



# Standard Specification for Doors, Watertight, Gastight/Airtight and Weathertight, Individually Dogged, for Marine Use<sup>1</sup>

This standard is issued under the fixed designation F 1069; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification, to be used in conjunction with Specification F 1073, covers the principal dimensions and the mechanical requirements for manufacturing steel, aluminum, and glass-reinforced plastic, individually dogged, watertight, gastight/airtight, and weathertight doors, for personnel access through bulkheads, complete with frames, for marine use intended to maintain the structural and tightness integrity of 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.

1.3 The following safety hazards caveat pertains to the test method portion, Section 8, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:

A 36/A36M Specification for Carbon Structural Steel<sup>2</sup>

A 131/A131M Specification for Structural Steel for Ships<sup>2</sup>

B 209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate<sup>3</sup>

F 1073 Specification for Door Fittings, for Watertight/Gastight/Airtight, Weathertight, and Non-Tight Doors, for Marine Use<sup>4</sup>

### 2.2 ABS Standard:

Rules for Building and Classing Steel Vessels<sup>5</sup>

### 2.3 Military Standards:

MIL-R-900 Rubber Gasket Material (45 Durometer Hardness)<sup>6</sup>

MIL-R-21607 Resins, Polyester Low-Pressure Laminating Fire Retardant<sup>6</sup>

MIL-P-17549 Plastic Laminates, Fibrous Glass Reinforced<sup>6</sup>

MIL-G-17927 Gaskets, Glass-Metallic Cover, Silicone Core<sup>6</sup>

MIL-C-81706 Coating, Aluminum and Aluminum Alloys<sup>6</sup>

MIL-P-24441 Epoxy-Polyamide Paint<sup>6</sup>

DoD-STD-2138 Metal Sprayed Coating Systems for Corrosion Protection<sup>6</sup>

TT-E-490 Enamel Silicone Alkyd Copolymer, Semi-gloss Exterior<sup>6</sup>

## 3. Classification

3.1 The doors shall be classified into groups as given in Table 1, according to their application; in addition, the length “L” shall be in accordance with the ABS Rules for Building and Classing Steel Vessels.

3.2 The doors shall be of two types. Type I doors shall conform to all dimensions, scantlings, and details of this specification. Type II doors shall be to special openings conforming to the test methods of this specification and scantlings indicated in Figs. 1-4. Special built doors with more than 9 psi (62 kPa) shall be indicated in the ordering information (see Supplementary Requirements).

3.2.1 Tolerances of all doors shall be  $\pm 1/8$  in. (3 mm).

3.3 Where structural fire protection requirements are applicable, the doors shall meet the same requirements as required for the bulkheads in which fitted.

## 4. Ordering Information

4.1 Orders for doors, under this specification, shall include the following:

4.1.1 Group (see Table 1), type of material and dimensions (see Tables 2-5 inclusive) of doors,

4.1.2 Nominal and ASTM designations indicating fixed lights or no lights,

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<sup>2</sup> Annual Book of ASTM Standards, Vol 01.04.

<sup>3</sup> Annual Book of ASTM Standards, Vol 02.02.

<sup>4</sup> Annual Book of ASTM Standards, Vol 01.07.

<sup>5</sup> Available from American Bureau of Shipping, ABS Plaza, 16855 Northchase Dr., Houston, TX 77060.

<sup>6</sup> Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

TABLE 1 Door Groups

Group	Application
A (WT) <sup>A</sup>	Doors in the bridge front bulkhead and the unprotected bulkhead of deckhouses/superstructures having the length of 0.4L or more and deckhouses that enclose machinery openings.
B (WT) <sup>A</sup>	Doors in the deckhouse bulkheads partially protected or in the bulkhead of deckhouses/superstructures having the length below 0.4L and not around machinery openings, watertight and airtight doors below weather deck.
C (AT/GT) <sup>B</sup>	Doors in the aft end bulkhead of the bridge, forecastle, and deckhouses at the weather deck level.
D (WEAT) <sup>C</sup>	Doors in the deckhouse above the weather deck level.

