

Australian Standard 2415—1980

CALIBRATION SYSTEM REQUIREMENTS



STANDARDS ASSOCIATION OF AUSTRALIA
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Australasian Institute of Metals
Australasian Institute of Mining and Metallurgy
Australian Institute of Management
Australian Organization for Quality Control
Bureau of Steel Manufacturers of Australia
CSIRO, Division of Applied Physics
Confederation of Australian Industry
Department of Defence
Department of Health
Department of Primary Industry
Department of Productivity
Institute of Quality Assurance
Institution of Production Engineers
Metal Trades Industry Association of Australia
National Association of Testing Authorities
Telecom Australia
University of New South Wales

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AUSTRALIAN STANDARD

CALIBRATION SYSTEM REQUIREMENTS

AS 2415—1980

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PREFACE

This standard was prepared by a special subcommittee for calibration systems on behalf of the Association's Committee on Quality Control, to satisfy a need for a national standard for use by Australian government and industry.

In the preparation of this standard, cognizance was taken of AQAP-6 Issue 2, NATO Calibration System Requirements for Industry; UK Ministry of Defence Standard DEF 05-26/Issue 2; and a draft revision of DEF(AUST) 3021 prepared by the Defence Standardization Committee under the authority of the Defence Industry Committee, Department of Defence. This standard is compatible with the U.S. Military Standard MIL-C-45662A, Calibration System Requirements.

For some time it has been recognized that there existed a need for an authoritative statement on the philosophy and practice of calibration of measuring instruments. There was a need for a nationally distributed document wherein the definitions and requirements of the calibration process were stated for the guidance of industry and the general user of measuring instruments.

It has been shown that, when better measurements are achieved, an improvement in output, better control of quality and cost optimization from both general industry and service industry can be obtained. The achievement of better measurements requires test instruments of higher accuracy than formerly needed and this in turn may require more frequent and rigorous calibration by appropriately skilled personnel. Accuracy should not be confused with precision. High accuracy cannot be expected unless measuring instruments have been calibrated. While precise values can be obtained from uncalibrated equipment of good design which is in sound condition, precise repetition of values can hide the fact that the instrument needs calibration or recalibration.

The purpose of calibration is to establish confidence in measurements. Errors in test and measuring instruments may result in defective or non-acceptable materials or products being marketed or purchased, or the rejection of acceptable materials or products. In a research and development environment the operation of a calibration system gives an assurance that important measurements in projects and investigations are not masked or invalidated by inaccuracies in test and measurement instruments.

Where required, calibrations may be performed in Australia by the Division of Applied Physics, CSIRO, or by a laboratory registered by the National Association of Testing Authorities, Australia (NATA).

This standard may require reference to the following:

Weights and Measure (National Standards) Act 1960-1966

AS 1514 Glossary of Terms Used in Metrology
Part 1—General Terms and Definitions

AS 1680 Code of Practice for Interior Lighting and the Visual Environment

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard for CALIBRATION SYSTEM REQUIREMENTS

FOREWORD

This standard sets out requirements for a calibration system which may have application in the following areas:

- (a) As part of a contractor's/supplier's quality control system.
- (b) As part of a testing or calibration organization.
- (c) As part of a purchaser's inwards material inspection system.
- (d) As part of a manufacturer's/distributor's repair/warranty facility.
- (e) As the calibration part of a repair facility of a service organization.
- (f) The calibration facility of a Statutory Authority.

Because of the range and variety in the examples quoted and to cover any other possible application of a calibration system, it is apparent that throughout this standard the names used for the parties concerned may not always be strictly correct. For convenience, the person or organization purporting to comply with this standard shall herein be called *the supplier*, and the other party shall be called *the customer* who may be represented by a *quality assurance representative*. In cases (d), (e) and (f) above, there may not be a particular customer, the 'supplier' being in the same situation as a manufacturer who offers a product or material purporting to be covered by an Australian standard and operating under the 'AS' Mark scheme.

In addition to setting out requirements for a calibration system, this standard provides an explanation of the rationale of each requirement and guidance on its implementation in the form of a commentary.

Where required, the standard may be used by the quality assurance representative of a customer or intending customer to assess the calibration system in use by a supplier. In addition to its other applications, this standard is intended to be a companion document to AS 1821-23.

SPECIFICATION

1 SCOPE. This standard establishes requirements for a calibration system to be designed, established and maintained for the purpose of ensuring that measuring instruments and measurement standards used in a specific measurement process or program are properly calibrated and thus serve to ensure that material and services conform to prescribed requirements.

Commentary: This clause covers the extent or range of the subject matter and delineates the functions that must be developed and put into continuing practice by the supplier to ensure that measuring instruments and standards are properly calibrated within the meaning of this standard.

2 APPLICATION. This standard shall apply when referenced in contracts and specifications which necessitate the use of test and measuring instruments and other equipment of which the accuracy is required to be known.

Commentary: This requirement states that compliance is mandatory when referenced in a contract or specification, but there is nothing to prevent a person or organization from voluntarily complying with its requirements as a

matter of sound practice. Further there is nothing in this requirement which would prevent the use of this standard as a guide to the evaluation of the potential of a prospective supplier prior to the award of a contract, and it is intended that it should be used in this way.

This requirement provides the authority that permits the representative of a customer to be satisfied with the effectiveness of the supplier's calibration system, in order that he may have confidence that the material or services will be in conformity with the requirements of a contract or specification.

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

NOTE: The definitions of principal terms listed in this standard are taken from AS 1514. Definitions of other terms used in this standard may also be found in AS 1514. The notes and examples to the definitions in this standard are not necessarily adopted from AS 1514.

3.1 True value—the value which characterizes a quantity perfectly defined.

NOTE: The true value of a quantity is an ideal concept and, in general, it cannot be known.