HSNO 6[illegible]

FINAL REPORT NUMBER 225-MGA-03-003

SAFETY COMPLIANCE TESTING FOR FMVSS 225
"Child Restraint Anchorage Systems"

SUZUKI
2003 GRAND VITARA XL-7
NHTSA No. C30509

MGA RESEARCH CORPORATION
446 Executive Drive
Troy, Michigan 48083

Test Date: April 29, 2003
Report Date: August 20, 2003

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
ROOM 6111 (NVS-221)
WASHINGTON, D.C. 20590

Prepared By: _____
Brad Reaume, Test Personnel

_____
Helen A. Kaleto, Laboratory Manager

Approved By: 2/4/04

Approval Date: _____

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: 6/30/04

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 225-MGA-03-003	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS 225 Compliance Testing of a 2003 Suzuki Grand Vitara XL-7, NHTSA No. C30509		5. Report Date August 20, 2003 6. Performing Organization Code MGA	
7. Author(s) Helen A. Kaleto, Laboratory Manager Brad Reaume, Test Personnel		8. Performing Organization Report No. 225-MGA-03-003	
9. Performing Organization Name and Address MGA Research Corporation 446 Executive Drive Troy, Michigan 48083		10. Work Unit No. 11. Contract or Grant No. DTNH22-02-D-11043	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (NVS-221) 400 Seventh Street, SW Room 6111 Washington, DC 20590		13. Type of Report and Period Covered Final Test Report 14. Sponsoring Agency Code NVS-221	
15. Supplementary Notes			
16. Abstract Compliance testing was conducted on the subject 2003 Suzuki Grand Vitara XL-7, NHTSA No. C30509, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-225T & 225L for the determination of FMVSS 225 compliance. The tests were conducted at MGA Research Corporation in Troy, Michigan on April 29, 2003. Test failures identified were as follows: NONE The data recorded indicates that the 2003 Suzuki Grand Vitara XL-7 tested appears to comply with the requirements for FMVSS 225, set forth by the National Highway Traffic Safety Administration.			
17. Key Words Compliance Testing Safety Engineering FMVSS 225 2003 Suzuki Grand Vitara XL-7		18. Distribution Statement Copies of this report are available From: NHTSA Technical Reference Division, Mail Code: NAD-52 400 Seventh Street, SW, Room 5108 Washington, D.C. 20590 Telephone No. (202) 366-4946	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 64	22. Price

Form DOT F 1700.7 (8-70)

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1.0 PURPOSE AND PROCEDURE

PURPOSE

These child restraint anchorage test results presented in this report are part of the Federal Motor Vehicle Safety Standard (FMVSS) No. 225 compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by MGA Research Corporation (MGA) under Contract No. DTNH22-02-D-11043. The purpose of the testing was to determine if the subject vehicle, a 2003 Suzuki Grand Vitara XL-7, NHTSA No. C30509 meets the performance requirements of FMVSS No. 225, "Child Restraint Anchorage Systems."

PROCEDURE

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedures, TP-225T (5/3/01) and TP-225L (6/11/01), and MGA's Laboratory Test Procedure, MGATP225GOV (3/20/03).

The front occupant compartment consisted of two (2) adjustable outboard bucket seats and the rear occupant compartment consisted of a three-passenger bench seat. Each rear outboard seating position was equipped with a child restraint anchorage system (one tether and two lower anchors). The rear center occupant position was equipped with a tether anchorage only. The center-to-center spacing between the rear outboard lower anchorage systems was approximately 680 mm. The lower anchorages and the tether anchorage for the right rear seating position was tested with the SFAD 2 fixture and the tether anchorage in the rear center seating position was tested with the SFAD 1 fixture.

2.0 COMPLIANCE TEST AND DATA SUMMARY

TEST SUMMARY

The testing was conducted at MGA, Troy, Michigan on April 29, 2003.

Based on the test results, the 2003 Suzuki Grand Vitara XL-7, appeared to meet the performance requirements of FMVSS No. 225 for these tests.

The SFAD 2 at the right rear seating position sustained a maximum force of 10,066 N and held the required load for 1 second. The SFAD 1 at the rear center seating position sustained a maximum force of 10,214 N and held the required load for 1 second. The applied maximum forces are provided in Table 1.

DATA SUMMARY

Summary data is provided below, and data detailing configuration and location of each child restraint anchorage system are provided in Section 5.0. Photographs are found in Section 6.0 and test plots are found in Section 7.0.

Table 1. Summary Data for Strength

MGA Test #	Fixture Type	Seating Position	Max. Load (N)
SB3227	SFAD II	Rear Right	10,066
	SFAD I	Rear Center	10,214

3.0 TEST VEHICLE INFORMATION

Table 2. General Test and Vehicle Parameter Data

VEH. MOD YR/MAKE/MODEL/BODY	2003 Suzuki Grand Vitara XL-7
VEH. NHTSA NO.	C30509
VIN	JS3TX92V03[redacted]
COLOR	Pearl White
VEH. BUILD DATE	September 2002
TEST DATE	April 29, 2003
TEST LABORATORY	MGA Research Corporation
OBSERVERS	Brad Reaume

GENERAL INFORMATION:

Date Received: 3/19/03 Odometer Reading: 53 Miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Suzuki Motor Corporation

Date of Manufacture: 9/02; VIN: JS3TX92V034103214

GVWR: 2230kg; GAWR FRONT: 1000kg

GAWR REAR: 1300kg

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 180kpa REAR: 250kpa

Recommended Tire Size: P235/60R16

FRONT: 180kpa REAR: 250kpa

VEHICLE CAPACITY DATA:

Type of Front Seats:	Bench ___;	Bucket X;	Split Bench ____
Number of Occupants:	Front 2;	Rear 3;	TOTAL; 5

4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

MGA Research Corporation 446 Executive Drive Troy, Michigan 48083	
Test Equipment Used for Testing	**Calibration Due Date**
MGA Hydraulic Test Frame	N/A
Two (2) Load Cells 3,000 lb Capability	S/N 306 8/20/03 & S/N 250 6/03/03
Two (2) String Potentiometers (S/N 18385 & 18386)	Calibrated at each use
Hydraulic Pump	N/A
MGA CRF Fixture	N/A
MGA SFAD2	N/A
MGA H-point Machine	N/A
MGA 2-Dimensional Template	N/A
Linear Scale	7/24/03 (SN# 133)
MGA Data Acquisition System	N/A
Three (3) Hydraulic Cylinders	N/A
Calipers	2/14/04 (DCL002)
Force Gauge	10/11/03 (SN# FR G001)
Inclinometer (Digital)	6/26/03 (SN# DGP001)

5.0 DATA

Table 3. Child Restraint Tether Anchorage Configuration (Data Sheet 1)

Seating Position		Permit the attachment of a tether hook	Accessible without the need for any tool other than a screwdriver or coin	Ready for use without the need for any tools	Sealed to prevent the entry of exhaust fumes
Front Row		N/A	N/A	N/A	N/A
Second Row	LH	Yes	Yes	Yes	Yes
	Ctr.	Yes	Yes	Yes	Yes
	RH	Yes	Yes	Yes	Yes
Third Row		N/A	N/A	N/A	N/A

Note: AS DETERMINED USING THE PROCEDURES SPECIFIED IN TP-225L & 225T.