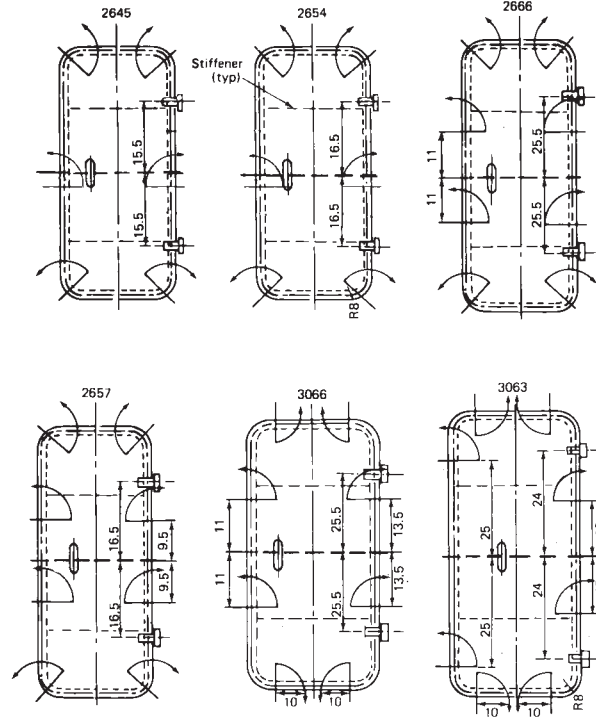
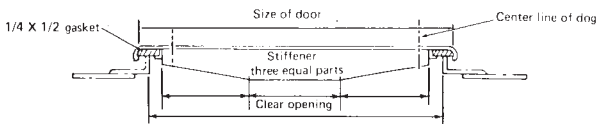
<sup>A</sup>WT—Indicates watertight.

<sup>B</sup>AT/GT—Indicates airtight/gastight. (Airtight is Naval terminology and is identical to gastight doors in commercial vessels.)

<sup>C</sup>WEAT—Indicates weathertight.

STEEL DOORS

Unit: inches



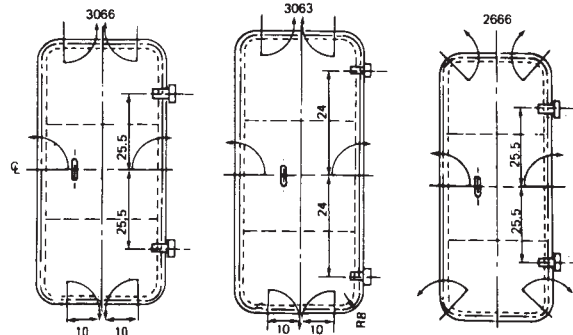
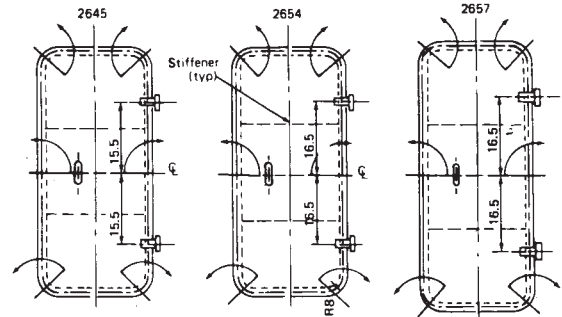
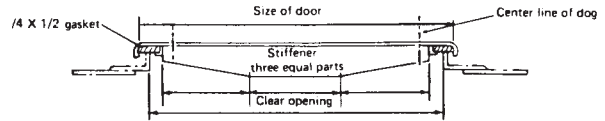
Remarks: 1. Stiffeners shall be spaced to divide the doorway into four equal parts.  
2. Corner radius 8"R shows the inside of the doorframe.

NOTE 1—1 in. = 25.4 mm.

FIG. 1 Group A and B

STEEL DOORS

Unit: inches



Remarks: 1. Stiffeners shall be spaced to divide the doorway into three equal parts.  
2. Corner radius 8"R shows the inside of the doorframe.

NOTE 1—1 in. = 25.4 mm.

FIG. 2 Group C

5. Materials and Manufacture

5.1 The materials and specifications shall be as shown in Table 5.

5.2 Glass-reinforced plastic (GRP) material of doors and frames shall meet the requirements of MIL-P-17549, Grade 1. In addition, laminate must have the flammability limits equal to the requirements for Grade 2, Class A, of MIL-R-21607.

5.2.1 All GRP material that is drilled, cut, and sanded, leaving the surface exposed, shall be sealed with the same resin as the exposed material.

6. Construction, Shape, and Dimensions

6.1 The construction, shape, and clear opening dimensions shall be as shown in Table 2, Table 3, Table 4, and Fig. 1, Fig. 2, and shall also conform to the following:

6.1.1 A right-hand opening door shall be construed as one that opens toward you with hinges located on right side of door. A left-hand opening is similar but with hinges on the left.

