

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
LABORATORY TEST PROCEDURE

FOR

FMVSS 208, Occupant Crash Protection

FMVSS 212, Windshield Mounting

FMVSS 219, Windshield Zone Intrusion

FMVSS 301F, Fuel System Integrity – Frontal



ENFORCEMENT
Office of Vehicle Safety Compliance
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Washington, DC 20590

**OVSC LABORATORY TEST PROCEDURE NO. 208
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**REVISION CONTROL LOG
FOR OVSC LABORATORY
TEST PROCEDURES**

TP-208
Occupant Crash Protection

TEST PROCEDURE		FMVSS 208		DESCRIPTION
REV. No.	DATE	AMENDMENT	EFFECTIVE DATE	
00				
01				
02				
03				
04				
05	07/10/81			
06	05/15/87			
07	02/15/88			
08	09/08/89			
09	03/15/93			Major Revision
10	01/15/98			Minor changes to procedure. New data sheets, revised data sheets, hip flexion dummy calibration, and removal of Hybrid II dummy
11	08/22/02	CFR revised Fed. Reg. Notice	10/1/2000 12/18/2001	Major Revision – Advance air bag rules from May 2000 and December 2001
12	01/14/03	FR notices ¹		Major revisions to data sheets based on testing experience plus corrections to dummy calibration appendices

¹ 66 FR 45777, 8/30/2001, 66 FR 64368, 12/13/2001, 67 FR 46400, 7/15/2002, 67 FR 47321, 7/18/2002, 67 FR 59020, 9/19/2002, 68 FR 504, 1/6/2003

TEST PROCEDURE		FMVSS 208		DESCRIPTION
REV. No.	DATE	AMENDMENT	EFFECTIVE DATE	
13	07/27/05	FR notices ²		Major revisions to data sheets based on testing experience and reg. changes
14	04/16/08	FR notice ³		Major revisions to data sheets due to reorganization, reg. change, and testing experience. Throughout the document, changes have also been made to adopt a standardized format. ⁴

² 68 FR 50077, 8/20/2003; 68 FR 65179, 11/19/2003; 69 FR 31034, 06/02/2004; 69 FR 51598, 8/20/2004.

³ 69 FR 51598, 8/20/2004; 72 FR 40252, 7/24/2007

⁴ The Office of Vehicle Safety Compliance is updating its laboratory test procedures, to the extent practicable, with a standardized format.

1. PURPOSE AND APPLICATION

This document is a laboratory test procedure provided by the National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Compliance (OVSC) for the purpose of presenting guidelines for a uniform testing data and information recording format, and providing suggestions for the use of specific equipment and procedures for contracted testing laboratories. The data correspond to specific requirements of the Federal Motor Vehicle Safety Standard(s) (FMVSS). The OVSC test procedures include requirements that are general in scope to provide flexibility for contracted laboratories to perform compliance testing and are not intended to limit or restrain a contractor from developing or utilizing any testing techniques or equipment which will assist in procuring the required compliance test data. These test procedures do not constitute an endorsement or recommendation for use of any particular product or testing method.

Prior to conducting compliance testing, contracted laboratories are required to submit a detailed test procedure to the COTR to demonstrate concurrence with the OVSC laboratory test procedure and the applicable FMVSS. If any contractor views any part of an OVSC laboratory test procedure to be in conflict with a FMVSS or observes deficiencies in a laboratory test procedure, the contractor is required to advise the Contracting Officer's Technical Representative (COTR) and resolve the discrepancy prior to the start of compliance testing or as soon as practicable. The contractor's test procedure must include a step-by-step description of the methodology and detailed check-off sheets. Detailed check-off sheets shall also be provided for the testing instrumentation including a complete listing of the test equipment with make and model numbers. The list of test equipment shall include instrument accuracy and calibration dates. All equipment shall be calibrated in accordance with the manufacturer's instructions. There shall be no contradictions between the laboratory test procedure and the contractor's in-house test procedure. Written approval of the in-house test procedures shall be obtained from the COTR before initiating the compliance test program.

NOTE: The OVSC Laboratory Test Procedures, prepared for the limited purpose of use by independent laboratories under contract to conduct compliance tests for the OVSC, are not rules, regulations or NHTSA interpretations regarding the meaning of a FMVSS. The laboratory test procedures are not intended to limit the requirements of the applicable FMVSS(s). In some cases, the OVSC laboratory test procedures do not include all of the various FMVSS minimum performance requirements. Recognizing applicable test tolerances, the laboratory test procedures may specify test conditions that are less severe than the minimum requirements of the standard. In addition, the laboratory test procedures may be modified by the OVSC at any time without notice, and the COTR may direct or authorize contractors to deviate from these procedures, as long as the tests are performed in a manner consistent with the standard itself and within the scope of the contract. Laboratory test procedures may not be relied upon to create any right or benefit in any person. Therefore, compliance of a vehicle or item of motor vehicle equipment is not necessarily guaranteed if the manufacturer limits its certification tests to those described in the OVSC laboratory test procedures.

2. GENERAL REQUIREMENTS

2.1 FMVSS 208

This test procedure is used to determine whether a vehicle meets the conditions, requirements, and injury criteria specified in Federal motor vehicle safety standard (FMVSS) No. 208, "Occupant crash protection." The requirements of this test procedure are those specified in Standard 208 sections S4, "General requirements," S14, "Advanced air bag requirements," and in section S7, "Adjustments," for seat belt assembly systems.

Passenger cars, trucks, and multipurpose passenger vehicles, with GVWR of 3,855 kilograms (8,500 lb) or less and an unloaded vehicle weight of 2,495 kilograms (5,500 lb) or less, must have frontal/angular protection in the front outboard designated seating positions with air bags and lap/shoulder belts. Lap/shoulder belts are required in each rear seating position. Lap belts are the minimum requirement for the front center-seating positions.

Occupant crash protection requirements are specified in terms of head and chest accelerations, chest displacement, neck forces and moments, and upper leg axial forces measured on laboratory calibrated Part 572 anthropomorphic test dummies in barrier impact collisions and applicable low risk deployment tests. When applicable, passenger air bag system suppression must be demonstrated for child dummies or human children, with and without child restraint seats, and passenger air bag system reactivation must occur with 5th percentile female dummies or humans of a similar size.

METRIC SYSTEM OF MEASUREMENT

Section 5164 of the Omnibus Trade and Competitiveness Act (Pub. L. 100-418) establishes that the metric system of measurement is the preferred system of weights and measures for trade and commerce in the United States. Executive order 12770 directs Federal agencies to comply with the Act by converting regulatory standards to the metric system after September 30, 1992. In a final rule published on March 15, 1990 (60 FR 13639), NHTSA completed the first phase of metrication, converting English measurements in several regulatory standards to the metric system. Since then, metrication has been applied to other regulatory standards (63 FR 28912).

Accordingly, the OVSC laboratory test procedures include revisions to comply with governmental directives in using the metric system. Regulatory standards converted to metric units are required to use metric measurements in the test procedures. For any testing equipment that is not available for direct measurement in metric units, the test laboratory shall calculate the exact metric equivalent by means of a conversion factor carried out to at least five significant digits before rounding consistent with the specified metric requirement.

All final compliance test reports are required to include metric measurements for standards using metrication.

NOTE: The methodology for rounding measurement in the test reports shall be made in accordance with ASTM E29-06b, "Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications."

2. GENERAL REQUIREMENTS....Continued

TABLE 1 - OCCUPANT CRASH PROTECTION INJURY CRITERIA

Injury Criteria	Dummies					
	50 th male certified to S5.1.1(b)(1) 0-48 kmph belted, & S5.1.1(b)(2)0-56 kmph belted, & S5.1.2(a)(2), S5.1.2(b) 32-40 kmph ($\pm 30^\circ$) unbelted ⁵	5 th female barrier S16.1(a)(1) 0-48 kmph belted, S16.1(a)(2) 0-56 kmph belted, S16.1(b) 32-40 kmph unbelted, & S18.1 offset 0-40 kmph belted ⁵	5 th female low risk deployment S25.3 ⁶	12-month -old low risk deployment S20.4 ⁷	3-year-old low risk deployment S22.4 ⁸	6-year-old low risk deployment S24.4 ⁸
HIC 15	700 S6.2(b)(2)	700 S15.3.2(b)	700 S15.3.2(b)	390 S19.4.2(a)	570 S21.5.2(b)	700 S23.5.2(b)
Nij	1.0 (Critical Values 6806 N tens. 6160 N comp. 310 Nm flex. 135 Nm ext.) S6.6(a)	1.0 (Critical Values 4287 N tens. 3880 N comp. 155 Nm flex. 67 Nm ext.) S15.3.6(a)	1.0 (Critical Values 3880 N tens. 3880 N comp. 155 Nm flex. 61 Nm ext.) S25.4(a)	1.0 (Critical Values 1460 N tens. 1460 N comp. 43 Nm flex. 17 Nm ext.) S19.4.4(a)	1.0 (Critical Values 2120 N tens. 2120 N comp. 68 Nm flex. 27 Nm ext.) S21.5.5	1.0 (Critical Values 2800 N tens. 2800 N comp. 93 Nm flex. 37 Nm ext.) S23.5.5(a)
Neck Extension	N/A	N/A	N/A	N/A	N/A	N/A
Neck Flexion	N/A	N/A	N/A	N/A	N/A	N/A
Neck Tension	4170 N S6.6(b)	2620 N S15.3.6(b)	2070 S25.4(b)	780 N S19.4.4(b)	1130 N S21.5.5(b)	1490 N S23.5.5(b)
Neck Compress.	4000 N S6.6(c)	2520 N S15.3.6(c)	2520 S25.4(c)	960 N S19.4.4(c)	1380 N S21.5.5(c)	1820 N S23.5.5(c)
Neck Fore-Aft Shear	N/A	N/A	N/A	N/A	N/A	N/A
Chest g	60 g S6.3	60 g S15.3.3	60 g S15.3.3	50 g S19.4.3	55 g S21.5.3	60 g S23.5.3
Chest Compress.	63 mm S6.4(b)	52 mm S15.3.4	52 mm S15.3.4	N/A	34 mm S21.5.4	40 mm S23.5.4
Femur Load	2250 lbf. (10000 N) S6.5	6805 N S15.3.5	6805 N S15.3.5	N/A	N/A	N/A

⁵ Calculated on data recorded for 300 ms after the vehicle strikes the barrier or from time zero in the sled test. (S4.11(a))⁶ Calculated on data recorded for 125 ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 26 km/h. (S4.11(d))⁷ Calculated on data recorded for 125 ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 64 km/h. (S4.11(c))⁸ Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

2. GENERAL REQUIREMENTS....Continued

TABLE 2 - S7. SEAT BELT ASSEMBLY REQUIREMENTS

FMVSS 208 Required Restraints	Passenger Cars			Trucks, MPVs, and Buses (GVWR 4,536 kg or less)		
	Front Outboard	Front Center	Rear	Front Outboard	Front Center	Rear
Adjustment S7.1	Yes S4.1.5.1(a)(3)	Yes S4.1.5.1(a)(2)	Yes S4.1.5.5.1	Yes S4.2.6 S4.1.5.1(a)(3)	Yes S4.2.6 S4.1.5.1(a)(2)	Yes S4.2.7
Lockability S7.1.1.5	Yes S4.1.5.1(a)(3)	Yes S4.1.5.1(a)(2)	Yes S4.1.5.5.1	Yes S4.2.6 S4.1.5.1(a)(3)	Yes S4.2.6 S4.1.5.1(a)(2)	Yes S4.2.7
Movable Anchorage S7.1.2	Yes S4.1.5.1(a)(3)	Yes S4.1.5.1(a)(2)	Yes S4.1.5.5.1	Yes S4.2.6 S4.1.5.1(a)(3)	Yes S4.2.6 S4.1.5.1(a)(2)	Yes S4.2.7
Belt Intersection S7.1.3	Yes S4.1.5.1(a)(3)	Yes S4.1.5.1(a)(2)	Yes S4.1.5.5.1	Yes S4.2.6 S4.1.5.1(a)(3)	Yes S4.2.6 S4.1.5.1(a)(2)	Yes S4.2.7
Latch Mechanism S7.2	Yes S4.1.5.1(a)(3)	Yes S4.1.5.1(a)(2)	Yes S4.1.5.5.1	Yes S4.2.6 S4.1.5.1(a)(3)	Yes S4.2.6 S4.1.5.1(a)(2)	Yes S4.2.7
Seat Belt Warning S7.3	Yes S4.1.5.1(a)(3) Driver ONLY	N/A S7.3	N/A S7.3	Yes S4.2.6 S4.1.5.1(a)(3) Driver ONLY	N/A S7.3	N/A S7.3
Belt Contact Force S7.4.3	NO S7.4 (b)(1)	YES S7.4 (b)(1)	YES S7.4 (b)(1)	YES S7.4 (b)(2)(ii)	YES S7.4 (b)(2)(ii)	YES S7.4 (b)(2)(ii)
Latch Plate Access S7.4.4	NO S7.4(b)(1)	YES S7.4 (b)(1)	YES S7.4 (b)(1)	YES S7.4 (b)(2)(ii)	YES S7.4 (b)(2)(ii)	YES S7.4 (b)(2)(ii)
Retraction S7.4.5	NO S7.4(b)(1)	YES S7.4 (b)(1)	YES S7.4 (b)(1)	YES S7.4 (b)(2)(ii)	YES S7.4 (b)(2)(ii)	YES S7.4 (b)(2)(ii)
Seat Belt Guides and Hardware S7.4.6	NO S7.4(b)(1)	YES S7.4 (b)(1)	YES S7.4 (b)(1)	YES S7.4 (b)(2)(ii)	YES S7.4 (b)(2)(ii)	YES S7.4 (b)(2)(ii)

2. GENERAL REQUIREMENTS....Continued

TABLE 3 - S7.1. – SEAT BELT FIT AND ADJUSTMENT

	Designated Seating Position	Seat Belt Type	Fit	Adjustment	
Front Row	Driver	Type 2	5th% Female to 95th % Male (S7.1.1.1)	Lap belt – emergency locking retractor (S7.1.1.3) Torso belt – emergency locking retractor or manual adjusting device (S7.1.1)	
	Center	Type 1	50 th % 6-year-old to 95 th % Male (S7.1.1)	ELR or ALR (S7.1.1)	
		Type 2	Lap - 50 th % 6-year-old to 95 th % Male (S7.1.1)	ELR or ALR (S7.1.1.2(a))	
			Torso – 5 th % Female to 95 th % Male	ELR or ALR or manual adjusting device (S7.1.1.2(a))	
	Passenger Outboard	Type 2	Lap - 50 th % 6-year-old to 95 th % Male (S7.1.1)	Lap belt – emergency locking retractor (S7.1.1.3)	
			Torso – 5 th % Female to 95 th % Male	Torso belt – emergency locking retractor or manual adjusting device (S7.1.1)	
2 nd Row (rear)	Outboard	Type 2	Lap - 50 th % 6-year-old to 95 th % Male (S7.1.1)	Lap belt – emergency locking retractor (S7.1.1.3)	
			Torso – 5 th % Female to 95 th % Male	Torso belt – emergency locking retractor or manual adjusting device (S7.1.1)	
	Center	Type 2	Lap - 50 th % 6-year-old to 95 th % Male (S7.1.1)	ELR or ALR (S7.1.1.2(a))	
			Torso – 5 th % Female to 95 th % Male	ELR or ALR or manual adjusting device (S7.1.1.2(a))	
	Other Rear Rows	Outboard	Type 2	Lap - 50 th % 6-year-old to 95 th % Male (S7.1.1)	Lap belt – emergency locking retractor (S7.1.1.3)
				Torso – 5 th % Female to 95 th % Male	Torso belt – emergency locking retractor or manual adjusting device (S7.1.1)
Center		Type 2	Lap - 50 th % 6-year-old to 95 th % Male (S7.1.1)	ELR or ALR or manual adjusting device (S7.1.1)	
			Torso – 5 th % Female to 95 th % Male	Torso belt – emergency locking retractor or manual adjusting device (S7.1.1)	

NOTE: Front seat belt fit data shall be obtained with the seat in both the forward most and rearward most positions and the seat back in the manufacturer’s nominal design riding position. Movable anchorages are required for some outboard designated seating positions with Type 2 seat belts (S7.1.2). All the lap belt parts of a seat belt assembly, except for the driver must be lockable for child safety seats. (S7.1.5)

2. 2. GENERAL REQUIREMENTS....Continued

TABLE 4
S7.3(a). Warning system for seat belt assembly provided at Driver's position, EITHER S7.3 (a)(1) or S7.3 (a)(2) —

	S7.3(a)(1)	S7.3(a)(2)	
	Belt unlatched & Key on ⁹	Belt latched & Key on	Belt unlatched & Key on ⁹
Warning light ¹⁰	60 sec. minimum	4 to 8 sec.	4 to 8 sec.
Audible signal ¹¹	4 to 8 sec.		4 to 8 sec.

⁹ At the manufacturer's option, the driver's belt NOT IN USE (unbelted) is defined as either the belt latch mechanism is not fastened or the belt is not extended at least 4 inches from the stowed position.

¹⁰ Continuous or flashing warning light visible to the driver consisting of the symbol for the seat belt telltale. Instead of the continuous or flashing warning light, the manufacturer, if permitted by FMVSS 101, may display the words "FASTEN SEAT BELTS" or "FASTEN BELTS."

¹¹ Continuous or intermittent audible signal. Note, 49 USC Section 30124 does NOT allow an audible signal to operate for more than 8 seconds. A voluntary audible signal after the 4 to 8 second required signal may be provided. It must be differentiated from the required signal (See May 25, 2001, legal interpretation to Longacre and Associates).

2. GENERAL REQUIREMENTS....Continued

2.2 FMVSS 212, Windshield Mounting

This standard establishes windshield retention requirements for motor vehicles during crashes. After they are subjected to a full frontal (the line of travel of the vehicle is perpendicular to the barrier) barrier impact test at any speed up to and including 48 kmph, vehicles equipped with passive restraints must retain not less than 50 percent of the portion of the windshield periphery on each side of the vehicle longitudinal centerline.

2.3 FMVSS 219, Windshield Zone Intrusion -- Partial

This standard specifies limits for the displacement of vehicle components into the windshield area during a frontal barrier impact test at any speed up to and including 48 kmph.

TABLE 5

	In "Protected Zone"	Below "Protected Zone"
Vehicle Component Penetration	Maximum of 6 mm into template (571.219 S5)	Must not penetrate inner surface of windshield within the Daylight Opening (DLO) (571.219 S5)

2.4 FMVSS 301

This standard specifies requirements for the integrity of motor vehicle fuel systems in frontal crash tests at speeds up to and including 48 kmph.

A. Frontal, Oblique, Lateral, and Rear Impact —

TABLE 6

TIME	MAX. FLUID SPILLAGE
From impact until vehicle motion ceases	28 g (571.301 S5.5)
For 5 minute period after vehicle motion ceases	142 g (571.301 S5.5)
For the next 25 minutes	28 g/minute (571.301 S5.5)

2. GENERAL REQUIREMENTS....Continued

B. Static Rollover

TABLE 7

TIME	MAX. FLUID SPILLAGE
For 5 minute period from onset of rotation at each 90° position	142 g (571.301 S5.6)
For 6th minute	28 g (571.301 S5.6)
For 7th minute (if required)	28 g (571.301 S5.6)
For 8th minute (if required)	28 g (571.301 S5.6)

3. SECURITY

The contractor shall provide appropriate security measures to protect the OVSC test vehicles and Government Furnished Property (GFP) from unauthorized personnel during the entire compliance testing program. The contractor is financially responsible for any acts of theft and/or vandalism which occur during the storage of test vehicles and GFP. Any security problems which arise shall be reported by telephone to the Industrial Property Manager (IPM), Office of Acquisition Management, within two working days after the incident. A letter containing specific details of the security problem shall be sent to the IPM (with copy to the COTR) within 48 hours.

The contractor shall protect and segregate the data that evolves from compliance testing before and after each vehicle test. No information concerning the vehicle safety compliance testing program shall be released to anyone except the COTR, unless specifically authorized by the COTR or the COTR's Division Chief.

NOTE: No individuals, other than contractor personnel directly involved in the compliance testing program or OVSC personnel, shall be allowed to witness any vehicle or equipment item compliance test or test dummy calibration unless specifically authorized by the COTR.

4. GOOD HOUSEKEEPING

Contractors shall maintain the entire vehicle compliance testing area, dummy calibration laboratory, test fixtures and instrumentation in a neat, clean and painted condition with test instruments arranged in an orderly manner consistent with good test laboratory housekeeping practices.

5. TEST SCHEDULING AND MONITORING

The contractor shall submit a test schedule to the COTR prior to conducting the first compliance test. Tests shall be completed at intervals as required in the contract. If not specified, the first test shall be conducted within 6 weeks after receiving the first delivered unit. Subsequent tests shall be completed in no longer that 1 week intervals unless otherwise specified by the COTR.

5. TEST SCHEDULING AND MONITORING....Continued

Scheduling of tests shall be adjusted to permit vehicles (or equipment, whichever applies) to be tested to other FMVSSs as may be required by the OVSC. All compliance testing shall be coordinated with the COTR in order to allow monitoring by the COTR and/or other OVSC personnel if desired. The contractor shall submit a monthly test status report and a vehicle status report (if applicable) to the COTR. The vehicle status report shall be submitted until all vehicles are disposed of. The status report forms are provided in the forms section.

6. TEST DATA DISPOSITION

The Contractor shall make all preliminary compliance test data available to the COTR on location within 30 minutes after the test. Final test data, including digital printouts and computer generated plots, shall be available to the COTR in accordance with the contract schedule or if not specified within two working days. Additionally, the Contractor shall analyze the preliminary test results as directed by the COTR.

All backup data sheets, strip charts, recordings, plots, technicians' notes, etc., shall be either sent to the COTR or destroyed at the conclusion of each delivery order, purchase order, etc.

The contractor shall protect and segregate the data that evolves from compliance testing before and after each test.

TEST DATA LOSS

A. INVALID TEST DESCRIPTION

An invalid compliance test is one, which does not conform precisely to all requirements/specifications of the OVSC Laboratory Test Procedure and Statement of Work applicable to the test.

B. INVALID TEST NOTIFICATION

The Contractor shall notify NHTSA of any test not meeting all requirements/specifications of the OVSC Laboratory Test Procedure and Statement of Work applicable to the test, by telephone, within 24 hours of the test and send written notice to the COTR within 48 hours or the test completion.

C. RETEST NOTIFICATION

The Contracting Officer of NHTSA is the only NHTSA official authorized to notify the Contractor that a retest is required. The retest shall be completed within 2 weeks after receipt of notification by the Contracting Officer that a retest is required.

D. WAIVER OF RETEST

NHTSA, in its sole discretion, reserves the right to waive the retest requirement. This provision shall not constitute a basis for dispute over the NHTSA's waiving or not waiving any requirement.

6. TEST DATA DISPOSITION....Continued

E. TEST VEHICLE

NHTSA shall furnish only one vehicle for each test ordered. The Contractor shall furnish the test vehicle required for the retest. The retest vehicle shall be equipped as the original vehicle. The original vehicle used in the invalid test shall remain the property of NHTSA, and the retest vehicle shall remain the property of the Contractor. The Contractor shall retain the retest vehicle for a period not exceeding 180 days if it fails the test. If the retest vehicle passes the test, the Contractor may dispose of it upon notification from the COTR that the test report has been accepted.

F. TEST REPORT

No test report is required for any test that is determined to be invalid unless NHTSA specifically decides, in writing, to require the Contractor to submit such report. The test data from the invalid test must be safeguarded until the data from the retest has been accepted by the COTR. The electronic data, draft final test report, dummy calibration report, and video shall be submitted within 14 days of the final test. The final test report, dummy calibration report, and video shall be submitted 7 days after receiving comments from the COTR.

G. DEFAULT

The Contractor is subject to the default and subsequent reprocurement costs for nondelivery of valid or conforming test (pursuant to the Termination For Default clause in the contract).

H. NHTSA'S RIGHTS

None of the requirements herein stated shall diminish or modify the rights of NHTSA to determine that any test submitted by the Contractor does not conform precisely to all requirements/specifications of the OVSC Laboratory Test Procedure and Statement of Work applicable to the test.

7. GOVERNMENT FURNISHED PROPERTY (GFP)

GFP consist of test vehicles and test dummies. The GFP is authorized by contractual agreement. The contractor is responsible for the following.

A. ACCEPTANCE OF TEST VEHICLES

The contractor has the responsibility of accepting each GFP test vehicle whether delivered by a new vehicle dealership or another vehicle transporter. In both instances, the Contractor acts on behalf of the OVSC when signing an acceptance of the GFP test vehicle delivery order. When a GFP vehicle is delivered, the contractor must verify:

1. All options listed on the "window sticker" are present on the test vehicle.
2. Tires and wheel rims are new and the same as listed.
3. There are no dents or other interior or exterior flaws in the vehicle body.

7. GOVERNMENT FURNISHED PROPERTY (GFP)....Continued

4. The vehicle has been properly prepared and is in running condition.
5. The glove box contains an owner's manual, warranty document, consumer information, and extra set of keys.
6. Proper fuel filler cap is supplied on the test vehicle.
7. Spare tire, jack, lug wrench and tool kit (if applicable) is located in the vehicle cargo area.
8. The VIN (vehicle identification number) on the vehicle condition report matches the VIN on the vehicle.
9. The vehicle is equipped as specified by the COTR.

A Vehicle Condition form will be supplied to the Contractor by the COTR when the test vehicle is transferred from a new vehicle dealership or between test contracts. The upper half of the form is used to describe the vehicle as initially accepted. The lower half of the Vehicle Condition form provides space for a detailed description of the post-test condition. The contractor must complete a Vehicle Condition form for each vehicle and deliver it to the COTR with the Final Test Report or the report will NOT be accepted for payment.

If the test vehicle is delivered by a government contracted transporter, the contractor should check for damage which may have occurred during transit.

GFP vehicle(s) shall not be driven by the contractor on public roadways unless authorized by the COTR.

B. NOTIFICATION OF COTR

The COTR must be notified within 24 hours after a vehicle (and/or equipment item) has been delivered. In addition, if any discrepancy or damage is found at the time of delivery, a copy of the Vehicle Condition form shall be sent to the COTR immediately.

C. TEST DUMMIES

Part 572 test dummies will be furnished to the contract laboratory by the OVSC. For low risk deployment and crash tests that are performed with Part 572, Subpart O, 5th percentile female dummies, the tests shall be performed using dummies manufactured by either Denton or First Technology Safety Systems. The COTR will direct the testing laboratory on which 5th female dummy to use taking into consideration the manufacturer's selection for its certification testing.

The Subpart E (50th male), O (5th female), and N (6-year old) dummies shall be stored in an upright sitting position with the weight supported by the internal structure of the pelvis. The dummies shall be held upright by using a strap around the chest or the base of the neck so that the neck is not supporting the weight of the dummy. The Subpart P (3-year-old), and R (12-month-old) dummies shall be stored in a hanging position using the bracket and positioning shown in Figures 1 and 2. The dummies shall be stored in a secured room, which

is kept between 55°F and 85°F and 10-70% relative humidity. The Contractor shall check the dummy components for damage after each crash test or low risk deployment test and complete a Dummy Damage Checklist that shall be included with the posttest dummy calibration. The COTR shall be kept informed of the dummies condition in order that replacement parts can be provided. The Contractor shall calibrate the test dummies before every dynamic test and check the calibration after every dynamic test.

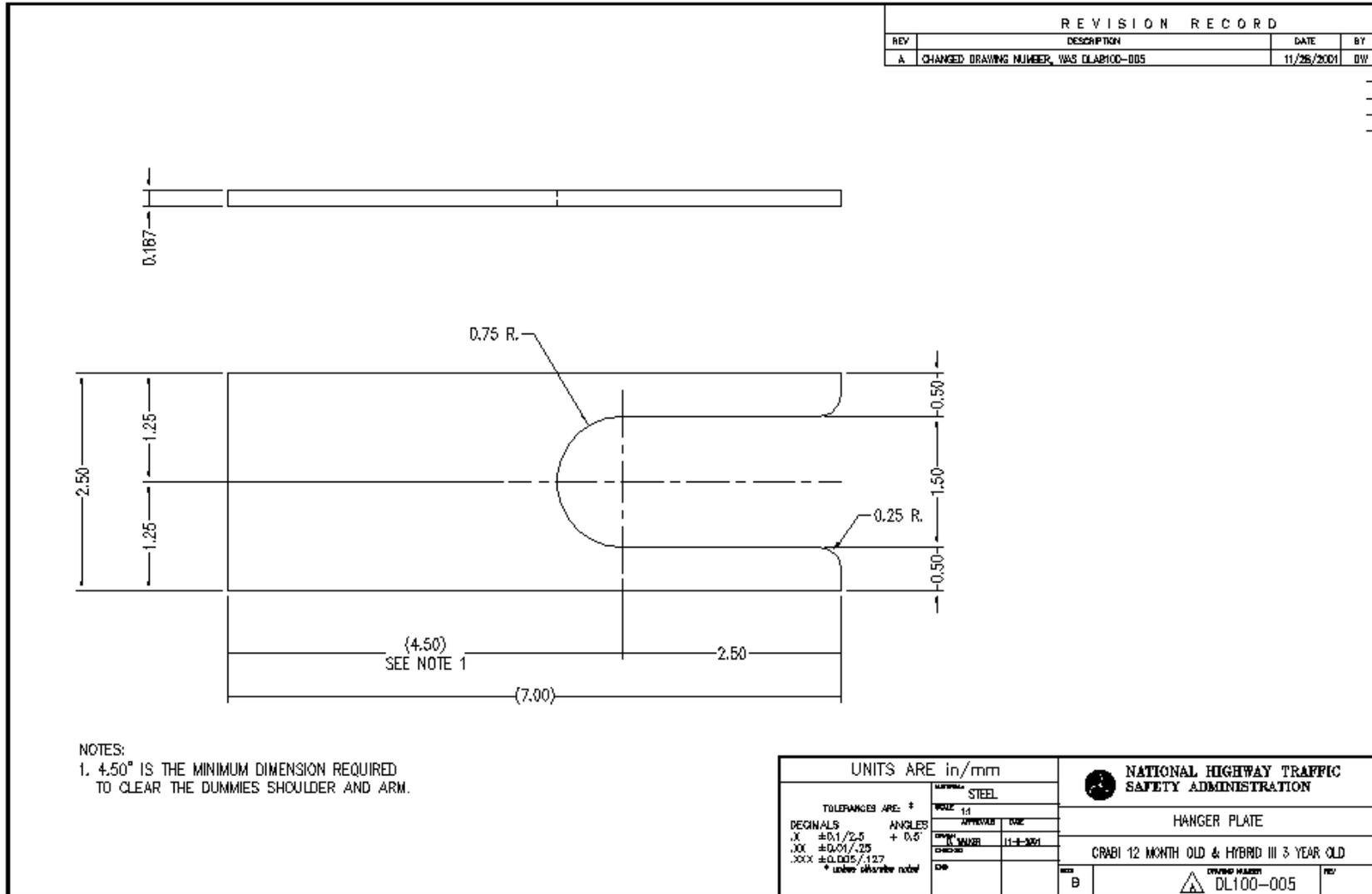


FIGURE 1

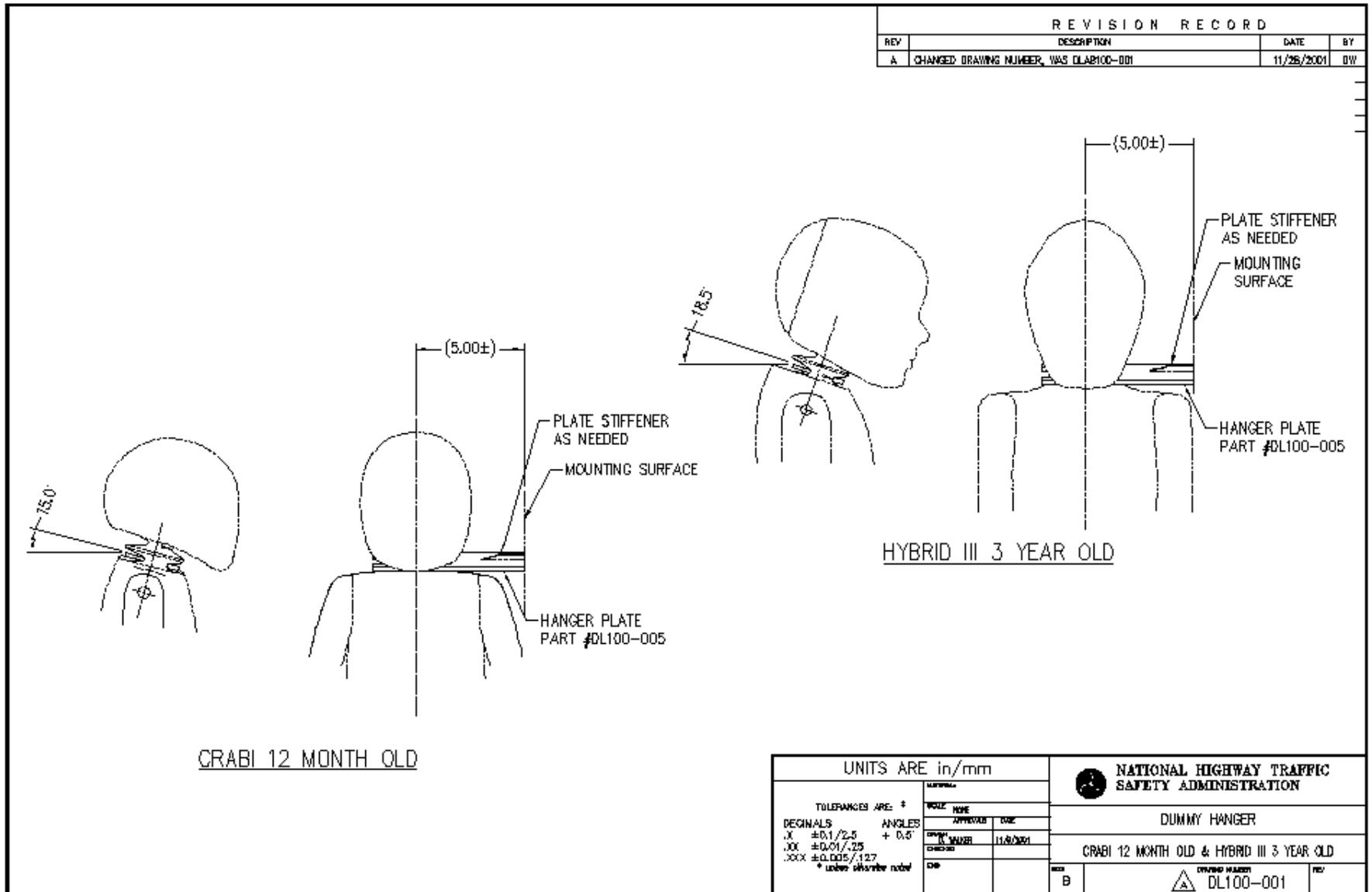


FIGURE 2

8. CALIBRATION AND TEST INSTRUMENTATION

Before the Contractor initiates the vehicle safety compliance test program, a test instrumentation calibration system must be implemented and maintained in accordance with established calibration practices. The calibration system shall include the following as a minimum:

- A. Standards for calibrating the measuring and test equipment shall be stored and used under appropriate environmental conditions to assure their accuracy and stability.
- B. All measuring instruments and standards shall be calibrated by the Contractor, or a commercial facility, against a higher order standard at periodic intervals not exceeding 12 months for instruments and 12 months for the calibration standards except for static types of measuring devices such as rulers, weights, etc., which shall be calibrated at periodic intervals not to exceed two years. Records, showing the calibration traceability to the National Institute of Standards and Technology (NIST), shall be maintained for all measuring and test equipment.

Accelerometers shall be calibrated every twelve months or after a test failure or after any indication from calibration checks that there may be a problem with the accelerometer whichever occurs sooner.

- C. All measuring and test equipment and measuring standards shall be labeled with the following information:
 - 1. Date of calibration
 - 2. Date of next scheduled calibration
 - 3. Name of the technician who calibrated the equipment
- D. A written calibration procedure shall be provided by the Contractor, which includes as a minimum the following information for all measurement and test equipment:
 - 1. Type of equipment, manufacturer, model number, etc.
 - 2. Measurement range
 - 3. Accuracy
 - 4. Calibration interval
 - 5. Type of standard used to calibrate the equipment (calibration traceability of the standard must be evident)
 - 6. The actual procedures and forms used to perform the calibrations.
- E. Records of calibration for all test instrumentation shall be kept by the Contractor in a manner that assures the maintenance of established calibration schedules.

8. CALIBRATION AND TEST INSTRUMENTATION....Continued

- F. All such records shall be readily available for inspection when requested by the COTR. The calibration system shall need the acceptance of the COTR before vehicle safety compliance testing commences.
- G. Test equipment shall receive a system functional check out using a known test input immediately before and after the test. This check shall be recorded by the test technician(s) and submitted with the final report.
- H. Anthropomorphic test devices shall be calibrated before and the calibration checked after each crash and low risk deployment test. The calibrations and calibration check shall be submitted with the final report.

Further guidance is provided in the International Standard ISO 10012-1, "Quality Assurance Requirements for Measuring Equipment" and American National Standard ANSI/NCSL Z540-1, "Calibration Laboratories and Measuring and Test Equipment General Requirements."

NOTE: In the event of a failure to meet the standard's minimum performance requirements additional calibration checks of some critically sensitive test equipment and instrumentation may be required for verification of accuracy. The necessity for the calibration will be at the COTR's discretion and shall be performed without additional cost.

9. PHOTOGRAPHIC DOCUMENTATION

The contractor shall document the crash event or low risk deployment with high-speed and real time digital color video cameras. The contractor shall report all camera locations along with camera speeds and lens focal lengths on the appropriate final report data sheets. Camera locations shall be referenced to the barrier face and monorail centerline with the X, Y, and Z coordinate for each camera.

The video footage shall be transferred to a compact disc (CD) or DVD as AVI or MPEG files with any standard or generally available "codec" compatible to Microsoft Windows. All video footage should be saved in a "read only" format before sending to the COTR to verify that the evidence has not been altered from its original condition. Video footage may only be saved using other types of file formats if approved by the COTR.

High-Speed Digital Video Cameras

High-speed digital video cameras shall operate at 1000 frames per second for at least 10 ms before barrier contact or the air bag is fired for low risk deployment and for at least 310 ms after barrier contact or after the air bag is fired for low risk deployment.

9. PHOTOGRAPHIC DOCUMENTATION....Continued

The minimum resolution for these cameras shall be 1536 CMOS sensors per every two rows of pixels, with 80% of the horizontal distance of the two rows covered by effective light sensors. There shall be a minimum of 1024 rows of sensors. Some camera views may not need to meet these specifications. Cameras that do not meet these specifications may be used if approved by the COTR.

A time zero impact mark must be registered in a frame to indicate when contact with the barrier is made in the crash test or when the air bag is fired in a low risk deployment test. Each frame shall contain the camera speed and the frame number beginning with the time zero frame labeled as "Frame 0." The frame numbers prior to time zero shall be negative numbers.

Real Time Camera

The contractor shall use a "real time" color digital camera that minimally operates at 24 frames per second. It shall be used to record pretest and posttest vehicle set-up, the installation of the fuel filler cap onto the filler neck and the rotation of the cap to the installed position, any fluid spillage and its collection after the impact or during static rollover, and to record a side view of the low risk deployment tests and left side of the vehicle or moving barrier as it travels down the tow road and through the impact event. The installation of the filler cap shall appear in the final version of the real-time crash video or as a single video file.

9.1 CAMERAS REQUIRED

9.1.1 OFFSET AND CRASH TESTS

CAMERA 1 Real-time (24 fps) left side view camera to follow the test vehicle down the tow road, across the photographic pit, and into the barrier face.

CAMERA 2 High-speed left side view camera to cover the vehicle's left side from the barrier face to a point rearward of the vehicle's front seat backs. The centerline of the camera shall be perpendicular to the longitudinal centerline of the vehicle.

CAMERA 3 High-speed left side view camera positioned adjacent to the vehicle's A-post to document the driver dummy's head movement during the impact event in the windshield area and windshield zone intrusion area. The centerline of the camera shall be perpendicular to the longitudinal centerline of the vehicle.

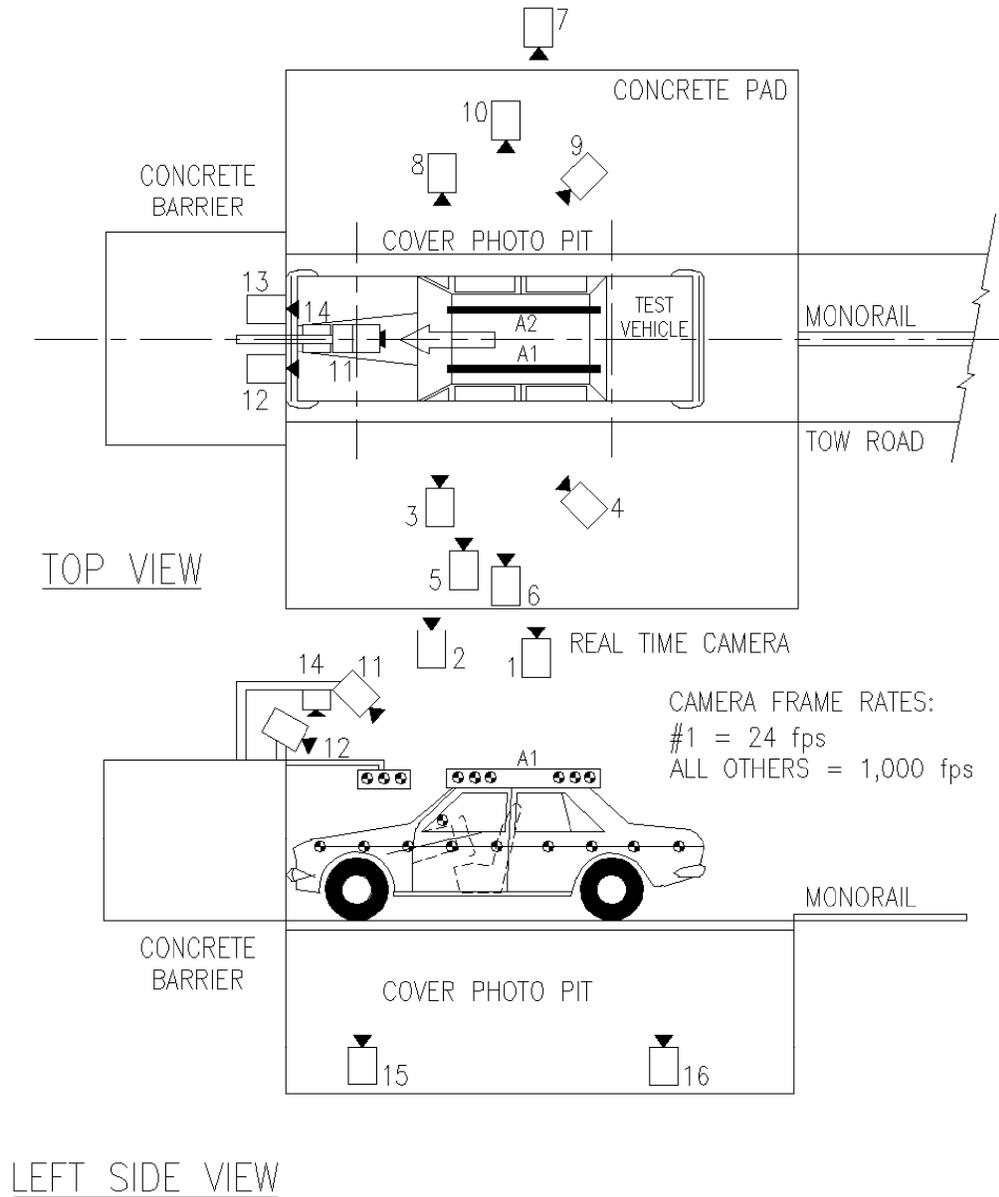
CAMERA 4 High-speed left side view camera positioned adjacent to the vehicle's B-post or center post to document the movement of the driver dummy during the impact event.

CAMERA 5 High-speed left side view camera positioned adjacent to the vehicle's B-post to document the movement of the vehicle's steering column/wheel assembly relative to the roof targets and the rear sill target during the impact event. (This camera is also used for steering column displacement analysis.) The centerline of the camera shall be perpendicular to the longitudinal centerline of the vehicle.

9. PHOTOGRAPHIC DOCUMENTATION....Continued

- CAMERA 6 High-speed left side view camera positioned adjacent to the vehicle's left front door and underneath CAMERA 5 to document the movement of the vehicle's steering column/wheel assembly relative to the roof target and the rear sill targets during the impact event. (This camera is also used for steering column displacement analysis.) The centerline of the camera shall be perpendicular to the longitudinal centerline of the vehicle.
- CAMERA 7 High-speed right side view camera to cover the entire right side of the test vehicle during the impact event. The centerline of the camera shall be perpendicular to the longitudinal centerline of the vehicle.
- CAMERA 8 High-speed right side view camera positioned adjacent to the vehicle's A-post to document the passenger dummy's head movement in the windshield area during the impact event and windshield zone intrusion. The centerline of the camera shall be perpendicular to the longitudinal centerline of the vehicle.
- CAMERA 9 High-speed right side view camera positioned adjacent to the vehicle's B-post (or center) to document the movement of the passenger dummy during the impact event.
- CAMERA 10 High-speed right side view camera positioned adjacent to the vehicle's right front door to document the movement of the passenger dummy during the impact event.
- CAMERA 11 High-speed overhead camera positioned directly above the vehicle's windshield centerline to cover the windshield area during the entire crash event. A polarizing filter may be used to eliminate windshield glare.
- CAMERA 12 High-speed front view camera mounted above the barrier face to document the movement of the driver dummy during the impact event and windshield zone intrusion.
- CAMERA 13 High-speed front view camera mounted above the barrier face to document the movement of the passenger dummy during the impact event and windshield zone intrusion.
- CAMERA 14 High speed overhead camera positioned directly above the barrier to record the contact of the vehicle with the barrier.
- CAMERA 15 High-speed photographic pit camera positioned beneath the vehicle's engine compartment to record the vehicle structural crush and document any Stoddard solvent spillage.
- CAMERA 16 High-speed photographic pit camera positioned beneath the vehicle's fuel tank to document any Stoddard solvent spillage.

9. PHOTOGRAPHIC DOCUMENTATION....Continued



CAMERA POSITIONS FOR FRONTAL IMPACTS

FIGURE 3

9. PHOTOGRAPHIC DOCUMENTATION....Continued

9.1.2 LOW RISK DEPLOYMENT TESTS

- CAMERA 1 The real-time camera (24 fps) shall be used to document the pretest and posttest condition of the test vehicle in addition to the pretest and posttest positions of the test dummy.
- CAMERA 2 High-speed left side view camera positioned perpendicular to the longitudinal centerline of the vehicle in line with the transverse centerline of the seat cushion to capture the movement of the dummy.
- CAMERA 3 High-speed right side view camera positioned perpendicular to the longitudinal centerline of the vehicle in line with the transverse centerline of the seat cushion to capture the movement of the dummy.
- CAMERA 4 High-speed front view camera mounted in the midsagittal plane of the dummy to document the movement of the dummy.

9. PHOTOGRAPHIC DOCUMENTATION....Continued

CAMERA POSITIONS FOR LOW RISK DEPLOYMENTS

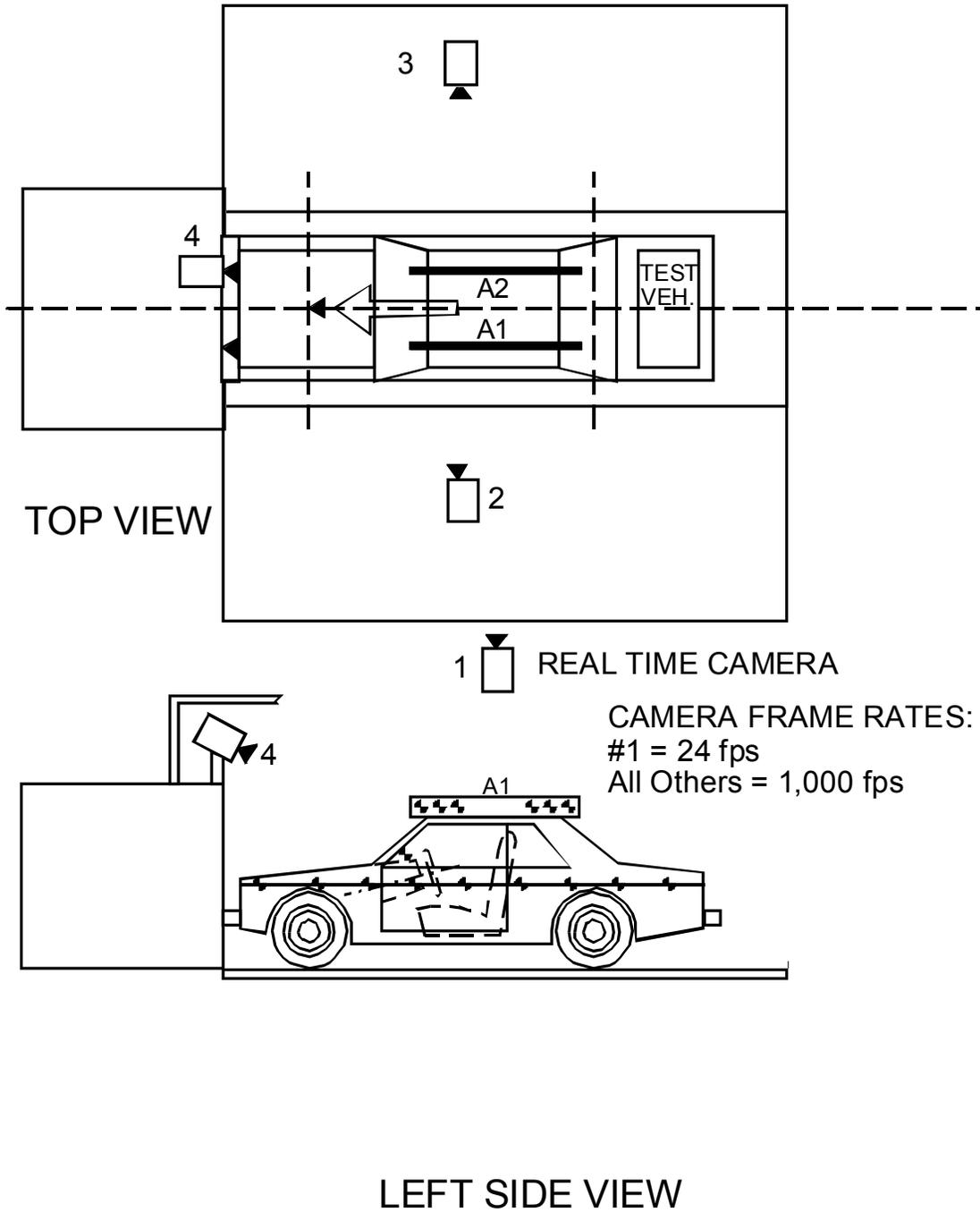


FIGURE 4

9. PHOTOGRAPHIC DOCUMENTATION....Continued

9.2 COLORING REQUIREMENTS FOR TEST PHOTOGRAPHIC PURPOSES

- A. Vehicle underbody components such as the floor pan, frame rail members, steering mechanism, suspension components, engine oil pan, and all fuel system components shall be painted with different colored paint (pink, green, blue, orange, etc.). (Crash tests ONLY.)
- B. Parts of the dummies shall be coated with colored chalk solutions to show contact points with the vehicle's interior, with their own components (such as head to knee contact), and with each other. The chalk solution shall be applied after final dummy positioning for crash tests. If necessary, the chalk solution may be applied prior to final dummy positioning for the low risk deployment tests.

