ANALYSIS OF FACTORS AND PARAMETERS AFFECTING THE ACCURACY OF PROCESSING LARGE-SIZED PARTS ON TURNING AND CAROUSEL MACHINES

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Abstract: *The article contains general information about large-sized parts, their features, and the organization of the production process. Selection of equipment for processing large-sized parts and analysis of factors and parameters affecting the accuracy of processing.*

Key words: *Large-sized parts, processing process, casting, rod and molding masses, unique parts, turning and carousel machines.*

Large-sized parts are unique, since they have very large impressive dimensions. But in addition, they require a very complex organizational process of their processing.

The organization of the processing process lies in the fact that equipment is needed to obtain blanks and processing suitable for the dimensions of these parts, this factor affects the production time, as well as the cost of the final product. In view of this, the cost of large-sized parts is much higher than small-sized analogues.

Blanks of large-sized parts are most often obtained by casting cast iron or steel alloys, which depends on the service purpose of these parts.

Cast blanks are usually obtained by casting into earthen or shell molds. In the manufacture of molds, manual molding is used. An important task in the production of large castings is to reduce processing allowances.

This problem is solved by using molding and core masses that harden due to chemical reactions, creating large shell molds based on them, using heat-resistant molding mixtures, as well as collapsible models, when using which there is no need for molding slopes on high vertical walls of castings.

The technological processes of manufacturing large-sized parts provide for the production of samples for testing.

That is, as already mentioned above, the uniqueness of these parts lies in the fact that they are usually not large-scale parts, therefore, for the production of any series of large-sized parts, the adjustment of a full production cycle is required. This includes the entire production process, starting from molds for blanks, ending with technical control of the finished part.

Parts of the usual size are processed on machines by installing the appropriate devices. As for large-sized parts, sometimes due to too large dimensions and complexity of structures, such an opportunity is not provided.

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For processing heavy large-sized parts that are difficult to install and process on lathes, two types of carousel machines are used: single-column and double-column. In these machines, the spindle axis is placed vertically, so the workpiece has a more convenient location for processing.

The high accuracy and reliability of the carousel machines (universal and specialized) allows us to produce parts of non-standard appearance and large weight.

Turning and carousel processing of metal workpieces can be carried out, if necessary, with single-column or double-column machines.

Turning and carousel machine 1L532F3 is designed for machining parts:

With grinding surfaces at a constant cutting speed, finishing and semi-finishing;

Threading on bodies of rotation;

Segments of parts of parts, cutting grooves;

Turning of parts with a diameter of up to 3000 mm;

In order for the finished parts to meet the required quality and accuracy classes, a careful selection of equipment is necessary.

In the modern machine-building world, there are many opportunities and equipment equipped with advanced technologies, Automated, easy to use.

As one of the factors affecting the quality of processing large-sized parts, the choice of more modern equipment will be appropriate.

For an illustrative study, a model of the 1L532 turning and carousel machine was selected. Turning and boring of cylindrical and conical surfaces, grinding of end surfaces, cutting of annular grooves, drilling, countersinking and deployment of central holes can be performed on the 1L532 lathe. The grinding of the end surfaces can be carried out at a constant cutting speed.

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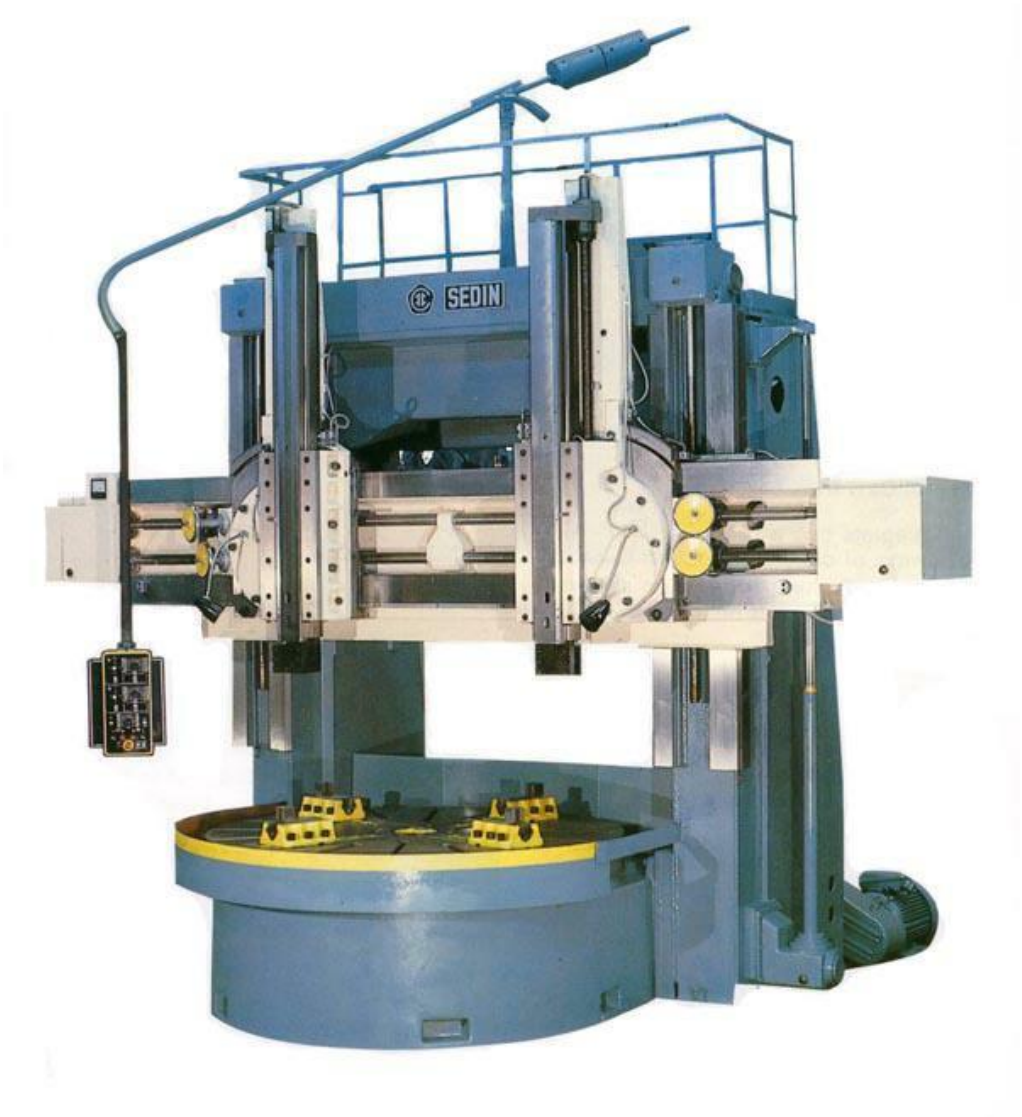

The turning-carousel 1L532 is a high-performance and precise machine with automated control, consisting of a number of complex devices, aggregates and assemblies.

The accuracy class of the machine 1L532 – N. Significant power of the main drive electric motor, high rigidity of the basic parts and sufficient strength of all elements of the kinematic chain in combination with wide ranges of control of the speed of the faceplate and feed values, allows the 1L532 machine to perform high-performance work at high-speed cutting modes. The machine can be used for both finishing and roughing.

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Another factor affecting the quality of processing large-sized parts is the experience and capabilities of the operator, Which is not unimportant since this type of parts requires high accuracy.

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