COMPARISON BETWEEN FMVSS No. 206 and ECE R11

DOOR COMPONENT	U.S. - FMVSS 206	Differences in ECE R11.02	Comments
A. Application			
1. Vehicles			
a. Passenger Cars	- Side doors, door locks, latches and hinges	- Side doors, latches and hinges on M1 and N1 passenger cars **(≤ 9 seats and < 3.5 tonnes (~7,000 lb))**	
	- Back doors, door locks, latches and hinges on passenger cars manufactured after Sept 1, 1997 and with a GVWR ≤ 4,536 kg (10,000 lb).	Not specified	
b. MPVs	- Side doors, door locks, latches and hinges	- Side doors, latches and hinges on M1 and N1 MPVs **(≤ 9 seats and < 3.5 tonnes (~7,000 lb))**	
	Back doors, door locks, latches and hinges on MPVs manufactured after Sept 1, 1997 and with a GVWR ≤ 4,536 kg (10,000 lb).	Not specified	
c. Trucks	- Side doors, door locks, latches and hinges	- Side doors, latches and hinges on M1 and N1 Trucks **(≤ 9 seats and < 3.5 tonnes (~7,000 lb))**	
	Back doors, door locks, latches and hinges on trucks manufactured after Sept 1, 1997 and with a GVWR ≤ 4,536 kg (10,000 lb).	Not specified	
2. Exemptions	Folding, roll-up and detachable doors and door components on doors modified for use with a wheelchair lift system	See above	

B. Requirements			
1. Hinged Side Doors, (Except Cargo)			
a. Door System	Not specified	Not specified	Research shows that door components affect one another during a crash causing doors to open. Therefore, a full door system test may capture these failures.
b. Latching System (latch and striker)	Requires that hinged side door latches must have a fully latched position; and a secondary/ intermediate latching position.	Same	
	Requires that hinged side door latches must withstand a longitudinal load of 11,000 N in the fully latched position and 4,450 N in the secondary latched position	Requires that hinged side door latches must withstanding a longitudinal load of **11,110 N** in the fully latched position and **4,440 N** in the secondary latched position.	The variation in loads are minor and they result from different methods of converting FMVSS 206's original English units to metric
	Requires that hinged side door latches must withstand a transverse load of 8,900 N in the fully latched position and 4,450 N in the secondary latched position	Requires that hinged side door latches must withstand a transverse load of **8,890 N** in the fully latched position and **4,440 N** in the secondary latched position	
	Requires that the door latch assembly shall not disengage from the fully latched position when a longitudinal or transverse load of 30g is applied to the door latch system (including the latch and its actuating mechanism with the locking mechanism disengaged). Verified by calculation (SAE J839) or by an agency approved test procedure.	Requires that the door latch shall not move from the fully latched position when an acceleration of 30g is applied in both directions longitudinally and transversally to the latch, including its actuating mechanism, with the locking mechanism disengaged. Verified by calculation (SAE J839) or by **dynamic inertial testing**	**Only, ECE 11 has provisions for an inertial dynamic testing procedure. However, it is unknown whether European manufacturers and testing facilities have ever conducted testing using this procedure.**
c. Hinges	Requires that each side door hinge system must support the door and withstand a longitudinal load of 11,000 N and a transverse load of 8,900N applied separately.	Requires that each side door hinge system must support the door and withstand a longitudinal load of **11, 110 N** and a transverse load of **8,890 N** applied separately.	Minor differences in test loads resulting from conversion.
	Not specified	Requires that the retention components of hinged mounted side doors, other than folding doors, shall be mounted at the forward edge in the direction of travel.	ECE 11 requires that hinged side doors, except cargo doors, have hinges located on the front of the door.
Door Locks	Requires that each door shall be equipped with a locking mechanism with an operating means in the interior of the vehicle.	Not specified	
	Requires that side front door locks, when engaged, disable the outside door handle or other outside latch release control shall be inoperative	Not specified	
	Requires that side rear door locks, when engaged, disable both the outside and inside handles or other latch release controls shall be inoperative	Not specified	

