INCH-POUND
MIL-DTL-44048H
30 November 2000
SUPERSEDING
MIL-C-44048G
2 February 1995

DETAIL SPECIFICATION

COATS, CAMOUFLAGE PATTERN, COMBAT

This document is approved for use by all departments and agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This document covers the requirements for camouflage pattern, single-breasted combat coats.

1.2 Classification. The coat shall be of the following types and sizes as specified (see 6.2).

Type I	-	Woodland camouflage pattern cotton/nylon twill cloth
Type II	-	Deleted (see 6.5)
Type III	-	Deleted (see 6.5)
Type IV	-	Deleted (see 6.5)
Type V	-	Deleted (see 6.5)
Type VI	-	Woodland camouflage pattern, nylon/cotton ripstop
Type VII	-	Desert camouflage pattern, nylon/cotton ripstop
Type VIII	-	Black 357, nylon/cotton ripstop
Type IX	-	Insect repellent treated, woodland camouflage pattern cotton/nylon twill
Type X	-	Insect repellent treated, woodland camouflage pattern nylon/cotton ripstop
Type XI	-	Insect repellent treated, desert camouflage pattern nylon/cotton ripstop
Type XII	-	Insect repellent treated, Black 357, nylon/cotton ripstop
Type XIII	-	Camouflage Green 483, nylon/cotton ripstop

Beneficial comments (recommendations, additions, deletions) and any data which may be of use in improving this document should be addressed to : Defense Supply Center Philadelphia, Clothing and Textiles Directorate, Attn.: DSCP-CRFD, 700 Robbins Avenue, Bldg 6 Area D, Philadelphia, PA 19111-5096, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 8415

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SCHEDULE OF SIZES

X-Small	Small	Medium	Large	X-Large	XX-Large
	XXX-Short				
XX-Short	XX-Short	XX-Short			
X-Short	X-Short	X-Short	X-Short		
Short	Short	Short	Short		
Regular	Regular	Regular	Regular	Regular	
Long	Long	Long	Long	Long	
	X-Long	X-Long	X-Long	X-Long	X-Long
			XX-Long		

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 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 shall be 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).

SPECIFICATIONS

MILITARY

MIL-C-44031 - Cloth, Camouflage Pattern: Woodland, Cotton and Nylon
MIL-DTL-44411 - Insect Repellent, Permethrin
MIL-C-44436 - Cloth, Camouflage Pattern, Wind Resistant Poplin, Nylon/Cotton Blend

(Copies of above specifications are available from the Defense Automated Printing Service, 700 Robbins Avenue, Building #4, Section D, Philadelphia, PA 19111-5096.)

2.2.2 Other Government documents, drawings, and publications. The following Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those specified in the solicitation.

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Environmental Protection Agency
Office of Prevention, Pesticides and Toxic Substances
870.1200 (Acute Dermal Toxicity)

(Copies may be obtained from the U.S. Government Printing Office, Washington DC 20402, or from the Environmental Protection Agency at (800) 490-9198)

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 which are DOD adopted shall be those in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issue of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM D-2256 - Tensile Properties of Yarns by the Single-Strand Method
ASTM D-5034 - Breaking Force and Elongation of Textile Fabrics (Grab Test)
ASTM D-6193 - Standard Practice for Stitches and Seams

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

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

AATCC 61 - Colorfastness to Laundering, Home and Commercial: Accelerated
AATCC 136 - Bond Strength of Bonded and Laminated Fabrics

(Applications for copies should be addressed to the American Association of Textile Chemists and Colorists, P.O. Box 12215, Triangle Park, NC 27709-2215. Phone number (919) 549-8141.)

ANSI/ASQC Z1.4- Sampling Procedures and Tables for Inspection of Attributes

(Applications for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018-3308.)

Principle and Methods of Toxicology, A. Wallace Hayes (editor), 1989, pp.394-396.

(Applications for copies should be addressed to Raven Press, 1185 Avenue of the Americas, New York, NY 10036.)

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 specified exemption has been obtained.

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3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.2.

3.2 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.3 Design and construction. The coat is single-breasted with a collar, concealed button front closure and four bellowed pockets with flaps having concealed buttons. Each breast pocket has a drainage hole in the bottom bellows; the left pocket has a concealed pencil pocket. The coat has long sleeves with reinforced elbows, adjustable cuffs at wrist, a suppressed waist and straight-cut bottom (reference figure 1). This design provides for comfort in movement and uniformity between manufacturers.

3.3.1 Basic material. The following materials shall be used to provide the comfort and durability needed in garrison, combat, and operations other than war. The coat shall show no toxicity when used as intended and when tested as specified in 4.4.

Types I and IX - The basic material shall be cotton/nylon twill cloth printed in woodland camouflage pattern conforming to class 1 of MIL-C-44031.

Types VI and X - The basic material shall be nylon/cotton ripstop printed in woodland camouflage pattern conforming to class 1 of MIL-C-44436.

Types VII and XI- The basic material shall be nylon/cotton ripstop printed in a desert camouflage pattern conforming to class 3 of MIL-C-44436.

Types VIII and XII - The basic material shall be nylon/cotton ripstop dyed Black 357, conforming to class 5 of MIL-C-44436.

Type XIII - The basic material shall be nylon/cotton ripstop dyed Camouflage Green 483, conforming to class 5 of MIL-C-44436.

3.3.2 Ground shade/printed seconds/mill seconds. Ground shade cloth shall be dyed in conformance with the specified basic material and shall meet the physical, mechanical, and dimensional requirements of the respective finished fabric. Printed seconds shall be cloth which has only been rejected for defects pertaining to color, infrared reflectance, or camouflage print patterns, cited in the specified basic material requirements. Mill seconds shall be cloth which has been rejected for visual defects only and has been either dyed to match ground shade or printed with a camouflage pattern (see 3.4.2).

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3.3.3 Interlining. To improve abrasion resistance and appearance of garment, the collar and pocket flaps of all coat types shall be interlined. The interlining shall have the same life expectancy of the coat itself, and after attaching to the basic cloth, shall meet an initial directional bond strength of 32 ounces minimum per inch and 24 ounces minimum per inch after 3 launderings when tested as specified in 4.4.1.

3.3.4 Thread. Thread for needle and bobbin (looper) shall be cotton- or polyester-covered, polyester core, commercial size Ticket No. 50 (Tex size 36 to 50) with a minimum breaking strength of 3.2 pounds when tested as specified in 4.4.2. As an alternate, Ticket No. 70 (Tex size 31 to 35) with a breaking strength of 2.6 pounds when tested as specified in 4.4.2 may be used as the bobbin (looper) thread.

3.3.4.1 Gimp. Thread for reinforcement of buttonholes shall be cotton, commercial size Ticket No. 8 (Tex size 210) with a minimum breaking strength of 6.5 pounds when tested as specified in 4.4.2. The size and type of gimp specified provides durability and shape retention to the eyelet end buttonhole.

3.3.4.2 Colorfastness and Color. All thread used shall be non-staining and show good colorfastness to laundering when tested as specified in 4.4.3. The thread shall be a good match to the following colors:

Types I,VI, IX, X and XIII	Types VII and XI	Types VIII and XII
Camouflage Green (CG) 483	Light Khaki 494	Black 357

3.3.5 Insect Repellent. The finished coats, types IX, X, XI, XII only, shall be given an EPA approved permethrin treatment. This process shall be performed on the completed coats. The treated coats shall contain 0.113 to 0.137 mg/cm^2 of permethrin with a standard deviation of 0.036 to 0.044 when tested in accordance with the gas chromatographic method specified in 4.4.8.

