

HEADQUARTERS
PHILIPPINE ARMY
OFFICE OF THE ARMY CHIEF QUARTERMASTER
Fort Andres Bonifacio, Metro Manila

PA SPECIFICATION

QM SPEC NR IE-22MBAM2

03 JUN 2022

(Interim)

MILITARY BODY ARMOR, MODEL 2

1. GENERAL:

1.1. Scope - This specification covers a brand-new force protection equipment (FPE) under the nomenclature, Military Body Armor, Model 2 (**MBA2** for brevity) primarily designed to provide protection to every individual soldier of the Philippine Army against bullets and fragments than can cause fatal injuries.

1.2. Grade - The finished MBA2 shall be of the quality and grade of product prescribed by this specification.

1.3. Type - This specification covers the body armor designed to provide ballistic and non-ballistic protection to the user's upper torso from injuries caused by bullets and shrapnel. It is composed of the following components:

- a) Basic Vest (MOLLE)
- b) Soft Ballistic Panel
- c) Ballistic Inserts

2. REQUIREMENTS:

2.1. First Article – A sample of MBA2 shall be subjected to first article inspection and for approval as bid sample.

2.2. Basic Materials

2.2.1. **Basic Vest** – The basic vest shall be Modular-type design, which can accommodate the required pouches, Philippine Army Pattern (PHILARPAT) in color and shall have the following characteristics which shall be evaluated by a third party government licensed/accredited laboratory.

Characteristics	Requirement
A. Basic Material	Nylon
Construction	Ripstop
Coating	Polyurethane
Weight (g/m ²)	270 (maximum)
Color	PHILARPAT
Color Quality (Spectrophotometer)	2 (maximum)

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Characteristics	Requirement
A. Basic Material	Nylon
Tensile Strength (N/50 mm)	
Warp	2,800 (minimum)
Filling	2,500 (minimum)
Tear Strength (N)	
Warp	450 (minimum)
Filling	350 (minimum)
Hydrostatic Pressure (mm)	1,500 (minimum)
Hydrostatic Pressure (mm) After 3 wash	350 (minimum)
Water Repellency (Spray Rating)	4 (minimum)
Dimensional Stability	± 3 % (maximum)
Color Fastness to Light	5 (minimum)
Color Fastness to Weathering	4 (minimum)
Color Fastness to Perspiration Acid	4 (minimum)
Color Fastness to Perspiration Alkaline	4 (minimum)
Color Fastness to Washing	4 (minimum)
Wet and Dry rub	4 (minimum)
Abrasion Resistance	10,000 (minimum)
Elastic Cord	150 cm (minimum)
Breaking strength	20 kgs (minimum)
Determination of antibacterial activity of antibacterial finished products	Strong antibacterial effect
Fungus Resistance	Grade 0

B. Lining Fabric	Requirement
Material	Nylon
Construction	Ripstop 4+ 1.5 mm
Weight (g/m ²)	175 (maximum)
Tensile Strength (N)	
Warp	700 (minimum)
Filling	400 (minimum)
Tear Strength (N)	
Warp	40 (minimum)
Filling	30 (minimum)
Hydrostatic Pressure (cm)	150
Dimensional Stability	Less than 3%
C. Inner Mesh Material	Requirement
Material	Polyester
Color	Black or Olive Drab (OD)
Construction	3D Spacer Mesh
Thickness (mm)	3.5 ± 0.5
Weight (g/m ²)	520 ± 15%
Tensile Strength (N)	
Warp	1,000 (minimum)
Filling	300 (minimum)

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C. Inner Mesh Material	Requirement
Tear Strength (N)	
Warp	160 (minimum)
Filling	65 (minimum)
Color Fastness to Water	4
Color Fastness to Perspiration	4
Color Fastness to Rubbing	
Dry	4
Wet	4
Color Fastness to Washing wash at 40° c, wash time 30 minute	4
Color Fastness to Dry -Cleaning	4
Curved holes count (10 cm)	
Warp	4 (minimum)
Weft	6 (minimum)

