

METRIC

DOD-A-17254A(SH)
 23 August 1985
 SUPERSEDING
 MIL-A-17254(SHIPS)
 30 June 1952
 (See 6.5)

MILITARY SPECIFICATION

ANCHORS, NAVY, LIGHTWEIGHT
 (HADFIELD MANGANESE CAST STEEL LOW
 MAGNETIC PERMEABILITY) (METRIC)

This specification is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers low magnetic permeability, high holding power, non-fouling, lightweight (LWT) anchors for use on ships or boats.

1.2 Classification. The anchors shall be of the following weights, as specified (see 6.2.1):

<u>Nominal weight</u>	
Pounds	Kilograms (kg)
30	(14)
75	(34)
500	(227)
1,500	(680)

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified, the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 5523, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 2040

DISTRIBUTION STATEMENT A Approved for public release; distribution unlimited

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SPECIFICATIONS

FEDERAL

TT-V-51 - Varnish, Asphalt.

MILITARY

MIL-C-450 - Coating Compound, Bituminous Solvent Type, Black (for Ammunition).
 MIL-I-17214 - Indicator, Permeability; Low-Mu (Go-No Go).
 MIL-S-17249 - Steel Casting, Hadfield Manganese (Low Magnetic Permeability).
 MIL-S-17758 - Steel Bar and Steel Forging, Nickel Modified Hadfield and Nickel-Molybdenum Modified Hadfield.

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
 MIL-STD-129 - Marking for Shipment and Storage.
 MIL-STD-1186 - Cushioning, Anchoring, Bracing, Blocking and Waterproofing; with Appropriate Test Methods.

2.1.2 Government drawing. The following Government drawing forms a part of this specification to the extent specified herein.

DRAWING

NAVAL SEA SYSTEMS COMMAND (NAVSEA)

803-632566 - Mark II, Lightweight Type (LWT) Anchor Assembly and Details.

(Copies of specifications, standards and drawings required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current DoDISS and the supplement thereto, if applicable.

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- A 153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware. (DoD adopted)
- B 150 - Standard Specification for Aluminum Bronze Rod, Bar, and Shapes. (DoD adopted)
- B 633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel. (DoD adopted)
- B 695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

ASSOCIATION OF AMERICAN RAILROADS

Association of American Railroads Rules Governing the Loading of Commodities on Open Top Cars

(Application for copies should be addressed to the Association of American Railroads, Operations and Maintenance Department, Mechanical Division, 59 East Van Buren Street, Chicago, IL 60605.)

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT
National Motor Freight Classification

(Application for copies should be addressed to the National Motor Freight Traffic Association, Inc., ATA TRAFFIC Dept., 1616 "P" Street, NW, Washington, DC 20036.)

UNIFORM CLASSIFICATION COMMITTEE AGENT

Uniform Freight Classification Ratings, Rules and Regulations

(Application for copies should be addressed to the Uniform Classification Committee Agent, Tariff Publication Officer, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Material.

3.1.1 Anchor. The anchor crown, flukes, shank, and stock for all weights shall be steel castings in accordance with MIL-S-17249.

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3.1.2 Anchor shackle and shackle pin.

3.1.2.1 Weights 30 pounds (14 kg) and 75 pounds (34 kg). The shackle and pin shall be forged aluminum bronze in accordance with composition C62300 or C63200 of ASTM B 150. The dimensions, proof load, and breaking load shall be in accordance with Drawing 803-632566.

3.1.2.2 Weights 500 pounds (227 kg) and 1,500 pounds (680 kg). The shackle and pin shall be forged steel of Hadfield austenitic grade, hot rolled conforming to the chemical composition and mechanical limits of alloy 2 in accordance with MIL-S-17758.

3.1.3 Key pins, split keys, and rings. Key pins, split keys, and rings shall be made from aluminum bronze in accordance with ASTM B 150, or austenitic stainless steel, having a magnetic permeability less than 1.30.

3.1.4 Chain. The chain shall be close link type and shall be aluminum bronze in accordance with ASTM B 150, or austenitic stainless steel, having a magnetic permeability less than 1.30, and of size and length as specified on Drawing 803-632566.

3.1.5 Recovered materials. Unless otherwise specified herein, all equipment, material, and articles incorporated in the products covered by this specification shall be new and may be fabricated using materials produced from recovered materials to the maximum extent practicable without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification unless otherwise specifically specified.

3.2 Description. The anchor shall consist essentially of a long shank and two sharp, double-swinging flukes with the stock located at the crown end of the anchor. Anchors shall be furnished complete, including shackle and shackle pin, with all parts properly fitted and assembled.

3.3 Design and dimensions. The anchor assembly, including shackle and shackle pin, shall comply with the design and dimensions specified on Drawing 803-632566.

3.4 Weight tolerance. The weight shall be not more than 4 percent or less than 2 percent of the actual weight of the anchors with shackles shown in table I.

TABLE I. Anchor weight.

