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BSI Standards Publication

Aerospace series — Nipples, lubricating, axial type, in corrosion resisting steel, passivated

bsi.

National foreword

This British Standard is the UK implementation of EN 3908:2017.

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EN 3908

January 2017

ICS 49.035

English Version

Aerospace series - Nipples, lubricating, axial type, in corrosion resisting steel, passivated

Série aérospatiale - Graisseurs à accrochage axial, en acier résistant à la corrosion, passivés

Luft- und Raumfahrt - Kegel-Schmiernippel, aus korrosionsbeständigem Stahl, passiviert

This European Standard was approved by CEN on 11 March 2016.

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

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

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European foreword

This document (EN 3908:2017) 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 European 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of an identical text or by endorsement, at the latest by July 2017, and conflicting national standards shall be withdrawn at the latest by July 2017.

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1 Scope

This European Standard specifies the required characteristics and the tests for lubricating nipples of the axial type, in corrosion resisting steel, passivated. Annex A (normative) states the clearance space requirements for the coupling and uncoupling of the lubricating gun and the maximum permissible diameter of the lubricating gun barrel, together with installation thread requirements.

Lubricating nipples according to this European Standard are intended for use in aerospace assemblies, where regular lubrication of moving parts is required.

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 2424, *Aerospace series — Marking of aerospace products*

EN 2516, *Aerospace series — Passivation of corrosion resisting steels and decontamination of nickel base alloys*

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

ISO 68 (all parts), *ISO general purpose screw threads — Basic profile*

IS0 413, *Aircraft — Heads of lubricating nipples*

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 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*

STANAG 1135:2008, *Interchangeability of fuels, lubricants and associated products used by the armed forces of the North Atlantic Treaty Nations* [1)]

1) Published by: North Atlantic Treaty Organization (NATO), Military Agency for Standardization (MAS), 1110 Brussels, Belgium.

3 Required characteristics

3.1 Configuration – Dimensions – Masses

The envelope dimensions for the nipple head are shown in Figure 1, detail "Z" and are in accordance with ISO 413. The tip design of the nipple (face with the sealing ball) is left at the manufacturer's option provided the profile remains within the envelope dimensions shown in figure 1 and the requirements of Clause 7 are met.

The dimensions apply after surface treatment.

A check valve (composed of a spring and ball) shall be located at the surface of the nipple to prevent the ingress of foreign matter into the nipple tip. Other internal design shall be at the manufacturer's discretion provided the nipples meet the requirements specified in Clause 7.

3.2 Surface roughness

R_a = 6,3 μm unless otherwise specified. The values apply prior to surface treatment.

The surface roughness of the thread will be as achieved by normal methods of manufacture.

3.3 Materials

Austenitic chromium-nickel steel; ultimate strength min. 550 MPa. See also 7.6.2.

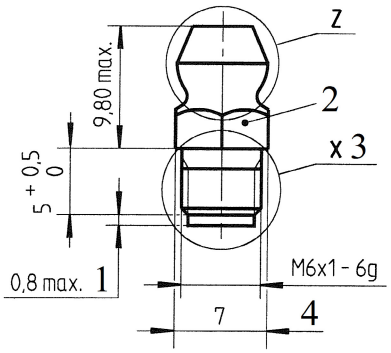
The nipple head surface shall be case hardened to a depth of 0,08 mm to 0,13 mm to give a minimum hardness value of HV 533 (52 HRC). The nipple body shall withstand a tightening torque of 9 Nm without strain.

Material and surface treatment for the internal parts of the nipple shall be at the manufacturer's option.