2. Hinged Side Doors, Cargo Type			
a. Door System	Not specified	Not specified	A better test is needed to address the number and orientation of cargo door latches and better simulate actual loading conditions that cause openings.
b. Latching Systems (latch and striker)	Requires that each hinged side cargo door latches must only have a primary latching position	1. Requires that each hinged side cargo door latches must only have a primary latching position **and a secondary/intermediate latching position.**	FMVSS 206 does not have a requirement and strength provisions for the intermediate latching position.
	Requires that hinged side door latches must withstand a longitudinal load of 11,000 N in the fully latched position	Requires that hinged side door latches must withstanding a longitudinal load of **11,110 N** in the fully latched position and **4,440 N** in the secondary latched position.	Conversions differences in test loads and ECE 11 has strength provisions for the internediate latching position
	Requires that hinged side door latches must withstand a transverse load of 8,900 N in the fully latched position	Requires that hinged side door latches must withstand a transverse load of **8,890 N** in the fully latched position and **4,440 N** in the secondary latched position	
	Not specified	Requires that the door latch shall not move from the fully latched position when an acceleration of 30g is applied in both directions longitudinally and transversally to the latch, including its actuating mechanism, with the locking mechanism disengaged. Verified by calculation (SAE J839) or by **dynamic inertial testing**	ECE 11 requires inertial resistance for sliding door latches, whereas FMVSS 206 does not.
Hinges	Requires that each side door hinge system must support the door and withstand a longitudinal load of 11,000 N and a transverse load of 8,900N applied separately.	Requires that each side door hinge system must support the door and withstand a longitudinal load of **11,110 N** and a transverse load of **8,890N** applied separately	Conversions differences in test loads
	Not specified	Requires that the retention components of hinged mounted side doors, other than folding doors, shall be mounted at the forward edge in the direction of travel. In the case of double doors, this requirement shall apply to the door wing, which opens first; the other wing shall be capable of being bolted.	ECE 11 restricts the location of hinges
Door Locks	Requires that each door shall be equipped with a locking mechanism with an operating means in the interior of the vehicle.	Not specified	ECE 11 has no lock requirements
	Requires that side front door locks, when engaged, disable the outside door handle or other outside latch release control shall be inoperative	Not specified	
	Requires that side rear door locks, when engaged, disable both the outside and inside handles or other latch release controls shall be inoperative	Not specified	

3. Hinged Back Doors			
a. Door System	Not specified	Not specified	Because of number and orientation of back door latches, a door system test would better simulate actual loading conditions that cause doors to open.
b. Latching Systems (latch and striker)	Each back door must have at least <u>one primary latch and striker assembly</u> with a fully latched position and a secondary latched position	Not specified	ECE 11 has no requirements for back doors, locks, latches or hinges.
	Requires that primary back door latches must comply with load tests one, two and three as well as to inertial resistance requirements	Not specified	
	Requires that auxiliary back door latches, if present, must comply with load tests one and two and inertial resistance requirements	Not specified	
	<u>Load test one:</u> Fully latched: 11,000 N secondary latch: 4,450 N *Application of load*: perpendicular to the face of the latch (corresponding to the longitudinal load test for side doors)	Not specified	
	<u>Load test two:</u> Fully latched: 8,900 N secondary latch: 4,450 N *Application of load*: in the direction of the fork-bolt opening and parallel to the face of the latch	Not specified	
	<u>Load test three:</u> Back doors, opening upwards: Fully latched position shall not disengage under load of 8900N *Application of load:* orthogonal to directions of load tests one and two	Not specified	
	<u>Inertial Resistance Requirements</u> Requires that the fully latched position shall not disengage under inertia load of 30 g. *Application of the inertia load*: in the directions of load tests one, two and three.	Not specified	
c. Hinges	<u>Load test one:</u> Each back door hinge system shall support the door shall not separate under load of 11,000 N *Application of load*: perpendicular to the hinge face plate such that the hinge plates are not compressed against each other.	Not specified	
	<u>Load test two:</u> Each back door hinge system shall support the door shall not separate under load of 8,900N *Application of load*: perpendicular to the axis of the hinge pin and parallel to the hinge face plate such that the hinge plates are not compressed against each other.	Not specified	

	Load test three: Back doors opening upward: no separation under load of 8,900N *Application of load*: in the direction of the axis of the hinge pin	Not specified	
d. Door Locks	Requires that each back door system equipped with interior door handles or that leads directly into a compartment that contains one or more seating accommodations shall be equipped with a locking mechanism with operating means in both the interior and exterior of the vehicle. When the locking mechanism is engaged, both inside and outside door handles or other latch release controls shall be inoperative	Not specified	

4. Sliding Doors			
a. Door System	<u>Side Sliding Doors</u> Requires the track and slide combination or other supporting means of side sliding doors shall not separate under outward transverse load of 17,800 N (8,890 N to each load bearing member at opposite edges of door).	Same	
	<u>Back Sliding Doors</u> Requires the track and slide combination or other supporting means of side sliding doors shall not separate under outward transverse load of 17,800 N (8,890 N to each load bearing member at opposite edges of door).	Not specified	Only FMVSS 206 requires sliding back doors to have performance requirements.
b. Latching Systems (latch and striker)	Not specified	Requires that the sliding door latch/striker assembly must withstand a longitudinal load of 4,440 N in intermediate latched position 11,110 N in fully latched position.	Only ECE 11 requires sliding door latch requirements and a requirement to ensure door closure
	Not specified	Requires that the sliding door latch/striker assembly must withstand a transversal load of 4440 N in intermediate latched position 8890 N in fully latched position.	
	Not specified	Requires that the sliding door latch shall not move from fully latched position when acceleration of 30g is applied longitudinally and transversally to the latch, including its actuating mechanism, with the locking mechanism disengaged.	
	Not specified	Requires that sliding doors without an intermediate latched position: if the door is not fully latched, must automatically move away to a partially open position; readily apparent to the vehicle occupants	
c. Hinges	NA	NA	
d. Door Locks	No requirements	No requirements	

