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AVIS

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**MANUFACTURING DATA
FOR
PARKA, EXTREME COLD WEATHER, MULTICAM®**

1.0 SCOPE

1.1 Scope

This Manufacturing Data covers the materials, design, construction and inspection requirements for the Parka, Extreme Cold Weather, MULTICAM® for use by the Canadian Special Operations Forces Command (CANSOFCOM).

1.2 Intended Use

The Parka, Extreme Cold Weather, MULTICAM® is worn with the Overalls, Extreme Cold Weather, MULTICAM®.

1.3 Classification

The Parkas covered by this Manufacturing Data will be supplied in one (1) of the following types as specified in the Contract:

- (a) Type I - Parka, Extreme Cold Weather, MULTICAM®, Cloth, Nylon/Cotton, MULTICAM®, Oil and Water Repellent Treated; and
- (b) Type II - Parka, Extreme Cold Weather, MULTICAM®, Cloth, Knit, Jersey, Aramid/FR Viscose, MULTICAM®, Water Repellent Treated.

2.0 GENERAL

2.1 Intellectual Property

The information, data, know-how, formulas, algorithms, software, processes, systems, methods, designs, text, works, figures, tables, sketches, photographs, plans, drawings, specifications, samples, reports, names, inventions and/or ideas contained herein (hereinafter "Intellectual Property") is the exclusive property of Her Majesty The Queen in Right of Canada as represented by the Minister of National Defence (hereinafter referred as "DND"). No one has the right to reproduce, disclose, disseminate, or utilize, in any manner or in any form, this Intellectual Property, or any part thereof, without the prior written consent of DND. For further information on the restrictions applicable to this Intellectual Property, or to request consent from DND, please contact the Contracting Authority.

2.2 Applicable Documents

The following documents form part of this Manufacturing Data to the extent specified, and are supportive of this Manufacturing Data when referenced; all other document references are to be considered supplemental information only. In the event of a conflict between the documents referenced and the contents of this Manufacturing Data, then the contents of this Manufacturing Data must take precedence:

DND Specifications and Standards (provided upon request)

- CF-B-854 Buttons, Nylon
- D-80-001-028/SF-001 Specification for Cord, Plaited, Spun, Synthetic Fibre
- D-80-001-055/SF-001 Specification for Label, Clothing and Equipment
- D-83-001-005/SF-001 Fastener, Slide, Interlocking
- D-LM-008-002/SF-001 Specification for Marking for Storage and Shipment

DND Drawings (provided upon request)

- 2811 Strap and Button Assembly, 45-Ligne
- 373118 Button, Nylon, Slotted, 30-Ligne
- 389556 Button, Bar, Plastic, 45-Ligne
- 8790166 Strap and Button Arrangement, 30-Ligne, Type I
- CS-149 Socket, Fastener
- CS-150 Studs, Fastener
- CS-151 Eyelet, Fastener
- CS-153 Button, Fastener

CAN/CGSB Standards (email: ncr.cgsb-ongc@pwgsc.gc.ca)

- CAN/CGSB-4.2-M Textile Text Methods
- CAN/CGSB-4.131-M Cotton-Covered or Polyester-Covered, Polyester Thread
- CAN/CGSB-4.139 Polyester Staple Thread
- CAN/CGSB-54.1-M Stitches and Seams, Parts I and II
- CAN/CGSB-86.1-2003 Care Labelling of Textiles
- 4-GP-80Ma Cotton Thread
- 4-GP-85Ma Nylon Thread

American Society for the Testing of Materials (www.astm.org)

- D 5736 Standard Test Method for Thickness of Highloft Nonwoven Fabrics
- D 6242 Standard Test Method for Mass Unit Area of Nonwoven Fabrics

International Standards Organization (ISO) (www.iso.org)

- ISO 11092 Textiles - Physiological Effects - Measurement of Thermal and Water Vapour Resistance Under Steady-State Conditions (Sweating Guarded Hot-Plate Test)

FED Standards (Download Documents: <http://assist.daps.dla.mil/quicksearch/>)

- FED-STD-595C - Colors Used in Government Procurement
- A-A-55126B Commercial Item Description - Fastener Tapes, Hook and Loop, Synthetic

Federal Aviation Administration: (www.faa.gov)

- Federal Aviation Regulations (FAR) Part 25 - Airworthiness Standards Transport Category Airplanes: Subpart D - Design and Construction (Fire Protection: 25.853 Compartment Interiors)

U.S. Department of Transportation (www.transportation.gov)

- Code of Federal Regulation (CFR) Part 517 (Federal Motor Vehicle Safety Standards) 571.302 - Flammability of Interior Materials

2.2.1 Order of Precedence

The order of preference is as follows:

- (a) In the event of inconsistency between contract documents, such as contract, Manufacturing Data, drawing and sealed pattern, the order of precedence shall be contract, Manufacturing Data, drawing and sealed patterns;
- (b) In the event of a conflict between the text of this manufacturing data and the references cited herein, the text of this manufacturing data must take precedence;
- (c) In the event of inconsistency within this manufacturing data, the Contracting Authority must be contacted for clarification; and
- (d) Nothing in this document supersedes applicable laws and regulations, unless a specific exemption has been obtained.

2.3 Material Standards

The following material standards are supplemental to this standard:

- (a) Specification for Cloth, Nylon/Cotton, MULTICAM®, Oil and Water Repellent Treated;
- (b) Specification for Cloth, Twill, Aramid/FR Viscose, MULTICAM® Oil and Water Repellent Treated;
- (c) Specification for Waterproof Moisture Vapour Permeable (WMVP) Barrier Fabric;
- (d) Specification for Cloth, Taffeta, Nylon;
- (e) Specification for Cloth, Plain Weave, Nylon; and
- (f) Specification for Cloth, Melton, Wool.

2.4 Definitions

Earth Tone	By definition, earth tone is considered a color scheme that draws from a color palette of browns, tans, grays, greens, oranges, whites and some reds. The colors in an earth tone scheme are muted and flat in an emulation of the natural colors found in soils, moss, trees and rocks. For the purpose of this specification, the earth tone color (where specified) must be based on the predominantly brown, tan and gray color series (lusterless) within FED STD-595C, where those colors do not include any
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	elements of orange, red and white.
Hook and Loop Fastener	A fastening consisting of two strips of nylon fabric, one having hooked threads and the other a coarse surface, that form a strong bond when pressed together, trademarked under the name VELCRO®.
MULTICAM®	A proprietary design for a computer generated digital camouflage pattern patented by Crye Precision Ltd.
Slide Fastener	A fastener for locking together two toothed edges by means of a sliding tab, commonly referred to as a zipper.

2.5 Layout Sketches

Schematic layout sketches for the Parkas are included as part of this Annex. The sketches are designed to provide a general layout of the Parkas only. They are not to scale and are not representative of the style, fit, colour scheme or form of the final garment. The following sketches are included in Appendix 1:

- (a) Figure 1 - Front and Back View;
- (b) Figure 2 - Garment Components - Dimensions;
- (c) Figure 3 - Chest Pocket Systems;
- (d) Figure 4 - Lower Pocket System;
- (e) Figure 5 - Parka, Inside View - Retaining Tabs;
- (f) Figure 6 - Liner - Front and Back View;
- (g) Figure 7 - Lining Details;
- (h) Figure 8 - Fly Front System;
- (i) Figure 9 - Hood - Outside View;
- (j) Figure 10 - Hood - Inside View; and
- (k) Figure 11 - Care and Marking Label for Parka, Liner and Hood.

2.6 Patterns

DND will provide patterns as follows:

- (a) Sealed pattern: CANSOFCOM - Parka, Extreme Cold Weather, MULTICAM® (Sealed for construction and design only); and
- (b) Paper patterns - DSSPM paper patterns for all sizes under Style Code PECWIA30 - Parka, Extreme Cold Weather, Improved, CADPAT™ (TW), Integrated Clothing Ensemble (ICE). Size 7040 (Regular/Medium) will be used for tendering purposes.

Note: The paper patterns for the Parka, Extreme Cold Weather, Improved, CADPAT™ (TW), Integrated Clothing Ensemble (ICE) are to be used for the construction of the Parka, Extreme Cold Weather, MULTICAM®. The paper patterns have the following deviations:

- The strap for the rank slip-on on the front of the jacket has been deleted and replaced by a loop fastener patch;
- The ear defender retaining tabs in the cargo pockets have been deleted;
- The magazine pouches in the cargo pockets have been deleted;
- The carrying pouch has been deleted;
- The carrying strap has been deleted;
- The functional opening on the chest patch pocket must be 17.78 cm (7 in) to accommodate an insulated gloved hand; and
- The functional opening on the handwarmer pocket must be 17.78 cm (7 in) to accommodate an insulated gloved hand.

3.0 **REQUIREMENTS**

3.1 Design

The design must be in accordance with Sealed Patterns and must incorporate the following features:

Loose fitting;

- (a) Loose fitting;
- (b) Front closure with slide fastener and covered buttoning fly system;
- (c) Two (2) piece sleeves with elbow patches and band cuff finish;
- (d) Loop fastener tape on outside front fly for placement of rank patch;
- (e) Chest pocket systems including cargo pocket, patch pocket and pencil pocket;
- (f) Cargo pockets with hand warmer pockets;
- (g) Knit collar and storm cuff;
- (h) Shoulder tab on left sleeve for detachable Canadian flag;
- (i) Draw cords in waist and hem;
- (j) Detachable hood with face storm shield;
- (k) Interlining of a waterproof, moisture vapour permeable membrane; and
- (l) Fully lined with removable quilted lining.

Note: Unless otherwise specified, these garments must be governed by the Scale of Measurements at Appendix 2.

3.2 Materials

The following applies:

- (a) Shell Material - The following applies:
 - i. The shell material for Type I must be Cloth, Nylon/Cotton, MULTICAM®, Oil and Water Repellent Treated; and

- ii. The shell material for Type II must be Cloth, Knit, Jersey, Aramid/FR Viscose, MULTICAM®, Water Repellent Treated;
- (b) Barrier Layer - The barrier layer material must be Waterproof Moisture Vapour Permeable (WMVP) Barrier Fabric;
- (c) Lining Material - Taffeta - The lining material must be Cloth, Taffeta, Nylon;
- (d) Lining Material - Nylon - The lining material used for pocket linings and the binding for the hand warmer pockets must be Cloth, Plain Weave, Nylon;
- (e) Handwarmer Fleece - The handwarmer fleece fabric must:
 - i. Be commercially available fleece knitted from 100% filament polyester yarns, the cloth double faced, veloured and sheared;
 - ii. Have a maximum mass of 275 g/m²
 - iii. Have a maximum thickness of 6.3 mm (0.25 in) and minimum thickness of 5.8 mm (0.23 in) when measured under 0.03 kPa pressure according to CAN/CGSB-4.2 Method 37;
 - iv. Have a maximum dimensional change of 7% in the warp direction and 5% in the weft direction, with the total shrinkage for both directions not to exceed 10%, when laundered according to the conditions prescribed for the garment; and
 - v. Be a non-florescent earth-tone colour;
- (f) Melton Material - The Melton for the hood lining must be Cloth, Melton, Wool;
- (g) Insulation - The following applies:
 - i. The batting must be a commercially available product made from synthetic fibers, manufactured for use in outerwear garments meant to provide a high degree of cold weather protection;
 - ii. The integrity of the batting must be maintained through the normal service life of the garments, through wear and tear of motion, abrasion between layers of cloth, frequent stuff packing and unpacking, etc. No thin spots, lumping, clumping, curling, slipping, or changes in dimensional stability over time are allowed;
 - iii. There must be no fiber migration of the batting through the fabric;
 - iv. The batting and any accompanying scrim must:
 - a. Be launderable at high temperatures up to 70°C, in domestic machines, coin operated machines, commercial or field laundries; and
 - b. Be machine tumble dryable at high temperatures up to 75°C;
 - v. Any scrim, quilting, surface treatment, or other addition to the actual insulation batting must be compatible with the batting and must not degrade its performance;
 - vi. Any scrim, quilting, etc. required for the necessary performance of the batting when in the garment must be incorporated; and
 - vii. The batting must be in compliance with Table 1. Testing must be conducted on the batting alone, without any scrim or lining material attached;

Table 1: Requirements for Insulation

Property	Test Method	Requirement
Fiber Content – Batting	CAN/CGSB-4.2-M Test Method 14	100% polyester

Property	Test Method	Requirement
Fiber Content – Scrim (if applicable)	CAN/CGSB-4.2-M Test Method 14	100% polyester
Mass (g/m ²) – batting only	ASTM D 6242	Maximum: 170
Thickness (mm)	ASTM D 5736 (0.014 kPa pressure)	Maximum: 25
CLO (CLO/g/m ²)	ISO 11092 (dry)	Minimum: 0.02

Note: PRIMALOFT® Silver (133 g/m²) has been known to meet these requirements.

