

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 11<sup>th</sup> 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.

*widm 5/12*  
 13/2/2013

Yours faithfully,

*Tilak Raj*  
 (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).

Annexure - J

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## **CENTRAL RESERVE POLICE FORCE STANDARD**

### **“SPECIFICATION FOR UNDER PANT THERMAL”**

**Submitted to :**

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

**Prepared by :**

**NORTHERN INDIA TEXTILE RESEARCH ASSOCIATION  
Sector-23, Raj Nagar, Ghaziabad (U.P.)  
Email : mail@nitratextile.org Fax: 0120-2783596**

# NORTHERN INDIA TEXTILE RESEARCH ASSOCIATION

(Linked to Ministry of Textiles, Government of India)

Directorate General CRPF  
Ministry of Home Affairs, Govt. Of India  
Block No-1, CGO Complex  
Lodhi Road,  
New Delhi-110003

NITRA/RPD 2839  
13.07.11

**Sub: Detailed specification/QRs of "Under Pant Thermal (Woolen)"**

Sir,

Please refer your letter No U.II-1/2010-Prv (Clo) dated nil Feb 2010 regarding framing of specifications/QRs of "Under Pant Thermal". As per the requirement of the rate contract/tender, we have developed the specification/QRs on the basis of towel submitted by you. Following are attached:

1. Two hard copies the detailed specification
2. Soft copy (CD) of the detailed specifications.
3. Copy of bill of the development

Thanking you,

Sincerely yours

Dr. M.S.Parmar

Asst. Director & HOD R&D (P) and CQE

Encl: as above

BIG (Prov).....  
पु.उ. महा (संभरण).....  
Dy. Comdt. (Prov).....  
रप डमाण्डेण्ट (संभरण).....  
AD (Prov / Accts).....  
सहायक निदेशक (संभरण/लेखा).....  
OS (Prov).....  
कार्यालय अधीक्षक (संभरण).....  
DA.....  
संबंधित सहायक.....  
Date of receipt.....  
प्राप्ति की तिथि.....

# SPECIFICATION FOR SPECIFICATION FOR UNDER PANT THERMAL

## RECORD OF AMENDMENTS

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

## PREAMBLE

The Inspector General of Police, CRPF, has asked NITRA to prepare technical specifications for "Under pant Thermal". The specification describes the fabric particulars and properties – courses/inch, wales/inch, weight, yarn count, fibre composition, dimensions, color fastness to light, pH, dimensional change due to washing etc.

Bureau of Indian Standards (BIS) and American Association of Textile Chemists and Colorists (AATCC) test methods are considered to draw the specification.

This report contains 14 pages which describe the technical specifications of "Under Pant Thermal" for CRPF.

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

**SPECIFICATION FOR SPECIFICATION FOR UNDER  
PANT THERMAL**

**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 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 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.

