

No. U-II-25/2011-12-Prov-(CoBRA)
 Government of India/भारत सरकार
 Ministry of Home Affairs/गृह मंत्रालय
 Police Modernization Division/पुलिस आधुनिकीकरण प्रभाग
 Prov.I Desk/संभरण-I डेस्क

26, Mansingh Road, Jaisalmer House,
 New Delhi, the 11th February, 2013

DsG : AR/BSF/CISF/CRPF/ITBP/NSG/SSB & BPR&D

Subject : QRs/Specification of 14 various Clothing items.

The QRs/Specification of following 14 items as per annexures have been approved by the Competent authority in MHA:

- i. Socks woollen heavy (Annex. B).
- ii. Hand Gloves Knitted (Annex. C)
- iii. Cotton Terry Towel (Sky Blue Color)/Hand Towel (Annex. D)
- iv. Scoured and bleached rib knitted round neck sleeveless and short sleeve vests/Vest Cotton (Annex. E)
- v. Water Bottle(Annex. F)
- vi. Trouser BD Serge Cloth/Cloth Trouser BD (Annex. G)
- vii. Shirt Angola Cloth./Shirt Angola (Annex. H)
- viii. Cap Comforter Woollen(Annex. I)
- ix. Under Pant Thermal/ Under Pant Woollen (Annex. J)
- x. Vest Thermal/Vest Woollen (Annex. K)
- xi. Coat Parka (Annex. L)
- xii. Beret Cap (Annex. M)
- xiii. Rain Cape(Annex. O)
- xiv. Blanket Air Force Blue (Annex. S)

2. Henceforth, all CAPFs should procure the above items required by them, strictly as per the laid down QRs/Specifications.

Yours faithfully,

(Signature)
 (Tilak Raj)

Under Secretary to the Govt. of India

O/C

Encl : As above.

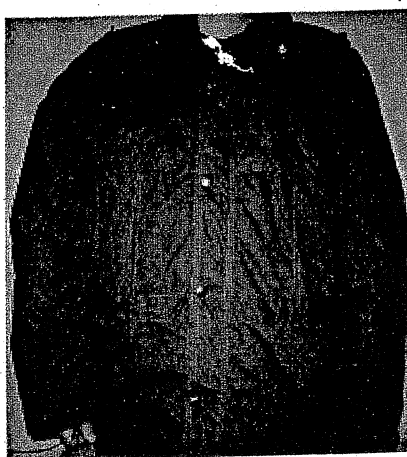
Copy to :

1. SO, IT Cell, MHA - with the request to host the above QRs/Specification on the official website of MHA (under the page of Organizational set up, Police Modernization Division) and confirm to this Division. Softcopy is being sent separately.
2. Director(Procurement), MHA

Copy for information to PS to JS(PM).

Wdgm 5/12
13/2/2013

CENTRAL RESERVE POLICE FORCE STANDARD



"SPECIFICATION FOR COAT PARKA"

Submitted to :

Office of the Directorate General of Police,
CRPF, Ministry of Home Affairs
Block No-1, CGO Complex, Lodhi Road,
New Delhi-03

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SPECIFICATION FOR COAT PARKA

RECORD OF AMENDMENTS

Amendment No. and Date	Amendment pertains to SI.No./Para No./Column No.	Authority	Amended by Name and Appointment (in block letter)	Signature and Date

PREAMBLE

The Inspector General of Police, CRPF, has asked NITRA to prepare technical specifications for "Coat Parka". The specification describes the performance requirements and material properties – Ends/dm, picks/dm, weave, weight, yarn count, fibre composition, dimensions, color fastness to light, washing, and perspiration; pH, dimensional change due to washing, etc. Bureau of Indian Standards (BIS), American Society for Testing and Materials (ASTM), American Association of Textile Chemists and Colorists (AATCC) test methods and International Organization for Standardization (ISO) test methods are considered to draw this specification.

This report contains 37 pages which describe the technical specifications of "Coat Parka" for CRPF.

Whenever a reference to any other standard occurs in this specification, it shall be taken as reference to the latest version of that standard existing at the time of finalization of a contract.

This technical specification will enable the CRPF to prepare tender documents (technical details) at the time of placing orders for "Coat Parka" and final inspection as well.

SPECIFICATION FOR COAT PARKA**C O N T E N T S**

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0.0 FORWARD

- 0.0 This specification has been prepared by Office of the Directorate General of Police, CRPF on the authority of The Director General of Police, CRPF.
- 0.1 This specification is for use by the CRPF.
- 0.2 This specification would be used for manufacture, quality assurance and procurement of the item.
- 0.3 Quality assurance authority for the item covered in this specification is Office of the Directorate General of Police, CRPF, New Delhi. All enquiries regarding this specification, including those relating to any contractual conditions contained therein shall be addressed to the Quality Assurance authority at the following address:
- Office of the Directorate General of Police,
CRPF, Ministry of Home Affairs
Block No-1, CGO Complex, Lodhi Road,
New Delhi-03
- 0.4 Copies of the specification can be obtained from:
- Office of the Directorate General of Police,
CRPF, Ministry of Home Affairs
Block No-1, CGO Complex, Lodhi Road,
New Delhi-03
- 0.5 This specification holds good only for the supply order for which it is issued.
- 0.6 The Quality Assurance Authority reserves the right to amend or modify this specification as and when required.
- 0.7 The Quality Assurance Authority is the competent authority to grant concessions, if any, in respect of any clause contained in this specification.
- 0.8 For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS:2-1960 (Reaffirmed 2006). The number of significant places retained in the rounded off value should be the same as that of the specified value in this specification.

1.0 SCOPE

1.1 The specification prescribes the requirement of "Coat Parka".

1.2 This specification does not specify the general appearance, lusture, feel, type of finish of "Coat Parka".

2.0 MATERIAL AND MANUFACTURE

2.1 The design and shape of the "Coat Parka" shall be as per Fig. 1 to 5. Wherever tolerance in dimensions is not given following tolerance shall be applicable:

- i) Dimensions upto 25 cms : ± 0.25 cms
- ii) Dimensions from 26 cms up to 50 cms : ± 0.50 cms
- iii) Dimensions from 51 cms up to 100 cms : ± 1.00 cms
- iv) Dimensions from 101 cms and above: ± 1.50 cms

2.2 "Coat Parka" shall have following three main parts:

- i) Outer Jacket
- ii) Inner jacket
- iii) Hood

The main components used to manufacture "Coat Parka" are given in Table-1

Table1: Components used in manufacture of "Coat Parka"

Component No.	Name of the component	Description
1	Outer shell fabric for outer jacket	<p>1. Polyester multifilament yarn in weft and cotton yarn in warp shall be used.</p> <p>2. For guidance i) warp count (Ne): 30s, ii) weft count: 150 Denier</p> <p>3. Ends/dm : 480 Min., Picks/ dm: 240 Min.</p> <p>4. Weave: Plain 1 up 1 down</p> <p>5. The fabric shall be 'Heat set' and fully shrunk.</p> <p>6. Olive green shade and finished with water repellent finish</p>
2	Inner shell fabric for outer jacket	<p>1. Nylon multifilament yarn shall be used.</p> <p>2. For guidance i) warp count: 70 Denier, ii) weft count: 70 Denier</p> <p>3. Weave: plain 1 up 1 down</p> <p>4. Ends/dm : 440 Min., Picks/ dm: 300 Min.</p> <p>5. The fabric shall be 'Heat set' and fully shrunk.</p> <p>6. Olive green shade and finished with water repellent finish</p>
3	Nonwoven inner lining fabric for outer jacket	<p>1. Polyester hollow fibre (Minimum hollowness: 9%) shall be used.</p> <p>2. For guidance 5.0 Denier fibre may be used.</p> <p>3. Mass=150±10 g/m²</p> <p>4. Thickness: 2.5 mm at 1Kpa Pressure</p> <p>5. White Colour</p>
4	Slide fastener 80±2 cm length for outer jacket (Outer)	<p>1. Comply with the acceptance criteria specified in IS 14181</p> <p>2. Designation: Medium</p> <p>3. Type: One way open end type C slide fastener.</p> <p>4. Colour: Olive Green</p>

5	Slide fastener 16±1 cm length for outer jacket (Pocket)	1. Comply with the acceptance criteria specified in IS 14181 2. Designation: Light special 3. Type: Two way open end type C slide fastener. 4. Colour: Olive Green
6	Draw Cord for outer jacket	1. For guidance Nylon filament yarn of 700 Denier (3 ply) may be used 2. Length of the cord = 180 cm (Min) and diameter = 4 mm 3. Colour : Olive Green
7	Elastic draw cord with lock for outer jacket	Elastic Draw Cord: 1. For guidance core cord made out of rubber strips in a core and polyester fibre in the sheath may be used. 2. Length of the cord = 150 cm (Min) and diameter = 3mm 3. Black colour Draw Cord Lock: 1. Made out of Nylon, 2. For dimension refer Fig. 1d. 3. Colour : Black
8	Sewing Thread	1. Polyester sewing thread of 3/20s Ne in needle and 2/20s in bobbin shall be used. 2. Colour : Olive Green matching with "Coat Parka"
9	Snap Fastener-male & female for outer jacket	Snap fastener (Male): 1. Diameter: 10±1 mm Snap fastener (Female): 1. Diameter: 10±1 mm 2. Top disc diameter: 18±1 mm 3. Colour of the top disc: Olive Green (Sample of "Coat Parka" held in the custody of CRPF may be referred for more clarification)
10	Button	1. Diameter: 20±2 mm 2. Colour : Olive Green (Sample of "Coat Parka" held in the custody of CRPF may be referred for the clarification)

