



Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, D.C.

TSO-C202

Effective
Date: 11/10/15

Technical Standard Order

Subject: Cargo Stopper Devices

1. PURPOSE. This technical standard order (TSO) is for manufacturers applying for a TSO authorization (TSOA) or letter of design approval (LODA). In it, we (the Federal Aviation Administration, (FAA)) tell you what minimum performance standards (MPS) your cargo stopper device must first meet for approval and identification with the applicable TSO marking.

2. APPLICABILITY. This TSO affects new applications submitted after its effective date.

3. REQUIREMENTS. New models of cargo stopper devices identified and manufactured on or after the effective date of this TSO must meet the MPS qualification and documentation requirements in SAE International (SAE), Aerospace Standard AS6554 *Cargo Stopper Devices* dated July 2011, except for sections 1, 3.7, 4.3, 5 and 6. More recent versions of the references identified in paragraph 2 of AS6554 may be substituted if approved by the FAA Aircraft Certification Office (ACO) manager responsible for administering your TSO authorization or letter of design approval.

a. Functionality. This TSO's standards apply to equipment intended to be used in any of the following operational circumstances:

- (1) To ensure restraint/tie-down of a piece of cargo that does not lend itself to either direct hooking of tie-down straps or passing a strap around without risk of slippage.
- (2) To restrain cargo identified as "piercing", presenting a hazard to the aircraft in the event of its being released during flight.
- (3) To restrain a crate which contains, or may contain, a heavy item with a cross section smaller than the pallet net's mesh size.
- (4) To provide supplemental support when tying-down odd shaped cargo pieces where it is difficult or not allowed to directly attach tie-down straps or pass them around the load in an effective manner.

b. Functional Qualification. Demonstrate the required functional performance under the test conditions specified in SAE AS6554 paragraph 4 except for those paragraphs identified in Section 3 of this TSO.

c. Environmental Qualification. Demonstrate the required performance under the environmental and test conditions specified below. Consideration shall be given to available data regarding potential environmental degradation for the component straps and filling materials.

(1) Consider environmental degradation due to aging, ultra-violet (UV)-exposure, weathering, etc., for any materials used in the construction of cargo stopper devices.

(2) For textile performance see SAE Aerospace Information Report (AIR) 1490B, *Environmental Degradation of Textiles*, dated December 2007, for available data for textile performance when exposed to environmental factors. These data will be taken into account for consideration of the effects of environmental degradation on nets commensurate with the expected storage and service life.

NOTE: Environmental degradation data other than that documented in AIR1490B may be used if you substantiate the data and it is approved by the FAA ACO manager responsible for administering your TSO or LODA. A net must meet the minimum performance requirements of this TSO at any time during its service life.

d. Deviations. We have provisions for using alternate or equivalent means of compliance to the criteria in the MPS of this TSO. If you invoke these provisions, you must show that your equipment maintains an equivalent level of safety. Apply for a deviation under the provision of 14 CFR § 21.618.

e. Fire Protection. The materials used in the cargo stoppers shall not have an average burn rate greater than 2.5 inches per minute when tested horizontally in accordance with the applicable portions 14 CFR part 25, Appendix F, part I, paragraph (b).

4. MARKING.

a. Mark at least one major component permanently and legibly with all the information in 14 CFR § 45.15(b). The marking must include the serial number.

b. Also, mark the following permanently and legibly, with at least the manufacturer's name, subassembly part number, and the TSO number:

- (1) Each component that is easily removable (without hand tools);
- (2) Each subassembly of the article that you determined may be interchangeable;
- (3) Mark the rated ultimate load in Decanewton (daN) and Pound Force (lbf) on each cargo stopper device; and

- (4) Expiration date in the format “EXP YYYY-MM”.

5. APPLICATION DATA REQUIREMENTS. You must give the FAA ACO manager responsible for your facility a statement of conformance, as specified in 14 CFR § 21.603(a)(1) and one copy each of the following technical data to support your design and production approval. LODA applicants must submit the same data (excluding paragraph **5.e**) through their civil aviation authority.

- a.** A Manual(s) containing the following:

(1) Operating instructions and equipment limitations sufficient to describe the equipment’s operational capability.

- (2) Describe in detail any deviations.

