

Revised

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 53

BASIC RACK OF CYLINDRICAL GEARS
FOR GENERAL ENGINEERING

1st EDITION

December 1957

COPYRIGHT RESERVED

The copyright of ISO Recommendations and ISO Standards belongs to ISO Member Bodies. Reproduction of these documents, in any country, may be authorized therefore only by the national standards organization of that country, being a member of ISO.

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 53, *Basic Rack of Cylindrical Gears for General Engineering*, was drawn up by the Technical Committee ISO/TC 60, *Gears*, the Secretariat of which is held by the Institut Belge de Normalisation (IBN).

A first draft proposal was drawn up at the first meeting of ISO/TC 60, held in Paris, in October 1950. This draft proposal was discussed by the Technical Committee in the two following meetings, held in London, in April 1952, and in Brussels, in December 1954. At this latter meeting, an amended text was unanimously adopted as a Draft ISO Recommendation.

On 16 December 1955, this Draft ISO Recommendation was circulated to all the ISO Member Bodies. The comments submitted during the enquiry were examined by the Technical Committee at its fourth meeting, held in Geneva, in September 1956, and it was decided to make certain editorial amendments to the Draft.

These amendments having been taken into account, the Draft ISO Recommendation was approved by the following 24 Member Bodies (out of a total of 37):

*Austria	Germany	Norway
Belgium	*Greece	Romania
Bulgaria	Hungary	Spain
Chile	India	Sweden
Czechoslovakia	*Israel	Switzerland
*Denmark	*Italy	Turkey
Finland	Japan	United Kingdom
France	Netherlands	U.S.S.R.

The revised Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in December 1957, to accept it as an ISO RECOMMENDATION.

* These Member Bodies stated that they had no objection to the Draft being approved.

BASIC RACK OF CYLINDRICAL GEARS FOR GENERAL ENGINEERING

DEFINITIONS

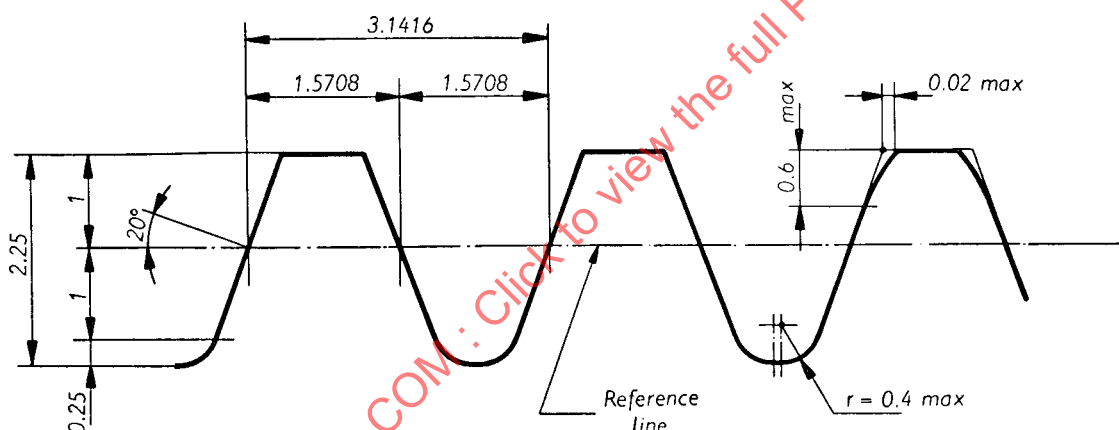
The *basic rack* is a section of the tooth surface of a gear of infinitely large diameter on a plane at right angles to the tooth surfaces, the profile of which is used as the basis of a system of cylindrical gears having either straight or helical teeth.

The *reference line* is a straight line on the profile of the basic rack, with reference to which the tooth dimensions are specified.

PROFILE OF THE BASIC RACK

The figure below represents the profile of the basic rack for gears of module $m = 1$ or of diametral pitch $P = 1$ for cylindrical gears for general engineering within the following limits*:

$$\begin{aligned} 1 &\leq m \leq 20 \\ 20 &\geq P \geq 1 \end{aligned}$$



NOTES

- The profile of the standard basic rack refers to cylindrical gears with involute teeth. It has substantially straight sides and the following characteristics:

pressure angle	20°
height of tooth	2.25 m (dimensions in millimetres)
or	$\frac{2.25}{P}$ (dimensions in inches)
- The tips of the teeth are at a distance from the reference line equal to the module and the thickness of the tooth measured on this line equals the width of the space.
- The value of the radius at the root of the tooth is normally fixed at 0.4 m maximum, keeping in mind that this radius must be as large as possible. In certain cases and as far as permitted by the conditions of meshing, this value may be exceeded up to a maximum of 0.45 m .
- When it is desired to effect relief to the profile, this relief is applied, in principle, to the tips of the teeth.

* See ISO Recommendation R 54, *Modules and Diametral Pitches of Cylindrical Gears for General Engineering*.