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Aerospace — Collar, threaded, self-locking — Test method for torque and preload

Aéronautique et espace — Bague filetée, à freinage interne — Méthode d'essai de couple et de précharge

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Foreword

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This document was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 4, *Aerospace fastener systems*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Aerospace — Collar, threaded, self-locking — Test method for torque and preload

1 Scope

This document describes torque and preload test method for threaded collars. This test method is used to measure the locking torque, breakaway torque, torque off and preload of threaded collars.

2 Normative references

There are no normative references in this document.

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
locking torque
highest torque value obtained in the installation direction prior to contact with the bearing surface

3.2
breakaway torque
torque required to start threaded collar rotation from its installed position

Note 1 to entry: The breakaway torque shall be measured after twisting off the hex portion and after removal of the preload.

Note 2 to entry: The breakaway torque is for seated breakaway test only.

3.3
test bolt
bolt to be used in conjunction with the collar during the test

4 General requirements

4.1 Test apparatus

A torque tension test bench, torsion machine or the equivalent precision machine shall be used for the test, which shall have been calibrated within a period of 12 months prior to the test date.

4.2 Test bolt

Test bolt shall be in accordance with product specification.

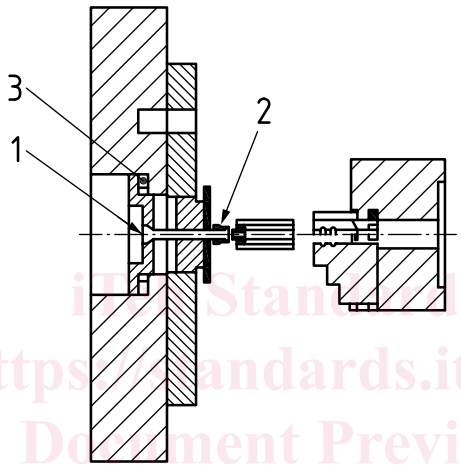
4.3 Test accessories

The material of the collar bearing surface (see Figure A.2, item 8) shall be alloy steel; the roughness of the interface contacting with the collar shall be between Ra = 0,4 µm and Ra = 0,8 µm. The hardness shall be 50 HRC to 60 HRC.

5 Detail requirements

5.1 Test procedures

a) Install the test bolt on the torsion machine; install the threaded collar finger tight against the locking element; install the threaded collar hex head into the socket adapted to the machine drive mechanism. See Figure 1. Measure the distance between the end surface of the bolt and threaded collar; then calculate the cycling number.



Key

1 test bolt
2 threaded collar
3 cell

Figure 1 — start point at the assembling process

b) Rotate the threaded collar at the rate of (10 ± 2) r/min. Continue applying the torque until the threaded collar seats (the hex portion of threaded collar twists off), as shown in Figure 2.

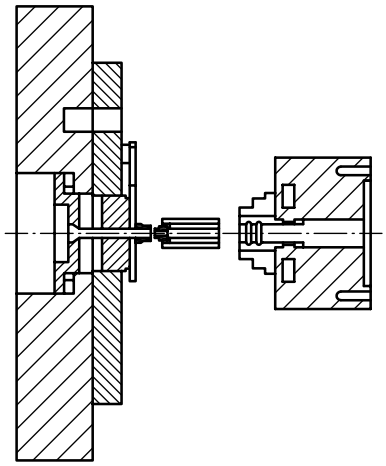


Figure 2 — the assembling process