DETERMINING THE NEED FOR ZERO SERIES EXECUTION IN MANUFACTURING PROCESSES IN THE TEXTILE GARMENT INDUSTRY

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Abstract: Because the industrial production requires the application of some transformation procedures on the material resources, so that a clothing product comes out with optimal use value in terms of maximum economic efficiency, one of the main influencial factors is the quality of the products. To make manufacturing processes more efficient, it is necessary to carry out the zero series in order to ensure the quality of the technological processes, as well as to prevent some design deficiencies. Among the main operations undertaken to ensure the quality of the zero series, we mention: creating the conditions for launch, tracking and finalizing the accompanying production documents under similar series production conditions; zero-series producers are usually the same workers who make up the series production line; equipping with the appropriate equipment and providing with necessary devices in order to create the technical conditions for the execution of the zero series; providing technical assistance in relation to manufacturing and control documentation for eliminating the design deficiencies. This paper presents the architecture of the zero series execution in manufacturing processes in the textile garment industry. The information obtained from the zero-series analysis is directed to the technical support, for possible corrections of the patterns according to which the products were manufactured.

Key words: zero series, technical documentation, design, quality, fold, inside fold, defects.

1. INTRODUCTION

The zero series consists of a small number of copies of the prototype for a certain dimensional scale, in order to track the materialization in the technical and constructive documentation of the product design features, observing the technical and economic indicators from the standards. Following the implementation of the zero series, the deficiencies noted will be reported in a minutes report and the corresponding changes will be made in the constructive and technological documentation, so that the final technological process is as elaborate as possible.

The switch to serial production will be done only when the technological process is considered to be in line with current standards, internal norms and material specifications.[1]

2. CONTENT

2.1. Checking the zero series.

The systematic review of the products quality that make up the zero series is analyzed by successive samples on the standard body or on the mannequin. The defects noticed on the dressed body in orthostatic position, and those that are highlighted as priority, are the ones of assembly make up of layers of a product, as well as those of the constructive design. The defects resulting from inappropriate technology will only be tracked if they lead to major disruptions in the product acquisition process. If these deficiencies are identified, it will be possible to make adjustments or corrections to the technological process[2].

The defects of structural composition of the layers assembly of a product are characterized by the tendency of rolling the end edges and the small reference marks, some loose or fixed folds may apper with different orientation, on layers, inside or outside, which is due to the inconsistency of the component layers characteristics of a product, or due to incorrect dimensioning of thickness additions.

The constructive defects when dressing are manifested by changing the body position in dynamics, identifying them as follows[3,4]:

- the appearance of folds or plaits, creases with different orientation;
- the change in the state of equilibrium of the final product or some component parts and making it difficult to carry out some natural moves.

From the practical point of view, for zero series the following issues are analyzed:

- positioning the product on the body;
- base material;
- constructive - decorative lines.

Following these analyses we compare the concordance between the copies and the standard model (prototype).

1. The folds are a result of over-dimensioning some constructive reference marks. This inconvenience can easily be rectified by recutting the reference mark. Fixed folds occur after under-dimensioning the respective reference mark. The fixed folds are oriented on the same direction as the undersized segment that caused them to appear. The folds usually indicate problems of inappropriate layout of the reference parts on the body. The horizontal folds typically occur if the product is too adjusted, above or below a protrusion.

The skirt is a classic example that is stretched in the underbottom area, showing horizontal folds above the hips towards the waist. In the case of some materials, the fixed horizontal folds lead to the destruction of the joint line by slipping the fabric.

In the case of shoulder-support products, the appearance of the fixed back folds is due to the under-dimensioning of the back width or the diameter of the sleeve cut at the back reference mark. This type of defect can be rectified by modifying the rear reference mark as shown in Figure 1.

For undersized reference marks in the transverse direction on the back of the garment, there appear loose vertical folds. This deficiency occurs very often at the back of the jackets, dresses, but they also appear on skirts, trousers or sleeves. Such a flaw is shown in Figure 2.
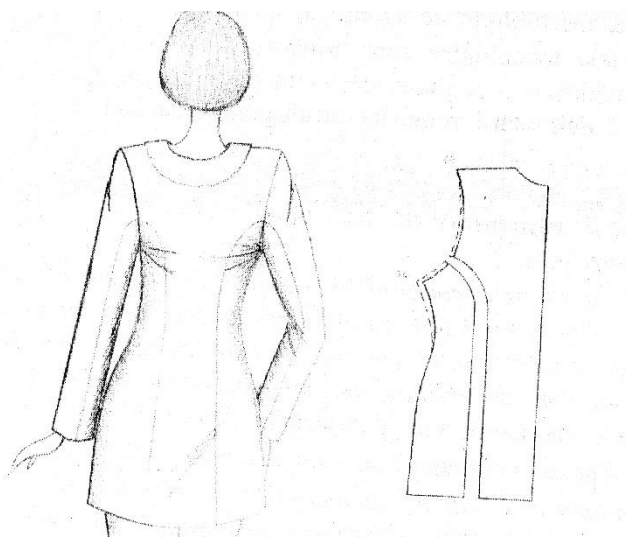
Fig. 1 *Example of fixed horisontal folds*
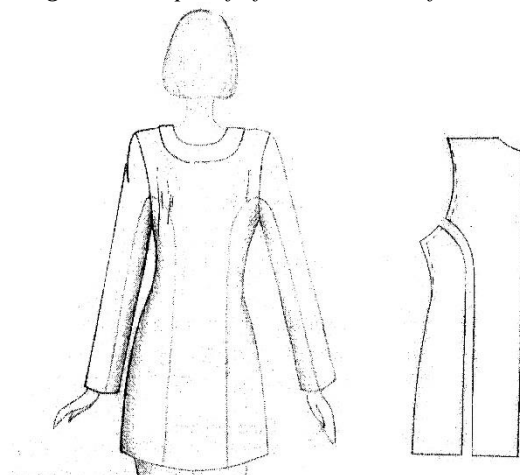
Fig. 2 *Example of vertical folds*

The oblique folds appear when placing the product on the body, and in order to rectify this deficiency it is necessary to increase the cut of the sleeve in front or at the back and increase the length of the shoulder line as in figure 3.

