

INCH-POUND

MIL-DTL-10884H
20 July 2005
SUPERCEDING
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DETAIL SPECIFICATION

FASTENERS, SNAP

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

1. SCOPE

1.1 Scope. This specification covers metal snap fasteners intended for temporary joining of detachable components and parts of clothing, equipment and tentage items.

1.2 Classification. Snap fasteners will be of the following styles, finishes and sizes as specified (see 6.2)

Style 1 – Large curtain type
Style 1B – Mudproof curtain type
Style 2 – Regular wire spring clamp type
Style 2A – Small wire spring clamp type
Style 3 – Pronged ring head type
Style 4 – Three way locking type

Finish 1 – Bright brass
Finish 2 – Black
Finish 3 – Nickel plate
Finish 4 – Bright chrome plate
Finish 5 – Enamel (color specified by purchaser)
Size – (see 3.2.3)

Comments, suggestions, or questions on this document should be addressed to: Defense Supply Center Philadelphia, ATTN: DSCP-ITAA, 700 Robbins Ave, Philadelphia, PA 19111-5096 or emailed to dscpg&ispeccomments@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil/>

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2.2 Non-Government publications. Unless otherwise specified, issues of referenced documents are those in effect at the time of solicitation. Information regarding the latest issue of non-government documents not adopted by the government can be obtained from the organization responsible for their publication. (see 6.2)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B18.6.4 – Thread Forming and Thread Cutting Tapping Screws and Metallic Drive Screws

(Application for copies should be addressed to ASME International, Three Park Avenue, New York, NY 10016-5990.)

ASTM INTERNATIONAL

ASTM A109	Steel, Strip, Carbon, Cold-Rolled
ASTM A366	Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality
ASTM B36	Brass Plate, Sheet, Strip and Rolled Bar
ASTM B134	Standard Specification for Brass Wire
ASTM B154	Copper and Copper Alloy Mercurous Nitrate Test
ASTM D498	Soap, Powdered (Nonalkaline Soap Powder)
ASTM D523	Test for Specular Gloss
ASTM F1135	Cadmium or Zinc Chromate Organic Corrosion Protective Coating for Fasteners
ASTM F1470	Standard Guide for In-Fastener Sampling for Specified Mechanical Properties and Performance Inspection

(Application for copies should be addressed to ASTM INTERNATIONAL, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or email <http://www.astm.org>.)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE-AMS-QQ-C-320	Chromium Plating (Electrodeposited)
SAE-AMS-QQ-N-290	Nickel Plating (Electrodeposited)

(Applications for copies should be addressed to the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001) or <http://www.sae.org>

(Non-government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available through libraries or other informational services.)

2.3 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 will take precedence. Nothing in this document, however, supercedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Materials and components. Materials and components shall conform to the requirements specified herein. Materials and components not definitely specified shall be of the quality normally used by the manufacturer provided the completed item complies with all provisions of this specification. It is encouraged that recycled material be used when practical as long as it meets the requirements of this specification.

3.1.1 Brass. Sheet and strip brass shall conform to copper alloy (UNS C26000) of ASTM B36 and shall be of the temper shown on the drawing. Brass wire shall be round and conform to copper alloy UNS C26000 or ASTM B134 and shall be of the temper shown on the drawing.

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3.1.2 Steel. Steel sheet, cold-rolled, commercial quality and steel strip, cold-rolled, temper 3, 4 or 5 shall conform to ASTM A109 and A366 respectively. Alloy 260 wire may be used as an alternate so long as snap performance is unchanged.

3.1.3 Phosphor-bronze spring wire. Phosphor-bronze spring wire shall be round and conform to copper alloy 510 or ASTM B134 and shall be of the temper shown on applicable drawing.

3.2 Design and construction. The design and construction of the snap fasteners shall be as specified herein and as shown on the drawings listed in 2.1.2. Where rotation of a part of a snap fastener component would prevent effective functioning, or assembling to an end use article, that part of the snap fastener component shall be joined in such a manner that rotation will be prevented. Snap fasteners shall function as intended, when tested as specified in 4.3.1.