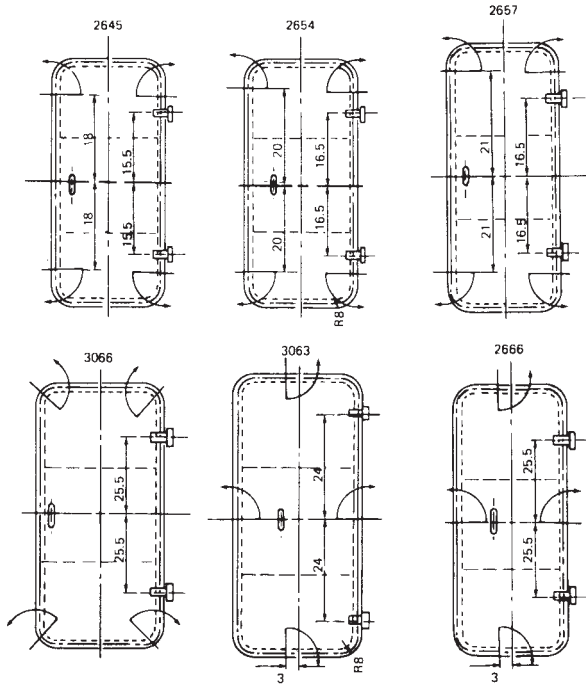
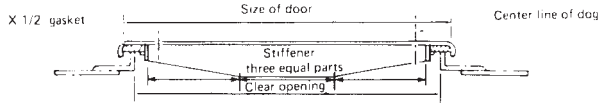
6.1.2 Door frames shall be supplied as indicated in Fig. 4. The corner radius, inside of door frame, shall be 8 in. (203 mm).

4.1.3 Quantity of each hand of door (right hand/left hand),  
4.1.4 Test head to be indicated when Type II door is required, and  
4.1.5 Hasp and staple assemblies.

4.2 Inspection and acceptance of doors shall be agreed upon between the purchaser and the supplier.

STEEL DOORS

Unit: inches



Remarks: 1. Stiffeners shall be spaced to divide the doorway into three equal parts.  
2. Corner radius 8" R shows the inside of the doorframe.

NOTE 1—1 in. = 25.4 mm.

FIG. 3 Group D

6.1.3 Dogs shall be located on the door panels unless otherwise specified. To hold dogs in open position, steel wedges or equivalent shall be welded to the panels.

6.1.4 Doors shall be fitted with dogs, hinges, grab handles, label plates, and hook assemblies; for details, see Specification F 1073.

6.1.5 Doors shall be fitted with hasp and staple assemblies if so specified by the purchaser in the ordering information.

6.1.6 The material for the standard door components shall be as shown in Table 5.

6.1.7 Welding shall be done in accordance with the Rules of the American Bureau of Shipping (indicated in Section 30).

7. Workmanship, Finish, and Appearance

7.1 All sharp and ragged edges shall be ground flush and removed for personnel protection.

7.2 Pretreatment and priming of door components shall be as follows:

7.2.1 Steel door and components shall be coated with inorganic zinc-rich primer SSPC Paint 20 Type I-C at 1.5 to 3.0 mil (MDFT) both sides, before assembly, following surface preparation in accordance with the manufacturer's instructions.

7.2.2 Aluminum door and components are to be pretreated with wash primer coating followed with lead-free, chromate-free, anticorrosion prime coating. Pretreatment and primer are to be applied before assembly, following surface preparation, in accordance with the manufacturer's instructions.

7.2.3 GRP door and components are to have color tint "haze gray" painted upon completion of the molding process.

8. Test Methods

8.1 Design all steel watertight doors with their respective fittings to an internal pressure of 9 psi (62 kPa). Watertight aluminum and GRP doors shall be 5 psi (34 kPa). Design gastight/airtight doors to an internal pressure of 2 psi (14 kPa).

8.2 Before delivery, certify the doors applicable to watertight, airtight, or weathertight integrity.

9. Product Marking

9.1 Each door shall be marked with the purchase order number by attaching a CRES label plate to the door panel using letters at least 1/2 in. (12.7 mm) high, indicating the ASTM designation number, class, nominal number, thickness of door plate, and direction of opening. Other markings may be in paint.

9.2 Label plates shall be screwed or bolted to the door panel on steel and aluminum doors, but in no way adversely affect the watertightness.