Nominal weight	Actual weight with shackle
30 pounds (14 kg)	32.73 pounds (15 kg)
75 pounds (34 kg)	76.61 pounds (35 kg)
500 pounds (227 kg)	521.8 pounds (237 kg)
1,500 pounds (680 kg)	1,644 pounds (746 kg)

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3.5 Heat treatment. The castings shall be heat-treated in accordance with MIL-S-17249.

3.6 Markings. The anchors shall be marked as specified on Drawing 803-632566. The legend shall also contain the letters "N-M" to designate low magnetic permeability. When size of anchor prohibits marking as shown on the applicable drawing, marking by stamping is authorized. Stamping dies shall be of the round bottom, low stress type. Stamped letters shall be of the maximum practical height permitted by the shank being marked. Stamping shall not exceed 60 mils (1.5 millimeters (mm)) in relief.

3.7 Finish.

3.7.1 Weights 30 pounds (14 kg) and 75 pounds (34 kg), inclusive. The entire surface of all parts, except shackle and pins, shall be zinc-coated. If the hotdip process is used, the coating shall be applied in accordance with ASTM A 153, class A. If the electrodeposited process is used, the coating shall be in accordance with ASTM B 633, class Fe/Zn25, type II. If the mechanical deposited process is used, the coating shall be in accordance with ASTM B 695, class 25, type II.

3.7.2 Weights 500 pounds (227 kg) and 1,500 pounds (680 kg), inclusive. Surfaces of all exposed parts shall be coated with one coat of black asphalt varnish conforming to TT-V-51 or type I of MIL-C-450.

3.8 Workmanship. The workmanship shall be free from imperfections which may impair appearance or serviceability.

3.9 Magnetic permeability. The magnetic permeability of all parts of the anchor shall not exceed 1.30.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Certification data reports. The contractor shall prepare certified test reports, inspection data, and identification of the anchor and attachments in accordance with the data ordering document included in the contract (see 6.2.2). The report shall contain the statement "Records are available covering heat number of material, processing, heat treatment, chemistry, mechanical properties, and proof test."

4.1.2 Inspection system. The contractor shall provide and maintain an inspection system as specified in the contract or order (see 6.2.1).

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4.2 Sampling for quality conformance inspection.4.2.1 Lot.

4.2.1.1 Forgings for 500 pounds (227 kg) and 1,500 pounds (680 kg) anchor shackle and pins. A lot shall consist of material manufactured from the same heat.

4.2.1.2 Castings. A lot shall consist of castings made from the same heat as specified in MIL-S-17249.

4.2.1.3 Chemical analysis of forgings for 500 pounds (227 kg) and 1,500 pounds (680 kg) anchor shackle and pins. A lot shall consist of all forgings from the same heat.

4.2.1.4 Chemical analysis of castings. A lot shall consist of castings as specified in MIL-S-17249.

4.2.1.5 Assembled anchor. A lot shall consist of assembled anchors of the same size offered for inspection at the same time.

4.3 Sampling for visual and dimensional examination. Sampling for visual and dimensional examination for normal inspection and lot acceptance criteria shall comply with MIL-STD-105 and an AQL of 2.5 percent defective.

4.3.1 Sampling for nominal weight. Sampling for nominal weight examination for normal inspection and lot acceptance criteria shall comply with MIL-STD-105 and an AQL of 2.5 percent defective.

4.3.2 Sampling for chemical analysis.

4.3.2.1 Castings. Sampling for chemical analysis of castings shall be in accordance with MIL-S-17249.

4.3.2.2 Forgings. Samples for chemical analysis of forgings, for 500 pounds (227 kg) and 1,500 pounds (680 kg) anchor shackles, shall be taken from the same lot which consists of material manufactured from the same heat.

4.3.3 Sampling for tension tests on castings. Casting samples shall be in accordance with MIL-S-17249. Two samples for the tension test shall be taken from each lot.

4.3.4 Sampling for tension tests on forgings. For all forged parts, except shackles and pins for anchors with a weight of 30 pounds (14 kg) and 75 pounds (34 kg), two samples for the tension test shall be taken from each lot.

4.4 Examination.

4.4.1 Visual and dimensional examinations. Anchors selected in accordance with 4.3 shall be visually and dimensionally examined, both prior to and after painting, for defects in manufacturing and workmanship to verify compliance with this specification. Any anchor containing one or more visual or dimensional defects shall be rejected and if the number of defective anchors in any sample

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exceeds the acceptable number for that sample, the entire lot represented by the sample shall be rejected. Rejected lots may be offered again for inspection provided the contractor has removed all nonconforming anchors. Samples shall again be selected from such rejected lots and re-examined to verify compliance with this specification.

4.4.1.1 Shank. Radii on the corners of the shanks shall be examined to assure a smooth curve, free from irregularities. The stop on the shank shall make full surface contact with the boss in the crown when the flukes are in the operating position.