11	Hook and Loop Fastener 25±1 mm	1. Comply with the acceptance criteria specified in IS 8156: 1994 RA 2004 2. Colour : Black (Vendor shall provide 10 meter Hook and Loop fastener used in the "Coat Parka" for testing purpose)
12	Polyester knit fabric for Inner jacket	1. Polyester multifilament yarn shall be used. 2. For guidance 120 Denier polyester filament yarn may be used. 3. Knit: Single jersey (Plain) raised (Fig. 5) 4. The fabric shall be 'Heat set' and fully shrunk. 5. Olive green shade and finished with water repellent finish
13	Slide fastener 60±2 cm length for Inner jacket	1. Comply with the acceptance criteria specified in IS 14181 2. Designation: Medium 3. Type: One way single puller reversible slide fastener. 4. Colour: Olive Green
14	Slide fastener 60±2 cm length for outer jacket-inside to attach inner jacket	1. Comply with the acceptance criteria specified in IS 14181 2. Designation: Medium 3. Type: One way single puller reversible slide fastener. 4. Colour: Olive Green

2.3 Outer jacket: The outer jacket of "Coat Parka" shall be made of a layer of non woven inner lining made out of polyester hollow fibre (Component-3) sandwiched between two layers of inner shell fabric (Component-2) and then stitch with outer shell fabric (Component-1) as shown in the Fig. 1 and 4. The location of stitches can be seen in the "Coat Parka" sample held in the custody of CRPF.

The opening and closing of the outer jacket of "Coat Parka" shall be carried out using Slide fastener (Component-4). The slide fastener shall be covered with front packet using snap fasteners (Component-9). The way to attach slide fastener may be seen in the sample held in the custody of CRPF. Slide

fastener shall be stitched to the opening of the "Coat Parka" using lock-stitch. For this purpose polyester sewing thread (Component-8) shall be used. The 'Coat Parka' shall be provided with a draw cord (Component-6) to tighten or loosen the "Coat Parka". This draw cord is placed in the tunnel. For further clarification Fig. 1 and 4 may be referred. One elastic draw cord (Component-7) shall also be provided at the end of jacket to tighten or loosen the "Coat Parka" Fig. 1 may be referred for further clarification.

The "Coat Parka" shall be provided with pockets. The location and dimensions of the pockets can be seen in the Fig. 1 and 4. The opening and closing of the pockets shall be carried out using slide fastener (Component-5, Fig. 1b may be referred). For further details, sample held in the custody of CRPF may be referred. The "Coat Parka" shall be provided with two shoulder straps as shown in the Fig. 1 and 4. One of the shoulder straps shall be stitched to the outer jacket while the other end shall be held by buttons (Component-10) as shown in Fig 1 and 4.

The right side of the "Coat Parka" shall be provided with Hook and Loop fastener (Component-11) as shown in the Fig.1 and 4.

The opening of the sleeves of "Coat Parka" shall be provided with Cuff buckle (straps made out of outer shell fabric) with one set of buttons (Component-10) as shown in the Fig.1 and 4 to adjust cuff opening.

2.4 Inner jacket:

The inner jacket of "Coat Parka" shall be made from a knitted fabric (Component -12). The inner jacket shall be of 100% polyester filament yarn. For guidance 120 denier polyester multifilament yarn may be used in the knit structure. The knitted fabric shall be raised before tailoring so as to

have the required thickness and appearance. The finish of the inner jacket of "Coat Parka" shall match with the sample held in the custody of CRPF.

The inner jacket shall be provided with two pockets as shown in the Fig. 2. The opening and closing of the inner jacket of "Coat Parka" shall be carried out using Slide fastener (Component-13). The inner jacket shall have suitable arrangement to attach to the outer jacket by slide fastener (Fig 4). The "Coat Parka" sample held in the custody of CRPF may be referred for further details.

2.5 Hood: It shall be made out of outer shell fabric (Components-1) and polyester knit fabric (Component -12). The snap fasteners (Component-9) shall be provided for opening and closing the Hood. Figures-3 and 4 may be referred for further details.

3.0 STITCHING

Lock stitch having at least 3 stitches per cm shall be employed for assembling the "Coat Parka". The stitching shall be done with even tension and all loose ends shall be securely fastened off. Sewing thread (Component-8) colour shall match with the outer jacket colour of the "Coat Parka".

4.0 WORKMANSHIP AND FINISH

The "Coat Parka" shall be free from workmanship defects i.e. texture, weaving (Outer jacket), knitting (inner jacket), dyeing flaws etc. The "Coat Parka" shall not have missed stitches, hole, cut, oil stains or any other defect

which may significantly affect the appearance or serviceability of "Coat Parka".

5.0 SEALED SAMPLE

In order to illustrate or specify the indeterminable characteristics such as general appearance, luster and feel of the "Coat Parka", a sample has been agreed upon and sealed; the supply shall be conformity with the sample in such respects.

The custody of the sealed sample shall be a matter of prior agreement between the buyer and seller.

6.0 REQUIREMENTS

6.1 Dimensions

The dimensions of "Coat Parka" when measured as per method described in Annex A shall conform to the requirements given in Table 2, Table 3 and Table 4.

6.2 Other Requirements:

- 6.2.1 The Component -1, Component-2, Component-3 and Component-12 of "Coat Parka" shall conform to the parameters given in Table 5, Table 6, Table 7 and Table 8.
- 6.2.2 The Component-4, Component-5 and Component-13 used in the "Coat Parka" shall meet the requirements given in Table-1. Other requirements of these components shall conform to IS 14181. Seller/vendor shall provide 10 numbers of extra Slide fasteners (Component-4, Component-5 and Component-13) for conforming IS 14181.
- 6.2.3 The component-6, Component-7, Component-8, Component-9 and Component-10 used in the "Coat Parka" shall meet the requirements as given in the Table-1.
- 6.2.4 The Component-11 used in the "Coat Parka" shall meet the requirement as given in the Table-1. Seller/vendor shall provide 10

meter of extra Hook and Loop fastener (Component-11) for conforming IS 8156.

Table:2 Measurement chart for Outer Jacket (Figure-1)
(All measurements are in centimeters)

S.No.	Measuring point	Notation as given in Fig. 1	Size		
			40	42	44
1	Jacket length	A	82	84	86
2	Chest width	B	71	74	77
3	Bottom width	C	71	74	77
4	Armhole straight from strap end	D	38	40	42
5	Biceps	E	33	35	37
6	Sleeve length at centre back with cuff	F	95	97	99
7	Shoulder patch length from HPS	G	52	53	54
8	Waist level from HPS	H	49	49	49
9	Neck width	I	22	23	24
10	Collar width	J	12	12	12
11	Sleeve opening	K	18	18	18
12	Cuff width	L	5.5	5.5	5.5
13	Under arm length	M	54	56	57
14	Shoulder placement from HPS	N	30	30	30
15	Side seam from arm hole to bottom	O	44	45	46
16	Yoke height from centre back	P	18	18	18
17	Hood attaching tape width	Q	3	3	3
18	Hood attaching tape length	-	30	30	30
19	Front yoke width	R	24	24	24
20	Yoke width from centre point	R-1	14.5	14.5	14.5
21	Cuff buckle	S	13	13	13
22	Front placket width	T	6	6	6
23	Under front placket	-	4.5	4.5	4.5

24	Length of slide fastener under the placket	-	81	81	81
25	Length of slide fastener under the placket for inner jacket attachment	-	60	60	60
26	Pocket opening with Slide fastener under the flap	U	30	30	30
27	Pocket flap distance from waist band	U-1	18	18	18
28	Pocket flap width	U-2	6.5	6.5	6.5
29	Shoulder strap length	V	18	18	18
30	Upper pocket flap width	W	8	8	8
31	Upper pocket width	X	19	20	21

Note: HPS-Highest Point of Shoulder

Table:3 Measurement chart for Inner Jacket (Figure-2a & 2b)
(All measurements are in centimeters)

S.No.	Measuring point	Notation as given in Fig. 2a & 2b	Size		
			40	42	44
1	Front length from HPS	A	74	76	78
2	Chest width	B	65	68	71
3	Bottom width	C	65	68	71
4	Across front (5" from HPS)	D	49	50	51
5	Across back (5" from HPS)	E	52	53	54
6	Sleeve length	F	62	64	66
7	Armhole straight	G	35	37	39
8	Biceps	H	30	32	34
9	Front neck drop	I	9	9	9
10	Neck width	J	20	21.5	22
11	Shoulder width	K	54.5	56.5	58.5
12	Sleeve opening	L	19	19	19
13	Centre back length	M	74	76	78
14	Collar width at center back	N	4	4	4

Table:4 Measurement chart for Hood (Figure-3)
(All measurements are in centimeters)

