U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

LABORATORY TEST PROCEDURE

FOR

FMVSS No. 214, DYNAMIC SIDE IMPACT PROTECTION

-Rigid Pole Side Impact Test Requirements-

APPENDIX B
CHECK SHEETS

ENFORCEMENT
Office of Vehicle Safety Compliance
Mail Code: NVS-220
1200 New Jersey Ave. SE
Washington, DC 20590

CHECK SHEETS

The check sheets provided in this Appendix contain step by step instructions to follow when conducting the pole test. The step by step method assures consistency in performing tasks such as preparing the test vehicle, positioning the test dummy, setting adjustable seats, etc. The use of check sheets enhances the repeatability of the test.

Contractors are required to provide draft copies of check sheets to the COTR for approval prior to conducting any compliance test for the OVSC. Contractors may alter the check sheets provided in this Appendix or generate other check sheets to use during the test. At a minimum, contractor generated check sheets must include all of the information on the check sheets provided in this Appendix. Copies of the actual check sheets used during the test must be submitted with the draft test report.*

TABLE OF CONTENTS

CHECK SHEET NO. 1
Collect and Record Vehicle Specifications

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

__1 **Test Vehicle information**
Complete the table using information on the Monroney label, other vehicle labels and information supplied by the COTR;

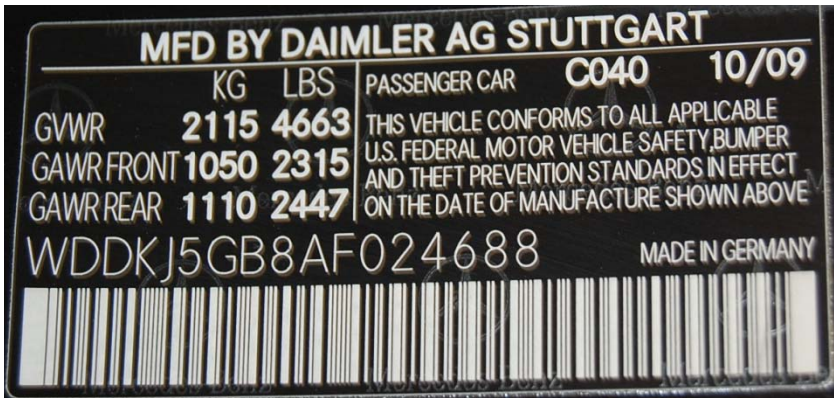
Test Vehicle Information	
Make	
Model	
VIN	
Body Style	
Body Color	
Enqine Disp (liters)	
# of Cylinders	
Engine Placement	
Transmission Type	
Transmission Speeds	
Overdrive	
Final Drive	
Odometer Reading	

__2 **Test Vehicle Options**
Indicate whether the test vehicle is equipped with the following option, "Yes" or "No."

Optional Equipment	
Anti-lock Brakes (ABS)	
All-Wheel Drive (AWD)	
Traction Control System (TCS)	
Electronic Stability Control (ECS)	
Side Curtain Air bags	
Torso Air bag - Front seats	
Torso Air bag - Rear seats	
Combination/Head Torso Bag	
Pelvic Air bag - Front seats	
Pelvic Air bag - Rear seats	
Knee Air baq - Driver	
Knee Air bag - Front Passenqer	
Seat belt pretentioners - Front seats	
Seat belt pretentioners - Rear seats	
Seat belt load limiters - Front seats	
Seat belt load limiters - Rear seats	
Tire pressure monitorinq system (TPMS)	
Tilt Steering Wheel	
Automatic Door Locks (ADL)	
Power Window Auto-reverse	
Power Seats	

CHECK SHEET NO. 1 (Continued)
Collect and Record Vehicle Specifications

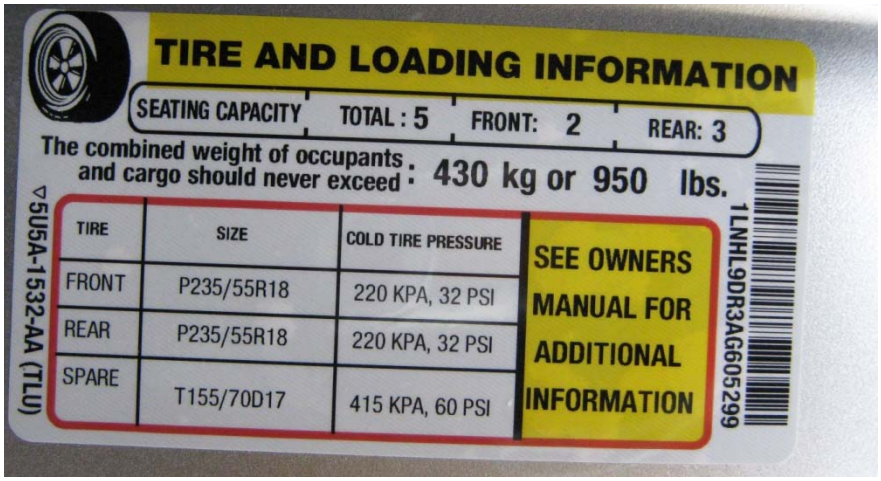
__3 **Data from Certification Label (Part 567)**
Complete the table using information from the certification label;



Manufactured by	
Date of Manufacture	
Vehicle Type	

GVWR (kg)	
GAWR Front (kg)	
GAWR Rear (kg)	

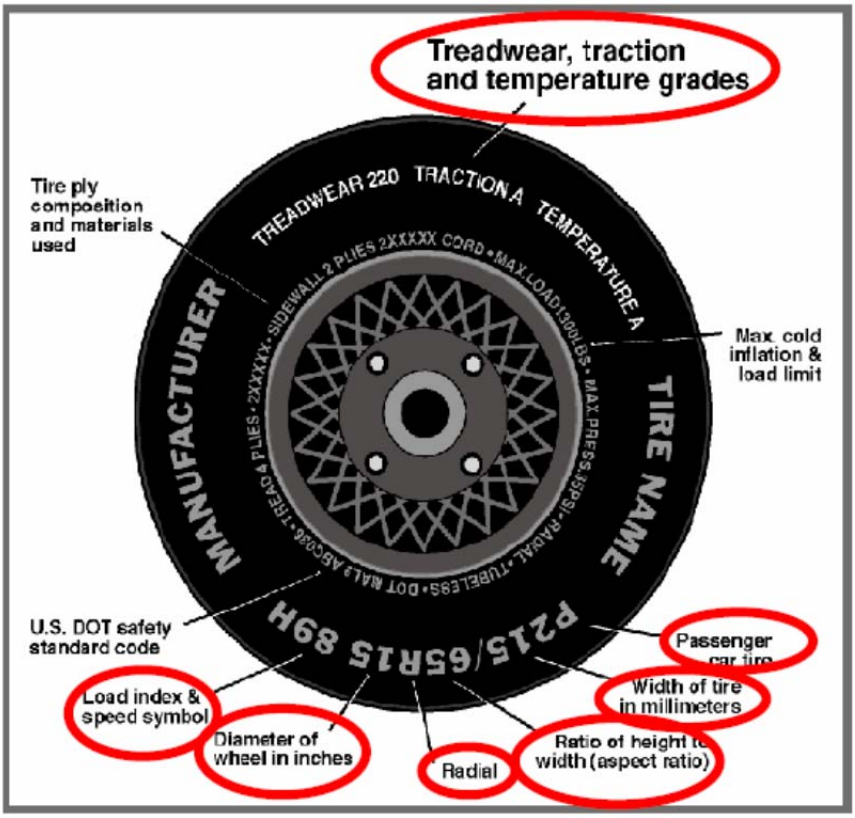
__4 **Vehicle Capacity Data**
Complete the table below;



	Front	Rear	Third	Total
Type of Seats (Bench or Bucket)				
Number of Occupants (DSC)				
Vehicle Capacity Weight (VCW) (kg)				
Cargo Weight (RCLW) (kg)				

CHECK SHEET NO. 1 (Continued)
Collect and Record Vehicle Specifications

__5 **Tire Information**
Complete the table using information from the tire placard and sidewalls;



Tire Placard	Front	Rear
Recommended Cold Pressure (kPa)		
Recommended Tire Size		
Tire Sidewall		
Maximum Tire Pressure (kPa)		
Tire Size on Vehicle		
Tire Manufacturer Model		
Tire Name		
Tire Type		
Tire Width		
Aspect Ratio		
Radial		
Wheel Diameter		
Load Index/Speed Symbol		
Treadwear		
Traction Grade		
Temperature Grade		

_____ _____
Signature **Completion Date**

CHECK SHEET NO. 2

Determine the Vehicle Test Weight and Attitude

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

__1 Determine the "As Delivered" Weight

__1.1 Fill the transmission with transmission fluid to full capacity.
__1.2 Top off the fuel tank to capacity supplied by the owner's manual.
__Record the useable fuel tank capacity supplied by the COTR (Form 1) _____liters
__Record the fuel tank capacity supplied in the owner's manual. _____liters
__1.3 Fill the coolant system to capacity
__1.4 Fill the engine with motor oil to the maximum mark on the dip stick
__1.5 Fill the brake reservoir with brake fluid to its normal level
__1.6 Fill the windshield washer reservoir to capacity
__1.7 Inflate the tires to the cold tire pressure on the tire placard. If no tire placard is available, inflate tires to the recommended pressure in the owner's manual and record below;

Tire placard pressure	RF_____	LF_____	RR_____	LR_____
Owner's manual pressure	RF_____	LF_____	RR_____	LR_____
Actual inflated pressure	RF_____	LF_____	RR_____	LR_____

__1.8 Weigh the vehicle at each wheel and add together to determine the "As Delivered" weight. Record the weight measurements on the "Vehicle Weight" table below.

__2 Determine the Vehicle Attitude - "As Delivered" Weight Condition

__2.1 Place the vehicle on a level surface.
__2.2 Place the transmission in neutral.
__2.3 Exercise the suspension by rolling the vehicle forward and rearward approximately 4 to 6 feet.
__2.4 Repeat step 2.3 three to four additional times.
__2.5 Mark a reference point on the driver's and front passenger's door sills.
__2.6 Measure the pitch angle of the door sills at that point. Indicate pitch angles rear to front (or nose-up) as positive. Record the measurements on the "Vehicle Attitude" table below
__2.7 Mark a reference point at the front and rear of the vehicle along a vertical plane that passes through the longitudinal centerline of the vehicle.
__2.8 Mark reference planes that are perpendicular to the vehicle and coincide with the reference points
__2.9 Measure the left-to-right (roll) angles at the front and rear of the vehicle with left up as positive. Record the measurements on the "Vehicle Attitude" table below.

__3 Calculate the Test Vehicle Target Weight (TVTW)

__3.1 Copy VCW from Check Sheet No. 1 = _____kg
__3.2 Copy the DSC from Check Sheet No.1 = _____
__3.3 Rated Cargo and Luggage Weight (RCLW) = VCW - (68.04 kg x DSC) = _____
__3.4 Is the vehicle certified as a truck, MPV or bus (see Check Sheet No.1)
__Yes, if the calculated RCLW is greater than 136 kg, use 136 kg as the RCLW.
__No, use the RCLW calculated in 3.3.
__3.5 TVTW = RCLW + wgt of test dummy + As Delivered Weight = _____ kg
__3.6 Fill in the table below;

Measured Parameter	Units	Value
As Delivered Weight	kg	
Weight of Test Dummy	kg	
Rated Cargo/Luggage Weight (RCLW)	kg	
Calculated Test Vehicle Target Weight (TVTW)	kg	

CHECK SHEET NO. 2 (Continued)
Determine the Vehicle Test Weight and Attitude

__4 Determine the "Fully Loaded" Weight

__4.1 With the vehicle in the As Delivered weight condition, drain the fuel system. Operate the engine until the fuel system is dry. Describe the operation of the fuel pump;

_____

_____

_____

_____

_____

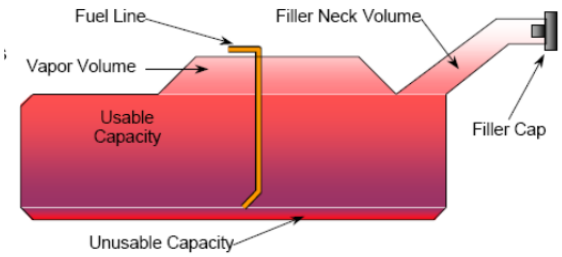
_____

_____

_____

_____

_____



VEHICLE FUEL TANK ASSEMBLY

__4.2 Using purple dyed Stoddard solvent having the physical and chemical properties of Type 1 solvent or cleaning fluid, Table 1, ASTM Standard D484-71,"Standard Specifications for Hydrocarbon Dry-cleaning Solvents," fill the fuel tank to 93 (± 1 %) of useable capacity through a 10 micron filter
Fuel tank capacity x 0.93 =_____liters Amount added =_____ liters

__4.3 Crank the engine to fill the fuel delivery system with Stoddard solvent.

__4.4 Load the vehicle with ballast equal to the RCLW from 3.3 or 3.4 whichever is applicable

__4.2 Place the ballast in the cargo area. Center the load over the longitudinal centerline of the vehicle.

__4.3 Place the weight of the fully instrumented test dummy in the appropriate front outboard seating position.

__4.4 Weigh the vehicle at each wheel and add together to determine the "Fully Loaded Weight". Record the weight measurements on the "Vehicle Weight" table below

__5 Determine the Vehicle Attitude – "Fully Loaded" Weight

__5.1 Place the vehicle on a level surface.

__5.2 Using the same reference point on the driver's and front passenger's door sills determined in 2.5., measure the pitch angle of the door sills at that point. Indicate pitch angles rear to front (or nose-up) as positive. Record the measurements on the "Test Vehicle Attitude" table below.

