

Specn No. Prov/S/7823/TC-5/2017

Supersedes Specn No. Prov/S/7823/TC-5/2011/03(a)

GOVERNMENT OF INDIA  
MINISTRY OF DEFENCE  
DGQA ORGANISATION



PROVISIONAL SPECIFICATION

For

**RUCKSACK 90 LTRS WITH HDPE BOARD**

DS Cat No- NIV

Issued by

**CONTROLLER**

Controllerate of Quality Assurance (Textiles Clothing)  
Department of Defence Production  
Ministry of Defence  
KANPUR – 208004

Price Rs:

Year: 2017

(i)



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0.0 FOREWORD

0.1 This specification containing 34 pages (including 13 drawing sheets) and has been prepared by Controllerate of Quality Assurance (Textile & Clothing) Kanpur based on sample sealed by MGO Br; received through HQ DQA(S) letter no.95896/Rucksack/DGQA/S-7 dt 15 Mar 2017, on behalf of the Director General of Quality Assurance, Ministry of Defence, New Delhi-110011.

0.2 This specification supersedes the specification No.Prov/S/7823/TC-5/2011/03 (a).

0.3 This specification shall be used for Tender Enquiry, Procurement, Manufacture and Quality Assurance of the stores covered by this specification.

0.4 The Quality Assurance Authority for the store covered by this specification is the Controller, CQA (Textile & Clothing) Ashok Path and Kanpur-208004. Enquiries regarding this specification related to technical or any other contractual conditions shall be referred to the Quality Assurance Authority named in the purchase documents viz. tender or contract.

0.5 This specification being a dynamic document is liable to amend at any time and therefore is applicable only to specific enquiry made at any time and for any subsequent technological development etc, a fresh copy of this specification is to be obtained.

0.6 Any deviation from this specification will not be resorted to without the explicit written sanction of the Quality Assurance Authority viz The Controller, Controllerate of Quality Assurance (Textiles and Clothing), Kanpur or his authorized representative.

0.7 Copies of any other reference / documents such as specification /drawings can be obtained on payment from CQA (T&C), Ashok Path, Kanpur-208004.



**1.0 SCOPE:**

1.1 This Provisional Specification covers the requirement of NIV- Rucksack 90 Itrs to be used by Defence Personnel for carrying his belongings at High Altitude and plain Area.

**2.0 STANDARD PATTERN:**

2.1 The standard pattern of NIV Rucksack 90 Itrs with HDPE board held in the custody the Controller, Controllerate of Quality Assurance (T&C), Kanpur shall constitute the standard with regards to shade, shape, appearance, general workmanship, finish and any other particulars not noted/defined in this specification shall confirm to sealed sample.

**3.0 MATERIAL**

3.1 The NIV- Rucksack 90 Itrs shall be manufactured from following materials:-

(A) The basic materials used in manufacture of Rucksack 90 Itrs are various Types of fabrics, Garniture items, Nylon Tapes, Buckles and Cushioning materials.

- |   |                |
|---|----------------|
| (a) Fabric for Main Pack  | (Appendix 'A') |
| (b) Fabric for Mouth Closure<br>Inner closures, Day pack lining, etc. | (Appendix 'B') |
| (c) Fabric for Rain cover   | (Appendix 'C') |
| (d) Plastic Slide Fasteners   | (Appendix 'D') |
| (e) Garniture items   | (Appendix 'E') |
| (f) Other components  | (Appendix 'F') |
| (g) Quick Release Buckles O.G.  | (Appendix 'G') |
| (h) HDPE Board  | (Appendix- K)  |

**B) CUSHIONING MATERIAL** (Tech requirement shall be as per Appx -'H')

- |   |           |
|---|-----------|
| (a) <u>Hip Belt</u> . The cushioning material shall be as under:- |           |
| (i) Expanded Cellular Polyethylene of 6 mm $\pm$ 1 mm             | (Layer A) |
| (ii) HDPE Sheet 2.25 mm   | (Layer B) |
| (iii) Expanded Cellular Polyethylene of 6 mm $\pm$ 1 mm           | (Layer C) |
| (iv) Polyurethane Foam 20 mm $\pm$ 1 mm                           | (Layer D) |

- (b) **Central Lumber Pad.** The cushioning material shall be as under:-
- (i) Expanded Cellular Polyethylene of 12 mm  $\pm$  1 mm (Layer A)
  - (ii) Expanded Cellular Polyethylene of 12 mm  $\pm$  1 mm (Layer B)
  - (iii) Polyurethane Foam 20 mm  $\pm$  1 mm (Layer C)
- (c) **Shoulder Strap.** The cushioning material shall be as under:
- (i) Expanded Cellular Polythene foam, thickness 15 mm  $\pm$  2 mm
  - (ii) Shoulder Strap thickness: 75 mm (Minimum)
- (d) **Cushion attached to body.** The cushioning material shall be as under:
- (i) Polyurethane foam of 20 mm  $\pm$  2 mm (Layer A)
  - (ii) Expanded Cellular Polythene foam of 6 mm  $\pm$  1 mm (Layer B)
- (e) **Cushion attached to lower back (Inside).** The cushioning material shall be as under:
- (i) Polythene foam of 6 mm  $\pm$  1 mm (Layer A)
  - (ii) EVA sheet black 1.5 mm (Layer B)

### 3.2 REQUIREMENTS.

- (a) **Capacity.** Rucksack should have total internal volumetric capacity of 90 ltrs including one detachable Day pack & two side Pockets.
- (b) **Weight.** 4.0 Kgs (Maximum).

### 4.0 PROCESSING/ MANUFACTURE

4.1 The Rucksack 90 ltrs shall be manufactured to the shape workmanship and design as shown in the relevant drawing plates attached to this specification and as per the sealed sample. It shall be O.G.in colour.

4.2 Stitching of all parts of the Rucksack shall be by lock stitching and shall be of high standards.

5.0 DESIGN AND CONSTRUCTIONS. The design and constructions of NIV-Rucksack 90 ltrs shall be as under and the drawing plates attached:-

- (a) NIV- Rucksack 90 ltrs is basically a "Top loader".
- (b) Should have two side pockets and one detachable Day Pack.
- (c) Hip belts at both side of size 325 mm lengths, 200mm width at inner end, 140 mm width at extreme ends, with an adjustable belt. The hip belt should have MOLLE system to hold miscellaneous pouches.
- (d) It shall have ergonomically shaped shoulder straps with adjustable-sternum straps.
- (e) It shall have the Air mesh tunnel system on the back to minimize perspiration

(f) Aluminum stay in shape of pie ( $\pi$ ) shall be placed on HDPE Board to provide stability and strength to it (see detail no.17sheet no.13).

(g) HDPE Board (see detail no.17 sheet no.13) shall be placed in the compartment at the rear inside back portion of body (detail no.1 sheet no. 3)

(h) It shall have provision for Rain cover with seam sealing tapes to avoid the water leakage from stitching joints.

(i) It shall have provision to carry Sleeping Bag

#### 6.0 PRE-INSPECTION OF SUPPLIES BY THE SUPPLIER:

6.1 The basic material for the fabrication of Rucksack 90 ltrs shall be procured from reputed suppliers. The supplier shall offer the basic material for inspection and approval at the firm premises to the SQAE (GS) of concerned area. The proof of procurement of basic material and test results of basic material shall be produced to Quality Assurance Officer along with offering letter. The Quality Assurance Officer will assess the quantity and quality of basic material as per Quantity on order and specification for issuance of Inspection certificate.

6.2 The fabricator of Rucksack 90 ltrs shall maintain documents showing cutting of components from the pre-inspected basic material and its utilization for fabrication of said store for verification by the SQAQ, SQAE(GS) of the area concerned.