REMARKS: NONE

Table 4. Child Restraint Lower Anchorage Configuration (Data Sheet 2)

OBSERVED LOWER ANCHORAGE CONFIGURATION	SEAT POSITION				
		FRONT ROW	SECOND ROW		THIRD ROW
Above anchorage, permanently marked with a circle not less than 13 mm in Dia.; and whose color contrasts with its background; and its center is not less than 50 mm and not more than 75 mm above the bar, and in the vertical longitudinal plane that passes through the center of the bar.	LH	N/A	Yes		N/A
	Ctr		N/A		
	RH		Yes		
Each of the bars is visible, without the compression of the seat cushion or seat back, when the bar is viewed, in a vertical longitudinal plane passing through the center of the bar, along a line marking an upward 30 degree angle with a horizontal plane.	LH	N/A	N/A		N/A*
	Ctr				
	RH				
Diameter of the bar (mm)	LH	N/A	5.96	5.97	N/A
	Ctr		N/A		
	RH		5.92	5.94	
Inspect if the bars are straight, horizontal and transverse	LH	N/A	Yes		N/A
	Ctr		N/A		
	RH		Yes		
Optional Marking: At least one anchorage bar (when deployed for use, if storable anchorages), one guidance fixture, or one seat marking is visible.	LH	N/A	N/A		N/A
	Ctr				
	RH				
Optional Marking: If guidance fixtures are used, the fixture(s) must be installed.	LH	N/A	N/A		N/A
	Ctr				
	RH				
Measure the distance between Point "Z" of the CRF and the center of the anchorage bar (mm)	LH	N/A	69	68	N/A
	Ctr		N/A		
	RH		68	68	
Measure the distance between the SRP to the center of the anchorage bar (mm)	LH	N/A	145		N/A
	Ctr		N/A		
	RH		145		

Table 4. Child Restraint Lower Anchorage Configuration (Data Sheet 2) (continued)

OBSERVED LOWER ANCHORAGE CONFIGURATION	SEAT POSITION			
		FRONT ROW	SECOND ROW	THIRD ROW
Inspect if the centroidal longitudinal axes are collinear within 5 degrees	LH	N/A	Yes	N/A
	Ctr		N/A	
	RH		Yes	
Inspect if the inside surface of the bar that is straight and horizontal section of the bars, and determine they are not less than 25 mm, but not more than 40 mm in length (mm).	LH	N/A	36 / 37	N/A
	Ctr		N/A	
	RH		37 / 36	
Inspect if the bars can be connected to, over their entire inside length by the connectors of child restraint system.	LH	N/A	Yes	N/A
	Ctr		N/A	
	RH		Yes	
Measure the distance between the center of the length of one bar to the center of the length of the other bar. The requirement is 280 mm ± 1 mm (mm).	LH	N/A	280	N/A
	Ctr		N/A	
	RH		280	
Inspect if the bars are an integral and permanent part of the vehicle.	LH	N/A	Yes	N/A
	Ctr		N/A	
	RH		Yes	
Inspect if the bars are rigidly attached to the vehicle. If feasible, hold the bar firmly with two fingers and gently pull.	LH	N/A	Yes	N/A
	Ctr		N/A	
	RH		Yes	

PITCH, YAW, & ROLL INFORMATION

SEAT POSITION	PITCH (degree)	YAW (deg)	ROLL (deg)
LH	9.6	No Data	0.4 to O/B
Ctr.	N/A		N/A
RH	11.4		0.2 to I/B

Note: AS DETERMINED USING THE PROCEDURES SPECIFIED IN TP-225L & 225T.

REMARKS: NONE

Table 5. Tether Location and Dimensional Measurements (Data Sheet 3)

SEAT POSITION FOR TETHER		TETHER ANCHORAGE LOCATION Located in the required zone?
Front Row	LH	N/A
	Ctr.	
	RH	
Second Row	LH	Yes
	Ctr.	Yes
	RH	Yes
Third Row	LH	N/A
	Ctr.	
	RH	

Note: AS DETERMINED USING THE PROCEDURES SPECIFIED IN TP-225L & 225T.

REMARKS: NONE

Table 6. Tether Anchorage Static Loading (Data Sheet 5)

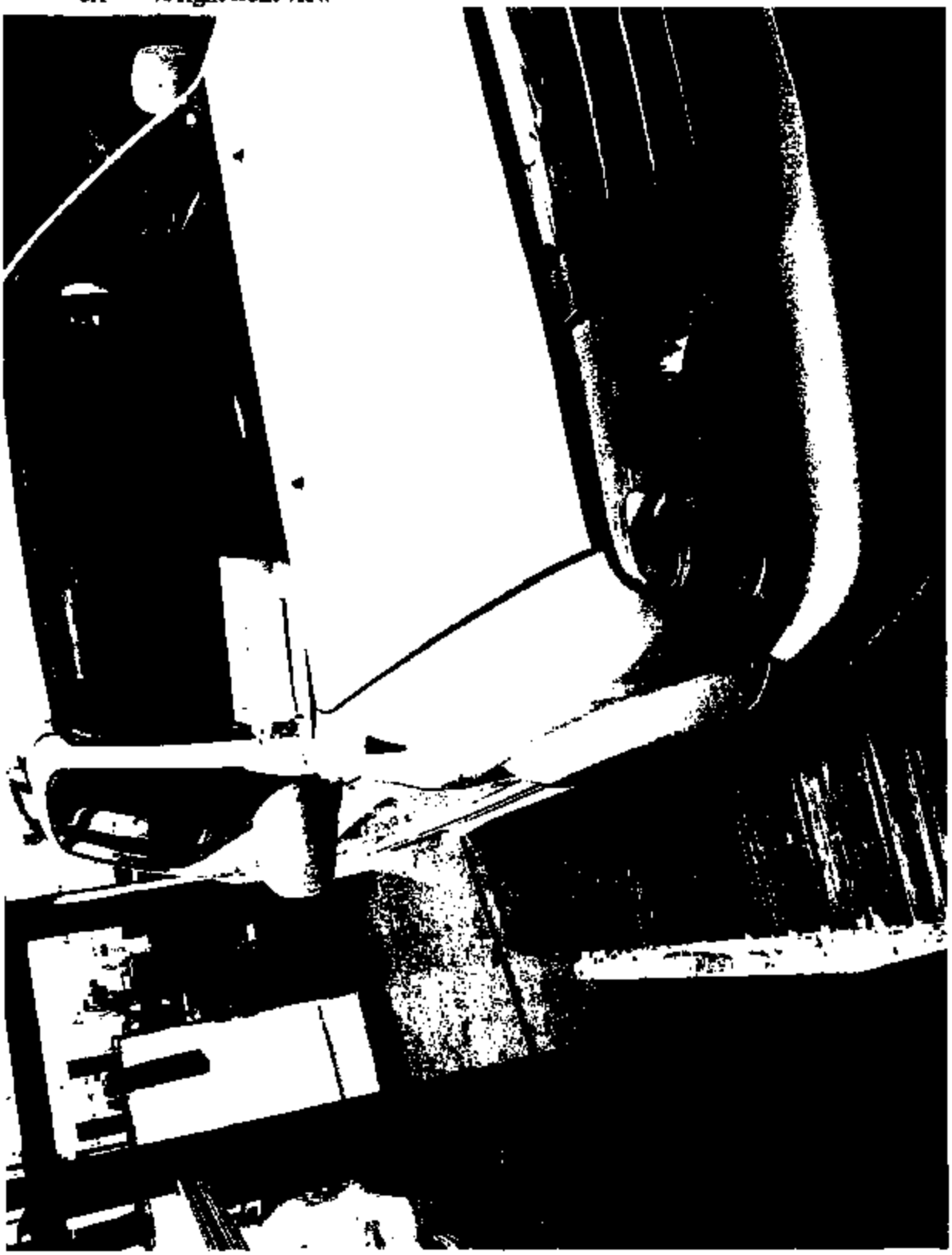
SEAT POSITION		Seat, Seat Back, & Head Restraint Positions			Type of SFAD used	Angle (deg)	Initial Location (mm)	Onset Rate (N/sec.)	Force Applied (N)	Max. Load (N)	Final Location (mm)	Horiz. Displ. (mm)
		Seat	Seat Back	Is There a Head Restraint ?								
Front Row	LH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Ctr.											
	RH											
Second Row	LH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Ctr.	Full Rwd	Most upright	No	1	5	N/A	352	10,000	10,214*	N/A	N/A
	RH	Full Rwd	Most upright	N/A	2	5	N/A	352	10,000	10,066*	N/A	N/A
Third Row	LH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Ctr.											
	RH											

Note: (1) AS DETERMINED USING THE PROCEDURES SPECIFIED IN TP-225L & 225T.

