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An American National Standard

Standard Specification for Chocks, Panama, Mooring Cast Steel[1]

This standard is issued under the fixed designation F2935; 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 principal dimensions and materials of chocks installed in ships to comply with the regulations of the Panama Canal.

1.2 Chocks can be used with either wire rope or fiber and synthetic ropes.

1.3 Chocks are for mounting directly on a deck, seat (foundation) or for mounting in a bulwark.

1.4 To meet Panama Canal Company regulations the radius of contact surfaces of lines must be 180 mm.

1.5 The values stated in SI units are to be regarded as the standard.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A27/A27M Specification for Steel Castings, Carbon, for General Application

2.2 *ANSI Standard:*[3]

B 46.1 Surface Texture

3. Descriptions of Terms Specific to This Standard

3.1 *bulwark*—a structural enclosure along the edge of the ship to serve as a rail.

3.2 *closed chock*—a metal flared ring-like fitting mounted on a ship through which mooring lines pass to tow or moor a ship.

3.3 *mooring ring or pipe*—a chock mounted in the bulwark and conforming to Type II or IV.

3.4 *rope contact area*—that part of the fitting in contact with the mooring line in normal mooring operations.

4. Classification

4.1 The size of the chock shall be identified by the nominal size "L" and "H" of the opening as shown in Table 1 and Fig. 1, and Table 2 and Fig. 2. Sizes larger than 360 mm by 260 mm may be considered as double chocks.

4.2 Chocks are furnished in types as follows:

4.2.1 *Type I*—Deck mounted, as shown in Fig. 1, and conforms to all dimensions in Table 1.

4.2.2 *Type II*—Bulwark mounted, as shown in Fig. 2, and conforms to all dimensions in Table 2.

4.2.3 *Type III*—Deck mounted conforming only to dimensions "L", "H", and 180 mm radius at entrance, as shown in Fig. 1 and Table 1 and the requirements of Sections 6 – 10.

4.2.4 *Type IV*—Bulwark mounted conforming only to dimensions "L", "H", and 180 mm radius at entrance, as shown in Fig. 2 and Table 2 and the requirements of Sections 6 to 10.

4.3 Chocks shall be furnished in either of the following grades:

4.3.1 *Grade 1*—Surface finish shall be in the as cast condition.

4.3.2 *Grade 2*—Surface finish in way of rope contact shall be in accordance with 7.2.

5. Ordering Information

5.1 Orders for chocks under this specification shall include this standard date, and the following:

5.1.1 Quantity (number) of chocks required,

5.1.2 Size (opening, $L \times H$),

5.1.3 Type and grade,

5.1.4 Primer and coating, if any (see 7.3), and

5.1.5 Marking.

6. Materials and Manufacture

6.1 Material shall be cast steel in accordance with Specification A27/A27M, Grade 60-30.

6.2 For Types III and IV the manufacturer shall certify that chock is in compliance with Panama Canal requirements.

6.3 Casting shall be smooth, fine grain, and free of cracks, hot tears, and blow holes, detrimental to end use. Defects having an area larger than 25 by 25 mm^2 and a depth of more than 10 % of the thickness in way thereof will be cause for rejection. Small defects in way of rope contact shall be welded

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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 National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

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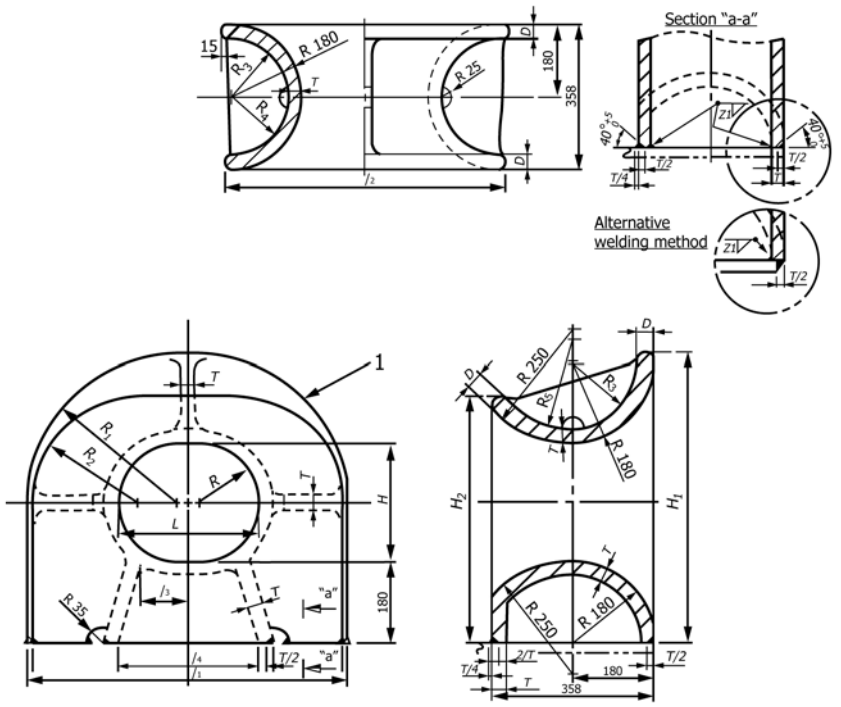
TABLE 1 Dimension Requirements (see Fig. 1)
(Unit: mm)

Nominal size	L	l_1	l_2	l_3	l_4	H	H_1	H_2	R	R_1	R_2
310	310	708	688	105	310	260	639	543	130	329	233
360	360	760	740	130	360	260	640	545	130	330	235

Nominal size	R_3	R_4	R_5	T	D	Welding leg length	SWL		Calculated weight (kg)
						z_1	kN	tonnes	
310	142	140	195	32	38	8	471	48	257
360	140	138	192	34	40	8.5	687	70	286



NOTE 1—All fillet radii to be equal to "*T*".
NOTE 2—All final products must have a thickness no less than "T".