3.2.1 Springs. When the requiring agency has a special application requiring a "soft" or "hard" action fastener (see 6.2):

- a. The dimensions of the inside diameter and gap of the springs, shown on the applicable drawing, shall not apply.
- b. The spring shall be designed to meet the specific application requirement so the socket assemblies will be firmly engaged when snapped on the appropriate studs and still permit disengagement or snapping off with a reasonable, properly applied force.
- c. The contractor shall, upon request, be required to furnish the dimensions of the inside diameter and gap of the spring he proposes to furnish.

3.2.2 Threads. All machine screw threads shall conform to the applicable requirements of FED-STD-H28/2. Self-tapping screw threads shall be in accordance with ASME B18.6.4. Thread acceptability for machine screws shall be in accordance with FED-STD-H28/20, System 21.

3.2.3 Fastener components. Unless otherwise specified (see 6.2), components necessary for fasteners shall be furnished and all components shall be of one manufacturer's construction only. When male or female halves of complete style 1, 1B, 2 and 2A fasteners only are specified, individual components shall be of one manufacturer's components only. Male components shall conform to FF-S-107, where applicable.

3.2.3.1 Style 1 and 1B. Style 1 and 1B fasteners shall consist of a female half and a male half. The female half shall consist of two separate components and the male half shall consist of one component (or two, if washer is required).

3.2.3.1.1 Female components, style 1 and 1B. The style 1 and 1B fastener components shall consist of a spring action socket, regular or long pronged when applicable, as specified (see 6.2), and a clinch plate.

3.2.3.1.2 Male components, style 1. The style 1 male fastener component(s) shall be one of the following types and sizes, as specified (see 6.2):

- a. Stud, two-screw base.
- b. Stud, eyelet base, with washer.
- c. Stud, machine screw base (No. 8 – 32UNC – 2A). Length as prescribed.
- d. Stud, machine screw base (No. 8 – 32UNC – 2A). large hex. Length as prescribed.
- e. Stud, self-tapping screw base.
- f. Stud, two prong, clinch base with washer.

3.2.3.1.3 Male components, style 1B. The style 1B male components shall consist of a stud, eyelet base, size 1, with washer, as specified (see 6.2).

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3.2.3.2 Style 2 and 2A. Unless otherwise specified (see 6.2), style 2 and 2A fasteners shall be either construction A, B, C, D or E at the option of the contractor. Style 2 and 2A fasteners shall consist of two separate components that constitute the female half of the fasteners and two separate components that constitute the male half of the fasteners, except that where the application required a reversible fastener the stud-eyelet combination shall be furnished in which case, the stud-eyelet combination shall constitute the male half of the fastener and the socket the female half.

3.2.3.2.1 Female components, style 2 and 2A. The style 2 and 2A female components shall be of the following buttons and sockets, as specified (see 6.2):

Style 2

- a. Button, 24 ligne size, size 1 or 2
- b. Button, 36 ligne size
- c. Socket

Style 2A

- a. Button, size 1, 2 or 3.
- b. Socket

3.2.3.2.2 Male components, style 2 and 2A. The style 2 and 2A male components shall be of the following stud and eyelet sizes or stud-eyelet combinations, as specified (see 6.2):

Style 2

- a. Stud
- b. Eyelet, size 1, 2 or 3
- c. Stud, machine screw base (No. 8 – 32UNC – 2A), size 1, 2, 3 or 4
- d. Stud, wood screw base
- e. Stud, self-tapping screw base, size 1 or 2
- f. Stud-eyelet combination, size 1 or 2
- g. Washer (for applications with 36 ligne is used)

Style 2A

- a. Stud
- b. Eyelet, size 1, 2, or 3

3.2.3.3 Style 3. Unless otherwise specified (see 6.2), style 3 fasteners shall be either construction A, B, C or D, at the option of the contractor. Style 3 fasteners shall consist of four separate components: pronged ring, socket, stud and eyelet. Reversible stud for use with construction B, C and D components shall be furnished only when specified (see 6.2). Reinforced socket for use with construction A components (in lieu of regular socket) shall be furnished only when requested.