REMARKS: *Applied force exceeded force specified in the test procedure.

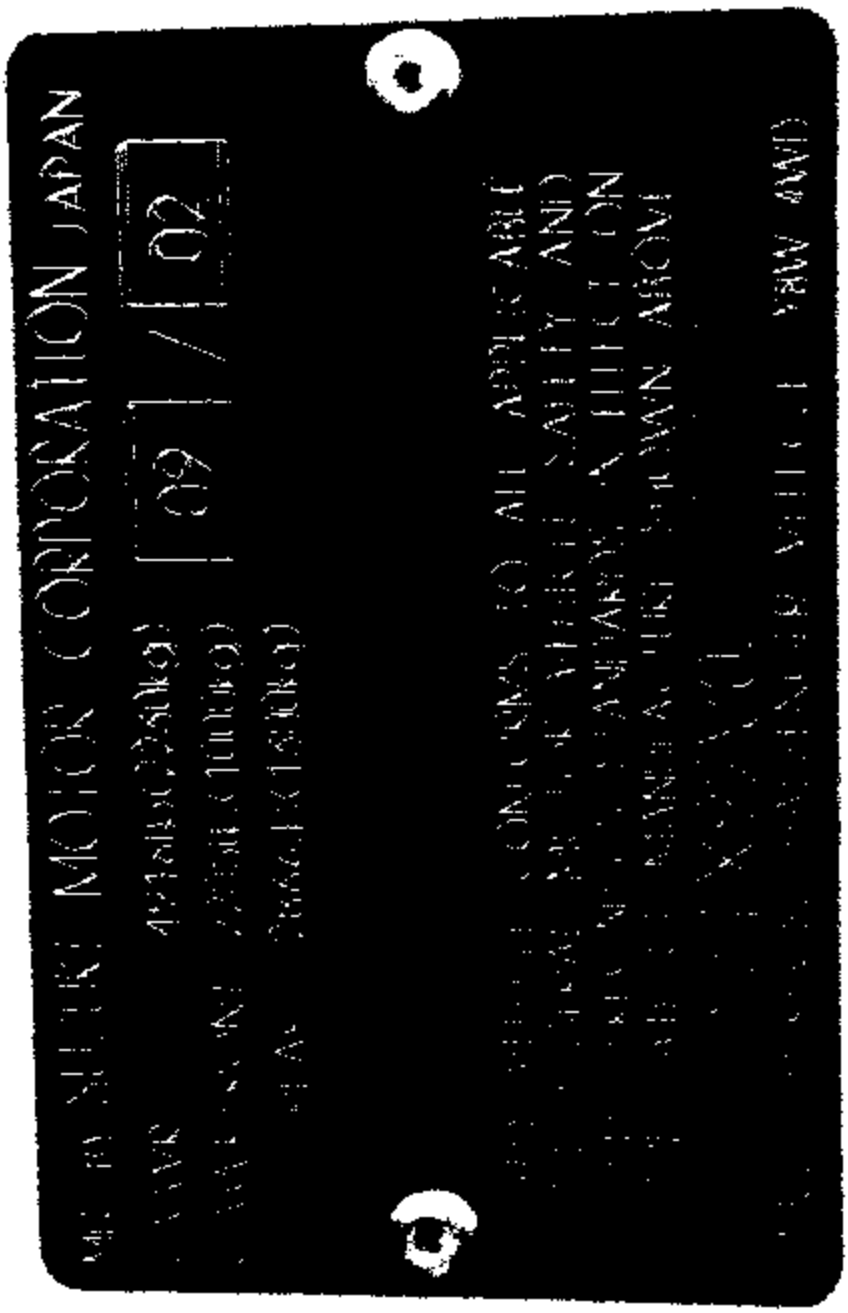
6.0 PHOTOGRAPHS

6.1 ¾ right front view

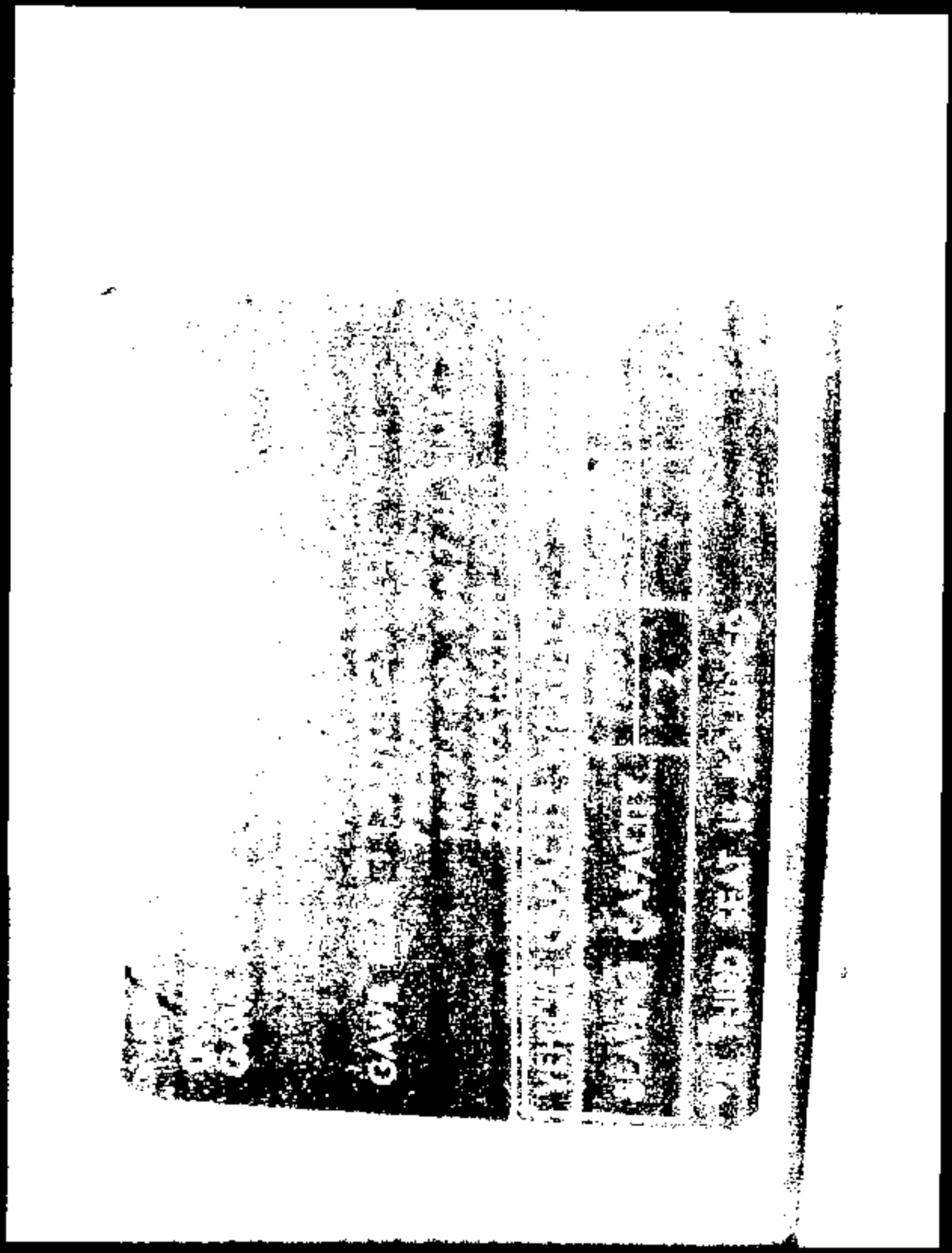


6.2 ¾ left front view

6.3 Test vehicle's certification label

