

TECHNICAL SPECIFICATIONS RAV 501 EOD SQUAD SUIT AND BALLISTIC HELMET



SPECIFICATION NO. 6441 - RAV 501 EOD SQUAD SUIT

SPECIFICATION NO. 5622 - BALLISTIC HELMETS

SPECIFICATION NO. 4863 - FACE SHIELD

MAINTENANCE INSTRUCTIONS

RAV 501 EOD SQUAD SUIT

SPECIFICATION NO. 6441

1. GENERAL

- 1.1. The suit is designed for soldiers whose main endeavor is the removal of bombs, and it is constructed in a way and with materials that give maximum protection in case of explosion..
- 1.2. The suit is constructed of two main parts: a jacket and pants. All parts of the suit are produced with the same ballistic material, and there is an option for ballistic ceramic plates.

2. TECHNICAL SPECIFICATIONS

2.1. Materials

- 2.1.1. Label (4)
 - 2.1.2. Ceramic Plate (optional)
 - 2.1.3. Cloth, nylon back coated PU 250 gr/sqm, water repellent (6)
 - 2.1.4. Cloth coated vinyl 2000/sqm (7)
 - 2.1.5. Cloth, ballistic aramid 190-285 gr/sqm (8)
 - 2.1.6. Webbing polyester 25 mm (800 gr/mtr) (9)
 - 2.1.7. Webbing polyester 40 mm (800 gr/sqm) (10)
 - 2.1.8. Webbing polyester 55 mm (800 gr/sqm) (11)
 - 2.1.9. Webbing polyester 285 mm (800 gr/sqm) (12)
 - 2.1.10. Webbing textile elastic 25 mm (13)
 - 2.1.11. Webbing textile elastic 40 mm (14)
 - 2.1.12. Fastener tape 50 mm Pyle synthetic (15)
 - 2.1.13. Fastener tape 50 mm hook synthetic (16)
 - 2.1.14. Fastener tape 25 mm Pyle synthetic (17)
 - 2.1.15. Fastener tape 25 mm hook synthetic (18)
 - 2.1.16. Fasteners snap socket (19)
 - 2.1.17. Fasteners snap stud (20)
 - 2.1.18. Rectangle 30 x 12 mm (21)
 - 2.1.19. Tab buckle 40 mm (22)
- (The numbers after the items correspond to the numbers found in the drawings below)
- 2.2.1. Threat level: according to the client's requirements, the standard level for mine clearing is 1600 FPS.

2.2.2. Weight of the suit: the weight of the suit is a factor that depends on the threat level required. For V50/1600fps the weights are:

PROTECTION LEVEL	SIZE M	SIZE L
V50/1600 FPS	8.9 KG	9.6 KG

2.3. PROCESSING OF SUIT

2.3.1. As mentioned before, the suit is made up of a jacket and pants. Details can be found in the attached drawings:

Sketch # 6441-01	Jacket Outer View
Sketch # 6441-02	Jacket Inner View
Sketch # 6441-03	Pants Outer View
Sketch # 6441-04	Pants Inner View
Sketch # 6441-05	Suit Photo

2.3.1. The jacket is produced from two main parts; front part and back part connected at the right shoulder permanently and at the left shoulder by fasteners.

2.3.2. The jacket is closed at the sides, by the two straps sewn on the back and fastened at the front by fasteners, which are sewn on the front. This kind of closure is very reliable while providing easy wearing and removal of the suit at the same time.

2.3.3. At the front of the jacket, attached on outer part, there is a large pouch, a sheath for a knife, elastic segments, three square rings meant to hold various tools.

