

INCH-POUNDMIL-B-23459D(YD)  
13 September 1988  
SUPERSEDING  
MIL-B-23459C(YD)  
6 June 1981MILITARY SPECIFICATION  
BUOY, HOSE SUPPORT, INFLATABLE

This specification is approved for use by the Naval Facilities Engineering 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 an inflatable synthetic rubber-impregnated nylon or polyester fabric buoy.

## 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standard and drawing. The following specifications, standards, and drawing form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer (Code 156), Naval Construction Battalion Center, Port Hueneme, CA 93043-5000, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 2050

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SPECIFICATIONS

FEDERAL

PPP-B-636 - Boxes, Shipping, Fiberboard.

MILITARY

MIL-P-116 - Preservation, Methods of.

MIL-C-17415 - Cloth, Coated, and Webbing, Inflatable Boat and Miscellaneous Use.

STANDARDS

FEDERAL

FED-STD-191 - Textile Test Methods.  
FED-STD-595 - Colors.  
FED-STD-601 - Rubber: Sampling and Testing.

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.  
MIL-STD-129 - Marking for Shipment and Storage.  
MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of.

DRAWING

NAVAL FACILITIES ENGINEERING COMMAND (NAVFAC)

889724 - Buoy, Hose Support, Collapsible, for Amphibious Fueling Facility.

(Unless otherwise indicated, copies of the federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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## 3. REQUIREMENTS

3.1 Description. The buoy shall be of single ply, synthetic rubber-impregnated fabric construction with reinforcing hoops at each end, with end plate having an attached mooring ring and inflation-deflation port with cap, and with other features as shown on Drawing 889724 and specified herein. At the option of the contractor, and subject to prior approval by the contracting officer, design, construction, end plate, and fabric materials may vary from the details shown on the drawing, provided the finished product meets or exceeds the requirements for strength, water tightness, and resistance to wear described herein and on the applicable drawing. Additional or better features which are not specifically prohibited by this specification but which are a part of a manufacturer's standard product design may be included, subject to approval by the contracting officer.

3.2 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.2.1 and 6.2).

3.3 Interchangeability. All units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to insure interchangeability of component parts, assemblies, accessories, and spare parts.

3.4 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible 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 are allowed under this specification unless otherwise specified.

3.5 Design and construction. The drawing, forming a part of this specification, is an engineering design drawing. The contractor is responsible for preparing his own shop drawings. Where tolerances prescribed could cumulatively result in incorrect fits, the contractor shall provide tolerances within those prescribed on the drawings to ensure correct fit, assembly, and operation of the item. Any deviation from the prescribed dimensions, tolerances, or materials shall be subject to prior approval of the contracting officer. The fabric shall be single-ply nylon or polyester cloth impregnated with synthetic rubber compound, and shall conform to MIL-C-17415, type 9, Class A, except that the coated cloth shall be uncured prior to autoclave vulcanizing of the buoy assembly. Seams shall be continuous, full width, and shall be overlapped not less than one inch. The amount and method of lapping shall be such as to produce seams as strong as the coated cloth. Cement, gum strips, and chafing gum shall be of a vulcanizing type compatible with the rubber impregnated fabric. All seams, splices, and raw edges on the interior

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and exterior of the buoy shall be covered with gum strip not less than 3/4-inch wide. Foot flaps of the coated fabric shall be as shown on the drawing and shall be vulcanized to the outer side and bottom of the buoy. The assembled buoy shall be vulcanized as a unit in a steam or air pressure autoclave. At the option of the contractor, fabrication shall be made by dielectric heat sealing. After vulcanizing, the adhesion of seams and cemented areas shall be not less than 12 pounds (lb) per inch of width, and all requirements and characteristics of the coated fabric shall comply with MIL-C-17415. At the option of the contractor, the commercial type tire bead reinforcing hoops may be rectangular section having dimensions not less than 3/8-inch by 3/8-inch in lieu of 3/4-inch round bead shown on the drawing.

**3.5.1 End plate assembly.** At the option of the contractor, the steel end plate assembly parts shall be joined as shown on the applicable drawing, or shall be joined by welding provided that the end plate assembly is cadmium-plated after the welding operation. At the option of the manufacturer, the end plate assembly shall be of heavy-duty rigid plastic installed in the end of the buoy either before or after vulcanizing of the buoy fabric. In either event, the method of joining the fabric to the end plate shall develop a high strength bond and positive seal which will withstand the severe and repeated flexing and pulling experienced during normal use conditions in an ocean surf having waves up to four feet in height. This requirement shall be verified by the test described in 4.5.2. The flanged filler neck fitting and cap shall be nonvented type and the material shall be rigid plastic or stainless steel. The cap shall be fitted with a keeper and line to prevent loss of cap. The cap seal shall be an O-ring bore seal of neoprene rubber. The steel end plate assembly shall be cadmium-plated before assembly to the filler neck. The manufacturer's preferred end plate design may be utilized subject to prior approval of the contracting officer.

