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**Fasteners — General requirements for  
bolts, screws, studs and nuts**

*Éléments de fixation — Exigences générales pour vis, goujons et écrous*

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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.

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 8992 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 7, *Reference standards for fasteners* (mainly covering terminology, dimensioning, sizes and tolerancing).

This second edition cancels and replaces the first edition (ISO 8992:1986), which has been technically revised.

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# Fasteners — General requirements for bolts, screws, studs and nuts

## 1 Scope

This International Standard specifies the general requirements for standardized bolts, screws, studs and nuts, but is also recommended for these non-standardized fasteners. It is intended to be used with reference to the related International Standards on tolerances, mechanical and performance characteristics, geometrical features, surface discontinuities, surface finishes and quality aspects.

## 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 272, *Fasteners — Hexagon products — Widths across flats*

ISO 885, *General purpose bolts and screws — Metric series — Radii under the head*

ISO 888, *Bolts, screws and studs — Nominal lengths, and thread lengths for general purpose bolts*

ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs*

ISO 898-2, *Mechanical properties of fasteners — Part 2: Nuts with specified proof load values — Coarse thread*

ISO 898-5, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 5: Set screws and similar threaded fasteners not under tensile stresses*

ISO 898-6, *Mechanical properties of fasteners — Part 6: Nuts with specified proof load values — Fine pitch thread*

ISO 898-7, *Mechanical properties of fasteners — Part 7: Torsional test and minimum torques for bolts and screws with nominal diameters 1 mm to 10 mm*

ISO 965-1, *ISO general-purpose metric screw threads — Tolerances — Part 1: Principles and basic data*

ISO 965-2, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose external and internal screw threads — Medium quality*

ISO 965-3, *ISO general purpose metric screw threads — Tolerances — Part 3: Deviations for constructional screw threads*

ISO 965-4, *ISO general purpose metric screw threads — Tolerances — Part 4: Limits of sizes for hot-dip galvanized external screw threads to mate with internal screw threads tapped with tolerance position H or G after galvanizing*

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ISO 965-5, *ISO general purpose metric screw threads — Tolerances — Part 5: Limits of sizes for internal screw threads to mate with hot-dip galvanized external screw threads with maximum size of tolerance position h before galvanizing*

ISO 1478, *Tapping screws thread*

ISO 2320, *Prevailing torque type steel hexagon nuts — Mechanical and performance properties*

ISO 2702, *Heat-treated steel tapping screws — Mechanical properties*

ISO 3269, *Fasteners — Acceptance inspection*

ISO 3506-1, *Mechanical properties of corrosion-resistant stainless-steel fasteners — Part 1: Bolts, screws and studs*

ISO 3506-2, *Mechanical properties of corrosion-resistant stainless-steel fasteners — Part 2: Nuts*

ISO 3506-3, *Mechanical properties of corrosion-resistant stainless-steel fasteners — Part 3: Set screws and similar fasteners not under tensile stress*

ISO 3506-4, *Mechanical properties of corrosion-resistant stainless-steel fasteners — Part 4: Tapping screws*

ISO 3508, *Thread run-outs for fasteners with thread in accordance with ISO 261 and ISO 262*

ISO 4042, *Fasteners — Electroplated coatings*

ISO 4753, *Fasteners — Ends of parts with external ISO metric thread*

ISO 4755, *Fasteners — Thread undercuts for external metric ISO threads*

ISO 4757, *Cross recesses for screws*

ISO 4759-1, *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C*

ISO 6157-1, *Fasteners — Surface discontinuities — Part 1: Bolts, screws and studs for general requirements*

ISO 6157-2, *Fasteners — Surface discontinuities — Part 2: Nuts*

ISO 6157-3, *Fasteners — Surface discontinuities — Part 3: Bolts, screws and studs for special requirements*

ISO 7085, *Mechanical and performance requirements of case hardened and tempered metric thread rolling screws*

ISO 7378, *Fasteners — Bolts, screws and studs — Split pin holes and wire holes*

ISO 7721, *Countersunk head screws — Head configuration and gauging*

ISO 8839, *Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals*

ISO 10664, *Hexalobular internal driving feature for bolts and screws*

ISO 10666, *Drilling screws with tapping screw thread — Mechanical and functional properties*

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

ISO 10684, *Fasteners — Hot-dip galvanized coatings*

ISO 16048, *Passivation of corrosion-resistant stainless-steel fasteners*

ISO 16426, *Fasteners — Quality assurance system*

### 3 Specifications and reference standards

See Tables 1 and 2.