- (h) Tricot Material - The material used as some pocket bags must be commercially available porous nylon tricot, in accordance with Table 2;

Table 2: Technical requirements for Tricot Material

Description	100% dull nylon tricot, 2 bar knit	
Gauge	32	
Wales	40 per inch	Tolerance ± 3
Courses	41 per inch	Tolerance ± 2
Weight	85 g/m ²	Tolerance ± 5%
Colour	Non-Florescent Earthtone	

- (i) Knit Material - The knit material for the knitted collar and storm cuffs must be commercially available circular 1x1 rib knit, 100% worsted spun bi-component acrylic in accordance with Table 3:

Table 3: Technical requirements for Knit Material

Property	Test Method	Requirement
Construction	-	Circular 1x1 rib knit
Wales per inch	-	25 to 27
Courses per inch	-	14 to 16
Weight	-	9 to 11 oz. per yd
Colourfastness to light	CAN/CGSB-4.2-M Test Method 18.1	Minimum L5
Colourfastness to water	CAN/CGSB-4.2-M Test Method 20	No change in colour, no staining. Grey scale 5
Colourfastness to crocking	CAN/CGSB-4.2-M Test Method 22	Grey scale 5.
Colourfastness to perspiration	CAN/CGSB-4.2-M Test Method 23	No change in colour, no staining. Grey scale 5
Colourfastness to laundering	CAN/CGSB-4.2-M Test Method 19.1 Test No. 1	No change in colour, no staining. Grey scale 5
Colourfastness to dry cleaning	CAN/CGSB-4.2-M Test Method 29.1	No change in colour, no staining. Grey scale 5
Colour	-	Non-Florescent Earthtone

- (j) Hook and Loop Fastener Tape - The hook and loop fastener tape must:
 - i. Be Type II, Class 1 100% nylon in accordance with A-A-55126B;
 - ii. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern; and
 - iii. Available in the following widths (plain backed):
 - a. 18 mm (0.75 in);
 - b. 25 mm (1 in);
 - c. 38 mm (1.5 in); and
 - d. 50 mm (2 ins);
- (k) Sealing Tape - The sealing tape must be commercially available tape compatible with the Waterproof Moisture Vapour Permeable (WMVP) Barrier Fabric interlining material. The colour must match the barrier fabric;
- (l) Slide Fasteners - The slide fasteners must be as follows:
 - i. Front closure:
 - a. Be Class 4, Type 9 automatic locking slider with a long pull in accordance with D- 83-001-005/SF-001; and
 - b. Flame retardant treated, monofilament (coil) as follows:
 - 1. Compliant with the FAR Part 25, Subpart D, Section 25.853 Flammability Test requirements; and
 - 2. Compliant with the FMVSS 302 for burn rate;
 - ii. Handwarmer Pockets:
 - a. Be Class 3, Type 1 monofilament (coil) chain type with a regular pull; and
 - b. Have monofilament (coil) members, automatic lock sliders and 100% polyester tape with in accordance with D- 83-001-005/SF-001;
 - iii. Chest Pockets:
 - a. Be Class 3, Type 1 monofilament (coil) chain type with a bridge stop at the top and a regular pull; and
 - b. Have monofilament (coil) members, automatic lock sliders and 100% polyester tape with in accordance with D- 83-001-005/SF-001;
 - iv. Hood Attachment:
 - a. Be a separating Class 3, Type 4 moulded chain type with a wire swivel pull;
 - b. Have plastic interlocking members, automatic lock slider and 100% polyester tape with in accordance with D- 83-001-005/SF-001; and
 - c. Be interchangeable;
 - v. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
- (m) Herringbone Twill Tape - The herringbone twill tape for the reinforcement for snap fasteners (where required) must be:
 - i. Commercially available 100% polyester woven edge twill tape, herringbone weave;
 - ii. Width: 2.5 cm (1 in); and
 - iii. A non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
- (n) Webbing Tape - The webbing tape must be:
 - i. Commercially available webbing, 100% polypropylene with a tensile strength of 166 kg when tested in accordance with CAN/CGSB-4.2-M. Test Method 9.1; and
 - ii. A non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
- (o) Grosgrain Ribbon - The ribbon for the retainer tabs for the liner must be:

- i. Commercially available webbing, 100% nylon ribbon; and
- ii. A non-florescent earth tone colour to match the MULTICAM® camouflage pattern;

(p) Elastic Cord - The elastic cord must:

- i. Be commercially available elastic cord in accordance with Table 4;
- ii. Have the finished ends, minimum of 19.1 mm (0.75 in) in length), dipped in an acetate film to prevent ravelling; and
- iii. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;

Table 4: Technical requirements for Elastic Cord

Diameter	3.5 mm
Weight	23.7 m/kg
Sheath	16 carriers
Core	16 ends of 34's square cut rubber
Picks per centimetre	28.4
Stretch (%)	190% ±10%
Covered yarn	600D polyester

(q) Draw Cord - The draw cord for the hood, waist and slide fastener pulls must:

- i. Be Cord, Plaited, Spun Synthetic Fibre, Type I in accordance with D-80-001-028/SF-001; and
- ii. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;

(r) Drawcord Locks - The drawcord locks for the hood, waist and bottom hem must:

- i. Be commercially available, wheel type, self-locking, black acetyl; and
- ii. Have dimensions as follows:
 - a. Size: 4.8 mm (10.1875 in);
 - b. Length: 32 mm (1.25 in);
 - c. Width: 25 mm (1 in); and
 - d. Depth: 6.4 mm (0.25 in);

(s) Face Shield Wire - The wire used for the hood storm shield must:

- i. Be commercially available copper wire;
- ii. Diameter: 11-12 gauge;
- iii. Elongation: 15%;
- iv. Breaking Strength (minimum): 220 pounds; and
- v. Tensile Strength: 34,000 psi;

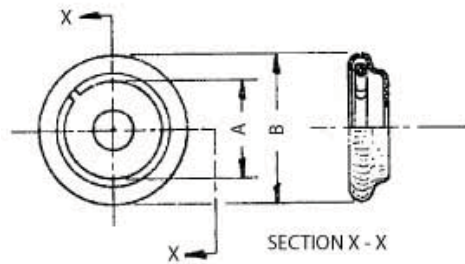
(t) Buttons - The buttons must:

- i. Be slotted nylon conforming to specification CF-B-854 and drawing 373118 (30-ligne) or 389556 (45-ligne); and
- ii. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;

Note: One (1) 30-ligne button and eleven (11) 45-ligne buttons are required for each parka.

(u) Snap Fasteners - Snap fasteners must be regular spring clamp type in brass with a black finish and a phosphor bronze spring as detailed in the following drawings:

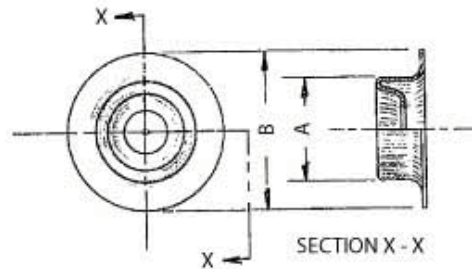
Drawing 1: CS-149 - Socket Fastener



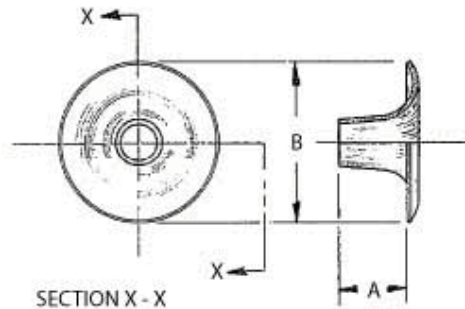
Inside diameter "A"	8.7 mm (0.3425 in)
Outside diameter "B"	14.3 mm 0.5625 in)

Drawing 2: CS-150 - Stud Fastener

Diameter "A"	9.5 mm (0.375 in)
Diameter "B"	14.3 mm 0.5625 in)

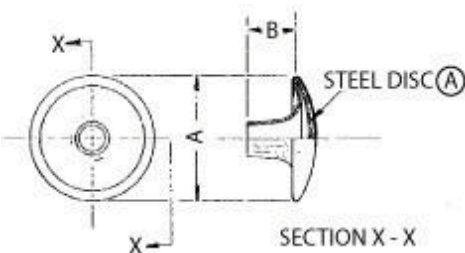


Drawing 3: CS-151 - Eyelet Fastener



Barrel Length Diameter "A"	6.3 mm (0.25 in)
Flange Diameter "B"	14.3 mm (0.5625 in)

Drawing 4: CS-153 - Button Fastener



Diameter "A"	Ligne	24
	Diameter	15.5 mm (0.609 in)
Diameter "B"	Barrel Length	4.4 mm (0.172 in)

(v) Thread - The following applies:

- i. The thread for flame retardant fabric components must:
 - a. Be aramid spun staple thread (R27 Tex) conforming to Type II of A-A-55217;
 - b. Be used for all sewing operations (seaming and serging) on the garments' sleeves, as well as all seams where a flame retardant fabric component is joined to a non-flame retardant fabric component (e.g., seaming of knit material to

- flame retardant material used on underarm and upper sleeve, stitching of the collar materials and the slide fastener placket, etc.); and
- c. Be a non-florescent earthtone colour that is a good visual match to the components being sewn;
 - ii. The thread for non-flame retardant fabric component seaming, stitching, buttonholes and bartacks must:
 - a. Be cotton-covered or polyester-covered, polyester thread (R50 Tex) conforming to CAN/CGSB-4.131-M; and
 - b. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
 - iii. The thread for seaming and serging the lining, interlining and pocket linings must:
 - a. Be polyester staple thread (R40 Tex) conforming to CAN/CGSB-4.139; and
 - b. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
 - iv. The thread for quilting the lining must:
 - a. Be Nylon 70/2 thread conforming to 4-GP-85Ma on the nylon taffeta side of the quilt;
 - b. Be polyester staple thread in accordance with CAN/CGSB-4.139 on the backing side of the quilt; and
 - c. Match the colour of the lining material being used;
 - v. Unless otherwise specified, all other garment components must be matched for thread colour;
- (w) Buttonhole Gimp - The buttonhole gimp must:
 - i. Be 100% cotton, 3 cord soft finish, R210 Tex, conforming to 4-GP-80Ma, Type 2A; and
 - ii. Be a non-florescent earth tone colour to match the MULTICAM® camouflage pattern;
- (x) All material must be sourced and supplied by the Contractor.

3.3 Sizing

The Parkas must be available in the following sizes in accordance with the Scale of Measurements at Appendix 2:

Height (in)	Chest (in)					
	32	36	40	44	48	52
64	X	X	X			
67		X	X	X	X	
70		X	X	X	X	X
73		X	X	X	X	X
76			X	X	X	X

Size	NSN (Type I)	NSN (Type II)
6432	8415-20-011-8343	TBD
6436	8415-20-011-8344	TBD
6440	8415-20-011-8345	TBD
6736	8415-20-011-8346	TBD
6740	8415-20-011-8347	TBD
6744	8415-20-011-8348	TBD
6748	8415-20-011-8349	TBD

7036	8415-20-011-8350	TBD
7040	8415-20-011-8351	TBD
7044	8415-20-011-8352	TBD
7048	8415-20-011-8353	TBD
7052	8415-20-011-8354	TBD
7336	8415-20-011-8355	TBD
7340	8415-20-011-8356	TBD
7344	8415-20-011-8357	TBD
7348	8415-20-011-8358	TBD
7352	8415-20-011-8359	TBD
7640	8415-20-011-8360	TBD
7644	8415-20-011-8361	TBD
7648	8415-20-011-8362	TBD
7652	8415-20-011-8363	TBD

The Parkas must also be available in special/extended sizes where the above sizes are not suitable.

3.4 Cutting

The following applies:

- (a) The Parkas must be cut using duplicates of Government supplied paper patterns as follows:
- i. Paper patterns include seam allowance but do not include 'make-up' allowance; and
 - ii. The Contractor is responsible for adding 'make-up' allowance to suit their production methods without changing the design, grade or requirements for the Parkas;

Note: Paper patterns will not be supplied to the Contractor for special/extended sizes.

- (b) The inherent properties of FR material render it prone to excessive fraying. Additional allowance has been incorporated into the patterns to accommodate fraying. Care must be taken to ensure that all seam allowances are adhered to without compromise to the shape and finished dimensions outlined in the scale of measurements; and
- (c) The shell parts of the Parkas must:
- i. Be cut and used in accordance with best commercial standards;
 - ii. Be cut in the direction of the warp as shown on the paper patterns; and
 - iii. Be cut from the same piece of shell material with the exception of the pencil pockets, chest pocket facings, chest patch pockets, cargo pocket welts, all buttoning portions of flaps including the button straps, which may be cut from separate lays or ends of shell material.

3.5 Sewing

The following applies:

- (a) Seams must be as follows:
- i. Conform to CAN/CGSB-54.1-M; and
 - ii. Be a minimum of 9.5 mm (0.375 in) wide unless otherwise specified;
- (b) Stitching must be as follows:

- i. Be either lock stitched Type 301 or chain stitch Type 401 (unless otherwise specified) conforming to CAN/CGSB-54.1-M, having not less than eight (8) nor more than ten (10) stitches per 2.5 cm (1 in);
 - ii. For double-needle stitching, needles set 6.4 mm (0.25 in) apart;
 - iii. Ends of all lock stitched seams and stitching, also breaks in thread, securely backstitched; and
 - iv. Present a regular even appearance without fabric pucker and be free from skips that may result from faulty machine thread tension or other stitching malfunctions;
- (c) Where double-lapped seams are specified, the needles must be set 6.4 mm (0.25 in) apart conforming to numerical designation 2.04.03 of CAN/CGSB-54.1-M;
- (d) Where seaming, turning and stitching is specified, the edges must be properly worked out before stitching;
- (e) Where seaming and serging is specified, this may be done in one or two operations;
- (f) All exposed raw edges must be serge finished with any 500 series, with not less than 10 stitches per inch (2.5 cm)
- (g) Buttonholes must:
- i. Be gimp reinforced eyelet type with not less than 22 stitches per 2.5 cm (1 in);
 - ii. Have ends fishtailed or bartacked; and
 - iii. When buttonholes are used for water drainage purposes, only the eyelet of the buttonhole is to be cut;
- (h) Hook and loop fastener tape must:
- i. Be stitched around all edges 3.2 mm (0.125 in) gauge, taking care to ensure stitching is formed into the hook and loop portion of the tape;
 - ii. For tapes wider than 2.5 cm (1 in) stitched around all edges and through the centre or have a 'X' enclosed in the box; and
 - iii. For best results, a ball point needle, size 110 (#18) should be used;
- (i) Bartacks, unless specified otherwise, must be 12.7 mm (0.5 in) long and have not less than twenty (20) cover stitches; and
- (j) Button and strap assemblies (where specified) must:
- i. Have buttons threaded with a strap of shell material in accordance with Drawing 8790166 for 30-ligne buttons or Drawing 2811 for 45-ligne buttons; and
 - ii. Have straps as follows:
 - a. Seam type numerical designation 8.06.02 or 8.19.01;
 - b. Finished width of 8 mm (0.3125 in); and
 - c. Attached with bartacks.

3.6 Snap Fasteners

When inlaying snap fasteners, reinforcement under the shell material may be added as required. Careful consideration must be given to the attaching force of the snap fastener machine to ensure that all parts of the snap fastener will remain attached and functional for the life of the garment.