2.3.4. The jacket can be produced in two sizes, Medium and Large. Please find below a table of sizes:

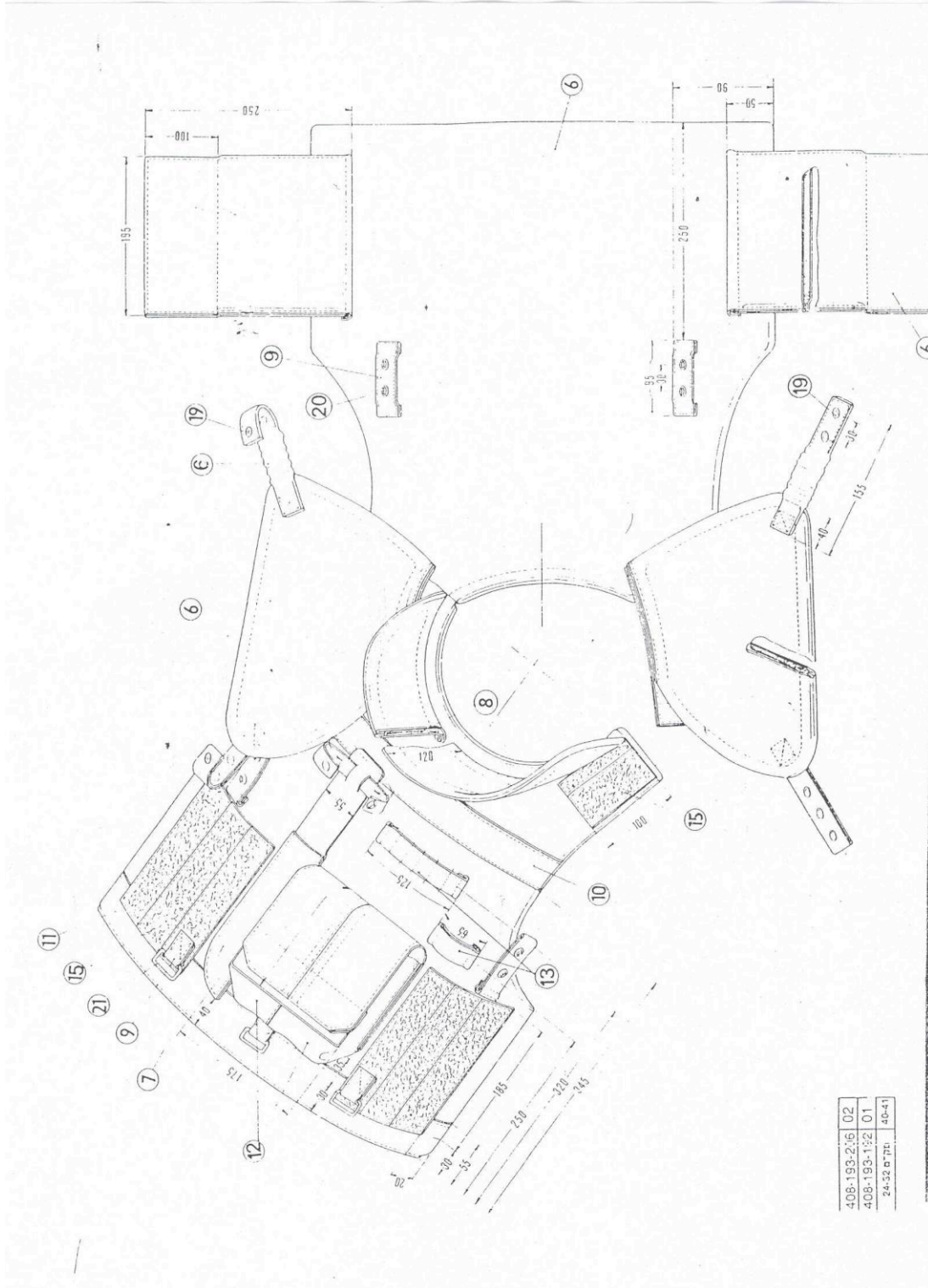
NO.	PLACE OF MEASUREMENT	SIZE M	SIZE L
1	Front Part – Width cm	59	63
2	Back – Width cm	56	60
3	Front – Length	57	58

