

**INCH-POUND****A-A-55312****August 25, 1997****COMMERCIAL ITEM DESCRIPTION****CAP, CAMOUFLAGE PATTERN**

The General Services Administration has authorized the use of this commercial item description as a replacement for MIL-C-1911 for all Federal agencies.

1. **SCOPE**. This commercial item description covers the requirements for a visor style cap that is intended for wear in a temperate zone environment by military personnel.
2. **CLASSIFICATION**. The cap is available in the following classes and sizes:

Classes

|         |   |                                     |
|---------|---|-------------------------------------|
| Class 1 | - | Woodland camouflage pattern         |
| Class 2 | - | Desert camouflage pattern (3-color) |

Schedule of sizes

|       |       |       |
|-------|-------|-------|
| 6-3/8 | 7     | 8     |
| 6-1/2 | 7-1/8 | 8-1/8 |
| 6-5/8 | 7-1/4 | 8-1/4 |
| 6-3/4 | 7-3/8 | 8-3/8 |
| 6-7/8 | 7-1/2 | 8-1/2 |
|       | 7-5/8 |       |
|       | 7-3/4 |       |
|       | 7-7/8 |       |

3. **SALIENT CHARACTERISTICS**

3.1 **Description**. The cap shall be a visor style, having a circular top crown, two side crown pieces, outside crown band, hinged visor, and retractable ear flap. The cap is lined with self material except for the flannel lined ear flap (see Figure 1). Crown seam shall be reinforced with a bias cut strip of self fabric between inner and outer plies.

**Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent to: Defense Personnel Support Center, Clothing and Textiles Directorate, Attn: DPSC-FNS, 2800 South 20th Street, Philadelphia, PA 19145-5099.**

AMSC N/A

FSC 8415

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The visor shall be smooth and free of wrinkles and puckers with a 1/8 inch wide hinge between the cap and visor lining. The hinge construction shall be evenly formed. The visor interlining shall not be caught in the stitching which forms the hinge. The crown and side pieces of the crown shall be neatly seamed, without puckers or pleats and with the raised stitching evenly gaged. The outside crown band shall be neatly and smoothly seamed to the side body, with top ends of band evenly matched in closing back seam, and finish uniformly  $1\text{-}1/8 \pm 1/8$  inches in width. Visor shall be quilted with six rows of evenly spaced parallel lockstitching through all plies.

The lining pieces shall be neatly joined with joining seams matching the outer crown pieces, and top and side pieces well shaped. The bottom and front curved edge of the ear flap shall be joined so that it is slightly cupped to hug the neck and ears. The ear flap lining shall be 1/8 to 1/4 inch from bottom of cap at center back and 1/2 to 3/4 inch at front ends, with the ends of the ear flap lapping on the ends of the under side of the visor.

### 3.2 Material.

3.2.1 Basic material. The cap material shall be an oxford cloth made of cotton warp and nylon filling treated with a water repellent. The warp yarn shall be 2-ply and the filling yarn shall be single ply semi-dull multifilament. For the class 1 cap, the color shall be a Woodland Camouflage Pattern (Light Green 354, Dark Green 355, Brown 356, and Black 357). For the class 2 cap, the color shall be Desert Camouflage Pattern (Light Tan 492, Light Brown 493, and Light Khaki 494).

As an alternate to the basic material, the cloth for the inside crown, crown side pieces, and the crown seam reinforcement strip may be printed seconds of the oxford cloth, dyed seconds of the oxford cloth, or oxford cloth dyed the ground shade prior to printing.

All colors of the finished cloth and thread shall match the standard sample when viewed under filtered tungsten lamps that approximate artificial daylight and that have a correlated temperature of  $7500 \pm 200$  K, with illumination of  $100 \pm 20$  foot candles, and shall be a good match to the standard sample under incandescent lamplight at  $2300 \pm 200$  K.

The cloth shall conform to the requirements specified in Table I.

