

be systematic each term has terminological meaning within the stipulated term system), concise in terms of expression, having a clearly defined definition limits its meaning [3].

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**RESEARCH OF THE SEALING CUFF OF THE HYDRAULIC PULLER**  
**OF SEATS FOR VALVES OF DRILLING PUMPS**

One of the main elements of a drilling unit during the construction of wells is a drilling pump. Its operating conditions are quite difficult, as it works with an abrasive environment, which is in drilling fluids and at high pressures. All this leads to strict requirements for the manufacture of pump parts, their operation and maintenance [1, 2]. The service life of the pump elements depends on the quality of maintenance and repair [3].

However, the further service life will depend from the tools used to service the pump. For example, when replacing the pump valve, the edge of the hole in which the cover will then be installed can be damaged by the puller (in the case of the shock disassembly method). If you use another puller like hydraulic then such damage can be prevented.

The main disadvantage of this hydraulic puller is the design of the cuff. After long storage of the puller at the next using they do not provide tightness. To eliminate this shortcoming, it is proposed to use new design of the cuff. The new design of the cuff includes the elastic ring installed in it.

Therefore, it is necessary to compare the characteristics of the standard and the proposed cuff. For this purpose, the finite element method and the axisymmetric formulation of the study were used. The criteria of comparison are the contact pressure on the contact surfaces (cuff and frame). The study will be conducted for two cuffs simultaneously in order to build common graphical relationships for their comparison.

The calculation scheme takes into account: the tension of the cuff in the frame; the tension of the ring in the proposed cuff; the coefficient of friction is taken equal to zero; the end surface of the proposed cuff, on which no pressure acts, has the ability to move in the radial and tangential directions (in the axial movement is limited).

Therefore, to compare the both type cuffs, the graphical dependences of the value of the contact pressure from the contact length of the cuffs is shown in Fig. 1.

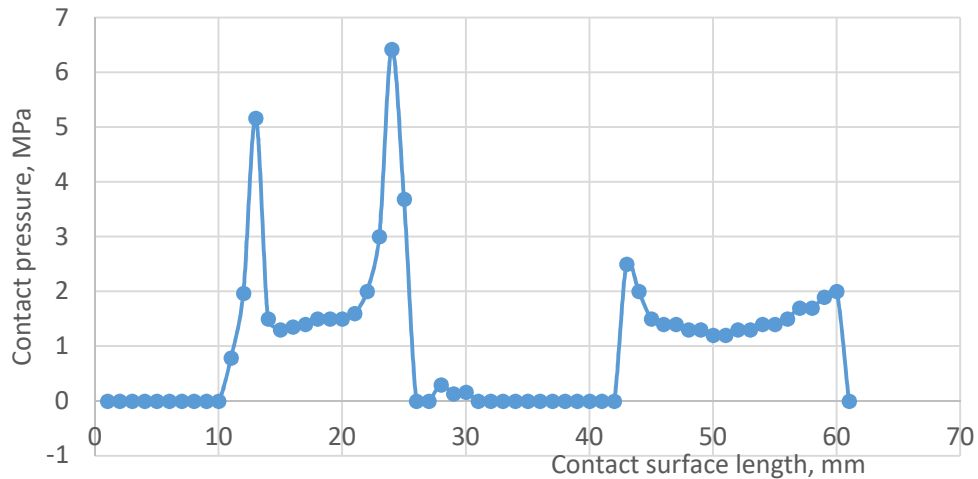


Fig. 1. Dependences of the value of the contact pressure along the contact length of the cuffs

Fig. 1 shows the distribution of contact pressure in the cuff, the surface length from 10 to 25 mm corresponds to the proposed cuff, and at a length of 42 to 61 mm corresponds to the standard cuff.

Therefore, the proposed cuff better seals the connection under the pressure of the working environment, better seals the connection when there is no pressure due to the elastic properties of the elastic ring installed in it.

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### **DEVELOPMENT OF RATIONAL HEAT TREATMENT MODES FOR BIODEGRADABLE MAGNESIUM ALLOY**

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A new biodegradable magnesium alloy of the Mg-Zr-Nd system with the following chemical composition was developed: 3,1...3,15% Nd, 1,22...1,3% Zr, 0,6...0,7% Zn, the rest – Mg. For this alloy, there is a need to choose the rational modes of heat treatment, which will allow to provide the optimal complex of mechanical properties.