



Number: CTSO-C202

Date of approval: Mar 18, 2019

Approved by: Xu Chaoqun

## **China Civil Aviation Technical Standard Order**

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This China Civil Aviation Technical Standard Order (CTSO) is issued according to Part 37 of the China Civil Aviation Regulations (CCAR-37). Each CTSO is a criterion which the concerned aeronautical materials, parts or appliances used on civil aircraft must comply with when it is presented for airworthiness certification.

### **Cargo Stopper Devices**

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#### **1. Purpose.**

This China Civil Aviation Technical Standard Order (CTSO) is for manufacturers applying for cargo stopper devices CTSO authorization (CTSOA). This CTSO prescribes the minimum performance standards (MPS) that cargo stopper devices must first meet for approval and identification with the applicable CTSO marking.

#### **2. Applicability.**

This CTSO affects new application submitted after its effective date. Major design changes to article approved under this CTSO will require a new authorization in accordance with section 21.353 of CCAR-21R4.

#### **3. Requirements.**

New models of cargo stopper devices identified and manufactured on or after the effective date of this CTSO must meet the 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.

a. Functionality. This CTSO'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 CTSO.

c. Environmental Qualification. Demonstrate the required performance under SAE Aerospace Information Report (AIR) 1490B, Environmental Degradation of Textiles, dated December 2007, for

available data for textile performance when exposed to environmental factors.

d. Deviations. The authorities have provisions for using alternate or equivalent means of compliance to the criteria in the MPS of this CTSO. If applicant invokes these provisions, applicant must show that equipment maintains an equivalent level of safety. Apply for a deviation under the provision of section 21.368(a) of CCAR-21R4.

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 CCAR-25R4, Appendix F, part I, paragraph (b).

#### **4. Marking**

a. Mark at least one major component permanently and legibly with all the information in section 21.423(b) of CCAR-21R4. 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 CTSO number:

(1) Each component that is easily removable (without hand tools);

(2) Each subassembly of the article that applicant determined may be interchangeable;

(3) Mark the rated ultimate load in Decanewton (daN) and Pound Force (lbf) on each cargo stopper device;

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

## **5. Application Data Requirements.**

The applicant must furnish the responsible certification personnel with the related data to support design and production approval. The application data include a statement of conformance as specified in section 21.353(a)(1) of CCAR-21R4 and one copy each of the following technical data:

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 CTSO’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 CTSO. 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 CTSO 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 CTSO.

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

(1) Description of the non-CTSO function(s), such as performance specifications, failure condition classifications, software, hardware, and environmental qualification levels. Include a statement confirming that the non-CTSO 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-CTSO 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-CTSO 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 CTSO article is not affected by the non-CTSO function(s).

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

e. The quality system description required by section 21.358 of CCAR-21R4, including functional test specifications. The quality system should ensure that applicant will detect any change to the approved design that could adversely affect compliance with the CTSO MPS, and reject the article accordingly.

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 CTSO qualification report showing results of testing accomplished according to paragraph 3.c of this CTSO.

## **6. Manufacturer Data Requirements.**

Besides the data given directly to the authorities, have the following

technical data available for review by the authorities:

- a. Functional qualification specifications for qualifying each production article to ensure compliance with this CTSO.
- 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 CTSO.
- g. If the article contains non-CTSO function(s), applicant must also make available items 6.a through 6.f as they pertain to the non-CTSO function(s).

## **7. Furnished Data Requirements.**

- a. If furnishing one or more articles manufactured under this CTSO 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 CTSO. Add any other data needed for the proper installation, certification, use, or for continued compliance with the CTSO, of the cargo stopper device.
- b. If the article contains declared non-CTSO function(s), include one copy of the data in paragraphs 5.d.(1) through 5.d.(4).

**8. Availability of Referenced Documents.**

Order SAE documents from:

Society of Automotive Engineers, Inc.

400 Commonwealth Drive, WARRENDALE, PA 15096-001, USA

You may also order them online from the SAE Internet website at:

[www.sae.org](http://www.sae.org).