

637451

REPORT NUMBER 301L-GTL-04-001

**SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 301L
FUEL SYSTEM INTEGRITY**

**NISSAN MOTOR CO., LTD.
2004 NISSAN QUEST, MPV
NHTSA NO. C45202**

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



OCTOBER 4, 2004

FINAL REPORT

PREPARED FOR

**U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
ROOM 8115 (NVS-220)
WASHINGTON, D.C. 20580**

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| 16. Abstract Compliance tests were conducted on the subject, 2004 Nissan Quest MPV in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-301-02 for the determination of FMVSS 301 compliance. Test failures identified were as follows: NONE | | |
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SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2004 Nissan Quest MPV was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 301 testing to determine if the vehicle was in compliance with the requirements of the standard. The purpose of this standard is to reduce deaths and injuries occurring from fires that result from fuel spillage during and after motor vehicle crashes, and resulting from ingestion of fuels during siphoning.

1.1 The test vehicle was a 2004 Nissan Quest MPV. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 5N1BV28U04N [REDACTED]

B. NHTSA No.: [REDACTED]

C. Manufacturer: NISSAN MOTOR CO., LTD.

D. Manufacture Date: 09/03

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 301 testing on September 16, 2004.

SECTION 2

COMPLIANCE TEST RESULTS SUMMARY

2.0 TEST RESULTS

All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedure, TP-301-02 dated 8 November 1994 and General Testing Laboratories, Inc. (GTL) Test Procedure, TP-301-02, "Fuel System Integrity".

Based on the test performed, the 2004 Nissan Quest MPV appears to meet the lateral impact requirements of FMVSS 301 testing.

SECTION 3

COMPLIANCE TEST DATA

3.0 TEST RESULTS

The following data sheets document the results of testing on the 2004 Nissan Quest.

SUMMARY OF RESULTS

Vehicle's NHTSA No.: C45202 Test Model: QUESTTest Date.: 09/16/04 Time: 11:40 Temperature 74 ° FVehicle Model Year, Make, Model and Body Style:
2004 NISSAN QUEST MPVVehicle Test Weight: 4747 lbs.; Impact Velocity: 19.7 mph

Type of Front Occupant Restraint System Installed In Test Vehicle:

Driver's DSP: TYPE 2 BELT WITH FRONTAL AIR BAG IN STEERING WHEELRight Passenger's DSP: TYPE 2 BELT WITH FRONTAL AIR BAG IN DASHStoddard solvent spillage from Vehicle's Fuel System: None

REMARKS:

RECORDED BY: [Signature]DATE: 09/16/04APPROVED BY: [Signature]

DATA SHEET 1
TEST VEHICLE SPECIFICATIONS

TEST VEHICLE INFORMATION:

NHTSA No.: C45202
Year/Make/Model/Body Style: 2004 NISSAN QUEST MPV
Engine Data: 3.5 LITER DOHC 24 VALVE 240 HP
Transmission Data: 4 SPEED AUTOMATIC
Final Drive Data: N/A
Major Options: 2ND AND 3RD ROW FOLDING SEATS
Date Received: 04/30/04; Odometer Reading: 19 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: NISSAN MOTOR CO., LTD.
Date of Manufacture: 09/03
VIN: 5N1BV28U04N

GVWR: 2599 kg (5732 lbs.); GAWR Front: 1309 kg (2888 lbs.) GAWR Rear: 1339 kg (2954 lbs.)

DATA FROM VEHICLE'S TIRE PLACARD:

Location of Placard on Vehicle: BOTTOM OF DRIVER'S "B" PILLAR
Tire Pressure With Maximum Capacity Vehicle Load —
Front: 35 psi; Rear: 35 psi
Recommended Tire Size: P225/65R16
Recommended Cold Tire Pressure: Front = 240 kPa (35 psi) Rear = 240 kPa (35 psi)
Size of Tires on Test Vehicle: P225/65R16
Type of Spare Tire: SPACE SAVER T135/80D16

Vehicle Capacity Data —

Type of Front Seat(s): BUCKET
Number of Occupants: Front = 2; Mid = 2 Rear = 3; Total = 7

| | |
|---|------------------|
| A. VEHICLE CAPACITY WEIGHT (VCW) = | <u>1204</u> lbs. |
| B. Number of Occupants x 150 lbs. = | <u>1050</u> lbs. |
| RATED CARGO AND LUGGAGE WEIGHT (RCLW) = A - B = | <u>154</u> lbs. |

RECORDED BY: [Signature]

DATE: 09/13/04

APPROVED BY: [Signature]

DATA SHEET 2 PRE-TEST DATA

WEIGHT OF TEST VEHICLE:

A. As Received At Laboratory (Maximum Fluids) —

Right Front = 581 kg (1281 lbs.) Right Rear = 398 kg (872 lbs.)

Left Front = 554 kg (1221 lbs.) Left Rear = 409 kg (901 lbs.)

TOTAL FRONT = 1135 kg (2502 lbs.) TOTAL REAR = 804 kg (1773 lbs.)

% of TOTAL = 58.5 % % of TOTAL = 41.5 %

TOTAL DELIVERED WEIGHT = 1939 kg (4275 lbs.)

B. Calculation of Target Test Weight —

1. Total Delivered Weight = 1939 kg (4275 lbs.)

2. Rated Cargo & Lugg. Weight (RCLW) = 70 kg (154 lbs.)

3. Weight of 2 Dummies (164 lbs. each) = 149 kg (328 lbs.)

TARGET TEST WEIGHT = 1 + 2 + 3 = 2158 kg (4757 lbs.)

C. Vehicle, Dummies and 70 kg (154 lbs.) of Cargo Weight —

Right Front = 603 kg (1330 lbs) Right Rear = 478 kg (1053 lbs)

Left Front = 582 kg (1283 lbs) Left Rear = 490 kg (1081 lbs)

TOTAL FRONT = 1185 kg (2613 lbs) TOTAL REAR = 968 kg (2134 lbs)

% of TOTAL = 55 % % of TOTAL = 45 %

TOTAL TEST WEIGHT = 2153 kg (4747 lbs)

Weight of Ballast secured in cargo area = 87 kg (191 lbs)

Type of Ballast: SALT BAGS

Method of Securing Ballast: CARGO STRAP

Vehicle Components Removed for Weight Reduction:

NONE

DATA SHEET 2 PRE-TEST DATA CONTINUED

TEST VEHICLE ATTITUDE:

As Delivered — Right Front: 739 mm (29.1 inches)
 Left Front: 748 mm (29.4 inches)
 Right Rear: 767 mm (30.2 inches)
 Left Rear: 765 mm (30.1 inches)

As Tested — Right Front: 732 mm (28.8 inches)
 Left Front: 737 mm (29.0 inches)
 Right Rear: 742 mm (29.2 inches)
 Left Rear: 739 mm (29.1 inches)

Vehicle's Wheelbase = 3150 mm (124 inches)

FUEL SYSTEM DATA:

Fuel System Capacity Listed In Owner's Manual = 76 liters (20.1 gallons)
 Usable Capacity Figure Furnished By COTR = 76 liters (20.1 gallons)

Test Volume Range (91 to 94% of Usable Capacity) —

69.2 liters (18.3 gallons) TO 71.5 liters (18.9 gallons)

ACTUAL TEST VOLUME = 70.0 liters (18.5 gallons) (with entire fuel system filled)

Test Fluid Type: Stoddard solvent

Test Fluid Specific Gravity: .7583

Test Fluid Kinematic Viscosity: 1.7 centistokes at 77° F

Test Fluid Color: BLUE ("red" is preferred)

Type of Vehicle Fuel Pump: ELECTRIC

Electric Fuel Pump Operation with Ignition Switch ON and Engine OFF —
YES, FOR 5 SECONDS, THEN TURNS OFF

Details of Fuel System: HIGH PRESSURE ELECTRIC FUEL PUMP
FEEDING FUEL INJECTORS WITH LOW PRESSURE RETURN LINE
TO FUEL TANK.

REMARKS:

RECORDED BY: [Signature]

DATE: 09/13/04

APPROVED BY: [Signature]

DATA SHEET 3
POST IMPACT DATA

TYPE OF TEST: 301L
TEST DATE: 09/16/04 ; TIME: 11:40 ; TEMP.: 74 °F
VEH. NHTSA NO.: C45202 ; VIN: 5N1BV28U04N

REQUIRED IMPACT VELOCITY RANGE: 18.9 to 19.9 mph

ACTUAL IMPACT VELOCITY: (speed traps located within 5 feet of impact plane)

Trap No. 1 = 19.8 mph Trap No. 2 = 19.6 mph
Average Impact Speed = 19.7 mph

REMARKS:

RECORDED BY: [Signature]

DATE: 09/16/04

APPROVED BY: [Signature]

DATA SHEET 4
SUMMARY OF FMVSS 301 DATA

TEST VEHICLE NHTSA NO.: C45202 ;

TEST DATE: 09/16/04

VEHICLE YEAR/MAKE/MODEL/BODY STYLE:

2003 NISSAN QUEST

TYPE OF IMPACT: 301L

STODDARD SOLVENT SPILLAGE MEASUREMENT:

A. From impact until vehicle motion ceases —

Actual = 0 oz. Maximum Allowable = 1 ounce

B. For 5 minute period after vehicle motion ceases —

Actual = 0 oz. Maximum Allowable = 5 ounces

C. For next 25 minutes —

Actual = 0 oz. Maximum Allowable = 1 oz./minute

D. Provide Spillage Details: NONE

REMARKS:

RECORDED BY: [Signature]

DATE: 09/16/04

APPROVED BY: [Signature]

DATA SHEET 5 **STATIC ROLLOVER TEST DATA:**

A. Test Phase = 0° to 90°

Determination of Stoddard Solvent
Collection Time Period:

1. Rollover Fixture 90° Rotation Time = 1
minutes, 35 seconds

(Specified Range Is 1 to 3
minutes)

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

3. TOTAL = 6 minutes, 35 seconds

4. NEXT WHOLE MINUTE INTERVAL =
7 minutes

Actual Test Vehicle Stoddard Solvent
Spillage:

1. First 5 minutes from onset of
rotation = 0 oz.
(5 oz. allowed)

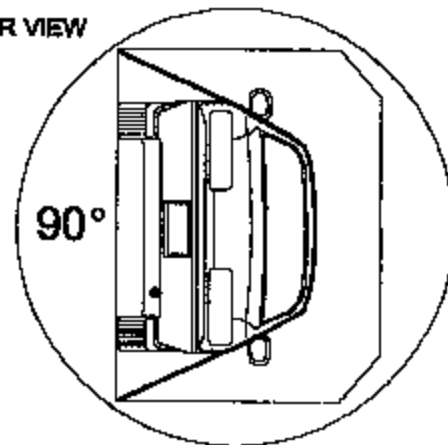
2. 6th minute = 0 oz.
(1 oz. allowed)

3. 7th minute = 0 oz.
(1 oz. allowed)

4. 8th minute (If required) = N/A oz. (1 oz. allowed)



REAR VIEW



Provide Details of Stoddard Solvent Spillage Locations — NONE

DATA SHEET 5 CONTINUED

B. Test Phase = 90° to 180°

Determination of Stoddard
Solvent Collection Time Period:

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

(Specified Range is 1 to 3
minutes)

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

3. TOTAL = 6 minutes, 38 seconds

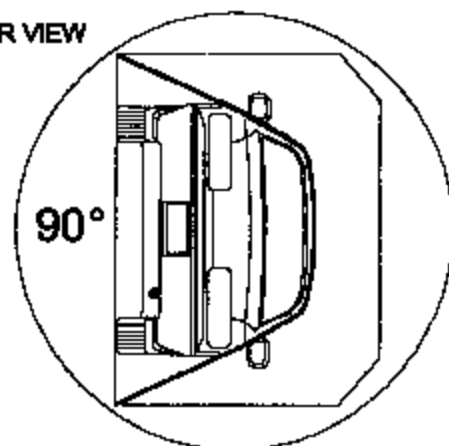
4. NEXT WHOLE MINUTE INTERVAL =
7 minutes

Actual Test Vehicle Stoddard
Solvent Spillage:

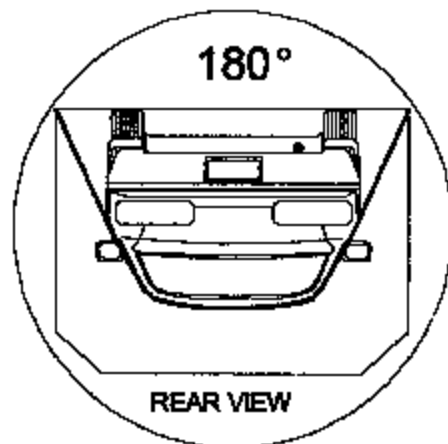
1. First 5 minutes from onset of
rotation = 0 oz.
(5 oz. allowed)
2. 6th minute = 0 oz.
(1 oz. allowed)
3. 7th minute = 0 oz.
(1 oz. allowed)
4. 8th minute (if required) = N/A oz. (1 oz. allowed)

Provide Details of Stoddard Solvent Spillage Locations --- NONE

REAR VIEW



180°



DATA SHEET 5 CONTINUED

C. Test Phase = 180° to 270°

Determination of Stoddard
Solvent Collection Time Period:

1. Rollover Fixture 90°

Rotation Time = 1 minutes,
26 seconds

(Specified Range is 1 to 3
minutes)

2. FMVSS 301 Position Hold

Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 26 seconds

4. NEXT WHOLE MINUTE

INTERVAL = 7 minutes

Actual Test Vehicle Stoddard
Solvent Spillage:

1. First 5 minutes from onset of

rotation = 0 oz.

(5 oz. allowed)

2. 6th minute = 0 oz.

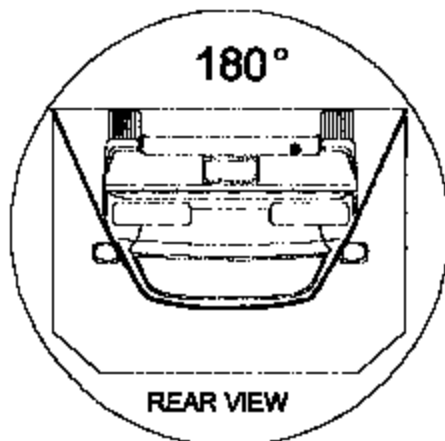
(1 oz. allowed)

3. 7th minute = 0 oz.

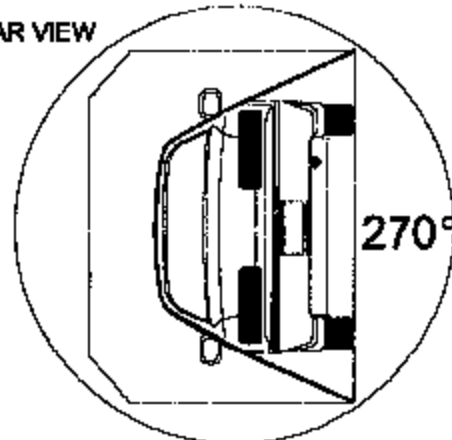
(1 oz. allowed)

4. 8th minute (if required) = N/A oz. (1 oz. allowed)

Provide Details of Stoddard Solvent Spillage Locations — NONE



REAR VIEW



DATA SHEET 5 CONTINUED

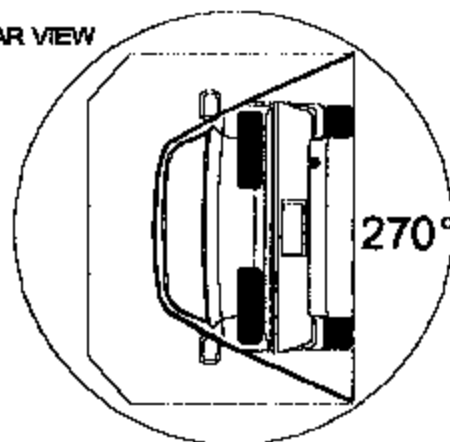
D. Test Phase = 270° to 360°

Determination of Stoddard
Solvent Collection Time Period:

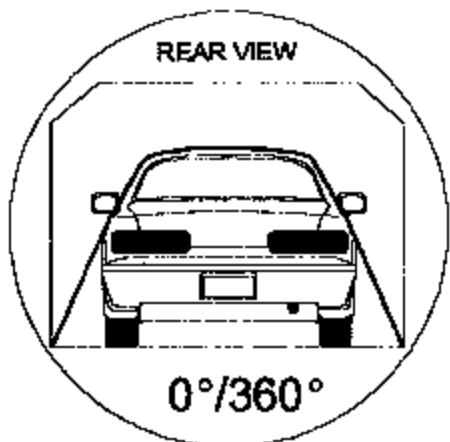
1. Rollover Fixture 90°

Rotation Time = 1 minutes,
45 seconds(Specified Range is 1 to 3
minutes)2. FMVSS 301 Position Hold
Time = 5 minutes, 0 seconds3. TOTAL = 6 minutes, 45 seconds4. NEXT WHOLE MINUTE INTERVAL =
7 minutesActual Test Vehicle Stoddard
Solvent Spillage:1. First 5 minutes from onset of
rotation = 0 oz.
(5 oz. allowed)2. 6th minute = 0 oz.
(1 oz. allowed)3. 7th minute = 0 oz.
(1 oz. allowed)4. 8th minute (if required) = N/A oz. (1 oz. allowed)Provide Details of Stoddard Solvent Spillage Locations — NONE