9.3 GRP door label plates shall be affixed to the door, with epoxy.

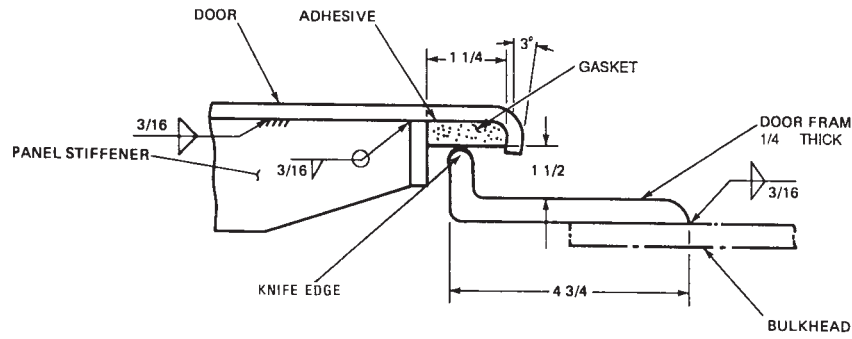
10. Packaging and Package Marking

10.1 Doors shall be crated or attached to a pallet in a manner acceptable for shipment by a common carrier. The door and door frame assembly shall be shipped as one unit with gasket protected from knife edge by an inserted partition.

11. Keywords

11.1 airtight; bulkheads; doors; gastight; marine; ship; tightness integrity; watertight; weathertight

UNIT: INCHES



T12386

TYPICAL EDGE SECTION

NOTE 1—1 in. = 25.4 mm.

FIG. 4 In Way of Steel Door Frame

TABLE 2 Doors—Watertight, Gastight/Airtight

UNIT: INCHES

NOMINAL NO.	CLEAR OPENING	SIZE OF DOOR	A						B			
			THICKNESS DOOR PLATE		SIZE OF STIFFENER			THICKNESS OF DOOR		SIZE OF STIFFENER		
			L > 345'	L ≤ 345'	L > 460'	L > 395'	L > 295'	L > 310'	L ≤ 310'	L > 460'	L ≤ 460'	
2645	26 X 45	28 X 47	3/8	5/16	3 1/2 X 3/8	3 X 3/8	2 1/2 X 3/8	5/16	1/4	2 1/2 X 1/4	2 1/2 X 1/4	
2654	26 X 54	28 X 56	3/8	5/16	3 1/2 X 3/8	3 X 3/8	2 1/2 X 3/8	5/16	1/4	2 1/2 X 1/4	2 1/2 X 1/4	
2657	26 X 57	28 X 59	3/8	5/16	3 1/2 X 3/8	3 X 3/8	3 X 3/8	5/16	1/4	2 1/2 X 1/4	2 1/2 X 1/4	
2666	26 X 66	28 X 68	3/8	5/16	3 1/2 X 3/8	3 X 3/8	3 X 3/8	5/16	1/4	2 1/2 X 1/4	2 1/2 X 1/4	
3063	30 X 63	32 X 65	3/8	5/16	4 X 1/2	4 X 3/8	3 1/2 X 3/8	5/16	1/4	2 1/2 X 1/4	2 1/2 X 1/4	
3066	30 X 66	32 X 68	3/8	5/16	4 X 1/2	4 X 3/8	3 1/2 X 3/8	5/16	1/4	2 1/2 X 1/4	2 1/2 X 1/4	

NOMINAL NO.	CLEAR OPENING	SIZE OF DOOR	C		D		CALCULATED WEIGHT (LBS)					
			THICKNESS DOOR PLATE	SIZE OF STIFFENER	THICKNESS DOOR PLATE	SIZE OF STIFFENER	A		B		C	D
							3/8	5/16	9/32	1/4		
2645	26 X 45	28 X 47	1/4	2 1/2 X 1/4	3/16	2 1/2 X 1/4	150.8	125.5	113	100	109	85.9
2654	26 X 54	28 X 56	1/4	2 1/2 X 1/4	3/16	2 1/2 X 1/4	177.7	150.2	134.9	120.0	128.5	98.3
2657	26 X 57	28 X 59	1/4	2 1/2 X 1/4	3/16	2 1/2 X 1/4	187.7	156.2	140.6	125.2	135.2	106.2
2666	26 X 66	28 X 68	1/4	2 1/2 X 1/4	3/16	2 1/2 X 1/4	215.4	179.2	161.4	143.6	153.1	119.7
3063	30 X 63	32 X 65	1/4	2 1/2 X 1/4	3/16	2 1/2 X 1/4	233.8	197.3	177.2	157.6	167.5	127.8
3066	30 X 66	32 X 68	1/4	2 1/2 X 1/4	3/16	2 1/2 X 1/4	231	203.9	183.5	163.1	173	135.4

NOTE 1—1 in. = 25.4 mm.

