



March 31, 2021

Docket Management Facility, M-30
U.S. Department of Transportation
West Building, Ground Floor, Rm. W12-140
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590

Re: Docket No. NHTSA-2020-0093

Britax Child Safety, Inc. (Britax) submits these comments in response to the notice of proposed rulemaking (NPRM) issued by the National Highway Traffic Safety Administration (NHTSA) regarding certain amendments to FMVSS No. 213, which incorporate a new test sled assembly and update a number of test procedures. Britax fully supports the efforts of NHTSA to update and modernize FMVSS No. 213 to further promote child passenger safety.

NHTSA has requested comments on the NPRM and Britax provides the following responses arranged by topic.

Minimum Recommended Weight for Forward-Facing CRS Use

NHTSA has proposed that the minimum recommended weight for forward-facing CRS use be increased from 9 kg to 12 kg. Most manufacturers in the United States communicate recommended weights primarily in pounds, and consumers often do not know their child's weight to the ounce. If the lower limit is set to 12 kg (26.5 lb), manufacturers may choose to use either 26.5 lbs or to round up to a whole number. We ask NHTSA to consider setting the minimum recommended weight for forward facing use of CRSs to a whole number in pounds in order to help minimize consumer confusion and drive more consistency across manufacturers.

Test Procedure for Rear-Facing CRSs with Recommended Weights Above 18.2 kg

The proposed rear-facing positioning procedure for the HIII-3YO ATD adds clarity to the regulation for rear-facing CRSs with weight limits up to 18.2 kg. However, the proposed standard does not provide the same specificity for CRSs labeled for rear-facing use for children over 18.2 kg. Britax requests clarification for rear-facing use for children over 18.2 kg under the proposed rule.



3YO Rear-Facing Positioning Procedure

Britax supports the explicit inclusion of an ATD that represents an older toddler in the rear-facing condition. We applaud both the consideration in matching the proposed test condition with real toddler lower extremity posture and the attention to practical considerations such as implementing the positioning procedure in the laboratory.

Britax requests further consideration of the non-biofidelic condition with the knee stops removed. The supporting reports to date seem to analyze repeatability and reproducibility of the summary metrics, but they lack discussion of how kinematics were affected by the lower leg behavior. The proposed positioning procedure, in which the knee stops are removed, is explicitly not biofidelic. This condition may, in some configurations of current or future designs, produce ATD-to-ATD or ATD-to-CRS contact. Further investigation by the NHTSA may be merited to better understand how factors such as lateral distance between the feet or ATD footwear can be controlled to help provide a repeatable test method. Additionally, a procedure to identify and discount such contact may be appropriate, like that specified in CMVSS 213 215(1)(d), which excepts from the head acceleration limit any acceleration caused by another part of the ATD striking its head.

Other Test Methodology Topics

Harness Tensioning Procedure

The current test procedure in FMVSS 213 for harness tension has been described as difficult to use. A recent study by Mansfield, et al, recruited 7 operators from 4 sled testing facilities in the United States to evaluate different harness tightening procedures. The operators rated 5 different procedures for ease-of-use on a scale of Excellent/Good/Fair/Poor; the FMVSS 213 procedure was ranked lowest. It was the only method to receive any "Poor" ease-of-use ratings, with 6 of the 7 operators choosing this option. Operators involved in the study reported relying on proxy procedures to achieve the prescribed harness tightness.¹

In the Repeatability and Reproducibility Report for the updated FMVSS 213 bench, the dynamic tests were conducted with a reported target harness tension of 2-4 lbs, apparently reflecting an alternative procedure to that described in the regulation.² Britax requests that if NHTSA has identified alternative procedures to be acceptable for compliance or certification testing, that those procedures be described in the published rule to promote both transparency and consistency across test facilities.

¹ See Mansfield, J., Baker, G., and Bolte, J., "Evaluation of Harness Tightening Procedures for Child Restraint System (CRS) Sled Testing," SAE Technical Paper 2019-01-0617, 2019, doi:10.4271/2019-01-0617

² See Maltese MR, Horn W. Final Summary Report of FMVSS No. 213 R&R Testing. National Highway Traffic Safety Administration; 2019. Report 213R&R-CAL-19-018



Vehicle Belt Webbing for Dynamic Testing

The current TP-213 test procedure requires a five-panel polyester webbing compliant with FMVSS 209. Five-panel polyester webbing is not frequently used in new vehicles and has become difficult for testing facilities to source. Britax requests the NHTSA to consider updating the specifications for the vehicle belt webbing to reflect more closely the performance characteristics of vehicle webbing in modern vehicles.

Installation Procedure for CRSs with Support Legs

Support legs are a feature utilized on CRSs in many parts of the world, including the United States. While NHTSA has indicated that it will not be including a procedure for testing with the support leg in use, Britax requests the NHTSA consider further guidance on its expectations for installation (e.g., whether the leg is fixed, stored, or removable) for CRSs with this feature pursuant to the proposed rule.

Installation Procedure for CRSs with Rigid Lower Anchor Connector

When a CRS is installed to the child restraint anchorage system on the standard seat assembly, the current rule specifies that the belt systems be adjusted to a tension of 53.5 to 67 N as measured on the webbing portion of the belt. However, this procedure does not provide specific guidance for installing a CRS with a rigid lower anchor attachment. Britax requests the NHTSA consider further guidance in the installation procedure for CRSs with rigid lower anchor attachments.³

³ ECE R129 instructs that an ISOFIX child restraint is installed with a force of 135 N applied parallel to the test seat cushion. See R129: 7.1.3.5.2.1. Installation of Integral Universal ISOFIX Enhanced Child Restraint Systems (i-Size), or Integral Specific vehicle ISOFIX Enhanced Child Restraint Systems on the test bench. The unoccupied ISOFIX Enhanced Child Restraint System shall be attached to the ISOFIX anchorage system. Securing the ISOFIX attachments to the ISOFIX lower anchorages shall be permitted to draw the unoccupied Enhanced Child Restraint System towards those anchorages. An additional force of 135 +/- 15N shall be applied in a plane parallel to the surface of the test seat cushion. The force shall be applied along the centre line of the Enhanced Child Restraint System and at a height no more than 100 mm above the cushion.



Virtual Models for CRS Fit

There are a couple key areas for future development that would further increase the utility of this resource. Britax suggests the following additions to the model: (i) the expansion of the covered age range through infancy, and (ii) the ability to articulate the toddler model, especially flexion angle at the hip and flexion/extension of the torso and neck.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Anna Early". The signature is fluid and cursive, with the first name being more prominent.

Anna Early
General Counsel, The Americas
Britax Child Safety, Inc.