

Specification for

Dial gauges for linear measurement

Co-operating organizations

The Mechanical Engineering Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

- Associated Offices' Technical Committee
- Association of Consulting Engineers
- Association of Mining Electrical and Mechanical Engineers
- Board of Trade
- British Chemical Plant Manufacturers' Association
- British Compressed Air Society
- British Electrical and Allied Manufacturers' Association
- British Gear Manufacturers' Association
- British Internal Combustion Engine Manufacturers' Association
- British Iron and Steel Federation
- British Mechanical Engineering Federation
- British Railways Board
- Crown Agents for Oversea Governments and Administrations
- Electricity Council, The Generating Board and the Area Boards in England and Wales
- Engineering Equipment Users' Association
- Gas Council
- Institute of Marine Engineers
- Institution of Civil Engineers
- Institution of Gas Engineers
- Institution of Heating and Ventilating Engineers
- Institution of Mechanical Engineers
- Institution of Mechanical Engineers (Automobile Division)
- Institution of Production Engineers
- Locomotive and Allied Manufacturers' Association of Great Britain
- London Transport Board
- Machine Tool Trades Association
- Ministry of Defence, Army Department
- Ministry of Defence, Navy Department
- Ministry of Labour (H.M. Factory Inspectorate)
- Ministry of Power
- Ministry of Public Building and Works
- Ministry of Technology—National Engineering Laboratory
- Ministry of Transport
- National Coal Board
- National Physical Laboratory (Ministry of Technology)
- Radio Industry Council
- Royal Institute of British Architects

This British Standard, having been approved by the mechanical engineering industry standards committee and endorsed by the chairman of the engineering divisional council, was published under the authority, of the general council on 29th November, 1965.

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Foreword

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 9,000, fully indexed and with a note of the contents of each, will be found in the BSI Catalogue which may be purchased from BSI Sales Department. The Catalogue may be consulted in many public libraries and similar institutions.

This British Standard for dial gauges for linear measurement has been prepared under the authority of the Mechanical Engineering Industry Standards Committee. It forms one of a series of standards for engineers' precision measuring equipment originated by a request from the Institution of Production Engineers and prepared with the co-operation of manufacturers and in close collaboration with the National Physical Laboratory.

The standard was first issued in 1940 and when it was revised in 1954 provision for the back plunger type of dial gauge was incorporated. Subsequent experience has shown that requirements for this type of gauge cannot always be assimilated to those for dial gauges with the plunger movement parallel to the plane of the dial and it has accordingly been deleted from this edition.

Since the publication of the 1954 edition, an ISO Recommendation for dial gauges has been drafted and the Committee have taken note of its provisions in preparing this revision.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard relates to dial gauges with the plunger movement parallel to the plane of the dial.

It applies to gauges having dial diameters from $1\frac{7}{8}$ in to $2\frac{1}{2}$ in, as measured from the outside of the scale marks, and scale divisions of 0.001 in (sometimes sub-divided into half divisions of 0.0005 in, in which case they are commonly designated "0.0005 in gauges"), 0.0001 in or 0.01 mm.

Recommended dimensions for dial gauges are given in Appendix A (Figure 5) and notes on methods of testing and on the care and use of dial gauges are given in Appendices B and C respectively.

2 Nomenclature and definitions

For the purposes of this British Standard the nomenclature is as given in Figure 1 and the following definitions apply:

scale mark

one of the marks constituting a scale

minimum scale value

the smallest value of the measured quantity which the scale is graduated to indicate

scale division

a part of a scale delimited by two adjacent scale marks

discrimination

the sensitiveness of an instrument, the smallest change in the quantity measured which produces a perceptible movement of the pointer

repeatability

the reproducibility of the readings of an instrument when a series of tests is carried out in a short interval of time under fixed conditions of use

limits of error

the positive and/or negative values of the errors which must not be exceeded under test

3 General features of design

The general design and workmanship shall be such as to ensure that the performance of the gauge meets the requirements of this standard under all ordinary methods of operation. The mechanism shall incorporate some means to eliminate backlash.

The design and rigidity of the case shall be such that the freedom of movement of the mechanism is not impaired by the tightening of the screws used for attaching the back or by the clamping of the stem of the instrument, provided that such clamping is carried out in an appropriate manner (see Appendix C, "Clamping").

The dial cover (or crystal) shall be of durable material which will retain its transparency without undue discolouration and both dial and case shall be dust proof.

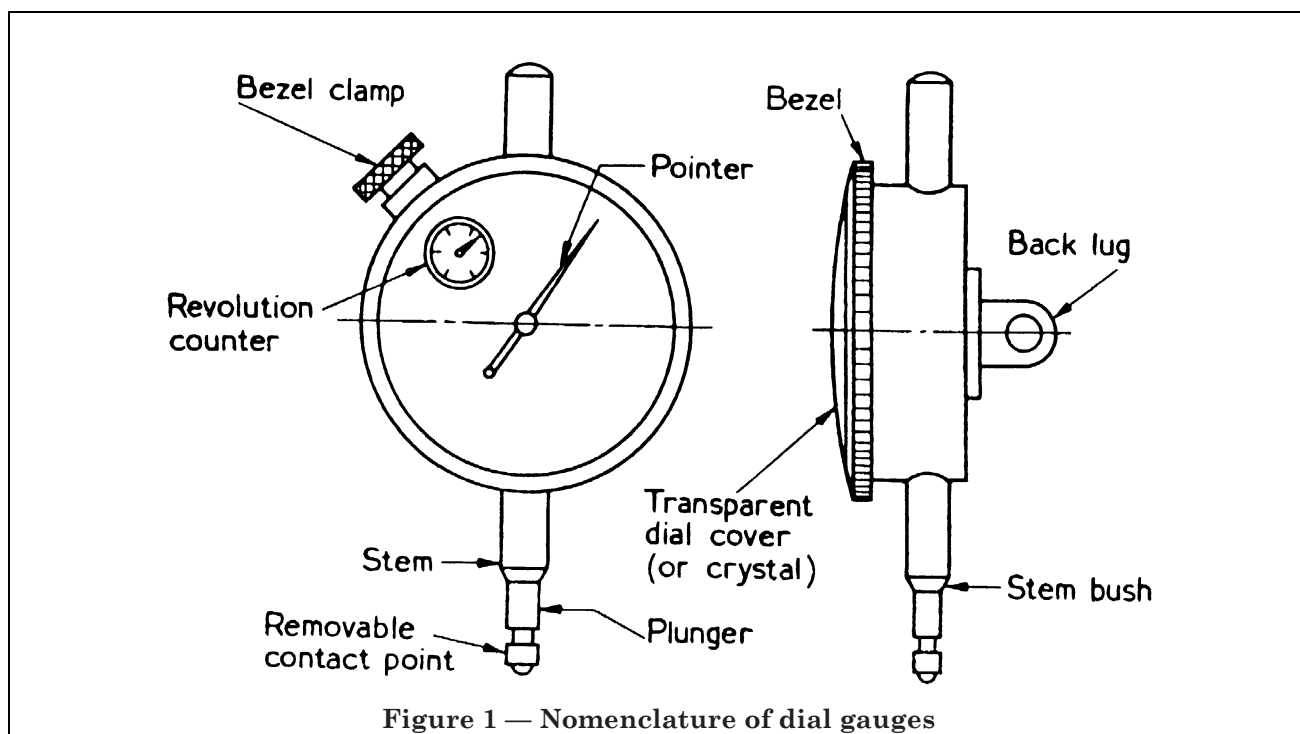


Figure 1 — Nomenclature of dial gauges