D. Nylon webbing for MOLLE according to A-A-55301

Requirement	Characteristics		
Raw material	Nylon		
	textured yarn		
Width (inch)	1 (±1/16)		
Picks/inch (min)	36		
Weave	The webbing shall be a tubular weave bound together by a plain weave binder		
Weight oz/linear Yard (min)	1 inch	0.5	
Warp ends, full width: Face, back, and middle warps (min)	Width	Binder warp	Face and back
	1 inch	15	101
Breaking strength lbs. (warp) (min)	1 inch	1000	
Thickness (inch)	0.046 - 0.07		
Color	PHILARPAT		
Color fastness min.	to light (xenon): 4 to laundering: 4 dry crocking: 3.5		
pH	8-5		

E. Nylon Webbing according to MIL-W-17337F Class 2

Characteristics	Requirement
	Nylon
Raw material	textured yarn
Width (inch)	3/4 ± 1/16
	1 ± 1/16
	1 1/2 ± 1/16
	2 ± 1/16
Picks/inch (min)	96

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E. Nylon Webbing according to MIL-W-17337F Class 2				
Characteristics	Requirement			
Weave	Double Plain			
Weight oz/linear Yard (min)	¾ inch	0.53		
	1 inch	0.71		
	1 ½ inch	1.07		
	2 inch	1.42		
Yarn warp (min)	Width	Ground	Binder	Total
	¾ inch	81	18	99
	1 inch	97	22	119
	1 ½ inch	145	34	179
	2 inch	193	46	239
Breaking strength, lbs. (min)	¾ inch		1000	
	1 inch		1200	
	1 ½ inch		1800	
	2 inch		2200	
Thickness (inch)	0.038 - 0.05			
Color	PHILARPAT			
Non fibrous material	4% (maximum)			
Color fastness min.	to light (20H): 4 to laundering: 4 Crocking: dry 4 / wet 3			
pH	8-5			

F. Binding webbing according to MIL-PRF-5038J Type III		
Characteristics	Requirement	
Material	Nylon	
Width (inch)	¾ ± 1/32	
	1 ± 1/32	
Picks/inch (min)	66	
Weave	Plain	
Weight oz/linear Yard (max)	¾ inch	0.2
Yarns full width warp (min)	Width	Total
	¾ inch	150
	1 inch	200
Breaking strength lbs. (warp) (min)	¾ inch	400
	1 inch	525
Thickness (inch)	0.015 - 0.025	
Breaking strength resistance to light	¾ inch	25% (maximum)
	1 inch	25% (maximum)
Breaking strength resistance to heat	¾ inch	25% (maximum)
	1 inch	25% (maximum)

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F. Binding webbing according to MIL-PRF-5038J Type III				
Requirement	Requirement			
Elongation at break % min	¾ inch	18% (maximum)		
	1 inch	18% (maximum)		
Color	PHILARPAT			
Color fastness min.	to light (20H): good (4) to laundering: fair (4) crocking: dry 4.0 / wet 3.0			
Breaking strength lbs. (warp) (min)	¾ inch	400		
	1 inch	525		
Thickness (inch)	0.015 - 0.025			
Breaking strength resistance to light	¾ inch	25% (maximum)		
	1 inch	25% (maximum)		
Breaking strength resistance to heat	¾ inch	25% (maximum)		
	1 inch	25% (maximum)		
Elongation at break % min	¾ inch	18% (maximum)		
	1 inch	18% (maximum)		
Color	PHILARPAT			
Color fastness min.	to light (20H): good (4) to laundering: fair (4) crocking: dry 4.0 / wet 3.0			
pH	8-5			
G. Hook & Loop fasteners according to A-A-55126B Type II Class 1				
Characteristics	Requirements			
Raw materials	Nylon with selvage			
Width (inches)	3/4	1	2	4
Weight gr lin /yard min				
Hook	3.4	4.5	9	14.4
Loop	4.1	5.9	12.6	22.4
Breaking strength lbf (min)				
Hook	80	100	170	320
Loop	50	75	165	280
Shear Strength lbf (min)				
After 3 Launderings	6.7	10	10	10
Peel Strength lbf (min)				
After 3 Launderings	1.0	1.0	1.0	1.0
Stitch Tear Strength, lbs. (min.)				
Hook	3.5	3.5	3.5	3.5
Loop	6.0	6.0	6.0	6.0
Thickness, inch (min.)				
Hook	0.050			
Loop	0.095			
Length Dimensional Stability, % (max.)	3			
Color fastness min	Gray Scale for color change for fastness to light:4 to laundering: 4 (3 cycles)			