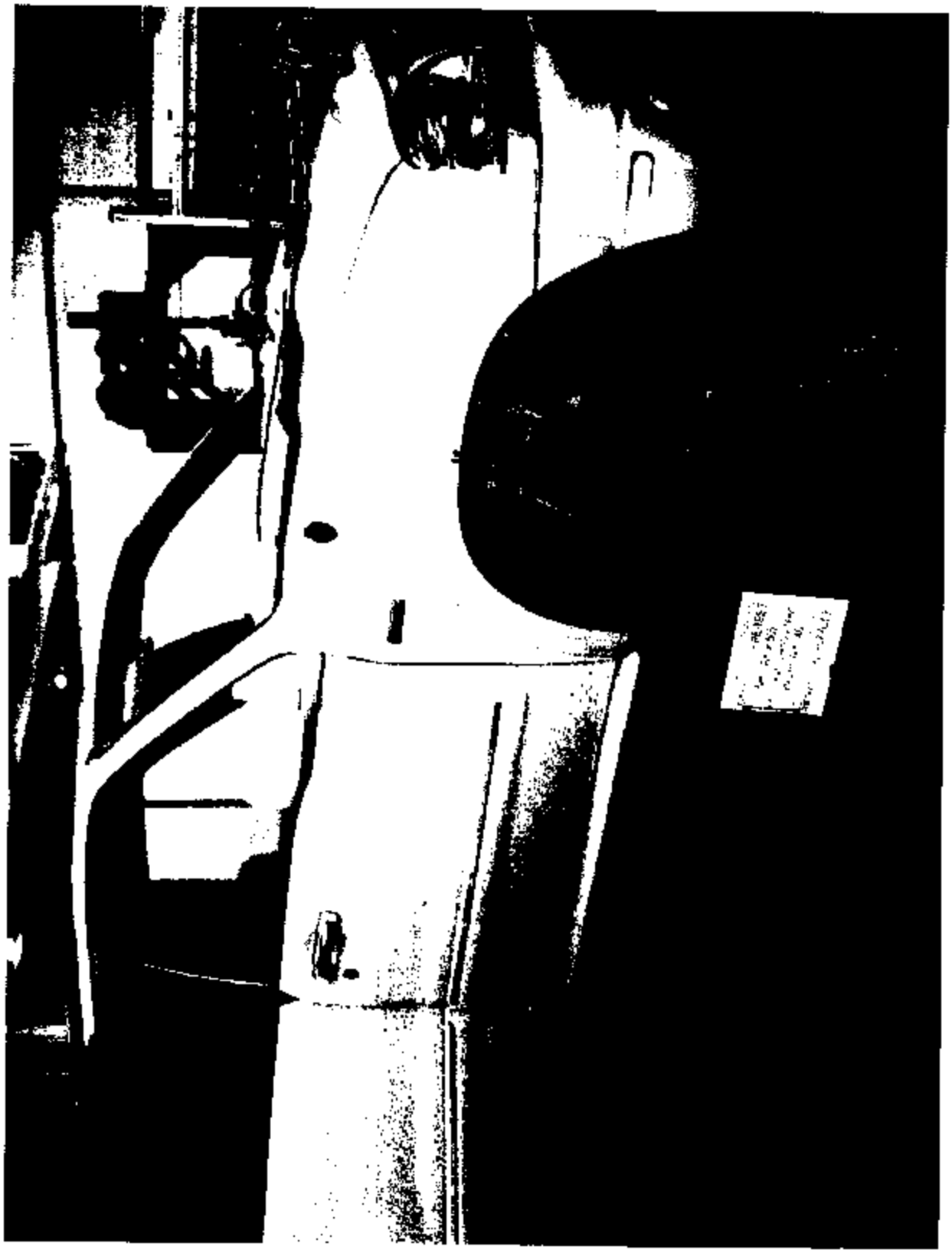


6.4 Test vehicle's tire information placard

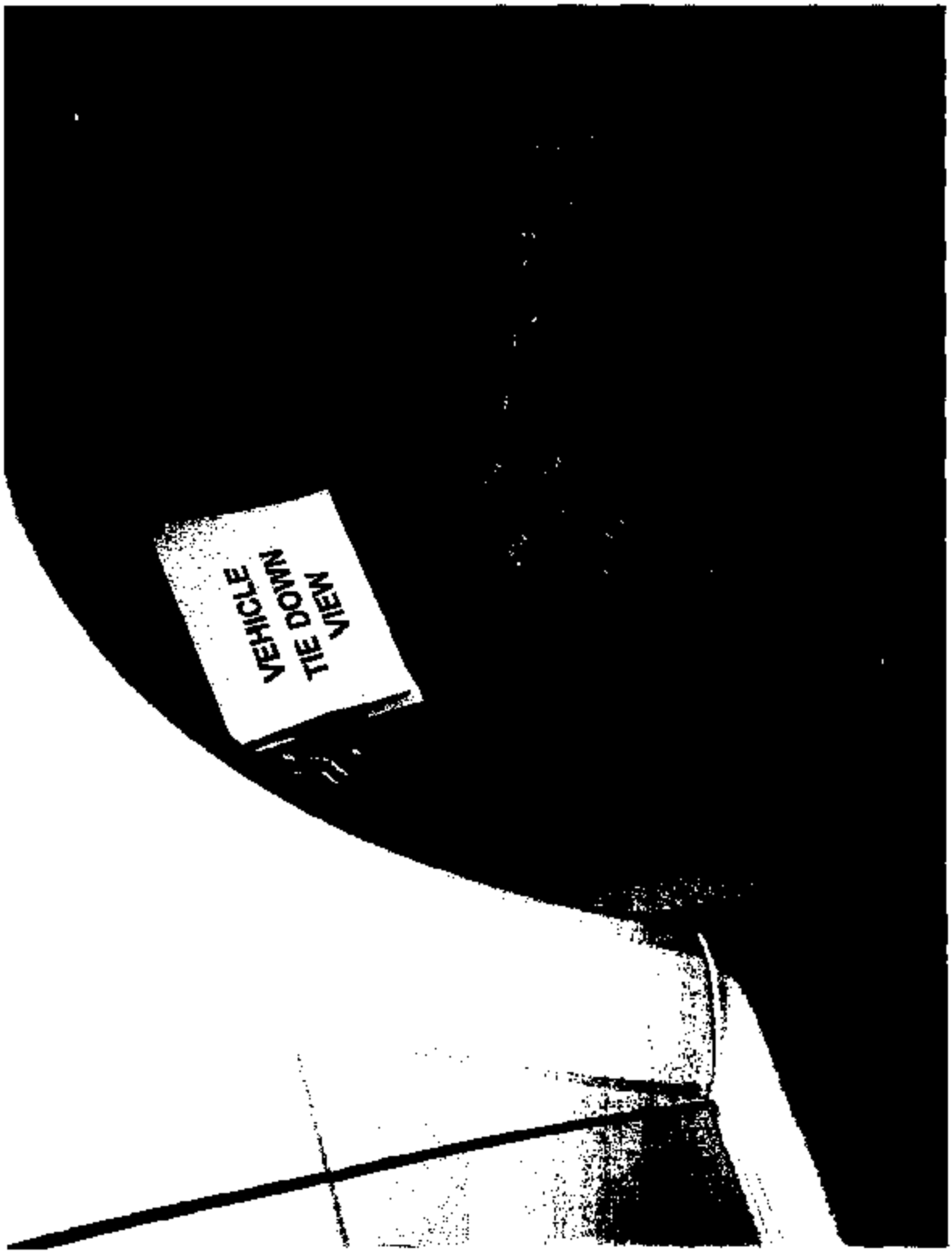


6.5 ¾ Rear left side view of test vehicle with test apparatus in place C30509

6.6 ¾ Frontal right side view of test vehicle with test apparatus in place

