

The automotive industry places the highest demands on functionality and surface quality on complex body sheet metal parts. To meet these requirements, a corresponding method plan is developed. The planned work initially introduces the basics of bodywork, forming and materials technology, tool technology and press technology, as far as they are relevant for the manufacture of body parts. Based on these principles, the main part deals with the topic of method planning, whereby the complex planning process is first broken down to a sequential thought model. Finally, it will be shown on the basis of practical examples how the previously sequentially treated planning steps are processed partly simultaneously, partly successively in several iteration loops in practice. In all designs, the focus is always on meeting the quality requirements that are placed on modern body parts today.

Volumetric cold stamping is used to manufacture parts of complex shape, but small sizes of metals with high plasticity. The process of volumetric stamping - plastic deformation of parts - is similar to hot stamping. However, the lack of heating allows you to get more accurate parts and with a cleaner surface. The use of volumetric stamping in combination with other stamping operations makes it possible to obtain details that do not require or almost do not require further machining.

Among the operations of volumetric stamping are: sediment, volumetric molding, cold extrusion, disembarkation, chasing, stamping.

Draft among other operations of volumetric stamping is the most simple and often used. It is used to flatten blanks and in the manufacture of parts with one-sided and two-sided protrusions .

When precipitating, the metal flows freely in the radial direction, and in the presence of cavities in the upper or lower parts of the die fills them.

When forming in open dies, an additional burr cutting operation is added, but there is no need to withstand the exact dimensions of the billet. The accuracy of the dimensions of parts manufactured in closed dies depends on the accuracy with which the workpiece is made. Stamps for volumetric molding are made massive, the mold cavities are performed accurately and carefully trimmed. For particularly precise and complex shapes, two dies are produced: the first for preforming, and the second for the sizing.

The roughness of the surface of the molded parts depends on the roughness of the surface of the workpieces, so the workpieces are thoroughly cleaned before molding from scale, rust and extraneous layers.

Cold extrusion is that the metal under high pressure changes into a plastic state and flows into the gap between the die and the punch.

The advantage of cold extrusion in comparison with the hood is the possibility of manufacturing thin-walled parts with a complex bottom shape, a higher metal utilization factor, higher productivity than with drawing, and lower costs for stamping.

For cold extrusion, metals with high ductility, low tensile strength and low hardening ability are suitable.