TP-214S-05
April 15, 1992

U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

LABORATORY TEST PROCEDURE

FOR

FMVSS 214S (STATIC)

Side Impact Protection

SAFETY ASSURANCE
Office of Vehicle Safety Compliance
Room 6115, NSA-30
400 Seventh Street, SW
Washington, DC 20590

OVSC LABORATORY TEST PROCEDURE NO. 214S (STATIC)

TABLE OF CONTENTS

1. PURPOSE AND APPLICATION

The Office of Vehicle Safety Compliance (OVSC) provides contracted laboratories with Laboratory Test Procedures (TPs) which serve as guidelines for obtaining compliance test data. The data are used to determine if a specific vehicle or item of motor vehicle equipment meets the minimum performance requirements of the subject Federal Motor Vehicle Safety Standard (FMVSS). The purpose of the OVSC Laboratory Test Procedures is to present a uniform testing and data recording format, and provide suggestions for the use of specific equipment and procedures. Any contractor interpreting any part of an OVSC Laboratory Test Procedure to be in conflict with a Federal Motor Vehicle Safety Standard or observing any deficiencies in a Laboratory Test Procedure is required to advise the Contracting Officer's Technical Representative (COTR) and resolve the discrepancy prior to the start of compliance testing.

Contractors are required to submit a detailed test procedure to the COTR before initiating the compliance test program. The procedure must include a step-by-step description of the methodology to be used.

The OVSC Laboratory Test Procedures 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.

NOTE:

The OVSC Laboratory Test Procedures, prepared for use by independent laboratories under contract to conduct compliance tests for the OVSC, 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. Sometimes, recognizing applicable test tolerances, the Test Procedures specify test conditions, which are less severe than the minimum requirements of the standards themselves. Therefore, compliance of a vehicle or item of motor vehicle equipment is not necessarily guaranteed if the manufacturer limits certification tests to those described in the OVSC Laboratory Test Procedures.

2. GENERAL REQUIREMENTS

FMVSS 214, Side Impact Protection, specifies performance requirements for protection of occupants in side impact crashes.

The purpose of this standard is to reduce the risk of serious and fatal injury to occupants of passenger cars by specifying strength requirements for side doors. This standard applies to all PASSENGER CARS as well as 90% of light truck type vehicles with a GVWR < 10,000 lbs, manufactured on and after September 1, 1993, to August 31, 1994. On and after September 1, 1994, all light truck type vehicles with a GVWR < 10,000 lbs will be required to meet the static requirements.

3. SECURITY

The contractor shall provide appropriate security measures to protect the OVSC test vehicles 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. Any security problems, which arise, shall be reported by telephone to the Industrial Property Manager (IPM), Office of Contracts and Procurement, within two working days after the incident. A letter containing specific details of the security problem will 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 Branch or Division Chief. The tested vehicles shall be protected from the elements, shall be retained by the test contractor for a **MINIMUM of 60 days** so that NHTSA and vehicle manufacturer personnel can be given an inspection opportunity.

NO INDIVIDUALS, OTHER THAN CONTRACTOR PERSONNEL DIRECTLY INVOLVED IN THE COMPLIANCE TESTING PROGRAM, SHALL BE ALLOWED TO WITNESS ANY VEHICLE COMPLIANCE TEST UNLESS SPECIFICALLY AUTHORIZED BY THE COTR.

4. GOOD HOUSEKEEPING

Contractors shall maintain the entire vehicle compliance testing area, 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 testing. Tests shall be completed as required in the contract. Scheduling shall be adjusted to permit sample motor vehicles to be tested to other FMVSS as may be required by the OVSC. All testing shall be coordinated to allow monitoring by the COTR.

6. TEST DATA DISPOSITION

The contractor shall make all preliminary compliance test data available to the COTR on location within four hours after the test. Final test data, including digital printouts and computer generated plots (if applicable), shall be furnished to the COTR within five working days. Additionally, the contractor shall analyze the preliminary test results as directed by the COTR. Final data shall be included in the Vehicle Test Report, which shall be delivered to the COTR one month after the completion of the side impact test. All backup data tapes and sheets, plots, technicians notes, etc., shall be either sent to the COTR or destroyed at the conclusion of each delivery order, purchase order, etc.

7. GOVERNMENT FURNISHED PROPERTY (GFP)

TEST VEHICLES

The Contractor has the responsibility of accepting test vehicles from either new car dealers or vehicle transporters. In both instances, the contractor acts in the OVSC's behalf when signing an acceptance of test vehicles. If a vehicle is delivered by a dealer, the contractor must check to verify the following:

A. All options listed on the "window sticker" are present on the test vehicle.

B. Tires and wheel rims are the same as listed.

C. There are no dents or other interior or exterior flaws.

D. The vehicle has been properly prepared and is in running condition.

E. The glove box contains an owner's manual, warranty document, consumer information, and extra set of keys.

F. Proper fuel filler cap is supplied on the test vehicle.

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

A "Vehicle Condition" form (shown on the next page) will be supplied to the contractor by the COTR when the test vehicle is transferred from the new car dealer or between test contracts. The upper half of the form describes the vehicle in detail, and the lower half provides space for a detailed description of the post-test condition. Vehicle Condition forms must be returned to the COTR with the copies of the Final Test Report or the reports will NOT be accepted.

NOTIFICATION OF COTR

The COTR must be notified within 24 hours after a vehicle has been delivered.

REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

CONTRACT NO.: DTNH22-_____ ; DATE: _____

FROM: _____

TO: _____

The vehicle was inspected upon arrival at the laboratory for the test and found to contain all of the equipment listed below. All variances have been reported within 2 working days of vehicle arrival, by letter, to the NHTSA Industrial Property Manager (NAD-30), with a copy to the OVSC COTR. The vehicle is again inspected, after the above test has been conducted, and all changes are noted below. The final condition of the vehicle is also noted in detail.