**TABLE 8
CHALK COLORS TO BE USED ON TEST DUMMIES**

DUMMY PART	DRIVER	PASSENGER
Nose	Red	Yellow
Lips	Red	Yellow
Face	Blue	Red
Top of Head	Yellow	Blue
Back of Head	Red	Yellow
Left Knee	Red	Yellow
Right Knee	Blue	Red
Lower Steering Wheel Rim	Red	

- C. In tests with a driver and passenger dummy, the clothes shall be contrasting colors so that the motion of each dummy can be identified during analysis.

9.3 PHOTOGRAPHIC COVERAGE OF FUEL FILLER CAP INSTALLATION

The removal, installation and tightening of the vehicle's fuel filler cap and the cap's rotation to its locked position by Contractor's personnel shall be documented. This color video footage shall appear in the final released video print to show that the filler cap was properly installed and tightened prior to the crash test. (Crash test ONLY.)

9.4 PHOTOGRAPHIC COVERAGE OF STODDARD SOLVENT SPILLAGE

The real-time camera (24 fps) shall be used to record any Stoddard solvent spillage from the test vehicle after the impact event or during the static rollover test. (Crash test ONLY)

9. PHOTOGRAPHIC DOCUMENTATION....Continued

9.5 VEHICLE AND DUMMY PHOTOGRAPHIC COVERAGE

The real-time camera (24 fps) shall be used to document the pretest and post test condition of the test vehicle and the test dummies' pretest and post test positions (including marks showing the fore and aft seat position) and if applicable, placement of the lap and shoulder belts on these dummies.

9.6 IMPACT EVENT MARKER

Strobe lights or taped photoflash bulbs (cloth tape on bulb exterior to form small slit for light passage) shall be placed in the field-of-view of all cameras to mark the beginning (time zero) of the crash or low risk deployment test. For the low risk deployment tests time zero is when the signal is sent to fire the air bag. Light from the impact detectors **SHOULD NOT COVER MORE THAN 3 HIGH-SPEED FRAMES**. Suggested locations for impact detectors or "time zero" markers are as follows:

- A. Vehicle's roof panel along longitudinal centerline above windshield header
- B. Top surface of vehicle's instrument panel along longitudinal centerline
- C. Adjacent to engine oil pan.
- D. Adjacent to vehicle's fuel tank.

9.7 REFERENCE TARGETS

Complete the "Photographic Targets" form for reference photographic targets to be used for crash testing. The setup rotation of the resection panel within the motion plane is not critical.

9.8 INFORMATIONAL PLACARDS

Vehicle identification placards shall be positioned so that at least 1 placard will be visible in the field-of-view for each of the cameras. The following information shall be shown:

- A. Vehicle's NHTSA Number
- B. Type of test, e.g., "48 KMPH FRONTAL," "40 KMPH FRONTAL," "40 KMPH OFFSET FRONTAL," etc.
- C. Date of test
- D. Name of contract laboratory
- E. Vehicle year, make and model

9.9 CRASH VIDEO TITLE AND EDITING

The crash test video shall include the following title frames:

- A. "The following **fill in the test type as stated in the informational placard above** test was conducted under contract with the National Highway Traffic Safety Administration by **name and location of test laboratory**"
- B. TEST TYPE e.g., "48 KMPH FRONTAL," "40 KMPH FRONTAL," "40 KMPH OFFSET FRONTAL," etc.

9. PHOTOGRAPHIC DOCUMENTATION....Continued

TEST VEHICLE MODEL YEAR, MAKE AND MODEL

NHTSA No. CXXXXX

DATE OF TEST

CONTRACT NO.: DTNH22-XX-X-XXXXX

C. The ending frame shall state "THE END"

9.10 VIDEO EDITING

The video shall be edited in the following sequence:

A. Title

B. Pretest Coverage

C. Real Time Pan Coverage

D. All high speed coverage in numerical order as shown in figures 3 and 4. When incorporating the procedures of Appendix J the video shall be edited to include each steering column camera's (5 and 6) "pre-run" of the resection control points panel inserted directly preceding that camera's footage from the actual test.

E. Posttest Coverage (All fuel system or windshield failures shall be completely documented.)

F. If applicable, FMVSS 301 Rotating Fixture Coverage (a minimum 10 seconds "burst" during 0 to 90 degree roll)

G. "The End"

9.11 DIGITAL PHOTOGRAPHS

The contractor shall take digital photographs of pretest and posttest condition of entire vehicle deformation and details that pertain to the tested standards. Photographs of all areas of the test vehicle that may be of importance to the frontal barrier impact test should be taken in excess and included in the test report only if the need arises. Photographs shall be taken in color and contain clear images. A tag, label or placard identifying the test vehicle model, NHTSA number and date shall appear in each photograph and must be legible. Each photograph shall be labeled as to the subject matter. The required resolution for digital photographs is a minimum of 1,600 x 1,200 pixels and shall have the same labeling requirements as still photographs. Digital photographs are required to be created in color and in a JPG format. Glare or light from any illuminated or reflective surface should be minimized while taking photographs.

9. PHOTOGRAPHIC DOCUMENTATION....Continued

The test reports should include enough photographs to describe the testing in detailed and shall be organized in a logical succession of consecutive pictures. The digital photographs shall be included in the test report as 203 mm x 254 mm or 215.9 mm x 279 mm (8 x 10 or 8½ x 11 inch) pictures. All photographs are required to be included in the test report in the event of a test failure. Any failure must be photographed at various angles to assure complete coverage. Upon request, the photographs should be sent to the COTR on a CD or DVD and saved in a "read only" format to ensure that the digital photographs are the exact pictures taken during testing and have not been altered from the original condition.

The following digital photographs are required for the OVSC standards enforcement report for vehicles that exceed the FMVSS 208 performance requirements. Those marked with an asterisk are required in reports for vehicles that meet the FMVSS 208 performance requirements.

The underbody views shall include the following vehicle components: fuel pump, fuel lines, sender unit, fuel tank filler pipe and any other visible fuel system components.

9.11.1 Frontal barrier crash tests

- *A. Pretest and post test frontal view of test vehicle
- *B. Pretest and post test left side view of test vehicle
- *C. Pretest and post test right side view of test vehicle
- *D. Pretest and post test left front three-quarter view of test vehicle
- E. Pretest and post test right rear three-quarter view of test vehicle
- F. Pretest and post test windshield view
- G. Pretest and post test engine compartment view
- H. Pretest and post test fuel filler cap view (Include for FMVSS 301 failures)
- *I. Pretest and post test front underbody view
- J. Pretest and post test rear underbody view
- *K. Pretest and post test driver dummy position with the camera perpendicular to the longitudinal centerline of the vehicle and in line with the markings showing the fore-aft position of the seat.
- *L. Frontal pretest and post test driver dummy position with the camera in the same plane as the longitudinal centerline of the dummy.
- *M. Pretest and post test passenger dummy position with the camera perpendicular to the longitudinal centerline of the vehicle and in line with the markings showing the fore-aft position of the seat.

9. PHOTOGRAPHIC DOCUMENTATION....Continued

- *N. Frontal pretest and post test passenger dummy position view with the camera in the same plane as the longitudinal centerline of the dummy.
- *O. Dummy contact point(s) vehicle and dummy
- *P. Pretest and post test view of the knee bolsters.
- *Q. Pretest and post test view of the steering column shear capsule if any part of it is visible. Do NOT disassemble any parts to take these photographs.
- *R. Pretest and post test view of the under hood steering shaft and steering box. Take the best photograph possible without removing any parts.
- *S. Pretest and post test view of the steering column intersecting the fire wall from the inside of the vehicle. Take the best photograph possible without removing any parts.
- *T. Pretest and post test under hood view of the steering column intersecting the fire wall. Take the best photograph possible without removing any parts.
- U. Photograph of ballast installed in vehicle.
- V. Post test Stoddard solvent spillage location view, when leakage occurs.
- W. Post test windshield periphery retention loss.
- X. Post test windshield intrusion, when intrusion occurs.
- *Y. Post test view of test vehicle while vehicle is on static rollover machine.
- *Z. Photograph of certification label.
- *AA. Photograph of tire placard.
- *AB. Photograph of vehicle window sticker(s)
- AC. Photographs of fuel system failures

9.11.2 Offset Deformable Barrier – the above photographs plus the following

- *A. Pretest and posttest of the front left side perpendicular to the centerline of the vehicle at the most forward point of the vehicle.
- *B. Pretest and posttest of the front of the vehicle.
- *C. Pretest and posttest of the vehicle interior to show any intrusion that may occur.

9. PHOTOGRAPHIC DOCUMENTATION....Continued

9.11.3 Suppression tests (For the suppression tests that meet the performance requirements of FMVSS 208 the contractor shall have 4 photographs per page in the test report. Thus the individual photograph size will not be 203 mm x 254 mm or 215.9 mm x 279 mm (8 x 10 or 8½ x 11 inch)).

- *A. Left side view of final position
- *B. Right side view of final position
- *C. Windshield view of final position
- D. Photograph of the suppression telltale if it does not indicate the air bag is suppressed when the suppression test is performed

9.11.4 Low Risk Deployment

- *A. Pretest and post test right side view
- *B. Pretest and posttest left side view
- *C. Dummy contact points

10. DEFINITIONS

The contractor shall check the Code of Federal Regulations for the most recent definitions. A citation is provided after each definition not specified in Standard 208.

- 10.1 Automatic-locking retractor: A retractor incorporating adjustment hardware by means of a positive self-locking mechanism which is capable when locked of withstanding restraint forces. (571.209, S3)
- 10.2 Backless child restraint system: A child restraint, other than a belt-positioning seat, that consists of a seating platform that does not extend up to provide a cushion for the child's back or head and has a structural element designed to restrain forward motion of the child's torso in a forward impact. (571.213, S3)
- 10.3 Belt-positioning seat: a child restraint system that positions a child on a vehicle seat to improve the fit of a vehicle Type II belt system on the child and that lacks any component, such as a belt system or a structural element, designed to restrain forward movement of the child's torso in a forward impact. (571.213, S3)
- 10.4 Booster seat: Either a backless child restraint system or a belt-positioning seat (571.213, S3)
- 10.5 Car bed: A child restraint system designed to restrain or position a child in the supine or prone position on a continuous flat surface. (571.213, S3)
- 10.5 Child restraint anchorage: Any vehicle component, other than Type I or Type II seat belts, that is involved in transferring loads generated by a child restraint system to the vehicle structure. (571.225, S3)
- 10.6 Child restraint anchorage system: A vehicle system that is designed for attaching a child restraint system to a vehicle at a particular designated seating position, consisting of:
 - (a) Two lower anchorages meeting the requirements of S9; and
 - (b) A tether anchorage meeting the requirements of S6. (571.225, S3)

10. DEFINITIONS....Continued

- 10.7 Child restraint system: Any device except Type I or Type II seat belts, designed for use in a motor vehicle or aircraft to restrain, seat, or position children who weight 50 pounds or less. (571.213, S3)
- 10.8 Daylight opening: The maximum unobstructed opening through the glazing surface including reveal, or garnish moldings adjoining the surface, as measured parallel to the outer surface of the glazing material. (571.219, S4)
- 10.9 Designated Seating Capacity: The number of designated seating positions provided. (571.3)
- 10.10 Designated Seating Positions: Any plan view location capable of accommodating a person at least as large as a 5th percentile adult female, if the overall seat configuration and design and vehicle design is such that the position is likely to be used as a seating position while the vehicle is in motion, except for auxiliary seating accommodations such as temporary or folding jump seats. Any bench or split-bench seat in a passenger car, truck or multipurpose passenger vehicle with a GVWR less than 4,586 kilograms (10,000 pounds), having greater than 127 centimeters (50 inches) of hip room (measured in accordance with SAE Standard J1100(a)) shall have not less than three seat designated seating positions, unless the set design or vehicle design is such that the center position cannot be used for seating. For the sole purpose of determining the classification of any vehicle sold or introduced into interstate commerce for purposes that include carrying students to and from school or related events, any location in such vehicle intended for securement of an occupied wheelchair during vehicle operation shall be regarded as four designated seating positions. (571.3)
- 10.11 Emergency-locking retractor: A retractor incorporating adjustment hardware by means of a locking mechanism that is activated by vehicle acceleration, webbing movement relative to the vehicle, or other automatic action during an emergency and is capable when locked of withstanding restraint forces. (571.209, S3)
- 10.12 Fixed Collision Barrier: A flat, vertical, unyielding surface with the following characteristics:
(1) The surface is sufficiently large that when struck by a tested vehicle, no portion of the vehicle projects or passes beyond the surface,
(2) The approach is horizontal surface that is large enough for the vehicle to attain a stable attitude during its approach to the barrier, and that does not restrict vehicle motion during impact,
(3) When struck by a vehicle, the surface and its supporting structure absorb no significant portion of the vehicle's kinetic energy, so that a performance requirement described in terms of impact with a fixed collision barrier must be met no matter how small an amount of energy is absorbed by the barrier. (571.3)
- 10.13 Fuel spillage: The fall, flow, or run of fuel from the vehicle but does not include wetness resulting from capillary action. (571.301, S3)
- 10.14 Gross axle weight rating or GAWR: The value specified by the vehicle manufacturer as the load-carrying capacity of a single axle system as measured at the tire-ground interfaces. (571.3)
- 10.15 Gross vehicle weight rating or GVWR: The value specified by the manufacturer as the loaded weight of a single vehicle. (571.3)
- 10.16 H point: The mechanically hinged hip point of a manikin which simulates the actual pivot center of the human torso and thigh, described in SAE Recommended Practice J826, "Manikins for Use in Defining Vehicle Seating Accommodations," November 1962. (571.3)
- 10.17 Longitudinal or longitudinally: Parallel to the longitudinal centerline of the vehicle. (571.3)

10. DEFINITIONS....Continued

- 10.18 Outboard designated seating position: A designated seating position where a longitudinal vertical plane tangent to the outboard side of the seat cushion is less than 12 inches from the innermost point on the inside surface of the vehicle at a height between the design H-point and the shoulder reference point (as shown in fig. 1 of Federal Motor Vehicle Safety Standard No. 210) and longitudinally between the front and rear edges of the seat cushion. (571.3)
- 10.19 Overall vehicle width: The nominal design dimension of the widest part of the vehicle, exclusive of signal lamps, marker lamps, outside rearview mirrors, flexible fender extensions, and mud flaps, determined with doors and windows closed and the wheels in the straight-ahead position. (571.3)
- 10.20 Rated cargo and luggage capacity weight (RCLW):
RCLW = vehicle capacity weight – (68 kg x designated seating capacity)
Maximum RCLW used in testing a truck, MPV, or bus is 136 kg.
- 10.21 Rear-facing child restraint system: A child restraint system, except a car bed, that positions a child to face in the direction opposite to the normal direction of travel of the motor vehicle. (571.213, S3)
- 10.22 Seating reference point (SgRP): The unique design H-point, as defined in SAE J1100 (June 1984), which:
- (a) Establishes the rearmost normal design driving or riding position of each designated seating position, which includes consideration of all modes of adjustment, horizontal, vertical, and tilt, in a vehicle;
 - (b) Has X, Y, and Z coordinates, as defined in SAE J1100 (June 1984), established relative to the designed vehicle structure;
 - (c) Simulates the position of the pivot center of the human torso and thigh; and
 - (d) Is the reference point employed to position the two-dimensional drafting template with the 95th percentile leg described in SAE J826 (May 1987), or, if the drafting template with the 95th percentile leg cannot be positioned in the seating position, is located with the seat in its most rearward adjustment position. (571.3)
- 10.23 Telltale: A display that indicates the actuation of a device, a correct or defective functioning or condition, or a failure to function. (571.101, S4)
- 10.24 Tether anchorage: A user-ready permanently installed vehicle system that transfers loads from a tether strap through the tether hook to the vehicle structure and that accepts a tether hook. (571.225, S3)
- 10.25 Tether strap: A strap that is secured to the rigid structure of the seat back of a child restraint system, and is connected to a tether hook that transfers the load from that system to the tether anchorage. (571.225, S3)
- 10.26 Type 1 seat belt assembly: A lap belt for pelvic restraint (571.209 S3)
- 10.27 Type 2 seat belt assembly: A combination of pelvic and upper torso restraints (571.209 S3)
- 10.28 Unloaded vehicle weight: The weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo, occupants, or accessories that are ordinarily removed from the vehicle when they are not in use. (571.3)
- 10.29 Vehicle capacity weight: The rated cargo and luggage load plus 68 kilograms times the vehicle's designated seating capacity. (571.110, S3)
- 10.30 Vehicle fuel tank capacity: The tank's unusable capacity (i.e., the volume of fuel left at the bottom of the tank when the vehicle's fuel pump can no longer draw fuel from the tank) plus its usable capacity (i.e., the volume of the fuel that can be pumped into the tank through the filler pipe with the vehicle on a level surface and with the unusable capacity already in the tank). The term does not include the vapor volume of the tank (i.e., the space above the fuel tank filler neck) nor the volume of the fuel tank filler neck. (571.3)

10. DEFINITIONS....Continued

10.30 Windshield trim: Molding of any material between the windshield glazing and the exterior roof surface, including material that covers a part of either the windshield glazing or exterior roof surface. (571.216, S3)

11. PRETEST REQUIREMENTS

Prior to conducting a compliance test, the contractor shall:

- A. Verify COTR approval of Contractor's in-house test procedure,
- B. Verify the training of technicians for performance of this test,
- C. Verify the calibration status of test equipment,
- D. Review applicable revision of FMVSS 208,
- E. Review vehicle Owner's Manual (or equipment mfg. instructions), and
- F. Set cold tire pressures according to the vehicle manufacturer's recommendations (where applicable).

11.1 DETAILED TEST AND QUALITY CONTROL PROCEDURES REQUIRED

Prior to conducting any compliance test, Contractors are required to submit a detailed in-house compliance test procedure to the COTR which includes:

- A. A step-by-step description of the methodology to be used.
- B. A written Quality Control (QC) Procedure which shall include calibrations, the data review process, report review, and the people assigned to perform QC on each task.
- C. A complete listing of test equipment with instrument accuracy and calibration dates.
- D. Detailed check off lists to be used during the test and during data review. These lists shall include all test procedure requirements and FMVSS requirements pertaining to the safety standard for which testing is being performed. Each separate check off sheet shall identify the lab, test date, vehicle and test technicians. These check sheets shall be used to document that all requirements and procedures have been complied with. These sheets shall be submitted with the test report.

11. PRETEST REQUIREMENTS....Continued

D.1.1 The following heading information must be at the top of the first page of each check sheet and the vehicle NHTSA No. must be on each page.

NHTSA No. _____

Test Date: _____

Laboratory: _____

Test Technician(s): _____

Impact Angle: _____

Belted Dummies: __Yes __No

Test Speed: __32 to 40 kmph

__0 to 48 kmph

__0 to 56 kmph

Driver Dummy: __ 5th female __ 50th male

Passenger Dummy: __ 5th female __ 50th male

D.1.2 The following information must be on the last page of each check sheet.

I certify that I have read and performed each instruction.

Date

- E. There shall be no contradiction between the OVSC Laboratory Test Procedure and the Contractor's in-house test procedure. The procedures shall cover all aspects of testing from vehicle receipt to submission of the final report. Written approval of the procedures must be obtained from the COTR before initiating the compliance test program.
- F. The sign convention shall be as shown in the following Figure 5:

SIGN CONVENTIONS FOR PART 572 SUBPART E TEST DUMMIES

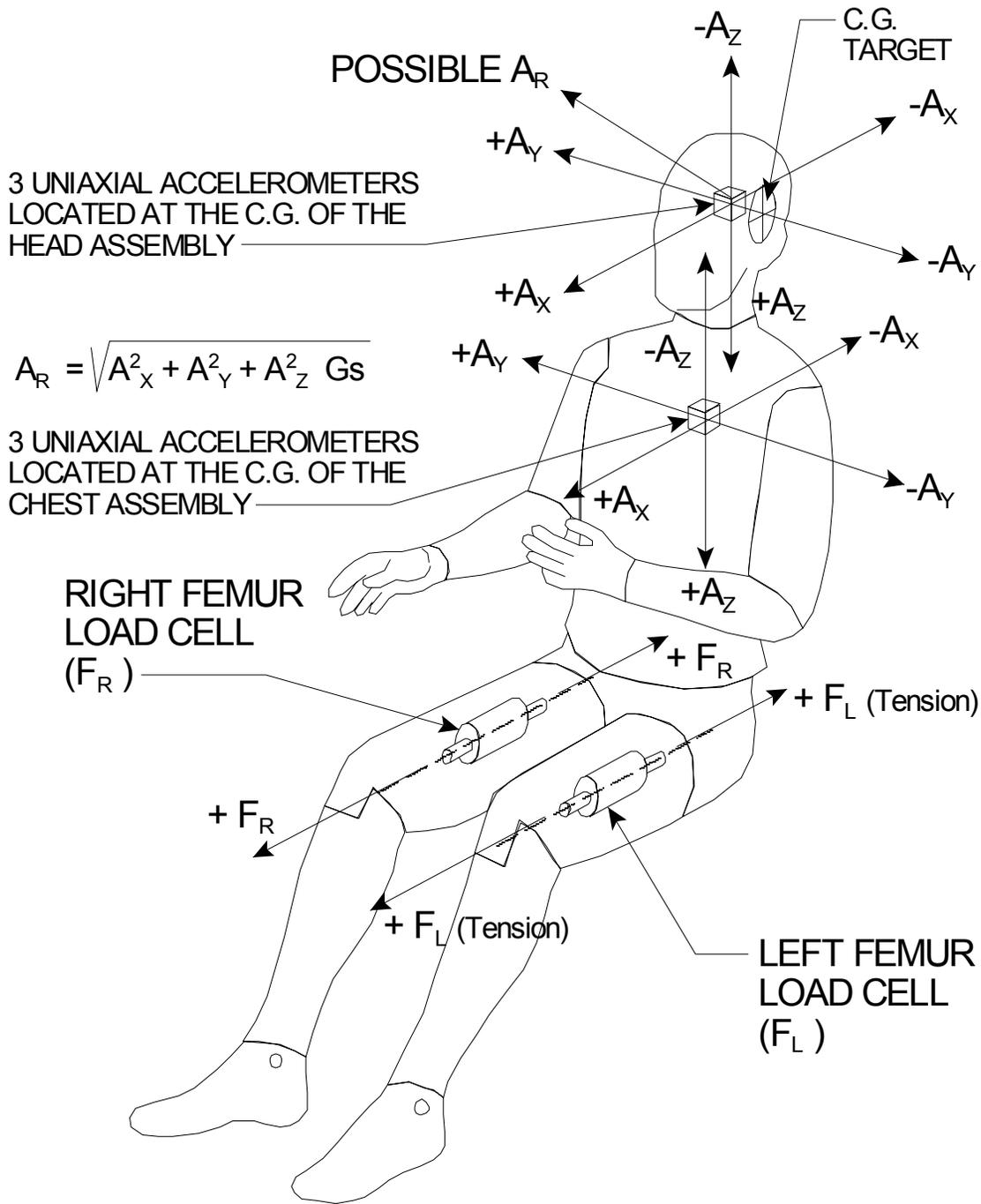


FIGURE 5

11. PRETEST REQUIREMENTS....Continued

11.2 INSTRUMENTATION TO BE INSTALLED IN THE TEST DUMMIES

A. The Contractor shall provide and install the following instrumentation in the GFP dummies for all except the suppression tests. The instrumentation shall meet the specifications and be in the locations as required by the drawing packages referenced in Title 49, Code of Federal Regulations Part 572.

TABLE 9

Dummy	Head	Neck	Chest	Chest Compress.	Femur
50 th male	3 uniaxial accelerometers (Endevco 7231C-750 with 1% transverse sensitivity)	1 - 6-axis upper neck load cell (Denton drawing C-1709)	3 uniaxial accelerometers (Endevco 7231C-750 with 1% transverse sensitivity)	Potentiometer is included with the dummy	2 load cells (GSE Inc. Model 2430)
5 th female	3 uniaxial accelerometers (drawing SA572-S4)	1 - 6-axis upper neck load cell (drawing SA572-S11)	3 uniaxial accelerometers (drawing SA572-S4)	Potentiometer is included with the dummy	2 load cells (drawing SA572-S14)
6-yr-old	3 uniaxial accelerometers (drawing SA572-S4)	1 - 6-axis upper neck load cell (drawing SA572-S11)	3 uniaxial accelerometers (drawing SA572-S4)	Potentiometer is included with the dummy	N/A
3-yr.-old	3 uniaxial accelerometers (drawing SA572-S4)	1 - 6-axis upper neck load cell (drawing SA572-S19)	3 uniaxial accelerometers (drawing SA572-S4)	Potentiometer is included with the dummy	N/A
12-month-old	3 uniaxial accelerometers (drawing SA572-S4)	1 - 6-axis neck/lumbar spine load cell (drawing SA572-23)	3 uniaxial accelerometers (drawing SA572-S4)	N/A	N/A

B. Temperature sensors to measure the stabilized temperature of the dummy (see Section 12.2).

The Contractor shall furnish data recording equipment having a sufficient number of channels available for recording the necessary time histories of the head and chest acceleration, chest displacement, neck forces and moments and the right and left femur axial loads applicable for calculating the injury values for each crash test or low risk deployment test for each test dummy used in the test. Each data channel shall be comprised of a sensor, signal conditioner, data acquisition device, and all interconnecting cables, and must conform to the requirements of SAE Recommended Practice J211/1, MAR 95.

C. An instrument calibration system capable of performing individual tests on all data channels used in acquiring the acceleration and force data shall conform to the appropriate section of SAE J211/1 MAR95. A schematic of the test setup is shown in Figure 6.

11. PRETEST REQUIREMENTS....Continued

- D. A precision time system compatible with the test equipment shall be used to provide a time reference for all recorded data. A system that identifies the precise instant of barrier contact shall be incorporated with the time reference signal.

11.3 OTHER INSTRUMENTATION

The Contractor shall provide and install the following accelerometers for all crash tests. The location of the accelerometers shall be recorded and included in the final test report.

The Contractor shall provide the necessary equipment to record and display the data. The data shall be included in the final test report and on the data tape/diskette.

A. X-DIRECTION ACCELEROMETERS

- #1. Rear seat cross-member on left side of vehicle
- #2. Rear seat cross-member on right side of vehicle
- #3. Top of engine block
- #4. Bottom of engine
- #5. Right front disc brake caliper
- #6. Left front disc brake caliper
- #7. Center of instrument panel top surface

B. Z-DIRECTION ACCELEROMETERS

Place a z-direction accelerometer along the vehicle longitudinal center line in the trunk, or as far back as possible in the rear passenger compartment.

11.4 FIXED COLLISION BARRIER

The basic fixed collision barrier must conform to the definition in Part 571.3--Definitions, 49 CFR Part 571.3, and at a minimum should consist of a reinforced concrete structure, 6 feet high, 6 feet thick, and 12 feet wide, weighing approximately 100,000 pounds.

Provision shall be made for 30° oblique crash tests. The fixed collision barrier may be adjustable or an extension may be added to the barrier to provide an angled barrier. If used, the extension shall be rigid such that it does not deflect or displace more than 10 mm (587.13).

The height of the barrier or, if used, the extension shall be at least as high as the highest point on the vehicle at the intersection of the vertical transverse plane tangent to the forward most point of both front tires, when the tires are parallel to the longitudinal centerline of the vehicle, and the vertical plane through the longitudinal centerline of the vehicle.

11. PRETEST REQUIREMENTS....Continued

A sheet of 3/4-inch thick plywood shall cover the barrier face and shall be replaced as necessary during the testing period.

11.5 OFFSET DEFORMABLE BARRIER

The barrier is described in Title 49 of the Code of Federal Regulations, Part 587, Subpart C. It is included in this test procedure as Appendix I.

11.6 VEHICLE PREPARATION BUILDING

In order that the test vehicle can be prepared for crash testing at the head of the tow road during hot or cold weather, the Contractor shall have a temperature controlled building constructed which is large enough to house the test vehicle and allow for government, vehicle manufacturer, and laboratory personnel to move around the test vehicle. The building climate control must be capable of maintaining the ambient air temperature between 69° F and 72° F.

11.7 IMPACT SITE TOW ROAD

The tow road should be at least 500 feet in length and terminate at the face of the non-energy-absorbing barrier as shown in Figure 7. The first 100 feet from the head of the tow road shall be used to accelerate the test vehicle up to the specified velocity without exceeding 0.5g, which might affect the positioning of the P572 test dummies in the test vehicle. The second 100 feet of tow road shall be used for dummy stabilization since the test vehicle should have approached the desired impact velocity with the acceleration now approaching zero. The remaining 300 feet of tow road shall be used for test vehicle speed stabilization. The width of the tow road should be approximately 8 feet or greater and should be straight and level so that the test vehicle does not oscillate vertically in excess of 0.29 g's (SAE J211/Mar 95 filter class 60).

A photographic pit shall be located in the tow road at the stationary barrier face so that leakage of Stoddard solvent can be photographed during the impact event. The pit shall be covered using the following guidelines:

- A. Use a transparent material that allows for use of pit cameras.
- B. The covering and its supports shall be of sufficient strength to support the vehicle structure should it come in contact with the cover during the FMVSS 208 test.
- C. The entire pit should be covered except for the area needed for the tow system to operate.
- D. Precautions must be taken to ensure there is no electrostatic interference from the pit cover.

11. PRETEST REQUIREMENTS....Continued

TYPICAL FMVSS 208 BARRIER IMPACT TEST FACILITY

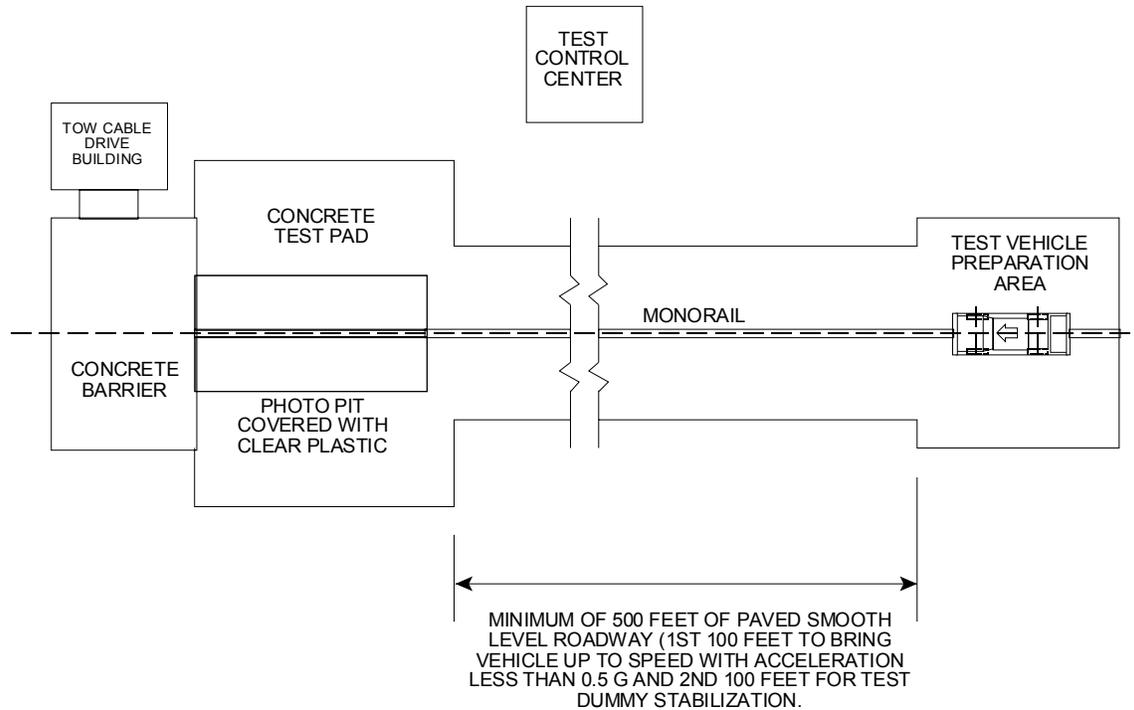


FIGURE 6

11.8 TEST VEHICLE TOW SYSTEM

A guidance system is required to assure that the test vehicle impacts the barrier at the proper angle. At most laboratories, a monorail running down the center of the tow road is used to guide a dolly to which the vehicle is connected. **NOTE:** NO HARD POINT CONNECTIONS BETWEEN THE MONORAIL AND TEST VEHICLE WILL BE ALLOWED.

A "soft" lateral guidance system is required to assure that the test vehicle will impact the barrier face at the designated 90° angle (straight perpendicular impact). It is suggested that the Contractor's lateral guidance system include steel cables or chains extending from the vehicle lower 'A' arms or front frame rails to the monorail dolly or shoe. The dolly shall ride on the monorail and engage the tow cable through a set of gripper jaws. The dolly will be stopped at the end of the tow road monorail or at the head of the photographic pit releasing the vehicle cables or chains at the same time allowing the vehicle to proceed to the barrier face for impact.

A "soft" connection (seat belt webbing, steel cables, chains, etc.) between the tow cable attachment device and the test vehicle front frame assembly shall be provided by the Contractor. **NOTE:** NO HARD POINT CONNECTIONS BETWEEN THE TOW CABLE AND THE TEST VEHICLE SHALL BE ALLOWED. The tow cable attachment shall release from the cable so that the vehicle will roll into the barrier at a constant velocity (no acceleration).

11. PRETEST REQUIREMENTS....Continued

11.9 TEST VEHICLE IMPACT SPEED CONTROL

The speed of the test vehicle is dependent on the speed requested by the COTR and must be controlled to obtain and maintain the vehicle speed within ± 0.8 kmph.

11.10 TEST VEHICLE IMPACT SPEED MEASUREMENT

The vehicle speed shall be constant for the last 1.5 meters of travel. The speed shall be measured when the front of the vehicle is 1.5 meters and 30 cm from the barrier. There shall be a redundant system at both distances. For multi sensor measuring systems, the sensors for each system shall be no more than 100 mm apart. The accuracy of the system shall be 0.08 kmph.

The basis for the speed measurement (time and distance) shall be calibrated by an instrument(s) traceable to the National Institute of Standards and Technology (NIST). The impact velocity shall be permanently recorded.

A speed measurement device shall monitor the speed of the test vehicle to permit aborting the test if the vehicle's speed is outside of the specified range.

11.11 ABORT SYSTEM

The laboratory shall provide an abort system capable of bringing the vehicle to a controlled stop.

11.12 STATIC ROLLOVER MACHINE

The rollover machine must be capable of rotating the barrier impacted test vehicle about its longitudinal axis with the axis kept horizontal, to each successive increment of 90° , 180° , and 270° at a uniform rate, with 90° of rotation taking place in any time interval from 1 to 3 minutes. Leakage shall be collected for the 5-minute period from the beginning of rotation plus any additional 1-minute collection periods that are required. Containers for the collection of possible Stoddard solvent spillage and a stop watch for timing the fluid collection intervals are required. Containers must be labeled before they are photographed.

11.13 ELECTROMAGNETIC INTERFERENCE AND STATIC CHARGE CONTROL

The laboratory shall take all necessary precautions to avoid electromagnetic and/or static charge interference with the test data. The following procedures shall be included in those adopted by the laboratory:

- A. Ground the head, thorax, and both femurs of the anthropomorphic test devices. This is accomplished by connecting the four components with a wire. A single wire then exits the dummy and is attached to a grounding block on the vehicle. Connect the grounding block to earth ground. The actual wire size and connections are left to the laboratory based on the system it uses.
- B. Use a static electricity elimination spray on the dummies and the interior of the vehicle.

11. PRETEST REQUIREMENTS....Continued

C. Ground and use static electricity elimination spray on pit covers.

11.14 TEST DATA ACQUISITION AND REDUCTION

The Contractor must meet all the requirements in the NHTSA Test Reference Guides which are available from the NHTSA web site

http://www.nhtsa.dot.gov/portal/site/nhtsa/template.MAXIMIZE/menuitem.8027fe7cfb6e727568d07a30343c44cc/?javax.portlet.tpst=4670b93a0b088a006bc1d6b760008a0c_ws_MX&javax.portlet.prp_4670b93a0b088a006bc1d6b760008a0c_viewID=detail_view&itemID=5cce5a284fe57110VgnVCM1000002fd17898RCRD&overrideViewName=Article

Prior to the vehicle crash test, onboard instrumentation is installed, and a null reference and a shunt calibration adjustment are performed to set all data devices. Immediately following the crash test, a post impact null reference and shunt calibration check shall be performed. The pretest adjustment and posttest check shall be recorded and the data submitted with the report.

Analog data is collected for at least 300 ms (longer if needed for the low risk deployment tests) after time zero, prefiltered (Class 1000) and digitized at a minimum rate of 10,000 samples per second. The data is then placed onto permanent storage media after the application of appropriate calibration scale factors.

As the data is recalled for integration or plotting, the appropriate phase-less digital filter, such as the Butterworth four-pole phase less digital filter is applied. These filters are in accordance with SAE Recommended Practice J211/1 MAR95, "Instrumentation for Impact Tests."

11. PRETEST REQUIREMENTS....Continued

TABLE 10
Filtering requirements from SAE J211/1 MAR95

	Filter Class	Cut-off Frequency
Head acceleration	1000	1650
Neck forces	1000	1650
Chest compression	600	1000
Femur loads	600	1000
Neck moments	600	1000
Nij calculations	600	1000
Chest acceleration	180	300
Vehicle acceleration	60	100
Velocity	180	300
Displacement	180	300

Before plotting, the Contractor's program manager or engineer shall determine the "time zero", which is verified with the trigger signal. When a velocity or displacement trace is to be plotted, integration for the appropriate acceleration signal is performed digitally.

11.15 ALGORITHMS USED TO CALCULATE THE HEAD INJURY CRITERION (HIC), N_{ij} , THE THREE MILLISECOND CLIPS OF A WAVEFORM, AND TO DIGITALLY FILTER THE CLASS 1000 DATA

Algorithms that are used to calculate the HIC, N_{ij} , 3 millisecond clips of a waveform, and to digitally filter the Class 1000 data collected from the tests, are on the NHTSA web site (www.nhtsa.dot.gov).

Any questions pertaining to the algorithms should be directed to the following organization:

National Highway Traffic Safety Administration
 Office of Crashworthiness Research
 Safety Systems Engineering and Analysis Division
 1200 New Jersey Ave. SE
 Mail Code: NVS-321
 Washington, DC 20590
 Telephone No.: 202-366-4850

11. PRETEST REQUIREMENTS....Continued

TYPICAL VEHICLE AND OCCUPANT TEST DATA ACQUISITION SYSTEM

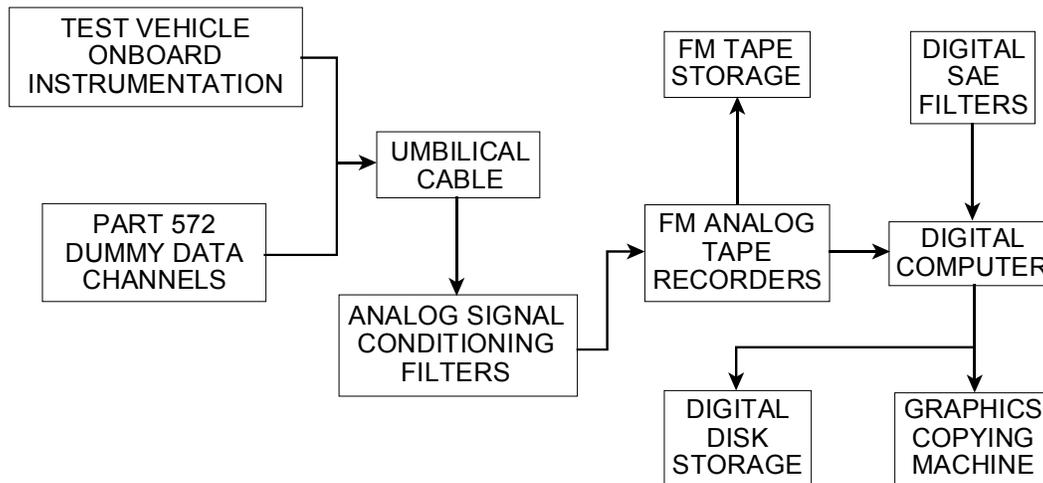


Figure 7

12. COMPLIANCE TEST EXECUTION

12.1 Review the COTR work order in the data sheet section and perform all the ordered items prior to any crash test. Use the appropriate data sheets from the data sheet section of this test procedure.

12.2 TEST TEMPERATURE CONDITIONS

The Contractor must verify that the dummy temperature for crash tests or low risk deployment tests is in the specified temperature range (69°F to 72°F) by either of the following two methods. The temperature sensors for both methods shall be accurate at least to within $\pm 0.5^\circ\text{F}$.

- A. The dummy must be soaked in an ambient air environment in the specified range as shown above for 16 hours prior to the test and any time after that until just before the movement of the vehicle towards the impact barrier. The ambient air temperature must be monitored and continuously recorded within 36 inches of the dummies. If at any time the ambient air temperature is not in the specified range, as shown above, the dummy part temperature measurement of Method B must be used prior to the impact test to verify a stabilized dummy temperature.
- B. The dummy must be soaked in an ambient air environment in the specified range (69°F to 72°F) for 16 hours prior to the test. The ambient temperature must be monitored and continuously recorded until just before impact. The temperature of the following dummy parts must be monitored and continuously recorded at least 30 minutes prior to the impact test.

12. COMPLIANCE TEST EXECUTION....Continued

- (1) The outside surface temperature of the forehead. (Remove this sensor immediately prior to the test)
- (2) The surface temperature of the spine box. (This is in the internal portion of the dummy)
- (3) The outside surface temperature of the neck. (Remove this sensor immediately prior to the test)
- (4) The outside surface temperature of one knee. (Remove this sensor immediately prior to the test)

The chalk coating may be put on the face and knee around the sensor. The sensors shall be taped into place on the outer surfaces of the dummy and secured to the spine box for the internal sensor.

When the temperature of these four components has reached the applicable temperature range as listed above, and has remained in that range for 30 continuous minutes, the impact test may be performed.

It is not the intent of Method B to have the dummy outside the ambient air temperature range that corresponds to the specified dummy temperature range listed above. However, the purpose is to confirm that the dummy is still at the proper stabilized temperature even if there are short fluctuations of ambient air temperature outside the range specified for the dummy temperature. Therefore, if there is an ambient air temperature excursion outside the specified dummy temperature range, the Contractor shall work quickly to bring the ambient air temperature back into that range.

The Contractor shall mark the ambient air temperature recording with the date, time and technician name at the beginning of the 16 hour soak and when the vehicle begins to move towards the barrier. The dummy part temperature recordings shall also be marked at the beginning and end with the date, time, and technician's name. Any excursions from the specified temperature must be noted on the recording along with the reason for the excursion. Temperature recordings shall be supplied to the COTR with final test reports. The windshield mounting material and all vehicle components in direct contact with the mounting material must be at a temperature between 15°F and 110°F. This temperature measurement must be made within 15 minutes of the impact test event.

12.3 TEST SUBJECTS

See the COTR work order to determine the type of dummies or human subjects to be used for a particular test. Tables 11 and 12 are the clothing requirements for dummies and humans.

The dummy calibration procedures are attached as Appendices. The calibration data for each dummy used in a crash or low risk deployment test shall be shown on the appropriate data sheets as provided in the calibration procedures.

Dummy positioning procedures for the Part 572, Subpart E dummy are detailed in Appendix F and dummy positioning procedures for the Part 572, Subpart O dummy are detailed in Appendix G. Seating procedures for suppression and low risk deployment tests are part of Section 15, Data Sheets.

12. COMPLIANCE TEST EXECUTION....Continued

The COTR may require that positioning of the dummies for crash tests be performed in the presence of NHTSA and vehicle manufacturer's representatives. The manufacturer's representatives shall also be afforded the opportunity to take measurements of the dummies' positions after the dummy positioning procedures are complete and before the Contractor records dummy measurements.

The dummies used in the frontal crash tests shall be alternated in the driver's and passenger's seat. For example, if three dummies are prepared for each test, the driver dummy from the previous test shall become the spare, the passenger dummy from the previous test shall be the driver, and the spare from the previous test shall be the passenger.

12. COMPLIANCE TEST EXECUTION....Continued

**TABLE 11
Dummy Clothing Requirements**

	Shirt	Pants	Shoes
5th female S16.2.5	Form fitting cotton stretch short sleeve	Form fitting cotton stretch above-the-knee	Size 7½W MIL-S-21711E, Amendment 2, 10/14/94
50th male S8.1.8.2	Form fitting cotton stretch short sleeve No more than 0.25 lb	Form fitting cotton stretch above-the-knee No more than 0.25 lb	Size 11XW MIL-S 13192P Amendment 1, 10/14/94 1.05 to 1.45 lb each
12-month-old 572.154(c)(2) PADI, pg. 3	50%Cotton-50% polyester-based tight-fitting crew-neck long - sleeve shirt (total weight of shirt and pants no more than 0.25 kg (0.55 lb))	50% Cotton-50% polyester-based tight-fitting ankle-length pants (total weight of shirt and pants no more than 0.25 kg (0.55 lb))	No shoes
3-year-old 572.144(c)(1) PADI, pg. 4	Cotton-polyester-based tight-fitting long sleeve shirt (total weight of shirt and pants no more than 0.25 kg (0.55 lb))	Cotton-polyester-based tight-fitting ankle-length pants (total weight of shirt and pants no more than 0.25 kg (0.55 lb))	Children's size 8 Oxford style canvas sneaker (Drawing 210-5920) 0.16 to 0.26 kg each
6-year-old 572.124(c)(2) PADI, pg.11	Form fitting cotton stretch short sleeve Children's size XS (size 4-5), Thermal Knit, waffle weave, 50%Cotton-50% polyester. 0.09 kg max.	Form fitting cotton stretch above-the-knee. Children's size XS (size 4-5), Thermal Knit, waffle weave, 50%Cotton-50% polyester. 0.09 kg max	Children's size 13M Oxford style canvas sneakers 0.33 to 0.43 kg each

**TABLE 12
Human Subject Clothing Requirements**

	Shirt	Pants	Shoes
5th female S29.2	Cotton T-shirt	Full-length cotton pants	Sneakers
3-year-old S29.2	Cotton T-shirt	Full-length cotton pants	Sneakers
6-year-old S29.2	Cotton T-shirt	Full-length cotton pants	Sneakers

12. COMPLIANCE TEST EXECUTION....Continued

12.4 FUEL SYSTEM INTEGRITY

12.4.1 Fluid Collection

After the vehicle impact, fuel system Stoddard solvent leakage shall be collected by hand and documented with a real-time (24 fps) motion picture camera and stop watch. The "tea cup method" has been used in the past and involves simply placing a collection vessel beneath the leakage source and timing the intervals of several collected volumes. The collected Stoddard solvent samples can subsequently be measured and spillage rates calculated. Contractors are invited to suggest alternative methods for fluid collection. If the "tea cup method" is used, the test personnel must be in position to scramble to observation points around the test vehicle at the instant the vehicle comes to rest after the impact event. Weigh the total amount of Stoddard solvent spillage from the moment the vehicle ceases motion. The spillage shall not exceed a total of 142 g for the 5-minute period after the vehicle comes to rest. The Contractor must keep the test vehicle under constant observation for Stoddard solvent leakage during the transition between impact and static rollover testing.

12. COMPLIANCE TEST EXECUTION....Continued

12.4.2 Static Rollover for FMVSS 301

The Contractor must conduct a static rollover test within 30 minutes after the vehicle impact only after the "quick look" data provides assurance that the vehicle is in compliance with FMVSS No. 208. With the test vehicle in a Static Rollover Machine, the device shall rotate successively at increments of 90° through 360° at a uniform rate, with a full 90° of rotation taking place in any time interval from 1 to 3 minutes. After reaching each 90° increment the vehicle is held in that position for 5 minutes. The rollover machine must be capable of rotating the test vehicle about its longitudinal axis with the axis maintained in a horizontal orientation at each successive rotation while maintaining a uniform rotation rate.

NOTE: If there is an indication of a test failure during or just after the impact test, DO NOT conduct the static rollover test.

(1) Remove test dummies and de-power systems.

(2) Carefully secure the test vehicle on the Static Rollover Device so as not to cause any damage to fuel system components or fuel lines.

(3) Begin rotating the vehicle to the first 90° increment. Record the time at which rotation begins and ends, increment of rotation shall be completed within a maximum of 3 minutes. The vehicle shall be held in this position for 5 minutes after rotation ends.

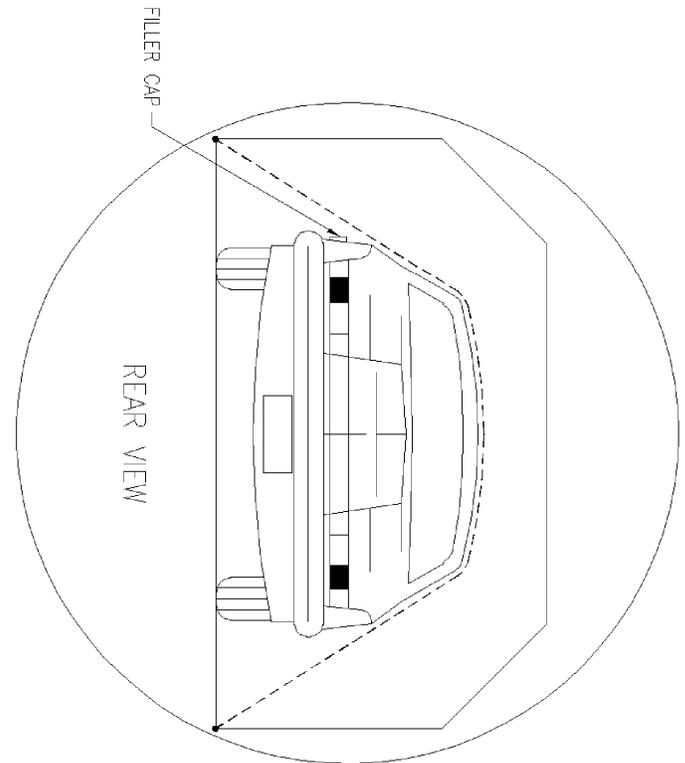
(4) Collect Stoddard solvent spillage, if any, from the time rotation began up to 5 minutes thereafter.

Note: If there is an indication of a test failure during any 90° increment of the rollover test, STOP THE TEST. Do not continue to the next successive 90° increment.

(5) Change collection containers. Record any spillage that occurs during the 6th minute after the onset of rotation or when rotation began.

(6) If required, change collection containers. Record any spillage that occurs during the 7th minute after the onset of rotation or when rotation began.

(7) If required, change collection containers. Record any spillage that occurs during the 8th minute after the onset of rotation or when rotation began.