FIG. 1 Configuration of Deck Mounted Chocks

TABLE 2 Dimension Requirements (see Fig. 2)
(Unit: mm)

Nominal size	L	l_1	l_2	H	H_1	H_2	R	R_1	R_2	R_3	R_4
310	310	720	688	260	670	453	130	335	227	149	147
360	360	770	733	260	670	456	130	335	228.5	147	145

Nominal size	R_5	T	D_1	θ	–	Welding leg length		SWL		Calculated weight (kg)
						z_1	z_2	kN	tonnes	
310	205	25	31	44°	–	12.5	10	726	70	228
360	203	27	33	43°	–	13.5	11	814	79	248

and finished smooth. Where applicable, welding shall be in accordance with code requirements, such as ABS, AWS and so on, and may require post weld heat treatment (PWHT).

6.4 All excess material, vents, and gates shall be removed and finished smooth to match the surrounding surface.

6.5 Limber or drain holes shall be 25 mm in diameter and provided in webs and brackets to prevent water entrapment.

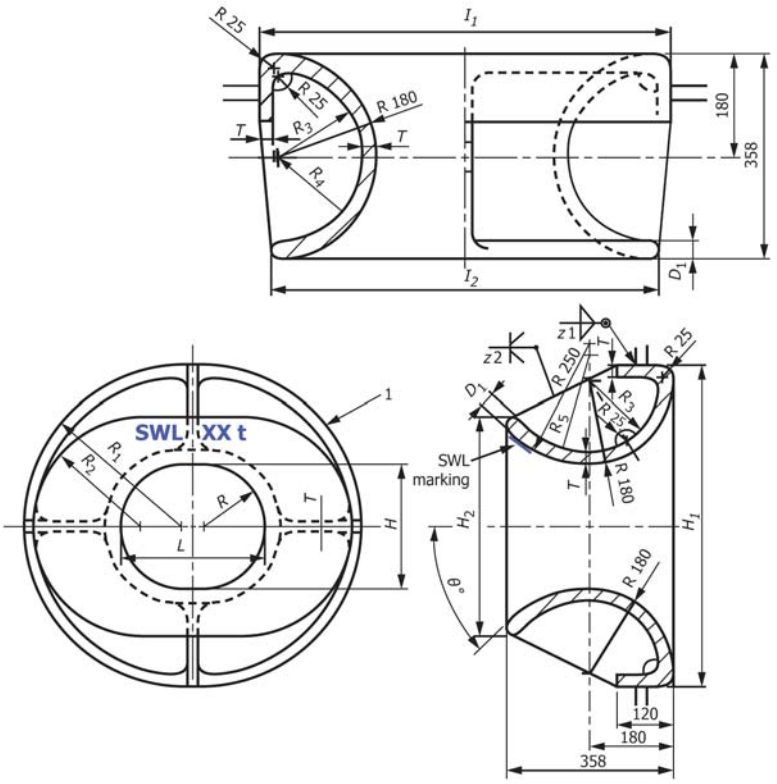
6.6 Type I shall be in accordance with Fig. 1 and Table 1.

6.7 Type II shall be in accordance with Fig. 2 and Table 2.

7. Workmanship, Finish, and Appearance

7.1 Casting shall be sand, grit, or shot blasted to a gray metal finish to remove all loose scale. All mold flashing shall be removed and radii shall be fair so as to present an even surface.

7.2 Surface of Grade 2 chocks shall have a rope contact surface of average surface roughness of 3 µm or less, in accordance with ANSI standard B 46.1 so as to reduce abrasive damage to fiber and synthetic ropes.



NOTE 1—All fillet radii to be equal to "*t*".
NOTE 2—All final products must have a thickness no less than "T".

FIG. 2 Configuration of Bulwark Mounted Chocks

7.3 The manufacturer shall provide additional surface preparation and coating as specified by the ordering information. In the absence of such requirements, surface preparation shall remain as required by 7.1.

8. Inspection

8.1 The manufacturer shall visually inspect the chock for dimensions, workmanship, finish, and appearance after the preparation required by 7.1 to ascertain that it meets the intent of this specification.

9. Product Marking

9.1 Each chock shall be marked with purchase order, item number, and stamped on the top exposed web using letters at least 12 mm high designating the ASTM standard number, type, and grade. Other marking may be in paint or a waterproof tag.

10. Packaging and Package Marking

10.1 If shipment is required, chocks shall be crated or attached to a pallet in a manner acceptable for shipment by a common carrier.

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