S.N o.	Measuring point	Notation as given in Fig.3	Size		
			40	42	44
1	Hood length	A	38	38	38
2	Hood length back	B	35	35	35

Table 5: Requirements of "Coat Parka"

Sl. No.	Characteristics	Requirements	Test Method
Outer shell fabric			
1	Identification of fibre -Warp -Weft	Cotton Polyester	IS 667: 1981
2	Weave	Plain-1 up 1 down	Visual
3	End/dm, Minimum	480	IS 1963:1981
4	Picks/dm, Minimum	240	IS 1963:1981
5	Mass, g/m ²	145-155	IS 1964 : 1970
6	Breaking strength, Newton (Minimum) -Warp-wise -Weft-wise	600 550	IS: 1969: 1985 (5 X 20 cm specimen size)
7	Tearing Strength, Newton (Minimum) - Warp-wise - Weft-wise	10 15	IS 6489: 1993
8	Abrasion Resistance (Martindale) -After 1000 cycles	No thread breakage	IS: 12673 : 1989
9	Colour fastness to washing - Change in colour - Staining on adjacent fabric	4 or better 4 or better	IS/ISO 105 - C10 C(3): 2006
10	Colour fastness to perspiration - Change in colour - Staining on adjacent fabric	4 or better 4 or better	IS 971:1983
11	Colour fastness to rubbing - Dry - Wet	4 or better 4 or better	IS 766:1988
12	Colour fastness to light	5 or better	IS 2454:1985
13	Dimensional Change due to relaxation, both directions, percentage, maximum	2.0	IS 2977: 1989
14	Water repellency (Face side)	Spray rating Min. 80	IS 390: 1975
15	pH value of aqueous extract	6.0-8.0	IS1390:1983 (Cold method)
16	Colour specification	≤ 1.0	Refer Table 6

Sl. No.	Characteristics	Requirements	Test Method
Inner shell fabric			
17	Nature of fibre/filament	Nylon	IS 667: 1981
18	Weave	Plain-1 up 1 down	Visual
19	End/dm, Minimum	440	IS 1963:1981
20	Picks/dm, Minimum	300	IS 1963:1981
21	Mass, g/m ²	55-65	IS 1964 : 1970
22	Tearing Strength, Newton (Minimum) - Warp-wise - Weft-wise	45 20	IS 6489: 1993
23	Abrasion Resistance (Martindale) -After 1,000 cycles	No thread breakage	IS: 12673 : 1989
24	Colour fastness to washing - Change in colour - Staining on adjacent fabric	4 or better 4 or better	IS/ISO 105 - C10 C(3): 2006
25	Colour fastness to perspiration - Change in colour - Staining on adjacent fabric	4 or better 4 or better	IS 971:1983
26	Colour fastness to rubbing - Dry - Wet	4 or better 4 or better	IS 766:1988
27	Colour fastness to light	5 or better	IS 2454:1985
28	Dimensional Change due to relaxation, both directions, percentage, maximum	2.0	IS 2977: 1989
29	pH value of aqueous extract	6.0-8.0	IS1390:1983 (Cold method)
30	Colour specification (ΔE)	≤ 2.0	Refer Table 7
Nonwoven inner lining			
31	Nature of fibre	Polyester	IS 667: 1981
32	Thickness, mm , Minimum	2.4	IS 7702: 1975 at 1 Kpa Pressure
Polyester knit fabric			
33	Nature of fibre/filament	Polyester	IS 667: 1981

34	Courses /dm, Minimum	120	B-3 of IS:14759-2000
35	Wales/dm, Minimum	120	B-3 of IS:14759-2000
36	Thickness, mm, minimum	2.5	IS 7702: 1975 at 2.0 Kpa pressure
37	Weight, , g/m ²	230-250	IS 1964 : 1970
38	Colour specification (ΔE)	≤ 2.0	Refer Table 8
39	Structure	Plain knit (Fig. 5)	Visual

Table-6 : Specification of colour for outer shell fabric "Coat Parka"
(AATCC Test method 173 : 2009 & AATCC Evaluation Procedure 7 : 2009)

Colour	:	Olive Green						
System	:	CIE LCH						
Illuminant Observer	:	D 65						
Standard Observer	:	10 Degree						
Tristimulus Values	:	<table> <tr> <th>X</th><th>Y</th><th>Z</th></tr> <tr> <td>6.534</td><td>6.747</td><td>5.051</td></tr> </table>	X	Y	Z	6.534	6.747	5.051
X	Y	Z						
6.534	6.747	5.051						
LCH	:	<table> <tr> <th>L</th><th>C</th><th>H</th></tr> <tr> <td>31.224</td><td>9.337</td><td>80.940</td></tr> </table>	L	C	H	31.224	9.337	80.940
L	C	H						
31.224	9.337	80.940						
CMC (l:c)	:	2:1						
Colour difference, ΔE_{cmc}	:	≤ 1.0						

Interpretation of Results :

- i) If ΔE_{cmc} is less than or equal to 1, then sample is acceptable.
- ii) If ΔE_{cmc} is greater than 1, then sample is unacceptable.

Note-1 : Absorbance/reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between samples of same type i.e., identical fabric construction parameters and filament/ fibre composition.

Note-2 : Test should be carried out after proper conditioning as per AATCC 173 using Diffuse (sphere) geometry spectrophotometer.

Table-7 : Specification of colour for inner shell fabric "Coat Parka"
(AATCC Test method 173 : 2009 & AATCC Evaluation Procedure 7 : 2009)

Colour	:	Olive Green						
System	:	CIE LCH						
Illuminant Observer	:	D 65						
Standard Observer	:	10 Degree						
Tristimulus Values	:	<table> <tr> <th>X</th><th>Y</th><th>Z</th></tr> <tr> <td>5.163</td><td>5.493</td><td>4.764</td></tr> </table>	X	Y	Z	5.163	5.493	4.764
X	Y	Z						
5.163	5.493	4.764						
LCH	:	<table> <tr> <th>L</th><th>C</th><th>H</th></tr> <tr> <td>28.096</td><td>5.249</td><td>95.818</td></tr> </table>	L	C	H	28.096	5.249	95.818
L	C	H						
28.096	5.249	95.818						
CMC (l:c)	:	2:1						
Colour difference, ΔE_{cmc}	:	≤ 2.0						

Interpretation of Results :

- If ΔE_{cmc} is less than or equal to 2, then sample is acceptable.
- If ΔE_{cmc} is greater than 2, then sample is unacceptable.

Note-1 : Absorbance/reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between samples of same type i.e., identical fabric construction parameters and filament/ fibre composition.

Note-2 : Test should be carried out after proper conditioning as per AATCC 173 using Diffuse (sphere) geometry spectrophotometer.

Table-8 : Specification of colour for Polyester Knit fabric "Coat Parka"
(AATCC Test method 173 : 2009 & AATCC Evaluation Procedure 7 : 2009)

Colour	:	Olive Green						
System	:	CIE LCH						
Illuminant Observer	:	D 65						
Standard Observer	:	10 Degree						
Tristimulus Values	:	<table> <tr> <th>X</th><th>Y</th><th>Z</th></tr> <tr> <td>3.147</td><td>3.251</td><td>2.505</td></tr> </table>	X	Y	Z	3.147	3.251	2.505
X	Y	Z						
3.147	3.251	2.505						
LCH	:	<table> <tr> <th>L</th><th>C</th><th>H</th></tr> <tr> <td>21.022</td><td>6.776</td><td>80.411</td></tr> </table>	L	C	H	21.022	6.776	80.411
L	C	H						
21.022	6.776	80.411						
CMC (l:c)	:	2:1						
Colour difference, ΔE_{cmc}	:	≤ 2.5						

Interpretation of Results :

- If ΔE_{cmc} is less than or equal to 2.5, then sample is acceptable.
- If ΔE_{cmc} is greater than 2.5, then sample is unacceptable.

Note-1 : Absorbance/reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between samples of same type i.e., identical fabric construction parameters and filament/ fibre composition.

Note-2 : Test should be carried out after proper conditioning as per AATCC 173 using Diffuse (sphere) geometry spectrophotometer.

7.0 SAMPLING

7.1 The sampling procedure detailed in 7.2 and 7.3 shall give desired protection to the buyer and the seller, provided that the lot submitted for inspection is homogeneous. To achieve this, the manufacturer shall maintain a system of process control at all stages of manufacturing ensuring the "Coat Parka" tendering by him for inspection to comply with the requirements of this standard in all respects.

7.2 The manufacturer should offer the stores serially numbered and arranged in such a way that the entire lot is accessible to the inspecting officer. Conforming of a lot to the requirement of this specification shall be determined on the basis of the tests carried out on the samples selected from it. The number of samples shall be selected at random in accordance with Table-9

Table-9: Number of “Coat Parka” to be selected from a lot and permissible number of non-conforming “Coat Parka”

Number of “Coat Parka” in the Lot	Non-Destructive Testing		Destructive Testing	
	No. of “Coat Parka” to be selected	Permissible number of non- conforming “Coat Parka”	No. of “Coat Parka” to be selected	Permissible number of non- conforming “Coat Parka”
(1)	(2)	(3)	(4)	(5)
Up to 300	10	1	2	0
301 – 500	20	2	3	0
501-1000	30	3	5	0
1001 and above	50	5	8	0
3001 and above	80	5	13	1

Note: Sampling officer will select sampling unit randomly and select ultimate items from each sampling unit as per the above table.