3.2.3.4 Style 4. Unless otherwise specified (see 6.2), style 4 fasteners shall be either construction A, B, or C at the option of the contractor. Style 3 fasteners shall consist of four separate components: button, socket, stud and eyelet or eyelet with threaded insert, as specified (see 6.2).

3.3 Stress corrosion cracking. Brass snap fastener components in the half-hard or harder temper shall be free from stress corrosion cracking when tested as specified in 4.3.2.

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3.4 Finish. The finish, as specified (see 6.2), shall be in accordance with the applicable finish requirements specified and shall apply to all metal fastener parts, except:

a. At the option of the contractor, the socket spring of style 2 and 2A may have either a natural finish or be finished to match the socket, provided such finishing does not adversely affect the function of the fastener.

b. At the option of the contractor, the following component parts of fasteners may have a natural finish:

<u>Component part</u>	<u>Applicable styles</u>
Stud eyelet	1, 1B (except 1B, size 3 alternates)
Button eyelet	2, 2A, 4
Button reinforcement (brass)	2
Threaded insert (brass)	4

c. Fastener components that are not made of brass shall be corrosion resistant steel (CRES).

Finished snap fasteners shall be free from scratch, dig, abrasion exposing bare metal and area of corrosion.

3.4.1 Finish 1, bright brass. All component parts of the fasteners, except for the optional provisions specified in 3.4, shall be given a bright brass finish produced by a chemical or mechanical commercial finished process. Button cap shells of style 2, 2A or 4 may be given a coat of clear lacquer.

3.4.2 Finish 2, black, chemical finish.

3.4.2.1 Style 1 and 1B fasteners. The finish on the socket and the stud body shall be a dull black chemical finish in accordance with ASTM F1135. Glossiness of the head of the stud body due to polishing action in handling is permissible. Other components of the fastener, except for the optional provision specified in 3.4, shall be given a commercial dark oxide finish (see 6.3).

3.4.2.2 Style 2, 2A, 3 or 4 fasteners. The black chemical finish of all components except the cap shells of the buttons of style 2, 2A, 3 and 4 fasteners shall be given a commercial dark oxide finish (see 6.3). The black chemical finish of the of the cap shells of buttons in style 2, 2A or 4 fasteners shall conform to ASTM F1135 except that the gloss shall be no more than 40. The finish of button cap shells of style 2, 2A and 4 fasteners may at the option of the contractor, be a black enamel finish specified in 3.4.5.

3.4.2.2.1 Appearance. The enamel shall be smooth and free of sags, runs and streaks.

3.4.3 Finish 3, nickel plate. All components parts of Style 1, 2, 2A, 3 and 4 fasteners shall have no visible sign of non-coverage.

3.4.4 Finish 4, bright chrome plate.

3.4.4.1 Style 1 fasteners. All components of the fasteners, except for the optional provisions specified in 3.4, shall be given a bright chrome plated finish conforming to class 1, type 1 of SAE-AMS-QQ-C-320. The nickel undercoat shall conform to class II of SAE-AMS-QQ-N-290 except the thickness of the nickel plate shall be not less than .0001 inch.

3.4.4.2 Style 2 and 2A fasteners. The button cap shell shall be given a bright nickel chrome plated finish conforming to class I, type 1 of SAE-AMS-QQ-C-320. The nickel undercoat shall conform to class II of SAE-AMS-QQ-N-290 except the thickness of the nickel plate shall not be less than .0001 inch. All other component parts, except for the optional provisions specified in

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3.4, shall be given either a nickel plated finish as specified in 3.4.3.2 or a commercial dark oxide finish (see 6.3). When all components, except for the optional provisions specified in 3.4 are to be chrome plated as specified (see 6.2), the chrome plate finish requirements stated above for the button cap shell shall apply.