3.7 Seam Sealing

When specified, seams must be sealed in a manner that will ensure the integrity of the waterproof barrier layer in the garment. The following requirements must be met:

Table 5: Requirements for Visual and Physical Examination

Construction Detail	Test Method	Unacceptable Faults
Seams	Visual Examination	<ul style="list-style-type: none"> – Tape which is not centered across the width of the seam; – Delamination along edges of tape, over seam allowance and stitching or across the width of the tape; – Bubbling; – Blistering; – Puckering; – Melting; and/or – Ends of threads which have not been trimmed.
Ends and Joins	Visual Examination	<ul style="list-style-type: none"> – Loose ends and corners which have not bonded; – Rough edges or beads at the ends; and – An overlap at a join of less than 19.1 mm (0.75 in).
Drill holes and stitching lines not in seams	Visual Examination	<ul style="list-style-type: none"> – Left uncovered without a designated exception.
Stiffness of seamed area	Physical Examination	<ul style="list-style-type: none"> – Marked increase of stiffness.

3.8 Quilting

The nylon lining and the insulation must be quilted together in accordance with the insulation supplier's instructions. Quilt stitching should be kept to a minimum to optimise the thermal value of the insulation. Ideally, the quilt pattern should not be smaller than a 30 cm (12 in) diamond pattern.

3.9 Marking and Care Label

The Parka, Liner and Hood must include a Marking and Care Label (see Figure 11), in French and English, as follows:

- (a) A label stitched around all edges, sized to include all of the information detailed in this section, positioned as follows:
 - i. Parka - On the bottom of the left front lining on the inside on the Parka (see Figure 5);
 - ii. Liner - Inside the chest pocket (see Figure 7); and
 - iii. Hood - Inside lower back (see Figure 10);
- (b) Light sand in colour with black printing in characters not less than 3.2 mm (0.125 in) nor more than 6.4 mm (0.25 in) in height, with the exception of the size identification which must be twice the height;
- (c) Care symbols in accordance with CAN/CGSB-86.1-2003 including the following:
 - i. Washing – Normal 40°C;
 - ii. Bleaching – Do Not Bleach;
 - iii. Drying – Tumble Dry on Low Heat;
 - iv. Ironing/Pressing – Iron at Low Temperature. Do Not Steam Press; and
 - v. Professional Textile Care – Do Not Dry Clean;

(d) Marking label in accordance with D-80-001-055/SF-001 including the following:

i. For the Parka shell as follows:

a. Nomenclature in English and French:

PARKA, EXTREME COLD WEATHER, MULTICAM®, TYPE I/II
PARKA, EXTRÊME TEMP FROID, MULTICAM®, TYPE I/II

b. NATO Stock Number as required for each size;

c. Size by height and chest;

d. NATO size designation;

e. Contract Number;

f. Name of Contractor and/or Sub-Contractor as applicable (no logos or trademarks);

g. Month/Year of manufacture;

h. Fiber content;

i. Care Symbols (in black ink);

j. Care instructions in English and French as follows:

1. Machine wash in lukewarm water (not exceeding 40C) / Lavage à l'eau tiède (température maximale de 40C) dans une laveuse;

2. Do not use bleach/Ne pas utiliser d'agents de blanchiment;

3. Tumble dry at low temperature/Séchage en machine à tambour à température basse;

4. Dry clean only when proper laundering fails to remove soil. / Nettoyage à sec lorsque le blanchiment approprié ne parvient pas à enlever la saleté; and

5. Do not stitch or puncture the membrane in this garment. / Ne pas coudre ou perforer la membrane interne imperméable;

k. User Identification;

ii. For the Liner as follows:

a. Nomenclature in English and French:

LINER, EXTREME COLD WEATHER PARKA
DOUBLURE, PARKA D'EXTRÊME TEMP FROID

b. NATO Stock Number as required for each size;

c. NATO size designation;

d. Contract Number;

e. Name of Contractor and/or Sub-Contractor as applicable (no logos or trademarks);

f. Month/Year of manufacture;

g. Fiber content;

h. Care Symbols (in black ink); and

i. User Identification;

iii. For the Hood as follows:

a. Nomenclature in English and French:

HOOD, EXTREME COLD WEATHER PARKA
CAPUCHON, PARKA D'EXTRÊME TEMP FROID

b. NATO Stock Number as required for each size;

- c. NATO size designation;
 - d. Contract Number;
 - e. Name of Contractor and/or Sub-Contractor as applicable (no logos or trademarks);
 - f. Month/Year of manufacture;
 - g. Fiber content;
 - h. Care Symbols (in black ink); and
 - i. User Identification;
- (e) Include a bar code in accordance with D-LM-008-002/SF-001, Appendix 3 that identifies the NATO stock number.

3.10 User Instruction Label

The Liner must include a user instruction label, in French and English, as follows:

- (a) A label stitched around all edges, sized to include all of the information detailed in this section, positioned on the inside center back of the liner (see Figure 7); and
- (b) Include the following information printed in black on a light sand colour label:

USER INSTRUCTIONS

This clothing system allows you to layer components in a variety of ways to keep you warm and dry in temperatures from -57°C to $+10^{\circ}\text{C}$.

To maximize and maintain performance:

- Follow care instructions;
- Do not let garments become heavily soiled;
- Close all slide fasteners and pouch openings and separate components before laundering.
- Perform minor repairs such as button replacement, with care to avoid puncturing the membrane. Do not stitch or puncture the membrane.
- Return the garment to clothing stores for repair when damage and/or deterioration warrants.
- Ensure zipper sliders are at the bottom of opening before closing zippers. Do not force.
- Adjust waist drawcords to fit; fasten locks. Tuck drawcord ends and locks into channel pocket.
- To store parka/jacket in pouch, close front zipper before rolling garment compactly from collar to bottom. Turn pouch inside out over garment. Close pouch zipper. Adjust strap.
- When parachuting or in windy conditions, use the elastic at the lower back edge of the parka to prevent billowing by pulling the elastic loop through the legs and attaching to the front lower button.

DIRECTIVES POUR L'UTILISATION

Ce système d'habillement permet de superposer divers articles de différentes façons afin de conserver la chaleur et demeurer au sec à des températures allant de -57°C à $+10^{\circ}\text{C}$.

Pour maximiser et conserver l'efficacité:

- Suivre les directives d'entretien;
- Éviter de trop salir les vêtements;
- Séparer les pièces avant de les laver; fermer toutes les fermetures à glissières et les poches;

- Faire les petites réparations avec soin, comme remplacer les boutons, afin d'éviter de perforer la membrane. Ne pas coudre la membrane; ne pas la perforer.
- Tout vêtement endommagé ou détérioré doit être retourné au magasin d'habillement pour fins de réparation.
- Pour fermer les fermetures à glissières, il est important que la glissière soit bien engagée au bas de la fermeture. Il faut éviter de la forcer.
- Ajuster les cordonnets de ceinture et fixer les attaches. Insérer les bouts des cordonnets et les attaches dans la coulisse de la ceinture.
- Pour ranger le parka/veste dans sa pochette, fermer la fermeture puis enrouler le vêtement en partant du col allant vers le bas tout en le comprimant. Tourner la pochette à l'envers et la glisser sur le vêtement. Fermer la glissière de la pochette. Ajuster la courroie.
- Pour le parachutage ou dans le vent, pour éviter le gonflement, se servir de l'élastique qui se trouve à l'arrière du parka, à la partie inférieure. Tirer la boucle de cette élastique entre les jambes et vers le devant; la fixer au-devant du parka, au dernier bouton du bas.

3.11 Construction

The Parkas are to be manufactured in accordance with the following requirements:

- (a) **General** - The Parkas must consist of a full-length front opening Parka with full-length arms and a removable liner and hood;
- (b) **Collar** - The Parkas must have a high flat collar that rises above the shoulders as follows (see Figure 2 and Figure 5):
 - i. Include a under collar as follows:
 - a. Constructed from two (1) plies of shell material stitched together with alternating rows of stitching; and
 - b. Seamed and serged to the neck edge of the lining;
 - ii. Include a top collar as follows:
 - a. Constructed from one (1) ply of shell material;
 - b. With the interlining placed on the wrong side of the top collar, seam the top collar to the interlining around all edges; and
 - c. With the collar folded up and the seam allowance pressed towards the collar, the front facings and inside collar is then seamed along the neck edge;
 - iii. Include a hanger loop constructed of shell material as follows:
 - a. Made on an automatic looping machine;
 - b. Width: 9 mm (0.3125 in);
 - c. Functional Length: 4.5 cm (1.75 in); and
 - d. Centered on the top collar at the back neckline and bartacked into place;
 - iv. Include retaining tabs for the liner as follows:
 - a. Two (2) retaining tabs are required for the collar, each made from a 7.5 cm (3 in) long by 2.5 cm (1 in) wide grosgrain ribbon folded in half such that the finished functional length is 2.5 cm (1 in);
 - b. Include a male portion of a snap fastener inlaid 12.7 cm (0.5 in) from the fold when measured to the center of the snap;
 - c. Ends of the ribbon to be heat fused; and
 - d. Retaining tabs to be placed on the underside of the back portion of the collar 2.5 cm (1 in) from each shoulder seam, stud facing inward to connect with lining, and edge of tape against the shoulder seam, then stitched in place to the shell;
 - v. Include the following for attachment of the hood:
 - a. Slide fastener attachment as follows:

1. The matching slide fastener tape to the one on the hood, without the slider, is centered and seamed with double-needle stitching to the outside of the shell such that the bottom stop is on the right front and the slide fastener closes from right to left;
 2. Length of the slide fastener is in accordance with the Scale of Measurements at Appendix 2; and
 3. The position of the slide fastener is determined by the other half portion of the slide fastener sewn to the hood. Care must be taken to ensure the two halves effect proper closure, and the hood flange lies flat and evenly when hood and parka are joined together;
- b. Loop fastener tape attachment as follows:
1. Three (3) 5.7 cm (2.25 in) long by 2.5 cm (1 in) wide pieces of loop fastener tape are stitched in place on the outside of the back shell as follows:
 - a. One (1) on the center back; and
 - b. Two (2) others 12.7 mm (0.5 in) from shoulder seam, on the back side;
 2. Positioned 3.8 cm (1.5 in) below the neck edge;
- (c) **Back** - The back of the Parka is constructed from one (1) ply of shell material;
- (d) **Front Facings** - The Parka must have front left and right facings as follows:
- i. Constructed from one (1) ply of shell material;
 - ii. Folded in half lengthwise, wrong side together and stitched at 6.4 mm (0.25 in) gauge along fold and across the ends; and
 - iii. Include five (5) male portions of a snap fastener inlaid in each facing, as indicated on the paper patterns, with the studs of the snap fastener facing inward;
- (e) **Front Closure** - The Parkas must have a slide fastener front closure with a fly as follows (see Figure 8):
- i. Both sides of the slide fastener are placed face down on their respective side of the center front and stitched into place;
 - ii. With right sides together, the shell and collar/facing assembly are seamed along center fronts and collar raw edges with slide fastener sandwiched between both pieces;
 - iii. The assembly is turned inside out and stitched at 6.4 mm (0.25 in) along center fronts and collar
 - iv. The raw edge of the inside collar is turned under and stitched 3.2 mm (0.125 in) gauge along the neckline; and
 - v. Each side at the bottom of the slide fastener is reinforced with a horizontal bartack;
 - vi. Include an underfly on the right side as follows:
 - a. Constructed from one (1) ply of shell material and one (1) ply of barrier membrane;
 - b. Shell material folded lengthwise, wrong sides together, including the barrier membrane in the middle and seamed across each end;
 - c. Turned inside out and stitched 6.4 mm (0.25 in) gauge;
 - d. Raw edge to be serged;
 - e. Include five (5) 45-ligne button and loop assemblies as follows:
 1. Made in accordance with Drawing 2811 and seamed to the underfly;
 2. Centered in the width of the underfly with top and bottom loops at 6.4 mm (0.25 in) from the end edges;

3. The third button is then centered between the top and bottom buttons, and the remaining buttons placed equidistant between them; and
4. Loop straps to be bartacked to the underfly;
- f. Underfly is then placed face down on the right front, 19.1 mm (0.75 in) behind center front, with the top edge directly under the collar seam; and
- g. The underfly is seamed to the front at 4.8 mm (0.1875 in) gauge, then pressed over and stitched 6.4 mm (0.25 in) gauge;
- vii. Include a buttoning fly and fly cover on the left side as follows:
 - a. Buttoning fly as follows:
 1. Constructed from one (1) ply of shell material folded in half lengthwise with wrong sides together and seamed across each end;
 2. Turned inside out and stitched 6.4 mm (0.25 in) gauge; and
 3. Include five (5) buttonholes to fit a 45-ligne button, worked into the buttoning fly as indicated on the paper patterns;
 - b. Fly cover as follows:
 1. Constructed from one (1) ply of shell material and one (1) ply of barrier membrane;
 2. The buttoning fly is centered under the fly cover;
 3. Four (4) separate rows of stitches that extend the width of the buttoning fly are placed horizontally, centered between each buttonhole and across each end, and end 6.4 mm (0.25 in) from the folded edge;
 4. The fly cover is folded lengthwise, right sides together, including the barrier material, seamed across each end then turned inside out and stitched 6.4 mm (0.25 in) gauge ensuring the buttoning fly is not caught in this seam;
 5. Raw edge to be serged together;
 6. The fly and buttoning fly assembly are placed with top side facing down on the left front, 19.1 mm (0.75 in) behind center front, with the top edge directly under the collar seam; and
 7. The fly is seamed to the front at 4.8 mm (0.1875 in) gauge, then pressed over and stitched 6.4 mm (0.25 in) gauge;
- (f) **Shoulders** - The front and back are joined together along the shoulder seam with a double-lapped seam, with the back overlapping the front on the outside;
- (g) **Sleeves** - The Parkas must have two-piece set-in sleeves as follows:
 - i. Constructed from one (1) ply of shell material;
 - ii. The top and under sleeve are joined together along the elbow seam with a double-lapped seam, with the top sleeve overlapping the under sleeve on the outside;
 - iii. The side and underarm are seamed together in a continuous seam using a double lapped seam, with the back overlapping the front on the outside;
 - iv. Sleeves joined to their respective armholes with a double-lapped seam, with the body overlapping the sleeve on the outside ;
 - v. Include an elbow reinforcement patches as follows:
 - a. Constructed from one (1) ply of shell material; and
 - b. Each elbow patch placed on their respective sleeve piece, face up with raw edges folded under and double-needle stitched to the sleeve; and
 - vi. Include a band cuff with hook and loop closure as follows (see Figure 2):
 - a. Constructed from one (1) ply of shell material;
 - b. Include a piece of hook fastener tape measuring 4.5 cm (1.75 in) long by 3.8 cm (1.5 in) wide, cut to fit the shape of the cuff extension, centered in the under