7.3 Lot: For the purpose of conformance inspection and test sampling, a lot is defined as all the completed “Coat Parka” of the same size and type, with same assemblies, produced in one facility, using the same production processes and materials, and being offered for delivery at one time to buyer against a dispatch note.

7.4 The CRPF reserves the right to carry out inspection of bigger lot sizes, even to the extent of 100% inspection, if considered necessary.

7.5 The sample size and the criterion for conformity for various characteristics shall be as follows:

Table 10: Criterion for conformity

Characteristics	Number of test samples	Criteria for conformity
Dimensions, Nos. of ends & picks, Nos of Course & wales, visual colour inspection and freedom from defects	All "Coat Parka" selected according to column 2 of table-9	Non-conforming "Coat Parka" not to exceed the corresponding number given in column 3 of table-9
Dimensional change, pH value, mass, breaking strength, tear strength, abrasion resistance, water repellency, colour fastness to various agencies etc.	All "Coat Parka" selected according to column 4 of table-9	Non-conforming "Coat Parka" not to exceed the corresponding number given in column 5 of table-9

Note: Test methods may be taken as guidance wherever specimen size is not sufficient as per standard.

8.0 MARKING

A woven cloth label (length: 5.5 cm and width: 4.0 cm, double fold) marked with the following information (Label colour shall not bleed on to the "Coat Parka" during storage or use) shall be stitched to the inside of the neck portion (backside) of both outer and inner jackets of "Coat Parka".

- a) Size in cm
- b) Manufacturer's name or trade mark, if any
- c) Any other information required by the buyer

9.0 PACKING

The "Coat Parka" shall be delivered in clean and dry condition. One such bag shall be packed in a polyethylene bag. Four such "Coat Parka" shall be made into one unit pack by suitably placing in the cardboard box (Cases).

Unless otherwise agreed upon by the buyer and seller the "Coat Parka" shall be packed in cases in conformity with the procedure laid down in IS 1347: 1972 or IS: 1980.

Before dispatch, each box shall be legibly marked by stencil showing the following information:

- i) Nomenclature and Category number of the store
- ii) Quantity packed in the box
- iii) Serial number of the box
- iv) Month & Year of packing
- v) Name/Trademark of the Manufacture
- vi) Gross weight of the box in Kg.
- vii) Name & Address of the consignee
- viii) Inspection note number and date
- ix) Any other information required by the customer

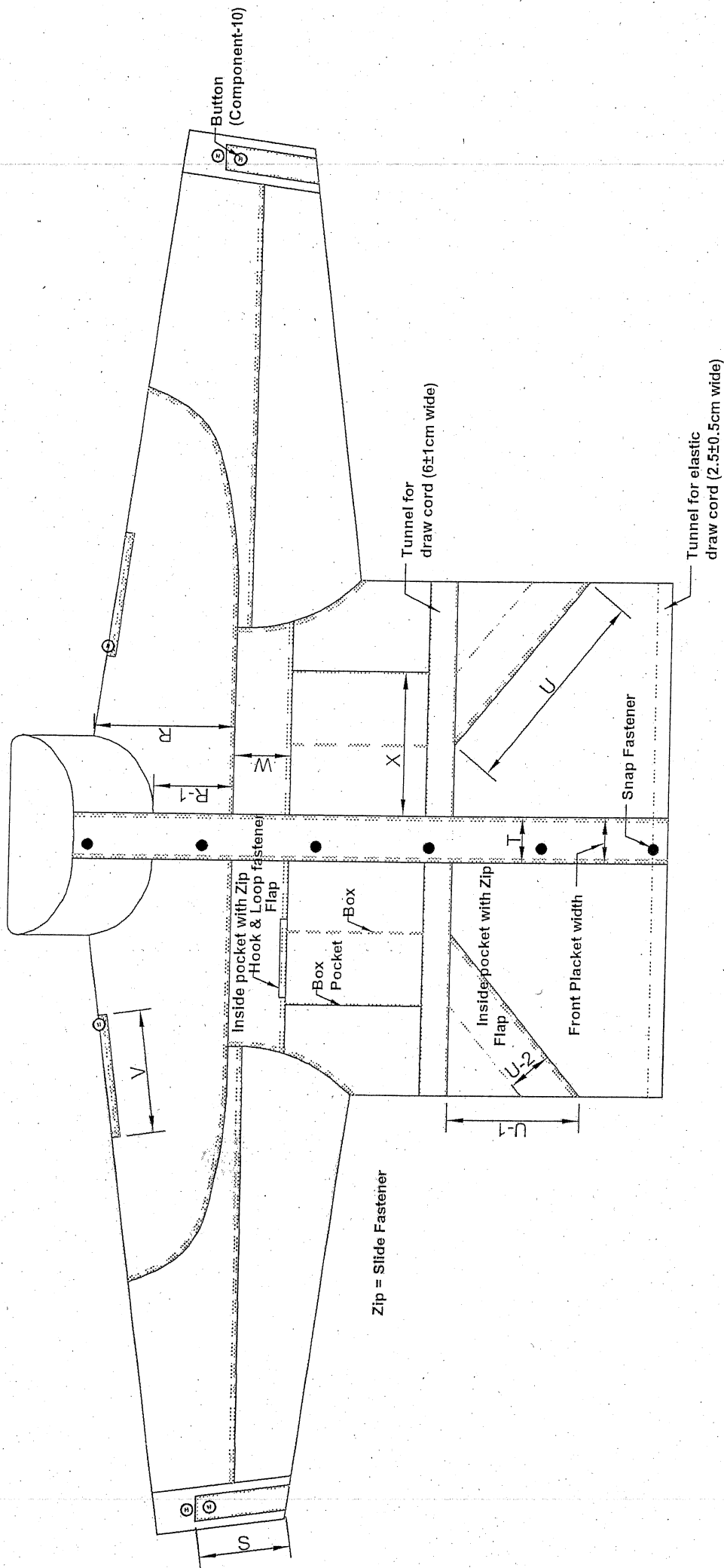


Fig.-1a Outer Jacket (Front) of Coat Parka
(All Dimensions are in cm)

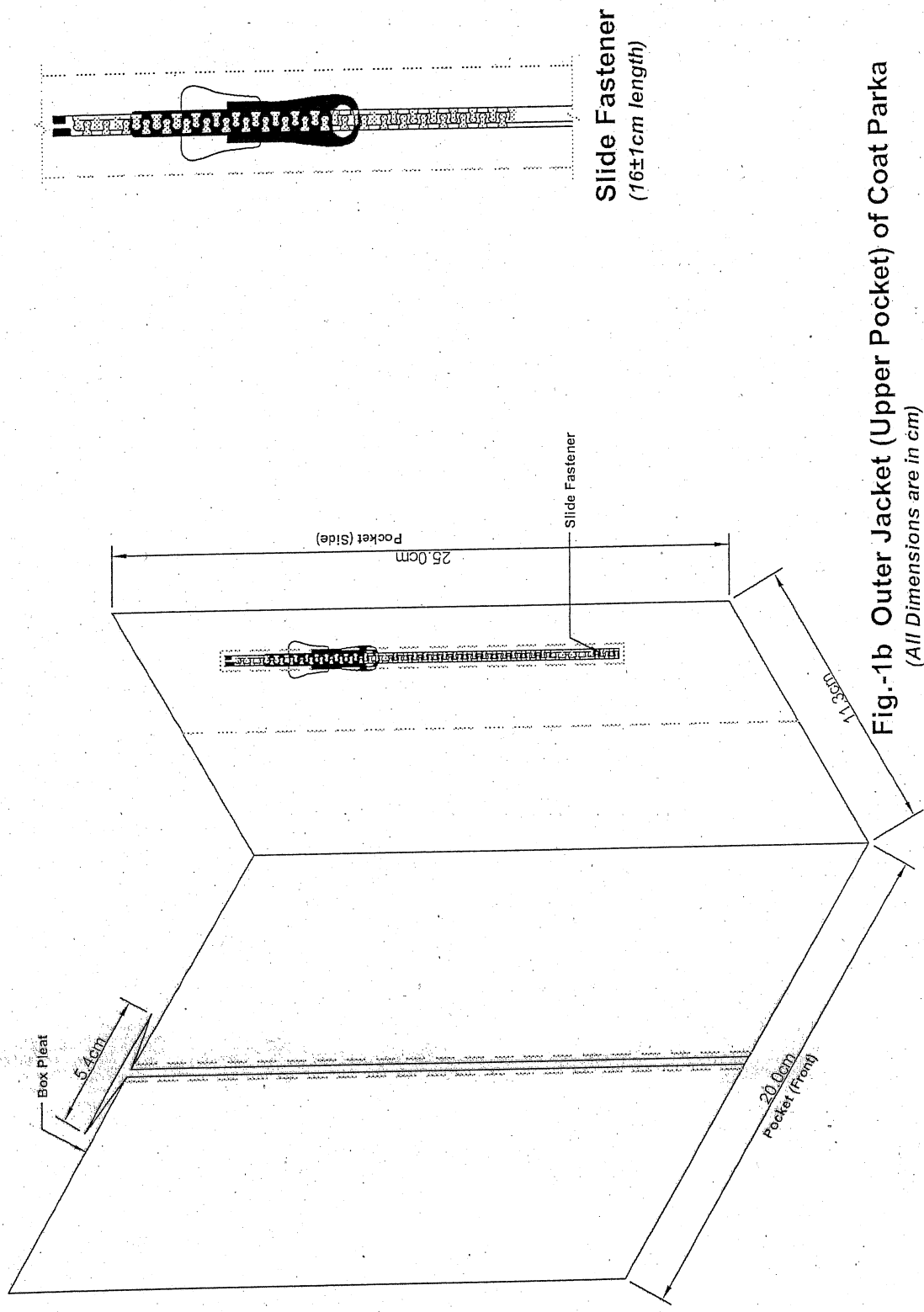


Fig.-1b Outer Jacket (Upper Pocket) of Coat Parka
(All Dimensions are in cm)

