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TECHNOLOGY OF MAKING "BUKSA" DETAIL FOR RAILWAY WAGONS BY CASTING METHOD

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Abstract: *The article presents a technology for obtaining a billet for the axle bearing housing of railway cars by injection molding according to burnt models.*

Key words: *Casting, cast billet, burnt-out model, injection molding, bearing housing.*

In the conditions of Uzbekistan, the "Buksa" part, which is considered as the bearing housing of the wheel axle of railway wagons, is mainly brought from the Russian Federation. In recent times, localization programs have been used to obtain this detail by casting method. However, only the Tashkent Foundry-Mechanical Plant produces this part and it cannot cover the current need.

Therefore, in order to cover the existing need, the specialists of the Torakorgan Mechanical Plant and the scientists of the Namangan Engineering-Construction Institute developed the technology of making the above-mentioned detail by casting method.

During the development of the technology for the production of the detail zagotovka, the experiences acquired by the Tashkent Foundry-Mechanical Plant on the preparation of this detail were also studied. At the Tashkent Foundry-Mechanical Plant, the cast zagotovka of this detail was made from 20GL alloyed foundry steel in machine-made sand-clay molds. However, zagotovkas have many defects such as gas voids and access holes. To eliminate such defects, we suggest using special casting methods.

Various defects occur in steel castings due to a number of technological reasons. For example, when it is poured into a mold over steel, there may be an entry cavity in its upper part, and gas bubbles around it, as well as bumps and cracks on its surface. In order to prevent these defects in castings, an additional heated mold is installed on top of the mold. As a result, the resulting entry cavity and gas bubbles are transferred to the metal in the overmold. In addition, the uneven distribution of additives, such as R, S, S, in castings greatly affects its quality (accuracy). Often, these elements are 2-3 times more in the central and upper part of the casting than in the edge part, and less in the bottom part. If these flawed castings are first annealed at a high temperature, and then almost leveled in composition by annealing at room temperature, other defects are cut out.

In order to obtain high-quality ingots from steel, it is very important to clean them from gases and slags and insert them straight into the molds. In this case, before the steel is taken out of the furnace, the furnace bars, ladles and molds should be set to meet the requirements. (Usually, the capacity of the most used small pits is 10-15 tons, the capacity of medium pits is 10-25 tons, and the capacity of large pits is 300-400 tons.) covered. A steel ring was put on it. This ring has two hook ears. At the bottom of the container is a cup made of refractory material, the opening of which is closed and opened with a refractory plug as needed. The stem of the plug is connected to the wing system. In the

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following years, buckets with shiber (fastener) adjusting the speed of metal pouring into the mold were also used. Metal molds are often made of cast iron. Its working surfaces are made conical so that the casting can be easily separated from the mold. The shape and size of the clips will depend on the material and size of the cast. For example, square and rectangular molds are used for the production of various rolls and balls, and cylindrical molds are used for the production of pipes. To obtain high-quality castings, before metal is poured into molds, the working surfaces are cleaned of metal drops, lubricated with special oil (for example, coal tar) and heated to a temperature of 80-120°C. In this case, when the metal is poured into the mold, the oil burns and forms a gas layer, which prevents the casting from sticking to the mold. The heating of the mold keeps the metal from overheating and ensures quality castings.

The chemical composition of alloyed casting steel 20GL is as follows: C=0.15-0.25%; Si=0.2-0.4%; Mn=1.2-1.6%; C=up to 0.04%; Up to P=0.04 %. In addition, taking into account the operation of the "Buksa" part under the influence of variable load during operation, it is necessary to take into account the mechanical properties of the parts made of steel of this brand (Table 1).

Mechanical properties of 20GL steel at temperature T=20°C

Table 1

Assortment	Consistency limit, $\sigma_в$, МПа	Yield strength, $\sigma_т$, МПа	Relative elongation, δ_5, %	Relative narrowing, Ψ, %	Percussive viscosity, KCV КДж/м^2	Heat treatment
К25 castings	540	275	18	25	491	Finding at 880-900°C Release at 600-650°C
КТ 30 casting	530	334	14	25	383	Finding at 870-890°C Release at 620-650°C
casting	500	300	20	35		Normalize
casting	550	400	15	30		Catch and release

It has been observed many times that there are defects such as gas voids (gas voids) and voids in the solidification (usadochnye ravky) in the castings obtained at the Tashkent Foundry-Mechanical Plant. In addition, deviations from the accuracy of the shape of the casting zagotovka due to defects in the assembly of molds were also observed.

During the study of the technical requirements for details and the experience acquired by the Tashkent Foundry-Mechanical Plant, measures were taken to eliminate the existing defects. That is, in order to ensure the accuracy of the shape of the cast zagotovka, it is suggested to take the cast in mold molds, and in order to eliminate the voids in the above-mentioned cast, it is proposed to cast under pressure in the burnable models.

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Figure 1. Cast zagotovka

Figure 2. Penoplast model

The authors designed and prepared the mold structure from aluminum alloy. At the same time, the technology of filling the mold cavity from foam plastic was also developed. The first samples of cast zagotovka (Fig. 1) proved to be free from the defects listed above. At present, work is being carried out to test the machined part and to improve the technology of obtaining cast zagotovka.

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