Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, DC

TSO-C22g

Date: 3/5/93

Technical Standard Order

Subject: TSO-C22g, SAFETY BELTS

a. Applicability.

(1) Minimum Performance Standards. This technical standard order (TSO) prescribes the minimum performance standard that safety belts must meet in order to be identified with the applicable TSO marking. New models of safety belts that are to be so identified and that are manufactured on or after the date of this TSO must meet the standards set forth in Society of Automotive Engineers, Inc. (SAE) Aerospace Standard (AS) Document No. AS 8043, "Torso Restraint Systems," dated March 1986, with the exceptions and revisions covered in subparagraphs (a) (4) and (a) (5) of this TSO. Through these exceptions and additions, this TSO only uses those sections of SAE AS 8043 applicable to the pelvic restraint (seat belt) portion of the torso restraint system. Safety belts approved prior to the date of this TSO may continue to be manufactured for an additional six months at which time they may no longer be manufactured under the provisions of their original approval.

(2) Exceptions.

(i) Wherever SAE AS 8043 refers to torso restraint system(s) or pelvic restraint it shall be considered to be applicable to safety-belt restraint system(s).

(ii) The information contained in Sections 1., 2.1, 2.3, and 2.9 of SAE AS 8043 is not relevant to safety belt restraint systems and shall be disregarded.

(iii) Compliance with Sections 3.2, 3.2.2, 3.8, 5.9, 6.1, 6.1.2, 8.9, 9.3 and 9.4 of SAE AS 8043 is not required.

(iv) Disregard references to breaking strength of upper torso restraint webbing and attachment hardware specified in Sections 4.2, 4.4, and 5.3 of SAE AS 8043 respectively.

DISTRIBUTION: ZVS-326; A-W(IR)-3; A-X(CD)-4; A-FFS-1, 2, 7, 8(LTD); A-X(FS)-3; AVN-1; A-FAC-0(MAX)

(3) Additions.

(i) The definition in Section 2.2 of SAE AS 8043 shall read as follows: Safety Belt Restraint System: Consists of any webbing or similar device including all buckles or other fasteners, and all integral hardware designed to restrain movement of the pelvis, commonly referred to as a lap belt or safety belt.

(ii) The requirements of Section 3.2.1 of SAE AS 8043 shall read as follows: Safety Belt Restraint System: A safety belt restraint system shall provide pelvic restraint and shall not incorporate emergency locking retractors (inertia reels).

(iii) Section 9.1 of SAE AS 8043 is revised and shall read as follows: Installation: All components of three seat belt restraint systems shall be tested using a rigid test block, as shown in Figures 2 and 3, or a modified test block incorporating only the first 6 inches of the test block shown in Figure 3, or the equivalent, using the procedures in paragraph 9.2, as appropriate. Install the seat belt restraint system on the test block, as shown in Figure 2 and adjust to a length of 1220-1270 mm (48-50 inches), or as near as possible. An automatic locking retractor should be locked at the start of the test with a force on the webbing just sufficient to keep the retractor locked.

(4) Environmental Standards. SAE AS 8043 incorporates as reference the following environmental standards, for which a more recent version of these standards may be substituted, if approved by the manager of the aircraft certification office (ACO), Federal Aviation Administration (FAA), having geographical purview over the manufacturer's facilities.

(i) American Society for Testing Materials (ASTM) G23-81, Standard Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials.

(ii) ASTM B117-73, Standard Method of Salt Spray (Fog) Testing.

(iii) ASTM D756-78, Standard Practice for Determination of Weight and Shape Changes of Plastics Under Accelerated Service Conditions.

(5) Test Methods. SAE AS 8043 incorporates as a reference the following test standards, for which a more recent version of these standards may be substituted, if approved by the manager of the ACO, having geographical purview over the manufacturer's facilities.

(i) American Association of Textile Chemist and Colorists (AATCC) Standard Test Method 8-1981, Colorfastness to Crocking.

(ii) AATCC Standard Test Method 107-1981, Colorfastness to Water.

(iii) Federal Test Method Standard 191, Method 5906.

(iv) AATCC Chart for Measuring Transference of Color.

b. Marking. Each safety belt restraint system or separate sub-assembly must be marked in accordance with Federal Aviation Regulations (FAR) Section 21.607 (d), except that the rated strength of the safety belt restraint system shall be shown and the date of manufacture is required in lieu of the optional marking requirements of Section 21.607 (d) (3).

c. Data Requirements.

(1) In addition to FAR Section 21.605, the manufacturer shall furnish the manager of the ACO, FAA having geographical purview of the manufacturer's facilities, one copy each of the following technical data:

(i) A complete description of the safety belt restraint system, including detail drawings, material identification and specification.

(ii) Operating instructions and limitations.

(iii) Installation instructions and limitations.

(iv) A report of the tests conducted in accordance with SAE AS 8043 for qualification and approval of safety belt restraint systems.

(v) Detailed maintenance instructions, including specific guidance on the limits of wear and damage permissible to webbing material which would warrant replacement, i.e., explain how and/or when the breaking strength of the webbing would be expected to drop below the specified abrasion breaking strength.

(vi) The quality control functional test specification to be used to test each production article to ensure compliance with this TSO.

(2) In addition, the manufacturer must furnish to the user one copy of the data and information specified in paragraphs c (1) (ii) and c (1) (v). This data and information is necessary for proper installation and use and for continued airworthiness of the product or article. The manufacturer also must furnish the user a note with the following statement:

> "The conditions and test required for TSO approval of this article are minimum performance standards. It is the responsibility of those desiring to install the article either on or within a specific type or class of aircraft to determine that the aircraft installation conditions are within the TSO standards. The article may be installed only if further evaluation by the applicant (user/installer) documents an acceptable installation and is approved by the Administrator."

d. Availability of Referenced Documents.

(1) Copies of SAE AS 8043 may be purchased from the Society of Automotive Engineers, Inc., Department 331, 400 Commonwealth Drive, Warrendale, PA 15096.

(2) Copies of ASTM B117-73, D756-78, and G23-81 may be purchased from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

(3) Copies of AATCC 8-1981 and 107-1981 may be purchased from the American Association of Textile Chemists and Colorists, PO Box 12215, Research Triangle Park, NC 27709.

(4) Copies of Federal Test Method Standard 191 Method 5906 may be purchased from the Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

(5) Federal Aviation Regulations, Part 21, Subpart O, may be purchased from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402-9325.

(6) Advisory Circular 20-110, "Index of Aviation Technical Standard Orders," may be obtained from the US Department of Transportation, Utilization and Storage Section, M-443.2, Washington, DC 20590.

/S/ John K. McGrath
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