MODEL YEAR/MAKE/MODEL/BODY STYLE: _____

NHTSA NO.: _____ BODY COLOR: _____ VIN: _____

ODOMETER READINGS: ARRIVAL - _____ miles DATE - _____

COMPLETION - _____ miles DATE - _____

PURCHASE PRICE: $_____ DEALER'S NAME: _____

ENGINE DATA: ____ Cylinders ____ Liters ____ Cubic Inches

TRANSMISSION DATA: ____ Automatic ____ Manual ____ No. of Speeds

FINAL DRIVE DATA: ____ Rear Drive ____ Front Drive ____ 4 Wheel Drive

TIRE DATA: Size - _____ Mfr. - _____

CHECK APPROPRIATE BOXES FOR VEHICLE EQUIPMENT:

	Air Conditioning		Traction Control		Clock
	Tinted Glass		All Wheel Drive		Roof Rack
	Power Steering		Speed Control		Console
	Power Windows		Rear Window Defroster		Driver Air Bag
	Power Door Locks		Sun Roof or T-Top		Passenger Air Bag
	Power Seat(s)		Tachometer		Front Disc Brakes
	Power Brakes		Tilt Steering Wheel		Rear Disc Brakes
	Antilock Brake System		AM/FM/Cassette Radio		Other-

LIST OTHER PERTINENT OPTIONAL EQUIPMENT ON NEXT PAGE (REMARKS SECTION)

REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING...Continued

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: _____

8. CALIBRATION OF TEST INSTRUMENTS

Before the contractor initiates the safety compliance test program, a test instrumentation calibration system will be implemented and maintained in accordance with established calibration practices. Guidelines for setting up and maintaining such calibration systems are described in MIL-C-45662A, "Calibration System Requirements." The calibration system shall be set up and maintained as follows:

A. Standards for calibrating the measuring and test equipment will 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 TO EXCEED TWELVE (12) MONTHS! Records, showing the calibration traceability to the National Institute of Standards and Technology (NIST), shall be maintained for all measuring and test equipment.

C. All measuring and test equipment and measuring standards will 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)

E. Records of calibration for all test instrumentation shall be kept by the contractor in a manner which assures the maintenance of established calibration schedules. All such records shall be readily available for inspection when requested by the COTR. The calibration system will need the acceptance of the COTR before the test program commences.

9. PHOTOGRAPHIC DOCUMENTATION

Photographs shall be black and white, 8 x 10 inches, and legible. A tag, label or placard identifying the test vehicle model as well as the NHTSA number, if applicable, shall appear in each photograph and be legible. The test vehicle shall show the compliance test date. Each photograph shall be labeled as to subject matter. As a minimum the following photographs shall be included:

A. Pretest and post test frontal views of the vehicle

B. Pretest and post test rear views of the vehicle

C. Three-Quarter view from the front and rear of vehicle before and after testing.

D. Full view of both sides of the vehicle before and after testing.

E. Loading device against each vehicle test door at beginning of test and again at maximum load conditions.

F. Instrumentation set-up.

G. Each test door, after removal of loading device, viewed from the outside and inside.

H. Any damage after testing that cannot be seen in above photographic shots.

I. Include all back-up photographs taken.

J. Detailed documentation of the vehicle tie-down.

10. DEFINITIONS

CERTIFICATION STATEMENT

This document is obtained from the vehicle manufacturer and supplied to the testing laboratory by the Contract Officers Technical Representative (COTR). It indicates whether the vehicle was certified with or without the seat assemblies installed in the vehicle.

CONTOURED

With respect to a door, means that the lower portion of its front or rear edge is curved upward, typically to conform to a wheel well.

CURB WEIGHT

The weight of a vehicle with standard equipment; maximum capacity of engine fuel, oil, coolant; and, if so equipped, air conditioning and additional weight optional engine.

DOUBLE SIDE DOORS

A pair of hinged doors with the lock and latch mechanisms located where the door lips overlap.

LONGITUDINAL OR LONGITUDINALLY

Parallel to the vehicle's longitudinal (front to rear) centerline.

STANDARD AMBIENT CONDITIONS

Unless otherwise specified herein, all tests shall be performed at ambient conditions.

UNLOADED VEHICLE WEIGHT

The weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but WITHOUT cargo or occupants.

WALK-IN VAN

A van in which a person can enter the occupant compartment in an upright position.

11. PRETEST REQUIREMENTS

Prior to conducting any compliance tests, contractors are required to submit a detailed in-house compliance test procedure to the COTR which includes a step-by-step description of the methodology to be used. Written approval must be obtained from the COTR before initiating the compliance test program so that all parties are in agreement.

The contractor's test procedure shall contain a complete listing of test equipment and a detailed check-off list. There shall be no contradiction between the OVSC Laboratory Test Procedure and the contractor's in-house test procedure. The list of test equipment shall include instrument accuracy and calibration dates.

TEST DATA LOSS

A compliance test is not to be conducted unless all of the various test conditions specified in the applicable OVSC Laboratory Test Procedure have been met. Failure of a contractor to obtain the required test data and to maintain acceptable limits on test parameters in the manner outlined in the applicable OVSC Laboratory Test Procedure may require a retest at the expense of the contractor. The retest costs will include the cost of the replacement vehicle (with the same equipment as the original vehicle) or item of motor vehicle equipment and all costs associated with conducting the retest. The original test specimen (vehicle or equipment item) used for the invalid test shall remain the property of OVSC, and the retest specimen shall remain the property of the contractor. If there is a test failure, the contractor shall retain the retest specimen for a period not exceeding 180 days. If there is no test failure, the Contractor may dispose of the test specimen upon notification from the COTR that the final test report has been accepted, after the stipulated minimum period specified as follows.

The tested vehicles, protected from the elements, shall be retained by the test contractor for a MINIMUM of 60 days so that NHTSA and vehicle manufacturer personnel can be given an inspection opportunity.

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 two (2) weeks after receipt of notification by the Contracting Officer that a retest is required. If a retest is conducted, no test report is required for the original test.

11. PRETEST REQUIREMENTS….Continued

PRETEST PREPARATION ITEMS

A. **Wash and Clean Vehicle** - Wash and clean the vehicle. Inspect test vehicle per receiving inspection procedures to ascertain completeness, function and operation. Record and notify the monitor of any abnormal conditions that could influence the test results.

B. **Vehicle Preparation** - Prior to securing the vehicle to the test fixture, check the manufacturer's certification statement to determine if it should be tested with or without the seats installed. Then proceed with the following:

(1) Weigh vehicle

(2) Remove all seats unless the vehicle has been certified with the seats installed. If the seats remain in the vehicle, they are to be adjusted per the COTR's instructions.

(3) Close all windows

(4) Lock all doors

(5) Remove any components of the vehicle (such as tires) that may interfere or prevent the vehicle sills and/or frame from being supported on the tie-down fixture.

C. **Securing the Vehicle** - Secure the test vehicle in the tie-down fixture as described in the **TEST EQUIPMENT DESCRIPTION** page. Attachments of wire rope turnbuckles, etc. will be made by using existing holes, etc. in the sill, frame or body. Note that a sufficient number of horizontal and vertical tie-downs shall be used to prevent movement under load. An unyielding vertical face, opposite the side being loaded shall support the vehicle sill and/or frame to prevent lateral movement.

D. **Location of Load Device** - **Passenger Cars** - Position the loading device at least 0.50 inch above the bottom edge of the door window opening but not of a length that will cause contact with any structure above the bottom edge of the door window opening during the test.

Locate the loading device as shown in Figure 1 on the next page so that its longitudinal axis is vertical and is laterally opposite the midpoint of a horizontal line drawn across the outer surface of the door 5 inches above the lowest point of the door. The bottom surface of the loading device will be 5 inches above the lowest point of the door and the cylindrical face of the loading device will be in contact with the outer surface of the door. Figure 2 shows a block diagram of a typical instrumentation and loading device set-up for a passenger car. Take the required pretest photographs.

