

135-TRC-04-001

SAFETY COMPLIANCE TESTING FOR FMVSS 135
Passenger Car Brake Systems

Ford Motor Company, in U.S.A.
2004 Ford F150 XL Triton, 2-Door (Pickup) Truck
NHTSA No. C40201

TRANSPORTATION RESEARCH CENTER INC.

10820 State Route 347
East Liberty, Ohio 43319



Final Report Completed: November 20, 2003

FINAL REPORT

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

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration

~~Safety Assurance~~ *Enforcement*

Office of Vehicle Safety Compliance

400 Seventh Street, SW

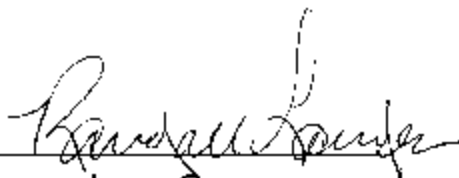
Room 6115 (NVS-221)

Washington, DC 20590

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

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products of manufacturers.

Prepared By



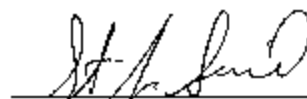
Approved By



Approval Date:

11/24/03

Final Report Acceptance By OVSC:



Contract/Technical Manager, Office of
Vehicle Safety Compliance

12/5/03

Acceptance Date

1. REPORT NUMBER: 135-TRC-04-001		2. GOVERNMENT ACCESSION NO.:		3. RECIPIENT'S CATALOG NO.:	
4. TITLE AND SUBTITLE: Final report of FMVSS 135 Compliance Testing of a 2004 Ford F150 XL Triton, 2 Door (Pickup) Truck, NHTSA No. C40201				5. REPORT DATE: November 20, 2003	
				6. PERFORMING ORGANIZATION CODE: TRC 20000113/4350	
7. AUTHOR(S): Project Manager: WALTER DULDEK Project Engineer: RANDALL A. LANDES				8. PERFORMING ORGANIZATION REPORT NO.: TRC-DOT-135-046	
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Transportation Research Center Inc. 10820 State Route 347 East Liberty, Ohio 43319				10. WORK UNIT NUMBER:	
				11. CONTRACT OR GRANT NO.: DTNH22-01-C-21025	
12. SPONSORING AGENCY NAME AND ADDRESS: U.S. Department of Transportation National Highway Traffic Safety Administration Safety Assurance Enforcement Office of Vehicle Safety Compliance (NHTSA-308) NVS-221 400 Seventh Street, SW, Room 6115 Washington, DC 20590				13. TYPE OF REPORT AND PERIOD COVERED: Final test report Tested: 10/16/03 to 11/06/03	
				14. SPONSORING AGENCY CODE: NVS-221	
15. SUPPLEMENTARY NOTES:					
16. ABSTRACT: Compliance tests were conducted on the subject 2004 Ford F150 XL Triton, 2-Door (Pickup) Truck, 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: S5.5.5 Labeling. (a) "...the words shall have lettering not less than 3.2 mm (1/8 inch) high..." The "AIS" indicator warning lamp measures less than 3.2 mm.					
17. KEY WORDS: Compliance Testing Safety Engineering FMVSS 135				18. DISTRIBUTION STATEMENT: Copies of this report are available from: NHTSA Technical Reference Division Mail Code: NAD-40 400 Seventh Street, SW, Rm. 5108 Washington, DC 20590 Telephone No. (202) 366-4949	
19. SECURITY CLASSIF. (OF THIS REPORT): Unclassified		20. SECURITY CLASSIF. (OF THIS PAGE): Unclassified		21. NO. OF PAGES: 71	
				22. PRICE:	

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
	Notice	i
	Table of Contents	iii
1.0	Introduction/Purpose of Compliance Test	1
2.0	Vehicle Information Sheet - Data Sheet 1	2
3.0	Test Summary	4
4.0	Vehicle Weight - Data Sheet 3	5
5.0	Test Data - Data Sheet 10	8
6.0	Photographs	33
7.0	Instrumentation and Daily Calibrations	50
Appendix A	Copy of Manufacturer's Sticker	54
Appendix B	Discussion on Data	56
Appendix C	Contractor's Comments Procedure Modifications and Test Facility	58
Appendix D	Notice of Possible Non-Compliance	66

1.0 INTRODUCTION

Tests were conducted on a 2004 Ford F150 XL Triton, 2-dr. (pickup) truck, manufactured by the Ford Motor Company in the U.S.A., 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
- Heating Snubs and Hot Performance Stops
- Brake Cooling and Recovery Stops

- 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

- Brake Slope
- Parking Brake

Average PFC during the test period was 0.99 (Skid Pad) and 0.96 (Test Track) 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.

This vehicle did not meet all the requirements of FMVSS 135.

DATA SHEET 1 - VEHICLE INFORMATION

VEHICLE SPECS

Year: 2004	NETSA No: C40201
Mfr: FORD MOTOR CO IN U.S.A	GVWR (Kg): 3016.0
Make: FORD	GAWR Front(Kg): 1564.9
Model: F-150 XL TRITON	GAWR Rear(Kg): 1542.2
Body Style: 2 DR PU TRUCK	Wheelbase (mm): 3200.4
Mfr. Date: 08/03	Odometer: Start: 73 MI. End: 523 MI.
VIN: 1FTRF12WX4NA32153	

BUSES ONLY

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

Engine Type: GASOLINE, V8, EFI, PISTON.	Tire Size: P235/70R17
Displacement: 4.6 LITER	Tire Type: DYNA PRO AS, 108S, M&S, RADIAL, T
Engine Hspwr: N/A	Tire Mfr.: HANKOOK
Idle Speed(rpm): 68.068	GVWR Front Press.(kpa): 262.00
Transmission Type: AUTO 4 SPD W/DR SEL. O/D	GVWR Rear Press.(kpa): 262.00
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): FRONT/REAR	Pwr Asst /Pwr Unit w/Backup: NO
Power Unit: VACUUM	Variable Prop. System: NO
Anti-Skid unit Mfr: BOSCH	Anti-Skid Device: YES
Parking Mechanism: YES	
Type of Parking Unit: AUTOMATIC TRANSMISSION WITH PARK DETENT	
Mstr Cylinder Dia(mm): 28.58	Pedal Ratio: 3.6 : 1

FRONT SYSTEM BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC	Material: CAST IRON
Drum Construction: N/A	LF Drum Shoe Cage Dia.(mm): 0.00
Disc Construction: INTEGRAL CAST, UNVENT	RF Drum Shoe Cage Dia.(mm): 0.00
Front Brake Dia (mm): 329.72	LF Drum Dia. RESET(mm): 0.00
Fr Disc Thickness(mm): 46.99	RF Drum Dia. RESET(mm): 0.00
Lining Construction: Bonded	

FRONT BRAKE COMPONENT DIMENSIONS AND CODES:

Inboard (Leading)	Outboard (Trailing)
Width(mm): 49.91	Width(mm): 49.89
Length(mm): 139.29	Length(mm): 139.34
Thickness(mm): 13.92	Thickness(mm): 13.92
Lining Code/Color: BX-ZS-PF	Lining Code/Color: BX-ZS-PF
Hyd. Piston Dia (mm): 50.98 (X2)	

DATA SHEET 1 - (CONTINUED)

REAR SYSTEM

BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC

Material: CAST IRON

Drum Construction: N/A

LR Drum Shoe Cage Dia. (mm): 0.00

Disc Construction: INTEGRAL CAST

RR Drum Shoe Cage Dia. (mm): 0.00

Lining Construction: BONDED

LR Drum Dia. RESET (mm): 0.00

Rear Brake Dia (mm): 347.88

RR Drum Dia. RESET (mm): 0.00

Rr Disc Thickness (mm): 20.37

REAR BRAKE COMPONENT DIMENSIONS AND CODES:

Inboard (Leading)

Outboard (Trailing)

Width (mm): 35.84

Width (mm): 35.81

Length (mm): 122.71

Length (mm): 122.63

Thickness (mm): 11.71

Thickness (mm): 11.89

Lining Code/Color: BX-ZR-EE

Lining Code/Color: BX-ZR-EE

Hyd Piston Dia (mm): 51.00

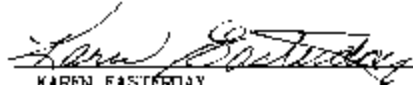
OTHER COMPONENT INFORMATION:

Friction-type Park Brake: FOOT-OPERATED

Non Service Brake Type Parking Brake: NCT APPL.

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 turnish and returnish procedures, discontinue testing and notify the COTR immediately

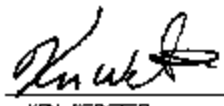
Technician:


KAREN EASTERDAY

Date:

11-21-03

Quality Assurance:


KEN WEBSTER

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				162.1 km/h avg.			NA
Burnish	GVWR	30				200.30 - 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	ABS Equipped			NA
Adhesion Utilization w/o ABS	GVWR					ABS Equipped			NA
Cold Effectiveness	GVWR	100	65	500	70	5	480.7	53.4	Pass
High Speed Effectiveness	GVWR	129.7	65	500	spd. depend.-125.6	5	487.3	66.5	Pass
Stops with Engine Off	GVWR	100	65	500	70	5	491.4	51.0	Pass
Cold Effectiveness	LLVW	100	65	500	70	5	489.0	49.1	Pass
High Speed Effectiveness	LLVW	129.7	65	500	spd. depend.-125.6	5	478.0	77.6	Pass
Failed Antilock	LLVW	100	65	500	85	5	140.4	54.5	Pass
Failed Proportioning Valve	LLVW	100	65	500	110	5	NA	NA	NA
Failed Hydraulic Circuit #1	LLVW	100	65	500	168	5	466.8	68.2	Pass
Failed Hydraulic Circuit #2	LLVW	100	65	500	168	5	491.3	129.4	Pass
Failed Hydraulic Circuit #1	GVWR	100	65	500	168	5	490.8	74.0	Pass
Failed Hydraulic Circuit #2	GVWR	100	65	500	168	5	500.0	119.9	Pass
Failed Antilock	GVWR	100	65	500	85	5	284.3	57.7	Pass
Failed Proportioning Valve	GVWR	100	65	500	110	5	NA	NA	NA
Power Brake Unit Failure	GVWR	100	65	500	168	5	489.5	147.1	Pass
Parking Brake - Uphill	GVWR	-	-	500	Hold for 5 min.?	NA	497.1	Yes-Holds	Pass
Parking Brake - Downhill	GVWR	-	-	500	Hold for 5 min.?	NA	485.3	Yes-Holds	Pass
Heating Snubs	GVWR	120-60	NA	NA	15 Snubs- 3.0	5	36 Vis. Avg.	NA	NA
Hot Performance Stop #1	GVWR	100	65	395 avg.	82.3	5	373.6 (224.6)	56.7	Pass
Hot Performance Stop #2	GVWR	100	65	500	89	5	354.1 (43/7)	56.3	Pass
Brake Cooling	GVWR	50	NA	NA	4 Stops - 3.0 mpsps	5	42 Vis. Avg.	NA	NA
Recovery Performance Stop #1	GVWR	100	65	395 avg.	One of the two stops between 72.0 and 38.9 meters	5	391.3 (299.1)	58.4	Pass
Recovery Performance Stop #2	GVWR	100	65	395 avg.		5	483.7 (273.3)	53.5	
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 S5.4.3.					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 D.

DATA SHEET 3 - VEHICLE WEIGHT

VEHICLE: 2004 FORD F-150 XL TRITON

NHTSA No C40201 Date 10/29/03

Tire Pressure(cold): Front (kpa) 262 Rear (kpa) 262

Odometer: Start 73 MI. End 523 MI.

Scale(s) Used: TRC 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): 3016
GAWR Front(Kg): 1565
GAWR Rear(Kg): 1542

L Front(Kg): 619 L Rear(Kg): 466
R Front(Kg): 620 R Rear(Kg): 467
T Front(Kg): 1239 T Rear(Kg): 934
Total UVW(Kg): 2172

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): 668 L Rear(Kg): 508
R Front(Kg): 669 R Rear(Kg): 510
T Front(Kg): 1337 T Rear(Kg): 1018
Total LLVW(Kg): 2356

L Front(Kg): 676 L Rear(Kg): 512
R Front(Kg): 660 R Rear(Kg): 506
T Front(Kg): 1335 T Rear(Kg): 1018
Total Actual Test LLVW(Kg): 2353

Load: Driver/Observer 73(Kg) + Instru. 41(Kg) + Ballast 67(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): 759 L Rear(Kg): 751
R Front(Kg): 762 R Rear(Kg): 744
T Front(Kg): 1521 T Rear(Kg): 1495
Total Fully Loaded GVWR(Kg): 3016

Load: Driver/Observer 73(Kg) + Instru. 41(Kg) + Ballast 731(Kg) = 845(Kg)

Technician: Karen Easterday
KAREN EASTERDAY

Date: 11-21-03

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: 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 HIGH FREQUENCY SQUEAL WHEN WORN.

(B) Visual check outside or under vehicle? YES

Describe: FRONT&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

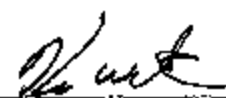
COMMENTS NONE.

Tester/Technician:


KAREN EASTERDAY

Date: 11-21-03

Quality Assurance:


KEN WEBSTER

DATA SHEET 5 - VEHICLE MAX SPEED

VEHICLE: 2004 FORD F-150 XL TRITON

NHTSA No C40201 Date: 10/29/03

Ambient Temperature: 48.00°F

Wind Velocity: 11.00(MPH)

Road PFC: 98

Wind Direction: 264°

Odometer: Start 88(mi) End 103(mi)

TEST WEIGHT: Total (Kg): 2353

Front (Kg): 1335

Rear (Kg): 1018

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
a standing start in 3.2 km

INTERVAL: N/A

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	162.13	162.1	11.46
Run No. 2	North	162.00	162.0	11.88

AVERAGE = 162.1 km/h

COMMENTS: INV DATA, Section 0001, 10/29/03, 14:50:06

Tester/Technician:


KAREN EASTERDAY

Date: 11-21-03

Quality Assurance:


KEN WEBSTER

Vehicle: 2004 FORD MOTOR CO. NHTSA NUMBER: C40201

Make: FORD

Model: F-150 XLT TRITON

Body Style: 1 DR PU TRUCK

Front Cold Tire Pressure: 262 (Kpa)

Rear Cold Tire Pressure: 262 (Kpa)

Transportation Research Center, Inc.

10820 State Route 407

Tam Liberty, Ohio 43310

(614) 666-2011 www.trcpc.com

Date Tested: 10/29/03

DATA SHEET 6 - BURNISH AT GVWR

Testing Conditions: INV DATA, Section 0002, 10/29/03, 17:53:30

Weather Conditions: 43°F Wind: 1 mph 136°

Start Odo.: 108

End Odo.: 359

Schedule:

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

Endurance Requirements:

Interval between runs: Time necessary to reduce IBT to 100 °C or 2 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.	
	INIT	FRONT	FRONT	REAR	REAR	PEDAL	PEDAL	AVG.
STOP	SPD	IBT	IBT	IBT	IBT	FORCE	FORCE	DECEL
#	(kph)	(°C)	(°C)	(°C)	(°C)	(N)	(N)	(m/sec ²)
1	78.94	91	102	59	71	49.17	34.72	2.78
10	79.51	116	110	66	78	48.34	34.23	2.80
20	79.32	112	118	61	77	46.12	30.54	2.85
30	80.94	110	121	59	78	51.33	30.12	2.82
40	79.79	111	123	61	76	45.36	30.42	2.60
50	79.50	108	123	58	75	40.19	28.46	2.69
60	79.34	106	127	54	72	40.39	25.78	2.71
70	79.70	114	126	57	73	44.49	25.74	2.76
80	79.50	112	119	55	72	45.59	26.72	2.73
90	80.35	104	114	54	66	46.95	29.17	2.78
100	79.77	108	118	56	69	45.97	27.25	2.73
110	79.38	107	116	54	68	42.85	26.08	2.82
120	80.20	107	118	56	69	44.55	29.59	2.89
130	79.59	107	119	56	70	47.10	27.61	2.77
140	79.83	105	116	56	68	44.36	27.62	2.76
150	79.42	106	115	56	68	43.40	29.26	2.75
160	79.97	112	118	56	68	43.87	27.93	2.80
170	79.74	107	115	56	66	47.10	26.72	2.75
180	79.16	108	112	56	66	49.63	27.56	2.79
190	79.51	110	116	55	66	41.21	26.40	2.75
200	79.87	109	118	54	66	48.57	25.93	2.76

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

BRAKE ADJUSTMENT

Schedule:

Adjust service brakes: record procedure and amount adjusted.

