

INTERNATIONAL ISO  
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First edition  
2001-08-01

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## **Calculation of load capacity of bevel gears —**

### **Part 1: Introduction and general influence factors**

*Calcul de la capacité de charge des engrenages coniques —*

*Partie 1: Introduction et facteurs généraux d'influence*



Reference number  
ISO 10300-1:2001(E)

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Printed in Switzerland

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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 3.

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 part of ISO 10300 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 10300-1 was prepared by Technical Committee ISO/TC 60, *Gears*, Subcommittee SC 2, *Gear capacity calculation*.

ISO 10300 consists of the following parts, under the general title *Calculation of load capacity of bevel gears*:

- *Part 1: Introduction and general influence factors*
- *Part 2: Calculation of surface durability (pitting)*
- *Part 3: Calculation of tooth root strength*

Annex A forms an integral part of this part of ISO 10300. Annex B and annex C are for information only.

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## Introduction

Parts 1, 2 and 3 of ISO 10300, taken together with ISO 6336-5, are intended to establish general principles and procedures for the calculation of the load capacity of bevel gears. Moreover, ISO 10300 has been designed to facilitate the application of future knowledge and developments, as well as the exchange of information gained from experience.

Several methods for the calculation of load capacity and various factors are specified by ISO 10300, whose guidelines are complex, yet flexible. There could be differences of up to 20 % to 25 % between the results of calculations carried out using method B with method B1 and method B2 with method C. The combined use of methods B2 and C, considered the methods of greater simplification, provides a more conservative safety factor. Detailed or simplified methods can be included, as appropriate, in application standards derived from ISO 10300 in the fields of industrial and marine gears. However, it must be stressed that the methods' use for specific applications demands not only experience with combined calculation methods, but also a realistic and knowledgeable appraisal of all relevant considerations, as well as appropriate safety factors.

The more detailed calculation methods of ISO 10300 are intended for the recalculation of the load capacity limits of gears where all important data, such as existing gear sets and completed gear designs, is known. The approximate methods of ISO 10300 are to be used for preliminary estimates of gear capacity where the final details of the gear design are as yet unknown.

The procedures covered by ISO 10300 are based on both testing and theoretical studies. However, the results obtained from its rating calculations may not be in good agreement with certain, previously accepted, gear-calculation methods.

ISO 10300 provides methods by which different gear designs can be compared. It is not intended to ensure the performance of assembled gear-drive systems. Neither is it intended for use by the average engineer. Rather, it is aimed at the experienced gear designer capable of selecting reasonable values for the factors in these formulae, based on knowledge of similar designs and on awareness of the effects of the items discussed.