REAR VIEW



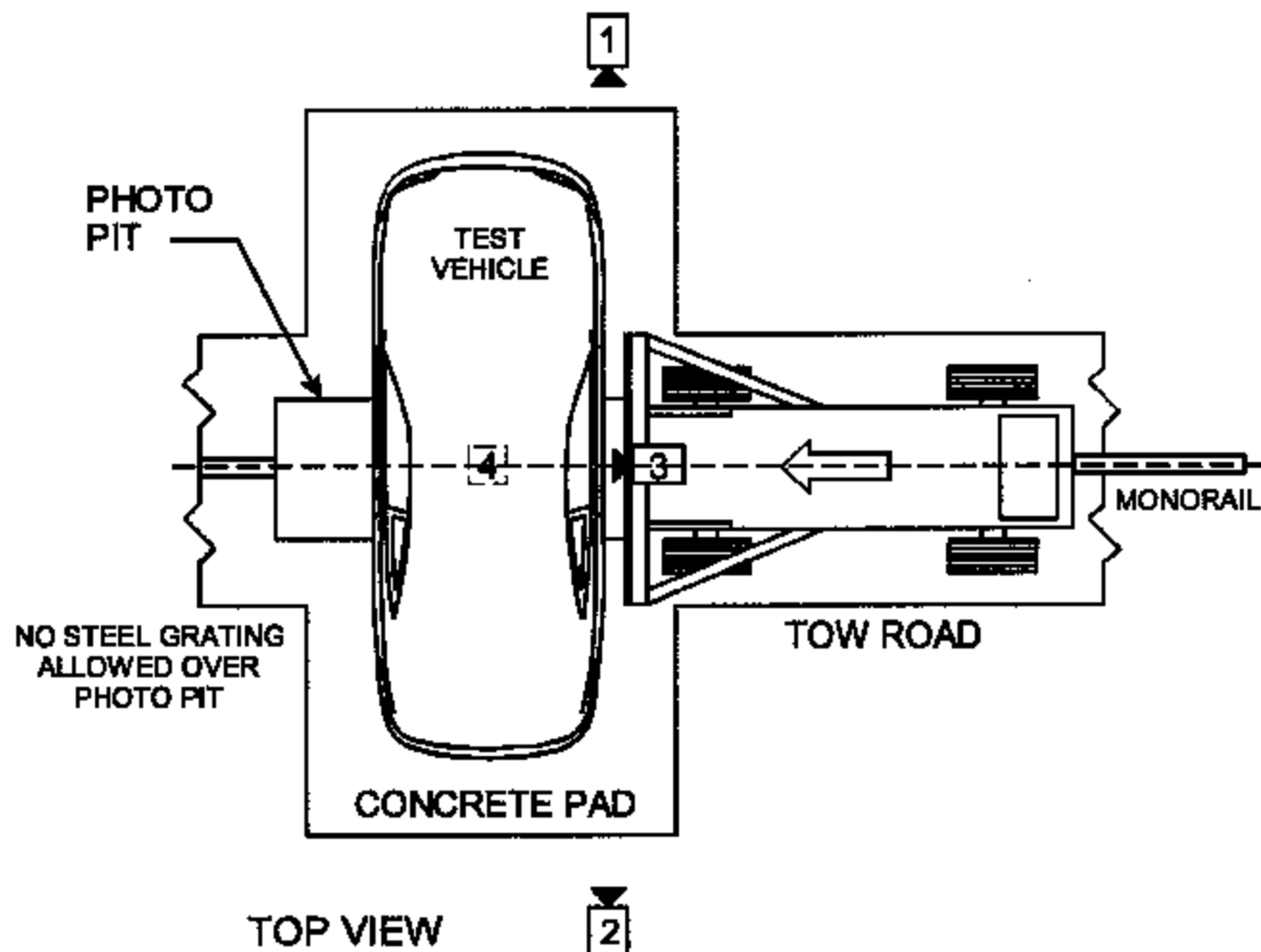
REAR VIEW



DATA SHEET 8 CAMERA LOCATION

VEHICLE NHTSA NO.: C45202

TEST DATE: 09/16/04



- CAMERA 1 – REAR SIDE VIEW OF VEHICLE DURING CRASH
- CAMERA 2 – FRONT SIDE VIEW OF VEHICLE DURING CRASH
- CAMERA 3 – OVERHEAD VIEW OF ENTIRE IMPACT
- CAMERA 4 – UNDERBODY VIEW OF FUEL TANK LOCATED IN PIT

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

| EQUIPMENT | DESCRIPTION | MODEL/ SERIAL NO. | CAL. DATE | NEXT CAL. DATE |
|------------------------|--------------------|------------------------------|------------------|---------------------------|
| COUNTER/TIMER | RACAL-DANA | 994343 | 07/04 | 07/05 |
| COUNTER/TIMER | SYSTRON DONNER | 19 353- 118 | 07/04 | 07/05 |
| SPEED TRAP 2 | GTL ST1 | N/A | 09/04 | 09/05 |
| SPEED TRAP 3 | GTL ST2 | N/A | 09/04 | 09/05 |
| STOP WATCH | ACCUSPLIT | ACT 1 A&B | 07/04 | 07/05 |
| STOP WATCH | ACCUSPLIT | ACT 2 A&B | 07/04 | 07/05 |
| SCALES | INTERCOMP | 199744 | 07/04 | 07/05 |
| TIRE PRESSURE GAUGE | WEKSLER | 0-100 | 02/04 | 02/05 |
| STEEL SCALES | STARRETT | C416R | 02/04 | 02/05 |
| STEEL TAPE | STANLEY | GF2 | 02/04 | 02/05 |
| LEVEL | STANLEY | 42-449 | 02/04 | 02/05 |
| TEMP. INDICATOR | OMEGA | B/5562/14/1 | 03/04 | 03/05 |
| TEMP. RECORDER | OMEGA | B/5562/14/1 | 03/04 | 03/05 |

SECTION 5
PHOTOGRAPHS

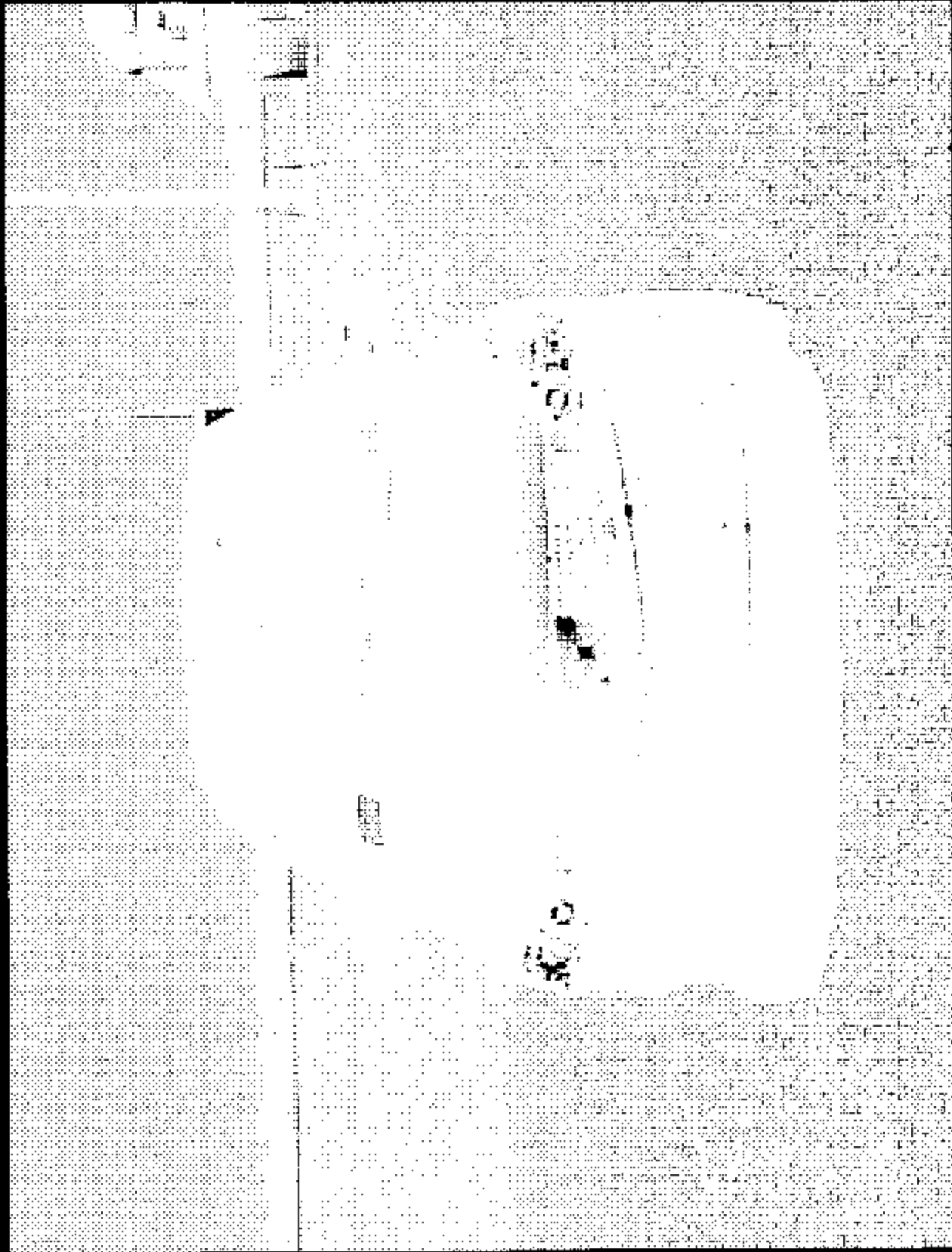
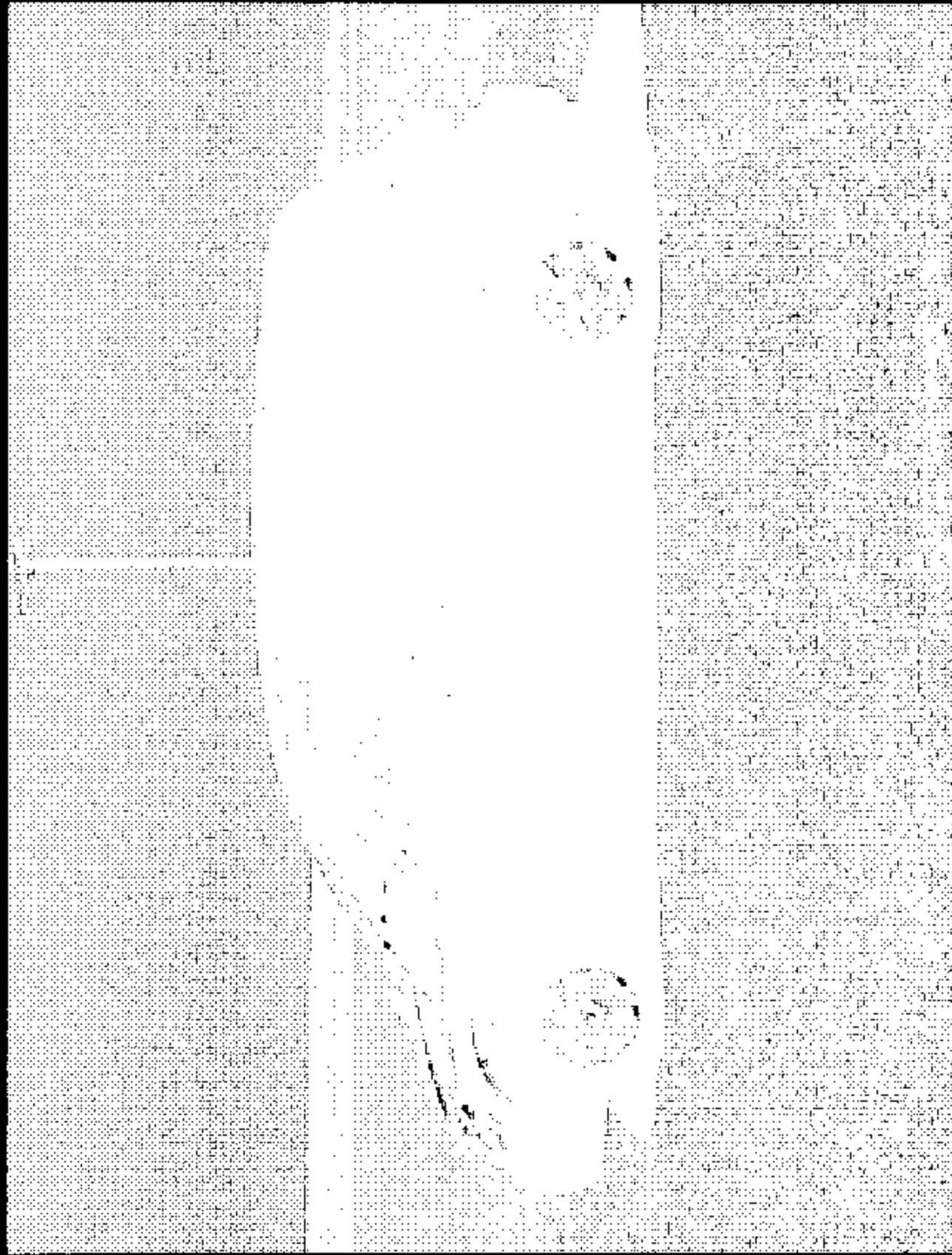


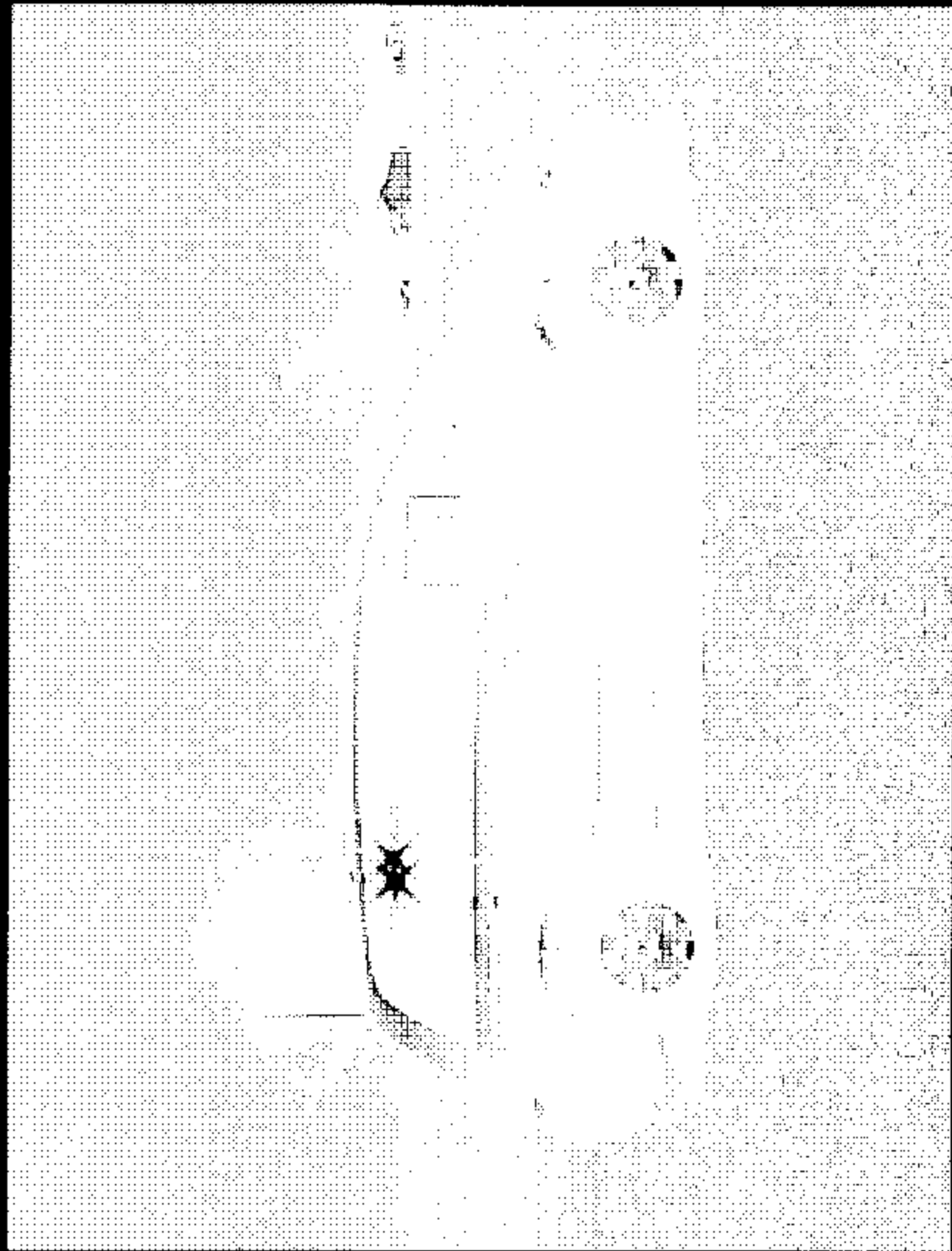
FIGURE 5.1
FRONT VIEW OF VEHICLE PRE-TEST

2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L



2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.2
LEFT SIDE VIEW OF VEHICLE PRE-TEST



