DESIGN OF AN AUTOMATIC PRECISION CONTROL DEVICE FOR SHAFT MACHINING.

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The shaft is shaped like a rotating body and serves to transmit torque. The design of the shafts can be compared to simple details, but the design of many shafts is complex. Because the shafts of the structure have the following (Figure 1):

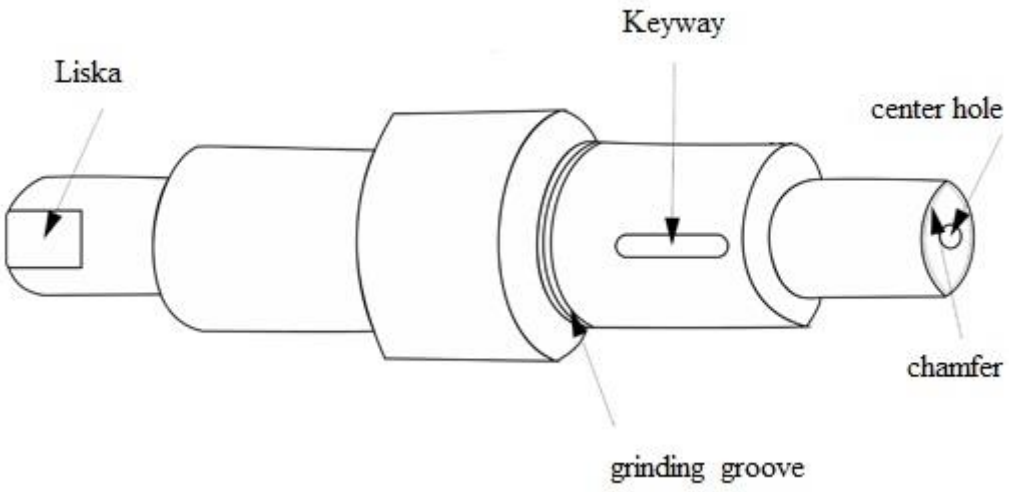

Figure 1. Separate machined parts on shafts

Shaft-type parts wear one component of the assembly as another component on their body, and the rotation begins to move. Therefore, during the operation of this compound, friction occurs between the constituents, so the requirements for the surfaces of the shafts may be high. It follows that in the process of machining the shafts the desired result is obtained in several stages. There will be the following steps: obdirka can be made on a sanding machine, or a certain amount of casting is cut on a lathe, the next step is the initial sanding, and the final stage is the final clean sanding to achieve the desired smoothness.

It follows that the appropriate casting and surface smoothness requirement is determined for each stage of the grinding process.

The roughness defined on the surfaces according to the standards is as follows:

It will be necessary to select a grinding machine that is optimally suited for the process of grinding the shafts. As a result of this research and literature analysis, we have selected the optimal type of machining, the circular sanding machine, as the circular sanding machine.

These machines are divided into external and internal, flat and special grinding machines, depending on the shape of the workpiece.

External circular grinding machines are designed for grinding external circular cylindrical, conical and side (torets) surfaces, which are divided into simple, universal, submersible and special types.

On ordinary external circular grinding machines, cylindrical surfaces, conical surfaces with a slope angle not exceeding 8 ° can be sanded by turning the top of the table (pUta).

Universal External Circular Grinding Machines differ from ordinary machines in that they have the ability to turn a detail or a circle, and in addition to cylindrical surfaces, they can also grind large-angle conical surfaces.

The main diameter and length of the grinding detail is indicated as the main characteristic of the circular grinding machines.

Modern grinding machines operate on a semi-automatic or automatic cycle and are used in large-scale, serial and individual production conditions.

External circular grinding semi-automatic machines are program-controlled and designed for use in small-scale production in the form of longitudinal thrust and immersion of cylindrical, tores, conical and stepped surfaces. Sharpening (editing) on the side and edge (per-iferia) of the grinding circle is performed automatically using diamond cutters mounted on a special frame on the back, or it can be done manually when replacing the circle. The machine is equipped with a measuring and control device type XSh9-2M. Entering the processing program into the digital control system (RDB) is done using the keyboard on the control panel.

In order to dramatically improve the quality of the finished workpiece, it is necessary to control the result of each machining and make sure that the required smoothness is achieved. Of course, this process can add extra time to the processing time.

In order to improve the quality of the product, as well as not to increase the amount of additional time, research was conducted to create an automated control device.

Of course, as the 21st century advances in technology, autonomous 3-D scanners have been invented for monitoring around the world. Did an in-depth study of this device reveal this? This equipment is very small, convenient, accurate and suitable for operators who are not very qualified to use it, because it takes very little time and space, and can be placed anywhere on the conveyor.

Its working principle is simple and automated, as long as the mirror is sent to the treated surface, the infrared light is directed and shows all the measurements on the surface on the screen.

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