3.4.5 Finish 5, enamel.

3.4.5.1 Style 2, 2A, and 4 Button caps. The enamel finish on the button cap shell shall be a commercial baked-on enamel. Prior to enameling, the shell shall be thoroughly cleaned and may be given preparatory prepaint treatment. The enamel shall be uniformly coated over the top surface of the shell including the Visible portion of the edge (Visible when attached to the end use article).

3.4.5.1.1 Gloss. The gloss of the enamel shall be no more than 40 when tested as specified in 4.3.3.

3.4.5.1.2 Resistance to hot soap solution. The enamel shall be unaffected, except for slight color change and slight dulling, and it shall not be possible to furrow through the film with the thumbnail, when tested for resistance to hot soap solution, as specified in 4.3.4.

3.4.5.1.3 Solvent resistance. The enamel shall be unaffected except for light loss of gloss and there shall be no softening, when tested as specified in 4.3.5.

3.4.5.1.4 Enamel chipping. The enamel shall be capable of withstanding attachment operations without removal of any enamel, when tested as specified in 4.3.6.

3.4.5.1.5 Resistance to brittleness. The enamel shall be capable of being furrowed with a knife blade without evidence of brittleness, such as jagged furrow edges, when tested as specified in 4.3.7.

3.4.5.1.6 Appearance. The enamel coating shall be smooth and free of sags, runs, and streaks.

3.4.5.2 Style 3 pronged ring. The enamel finish on the pronged ring of style 3 shall be a baked-on enamel and shall conform to 3.4.5.1.1 through 3.4.5.1.5

3.5 Marking for identification. At least one component of each complete fastener shall bear the manufacturer's identification by either name, trade name or trademark. Identification markings shall be permanent and shall not affect the working or snapping on and off characteristics of the fastener.

3.6 Workmanship. The finished fasteners shall be free of imperfections that affect the visual and performance requirements of the item.

4 VERIFICATION

4.1 Classification of inspections. The inspections specified herein are classified as follows
a. Conformance inspection (see 4.2.1, 4.2.2, 4.2.3, 4.2.4 and 4.2.5).

4.2 Conformance inspection. Unless other wise specified, sampling for inspection shall be performed in accordance with ASTM F1470.

4.2.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all requirements of referenced documents unless otherwise excluded, amended, modified or qualified in this specification or applicable purchase document.

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4.2.2 In-process inspection. Inspection of subassemblies shall be made to ascertain that construction details which cannot be examined in the finished product are in accordance with specified requirements. The Government reserves the right to exclude from consideration for acceptance, any material or service for which in-process inspection has indicated nonconformance.

a. Cleaning of button cap shells prior to enameling (when applicable) is in conformance to 3.4.2.2.2 and 3.4.5.

b. Nickel undercoating prior to chrome plating (when applicable) is in conformance to 3.4.4.1 and 3.4.4.2.

4.2.3 End item visual inspection. The end items shall be examined in accordance with ASTM F1470 for the characteristics listed in table 1, as applicable. Sample size shall be in accordance with size "B" requirements. The fasteners shall be examined for the following characteristics:

Finish :Not finished; color or finish is not as specified, unless excepted (e.g., glossiness of head or stud body; scratch, dig, or abrasion exposing bare metal; areas of corrosion; enamel coating not uniform over the top and visible portion of the edge of the shell of the button cap; enamel coating has sags, runs or streaks, or is not smooth).

Design, construction and workmanship, general (applicable to all components and assemblies): Any component missing, any component not fabricated of the applicable referenced materials; not fabricated as specified; not clean (i.e., evidence of oil, grease or dirt); sharp edge or burr; puncture, malformation, deformation or fracture.