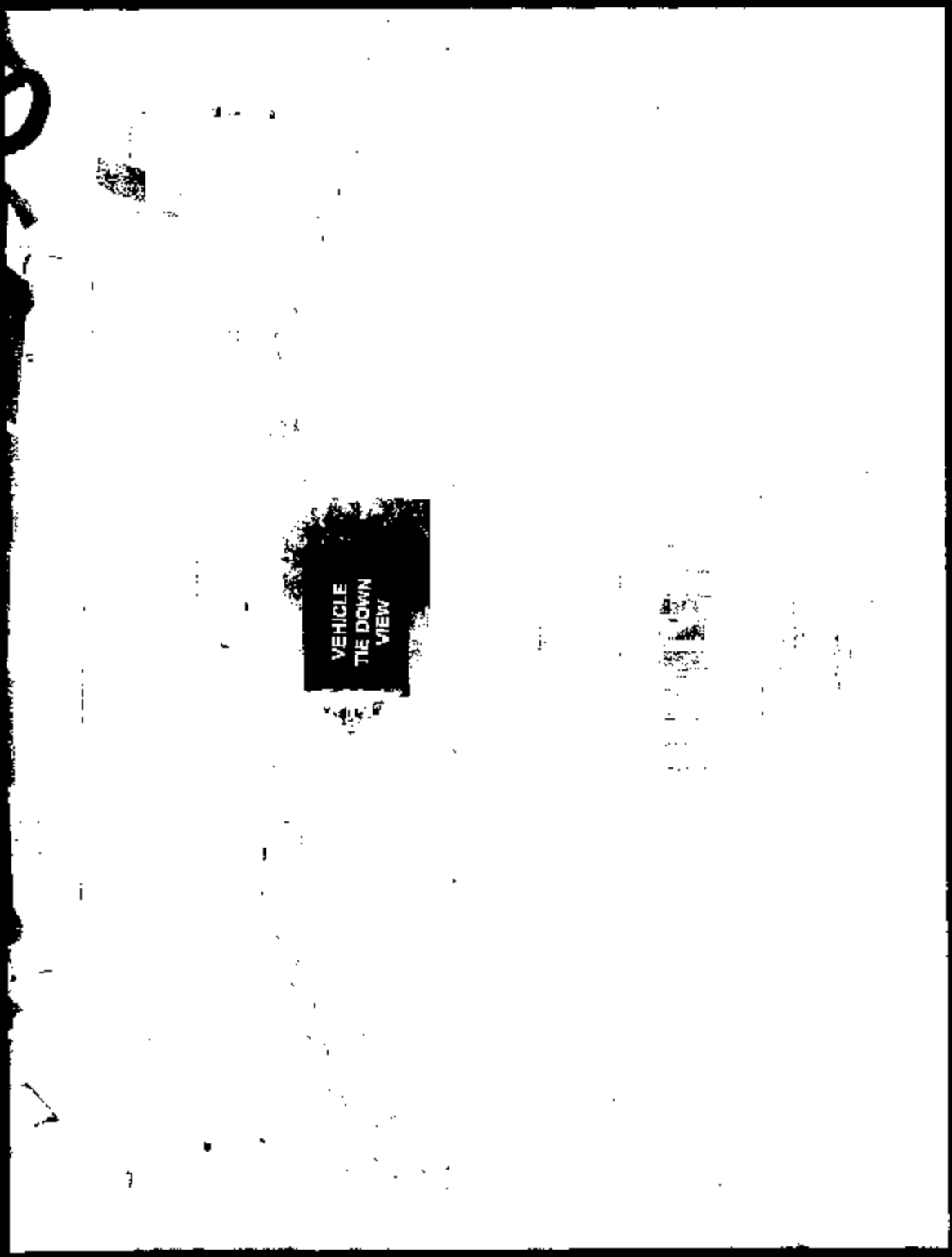


6.7.3 right front



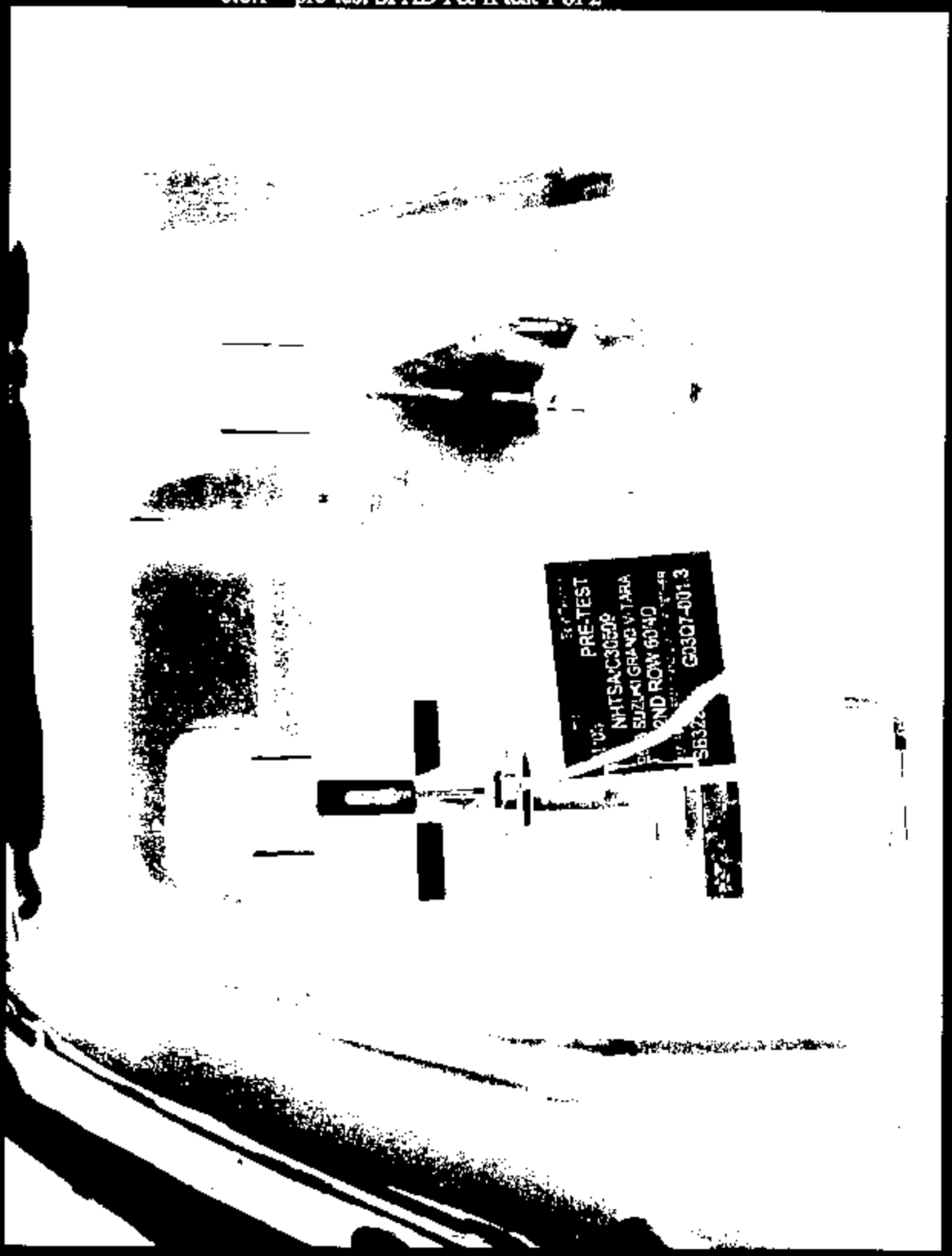
6.7.4 right rear

6.7.5 rear under vehicle

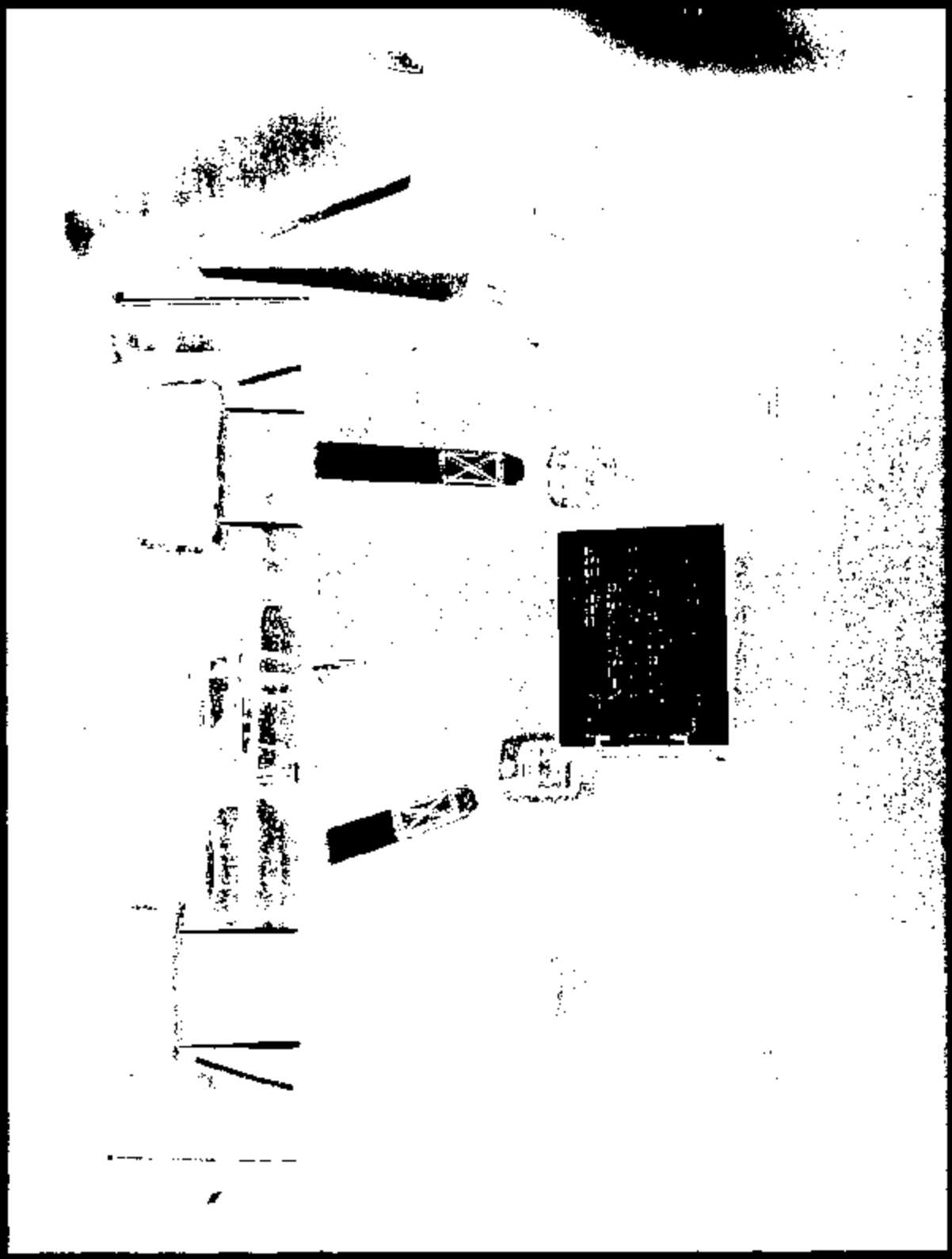


6.8 Pre-test views of each child restraint anchorage system installed in the vehicle