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TABLE I. Basic material physical requirements

| Characteristic   | Requirement         | Test method                          |
|--|---------------------|--------------------------------------|
| Cloth type   | Oxford <u>1</u> /   | <u>2</u> /                           |
| Weight, oz./sq. yd.  | 4.8 - 5.8           | ASTM-D-3776, Option C                |
| Yarns per inch (min.)  |                     |                                      |
| Warp   | 160                 | ASTM-D-3775                          |
| Filling  | 74                  | ASTM-D-3775                          |
| Breaking strength, (lbs., min.)                                    |                     |                                      |
| Warp   | 150                 | ASTM-D-5034                          |
| Filling  | 125                 |                                      |
| Water repellency hydrostatic height, cm. (min.)                    | 35                  | ASTM-D-751, Procedure I with 3 drops |
| dynamic absorption, (percent, max.)                                |                     |                                      |
| Initial  | 25                  | AATCC 70                             |
| After 25 launderings   | 25                  | AATCC 96, Opt. IIIc, A and AATCC 70  |
| Spray rating   | 90,90,80            | AATCC 118                            |
| Air permeability, (ft. <sup>3</sup> /min./ft. <sup>2</sup> ), max. | 4.0                 | ASTM-D-737                           |
| Resistance to organic liquid (n-tetradecane)                       | no wetting          | AATCC 118                            |
| Colorfastness to:  |                     |                                      |
| Laundering   | 3.4 <u>3</u> /      | AATCC 61, 3A                         |
| Perspiration   | 3.4                 | AATCC 15                             |
| Crocking   | 3.4                 | AATCC 8                              |
| Light  | 3.4                 | AATCC 16, Option A                   |
| Spectral reflectance, (nanometers)                                 | 600 - 860 (class 1) | 3.2.1.1                              |
|  | 700 - 860 (class 2) | 3.2.1.2                              |
| Non-fibrous material, (percentage, max.)                           | 2.0                 | ASTM-D-629                           |
| pH   | 5.0 - 8.5           | ASTM-D-2165                          |
| Dimensional stability(percentage, max.)                            |                     |                                      |
| Warp   | 2.0                 | AATCC 96                             |
| Filling  | 2.0                 | AATCC 96                             |
| Seam efficiency, (percentage, min.)                                | 70                  | ASTM-D-1683                          |

1/ 2 warp ends weaving as one

2/ A certificate of compliance shall be submitted and will be acceptable for the stated requirement.

3/ Equal to or better than the specified rating on AATCC Gray Scale For Color Change and/or Staining when compared to the original unexposed specimen.

3.2.1.1 Spectral reflectance, (class 1) The spectral reflectance values for each color in the Woodland Camouflage printed cloth shall conform to the requirements specified in Table II.

**A-A-55312****TABLE II. Spectral reflectance requirements, Class 1**

| Reflectance values (percent)  |                 |      |                           |      |           |      |
|-------------------------------|-----------------|------|---------------------------|------|-----------|------|
| Wavelength,<br>Nanometer (nm) | Light Green 354 |      | Dark Green 355& Brown 356 |      | Black 357 |      |
|                               | Min.            | Max. | Min.                      | Max. | Min.      | Max. |
| 600                           | 8               | 18   | 3                         | 10   | --        | 10   |
| 620                           | 8               | 18   | 3                         | 10   | --        | 10   |
| 640                           | 8               | 18   | 3                         | 9    | --        | 10   |
| 660                           | 8               | 18   | 3                         | 12   | --        | 10   |
| 680                           | 10              | 22   | 3                         | 14   | --        | 10   |
| 700                           | 18              | 40   | 5                         | 18   | --        | 10   |
| 720                           | 22              | 45   | 7                         | 20   | --        | 10   |
| 740                           | 30              | 55   | 12                        | 28   | --        | 10   |
| 760                           | 35              | 65   | 18                        | 36   | --        | 10   |
| 780                           | 40              | 75   | 26                        | 44   | --        | 10   |
| 800                           | 45              | 80   | 34                        | 52   | --        | 10   |
| 820                           | 50              | 86   | 42                        | 60   | --        | 10   |
| 840                           | 55              | 88   | 50                        | 68   | --        | 10   |
| 860                           | 60              | 90   | 56                        | 74   | --        | 10   |

3.2.1.2 Spectral reflectance, (class 2). The spectral reflectance values for each color in the Desert Camouflage printed cloth shall conform to the requirements specified in Table III.

