# DEVELOPMENT OF THE TECHNOLOGICAL PROCESS OF MANUFACTURING AND DEVICES FOR TECHNICAL SUPPORT OF THE BODY PART

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**Annotation:** This article describes the relevance of studying body parts, optimizing its design, designing devices and technical support of the part.

**Key words***:* Case, casting, pressing, soldering, design manufacturability,

In mechanical engineering, the most frequently studied part, if other parts, is the body part, this is due to the fact that in all assembly units that are part of the machine there is their key body part, which contains all the components of this assembly unit. The study of body parts is that this part most often wears out, with the exception of some. Joint surfaces usually require careful processing to reduce friction. And that is why this detail is so widely studied by engineers and designers.

In addition to body parts, requirements are imposed on wear resistance, minimal deformations at variable temperatures, tightness, ease of assembly and dismantling of parts.

The design of the body provides free entry and exit of the tool, and the convenience of processing. Surfaces to be machined are available for machining.

Blanks of body parts are obtained by various methods of casting, pressing, welding or soldering, in a combined way, when individual elements of the body blank are cast, and then they are welded or joined by soldering. The choice of a method for obtaining blanks is carried out based on the size and shape of the part, the material and its properties, the program for the production of devices and additional requirements for the body (for example, tightness). In the conditions of serial production, the main method for obtaining blanks is casting; in small-scale and single-piece production, body parts are made "from a piece" or welded and brazed blanks are used. The choice of a method for obtaining a workpiece should be considered comprehensively, i.e. the actual process of obtaining the workpiece and the process of its further machining, and therefore, when comparing the options for the technological process, the criterion should not be the cost of manufacturing the workpiece or machining, but the cost of manufacturing the part.

The complexity of manufacturing body parts significantly depends on the manufacturability of their design, i.e. from the correct choice of the material of the part, the appointment of design bases, the setting of dimensions, the shape of the surfaces, their location, the specified dimensional accuracy and quality of the surfaces, etc.

The technological process of manufacturing a body part is a project carefully developed starting from sketches of the workpiece, calculation of allowances, ending with the calculation of the economic efficiency of the created project.

The construction and content of the process of processing the body part workpiece are determined by the choice of bases and dimensional relationships between different surfaces. Body parts are based, maintaining the principles of constancy and combination of bases. In their manufacture, two methods of basing are most often used: along three planes forming a coordinate angle; along the plane and two holes, processed according to the H7 grade with a fit on two mounting fingers of the device.

The technical support is devices and fixtures for processing the body part. In the design of the technological process, a chapter is separated for the development and calculation of these devices.

It is necessary to select a machine and a machine fixture for processing the body part, in this case a four-coordinate vertical milling machine was chosen. The part is processed on a four-axis vertical milling machine, this machine is designed for high-performance processing of parts of complex configuration from

ferrous and non-ferrous metals, alloyed and light alloys under the conditions of single, small-scale and serial production according to the program.

Various types of processing can be performed on the machine: milling, drilling, countersinking, threading with machine taps and cutters in through holes, boring and reaming, and other operations. The workpiece is clamped in a hydraulic machine vise. Machine vices belong to the group of universal devices that allow readjustment. The body with the slide and the clamping mechanism of the vise are permanent. The setup consists of interchangeable jaws and other setting elements designed and manufactured in accordance with the shape and dimensions of the workpieces. The main advantages of the vise hardened ground surfaces provide high clamping accuracy 5 working surfaces drop-down system for the most reliable fastening.

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