SURFACE VEHICLE RECOMMENDED PRACTICE

J384™	JUL2022

Issued 1976-05
Revised 2014-10
Stabilized 2022-07

Superseding J384 OCT2014

Motor Vehicle Seat Belt Anchorages - Test Procedure

RATIONALE

This technical report is being stabilized because it covers technology, products, or processes for which technical expertise no longer resides in the owning committee.

STABILIZED NOTICE

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1. SCOPE

This SAE Recommended Practice specifies performance requirements and test procedures for the strength and location of seat belt assembly anchorages. It applies to seat belt anchorages attached to vehicle body structure or to seat assemblies in the vehicle. Design Considerations are specified in SAE J383.

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.

SAE J383 Motor Vehicle Seat Belt Anchorages - Location and Design Considerations

SAE J879 Motor Vehicle Seating Systems

Federal Motor Vehicle Safety Standard 208 - Occupant Performance

Federal Motor Vehicle Safety Standard 209 - Seat Belt Assemblies.

Federal Motor Vehicle Safety Standard 210 - Seat Belt Assembly Anchorages

3. DEFINITIONS

3.1 ANCHORAGE

Structural attachments that transfer occupant restraint forces of the seat belt assembly to the vehicle or seat structure.

3.2 ATTACHMENT HARDWARE

Attachment hardware means any or all hardware designed for securing the webbing of a seat belt assembly to a motor vehicle.

NOTE: If the seat belt is attached to a seat, the seat is not attachment hardware.

3.3 CURB WEIGHT

Weight of the vehicle as delivered with full capacity of fluids.

3.4 DESIGNATED SEATING POSITION (DSP)

A seat location that has a seating surface width of at least 330 mm (13 in) as described and further defined in FMVSS 208.

3.5 SEAT BELT ASSEMBLY

Any strap, webbing, or similar device designed to restrain an occupant in a motor vehicle during a crash. Includes all necessary buckles and other fasteners, and all hardware designed for installing such seat belt assembly in a motor vehicle.

3.6 TYPE 1 SEAT BELT ASSEMBLY

A lap belt for pelvic restraint as defined in FMVSS 209.