**TABLE III. Spectral reflectance requirements, Class 2**

| Reflectance values (percent)  |               |      |                 |      |                 |      |
|-------------------------------|---------------|------|-----------------|------|-----------------|------|
| Wavelength,<br>Nanometer (nm) | Light Tan 492 |      | Light Brown 493 |      | Light Khaki 494 |      |
|                               | Min.          | Max. | Min.            | Max. | Min.            | Max. |
| 700                           | 38            | 53   | 19              | 41   | 25              | 44   |
| 720                           | 38            | 54   | 20              | 41   | 25              | 45   |
| 740                           | 39            | 55   | 20              | 42   | 25              | 46   |
| 760                           | 40            | 56   | 21              | 42   | 26              | 47   |
| 780                           | 41            | 57   | 21              | 42   | 27              | 48   |
| 800                           | 43            | 58   | 22              | 43   | 28              | 50   |
| 820                           | 45            | 59   | 23              | 45   | 30              | 52   |
| 840                           | 48            | 62   | 24              | 46   | 33              | 59   |
| 860                           | 50            | 65   | 25              | 48   | 36              | 58   |

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3.2.2 **Lining.** The lining for the ear flaps shall be wool and nylon flannel, and shall have a fiber content of 80 percent wool/20 percent nylon and shall conform to the requirements specified in Table IV; or a double face 100 percent polyester fleece cloth in a circular knit construction of 150 denier continuous filament polyester yarns and shall conform to the requirements specified in Table V. The color shall be CG 483 for Class 1 caps, and the color shall be Tan 380 or CG 483 for Class 2 caps. As an alternate, the cloth shall be 100 percent polyester fleece in accordance with Polartec, Style 7646 series 100M Micro-Fiber. The color for Class 1 caps shall be Boxwood 3382 and the color for Class 2 caps shall be Cappoccino 7424, Malden Mills Industries, Inc., Lawrence, MA or equivalent. Lining shall not exceed 2% shrinkage.

**TABLE IV. Wool and nylon flannel cloth requirements**

| <b>Characteristic</b>           | <b>Requirement</b> | <b>Test method</b>    |
|---------------------------------|--------------------|-----------------------|
| Weave                           | plain              | <u>1/</u>             |
| Weight, oz./sq. yd. (min.)      | 12.0               | ASTM-D-3776, Option C |
| Yarns per inch (min.)           |                    |                       |
| Warp                            | 38                 | ASTM-D-3775           |
| Filling                         | 31                 | ASTM-D-3775           |
| Breaking strength, (lbs., min.) |                    |                       |
| Warp                            | 42                 | ASTM-D-5034           |
| Filling                         | 32                 |                       |
| Colorfastness to:               |                    |                       |
| Light                           | 3-4 <u>3/</u>      | AATCC 16, Opt. A      |
| Perspiration                    | 3-4                | AATCC 15              |
| Crocking                        | 3-4                | AATCC 8               |
| pH                              | 5.0 - 8.5          | ASTM-D-2165           |
| Shrinkage, percent (max.)       |                    |                       |
| Warp                            | 6.0                | AATCC 99 <u>2/</u>    |
| Filling                         | 4.0                | AATCC 99 <u>2/</u>    |

- 1/ A certificate of compliance shall be submitted and will be acceptable for the stated requirement.
- 2/ In Paragraph 7, Test Procedure Relaxation Dimension Change, decrease soaking time to 1 hour, and shall be air dried (185°F).
- 3/ Equal to or better than the specified rating on AATCC Gray Scale for Color Change and/or Staining when compared to the original unexposed specimen.

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**TABLE V. Double face polyester fleece cloth requirements**

| Characteristic                             | Requirement   | Test method           |
|--|---------------|-----------------------|
| Weight, oz. sq. yd.                        | 6.5 - 7.5     | ASTM-D-3776, Option C |
| Finished thickness, in. (max.) at 0.1 psi  | 0.06          | ASTM-D-1777 <u>1/</u> |
| Fabric construction (wales and courses)    | 20 x 26       | <u>2/</u>             |
| Bursting strength, lbs., min.              | 125           | ASTM-D-3787           |
| Shrinkage, percent, max. (wales x courses) | 3.0 x 3.0     | AATCC 96              |
| pH   | 4.5 - 8.5     | ASTM-D-2165           |
| Colorfastness to:                          |               |                       |
| Laundering                                 | 3-4 <u>3/</u> | AATCC 61, 3A          |
| Crocking                                   | 3-4           | AATCC 8               |
| Perspiration                               | 3-4           | AATCC 15              |

1/ A thickness gauge of the dead-weight type equipped with a dial graduated to read directly to .001 inches shall be used. The presser foot shall be circular, with a diameter of  $1.129 \pm 0.001$  inches and with moving parts weighted to apply a total load of  $0.60 \pm 0.03$  pounds per square inch to the specimen. The anvil shall be not less than 1.129 inches in diameter. The presser foot and anvil surface shall be planed to within 0.0001 inches and shall be parallel to each other to within 0.0001 inches.

