



JAPANESE
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STANDARD

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JIS B 1701-1 : 1999
(ISO/DIS 53 : 1996)

**Cylindrical gears for general
and heavy engineering
Part 1 : Standard basic rack
tooth profile**

ICS 21.200

Descriptors : gear drives, spur gears, racks (gears), tooth profiles

Reference number : JIS B 1701-1 : 1999 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of International Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law.

In the traditional Japanese Industrial Standard, the standard basic racks and modules have been prescribed in the same standard, on the other hand, in the International Standards these have been specified separately. Therefore, in order to conform with the International Standards, **JIS B 1701 : 1963** was withdrawn, and replaced with **JIS B 1701-1** *Cylindrical gears for general and heavy engineering—Part 1 : Standard basic rack tooth profile* and **JIS B 1701-2** *Cylindrical gears for general engineering and for heavy engineering—Part 2 : Modules*.

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Cylindrical gears for general and heavy engineering

Part 1 : Standard basic rack tooth profile

Introduction This Japanese Industrial Standard has been prepared based on **ISO/DIS 53** *Cylindrical gears for general and heavy engineering—Standard basic rack tooth profile* published in 1996 without modifying the technical contents.

1 Scope This Standard specifies the characteristics of the standard basic rack tooth profile for cylindrical involute gears (external or internal) for general and heavy engineering.

This Standard applies to the standardized modules specified in **JIS B 1701-2**.

The defined profile does not take into account the possible cut-off of the height of internal teeth. This height is to be calculated for each case.

The standard basic rack tooth profile defined in this Standard constitutes a geometrical reference for a system of involute gears in order to fix the sizes of their teeth. It does not constitute a definition of a cutter, but a cutter may be defined from this standard basic rack tooth profile in order to realize a conforming profile.

2 Normative reference The following standard contains provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent edition of the standard shall be applied.

JIS B 1701-2 : 1999 *Cylindrical gears for general engineering and for heavy engineering—Part 2 : Modules*

Remarks : Items cited from **ISO 54** : 1996 *Cylindrical gears for general engineering and for heavy engineering—Modules* are equivalent to the corresponding matters of the said standard.

3 Terms and definitions For the purposes of this Standard, the terms and definitions, symbols and units given in the following and table 1 apply.

3.1 standard basic rack tooth profile tooth profile normal section through the teeth of a basic rack which corresponds to an external gear with number of teeth $z = \infty$ and diameter $d = \infty$. The tooth of the standard basic rack tooth profile is bounded by the tip line at the top and by the parallel root line at the bottom. The fillet between the straight part of the profile and the root line is a circular arc with a radius equal to ρ_{fp} .

3.2 mating standard rack tooth profile rack tooth profile symmetrical to the standard basic rack tooth profile about the datum line P-P and displaced by half a pitch relative to it.