

**Clearance Record
DOCUMENT COMMENT LOG**

Originating Office: AIR-120 POC: Hughson	Document Description: TSO-C100c: Aviation Child Safety Device	Reviewer:	Reviewing Organization:	Date of Review:
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Company & Group	Page & Paragraph	Comment	Rationale for Comment	Recommendation	Disposition
Astronics DME	Amended SAE AS 5276/1: 1; 3(a)	Date for AS is indicated as September 2000. Appendix 1, page 5 indicates AS date as October 2000. SAE AS document indicates 2000-11 (November)	Document dates need to be correct	Change date listed in TSO to SAE AS Issued Date (2000-11).	Concur with recommendation, Correct the publication date for AS5276-1 in TSO paragraph 3.a , and Appendix 1 to November 2000.
Astronics DME	Amended SAE AS 5276/1: 1; 3(a)	Clarify/Eliminate Type III Toddler type.	Passenger seats must be provided for each occupant who has reached his or her second birthday per 14 CFR 25.785. This means that all existing and future passenger seats must satisfy 14 CFR 25.785 and there is no need for a toddler ACSD. UMTRI-85-23 report cites mean height for a 2.0 year old as 34 inches.	Eliminate Type III or Footnote the Type III Toddler citation as follows: Children that have a minimum standing height of 34 inches are to be seated and restrained in the passenger seat.	No Change: This comment is out of scope. Use of any child restraint system in aircraft is currently optional. The purpose of a Type III ACSD is to provide a higher level of safety for children than provided by a passenger seat.
Astronics DME	Amended SAE AS 5276/1: 2.1.4	Delete reference to where the ANSI document can be acquired.	Consistency	Delete reference to where the ANSI document can be acquired.	Concur with recommendation. Revise Appendix 1 to include: Paragraph 2.1.4: Revise to read: 2.1.4 ANSI Publications: Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002. ANSI Z535.4 -1998 Product Safety Signs and Labels Revise TSO paragraph 8. How to Get Referenced Documents –

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					Add & renumber: c. Order ANSI documents from ANSI, 11 West 42nd Street, New York, NY 10036-8002. Telephone (202) 293-8020, fax (202) 293-9287. You can also order copies on line at www.ansi.org .
Astronics DME	Amended SAE AS 5276/1: 2.3	Clarify/Eliminate Type III Toddler type.	Passenger seats must be provided for each occupant who has reached his or her second birthday per 14 CFR 25.785. This means that all existing and future passenger seats must satisfy 14 CFR 25.785 and there is no need for a toddler ACSD. UMTRI-85-23 report cites mean height for a 2.0 year old as 34 inches.	Eliminate Type III or Footnote the Type III Toddler citation as follows: Children that have a minimum standing height of 34 inches are to be seated and restrained in the passenger seat.	No Change: This comment is out of scope. Use of any child restraint system in aircraft is currently optional. The purpose of a Type III ACSD is to provide a higher level of safety for children than provided by a passenger seat.
Astronics DME	Amended SAE AS 5276/1: 2.3	Dominant characteristic for all children should be height. Newborn should be 11 to 22 inches. Infant should be 23 inches to 33 inches. Age is immaterial. Weight is only important for structural substantiation.	UMTRI-85-23 report.	Eliminate age and weight characteristics and use standing height as means to select seat type and orientation. Eliminate Type III or Footnote the Type III Toddler citation as follows: Children that have a minimum standing height of 34 inches are to be seated and restrained in the passenger seat.	No Change. The characteristics listed and the designation of which are the most dominant for each age category, are consistent with American Academy of Pediatrics recommendations and the stature and weights cited in 49 CFR § 571.213 as transition points between seat orientations and occupant sizes.
Astronics DME	Amended SAE AS 5276/1: 2.4	Clarify/Eliminate Type III Toddler type.	Passenger seats must be provided for each occupant who has reached his or her second birthday per 14 CFR 25.785. This means that all existing and future passenger seats must satisfy 14 CFR 25.785 and there is no need for a toddler ACSD.	Eliminate Type III or Footnote the Type III Toddler citation as follows: Children that have a minimum standing height of 34 inches are to be seated and restrained in the passenger seat.	No Change: This comment is out of scope. Use of any child restraint system in aircraft is currently optional. The purpose of a Type III ACSD is to provide a higher level of safety for children than provided by a passenger seat.