12. COMPLIANCE TEST EXECUTION....Continued

Repeat for 90° to 180°, 180° to 270° and 270° to 360° increments.

Performance - Stoddard solvent spillage, from the onset of rotational motion, shall not exceed a total of 142 grams for the first 5 minutes of testing at each successive 90° increment. For the remaining testing period, at each increment of 90°, solvent spillage during any 1-minute interval shall not exceed 28 grams. In the event of a failure the contractor shall photograph the containers containing the Stoddard solvent. Containers must be labeled before they are photographed.

- 12.5 Review the "COTR Vehicle Work Order" form and complete the data sheets in the Data Sheets section and in the appendices associated with each task. Include the "COTR Vehicle Work Order" and all other data sheets in the test report.

12.6 PRE-CRASH TEST

- 12.6.1 Start the vehicle measurement data sheet
- 12.6.2 Start vehicle weight and attitude data sheet
- 12.6.3 Paint the underbody (see section 9.2)
- 12.6.4 Start windshield mounting data sheet (ONLY if included on COTR Work Order)
- 12.6.5 Start windshield zone intrusion data sheet (ONLY if included on COTR Work Order)
- 12.6.6 Complete vehicle targeting data sheet
- 12.6.7 Complete vehicle accelerometer placement data sheet
- 12.6.8 Complete high speed camera placement data sheet
- 12.6.9 Complete dummy positioning data sheets (data sheets in appendix)
- 12.6.10 Complete dummy measurement data sheets
- 12.6.11 Complete vehicle weight and attitude data sheet
- 12.6.12 Start photograph data sheet
- 12.6.13 Start crash test data sheet (Frontal or Offset)

12.7 POST-CRASH TEST

- 12.7.1 Conduct Fuel System Integrity Test (see section 12.4) and collect results on FMVSS 301 data sheet (ONLY if included on COTR Work Order)
- 12.7.2 Complete photograph data sheet
- 12.7.3 Complete crash test data sheet (*posttest instrument calibration checks.*) (Frontal or Offset)
- 12.7.4 Check the protected zone and windshield mounting directly after a frontal barrier impact. Loss of windshield protection can be determined when a piece of paper can pass between the windshield edge and the vehicle body. Photographs of the windshield periphery should be taken before the vehicle is placed in the FMVSS 301 static rollover machine.
- 12.7.5 Complete windshield zone intrusion data sheet (ONLY if included on COTR Work Order)
- 12.7.5 Complete windshield retention data sheet (ONLY if included on COTR Work Order)
- 12.7.6 Complete FMVSS 301 data sheet
- 12.7.7 Complete the vehicle measurement data sheet
- 12.7.7 Complete the "Report of Vehicle Condition" including a word description of its post test condition,

13. POST TEST REQUIREMENTS

- A. Verify all instrumentation, data sheets and photographs are complete
- B. Copy applicable pages of the vehicle Owner's Manual for attachment to the final test report
- C. Move the test vehicle to a secure area,
- D. Place all original records in a secure and organized file awaiting test data disposition.

14. REPORTS

14.1 MONTHLY STATUS REPORTS

The Contractor shall submit a monthly Test Status Report and a Vehicle or Equipment Status Report to the COTR (both reports shown in this section). The Vehicle Status Report shall be submitted until all vehicles or items of equipment are disposed of.

14. REPORTS....Continued

MONTHLY TEST STATUS REPORT
 FMVSS 208
 DATE OF REPORT:

NO.	VEHICLE NHTSA NO., MAKE & MODEL	TEST DATE	PASS/ FAIL	DATE REPORT SUBMITTED	DATE INVOICE SUBMITTED	INVOICE PAYMENT DATE
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

14. REPORTS....Continued

MONTHLY VEHICLE STATUS REPORT
 FMVSS 208
 DATE OF REPORT:

NO.	VEH. NHTSA NO., MAKE & MODEL	DATE OF DELIVERY	ODOMETER READING	TEST COMPLETE DATE	VEHICLE SHIPMENT DATE	ODOMETER READING
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

14. REPORTS....Continued

14.2 APPARENT TEST FAILURE

Any indication of an apparent test failure shall be communicated by telephone to the COTR within 24 hours with written notification mailed within 48 hours (Saturdays and Sundays excluded). A Notice of Apparent Test Failure, shown in this section, with a copy of the particular compliance test data sheet(s) and preliminary data plot(s) shall be included.

In the event of an apparent test failure, a posttest calibration check of some critically sensitive test equipment and instrumentation may be required for verification of accuracy. The necessity for the calibration shall be at the COTR's discretion and shall be performed without additional costs to the OVSC.

14. REPORTS....Continued

LABORATORY NOTICE OF APPARENT TEST FAILURE TO OVSC

FMVSS NO. 208 TEST DATE: _____

LABORATORY: _____

CONTRACT NO.: _____ DELV. ORDER NO.: _____

LABORATORY PROJECT ENGINEER'S NAME: _____

TEST SPECIMEN DESCRIPTION: _____

VEHICLE NHTSA NO.: _____ VIN: _____

MFR: _____

APPARENT TEST FAILURE DESCRIPTION: _____

FMVSS REQUIREMENT, PARAGRAPH S____ :

NOTIFICATION TO NHTSA (COTR): _____

DATE: _____ BY: _____

REMARKS:

14. REPORTS....Continued

14.3 FINAL TEST REPORT

14.3.1 COPIES

Provide a compact disk or sets of disks, depending on the amount of data, with a draft of the final report, high speed video, real time video, and dummy calibration report. Once the draft has been approved provide 4 compact disks or sets of disks depending on the amount of data as follows:

1. Final report, high speed video, real time video, and dummy calibration report
2. Final report, high speed video, and real time video
3. Final report, high speed video, and real time video
4. Final report

The Final Test Report format to be used by all Contractors can be found in this section.

Payment of Contractor's invoices for completed compliance tests may be withheld until the Final Test Report is accepted by the COTR. Do NOT submit invoices before the COTR is provided copies of all the report deliverables.

Contractors are required to submit the first draft test report within two weeks after the compliance test is conducted. The Contractor and the COTR will then be able to discuss the details of both test conduct and report content early in the compliance test program.

High speed video, real time video, dummy calibrations and contractor test check sheets must be provided with the draft test report. The electronic test data shall be provided by e-mail to the COTR within 5 days of any test that requires injury measures to be calculated.

Contractors are required to PROOF READ all Final Test Reports before submittal to the COTR. The OVSC will not act as a report quality control office for Contractors. Reports containing a significant number of errors will be returned to the Contractor for correction, and a "hold" will be placed on invoice payment for the particular test.

14.3.2 REQUIREMENTS

The Final Test Report with the associated documentation (including photographs) is relied upon as the chronicle of the compliance test. The Final Test Report will be released to the public domain after review and acceptance by the COTR. For these reasons, each final report must be a complete document capable of standing by itself.

The Contractor should use **detailed** descriptions of all compliance test events. Any events that are not directly associated with the standard but are of technical interest should also be included. The Contractor should include as much detail as possible in the report.

Instructions for the preparation of the first three pages of the final test report are provided below for the purpose of standardization.

14. REPORTS....Continued**14.3.3 FIRST THREE PAGES****FRONT COVER**

The information required on the cover page is as follows:

- (A) Final Report Number such as 208-ABC-XX-001, where —

208 is the FMVSS tested

ABC are the initials for the laboratory

XX is the last two numbers of the Fiscal Year of the test program

001 is the Group Number (001 for the 1st test, 002 for the 2nd test, 003 for the 3rd test, etc.)

- (B) Final Report Title and Subtitle such as

SAFETY COMPLIANCE TESTING FOR FMVSS 208

Occupant Crash Protection

World Motors Corporation

20XX XYZ 4-door sedan

NHTSA No. CX0401

- (C) Contractor's Name and Address such as

COMPLIANCE TESTING LABORATORIES, INC.

4335 West Dearborn Street

Detroit, Michigan 48090

NOTE: DOT SYMBOL SHALL BE PLACED BETWEEN ITEMS (C) AND (D)

- (D) Date of Final Report completion

- (E) The words "FINAL REPORT"

- (F) The sponsoring agency's name and address as follows

U. S. DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

Enforcement

Office of Vehicle Safety Compliance

Mail Code: NVS-220

1200 New Jersey Ave., SE

Washington, DC 20590

14. REPORTS....Continued

FIRST PAGE AFTER COVER PAGE

When a contract test laboratory is reporting, a disclaimer statement and an acceptance signature block for the COTR shall be provided as follows:

This publication is distributed by the National Highway Traffic Safety Administration in the interest of information exchange. Opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof.

If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement.

Prepared By: _____

Approved By: _____ *

Approval Date: _____ *

FINAL REPORT ACCEPTANCE BY OVSC: *

Accepted By: _____

Acceptance Date: _____

* These lines not required when OVSC staff writes the Test Report

14. REPORTS....Continued

SECOND PAGE AFTER COVER Page

A completed Technical Report Documentation Page (Form DOT F1700.7) shall be completed for those items that are applicable with the other spaces left blank. Sample data for the applicable block numbers of the title page follows.

Block 1 — REPORT NUMBER

208-ABC-XX-001

Block 2 — GOVERNMENT ACCESSION NUMBER

Leave blank

Block 3 — RECIPIENT'S CATALOG NUMBER

Leave blank

Block 4 — TITLE AND SUBTITLE

Final Report of FMVSS 208 Compliance Testing
of a 20XX World XYZ Deluxe 4-door sedan
NHTSA No. CX0401

Block 5 — REPORT DATE

Month Day, 20XX

Block 6 — PERFORMING ORGANIZATION CODE

ABC

Block 7 — AUTHOR(S)

John Smith, Project Manager
Bill Doe, Project Engineer

Block 8 — PERFORMING ORGANIZATION REPORT NUMBER

ABC-DOT-XXX-001

Block 9 — PERFORMING ORGANIZATION NAME AND ADDRESS

ABC Laboratories
405 Main Street
Detroit, MI 48070

14. REPORTS....Continued

Block 10 — WORK UNIT NUMBER

Leave blank

Block 11 — CONTRACT OR GRANT NUMBER

DTNH22-XX-D-12345

Block 12 — SPONSORING AGENCY NAME AND ADDRESS

U.S. Department of Transportation
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
Mail Code: NVS-220
1200 New Jersey Ave., SE
Washington, DC 20590

Block 13 — TYPE OF REPORT AND PERIOD COVERED

Final Test Report
Month Day to Month Day, 20XX

Block 14 — SPONSORING AGENCY CODE

NVS-220

Block 15 — SUPPLEMENTARY NOTES

Leave blank

Block 16 — ABSTRACT

Compliance tests were conducted on the subject 20XX World XYZ 4-door sedan in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP208-XX for the determination of FMVSS 208 compliance. Test failures identified were as follows:

None

14. REPORTS....Continued

Block 17 — KEY WORDS

Compliance Testing
Safety Engineering
FMVSS 208

Block 18 — DISTRIBUTION STATEMENT

Copies of this report are available from the following:

National Highway Traffic Safety Administration
Technical Information Services Division, NPO-411
1200 New Jersey Avenue SE (Room E12-100)
Washington DC 20590

e-mail: tis@nhtsa.dot.gov
FAX: 202-493-2833

Block 19 — SECURITY CLASSIFICATION OF REPORT

Unclassified

Block 20 — SECURITY CLASSIFICATION OF PAGE

Unclassified

Block 21 — NUMBER OF PAGES

Add appropriate number

Block 22 — PRICE

Leave blank

14.3.4 TABLE OF CONTENTS

Sample Test Report **Table of Contents:**

- Section 1 — Purpose of Compliance Test
- Section 2 — Tests Performed
- Section 3 — Injury Result Summary
- Section 4 — Discussion of Test (if applicable)
- Section 5 — Test Data Sheets (list each sheet in order)
- Section 6 — Test Data (including acceleration and load plots)
- Section 7 — Photographs (Photographs of suppression tests and low risk deployment tests shall be included with the data sheets to which they apply.)
- Section 8 — Notice of Test Failure (if applicable)
- Section 9 — Test Equipment List and Calibration Information

14. REPORTS....Continued

14.3.5 NON-DATA SHEET SECTION PAGES AND INSTRUCTIONS FOR THE REST OF THE TEST REPORT

PURPOSE

This Federal Motor Vehicle Safety Standard 208 compliance test is part of a program conducted for the National Highway Traffic Safety Administration by **[insert company name]** under contract **[insert contract number]**. The purpose of the test was to determine whether the subject vehicle, **[insert model year, make, model and NHTSA no.]**, meets certain performance requirements of FMVSS 208, "Occupant Crash Protection"; **[include these if applicable, FMVSS 212, "Windshield Mounting"; FMVSS 219, "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity"]**. The compliance test was conducted in accordance with OVSC Laboratory Test Procedure No. TP208-XX dated _____, 20XX.

14. REPORTS....ContinuedTESTS PERFORMED

The following checked items indicate the tests that were performed:

- 1. Rear outboard seating position seat belts (S4.1.4.2(b) & (S4.2.4)
- 2. Air bag labels (S4.5.1)
- 3. Readiness indicator (S4.5.2)
- 4. Passenger Air Bag Manual Cut-Off Device (S4.5.4)
- 5. Lap belt lockability (S7.1.1.5)
- 6. Seat belt warning system (S7.3)
- 7. Seat belt contact force (S7.4.3)
- 8. Seat belt latch plate access (S7.4.4)
- 9. Seat belt retraction (S7.4.5)
- 10. Seat belt guides and hardware (S7.4.6)
- 11. Air bag suppression telltale (S19.2.2)
- 12. Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart N)
- 13. Suppression tests with Newborn infant (Part 572, Subpart K)
- 14. Suppression tests with 3-year-old dummy (Part 572, Subpart P)
- 15. Suppression tests with 6-year-old dummy (Part 572, Subpart R)
- 16. Test of Reactivation of the passenger Air Bag system with an Unbelted 5th Percentile female dummy
- 17. Low risk deployment test with 12-month-old dummy (Part 572, Subpart N)
- 18. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P)
- 19. Low risk deployment test with 6-year-old dummy (Part 572, Subpart R)
- 20. Low risk deployment test with 5th female dummy (Part 572, Subpart O)
- 21. Impact tests
 - Frontal Oblique
 - Belted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.1.(a))
 - Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1))
 - Unbelted 50th male dummy driver and passenger (32 to 40 kmph) (S5.1.2(a)(1) or S5.1.2(b))
 - Frontal 0°
 - Belted 50th male dummy driver (0 to 48 kmph) (S5.1.1(b)(1) or S5.1.1(a))
 - Belted 50th male dummy passenger (0 to 48 kmph) (S5.1.1(b)(1) or S5.1.1(a))
 - Belted 5th female dummy driver (0 to 48 kmph) (S16.1(a))
 - Belted 5th female dummy passenger (0 to 48 kmph) (S16.1(a))
 - Belted 50th male dummy driver and passenger (0 to 56 kmph)) (S5.1.1(b)(2))
 - Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1))
 - Unbelted 50th male dummy driver (32 to 40 kmph) (S5.1.2(a)(2) or S5.1.2(b))
 - Unbelted 50th male dummy passenger (32 to 40 kmph) (S5.1.2(a)(2) or S5.1.2(b))
 - Unbelted 5th female dummy driver (32 to 40 kmph) (S16.1(b))
 - Unbelted 5th female dummy passenger (32 to 40 kmph) (S16.1(b))
 - 40% Offset 0° Belted 5th female dummy driver and passenger (0 to 40 kmph) (S18.1)
- 22. FMVSS 204 indicant test
- 23. FMVSS 212 test
- 24. FMVSS 219 indicant test
- 25. FMVSS 301 frontal test

14. REPORTS....Continued

For the crash tests, the vehicle was instrumented with 8 accelerometers. The accelerometer data from the vehicle and dummies were sampled at [*insert sample rate*] and processed as specified in SAE J211/1 MAR95 and FMVSS 208, S4.13.

The dynamic tests were recorded using high speed digital video.

[Choose the appropriate sentence: *The vehicle appears to meet the performance requirements to which it was tested. or The vehicle appears to fail the following performance criterion(a): _____.*]

14. REPORTS....Continued

INJURY RESULT SUMMARY FOR CRASH TESTS AND/OR
LOW RISK DEPLOYMENT TESTS

NHTSA No. _____

Test Date: _____

VIN _____

Frontal Crash ___ Offset Crash ___ Low Risk Deployment ___

Impact Angle: _____

Belted Dummies: ___Yes ___No

Speed Range: ___0 to 40 kmph ___32 to 40 kmph ___0 to 48 kmph ___0 to 56 kmph

Test Speed _____

Driver Dummy: ___ 5th female ___ 50th male

Passenger Dummy: ___ 5th female ___ 50th male

Test weight _____

[Include any of the following result tables that are appropriate for the tests that were performed.]

50th Percentile Male Frontal Crash Test
Vehicles certified to S5.1.1(b)(1), S5.1.1(b)(2), S5.1.2(a)(2), or S5.1.2(b)

Injury Criteria	Max. Allowable Injury Assessment Values	Driver	Passenger
HIC15	700		
N _{te}	1.0		
N _{tf}	1.0		
N _{ce}	1.0		
N _{cf}	1.0		
Neck tension	4170 N		
Neck compression	4000 N		
Chest g	60 g		
Chest displacement	63 mm		
Left femur	10,000 N		
Right femur	10,000 N		

Injury measures calculated for data collected from 0 ms to 300 ms

5th Percentile Female [**choose one: Frontal or Offset**] Crash Test

14. REPORTS....Continued

Vehicles certified to S16.1(a)(1), S16.1(a)(2), S16.1(b), or S18.1

Injury Criteria	Max. Allowable Injury Assessment Values	Driver	Passenger
HIC15	700		
N _{te}	1.0		
N _{tf}	1.0		
N _{ce}	1.0		
N _{cf}	1.0		
Neck tension	2620 N		
Neck compression	2520 N		
Chest g	60 g		
Chest displacement	52 mm		
Left femur	6805 N		
Right femur	6805 N		

Injury measures calculated for data collected from 0 ms to 300 ms

5th Percentile Female Low Risk Deployment Test
 Vehicles certified to S25.3

Injury Criteria	Max. Allowable Injury Assessment Values	Position 1	Position 2r
HIC15	700		
N _{te}	1.0		
N _{tf}	1.0		
N _{ce}	1.0		
N _{cf}	1.0		
Neck tension	2070 N		
Neck compression	2520 N		
Chest g	60 g		
Chest displacement	52 mm		
Left femur	6805 N		
Right femur	6805 N		

Injury measures calculated for data collected from 0 ms to ___ ms

14. REPORTS....Continued

6-Year Old Low Risk Deployment Test
Vehicles certified to S24.4

Injury Criteria	Max. Allowable Injury Assessment Values	Position 1	Position 2r
HIC15	700		
N _{te}	1.0		
N _{tf}	1.0		
N _{ce}	1.0		
N _{cf}	1.0		
Neck tension	1490 N		
Neck compression	1820 N		
Chest g	60 g		
Chest displacement	40 mm		

Injury measures calculated for data collected from 0 ms to ___ ms

3-Year Old Low Risk Deployment Test
Vehicles certified to S22.4

Injury Criteria	Max. Allowable Injury Assessment Values	Position 1	Position 2r
HIC15	570		
N _{te}	1.0		
N _{tf}	1.0		
N _{ce}	1.0		
N _{cf}	1.0		
Neck tension	1130 N		
Neck compression	1380 N		
Chest g	55 g		
Chest displacement	34 mm		

Injury measures calculated for data collected from 0 ms to ___ ms

14. REPORTS....Continued

12-Month Old Low Risk Deployment Test
Vehicles certified to S20.4

	HIC15	N _{te}	N _{tf}	N _{ce}	N _{cf}	Neck tension	Neck compression	Chest g
Max. Allowable Injury Assessment Values	390	1.0	1.0	1.0	1.0	780 N	960 N	50 g
Child Restraint								

Injury measures calculated for data collected from 0 ms to ___ ms

[Add as many rows as necessary for the child restraints tested.]

14. REPORTS....Continued

Discussion of Test

[Discuss any unexpected events or items that may be of interest. If there were no events or items to discuss, state that there were none.]

14. REPORTS....Continued

After the "Discussion of Test" page, put in the completed applicable data sheets of Section 15 in order by data sheet number. Photographs, when taken for a specific test data sheet (e.g. suppression test or low risk deployment), shall be included directly after that data sheet. Next put in the plots of the electronic data that were collected during the test. Then put in the rest of the photographs after the data plots. Finally, put in the ambient temperature recording.

If the suppression test meets the performance requirements of FMVSS, a summary page, approved by the COTR, may be substituted in the report for the complete Data Sheet for each child restraint and dummy/human test,.

15. DATA SHEETS

1. COTR Vehicle Work Order
2. Report of Vehicle Condition
3. Certification Label and Tire Placard (FMVSS 110 label) Information
4. Rear Outboard Seating Position Seat Belts (S4.1.4.2(b) and S4.2.4)
5. Air Bag Labels (S4.5.1)
6. Readiness Indicator (S4.5.2)
7. Passenger Air Bag Manual Cut-Off Device (S4.5.4)
8. Lap Belt Lockability (S7.1.1.5)
9. Seat Belt Warning System (S7.3)
10. Belt Contact Force (S7.4.3)
11. Latchplate Access (S7.4.4)
12. Seat Belt Retraction (S7.4.5)
13. Seat Belt Guides and Hardware (S7.4.6)
14. CRS Installation Procedure for LATCH Equipped Seating Positions Using the vehicle LATCH Attachments
15. H-Point Determination for 50th Percentile Male Dummy
16. Air Bag Suppression Telltale (S19.2.2)
17. Suppression Test Using 12-Month-Old CRABI Dummy (S20)
18. Suppression Test Using Newborn Infant Dummy (S20)
19. Suppression Test Using 3-Year-Old Dummy and Booster Seats (S22) (Appendix H, Data Sheet 19H when using a Representative 3-Year Old Child)
20. Suppression Test Using 3-Year-Old Dummy and Forward Facing Convertible Child Restraints (S22) (Appendix H, Data Sheet 20H when using a Representative 3-Year Old Child)
21. Suppression Test Using an Unbelted 3-Year-Old Dummy (S22) (Appendix H, Data Sheet 21H when using a Representative 3-Year Old Child)
22. Suppression Test Using 6 Year-Old-Dummy and Booster Seats (S24.2.1) (Appendix H, Data Sheet 22H when using a Representative 6-Year Old Child)
23. Suppression Test Using an Unbelted 6- Year-Old-Dummy (S24.2.1) (Appendix H, Data Sheet 23H when using a Representative 6-Year Old Child)
24. Low Risk Deployment Test Using 12-Month-Old CRABI Dummy (S20.4)
25. Low Risk Deployment Test Using an Unbelted 3-Year-Old Dummy (S22.4) Position 1-Chest on IP
26. Low Risk Deployment Test Using an Unbelted 3-Year-Old Dummy (S22.4) Position 2-Head on IP
27. Low Risk Deployment Test Using an Unbelted 6-Year-Old Dummy (S24.4) Position 1-Chest on IP
28. Low Risk Deployment Test Using an Unbelted 6-Year-Old Dummy (S24.4) Position 2-Chest on IP
29. Low Risk Deployment Test Using an Unbelted 5th Percentile Female Dummy (S26) Position 1- Chin on module
30. Low Risk Deployment Test Using an Unbelted 5th Percentile Female Dummy (S26) Position 2- Chin on rim
31. Test of Reactivation of the Passenger Air Bag System with an Unbelted 5th Percentile Female Dummy (Appendix H, Data Sheet 25H when using a Representative 5th Percentile Female)
32. Vehicle Weight, Fuel Tank, and Attitude Data
33. Vehicle Accelerometer Locations
34. Photographic Targets
35. Camera Locations
36. Dummy Positioning (See the appendices for the data sheets)
37. Dummy measurements
38. Crash Test
39. Offset Deformable Barrier Test Using Belted 5th Percentile Female Dummy (S18)
40. Accident Investigation Measurements
41. Windshield Mounting (FMVSS 212)
42. Windshield Zone Intrusion (FMVSS 219)
43. Fuel System Integrity (FMVSS 301)

DATA SHEET 1
COTR Vehicle Work Order

Vehicle model year, make, and model _____

NHTSA no. _____ Date _____

COTR signature _____

Tests to be performed for this vehicle are checked below.

1. Rear outboard seating position seat belts (S4.1.4.2(b) & (S4.2.4))
2. Air bag labels (S4.5.1)
3. Readiness indicator (S4.5.2)
4. Passenger Air Bag Manual Cut-Off Device (S4.5.4)
5. Lap belt lockability (S7.1.1.5)
6. Seat belt warning system (S7.3)
7. Seat belt contact force (S7.4.3)
8. Seat belt latch plate access (S7.4.4)
9. Seat belt retraction (S7.4.5)
10. Seat belt guides and hardware (S7.4.6)
11. Air bag suppression telltale (S19.2.2)
12. Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R) using the following indicated child restraints (mid-height seat position):
- Section B – Rear Facing (unbelted and belted rear facing, unbelted forward facing)
- Britax Handle with Care 191 Full rearward Mid position Full forward
- Century Assura 4553 Full rearward Mid position Full forward
- Century Smart Fit 4543 Full rearward Mid position Full forward
- Cosco Arriva 02727 Full rearward Mid position Full forward
- Evenflo Discovery Adjust Right 212 Full rearward Mid position Full forward
- Evenflo First Choice 204 Full rearward Mid position Full forward
- Graco Infant 8457 Full rearward Mid position Full forward
- Section C – Convertible (unbelted and belted rear facing, unbelted and belted forward facing)
- Britax Roundabout 161 Full rearward Mid position Full forward
- Century Encore 4612 Full rearward Mid position Full forward
- Century STE 1000 4416 Full rearward Mid position Full forward
- Cosco Olympian 02803 Full rearward Mid position Full forward
- Cosco Touriva 02519 Full rearward Mid position Full forward
- Evenflo Horizon V 425 Full rearward Mid position Full forward
- Evenflo Medallion 254 Full rearward Mid position Full forward
13. Suppression tests with Newborn infant (Part 572, Subpart K) using the following indicated child restraints. (mid-height seat position)
- Section A – Car Bed (Belted)
- Cosco Dream Ride 02-719 Full rearward Mid position Full forward
14. Suppression tests with 3-year-old dummy (Part 572, Subpart P) using the following indicated child restraints where a child restraint is required (mid-height seat position):
- Section C – Convertible (Belted forward-facing)
- Britax Roundabout 161 Full rearward Mid position Full forward
- Century Encore 4612 Full rearward Mid position Full forward
- Century STE 1000 4416 Full rearward Mid position Full forward
- Cosco Olympian 02803 Full rearward Mid position Full forward
- Cosco Touriva 02519 Full rearward Mid position Full forward
- Evenflo Horizon V 425 Full rearward Mid position Full forward
- Evenflo Medallion 254 Full rearward Mid position Full forward

Section D – Toddler/Belt Positioning Booster (Belted)

- Britax Roadster 9004 Full rearward Mid position Full forward
 Century Next Step 4920 Full rearward Mid position Full forward
 Cosco High Back
 Booster 02-442 Full rearward Mid position Full forward
 Evenflo Right Fit 245 Full rearward Mid position Full forward

- __15. Suppression tests with Representative 3-year-old child using the following indicated child restraints where a child restraint is required (mid-height seat position) (Appendix H, Data Sheet 19H and 20H):

Section C - Convertible(Belted forward-facing)

- Britax Roundabout 161 Full rearward Mid position Full forward
 Century Encore 4612 Full rearward Mid position Full forward
 Century STE 1000 4416 Full rearward Mid position Full forward
 Cosco Olympian 02803 Full rearward Mid position Full forward
 Cosco Touriva 02519 Full rearward Mid position Full forward
 Evenflo Horizon V 425 Full rearward Mid position Full forward
 Evenflo Medallion 254 Full rearward Mid position Full forward

Section D – Toddler/Belt Positioning Booster (Belted)

- Britax Roadster 9004 Full rearward Mid position Full forward
 Century Next Step 4920 Full rearward Mid position Full forward
 Cosco High Back
 Booster 02-442 Full rearward Mid position Full forward
 Evenflo Right Fit 245 Full rearward Mid position Full forward

- __16. Suppression tests with 3-year-old dummy (Part 572, Subpart P) in the following positions (mid-height seat position):

- Sitting on seat with back against seat back (S22.2.2.1)
 Full rearward Mid position Full forward
 Sitting on seat with back against reclined seat back (S22.2.2.2)
 Full rearward Mid position Full forward
 Sitting on seat with back not against seat back (S22.2.2.3)
 Full rearward Mid position Full forward
 Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4)
 Full rearward Mid position Full forward
 Standing on seat, facing forward (S22.2.2.5)
 Full rearward Mid position Full forward
 Kneeling on seat facing forward (S22.2.2.6)
 Full rearward Mid position Full forward
 Kneeling on seat facing rearward (S22.2.2.7)
 Full rearward Mid position Full forward
 Lying on seat (S22.2.2.8)

- __17. Suppression tests with representative 3-year-old child in the following positions (mid-height seat position):

- Sitting on seat with back against seat back (S22.2.2.1)
 Full rearward Mid position Full forward
 Sitting on seat with back against reclined seat back (S22.2.2.2)
 Full rearward Mid position Full forward
 Sitting on seat with back not against seat back (S22.2.2.3)
 Full rearward Mid position Full forward
 Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4)
 Full rearward Mid position Full forward
 Standing on seat, facing forward (S22.2.2.5)
 Full rearward Mid position Full forward
 Kneeling on seat facing forward (S22.2.2.6)
 Full rearward Mid position Full forward
 Kneeling on seat facing rearward (S22.2.2.7)
 Full rearward Mid position Full forward
 Lying on seat (S22.2.2.8)
 Full rearward Mid position Full forward

__18. Suppression tests with 6-year-old dummy (Part 572, Subpart N) using the following indicated child restraints where a child restraint is required (mid-height seat position):

Section D

- Britax Roadster 9004 Full rearward Mid position Full forward
- Century Next Step 4920 Full rearward Mid position Full forward
- Cosco High Back
 Booster 02-442 Full rearward Mid position Full forward
- Evenflo Right Fit 245 Full rearward Mid position Full forward

__19. Suppression tests with representative 6-year-old child using the following indicated child restraints where a child restraint is required (mid-height seat position):

Section D

- Britax Roadster 9004 Full rearward Mid position Full forward
- Century Next Step 4920 Full rearward Mid position Full forward
- Cosco High Back
 Booster 02-442 Full rearward Mid position Full forward
- Evenflo Right Fit 245 Full rearward Mid position Full forward

__20. Suppression tests with 6-year-old dummy (Part 572, Subpart N) in the following positions (mid-height seat position):

- Sitting on seat with back against seat back (S22.2.2.1)
 Full rearward Mid position Full forward
- Sitting on seat with back against reclined seat back (S22.2.2.2)
 Full rearward Mid position Full forward
- Sitting on seat edge, spine vertical, hands by the dummy's side (S22.2.2.4)
 Full rearward Mid position Full forward
- Sitting back in the seat and leaning on the right front passenger door (S24.2.3)
 Full rearward Mid position Full forward

__21. Suppression tests with representative 6-year-old child in the following positions (mid-height seat position):

- Sitting on seat with back against seat back (S22.2.2.1)
 Full rearward Mid position Full forward
- Sitting on seat with back against reclined seat back (S22.2.2.2)
 Full rearward Mid position Full forward
- Sitting on seat edge, spine vertical, hands by the dummy's side (S22.2.2.4)
 Full rearward Mid position Full forward
- Sitting back in the seat and leaning on the right front passenger door (S24.2.3)
 Full rearward Mid position Full forward

__22. Test of Reactivation of the Passenger Air Bag System with an Unbelted 5th Percentile Female Dummy (S20.3, 22.3, S24.3) (mid-height seat position) Perform this test after the following suppression test(s):_____

__23. Test of Reactivation of the Passenger Air Bag System with a representative 5th Percentile Female (S20.3, 22.3, S24.3) (mid-height seat position) Perform this test after the following suppression test(s):_____

__24. Low risk deployment test with 12-month-old dummy (Part 572, Subpart R) using the following indicated child restraints (full forward, mid-height seat position)(S20.4):

Section B

- Britax Handle with Care 191
- Century Assura 4553
- Century Smart Fit 4543
- Cosco Arriva 02727
- Evenflo Discovery Adjust
 Right 212
- Evenflo First Choice 204
- Graco Infant 8457

Section C

- Britax Roundabout 161
- Century Encore 4612
- Century STE 1000 4416
- Cosco Olympian 02803
- Cosco Touriva 02519
- Evenflo Horizon V 425
- Evenflo Medallion 254
- 25. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P) in the following positions:
 - Position 1 (rear-most, lowest seat position)
 - Position 2 (mid-height seat position)
- 26. Low risk deployment test with 6-year-old dummy (Part 572, Subpart N) in the following positions:
 - Position 1 (rear-most, lowest seat position)
 - Position 2 (mid-height seat position)
- 27. Low risk deployment test with 5th female dummy (Part 572, Subpart O) in the following positions
 - Position 1 (mid-height seat position)
 - Position 2 (mid-height seat position)
- 28. Impact tests
 - Frontal Oblique Impact Angle _____ Test Speed _____
 - Belted 50th male dummy driver and passenger ((0 to 48 kmph) (S5.1.1.(a))
 - Unbelted 50th male dummy driver and passenger ((0 to 48 kmph) (S5.1.2(a)(1))
 - Unbelted 50th male dummy driver and passenger ((32 to 40 kmph) (S5.1.2(a)(2) or S5.1.2(b))
 - Frontal 0° Test Speed _____
 - Belted 50th male dummy driver ((0 to 48 kmph) (S5.1.1(b)(1) or S5.1.1(a))
 - Belted 50th male dummy passenger ((0 to 48 kmph) (S5.1.1(b)(1) or S5.1.1(a))
 - Belted 5th female dummy driver ((0 to 48 kmph) (S16.1(a)(1))
 - Belted 5th female dummy passenger ((0 to 48 kmph) (S16.1(a)(1))
 - Belted 5th female dummy driver passenger ((0 to 56 kmph) (S16.1(a)(2))
 - Belted 50th male dummy driver and passenger ((0 to 56 kmph) (S5.1.1(b)(2))
 - Unbelted 50th male dummy driver and passenger ((0 to 48 kmph) (S5.1.2(a)(1))
 - Unbelted 50th male dummy driver ((32 to 40 kmph) (S5.1.2(a)(2) or S5.1.2(b))
 - Unbelted 50th male dummy passenger (32 to 40 kmph) (S5.1.2(a)(2) or S5.1.2(b))
 - Unbelted 5th female dummy driver (32 to 40 kmph) (S16.1(b))
 - Unbelted 5th female dummy passenger (32 to 40 kmph) (S16.1(b))
 - 40% Offset 0° Belted 5th female dummy driver and passenger (0 to 40 kmph) (S18.1)
 - Test Speed _____
- 29. FMVSS 204 indicant test
- 30. FMVSS 212 test
- 31. FMVSS 219 indicant test
- 32. FMVSS 301 frontal test

DATA SHEET 2

REPORT OF VEHICLE CONDITION

CONTRACT NO. DTNH22-_____ Date:_____

FROM: _____
Lab & rep name

TO: _____ OVSC, NVS-220

COTR Name
PURPOSE: () Initial () Received () Present
Receipt via Transfer vehicle condition

MODEL YEAR/MAKE/MODEL/BODY STYLE:_____

MANUFACTURE DATE:_____ NHTSA NO.:_____ BODY COLOR:_____

VIN:_____ GVWR_____ GAWR (Fr)_____ GAWR (Rr)_____

ODOMETER READINGS: ARRIVAL _____ miles DATE _____
COMPLETION _____ miles DATE _____

PURCHASE PRICE: \$ _____ DEALER'S
NAME:_____

- A. ALL OPTIONS LISTED ON "WINDOW STICKER" ARE PRESENT ON THE TEST VEHICLE.
__Yes __No
- B. TIRES AND WHEEL RIMS ARE NEW AND THE SAME AS LISTED.
__Yes __No
- C. THERE ARE NO DENTS OR OTHER INTERIOR OR EXTERIOR FLAWS.
__Yes __No
- D. THE VEHICLE HAS BEEN PROPERLY PREPARED AND IS IN RUNNING CONDITION.
__Yes __No
- E. KEYLESS REMOTE IS AVAILABLE AND WORKING.
__Yes __No
- F. THE GLOVE BOX CONTAINS AN OWNER'S MANUAL, WARRANTY DOCUMENT,
CONSUMER INFORMATION, AND EXTRA SET OF KEYS.
__Yes __No
- G. PROPER FUEL FILLER CAP IS SUPPLIED ON THE TEST VEHICLE.
__Yes __No
- H. USING PERMANENT MARKER, IDENTIFY VEHICLE WITH NHTSA NUMBER AND FMVSS
TEST TYPE(S) ON ROOF LINE ABOVE DRIVER DOOR OR FOR SCHOOL BUSES, PLACE A
PLACARD WITH NHTSA NUMBER INSIDE THE WINDSHIELD AND TO THE EXTERIOR
FRONT AND REAR SIDE OF BUS.
__Yes __No
- I. PLACE VEHICLE IN STORAGE AREA.
__Yes __No
- J. INSPECT THE VEHICLE'S INTERIOR AND EXTERIOR, INCLUDING ALL WINDOWS, SEATS,
DOORS, ETC., TO CONFIRM THAT EACH SYSTEM IS COMPLETE AND FUNCTIONAL PER
THE MANUFACTURER'S SPECIFICATIONS. ANY DAMAGE, MISADJUSTMENT, OR OTHER
UNUSUAL CONDITION THAT COULD INFLUENCE THE TEST PROGRAM OR TEST
RESULTS SHALL BE RECORDED. REPORT ANY ABNORMAL CONDITION TO THE NHTSA
COTR BEFORE BEGINNING ANY TEST.
__Vehicle OK __Conditions reported below in comment section

Identify the letter above to which any of the following comments apply.

Comments: _____

REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

LIST OF FMVSS TESTS PERFORMED BY THIS LAB:

MODEL YEAR/MAKE/MODEL/BODY STYLE: _____

NHTSA NO. _____

REMARKS: _____

Equipment that is no longer on the test vehicle as noted on previous page: _____

Explanation for equipment removal: _____

Test Vehicle Condition: _____

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

#####

RELEASE OF TEST VEHICLE

The vehicle described above is released from _____ to be delivered to

_____ (Laboratory) (Laboratory)

Date: _____ Time: _____ Odometer: _____

Lab Representative: _____

Signature Title

Carrier/Customer Representative: _____

Signature Date

DATA SHEET 3
 Certification Label and Tire Placard Information

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

1. Certification Label (Part 567)

Manufacturer _____
 Date of Manufacture _____
 VIN _____
 Vehicle certified as: __ Passenger car __ MPV __ Truck __ Bus
 Front axle GVWR _____
 Rear axle GVWR _____
 Total GVWR _____

2. Tire Placard for Motor Vehicles with a GVWR of 10,000 lb or Less and Passenger Cars (571.110)

Vehicle Capacity Weight _____
 Designated seating capacity front _____
 Designated seating capacity rear _____
 Total Designated seating capacity _____
 Recommended cold tire inflation pressure front _____
 Recommended cold tire inflation pressure rear _____
 Recommended tire size _____
 Tire size on vehicle _____

 Signature

 Date

DATA SHEET 4
REAR SEATING POSITION SEAT BELTS

NHTSA No. _____

Test Date: _____

Laboratory: _____

Test Technician(s): _____

Do all rear seating positions have type 2 seat belts? Yes _____; No _____

If NO, describe the seat belt installed, the seat location, and any other information about the seat that would explain why a type 2 seat belt was not installed.

REMARKS:

Signature_____
Date

DATA SHEET 5**AIR BAG LABELS (S4.5.1)**

NHTSA No. _____

Test Date: _____

Laboratory: _____ Test Technician(s): _____

1. Air Bag Maintenance Label and Owner's Manual Instructions: (S4.5.1(a))
 - 1.1 Does the manufacturer recommend periodic maintenance or replacement of the air bag?
__ Yes (Go to 1.2); __ No (Go to 2)
 - 1.2 Does the vehicle have a label specifying air bag maintenance or replacement?
__ Yes-Pass; __ **No-FAIL**
 - 1.3 Does the label contain one of the following?
__ Yes-Pass; __ **No-FAIL**
Check applicable schedule
__ Schedule on label specifies month and year (Record date _____)
__ Schedule on label specifies vehicle mileage (Record mileage _____)
__ Schedule on label specifies interval measured from date on certification label
(Record interval _____)
 - 1.4 Is the label permanently affixed within the passenger compartment such that it cannot be removed without destroying or defacing the label or vehicle part? (3/19/01 legal interpretation to Todd Mitchell)
__ Yes-Pass; __ **No-FAIL**
 - 1.5 Is the label lettered in English?
__ Yes-Pass; __ **No-FAIL**
 - 1.6 Is the label in block capitals and numerals?
__ Yes-Pass; __ **No-FAIL**
 - 1.7 Are the letters and numerals at least 3/32 inches high?
____ height of letters and numerals
__ Yes-Pass; __ **No-FAIL**
 - 1.8 Does the owner's manual set forth the recommended schedule for maintenance or replacement?
__ Yes-Pass __ **No-FAIL**
2. Does the owner's manual: (S4.5.1(f))
 - 2.1 Include a description of the vehicle's air bag system in an easily understandable format?
__ Yes-Pass; __ **No-FAIL**
 - 2.2 Include a statement that the vehicle is equipped with an air bag and a lap/shoulder belt at the front outboard seating positions?
__ Yes-Pass; __ **No-FAIL**
 - 2.3 Include a statement that the air bag is a supplemental restraint at the front outboard seating positions?
__ Yes-Pass; __ **No-FAIL**
 - 2.4 Emphasize that all occupants, including the driver, should always wear their seat belts whether or not an air bag is also provided at their seating positions to minimize the risk of severe injury or death in the event of a crash?
__ Yes-Pass; __ **No-FAIL**
 - 2.5 Provide any necessary precautions regarding the proper positioning of occupants, including children, at seating positions equipped with air bags to ensure maximum safety protection for those occupants?
__ Yes-Pass; __ **No-FAIL**
 - 2.6 Explain that no objects should be placed over or near the air bag on the steering wheel or on the instrument panel, because any such objects could cause harm if the vehicle is in a crash severe enough to cause the air bag to inflate?
__ Yes-Pass; __ **No-FAIL**

- 2.7 Is the vehicle certified to meet the requirements of S14.5, S15, S17, S19, S21, S23, and S25? **(Obtain the answer to this question from the COTR.)** (S4.5.1(f)(2))
 Yes (go to 2.7.1); No (go to 3)
- 2.7.1 Explain the proper functioning of the advanced air bag system? (S4.5.1(f)(2))
 Yes-Pass; **No-FAIL**
- 2.7.2 Provide a summary of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2))
 Yes-Pass; **No-FAIL**
- 2.7.3 Present and explain the main components of the advanced passenger air bag system? (S4.5.1(f)(2)(i))
 Yes-Pass; **No-FAIL**
- 2.7.4 Explain how the components function together as part of the advanced passenger air bag system? (S4.5.1(f)(2)(ii))
 Yes-Pass; **No-FAIL**
- 2.7.5 Contain the basic requirements for proper operation, including an explanation of the actions that may affect the proper functioning of the system? (S4.5.1(f)(2)(iii))
 Yes-Pass; **No-FAIL**
- 2.7.6 Is the vehicle certified to the requirements of S19.2, S21.2 or S23.2 (automatic suppression)?
 Yes, continue with 2.7.6
 No, go to 2.7.7
- 2.7.6.1 Contain a complete description of the passenger air bag suppression system installed in the vehicle, including a discussion of any suppression zone? (S4.5.1(f)(2)(iv))
 Yes-Pass; **No-FAIL**
- 2.7.6.2 Discuss the telltale light, specifying its location in the vehicle and explaining when the light is illuminated?
 Yes-Pass; **No-FAIL**
- 2.7.7 Explain the interaction of the advanced passenger air bag system with other vehicle components, such as seat belts, seats or other components? (S4.5.1(f)(2)(v))
 Yes-Pass; **No-FAIL**
- 2.7.8 Summarize the expected outcomes when child restraint systems, children and small teenagers or adults are both properly and improperly positioned in the passenger seat, including cautionary advice against improper placement of child restraint systems? (S4.5.1(f)(2)(vi))
 Yes-Pass; **No-FAIL**
- 2.7.9 Provide information on how to contact the vehicle manufacturer concerning modifications for persons with disabilities that may affect the advanced air bag system? (S4.5.1(f)(2)(vii))
 Yes-Pass; **No-FAIL**
3. Sun Visor Air Bag Warning Label (S4.5.1 (b)): Vehicles certified to meet the requirements of S19, S21, and S23. (S4.5.1(b)(3))
- 3.1 Is the label permanently affixed (including permanent marking on the visor material or molding into the visor material) to either side of the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1 (b)(3)) (3/19/01 legal interpretation to Todd Mitchell)
 Driver side Yes-Pass **No-FAIL**
 Passenger side Yes-Pass **No-FAIL**
- 3.2 Does the label conform in content to the label shown in Figure 11 at each front outboard seating position? (S4.5.1(b)(2)) **(Vehicles without back seats may omit the statement: back seats or the back seat is too small to accommodate a rear-facing child restraint may omit the statement “Never put a rear-facing child seat in the front.” (S4.5.1(b)(3)(v))**
 Driver side Yes-Pass **No-FAIL**
 Passenger side Yes-Pass **No-FAIL**

- 3.3 Is the label heading area yellow with the word "WARNING" and the alert symbol in black? (S4.5.1 (b)(3)(i))
 Driver side Yes-Pass **No-FAIL**
 Passenger side Yes-Pass **No-FAIL**
- 3.4 Is the message area white with black text? (S4.5.1(b)(3)(ii))
 Driver side Yes-Pass **No-FAIL**
 Passenger side Yes-Pass **No-FAIL**
- 3.5 Is the message area at least 30 cm²? (S4.5.1(b)(3)(ii))
The message area consists of the total label area minus the yellow heading area and the pictogram. The pictogram is enclosed on the left side and bottom by the edge of the label. The top edge of the pictogram area is defined by a horizontal line midway between the uppermost edge of the pictogram and the lowermost edge of the text. The right side of the pictogram is defined by a vertical line midway between the rightmost edge of the pictogram and the left most edge of the text, including any bullets. (See 5/6/03 interpretation to Gerald Plante on behalf of Subaru)
 Driver side: Length _____, Width _____
 Passenger side: Length _____, Width _____
 Driver actual message area _____ cm²
 Passenger actual message area _____ cm²
 Driver side Yes-Pass **No-FAIL**
 Passenger side Yes-Pass **No-FAIL**
- 3.6 Is the pictogram black on a white background? (S4.5.1(b)(3)(iii))
 Driver side Yes-Pass **No-FAIL**
 Passenger side Yes-Pass **No-FAIL**
- 3.7 Is the pictogram at least 30 mm in length? (S4.5.1(b)(3)(iii))
 Driver side: Length _____
 Passenger side: Length _____
 Driver side Yes-Pass **No-FAIL**
 Passenger side Yes-Pass **No-FAIL**
- 3.8 Is the same side of the sun visor that contains the air bag warning label free of other information with the exception of the air bag maintenance label and/or the rollover-warning label? (S4.5.1 (b)(5)(i))
 Driver side Yes-Pass **No-FAIL**
 Passenger side Yes-Pass **No-FAIL**
- 3.9 Is the sun visor free of other information about air bags or the need to wear seat belts with the exception of the air bag alert label and/or the rollover-warning label? (S4.5.1(b)(5)(ii))
 Driver side Yes-Pass **No-FAIL**
 Passenger side Yes-Pass **No-FAIL**
- 3.10 Does the driver side visor contain a rollover-warning label on the same side of the visor as the air bag warning label?
 Yes (go to 3.10.1); No (go to 4., skipping 3.10.1 through 3.10.3)
- 3.10.1 Are both the rollover-warning label and the air bag warning label surrounded by a continuous solid-lined border?
 Yes (go to 3.10.2 and skip 3.10.3); No (go to 3.10.3 and skip 3.10.2.)
- 3.10.2 Is the shortest distance from the border of the rollover label to the border of the air bag warning label at least 1 cm? (575.105 (d)(1)(iv)(B))
 _____ actual distance
 Yes-Pass **No-FAIL**
- 3.10.3 Is the shortest distance from any of the lettering or graphics on the rollover-warning label to any of the lettering or graphics of the air bag warning label at least 3 cm? (575.105(d)(1)(iv)(A))
 _____ actual distance
 Yes-Pass **No-FAIL**

4. Air Bag Alert Label (S4.5.1(c)) (A "Rollover Warning Label" or "Rollover Alert Label" may be on the same side of the driver's sun visor as the "Air Bag Alert Label." 575.105(d))
- 4.1 Is the Sun Visor Warning Label visible when the sun visor is in the stowed position?
Driver side Yes No
Passenger side Yes No
If yes, for driver and passenger go to 5.
- 4.2 Is the air bag alert label permanently affixed (including permanent marking on the visor material or molding into the visor material) to the sun visor at each front outboard seating position such that it cannot be removed without destroying or defacing the label or the sun visor? (S4.5.1(c)) (3/19/01 legal interpretation to Todd Mitchell)
Driver side Yes-Pass **No-FAIL**
Passenger side Yes-Pass **No-FAIL**
- 4.3 Is the air bag alert label visible when the visor is in the stowed position? (S4.5.1(c))
Driver side Yes-Pass **No-FAIL**
Passenger side Yes-Pass **No-FAIL**
- 4.4 Does the label conform in content to the label shown in Figure 6c? (S4.5.1(c))
Driver side Yes-Pass **No-FAIL**
Passenger side Yes-Pass **No-FAIL**
- 4.5 Is the message area black with yellow text? (S4.5.1(c)(1))
Driver side Yes-Pass **No-FAIL**
Passenger side Yes-Pass **No-FAIL**
- Is the message area at least 20 cm²? (S4.5.1(c)(1))
The message area consists of the black part of the label.
Driver side: Length _____, Width _____
Passenger side: Length _____, Width _____
Actual message area _____ cm²
Driver side Yes-Pass **No-FAIL**
Passenger side Yes-Pass **No-FAIL**
- 4.7 Is the pictogram black with a red circle and slash on a white background? (S4.5.1(c)(2))
Driver side Yes-Pass **No-FAIL**
Passenger side Yes-Pass **No-FAIL**
- 4.8 Is the pictogram at least 20 mm in diameter? (S4.5.1(c)(2))
Driver side: diameter _____
Passenger side: diameter _____
Driver side Yes-Pass **No-FAIL**
Passenger side Yes-Pass **No-FAIL**
5. Label On the Dashboard: Vehicles certified to meet the requirements of S19, S21, and S23?
- 5.1 Does the vehicle have a label on the dash or steering wheel hub? (S4.5.1(e)(3))
 Yes-Pass **No-FAIL**
- 5.2 Is the label clearly visible from all front seating positions? (S4.5.1(e)(3))
 Yes-Pass **No-FAIL**
- 5.3 Does the label conform in content to the label shown in Figure 12? (S4.5.1(e)(3))
Vehicles without back seats may omit the statement: "The back seat is the safest place for children." Vehicles without back seats or too small to accommodate a rear-facing child restraint consistent with S4.5.4.1 as determined in DATA SHEET 7 may omit the statement "Never put a rear-facing child seat in the front." (S4.5.1(e)(3)(iii))
 Yes-Pass; **No-Fail**
- 5.4 Is the heading area yellow with black text? (S4.5.1(e)(3)(i))
 Yes-Pass; **No-FAIL**

- 5.5 Is the message white with black text? (S4.5.1(e)(3)(ii))
__ Yes-Pass; __ **No-FAIL**
- 5.6 Is the message area at least 30 cm²? (S4.5.1(e)(3)(ii))
The message area consists of the total label area minus the yellow heading area.
(See 5/6/03 interpretation to Gerald Plante on behalf of Subaru)
Length _____, Width _____
Actual message area _____ cm²
__ Yes-Pass; __ **No-FAIL**

I certify that I have read and performed each instruction.