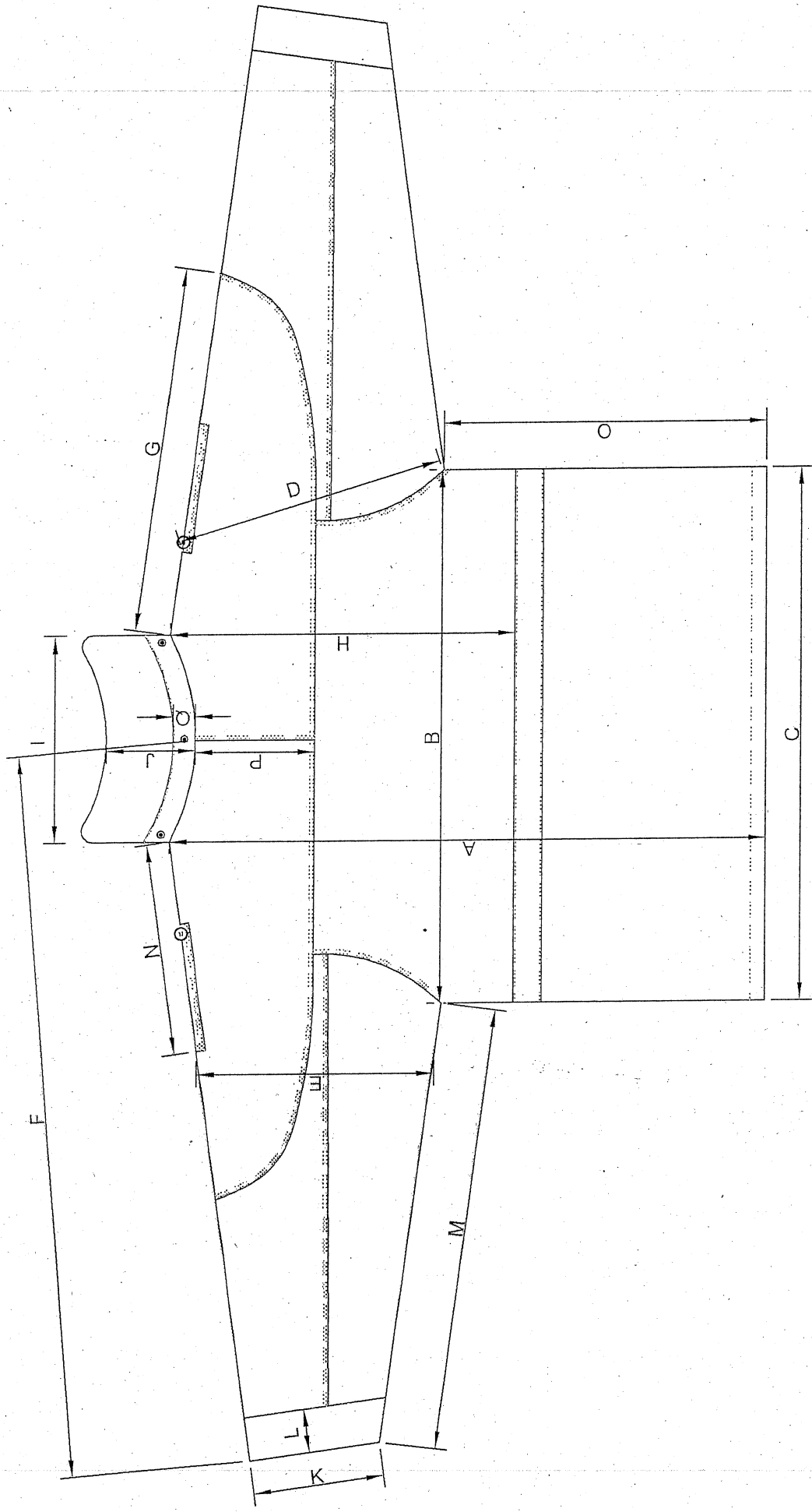


Fig.-1c Outer Jacket (Back) of Coat Parka
(All Dimensions are in cm)

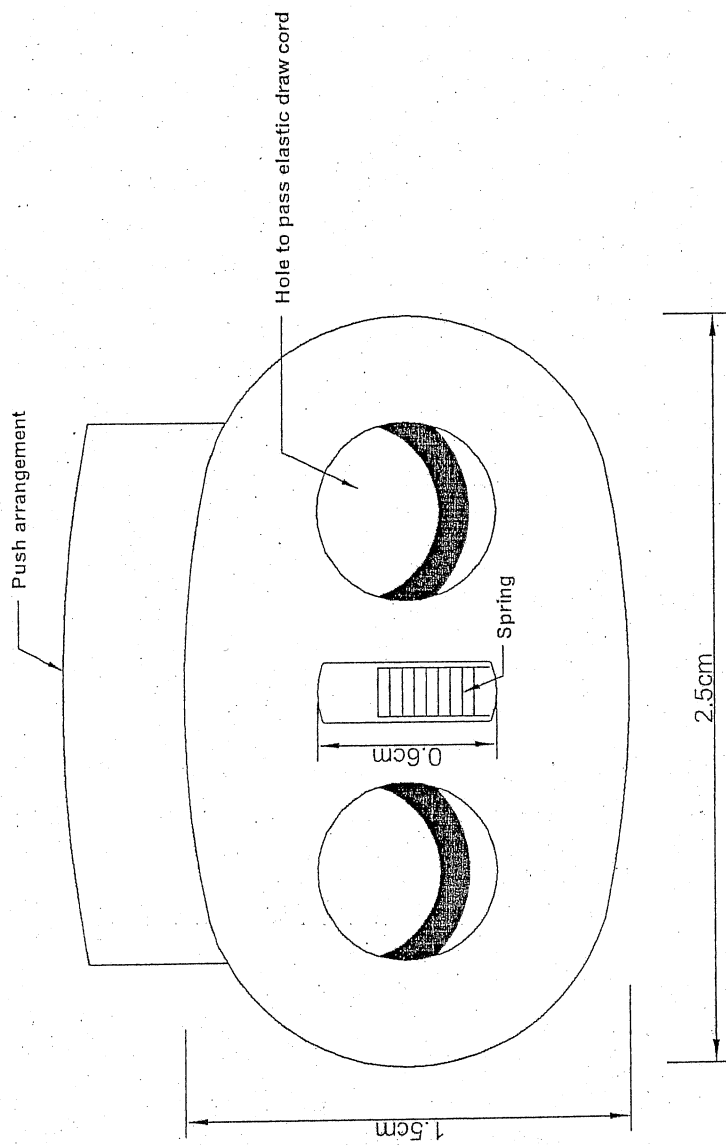


Fig.-1d Elastic Draw Cord Lock (Outer Jacket)
(All Dimensions are in cm)