3.7 TYPE 2 SEAT BELT ASSEMBLY

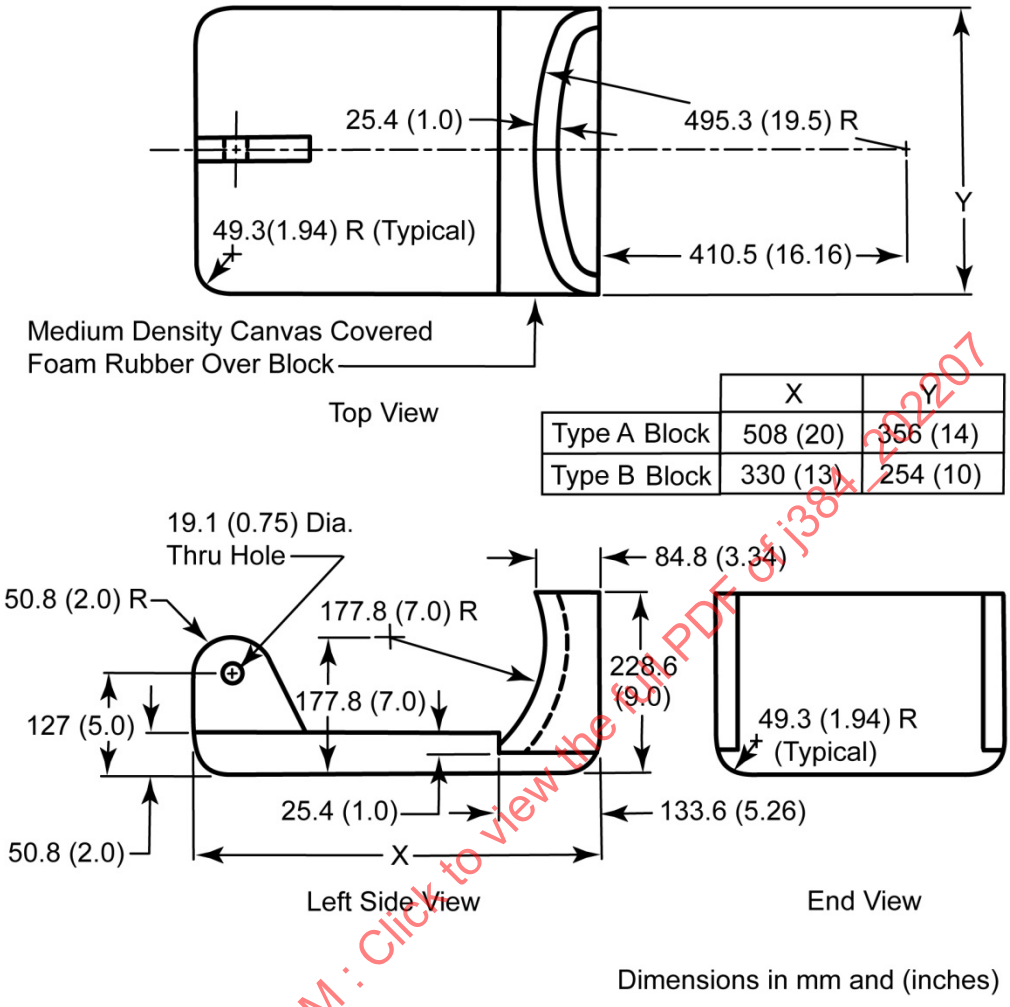
A combination of pelvic and upper torso restraints as defined in FMVSS 209.

4. TEST EQUIPMENT

4.1 Vehicle or Significant Vehicle Structure

The vehicle or portions of the vehicle significant to the support of the anchorages to be tested. Vehicle components likely to influence the performance of those anchorages must be included.

4.2 Lap Belt Body Blocks



	X	Y
Type A Block	508 (20)	356 (14)
Type B Block	330 (13)	254 (10)

FIGURE 1 TYPICAL TYPE A AND TYPE B BODY BLOCKS

The Type B lap belt body block may be substituted for the Type A body block if needed to apply the required load to the center belt anchorages for any group of 3 or more sets of anchorages that must be simultaneously loaded. (See Figure 1).

