

INCH-POUND

MIL-DTL-52618E

25 November 2002

SUPERSEDING

MIL-F-52618D(ME)

29 June 1990

## DETAIL SPECIFICATION

### FITTINGS, PIPE, ALUMINUM-ALLOY (THREADED) 150-POUND: GENERAL SPECIFICATION FOR

This specification is approved for use by all Departments  
and Agencies of the Department of Defense.

#### 1 SCOPE

1.1 Scope. This specification covers aluminum-alloy threaded pipe fittings, 150-pound class.

1.2 Classification. The fittings shall be of types, configuration, sizes, thread direction and finishes as shown in the applicable specification sheets and as specified (see 6.2).

#### 2 APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

##### 2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards 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 (DoD) Index of Specifications and Standards (DoDISS) and supplement thereto cited in the solicitation (see 6.2).

## SPECIFICATIONS

### FEDERAL

A-A-59616 - Pipe-Fittings: Bushings, Locknuts, and Plugs; Iron, Steel,  
and Aluminum (Threaded); 125 - 150 Pounds.

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this document should be addressed to: Defense Logistics Agency, Defense Supply Center, Columbus (DSCC-VAI), P.O. Box 3990, Columbus, OH 43216-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 4730

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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## DEPARTMENT OF DEFENSE

MIL-A-8625 - Anodic Coatings For Aluminum and Aluminum Alloys.

## STANDARDS

## DEPARTMENT OF DEFENSE

MIL-STD-130 - Identification Marking of US Military Property.

(Unless otherwise indicated, copies of the above specifications are available from the Document Automation and Production Service, DoDSSP, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents that are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

## AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B1.20.1	-	Pipe Threads, (Inch) General Purpose.
ASME B16.4	-	Fitting, Cast Iron Threaded Fittings, Classes 125, American National Standard.
ASME B16.15	-	Fitting, Cast Bronze Threaded, Standard For.

(Application for copies should be addressed to the American Society of Mechanical Engineers, Three Park Avenue, New York, New York, 10016-5990.)

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B26	-	Aluminum-Alloy Sand Castings.
ASTM B108	-	Aluminum-Alloy Permanent Mold Castings.
ASTM B210	-	Aluminum-Alloy Drawn Seamless Tubes.
ASTM B211	-	Aluminum-Alloy Bars, Rods, and Wires.
ASTM B221	-	Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

2.4 Order of precedence. In the event of a conflict between the text of this document 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.

## 3. REQUIREMENTS

3.1 Specification Sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheet. In the event of any conflict between the requirements of this specification and the specification sheet, the latter shall govern.

3.2 Description. The threaded aluminum pipe fittings, hereinafter referred to as "fittings" shall be of the 150-pound class. Fittings specified herein shall include crosses, tees, 90-degree and 45-degree elbows, couplings, reducers, return bends, reducing crosses, tees and elbows, caps, plugs, bushings, and street elbows.

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3.3 Material. Material shall be as specified herein. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification.

3.3.1 Recovered materials. For the purpose of this requirement, recovered materials are those materials that have been collected from solid waste and reprocessed to become a source of raw materials, as distinguished from virgin raw materials. The components, pieces and parts incorporated in the fittings may be newly fabricated from recovered materials to the maximum extent practicable, provided the fittings produced meets all other requirements of this specification. Used, rebuilt or remanufactured components, pieces and parts shall not be incorporated in the fittings.

3.3.2 Fabrication. The fittings shall be fabricated from aluminum-alloy castings conforming to ASTM B26 or ASTM B108, alloy 356.0-T6, except that the fittings listed below shall be aluminum-alloy 6061-T6 fabricated from wrought products indicated herein:

- a. All couplings, size 1/4 inch through 1 inch, shall be drawn tube conforming to ASTM B210.
- b. All couplings, size 1-1/4 inch through 4 inches, shall be extruded tube conforming to ASTM B221.
- c. All plugs, size 1/8 inch through 1/2 inch, shall be rod conforming to ASTM B211.