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Astronics DME	Amended SAE AS 5276/1: 2.5d	Clarify/Eliminate Type III Toddler type and physical characteristics for which the passenger seat is designed to accommodate. Use passenger seat manufacturer TSO test data to define minimum physical characteristics of the seat occupant that can use the passenger seat lap belt.	Passenger seats must be provided for each occupant who has reached his or her second birthday per 14 CFR 25.785. This means that all existing and future passenger seats must satisfy 14 CFR 25.785 and there is no need for a toddler ACSD.	Change 2.5d to: Children that have a minimum standing height of 34 inches are to be seated and restrained in the passenger seat.	No Change: This comment is out of scope. Use of any child restraint system in aircraft is currently optional. The purpose of a Type III ACSD is to provide a higher level of safety for children than provided by a passenger seat.
Astronics DME	Amended SAE AS 5276/1: 4.1c	Clarify/Eliminate Type III Toddler type.	Passenger seats must be provided for each occupant who has reached his or her second birthday per 14 CFR 25.785. This means that all existing and future passenger seats must satisfy 14 CFR 25.785 and there is no need for a toddler ACSD.	Eliminate Type III or Footnote the Type III Toddler citation as follows: Children that have a minimum standing height of 34 inches are to be seated and restrained in the passenger seat.	No Change: This comment is out of scope. Use of any child restraint system in aircraft is currently optional. The purpose of a Type III ACSD is to provide a higher level of safety for children than provided by a passenger seat.
Astronics DME	Amended SAE AS 5276/1: 6.1.2	Reference to CRS (2) should be changed to ACSD.	Consistency with agreed terminology.	Change CRS to ACSD	Concur with recommendation. Revise Appendix 1, FAA modification to Paragraph 6.1.2 as follows: change CRS to ACSD.
Astronics DME	Amended SAE AS 5276/1: 6.1.2	Last sentence in first paragraph refers to a pre-test measurement and limit. Section 6.1 is related to post-test pass/fail criteria.	Pre-test measurements and limits should be included in the pre-test preparation section.	Move last sentence in first paragraph of 6.1.2 to paragraph 5.1.	Wording will be added to clarify that the initial angle may be directly measured pre-test. Requirement retained in current paragraph since it is a Pass/Fail criteria. Revise Appendix 1 to include new modification: Paragraph 6.1 Revise to read: 6.1 Excursion Limits: The ATD

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					and ACSD excursions and initial positions described below shall be obtained by measuring the high speed film or video images recorded during the test, or in the case of initial position, measured directly prior to the test.
Astronics DME	Amended SAE AS 5276/1: 6.2	Change reference to “(36)” in last paragraph to “(36 ms)”.	Unit related to magnitude needs to be defined.	Change “(36)” to “(36 ms)”	<p>The term commonly used for the intended version of the Head Injury Criteria (HIC) calculation is HIC36. The text will be revised to reflect this designation.</p> <p>Revise Appendix 1, FAA modification to Paragraph 6.2 as follows:</p> <p>Revise text to read:</p> <p>The Head Injury Criterion (HIC36) is calculated according to the following equation:</p> $HIC = \left[(t_1 - t_2) \left[\int_{t_1}^{t_2} a(t) dt \right]^{2.5} \right]_{Max}$ <p>Where:</p> <p>t1, t2 = Any two points in time during the head impact which are not separated by more than a 36 millisecond time interval a(t) = The resultant head</p>

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					<p>acceleration at the center of gravity of the ATD head expressed as a multiple of g (the acceleration of gravity)</p> <p>The maximum value of the HIC36 computation from data acquired during the impact test, including rebound motion of the ATD and ACSD, shall not exceed a value of 1,000.</p>
Astronics DME	Amended SAE AS 5276/1: 7.1	Eliminate Type III ACSD option and labeling for Type III ACSD.	Passenger seats must be provided for each occupant who has reached his or her second birthday per 14 CFR 25.785. This means that all existing and future passenger seats must satisfy 14 CFR 25.785 and there is no need for a toddler ACSD.	Eliminate Type III or Footnote the Type III Toddler citation as follows: Children that have a minimum standing height of 34 inches are to be seated and restrained in the passenger seat.	No Change: This comment is out of scope. Use of any child restraint system in aircraft is currently optional. The purpose of a Type III ACSD is to provide a higher level of safety for children than provided by a passenger seat.
Astronics DME	Amended SAE AS 5276/1: 3.2.7	49 CFR 571.213 §§ S5.2.2.1 does not exist.	Review of 49 CFR 571	Change citation in TSO to 49 CFR 571.213 §§ S5.2.2.1(a)	<p>The intent was to address (a), (b) and (c) using the single reference to S5.2.2.1. Wording will be revised to specifically call out the subparagraphs.</p> <p>Revise Appendix 1, FAA modification to Paragraph 3.2.7 as follows:</p> <p>Change §§ S5.2.2.1 to §§ S5.2.2.1 (a), (b), and (c)</p>