3.3.5.1 Permethrin. The permethrin (US patent No. 4,024,163) used shall conform to type II of MIL-DTL-44411.

3.3.6 Labels. Each coat shall have a size label, an identification label, a care label, and an insect repellent label (types IX, X, XI, XII only), as applicable. The size and identification labels or the identification and care label may be combined. The identification label shall contain the item description, contract number, fiber content information and contractor's name. The label color shall approximate the basic cloth ground shade for the size, identification and care labels, with the exception of types VIII and XII, which shall be white. The insect repellent label shall be yellow in color. The inscription shall have a minimum font size of 10 points. The inscription legibility, label, and label attachment shall last the expected life of the coat. The care label, combination label, or insect repellent label, as applicable, shall include the following information:

Types I and IX - **Coat, Woodland Camouflage Pattern, Combat**

or

Types VI and X - **Coat, Hot Weather, Woodland Camouflage Pattern, Combat**

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or

Types VII and XI- **Coat, Desert Camouflage Pattern, Combat**

or

Types VIII and XII- **Coat, Hot weather, Black, Combat**

Type XIII- **Coat, Hot weather, Camouflage Green, Combat**

1. **Wear outside of trousers.**
2. **Adjust closures to ventilate: avoid overheating of body.**
3. **Machine washing. Use Permanent Press Cycle. Wash in warm water and mild detergent.**
4. **Hand washing. Wash in warm water using mild detergent. DO NOT WRING OR TWIST. Rinse in clean warm water.**
5. **DO NOT USE CHLORINE BLEACH OR STARCH.**
6. **Dry at low heat (Do not exceed 130°F). After drying, tumble at room temperature for 10 minutes. Remove immediately from dryer. To drip dry, remove from water and place on rust-proof hanger.**

DO NOT REMOVE THIS LABEL

3.3.6.1 Insect repellent label. For types IX, X, XI, and XII coats only. This label shall contain all the information on the existing size or combination label and the following information shall also be included on the yellow colored insect repellent label:

This garment has been treated with Permethrin insect repellent.

Date of treatment: (insert date)
Dosage Rate: (insert rate)

3.3.6.2 Size label. The size label shall contain, as a minimum, the following information, as applicable:

X-Small - XX-Short Height: 55 to 59 in. Chest: Up to 33 in. Stock No. NATO Size 4050/7484	X-Small – X-Short Height: 59 to 63 in. Chest: Up to 33 in. Stock No. NATO Size 5060/7484	X-Small - Short Height: 63 to 67 in. Chest: Up to 33 in. Stock No. NATO Size 6070/7484
X-Small – Regular Height: 67 to 71 in. Chest: Up to 33 in. Stock No. NATO Size 7080/7484	X-Small - Long Height: 71 to 75 in. Chest: Up to 33 in. Stock No. NATO Size 8090/7484	Small – XXX-Short Height: Under 55 in. Chest: 33 to 37 in. Stock No. NATO Size 3040/8494

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Small – XX-Short
Height: 55 to 59 in.
Chest: 33 to 37 in.
Stock No.
NATO Size 4050/8494

Small - X-Short
Height: 59 to 63 in.
Chest: 33 to 37 in.
Stock No.
NATO Size 5060/8494

Small – Short
Height: 63 to 67 in.
Chest: 33 to 37 in.
Stock No.
NATO Size 6070/8494

Small - Regular
Height: 67 to 71 in.
Chest: 33 to 37 in.
Stock No.
NATO Size 7080/8494

Small - Long
Height: 71 to 75 in.
Chest: 33 to 37 in.
Stock No.
NATO Size 8090/8494

Small - X-Long
Height: Above 75 in.
Chest: 33 to 37 in.
Stock No.
NATO Size 9000/8494

Medium – XX-Short
Height: 55 to 59 in.
Chest: 37 to 41 in.
Stock No.
NATO Size 4050/9404

Medium - X-Short
Height: 59 to 63 in.
Chest: 37 to 41 in.
Stock No.
NATO Size 5060/9404

Medium - Short
Height: 63 to 67 in.
Chest: 37 to 41 in.
Stock No.
NATO Size 6070/9404

Medium – Regular
Height: 67 to 71 in.
Chest: 37 to 41 in.
Stock No.
NATO Size 7080/9404

Medium - Long
Height: 71 to 75 in.
Chest: 37 to 41 in.
Stock No.
NATO Size 8090/9404

Medium - X-Long
Height: 75 to 79 in.
Chest: 37 to 41 in.
Stock No.
NATO Size 9000/9404

Large - X-Short
Height: 59 to 63 in.
Chest: 41 to 45 in.
Stock No.
NATO Size 5060/0414

Large - Short
Height: 63 to 67 in.
Chest: 41 to 45 in.
Stock No.
NATO Size 6070/0414

Large - Regular
Height: 67 to 71 in.
Chest: 41 to 45 in.
Stock No.
NATO Size 7080/0414

Large - Long
Height: 71 to 75 in.
Chest: 41 to 45 in.
Stock No.
NATO Size 8090/0414

Large - X-Long
Height: 75 to 79 in.
Chest: 41 to 45 in.
Stock No.
NATO Size 9000/0414

Large - XX-Long
Height: Above 79 in.
Chest: 41 to 45 in..
Stock No.
NATO Size 0010/0414

X-Large - Regular
Height: 67 to 71 in.
Chest: 45 to 49 in.
Stock No.
NATO Size 7080/1424

X-Large –Long
Height: 71 to 75 in.
Chest: 45 to 49 in.
Stock No.
NATO Size 8090/1424

X-Large – X-Long
Height: 75 to 79 in.
Chest: 45 to 49 in.
Stock No.
NATO Size 9000/1424

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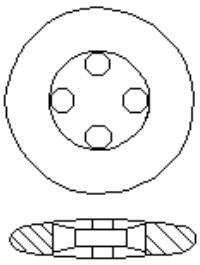
XX-Large – X-Long
Height: 71 to 75 in
Chest: 53 to 57 in.
Stock No.
NATO Size 9000/2434

3.3.6.3 Label/tag. Each coat 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 coat by a fastener. The tags shall be clearly legible and readable by scanner. The bar coding element shall be a 13 digit national stock number (NSN). There shall be a 12 digit UPC number assigned for all NSNs by the contracting activity. The initials "UPC" must appear beneath the code. The bar code for NSN and UPC type shall be a medium to high density and shall be located so that it is completely visible on the coat when it is folded and/or packaged as specified and so it causes no damage to the coat. This UPC code must also be placed on all shipping cartons on which the NSN appears.

3.3.6.4 Label placement. The labels shall be securely attached to the coat and positioned as follows:

(1) Identification/care label. On inside of right lower front pocket area, for uniformity between garments. No indication of label application shall show on the outside of the coat. (See figure 2).
(2) Size label. On inside center collar (± 1 inch off center), for visibility when folded.
(3) Insect repellent label. Attached to coat covering existing size or combination label.

3.3.7 Buttons. The buttons shall be dull finish, 4-hole, 30 ligne, and shall be in accordance with the following button style:



(Cross section of button)

The color of the button shall be a good match to Camouflage Green for types I, VI, IX, X and XIII coat, and Khaki for types VII and XI coat, and Black for types VIII and XII coat. The buttons shall not exhibit chalking when tested as specified in 4.4.4. The buttons shall show a minimum compressive strength of 1800 lb. when tested as specified in 4.4.5. When attached to the coat, the button and thread shall withstand a pull test of 40 lb. (min.), when tested as specified in 4.4.6.

3.4 List of pattern parts. Standard patterns provide a seam allowance of 3/8 inch for single needle seams and ½ inch for double needle seams. Buttonholes, pockets and pocket flaps shall be located in

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accordance with marks on patterns. The pattern list in Table I is provided to insure that the pattern set provided is complete.

TABLE I. List of pattern parts.

Pattern Abbreviation	Nomenclature
FRONT	Front
BACK	Back
COLLAR NRRW	Collar Narrow
COLLAR WIDE	Collar Wide
CLLR 1P NRW	Collar (one piece) Narrow
CLLR 1P WD	Collar (one piece) Wide
TOP SLEEVE	Top Sleeve
TOP SLV ALT	Top Sleeve alternate
UNDER SLEEVE	Undersleeve
UND SLV ALT	Undersleeve alternate
BRST POCKET	Breast pocket
BRS PKT FLAP	Breast pocket flap
BR PK FL TB	Breast pocket flap tab
BR P F T 1P	Breast pocket flap & tab (one piece)
PENCIL PCKT	Pencil pocket
LOWER PCKT	Lower pocket
LWR PKT FLP	Lower pocket flap
LWR PKT FL TB	Lower pocket flap tab
LW P F T 1P	Lower pocket flap & tab (one piece)
TP SL ELB P	Top sleeve elbow patch
UN SL ELB P	Undersleeve elbow patch
ELBOW PATCH	Elbow patch (one piece)
CUFF TAB	Cuff tab
CUFF	Cuff
LFT FRT FLY	Left front fly
TP SLV CFF	Top sleeve cuff (standard sleeve)
UND SLV CFF	Undersleeve cuff (standard sleeve)
CLR FUS NRW	Collar interlining
BR PK FL FS	Breast pocket flap interlining
BR P F T FS	Breast pocket flap & tab (one piece) interlining
LW PK FL FS	Lower pocket flap interlining
LW P F T FS	Lower pocket flap & tab (one piece) interlining
CLR 1P FUS NR	Collar (one piece) interlining

3.4.1 Parts cut from ends. Table Ia lists the pattern parts which are not visible on the finished garment, and may be cut from ends.

