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HS#
636528

135-TRC-03-004

**SAFETY COMPLIANCE TESTING FOR FMVSS 135
Passenger Car Brake Systems**

Auto Alliance International, Inc., for Mazda Motor Corporation
2003 Mazda6i A, 4-Door Sedan
NHTSA No. C35401

TRANSPORTATION RESEARCH CENTER INC.

10820 State Route 347
East Liberty, Ohio 43319



Final Report Completed: May 22, 2003

FINAL REPORT

Prepared Under Contract No.: DTNH22-01-C-21025

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance
400 Seventh Street, SW
Room 6115 (NSA-30)
Washington, DC 20590

Prepared for the Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-01-C-21025.

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Prepared By Ronald A. Lander

Approved By Robert W. L. Lander

Approval Date: 5/22/03

Final Report Acceptance By OVSC:

[Signature]
Contract Technical Manager, Office of
Vehicle Safety Compliance

5/29/03
Acceptance Date

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				6. PERFORMING ORGANIZATION CODE: TRC 20000113/3354	
7. AUTHOR(S): Project Manager: VIRGINIA WATERS Project Engineer: RANDALL A. LANDES				8. PERFORMING ORGANIZATION REPORT NO.: TRC-DOT-135-042	
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Transportation Research Center Inc. 10820 State Route 347 East Liberty, Ohio 43319				10. WORK UNIT NUMBER:	
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15. SUPPLEMENTARY NOTES:					
16. ABSTRACT: Compliance tests were conducted on the subject 2003 Mazda6i A, 4-Door Sedan, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-135-00 for the determination of FMVSS 135 compliance. Test failures identified were as follows: <u>S5.5 Brake system warning indicator:</u> Specifically: <u>S5.5.1(a)(1)</u>					
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1.0 INTRODUCTION

Tests were conducted on a 2003 Mazda6i A, 4-door sedan, manufactured by the Auto Alliance International Inc., for Mazda Motor Corporation to determine compliance with FMVSS 135 "Passenger Car Brake Systems." All tests were conducted in accordance with the U.S. D.O.T., NHTSA Laboratory Procedure TP 135-00 and/or the corresponding TRC Inc. test procedure that was submitted to NHTSA for their approval. The test procedure was clearly described in the submitted document and has not been repeated in this report.

All stops were performed manually.

All tests were conducted by TRC Inc. personnel using the following TRC facilities:

7.5-Mile Test Track

Vehicle Maximum Speed

Burnish

Skid Pad

Cold Effectiveness Stops

High Speed Effectiveness Stops

Stops with Engine Off

Failed Antilocks

Failed Variable Proportioning Valve (if applicable)

Failed Hydraulic Circuits

Brake Power Assist Unit Failures

Heating Snubs and Hot Performance Stops

Brake Cooling and Recovery Stops

Brake Slope

Parking Brake

Average PFC during the test period was 0.96 utilizing the ASTM E1337 w/E1336 tire method.

The test vehicle was ABS equipped. Therefore, the Wheel Lock Sequence and Adhesion Utilization Tests were not performed.

DATA SHEET 1 - VEHICLE INFORMATION

VEHICLE SPECS

Year: 2003	NHTSA No: C35401
Mfr: AUTO ALLIANCE	GVWR (Kg): 1958.2
Make: MAZDA	GAWR Front(Kg): 1070.0
Model: MAZDA 6I	GAWR Rear(Kg): 888.1
Body Style: 4 DOOR SEDAN	Wheelbase (mm): 2672.1
Mfr. Date: 01/03	Odometer: Start:65 MI. End:714 MI.
VIN: 1YVFP80C335M20688	

BUSES ONLY

Chassis Mfg.: N/A
 Serial No.: N/A
 No. of Seats: N/A
 Manufacture Date: N/A

Engine Type: GASOLINE, 4 CYL., DOHC, 16 VALVE, VVT, EFI	Tire Size: P205/60R16
Displacement: 2.3 LITER	Tire Type: TUBELESS RADIAL, MXV4 PLUS XSE
Engine Hspwr: 160	Tire Mfr.: MICHELIN
Idle Speed(rpm): 698	GVWR Front Press.(kpa): 220.63
Transmission Type: AUTO 4-SPD OD	GVWR Rear Press (kpa): 220.63
No. of Axles: 2	

BRAKE APPLY SYSTEM

Brake Series: Front: DISC Rear: DISC	Power Assist Unit: YES
Brake Actuation	Pwr Unit w/Accumulator: NO
(Hydr. Circuit Split): DIAGONAL	Pwr Asst /Pwr Unit w/Backup: NO
Power Unit: VACUUM	Variable Prop. System: YES
Anti-Skid unit Mfr: SUMITOMO ELEC /VISTEON	Anti-Skid Device: YES
Parking Mechanism: YES	
Type of Parking Unit: AUTOMATIC TRANSMISSION W/PARK DETENT	
Mstr Cylinder Dia(mm): 0.00	Pedal Ratio: 2.85 : 1

FRONT SYSTEM BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC	Material: CAST
Drum Construction: N/A	LF Drum Shoe Cage Dia.(mm): 0.00
Disc Construction: INTEGRAL CAST, VENTED	RF Drum Shoe Cage Dia.(mm): 0.00
Front Brake Dia.(mm): 282.75	LF Drum Dia. RESET(mm): 0.00
Fr Disc Thickness(mm): 25.12	RF Drum Dia. RESET(mm): 0.00
Lining Construction: Bonded	

FRONT BRAKE COMPONENT DIMENSIONS AND CODES:

Inboard (Leading)	Outboard (Trailing)
Width(mm): 48.59	Width(mm): 48.56
Length(mm): 114.53	Length(mm): 114.48
Thickness(mm): 11.58	Thickness(mm): 11.61
Lining Code/Color: NBK D6432H FF	Lining Code/Color: NBK D6432H FF
Hyd. Pistor Dia (mm): 57.10	

DATA SHEET 1 - (CONTINUED)

REAR SYSTEM BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC

Material: CAST

Drum Construction: N/A

LR Drum Shoe Cage Dia.(mm): 0.00

Disc Construction: INT.CAST/UNVENT

RR Drum Shoe Cage Dia.(mm): 0.00

Lining Construction: BONDEC

LR Drum Dia. RESET(mm): 0.00

Rear Brake Dia (mm): 279.78

RR Drum Dia RESET(mm): 0.00

Rr Disc Thickness(mm): 10.00

REAR BRAKE COMPONENT DIMENSIONS AND CODES:

Inboard (Leading)

Outboard (Trailing)

Width(mm): 38.43

Width (mm): 38.18

Length(mm): 95.25

Length (mm): 94.89

Thickness(mm): 7.39

Thickness (mm): 7.39

Lining Code/Color: AK NS530H FF C

Lining Code/Color: AK NS530H FF C

Eye Piston Dia (mm): 34.80

OTHER COMPONENT INFORMATION:

Friction-type Park Brake: HAND OPERATED

Non-Service Brake Type

Parking Brake: N/A

NOTE: If at any time after the test series has begun, any brake system part requires replacement or the brake system requires adjustments other than permitted in burnish and reburnish procedures, discontinue testing and notify the COTR immediately.

Technician:

David Dolin
DAVID DOLIN

Date:

5-22-03

Quality Assurance:

Ken Webster
KEN WEBSTER

VEHICLE: 2003 Mazda6/ A

NHTSA NO.: C35401

DATE: 05/09/03

3.0 SUMMARY OF TESTING

	Specification and Limit					TEST RESULTS (In compliance if one stop meets requirement)			
TEST	Loading Condition	Speed (km/h)	Min. Pedal Force (N)	Max. Pedal Force (N)	Stopping Distance Requirement (m)	Shortest Stop Min. Pedal Force (N)***	Shortest Stop Max. Pedal Force Newtons (Average – N)	Shortest Stop Stopping Distance (m) (Corrected)	PASS Fail
Equipment Requirements	Specified Equipment					Vehicle contains specified equipment			Pass
Vehicle Maximum Speed	LLVW	NA				182.6 km/h avg.			NA
Burnish	GVWR	80				200, 80 - 0 km/h stops @ 3.0 mpsps			NA
Wheel Lockup Sequence w/o ABS	GVWR				Lockup of front wheels prior to rear	ABS Equipped			NA
Wheel Lockup Sequence w/o ABS	LLVW					ABS Equipped			NA
Adhesion Utilization w/o ABS	LLVW					Rear axle adhesion utilization curve below specified value			ABS Equipped
Adhesion Utilization w/o ABS	GVWR	ABS Equipped			NA				
Cold Effectiveness	GVWR	100	65	500	70	5	474.2	49.4	Pass
High Speed Effectiveness	GVWH	146.1	65	500	spd. depend -157.5	5	471.5	103.5	Pass
Stops with Engine Off	GVWR	100	85	500	70	5	441.0	48.4	Pass
Cold Effectiveness	LLVW	100	65	500	70	5	457.1	46.1	Pass
High Speed Effectiveness	LLVW	146.1	65	500	spd. depend -157.5	5	494.7	90.4	Pass
Failed Antilock	LLVW	100	65	500	85	5	238.6	47.3	Pass
Failed Proportioning Valve	LLVW	100	65	500	110	5	NA	NA	NA
Failed Hydraulic Circuit #1	LLVW	100	65	500	168	5	450.3	111.3	Pass
Failed Hydraulic Circuit #2	LLVW	100	65	500	188	5	438.3	101.0	Pass
Failed Hydraulic Circuit #1	GVWR	100	65	500	168	5	439.3	106.4	Pass
Failed Hydraulic Circuit #2	GVWR	100	65	500	188	5	477.7	98.1	Pass
Failed Antilock	GVWR	100	65	500	85	5	219.7	48.8	Pass
Failed Proportioning Valve	GVWR	100	65	500	110	5	NA	NA	NA
Power Brake Unit Failure	GVWR	100	65	500	168	5	494.7	124.2	Pass
Parking Brake - Uphill	GVWR	-	-	400	Hold for 5 min.?	NA	356.3	Yes-Holds	Pass
Parking Brake - Downhill	GVWR		-	400	Hold for 5 min.?	NA	362.0	Yes-Holds	Pass
Heating Snubs	GVWR	120-60	NA	NA	15 Snubs- 3.0 mpsps	5	64 Vis. Avg.	NA	NA
Hot Performance Stop #1	GVWR	100	65	356 avg	75.8	5	322.0 (220.3)	63.6	Pass
Hot Performance Stop #2	GVWR	100	65	500	89	5	526.5	51.0	*Pass
Brake Cooling	GVWR	50	NA	NA	4 Stops - 3.0 mpsps	5	76 Vis Avg	NA	NA
Recovery Performance Stop #1	GVWR	100	65	356 avg	One of the two stops between 66.4 and 38.3 meters	5	372.4 (185.7)	54.4	Pass
Recovery Performance Stop #2	GVWR	100	65	500		5	378.0 (88.7)	47.9	
Final Inspection-Brake Integrity	Check components for detachment, fracture or lubricants.					No detachments or fractures-normal appear. & colr.			Pass
Final Inspection-Reservoirs/Warning Indicators	Master cylinder or brake power reservoir shall meet the volume and label requirements of S5.4.2 and S6.4.3.					Brake system has sufficient capacity and indicators are in compliance.			*Fail

*** Note: The Shortest Stop Minimum Pedal Force represents the minimum force value required to engage the data acquisition's recording mode. *See Appendix C.

DATA SHEET 3 - VEHICLE WEIGHT

VEHICLE: 2003 MAZDA MAZDA 6I

NHTSA No. C35401 Date: 03/28/03

Tire Pressure(cold): Front (kpa) 221 Rear (kpa) 221

Odometer: Start 65 MI. End 714 MI

Scale(s) Used: TRC Toledo Scales

NOTE: GVWR, LLVW and axle weights to be measured within +0% and -1%.

GVWR/GAWR INFORMATION
(From Veh. Certification Label)

UNLOADED VEHICLE WEIGHT(UVW)

GVWR(Kg): 1958
GAWR Front(Kg): 1070
GAWR Rear(Kg): 888

L Front(Kg): 425 L Rear(Kg): 295
R Front(Kg): 424 R Rear(Kg): 276
T Front(Kg): 848 T Rear(Kg): 571
Total UVW(Kg): 1419

TARGET LIGHT LOADED WEIGHT(LLVW):

ACTUAL LIGHT LOADED WEIGHT(LLVW):

NOTE 1: LLVW = UVW+181.4Kg

NOTE 2: Weight distributed in front passenger seat area.

NOTE 3: Neither axle load at LLVW less than at UVW; ballast as required.

L Front(Kg): 475 L Rear(Kg): 338
R Front(Kg): 471 R Rear(Kg): 319
T Front(Kg): 946 T Rear(Kg): 657
Total LLVW(Kg): 1603

L Front(Kg): 482 L Rear(Kg): 342
R Front(Kg): 463 R Rear(Kg): 313
T Front(Kg): 945 T Rear(Kg): 654
Total Actual Test LLVW(Kg): 1599

Load: Driver/Observer 100(Kg) + Instru. 41(Kg) + Ballast 41(Kg) = 181(Kg)

FULLY LOADED TEST WEIGHT (ACTUAL GVWR)

NOTE 1: Vehicle loaded so axle loads proportional to GAWR shown previously.

NOTE 2: But no axle weight to be less than at LLVW.

NOTE 3: If weight on any axle at LLVW exceeds the axle's proportional share of the GVWR, the load required to reach GVWR is placed so that the weight on that axle remains the same as at LLVW.

L Front(Kg): 533 L Rear(Kg): 446
R Front(Kg): 538 R Rear(Kg): 440
T Front(Kg): 1070 T Rear(Kg): 886
Total Fully Loaded GVWR(Kg): 1956

Load: Driver/Observer 33(Kg) + Instru. 41(Kg) + Ballast 396(Kg) = 537(kg)

Technician: David Julin

DAVID JULIN

Date: 5-22-03

Quality Assurance:

Ken Webster
KEN WEBSTER

DATA SHEET 4 - EQUIPMENT REQUIREMENTS (S5)

SERVICE BRAKE SYSTEM (S5.1)

Vehicle equipped with a service brake system acting on all wheels? YES

Wear Adjustment (S5.1.1):

Service Brakes are compensated for wear by means of a system of automatic adjustment? YES

Describe: DISC: AUTOMATIC CLEARANCE TAKE-UP.

Wear Status (S5.1.2)

Wear status of service brakes is indicated by:

(A) Acoustic or optical device? YES

Describe: METAL TAB EMITS SQUEAL WHEN WORN. FRONT ONLY

(B) Visual check outside or under vehicle? YES

Describe: FRONT LOOK THROUGH CALIPER; REAR LOOK THROUGH CALIPER

PARKING BRAKE SYSTEM (S5.2)

Vehicle equipped with a parking brake system of a friction type with solely mechanical means to retain engagement? YES

CONTROLS (S5.3)

(A) Service brakes activated by means of a foot control? YES

(B) Parking brake control is independent of the service brake control? YES

(C) Parking brake control is hand or foot operated? YES

(D) ABS, if equipped, cannot be manually disabled? YES

DATA INDICATES COMPLIANCE. YES

COMMENTS: NONE.

Tester/Technician:

David Dulin
DAVID DULIN

Date: 5-22-03

Quality Assurance:

Ken Webster
KEN WEBSTER

DATA SHEET 5 - VEHICLE MAX SPEED

VEHICLE: 2003 MAZDA MAZDA 6L

NHTSA No. C35401 Date: 04/02/03

Ambient Temperature: 63.00°F

Wind Velocity: 14.00(MPH)

Road PFI: .96

Wind Direction: 219°

Odometer: Start 94(mi) End 109(mi)

TEST WEIGHT: Total (Kg) 1559

Front (Kg): 945

Rear (Kg) 654

ESTABLISH VEHICLE MAXIMUM SPEED

VEHICLE LOAD: LLVW

IBT: N/A

GEAR: Drive

DECEL RATE: N/A

PEDAL FORCE: N/A

WHEEL LOCKUP: N/A

TEST SPEED: Maximum attainable from

INTERVAL: N/A

a standing start in 3.2 km.