- 2.3.5. The pants are produced of three main parts: the waste including the groin protector, and the two pants legs, which are opened along the back.
- 2.3.6. The pants leg is made of two parts: upper part and lower part are connected by three elastic bands, which allow for flexibility while putting on the pants.
- 2.3.7. The closure of the pants legs is achieved by a leaf with fasteners, and the leaf is attached to the pants leg by three elastic bands.
- 2.3.8. The fastening of pants to the body is achieved by fasteners in waste, and suspenders that are closed by bands and fasteners.
- 2.3.9. The pants are produced in one size, according to the measurements in the drawings. The fit is done with the help of the measurements in the drawings, and the fit is done with the help of the suspenders and fasteners.

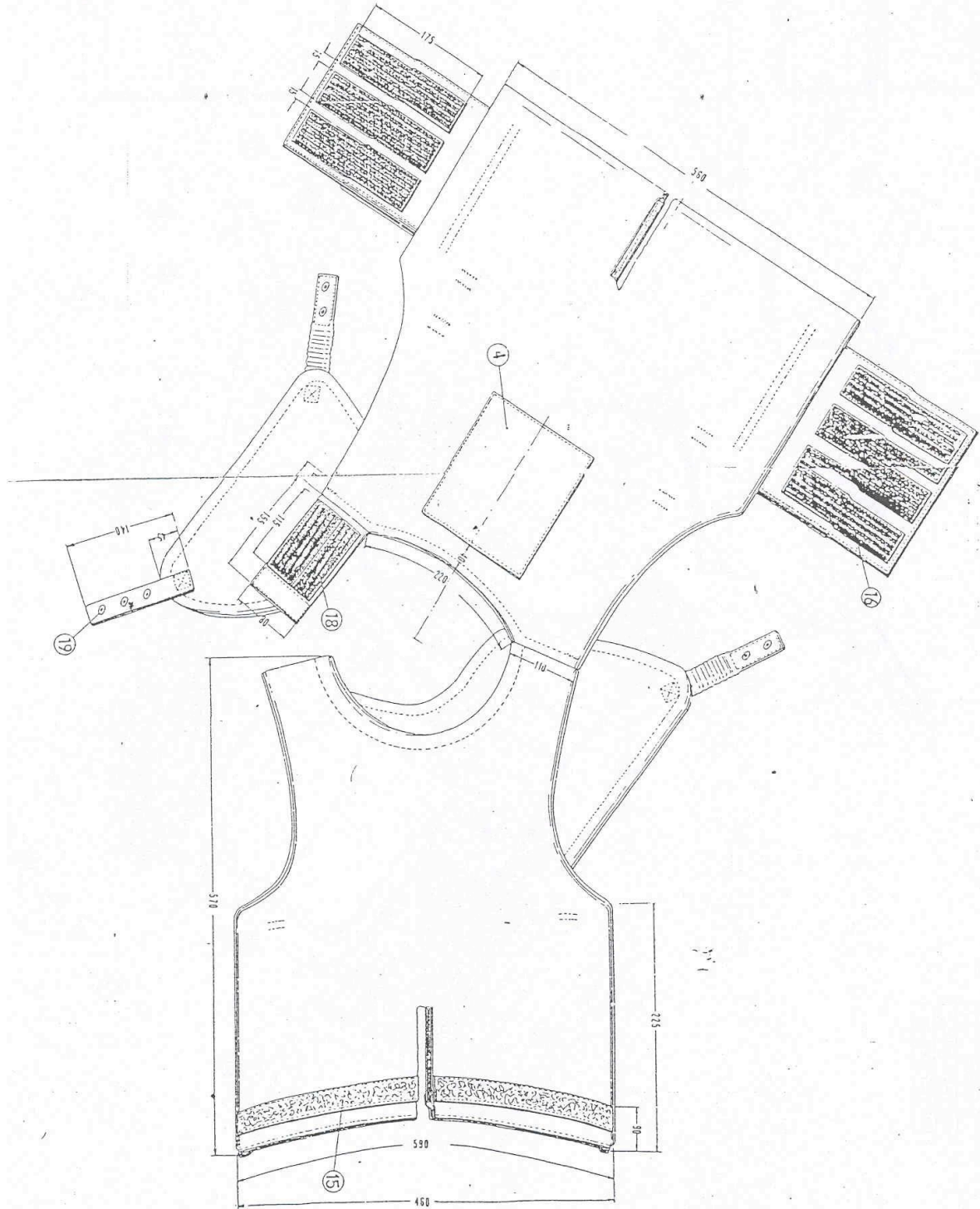
3. PACKING

- 3.1. The suit may be packed in a carrier made of nylon covered by vinyl on both sides, water resistant, or by another fabric according to the client's demands.