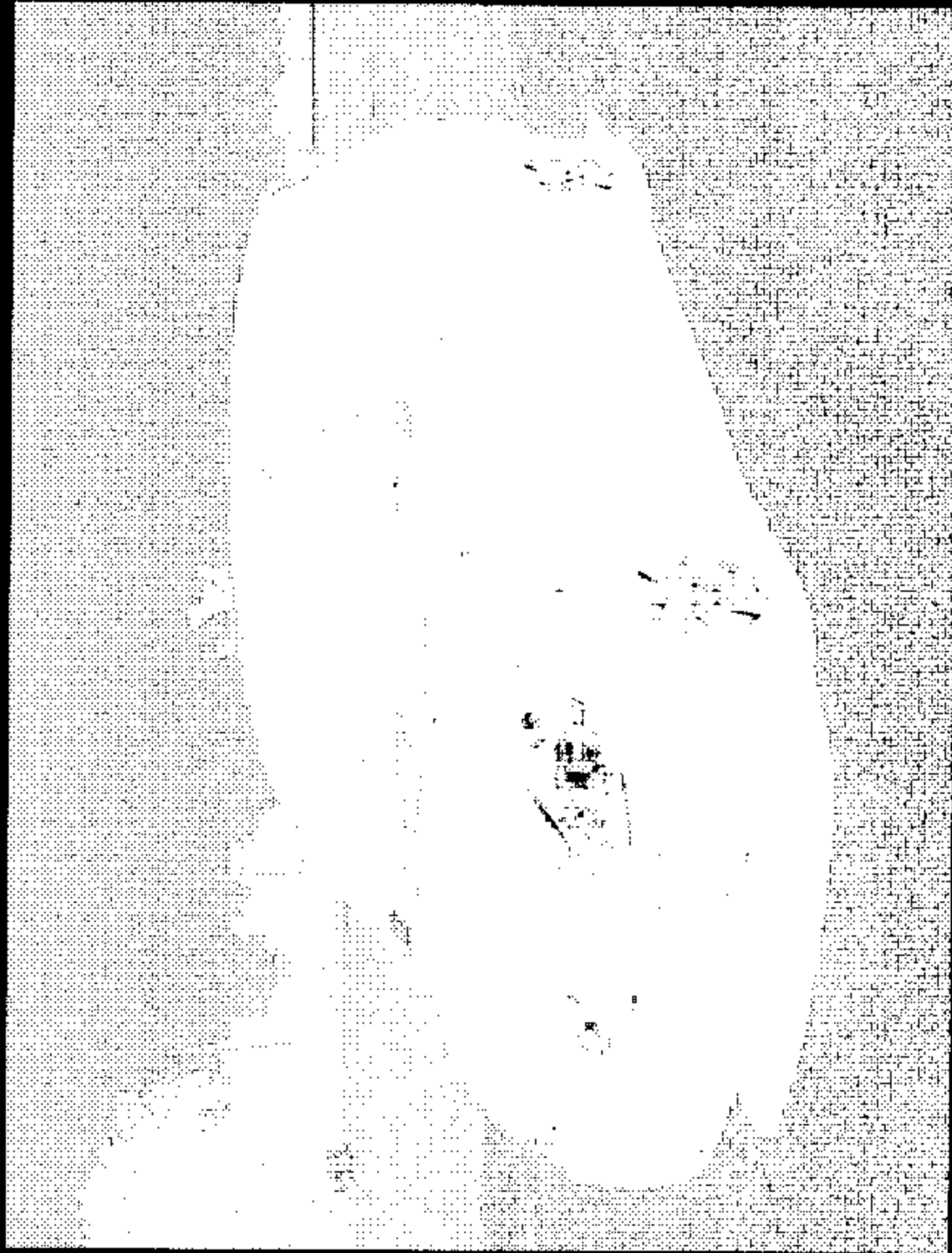
2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.3
RIGHT SIDE VIEW OF VEHICLE PRE-TEST



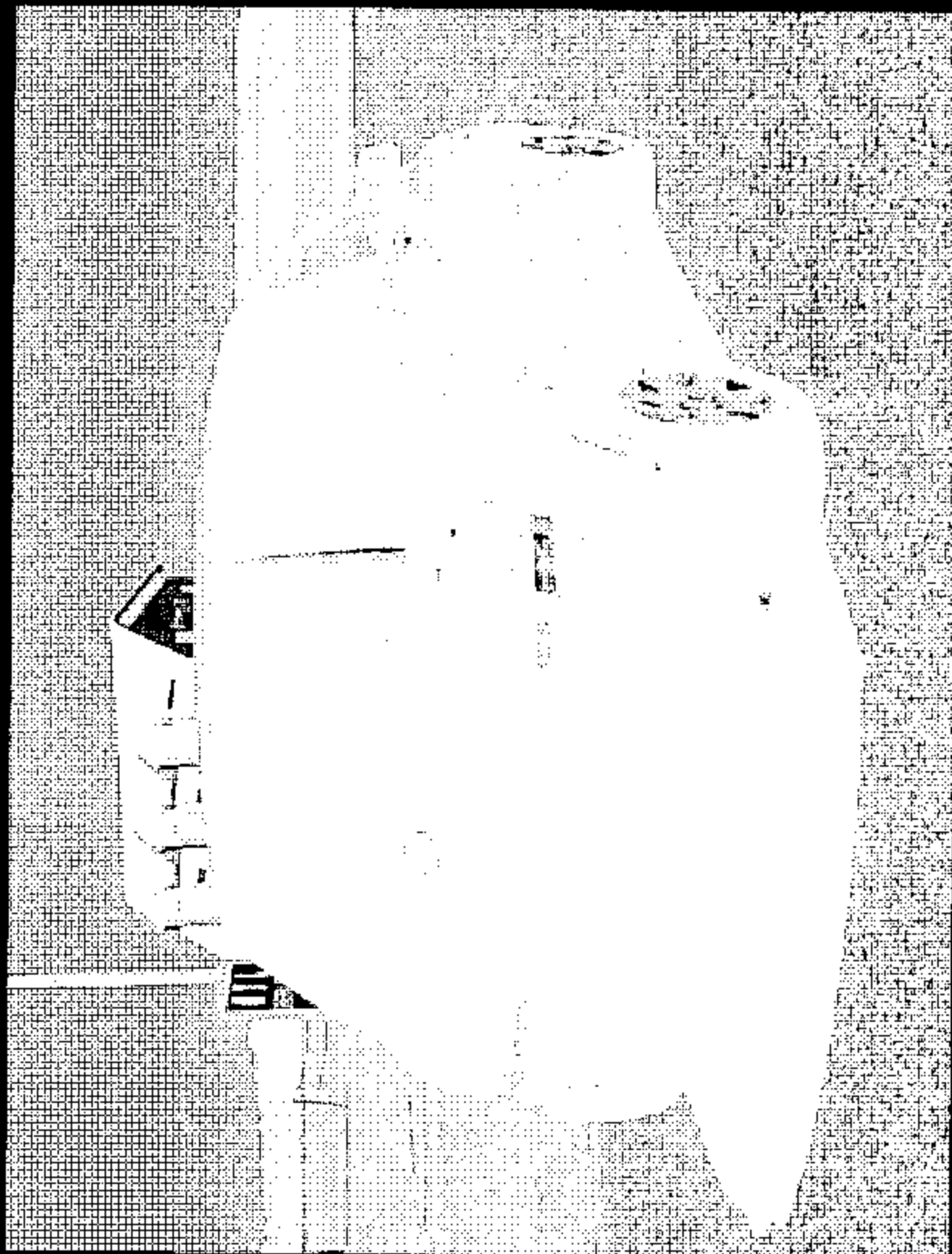
2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.4
REAR VIEW OF VEHICLE PRE-TEST



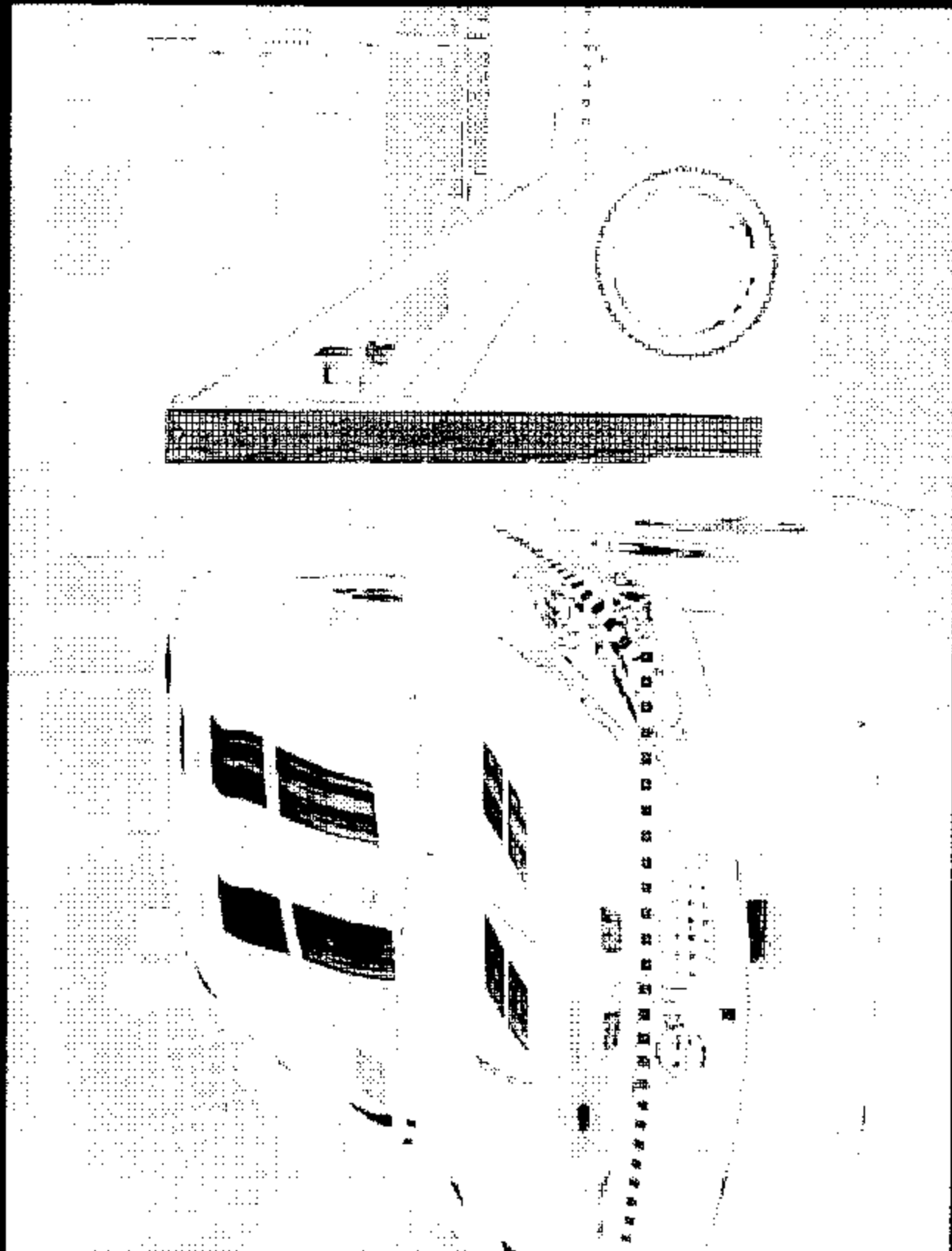
2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.5
¾ FRONTAL VIEW FROM LEFT SIDE OF
VEHICLE PRE-TEST



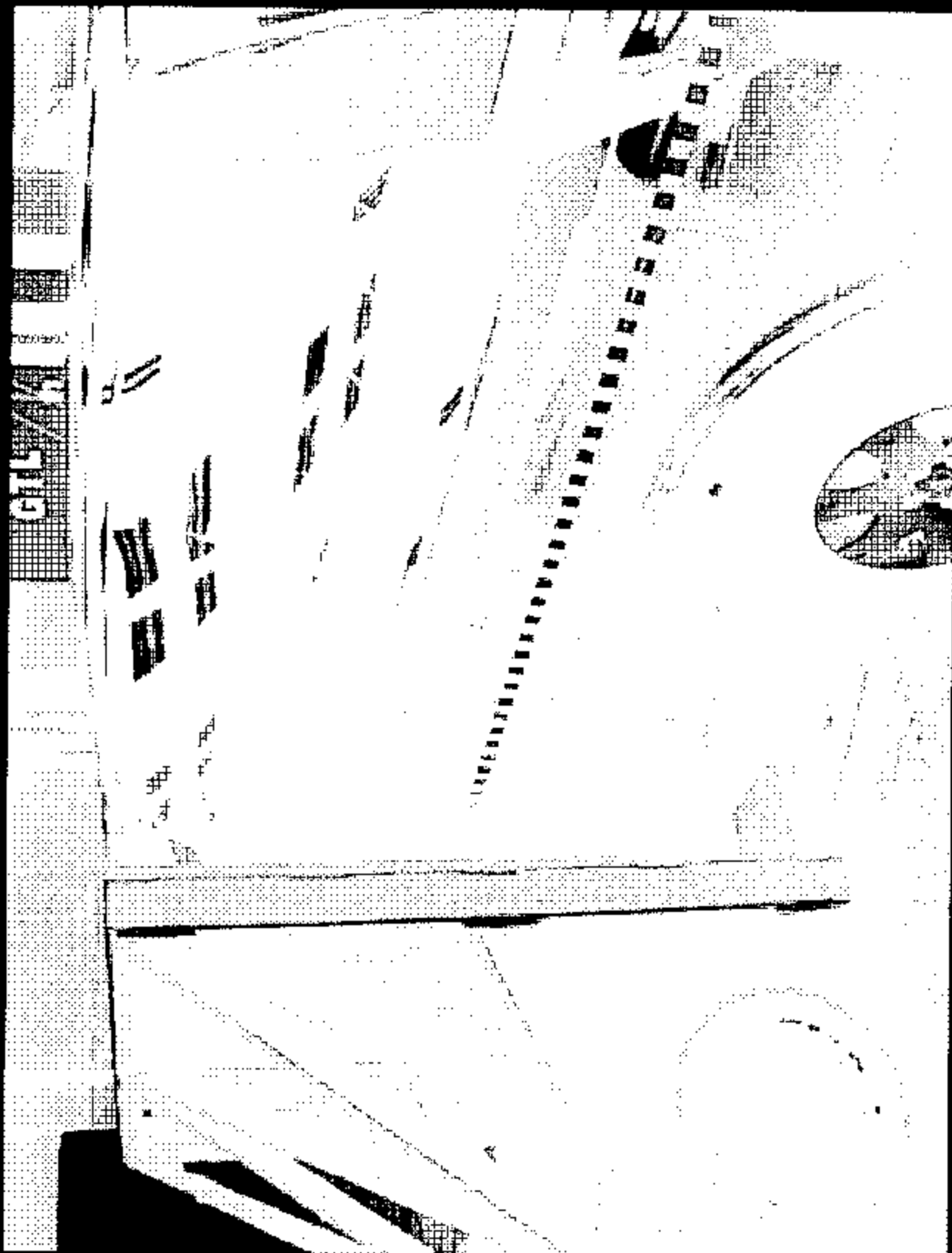
2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.6
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE
PRE-TEST



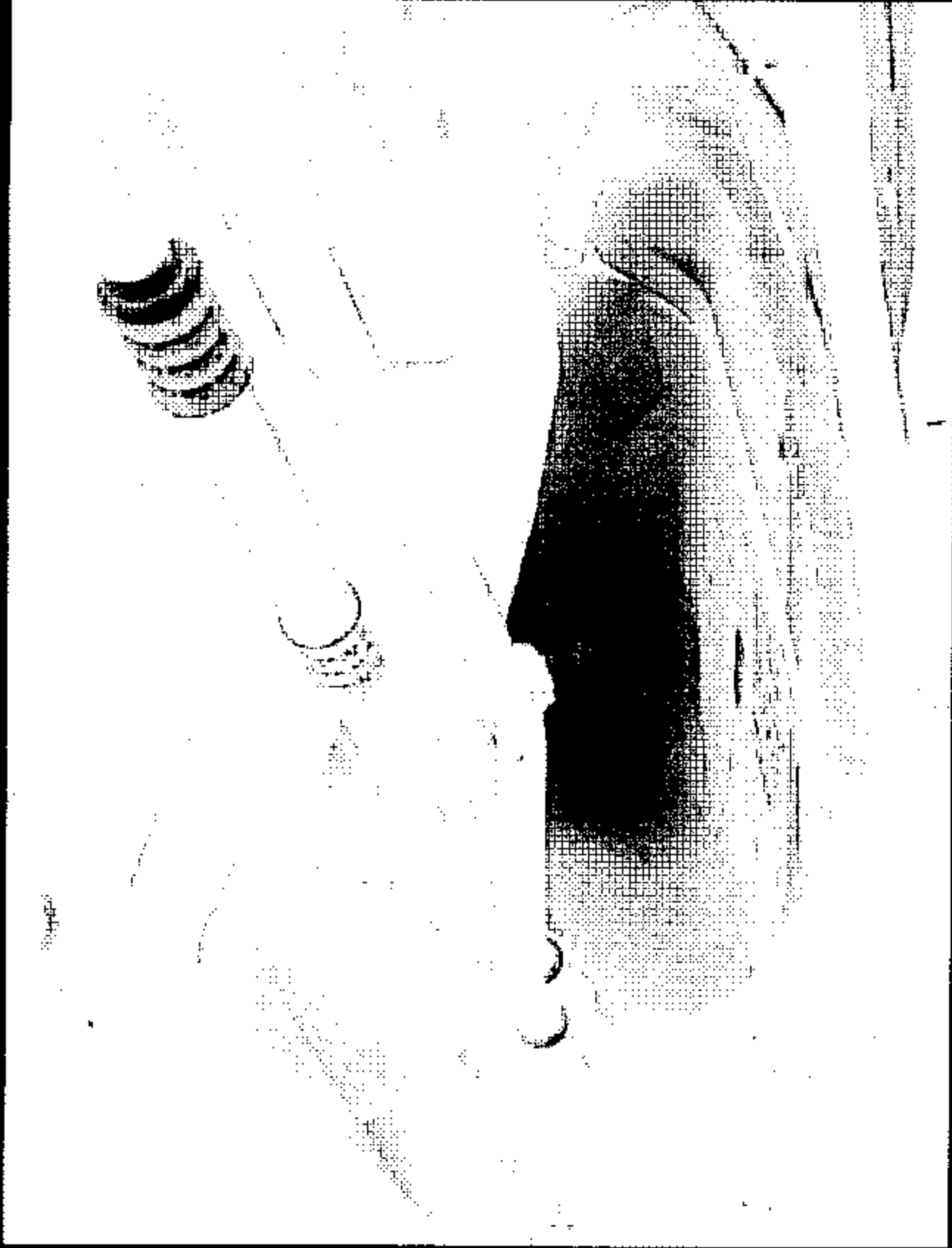
2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.7
LEFT VIEW OF VEHICLE/BARRIER PRE-TEST



