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Pattern Block Emendation before Design Manipulation to get Accurate Garment Dimension According to Size after Washing and Finishing

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Abstract— Pattern drafting provides the pattern block which provides the basic shapes for manipulation and development. Pattern drafting is a construction method, allowing the measurement of the body and minimum levels of ease to satisfy comfort and function. However, the block which provides the drafting method, we cannot use the same block for woven apparel design and also for knitwear design. So, the block depends on fabric characteristics. The research outlines methods and results to establish the system of pattern drafting and emendation pattern block according to fabric characteristics. Although ease is generally considered as an addition to the dimensions, it may also be subtraction and is dependent on many factors including body movement, fabric characteristics, comfort preferences and garment styling. To develop a block and then design enlargement, first we need to draft the pattern block with minimum ease and then need to develop the pattern according to fabric characteristics (shrinkage & elongation presentence).

Index Terms —Elongation, Emendation, Enlargement, Manipulation, Shrinkage, Subtraction

1 INTRODUCTION

Pattern construction is an integral part of garment manufacture. First pattern drafting which provide the blocks (after fittest) are used as the basic shapes, which are manipulated to achieve the trendy pattern used for garment manufacture. The process of pattern construction has been the subject of much research, especially for drafting a pattern we need the body measurement and minimum level of ease. The system of drafting pattern different for woven garment and also for knit garment. "*The block drafting depends on many factor body measurement, body movement, level of ease, fabric characteristics, comfort preferences and garment styling*" *(Fan et al.2004, Chen et al.2008)*.Without the trial and error process to develop any design, the block need to modification according to fabric characteristic. The study focus on the modification of pattern block according to fabric character (shrinkage & elongation presentence) which has been included as suitable in basic trouser block drafting and modify.

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Fabric common character mainly shrinkage or elongation. Shrinkage is the process in which a fabric becomes smaller than its original size, usually through the process of laundry. Novice users of modern laundry machines sometimes experience accidental shrinkage of garments, especially when applying heat. Others may intentionally shrink a garment to their size. "*Some may purchase a garment one or more sizes larger in anticipation of shrinkage*"[1]. Elongation is the process in which a fabric becomes bigger than its original size, usually through the process of finishing using heat. The study focuses on the modification of pattern block according to fabric shrinkage% & fabric elongation% and the drafting of a basic trouser block and also the relation between fabric and pattern block.

2 TECHNICAL DESCRIPTIONS

2.1 Objectives

Specially, this study was conducted

a) To get a stable dimensional garment according to their original size at the finishing stage.
b) To find out the relation between fabric character and pattern block in the first stage of garment manufacturing.

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TABLE 1
A SIZE CHART FOR OVER GARMENTS. TROUSER [2]

		Medium(96-100) Chest Sizes
A	CHEST	100
B	SEAT	104
C	NATURAL WAIST	86
D	TROUSER WAIST (4cm below natural waist)	89
E-F	HALF BACK	20
G-H	NATURAL WAIST LENGTH	44.6
G-I	SCYE DEPTH	24.4
J	NECK SIZE	40
K-L	SLEEVE LENGTH. ONE PIECE SLEEVE	65.4
E-M	SLEEVE LENGTH. TWO PIECE SLEEVE	82
N-O	INSIDE LEG	81
P-Q	BODY RISE	28
R	CLOSE WRIST MEASUREMENT	17.6
	EXTRA MEASUREMENTS GARMENT LENGTH	
	CUFF SIZE. TWO- PIECE SLEEVE	30
	TROUSSER BOTTOM (as desire) MEASUREMENT	38
	JEANS BOTTOM MEASUREMENT	22
	FULL LENGTH	110

