



BSI Standards Publication

**Aerospace series —
Sleeves, tubular, protruding
head, in corrosion resisting
steel, passivated
(0,25 mm wall thickness)**

National foreword

This British Standard is the UK implementation of EN 3278:2012.

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.

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EUROPEAN STANDARD

EN 3278

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EUROPÄISCHE NORM

March 2012

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English Version

Aerospace series - Sleeves, tubular, protruding head, in corrosion resisting steel, passivated (0,25 mm wall thickness)

Série aérospatiale - Douilles tubulaires, tête saillante en acier résistant à la corrosion, passivé (Épaisseur de paroi 0,25 mm)

Luft- und Raumfahrt - Hülsen, überstehender Kopf, aus korrosionsbeständigem Stahl, passiviert (Wanddicke 0,25 mm)

This European Standard was approved by CEN on 24 August 2011.

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Foreword

This document (EN 3278:2012) 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of an identical text or by endorsement, at the latest by September 2012, and conflicting national standards shall be withdrawn at the latest by September 2012.

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1 Scope

This European standard specifies the characteristics and technical requirements for protruding head tubular sleeves, in corrosion resisting steel, which may be plain or provided with a series of annular grooves.

They are for use in aerospace assemblies whose maximum operating temperature does not exceed 650 °C.

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 2175, *Aerospace series - Heat resisting alloy FE-PA2602 (X4NiCrTiMoV26-15) - Solution treated and precipitation treated - Sheet, strip and plate - 0,5 mm ≤ a ≤ 10 mm - Rm ≥ 850 MPa*

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

EN 2516, *Aerospace series — Passivation of corrosion resistant steels*

ISO 2859 (all parts), *Sampling procedures for inspection by attributes*

3 Definitions

3.1 Crack: Rupture in the material which may extend in any direction and which may be intercrystalline or transcrystalline in character.

3.2 Seam: Open surface defect which is the result of the extrusion of the material.

3.3 Lap: Surface defect caused by folding over metal fins or sharp corners and then rolling or forging them into the surface.

4 Required characteristics

4.1 Configuration — Dimensions — Tolerances

The configuration shall be in accordance with the figure; the dimensions and tolerances shall conform to the values shown in the figure and in tables 1 and 2 after passivation.

4.2 Surface roughness

See figure. The values apply after passivation.

4.3 Material

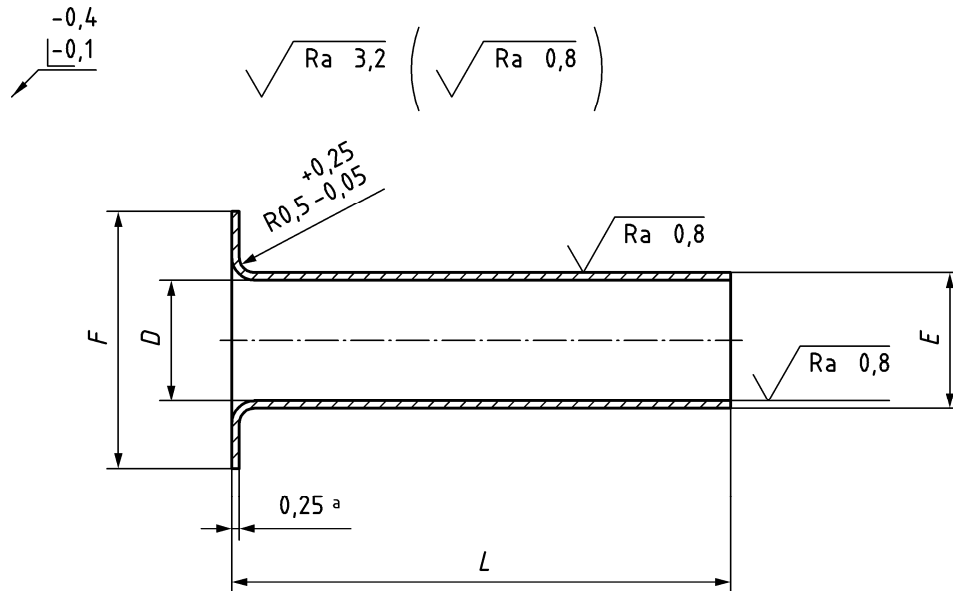
Steel EN 2175, received in the annealed condition and cold worked during manufacture.