11. PRETEST REQUIREMENTS….Continued

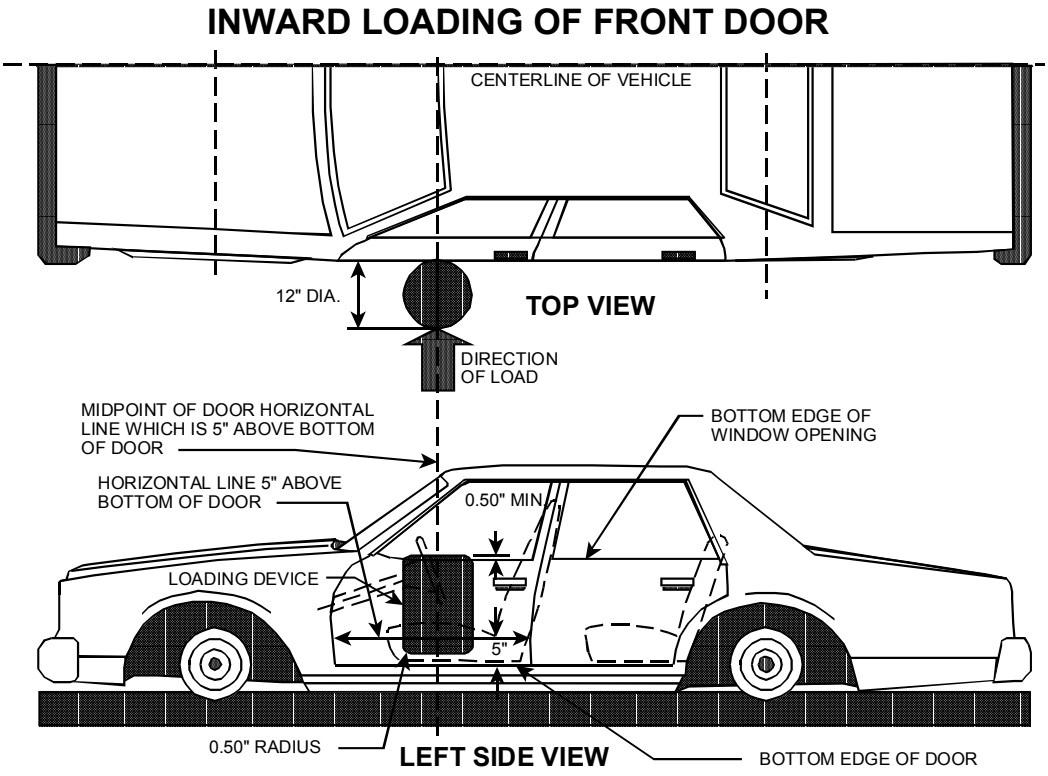


FIGURE 1

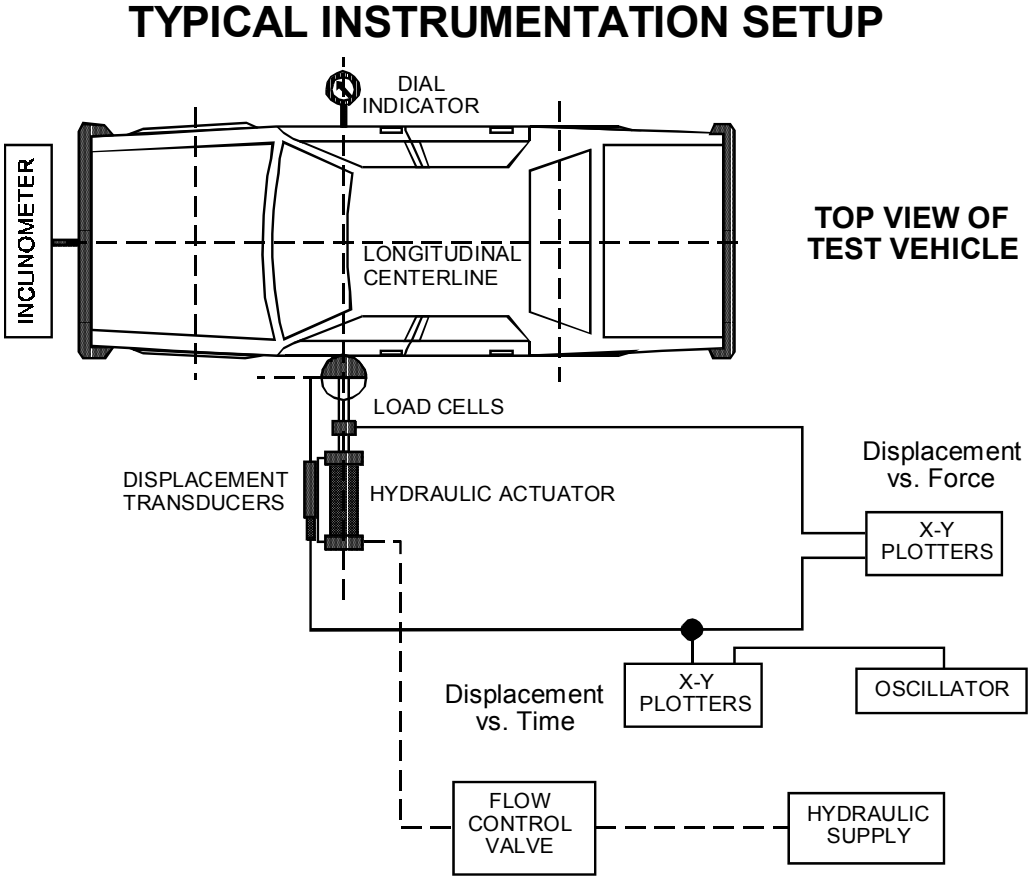


FIGURE 2

11. PRETEST REQUIREMENTS….Continued

For Contoured Doors on trucks, buses, and MPV's with a GVWR of 4,545 kg (10,000 lbs) or less, if the length of the horizontal line drawn across the outer surface of the door 5 inches above the bottom of the door is not equal to or greater than 559 mm (22 inches), the line should be moved vertically up the side of the door to the point at which the line is 559mm (22 inches) long. The loading device is then located laterally opposite the midpoint of that line (see figure 3). The bottom surface of the load device is in the lowest horizontal plane such that every point on the lateral projection of the bottom surface of the device on the door is at least 127mm (5 inches), **horizontally and vertically**, from any edge of the door panel, exclusive of any decorative or protective molding that is not permanently affixed to the door. Figure 3 shows a typical test set up for a contoured door.