Left Front: DISC DISC BRAKE NO ADJUSTMENT REQUIRED
Right Front: DISC DISC BRAKE NO ADJUSTMENT REQUIRED
Left Rear: DISC DISC BRAKE NO ADJUSTMENT REQUIRED
Right Rear: DISC DISC BRAKE NO ADJUSTMENT REQUIRED
DATA INDICATES COMPLIANCE: YMS (X) NO ()

Driver: KAREN BASTERDAY

Observer: NONE

Recorded Data Processed by: CHUCK GUNNING

Date: 11/12/03

Approving Laboratory Official: KEN WEBSTER

Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO. NHTSA NUMBER: C4C2Q1
 Make: FORD
 Model: F-150 XL TRITON
 Body Style: 2 DR PU TRUCK
 Front Cold Tire Pressure: 262 (Kpa)
 Rear Cold Tire Pressure: 262 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 147
 East Liberty, Ohio 43315
 (937) 665-2011 www.trcpg.com

Date Tested: 10/30/03

DATA SHEET 11 - COLD EFFECTIVENESS AT GVWR

Testing Conditions: INV DATA, Section 9015, 10/30/03, 12:35:24

Weather Conditions: 55°F Wind: 12 mph 121° Start Odo.: 371 End Odo.: 377

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 70m
 Pedal force between 650 and 800N
 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	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meters)	CORRECTED DISTANCE (SAE 299) (meters)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
		1st 1st (°C)	1st 1st (°C)	1st 1st (°C)	1st 1st (°C)						
1	99.52	63	69	49	56	55.1	55.6	370.90	268.03	10.64	6.56
2	99.95	25	30	59	69	53.4	53.4	480.69	394.55	11.00	7.13
3	99.36	88	86	54	62	54.2	54.9	494.10	353.26	10.94	5.91
4	99.52	91	89	60	67	54.5	55.1	490.74	348.28	10.45	5.86
5	95.73	95	96	65	72	53.6	53.9	508.42	318.47	10.55	5.55
6	100.69	87	90	61	64	55.3	54.7	497.27	322.17	10.28	5.39

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

STOP #	DRIVER	VEHICLE	STOP COMMENTS
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: KAREN EASTERDAY Observer: NONE
 Recorded Data Processed by: CROCK JENKINS Date: 11/12/03
 Approving Laboratory Official: KEN NEESIER Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO NHTSA NUMBER: C482D1

Make: FORD

Model: F-150 XL TRUCK

Body Style: 2 DR PU TRUCK

Front Cold Tire Pressure: 362 (Kpa)

Rear Cold Tire Pressure: 362 (Kpa)

Transportation Research Center, Inc.

10820 State Route 347

East Liberty, Ohio 43019

15171666-2011 www.trcpg.com

Date Tested: 11/30/03

DATA SHEET 12 - HIGH SPEED EFFECTIVENESS AT GVWR

Testing Conditions: INV DATA, Section 0020, 11/30/03, 15:03:32

Weather Conditions: 72°F Wind: 21 mph 178°

Start Odu: 383

End Odu: 391

Schedule:

Initial Brake Temperature: 65-100°C

Initial Speed: 80% max km/h, not greater than 160km/h

6 stops with transmission in gear

Performance Requirements:

One Stop with:

Stopping Distance less than: 125.6 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 SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
		1BT (°C)	1FC (°C)	1BT (°C)	1FC (°C)						
1	128.69	59	65	59	56	53.4	90.4	478.57	345.90	11.17	6.67
2	129.01	69	62	67	71	60.2	87.9	506.61	360.84	11.67	6.31
3	129.21	88	93	59	66	69.2	89.8	499.53	365.28	11.24	7.07
4	120.48	92	93	55	63	66.3	87.9	500.14	393.50	11.12	6.07
5	130.66	86	91	52	59	68.3	86.6	492.79	376.53	10.88	6.79
6	128.40	80	94	52	61	64.8	88.5	487.30	354.28	11.30	6.25

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: KAREN BRSTERDAY

Observer: NONE

Recorded Data Processed by: CHUCK JENNING

Date: 11/13/03

Approving Laboratory Official: KEN WEBSTER

Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO. NHTSA NUMBER: C40201 Transportation Research Center, Inc.
 Make: FORD 10820 State Route 247
 Model: F-150 XL TRITON East Liberty, Ohio 43315
 Body Style: 2 DO RH TRUCK 19371666-2011 www.trcpg.com
 Front Cold Tire Pressure: 462 (Kpa)
 Rear Cold Tire Pressure: 362 (Kpa) Date Tested: 10/10/03

DATA SHEET 13 - STOPS WITH ENGINE OFF AT GVWR

Testing Conditions: INV DATA, Section 0025, 10/30/03, 16:09:17

Weather Conditions: 73°F Wind: 14 mph 164° Start Odo.: 393 End Odo.: 406

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 70m

pedal force between 50N and 200N

No Look-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 1BT (°C)	RIGHT FRONT 1BT (°C)	LEFT REAR 1BT (°C)	RIGHT REAR 1BT (°C)	ACTUAL DISTANCE (meters)	CORRECTED DISTANCE (SAB 299) (meters)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DRCEL (m/sec²)	AVG. DRCEL (m/sec²)
1	99.44	91	97	58	63	60.0	60.7	239.49	154.06	10.68	6.02
2	99.17	71	76	53	60	51.3	52.1	352.96	255.72	11.82	7.11
3	100.75	87	96	62	72	53.7	52.9	473.61	396.14	11.24	6.96
4	99.51	86	94	58	71	50.5	51.0	491.36	299.22	11.30	6.23
5	100.04	87	94	56	69	59.1	59.0	429.21	270.64	10.96	6.67
6	99.91	89	96	55	64	51.8	51.9	506.15	290.74	11.12	5.92

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: KAREN EASTRDAY Observer: NONE

Recorded Data Processed by: CHUCK JENKINS Date: 11/12/03

Approving Laboratory Official: BEN WEBSTER Date: 12/14/03

Vehicle: 2004 FORD MONDEO CD. NETSA NUMBER: C40201
 MAKE: FORD
 Model: 7-150 XL TSTTON
 Body Style: 2 DR PU TRUCK
 Front Cold Tire Pressure: 357 (Kpa)
 Rear Cold Tire Pressure: 362 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 61371666-2311 www.trcrg.com

Date Tested: 10/31/03

DATA SHEET 14 - COLD EFFECTIVENESS AT LLVM

Testing Conditions: INV DATA, Section 803B, 10/31/03, 10:34:42

Weather Conditions: 66°F Wind: 19 mph 209° Start Odo.: 414 End Odo.: 419

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 SPD (km/h)	LEFT FRONT 10T (°C)	RIGHT FRONT 10T (°C)	LEFT REAR 10T (°C)	RIGHT REAR 10T (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAB 289) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
1	100.55	64	67	58	66	49.7	49.2	457.98	327.50	12.23	7.37
2	99.45	83	82	58	70	48.6	49.2	402.97	365.93	12.99	7.02
3	99.57	94	94	57	71	48.6	49.1	515.30	376.05	12.81	7.20
4	99.33	94	95	53	63	49.0	49.7	476.66	349.25	13.22	6.17
5	98.99	92	93	48	57	48.7	49.7	495.91	348.34	12.45	6.59
6	100.58	93	91	46	57	51.7	51.1	500.16	379.98	13.42	6.84

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
2	-	NOX	SOUTH
3	-	NOX	SOUTH
4	-	NOX	SOUTH
5	-	NOX	SOUTH
6	-	NOX	SOUTH

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN VASTERDAY Observer: NONE
 Recorded Data Processed By: CHUCK JENKINS Date: 11/13/04
 Approving Laboratory Official: KEE WEBSTER Date: 11/14/02

Vehicle: 2004 FORD MOTOR CO. NHTSA NUMBER: C40201
 Make: FORD
 Model: F-150 XL TRUCK
 Body Style: 2 DR PU TRUCK
 Front Cold Tire Pressure: 262 (Kpa)
 Rear Cold Tire Pressure: 262 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 147
 East Liberty, Ohio 43113
 (614) 665-2011 www.trcpg.com

Date Tested: 10/31/03

DATA SHEET 15 - HIGH SPEED EFFECTIVENESS AT LLVM

Testing Conditions: INV DATA, Section 0035, 10/31/03, 11:07:00

Weather Conditions: 68°F Wind: 23 mph 227° Start Odo.: 430 End Odo.: 428

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed: 60k max km/h
 6 stops with transmission in gear

Performance Requirements:

One Stop with:
 Stopping Distance less than 125.6m
 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 (meters)	CORRECTED DISTANCE (SAE 209) (meters)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
		1BT (°C)	1RT (°C)	1LT (°C)	1RT (°C)						
1	130.67	83	82	42	51	80.8	79.6	495.27	349.25	12.85	7.67
2	130.34	92	89	42	52	79.7	78.8	489.27	384.55	14.27	7.91
3	128.67	88	89	40	49	81.5	82.9	491.38	371.56	12.52	6.81
4	128.53	94	93	42	51	77.8	77.8	472.98	372.65	14.12	7.52
5	129.27	91	87	39	48	80.2	80.7	487.08	382.39	12.55	7.43
6	128.87	87	88	38	47	79.3	79.3	514.49	407.73	12.97	7.48

STOP # DRIVER VEHICLE STOP COMMENTS
 1 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
5	-	NOX	SOUTH YES
6	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN BASTEDAY Observer: NONE
 Recorded Data Processed by: CHUCK HARRIS Date: 11/12/03
 Approving Laboratory Official: KEV WEBSTER Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO. NHTSA NUMBER: C402D1 Transportation Research Center, Inc.
 Make: FORD 13623 State Route 347
 Model: F-150 XL TRUCK East Liberty, Ohio 43019
 Body Style: 7 DR ED TRUCK (937) 666-2811 www.trcby.com
 Front Cold Tire Pressure: 262 (Kpa)
 Rear Cold Tire Pressure: 262 (Kpa) Date Tested: 10/31/03

DATA SHEET 16 - ANTILOCK FUNCTIONAL FAILURE AT LLVW

Testing Conditions: INV DATA, Section 004C, 10/31/03, 12:35:25

Weather Conditions: 71°F Wind: 16 mph 215° Start Odo.: 431 End Odo.: 436

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 60N and 500N
 No Lock Up allowed longer than 4.1 sec Above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (km/h)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meters)	CORRECTED DISTANCE (EAS 299) (meters)	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	100.15	74	75	54	62	54.7	54.5	140.40	86.42	10.01	5.54
2	99.37	70	81	54	61	54.7	55.4	124.96	80.64	10.10	6.61
3	99.32	91	84	60	68	55.6	56.4	172.49	86.64	9.63	6.37
4	100.42	81	84	98	56	58.0	57.6	106.76	77.17	9.67	6.22
5	99.58	88	81	53	60	58.5	58.0	103.33	79.33	9.10	6.50
6	99.76	91	96	57	64	54.9	55.2	170.04	81.81	9.40	5.48

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	SOUTE YES
2	-	NOX	SOUTE YES
3	-	NOX	SOUTE YES
4	-	NOX	SOUTE YES
5	-	NOX	SOUTE YES
6	-	NOX	SOUTE YES

How was the ABS failure induced: REMOVED 10 AMP FUSE FROM BOX BEHIND KICK PANEL, PASSENGER SIDE.

Is brake system indicator lamp activated: YES (Y) NO (N)

Vehicle not equipped with variable proportioning valve. Data Sheet 17 not included.

DATA INDICATES COMPLIANCE: YES (X) NO (N)

Driver: JAMES EASTERDAY

Observer: NONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/17/03

Approving Laboratory Official: JIM WISSETER

Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO. MKTSA NUMBER: C40201
 Make: FORD
 Model: F 150 XL TRUCK
 Body Style: 2 DR DU TRUCK
 Front Cold Tire Pressure: 262 (Kpa)
 Rear Cold Tire Pressure: 262 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43015
 (937) 666-2011 www.tropg.com

Date Tested: 10/31/03

DATA SHEET 18 - HYDRAULIC CIRCUIT FAILURE #1 AT LLVW

Testing Conditions: INV DATA. Section 0050, 10/31/03, 14:48:19

Weather Conditions: 72°F Wind: 21 mph 209° Start ODO: 439 End ODO: 442

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

System Portion Failed: LM & RA

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 650 and 300N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP #	INIT SPD (kmph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (S&S 209) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX DECEL (m/sec ²)	AVG DECEL (m/sec ²)
		IN7 (°C)	IN7 (°C)	IN7 (°C)	IN7 (°C)						
1	99.44	71	76	29	32	70.2	71.0	372.54	362.19	9.40	5.19
2	99.36	85	87	29	31	67.3	68.2	456.82	327.31	12.31	5.39
3	99.53	93	92	29	31	68.6	69.2	485.27	349.66	10.25	5.03
4	99.67	94	92	28	33	66.9	69.4	476.09	348.20	9.85	3.20

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: 420

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

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN EASTERDAY Checker: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 11/12/03
 Approving Laboratory Official: KEN WEBSTER Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO NHTSA NUMBER: D40201 Transportation Research Center, Inc
 Make: FORD 13820 State Route 347
 Model: F-150 XL TRITON East Liberty, Ohio 43319
 Body Style: 2 DR PU TRUCK (937)666-2011 www.trcpg.com
 Front Cold Tire Pressure: 262 (Kpa)
 Rear Cold Tire Pressure: 262 (Kpa) Date Tested: 10/31/02

DATA SHEET 19 - HYDRAULIC CIRCUIT FAILURE #2 AT LLVM

Testing Conditions: INV DATA, Section 0055, 10/31/02, 16:08.41

Weather Conditions: 73°F Wind: 15 mph 202° Start Odo.: 447 End Odo.: 451

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

System Portion Failed: RF & LF

Schedule:

Initial Brake Temperature 65-80°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 150m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 2.1 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 (meters)	CORRECTED DISTANCE (SAE 2993) (meters)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
		1BT (°C)	1RT (°C)	1LT (°C)	1RT (°C)						
1	99.28	40	41	84	92	137.1	139.1	520.04	176.47	7.12	2.74
2	99.17	34	35	80	96	130.0	132.4	475.48	163.97	7.44	2.86
3	99.31	37	71	84	92	131.6	131.9	462.84	167.57	8.34	2.86
4	100.12	30	30	86	94	129.7	129.4	491.33	199.53	10.08	2.88

STOP # DRIVER VEHICLE STOP COMMENTS
 1 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 (N) to Activate Brake Failure Lamp: 420

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

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN BASTERDAY Observer: NOME
 Recorded Data Processed By: CRUCK JENNINGS Date: 11/12/03
 Approving Laboratory Official: KEN WEBSTER Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO. NHTSA NUMBER: C40204
 Make: FORD
 Model: F-150 L1 TRUCK
 Body Style: 2 DR PU TRUCK
 Front Cold Tire Pressure: 262 (Kpa)
 Rear Cold Tire Pressure: 262 (Kpa)

Transportation Research Center, Inc.
 19320 State Route 447
 East Liberty, Ohio 43313
 (937) 666-2011 www.trcgg.com

Date Tested: 11/31/03

DATA SHEET 20 - HYDRAULIC CIRCUIT FAILURE #1 AT GVWR

Testing Conditions: HWY DATA, Section 3060, 11/03/03, 13:04:17

Weather Conditions: 55°F Wind: 12 mph 227° Start Cds.: 462 End Cds.: 472

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

System Portion Failed: LR & RR

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 169m
 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 1.5m

STOP	INIT SPD (kmph)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meters)	CORRECTED DISTANCE (meters)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
1	98.87	56	60	53	55	79.2	80.1	499.36	312.51	8.78	4.63
2	101.07	52	56	48	50	76.1	74.0	490.75	367.48	7.77	4.83
3	98.20	93	99	41	44	70.1	77.4	475.42	269.28	7.05	3.47
4	95.46	90	91	34	36	76.6	77.6	500.82	170.01	9.09	4.82

STOP DRIVER VEHICLE STOP COMMENTS
 4 Wheel Lock-Up - Direction of Stop - Stay in Lane!