__5.3 Using the same reference at the front and rear of the vehicle along a vertical plane that passes through the longitudinal centerline of the vehicle determined in 2.8., measure the left-to-right (roll) angles at the front and rear of the vehicle (left up is positive). Record the measurements on the "Vehicle Attitude" table below.

CHECK SHEET NO. 2 (Continued)
Determine the Vehicle Test Weight and Attitude

__6 Determine the "As Tested" Weight

__6.1 With the vehicle in the Fully Loaded Weight condition, drain transmission fluid, engine coolant, motor oil, and windshield washer fluid.

__6.2 Remove the RCLW from the cargo area

__6.3 Secure instrumentation, equipment and cameras to the test vehicle.

__6.4 Weigh the vehicle at each wheel and add together to determine the "As Tested Weight". Record the weight measurements on the "Vehicle Weight" table below.

__6.5 If necessary, add ballast to achieve an As Tested Weight that falls within the required weight range (TVTW – 4.5kg to TVTW – 9 kg).
___N/A
Weight of ballast _____kg
As Tested Weight _____kg

__6.6 If necessary, remove vehicle parts in accordance with the list provided on Form 1 to achieve an As Tested Weight that falls within the required weight range;
Vehicle Parts Removed_____
_____
_____
___N/A
Total Weight of vehicle parts _____kg
As Tested Weight _____kg

__6.7 Complete the table below;

Vehicle Weight

		As Delivered			Fully Loaded			As Tested		
	Units	Front Axle	Rear Axle		Front Axle	Rear Axle		Front Axle	Rear Axle	
Left	kg									
Right	kg									
Ratio	%									
Totals	kg									

__7 Determine the Vehicle Attitude – "As Tested" Weight

__7.1 Place the vehicle on a level surface.

__7.2 Using the same reference point on the driver's and front passenger's door sills determined in 2.5,measure the pitch angle of the door sills at that point. Indicate pitch angles rear to front (or nose-up) as positive. Record measurements on the "Vehicle Weight" table below

__7.3 Using the same reference at the front and rear of the vehicle along a vertical plane that passes through the longitudinal centerline of the vehicle determined in 2.8., measure and record the left-to-right (roll) angles at the front and rear of the vehicle (left up is positive).

CHECK SHEET NO. 2 (Continued)

Determine the Vehicle Test Weight and Attitude

__8 **Verify that the As Tested vehicle attitude meets requirement**
The As Tested vehicle attitude measurements must be between the As Delivered and Fully Loaded attitude measurements, inclusive.(S10.2)

__8.1 Complete the table by indicating (Yes, No) in the column labeled “Meets Reqmnt.”

Vehicle Attitude

	As Delivered	Fully Loaded	As Tested	Meets Reqmnt
Right Door Sill Angle				
Left Door Sill Angle				
Front Bumper-Line Angle				
Rear Bumper-Line Angle				
ND=Nose Down, NU=Nose Up, LU = Left up, LD = Left Down, RU = Right up, RD = Right Down				

__8.2 If any measurement of the As Tested attitude does not meet the requirement, adjust the load by shifting ballast, instrumentation and/or cameras.

__8.3 Repeat steps 7.1 thru 8.1.

__8.4 If any measurement of the As Tested attitude does not meet the requirement, contact the COTR.

_____ _____

I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 3

Affix Photographic Targets to the Test Vehicle

Test Vehicle:_____ Technician:_____

*Test Facility:*_____ Start Date:_____

__1 **Tape the Struck Side of the Test Vehicle**

Affix 25 mm (1 inch) wide checkerboard tape (yellow/black or other colors that contrast the test vehicle's body color) horizontally along the struck side of the test vehicle at each level indicated in the table below. Measure and record the vertical distance from ground to each level (top edge of the tapeline) along a vertical line passing through the B-Pillar or front door striker.

__1.1 Top of side sill – Affix tape along the door sill from front to the rear wheel-wells.

__1.2 Occupant Hip-point – Project the location of the test dummies hip-point laterally through the door to its exterior panel. Affix tape to the side body panels so that the tape intersects the hip-point.

__1.3 Mid-door - Measure the height of the front door body panel at two different locations that are at least 600 mm apart. Take the average of the two measurements. Mark this point on the exterior door panel. Affix tape to the side body panels so that the tape intersects this point.

__1.4 Window Sill - Affix tape just below the front door window sill.

__1.5 Top of Window - Affix tape just above the top of the front door window.

LEVELS	Vertical distance from ground (mm)
1 – Top of side sill	_____
2 – Occupant H-Point	_____
3 – Mid-door	_____
4 – Window Sill	_____
5 – Top of window	_____

CHECK SHEET NO. 3 (Continued)
Affix Photographic Targets to the Test Vehicle

__2 Tape the vertical impact reference line

__2.1 After the dummy has been properly positioned, place the vehicle on the test pad area so that its longitudinal centerline is at 75° (for a left-side impact) or 285° (for a right-side impact) relative to its intended line of forward motion.

__2.2 Strike a vertical plane through the dummy's head center of gravity (CG) coincident to the intended forward line of motion.

__2.3 Affix 25 mm (1 inch) wide tape vertically along the exterior front door panel to mark where the plane determined in step 2.2 intersects the door. This is the vertical impact reference line.

__2.4 Measure and record the distance from the center of the front axle to the edge of the tape.
Vertical Ref. Line Aft of Front Axle Centerline _____mm

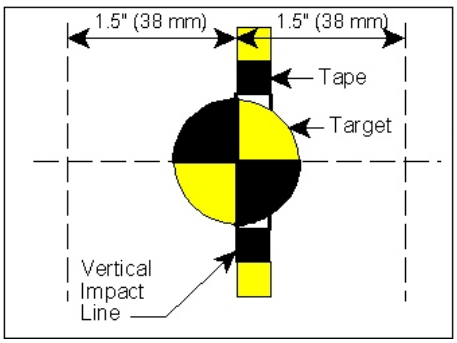
__3 Affix Targets to the Struck side of the Test Vehicle

__3.1 Affix targets every 300 mm along the LEVEL 4, window sill tape line.

__3.2 Affix a target at the approximate location of the vehicle's center of gravity (CG)

__3.3 Affix a target to the door or side panel to denote hip pivot center of the test dummy

__3.4 Affix a 50 mm (2 inch) target over the impact reference line at the outermost contour of the front door panel (see figure below).



CHECK SHEET NO. 3 (Continued)
Affix Photographic Targets to the Test Vehicle

__4 Tape the Roof and Hood

__4.1 Affix 25 mm (1 inch) wide checkerboard tape on the hood and roof along the longitudinal centerline of the entire vehicle (excluding glazing surfaces).

__4.2 Affix 25 mm (1 inch) wide checkerboard tape laterally across the roof along the vertical transverse plane through the vertical impact reference line and coincident with the intended line of forward motion (see

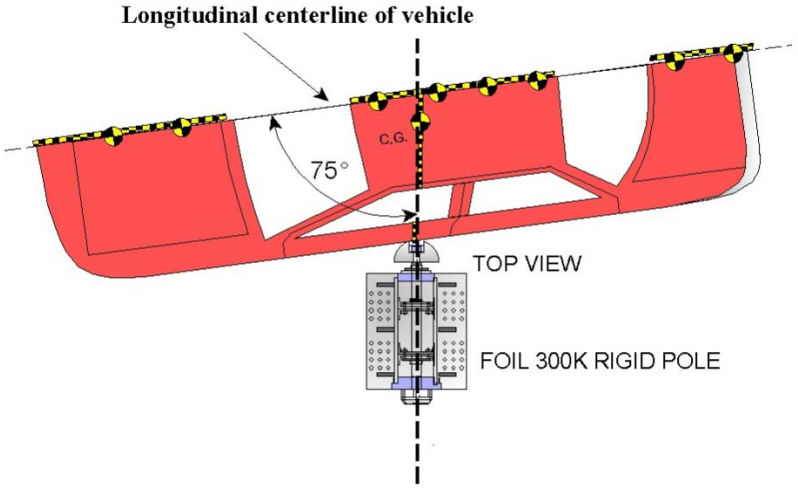


figure below).

__5 Affix Targets to the Roof and Hood

__5.1 Affix 100 mm (4-inch) diameter targets along the roof aligned with the longitudinal centerline

__5.2 Affix 100 mm (4-inch) to the roof to mark the location of the test dummy's head CG

__6 Affix a Target to the Top of the Pole

Affix a 100 mm (4-inch) diameter target on top of the pole. Center the target on the centerline of the pole. If the pole is hollow, affix 25 mm (1 inch) wide checkerboard tape coincident with the line of forward motion to the top of the pole through its centerline.

__7 Affix Vehicle ID placards

Affix vehicle ID placards with the following information to the roof, struck side, front and rear of the test vehicle;

- Name of the test laboratory
- The words "FMVSS No. 214 Pole Test"
- NHTSA number
- Vehicle year, make and model
- Date of the test

_____ _____

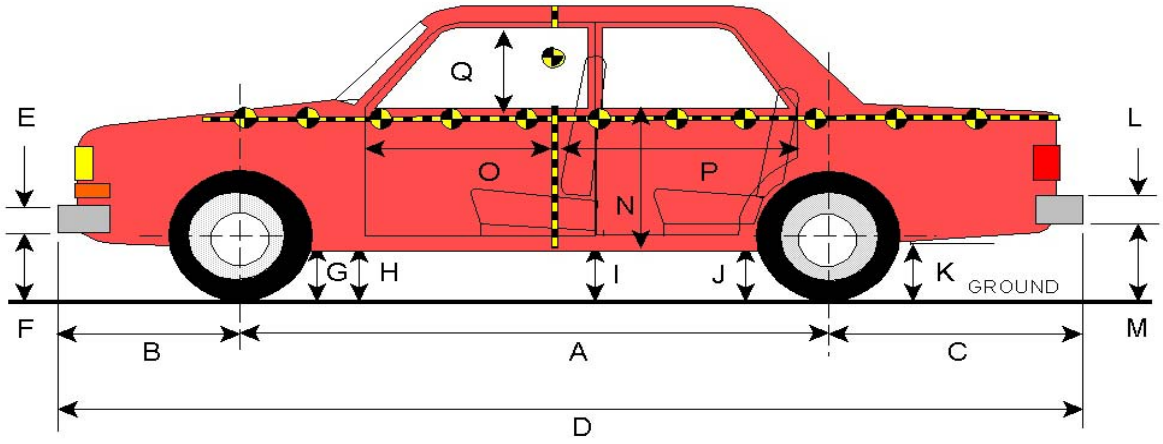
I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 4

Take Pre and Post test Vehicle Measurements

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

Using the schematic as a guide, take the following measurements prior to impact with the vehicle resting on a level surface and posttest, at the same points, with the vehicle's tires inflated and resting on a level surface. Compute the difference between pretest and posttest measurements and record all measurements on the table.



IMPACT SIDE VIEW

Code	Description	Pre-Test	Post-Test	Diff Δ
A	Wheelbase			
B	Front Axle to FSOV			
C	Rear Axle to RSOV			
D	Total Length at Centerline			
E	Front Bumper Thickness			
F	Front Bumper Bottom to Ground			
G	Sill Height at Front Wheel Well			
H	Sill Height at Front Door Leading Edge			
I	Sill Height at B Pillar			
J1	Sill Height at Rear Wheel Well			
J2	Pinch Weld Height at Rear Wheel Well			
K	Sill Height Aft of Rear Wheel Well			
L	Rear Bumper Thickness			
M	Rear Bumper Bottom to Ground			
N	Sill Height to Window Bottom Sill			
O	Front Door Leading Edge to Impact CL			
P	Rear Door Trailing Edge to Impact CL			
Q	Front Window Opening			
R	Right Side Length			
S	Left Side Length			
T	Vehicle Width at B-Pillar			

CHECK SHEET NO. 4 (Continued)

Take Pre and Post test Vehicle Measurements

__A *Wheelbase* – front axle centerline to rear axle centerline
__B *Front Axle to FSOV* - The longitudinal distance between the front axle centerline and the most forward surface of the vehicle
__C *Rear Axle to RSOV* - The longitudinal distance between the rear axle centerline and the most rearward surface of the vehicle
__D *Total Length at Centerline* - Overall length of the vehicle measured at its longitudinal centerline
__E *Front Bumper Thickness* – Vertical height of the front bumper fascia
__F *Front Bumper Bottom to Ground* - Vertical distance from ground to the bottom of the front bumper fascia
__G *Sill Height at Front Wheel Well* - Vertical distance from ground to the sill at the front wheel well opening
__H *Sill Height at Front Door Leading Edge* - Vertical distance from ground to the sill at the front door seam
__I *Sill Height at B-Pillar* - Vertical distance from ground to the sill in line with the front door striker or B-pillar if no striker exists
__J1 *Sill Height at Rear Wheel Well* - Vertical distance from ground to the sill at the rear wheel well opening
__J2 *Pinch Weld Height at Rear Wheel Well* – Vertical distance from ground to the pinch weld at the rear wheel well opening
__K *Sill Height Aft of Rear Wheel Well* - Vertical distance from ground to the vehicle sheet body at the rear of the rear tire's wheel well
__L *Rear Bumper Thickness* – vertical height of the rear bumper fascia
__M *Rear Bumper Bottom to Ground* - Vertical distance from the ground to the rear bumper
__N Sill Height to Bottom of Front Window Sill - Vertical distance from the bottom of the door to the bottom of the front window sill
__O *Front Door Leading Edge to Impact CL* - Longitudinal distance from the vertical impact reference line to the front door seam
__P *Rear Door Trailing Edge to Impact CL* - Longitudinal distance from the vertical impact reference line to the rear door seam
__Q *Front Window Opening* - Vertical distance that measures the front window opening on the impact side
__R Right Side Length – longitudinal distance of the right side of the vehicle measured along a plane parallel to its longitudinal centerline
__S Left Side Length – longitudinal distance of the left side of the vehicle measured along a plane parallel to its longitudinal centerline
__T *Vehicle Width at B-Pillars* - The width of the vehicle measured laterally across the vehicle at its B-Pillars