TABLE Ia. List of pattern parts.

Pattern Abbreviation	Nomenclature
COLLAR	Undercollar
BR PK FL TB	Breast pocket flap tab
PENCIL PCKT	Pencil pocket
LWR PKT FL TB	Lower pocket flap tab
LFT FRT FLY	Left front fly

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3.4.2 Parts cut from ground shade/printed seconds/mill seconds. Table Ib lists the pattern parts which may be cut from ground shade cloth, printed seconds, or mill seconds (see 3.3.2).

TABLE Ib. List of pattern parts.

Pattern Abbreviation	Nomenclature
PENCIL PCKT	Pencil pocket

3.5 Configuration. The following specifics are needed to provide uniform appearance, comfort, and durability in garrison, combat, and operations other than war. End item garment construction and appearance shall conform to figures 1 through 7 and the finished dimensions (see 4.4.9.1) to maintain configuration and compliance to end item performance tests (see 4.4).

3.5.1 Seaming. Seaming shall be consistent, exhibit a uniform appearance and conform to the ASTM D6193 stitch and seam types listed below. The backside of all seams (inside garment) shall be flat with no protruding seam allowance to create irritation or discomfort. The seams shall be sewn with 10-14 stitches per inch for all outside visible stitching. Overedge or pre-hemming shall be 6-10 stitches per inch. To maintain durability and functionality, bartacks 3/8 to 5/8 inch in length with approximately 27 stitches are required at the specified reinforcement points shown in Figure 7. Buttonholes shall be eyelet end, tapered bar, ¾ to 7/8 inch length with 52 - 56 stitches per inch. The buttonhole purling shall be between tab and flap plies and front facing and front plies, or on the outside of the coat. Eyelets for the pockets shall have a minimum of 19 stitches each, with the purling on the outside. All material edges shall be clean finished: edges shall be either turned-in, turned-under, or serged.

Seam Placement	Seam type	Gage	Stitch Type
Side seams, back arm seams, set in sleeves, shoulder seams	LSc-2	3/16 to 9/32 inch gage	301 or 401
Top Stitching of pocket flaps, collar, left front fly, cuff, front edges	OSf-1	316 to 1/4 inch from the edge	301
Top Stitching of pockets	OSf-1	1/16 to 1/8 inch from the edge	301
Attachment of pockets	LSd-1	1/16 to 1/8 inch from the edge	301
Attachment of patches and flaps	LSd-1or LSd-2	two rows 3/16 to 1/4 inch apart	301
Bottom hemming	Efb-1	1/16 to 1/8 inch from edge, 5/8 ± 1/8 inch wide hem	301
Attachment of flaps	LSbk-3	3/16 inch setting with 1/4 inch gage topstitching or 1/16 inch with 1/4 inch gage	301
Setting cuff	LSd-1	1/8 to 3/16 inch from the edge	301
Setting collar	Ssa-1 Lsb-1	1/16 to 1/8 inch from the edge	301

3.6 Toxicity. The finished cloth used in the coat shall not present a dermal health hazard when used as intended (see 4.4.7).

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4. VERIFICATION

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

1. First article inspection (see 4.2)
2. Quality conformance inspection (see 4.3)

4.2 First article inspection. The first article, submitted in accordance with 3.1, shall be inspected for compliance with design, configuration, workmanship and dimensional requirements. The presence of excessive defects, as defined by contract, (see 4.4.9) or failure to pass any test shall be cause for rejection of the first article.

4.3 Quality conformance inspection. Sampling for inspection shall be performed in accordance with ANZI/ASQC Z1.4, as defined by contract, except where otherwise indicated.

4.4 Component and end item inspection. In accordance with 4.1, components and end items shall be tested in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this document or applicable procurement documents. The government reserves the right to inspect all components and end items to determine conformance to requirements.

4.4.1 Bond strength test. The interlining shall meet the requirements stated in 3.3.3 when tested according to AATCC TM 136, paragraph 11.

4.4.2 Breaking strength and elongation test. The thread and gimp shall meet the requirements stated in 3.3.4 and 3.3.4.1 when tested according to ASTM-D-2256.

4.4.3 Colorfastness test. The thread and gimp shall meet the requirements stated in 3.3.4.2 when tested according to AATCC TM 61, Test 3A (3 cycles).

4.4.4 Chalking test. The buttons shall meet the requirements stated in 3.3.7 when tested for chalking by immersion in a boiling solution of 0.8 percent by weight sulfuric acid for 10 minutes, immediately thereafter dried and examined by holding the button at arm's length under a strong white light.

4.4.5 Compressive strength test. The buttons shall meet the requirements stated in 3.3.7 when tested for compressive strength using an apparatus which permits gradual application of the load either by a manual or automatic hydraulic mechanism. Buttons shall be placed face down one at a time between flat blocks of steel, and tested to failure. Failure is defined as the first sign of a crack in the button visible to the naked eye (a visible crack in the button will usually be found at the first audible sound of cracking).

4.4.6 Button pull test. The buttons attached to the coat shall meet the requirements stated in 3.3.7 when tested according to ASTM D-5034, except slide button on top of 1 inch wide grips separated at least 3/8 inch so that button loosely rests evenly on top of grips. Use manually adjusted grips only, not pneumatic. Place button attachment stitching in middle of bottom grips and adjust an additional 3/8 inch

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down so that grips grab fabric just below stitching, not on the stitching. Run tensile machine per test method and record force required to pull button from sewn garment.

4.4.7 Toxicity assesment. The contractor must furnish information which certifies that the finished product is composed of materials which have been safely used commercially or provide sufficient toxicity data to show compatibility with prolonged, direct skin contact. At a minimum, toxicity data should include results from a primary dermal irritation study in laboratory animals (see 2.2.2) and a repeated insult human patch test (Modified Draize Procedure) (see 2.3). The latter must be conducted under the supervision of a qualified dermatologist using at least 100 free living individuals.

4.4.8 Gas chromatographic test method for types IX, X, XI, and XII only. (See 3.3.5)

4.4.8.1 Gas chromatograph. The gas chromatograph shall be equipped with an electron capture detector and a GC septurn. The gas tank shall contain an argon/methane (95%/5%) mixture and be equipped with an appropriate gas regulator. The glass column shall be 6 feet by 1/8 inch inside diameter. The column packing shall be 3.0 percent OV-225 on 10/120 mesh Gas Chrom Q (or equivalent).

4.4.8.2 Supplies. The following supplies are needed to perform the test method:
10 microliter syringe; analytical balance; electrical heater with variable control; heat resistant 250 ml glass flask with a flat bottom, and single neck; Soxhlet extractor; extractor condenser; 50 ml volumetric flask; graduated cylinder; funnel; pipettes; and boiling chips.

4.4.8.3 Reagents. The permethrin shall consist of 40 percent permethrin (weight/weight) technical grade with a minimum of 35 percent (+) cis and a maximum 65 percent (+) trans isomers. The mixture shall be of 80 percent 190 UV cutoff reagent grade acetonitrile and 20 percent reagent grade methanol (volume/volume).

4.4.8.4 Preparation

4.4.8.4.1 Stock solution. Prepare a stock solution by weighing 1.000g permethrin solution (see 4.4.8.3) to the nearest 1 mg into a 1000 ml volumetric flask and dilute to volume with acetonitrile/methanol (80/20) solution (see 4.4.8.3). The stock solution shall then contain 400mg permethrin with a final concentration of 0.4 mg/ml.