**3.5.2 Repairs.** Damage occurring before curing shall be repaired before curing. The hot-patch method shall be used to repair damages or seam defects after curing. Patches shall have an adhesion not less than that specified in 4.5.3.

**3.6 Performance.**

**3.6.1 Leakage.** The buoy shall not leak when fully inflated and the cap installed, as demonstrated by the test specified in 4.5.4.

**3.6.2 Storage temperature range.** The buoy shall be suitable for storage in a temperature range from  $-40^{\circ}$  Fahrenheit (F) to  $+160^{\circ}$ F, as evidenced by the tests of 4.5.1. The buoy body material shall not flake or crack in any ambient temperature to  $-40^{\circ}$ F, and shall develop no damage or tackiness in any ambient temperature to  $+160^{\circ}$ F.

**3.7 Vulcanizing repair items.** When specified (see 6.2), the vulcanizing repair items shown in Table I shall be furnished.

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TABLE I. Vulcanizing repair items.

Item	Description	Quantity
Patching, 12 inches by 12 inches	Cured coated fabric conforming to 3.5	1 piece
Sealing strip, 1 inch by 60 inches	Cured gum strip conforming to 3.5	1 strip
Cement	Room temperature curing, with accelerator as required for rapid curing	Two 1/2- pint cans

3.8 Workmanship.

3.8.1 Steel fabrication. The steel used in fabrication shall be free from kinks, sharp bends, and other conditions which would be deleterious to the finished product. Manufacturing processes shall not reduce the strength of the steel to a value less than intended by the design. Manufacturing processes shall be done neatly and accurately. All bends shall be made by controlled means to insure uniformity of size and shape.

3.8.2 Welding. Welding procedures shall be in accordance with a nationally recognized welding code. The surface of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the parts connected by the welds. Welds shall transmit stress without permanent deformation or failure when the parts connected by the weld are subjected to proof and service loadings.

3.8.3 Bolted connections. Boltholes shall be accurately punched or drilled and shall have the burrs removed. Washers or lockwashers shall be provided in accordance with good commercial practice, and all bolts, nuts, and screws shall be tight.

3.8.4 Riveted connections. Rivet holes shall be accurately punched or drilled and shall have the burrs removed. Rivets shall be driven with pressure tools and shall completely fill the holes. Rivet heads, when not countersunk or flattened, shall be of approved shape and of uniform size for the same diameter of rivet. Rivet heads shall be full, neatly made, concentric with the rivet holes, and in full contact with the surface of the member.

3.8.5 Plastic fabrication. When plastic components are used, fabrication shall be in accordance with the best commercial practices. Parts shall be free of warps, fractures, and other defects affecting strength and serviceability.

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3.9 Cleaning. Before being packed, the interior and exterior surfaces of the buoy shall be clean and free of dirt, debris, talc, separation sheet, grease pencil marks, excess construction material, or any foreign matter. Residue from soapsuds or aerosol spray used for leak testing shall be rinsed off with fresh water. All surfaces shall be dry before packing.

3.10 Color. Finish color of the exterior surfaces of the buoy, and of patches and repair items, shall be black No. 37038 of FED-STD-595. Color shall be integral with the synthetic rubber coating compound.

3.11 Identification marking. The buoy shall be marked for identification by stenciling in a visible location with the following information:

BUOY, HOSE SUPPORT, INFLATABLE  
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NSN 1H 2050-00-859-4833  
(DATE OF MANUFACTURE)

The marking shall be as permanent as the normal life expectancy of the buoy and shall be capable of withstanding the environmental tests specified for the buoy.

3.12 Servicing and restoration. Each unit tested shall be serviced and restored to a service condition equal to the original condition of the unit, neglecting nominal wear incurred during the tests.

#### 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 (examinations and tests) 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 ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

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4.1.2 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.2.1).
- b. Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. The first article inspection shall be performed on the buoy when a first article is required (see 3.2, 6.2, and 6.3). This inspection shall include the examination of 4.4 and tests of 4.5.1 and 4.5.2. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.4, the tests of 4.5 and the packaging inspection of 5. The examination of 4.4 and the tests of 4.5.1 and 4.5.3 shall be performed on daily production of buoys. Sample buoys selected in accordance with 4.3 shall be examined and tested as specified in 4.4 and 4.5.2.

4.3 Sampling. Sampling and inspection procedures shall be in accordance with MIL-STD-105. The unit of product shall be one buoy. All buoys offered for delivery at one time shall be considered a lot for the purpose of inspection. The inspection level shall be level S-2 and the Acceptable Quality Level (AQL) shall be 2.5 percent defective. If an inspection lot is rejected, the contractor may rework it to correct the defects, or screen out the defective units, and resubmit for a complete reinspection. Resubmitted lots shall be reinspected using tightened inspection. If the rejected lot was screened, reinspection shall be limited to the defect causing rejection. If the lot was reprocessed, reinspection shall be performed for all defects. Rejected lots shall be separated from new lots, and shall be clearly identified as reinspected lots.