_____ _____

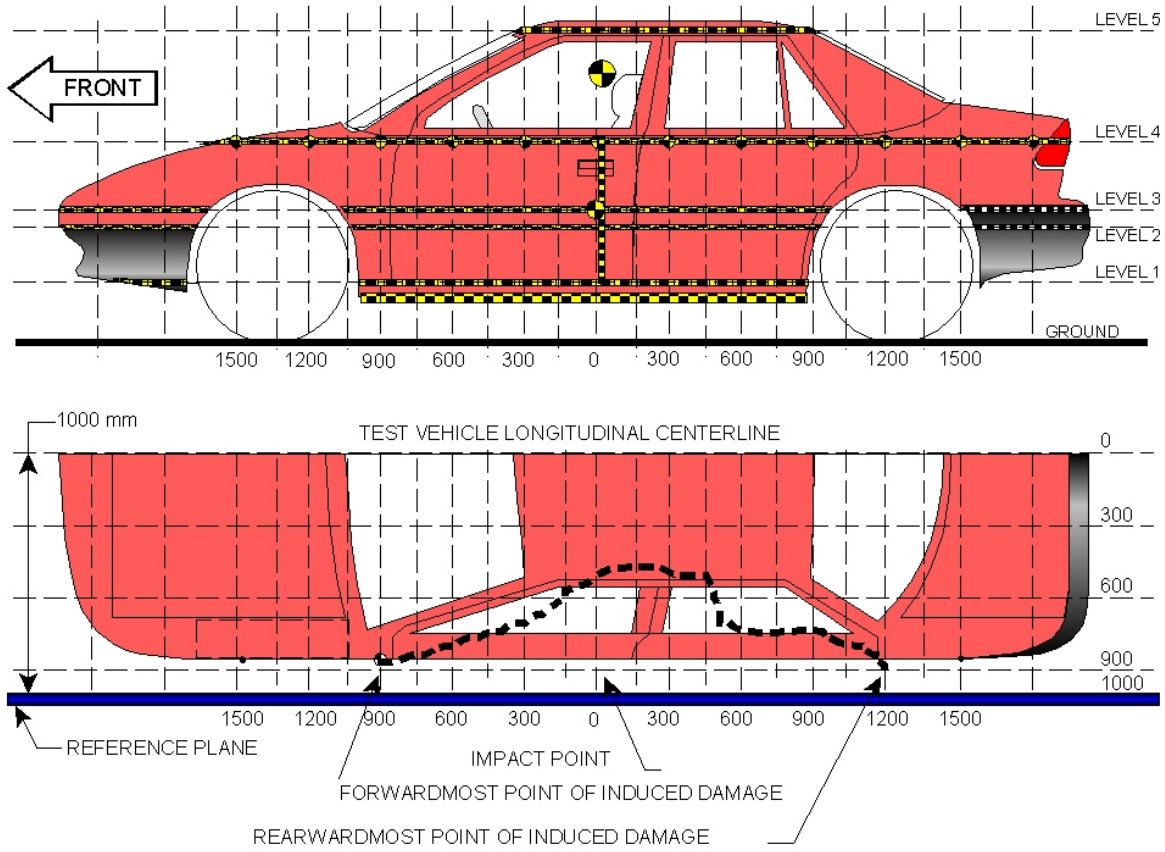
I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 5

Take Vehicle Exterior Static Crush Measurements

Test Vehicle:_____ Technician:_____

Test Facility:_____ Start Date:_____



NOTE: All measurements are in millimeters (mm)

__1 Pretest, with the vehicle resting on a flat level surface, establish a fixed reference plane parallel to the vehicle's longitudinal centerline.

__2 Measure from the fixed reference plane to the exterior vehicle body surface across the entire length of the impact side at all five levels determined in Check Sheet No. 3. Take measurements at 150mm intervals forward and rearward of the impact reference line. Record on the table below. Mark the location where each measurement is taken for future reference.

__3 Post-test place the test vehicle on a flat, level surface. Inflate the test vehicle's tires to maximum cold pressure.

__4 Using the same reference locations established in step 2 above, begin taking static crush measurements at the first 150mm interval forward of the forward-most point of the induced body damage and end at the first 150 mm interval past the rearward-most point of induced body damage. Record measurements on the table below.

__5 Compute the difference (i.e., static crush) between pre-test and posttest measurements at each interval and record measurements in the table below.

CHECK SHEET NO. 5 (Continued)

Take Vehicle Exterior Static Crush Measurements

	Pre-Test					Post-Test					Diff Δ				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300															
-150															
0															
150															
300															
450															
600															
750															
900															
1050															
1200															
1350															
1500															
1650															
1800															
1950															
2100															
2250															
2400															
2550															
2700															
2850															

__6 For each level 1 thru 5, record the vertical height above ground. Compute the maximum static crush at each level. Record the maximum static crush and the distance from the impact line (i.e., a vertical line that intersects the actual impact point) on the table below.

Level	Measurement Description	Maximum Exterior Static Crush	Distance from Impact Line	Height Above Ground
1	Sill Top			
2	Occupant H-Point			
3	Mid-Door			
4	Window Sill			
5	Window Top			

__7 For each level 1 thru 5, plot (x-distance from impact in 150 mm intervals, y-static crush measurement)

_____ _____

I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 6

Attach Accelerometers to the Test Vehicle

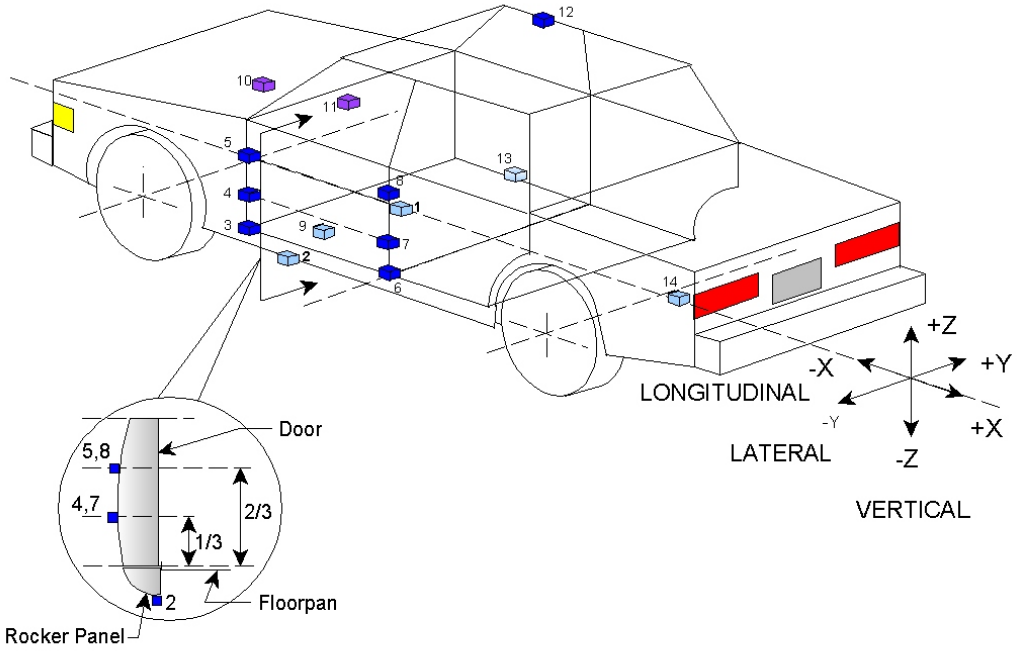
Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

Attach accelerometers to the test vehicle at the locations indicated below using the schematic as a guide. Record the coordinates, serial number, manufacturer and last calibration date of each accelerometer on the table below.

__1 Mount accelerometers to the floorpan at the vehicle's CG location to measure accelerations in the x,y and z directions.
__2 Mount a uni-axial accelerometer on the struck-side sill forward of the impact reference line but rearward of the A-pillar to measure acceleration in the y-direction.
__3 Mount a uni-axial accelerometer on the struck-side A-pillar at the lower sill *level* to measure acceleration in the y-direction.
__4 Mount a uni-axial accelerometer on the struck-side A-pillar approximately 1/3 the distance from the ground to the bottom of the front window opening to measure acceleration in the y-direction.
__5 Mount a uni-axial accelerometer on the struck-side A-pillar approximately 2/3 the distance from the floor to the bottom of the front window opening to measure acceleration in the y-direction.
__6 Mount a uni-axial accelerometer on the struck-side B-pillar at the lower sill *level* to measure acceleration in the y-direction
__7 Mount a uni-axial accelerometer on the struck-side B pillar approximately 1/3 the distance from the floor to the bottom of the front window opening to measure acceleration in the y-direction.
__8 Mount a uni-axial accelerometer on the struck-side B pillar approximately 2/3 the distance from the floor to the bottom of the front window opening to measure acceleration in the y-direction.
__9 Mount a uni-axial accelerometer on the floorpan at the seat track in a vertical longitudinal plane that intersects the dummy's hip pivot bolt center (± 20 mm) to measure acceleration in the y direction.
__10 Mount accelerometers on the top of the engine to measure accelerations in the x and y directions.
__11 Mount a uni-axial accelerometer near the center of the firewall to measure acceleration in the y-direction.
__12 Mount a uni-axial accelerometer on the non-struck side roof rail at the B-pillar to measure acceleration in the y-direction.
__13 Mount a uni-axial accelerometer on the non-struck side floor sill opposite of Loc. No.2.
__14 Mount accelerometers on the floorpan behind the rear axle as close as possible to the longitudinal centerline of vehicle to measure accelerations in the x and y directions.

CHECK SHEET NO. 6 (Continued)

Attach Accelerometers to the Test Vehicle
(For Left-side Impacts)



Loc. No	Accelerometer	Serial No.	Mfr	Cal. date	Coordinates		
					x	Y	Z
1	Vehicle CG(X)						
	Vehicle CG(Y)						
	Vehicle CG(Z)						
2	Struck side - Floor Sill(Y)						
3	A-Pillar Sill(Y)						
4	A-Pillar Low(Y)						
5	A-Pillar Mid(Y)						
6	B-Pillar Sill(Y)						
7	B-Pillar Low(Y)						
8	B-Pillar Mid(Y)						
9	Seat Track(Y)						
10	Engine(X)						
	Engine(Y)						
11	Firewall(Y)						
12	Right Roof(Y)						
13	Right Floor Sill(Y)						
14	Rear Deck(X)						
	Rear Deck(Y)						

_____ _____

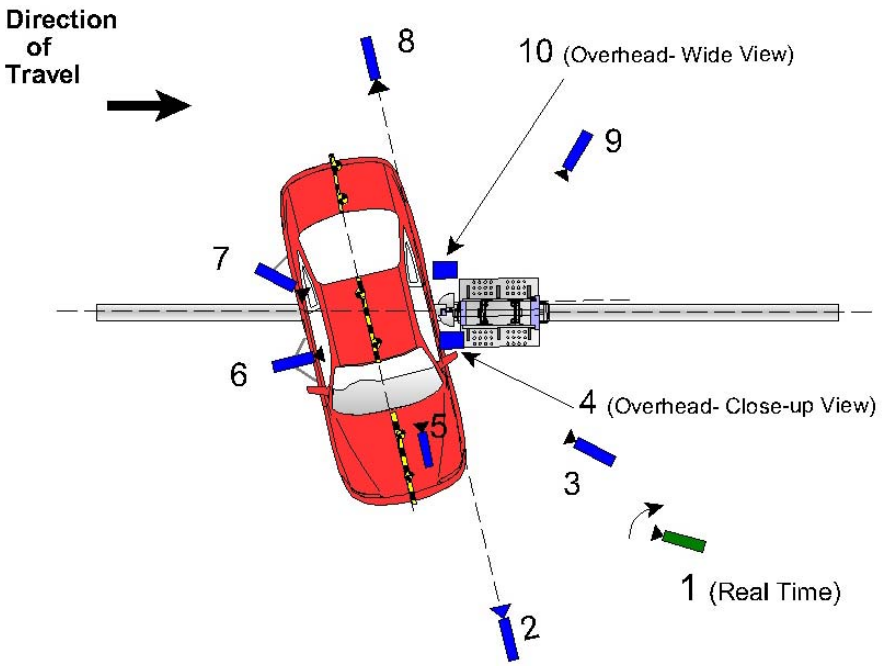
I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 7

Place Cameras at Impact Site and Attach Onboard Cameras to the Test Vehicle

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

__1 Verify that each high speed digital camera is set to capture video at a minimum 1000 fps and the real time camera is set to capture video at 24 to 30 fps.
__2 Record frame speed and length of lens for all cameras on the table below.
__3 Using the figure below as a guide, place high speed cameras at the impact site as follows;
__3.1 Camera No. 2 – in front of the test vehicle, in-line with (or parallel to) the vertical plane of impact.
__3.2 Camera No. 3 - approximately 45º to the impacted side of the vehicle viewing the impact area forward of the pole.
__3.3 Camera No. 4 - directly overhead to provide a close-up view of impact.
__3.4 Camera No. 8 - the rear of the test vehicle, in-line with (or parallel to) the vertical plane of impact.
__3.5 Camera No. 9 - approximately 45º to the impacted side of the vehicle viewing the impact area rearward of the pole.
__3.6 Camera No.10 - directly overhead to provide a wide view of impact.
__4 Record the x, y & z coordinates of cameras 2,3,4,8,9 & 10 on the table below. Use as reference the forwardmost edge of the pole along the pole's X-axis for X and Y measurements and ground for Z measurement (+X = Forward of Impact, +Y = Right of Impact, +Z = Down)
__5 Rigidly attached camera nos. 5, 6 &7 to the test vehicle as follows;
__5.1 Camera No. 5 - on the hood structure and placed to the left side (for driver's side impacts) or right side (for front passenger side impacts) to provide a frontal view of dummy kinematics.
__5.2 Camera No. 6 - to the non-struck side front door structure to provide a side view of dummy kinematics through the vehicle's front side door window.
__5.3 Camera No. 7 - to the non-struck side rear door structure or rear window opening to provide a view of the dummy kinematics.
__6 Mount lighting systems to the vehicle to illuminate the interior during impact.
__7 To indicate time zero, place strobes or flash lights with diffused light in the field of view of each camera.



