



Royal Canadian Mounted Police  
Gendarmerie royale du Canada

Doc. no: G.S. 1045-146  
Date: 2016-04-13

## Specification

# Vest, High Visibility

This document has 22 pages including the drawings.

This document was created in English.

The document is available in English and French.

- English/Anglais  
Français/French

The photograph on this page is for reference only.



## Modifications

Date	Para. No's	Modifications
2005-12-20		Original Specification
2007-11-15	Page 6, Para. 4.3.2.1; Page 7, Para. 4.3.2.3	Drawing references in spec amended to reflect correct pages due to typo.
2009-05-08	Para. 4.1.2 Para. 4.1.5 Scale of Measurements Entire Specification	L*a*b* readings changed. New thread requirement. Pattern side height adjusted. Standard version change from CSA Z96-02 to CSA Z96-09 Test requirements updated
2013-06-19	Para. 2.5  Para. 4.1.5  Para. 4.1.6  Para. 4.4 Appendix C	Updated CGSB standard for Care & Labeling of textiles.  Updated the thread requirement as per industry recommendation and added Certificate of compliance required. Changed reference of Validation certificate to Certificate of compliance. Updated reference to CGSB standard. Revised definitions and criteria.
2016-02-02	Para. 1.1 Para. 1.4 Para. 2.3 Para. 2.7 - 2.8  Para. 3.3 Para. 4.1 - 4.1.4 Para. 4.1.2 Para. 4.1.6 Para. 4.4  Para. 5  Table I  Appendix C	Added stock item number to paragraph. Added paragraph. Updated CSA/Z96 standard. Added paragraphs for ASTM & AATCC standards. Paragraph deleted. Updated CSA/Z96 standard in paragraphs. Removed reference to LAB reading. Updated paragraph for hook and loop tape. Modified cleaning instruction label information. Paragraph deleted, following paragraphs renumbered. Weight tolerance increased and breaking strength decreased. Appendix removed.
2016-04-12	Table I	Corrected test method for colourfastness to light.
2016-04-13	Para. 4.4	Corrected care symbol for drying.

## **RCMP VIEWING SAMPLE**

A viewing sample, when available, will be supplied to the successful bidder.

This will be used for the guidance of the manufacturer in all factors not covered by this specification or referred to therein. Variation from the specification may appear in the sample in which case the specification shall govern.

It may be obtained from:

Royal Canadian Mounted Police  
ATTN: Uniform and Equipment Program  
(440 Coventry Road, Warehouse Building)  
1200 Vanier Parkway  
Ottawa, Ontario  
K1A 0R2

It will be sent “prepaid” and is to be returned “prepaid”.

The viewing sample shall be returned to the RCMP in the same condition as received by the manufacturer. Lost or damaged viewing samples shall be replaced by an identical item or the RCMP shall be reimbursed for the cost of an acceptable replacement.

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## **SPECIFICATION**

### **VEST, HIGH VISIBILITY**

#### **1. Definition**

- 1.1 This specification shall govern the manufacture and inspection of Vest, High Visibility. The specific items covered under this specification with stock number are as follows:
- i. 8100 – Vest, High Visibility / Gilet haute visibilité;
  - ii. 8101-000 – Vest, High Visibility, Special / Gilet, haute visibilité, taille spéciale;
  - iii. 8110 – Vest, High Visibility, Auxiliary / Gilet, haute visibilité, auxiliaire;
  - iv. 8111-000 – Vest, High Visibility, Auxiliary, Special / Gilet, haute visibilité, auxiliaire, taille spéciale.
- 1.2 This specification, patterns, viewing sample, drawing or other information issued in connection therewith, may only be used for specific enquiries, solicitations, or orders placed on behalf of the Royal Canadian Mounted Police.
- 1.3 This specification supersedes all previous specifications for R.C.M.P. Vest, High Visibility.
- 1.4 This specification has been translated into French from this original English language document.

#### **2. Applicable Specifications**

- 2.1 The following publications are applicable to this specification and to the issues in effect on the date of the solicitation, unless otherwise specified.
- 2.2 CAN/CGSB 4.2 Textile Test Methods; 4.1-2008, 5.1-M90 (2013), 6-2013, 9.2-M90 (R2013), 12.3-2005 (R2013), 19.1-2004 (R2013), 22-2004, 23-M90 (R2013), 29.1-M89 and 58-2004.
- 2.3 CAN/CSA Z96-15 High-Visibility Safety Apparel.
- 2.4 CAN/CGSB 4.131-93, Thread, Polyester.

- 2.5 CAN/CGSB 86.1-2003 Care Labelling of Textiles.
- 2.6 ASTM E308-01 Standard Practice for Computing the Colors of Objects by Using the CIE System.
- 2.7 ASTM, American Society for Testing and Materials, Methods D1424-09 (2013), D5034-09 (2013), D5169-98 (2015), D5170-98 (2015), E808-01 (2009), E809-08 (2013) and E1164-12.
- 2.8 AATCC, American Association of Textile Chemists and Colorists - Technical Manual Methods; 8-2013, 15-2013, 16.3-2014, and 135-2012.

### 3. **General Requirements**

- 3.1 The article or material covered by this specification shall be free from material and manufacturing defects that may affect its appearance or serviceability. In all particulars not covered by this specification or contract documents, production shall be equivalent in all respects to the viewing sample.
- 3.2 **Design** - The vest shall be a front closure, 'five-point tear-away' design traffic safety garment conforming in all respects to the CAN/CSA Z96-15 Standard as a Class 2, Level 2 garment. The lettering shall be retroreflective applied to the front and back of the vest. The lettering shall be 'RCMP', 'GRC', and 'Police'. When specified in the contract documents, 'Auxiliary' and 'Auxiliaire' markings shall replace the word 'POLICE' on both the front and back of the vest. The 'RCMP' and 'GRC' shall remain at the same size and at the same position.

### 4. **Detail Requirements**

- 4.1 **Material & Performance Requirements** - Vest, High Visibility shall conform in all respects to the following national standard of Canada:

**CAN/CSA Z96-15 High-Visibility Safety Apparel**, (most recent edition), as published by the Canadian Standards Association, as non-FR Class 2, Level 2 garment, with specific requirements of design, colour, and size as listed below.

- 4.1.1 **Shell Material** - The shell material shall be a woven fabric meeting the requirements outlined in Table I of this specification for non-water repellent, non-water resistant material. All vests must be machine-washable at temperatures up to

and including 60°C and dry-cleanable while meeting the performance requirements outlined in CAN/CSA Z96-15 High Visibility Safety Apparel. Mesh type material shall not be acceptable.

- 4.1.2 **Shell Material - Colour** - The colour shall be fluorescent yellow-green in accordance with Table I. The colour shall visually match the sample provided by R.C.M.P. Uniform & Equipment Program.
- 4.1.3 **Edge Binding** - The front and back piece edges shall be finished with a binding tape using material as specified in Para. 4.1.1. The binding tape shall be 8 mm ± 2 mm wide finished and spliced no more than 3 times on each piece.
- 4.1.4 **Retroreflective Markings and Lettering** - The retroreflective markings shall be exposed, wide angle, retroreflective lens, silver material in the form of a heat transfer film, 5cm wide. The font shall be Arial Black and the lettering shall be as per contract requirements. *Stock number 8100 and 8101* shall have the 'RCMP', 'GRC', and 'POLICE' lettering on the front and back as per drawing #4. *Stock number 8110 and 8111* shall have the 'RCMP', 'GRC', 'AUXILIARY' and 'AUXILIAIRE' lettering on the front and back as per Appendix 'B' and drawings #5 and #6. It shall meet all the retroreflective performance requirements outlined in Section 6, meeting Table 5 in the CAN/CSA Z96-15 High-Visibility Safety Apparel standard. All retroreflective markings and lettering shall meet a minimum coefficient of retro reflection,  $R_A$ , and shall be determined in accordance with the procedures defined in ASTM E808-01 (2009) and E809-08 (2013).
- 4.1.5 **Thread** - The thread shall be polyester wrap, polyester core, Tex 40, Class B of matching colour, meeting CAN/CGSB 4.131-93.
- 4.1.6 **Hook and Loop Tape** - The hook and loop tape shall be woven nylon, fluorescent yellow-green in colour, with a high life cycle. The combined hook and loop shall have no less than 8 P.S.I length-wise shear strength with initial peel strength of not less than 1 P.I.W. when tested to ASTM D5169-98 (2015), standard test method for shear strength [dynamic method] of hook and loop touch fasteners and ASTM D5170-98 (2015), standard test method for peel strength ["T" method] of hook and loop touch fasteners." Dimensions shall be as per drawings.
- 4.2 **Size and Dimensions** - Vest, High Visibility to this specification shall be supplied in the sizes specified by the RCMP and to the dimensions given in the scale of measurements and drawings forming part of this specification. The garment components shall be shaped, dimensioned and positioned in accordance with the

pattern components and pattern requirements as outlined in Appendix A forming part of this specification.

#### 4.3 **Construction**

4.3.1 **Stitching** - All stitching shall be lockstitch. There shall be not less than three nor more than four stitches per centimetre. The beginning and ending of all stitching shall be securely backstitch tacked, unless secured by other stitching.

#### 4.3.2 **Body**

4.3.2.1 **Front** - The front shall be made from the material specified in Para. 4.1.1 and shall be sized and shaped to the pattern according to the scale of measurements. Both fronts shall have retroreflective tape as specified in Para. 4.1.4 applied vertically and horizontally as per patterns and drawings. The left front shall have one piece of loop tape sewn on the back side vertically from top to bottom along center front. The right front shall have 4 pieces of hook tape 5 cm long by 3.75 cm wide placed on the face at center front according to the pattern. The name tag shall be loop tape 8.5 cm long by 2.5 cm wide. Below the name tag shall be lettering as per drawing #4 or #6. Hook tape shall be applied to the face of the garment on the side extensions as per drawing #3 and the measurements shall be as per the scale of measurements extension length. Hook tape shall be placed on the face of the material at the shoulder edge as per drawing #2. The hook tape shall be 3.75 cm wide and the length shall measure the width of the shoulder. All edges shall be bound with binding tape as specified in Para. 4.1.3 to ensure durability. Care shall be taken to ensure that the binding is stitched to the shell material and does not separate.

4.3.2.2 **Back** - The back shall be made from the material specified in Para. 4.1.1 and shall be sized and shaped to the pattern and scale of measurements. The back shall have retroreflective tape as specified in Para. 4.1.4 applied to form an 'X' and a horizontal stripe as per patterns and drawings. In the 'X', there shall be lettering sized as per drawing #4 for "Police" vests or as per drawing #6 for "Auxiliary" and "Auxiliaire" vests. Loop tape shall be applied to the wrong side of the garment on the side extensions as per drawing #3. The loop tape furthest from the side flap end shall be placed at a distance equal to the extension length in the scale of measurements. The loop tape placed horizontally shall be centered between the two vertical loop tape and shall be in line with the top of the vertical loop tape. Loop tape, 3.75 cm wide measuring the width of the shoulder, shall be placed at the shoulder edge on the wrong side. Two pieces of loop tape shall be placed butted against each other to form a continuous piece 7.5 cm wide. Hook and loop tape

shall be placed in line with the piece edge. All edges shall be bound with the binding tape as specified in Para. 4.1.3 to ensure durability. Care shall be taken to ensure that the binding is stitched to the shell material and does not separate.