2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.8
RIGHT VIEW OF VEHICLE/BARRIER PRE-TEST



2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.9
UNDERBODY VIEW OF FUEL TANK RIGHT VIEW
PRE-TEST



2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.10
UNDERBODY VIEW OF FUEL TANK LEFT VIEW
PRE-TEST



2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.11
UNDERBODY VIEW OF FUEL TANK FRONT VIEW
PRE-TEST



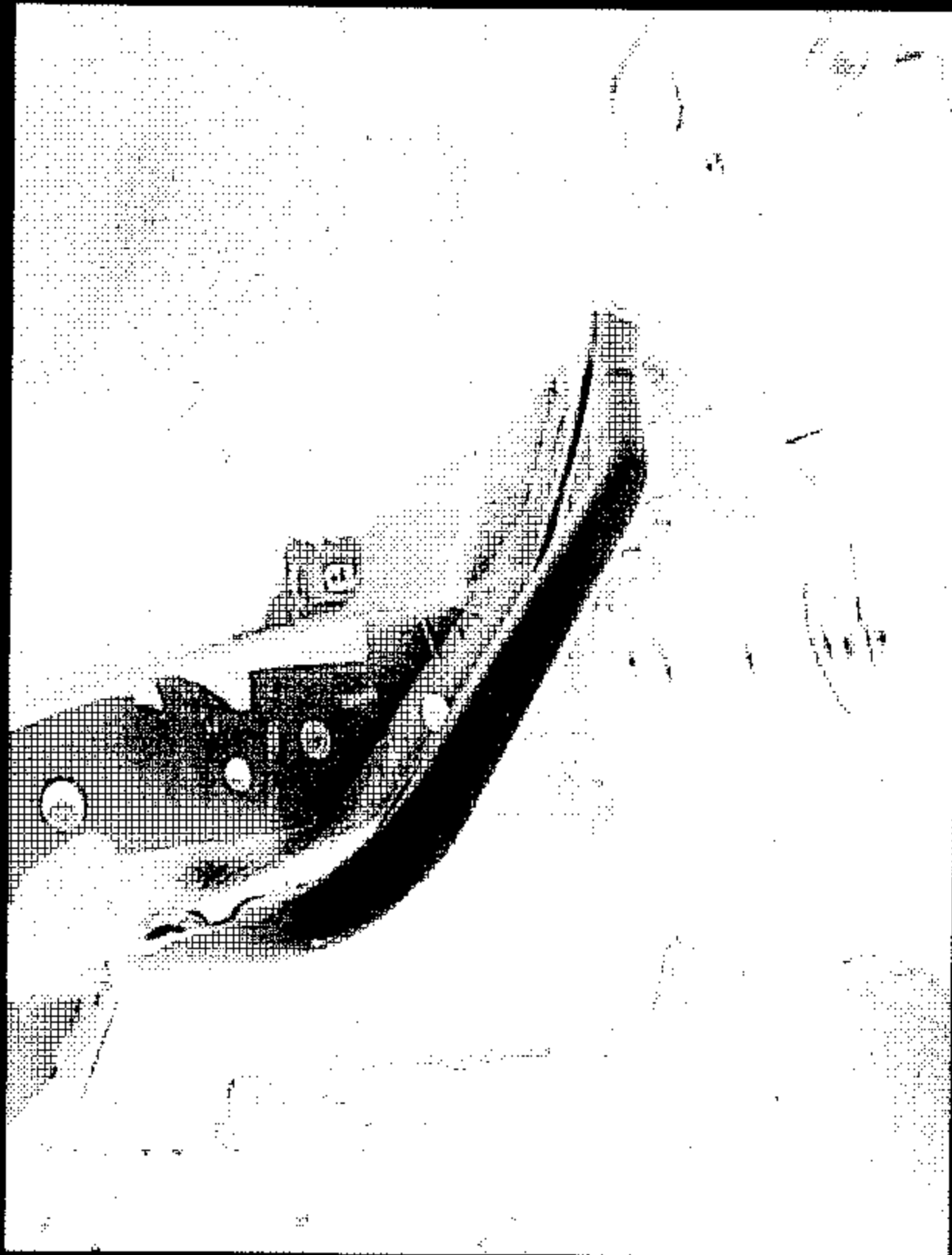
2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.12
UNDERBODY VIEW OF FUEL TANK REAR VIEW
PRE-TEST



2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.13
UNDERBODY VIEW OF FUEL FILL AND VENT
LINE PRE-TEST



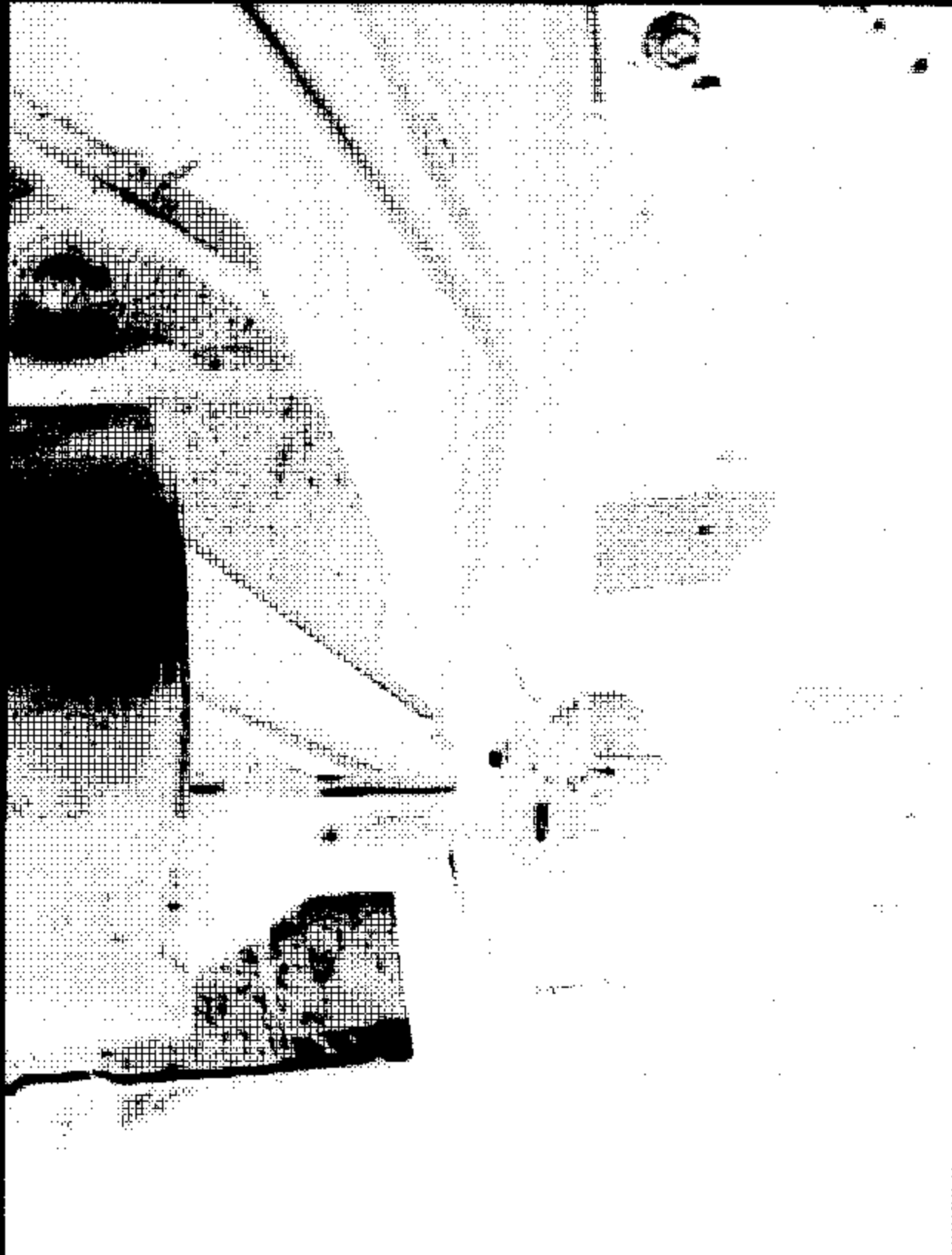
2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.14
UNDERBODY VIEW OF FUEL FILL AND VENT
LINE PRE-TEST



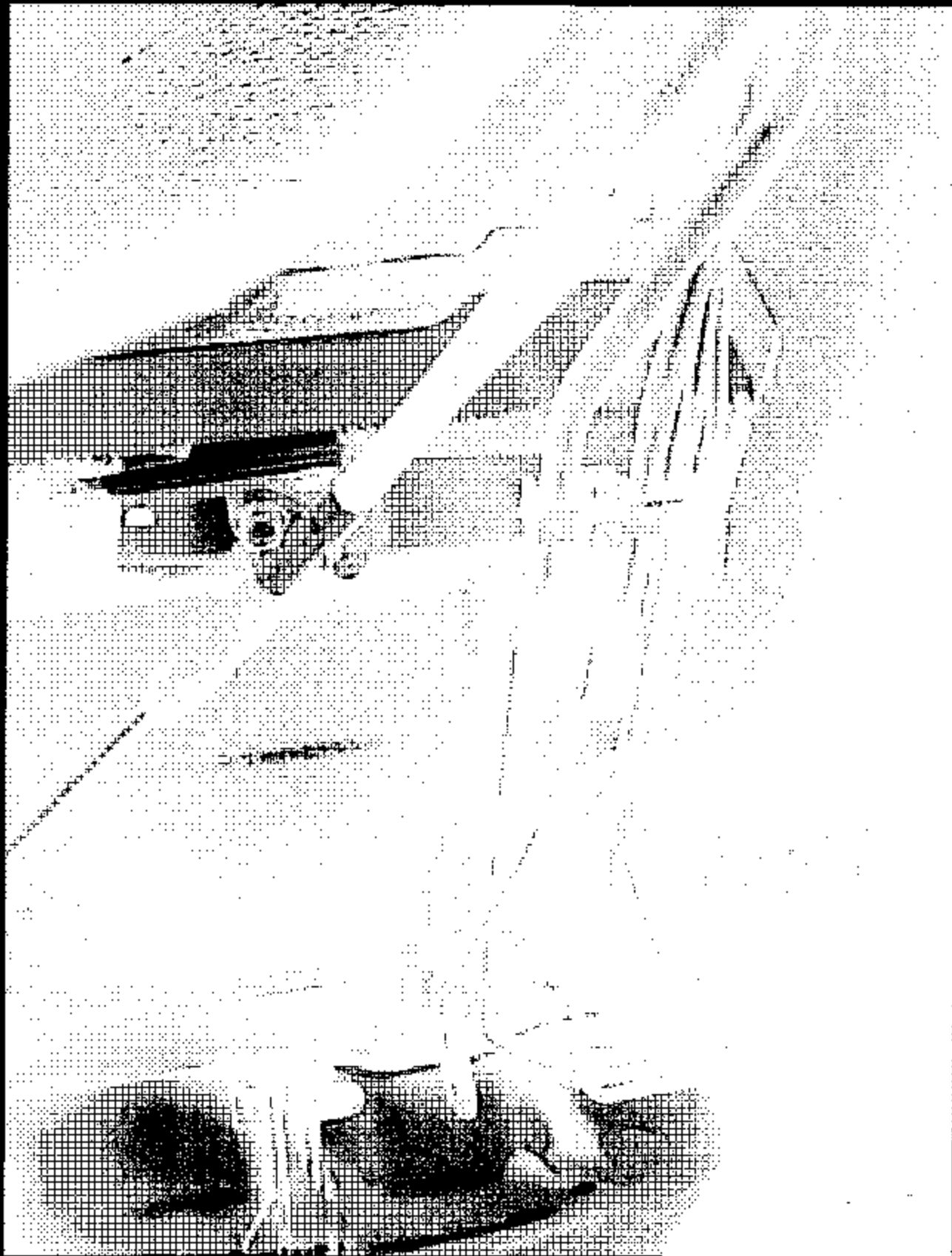
2004 NISSAN QUEST
NHTSA NO. C45202
FMVSS NO. 301L

FIGURE 5.15
UNDERBODY VIEW OF FUEL LINES FRONT
PRE-TEST



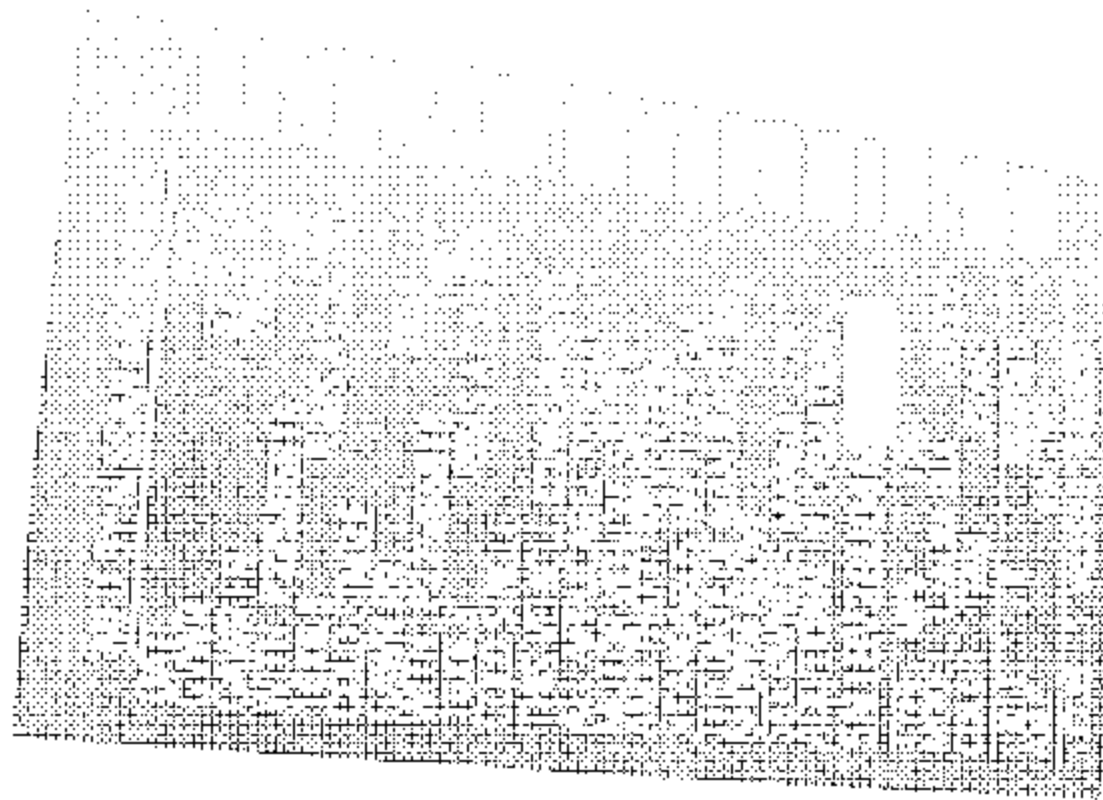
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FIGURE 5.16
UNDERBODY VIEW OF FUEL LINES MID
PRE-TEST



