



SLOVENSKI STANDARD
SIST EN 4014:2005

01-junij-2005

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SIST EN 4014:2004

Aerospace series - Inserts, thickwall, self-locking - Design standard

Aerospace series - Inserts, thickwall, self-locking - Design standard

Luft- und Raumfahrt - Gewindeeinsätze, dickwandig, Selbstsichernd - Konstruktionsnorm

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Série aérospatiale - Douilles filetées, a paroi renforcée, a freinage interne - Norme de conception

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Ta slovenski standard je istoveten z: EN 4014:2004

ICS:

49.030.30

Matice

Nuts

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 4014

November 2004

ICS 49.030.30

Supersedes EN 4014:2003

English version

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This European Standard was approved by CEN on 11 September 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 4014:2004) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

This document supersedes EN 4014:2003.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EN 4014:2004 (E)

1 Scope

This standard specifies the use and installation hole dimensions for EN standard, self-locking, thickwall inserts and provisions for component salvage, for aerospace applications.

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 5855-1, *Aerospace – MJ threads – Part 1: General requirements*

ISO 5855-2, *Aerospace – MJ threads – Part 2: Limit dimensions for bolts and nuts*

EN 3831, *Aerospace series – Inserts, thickwall, self-locking, MJ threads, in heat resisting steel FE-PM3801 (17-4PH), MoS₂ coated*

EN 4015, *Aerospace series – Inserts, thickwall, self-locking – Installation and removal procedure*

3 Design

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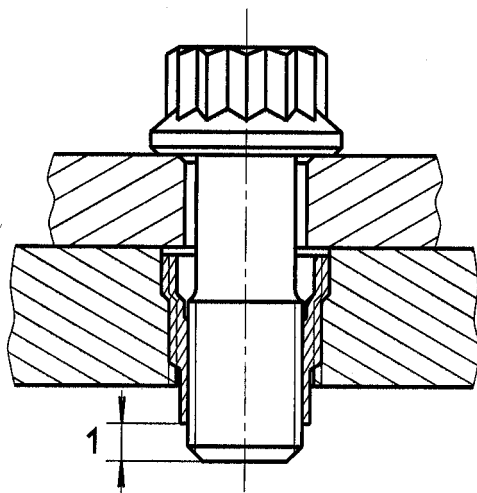
Typical examples of installed inserts are shown in Figures 1 and 2.

3.1 The thickwall self-locking screw thread inserts may be used in tapped blind holes and tapped through holes. The minimum flange thickness dimensions K given in Tables 3 and 4 are less than the insert lengths. When using these minimum flange thicknesses, protrusion of the inserts will occur (see Figure 5, footnote ^a). Designers must therefore ensure that the inserts do not protrude into an abutment face or foul any other adjacent features.

3.2 The installed insert is consistent with metric size bolt and MJ thread to ISO 5855-2.

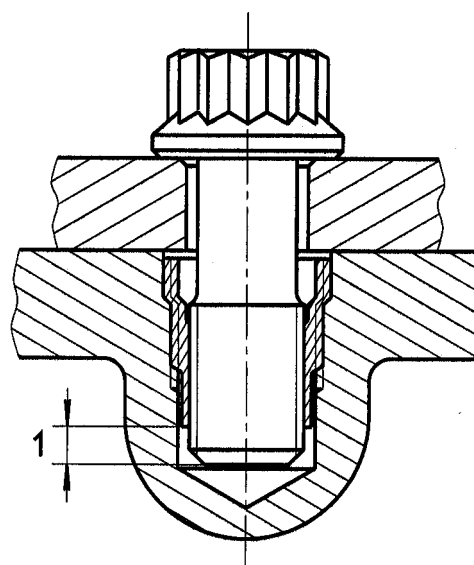
3.3 The minimum selected bolt length shall ensure full thread engagement with the insert (see Figures 1 and 2).

3.4 These screw thread inserts may be used in aluminium alloys and in harder materials, such as heat resisting steels and titanium alloys.

**Key**

1 1,5 pitches minimum

Figure 1

**Key**

1 1,5 pitches minimum

Figure 2

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4 Use**4.1 General**

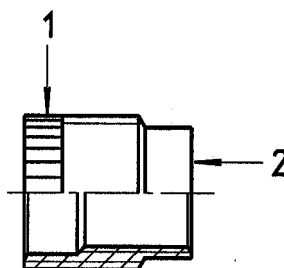
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A self-locking thickwall insert as shown in Figure 3 is a sleeve of metal which is threaded both internally and externally, with an externally serrated upper portion.

These inserts are screwed into tapped holes which contain counterbores (see 5.1) and are fixed by swaging the serrated portion into the counterbore of the component (see Figures 1 and 2) thus preventing the insert moving during the installation or removal of a bolt.

The self-locking zone of these inserts is positioned at the opposite side from the counterbored portion.

**Key**

- 1 knurled end to be swaged into the counterbore of the parent component
- 2 formed out-of-round to achieve self-locking feature

Figure 3

4.2 Performance

The thickwall inserts according to EN 3831 have a minimum performance of 25 re-uses at ambient temperature and five re-uses after 350 °C baking at the maximum operating temperature: 350 °C.