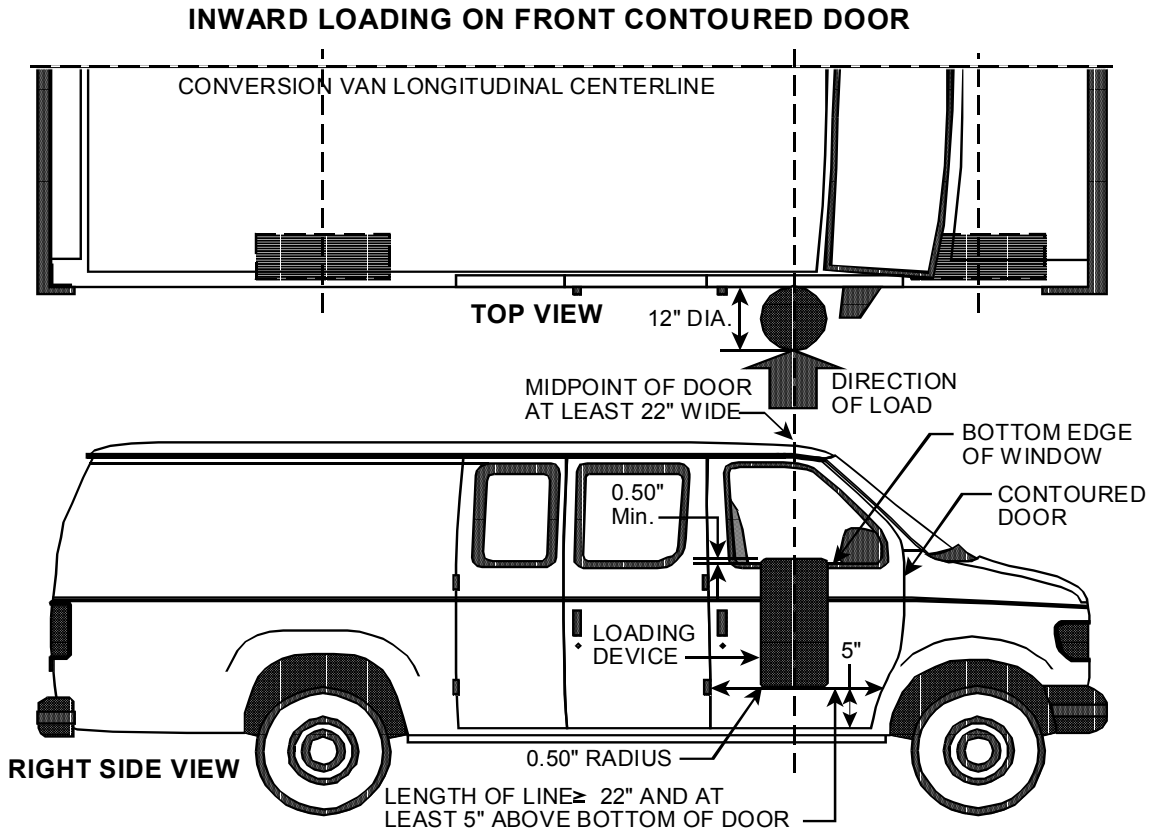


FIGURE 3

For double side doors on trucks, buses, and multipurpose passenger vehicles with GVWR of 4,545 kg (10,000 lb) or less, its longitudinal axis is laterally opposite the midpoint of a horizontal line drawn across the outer surface of the double door span, 127 mm (5 inches) above the lowest point on the doors, exclusive of any decorative or protective molding that is not permanently affixed to the door panel (see figure 4). The bottom surface of the load device is in the same horizontal plane as a horizontal line drawn across the outer surface of the double door span, 127mm (5 inches) above the lowest point of the doors, exclusive of any decorative or protective

11. PRETEST REQUIREMENTS….Continued

molding that is not permanently affixed to the door panel. Figure 4 shows a typical set up for a double side door test set up.

INWARD LOADING ON REAR DOUBLE SIDE DOORS WITH WINDOWS

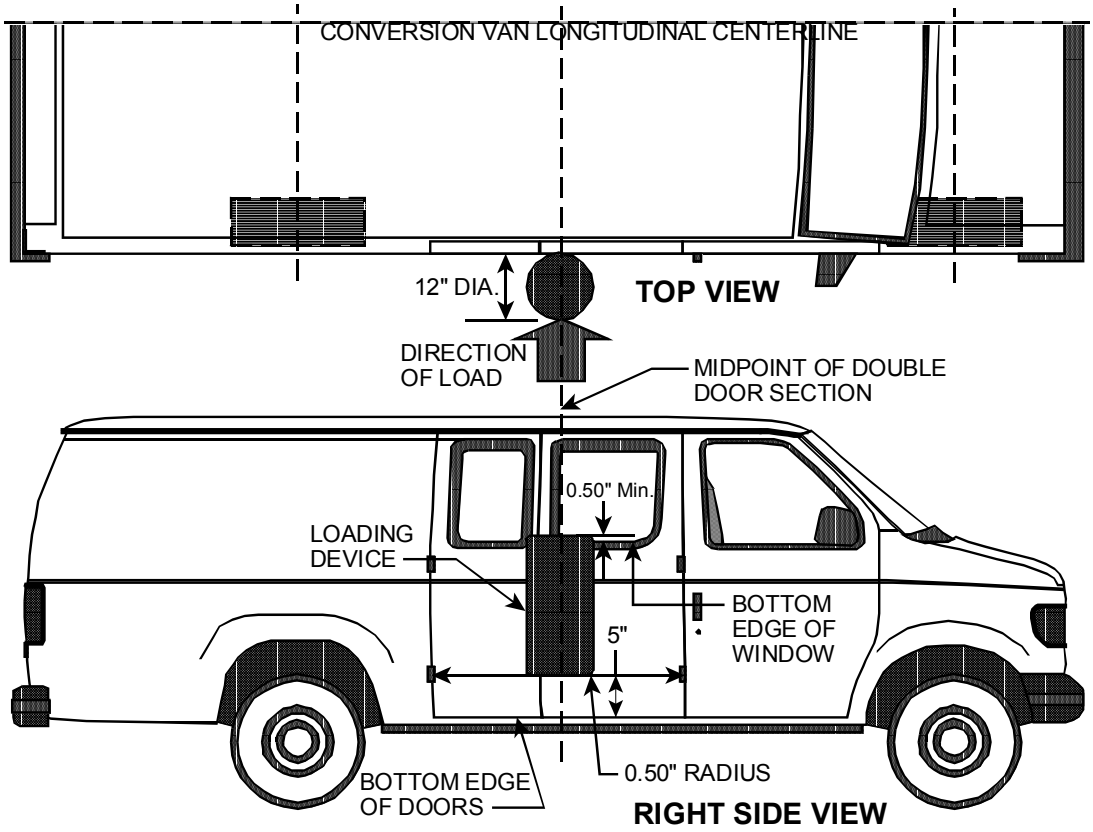


FIGURE 4

12. COMPLIANCE TEST EXECUTION

TEST EQUIPMENT DESCRIPTION

Following is a list of the minimum test equipment needed to evaluate the minimum performance requirements as outlined in FMVSS 214.