**Table 1 — Fasteners with ISO metric screw threads**

| Material  | Carbon steel<br>Alloy steel  | Stainless steel                        | Non-ferrous metal |
|---|--|--|-------------------|
| <b>Tolerances</b>                                 | ISO 4759-1   |  |                   |
| <b>Mechanical and performance characteristics</b> | ISO 898-1<br>ISO 898-2<br>ISO 898-5<br>ISO 898-6<br>ISO 898-7<br>ISO 2320<br>ISO 7085  | ISO 3506-1<br>ISO 3506-2<br>ISO 3506-3 | ISO 8839          |
| <b>Geometrical features</b>                       | <ul style="list-style-type: none"> <li>— Thread: ISO 965-1, ISO 965-2, ISO 965-3, ISO 965-4, ISO 965-5</li> <li>— Driving features: ISO 272, ISO 4757, ISO 10664</li> <li>— Ends of parts: ISO 4753</li> <li>— Countersunk head: ISO 7721</li> <li>— Others: ISO 885, ISO 888, ISO 3508, ISO 4755, ISO 7378</li> </ul> |  |                   |
| <b>Surface discontinuities</b>                    | ISO 6157-1<br>ISO 6157-2<br>ISO 6157-3   | —                                      | —                 |
| <b>Surface finish</b>                             | ISO 4042<br>ISO 10683<br>ISO 10684   | ISO 16048                              | ISO 4042          |
| <b>Quality aspects</b>                            | ISO 3269, ISO 16426  |  |                   |

**Table 2 — Fasteners with tapping screw threads**

| Material  | Steel  | Stainless steel |
|---|--|-----------------|
| <b>Tolerances</b>                                 | ISO 4759-1   |                 |
| <b>Mechanical and performance characteristics</b> | ISO 2702<br>ISO 10666  | ISO 3506-4      |
| <b>Geometrical features</b>                       | <ul style="list-style-type: none"> <li>— Thread: ISO 1478</li> <li>— Driving features: ISO 4757, ISO 10664</li> <li>— Ends of parts: ISO 1478</li> <li>— Countersunk head: ISO 7721</li> </ul> |                 |
| <b>Surface finish</b>                             | ISO 4042<br>ISO 10683<br>ISO 10684   | ISO 16048       |
| <b>Quality aspects</b>                            | ISO 3269, ISO 16426  |                 |

## 4 General requirements

Standardized bolts, screws, studs and nuts are defined by the following elements:

- a) mechanical properties (property class, material);
- b) product grade (tolerances);
- c) standardized geometrical features (if any);
- d) surface coatings (if required);
- e) special requirements (if agreed).

All information relates to fully manufactured products. Specific manufacturing processes are not required, except where they have been laid down in the individual standards or have been agreed between customer and supplier.

The product shall have intact surfaces and edges and shall be free of burrs consistent with the manufacturing methods used. It is not generally required that small burrs due to operations such as slotting, or resulting from forging, pressing or trimming, be removed. Any burr which influences the performance of the product or would be a safety hazard when handled, however, shall be removed.

Trimming burrs beyond the bearing face of bolts and screws is not permissible.

Centre holes for bolts and screws are permissible, unless otherwise specified.

Unless a surface coating is agreed, the surface finish of the products shall be

- as processed for steel products, or
- plain for products made of stainless steel or non-ferrous metal.

Bolts, screws, studs and nuts shall be delivered in a clean condition and lightly oiled, if no other conditions have been agreed.