



SLOVENSKI STANDARD
oSIST prEN ISO 10642:2018
01-julij-2018

Vezni elementi - Vijaki z ugrezno glavo in notranjim šestkotnikom (imbus) z manjšo obremenljivostjo (ISO/DIS 10642:2018)

Fasteners - Hexagon socket countersunk head screws with reduced loadability (ISO/DIS 10642:2018)

Mechanische Verbindungselemente - Senkschrauben mit Innensechskant mit reduzierter Belastbarkeit (ISO/DIS 10642:2018)

Fixations - Vis à tête fraisée à six pans creux à capacité de charge réduite (ISO/DIS 10642:2018)

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Ta slovenski standard je istoveten z: prEN ISO 10642

ICS:

21.060.10 Sorniki, vijaki, stebelni vijaki Bolts, screws, studs

oSIST prEN ISO 10642:2018

en,fr,de

DRAFT INTERNATIONAL STANDARD

ISO/DIS 10642

ISO/TC 2/SC 11

Secretariat: DIN

Voting begins on:
2018-04-23Voting terminates on:
2018-07-16

Fasteners — Hexagon socket countersunk head screws with reduced loadability

Fixations — Vis à tête fraisée à six pans creux à capacité de charge réduite

ICS: 21.060.10

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ISO/CEN PARALLEL PROCESSING



Reference number
ISO/DIS 10642:2018(E)

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CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
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Published in Switzerland

Foreword

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ISO 10642 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 11, *Fasteners with metric external thread*, and by Technical Committee CEN/TC 185, *Fasteners* in collaboration.

This third edition cancels and replaces the second edition (ISO 10642:2004 including ISO 10642:2004/Amd.1:2012), which has been technically revised. The main changes compared to the previous version are as follows:

- the whole standard was improved to clearly point out that these hexagon socket countersunk head screws have reduced loadability because of their head design (head dimensions and penetration of the hexagon socket);
- the minimum tensile loads were recalculated by taking into account the most critical dimensions (in the worst dimensional conditions, the calculated values for proof loads fall below 80% of the minimum ultimate tensile load specified for full loadability in ISO 898-1 and ISO 3506-1); however, when these screws are not manufactured to minimum head dimensions in combination with a maximum penetration depth, tensile strength will be higher;
- detailed head configuration was added (see Figure 4);
- M2 and M2,5 were added, their minimum ultimate tensile loads for full loadability are not specified in ISO 898-1 and ISO 3506-1, but calculated with the same formulae accordingly (see Annex A);
- the reference threaded length b was increased to $3d$ for partially threaded screws M14 to M20, so that these screws can be tensile tested in accordance with ISO 3506-1 ($b \geq 3d$ is required to tensile test screws with reduced loadability);
- head height k_{\min} was added as reference dimension in Table 1;

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- the wall thickness between driving feature and bearing face w_{\min} was replaced by the depth of the internal driving feature t_{\max} (same method as for hexalobular internal drive);
- D_a , D_k and F were pointed out as gauge dimensions in Table 1 (see also Figure 5);
- the minimum nominal lengths of the standardised range were determined in accordance with footnote g of Table 1 and therefore the shorter lengths for M4 to M20 were deleted;
- the standard was editorially revised.

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Fasteners — Hexagon socket countersunk head screws with reduced loadability

1 Scope

This International Standard specifies the characteristics of hexagon socket countersunk head screws with reduced loadability due to head design, in steel and stainless steel, with metric coarse pitch threads M2 to M20, and with product grade A.

NOTE The reduced loadability (related to the countersunk head dimensions in combination with penetration of the hexagon socket specified in this standard) implies a limitation of ultimate tensile load, see Table 3.