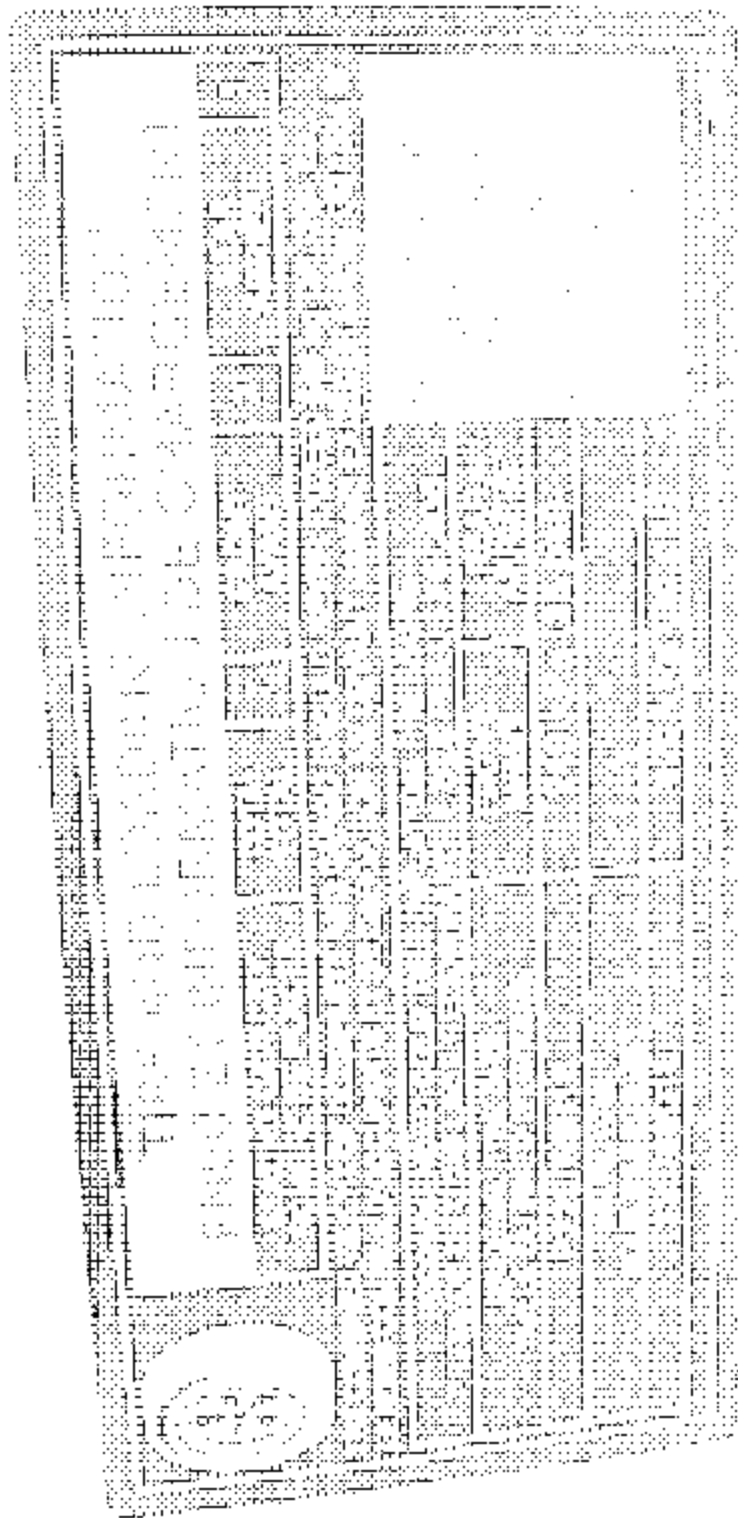
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FIGURE 5.17
UNDERBODY VIEW OF FUEL LINES REAR
PRE-TEST



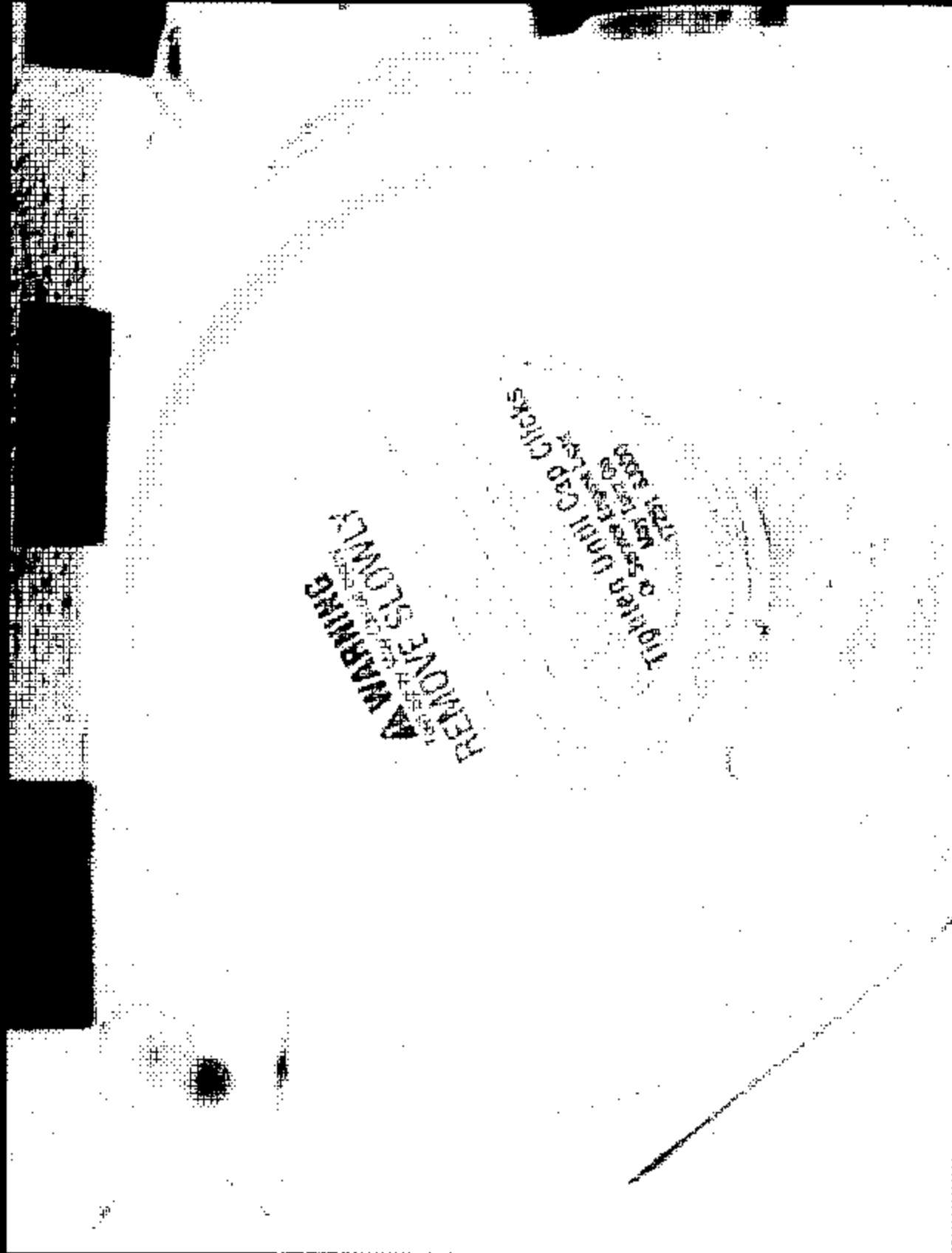
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FIGURE 5.18
VEHICLE CERTIFICATION LABEL



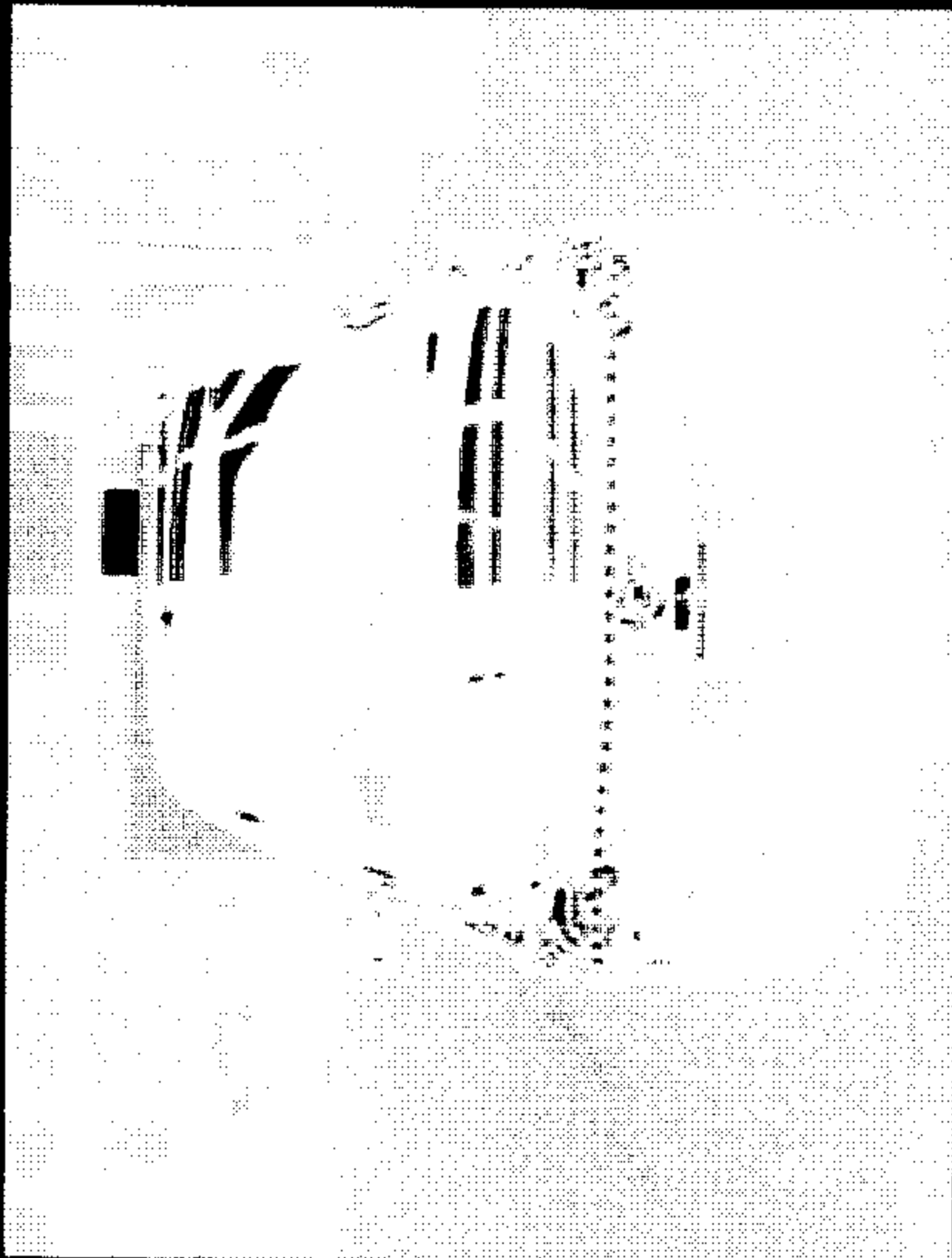
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FIGURE 5.19
 VEHICLE TIRE INFORMATION LABEL



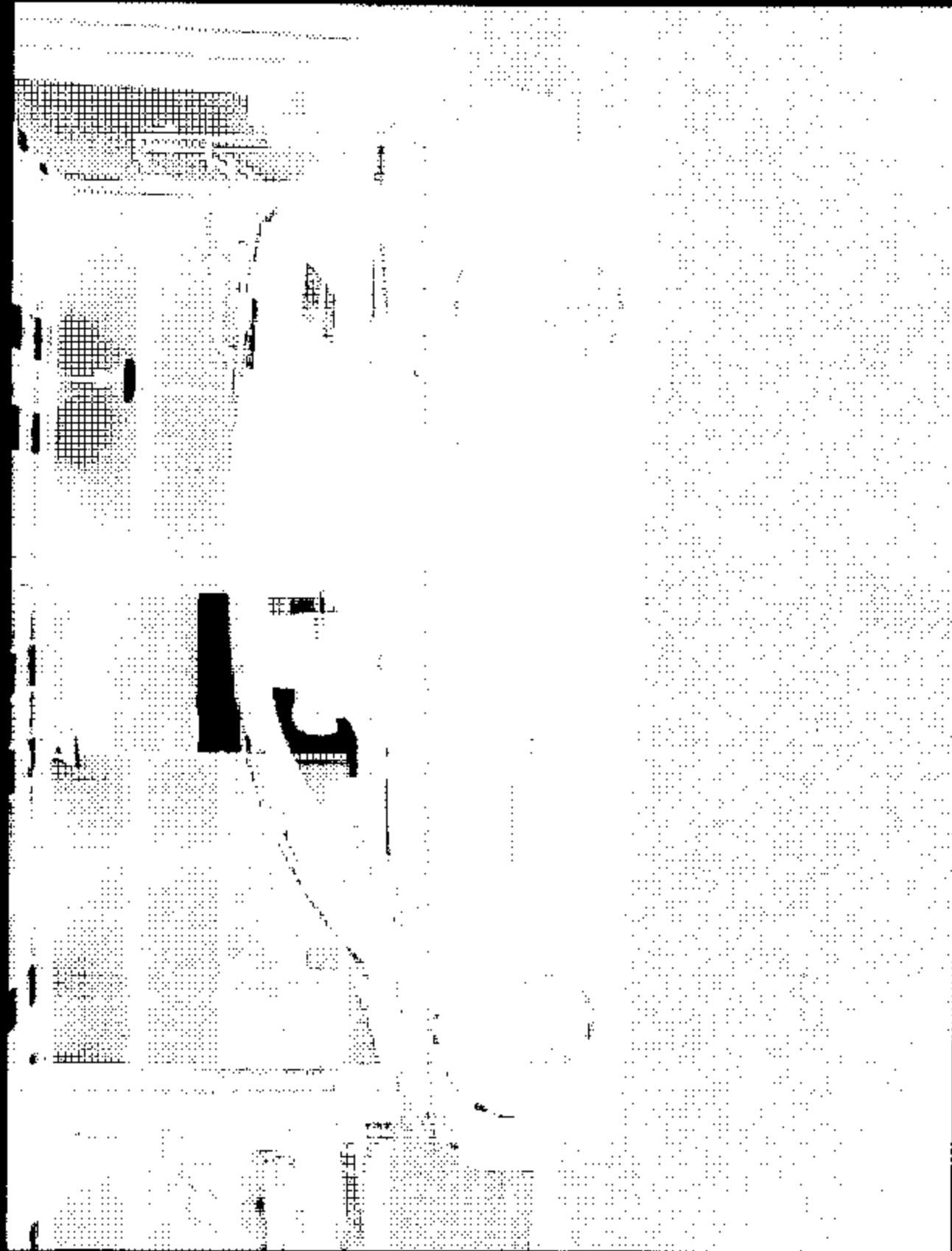
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FIGURE 6.20
VEHICLE FUEL CAP PRE-TEST



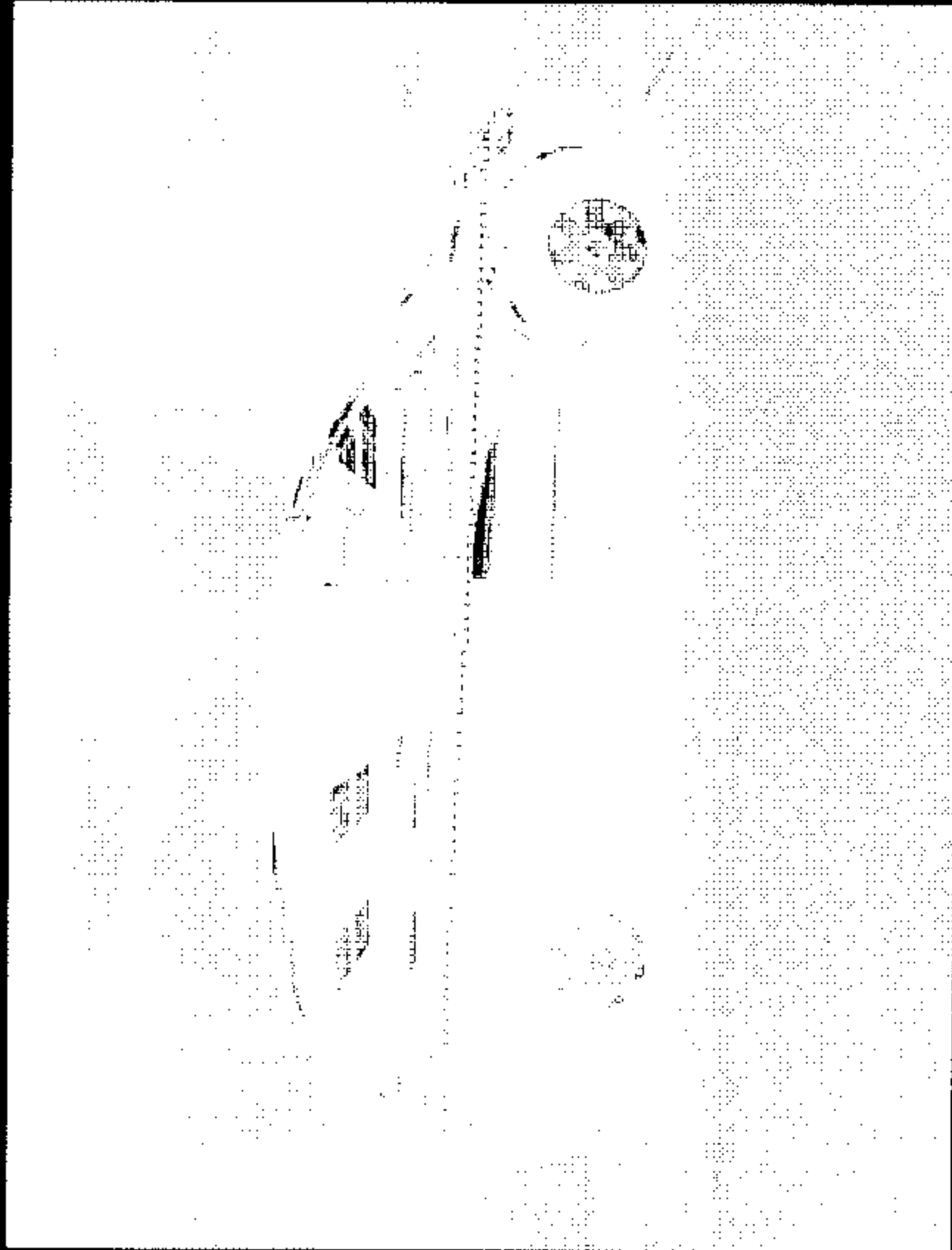
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FIGURE 5.21
FRONT VIEW OF VEHICLE POST TEST



