

REPORT NUMBER 216-GTL-04-002

**SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 216
ROOF CRUSH RESISTANCE**

**DAIMLERCHRYSLER CORPORATION
2004 CHRYSLER PACIFICA, MPV
NHTSA NO. C40301**

**GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443**



MAY 26, 2004

FINAL REPORT

PREPARED FOR

**U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
ROOM 6111 (NVS-220)
WASHINGTON, D.C. 20590**

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Prepared By: Debbie Messick
Approved By: [Signature]
Approval Date: 05/26/04

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Accepted By: Amanda Puseott
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SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2004 Chrysler Pacifica MPV was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 216 testing to determine if the vehicle was in compliance with the requirements of the standard. The purpose of this standard is to reduce deaths and injuries due to the crushing of the roof into the occupant compartment in rollover crashes.

1.1 The test vehicle was a 2004 Chrysler Pacifica MPV. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 2C4GM68404R539386

B. NHTSA No.: C40301

C. Manufacturer: DAIMLERCHRYSLER CORPORATION

D. Manufacture Date: 9-03

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 216 testing on May 19, 2004.

SECTION 2

COMPLIANCE TEST RESULTS SUMMARY

2.0 TEST RESULTS

All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedure, TP-216-05 and General Testing Laboratories Procedure, TP-216-05B with the following modifications requested by the COTR:

- 1) The vehicle was rigidly mounted in the test fixture by welding vertical supports to the vehicle jack points to prevent any vehicle movement. Chains were not used in an effort to reduce and/or eliminate "pre-stressing" of the vehicle due to the tightening of chains.
- 2) Dial gauges were placed at the vehicle corners and at the passenger door to track overall vehicle motion and the ability of the alternate tie-down procedure to restrict motion of the vehicle.

The data for this portion of the test can be found on Data Sheet 6.

Based on the test performed, the 2004 Chrysler Pacifica appears to meet the requirements of FMVSS 216.

SECTION 3
COMPLIANCE TEST DATA

3.0 TEST RESULTS

The following data sheets document the results of testing on the 2004 Chrysler Pacifica.

DATA SHEET 1
FMVSS 216
SUMMARY OF RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHRYSLER PACIFICA MPV
VEH. NHTSA NO: C40301; VIN: 2C4GM68404R539386
VEH. BUILD DATE: 9-03; TEST DATE: MAY 19, 2004
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

A. VISUAL INSPECTION OF TEST VEHICLE

Upon receipt, inspect vehicle for completeness, function, and discrepancies or damage which might influence the testing.

RESULTS:

B. VEHICLE DATA

- (1) Vehicle type as shown on certification label: MPV
- (2) Vehicle UVW as recorded on Data Table 2: 2018 kg

C. STATIC LOAD TEST OF DRIVER SIDE OF ROOF

Minimum roof crush resistance required by FMVSS 216 for the vehicle tested:

MCCR as recorded on Data Table 2: 29,665 N

Maximum roof crush resistance measured during test was
43,706 N at 95.7 mm

	PASS	FAIL
	<u>X</u>	<u> </u>

D. POST TEST VISUAL INSPECTION

Roof over driver head pushed down approximately 2.5". Windshield cracked. Roof metal bent from corner of windshield rearward 44".

RESULTS:

REMARKS:

RECORDED BY: *G. Farrand*

DATE: 05/19/04

APPROVED BY: *D. Messier*

DATA SHEET 2
FMVSS 216
RECEIVING INSPECTION

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHRYSLER PACIFICA MPV

VEH. NHTSA NO: C40301; VIN: 2C4GM68404R539386

VEH. BUILD DATE: 9-03; TEST DATE: MAY 19, 2004

TEST LABORATORY: GENERAL TESTING LABORATORIES

OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

Upon receipt, the vehicle will be examined visually for completeness, function, and damage. The roof and supporting structures such as the doors and windows should be checked for proper operation and any discrepancies which may influence the testing. The vehicle will be weighed and the minimum roof crush resistance determined.

RESULTS:

(1) Unloaded Vehicle Weight (UVW)

Left Front	<u>578.3</u>	kg	Left Rear	<u>451.8</u>	kg
Right Front	<u>549.8</u>	kg	Right Rear	<u>437.7</u>	kg
Front Axle	<u>1128</u>	kg	Rear Axle	<u>890.0</u>	kg

TOTAL UVW 2018 kg

(2) Vehicle type as shown on vehicle certification label: MPV

(3) Minimum Roof Crush Resistance (MCRR):

Passenger Car:

UVW x 1.5 x 9.8 = N/A N

MCRR = N/A N (UVW x 1.5 x 9.8 or 22,241 N whichever is less)

MPV, Truck or Bus:

MCRR = UVW x 1.5 x 9.8 = 29,665 N

(4) Other Comments: _____

REMARKS:

RECORDED BY: *[Signature]*

DATE: 05/19/04

APPROVED BY: *[Signature]*

DATA SHEET 3
FMVSS 216
PRE-TEST PREPARATION

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHRYSLER PACIFICA MPV
VEH. NHTSA NO: C40301; VIN: 2C4GM68404R539386
VEH. BUILD DATE: 9-03; TEST DATE: MAY 19, 2004
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

Prior to testing, the following will be accomplished:

- A. Secure any convertible top, movable or removable roof structure in their weather tight positions OK
- B. Close all windows OK
- C. Close and lock all doors OK
- D. State Side of Roof Tested Driver
- E. Measure the lateral angle of the test device at sufficient points to determine that it has a 25 degree (plus zero degree, minus one degree) angle 25°
- F. Measure the longitudinal angle of the loading device at sufficient points to determine that it has a 5 degree (plus zero minutes, minus 20 minutes) 5°
- G. The test device will initially contact the roof at 508 mm aft of top center of windshield
- H. If the test device was relocated based on the requirements of Chapter 12.3 paragraph F, describe where the test device will initially contact the roof as relocated N/A
- I. Ambient temperature 51 mm from the vehicle roof in the immediate area of the test device: 22.7 degrees C.

