



SLOVENSKI STANDARD
SIST EN 3077:2022

01-maj-2022

Aeronavtika - Cevne objemke - Tehnična specifikacija

Aerospace series - Clamps worm drive - Technical specification

Luft- und Raumfahrt - Schellen mit Schneckentrieb - Technische Lieferbedingungen

Série aérospatiale - Colliers à vis tangente - Spécification technique

Ta slovenski standard je istoveten z: EN 3077:2022

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ICS:

49.030.99

Drugi vezni elementi - Other fasteners

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EUROPEAN STANDARD

EN 3077

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2022

ICS 49.080

English Version

Aerospace series - Clamps worm drive - Technical specification

Série aérospatiale - Colliers à vis tangente -
Spécification technique

Luft- und Raumfahrt - Schellen mit Schneckentrieb -
Technische Lieferbedingungen

This European Standard was approved by CEN on 17 January 2022.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 3077:2022) 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 document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, 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of an identical text or by endorsement, at the latest by September 2022, and conflicting national standards shall be withdrawn at the latest by September 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN 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, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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EN 3077:2022 (E)

1 Scope

This document specifies the required characteristics, inspections, test methods, quality assurance, qualification, acceptance and delivery conditions of clamps worm drive designed for use with suitable rubber hoses to form joints in fluid system pipelines.

The clamps worm drive are intended to be used as specified in the product standards.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 10204, *Metallic products — Types of inspection documents*

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

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

clamp worm drive

band of material fitted with an adjustment device intended for use in conjunction with a suitable hose to provide a pipe-to-pipe joint

3.2

batch

clamps of a particular size and material produced under essentially the same manufacturing conditions and presented for inspection at the same time

4 Requirements, inspection and test methods

See Table 1.

Table 1 — Requirements, inspection and test methods

Clause	Characteristic	Requirement	Inspection and test method	Q ^a	A ^a
4.1	Materials	They shall conform with the requirements of the product standards.	The acceptance test certificate for the semi-finished product can be used.	x	x
4.2	Dimensions and tolerances	They shall conform with the values quoted in the product standards.	They shall be measured using suitable instruments.	x	x
4.3	Marking	The clamps shall be marked according to the requirements of the product standards. It shall be legible and shall not degrade the material or adversely affect the part.	Visual examination	x	x
4.4	Surface appearance	The clamps shall be free from burrs, sharp edges, irregular surfaces on the clamp band and any other defect which could affect their service use.	Visual examination	x	x
4.5	Tightening range	The clamps shall be designed to operate within the full tightening range specified in the product standards. When the clamp is fully opened, it shall be possible to re-engage the band screw easily so that it passes into the closing range without any noticeable resistance.	The maximum and minimum values of the tightening range shall be checked by dimensional inspection. The maximum value shall be checked by mounting the clamp on a mandrel and the band screw engaged while the clamp is opened and the closing process initiated.	x	x
4.6	Tightening torque	The clamps shall be capable of being tightened to the values specified in the product standards. They shall apply over the full tightening range.	The clamps shall be mounted on a mandrel of nominal diameter and tightened to the torque values specified. There shall be no deformation of screw threads or band slots. The test shall be repeated on mandrels of maximum and minimum diameter. The clamps can be lubricated or dry.	x	
4.7	Ultimate torque	The clamps shall be capable of withstanding a torque of 1,5 times the value specified in the product standards.	The clamps shall be mounted on a mandrel of nominal diameter. The clamps shall then be tightened until failure occurs. The torque recorded shall be in excess of the values specified.	x	

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Clause	Characteristic	Requirement	Inspection and test method	Q ^a	A ^a
4.8	Re-usability	Repeated assembly shall not cause any change in clamp dimensions or affect the correct functioning.	To verify repeated assembly, the clamps shall be installed 5 (five) times on a maximum diameter mandrel. The clamps shall be opened by detaching the band from the screw and passing over the mandrel. On completion of the test, the dimensions of the clamps shall be checked using suitable instruments and inspected for defects likely to affect performance.	x	x
^a Q: Qualification. A: Acceptance.					

5 Quality assurance

5.1 Approval of manufacturer

The manufacturer's operations shall be an approved production organization for aerospace products and shall demonstrate that it has implemented and is able to maintain a quality management system (e.g. according to EN 9100 or another in aerospace accepted and established quality management system).

5.2 Product qualification

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The qualification procedure for aerospace standard products (e.g. according to EN 9133 or another in aerospace accepted and established qualification procedure) shall be used and documented according to the specified tests if not otherwise agreed between customer and supplier.

To obtain qualification for clamps the manufacturer shall observe the schedule and the requirements of Table 2.

No change in material or design is permitted without the prior approval of the qualification authorities who granted the initial approval.

6 Acceptance conditions

6.1 Manufacturer's responsibility

The manufacturer is responsible for the tests to be performed at product acceptance.

6.2 Inspections and tests

The inspections and tests to be performed by the manufacturer for the acceptance of a batch of clamps shall be those listed in Table 3. A random sample shall be selected from each batch in accordance with the procedures listed in ISO 2859-1. The inspection level and acceptance quality level (AQL) shall be as specified in Table 3.

Table 2 — Inspections and tests for qualification

Test No.	Inspection or test	Defined in	Number of samples
1	Materials	4.1	All test samples
2	Dimensions and tolerances	4.2	
3	Marking	4.3	
4	Surface appearance	4.4	
5	Tightening range	4.5	
6	Tightening torque	4.6	2
7	Ultimate torque	4.7	12
8	Re-usability	4.8	5

The clamp tests are to be performed on each nominal size.

Table 3 — Inspections and tests for acceptance

Inspection or test	Defined in	ISO 2859-1 Inspection level 1 (AQL)
Materials	4.1	At manufacturer's option
Dimensions and tolerances	Band width and thickness	1,0 (major)
	All other dimensions	4,0 (minor)
Marking	4.3	4,0 (minor)
Surface appearance	4.4	4,0 (minor)
Tightening range	4.5	4,0 (minor)
Re-usability	4.8	5 parts

7 Packaging

The clamps shall be packed so as not to be damaged during transit; individual packaging is preferable. They shall be protected against humidity, corrosion, dirt and any other harmful influences.

The packaging material in contact with the clamps shall provide this protection.

The following shall appear on each individual package:

- name of manufacturer;
- quantity;
- identity block of the product standard;
- date of packaging.

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At least the following shall appear on collective packages for transport:

- name of manufacturer;
- number of order or contract;
- quantity;
- description;
- identity block of the product standard;
- reference of manufacturer.

8 Acceptance test certificate

If required by the customer, all deliveries of clamps referring to this standard shall be confirmed by the manufacturer with an acceptance test certificate according to EN 10204. The type of acceptance test certificate and the compliance tests to be included in the acceptance test certificate shall be agreed between customer and manufacturer.

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