

and the adult population, without worrying about the incompatibilities of those designs with child restraint systems. The petitioner has shown that the 125 mm displacement limit would have the effect of intertwining the two systems again, without a compelling need to do so, contrary to the intent of the rulemaking. By causing vehicle manufacturers to reduce lap belt angles, the LATCH system would limit the ability of vehicle manufacturers to optimize seat belt designs that could greatly improve the restraint of older children, teenagers, and adults.

Manufacturers might have to over-design to meet both the 15,000 N strength requirement of the standard and a displacement limit for LATCH-equipped seating positions, which could result in the unnecessary stiffening of vehicle seat and floor structures and other design changes that curtail the ability of belt systems to restrain occupants.

A displacement limit is extremely objective. However, a displacement limit impedes manufacturers' abilities to optimize seating and belt designs to better restrain older children, teenagers and adults. Sufficient objectivity can be achieved in a manner other than by specifying the displacement limit. Instead of the 125 mm displacement limit, the standard will specify that, when subjected to the 15,000 N test load, the tether anchorage shall not separate completely from the vehicle seat or seat anchorage or the structure of the vehicle. The language harmonizes with that of Transport Canada's Regulation 210.2, "Lower Universal Anchorage Systems for Restraint Systems and Booster Cushions" (Standard 210.2), which specifies that "A lower universal anchorage system installed in a row of designated seating positions shall not separate completely from the vehicle seat or seat anchorage or the structure of the vehicle when tested" by pulling with a force of 15,000 N ("Strength Requirements").

The establishment of a displacement limit for the static strength test that is both objective and related directly to the safety performance of the system is difficult for many reasons. Standard No. 225 permits tether anchorages to be located in a wide range of vehicle locations relative to the placement of the child restraint itself, e.g., on the rear filler panel, on the floor, on the roof, etc. Because of this design latitude, the forces applied through the tether strap on the SFAD test device to the anchorages themselves vary widely in both magnitude and direction. As such, the measurement of displacement of the tether anchorage—either in a horizontal

direction or in a direction in line with the application of force—may or may not be relevant to the performance of the child restraint. On the other hand, if the anchorage does not structurally fail during the very slow (27 ± 3 seconds) application of force ("withstands" the force) during the static compliance test, the agency is confident that the same anchorage will perform well in dynamic crash conditions. As noted above, the criteria adopted today are comparable to those Transport Canada incorporated into that country's final regulation on universal child restraint anchorage systems.

2. Strength of Lower Anchorages

i. 11,000 N Requirement. The 11,000 N force level was supported by test data obtained from Transport Canada. Canada performed 48.3 km/h (30 mph) dynamic testing of a 6-year-old child dummy in a 17 lb booster that was attached to the vehicle seat assembly by rigid LATCH attachments on the child restraint. Dynamic loads recorded at one lower bar was approximately 5,500 N, resulting in what the agency believed to be a combined dynamic load of about 11,000 N.

The Alliance petitioned for reconsideration of the strength requirement, believing that an 8,000 N load application in the forward direction is sufficient for motor vehicle safety. The reasons underlying the petitioner's view were the same ones discussed above regarding the 15,000 N requirement for testing tether anchorages. NHTSA is denying the petitioner's request, for the same reasons the agency has denied the request to reduce the tether anchorage requirements.

NHTSA has regarded the test of the two lower LATCH anchorages as a misuse test. Specifying that the tether anchorage would not be attached in the test was consistent with the agency's objective of ensuring that the child restraint anchorages system will retain the child restraint system in the event that the tether is misused or not used at all (64 FR 10805). Lower performance requirements could be justified for the misuse situation, since the full performance of the safety system is not being assessed. There are precedents in the agency's safety standards where NHTSA tests in a misuse condition to ensure a minimum level of performance if misuse occurs, and imposes less stringent performance requirements for that test. (See, e.g., S6.1.1(b)(2) of Standard No. 213, Test Configuration II, which is a 20 mph misuse test of certain child restraints. Test Configuration II is used to assess the performance of child

restraints in misuse conditions such as: tether unattached, and a fixed or movable surface in front of test dummy unbuckled.)

In assessing the Alliance's petition for reconsideration of the lower anchorage strength requirement, NHTSA recognizes that the crash forces transmitted to the child and CRS through the LATCH anchorage system would be the same regardless of whether the CRS is attached to the vehicle via the LATCH (tethers plus lower anchorages) or only the lower anchorages. We continue to stress the need to install child restraints (convertible and forward-facing CRS) properly by securing them to the vehicle by the full LATCH system, or with a tether and seat belt, in order to obtain the full protective benefit of the restraint system. The agency also plans to revise *Buying A Safer Car For Child Passengers* and other consumer information materials to better educate parents and caregivers about the added level of protection afforded by the tether. As part of the agency's efforts to inform consumers, new LATCH literature has been developed that explains the use of the new system. Additionally, the agency's training curriculum is being updated and revised to ensure that all trained child passenger safety technicians are properly informed that using the tether enhances the safety benefits of child restraints.

The March 1999 final rule, however, allows convertible cars and school buses to meet the CRS anchorage requirements by installing only the lower LATCH anchorages due to the practical difficulties concerning the installation of tether anchorages on these vehicles. In view of several interpretations concerning positioning of tether anchorages in locations that are recessed into the seat back or under the seat itself, the agency wants to reconsider the practicability issue and is interested in information showing the degree of difficulty of installing tether anchorages on those vehicles. The zone in which the tether anchorage may be located as specified in the standard is relatively large, possibly affording vehicle manufacturers wide latitude in designing viable alternatives.

Further, the agency is planning to issue a notice in the future addressing a new generation school bus occupant protection system. The agency is evaluating alternative restraint systems and seating systems to determine the feasibility of requiring these in school buses. The agency will address the feasibility and need to incorporate tether anchorages on school buses as part of that work.