1. Ballast Vehicle to LLVW
2. Accelerate at a maximum rate from a standing start for a distance of 3.2 km on a level surface.
3. Repeat in opposite direction.
4. Record speed attained in each direction and use the average of the two runs.

	DIRECTION	MAX SPEED (km/h)		Time 0 - 100 KPH (seconds)
		Visual	Recorded	
Run No. 1	South	182.3 km/h	182.3	13.40
Run No. 2	North	182.3 km/h	182.8	12.00

AVERAGE = 182.6 km/h

COMMENTS: INV DATA, Section 0001, 04/02/03, 10:08:23

Tester/Technician:

DAVID DULIN

Date:

5-22-03

Quality Assurance:

KEN WEBSTER

Vehicle: 2003 AOTO ALLIANCE NHTSA NUMBER: C35401
 Make: MAZDA
 Model: MAZDA 6i
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 397
 East Liberty, Ohio 43319
 (937) 666-2011 www.trcpg.com

Date Tested: 04/02/03

DATA SHEET 6 - BURNISH AT GVWR

Testing Conditions: INV DATA, Section 0002, 04/02/03, 14:03:49

Weather Conditions: 58°F Wind: 7 mph 131°

Start Odo.: 175 End Odo.: 179

Schedule:

Initial Brake Temperature Less Than 100°C
 Initial Speed 80 km/h to zero
 200 stops with transmission in gear

Performance Requirements:

Interval between runs: Time necessary to reduce IMV to 100 C° or
 1 km distance, whichever occurs first.
 Constant decel rate: 3.0 m/s²
 Pedal force adjusted to maintain constant decel.
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

		LEFT	RIGHT	LEFT	RIGHT	MAX.	AVG.	
STOP	INIT	FRONT	FRONT	REAR	REAR	PEDAL	PEDAL	AVG.
#	(km/h)	(°C)	(°C)	(°C)	(°C)	(N)	(N)	(m/sec ²)
1	80.33	55	56	43	42	112.49	72.88	3.31
10	80.52	107	132	102	92	72.64	49.22	2.88
20	80.35	121	132	102	99	85.82	49.46	3.23
30	80.67	116	133	101	96	69.70	47.79	2.98
40	80.22	110	134	101	89	65.73	49.93	3.01
50	81.09	115	129	94	91	52.63	40.41	2.91
60	79.34	111	134	97	88	56.60	48.19	2.84
70	80.26	119	129	94	94	56.52	47.87	2.85
80	79.24	110	128	96	94	50.97	44.06	2.89
90	77.94	111	131	96	88	58.35	46.68	2.87
100	79.62	113	128	94	97	57.67	41.36	2.71
110	80.73	116	126	96	99	50.97	35.60	2.96
120	81.19	131	122	90	96	48.35	36.76	2.88
130	79.57	102	116	83	87	49.46	42.79	2.66
140	80.02	104	117	88	94	58.03	39.69	2.94
150	80.54	106	114	87	93	52.08	41.60	2.87
160	80.37	104	116	84	91	48.59	43.37	3.85
170	80.56	103	113	82	88	56.05	39.38	2.93
180	81.14	96	108	83	86	57.48	39.77	3.03
190	80.84	102	114	83	87	52.24	40.25	3.09
200	80.50	103	114	81	86	59.38	41.62	2.98

COMMENTS: THIS VEHICLE WAS EQUIPPED, DATA SHEETS 7-10 NOT INCLUDED.

BRAKE ADJUSTMENT

Schedule:

Adjust service brakes; record procedure and amount adjusted.

Left Front: DISC NONE
 Right Front: DISC NONE
 Left Rear: DISC NONE
 Right Rear: DISC NONE

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN

Observer: NONE

Recorded Data Processed by: LANCE JENKINS

Date: 5/2/03

Approving Laboratory Official(s): KEN WRIGHT

Date: 5/8/03

Vehicle: 2003 AUTO ALTAMONTE NHTSA NUMBER: C35401
 Make: MAZDA
 Model: MAZDA 6I
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 147
 East Liberty, Ohio 43319
 (937) 466-2011 www.tropg.com

Date Tested: 04/04/03

DATA SHEET 11 - COLD EFFECTIVENESS AT GVWR

Testing Conditions: NHTSA, Section 0015, 04/04/03, 11:10:03

Weather Conditions: 64°F Wind: 15 mph 205° Start Odo.: 393 End Odo.: 408

Schedule:

Initial Brake Temperature 65 - 100 C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 70m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP #	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL DISTANCE (meters)	CORRECTED DISTANCE (meters)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
	FRONT	FRONT	FRONT	FRONT							
	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)							
SPD (kph)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)	TEMP (°C)
1	100.36	84	91	67	61	53.5	53.2	386.15	244.35	11.99	7.41
2	99.99	89	94	66	56	51.4	51.4	305.28	233.71	12.19	6.86
3	100.64	90	94	63	51	51.7	51.0	299.25	242.05	12.03	7.56
4	100.53	91	92	61	51	51.8	51.2	416.52	331.90	12.11	7.88
5	100.10	89	91	66	52	49.5	49.4	474.77	356.16	12.13	7.46
6	100.16	88	92	69	55	49.5	49.1	511.59	387.13	12.05	7.49

STOP #	DRIVER VEHICLE STOP COMMENTS		
4	(Wheel lock up - Direction of Stop - Stay in Lane)		
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	SOUTH YES
6	-	NOX	SOUTH YES

Corrected Distances are used to determine shortest stopping distance.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENNINS Date: 5/2/03
 Approving Laboratory Official: KEN WEBSTER Date: 5/8/03

Vehicle: 2003 NISSAN ALTIMA NISSAN NUMBER: C35401 Transportation Research Center, Inc.
 Make: NISSAN 10820 State Route 347
 Model: NISSAN 6J East Liberty, Ohio 43319
 Body Style: 4 DOOR SEDAN 9371666-2011 www.trcpg.com
 Front Cold Tire Pressure: 221 (Kpa) Date Tested: 04/04/03
 Rear Cold Tire Pressure: 221 (Kpa)

DATA SHEET 12 - HIGH SPEED EFFECTIVENESS AT GVWR

Testing Conditions: INV DATA, Section 0020, 04/04/03, 13:30-54

Weather Conditions: 64°F Wind: 12 mph 224° Start Odo: 412 End Odo: 439

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed: 80± mph km/h, not greater than 160km/h
 6 stops with transmission in gear

Performance Requirements:

One Stop with:
 Stopping Distance less than: 157.5 meter
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	FORCE	FORCE	DECEL	DECEL
#	(Kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec²)	(m/sec²)
1	144.74	86	92	72	66	108.7	110.6	472.90	412.76	12.10	7.95
2	144.70	86	91	71	61	104.2	106.2	488.87	424.60	12.07	7.28
3	146.04	85	98	70	63	106.1	105.1	523.10	423.89	12.14	7.66
4	146.20	90	87	59	64	103.8	103.5	471.47	404.11	12.12	7.97
5	145.40	89	84	96	78	105.6	106.4	493.28	414.99	12.16	7.94
6	146.33	95	92	62	55	105.4	105.0	486.24	406.65	12.16	8.14

STOP	DRIVER VEHICLE STOP COMMENTS
#	(Wheel Lock up - Direction of Stop - Stay in Lane)
1	NOX SOUTH YES
2	NOX SOUTH YES
3	NOX SOUTH YES
4	NOX SOUTH YES
5	NOX SOUTH YES
6	NOX SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENNINS Date: 5/2/03
 Approving Laboratory Official: KEN WEBSTER Date: 5/8/03

Vehicle: 2007 AUTO ALLIANCE NHTSA NUMBER: C35401
 Make: MAZDA
 Model: MAZDA 6I
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

Transportation Research Center, Inc.
 10320 State Route 342
 East Liberty, Ohio 43319
 (937) 660-2011 www.trcpg.com

Date Tested: 04/04/03

DATA SHEET 13 - STOPS WITH ENGINE OFF AT GVWR

Testing Conditions: INV DATA, Section 0025, 04/04/03, 14:42:06

Weather Conditions: 66°F Wind: 7 mph 158° Start Odo : 438 End Odo.: 451

Scenarios:

Initial Brake Temperature: 65-100°C
 Initial Speed 130 km/h to zero
 6 stops with transmission in Neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than **70m**
 Pedal force between 65N and 500N
 No lock-up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 199) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
		IBT (°C)	IBT (°C)	IBT (°C)	IBT (°C)						
1	99.47	54	91	62	55	49.1	49.7	479.49	374.32	12.17	7.86
2	101.16	59	93	62	51	49.9	48.8	440.17	335.07	12.13	7.37
3	98.34	59	93	61	48	48.9	50.5	446.13	354.94	12.16	7.60
4	99.16	68	92	64	53	47.9	46.6	427.54	343.10	12.18	6.98
5	100.99	67	90	67	57	47.1	46.4	481.04	382.50	12.14	8.16
6	100.32	57	91	69	61	47.2	46.9	557.66	400.13	12.12	8.00

STOP #	DRIVER VEHICLE STOP COMMENTS		
#	[Wheel Lock-Up - Direction of Stop - Stay in Lane]		
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	SOUTH YES
6	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CRUCI JENNINS Date: 5/2/03
 Approving Laboratory Official: BEN WEBSTER Date: 5/3/03

Vehicle: 2003 AUTO ALLIANCE
 Make: MAZDA
 Model: MAZDA 6I
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

NHTSA NUMBER: C35497

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43118
 (937)666-2011 www.trcny.com

Date Tested: 04/14/03

DATA SHEET 14 - COLD EFFECTIVENESS AT LLVW

Testing Conditions: INV DATA, Section 0030, 04/14/03, 14:33:40

Weather Conditions: 71°F Wind: 15 mph 212° Start Odo.: 466 End Odo.: 486

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 70m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 16 km/h
 Vehicle must stay in lane of 3.5m

STOP #	INIT SPD	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL FORCE	AVG. PEDAL FORCE	MAX DECEL	AVG. DECEL
	(km/h)	(°C)	(°C)	(°C)	(°C)	(meters)	(meters)	(N)	(N)	(m/sec²)	(m/sec²)
1	100.78	83	89	72	64	50.1	49.3	375.47	286.29	12.15	3.02
2	100.48	86	94	69	59	47.1	46.6	425.46	341.74	12.27	3.00
3	99.66	86	93	66	56	48.0	48.3	438.05	356.56	12.24	2.99
4	99.54	87	93	62	53	45.7	46.1	457.09	374.48	12.25	3.16
5	100.73	91	93	64	54	48.5	47.8	454.30	390.73	12.30	2.88
6	99.60	88	94	67	58	46.4	48.8	456.28	324.29	12.25	2.69

STOP #	DRIVER VEHICLE STOP COMMENTS		
	Wheel Lock-Up	Direction of Stop	Stay in Lane
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	SOUTH YES
6	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN
 Recorded Data Processed by: CHUCK JENKINS
 Approving Laboratory Official: KEN WEBSTER

Observer: NONE
 Date: 5/2/03
 Date: 5/8/03

Vehicle: 2003 AUTO ALLIANCE NHTSA NUMBER: C35401
 Make: MAZDA
 Model: MAZDA 6i
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 227 (Kpa)
 Rear Cold Tire Pressure: 227 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937) 666-1011 www.tropg.com

Date Tested: 04/15/03

DATA SHEET 15 - HIGH SPEED EFFECTIVENESS AT LLWV

Testing Conditions: INV DATA, Section 0315, 04/15/03, 08:56:50

Weather Conditions: 78°F Wind: 22 mph 227° Start Odo.: 601 End Odo.: 530

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed: 80± max km/h
 6 stops with transmission in gear

Performance Requirements:

One Stop with:
 Stopping Distance less than 157.5m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	(SAB 299)	PEDAL	PEDAL	DECEL	DECEL
#	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec²)	(m/sec²)
1	145.56	86	89	71	61	95.3	95.9	481.78	424.79	12.23	8.55
2	146.39	94	93	66	56	90.9	90.4	494.69	352.77	12.21	8.48
3	145.10	97	93	64	51	92.5	93.7	408.96	346.83	12.26	8.03
4	145.43	91	88	59	48	90.5	91.3	429.15	358.07	12.26	8.22
5	144.55	93	89	59	49	91.7	95.7	441.26	365.83	12.29	8.08
6	145.01	92	86	57	48	95.4	96.7	508.77	396.12	12.27	7.88

STOP	DRIVER VEHICLE STOP COMMENTS		
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)		
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	SOUTH YES
6	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN
 Recorded Data Processed By: CHUCK JENKINS
 Approving Laboratory Official: KEN WEBSTER

Observer: MONA
 Date: 5/2/03
 Date: 5/8/03

Vehicle: 2003 AUDI ALLIANCE
Make: MAZDA
Model: MAZDA 6i
Body Style: 4 DOOR SEDAN
Front Cold Tire Pressure: 320 (Kpa)
Rear Cold Tire Pressure: 321 (Kpa)

Vehicle Number: Q35401

Transportation Research Center, Inc.
10820 State Route 347
East Liberty, Ohio 43319
(937)666-2011 www.trcpc.com

Date Tested: 04/15/03

DATA SHEET 16 - ANTILOCK FUNCTIONAL FAILURE AT LLVW

Testing Conditions: TMV DATA, Section 0008, 04/15/03, 14:30:38

Weather Conditions: 78°F Wind: 26 mph Z16° Start Odo: 530 End Odo: 544

Schedule:

Initial Brake Temperature: 65-100°C
Initial Speed 100 km/h to zero
6 stops with transmission in Neutral

Performance Requirements:

One Stop with:
Stopping Distance less than 85m
Pedal force between 55N and 500N
No Lock-Up allowed longer than 0.1 sec above 15 km/h
Vehicle Must stay in Lane at 3.5m

STOP	INIT SPD (kph)	LEFT FRONT 1BT (°C)	RIGHT FRONT 1BT (°C)	LEFT REAR 1BT (°C)	RIGHT REAR 1BT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 289) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
1	99.43	51	52	60	52	46.7	47.3	238.63	159.19	12.24	7.63
2	99.38	51	52	61	52	47.0	47.6	160.36	126.15	12.28	7.51
3	99.03	53	52	61	52	58.1	59.3	116.98	93.55	10.78	6.58
4	98.24	53	52	62	53	56.5	58.5	159.09	97.04	10.75	6.36
5	100.02	54	53	63	53	52.3	52.3	176.50	97.27	10.85	7.04
6	100.13	53	53	64	54	59.7	59.5	162.02	86.19	9.47	6.21

STOP DRIVER VEHICLE STOP COMMENTS
(Wheel Lock-Up - Direction of Stop - Stay in Lane)

1	-	BR END	SOUTH	YES
2	-	BR END	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

How was the ABS failure induced: REMOVED FTSE FROM UNDER GOOD.

Is Brake system indicator lamp activated: YES (X) NO ()

Variable proportioning valve integral w/ABS can't repeatedly engage. Data Sheet 17 not included.