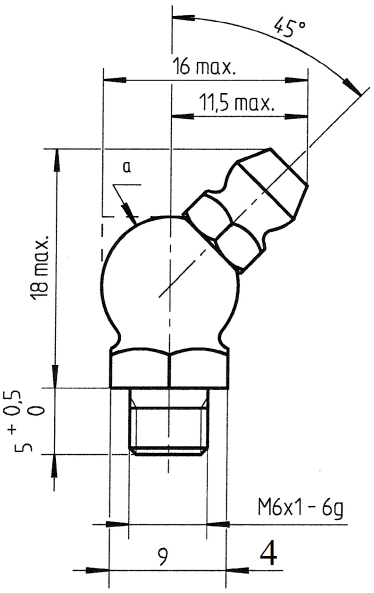
3.4 Surface treatment

EN 2516, process appropriate to the material

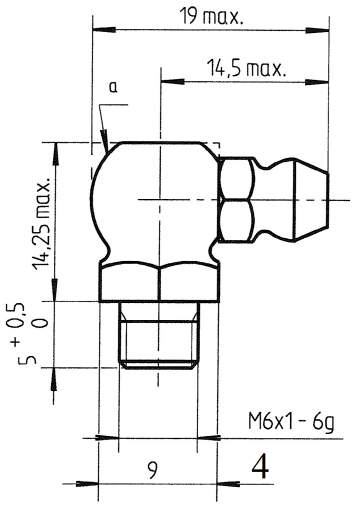
Dimensions in millimetres



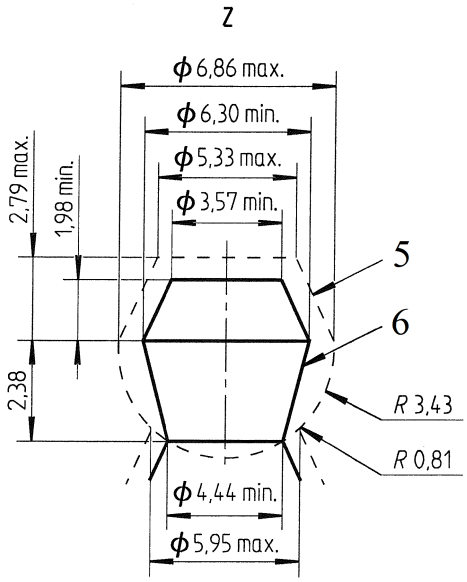
Mass: max. 3 g/piece
Form A (code 01)



Mass: max. 10 g/piece
Form B (code 02)



Mass: max. 11 g/piece
Form C (code 03)



Key

1 At manufacturer's option
2 Marking area (for forms A, B and C)
3 Detail X: see Figure 2.
4 Across flats
5 Maximum contour (broken line)
6 Minimum contour (continuous line)

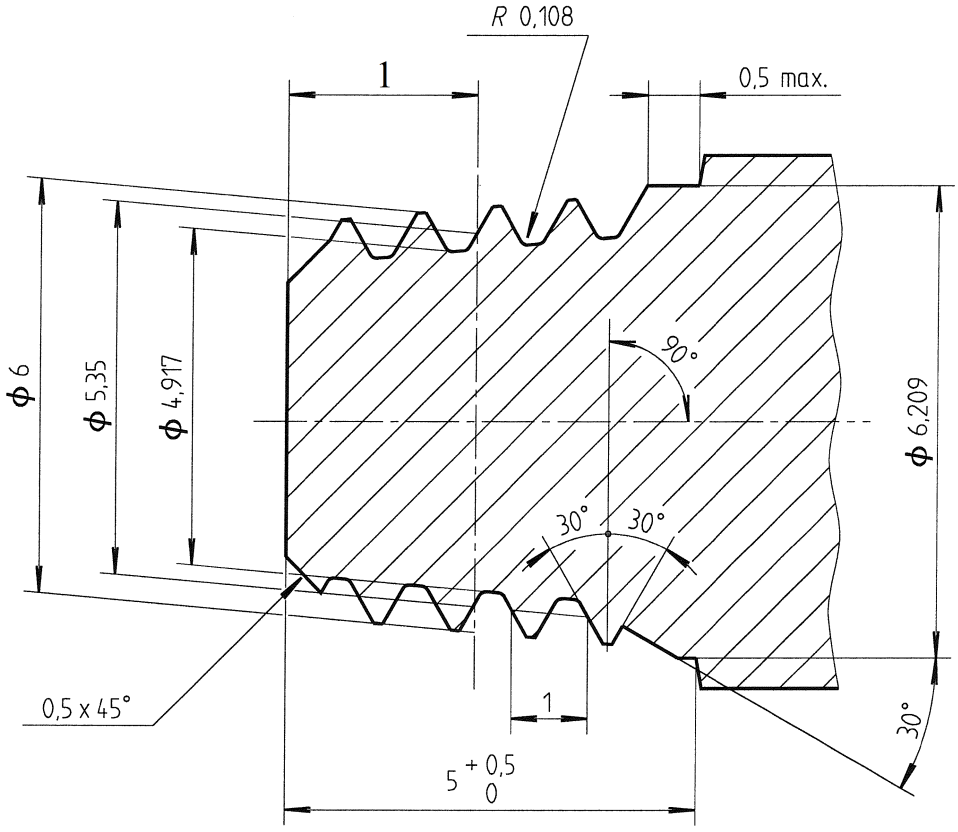
a Shape optional

Figure 1

3.5 Thread

The thread shall be tapered as shown in Figure 2 and conform with ISO 68 and ISO 965-2.