STOP	1	2	3	4
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES

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

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN EASTERDAY Observer: NONE
 Recorded Data Processed by: CHUCK JENSENS Date: 11/12/03
 Approving Laboratory Official: KEN WEBSTER Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO. NHTSA NUMBER: C44301 Transportation Research Center, Inc.
 Make: FORD 13520 State Route 747
 Model: F-150 XL TRITON East Liberty, Ohio 43319
 Body Style: 2 DR EXT. CAB (539) 666 2811 www.trcpg.com
 Front Cold Tire Pressure: 262 (kpa)
 Rear Cold Tire Pressure: 262 (kpa) Date Tested: 11/03/03

DATA SHEET 21 - HYDRAULIC CIRCUIT FAILURE #2 AT GVWR

Testing Conditions: INV DATA, Section 0065, 11/03/03, 09-13-48

Weather Conditions: 61°F Wind: 6 mph 171° Start Odo.: 459 End Odo.: 469

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

System Portion Failed: EP & LP

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 160m
 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 TBT (°C)	RIGHT FRONT TBT (°C)	LEFT REAR TBT (°C)	RIGHT REAR TBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (g/800°)	AVG. DECEL (g/800°)
1	99.19	19	21	83	95	119.5	121.9	482.37	420.60	5.57	3.27
2	100.02	19	22	84	95	123.6	123.6	490.41	401.35	5.46	2.75
3	100.21	19	22	87	96	120.4	119.9	499.96	380.39	5.81	3.14
4	100.07	20	21	87	78	126.6	126.6	505.18	419.32	5.66	2.94

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

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

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN EASTERDAY Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 11/12/03
 Approving Laboratory Official: KEN WEBSTER Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO. NHTSA NUMBER: C40201 Transportation Research Center, Inc.
 Make: FORD 16820 State Route 147
 Model: F-150 XL TRITON East Liberty, Ohio 43319
 Body Style: 2 DR PU TRUCK 1937/666-2011 www.trcpg.com
 Front Cold Tire Pressure: 262 (Kpa)
 Rear Cold Tire Pressure: 262 (Kpa) Date Tested: 11/03/03

DATA SHEET 22 - ANTILOCK FUNCTIONAL FAILURE AT GVWR

Testing Conditions: INV DATA, Section 0570, 11/03/03, 11:20.09

Weather Conditions: 72°F Wind: 20 mph 193° Start Odo.: 475 End Odo.: 480

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 82m
 Pedal force between 65N and 300N
 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 IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG.		MAX. DECEL (m/sec²)	AVG. DECEL (m/sec²)
		FRONT IBT (°C)	FRONT IBT (°C)	REAR IBT (°C)	REAR IBT (°C)				PEDAL FORCE (N)	PEDAL FORCE (N)		
1	59.35	72	74	52	59	61.9	62.7	213.81	90.05	90.05	9.12	5.76
2	58.82	85	88	59	67	60.7	62.2	200.03	90.31	90.31	8.90	5.89
3	100.57	77	87	49	57	59.4	50.6	215.55	103.00	103.00	9.30	6.00
4	98.77	93	97	57	60	56.3	57.7	204.26	101.56	101.56	9.31	5.79
5	99.60	75	86	46	53	72.7	73.1	200.75	87.29	87.29	8.68	4.70
6	99.98	96	96	60	70	66.4	66.5	121.99	87.25	87.25	8.65	5.13

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

STOP	WHEEL LOCK-UP	DIRECTION AT STOP	STAY IN LANE
1	NOX	SOUTH	YES
2	NOX	SOUTH	YES
3	NOX	SOUTH	YES
4	NOX	SOUTH	YES
5	REF-INIT	SOUTH	YES
6	NOX	SOUTH	YES

How was the ABS failure induced: REMOVED 10 AMP FUSE FROM FUSE BOX BEHIND EX-CEL PANEL, PASSENGER SIDE.

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

Vehicle not equipped with variable proportioning valve. Data Sheet 23 not included.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN BATESDAY Observed: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 11/12/03
 Approving Laboratory Official: KEN WEBSTER Date: 11/14/03

Vehicle: 2006 FORD MOTOR CO. NHTSA NUMBER: C40201 Transportation Research Center, Inc.
 Make: FORD 10820 State Route 347
 Model: F-150 XL TRITON East Liberty, Ohio 43319
 Body Style: 3 DR PU TRUCK 19371660-2011 www.tropg.com
 Front Cold Tire Pressure: 282 (kPa)
 Rear Cold Tire Pressure: 262 (kPa) Date Tested: 11/03/03

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

Testing Conditions: TMV DATA, Section 0840, 11/03/03, 12:59:11

Weather Conditions: 73°F Wind: 11 mph 210° Start Odo.: 493 End Odo.: 495

Failure Simulation: Disconnect primary source of power.

Method of rendering inoperative: Removed Engine Vacuum Hose at Booster

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 1.60m
 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	(SAE 299)	PEDAL	PEDAL	DECEL	DECEL
#	(km/h)	(°C)	(°C)	(°C)	(°C)	(m/sec²)	(m/sec²)	(N)	(N)	(m/sec²)	(m/sec²)
1	100.17	66	67	59	64	167.6	167.0	495.32	462.95	3.92	2.12
2	100.17	64	67	66	73	156.5	155.8	503.44	467.04	3.70	2.56
3	99.23	94	90	67	76	150.0	152.4	493.70	466.59	3.68	2.69
4	98.63	78	84	57	61	153.1	157.4	495.74	450.84	3.63	2.55
5	100.02	88	93	62	68	144.2	144.1	510.84	453.22	4.08	2.72
6	100.19	94	97	64	73	147.7	147.1	489.54	462.26	3.81	2.72

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 (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN BASTERDAY Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 11/12/03
 Approving Laboratory Official: KEN WEBSTER Date: 11/24/03

21

Vehicle: 2004 FORD MOTOR CO. MUSTA NUMBER: 040201
 Make: FORD
 Model: F-150 XL TRUCK
 Body Style: 2 DR PU TRUCK
 Front Cold Tire Pressure: 262 (Kpa)
 Rear Cold Tire Pressure: 262 (Kpa)

Transportation Research Center, Inc.
 10920 State Route 347
 East Liberty, Ohio 43319
 (937) 666-2011 www.trcpgy.com

Date Tested: 11/03/03

DATA SHEET 26 - HEATING SNUBS AT GVWR

Testing Conditions: INV DATA, Section 0050, 11/03/03, 15:07:42

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 IBT for first snub is 55-65°C
 Maintain 3.0 m/s² deceleration
 Vehicle Must stay in lane of 1.5m

SNUB	AVG. DECEL (m/sec²)	Time Between Snubs (second)	AVG. PEDAL FORCE (N)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	INIT SPD (Kph)
1	3.42	NA	40.74	64	64	52	58	120.42
2	2.92	47	37.34	116	123	86	96	120.90
3	3.91	45	35.11	158	170	119	131	119.58
4	3.22	45	35.44	188	204	152	166	120.74
5	3.25	45	31.11	215	233	189	200	119.75
6	3.04	45	29.45	236	257	218	229	119.58
7	2.67	45	31.38	251	273	238	249	121.07
8	2.79	47	36.89	269	290	259	271	120.57
9	2.81	47	37.58	280	302	267	280	120.50
10	2.98	47	37.60	291	310	280	311	119.96
11	2.78	45	35.64	306	323	296	327	120.50
12	2.76	45	37.08	314	329	308	333	120.74
13	2.79	45	36.25	324	333	319	334	120.73
14	2.88	45	37.53	319	338	311	338	120.10
15	2.47	45	35.38	324	346	345	341	118.94

STOP

DRIVER VEHICLE SNUB COMMENTS

1 Wheel Lock-Up - Direction of Stop - Stay in Lane:

SNUB	WHEEL LOCK-UP	DIRECTION OF STOP	STAY IN LANE
1	NOX	EAST	YES
2	NOX	SOUTH	YES
3	NOX	SOUTH	YES
4	NOX	SOUTH	YES
5	NOX	WEST	YES
6	NOX	WEST	YES
7	NOX	NORTH	YES
8	RR SQUARE	NORTH	YES
9	RR SQUARE	NORTH	YES
10	NOX	NORTH	YES
11	NOX	EAST	YES
12	NOX	SOUTH	YES
13	RR WHEEL TACK OFF	SOUTH	YES
14	NOX	SOUTH	YES
15	NOX	WEST	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN EASTERDAY

Observer: WONE

Recorded Data Processed by: CHUCK JENKINS

Date: 11/12/03

Approving Laboratory Official: KEN WEBSTER

Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO NHTSA NUMBER: C40201

Make: FORD

Model: F-150 XL TRUCK

Body Style: 2 DR PU TRUCK

Transportation Research Center, Inc.

10823 State Route 347

East Liberty, Ohio 43016

(937)666-2011 www.trcpg.com

Front Cold Tire Pressure: 262 (Kpa)

Date Tested: 11/02/03

Rear Cold Tire Pressure: 262 (Kpa)

DATA SHEET 27 - HOT PERFORMANCE AT GVWR

Testing Conditions: INV DATA, Section 0095, 11/02/03, 15:19:09

Schedule:

Make 2 stops from 100 kph

Pedal Force: 1st stop is done with an average force not greater than the average recorded in the shortest GVWR Cold Effectiveness stop.
2nd stop is done with a force not greater 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: 2
Initial speed of stop: 99.96 (kph)
Actual distance of stop: 33.4 (meter)
Average pedal force: 394.8 (N)

Performance Requirements:

Stop Number 1 must be equal or less than: 82.3 (meter)

In addition the stopping distance for at least one of the of the two hot stops must be equal or less than: 89 (meter)

STOP	INIT SPD (kph)	LEFT	RIGHT	LEFT	RIGHT	ACTUAL DISTANCE (meters)	CORRECTED DISTANCE (FEAR 199) (meters)	MAX.	AVG.	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
		FRONT IBT (°C)	FRONT IBT (°C)	REAR IBT (°C)	REAR IBT (°C)			PEDAL FORCE (N)	PEDAL FORCE (N)		
1	99.89	313	340	339	338	56.6	56.7	373.78	224.80	9.50	6.19
2	99.20	354	363	336	335	55.4	56.3	431.85	287.21	9.52	6.34

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

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN EASTERDAY Observer: NONE

Recorded Data Processed by: CHUCK JENNINGS

Date: 11/12/03

Approving Laboratory Official: KEN WEBSTER

Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO. NHTSA NUMBER: C40201
 Make: FORD
 Model: F-150 XL TRITON
 Body Style: 2 DR PU TRUCK
 Front Cold Tire Pressure: 262 (kpa)
 Rear Cold Tire Pressure: 262 (kpa)

Transportation Research Center, Inc.
 10920 State Route 347
 East Liberty, Ohio 41719
 (937)666-2011 www.trcpg.com

DATA TESTED: 11/03/03

DATA SHEET 28 - BRAKE COOLING STOPS AT GVWR

Testing Conditions: INV DATA, Section 8106, 11/03/03, 15:22:17

Schedule:

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

Performance Requirements:

Constant Decel rate: 3.0 m/s/s
 Pedal force adjusted as necessary
 No lock-up allowed longer than 0.1 sec above 15 km/h
 Vehicle must stay in lane of 3.5m

STOP	INIT	AVG.	AVG.	LEFT	RIGHT	LEFT	RIGHT
#	SPD	DECEL	PEDAL	FRONT	FRONT	REAR	REAR
	(kph)	(m/sec ²)	FORCE	1BT	1BT	1BT	1BT
			(N)	(°C)	(°C)	(°C)	(°C)
1	53.74	2.58	41.72	311	329	286	283
2	50.24	2.61	45.92	271	283	232	246
3	49.97	2.65	42.61	234	240	184	210
4	49.74	2.85	38.78	207	212	171	188

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

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: KAREN EASTERDAY Observer: MONT
 Recorded Data Processed by: CHUCK JENKINS Date: 11/12/03
 Approving Laboratory Official: KEN WEBSTER Date: 11/14/03

Vehicle: 2004 FORD MOTOR CO. NETSA NUMBER: C40201 Transportation Research Center, LLC.
 Make: FORD 10620 State Route 347
 Model: F-150 XL TRUCK East Liberty, Ohio 43124
 Body Style: 1 DR PU TRUCK (937)664-2011 www.trcpg.com
 Front Cold Tire Pressure: 262 kPa:
 Rear Cold Tire Pressure: 262 kPa:
 DATA TESTED: 11/03/03

DATA SHEET 29 - RECOVERY PERFORMANCE AT GVWR

Testing Conditions: INV DATA, Section 0105, 11/03/03, 15:29:22

Weather Conditions: 74°F Wind: 14 mph 193° Start Odo.: 494 End Odo.: 511

Schedule:

Make 2 stops from 100 kph

Pedal force: Both stops are performed with an average force not greater 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: 72.0 (meter)
 Lower limit of corrected stopping distance: 36.9 (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: Stop2

Initial speed of stop: 99.96 (kph)

Actual distance of stop: 53.4 (meter)

Average pedal force: 394.5 (N)

STOP	SPD	LEFT		RIGHT		ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
		FRONT	REAR	FRONT	REAR					DECEL	DECEL
#	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec²)	(m/sec²)
1	100.31	190	199	162	171	58.7	58.4	391.30	239.11	10.06	6.93
2	99.67	229	243	199	205	53.1	53.5	463.72	279.28	10.58	6.25

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: KAREN BASTERDAY Observer: NONE

Recorded Data Processed by: CHUCK JENKINS Date: 11/13/03

Approving Laboratory Official: KEN WEBSTER Date: 11/14/03

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

VEHICLE: 2004 Ford F150 XL Triton NHTSA NO.: C40201 DATE: 11/05/03

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	None
RR	Normal Appearance & Color	RR	None
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: K. Easterday

DATA SHEET 30 (Part 2 of 5)
TEST COMPLETION INSPECTION (\$7.17)

VEHICLE: 2004 Ford F150 XL Triton; NHTSA NO.: C40201; GVWR: 3016 kg
MASTER CYLINDER RESERVOIR:

DATE	11/04/03	Requirements	Pass	Fail
Reservoir Compartments (\$5.4.1)				
(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 (\$5.4.2)				
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				
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)	740 ml	Shall have total minimum capacity for entire reservoir for displacement resulting from all subsystem wheel cylinders or caliper pistons moving from new lining to full worn condition as above.	X	
Fluid displaced from new to worn linings (ALL linings)	323.7 ml*			
*Value calculated from Data Sheet 31				

Comments: None

DATA SHEET 30 (Part 3 of 5)
TEST COMPLETION INSPECTION (S7.18)

VEHICLE: 2004 Ford F150 XL Triton; NHTSA NO.: C40201; GVWR: 3016 kg

MASTER CYLINDER RESERVOIR:

DATE	11/04/03	Requirements	Pass	Fail
Master Cylinder Piston Displacement(S5.4.2) [If Common Reservoir Supply - continued from previous page]				
Fluid displaced by three strokes of master cylinder piston for Primary (Subsystem No. 1)	37ml	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)	64 ml			
Fluid displaced per stroke, Primary	12.3 ml			
Fluid displaced per stroke, Secondary	21.3 ml			
Fluid available in partial compartment Subsystem No. 1	81 ml			
Fluid available in partial compartment Subsystem No. 2	77 ml		X	
Brake Power Unit Reservoir (S5.4.2)				
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 or accumulators to normal operating pressure <u>plus</u> displacement when wheel cylinders or caliper pistons move from new lining to full worn condition as above.	NA	
Reservoir Labeling (S5.4.3)				
Exact copy of reservoir label: On master cylinder reservoir cap: <u>WARNING, CLEAN FILLER CAP BEFORE REMOVING. USE ONLY DOT 3 BRAKE FLUID FROM A 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 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	
	No			

Comments: None

Technician: K. Easterday

DATA SHEET 30 (Part 4 of 5)
TEST COMPLETION INSPECTION (\$7.18)

VEHICLE: 2004 Ford F150 XL Triton; NHTSA NO.: C40201; DATE: 11/04/03
BRAKE SYSTEM WARNING INDICATOR (\$5.5)

CONDITION	ANSWER	REQUIREMENTS	PASS	FAIL
Brake Systems Indicator Lamp Function Check (\$5.5.2) (Bulb and systems check)				
Describe location of brake indicator lamp: Lower left quadrant of the instrument cluster.	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?	Yes			
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 (\$5.5.1) DURATION (\$5.5.3) FUNCTION (\$5.5.4)				
CONDITION	Light ON?	REQUIREMENT	PASS	FAIL
A. In event of hydraulic leak (1) On or before appearance of pressure differential of 218 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.	Yes			
(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</u> and a condition in (a) above exists?	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? (\$5.4.4)	NA			
Indicator lamps remain activated as long as condition exists - ignition "on", and engine on or off? (\$5.5.3 DURATION)	Yes			
Visual warning - continuous or flashing? Audible warning - continuous or flashing?	Yes-Cont. No			

Comments: None.