Date

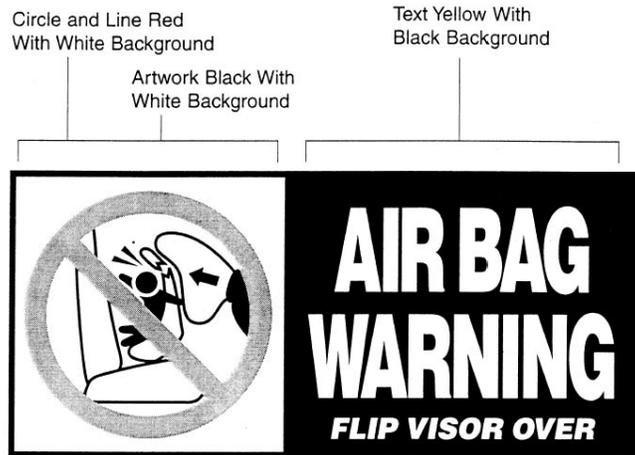


Figure 6c. Sun Visor Label Visible When Visor is in Up Position.



Figure 11. Sun Visor Label Visible when Visor is in Down Position.

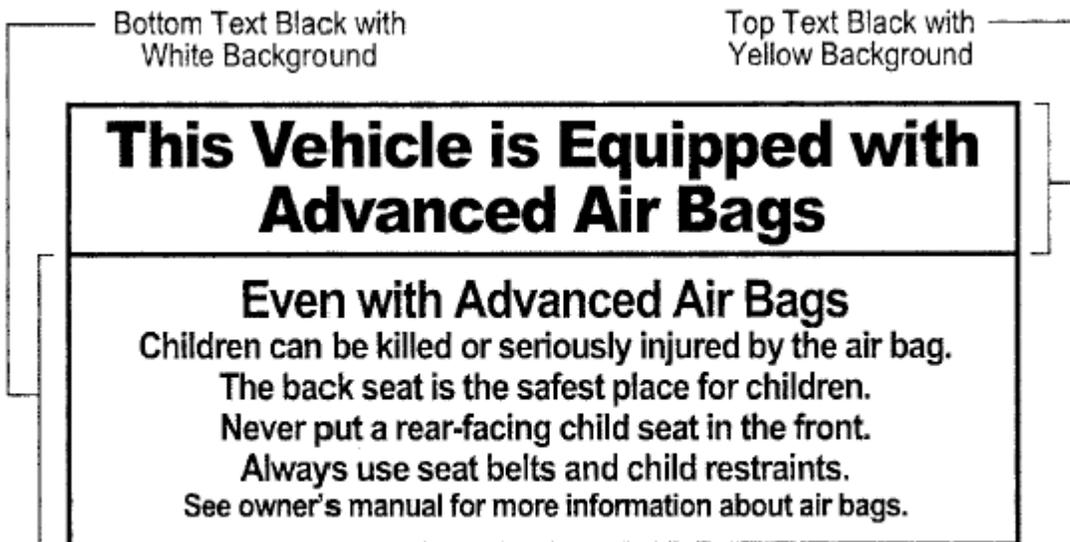


Figure 12. Removable Label on Dash.

DATA SHEET 6

FMVSS 208 READINESS INDICATOR (S4.5.2)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

An occupant restraint system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. A totally mechanical system is exempt from this requirement. (11/8/94 legal interpretation to Lawrence F. Henneberger on behalf of Breed)

- __1. Is the system totally mechanical? Yes ___; No___
(If YES this Data Sheet is complete.)
- __2. Describe the location of the readiness indicator: _____

- __3. Is the readiness indicator clearly visible to the driver?
 ___Yes-Pass; ___**No-FAIL**
- __4. Is a list of the elements in the occupant restraint system, being monitored by the readiness indicator, provided on a label or in the owner's manual?
 ___Yes-Pass; ___**No-FAIL**
- __5. Does the vehicle have an on-off switch for the passenger air bag?
 ___Yes (go to 6) ___No (this form is complete)
- __6. Is the air bag readiness indicator off when the passenger air bag switch is in the off position?
 ___Yes-Pass; ___**No-FAIL**

REMARKS:

I certify that I have read and performed each instruction.

Date

DATA SHEET 7

Passenger Air Bag Manual Cut-Off Device (S4.5.4)

NHTSA No. _____

Test Date: _____

Laboratory: _____

Test Technician(s): _____

- __1. Is the vehicle equipped with an on-off switch that deactivates the air bag installed at the right front outboard seating position?
 __Yes, go to 2
 __No, this sheet is complete
- __2. Does the vehicle have any forward-facing rear designated seating positions? (S4.5.4.1(a))
 __Yes, go to 3
 __No, go to 4
- __3. Verification there is room for a child restraint in the rear seat behind the driver's seat. (S4.5.4.1(b))
- __3.1. Using all the controls that affect the fore-aft movement of the seat, move the seat to the rearmost position. Mark this position.
 __ N/A - the seat does not have fore-aft adjustment
- __3.2. Using all the controls that affect the fore-aft movement of the seat, move the seat to the foremost position. Mark this position.
 __ N/A - the seat does not have fore-aft adjustment
- __3.3. Move the seat to the middle of the foremost and rearmost positions. (S8.1.2)
 __ N/A - the seat does not have a fore-aft adjustment
- __3.4. If the driver's seat height is adjustable, use all the controls that affect height to put it in the lowest position while maintaining the middle fore-aft position. (S8.1.2)
 __N/A – No seat height adjustment
- __3.5. Position the driver's seat adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
 __ N/A – No lumbar adjustment
- __3.6. The driver's seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1(b) and S8.1.3)
 __ N/A – No seat back angle adjustment
 Manufacturer's design driver's seat back angle _____
 Tested driver's seat back angle _____
- __3.7. Is the driver seat a bucket seat?
 __ Yes, go to 3.7.1 and skip 3.7.2.
 __ No, go to 3.7.2 and skip 3.7.1.
- __3.7.1 Bucket seats:
- __3.7.1.1 Locate and mark a vertical Plane B through the longitudinal centerline of the driver's seat cushion. The longitudinal centerline of a bucket seat cushion is determined at SgRP. (S16.3.1.10) (S4.5.4.1(b)(1))
- __3.7.1.2 Locate the longitudinal horizontal line in plane B that is tangent to the highest point of the rear seat cushion behind the driver's seat. Measure along this line from the front of the seat back of the rear seat to the rear of the seat back of the driver's seat.
 _____ mm distance
 __ less than 720 mm – Pass
 __ more than 720 mm – **FAIL**
 Go to 4

- ___3.7.2 Bench seats (including split bench seats):
- ___3.7.2.1 Locate and mark a vertical Plane B through the center of the steering wheel parallel to the vehicle longitudinal centerline. (S4.5.4.1(b)(2))
- ___3.7.2.2 Locate the longitudinal horizontal line in plane B that is tangent to the highest point of the rear seat cushion. Measure along this line from the front of the seat back of the rear seat to the rear of the seat back of the front seat.
- ___ mm distance
- ___less than 720 mm – Pass
- ___more than 720 mm - **FAIL**
- Go to 4
- ___4. Does the device turn the air bag on and off using the vehicle's ignition key? (S4.5.4.2)
- ___Yes – Pass
- ___No – **FAIL**
- ___5. Is the on-off device separate from the ignition switch? (S4.5.4.2)
- ___Yes – Pass
- ___No – **FAIL**
- ___6. Is there a telltale light that comes on when the passenger air bag is turned off? (S4.5.4.2)
- ___Yes – Pass
- ___No – **FAIL**
- ___7. Telltale light (S4.5.4.3)
- ___7.1 Is the light yellow? S4.5.4.3(a)
- ___Yes – Pass
- ___No – **FAIL**
- ___7.2 Are the words "PASSENGER AIR BAG OFF" or "PASS AIR BAG OFF" (S4.5.4.3(b))
- ___7.2.1 on the telltale?
- ___Yes – Pass, go to 7.3
- ___No – go to 7.2.2
- ___7.2.2 within 25 mm of the telltale? _____mm from the edge of the telltale light
- ___Yes – Pass
- ___No – **FAIL**
- ___7.3 Does the telltale remain illuminated while the air bag is turned off? (S4.5.4.3c) (Leave the air bag off for 5 minutes.)
- ___Yes – Pass
- ___No – **FAIL**
- ___7.4 Is the telltale illuminated while the air bag is turned on? (S4.5.4.3(d))
- ___Yes – **FAIL**
- ___No – Pass
- ___7.5 Is the telltale combined with the air bag readiness indicator? (S4.5.3(e))
- ___Yes – **FAIL**
- ___No – Pass
- ___8. Owner's manual
- ___8.1 Does the owner's manual contain complete instructions on the operation of the on-off switch? (S4.5.4.4(a))
- ___Yes – Pass
- ___No – **FAIL**

8.2 Does the owner's manual contain a statement that the on-off switch should only be used when a member of one of the following risk groups is occupying the right front passenger seating position? (S4.5.4.4(b))

Infants: there is no back seat
 the rear seat is too small to accommodate a child restraint
 there is a medical condition that must be monitored constantly

Children aged 1 to 12: there is no back seat
 space is not always available in the rear seat
 there is a medical condition that must be monitored constantly

Medical condition: medical risk causes special risk for passenger
 greater risk for harm than with the air bag on

Yes – Pass

No – **FAIL**

8.3 Does the owner's manual contain a warning about the safety consequences of using the on-off switch at other times?

Yes – Pass

No – **FAIL**

I certify that I have read and performed each instruction.

Date

DATA SHEET 8

LAP BELT LOCKABILITY

Passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. (S7.1.1.5)

Complete one of these forms for **each** designated seating position that can be adjusted to forward-facing or that is a forward-facing seat, other than the driver's seat (S7.1.1.5(a), **and** that has seat belt retractors that are not solely automatic locking retractors. (S7.1.1.5(c))

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

DESIGNATED SEATING POSITION: _____

- N/A – No retractor is at this position
- N/A – The retractor is an automatic locking retractor ONLY

- 1. Record test fore-aft seat position. _____
(S7.1.1.5 (c)(1))
(Any position is acceptable.)
- 2. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does **NOT** have to be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle? (S7.1.1.5 (a))
 Yes-Pass; **No-FAIL**
- 3. Does the lap belt portion of the seat belt in the forward-facing seat or seat that can be adjusted to forward-facing consist of a locking device that does **NOT** require inverting, twisting or deforming of the belt webbing? (S7.1.1.5 (a))
 Yes-Pass; **No-FAIL**
- 4. Place any adjustable seat belt anchorage in the lowest adjustment position.
 N/A The anchorage is not adjustable.
- 5. Buckle the seat belt. (S7.1.1.5(c)(1))
- 6. Locate a reference point A on the seat belt buckle. (S7.1.1.5(c)(2))
- 7. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
- 8. Does the vehicle user need to take some action to activate the locking feature on the lap belt portion of the seat belt in any forward-facing seat or seat that can be adjusted to forward-facing?
 Yes; No (If yes, go to 8.1. If no, go to 9.)
- 8.1 Does the vehicle owner's manual include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system? (S7.1.1.5(b))
 Yes-Pass; **No-FAIL**
- 9. Adjust the lap belt or lap belt portion of the seat belt assembly according to any procedures recommended in the vehicle owner's manual to activate any locking feature so that the webbing between points A and B is at the maximum length allowed by the belt system. (S7.1.1.5(c)(2) & S7.1.1.5(c)(1))
- 10. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly. (S7.1.1.5(c)(2))
Measured distance between A and B _____ inches
- 11. Readjust the belt system so that the webbing between points A and B is at ½ the maximum length of the webbing. (S7.1.1.5(c)(3))

- ___12. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
 Measured force application angle _____(spec. 5 - 15 degrees)
- ___13. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
 Measured distance between A and B _____ inches
- ___14. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
 Record onset rate _____lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
 Measured distance between A and B _____ inches (S7.1.1.5(c)(6))
- ___15. Let the seat belt webbing retract to its minimum length with the seat belt still buckled.
- ___16. To the lap belt or lap belt portion of the seat belt assembly, apply a preload of 10 pounds using the webbing tension pull device in Figure 5. Apply the load in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position. Apply the preload in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. (S7.1.1.5(c)(4))
 Measured force application angle _____(spec. 5 - 15 degrees)
- ___17. Measure the length between points A and B along the longitudinal centerline of the webbing while the preload is being applied. (S7.1.1.5(c)(4))
 Measured distance between A and B _____ inches
- ___18. Increase the load to 50 pounds at a rate of no more than 50 pounds per second. Attain the load in not more than 5 seconds. (If webbing sensitive emergency locking retractors are installed as part of the lap belt or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer.) Maintain the load for at least 5 seconds. Measure and record the distance between points A and B along the longitudinal centerline of the webbing. (S7.1.1.5(c)(5))
 Record onset rate _____lb/sec (spec. 10 to 50 lb/sec) (S7.1.1.5(c)(5))
 Measured distance between A and B _____ inches (S7.1.1.5(c)(6))
- ___19. Subtract the measurement in 13 from the measurement in 14 and the measurement in 17 from the measurement in 18. Is the difference 2 inches or less for both? (S7.1.1.5(c)(7))
 14-13 = _____inches;
 18-17 = _____inches
 ___Yes-Pass; ___**No-FAIL**
- ___20. Subtract the measurement in 14 from the measurement in 10 and the measurement in 14 from the measurement in 18. Is the difference 3 inches or more for both? (S7.1.1.5(c)(8))
 10-14 = _____inches;
 10-18 = _____inches
 ___Yes-Pass; ___**No-FAIL**

REMARKS:

 I certify that I have read and performed each instruction.

 Date

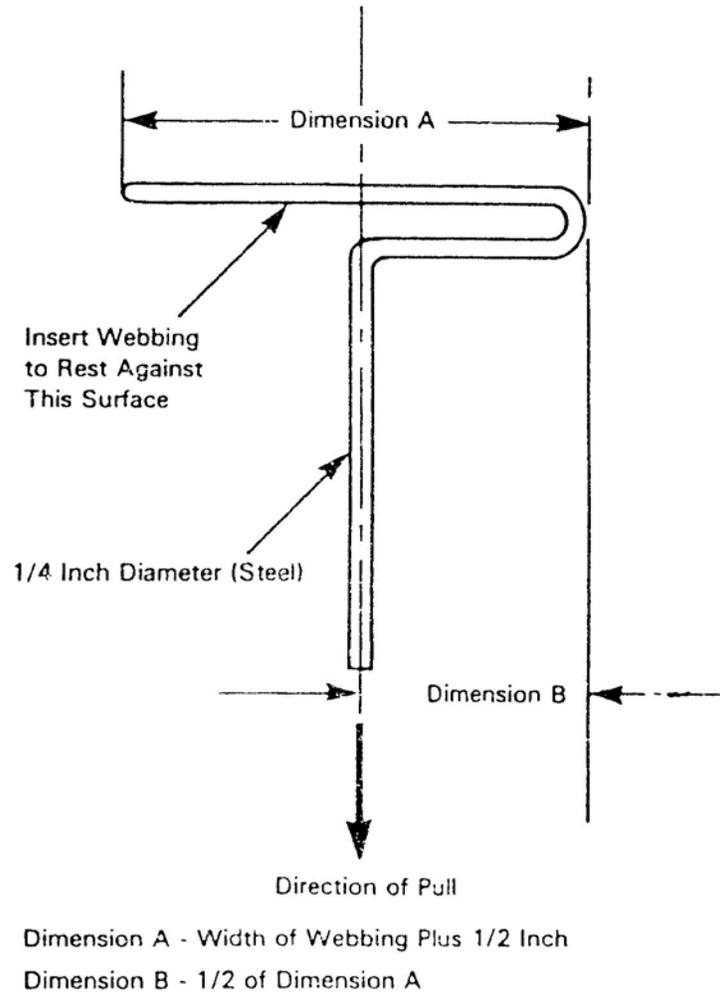


Figure 5. - Webbing Tension Pull Device

DATA SHEET 9

FMVSS 208 SEAT BELT WARNING SYSTEM CHECK (S7.3)

NHTSA No. _____

Test Date: _____

Laboratory: _____

Test Technician(s): _____

- 1. The occupant is in the driver's seat.
- 2. The seat belt is in the stowed position.
- 3. The key is in the "on" or "start" position.
- 4. The time duration of the audible signal beginning with key "on" or "start" is _____ seconds.
- 5. The occupant is in the driver's seat.
- 6. The seat belt is in the stowed position.
- 7. The key is in the "on" or "start" position.
- 8. The time duration of the warning light beginning with key "on" or "start" is _____ seconds.
- 9. The occupant is in the driver's seat.
- 10. The seat belt is in the latched position and with at least 4 inches of belt webbing extended.
- 11. The key is in the "on" or "start" position.
- 12. The time duration of the warning light beginning with key "on" or "start" is _____ seconds.
- 13. Complete the following table with the data from 4, 8, and 12 to determine which option is used.

		Warning light	Warning light specification	Audible signal	Audible signal specification*
S7.3 (a)(1)	Belt stowed & Key on or start	Item 8 _____	60 seconds minimum	Item 4 _____	4 to 8 seconds
S7.3 (a)(2)	Belt latched & Key on or start	Item 12 _____	4 to 8 seconds		
	Belt stowed & Key on or start	Item 8 _____	4 to 8 seconds	Item 4 _____	4 to 8 seconds

* 49 USCS @ 30124 does NOT allow an audible signal to operate for more than 8 seconds. A voluntary audible signal after the 4 to 8 second required signal may be provided. It must be differentiated from the required signal (5/25/2001 legal interpretation to Longacre and Associates).

- 14. The seat belt warning system meets the requirements of (manufacturers may comply with either section)
 - S7.3 (a)(1)
 - S7.3 (a)(2)
 - FAIL** - Does NOT meet the requirements of either option
- 15. Note wording of visual warning: (S7.3(a)(1) and S7.3(a)(2))
 - Fasten Seat Belts
 - Fasten Belts
 - Symbol 101 -  or 
 - FAIL** - Does not use any of the above wording or symbol

I certify that I have read and performed each instruction.

Date

DATA SHEET 10**BELT CONTACT FORCE (S7.4.3)**

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

DESIGNATED SEATING POSITION: _____

Test all Type 2 seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- __1. Does the vehicle incorporate a webbing tension-relieving device?
 ___Yes (this form is complete)
 ___No (continue with this check sheet)
- __2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
 ___ N/A – No lumbar adjustment
- __3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
 ___ N/A – No additional support adjustment
- __4. Is the fore-aft position of the seat adjustable?
 ___No- go to 5
 ___Yes – Go to 4.1
- __4.1. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson)
- __4.2. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the foremost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson)
- __4.3 **Mark** each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, **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. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 4.1 and 4.2. (8/31/95 legal interp to Hogan and Hartson)
- __4.4 Move the seat to the mid position.
- __4.5 While maintaining the mid position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.
- __5. Is the seat back angle adjustable?
 ___No- go to 6
 ___Yes- go to 5.1
- __5.1 Set and mark seat back angle, if adjustable, at the manufacturer's nominal design riding position for a **50th percentile adult male** in the manner specified by the manufacturer.
 ___ N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- __6. Is the seat a bucket seat?
 ___Yes, go to 6.1 and skip 6.2
 ___No, go to 6.2 and skip 6.1
- __6.1 Bucket seats:

- Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)
- ___6.2. Bench seats (complete ONLY the one that is applicable to the seat being tested):
- 6.2.1 Driver Seat
Locate and **mark** the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)
- 6.2.2 Front Outboard Passenger Seat
Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)
Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. _____
- 6.2.3 Rear designated seating positions
Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline.
- ___7. Position the test dummies according to dummy position placement instructions in Appendix F. **Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.**
- ___8. Fasten the seat belt latch.
- ___9. Pull either 12 inches of belt webbing or the maximum available amount of belt webbing, whichever is less, from the retractor and then release it, allowing the belt webbing to return to the dummy's chest.
- ___10. Locate the point where the centerline of the upper torso belt webbing crosses the midsagittal line on the dummy's chest. At that point pull the belt webbing out 3 inches from the dummy's chest and release until it is within one inch from the dummy's chest. (S10.8) Using a force measuring gage with a full scale range of no more than 1.5 pounds, measure the contact force perpendicular to the dummy's chest exerted by the belt webbing.
Contact force _____ lb.
___0.0 to 0.7 pounds - Pass
___**greater than 0.7 pounds - FAIL**

I certify that I have read and performed each instruction.

Date

DATA SHEET 11

LATCHPLATE ACCESS (S7.4.4)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

DESIGNATED SEATING POSITION: _____

Test all front outboard seat belts other than those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- ___1. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
 ___ N/A – No lumbar adjustment
- ___2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
 ___ N/A – No additional support adjustment
- ___3. Is the fore-aft position of the seat adjustable?
 ___No- go to 4
 ___Yes – Go to 3.1
- ___3.1. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the foremost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson) (S10.7)
- ___3.2 While maintaining the forward most position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.
- ___4. Is the seat back angle adjustable?
 ___No- go to 5
 ___Yes- go to 4.1
- ___4.1 Set and mark seat back angle, if adjustable, at the manufacturer's nominal design riding position for a **50th percentile adult male** in the manner specified by the manufacturer.
 ___ N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
 Tested seat back angle _____
- ___5. Is the seat a bucket seat?
 ___Yes, go to 5.1 and skip 5.2
 ___No, go to 5.2 and skip 5.1
- ___5.1 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)
- ___5.2. Bench seats (complete ONLY the one that is applicable to the seat being tested):
- 5.2.1 Driver Seat
 Locate and **mark** the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)
- 5.2.2 Front Outboard Passenger Seat
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)

Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____

Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. _____

- ___6. Position the test dummy using the procedures in Appendix F. (Some modifications to the positioning procedure may need to be made because the seat is in its forward most position. Note on the Appendix F positioning check sheet any deviations necessary to position the Part 572, Subpart E dummy.) **Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.**
- ___7. Position the adjustable seat belt anchorage in the manufacturer's nominal design position for a 50th percentile adult male occupant.
- ___8. Attach the inboard reach string to the base of the head following the instructions on Figure 3.
- ___9. Attach the outboard reach string to the torso sheath following the instructions on Figure 3.
- ___10. Place the latch plate in the stowed position.
- ___11. Extend the inboard reach string in front of the dummy and then backward and outboard to the latch plate to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?
___Yes - Pass ___NO
- ___12. Extend the outboard reach string in front of the dummy and then backward and outboard to the latch plate to generate arcs of the reach envelope of the test dummy's arms. Is the latch plate within the reach envelope?
___Yes - Pass ___NO
- ___13. Is the latch plate within the inboard (item 11) or outboard (item 12) reach envelope?
___Yes - Pass ___**NO - FAIL**
- ___14. Using the clearance test block, specified in Figure 4, is there sufficient clearance between the vehicle seat and the side of vehicle interior to allow the test block to move unhindered to the latch plate or buckle?
___Yes - Pass ___**NO - FAIL**

I certify that I have read and performed each instruction.

Date

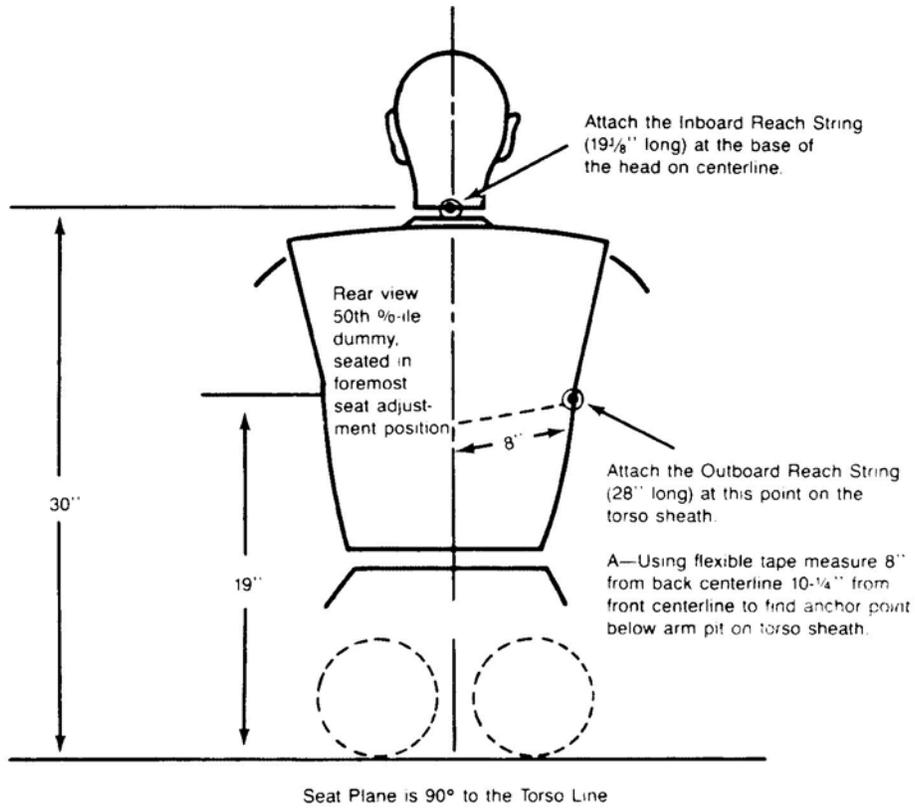


Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibility Using Subpart E Test Device

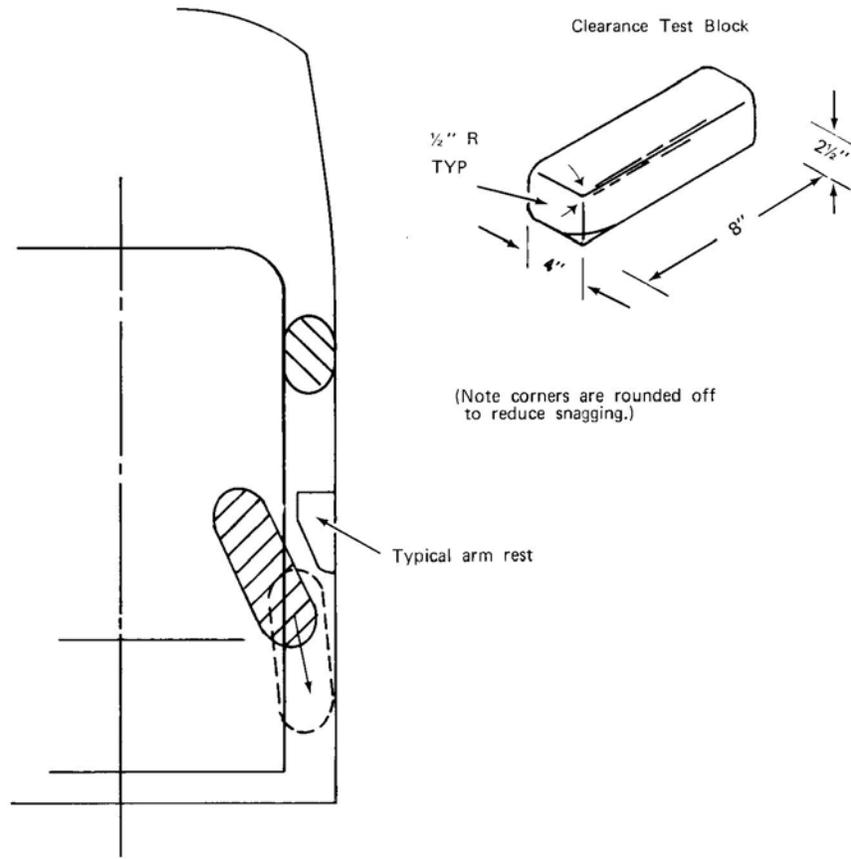


Figure 4—USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS

DATA SHEET 12
SEAT BELT RETRACTION (S7.4.5)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

DESIGNATED SEATING POSITION: _____

Test all front outboard seat belts, except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- ___ 1. Is the vehicle a passenger car or walk-in van-type vehicle?
 ___ Yes, this form is complete
 ___ No
- ___ 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
 ___ N/A – No lumbar adjustment
- ___ 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
 ___ N/A – No additional support adjustment
- ___ 4. Is the fore-aft position of the seat adjustable?
 ___ No- go to 5
 ___ Yes – Go to 4.1
- ___ 4.1. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson)
- ___ 4.2. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the foremost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson)
- ___ 4.3 **Mark** each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, **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. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 4.1 and 4.2. (8/31/95 legal interp to Hogan and Hartson)
- ___ 4.4 Move the seat to the mid position.
- ___ 4.5 While maintaining the mid position, move the seat to its lowest position. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.
- ___ 5. Is the seat back angle adjustable?
 ___ No- go to 6
 ___ Yes- go to 5.1
- ___ 5.1 Set and mark seat back angle, if adjustable, at the manufacturer's nominal design riding position for a **50th percentile adult male** in the manner specified by the manufacturer.
 ___ N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
 Tested seat back angle _____
- ___ 6. Is the seat a bucket seat?
 ___ Yes, go to 6.1 and skip 6.2
 ___ No, go to 6.2 and skip 6.1
- ___ 6.1 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper

- surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)
- 6.2. Bench seats (complete ONLY the one that is applicable to the seat being marked):
- 6.2.1 Driver Seat
Locate and **mark** the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)
- 6.2.2 Front Outboard Passenger Seat
Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)
Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. _____
7. Position the Part 572 Subpart E test dummy according to dummy position placement instructions in Appendix F. **Complete the Appendix F check sheets, but include them in the test report ONLY if there is a test failure.**
8. Fasten the seat belt around the dummy.
9. Remove all slack from the lap belt portion. (S10.9)
10. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)
11. Apply a 2 to 4 pound tension load to the lap belt. (S10.9)
_____pound load applied
12. Is the belt system equipped with a tension-relieving device?
 Yes, continue
 No, go to 14
13. Introduce the maximum amount of slack into the upper torso belt that is recommended by the vehicle manufacturer in the vehicle owner's manual. (S10.9).
14. Check the statement that applies to this test vehicle:
- 14.1 The torso and lap belt webbing of the seat belt system automatically retracts to a stowed position when the adjacent vehicle door is in an open position and the seat belt latch plate is released. Yes – Pass go to 15 No – go to 14.2
- 14.2 The torso and lap belt webbing of the seat belt system automatically retracts when the seat belt latch plate is released. Yes – Pass go to 15 No – go to 14.3
- 14.3 Neither 14.1 nor 14.2 apply. **FAIL**
15. With the webbing and hardware in the stowed position are the webbing and hardware prevented from being pinched when the door is closed?
 Yes - Pass **NO - FAIL**
16. If this test vehicle has an open body (without doors) and has a belt system with a tension-relieving device, does the belt system fully retract when the tension-relieving device is deactivated?
 N/A – Not an open body vehicle
 Yes – Pass **NO – FAIL**

I certify that I have read and performed each instruction.

Date

DATA SHEET 13
SEAT BELT GUIDES AND HARDWARE (S7.4.6)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

DESIGNATED SEATING POSITION: _____

Test seat belts except those in walk-in van-type vehicles and those at front outboard designated seating positions in passenger cars. Complete a form for each applicable seat belt.

- ___1. Is the seat cushion movable so that the seat back serves a function other than seating? (S7.4.6.1 (b))
 ___Yes; this form is complete
 ___No; got to 2
- ___2. Is the seat removable? (S7.4.6.1(b))
 ___Yes; this form is complete
 ___No; got to 3
- ___3. Is the seat movable so that the space formerly occupied by the seat can be used for a secondary function? (S7.4.6.1(b))
 ___Yes; this form is complete
 ___No; got to 4
- ___4. Is the webbing designed to pass through the seat cushion or between the seat cushion and seat back? (S7.4.6.1(a))
 ___Yes: go to 5.
 ___No: this form is complete.
- ___5. Does one of the following three parts, the seat belt latch plate, the buckle, or the seat belt webbing, stay on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant)? (S7.4.6.1(a))
 ___Yes – Pass ___**NO – FAIL**
 Identify the part(s) on top or above the seat.
 ___seat belt latch plate; ___buckle; ___seat belt webbing
- ___6. Are the remaining two seat belt parts accessible under normal conditions?
 ___Yes – Pass ___**NO - FAIL**
- ___7. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the belt is completely retracted or, if the belt is nonretractable, the belt is unlatched. (S7.4.6.2)
 ___Yes – Pass ___**NO - FAIL**
- ___8. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat is moved to any position to which it is designed to be adjusted. (S7.4.6.2)
 ___Yes – Pass ___**NO - FAIL**
- ___9. The buckle and latch plate do not pass through the guides or conduits provided and fall behind the seat when the seat back, if foldable, is folded forward as far as possible and then moved backward into position. (S7.4.6.2)
 ___Yes – Pass ___**NO - FAIL**
- ___10. Is the inboard receptacle end of the seat belt assembly, installed in the front outboard designated seating position, accessible with the center armrest in any position to which it can be adjusted (without moving the armrest)? (S7.4.6.2)
 ___Yes – Pass ___**NO – FAIL**

I certify that I have read and performed each instruction.

Date

DATA SHEET 14

CRS Installation Procedure for LATCH Equipped Seating Positions Using the vehicle LATCH Attachments

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Child Restraint Name, Model, and Manufacture Date: _____

Seat Position: Rearmost, mid-height Mid-position, mid-height Foremost, mid-height
(Use a separate sheet for each of the three fore-aft positions.)

Test Mode: Forward Facing Rear Facing

The child restraint seat has NO visible damage. (S22.1.1)

Is the passenger air bag suppression telltale light off when the passenger seat is empty?

Yes – Note the instances when a mechanism rather than the telltale is needed to determine the air bag is suppressed. The 3/8/04 interpretation to DaimlerChrysler limits the use of the mechanism to the car bed and the 3-year-old on the edge of the seat.

No

1. Tests using FMVSS 225 Anchorages with child restraint seats. (Child restraint seats listed in Appendix A, sections B, C, or D) – Do NOT attach seat belts. (S20.2.1.2(b), S22.2.1.4(b), S24.2(b)) Do NOT attach any tethers. (S20.1.8, S22.2.1.6.1(e))

Determine the attachment method used to attach the child restraint to the lower anchors.

- If the attachment mechanism provided by the manufacturer incorporates a strap(s), go to step 2 and skip steps 3 and 4, (S22.2.1.6.1)
- If the child restraint uses a linear sliding or ratcheting mechanism that requires the application of force to securely install the child restraint skip steps 2 and 4 and go to step 3. (S22.2.1.6.2(h))
- If the child restraint attaches using a method other than straps or a linear sliding or ratcheting mechanism, skip steps 2 and 3 and go to step 4. (S22.2.1.6.2(g))

2. Seats with straps

- 2.1 Place the child restraint on the vehicle seat facing rearward or forward, depending on the orientation being tested, with Plane A of the child restraint aligned within +/-10 mm with a longitudinal vertical plane passing through a point midway between the centers of the two lower anchor bars. (S20.2.1.6.1(a), S22.2.1.6.1(a))
- 2.2 Position any adjustments on the child restraint, to the extent possible according to the child restraint manufacturer's instructions. (S20.2.1.6.1(b), S22.2.1.6.1(b))
- 2.3 Connect the lower anchor straps of the restraint to the lower anchor bars of the seat and remove the slack, but do not apply any load using these straps. (S20.2.1.6.1(c), S22.2.1.6.1(c))
- 2.4 Move the child restraint rearward until it contacts the seat back. (S20.2.1.6.1(d), S22.2.1.6.1(d))
- 2.5 Use the loading device equipped with the loading foot shown in Figure 14-1 and position it as shown in Figure 14-2 of this data sheet. (The 15 +/- 3 degree angle of the loading device illustrated in Figure 14-2 is determined with an initial preload of 75 +/- 25N.) (S20.2.1.6.1(e), S22.2.1.6.1(f))
- 2.6 Over a period of 90 +/- 30 seconds, increase the load to 875N +/- 25 N. (S20.2.1.6.1(f), S22.2.1.6.1(g))
- 2.7 After achieving the 875 N load in step 2.6, hold the loading bar length at present position and allow the load to settle for 60 seconds. (S20.2.1.6.1(g), S22.2.1.6.1(h))

- ___ 2.8 Following the 60second settling period specified in step 2.7, increase the load to 875 +/- 25 N such that the 875+/- 25 N load is achieved within 10 seconds of the end of the settling period. (S20.2.1.6.1(h), S22.2.1.6.1(i))
- ___ 2.9 Hold the bar length at present position and allow the load to settle until 120 seconds after achieving the load in step 2.7. (S20.2.1.6.1(i), S22.2.1.6.1(j))
- ___ 2.10 Following the settling period specified in step 2.9, increase the load to 875 +/- 25 N such that the 875+/- 25 N load is achieved within 10 seconds of the end of the settling period. (S20.2.1.6.1(j), S22.2.1.6.1(k))
- ___ 2.11 Observe the settling of the load and tighten the lower anchor straps when the load is 850 +/- 5N or 180 seconds has elapsed since achieving the 875 +/- 25 N load in 2.7, whichever comes first. Tighten the lower anchor strap(s) at the same time such that the load is reduced 15 +/- 10 N and the change occurs within 2 seconds. (S20.2.1.6.1(k), S22.2.1.6.1(l))
- ___ The load was reduced after reaching 850 +/- 5 N
- ___ The load was reduced after the 180 second elapsed time since step 2.7
- ___ The change in load was _____ N and occurred in less than 2 seconds.
- ___ 2.12 Remove the loading device. (S20.2.1.6.1(l), S22.2.1.6.1(m))
3. Seats with linear sliding or ratcheting mechanisms.
- ___ 3.1 Place the vehicle seat in the rearmost and mid-height position. (S20.2.1.6.2(a), S22.2.1.6.2(a))
- ___ 3.2 Place the child restraint on the vehicle seat facing rearward or forward, depending on the orientation being tested, with Plane A of the child restraint aligned within +/- 10 mm with a longitudinal vertical plane passing through a point midway between the centers of the two lower anchor bars. (S20.2.1.6.2(b), S22.2.1.6.2(b))
- ___ 3.3 Position any adjustments on the child restraint, to the extent possible, according to the child restraint manufacturer's instructions. (S20.2.1.6.2(c), S22.2.1.6.2(c))
- ___ 3.4 Connect the lower anchor attachments to the lower anchor bars following, to the extent possible, the child restraint manufacturer's instructions. (S20.2.1.6.2(d), S22.2.1.6.2(d))
- ___ 3.5 Move the child restraint rearward until it contacts the seat back. (S20.2.1.6.2(e), S22.2.1.6.2(e))
- ___ 3.6 If the child restraint uses a linear sliding or ratcheting mechanism that requires the application of force to securely install the child restraint, within 25 +/- 5 seconds, apply a 475 N force, that has no lateral component, aligned angularly +/- 10 degrees with a parallel plane located within +/- 100 mm of the plane formed by the linear mechanism. Release the force. (S20.2.1.6.2(h), S22.2.1.6.2(h))
- ___ 3.7 Move the vehicle seat to the seat position being tested (full rear, mid, full forward). (S20.2.1.6.2(i), S22.2.1.6.2(i))
4. Seats without strap(s) or linear sliding or ratcheting mechanisms.
- ___ 4.1 Place the child restraint on the vehicle seat facing forward with Plane A of the child restraint aligned within +/- 10 mm with a longitudinal vertical plane passing through a point midway between the centers of the two lower anchor bars. (S20.2.1.6.2(b), S22.2.1.6.2(b))
- ___ 4.2 Position any adjustments on the child restraint, to the extent possible, according to the child restraint manufacturer's instructions. (S20.2.1.6.2(c), S22.2.1.6.2(c))
- ___ 4.3 Follow, to the extent possible, the CRS manufacturer's instructions for installing the child restraint onto the seat. (S20.2.1.6.2(g), S22.2.1.6.2(g))

I certify that I have read and performed each instruction.

Date

Figure 14-1 Loading Bar Foot Detail

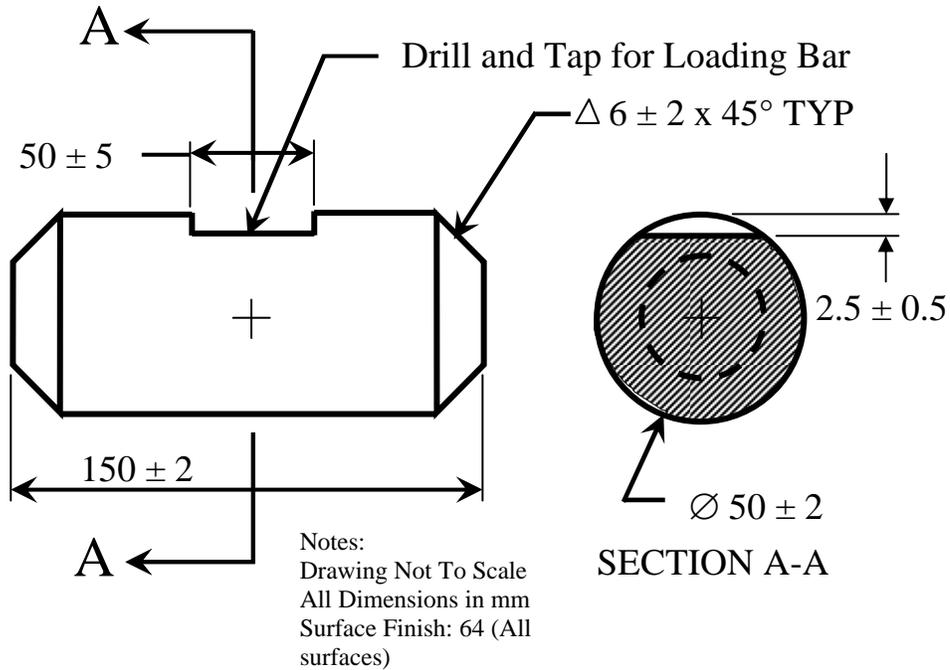
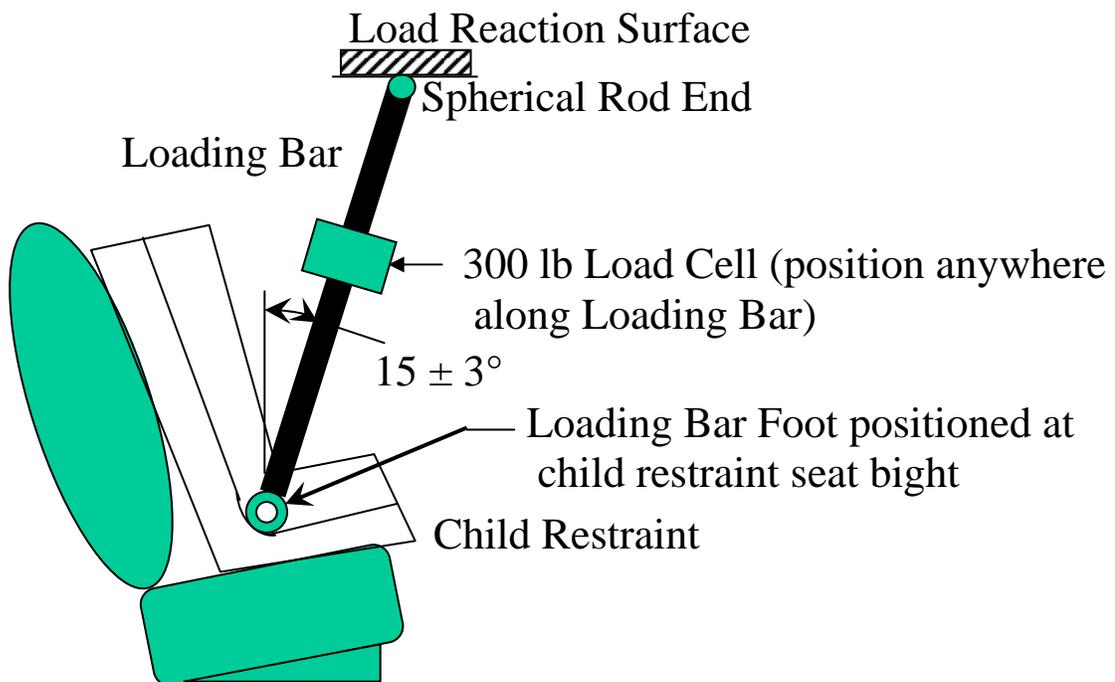


Figure 14-2 Loading Bar Installation



DATA SHEET 15H-Point Determination for 50th Percentile Male Dummy

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

 Driver Designated Seating Position Passenger Designated Seating Position

1. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
 N/A – No lumbar adjustment
2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
 N/A – No additional support adjustment
3. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson)
4. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the foremost position. **Mark** this position. (8/31/95 legal interp to Hogan and Hartson)
5. **Mark** each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, **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. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 3 and 4. (8/31/95 legal interp to Hogan and Hartson)
6. Move the seat to the mid position.
7. While maintaining the mid position, move the seat to its lowest position. **Mark** the height position. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.
8. Visually **mark** the seat back angle, if adjustable, at the manufacturer's nominal design riding position for a **50th percentile adult male** in the manner specified by the manufacturer.
 N/A – No seat back angle adjustment
 Previously marked during Data Sheet 14.1 go to 9
 Manufacturer's design seat back angle _____
9. Is the seat a bucket seat?
 Previously marked during data sheet 14.1. This form is complete.
 Yes, go to 10 and skip 11
 No, go to 11 and skip 10
10. Bucket seats:
 Locate and **mark** for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)
11. Bench seats (complete ONLY the one that is applicable to the seat being marked):
 11.1 Driver Seat
 Locate and **mark** for future reference the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)

11.2 Passenger Seat

Locate and **mark** for future reference the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel.

(S10.4.1.1)

Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____

Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. _____

- ___ 12. Place a 910 mm² piece of muslin cotton cloth over the seat area. (The muslin cloth shall be comparable to 48 threads/in² and density of 2.85 lb/yd.) Tuck the muslin cloth in a sufficient amount to prevent hammocking of the material.
- ___ 13. Place the seat and back assembly of the H-Point machine at the centerline of the seat as determined in item 10 or 11.
- ___ 14. Install the lower leg, and foot segments.
- ___ 15. Set the length of the lower leg segment at 16.3 inches and the length of the thigh bar at 15.8 inches.
- ___ 16. Leg and foot placement
 - ___ 16.1 Driver Designated Seating Position
 - ___ 16.1.1 Insert the pin so that the foot angle is never less than 87 degrees.
 - ___ 16.1.2 Place the right foot on the undepressed 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.
 - ___ 16.1.3 Adjust the left leg to be the same distance from H-point machine centerline as the right leg.
 - ___ 16.1.4 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
 - ___ 16.2 Passenger Designated Seating Position
 - ___ 16.1.1 Insert the pin so that the foot angle is never less than 87 degrees.
 - ___ 16.1.2 Space the lower legs 10.6 inches apart, equally spaced about the centerline of the H-point machine.
 - ___ 16.1.3 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.
 - ___ 16.1.4 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
- ___ 17. Apply the lower leg weights.
- ___ 18. Apply the thigh weights.
- ___ 19. Tilt the back pan forward against the forward stop and draw the H-point machine away from the seatback using the T-bar.

- ___ 20. Repositioning the back pan
 - ___ 20.1 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 20.2
 - ___ 20.2 Slide the H-point machine rearward by a horizontal rearward load applied at the T-bar until the seat pan contacts the seat back.
- ___ 21. 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.
- ___ 22. 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.
- ___ 23. Carefully return the back pan to the seat back.
- ___ 24. Install the right and left buttock weights.
- ___ 25. Install the eight torso weights alternately the installation between right and left.
- ___ 26. Tilt the back pan forward until the stop is contacted.
- ___ 27. Rock the H-point from side to side over a 10degree arc (5 degrees 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.
- ___ 28. 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.
- ___ 29. 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.
- ___ 30. 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.
- ___ 31. 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.
- ___ 32. Is the seat pan level?
 - ___ Yes. Go to 34
 - ___ No. Go to 33
- ___ 33. Apply a sufficient lateral load to the top of the seatback pan to level the H-point machine seat pan on the seat.
- ___ 34. Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, return the seatback pan to the seatback.
- ___ 35. 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 degrees. 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 Application	Hip Angle
1	
2	
3	
4	
5	

- ___ 36. Is the H-point machine level?
 - ___ Yes, go to 37.
 - ___ No, relevel. Go back to item 26 and repeat using a new data sheet.

___37. Record the H-point location.
Describe and mark the measuring reference point. _____

x direction measurement _____

z direction measurement _____

I certify that I have read and performed each instruction.

Date

DATA SHEET 16
AIR BAG SUPPRESSION TELLTALE (S19.2.2)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

- __1. Is the vehicle certified to any suppression performance standards of FMVSS 208?
 __Yes – go to 2
 __No – this form is complete
- __2. Does telltale emit yellow light when the air bag is suppressed? (S19.2.2(a))
 __Yes - Pass **NO – FAIL**
- __3. Are the words “PASSENGER AIR BAG OFF” or “PASS AIR BAG OFF” (S19.2.2(b))
 __3.1 on the telltale? (S19.2.2(b))
 __Yes – Pass, go to 4
 __No – go to 3.2
- __3.2 within 25 mm of the telltale? (S19.2.2(b)) _____ mm from the edge of the telltale light
 __Yes - Pass **NO – FAIL**
- __4. Is the telltale separate from the air bag readiness indicator? (S19.2.2(c))
 __Yes - Pass **NO – FAIL**
- __5. Is the telltale within the interior of the vehicle? (S19.2.2(d))
 __Yes - Pass **NO – FAIL**
- __6. Is the telltale forward of and above the design H-point of both the driver’s and the front outboard passenger’s seat when the seats are in their forwardmost seating positions? (S19.2.2(d))
 __Yes - Pass **NO – FAIL**
- __7. Is the telltale away from surfaces that can be used for temporary or permanent storage of objects that could obscure the telltale from either the driver’s or front outboard passenger’s view? (S19.2.2(d))
 __Yes - Pass **NO – FAIL**
- __8. Is the telltale located so that it is not obscured from the driver by a rear-facing child restraint in Appendix A installed in the front outboard passenger seat? (S19.2.2(d))
 __Yes - Pass **NO – FAIL**
- __9. Is the telltale visible or recognizable during the night? (S19.2.2(e))
 __Yes - Pass **NO – FAIL**
- __10. Is the telltale visible or recognizable during the day? (S19.2.2(e))
 __Yes - Pass **NO – FAIL**
- __11. If there is a visibility adjustment, do all the adjustment levels make the telltale visible and recognizable? (S19.2.2(g))
 __N/A-No visibility adjustment
 __Yes - Pass **NO – FAIL**
- __12. Does the telltale remain illuminated while the air bag is suppressed? (S19.2.2(h)) (Leave the air bag suppressed for 5 minutes.)
 __Yes - Pass **NO – FAIL**
- __13. Is the telltale off while the air bag is activated? (S19.2.2(h)) (Leave the air bag activated for 5 minutes.)
 __Yes - Pass **NO – FAIL**

I certify that I have read and performed each instruction.