6.3 The garniture required for fabrication of Rucksack 90 ltrs shall be of acceptable quality as laid down in the governing specification. Testing of the garniture items will be carried out by SQAE (GS) of area concerned from the made up store or from the production line. Pre-inspection of garniture items will not be insisted upon. However, Plastic Slide Fasteners required to be used in the fabrication of made up store will not be considered as garniture and the same shall be pre-inspected by DGQA before used in made up store.

#### 7.0 SAMPLING PROCEDURE.

7.1. The supplier shall arrange the homogeneous lot of NIV Rucksack 90 ltrs in such a way that all the units are easily accessible to the Quality Assurance Officer to enable him to draw samples from any portion of the homogeneous lot.

7.2. Sampling of stores shall be done adopting appropriate sampling plan and sample to be selected as per IS: 4905. The samples so drawn shall be examined / checked for various quality requirements and should be truly representative of the lot.



7.3 Scale of sampling: Number of sample-units to be drawn for assessing the quality of the stores, characteristic wise, should be in accordance with the sampling table given in this specification at Para 8.

### 8.0 SAMPLING PLAN:

8.1 The sampling plan based on 4 % AQL prepared as per IS: 2500 (Part -I)-2000 for Rucksack 90 Ltrs with HDPE Board is as under:

8.1.1 The Lot size is restricted to 5000 Nos.

### **SAMPLING PLAN BASED ON 4% AQL, AUTHORITY IS: 2500(Pt-I):2000/ISO: 2859-1999(Pt-1)**

Table-I

Lots Size in number	Sampling Plan							
	Visual examination/ dimensional check at the time of sampling (L-II)		Sample size for detail check at Bulk QA stage		Physical Parameters (for laboratory tests) (S-4)		Chemical Parameters (for laboratory tests) (S-2)	
	Sample Size	Acceptance No.	Sample Size	Acceptance No.	Sample Size	Acceptance No.	Sample Size	Acceptance No.
1	2	3	4	5	6	7	8	9
Upto 280	32	3	50	5	13	1	5	0
281 – 500	50		80	7	13	1	5	0
501 – 1200	80		125	10	20	2	5	0
1201 – 3200	125		200	14	32	3	8	1
3201-10000	200		315	21	32	3	8	1

**Note:-**

(i) Sampling plan is prepared with Level II as a standard practice.  
(ii) Shift of level and switching of type of inspection will be at the discretion of Inspecting Officer based on QA inputs and switching rules be resorted to.

(iii) Samples drawn as per column (2) to be first examined visually. If found satisfactory, the samples for physical testing as per column (6) be drawn out from the samples originally drawn as per column (2) by the sampling officer and marked accordingly. The sample size is as given in column (2) for visual examination. QAIR will be prepared by the sampling officer.

(iv) Samples for chemical testing will be drawn as per column (8) from the samples drawn as mentioned in column (6) only.



- (v) The sample size for bulk QA check under the column (4) and acceptance no for bulk QA stage are mentioned in column (5).
- (vi) Acceptance No. in column (7) is inclusive of Acceptance No. mentioned in column (9).
- (vii) L: General Inspection Level and S: Special Inspection Level.

## 9.0 CRITERIA FOR CONFORMITY

9.1 The lot shall be considered of standard quality & in conformity with the specification of the contract, if samples drawn for lab test and visual examination both in sampling & Bulk QA are found satisfactory.

## 10.0 MARKING:

10.1 MARKING BY THE VENDOR:- The store shall be legibly and indelibly marked as under:

- (a) Manufacturer's name, initials or recognized Trade mark.
- (b) Year of Manufacture.
- (c) DS Cat No. and nomenclature of store

## 10.2 MARKING BY THE QUALITY ASSURANCE OFFICER.

10.2.1 Each accepted store shall be legibly and indelibly marked using stencil plate/steel stamp of letter size six (6) mm, depending upon the size of the store / components.

## 11.0 PACKAGING STANDARD:

11.1 Each accepted store shall be packed in Polythene bag and five such packs shall be packed in a suitable paper carton / Card Board Box.

Or

If any other suitable packing as per National Standards / International Standard is adopted, same is to be ratified by the AHSP. For doing so, the vendor has to submit samples of packaging materials in advance to the AHSP.

11.2 In both the above packaging, the Vendor shall ensure the required safe guard from any damage to the store during transit and storage against:-

- (a) Shock/Vibration.
- (b) Microbiological attack.
- (c) Weathering affect.
- (d) Any other criteria which may likely to affect the store.

**12.0 MARKING ON PACKAGES:**

12.1 Each final package shall be legibly and indelibly be marked as under:

**(a) Front & Top**

- (i) DS Cat No. & Nomenclature of store.
- (ii) Quantity packed preceded by the abbreviation 'QTY'

**(b) Back**

- (i) Name & address of the Consignee.
- (ii) Gross mass of the package in Kg.
- (iii) Number of individual package and total No. of package in the consignment i.e. 1 of 500, 2 of 500 etc. when the consignment consist of 500 packages.

**(c) Left End**

- (i) Consignors Name, initials or recognized Trade mark.
- (ii) Month and Year packing.
- (iii) S.O. / A/T Number and date.
- (iv) Inspection Note No. & date.

**13.0 TECHNICAL LITERATURE/DRAWINGS:**

13.1 Fourteen No. of drawing Sheets Marked 1 to 14 are enclosed with the specification.

**13.2 Tolerances: -**

- (a) Major dimension and tolerances are as per Appendix --'J'
- (b) Other dimensions in the drawing are for the guidance of manufacturer

**14.0 WARRANTY**

14.1 Except as otherwise provided in the invitation to the tender, the contractor/seller hereby declare that the goods, stores, articles sold/supplied to the purchaser under this contract shall be of the best quality and workmanship and new in all respects and shall be strictly in accordance with the specification and particulars contained/mentioned in the contract.

The contractor/seller hereby guarantees that the said goods/stores/articles would continue to conform to the description and quality aforesaid for period of 12 months from the date of delivery of the said goods/stores/articles to the purchaser or 15 months from the date of shipment/dispatch from the contractor's work, whichever is earlier and that notwithstanding the fact that the purchaser(Inspector) may have inspected and/or approved the said goods/stores, articles, if during the foresaid period of 12/15 months the said goods/stores/articles, be discovered not to conform to the description and quality aforesaid or not having satisfactory performance or have deteriorated and the decision of the purchaser in that behalf shall be final and binding on the contractor/seller to rectify/replace by acceptable goods/stores/articles or such portion or portions thereof as is found to be defective by the purchaser within



reasonable period not exceeding 3 months or as may be allowed by the purchaser in his discretion on the application made thereof by the contractor/seller and in such an event the above mentioned warranty period shall apply to the goods/stores/articles rectified/replaced from the date of rectification/replacement thereof, otherwise the Contractor/seller shall pay to the purchaser such compensation as determined by the purchaser as may arise by reason of the break of the Warranty herein contained".

15.0 QUALITY ASSURANCE.

15.1 Examination of NIV Rucksack 90 ltrs (samples) taken at random from any portion of the consignment shall conform to the requirement of specification when tested in accordance as per the test method specified therein.

