

INCH-POUND

MIL-DTL-85069C

25 January 2006

SUPERSEDING

MIL-S-85069B

12 October 1982

DETAIL SPECIFICATION

SLEEVES, FASTENER,
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 the general requirements for fastener sleeves for use in over-sized fastener holes in aerospace structures.

1.2 Classification. The fastener sleeves should be of the types specified in the individual specification sheets.

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 of the documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

Comments, suggestions, or questions on this document should be addressed to Defense Supply Center Richmond, ATTN: DSCR-VEB, 8000 Jefferson Davis Highway, Richmond, VA 23297-5616 or e-mailed to STDZNMGT@dla.mil . Since contact information can change, you may want to verify the currency of this address information using the ASSIST database at http://assist.daps.dla.mil .
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DEPARTMENT OF DEFENSE SPECIFICATIONS

(See Supplement 1 for list of specification sheets.)

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-1916 - DoD Preferred Methods for Acceptance of Product.

(Copies of these documents are available at <http://assist.daps.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, 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 these documents are those cited in the solicitation or contract (see 6.2).

SAE INTERNATIONAL

SAE AMS 5525 - Steel, Corrosion and Heat Resistant, Sheet, Strip, and Plate
15Cr - 25.5Ni - 1.2Mo - 2.1Ti - 0.006B - 0.30V 1800 °F
(982 °C) Solution Heat Treated.

(Copies of these documents are available at <http://www.sae.org/> or from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), 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 sheets. In the event of any conflict between requirements of this specification and the specification sheets, the latter shall govern.

3.2 Design and construction.

3.2.1 Construction. The fastener sleeve shall be drawn from sheet or strip stock to form a one-piece tubular section and head. The thickness of the tubular wall and head shall be uniform. The tubular section shall be grooved in 1/16-inch increments to provide a means of trapping sealant in the bearing areas and to aid in adjusting sleeve to desired length.

3.2.2 Material. Sleeve material shall conform chemically to SAE AMS 5525 (see 4.3.3).

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3.2.3 Head structure and grain flow. When visually examined, the sleeve may show axial flow lines in the tubular section typical of a drawn sleeve. The flow lines shall be continuous at the fillet radius.

3.2.4 Protective coatings. Platings and coatings shall be in accordance with the applicable specification sheet.

3.2.5 Lubrication. Lubrication shall be in accordance with the applicable specification sheet.

3.2.6 Surface texture. The surface shall be free of cracks or draw marks; slight visible orange peeling effect shall be permitted.

3.2.7 Shape. Fastener sleeves shall be round and shall show no evidence of distortion.

3.3 Metallurgical properties.

3.3.1 Cracks. The fastener sleeves shall be free of cracks. A crack is identified as a clean crystalline break passing through the grain or boundary without the inclusion of foreign elements.

3.3.2 Discontinuities. There shall be no laps or folds, seams or discontinuities, or other interruption in grain flow.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as a conformance inspection (see 4.2).

4.2 Conformance inspection.

4.2.1 Sampling for examination. Test samples shall be selected at random in accordance with MIL-STD-1916, with the sampling level as specified in table I. Identical sample items may be used for any of the tests provided selection of random samples is maintained and known characteristics of the samples are not used to influence the integrity of test results.

TABLE I. Conformance examination.

Test	Reference paragraph	MIL-STD-1916 sampling level
Lot inspection	4.2.2	
Examination	4.3.1	I
Material certification	4.3.3	
Grip length break	4.3.4	I

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4.2.2 Lot inspection. A lot shall consist of sleeves made from the same lot of material and fabricated as a single continuous production run in which the forming machine set-up remains unchanged except for head configuration. A lot shall be restricted to one material diameter or sleeve. A lot of material shall be defined as the quantity of sheet or strip made from a single heat. It shall be controlled and shipped with appropriate mill certification. In addition, the manufacturer shall maintain a record of inspections by lot number for a period of three years.

4.2.3 Certified test report. The manufacturer shall furnish certification that the product conforms to the specification. The record shall state that the product met the requirements of this specification.

4.3 Examination and tests.

4.3.1 Examination. Each of the sample sleeves selected for examination shall be examined for conformance to the requirements for dimensions, workmanship, identification, and to all requirements not covered by tests.

4.3.2 Strength. The strength of the fastener sleeve combination is considered the strength of the fastener alone. The wall thickness of the sleeve is considered thin enough so that there will be no material decrease in thickness when under load.

4.3.3 Material certification. Mill certification on all materials shall be kept on file by the manufacturer and shall be available to the procuring agency for a period of three years.

4.3.4 Grip length break. Using different fastener sleeves, break at different lengths with the proper tooling. Only break a sleeve one time. The step plate tool indicates the grip length at which the sleeve will break along the groove without damage to the sleeve. To adjust to length other than the breaking area of the step plate, the sleeve may be ground to length using the painted section of the step plate. Grind on a disc or belt sander.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the inventory control point's 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's or defense agency's 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 fastener sleeves specified herein are intended for structural and non-structural application in aerospace structures and other military equipment. The function of the sleeves is to serve as a repair procedure for holes that have become damaged, elongated, or corroded and to protect the structure in soft or brittle material. The sleeve is intended to increase the integrity of the overall joint, not the strength of the individual fastener.

6.1.1 Length adjustment. Fastener sleeves are manufactured with proper head configuration and diameter but must be adjusted to the correct length for each individual fastener.

6.1.2 Installation of sleeves. Fastener sleeves must be installed with reasonable care to ensure that they seal properly, inhibit corrosion, and restore the structural integrity of joints in modification, repair, or in the original manufacture of aerospace or military hardware. The installation information and the processing specifications should be followed. Tools are available to facilitate and ensure proper installation of the sleeve.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. The specific issue of individual documents referenced (see 2.2.1 and 2.3).
- c. Packaging (see 5.1).

6.3 Subject term (key word) listing.

aerospace
holes
repair

Custodians:
Army - AV
Navy - AS
Air Force - 99

Preparing Activity:
DLA - GS7

(Project 5365-0030)

Review Activity:
Air Force - 71

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