

Longitudinal Full Door Test

- Overview
 - Quasi-static door-in-frame test (door, latch, striker and hinges in a simulated door frame)
 - Tests side hinged (except cargo) doors in the fully latched position
 - Developed to simulate a collision in which the affected side of the vehicle is stretched, leading to the possibility that the striker could be torn from its mated latch (i.e., far side door in side impacts, and front and rear offset crashes on the opposite side door)
 - Replaces current longitudinal component test for latch in primary position
- Performance requirement
 - The door, latch, striker, and hinges mounted in a simulated door frame shall not separate when simultaneous tensile forces of 17,000 N longitudinal and 1,000 N lateral are applied to the entire door system for a period of not less than 10 seconds after the load force is achieved.
- Test Procedure
 - The test includes the door, latch, striker and hinges in a simulated doorframe with two hydraulic actuators. The first actuator is connected to the striker and positioned along the longitudinal axis of the door and adjusted to the height of the door latch. This actuator applies a tensile longitudinal load between the mated latch and striker at a constant rate of displacement of 20 mm per minute. A second actuator is positioned at the end of the door, 90 degrees to the first actuator, and applies a constant lateral force to the door, which also causes tension between the mated latch/striker.
- NHTSA Testing
 - 1993-1994
 - 29 doors tested from 1983-1991 vehicles
 - Minimum test failure load = 4,565 N
 - Maximum test failure load = 25,562 N
 - Average test failure load = 16,270 N
 - 2000-2001
 - 21 doors tested from 1993-1998 vehicles
 - Minimum test failure load = 11,427 N
 - Maximum test failure load = 22,204 N
 - Average test failure load = 16,685 N
 - NASS weighted - average test failure load = 17,000 N
- Test Reports
 - DOT HS 808 188, "Door Latch Integrity Study: Evaluation of Door Latch Failure Modes", January 1994.
 - Howe, G., Leigh, M., Willke, D., "Door Latch Integrity Study: Engineering Analysis and NASS Case Review", December 1991, NHTSA Docket 94-70-N02-006
- Diagram (see next page)

New Longitudinal Full Door Test

For Hinged Side Doors (except Cargo) in Primary Latched Position

The door, latch, striker, and hinges in a simulated door frame shall maintain and not separate for at least 10 seconds after achieving a longitudinal tensile force of 17,000 N and a lateral tensile force of 1,000 N.