REMARKS:

RECORDED BY: *J. Farrand*
APPROVED BY: *D. M...*

DATE: 05/19/04

DATA SHEET 4
FMVSS 216

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHRYSLER PACIFICA MPV
VEH. NHTSA NO: C40301; VIN: 2C4GM68404R539386
VEH. BUILD DATE: 9-03; TEST DATE: MAY 19, 2004
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

RESULTS: Plots of load versus displacement and time versus displacement showed that:

- (1) The maximum roof crush resistance was 43,706 N at 95.7 mm
- (2) The rate of loading was 5.08 mm/sec (.2 in/sec)
- (3) The required roof crush resistance of 29,665 N was at 45.5 mm

REMARKS:

RECORDED BY: *G. Farrand*

DATE: 05/19/04

APPROVED BY: *D. Messick*

DATA SHEET 5
FMVSS 216
POST TEST VISUAL INSPECTION

VEH. MOD YR/MAKE/MODEL/BODY: 2004 CHRYSLER PACIFICA MPV
VEH. NHTSA NO: C40301; VIN: 2C4GM68404R539386
VEH. BUILD DATE: 9-03; TEST DATE: MAY 19, 2004
TEST LABORATORY: GENERAL TESTING LABORATORIES
OBSERVERS: GRANT FARRAND, JIMMY LATANE, AMANDA PRESCOTT

Upon completion of testing, a detailed visual inspection of the vehicle shall be made. Describe all damage and deformation that occurred during the test.

RESULTS: Roof over driver head pushed down approximately 2.5". Windshield cracked. Roof metal bent from corner of windshield rearward 44".

RECORDED BY: *S. P. Espinoza*

DATE: 05/19/04

APPROVED BY: *D. Menick*

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
COMPUTER	AT&T	486D66	BEFORE USE	BEFORE USE
TEST FIXTURE	GTL	N/A	N/A	N/A
A/D INTERFACE	METRABYTE	DAS-16(F)	BEFORE USE	BEFORE USE
SIGNAL CONDITIONER	METRABYTE	EXP-RES	BEFORE USE	BEFORE USE
LOAD CELL	REVERE	544351	11/03	11/04
DIAL INDICATOR	MITUTOYO	2424-10	BEFORE USE	BEFORE USE
LINEAR POTENTIOMETER	SERVO SYSTEMS	20/69	BEFORE USE	BEFORE USE
LINEAR POTENTIOMETER	SERVO SYSTEMS	20/70	BEFORE USE	BEFORE USE
LINEAR POTENTIOMETER	SERVO SYSTEMS	20/72	BEFORE USE	BEFORE USE
LINEAR POTENTIOMETER	ELECTRIC ASSOC. INC.	11A4A6	BEFORE USE	BEFORE USE

SECTION 6
TEST PLOTS



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.1
3/4 FORWARD VIEW OF VEHICLE ON TESTED
SIDE BEFORE TESTING



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.2
3/4 REARWARD VIEW OF VEHICLE ON TESTED
SIDE BEFORE TESTING



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.3
LEFT SIDE VIEW OF VEHICLE BEFORE TESTING



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.4
RIGHT SIDE VIEW OF VEHICLE BEFORE
TESTING



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.5
FRONT VIEW OF TEST SET-UP PRE-TEST



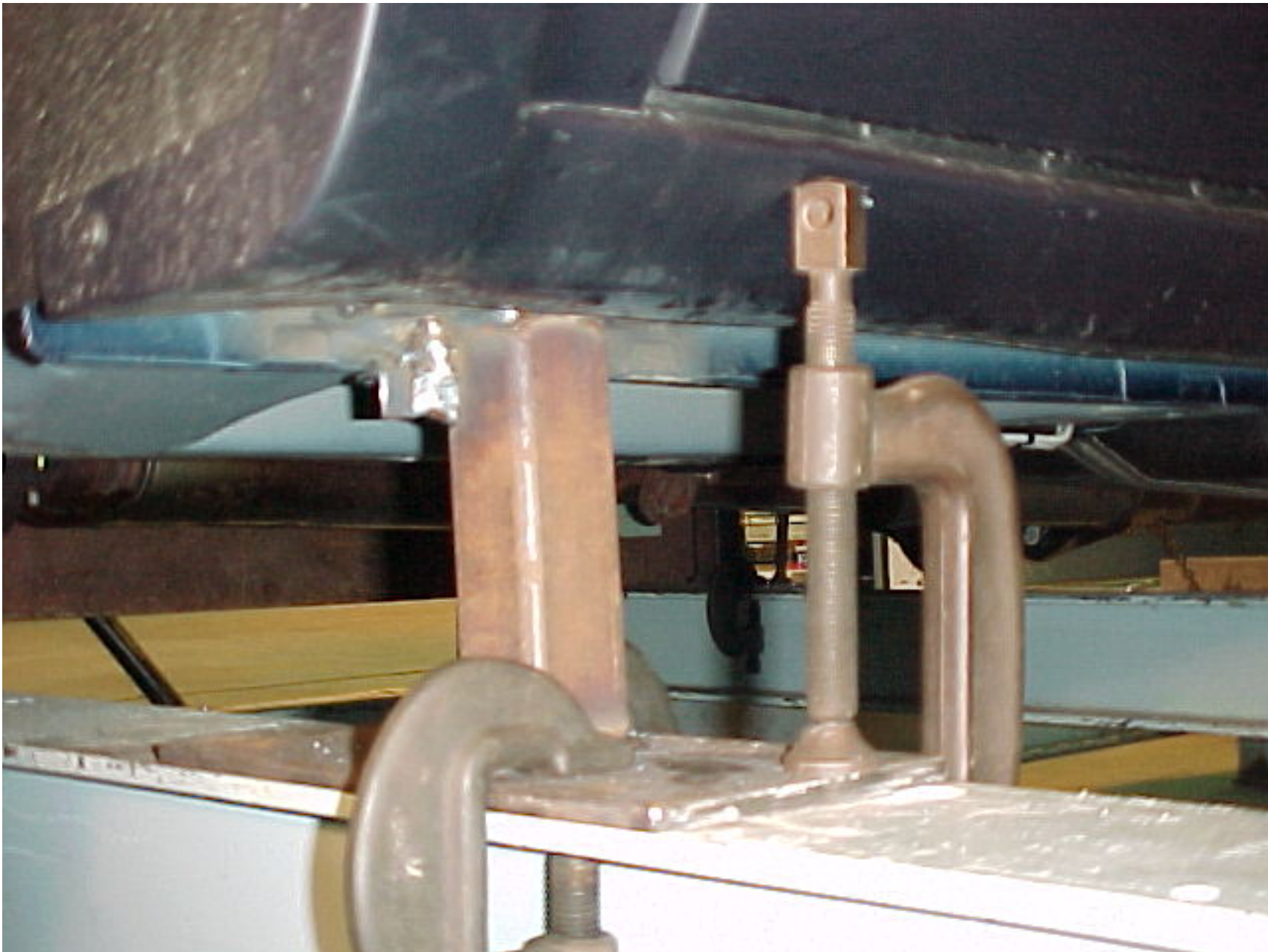
2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.7
VEHICLE IN 216 TEST RIG PRE-TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.6
REAR VIEW OF TEST SET-UP PRE-TEST



