INTERNATIONAL STANDARD

ISO 6789-1

First edition
2017-02

Assembly tools for screws and nuts — Hand torque tools —

Part 1: Requirements and methods for design conformance testing and quality conformance testing: minimum requirements for declaration of conformance

Outils de manoeuvre pour vis et écrous — Outils dynamométriques à commande manuelle —

Partie 1: Exigences et méthodes d'essai pour vérifier la conformité de conception et la conformité de qualité: exigences minimales pour déclaration de conformité

Reference number
ISO 6789-1:2017(E)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 10, *Assembly tools for screws and nuts, pliers and nippers*.

This first edition of ISO 6789-1, together with ISO 6789-2, cancels and replaces ISO 6789:2003 which has been technically revised with changes as follows.

a) ISO 6789:2003 has been divided into two parts. This document specifies the requirements for design and manufacture including the content of a declaration of conformance. ISO 6789-2 specifies the requirements for traceable certificates of calibration. It includes a method for calculation of uncertainties and provides a method for calibration of the torque measurement device used for calibrating hand torque tools.

b) The output drive designation of torque tools is expanded to include hexagonal and other output drives.

c) The definition of the torque range of the tools has been changed.

d) The rate of loading (shown by the time to achieve the last 20 %) has been changed.

e) The importance of avoiding parasitic forces has been emphasized.

f) Explanatory flowcharts for the measurement sequence of different torque tools have been added in Annex C.

g) The requirement for a "declaration of conformance" that the torque tool conforms with this document has been added.

h) The requirement for a "certificate of calibration" has been removed, recognizing that manufacturers' calibration certificates have not previously contained enough information to be traceable calibration certificates.

i) ISO 6789 has been editorially updated and restructured.

j) Figures B.2, B.3, B.5 and B.6 have been changed.

A list of all parts in the ISO 6789 series can be found on the ISO website.

Introduction

The revision of ISO 6789:2003 has been designed to achieve the following improvements.

ISO 6789 has been split to provide two levels of documentation. It recognizes the different needs of different users of the standard.

This document continues to provide designers and manufacturers with relevant minimum requirements for the development, production and documentation of hand torque tools.

ISO 6789-2 provides detailed methods for calculation of uncertainties and requirements for calibrations. This will allow users of calibration services to more easily compare the calibrations from different laboratories. Additionally, minimum requirements for the calibration of torque measurement devices are described in ISO 6789-2:2017, Annex C.

Assembly tools for screws and nuts — Hand torque tools —

Part 1: Requirements and methods for design conformance testing and quality conformance testing: minimum requirements for declaration of conformance

1 Scope

This document specifies the conformance testing and marking requirements for hand torque tools used for controlled tightening of screws and nuts. It also specifies the minimum requirements for declaration of conformance for hand torque tools.

This document applies to hand torque tools which are classified as indicating torque tools (Type I) and setting torque tools (Type II).

NOTE Hand torque tools covered by this document are those identified in ISO 1703:2005 by reference numbers 6 1 00 11 0, 6 1 00 11 1 and 6 1 00 12 0, 6 1 00 12 1 and 6 1 00 14 0, 6 1 00 15 0. ISO 1703 is currently under revision. In the next edition, torque tools will be moved to an own clause, and with this change the reference numbers will also change and additional reference numbers will be added.

This document does not specify requirements of calibration certificates for hand torque tools. These are described in ISO 6789-2.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1173, *Assembly tools for screws and nuts — Drive ends for hand- and machine-operated screwdriver bits and connecting parts — Dimensions, torque testing*

ISO 1174-1, *Assembly tools for screws and nuts — Driving squares — Part 1: Driving squares for hand socket tools*

ISO 6789-2:2017, *Assembly tools for screws and nuts — Hand torque tools — Part 2: Requirements for calibration and determination of measurement uncertainty*

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

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp