
INTERNATIONAL STANDARD



2768

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

● Permissible machining variations in dimensions without tolerance indication

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2768 was drawn up by Technical Committee ISO/TC 3, *Limits and fits*, and circulated to the Member Bodies in April 1972.

It has been approved by the Member Bodies of the following countries :

Austria	Ireland	Sweden
Belgium	Japan	Switzerland
Czechoslovakia	New Zealand	Thailand
Egypt, Arab Rep. of	Norway	Turkey
Finland	Poland	United Kingdom
France	Romania	U.S.A.
Germany	South Africa, Rep. of	U.S.S.R.
India	Spain	

The Member Body of the following country expressed disapproval of the document on technical grounds :

Canada

Permissible machining variations in dimensions without tolerance indication

1 SCOPE

This International Standard specifies the permissible machining variations in dimensions without tolerance indication.

2 FIELD OF APPLICATION

This International Standard applies only to the dimensions of mechanical parts that are machined, i.e. that are shaped by metal removal.

Similar, but possibly not identical, International Standards may subsequently be evolved for parts shaped by other processes such as, for example, cast parts, forged parts, sheet-iron parts, etc.

3 DIMENSIONS SAID TO BE "WITHOUT TOLERANCE INDICATION"

All dimensions inscribed on a drawing of a machined part should, in principle, be associated with tolerance data, which are normally indicated on the dimensioning line after the nominal dimension.

However, for parts of the drawing not constituting fits and without special accuracy requirements, the tolerance may simply be inscribed in a general note specifying at once the value of permissible variations for all corresponding dimensions (conventionally called "dimension without tolerance indication").

4 SELECTION OF THE VALUE OF PERMISSIBLE VARIATIONS

It is the responsibility of the design service to fix, in the best way, but as far as possible in accordance with the guidelines given below, the value of the permissible variations to be shown in the general note for the dimensions without tolerance indication.

4.1 Linear dimensions

The general note should preferably prescribe:

- 1) a permissible variation equal to $\pm \frac{IT}{2}$ of a grade of the ISO system of tolerances ($\pm \frac{IT 14}{2}$ for example), that is to say a permissible variation j_s for shafts and J_s for bores; the note may prescribe, in addition, the replacement of that permissible variation by **H** for bores and **h** for shafts;

- 2) or permissible variations of one of the three series given in table 1 (more widely rounded off than the corresponding ISO grades IT 12, 14 or 16 respectively); the note may prescribe, in addition, the replacement of those $\pm t/2$ values by $+t$ for bores or $-t$ for shafts.

In this case, it is recommended not to simply refer to the standard giving table 1, indicating the preferred series, but rather to reproduce, in the note, the prescribed numerical values taken from this table;

- 3) or even a single value, whatever the nominal dimension, if there is not too great a disproportion between the different dimensions without tolerance indication on the drawing ($\pm 0,4$ mm for example, as on the lathe spindle nose drawings of ISO/R 702).

4.2 Angular dimensions

The general note should preferably prescribe the permissible variations of table 2 in terms of the length of the shorter side of the angle concerned and expressed :

- either in degrees and minutes,
- or by conversion to a percentage (number of millimetres per 100 mm).

TABLE 1

Variations in millimetres

Nominal dimensions mm		0,5 to 3	over 3 to 6	over 6 to 30	over 30 to 120	over 120 to 315	over 315 to 1 000	over 1 000 to 2 000
Permissible variations	Fine series	± 0,05	± 0,05	± 0,1	± 0,15	± 0,2	± 0,3	± 0,5
	Medium series	± 0,1	± 0,1	± 0,2	± 0,3	± 0,5	± 0,8	± 1,2
	Coarse series		± 0,2	± 0,5	± 0,8	± 1,2	± 2	± 3

TABLE 2

Length of the shorter side mm		up to 10	over 10 to 50	over 50 to 120	over 120 to 400
Permissible variations	in degrees and minutes	± 1°	± 30'	± 20'	± 10'
	in millimetres per 100 mm	± 1,8	± 0,9	± 0,6	± 0,3

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