BS EN 4163:2016

BSI Standards Publication

Aerospace series — Screws 100° countersunk normal head, offset cruciform recess, coarse tolerance normal shank, long thread, in alloy steel, cadmium plated — Classification: 1 100 MPa (at ambient temperature) / 235 °C

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National foreword

This British Standard is the UK implementation of EN 4163:2016. It supersedes BS EN 4163:2009 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ACE/12, Aerospace fasteners and fastening systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Published by BSI Standards Limited 2016

ISBN 978 0 580 90782 1

ICS 49.030.20

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 March 2016.

Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 4163

March 2016

ICS 49.030.20

Supersedes EN 4163:2009

English Version

Aerospace series - Screws 100° countersunk normal head, offset cruciform recess, coarse tolerance normal shank, long thread, in alloy steel, cadmium plated - Classification: 1 100 MPa (at ambient temperature) / 235 °C

Série aérospatiale - Vis à tête fraisée 100° normale, à empreinte cruciforme déportée, tige normale à tolérance large, filetage long, en acier allié, cadmiées - Classification: 1 100 MPa (à température ambiante) / 235 °C

Luft- und Raumfahrt - 100° Senkschrauben mit Flügelkreuzschlitz, langes Gewinde, aus legiertem Stahl, verkadmet - Klasse: 1 100 MPa (bei Raumtemperatur) / 235 °C

This European Standard was approved by CEN on 27 September 2015.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 4163:2016 E

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European Foreword

This document (EN 4163:2016) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-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 ASD, 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 September 2016, and conflicting national standards shall be withdrawn at the latest by September 2016.

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This document supersedes EN 4163:2009.

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1 Scope

This European Standard specifies the characteristics of screws, 100° countersunk normal head, offset cruciform recess, coarse tolerance normal shank, long thread, in alloy steel, cadmium plated.

Classification: 1 100 MPa[1)] / 235 °C[2)].

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2133, *Aerospace series — Cadmium plating of steels with specified tensile strength ≤ 1 450 MPa, copper, copper alloys and nickel alloys*

EN 2137, *Steel FE-PL75 — 1100 MPa ≤ R_m ≤ 1250 MPa — Bars D_e ≤ 100 mm*

EN 2424, *Aerospace series — Marking of aerospace products*

EN 2442, *Steel FE-PL711 — 1100 MPa ≤ R_m ≤ 1300 MPa — Bars and wires —D_e ≤ 25 mm*[3)]

EN 3514, *Steel FE-PL711 — Hardened and tempered — 1100 MPa ≤ R_m ≤ 1300 MPa — Bar and wire for bolts — D_e ≤ 25 mm*

EN 9100, *Quality Management Systems — Requirements for Aviation, Space and Defense Organizations*

EN 9133, *Aerospace series — Quality management systems — Qualification procedure for aerospace standard parts*

ISO 3353-1, *Aerospace — Lead and runout threads — Part 1: Rolled external threads*

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

ISO 7689, Aerospace — *Bolts, with MJ threads, made of alloy steel, strength class 1 100 MPa — Procurement specification*

ISO 7913, *Aerospace — Bolts and screws, metric — Tolerances of form and position*

ISO 14275, *Aerospace — Drives, internal, offset cruciform, ribbed — Metric series*

ISO 14276, *Aerospace — Drives, internal, offset cruciform — Metric series*

TR 3775, *Aerospace series — Bolts and pins — Materials*

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1) Minimum tensile strength of the material at ambient temperature.

2) Maximum temperature that the screw can withstand without continuous change in its original characteristics, after return to ambient temperature. The maximum temperature is determined by the surface treatment.

3) For new design, see EN 3514.

3 Required characteristics

3.1 Configuration – Dimensions – Masses

See Figure 1 and Table 1.

Dimensions and tolerances are expressed in millimetres and apply after surface treatment.

3.2 Tolerances of form and position

ISO 7913.

