AS 1654.2—1995
ISO 286-2:1988

Australian Standard®

ISO system of limits and fits

Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts

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This Australian Standard was prepared by Committee ME/27, Engineering Tolerance Systems, Metrology and Surface Quality. It was approved on behalf of the Council of Standards Australia on 24 August 1995 and published on 5 December 1995.

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CSIRO—Division of Applied Physics
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PREFACE

This Standard was prepared by the Standards Australia Committee ME/27 on Engineering Tolerance Systems, Metrology and Surface Quality to supersede (in part) AS 1654—1974, *Limits and fits for engineering (metric units)*.

This Standard is Part 2 of a two-part series. Part 1 gives the bases of tolerances, deviations and fits.

The objective of this Standard is to provide engineers with a tabulation of the limit deviation for commonly used tolerance classes for holes and shafts calculated from the information given in AS 1654.1 for use in design offices and workshops.

This Standard is identical with and has been reproduced from ISO 286-2:1988, *ISO system of limits and fits*, Part 2: *Tables of standard tolerance grades and limit deviations for holes and shafts.*

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Reference to International Standard		*Australian Standard*	
ISO		AS	
286	ISO system of limits and fits	1654	ISO system of limits and fits
286-1	Part 1: Basis of tolerances, deviations and fits	1654.1	Part 1: Bases of tolerances, deviations and fits
1829	Selection of tolerance zones for general purposes	—	

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Originated as part of AS B132.1—1955 (being endorsement of BS 1916.1:1955 without amendment).
Previous edition AS 1654—1974.
Revised and redesignated in part as AS 1654.2—1995.

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AUSTRALIAN STANDARD

ISO system of limits and fits —

Part 2:
Tables of standard tolerance grades and limit deviations for holes and shafts

0 Introduction

The need for limits and fits for machined workpieces was brought about mainly by the inherent inaccuracy of manufacturing methods, coupled with the fact that "exactness" of size was found to be unnecessary for most workpieces. In order that function could be satisfied, it was found sufficient to manufacture a given workpiece so that its size lay within two permissible limits, i.e. a tolerance, this being the variation in size acceptable in manufacture.

Similarly, where a specific fit condition is required between mating workpieces, it is necessary to ascribe an allowance, either positive or negative, to the basic size to achieve the required clearance or interference, i.e. a "deviation".

With developments in industry and international trade, it became necessary to develop formal systems of limits and fits, firstly at the industrial level, then at the national level and later at the international level.

This International Standard therefore gives the internationally accepted system of limits and fits.

A general graphical representation of the relationship between the respective tolerance classes and their deviations is given in the annex.

1 Scope

This part of ISO 286 gives values of the limit deviations for commonly used tolerance classes (zones) for holes and shafts calculated from the information given in ISO 286. This part of ISO 286 covers values for the upper deviations ES (for holes) and es (for shafts), and the lower deviations EI (for holes) and ei (for shafts) (see figure 1).

NOTE — In the tables of limit deviations, the values for the upper deviation ES or es are shown above the values for the lower deviation EI or ei except for tolerance class JS and js which is symmetrical about the zero line.

2 Field of application

The ISO system of limits and fits provides a system of tolerances and deviations suitable for plain workpieces.

It should be noted that the general term "hole" or "shaft" used in this International Standard can be taken as referring to the space contained by (or containing) the two parallel faces (or tangent planes) of any workpiece, such as the width of a slot or the thickness of a key (see also ISO 286-1). Similarly, the term "commonly used holes and shafts" shall be interpreted as providing a very wide choice of limit deviations suitable for a wide variety of requirements.

For further information on terminology, symbols, bases of the system, etc., see ISO 286-1.

Notes on the presentation of tables 2 to 32 are given on page 7.

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