
**Calculation of load capacity of spur
and helical gears —**

**Part 6:
Calculation of service life under variable
load**

*Calcul de la capacité de charge des engrenages cylindriques
à dentures droite et hélicoïdale —*

Partie 6: Calcul de la durée de vie en service sous charge variable



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 6336-6 was prepared by Technical Committee ISO/TC 60, *Gears*, Subcommittee SC 2, *Gear capacity calculation*.

ISO 6336 consists of the following parts, under the general title *Calculation of load capacity of spur and helical gears*:

- *Part 1: Basic principles, introduction and general influence factors*
- *Part 2: Calculation of surface durability (pitting)*
- *Part 3: Calculation of tooth bending strength*
- *Part 5: Strength and quality of materials*
- *Part 6: Calculation of service life under variable load*

Calculation of load capacity of spur and helical gears —

Part 6:

Calculation of service life under variable load

1 Scope

This part of ISO 6336 specifies the information and standardized conditions necessary for the calculation of the service life (or safety factors for a required life) of gears subject to variable loading. While the method is presented in the context of ISO 6336 and calculation of the load capacity of spur and helical gears, it is equally applicable to other types of gear stress.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1122-1:1998, *Glossary of gear terms — Part 1: Geometrical definitions*

ISO 6336-1:2006, *Calculation of load capacity of spur and helical gears — Part 1: Basic principles, introduction and general influence factors*

ISO 6336-2:2006, *Calculation of load capacity of spur and helical gears — Part 2: Calculation of surface durability (pitting)*

ISO 6336-3:2006, *Calculation of load capacity of spur and helical gears — Part 3: Calculation of tooth bending strength*

3 Terms, definitions, symbols and abbreviated terms

For the purposes of this part of ISO 6336, the terms, definitions, symbols and abbreviated terms given in ISO 6336-1 and ISO 1122-1 apply.

4 General

4.1 Application factors

If no load spectra are available, application factors from experience with similar machines may be used, depending on the operating mode of the driving and driven machine instead of calculation of the service strength.

See Annex B for tables for K_A .

4.2 Determination of load and stress spectra

Variable loads resulting from a working process, starting process or from operation at or near a critical speed will cause varying stresses at the gear teeth of a drive system. The magnitude and frequency of these loads depend upon the driven machine(s), the driver(s) or motor(s) and the mass elastic properties of the system.