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H. Soft protection panels cover	
Characteristics	Requirement
Material	PA
Coating	PU
Weight (g/m ²)	273 ± 5%
Adhesion	
Warp	35 (minimum)
Filling	35 (minimum)
Breaking strength (strip)	
Warp	120 (minimum)
Filling	115 (minimum)
Elongation	
Warp	40% (maximum)
Filling	40% (maximum)
Tear strength	
Warp	4 kg (minimum)
Filling	3.5 kg (minimum)
Air porosity	No bubbles
High frequency welding (width of 4±0.5mm)	40 kg/5 cm (minimum)

I. Shoulder 25mm Quick-release buckle:

- Buckle will fit 25±1 webbing. Buckle will not slip or open in tensile force of 55 kg. The test shall be done using tensile test machine, applying vertical force in speed of 100mm per minute.
- The male part will contain regulation bars in order to adjust the location of the buckle when needed.
- The male part will allow releasing by pulling a cord.
- The female part will be single bar, without any regulation geometry.
- Buckles shall be made from non-metallic material.

J. Side closure buckles

- Side flaps of the body armor shall be secured to the front panel of the body armor by a two-piece buckle.
- The side buckle should have two contact points.
- The user should be able to operate the side buckle (open and close) by using one hand.
- One part of the buckle should attach to the side flap and the second part should attach to the front panel.
- The female part shall be stitched to the flap using the same MOLLE (PALS) webbing
- The male part shall be implemented in the front panel.

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- g. The buckle parts will not separate or break under pressure of minimum 170 kg, in order to preserve human evacuation when need. The test shall be done using tensile test machine, applying vertical force in speed of 100mm per second.
- h. The buckle parts shall have a quick-release cord for easy doffing of the vest and shall remain in one piece.

2.2.2 Soft Ballistic Panel

2.2.2.1 Ballistic Protection: Minimum Level IIIA, NIJ Standard 0101.06.

2.2.2.2 Protection from Fragments: Compliant with MIL-STD-662-F or STANAG 2920 (17-grain, 22 Cal Fragment Simulating Projectile, V50-600 m/s).

2.2.2.3 Protection coverage: Full torso area coverage (front, back, sides). In addition, the side portion of the protective panel shall have no space or gaps to ensure full coverage of protection to the user.

2.2.3 Ballistic Insert

2.2.3.1 Ballistic Protection:

2.2.3.1.1 Minimum Level III, NIJ Standard 0101.06.

2.2.3.1.2 Shall be able to defeat six (6) shots of SS109 (M855) at a speed of 930 m/s, in conjunction with the soft ballistic panel when tested under the Special Type Level, NIJ Standard 0101.06.

2.3. Design and Construction

2.3.1. **The Body Armor** [Basic Vest, Soft Armor Panel (SAP) and Hard Armor Panel (HAP)] shall have a maximum overall weight of 6.0 kilograms.

2.3.1.1 The serial number of the Basic Vest, Soft Ballistic Panel and the Ballistic Inserts of every set of Armor Vest shall be the same.

2.3.1.2 Basic Vest

2.3.1.2.1 It shall be Modular Lightweight Load-Carrying Equipment (MOLLE) type design that can accommodate the required pouches. The MOLLE design shall be in PHILARPAT color.

2.3.1.2.2 It shall have provisions to accommodate removable Soft Armor Panels (SAP) on the front, back and sides.

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2.3.1.2.3 It shall have provisions to accommodate removable Hard Armor Panels (HAP) on the front and the back and shall be stable or not swaying/moving when inserted inside.

2.3.1.2.4 The provisions for the soft ballistic panel and ballistic inserts shall not be visible at the outer portion of the basic vest.

2.3.1.2.5 Shall have a mesh lining on the inner side of the vest for better heat dissipation.

2.3.1.2.6 There shall be at least two (2) adjustments; shoulder and waist. The vest must be easy to don / doff by the user without assistance from others.