Technician: K. Easterday

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

VEHICLE: 2004 Ford F150 XL Triton; NHTSA NO.: C40201; DATE: 11/04/03

BRAKE SYSTEM WARNING INDICATOR LABELING (\$5.5.5)

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 (BRAKE) & Approx. 2.0 mm (ABS)</u>	No		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"? <u>"BRAKE". w/one symbol.</u>	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 _____	NA	X	
2. Gross pressure loss per S5.5.1(a)(2), does Indicator say "Brake Pressure"? Record wording _____	NA		
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>	Yes		
4. Parking brake per S5.5.1(c), does indicator say "Park" or "Parking Brake"? Record wording _____	Yes		
5. Brake lining wear-out per S5.5.1(d), does indicator say "Brake Wear"? Record wording _____	NA		
6. For any other function? If yes, Record _____	NA		

Comments: None

Technician: K. Easterday

DATA SHEET 31 (Part 1 of 2)

CALCULATION OF MINIMUM RESERVOIR VOLUME REQUIREMENTS

VEHICLE: 2004 Ford F150 XL Triton; NHTSA NO.: C40201; DATE: 11/05/02

BRAKE		LINING		
LOCATION	TYPE	DESCRIPTION	MINIMUM THICKNESS	THICKNESS TO FULLY WORN (1) mm*
Left Front	Drum	Leading	Pre-test 13.92 mm	0
		Primary	Post Test 11.96 mm	
		Inboard X	Δ 1.96 mm	
	Disc X	Trailing	Pre-test 13.92 mm	0
		Secondary	Post Test 12.70 mm	
		Outboard X	Δ 1.22 mm	
LINING CLEARANCE:		Diametrical (2): N/A	Inboard – Approx. 0 mm	Outboard – Approx. 0 mm
WHEEL CYLINDER DIAMETER (3): N/A		CALIPER PISTON DIAMETER (3): 53.98 mm (x2 pistons)		
SHOE CAGE DIAMETER (4): N/A ; CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C.: N/A				
Right Rear	Drum	Leading	Pre-test 11.71 mm	0
		Primary	Post Test 11.05 mm	
		Inboard X	Δ 0.66 mm	
	Disc X	Trailing	Pre-test 11.69 mm	0
		Secondary	Post Test 11.33 mm	
		Outboard X	Δ 0.56 mm	
LINING CLEARANCE:		Diametrical (2) – N/A	Inboard – Approx. 0 mm	Outboard – Approx. 0
WHEEL CYLINDER DIAMETER (3): N/A		CALIPER PISTON DIAMETER (3): 51.00 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	RR - X
CIRCUIT #2 CONSISTS OF:	LF - X	LR	RF - X	RR
(1) MFRS. RECOMMENDATIONS – Not Available. Default to zero.				
(2) REAR - TOP OF RIVET HEADS – N/A. FRONT - 1/32 INCH – N/A. MFRS. DATA – Not Available.				
(2) DRUM BRAKES, MEASURED AT HORIZONTAL CENTERLINE: N/A				
(3) MFRS. DATA: Not Available.				
(4) RESET POSITION: N/A				

Comments: Manufacturer's new lining thickness: Not Available.

Technician: K. Easterday

DATA SHEET 31 – SECTION CONTINUED (Part 2 of 2)

Vehicle: 2004 Ford F150 XL Triton;

NHTSA No.: C40201;

Date: 11/13/03

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:
(Front)

$$V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$$
$$\begin{aligned}\Delta t_i &= 13.92 \text{ mm} \\ \Delta t_o &= 13.92 \text{ mm} \\ t_{ic} + t_{oc} &= 0 \text{ mm} \\ d &= 50.98 \text{ mm} \\ V_r &= (13.92 + 0 + 13.92 + 0) \frac{\pi (50.98)^2}{4} \\ &= 27.84 (2041.22) \\ &= 56827.5 \text{ mm}^3 = 56.8 \text{ ml (x2 pistons)} = 113.7 \text{ ml}\end{aligned}$$

Disc Brake:
(Rear)

$$V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi d^2}{4}$$
$$\begin{aligned}\Delta t_i &= 11.71 \text{ mm} \\ \Delta t_o &= 11.89 \text{ mm} \\ t_{ic} + t_{oc} &= 0 \text{ mm} \\ d &= 51.00 \text{ mm} \\ V_r &= (11.71 + 0 + 11.89 + 0) \frac{\pi (51)^2}{4} \\ &= 23.6 (2042.82) \\ &= 48210.6 \text{ mm}^3 = 48.2 \text{ ml}\end{aligned}$$

For System 1 (RR, LR)

$$V_{r1} = 48210.6 \text{ mm}^3 + 48210.6 \text{ mm}^3$$

$$V_{r1} = 96421.2 \text{ mm}^3 = (96.4 \text{ ml})$$

For System 2 (LF, RR)

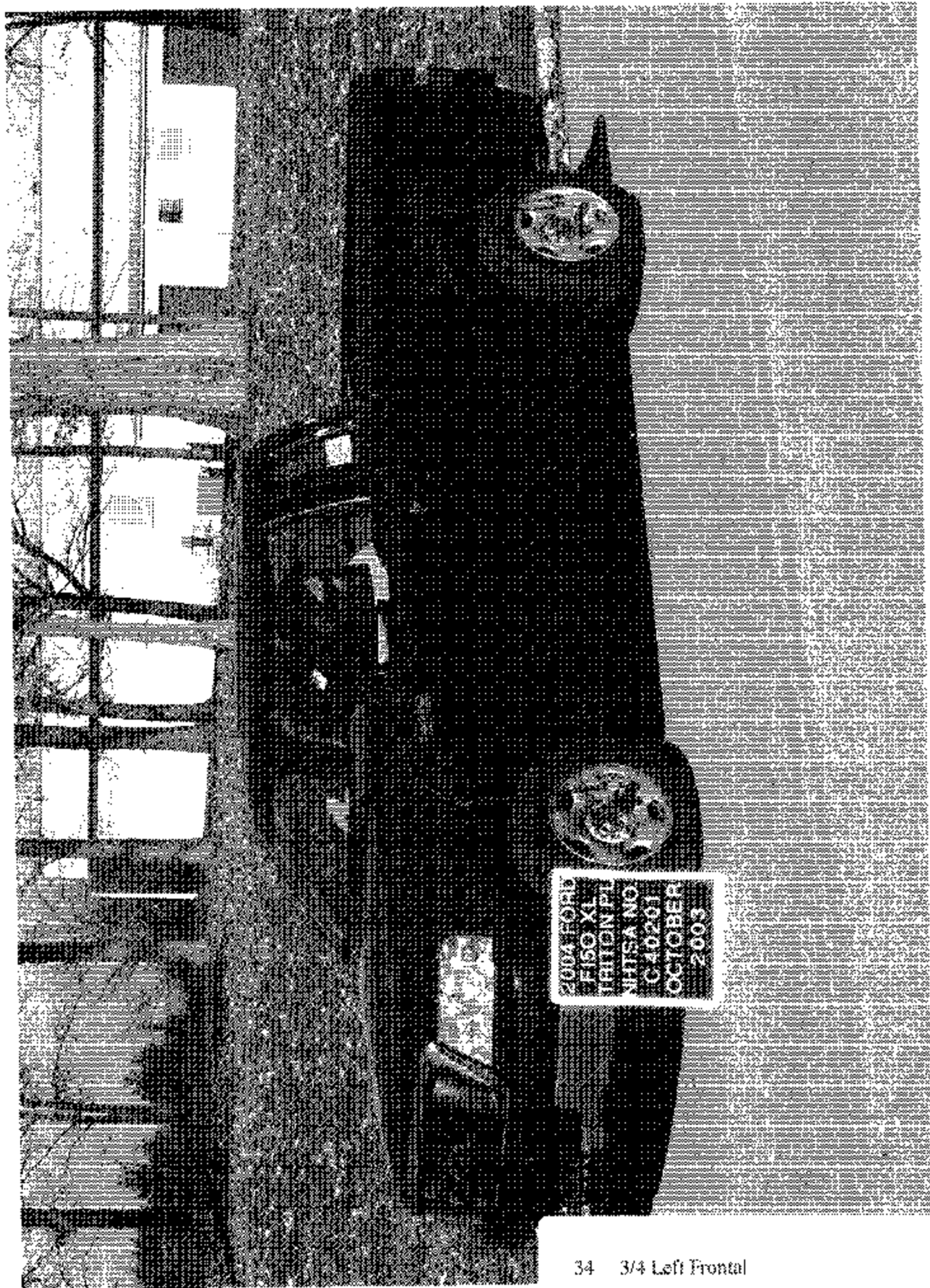
$$V_{r2} = 113655.0 \text{ mm}^3 + 113655.0 \text{ mm}^3$$

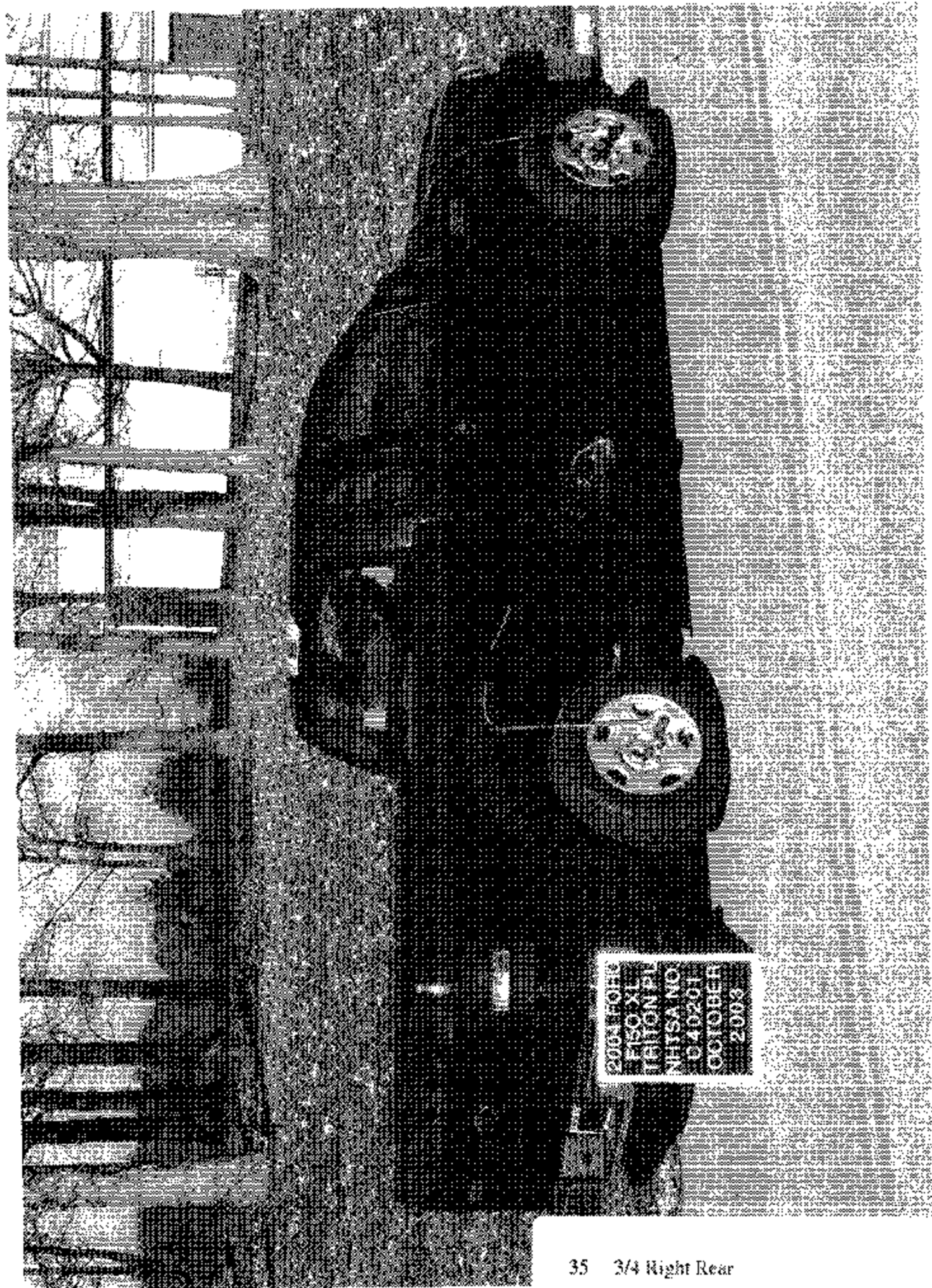
$$V_{r2} = 227310.0 \text{ mm}^3 = (227.38 \text{ ml})$$

$$\text{TOTAL VOLUME REQUIRED} = V_t = V_{r1} + V_{r2} = 323731.2 \text{ mm}^3 = 323.7 \text{ ml}$$