4.3.2.3 **Retroreflective Markings and Lettering** - The retroreflective as specified in Para. 4.1.4 shall be heat transferred to the shell material and positioned as per pattern and drawings. The back panel shall have an 'X' that is broken up by lettering. The break shall be 10 cm high and shall measure 5 cm vertically on both sides of center keeping the 'X' symmetrical. The word 'POLICE' shall be centered in the 'X' and the words 'RCMP' and 'GRC' shall be above it as per drawing #4. The lettering 'RCMP' shall be left justified in relation to 'POLICE' and the lettering 'GRC' shall be right justified in relation to 'POLICE'. There shall be a horizontal band at the bottom of the 'X' extending from side to side. The front body shall have retroreflective material from the shoulder extending down the body to meet the horizontal band that extends from side to side. On the front, 1 cm below the name tag shall be 'RCMP', 'GRC' and 'POLICE' lettering, dimensioned and positioned as per drawing #5. The lettering 'RCMP' shall be left justified in relation to 'POLICE' and the lettering 'GRC' shall be right justified in relation to 'POLICE'. The front lettering shall be in line with the left side of the name tag. All retroreflective material shall be permanently attached to the shell material by means of heat sealing. No stitching shall be employed in attaching the retroreflective material, and the heat-sealing shall endure for the life of the vest. There shall be no loose or un-bonded edges, or loss of film. Retroreflective material shall not cover other retroreflective material on the vest in order to provide the best bond between the retroreflective material and the background material.

4.4 **Marking & Cleaning Instructions Label** - Each vest shall have a label marked legibly and indelibly in English and French attached in accordance with the requirements outlined in Section 10 of CAN/CSA Z96-15 High-Visibility Safety Apparel, with additional information as listed below added to the label. The cleaning instructions shall have all necessary and applicable care symbols for the garment and trim. All symbols shall appear according to the CAN/CGSB 86.1-2003 Care Labelling of Textiles. The label shall be placed at the back of the front panel at the side aligning with the retroreflective material as per drawing #3.

1. Item name in English as written in para. 1.1.
2. Item name in French as written in para. 1.1.
3. RCMP stock number - reference contract documents. (Ex. 8100 000)
4. Size of the article, combining the size designation referenced in the English and French contract documents. (Ex. L/XL - G/TG)
5. Date of manufacture, in numeric format year/month (Ex. 2001/11)
6. Your manufacturer identification (Company name or number).



- 7. Print information as shown below.
- 8. Print information as shown below.

1					
2					
3					
4					
5					
6					
7	CAN/CSA Z96-15 Class 2, Level 2 Fluorescent Yellow-Green		Norme Z96-15 de la CAN/CSA Classe 2, Niveau 2 Jaune-vert fluorescent		
8					
	<b>Do Not</b> use fabric softener		<b>(Do Not)</b> use dryer sheets		
	Ne pas utiliser d'agent adoucissant		(Ne pas utiliser d'assouplissant en feuilles)		

4.5 **Identification Label** - Each vest shall have a durable blank label 7.5 cm x 2 cm applied separately beside the marking and cleaning label used for the inscription of the wearer's name.

5. **Quality Assurance Provisions**

5.1 **Responsibility for Inspection** - Unless otherwise stipulated in the contract, it is the prime contractor's responsibility to satisfy the R.C.M.P., Uniform and Equipment Program that the material and services being supplied conform to this specification. This may be accomplished by performing the tests specified in this specification or by demonstrating to the satisfaction of the R.C.M.P., Uniform and Equipment Program that conformity to this specification of manufacturing processes is assured. The contractor may use any commercial testing establishment acceptable to the R.C.M.P., Uniform and Equipment Program.

5.2 The R.C.M.P., Uniform and Equipment Program reserves the right to perform any inspection considered necessary to ensure the material and services conform to the specified requirements. For the purpose of inspection, a portion of each delivery not exceeding two percent or two out of any number delivered under 100 may be put to tests that could destroy the articles. If found to be inferior or not in

accordance with this specification, all articles so destroyed shall be replaced by others of proper quality and pattern at the expense of the contractor. The entire delivery may also be rejected if it is found that articles previously rejected due to non-repairable defects are redelivered for inspection.

- 5.3 The contractor will be promptly notified when any articles are not accepted and such articles will be returned at the contractor's risk and expense.

6. **Methods of Measuring**

(Refer to the Scale of Measurements and Drawing No. 1).

- 6.1 **Chest** - The chest shall be the distance across one vest front panel, measured 7.5cm below the lowest point of the neckline. (A).
- 6.2 **Hem** - The hem shall be half the distance across the vest bottom, measured 2.5cm above the bottom of the vest including extension. (B).
- 6.3 **Front Length** - The length shall be the distance measured 2.5 cm in from center front at the base of the neckline to the hem. (C).
- 6.4 **Shoulder to Waist** - The length shall be the distance measured from the shoulder 2.5cm in from the neckline to the hem. (D).
- 6.5 **Back Width** - The back width shall be the distance across the back of the vest measured 10cm down from the neckline. (E).
- 6.6 **Back Hem** - The hem shall be the distance across the vest bottom, measured 2.5cm above the bottom of the vest including extensions. (F).
- 6.7 **Center Back Length** - The length shall be the distance measured from the base of the neckline at center back to the hem. (G)
- 6.8 **Side Width** - The distance measured 2.5cm in from the end of the extension from top to hem. (H).
- 6.9 **Extension Length** - The distance measured perpendicular from a continuation of the side measured to the side extension edge. (J).