4.4.8.4.2 Standard preparation. Place 1 ml of the stock solution into a 100 ml volumetric flask and dilute to volume with acetonitrile/methanol (80/20) (see 4.4.8.3). One microliters (µl) of this standard shall then contain 4 nanograms(ng) of permethrin. This amount is within the linear portion of the permethrin concentration x peak area standard curve performed under the gas chromatographic procedure described in 4.4.8.4.3 (the curve is linear from 0-10 ng permethrin).

4.4.8.4.3 Standard Injection. Inject 1µl of the standard solution into a gas chromatograph equipped with an electron capture detector. Use the argon/methane (95percent/5percent) (see 4.4.8.1) carrier gas and the 10 meter OV-225 glass capillary column (see 4.4.8.1). The following gas chromatographic settings shall be used in the analysis:

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a. Oven temperature – 230°C
b. Injector temperature – 275°C
c. Detector temperature – 275°C
d. Injection volume - 1µl
e. Carrier gas flow rate – 1ml/minute
f. Column head pressure – 4 p.s.i.
g. Run time – 15 minutes
h. Split ratio 1:1
i. Purge – Off initially, On 0.5 min, flow rate 1.0 ml/minute

Repeat the standard injection three times and determine the average area for permethrin.

4.4.8.5 Test specimen. Three specimens (1 inch by 3 inches) shall be cut from the permethrin treated material. The mass of the specimens shall be recorded to the nearest milligram.

4.4.8.6 Number of determinations. Unless otherwise specified in the procurement document, three specimens for each sample shall be tested.

4.4.8.7 Test procedure. Place each specimen into cellulose Soxhlet extraction thimble. Add 160ml of the acetonitrile/methanol mixture and several boiling chips into a 250 ml heat resistant glass flask. Assemble the Soxhlet extraction apparatus and extract the permethrin impregnated specimens for 6 hours. after 6 hours of extraction, concentrate the extract by rotoevaporation at 35°C to a final volume of less than 10 ml and pour the resulting solution into the 10 ml volumetric flask and fill to volume with the acetonitrile/methanol solution. Inject 1µl of the extract into the gas chromatograph using the conditions outlined in 4.4.8.4.3.

4.4.8.8 Calculations. The mg permethrin/cm^2 shall be calculated from the peak area of the gas chromatographic curve as follows:

$$\text{mg Permethrin/cm}^2 = \frac{W_s \times A_t \times V_e}{V_s \times A_s \times A_m}$$

Where

W_s = weight of injected standard in mg
A_t = peak area of test specimen
V_e = volume of specimen
A_s = peak area of standard
A_m = test specimen area in cm^2

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4.4.8.9 Report. The mg permethrin/cm^2 shall be reported as the mean of the values obtained for the sample and reported to the nearest 0.001 mg. The individual values of each specimen used to calculate the mean shall be reported to the nearest 0.001 mg.

NOTE: The conditions described in this method are optimum for the gas chromatograph employed. These conditions may vary depending on the gas chromatograph used. The carrier gas flow rate shall be adjusted so that the elution of the first permethrin isomer is greater than 5 minutes.

4.4.9 End item visual examination. The coat shall be examined for the defects listed below.

EXAMINATION	DEFECT
Material and workmanship	Component part omitted, distorted, full, tight, or twisted; any part of coat caught in any unrelated stitching, the edge of any component part required to be forced out having folds of more than 1/8 inch Hole, cut, tear, smash, burn, drill hole, run, thin place, dye streak, color not as specified, misweave, knot or slub affecting appearance or serviceability Seam: puckered, distorted, pleated, wavy, twisted, irregular or open, loose or tight stitch tension, broken or missing thread or stitch, needle chew, visible mend, edge or raised stitching sewn too close to edge, resulting in damage to cloth, seam allowance not as specified, raw edge affecting appearance or serviceability Length of fronts uneven by more than 1/4 inch at top or uneven by more than 1/4 inch at bottom when buttoned, front buttons and buttonholes out of alignment, causing bulge or twist on fronts when buttoned Permanent fold, pleat, or crease affecting appearance or serviceability Front pockets and flaps: not uniform in size or shape, out of alignment by more than 3/8 inch, front edge not parallel to front edge of coat by 3/8 inch or more, pleated, twisted, curled or puckered, not stitched as specified, flap not completely covering pocket opening, bellows exposed beyond edge of pockets more than 1/8 inch, tab shows beyond the flap, tab is caught in edge stitching at bottom of flap, buttons and buttonholes out of alignment, causing bulge or twist on pockets when buttoned Collar points uneven in length by 1/4 inch or more, collar curls, puckers, pleats, or twists Buttonholes and eyelets omitted, added, not clean cut or securely caught in fabric, not specified type Buttons missing, broken, defective, not attached as specified, or insecurely sewn Bartacks or backtacks missing, insecure, misplaced, not specified size, stitches loose or broken, or not serving intended purpose

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Material and workmanship	Sleeve reversed, puckered or pleated; cuffs reversed, uneven in width more than 1/4 inch, poorly shaped, buttons not placed as specified, cuff buttonhole and first sleeve button not aligned, causing bulge or twist on cuff when buttoned
	Interlining bubbling, delamination, bleed through, wrinkling, or puckering
	Any finished measurement not as specified
Shade	Shade variation within a part or between parts
	Thread or button color not as specified
Cleanness	Spot, stain, excessive thread ends not trimmed or removed
	Odor, affecting appearance or serviceability
Labels	Omitted, incorrect, illegible, not attached where specified
	Bar-code/UPC code omitted, not readable by scanner; human-readable interpretation (HRI) omitted or illegible
	Bar code/UPC code not visible on folded, packaged item, bar code attachment causes damage to the item
Packaging	Any coats not packaged in accordance with contract or purchase order

4.4.9.1 Finished dimensions. The coat shall conform to the dimensions listed in inches below:

Size	XXX-Short	XX-Short	X-Short	Short	Regular	Long	X-Long	XX-Long
Half chest, + 3/4 in								
X-Small		20-1/4	20-1/4	20-1/4	20-1/4	20-1/4		
Small	22-1/4	22-1/4	22-1/4	22-1/4	22-1/4	22-1/4	22-1/4	
Medium		24-1/4	24-1/4	24-1/4	24-1/4	24-1/4	24-1/4	
Large			26-1/4	26-1/4	26-1/4	26-1/4	26-1/4	26-1/4
X-Large					28-1/4	28-1/4	28-1/4	
XX-Large							30-1/4	
Back length, + 3/4 in								
X-Small		26-3/8	27-3/8	28-3/8	29-7/8	31-1/4		
Small	25-3/8	26-7/8	27-7/8	28-7/8	30-3/8	31-3/4	33-1/8	
Medium		27-3/8	28-3/8	29-3/8	30-7/8	32-1/4	33-5/8	
Large			28-7/8	29-7/8	31-3/8	32-3/4	34-1/8	35-1/2
X-Large					31-7/8	33-1/4	34-5/8	
XX-Large							35-1/8	
Sleeve length, +3/4in								
X-Small		21-1/4	22-1/4	23-1/4	24-1/4	25-1/4		
Small	20-3/4	21-3/4	22-3/4	23-3/4	24-3/4	25-3/4	26-3/4	
Medium		22-1/4	23-1/4	24-1/4	25-1/4	26-1/4	27-1/4	
Large			23-3/4	24-3/4	25-3/4	26-3/4	27-3/4	28-3/4
X-Large					26-1/4	27-1/4	28-1/4	
XX-Large							28-3/4	

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Size	XXX-Short	XX-Short	X-Short	Short	Regular	Long	X-Long	XX-Long
Collar - Type I, VI & VIII , ± 1/8 in	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2
Collar - Type VII, ± 1/8 in.	4	4	4	4	4	4	4	4

Method of measuring. The coat shall be placed flat upon a table and measured as follows:
Half Chest-With coat buttoned, measure from folded edge to folded edge across coat chest in line with pit of armhole.
Back Length-Along center back measure from undercollar seam to bottom edge of coat.
Sleeve Length-Fold sleeve along underarm seam, measure along folded edge of the top sleeve from shoulder seam to the bottom of the sleeve cuff.
Collar-Measure from collar seam along edge of collar to collar point.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or purchase order (see 6.2). When actual packaging of material 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's packaging activity 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.