- layer of the cuff, 2.5 cm (1 in) behind the raw pointed edge, and stitched around all edges and reinforced along the center;
 - c. Include a piece of loop fastener tape measuring 3.8 cm (1.5 in) wide by 11.4 cm (4.5 in) long centered on the outside cuff 12.7 mm (0.5 in) behind the straight end, stitched around all edges and reinforced along the center;
 - d. Cuff to be folded in half, wrong sides together, and seamed along both ends and cuff extension, turned, properly worked out and double-needle stitched along bottom, sides and extension at 3.2 mm (0.125 in) gauge;
 - e. Include two (2) pleats folded in the lower edge of the sleeve on either side of the elbow seam;
 - f. With the pointed end of the cuff toward the elbow seam, the cuff is double needle stitched to the lower edge of the sleeve, taking care to include the pleat in the sleeve and the two (2) cuff retaining tabs in the seam;
 - g. The straight end of the cuff is stitched to the cuff extension, 6.3 cm (2.5 in) from the point;
 - h. Include retaining tabs as follows (see Figure 5):
 - 1. Two (2) cuff retaining tabs are required for each cuff, each made from a 7.5 cm (3 in) long by 2.5 cm (1 in) wide grosgrain ribbon folded in half;
 - 2. Include a male portion of a snap fastener inlaid 12.7 cm (0.5 in) from the fold when measured to the center of the snap;
 - 3. Ends of the ribbon to be heat fused; and
 - 4. Retaining tabs to be centered under the underarm seam and elbow seam with snap fastener facing up on the backside of the cuff;
 - i. Finished width of the cuff to be 6.3 cm (2.5 in);
- vii. Include a tab on the left shoulder as follows (see Figure 2):
 - a. Finished size 5.7 cm (2.25 in) high by 5 cm (2 in) wide constructed from two (2) plies of shell material seamed, turned and stitched 6.4 mm (0.25 in) gauge;
 - b. Include a piece of loop fastener tape measuring 5.0 cm (2 in) wide by 5.0 cm (2 in) long centered and stitched around all edges to the underside of the tab;
 - c. Include a piece of loop fastener tape measuring 5 cm (2 in) long by 2.5 cm (1 in) wide placed over the bottom portion of the topside tab and stitched around all edges;
 - d. Attached to the Parka at the upper outer side of the sleeve, centred over the left sleeve cap and basted in place to facilitate joining; and
 - e. Include a piece of hook fastener tape measuring 5.0 cm (2 in) wide by 5.0 cm (2 in) long seamed to the left sleeve cap, positioned to affect proper closure with the shoulder tab;
- (h) **Pockets** - The Parkas must have pockets as follows:
- i. Lower Front Cargo Pockets - A cargo pocket on the front of each hip as follows (see Figure 4):
 - a. Constructed as follows:
 - 1. One (1) ply of nylon for the back wall; and
 - 2. Shell material with a lining of nylon material for the front (outer) side;
 - b. With raw edges folded under, the back pocket wall of nylon is stitched to each lower front 3.2 mm (0.125 in) gauge as indicated on the paper patterns;
 - c. The edges of the pocket may be seamed together for better handling as required;
 - d. A 45-ligne button and loop assembly is placed vertically on the front wall of the lower pocket as indicated on the paper patterns, positioned to effect proper closure with flap;

- e. The top edge of the side walls of the pocket are to have envelope folds, including both the shell and lining material, creating a 19.1 mm (0.75 in) pleat as indicated on the paper patterns;
- f. Include a pocket welt constructed from one (1) ply of shell material, folded in half with raw edges turned under and seamed to the top edge of the cargo pocket assembly 3.2 mm (0.125 in) gauge;
- g. The pocket assembly, including the lining and pocket welt, is then serged together along the side and bottom edges;
- h. Include two (2) drainage type buttonholes on the bottom of the cargo pocket, through both layers;
- i. The two (2) lower bellows cuts are to be seamed and serged with both the shell and lining caught in the seam;
- j. The pocket assembly is then centered over the back pocket wall of nylon as indicated on paper patterns, with side and bottom edges folded under and seamed 3.2 mm (0.125 in) gauge, with the stitching starting and ending 3.2 cm (1.25 in) below the top edge of either side of the welt;
- k. Include a covered buttoning flap as follows:
 - 1. Consist of two (2) parts, a covering flap and a buttoning flap , both constructed from shell material;
 - 2. With right sides together, the buttoning flap and buttoning flap facing seamed along the buttoning opening, turned inside out with corners properly worked out and stitched 6.4 mm (0.25 in) gauge;
 - 3. A vertical buttonhole to fit a 45-ligne button is then placed 15.8 mm (0.625 in) from pointed end;
 - 4. With right sides together, the buttoning flap and buttoning flap facing is then seamed along each side of the flap facing 9.5 mm (0.375 in) gauge ensuring only the facings are caught in the stitching;
 - 5. A bartack is then placed at both corners of the opening;
 - 6. With right sides together, the flap is then seamed along the outer edges to the flap facing with the buttoning flap assembly sandwiched between the flap pieces during this operation such that they are partially caught in the seam;
 - 7. The flap assembly is then turned inside out and stitched 6.4 mm (0.25 in) gauge; and
 - 8. Both ends of the welt are folded under and securely backstitched or bartacked to the pocket flap, through all layers ensuring the flap effects proper closure with button assembly on pocket;
- l. Include a hand warmer pocket with a covered slide fastener closure placed at the front of each cargo pocket as follows:
 - 1. Include a slide fastener as follows:
 - a. Cut to length to fit the opening as indicated on the paper pattern such that the finished functional opening is not less than 17.8 cm (7 in);
 - b. With the slider attached, secured by back stitching across both ends; and
 - c. Slider is at the top when the pocket is closed;
 - 2. Have a front lining constructed of fleece and a back wall constructed of tricot as follows:
 - a. The front fleece lining is placed on the right side of the lower pocket piece, with the slide fastener sandwiched between both pieces, then seamed along the bottom pocket opening;

- b. The pocket is turned inside out, corners properly worked out, and stitched 3.2 mm (0.125 in) gauge;
 - c. The slide fastener cover is folded under to form a 2.5 cm (1 in) hem; and
 - d. With the hand warmer pocket and slide fastener cover placed over the tricot backing, the slide fastener cover is centered over the slide fastener and stitched through all layers;
 - 3. The bottom edge of the tricot and the fleece is double-needle stitched to the front wall of the cargo pocket; and
 - 4. The hand warmer pocket is then seamed on each side to the side walls, then the side walls are pressed outward and double-needle stitched;
 - ii. Front Chest Pockets - Pockets on the upper exterior portion of the left and right sides of the chest as follows (see Figure 3):
 - a. Include a patch pocket with a slide fastener closure and internal pencil pocket as follows:
 - 1. Constructed from one (1) ply of shell material;
 - 2. Raw edges of the pocket serged then, with the 19 cm (7.5 in) long slide fastener facing up and positioned as indicated on the paper patterns, the patch pocket is placed over the slide fastener and seamed 6.4 mm (0.25 in) gauge from the teeth;
 - 3. Slide fastener to open downwards and have a functional opening of 17.8 cm (7 in) when complete; and
 - 4. Include a pencil pocket as follows:
 - a. Constructed from one (1) ply of shell material;
 - b. Positioned on the front interior wall of each patch pocket;
 - c. With the top edge turned under 9.5 mm (0.375 in), stitched 6.4 mm (0.25 in) gauge;
 - d. With the raw edges folded under, the pencil pocket is seamed 3.2 mm (0.125 in) gauge to the wrong side of the patch pocket and the top corners are securely backstitched; and
 - e. Include a row of stitching down the center of the pocket parallel to the edge (creating two (2) pencil pockets), securely backstitched on either end;
 - b. Include a cargo pocket placed over each patch pocket forming a three-pocket chest pocket assembly as follows:
 - 1. Constructed from one (1) ply of shell material and one (1) facing of shell material;
 - 2. Pocket and facing serged along the raw edges;
 - 3. Top edge of pocket to have two (2) 12.7 mm (0.5 in) pleats as indicated on the paper patterns;
 - 4. Include two (2) drainage type buttonholes placed along the bottom of each pocket as indicated on the paper patterns;
 - 5. Pocket and facing seamed along the top edge, turned under and stitched 3.2 mm (0.125 in) gauge;
 - 6. Two (2) bellows cuts at the corners be seamed and serged; and
 - 7. A 45-ligne button and loop assembly is placed vertically on the front wall of the lower pocket, centered on the pocket with the top loop 19.1 mm (0.75 in) from top edge to effect proper closure with flap, and bartacked into place;
 - c. Include a covered buttoning flap as follows:

1. Consist of two (2) parts, a covering flap and a buttoning flap , both constructed from shell material;
2. With right sides together, the buttoning flap and buttoning flap facing seamed along the buttoning opening, turned inside out with corners properly worked out and stitched 3.2 mm (0.125 in) gauge;
3. A vertical buttonhole to fit a 45-ligne button is then placed 15.8 mm (0.625 in) from pointed end;
4. With right sides together, the buttoning flap facing and flap facing is then seamed along each side of the flap facing 9.5 mm (0.375 in) gauge ensuring only the facings are caught in the stitching;
5. With right sides together, the flap is then seamed along the outer edges to the flap facing with the buttoning flap assembly sandwiched between the flap pieces during this operation such that they are partially caught in the seam;
6. The flap assembly is then turned inside out and stitched 6.4 mm (0.25 in) gauge; and
7. Attached to the garment as follows:
 - a. The raw edge of the flap placed at the top edge of the patch pocket and seamed; and
 - b. Flap is then folded down and stitched 6.4 mm (0.25 in) gauge to enclose all raw edges through all layers ensuring the flap effects proper closure with button assembly on pocket;
- d. Assembly attached to the Parka as follows:
 1. With cargo and patch pockets placed right to wrong side, the sides and bottom of the cargo pocket are seamed;
 2. With the assembly turned right side out, the raw edges of the top portion of the patch pocket is properly worked out to the underside and the free edge of the pocket opening is then stitched 3.2 mm (0.125 in) gauge;
 3. The pocket assemblies are placed on their respective fronts and the remaining slide fastener tape is double stitched to the front 6.4 mm (0.25 in) gauge from slide fastener teeth, and a second row of stitching is placed 3.2 mm (0.125 in) gauge from the first stitching;
 4. The pocket assembly is the stitched along the outside edge, bottom, bottom of the pocket opening and top portion of the patch pocket, through all layers; and
 5. Vertical bartacks are then placed at the top and bottom of the pocket opening;

(i) **Hook and Loop Fastener Tape Patches** - The Parkas must have hook and loop tape fastener patches as follows (see Figure 2):

- i. **Name Tape Patch** - A piece of loop fastener tape measuring 15.2 cm (6 in) long by 2.5 cm (1 in) wide centered 12.7 cm (0.5 in) above the left chest pocket and stitched around all edges; and
- ii. **Rank Patch** - As follows:
 - a. Constructed from one (1) piece of loop fastener tape 9 cm (3.5 in) long by 5 cm (2 in) wide;
 - b. Centred horizontally onto the outer left fly cover with the top of the patch positioned 22.8 cm (9 in) below the top of the fly; and
 - c. Stitched to the outer layer of the fly around all edges and through the centre (i.e., have an 'X' enclosed in the box);

- (j) **Waist Suppression** - The Parkas must have a waist suppression system as follows:
- i. A waist drawcord channel and waist drawcord channel reinforcement as follows:
 - a. Constructed from one (1) ply of shell material;
 - b. Include a buttonhole for the drawcord outlet positioned on the channel reinforcement as indicated on paper patterns as follows:
 1. Reinforced with a layer of shell material or barrier fabric measuring 8.9 cm (3.5 in) long by 3.2 cm (1.25 in) wide; and
 2. Only the eyelet to be cut;
 - ii. With raw edges together, the channel and channel reinforcement to be seamed together and the channel folded back about 7.5 cm (3 in) to form the pockets for the drawcord clamps;
 - iii. The draw cord is securely stitched or bartacked through all plies, at center back;
 - iv. With top and bottom edges folded under, the channel is then centered over the waistline on the outside shell and stitched 1.6 mm (0.0625 in) gauge, with the drawcord included in the channel but not included in the stitching, and the top edges of the pocket flaps included in the bottom stitching of the channel; and
 - v. The finished drawcord is to protrude 17-17.5 cm (6-7 in) from each buttonhole, threaded through the wheel locks, knotted and fused to prevent ravelling;
- (k) **Bottom Hem** - The Parkas must have a bottom hem with a drawcord as follows:
- i. Include four (4) drainage type buttonholes for the draw cord outlets as follows:
 - a. Two (2) buttonholes placed 5 cm (2 in) from the front closure on either side;
 - b. Two (2) buttonholes 5 cm (2 in) apart at center back;
 - c. Reinforced with shell material, twill tape or barrier membrane measuring 6.3 cm (2.1 in) long by 2.5 cm (1 in) wide, worked into the bottom hem; and
 - d. Only the eyelet of the buttonhole to be cut;
 - ii. The elastic drawcord is placed under the hem area and threaded through the buttonholes;
 - iii. The hem is folded up 3.8 cm (1.5 in), with raw edge folded under and stitched 3.2 mm (0.125 in) gauge, with the hem retaining tabs included in the seam and the drawcord included in the hem channel but not caught in the stitching such that the finished hem channel measures 2.8 cm (1.125 in) wide;
 - iv. The finished drawcord is to protrude 17-17.5 cm (6-7 in) from each front buttonhole, threaded through the wheel locks, knotted and the ends dipped in an acetate film for at least 19.1 mm (0.75 in) to prevent ravelling;
 - v. Include retaining tabs for the liner as follows:
 - a. Six (6) retaining tabs are required for the hem, each made from a 7.5 cm (3 in) long by 2.5 cm (1 in) wide grosgrain ribbon folded in half such that the finished functional length is 2.5 cm (1 in);
 - b. Include a male portion of a snap fastener inlaid 12.7 cm (0.5 in) from the fold when measured to the center of the snap;
 - c. Ends of the ribbon to be heat fused; and
 - d. Retaining tabs to be stitched into place as follows:
 1. Two (2) centered on the front portion of the shell;
 2. Two (2) placed directly behind the side seams; and
 3. Two (2) centered on the back portion of the shell;
- (l) **Liner**- The Parkas must have a removable liner as follows (see Figure 6):
- i. Constructed from the quilted taffeta lining material and insulation;
 - ii. Front and back lining seamed and serged together at the shoulders;
 - iii. Elbow seams of the sleeves seamed and serged together;
 - iv. Sleeves seamed and serged to the lining armhole;