DATA INDICATE COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NONE
Recorded Data Processed by: CHUCK JENKINS Date: 5/2/03
Approving Laboratory Official: KEN WEBSTER Date: 5/8/03

Vehicle: 2003 AUTO ALLIANCE
 Make: MAZDA
 Model: MAZDA 6i
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

NHTSA NUMBER: C35491

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Date Tested: 04/16/03

DATA SHEET 18 - HYDRAULIC CIRCUIT FAILURE #1 AT LLVW

Testing Conditions: INV DATA, Section 0059, 04/16/03, 10:22:33

Weather Conditions: 69°F Wind: 14 mph 234° Start Odo.: 358 End Odo.: 569

Method of simulating failure: Disconnected Brake Line @ M/C Front Port

System Portion Failed: RF & LR

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.3 sec above 14 km/h
 Vehicle must stay in lane of 3.5m

STOP	INIT SPD (kph)	LEFT FRONT TBT (°C)	RIGHT FRONT TBT (°C)	LEFT REAR TBT (°C)	RIGHT REAR TBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
1	98.24	51	51	52	59	110.5	114.5	495.90	395.11	12.79	3.49
2	99.89	53	50	53	64	109.4	109.6	501.53	435.72	14.60	3.56
3	99.78	53	53	52	61	115.0	115.5	459.90	403.16	14.77	3.33
4	100.32	52	52	53	69	111.6	111.3	459.27	398.66	11.42	3.37

STOP DRIVER VEHICLE STOP COMMENTS
 * (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP	WHEEL LOCK-UP	DIRECTION OF STOP	STAY IN LANE
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES

Force Needed to Activate Brake Failure Lamp (N): N/A
 Fluid Removed (mL) to Activate Brake Failure Lamp: * See APP.C

Is brake system indicator lamp activated: YES () NO (X)

DATA INDICATES COMPLIANCE: YES () NO (X)

Driver: DAVID DULIN Observer: XONR
 Recorded Data Processed by: CHUCK JENKINS Date: 5/2/03
 Approving Laboratory Official: KEN WEBSTER Date: 5/8/03

Vehicle: 2003 ADU ALLIANCE MVRSA NUMBER: C35401
 Make: MAZDA
 Model: MAZDA 6I
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

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 10320 State Route 347
 East Liberty, Ohio 43319
 (931) 666 2011 www.trcpg.com

Date Tested: 04/16/03

DATA SHEET 19 - HYDRAULIC CIRCUIT FAILURE #2 AT LLVW

Testing Conditions: INV DATA, Section 0055, 04/16/03, 13:07:18

Weather Conditions: 75°F Wind: 21 mph 188° Start Odo.: 500 End Odo.: 580

Method of simulating failure: Disconnected Brake Line @ M/C Rear Port

System Portion Failed: LF & RR

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 165m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP	INIT SPD	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL	AVG. PEDAL	MAX. DECEL	AVG DECEL
#	(km/h)	(°C)	(°C)	(°C)	(°C)	(meters)	(meters)	(N)	(N)	(m/sec²)	(m/sec²)
1	100.34	74	93	75	31	103.8	103.8	458.12	396.66	11.34	3.67
2	100.15	35	93	76	31	104.7	104.4	449.12	384.03	12.73	3.73
3	100.61	27	91	75	31	110.8	109.5	452.45	390.38	12.58	3.73
4	100.24	19	92	70	32	101.5	101.0	438.26	323.72	10.93	3.74

STOP	DRIVER VEHICLE STOP COMMENTS			
#	Wheel Lock-Up - Direction of Stop - Stay in Lane!			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES

Force Needed to Activate Brake Failure Lamp (N): N/A
 Fluid Removed (mL) to Activate Brake Failure Lamp: *See App. C*

Is brake system indicator lamp activated: YES () NO (X)

DATA INDICATES COMPLIANCE: YES () NO (X)

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed By: CHUCK JENKINS Date: 5/2/03
 Approving Laboratory Official: KEN WEBSTER Date: 5/8/03

Vehicle: 2003 HYUNDAI ACCENT MVRSA NUMBER: C15487 Transportation Research Center, Inc.
 Make: MAZDA 10820 State Route 347
 Model: MAZDA 6T West Liberty, Ohio 43319
 Body Style: 4 DOOR SEDAN (937) 666 2011 www.trcpg.com
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa) Data tested: 04/16/03

DATA SHEET 20 - HYDRAULIC CIRCUIT FAILURE #1 AT GVWR

Testing Conditions: TWP DATA, Section 0060, 04/16/03, 15:30:20

Weather Conditions: 77°F Wind: 17 mph 216° Grate Cdn.: 582 Rad Cdn.: 599

Method of Simulating Failure: Disconnected Brake Line @ M/C Front Port

System Portion Failed: RP & LR

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in Neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 100m
 Pedal force between 45N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INTT	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE	CORRECTED DISTANCE (SAE 298)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
4	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec²)	(m/sec²)
1	100.00	91	41	38	64	111.2	109.7	432.71	379.75	9.25	5.79
2	92.05	94	41	19	62	109.0	109.3	439.29	388.79	11.59	3.62
3	100.74	93	39	39	61	100.0	106.4	439.29	402.51	13.04	3.81
4	99.72	84	38	38	60	109.7	110.3	459.90	414.56	11.62	3.60

STOP	DRIVER VEHICLE STOP COMMENTS
4	(Wheel Lock-Up - Direction of Stop - Stay in Lane)
1	NOX SOUTH YES
2	NOX SOUTH YES
3	NOX SOUTH YES
4	NOX SOUTH YES

is Brake system indicator lamp activated: YES () NO (X) *See Appen. C*

DATA INDICATES COMPLIANCE: YES () NO (X)

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 5/2/03
 Approving Laboratory Official: BEN WEBSTER Date: 5/8/03

Vehicle: 2003 AUTO ALLIANCE NHTSA NUMBER: C35401
 Make: MAZDA
 Model: MAZDA 6I
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 337
 East Liberty, Ohio 43319
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Date Tested: 04/17/03

DATA SHEET 21 - HYDRAULIC CIRCUIT FAILURE #2 AT GVWR

Testing Conditions: JNT DATA, Section 0065, 04/17/03, 09:42:27

Weather Conditions: 47°F Wind: 3 mph 6" Start Odb.: 607 End Odb.: 619

Method of simulating failure: Disconnected Brake Line @ M/C Rear Port

System Portion Failed: LF & RR

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT SPD (km/h)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meters)	CORRECTED DISTANCE (SAB 299) (meters)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
1	99.93	17	53	61	16	100.8	100.9	400.43	411.63	10.01	4.04
2	100.11	17	52	66	16	104.7	104.5	479.85	424.07	9.84	1.77
3	100.11	17	52	67	19	100.5	100.3	471.61	410.52	9.95	3.79
4	100.20	17	53	65	19	98.6	98.1	477.71	415.75	10.40	3.89

STOP	DRIVER VEHICLE STOP COMMENTS
#	Wheel Lock Up - Direction of Stop Stay in Lane:
1	NOX SOUTH YES
2	NOX SOUTH YES
3	NOX SOUTH YES
4	NOX SOUTH YES

Is brake system indicator lamp activated: YES () NO (X) *See APP. C.*

DATA INDICATES COMPLIANCE: YES () NO (X)

Driver: DAVID DULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 5/2/03
 Approving Laboratory Official: KEN WEBSTER Date: 5/8/03

Vehicle: 2003 AUTO ALLIANCE
 Make: MAZDA
 Model: MAZDA 6i
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

NHTSA NUMBER: C35401

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 East Liberty, Ohio 43119
 (614) 666-2011 www.trcpg.com

Date Tested: 04/17/03

DATA SHEET 22 - ANTILOCK FUNCTIONAL FAILURE AT GVWR

Testing Conditions: INV DATA Section 0870, 04/17/03, 11:47:49

Weather Conditions: 53°F Wind: 7 mph 1° Start Odo.: 622 End Odo.: 634

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

Dec Stop with:
 Stopping Distance less than 95m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	PEDAL	PEDAL	FORCE	FORCE
#	(km/h)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(N/sec²)	(m/sec²)
1	100.67	68	91	64	57	51.7	50.9	261.32	165.36	10.76	7.29
2	99.93	71	92	61	54	55.1	55.2	275.82	125.75	11.27	6.71
3	99.26	72	92	50	52	49.6	50.4	219.16	153.24	11.90	7.55
4	100.44	73	89	58	52	50.1	49.7	239.77	152.84	11.12	7.56
5	100.12	77	93	57	51	49.8	49.6	219.73	241.73	12.26	7.66
6	100.21	79	95	56	52	49.6	49.4	243.65	157.36	11.63	7.73

STOP	DRIVER VEHICLE STOP COMMENTS
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)
1	- NOX SOUTH YES
2	- NOX SOUTH YES
3	- NOX SOUTH YES
4	- NOX SOUTH YES
5	- NOX SOUTH YES
6	- LPMIL/LPMBB SOUTH YES

How was the ABS failure induced: REMOVED FUSE FROM UNDER HOOD.

Is Brake system indicator lamp activated: YES (X) NO ()

Variable proportioning valve integral w/ABS can't separately engage. Data Sheet 23 not included.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: MONR
 Recorded Data Processed by: CHUCK JENKINS Date: 5/2/03
 Approving Laboratory Official: KEN WEBSTER Date: 5/8/03

Vehicle: 2003 AUTO ALLIANCE
 Make: MAZDA
 Model: MAZDA 6I
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 327 (Kpa)
 Rear Cold Tire Pressure: 277 (Kpa)

NHTSA NUMBER: C05401

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 10920 State Route 347
 East Liberty, Ohio 47319
 (937)666-2011 www.tropg.com

Date Tested: 04/17/03

DATA SHEET 24 - BRAKE POWER UNIT OR PWR ASSIST UNIT IN/OP AT GVER

Testing Conditions: INV DATA, Section 0000, 04/17/03, 13:19:08

Weather Conditions: 63°F Wind: 3 mph 31° Start Odo.: 636 End Odo.: 649

Failure Simulation: Disconnect primary source of power

Method of rendering inoperative: Removed Engine Vacuum Hose at Booster

Subevents:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 6 stops With transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 158m
 Pedal force between 65N and 503N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL FORCE	AVG. PEDAL FORCE	MAX. DECEL	AVG. DECEL
#	(km/h)	(°C)	(°C)	(°C)	(°C)	(meters)	(meters)	(N)	(N)	(m/sec²)	(m/sec²)
1	100.15	84	89	66	59	135.0	134.6	498.47	463.13	5.08	2.98
2	95.97	82	93	63	58	124.3	124.2	494.74	472.80	5.65	3.22
3	95.87	79	92	60	57	127.1	127.4	501.16	473.51	5.69	3.17
4	100.11	80	92	61	57	128.9	128.6	499.26	468.52	5.39	3.09
5	99.78	79	92	59	56	126.3	126.6	497.04	471.85	5.46	3.26
6	95.74	81	93	61	56	132.3	133.0	492.45	460.51	4.85	3.04

STOP #	DRIVER VEHICLE STOP COMMENTS
#	(Wheel Lock-Up - Direction of Stop Stay in Lane)
1	- NOX SOUTH YES
2	- NOX SOUTH YES
3	- NOX SOUTH YES
4	- NOX SOUTH YES
5	- NOX SOUTH YES
6	- NOX SOUTH YES

Is the brake system indicator lamp activated: YES () NO (X)

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DOLIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 5/2/03
 Approving Laboratory Official: KEN WEBSTER Date: 5/8/03

Vehicle: 2003 AUTO ALLIANCE
 Make: MAZDA
 Model: MAZDA 6
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 kPa
 Rear Cold Tire Pressure: 221 kPa

ENTER NUMBER: C35401

Transportation Research Center, Inc.
 10820 State Route 747
 East Liberty, Ohio 43319
 (937)666-2011 www.trecpg.com

Date Tested: 04/21/03

DATA SHEET 25 - PARKING BRAKE AT GVWR

Testing Conditions: INV DATA, Section 0085, 04/21/03, 09:48:28
 Parking brake: AUTOMATIC TA Non service type: N/A

Service type: HAND OPERATED

Weather Conditions: 54°F Wind: 12 mph 227° Start Odo.: 667 End Odo.: 669

Total Weight: Total: 1956kg Front: 1070kg Rear: 886kg

Schedule:

Initial Brake Temperature <100°C or (Ambient temp.
 if non-service brake type materials)
 Loaded to GVWR with (Transmission in Neutral
 Drive onto 20% slope in forward and reverse directions.

Performance Requirements:

Up to Three Applies in each direction:
 Parking brake must hold the vehicle stationary
 in both directions for 5 minutes each.
 Pedal force. Hand control: <400 N
 Foot control: <500 N

NOTE: For vehicles with parking brake systems not utilizing the
 service brake friction elements, the friction elements of such systems
 are to be burnished prior to parking brake tests according to the
 manufacturer's published recommendation as furnished to the purchaser.
 If no recommendations are furnished, test the system in an unburnished
 condition. If recommendations are furnished, record method used.

APPLY #	MAX SERVICE FORCE	MAX P BRAKE FORCE	LEFT REAR IBT	RIGHT REAR IBT	AVG REAR IBT	DRIVER VEHICLE STOP COMMENTS (Direction of Stop (Up/Down) - Brake holds/fails)		
	(N)	(N)	(°C)	(°C)	(°C)			
1	57.3	366.3	27	36	31.4	0 REAPPLY	UPHILL	HOLDS 20%
2	56.0	362.0	27	31	29.2	0 REAPPLY	DOWNHILL	HOLDS 20%

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DYLIN
 Recorded Data Processed by: CHUCK JENKINS
 Approving Laboratory Official: KEN WEBSTER

Observer: NONE
 Date: 5/2/03
 Date: 5/8/03

Vehicle: 2007 AUTO ALLIANCE NHTSA NUMBER: C55101
 Make: MAZDA
 Model: MAZDA 6T
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 227 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

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 10820 State Route 307
 East Liberty, Ohio 43319
 (614) 666-2011 www.trecg.com

Date Tested: 04/21/03

DATA SHEET 26 - HEATING SNUBS AT GVWR

Testing Conditions: TNY DATA, Section 009D, 04/21/03, 14:59:52

Schedule:

Conduct 15 snubs from 120 km/h or 80% Vmax, whichever is slower, to 1/2 of initial speed.
 Attain required decel in 1 second and maintain that decel.
 Interval between snubs is 45 seconds and NOT to initial speed.

Performance Requirements:

Initial I37 for first snub is 55-65°C
 Maintain 3.0 m/s/s deceleration
 Vehicle must stay in lane of 3.5m

	AVG.	Time	AVG.	LEFT	RIGHT	LEFT	RIGHT	
SNUB	DECEL	Between	PEDAL	FRONT	FRONT	REAR	REAR	INIT
#	(m/sec ²)	Snubs	FORCE	(BT	(BT	(BT	(BT	SPD
		(seconds)	(N)	(°C)	(°C)	(°C)	(°C)	(kph)
1	4.92	40	129.94	57	64	43	41	120.98
2	3.40	40	63.80	103	117	89	62	121.74
3	2.87	52	55.14	141	164	93	82	122.81
4	3.18	46	58.60	173	205	119	104	122.14
5	3.12	50	53.60	195	224	143	127	120.35
6	3.04	42	61.39	213	238	162	147	121.53
7	2.97	46	62.87	224	252	179	168	123.57
8	2.71	43	55.12	242	265	196	186	120.55
9	3.01	41	62.77	257	273	206	200	121.90
10	2.69	42	59.96	267	276	217	212	121.01
11	2.64	47	56.99	269	281	229	222	121.20
12	2.90	48	59.99	267	291	237	225	121.01
13	2.83	42	60.41	269	304	246	226	121.20
14	2.89	46	61.97	267	308	252	223	120.61
15	2.72	38	59.95	257	299	254	222	122.14

STOP	DRIVE VEHICLE SNUB COMMENTS			
#		Wheel Lock-Up	Direction of Stop	Stay in Lane
STOP				
1	-	NOX	EAST	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	WEST	YES
5	-	NOX	WEST	YES
6	-	NOX	WEST	YES
7	-	NOX	NORTH	YES
8	-	NOX	NORTH	YES
9	-	NOX	NORTH	YES
10	-	NOX	EAST	YES
11	-	NOX	SOUTH	YES
12	-	NOX	SOUTH	YES
13	-	NOX	SOUTH	YES
14	-	NOX	WEST	YES
15	-	NOX	WEST	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN Observer: NUNE
 Recorded Data Processed by: CHUCK JENKINS Date: 5/2/03
 Approving Laboratory Official: KEN WEBSTER Date: 5/8/03

Vehicle: 2001 AUTO ALTAMON WHTSA NUMBER: C35401
 Make: MAZDA
 Model: MAZDA 6I
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

Transportation Research Center, Inc.
 10620 State Route 117
 East Liberty, Ohio 43319
 (917)666-2011 www.trecpg.com

Date Tested: 04/21/03

DATA SHEET 27 - HOT PERFORMANCE AT GVWR

Testing Conditions: TNY DATA, Section 0095, 04/21/03, 15:11:00

Schedule:

Make 2 stops from 100 kph
 Pedal Force: 1st stop is done with an average force
 less than the average recorded in the
 shortest GVWR Cold Effectiveness Stop.
 2nd stop is done with a force less
 than 500 N.