4.4.2 Determination of weight. Each anchor of the sample shall have its weight determined to verify compliance with 3.4. Anchors exceeding the tolerance limits shall be rejected. If the number of defective anchors in any sample (see 4.3.1) exceeds the acceptable number for that sample, the entire lot represented by the sample shall be rejected. Rejected lots may be resubmitted for inspection only after the contractor has removed all nonconforming anchors. Samples shall again be selected from such rejected lots and re-examined to verify compliance with the requirement.

4.4.3 Magnetic permeability. Inspect all parts of each anchor with an approved magnetic permeability indicator in accordance with MIL-I-17214. Measurements shall be made on a Go-No Go basis. Rejected parts may be resubmitted for inspection only after the contractor has remedied the defects found.

4.5 Test procedures.

4.5.1 Chemical and mechanical tests. Chemical and mechanical tests shall be conducted in accordance with MIL-S-17249.

4.5.2 Proof load test.

4.5.2.1 General. Each anchor shall be assembled with shackle and pins ready for service and shall be subjected, in the presence of the Government representative, to the proof load test in both positions as specified on Drawing 803-632566.

4.5.2.2 Gauging. The anchors shall be gauged before and after they have been tested in each operative position to determine whether any permanent deformation has been caused by the applied stress.

4.6 Repairs of defects. Where defects are found, repair by welding shall be accomplished in accordance with MIL-S-17249.

4.7 Inspection of packaging. Sample packages and packs, and the inspection of the preservation-packaging, packing and marking for shipment and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

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5. PACKAGING

(The packaging requirements specified herein apply only for direct Government acquisition. For the extent of applicability of the packaging requirements of referenced documents listed in section 2, see 6.4.)

5.1 Packing. Anchors shall be packed level A, B, or C as specified (see 6.2.1).

5.1.1 General. Anchors shall be individually prepared for shipment. Anchoring, blocking, and bracing shall be in accordance with the requirements of MIL-STD-1186. Shipping containers (boxes), when used, shall be provided with skids.

5.1.2 Details. Movable parts shall be securely fastened to prevent movement, dislodgement, or loss during handling, shipment, and storage. Anchors shall be arranged, secured, and packed for shipment, in a manner acceptable to the carrier and which will ensure safe delivery at the destination in a satisfactory condition at the lowest applicable rate. The method of packing, packing media (skids, pallets, containers, and so forth) when used, and loading shall comply with the Uniform Freight or National Motor Freight Classification Rules and Regulations or other carrier rules as applicable to the mode of transportation. Loading methods for rail cars shall be in accordance with the Association of American Railroad Rules, as applicable to the type of vehicle employed.

5.2 Marking. In addition to any special marking (see 6.2.1) and identification (see 3.6) required, shipping containers and unpacked anchors shall be marked in accordance with MIL-STD-129. In addition, shipping containers shall contain structural markings as required by MIL-STD-129.

6. NOTES

6.1 Intended use. Anchors covered by this specification are for use on U.S. Naval ships.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, revision, and date of this specification.
- (b) Nominal weight of anchor required (see 1.2).
- (c) That the nominal weight of anchor ordered will determine the price and no payment will be made for any excess of weight.
- (d) Inspection system in accordance with MIL-I-45208 (see 4.1.2).
- (e) Level of packing required (see 5.1).
- (f) Special marking, when required (see 5.2).

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6.2.2 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL), the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL incorporated into the contract. When the provisions of FAR 52.227-7031 are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification is cited in the following paragraph.

<u>Paragraph no.</u>	<u>Data requirement title</u>	<u>Applicable DID no.</u>	<u>Option</u>
4.1.1	Certification data/report	UDI-A-23264	---

(Data item descriptions related to this specification, and identified in section 6 will be approved and listed as such in DoD 5000.19L., Vol. II, AMSDL. Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

6.2.2.1 The data requirements of 6.2.2 and any task in sections 3, 4, or 5 of this specification required to be performed to meet a data requirement may be waived by the contracting/acquisition activity upon certification by the offeror that identical data were submitted by the offeror and accepted by the Government under a previous contract for identical item acquired to this specification. This does not apply to specific data which may be required for each contract regardless of whether an identical item has been supplied previously (for example, test reports).

6.3 Anchors covered by this specification are commonly referred to as LWT, low permeability anchors.

6.4 Sub-contracted material and parts. The packaging requirements of referenced documents listed in section 2 do not apply when material and parts are acquired by the contractor for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.5 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Preparing activity:
Navy - SH
(Project 2040-N153)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER DOD-A-17254A(SH)	2. DOCUMENT TITLE Anchors, Navy, Lightweight (Hadfield Manganese Cast Steel Low Magnetic Permeability) (METRIC)
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3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

 VENDOR USER MANUFACTURER OTHER (Specify): _____

b. ADDRESS (Street, City, State, ZIP Code)

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) - Optional

b. WORK TELEPHONE NUMBER (Include Area Code) - Optional

c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional

8. DATE OF SUBMISSION (YYMMDD)

(TO DETACH THIS FORM, CUT ALONG THIS LINE.)