A. **Static Loading Device** - The loading device will consist of a rigid, steel cylinder or semi-cylinder 12.0 inches, + 0.25 inches, - 0 inches in diameter with an edge radius of 0.500 inch. The surface should be continuous and smooth. The length of the loading device shall be such that when the bottom of the device is placed along a line 5 inches above the lowest point of the door the top surface of the loading device is (**for vehicles with windows**) at least one-half inch above the edge of the door window opening but not of a length that will cause contact with any structure above the bottom edge of the door window opening during the test. **For doors without windows**, the top surface of the loading device should be the same height above the ground as when the loading device is positioned for the front door of that vehicle with a window (see Figure 5). The load may be applied either mechanically or hydraulically.

INWARD LOADING ON REAR DOUBLE SIDE DOORS WITHOUT WINDOWS

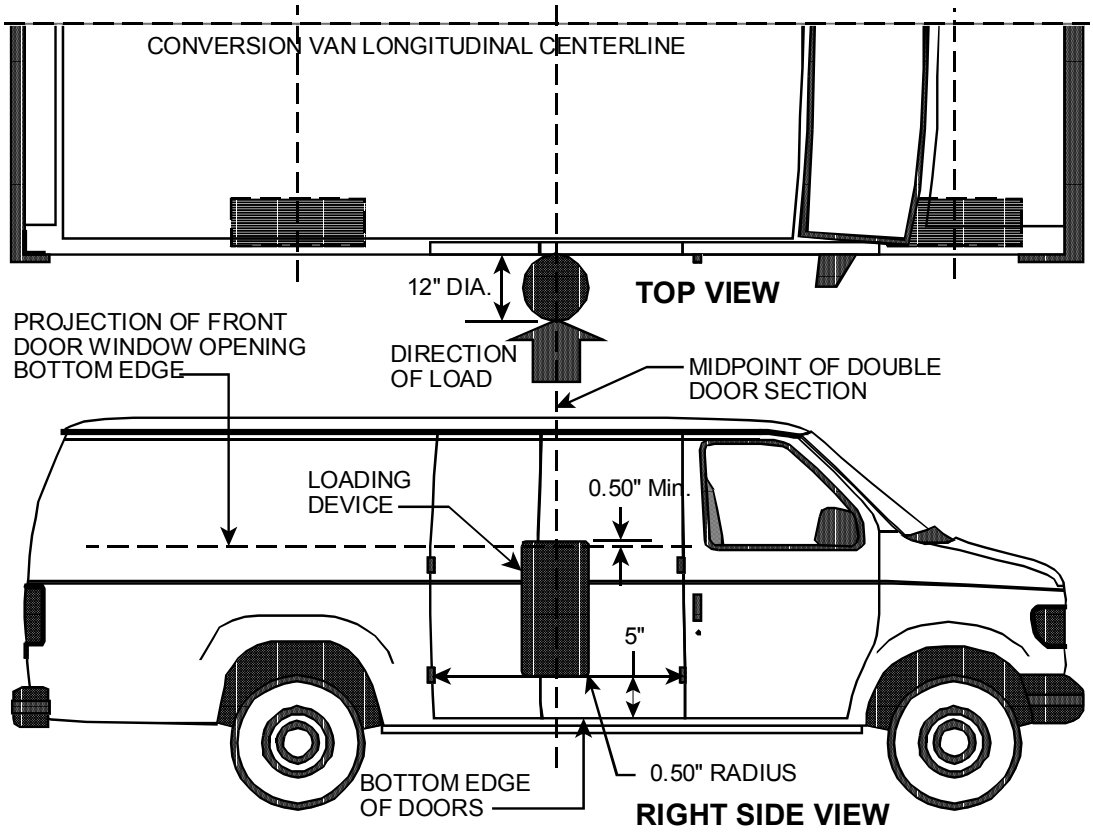


FIGURE 5

12. COMPLIANCE TEST EXECUTION….Continued

B. **Vehicle Tie-Down Fixture** - The vehicle must be secured on a rigid, horizontal fixture (± 0.250º) so that it is adequately restrained at the vehicle underbody and also at the sides to prevent lateral and/or rotational movement of the whole vehicle during the test. Good engineering judgement will be required to provide maximum support, for the maximum area possible outside the centerlines of the two axles. Following are some examples of different types of vehicle construction that may be encountered:

(1) Separate body and frame construction

(2) Full unit body construction

(3) Unit body construction and stub frame construction

The vehicle shall be secured to the loading fixture using wire rope, turnbuckles, strap plates, etc. As many horizontal and vertical tie-downs will be used as needed to prevent movement under load. The tie-downs will be placed at or forward of the front wheel lateral centerline and at or rearward of the rear wheel lateral centerline. In some instances, such as when testing some pick-up truck configurations, the vehicle may need additional tie-downs somewhere between the front and rear wheel lateral centerlines. This will ensure that the vehicle is secure and will not move during testing. The COTR will make the final determination of vehicle tie down placements.

C. **Load Measuring Device** - Two independent load cells of proper capacity (see Section 13(A)(3)) with an accuracy of ± 0.250 percent, shall be used for measuring load and will be placed in the loading system so that they measure the actual load being transmitted into the vehicle door.

D. **Deflection Measuring Device** - Deflection of the loading device shall be measured to ± 0.0625 inch using two independent linear displacement potentiometers fixed at one end and attached to the loading device at opposite end.

E. **Body Deflection Measuring Device** - A dial indicator, with an accuracy of ± 0.001 inch, and a minimum of 1.500 inch of travel shall be placed on the center of the axle/spindle diagonally opposite to the door being tested (example: right front door test, left rear axle center dial indicator location). An inclinometer shall be placed and zeroed at the transverse center of the bumper diagonally opposite to the door being tested (example: right front door test, rear bumper inclinometer location). Readings shall be taken at 0 inches, 2 inches, 4 inches, 6 inches, 12 inches, maximum distance of loading device travel, and after removal of the loading device.

12. COMPLIANCE TEST EXECUTION….Continued

F. **Recording System** - Two independent X-Y plotters or computer system capable of giving equivalent or better results, with an accuracy of ± 1 percent, shall be used to plot load versus deflection graphs as a permanent record. The graph paper shall have an overall minimum size of 8-1/2 by 11 inches and shall have an effective area size of 7 by 10 inches. Force will be plotted on the vertical axis with each inch equal to 1,000 pounds (full scale should be at least 10,000 pounds). Displacement will be plotted on the horizontal axis with each inch equal to 2 inches.

G. **Measuring Devices** - Appropriate angle and length measuring instruments for determination of the orientation of the loading device and test vehicle, scales for weighing the test vehicle, and length measuring instruments and planimeter for determination of the crush resistances shall be used. Scales for weighing the vehicle shall have an accuracy of ± 10 pounds when the vehicle is weighed at each wheel or ± 40 pounds when the entire vehicle is weighed.