No Lock-Up allowed longer than 0.1 sec above 15 km/h.

Distance requirements are based on the following:

Shortest stop in Data Sheet 11 is: 5
 Initial speed of stop: 100.10 (kph)
 Actual distance of stop: 49.5 (meter)
 Average pedal force: 355.9 (N)

Performance Requirements:

Stop Number 1 must be less than: 75.3 (meter)
 In addition the stopping distance for at least one of the
 of the two hot stops must be less than: 89 (meter)

		LEFT	RIGHT	LEFT	RIGHT		(CORRECTED)	MAX.	AVG.		
	INTT	FRONT	FRONT	REAR	REAR	ACTUAL	DISTANCE	PEDAL	PEDAL	MAX	AVG.
STOP	SPD	IBT	IBT	IBT	IBT	DISTANCE	(SAE 299)	FORCE	FORCE	DECKL	DECKL
#	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec²)	(m/sec²)
1	98.94	265	312	261	229	62.3	63.6	322.00	220.28	9.52	6.41
2	99.53	280	323	270	236	50.6	51.0	516.51	342.60	15.64	7.16

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock-Up - Direction of Stop Stay in Lane)			
1	NOX			
2	NOX			

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID EULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 5/2/03
 Approving Laboratory Official: BEN WEBSTER Date: 5/8/03

Vehicle: 2004 AUTO ALLIANCE MTRSA NUMBER: C35401
 Make: MAZDA
 Model: MAZDA 6T
 Body Style: 4 DOOR SEDAN
 Front Cold Tire Pressure: 221 (Kpa)
 Rear Cold Tire Pressure: 221 (Kpa)

Transportation Research Center, Inc.
 10620 State Route 347
 East Liberty, Ohio 43319
 (937) 666 2011 www.trcog.com

Date Tested: 04/21/03

DATA SHEET 28 - BRAKE COOLING STOPS AT GVWR

Testing Conditions: INV DATA, Section 0100, 04/21/03, 15:13:02

Schedule:

Initial Brake Temperature:
 Achieved on completing Hot Performance
 Initial Speed 50 km/h to zero
 4 drops with transmission in gear

Performance Requirements:

Constant Decel rate: 3.0 m/s²
 Pedal force adjusted as necessary
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Misc stay in lane of 3.5m

STOP #	INIT SPD (kph)	AVG. DECEL (m/sec ²)	AVG. PEDAL	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR
			FORCE (N)	IBT (°C)	IBT (°C)	IBT (°C)	IBT (°C)
1	50.24	3.46	31.22	296	336	271	242
2	49.99	3.01	57.77	214	222	188	188
3	49.71	3.05	76.85	179	178	150	158
4	49.69	2.76	68.18	152	154	136	136

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	NORTH	YES
2	-	NOX	NORTH	YES
3	-	NOX	EAST	YES
4	-	NOX	EAST	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID CULIN Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 5/2/03
 Approving Laboratory Official: KIM WEBSTER Date: 5/8/03

Vehicle: 2003 Acura Integra
 Make: Acura
 Model: Integra GJ
 Body Style: 4 Door Sedan
 Front Cold Tire Pressure: 221 (kpa)
 Rear Cold Tire Pressure: 221 (kpa)

NHTSA Number: C35401

Transportation Research Center, Inc.
 10020 State Route 347
 East Liberty, Ohio 43319
 (937) 664-2811 www.trcpg.com

Date Tested: 04/21/03

DATA SHEET 29 - RECOVERY PERFORMANCE AT GVWR

Testing Conditions: INV DATA, Section 0103, 04/21/03, 15:19:33

Weather Conditions: 55°F Wind: 15 mph 232° Start Cdd.: 671 End Cdd.: 691

Schedule:

Make 2 stops from 100 kph
 Pedal Force: Both stops are performed with an average force less than the average recorded in the shortest GVWR Cold Effectiveness stop.

Performance Requirements:

One of the two stops must be within the following limits:
 Upper limit of corrected stopping distance: 66.4 (meter)
 Lower limit of corrected stopping distance: 36.3 (meter)

No Lock Up allowed longer than 0.1 sec above 15 km/h.

Distance Requirements are based on the following:

shortest stop in Data Sheet 11 is: Stop5
 Initial speed of stop: 100.10 (kph)
 Actual distance of stop: 49.5 (meter)
 Average pedal force: 156.4 (N)

STOP #	INIT SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
		(°C)	(°C)	(°C)	(°C)						
1	101.91	143	151	129	123	56.5	54.4	372.47	185.86	11.47	6.20
2	107.48	159	177	141	128	55.3	47.9	378.01	88.66	16.54	2.59

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DAVID DULIN
 Recorded Data Processed by: CHUCK SKMELER
 Approving Laboratory Official: KEN WHESTER

Observer: NONE
 Date: 5/2/03
 Date: 5/8/03

DATA SHEET 30 (Part 1 of 5)
6.0 Test Completion Inspection (7.17)

VEHICLE: 2003 Mazda6i A NHTSA NO.: C35401 DATE: 04/30/03

System Integrity (S5.6)

Each vehicle shall meet the complete performance requirements of this standard without:

(a) Detachment or fracture of any component of the braking system such as brake springs and brake shoes or disc pad facings, other than minor cracks, that do not impair attachment of the friction facings. All mechanical components of the braking system shall be intact and functional. Friction facing tearout (complete detachment of lining) shall not exceed 10 percent of the lining on any single frictional element.

(b) Any visible brake fluid or lubricant on the friction surface of the brake or leakage at the master cylinder or brake power unit reservoir cover, seal, and filler openings.

Friction Material Condition: Primary/Inner		Friction Material Condition: Secondary/Outer	
LF	Normal Appearance & Color	LF	Normal Appearance & Color
RF	Normal Appearance & Color	RF	Normal Appearance & Color
LR	Normal Appearance & Color	LF	Normal Appearance & Color
RR	Normal Appearance & Color	RR	Normal Appearance & Color
Drum (or Rotor) Condition:		Brake Fluid/Lubricant Inside Brakes:	
LF	Normal Appearance & Color	LF	None
RF	Normal Appearance & Color	RF	None
LR	Normal Appearance & Color	LR	Piston/Seal – Damp w/Fluid
RR	Normal Appearance & Color	RR	Piston/Seal – Damp w/Fluid
Hydraulic Component Condition:		Mechanical Component Condition:	
LF	Good	Brk/Pedal	Good
RF	Good	Power Brk	Good
LR	Good	Stop/Lamp	Good
RR	Good	Linkage	Good
M/Cyl	Good	Other	NA

COMPLIANCE: Yes X No

Comments: None

Technician: D. Dulin

DATA SHEET 30 (Part 2 of 5)
TEST COMPLETION INSPECTION (S7.17)

VEHICLE: 2003 Mazda6/A; NHTSA NO.: C35401; GVWR: 1958 kg
MASTER CYLINDER RESERVOIR:

DATE	12/11/02	Requirements	Pass	Fail
Reservoir Compartments (S5.4.1)				
(1) Does master cylinder have a reservoir compartment for each brake subsystem?	<u>Yes</u>	Master cylinder shall have a reservoir compartment for each subsystem.	X	
	No			
(2) Does loss of fluid in one compartment result in complete loss from another compartment?	Yes	Loss of fluid from one compartment shall not cause complete loss from another compartment.	X	
	<u>No</u>			
Reservoir Capacity (S5.4.2)				
Shall conform to requirements (1) or (2), state units:				
(1) For reservoirs having completely separate compartments for each subsystem (two separate, independent reservoirs):				
Subsystem 1 Subsystem reservoir capacity		Each compartment (reservoir) shall have a minimum capacity equivalent to the fluid displacement resulting when all wheel cylinders or caliper pistons serviced by that independent compartment/reservoir moves from a new lining, fully retracted position to a fully worn, properly adjusted, fully applied position. (Use Data Sheet 31 and Appendix 1A)	NA	NA
Subsystem 1 Fluid displaced from new to worn lining			NA	NA
Subsystem 2 Subsystem reservoir capacity			NA	NA
Subsystem 2 Fluid displaced from new to worn lining				
2) For reservoirs utilizing a portion of the reservoir for a common supply to two or more subsystems:				
Total minimum capacity for the entire master cylinder reservoir (includes individual compartment reservoirs)	** ml	Shall have total minimum capacity for entire reservoir for displacement resulting from all subsystem wheel cylinders or caliper positions moving from new lining to full worn condition as above.		
Fluid displaced from new to worn linings (ALL linings) *Value calculated from Data Sheet 31	128.5 ml*			

Comments: **Excluded per NHTSA/OVSC Technical Engineer. See Appendix C

DATA SHEET 30 (Part 3 of 5)
TEST COMPLETION INSPECTION (\$7.18)

VEHICLE: 2003 Mazda6/A; NHTSA NO.: C35401; GVWR: 1958 kg

MASTER CYLINDER RESERVOIR:

DATE	04/30/03	Requirements	Pass	Fail
Master Cylinder Piston Displacement (\$5.4.2) [If Common Reservoir Supply - continued from previous page]				
Fluid displaced by three strokes of master cylinder piston for Primary (Subsystem No. 1)	** ml	Individual partial compartments of reservoir shall each have a minimum of fluid equal to at least the volume displaced by the master cylinder piston servicing the subsystem during a <u>full stroke</u> of the piston. NOTE: Procedure uses three strokes to ensure an accurate measurement.		
Fluid displaced by three strokes of master cylinder piston for Secondary (Subsystem No. 2)	** ml			
Fluid displaced per stroke, Primary	** ml			
Fluid displaced per stroke, Secondary	** ml			
Fluid available in partial compartment Subsystem No. 1	** ml			
Fluid available in partial compartment Subsystem No. 2	** ml			
Brake Power Unit Reservoir (\$5.4.2)				
Volume displaced in charging system piston or accumulator to normal operating pressure plus wheel cylinder or caliper piston displacement.		Shall have a capacity at least equal to fluid displacement required to charge the system pistons on accumulators to normal operating pressure <u>plus</u> displacement <u>when</u> wheel cylinders or caliper pistons move from new lining to full worn condition as above.	NA	
Reservoir Labeling (\$5.4.3)				
Exact copy of reservoir label: On master cylinder reservoir cap: <u>WARNING.</u> <u>CLEAN FILLER CAP BEFORE REMOVING.</u> <u>USE ONLY DOT 3 BRAKE FLUID FROM A</u> <u>SEALED CONTAINER.</u>		Label shall read: "Warning, clean filler cap before removing; use only * fluid from a sealed container". * Fluid type specified in 49 CFR 571.116	X	
Measure letter height	3.2 mm	Letters shall be at least 3.2 mm/0.125" high	X	
Describe label attachment method and location. <u>Embossed on the top of the master cylinder reservoir filler cap.</u>		Lettering shall be permanently affixed, engraved or embossed and located so as to be visible by direct view either on or within 100 mm/3.94 inches of the brake fluid reservoir filler plug or cap.	X	
Does the lettering contrast with the background?	Yes	If label is not engraved or embossed, letters shall be of a color that contrasts with the background	NA	
	<u>No</u>			

Comments: ** Excluded per NHTSA/OVSC Technical engineer. *See Appendix C*
 Technician: D. Dulin

DATA SHEET 30 (Part 4 of 5)
TEST COMPLETION INSPECTION (S7.18)

VEHICLE: 2003 Mazda6/A; NHTSA NO.: C35401; DATE: 04/30/03
BRAKE SYSTEM WARNING INDICATOR (S5.5)

CONDITION	ANSWER	REQUIREMENTS	PASS	FAIL
Brake Systems Indicator Lamp Function Check (S5.5.2) (Bulb and systems check)				
Describe location of brake indicator lamp: <u>Lower left quadrant of the instrument cluster</u>	NA	Shall be in front, and in clear view, of driver.	X	
Does lamp light with ignition (start) switch at ON/RUN?	Yes	Automatic activation when ignition switch is "on" when engine not running, or ignition between "on" and "start" if is manufacturer check position- OR -single manual action by driver	X	
Does lamp light with ignition between ON and Start?	No			
Brake check description in owner's manual?	Yes	Manufacturer shall explain the brake check function test procedure in the owner's manual.	X	
Brake System Warning Indicator ACTIVATION (S5.5.1) DURATION (S5.5.3) FUNCTION (S5.5.4)				
CONDITION	Light ON?	REQUIREMENT	PASS	FAIL
A. In event of hydraulic leak (1) On or before appearance of pressure differential of 215 psi (split system)	NA	When ignition (Start) switch is ON, lamp must light whenever (A), (B), (C), or (D) occurs. In addition, if service brake system is not a split system, audible warning must be activated when any condition in (A) exists. Visual warning indicator for non-split systems must be flashing.		X
(2) If any reservoir falls below either "safe" level or 25% of capacity, whichever is greater.	No			
(3) On or before supply pressure to brake power unit falls to 50%	NA			
B. Electrical functional failure in an antilock or variable brake proportioning system.	Yes		X	
C. Application of the parking brake.	Yes			
D. Brake lining wear-out if optical warning	NA			
<u>Must have Audible alarm if not split system and a condition in (a) above exists?</u>	NA			
If condition (A) (2) above does not exist, then fluid reservoir must be transparent for fluid check without the need for reservoir to be opened? (S5.4.4)	NA			
Indicator lamps remain activated as long as condition exists - ignition "on", and engine on or off? _____ (S5.5.3 DURATION)	Yes**			
Visual warning - continuous or flashing? _____ Audible warning - continuous or flashing? _____	Yes-Cont. No			

Comments: ** Yes for Parking Brake. Fluid Level undeterminable.

Technician: D. Dulin

* See Appendix C.

DATA SHEET 30 (Part 5 of 5)
TEST COMPLETION INSPECTION (S7.18)

VEHICLE: 2003 Mazda6i A;

NHTSA NO.: C35401;

DATE: 04/30/03

BRAKE SYSTEM WARNING INDICATOR LABELING (S5.5.5)

CONDITION AND REQUIREMENT	ANSWER NOTE: Standard requires that the answer to questions be YES	PASS	FAIL
Are visual indicators legible to driver in daylight and nighttime conditions when activated?	Yes	X	
Are visual indicator words 3.2 mm (.125") high minimum? Record Height <u>3.2 mm</u>	Yes	X	
Visual indicator words and background contrasting colors, one of which is red. Record colors <u>Letters - Red, Lens - Black</u>	Yes	X	
If split system, is there one brake indicator? If yes, does it say the word "Brake"? Additionally, w/one symbol.	Yes	X	
If not split system, is there a separate indicator for loss of fluid or fluid pressure? Does this indicator say "Stop-Brake Failure"? Are the letters block and not less than 6.4 mm (.25") in height? Record letter height <u>NA</u>	NA		
If separate indicator for: 1. Low brake fluid per S5.5.1(a)(1), does indicator say "Brake Fluid"? NOTE: not required for mineral oil system Record wording _____ 2. Gross pressure loss per S5.5.1(a)(2), does indicator say "Brake Pressure"? Record wording _____ 3. Electrical functional failure in antilock or variable proportioning system per S5.5.1(b), letters and background contrasting colors one of which is yellow? Record colors <u>Lens - Black, Letters - Yellow (or Amber)</u> . Does indicator say "Antilock" or "ABS" or "Brake Proportioning"? Record wording <u>"ABS" within a symbol</u> 4. Parking brake per S5.5.1(c), does indicator say "Park" or "Parking Brake"? Record wording _____ 5. Brake lining wear-out per S5.5.1(d), does indicator say "Brake Wear"? Record wording _____ 6. For any other function? If yes, Record _____	NA NA Yes Yes NA NA NA	X	

Comments: None

Technician: D. Dulin

DATA SHEET 31 (Part 1 of 2)

CALCULATION OF MINIMUM RESERVOIR VOLUME REQUIREMENTS

VEHICLE: 2003 Mazda6/A; NHTSA NO.: C35401; DATE: 04/30/03

BRAKE		LINING		
LOCATION	TYPE	DESCRIPTION	MINIMUM THICKNESS	THICKNESS TO FULLY WORN (1) mm*
Left Front	Drum	Leading	Pre-test 11.58 mm	1.5
		Primary	Post Test 10.95 mm	
		Inboard X	Δ 0.63 mm	
	Disc X	Trailing	Pre-test 11.61 mm	1.5
		Secondary	Post Test 10.97 mm	
		Outboard X	Δ 0.64 mm	
LINING CLEARANCE:	Diametrical (2): N/A	Inboard - 0.1 to 0.2 mm	Outboard - 0.1 to 0.2 mm	
WHEEL CYLINDER DIAMETER (3): N/A		CALIPER PISTON DIAMETER (3): 57.1 mm		
SHOE CAGE DIAMETER (4): N/A ; CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C.: N/A				
Right Rear	Drum X	Leading	Pre-test 7.39 mm	2
		Primary	Post Test 6.99 mm	
		Inboard X	Δ 0.40 mm	
	Disc	Trailing	Pre-test 7.39 mm	2
		Secondary	Post Test 7.11 mm	
		Outboard X	Δ 0.28 mm	
LINING CLEARANCE:	Diametrical (2) - N/A	Inboard - 0.06 to 0.15 mm	Outboard - 0.06 to 0.15 mm	
WHEEL CYLINDER DIAMETER (3): N/A		CALIPER PISTON DIAMETER (3): 34.80 mm		
SHOE CAGE DIAMETER (4): N/A		CENTER POINT OF BRAKE ASSY TO CENTER PT. OF W.C.: N/A		
CIRCUIT #1 CONSISTS OF:	LF	LR - X	RF - X	RR
CIRCUIT #2 CONSISTS OF:	LF - X	LR	RF	RR - X
(1) MFRS. RECOMMENDATIONS - Fronts - 1.5 mm; Rears - 2 mm.				
(2) REAR - TOP OF RIVET HEADS - N/A. FRONT - 1/32 INCH - N/A.				
(2) DRUM BRAKES. MEASURED AT HORIZONTAL CENTERLINE: N/A				
(3) MFRS. DATA: Front: 57.15 mm; Rear: 34.93 mm.				
(4) RESET POSITION: N/A				

Comments: Manufacturer's new lining thickness: Frt.: 11.5 mm; Rear: 8 mm.
Technician: D. Dulin

DATA SHEET 31 – SECTION CONTINUED (Part 2 of 2)Vehicle: 2003 Mazda6i A;NHTSA No.: C35401;Date: 05/09/03**Procedure and Example for Determining Master Cylinder Volume Requirement**

The procedure followed for determining the minimum volume requirements is outlined in the example shown below. The required data is taken from the previous page.