Assembling data: Missing, as applicable; incomplete or illegible.

Marking (identification): Missing, incomplete, illegible, misspelled or incorrect; not permanent.

4.2.4 End item dimensional examination. The end items shall be examined in accordance with ASTM F1470 for conformance to the dimensions specified on the drawings that can be determined on the end item without damaging or disassembling the end items. Any dimensions not within the specified tolerance shall be classified as a defect. Sample size shall be in accordance with size "B" requirements.

4.2.5 End item testing. The end items shall be tested for the characteristics listed in Table I. The methods of testing specified in FED-STD-191 wherever applicable and as listed in Table I shall be followed. Sample size shall be in accordance with ASTM F1470 size "A" requirements.

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TABLE I End Items Testing

<u>Characteristic</u>	<u>Requirement reference</u>	<u>Test method Paragraph</u>	<u>Number of samples tested</u>	<u>Result report</u>
Functioning of assembled fastener	3.2	4.3.1	1	Pass/fail
Resistance to stress corrosion cracking	3.3	4.3.2	1	Pass/fail
Enamel finish: Gloss	3.4.5.1.1	4.3.3	1	Pass/fail
Resistance to hot soap solution	3.4.5.1.2	4.3.4	1	Pass/fail
Solvent resistance	3.4.5.1.3	4.3.5	1	Pass/fail
Resistance to enamel chipping	3.4.5.1.4	4.3.6	1	Pass/fail
Resistance to brittleness	3.4.5.1.5	4.3.7	1	Pass/fail

4.3 Methods of inspection.

4.3.1 Function test. The male and female half of the fastener shall each be attached to a fabric or material for each application in accordance with the fastener manufacturer's recommendations for attachment method, foundation thickness, and item construction. Determine whether rotation, if any, of any part prevents effective assembling or functioning when tested as specified herein (see 3.2). After attachment, the male and female halves of the fastener shall be visually inspected and the attachments shall be subjected to manufacturer's recommended attachment strength tests and shall be at or above specified values. Cracks in the rolled eyelet portion of the attached male or female halves of the fastener shall not constitute a test failure. The male and female half shall be manually snapped together and shall snap and unsnap at the point of periphery normally used when opening and closing. The fastener shall be manually operated as stated not less than four times to determine compliance with 3.2. Any sample not snapping or unsnapping shall constitute failure of this test.

4.3.2 Stress corrosion cracking test. The brass snap fastener components in the half-hard to harder temper shall be tested for stress corrosion cracking in accordance with ASTM B154. Any sample having evidence of stress corrosion cracking shall constitute failure of this test.

4.3.3 Enamel gloss test. The enamel gloss of the button cap shell shall be tested by visually comparing against a black or brown, as applicable, enamel plain panel whose gloss has been determined to be 40 in accordance with ASTM D523. Any button cap shell having a gloss greater than 40 shall constitute failure of this test.

4.3.4 Enamel resistance to hot soap solution test. The resistance of the enamel on the button shall be tested by immersing the button in a 5 percent soap solution maintained at 195 degrees F \pm 5 degrees, for a period of not less than 2 hours. The soap shall conform to ASTM D498. After immersion, the button shall be rinsed and the enamel on the cap shell examined for differences in appearance from the unimmersed control version. An attempt shall be made to furrow through the enamel with the thumbnail. Any difference in enamel film appearance, except for slight color change or slight dulling, or any enamel film having evidence of thumbnail furrow through the film shall constitute failure of this test.

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4.3.5 Enamel resistance to solvent test. The resistance of the enamel on the button to a solvent shall be tested by immersing the button in Stoddard's solvent maintained at 70 degrees F \pm 5 degrees, for a period of not less than 20 minutes. After immersion, the button shall be dried and the enamel cap shell surface examined visually for changes in appearance from an unimmersed control specimen. An attempt shall be made to scrape the enamel film with the thumbnail. Any difference in enamel film appearance, except for slight loss of gloss, or any enamel film having evidence of softening due to scraping with thumbnail shall constitute failure of this test.