4.4 Surface treatment

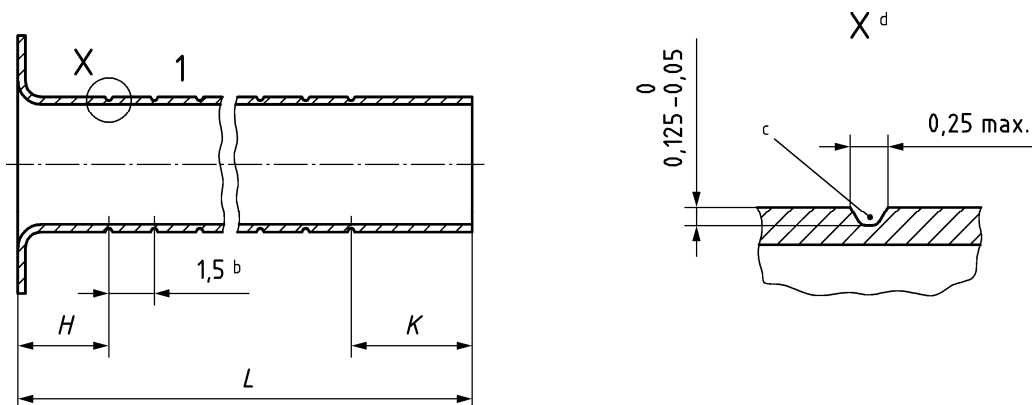
Passivation EN 2516.

Values in micrometres apply prior to surface treatment.

Plain form
(code "P")



Grooved form
(code "G")



Key

- 1 Unspecified dimensions: as plain form
- a Ref.
- b Pitch of grooves
- c Form of groove at manufacturer's option
- d Enlarged

Figure 1 — Configuration

Table 1 — Dimensions

Dimensions in millimetres

Diameter code	<i>D</i>		<i>E</i>		<i>F</i>	<i>H</i>	<i>K</i>
	max.	min.	max.	min.	± 0,3	± 0,5	± 0,5
040	3,999	3,960	4,499	4,474	8,5	3	4
050	4,999	4,960	5,499	5,474	10	3	5,5
060	5,999	5,960	6,499	6,474	11,5	4,5	7
080	7,994	7,955	8,494	8,470	14,5	6	7
100	9,994	9,955	10,494	10,470	17,5	7,5	10

Table 2 — Lengths and masses

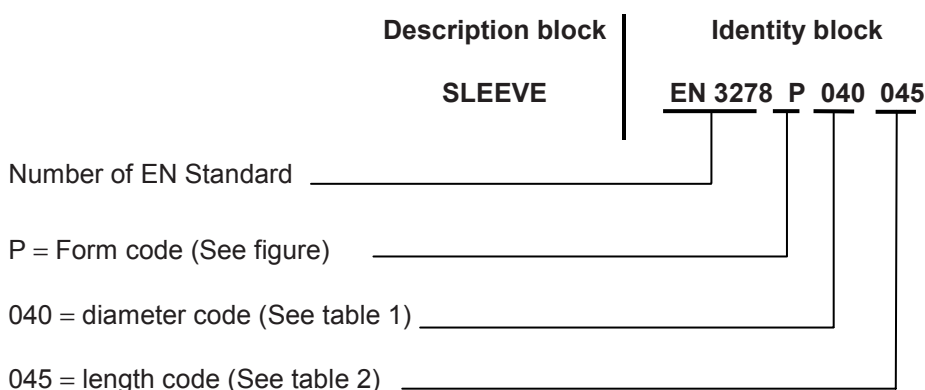
Dimensions in millimetres

Diameter code		040	050	060	080	100	
Form	Length		Mass				
	Code	$L_{0}^{+0,5}$	kg/1 000 pieces ^a				
Plain	030	3	0,167	0,215	—	—	—
	045	4,5	0,206	0,264	0,325	—	—
	060	6	0,246	0,312	0,383	0,489	—
	075	7,5	0,285	0,361	0,441	0,565	0,799
	090	9	0,325	0,410	0,499	0,642	0,894
	105	10,5	0,364	0,459	0,557	0,719	0,989
	120	12	0,404	0,508	0,615	0,795	1,085
	135	13,5	0,443	0,556	0,673	0,872	1,180
	150	15	0,483	0,605	0,731	0,949	1,276
	165	16,5	0,520	0,654	0,790	1,025	1,371
	180	18	0,562	0,703	0,848	1,102	1,466
	195	19,5	0,601	0,751	0,906	1,179	1,562
	210	21	0,641	0,800	0,964	1,256	1,657
	225	22,5	0,680	0,849	1,022	1,332	1,753
	240	24	0,720	0,898	1,080	1,409	1,848
255	25,5	0,759	0,947	1,138	1,486	1,943	
Grooved	—	25	0,747	0,931	1,119	1,460	1,912

^a Calculated on basis of 7,95 kg/dm³.

5 Designation

Each sleeve shall only be designated as in the following example:



Where the following codes apply:

P = plain form

G = grooved form

NOTE If necessary, the originator code S 9005 may be introduced between the description block and the identity block.

6 Marking

EN 2424, style G.

In addition, the quantity shall be stated on the package.

7 Technical requirements

7.1 Manufacture

The sleeve shall be formed by a drawing process from sheet or strip stock to form a one piece tubular section and head.

7.2 Surface appearance

The sleeves shall be free from cracks, seams and laps.

Under visual examination, the sleeve may show axial flow lines in the tubular section typical of a drawn sleeve. The flow lines shall be continuous at the fillet radius. A slight visible orange peel effect is also permissible.

7.3 Sampling

In conformity with ISO 2859, using normal or reduced inspection methods. The acceptable quality level (AQL) is 1 %.

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