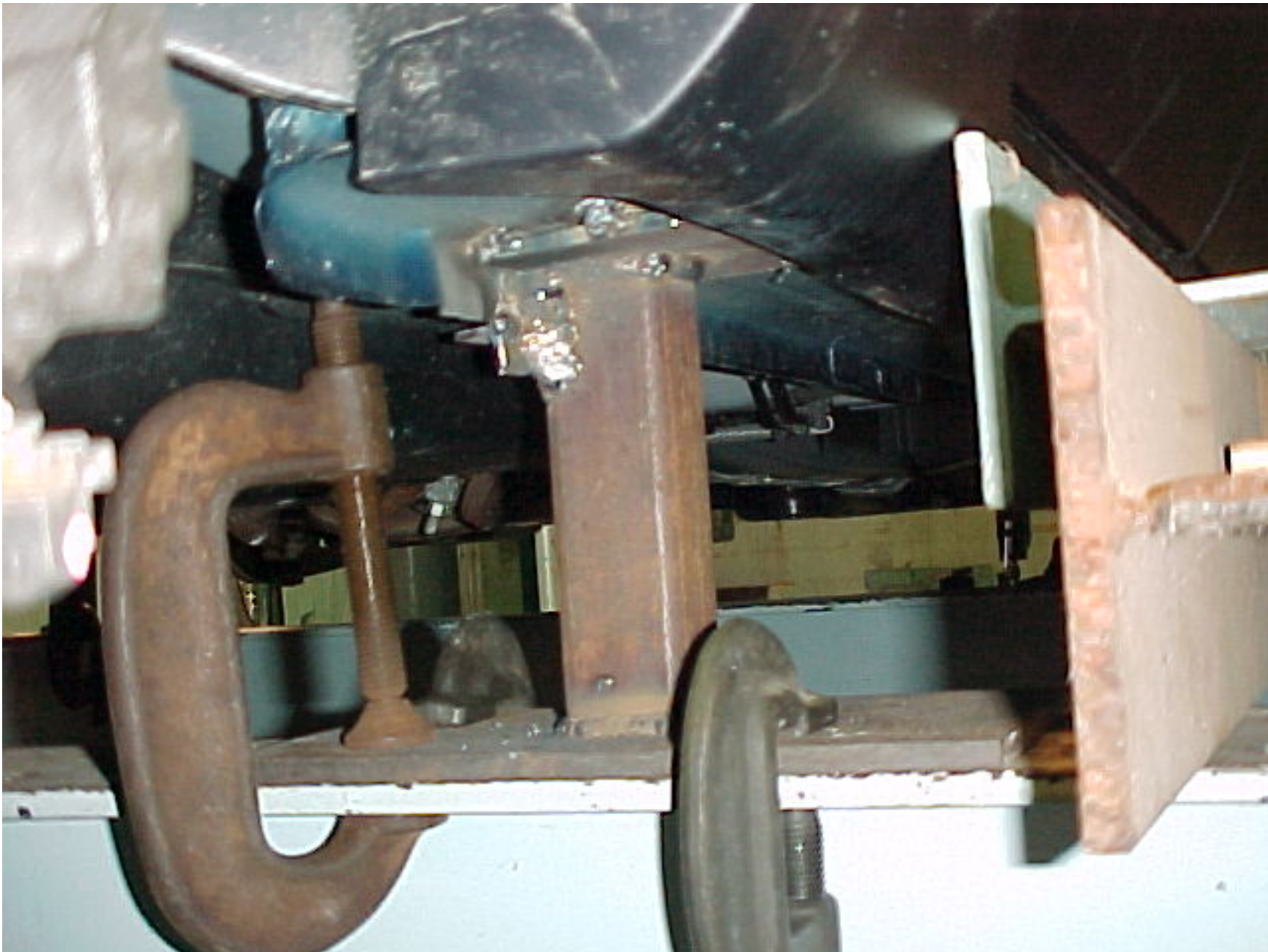
2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.8
LEFT FRONT VEHICLE MOUNTING



