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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2015-8298; Special Conditions No. 25-611-SC]

Special Conditions: JAMCO America, Inc., Boeing Model 777-300ER, Dynamic Test Requirements for Single-Occupant Oblique (Side-Facing) Seats with Inflatable Restraints

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special condition; request for comments; corrections.

SUMMARY: This document corrects omissions in docket no. FAA-2015-8298, special conditions no. 25-611-SC, which was published in the Federal Register on March 16, 2016 (81 FR 13969). The special conditions in the published document are incomplete. This correction replaces the entire special conditions section from that which appeared in the original Federal Register publication.

DATES: This action is effective on JAMCO America, Inc., on **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. We must receive your comments **[INSERT DATE 45 DAYS FROM DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

FOR FURTHER INFORMATION CONTACT: John Shelden, FAA, Airframe and Cabin Safety Branch, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington, 98057-3356; telephone (425) 227-2785; facsimile (425) 227-1320.

SUPPLEMENTARY INFORMATION: On March 16, 2016, the **Federal Register** published a document designated as “Docket No. FAA-2015-8298; Special Conditions No. 25-611-SC,” (81 FR 13969). That document issued special conditions pertaining to dynamic test requirements for single-occupant oblique (side-facing) seats with inflatable restraints on Boeing Model 777-300ER airplanes. As published, the special conditions are incomplete. The applicant was aware of the complete set of conditions at the time of the original, incomplete publication.

Correction

The following special conditions replace the entire special conditions section of the final special conditions document [FR Doc. 2016-05995 Filed 3-15-16; 8:45 am], published on March 16, 2016 (81 FR 13969). The introductory language was previously published and is not changed.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Boeing Model 777-300ER airplanes modified by JAMCO.

Oblique (Side-Facing) Seats Special Conditions

In addition to the requirements of § 25.562:

1. Head Injury Criteria (HIC):

Compliance with § 25.562(c)(5) is required, except that, if the anthropomorphic test device (ATD) has no apparent contact with the seat and related structure but has contact with an airbag, a HIC unlimited score in excess of 1000 is acceptable, provided the HIC15 score (calculated in accordance with 49 CFR 571.208) for that contact is less than 700.

2. Body-to-Wall/Furnishing Contact:

If a seat is installed aft of structure (e.g. interior wall or furnishings) that does not provide a homogenous contact surface for the expected range of occupants and yaw angles, then additional analysis and tests may be required to demonstrate that the injury criteria are met for the area that an occupant could contact. For example, if different yaw angles could result in different airbag device performance, then additional analysis or separate tests may be necessary to evaluate performance.

3. Neck Injury Criteria:

- a. The seating system must protect the occupant from experiencing serious neck injury. The assessment of neck injury must be conducted with the airbag device activated, unless there is reason to also consider that the neck-injury potential would be higher for impacts below the airbag-device deployment threshold.
- b. The N_{ij} , calculated in accordance with 49 CFR 571.208, must be below 1.0, where $N_{ij} = F_z/F_{zc} + M_y/M_{yc}$, and N_{ij} critical values are:
 - i. $F_{zc} = 1530$ lb for tension
 - ii. $F_{zc} = 1385$ lb for compression
 - iii. $M_{yc} = 229$ lb-ft in flexion
 - iv. $M_{yc} = 100$ lb-ft in extension
- c. In addition, peak upper neck F_z must be below 937 lb in tension and 899 lb in compression.
- d. Rotation of the head about its vertical axis relative to the torso is limited to 105 degrees in either direction from forward-facing.

- e. The neck must not impact any surface that would produce concentrated loading on the neck.

4. Spine and Torso Injury Criteria:

- a. The lumbar spine tension (F_z) cannot exceed 1200 lb.
- b. Significant concentrated loading on the occupant's spine, in the area between the pelvis and shoulders during impact, including rebound, is not acceptable. During this type of contact, the interval for any rearward (X-axis direction) acceleration exceeding 20g must be less than 3 milliseconds as measured by the thoracic instrumentation specified in 49 CFR part 572, subpart E, filtered in accordance with SAE recommended practice J211/1, "Instrumentation for Impact Test-Part 1-Electronic Instrumentation."
- c. The occupant must not interact with the armrest or other seat components in any manner significantly different than would be expected for a forward-facing seat installation.

5. Pelvis Criteria:

Any part of the load-bearing portion of the bottom of the ATD pelvis must not translate beyond the edges of the seat bottom seat-cushion supporting structure.

6. Femur Criteria:

Axial rotation of the upper leg (about the Z-axis of the femur, per SAE J211/1) must be limited to 35 degrees in the strike direction from the normal seating position. Evaluation during rebound need not be considered.

7. ATD and Test Conditions:

Longitudinal tests conducted to measure the injury criteria above must be performed with the FAA Hybrid III ATD, as described in SAE 1999-01-1609, “A Lumbar Spine Modification to the Hybrid III ATD For Aircraft Seat Tests.” The tests must be conducted with an undeformed floor, at the most-critical yaw cases for injury, and with all lateral structural supports (e.g. armrests or walls) installed.

Inflatable Lapbelt Special Conditions

The inflatable lapbelts must meet special conditions no. 25-187A-SC, “Boeing Model 777 Series Airplanes; Seats with Inflatable Lapbelts.”

1. Because this type of protection system may or may not activate during various crash conditions, the applicant must demonstrate that the injury criteria listed in these special conditions are not exceeded in an event which is slightly below the activation level of the airbag system.
2. Additionally, as indicated in special conditions no. 25-187A-SC, inflatable lapbelts must be shown to not affect emergency-egress capabilities in the main aisle, cross-aisle, and passageway.

Issued in Renton, Washington on June 17, 2016.

Michael Kaszycki
Assistant Manager, Transport Airplane Directorate
Aircraft Certification Service
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