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 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*

ISO 888, *Fasteners — Bolts, screws and studs — Nominal lengths and thread lengths*

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

ISO 3269, *Fasteners — Acceptance inspection*

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

ISO 4042, *Fasteners — Electroplated coatings*

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

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

ISO 8992, *Fasteners — General requirements for bolts, screws, studs and nuts*

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

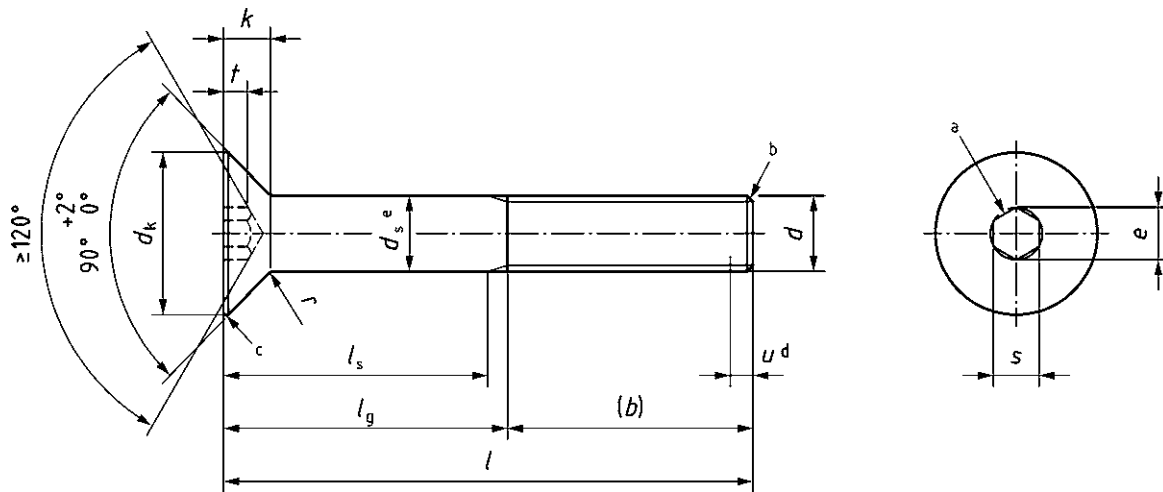
ISO 16048, *Passivation of corrosion-resistant stainless-steel fasteners*

3 Dimensions and gauging of head

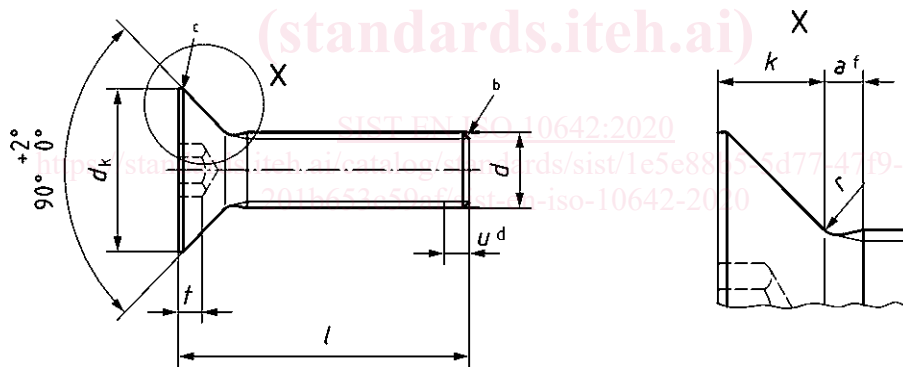
3.1 Dimensions

Dimensions shall be in accordance with Figures 1 to 4 and Table 1.

Symbols and descriptions of dimensions are defined in ISO 225.



a) Partially threaded screw



b) Screw threaded to the head

- a A slight rounding or countersink at the mouth of the socket is permissible.
- b In accordance with ISO 4753, chamfered end or, for sizes $\leq M4$, as-rolled end.
- c Edge of the head flat or rounded.
- d Incomplete thread $u \leq 2P$.
- e d_s applies when values for $l_{s,min}$ are specified in Table 1.
- f $a \leq 2P$.

