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CIRCULAR MACHINE SCREWING DIES, CIRCULAR HAND SCREWING DIES AND HEXAGON DIE-NUTS

Part 1—GENERAL PURPOSE METRIC SCREW THREADS

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DIE, RETHREADING AND DIE THREAD CUTTING
(Circular Machine Screwing Dies, Hand Screwing Dies
and Hexagon Die-nuts); NSC 5136]

The following scientific, industrial and governmental organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

CSIRO, Division of Materials Science

CSIRO, National Measurement Laboratory

Confederation of Australian Industry

Department of Defence

Department of Productivity

Department of Technical and Further Education

Electricity Supply Association of Australia

Fasteners Institute of Australia

Institution of Engineers, Australia

Institution of Production Engineers

Metal Trades Industry Association of Australia

Railways of Australia Committee

Telecom Australia

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Part 1—GENERAL PURPOSE METRIC SCREW THREADS

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PREFACE

This standard was prepared by the Association's Committee on Screw Threads. With AS 1364, Parts 2 and 3 it supersedes AS B96, Circular Screwing Dies and Hexagon Die-nuts, which was the endorsement of BS 1127:1950.

The need for a standard has arisen primarily because Australia has adopted the metric system of units (SI), but it is equally important that Australian practice be aligned with current world practice as given in ISO standards.

AS 1364 covers circular machine screwing dies, circular hand screwing dies, and hexagon die-nuts as follows:

Part 1—General Purpose Metric Screw Threads

Part 2—Pipe Threads of Whitworth Form

Part 3—Inch Screw Threads

This standard sets out the requirements of circular machine screwing dies, circular hand screwing dies, and hexagon die-nuts for cutting parallel screw threads in accordance with AS 1721, General Purpose Metric Screw Threads, and AS 1275, Metric Screw Threads for Fasteners (Based on ISO Recommendations). The general dimensions of circular machine screwing dies are the same as those given in ISO 2568, Hand and Machine-operated Circular Screwing Dies and Hand-operated Die Stocks. With respect to circular hand screwing dies, however, the committee noted that the ISO system would require a larger number of dies to cover a given range of screw thread diameters than is currently needed for inch series threads, and hence would require a larger number of die stocks. There is also no necessity for interchangeability in related die heads as is the case for circular machine screwing dies. This, together with the fact that there are a significant number of inch-based die stocks used throughout the country generally, led the committee to base the general dimensions for such dies on current practices soft-converted into metric units.

There are no ISO standards giving general dimensions for hexagon die-nuts, although some work is being done by ISO/TC29/SC4, Screwing Taps and Dies. It would appear that no agreement will be forthcoming in the near future, and therefore the general dimensions given in this standard have been developed by the committee and are based on ISO 272, Hexagon Bolts and Nuts—Widths Across Flats Heights of Heads, Thicknesses of Nuts—Metric Series, which gives the hexagon sizes for metric fasteners. It is intended that the proposed series be forwarded to ISO/TC 29/SC 4 as an Australian proposal. An an interim measure until stocks of hexagon metric die-nuts become available, the dimensions of inch-based hexagon soft-coverted into metric units are given in an appendix. It is intended to withdraw this material when appropriate.

The standard also sets out material and performance requirements which are not given in the ISO standards, and includes a method of test based on the ability of the nut to cut a screw thread of a given tolerance class.

This standard requires reference to the following standards:

AS 1017	Gauging of Metric Screw Threads
AS 1275	Metric Screw Threads for Fasteners (Based on ISO Recommendations)
AS 1442	Carbon Steels and Carbon-manganese Steels—Hot-rolled Bars and Semi-finished Products
AS 1654	Limits and Fits for Engineering
AS 1721	General Purpose Metric Screw Threads.