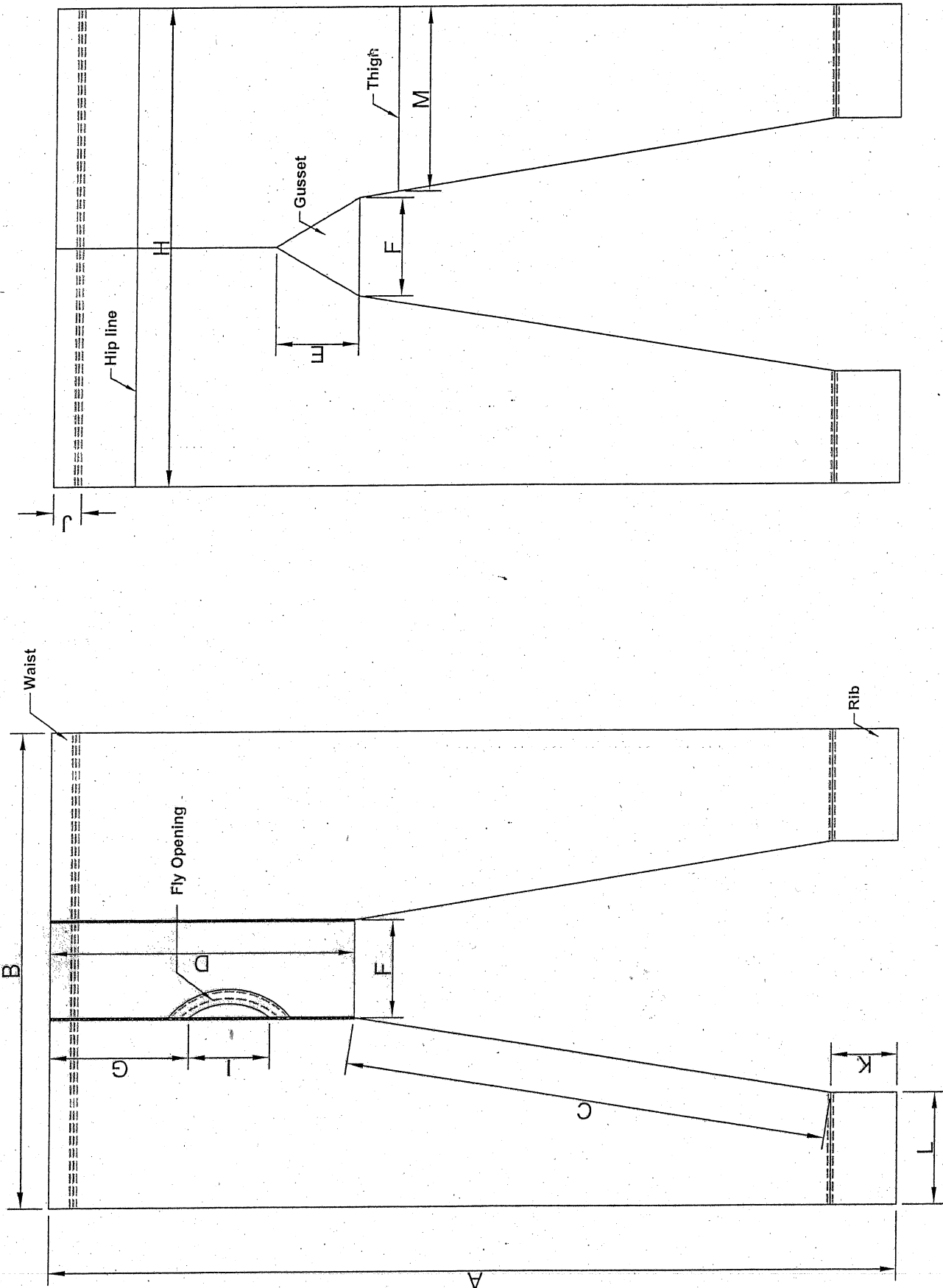
## 1.0 SCOPE

- 1.1 The specification prescribes the requirement of "Under Pant Thermal" off white in color .
- 1.2 This specification does not specify the general appearance, lusture, feel, type of finish of "Under Pant Thermal".

## 2.0 MATERIAL AND MANUFACTURE

- 2.1 The style and shape with dimensions of the "Under Pant Thermal" are shown in the Fig. 1.
- 2.2 The "Under Pant Thermal" shall be manufactured using cotton yarn and polyester filament yarn. For guidance, 40s count combed cotton (IS 834: 1993) and 150 D polyester (micro) textured filament yarn may be used.
- 2.3 The "Under Pant Thermal" shall be tailored out of well and evenly knitted tubular interlock fabric made from circular knitting machine. The arrangement of needles in dial and cylinder of knitting machine are shown in the Fig. 2. The finish of the "Under Pant Thermal" shall match with the sample held in the custody of CRPF.
- 2.4 At the waist of the 'Under Pant Thermal', the raw edge of the fabric shall be turned into of 2.5 cm throughout and stitched with elastic tape (2.5±0.1) cm through the waist band.
- 2.5 The rib (1X1) attached to the legs of the "Under Pant Thermal" shall be manufacture using 40s count combed cotton yarn along with 5% elastane filament yarn.





Back

Front

Fig.-1 Under Pant Thermal

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### 3.0 STITCHING

3.1 The type of stitch and seams (refer ISO 4915:1991 Textiles –Stitch types-classification and terminology and ISO 4916:1991 Textiles –Seam types-classification and terminology) and count of sewing thread (white colour) for seams and stitches at various portions of “Under Pant Thermal” shall be as given in Table 1. All the stitches shall be of even tension throughout with all loose ends fastened.