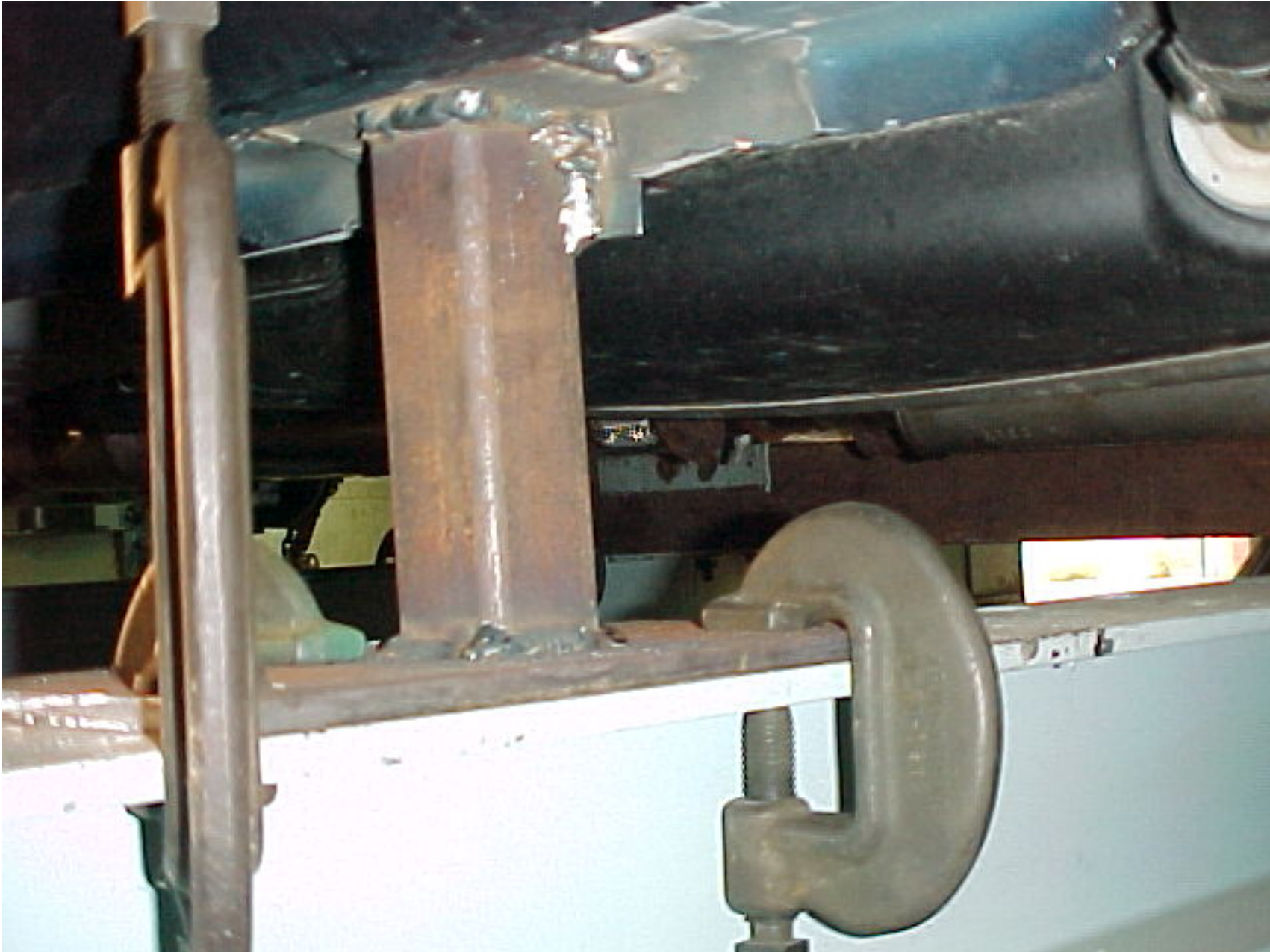
2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.9
RIGHT FRONT VEHICLE MOUNTING



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.10
RIGHT REAR VEHICLE MOUNTING



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.11
LEFT REAR VEHICLE MOUNTING



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.12
LEFT FRONT DISPLACEMENT PRE-TEST



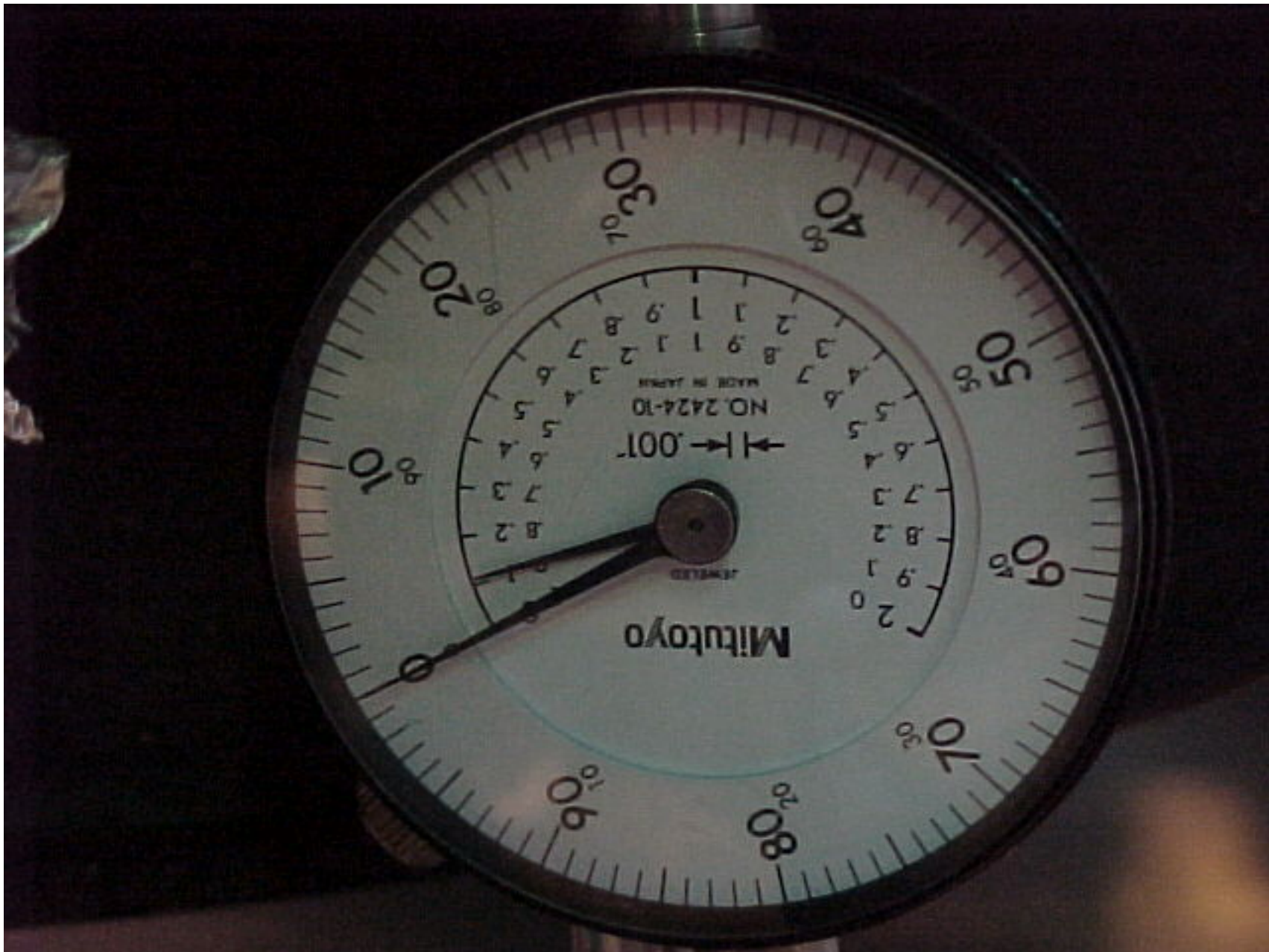
2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.13
RIGHT FRONT DISPLACEMENT PRE-TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.14
PASSENGER DOOR DISPLACEMENT PRE-TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.15
RIGHT REAR DISPLACEMENT PRE-TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.16
LEFT REAR DISPLACEMENT PRE-TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.17
INTERIOR SIDE VIEW PRE-TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.18
INTERIOR REAR VIEW PRE-TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.19
CONTACT POINT WITH PLATE