The self-locking torque values for the inserts are given in Table 1. These are the values required to achieve the minimum re-usability performance in accordance with the technical specification of the inserts.

Table 1

Bolt thread diameter	Self-locking torque	
	Nm	
	min.	max.
MJ5×0,8	0,25	2
MJ6×1	0,35	3,2
MJ7×1	0,5	4,6
MJ8×1	0,65	6
MJ10×1,25	1,2	9,5

4.3 Installation restrictions

In applications where it is necessary to pass items through the installed insert, care shall be taken to ensure that such items do not foul the locking feature of the insert. The maximum diameter X that can be passed through the insert is illustrated in Figure 4 and dimensions are given in Table 2.

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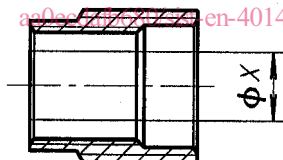


Figure 4

Table 2

Dimensions in millimetres

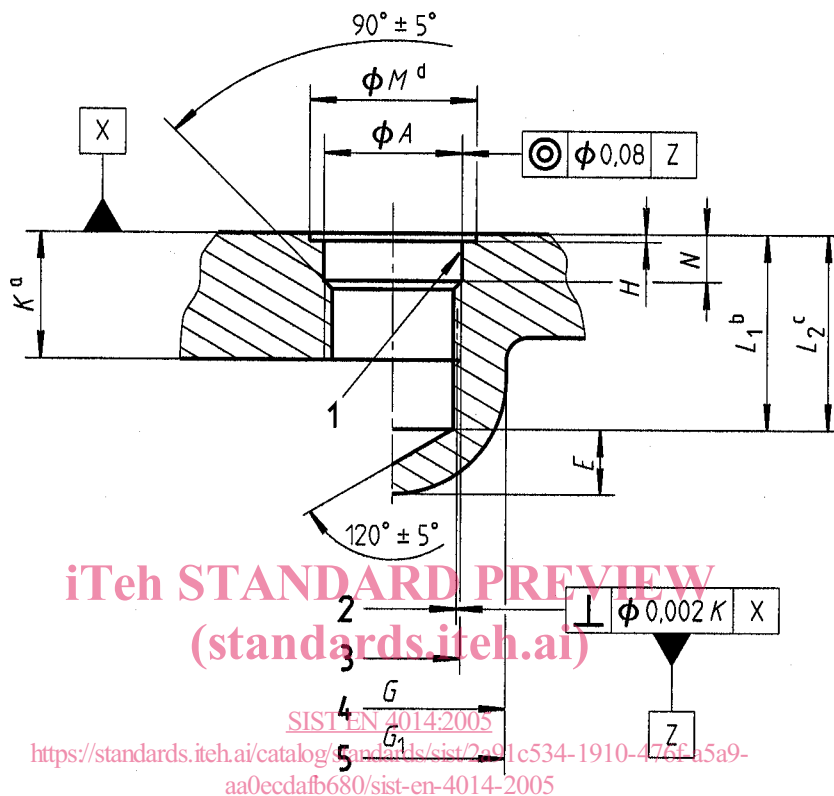
Internal thread size insert	Diameter X max.
MJ5×0,8	3,2
MJ6×1	3,7
MJ7×1	4,5
MJ8×1	5,3
MJ10×1,25	6,7

5 Required characteristics

5.1 Installation hole

See Figure 5 and Tables 3 and 4.

Dimensions in millimetres



Key

- 1 serration, see 5.2.
- 2 pitch diameter
- 3 thread
- 4 normal boss
- 5 salvage boss

^a K allows total installation of the threaded part of the insert with 0,5 underflush. The not threaded part of the insert may protrude.

^b L_1 min. = $K + 5$ pitches. Allows machine tapping, housing of the non threaded part and a 1,5 pitches protrusion of the bolt.

^c L_2 min. = Insert length max. + 0,5 (underflush) + 1,5 pitches

^d Spot facing of M is optional. It avoids swelling of the bearing face when installing in aluminium alloys and also when broaching the serrated counterbores in harder materials.

Figure 5

Table 3 — Normal size insert

Dimensions in millimetres

Diameter code	Bolt thread diameter ^a	Installation thread diameter ^b	A		E	G	G ₁ ^c	H +0,1 0	K	L ₁	L ₂	M +0,2 0	N +0,2 0
			max.	min.									
050-0	MJ5×0,8	MJ8×1-4H5H	8,1	8	3,8	14	17	0,2	6,5	11,5	10	10	3
060-0	MJ6×1	MJ9×1-4H5H	9,1	9	4	15	19		7,5	12,5	11,5	11	3,1
070-0	MJ7×1	MJ10×1-4H5H	10,1	10	4,4	17	21		9	14	13,5	12	3,4
080-0	MJ8×1	MJ11×1-4H5H	11,1	11	4,7	19	23		11,5	16,5	15,5	13	3,6
100-0	MJ10×1,25	MJS13×1-4H5H	13,1	13	5,3	22	27		14	19	19	15	4

^a According to ISO 5855-2

^b According to ISO 5855-1

^c Valid for repair size insert