Fig. 3 *Example of oblique folds*

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Fig. 4 Example of radial folds

If the design was incorrectly executed in the case of inside folds of constructive modeling in the areas of the nipple, abdominal, buttocks or shoulder prominencies, the tensioning forces concentrate on the protruding area forming radial folds. Correction of this deficiency is done as shown in Figure 4. In the case of waist-type products, this type of folds appear around the limb joints when the textile material is less elastic and the cross-sectional dimensions of the reference marks are relatively reduced.[5]

2. The equilibrium of the product represents the perfect match of the product with the body, as well as the influence on the arrangement of the product on the body. The product must be arranged in the same way on the symmetrical elements of the product. The equilibrium defects are characterized by the tendency of the product to twisting towards the front or back. These defects are manifested by overlapping or removing the product opening lines in front, lifting or semi-lowering the front end or back end line, deflection of the lateral stitch line to the front or back of the product and moving the shoulder line to the front or back. This defect is rectified by redesigning the back or front patters as appropriate.

3. The proper positioning of the product on the body is characterized by the absence of folds (creases) placed diagonally in the direction of the warp or weft.

4. The influence of the textile material is highlighted in the case of inappropriate choice of the material inconsistent with the chosen model, as well as by defects caused by not considering the sense of positioning the patterns on the material. For refrence marks that have to keep the direction of the warp, its non-compliance either due to printing errors or due to special design effects, result in bent reference marks that eventually manifest by changing the finish of the product, through curls or wrinkles, defects that are accentuating after first uses and washes of the product. For almost all the reference marks for the main perimetesr of the body, the position of the woof should be parallel to the horizontal plan. Failure to follow the weft direction for the main perimeter causes the product to be tightened on the symmetry lines, which can be seen by the appearance of fixed folds on the horizontal direction.

5. The influence of the constructive-decorative lines can be highlighted as follows: in order for the product to correspond to the spatial form of the human body, it is necessary to obtain certain lines made by joining with a structural or/and decorative role, through pleats or inside folds forming the silhouette of the product.

Most of the times the joints on the symmetry line of the back, from the middle of the front, on the side seams of the trousers, are positioned in the direction of maximum dimensional stability, respectively in the direction of the warp. For a product with shoulder support, the shoulder stitch is positioned just above it, and the inside folds are oriented towards the area that shapes it. Failure to observe the position of the shoulder by oversizing the back height leads to the appearance of loose

horizontal folds in the upper part of the back (see Figure 5). Also in the case of this type of defect that occurs on the front part of the product it should solved in the same way.

If the product does not fit properly on the support area, if the product pressure is uneven, there are tensions leading to oblique folds. For example, for shoulder-based products, these folds may appear in the support area if the shoulder line inclination is too large or too small - Figure 6.[6]
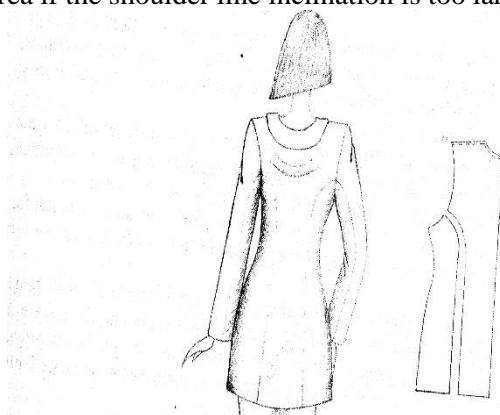
Fig. 5 *Example of horizontal folds in the upper part of the back*

Fig. 6 *Example of shoulder line inclination*

The following defects may occur on the neckline cut [7]:
- loose folds when the neckline cut is under-dimensioned and its rectification consists in raising the neckline contour to the front and back pattern with the necessary value;
- the radial folds from the neckline cut to the outside indicate that the neckline is too fixed to the perimeter of the neck, and its correction consists in lowering the contour of the neckline to the front and back pattern with the necessary value;
- the folds diagonally oriented when the collar is placed on the body, it requires to rectify the size of the neckline cut in the back and to increase the shoulder line dimensions with the same value.

The terminal line of products, which must be positioned at equal distances from a horizontal plan, can be modified due to problems of product placement on the body, uncorrelation between product dimension and product size, non-compliance with the positioning direction of the patterns on the fabric, as well as due to the poor construction of the patterns. In the case of vertical folds or pleats,

the strict non-observance of the nominal direction leads to the appearance of some changes in the modeling lines, materialized by rolling of the endings towards the front or back of the product.

3. CONCLUSIONS

The information obtained from the zero-series analysis is directed to the technical support, for possible corrections of the patterns according to which the products were manufactured.

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