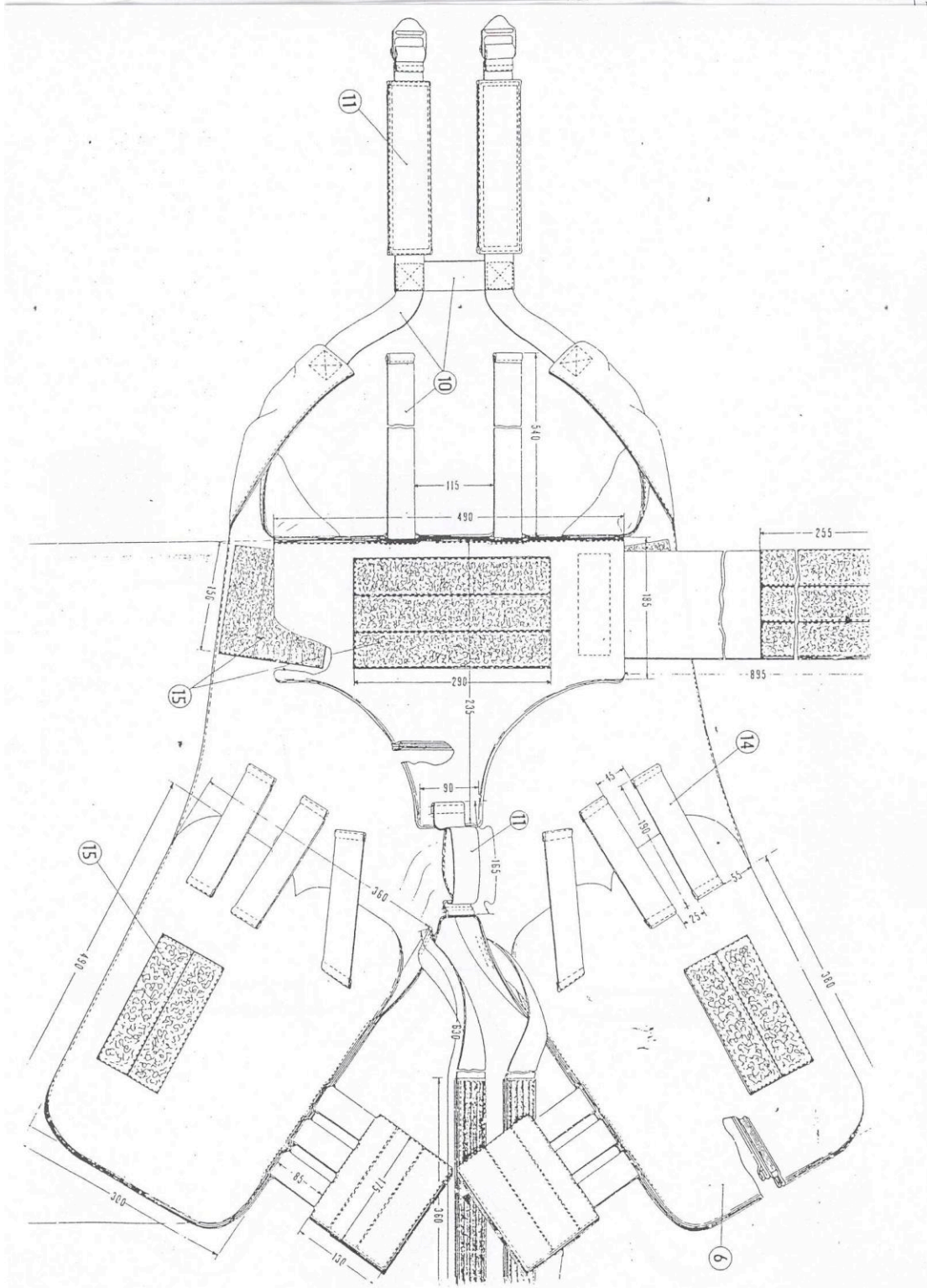
Sketch # 6441-01 Jacket Outer View



Sketch # 6441-02 Jacket Inner View



Sketch # 6441-04 Pants Inner View



Sketch # 6441-05 Suit Photo



BALLISTIC HELMET

SPECIFICATION NO.: 5622



1. SCOPE

This specification covers the requirements for the manufacturing of helmets with face shield.

2. REQUIREMENTS

GENERAL

The helmet provides ballistic protection against fragmentation to the head. The helmet's shell consists of a shell body, suspension assembly, headband, and chinstrap as well as face shield according to specification No. 4863.

MATERIALS

The shell's body is made of aramid ballistic fabrics laminated by a catalyzed phenol resin system. The shell shall not delaminate, distort or crack during its usage.

2.2.2. CROWN STRAP

The crown strap is made of Polyester webbing, 800 gr/sqm, width 27 mm, and buckle bar 27 mm made of stainless steel.

2.2.3. RUBBER EDGING

The edging profile is made of Neoprene U.V. Resistance.

2.2.4. ADJUSTABLE HEAD BAND

The headband is made of Polyester webbing 800 gr/sqm, width 27 mm and tanned leather. Bank finished in natural color, 0.8-1mm thick.

2.2.5. CHIN TRAP

The chinstrap is made of Nylon webbing 850 gr/sqm, 19mm width.

2.2.6. CUSHION PAD

The cushion pad (foam impact pad) is made of durable Polyurethane foam, which is protected by integral skin.

2.2.7. FASTENER TAPES

The pile and hook of the fastener tape is made of Nylon or Polyester, 19 and 25 mm width.