**Table-1 Seams and stitches**

Sl. No	Portion to be stitched	Type of stitch	Nos. of stitches per cm, Min.	Type of Seam	Recommended Thread in the Needle/Looper(s)
1	2	3	4	5	6
1	Waistband elastic	Multithread Chain stitch(407)	8	EFa	i)100Tex Polyester sewing thread (two ply)- in needle ii)60 Tex Polyester (two ply)-in Looper
2	Center panel	Cover stitch(605)	4	SSa	
3	Binding at upper fly opening	Multithread chain stitch(406)	4	BSb	
4	Binding at under fly opening	Multithread chain stitch(406)	4	BSb	
5	Inseam leg joining	3 thread overlock(504)	3	SSa	
6	Gusset end joining	3-thread overlock (504)	3	SSa	
7	Rib attach	3-thread overlock(504)	3	SSa	
8	Rib cover stitch	Multithread chain stitch(406)	8	LSb	

EFa=Edge Finishing (Sub class-a), SSa=Super imposed Seam (Sub class-a),  
BSb=Bound Seam (Sub class-b), LSb=Lapped Seam (Sub class-b)

#### 4.0 WORKMANSHIP AND FINISH

The "Under Pant Thermal" shall be free from workmanship defects i.e. texture, knitting flaws etc. The "Under Pant Thermal" shall not have missed stitches, hole, cut, oil stains or any other defect which may significantly affect the appearance or serviceability of "Under Pant Thermal".

#### 5.0 SEALED SAMPLE

In order to illustrate or specify the indeterminate characteristics such as general appearance luster and feel of the "Under Pant Thermal", 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 "Under Pant Thermal" when measured by the method prescribed in Annex- A shall conform to the requirements given in Table 2.

6.2 The width of the elastic tape (used in waist band) shall be  $(2.5 \pm 0.1)$  cm (measured in accordance with IS 1954: 1990, (RA 2007). The other properties of the elastic tape, when tested shall meet the requirement laid down in specification IS 9686 1980, (RA 2002). For this purpose the seller has to submit at least 5 meters of elastic tape along with the "Under Pant Thermal".

### 6.3 Other Requirements:

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- i) The "Under Pant Thermal" shall conform to the parameters as given in Table 3 A.
- ii) The rib attached with the legs of the "Under Pant Thermal" shall confirm to the parameters given in Table 3B.

**Table 2: Dimension of "Under Pant Thermal"**  
(All dimensions are in centimeter)

Sizes	Length	Waist Elastic	Leg Inside Length	Crotch	Gusset Length	Gusset Width	Waist To Fly Opening	Hip	Front Opening	Elastic Width	Rib (Length)	Rib (Width)	Thigh
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
80	81.3	52.1	55.5	27.9	7.5	8.8	11.9	45.7	8.9	2.5	6.4	8.9	21.6
85	86.4	57.2	58.0	29.2	7.5	8.8	12.5	47.0	10.2	2.5	7.0	9.5	22.2
90	91.4	61.0	60.8	30.5	7.5	8.8	13.1	49.5	10.2	2.5	7.0	9.5	22.9
95	96.5	63.5	63.6	31.8	7.5	8.8	13.7	52.1	10.2	2.5	7.6	10.2	24.1
100	99.1	68.6	66.6	33.0	7.5	8.8	14.3	54.6	10.2	2.5	7.6	10.2	25.4
105	101.6	73.7	69.8	34.3	7.5	8.8	15	57.2	10.2	2.5	7.6	10.2	26.7
Tolerance	±1.5	±1.0	±1.0	±1.0	±0.5	±0.5	±0.5	±0.5	±0.5	±0.1	±0.5	±0.5	±0.5

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Table 3A: Requirements of "Under Pant Thermal"

Sl. No.	Parameters	Requirements	Method of Testing
1.	Composition (excluding of Rib), Percentage -Cotton -Polyester	80±2 20±2	IS 667:1981 and IS 3416 (Part-1): 1988 (Based on dry mass)
2.	Wales/dm, Minimum	120	B-3, IS:14759-2000
3.	Courses /dm, Minimum	110	B-3, IS:14759-2000
4.	Weight, g/m <sup>2</sup>	210-220	IS 1964-2001
5.	Dimensional Change (due to relaxation), percentage, Maximum -Wales direction -Courses direction	5.0 5.0	B-2, IS:14759-2000
6.	pH Value of aqueous extract	6.0 to 8.0	IS :1390-1983 (Cold method)
7.	Colour fastness to light	4 or better	IS: 2454-1985
8.	Colour	Off White	Visual