DISC BRAKES

Volume Required, $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times [\pi (D^2)]/4$, where –

- : V_r = Volume required per wheel
 Δt = Change in thickness (average)
 i = Inboard
 o = Outboard
 D = Caliper cylinder diameter
 c = Average clearance

Using the above equations, the volume requirements for Subsystem No. 1 (LF, RR) and Subsystem No. 2 (RF, LR) were calculated utilizing measured and manufacturer's provided data to create the greatest displacement, as shown below:

Disc Brake: $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$
 (Front)

$$\begin{aligned} \Delta t_i &= 10.08 \text{ mm} \\ \Delta t_o &= 10.11 \text{ mm} \\ t_{ic} + t_{oc} &= 0.3 \text{ mm} \\ d &= 57.15 \text{ mm} \\ V_r &= (10.08 + 0.15 + 10.11 + 0.15) \frac{\pi (57.15)^2}{4} \\ &= 20.49 (2565.2) \\ &= 52561.1 \text{ mm}^3 = 52.6 \text{ ml} \end{aligned}$$

Disc Brake: $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$
 (Rear)

$$\begin{aligned} \Delta t_i &= 6 \text{ mm} \\ \Delta t_o &= 6 \text{ mm} \\ t_{ic} + t_{oc} &= 0.22 \text{ mm} \\ d &= 34.93 \text{ mm} \\ V_r &= (6 + 0.11 + 6 + 0.11) \frac{\pi (34.93)^2}{4} \\ &= 12.22 (958.27) \\ &= 11710.0 \text{ mm}^3 = 11.7 \text{ ml} \end{aligned}$$

For System 1 (RF, LR)

$$V_{r1} = 52561.1 \text{ mm}^3 + 11710.0 \text{ mm}^3$$

$$V_{r1} = 64271.1 \text{ mm}^3 = (64.3 \text{ ml})$$

For System 2 (LF, RR)

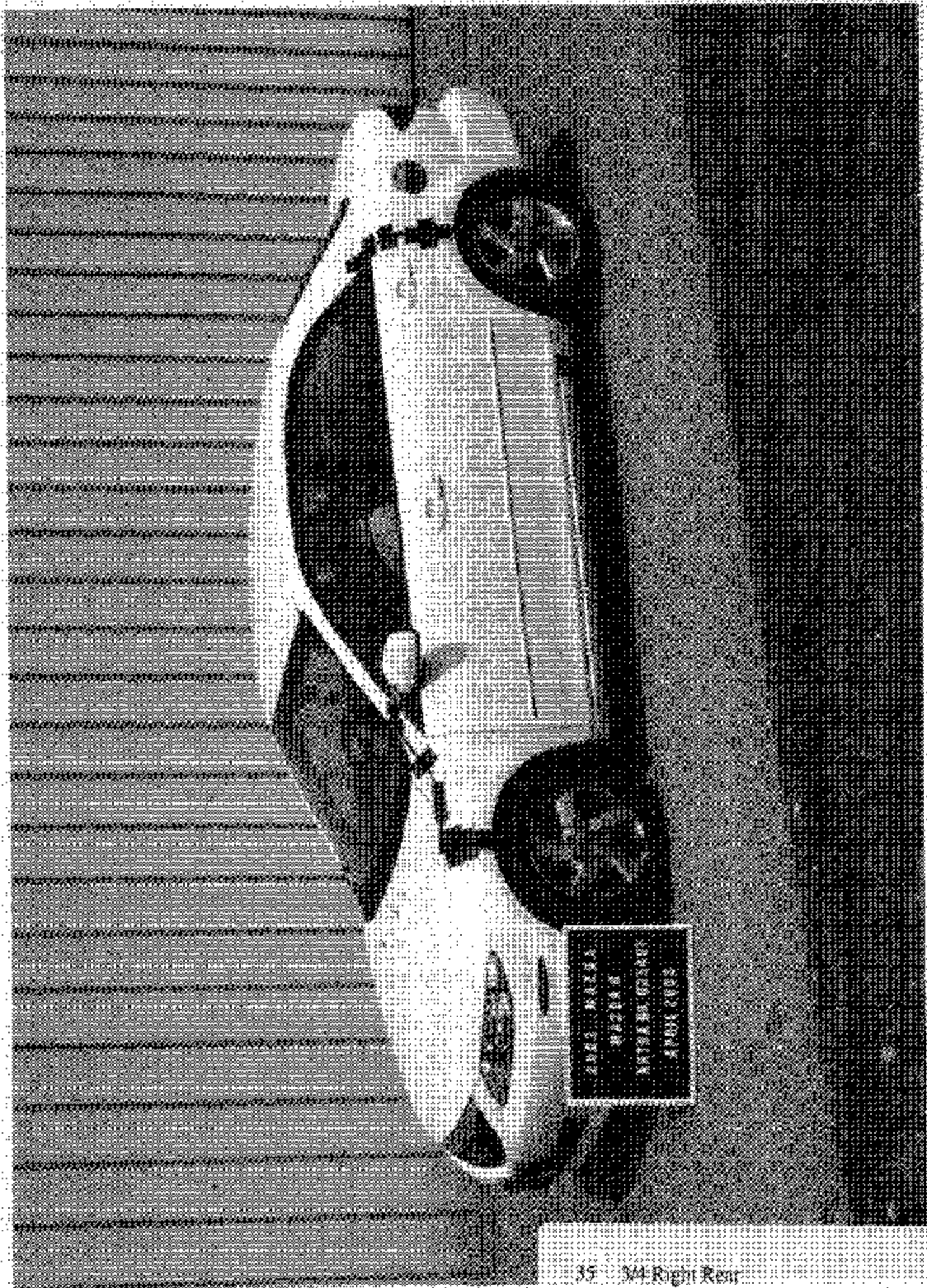
$$V_{r2} = V_{r1}$$

$$V_{r2} = 64271.1 \text{ mm}^3 = (64.3 \text{ ml})$$

$$\text{TOTAL VOLUME REQUIRED} = V_1 = V_{r1} + V_{r2} = 128542 \text{ mm}^3 = 128.5 \text{ ml}^*$$

SECTION 6.0

Photographs



WEI BY TWO MAZDA MOTOR CORP.
FOR MAZDA MOTOR CORPORATION
MADE IN U.S.A.

DATE: 01/03

DATE: 03/15/1998

TRUCK DATE: 03/15/1998 FOR CAR: 1998/03/15

THIS TRUCK CONTAINS TO ALL APPLICABLE FEDERAL MOTOR
VEHICLE SAFETY STANDARDS AND REGULATIONS
IN EFFECT ON THE DATE OF MANUFACTURE.

VIN: 1TVFPEBC336M20608

TYPE: PASSENGER



DATE: 01/03
VIN: 1TVFPEBC336M20608

DATE: 01/03

DATE: 03/15/1998

2003 MAZDA

MAZDA6

NHTSA NO. C35401

APRIL 2003

2003 MAZDA

MAZDA6

NHTSA NO. C35401

APRIL 2003

VEHICLE CAPACITY WEIGHT
CAPACITE PORTEUSE DU VEHICULE

(GK2A)
385kg(850 lbs)

FRONT SEAT

2

SIÈGE AVANT

REAR SEAT

3

SIÈGE ARRIÈRE

5

SEATING CAPACITY
NOMBRE DE PLACES

TIRE INFLATION PRESSURE

PRESSION DE GONFLAGE DES

PNEUS (kg/cm²) (p.s.i.)

FRONT/AVANT

REAR/ARRIÈRE

220

220

12.2-13.2

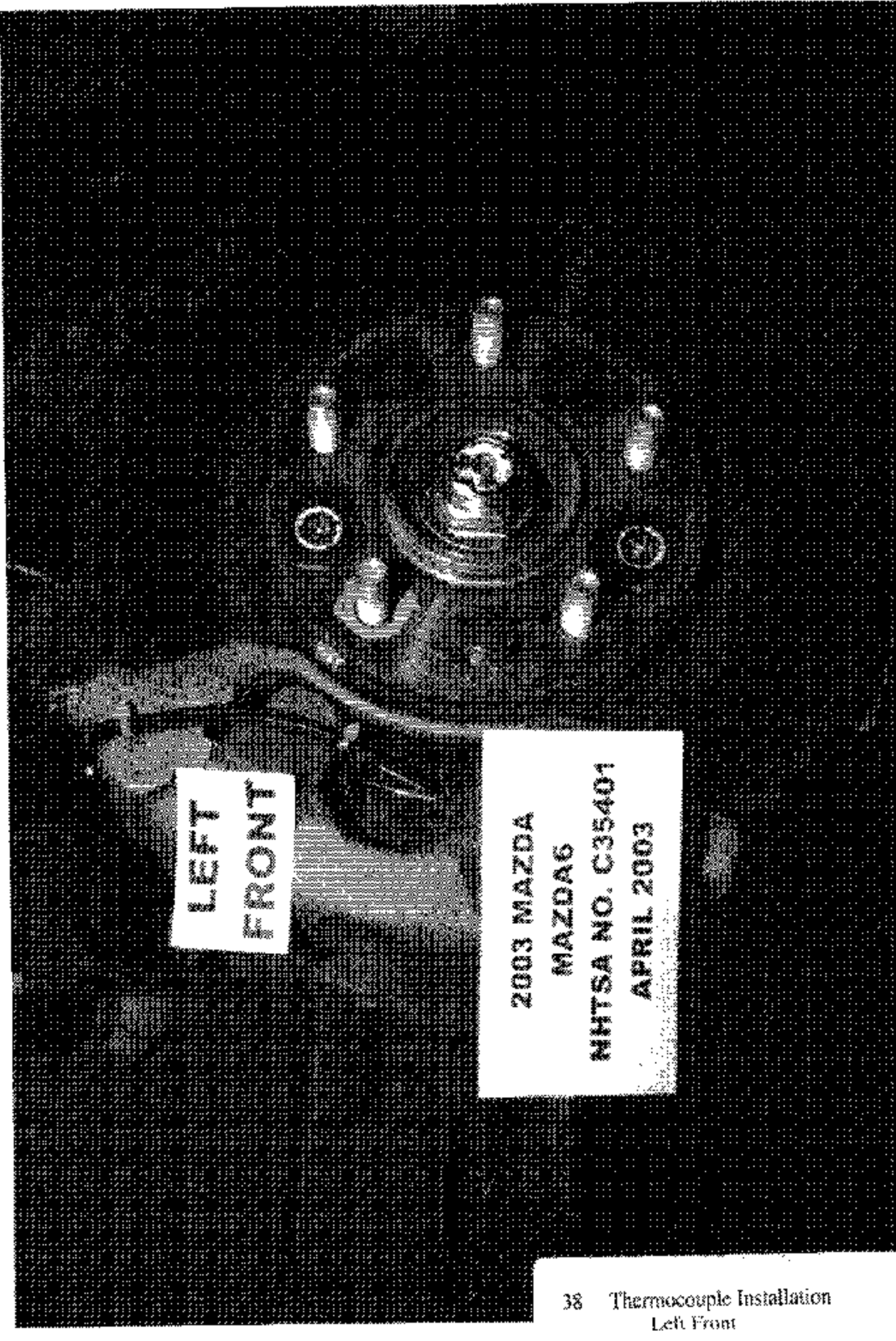
12.2-13.2

TIRE SIZE

TAILLE DES PNEUS

P205/60R16 91H

P215/55R17 93V

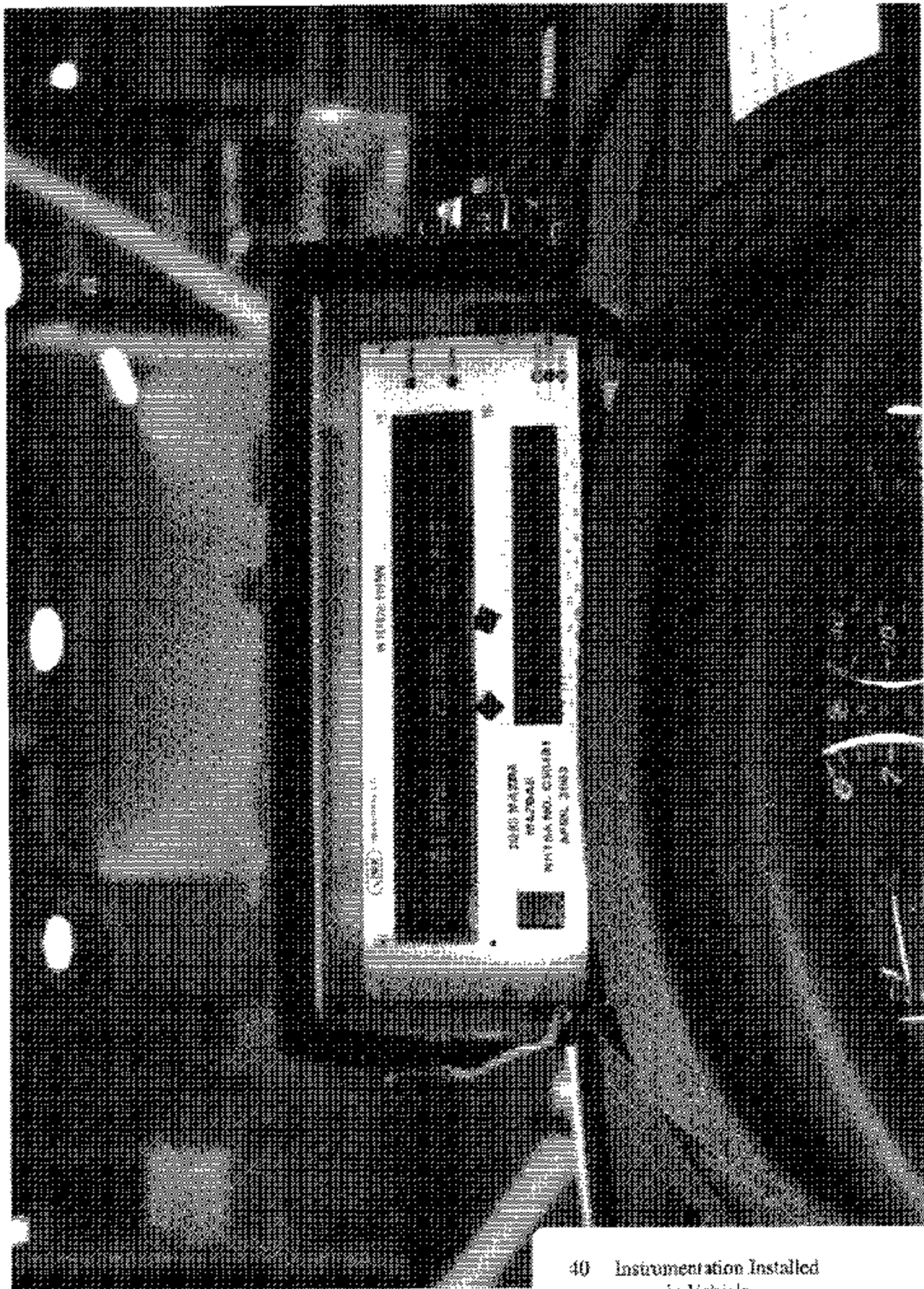


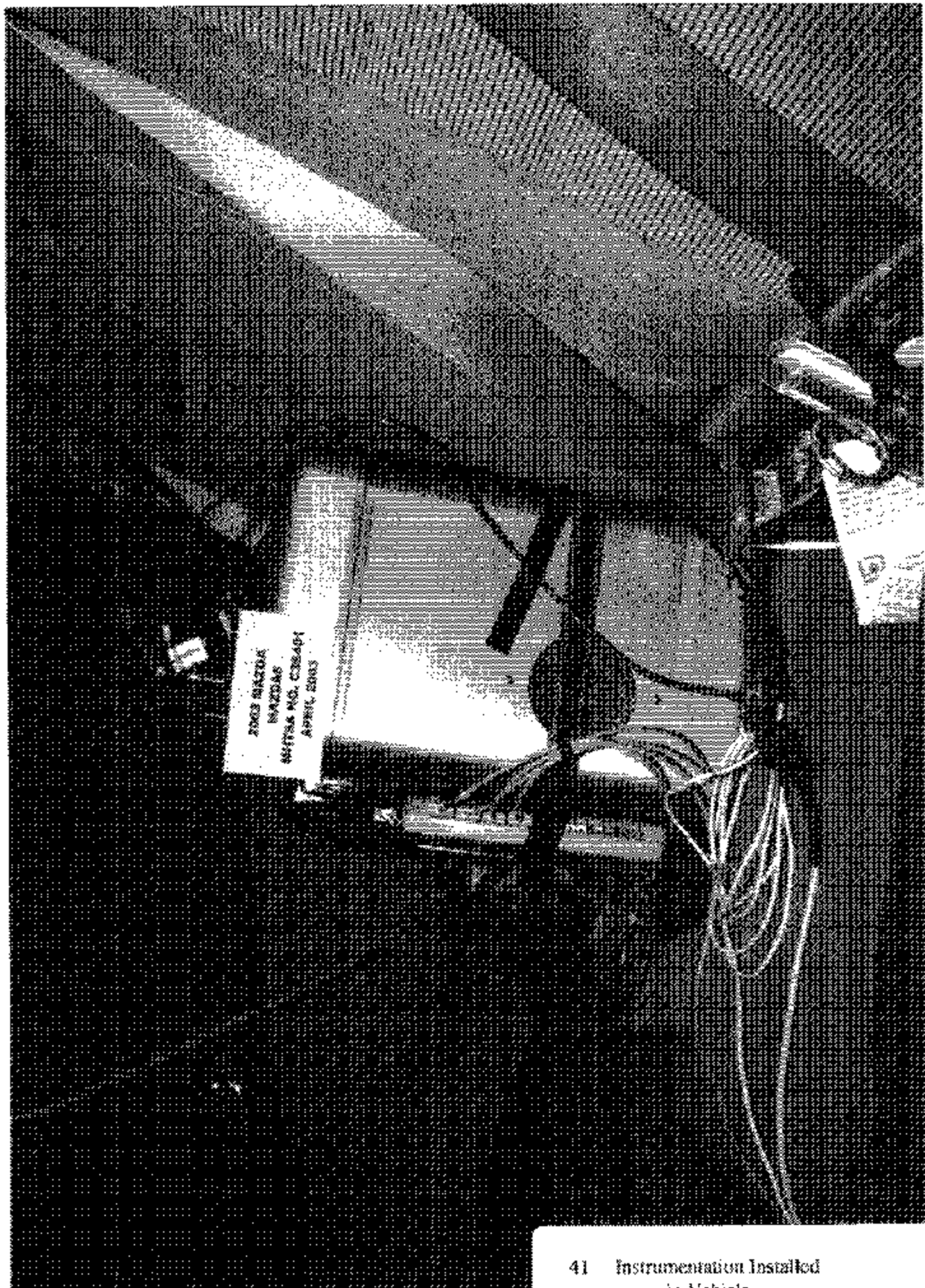
**LEFT
FRONT**

**2003 MAZDA
MAZDA6
NHTSA NO. C35401
APRIL 2003**

**RIGHT
REAR**

**2003 MAZDA
MAZDA6
NHTSA NO. C35401
APRIL 2003**



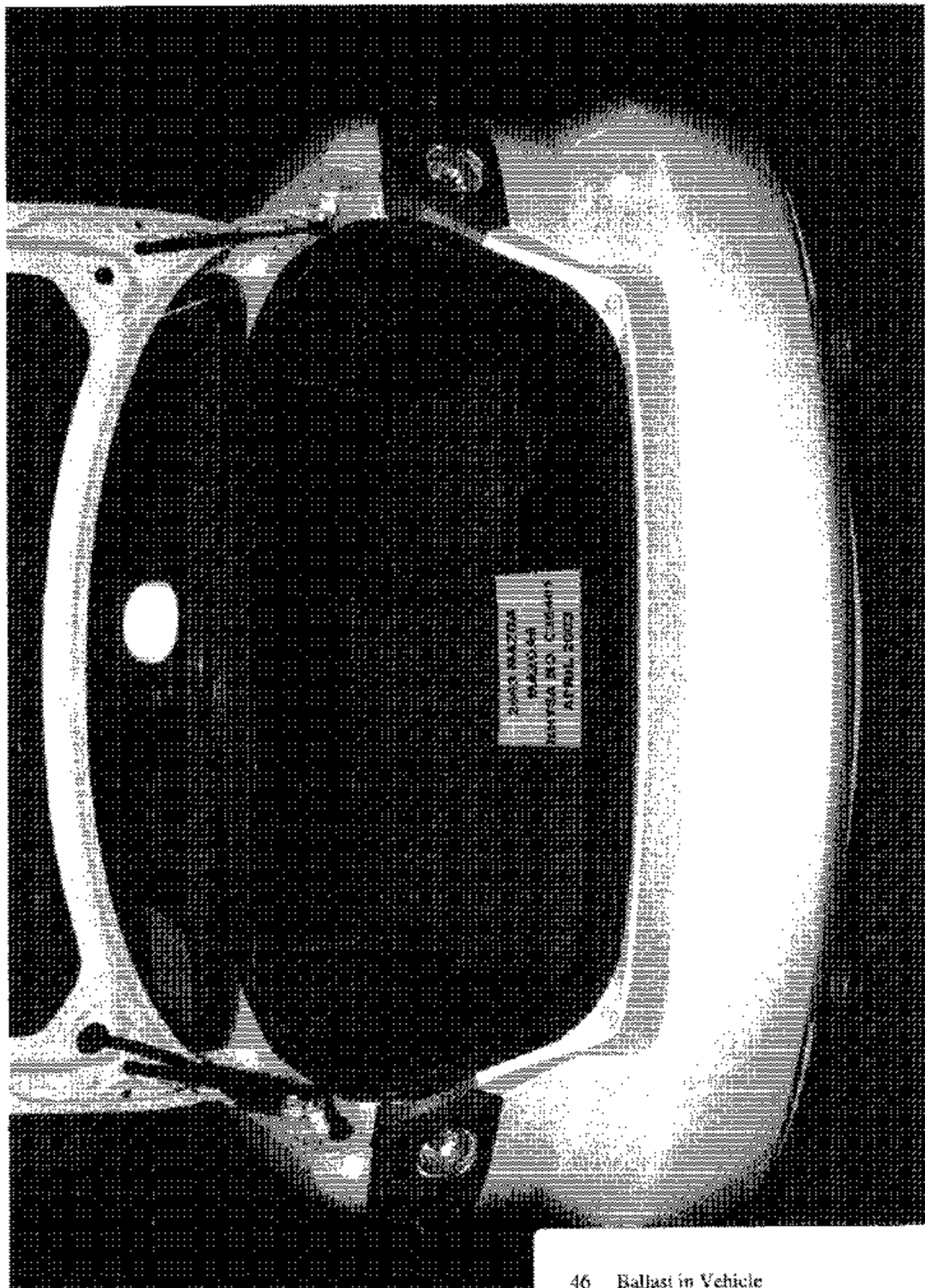






2003 MAZDA
MAZDA6
NHTSA NO. C35401
APRIL 2003

2003 MAZDA
MAZDA6
NHTSA NO. C35401
APRIL 2003



2003 MAZDA
MAZDA6
NHTSA NO. C35401
APRIL 2003

2003 MAZDA
MAZDA6
NHTSA NO. C35401
APRIL 2003



2003 MAZDA

MAZDA6

NHTSA NO. 03E401

APRIL 2003

2003 MAZDA

MAZDA6

NHTSA NO. C35401

APRIL 2003

7.0 INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)

VEHICLE: 2003 Mazda6i A; NHTSA NO.: C35401; DATE: 04/02/03

INSTRUMENT	SERIAL NUMBER	CALIBRATION DATE	NEXT CALIBRATION
Data Acquisition System - Link DAS 2030	975016	04/09/03	04/09/04
Computer - Dell/Link Engrg.	TRC-43366	Not Applicable	Not Applicable
Software - Link Engrg. Rev Data	TRC Propr.	NA	NA
LF Torque Wheel	Not Utilized		
RF Torque Wheel	Not Utilized		
LR Torque Wheel	Not Utilized		
RR Torque Wheel	Not Utilized		
Stopwatch - Fischer Scientific Accusplit	SW ST03	04/10/02	04/10/03
Tire Pressure Gauge - Ashcroft	AG-05	11/05/02	11/05/03
Frequency Counter - Hewlett Packard	M-1128A00670	09/19/02	09/19/03
Voltage Multimeter - Dana 4300	M-108639	11/16/02	11/16/03
Pedal Force Transducer - Sensor Devel.	981374	Each Test	Each Test
Assorted Pipe-Handle Steel Weights	Not Available	02/13/02	02/13/03
Park Brake Force Transducer - Interface	41721	Each Test	Each Test
LF Hydraulic Pressure Transducer	Not Utilized		
RF Hydraulic Pressure Transducer	Not Utilized		
LR Hydraulic Pressure Transducer	Not Utilized		
RR Hydraulic Pressure Transducer	Not Utilized		
Accelerometer - Setra (+ or - 15 g)	A118555	08/07/02	08/07/03
Fifth Wheel - ADAT DSR-06 Radar	140.0027	Each Test	Each Test
Wind Velocity/Direct. - Davis Model 6410	021023N09	10/24/02	10/24/03
Ambient Temp. Gage - Davis Model 6320	021024N11	10/29/02	10/29/03
LF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
LR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
Lock-up Detection System	TRC Propr.	Each Test	Each Test
Vehicle Weight - Mettler/Toledo - Jag Extreme	5225831-5JC	02/11/03	05/11/03

QUALITY ASSURANCE

DAILY CALIBRATIONS (1 of 3)

Vehicle: 2003 Mazda6i

NHTSA No.: C35401

Deceleration Calibration Data for Unit 3354

Desired full scale value is: 9.81 m/s/s

Allowed deviation is: + or - 0.15 m/s/s

Accelerometer Level to zero, then tilt to full scale

"Date"	"Time"	Zero	Cal
"stp"	"stp"	"Decel"	"Decel"
4/2/2003	9:00:52	-0.01	9.81
4/4/2003	10:18:26	0.00	9.82
4/4/2003	15:37:33	-0.03	9.80
4/14/2003	14:16:56	0.01	9.80
4/14/2003	16:06:50	-0.01	9.80
4/15/2003	8:36:30	0.00	9.81
4/15/2003	15:29:25	0.00	9.81
4/16/2003	9:59:46	0.01	9.82
4/16/2003	15:33:09	-0.01	9.78
4/17/2003	9:16:54	0.01	9.78
4/17/2003	15:38:08	-0.01	9.81
4/21/2003	9:04:45	0.01	9.80
4/21/2003	15:46:34	0.01	9.81
4/29/2003	8:49:38	-0.01	9.83

PRETEST CAL

POST TEST CAL

Pre-Test Linearity Check 04/02/03

Actual (m/s/s)	Rec. (m/s/s)
0.0	0.0
3.0	3.0
6.1	6.1
9.8	9.8

Post-Test Linearity Check 04/30/03

Actual (m/s/s)	Rec. (m/s/s)
0.0	0.0
3.0	3.0
6.1	6.1
9.8	9.8

Distance Calibration Data for Unit 3354

Desired full scale value is: 1000 m

Allowed deviation is: 3 m

Light beam Drive from 0 to 100 to 0 km/h
distance sensor on a measured kilometer

"Date"	"Time"	Distance for
"stp"	"stp"	1000 meters
4/2/2003	9:46:58	1000.0
4/4/2003	10:59:37	1000.4
4/4/2003	15:23:44	1001.0
4/14/2003	14:21:55	999.9
4/14/2003	16:12:22	1000.0
4/15/2003	8:41:13	1001.0
4/15/2003	15:33:46	999.4
4/16/2003	10:04:50	999.1
4/16/2003	15:36:15	1000.2
4/17/2003	9:23:57	999.9
4/17/2003	15:42:25	1000.6
4/21/2003	9:09:38	1000.9
4/21/2003	15:54:26	999.8
4/28/2003	14:58:57	999.9

PRETEST CAL

POST TEST CAL

DAILY CALIBRATIONS CONTINUED (2 of 3)

VEHICLE: 2003 Mazda6/

NHTSA No.: C35401

Wheel Tachometer Calibrations for Unit 3554

Wheel tachometer calibrations: all wheel speeds should be 15 km/h

Wheel lock detector
While at a standstill, check zeros. Drive vehicle at approx. 15 km/h and engage zero speed switch for each wheel

"Date"	"Time"	Zero	@15km/h	Zero	@15km/h	Zero	@15km/h	Zero	@15km/h
stp	stp	LF	LF	RF	RF	LR	LR	RR	RR
4/4/2003	10:56:29	-0.1	19.2	-0.2	27.0	-0.2	22.5	-0.1	18.8
4/4/2003	15:38:37	-0.2	18.7	-0.2	21.6	-0.3	19.6	-0.1	19.2
4/14/2003	14:19:13	-0.2	19.0	-0.2	26.1	-0.2	21.8	-0.1	19.5
4/14/2003	16:08:18	-0.1	19.3	-0.2	24.7	0.2	19.1	-0.1	18.9
4/15/2003	8:38:15	-0.2	17.5	-0.3	23.3	-0.2	17.9	-0.2	17.7
4/15/2003	15:30:57	-0.2	17.5	-0.2	22.4	-0.3	19.6	-0.3	17.5
4/16/2003	10:01:30	-0.1	26.6	-0.2	35.3	-0.3	26.4	-0.2	27.4
4/16/2003	15:34:22	-0.2	16.0	-0.3	22.8	-0.1	23.6	-0.1	18.9
4/17/2003	9:18:33	-0.1	17.3	-0.3	22.0	-0.1	25.7	-0.2	18.4
4/17/2003	15:39:30	-0.2	18.5	-0.2	25.9	-0.2	21.6	-0.2	19.1
4/21/2003	9:08:05	-0.1	17.6	-0.2	27.5	-0.2	21.8	-0.1	26.4
4/21/2003	15:47:37	-0.2	19.1	-0.3	26.7	-0.2	22.5	-0.1	20.8
4/28/2003	14:54:45	-0.1	18.5	-0.2	27.6	-0.2	21.7	-0.2	18.6

POST TEST CAL

When driven over 15 km/hr and the wheel tach generators are shunted to zero volts, do all four wheel lock indicators align? ... ☒ Yes, ☐ No.

