



SURFACE VEHICLE RECOMMENDED PRACTICE

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Seat Belt Hardware Test Procedures

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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 Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org

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

3. DEFINITIONS

See SAE J1803.

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.

TABLE 1 - TEST SEQUENCE

Test Method	SAE J140 Paragraph Ref.	Sequence of Tests Group 1	Sequence of Tests Group 2	Sequence of Tests Group 3	Sequence of Tests Group 4
Conditioning, General	4.1	1	1	1	1
Web width	6.1	2			
Web strength	6.2	3,5	3		
Web light resistance	6.3	4			
Corrosion	4.2		—	2	2
Temperature resistance	4.3		—	3	3
Hardware strength	4.4		—	4	
		—	—		—
Buckle release					
Loop test	4.6		—	8	5
	—		—	—	—
Compression	4.7		—	—	4
Buckle latch - cycle and false latch	4.8		—	7	—
Tilt lock	5.2			6	—
Adjustment	5.1			5	—
Abrasion - system	—	—	2	—	—

1. 3 assemblies to be tested in each group
2. Group 1 is webbing Tensile test 3 pieces without light exposure (1,2,3) and 3 pieces with light exposure (1,4,5)
3. Group 2 is webbing
4. Group 3 is hardware and assembly performance
5. Group 4 is buckle compression

4.2 Corrosion Resistance

Three seat belt assemblies shall be tested in accordance with American Society for Testing and Materials B117- 07a, "Standard Practice for Operating Salt Spray (Fog) Apparatus." Any surface coating or material not intended for permanent retention on the metal parts during service life shall be removed prior to preparation of the test specimens for testing. In the salt spray test chamber, the parts from the three assemblies shall be positioned in an orientation as follows: Retractors will be hung by the webbing or positioned similar to "in-vehicle orientation" within the chamber. Buckles will be supported in a rack with the tongue slot facing upwards or positioned similar to "in vehicle orientation" within the chamber. The period of test shall be 50 continuous hours for all seat belt hardware. At the end of the test, the seat belt assembly shall be washed thoroughly with water to remove the salt. After drying for at least 24 hours under standard laboratory conditions specified in S5.1(a), attachment hardware shall be examined. Ferrous and nonferrous corrosion deposits are allowed for components normally behind trim or covered when installed in the vehicle provided they can not be transferred, either directly or by means of the webbing, to a person or their clothing during the use of a seat belt assembly incorporating the hardware. After testing, seat belt assemblies must meet all functional and strength requirements. Seat belt components in the passenger compartment normally handled while using the seat belt system shall be examined for ferrous corrosion on significant surfaces, that is, all surfaces that can be contacted by a sphere 19mm in diameter, and 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 clothing during the use of a seat belt assembly incorporating the hardware.

4.3 Temperature Resistance

Three seat belt assemblies having plastic or non-metallic hardware or having retractors shall be subjected to the temperature resistance test and shall not warp or otherwise deteriorate to cause the assembly to operate improperly or fail to comply with applicable requirements of Section 4. Condition three specimens for 24 h at 23 ± 2 °C and 48%-67% relative humidity prior to beginning the temperature resistance test. Immediately after conditioning, expose the assemblies to a temperature of 80 ± 1 °C (176 ± 1.8 °F), for 24 hours, over water, in a circulating air type oven. Immediately following this 24 hour exposure perform an additional 24 hour exposure of dry heat at 80 ± 1 °C (176 ± 1.8 °F). Buckles shall be unlatched and retractors shall be fully retracted during conditioning and test. These parts shall then be used for all applicable tests in section 4.

4.4 Attachment Hardware

4.4.1 Pelvic Restraint

Attachment bolts or other substitute attachment means used to secure the pelvic restraint of a seat belt assembly to a motor vehicle shall be tested in a manner similar to that shown in Figure 1. The force shall be applied at an angle of 45 degrees to the axis of the bolt through attachment hardware from the seat belt assembly, or through a special fixture which simulates the loading applied by the attachment hardware. When bolts are used, the attachment hardware or simulated fixture shall be fastened by the bolt to the anchorage shown in Figure 1, which has the appropriate mating hole in a hardened steel plate of at least 10 mm in thickness. The bolt shall be tested when installed two full turns from the fully seated position Figure 1. The appropriate force required by SAE J141 shall be applied. The bolts or other attachment means from each of three seat belt assemblies shall be tested. Other attachment means shall be tested in a manner which simulates usage.