4.4 Examination. Each buoy shall be examined for compliance with the requirements in Section 3 of this specification. This element of inspection shall encompass all visual examinations and dimensional measurements. Non-compliance with any specified requirements or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.5 Tests.

4.5.1 Temperature test. Resistance of the coated fabric to high and low temperatures shall be determined in accordance with FED-STD-191, methods 5872 and 5874 respectively with the following exceptions: (1) the high temperature

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shall be  $160^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ; (2) the low temperature shall be  $-40^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ; and (3) the specimens for the tests shall be conditioned in the required environment for a period of 24 hours. The coated fabric shall show a rating of greater than 2 when tested by method 5872.

4.5.2 Dynamic buoyancy test. The test arrangement shall be similar to that shown on Figure 1. The mechanism shall be powered and rigged to alternately submerge and float the normally inflated buoy in the tank of water at a rate of 8 to 10 complete cycles per minute for not less than 48 hours. At maximum submergence, the top of the buoy shall be not less than three feet below the water surface. Upon examination after this test, if the buoy shows indications of seam, joint, or hoop failures; a loss of buoyancy of greater than five percent; or deformation or failure of any part, the buoy shall be rejected.

4.5.3 Seam strength test. Two seam specimens, one-inch wide, shall be prepared from daily production and cured simultaneously with a buoy or group of buoys. The adhesion of seams and cemented areas of the specimens shall be tested in accordance with FED-STD-601, method 8311, using a rate of travel for the power grip of two inches per minute.

4.5.4 Leakage. Each buoy shall be manually inflated by extending the body section to the full height with the cap removed and then replacing the cap while holding the buoy in its extended position. The buoy shall then be totally submerged in a suitable container, using clear water as the liquid medium. While submerged, the buoy shall be compressed using a static load or a manual pressure of 100 pound (lb). Leaks detected in any portion of the buoy shall be repaired and the buoy retested. At the option of the contractor, an internal air pressure of 1/2 lb per square inch gage shall be applied to the buoy and the soapsuds method of testing for leaks shall be employed, provided the 100-lb static load is applied and all external surfaces of the buoy are coated with soapsuds and carefully examined for leaks. Any indication of leaks shall be cause for rejection.

4.6 Packaging inspection. The packing and marking of the buoys shall be inspected to verify conformance to the requirements of Section 5.

## 5. PACKAGING

5.1 Preservation. Preservation shall be level A, or commercial as specified (see 6.2).

### 5.1.1 Level A.

5.1.1.1 Buoys. Each buoy shall be deflated and packaged in accordance with MIL-P-116, method III.

5.1.1.2 Repair kits. Each repair kit, when furnished, shall be packed in accordance with MIL-P-116, method III, in a fiberboard box conforming to PPP-B-636, weather-resistant.

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5.1.2 Commercial. The buoys and repair kits, when furnished, shall be packaged in accordance with the contractor's standard practice.

5.2 Packing. The packing shall be level A, B, or commercial as specified (see 6.2).

5.2.1 Level A. The buoys and repair kits, when furnished, shall be packed in accordance with the level A requirements of MIL-STD-794 utilizing applicable containers selected from Table II.

5.2.2 Level B. The buoys and repair kits, when furnished, shall be packed in accordance with the level B requirements of MIL-STD-794.

5.2.3 Commercial. The buoys and repair kits, when furnished, shall be packed in a manner which will insure arrival at destination in satisfactory condition. Containers and packing shall conform to the applicable carrier rules and regulations.

5.2.4 Marking. Interior packages and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The inflatable buoy is primarily used to support fuel lines of amphibious fueling facilities, and can be used in other applications where a buoyancy of up to 300 lb is desired.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1).
- c. When first article is required for inspection and approval (see 3.2, and 4.2.1).
- d. When vulcanizing repair items are required (see 3.7).
- e. Level of preservation and level of packing required (see 5.1 and 5.2).

6.3 First article. When a first article inspection is required, the item will be tested and should be a first article buoy or it may be a standard production item from the contractor's current inventory as specified in 4.2.1. The first article should consist of one unit. The contracting officer should

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include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.4 Subject term (key word) listing.

Floats  
Flotation equipment  
Buoys  
Hose support buoys

6.5 Changes from previous issues. Marginal notations 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 - YD

(Project 2050-N029)

## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER MIL-B-23459D(YD)		2. DOCUMENT TITLE MILITARY SPECIFICATION - BUOY, HOSE SUPPORT, INFLATABLE	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one)	
b. ADDRESS (Street, City, State, ZIP Code)		<input type="checkbox"/> VENDOR	
		<input type="checkbox"/> USER	
		<input type="checkbox"/> MANUFACTURER	
		<input type="checkbox"/> OTHER (Specify): _____	
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)