2.2.8. THREAD

The thread used for sewing is Polyester or Nylon thread having a minimum breaking strength of 20N. The color and color fastness of the thread shall match those of the materials being sewn.

2.3 CONSTRUCTION

2.3.1. SHELL'S BODY

The helmet's shell is of laminated structure of ballistic materials, suitably united by heat and pressure. The shell's body shall be rigid. The outside surface of the shell's body shall be in crinkle finish and painted in matt 0.G.

2.3.1.1. SHAPING OF SHELL

The shell, before molding, shall be shaped by using pinwheel moulds.

2.3.1.2. MOLDING OF SHELL

The shell shall be formed using match-die molding. The shell shall not be remolded after this single molding cycle. The outer and inner surfaces of the molding shell shall

be smooth. The edge is finished smoothly and evenly, with no ends of fabric fibers exposed. Both the inside and outside surfaces shall be free from any holes, void, delamination, pimple, blister, cracking, dry spot and area of non-resin flow. Before further processing is undertaken, 100% inspection shall be taken after the molding cycle. De-laminations and blisters, as well as evidence of the laminations and blisters are not acceptable.

2.3.1.3. ATTACHMENT OF COMPONENTS

Before finishing, holes for attachment of the helmet components shall be drilled. There shall be no puncturing or tearing of the shell materials.