Pedal Force Meter Calibration for Unit 3554

Target shunt calibration is 1073 N

Desired recorded value is: 1676 N

Allowed deviation is: 6.5 N

Service brk. pedal effort: Driver engages a fixed shunt cal switch.

"Date"	"Time"	Zero	Cal Val
stp	stp	Force	Force lb
4/2/2003	8:24:02	-2.3	1678.2
4/4/2003	10:15:26	-3.5	1677.8
4/4/2003	15:34:50	-3.0	1678.9
4/14/2003	14:13:07	-2.7	1679.0
4/14/2003	16:04:14	-2.9	1677.9
4/15/2003	8:30:52	-2.0	1676.0
4/15/2003	15:27:50	-2.9	1679.1
4/16/2003	9:57:50	-2.9	1679.4
4/16/2003	15:31:45	-3.1	1679.5
4/17/2003	9:14:57	-3.0	1678.4
4/17/2003	15:35:31	-4.0	1680.7
4/21/2003	9:02:18	-3.3	1679.3
4/21/2003	15:43:47	-2.7	1677.2
4/29/2003	9:20:06	-2.4	1678.9

PRETEST CAL

POST TEST CAL

Pre-Test Linearity Check - 04/02/03

Actual	Recorded
Force (N)	Force (N)
0	0
222	222
445	444
498	498

Post-Test Linearity Check - 04/26/03

Actual	Recorded
Force (N)	Force (N)
0	1
222	223
445	445
498	449

DAILY CALIBRATIONS CONTINUED (3 of 3)

VEHICLE: 2003 Mazda6i

NHTSA No. C35401

Dynamic Speed Calibration for Unit 3354

Desired speed value is: 100 km/h

Allowed deviation is: 1.6 km/h

Desired time value is: 36 seconds

Allowed deviation is: + or - 0.6 seconds

Light beam
speed sensor

Drive vehicle
at a steady
100 km/h
through a
kilometer.

"Date"	"Time"	"Speed"	"Time"
stp	stp	km/h	sec
4/2/2003	9:51:24	101.0	35.99
4/4/2003	11:03:03	100.4	36.34
4/4/2003	15:41:44	99.4	36.27
4/14/2003	14:25:03	100.0	35.92
4/14/2003	16:15:07	100.4	36.05
4/15/2003	8:47:33	99.9	36.61
4/15/2003	15:37:06	99.8	36.22
4/16/2003	10:08:49	100.7	36.07
4/16/2003	15:39:48	100.5	36.05
4/17/2003	9:27:41	100.3	36.24
4/17/2003	15:45:56	100.5	36.09
4/21/2003	9:13:52	99.8	36.26
4/21/2003	15:58:18	100.5	36.31
4/28/2003	15:03:04	100.1	36.16

PRETEST CAL

POST TEST CAL

APPENDIX A

Copy of Manufacturer's Sticker

SOLD TO:

61451

RICART MAZDA
4255 S. HAMILTON ROAD
GROVEPORT, OH 43125

SHIP TO:

61451

RICART MAZDA
4255 S. HAMILTON ROAD
GROVEPORT, OH 43125

1011A - 60264-AN - F - 5003100

1YVFP8DC335M20688



TRUCK

PARTS CONTENT INFORMATION:

FOR VEHICLES IN THIS COUNTRY:
U.S./CANADIAN PARTS CONTENT: 53%
MAJOR SOURCES OF FOREIGN PARTS CONTENT:
JAPAN: 28% MEXICO: 16%

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT: PLAT ROCK, MI, USA

COUNTRY OF ORIGIN:
ENGINE: MEXICO
TRANSMISSION: JAPAN

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY COST
US CONTENT, OR OTHER REPAIRS COST

STANDARD EQUIPMENT**SAFETY AND SECURITY FEATURES**

- 48 MONTH/50,000 MILE
"Bumper-to-Bumper" WARRANTY
- 24 HOUR ROADSIDE ASSISTANCE
- LOCKER CAR PROGRAM
- 5-PASSENGER 3-PT SAFETY BELTS

INTERIOR FEATURES

- QUAD SEATS & CARPET FLOOR MATS
- AIR CONDITIONING & POLLEN FILTER
- 60/40 SPLIT FOLD DOWN REAR SEATS
- POWER WINDOWS & DOOR LOCKS
- AM/FM/CD W/ 6 SPEAKERS

EXTERIOR FEATURES

- 15" STEEL WHEELS & P40580 TRES
- CLEAR LENS HALOGEN HEADLIGHTS
- VARIABLE INTERMITTENT WIPERS
- ENGINE/MECHANICAL FEATURES
- 2.3L DOHC 16-VALVE V-6 ENGINE
- FOUR-DRIVE W/ FRONT MULTI-LINK
REAR SUSPENSION

BASE PRICE**\$18,530****OPTIONAL EQUIPMENT****CGN CARGO NET**

- ALUMINUM FUEL-FILLER DOOR (CHROME)
- ABS & TRACTION CONTROL (TCS)
- 4-SPEED SPORT AT
- PREMIUM PACKAGE
- 18" ALLOY/SANTI THEFT ALARM

\$40
\$100
\$100
\$850
\$400

8-WAY POWER DRIVER'S SEAT

TOTAL VEHICLE AND OPTIONS

DELIVERY, PROCESSING AND HANDLING FEE

TOTAL VEHICLE PRICE \$21,240**Actual Mileage will vary with**

options, driving conditions,
driving habits and vehicle's
condition. Results reported to
EPA include the impact
of vehicles with these estimates
will achieve between

19 and 27 mpg in the city,
and between

24 and 34 mpg on the
highway.

CITY MPG**23****HIGHWAY MPG****29****2003 MAZDA6**

4-CYLINDER 137.6 CUBIC INCH
DISPLACEMENT ELECTRONIC
GASOLINE INJECTION, 4 SPEED
AUTOMATIC OR TRANSMISSION
CATALYST EQUIPPED

For Comparison Shopping,
all vehicles classified as

MIDSIZE

have been tested mile-age ratings
ranging from 19 to 27 mpg city
and 14 to 34 mpg highway.

Estimated Annual Fuel Cost:
\$930

See www.fueleconomy.gov

APPENDIX B

Discussion on Data

DISCUSSION ON DATA

Symbols for Brake Components

4	-	4 Wheel	G	-	Groan	DL	-	Deceleration (State FPSPS)
X	-	Skid	SQ	-	Squeal	PF	-	Pedal on Floor
L	-	Left	SQK	-	Squeak	SCP	-	Shoe Scrape
R	-	Right	PO	-	Pinchout	RB	-	Rubber Banding
R	-	Rear	P	-	Pull	O	-	Odor
F	-	Front	R	-	Shudder	NOX	-	No Skid
B	-	Both	M	-	Momentary			
INT or INIT	-	Initial Part of Stop						
MID	-	Middle of Stop						
END	-	End of Stop						

All stops were made manually.

APPENDIX C

Contractor's Comments Procedure Modifications and Test Facility

Comments for vehicle C35401.

The vehicle is equipped with an Electronic Variable Proportioning system. This system is integral with the ABS system and it cannot be failed separately. Failing the ABS also fails the Variable Proportioning.

For all recorded decelerations:

The recorded *average* deceleration values for the tests are slightly lower than that which is required or targeted for certain test sections. However, in all cases and in reality, the driver maintained the correct required/target deceleration values for the majority of time for each of those stops. The recorded deceleration is acquired from the moment the service brake pedal is moved until the vehicle reaches zero speed. Therefore, the time needed to achieve the target deceleration (rise time) and the time the vehicle goes from the target deceleration to zero (fall time) is included in the average deceleration calculation. The rise and fall times were added to the entire length of the stops. Hence the recorded average deceleration values were generally and slightly less than the required/target deceleration values.

For all snubs of Data Sheet 26 – Heating Snubs at GVWR, stop number one of Data Sheet 28 – Brake Cooling Stops at GVWR, and both stops of Data Sheet 29 – Recovery Performance at GVWR the pedal force transducer's zero or null point drifted upward while the test was being conducted. The data acquisition system utilizes a threshold point of 5 N to engage the recording mode. The pedal force null point had drifted up to approximately 8 N. This caused incorrect data output from the analysis software (low averages due to premature recording mode engagement). After the completion of testing, TRC technicians altered the acquisition software to begin analysis at 9 N. This slightly raised engagement threshold allowed proper output from the analysis software. The result of the raised threshold likely displays a very slightly shortened stopping distance and time interval as well as a very slightly higher average deceleration. This slightly increased pedal force engagement point had no effect regarding the vehicle's dynamic compliance parameters.

For Data Sheet 27 – Hot Performance at GVWR, stop number two, the driver momentarily exceeded the maximum allowable pedal force of 500 N by 27 N. The target average pedal force, however, was not exceeded and the stopping distance was less than the maximum allowable by a fair margin. It is believed that, had the driver not exceeded the maximum allowable pedal effort, the vehicle would have complied with this portion of the Standard.

During the performance of Data Sheet 18 – Hydraulic Circuit Failure #1 at LLVW, the driver noted that the “Brake” warning lamp did not activate when the fluid level was very low. To confirm, all fluid was removed from the master cylinder reservoir and the warning lamp condition checked again. This was done several times to confirm the warning lamp did not alight. NHTSA/OVSC’s Technical Engineer was informed and a Non-Compliance form was created and sent. The Technical Engineer, then requested TRC to proceed onward to the completion of the test. After completion of the dynamic tests, the Technical Engineer and two representatives from the manufacture attended TRC to inspect and observe the test vehicle. It appeared that the “float” within the master cylinder reservoir would not move freely and was essentially “stuck” in position. Movement of the float downward as the fluid is lost within the master cylinder reservoir activates the “Brake” warning lamp.

Due to the above anomaly, TRC was instructed by the NHTSA technical engineer to exclude the reservoir capacity and master cylinder piston displacement measurement portions of the test completion inspection so as to not compromise the integrity of the master cylinder system for future examination.

Please note that TRC Inc.’s Report Writer analysis software is not able to produce small letters or print in Italics, thus on those particular pages the Model is identified as a MAZDA 6I rather than a Mazda6i.

7.5-MILE TEST TRACK

The 7.5-mile test track encloses a 1,600-acre area, one mile wide and 3.5 miles long.

The track has a downward grade, north to south, of 0.228 percent and a cross slope in the straightaways of 3/16 inch per foot. The 1.88 mile long straightaways flow into transition areas 2,300 feet in length and then into 5,275-foot long curves with a constant radius of 2,400 feet. The 36-foot wide straightaways and the 42-foot wide curves provide three test lanes. Paved berms, 12 feet in width, border the straightaways and the inside of the curves.

As a vehicle moves toward the outside of the track in the curves, it encounters a progressively steeper bank. The inside lane (or "slow" lane) has a bank of 10 degrees allowing a neutral speed of 80 mph with no side forces. In the center lane, the slope increases to 19 degrees resulting in a neutral speed of 110 mph. The outside lane's 28-degree bank allows a 140 mph neutral speed. Rimming the outer lane is a seven-foot safety lane culminating in a 36-degree slope at the guardrail.

The facility is paved with Portland cement concrete. It carries a maximum single axle load of 36,000 pounds and a maximum tandem axle load weight of 48,000 pounds. Special provisions can be made for heavier weight loads.

With 22.5 lane miles, our track will accommodate many vehicles simultaneously. Research which utilizes the track includes component performance and durability studies, brake tests, aerodynamic studies, fuel economy studies, drive line efficiency tests, and the determination of vehicular acceleration and cruise characteristics. In addition, it supports maximum speed determination, road load power, noise and emission measurements and tire durability test programs.

The 7.5-mile test track can be used in conjunction with other facilities at TRC. It provides an excellent area for pre-test conditioning of equipment such as brake burnishing, tire break-in, and vehicle warm-up.

TRC SKID PAD

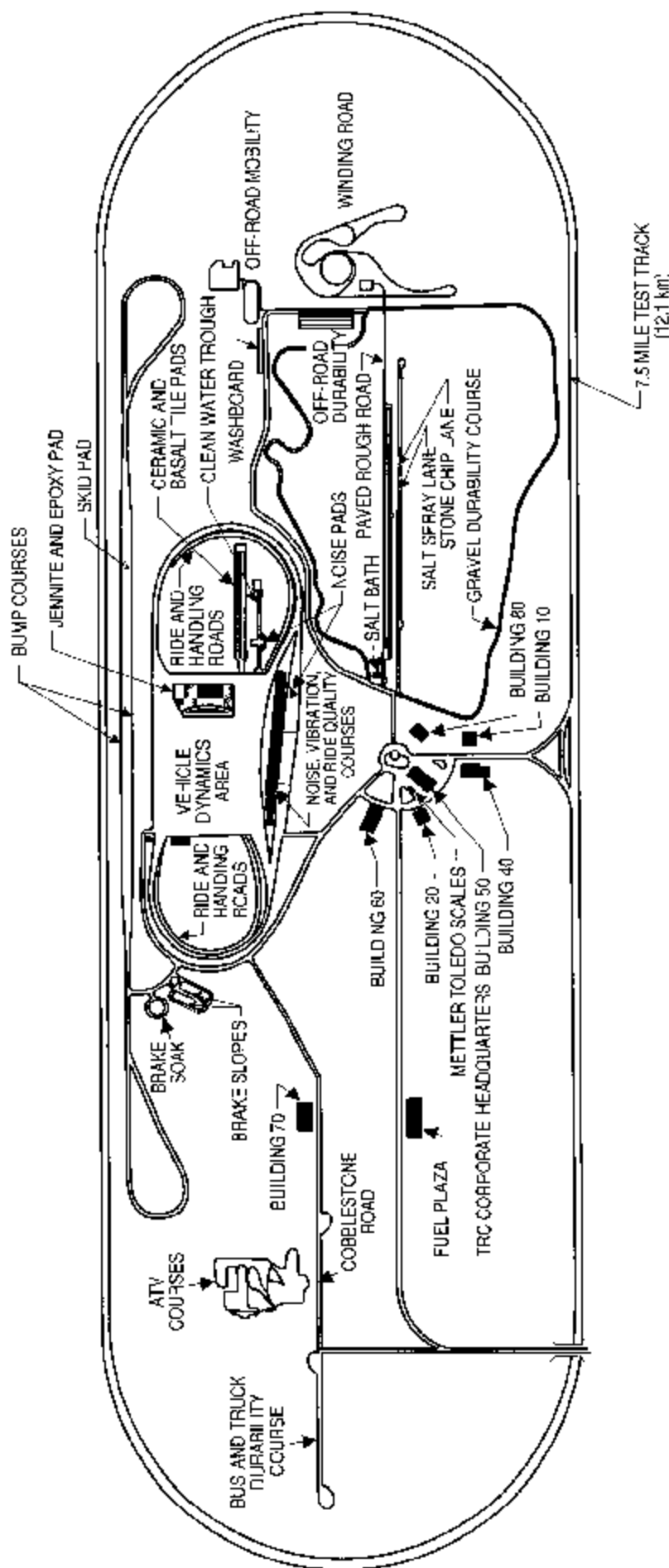
The Skid Pad is a test facility which is utilized primarily for the evaluation of tire and brake systems.

The overall dimensions of the pad are 9,000 feet by 84 feet with loops on the north and south ends. Both turnaround loops have a 309-foot radius and are 16 feet wide with a 25 percent super elevation. They will accommodate speeds of 45 mph with zero side force and 60 mph with .5 gs lateral acceleration. The acceleration/deceleration lanes at each end are 3,280 feet in length.