16.0 SUGGESTIONS FOR IMPROVEMENT:

16.1 Any suggestion for improvement of this document may be forwarded to: -

The Controller  
Controllerate of Quality Assurance  
(Textiles & Clothing)  
Ashok Path,  
KANPUR - 208 004  
Phone No. 0512-2324529  
E-mail: cqatc-dgqa@nic.in

Place- Kanpur

Dated- 03 July 2017

  
CONTROLLER  
CQA (T&C)  
KANPUR



Appendix-'A'FABRIC FOR MAIN PACK

S. No.	CHARACTERISTICS	REQUIREMENTS	TEST METHOD
1	Nature of fibre	Nylon 6,6	IS: 667:1981, RA 2013 & Annexure 'A' clause No.4.1 of IS:8156: 1994
2.	Mass per Sq Metre (GSM)	230 to 245 g	IS: 1964: 2001, RA 2010
3.*	Nature of weave	Matt Weave	Visual
4.*	Ends/ cm	17-19	IS :1963: 2004, RA 2008
5.*	Picks /cm	10-12	IS :1963 : 2004, RA 2008
6.	Nature of Coating	Polyurethane	See Appendix- I
7.	Breaking Strength	2200 'N' warp (min) 1700 'N' weft (min)	IS: 7016 Pt-2: 1981, RA 2008  Cut Strip method
8.	Tearing Strength	145'N' warp (min) 145'N' weft (min)	IS: 7016 Pt-3 : 1981, RA 2008  Tongue method
9.	Hydrostatic Pressure Head Test	Fabric should withstand pressure of 30 cm (min) water column for 30 minutes, No wetting, No leakage	IS: 7016 Pt-7 :2009
10.	Water Repellency (Spray rating )	80 (min) (on uncoated Face )	IS :390 : 1973 RA 2013
11.	Resistance to damage by flexing (after 3000 cycles)	Fabric should not develop Wrinkling, Cracking and Flaking.	IS: 7016 Pt-4:2003, RA 2009
12.	Resistance to accelerated Ageing at Temperature of ( 70 ±1 °C )for 168 hours.	No sign of softening, tackiness, brittleness, stiffness.	IS: 7016 Pt-8:1975, RA 2012
13.	Resistance to low temperature(at -40°C for 6 hours)	No appreciable stiffness, No cracking	IS: 7016 Pt-10 :1997, RA 2008

Note: \* For manufacturing guidance only.

Appendix-'B'FABRIC FOR MOUTH CLOSURE, INNER CLOSURE & DAY PACK  
LINING

S. No.	CHARACTERISTICS	REQUIREMENTS	TEST METHOD
1	Nature of fiber	Polyester	IS: 667 :1981, RA 2013
2	Nature of Coating	Polyurethane	See Appendix – I
3	Mass per Sq. metre (GSM)	210 to 235 g	IS: 1964:2001, RA 2010
4*	Ends/ cm	23-25	IS :1963 -2004, RA 2008
5*	Picks /cm	14-16	IS :1963- 2004,RA 2008
6*	Nature of weave	Plain Weave	Visual
7.	Breaking Strength	1470 'N' warp (Min) 1275 'N' weft (Min)	IS: 7016 Pt-2 :1981, RA 2008  Cut strip method
8.	Tearing Strength	140 'N' warp & weft (Min)	IS: 7016 Pt-3:1981 RA 2008 Tongue method
9.	Hydrostatic Pressure Head Test	Fabric should withstand pressure of 30 cm (min) water column for 30 minutes, No wetting, No leakage.	IS: 7016 Pt-7,:2009
10	Water Repellency (Spray rating) uncoated Face )	Minimum 80 (uncoated Face)	IS :390 :1973, RA 2013

Note: \* For manufacturing guidance only

Appendix- "C"FABRIC FOR RAIN COVER

S.No.	CHARACTERISTICS	REQUIREMENTS	TEST METHOD
1	Nature of fibre	Nylon	IS: 667 :1981, RA 2013
2	Nature of Coating	Polyurethane	See Appendix- I
3.	Mass per unit Sq.mtr	100 to 140 g	IS: 1964:2001, RA2010
4.*	Ends/ cm	25-27	IS :1963 :2004, RA 2008
5.*	Picks /cm	19-21	IS :1963 :2004, RA 2008
6.*	Nature of weave	Plain Weave	Visual
7.	Breaking Strength	780'N' warp (Min) 680'N' weft (Min)	IS: 7016 Pt-2 :1981, RA 2008  Cut Strip method
8.	Tearing Strength	19 'N' warp & weft (Min)	IS: 7016 Pt-3 :1981 RA 2008  Tongue method
9.	Hydrostatic Pressure Head Test	Fabric should withstand pressure of water 30 cm (min) column for 30 minutes No wetting, No leakage.	IS: 7016 Pt-7 :2009
10	Water Repellency (Spray rating )	Minimum 80 (on uncoated Face)	IS :390 :1975 RA 2013

Note: \* For manufacturing guidance only



Appendix – 'D'PLASTIC SLIDE FASTENERS VARIOUS

S No	ITEM	REQUIREMENTS	TEST METHOD	REMARK
1.	Plastic slide Fasteners: Spl Purpose as per IS:14181 : 2002, Pt1, Amdt -2 of 2008	<b><u>L-Type, Non lock</u></b>	IS : 14181- 2002 Pt-II, Amdt No 2 of 2008, RA 2013	
	(i) Inside daypacks	(i) 60 cms, Medium spl, Double slider, center closing, closed end.		
	(ii) Between daypack & main compartment	(ii) 90 cms, Heavy spl, open end.		
	(iii) Side Pockets	(iii) 56 cms, Medium spl, closed end.		
	(iv) Top Compartment	(iv) 24 cms, Medium spl. Closed end.		
	(v) Lower Compartment	(v) 52 cms, Medium spl. Closed end.		
	(vi) Lower Bottom	(vi) 20 cms, Medium spl. Closed end		
	(vii) Compartment for HDPE Board	(vii) 30 Cm Medium spl closed end		

GARNITURE ITEMSAppendix- 'E'

S No	ITEM	REQUIREMENTS	TEST METHOD	REMARK
1.	Netting ( Mesh ) Type -I No. of Holes on base & bias within 6.25 cm <sup>2</sup>	4/5	IS: 1431-1973 Amd-3, RA 2011	For manufacture guidance only
2.	Netting ( Mesh ) Type -II No. of Holes on base & bias within 6.25 cm <sup>2</sup>	7/8	IS :1431-1973 Amd-3, RA 2011	For manufacture guidance only
3.	(a) Nylon Tape O.G.(webbing) 50 mm Width (a) Total No of Ends (b) Picks per cm	50 ± 1 254 8-10	IS :1954-1990 RA 2007 & IS :1963-2004, RA 2008	For manufacture guidance only
	(b) Nylon Tape O.G. (webbing) 25 mm Width (a) Total No of Ends (b) Picks per cm	25 ± 1 125 8-10	IS :1954-1990 RA 2007 & IS : 1963- 2004, RA 2008	For manufacture guidance only
	(c)Tape Nylon 25 mm for beading purpose	25 ± 1	IS :1954-1990	For manufacture guidance only
4.	Elastic Tape (Various )	Comply with the Specification	IS : 9686-1980 Amd-1, RA 2012	For manufacture guidance only
5.	Hook & loop Fastener (Velcro)	Comply with the Specification	IS: 8156: 1994, RA 2009	For manufacture guidance only
6.	Sewing thread O.G.	Nylon sewing thread as per H1 of IS: 4229	IS: 4229-1992, RA 2008	For manufacture guidance only
7.	Nylon Cordage O.G. 1785 'N'	Nylon filaments 700 D braided [for guidance only.]	JSS : 4020- 2009	For manufacture guidance only