SECTION 6.0

Photographs



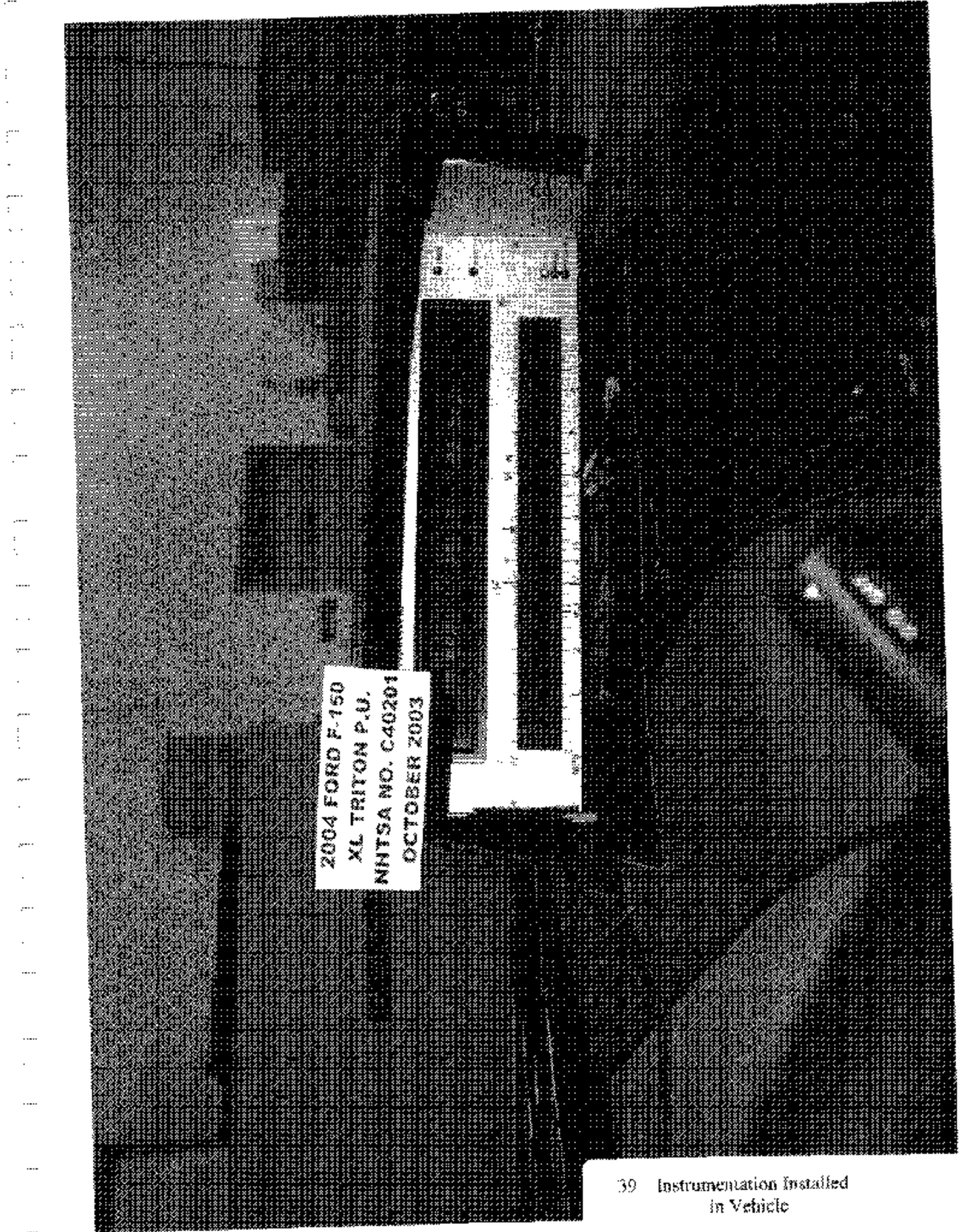


2004 FORD F-150
XL TRITON P.U.
NHTSA NO. C40201
OCTOBER 2003

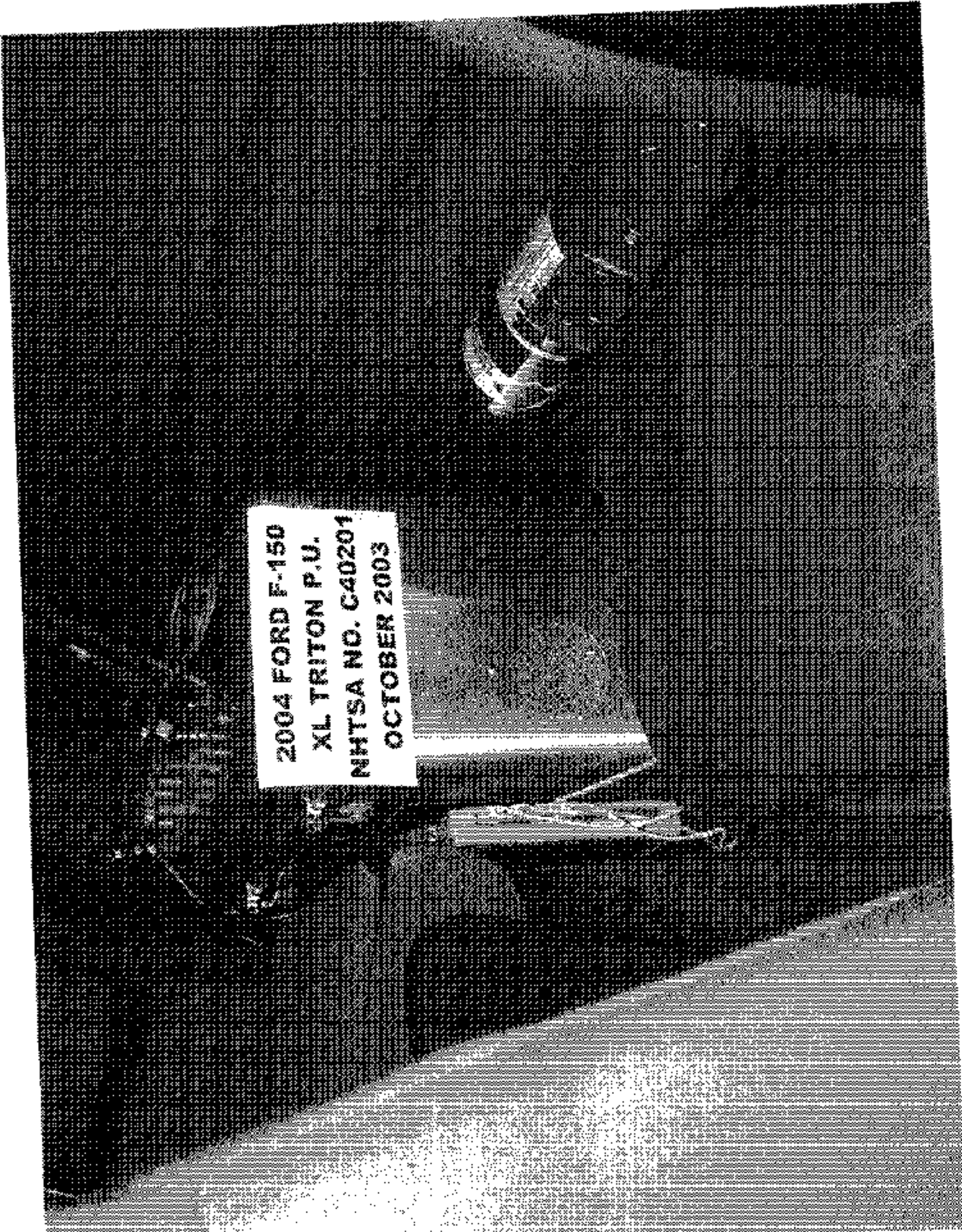
LEFT
FRONT

2004 FORD F-150
XL TRITON P.U.
NHTSA NO. C40201
OCTOBER 2003

RIGHT
REAR



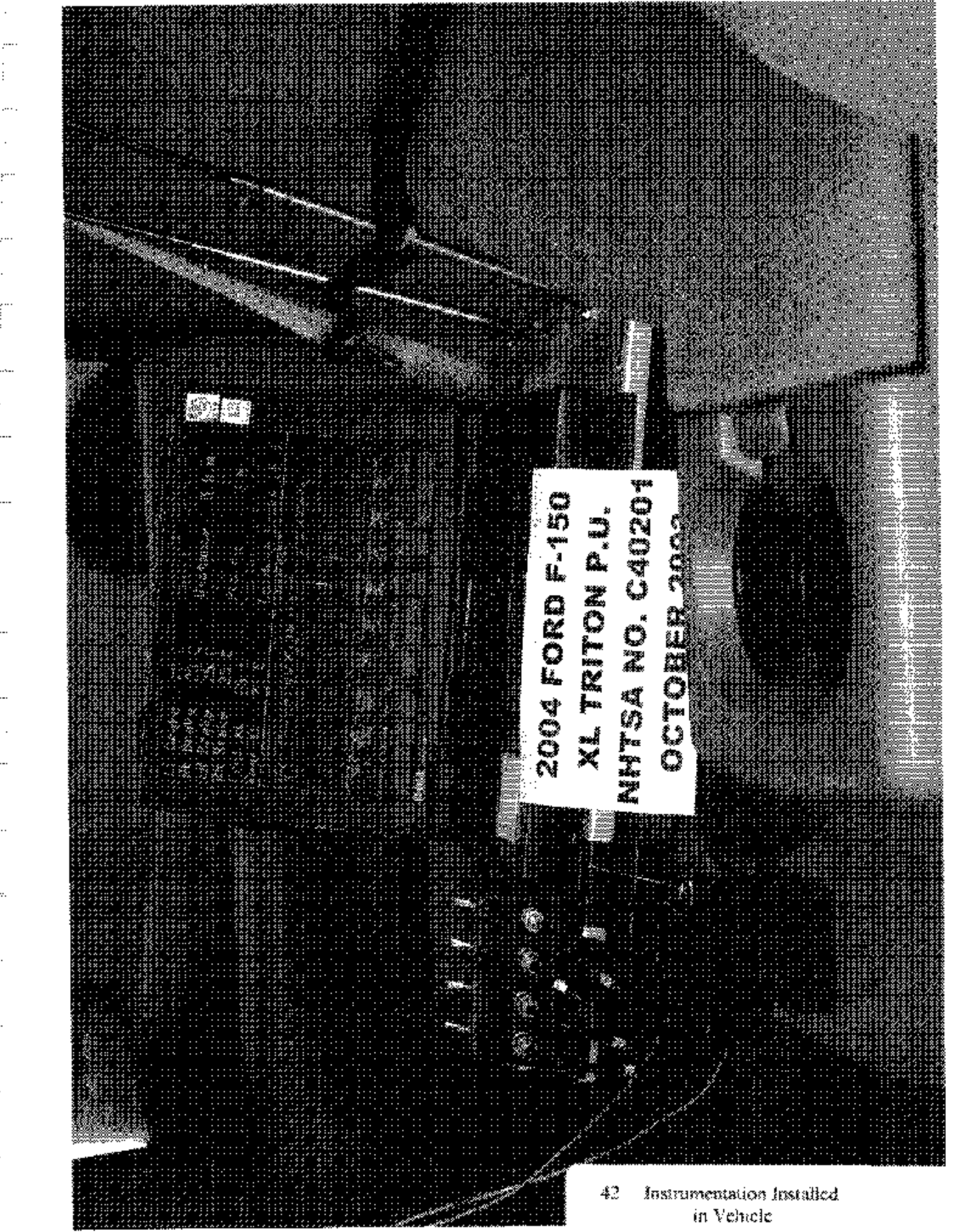
2004 FORD F-150
XL TRITON P.U.
NHTSA NO. C40201
OCTOBER 2003



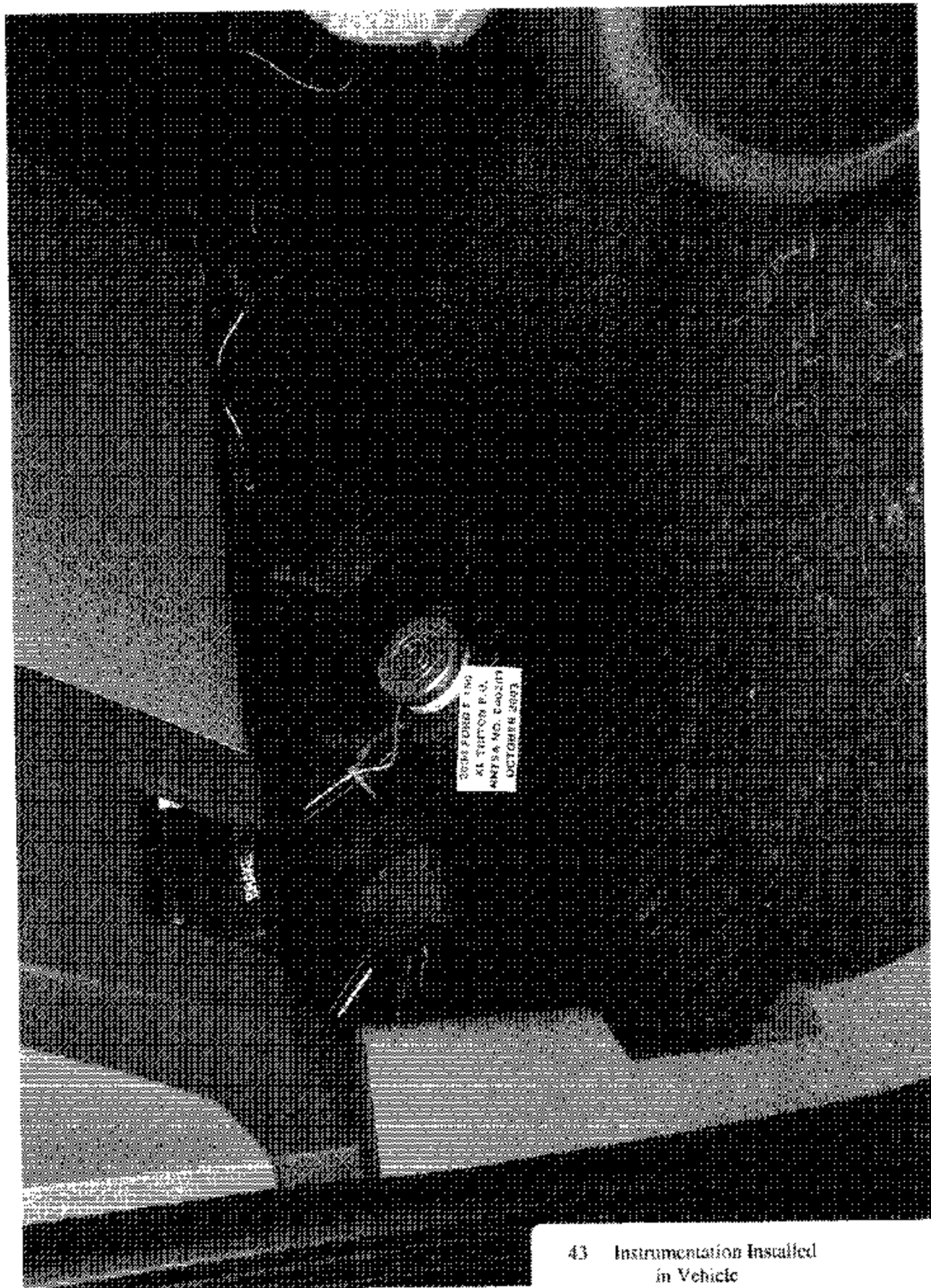
2004 FORD F-150
XL TRITON P.U.
NHTSA NO. C40201
OCTOBER 2003