3.3 Materials

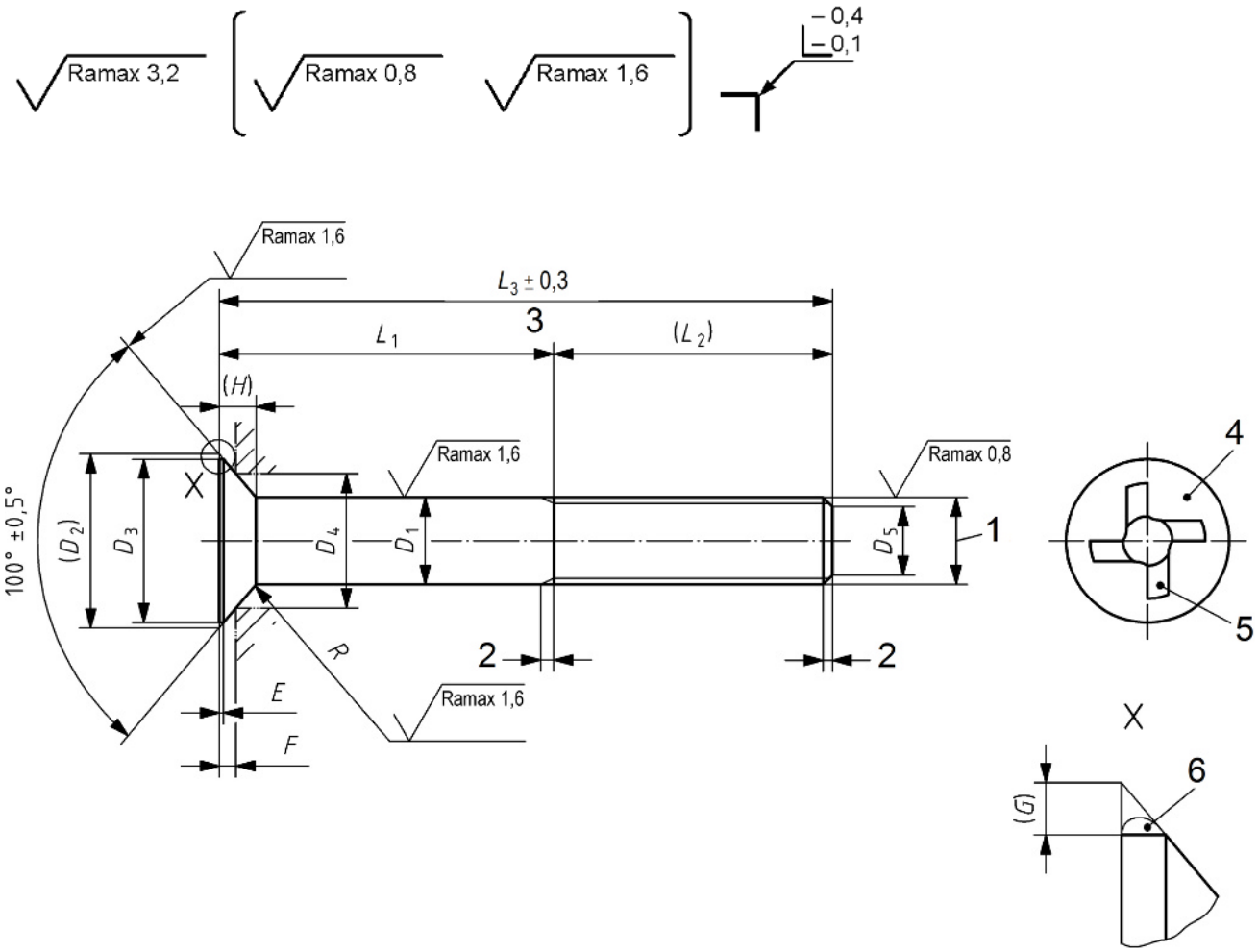
EN 2137 and EN 2442.

or

TR 3775: alloy steel, classification 1 100 MPa.

EN 2133, thickness 8 µm to 14 µm on all surface which can be contacted by a 20 mm diameter ball. On all other surfaces, a continuous cadmium plating shall be present, but no value is specified.

Black colour option: code B.