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 coats are for wear by military personnel of the Department of Defense as an outer garment in garrison, combat, and operations other than war: Type I and IX in temperate foliated areas, type VI and X in hot humid foliated areas, type VII and XI in desert areas, and type VIII and XII where required.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number and date of this document.
b. Types, classes and sizes required (see 1.2).
c. Issue of DODISS to be cited in the solicitation and, if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).
d. When first article sample is required (see 3.1, 4.2 and 6.3).
e. Packaging requirements (see 5.1).

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6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209-4. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should include specific instructions in all acquisitions documents regarding arrangements for selection, inspection, and approval of the first article.

6.4 International standardization agreement. Certain provisions of this document are the subject of international standardization agreement as cited in NATO, STANAG, No. 2333. When amendment, revision, or cancellation of this document is proposed that will modify the international agreement concerned, the preparing activity will take appropriate action through international standardization channels, including departmental standardization offices, to change the agreement or make other appropriate accommodations.

6.5 Supersession data. The type II desert camouflage pattern (6 color), cotton/nylon twill coat, type III woodland camouflage pattern, ripstop cotton coat, type IV desert camouflage pattern (3 color), cotton/nylon twill coat, and type V desert camouflage pattern (3 color), cotton poplin coat have been deleted since they are no longer required.

6.6 Subject term (key word) listing.

Battle dress uniform
Clothing
Desert
Tropical
Utility
Woodland

MILITARY INTERESTS:

Custodians:
Army - GL
Navy - NU
Air Force - 99

Preparing activity:
DLA - CT

Review activities:
Army - MD
Navy - MC
Air Force - 11.6, 11.5

Project No. 8415-0165

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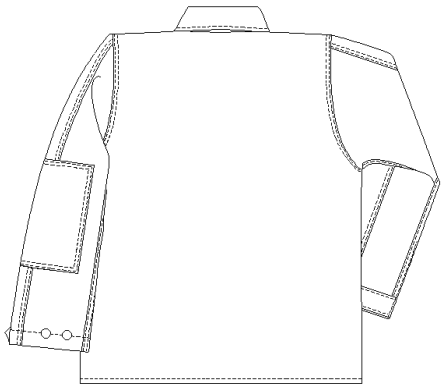
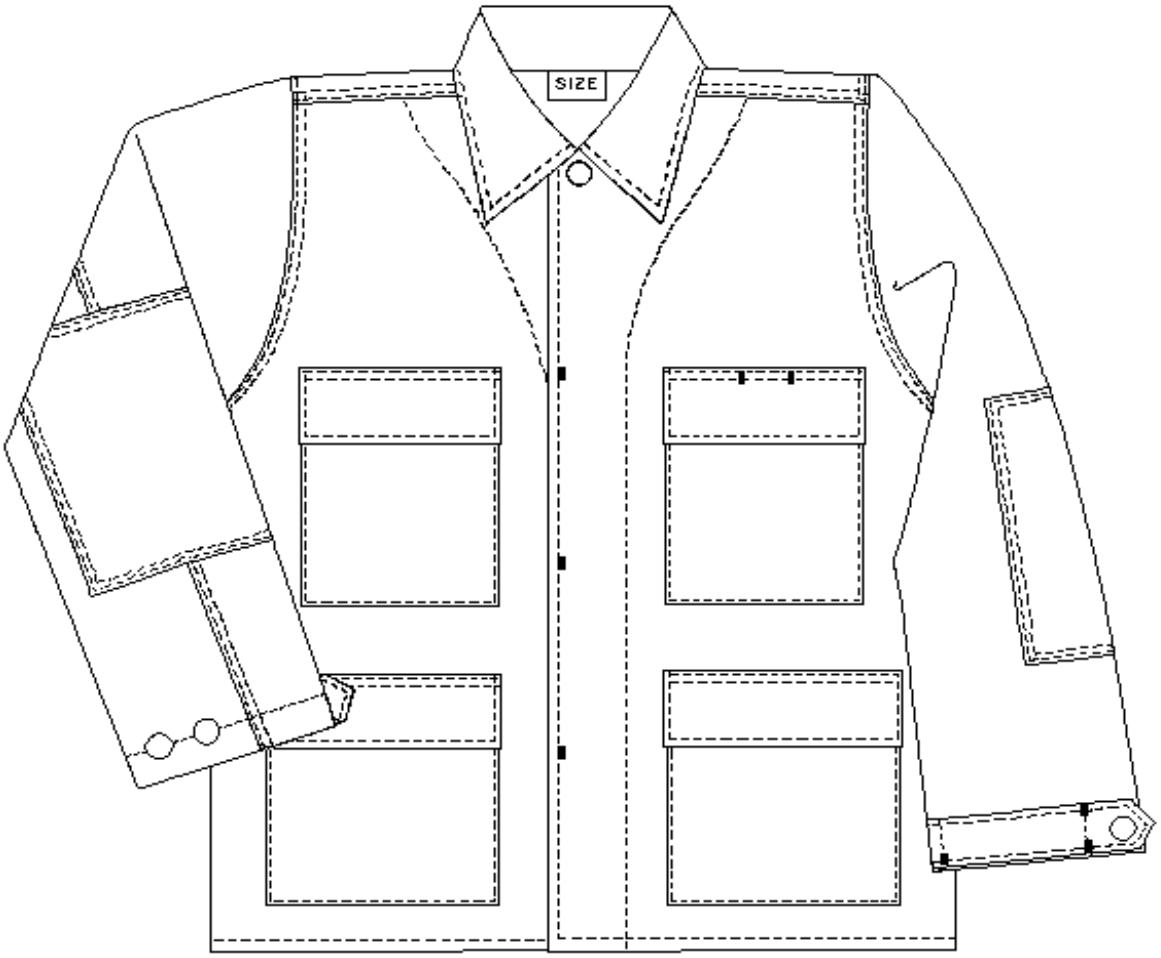


Back View



Front View

Figure 1.
Coat, Camouflage Pattern, Combat

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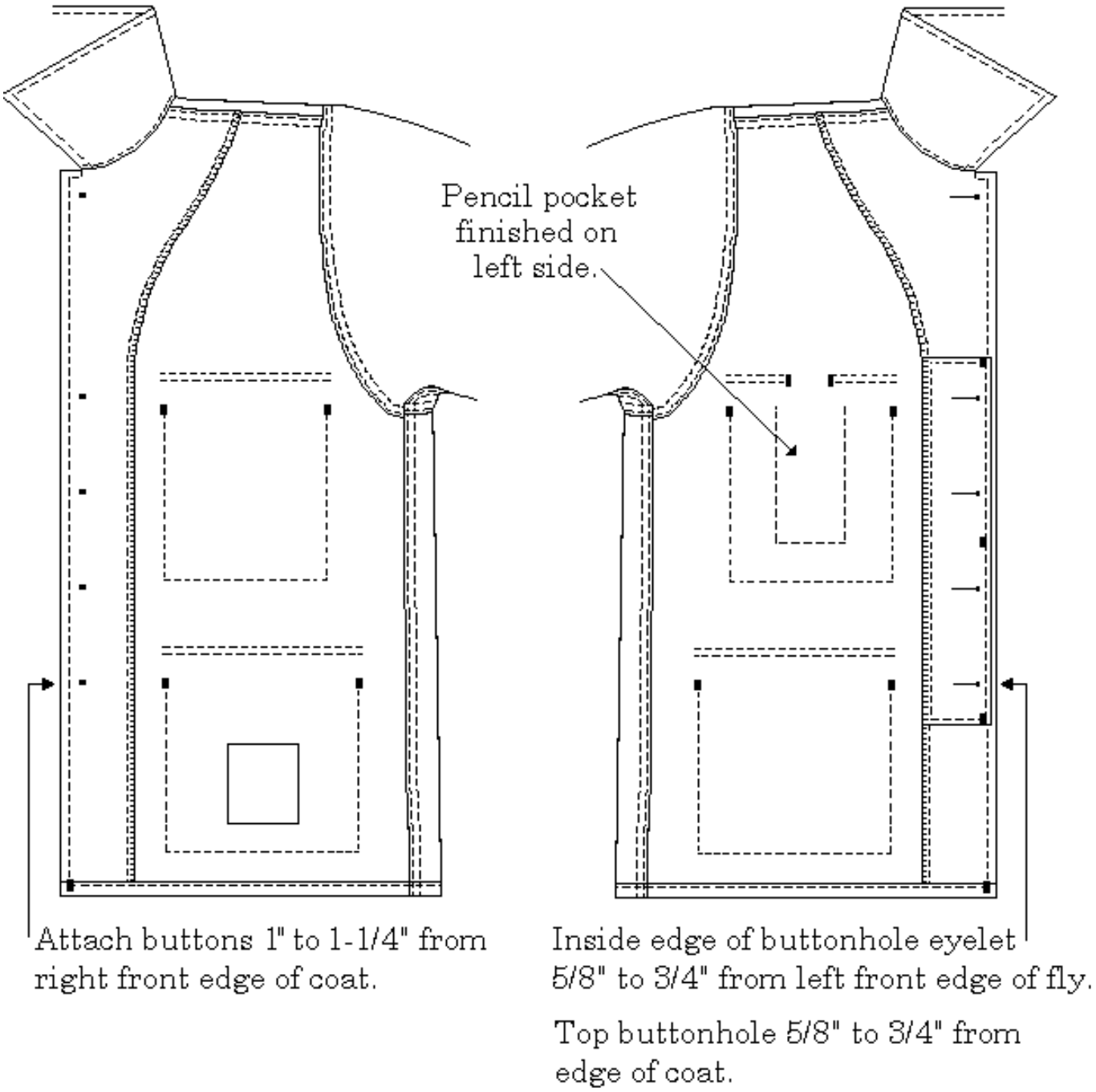