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.20
FRONT VIEW AT FULL LOAD



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.21
SIDE VIEW AT FULL LOAD



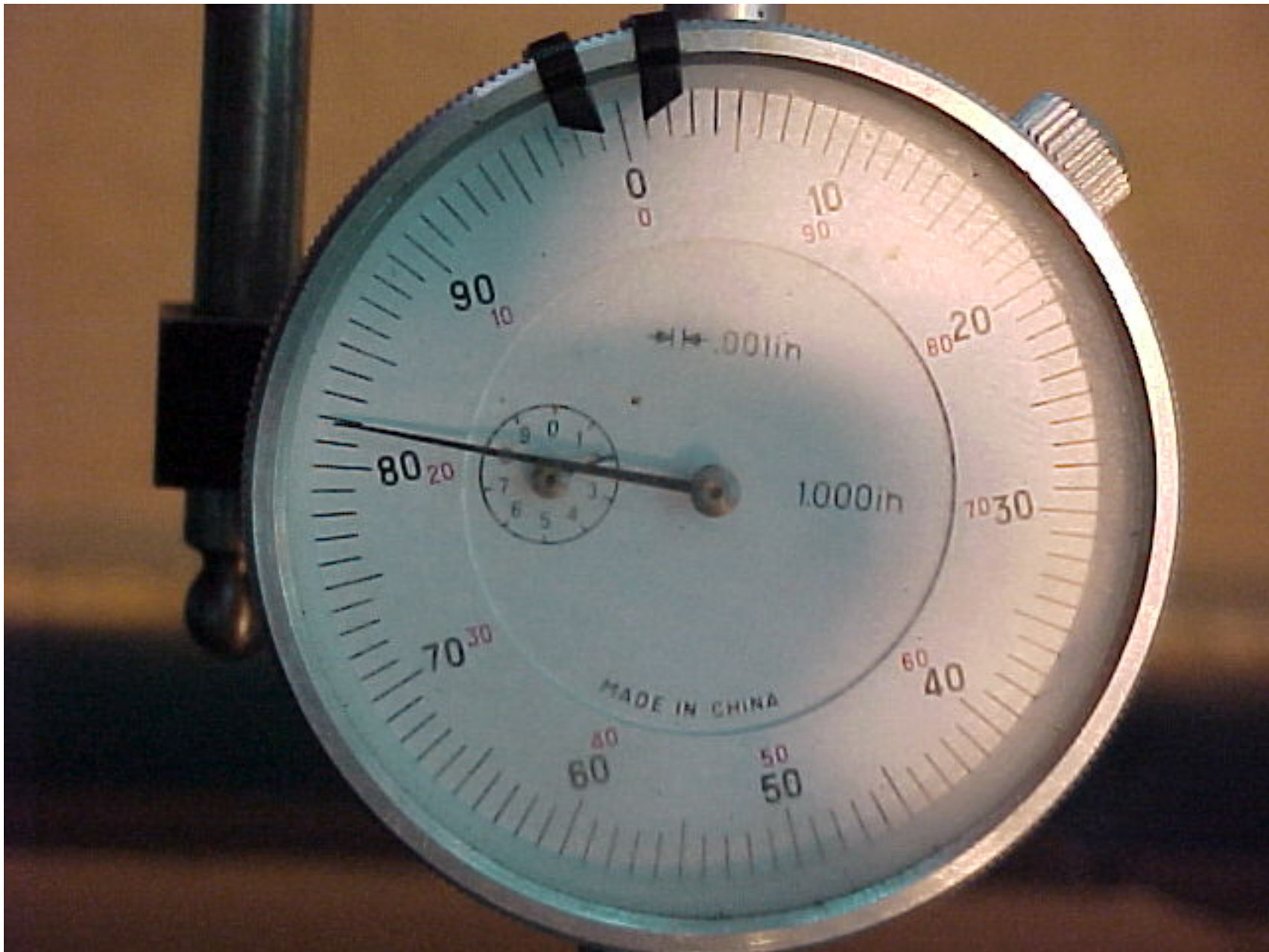
2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.22
LEFT FRONT DISPLACEMENT AT FULL LOAD
(INCHES)