Appendix- 'F'TECHNICAL REQUIREMENTS FOR COMPONENTS

Sl. No	Components	Description
1	Aluminum Stay	(i) Dimension: 670 cm X 25 mm X 2.75 mm shall be placed on HDPE Board.
2	Polythene Foam	Best trade quality
3	Plastic end Cap O.G. 25 mm	Best trade quality
4	Quick Release Buckle O.G. 25mm and 50mm	(i) Made of Nylon (ii) O.G in colour (iii) Should satisfy load test as per Appendix 'F' & technical requirement as per Appendix 'G'
5	Ladder Lock O.G. 25 mm	(i) Made of Nylon (ii) O.G in colour (iii) Should satisfy technical requirement as per Appendix 'G'
6	Toggle O.G.	(i) Made of Nylon (ii) O.G in colour (iii) Should satisfy technical requirement as per Appendix 'G'
7	End Lock O.G.	(i) Made of Nylon (ii) O.G in colour (iii) Should satisfy technical requirement as per Appendix 'G'
8	Belt Stay O.G. 25 mm	(i) Made of Nylon (ii) O.G in colour (iii) Should satisfy technical requirement as per Appendix 'G'
9	Adjuster O.G.	(i) Made of Nylon (ii) O.G in colour (iii) Should satisfy technical requirement as per Appendix 'G'
10	'D' Ring O.G. 25 mm	(i) Made of Nylon (ii) O.G in colour (iii) Should satisfy technical requirement as per Appendix 'G'
11	Square Ring O.G. 25 mm	(i) Made of Nylon (ii) O.G in colour (iii) Should satisfy technical requirement as per Appendix 'G'



APPENDIX 'G'

QUICK RELEASE BUCKLES

The Quick Release Buckles shall be of O.G color, made of Nylon material which shall sustain a load of 25 kg for four hours without any crack/permanent deformation symptoms. Standard test method of load application shall be used.

Appendix- 'H'CUSHIONING MATERIALS

Sl No	Components	Description
1.	Expanded Cellular Polythene foam of Thickness 15 mm $\pm$ 2mm	(a) Best Trade Quality, virgin foam, should have properties of adequate density, firmness and support factor so as to provide comfort to the user and sustain for the service life of the store,
2.	Expanded Cellular Polythene Foam of Thickness 6 mm $\pm$ 1 mm	
3.	Expanded Cellular Polythene Foam of Thickness 12 mm $\pm$ 1 mm	
4.	Polyurethane Foam of Thickness 20 mm $\pm$ 2 mm	
5.	EVA Sheet Black ( size 350 x 230 x 1.5 mm)	(b) Thickness as per IS :7888

Appendix - I

Approx 5g of coated fabric is dissolved in 5ml Glacial Acetic acid by warming for several minutes. To this add 0.1g p-dimethylamino Benzaldehyde. The solution is further warmed for 2-3 minutes. The solution turns yellow indicating presence of polyurethane.

Appendix - 'J'  
( Refer . Para 13.2 )

MAJOR DIMENSIONS & TOLERANCES

RUCK SACK 90 LTRS

Dimensions & Tolerances are in mm

Sl No.	Parameters	Specified Value	Tolerance
1.	Overall Height	930	± 10
2.	Length at bottom portion	360	± 10
3.	Width at bottom portion	220	± 5
4	Opening of mouth closer ( At edge )	1220	± 15
5.	Height of mouth closure	150	± 5
6.	Length of hip pad	820	± 10
7.	Length of each shoulder pad	500	± 10
8.	Height of side pocket	355	± 10
9.	Width of side pocket	140	± 5
10	Length of detachable day bag pack	450	± 10
11.	Width of detachable day bag pack	280	± 5
12.	Depth of detachable day bag pack	180	± 5
13.	Size of Top cover- ( Length X Width)	356 X 365	± 5
14.	Water proof rain cover (Length X Width X Height)	740 X 400X 350	+ 10 / -5



Appendix- 'K'

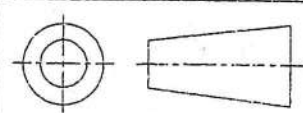
HDPE BOARD

S.No.	CHARACTERISTICS	REQUIREMENTS	TEST METHOD
1.	Density (in gms/cm <sup>3</sup> )	1.02	ASTM D792
2.	Tensile Strength, MPa	18.8	ASTM D638
3.	Thickness (mm) - (by thickness Gauge)	2.25	
4.	Hardness, Shore -D	61	ASTM D2240

DRG ATTACHED TO SPECIFICATION  
No. PROV./S/7823/TC-5/2017

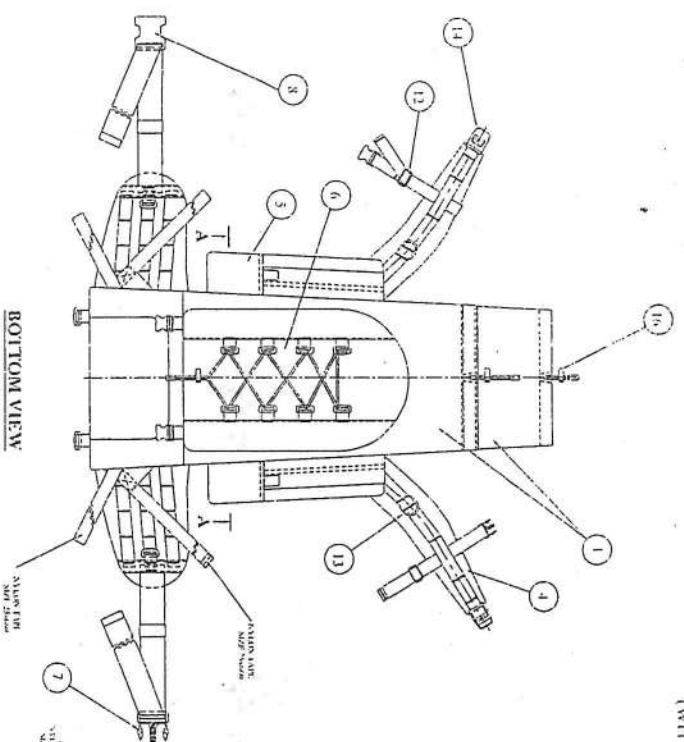
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15	D-RING	SHEET No. 11 OF 14	13
16	BUCKLE (MEDIUM)	SHEET No. 11 OF 14	14
17	RUBBER BOTTOM PAD	SHEET No. 12 OF 14	15
18	TOGGLE	SHEET No. 12 OF 14	16
19	BACK SUPPORT HDPE BOARD	SHEET No. 13 OF 14	17
20	WATER PROOF/RAIN COVER	SHEET No. 14 OF 14	18

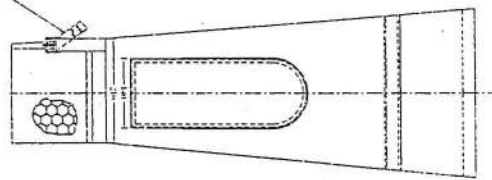
AJAY KUMAR JTC ID:	DATE	NAME	CONTROLLERATE OF QUALITY ASSURANCE (TEXTILE & CLOTHING) MINISTRY OF DEFENCE (DQA) ASHOK PATEL KANPUR
	DGN.		
	DRN.	Ajay Kumar	
	CHD.	Ajay Kumar	
PASSED BY -  COTC-57	TRD.		
	COMP.		
APPROVED BY -  COTC-57	SCALE: ---	<b>RUCKSACK 90 LTRS</b>	
	---		
ALL DIMENSIONS ARE IN MILLIMETERS			DRG ATTACHED TO SPECIFICATION No. PROV./S/7823/TC-5/2017
TC-4/05/2017			

(MAIN ASSEMBLY)