**Scale of Measurements - Vest, High Visibility**

Size	Body Measurements		GARMENT MEASUREMENT								
Size	Chest	Waist	Front Chest (½ only)	Front Hem (½ only)	Front Length	Shoulder to Waist	Back Width	Back Hem	Center Back Length	Side Width	Extension Length
S/M	up to 40"	up to 34"	21.4	34.6	38	54.5	38.6	65.2	45.4	20	13
L/XL	40" - 48"	34" - 46"	23.9	42.2	42.4	59.3	43.6	80.4	49.8	19.8	18
2XL/3XL	48" - 56"	46" - 58"	26.4	49.8	46.8	64.1	48.6	95.6	54.2	19.7	23
4XL/5XL	56" - 62"	58" - 70"	28.9	57.4	51.2	69	53.6	110.8	58.6	19.5	28
Tolerances ± including binding			1 cm	1 cm	1 cm	1 cm	1 cm	1 cm	1 cm	1 cm	1 cm
Measurement Location			A	B	C	D	E	F	G	H	J

**NOTE:** All measurements are in centimetres unless otherwise indicated.

**TABLE I**  
**Properties of Shell Material (Fluorescent Yellow-Green)**  
**CAN/CSA Z96-15 High Visibility Apparel Requirements (Meeting or Exceeding)**

		REQUIREMENTS	TEST METHOD
1	Colour	Fluorescent yellow-green matching the viewing sample	
2	Fiber Content	100% Polyester	
3	Weave	Plain	
4	Mass	180g/m <sup>2</sup> ± 15g/m <sup>2</sup>	<ul style="list-style-type: none"> <li>• CAN/CGSB-4.2 Method 5.1-M90 (2013)</li> </ul>
5	Width	150 cm (min.)	<ul style="list-style-type: none"> <li>• CAN/CGSB-4.2 Method 4.1-2008</li> </ul>
6	Yarns per 10 cm	Warp 252 (min.) Weft 181 (min.)	<ul style="list-style-type: none"> <li>• CAN/CGSB-4.2 Method 6-2013</li> </ul>
7	Breaking Strength	Lengthwise: 400N (min.) Crosswise: 400N (min.)	<ul style="list-style-type: none"> <li>• CAN/CGSB-4.2 Method 9.2-M90 (R2013)</li> <li>• ASTM D5034-09 (2013)</li> </ul>
REQUIREMENTS FROM CAN/CSA Z96-15			
8	Background - Material Colour	<p><b>Initial:</b> Table 2A - Fluorescent yellow-green</p> <p><b>After</b> colourfastness to light (AATCC 16.1-2014 Test Option E, 40 AATCC Fading Units): Table 2A - Fluorescent yellow-green</p>	<ul style="list-style-type: none"> <li>• ASTM E1164-12</li> </ul>
9	Colour Fastness To Light (Xenon)	Light fastness shall be equal or better than Grade 4 by Grey Scale for Colour change after 40 AATCC Fading Units.	<ul style="list-style-type: none"> <li>• AATCC 16.3-2014, Test Option E</li> </ul>
10	Colour Fastness To Crocking	Wet: Grey Scale 4 or better Dry: Grey Scale 4 or better	<ul style="list-style-type: none"> <li>• CAN/CGSB-4.2 Method 22-2004</li> <li>• AATCC 8-2013</li> </ul>
11	Colour Fastness To Perspiration	Colour change: Grey Scale 4 or better Staining: Grey Scale 4 or better	<ul style="list-style-type: none"> <li>• CAN/CGSB-4.2 Method 23-M90 (R2013)</li> <li>• AATCC 15-2013</li> </ul>
12	Colour Fastness To Domestic and Commercial Laundering	Colour change: Grey Scale 4 or better Staining: Grey Scale 3 or better	<ul style="list-style-type: none"> <li>• CAN/CGSB-4.2 Method 19.1-2004 (R2013), Test 2</li> </ul>
13	Colour Fastness To Dry Cleaning	Colour Change: Grey Scale 4 or better	<ul style="list-style-type: none"> <li>• CAN/CGSB-4.2 Method 29.1-M89</li> </ul>
14	Dimensional Change to Laundering	5 cycles: Not exceed ± 4% length Not exceed ± 2% width	<ul style="list-style-type: none"> <li>• CAN/CGSB-4.2 Method 58-2004</li> <li>• AATCC Method 135-2000</li> </ul>
15	Tearing Strength	Minimum: 13N	<ul style="list-style-type: none"> <li>• CAN/CGSB-4.2 Method 12.3-2005 (R2013)</li> <li>• ASTM D1424-09 (2013)</li> </ul>

**Note:** All material requirements above meet or exceed the CSA Z96-15 standard and all certification and test reports shall comply with the table requirements above not only to CSA Z96-15.

## APPENDIX A

### Sealed Pattern Identifier

Pattern #: G.S. 1045-146  
 Title: Vest, High Visibility

Paper Patterns - Paper patterns are available from the RCMP, Uniform and Equipment Program, Ottawa Ontario, under Pattern # G.S. 1045-146. Firms requested to produce Pre-contract Award Samples will be provided with the base pattern only. The full set of patterns either in individual sizes or as a graded nest will be provided to the successful bidder after the contract is awarded.

The paper patterns include placement some templates for hook and loop and retroreflective material. Contractors may make changes required to suit their production process, however, the design and grade shall not be affected or changed. No seam allowance is required.

All patterns are the property of the RCMP and must be returned upon completion of the contract.

Pattern Pieces - This design has 3 pattern components.

<b>Legend:</b>	
Cut 1 Single	= Cut 1
Cut 1 Paired	= Cut 2

Pattern Components	Nomenclature	Quantity to be cut	Material
# 1 of 2	Back	1 Single	Shell Material
# 2 of 2	Front Right	1 Single	Shell Material
# 3 of 3	Front Left	1 Single	Shell Material

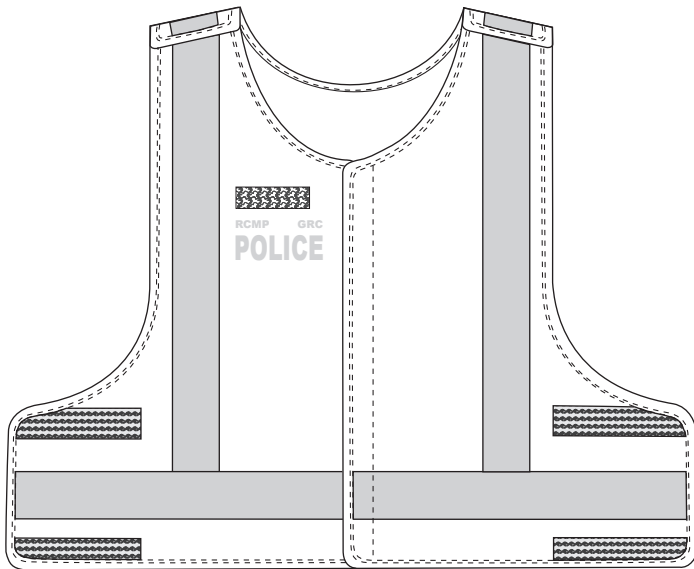
**Note:** Pattern piece for edge binding not included.