2.3.1.4 FINISHING OF HELMET'S SHELL

2.1.1.4.1. PREPARATION OF SURFACES

Before applying the protective coating, all permissible surface gaps and pits shall be filled with a Micro fill compound, to provide smooth and continuous surfaces.

2.3.1.4.2. COATING OF SURFACE

After preparing the helmet's shell surface, one or more coats of coating as specified in MIL-C-46168 shall be applied to the outside surface and the edging of the shell. The color shall be colorfast against sunlight and weather.

2.3.1.5. THICKNESS

The thickness of the shell's body shall be uniform and shall not vary by more than 1.5 mm.

2.3.1.6. WEIGHT

The overall weight of a complete helmet will not exceed 1.5 kg.

2.3.1.7. DIMENSIONS

The helmets will cover the head sizes of 55 – 64 cm.

2.3.2. SUSPENSION BAND

The suspension band shall consist of Crown Strap with adjusting buckles. The suspension band shall be fixed to the inside surface of the shell's body by means of

rivets. It shall be properly positioned to give balance and comfort to the user and shall be taut when fixed to the inside of the shell.

2.3.3. ADJUSTABLE HEAD BAND

The leatherhead band lined with a Polyester webbing strap shall have an adjustable buckle. Six metal clips shall be fitted around the headband. They shall be used to attach the head band to the fixed webbing strap on the suspension band. To the rear of the headband, a buckle shall be used to provide adjustment for various head sizes.

2.3.4. CHIN STRAP

The chinstrap composed of the following material.

2.3.4.1 Nylon webbing 850 gr/sqm. 19 mm width

2.3.4.2 Tanned leather 0.8-1mm thick

2.3.4.3 Adjusting metal buckles

2.3.4.4 Plastic buckle male and female to close the chinstrap

2.3.4.5 Plastic slider 19 mm

2.3.5. STITCHING

Unless otherwise specified – lock-stitch type 301 shall be used in all stitching. All stitching shall have 2.5 – 3.5 stitches per 10 mm.

2.4. PERFORMANCE

2.4.1. BALLISTIC PROTECTION

From each production batch of helmets, the required number of helmet samples, selected at random, for ballistic testing shall be according to para. 3.3.2.2.2.

The minimum V-50 of each helmet shall be 1800 f/s, when tested in accordance with MIL-P-GGLE with fragment simulators, 0.22 caliber, 17 grains per MIL-P-46593.

2.4.2. RIGIDITY OF SHELL

In shell rigidity test, as per I.I.S. Standards the helmet shall not deform more than 30 mm.

2.5. MARKING

Each helmet shall be indelibly marked on the inside of the shell with the following information:

1. Name
2. Manufacturer's name
3. Tender P.N. and date of manufacture
4. Size
5. Lot No. and Batch No.

2.6. PACKAGING AND PACKING

Each helmet with an instruction booklet shall be wrapped in a Polyethylene film bag. 30 wrapped helmets shall be packed in a carton box.

3. ACCEPTANCE PROVISIONS

3.1. RESPONSIBILITY FOR INSPECTION

The manufacturer is responsible for the performance of all inspection requirements.

3.2. ACCEPTANCE APPROVAL

The client's respective authority shall verify all the supplies for acceptance procedures.

3.3. INSPECTION PROVISIONS

3.3.1. LOT FORMATION

The lot shall consist of helmets made by one manufacturer in accordance with this SPECIFICATION.

3.3.2. INSPECTION METHODS

The following inspections shall be carried out:

- a. In-process inspection
- b. Finished product inspection

3.3.2.1. IN-PROCESS INSPECTION

In-process inspection shall be performed to ensure that the materials, components and forming of the helmet's shell before molding, are in accordance with the requirements specified in the SPECIFICATION.

The helmet's shell, prior to finishing operations, shall be 100% examined for any evidence of blister or de-lamination. Any blister or de-lamination, as well as any evidence of a blister or de-lamination that was modified by any means after molding, shall be classified as a defect and the shell shall be rejected.