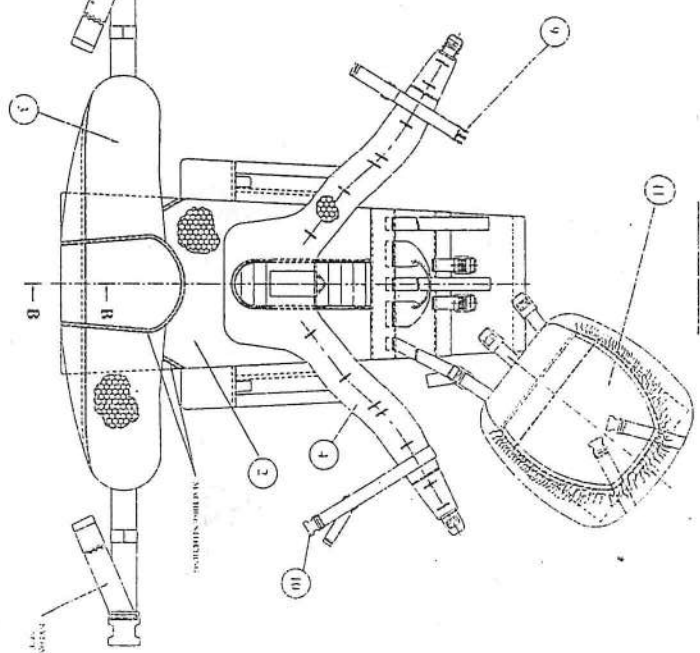
FRONT VIEW



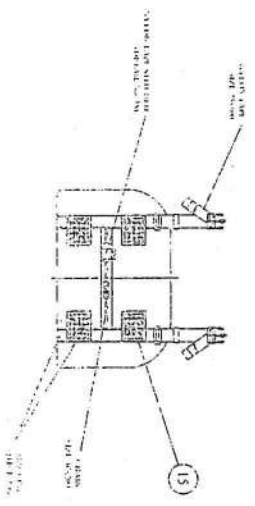
SIDE VIEW  
(WITHOUT DETACHABLE DAY PACK)



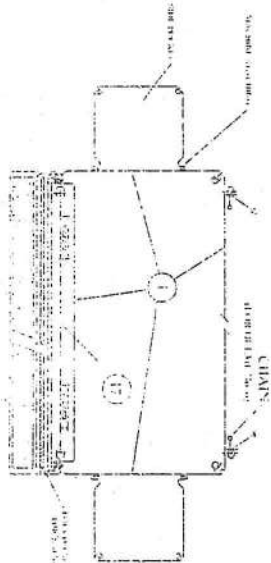
BACK VIEW



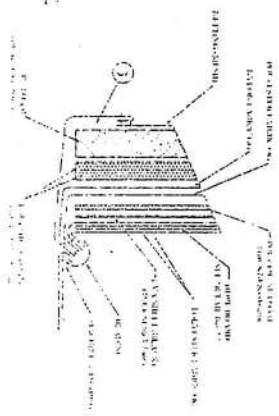
BOTTOM VIEW  
(WITHOUT HIP PAD)



SECTION-A-A  
WITHOUT DETACHABLE DAY BAG  
ENLARGED VIEW



SECTION-B-B  
OF THE MAIN VIEW



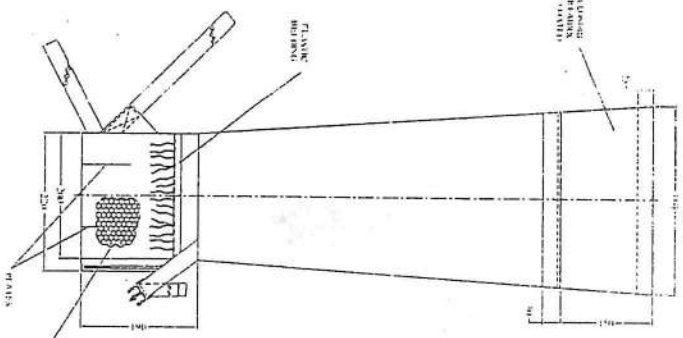
<p>ROCKSACK 90 LITRS</p>							
<p>DESIGNER: [Name]</p> <p>DATE: [Date]</p>	<p>SCALE: [Scale]</p>						
<p>REVISIONS:</p> <table border="1"> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>		NO.	DESCRIPTION	DATE			
NO.	DESCRIPTION	DATE					



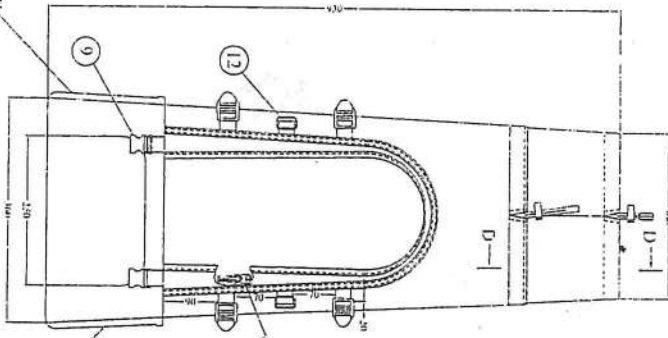
DRG ATTACHED TO PROV. SPECIFICATION NO. PROV./S/7821/FC-S/2017

**BODY**

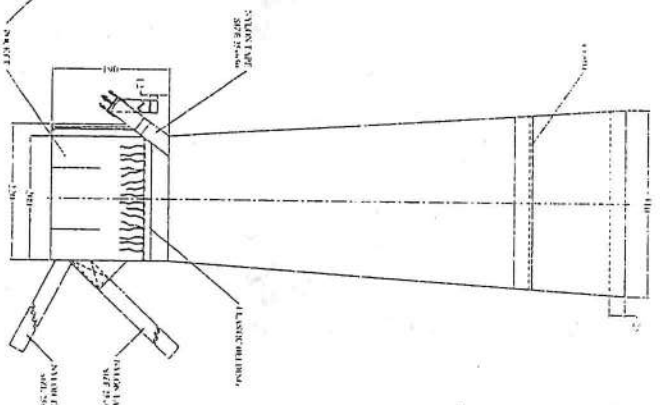
**LEFT SIDE VIEW**



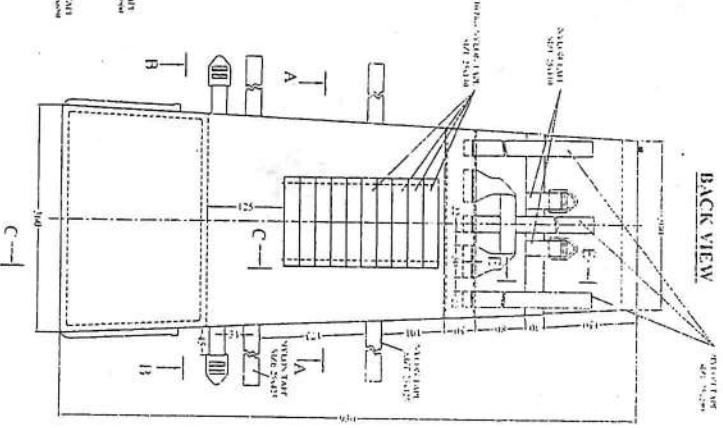
**FRONT VIEW**



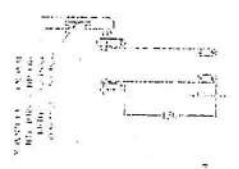
**RIGHT SIDE VIEW**



**BACK VIEW**

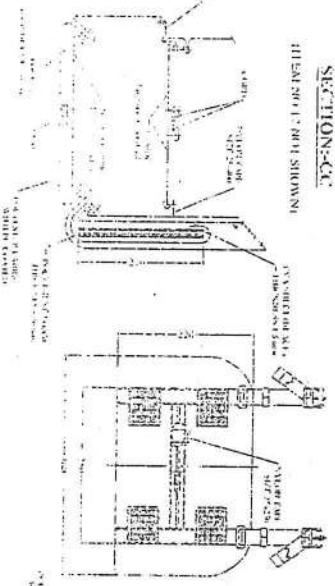


**SECTION-DD**

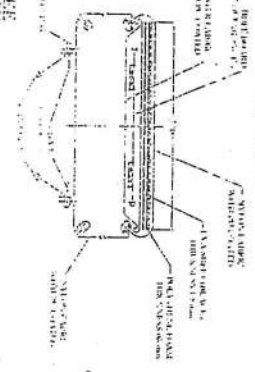


**SECTION-CC**

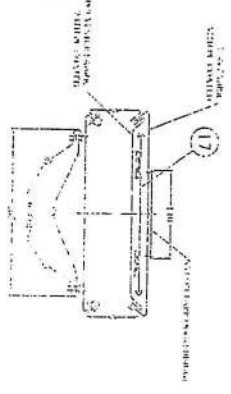
(THIS SECTION SHOWS)