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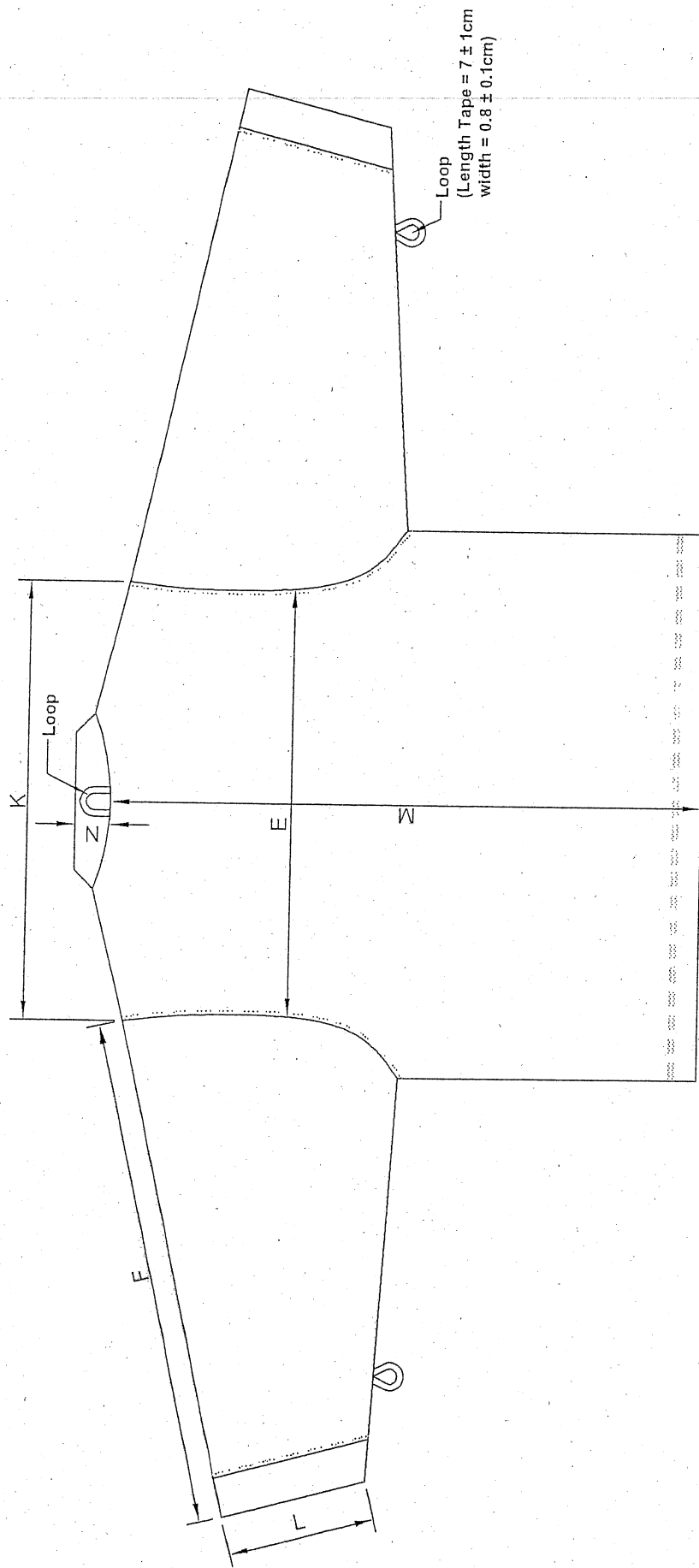


Fig.-2b Inner Jacket (Back) of Coat Parka
(All Dimensions are in cm)

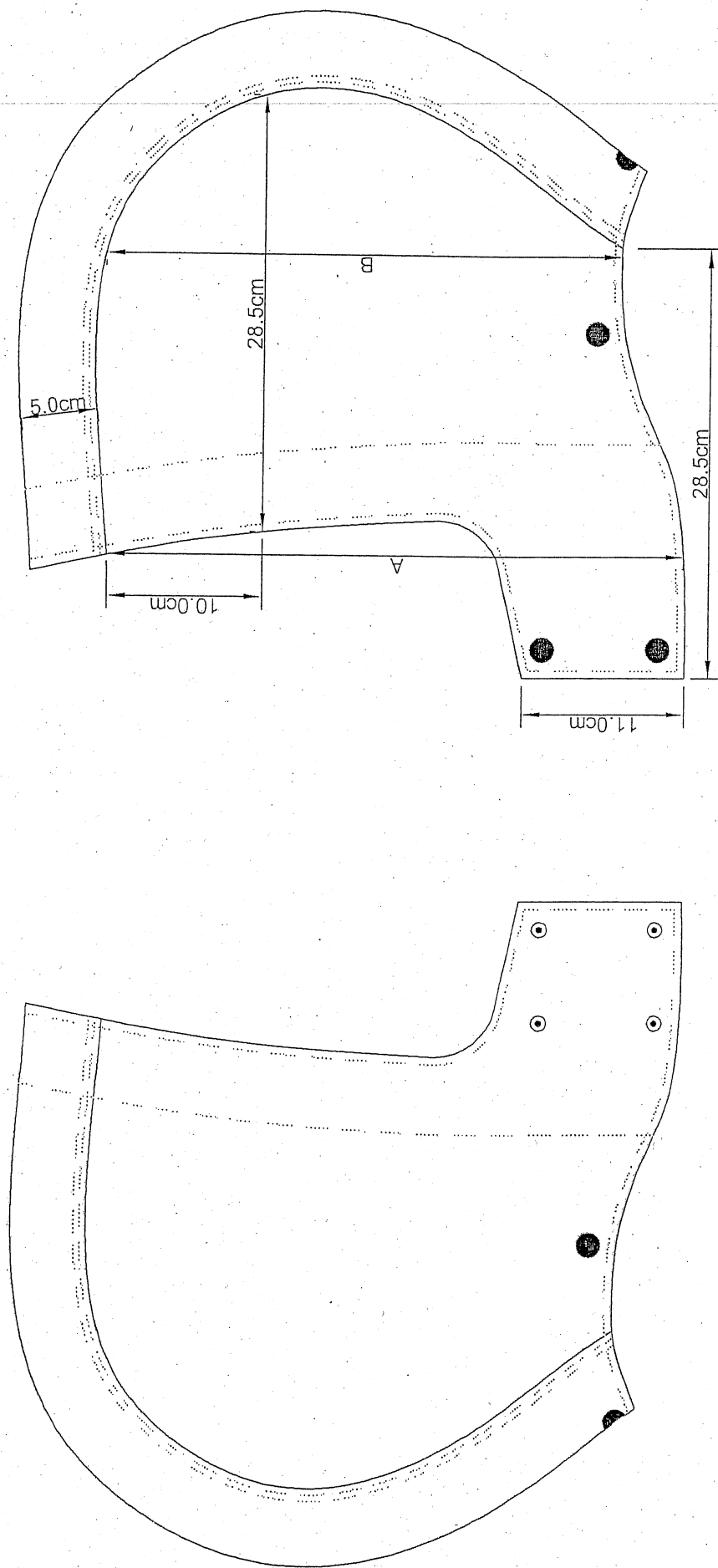


Fig.-3 Hood of Coat Parka
(All Dimensions are in cm)