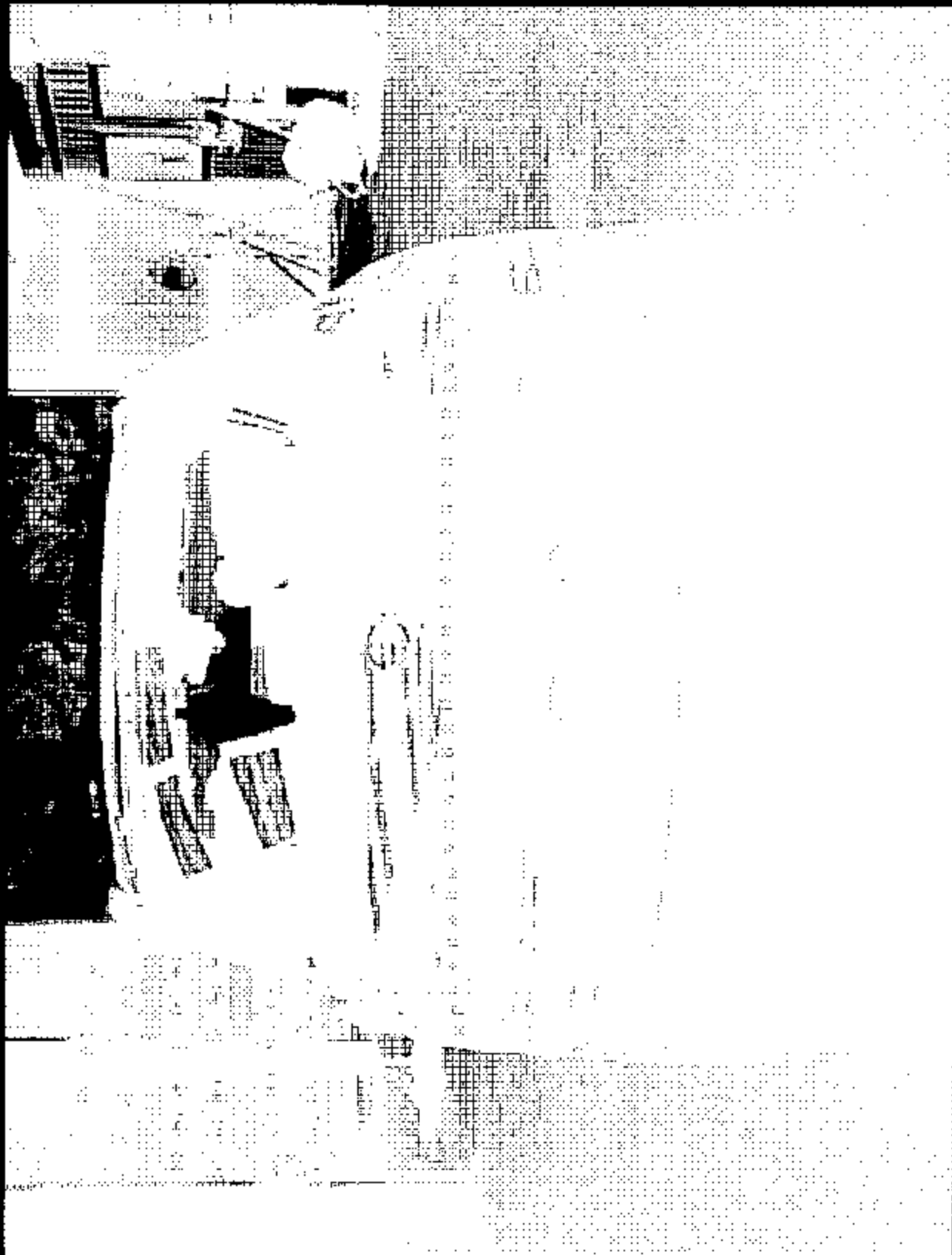
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FIGURE 5.22
LEFT SIDE VIEW OF VEHICLE POST TEST



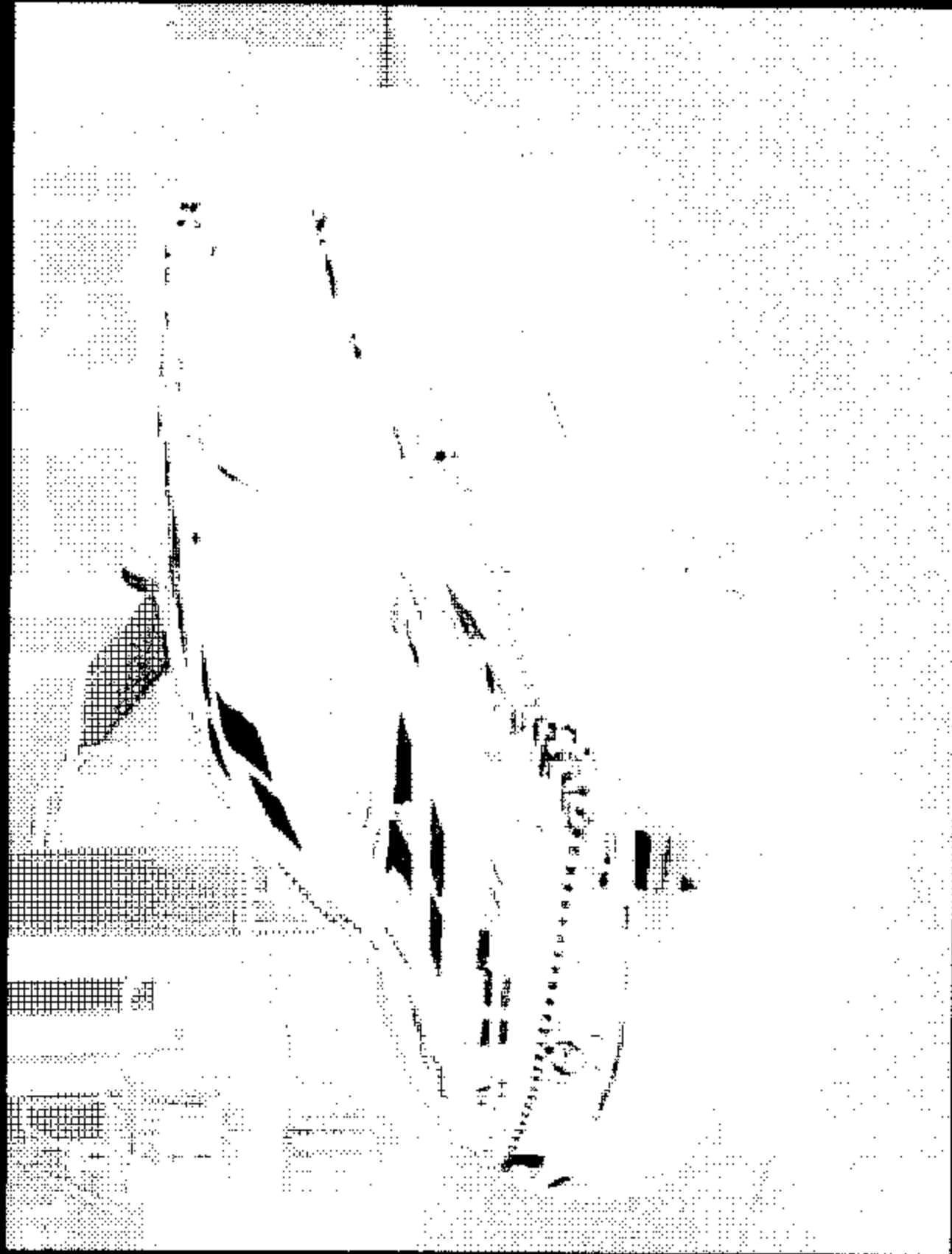
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FIGURE 5.23
RIGHT SIDE VIEW OF VEHICLE POST TEST



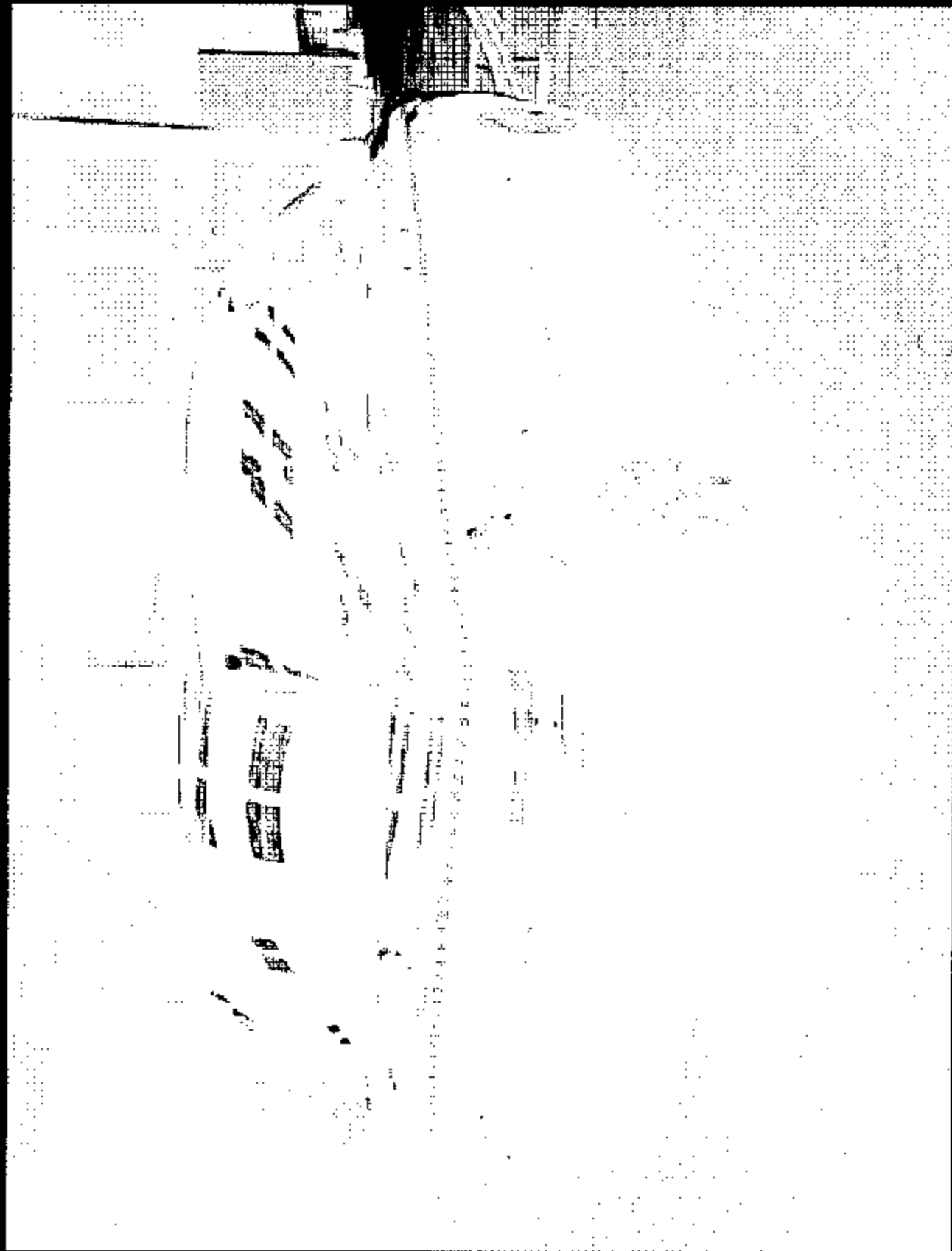
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FIGURE 5.24
REAR VIEW OF VEHICLE POST TEST



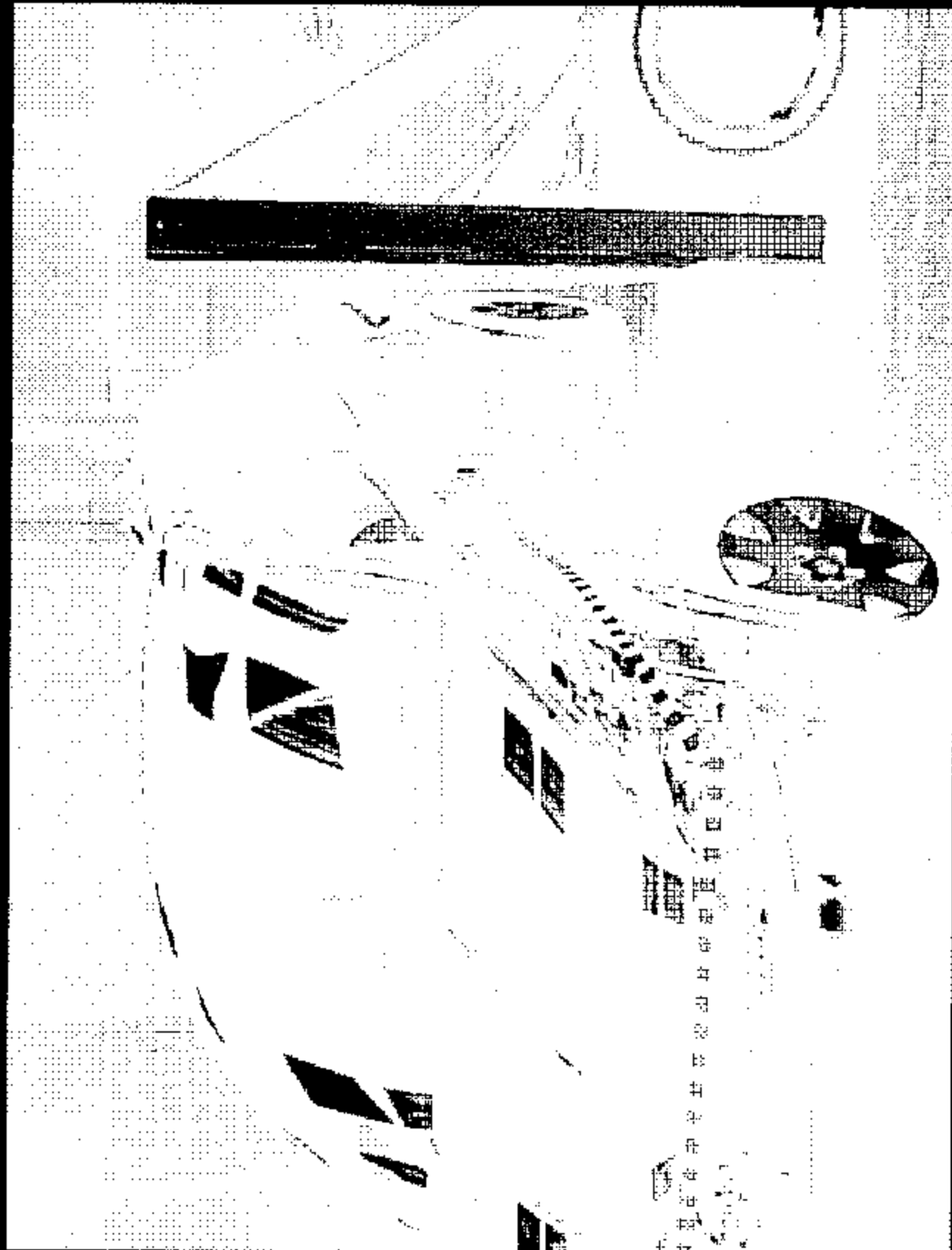
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FIGURE 5.25
¾ FRONTAL VIEW FROM LEFT SIDE OF
VEHICLE POST TEST