4.3 Shoulder Belt Body Block

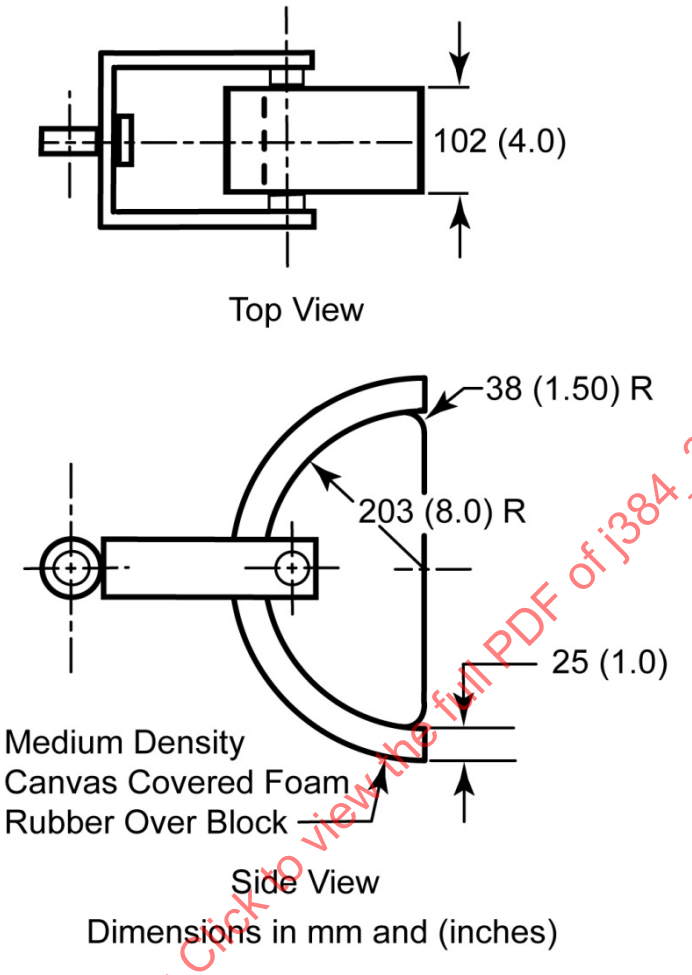


FIGURE 2 - TYPICAL SHOULDER BELT BLOCK

4.4 Test Machine

A facility with provision to secure the vehicle or significant vehicle structure and raise the test vehicle at least 25mm (1 inch) above the floor level as anchorage test loads are applied. Including a means to apply the anchorage test loads, such as hydraulic cylinders, and with instrumentation appropriate to measuring the load-time characteristic (See Figure 4).

4.5 Test Attachments

Means such as cables or chains must be provided to connect the load generating devices to the body blocks which distribute loads through belts or cables and anchorage hardware to the anchorages under test (see Figure 4),

5. TEST PROCEDURE

5.1 Attach the vehicle or significant vehicle structure is securely to the test machine in a manner so as not to affect the strength characteristics of the anchorages.

5.2 Install the seats into the vehicle in their design intent position if the seats affect belt positioning or load distribution.

5.3 If the seats are adjustable and the anchorages are not integral to the seat, place the seat in its rearmost and lowest position.

Place the appropriate pelvic and upper torso body blocks at each designated seating position. The seat belts should be positioned on the blocks to represent design intent routing. If it appears that the seat belt buckle or webbing may incur loading that may cause it to fail due to unrepresentative interaction with the body blocks, replace the seat belt webbing and/or buckles in the area of the body blocks with wire rope, high strength webbing, and/or high strength development buckles. Load limiting devices can be replaced with appropriate bracketry which will allow the anchorage to be tested without load limiting engagement.

5.4 Attachments are connected between the test machine and the anchorages to be tested as follows:

- Attachment hardware is positioned to approximate its normal location in the vehicle.
- Anchorages for laterally adjacent seating positions in the same row shall be tested simultaneously.
- Raise the test vehicle until it is 25mm (1 inch) above the test surface and at its curb weight attitude.

5.5 Type 1 Seat Belt Anchorages

5.5.1 Type 1 seat belt assembly anchorages, attachment hardware, and attachment bolts shall withstand a 22,241 N (5000 lbs) force applied to the lap belt body block when tested as follows:

- The seat in its rearmost and lowest position.
- The test load in the direction the seat faces.
- Simultaneously to all DSPs that face in the same direction and are common to the same row, but tested separately for each row.
- All anchorages for each seating position shall be tested simultaneously, but may be tested separately from those of other seating positions provided they are structurally independent from those other anchorages.
- For belt anchorages integral to the seat assembly, seat inertia force of SAE J879 is to be applied simultaneously with the belt anchorage loads.
- Common anchorages for forward and rearward facing seating positions need not be tested simultaneously.
- With the load in a plane parallel to the longitudinal centerline of the vehicle.
- With the load is applied initially at an angle of 10 deg ± 5 degrees above the horizontal (see Figure 3).
- With an onset rate of not more than 222,441 N/s (50,000 lbs/s).
- First apply 10% of the specified test load and briefly hold.
- Load application from time of 10% load cannot exceed 30s.
- Load must be maintained for at least 10s without separation of the anchorage after which the test load can be released.
- Optionally test to higher load or ultimate strength