- v. Underarm seams seamed and serged together in a continuous seam through the side seams;
- vi. Knitted cuffs doubled over then seamed and serged to the bottom of the liner sleeve;
- vii. Include a barrier layer as follows:
 - a. The fronts of the barrier membrane are seamed to the back of the barrier membrane at the shoulders;
 - b. The top sleeve of the barrier is seamed to the under sleeve of the barrier along the elbow seam, and the sleeve barrier layer is joined to the body barrier layer at the armhole seam;
 - c. The underarm seam on the barrier is then joined in a continuous operation through the side seams;
 - d. All seams sewn in the barrier membrane are sealed; and
 - e. Joined to the lining as follows:
 - 1. With the right sides together, the barrier layer and lining are seamed together around the neck, front and sleeve edges;
 - 2. The bottom edges are seamed together, leaving an opening for turning at center back
 - 3. The liner is then turned right side out, properly worked out and topstitched 6.4 mm (0.25 in) gauge around the neck seam, left and right front edges and across the bottom, with the edges of the bottom opening turned in and closed with the topstitching; and
 - 4. The right front edge of the liner is stitched 7.5 cm (3 in) gauge through all plies and the left front edge of the liner is stitched 4.5 cm (1.75 in) gauge through all plies;
- viii. Front facings as follows:
 - a. Right dome facing as follows:
 - 1. Constructed from the shell material;
 - 2. Folded in half lengthwise and raw edge placed along the front edge of the barrier right front piece;
 - 3. Stitched 1.6 mm (0.0625 in) and 3.5 cm (1.375 in) gauge from the fold; and
 - 4. Include five (5) button portions of the snap fasteners inlaid through the right dome facing and positioned to align correctly with the corresponding snaps on the parka shell facing;
 - b. Left dome facing as follows:
 - 1. Constructed from the shell material;
 - 2. Folded in half lengthwise and raw edge placed along the front edge of the barrier left front piece;
 - 3. Stitched 1.6 mm (0.0625 in) and 3.5 cm (1.375 in) gauge from the fold; and
 - 4. Include five (5) button portions of the snap fasteners inlaid through the left dome facing and positioned to align correctly with the corresponding snaps on the parka shell facing;
- ix. Include a hanger loop as follows:
 - a. The ends of the cord for the hanger loop stitched to the outer neckline of the liner collar; and
 - b. Functional length of 5 cm (2 in);
- x. Knit collar piece folded up and with raw edges together, stitched to the neck edge of the liner;
- xi. Include retaining tabs for the sleeves as follows:

- a. Two (2) retaining tabs are required for each sleeve;, each made from a 7.5 cm (3 in) long by 2.5 cm (1 in) wide grosgrain ribbon folded in half such that the finished functional length is 2.5 cm (1 in);
- b. Include a female portion of a snap fastener inlaid 12.7 cm (0.5 in) from the fold when measured to the center of the snap;
- c. Ends of the ribbon to be heat fused; and
- d. Retaining tabs to be stitched to the lower edge of the barrier layer sleeves centered over both the elbow and underarm seams;
- xii. Include snap fasteners as follows:
 - a. Six (6) female portions of the snap fasteners applied to the bottom of the liner with the button on the lining side of the liner;
 - b. Two (2) female portions of the snap fasteners applied to the neck edge of the liner; and
 - c. All snap fasteners to be positioned to align with the corresponding snap fastener retaining tabs on the shell so that the liner fits to the shell without pulling or bunching between the snaps;
- xiii. Include pockets on the upper interior portion of the left and right sides of the chest as follows (see Figure 7);
 - a. Two (2) pieces of hook fastener tape measuring 12.7 cm (5 in) long by 19.1 mm (0.75 in) wide seamed to the front lining, as indicated on the paper patterns;
 - b. Raw edges of the pocket must be serged and turned under;
 - c. Two (2) pieces of loop fastener tape measuring 12.7 cm (5 in) long by 19.1 mm (0.75 in) wide is stitched to the inside front corner for the pocket opening;
 - d. The pocket is double-needle stitched to the front lining up to 12.7 mm (0.5 in) into loop tape on both sides of the pocket opening;
 - e. The top edge of the lower back lining turned under and double-needle stitched to the right face of the back lining; and
 - f. The side edges of the lower back lining and the back lining topstitched together, forming a pleat 5 cm (2 in) deep in the area over the slide fastener;
- (m) **Hood** - The Parkas must have a detachable hood as follows (see Figure 9 and Figure 10):
 - i. Hood shell constructed from one (1) ply of shell material as follows:
 - a. Darts in both hood shell pieces stitched and topstitched at 1.6 mm (0.0625 in) gauge;
 - b. The hood shell pieces seamed together along the centre seam, turned to one side and topstitched 1.6 mm (0.0625 in) gauge, with the midpoint of the draw cord for the front channel of the hood fastened to the hood with this row of topstitching;
 - c. Include a buttonhole worked in the hood shell at each end of the draw cord channel with only the eyelet of the buttonhole cut for drawcord outlet;
 - ii. Include a hood back channel as follows:
 - a. Back channel pieces seamed together at the centre back;
 - b. The midpoint of the back draw cord is securely stitched to the midpoint of the back channel;
 - c. The back channel is positioned on the inside of the hood and stitched in place along the outer edges; and
 - d. The ends of the draw cord are threaded through the hood shell buttonhole;
 - iii. Include a shell flange constructed from one (1) ply of shell material as follows:
 - a. Shell flange pieces seamed together at the centre back, turned to one side and topstitched 1.6 mm (0.0625 in) gauge;
 - b. Shell flange then seamed to the bottom of the hood shell; and

- c. With the seam allowance turned up, the neckline is then topstitched 1.6 mm (0.0625 in) gauge;
- iv. Include a hood barrier membrane as follows:
 - a. Darts in the barrier layer seamed, then the hood barrier pieces seamed together along the centre back seam;
 - b. Barrier pieces for the flange are seamed together at the centre back and then the flange barrier is seamed to the bottom of the hood barrier layer; and
 - c. All seams, with the exception of the flange centre back seam, are then sealed;
- v. Include a hood lining constructed from one (1) ply of wool Melton as follows:
 - a. The darts in the lining are seamed, opened flat, and topstitched on each side of the seam 1.6 mm (0.0625 in) gauge;
 - b. The hood lining pieces are seamed together at the center back, opened flat and topstitched on each side of the seam 1.6 mm (0.0625 in) gauge;
 - c. The flange lining pieces are seamed together at the center back; and
 - d. The flange lining is seamed to the bottom of the hood lining, the seam opened and topstitched 1.6 mm (0.0625 in) gauge;
- vi. Include a hood buttoning fly constructed from one (1) ply of shell material as follows:
 - a. The hood buttoning fly is folded in half, wrong sides together and stitched 6.4 mm (0.25 in) gauge along fold, and the raw edges are serged;
 - b. Two (2) horizontal buttonholes to fit 45-ligne buttons are then worked in, 12.7 mm (0.5 in) from the folded edge as follows:
 - 1. One (1) buttonhole centered on the flange portion of the fly; and
 - 2. One (1) buttonhole centered on the neck portion;
 - c. The buttoning fly is then placed on the front left lining 6.4 mm (0.25 in) behind the front edge and, with the side edge turned under, the buttoning fly is stitched 3.2 mm (0.125 in) gauge to the lining;
 - d. A horizontal row of stitching is then placed at the neck seam; and
 - e. Include two (2) 45-ligne button and strap assemblies sewn to the right front of the hood, 5 cm (2 in) from the front edge, and spaced to align with the buttonholes on the left side of the hood;
- vii. Include a hood brim constructed from shell material as follows:
 - a. The hood brim pieces are seamed together around the outer edge, turned, properly worked out and topstitched 6.4 mm (0.25 in) gauge;
 - b. A second row of topstitching is stitched 12.7 mm (0.5 in) from the edge, to form a channel for the hood brim wire;
 - c. The hood brim plies are stitched together with diagonal rows spaced 3.2 cm (1.25 in) apart when measured at the base of the triangles formed;
 - d. The brim wire is threaded through the brim channel and the ends of the wire are bent back to prevent a sharp edge from puncturing the channel;
- viii. Hood assembled as follows:
 - a. The hood shell, barrier and lining are seamed together around the outer edge, including the hood brim in the front face edge, leaving a turning opening at the center back of the flange;
 - b. The hood assembly is turned, properly worked out and stitched 6.4 mm (0.25 in) gauge around the edges, with the edges of the turning opening turned under and closed with the stitching;
 - c. The front edge of the hood is topstitched to form the front channel, with the stitching 2.5 cm (1 in) gauge at top center seam and meet the stitching of the back draw cord channel at the ends of the channel;

- d. The draw cord is threaded through the channel buttonhole, the ends of the draw cords are threaded through the wheel locks and knotted together at the end, twice then the ends of the draw cord are fused to prevent ravelling; and
 - e. When the channels are fully extended, the draw cord extends from the opening by 10 cm (4 in);
 - ix. Include a hood slide fastener as follows:
 - a. The matching slide fastener tape to the one on the collar, including the slider, is centered face down on the hood lining, with the teeth 5 cm (2 in) from the bottom edge of the flange, and double topstitched through all plies; and
 - b. Positioned such that when the slide fastener is closed, the hood is correctly positioned on the Parka shell;
 - x. Include three (3) 5.7 cm (2.25 in) long by 2.5 cm (1 in) wide pieces of hook fastener tape stitched on the flange lining, 12.7 mm (0.5 in) from the edge, to align with the loop fastener tapes on the parka shell;
- (n) **Slide Fastener Thongs** - Each slide fastener pull must have a thong as follows:
- i. A length of drawcord threaded through each slide fastener pull, tied with a single knot at the pull tab and knotted again at the thong end;
 - ii. Ends of the drawcords fused to prevent ravelling; and
 - iii. Finished functional length: 6.3 cm (2.5 in).