Figure 2.
Right and left front facings, inside view

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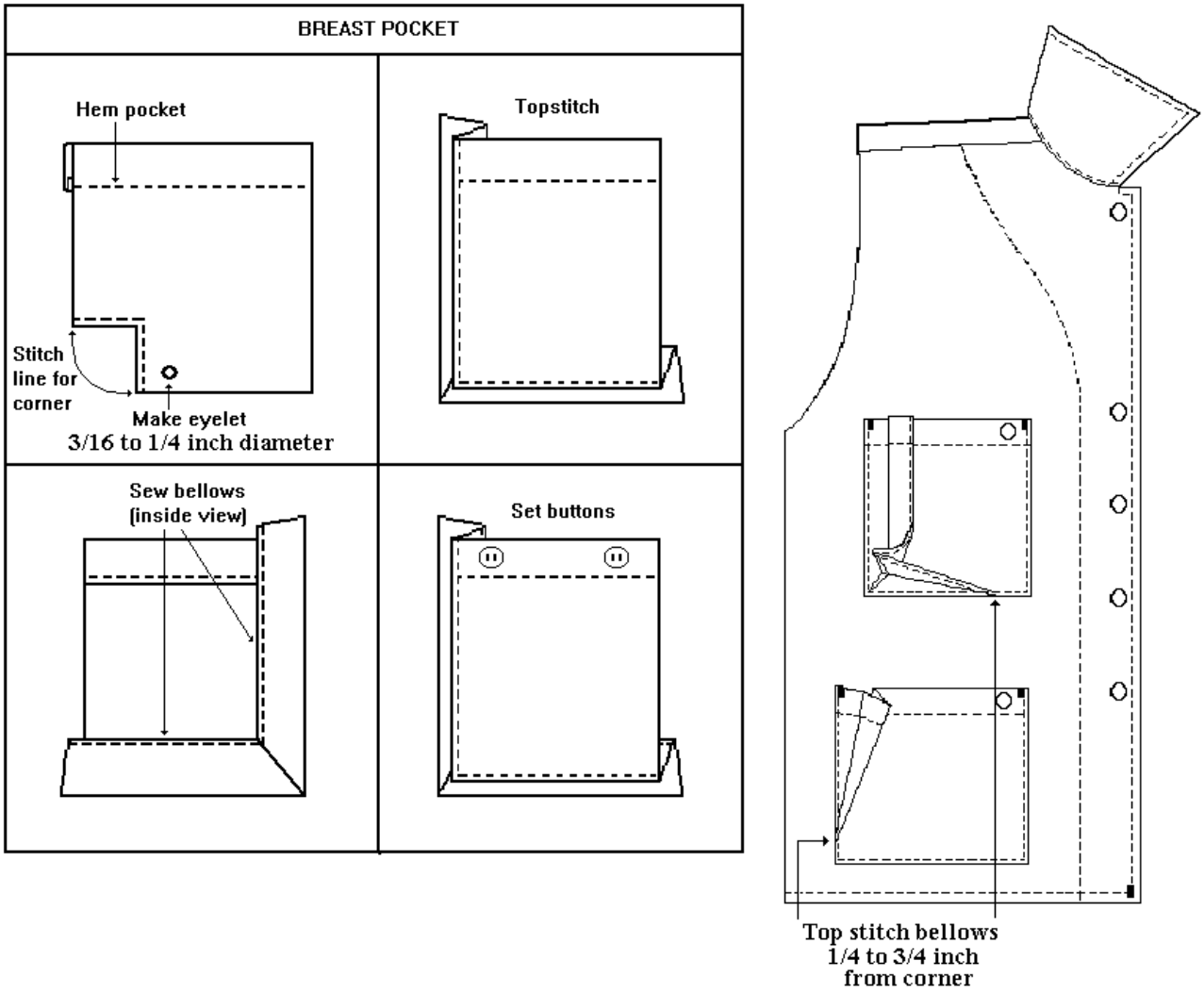