Dimensions in millimetres



Key

1 1 to 2

Figure 2 — Detail X of Figure 1

4 Designation

EXAMPLE

Description block	Identity block
NIPPLE	**EN3908-01**

Number of this standard

Form code of nipple (see Figure 1)

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

5 Marking

EN 2424, style F for products (see Figure 1) and style G for each packing

6 Technical specification

The lubricating nipples shall meet the requirements of this European Standard. For quality assurance requirements, see EN 9100.

7 Requirements and test methods

Acceptance tests shall be carried out for each inspection lot. Samples shall be selected from the inspection lots in accordance with the requirements of ISO 2859-1. For non-destructive tests "General inspection level" II and an AQL of 1,0 for sample size (*n*) shall be used (see Table 1). For destructive tests "Special level" S4 and an AQL of 1,5 for sample size (*n*) shall be used (see Table 2).

NOTE The requirements for "continuation of inspection", "switching procedures" and "discontinuation of inspection" shall be in accordance with 9.2, 9.3 and 9.4 of ISO 2859-1.

Table 1

Batch size (pieces)	*n*	AC
≤ 90	13	0
91 to 150	20	1
151 to 280	32	1
281 to 500	50	1
501 to 1 200	80	2
1 201 to 3 200	125	3
3 201 to 10 000	200	5

Table 2

Batch size (pieces)	*n*	AC
≤ 500	8	0
501 to 10 000	32	1

7.1 Materials and surface treatment

The manufacturer shall provide a test certificate proving that all materials and surface treatments comply with the requirements of 3.3 and 3.4 and shall also show that the quality has been maintained throughout all stages of nipple manufacture.

7.2 Dimensions

Components shall be inspected to verify that they conform to the relevant requirements of 3.1.

Sample size: see Table 1.

The thread test and the verification of the absence of burrs are not included (see 7.3 or 7.6.1).

7.3 Absence of burrs

The nipple shall be submitted to a 100 % inspection to check the absence of burrs.

7.4 Marking

Marking shall comply with the requirements of Clause 5.

Sample size: see Table 1.

7.5 Hardness

7.5.1 The hardness test (Vickers) in accordance with ISO 6507-1 shall be carried out on the across flats of the lubricating nipple.

Sample size: see Table 2.

7.5.2 A minimum of five components shall be selected from those tested according to 7.5.1.

7.5.3 They shall be fractured and the case depth shall be as specified in 3.3.

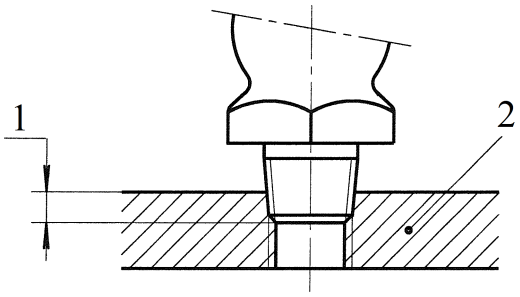
7.6 Thread inspection and strength test

For the purpose of these tests a parallel internal thread M6×1-6H shall be cut into a steel plate (strength ≥ 900 MPa). There shall be no chamfer at the entrance of the thread.

7.6.1 Thread test

The thread shall be submitted to a 100 % inspection. It shall be possible to engage each nipple manually as deep as indicated in Figure 3.

Dimensions in millimetres



Key

1 1 to 2

2 Test plate, see 7.6.

Figure 3

7.6.2 Strength test

The lubricating nipples shall withstand the tightening torque requested in 3.3 when installed in a test plate to the requirements of 7.6. When removed there shall be no sign of strain on the nipple body and there shall be no substantial change in the tapered nipple thread.

Sample size: see Table 1.