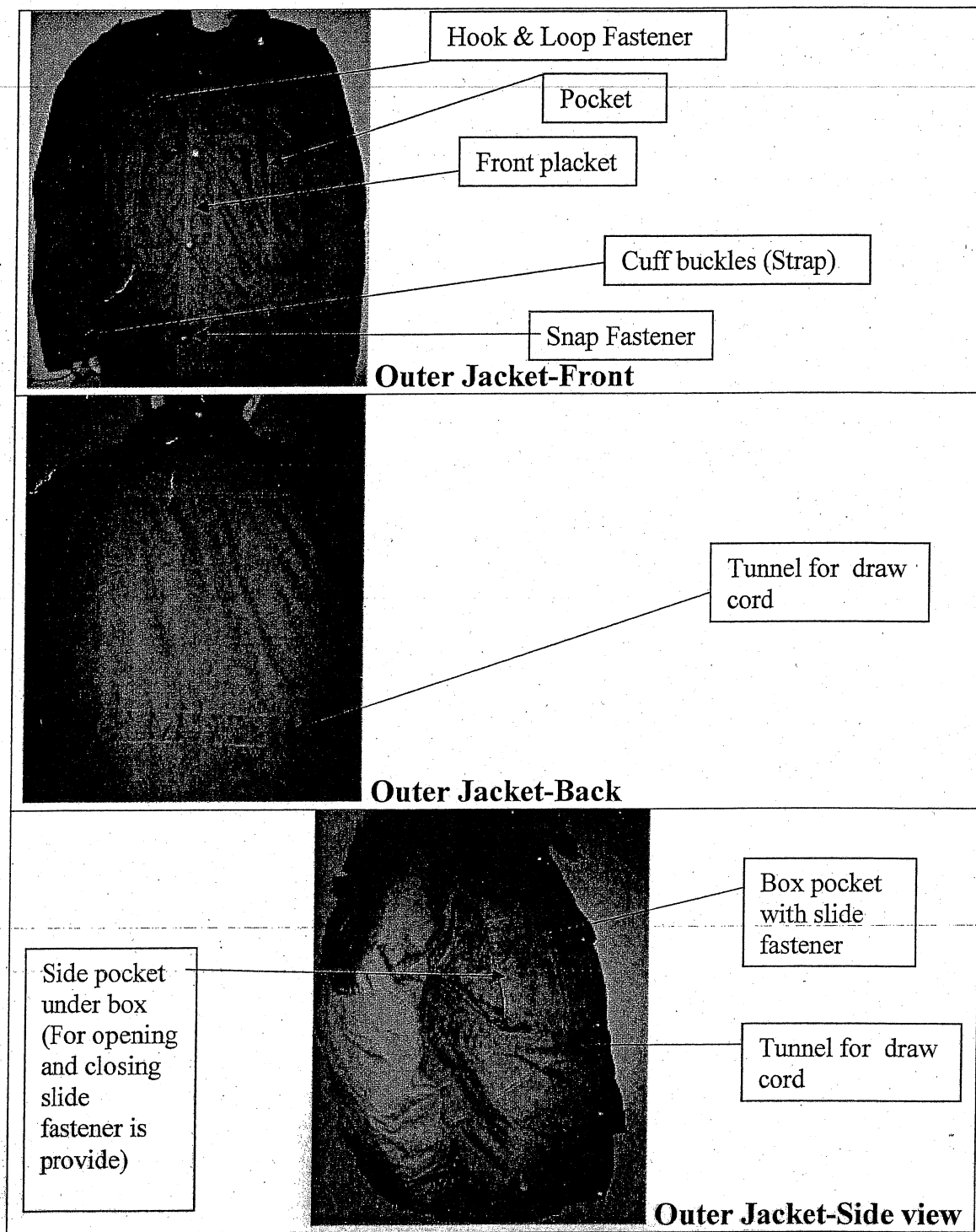


Fig. 4 (a) Coat Parka

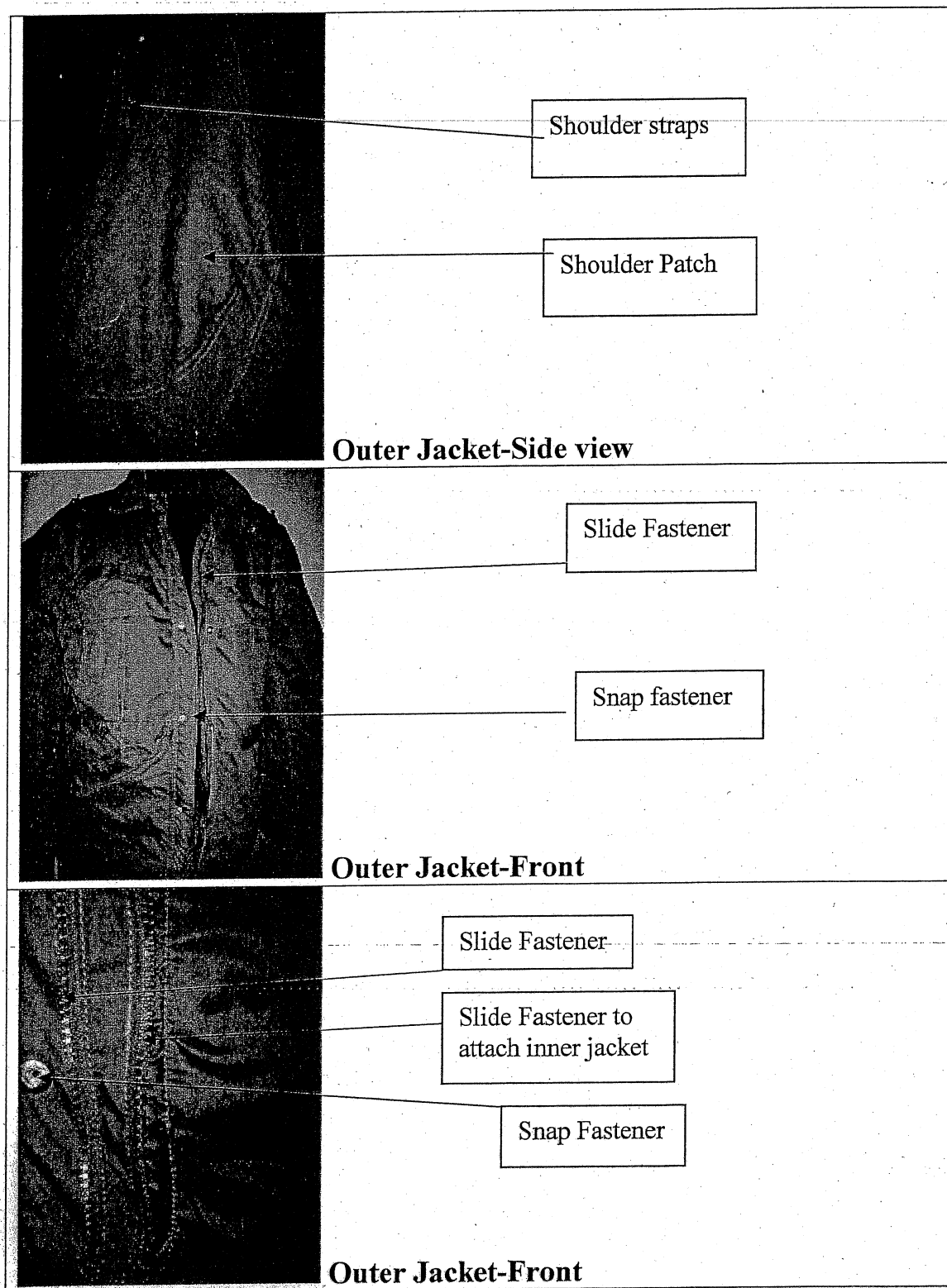


Fig. 4 (b) Coat Parka

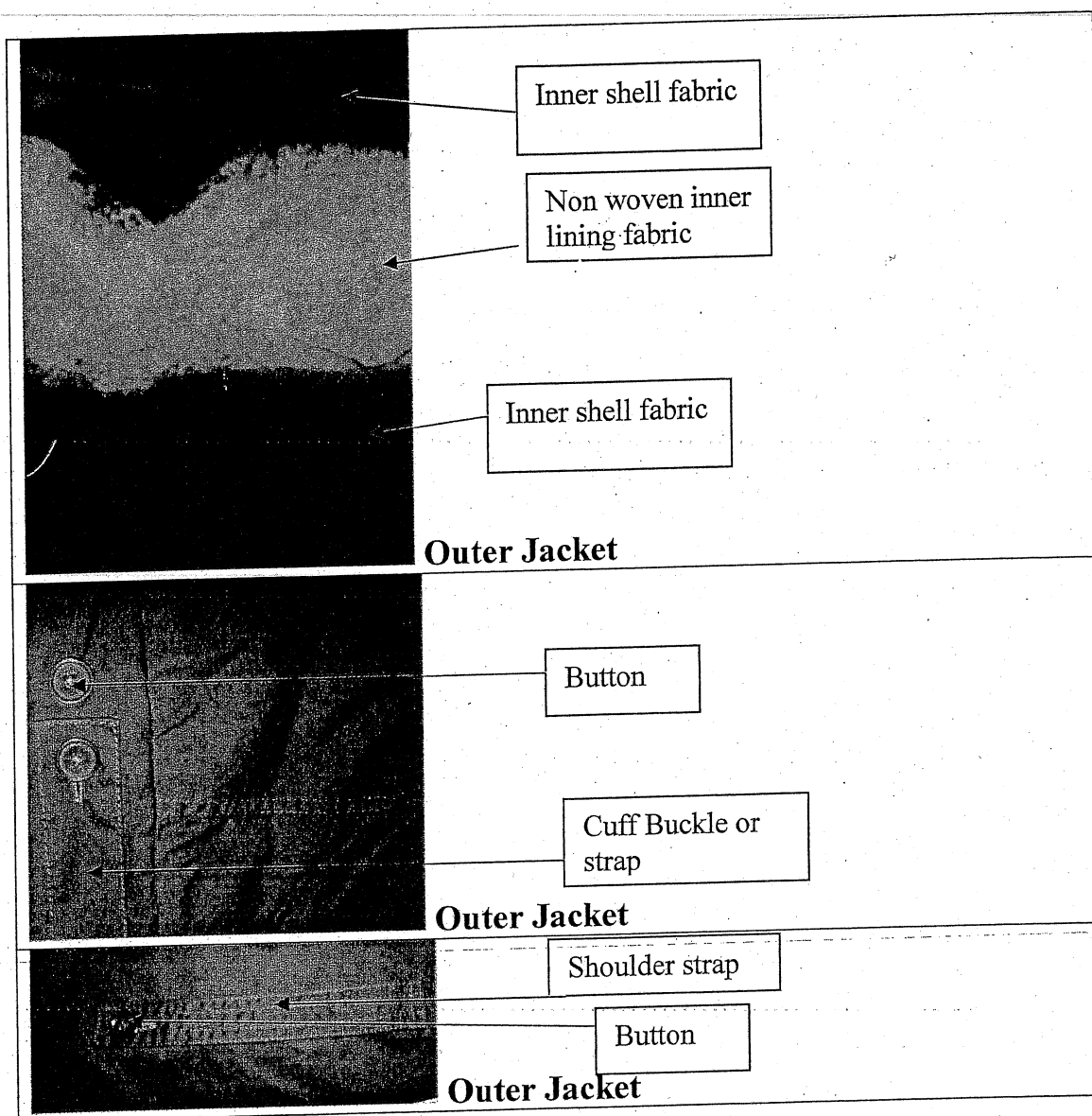


Fig. 4 (c) Coat Parka

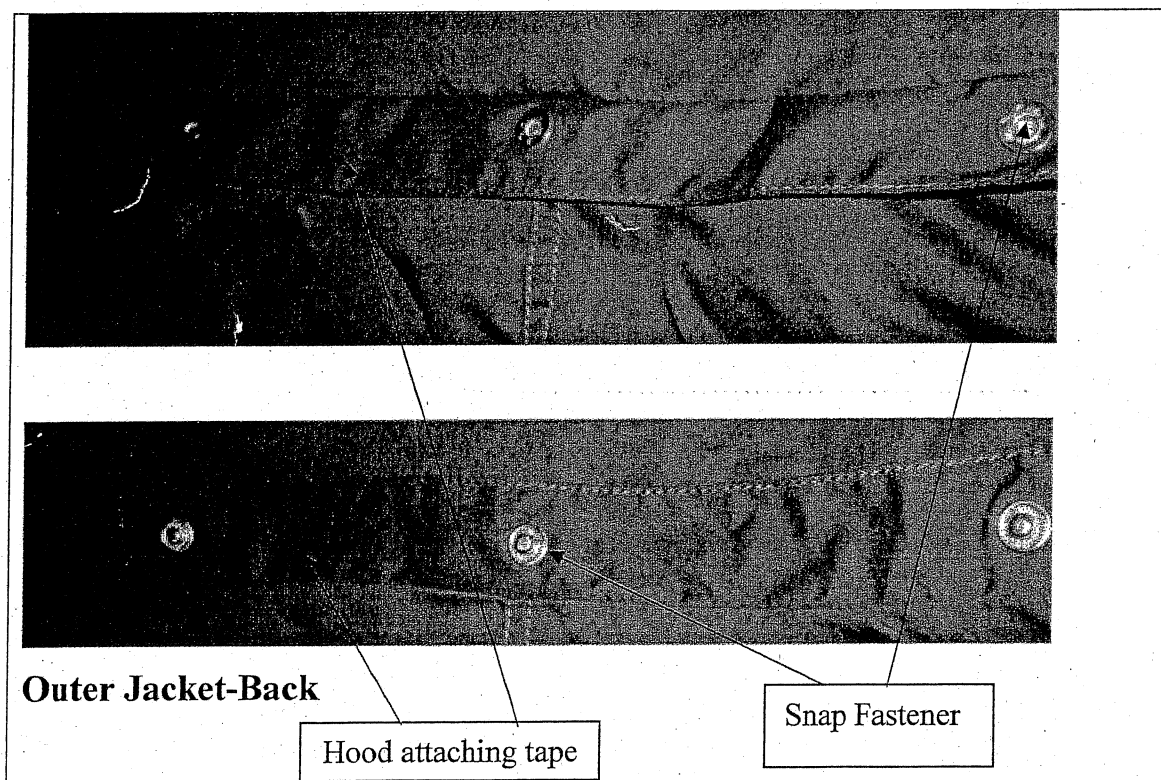


Fig. 4 (d) Coat Parka

F

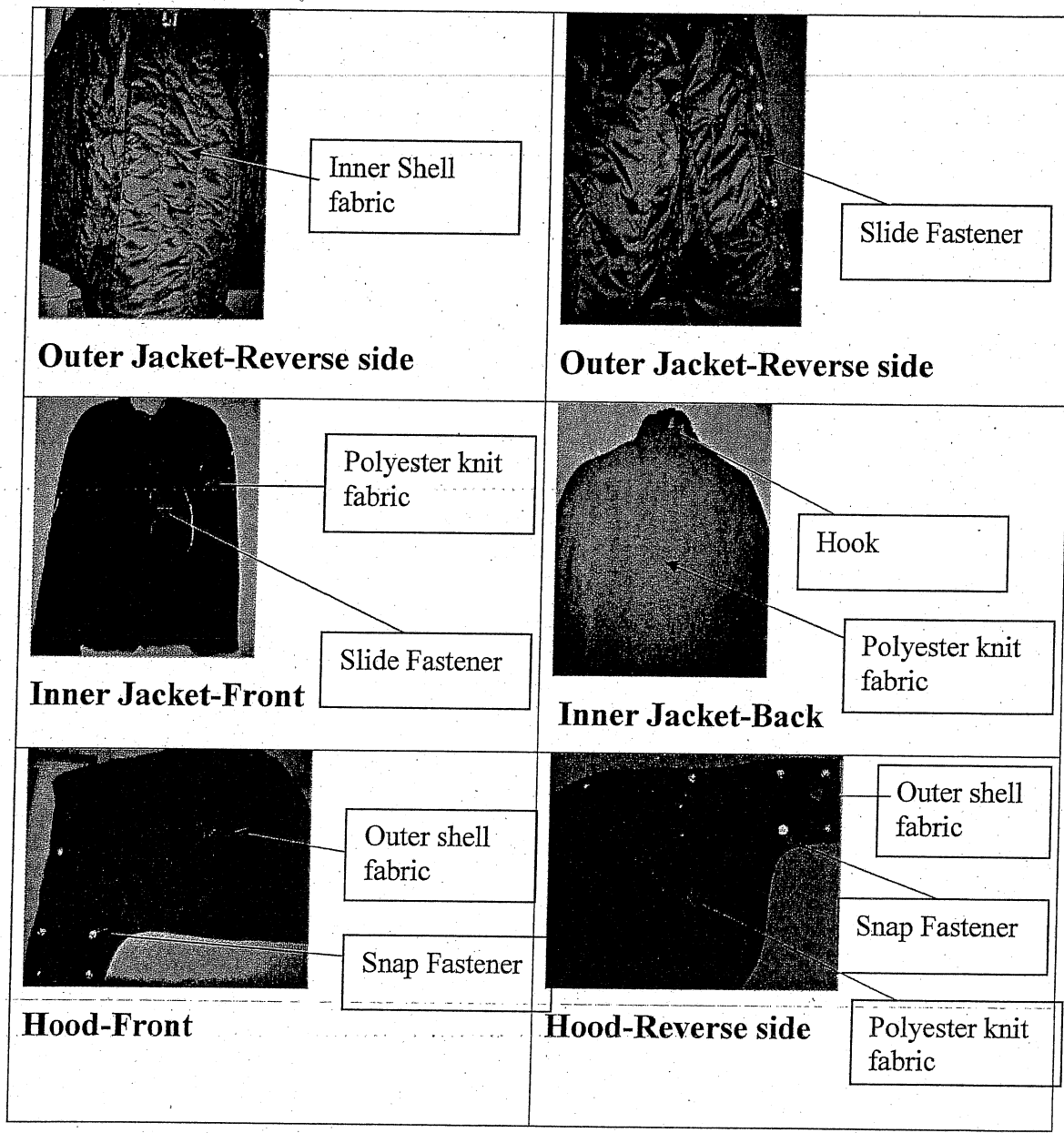


Fig. 4 (e) Coat Parka

Dial	Needle no.	Structure		
	2	K	M	T
	1	K	M	M

Cylinder	Needle no.	Structure		
	1	M	K	M
	2	M	K	K

K=Knit, M=Miss, T=Tuck

Fig. 5 : Arrangement of needles in dial and cylinder of knitting machine

16	IS 667: 1981	Method for identification of textile fibres
17	IS 6489: 1993	Woven fabrics-Determination of tear resistance by falling pendulum method
18	IS/ISO 105:C10 C(3):2006	Method for determination of colour fastness of textile material to washing
19	IS 971:1983,	Method for determination of colour fastness of textile material to perspiration
20	IS 12673: 1989	Methods for determination abrasion resistance
21	IS 766:1988	Method for determination of colour fastness of textile material to rubbing
22	IS 2454:1985	Method for determination of colour fastness of textile material to artificial light (Xenon lamp)
