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CONSTRUCTION MATERIALS INDUSTRY-BASIC CONCEPTS ABOUT TECHNICAL DIMENSIONS

Annotation: in a detail drawing, the inner, outer or stepped size represents an abstract type of size, and when processing it on the defining surfaces, the size changes: it becomes larger, smaller or remains unchanged, depending on which it can be identified. When laying a scale, the detail should be considered in the correlation with other details, that is, the dimensions should be laid relative to the design bases. It is called a surface (or bullet) base, in which the position of other surfaces and arrows is determined in relation to it.

Keywords: project, size, external, internal, stepped, nominal size, actual size, boundary dimensions, average size

Introduction

Size is the numerical quantity of linear size in selected units of measurement [1,2].

The internal (coverage) dimensions are hole diameter, groove width, excess width, etc. Internal dimensions are enlarged in processing by marking surfaces and internal elements (Figure 1, a).

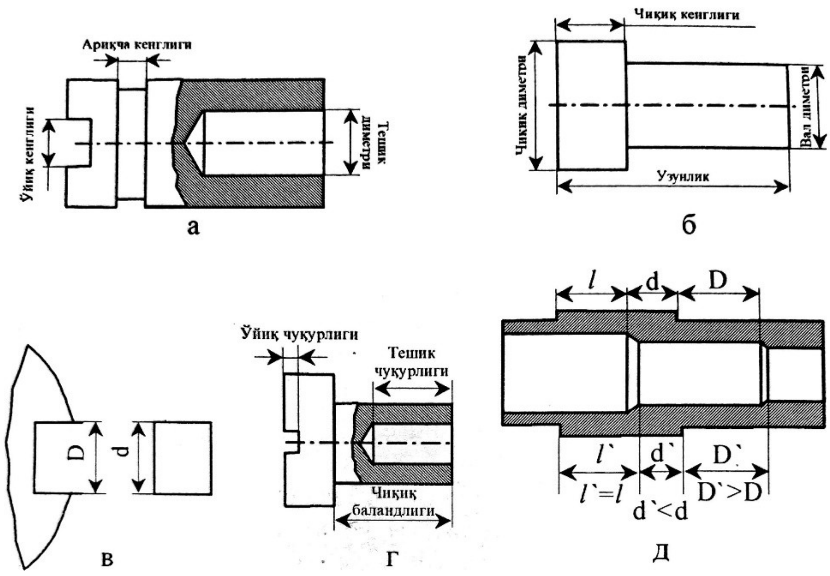

Figure 1. Types of dimensions: a-internal dimensions; b-external dimensions; V-hole (D) and val (d) dimensions; g and d-step dimensions

External (spanning) dimensions are val diameter, line width, and other gabarite dimensions. External dimensions determine external surfaces and external elements, when processed they become smaller (figure 1, b).

The inner element of the details is called the hole (D), the outer element is called “val” (d), and these Terms also apply to non-cylindrical elements (Figure 1, v).

Stepped (open) dimensions represent dimensions such as hole and groove depth, line height, which cannot be attributed to either internal dimensions or external dimensions. Step size ye, when processed on one of the surfaces that detect it, becomes larger and becomes smaller when processed on another surface (Figure 1, g and d).

In a detail drawing, the inner, outer or stepped size represents an abstract size type, and when processing it on the defining surfaces, the size changes: it becomes larger, smaller, or remains unchanged, depending on which it can be identified [3].

Materials and methods

This includes empirical methods such as modeling, fact, experiment, description and observation, as well as theoretical methods such as logical and historical methods, abstraction, deduction, induction, synthesis and analysis. The research materials are: scientific facts, the results of previous observations, surveys, experiments and tests; means of idealization and rationalization of the scientific approach.

Let the initial dimensions be l, d, D, and the dimensions after processing be l`, d`, D` (Figure 1, D): D`>D, demak, D scale-inner scale; d`<D, D - outer scale; l`is a 1, l - step scale.

In addition to the above, the detail drawings contain angular and radius dimensions, as well as the dimensions that determine the position of the arrows, the detail rubber part, the parts of the surfaces in different roughness, thermal processing, finishing, coating parts, and others.

When laying a scale, the detail should be considered in the correlation with other details, that is, the dimensions should be laid relative to the design bases.

It is called a surface (or bullet) base, in which the position of other surfaces and arrows is determined in relation to it.

Results and discussion:

The structural base, on the other hand, is the part of the surface or surface of the detail that attempts with other detail surfaces.

The surfaces on which the details of the knot attach or collide are called contiguous surfaces. The dimensions of contiguous surfaces are also called contiguous dimensions in turn. The remaining surfaces and corresponding dimensions are called non-contiguous (free) dimensions.

The gripping dimensions are executed some time more precisely with respect to the free dimensions, so in the detail drawing the number of gripping dimensions should be as low as possible, the number of non - gripping (free) dimensions-more. In order for the gripping dimensions to be low in the drawing, a one-dimensional Bond must be created between the gripping surfaces when laying the die.

The Nominal size (l, d, D) is the size with which the marginal dimensions relative to it are determined and the deviations are calculated. Nominal dimensions serve as the main dimensions for details and their combinations. Nominal dimensions are determined based on the results of the calculation of the details according to the criteria for strength, biquidity, wear resistance and other operational competence, or based on their requirements for use. The connecting surfaces will have a common nominal size [3].

The nominal size of the junction is common to the junction-forming hole and val (D=d). For example, the diameter of the shaft rotating on the sliding bearing and the diameter of the bearing hole are determined by one nominal size in the drawings. And in fact, the diameter of the shaft will be slightly smaller than the diameter of the bearing hole, otherwise the shaft would not be able to rotate.

Boundary dimensions are the two boundary allowable dimensions of an element, the actual size must be placed between them, or they may be equal to the middle. One can draw conclusions after comparing the smaller of the boundary dimensions - the lower boundary dimension (Dmin, dmin), the larger - the upper boundary dimension (Dmax, dmax). A detail whose size goes beyond the permissible limits (greater than the upper limit size or less than the lower limit size) is considered defective [4,5].

The mean (Dm, dm) is half the sum of the boundary dimensions:

$Dm = (Dmax+Dmin) / 2; dm = (dmax+dmin)$ (1

Conclusion:

Defects are also divided into (“positive” defect) and incurable (“negative” defect), which are corrected according to the actual size. A defect whose real size is greater than the upper bound size can be corrected by machining, while a defect whose real size is less than the lower bound size cannot be corrected by machining, it is an irreparable defect [1,2]..

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