2.2 Basic trouser pattern construction method

Drafting

0-1= Full length including waist band=110
0-2= Crotch depth +allowance (min, 2-2.5 cm) =28+2=30
0-3= Hip depth, 2/3 of 0-2=20
0-4= ½ of hip+5cm=52+5=57
5-8= ¼ of total hip + 0.5cm =26+0.5=26.5
3-9= ¼ of hip + 0.5cm =26+0.5=26.5
Increase the line 2-6 and draw a vertical line on the point 8-9, which will intersect the line 2-6 in points
10 &11.Then come left from point 10 by ¼.
Then on the extended line 2-6, draw 2-12.
2-12= ¼ of 3-9 (front crotch extension) =6.63
6-13= ½ of 5-8 (back crotch extension) =13.25
Now decide the crease line at front & back.
Back – Take the midpoint of 13 – 10' is named as 15;
Front - Take the midpoint of 11' – 12 is named as 16;
Draw a vertical line on point 15 and 16;
Now locate the knee area (horizontally);
1 – 14 = ½ of (1 – 2) + 1.25cm =80/2+1.25 =40+1.25=41.25cm
[(1-2)= (0-1)-(0-2) =110-30=80)]
Horizontally, ankle level is 1 – 7 and knee level is 14 – 23;
These two lines should be intersected by front crease line 16 at point 20 and 18;
At Back, crease line 15 will be intersecting at point 19 and 17;
Now decide about the total hem width; If the sweep is 38 then Back part should be 5cm bigger than Front, means
Back = 38/2 + 2.5cm = 19+2.5=21.5 ; Front = 38/2 – 2.5 = 16.5 ;
For Front, 18-21=18-22=16.5/2=8.25
For Back,17-21'=17-22'=21.5/2=10.75
The width of trouser hem should be equally distributed from the crease line of both front and back and knee width will be 2.5cm bigger both at front and back;
At Front = 20 – 24 = 20 – 23 = (18 – 21) + 1.25cm = (18 – 22) + 1.25cm=8.25+1.25=9.5
At Back = 19 – 24' = 19 – 23' = (17 – 21') + 1.25cm = (17 – 22') + 1.25cm=10.75+1.25=12

Waist (Front):

0 -0 = 0.5cm down + 0.5cm inside;
Connect 0 – 3 – 12 and 12 – 24 – 21 (inseam);
In trouser, front waist should be 5cm bigger than back, means if total waist is 86cm,
Then front = 86/2 + 2.5cm= 43+2.5=45.5;
Back = 86/2 – 2.5cm = 40.5;
0 – 29 = ½ of front waist + 1.25cm dart intake + .5cm ease =22.75+1.25+.5=24.5;

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Front dart should be on the crease line.
27 – 28 = 10cm; Join 0' – 29 by hip curve and 29 – 9 and 9 – 11' – 23 – 22 and 21 – 24 – 12 – 0;
16 – 20 – 18 is front crease line;

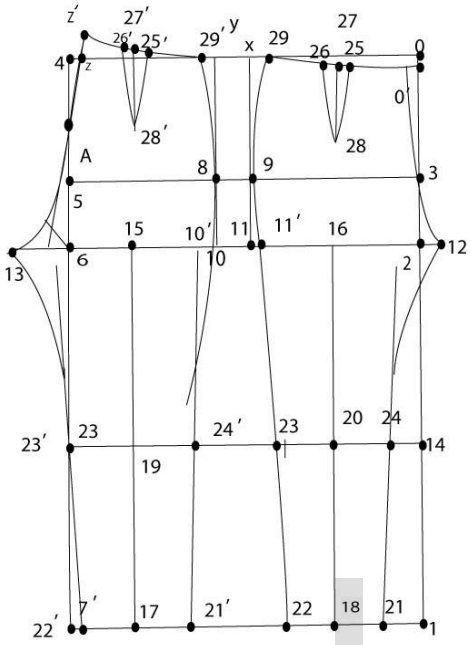

Fig 1: Trouser Drafting

Waist (Back):
A is the midpoint of 4-5;
Z-Z'=1.25cm foe men and 2.5 cm for women;
4 – Z = 1.25cm for men and 2 – 2.5cm for women;
Connect Z' – 29' by a hip curve: 27' is the midpoint of Z' – 29' and join 29' – 8 – 10' – 24'- 21' and
22' – 23' – 13 A – Z'.
Back dart length should be 12 cm and intake should be 2.5 – 5cm;
Z' – 29' = ½ of back waist + dart intake +ease .5cm.
=43.72/2+2.5cm dart intake+.5cm ease
=20.25+2.5+.5=23.25cm.