Date

DATA SHEET 17

Suppression Test Using 12-month-old CRABI Dummy (Part 572, Subpart N)(S20)
 NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Child Restraint Name, Model, Date of Manufacture: _____

Base: On Off N/A-Restraint does not have a removable base
 (A child restraint with a removable base shall be treated as two separate models, i.e. this form and test procedure will be completed with the base on and then repeated with the base off. (S20.1.7))

Seat Position: Rearmost, mid-height Mid-position, mid-height Foremost, mid-height
 (Use a separate sheet for each of the three fore-aft positions.)

The child restraint has NO visible damage (S20.1.1)

Is the passenger air bag suppression telltale light off when the passenger seat is empty?
 Yes – Note on the result table the instances when a mechanism rather than the telltale is needed to determine the air bag is suppressed. The 3/8/04 interpretation to DaimlerChrysler limits the use of the mechanism to the car bed and the 3-year-old on the edge of the seat.
 No

1. Seat Marking

- 1.1 Position the seat’s adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 N/A – No lumbar adjustment
- 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 N/A – No additional support adjustment
- 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 N/A – No adjustable leg support system
- 1.4 **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. (S16.3.1.12)
- 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 N/A – No independent fore-aft seat cushion adjustment
- 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
 Maximum angle _____
 Minimum angle _____
 Mid-angle _____
- 1.9 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 seat cushion

- reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
- N/A – No seat height adjustment
- 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- 1.11 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.
- 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- N/A – No seat height adjustment. Go to 1.18
- 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
- N/A – No seat back angle adjustment
Manufacturer's design seat back angle _____
- 1.19. Is the seat a bucket seat?
- Yes, go to 1.20 and skip 1.21
- No, go to 1.21 and skip 1.20
- 1.20 Bucket seats:
Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP (Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- 1.21 Bench seats:
Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
- Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____

Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____

- 1.22 Head Restraint Position
 ___ N/A Vehicle contains automatic head restraints.
 ___ N/A, there is no head restraint adjustment
- ___ 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- ___ 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- ___ 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
 Vertical height of head restraint _____ mm
 Mid-point height _____ mm
2. Belted tests with rearward facing child restraints and convertible restraints in the rearward-facing mode. (Child restraints listed in Appendix A, sections B and C) (S20.2.1.1, S20.2.1.2)
- ___ 2.1 Place the SCRIP in the position specified in the header information. Use the seat markings to set the fore-aft position, mid-height position, the seat cushion angle, the seat back angle and to set the head restraint at the lowest most forward position. (S20.1.9.4 and S20.1.9.5)
 ___ N/A – No seat back angle adjustment
 Tested seat back angle _____
 Seat cushion angle _____
 ___ N/A – No head restraint adjustment
- ___ 2.2 Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant (S20.2.1.5(a))
 ___ N/A – No adjustable upper seat belt anchorage
 Manufacturer's specified anchorage position. _____
 Tested anchorage position _____
- ___ 2.3 Locate and mark a vertical Plane A through the longitudinal centerline of the child restraint. (S20.2.1.3)
- ___ 2.4 Read the child restraint owner's manual for installation instructions.
- ___ 2.5 Place the child restraint facing rearward in the seat such that Plane A (item 2.3) is aligned with Plane B (item 1.20 or 1.21) (S20.2.1.5(b))
- ___ 2.6 While maintaining the child restraint Plane A aligned with Plane B, secure the child restraint by following, to the extent possible, the child restraint manufacturer's directions regarding proper installation of the restraint in the rear facing mode. (S20.2.1.5(c)) Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000) If the vehicle has FMVSS 225 anchorages, do not attach (S20.1.6) the child restraint to these anchorages. (S20.2.1.5(b)) Do NOT attach any tethers. (S20.1.8)
- ___ 2.7 Place a load cell with a maximum full-scale reading of 225 N (50.6 lb) on a flat, straight section of the lap belt between the child restraint belt path and the contact point with the belt anchor or vehicle seat, on the side away from the buckle (to avoid interference from the shoulder portion of the belt). (S20.2.1.5(c))
 Is there a sheath around the seat belt that interferes with the load cell? ___ Yes ___ No
 If yes, cut off all or part of the sheath. ___ All ___ Part
- ___ 2.8 Cinch the seat belt to a tension load of 130 N \pm 3N (29.2 lb \pm 0.7 lb) (S20.2.1.5(c))
 Record seat belt tension _____
- ___ 2.9 Position the 49 CFR Part 572 Subpart R 12-month-old CRABI dummy in the child restraint by following, to the extent possible, the manufacturer's instructions provided with the child restraint. (S20.2.1.5(d)) (The tension in the seat belt may change from item 2.8.

Do NOT readjust the tension unless the fore-aft position of the seat changes because of dummy contact.)

If the seat must be moved rearward because of child restraint or dummy contact with the instrument panel, describe the final location of the seat (S20.1.2):

___ N/A – No dummy contact with the instrument panel.

Manual seat adjuster: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)

Power seat adjuster: Using only the control that primarily moves the seat fore and aft move the seat rearward until there is a maximum of 5mm clearance between the dummy or child restraint and the vehicle interior.

___ mm between instrument panel and child restraint (max. allowed is 5 mm.)

Recinch the seat belt to a tension load of 130 N \pm 3N (29.2 lb \pm 0.7 lb) (S20.2.1.5(c))

Record seat belt tension _____

- ___2.10 Complete rows 1 through 12 in Table 1 without changing the position of the child restraint or dummy. If the seat belt is not integrated into the seat, the seat belt tension will have to be adjusted and recorded for each child seat belted position. For each variation of blanket, handle and sunshield position, start the vehicle engine or place the ignition in the “on” position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed. (S20.2.1.5(e))
3. Unbelted tests with rear-facing child restraints and convertible child restraints in the rear-facing mode (S20.2.2.4). (Child restraints listed in Appendix A, sections B and C) (S20.2.2.1) – If the vehicle has FMVSS 225 anchorages, do NOT attach (S20.1.6) the child restraint to these anchorages. (S20.2..2) Do NOT attach any tethers. (S20.1.8)
Without changing the position of the child restraint or dummy, disconnect the seat belt and return it to its stowed position.
Complete rows 13 through 24 in Table 1 without changing the position of the child restraint or dummy. For each variation of blanket, handle and sunshield position, start the vehicle engine or place the ignition in the “on” position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed. (S20.2.2.4(c))
4. Unbelted tests using FMVSS 225 Anchorages with rear-facing child restraints and convertible child restraints in the rear-facing mode. (Child restraints listed in Appendix A, sections B and C) (S20.2.1.2(b)) – Do NOT attach seat belts. (S20.1.6) Do NOT attach any tethers. (S20.1.8)
___N/A - Vehicle does not have FMVSS 225 anchorages or child restraint does not have FMVSS 213 S5.9 devices to mate to the FMVSS 225 anchorages.
- ___4.1. Keep the same seat position as in 2.1 above.
- ___4.2. Read the child restraint owner’s manual for installation instructions.
- ___4.3 Attach the child restraint, facing rearward, to the FMVSS 225 anchorages by completing Data Sheet 14. Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000) Do NOT attach any tethers. (S20.1.8) (S20.2.1.6)
- ___4.4 Position the 49 CFR Part 572 Subpart R 12-month-old CRABI dummy in the child restraint by following, to the extent possible, the manufacturer’s instructions provided with the child restraint. (S20.2.1.6.1 (I))
If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
___ N/A – No dummy contact with the instrument panel.
Manual seat adjuster: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
Power seat adjuster: ___ mm between instrument panel and child restraint (max. allowed is 5 mm.)
- ___4.5 Complete rows 25 through 36 in Table 1 without changing the position of the child restraint or dummy. For each position, start the vehicle engine or place the ignition in the

- “on” position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed. (S20.2.1.6.1(m))
5. Belted tests with convertible child restraints in the forward-facing mode. (Child restraints listed in Appendix A, section C) (S20.2.1.1(b)) – If the vehicle has FMVSS 225 anchorages, do not attach the child restraint to these anchorages. (S20.2.1.2 (a)) Do NOT attach any tethers. (S20.1.8)
- N/A – Not a convertible restraint
- 5.1 Keep the same seat position as in 2.1 through 2.2 above.
- 5.2 Read the child restraint owner’s manual for installation instructions.
- 5.3 Place the child restraint facing forward in the seat such that Plane A (item 2.3 above) is aligned with Plane B (item 1.20 or 1.21). (S20.2.1.5(b))
- 5.4 While maintaining the child restraint position with Plane A aligned with Plane B, secure the child restraint by following, to the extent possible, the child restraint manufacturer’s directions regarding proper installation of the restraint in the forward facing mode. (S20.2.1.5(b)) Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000) If the vehicle has FMVSS 225 anchorages, do not attach the child restraint to these anchorages. (S20.2.1.5) Do NOT attach any tethers. (S20.1.8)
- 5.5 Place a load cell with a maximum full-scale reading of 225 N (50.6 lb) on a flat, straight section of the lap belt between the child restraint belt path and the contact point with the belt anchor or vehicle seat, on the side away from the buckle (to avoid interference from the shoulder portion of the belt). (S20.2.1.5(c))
- Is there a sheath around the seat belt that interferes with the load cell? Yes No
If yes, cut off all or part of the sheath. All Part
- 5.6 Cinch the seat belt to a tension load of 130 N \pm 3N (29.2 lb \pm 0.7 lb) (S20.2.1.5(c))
Record seat belt tension _____
- 5.7 Position the 49 CFR Part 572 Subpart R 12-month-old CRABI dummy in the child restraint by following, to the extent possible, the manufacturer’s instructions provided with the child restraint. (S20.2.1.5(d)) (The tension in the seat belt may change from item 4.6. Do NOT readjust the tension unless the fore-aft position of the seat changes because of dummy contact.)
If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
 N/A – No dummy contact with the instrument panel.
Manual seat adjuster: detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
Power seat adjuster: mm between instrument panel and child restraint (max. allowed is 5 mm.)
Recinch the seat belt to a tension load of 130 N \pm 3N (29.2 lb \pm 0.7 lb) (S20.2.1.5(c))
Record seat belt tension _____
- 5.8 Complete rows 37 through 48 in Table 1 below without changing the position of the child restraint or dummy. If the seat belt is not integrated into the seat, the seat belt tension will have to be adjusted and recorded for each child seat belted position. For each variation of blanket, handle and sunshield position, start the vehicle engine or place the ignition in the “on” position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed. (S20.2.1.5(e))
6. Unbelted tests with rear-facing and convertible child restraints in the forward-facing mode. (Appendix A, sections Band C) (S20.2.2.5) – If the vehicle has FMVSS 225 anchorages, do not attach (S20.1.6) the child restraint to these anchorages. Do NOT attach any tethers. (S20.1.8)
Without changing the position of the child restraint or dummy, disconnect the seat belt and return it to its stowed position.
Complete rows 49 through 60 in Table 1 without changing the position of the child restraint or dummy. For each variation of blanket, handle and sunshield position, start the vehicle engine

- or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed. (S20.2.2.5(c))
7. Unbelted tests using FMVSS 225 Anchorages with convertible child restraints in the forward facing mode (S20.2.1.1(b), S20.2.1.2(b)). (Child restraints listed in Appendix A, section C) – Do NOT attach seat belts. (S20.1.6, S20.2.2) Do NOT attach any tethers. (S20.1.8)
- ___ N/A - Vehicle does not have FMVSS 225 anchorages or child restraint does not have FMVSS 213 S5.9 devices to mate to the FMVSS 225 anchorages.
- ___ N/A – Not a convertible restraint
- ___7.1 Keep the same seat position as in item 2.
- ___7.2 Read the child restraint owner's manual for installation instructions.
- ___7.3 Attach the child restraint, facing forward, to the FMVSS 225 anchorages by completing Data Sheet 14. Do NOT attach any tethers. (S20.1.8) Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000)
- ___7.4 Position the 49 CFR Part 572 Subpart R 12-month-old CRABI dummy in the child restraint by following, to the extent possible, the manufacturer's instructions provided with the child restraint. (S20.2.2.5(b))
- If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
- ___ N/A – No dummy contact with the instrument panel.
- Manual seat adjuster: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
- Power seat adjuster: ___ mm between instrument panel and child restraint (max. allowed is 5 mm.)
- ___7.5 Complete rows 61 through 72 in Table 1 without changing the position of the child restraint or dummy. For each variation of blanket, handle and sunshield position, start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed. (S20.2.2.5(c))

I certify that I have read and performed each instruction.

Date

Table 1

NHTSA No. _____

Test Date: _____

Child Restraint Name, Model, Date of Manufacture: _____

Base: On Off N/A-Restraint does not have a removable base

Seat Position: Rearmost, mid-height Mid-position, mid-height Foremost, mid-height

	Belted, Unbelted, FMVSS 225	Rear facing, Forward facing	Seat Belt Tension (N)	Handle ¹ (S20.1.3)	Sunshield ² (S20.1.4)	Blanket ³ Position 1 (S20.1.5(a))	Blanket ⁴ Position 2 (S20.1.5(b))	Suppressed, FAIL, Or N/A
1	Belted	Rear		Down	In-use	None	N/A	
2	Belted	Rear		Down	Stowed	None	N/A	
3	Belted	Rear		Upright	In-use	None	N/A	
4	Belted	Rear		Upright	Stowed	None	N/A	
5	Belted	Rear		Down	In-use	On	N/A	
6	Belted	Rear		Down	Stowed	On	N/A	
7	Belted	Rear		Upright	In-use	On	N/A	
8	Belted	Rear		Upright	Stowed	On	N/A	
9	Belted	Rear		Down	In-use	N/A	On	
10	Belted	Rear		Down	Stowed	N/A	On	
11	Belted	Rear		Upright	In-use	N/A	On	
12	Belted	Rear		Upright	Stowed	N/A	On	
13	Unbelted	Rear	N/A	Down	In-use	None	N/A	
14	Unbelted	Rear	N/A	Down	Stowed	None	N/A	
15	Unbelted	Rear	N/A	Upright	In-use	None	N/A	
16	Unbelted	Rear	N/A	Upright	Stowed	None	N/A	
17	Unbelted	Rear	N/A	Down	In-use	On	N/A	
18	Unbelted	Rear	N/A	Down	Stowed	On	N/A	
19	Unbelted	Rear	N/A	Upright	In-use	On	N/A	
20	Unbelted	Rear	N/A	Upright	Stowed	On	N/A	
21	Unbelted	Rear	N/A	Down	In-use	N/A	On	
22	Unbelted	Rear	N/A	Down	Stowed	N/A	On	
23	Unbelted	Rear	N/A	Upright	In-use	N/A	On	
24	Unbelted	Rear	N/A	Upright	Stowed	N/A	On	
25	225	Rear	N/A	Down	In-use	None	N/A	
26	225	Rear	N/A	Down	Stowed	None	N/A	
27	225	Rear	N/A	Upright	In-use	None	N/A	
28	225	Rear	N/A	Upright	Stowed	None	N/A	
29	225	Rear	N/A	Down	In-use	On	N/A	
30	225	Rear	N/A	Down	Stowed	On	N/A	
31	225	Rear	N/A	Upright	In-use	On	N/A	
32	225	Rear	N/A	Upright	Stowed	On	N/A	
33	225	Rear	N/A	Down	In-use	N/A	On	
34	225	Rear	N/A	Down	Stowed	N/A	On	
35	225	Rear	N/A	Upright	In-use	N/A	On	
36	225	Rear	N/A	Upright	Stowed	N/A	On	

	Belted, Unbelted, FMVSS 225	Rear facing, Forward facing	Seat Belt Tension (N)	Handle ¹ (S20.1.3)	Sunshield ² (S20.1.4)	Blanket ³ Position 1 (S20.1.5(a))	Blanket ⁴ Position 2 (S20.1.5(b))	Suppressed, FAIL, Or N/A
37	Belted	Forward ⁵		Down	In-use	None	N/A	
38	Belted	Forward ⁵		Down	Stowed	None	N/A	
39	Belted	Forward ⁵		Upright	In-use	None	N/A	
40	Belted	Forward ⁵		Upright	Stowed	None	N/A	
41	Belted	Forward ⁵		Down	In-use	On	N/A	
42	Belted	Forward ⁵		Down	Stowed	On	N/A	
43	Belted	Forward ⁵		Upright	In-use	On	N/A	
44	Belted	Forward ⁵		Upright	Stowed	On	N/A	
45	Belted	Forward ⁵		Down	In-use	N/A	On	
46	Belted	Forward ⁵		Down	Stowed	N/A	On	
47	Belted	Forward ⁵		Upright	In-use	N/A	On	
48	Belted	Forward ⁵		Upright	Stowed	N/A	On	
49	Unbelted	Forward	N/A	Down	In-use	None	N/A	
50	Unbelted	Forward	N/A	Down	Stowed	None	N/A	
51	Unbelted	Forward	N/A	Upright	In-use	None	N/A	
52	Unbelted	Forward	N/A	Upright	Stowed	None	N/A	
53	Unbelted	Forward	N/A	Down	In-use	On	N/A	
54	Unbelted	Forward	N/A	Down	Stowed	On	N/A	
55	Unbelted	Forward	N/A	Upright	In-use	On	N/A	
56	Unbelted	Forward	N/A	Upright	Stowed	On	N/A	
57	Unbelted	Forward	N/A	Down	In-use	N/A	On	
58	Unbelted	Forward	N/A	Down	Stowed	N/A	On	
59	Unbelted	Forward	N/A	Upright	In-use	N/A	On	
60	Unbelted	Forward	N/A	Upright	Stowed	N/A	On	
61	225	Forward ⁵	N/A	Down	In-use	None	N/A	
62	225	Forward ⁵	N/A	Down	Stowed	None	N/A	
63	225	Forward ⁵	N/A	Upright	In-use	None	N/A	
64	225	Forward ⁵	N/A	Upright	Stowed	None	N/A	
65	225	Forward ⁵	N/A	Down	In-use	On	N/A	
66	225	Forward ⁵	N/A	Down	Stowed	On	N/A	
67	225	Forward ⁵	N/A	Upright	In-use	On	N/A	
68	225	Forward ⁵	N/A	Upright	Stowed	On	N/A	
69	225	Forward ⁵	N/A	Down	In-use	N/A	On	
70	225	Forward ⁵	N/A	Down	Stowed	N/A	On	
71	225	Forward ⁵	N/A	Upright	In-use	N/A	On	
72	225	Forward ⁵	N/A	Upright	Stowed	N/A	On	

- 1 If there is no handle, place N/A in the Suppressed/FAIL column in the rows marked "Upright." "Down" means the child restraint manufacturer's recommended position or there is no handle. (S20.1.3)
- 2 If there is no sunshield, place N/A in the Suppressed/FAIL column in the rows marked "In-use." (S20.1.4)
- 3 Blanket position 1 (S20.1.5(a)): Place a blanket on the child restraint so that the top and side edges of the restraint are covered. The vehicle seat shall not support the blanket.

- 4 Blanket position 2 (S20.1.5(b)): Place a blanket on the child restraint so that it rests on the top of the vehicle's seat back and the forward most (towards the instrument panel) edge of the child restraint.
- 5 Convertible restraints ONLY (S20.2.1.1(b)) (Appendix A, section C)

Record the weight of the blanket. (Cannot be more than 1 kg (2.2 lb.) _____
(S20.1.5)

Comments (Record any position readjustments or problems by first stating the row number to which the comment applies.): _____

DATA SHEET 18

Suppression Test Using Newborn Infant Dummy (Part 572, Subpart K)(S20.2.3)
(Car beds listed in Appendix A, section A)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Car Bed Name, Model, and Manufacture Date: _____

Base: On Off N/A-Constraint does not have a removable base
(A car bed with a removable base shall be treated as two separate models, i.e. this form and test procedure will be completed with the base on and then repeated on a new form with the base off.)

Seat Position: Rearmost, mid-height Mid-position, mid-height Foremost, mid-height
(Use a separate sheet for each of the three fore-aft positions.)

The child restraint has NO visible damage (S20.1.1)

Is the passenger air bag suppression telltale light off when the passenger seat is empty?
 Yes – Note on the result table the instances when a mechanism rather than the telltale is needed to determine the air bag is suppressed. The 3/8/04 interpretation to DaimlerChrysler limits the use of the mechanism to the car bed and the 3-year-old on the edge of the seat.

No

1. Seat Marking

- 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 N/A – No lumbar adjustment
- 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 N/A – No additional support adjustment
- 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 N/A – No adjustable leg support system
- 1.4 **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. (S16.3.1.12)
- 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 N/A – No independent fore-aft seat cushion adjustment
- 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
Maximum angle _____
Minimum angle _____
Mid-angle _____
- 1.9 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 seat cushion

- reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
- N/A – No seat height adjustment
- 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- 1.11 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.
- 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- N/A – No seat height adjustment. Go to 1.18
- 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
- N/A – No seat back angle adjustment
Manufacturer's design seat back angle _____
- 1.19. Is the seat a bucket seat?
- Yes, go to 1.20 and skip 1.21
- No, go to 1.21 and skip 1.20
- 1.20 Bucket seats:
Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP (Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- 1.21 Bench seats:
Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____

Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____

- 1.22 Head Restraint Position
 - N/A Vehicle contains automatic head restraints.
 - N/A, there is no head restraint adjustment
 - 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
 - 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
 - 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
 - Vertical height of head restraint _____ mm
 - Mid-point height _____ mm
- 2. Belted suppression tests with car beds. (S20.2.3) (Car beds listed in Appendix A, section A)
 - 2.1 Place the SCRPs in the position specified in the header information. Use the seat markings determined in item 1 to set the fore-aft position, mid-height position, the seat cushion angle, the seat back angle and head restraint. (S20.1.9.1, S20.1.9.2, S20.1.9.3, S20.1.9.4, S20.1.9.5, S20.1.9.6)
 - N/A – No seat back angle adjustment
 - Tested seat back angle _____
 - Seat cushion angle _____
 - N/A – No head restraint adjustment
 - 2.2 Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant (S20.2.3.2 (b))
 - N/A – No adjustable upper seat belt anchorage
 - Manufacturer's specified anchorage position. _____
 - Tested anchorage position _____
 - 2.3 Read the car bed owner's manual for installation instructions.
 - 2.4 Secure the car bed with the seat belt by following, to the extent possible, the car bed manufacturer's directions regarding proper installation of the restraint. (S20.2.3.2 (a)) Do NOT use any positioning devices such as towels. If the vehicle has FMVSS 225 anchorages, do not attach the car bed to these anchorages. (S20.1.6) Do NOT attach any tethers. (S20.1.8)
 - 2.4.1 Does placement of the car bed prevent the door from closing and completely latching? (6/9/03 legal interpretation to DaimlerChrysler)
 - Yes – **Inform COTR** No
 - 2.4.2 Does placement of the car bed prevent the driver from operating the vehicle in a reasonable manner? (6/9/03 legal interpretation to DaimlerChrysler)
 - No
 - Yes – Explain and **inform COTR**: _____
 - 2.4.3 Is the car bed rotated more than 30 degrees with respect to a vertical longitudinal plane?
 - No Yes - _____ degrees (6/9/03 legal interpretation to DaimlerChrysler)
 - 2.5 Position the 49 CFR Part 572 Subpart K Newborn Infant dummy in the car bed by following, to the extent possible, the car bed manufacturer's instructions provided with the car bed. (S20.2.3.2 (c))
 - If the seat must be moved rearward because of contact with the instrument panel, describe the final location of the seat:
 - N/A – No contact with the instrument panel.

Manual seat adjuster: ___ detent(s) rearward of the fore-most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)

Power seat adjuster: ___ mm between instrument panel and child restraint (max. allowed is 5 mm.)

___2.6 Complete rows 1 through 12 in Table 2 without changing the position of the child restraint or dummy. For each variation of blanket, handle and sunshield position, start the vehicle engine or place the ignition in the “on” position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed (S20.2.3(d)).

3. Unbelted suppression tests using FMVSS 225 Anchorages with car bed (S20.1.6). (Car beds listed in Appendix A, section A) Car beds are not required by FMVSS 213 to have devices to mate to FMVSS 225 anchorages.

___N/A - Vehicle does not have FMVSS 225 anchorages or car bed does not have FMVSS 213 S5.9 devices to mate to the FMVSS 225 anchorages.

___3.1 Keep the same seat position as in 1.1 above.

___3.2 Read the car bed owner’s manual and the vehicle owner’s manual for installation instructions.

___3.3 Attach the car bed to the FMVSS 225 anchorages by completing Data Sheet 14. Do NOT attach seat belts. (S20.1.6) Do NOT attach any tethers. (S20.1.8)

___3.3.1 Does placement of the car bed prevent the door from closing and completely latching? (6/9/03 legal interpretation to DaimlerChrysler)

___Yes – **Inform COTR** ___No

___3.3.2 Does placement of the car bed prevent the driver from operating the vehicle in a reasonable manner? (6/9/03 legal interpretation to DaimlerChrysler)

___No

___Yes – Explain and **inform COTR**: _____

___3.3.3 Is the car bed rotated more than 30 degrees with respect to a vertical longitudinal plane?

___No ___Yes - _____degrees (6/9/03 legal interpretation to DaimlerChrysler)

___3.4 Position the 49 CFR Part 572 Subpart K Newborn Infant dummy in the car bed by following, to the extent possible, the car bed manufacturer’s instructions provided with the car bed. (S20.2.3.2 (c))

If the seat must be moved rearward because of contact with the instrument panel, describe the final location of the seat:

___ N/A – No contact with the instrument panel.

Manual seat adjuster: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)

Power seat adjuster: ___ mm between instrument panel and child restraint (max. allowed is 5 mm.)

___3.5 Complete rows 13 through 24 in Table 2 without changing the position of the child restraint or dummy. For each position, start the vehicle engine or place the ignition in the “on” position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed. (S20.2.3.2(d))

I certify that I have read and performed each instruction.

Date

Table 2

NHTSA No. _____

Test Date: _____

Car Bed Name, Model, and Manufacture Date: _____

Base: On Off N/A—Restraint does not have a removable base

Seat Position: Rearmost, mid-height Mid-position, mid-height Foremost, mid-height

	Belted, FMVSS 225	Handle ¹ (S20.1.3)	Sunshield ² (S20.1.4)	Blanket ³ Position 1 (S20.1.5(a))	Blanket ⁴ Position 2 (S20.1.5(b))	Suppressed, FAIL, Or N/A
1	Belted	Down	Fully Open	None	N/A	
2	Belted	Down	Fully Closed	None	N/A	
3	Belted	Upright	Fully Open	None	N/A	
4	Belted	Upright	Fully Closed	None	N/A	
5	Belted	Down	Fully Open	On	N/A	
6	Belted	Down	Fully Closed	On	N/A	
7	Belted	Upright	Fully Open	On	N/A	
8	Belted	Upright	Fully Closed	On	N/A	
9	Belted	Down	Fully Open	N/A	On	
10	Belted	Down	Fully Closed	N/A	On	
11	Belted	Upright	Fully Open	N/A	On	
12	Belted	Upright	Fully Closed	N/A	On	
13	225	Down	Fully Open	None	N/A	
14	225	Down	Fully Closed	None	N/A	
15	225	Upright	Fully Open	None	N/A	
16	225	Upright	Fully Closed	None	N/A	
17	225	Down	Fully Open	On	N/A	
18	225	Down	Fully Closed	On	N/A	
19	225	Upright	Fully Open	On	N/A	
20	225	Upright	Fully Closed	On	N/A	
21	225	Down	Fully Open	N/A	On	
22	225	Down	Fully Closed	N/A	On	
23	225	Upright	Fully Open	N/A	On	
24	225	Upright	Fully Closed	N/A	On	

- 1 If there is no handle, place N/A in the Suppressed /FAIL column in the rows marked "Upright." "Down," means the car bed manufacturer's recommended position or there is no handle.
- 2 If there is no sunshield, place N/A in the Suppressed/FAIL column in the rows marked "In-use."
- 3 Blanket position 1 (S20.1.5 (a)): Place a blanket on the car bed so that all edges of the restraint are covered. The vehicle seat shall not support the blanket.
- 4 Blanket position 2 (S20.1.5 (b)): Place a blanket on the car bed so that it rests on the top of the vehicle's seat back and the forward most (towards the instrument panel) edge of the car bed.

Record the weight of the blanket. (Cannot be more than 1 kg (2.2 lb.) _____ (S20.1.5)

Comments (Record any position readjustments or problems by first stating the row number to which the comment applies.):

DATA SHEET 19

Suppression Test Using 3-Year-Old Dummy (Part 572, Subpart P) and
Booster Seats (S22)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Booster Seat Name, Model, and Manufacture Date: _____

Seat Position: Rearmost, mid-height Mid-position, mid-height Foremost, mid-height
(Use a separate sheet for each of the three fore-aft positions.)

The booster seat has NO visible damage. (S22.1.1)

Is the passenger air bag suppression telltale light off when the passenger seat is empty?

Yes – Note the instances when a mechanism rather than the telltale is needed to determine the air bag is suppressed. The 3/8/04 interpretation to DaimlerChrysler limits the use of the mechanism to the car bed and the 3-year-old on the edge of the seat.

No

1. Seat Marking

- 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 N/A – No lumbar adjustment
- 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 N/A – No additional support adjustment
- 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 N/A – No adjustable leg support system
- 1.4 **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. (S16.3.1.12)
- 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 N/A – No independent fore-aft seat cushion adjustment
- 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
Maximum angle _____
Minimum angle _____
Mid-angle _____
- 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 N/A – No seat height adjustment

- ___ 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- ___ 1.11 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.
- ___ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ___ 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
 ___ N/A – No seat height adjustment. Go to 1.18
- ___ 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- ___ 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- ___ 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- ___ 1.19. Is the seat a bucket seat?
 ___ Yes, go to 1.20 and skip 1.21
 ___ No, go to 1.21 and skip 1.20
- ___ 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP (Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- ___ 1.21 Bench seats:
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
 Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
 Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____
- 1.22 Head Restraint Position

- N/A Vehicle contains automatic head restraints.
- N/A, there is no head restraint adjustment
- 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
- Vertical height of head restraint _____ mm
- Mid-point height _____ mm
2. Belted tests with a booster seat. (Booster seats listed in Appendix A, section D)
- 2.1 Place the SCRPs in the position specified in the header information. (S22.1.7.1, S22.1.7.2, S22.1.7.3, S22.1.7.4, S22.1.7.5, S22.1.7.6)
- N/A – No seat back angle adjustment
- Tested seat back angle _____
- Seat cushion angle _____
- N/A – No head restraint adjustment
- 2.2 Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant (S22.2.1.5(a))
- N/A – No adjustable upper seat belt anchorage
- Manufacturer's specified anchorage position. _____
- Tested anchorage position _____
- 2.3 Locate and mark a vertical Plane A through the longitudinal centerline of the booster seat. (S22.2.1.2)
- 2.4 Read the booster seat owner's manual for installation instructions
- 2.5 Place the booster seat in the seat such that Plane A (item 2.3 above) is aligned with Plane B (determined and marked in item 1.20 or 1.21). (S22.2.1.5(b))
- 2.6 While maintaining the booster seat with Plane A aligned with Plane B, secure the booster seat by following, to the extent possible, the booster seat manufacturer's directions regarding proper installation of the booster seat. Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000) If the vehicle has FMVSS 225 anchorages, do not attach (S22.1.3) the booster seat to these anchorages. (S22.2.1.5(b)) Do NOT attach any tethers. (S22.1.4)
- 2.7 For a child of the same height and weight as the 3-year-old child dummy (37 in (99 cm), 34 lb (15.4 kg)) is the booster seat designed to be secured to the vehicle seat with the seat belt even when empty?
- Yes – complete item 2.7 and skip 2.8
- No – go to item 2.8
- Place a load cell with a maximum full-scale reading of 225 N (50.6 lb) on a flat, straight section of the lap belt between the booster seat belt path and the contact point with the belt anchor or vehicle seat, on the side away from the buckle (to avoid interference from the shoulder portion of the belt). (S22.2.1.5(c))
- Is there a sheath around the seat belt that interferes with the load cell? Yes No
- If yes, cut off all or part of the sheath. All Part
- 2.7.1 Cinch the seat belt to a tension load of 130 N \pm 3N (29.2 lb \pm 0.7 lb) (S22.2.1.5(c))
- Record seat belt tension _____
- 2.7.2 Position the 49 CFR Part 572 Subpart P 3-year-old dummy in the booster seat such that the dummy's lower torso is centered on the booster seat cushion and the dummy's back is against the seat back of the booster seat or if there is no booster seat back, the vehicle seat back. Place the arms at the dummy's sides. (S22.2.1.8.1)
- 2.7.3 Attach all belts that come with the booster seat that are appropriate for a child of the same height and weight as the 3-year-old child dummy (3'-1", 34 lb), if any, by following,

- to the extent possible, the manufacturer's instructions for seating children provided with the booster seat. (S22.2.1.8.2)
- ___2.8 Position the 49 CFR Part 572 Subpart P 3-year-old dummy in the booster seat such that the dummy's lower torso is centered on the booster seat cushion and the dummy's back is against the seat back of the booster seat or if there is no booster seat back, the vehicle seat back. Place the arms at the dummy's sides. (S22.2.1.8.1)
- ___2.8.1 Place the Type 2 manual belt around the test dummy and fasten the latch. Remove all slack from the lap belt portion. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. Apply a 9 to 18 N (2 to 4lb) tension load to the lap belt. Allow the excess webbing in the upper torso belt to be retracted by the retractive force of the retractor. (S22.2.1.8.3)
- ___2.9 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.1.8.4)
- ___Air Bag Suppressed – Pass
- ___Air Bag Not Suppressed – **FAIL**
- ___2.10 Return the ignition switch to the "off" position.
3. Unbelted tests using FMVSS 225 Anchorages with a booster seat. (Booster seats listed in Appendix A, sections D) – Do NOT attach seat belts. (S22.2.1.4 (b)) Do NOT attach any tethers. (S22.1.4)
- ___N/A - Vehicle does not have FMVSS 225 anchorages or booster seat does not have FMVSS 213 S5.9 devices to mate to the FMVSS 225 anchorages.
- ___3.1 Keep the same seat position as in item 2.
- ___3.2 Read the booster seat and vehicle owner's manuals for installation instructions
- ___3.3 Attach the booster seat to the FMVSS 225 anchorages by completing Data Sheet 14. Do NOT attach any tethers. (S22.1.4) Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000)
- ___3.4 Position the 49 CFR Part 572 Subpart P 3-year-old dummy in the booster seat such that the dummy's lower torso is centered on the booster seat cushion and the dummy's back is against the seat back of the booster seat or if there is no booster seat back, the vehicle seat back. Place the arms at the dummy's sides. (S22.2.1.8.1)
- ___3.5 Attach all belts that come with the booster seat that are appropriate for a child of the same height and weight as the 3-year-old child dummy (3'-1", 34 lb), if any, by following, to the extent possible, the manufacturer's instructions for seating children provided with the booster seat. (S22.2.1.8.2)
- ___3.6 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.1.7) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.1.8.4)
- ___Air Bag Suppressed – Pass
- ___Air Bag Not Suppressed – **FAIL**

__3.7 Return the ignition switch to the "off" position.

I certify that I have read and performed each instruction.

Date

DATA SHEET 20

Suppression Test Using 3-Year-Old Dummy (Part 572, Subpart P) and
Forward Facing Convertible Child Restraints (S22)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Child Restraint Name, Model, and Manufacture Date: _____

Seat Position: Rearmost, mid-height Mid-position, mid-height Foremost, mid-height
(Use a separate sheet for each of the three fore-aft positions.)

The forward facing child restraint seat has NO visible damage. (S22.1.1)

Is the passenger air bag suppression telltale light off when the passenger seat is empty?

Yes – Note the instances when a mechanism rather than the telltale is needed to determine the air bag is suppressed. The 3/8/04 interpretation to DaimlerChrysler limits the use of the mechanism to the car bed and the 3-year-old on the edge of the seat.

No

1. Seat Marking

- 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 N/A – No lumbar adjustment
- 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 N/A – No additional support adjustment
- 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 N/A – No adjustable leg support system
- 1.4 **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. (S16.3.1.12)
- 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 N/A – No independent fore-aft seat cushion adjustment
- 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
Maximum angle _____
Minimum angle _____
Mid-angle _____
- 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 N/A – No seat height adjustment
- 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.

- ___ 1.11 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.
- ___ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ___ 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
 ___ N/A – No seat height adjustment. Go to 1.18
- ___ 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- ___ 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- ___ 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- ___ 1.19. Is the seat a bucket seat?
 ___ Yes, go to 1.20 and skip 1.21
 ___ No, go to 1.21 and skip 1.20
- ___ 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- ___ 1.21 Bench seats:
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
 Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
 Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____
- ___ 1.22 Head Restraint Position
 ___ N/A Vehicle contains automatic head restraints.
 ___ N/A, there is no head restraint adjustment

- ___ 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
 - ___ 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
 - ___ 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
 Vertical height of head restraint _____ mm
 Mid-point height _____ mm
2. Belted tests with a forward facing child restraint. (Child restraints listed in Appendix A, section C)
- ___ 2.1 Place the SCRIP in the position specified in the header information. (S22.1.7.1, S22.1.7.2, S22.1.7.3, S22.1.7.4, S22.1.7.5, S22.1.7.6)
 ___ N/A – No seat back angle adjustment
 Tested seat back angle _____
 Seat cushion angle _____
 ___ N/A – No head restraint adjustment
 - ___ 2.2 Place any adjustable seat belt anchorages at the vehicle manufacturer’s nominal design position for a 50th percentile adult male occupant (S22.2.1.5.(a))
 ___ N/A – No adjustable upper seat belt anchorage
 Manufacturer’s specified anchorage position. _____
 Tested anchorage position _____
 - ___ 2.3 Locate and mark a vertical Plane A through the longitudinal centerline of the child restraint. (S22.2.1.2)
 - ___ 2.4 Read the child restraint owner’s manual for installation instructions
 - ___ 2.5 Place the child restraint facing forward in the seat such that Plane A (item 2.3) is aligned with Plane B (determined and marked in item 1.20 or 1.21). (S22.2.1.5 (c))
 - ___ 2.6 While maintaining the child restraint position with Plane A aligned with Plane B, secure the child restraint by following, to the extent possible, the child restraint manufacturer’s directions regarding proper installation of the restraint in the forward facing mode. Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000) If the vehicle has FMVSS 225 anchorages, do not attach the child restraint to these anchorages. (S22.2.1.4) Do NOT attach any tethers. (S22.1.4)
 - ___ 2.7 Place a load cell with a maximum full-scale reading of 225 N (50.6 lb) on a flat, straight section of the lap belt between the child restraint belt path and the contact point with the belt anchor or vehicle seat, on the side away from the buckle (to avoid interference from the shoulder portion of the belt). (S22.2.1.5.(c))
 Is there a sheath around the seat belt that interferes with the load cell?
 ___ Yes ___ No
 If necessary, cut off all or part of the sheath. _____ None, ___ All, ___ Part

- ___2.8 Cinch the seat belt to a tension load of $130\text{ N} \pm 3\text{N}$ ($29.2\text{ lb} \pm 0.7\text{ lb}$) (S22.2.1.5.(c))
Record seat belt tension
- ___2.9 Position the 49 CFR Part 572 Subpart P 3-year-old dummy in the child restraint such that the dummy's lower torso is centered on the child restraint and the dummy's spine is against the seat back of the child restraint. Place the arms at the dummy's sides. (S22.2.1.7.1)
- ___2.10 Attach all belts that come with the child restraint that are appropriate for a child of the same height and weight as the 3-year-old child dummy (3'-1", 34 lb), if any, by following, to the extent possible, the manufacturer's instructions for seating children provided with the child restraint. (S22.2.1.7.2)
- ___2.11 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.1.7.3)
___Air Bag Suppressed – Pass
___Air Bag Not Suppressed – **FAIL**
- ___2.12 Return the ignition switch to the "off" position.
3. Unbelted tests using FMVSS 225 Anchorages with a forward facing convertible child restraint. (Child restraint seats listed in Appendix A, sections C) – Do NOT attach seat belts. (S22.2.1.4 (b)) Do NOT attach any tethers. (S22.1.4)
___N/A - Vehicle does not have FMVSS 225 anchorages or child restraint does not have FMVSS 213 S5.9 devices to mate to the FMVSS 225 anchorages.
- ___3.1 Keep the same seat position as in 2.1 above
- ___3.2 Read the child restraint and vehicle owner's manuals for installation instructions
- ___3.3 Attach the child restraint, facing forward, to the FMVSS 225 anchorages by completing Data Sheet 14. Do NOT attach any tethers. (S22.1.4) Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000)
- ___3.4 Position the 49 CFR Part 572 Subpart P 3-year-old dummy in the child restraint such that the dummy's lower torso is centered on the child restraint and the dummy's spine is against the seat back of the child restraint. Place the arms at the dummy's sides. (S22.2.1.7.1)
- ___3.5 Attach all belts that come with the child restraint that are appropriate for a child of the same height and weight as the 3-year-old child dummy (3'-1", 34 lb), if any, by following, to the extent possible, the manufacturer's instructions for seating children provided with the child restraint. (S22.2.1.7.2)
- ___3.6 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.1.7.3)
___Air Bag Suppressed – Pass
___Air Bag Not Suppressed – **FAIL**
- ___3.7 Return the ignition switch to the "off" position.

I certify that I have read and performed each instruction.

Date

DATA SHEET 21

Suppression Tests Using an Unbelted 3-Year-Old Dummy (Part 572, Subpart P) (S22)
 NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Dummy Serial No. _____

Seat Position: ___ Rearmost, mid-height ___ Mid-position, mid-height ___ Foremost, mid-height
 (Use a separate sheet for each of the three fore-aft positions.)

Do NOT use seat belts for these tests. (S22.2.2)

Is the passenger air bag suppression telltale light off when the passenger seat is empty?

___ **Yes** – Note the instances when a mechanism rather than the telltale is needed to determine the air bag is suppressed. The 3/8/04 interpretation to DaimlerChrysler limits the use of the mechanism to the car bed and the 3-year-old on the edge of the seat.

___ **No**

1. Seat Marking

- ___ 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 ___ N/A – No lumbar adjustment
- ___ 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No additional support adjustment
- ___ 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 ___ N/A – No adjustable leg support system
- ___ 1.4 **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. (S16.3.1.12)
- ___ 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- ___ 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- ___ 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 ___ N/A – No independent fore-aft seat cushion adjustment
- ___ 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
 Maximum angle _____
 Minimum angle _____
 Mid-angle _____
- ___ 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 ___ N/A – No seat height adjustment
- ___ 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.

- ___ 1.11 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.
- ___ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ___ 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
 ___ N/A – No seat height adjustment. Go to 1.18
- ___ 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- ___ 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- ___ 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- ___ 1.19. Is the seat a bucket seat?
 ___ Yes, go to 1.20 and skip 1.21
 ___ No, go to 1.21 and skip 1.20
- ___ 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP (Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- ___ 1.21 Bench seats:
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
 Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
 Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____
- ___ 1.22 Head Restraint Position
 ___ N/A Vehicle contains automatic head restraints.
 ___ N/A, there is no head restraint adjustment

- __1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- __1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- __1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
Vertical height of head restraint ____ mm
Mid-point height ____ mm
2. Sitting on seat with back against seat back (S22.2.2.1)
- __2.1 Place the SCRIP in the position specified in the header information. (S22.1.7.1, S22.1.7.2, S22.1.7.3, S22.1.7.4, S22.1.7.5, S22.1.7.6)
__ N/A – No seat back angle adjustment
Tested seat back angle _____
Seat cushion angle _____
__ N/A – No head restraint adjustment
- __2.2 Position the dummy on the right front outboard seat in a seated position. (S22.2.2.1(a))
- __2.3 Position the dummy such that its midsagittal plane is within ± 10 mm of Plane B (determined and marked in item 1.20 or 1.21). (S22.2.2.1(b))
- __2.4 Position the dummy's torso against the seat back. (S22.2.2.1(b))
- __2.5 Position the dummy's thighs against the seat cushion. (S22.2.2.1(b))
- __2.6 Allow the legs of the dummy to extend off the surface of the seat. (S22.2.2.1(c))
If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
__ N/A – No dummy contact with the instrument panel.
Manual seat adjuster: __ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
Power seat adjuster: __ mm between instrument panel and child restraint (max. allowed is 5 mm.)
- __2.7 Rotate the dummy's upper arms until they contact the seat back. (S22.2.2.1(d))
- __2.8 Rotate the dummy's lower arms until the dummy's hands contact the seat cushion. (S22.2.2.1(e))
- __2.9 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.1(f)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.1(g))
__ Air Bag Suppressed – Pass
__ Air Bag Not Suppressed – **FAIL**
- __2.10 Return the ignition switch to the "off" position.
3. Sitting on seat with back against reclined seat back (S22.2.2.2)
__ N/A – No seat back angle adjustment
- __3.1 Keep the dummy and the seat in the same position as item 2 above.
- __3.2 Recline the seat back an additional 25 degrees or the closest position that does not exceed 25 degrees. (S22.2.2.2)
Initial seat back angle _____
Final seat back angle _____
- __3.3 Verify the dummy's midsagittal plane is within ± 10 mm of Plane B (determined and marked in item 1.20 or 1.21). (S22.2.2.1(b))
- __3.4 Verify the dummy's torso is against the seat back. (S22.2.2.1(b))
- __3.5 Verify the dummy's thighs are against the seat cushion. (S22.2.2.1(b))
- __3.6 Allow the legs of the dummy to extend off the surface of the seat. (S22.2.2.1(c))
If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
__ N/A – No dummy contact with the instrument panel.

Manual seat adjuster: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)

Power seat adjuster: ___ mm between instrument panel and child restraint (max. allowed is 5 mm.)

- ___3.7 Verify the dummy's upper arms contact the seat back. (S22.2.2.1(d))
- ___3.8 Verify the dummy's hands contact the seat cushion. (S22.2.2.1(e))
- ___3.9 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.1(f)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.1(g))
- ___Air Bag Suppressed – Pass
- ___Air Bag Not Suppressed – **FAIL**
- ___3.10 Return the ignition switch to the "off" position.
4. Sitting on seat with back not against seat back (S22.2.2.3)
- ___4.1 Keep the dummy and the seat in the same position as item 3 above.
- ___4.2 Incline the seat back to the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S22.1.7.5 and S8.1.3)
- ___ N/A – No seat back angle adjustment
- Manufacturer's design seat back angle _____
- Tested seat back angle _____
- ___4.3 Verify the dummy's midsagittal plane is within ± 10 mm of Plane B (determined and marked item 1.20 or 1.21). (S22.2.2.3(b))
- ___4.4 Verify the dummy's torso is against the seat back.
- ___4.5 Verify the dummy's thighs are against the seat cushion. (S22.2.2.3(c))
- ___4.6 Rotate the dummy forward until the spine is vertical. (S22.2.2.3(b))
- ___4.7 Keeping the spine vertical, move the dummy fore or aft to position the dummy's back 25 to 150 mm from the seat back as measured horizontally from the dummy's midsagittal plane at the mid sternum level. (S22.2.2.3(b))
- Distance measured from seat back _____ (25 to 150 mm)
- ___4.8 Allow the legs of the dummy to extend off the surface of the seat. (S22.2.2.3(d))
- If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
- ___ N/A – No dummy contact with the instrument panel.
- Manual seat adjuster: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
- Power seat adjuster: ___ mm between instrument panel and child restraint (max. allowed is 5 mm.)
- ___4.9 If necessary, hold the dummy in position with a material that has a maximum breaking strength of 311 N. (S22.2.2.3 (b))
- ___ N/A – Dummy did not need to be supported.
- ___4.10 Position the dummy's upper arms parallel to the spine. (S22.2.2.3 (e))
- ___4.11 Rotate the dummy's lower arms until the hands contact the seat cushion. (S22.2.2.3 (e))
- ___4.12 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.3 (f)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.3 (g))
- ___Air Bag Suppressed – Pass
- ___Air Bag Not Suppressed – **FAIL**
- ___4.13 Return the ignition switch to the "off" position.
5. Sitting on seat edge, spine vertical, hands by the dummy's side (S22.2.2.4)
- ___5.1 Keep the seat in the end position used for 4 above.
- ___5.2 Position the dummy in the seated position and place it on the right front outboard seat. (S22.2.2.1(a))
- ___5.3 Position the dummy such that its midsagittal plane is within ± 10 mm of Plane B (determined and marked in 1.20 or 1.21). (S22.2.2.4(a))

- ___5.4 Position the dummy in the seated position forward in the seat such that the legs are vertical and the back of the legs rest against the front of the seat with the spine vertical. If the dummy's feet contact the floor pan raising part of the thighs off the seat cushion, rotate the legs forward until the dummy's thighs are resting on the seat cushion with the feet positioned flat on the floor pan and the dummy spine vertical. (S22.2.2.4(b))
If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
___ N/A – No dummy contact with the instrument panel.
Manual seat adjuster: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
Power seat adjuster: ___ mm between instrument panel and child restraint (max. allowed is 5 mm.)
- ___5.5 Position the dummy's upper arms parallel to the spine. (S22.2.2.4(c))
- ___5.6 Rotate the dummy's lower arms until the hands contact the seat cushion. (S22.2.2.4(d))
- ___5.7 If necessary, hold the dummy in position with a material that has a maximum breaking strength of 311 N. (S22.2.2.4(b))
- ___5.8 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.4(e)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.4(f))
___ Air Bag Suppressed – Pass
___ Air Bag Not Suppressed – **FAIL**
- ___5.9 Return the ignition switch to the "off" position.
6. Standing on seat, facing forward (S22.2.2.5)
- ___6.1 Keep the seat in the end position used for 5 above.
- ___6.2 Position the dummy in a standing position on the right front outboard seat cushion facing the front of the vehicle with the midsagittal plane within ± 10 mm of Plane B (determined and marked in item 1.20 or 1.21) and with the heels of the dummy's feet in contact with the seat back. (S22.2.2.5(a))
- ___6.3 Rest the dummy against the seat back, with the arms parallel to the spine. (S22.2.2.5(b))
- ___6.4 If the seat back must be reclined because of dummy contact with the roof, describe the final location of the seat:
___ N/A – No dummy contact with the roof.
Manual seat back recliner: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the roof.) (S22.2.2.5(c))
Power seat adjuster: ___ mm between roof and dummy head (max. allowed is 5 mm.) (S22.2.2.5(c))
- ___6.5 If necessary, hold the dummy in position using a material that has a maximum breaking strength of 311 N or spacer blocks. (S22.2.2.5 (d))
___ N/A – Dummy did not need to be supported.

