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LAND SEA AIR SPACE

TECHNICAL REPORT J141

SEAT BELT HARDWARE PERFORMANCE REQUIREMENTS—SAE J141

SAE Recommended Practice

Report of Motor Vehicle Seat Belt Committee approved February 1973.

1. Scope—This SAE Recommended Practice describes performance requirements for hardware used in Type 1 and Type 2 motor vehicle seat belt assemblies when tested in accordance with the test procedures specified in SAE J140.

NOTE: The performance requirements for seat belt assembly hardware in this report are intended to supersede those now reported in SAE J4c.

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

2. Definitions

2.1 Seat Belt Assembly—Any strap, webbing, or similar device designed to secure a person in a motor vehicle with the intention of mitigating the results of a collision, including all buckles and other fasteners and all hardware designed for installing the assembly in a motor vehicle.

2.2 Pelvic Restraint—A seat belt assembly or portion thereof intended to restrain movement of the pelvis.

2.3 Upper Torso Restraint—A portion of a seat belt assembly intended to restrain movement of the chest and shoulder regions.

2.4 Type 1—A seat belt assembly which provides pelvic restraint.

2.5 Type 2—A seat belt assembly which provides both pelvic and upper torso restraint.

2.6 Type 2A—A seat belt assembly consisting of either a separate upper torso restraint intended for use only with a Type 1 seat belt assembly 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.

2.7 Hardware—Any metal or rigid plastic part of the seat belt assembly.

2.7.1 BUCKLE—A quick release connector which fastens a person in a seat belt assembly.

2.7.2 ATTACHMENT HARDWARE—All hardware designed for securing the webbing of a seat belt assembly to a motor vehicle.

2.7.3 ADJUSTMENT HARDWARE—All hardware designed for adjusting the size of a seat belt assembly to fit the user, including such hardware that may be integral with a buckle, attachment hardware, or retractor.

3. Requirements for Hardware

3.1 General

3.1.1 HARDWARE—All hardware which contacts, under normal usage, an occupant, his clothing, or his seat belt assembly webbing shall be free from burrs and sharp edges, and shall be so designed and located in the assembly that the possibility of injury to the occupant shall be minimized.

3.1.2 BUCKLE RELEASE MECHANISM—The buckle release mechanism shall be designed to minimize the possibility of accidental release. A buckle, with the release mechanism in the normal position, shall have only one opening into which the tongue can be inserted on the end of the buckle designed to receive and latch the tongue.

3.1.3 ATTACHMENT HARDWARE

3.1.3.1 The attachment hardware shall be designed to prevent attaching bolts and other parts becoming inadvertently disengaged from the vehicle.

3.1.3.2 Reinforcing plates or washers furnished for universal floor installations shall be of steel, free from burrs and sharp edges on the peripheral edges adjacent to the vehicle, not less than 0.06 in (1.5 mm) in thickness, nor less than 4 in^2 (250 mm^2) in projected area. The distance between any edge of the plate and the edge of the attachment hole shall be at least 0.6 in (15 mm), and any corner shall be rounded to a radius of not less than 0.25 in (6 mm) or cut at a 45 deg angle along a hypotenuse not less than 0.25 in (6 mm) in length.

3.1.3.3 Attaching bolts for Type 1 assemblies or the pelvic portion of a Type 2 assembly shall have threads, when installed, having a fit equivalent to or tighter than $\frac{7}{16}$-20 UNF-2A or $\frac{1}{2}$-13 UNC-2A.

3.1.4 TEST SEQUENCE—When evaluating hardware components of a seat belt assembly, the test shall be conducted in the sequence shown in Table 1.

TABLE 1—TEST SEQUENCE

Test Method	Ref. Paragraph SAE J140	Sequence of Tests, Group[a] 1	2	3	4
Conditioning, general	3.1	1	1	1	—
Corrosion	3.2	4	—	2	1
Temperature resistance	3.3	5	—	3	—
Strength	3.4	11	—	5	2
Hook retention	3.4.3	—	—	4	—
Buckle release					
Loop test	3.5	12	—	—	—
Access	—	6	—	—	—
Compression	3.6	9	—	—	—
Buckle latch — cycle and false latch	3.7	10	—	—	—
Tilt lock	4.2	2,7	2,5	—	—
Adjustment	4.1	3,8	3,6	—	—
Abrasion — system	—	—	4	—	—
Webbing tensile strength	—	—	7	—	—

[a]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 any substitute attachment means.

3.2 Corrosion Resistance

3.2.1 Attachment hardware of a seat belt assembly after being subjected to the conditions specified in SAE J140, paragraph 3.2, shall be free of ferrous corrosion on significant surfaces, except for permissible ferrous corrosion at peripheral edges or edges of holes on underfloor reinforcing plates and washers. The test for corrosion resistance shall not be required for attachment hardware made from corrosion-resistant steel containing at least 11.5% chromium.

3.2.2 Surfaces of buckles and metallic parts, other than attachment hardware, of a seat belt assembly, after being subjected to the conditions specified in SAE J140, paragraph 3.2, shall be free of ferrous or nonferrous corrosion which may be transferred either directly or by means of the webbing to the occupant or his clothing when the assembly is worn.

3.3 Temperature Resistance—Plastic or other nonmetallic hardware parts of a seat belt assembly, when subjected to the conditions specified in SAE J140, paragraph 3.3, shall not deteriorate in any manner to cause the assembly to operate improperly or fail to comply with applicable requirements in paragraph 3 and in SAE J4c.

3.4 Attachment Hardware Strength—Applicable test procedures of SAE J140 and SAE J4c shall be used to determine attachment hardware strength. When more than one attachment bolt is used to secure a single piece of hardware to the vehicle, they shall be tested as a system and shall withstand the applicable specified loads of this section.

3.4.1 Attachment hardware other than the attaching bolt(s) shall withstand the following loads.

3.4.1.1 One end of the pelvic portion of a seat belt assembly—2500 lb (11.1 kN).

3.4.1.2 Common attachment for pelvic and upper torso portions of a seat belt—3000 lb (13.3 kN).

3.4.1.3 Upper torso portion of a seat belt assembly—2000 lb (8.8 kN).

3.4.1.4 Ends of two seat belt assemblies—6000 lb (26.7 kN).

3.4.2 Bolts used to secure the ends of seat belts to motor vehicles shall withstand the following loads.

3.4.2.1 One end of the pelvic portion of a single seat belt assembly—5000 lb (22.2 kN).