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# Fastener in occupational wear-investigative study to identify types & to set parameters in the case of BSF

**Shakti Sagar Katre[1*], Dr. Chitra Arora[2]**
[1] Research Scholar, Department of Fine and Performing Arts, Faculty of Humanities, Social Sciences and Fine Arts, Mewar University, Gangrar, Chittorgarh, Rajasthan, India
[2] Associate professor, Delhi University, New Delhi, India

**Abstract**
Any or various device which holds two different part or object together. Also some time to separates two object or parts. Performance as ease in opening and closing, upholding, protection, comfort, usage and aesthetics. requires appropriate qualities. As strength, durability, pull strength, Flexibility, resistance to corrosion etc; as per type of fastener. study of existing fastener and setting up parameters to assess performance.

**Keywords:** aesthetics, performance, parameters, fastener, comfort

## Introduction
Fastener adds function and detail to the uniform, the fastener use will be determined by following factor Type of uniform, type of Fabric, function, position. Type of opening and closing. Like soft and thin fabric may required covered snap, thick fabric will required rugged open snap. Some places touch and close fastener is required as per strength and operation time. Type of button material, size, Placement is decided by the function required strength, operation. As per the uniform of BSF listing out present fastener and classification has been done in this study along with setting up various standard to measure various factor which are affecting durability and performance. Investigative study of different fastener used in various type of uniform of Border security force has been conducted.

## Methodology
To categorized different type of fastener analysis of video recording on field activity interview with officers and "jawans" were conducted.

Literature review for the recent and new development in field of fastening system has been conducted. Along with various standard adopted for testing has been reviewed. As per that categorization and parameter has been decided to set standard.

### 1. Button & Button hole
Buttons are 3D object used with buttonholes for fastening of garments. Buttonholes are complete hole sized to house a button without straining the piece of clothing or fabric. Buttonholes are made on the overlap of the garment. Garments may have vertical or horizontal buttonhole. Button are stitched using yarn in to one part of fabric and other part consists button hole or loop to house it, button has two or four hole to stitch in to fabric mainly three type of button has been found in various type of uniform of BSF. Flat button with two or four Hole, Snap button, shank button attached with polyester thread. Worked button hole, button loop for these variation following parameter has been drawn after investigation for testing and field trial.

**Table 1**

| Type of Button | | Material | Placement | Attachment procedure | Testing type | Required result |
|---|---|---|---|---|---|---|
| Two /four hole button | | Appropriateness of material for button and thread | Placement as per length and width of area | Sewing technique and thread count/strength | Pull test and field trial | Depending on stressing |
| Snap button | Sew on snap | Appropriateness of material button and thread | Placement as per length and width of area | Sewing technique and thread count/strength | Pull test, corrosion test and field trial | Depending on stressing/ duration |
| | No sew on snap | Appropriateness of material button | Placement as per length and width of area | Snapping technique | Pull test, corrosion test and field trial | Depending on stressing/duration |
| Shank button | | Appropriateness of material button and thread | Placement as per length and width of area | Sewing technique and thread count/strength | Pull test, corrosion test and field trial | Depending on stressing/ duration |

### 2. Hook and eye
Hook and eye fastener are used in the high stress area of uniform as west line, hook and eye comes in different size from very small to large depending on how much strength is required hook and eye fastener has two different attachment sew on and no sew hook and eye. No sew fastener is clamped with fabric and it has four component. sew on fastener has round shape eye and no sew fastener has I shape eye. Few places thread eye also found mainly area which has less amount of stress. After investigation and study following parameter has been drawn for testing and field trial to validate and set up standard.

**Table 2**

| Type of hook and eye | Material | Placement | Attachment procedure | Testing type | Required result |
|---|---|---|---|---|---|
| Sew on hook and eye | Appropriateness of material hook and eye and thread | Placement as per length and width of area and low stress area | Sewing technique and thread count/strength | Tensile strength corrosion test | Depending on stressing |
| No sew on hook and eye | Appropriateness of material hook and eye and thread | Placement as per length and width of area | Clamping technique | Pull test, corrosion test and field trial | Depending on stressing/ duration |

### 3. Hook and loop

This variety of fastener is found in various place like uniform accoutrement, combat uniform, accessory. Property of easy to use of hook and loop fastener makes it more widely used fastener it has two strap one is with polyester hooks and another strap with nylon loops touch. After investigation and study of hook and loop fastener following parameter has been drawn for testing and field trial to validate and set up standard required.

**Table 3**

| Type of hook and loop | Material | Placement | Attachment procedure | Testing type | Required result |
|---|---|---|---|---|---|
| Sew on hook and loop | Appropriateness of material hook and loop and thread | Placement as per length and width of area and low stress area | Sewing technique and thread count/strength | Fatigue testing shear and peel strength | Depending on stressing |

### 4. Slide fastener:

It is a closing device consisting of inter- lockable essentials each attached to one of the opposite split ends of two tapes and a movable part called a “slider” that spans the inter-lockable essentials. The term slide fastener and zipper are used interchangeably

The physical parts of a zipper are the scoop teeth, chain, lock, pull, tape, and slider. Some zippers have a thong attached to the pull link to facilitate the pulling action. Zippers may also have retainers, stops, or retainer pins. At the investigation metal and plastic moulded zipper found in use following parameters drawn to set up standard.

