



Standard Specification for Chocks, Ship Mooring, Cast Steel¹

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1. Scope

1.1 This specification covers the principal dimensions and materials of closed chocks for installation on ships used for mooring.

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 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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

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

2.2 *ANSI Standards:*³

B 46.1 Surface Texture

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

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

¹ This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.01 on Structures.

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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>.

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

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

3.1.4 *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 chocks will be identified by the nominal size “L” and “H” of the opening as shown in Table 1 and Table 2.

4.2 Chocks are furnished in types as follows:

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

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

4.2.3 *Type III*—Deck mounted, conforming only to dimensions “L” and “H” of Table 1 and is of adequate strength to at least meet 7.2 requirement and the requirements of Sections 6 to 10.

4.2.4 *Type IV*—Bulwark mounted, conforming only to dimensions “L” and “H” of Table 2 and is of adequate strength to at least meet 7.2 requirement 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 8.2.

5. Ordering Information

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

5.1.1 Descriptive information (size, material, etc.) of mooring lines,

5.1.2 Quantity (number) of chocks required,

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

5.1.4 Type and grade,

5.1.5 Primer and coating, if any (see 8.3), and

5.1.6 Marking.

**TABLE 1 Dimension Requirements (see Fig. 1)
(Units: mm)**

Nominal size LxHxD	l ₁	l ₂	l ₃	l ₄	H ₁	H ₂	H ₃	R	R ₁	R ₂	R ₃
250x200x214	488	453	76	265	427	368	108	100	219	160	108
300x250x286	614	565	89	330	551	481	144	125	282	212	144
350x250x333	716	660	114	403	601	525	168	125	308	232	168
400x250x381	820	754	139	475	652	553	192	125	335	236	192
450x250x381	870	804	164	524	652	553	192	125	335	236	192
500x250x381	920	854	189	574	652	553	192	125	335	236	192
400x250x428	870	796	139	500	701	609	216	125	360	268	216
450x250x428	920	846	164	550	701	609	216	125	360	268	216
500x250x428	970	896	189	600	701	609	216	125	360	268	216
500x400x428	970	896	176	600	851	759	216	200	435	343	216
500x250x525 ^A	1068	1000	190	652	798	675	264	125	409	286	264
500x400x525 ^A	1068	1000	193	652	948	825	264	200	484	361	264
500x250x525 ^B	1074	1000	176	652	801	680	264	125	412	291	264
500x400x525 ^B	1074	1000	179	652	951	830	264	200	487	366	264

Nominal size LxHxD	R ₄	R ₅	R ₆	d ₁	T	Welding leg	SWL		Rope	Calculated
						length	kN	ton	diameter (Recommend)	
250x200x214	86	150	128	108	22	z ₁ 6	226	23	18	73
300x250x286	118	180	154	144	26	6.5	422	40	24	142
350x250x333	138	200	170	168	30	7.5	549	56	28	222
400x250x381	156	250	214	192	36	9	687	70	32	310
450x250x381	156	250	214	192	36	9	706	72	32	322
500x250x381	156	250	214	192	36	9	765	78	32	337
400x250x428	178	250	212	216	38	9.5	883	90	36	434
450x250x428	178	250	212	216	38	9.5	912	93	36	452
500x250x428	178	250	212	216	38	9.5	932	95	36	472
500x400x428	178	250	212	216	38	9.5	893	91	36	528
500x250x525 ^A	224	320	280	264	40	10	1148	117	44	657
500x400x525 ^A	224	320	280	264	40	10	1158	118	44	724
500x250x525 ^B	218	320	274	264	46	11.5	1413	144	44	753
500x400x525 ^B	218	320	274	264	46	11.5	1383	141	44	825

^A SWLs shown in the Table are for reference only. “SWL” may be adjusted depending on the actual loading conditions, and the actual marking is to be per the agreement between the user and the manufacturer.

^B Rope diameter (Recommend) is only for reference based on bending ratio of rope through the chock is 12 times.

^C Calculated weight is for reference only.

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 strength of the chock will at least meet **7.2** requirement, and that it is suitable for the mooring lines specified in the ordering information.

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 mm² and a depth of more than 10 % of the thickness in way thereof will be cause for rejection. Smaller defects in way of rope contact shall be welded 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. Strength Requirements

7.1 The closed chocks are to be designed to withstand the horizontal and vertical load cases. Horizontal and vertical

loadings were considered individually; both loadings were not considered simultaneously.

7.1.1 *Case 1*—Horizontal loading (see **Fig. 3**).

7.1.2 *Case 2*—Vertical loading (see **Figs. 4-6**).

7.2 The combined stress is limited to 85 % of the yield stress of the material.

8. Workmanship, Finish, and Appearance

8.1 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.

8.2 The surface of Grade 2 chocks shall have a line 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.

8.3 The manufacturer shall provide surface preparation and coating as specified by the ordering information. In the absence of such requirements surface preparation shall remain as required by **8.1**.

9. Inspection

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