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Astronics DME	Amended SAE AS 5276/1: 2.6	Definitions are per 49 CFR 571.213 § S4 which include the definition for a “representative aircraft passenger seat”. 49 CFR 571.213 § S4 defines a simulated aircraft passenger seat as being either an FAA approved production passenger seat or a seat conforming to Figure 6 of 49 CFR 571.213. The passenger seat defined in the amended SAE AS5276/1 is significantly different than FAA approved passenger seats and the simulated aircraft passenger seat described in Figure 6. Revise proposed TSO C100c to allow the use of the passenger seat described in the amended SAE AS5276/1 document, an FAA approved passenger seat or the simulated aircraft passenger seat described in Figure 6.	If DOT is testing and approving child restraints for use on automotive passenger seats and aircraft passenger seats using FAA approved or simulated aircraft passenger seats then there is no need for an amended automotive seat. DOT has already defined an acceptable means for approving a child restraint installed on aircraft passenger seats.	Remove all references to the TSO C-100c/SAE AS5276/1 amended automotive test fixture and replace with reference to the use of an FAA approved aircraft passenger seat or DOT approved simulated aircraft passenger seat per 49 CFR571.213 § S4.	No Change. The sole purpose of the representative aircraft passenger seat as defined in 49 CFR § 571.213 S4 is for conducting the inversion tests described in 49 CFR § 571.213 S8.2 which is cited in paragraph 3.5 of SAE5276/1. That seat is not used for any of the dynamic tests contained in 49 CFR § 571.213.
Astronics DME	Amended SAE AS 5276/1: 5.4	Requirements of amended SAE AS5276/1 5.4 and 5.1 of the amended SAE AS5276/1 conflict with each other.	Para 5.1 indicates the ASCD is installed on the passenger seat test fixture per manufacturers instruction. Para 5.4 places a limit on lap belt tightening.	Delete para 5.4 in amended SAE AS5276/1.	No Change. The belt adjustment procedures referenced by amended paragraph 5.4 are accomplished after all other ASCD installation tasks are complete so there is no conflict with the other requirements. Since the belt tension initially achieved when installing the ASCD per the manufactures instructions could vary

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					significantly, specifying a limited acceptable range for belt tension adjustment provides test consistency.
Astronics DME	Amended SAE AS 5276/1: Figure A2	Amended 49 CFR 571.213 standard seat assembly test fixture does not have the same seat, seat back and lap belt anchor locations as the simulated aircraft passenger seat.	If DOT is testing and approving child restraints for use on automotive passenger seats and aircraft passenger seats using FAA approved or simulated aircraft passenger seats then there is no need for an amended automotive seat. DOT has already defined an acceptable means for approving a child restraint installed on aircraft passenger seats.	Remove all references to the TSO C-100c/SAE AS5276/1 amended automotive test fixture and replace with reference to the use of an FAA approved aircraft passenger seat or DOT approved simulated aircraft passenger seat per 49 CFR571.213 § S4.	No Change. The sole purpose of the representative aircraft passenger seat as defined in 49 CFR § 571.213 S4 is for conducting the inversion tests described in 49 CFR § 571.213 S8.2 which is cited in paragraph 3.5 of SAE5276/1. That seat is not used for any of the dynamic tests contained in 49 CFR § 571.213.
Cessna Carlos Ayala Manager, Airworthiness	FAA has provided a representative excerpt here from Cessna's complete submittal follows this matrix.	Cessna Aircraft Company has no comment on this issue at this time.			No response required.
Family Member - American Eagle Flight 4184 Jennifer Stansberry Miller	FAA has provided a representative excerpt here from Jennifer Stansberry Miller's complete submittal follows this matrix.	Though I appreciate any and all efforts regarding child safety in aviation, I feel that the overall picture is being missed here. (Complete Stansberry Miller submittal follows this matrix)		I am recommending that in addition to this current issue, that an overall mandate of requiring all passengers regardless of age and size, should be required to purchase a seat and subsequently, have the proper restraints reflective of the child's age and weight as seen in automobiles	Comments are beyond the scope of the TSO and will be forwarded to the appropriate FAA office.

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SSEAT-Safe Seats for Every Air Traveler Jan Brown	FAA has provided a representative excerpt here from SSEAT-Safe's complete submittal follows this matrix.	For over 21 years there has been endless discussion re: lap children on planes and the risk of such a policy. All talk, no action. (Complete SSEAT submittal follows this matrix)		Mandate child seats now	Comments are beyond the scope of the TSO and will be forwarded to the appropriate FAA office.
NADA/F Gail Dunham, , Executive Director, and Matt Ziemkiewicz, President,	FAA has provided a representative excerpt here from NADA/F complete submittal follows this matrix.	All government agencies, the American Academy of Pediatrics, the airlines and more have always agreed that the safest place for a child under the age of two is in a child restraint. (Complete NADA/F submittal follows this matrix)		In the interest of Child Safety in Flight we are requesting an FAA mandate to require child restraint seats (CRS) for children under the age of two in commercial flights.	Comments are beyond the scope of the TSO and will be forwarded to the appropriate FAA office.