**APPENDIX B****Auxiliary Markings**

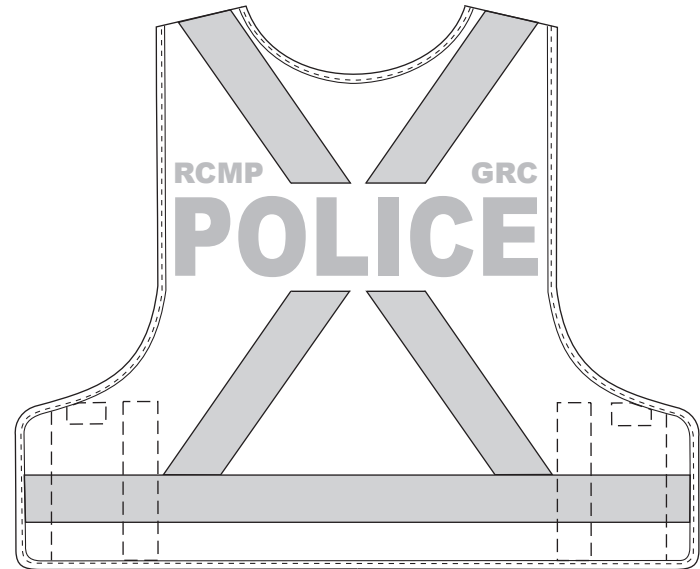
When specified in the contract documents, 'Auxiliary' and 'Auxiliaire' markings shall replace the word 'POLICE' on both the front and back of the vest. The 'RCMP' and 'GRC' shall remain at the same size and at the same position.

When the contract specifies the purchase of the vest with 'Auxiliary' and 'Auxiliaire', the following shall govern. In Para. 4.1.4, the lettering shall be 'Auxiliary' and 'Auxiliaire' as specified in drawings #5 and #6. All other requirements shall be as per the specification.

Dwg. 1



Front View



Back View

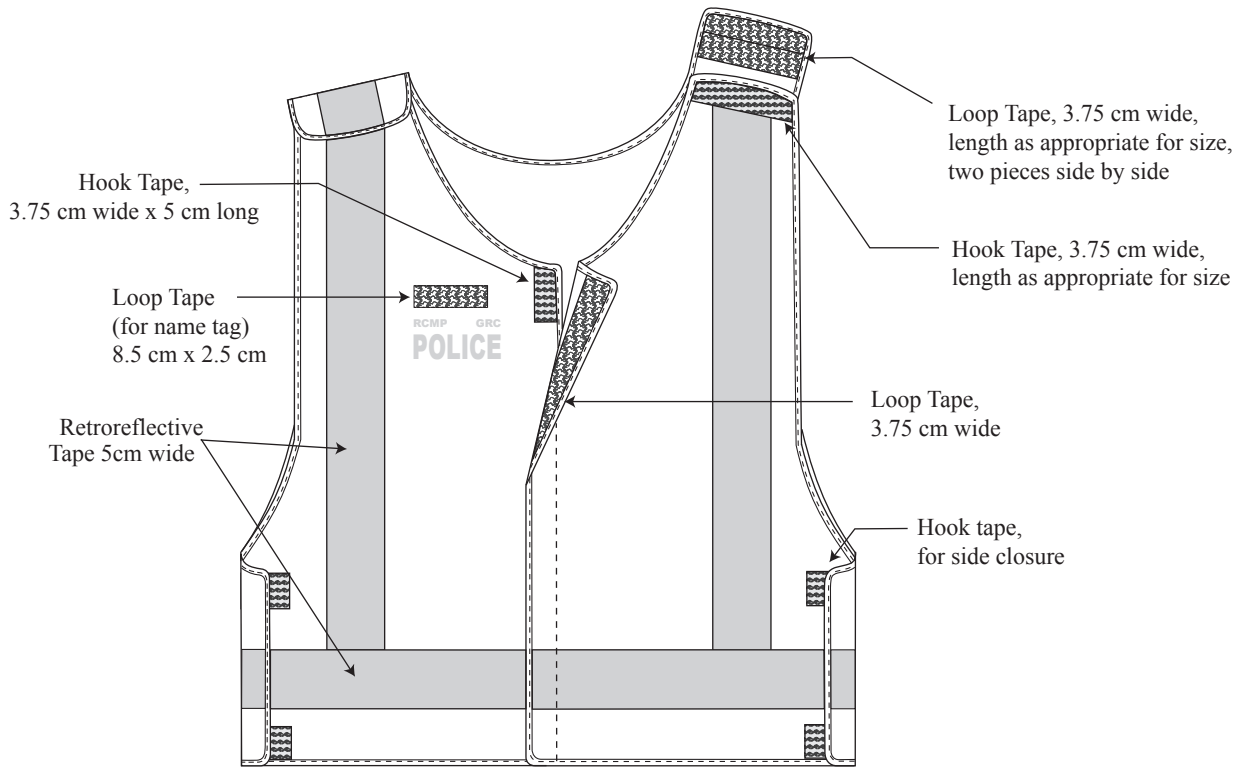
All Measurements in Centimetres  
NOT TO SCALE