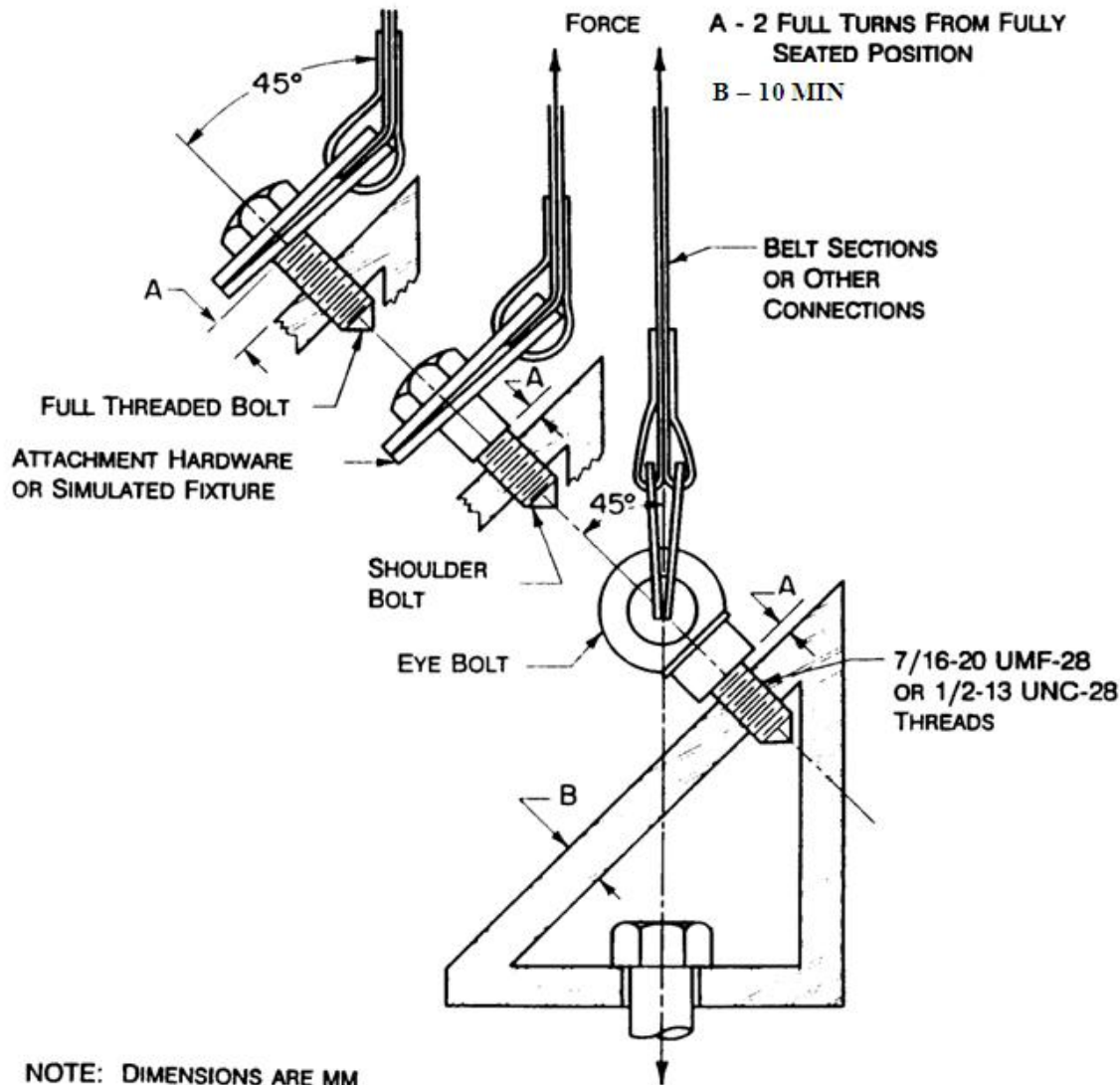


FIGURE 1 - ATTACHMENT HARDWARE TEST FIXTURE

4.4.2 Upper Torso Restraint

Attachment bolts or other attachment means used to secure the upper torso portion of a seat belt assembly to a motor vehicle shall be tested in a manner similar to that shown in Figure 1. The force shall be applied at an angle of 45 degrees to the axis of the fastener or bolt through attachment hardware from the seat belt assembly, or through a special fixture which simulates the loading applied by the attachment hardware as installed in the vehicle. The attachment hardware or simulated fixture shall be fastened by the bolt(s) or fastener(s) to the anchorage shown in Figure 1, which has the appropriate mating hole(s) or attachment(s) in a hardened steel plate of at least 10 mm in thickness. Bolt(s) shall be tested when installed two full turns from the fully seated position. The appropriate force required by SAE J141 shall be applied. Bolts and/or fasteners from each of three seat belt assemblies shall be tested.