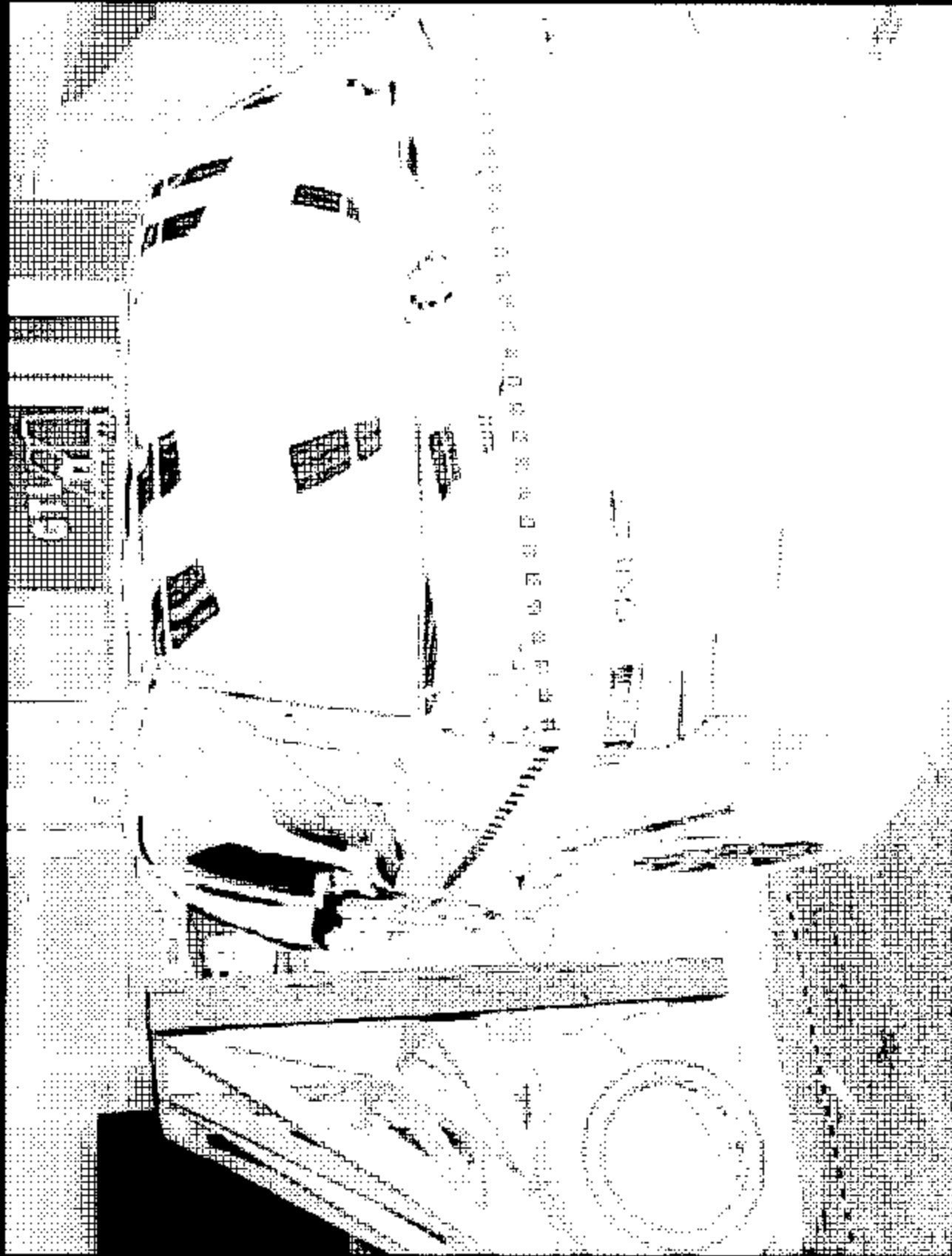
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FIGURE 5.26
¾ REAR VIEW FROM RIGHT SIDE OF
VEHICLE POST TEST



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FIGURE 5.27
LEFT VIEW OF VEHICLE/BARRIER POST TEST



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FIGURE 5.28
RIGHT VIEW OF VEHICLE/BARRIER POST TEST



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FIGURE 5.29
UNDERBODY VIEW OF FUEL TANK AND FUEL
LINES FRONT VIEW POST TEST



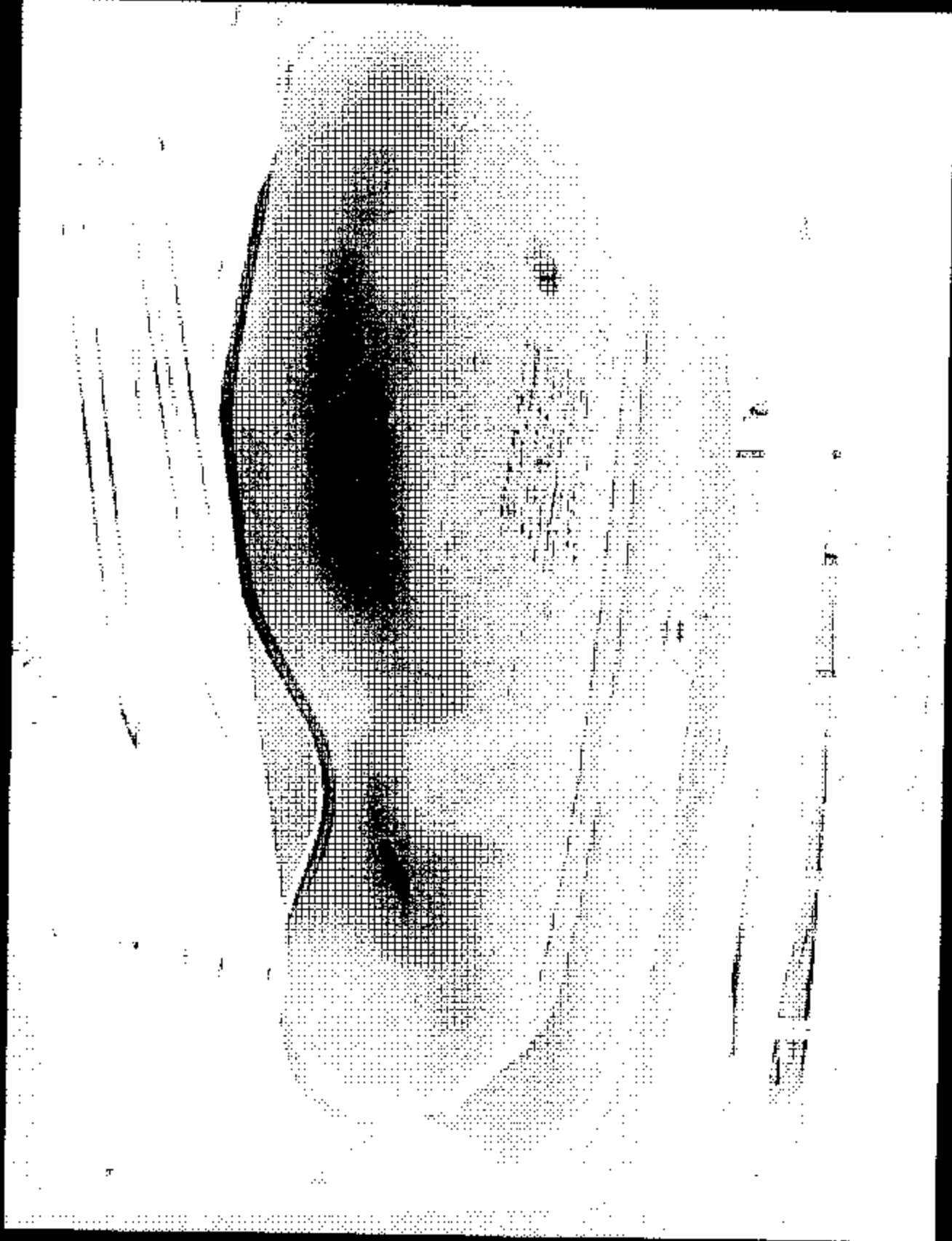
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FIGURE 5.30
UNDERBODY VIEW OF FUEL TANK REAR VIEW
POST TEST



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FIGURE 5.31
UNDERBODY VIEW OF FUEL TANK REAR VIEW
POST TEST



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FIGURE 5.32
UNDERBODY VIEW OF FUEL TANK RIGHT VIEW
POST TEST



FIGURE 5.33
UNDERBODY VIEW OF FILL AND VENT LINES
POST TEST

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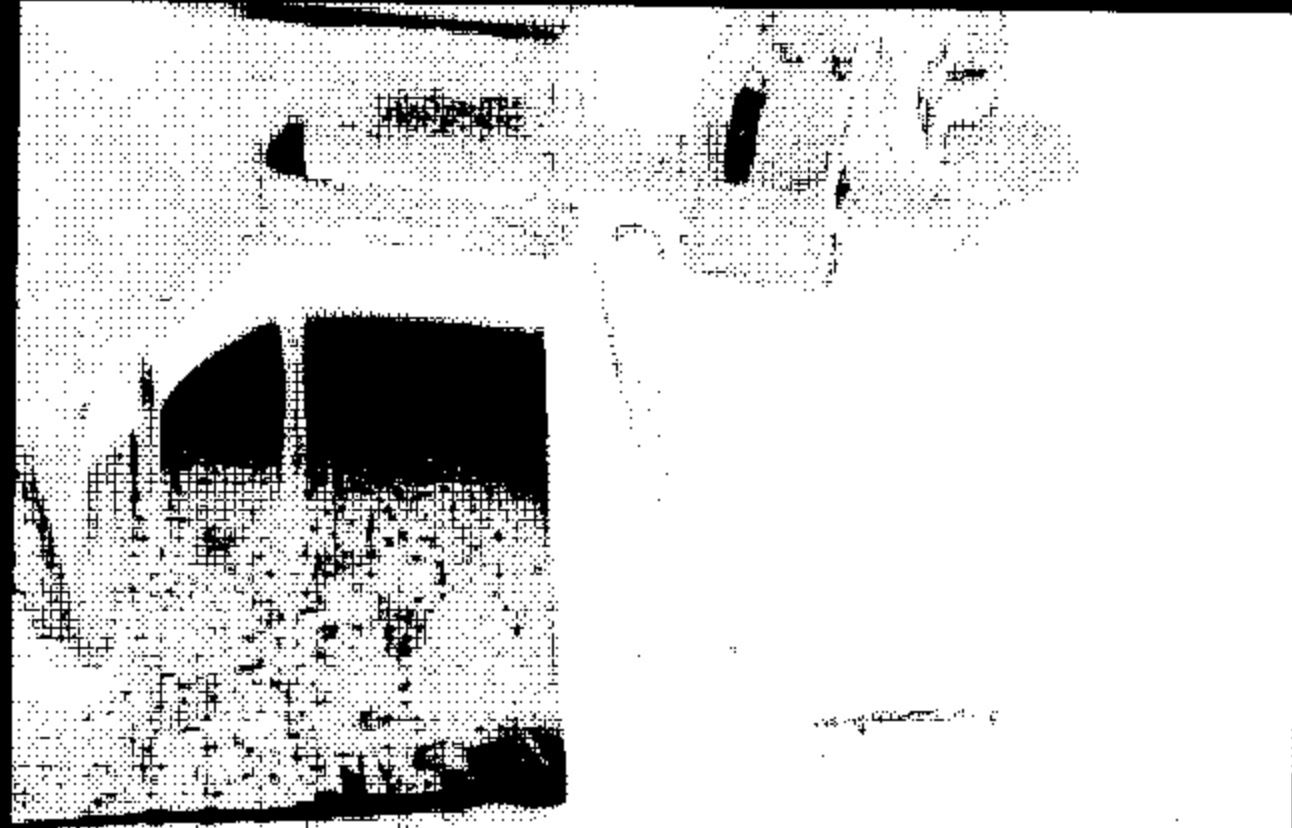
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FIGURE 5.34
UNDERBODY VIEW OF FILL AND VENT LINES
POST TEST



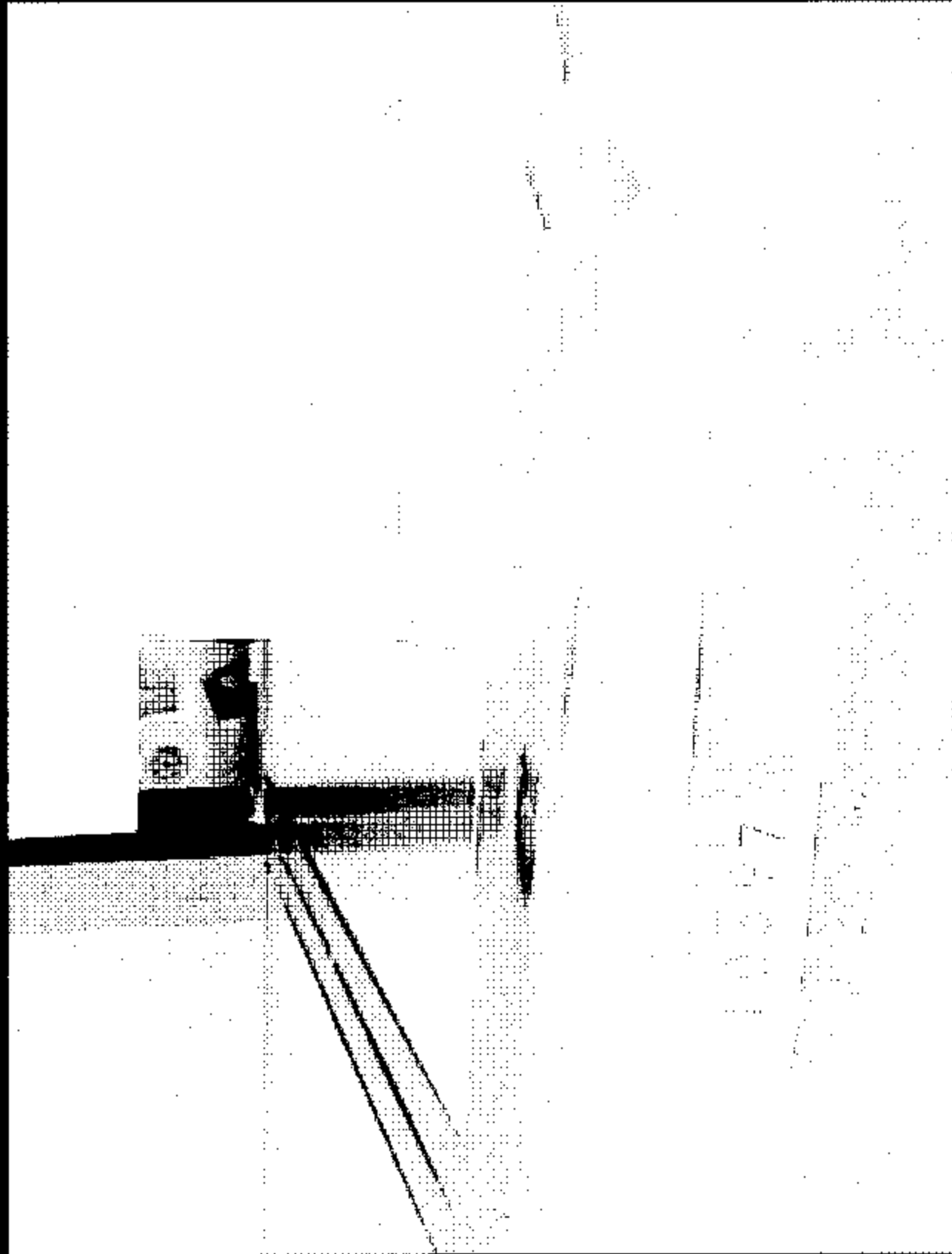
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FIGURE 5.35
UNDERBODY VIEW OF FUEL LINES FRONT
POST TEST



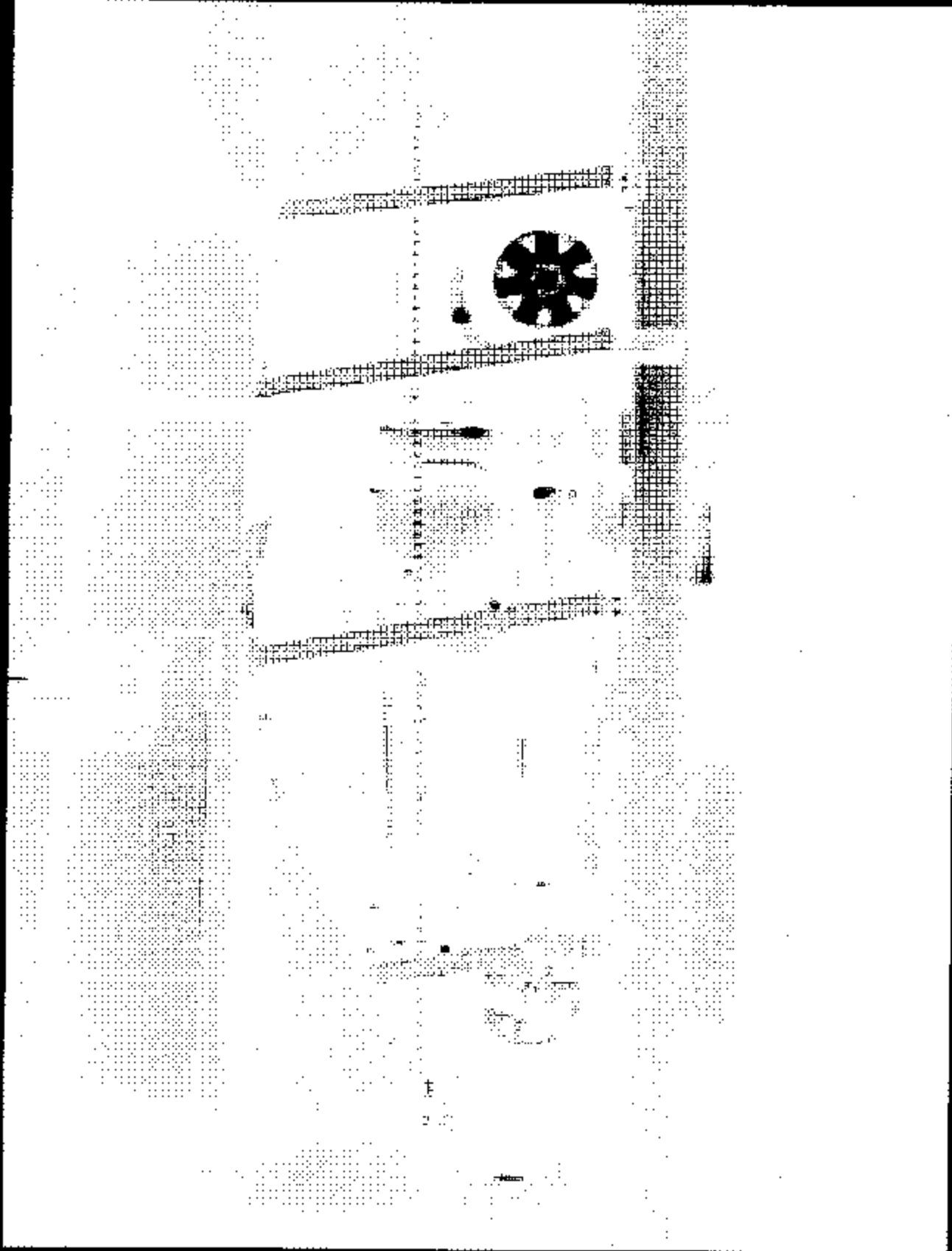
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FIGURE 5.36
UNDERBODY VIEW OF FUEL LINES FRONT
POST TEST



