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Technical drawings — Conventional representation of gears

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FOREWORD

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Technical drawings — Conventional representation of gears

1 SCOPE AND FIELD OF APPLICATION

This International Standard establishes the conventional representation of the toothed portion of gears including worm gearing and chain wheels. It is applicable to detail drawings and assembly drawings.

As a fundamental principle a gear is represented (except in axial section) as a solid part without teeth, but with the addition of the pitch surface in a thin long chain line.

NOTE — For uniformity all figures in this international Standard are in first angle projection (Method E). It should be understood that the third angle projection (Method A) could equally well have been used without prejudice to the principles established.

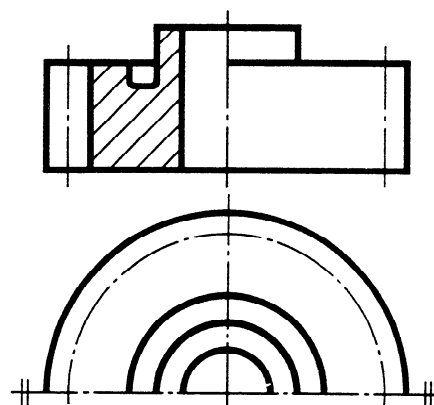


FIGURE 1

2 DETAIL DRAWINGS (INDIVIDUAL GEARS)

2.1 Contours and edges

Represent the contours and the edges of each gear (see Figures 1, 2 and 3), as if they were,

- in an unsectioned view, a solid gear bounded by the tip surface;
- in an axial section, a spur gear having two diametrically opposed teeth, represented unsectioned, even in the case of a gear that does not have spur teeth or that has an odd number of teeth.

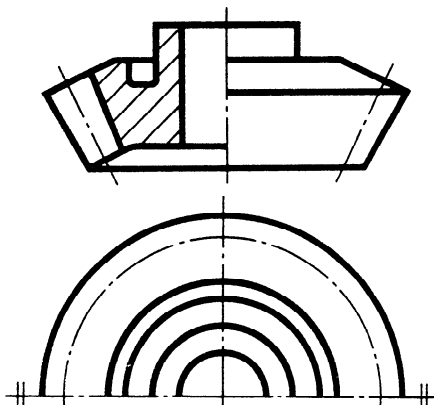


FIGURE 2

2.2 Pitch surface

Draw the pitch surface with a thin, long chain line, even in concealed portions and sectional views, and represent it,

- in a projection normal to the axis, by its pitch circle (external pitch circle in the case of a bevel gear and the median pitch circle in the case of a worm wheel) (see Figures 1, 2 and 3);
- in a projection parallel to the axis, by its apparent contour, extending the line beyond the gear contour on each side (see Figures 1, 2 and 3).

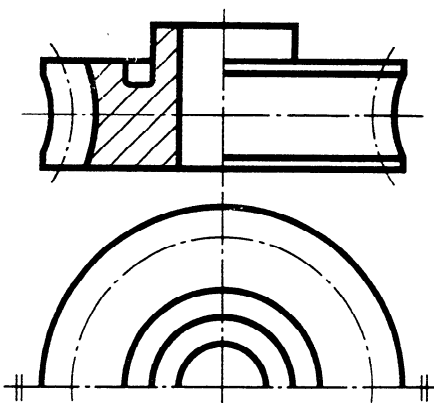


FIGURE 3

2.3 Root surface

As a general rule, do not represent the root surface except in sectional views.

However, if it seems helpful to show it also on unsectioned views, always draw it, in this case, as a thin continuous line (see Figures 4, 5 and 6).

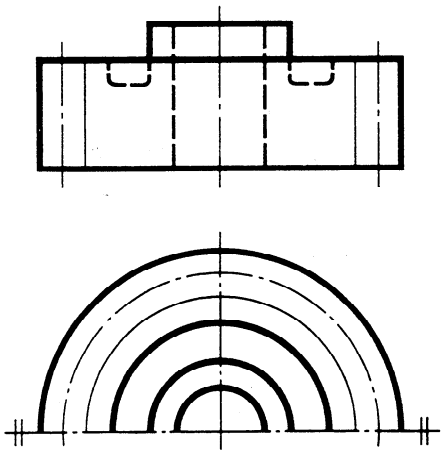


FIGURE 4

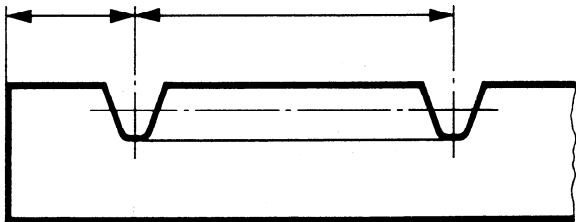


FIGURE 5

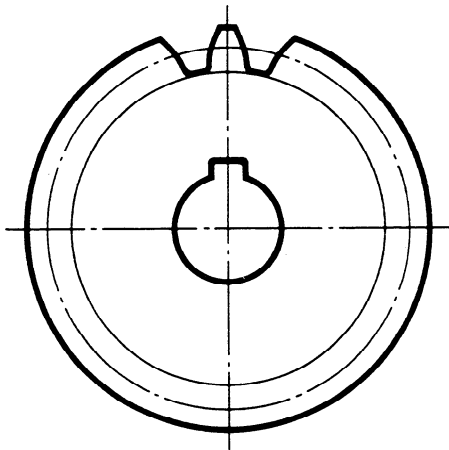


FIGURE 6

2.4 Teeth

Specify the teeth profile either by reference to a standard or by a drawing to a suitable scale.

If it is essential to show one or two teeth on the drawing itself (either to define the ends of a toothed portion or rack, or in order to specify the position of the teeth in relation to a given axial plane), draw them as thick continuous lines (see Figures 5 and 6).

It is necessary to indicate the direction of the teeth of a gear or rack on the view of the tooth surface in a projection parallel to the gear axes, three thin continuous lines of the corresponding form and direction should be shown (see Table and Figure 7).

TABLE

Tooth system	Symbol
Helical to the right	
Helical to the left	
Double helical	
Spiral	

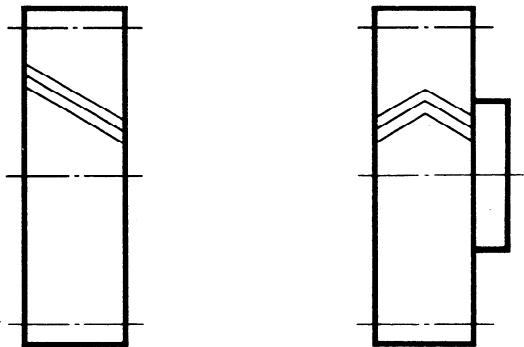


FIGURE 7

NOTE — If mating gears are represented, the direction of the teeth should be shown on one gear only.

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