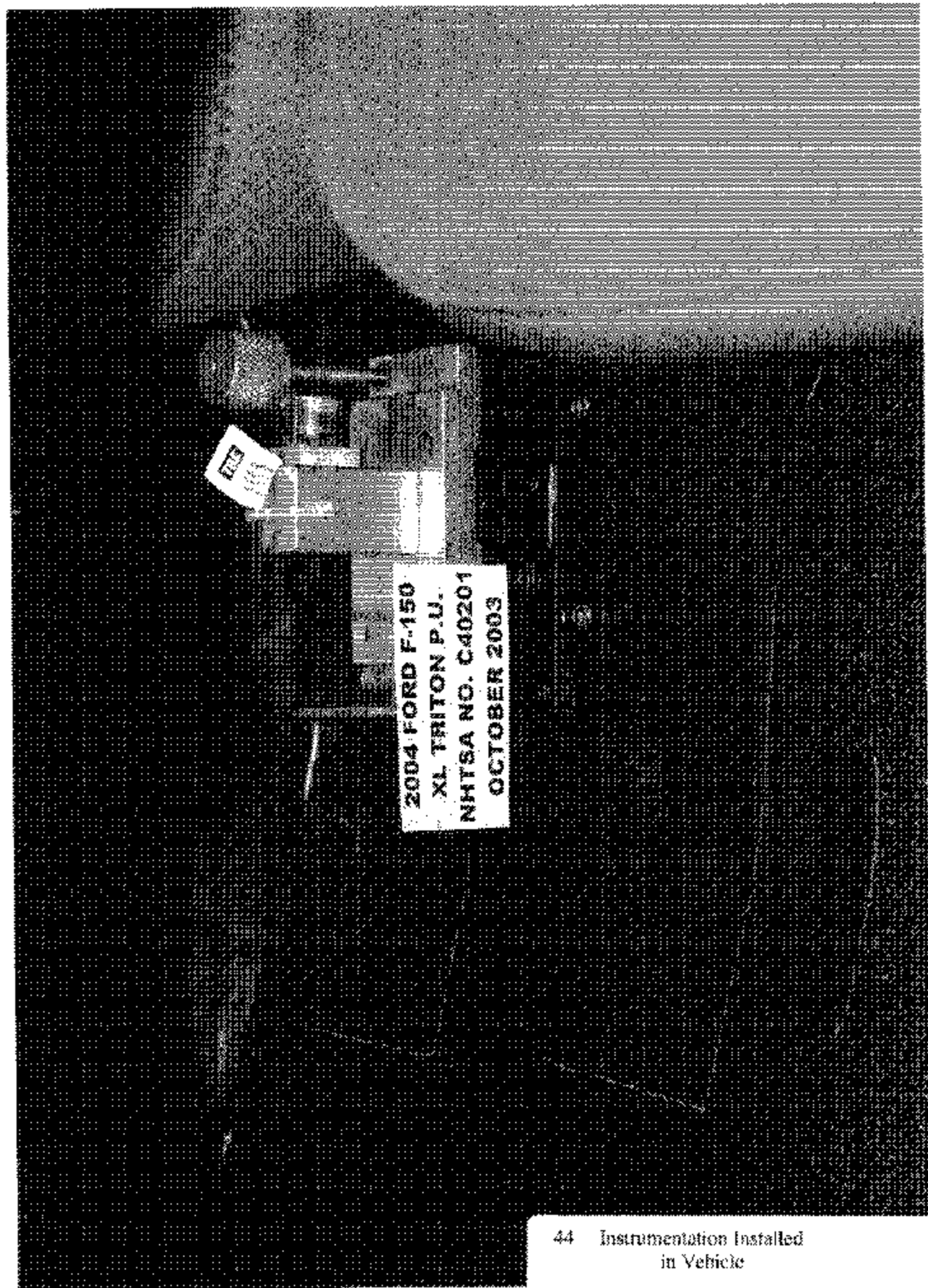
2004 FORD F-150
XL TRITON P.U.
NHTSA NO. C40201
OCTOBER 2003

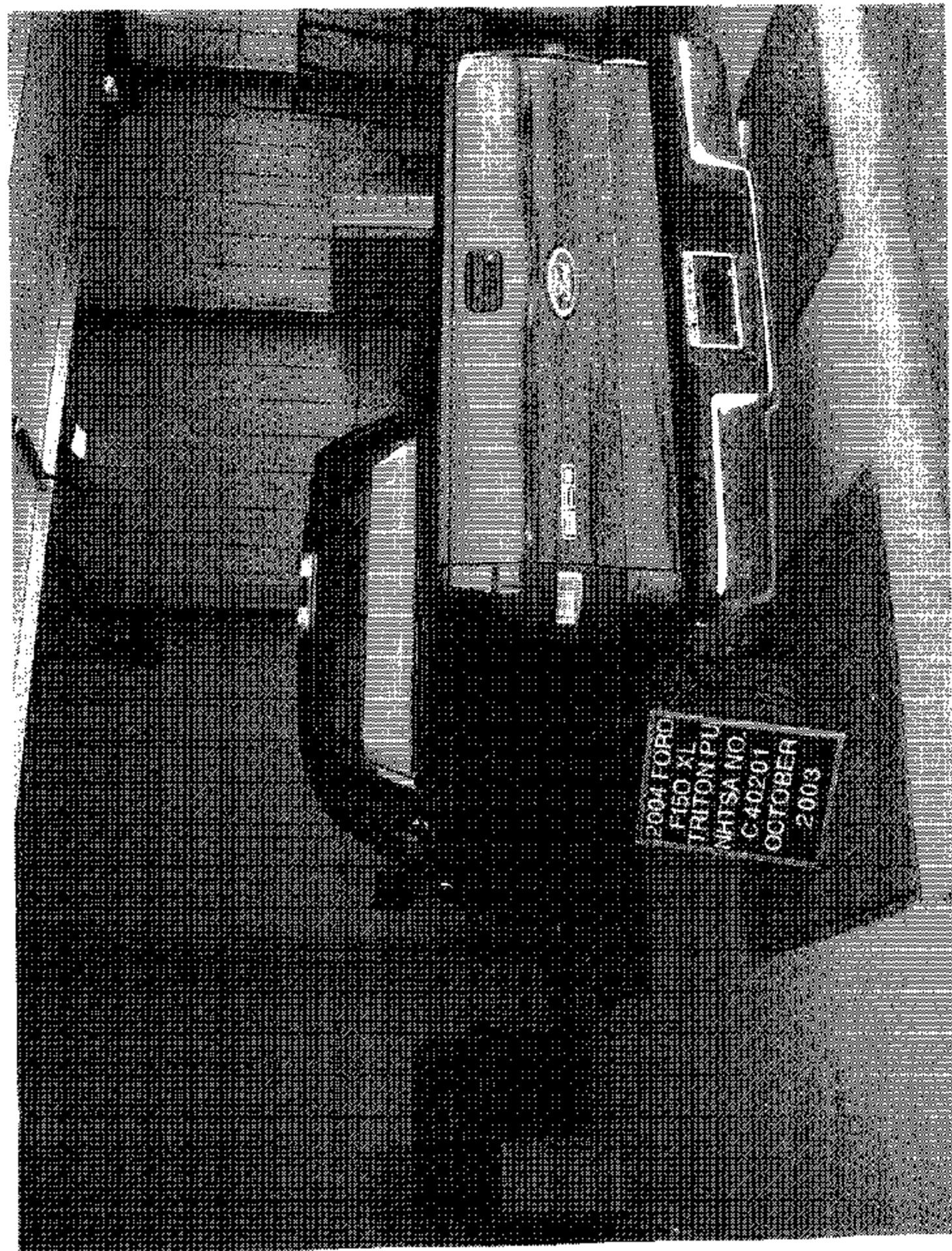


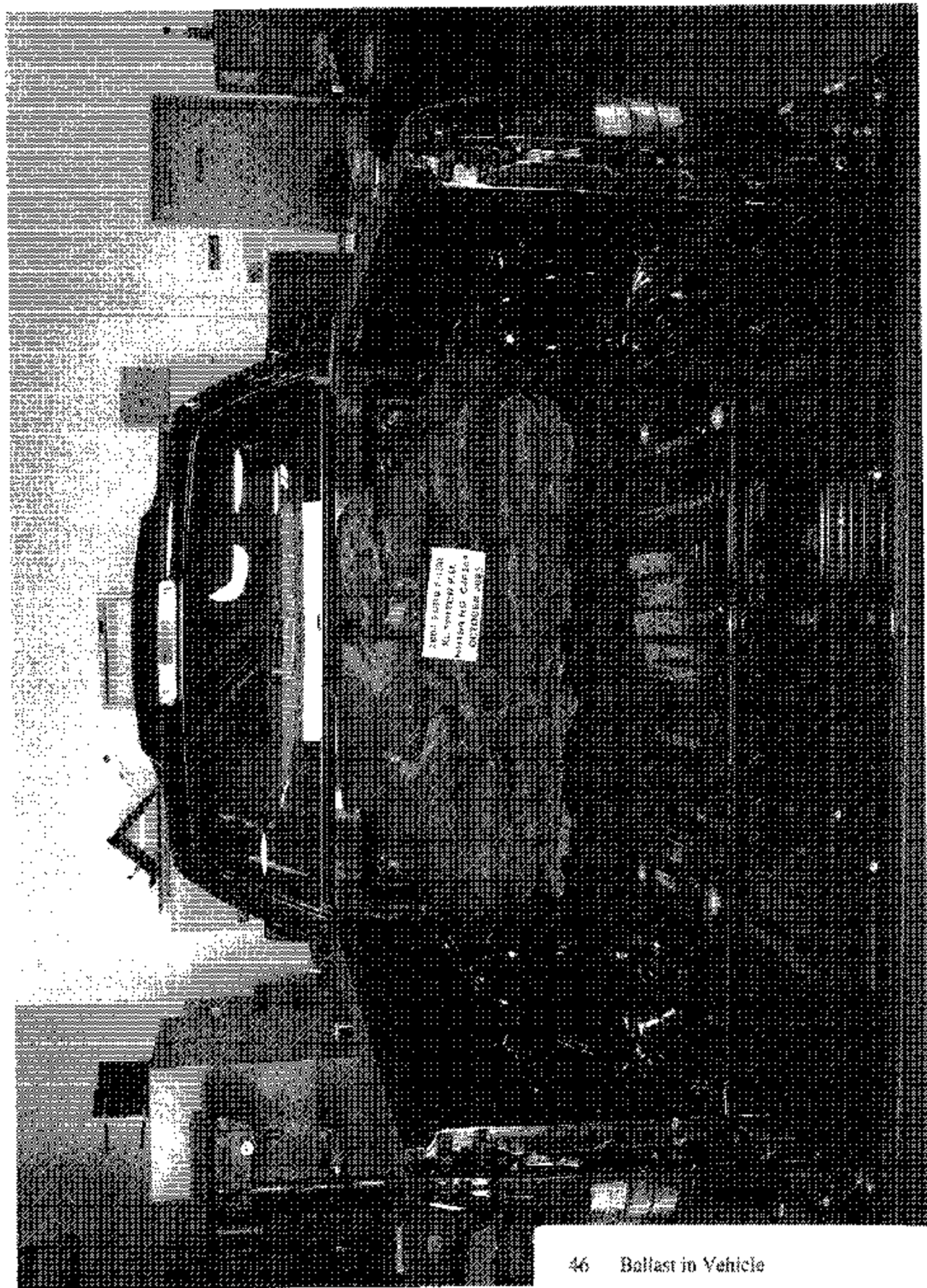
2004 FORD F-150
XL TRITON P.U.
NHTSA NO. C40201
OCTOBER 2003