2.3.1.2.7 It shall have provision for a quick-release mechanism that is easily accessible and reusable. In removing / releasing the vest from the users body using the quick-release mechanism it should take a maximum of 3 seconds, and the user should be able to perform the action using either his left or right hand in a single motion and with minimal effort the quick release mechanism should enable the vest to be removed from the body. The vest should remain in one piece after the action and when it is completely removed from the body. The re-assembly of the vest after the use of the quick-release mechanism shall not exceed thirty (30) seconds.

2.3.1.2.8 Shall have a drag strap capable of pull load of at least 120 kgs

2.3.1.2.9 Dimension of the vest:

Upper Width	Front	28-30 cm
	Back	30-33 cm
Lower Width	Front	46-48 cm
	Back	43-46 cm
Length	Front	41-44 cm
	Back	44-47 cm
Side Panels	Width	21 - 23 cm
	Length	23 - 29 cm

2.3.1.3 Soft Armor Panel (SAP)

2.3.1.3.1 Durability: It shall be enclosed with a protective cover that is durable and waterproof. Likewise, the seams of the cover shall be heat-sealed.

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2.3.1.3.2 Coverage and Weight – The Armor Vest shall have a minimum protective coverage area of 0.3470 m² and a maximum weight of 1.95 kgs

Upper Width X1	Front	27-30 cm
	Back	29-32 cm
Lower Width X2	Front	44-49 cm
	Back	42-45 cm
Length Y	Front	39-43 cm
	Back	43-46 cm
Side Flaps	Width	19-21 cm
	Length	24-27 cm

2.3.1.4 Ballistic Insert

2.3.1.4.1 Durability: The ballistic insert shall be able to withstand impact resulting from accidental drop with no deformation and effect on its ballistic protection capability.

2.3.1.4.2 Dimension and Weight:

Dimension		Tolerance
Width x Length	23 x 28 cm	+/- 0.5 cm
Weight, Kg	1.7	Maximum

2.4. System Requirements

2.4.1. Shall have three (3) MOLLE compatible ammunition pouches that can fit either three (3) M16A1/M653/M4 Magazines (30 rounds) or two (2) M14 Magazines per set of Armor Vest delivered. The materials of the ammunition pouches shall be the same fabric used in the basic vest.

2.4.2. One (1) Hand-Carry Bag for every set of MBA2. The materials of the ammunition pouches and Hand- Carry Bag shall be the same fabric used in the basic vest.

2.4.3. Each set of MBA2 shall be provided with a manual (or brochure) on the equipment's proper use and maintenance (available in hard and e-copy).

2.4.4. Five (5) years warranty coverage for the Ballistic Protection of the MBA2.

2.4.5. All the components of the MBA2 shall be labeled in accordance with the NIJ Standards for Body Armor.

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2.5. Workmanship

2.5.1. Basic Vest

2.5.1.1 A label shall be permanently attached in each basic vest with the following information, written legibly in English language:

Name, logo, or other identification of the manufacturer

Address of manufacturer

"Basic Vest" boldly printed with at least Arial font size 18

Size

Model Description

Date of Manufacture

Serial Number (shall be the same with the soft ballistic panel and ballistic insert)

2.5.1.2 A warning of at least Arial font size 14 and at least twice the font size of the rest of the markings, stating the following: "**This Basic Vest offers no protection without the ballistic panels being inserted.**" See ballistic panel label for protection level provided in accordance with NIJ Standard 0101.06"

2.5.1.3 Shall have a proper use and care instructions for Basic Vest.

2.5.1.4 Other Requirements:

2.5.1.4.1 The Basic Vest shall be new.

2.5.1.4.2 It shall have provisions for outlets that would allow rapid drainage of trapped fluids.

2.5.2. Soft Ballistic Panel

2.5.2.1 Label: A label shall be permanently attached in every soft ballistic panel with the following information, written legibly in English language:

Name, logo or other identification of the manufacturer

Address of the manufacturer

"Soft Ballistic Panel" boldly printed with Arial font size 18 (minimum) Rated level of protection in accordance with NIJ Standard 0101.06 boldly printed with Arial font size 14 (minimum)

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Size

Model Designation

Date of manufacture

Serial Number (shall be the same with basic vest and ballistic insert)

2.5.2.2 **"Strike Face" or Wear Face** permanently and boldly marked with Arial font size 18 minimum (indicating the proper orientation of the ballistic panel inside the Basic Vest.