6.8.1 pre-test SFAD I & II test 1 of 2

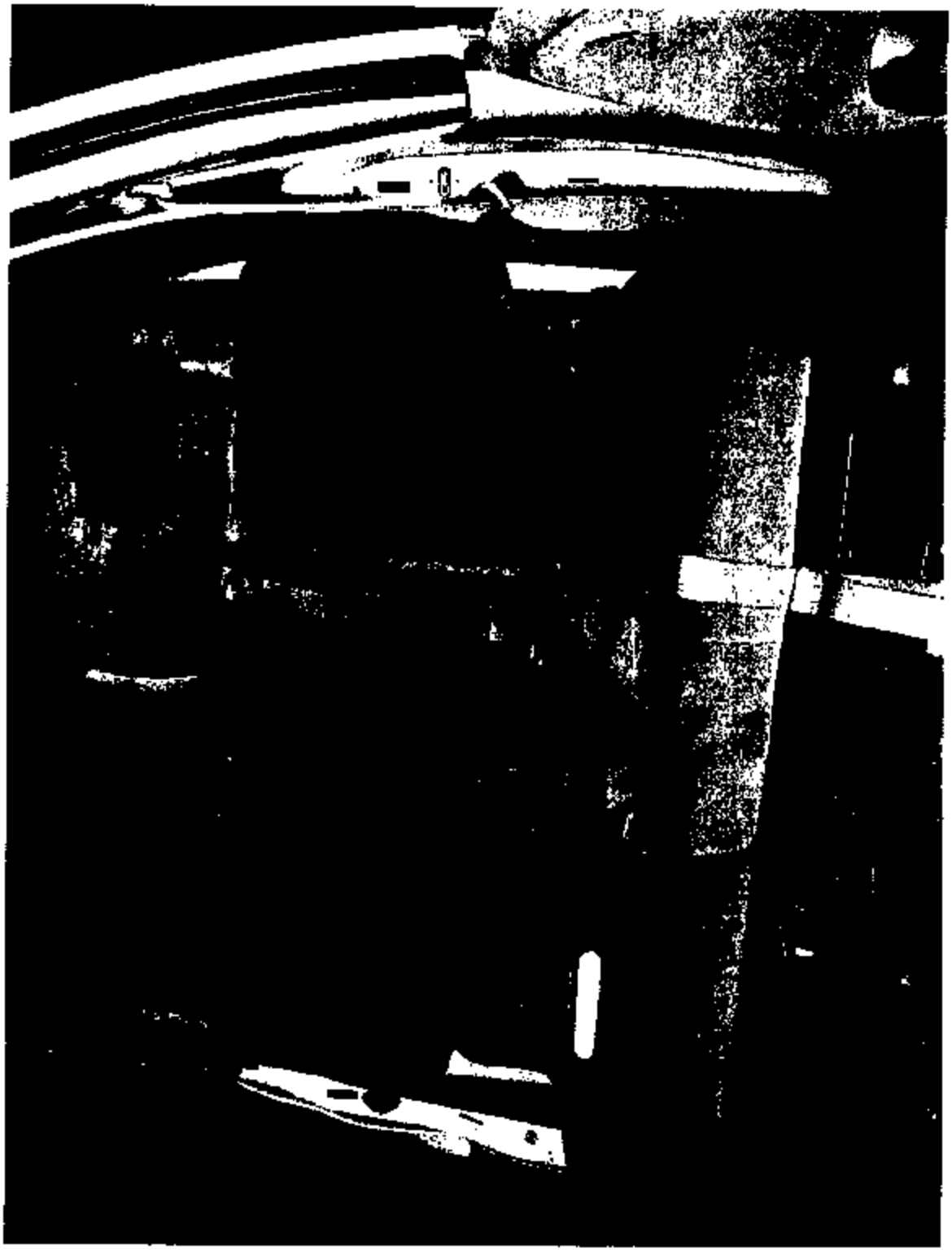


6.8.2 pre-test SFAD I & II test 2 of 2



6.9 Pre-test equipment set up at each designated seating position & loading device with load cell and the test fixture in test position