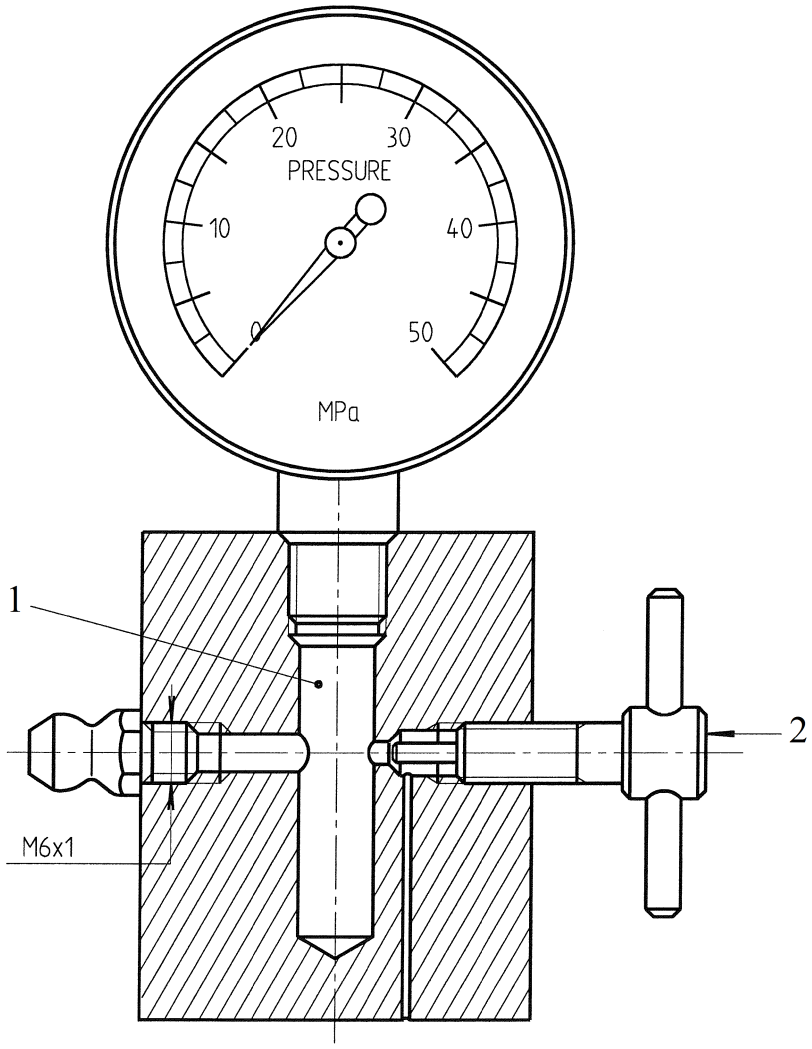
7.7 Performance check

7.7.1 A production check, of a simple mechanical nature not involving the use of grease, shall be carried out on each assembled nipple to ensure that the check valve will open and seat satisfactorily.

7.7.2 Ten nipples of each form, shall be shown to meet the design performance requirements laid down in Table 3 using a lubricant complying with NATO G-354 (see STANAG 1135). The test block shall have a minimum capacity of 10 ml (a suitable form of test block is depicted in Figure 4).

Table 3

Test	Requirements and limitations
Admit lubricant at a pressure of 7 MPa with the coupled gun held at an angle of 10° to the nipple axis.	No lubricant leakage is permitted between the gun and the nipple head.
Opening of the nipple valve	Between 1 MPa and 3,5 MPa
Leakage at sustained pressure of 35 MPa	2 ml / min max.



Key

1 Minimum capacity of grease duct: 10 ml
2 Vent-screw

Figure 4 — Test block

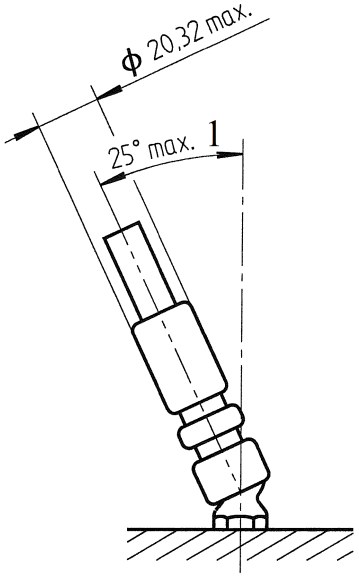
Annex A
(normative)

Installation requirements

A.1 Space requirements

Sufficient clearance space shall be provided around the lubricating nipple to allow the coupling and uncoupling of the lubricating gun as shown in Figure A.1. It shall be noted that, in uncoupling, the gun has to be tilted up to 25° in any radial direction.

Dimensions in millimetres



Key

1 Uncoupling angle

Figure A.1

A.2 Installation thread requirement

The installation hole shall have a parallel thread conforming to M6×1-6H to the requirements of ISO 68 and ISO 965-2.

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