



**SLOVENSKI STANDARD**  
**oSIST prEN 3077:2020**  
**01-september-2020**

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**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: prEN 3077**

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**ICS:**

49.030.99      Drugi vezni elementi      Other fasteners

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**en,fr,de**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 3077**

June 2020

ICS

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 draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (prEN 3077:2020) 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 document is currently submitted to the CEN Enquiry.

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**prEN 3077:2020 (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 <http://www.iso.org/obp>
- IEC Electropedia: available at <http://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 <sub>a</sub>	A <sup>a</sup>
4.1	Materials	They shall conform with the requirements of the product standards.	The acceptance test certificate for the semi-finished product may 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 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 may be lubricated or dry.	x	

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Clause	Characteristic	Requirement	Inspection and test method	Q <sub>a</sub>	A <sup>a</sup>
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	
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 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
<p><sup>a</sup> Q: Qualification A: Acceptance</p> <p><b>(standards.iteh.ai)</b></p>					

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## 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

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 — Inspection and tests for qualification**

Test No.	Inspection or test	Defined in	No 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 — Inspection 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	4.2	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

**prEN 3077:2020 (E)****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.

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.

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**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.