6.9.1 pre-test equipment 1 of 5

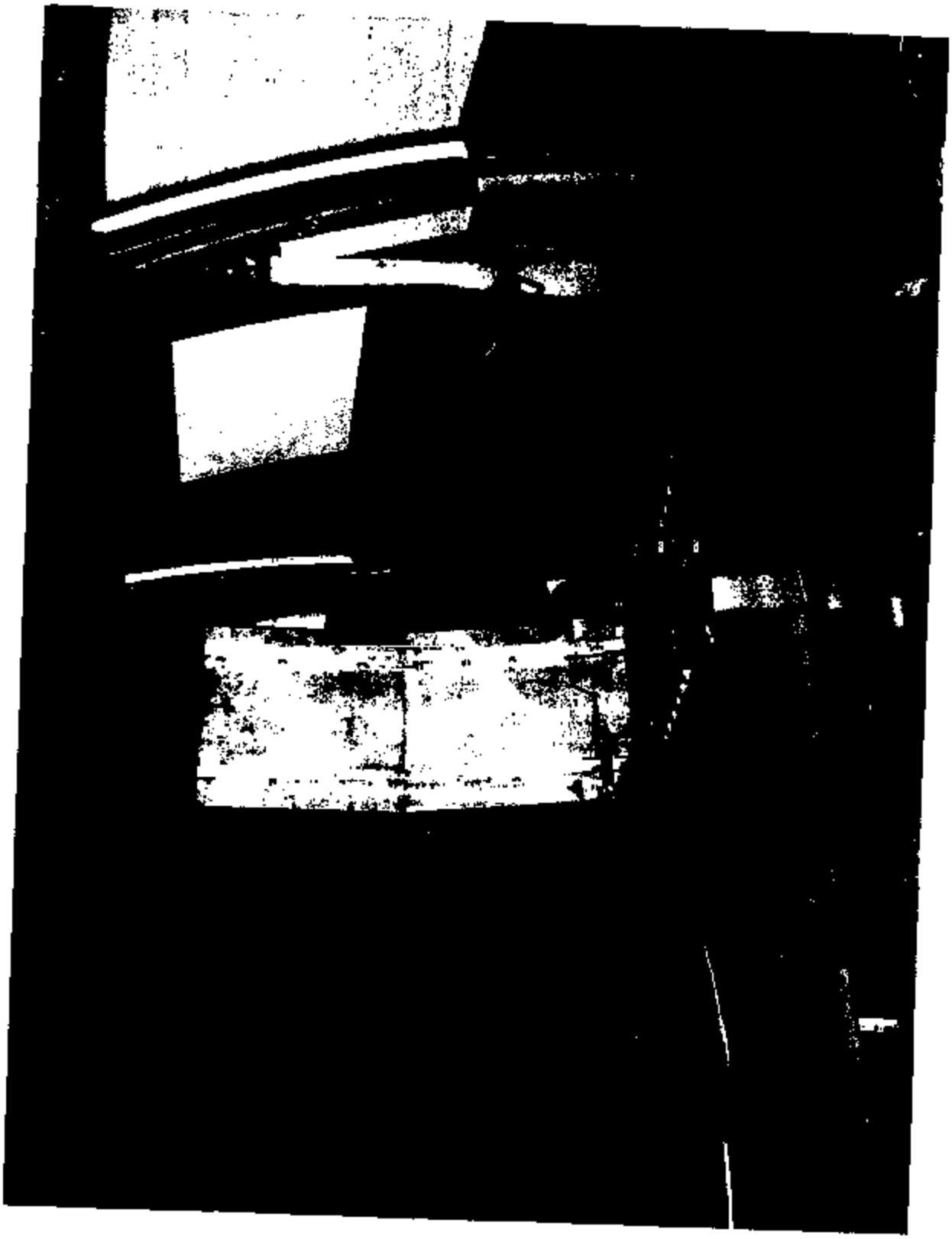


6.9.2 pre-test equipment 2 of 5

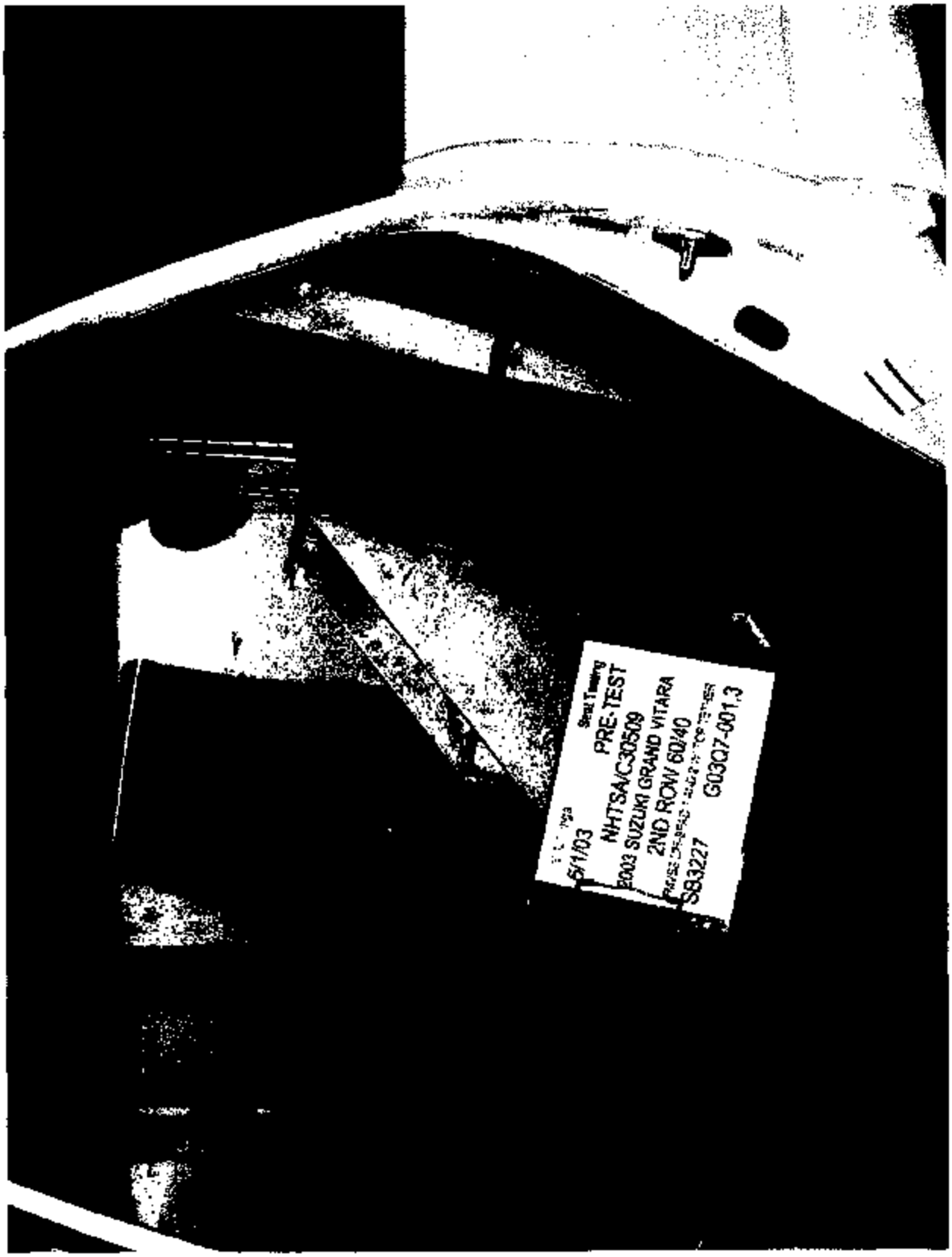
6.9.3 pre-test equipment 3 of 5

6.9.4 pre-test equipment 4 of 5

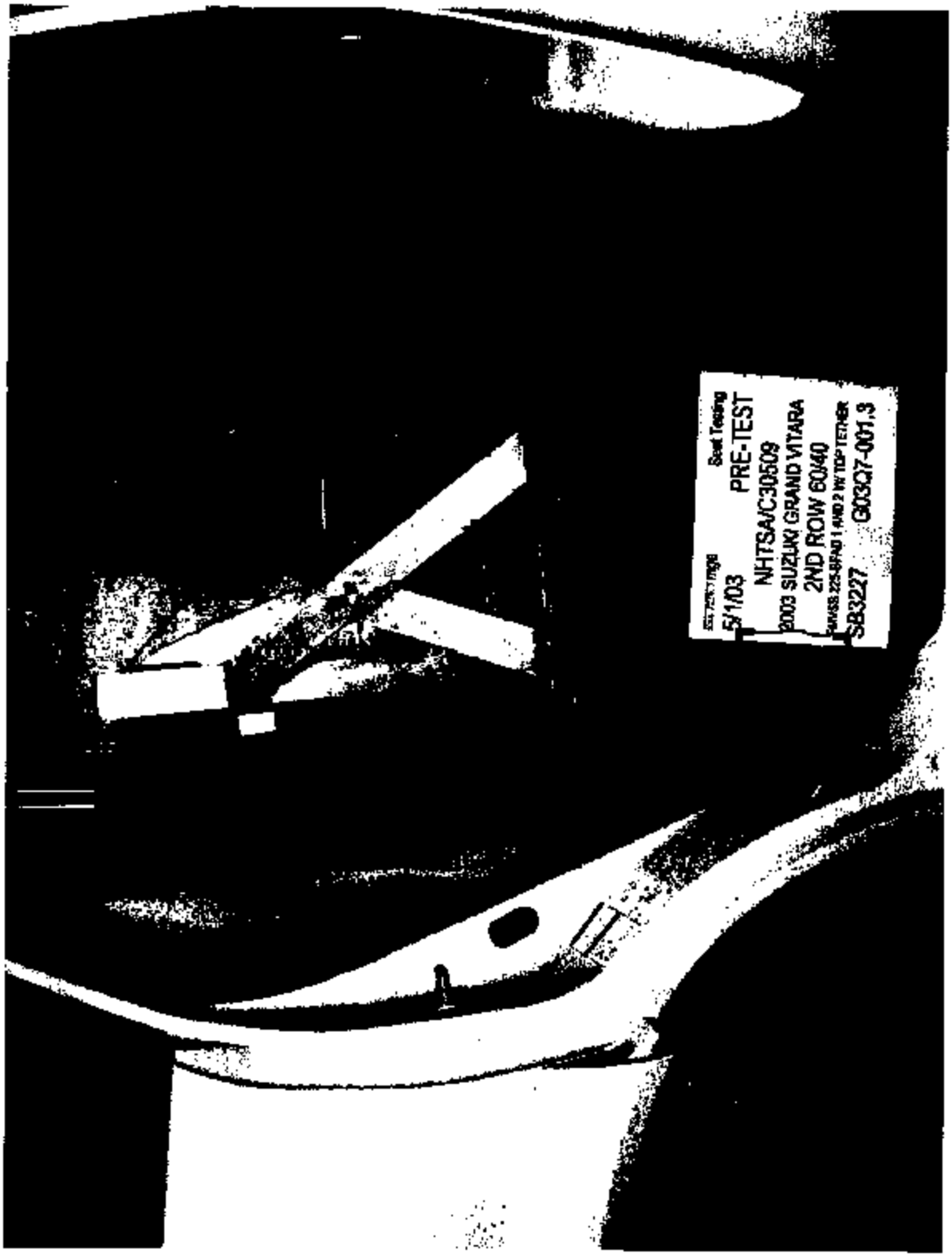