2.3 Develop the block from the drafting

Before the production pattern, first we develop a complete pattern from the drafting to make a calico toile for fit test. After adjusting the calico toile, we have to modify the basic drafting for making basic pattern set which we called basic block. The basic block, consisting of front and back, this represents the dimensions of a specific form or figure. It is developed without design features. It is always traced for pattern making when using the slash and spread technique. The basic pattern set or block should remain seamless to develop design pattern. Seams are added at the completion of the basic pattern and design pattern. "*The professional designer or Patternmaker may prefer to develop design pattern with seamed patterns to save time*" [3].

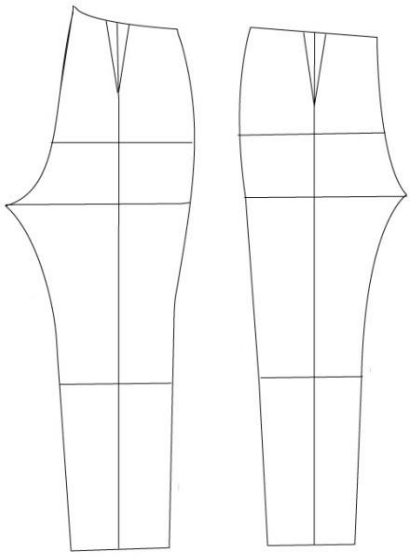

Fig 2: Trouser block (back, front)

2.4 Analysis of the problem

The pattern block which we use for developing design by slashing and spreading technique all block have a common problem. If we develop same design from the block for different fabric without analysis the fabric character, the garment will differ for different fabric. The garment dimension will change according to fabric character after washing and finishing. To solve the after mentioned problem as well as to solve the garment dimensional problem the block must need to modify according to fabric character.

3 METHODOLOGY

This research began with the selection to develop design from the pattern to use slash and spread technique. All patterns were drafted by an experienced pattern technician and then checked for accuracy before being develop block. Pattern analysis consisted of three stages. First; need to check the accuracy of body measurement.Second; add to ease measurement. Third; the pattern blocks need to modify for developing any design according to fabric character where the fabric is shrinking or elongating.

3.1 Shrinkage test procedures:

- Fabric swatch 35 X 35cm
- Need to over lock the edge of the fabric swatch
- Mark 30X30cm with permanent marker or stitch with contrast color thread.
- Wash the sample according to buyer requirements &
- Finish, according to the buyers standard.

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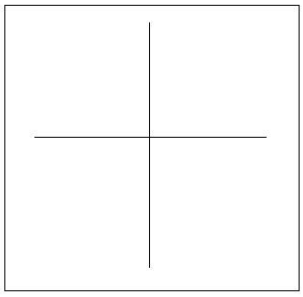

Fig 3: Fabric swatch (30cm permanent marker line)

Calculation:
Now we need to measurement and find on the shrinkage.
Length:
Fabric length (warp) before wash = 30 cm
Fabric length after wash = 28.8 cm
Now shrinkage = (30 -28.8) = 1.2 cm
For, 30 cm shrinkage = 1.2 cm
1 cm shrinkage = 1.2/30 cm
Shrinkage% =1.2 X 100 = 4 %
30
So, Length Shrinkage = 4%
Width:
Fabric width before wash = 30cm
Fabric width after wash = 29.4 cm
Now shrinkage = 30 – 29.4 = 0.6 cm
For, 30 cm shrinkage = 0.6 cm
1 cm shrinkage = 0.6/30
Shrinkage%= 0.6 X 100 = 2%
30
So, width Shrinkage = 2 %

TABLE 2(A)
FABRIC SWATCH MEASUREMENT

	Warp	weft
Before wash	30	30
After wash	29.4	28.8

TABLE 2(B)
FABRIC SHRINKAGE%

Warp wise shrinkage	Weft wise shrinkage
4%	2%

3.2 Pattern block adjust according to shrinkage%

Front: Trouser block full length =110cm
The block adjustable length with 4% shrinkage
=110+4%=110+4.4=114.4cm
Front Crotch (11'-12) = (3-9)-.25+ (2-12)
=26.5-.25+6.63=32.88cm
The block adjustable width (front crotch) with 2% shrinkage
=32.88+2%=32.88+.66=33.54cm
Back: Trouser block full length =110
The block adjustable length with 4% shrinkage
=110+4%=110+4.4=114.4cm
Back Crotch (10'-13)=(5-8)-.25+(6-13)
=26.5-.25+13.25
=39.5cm
The block adjustable width (back crotch) with 2% shrinkage
=39.5+2%=39.5+0.79=40.29cm