CHECK SHEET NO. 7 (Continued)

Place Cameras at Impact Site and Attach Onboard Cameras to the Test Vehicle

Pos No.	Camera View	Location			Lens (mm)	Operating Frame Rate
		X	y	z		
1	Real time (24 fps) film coverage					
2	Front ground level - impact view					
3	Impact side 45* - forward pole view					
4	Overhead Close-up view of impact					
5	Onboard – dummy front view					
6	Onboard – dummy side view					
7	Onboard – dummy rear view					
8	Rear ground level – impact view					
9	Impact side 45º - rearward pole view					
10	Overhead wide-view of impact					

__6 Posttest, verify that all high speed digital cameras operated at or above1000 fps and produced video at or above the minimum resolution specification of 1920 x 1035.

__6.1 Yes, all camera views were captured and all cameras operated within specifications

__6.2 No - Camera No.__ did not operate as intended because _____
_____

__7 Posttest, verify that the real-time camera operated within specification.

__7.1 Yes, all views were captured and the camera operated within specifications

__7.2 No - The real time camera did not operate as intended because _____
_____

_____ _____

I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 8

Mark for Reference the Location of Adjustable Seats,
Adjustable Seat Belt Anchorages and Steering Wheel

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

Does the front outboard passenger seat adjust independently of the driver's seat?
__Yes – Follow all steps below and mark for reference both driver and front outboard passenger seats.
__No – The driver's seat controls the final position of the passenger seat (S8,3.2.3), (S10.3.2.3)
Mark for reference the location of the driver's seat only.(i.e., step 7)

__1 **Determine the seat type**
Visually inspect the front seats to determine its type (i.e., bucket or bench).
Driver seat: Bench__ Bucket__
Front outboard passenger seat: Bench__ Bucket__

__2 **Position lumbar supports** (S10.3.1), (S8.3.1.1)
Position the seat's adjustable lumbar supports to the lowest, retracted or deflated adjustment positions.

__*N/A* No lumbar adjustment

__3 **Position additional supports** (S10.3.1), (S8.3.1.2)
Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position.

__*N/A* No additional support adjustment

__4 **Position leg supports**
Position an adjustable leg support system in its rearmost position.

__*N/A* No adjustable leg support system

__5 **Position the head restraint**

__5.1 For a Subpart V (SIDIIs) test dummy (S10.3.2.2)

__5.1.1 Does the adjustable head restraint have a non-use position as defined by FMVSS No. 202a?
__Yes - Set the head restraint to the lowest position using the procedure described by the manufacturer. Go to step 6.
__No – go to step 5.1.2

__5.1.2 Using any adjustment of the head restraint, position it to its lowest position.

__5.1.3 Using any adjustment of the head restraint, position it to the full forward position. If it rotates, rotate it such that the head restraint extends as far forward as possible.

__5.2 For a Subpart U (ES-2re) test dummy: (S8.3.1.2)

__5.2.1 Using any adjustment of the head restraint, position it to its highest position.

__5.2.2 Using any adjustment of the head restraint, position it to the full forward position. If it rotates, rotate it such that the head restraint extends as far forward as possible.

__*N/A* The test vehicle is equipped with automatically adjusting head restraints or there is no head restraint adjustment,

__6 **Mark the longitudinal centerline of the seat**

__6.1 **Driver's seat**:
If adjustable, place the seat back in its most vertical (upright) position. For bucket seats, locate and **mark** for reference the intersection of a vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface, seat back and head restraint. For bench seats, draw a line along the intersection of a vertical longitudinal plane that passes through the centerline of the steering wheel and the seat cushion upper surface, seat back and head restraint.

__6.2 **Front Passenger outboard seat (Right Side Impact)**:
If adjustable independent of the driver's seat place the seat back in its most vertical (upright) position. For bucket seats, locate and **mark** for reference the intersection of a vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface, seat back and head restraint. For bench seats, locate and **mark** for future reference the longitudinal centerline of the passenger seat cushion, seat back and head restraint. The longitudinal centerline of the seat is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel.

CHECK SHEET NO. 8 (Continued)

Mark for Reference the Location of Adjustable Seats,
Adjustable Seat Belt Anchorages and Steering Wheel

__7 **Mark the range of seat travel**
Prior to marking the seat, move the seat through its full range of motion using all available controls. Separately, operate each control to determine whether it moves the seat and/or seat cushion primarily in the fore-aft or up-down directions.

__7.1 Mark a point (seat cushion reference point - **SCRP**) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. For seat cushions that move up and down independently from the seat housing, mark the point on the side of the cushion in an area that will not be obscured by the seat housing when the seat cushion is at its lowest height position.

__7.2 Draw a horizontal line (seat cushion reference line - **SCRL**) through the **SCRP**.

__7.3 Use only the controls that primarily move the seat in the fore-aft direction to move the **SCRP** to the rearmost position.

__7.4 If the seat cushion adjusts fore-aft, independent of the seat back, use only the controls that primarily move the seat cushion in the fore-aft direction to move the **SCRP** to the rearmost position.

_ *N/A* No independent fore-aft seat cushion adjustment

__7.5 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the **SCRL** and to set the **SCRL** at mid-angle. Record the maximum, minimum and mid-angles in the table below;

SCRL°	Max	Min	Mid
Driver			
Passenger			

__7.6 If the seat and/or seat cushion height is adjustable, use any part of any control other than the parts which primarily move the seat or seat cushion fore-aft, to put the **SCRP** in its lowest position with the **SCRL** angle at the mid-angle found in 7.5.

_ *N/A* No seat height adjustment

__7.7 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.

__7.8 Use only the controls that primarily move the seat in the fore-aft direction to **mark** the fore-aft seat positions. **Mark** each position so that there is a visual indication when the seat is at a particular position. For manual seats, move the seat forward one detent at a time and **mark** each detent. For power seats, **mark** only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost.

Two different methods for marking the fore-aft seat positions are illustrated in the photos below.

CHECK SHEET NO. 8 (Continued)

Mark for Reference the Location of Adjustable Seats,
Adjustable Seat Belt Anchorages and Steering Wheel

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

__7.9 Use only the controls that primarily move the seat in the fore-aft direction to move the **SCRP** to the rearmost position.

__7.10 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find the maximum, minimum, and middle height of the **SCRP** with the **SCRL** at the mid-angle determined in 7.5 by measuring from the **SCRP** to a reference point on the floor pan or sill. Record the maximum, minimum and middle heights on the table below.

__*N/A* No seat height adjustment. Go to step 8.

__7.11 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the **SCRP** at the mid-fore-aft position.

__7.12 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find the maximum, minimum, and middle height of the **SCRP** with the **SCRL** at the mid-angle determined in 7.5 by measuring from the **SCRP** to a reference point on the floor pan or sill. Record the maximum, minimum and middle heights on the table below.

__7.13 Use only the controls that primarily move the seat in the fore-aft direction to place the **SCRP** at the full forward position.

__7.14 Use any part of any control, other than the parts which primarily move the seat or seat cushion fore-aft, to find and visually **mark** the maximum, minimum, and middle height of the **SCRP** with the **SCRL** at the mid-angle determined in 7.5 by measuring from the **SCRP** to a reference point on the floor pan or sill. Record the maximum, minimum and middle heights and SCRL mid-angle on the table below.

	SCRL Mid-Angle° (7.5)		**SCRP Height (mm)**		
			Rearmost (7.10)	**Mid-fore/aft (7.12)**	**Full forward (7.14)**
Driver		Max			
		Mid			
		Min			
Front Passenger		Max			
		Mid			
		Min			

__8 **Mark the seat belt upper anchorage positions**
Mark for reference each vertical position of a manually adjustable seat belt upper anchorage.

__*N/A* The seat belt upper anchorage is not manually adjustable.

__9 **Mark the steering wheel position**
Is the steering wheel adjustable up and down and/or in and out?
__Yes - go to 9.1
__No - Check Sheet completed. Go to the end and sign.

__9.1 Find and **mark** for future reference each up and down position. Label three of the positions with the following: H for highest, M for mid-position (if there is no mid-position, label the next lowest adjustment position), and L for lowest.
__N/A steering wheel is not adjustable up and down

__9.2 Find and **mark** for future reference each -in- and -out- position. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the next rearmost adjustment position), and R for rearmost.

_____ _____
I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 9

Position a Test Dummy Conforming to Subpart U of Part 572 (ES-2re)
in the Driver or Front Outboard Passenger Seat

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____
DSP: ___Driver ___Front Passenger

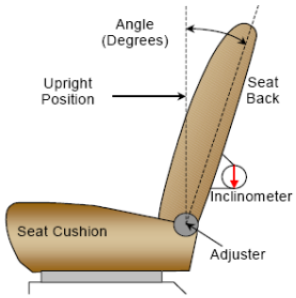
__1 **Set the seat for a Subpart U (ES-2re) test dummy**
Using the reference marks on the seat(s) (see Check Sheet No. 8), set the seat(s) in the mid fore-aft, lowest height at mid seat cushion angle position as follows;
NOTE: When setting the seat for a Front Outboard Passenger (i.e., right-side impact test), if the seat does not adjust independently from the driver's seat, use the driver's seat reference marks to set the seat (see Check Sheet No. 8). Otherwise, set both front outboard seats to the mid fore aft position using the procedure below.

__1.1 Using the control that primarily moves the seat fore and aft, move the **SCRP** to the mid-travel (i.e., mid-fore aft) position. (S8.3.1.3.2)

__1.2 If the seat or seat cushion height is adjustable, other than by the controls that primarily move the seat or seat cushion fore and aft, set the height of the **SCRP** to the minimum height, with the **SCRL** set as closely as possible to the mid-angle determined in Check Sheet No. 8. (S8.3.1.3.3)

__1.3 Set the seat back angle at the manufacturer's **nominal design riding position** for a 50th percentile adult male in the manner specified by the manufacturer. If the position is not specified, set the seat back at the first detent rearward of 25° from vertical. (S8.3.1.2).
Describe the method used to achieve the nominal design riding position and record the seat back angle.

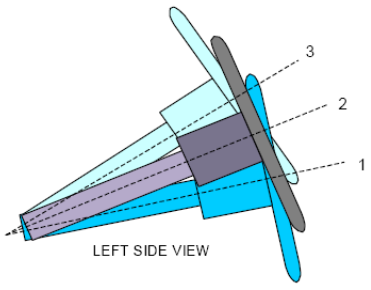
_____
_____
_____
_____
_____
_____
Seat Back Angle___ °



FRONT SEAT ASSEMBLY

__*N/A* The seat back does not adjust.

__2 **Set the steering wheel to the mid-position**
Use the markings to position the steering wheel hub at the geometric center of full range of driving positions including any telescoping positions or if applicable, the next lowest detent position (S10.5). Complete the following table;



STEERING COLUMN ASSEMBLY

	Degrees	Fore/Aft Position (mm)
Lowermost - Position 1		
Geometric Center – Position 2		
Uppermost – Position 3		
Telescoping Steering Wheel Travel		
Test Position		

CHECK SHEET NO. 9

Position a Test Dummy Conforming to Subpart U of Part 572 (ES-2re) in the Driver or Front Outboard Passenger Seat

__*N/A* The steering wheel does not adjust.

__**3** ***Set* adjustable seat belt upper anchorages**

Use the markings to position an adjustable seat belt upper anchorage at the manufacturer's nominal design position for a 50th percentile male adult occupant. (S12.2.1);

___Total # of Positions ____ Test Position # __*N/A S*eat belt upper anchorage does not adjust.

__4 **Retract the armrest**

Retract any folding armrest (S12.2.1)

__*N/A* No armrest or armrest is fixed, not retractable.

__5 **Determine the H-point location;**

Position the three dimensional H-point manikin (i.e., H-point machine) specified in Society of Automotive Engineers (SAE) Surface Vehicle Standard J826, revised July 1995, Devices for Use in Defining and Measuring Vehicle Seating Accommodation in the seat as follows;

__5.1 Place a 910 mm^2 piece of muslin cotton cloth over the seat area. (The muslin cloth shall be comparable to 48 threads/in^2 and density of 2.85 lb/yd.) Tuck the muslin cloth in a sufficient amount to prevent hammocking of the material.

__5.2 Place the seat and back assembly of the H-Point machine such that its plane of symmetry is coincident with the longitudinal centerline marking on the seat.

__5.3 Install the lower leg, and foot segments.

__5.4 Set the length of the lower leg segment at 414 mm (16.3 in) and the length of the thigh bar at 401 mm (15.8 in).

__5.5 **Leg and foot placement**

__5.5.1 *Driver Seating Position*

__5.5.1.1 Insert the pin so that the foot angle is not less than 87°.

__5.5.1.2 Place the right foot on the un-depressed accelerator pedal with the sole of the foot on the pedal and the heel as far forward as allowable. Do not place the heel on the toe board.

