Australian Standard™

Calibration and classification of force-measuring systems

Standards Australia

This Australian Standard was prepared by Committee MT-006, Mechanical Testing of Metals. It was approved on behalf of the Council of Standards Australia on 30 September 2002 and published on 25 October 2002.

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Australian Aluminium Council

Australian Industry Group

Australasian Railway Association

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PREFACE

This Standard was prepared by the Standards Australia Committee MT-006, Mechanical Testing of Metals, to supersede AS 2193—1978, *Methods for calibration and grading of force-measuring systems of testing machines*.

The objective of this revision is to upgrade the requirements and procedures for the calibration and classification of force-measuring systems and working force standards.

A significant change to the Standard is the modification of the name from *Methods for calibration and grading of force-measuring systems of testing machines* to *Calibration and classification of force-measuring systems.* The methods set out in Section three of the superseded Standard have been used to calibrate and grade force-measuring systems or instruments (e.g. soil testing rings) which are not testing machines by definition. The name change reflects the application of this Standard to force measurement, generally, while still specifying appropriate procedures that apply to force-measuring systems whether or not they are an integral part of a testing machine.

Other significant changes have been made to align with recent International Standards, ISO 376:1999, and ISO 7500-1:1999. The most obvious change is the use of Class instead of Grade. There were two reasons for this. To adopt the internationally accepted terms Class and Classification and to discriminate between Grades/Classes allocated in accordance with the old and the new Standard. In Section 3, the addition of Class AA for force-measuring systems is included. Section 4 now includes a Class 0 and a Class 3 for working force standards. However, there are some procedural differences between the ISO Standard, and AS 2193. AS 2193 provides more guidance to the calibration procedures, particularly to the calculation of the uncertainties in accordance with the ISO GUM. The uncertainty evaluation of calibration results is necessary to fulfil the technical requirement for laboratory accreditation in Australia. In addition, the classification of testing machines in ISO 7500-1 does not cover 5% accuracy testing machines currently in use in Australia.

During the preparation of this edition, cognizance was taken of the following Standards:

ISO
376 Metallic materials—Calibration of force-proving instruments used for the verification of uniaxial testing machines

7500 Metallic materials—Verification of static uniaxial testing machines
7500-1 Part 1: Tension/compression testing machines—Verification and calibration of the force-measuring system

ASTM
E 74 Standard practice of calibration of working force standards for verifying the load indication of testing machines

AS ISO/IEC
17025 General requirements for the competence of testing and calibration laboratories

ISO
GUM Guide to the Expression of Uncertainty in Measurement

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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