H. **Camera and Adequate Lighting** - Provide camera and lights necessary for photographs of each test set-up, test vehicle and instrumentation.

I. **Timing Device** - Two independent X-Y plotters, with an accuracy of ± 1 percent, shall be used to plot deflection versus time to insure appropriate rate of load application. The graph paper shall have overall size of 8.50 inches and shall have an effective area of 7 by 10 inches. Time will be plotted in the vertical axis with each inch equal to 20 seconds. Displacement will be plotted on the horizontal axis with each inch equal to 0.50 inch. An oscillator will provide the time base.

EXECUTION OF THE STATIC LOAD TEST OF VEHICLE

Doors on both sides of each two-door vehicle will be subjected to the side intrusion test. On four door models, the driver's side forward door and the opposite side rear door shall be tested.

A. Data Acquisition - The following data will be recorded during the testing of each door utilizing two redundant independent data recording systems:

(1) Load versus displacement
(2) Time versus displacement

B. In addition, the dial indicator and inclinometer, which show vehicle body movement while the load is being applied, shall be photographed, as a minimum:

(1) Prior to load application
(2) 2 inches of load device travel

12. COMPLIANCE TEST EXECUTION....Continued

(3) 4 inches of load device travel
(4) 6 inches of load device travel
(5) 12 inches of load device travel
(6) Maximum load device travel
(7) Immediately after removal of test load

C. Intrusion Resistance - Apply a load to the outer surface of the door in an inboard direction normal to a vertical plane along the vehicles longitudinal centerline. Apply the load continuously such that the loading device travel rate does not exceed 0.50 inch per second until the loading device travels 18 Inches. Guide the loading device to prevent it from being rotated or displaced from its intended direction of travel. The test must be completed within 120 seconds. If after 12 inches of loading device travel, the peak crush resistance has been obtained, the test may be stopped if prior approval has been obtained from the OVSC Contract Officers Technical Representative (COTR).

13. POST TEST REQUIREMENTS

A. **Requirements** - Upon completion of the test it shall be determined if the following requirements were met:

(1) The initial crush resistance shall not be less than 2,250 pounds, with or without seats installed.

(2) The intermediate crush resistance shall not be less than 3,500 pounds or 4,375 pounds with seats installed.

(3) The peak crush resistance shall not be less than two times the curb weight of the vehicle or 7,000 pounds, whichever is less. With seats installed, it shall not be less than 3.5 times the curb weight or 12,000 pounds, whichever is less.

B. **Visual Observations** - The following information shall be recorded after testing each door:

(1) Describe all damage and deformation to the door and vehicle.

(2) Take the required post-test photographs (see Test Report Section).

C. **Measurements** - To determine the initial, intermediate and peak crush resistances use the plot of load versus displacement and obtain the integral of the applied load with respect to the crush distances specified below for each door tested. A planimeter or other suitable method, approved by the COTR, will be used to obtain the Integral of the curve. These quantities expressed in inch-pounds and divided by the specified crush distance, represent the average forces in pounds required to deflect the door those distances.

(1) The initial crush resistance is the average force required to deform the door through the initial 6 inches of crush.

(2) The intermediate crush resistance is the average force required to deform the door through the initial 12 inches of crush.

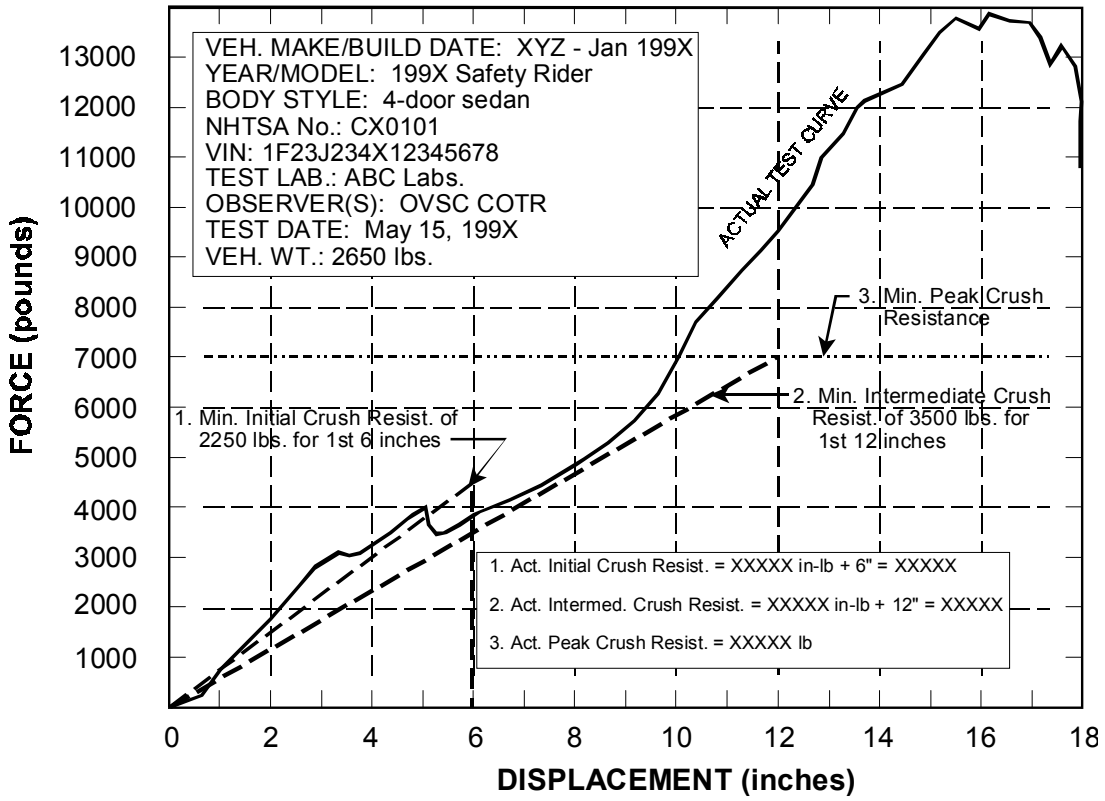
The peak crush resistance will be directly obtained from the plot of load versus displacement since it is the largest force required to deform the door through the entire 18 inches crush distance.

Typical test curves of load versus displacement and time versus displacement are shown on the next page in Figures 6 and 7.

Contractor shall re-verify all instrumentation and check data sheets.