2/ A certificate of compliance shall be submitted and will be acceptable for the stated requirement.

3.2.3 **Visor interlining.** The visor interlining shall be a non-woven, fibrous material conforming to the requirements stated in Table VI. As an alternate, the visor interlining may be a plastic, high density polyethylene material weighing 12.0 to 14.5 grams per visor, having a thickness of 0.083 to 0.089 inch and 40 percent to 60 percent of stiffness when tested in accordance with ASTM-D-747.

**TABLE VI. Visor interlining requirements**

| Characteristic                        | Requirement Direction<br>Machine Cross | Test method         |
|---------------------------------------|--|---------------------|
| Stiffness, (load lb. per in., min.)   |  |                     |
| Original                              | 2.4 1.5                                | ASTM-D-747          |
| After laundering (3 cycles)           | 2.4 1.5                                | ASTM-D-747          |
| Tensile strength, (lb. per in., min.) | 156 103                                | TAPPI 404 <u>1/</u> |
| Stretch (percent, max.)               | 17 26                                  | TAPPI 404 <u>1/</u> |
| Tearing strength, (grams, min.)       | 1600 1840                              | TAPPI 414 <u>1/</u> |
| Weight, lbs./sq. yd.                  | $2.21 \pm 5\%$                         | ASTM-D-3776, Opt. C |
| Thickness                             | $0.075 \pm 0.003$ in.                  | ASTM-D-1777         |
| Water absorption (percent, max.)      | 30                                     | FED-STD-191/TM 5502 |
| Accelerated aging                     | 3.2.3.1                                | ---                 |
| Shrinkage                             | 3.2.3.2                                | <u>2/</u>           |

1/ Technical Association of the Pulp and Paper Industry test method

2/ Pass or fail

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3.2.3.1 Accelerated aging. The finished material shall show no sign of embrittlement, development of stickiness or delamination.

3.2.3.2 Shrinkage. The finished material shall not shrink or warp.

3.2.4 Thread. The thread shall be cotton-covered, polyester core thread 65, 40 and 35 Tex, 2 ply, with a breaking strength of 5.0, 3.2, and 2.6 pounds minimum, respectively, and 26 percent maximum elongation when tested according to ASTM-D-2256. Unless otherwise specified, the direction of twist for single ply shall be "S" and for the plied thread "Z". The thread shall be dyed Olive Drab S-1, C.A. 66022. The dyed and finished thread shall show fastness to laundering (3 cycles; dried after each cycle), dry heat, light (exposure time shall be 40 standard fading hours), and, when specified, wet drycleaning, perspiration, and weathering (exposure time shall be 80 hours) equal to or better than the standard sample when tested according to AATCC 61-3A, 117, 16 (option A), 132, 15, and 111A, respectively. The thread shall contain only the minimum amount of lubricant to facilitate sewing. The yarn finish shall be non-staining and non-flame propagating. 1/

The thread shall be water-repellent treated so that the treated thread shall resist the wicking of water for a period of not less than 6 hours when tested as follows: The test specimen shall consist of 20 strand skein of thread in one continuous 30 yard length made on a 54 inch periphery skein reel. The skein shall be hung over the movable crossbar of a laboratory stand with the other end hanging over the vessel. The movable crossbar shall rise 28 inches or more above the base. A non-ferrous 3/4 to 7/8 ounce weight shall be placed in the lower catenary of the skein to keep it taut and straight. The skein shall be arranged so that the strands are touching each other in flat ribbon form. The vessel shall be filled to a depth of at least 5 inches with distilled water at room temperature which has been mixed with 0.5 percent Basic Blue 9 dye C.I. 52015, salt and wetting agent free. A piece of blotting paper shall be attached by means of a paper clip or similar clamp to one full side (20 strands) of the skein, 3 inches above the lower catenary of the skein. The position of the crossbar shall be adjusted that when the skein is hung freely in the liquid, 2 inches of the skein will be immersed in the liquid and the lower edge of the blotter is 1 inch above the liquid surface. The skein shall then be slightly lowered into the dyebath and the time of entry shall be noted. Depending on the dimensions of the vessel and the length of the crossbar, several specimens can be tested at the same time in the same dyebath by hanging the skeins sufficiently apart on the crossbar.