__5.5.1.3 Adjust the left leg to be the same distance from H-point machine centerline as the right leg.

__5.5.1.4 With the T-bar level, place the left foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheel well projection. If the foot cannot be positioned on the toe board, set it on the floor pan.

__Foot on toe board

__Foot on floor pan

__5.5.2 *Front Outboard Passenger Seating Position*

__5.5.2.1 Insert the pin so that the foot angle is not less than 87 degrees.

__5.5 2.2 Space the lower legs 254 mm (10 in) apart, equally spaced about the centerline of the H-point machine.

__5.5.2.3 With the T-bar level, place the left foot on the toe board with the rearmost point of the wheel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheel well projection. If the foot cannot be positioned on the toe board, set it on the floor pan.

__Foot on toe board

__Foot on floor pan

CHECK SHEET NO. 9 (Continued)
Position a Test Dummy Conforming to Subpart U of Part 572 (ES-2re)
in the Driver or Front Outboard Passenger Seat

__5.5.2.4 With the T-bar level, place the right foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheel well projection. If the foot cannot be positioned on the toe board, set it on the floor pan.
__Foot on toe board
__Foot on floor pan

__5.6 Apply the lower leg weights.
__5.7 Apply the thigh weights.
__5.8 Tilt the back pan forward against the forward stop and draw the H-point machine away from the seatback using the T-bar.
__5.9 **Re-positioning the back pan**
__5.9.1 Allow the H-point machine to slide rearward until a forward horizontal restraining load on the T-bar is no longer required due to the seat pan contacting the seat back.
__The seat pan does not slide rearward. Go to 5.9.2
__5.9.2 Slide the H-point machine rearward by a horizontal rearward load applied at the T-bar until the seat pan contacts the seat back.
__5.10 Apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.
__5.11 Again apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.
__5.12 Carefully return the back pan to the seat back.
__5.13 Install the right and left buttock weights.
__5.14 Install the eight torso weights alternately the installation between right and left.
__5.15 Tilt the back pan forward until the stop is contacted.
__5.16 Rock the H-point from side to side over a 10° arc (5° to each side of the vertical centerline) for three complete cycles. Restrain the T-bar during rocking so that the seat pan does not change position. Minimize any inadvertent exterior loads applied in a vertical or fore-aft direction. The feet are free to move during this rocking motion.
__5.17 Without applying a forward or lateral load lift the right foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.
__5.18 Lower the right foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor, toe board, or undepressed accelerator pedal.
__5.19 Without applying a forward or lateral load lift the left foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.
__5.20 Lower the left foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor or toe board.
__5.21 Is the seat pan level?
__Yes. Go to 5.23
__No. Go to 5.22

CHECK SHEET NO. 9 (Continued)
Position a Test Dummy Conforming to Subpart U of Part 572 (ES-2re)
in the Driver or Front Outboard Passenger Seat

__5.22 Apply a sufficient lateral load to the top of the seatback pan to level the H-point machine seat pan on the seat.
__5.23 Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, return the seatback pan to the seatback.
__5.24 Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, apply sufficient rearward force perpendicular to the back angle bar just above the torso weights to increase the hip angle 3°. Minimize the exterior downward or side forces applied to the H-point machine. Release the force. Repeat this step until the hip angle readout is identical. Complete as many force applications as necessary and record the results in the following table:

Force App.	Hip Angle
1	
2	
3	
4	
5	

__5.25 Is the H-point machine level?
__Yes, go to 5.26
__No, go back to step 5.15 and repeat steps to re-level H-point machine.
__5.26 Record the H-point location in the table below;
__5.27 Remove the H-point machine

H-point location	
Torso Angle (fore/aft)	°
X(fore/aft) of striker	(mm)
Z(above/below) striker	(mm)

__6 Set limb joints and clothe the test dummy (S11.1(a) & S11.2(a))
__6.1 Set the limb joints at between 1 and 2 g. Adjust the leg joints with the torso in the supine position.
__6.2 Clothe the test dummy in clean short sleeve formfitting cotton stretch top and midcalf length pants.
__6.3 Place size 11EEE shoes meeting MIL-S-13192(1976) on each foot.

Once the H-point has been determined, position a calibrated ES-2re test dummy in the designated front seat on the struck side of the test vehicle.

__7 Place the test dummy in the seat
__7.1 Move the seat and seat back rearward as necessary to get the test dummy in the seat.
__7.2 Position the test dummy in the seat such that its plane of symmetry (i.e., mid-sagittal plane) is coincident with the longitudinal centerline marking on the seat cushion, seat back and head restraint.
__7.3 Bend the upper torso forward and then lay it back against the seat back. Push the shoulders of the dummy fully rearward. (S12.2.1(a)(2))
__7.4 Remove the foam blocks from the pelvis flesh.
__7.5 Position the dummy so that it sits square and level in the seat.
__7.6 Repeat steps 1 thru 1.3 to set the seat at the mid-fore aft position

CHECK SHEET NO. 9 (Continued)
Position a Test Dummy Conforming to Subpart U of Part 572 (ES-2re)
in the Driver or Front Outboard Passenger Seat

__7.7 Maneuver the dummy's pelvis until the M3 hole on its back plate is within a circle with a radius of 10 mm round the H-point location (x,z) determined by the H-point machine. (S12.2.1(b)(2))

__7.8 Position the pelvis of the dummy such that a horizontal (lateral) line passing through the dummy's hip pivot center is perpendicular to the longitudinal center plane of the seat.

__7.9 Measure the pelvic angles using the tilt angle sensors installed in the test dummy. Verify that the line through the dummy's hip pivot center is horizontal with a maximum(Y) inclination of ± 2°. (S12.2.1(b)(1))

__7.10 Is the pelvic tilt angle(Y) within spec. ± 2°?

__Yes - Record the tilt angles (X) and (Y) and measure and record the X and Z location of the dummy's hip pivot center on the chart below;

Pelvic angle and H-point location	
Pelvic Tilt Angle(Y)	°
Pelvic Tilt Angle (X)	°
X(fore/aft) of striker	(mm)
Z(above/below) striker	(mm)

__ No, go back to step 7.2 and repeat steps to re-adjust the position of the test dummy

__ Proper position cannot be achieved, contact COTR immediately.

__7.11 **Foot Placement**

__7.11.1 D**river seating position (S12.2.1(d)(1)):**

__7.11.2 Without inducing pelvis or torso movement, place the right foot of the dummy on the un-pressed accelerator pedal with the heel resting as far forward as possible on the floor pan.

__7.11.3 Set the left foot perpendicular to the lower leg with the heel resting on the floor pan in the same lateral line as the right heel.

__7.11.4 If possible within these constraints, place the thighs of the dummy in contact with the seat cushion.

__7.11.5 F**ront passenger outboard seating position (S12.2.1(d)(2)):**

__7.11.6 Without inducing pelvis or torso movement, place the heels of the dummy as far forward as possible on the floor pan.

__7.11.7 Position the knees of the dummy such that their outside surfaces are 150±10mm from the plane of symmetry of the dummy. Measure the distance and record on the table below.

__7.12 **Arm Placement (S12.2.1(c))**

Place the dummy's upper arms such that the angle between the projection of the arm centerline on the mid-sagittal plane of the dummy and the torso reference line is 40°±5°. Measure the angle of each arm and record on the table below.

__8 **Seatbelt Placement (12.2.1)**

Place the seatbelt around the test dummy and fasten latch.

_____ _____

I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 10

Position a Test Dummy Conforming to Subpart V of Part 572 (SIDIIs) in the Driver's Seat

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

__1 **Set the seat at rearmost fore/aft position, mid-height at mid-angle**
Using the reference marks on the seat (see Check Sheet No. 8), set the seat in the mid fore-aft, lowest height at mid seat cushion angle position as follows;

__1.1 Using the control that primarily moves the seat fore and aft, move the **SCRP** to the rearmost position. (S12.3.2(a)(1))

__1.2 If the seat or seat cushion height is adjustable, other than by the controls that primarily move the seat or seat cushion fore and aft, set the height of the **SCRP** to the mid-height, with the **SCRL** set as closely as possible to the mid-angle determined in Check Sheet No.8.

__1.3 Fully recline the seat back. (S12.3.2(a)(2))

__*N/A* The seat back does not adjust.

__2 **Set the steering wheel to the mid-position (S10.5)**
Use the markings to position the steering wheel hub at the geometric center of full range of driving positions including any telescoping positions or if applicable, the next lowest detent position

__*N/A* The steering wheel does not adjust.

__3 **Set adjustable seat belt upper anchorages (S12.3.1(d))**
Use the markings to position an adjustable seat belt upper anchorage at the manufacturer's nominal design position for a 5th percentile female adult occupant.

__*N/A* The seat belt upper anchorage does not adjust.

__4 **Retract the armrest (S12.3)**
Retract any folding armrest.

__*N/A* No armrest or armrest is fixed, not retractable.

__5 **Set adjustable accelerator pedal (S12.3.2 (b)(1))**
If the vehicle has an adjustable accelerator pedal, adjust it to the full forward position.

__*N/A* The vehicle's accelerator pedal does not adjust.

__6 Fully recline the seat back, if adjustable.

__*N/A* Seat back does not adjust.

__**7** **Set limb joints and clothe the test dummy (S11.1(b) & S11.2(b))**

__7.1 Set the limb joints at between 1 and 2 g. Adjust the leg joints with the torso in the supine position.

__7.2 Clothe the test dummy in clean short sleeve formfitting cotton stretch top and knee length pants.

__7.3 Place size 7.5W shoes meeting MIL-S-21711E on each foot

__8 **Place the test dummy in the seat (S12.3.2(a)(2), (3) & (4))**
Position the dummy in the seat such that the midsagittal plane is coincident with the longitudinal centerline markings on the seat cushion, seat back and head restraint. Place the dummy in the seat with the legs at an angle of 120° to the thighs. The calves should not be touching the seat cushion.

__9 Hold down the dummy's thighs and push rearward on the upper torso to maximize the pelvic angle. (S12.3.2(a)(5))

__10 Set the angle between the legs and the thighs to 120°. (S12.3.2(a)(6))

__11 Set the transverse distance between the centers of the front of the knees at 160 to 170 mm. (6.3 to 6.7 inches). Center the knee separation with respect to the longitudinal centerline markings of the seat cushion
Record Knee Separation _____

__12 Push rearward on the dummy's knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first.
__Pelvis contacted seat back.
__Calves contacted seat cushion.

__13 Gently rock the upper torso ± 5° arc (approximately 51 mm (2 inches)) side-to-side three times. (S12.3.2(a)(7))

CHECK SHEET NO. 10 (Continued)
Position a Test Dummy Conforming to
Subpart V of Part 572 (SIDIIs) in the Driver's Seat

__14 If needed, extend the legs until the feet do not contact the floor pan. The thighs should be resting on the seat cushion. (S12.3.2(a)(8))

__15 Position the right foot until it is in line with a longitudinal vertical plane passing through the center of the accelerator pedal. Maintain the leg and thigh in a vertical plane.

__16 Rotate the left leg and thigh laterally to equalize the distance between each knee and the longitudinal centerline markings on the seat cushion.

__17 Attempt to return the seat to the foremost fore-aft position, mid-height, and seat cushion mid-angle. The foot may contact and depress the accelerator and/or change the angle of the foot with respect to the leg.
__Foremost position achieved. Proceed to leveling the dummy's head (see step 22).
__Foremost not achieved because of foot interference. Proceed to step 19.
__Foremost not achieved because of steering wheel contact.

__18 If either of the dummy's legs contact the steering wheel, move the steering wheel up the minimum amount required to avoid contact. If the steering wheel is not adjustable separate the knees the minimum distance required to avoid contact.
__N/A- there was no leg contact
__Steering wheel repositioned
__Knees separated

__19 If the left foot interferes with the clutch or brake pedals, rotate the left foot about the leg to provide clearance. If this is not sufficient, rotate the thigh outboard at the hip the minimum amount required for clearance.
__N/A, No foot interference with pedals.
__Foot adjusted to provide clearance.
__Foot and Thigh adjusted to provide clearance.