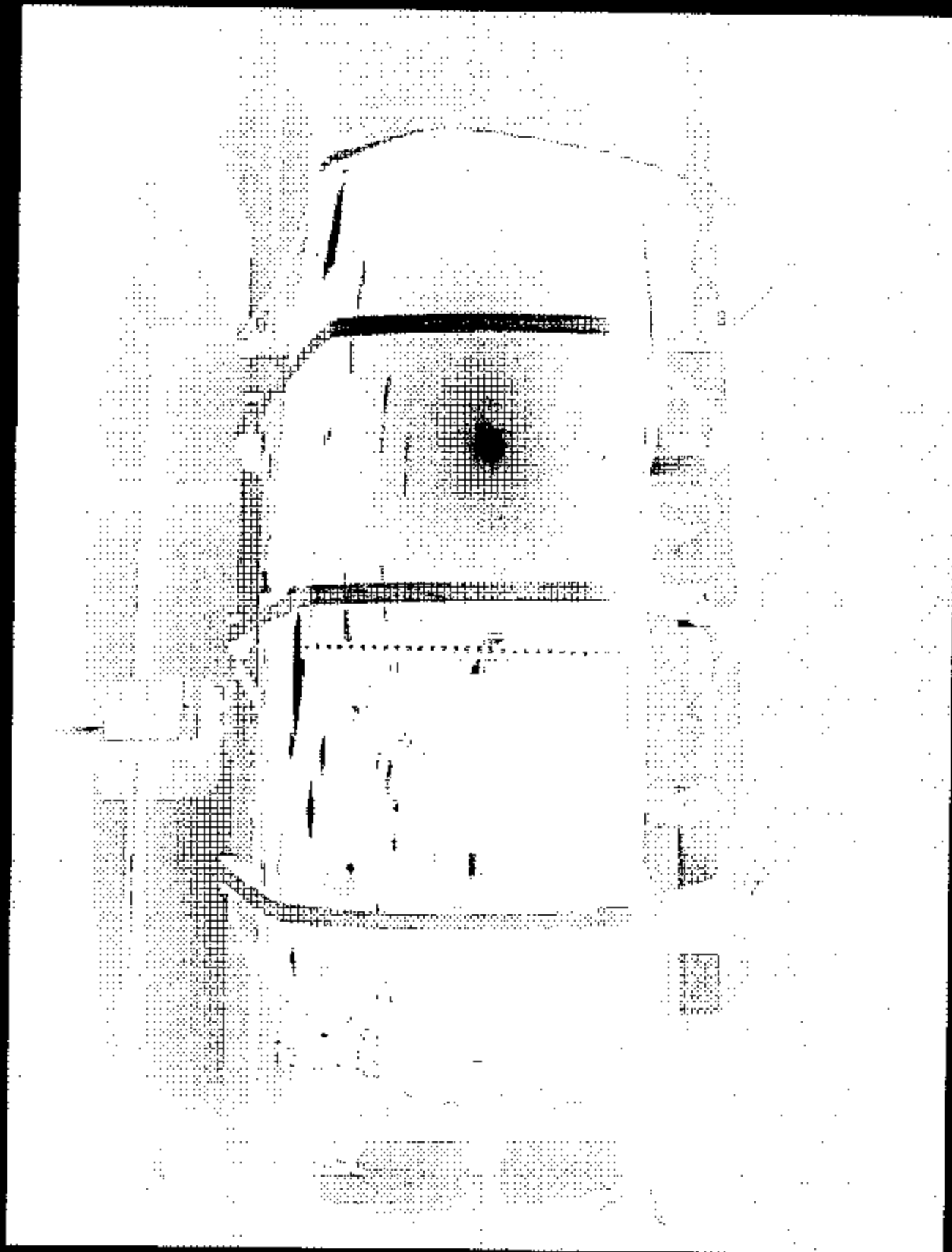
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FMVSS NO. 301L

FIGURE 5.37
SPEED COUNTERS POST TEST



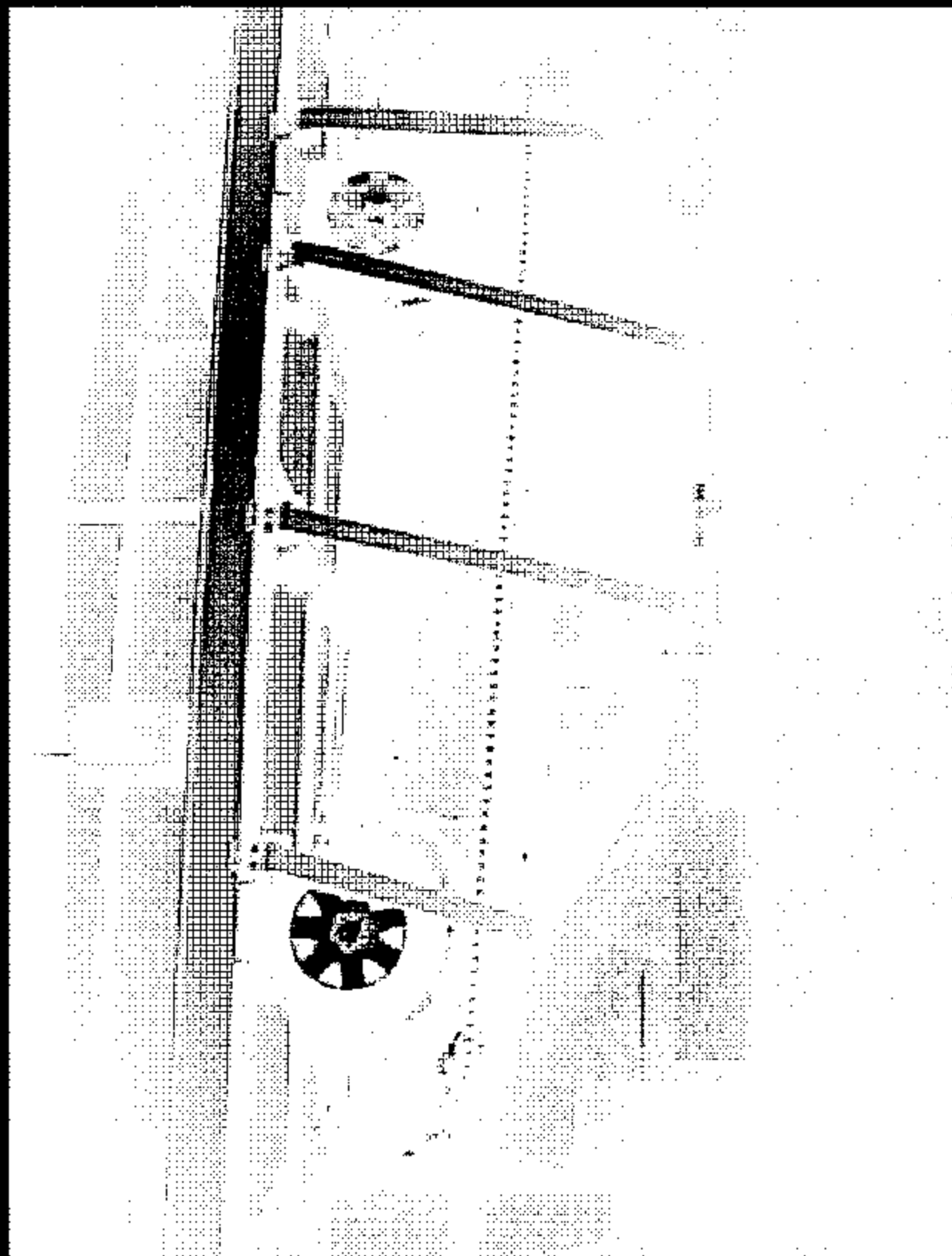
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FIGURE 5.38
VEHICLE IN ROLLOVER FIXTURE AT 0°



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FIGURE 5.39
VEHICLE IN ROLLOVER FIXTURE AT 90°



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FIGURE 5.40
VEHICLE IN ROLLOVER FIXTURE AT 180°

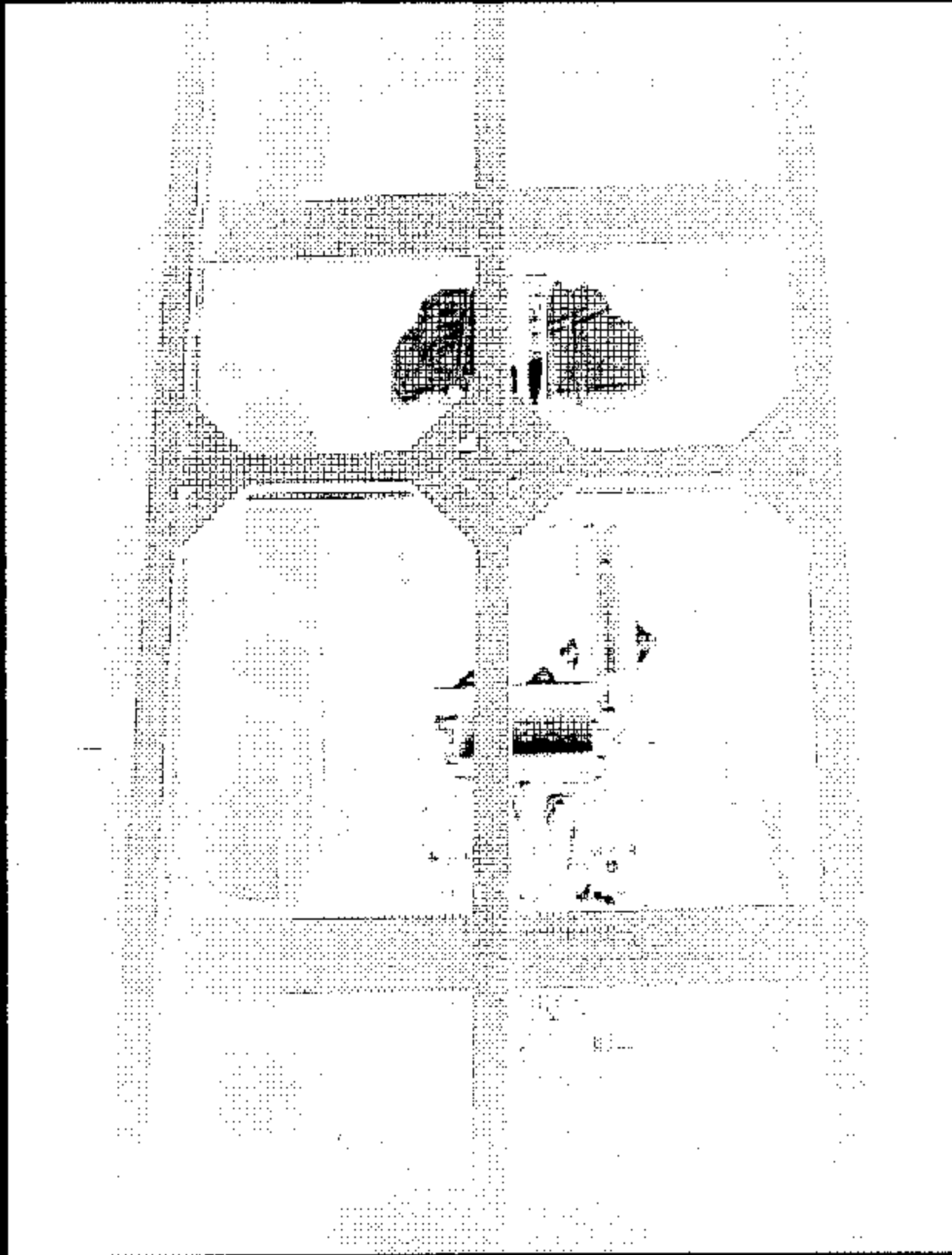
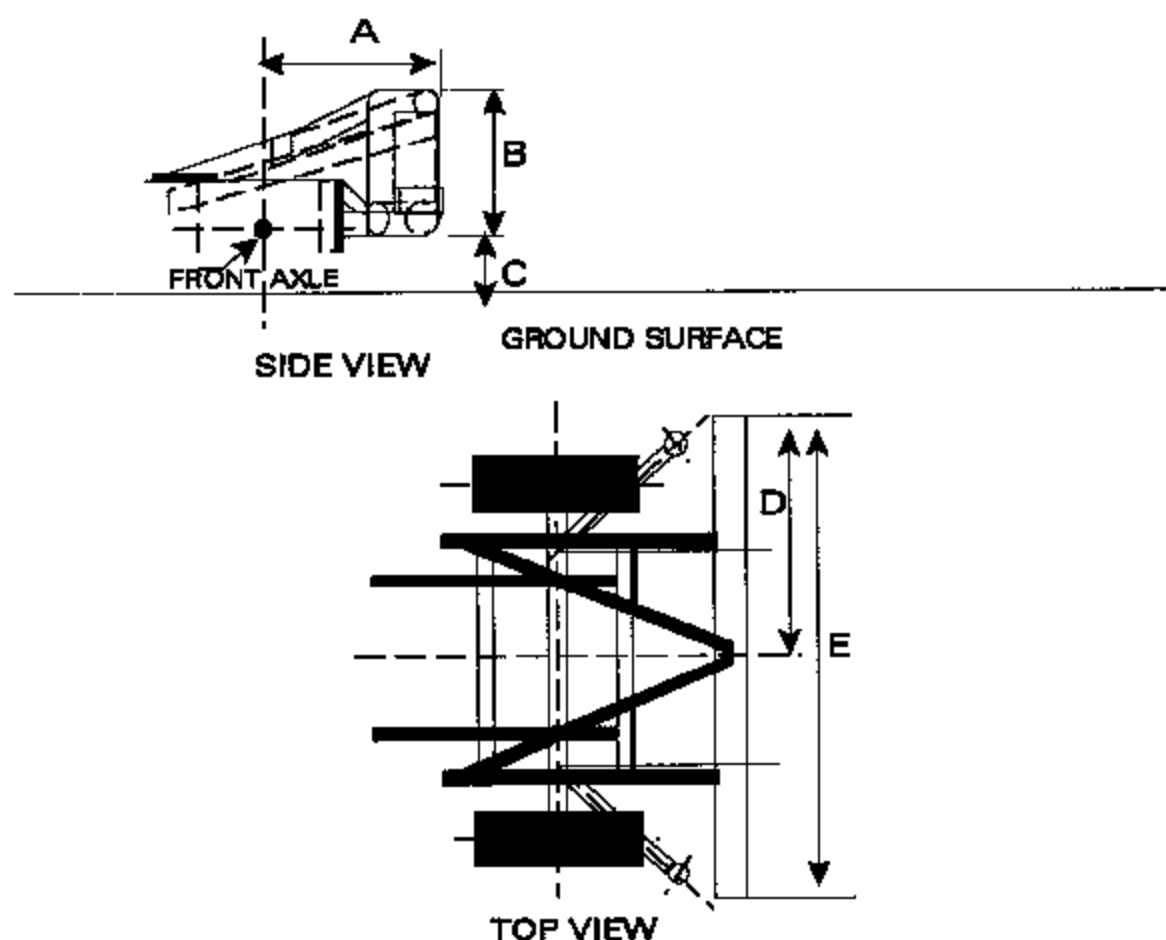


FIGURE 5.41
VEHICLE I ROLLOVER FIXTURE AT 270°

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SECTION 6
BARRIER INFORMATION



DIMENSIONS SHOWN IN TABLE ON NEXT PAGE

NOTES:

- 1.Face Plate 0.50 in. (19mm) thick cold rolled steel
- 2.All Inner Reinforcements 4.0 x 2.0 x 0.19 in. (102 x 51 x 5mm) Steel Tubing
- 3.Impact Surface above shown without .75 x 48 x 96 in. Plywood Face attached

| LETTER | INCHES | MILLIMETERS |
|--------|--------|-------------|
| A | 20.5* | 521* |
| B | 60.0 | 1524 |
| C | 5.0 | 127 |
| D | 39.0 | 991 |
| E | 78.0 | 198 |

TEST SET-UP OF COMMON CARRIAGE WITH 60" x 78" FLAT FACE IMPACT SURFACE INSTALLED:

| | |
|--------------------|-------------|
| LEFT FRONT WEIGHT | <u>1075</u> |
| RIGHT FRONT WEIGHT | <u>1075</u> |
| LEFT REAR WEIGHT | <u>887</u> |
| RIGHT REAR WEIGHT | <u>887</u> |

TOTAL WEIGHT 3924

* EXCLUDING 3/4" PLYWOOD FACE

DIMENSIONS FOR GTL 60" x 78" FLAT FACE IMPACT SURFACE