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Specification for

Indicating tachometer and speedometer systems for industrial, railway and marine use

Co-operating organizations

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

- British Calibration Service
- British Electrical and Allied Manufacturers' Association*
- British Industrial Measuring and Control Apparatus Manufacturers' Association
- British Mechanical Engineering Confederation
- British Nautical Instrument Trade Association
- British Railways Board*
- British Steel Industry
- Department of the Environment
- Electrical Research Association
- Electricity Council, the Generating Board and the Area Boards in England and Wales
- Electronic Engineering Association
- Engineering Equipment Users' Association
- Gauge and Tool Makers' Association
- Hevac Association
- Institute of Measurement and Control
- Institution of Chemical Engineers
- Institution of Electrical Engineers
- Institution of Heating and Ventilating Engineers
- Institution of Mechanical Engineers*
- Institution of Production Engineers
- Meteorological Office
- Ministry of Defence, Air Force Department
- Ministry of Defence, Army Department*
- Ministry of Defence, Navy Department
- National Coal Board
- National Physical Laboratory
- Oil Companies Materials Association
- Scientific Instrument Manufacturers' Association
- SIRA Institute*
- Water-tube Boilermakers' Association

The Government department and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

- British Internal Combustion Engine Manufacturers' Association
- London Transport Executive
- Ministry of Defence, (Navy)
- Society of Motor Manufacturers and Traders Limited

This British Standard, having been approved by the Instrument Industry Standards Committee, was published under the authority of the Executive Board on 7 April 1972

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Foreword

This standard makes reference to the following British Standards:

BS 229, *Flameproof enclosure of electrical apparatus*.

BS 1259, *Intrinsically safe electrical apparatus for use in explosive atmospheres*.

BS 1597, *Radio-interference suppression on marine installations*.

BS 1991, *Letter symbols, signs and abbreviations — Part 3: Fluid mechanics*.

BS 2011, *Methods for the environmental testing of electronic components and electronic equipment — Part 2: Tests — Part 2Da: Damp heat, cyclic — Part 2 Ka: Salt mist*.

BS 3693, *Recommendations for the design of scales and indexes*.

BS 3807, *Method for the type testing of enclosures for electrical apparatus for use in onerous dust conditions*.

CP 1006, *General aspects of radio interference suppression*.

This British Standard has been prepared under the authority of the Instrument Industry Standards Committee.

This second edition of the standard which originally dealt with indicating tachometers for general industrial use has been revised in order to cater for tachometer and speedometer systems for industrial, railway and marine applications.

This standard is not intended to cover digital tachometers, nor does it cover aircraft applications or speedometers for road vehicles. Speedometers for road vehicles are covered in BS 3190.

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, an inside back cover 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 General

1.1 Scope

This British Standard specifies requirements for indicating tachometer and speedometer systems with or without revolution counters for industrial, railway and marine application.

NOTE The titles of the British Standards referred to in this standard are listed on page ii

1.2 Accuracy classes

The three classes of accuracy specified in this standard are as follows:

Class index 0.75. System having a nominal accuracy of ± 0.75 % of maximum scale value (see 3.3.3).

Class index 1.5. System designed for general purposes, having a nominal accuracy of ± 1.5 % of maximum scale value (see 3.3.3).

Class index 3.0. System designed for general purposes, having a nominal accuracy of ± 3 % of maximum scale value (see 3.3.3).

All the requirements of this standard apply to Class 0.75, Class 1.5 and Class 3.0 instruments, except where a distinction between these three classes is made.

1.3 Definitions

For the purposes of this British Standard, the following definitions apply:

1.3.1

tachometer system

a means of measuring the rate of revolution of a rotating body. It may also, but not necessarily, detect the direction of rotation

1.3.2

speedometer system

a device for the measurement of distance travelled per unit time

1.3.3

mechanical tachometer

a tachometer in which the linkage between the rotating body and the measuring device is wholly mechanical

1.3.4

electrical/electronic tachometer

a tachometer in which the means of detection, transmission and measurement are partly electrical

1.3.5

magnetic tachometer

a mechanical or electrical tachometer in which the indicating component includes a driving link effected by interaction between a relatively rotating magnetic system and an induction cup or disc

1.3.6

electrical/electronic tachometer transmitter

a device which provides electrical signals from which the rate of revolution can be measured

1.3.7

electrical/electronic tachometer indicator

a device which accepts signals from the electrical tachometer transmitter with or without intermediate conversion and indicates visually the rate of revolution

1.3.8

index

the pointer or other means by which the measured quantity is indicated relative to the scale

1.3.9

scale

the array of marks together with any associated figuring from which the indicated quantity may be read

1.3.10

accuracy

the accuracy of a measuring instrument or of an accessory is defined by the limits of intrinsic error and the limits of variations due to influence quantities

1.3.11

accuracy class

a class of measuring instruments or accessories, the accuracy of all of which can be designated by the same number, if they comply with all the clauses of this standard

1.3.12

class index

the number which designates the accuracy class

NOTE 1 The class index is applicable to the variation as well as to the intrinsic error.

NOTE 2 Multi-range instruments may have more than one class index.

1.3.13

maximum scale value

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

NOTE 1 In multi-range instruments this definition is to be read as applying to the particular range which the instrument is set up to measure.

NOTE 2 In centre-zero or offset zero type instruments the maximum scale value is to be taken as the sum of the two end scale values.