4.3.6 Enamel chipping test. The resistance of the enamel on the button to withstand attachment operations shall be tested by attaching a button and applicable socket to a suitable fabric using the contract's recommended attaching device. After attachment, the enameled surface of the button shall be visually thumbnail shall constitute failure of this test.

4.3.7 Enamel resistance to brittleness test. The resistance of the enamel on the button to brittleness shall be tested by holding a knife blade at 30 degrees from the horizontal and drawing it across the enameled surface making a furrow. The edges of the furrow shall be examined visually. Any evidence of jagged furrows shall constitute failure of this test.

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 material is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contracting the responsible packaging activity.

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 snap fasteners are intended for use on clothing, tentage, equipment and leather items. When specified, the supplier may furnish data for attaching snap fasteners to end use articles. Assembling data may include the supplier's recommendations for the attaching tool (e.g., chuck, hand punch, die, hand screw driver or special equipment).

6.2 Acquisition requirements. Acquisition documents must 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 and 2.2).
- c. Style and finish of snap fastener (see 1.2 and 3.4).
- d. Application (end use article data on which fastener is to be used), if the application requires other than regular spring action (e.g., "hard" or "soft" action is required) (see 3.2.1)
- e. Whether complete fastener or half fastener (male or female half of fastener), or individual fastener part is required (see 3.2.3).
- f. Specific construction required if construction is not to be at the contractor's option
 1. Style 2 and 2A, construction A, B, C or D (see 3.2.3.2).
 2. Style 3, construction A, B, C or D (see 3.2.3.2).
 3. Style 4, construction A, B, C or D (see 3.2.3.2).
- g. Component (s) and size(s) of fastener components required (where applicable).
 1. Style 1 and 1B female components (see 3.2.3.1.1)
 2. Style 1 male components (see 3.2.3.1.2)

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3. Style 1B male components (see 3.2.3.1.3).
4. Style 2 and 2A female components (see 3.2.3.2.1)
5. Style 2 and 2A male components (see 3.2.3.2.2)
6. Style 3 components (see 3.2.3.3).
7. Style 4 components (see 3.2.3.4)
- h. When all components of style 2 and 2A fasteners, except for optional provisions, are to be chrome plated (see 3.4.4.2).
- i. When assembling data is required (see 3.6)

6.3 Color, commercial dark. Commercial dark color is normally dark in color, approaching black, but with permissible latitude as to shade and tone (e.g., bronze-tone black, blue tone black and dark gray).

6.4 Styles, drawings and military standards. The styles with applicable drawings and comparable military standards are listed as follows:

<u>Style</u>	<u>Drawing</u>	<u>Military specification Sheet (MS/NASM)</u>
1	4-1-173 and 4-1-174	MS27977
1B	4-1-183	MS27979
2	DSCP DWG 02936, DSCP DWG	NASM27980
2A	DSCP DWG 02935	NASM27981
4	4-1-181and 4-1-182	MS27983
3	DSCP DWG 02754	A-A-55621

6.5 Supercession data. Style 3 fastener for 17 ligne was deleted and replaced with Style 3 for 16 ligne.

Style 1A (small – curtain type) cancelled.

Style 5, 6 and 7cancelled.

Drawing No. 4-1-184, 4-1-185 and 4-1-186 deleted. Military standards MS27984, MS27985 and MS29786 deleted.

6.6 Subject term (keyword) listing.

Catch	Snap, fastener
Clasp	
Hook	
Join	
Secure	

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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Custodians:

Army –GL
Navy – AS
Air Force – 99

Preparing Activity:
DLA-IS

(Project 5325-1179)

Review activities:

Army – AR, AV, CR4, MI
Navy – OS
Air Force – 71
DLA – CT

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil/>.