Figure 1 — Hexagon socket countersunk head screws

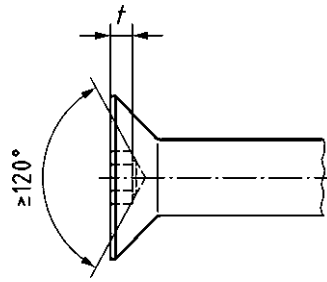


Figure 2 — Permissible alternative form of socket

For broached sockets which are at the maximum limit of size the overcut resulting from drilling shall not exceed 1/3 of the length of any flat of the socket which is $e/2$ (see Figure 3).

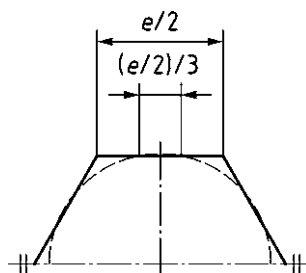


Figure 3 — Detail: Broached socket

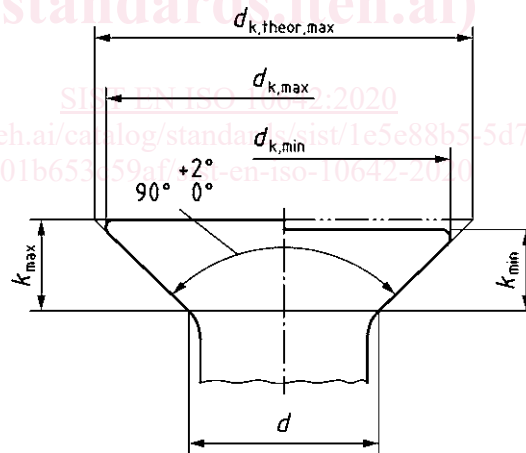
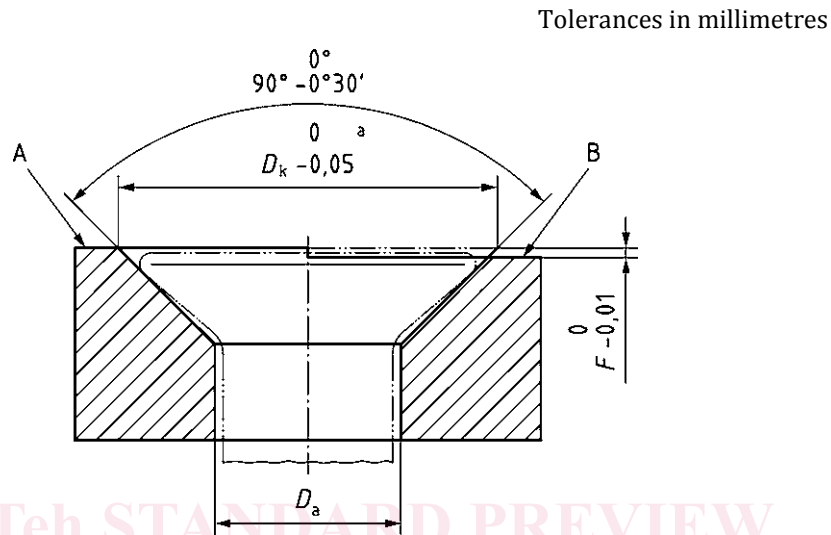


Figure 4 — Countersunk head configuration

3.2 Gauging of head

For gauging of the head and for dimensions of the gauge allowing the control of the head dimensions see Figure 5 and Table 1. The top surface of the screw shall be located between the gauge surfaces A and B.

NOTE For more information about calculation basis for gauge dimensions, see ISO 7721.



Key

D_a Gauge inner diameter related to the screw bearing surface

F flushness of the gauge

A gauge maximum condition

B gauge minimum condition

a $D_k = d_{k,theor,max}$ (see Table 1)

Figure 5 — Flushness gauge