AS 2103—1978

Australian Standard®

Dial gauges and dial test indicators (metric series)

[Title Allocated by Defence Cataloguing Authority:
INDICATOR DIAL (METRIC SERIES), . . . NSC 5210]

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

Confederation of Australian Industry
Department of Defence
Department of Productivity
Federal Chamber of Automotive Industries
Institution of Engineers, Australia
Institution of Production Engineers
Metal Trades Industry Association of Australia
National Measurement Laboratory
Railways of Australia Committee
Society of Manufacturing Engineers
Universities and Institutes of Technology

This standard, prepared by Committee ME/27, Metrology, was approved on behalf of the Council of the Standards Association of Australia on 1 June 1978, and was published on 1 July 1978.

This standard was issued in draft form for public review as DR 77078.

Australian Standard®

Dial gauges and dial test indicators (metric series)

First published 1978

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 1499 X

PREFACE

This standard was prepared by the Association's Committee on Metrology as part of its program to provide standards for a comprehensive range of measuring instruments, in the metric series. This standard supersedes both AS B80—1967, Dial Gauges for Linear Measurement, and AS B166—1962, Dial Test Indicators (Lever Type) for Linear Measurement, because those standards were essentially imperial-unit based and the metric information was only supplementary. Inch series dial gauges and dial test indicators are covered in Supplement No 1* to this standard.

In preparing this standard, the committee noted that, whereas the information herein was previously the subject of two standards, the requirements of those standards were more or less parallel and it was therefore considered practical to combine all the information in the one standard. This standard therefore contains all information relevant to dial gauges and lever type dial test indicators with mechanical magnification. It does not include comparators having electronic magnification with stylus attachments which can perform the same metrological tasks.

The committee fully took into account the requirements of ISO/R463, Dial Gauges Reading to 0.01 mm, 0.001 in and 0.0001 in, and also the draft ISO/TC 3/SC 3 N 12, Dial Test Indicators. In addition the following standards of other countries were considered:

JIS B7503	Dial Gauges Reading in 0.01 mm
JIS B7509	Dial Gauges Reading in 0.001 mm
DIN 878	Dial Gauges
BS 2795	Dial Test Indicators (Lever Type) for Linear Measurements Part 1—Metric Units
BS 907	Dial Gauges for Linear Measurement

The assistance received from these sources is acknowledged.

The requirements of this standard are compatible with those of ISO/R463 for the dimensions, design, materials and mechanical properties of dial gauges. The calibration accuracies of these instruments are also the same as those in ISO/R463, but this standard treats repeatability and discrimination as two separate metrological properties, whereas the clause dealing with repeatability in ISO/R463 (Clause 2.2.1) brings together, under a common accuracy requirement, two important and distinct metrological properties which had previously been covered separately in Australian standards.

The related ISO documentation for dial test indicators is still in its early formative stages and ISO/TC 3/SC 3 N 12 is the first ISO draft proposal for these instruments. The committee concluded that it could be unwise to base an Australian standard on these requirements and therefore took BS 2795, Part 1, as the basis for Section 3; hence the technical requirements are in complete agreement with that standard. These

---

* In course of preparation.

requirements are also in agreement with those in ISO/TC 3/SC 3 N 12 except that the accuracy and performance requirements are different both in principle and in detail.

This standard does not take into account dial gauges having a 'back plunger' movement. This type of gauge has previously been covered by Australian standards but experience has shown that the requirements for it are not always compatible with those for dial gauges that have the plunger movement parallel to the plane of the dial, and accordingly they have been deleted.

This standard may require reference to the following Australian standards:

AS 1004 Surface Plates (Metric Units)

AS 1721 General Purpose Metric Screw Threads

AS . . . . Glossary of Terms Used in Metrology*

---

* In course of preparation.

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard Specification for DIAL GAUGES AND DIAL TEST INDICATORS (METRIC SERIES)

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard applies to dial gauges and dial test indicators for linear measurement. It specifies requirements for the more important general dimensions, finish, accuracy, scale graduations, marking and packaging, together with certain design features necessary to ensure convenience in use and repeatability of readings.

Notes on methods of testing the more important features of dial gauges and dial test indicators are given in Appendices A and B, and notes on the care and use of these instruments are given in Appendix C.

1.2 APPLICATION. The instruments shall comply with the requirements of this Section 1 and with particular requirements of the following Sections, as appropriate:

Section 2—Dial Gauges

Section 3—Dial Test Indicators

1.3 NOMENCLATURE. For the purpose of this standard the nomenclature given in Figs 1.1 and 1.2 shall apply.

1.4 TERMS AND DEFINITIONS. For the purpose of this standard the following terms and definitions shall apply. For other terms and definitions reference should be made to AS . . . .*

1.4.1 Dial gauge—a measuring instrument in which the displacements of a plunger are transmitted by suitable mechanical means to a pointer which rotates in front of a circular dial graduated in equal divisions over the whole of its circumference. It may also be provided with a revolution counting device in which an auxiliary pointer rotates in front of a scale which indicates the total number of revolutions of the main pointer and also the linear displacement of the plunger.

1.4.2 Dial test indicator—a measuring instrument in which the displacements of a stylus lever are transmitted by a suitable mechanical means to a pointer which rotates in front of a circular dial graduated in equal divisions over the whole of its circumference. The stylus lever shall be capable of being displaced in either of two opposite directions.

1.4.3 Scale mark—one of the marks constituting the scale.

---

* AS . . . ., Glossary of Terms Used in Metrology (in course of preparation).