2.5.2.3 A warning with font size at least 14 font size (Arial) and at least twice the font size of the rest of the markings, stating the information that soft ballistic panel insert is not intended to protect the wearer from rifle fire and sharp edged or pointed instruments.

2.5.2.4 Other requirement: All the ballistic layers should be same in size and shape.

2.5.3. Ballistic Insert

2.5.3.1 Workmanship: It shall be high-frequency sealed in a water-proof, black or olive drab cover in non-glare finish. Each ballistic insert shall be free from wrinkles, blisters, cracks or fabric tears, creasing, chipped or sharp corners and edges, or other evidences of inferior workmanship. Additionally, all samples shall be identical in appearance, size and manner of construction.

2.5.3.2 A label shall be permanently attached in each ballistic insert with the following information, written legibly in English language:

Name, logo or other identification of the manufacturer

Address of the manufacturer

"Ballistic Insert" boldly printed with Arial font size 18 (minimum)

Rated level of protection in accordance with NIJ Standard 0101.06 boldly printed with Arial font size 14 (minimum)

Size

Model Designation

Date of manufacture

Serial Number (shall be the same with basic vest and ballistic insert)

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2.5.3.3 **“Strike Face” or Wear Face** permanently and boldly marked with at least Arial font size 18 indicating the proper orientation of the ballistic inserts in the Basic Vest.

2.5.3.4 A warning with font size at least Arial font size 14 and at least twice the font size of the rest of the markings, stating the information that soft ballistic panel insert should be used in conjunction with the soft ballistic panel in order to attain the stated level of protection.

2.5.3.5 Proper use and care instructions.

3. VERIFICATION

3.1. First Article Inspection – The first article submitted in accordance with para 2.1 shall be subjected to first article inspection and approval as against the bid sample. The samples shall be subjected to tests and examination to verify if the requirements in para 2.2 to 2.4 are satisfied, with reference to the attached test parameters and classification of defects for this document.

3.2. Sampling

3.2.1. Samples of MBA2 materials, components and other items shall be taken at random by Technical Inspection and Acceptance Committee during delivery for the purpose of examination and test to determine compliance with the requirements of this specification, as agreed in the contract.

3.2.2. Pre-Production Sample – Before actual production is commenced, as necessary, required sample/s of the item shall be submitted for verification whether the quality of the materials used conform with the characteristics/requirements of this specification and one (1) finished item to the Office of the Army Chief Quartermaster for approval as to design, construction, workmanship, style and finish of the article.

4. QUALITY ASSURANCE PROVISIONS

4.1. Responsibility for Inspection – Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this document where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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4.2. Responsibility for Compliance – All items must meet all requirements of sections 2 and 3. The inspection set forth in this document shall become a part of the contractor's overall inspection system or quality assurance program. The absence of any inspection requirements in the document shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all the requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.3. Responsibility for Dimensional Requirements – Unless otherwise specified in the contract or purchase order, the contractor is responsible for assuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point or all points in the manufacturing process necessary to assure compliance with all dimensional requirements.

4.4. Certification of Compliance. When the certificate of compliance is submitted, the government reserves the right to inspect such items to determine the validity of the certification. The following certification (In English Translation) shall be provided by the manufacturer from authorized organization/agency such as but not limited to:

4.4.1. Scope of ISO9001:2015 is for the design, production, and manufacture of ballistic body armor.

4.4.2. Recent ballistic Test Reports from any NIJ- accredited Test Laboratory for ballistic performance of the armor vest that they manufactured.

4.4.3. Recent test report from any internationally recognized textile test laboratory on the required characteristics of the fabric used in the armor vest.

4.4.4. Product data sheet from the manufacturer for all major materials used in the manufacture of the Armor Vest.

4.4.5. The manufacturer shall provide detailed drawings of all components of the Armor Vest being offered.

5. PACKAGING AND PACKING

5.1. Packing – the packing for the MBA2 shall be in accordance with the best method currently being employed by the contractor.