The skein shall be exposed for 6 hours. The blotter shall be examined for wetting or straining at least every hour. The test shall be terminated whenever staining or wetting of the blotter is observed within the 6 hour test duration. 1/

1/ Certificates of compliance shall be submitted for all requirements and the Government reserves the right to inspect such items to determine the validity of the certification.

3.3 Labels. The labels shall be nonwoven, Medium Green, Cable No. 70034, 70130, or 70131 with black legible marking. Marking shall show colorfastness to laundering, with a minimum rating of "4" when tested in accordance with AATCC 61, Test No 4A. Center combination identification, size, and instruction label on crown lining approximately 1 inch from crown seam at back of cap and stitch on all four sides. The label shall contain the information in the following format:

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|  |   |
|--|---|
| CAP, CAMOUFLAGE PATTERN                                    | S |
| Contract Number  | I |
| National Stock Number                                      | Z |
| Fur, Wool, or Fiber Products Act Information as applicable | E |
| Contractor Name  |   |

1. If cap is worn under helmet, helmet head band may require readjustment for proper fit and comfort.
2. Machine Wash. Use permanent press cycle. Wash in warm water with mild detergent.
3. Hand Wash. Hand wash in warm water using mild detergent. DO NOT WRING OR TWIST. Rinse in clean warm water.
4. DO NOT USE CHLORINE BLEACH OR STARCH.
5. Dry at low heat (Do not exceed 130°F).  
DO NOT REMOVE THIS LABEL

3.3.1 Label/tag. Each item shall be individually bar-coded with a paper tag for personal clothing items. The paper tag shall be standard bleached sulfate having a basis weight of 100 pounds. The paper used for the tags shall have a smooth finish to accept thermal transfer and direct printing. The tags shall have a hole and shall be attached to each item by a fastener, clearly legible and readable by a scanner. The bar coding element shall be a 13 digit national stock number (NSN). The bar code type shall be a medium to high code density and shall be located so that it is completely visible on the item when it is folded and/or packaged as specified and so that it causes no damage to the item.

3.4 Sizes and measurements. The finished caps shall conform to the measurements specified in Tables VII and VIII.

**TABLE VII. Cap sizes (inches)**

| <b>Size</b> | <b>Inside cap circumference (+ 1/4 inch tolerance)</b> |
|-------------|--|
| 6-3/8       | 20-1/8   |
| 6-1/2       | 20-1/2   |
| 6-5/8       | 20-7/8   |
| 6-3/4       | 21-1/4   |
| 6-7/8       | 21-5/8   |
| 7           | 22   |
| 7-1/8       | 22-3/8   |
| 7-1/4       | 22-3/4   |
| 7-3/8       | 23-1/8   |
| 7-1/2       | 23-1/2   |
| 7-5/8       | 23-7/8   |
| 7-3/4       | 24-1/4   |
| 7-7/8       | 24-5/8   |
| 8           | 25   |
| 8-1/8       | 25-3/8   |
| 8-1/4       | 25-3/4   |
| 8-3/8       | 26-1/8   |
| 8-1/2       | 26-1/2   |



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3.5 Patterns. Standard patterns to be used to cut working patterns will be furnished by the Government. The working patterns shall be identical to the Government patterns. Neither the Government patterns nor the working patterns shall be altered in any way, except that additional notches for use during construction are allowed on the working patterns. Also, minor modifications are permitted where necessary when using automatic equipment. These modifications shall not alter the dimensional, serviceability, or appearance requirements. The standard patterns provide a seam allowance of 3/8 inch for the joining seams, and 1/4 inch for all other seams.

4. REGULATORY REQUIREMENTS. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

## 5. QUALITY ASSURANCE PROVISIONS

5.1 Product conformance. The products offered shall meet the salient characteristics of this commercial item description, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be a similar product that is offered for sale in the commercial market. The Government reserves the right to require proof of such conformance.

5.2 Market acceptance criteria. The item offered, or a generic equivalent, must have been sold to the commercial market or to the Government.