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.23
RIGHT FRONT DISPLACEMENT AT FULL LOAD
(INCHES)



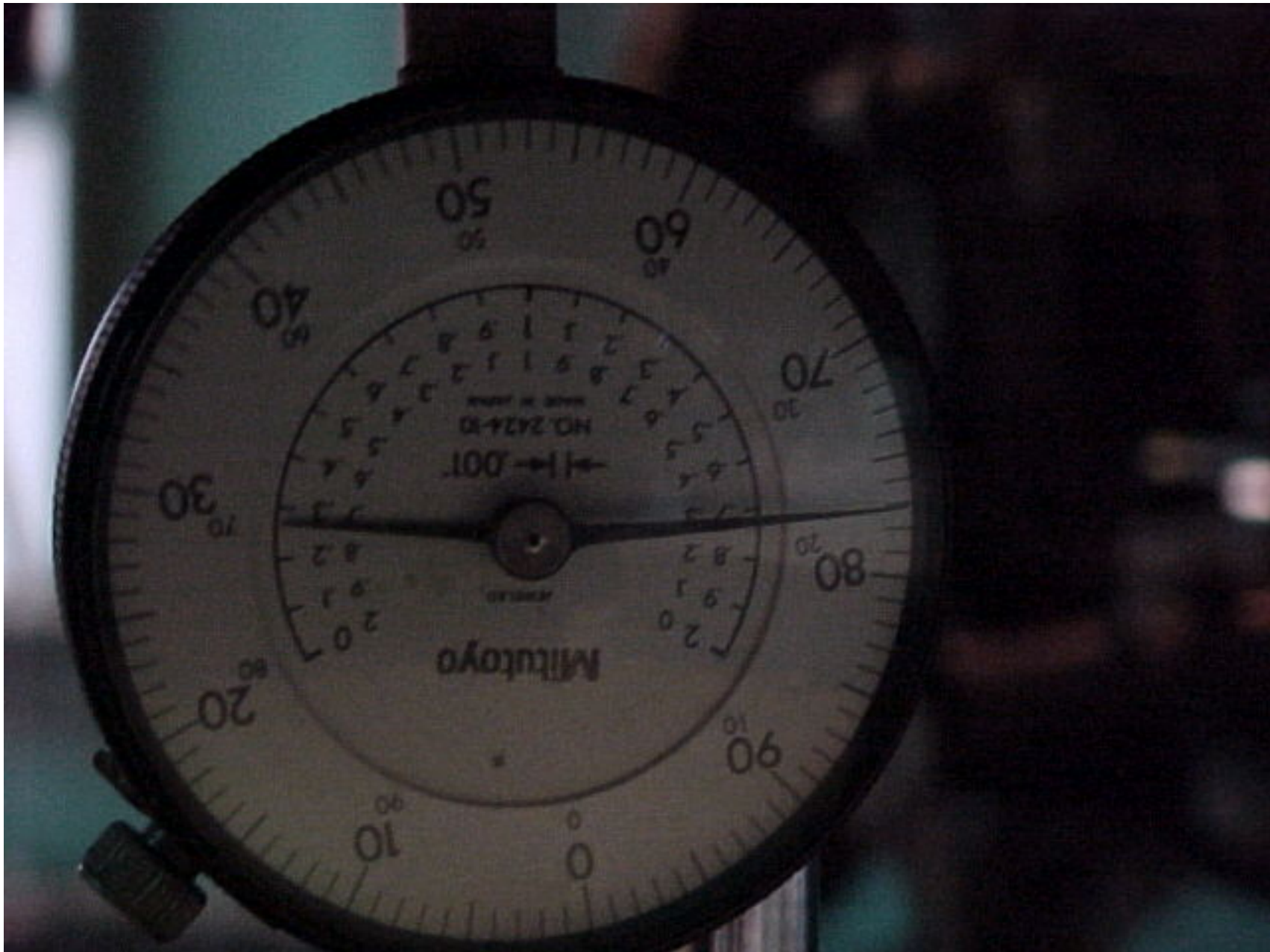
2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.24
PASSENGER DOOR DISPLACEMENT AT FULL
LOAD (INCHES)



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.25
RIGHT REAR DISPLACEMENT AT FULL LOAD
(INCHES)



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.26
LEFT REAR DISPLACEMENT AT FULL LOAD
(INCHES)



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.27
FRONT VIEW POST TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.28
INTERIOR REAR VIEW POST TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.29
INTERIOR SIDE VIEW POST TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.30
LEFT SIDE VIEW OF VEHICLE POST TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.31
¾ LEFT FRONT VIEW OF VEHICLE POST TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.32
¾ LEFT REAR VIEW OF VEHICLE POST TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.33
RIGHT SIDE VIEW OF VEHICLE POST TEST