**SECTION-BB**

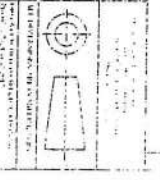


**SECTION-AA**



**BACKPACK 90 LTRS**

NO. OF LAYERS	1
NO. OF STITCHES	1
NO. OF SEAMS	1
NO. OF ZIPPERS	1
NO. OF BUTTONS	1
NO. OF HOOKS	1
NO. OF SAFETY PINS	1
NO. OF STRAPS	1
NO. OF POCKETS	1
NO. OF FLAPS	1
NO. OF TIES	1
NO. OF RINGS	1
NO. OF SCISSORS	1
NO. OF KNIVES	1
NO. OF STAPLES	1
NO. OF GLUE	1
NO. OF WAX	1
NO. OF THREAD	1
NO. OF NEEDLES	1
NO. OF SCISSORS	1
NO. OF KNIVES	1
NO. OF STAPLES	1
NO. OF GLUE	1
NO. OF WAX	1
NO. OF THREAD	1
NO. OF NEEDLES	1







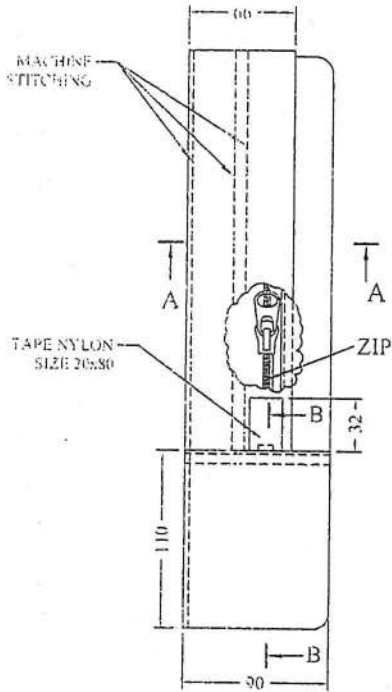


DRG. ATTACHED TO SPECIFICATION  
No. PROV. S/7823/TC-5/2017

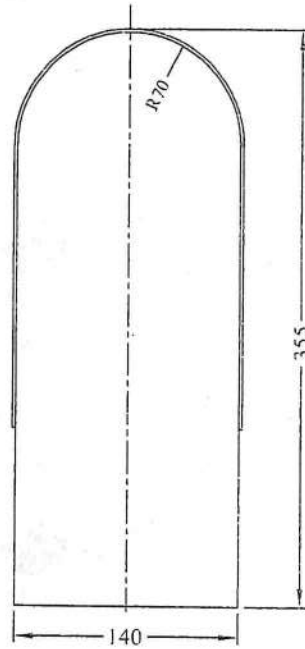
**SIDE POCKET**

2- PER SET

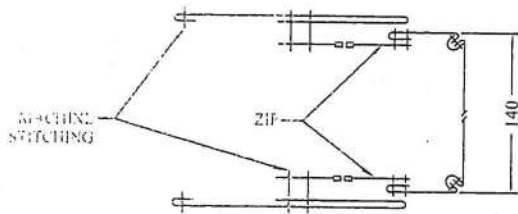
**FRONT VIEW**



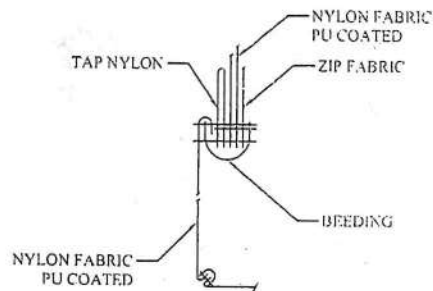
**SIDE VIEW**

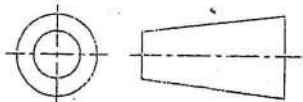


**SECTION:-AA  
(ENLARGE VIEW)**



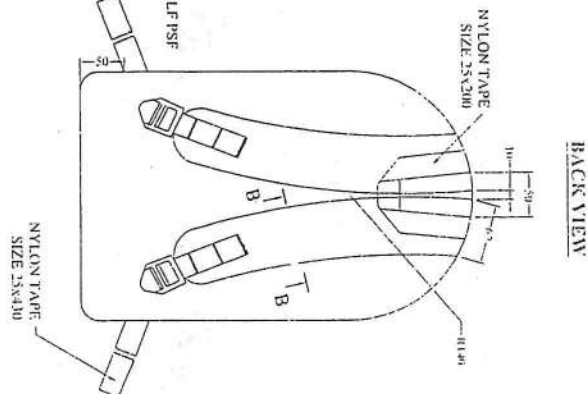
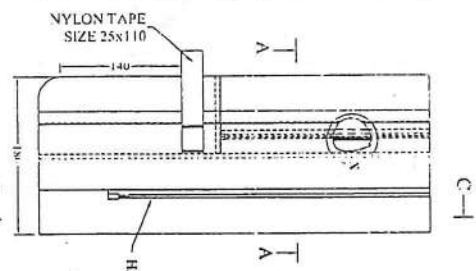
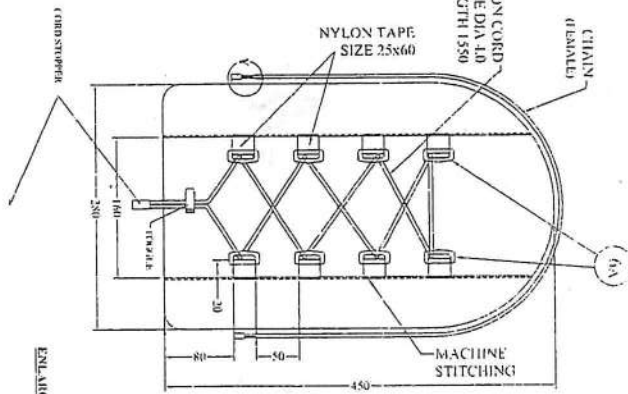
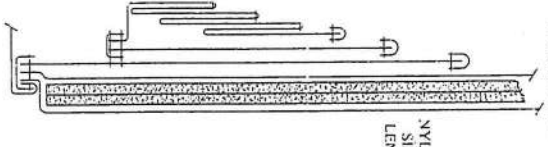
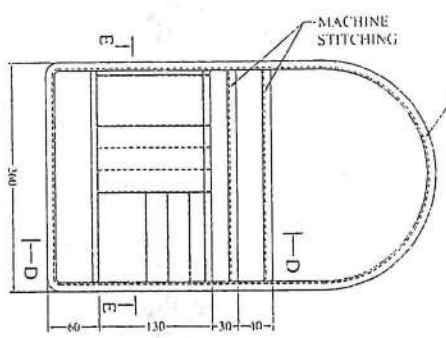
**SECTION:-BB  
(ENLARGE VIEW)**