C. Test Procedures			
1. Hinged Side Doors (including cargo)			
a. Door System	Not specified	Not specified	
b. Latching Systems (latch and striker)	The test procedure specifies (defined in SAE J839): 1. For the longitudinal load attach the latch and striker to test fixture. Locate weights to apply 890 N tending to separate latch and striker in direction of door opening. Apply test load perpendicular to latch face at a rate $\leq$ 5 mm/min 2. For the transverse load attach latch and striker to test fixture Apply load in line with the contacting surfaces of latch and striker, in door opening direction at a rate$\leq$ 5 mm/min.	Same	
	The test procedure specifies (defined in SAE J839): For the (S5.1.1.2) Inertia load, calculation of complete door latch system (i.e. door latch, striker, outside and inside handle, key cylinder and any connecting mechanisms) in the fully latched position, showing that the system will remain in the fully latched position when subjected to an inertia load of 30g in any direction	Same as FMVSS 206 but provides the additional option to conducted dynamic inertial testing. *The dynamic test is as follows:* -vehicle itself or simulated structure secured to a chassis with door lock system fully latched -acceleration of 30 to 36 g applied to the chassis for at least 30 msec in forward direction parallel to vehicle longitudinal axis as well as in direction of the door opening, perpendicular to above described first direction - when equipped with lock device ensure that it does not come into action during the tests.	**Only, ECE 11 has provisions for an inertial dynamic testing procedure. However, it is unknown whether European manufacturers and testing facilities have ever conducted testing using this procedure.**
c. Hinges	Conventional Hinges The test procedure specifies (defined in SAE J934): Attach a test fixture to the mounting provision of the hinge system, simulating vehicle position (door fully closed) relative to the hinge centerline. Distance between the extreme end of one hinge in the system to the extreme end of another hinge in the system: 16.00 in (406.4 mm). Apply load equidistant between the linear center of the engaged portion& of the hinged pins and through the centerline of the hinge pin in the longitudinal vehicle direction (for longitudinal strength) and in the transverse vehicle direction (for transversal strength). Apply test load at a rate S 0.2 in (5 mm) per minute until failure. Record maximum load	Same	

	Piano Hinges The test procedure specifies (defined in SAE J934): For piano type hinges, the hinge spacing requirements of SAE J934 shall not be applicable and arrangement of the test fixture shall be altered as required so that the test load will be applied to the complete hinge	Same	
d. Door Locks	Not specified	Not specified	

2. Back Doors			
a. Door System	Not specified	Not specified	Because of number and orientation of back door latches, a door system test would better simulate actual loading conditions that cause doors to open.
b. Latching Systems (latch and striker)	The test procedure specifies: Load test one, two and three are same as for side door latches, longitudinal load, except that the test load must be applied in the directions specified in load tests one, two and three Inertia loads: same as for side door latches	Not specified	FMVSS 206 has a procedure for testing back door latches.
c. Hinges	The test procedure specifies: Same as for side hinged doors except that the loads shall be in the direction specified in test load one, two and three described above. The same test device may be used for load tests two and three.	Not specified	FMVSS 206 has a procedure for testing back door hinges.
d. Door Locks	Not specified	Not specified	

3. Sliding Doors			
a. Door System	<u>Side Sliding Doors</u> The test procedure specifies: Compliance shall be demonstrated by applying an outward transverse load of 8,900 Newtons (2,000 pounds) to the load-bearing members at the opposite edges of the door (17,800 Newtons (4,000 pounds) total). The demonstration may be performanced wither in the vehicle or with the door retention components in a bench test fixture	Same	
	<u>Back Doors</u> The test procedure specifies: Compliance shall be demonstrated by applying an outward transverse load of 8,900 Newtons (2,000 pounds) to the load-bearing members at the opposite edges of the door (17,000 Newtons (4,000 pounds) total). The demonstration may be performanced wither in the vehicle or with the door retention components in a bench test fixture	Not specified	FMVSS 206 has a procedure for testing sliding back doors.
b. Latching Systems (latch and striker)	Not specified	Same as for side hinged doors	FMVSS 206 does not test sliding door latches
c. Hinges	NA	NA	
d. Door Locks	Not specified	Not specified	