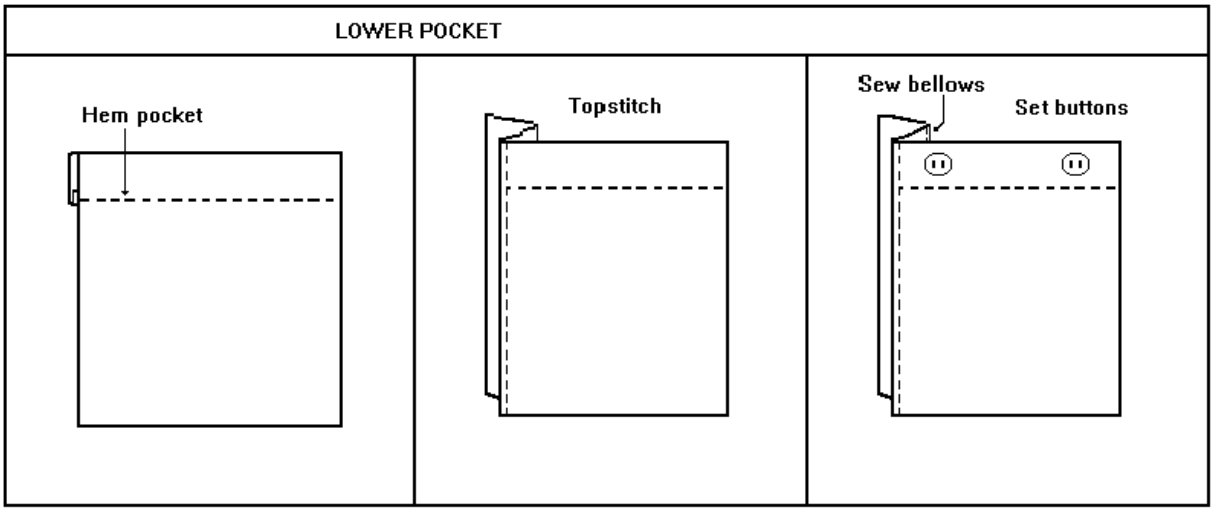

FIGURE 3.
Pocket construction

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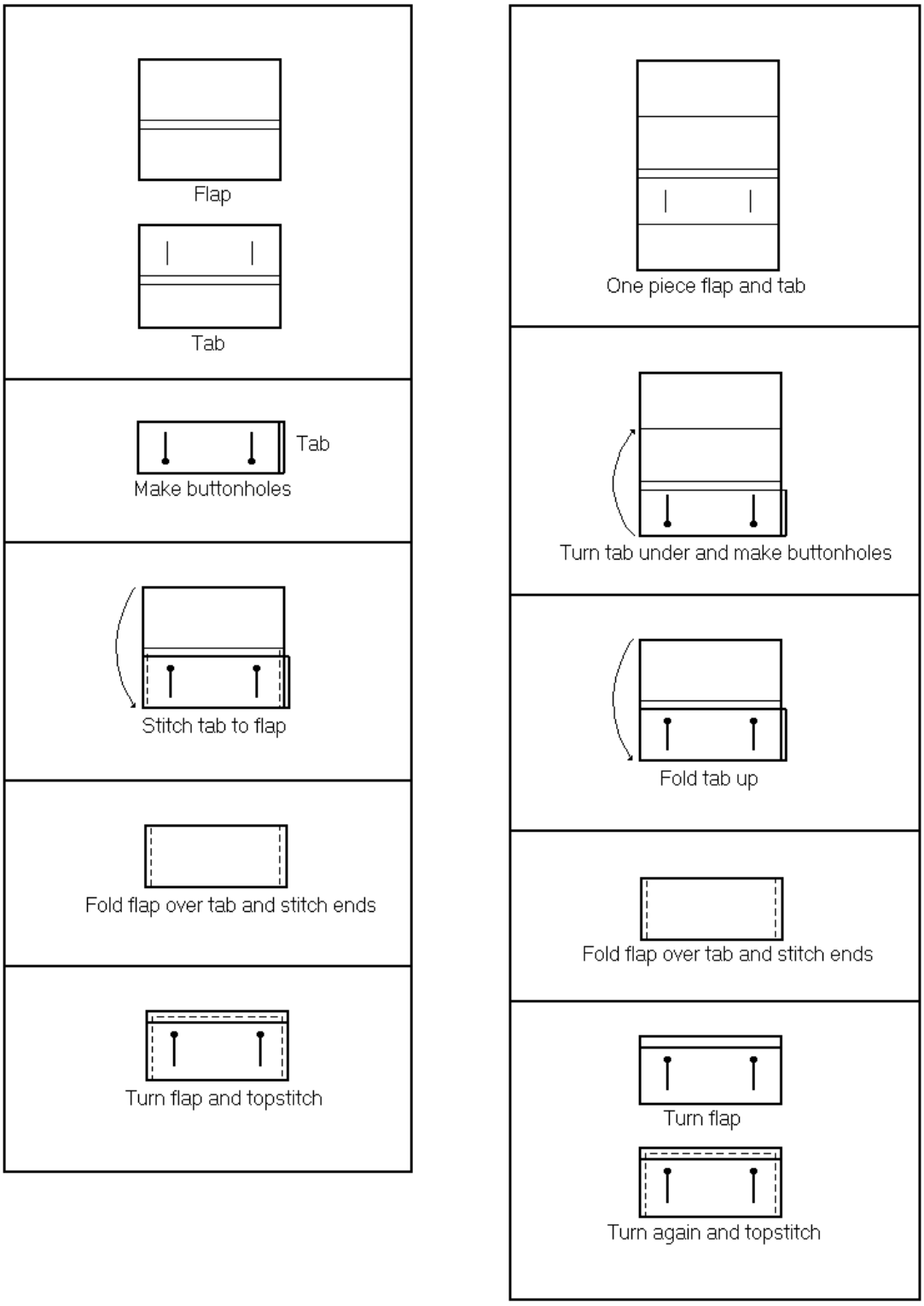

Inside of buttonhole eyelet shall finish 3/8 to 1/2 inch from folded edge of tab.

FIGURE 4. Pocket flap construction.

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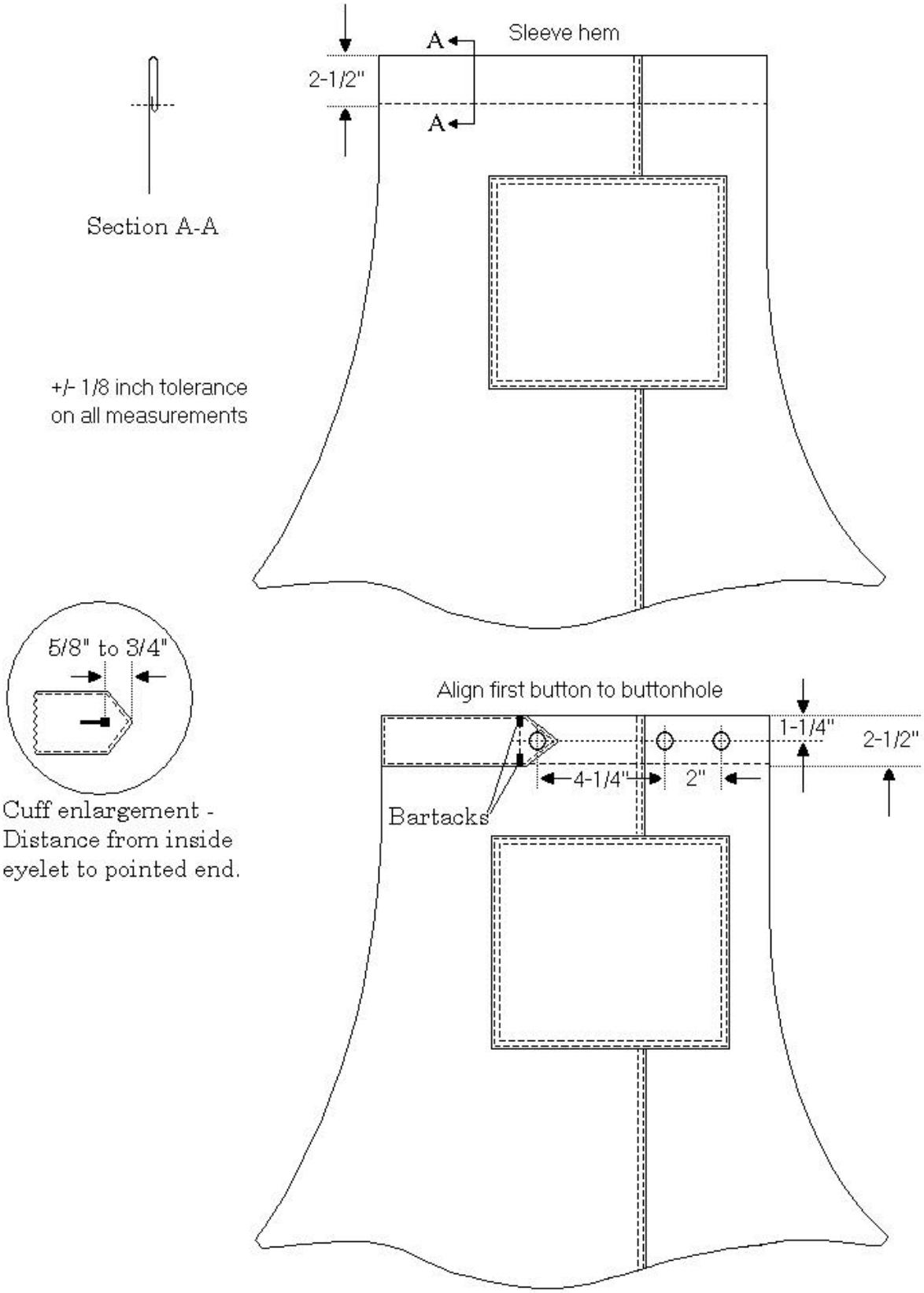