3.3.2.2. FINISHED PRODUCT INSPECTION

The inspection shall be carried out in two stages:

- a. Stage one – visual inspection
- b. Stage two – dimensional measurements and testing of finished product.

3.3.2.2.1. STAGE ONE INSPECTION

Sampling plan and procedure for inspection shall be in I.A.W. MIL-STD-105D. Unless otherwise specified, the level of inspection shall be general level ii, single sampling plan, with the following AQLS:

AQL for major defects shall be 2.59

AQL for minor defects shall be 4.04

3.3.2.2.2. STAGE TWO INSPECTION

For every lot of 1 - helmets, the number of samples taken is as follows:

- a. 2 helmets (end product) shall be tested to check for workmanship and finishing
- b. 3 helmet shells shall be tested as specified in para 2.4.2 for ballistic protection
- c. 2 helmets shall be tested for rigidity
- d. 2 helmets shall be tested for impact resistance.

3.4. CERTIFICATION

The manufacturer certifies that the helmets have been tested and meet all the performance requirements specified by the client.

FACE SHIELD

SPECIFICATION NO. 4863

1.0 GENERAL

- 1.0 The visor shall provide ballistic protection to the face against all pistols up to 9 mm including UZI sub-machine gun.

2.0 MATERIALS

- 2.1 The visor shall be made of PMMA and Poly Carbonate

CONSTRUCTION

The visor shall be a combination of two materials, PMMA outer layer and Polycarbonate inner layer assembled together with a rubber ring in between. This rubber ring is designed to increase overall ballistic performance. The two layers are secured with two joint screws and RTV, which seals the edges, and adds to the energy absorption of the rubber ring. Two air nuzzles are designed to prevent condensation in the air gap between the two layers.

The visor is easily assembled or removed from the helmet and incorporates a simple open or closed locking mechanism.

- 3.2 Thickness 21 mm +/- 1mm

- 3.3 Weight 1100 g +/- 20 g

PERFORMANCE REQUIREMENTS

3.4.1. Ballistic Protection Test

Ammunition: 9mm 8.1 gr,. Full jacket, round nose, soft point

Distance 5 meters

Velocity 410 m/s

Number of bullets 2

1 shot with 1" distance from any edge.

3.4.2. Visual Inspection

The visor starting 25 mm from the edge to the center, shall be clean from any visual defects, scratches, dirt points or cracks.

3.4.3. Accelerated Ageing

The plastic component will be processed in a manner that guarantees no residual stress.

3.4.3.1. Ageing test shall be performed in a plastic bowl containing 1 portion of Toloul and 3 portions of NPROPANOL. The upper part of the visor (where the hole is found) will be submerged for 3 min. and dried at room temperature, no visual cracks near the holes or on visor edges.

MAINTENANCE INSTRUCTIONS

STORAGE INSTRUCTIONS FOR RAV 501 EOD SQUAD SUIT

The suit is to be kept in a cool, dark, dry place – it shall not be exposed to the sun directly.

MAINTENANCE OF THE SUIT

2. Clean with a soft brush or white slightly wet cloth, outer cover.
3. Keep the vest always dry. In case it gets wet, dry by open-air ventilation. **DO NOT DRY IN THE SUN!** Do not fry in a drier machine.
4. Do not bleach. Do not use harsh solvents, or harsh cleaning materials.

MAINTENANCE OF THE HELMET

1. Check that screws are properly closed.
2. Check that the straps are undamaged
3. In case of damage by bullet shot or a sharp object, suit is to be replaced and expertly checked, before reuse.
4. Check that the buckles are undamaged.
5. Cleaning of helmet with soap and water and dry it in fresh air.

MAINTENANCE FOR FACE SHIELD

4. Cover the face shield at the end of use to avoid scratching.
5. In case of deep scratch or heavy damage, the face shield shall be changed.
6. Clean the face shield with soap and water and dry it in fresh air.