Key

1 Thread
2 Conforms to ISO 3353-1
3 $L_3 = L_1 + (L_2)$
4 Marking
5 Drive
6 The rounded angle accepted or Blended convex form permitted

Figure 1

Table 1

Diameter code	**Thread**[a]	D_1 h12	D_2	D_3 min.	D_4	D_5 nom.	D_5 Tol.	E min.	F 0 −0,08	G	H
050	MJ5×0,8-4h6h	5	10	9,0	7,71	3,4	±0,5	0,1	0,96	0,5	2,12
060	MJ6×1-4h6	6	12	10,8	9,00	4,2			1,26	0,6	2,54
070	MJ7×1-4h6h	7	14	12,8	10,28	5,2			1,57		2,96
080	MJ8×1-4h6h	8	16	14,8	12,21	6,2			1,60		3,39
100	MJ10×1,25-4h6h	10	20	18,8	15,43	7,9			1,93		4,23
120	MJ12×1,25-4h6h	12	24	22,8	18,00	9,8			2,53		5,08

Diameter code	L_1[b,c] nom.	L_1[b,c] Tol.	L_2	$L_3 \pm 0,3$[c,d] Length code	$L_3 \pm 0,3$[c,d] nom.	R max.	R min.	Mass[e] [f]	Mass[e] [g]
050	6	0 −0,8	16	022 to 070	22 to 70	0,5	0,3	3,009	0,306
060	6	0 −1	18	024 to 084	24 to 84	0,7	0,5	4,699	0,444
070	8	0 −1	20	028 to 098	28 to 98			7,682	0,604
080	8	0 −1	22	030 to 112	30 to 112			10,535	0,790
100	8	0 −1,25	26	034 to 140	34 to 140	0,8	0,6	19,337	1,232
120	10	0 −1,25	30	040 to 168	40 to 168	0,9		33,504	1,774

a In accordance with ISO 5855-2.

b First length corresponding to first L_3 length.

c Increments:

2 for $L_3 \leq 100$;

4 for $L_3 > 100$.

d If greater lengths are required, they shall be chosen using the above increments. The length code corresponds to the length L_3, completed by one or two zeros to the left, where necessary, to obtain a three digit code.

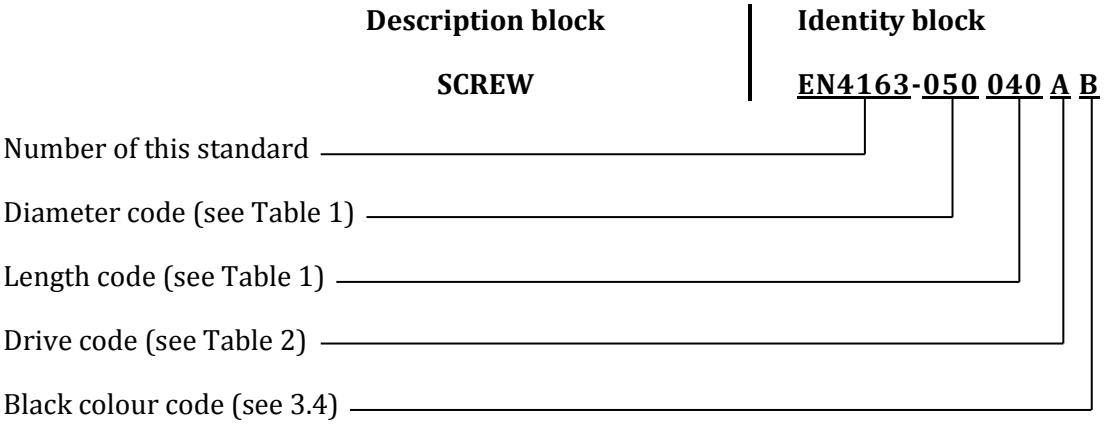
e Approximate values (kg/1 000 pieces), calculated on the basis of 7,85 kg/dm^3, given for information purposes only.

f Value for first L_3.

g Increase for each additional 2 mm of L_3.

4 Designation

EXAMPLE



NOTE If necessary the originator code I9005 shall be placed between the description block and the identity block.

Table 2

Drive	Code
ISO 14275	None
ISO 14276	A

5 Marking

EN 2424, style B (see Figure 1).

6 Technical specification

6.1 General

ISO 7689 except for clauses.

6.2 Approval of manufacturers

EN 9100.

6.3 Qualification of screws

EN 9133.

Annex A
(informative)

Standard evolution form

MODIFICATION	REASON AND VALIDATION
Replacement ISO 7994 Replaced by ISO 14275 et ISO 14276	
Add: “d” on the drawing and *Key* d $L_3 = L_1 + (L_2)$	To define how L_3 is calculated
Roughness symbol inside and above the drawing. Add to all symbols: max e. g. Ramax 3,2 Ramax 0,8	Modify symbols according to ISO 1302.

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