FIGURE 5. Alternate sleeve and cuff construction

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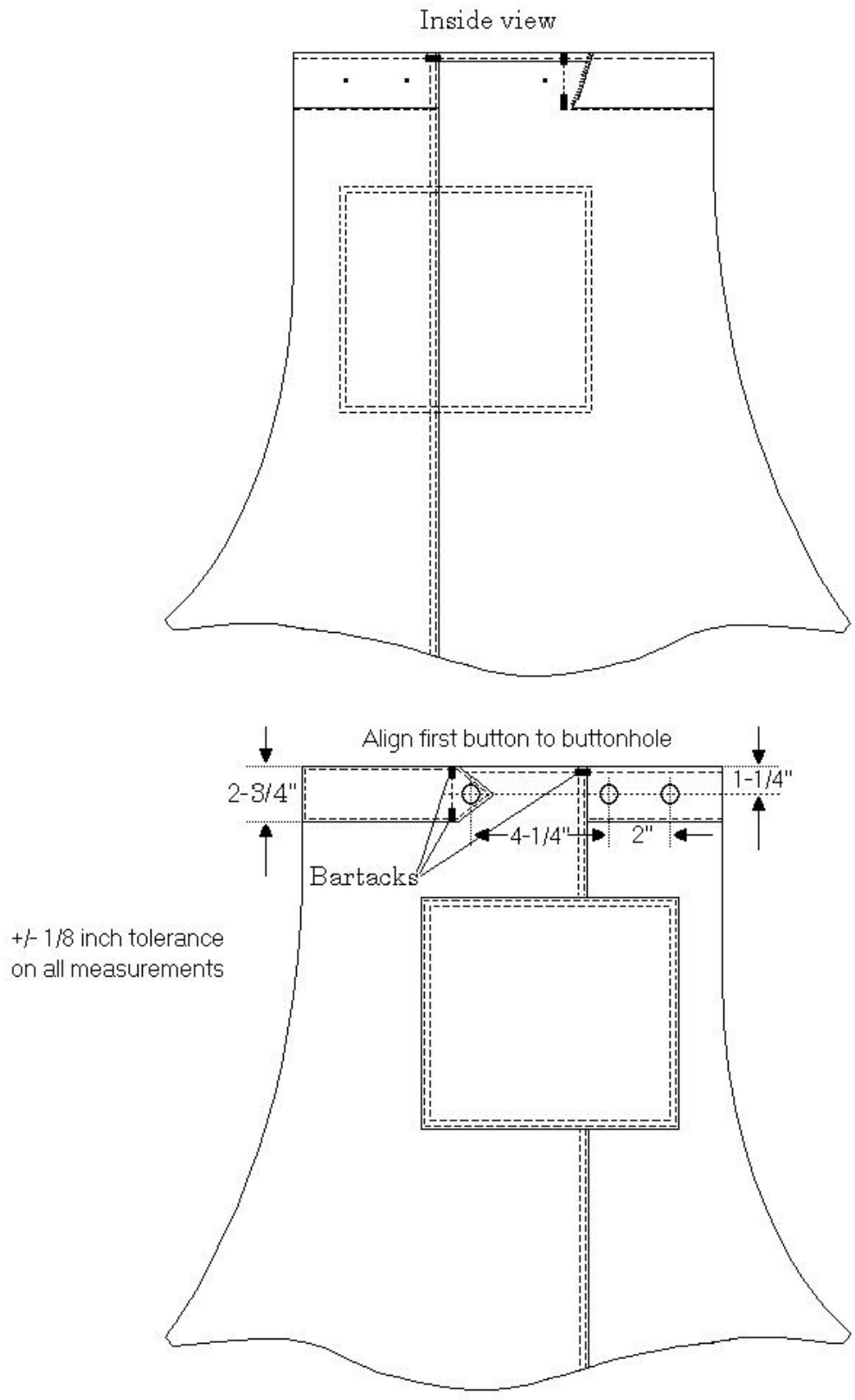

FIGURE 6. Standard sleeve and cuff construction

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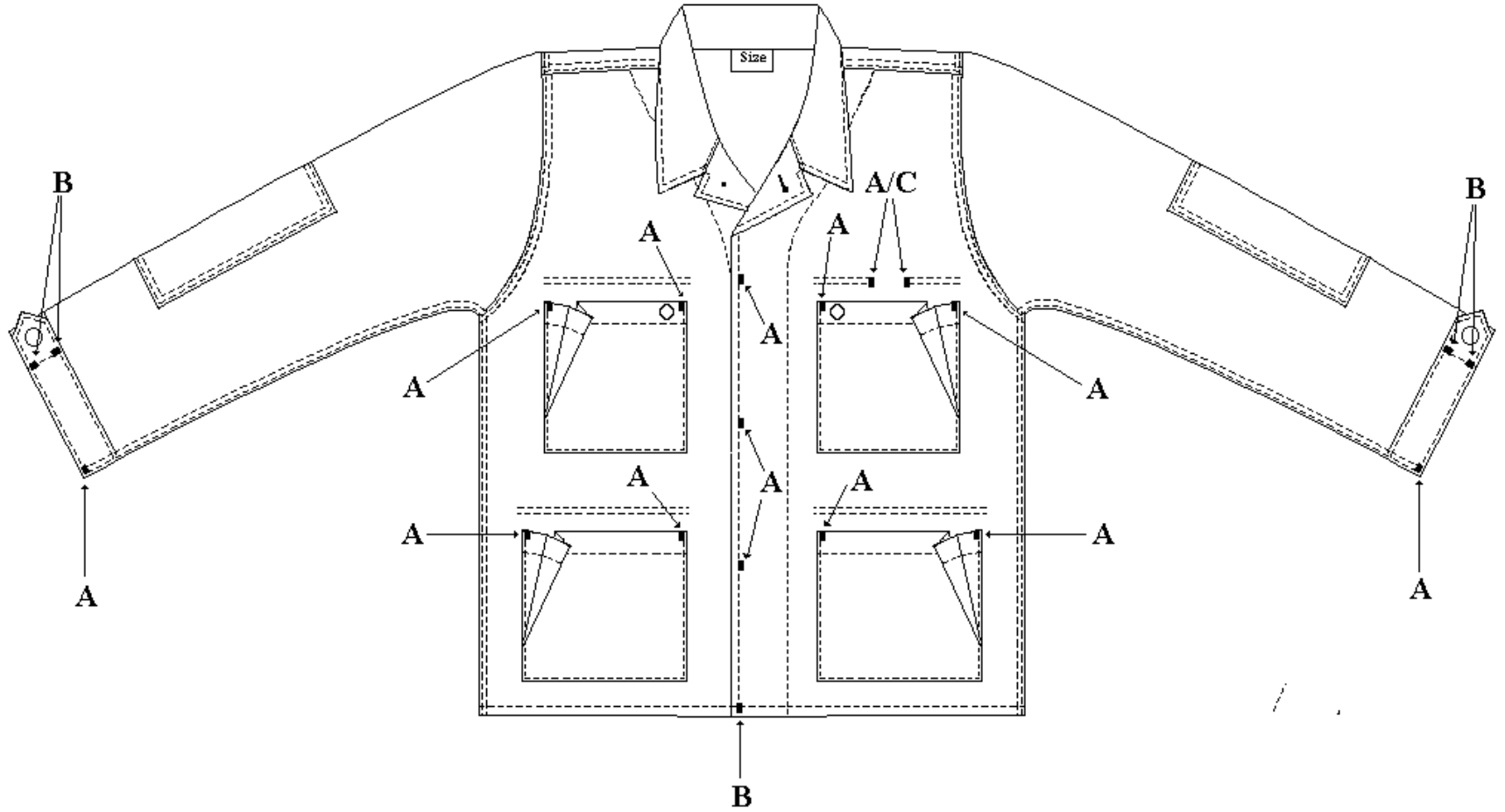

KEY

A - BARTACK
B - BARTACK OR BACKTACK
A/C – PENCIL POCKET OPENING 1-1/4 TO 1-1/2 INCHES

FIGURE 7. Bartack placement

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INSTRUCTIONS

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3. DOCUMENT TITLE
COATS, CAMOUFLAGE PATTERN, COMBAT

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6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
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8. PREPARING ACTIVITY

NAME Defense Supply Center Philadelphia ATTN: DSCP-CRFD (BLDG 6, AREA D)	b. TELEPHONE *Include Area Code)* (1) Commercial 215 737 7956 (2) AUTOVON 444 7956
c. ADDRESS *(Include Zip Code)* 700 Robbins Ave Philadelphia, PA 19111- 5096	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** Defense Standardization Program Office (DLSC-LM) 8725 John J. Kingman road, Suite 2533 Ft. Belvoir, VA 22060-2533 Telephone (703) 767-6888 AUTOVON 427-6888

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