INTERNATIONAL STANDARD

ISO 10644

Second edition
2009-07-01

Screw and washer assemblies made of steel with plain washers — Washer hardness classes 200 HV and 300 HV

Vis en acier à rondelle plate incorporée — Rondelles de classes de dureté 200 HV et 300 HV

Reference number
ISO 10644:2009(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 10644 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 10, *Product standards for fasteners*.

This second edition cancels and replaces the first edition (ISO 10644:1998), which has been technically revised.

Screw and washer assemblies made of steel with plain washers — Washer hardness classes 200 HV and 300 HV

1 Scope

This International Standard specifies the requirements for metric screw and plain washer assemblies made of steel with coarse thread M2 to M12 inclusive, flat seating heads, property classes up to and including 10.9 and washer hardness classes 200 HV or 300 HV.

The plain washers are captive, i.e. prevented from disassembly and free to rotate.

NOTE The manufacturing of screw and washer assemblies takes into consideration material and production procedure of screw blank and washer as well as the assembly process of components, in order to meet specification requirements (see Annex A).

2 Normative references

The following referenced documents are indispensable for the application 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 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread*

ISO 1207, *Slotted cheese head screws — Product grade A*

ISO 1580, *Slotted pan head screws — Product grade A*

ISO 4014, *Hexagon head bolts — Product grades A and B*

ISO 4015, *Hexagon head bolts — Product grade B — Reduced shank (shank diameter approximately equal to pitch diameter)*

ISO 4017, *Hexagon head screws — Product grades A and B*

ISO 4042, *Fasteners — Electroplated coatings*

ISO 4762, *Hexagon socket head cap screws*

ISO 7045, *Pan head screws with type H or type Z cross recess — Product grade A*

ISO 9717, *Phosphate conversion coatings for metals — Method of specifying requirements*

ISO 10673, *Plain washers for screw and washer assemblies — Small, normal and large series — Product grade A*

ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coatings*

ISO 14579, *Hexalobular socket head cap screws*

ISO 14583, *Hexalobular socket pan head screws*

ISO 15071, *Hexagon bolts with flange — Small series — Product grade A*

ISO 15072, *Hexagon bolts with flange with metric fine pitch thread — Small series — Product grade A*

3 Dimensions

The dimensions of plain washers shall be in accordance with ISO 10673.

The dimensions of the assembled screws shall conform to those of loose parts, i.e. ISO 1207, ISO 1580, ISO 4014, ISO 4015, ISO 4017, ISO 4762, ISO 7045, ISO 14579, ISO 14583, ISO 15071, ISO 15072, with the following exceptions:

— Bolts and screws shall have a reduced shank of such diameter, d_s, that the washer with dimensions in accordance with ISO 10673 is free to rotate.

NOTE $d_s \approx$ pitch diameter.

— The maximum distance from the underside of the head to the commencement of full thread is increased by an amount necessary to accommodate the washer thickness for those products which are approximately threaded to the washer.

For examples of screw and washer assemblies, see Figures 1 and 2.

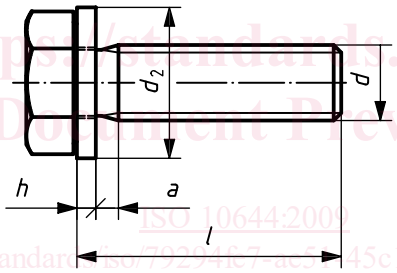

Figure 1 — Screw threaded up to the washer

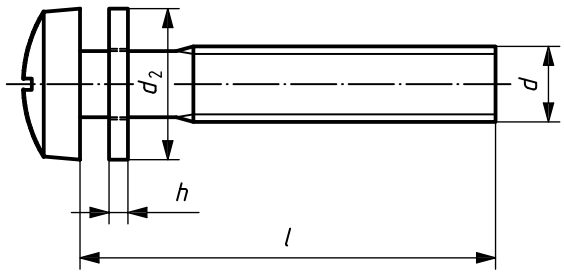

Figure 2 — Screw with shank

— The transition diameter, d_a, as specified in the reference International Standards (see Table 3) shall be reduced by an amount equivalent to the difference between the nominal diameter, d, and pitch diameter to create the transition diameter, d_{a1} (see Figure 3 and Table 1). The curvature under head, as specified in the ISO International Standards for loose parts, shall not be changed.