3.4 Design and tolerances. The design and tolerances of the fittings shall conform to ASME B16.4 or as specified herein. Cast couplings and street elbows shall be designed in accordance with dimensions and tolerances specified in ASME B16.15. Dimensions for all plugs and bushing shall be in accordance with A-A-59616.

3.5 Threads. All threads shall be American National Standard Taper Pipe Thread (NPT) in accordance with ASME B1.20.1, except that couplings, wrought caps, and wrought bushings in sizes 1/2 inch and under may be American National Standard Straight Pipe (NPSC) thread in accordance with ASME B1.20.1. Thread length, depth, variation in alignment, countersinking, and chamfering shall be as specified in ASME B16.4.

3.6 Performance. The fittings shall withstand an internal air pressure of 90 pounds per square inch gauge (psig) or an internal hydrostatic pressure of 250 psig without leaking (see 6.2.f).

3.7 Finish. The finish of cast and extruded fittings shall be workmanlike and free of burrs, sharp edges, and corners. When specified (see 6.2), fittings shall be anodized in accordance with MIL-A-8625, type II, class 1, thickness no less than 0.0004 inch for castings and no less than 0.0007 inch for wrought products.

3.8 Identification marking. The pipe fittings shall be identified and marked in accordance with MIL-STD-130.

3.9 Workmanship. The fittings shall be free of sand inclusions, fins, gate protrusions, cracks, shrinks, and other injurious defects.

#### 4. VERIFICATION

4.1 Requirements cross-reference matrix. Table I provides a cross-reference matrix of section 3 requirements tested or verified in the paragraphs below.

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TABLE I. Requirements cross-reference matrix.

Requirement	Verification	Requirement	Verification
3.3.2	4.4, 4.5	3.7	4.8
3.5	4.6	3.8	4.9
3.6	4.7.1, 4.7.2	3.9	4.8

4.2 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examination and test) 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.

4.2.1 Responsibility for compliance. All items must meet all requirements of section 3. The inspection set forth in this specification shall become a part of the contractor's overall inspection system. 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 acceptance of defective material.

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

- a. Conformance inspection (see 4.4).

4.4 Conformance inspection. Conformance inspection (see 6.2 and 6.3) shall be performed at a laboratory acceptable to the Government on sample units as specified in 4.4.1. Inspections shall consist of those tests specified in 4.6 through 4.9.

4.4.1 Sample size. Sampling for examination and tests shall be in accordance with table II. The sample shall be taken at random from a production run and shall be produced with equipment and procedures normally used in production. A lot shall be accepted when 0 defects are found, and rejected when 1 or more defects are found.

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TABLE II. Inspection sample.

Production lot size	Sample size
1	1
2 to 8	2
9 to 15	3
16 to 25	5
26 to 50	8
51 to 90	13
91 to 150	20
151 to 280	32
281 to 500	50
501 to 1,200	80
1201 to 3,200	125
3201 to 10,000	200
10,001 to 35,000	315

4.4.2 Inspection lot. An inspection lot shall consist of all fittings covered by a single specification sheet produced under essentially the same conditions and offered for inspection at one time.

4.5 Threads. Fittings selected from the sample shall be inspected for conformance with ASME B1.20.1 and ASME B16.4.

4.6 Pressure tests. Fittings selected from the sample shall be subjected to either the air pressure test or the hydrostatic test, as required (see 6.2).

4.6.1 Air pressure test. Each of the sample fittings selected shall be subjected to an air pressure test at normal plant air pressure of at least 90 psig for a length of time sufficient for an examination for leaks, but not less than one minute. Any evidence of air leakage shall constitute failure of this test.

4.6.2 Hydrostatic test. Sample pipe fittings shall be subjected to a hydrostatic pressure of 250 psig for 1 minute. Any evidence of leakage shall constitute failure of this test.

4.7 Finish. The finish shall be visually examined for burrs, sharp edges, and corners. When specified (see 6.2), the finish type and thickness shall be verified in accordance with MIL-A-8625.

4.8 Marking. The fittings shall be visually examined for marking in accordance with the requirements denoted in Section 3 of this specification.

## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2 and 6.5). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department or Defense Agency automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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## 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 aluminum fittings are primarily intended for use with threaded aluminum piping in water or liquid petroleum product service.

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 2.2 and 2.2.1).
- c. Part or identifying number (see 6.6).
- d. Specification sheet number required.
- e. Finish, if required (see 3.7).
- f. Type of pressure test as required (see 3.6).
- g. Preservation and packaging requirements (see 5.1 and 6.5).
- h. Any special marking required (see 3.8, 5.1, and 6.5).

6.3. Cross-reference. A cross-reference of old to new classification or part number is not used in this revision because of the general nature of types in the previous issues.

6.4 Subject term (key word) listing.

Bushings, pipe, aluminum (threaded)  
Caps, pipe, aluminum (threaded)  
Couplings, pipe, aluminum (threaded)  
Crosses, pipe, aluminum (threaded)  
Elbows, pipe, aluminum (threaded)  
Fittings, pipe, aluminum (threaded)  
Reducers, pipe, aluminum (threaded)  
Street elbows, pipe, aluminum (threaded)  
Tees, pipe, aluminum (threaded)

6.5 Packaging. Because of the risk of damage to threads and closely controlled dimensions, MIL-V-3 was used in the past to specify requirements for the preservation, packing, unitization, and marking of aluminum pipe fittings for storage and domestic and overseas shipments. The contract or order should levy the requirement for packaging to protect against damage to parts manufactured and supplied to this specification.

6.6 Part or Identifying Number (PIN). The PIN to be used for pipe fittings acquired to this specification shall be in accordance with the applicable specification sheets (MIL-DTL-52618/1 through MIL-DTL-52618/9)

6.7 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue, due to the extent of the changes.

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## CONCLUDING MATERIAL

### Custodians:

Army – AT  
Navy – AS  
DLA – CC

### Preparing activity:

DLA – CC

(Project 4730-2227)

### Review activities:

Army – CE  
Navy – SA

## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

### INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7, and send to preparing activity.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

<b>I RECOMMEND A CHANGE:</b>		<b>1. DOCUMENT NUMBER</b> <b>MIL-DTL-52618E</b>	<b>2. DOCUMENT DATE (YYMMDD)</b> ENTER DATE
<b>3. DOCUMENT TITLE</b> Fittings, Pipe, Aluminum-Alloy (Threaded), 150-Pound: General Specification For			
<b>4. NATURE OF CHANGE</b> <i>(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)</i>			
<b>5. REASON FOR RECOMMENDATION</b>			
<b>6. SUBMITTER</b>			
<b>a. NAME</b> <i>(Last, First, Middle Initial)</i>		<b>b. ORGANIZATION</b>	
<b>c. ADDRESS</b> <i>(Include zip code)</i>	<b>d. TELEPHONE</b> <i>(Include Area Code)</i> (1) Commercial (2) DSN <i>(if applicable)</i>		<b>7. DATE SUBMITTED</b> (YYMMDD)
<b>8. PREPARING ACTIVITY</b>			
<b>a. NAME</b> Defense Logistics Agency Defense Supply Center, Columbus (DSCC-VAI)		<b>b. TELEPHONE</b> <i>(Include Area Code)</i> (1) Commercial (614) 692-0538 (2) DSN 850-0538	
<b>c. ADDRESS</b> <i>(Include Zip Code)</i> P.O. Box 3990 Columbus, Ohio 43216-5000		<b>IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:</b> Defense Standardization Program Office (DLSC-LM) 8725 John J. Kingman Road, Suite 2533 Fort Belvoir, Virginia 22060-6621 Telephone (703) 767-6888 DSN 427-6888	