6. MISCELLANEOUS

6.1 The Contractor shall notify the procuring entity or the authorized committee/office in a reasonable time before actual production starts so that PA inspectors can be assigned to oversee the process of manufacture to be followed and to inspect the quality of materials to be used when deemed necessary.

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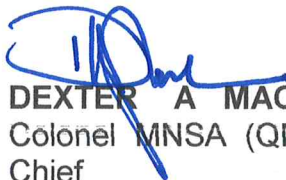
6.2 All costs related to the testing shall be for the account of the Contractor/bidder.

6.3 Any point not covered by this text shall be supported by the attached illustrations as reference and guide of the Contractor/bidder.

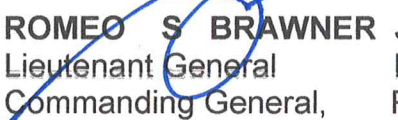
Prepared by:


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Chief

Approved by:


ROMEO S. BRAWNER JR
Lieutenant General PA
Commanding General, PA

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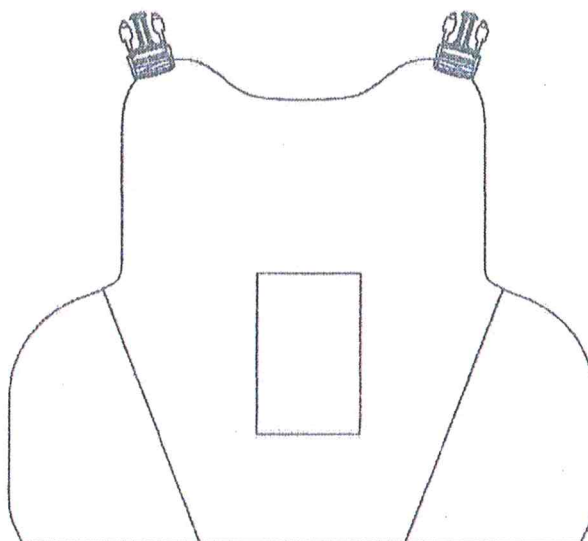
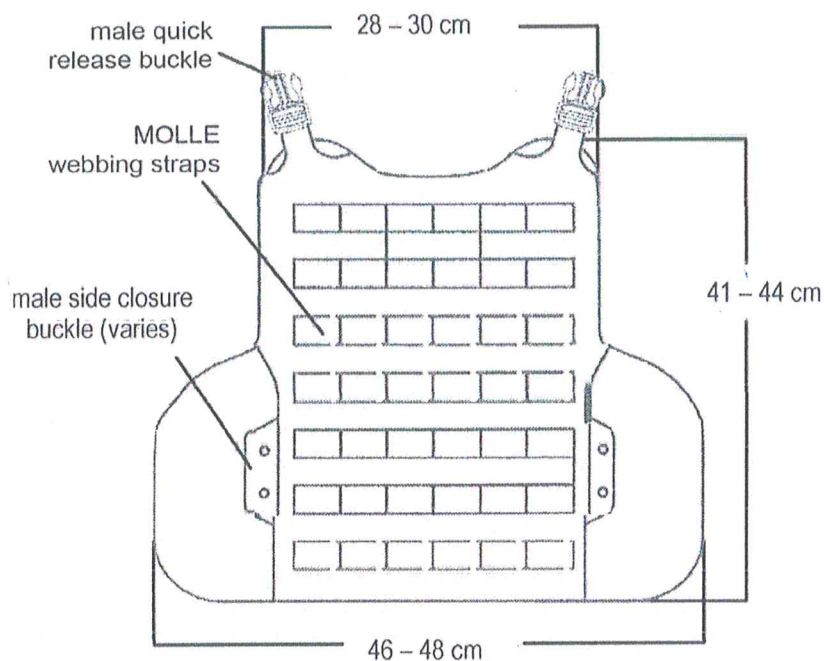
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DRAWINGS / ILLUSTRATIONS