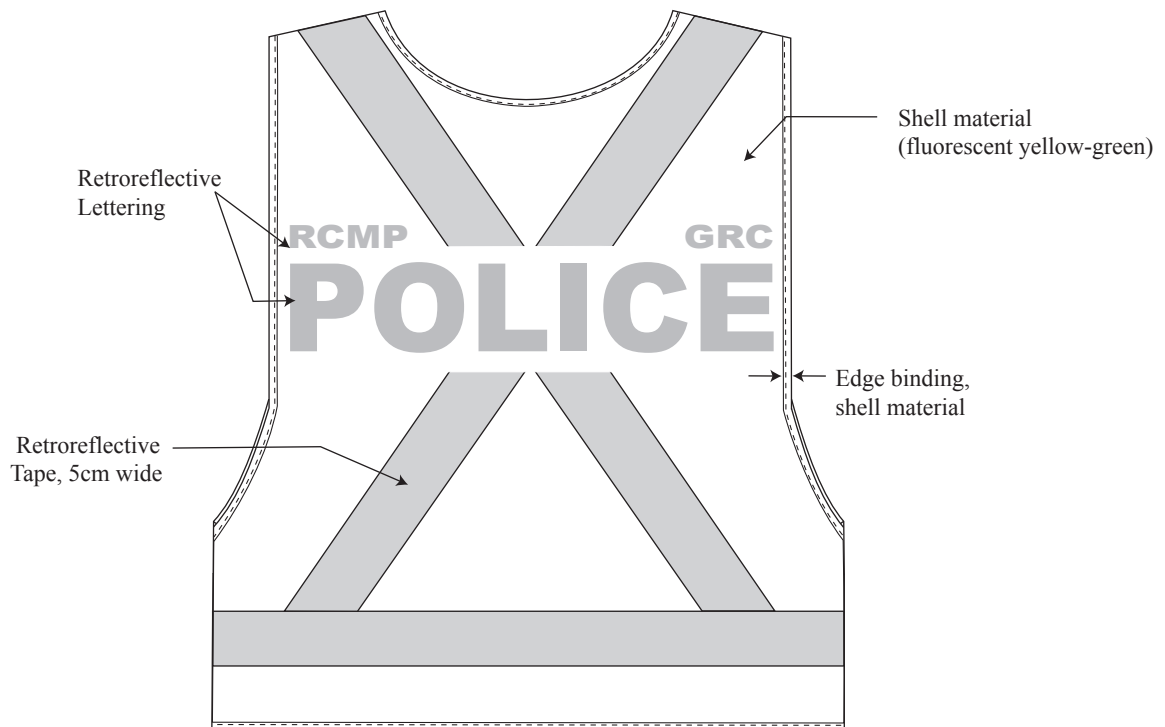
Vest, High Visibility

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Dwg. 2



Front



Back

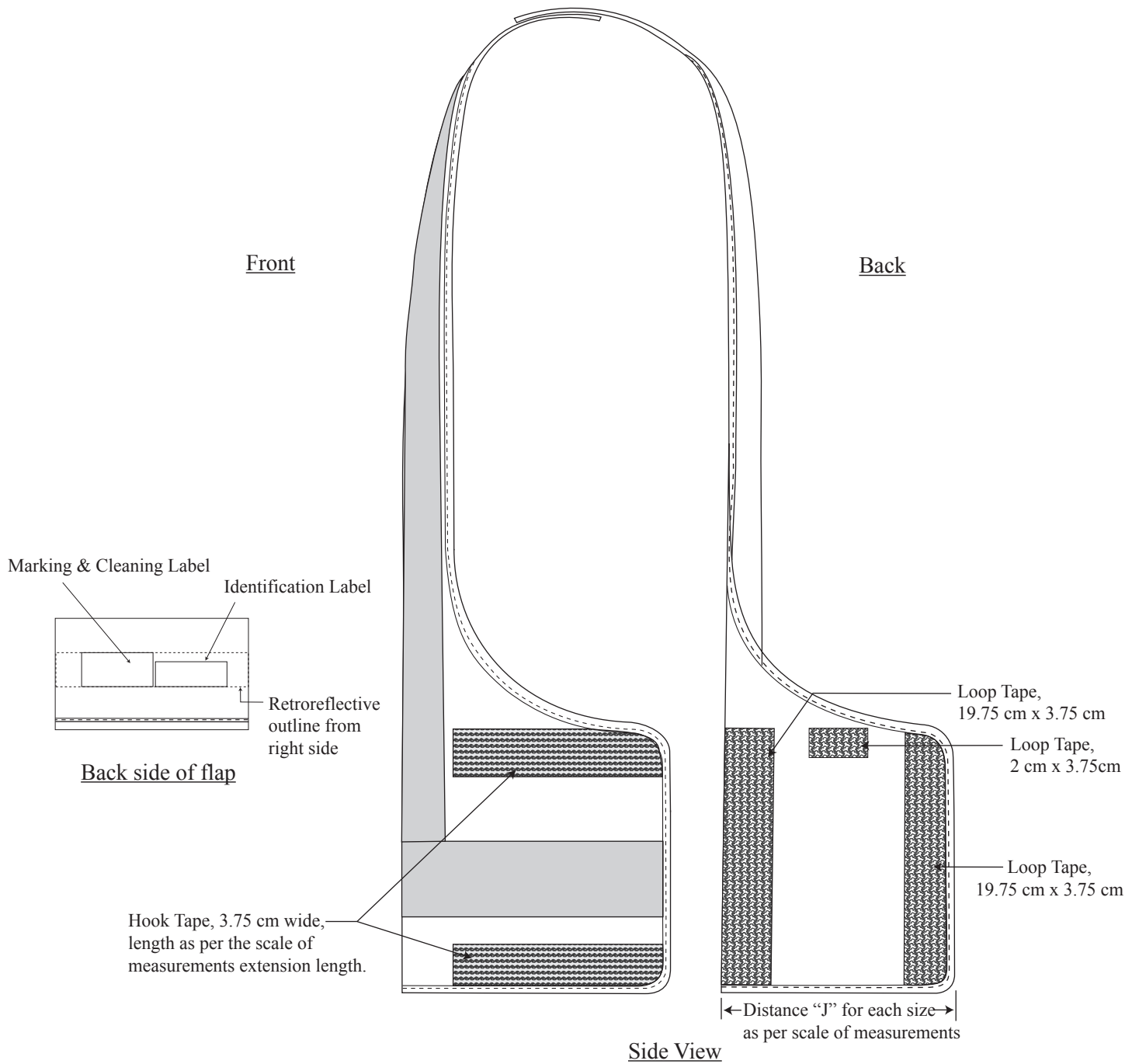
All Measurements in Centimeters

Unless otherwise stated all measurements are subject to  $\pm 0.5$  cm tolerances