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PART 1—GENERAL PURPOSE METRIC SCREW THREADS

SECTION 1. SCOPE AND GENERAL REQUIREMENTS

1.1 SCOPE. This standard specifies requirements for screwing dies and die-nuts for cutting coarse pitch metric screw threads in accordance with AS 1275, and coarse and fine pitch metric screw threads in accordance with AS 1721, in sizes up to and including M64 for circular machine screwing dies, up to and including M24 for circular hand screwing dies and up to and including M52 for hexagon die-nuts.

Appendix A gives the basis of the general dimensions and tolerances for circular machine screwing dies for screw threads up to and including M71 diameter, to enable the manufacture of screwing dies outside the dimensional range of the standard and also to provide for other diameter/pitch combinations.

NOTES:

1. To ensure interchangeability of circular machine screwing dies in related die heads, the external dimensions of circular machine screwing dies for inch screw threads given in AS 1364, Part 3 are the same as those specified for metric threads in this standard.
2. During the transition period to the ISO metric hexagon series, hexagon die-nuts may be supplied with general dimensions in accordance with Appendix B which represents current practices soft-converted into metric units. If the purchaser specifically requires die-nuts with ISO metric hexagons as given in Tables 4.1 and 4.2, he should indicate this in his enquiry or order.

1.2 APPLICATION. The dies and die-nuts shall comply with the relevant requirements of this Section and with the requirements of the following Sections, as appropriate:

(a) Section 2—circular machine screwing dies for screw threads up to and including M64 diameter.

(b) Section 3—circular hand screwing dies for screw threads up to and including M24 diameter.

(c) Section 4—hexagon die-nuts for screw threads up to and including M52 diameter.

1.3 DEFINITIONS. For the purposes of this standard, the following definitions apply.

NOTE: For the nomenclature of circular screwing dies, see Fig. 1.1.

1.3.1 Screwing die—a multiple-edged tool used for cutting an external screw thread.

1.3.2 Circular machine screwing die—a screwing die that is cylindrical in form and without provision for the adjustment of the cutting size. These dies are intended for use with die heads in machine-screwing operations.

1.3.3 Circular hand screwing dies—a screwing die that is cylindrical in form and has a slit between the outside diameter and a chip clearance hole for the purpose of adjusting the cutting size. These dies are intended for use in die stocks in hand-screwing operations.

1.3.4 Hexagon die-nut—a screwing die that has an external hexagon drive. These dies are intended for use in hand-screwing operations to re-form damaged existing threads.

1.3.5 Chamfer lead—a tapered truncation and relieving of the first few threads to form a bevelled cutting edge.

1.4 MARKING. Screwing dies shall be legibly marked on the face with the following particulars:

(i) Thread designation.

NOTE: Coarse pitch metric screw thread series are normally designated by the nominal diameter only, e.g. M6; however, the pitch may also be included. The designation for other than coarse pitch threads is to include the pitch of the screw thread, e.g. M6 × 0.75.

(ii) For screwing dies manufactured from high speed steel, the letters HSS.

(iii) For screwing dies with a left-hand thread, the letters LH.

(iv) In addition the packages of screwing dies may also be marked with the number of this Australian standard, i.e. AS 1364, Part 1 (see Note).

Example. A screwing die for a 6 mm coarse pitch screw thread manufactured from high speed steel, would he marked—

M6 — HSS

or may be marked—

M6 × 1 — HSS

NOTE: Warning is given that the presence of the Australian standard number, AS 1364.1, on a screwing die, its packaging or literature related thereto could be taken as a claim by the manufacturer that the screwing die so marked complies in all respects with this standard.

Attention is particularly drawn, however, to the scheme for independent assurance of compliance with this standard provided by the AS Mark which is a registered certification trademark owned by the Standards Association of Australia. This is shown below enclosed in the words 'Approved to Australian Standard 1364.1'.

This mark can be used only by manufacturers licensed under the certification mark scheme operated by the SAA, and only when accompanied by the number of the relevant Australian standard.

The presence of this mark on or in relation to a product is an assurance that the goods have been produced to comply with the requirements of the Australian standard under a system of supervision, control and testing applied during manufacture and including periodical inspections at the manufacturer's works in accordance with the certification mark scheme of the SAA.