- ___6.6 Start the vehicle engine or place the ignition in the “on” position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.5(e)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.5(f))
 ___ Air Bag Suppressed – Pass
 ___ Air Bag Not Suppressed – **FAIL**
- ___6.7 Return the ignition switch to the “off” position.
7. Kneeling on seat facing forward (S22.2.2.6)
- ___7.1 Keep the seat in the end position used in item 6.
- ___7.2 If the seat back angle was changed in 6.4 above, reset it to the manufacturer’s nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S22.1.7.5 and S8.1.3)
 ___ N/A – No seat back angle adjustment
 ___ N/A – The seat back angle was not adjusted in 6.4 above.
 Manufacturer’s design seat back angle _____
 Tested seat back angle _____
- ___7.3 Position the dummy in a kneeling position on the right front outboard seat cushion facing the front of the vehicle with the midsagittal plane within ± 10 mm of Plane B (determined and marked in item 1.20 or 1.21.) with the toes at the intersection of the seat back and seat cushion and with the spine vertical. (S22.2.2.6(a) and (b))
- ___7.4 Push down on the legs so that they contact the seat as much as possible and then release. (S22.2.2.6(b))
- ___7.5 Place the arms parallel to the spine. (S22.2.2.6(b))
- ___7.6 If necessary, hold the dummy in position using a material that has a maximum breaking strength of 311 N or spacer blocks. (S22.2.2.6(c))
 ___ N/A – Dummy did not need to be supported.
- ___7.7 Start the vehicle engine or place the ignition in the “on” position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.6(d)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.6(e))
 ___ Air Bag Suppressed – Pass
 ___ Air Bag Not Suppressed – **FAIL**
- ___7.8 Return the ignition switch to the “off” position.
8. Kneeling on seat facing rearward (S22.2.2.7)
- ___8.1 Keep the seat in the end position used for 7 above.
- ___8.2 Position the dummy in a kneeling position on the right front outboard seat cushion facing the rear of the vehicle with the midsagittal plane within ± 10 mm of Plane B (determined and marked in item 1.20 or 1.21) with the head and torso in contact with the seat back. (S22.2.2.7 (a) and (b))
- ___8.3 Push down on the legs so that they contact the seat as much as possible and then release. (S22.2.2.7(b))
- ___8.4 Place the arms parallel to the spine. (S22.2.2.7(b))
- ___8.5 Start the vehicle engine or place the ignition in the “on” position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.7(c)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.7(d))
 ___ Air Bag Suppressed – Pass
 ___ Air Bag Not Suppressed – **FAIL**
- ___8.6 Return the ignition switch to the “off” position.
9. Lying on seat (S22.2.2.8)
- ___9.1 Does the front seat row have 3 or more designated seating positions?
 ___ Yes, ___ No, this form is complete.
- ___9.2 Keep the seat in the end position used for 8 above.
- ___9.3 Lay the dummy on the right front outboard seat with the spine perpendicular to the vehicle’s longitudinal axis, with the dummy facing forward and the head towards the right front door. (S22.2.2.8(a)(2), & S22.2.2.8(a)(5), and S22.2.2.8(a)(6))
- ___9.4 Position the dummy so that the midsagittal plane is horizontal and a plane passing through the two shoulder joints of the dummy is vertical. (S22.2.2.8(a)(1) and S22.2.2.8(a)(4))

- 9.5 Position the dummy's arms parallel to the spine. (S22.2.2.8(a)(3))
- 9.6 Position the dummy so that it is as far back in the seat as possible. (S22.2.2.8(a)(8))
- 9.7 Position the dummy so that the topmost point of the dummy's head is 50 to 100 mm from the vehicle door. (S22.2.2.8(a)(7))
- 9.8 Rotate both thighs as much as possible toward the chest of the dummy and rotate the legs as much as possible against the thighs. (S22.2.2.8(b))
- 9.9 Position the dummy's upper left arm perpendicular to the longitudinal centerline of the vehicle and rotate the lower left arm about the elbow joint and toward the dummy's head until movement is obstructed. (S22.2.2.8(c))
- 9.10 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.8(d)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.8(e))
 - Air Bag Suppressed – Pass
 - Air Bag Not Suppressed – **FAIL**
- 9.11 Return the ignition switch to the "off" position.

I certify that I have read and performed each instruction.

Date

DATA SHEET 22

Suppression Test Using 6-Year-Old Dummy (Part 572, Subpart N) and
Booster Seats (S24.2.1)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Booster Seat Name, Model, and Manufacture Date: _____

Seat Position: ___ Rearmost, mid-height ___ Mid-position, mid-height ___ Foremost, mid-height
(Use a separate sheet for each of the three fore-aft positions.)

___ The booster seat has NO visible damage. (S24.1.1)

Is the passenger air bag suppression telltale light off when the passenger seat is empty?

___ **Yes – Note the instances when a mechanism rather than the telltale is needed to determine the air bag is suppressed. The 3/8/04 interpretation to DaimlerChrysler limits the use of the mechanism to the car bed and the 3-year-old on the edge of the seat.**

___ **No**

1. Seat Marking

- ___ 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
___ N/A – No lumbar adjustment
- ___ 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
___ N/A – No additional support adjustment
- ___ 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
___ N/A – No adjustable leg support system
- ___ 1.4 **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. (S16.3.1.12)
- ___ 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- ___ 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- ___ 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
___ N/A – No independent fore-aft seat cushion adjustment
- ___ 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
Maximum angle _____
Minimum angle _____
Mid-angle _____
- ___ 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
___ N/A – No seat height adjustment
- ___ 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.

- ___ 1.11 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.
- ___ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ___ 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
 ___ N/A – No seat height adjustment. Go to 1.18
- ___ 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- ___ 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- ___ 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- ___ 1.19. Is the seat a bucket seat?
 ___ Yes, go to 1.20 and skip 1.21
 ___ No, go to 1.21 and skip 1.20
- ___ 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP (Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- ___ 1.21 Bench seats:
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
 Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
 Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____
- ___ 1.22 Head Restraint Position
 ___ N/A Vehicle contains automatic head restraints.
 ___ N/A, there is no head restraint adjustment

- 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
Vertical height of head restraint _____ mm
Mid-point height _____ mm
2. Belted tests with a booster seat. (Booster seats listed in Appendix A, section D, S24.1.1))
- 2.1 Place the SCRIP in the position specified in the header information. Use the seat markings determined during the completion of item 1 to set the fore-aft position, mid-height position, the seat cushion angle, the seat back angle and head restraint. (S24.1.2)
 N/A – No seat back angle adjustment
Tested seat back angle _____
Seat cushion angle _____
 N/A – No head restraint adjustment
- 2.2 Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant (S22.2.1.5(a), S24.2(a))
 N/A – No adjustable upper seat belt anchorage
Manufacturer's specified anchorage position. _____
Tested anchorage position _____
- 2.3 Locate and mark a vertical Plane A through the longitudinal centerline of the booster seat. (S22.2.1.5(b), S24.2(a))
- 2.4 Read the booster seat owner's manual for installation instructions
- 2.5 Place the booster seat in the seat such that Plane A (item 2.3 above) is aligned with Plane B (determined and marked item 1.20 or 1.21). (S22.2.1.5(b), S24.2(a))
- 2.6 While maintaining Plane A aligned with Plane B, secure the booster seat by following, to the extent possible, the booster seat manufacturer's directions regarding proper installation of the booster seat. Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000) If the vehicle has FMVSS 225 anchorages, do not attach (S22.1.3) the booster seat to these anchorages. (S22.2.1.5 (b), S24.2(a)) Do NOT attach any tethers. (S24.1.4)
- 2.7 For a child of the same height and weight as the 6-year-old child dummy (45 in (114 cm), 51.6 lb (23.4 kg), is the booster seat designed to be secured to the vehicle seat with the seat belt even when empty?
 Yes – complete item 2.8 and skip 2.9
 No – go to item 2.9

- 2.8 Place a load cell with a maximum full-scale reading of 225 N (50.6 lb) on a flat, straight section of the lap belt between the booster seat belt path and the contact point with the belt anchor or vehicle seat, on the side away from the buckle (to avoid interference from the shoulder portion of the belt). (S22.2.1.5)
 Is there a sheath around the seat belt that interferes with the load cell?
 Yes No
 If necessary, cut off all or part of the sheath. All Part
- 2.8.1 Cinch the seat belt to a tension load of 130 N \pm 3N (29.2 lb \pm 0.7 lb) (S22.2.1.6.1)
 Record seat belt tension _____
- 2.8.2 Position the 49 CFR Part 572 Subpart N 6-year-old dummy in the booster seat such that the dummy's lower torso is centered on the booster seat cushion and the dummy's back is against the seat back of the booster seat or if there is no booster seat back, the vehicle seat back. Place the arms at the dummy's sides. (S22.2.1.8.1)
- 2.8.3 Attach all belts that come with the booster seat that are appropriate for a child of the same height and weight as the 6-year-old child dummy (45 in (114 cm), 51.6 lb (23.4 g)), if any, by following, to the extent possible, the manufacturer's instructions provided with the booster seat for seating children. (S22.2.1.8.2)
- 2.9. Position the 49 CFR Part 572 Subpart N 6-year-old dummy in the booster seat such that the dummy's lower torso is centered on the booster seat cushion and the dummy's back is against the seat back of the booster seat or if there is no booster seat back, the vehicle seat back. Place the arms at the dummy's sides. (S22.2.1.8.1)
- 2.9.1 Place the Type 2 manual belt around the test dummy and fasten the latch. Remove all slack from the lap belt portion. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. Apply a 9 to 18 N (2 to 4lb) tension load to the lap belt. Allow the excess webbing in the upper torso belt to be retracted by the retractive force of the retractor. (S22.2.1.8.3)
- 2.10 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.1.8.4) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.1.8.4)
 Air Bag Suppressed – Pass
 Air Bag Not Suppressed – **FAIL**
- 2.11 Return the ignition switch to the "off" position.
3. Unbelted tests using FMVSS 225 Anchorages with a booster seat. (Booster seats listed in Appendix A, sections D) – Do NOT attach seat belts. (S24.2(b)) Do NOT attach any tethers. (S24.1.4)
 N/A - Vehicle does not have FMVSS 225 anchorages or booster seat does not have FMVSS 213 S5.9 devices to mate to the FMVSS 225 anchorages.
- 3.1 Keep the same seat position as in 2.1 above
- 3.2 Read the booster seat and vehicle owner's manuals for installation instructions
- 3.3 Attach the booster seat to the FMVSS 225 anchorages by completing Data Sheet 14. Do NOT attach any tethers. (S22.1.4) Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000)
- 3.4 Position the 49 CFR Part 572 Subpart N 6-year-old dummy in the booster seat such that the dummy's lower torso is centered on the booster seat cushion and the dummy's back is against the seat back of the booster seat or if there is no booster seat back, the vehicle seat back. Place the arms at the dummy's sides. (S22.2.1.8)
- 3.5 Are belts that come with the booster seat designed to be used for a child of the same height and weight as the 6-year-old child dummy (45 in (114 cm), 51.6 lb (23.4 g))?
 Yes – complete item 2.5.1 and skip 2.6
 No – go to item 2.6
- 3.5.1 Attach all belts that come with the booster seat that are appropriate for a child of the same height and weight as the 6-year-old child dummy (45 in (114 cm), 51.6 lb (23.4 kg)), if any, by following, to the extent possible, the manufacturer's instructions provided with the booster seat for seating children. (S22.2.1.8.2)

- 3.6 Place the Type 2 manual belt around the test dummy and fasten the latch. Remove all slack from the lap belt portion. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. Apply a 9 to 18 N (2 to 4lb) tension load to the lap belt. Allow the excess webbing in the upper torso belt to be retracted by the retractive force of the retractor. (S22.2.1.8.3)
- 3.7 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.1.7) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.1.8.4)
- Air Bag Suppressed – Pass
- Air Bag Not Suppressed – **FAIL**
- 3.8 Return the ignition switch to the "off" position.

I certify that I have read and performed each instruction.

Date

DATA SHEET 23

Suppression Tests Using an Unbelted 6-Year-Old Dummy (Part 572, Subpart N) (S24.2.1)
 NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Dummy Serial No. _____

Seat Position: ___ Rearmost, mid-height ___ Mid-position, mid-height ___ Foremost, mid-height
 (Use a separate sheet for each of the three fore-aft positions.)

Do NOT use seat belts for these tests. (S22.2.2)

Is the passenger air bag suppression telltale light off when the passenger seat is empty?

Yes – Note the instances when a mechanism rather than the telltale is needed to determine the air bag is suppressed. The 3/8/04 interpretation to DaimlerChrysler limits the use of the mechanism to the car bed and the 3-year-old on the edge of the seat.

No

1. Seat Marking

- 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 N/A – No lumbar adjustment
- 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 N/A – No additional support adjustment
- 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 N/A – No adjustable leg support system
- 1.4 **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. (S16.3.1.12)
- 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 N/A – No independent fore-aft seat cushion adjustment
- 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
 Maximum angle _____
 Minimum angle _____
 Mid-angle _____
- 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 N/A – No seat height adjustment
- 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.

- ___ 1.11 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.
- ___ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ___ 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
 ___ N/A – No seat height adjustment. Go to 1.18
- ___ 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- ___ 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- ___ 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- ___ 1.19. Is the seat a bucket seat?
 ___ Yes, go to 1.20 and skip 1.21
 ___ No, go to 1.21 and skip 1.20
- ___ 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP (Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- ___ 1.21 Bench seats:
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
 Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
 Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____
- ___ 1.22 Head Restraint Position
 ___ N/A Vehicle contains automatic head restraints.
 ___ N/A, there is no head restraint adjustment

- __1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- __1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- __1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
Vertical height of head restraint ____ mm
Mid-point height ____ mm
2. Sitting on seat with back against seat back (S22.2.2.1)
- __2.1 Place the SCRIP in the position specified in the header information. Use the seat markings determined during the completion of item 1 to set the fore-aft position, mid-height position, the seat cushion angle, the seat back angle and head restraint. (S22.1.7.1, S22.1.7.2, S22.1.7.3, S22.1.7.4, S22.1.7.5, S22.1.7.6)
__ N/A – No seat back angle adjustment
Tested seat back angle _____
Seat cushion angle _____
__ N/A – No head restraint adjustment
- __2.2 Position the dummy place it on the right front outboard seat in a seated position and. (S22.2.2.1 (a))
- __2.3 Position the dummy such that its midsagittal plane is coincident is within ± 10 mm of Plane B (determined and marked item 1.20 or 1.21). (S22.2.2.1(b))
- __2.4 Position the dummy's torso against the seat back. (S22.2.2.1(b))
- __2.5 Position the dummy's thighs against the seat cushion. (S22.2.2.1(b))
- __2.6 Allow the legs of the dummy to extend off the surface of the seat. (S22.2.2.1(c))
If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
__ N/A – No dummy contact with the instrument panel.
Manual seat adjuster: __ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
Power seat adjuster: __ mm between instrument panel and child restraint (max. allowed is 5 mm.)
- __2.7 Rotate the dummy's upper arms until they contact the seat back. (S22.2.2.1(d))
- __2.8 Rotate the dummy's lower arms until the dummy's hands contact the seat cushion. (S22.2.2.1 (e))
- __2.9 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.1(f)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.1(g))
__ Air Bag Suppressed – Pass
__ Air Bag Not Suppressed – **FAIL**
- __2.10 Return the ignition switch to the "off" position.
3. Sitting on seat with back against reclined seat back (S22.2.2.2)
__ N/A – No seat back angle adjustment
- __3.1 Keep the dummy and the seat in the same position as item 2 above.
- __3.2 Recline the seat back an additional 25 degrees or the closest position that does not exceed 25 degrees. (S22.2.2.2)
Initial seat back angle _____
Final seat back angle _____
- __3.3 Verify the dummy's midsagittal plane is coincident is within ± 10 mm of Plane B (determined and marked in item 1.20 or 1.21). (S22.2.2.1(b))
- __3.4 Verify the dummy's torso is against the seat back. (S22.2.2.1(b))
- __3.5 Verify the dummy's thighs are against the seat cushion. (S22.2.2.1(b))

- ___3.6 Allow the legs of the dummy to extend off the surface of the seat. (S22.2.2.1(c))
If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
___ N/A – No dummy contact with the instrument panel.
Manual seat adjuster: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
Power seat adjuster: ___ mm between instrument panel and child restraint (max. allowed is 5 mm.)
- ___3.7 Verify the dummy's upper arms contact the seat back. (S22.2.2.1(d))
- ___3.8 Verify the dummy's hands contact the seat cushion. (S22.2.2.1(e))
- ___3.9 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.1(f)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.1(g))
___ Air Bag Suppressed – Pass
___ Air Bag Not Suppressed – **FAIL**
- ___3.10 Return the ignition switch to the "off" position.
4. Sitting on seat edge, spine vertical, hands by the dummy's side (S22.2.2.4)
- ___4.1 Keep the seat in the end position used for 3 above.
- ___4.2 Incline the seat back to the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S22.1.7.5 and S8.1.3)
___ N/A – No seat back angle adjustment
Manufacturer's design seat back angle _____
Tested seat back angle _____
- ___4.3 Position the dummy in the seated position and place it on the right front outboard seat. (S22.2.2.1(a))
- ___4.4 Position the dummy such that its midsagittal plane is coincident is within ± 10 mm of Plane B (determined and in item 1.20 or 1.21). (S22.2.2.4(a))
- ___4.5 Position the dummy forward in the seat such that the legs are vertical and the back of the legs rest against the front of the seat with the spine vertical. If the dummy's feet contact the floor pan raising part of the thighs off the seat cushion, rotate the legs forward until the dummy's thighs are resting on the seat cushion with the feet positioned flat on the floor pan and the dummy spine vertical. (S22.2.2.4(b))
If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
___ N/A – No dummy contact with the instrument panel.
Manual seat adjuster: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
Power seat adjuster: ___ mm between instrument panel and child restraint (max. allowed is 5 mm.)
- ___4.6 Position the dummy's upper arms parallel to the spine. (S22.2.2.4(c))
- ___4.7 Rotate the dummy's lower arms until the hands contact the seat cushion. (S22.2.2.4(d))
- ___4.8 If necessary, hold the dummy in position with a material that has a maximum breaking strength of 311 N. (S22.2.2.4 (b))
- ___4.9 Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S22.2.2.4(e)) Wait 10 seconds, and then check whether the air bag is suppressed. (S22.2.2.4(f))
___ Air Bag Suppressed – Pass
___ Air Bag Not Suppressed – **FAIL**
- ___4.10 Return the ignition switch to the "off" position.
5. Sitting back in the seat and leaning on the front outboard passenger door (S24.2.3)
- ___5.1 Keep the seat in the end position used for 4 above.

- 5.2 Position the dummy in the seated position and place it on the right front outboard seat. (S24.2.3(a))
- 5.3 Position the dummy such that its midsagittal plane is coincident is within ± 10 mm of Plane B (determined and marked in item 1.20 or 1.21). (S24.2.3(a))
- 5.4 Position the dummy's back against the seat back and thighs on the seat cushion. (S24.2.3(b))
- 5.5 Allow the legs and feet to extend off the surface of the seat. If this positioning of the dummy's legs is prevented by contact with the instrument panel, move the seat rearward. (S24.2.3(c))
If the seat must be moved rearward because of dummy contact with the instrument panel, describe the final location of the seat:
 N/A – No dummy contact with the instrument panel.
Manual seat adjuster: detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
Power seat adjuster: mm between instrument panel and child restraint (max. allowed is 5 mm.)
- 5.6 Rotate the dummy's upper arms toward the seat back until they make contact. (S24.2.3(d))
- 5.7 Rotate the dummy's lower arms down until they contact the seat. (S24.2.3(e))
- 5.8 Close the vehicle's passenger-side door and then start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system. (S24.2.3 (f))
- 5.9 Push against the dummy's left shoulder to lean the dummy against the door; close all remaining doors. (S24.2.3 (g))
- 5.10 Wait 10 seconds, and then check whether the air bag is suppressed. (S24.2.3 (h))
 Air Bag Suppressed – Pass
 Air Bag Not Suppressed – **FAIL**
- 5.11 Return the ignition switch to the "off" position.

I certify that I have read and performed each instruction.

Date

DATA SHEET 24

Low Risk Deployment Test Using 12-month-old CRABI Dummy (Part 572, Subpart N)(S20.4)
 NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Child Restraint Name and Model: _____ Separate Base? Y N
 Test conditions to be specified by COTR. (circle test conditions)

Base Used? (S20.1.7)	Y	N	N/A
Handle Position? (S20.1.3)	Up	Down	N/A
Sunshade? (S20.1.4)	In-use	Stowed	N/A
Blanket Position 1? (S20.1.5(a))	Y	N	N/A
Blanket Position 2? (S20.1.5(b))	Y	N	N/A

(A child restraint with a removable base shall be treated as two separate models)

___ The child restraint has NO visible damage. (S20.1.1)

Belted tests with rearward facing child restraints and convertible restraints in the rearward-facing mode. (Child restraints listed in Appendix A, sections B and C (S20.4.2))

1. Seat Marking

- ___ 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 ___ N/A – No lumbar adjustment
- ___ 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No additional support adjustment
- ___ 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 ___ N/A – No adjustable leg support system
- ___ 1.4 **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. (S16.3.1.12)
- ___ 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- ___ 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- ___ 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 ___ N/A – No independent fore-aft seat cushion adjustment
- ___ 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
 Maximum angle _____
 Minimum angle _____
 Mid-angle _____
- ___ 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 ___ N/A – No seat height adjustment
- ___ 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.

- ___ 1.11 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.
- ___ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ___ 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
 ___ N/A – No seat height adjustment. Go to 1.18
- ___ 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- ___ 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- ___ 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- ___ 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- ___ 1.19. Is the seat a bucket seat?
 ___ Yes, go to 1.20 and skip 1.21
 ___ No, go to 1.21 and skip 1.20
- ___ 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP (Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- ___ 1.21 Bench seats:
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
 Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
 Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____
- ___ 1.22 Head Restraint Position
 ___ N/A Vehicle contains automatic head restraints.
 ___ N/A, there is no head restraint adjustment

- ___ 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- ___ 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- ___ 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
Vertical height of head restraint ____ mm
Mid-point height ____ mm
- ___ 2. Place the SCRIP in the full forward, mid-height position, mid-seat cushion angle, lowest and most forward head restraint position and seat back angle determined during Item 1. (S20.4.1)
___ N/A – No seat back angle adjustment
Tested seat back angle _____
Seat cushion angle _____
___ N/A – No head restraint adjustment
- ___ 3. Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant (S20.4.7)
___ N/A – No adjustable upper seat belt anchorage
Manufacturer's specified anchorage position. _____
Tested anchorage position _____
- ___ 4. Locate and mark a vertical Plane A through the longitudinal centerline of the child restraint. (S20.4.3)
- ___ 5. If there is a handle, verify the handle is in the specified position.
___ N/A – No handle on the child restraint
Tested handle position _____
- ___ 6. If there is a sunshield, verify the sunshield is in the specified position.
___ N/A – No sunshield on the child restraint
Tested sunshield position _____
- ___ 7. Read the child restraint owner's manual for installation instructions.
- ___ 8. Is the child restraint is certified to S5.9 of FMVSS No. 213, **AND** does the vehicle seat have an anchorage system as specified in FMVSS No. 225?
___ Yes – continue
___ No – Go to 9
- ___ 8.1 Place the child restraint facing rearward in the seat. Attach the child restraint to the vehicle seat anchorage by completing Data Sheet 14. Do not attach the vehicle seat belt. Do NOT attach any tethers. (S20.1.8 and S20.4.6)
If the child restraint contacts the instrument panel, use only the control that primarily moves the seat in the fore and aft direction to move the seat rearward. (S20.4.1)
Describe the final location of the seat:
___ N/A – No child restraint contact with the instrument panel.
Manual seat adjuster: ___ detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)
Power seat adjuster: ___ mm between instrument panel and dummy or child restraint (max. allowed is 5 mm.)
Go to item 10 and skip item 9.
- ___ 9. Place the child restraint facing rearward in the seat. Position the child restraint with Plane A (item 4) aligned with Plane B (determined and marked in item 1.20 or 1.21), secure the child restraint by following, to the extent possible, the child restraint manufacturer's directions regarding proper installation of the restraint in the rear facing mode. (S20.4.5 and S20.4.7) Do NOT use any positioning devices such as towels. (FR 65 30711, footnote 23, 5/12/2000) Do NOT attach any tethers. (S20.1.8)

If the child restraint contacts the instrument panel, use only the control that primarily moves the seat in the fore and aft direction to move the seat rearward. (S20.4.1)

Describe the final location of the seat:

N/A – No child restraint contact with the instrument panel.

Manual seat adjuster: detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)

Power seat adjuster: mm between instrument panel and dummy or child restraint (max. allowed is 5 mm.)

- __91 Place a load cell with a maximum full-scale reading of 225 N (50.6 lb) on a flat, straight section of the lap belt between the child restraint belt path and the contact point with the belt anchor or vehicle seat, on the side away from the buckle (to avoid interference from the shoulder portion of the belt). (S20.4.7)

Is there a sheath around the seat belt that interferes with the load cell? Yes No
If yes, cut off all or part of the sheath. All Part

- __9.2 Cinch the seat belt to a tension load of 0 N to 130 N ± 3N (29.2 lb ± 0.7 lb) (S20.4.7) as directed by the COTR.

Record seat belt tension _____

- __10. Position the 49 CFR Part 572 Subpart R 12-month-old CRABI dummy in the child restraint by following, to the extent possible, the manufacturer’s instructions provided with the child restraint. (S20.4.8) (The tension in the seat belt may change from item 10.2. Do NOT readjust the tension unless the fore-aft position of the seat changes because of dummy contact.)

If the dummy or child restraint contacts the instrument panel, use only the control that primarily moves the seat in the fore and aft direction to move the seat rearward. (S20.4.1)

Describe the final location of the seat:

N/A – No dummy or child restraint contact with the instrument panel.

Manual seat adjuster: detent(s) rearward of the forward most position (Move the seat the minimum number of detents to eliminate contact with the instrument panel.)

Power seat adjuster: mm between instrument panel and dummy or child restraint (max. allowed is 5 mm.)

Re-cinch the seat belt to the tension load of 0 N to 130 N ± 3N (29.2 lb ± 0.7 lb) (S20.4.7) as directed by the COTR

Record seat belt tension _____

- __11. Record the air bag deployment and timing requirements in the chart below. (Provided by the COTR)
Number of stages for this test. _____

Stage No.	Firing Time (msec) *	Recorded Firing Time (msec)
1	0.0 msec (Time Zero)	

* Firing time is measured from Time Zero for all stages

- __12. Connect dummy instrumentation to the test data acquisition system and verify channel operation.
- __13. Connect the passenger frontal air bag to the air bag firing system per the manufacturer’s instructions, provided by the COTR.
- __14. Prepare the high-speed video/film cameras.
- __15. Deploy the passenger frontal air bag per the table above and record the data from the dummy instrumentation. (S20.4.9)
- __16. Photograph the post-test results
- __17. Verify recorded firing times match specified firing times +/- 2 milliseconds.

__18. Record injury values for this test.

	FMVSS 208 Maximum Allowable Injury Assessment Value	Measured Value* Dummy Serial No. _____
HIC ₁₅	390	
Chest Acceleration	50 g	
Peak Nij (Nte)	1.0	
Time (ms)	NA	
Peak Nij (Ntf)	1.0	
Time (ms)	NA	
Peak Nij (Nce)	1.0	
Time (ms)	NA	
Peak Nij (Ncf)	1.0	
Time (ms)	NA	
Neck Tension (Fz)	780 N	
Neck Compression (Fz)	960 N	

*Calculated on data recorded for 125 ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 64 km/h. (S4.11(c))

I certify that I have read and performed each instruction.

Date

DATA SHEET 25

Low Risk Deployment Tests Using an Unbelted 3-Year-Old Dummy (Part 572, Subpart P) (S22)
 Position 1 - Chest On Instrument Panel (S22.4.2)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Dummy Serial No. _____

1. Seat Marking

- ___ 1.1 Position the seat’s adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 ___ N/A – No lumbar adjustment
- ___ 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No additional support adjustment
- ___ 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 ___ N/A – No adjustable leg support system
- ___ 1.4 **Mark** a point (seat cushion reference point, SCRCP) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. (S16.3.1.12)
- ___ 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- ___ 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- ___ 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 ___ N/A – No independent fore-aft seat cushion adjustment
- ___ 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
 Maximum angle _____
 Minimum angle _____
 Mid-angle _____
- ___ 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 ___ N/A – No seat height adjustment
- ___ 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- ___ 1.11 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.
- ___ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ___ 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle

- determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- N/A – No seat height adjustment. Go to 1.18
- 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
- N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- 1.19. Is the seat a bucket seat?
- Yes, go to 1.20 and skip 1.21
- No, go to 1.21 and skip 1.20
- 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- 1.21 Bench seats:
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
 Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
 Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____
- 1.22 Head Restraint Position
- N/A Vehicle contains automatic head restraints.
- N/A, there is no head restraint adjustment
- 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
- Vertical height of head restraint _____ mm
 Mid-point height _____ mm

- ___2. Place the SCRP in the full rearward, lowest height position, mid-seat cushion angle, head restraint position and seat back angle determined during the completion of item 1. (S22.4.2.1)
 ___ N/A – No seat back angle adjustment
 Tested seat back angle _____
 Seat cushion angle _____
 ___ N/A – No head restraint adjustment
- ___3. Mark a point on the instrument panel that is longitudinally and transversely, as measured along the surface on the instrument panel, within ± 6 mm of the point that is defined by the intersection of the instrument panel and a line between the volumetric center of the smallest volume that can encompass the folded undeployed air bag and the volumetric center of the static fully inflated air bag. (S22.4.1.2) **(See manufacturer's information.)** The vertical longitudinal plane through this point is "Plane D." (S22.4.1.3) The horizontal plane through this point is Plane C.
- ___4. Locate and mark a point on the front of the dummy's chest jacket on the midsagittal plane that is $114 \text{ mm} \pm 3 \text{ mm}$ along the surface of the skin from the top of the skin at the neck line. This is referred to as "Point 1." (S22.4.1.1)
- ___5. Position a calibrated Part 572 Subpart P three-year-old dummy on the right front outboard seat in a seated position. (S22.4.2.2)
- ___6. Position the dummy such that its midsagittal plane is coincident with Plane D (determined and marked in item 3). (S22.4.2.2.1)
- ___7. Position the dummy's legs in a vertical orientation and place the calves in contact with the seat cushion. (S22.4.2.2.2)
- ___8. Position the upper arms parallel to the torso, and place the hands in contact with the thighs. (S22.4.2.2.3)
- ___9. Without changing the seat position, position the dummy torso so the rear face of the thorax instrument cavity is vertical. (S22.4.2.3)
 Thorax instrument cavity angle _____
 Thigh Angle _____
- ___10. Move the dummy forward on the seat, maintaining the thorax instrument cavity and thigh angles, until the dummy head/torso contacts the instrument panel. If the dummy loses contact with the seat cushion maintain the height of the dummy and angles of the thighs with respect to the torso until head/torso contact with the instrument panel occurs. (S22.4.2.3) Adjust the dummy thighs and legs the minimum amount necessary to ensure torso/head contact with the instrument panel when the dummy is moved forward. (S22.4.2.2.2)
 ___ Leg/thigh adjustments needed
 Thigh Angle _____
- ___11. Adjust the dummy position vertically until Point 1 (determined and marked in item 4) lies in Plane C within ± 3 mm (determined and marked in item 3). Adjust the fore/aft position of the dummy to maintain contact with the instrument panel. If the head of the dummy contacts the windshield before point 1 reaches Plane C, lower the dummy to achieve a maximum clearance of 5mm (0.2 inches) between the head and the windshield. (S22.4.2.3)
 ___ Point 1 Lies within Plane C. Height of Point 1 _____ mm
 ___ Head Contacted Windshield Height of Point 1 _____ mm
 Head/ windshield Clearance _____ mm
- ___12. Verify dummy legs are vertical. (S22.4.2.4)
 ___ Positioning of the dummy does not allow the legs to be vertical
- ___13. Position the feet flat on the floor pan if possible, otherwise, position feet parallel to the floor pan. (S22.4.2.4)
 ___ Feet placed on floor pan
 ___ Feet placed parallel to floor pan
- ___14. Avoid using any material, other than spacer blocks under the dummy, to hold the dummy in place. When the dummy will not stay in place use material with a maximum breaking strength of 311 N (70 lb) and spacer blocks. Support the dummy so that there is minimum

interference with the full rotational and translational freedom for the upper torso of the dummy. The material should support the torso rather than the head and should not interfere with the air bag (S22.4.2.5)

- ___ Photograph final setup and record position.
 - Thorax Cavity Angle _____degrees
 - Thigh Angle _____degrees
 - Point 1 Height _____mm

___15. Record the Air bag deployment and timing requirements in the chart below.

Number of stages for this test. _____

Stage No.	Firing Time (msec) *	Recorded Firing Time (msec)
1	0.0 msec (Time Zero)	

* Firing time is measured from Time Zero for all stages

- ___16. Connect dummy instrumentation to the test data acquisition system and verify channel operation.
- ___17. Connect the air bag to the air bag firing system per the manufacturer's instructions, provided by the COTR.
- ___18. Prepare the high-speed video/film cameras.
- ___19. Deploy the air bag per the table above and record the data from the dummy instrumentation.
- ___20. Photograph the post-test results
- ___21. Verify recorded firing times match specified firing times +/- 2 milliseconds.

__22. Record injury values for this test.

	FMVSS 208 Maximum Allowable Injury Assessment Value	Measured Value* Dummy Serial No. _____
HIC ₁₅	570	
Chest Acceleration	55 g	
Chest Displacement	34 mm	
Peak Nij (Nte)	1.0	
Time (ms)	NA	
Peak Nij (Ntf)	1.0	
Time (ms)	NA	
Peak Nij (Nce)	1.0	
Time (ms)	NA	
Peak Nij (Ncf)	1.0	
Time (ms)	NA	
Neck Tension (Fz)	1130 N	
Neck Compression (Fz)	1380 N	

*Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

I certify that I have read and performed each instruction.

Date

DATA SHEET 26

Low Risk Deployment Tests Using an Unbelted 3-Year-Old Dummy (Part 572, Subpart P) (S22)
Position 2 - Head On Instrument Panel (S22.4.3)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Dummy Serial No. _____

1. Seat Marking

- 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 N/A – No lumbar adjustment
- 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 N/A – No additional support adjustment
- 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 N/A – No adjustable leg support system
- 1.4 **Mark** a point (seat cushion reference point, SCRCP) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. (S16.3.1.12)
- 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 N/A – No independent fore-aft seat cushion adjustment
- 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
Maximum angle _____
Minimum angle _____
Mid-angle _____
- 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 N/A – No seat height adjustment
- 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- 1.11 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.
- 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle

- determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- N/A – No seat height adjustment. Go to 1.18
- 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
- N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- 1.19. Is the seat a bucket seat?
- Yes, go to 1.20 and skip 1.21
- No, go to 1.21 and skip 1.20
- 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP (Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- 1.21 Bench seats:
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
 Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
 Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____
- 1.22 Head Restraint Position
- N/A Vehicle contains automatic head restraints.
- N/A, there is no head restraint adjustment
- 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
 Vertical height of head restraint _____ mm
 Mid-point height _____ mm

- ___2. Place the SCRP in the full rearward, mid-height position, mid-seat cushion angle, head restraint position and seat back angle determined during the completion of item 1. (S22.4.3.1)
 ___ N/A – No seat back angle adjustment
 Tested seat back angle _____
 Seat cushion angle _____
 ___ N/A – No head restraint adjustment
- ___3. Mark a point on the instrument panel that is longitudinally and transversely, as measured along the surface on the instrument panel, within ± 6 mm of the point that is defined by the intersection of the instrument panel and a line between the volumetric center of the smallest volume that can encompass the folded undeployed air bag and the volumetric center of the static fully inflated air bag. (S22.4.1.2) **(See manufacturer’s information.)** The vertical longitudinal plane through this point is “Plane D.” (S22.4.1.3) The horizontal plane through this point is Plane C.
- ___4. Position a calibrated Part 572 Subpart P three-year-old dummy in the seated position and place it on the right front outboard seat. (S22.4.3.2)
- ___5. Position the dummy such that its midsagittal plane is coincident with Plane D (determined and marked during the completion of Data Sheet 14). (S22.4.3.2.1)
- ___6. Position the dummy’s legs in a vertical orientation and place the back of the legs in contact with the seat cushion. (S22.4.3.2.2)
- ___7. If the thighs do not rest fully on the seat cushion, position the legs by rotating them forward and placing the feet flat on the floor pan until the thighs rest fully on the seat cushion.
- ___8. Set the transverse distance between the longitudinal centerlines at the front of the knees at 86 to 91 mm (3.4 to 3.6 inches). Maintain the legs and thighs in a vertical plane. (S22.4.3.2.2)
 Knee Separation Distance _____
 Thigh Angle _____
- ___9. Position the dummy torso so the rear face of the thorax instrument cavity is vertical. (S22.4.3.2.2.)
 Thorax instrument cavity angle _____
- ___10. Position the upper arms parallel to the torso, and place the hands in contact with the thighs. (S22.4.3.2.3)
- ___11. Using only the control that primarily moves the seat in the fore and aft direction, move the seat forward, while maintaining the thorax instrument cavity angle until any part of the dummy contacts the instrument panel. (S22.4.3.3)
 ___ No contact. Proceed to item 12
 ___ No head/torso contact. Proceed to item 13
 ___ Head/torso contact. Proceed to item 15
- ___12. Move the dummy forward on the seat, maintaining the thorax instrument cavity, the thigh angles with respect to the horizontal, and dummy height until any part of the dummy contacts the instrument panel. (S22.4.3.4)
 ___ No head/torso contact. Proceed to item 13
 ___ Head/torso contact. Proceed to item 15

- ___13. While maintaining the thigh angles with respect to the horizontal, apply a force between the shoulder joints of the dummy, perpendicular to the thorax instrument cavity rear face, until the head or torso comes into contact with the vehicle's instrument panel or until a maximum force of 222 N is achieved. (S22.4.3.5)
 - ___ No head/torso contact. Proceed to item 14
 - ___ Contact. Proceed to item 15
- ___14. Release the force. While maintaining the relative angle between the torso and the femurs, roll the dummy forward on the seat cushion, without sliding, until head/torso contact with the instrument panel is achieved. If seat contact is lost prior to or during femur rotation out of the horizontal plane, constrain the dummy to rotate about the dummy H-point. If the dummy cannot be rolled forward on the seat due to contact of the dummy feet with the floor pan, extend the lower legs forward, at the knees, until floor pan contact is avoided. (S22.4.3.5)
 - ___ Head/torso contact achieved when dummy rolled forward
 - ___ Seat contact lost and dummy rotated about the H-point. Head/torso contact achieved
 - ___ Seat contact lost and dummy rotated about the H-point. Legs extended. Head/torso contact achieved
- ___15. Avoid using any material, other than spacer blocks under the dummy, to hold the dummy in place. When the dummy will not stay in place use material with a maximum breaking strength of 311 N (70 lb) and spacer blocks, support the dummy so that there is minimum interference with the full rotational and translational freedom for the upper torso of the dummy. The material should support the torso rather than the head and should not interfere with the air bag (S22.4.3.6)
 - ___ Photograph final setup and record position.
 - Thorax Cavity Angle _____degrees
 - Thigh Angle _____degrees

- ___16. Record the Air bag deployment and timing requirements in the chart below.
Number of stages for this test. _____

Stage No.	Firing Time (msec) *	Recorded Firing Time (msec)
1	0.0 msec (Time Zero)	

* Firing time is measured from Time Zero for all stages

- ___17. Connect dummy instrumentation to the test data acquisition system and verify channel operation.
- ___18. Connect the air bag to the air bag firing system per the manufacturer's instructions, provided by the COTR.
- ___19. Prepare the high-speed video/film cameras.
- ___20. Deploy the air bag per the table above and record the data from the dummy instrumentation.
- ___21. Photograph the post-test results
- ___22. Verify recorded firing times match specified firing times +/- 2 milliseconds.

___23. Record injury values for this test.

	FMVSS 208 Maximum Allowable Injury Assessment Value	Measured Value* Dummy Serial No. _____
HIC ₁₅	570	
Chest Acceleration	55 g	
Chest Displacement	34 mm	
Peak Nij (Nte)	1.0	
Time (ms)	NA	
Peak Nij (Ntf)	1.0	
Time (ms)	NA	
Peak Nij (Nce)	1.0	
Time (ms)	NA	
Peak Nij (Ncf)	1.0	
Time (ms)	NA	
Neck Tension (Fz)	1130 N	
Neck Compression (Fz)	1380 N	

*Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

I certify that I have read and performed each instruction.

Date

DATA SHEET 27

Low Risk Deployment Tests Using an Unbelted 6-Year-Old Dummy (Part 572, Subpart N) (S24)
Position 1 - Chest On Instrument Panel (S24.4.2)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Dummy Serial No. _____

1. Seat Marking

- 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 N/A – No lumbar adjustment
- 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 N/A – No additional support adjustment
- 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 N/A – No adjustable leg support system
- 1.4 **Mark** a point (seat cushion reference point, SCRPP) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. (S16.3.1.12)
- 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 N/A – No independent fore-aft seat cushion adjustment
- 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
Maximum angle _____
Minimum angle _____
Mid-angle _____
- 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 N/A – No seat height adjustment
- 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- 1.11 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.
- 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle

- determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- N/A – No seat height adjustment. Go to 1.18
- 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
- N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- 1.19. Is the seat a bucket seat?
- Yes, go to 1.20 and skip 1.21
- No, go to 1.21 and skip 1.20
- 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP (Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- 1.21 Bench seats
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
 Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
 Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____
- 1.22 Head Restraint Position
- N/A Vehicle contains automatic head restraints.
- N/A, there is no head restraint adjustment
- 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
 Vertical height of head restraint _____ mm
 Mid-point height _____ mm

- ___2. Place the SCRP in the full rearward, lowest height position, mid-seat cushion angle, head restraint position and seat back angle determined during the completion of item 1. (S24.4.2.1)
 ___ N/A – No seat back angle adjustment
 Tested seat back angle _____
 Seat cushion angle _____
 ___ N/A – No head restraint adjustment
- ___3. Mark a point on the instrument panel that is longitudinally and transversely, as measured along the surface on the instrument panel, within ± 6 mm of the point that is defined by the intersection of the instrument panel and a line between the volumetric center of the smallest volume that can encompass the folded undeployed air bag and the volumetric center of the static fully inflated air bag. (S24.4.1.2) **(See manufacturer’s information.)** The vertical longitudinal plane through this point is “Plane D.” (S24.4.1.3) The horizontal plane through the point is referred to as “Plane C.” (S24.4.1.4)
- ___4. Locate and mark a point on the front of the dummy’s chest jacket on the midsagittal plane that is 139 mm \pm 3mm along the surface of the skin from the top of the skin at the neck line. This is referred to as “Point 1.” (S24.4.1.1)
- ___5. Remove the dummy legs at the pelvic interface. (S24.4.2.2)
- ___6. Position a calibrated Part 572 Subpart N six-year-old dummy in the seated position and place it on the front passenger outboard seat. (S24.4.2.3)
- ___7. Position the dummy such that its midsagittal plane is within ± 10 mm of Plane D. (S24.4.2.3(a))
- ___8. Position the upper arms parallel to the torso, and place the hands in contact with the thighs. (S24.4.2.3(b))
- ___9. Position the dummy torso so the rear face angle of the thorax instrument cavity is 6 degrees forward of vertical. (S24.4.2.3(c))
 Thorax instrument cavity angle _____
- ___10. Move the dummy forward on the seat, maintaining the thorax instrument cavity angle, until the dummy head/torso contacts the instrument panel or the head contacts the windshield. If the dummy loses contact with the seat maintain the height and angle until head/torso contact with the instrument panel occurs. (S24.4.2.3(c))
 ___ Head/torso contacts the instrument panel. Proceed to 12
 ___ Head contacts the windshield. Proceed to 11
- ___11. Maintain the thorax instrument cavity angle and move the dummy forward such that he head is following the angle of the windshield until there is head/torso contact with the instrument panel.
- ___12. Adjust the dummy position vertically until Point 1 is within ± 10 mm of Plane C. Adjust the fore/aft position of the dummy to maintain contact with the instrument panel. If the head of the dummy contacts the windshield before point 1 reaches Plane C, lower the dummy to achieve a maximum clearance of 5mm (0.2 inches) between the head and the windshield. (S24.4.2.3(c))
 ___ Point 1 Lies within Plane C.
 ___ Head Contacted Windshield Head/windshield Clearance. _____mm

- __13. Avoid using any material, other than spacer blocks under the dummy, to hold the dummy in place. When the dummy will not stay in place use material with a maximum breaking strength of 311 N (70 lb) and spacer blocks to support the dummy so that there is minimum interference with the full rotational and translational freedom for the upper torso of the dummy. The material should support the torso rather than the head and should not interfere with the air bag (S22.4.2.4)

__ Photograph final setup and record position.
 Thorax Cavity Angle _____degrees
 Point 1 Height _____mm

- __14. Record the Air bag deployment and timing requirements in the chart below.

Number of stages for test. _____

Stage No.	Firing Time (msec) *	Recorded Firing Time (msec)
1	0.0 msec (Time Zero)	

* Firing time is measured from Time Zero for all stages

- __15. Connect dummy instrumentation to the test data acquisition system and verify channel operation.
- __16. Connect the air bag to the air bag firing system per the manufacturer’s instructions, provided by the COTR.
- __17. Prepare the high-speed video/film cameras.
- __18. Deploy the air bag per the table above and record the data from the dummy instrumentation.
- __19. Photograph the post-test results
- __20. Verify recorded firing times match specified firing times +/- 2 milliseconds.
- __21. Record injury values for this test.

	FMVSS 208 Maximum Allowable Injury Assessment Value	Measured Value* Dummy Serial No. _____
HIC ₁₅	700	
Chest Acceleration	60 g	
Chest Displacement	40 mm	
Peak Nij (Nte)	1.0	
Time (ms)	NA	
Peak Nij (Ntf)	1.0	
Time (ms)	NA	
Peak Nij (Nce)	1.0	
Time (ms)	NA	
Peak Nij (Ncf)	1.0	
Time (ms)	NA	
Neck Tension (Fz)	1490 N	
Neck Compression (Fz)	1820 N	

*Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

 I certify that I have read and performed each instruction.

 Date

DATA SHEET 28

Low Risk Deployment Tests Using an Unbelted 6-Year-Old Dummy (Part 572, Subpart N) (S24)
Position 2 - Head On Instrument Panel (S24.4.3)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Dummy Serial No. _____

1. Seat Marking

- 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 N/A – No lumbar adjustment
- 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 N/A – No additional support adjustment
- 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 N/A – No adjustable leg support system
- 1.4 **Mark** a point (seat cushion reference point, SCRCP) on the side of the seat cushion that is between 150 mm and 250 mm from the front edge of the seat cushion. (S16.3.1.12)
- 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 N/A – No independent fore-aft seat cushion adjustment
- 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
Maximum angle _____
Minimum angle _____
Mid-angle _____
- 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 N/A – No seat height adjustment
- 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- 1.11 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.
- 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle

- determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- N/A – No seat height adjustment. Go to 1.18
- 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
- N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- 1.19. Is the seat a bucket seat?
- Yes, go to 1.20 and skip 1.21
- No, go to 1.21 and skip 1.20
- 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP (Plane B) and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- 1.21 Bench seats:
 Locate and **mark** the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S20.2.1.4, S22.2.1.3, S24.2.3, S20.4.4, S22.2.2.1(b), S22.2.2.3(b), S22.2.2.4(a), S22.2.2.5(a), S22.2.2.6(a), S22.2.2.7(a), S24.2.3(a))
 Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
 Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. (The vertical plane through this longitudinal centerline is Plane B for suppression.) _____
- 1.22 Head Restraint Position
- N/A Vehicle contains automatic head restraints.
- N/A, there is no head restraint adjustment
- 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
 Vertical height of head restraint _____ mm
 Mid-point height _____ mm

- ___2. Place the SCRP in the full rearward, mid-height position, mid-seat cushion angle, head restraint position and seat back angle determined during the completion of item 1. (S24.4.3.1)
 ___ N/A – No seat back angle adjustment
 Tested seat back angle _____
 Seat cushion angle _____
 ___ N/A – No head restraint adjustment
- ___3. Mark a point on the instrument panel that is longitudinally and transversely, as measured along the surface on the instrument panel, within ± 6 mm of the point that is defined by the intersection of the instrument panel and a line between the volumetric center of the smallest volume that can encompass the folded undeployed air bag and the volumetric center of the static fully inflated air bag. (S24.4.1.2) **(See manufacturer's information.)** The vertical plane parallel to the vehicle longitudinal centerline and through this point is "Plane D." (S22.4.1.3)
- ___4. Position a calibrated Part 572 Subpart N six-year-old dummy in the seated position and place it on the right front outboard passenger seat. (S24.4.3.2)
- ___5. Position the dummy such that its midsagittal plane is coincident with Plane D. (S24.4.3.2(a))
- ___6. Position the dummy's legs in a vertical orientation and place the back of the legs in contact with the seat cushion. (S24.4.3.2(b))
- ___7. If the thighs do not rest fully on the seat cushion, position the legs by rotating them forward and placing the feet flat on the floor pan until the thighs rest fully on the seat cushion and the back of the legs are in contact with the front of the seat cushion. (S24.4.3.2(b))
- ___8. Set the transverse distance between the longitudinal centerlines at the front of the knees at 112 to 117 mm (4.4 to 4.6 inches). Maintain the legs and thighs in a vertical plane. (S24.4.3.2(b))
 Knee Separation Distance _____
 Thigh Angle _____
- ___9. Position the dummy Torso so the rear face of the thorax instrument cavity is 6 degrees forward of vertical. (S24.4.3.2(b))
 Thorax instrument cavity angle _____
- ___10. Position the upper arms parallel to the torso, and place the hands in contact with the thighs. (S24.4.3.2(c))
- ___11. Using only the control that primarily moves the seat in the fore and aft direction, move the seat forward while maintaining the thorax instrument cavity angle until any part of the dummy contacts the instrument panel. (S24.4.3.3)
 ___ No contact. Proceed to item 12
 ___ Dummy contact, but not torso/head contact. Proceed to item 13
 ___ Head/torso Contact. Proceed to item 15
- ___12. Slide the dummy forward on the seat, maintaining the thorax instrument cavity and thigh angles. If the dummy loses contact with the seat, maintain the dummy height until any part of the dummy contacts the instrument panel. (S24.4.3.4)
 ___ No head/torso contact. Proceed to item 13
 ___ Head/torso Contact. Proceed to item 15

- __13. While maintaining the thigh angles with respect to the horizontal, apply a force between the shoulder joints of the dummy, perpendicular to the thorax instrument cavity rear face, until the head or torso comes into contact with the vehicle's instrument panel or until a maximum force of 222 N is achieved. (S24.4.3.5)
 - __ No head/torso contact. Proceed to item 14
 - __ Head/torso Contact. Proceed to item 15
- __14. Release the force. While maintaining the relative angle between the torso and the femurs, roll the dummy forward on the seat cushion, without sliding, until head/torso contact with the instrument panel is achieved. If seat contact is lost prior to or during femur rotation out of the horizontal plane, constrain the dummy to rotate about the dummy H-point. If the dummy cannot be rolled forward on the seat due to contact of the dummy feet with the floor pan, extend the lower legs forward, at the knees, until floor pan contact is avoided. (S22.4.3.5)
 - __ Head/torso contact achieved when dummy rolled forward
 - __ Seat contact lost and dummy rotated about the H-point. Head/torso contact achieved
 - __ Seat contact lost and dummy rotated about the H-point. Legs extended. Head/torso contact achieved
- __15. Avoid using any material, other than spacer blocks under the dummy, to hold the dummy in place. When the dummy will not stay in place use material with a maximum breaking strength of 311 N (70 lb) and spacer blocks to support the dummy so that there is minimum interference with the full rotational and translational freedom for the upper torso of the dummy. The material should support the torso rather than the head and should not interfere with the air bag (S24.4.3.6)
 - __ Photograph final setup and record position.
 - Thorax Cavity Angle _____degrees
 - Thigh Angle _____degrees
- __16. Record the Air bag deployment and timing requirements in the chart below.

