AS 1654—1974
UDC 621.753.2

Australian Standard 1654—1974

LIMITS AND FITS FOR ENGINEERING

METRIC UNITS

AS 1654
ISO system of limits and fits

AS 1654.1—1995
Bases of tolerances, deviations and fits (ISO 286-1:1988)
(In Professional Package 56A)
30pp *G*

Provides the bases for a system of tolerances and deviations suitable for plain workpieces, and fits between mating cylindrical features or fits between workpieces having features with parallel faces such as the fit between a key and a keyway. Annexes give the basic equations and rules for establishing the system, examples of the use of the system and equivalent terms used in the Standard in eight languages. Identical with and reproduced from ISO 286-1: 1988.

(ME/27): Supersedes AS 1654—1974 (in part) which is to be withdrawn: Publication date 1995-12-05.

AS 1654.2—1995
Tables of standard tolerance grades and limit deviations for holes and shafts (ISO 286-2:1988)
(In Professional Package 56A)
43pp *H*

Gives values of the limit deviations for commonly used tolerance class for holes and shafts calculated from the information given in AS 1654.1. Graphical representations of tolerance zones for holes and shafts are given in the Annex. Identical with and reproduced from ISO 286-2:1988.

(ME/27): Supersedes AS 1654—1974 (in part) which is to be withdrawn: Publication date 1995-12-05.

STANDARDS ASSOCIATION OF AUSTRALIA
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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Associated Chambers of Manufactures of Australia

Australian and New Zealand Railways Conferences

CSIRO, National Measurement Laboratory

Department of the Army

Department of Supply (Defence Standards Laboratories)

Department of Supply (Munitions and Aircraft Factories)

Electricity Supply Association of Australia

Federal Chamber of Automotive Industries

Metal Trades Industry Association of Australia

Society of Manufacturing Engineers

The Institution of Engineers, Australia

The Institution of Production Engineers

University of New South Wales

Weapons Research Establishment

This standard, prepared by Committee ME/27, Metrology, was approved on behalf of the Council of the Standards Association of Australia on 21 February 1974.

To keep abreast of progress in industry, Australian standards are regularly reviewed. Suggestions for improvements to published standards, addressed to the headquarters of the Association, are welcomed.

This standard was issued in draft form for public review as DR 73124.

AUSTRALIAN STANDARD

LIMITS AND FITS FOR ENGINEERING

(METRIC UNITS)

AS 1654—1974

First published 1974

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PREFACE

This standard was prepared by the subcommittee on limits and fits of the Association's Committee on Metrology. It supersedes the metric information in AS B132, Part 1 — 1955, Part 2 — 1955 and Part 3 — 1966, which are endorsements of British Standard 1916 — Part 1:1953, Part 2:1953 and Part 3:1963 respectively. Imperial unit limits and fits are the subject of Supplement No 1* to this standard, AS 1654.

This standard is based on ISO† Recommendation 286–1962, but differs considerably in style of presentation. It also differs from BS 4500:1969, ISO Limits and Fits, which superseded the metric tables in AS B132, Parts 1 and 3. These differences are summarized below:

Variations between ISO/R286 and AS B132.

(a) Extension of sizes below 1 mm for grades up to grade 13.

(b) Addition of finer grades 01 and 0 below grade 1.

(c) Addition of new deviations for shafts and holes, viz —

cd, CD, ef, EF, fg, FG: Up to 10 mm only, for fine mechanics and horology

j_s, J_S: To provide a complete range of symmetrical deviations for all diameters and all grades

za, ZA, zb, ZB, zc, ZC: For high interference fits.

(d) Amendment of some tolerances for fine grades and amendment of some deviations to relate existing values with those added in (c) above.

Variations between this standard and ISO/R286, AS B132 and BS 4500.

(a) In the calculation of limits, the maximum material condition (MMC) limit is always determined before the least material condition (LMC) limit, whereas in ISO/R 286 either MMC or LMC is first determined depending upon the sign of the fundamental deviation. (This rationalization facilitates comprehension of the system but requires additional tables.)

(b) The data in this standard is given in sections, each of which contains data of a particular category, as follows:

(i) Conventions and definitions.

(ii) Data which facilitates the understanding of the system, its conventions, its place in engineering and its relation to other standards.

(iii) Data necessary for the application of the system to general engineering.

(iv) Data for applications of special natures such as precision instruments, horological instruments, gauges and the like (grades 01 to 5 inclusive), and data for shapes and dimensions usually obtained without machining operations (grades 13 to 16 inclusive).

(c) This standard does not include deviations j and J.

(d) The arrangement of this standard facilitates the retrieval of information.

The ISO system of limits and fits provides data for a broad field of activities covering an extensive range of processes and products; therefore it contains a multiplicity of tolerance grades and deviations. This multiplicity makes difficult the selection for a particular application and, as a consequence, certain recommendations for the selection of classes of tolerances and fits are included in this standard. These recommendations are based on BS 4500 which in turn features a selection from ISO/R1829, Selection of Tolerance Zones for General Purposes.

This standard relates to the system which is the very basis of interchangeability and, together with gauging and measuring practices, constitutes a system that insures dimensional reliability of machines and structures.

Decimal comma. In accordance with the practice adopted in AS 1100, Engineering Drawing Practice, the decimal comma is used in this standard. It is now used in all ISO standards in the English language and the Metric Conversion Board recognize its use in situations where ambiguity does not arise.

NOTE: In order to minimize the risk of error in the printed tables, the original computer print-outs were used wherever practicable. In some cases there may be minor discrepancies in alignment but these will not interfere with normal use of the tables.

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* In course of preparation. When Supplement No 1 is published AS B132, Parts 1, 2 and 3, will be withdrawn.

† International Organization for Standardization.

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