__20 Continue to move the seat. Use seat controls to line up the seat markings determined in Check Sheet No. 8 to set the foremost fore-aft position, mid-height position and the seat cushion mid-angle. If the dummy contacts the interior move the seat rearward until a maximum clearance of 5 mm (0.2 inches) is achieved or the seat is in the closest detent position that does not cause dummy contact.
__Foremost, mid-height position and the seat cushion mid-angle reached
__Dummy contact Clearance set at maximum of 5mm
Measured Clearance_____
__Dummy contact Seat set at nearest detent position.
Seat position ___ detent positions rearward of foremost
(foremost is position zero)

__21 If the steering wheel was repositioned in step 18, return the steering wheel to the original position. If the steering wheel contacts the dummy before reaching the original position, position the wheel until a maximum clearance of 5mm (.2 inches) is achieved, or the steering wheel is in the closest detent position that does not cause dummy contact.
__N/A Steering wheel was not repositioned.
__Original position achieved.
__Dummy contact Clearance set at maximum of 5mm
Measured Clearance_____
__Dummy contact Steering wheel set at nearest detent position.
Steering wheel position ___ detent positions upward of original position.
(Original position is position zero)

CHECK SHEET NO. 10 (Continued)
Position a Test Dummy Conforming to
Subpart V of Part 572 (SIDIIs) in the Driver's Seat

__22 **Head Leveling: Adjustable Seat Backs (12.3.2(9)(ii))**
Rotate the seat back forward while holding the thighs in place. Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level to within ± 0.5°. Make sure the pelvis does not interfere with the seat bight. If interference occurs, slightly shift the pelvis forward on the seat cushion and complete steps to level the head
__22.1 Head leveled using the adjustable seat back and the pelvis does not interfere with the seat bight
Record the Head angle: _____° **Proceed to step 24.**
__22.2 Head Level NOT Achieved
Place the seat back in the adjustment position that minimizes the difference between the instrument platform angle and level.
__22.3 Adjust the lower neck bracket to level the transverse instrumentation platform angle to within ± 0.5°.
__22.4 Head leveled by adjusting neck bracket
Record the Head angle: _____° **Proceed to step 24.**
__22.5 Head Level NOT Achieved
Place the lower neck bracket in the adjustment position that minimizes the difference between the instrument platform angle and level
Record the Head angle: _____°

__23 **Head Leveling: Fixed Seat Backs (12.3.2(9)(i))**
Adjust the lower neck bracket to level the transverse instrumentation platform angle to within ± 0.5 °
__23.1 Head leveled by adjusting neck bracket
Record the Head angle: _____° **Proceed to step 24.**
__23.2 Head Level NOT Achieved
Place the lower neck bracket in the adjustment position that minimizes the difference between the instrument platform angle and level
Record the Head angle: _____° **Proceed to step 24.**

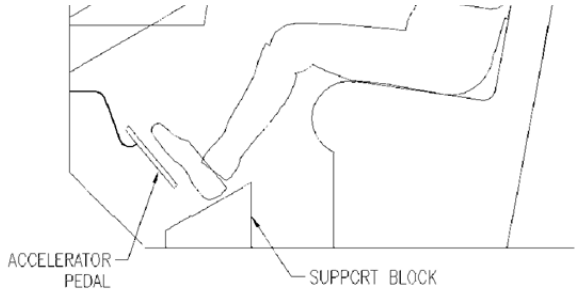
__24 **Re-position the Steering Wheel or Seat if dummy contact occurs (12.3.2(10))**
If the dummy torso contacts the steering wheel while performing step 22, reposition the steering wheel in the following order to eliminate contact.
__N/A, No dummy torso contact with the steering wheel
__24.1 Adjust telescoping mechanism
__N/A No telescoping adjustment
__Adjustment performed (fill in appropriate change)
Steering wheel moved ____ detent positions in the forward direction
Steering wheel moved ____ mm in the forward direction
__24.2 Adjust tilt mechanism
__N/A No tilt adjustment
__No adjustment performed
__Adjustment performed
Steering wheel moved ____ detent positions Upward/Downward
Steering wheel moved ____ degrees Upward/Downward
__24.3 Adjust Seat in the aft direction
__No Adjustment performed
__Seat moved aft ___ mm from original position
__Seat moved aft ___ detent positions from the original position

CHECK SHEET NO. 10 (Continued)
Position a Test Dummy Conforming to
Subpart V of Part 572 (SIDIIs) in the Driver's Seat

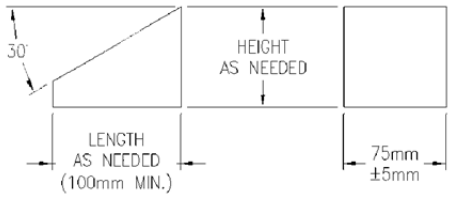
__25 **Pelvic Angle Measurement (S12.3.2(a)(11))**
Measure and set the pelvic angle to 20.0°± 2.5° using the pelvic angle gage. If the pelvic angle cannot be set to the specified range because the head will not be level or because the dummy will have need major repositioning, adjust the pelvis as closely as possible to the angle range, but keep the head level.
__Pelvic angle set to 20.0° ± 2.5°.
__Pelvic angle range not achieved, but the angular difference was minimized.

__26 **Check the dummy for contact with the interior (S12.3.2(a)(12))**
__No contact
__Dummy in contact with interior
__Seat moved aft ___ mm from the previous position
__Seat moved aft ___ detent positions from the previous position
Check the dummy to see if additional interior clearance is obtained, allowing the seat to be moved forward.
__N/A, Seat already at foremost position
__Clearance unchanged. No adjustments required.
__Additional clearance available
__Seat moved Forward ___ mm from the previous position.
__Seat moved Forward ___ detent positions from the previous position.

Tapered Foam Block



5th PERCENTILE FEMALE RIGHT FOOT SUPPORT BLOCK



SUPPORT BLOCK DETAIL

__27 **Driver foot positioning – Right Foot (12.3.2(b)(1))**
Place the foot perpendicular to the leg and determine if the heel contacts the floor pan at any leg position. If the heel contacts the floor pan proceed to step 28 otherwise, proceed to step 29.

__28 Perform the following steps until either all steps are completed, or the foot contacts the accelerator pedal. Step 28.6 shall be completed in all cases.

__28.1 With the rear of the heel contacting the floor pan, move the foot forward until pedal contact occurs or the foot is at the full forward position.

__28.2 If the vehicle has an adjustable accelerator pedal, move the pedals rearward until pedal contact occurs or the pedals reach the full rearward position.

__28.3 Extend the leg, allowing the heel to lose contact with the floor until the foot contacts the pedal. Do not raise the toe of the foot higher than the top of the accelerator pedal. If the foot does not contact the pedal, proceed to the next step. If pedal contact does occur, place a tapered foam block under the heel with the shallow part of the taper facing forward.

CHECK SHEET NO. 10 (Continued)
Position a Test Dummy Conforming to
Subpart V of Part 572 (SIDIIs) in the Driver's Seat

__28.4 Angle the foot to achieve contact between the foot and the pedal. If the foot does not contact the pedal, return the foot to the perpendicular orientation. If pedal contact does occur, place a tapered foam under the heel with the shallow part of the taper facing forward

__28.5 Align the centerline of the foot with the vertical-longitudinal plane passing through the center of the accelerator pedal. Place a tapered foam block under the heel with the shallow part of the taper facing forward.

__28.6 Record foot position
- __Pedal Contact achieved. Contact occurred at step _____
- __Heel contacts floor pan
- __Heel set _____ mm from floor pan.
- __ Pedal Contact not achieved. Heel set _____ mm from the floor pan.

__29 Perform the following steps until either all steps are completed, or the foot contacts the accelerator pedal. Step 29.5 shall be completed in all cases.

__29.1 Extend the leg until the foot contacts the pedal. Do not raise the toe of the foot higher than the top of the accelerator pedal. If the foot does not contact the pedal, proceed to the next step. If pedal contact does occur, place a tapered foam block under the heel with the shallow part of the taper facing forward

__29.2 If the vehicle has an adjustable accelerator pedal, move the pedals rearward until pedal contact occurs or the pedals reach the full rearward position. If pedal contact does occur, place a tapered foam block under the heel with the shallow part of the taper facing forward.

__N/A No pedal adjustment

__29.3 Angle the foot to achieve contact between the foot and the pedal. If the foot does not contact the pedal, return the foot to the perpendicular orientation. If pedal contact does occur, place a tapered foam block under the heel with the shallow part of the taper facing forward.

__29.4 Align the centerline of the foot in the same horizontal plane as the centerline of the accelerator pedal. Place a tapered foam block under the heel with the shallow part of the taper facing forward.

__29.5 Record foot position
- __Pedal Contact achieved. Contact occurred at step _____.
- __ Heel set _____ mm from floor pan.
- __Pedal Contact not achieved. Heel set _____ mm from the floor pan

__30 **Driver foot positioning - Left Foot (12.3.2(b)(4))**

__30.1 Place the foot perpendicular to the leg and determine if the heel contacts the floor pan at any leg position. If the heel contacts the floor pan proceed to step 30.2, otherwise position the leg as perpendicular to the thigh as possible with the foot parallel to the floor pan.

__30.2 Place the foot on the toe-board with the heel resting on the floor pan as close to the intersection of the floor pan and the toe board as possible. Adjust the angle of the foot if necessary to contact the toe-board. If the foot will not contact the toe board, set the foot perpendicular to the leg, and set the heel on the floor pan as far forward as possible. Avoid contact with the brake pedal, clutch pedal, wheel well projection, and footrest. To avoid this contact use the following three manipulations in the order listed, with each subsequent option incorporating the previous, until contact is avoided: rotate the foot about the lower leg (abduction/adduction), plantar flex the foot, rotate the leg outboard about the hip. Movement should be the minimum amount necessary. If it is not possible to avoid all foot contact, give priority to avoiding brake or clutch pedal contact.
- __No contact
- __Foot rotated about the leg (abduction/adduction)
- __Foot rotated about the leg, and foot plantar flexed
- __Foot rotated about the leg, foot plantar flexed, and the leg rotated about the hip.

__30.3 Record foot position
- __Heel does not contact floor pan.
- __Heel on floor pan and foot on toe-board
- __Heel on floor pan and foot not on toe-board

CHECK SHEET NO. 10 (Continued)
Position a Test Dummy Conforming to
Subpart V of Part 572 (SIDIIs) in the Driver's Seat

__31 **Driver (left) arm positioning (12.3.2(c))**
Set the dummy's (left) upper arm at the discrete arm position that achieves a 45° ± 5° angle between the arm centerline and dummy's torso.

__32 **Seatbelt Placement (12.3.1(d))**
Restrain the test dummy using all available belt systems.

_____ _____
I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 11

Position a Test Dummy Conforming to
Subpart V of Part 572 (SIDIIs) in the Front Outboard Passenger Seat

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

__1 **Set the seat at rearmost fore/aft position, mid-height at mid-angle**
Using the reference marks on the seat (see Check Sheet No. 8), set the seat in the mid fore-aft, lowest height at mid seat cushion angle position as follows;

__1.1 Using the control that primarily moves the seat fore and aft, move the **SCRP** to the rearmost position. (S12.3.3(a)(1))

__1.2 If the seat or seat cushion height is adjustable, other than by the controls that primarily move the seat or seat cushion fore and aft, set the height of the **SCRP** to the mid-height, with the **SCRL** set as closely as possible to the mid-angle determined in Check Sheet No.8.

__1.3 Fully recline the seat back. (S12.3.3(a)(2))
__ N/A seat back not adjustable.

__2 **Set adjustable seat belt upper anchorages (S12.3.1(d))**
Use the markings to position the adjustable seat belt upper anchorage at the manufacturer's nominal design position for a 5th percentile female adult occupant.

__*N/A* The seat belt upper anchorage does not adjust.

__**3** **Retract the armrest (S12.3)**
Retract any folding armrest.

__*N/A* No armrest or armrest is fixed, not retractable.

__**4** **Set limb joints and clothe the test dummy (S11.1(b) & S11.2(b))**

__4.1 Set the limb joints at between 1 and 2 g. Adjust the leg joints with the torso in the supine position.

__4.2 Clothe the test dummy in clean short sleeve formfitting cotton stretch top and knee length pants.

__4.3 Place size 7.5W shoes meeting MIL-S-21711E on each foot.

__5 **Place the test dummy in the seat (S12.3.3(a)(2), (3) & (4))**
Position the dummy in the seat such that the midsagittal plane is coincident with the longitudinal centerline markings on the seat cushion, seat back and head restraint. Place the dummy in the seat with the legs at an angle of 120° to the thighs. The calves should not be touching the seat cushion.

__6 Hold down the dummy's thighs and push rearward on the upper torso to maximize the pelvic angle. (S12.3.3(a)(5))

__7 Set the angle between the legs and the thighs to 120°. (S12.3.3(a)(6))

__8 Set the transverse distance between the centers of the front of the knees at 160 to 170 mm. (6.3 to 6.7 inches). Center the knee separation with respect to the longitudinal centerline markings of the seat cushion
Record Knee Separation _____

__9 Push rearward on the dummy's knees until the pelvis contacts the seat back, or the backs of the calves contact the seat cushion, whichever occurs first.
__Pelvis contacted seat back.
__Calves contacted seat cushion.

__10 Gently rock the upper torso ± 5° arc (approximately 51 mm (2 inches)) side-to-side three times. (S12.3.3(a)(7))

__11 If needed, extend the legs until the feet do not contact the floor pan. The thighs should be resting on the seat cushion. (S12.3.3(a)(8))

__12 Using the markings determined in Check Sheet No. 8, set the seat to its foremost fore-aft position, mid-height position at the seat cushion mid-angle. If the dummy contacts the interior move the seat rearward until a maximum clearance of 5 mm (0.2 inches) is achieved or the seat is in the closest detent position that does not cause dummy contact.
__Foremost, mid-height position and the seat cushion mid-angle reached
__Dummy contact Clearance set at maximum of 5mm
Measured Clearance_____
__Dummy Contact Seat set at nearest detent position.
Seat position ___ detent positions rearward of foremost (foremost is position zero)

CHECK SHEET NO. 11(Continued)

Position a Test Dummy Conforming to
Subpart V of Part 572 (SIDIIs) in the Front Outboard Passenger Seat

__13 **Head Leveling: Adjustable Seat Backs (12.3.3(9)(ii))**
Rotate the seat back forward while holding the thighs in place. Continue rotating the seat back forward until the transverse instrument platform of the dummy head is level to within ± 0.5°. Make sure the pelvis does not interfere with the seat bight. If interference occurs, slightly shift the pelvis forward on the seat cushion and complete steps to level the head

__13.1 Head leveled using the adjustable seat back and the pelvis does not interfere with the seat bight
Record the Head angle: _____° **Proceed to step 15.**

__13.2 Head Level NOT Achieved
Place the seat back in the adjustment position that minimizes the difference between the instrument platform angle and level.