23	IS 1390 : 1983	Method for determination of pH value of aqueous extract of textile materials
24	AATCC Test method 173 : 2009	CMC: Calculation of small colour differences for acceptability
25	AATCC Evaluation Procedure 7 : 2009	Instrumental assessment of the change in colour of a test specimen
26	IS 3416 (Pt I): 1988	Method for quantitative chemical analysis of binary mixtures of polyester fibres with cotton or regenerated cellulose

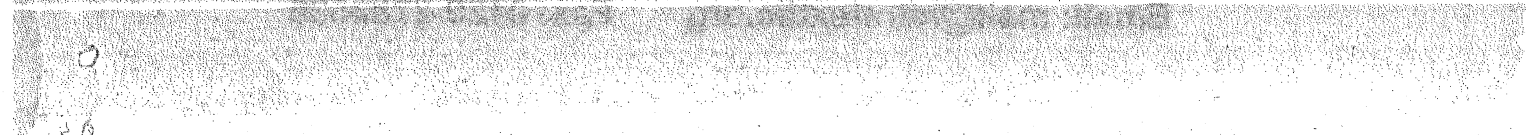
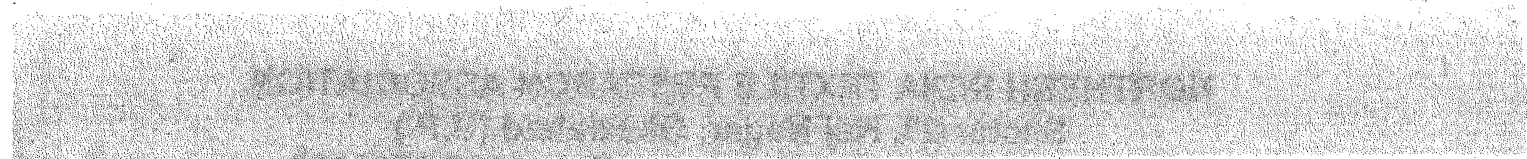
ANNEX A

A-1 Conditioning of test specimens and atmospheric conditions for testing:

The test specimen shall be tested in prevailing atmospheric conditions. In case of dispute, the sample shall be conditioned and tested in the standard atmosphere as given in IS 6359.

A-2 Dimensions:

Take each "Coat Parka" constituting the test specimen. Lay it flat on a table. Remove by hand all crease and wrinkles without distorting the specimen. Measure nearest to 0.1 cm, the dimensions given in Table-2, 3 & 4.





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