5.3 Visual examination. Each cap shall be examined for the defects listed below.

5.3.1 Defects. Any hole, cut, or tear; any visible mend; thread ends not removed; component part omitted, misplaced, or not as required; component part puckered, wrinkled, or pleated; fullness affecting appearance; misshaped or distorted; part of material caught in unrelated operation or stitching; not neatly seamed; back seam off center; skipped stitches or runoff stitches; ends of stitching not secured; loose or tight tension; thread breaks; visor off center or construction not formed evenly; visor interlining caught in visor to cap joining seam; top ends of side crown band not evenly matched in back closing seam; label missing, incorrect, or illegible; any dimensional measurement of item not as specified; bar code omitted or not readable by scanner; human-readable interpretation (HRI) omitted or illegible; bar code not visible on folded, packaged item; bar code causes damage to the item; any items not packaged in accordance with the contract or purchase order.

5.4 Acceptance criteria. Acceptance criteria shall be as specified in the contract or purchase order.

## 6. PACKAGING

6.1 Preservation, packing, and marking. The preservation, packing, and marking shall be as specified in the contract or purchase order.

## 7. NOTES

7.1 Source of Government documents. Copies of military and Federal documents are available from:

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Standardization Documents Order Desk  
Bldg. 4D  
700 Robbins Avenue  
Philadelphia, PA 19111-5094

### 7.2 Source of non-Government documents

#### ASTM Test Methods

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

#### AATCC Test Methods

(Applications for copies should be addressed to American Association of Textile Chemists and Colorists (AATCC), P.O. Box 12215, Triangle Park, NC 27709-2215.)

#### TAPPI Test Methods

(Applications for copies should be addressed to Technical Association of the Pulp and Paper Industry (TAPPI), Technology Park/Atlanta, P. O. Box 105113, Atlanta, GA 30348.)

### MILITARY INTERESTS:

#### Custodians

Army - GL  
Navy - MC  
Air Force - 99

#### Review Activities:

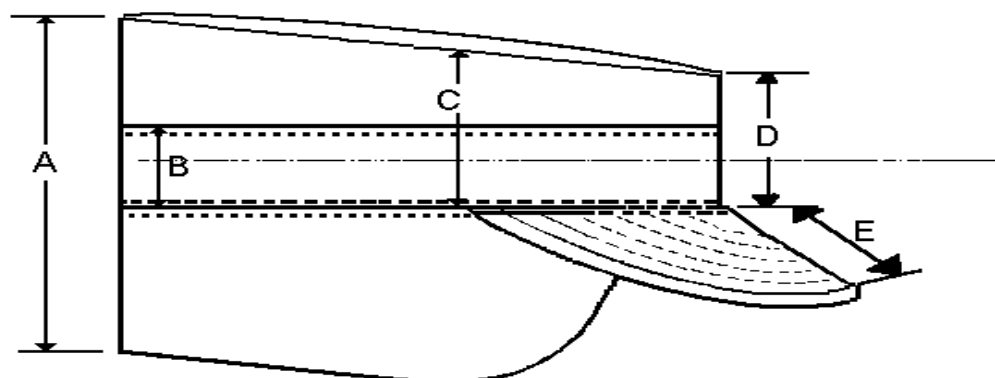
Army - MD  
Air Force - 45, 82

#### CIVIL AGENCY COORDINATING ACTIVITY: GSA - FSS

#### PREPARING ACTIVITY: DLA - CT

Project Number  
8415-0104

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**Edge of Ear Flap  
Overedge Stitching**

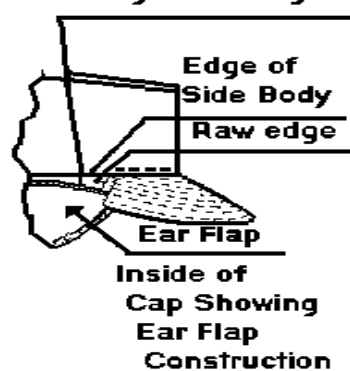


TABLE VIII Cap Measurements (inches)

|           | A         | B         | C         | D         | E         |
|-----------|-----------|-----------|-----------|-----------|-----------|
|           | 3-5/8     | 1-1/8     | 3-1/2     | 2-5/8     | 2-1/8     |
| Tolerance | $\pm 1/4$ | $\pm 1/8$ | $\pm 1/4$ | $\pm 1/4$ | $\pm 1/8$ |

FIGURE 1. Cap, Camouflage Pattern