FRONT PART



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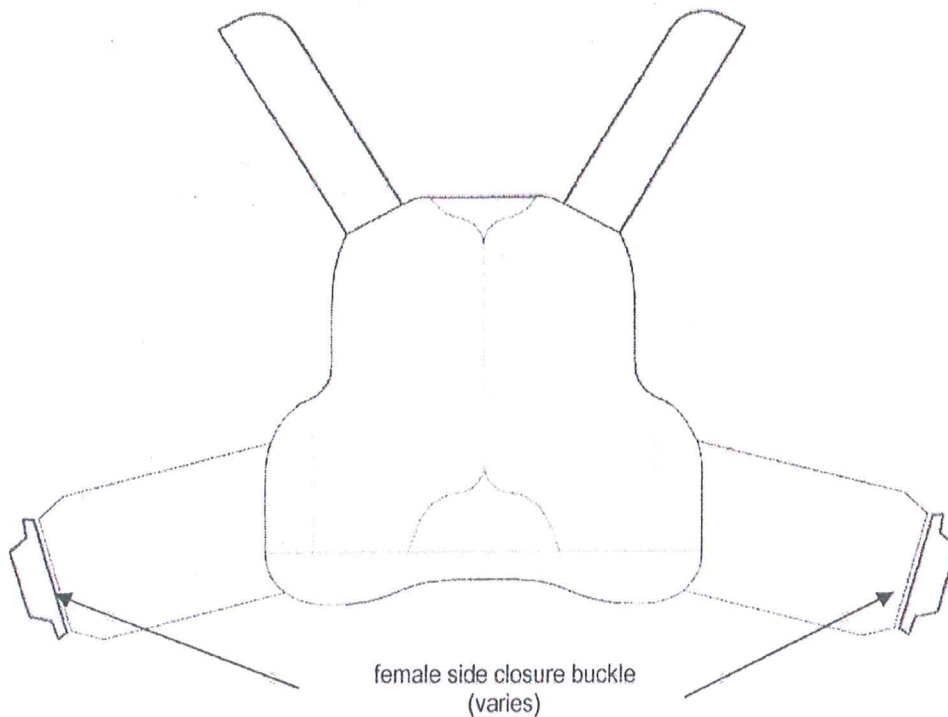
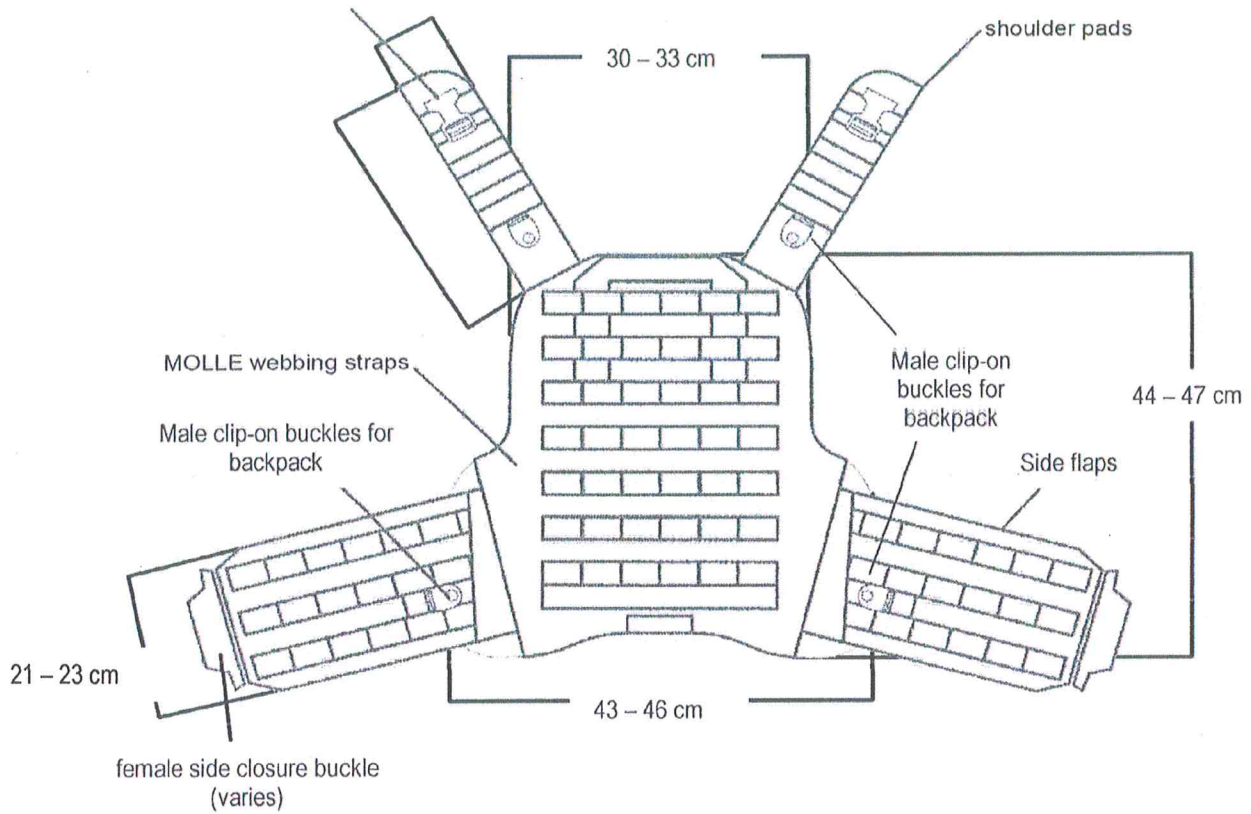
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female quick release buckle