(3) Installation procedures and limitations sufficient to ensure that the cargo stopper device, when installed according to the installation or operational procedures, still meets this TSO’s requirements. Limitations must identify any unique aspects of the installation. The limitations must include a note with the following statement:

“This article meets the minimum performance and quality control standards required by a technical standard order (TSO).
Installation of this article requires separate approval.”

b. Instructions covering periodic maintenance, calibration, and repair, to ensure that the cargo stopper device continues to meet the TSO approved design. Include recommended inspection intervals and service life, as appropriate.

c. A drawing depicting how the article will be marked with the information required by paragraph **4.** of this TSO.

d. Identify functionality or performance contained in the article not evaluated under paragraph **3** of this TSO (that is, non-TSO functions). Non-TSO functions are accepted in parallel with the TSO authorization. For those non-TSO functions to be accepted, you must declare these functions and include the following information with your TSO application:

(1) Description of the non-TSO function(s), such as performance specifications, failure condition classifications, software, hardware, and environmental qualification levels. Include a statement confirming that the non-TSO function(s) don’t interfere with the article’s compliance with the requirements of paragraph **3**.

(2) Installation procedures and limitations sufficient to ensure that the non-TSO function(s) meets the declared functions and performance specification(s) described in paragraph **5.d.(1)**.

(3) Instructions for continued performance applicable to the non-TSO function(s) described in paragraph **5.d.(1)**.

(4) Interface requirements and applicable installation test procedures to ensure compliance with the performance data defined in paragraph **5.d.(1)**.

(5) Test plans, analysis and results, as appropriate, to verify that performance of the hosting TSO article is not affected by the non-TSO function(s).

(6) Test plans, analysis and results, as appropriate, to verify the function and performance of the non-TSO function(s) as described in paragraph **5.d.(1)**.

e. The quality system description required by 14 CFR § 21.608, including functional test specifications. The quality system should ensure that you will detect any change to the approved design that could adversely affect compliance with the TSO MPS, and reject the article accordingly. (Not required for LODA applicants.)

f. Material and process specifications list.

g. List of all drawings and processes (including revision level) that define the article's design.

h. Manufacturer's TSO qualification report showing results of testing accomplished according to paragraph **3.c** of this TSO.

6. MANUFACTURER DATA REQUIREMENTS. Besides the data given directly to the responsible ACO, have the following technical data available for review by the responsible ACO:

a. Functional qualification specifications for qualifying each production article to ensure compliance with this TSO.

b. Equipment calibration procedures.

c. Schematic drawings.

d. Wiring diagrams.

e. Material and process specifications.

f. The results of the environmental qualification tests conducted according to paragraph **3.c** of this TSO.

g. If the article contains non-TSO function(s), you must also make available items **6.a** through **6.f** as they pertain to the non-TSO function(s).

7. FURNISHED DATA REQUIREMENTS.

a. If furnishing one or more articles manufactured under this TSO to one entity (such as an operator or repair station), provide one copy or on-line access to the data in paragraphs **5.a** and **5.b** of this TSO. Add any other data needed for the proper installation, certification, use, or for continued compliance with the TSO, of the cargo stopper device.

b. If the article contains declared non-TSO function(s), include one copy of the data in paragraphs **5.d.(1)** through **5.d.(4)**.

8. HOW TO GET REFERENCED DOCUMENTS.

a. Order SAE documents from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001. Telephone (724) 776 4970, fax (724) 776-0790. You can also order copies online at www.sae.org.

b. Order copies of 14 CFR parts 21 and 45 {add additional applicable parts} from the Superintendent of Documents, Government Printing Office, P.O. Box 979050, St. Louis, MO 63197. Telephone (202) 512-1800, fax (202) 512-2250. You can also order copies online at www.gpo.gov. Select "Access," then "Online Bookstore." Select "Aviation," then "Code of Federal Regulations."

c. You can find a current list of technical standard orders and advisory circulars on the FAA Internet website Regulatory and Guidance Library at <http://rgl.faa.gov/>. You will also find the TSO Index of Articles at the same site.

Susan J. M. Cabler
Acting Manager, Design, Manufacturing, &
Airworthiness Division
Aircraft Certification Service