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STUDY REGARDING THE PATTERN DESIGN FOR FOOTWEAR WITH AND WITHOUT PREMOULDING OF THE VAMP

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Abstract: *When it comes to footwear design, independently from the type of shoe that is to be designed (pumps, boots, ankle boots), there are different situations where the vamp is brought up to the leg. Specific for this choice of asemblance, is that the vamp can have two or three symetry axes. Therefore, the pattern is to be transformed into a single simetry ax guideline.This paper analyses ways to obtain the pattern of the vamp, by using the method of successive rotations and previous perforations of the material. This paper does not propose to analyze the existing methods, which are more or less accurate, but based on the authors' experience in designing footwear, we propose two methods of cutting the vamp, leading to an spatializing during installation and also saving material during the operating of re-cutting the premoulded pattern after preforming. Most times, the preformation pattern is drawn approximately, during the second cut resulting huge waste, thus affecting the leather consumption. Based upon a theoretical approach and a graphical construction, we managed to obtain a reduction of the wastes during the second cut, and for certain models to completely eliminate this operation. In comparison to the used methods, which as we showed before are very inaccurate, using the presented algorithm we can obtain a material economy of up to 15-20%.*

Key words: *footwear design, preformed, simetry axe, recutting, premoulding.*

1. INTRODUCTION

In the composition of different footwear models, regardless of assortment (shoes, boots, ankle boots), we can encounter different constructive variants for the vamp, the most frequent one being the variant where the vamp is prolonged above the ankle joint.

In order to achieve this landmark, which during assembly receives a gap, there are two possibilities:

- To obtain the vamp by successively rotating it in certain positions;
- To obtain an approximate pattern of the vamp, to tailor and preform the profile of the shoe given by the conformation of the last and of the basic design.

The literature proposes different solutions to achieve these milestones, each author having a subjective approach, purely theoretical. [1]

This paper does not propose to analyze the existing methods, which are more or less accurate, but based on the authors' experience in designing footwear, we propose two methods of

cutting the vamp, leading to an spatializing during installation and also saving material during the operating of re-cutting the premoulded pattern after preforming.[2,3]

We chose the same boot type as an example, having into consideration the fact that the producer owns a preforming machine. Most times, the preformation pattern is drawn approximately, during the second cut resulting huge waste, thus affecting the leather consumption. [4]

Based upon a theoretical approach and a graphical construction, we managed to obtain a reduction of the wastes during the second cut, and for certain models to completely eliminate this operation. The median line of the top of the boot is drawn from the intersecting point with the vamp. The higher point of the vamp S is connected with point B, situated on the tangent line in the top are resulting BS line.

ll_1, tangent to the curve BS. The intersecting point is E. In E the perpendicular on BS results point E_1.fig.4..

2. OBTAINING THE VAMP PATTERN BY SUCCESIVELY ROTATING IT IN CERTAIN POSITIONS

The most conclusive example is cutting the vamp, which is shaped like a saddle. A good example for this is the boot model in Fig 1.

Fig. 1: *Model of boots with prior vamp preforming*

We go through all known stages for obtaining the basic design by adapting the anthropometric parameters given for the calf and the dorsal side of the foot.

Particular attention should be paid to the manner in which the copy of the last on which the chosen model has been drawn on is flattened.[5]

The choice of the vamp midline is also a basic element.Fig.2 .

Fig.2: *The basic design for boots with vamp preforming*

In order to determine correctly the correspondence between the vamp line and the top of the boot, we proceed to fixing the medium copy on the last, after previously cutting the upper part, which by installation spatializes. Fig 3 a and b.

Fig3.a: *Fixing the basic design on the last*

Fig3.b: *Setting the medium line at vamp*

We can observe that by successively rotating the vamp, using the methods which are proposed by the literature, we obtain different contour lines. The advantage of this method is that the landmarks can be cut immediately, without needing any supplementary corrections.

3.DRAWING THE VAMP PATTERN FOR BOOTS WITH PRIOR VAMP PREFORMING

We chose the same boot type as an example, having into consideration the fact that the producer owns a preforming machine.

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Based upon a theoretical approach and a graphical construction, we managed to obtain a reduction of the wastes during the second cut, and for certain models to completely eliminate this operation. The median line of the top of the boot is drawn from the intersecting point with the vamp. The higher point of the vamp S is connected with point B, situated on the tangent line in the top are resulting BS line.[6]

ll_1, tangent to the curve BS. The intersecting point is E. In E the perpendicular on BS results point E_1.fig.4..

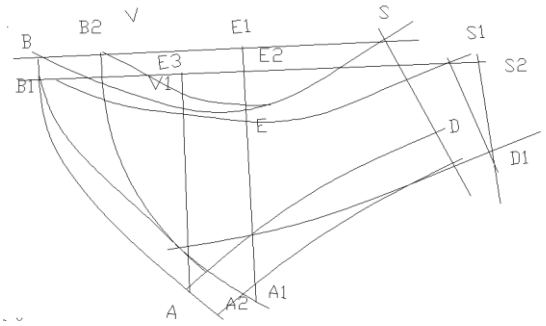

Fig.4: *Drawing the vamp pattern for boots with prior vamp preforming*

In point E_1 we measure E_1 A_1, which is the vamp width.

E_1 E_2= 0,33 E_1 E
From E_2 we draw a parallel to BS, intersecting with the vamp contour B_1.
B_1 S_1= K_s BS= B_1 S_2= the vamp median line
K_s=1,04 for leather
Din A perpendicular on B_1 S_1 results E_3
E_3 A_2=0,996K_s EA_1+ 0,34EE_1

We determine the upper pattern line S_1 D_1, as follows:
From S on SB we draw the distance SV.
SV=1,37 SE_1

The perpendicular from V on B_1 S1 gives the vamp rotation point V_1.

The initial pattern is superposed with point S in S_2 and is rotated until it intersects with point V_1 (see the printed line).

We mark the obtained points B_2 A_2 D_1 S_1, and obtain the pattern for preforming. We aim to have a straight angle in point S_2.

When the vamp is preformed using the preforming machine, we can obtain deformations of up to 3-5 mm. This is why in S_1 D_1 and D_1 A_2 we add 5-7 mm.

To this we can 2- 3 mm.

The resulting pattern we use for cutting.

In comparison to the used methods, which as we showed before are very inaccurate, using the presented algorithm we can obtain a material economy of up to 15-20%.

3. CONCLUSIONS

The two methods for getting the pattern of vamp are different from the methods proposed in the literature.

For getting the pattern of vamp we need to set the last of the basic pattern and that it is the author's own conception.

By making construction graphic patterns for preforming and neckline, on the basis of practical measurements , we have found a saving of material about 15-20%.

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