BACK PART



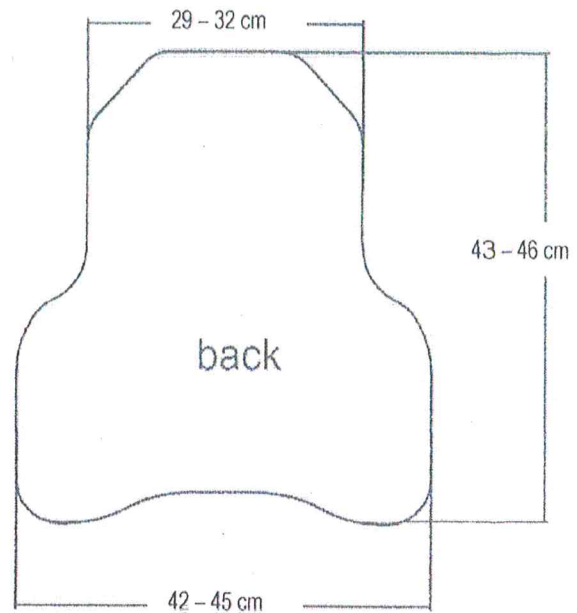
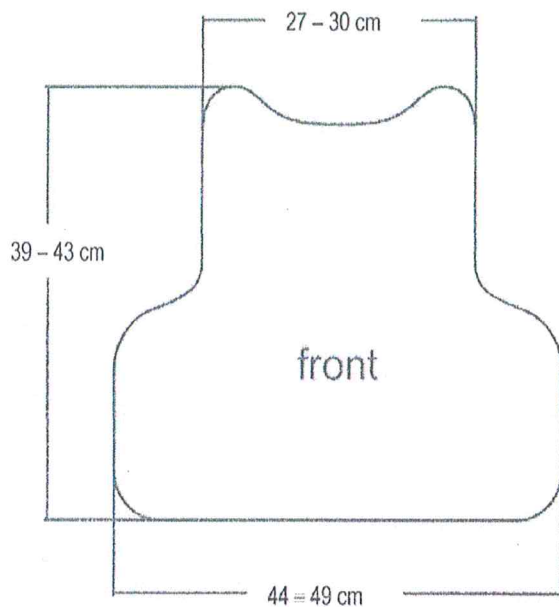
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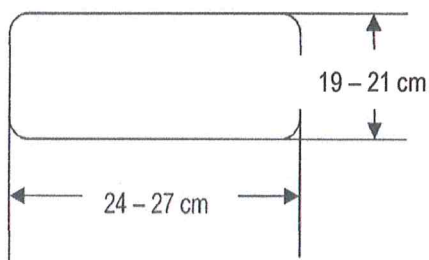
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SOFT ARMOR PANELS (SAP)



SIDE ARMOR PANELS



BALLISTIC INSERT