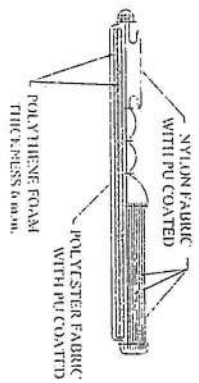
AJAY KUMAR JTC(D)	DATE	NAME	CONTROLLERATE OF QUALITY ASSURANCE (TEXTILE & CLOTHING) MINISTRY OF DEFENCE (GOVT) ASHOK P.A. H. KANPUR
	DGN.		
	DRN.	Ajay Kumar	
	CHD.	Ajay Kumar	
PASSED BY:-  0070-50	TRD.		
	COMP.		
APPROVED BY:-  0070-5	SCALE: ---	<b>RUCKSACK 90 LTRS</b>	ALL DIMENSIONS ARE IN MILLIMETERS

DETACHABLE DAY BAG/PACK

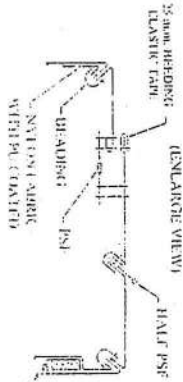
6



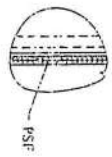
SECTION-EE  
(ENLARGE VIEW)



SECTION-AA  
(ENLARGE VIEW)



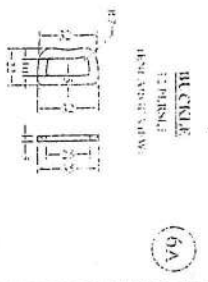
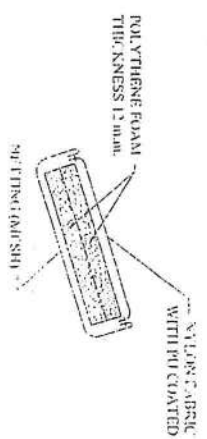
ENLARGED VIEW AT 'X'



ENLARGED VIEW AT 'Y'



SECTION-BB  
(ENLARGE VIEW)



90 LITRES (GROSS)  
THE EXPRESSOR BAG  
(SHOULDER BAG)

<p>REQUISITION NO. _____</p> <p>DATE OF ORDER _____</p>		<p>ISSUANCE NO. _____</p> <p>DATE OF ISSUANCE _____</p>										
<p>APPROVAL _____</p> <p>BY _____</p>		<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>		NO.	DESCRIPTION	DATE						
NO.	DESCRIPTION	DATE										
<p><b>RUCKSACK 90 LITRS</b></p>												
<p>DESIGNED BY _____</p> <p>DRAWN BY _____</p>		<p>CHECKED BY _____</p> <p>DATE _____</p>										



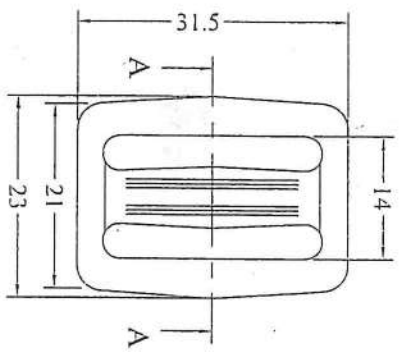




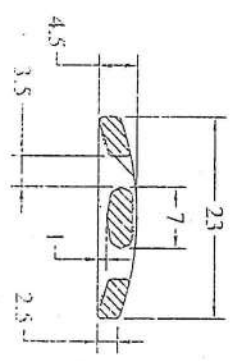


12

BUCKLE (SMALL)  
6-PERSET

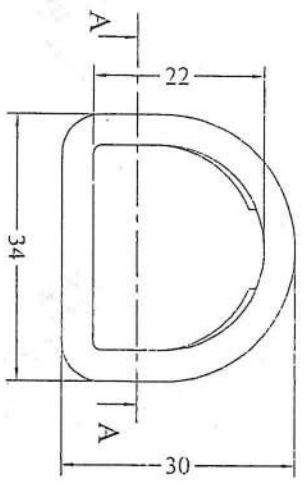


SECTION:-AA

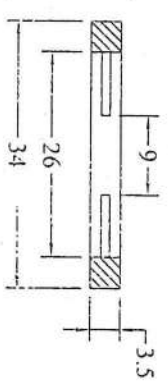


13

D-RING  
2-PERSET

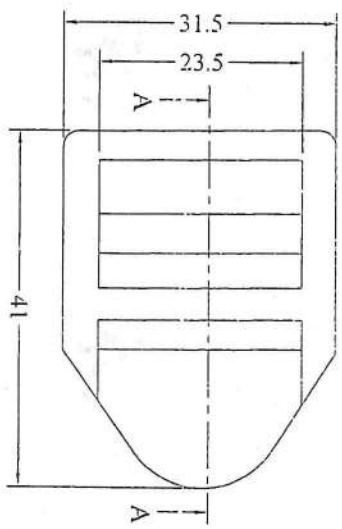


SECTION:-AA

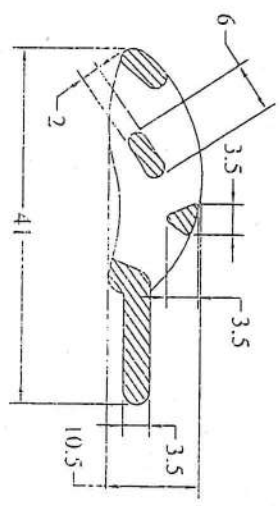


14

BUCKLE (MEDIUM)  
12-PERSET



SECTION:-AA



APPROVED BY:	DATE:	SCALE:
DESIGNED BY:		
CHECKED BY:		
APPROVED BY:		

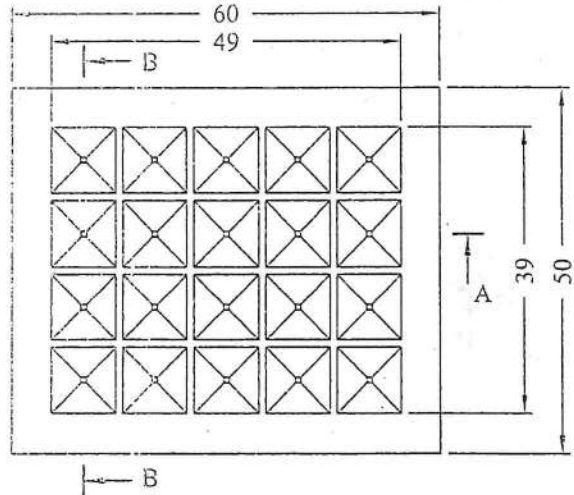
RUCKSACK 90 LTRS



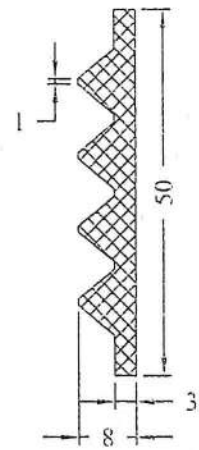


**RUBBER BOTTOM PAD**

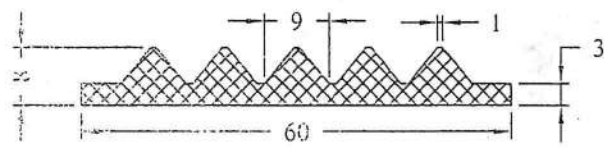
15



**SECTION:-BB**



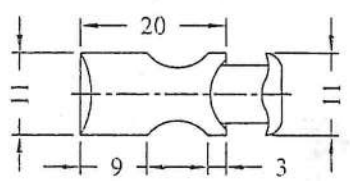
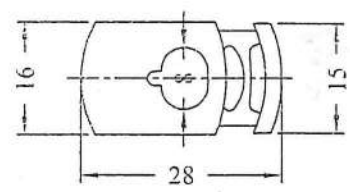
**SECTION:-AA**



**TOGGLE**

(TRADE SUPPLY)

