



Sections in Engineering Graphics in Drawings

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Abstract: Conventions when performing sections. Sections and rules of design in drawings. Sections and designation rules in drawings. Rendered section, superimposed section.

Keywords: Cross-section, image, figure, plane, incision, rendered sections, frontal, horizontal, profile.

Cross—section is an image of a figure obtained by mentally dissecting an object with one or more planes. The section shows only what is obtained directly in the secant plane. Sections that are not part of the section are divided into removed and superimposed. It is better to use the rendered sections. They are allowed to be placed in a gap between parts of the same type.

The contour of the rendered section, as well as the section that is part of the section, is represented by solid main lines, the contour of the superimposed section is represented by solid thin lines. The contour of the image of the object at the location of the superimposed section is not interrupted. The axis of symmetry of the rendered (along the track of the secant plane or in a gap) or superimposed section is performed with a dotted thin line without marking with letters and arrows and the section line is not drawn. If the section (symmetrical or asymmetrical) is made in an empty place of the drawing, an open line is used for the section line with the direction of view arrows and denotes it with the same capital letters of the Russian alphabet. The image of the section is designated by the type "A - A".

For non-symmetrical sections located in a gap or superimposed, the section line is drawn with arrows, but not marked with letters. Conventions when performing sections. If the secant plane passes through the axis of the rotation surface bounding the hole or recess, then the contour of the hole or recess in the section is shown completely, that is, the section is performed according to the type of cut.

In the case of a non-circular hole and if the image splits into separate independent parts when performing the section, then cuts should be used instead of the section. In contrast to the section section, only what is located directly in the secant plane is shown, everything that lies behind it is not depicted. Sections, depending on their location in the drawing, are divided into rendered and superimposed. The rendered sections are placed in a free place of the drawing field or in the gap of the image of the object. The superimposed sections are placed on the corresponding image of the object.

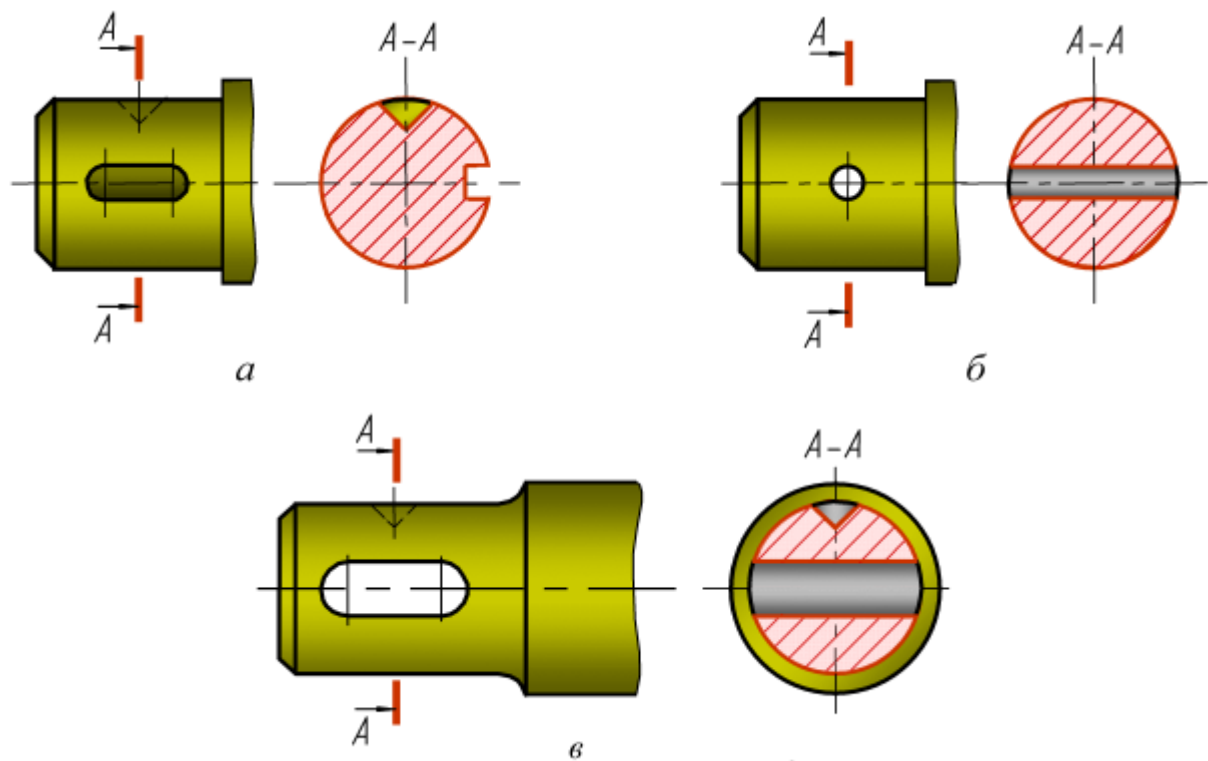


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Symmetrical superimposed sections and in the gap are not indicated by letters and arrows and the section line is not shown. If the axis of symmetry of the symmetrical rendered section coincides with the trace of the secant plane, then such a section is also not designated and is not signed.

The rendered sections are preferred. Their outline is drawn with solid thick lines. The contours of the superimposed sections are drawn with solid thin lines. For non-symmetrical sections located in a gap or superimposed, the position of the secant plane is indicated by the cross-section line with arrows, but is not indicated by letters. In all other cases of cross-sections, the position of the secant plane should be shown by the cross-section line with the arrows indicating the direction of view, and an inscription is made above the sections themselves.

When the secant plane coincides with the axis of the surface of rotation bounding the hole or recess, the contour of the hole or recess in the section is shown completely, although this contour is not located in the secant plane, i.e. the section is formed as a section. If the secant plane passes through non-circular holes and the section is obtained consisting of separate parts, then the section should be replaced by a section. The section can be rotated if necessary. In this case, after the letter designation, an icon is placed - a circle with an arrow.

Sections and designation rules in drawings

The rules for the image and designation of sections are established by the standard. Cross-section is an image of a figure obtained by mentally dissecting an object with one or more planes. The section shows only what is obtained directly in the secant plane. Depending on certain conditions, the sections are subdivided as shown. The rendered section. The rendered sections are preferred. The rendered sections are located outside the part image: 1) in the gap between the parts of the same image; 2) on the continuation of the trace of the secant plane; in the free space of the drawing field. In the gap between the parts of the image and on the continuation of the trace of the secant plane, it is recommended to place symmetrical sections, then they are not indicated. If the section is located on a free field of the drawing, then it is designated in the same way as sections are designated



For cross sections of all types, when the secant plane passes through the axis of rotation of cylindrical, conical, spherical recesses or through hardness, the contours of the recesses and holes must be drawn completely. The contour of the rendered section is always outlined with a solid thick line. For a number of identical sections related to the same part, the cross-section lines should be denoted by the same letter and one section should be drawn. If the cutting planes are directed at different angles, then the symbol is not applied. If the secant plane passes through a non-circular hole and the section turns out to consist of separate independent parts, then a section should be used instead of a section.

Superimposed section

The superimposed sections are drawn directly on the part image. Its contour is outlined with a solid thin line (S/2 – S/3). At the location of the superimposed section, the contour lines of the image of the detail are not interrupted. The superimposed section is not indicated if it is symmetrical. For non-symmetrical superimposed sections, the position of the secant plane and the direction of view are indicated. Superimposed sections are recommended to be used in cases where its contour is not intersected by any lines of the visible contour of the part.

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