__13.3 Adjust the lower neck bracket to level the transverse instrumentation platform angle to within ± 0.5°.

__13.4 Head leveled by adjusting neck bracket
Record the Head angle: _____° **Proceed to step 15.**

__13.5 Head Level NOT Achieved
Place the lower neck bracket in the adjustment position that minimizes the difference between the instrument platform angle and level
Record the Head angle: _____° **Proceed to step 15.**

__14 **Head Leveling: Fixed Seat Backs (12.3.3(9)(i))**
Adjust the lower neck bracket to level the transverse instrumentation platform angle to within ± 0.5 °

__14.1 Head leveled by adjusting neck bracket
Record the Head angle: _____° **Proceed to step 15.**

__14.2 Head Level NOT Achieved
Place the lower neck bracket in the adjustment position that minimizes the difference between the instrument platform angle and level
Record the Head angle: _____°

__15 **Pelvic Angle Measurement (12.3.3(10))**
Measure and set the pelvic angle at 20.0°± 2.5°using the pelvic angle gage. If the pelvic angle cannot be set to the specified range because the head will not be level or because the dummy will have need major repositioning, adjust the pelvis as closely as possible to the angle range, but keep the head level.

__Pelvic angle set to 20.0° ± 2.5°.
__Pelvic angle range not achieved but the angular difference was minimized.
__Record the pelvic angle: _____ °

__16 Check the dummy for contact with the interior. (S12.3.3(11))
__No contact.
__Dummy in contact with interior.
__Seat moved aft ___ mm from the previous position.
__Seat moved aft ___ detent positions from the previous position.

__17 Check the dummy to see if additional interior clearance is obtained, allowing the seat to be moved forward.
__N/A, Seat already at foremost position.
__Clearance unchanged. No adjustments required.
__Additional clearance available
__Seat moved Forward ___ mm from the previous position.
__Seat moved Forward ___ detent positions from the previous position.

CHECK SHEET NO. 11(Continued)

Position a Test Dummy Conforming to
Subpart V of Part 572 (SIDIIs) in the Front Outboard Passenger Seat

__18 **Passenger foot positioning (Indicate final position achieved) (12.3.3(b))**
__18.1 Place feet flat on the toe board; OR
__18.2 If the feet cannot be placed flat on the toe board, set the feet perpendicular to the lower leg, and rest the heel as far forward on the floor pan as possible; OR
__18.3 The heels do not touch the floor pan, set the legs as perpendicular to the thighs as possible and set the feet parallel to the floor pan.
__19 **Passenger (right) arm positioning**
Set the dummy's (right) upper arm at the discrete arm position that achieves a 45° ± 5° angle between the arm centerline and dummy's torso.
__20 **Seatbelt Placement (12.3.1(d))**
Restrain the test dummy using all available belt systems.

_____ _____
I certify that I have read and performed each instruction. Date

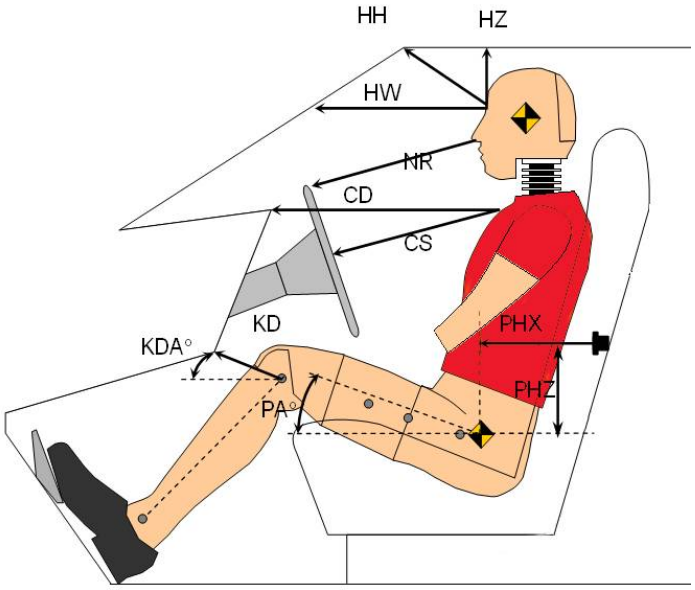
CHECK SHEET NO. 12
Take Dummy Measurements

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

Take the following measurements after the dummy has been properly positioned. Complete each table below.

NOTE: When a level is to be used, it is to ensure that the line containing the two points described is either parallel or perpendicular to the ground. If a measurement to be made is less than 250 mm ignore the directions to use a level and approximate a level measurement. Also, when a measurement is to be taken to or from the center of a bolt on the dummy, take the measurement from the center of the bolt hole if the bolt is recessed.

Longitudinal Measurements



Code	Measurement Description	Length(mm)/ Angle °
HH	Head to Header	
HW	Head To Windshield	
HZ	Head to Roof	
NR/ND	Nose to Rim/Nose to Dash Panel	
CD	Chest to Dash Panel	
CS	Chest to Steering Wheel	
KDL	Left Knee to Dash Panel	
KDR	Right Knee to Dash Panel	
KDA	Knee (outboard) to Dash Panel Angle	
PA(X)	Pelvic Tilt Angle (X)	
PA(Y)	Pelvic Tilt Angle (Y)	
PHX	Hip point to Striker (X-axis)	
PHZ	Hip point to Striker (Z-axis)	

CHECK SHEET NO. 12 (Continued)
Take Dummy Measurements

__1 HEAD TO HEADER - Measure the distance from the point where the dummy's nose meets his forehead (between the eyes) to the furthest point forward on the header.

__2 HEAD TO WINDSHIELD - Measure the distance from the point where the dummy's nose meets his forehead (between the eyes) to a point on the windshield directly in front of it. Use a level.

__3 HEAD TO ROOF - Measure the distance from the point where the dummy's nose meets his forehead (between the eyes) to the point on the roof directly above it. Use a level.

__4 NOSE TO RIM/DASH PANEL - Measure the distance from the tip of the dummy's nose to the closest point on the top of the steering wheel rim for left-side impacts. For right-side impacts, measure the distance from the tip of the dummy's nose to the point on the dash panel.

__5 CHEST TO DASH - Place a tape measure on the tip of the driver dummy's chin and rotate 125 mm of it downward toward the dummy to the point of contact on the transverse center of the dummy's chest. Measure the distance from this point to the closest point on the dash either between the upper part of the steering wheel between the hub and the rim, or measure to the dash placing the tape measure above the rim, whichever is a shorter measurement.

__6 STEERING WHEEL TO CHEST - For left side impacts, measure the distance from the center of the steering wheel hub to the dummy's chest. Use a level.

__7 LEFT AND RIGHT KNEES TO DASHBOARD - Measure the distance from the center of each knee pivot bolt's outer surface to the closest point forward acquired by swinging the tape measure in continually larger arcs until it contacts the dashboard.

__8 HIP POINT TO STRIKER (X) - Locate a point on the front door striker and project this point (with a level) vertically downward. Measure the distance horizontally from the pivot center of the dummy's torso and thigh to the point it intersects with the level.

__9 HIP POINT TO STRIKER (Z) - Locate a point on the front door striker and project this point (preferably, with a level) horizontally toward the pivot center of the dummy's torso and thigh. Measure the distance vertically from the pivot center of the dummy's torso and thigh to the point it intersects with the level.

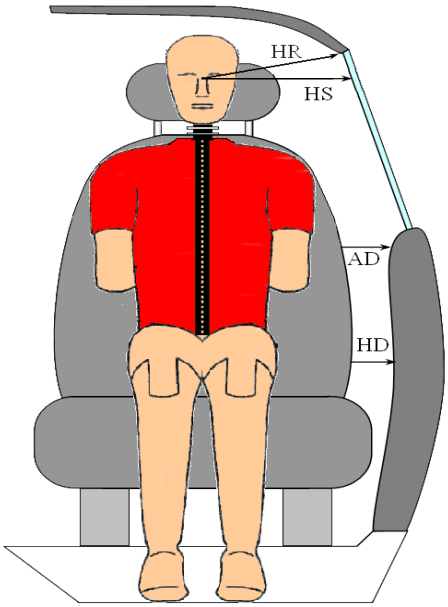
ANGLES

__10 KNEE (OUTBOARD) TO DASHBOARD ANGLE - Using the line representing the length measurement of the "outboard" knee (left or right) to the dashboard above, measure the angle between that line and horizontal.

__11 PELVIC TILT ANGLE – Record the pelvic tilt angles (X) and (Y) measured by tilt sensors installed in the test dummy

CHECK SHEET NO. 12 (Continued)
Take Dummy Measurements

Dummy Lateral Measurements



Code	Lateral Measurement Description	Length (mm)
HR	Head to Side Header	
HS	Head To Side Window	
AD	Arm to Door	
HD	Hip-point to door	

__1 HEAD TO SIDE HEADER - measure the shortest distance from the point where the dummy's nose meets his forehead (between the eyes) to the side edge of the header just *above* the window frame, directly adjacent to the dummy.

__2 HEAD TO SIDE WINDOW - measure the distance horizontally from the point where the dummy's nose meets his forehead (between the eyes) to the outside of the side window. In order to take this measurement, roll the window down to the exact height that allows a level measurement. Use a *level.*

__3 ARM TO DOOR - measure the distance horizontally from the center of the outboard arm segment to the closest point on the door

__4 HIP-POINT TO DOOR - Project a point horizontally from the pivot center of the dummy's torso and thigh, outward to edge of the pelvis skin (for ES-2re) or pelvis plug (for SIDIIs).
Measure the distance horizontally from this point to the closest point on the door panel.

_____ _____
I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 13

Apply Chalk Paint Color to the Test Dummy

After the dummy has been properly positioned and final measurements have been taken, using the chart and photo below as guides, apply chalk paint color to the head, face, hip and shoulder as follows;

Dummy Part	Color
Face	
Top of Head	
Side of Head	
Back of Head	
Shoulder	
Hip	

CHALK COLORS *TO BE USED ON TEST* DUMMIES

__1 Paint the face of the dummy blue in color. Be careful not to paint the sides.
__2 Paint the top of the head yellow in color. Stop painting at the skull cap.
__3 Paint the side of the head green in color.
__4 Paint the back of the head (i.e., skull cap) red in color.
__5 Paint the outer shoulder (closest to the door) orange in color.
__6 Paint the outer hip (closest to the door) red in color.

_____ _____

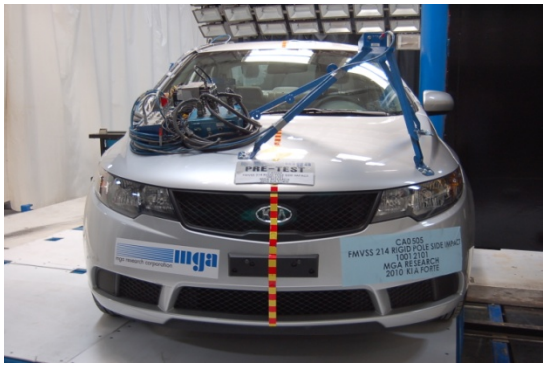
I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 14
Take Pre-test Photographs and Video

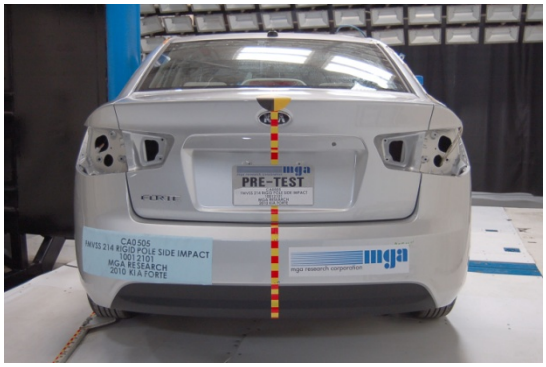
Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

Take the following photographs prior to impact;
Note – Place a test vehicle ID placard in each view

__1 Frontal View of Test Vehicle



__2 Rear View of Test Vehicle



__3 Struck Side of Test Vehicle

CHECK SHEET NO. 14 (Continued)
Take Pre-test Photographs and Video

__4 Left ¾ Front View of Vehicle and pole

__5 Overhead View

__6 Test Dummy Through the Opposite Side Window

CHECK SHEET NO. 14 (Continued)

Take Pre-test Photographs and Video

__7 Close-up of Test Dummy w/Door Closed (Impact Side)

__8 Test Dummy w/Door Open

__9 Test Dummy Shoulder and Door Top View

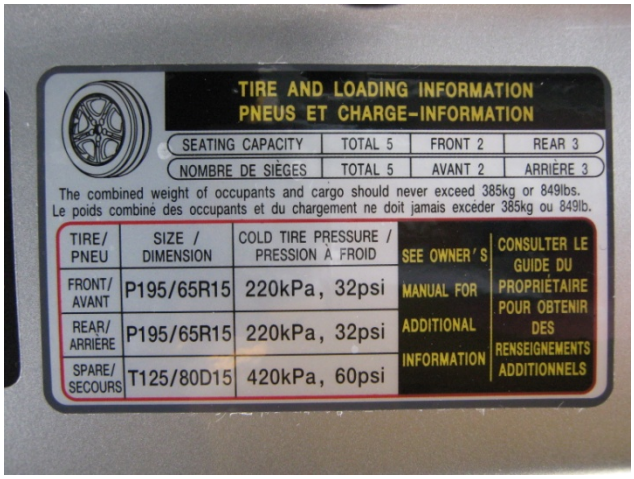
CHECK SHEET NO. 14 (Continued)

Take Pre-test Photographs and Video

__10 Interior of Front Door Closed (Through Opposite Window)

__11 Close up view of Vehicle's Certification label

__12 Close up view of Vehicle's Tire Placard



CHECK SHEET NO. 14 (Continued)