NOT TO SCALE

Side Closure Detail

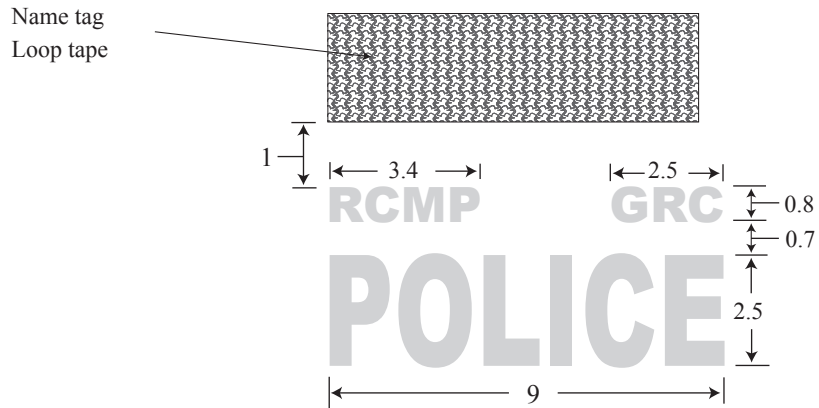
Dwg. 3



All Measurements in Centimeters  
Unless otherwise stated all measurements are subject to  $\pm 0.5$  cm tolerances  
NOT TO SCALE

Police Dimensions

Dwg. 4



Front Retroreflective Lettering



Back Retroreflective Lettering

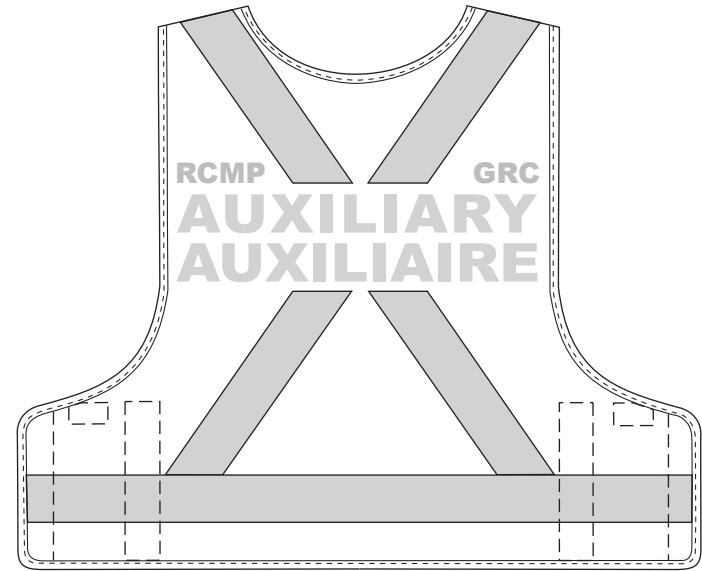
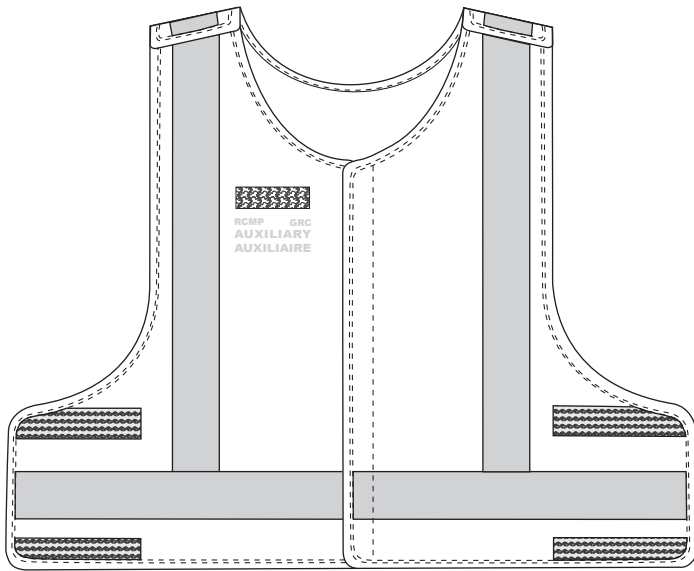
All Measurements in Centimeters

Unless otherwise stated all measurements are subject to  $\pm 0.5$  cm tolerances

NOT TO SCALE

Auxiliary Markings, Appendix "B"