NOTE 2—2.2 lb = 1 kg.

NOTE 3—The length "L" shall be in accordance with the Rules for Building and Classing Steel Vessels by ABS. Weight does not include fittings.

**TABLE 3 GRP Doors**

UNIT: INCHES

NOMINAL NO.	CLEAR OPENING	SIZE OF DOOR	C & D		REMARKS
			DESCRIPTION	WEIGHT	
2645	26 x 45	28 x 47	2" POLYURETHENE CORE WITH 3/32" FACE SHEETS	38	SEE DWG. NOS. 804-500905, 906, 907 & 937.
2654	26 x 54	28 x 56	INCLUDING WEBS SPACED 5" APART	45	
2657	26 x 57	28 x 59		47	
2666	26 x 66	28 x 68		54	
3063	30 x 63	32 x 65		58	
3066	30 x 66	32 x 68		61	

- NOTE 1—1 in. = 25.4 mm.
- NOTE 2—2.2 lb = 1 kg.
- NOTE 3—For steel doors, see Table 2 .
- NOTE 4—For aluminum doors, see Table 4.
- NOTE 5—Weight does not include fittings.

**TABLE 4 Aluminum Doors**

UNIT: INCHES

NOMINAL NO.	CLEAR OPENING	SIZE OF DOOR	C & D		CALCULATED WEIGHT (LBS)	REMARKS
			THICKNESS DOOR PLATE	SIZE OF STIFFENER		
2645	26 x 45	28 x 47	1/4"	2 x 2 x 1/4" 'T' BAR	59	
2654	26 x 54	28 x 56	1/4"	2 x 2 x 1/4" 'T' BAR	67	
2657	26 x 57	28 x 59	1/4"	2 x 2 x 1/4" 'T' BAR	73	
2666	26 x 66	28 x 68	1/4"	2 x 2 x 1/4" 'T' BAR	83	
3063	30 x 63	32 x 65	1/4"	2 x 2 x 1/4" 'T' BAR	88	
3066	30 x 66	32 x 68	1/4"	2 x 2 x 1/4" 'T' BAR	93	

- NOTE 1—1 in. = 25.4 mm.
- NOTE 2—2.2 lb = 1 kg.
- NOTE 3—For steel doors, see Table 2.
- NOTE 4—For GRP doors, see Table 3.
- NOTE 5—Weight does not include fittings.

**TABLE 5 Standard Door Materials**

Number	Component	Steel	Aluminum	Glass-Reinforced Plastic (GRP)
1	door panel	Specifications A 36/A 36M or A 131/A 131M	Specification B 209	MIL-P-17549, Grade 1 or equivalent
2	gasket retainer (optional)	not required	not required	not required
3	gasket	Neoprene 45 Durometer	MIL-R-900	
4	stiffeners	optional	optional	(integral)
5	door frame	Specifications A 36/A 36M or A 131/A 131M	Specification B 209	

## SUPPLEMENTARY REQUIREMENTS

The following supplementary requirements shall apply only when specified by the contract or order

### S1. Painting

S1.1 Pretreatment and priming of door components shall consist of metal spray coating in accordance with DoD-STD-2138, Type II on both sides before assembly.

S1.2 Aluminum door and components shall be treated with a chemical conversion coating MIL-C-81706, followed with a second coat of epoxy polyamide primer (Formula 150 of MIL-P-24441) alkyd haze gray (TT-E-490 or equal). Coating to be applied before assembly, following surface preparation, in accordance with the manufacturer's instruction.

### S2. Internal Pressure

S2.1 Internal pressure of more than 9 psi (62 kPa) and any other clear openings of door are to be indicated.

### S3. Special Heat-Resisting Gaskets

S3.1 Special heat-resisting gaskets in accordance with MIL-G-17927 are to be indicated.

### S4. GRP and Aluminum Doors

S4.1 GRP and aluminum doors for 5-psi (34-kPa) internal and 9-psi (62-kPa) external pressures are to be indicated.

### S5. Additional Test Requirements

S5.1 Test requirements when indicated, shall allow 1 door out of 50 doors to be tested for 1.5 times the test requirements performed by the manufacturer.

### S6. Door Frames

S6.1 Door frames when specified, may be 3- by 2-in. (76-by 50-mm) angles when dogs are located on the doors.

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