APPENDIX 1 LAYOUT SKETCHES

Figure 1: Front and Back View

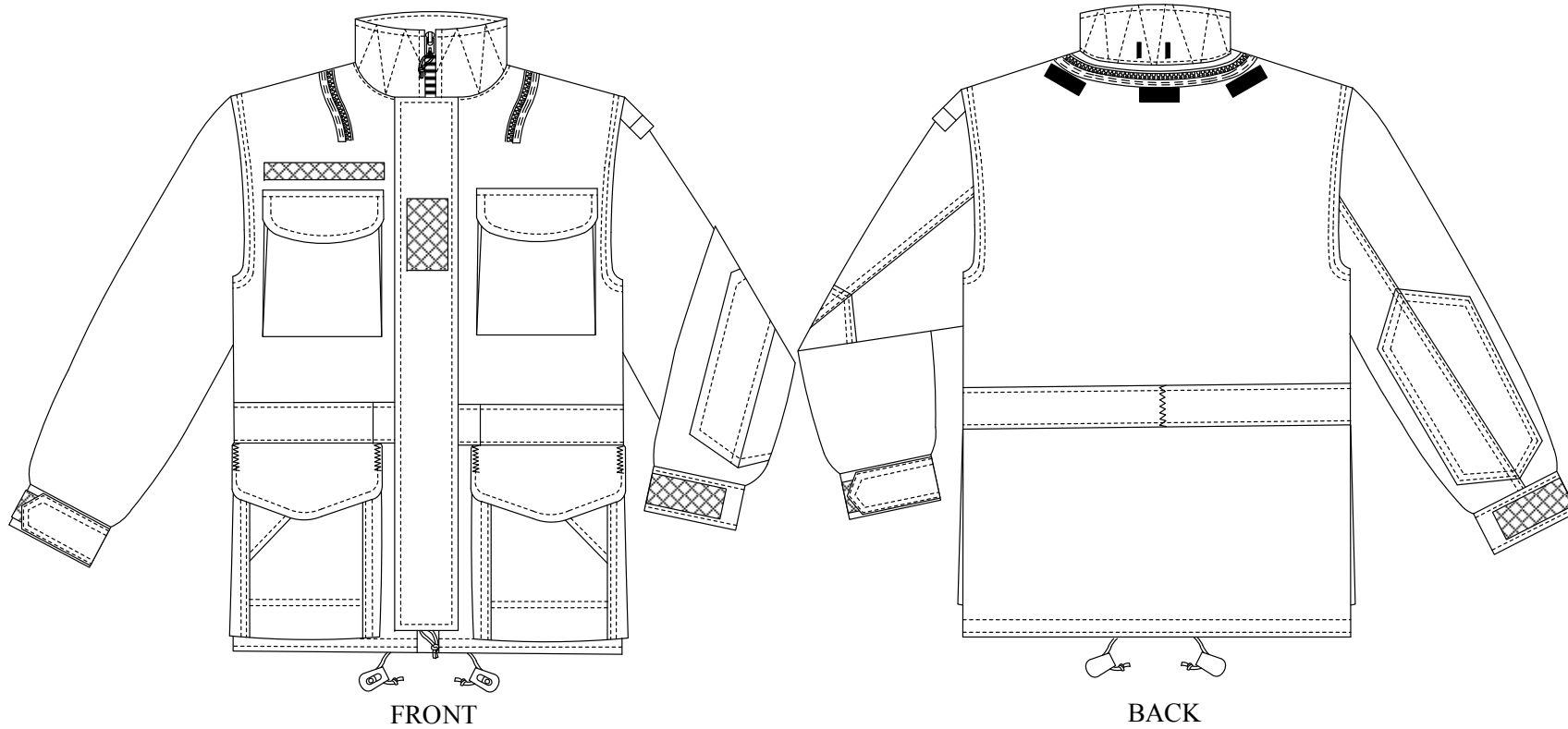


Figure 2: Garment Components - Dimensions

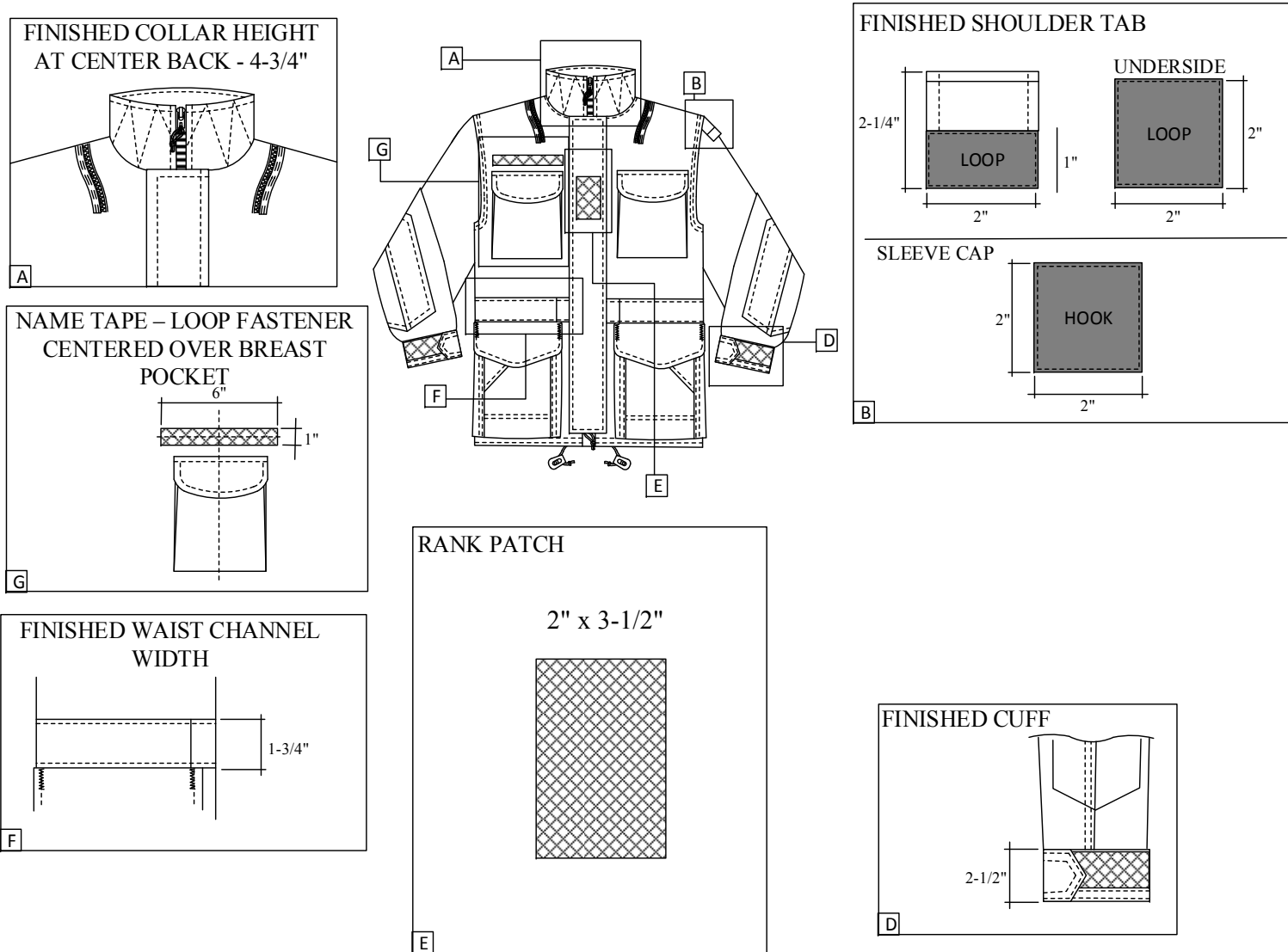


Figure 3: Chest Pocket Systems

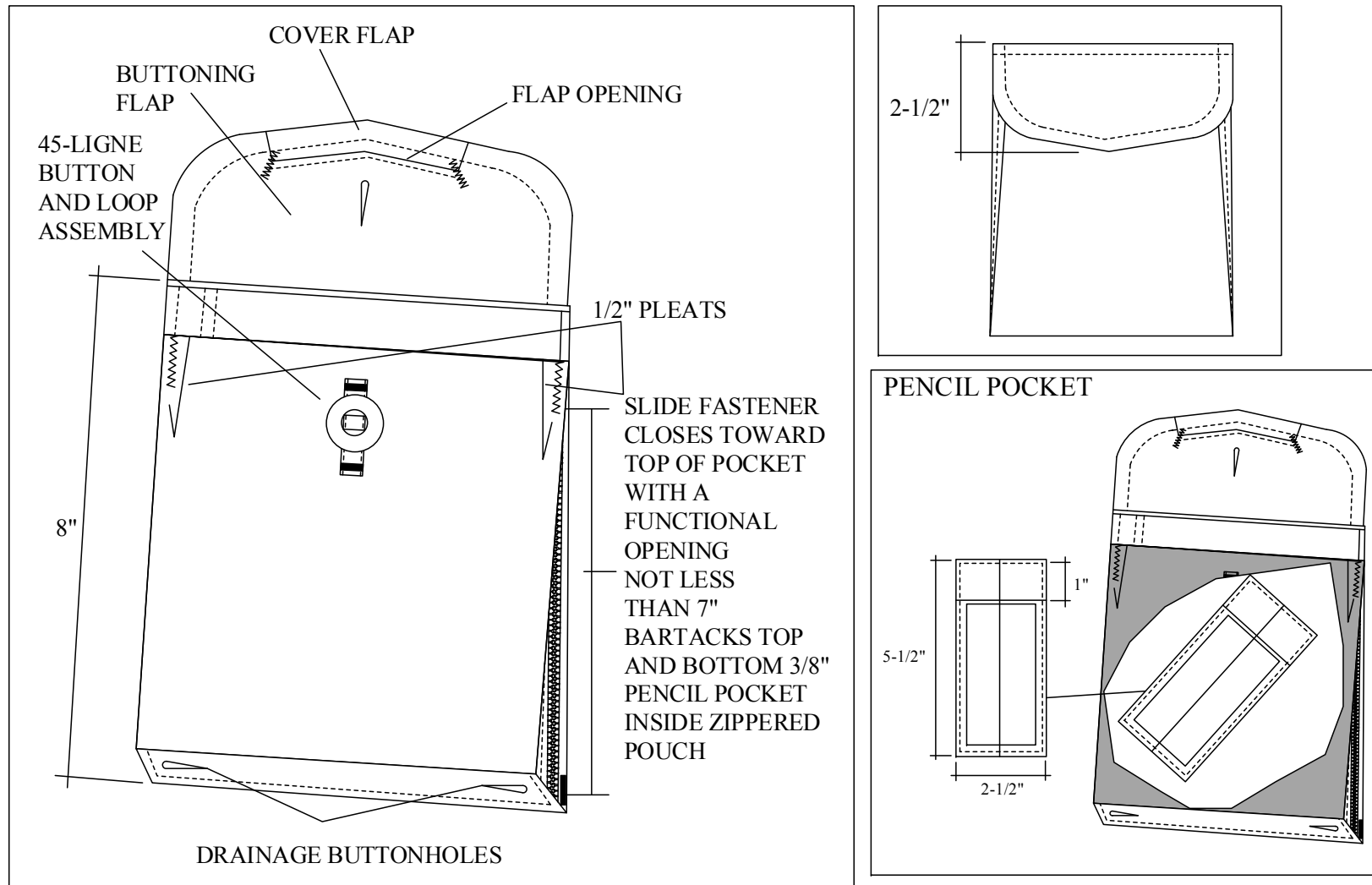


Figure 4: Lower Pocket System

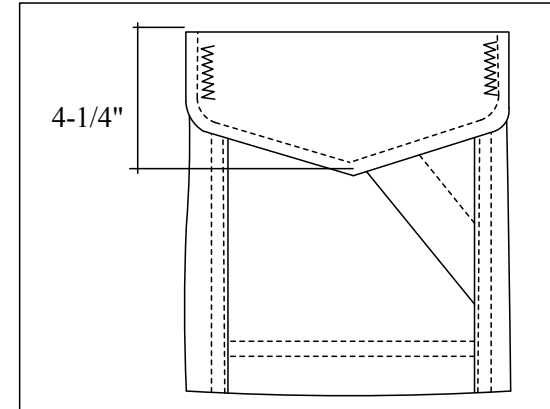
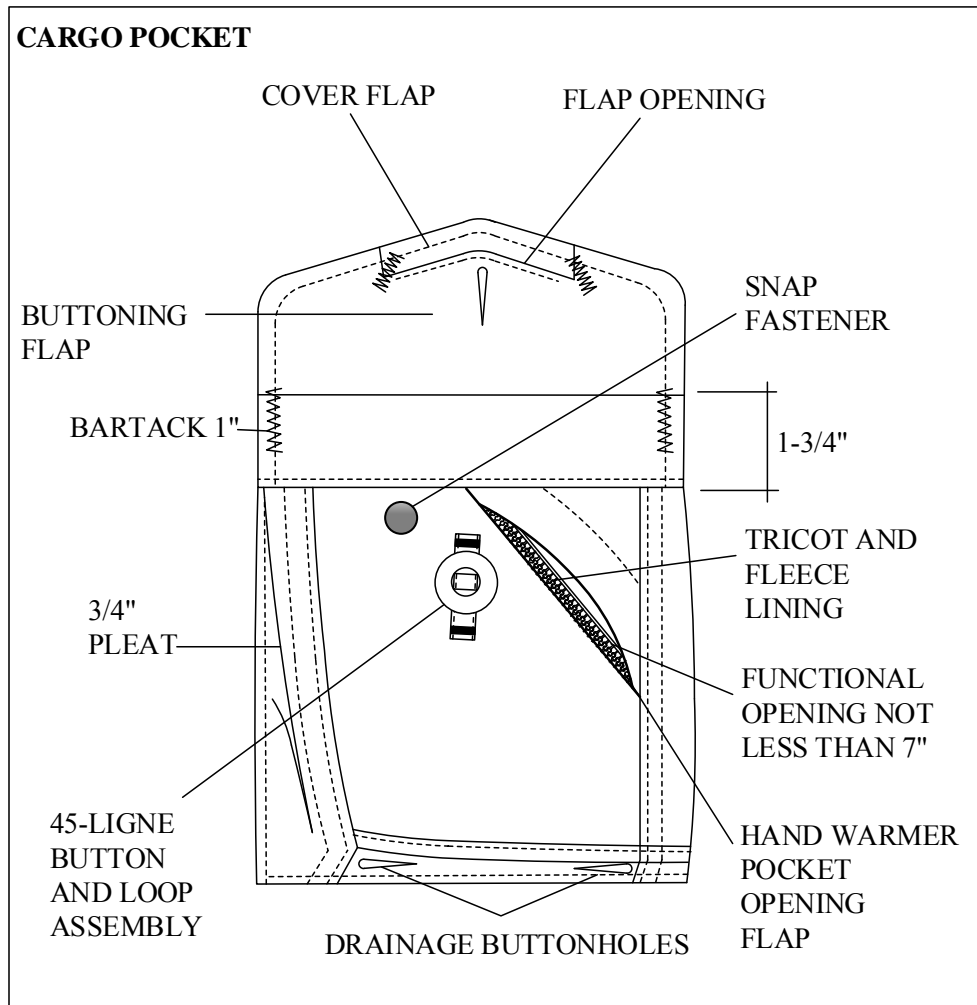