Number of stages for this test. _____

Stage No.	Firing Time (msec) *	Recorded Firing Time (msec)
1	0.0 msec (Time Zero)	

* Firing time is measured from Time Zero for all stages

- __17. Connect dummy instrumentation to the test data acquisition system and verify channel operation.
- __18. Connect the air bag to the air bag firing system per the manufacturer's instructions, provided by the COTR.
- __19. Prepare the high-speed video/film cameras.
- __20. Deploy the air bag per the table above and record the data from the dummy instrumentation.
- __21. Photograph the post-test results.
- __22. Verify recorded firing times match specified firing times +/- 2 milliseconds.

__23. Record injury values for this test.

	FMVSS 208 Maximum Allowable Injury Assessment Value	Measured Value* Dummy Serial No. _____
HIC ₁₅	700	
Chest Acceleration	60 g	
Chest Displacement	40 mm	
Peak Nij (Nte)	1.0	
Time (ms)	NA	
Peak Nij (Ntf)	1.0	
Time (ms)	NA	
Peak Nij (Nce)	1.0	
Time (ms)	NA	
Peak Nij (Ncf)	1.0	
Time (ms)	NA	
Neck Tension (Fz)	1490 N	
Neck Compression (Fz)	1820 N	

*Calculated on data recorded for 100 ms after the initial deployment of the air bag. (S4.11(b))

I certify that I have read and performed each instruction.

Date

DATA SHEET 29

Low Risk Deployment Tests Using an Unbelted 5th Percentile Female
 Dummy (Part 572, Subpart O) (S26)
 Position 1 - Chin On Module (S26.2)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Dummy Serial No. _____

1. Seat Marking

- ___ 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 ___ N/A – No lumbar adjustment
- ___ 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No additional support adjustment
- ___ 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 ___ N/A – No adjustable leg support system
- ___ 1.4 **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. (S16.3.1.12)
- ___ 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- ___ 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- ___ 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 ___ N/A – No independent fore-aft seat cushion adjustment
- ___ 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
 Maximum angle _____
 Minimum angle _____
 Mid-angle _____
- ___ 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 ___ N/A – No seat height adjustment
- ___ 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- ___ 1.11 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.
- ___ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ___ 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- N/A – No seat height adjustment. Go to 1.18
- 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
- N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- 1.19. Is the seat a bucket seat?
 Yes, go to 1.20 and skip 1.21
 No, go to 1.21 and skip 1.20
- 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- 1.21 Bench seats:
 Locate and **mark** the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface.
- 1.22 Head Restraint Position
 N/A Vehicle contains automatic head restraints.
 N/A, there is no head restraint adjustment
- 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
 Vertical height of head restraint _____ mm
 Mid-point height _____ mm
2. Position the steering wheel so the front wheels are in the straight-ahead position. (S26.2.1)
3. Is the steering wheel adjustable up and down and/or in and out?
 Yes – go to 3.1
 No – go to 5

- ___3.1. Find and **mark** 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
- ___3.2. Find and **mark** 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.
 ___ N/A – steering wheel is not adjustable in and out.
- ___4. Using the markings made item 3 position the steering controls in the mid-position or if applicable next lowest detent position. (S26.2.1)
- ___5. Place the SCRPs in the full rearward, mid-height position, mid-seat cushion angle, head restraint position and seat back angle determined during the completion of item 1. (S26.2.3)
 ___ N/A – No seat back angle adjustment
 Tested seat back angle _____
 Seat cushion angle _____
 ___ N/A – No head restraint adjustment
- ___6. Locate and **mark** the point that is defined by the intersection of the steering wheel cover and a line between the volumetric center of the smallest volume that can encompass the folded undeployed air bag and the volumetric center of the static fully inflated air bag. The vertical longitudinal plane this point is referred to as "Plane E." (Check determination method below.) (S26.2.2)
 Measurements with respect to measurement reference points:

- ___ Point determined using manufacturer's information supplied by the COTR .
 (Include manufacturer's information in the test report.)
 OR
 ___ Point determined by test lab personnel and approved by the COTR.
 (Include supporting documentation in the test report.)
- ___7. Position a calibrated Part 572 Subpart O 5th percentile female dummy in the driver's seat (S26.2.4)
- ___8. Position the dummy such that its midsagittal plane is within ± 10 mm of Plane E (determined item 6). (S26.2.4.1)
- ___9. Position the dummy's legs in a vertical orientation and place the back of the legs in contact with the seat cushion. (S26.2.4.2)
- ___10. Position the dummy's thorax instrument cavity rear face 6 degrees forward (toward the front of the vehicle) of the steering wheel angle (i.e., if the steering wheel angle is 25 degrees from vertical, the thorax instrument cavity rear face angle is 31 degrees.) (S26.2.4.3.)
- ___11. Set the initial transverse distance between the longitudinal centerlines at the front of the dummy's knees at 160 to 170 mm (6.3 to 6.7 in), with the thighs and legs of the dummy in vertical planes. (S26.2.4.4)
- ___12. Position the upper arms parallel to the torso, and place the hands in contact with the thighs. (S26.2.4.5)
- ___13. Slide the dummy forward on the seat, maintaining the thorax instrument cavity angle, until the dummy head/torso contacts the steering wheel. (S26.2.5) Adjust the dummy legs the minimum amount necessary to ensure torso/head contact with the steering wheel when the dummy is moved forward. (S26.2.4.2)
 ___ Leg adjustments needed
- ___14. Adjust the dummy position vertically using the seat height adjustment or spacer blocks until the bottom of the chin coincides with Plane F (the transverse horizontal plane

through highest point of the air bag module cover). Adjust the fore/aft position of the dummy to maintain contact with the steering wheel. If the seat prevents placing the bottom of the chin coincident with Plane F, adjust the dummy position to achieve the closest placement possible. The thorax cavity angle should be maintained throughout the adjustment process. (S26.2.6)

___ Bottom of Chin Lies within Plane F.

___ Seat interfered with positioning. Distance of Chin from Plane F _____mm

- ___15. Avoid using any material, other than spacer blocks under the dummy, to hold the dummy in place. The legs may be extended to achieve this goal. When the dummy will not stay in place use material with a maximum breaking strength of 311 N (70 lb) and spacer blocks to support the dummy so that there is minimum interference with the full rotational and translational freedom for the upper torso of the dummy. The material should support the torso rather than the head and should not interfere with the air bag (S26.2.7)

___ Photograph final setup and record position.

Steering Wheel Angle _____ degrees (SWA)

Thorax Cavity Angle _____ degrees (SWA + 6°) ± 2°

Distance of Chin from Plane F _____mm

- ___16. Record the Air bag deployment and timing requirements in the chart below.
Number of stages for this test. _____

Stage No.	Firing Time (msec) *	Recorded Firing Time (msec)
1	0.0 msec (Time Zero)	

* Firing time is measured from Time Zero for all stages

- ___17. Connect dummy instrumentation to the test data acquisition system and verify channel operation.
- ___18. Connect the air bag to the air bag firing system per the manufacturer's instructions, provided by the COTR.
- ___19. Prepare the high-speed video/film cameras.
- ___20. Deploy the air bag per the table above and record the data from the dummy instrumentation.
- ___21. Photograph the post-test results
- ___22. Verify recorded firing times match specified firing times +/- 2 milliseconds.
- ___23. Record injury values for this test.

	FMVSS 208 Maximum Allowable Injury Assessment Value	Measured Value* Dummy Serial No. _____
HIC ₁₅	700	
Chest Acceleration	60 g	
Chest Displacement	52 mm	
Peak Nij (Nte)	1.0	
Time (ms)	NA	
Peak Nij (Ntf)	1.0	
Time (ms)	NA	
Peak Nij (Nce)	1.0	
Time (ms)	NA	
Peak Nij (Ncf)	1.0	
Time (ms)	NA	
Neck Tension (Fz)	2070 N	
Neck Compression (Fz)	2520 N	

*Calculated on data recorded for 125 ms after the initiation of the final stage of air bag deployment designed to deploy in any full frontal rigid barrier crash up to 26 km/h. (S4.11(d))

I certify that I have read and performed each instruction.

Date

DATA SHEET 30

Low Risk Deployment Tests Using an Unbelted 5th Percentile Female
 Dummy (Part 572, Subpart O) (S26)
 Position 2 - Chin On Rim (S26.3)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Dummy Serial No. _____

1. Seat Marking

- ___ 1.1 Position the seat's adjustable lumbar supports so that the lumbar supports are in the lowest, retracted or deflated adjustment positions. (S16.2.10.1, S20.1.9.1, S20.4.1, S22.1.7.1)
 ___ N/A – No lumbar adjustment
- ___ 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. (S16.2.10.2, S20.1.9.2, S20.4.1, S22.1.7.1, S22.4.2.1, S22.4.3.1, S24.4.2.1, S26.2.3, S26.3.1)
 ___ N/A – No additional support adjustment
- ___ 1.3 Position an adjustable leg support system in its rearmost position. (8/27/04 interpretation to Toyota)
 ___ N/A – No adjustable leg support system
- ___ 1.4 **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. (S16.3.1.12)
- ___ 1.5 Draw a line (seat cushion reference line) through the seat cushion reference point. (S16.3.1.13)
- ___ 1.6 Use only the controls that primarily move the seat in the fore-aft direction to move the seat cushion reference point to the rearmost position. (S16.2.10.3.1, S22.1.7.3)
- ___ 1.7 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 seat cushion reference point to the rearmost position. (S16.2.10.3.1, S20.1.9.3)
 ___ N/A – No independent fore-aft seat cushion adjustment
- ___ 1.8 Use any part of any control, other than the parts just used for fore-aft positioning, to determine the range of angles of the seat cushion reference line and to set the seat cushion reference line at the mid-angle. (S16.2.10.3.1)
 Maximum angle _____
 Minimum angle _____
 Mid-angle _____
- ___ 1.9 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 seat cushion reference point in its lowest position with the seat cushion reference line angle at the mid-angle found in 1.8. (S16.2.10.3.1)
 ___ N/A – No seat height adjustment
- ___ 1.10 Use only the controls that primarily move the seat in the fore-aft direction to verify the seat is in the rearmost position.
- ___ 1.11 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.
- ___ 1.12 Use only the controls that primarily move the seat in the fore-aft direction to place the seat in the rearmost position.
- ___ 1.13 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S22.4.3.1, S24.1.2, S24.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- N/A – No seat height adjustment. Go to 1.18
- 1.14 Use only the controls that primarily move the seat and/or seat cushion in the fore-aft direction to place the seat in the mid-fore-aft position.
- 1.15 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.16 Use only the control that change the seat in the fore-aft direction to place the seat in the foremost position. (S16.2.10.3.2)
- 1.17 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 seat cushion reference point with the seat cushion reference line at the mid-angle determined in 1.8. (S16.2.10.3.3, S20.1.9.4, S22.1.2, S22.1.7.4, S22.3.1, S24.1.2, S24.3.1)
- 1.18. Visually **mark** 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 for the rearmost, mid, and foremost seat positions. (S20.1.9.5, S22.1.7.5, S22.4.2.1, S22.4.3.1, S24.1.2, S24.4.2.1, S26.2.3, S26.3.1)
- N/A – No seat back angle adjustment
 Manufacturer's design seat back angle _____
- 1.19. Is the seat a bucket seat?
- Yes, go to 1.20 and skip 1.21
- No, go to 1.21 and skip 1.20
- 1.20 Bucket seats:
 Locate and **mark** the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S16.3.1.10 & S20.1.10)
- 1.21 Bench seats:
 Locate and **mark** the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface.
- 1.22 Head Restraint Position
- N/A Vehicle contains automatic head restraints.
- N/A, there is no head restraint adjustment
- 1.22.1 Adjust the head restraint to its lowest position. (S16.2.10.2, S20.1.9.6 S20.4.1, S22.1.7.6, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.2 All adjustments of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. **Mark** the foremost position. (S16.2.10.2 & S16.3.4.4 & S20.1.9.6, S20.4.1, S22.4.2.1, S22.4.3.1, S24.4.3.1, S26.2.3, S26.3.1)
- 1.22.3 Measure the vertical distance from the top most point of the head restraint to the bottom most point. Locate and **mark** a horizontal plane through the midpoint of this distance. (S16.3.4.3)
- Vertical height of head restraint _____ mm
 Mid-point height _____ mm
2. Position the steering wheel so the front wheels are in the straight-ahead position. (S26.3.2)
3. Is the steering wheel adjustable up and down and/or in and out?
- Yes – go to 3.1
- No – go to 5

- ___3.1. 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
- ___3.2. Find and **mark** for future references 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.
 ___ N/A – steering wheel is not adjustable in and out.
- ___4. Using the markings made from item 3 position the steering controls in the mid-position or if applicable next lowest detent position. (S26.3.2)
- ___5. Place the SCRPs in the full rearward, mid-height position, mid-seat cushion angle, head restraint position and seat back angle determined during the completion of item 1. (S26.3.1)
 ___ N/A – No seat back angle adjustment
 Tested seat back angle _____
 Seat cushion angle _____
 ___ N/A – No head restraint adjustment
- ___6. Locate and **mark** the point that is defined by the intersection of the steering wheel cover and a line between the volumetric center of the smallest volume that can encompass the folded undeployed air bag and the volumetric center of the static fully inflated air bag. The vertical plane parallel to the vehicle longitudinal centerline through this point is referred to as "Plane E." (Check determination method below.) (S26.2.2)
 Measurements with respect to measurement reference points:

- ___ Point determined using manufacturer's information supplied by the COTR .
 (Include manufacturer's information in the test report.)
 OR
 ___ Point determined by test lab personnel and approved by the COTR.
 (Include supporting documentation in the test report.)
- ___7. Mark a point on the steering wheel rim in "Plane E" that is 10 mm below the highest point on the steering wheel rim. (S26.3.6)
- ___8. Locate and mark a point on the front of the dummy's chin on the midsagittal plane that is 40 mm ± 3mm below the center of the mouth. This is referred to as "Chin Point." (S26.3.6)
- ___9. Position a calibrated Part 572 Subpart O 5th percentile female dummy in the driver's seat (S26.3.4)
- ___10. Position the dummy such that its midsagittal plane is within ± 10 mm of Plane E (determined in item 6). (S26.3.4.1)
- ___11. Position the dummy's legs in a vertical orientation and place the back of the legs in contact with the seat cushion. (S26.3.4.2)
- ___12. Position the dummy's thorax instrument cavity rear face 6 degrees forward (toward the front of the vehicle) of the steering wheel angle (i.e., if the steering wheel angle is 25 degrees from vertical, the thorax instrument cavity rear face angle is 31 degrees.) (S26.3.4.3.)
- ___13. Set the initial transverse distance between the longitudinal centerlines at the front of the dummy's knees at 160 to 170 mm (6.3 to 6.7 in), with the thighs and legs of the dummy in vertical planes. (S26.3.4.4)
- ___14. Position the upper arms parallel to the torso, and place the hands in contact with the thighs. (S26.3.4.5)
- ___15. Slide the dummy forward on the seat, maintaining the thorax instrument cavity angle, until the dummy head/torso contacts the steering wheel. (S26.3.5)

- ___16. Adjust the dummy position vertically until the Chin Point is within ± 10 mm of the steering wheel point located in item 7. (S26.3.6)
 - ___Chin Point is within ± 10 mm of the steering wheel point located in item 7. Go to 19
 - ___Chin Point is not within ± 10 mm of the steering wheel point located in item 7 and dummy head contacts the windshield or upper interior. Go to 17
 - ___Chin Point is within ± 10 mm of the steering wheel point located in item 7 and the dummy's leg(s) is in contact with the steering wheel.
 - ___Steering wheel is not adjustable. Go to 19
 - ___Steering wheel is adjustable. Go to 18
- ___17. Lower the dummy until there is no more than 5 mm clearance between the windshield or upper interior. (S26.3.6)
 - ___Chin Point is within ± 10 mm of the steering wheel point located in item 7. Go to 19
 - ___Chin Point is not within ± 10 mm of the steering wheel point located in item 7.
 - ___Steering wheel is not adjustable. Go to 19
 - ___Steering wheel is adjustable. Go to 18
- ___18. Adjust any or all (FR68 65183) of the steering controls to bring the Chin Point within ± 10 mm of the steering wheel point located in item 7. Adjust the rear thorax cavity per item 12. (S26.3.7)

Steering Wheel Angle _____ degrees

Thorax Cavity angle _____degrees

 - ___ Chin Point is within ± 10 mm of the steering wheel point located in item 7. Go to 19
 - ___ Chin Point is not within ± 10 mm of the steering wheel point located in item 7. Go to 19
- ___19. Avoid using any material, other than spacer blocks under the dummy, to hold the dummy in place. The legs may be extended to achieve this goal. When the dummy will not stay in place use material with a maximum breaking strength of 311 N (70 lb) and spacer blocks. Support the dummy so that there is minimum interference with the full rotational and translational freedom for the upper torso of the dummy. The material should support the torso rather than the head and should not interfere with the air bag (S26.3.8)
 - ___ Photograph final setup and record position.
 - Steering Wheel Angle _____ degrees
 - Thorax Cavity Angle _____degrees (SWA + 6°) $\pm 2^\circ$
 - Chin Point Height _____mm
- ___20. Record the Air bag deployment and timing requirements in the chart below.
Number of stages for this test. _____

Stage No.	Firing Time (msec) *	Recorded Firing Time (msec)
1	0.0 msec (Time Zero)	

* Firing time is measured from Time Zero for all stages

- ___21. Connect dummy instrumentation to the test data acquisition system and verify channel operation.
- ___22. Connect the air bag to the air bag firing system per the manufacturer's instructions, provided by the COTR.
- ___23. Prepare the high-speed video/film cameras.
- ___24. Deploy the air bag per the table above and record the data from the dummy instrumentation.
- ___25. Photograph the post-test results
- ___26. Verify recorded firing times match specified firing times +/- 2 milliseconds.

27. Record injury values for this test.

	FMVSS 208 Maximum Allowable Injury Assessment Value	Measured Value Dummy Serial No.
HIC ₁₅	700	
Chest Acceleration	60 g	
Chest Displacement	52 mm	
Peak Nij (Nte)	1.0	
Time (ms)	NA	
Peak Nij (Ntf)	1.0	
Time (ms)	NA	
Peak Nij (Nce)	1.0	
Time (ms)	NA	
Peak Nij (Ncf)	1.0	
Time (ms)	NA	
Neck Tension (Fz)	2070 N	
Neck Compression (Fz)	2520 N	

I certify that I have read and performed each instruction.

Date

DATA SHEET 31

Test of Reactivation of the Passenger Air Bag System with an
Unbelted 5th Percentile Female Dummy (S20.3, 22.3, S24.3)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Seat Position: ___ Rearmost ___ Mid-position ___ Foremost (S20.3.1, 22.3.1, S24.3.1)

Do NOT use seat belts for these tests.

1. This reactivation test is being performed after the following suppression test:
 - ___ Suppression Test Using 12-Month-Old CRABI Dummy (S20)
After section ___ of data sheet 16
 - ___ Suppression Test Using Newborn Infant Dummy (S20)
After section ___ of data sheet 17
 - ___ Suppression Test Using 3-Year-Old Dummy and Booster Seats (S22)
After section ___ of data sheet 18
 - ___ Suppression Test Using 3-Year-Old Dummy and Forward Facing Convertible Child Restraints (S22)
After section ___ of data sheet 19
 - ___ Suppression Test Using an Unbelted 3-Year-Old Dummy (S22)
After section ___ of data sheet 20
 - ___ Suppression Test Using 6 Year-Old-Dummy and Booster Seats (S24.2.1)
After section ___ of data sheet 21
 - ___ Suppression Test Using 6 Year-Old-Dummy (S24.2.1)
After section ___ of data sheet 22
- ___ 2. Leave the seat in the fore-aft position, seat mid-height, and seat cushion angle used for the suppression test.
- ___ 3. Fully recline the seat back. (S16.3.3.1.2)
___ N/A seat back not adjustable.
- ___ 4. Place the dummy in the seat with the legs at an angle of 120 degrees to the thighs. The calves should not be touching the seat cushion. (S16.3.3.1.2, S20.3.2)
- ___ 5. Position the dummy midsagittal plane vertical and coincident with the seating position centerline determined in Data Sheet 14.1. (S16.3.3.1.3 or S16.3.3.1.4)
- ___ 6. Hold down the dummy's thighs and push rearward on the upper torso to maximize the pelvic angle. (S16.3.3.1.5)
- ___ 7. Set the angle between the legs and the thighs to 120 degrees. (S16.3.3.1.6)
- ___ 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 seat centerline. (S16.3.3.1.6)
Record Knee Separation _____ mm
- ___ 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. (S16.3.3.1.6)
___ Pelvis contacted seat back.
___ Calves contacted seat cushion.
- ___ 10. Gently rock the upper torso +/- 5 degrees (approximately 51 mm (2 inches)) side to side three times to reduce the friction between the dummy and the seat. (S16.3.3.1.7)

- __11. 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. (S16.3.3.1.8) If needed, extended the legs until the feet do not contact the floor pan. The thighs should be resting on the seat cushion. (S16.3.3.1.8)
- __N/A No contact
- __Dummy contact. Clearance set at maximum of 5mm
Measured Clearance _____ mm
- __Dummy Contact. Seat set at nearest detent position.
Seat position ____ detent positions rearward of full forward
(full forward is position zero)
- __12. Verify the pelvis is not interfering with the seat bight. (S16.3.3.1.9)
- __13. Verify the dummy abdomen is properly installed. (S16.3.3.1.9)
- __14. If the seat back is adjustable, 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 +/- 0.5 degrees. If the head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle. (S16.3.3.1.9 and S16.3.3.1.10) (Check All That Apply)
- __Seat back not adjustable
- __Head Level Achieved. (Check all that apply)
- __Head leveled using the adjustable seat back
- __Head leveled using the neck bracket.
Head Angle _____ degrees
- __Head Level NOT Achieved. (Check all that apply)
- __Head angle minimized using the adjustable seat back
- __Head angle minimized using the neck bracket.
Head Angle _____ degrees
- __15. Measure and set the pelvic angle using the pelvic angle gage TE-2504. The pelvic angle should be 20.0 degrees +/- 2.5 degrees. If the pelvic angle cannot be set to 20 degrees, minimize the angular difference. (S16.3.3.1.11)
- __Pelvic angle set to 20.0 degrees +/- 2.5 degrees.
- __Pelvic angle of 20.0 degrees not achieved, the angular difference was minimized.
- __Record the pelvic angle. _____ degrees
- __16. Verify the transverse instrument platform of the dummy head is level +/- 0.5 degrees. Use the seat back angle adjustment to level the head. If the head cannot be leveled using the seat back adjustment, or the seat back is not adjustable, use the lower neck bracket adjustment to level the head. If a level position cannot be achieved, minimize the angle. (S16.3.3.1.9, S16.3.3.1.10, and S16.3.3.1.11)
- __Head Level Achieved
Head Angle _____ degrees
- __Head Level NOT Achieved.
Head Angle _____ degrees
- __17. Check the dummy for contact with interior after completing adjustments. (S16.3.3.1.12)
- __No contact.
- __Dummy in contact with interior.
- __Seat moved Aft ____ mm from the previous position.
- __Seat moved Aft ____ detent positions from the previous position.
- __18. Foot positioning. (Indicate final position achieved) (S16.3.3.2)
- __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 If the heels do not touch the floor pan, set the legs to vertical and set the feet parallel to the floor pan

- ___19. Passenger arm/hand positioning. (S16.3.3.3)
 - ___19.1 Place the dummy's upper arms adjacent to the torso with the arm centerlines as close to a vertical longitudinal plane as possible. (S16.3.3.3.1)
 - ___19.2 Place the palms of the dummy in contact with the outer part of the thighs (S16.3.3.3.2)
 - ___19.3 Place the little fingers in contact with the seat cushion. (S16.3.3.3.3)
- ___20. Start the vehicle engine or place the ignition in the "on" position, whichever will turn on the suppression system, and close all vehicle doors. (S20.3.2, S22.2.1.7) Wait 10 seconds, and then check whether the air bag is suppressed. (S20.3.4, S22.2.1.8)
 - ___Air Bag Suppressed – **FAIL**
 - ___Air Bag Not Suppressed – Pass
- ___21. Return the ignition switch to the "off" position.

I certify that I have read and performed each instruction.

Date

DATA SHEET 32

VEHICLE WEIGHT, FUEL TANK, AND ATTITUDE DATA

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Impact Angle: _____ Belted Dummies: __Yes__ No

Test Speed: __32 to 40 kmph __0 to 48 kmph __0 to 56 kmph

Driver Dummy: __5th female __50th male Passenger Dummy: __5th female __50th male

- __1. Fill the transmission with transmission fluid to the satisfactory range.
- __2. Drain fuel from vehicle
- __3. Run the engine until fuel remaining in the fuel delivery system is used and the engine stops.
- __4. Record the useable fuel tank capacity supplied by the COTR. _____
- __5. Record the fuel tank capacity supplied in the owner's manual. _____
- __6. 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," or gasoline, fill the fuel tank through a 10 micron filter to assure debris free stoddard.
Amount added _____
- __7. Fill the coolant system to capacity.
- __8. Fill the engine with motor oil to the max. mark on the dip stick.
- __9. Fill the brake reservoir with brake fluid to its normal level.
- __10. Fill the windshield washer reservoir to capacity.
- __11. Inflate the tires to the tire pressure on the tire placard. If no tire placard is available, inflate the tires to the recommended pressure in the owner's manual.
Tire placard pressure RF____; LF____; RR____; LR____
Owner's manual pressure :RF____; LF____; RR____; LR____
Actual inflated pressure RF____; LF____; RR____; LR____
- __12. Record the vehicle weight at each wheel to determine the unloaded vehicle weight (UVW), i.e. "as delivered" weight).

Right Front =	_____ kg	Right Rear =	_____ kg
Left Front =	_____ kg	Left Rear =	_____ kg
TOTAL FRONT =	_____ kg	TOTAL REAR =	_____ kg
% Total Weight =	_____ %	% Total Weight =	_____ %

UVW = TOTAL FRONT PLUS TOTAL REAR = _____ kg
(If the weight is greater than 2,495 kg, immediately contact the COTR.)

- __13. UVW Test Vehicle Attitude: (all dimensions in millimeters)
 - __13.1 Mark a point on the vehicle above the center of each wheel.
 - __13.2 Place the vehicle on a level surface.
 - __13.3 Measure perpendicular to the level surface to the 4 points marked on the body and record the measurements

RF____; LF____; RR____; LR____

14. Calculate the Rated Cargo and Luggage Weight (RCLW).
 ___ 14.1 Vehicle capacity weight (VCW) on the certification label or tire placard. _____
 ___ 14.2 DSC from the certification label or tire placard _____
 ___ 14.3 $RCLW = VCW - (68 \text{ kg} \times DSC) = \underline{\hspace{2cm}} - (68 \text{ kg} \times \underline{\hspace{2cm}}) = \underline{\hspace{2cm}}$
 ___ 14.4 Is the vehicle certified as a truck, MPV or bus (see the certification label on the door jamb)?
 ___ Yes. If the calculated RCLW is greater than 136 kg, use 136 kg as the RCLW. (S8.1.1)
 ___ No, use the RCLW calculated in 14.3.

- ___ 15. Fully Loaded Weight (100% fuel fill)
 ___ 15.1 Place the appropriate test dummy in both front outboard seating positions.
 Driver: ___ 5th female ___ 50th male
 Passenger: ___ 5th female ___ 50th male
 ___ 15.2 Load the vehicle with the RCLW from 14.3 or 14.4 whichever is applicable.
 ___ 15.3 Place the RCLW in the cargo area. Center the load over the longitudinal centerline of the vehicle. (S8.1.1 (d))
 ___ 15.4 Record the vehicle weight at each wheel to determine the Fully Loaded Weight.

Right Front = _____ kg Right Rear = _____ kg
 Left Front = _____ kg Left Rear = _____ kg
 TOTAL FRONT = _____ kg TOTAL REAR = _____ kg
 % Total Weight = _____ % % Total Weight = _____ %
 % GVW = _____ % % GVW = _____ %

FULLY LOADED WEIGHT = TOTAL FRONT PLUS TOTAL REAR = _____ lbs

- ___ 16. Fully Loaded Test Vehicle Attitude: (all dimensions in millimeters)
 ___ 16.1 Place the vehicle on a level surface.
 ___ 16.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13.1 above) and record the measurements

RF _____; LF _____; RR _____; LR _____

- ___ 17. Drain the fuel system
 ___ 18. 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 94 percent of useable capacity through a 10 micron filter
 Fuel tank capacity x .94 = _____ x .94 = _____
 Amount added _____
 ___ 19. Crank the engine to fill the fuel delivery system with Stoddard solvent.
 ___ 20. Calculate the test weight range.
 ___ 20.1 Calculated Weight = UVW (see 12 above) + RCLW (see 14 above) + 2x(dummy weight)
 _____ = _____ + _____ + _____
 ___ 20.2 Test Weight Range = Calculated Weight (- 4.5 kg, - 9 kg.)
 Max. Test Weight = Calculated Test Weight - 4.5kg = _____
 Min. Test Weight = Calculated Test Weight - 9 kg = _____
 ___ 21. Remove the RCLW from the cargo area.

__22. Drain transmission fluid, engine coolant, motor oil, and windshield washer fluid from the test vehicle so that Stoddard solvent leakage from the fuel system will be evident.

__23. Vehicle Components Removed For Weight Reduction:

__24. Secure the equipment and ballast in the load carrying area and distribute it, as nearly as possible, to obtain the proportion of axle weight indicated by the gross axle weight ratings and center it over the longitudinal centerline of the vehicle.

__25. If necessary, add ballast to achieve the actual test weight.
 __N/A
 Weight of ballast _____

__26. Ballast, including test equipment, must be contained so that it will not shift during the impact event or interfere with data collection or interfere with high-speed film recordings or affect the structural integrity of the vehicle or do anything else to affect test results. Care must be taken to assure that any attachment hardware added to the vehicle is not in the vicinity of the fuel tank or lines.

__27. Record the vehicle weight at each wheel to determine the actual test weight.

Right Front =	_____ kg	Right Rear =	_____ kg
Left Front =	_____ kg	Left Rear =	_____ kg
TOTAL FRONT =	_____ kg	TOTAL REAR =	_____ kg
% Total Weight =	_____ %	% Total Weight =	_____ %
% GVW =	_____ %	% GVW =	_____ %
(%GVW = Axle GVW ÷ Vehicle GVW)			
TOTAL FRONT PLUS TOTAL REAR = _____ kg			

__28. Is the test weight between the Max. Weight and the Min. Weight (See 20.2)?

__Yes
 __No, explain why not. _____

__29. Test Weight Vehicle Attitude: (all dimensions in millimeters)

__29.1 Place the vehicle on a level surface.

__29.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13 above) and record the measurements

RF _____; LF _____; RR _____; LR _____

__30. Summary of test attitude

__30.1

AS DELIVERED: RF____; LF____; RR____; LR____

AS TESTED: RF____; RF____; RR____; LR____

FULLY LOADED: RF____; LF____; RR____; LR____

__30.2 Is the "as tested" test attitude equal to or between the "fully loaded" and "as delivered" attitude?

__Yes

__No, explain why not. _____

I certify that I have read and performed each instruction.

Date

DATA SHEET 33
Vehicle Accelerometer Location

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Impact Angle: _____ Belted Dummies: __Yes__ No

Test Speed: __32 to 40 kmph __0 to 48 kmph __0 to 56 kmph

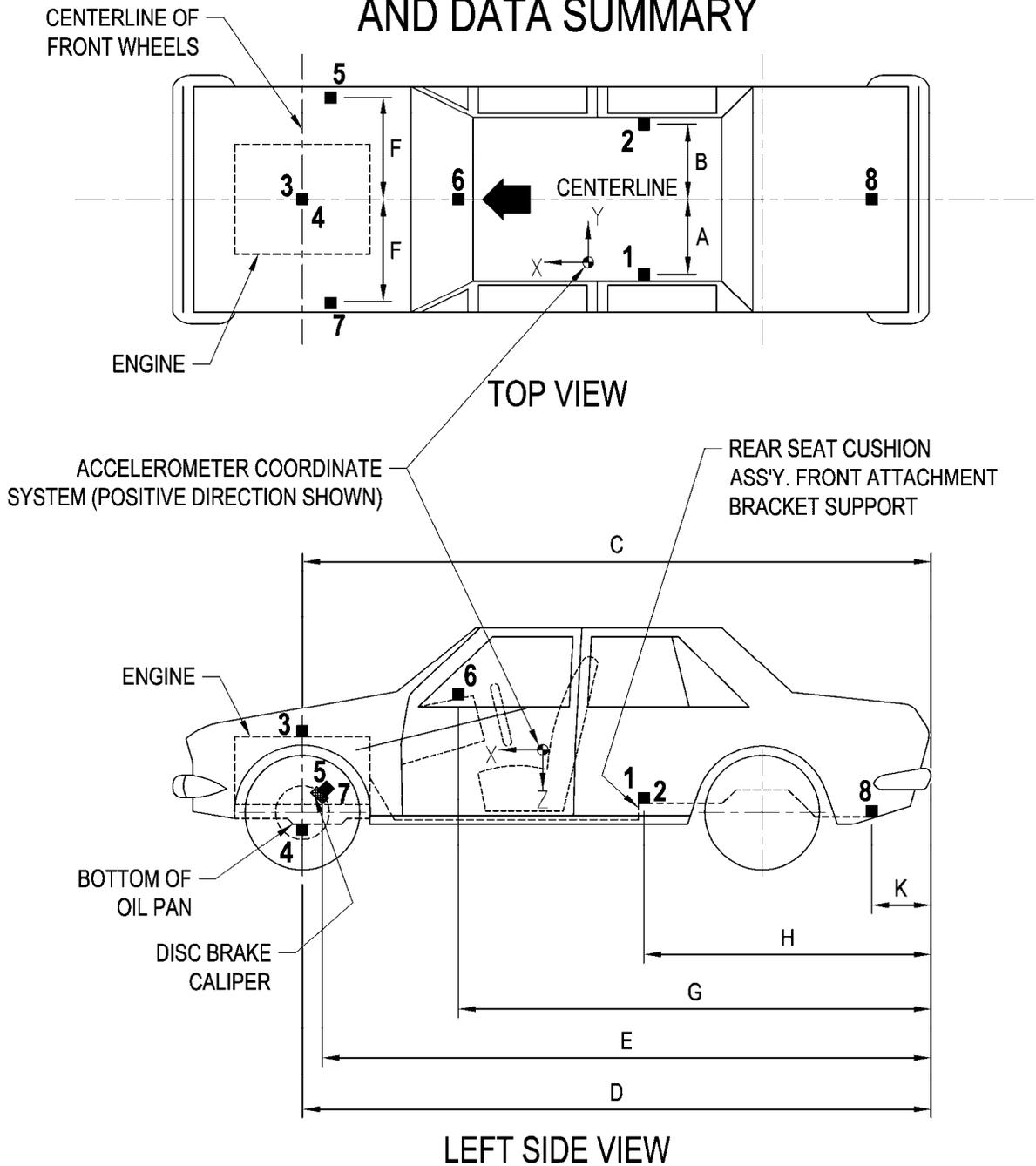
Driver Dummy: __5th female __50th male Passenger Dummy: __5th female __50th male

- __1. Find the location where the vertical plane parallel to the longitudinal centerline of the vehicle and through the center of the left front outboard seating position intersects the left rear seat cross member. Install an accelerometer at this intersection on the rear seat cross member to record x-direction accelerations. Record the location on the following chart.
- __2. Find the location where the vertical plane parallel to the longitudinal centerline of the vehicle and through the center of the right front outboard seating position intersects the right rear seat cross member. Install an accelerometer at this intersection on the rear seat cross member to record x-direction accelerations. Record the location on the following chart.
- __3. Find the location where a vertical plane through the longitudinal centerline of the vehicle and a vertical transverse plane through the center of the two wheels on opposite sides of the engine intersect at the top of the engine. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.
- __4. Find the location where a vertical plane through the longitudinal centerline of the vehicle and a vertical transverse plane through the center of the two wheels on opposite sides of the engine intersect the bottom of the engine. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.
- __5. Install an accelerometer on the right front brake caliper to record x-direction accelerations. Record the location on the following chart.
- __6. Find the location where a vertical plane through the longitudinal centerline of the vehicle intersects the top of the instrument panel. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.
- __7. Install an accelerometer on the left front brake caliper to record x-direction accelerations. Record the location on the following chart.
- __8. Find the location where a vertical plane through the longitudinal centerline of the vehicle intersects the floor of the trunk. Install an accelerometer on the trunk floor at this intersection to record z-direction accelerations. Record the location on the following chart.

I certify that I have read and performed each instruction.

Date

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



DIMENSION CORRESPONDING TO THE LETTERS "A" THROUGH "K" ARE RECORDED IN THE TABLE ON THE FOLLOWING PAGE. ACCELEROMETERS CORRESPONDING TO THE NUMBERS 1 THROUGH 8 ARE SPECIFIED ON THE PRECEDING PAGE.

DATA SHEET 33
VEHICLE ACCELEROMETER LOCATION MEASUREMENTS

<u>DIMENSION</u>	<u>LENGTH (inches)</u>	
<u>PRETEST VALUES</u>		
<u>A</u>		
<u>B</u>		
<u>C</u>		
<u>D</u>		
<u>E</u>	Right Side	Left Side
<u>F</u>	Right Side	Left Side
<u>G</u>		
<u>H</u>		
<u>K</u>		
<u>POST TEST VALUES</u>		
<u>A</u>		
<u>B</u>		
<u>C</u>		
<u>D</u>		
<u>E</u>	Right Side	Left Side
<u>F</u>	Right Side	Left Side
<u>G</u>		
<u>H</u>		
<u>K</u>		

REMARKS:

DATA SHEET 34
Photographic Targets

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Impact Angle: _____ Offset percentage: _____ Belted Dummies: __Yes__ No

Test Speed: __32 to 40 kmph __0 to 48 kmph __0 to 56 kmph

Driver Dummy: __5th female __50th male Passenger Dummy: __5th female __50th male

1. FMVSS 208 vehicle targeting requirements (See Figures 28A and 28B)
 - 1.1 Targets A1 and A2 are on flat rectangular panels.
 - 1.2 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the front on the outboard sides of A1 and A2. The center of each circular target is 100 mm from the one next to it. Distance between targets _____mm
 - 1.3 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the back on the outboard sides of on A1 and A2. The center of each circular target is 100 mm from the one next to it. Distance between targets _____mm
 - 1.4 The distance between the first circular target at the front of A1 and A2 and the last circular target at the back of A1 and A2 is at least 915 mm.
Distance between the first and last circular targets _____mm
 - 1.5 Firmly fix target A1 on the vehicle roof in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy.
 - 1.6 Firmly fix target A2 on the vehicle roof in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy.
 - 1.7 Two circular targets (C1 and C2) at least 90 mm in diameter and with black and yellow quadrants are mounted on the outside of the driver door. The centers of each circular target are at least 610 mm apart. Distance between targets _____mm
 - 1.8 Two circular targets (C1 and C2) at least 90 mm in diameter and with black and yellow quadrants are mounted on the outside of the passenger door. The centers of each circular target are at least 610 mm apart. Distance between targets _____mm
 - 1.9 Place tape with squares having alternating colors on the top portion of the steering wheel.
 - 1.10 Chalk the bottom portion of the steering wheel.
 - 1.11 Is this an offset test?
 Yes, continue with this section
 No, go to 2.
 - 1.12 Measure the width of the vehicle. Vehicle width _____mm
 - 1.13 Find the centerline of the vehicle. ($\frac{1}{2}$ of the vehicle width)
 - 1.14 Find the line parallel to the centerline of the vehicle and 0.1 x vehicle width from the centerline of the vehicle.
 - 1.15 Apply 25 mm wide tape with alternating black and yellow squares parallel to and on each side of the line found in 1.14. The edge of each tape shall be 50 mm from the line found in 1.14. The tape shall extend from the bottom of the bumper to the front edge of the windshield. (Figure 28D)
2. Barrier targeting
 - 2.1 Fix two stationary targets D1 and D2 to the barrier as shown in the Figure 28A. One target is in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy. The other is in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy
 - 2.2 Targets D1 and D2 are on a rectangular panel.
 - 2.3 Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted on the sides of the rectangular panel away from the longitudinal centerline of the vehicle. The center of each circular target is 100 mm from the one next to it.

Distance between circular targets on D1 _____mm
 Distance between circular targets on D2 _____mm

3. FMVSS 208 dummy targeting requirements
 - ___3.1 Place a circular target with black and yellow quadrants on both sides of the driver dummy head as close as possible to the center of gravity of the head in the x and z direction (relative to the measuring directions of the accelerometers).
 - ___3.2 Place a circular target with black and yellow quadrants on both sides of the passenger dummy head as close as possible to the center of gravity of the head in the x and z direction (relative to the measuring directions of the accelerometers).
 - ___3.3 Place a circular target with black and yellow quadrants on the outboard shoulder of the driver dummy. Place the target as high up on the arm as possible at the intersection of the arm and shoulder. The sleeve of the shirt on the dummy may be cut to make the target visible, but do not remove any material.
 - ___3.4 Place a circular target with black and yellow quadrants on the outboard shoulder of the passenger dummy. Place the target as high up on the arm as possible at the intersection of the arm and shoulder. The sleeve of the shirt on the dummy may be cut to make the target visible, but do not remove any material.

4. FMVSS 204 targeting requirements
 - ___4.1 Is an FMVSS 204 indicant test ordered on the "COTR Vehicle Work Order?"
 - ___Yes, continue with this form.
 - ___No, this form is complete
 - ___4.2 Resection panel (Figure 28C)
 - ___4.2.1 The panel deviates no more than 6 mm from perfect flatness when suspended vertically.
 - ___4.2.2 The 8 targets on the panel are circular targets at least 90 mm in diameter and with black and yellow quadrants.
 - ___4.2.3 The center of each of the 4 outer targets are placed within 1 mm of the corners of a square measuring 914 mm on each side.
 - ___4.2.4 Locate another square with 228 mm sides and with the center of this square coincident with the center of the 914 mm square.
 - ___4.2.5 The center of the 4 inner targets are placed at the midpoints of each of the 228 mm sides.
 - ___4.3 Place a circular target at least 90 mm in diameter and with black and yellow quadrants on a material (cardboard, metal, etc.) that can be taped to the top of the steering column.
 - ___4.4 Tape the target from 4.3 to the top of the steering column in a manner that does not interfere with the movement of the steering column in a crash.

 I certify that I have read and performed each instruction.

 Date

REFERENCE PHOTO TARGETS

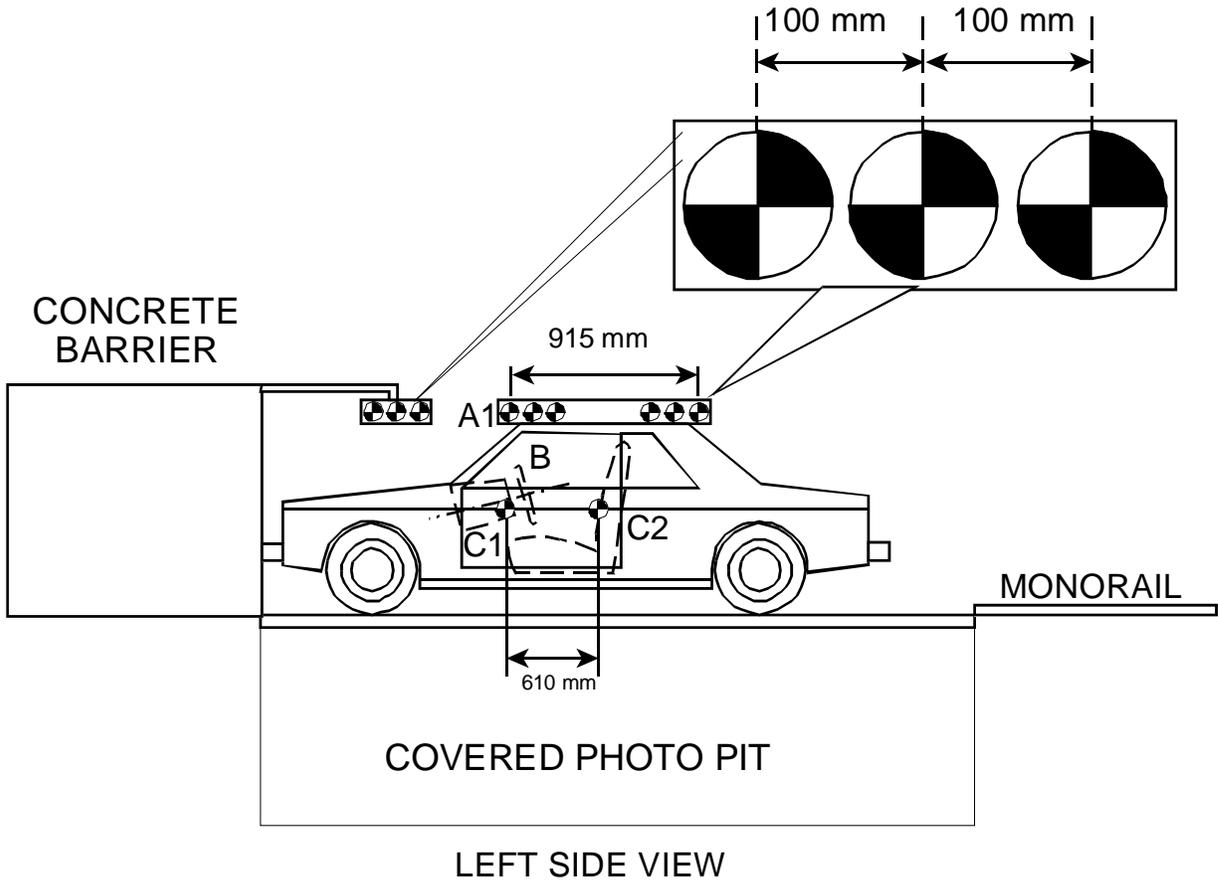
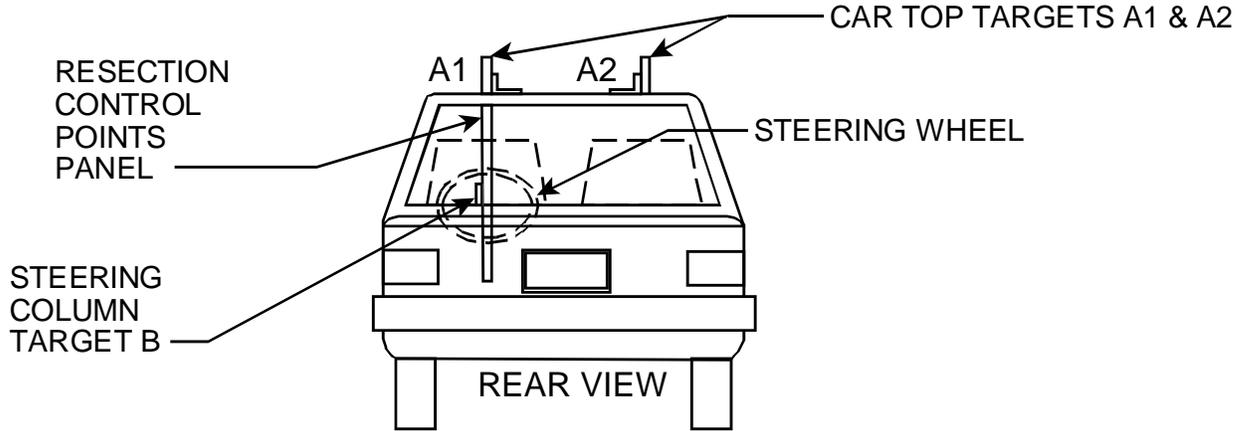


FIGURE 28A

RESECTION PANEL TARGETING ALIGNMENT



TEST RUN STEERING COLUMN CAMERA VIEW OF TYPICAL TIME ZERO VEHICLE POSITION

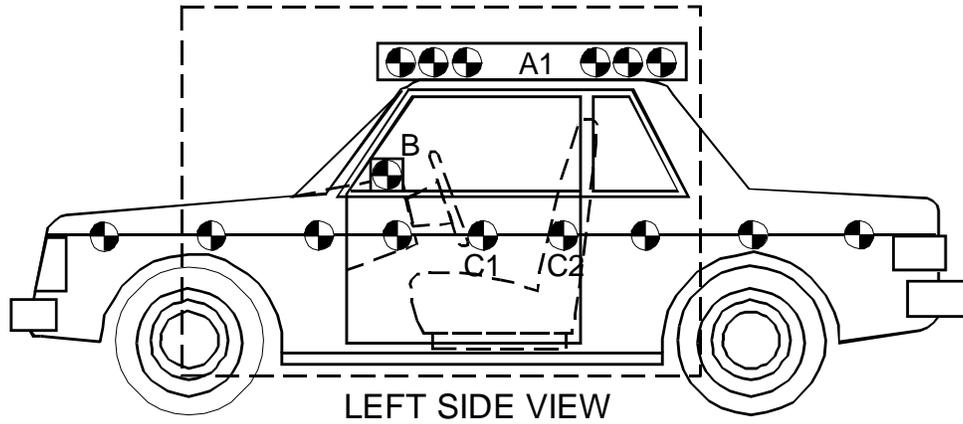
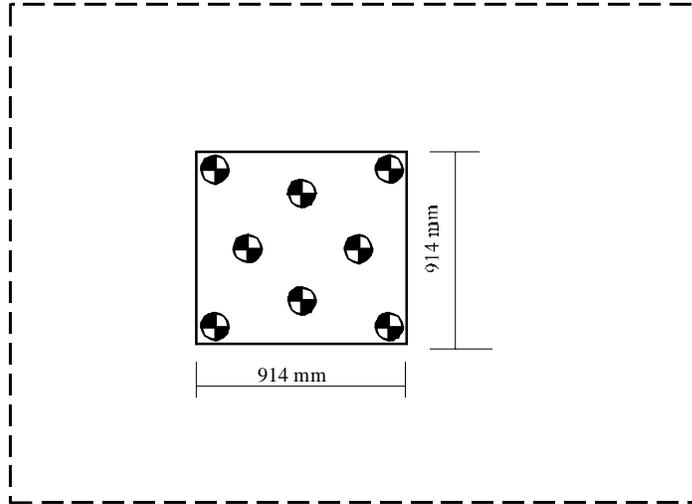


