AS 1984—1977

Australian Standard®

Vernier callipers (metric series)

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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

Department of Defence

Department of Industry and Commerce

Federal Chamber of Automotive Industries

Institution of Engineers, Australia

Institution of Production Engineers

Metal Trades Industry Association of Australia

National Measurement Laboratory

Queensland Institute of Technology

Railways of Australia Committee

Society of Manufacturing Engineers

University of New South Wales

Weapons Research Establishment

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PREFACE

This standard was prepared by the Association's Committee on Metrology as part of its program of providing specifications for measuring equipment in metric units.

The present Australian standard for vernier callipers, AS B82—1952, covers both inch and metric units and is the endorsement of BS 887:1950. However, the design of vernier callipers specified in that standard was essentially based on imperial units, and the corresponding metric units were given as supplementary information only. This new standard, therefore, supersedes the metric information given in AS B82.

The International Organization for Standardization (ISO) has published International Standard ISO 3599, Vernier Callipers Reading to 0,1 and 0,05 mm, and is currently finalizing draft proposal for vernier callipers reading to 0,02 mm. However, it is generally considered that greater accuracy will not be obtained by using vernier callipers reading to 0,02 mm unless they are frequently checked and readings are taken with great care.

This standard is in complete technical agreement with the ISO documents referred to above although the following requirements are additional to those of the ISO documents:

(a) Mandatory provision for the fine adjustment of the sliding jaw for callipers reading to 0,02 mm.

(b) Limitations on the departure from straightness of the principal guiding face of the beam.

(c) Limitations on the departure from flatness of the beam.

(d) Minimum hardness requirements for the beam.

(e) The restriction to 0-300 mm of the range of measurement for callipers reading to 0,02 mm.

During the preparation of this standard the committee considered the inclusion of dial callipers which have become popular in recent years. It was noted, however, that although these instruments may have some uses in certain applications, they were prone to random errors, largely owing to the entry of dirt and other foreign bodies, and for this reason were considered unsuitable for inclusion in the Australian standard.

In accordance with the practice adopted in AS 1100, Drawing Practice, the decimal comma has been used in this standard.

This standard may require reference to AS Z23, Glossary of Terms Relating to the Performance of Measuring Instruments.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard Specification

for

VERNIER CALLIPERS (METRIC SERIES)

SECTION 1. SCOPE AND GENERAL REQUIREMENTS

1.1 SCOPE. This standard specifies requirements for vernier callipers reading to 0,1 (1/10), 0,05 (1/20), and 0,02 (1/50) mm, and having measuring ranges as given in Table 1.

Requirements for materials and properties, basic design, accuracy and finish are also specified.

NOTE: Notes on methods for testing the more important features of vernier callipers are given in Appendix A. These notes are for guidance only and do not purport to be either recommended or mandatory methods of test.

Although dial callipers are not specified in this standard (see Preface), they should comply with all relevant requirements except those for the read-out and indicating mechanism.

1.2 NOMENCLATURE. The terms relating to the more important features of vernier callipers are given in Figs 1 and 2.

1.3 DEFINITIONS. For the purpose of this standard, the following definitions apply. For further definitions refer to AS Z23.*

Instrument range—the distance that the jaws may be separated without the vernier scale projecting beyond the main scale and without the slider or the fine adjustment member, if fitted, projecting beyond the end of the beam.

Indication error—the difference between the actual distance separating the two measuring jaws and the reading on the instrument.

1.4 STANDARD SIZES. Vernier callipers with the ranges of measurement given in Table 1 constitute the standard sizes covered by this standard. These are the sizes most commonly available and are consistent with the measuring accuracies obtainable in the use of the instruments.

* AS Z23, Glossary of Terms Relating to the Performance of Measuring Instruments.