Figure 5: Parka, Inside View - Retaining Tabs

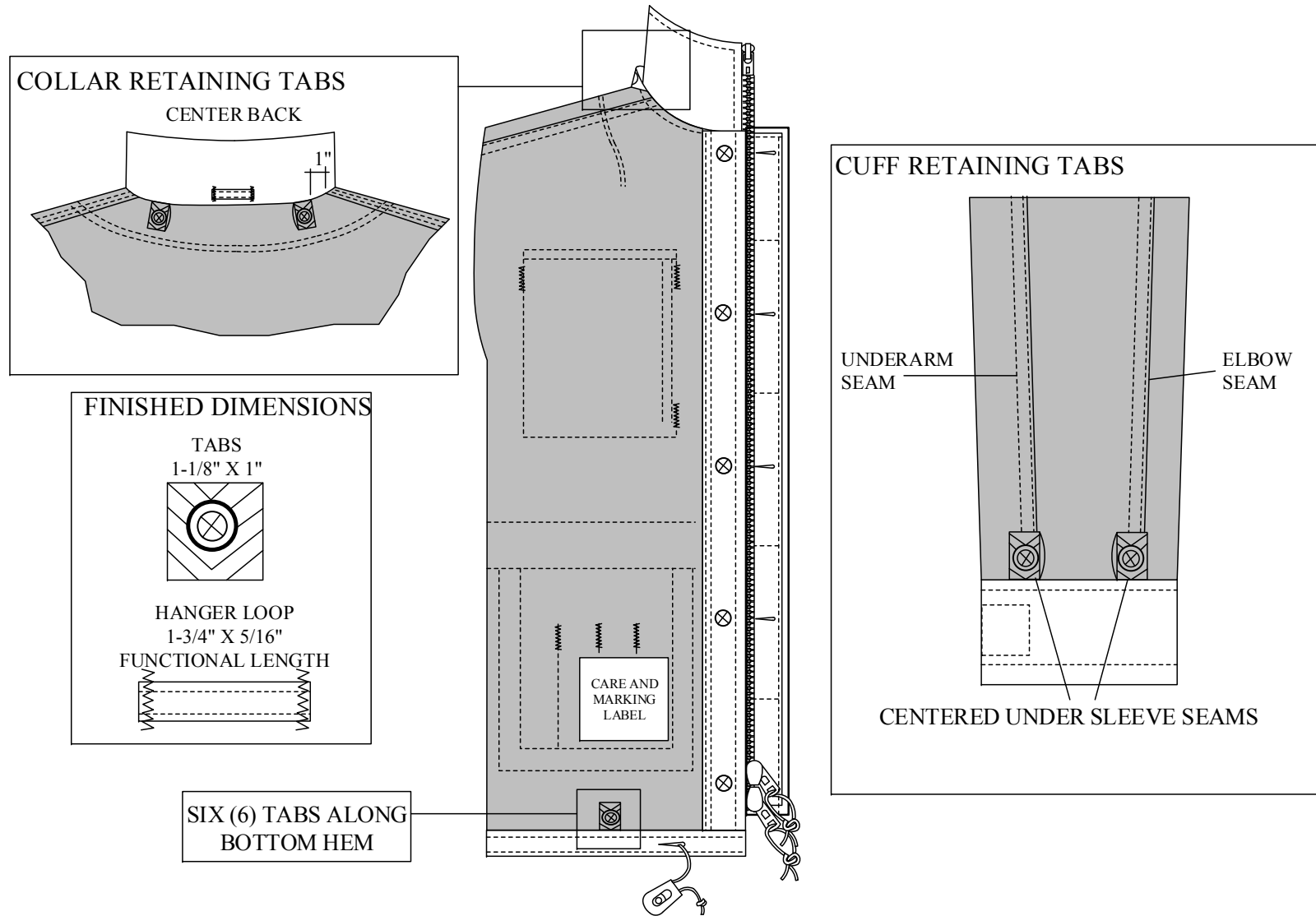


Figure 6: Liner - Front and Back View

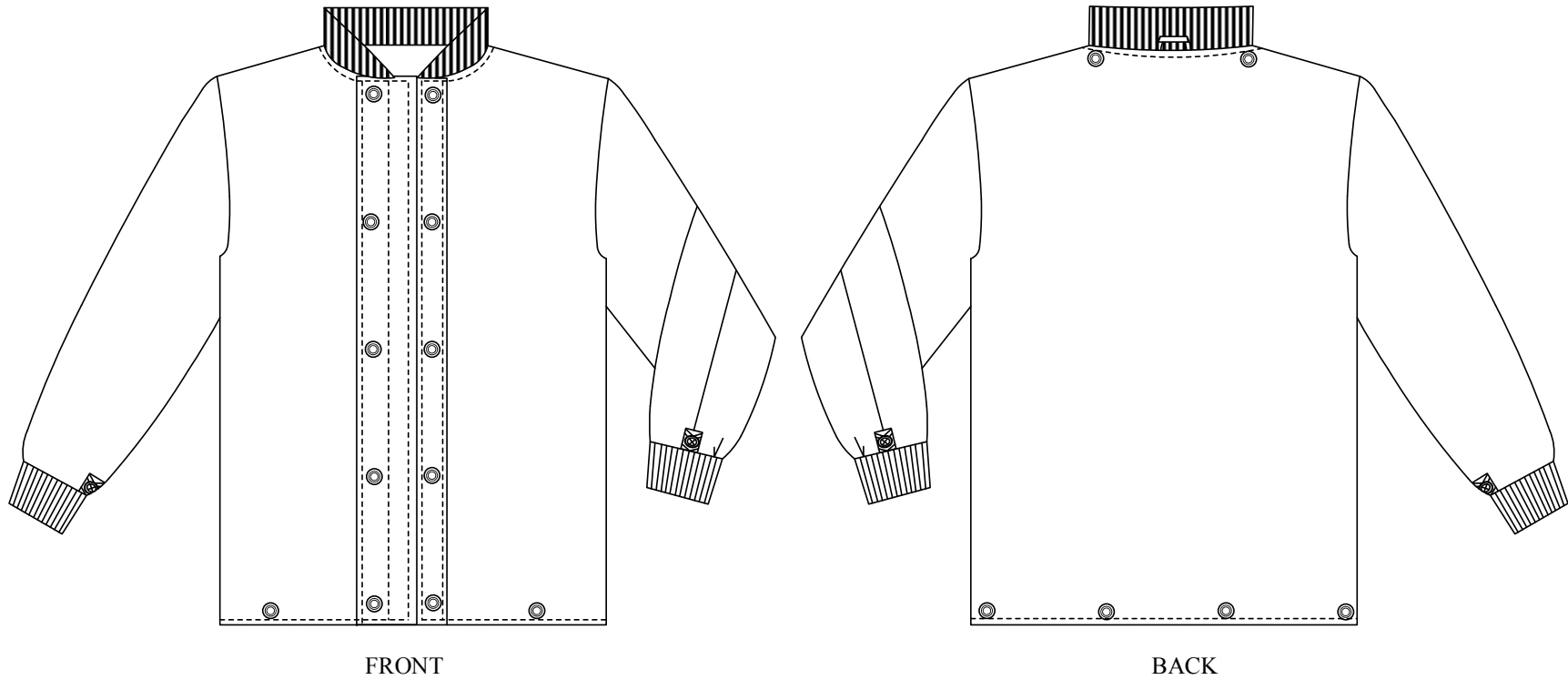


Figure 7: Lining Details

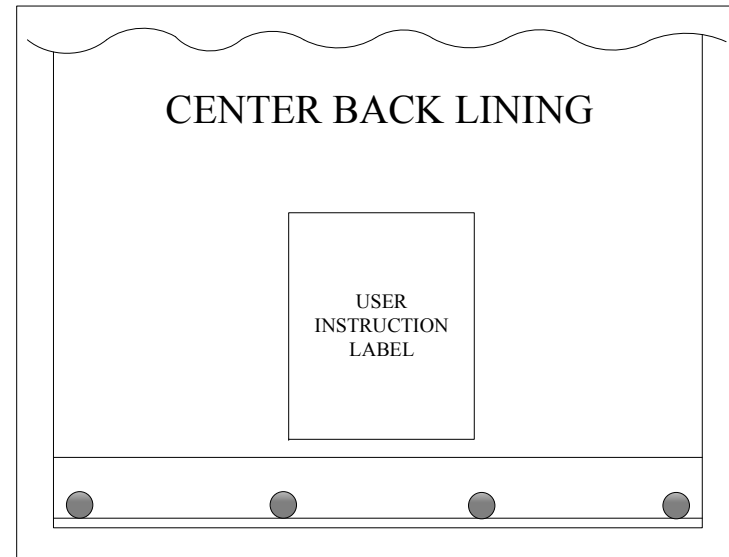
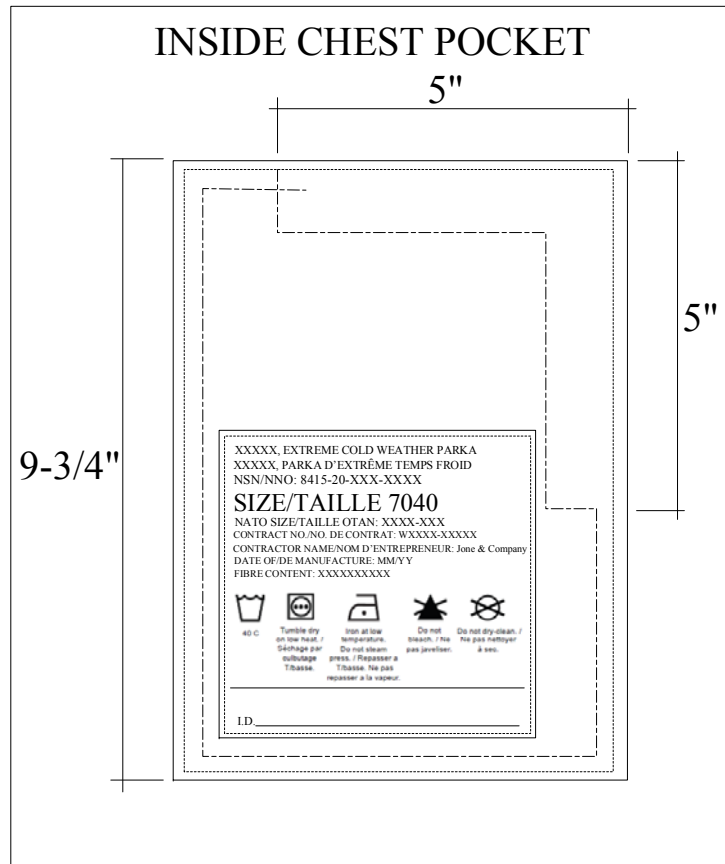