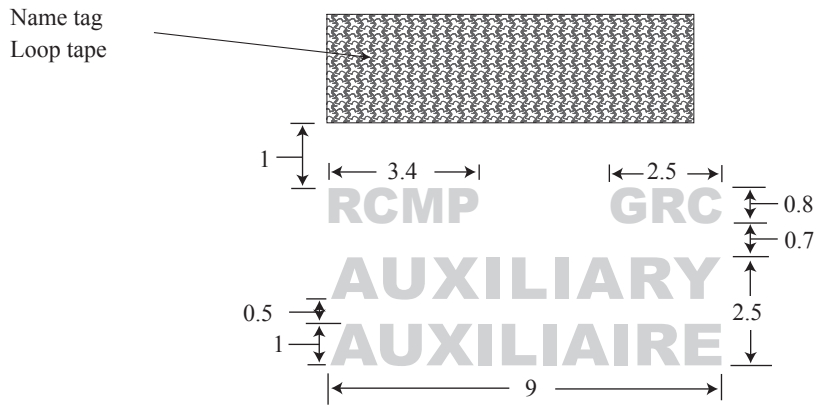
Dwg. 5



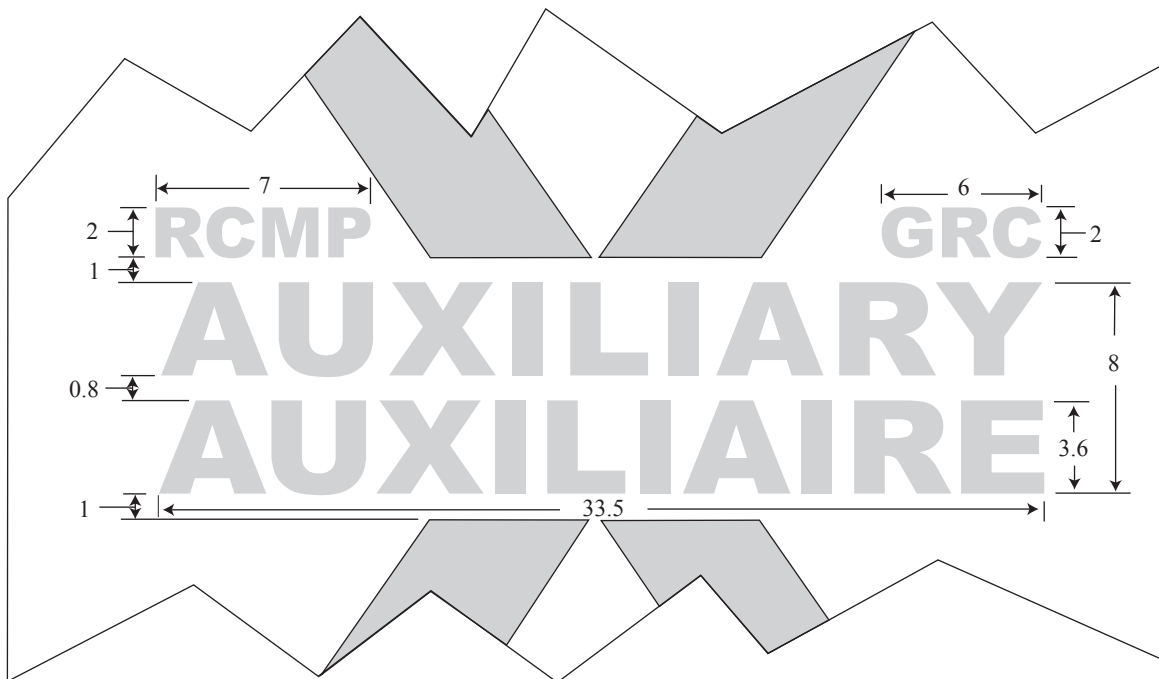
All Measurements in Centimetres  
NOT TO SCALE

Auxiliary Dimensions, Appendix "B"

Dwg. 6



Front Retroreflective Lettering



Back Retroreflective Lettering

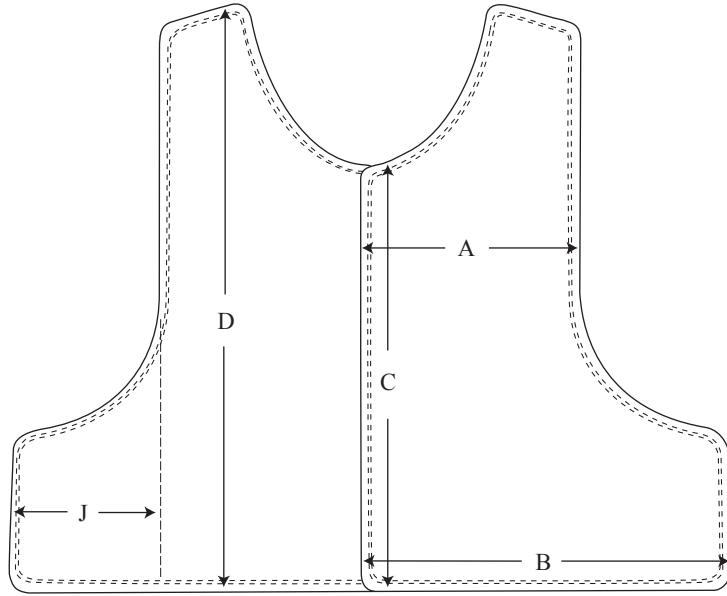
All Measurements in Centimeters

Unless otherwise stated all measurements are subject to  $\pm 0.5$  cm tolerances

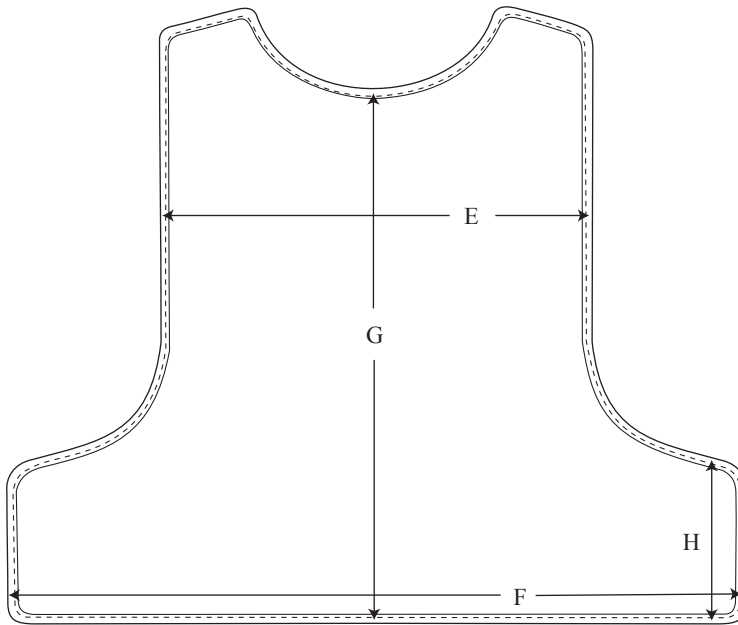
NOT TO SCALE

Measurement Location Chart

Dwg. 7



Front



Back

NOT TO SCALE