Table 3B: Requirements of "Under Pant Thermal" - Rib

Sl. No.	Parameters	Requirements	Method of Testing
1.	Composition, Percentage -Elastane, Minimum -Cotton	5 Remainder	AATCC 20A (Dry mass basis)
2.	Wales/dm, Minimum	110	B-3, IS:14759-2000
3.	Courses /dm, Minimum (Including elastane yarn)	200	B-3, IS:14759-2000
4.	Colour	Match with the under pant thermal fabric	Visual

## 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 "Under Pant Thermal" 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. The 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-4

**Table-4: Number of "Under Pant Thermal" to be selected from a lot and permissible number of non-conforming "Under Pant Thermal"**

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Number of "Under Pant Thermal" in the Lot  (1)	Physical Characteristics		Other Requirements- Number of "Under Pant Thermal" to be tested  (4)
	No. of "Under Pant Thermal" to be Inspected  (2)	Permissible number of non-conforming "Under Pant Thermal"  (3)	
Up to 300	13	1	3
301 – 500	20	2	5
501-1000	32	3	5
1001 and above	50	5	8

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 "Under Pant Thermal" 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:



Characteristics	Sample size	Criteria for conformity
Freedom from defects, manufacture and dimensions	All the "Under Pant Thermal" shall be inspected according to the column 2 of table 4	Non-conforming "Under Pant Thermal" not to exceed the corresponding number given in col. 3 of table 4
Nature of fibre, Construction, Dimensional change, Scouring loss, pH value, colour	All the "Under Pant Thermal" shall be inspected according to the column 4 of table 4	All the "Under Pant Thermal" to satisfy the relevant requirements.
Colour fastness to light	One each for lot size up to 500 "Under Pant Thermal" and two if lot size is 501 and above	All the "Under Pant Thermal" to satisfy the relevant requirements.

## 8.0 MARKING

A woven cloth label marked with the following information (Colour from the label shall not bleed on to the "Under Pant Thermal" during storage or use) shall be fastened to each "Under Pant Thermal" at the inside of the hip portion (inner side of the waist band).

- a) Size in cm
- b) Name of manufacturer or trade mark, if any
- c) Any other information required by the buyer

## 9.0 PACKAGING & PACKING

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9.1 Each "Under Pant Thermal" shall be placed in polyethylene bag. The vendor shall supply a sticker for each "Under Pant Thermal" for inspection and signature. 50 such "Under Pant Thermal" shall be placed in mill Grey board (3 ply corrugated fibre board telescopic Box) to form a unit pack and such four unit shall be packed in 7 ply corrugated fibre board slotted Box and further wrapped into water proof hessian/HDPE sheet (as per buyer requirement) and stitched with not less than 6 stitches/ 6 cm and strip bound. However, on each box the following shall be indicated:

- a) Name of material;
- b) Count of yarn and type (carded or combed);
- c) Designation of fabric;
- d) "Under Pant Thermal" style and size in cm;
- e) Blend composition, if required by buyer;
- f) Quantity per box;
- g) Indication of the source of manufacturer;
- h) Any other information as required by the buyer

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. 2 : Arrangement of needles in dial and cylinder of knitting machine**

## 10.0 REFERENCES

Sl. No.	SPEC. /TEST METHOD No.	DESCRIPTION
(a)	IS 667: 1981	Method for identification of textile fibres
(b)	IS 1390: 1983, RA 2004	Methods of testing of pH value of aqueous extract
(c)	IS 2454: 1985, RA 2006	Methods for determining of colour fastness of textile materials to artificial light (xenon lamp)
(d)	IS 6359:1971, RA 2004	Method for Conditioning of Textiles
(e)	IS 14759 : 2000,	Textiles-Fabric, cotton, rib-knitted-specification
(f)	IS: 9543: 1980	Spun polyester sewing threads
(g)	IS: 834: 1993	Textiles-Ring spun grey cotton yarn for hosiery-Specification
(h)	AATCC 20A	Fibre analysis: Quantitative

## 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 "Under Pant Thermal" 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.