16

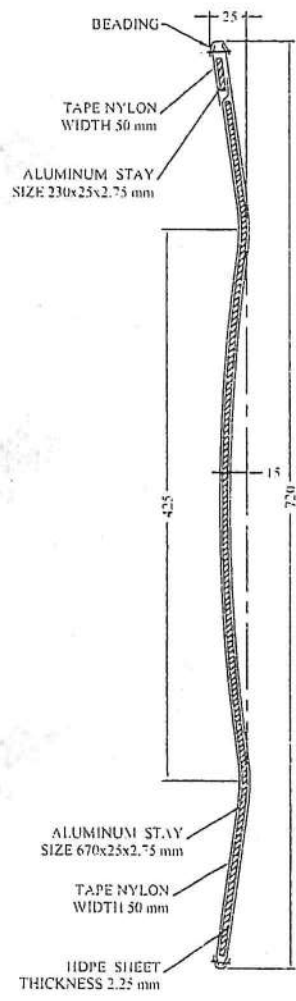
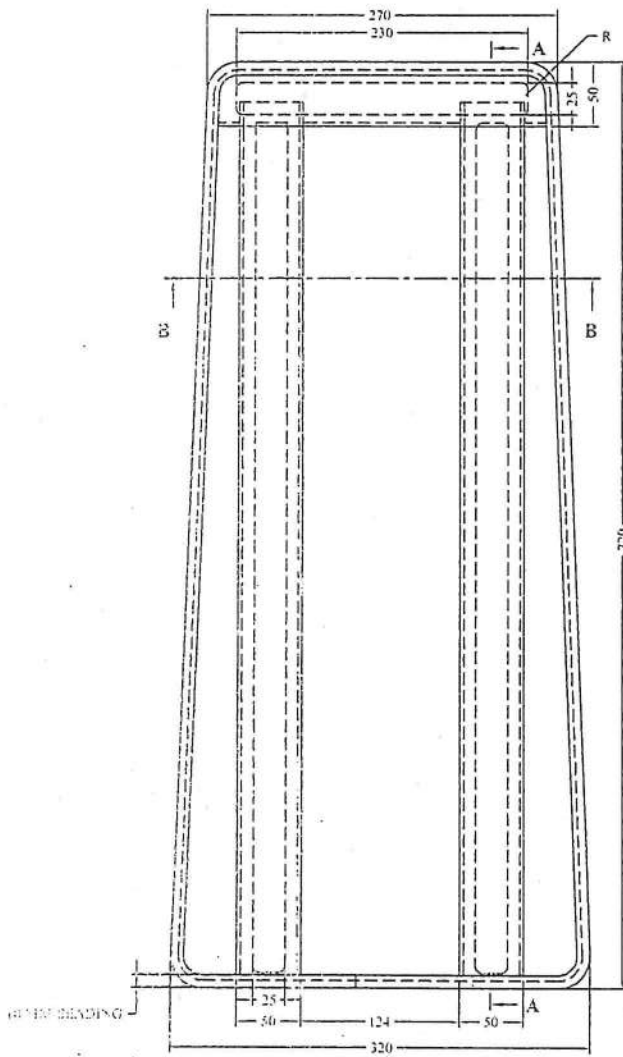


AJAY KUMAR JUDGE	DGN.	DATE	NAME	CONTROL RATE OF QUALITY ASSURANCE (TEXTILE & CLOTHING) MINISTRY OF DEFENCE (DGOA) ASHOK PATH, CANPUR
	DRN.		Ajay Kumar	
	CHD.		Ajay Kumar	
	TRD.			
PASSED BY:	CGMP.			
SCALE:---			<b>RUCKSACK 90 LTRS</b>	
APPROVED BY:				
DC/TC-57				ALL DIMENSIONS ARE IN MILLIMETERS DRG ATTACHED TO SPECIFICATION NO. PROV. S7823 TC-5 2017

17

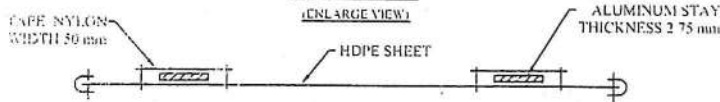
**BACK SUPPORT HDPE BOARD**

**SECTION:-AA**



**SECTION:-BB**

(ENLARGE VIEW)



AJAY KUMAR JCO-01	DGN.	
	DRN.	Ajay Kumar
	CHD.	Ajay Kumar
	TRD.	
	COMP.	
PASSED BY:-	SCALE: ---	
DC/TC-57		
APPROVED BY:-		
DC/TC-57		

DATE	NAME

**RUCKSACK 90 LTRS**

CONTROLLERATE OF QUALITY ASSURANCE  
(TEXTILE & CLOTHING)  
MINISTRY OF DEFENCE (DGQA)  
ASHOK PATEL ANPUR

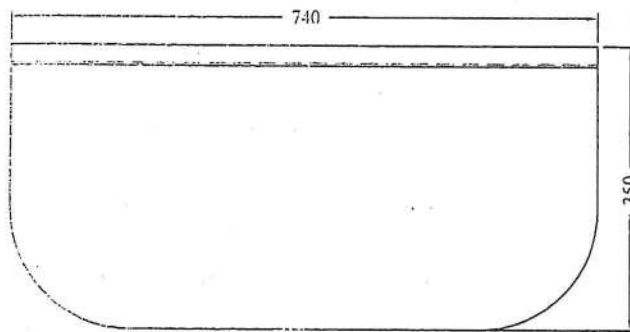
ALL DIMENSIONS ARE IN MILLIMETERS  
DRG ATTACHED TO SPECIFICATION No.  
PROV. S/823/TC-5.2017

DRG ATTACHED TO PROV. SPECIFICATION No. PROV./S/7823/TC-5/2017

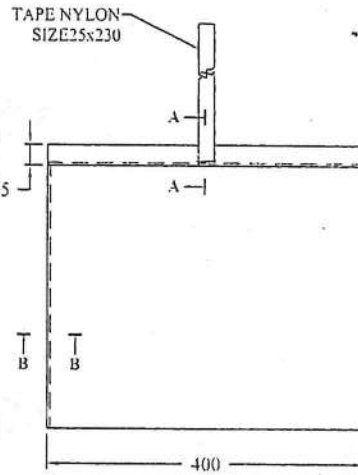
18

**WATER PROOF RAIN COVER**

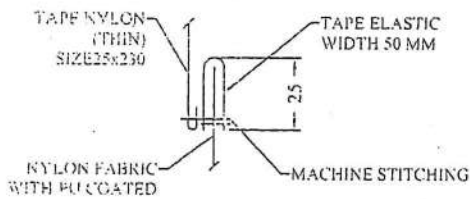
**FRONT VIEW**



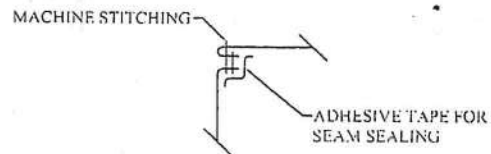
**SIDE VIEW**



**SECTION:-AA  
(ENLARGE VIEW)**



**SECTION:-BB  
(ENLARGE VIEW)**



AJAY KUMAR JTC (D)	DATE	NAME	CONTROLLER/ATL OF QUALITY ASSURANCE (TEXTILE & CLOTHING) MINISTRY OF DEFENCE (DGOA) ASHOK PATHI, KANPUR
	DGN.		
	DRN.	Ajay Kumar	
	CHD.	Ajay Kumar	
	TRD.		
PASSED BY:-	COMP.		
60/10-57	SCALE: ---	<b>RUCKSACK 90 LTRS</b>	
APPROVED BY:-			
100/10-57			ALL DIMENSIONS ARE IN MILLIMETERS
			DRG ATTACHED TO SPECIFICATION No. PROV. S/7823 TC-5 2017