



SLOVENSKI STANDARD

SIST EN 4359:2009

01-maj-2009

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Aerospace series - Six lobe recess - Drivers - Technical specification

Luft- und Raumfahrt - Sechs-Bogenzahn-Innenantrieb - Schraubendrehereinsätze -
Technische Lieferbedingungen

iTeh STANDARD PREVIEW

Série aérospatiale - Empreinte six lobes - Embouts de tournevis - Spécification technique

Ta slovenski standard je istoveten z: **EN 4359:2006**

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ICS:

49.030.99 Drugi vezni elementi Other fasteners

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 4359

December 2006

ICS 49.030.99

English Version

Aerospace series - Six lobe recess - Drivers - Technical specification

Série aéronautique - Empreinte six lobes - Embouts de tournevis - Spécification technique

Luft- und Raumfahrt - Sechs-Bogenzahn, Innenantrieb - Schraubendrehereinsätze - Technische Lieferbedingungen

This European Standard was approved by CEN on 28 August 2006.

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.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This document (EN 4359:2006) 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 June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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EN 4359:2006 (E)**1 Scope**

This standard specifies the characteristics, qualification and acceptance requirements for drivers for installing and removing screws and bolts having six lobe recess internal drive.

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 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)*.

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

EN 3911, *Aerospace series — Six lobe recess — Geometrical definition*.¹⁾

EN 4358, *Aerospace series — Six lobe recess — Drivers, double ended, 90°*.

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 batch

consists of drivers of the same types and of the same materials defined by the same standard

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4 Required characteristics**4.1 General**

Recess in accordance with EN 3911.

Dimensions and tolerances are in millimetres.

4.2 Material – Hardness – Surface condition – Surface coating – Dimensions and tolerances**4.2.1 Material**

The material quality is left at the manufacturer's option as specified in the product standard. However, materials used shall be either rolled, drawn or forged steel with chemical composition, and ascertain adequate strength composition and good impact characteristics.

1) Published as ASD Prestandard at the date of publication of this standard.

4.2.2 Hardness

The drivers shall be hardened throughout to Rockwell C56 to C64 for all sizes. Hardness tests shall be performed in accordance with 8.2.3.4.

4.2.3 Surface condition

All drivers shall be free from pitting, deposits, forging flashes, cracks, splits, burrs and other defects liable to impair their characteristics and their endurance and to cause injury to operators. Surfaces shall be smooth to adequately determine all dimensions specified.

4.2.4 Surface coating

A rust preventative coating adequate for interim storage shall be applied.

4.2.5 Dimensions and tolerances

Drivers shall conform to dimensions and tolerances of the product standard and shall be inspected in accordance with 8.1.

5 Performance

5.1 Torque load

The drivers, when tested as specified in 8.2.3, shall conform to 60 % of the torque load requirements of Table 1, for the specified driver size (recess code). In the case of double ended drivers, EN 4358, both ends shall be tested.

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5.2 Toughness

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The drivers shall be subjected to a toughness test to determine whether or not the material is able to absorb energy up to its rupture point. The test shall be conducted as specified in 8.2.3.3.

Table 1 — Endurance minimum torque values

Driver size Recess code	Endurance torque value Nm min.
06	0,9
07	1,70
08	2,60
09	3,40
10	4,52
15	7,7
20	12,7
25	19,0
27	26,9
30	37,4
40	65,1
45	103,5
50	158,8
55	256,7
60	445,4

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6 Quality assurance

EN 9133

Responsibility for inspection, unless otherwise specified in the contract or purchase order, is the responsibility of the supplier as specified herein.

7 Qualification and acceptance procedures

See Tables 2 and 3.

The strength and endurance of the drivers are tested in accordance with the procedures described in Clause 8.

8 Test methods

8.1 Visual and dimensional examination

Each driver shall be selected in accordance with Table 4 sampling data and shall be visually examined for conformance. Driver tip dimensions as specified in the product standard shall be inspected with GO and NO GO gauges specified in Figure 1 and Table 6.

8.2 Acceptance

8.2.1 General

The aim of the acceptance tests is to check as simply as possible that drivers from different batches satisfy the requirements of this standard.

8.2.2 Acceptance test

The acceptance test shall be conducted on drivers chosen at random from different production batches in accordance with Table 4 or 5.

8.2.3 Proof load torque test

8.2.3.1 Test fixtures

The drivers shall be tested in a fixture having in its centre the correct size and form of the six lobe drive-internal recess in accordance with EN 3911. The fixture shall be heat treated to a hardness of Rockwell C65 minimum.

8.2.3.2 Application of test loads

The loads specified in 5.1 shall be applied with calibrated torque wrenches, or suitable equivalent torque machines. Drivers must withstand fifty (50) alternating applications in a clockwise and the counter clockwise directions, with applied loads of 60 % of minimum torque values specified in Table 1. Failure of the drivers to do such tests, shall be cause for rejection. If the fixture fails, repeat the test with a new driver and a new fixture.

8.2.3.3 Toughness test

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Drivers that have successfully completed the requirements of 8.2.3.2, shall be torqued to failure utilising test fixtures of 8.2.3.1. Test loads shall be applied in accordance with 8.2.3.2. Torque shall be applied until a **fracture** or definite bend of the driver occurs. At least one driver shall have torque applied in the counter clockwise direction. If fracture occurs, the pieces shall be refitted and the driver shall show that a definite, noticeable permanent set occurred prior to failure. If fracture or a permanent set occurs prior to the application of torques listed in Table 1, the driver shall be considered as not having passed the test. If a fracture occurs after the torque values listed in Table 1 have been exceeded but with no permanent set of the fractured driver (brittle failure), the driver shall be considered as not having passed the test.

8.2.3.4 Hardness test

Drivers shall be tested in accordance with ISO 6508-1. Surfaces shall be suitably ground for these tests, with any coating, decarburisation or hardness cases removed before testing. The hardness of the driver shall be taken as near to the driver tip as practically possible. The hardness shall conform to 4.2.2.

9 Marking/packing

9.1 Identity marking

The identity marking is specified in the product standard and/or detail drawing.

9.2 Packaging

The packaging of the drivers is left to the option of the manufacturers.