Take Pre-test Photographs and Video

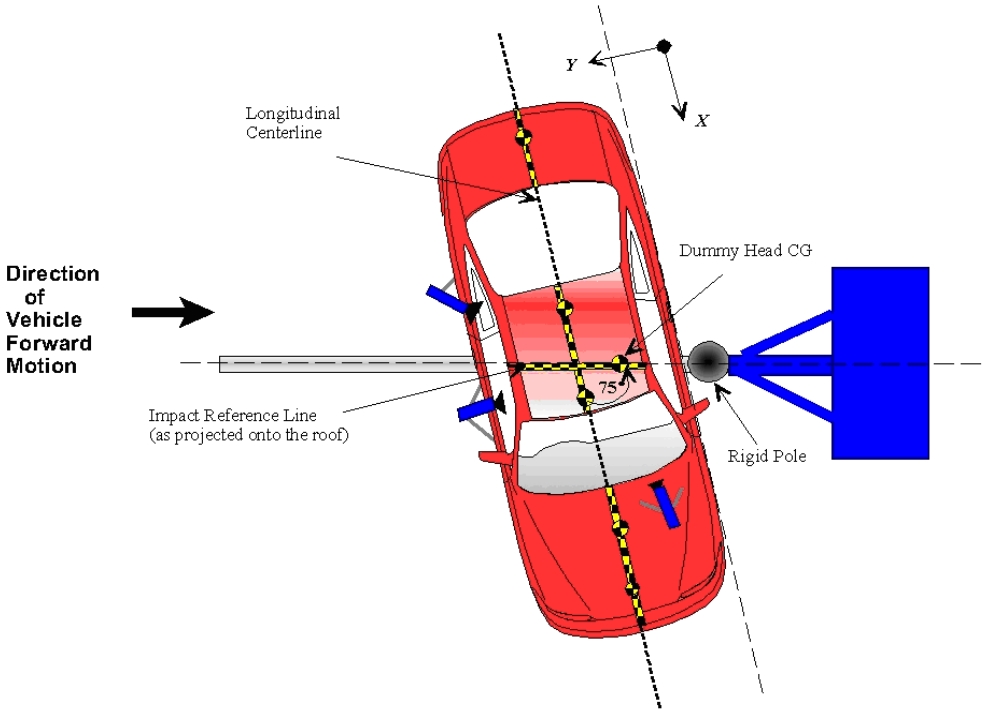
Capture the following pan views using a real-time camera;

__1 Pole
__2 View of the front of the test vehicle
__3 ¾ Front view of the struck side of the test vehicle
__4 Side view of the struck side of the test vehicle
__5 ¾ Rear view of the struck side of the test vehicle
__6 View of the rear of the test vehicle
__7 Side view of the non-struck side of the test vehicle
__8 View of the test dummy w/door open
__9 View of test dummy w/door closed
__10 View of test dummy through opposite side window/door
__11 Door closings (including all passenger doors, trunk or rear hatch)
__11 Gas cap being attached to the filler pipe

_____ _____
Signature Completion Date

CHECK SHEET NO. 15

Conduct the Test



__1 Close shut all doors and hatches. Check instrument panel telltales just prior to impact to ensure that all doors and hatches are closed. (S10.8)

__2 Place manual transmissions in 2nd gear. __ automatic transmissions in neutral (S10.9)

__3 Engage the parking brake. (S10.9)

__4 Place the key in the ignition and switch to the **"ON"** position. If the ignition switch operates without entry of a key, assure the ignition is in the "power on" position.

__5 Place any movable windows and vents located on the struck side of the vehicle in the fully closed position. (S10.6)

__6 Place sunroof(s) in the full closed position.(S10.6)

__7 Place convertible tops in the closed passenger compartment configuration. (S10.7)
__N/A

__8 Prior to impact, affix a cement tack (or other marker) to the pole such that it will transfer into the test vehicle's sheet metal at the target located on the impact reference line upon initial contact.

__9 Tow the test vehicle (at the test speed designated by the COTR) toward the stationary pole so that its line of forward motion forms an angle of 75° (or 285°) ± 3° for left (or right) side impact with the vehicle's longitudinal centerline.

__10 At impact, the test vehicle's impact reference line is aligned with the centerline of the pole ± 38 mm (1.5 in).

CHECK SHEET NO. 16
Post Test Observations

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

__1 DUMMY CONTACT INFORMATION
Prior to removing the test dummy from the vehicle, observe where dummy body part made contact with the vehicle's door, interior components and air bags as indicated by chalk markings transferred to the contacted surfaces. Where applicable, confirm contact regions by high speed video analysis. Record observations on the table below. If no contact occurred, indicate as "No contact."

Front Occupant	Observation
Face	
Top of Head	
Left (Right) Side of Head	
Back of Head	
Left (Right) Hip	
Left (Right) Shoulder	

__2 POST TEST CONDITION OF DOORS AND SEAT
Observe the condition of the vehicle's doors after impact. Check "Yes" or "No" in response to the following questions.

2.1 Struck Door
Did the door separate totally from the vehicle at the hinges or latches?
__Yes - Fail; __No - Pass

2.2. Non-Struck Doors

2.2.1 Did the door disengage from the latched position?
Front Door: __Yes - Fail; __No - Pass
Rear Doors: __Yes - Fail; __No - Pass; __*N/A,* no rear doors
Rear Hatch: __Yes - Fail; __No - Pass; __*N/A,* no rear hatch

2.2.2 Did the latch separate from striker?
Front Door: __Yes - Fail; __No - Pass
Rear Doors: __Yes - Fail; __No - Pass; __*N/A*, no rear doors
Rear Hatch: __Yes - Fail; __No - Pass; _*N/A,* no rear hatch

2.2.3 Did the hinge components separate from each other?
Front Door: __Yes - Fail; __No - Pass
Rear Doors: __Yes - Fail; __No - Pass; __*N/A,* no rear doors
Rear Hatch: __Yes - Fail; __No - Pass; __*N/A,* no rear hatch

2.2.4 Did the hinge components separate from vehicle?
Front Door: __Yes - Fail; __No - Pass
Rear Doors: __Yes - Fail; __No - Pass; __*N/A,* no rear doors
Rear Hatch: __ Yes - Fail; __No - Pass; __*N/A,* no rear hatch

2.2.5 Did the latch or hinge systems pull out of their anchorages?
Front Door: __Yes - Fail; __No - Pass
Rear Doors: __Yes - Fail; __No - Pass; __*N/A,* no rear doors
Rear Hatch: __Yes - Fail; __No - Pass; __*N/A,* no rear hatch

For any door or door component failure (indicated by "Yes" in response to any of the questions above), complete a Laboratory Notice of Test Failure form and forward to the COTR.

CHECK SHEET NO. 16 (Continued)
Post Test Observations

2.3 Seat
__2.3.1 Did the seat track remain attached to the floor?
__Yes __No
__2.3.2 Did the seat back move from its initial position?
__Yes __No

__Fill in the table below by indicating Yes or No;

		Front	Rear	Hatch
Struck Doors	Total separation from vehicle at the hinges or latches			
Non-Struck Doors	Disengaged from latched position			
	Latch separated from striker			
	Hinge components separated from each other			
	Latch or hinge systems pulled out of their anchorages			
Seat	Seat track remained attached to the floor pan			
	Seat back moved from initial position			

2.4 Describe the door and door latch performance
__2.4.1 Using video analyses, verify whether any door including the rear hatch, opened during the impact event. Record your observation on the table below.

__2.4.2 Posttest, determine whether the door latch is operable and capable of opening the door without the use of tools. To describe the condition of the door, use the following categories: Remained closed and operational, opened or unlatched during the crash, or jammed shut. Sometimes, the door is jammed and unlatched. If the door cannot be opened by manually pulling on the door at the latch location, then note the door as "jammed shut." If the door is open as a result of the crash, measure and indicate the width of the door opening (mm) on the table below.

	Door and Door Latch Performance
Struck Door	
Non-Struck Door – Front(Left/Right)	
Non-Struck Door – Right Rear	
Non-Struck Door – Left Rear	
Non-Struck Door – Rear Hatch	

__3 POST TEST STRUCTURAL OBSERVATIONS
Record the following observations on the table below;
__3.1 describe the amount of deformation to the struck-side pillar
__3.2 describe the amount of damage to the struck side sill
__3.3 whether there was damage to the front windshield area and where the damage occurred
__3.4 whether there was damage to the side door window

	Observations
Pilllar	
Sill Separation	
Windshield Damage	
Side Window Damage	

CHECK SHEET NO. 16 (Continued)
Post Test Observations

__4 SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION
__4.1 Indicate whether the vehicle was installed with the restraint types listed in the table below
__4.2 Observe whether the test vehicle's supplemental restraints operated. Verify that each front outboard occupant deployed within 20 ms of impact using high speed video analyses. Provide descriptive comments for any air bag that failed to deploy, deployed late or appeared not to have inflated to full volume during impact.

Restraint Type	Front Occupant	
	Installed	Deployed
Frontal Air bag		
Side Torso Air bag		
Combination Head/Torso Air bag		
Side Curtain Air bag		
Pelvic Air bag		
Seat Belt Pretensioner		
Comments:		

__5 IMPACT POINT DATA
Measure the horizontal distance from the center of the cement tack (or other marker) to the impact reference line and record on the table below:

Impact Point Data	mm
Vertical Impact Ref. Line (aft of front axle)	
Actual Impact Point (aft of front axle)	
Diff	

_____ _____
I certify that I have read and performed each instruction. Completion Date

CHECK SHEET NO. 17
Take Posttest Photographs and Video

Test Vehicle:_____ Technician:_____
Test Facility:_____ Start Date:_____

Take the following photographs after impact;

__1 Frontal View of Test Vehicle

__2 Rear View of Test Vehicle

__3 Struck Side of Test Vehicle

CHECK SHEET NO. 17 (Continued)
Take Post-test Photographs and Video

__4 Left ¾ Front View of Vehicle and pole

__5 Overhead View

__6 Test Dummy Through the Opposite Side Window

CHECK SHEET NO. 17 (Continued)

Take Post-test Photographs and Video

__7 Close-up of Test Dummy w/Door Closed (Impact Side)

__8 Test Dummy Shoulder and Door Top View

__9 Post Test Interior of Front Door Showing Dummy Impact Locations (thru opposite window w/dummy removed)

CHECK SHEET NO. 17 (Continued)
Take Post-test Photographs and Video

__10 Post Test Impact Zone Close-up View

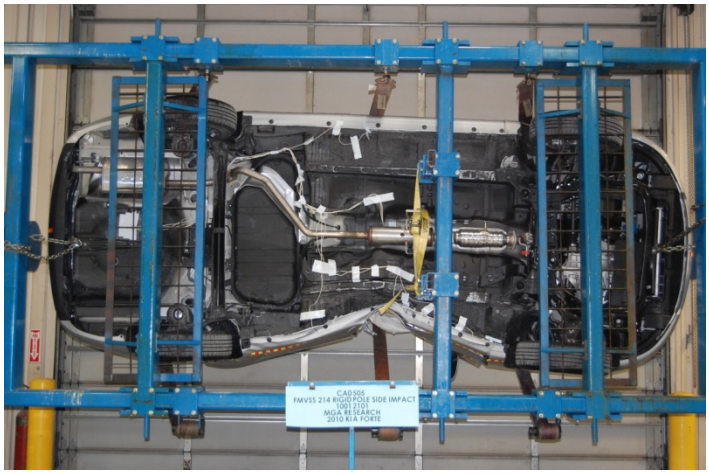
__11 Post Test 3/4 Front View of Impact Zone

__12 Post Test 3/4 Rear View of Impact Zone

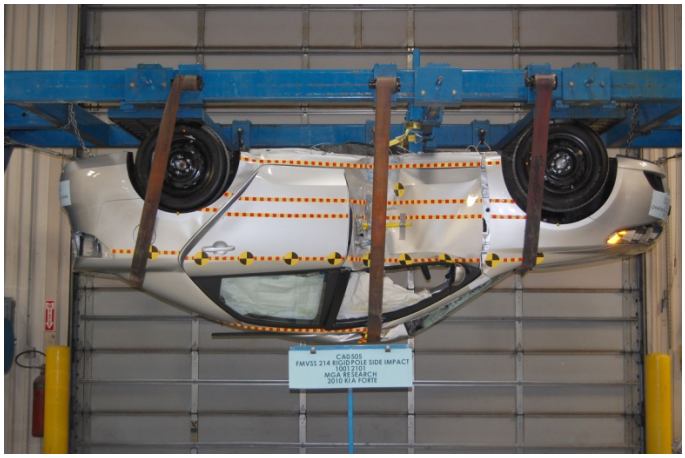
CHECK SHEET NO. 17 (Continued)
Take Post-test Photographs and Video

__13 Close-up View of Impact Point Target

__14 301 Static Rollover Test – 90 degrees



__15 301 Static Rollover Test – 180 degree



CHECK SHEET NO. 17 (Continued)
Take Post-test Photographs Video

__16 301 Static Rollover Test – 270 degree

__17 301 Static Rollover Test – 360 degree

__18 Additional Photos
Include additional photos to document any test anomaly or apparent noncompliance.

__18.1 If additional photos were taken, list heading for each photo below;

_____ _____ _____
_____ _____ _____

__18.2 N/A - No additional photos taken

CHECK SHEET NO. 17 (Continued)

Take Post-test Photographs Video

Capture the following pan views using a real-time camera;

__1 View of test dummy through opposite window (door closed)
__2 View of front of vehicle
__3 View of impacted side
__4 View of impact point – close-up
__5 View of rear of vehicle
__6 View of non-impact side of vehicle
__7 View of inside front door (dummy removed)
__8 View of rollover – 90 degrees
__9 View of rollover – 180 degrees
__10 View of rollover – 270 degrees
__11 View of rollover – 360 degrees

_____ _____
Signature Completion Date