13. POST TEST REQUIREMENTS….Continued

TYPICAL LOAD-DISPLACEMENT PLOT



TYPICAL TIME-DISPLACEMENT PLOT

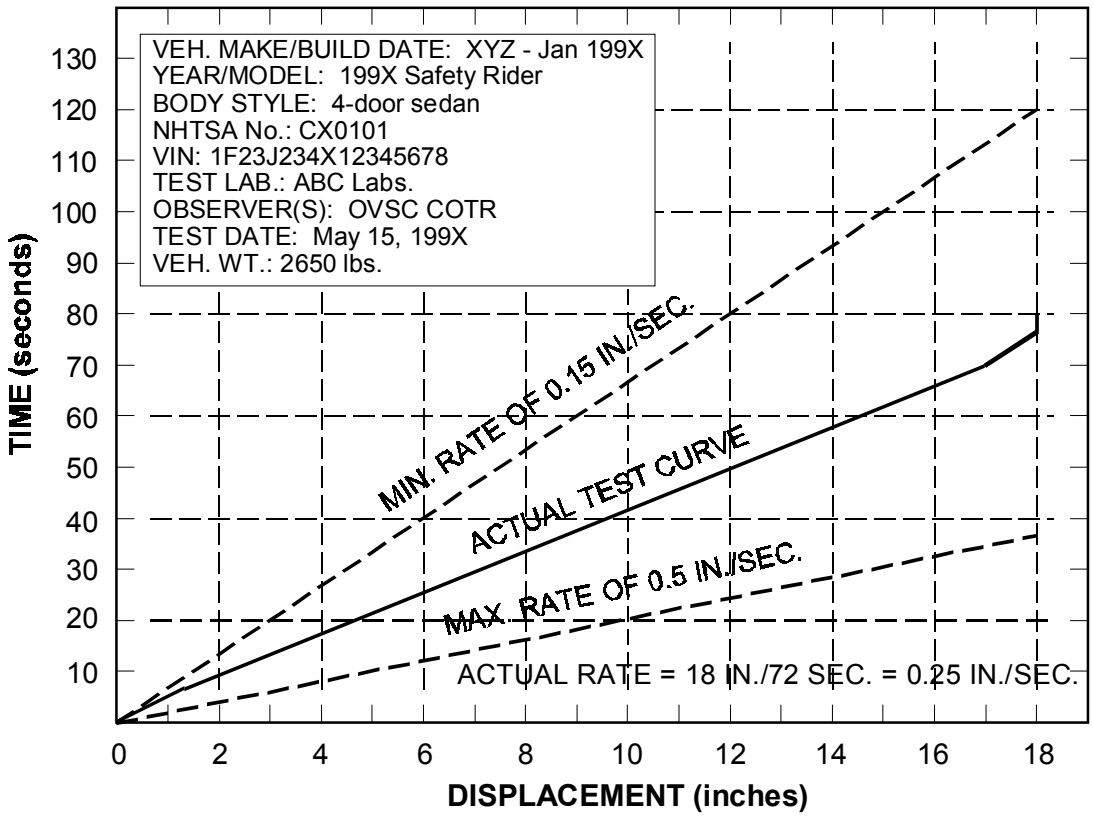


FIGURE 7

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. The Vehicle or Equipment Status Report shall be submitted until all vehicles or items of equipment are disposed of See Section 16 "Forms" for samples of the required Monthly Status Reports.

14.2. Apparent Test Failure

Any indication of a test failure shall be communicated by telephone to the COTR within 24 hours with written notification mailed within 48 hours (Saturday and Sunday hours excluded). A Notice of Test Failure (see Section 16 "Forms") with a copy of the particular compliance test data sheet(s) and preliminary data plot(s) shall be included.

In the event of a test failure, a post-test 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.

14.3. Final Test Reports

14.3.1 Copies

In the case of a test failure, **seven** copies of the Final Test Report shall be submitted to the COTR for acceptance within three weeks of test completion. The Final Test Report format to be used by all contractors can be found in this section.

Where there has been no indication of a test failure, **three** copies of each Final Test Report shall be submitted to the COTR for acceptance within three weeks of test completion. Payment of contractor's invoices for completed compliance tests may be withheld until Final Test Report acceptance by the COTR. Contractors are requested to NOT submit invoices before the COTR is provided with copies of the Final Test Report.

Contractors are required to submit the first Final Test Report in draft form 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.

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. REPORTS....Continued

14.3.2 Requirements

The Final Test Report, associated documentation (including photographs) are 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 and containing all data sheets.

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 for standardization.

14.3.3 First Three Pages

A. FRONT COVER
A heavy paperback cover (or transparency) shall be provided for the protection of the final report. The information required on the cover is as follows:

Final Report Number such as 214S-ABC-9X-001, where —

214S	is the FMVSS tested
ABC	are the initials for the laboratory
9X	is the Fiscal Year of the test program
001	is the Group Number (001 for the 1st test, 002 for the 2nd test, etc.)

Final Report Title And Subtitle such as

SAFETY COMPLIANCE TESTING FOR FMVSS 214-STATIC
Side Impact Protection (Static)
* * * * * * * * * * * * * * * *
Name of Vehicle Manufacturer
Model Year, Make/Model, Body Style
NHTSA Number Test Vehicle

Contractor's Name and Address such as

COMPLIANCE TESTING LABORATORIES, INC.
4335 West Dearborn Street
Detroit, Michigan 48090

NOTE: DOT SYMBOL WILL BE PLACED BETWEEN ITEMS (3) AND (4)

14. REPORTS....Continued

Date of Final Report Completion such as "March 15, 199X"

The words "FINAL REPORT"

The sponsoring agency's name and address as follows - -

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance
400 Seventh Street, SW
Room 6115 (NSA-31)
Washington, DC 20590

14. REPORTS….Continued

B. FIRST PAGE AFTER FRONT COVER

A disclaimer statement and an acceptance signature block for the COTR shall be provided as follows

This publication is distributed by the U. S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The 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. The United States Government does not endorse products or manufacturers.

Prepared By: _____

Approved By: _____

Approval Date: _____

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: _____

14. REPORTS....Continued

C. SECOND PAGE AFTER FRONT COVER
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

214-ABC-9X-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 214S (STATIC) Compliance Testing of 199X Ace Super 2-door Coupe, NHTSA No. CX0401

Block 5 — REPORT DATE

March 15, 199X

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

DTNH22-9X-D-12345

Block 12 — SPONSORING AGENCY NAME AND ADDRESS

US Department of Transportation
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance (NSA-31)
400 Seventh Street, SW, Room 6115
Washington, DC 20590

Block 13 — TYPE OF REPORT AND PERIOD COVERED

Final Test Report
Feb. 15 to Mar. 15, 199X

Block 14 —SPONSORING AGENCY CODE

NEF-30

Block 15 — SUPPLEMENTARY NOTES

Leave blank

Block 16 — ABSTRACT

Compliance tests were conducted on the subject 199X Ace Super 2-door coupe in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-214S-XX for the determination of FMVSS 214S (STATIC) compliance. Test failures identified were as follows:

None

NOTE: Above wording must be shown with appropriate changes made for a particular compliance test. Any questions should be resolved with the COTR.

