

WORLD SID SEATING PROCEDURE DRAFT 5.4

1.0 SEAT PREPARATION

1.1 ADJUSTMENTS

- a) Position the test seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions.
- b) Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position.
- c) Position an adjustable seat cushion length to the retracted position.
- d) Position an adjustable leg support system in its rearmost position.
- e) Place adjustable pedals in the full forward position (towards the front of the vehicle.)
- f) Set the steering wheel hub at the geometric center of the full range of driving positions including any telescoping positions.
- g) Set the head restraint position to the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant.
- h) Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant.

1.2 SEAT MARKINGS

- a) Define seat cushion reference points:
Identify one seat cushion reference point at the front and one at the rear side of the seat cushion. Draw a line through the seat cushion reference points.
- b) Define seat centerline reference.
Bucket seats:
Locate and mark for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion.
Bench seats
Locate and mark for future reference the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface.

1.3 STARTING SEAT POSITION

1. Use the seat control that primarily moves the seat vertically to adjust the rearmost seat reference point defined in 1.2(a) to the upper most vertical location;
2. Use the seat control that primarily moves the seat fore-aft to adjust the rearmost seat reference point defined in 1.2(a) to the rear most location;
3. Use the seat control that primarily moves the seat vertically to adjust the rearmost seat reference point defined in 1.2(a) to the lowest vertical location;

1.4 SEAT TEST POSITION

1. Use the seat control that primarily moves the seat fore-aft to adjust the rearmost seat reference point defined in 1.2(a) to the rear most location; Record the X position.
2. Use the seat control that primarily moves the seat fore-aft to adjust the rearmost seat reference point defined in 1.2(a) to the forward most location; Record the X position.
3. Measure and mark an X position 20mm rearward of the midpoint (MP +20mm).
4. Use the seat control that primarily moves the seat fore-aft to adjust the rearmost seat reference point defined in 1.2(a) to the X position marked in step 3 of 2.4. If the seat cannot be placed at exactly 20 mm rearward of the midpoint select next closest available rearward setting.
5. Use the seat control that primarily moves the seat vertically to adjust the rearmost seat reference point defined in 1.2(a) to the lowest vertical location;
6. Determine and record the range of angles of the seat cushion pitch and using only the control(s) that primarily adjust(s) the cushion pitch, set cushion pitch to the mid-angle.
7. Use the seat control that primarily moves the seat vertically to adjust the rearmost seat reference point defined in 1.2(a) to the lowest vertical location; (Note: for some vehicles this final step may change the cushion pitch as established in step 6 of section 1.4, this is acceptable)
8. Record test seat position co-ordinates

2.0 SAE H-POINT MEASUREMENT

1. Using only the controls that move the seat fore-aft return the test seat to the rearmost position to facilitate placement of the SAE H-point machine.
2. Place the H-point machine in the seat and position the seat to the test position as defined by the coordinates recorded in step 8 of section 1.4.
3. Follow the SAE J826 except that the length of the lower leg and thigh segments of the H-point machine shall be adjusted to the 50th percentile (418 mm) and 10th percentile (408 mm) positions, respectively.
4. Set the seat back angle to the angle specified by the manufacturer. If the seat back design angle is not specified by the manufacturer set the seat back angle to 23° or as close to 23 ° as possible (as measured by the SAE J826 H-Point manikin).
5. Record the SAE H-point X, Y and Z coordinates.
6. WorldSID H-point = 20 mm forward of SAE H-point X coordinate; Y and Z coordinates of the SAE H-point are not adjusted.

3.0 WORLDSID DUMMY PLACEMENT

- a) Using only the controls that move the seat fore-aft move the test seat to the rearmost position to facilitate placement of the WorldSID dummy.
- b) Place the WS dummy in the seat such that the mid-sagittal plane is coincident with the centerline markings and the upper torso resting against the seat back.
- c) Apply a fore-aft and lateral rocking motion to settle the pelvis rearward in the seat.
- d) Move the seat together with the WorldSID to the test seat position defined in section step 8 of section 1.4.

- e) If the **driver** position is being tested:
- Extend the right leg without displacing the thigh from the seat cushion. Allow the sole of the foot to settle on the accelerator pedal, the heel of the shoe should be in contact with the floor pan.
- Extend the left leg, without lifting the thigh from the seat cushion and allow the **sole** of the foot to settle on the footrest. The heel of the shoe should be in contact with the floor pan. In case of tibia contact slide the foot rearward, toward the seat until a 5 mm clearance is obtained.
- f) If the **passenger** side is being tested
- Extend the corresponding leg without displacing the thigh from the seat cushion. Allow the sole of the foot to settle on the floor pan in-line with the thigh (the heel of the shoe should be in contact with the floor pan). If the contour of the floor-pan does not permit the foot to rest on a flat surface, move the foot in 5 mm increments until the foot rests on a flat surface.
- Allow the sole of the left foot to settle on the floor pan in the same for-aft location (alignment) as the right foot (the heel of the shoe should be in contact with the floor pan). If the contour of the floor-pan does not permit the foot to rest on a flat surface, move the foot in 5 mm increments until the foot rests on a flat surface.
- g) Position the H-point of the dummy to match the WorldSID H-point coordinates recorded in step 6 of section 2.0 to within ± 5 mm.
- h) Adjust the WorldSID neck bracket to level the head at $0^\circ \pm 1^\circ$.
- i) Adjust the WorldSID until the rib angle, as defined by the thorax tilt sensor coincides with the angle specified by the manufacturer.
- If neither the seat back angle nor the tilt sensor angle is specified by the manufacturer adjust the dummy until the thorax tilt sensor reads -2° (2° downwards) $\pm 2^\circ$. If no rib angle is specified and the seat back angle is not $23^\circ \pm 2^\circ$ no further adjustment of rib angle is required.
- j) Confirm that the WorldSID H-point is still on target and that the head is still at $0^\circ \pm 1^\circ$
- k) Repeat 2.6 e if the driver seat is being tested or 2.6 f if the passenger seat is being tested.
- l) Place both arms at 45° from the coronal plane.