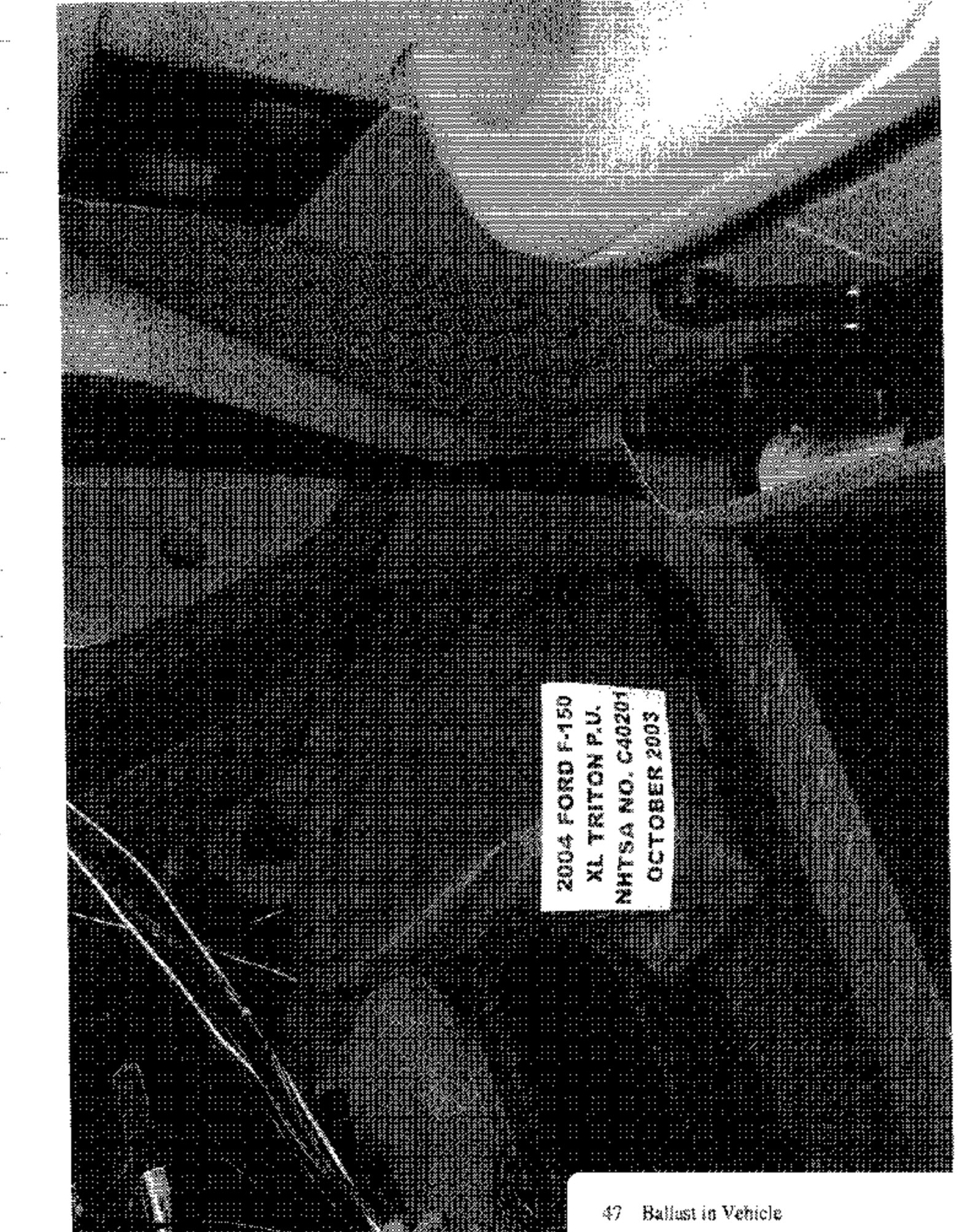


43 Instrumentation Installed
in Vehicle



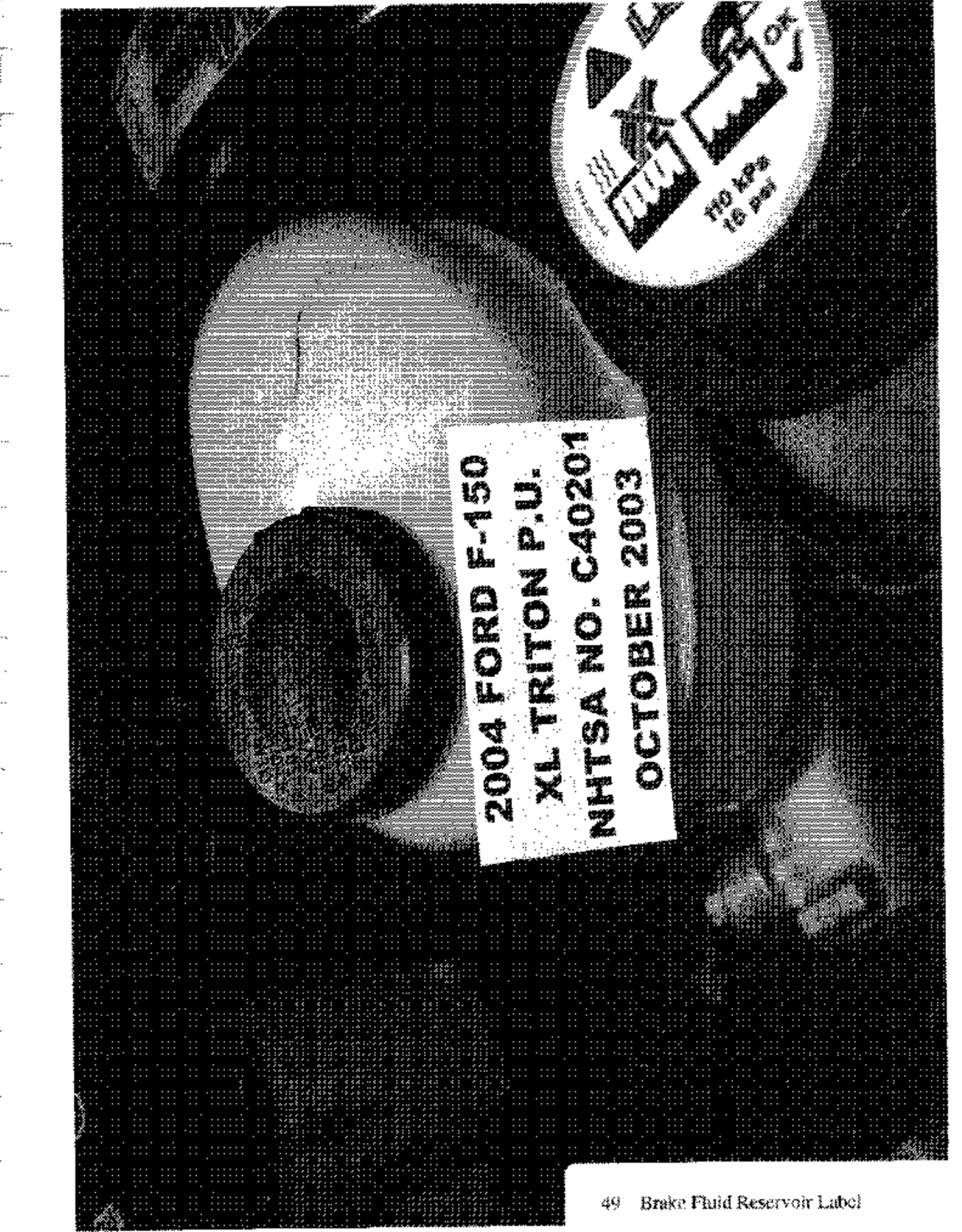






2004 FORD F-150
XL TRITON P.U.
NHTSA NO. C40201
OCTOBER 2003

**2004 FORD F-150
XL TRITON P.U.
NHTSA NO. C40201
OCTOBER 2003**

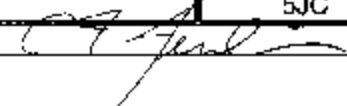


**2004 FORD F-150
XL TRITON P.U.
NHTSA NO. C40201
OCTOBER 2003**

7.0 INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)

VEHICLE: 2004 Ford F150 XL Triton; NHTSA NO.: C40201; DATE: 10/28/03

INSTRUMENT	SERIAL NUMBER	CALIBRATION DATE	NEXT CALIBRATION
Data Acquisition System - Link DAS 2030	975016	10/23/03	10/23/04
Computer - Dell Latitude/Link Engrg.	TRC-43207	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 - Accusplit	SW ST03	11/05/02	11/05/03
Tire Pressure Gauge - Ashcroft	AG-05	11/05/02	11/05/03
Voltage Multimeter - Dana 4300	M-108639	11/16/02	11/16/03
Pedal Force Transducer - Sensor Devel.	LC-169755	Each Test	Each Test
Asst. Pipe-Handle Steel Weights - Ohaus	LB-0002	05/12/03	05/12/04
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) 141A	A-1055763	Each Test	Each Test
Fifth Wheel - ADAT DSR-06 Radar	140.0119	Each Test	Each Test
Wind Velocity/Direct. - Davis Model 6410	WXB308193A	09/15/03	09/15/04
Ambient Temp. Gage - Davis Model 6320	WXB308193A	09/15/03	09/15/04
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 - Toledo/Mettler	7561RD4011 SN 5225831- 5JC	10/28/03	01/28/04

QUALITY ASSURANCE 

DAILY CALIBRATIONS (1 of 3)

Vehicle: 2004 Ford F-150 XL Triton

NHTSA No.: C40201

Deceleration Calibration Data for Unit 4350

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"
10/29/2003	11:14:37	0.00	9.82
10/30/2003	12:32:14	-0.01	9.83
10/30/2003	16:57:37	0.00	9.72
10/31/2003	10:07:47	-0.03	9.81
10/31/2003	16:33:44	0.03	9.79
11/3/2003	9:26:49	0.00	9.69
11/3/2003	15:41:47	-0.05	9.74
11/4/2003	11:59:49	0.00	9.81

PRE-TEST CAL.

POST-TEST CAL.

Pre-Test Linearity Check 10/29/03

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 11/04/03

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 4350

Desired full scale value is: 1000 m

Allowed deviation is: 3 m

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

"Date"	"Time"	Distance for
"stp"	"stp"	1000 meters
10/29/2003	14:33:25	1000.9
10/30/2003	12:28:22	1001.6
10/30/2003	17:02:57	1000.8
10/31/2003	10:27:57	1001.0
10/31/2003	16:40:11	1001.4
11/3/2003	9:23:01	1001.6
11/3/2003	15:45:30	1001.3

PRE-TEST CAL.

POST-TEST CAL.

DAILY CALIBRATIONS CONTINUED (2 of 3)

VEHICLE: 2004 Ford XL Triton

NHTSA No.: C40201

Wheel Tachometer Calibrations for Unit 4350

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

		'Date' stp	'Time' stp	Zero	@15km/h	Zero	@15km/h	Zero	@15km/h	Zero	@15km/h	
				LF	LF	RF	RF	LR	LR	RR	RR	
Wheel lock detector	While at a standstill, check zeros.	10/30/2003	12:30:29	0.0	18.0	0.0	17.5	0.0	17.6	-1.9	17.9	PRE-TEST CAL.
		10/30/2003	16:58:55	0.0	15.8	0.0	16.1	0.0	17.6	-0.1	17.4	
		10/31/2003	10:29:50	0.0	15.3	0.0	16.0	0.0	17.9	-0.2	17.5	
	Drive vehicle at approx. 15 km/h and engage zero speed switch for each wheel	10/31/2003	16:36:13	0.0	15.9	-0.1	16.9	-0.1	23.9	0.0	18.3	POST-TEST CAL.
		11/03/2003	9:24:50	0.0	15.7	0.0	18.6	-0.1	18.1	-2.2	15.3	
		11/03/2003	15:47:13	0.0	15.0	-0.1	0.1	-0.1	17.9	0.0	17.3	

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 4350

Target shunt calibration is 389 N

Desired recorded value is: 389 N

Desired recorded calibration value is: 500 N

Allowed deviation is: 6.5 N

		'Date' stp	'Time' stp	Zero	Cal Val	
				Force	Force lb	
Service brk. pedal effort	Driver engages a fixed shunt cal switch.	10/29/2003	11:12:15	-0.2	499.1	PRE-TEST CAL.
		10/30/2003	12:21:08	0.6	389.6	
		10/30/2003	16:57:05	-0.6	389.6	
		10/31/2003	10:06:40	0.0	390.2	
		10/31/2003	16:05:07	-0.6	389.6	
		11/3/2003	9:18:43	-0.4	389.7	POST-TEST CAL.
		11/3/2003	15:40:44	-0.6	389.7	
		11/4/2003	13:24:42	-0.3	500.8	

Pre-Test Linearity Check - 10/29/03

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

Post-Test Linearity Check - 11/04/03

Actual	Recorded
Force (N)	Force (N)
0	0
222	223
445	447
498	500

DAILY CALIBRATIONS CONTINUED (3 of 3)

VEHICLE: 2004 F-150 XL Triton

NHTSA No. C40201

Dynamic Speed Calibration for Unit 4350

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
10/29/2003	14:37:31	100.6	36.00
10/30/2003	12:26:12	100.6	36.03
10/30/2003	17:00:46	100.6	N/A
10/31/2003	10:26:06	100.3	36.37
10/31/2003	16:38:18	100.5	36.03
11/3/2003	9:20:53	100.6	36.34
11/3/2003	15:43:38	100.4	36.06

APPENDIX A
Copy of Manufacturer's Sticker



V...ILE T...HIPT...

F-1502004 F-150 4X2 REGULAR CAB
XL 126" WB STYLESIDE
4.6L EFI V8 ENGINE
ELECTRONIC 4-SPD AUTO O/D

VIN 1FTRF12WX4N

A32153EXTERIOR
TRUE BLUE CLEARCOAT
INTERIOR
FLINT CLOTH 40/20/40

www.fordvehicles.com

STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE

- EXTERIOR**
- BLK BAR STYLE GRILLE INSER
 - W/ CHROME SURROUND
 - INTERVAL WIPERS
 - LOCKING REMOVABLE TAILGATE
 - W/ LIFT ASSIST
 - REAR SOLAR TINTED GLASS
 - 17" GREY STYLED STEEL W/HS
 - P235/70R17 BSW A/S TIRES
 - SPARE TIRE & WHEEL LOCK
- INTERIOR**
- AIR CONDITIONING
 - AM/FM STEREO W/ CLOCK
 - BLACK VINYL FLOOR COVERING
 - COVERD VISOR VANITY MIRROR
 - DAY/NIGHT REAR VIEW MIRROR
 - COME LAMP/DUAL MAP LIGHTS
 - 11L STEERING WHEEL
- FUNCTIONAL**
- 130 AMP ALTERNATOR

- 4 PIN TRAILER WIRING
- 26 GALLON FUEL TANK
- AUXILIARY POWER POINT
- CARGO BOX TIE DOWN HOOKS
- FAL SAFE COOLING SYSTEM
- GAS FILLED SHOCK ABSORBERS
- MAINT FREE BATTERY W/SAVER
- MANUAL WINDOW & DOOR LOCKS
- POWER BACK PINPOINT STRINGS
- STABILIZER BAR - FRONT
- SAFETY SECURITY
- ROADSIDE ASSISTANCE
- 4 WHEEL ANTI-LOCK BRAKES
- DUAL AIRBAGS W/PASSENGER DEACT.
- SECURILOCK
- REAR HIGH MOUNT STOP LAMP
- 3R FRT DRIVER & PASS SEAT WARRANTY
- 367.36 BUMPER TO BUMPER

Compare this vehicle to others in the FREE FUEL ECONOMY GUIDE available at the dealer.

CITY MPG**15****Fuel Economy Information****HIGHWAY MPG****19**

Actual Mileage will vary with options, driving conditions, driving habits and vehicle's condition. Estimates reported in EPA indicate that the majority of vehicles with these estimates will achieve:

12 and 18 mpg in the city and between 16 and 22 mpg on the highway.

For more information see
WWW.FUELECONOMY.GOV

2004 F150 PICKUP 2WD
4.6 LITER ENGINE (F.F.S.)
8 CYLINDERS, FUEL INJECTION,
CATALYST,
4-SPD AUTO TRANSMISSION.

Estimated Annual Fuel Cost: \$1367

A RANGE OF FUEL ECONOMY VALUES FOR OTHER VEHICLES CLASSIFIED AS STANDARD PICKUP IS NOT AVAILABLE AT THIS TIME.

**EXTENDED SERVICE PLAN**

Ford Extended Service Plan is the ONLY service contract backed by Ford Motor Company and insured by over 5,400 Ford and Lincoln Mercury Dealers. Ask your dealer for prices and additional details or see our website at www.fordESP.com.

SOLD TO

Graham Ford Inc

Columbus

OH 43216

FAX 614/292-1000

TERMS OF PURCHASE

VIN

1FTRF12WX4NA32153

471 312

NORFOLK

CONVOY CF98

VALUES SUBJECT TO CHANGE WITHOUT NOTICE. FORD MOTOR COMPANY AND ITS AFFILIATES ARE NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS. ©2004 FORD MOTOR COMPANY. ALL RIGHTS RESERVED.

3H211N RB 2X 415 005039 08 21 03

PRICE INFORMATION**STANDARD VEHICLE PRICE****\$21,215.00**

Manufacturer's Suggested Retail Price

OPTIONAL EQUIPMENT

PREFERRED EQUIPMENT PKG. 502A
3.95 RATIO REGULAR AXLE
66.50# GVWR PACKAGE
FRONT LICENSE PLATE BRACKET
SPEED CONTROL
AM/FM STEREO/CLOCK/SINGLE CD

TOTAL VEHICLE & OPTIONS
DESTINATION & DELIVERY

NO CHARGE
NO CHARGE
225.00
235.00

21,675.00
21,795.00

TROPHY CASE

F-Series: Best-Selling Truck
26 Years in a Row

TOTAL MSRP**\$22,470.00**

1FTRF12WX4NA32153



SHIP THROUGH

ITEM#: 47-1110 O/T 2

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 C40201

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.

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 that utilizes the track includes component performance and durability studies, brake tests, aerodynamic studies, fuel economy studies, driveline 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

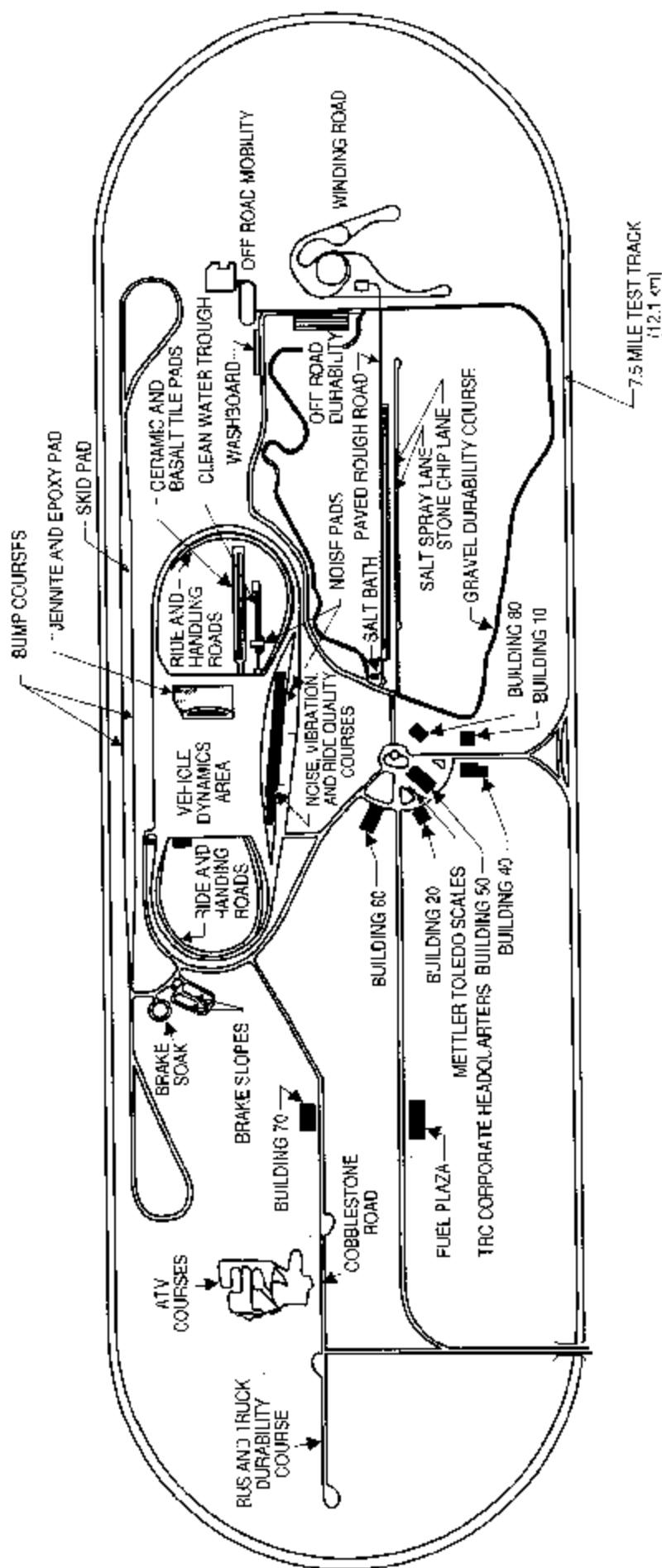
The Skid Pad is a test facility that is utilized primarily for the evaluation of tire and brake systems.