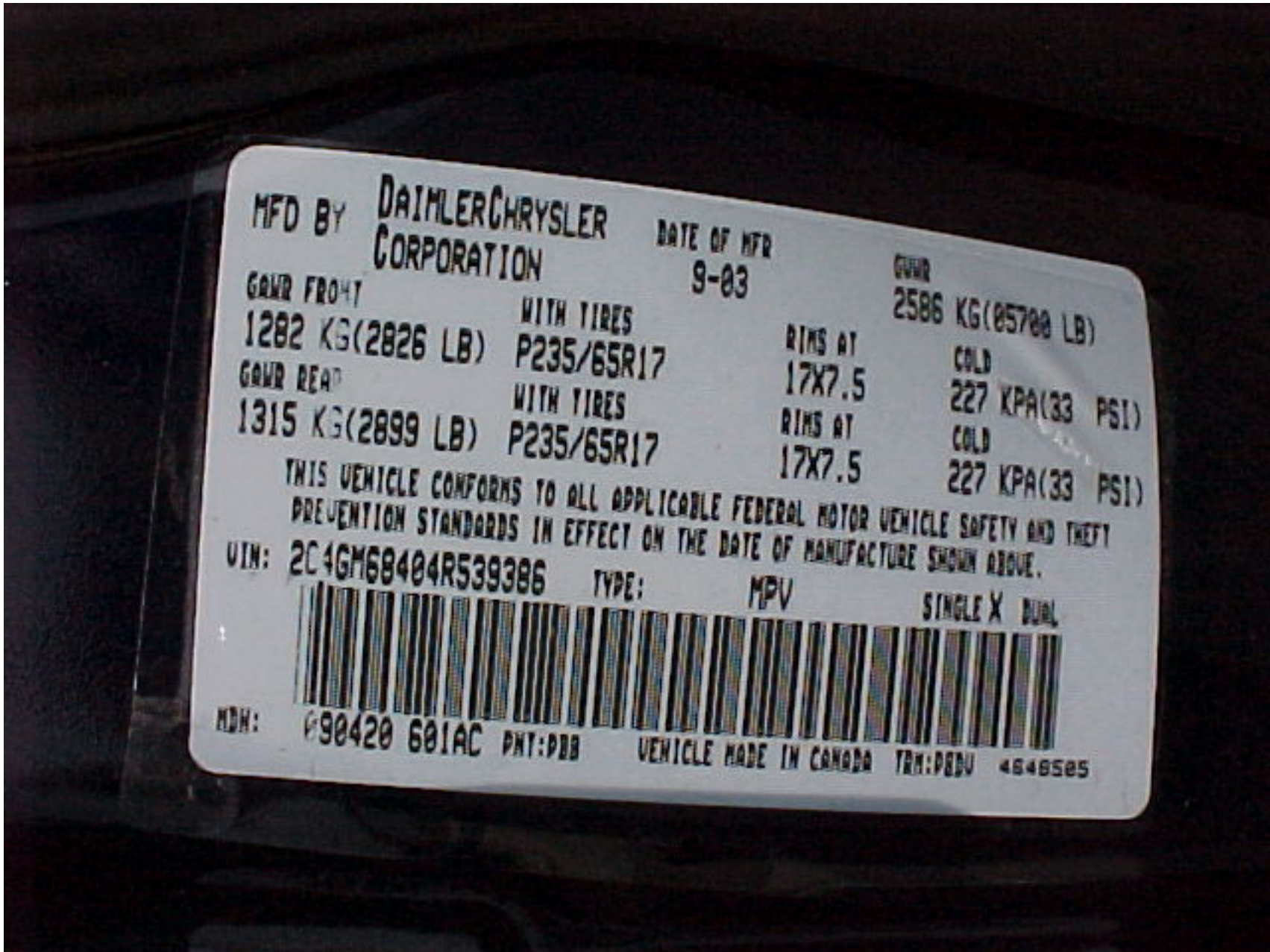
2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.34
CLOSE-UP OF ROOF POST TEST



2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.35
216 INSTRUMENTATION SET-UP



MFD BY DAIMLERCHRYSLER CORPORATION

DATE OF MFR 9-03

GWR 2586 KG (5700 LB)

GAWR FRONT 1282 KG (2826 LB) WITH TIRES P235/65R17

RIMS AT 17X7.5

COLD 227 KPA (33 PSI)

GAWR REAR 1315 KG (2899 LB) WITH TIRES P235/65R17

RIMS AT 17X7.5

COLD 227 KPA (33 PSI)

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: 2C4GM68404R539386

TYPE:

MPV

SINGLE X DUAL



MDH: 090420 601AC PNT: PBB

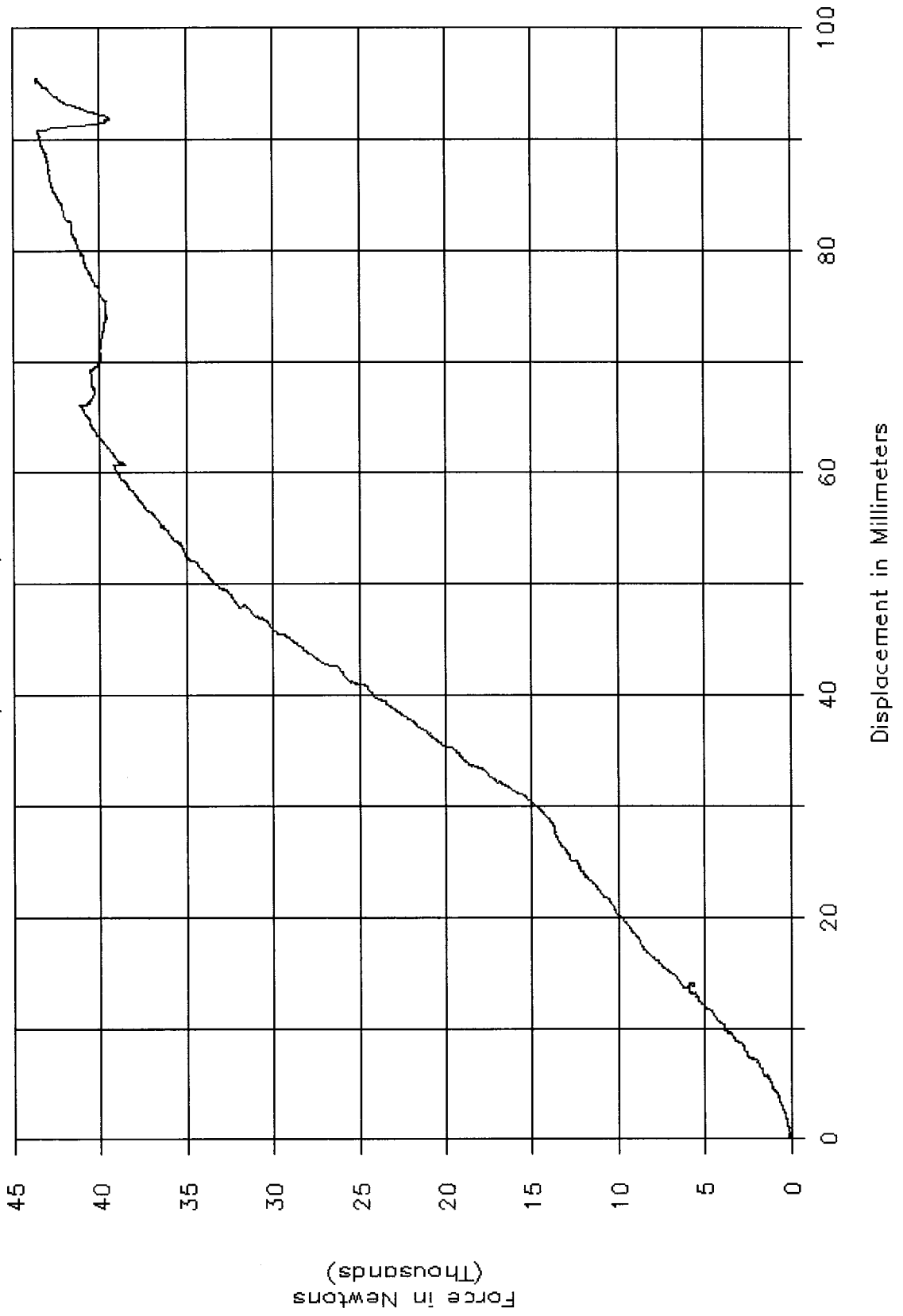
VEHICLE MADE IN CANADA TRM: PBDU 4648505