A test area of 210,000 square feet is situated in the center of the skid pad containing several test pads with varying surface textures. Skid numbers in this area range from 30 (wet) to 80 (dry).

The skid pad is paved with Portland cement. The load capacity of the skid pad is 36,000 pounds maximum single axle weight and 48,000 pounds maximum tandem axle weight.

Varying surface textures in the main test area are ideal for testing tire and/or brake system performance on different surfaces as characterized by "skid numbers." The skid pad is also used for acceleration studies, aerodynamics, rolling resistance, noise testing, and vehicle top speed determination.



NOT TO SCALE

TEST FACILITY DETAIL

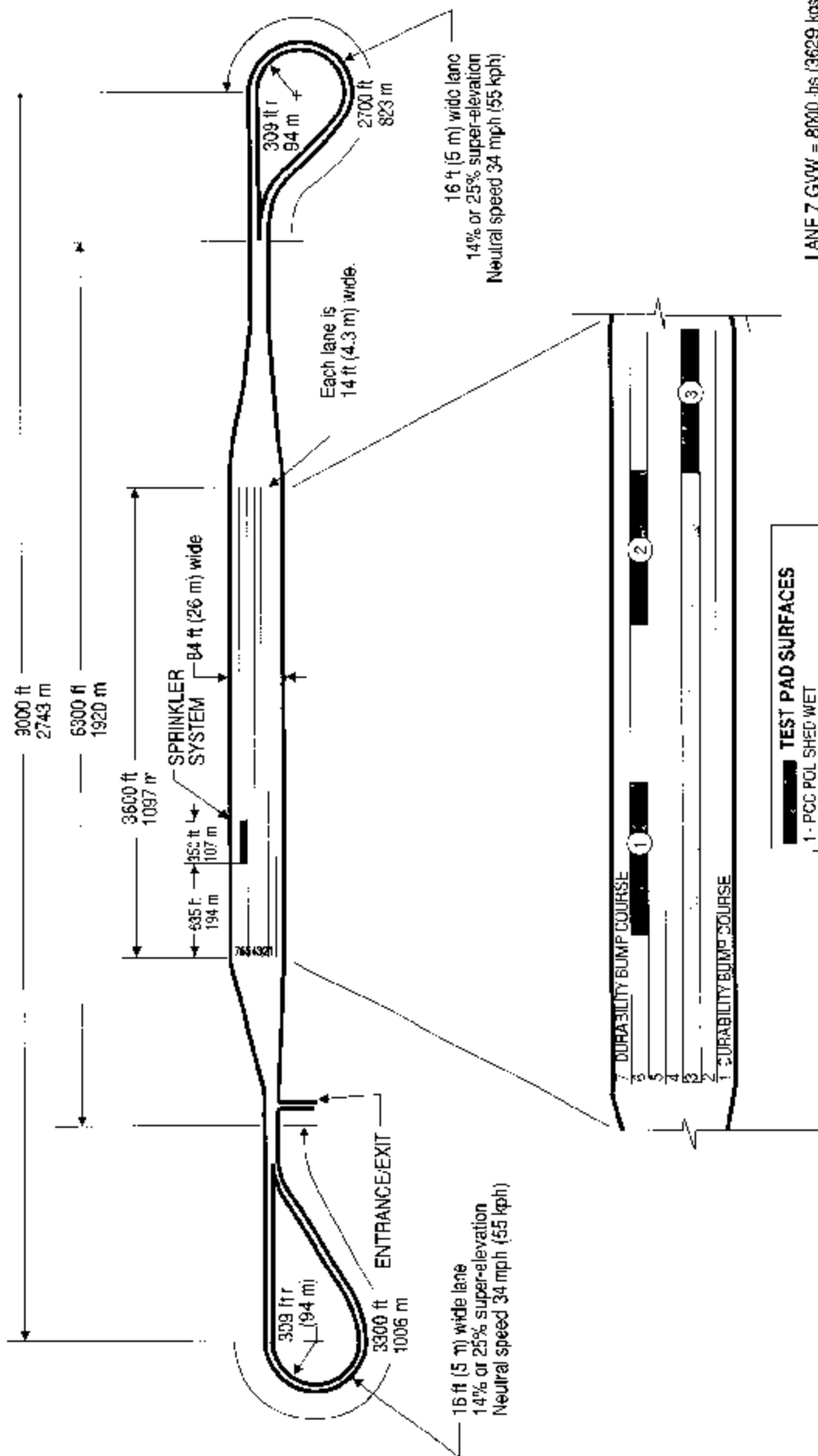


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F-1510601

ALL CONCRETE BROOMED SURFACE
1 LAP = APPROXIMATELY 4 MILES (6.4 KILOMETERS)



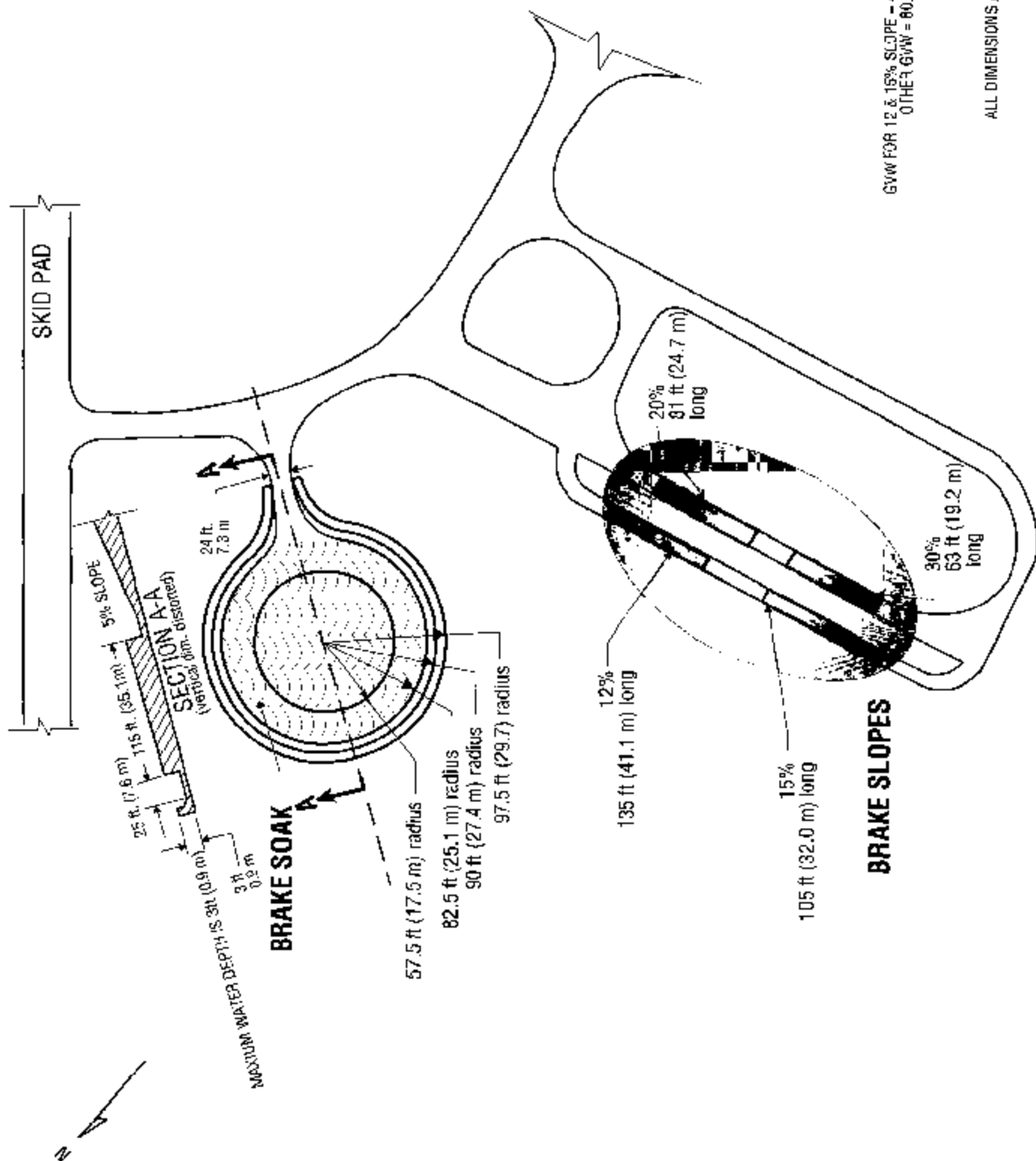
LANE 7 GVW = 8000 lbs (3629 kgs)
GVW = 80,000 LBS (36,298 kgs)

NOTE: BUMP COURSES PARALLEL THE PERIMETERS OF LANES 1 AND 7.

Not to scale
All dimensions are approximate

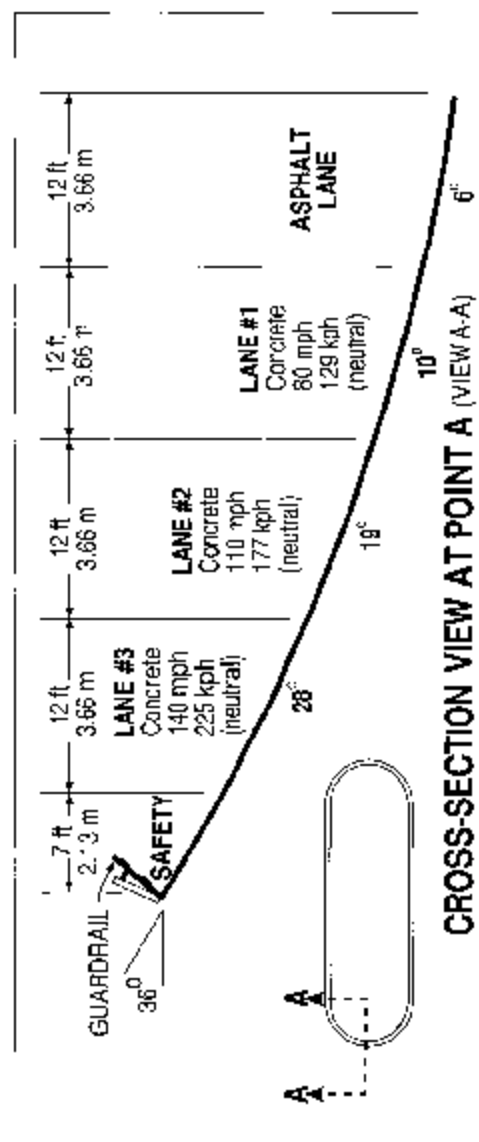
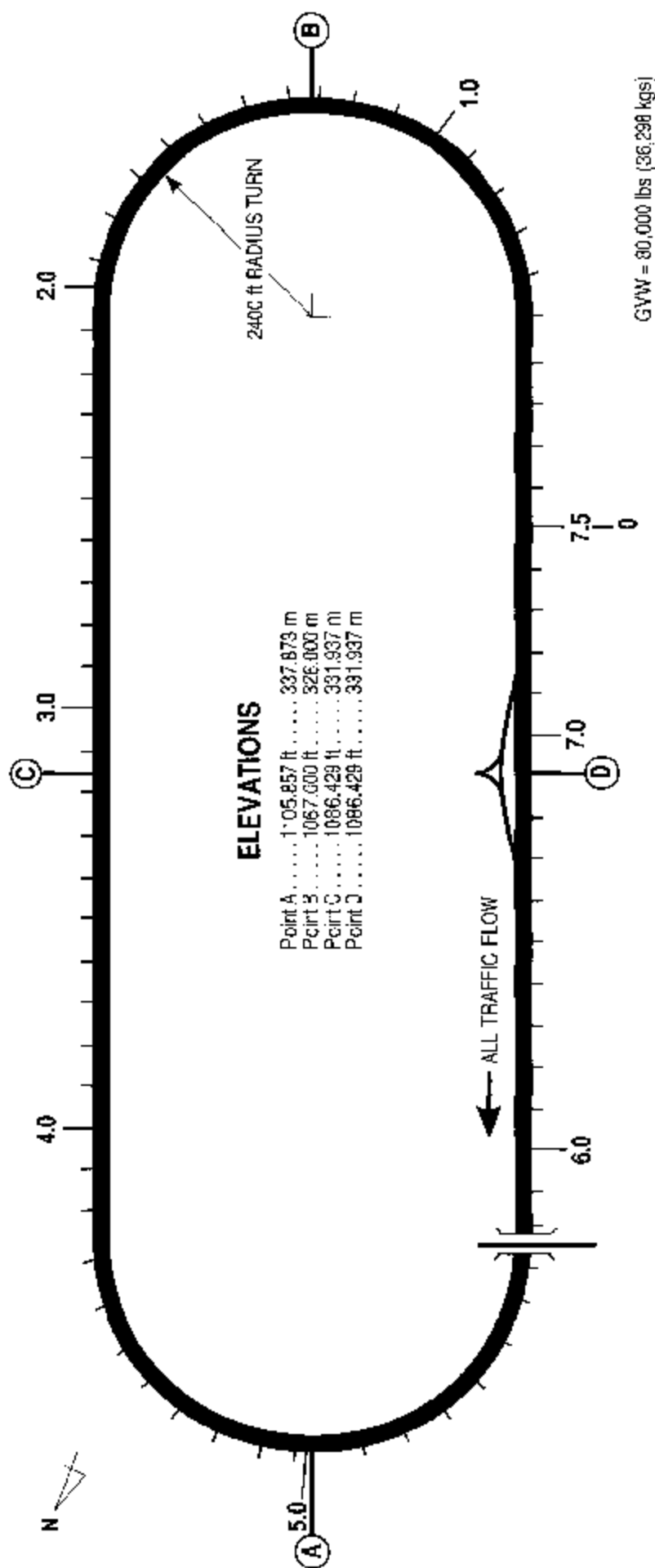
TRE
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EAST LIBERTY, OHIO 43315-0367

SKID PAD



GVW FOR 12 & 15% SLOPE = 4000 lbs (1814 kgs)
OTHER GVW = 80,000 lbs (36,296 kg)

NOT TO SCALE
ALL DIMENSIONS ARE APPROXIMATE



DISTANCES

Lane 3	7.539 mi	12.133 km
Lane 2	7.521 mi	12.104 km
Lane 1	7.507 mi	12.081 km
Point A to Point B	3.333 mi	5.364 km
Point C to Point D	.947 mi	1.524 km

NOT TO SCALE

7.5-MILE TEST TRACK

TRC

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TRC 3405

APPENDIX D
Notice of Possible Non-Compliance

LABORATORY NOTICE OF TEST FAILURE TO OVSC

FMVSS NO.: 135 TEST DATE: 04/17/03

LABORATORY: Transportation Research Center Inc.

CONTRACT NO.: DTNH22-01-C-21025 DELV. ORDER NO.: Not Appl.

LABORATORY PROJECT ENGINEER'S NAME: Randy Landes

TEST SPECIMEN DESCRIPTION: 2003 Mazda6i, Automatic

VEHICLE NHTSA NO.: C35401 VIN: 1YVFP80C335M20688

PART NO.: Not Avail. MFR: Continental Teves (per manufacturer's representative)*

TEST FAILURE DESCRIPTION: Master cylinder brake fluid level warning lamp
will not alight when the M/C fluid level is very low or empty.

FMVSS REQUIREMENT, PARAGRAPH S5.5.1(a)(1):

S5.5 Brake system warning indicator. "Each vehicle shall have one or more visual brake system warning indicators, mounted in front of and in clear view of the driver, which meet the requirements of S5.5.1 through S5.5.5....."

S5.5.1 Activation. "An indicator shall be activated when the ignition (start) switch is in the "on" ("run") position and whenever any of conditions (a) through (g) occur:

(a) A gross loss of fluid or fluid pressure (such as caused by rupture of a brake line but not by a structural failure of a housing that is common to two or more subsystems) as indicated by one of the following conditions (chosen at the option of the manufacturer):

(1) A drop in the level of the brake fluid in any master cylinder reservoir compartment to less than the recommended safe level specified by the manufacturer or to one-fourth of the fluid capacity of that reservoir compartment, whichever is greater.

NOTIFICATION TO NHTSA (COTR): Yes

DATE: 04/17/03

BY: Email - R. Landes

REMARKS: *After manufacturer's representative inspection.