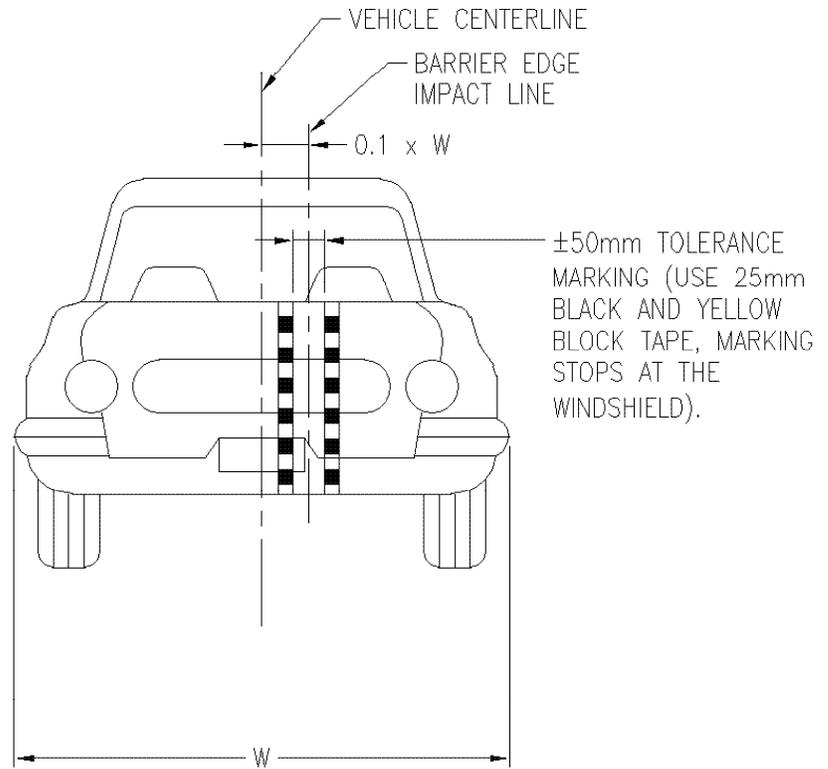
FIGURE 28B

PRE-RUN STEERING COLUMN HIGH SPEED CAMERA VIEW



LEFT SIDE VIEW

FIGURE 28C



OFFSET DEFORMABLE BARRIER
ADDITIONAL VEHICLE TARGETING

FIGURE 28D

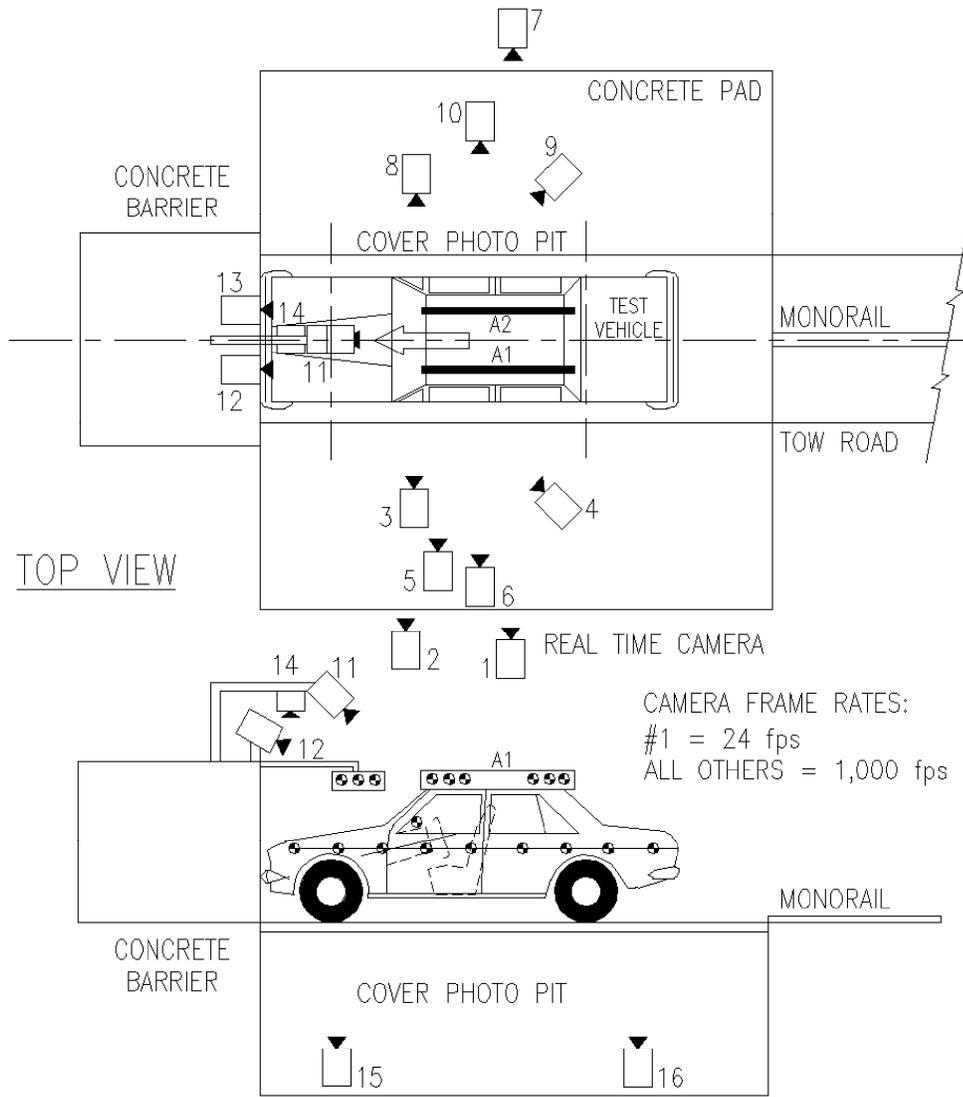
DATA SHEET 35
CAMERA LOCATIONS

VEH. NHTSA No.: _____; TEST DATE: _____; TIME: _____

VEH. YEAR/MAKE/MODEL/BODY STYLE: _____

CAMERA NO.	VIEW	CAMERA POSITIONS (mm) *			ANGLE (deg.)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Left SideView							24
2	Left Side View (barrier face to front seat backs)							
3	Left SideView (A-post)							
4	Left Side View (B-post aimed toward center of steering wheel)							
5	Left Side View (B-post)							
6	Left Side View (front door under camera 5)							
7	Right Side View (overall)							
8	Right Side View (A-post)							
9	Right Side View (B-post)							
10	Right Side View (front door)							
11	Front View Windshield							
12	Front View Driver							
13	Front View Passenger							
14	Overhead Barrier Impact View							
15	Pit Camera Engine View							
16	Pit Camera Fuel Tank View							

*
X - film plane to barrier face
Y - film plane to monorail centerline
Z - film plane to ground



LEFT SIDE VIEW

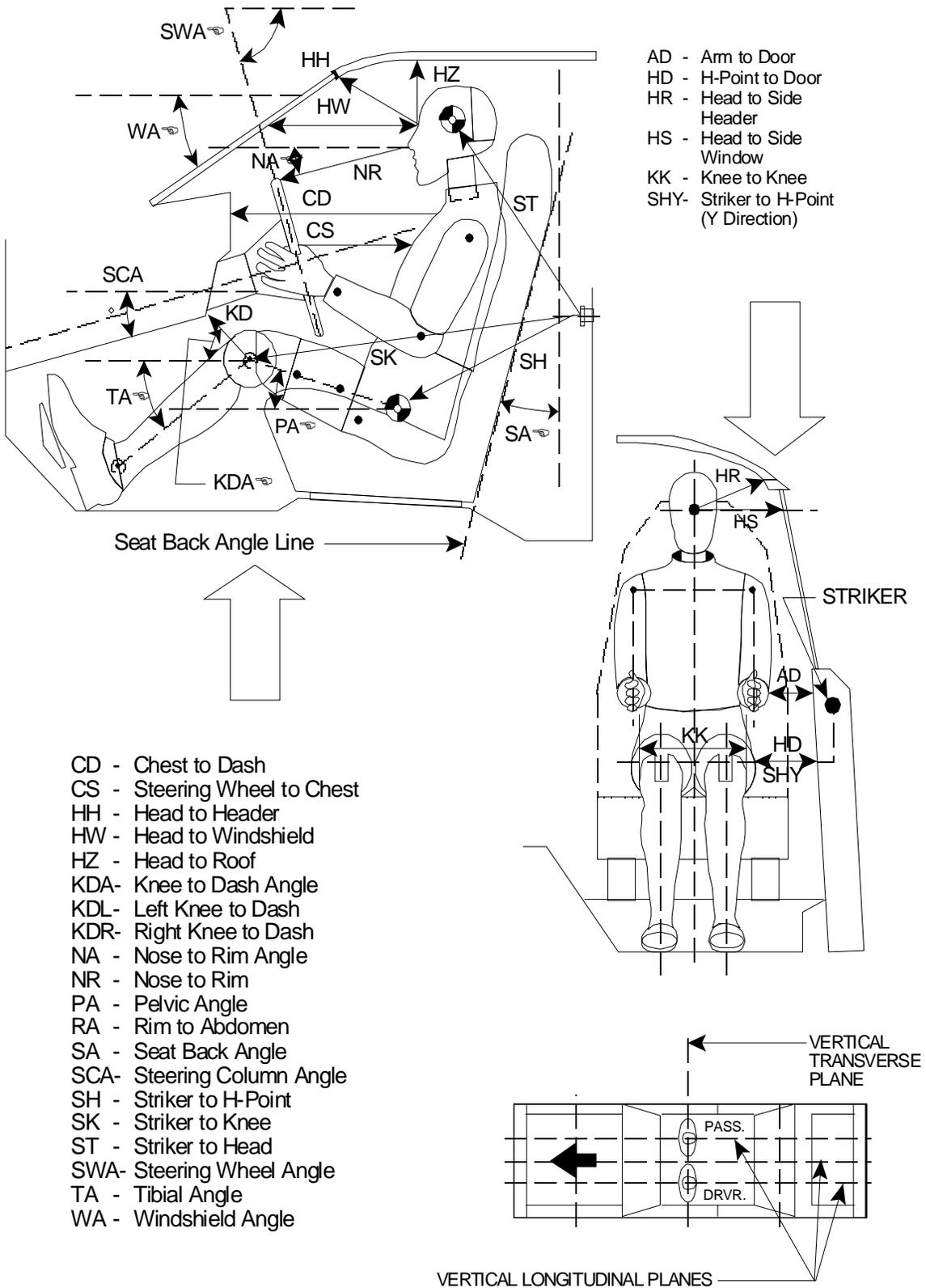
CAMERA POSITIONS FOR FRONTAL IMPACTS

DATA SHEET 36
Dummy Positioning (See Appendices F and G)

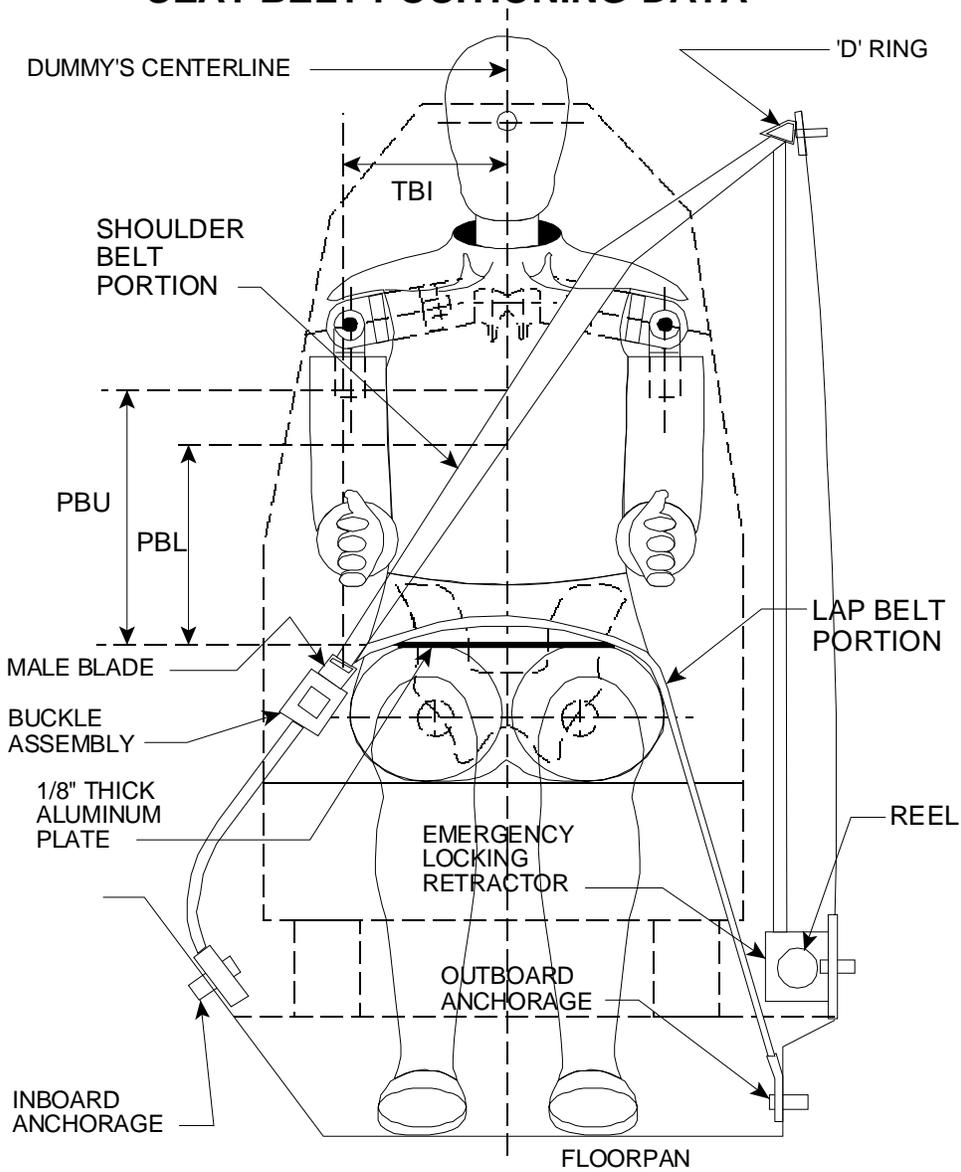
DATA SHEET 37
DUMMY POSITIONING MEASUREMENTS

	DRIVER (Serial No. _____)	PASSENGER (Serial No. _____)
WA°		
SWA°		NA
SCA°		NA
SA°		
HZ		
HH		
HW		
HR		
NR	ANGLE	NA
CD		
CS		
RA		
KDL		
KDR		
PA°		
TA°		
KK		
ST	ANGLE	ANGLE
SK	ANGLE	ANGLE
SH	ANGLE	ANGLE
SHY		
HS		
HD		
AD		

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



15. DATA SHEETS....Continued
SEAT BELT POSITIONING DATA



FRONT VIEW OF DUMMY

DESCRIPTIONS OF DUMMY MEASUREMENTS

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 10 inches 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.

The following measurements are to be made within a vertical longitudinal plane.

- * HH Head to Header, taken from the point where the dummy's nose meets his forehead (between his eyes) to the furthest point forward on the header.
- * HW Head to Windshield, taken from the point where the dummy's nose meets his forehead (between his eyes) to a point on the windshield. Use a level.
- HZ Head to Roof, taken from the point where the dummy's nose meets his forehead (between his eyes) to the point on the roof directly above it. Use a level.
- * CS Steering Wheel to Chest, taken from the center of the steering wheel hub to the dummy's chest. Use a level.
- * CD Chest to Dash, place a tape measure on the tip of the dummy's chin and rotate five inches of it downward toward the dummy to the point of contact on the transverse center of the dummy's chest. Measure from this point to the closest point on the dashboard either between the upper part of the steering wheel between the hub and the rim, or measure to the dashboard placing the tape measure above the rim, whichever is a shorter measurement. See photograph.
- RA Steering Wheel Rim to Abdomen, taken from the bottommost point of the steering wheel rim horizontally rearward to the dummy. Use a level.
- NR Nose to Rim, taken from the tip of the dummy's nose to the closest point on the top of the steering wheel rim. Also indicate the angle this line makes with respect to the horizontal (NA).
- *¹ KDL, KDR Left and Right Knees to Dashboard, taken from the center of the 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. Also reference the angle of this measurement with respect to the horizontal for the outboard knee (KDA). See photograph.
- SH, SK, ST Striker to Hip, Knee, and Head, these measurements are to be taken in the X-Z plane measured from the forward most center point on the striker to the center of the H-point, outer knee bolt, and head target. When taking this measurement a firm device that can be rigidly connected to the striker should be used. Use a level. The angles of these measurements with respect to the

* Measurement used in Data Tape Reference Guide

15. DATA SHEETS....Continued

horizontal should also be recorded. The measurement in the Y (transverse) direction from the striker to the H-point should also be taken (SHY). See photograph.

The following measurements are to be made within a vertical transverse plane.

HS	Head to Side Window, taken from the point where the dummy's nose meets his forehead (between his eyes) to the outside of the side window. In order to make this measurement, roll the window down to the exact height that allows a level measurement. Use a level. See photograph.
* AD	Arm to Door, taken from the outer surface of the elbow pivot bolt on a Hybrid II dummy to the first point it hits on the door. In the case of a Hybrid III dummy, measure from the bolt on the outer biceps. When a SID is used make the measurement from the center of the bottom of the arm segment where it meets the dummy's torso.
* HD	H-point to Door, taken from the H-point on the dummy to the closest point on the door. Use a level.
* HR	Head to Side Header, measure the shortest distance from the point where the dummy's nose meets his forehead (between his eyes) to the side edge of the header just above the window frame, directly adjacent to the dummy.
SHY	Striker to H-point, taken from a rod rigidly connected to the forward most center point on the striker to the H-point. Use a level. See photograph.
KK	Knee to Knee, for Hybrid II dummies measure the distance between knee pivot bolt head outer surfaces. For Hybrid III dummies measure the distance between the outboard knee clevis flange surfaces. (This measurement may not be exactly transverse)

* Measurement used in Data Tape Reference Guide

¹ Only outboard measurement is referenced in Data Tape Reference Guide

ANGLES

SA	Seat Back Angle, find this angle using the instructions provided by the manufacturer. If the manufacturer doesn't provide clear instructions contact the COTR.
PA	Pelvic or Femur Angle, taken by inserting the pelvic angle gauge into the H-point gauging hole on the SID or the Hybrid III dummies and taking this angle with respect to the horizontal. Measure the angle of the line connecting the H-point hole and the outer knee pivot bolt hole on a Hybrid II dummy with respect to the horizontal, to find the femur angle.
SWA	Steering Wheel Angle, find this by placing a straight edge against the steering wheel rim along the longitudinal plane. Then measure the acute angle of the straight edge with respect to the horizontal.

SCA	Steering Column Angle, measured with respect to the horizontal by placing an inclinometer on the center of the underside of the steering column.
NA	Measure the angle made when taking the measurement NR with respect to the horizontal.
KDA	Knee to Dash Angle, the angle that the measurement KD is taken at with respect to the horizontal. Only get this angle for the outboard knee. See photograph.
WA	Windshield Angle, place an inclinometer along the transverse center of the windshield exterior (measurement is made with respect to horizontal).
TA	Tibial Angle, use a straight edge to connect the dummy's knee and ankle bolts. Then place an inclinometer on the straight edge and measure the angle with respect to the horizontal.

PHOTOGRAPHS DEPICTING HOW TO TAKE SOME OF THE MEASUREMENTS

ST-Striker to Head



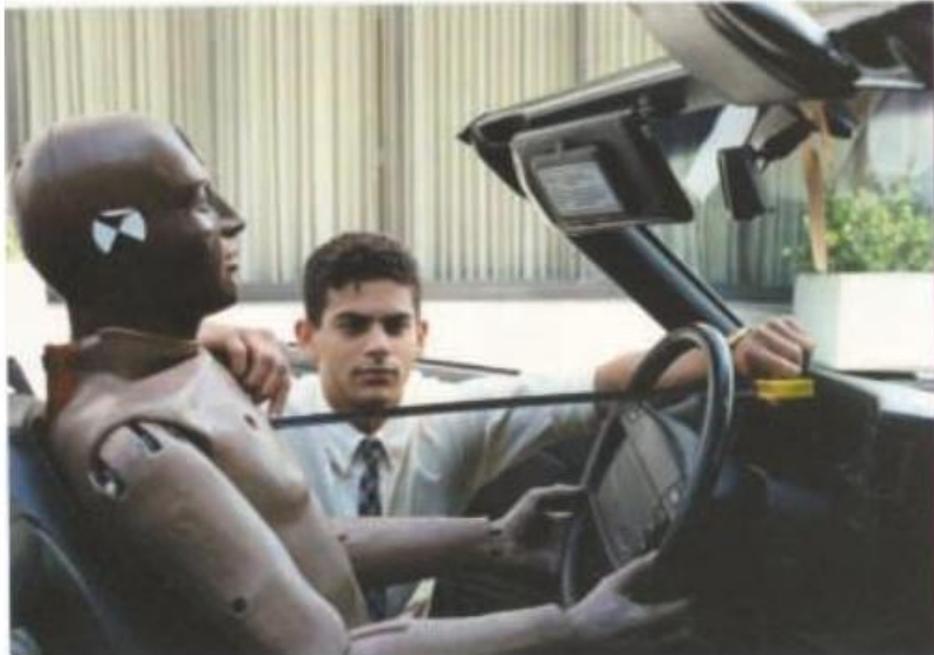
ST-Striker to Head



CD-Chest to Dash



CD-Chest to Dash



SH-Striker to H-Point



SH-Striker to H-Point



SK-Striker to Knee



SK-Striker to Knee



HS-Head to Side Window



SHY-Striker to H-Point (Y-DIR.)



KDL/KDR-Knee to Dash

KDA-Knee to Dash Angle



DATA SHEET 38
CRASH TEST

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Impact Angle: _____ Belted Dummies: __Yes__ No

Test Speed: __32 to 40 kmph __0 to 48 kmph __0 to 56 kmph

Driver Dummy: __5th female __50th male Passenger Dummy: __5th female __50th male

- __1. Vehicle underbody painted
- __2. The speed measuring devices are in place and functioning.
- __3. The speed measuring devices are _____ m from the barrier (spec. 1.5m) and _____ cm from the barrier (spec. is 30 cm)
- __4. Convertible top is in the closed position.
__N/A – Not a convertible
- __5. Instrumentation and wires are placed so the motion of the dummies during impact is not affected.
- __6. Tires inflated to pressure on tire placard or if it does not have a tire placard because it is not a passenger car, then inflated to the tire pressure specified in the owner information.
____ kpa front left tire ____ kpa specified on tire placard or in owner information
____ kpa front right tire ____ kpa specified on tire placard or in owner information
____ kpa rear left tire ____ kpa specified on tire placard or in owner information
____ kpa rear right tire ____ kpa specified on tire placard or in owner information
- __7. Time zero markers and switches in-place.
- __8. Pre test zero and shunt calibration adjustments performed and recorded
- __9. Dummy temperature meets requirements of section 12.2 of the test procedure.
- __10. Vehicle hood closed and latched
- __11. Transmission placed in neutral
- __12. Parking brake off
- __13. Are the heads still level?
__Yes, go to 14
__No, adjust dummy so that head is at the angle recorded in the Appendix F or G data sheets and then continue.
- __14. Ignition in the ON position
- __15. Doors closed and latched but not locked.
- __16. Posttest zero and shunt calibration checks performed and recorded
- __17. Actual test speed _____ kmph (The actual speed shall be no less than 0.8 kmph below the maximum speed or no more than 0.8 kmph higher than the minimum speed. In other words, if the speed range is 32 to 40 kmph and the vehicle is to be tested at 32 kmph, the speed tolerance is 32 to 32.8 kmph. If the vehicle is to be tested at 40 kmph, the speed tolerance is 39.2 to 40 kmph.)
- __18. Maximum longitudinal acceleration while the vehicle is traveling on the track
____ (0.5 g max.)
- __19. Maximum vertical acceleration while vehicle is traveling on the track.
____ (0.29 g max.)
- __20. Vehicle rebound from the barrier _____ cm
- __21. Describe whether the doors open after the test and what method is used to open the doors.
Left front door _____
Right front door _____
Left rear door _____
Right rear door _____
- __22. Describe the contact points of the dummy with the interior of the vehicle.
Driver dummy _____

Passenger dummy _____

I certify that I have read and performed each instruction.

Date

DATA SHEET 39
Offset Deformable Barrier Test Using Belted 5th Percentile Female Dummies
(Part 572, Subpart O) (S18)

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Test Number: _____ Barrier Serial Number: _____

Driver dummy Serial Number: _____ Passenger Dummy Serial Number: _____

Vehicle Speed ___ 40 km/hr Offset ___ Percent

1.0 Pre-Test Activities

___ 1.1 Complete the following data sheets

- ___ 1.1.1 Vehicle Receiving and Inspection
- ___ 1.1.2 Vehicle Weight, Fuel Tank, and Attitude
- ___ 1.1.3 Vehicle Accelerometer Location
- ___ 1.1.4 General Test Vehicle Data
- ___ 1.1.5 Photographic Targets
- ___ 1.1.6 Camera Locations
- ___ 1.1.7 5th Percentile Female Dummy Calibration
- ___ 1.1.8 Appendix G 5th Percentile Female Dummy Seating and Positioning Procedure

___ 1.2 Barrier Certification

- ___ 1.2.1 Verify the offset deformable barrier materials and construction are certified to Subpart C of 49 CFR 587. (Attach vendor certification sheets to this data sheet.)

___ 1.3 Verify barrier measurements and complete the table below. (See Figure 1)

	Specified Dimension in mm +/- 2.5 unless specified	Measured Dimension in mm
Main Body Height RH Side	650	
Main Body Height LH Side	650	
Floor to Lower Barrier LH	200 +/- 15	
Floor to Lower Barrier RH	200 +/- 15	
Main Body Width	1000	
Bumper Element Width	1000	
Bumper Element Height LH	330	
Bumper Element Height RH	330	
Main Body Depth LH	450	
Main Body Depth RH	450	
Bumper Element Depth LH	90	
Bumper Element Depth RH	90	
Upper Slot Location	220	
Lower Slot Location	110	
Upper Slot Width	4mm Max	
Lower Slot width	4mm Max	

- ___ 1.3.1 All Dimensions within specified Tolerance
 - ___ Yes

- ___ 1.4 Verify deformable barrier mounted using 10 bolts (8mm diameter minimum) and the steel strips specified.
- ___ 1.5 Verify height of Fixed Rigid Barrier relative to vehicle being tested.
- ___ 1.6 Photograph pre-test condition. Include photograph shown below.
 - ___ Pre-test frontal view of test vehicle
 - ___ Pre-test left side view of test vehicle
 - ___ Pre-test right side view of test vehicle
 - ___ Pre-test left front three-quarter view of test vehicle
 - ___ Pre-test right rear three-quarter view of test vehicle
 - ___ Pre-test windshield view
 - ___ Pre-test engine compartment view
 - ___ Pre-test fuel filler cap view
 - ___ Pre-test front underbody view¹
 - ___ Pre-test rear underbody view¹
 - ___ Pre-test driver dummy position with the door open and with the camera perpendicular to the longitudinal centerline of the vehicle and in line with the markings showing the fore-aft position of the seat.
 - ___ Frontal Pre-test driver dummy position with the camera in the same plane as the longitudinal centerline of the dummy.
 - ___ Pre-test passenger dummy position with the door open and with the camera perpendicular to the longitudinal centerline of the vehicle and in line with the markings showing the fore-aft position of the seat
 - ___ Frontal Pre-test passenger dummy position view with the camera in the same plane as the longitudinal centerline of the dummy.
 - ___ Dummy contact point(s) (vehicle and dummy)
 - ___ Pre-test view of the knee bolsters.
 - ___ Pre-test view of the steering column shear capsule if any part of it is visible. Do NOT disassemble any parts to take these photographs.
 - ___ Pre-test under hood view of the steering column intersecting the fire wall. Take the best photograph possible without removing any parts.
 - ___ Pre-test view of the steering column intersecting the firewall from inside the vehicle. Take the best photograph possible without removing any parts.

2.0 Test Execution

- ___ 2.1 Impact vehicle into offset deformable barrier at a speed of 25 km/hr +0/-2 km/hr
 - Record Impact speed Trap 1 _____ km/hr
 - Trap 2 _____ km/hr
 - Trap Location (from barrier) _____ mm
 - ___ Speed at impact 25 km/hr +0 / -2 km/hr Yes / No
- ___ 2.2 Strike barrier at offset of 10% of vehicle width +/- 50mm from the vehicle centerline.
 - Vehicle Width _____ mm
 - Required Offset _____ mm
 - Actual Measured Offset _____ mm
 - ___ Offset within +/- 50mm Yes / No
- ___ 2.3 Vehicle attitude at impact 0.0 degrees +/- 5 degrees
 - Impact angle _____ degrees
 - ___ Impact angle 0.0 +/- 5 degrees Yes / No

3.0 Post Test Activities

- ___ 3.1 Photograph post-test condition. Include photograph shown below.
 - ___ Post test frontal view of test vehicle
 - ___ Post test left side view of test vehicle
 - ___ Post test right side view of test vehicle
 - ___ Post test left front three-quarter view of test vehicle
 - ___ Post test right rear three-quarter view of test vehicle

- ___ Post test windshield view
- ___ Post test engine compartment view
- ___ Post test fuel filler cap view
- ___ Post test front underbody view¹
- ___ Post test rear underbody view¹
- ___ Post test driver dummy position with the door open and with the camera perpendicular to the longitudinal centerline of the vehicle and in line with the markings showing the fore-aft position of the seat.
- ___ Frontal post test driver dummy position with the camera in the same plane as the longitudinal centerline of the dummy.
- ___ Post test passenger dummy position with the door open and with the camera perpendicular to the longitudinal centerline of the vehicle and in line with the markings showing the fore-aft position of the seat
- ___ Frontal post test passenger dummy position view with the camera in the same plane as the longitudinal centerline of the dummy.
- ___ Dummy contact point(s)(vehicle and dummy)
- ___ Post test view of the knee bolsters.
- ___ Post test view of the steering column shear capsule if any part of it is visible. Do NOT disassemble any parts to take these photographs.
- ___ Post test under hood view of the steering column intersecting the fire wall. Take the best photograph possible without removing any parts.
- ___ Post test view of the steering column intersecting the fire wall from inside the vehicle. Take the best photograph possible without removing any parts.
- ___ Post test Stoddard solvent spillage location view, if required.
- ___ Post test electrolyte spillage location view, if required.
- ___ Post test top view of test vehicle while vehicle is on static rollover machine. (If applicable)

___ 3.2 Process data channels per section 11 and record injury values in the Table.

	FMVSS 208 Maximum Allowable Injury Assessment Value	Measured Value Driver Dummy Serial No.	Measured Value Passenger Dummy Serial No.
HIC ₁₅	700		
Chest Acceleration	60 g		
Chest Displacement	52 mm		
Peak Nij (Nte)	1.0		
Time (ms)	NA		
Peak Nij (Ntf)	1.0		
Time (ms)	NA		
Peak Nij (Nce)	1.0		
Time (ms)	NA		
Peak Nij (Ncf)	1.0		
Time (ms)	NA		
Neck Tension (Fz)	2620 N		
Neck Compression (Fz)	2520 N		

All injury Criteria within limits

- ___ Pass
- ___ Fail

___ 3.3 Perform post-test calibration check.

DATA SHEET 40
ACCIDENT INVESTIGATION MEASUREMENTS

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Impact Angle: _____ Belted Dummies: __ Yes __ No

Test Speed: __ 32 to 40 kmph __ 0 to 48 kmph __ 0 to 56 kmph

Driver Dummy: __ 5th female __ 50th male Passenger Dummy: __ 5th female __ 50th male

Vehicle Year/Make/Model/Body Style: _____

VIN: _____

Wheelbase: _____; Build Date: _____;

Veh. Size Category: _____; Test Weight: _____

Front Overhang: _____; Overall Width: _____

Accelerometer Data:

Location: _____

Linearity: _____; Integration Algorithm: _____

Veh. Impact Speed: _____; Time of Separation: _____; Vel. Change: _____

Collision Deformation Classification (CDC) Code:

Impact Mode: _____

Crush Depth Dimensions:

C1 = _____ inches

C2 = _____ inches

C3 = _____ inches

C4 = _____ inches

C5 = _____ inches

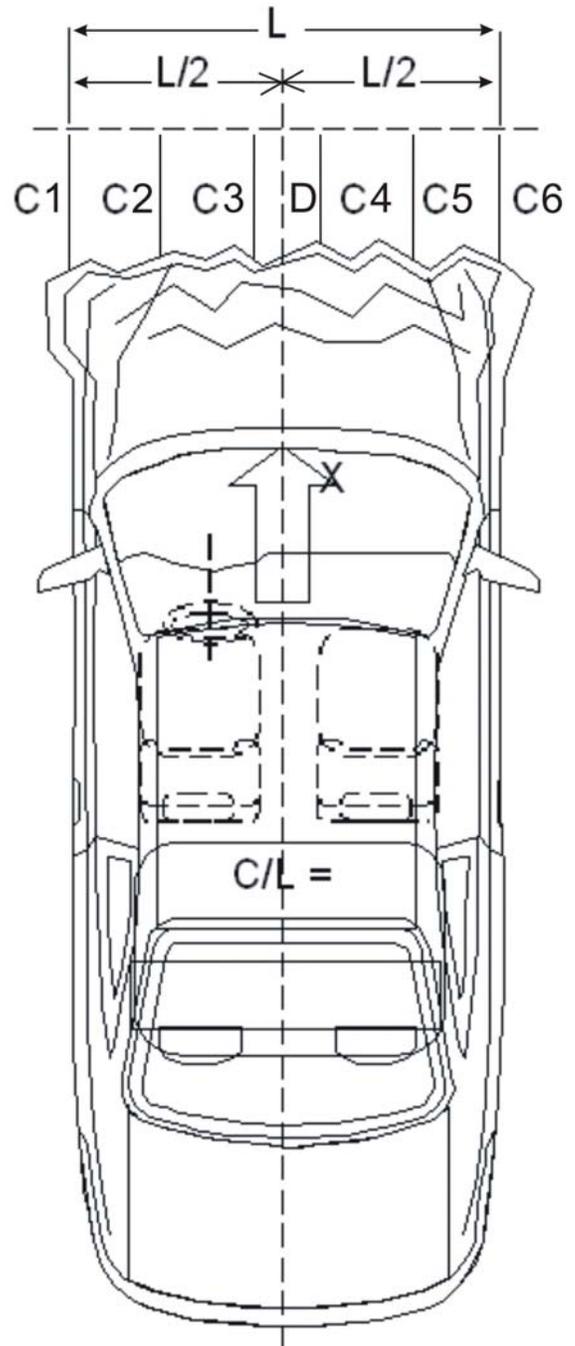
C6 = _____ inches

Midpoint of Damage: D= _____
 (Vehicle Longitudinal Centerline)

Length of Damage Region:

L = _____ inches

REMARKS:



**DATA SHEET 41
WINDSHIELD MOUNTING (FMVSS 212)**

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Impact Angle: _____ Belted Dummies: Yes No

Test Speed: 32 to 40 kmph 0 to 48 kmph 0 to 56 kmph

Driver Dummy: 5th female 50th male Passenger Dummy: 5th female 50th male

Most vehicle windshields are either bonded in place and covered with chrome or plastic strips or they are held to the body by a rubber retainer. It is difficult to determine the exact periphery of the windshield because the glazing edge is hidden from view. The test engineer will measure the perimeter inside the retainer or molding at several locations. After the impact test the covering over the glazing edge may be removed for exact measurement of the windshield periphery. Do not disturb the molding or retainer in the event of a noncompliance.

1. Pre-Crash

1.1 Describe from visual inspection how the windshield is mounted and describe any trim material.

1.2 Mark the longitudinal centerline of the windshield.

1.3 Measure pre-crash A, B, and C for the left side and record in the chart below.

1.4 Measure pre-crash C, D, and E for the right side and record in the chart below.

1.5 Measure from the edge of the retainer or molding to the edge of the windshield.
Dimension G: _____ mm

2. Post Crash

2.1 Can a single thickness of copier type paper (as small a piece as necessary) slide between the windshield and the vehicle body?

No-Pass. Skip to the table of measurements, complete it by repeating the pre-crash measurements in the post crash column, and calculate the retention percentage, which will be 100%.

Yes, go to 2.2.

2.2 Visibly mark the beginning and end of the portions of the periphery where the paper slides between the windshield and the vehicle body.

2.3 Measure and record post-crash A, B, C, D, E, and F such that the measurements do not include any of the parts of the windshield where the paper slides between the windshield and the vehicle body.

2.4 Calculate and record the percent retention for the right and left side of the windshield.

2.5 Is total right side percent retention less than 50%?

Yes, **FAIL**

No, Pass

2.6 Is total left side percent retention less than 50%?

Yes, **FAIL**

No, Pass

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

_____ Date

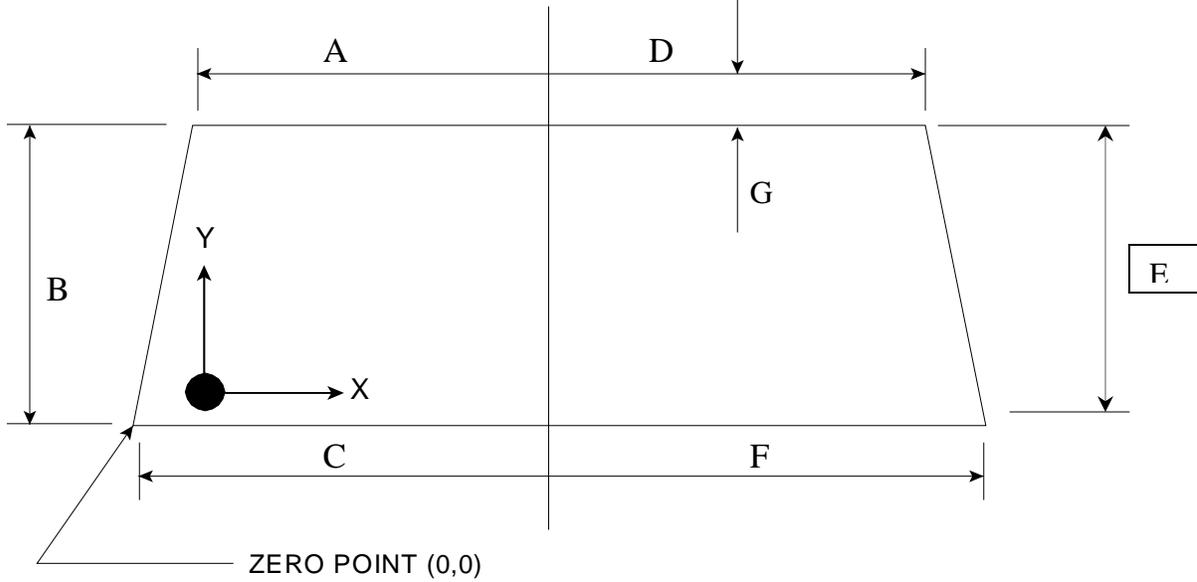
WINDSHIELD PERIPHERY MEASUREMENT

	Dimension	Pre-crash mm	Post-crash mm	Percent Retention (Post-crash ÷ Pre-crash)
Left side	A			
	B			
	C			
	Total			
Right side	D			
	E			
	F			
	Total			

Indicate area of mounting failure.

FRONT VIEW OF WINDSHIELD

INDICATE WIDTH OF MOLDING



**DATA SHEET 42
WINDSHIELD ZONE INTRUSION (FMVSS 219)**

NHTSA No. _____ Test Date: _____

Laboratory: _____ Test Technician(s): _____

Impact Angle: _____ Belted Dummies: Yes No

Test Speed: 32 to 40 kmph 0 to 48 kmph 0 to 56 kmph

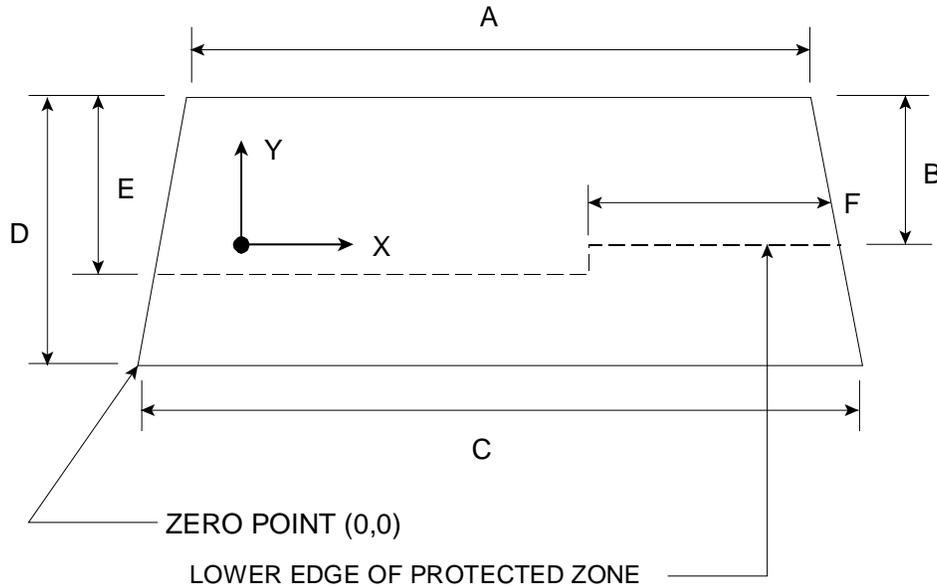
Driver Dummy: 5th female 50th male Passenger Dummy: 5th female 50th male

- ___1. Place a 165 mm diameter rigid sphere, with a mass of 6.8 kg on the instrument panel so that it is simultaneously touching the instrument panel and the windshield. (571.219 S6.1(a))
- ___2. Roll the sphere from one side of the windshield to the other while marking on the windshield where the sphere contacts the windshield. (571.219 S6.1(b))
- ___3. From the outermost contactable points on the windshield draw a horizontal line to the edges of the windshield. (571.219 S6.1(b))
- ___4. Draw a line on the inner surface of the windshield that is 13 mm below the line determined in items 2 and 3.
- ___5. After the crash test, record any points where a part of the exterior of the vehicle has marked, penetrated, or broken the windshield.

SKETCH OF FRONT VIEW OF WINDSHIELD:

Provide all dimensions necessary to reproduce the protected area.

FRONT VIEW OF WINDSHIELD



A. Windshield Dimensions

A	B	C	D	E	F

AREA OF PROTECTED ZONE FAILURES:

- B. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one which is normally in contact with the windshield.

X	Y

- C. Provide coordinates of the area beneath the protected zone template that the inner surface of the windshield was penetrated by a vehicle component

X	Y

REMARKS:

I certify that I have read and performed each instruction.

Date

DATA SHEET 43
FUEL SYSTEM INTEGRITY (FMVSS 301)

TEST VEHICLE NHTSA NO.: _____; TEST
DATE: _____

VEHICLE YEAR/MAKE/MODEL/BODY
STYLE: _____

TYPE OF IMPACT: _____

STODDARD SOLVENT SPILLAGE MEASUREMENT:

- A. From impact until vehicle motion ceases —
Actual = _____ grams. (Maximum Allowable = 28 grams)
- B. For 5 minute period after vehicle motion ceases —
Actual = _____ grams. (Maximum Allowable = 142 grams)
- C. For next 25 minutes —
Actual = _____grams . (Maximum Allowable = 28 grams/minute)
- D. Provide Spillage Details:

REMARKS:

FMVSS 301 STATIC ROLLOVER DATA SHEET

A. TEST PHASE = 0o TO 90°

Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90o Rotation Time = ___ minutes, ___ seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold Time = 5 minutes, 0 seconds

3. TOTAL = ___ minutes, ___ seconds

4. NEXT WHOLE MINUTE INTERVAL = ___ minutes

Actual Test Vehicle Stoddard Solvent Spillage:

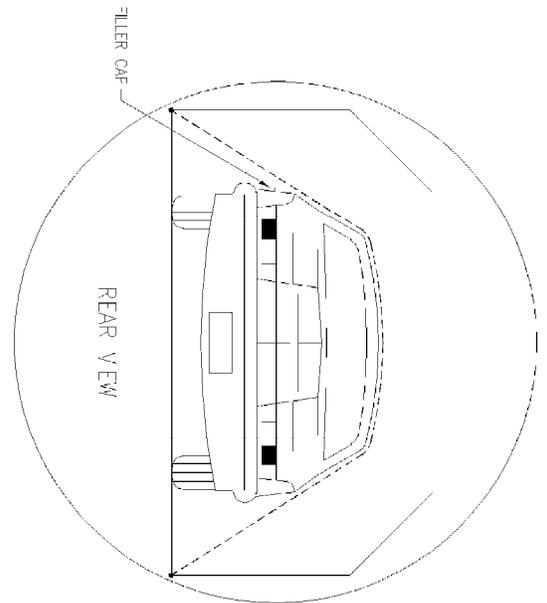
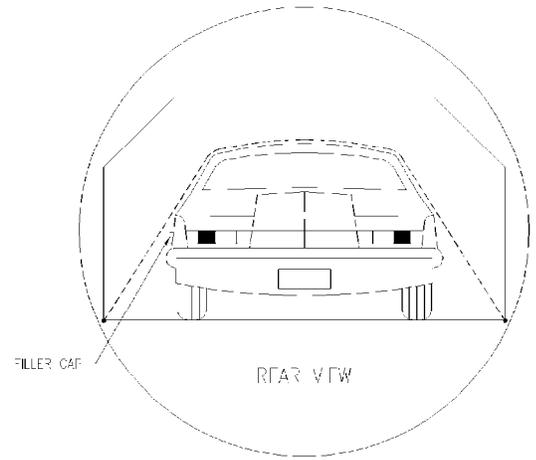
1. First 5 minutes from onset of rotation = ___ grams (142 grams allowed)

2. 6th minute = ___ grams (28 grams allowed)

3. 7th minute = ___ grams (28 grams allowed)

4. 8th minute (if required) = _____ grams (28 grams allowed)

Provide Details of Stoddard Solvent Spillage Locations –



B. TEST PHASE = 90° TO 180°

Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90°
 Rotation Time = ___ minutes, seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold
 Time = 5 minutes, 0 seconds

3. TOTAL = ___ minutes, ___ seconds

4. NEXT WHOLE MINUTE INTERVAL = minutes

Actual Test Vehicle Stoddard Solvent Spillage:

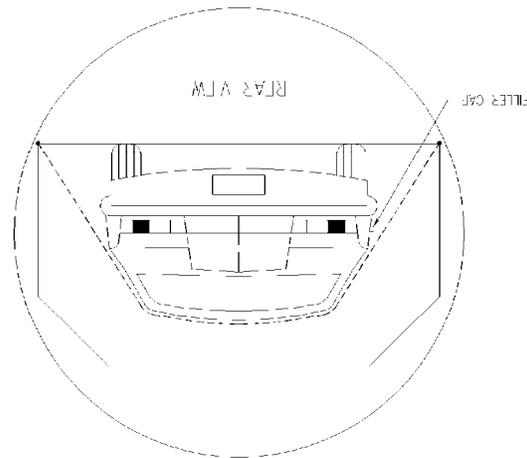
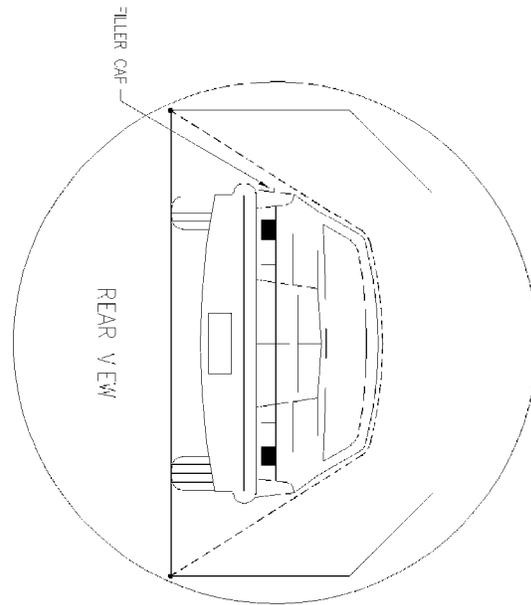
1. First 5 minutes from onset of rotation = ___ grams
 (142 grams allowed)

2. 6th minute = ___ grams
 (28 grams allowed)

3. 7th minute = ___ grams
 (28 grams allowed)

4. 8th minute (if required) = ___ grams
 (28 grams allowed)

Provide Details of Stoddard Solvent Spillage Locations –



C. TEST PHASE = 180° TO 270°

Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90°
 Rotation Time = ___ minutes, ___ seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold
 Time = 5 minutes, 0 seconds

3. TOTAL = ___ minutes, ___ seconds

4. NEXT WHOLE MINUTE INTERVAL = ___ minutes

Actual Test Vehicle Stoddard Solvent Spillage:

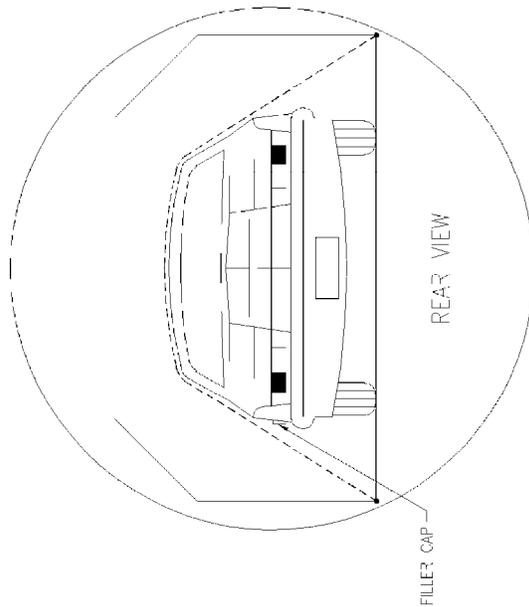
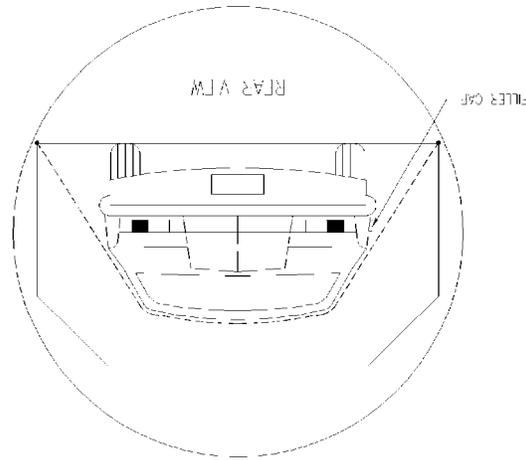
1. First 5 minutes from onset of rotation = ___ grams
 (142 grams allowed)

2. 6th minute = ___ grams.
 (28 grams allowed)

3. 7th minute = ___ grams
 (28 grams allowed)

4. 8th minute (if required) = ___ grams.
 (28 grams allowed)

Provide Details of Stoddard Solvent Spillage Locations –



D. TEST PHASE = 270° TO 360°

Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90°
 Rotation Time = ___ minutes, ___ seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold
 Time = 5 minutes, 0 seconds

3. TOTAL = ___ minutes, ___ seconds

4. NEXT WHOLE MINUTE INTERVAL = ___ minutes

Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = ___ grams
 (142 grams allowed)

2. 6th minute = ___ grams
 (28 grams allowed)

3. 7th minute = ___ grams.
 (28 grams allowed)

4. 8th minute (if required) = ___ grams.
 (28 grams allowed)

Provide Details of Stoddard Solvent Spillage Locations –

