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Submitted for recognition as an American National Standard

(R) SEAT BELT HARDWARE TEST PROCEDURES

Foreword—This Document has also changed to comply with the new SAE Technical Standards Board format

1. **Scope**—This SAE Recommended Practice describes test procedures for evaluating hardware used in motor vehicle seat belt assemblies. Related hardware performance requirements are described in SAE J141.

Test procedures and performance requirements for retractors will be covered in separate SAE Recommended Practices to be issued later.

2. **References**

- 2.1 **Applicable Publications**—The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

- 2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J141—Seat Belt Hardware Performance Requirements
SAE J339—Seat Belt Assembly Webbing Abrasion Test Procedure

- 2.1.2 ASTM PUBLICATIONS—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 117—Method of Salt Spray (Fog) Testing
ASTM D 756—Service Conditions
ASTM E 4—Standard Methods of Load Verification of Test Machines

- 2.2 **Related Publication**—The following publication is provided for information purposes only and is not a required part of this document.

- 2.2.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J114—Seat Belt Assembly Webbing Abrasion Performance Requirements

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3. Definitions

- 3.1 Seat Belt Assembly**—Any strap, webbing, or similar device designed to secure a person in a motor vehicle with the intention of minimizing the risk of bodily harm in a collision (other than a system designed solely to accommodate children), including all buckles, adjusting mechanisms, fasteners, and related hardware.
- 3.2 Pelvic Restraint**—A seat belt assembly or portion thereof intended to restrain movement of the lower torso by directing forces to the pelvic girdle.
- 3.3 Upper Torso Restraint**—A portion of a seat belt assembly intended to restrain forward movement of the upper torso.
- 3.4 Type 1 Seat Belt Assembly**—A seat belt assembly which provides pelvic restraint.
- 3.5 Type 2 Seat Belt Assembly**—A seat belt assembly which provides both pelvic and upper torso restraint.
- 3.6 Type 2A Seat Belt Assembly**—A seat belt assembly consisting of either a separate upper torso restraint intended for use only with a Type 1 seat belt assembly or knee bolster, or an upper torso restraint which may be connected to a Type 1 seat belt assembly for use as a Type 2 seat belt assembly.
- 3.7 Type 4 Seat Belt Assembly**—An automatic seat belt system.
- 3.8 Hardware**—Any metal or rigid plastic part of the seat belt assembly.
- 3.8.1 BUCKLE—A quick release connector between two parts of a seat belt assembly.
- 3.8.2 ATTACHMENT HARDWARE—All load-bearing hardware designed for securing the webbing portion of a seat belt assembly to a motor vehicle structure or intermediate structural component including but not limited to retractors, end fittings, bolts, studs, nuts, or other attachment means but not including those components permanently fixed to the vehicle.
- NOTE—If the seat belt is attached to a seat, the seat is not attachment hardware.
- 3.8.3 ADJUSTABLE HARDWARE—The hardware designed for adjusting the size of a seat belt assembly to fit the user, including hardware that may be integral with a buckle, attachment hardware, or retractor.
- 3.9 Laboratory Ambient Conditions**—Conditions at $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ ($73.4\text{ }^{\circ}\text{F} \pm 3\text{ }^{\circ}\text{F}$) and a relative humidity between 48 and 67%.

4. Test Procedure

- 4.1 General**—All components shall be conditioned for 4 h under laboratory ambient conditions prior to conducting the test sequence outlined in Table 1.

NOTE—The humidity requirement is not applicable to components in Groups 3 and 4.

TABLE 1—TEST SEQUENCE

Test Method	SAE J140	Sequence of Tests	Sequence of Tests	Sequence of Tests	Sequence of Tests
	Paragraph Ref.	Group ⁽¹⁾ 1	Group ¹ 2	Group ¹ 3	Group ¹ 4
Conditioning, General	4.1	1	1	1	—
Corrosion	4.2	4	—	2	1
Temperature resistance	4.3	5	—	3	—
Strength	4.4	11	—	5	2
Hook retention	4.5	—	—	4	—
Buckle release					
Loop test	4.6	12	—	—	—
Access	—	6	—	—	—
Compression	4.7	9	—	—	—
Buckle latch—cycle and false latch	4.8	10	—	—	—
Tilt lock	5.2	2,7	2,5	—	—
Adjustment	5.1	3,8	3,6	—	—
Abrasion—system	—	—	4	—	—
Webbing tensile strength	6.1	—	7	—	—

- Group 1—Components from three assemblies for evaluation of a buckle or other adjustment means excluding retractors.
Group 2—Components from three assemblies which are normally used to adjust the size of a seat belt assembly, excluding retractors, for system abrasion as described in SAE J339.
Group 3—Components from three assemblies for evaluation of attachment hardware.
Group 4—Bolts, bolt systems, or other substitute attachment means.

4.2 Corrosion Resistance—Three seat belt assemblies shall be tested in accordance with ASTM B 117 published by the American Society for Testing and Materials (ASTM). The period of test shall be 50 h for all attachment hardware at or near the floor, consisting of two periods of 24 h exposure to salt spray each followed by 1 h drying. The period of test shall be 25 h for all other hardware, consisting of one period of 24 h of exposure to salt spray followed by 1 h drying. In the salt spray chamber, the parts from the three assemblies shall be oriented differently, at those orientations most likely to develop corrosion on the larger areas. At the end of the 1 h drying interval at the conclusion of the test, the seat belt assembly shall be washed thoroughly with water to completely remove the salt. After drying for at least 24 h under ambient laboratory conditions, attachment hardware shall be examined for ferrous corrosion on significant surfaces, that is, surfaces that can be contacted by a sphere 19 mm (0.75 in) in diameter. Other hardware shall be examined for ferrous and nonferrous corrosion which may be transferred either directly or by means of the webbing to a person or his or her clothing during use of a seat belt assembly incorporating the hardware.

4.3 Temperature Resistance—Three seat belt assemblies having plastic or nonmetallic hardware shall be subjected to the conditions prescribed in procedure D of ASTM D 756. The dimension and weight measurements shall be omitted. Buckles shall be unlatched during conditioning. The hardware parts, after conditioning, shall be used for all applicable assembly tests.