Figure 8: Fly Front System

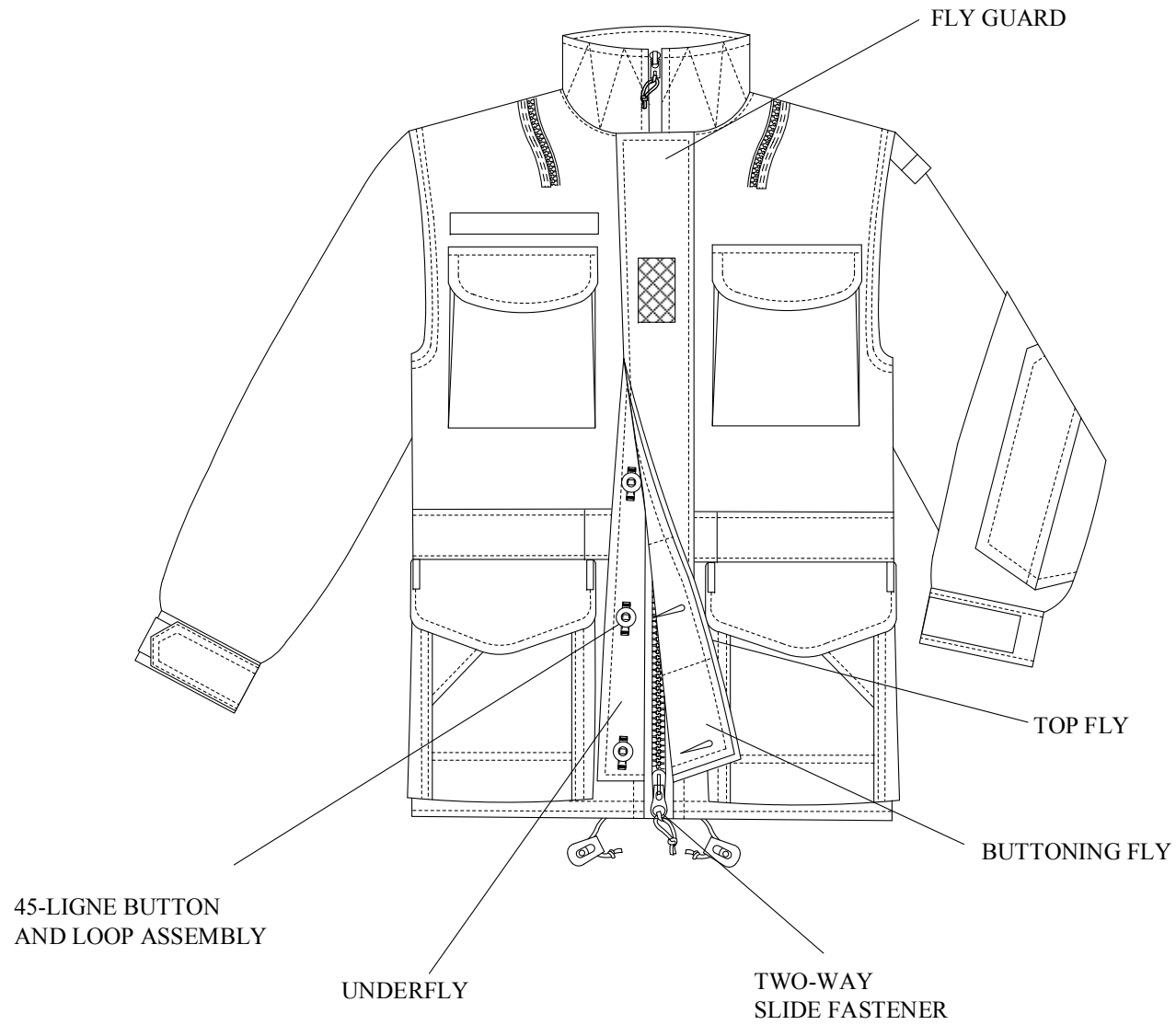


Figure 9: Hood - Outside View

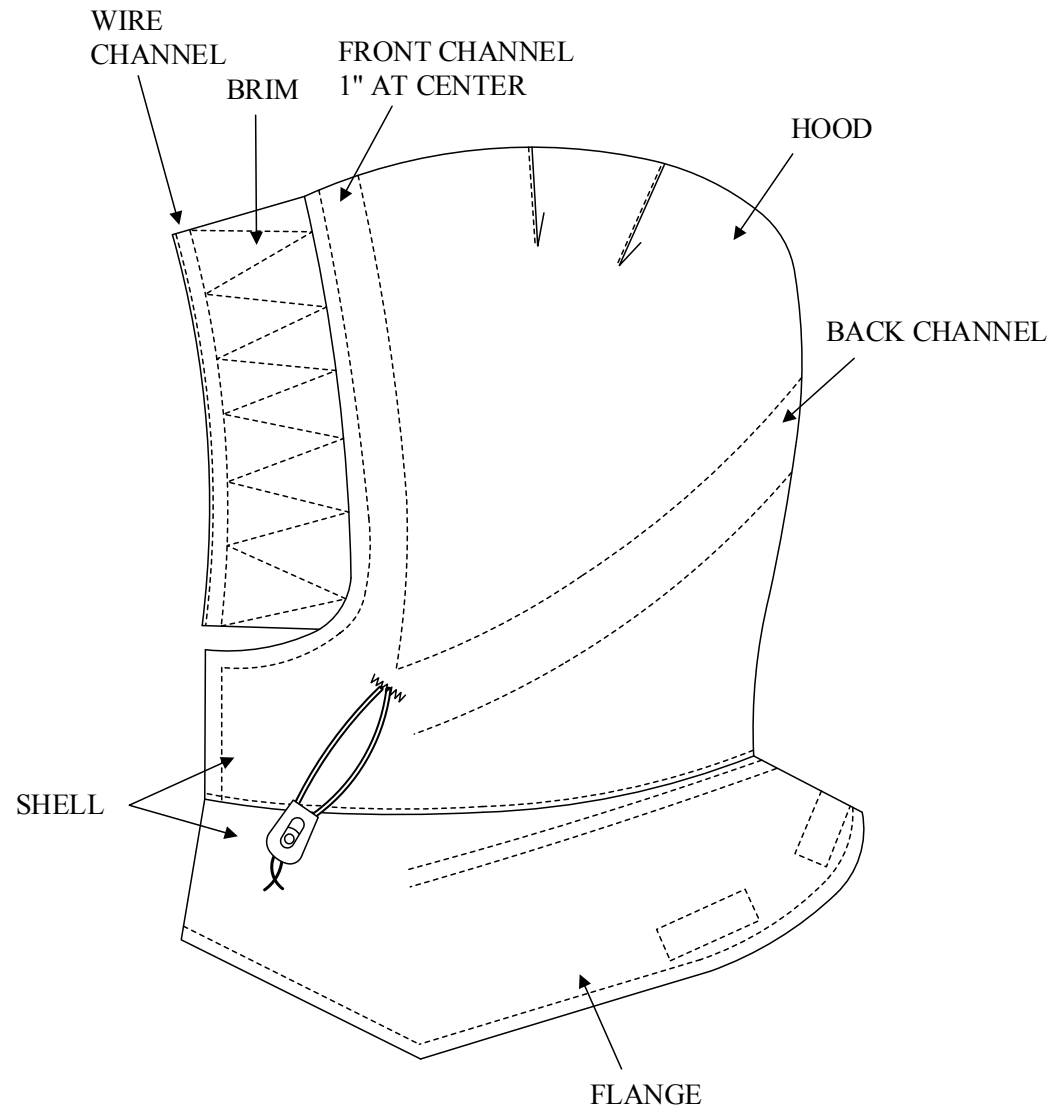


Figure 10: Hood - Inside View

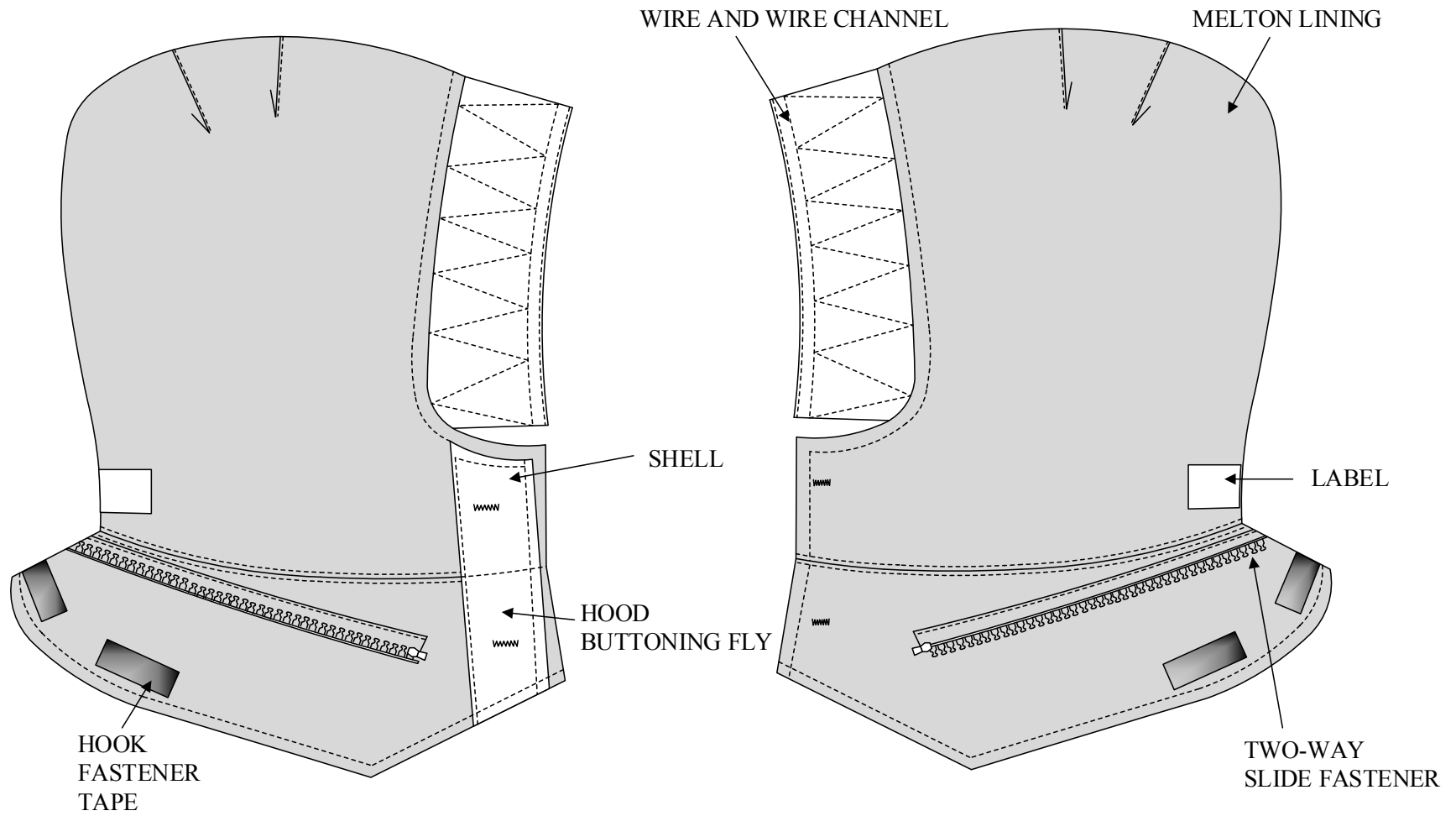


Figure 11: Care and Marking Label for Parka, Liner and Hood

ITEM & CONTRACT INFO	ARTICLET INFO SUR LE CONTRAT PARKA, EXTREME COLD WEATHER, MULTICAM® PARKA, EXTRÊME TEMPS FROID, MULTICAM® NSN/NNO: 8415-20-XXX-XXXX SIZE/TAILLE 7040 NATO SIZE/TAILLE OTAN: XXXX-XXX CONTRACT NO./NO. DE CONTRAT: WXXXX-XXXXX CONTRACTOR NAME/NOM D'ENTREPRENEUR: Jone & Company DATE OF/DE MANUFACTURE: MM/YY FIBRE CONTENT: XXXXXXXXXXXX
CARE SYMBOLS	SYMBOLS D'ENTRETIEN  <p>40 C Tumble dry on low heat. / Séchage par culbutage T/basse. Iron at low temperature. Do not steam press. / Repasser a T/basse. Ne pas repasser a la vapeur. Do not bleach. / Ne pas javeliser. Do not dry-clean. / Ne pas nettoyer à sec.</p>
CARE INSTRUCTIONS	CONSIGNES D'ENTRETIEN 1. MACHINE WASH IN LUKEWARM WATER (NOT EXCEEDING 40 C). 2. DO NOT USE BLEACH. 3. TUMBLE DRY AT LOW TEMPERATURE. 4. DRY CLEAN ONLY WHEN PROPER LAUNDERING FAILS TO REMOVE SOIL. 5. DO NOT STITCH OR PUNCTURE THE MEMBRANE IN THIS GARMENT. 1. LAVAGE A L'EAU TIEDE (TEMPERATURE MAXIMALE DE 40 C) DANS UNE LAVAUSE. 2. NE PAS UTILISER D'AGENTS DE BLANCHIMENT. 3. SECHAGE EN MACHINE A TAMBOUR A TEMPERATURE BASSE. 5. NETTOYAGE A SEC SI LE LINGE EST ENCORE SALE APRES LE BLANCHISSAGE. 5. NE PAS COUDRE OU PERFORER LA MEMBRANE INTERNE IMPERMÉABLE.
USERID	ID DE L'UTILISATEUR I.D. _____

ITEM & CONTRACT INFO	ARTICLET INFO SUR LE CONTRAT HOOD/LINER, EXTREME COLD WEATHER PARKA DOUBLURE/CAPAUCHON, PARKA D'EXTRÊME TEMPS FROID NSN/NNO: 8415-20-XXX-XXXX SIZE/TAILLE 7040 NATO SIZE/TAILLE OTAN: XXXX-XXX CONTRACT NO./NO. DE CONTRAT: WXXXX-XXXXX CONTRACTOR NAME/NOM D'ENTREPRENEUR: Jone & Company DATE OF/DE MANUFACTURE: MM/YY FIBRE CONTENT: XXXXXXXXXXXX
CARE SYMBOLS	SYMBOLS D'ENTRETIEN  <p>40 C Tumble dry on low heat. / Séchage par culbutage T/basse. Iron at low temperature. Do not steam press. / Repasser a T/basse. Ne pas repasser a la vapeur. Do not bleach. / Ne pas javeliser. Do not dry-clean. / Ne pas nettoyer à sec.</p>
USERID	ID DE L'UTILISATEUR I.D. _____

APPENDIX 2 SCALE OF MEASUREMENTS

MEASUREMENTS OF BODY				MEASUREMENTS OF GARMENT														
SIZES BY HEIGHT AND CHEST	NATO SIZES	HEIGHT WITHOUT SHOES	CHEST	GIRTH MEASUREMENTS SLIDE FASTENER			FULL LENGTH FROM COLLAR		SLEEVES				HOOD				SLIDE FASTENER LENGTH AT CENTRE FRONT	
				CHEST	WAIST	BOTTOM	FRONT	BACK	COLLAR EDGE TO EDGE AT NECK SEAM	WIDTH AT BACK IN LINE WITH BACK SLEEVE SEAM	LENGTH AT UNDER ARM SEAM INCLUDING CUFF	WIDTH AT SCYE	WIDTH AT CUFF FULLY EXTENDED	FRONT TO BACK OVER CROWN INCLUDING EXTENSION AND SKIRT	LENGTH OF FACE EXTENSION NOTCH TO NOTCH	SLIDE FASTENER LENGTH		
6432	5060-7585	5'1" to 5' 3 1/2"	X-SHORT	29-32	46	44	46	28	31 1/4	21 1/2	19 1/2	21 1/2	23 1/2	11	28	23 1/2	22	31
6436	5060-8595			33-36	50	48	50		31 3/8	22 1/2	21		24 1/2	12 1/2	28 1/4		23	
6440	5060-9505			37-40	54	52	54		31 1/2	23 1/2	21 1/2		25 1/2	13	28 1/2		24	
6736	6070-8595	5'4" to 5'6 1/2"	SHORT	33-36	50	48	50	29 1/2	32 7/8	22 1/2	21	22 1/2	25 1/4	12 1/2	28 1/4	23 1/2	23	32 1/2
6740	6070-9505			37-40	54	52	54		33	23 1/2	22 1/2		26 1/4	13	28 1/2		24	
6744	6070-0515			41-44	58	56	58		33 1/8	24 1/2	24		27 1/4	13 1/2	28 3/4		25	
6748	6070-1525			45-48	62	60	62		33 1/4	25 1/2	25 1/2		28 1/4	14	29		26	
7036	7080-8595	5'7" to 5'9 1/2"	REG.	33-36	50	48	50	31	34 3/8	22 1/2	21	23 1/2	26	12 1/2	28 1/4	23 1/2	23	34
7040	7080-9505			37-40	54	52	54		34 1/2	23 1/2	22 1/2		27	13	28 1/2		24	
7044	7080-0515			41-44	58	56	58		34 5/8	24 1/2	24		28	13 1/2	28 3/4		25	
7048	7080-1525			45-48	62	60	62		34 3/4	25 1/2	25 1/2		29	14	29		26	
7052	7080-2535			49-52	66	64	66		34 7/8	26 1/2	27		30	14 1/2	29 1/4		27	
7336	8090-8595	5'10" to 6'1/2"	TALL	33-36	50	48	50	32 1/2	35 7/8	22 1/2	21	24 1/2	26 3/4	12 1/2	28 1/4	23 1/2	23	35 1/2
7340	8090-9505			37-40	54	52	54		36	23 1/2	22 1/2		27 3/4	13	28 1/2		24	
7344	8090-0515			41-44	58	56	58		36 1/8	24 1/2	24		28 3/4	13 1/2	28 3/4		25	
7348	8090-1525			45-48	62	60	62		36 1/4	25 1/2	25 1/2		29 3/4	14	29		26	
7352	8090-2535			49-52	66	64	66		36 3/8	26 1/2	27		30 3/4	14 1/2	29 1/4		27	
7640	9000-9505	6'1" to 6'3 1/2"	X-TALL	37-40	54	52	54	34	37 1/2	23 1/2	22 1/2	25 1/2	28 1/2	13	28 1/2	23 1/2	24	37
7644	9000-0515			41-44	58	56	58		37 5/8	24 1/2	24		29 1/2	13 1/2	28 3/4		25	
7648	9000-1525			45-48	62	60	62		37 3/4	25 1/2	25 1/2		30 1/2	14	29		26	
7652	9000-2535			49-52	66	64	66		37 7/8	26 1/2	27		31 1/2	14 1/2	29 1/4		27	
TOLERANCE PLUS OR MINUS				1"	1"	1"	3/4	3/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	0	0	