2004 CHRYSLER PACIFICA
NHTSA NO. C40301
FMVSS NO. 216

FIGURE 5.36
CLOSE-UP VIEW OF VEHICLE CERTIFICATION
AND TIRE INFORMATION LABEL

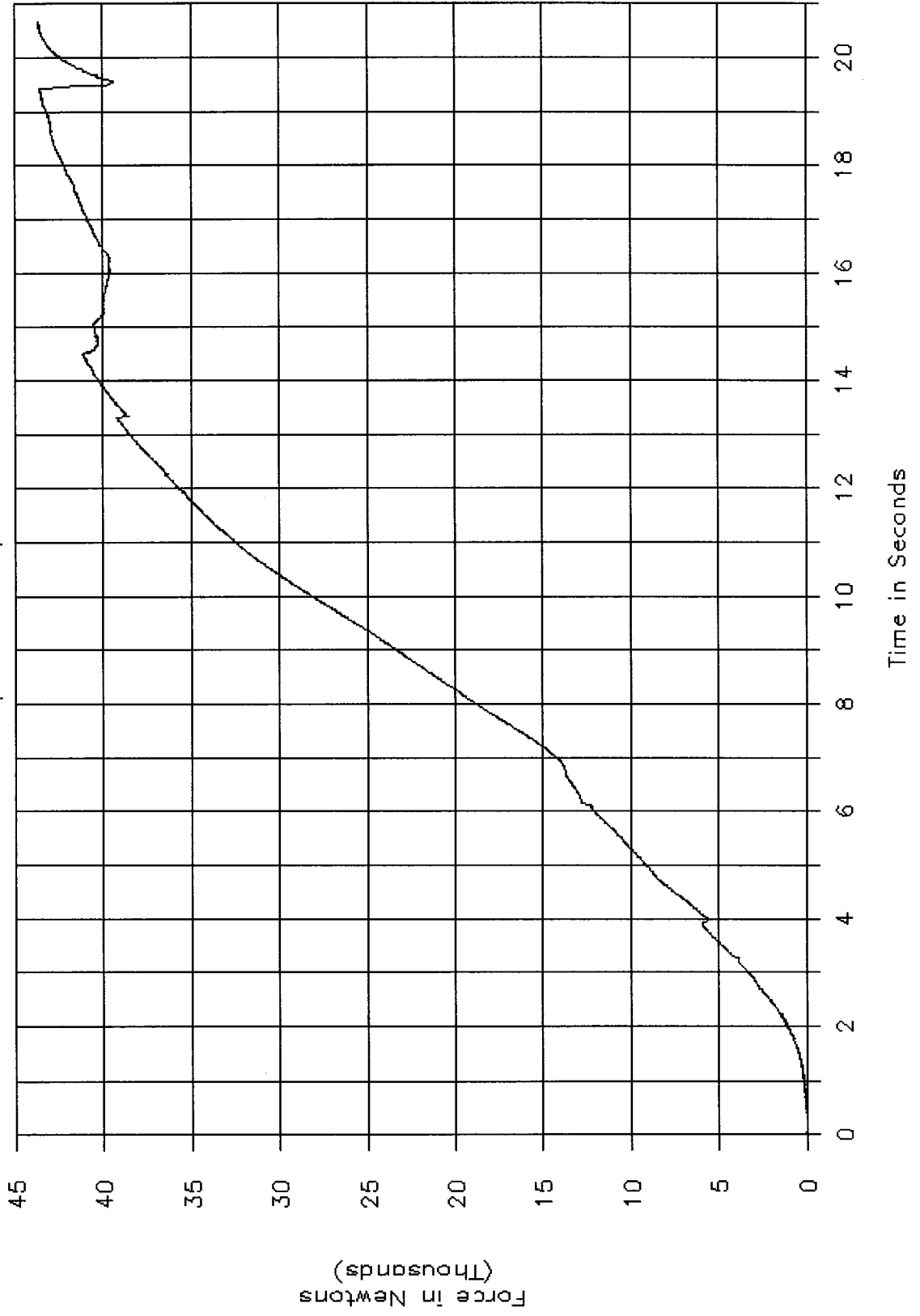
GTL 5199

216, Roof Crush, Driver Side.



GTL 5199

216, Roof Crush, Driver Side.



GTL 5199

216, Roof Crush, Driver Side.