**Table 4**

| Slide fastener | Material | Placement | Attachment procedure | Testing type | Required result |
|---|---|---|---|---|---|
| Metal Zipper | Appropriateness of material for set slide fastener | Placement as per length and width of area and low stress area | Sewing technique and thread count/strength | Pull of and tensile strength Lateral strength element slippage | Depending on stressing |
| Plastic casted Zipper | Appropriateness of material for set slide fastener | Placement as per length and width of area and low stress area | Sewing technique and thread count/strength | Pull of test Lateral strength element slippage | Depending on stressing |

### 5. Buckle

Buckle fastener are fastening devices that are used to join together two ends of a belt, strap, or other items to keep them secure Buckles may be characterized by the application for which it is intended, the material of which it is made, and the fastening mechanism used. there are following buckle has been found Cam Buckles, Roller Buckles, Side Release Buckles, Slide Buckles, Snap Buckles, Tie Buckles. Following parameter has been drawn for the setting standard as per field trial.

**Table 5**

| Buckle | Material | Placement | Attachment procedure | Testing type | Required result |
|---|---|---|---|---|---|
| Cam Buckles | Appropriateness of material | Placement as per requirement | Sewing technique and thread count/strength | Braking force of buckle, fatigue resistance of buckle, strength of fastened buckle | Depending on stressing |
| Roller Buckles | Appropriateness of material | Placement as per requirement | Sewing technique and thread count/strength | Braking force of buckle, fatigue resistance of buckle, strength of fastened buckle | Depending on stressing |
| Side Release Buckles | Appropriateness of material | Placement as per requirement | Sewing technique and thread count/strength | Braking force of buckle, fatigue resistance of buckle, strength of fastened buckle | Depending on stressing |
| Snap Buckles | Appropriateness of material | Placement as per requirement | Sewing technique and thread count/strength | Braking force of buckle, fatigue resistance of buckle, strength of fastened buckle | Depending on stressing |
| Tie Buckles | Appropriateness of material | Placement as per requirement | Sewing technique and thread count/strength | Braking force of buckle, fatigue resistance of buckle, strength of fastened buckle | Depending on stressing |

**6. Laces, Strap & elastic**

Laces with knot is being used in various paces. Strap is being used with different length and different type of buckle. Varity of laces is being used starting from shoe lace to lanyards and epaulette. Strap is being used in form of belt or with accoutrements. Elasticised bottom of trouser in combat uniform has been observed. Following parameter were been identified in investigative study.

**Table 6**

| Laces and strap | Material | Length/ braiding/weaving technique | Edge and end finishing | Testing type | Required result |
|---|---|---|---|---|---|
| Lace | Appropriateness of material quality of yarn | Type of braiding and length | Type of tail end finishing. | Knot Slippage Test, Loop Wick Test, Abrasion test, Breaking Force And Extension | Depending on strength required |
| Strap | Appropriateness of material quality of yarn | Type of weaving and length | Type of tail end finishing | Abrasion test, Breaking Force And Extension test | Depending on strength required |
| Elastic | Appropriateness of material quality | Width and attachment technique | Edge finishing | Breaking force | Depending on strength required |

**7. Pin and clips**

Split pin fastener, safety pin hat pin, multipurpose pin has been observed in use for various accoutrements fastening. Following parameter has been set in investigative study.

**Table 7**

| Pin and clips | Material | Placement | Attachment procedure | Testing type | Required result |
|---|---|---|---|---|---|
| Pin & Clips | Appropriateness of material | Placement as per requirement | Sewing technique and thread count/strength | Tensile strength. corrosion test | Depending on strength required |

**Conclusion**

Categorization of fastener from all type of uniform including combat uniform has been indicted along with the parameter finalization for testing of fastener and setting up standard to achieve durability and performance.

**References**


1. Akbar-Khanzadeh F. Comfort of personal protective equipment. Appl Ergon. 1995; 26(3):195-198.
2. ASTM D2050 – 11 “Standard Terminology Relating to Fasteners and Closures Used with Textiles”.
3. ASTM D2061 – 07 “Standard Test Methods for Strength Tests for Zippers”.
4. BS 3084:2006 “Slide fasteners (Zips) – Specification”, 2006.
5. NELSON W. Use of disposable Velcro sleeves on gastrointestinal clamps and forceps. Arch. Surg. 1976; 111(9):1038-39.
6. ROBERTS D. Velcro closure material in wound repair. Vet. Med. Small Anim. Clin. 1976; 62(8):747.
7. Solinger J., 1980, Apparel Manufacturing Handbook, 795p
8. TS 11516 “Tekstil Mamulleri-Fermuar”, 1995.
9. Tyler DJ, Carr & Latham’s Technology of Clothing Manufacture, 4th edition, Blackwell Publishing, 2008.
10. https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN6173_AR670-1_Web_FINAL.pdf. accessed January, 2020.
11. http://media.msanet.com/na/usa/3700-08-MilitaryCatalog.pdf accessed January, 2020.
12. https://aces.nmsu.edu/pubs/_c/C232/welcome.html accessed January, 2020.