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 g's 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

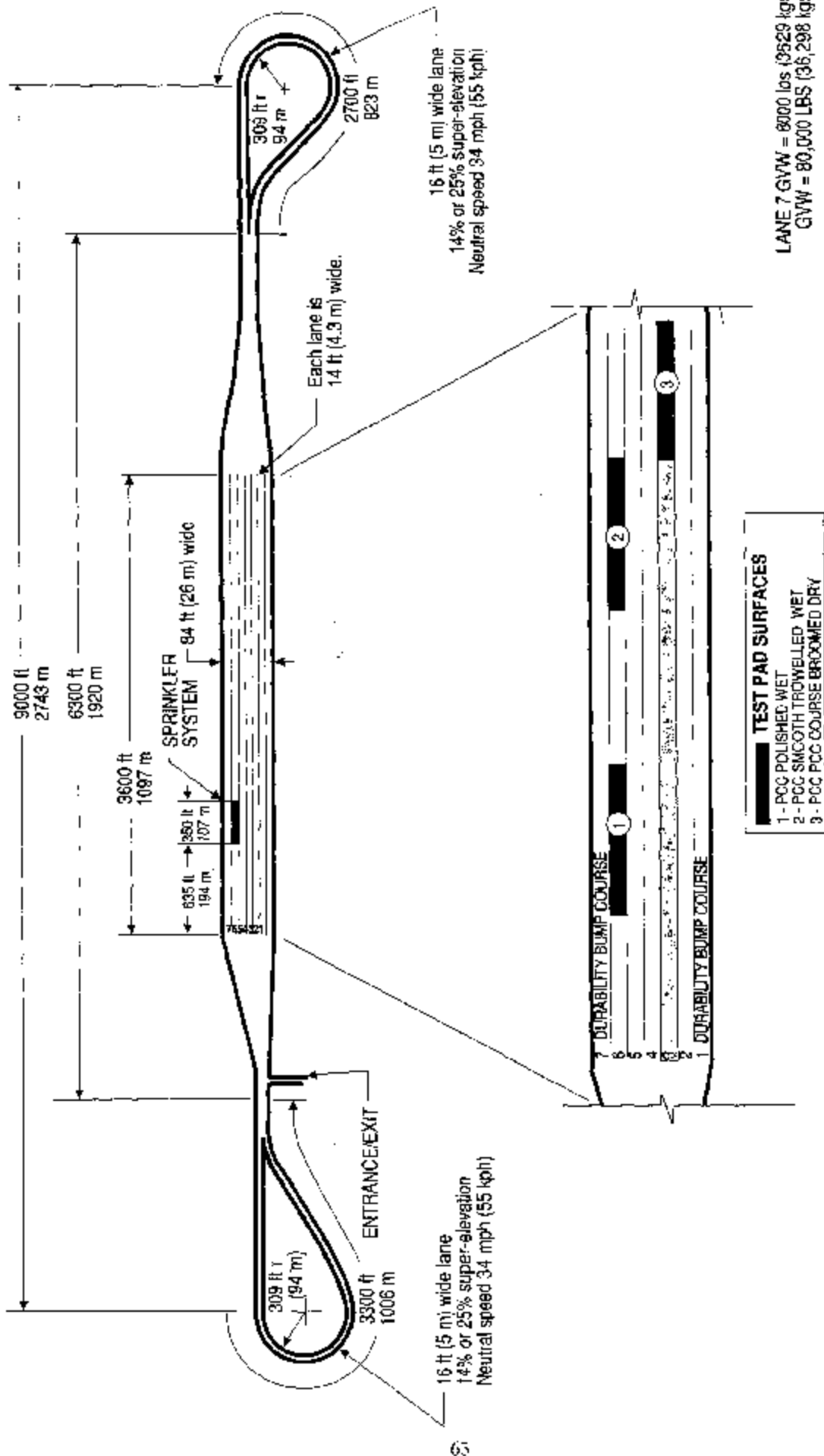


TRANSPORTATION RESEARCH CENTER INC.

FAST LIBERTY CHIC 493-51662

11-5 2963

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



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

LANE 7 GVW = 8000 lbs (3529 kgs)
 GVW = 80,000 LBS (36,298 kgs)

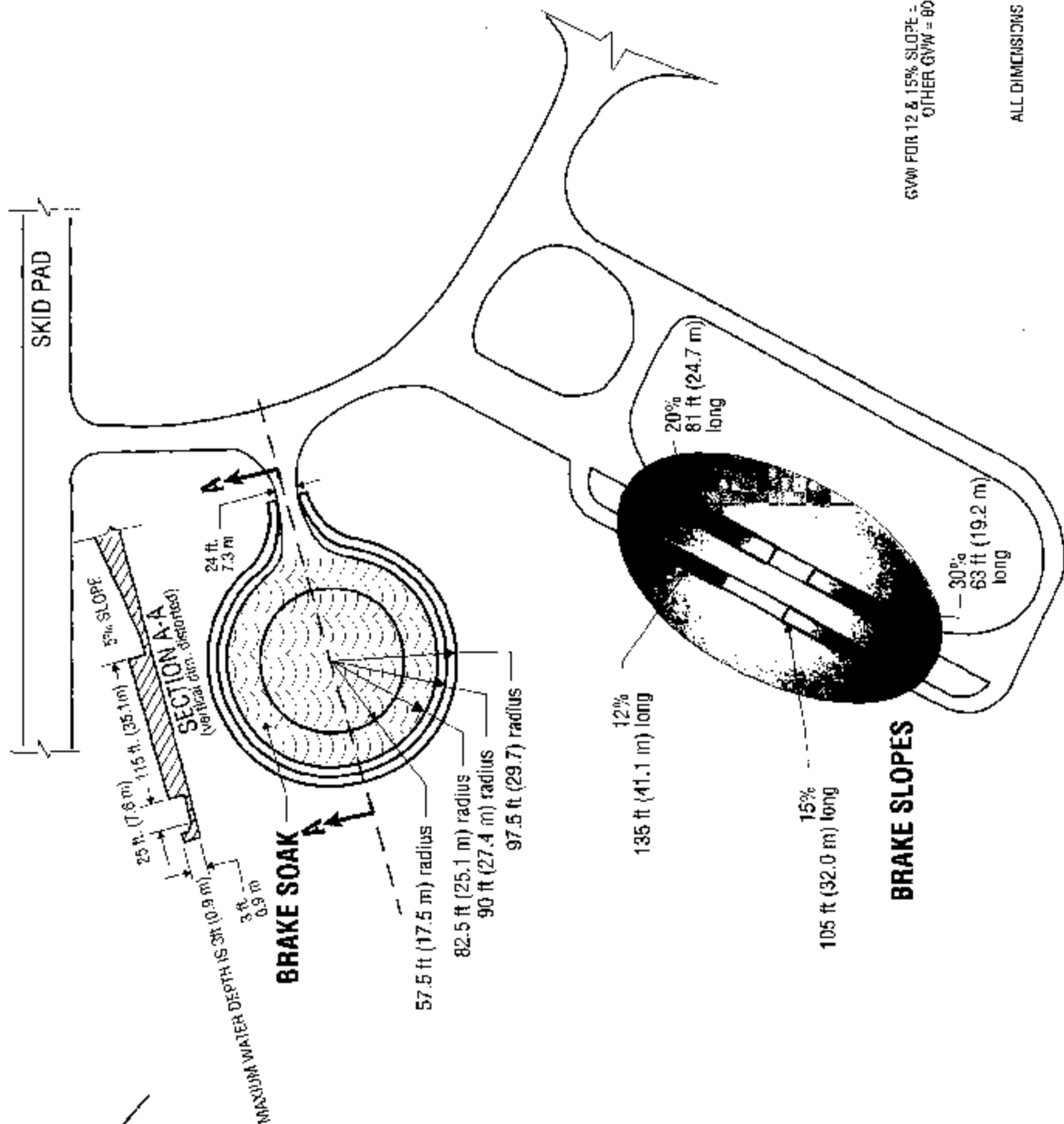
Not to scale
 All dimensions are approximate

TIRC

SKID PAD

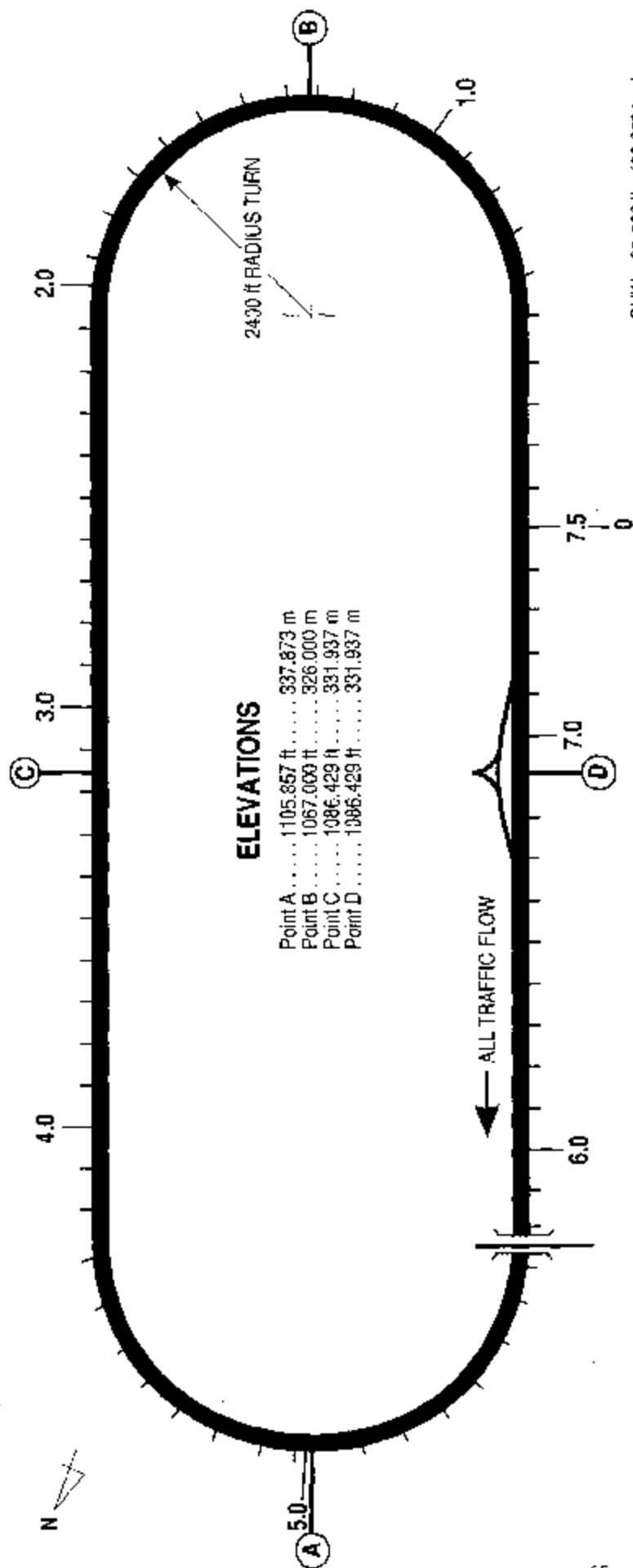
TRANSPORTATION RESEARCH CENTER INC.
 EAST LIBERTY, OHIO 43019-0387

13-0699

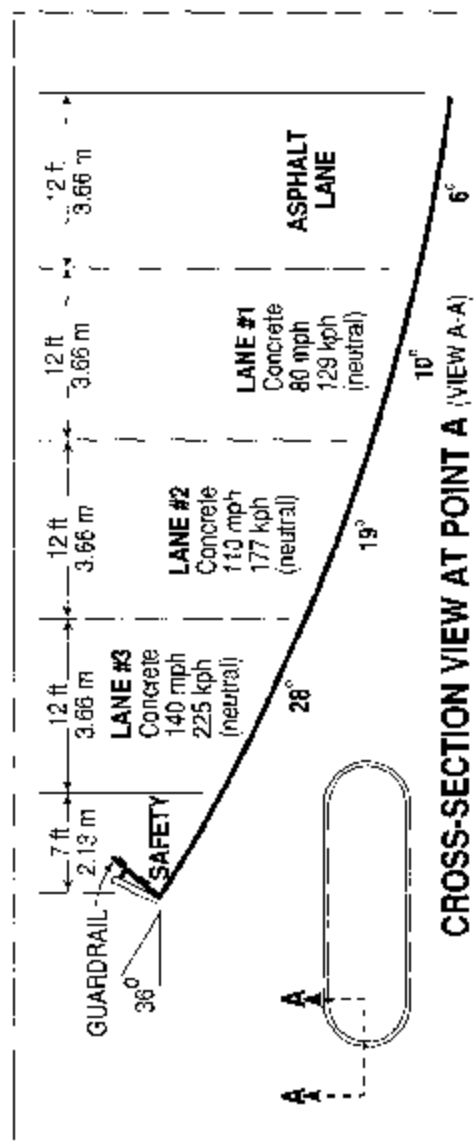


GVW FOR 12 & 15% SLOPE = 4000 lbs (1814 kgs)
OTHER GVW = 80,000 lbs (36,286 kg)

NOT TO SCALE
ALL DIMENSIONS ARE APPROXIMATE



GVW = 80,000 lbs (36,298 kgs)



DISTANCES

Lane 3 7.539 mi 12.133 km
 Lane 2 7.527 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 D947 mi 1.524 km

NOT TO SCALE

7.5-MILE TEST TRACK

TRC

TRANSPORTATION RESEARCH CENTER INC.

FAST IDENTITY, 24-JO 42015 C87

P-1, C-86

APPENDIX D
Notice of Possible Non-Compliance

LABORATORY NOTICE OF TEST FAILURE TO OVSC

FMVSS NO.: 135 TEST DATE: 11/10/03

LABORATORY: Transportation Research Center Inc.

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

LABORATORY PROJECT ENGINEER'S NAME: Randy Landes

TEST SPECIMEN DESCRIPTION: 2004 Ford F150 XL Triton

VEHICLE NHTSA NO.: C40201

VIN: 1FTRF12WX4NA32153

PART NO.: Not Avail.

MFR: Not Avail.

TEST FAILURE DESCRIPTION: The "ABS" warning lamp letters are less than 3.2 mm (1/8 in.) in height.

FMVSS REQUIREMENT, PARAGRAPH: S5.5 Brake system warning indicator.

S5.5.5. Labeling. (a) "Each visual indicator.....when activated. Unless otherwise specified, the words shall have letters not less than 3.2 mm (1/8 inch) high and the letters and background shall be of contrasting colors....."

NOTIFICATION TO NHTSA (COTR): Yes

DATE: 11/10/03

BY: Telephone & email - R. Landes

REMARKS: Photograph sent via email. "ABS" letters measure approximately 5/64 in. when measured/viewed through the instrument lens.