

In addition, the agency is also considering whether to require tethers on all child restraints. Standard No. 213 does not require tethers per se. Instead, the standard subjects forward-facing child restraints to a 720 mm (28-inch) head excursion limit, which a restraint may meet tethered. (An 813 mm (32-inch) head excursion limit must be met untethered.) Child restraints that have LATCH attachments able to meet the 720 mm head excursion limit without a tether, and that do not have a tether, will not be able to take advantage of the superior performance of the vehicle's full 3-point LATCH system. For this reason, the agency is interested in information on requiring tethers on all forward-facing child restraints, to the extent practicable.

ii. **Displacement Limit.** The Alliance petitioned for reconsideration of the 125 mm displacement limit specified in S9.4.1. We responded to its petition on this issue by denying the suggestion to replace the displacement limit with an alternative that the anchorage "withstand" the required forces, because a displacement limit is more objective than the latter in determining whether an anchorage met the performance criteria. 64 FR at 47576. The Alliance petitioned again following the denial (docket 6160-11). Petitioner stated that the displacement limit "effectively curtails the options available to the restraint system designer to manage crash energy and provide protection to the occupant." Petitioner stated that lower excursion limits subject occupants to higher accelerations. The Alliance stated (6160-11):

Allowing the occupant to undergo displacement during impact, as is done with a seat belt load limiter, is a powerful way to limit occupant accelerations and the associated injury potential. If an occupant strikes an object in a vehicle, high accelerations may result. This is a motivation to limit excursion. However, restricting all vehicles to an excursion limit of 125 mm denies restraint system designers flexibility to manage crash energy in a way that takes advantage of available space. Many vehicles used to transport children (minivans, sport utility vehicles, quad-cab style trucks, etc.) have large rear seating areas. Such vehicles have the space necessary to permit larger excursions of a CRS without an increased risk of interior impact. A fixed limit of 125 mm of excursion does not allow the available space to be used to its full potential.

The Alliance suggested an alternative approach to the 125 mm displacement limit for the forward strength test (S9.4.1(a)). Petitioner suggested that displacement should be permitted to vary from 125 to 200 mm, depending on the clearance that is in the vehicle's rear

seat (the distance between the rearward surface of the front seat back to the forward surface of the rear seat back). This assumed a maximum applied load of 8,000 N. The petitioner explained that 50 mm more excursion would reduce the dynamic force on the child/CRS system since the energy is absorbed by motion through a greater distance. Petitioner explained that 50 mm more would reduce a 23 g force to 16 g.

NHTSA has granted this petition in part. We are increasing the 125 mm displacement limit of S9.4.1(a) for the forward pull test. Instead of varying displacement depending on available rear seat clearance, the agency has decided to increase the displacement limit to 175 mm. A single value of 175 mm would increase the ease with which a compliance test could be conducted. Increasing the displacement limit to 175 mm would increase manufacturers' ability to limit accelerations while keeping the test as objective as possible. The 175 mm displacement limit is established to provide a limit at the 11,000 N loading level that is consistent with the petitioner's suggested 125 mm displacement limit at the 8,000 N loading level (Docket 6160-11).

The Alliance also suggested an alternative approach to the 125 mm displacement limit for the lateral strength tests (S9.4.1(b)). Petitioner suggested that displacement should be 125 mm for outboard seating positions (see definition, 49 CFR 571.3) and 150 mm for positions other than outboard seating positions. The reasons for the suggestion are the same as those discussed for the forward pull test (S9.4.1(a)).

NHTSA has granted this request and has increased the displacement limit for positions other than outboard seating positions from 125 mm to 150 mm. A single value of 150 mm would increase the ease with which a compliance test could be conducted. An increase of 25 mm would allow manufacturers the ability to use displacement to better manage the crash forces on the child/CRS system without sacrificing safety.

iii. **Ten-Second Hold Time.** The test procedures for the strength test of the lower LATCH anchorages are set forth in S11 of Standard No. 225. S11(a) specifies that the 11,000 N load is applied in the forward direction as linearly as practicable from a 500 N preload to a full force application of 11,000 N in not less than 24 seconds and not more than 30 seconds, and maintained at an 11,000 N level for 10 seconds. S11(b) specifies the same procedure for the lateral force test, except that the full force application is 5,000 N.

The Alliance petitioned for reconsideration of the force application profile for the lower anchorages. Petitioner requested that FMVSS No. 225 be revised to permit the manufacturer latitude in specifying the period of time in which the force is applied, within 30 seconds, as long as the rate does not exceed 135,000 N/s. Transport Canada permits the vehicle manufacturer to select the force application time. Further, the draft ISO test procedure requires the force to be applied in 2 seconds. Thus, the Alliance contended that lower anchorages would have to be tested to different conditions since no single test can be performed to satisfy all regulatory requirements. The Alliance wanted Standard No. 225's test procedure to allow manufacturers to select the force application time.

In the August 1999 final rule, we denied the petitioner's request that manufacturers be permitted to specify the force application rate based on our belief that the force should be applied at a constant rate for as long a time period as possible. This is to assure that the test adequately measures the strength of the anchorage. Metal structures generally can withstand greater forces under a faster rate of application than under a slower one. This means that an anchorage that fails when the required force is reached after 30 seconds might not fail if the required force is reached in a very short period of time. Adopting the petitioner's request could have allowed the use of weaker anchorages, resulting in a possible reduction of safety.

We also explained that the application rate is justified also because Standard No. 225 uses a laboratory test instead of a crash test to measure the strength of child restraint anchorages. Safety requirements can evaluate the performance of vehicle safety equipment by providing for test conditions that are structured to ensure the safety equipment will perform adequately in actual crash conditions without simulating those conditions. Test conditions that do not simulate actual crash conditions are developed generally when it would be infeasible or too costly to design and/or implement any single test procedure or series of test procedures that reasonably simulates the conditions to which the safety equipment will be exposed, including possible crash conditions and possible degradation over time because of exposure to environmental factors. The test conditions specified for this type of safety requirement are intended to subject the vehicle safety equipment to force or exposure levels that are sufficiently high that one can reasonably