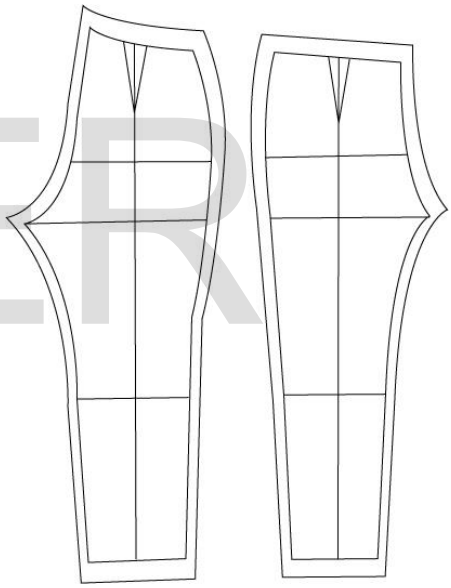

Fig 4: Trouser block with adjustable shrinkage length and width (back, front)

3.3 Pattern block adjust according to elongation%

Some fabric has the elongation property (cotton spandex, polyester spandex, elastic knitted fabric etc) when fabric becomes bigger than its original size usually through the process of finishing for using heat. To test elongation% we need to finish the fabric according to buyer standard. Than calculated the elongation% need to make with the pattern block before manufacturing. To adjust the elongation% need to deduct the measurement from the block.

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4 Results and discussion:

The main focus of this research was on modifying the basic block according to fabric character to protect the garment dimension according their perfect size after washing and finishing. If we develop the basic block after drafting according to fabric nature, the different block will help us to manipulation any design which garments give us the actual dimension with accurate size after wash and finish.

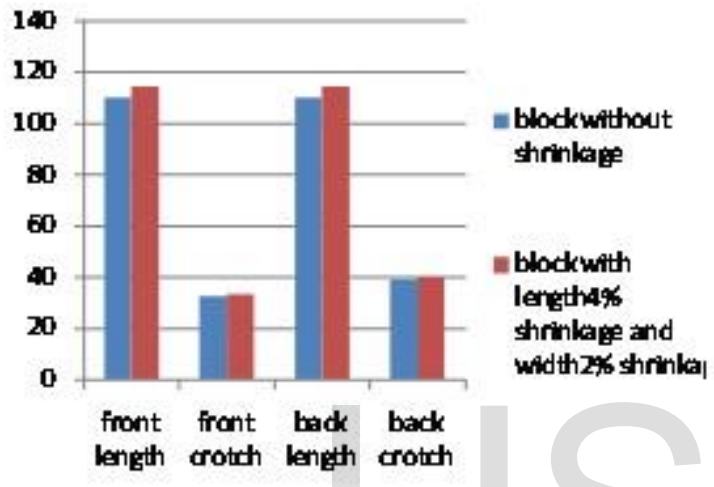

Fig 5: Trouser block with adjustable shrinkage length and width (back, front)

5 Summery, Conclusion and Implication

5.1 Summery

Without error process of making any design pattern from the basic block, that garment will have the fix dimensional property according to size after finishing for mass production.

5.2 Conclusion and Implication

The research has highlighted the new pattern block which is developed for design manipulation. The results indicate the new pattern block developing system according to fabric character for same design manipulation for different fabric. This is especially important with developing technology for garment stable dimension according to their actual size after wash. To develop any design from basic block first we need to analyses the fabric character and modify the pattern block before design manipulation for mass production.

These systems offer resources for both education & garment industry helping to overcome the difficulties of pattern manipulation, especially regarding area of garment dimension according to size

6 References

[1] http://en.wikipedia.org/wiki/Laundry
[2] Aldrich, W., 2004.Metric Pattern Cutting forMenswear.4th ed. . Oxford: Blackwell
[3] Armstrong, H.J., 2006.Patternmaking for fashion design.4th ed. Upper Saddle River, NJ: Pearson/Prentice Hall