14. REPORTS….Continued

Block 17 — KEY WORDS

Compliance Testing
Safety Engineering
FMVSS 214 STATIC

Block 18 — DISTRIBUTION STATEMENT

Copies of this report are available from —

NHTSA Technical Reference Division
Room 5108 (NAD-52)
400 Seventh St., SW
Washington, DC 20590
Telephone No.: 202-366-4946

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. REPORTS….Continued

14.3.4 TABLE OF CONTENTS

Final test report Table of Contents shall include the following:

Section 1 — Purpose of Compliance Test

Section 2 — Compliance Test Data Summary

Section 3 — Compliance Test Data

Section 4 — Noncompliance Data (if applicable)

Section 5 — Photographs

15. DATA SHEETS

DATA SHEET 1

TEST VEHICLE RECEIVING-INSPECTION

VEH. MODEL YR/MAKE/MODEL/BODY: _____

VEH. NHTSA NO.: _____ ; VIN: _____

VEH. BUILD DATE: _____ ; TEST DATE: _____

TEST LABORATORY: _____

OBSERVERS: _____

A. First compliance test by laboratory for this vehicle is the static FMVSS 214 test.

___ Yes ___ No (Go to item 2)

___ (1) Label test vehicle with NHTSA Number

___ (2) Verify all options on the "window sticker" are present on the vehicle

___ (3) Verify tires and wheel rims are new and the same as listed

___ (4) Verify there are no dents or other interior or exterior flaws

___ (5) Verify the glove box contains an owner's manual, warranty document, consumer information, and extra keys

___ (6) Verify the vehicle is equipped with the proper fuel filler cap

___ (7) If the vehicle has been delivered from the dealer, verify the vehicle has been properly prepared and is in running condition

B. Verify seat adjusters are working

___ Yes ___ No

C. Verify there is a seat belt at each seating position

___ Yes ___ No

(Continued on next page)

15. DATA SHEETS….Continued

D. Without disturbing the integrity of each seat belt and anchorage, verify that each seat belt is attached to the anchorage. For seat belts that are attached to the seat, also verify the seats are attached to the seat anchors and the seat anchors are attached to the vehicle.

___ Yes ___ No

E. COMMENTS: (Explain any problems here)

RECORDED BY: _____ DATE: _____

APPROVED BY: _____

15. DATA SHEETS….Continued

DATA SHEET 2

PRETEST PREPARATION

VEH. MOD. YR/MAKE/MOD/BODY STYLE: _____

VEH. DATE OF MANUFACTURE: _____ ; TEST DATE(S): _____

NHTSA No.: _____ ; VIN: _____

TEST LABORATORY: _____

OBSERVER(S): _____

Prior to testing the following will be accomplished:

A. Check the manufacturers certification statement to determine if the vehicle should be tested with or without seats installed.

B. Remove all seats unless the vehicle has been certified with the seats installed. If the seats remain in the vehicle, they are to be adjusted per the COTR's instructions.

C. Close all windows

D. Lock all doors

E. State door tested

F. State the length of a horizontal line drawn on door through a point 5 inches vertically above lowest point of test door

G. State vertical distance from the lowest part of test door to bottom of loading device

H. State position of vertical centerline of loading device on the midpoint of line determined step F

I. Determine that the vertical axis of the loading device is perpendicular to the longitudinal and lateral axis of the test vehicle

J. Determine that the top of the loading device is above the door window opening but not touching any structure above the window opening

RECORDED BY: _____ DATE: _____

APPROVED BY: _____

15. DATA SHEETS....Continued

DATA SHEET 3

STATIC LOAD TEST - BACK-UP SYSTEM DATA

VEH. MOD. YR/MAKE/MOD/BODY STYLE: _____

VEH. DATE OF MANUFACTURE: _____ ; TEST DATE(S): _____

NHTSA No.: _____ ; VIN: _____

TEST LABORATORY: _____

OBSERVER(S): _____

RESULTS: Plots of load versus displacement and time versus displacement obtained from the back-up data (attach plots to data sheet) showed that:

A. The initial crush resistance was _____

B. The intermediate crush resistance was _____

C. The peak crush resistance was _____ at _____ inches

D. The rate of loading was _____

The dial indicator and the inclinometer showed the following deflections.

LOADING DEVICE TRAVEL	DIAL INDICATOR	INCLINOMETER
0 inches	_____	_____
2 inches	_____	_____
4 inches	_____	_____
6 inches	_____	_____
12 inches	_____	_____
_____ Inches (full travel)	_____	_____
_____ Inches (removal)	_____	_____

RECORDED BY: _____ DATE: _____

APPROVED BY: _____

15. DATA SHEETS....Continued

DATA SHEET 4

DATA REDUCTION

VEH. MOD. YR/MAKE/MOD/BODY STYLE: _____

VEH. DATE OF MANUFACTURE: _____ ; TEST DATE(S): _____

NHTSA No.: _____ ; VIN: _____

TEST LABORATORY: _____

OBSERVER(S): _____

Data from the primary data systems will be analyzed and the plots attached to the data sheet.

RESULTS - The load versus displacement plot showed that - -

A. The initial crush resistance was _____

B. The intermediate crush resistance was _____

C. The peak crush resistance was _____

The time versus displacement plot showed that - -

The rate of loading was _____

Comparison of the ABOVE DATA with the BACKUP DATA indicates the following - -

RECORDED BY: _____ DATE: _____

APPROVED BY: _____

16. FORMS

LABORATORY NOTICE OF TEST FAILURE TO OVSC

FMVSS NO.: 214S (STATIC) TEST DATE: _____

LABORATORY: _____

CONTRACT NO.: DTNH22-_____ ; DELV. ORDER NO.: _____

LABORATORY PROJECT ENGINEER'S NAME: _____

TEST VEH. MAKE/MODEL/BODY STYLE: _____

VEHICLE NHTSA NO.: _____; VIN: _____

VEHICLE MODEL YEAR: _____; BUILD DATE: _____

TEST FAILURE DESCRIPTION: _____

_____

_____

_____

_____

S214S (STATIC) REQUIREMENT, PARAGRAPH ____ : _____

_____

_____

_____

NOTIFICATION TO NHTSA (COTR); _____

DATE: _____ BY: _____

REMARKS: _____

_____

16. FORMS....Continued

MONTHLY TEST STATUS REPORT

FMVSS 214S

DATE OF REPORT: _____

No.	VEHICLE NHTSA No., MAKE & MODEL	COMPLIANCE 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						
15						
16						
17						
18						
19						
20						

16. REPORT FORMS....Continued

MONTHLY VEHICLE STATUS REPORT

FMVSS 214S

DATE OF REPORT: _____

No.	VEHICLE NHTSA No., MAKE & MODEL	DATE OF DELIVERY	TEST COMPLETE DATE	VEHICLE SHIPMENT DATE	CONDITION OF VEHICLE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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