6.9.5 pre-test equipment 5 of 5



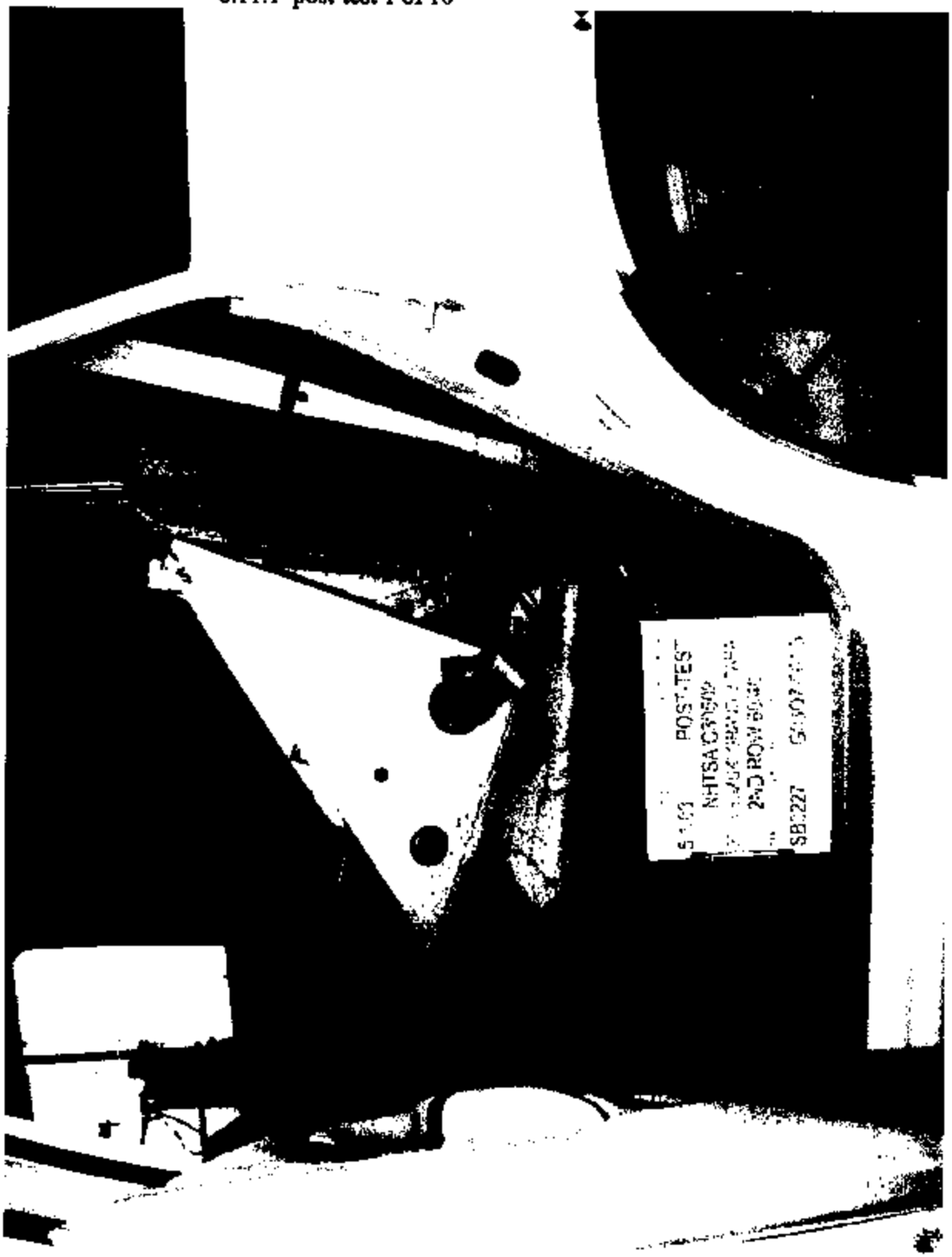
6.10 Load system control and data recording device in test position
6.10.1 forward SFAD I & II test 1 of 2



6.10.2 forward SFAD I & II test 2 of 2

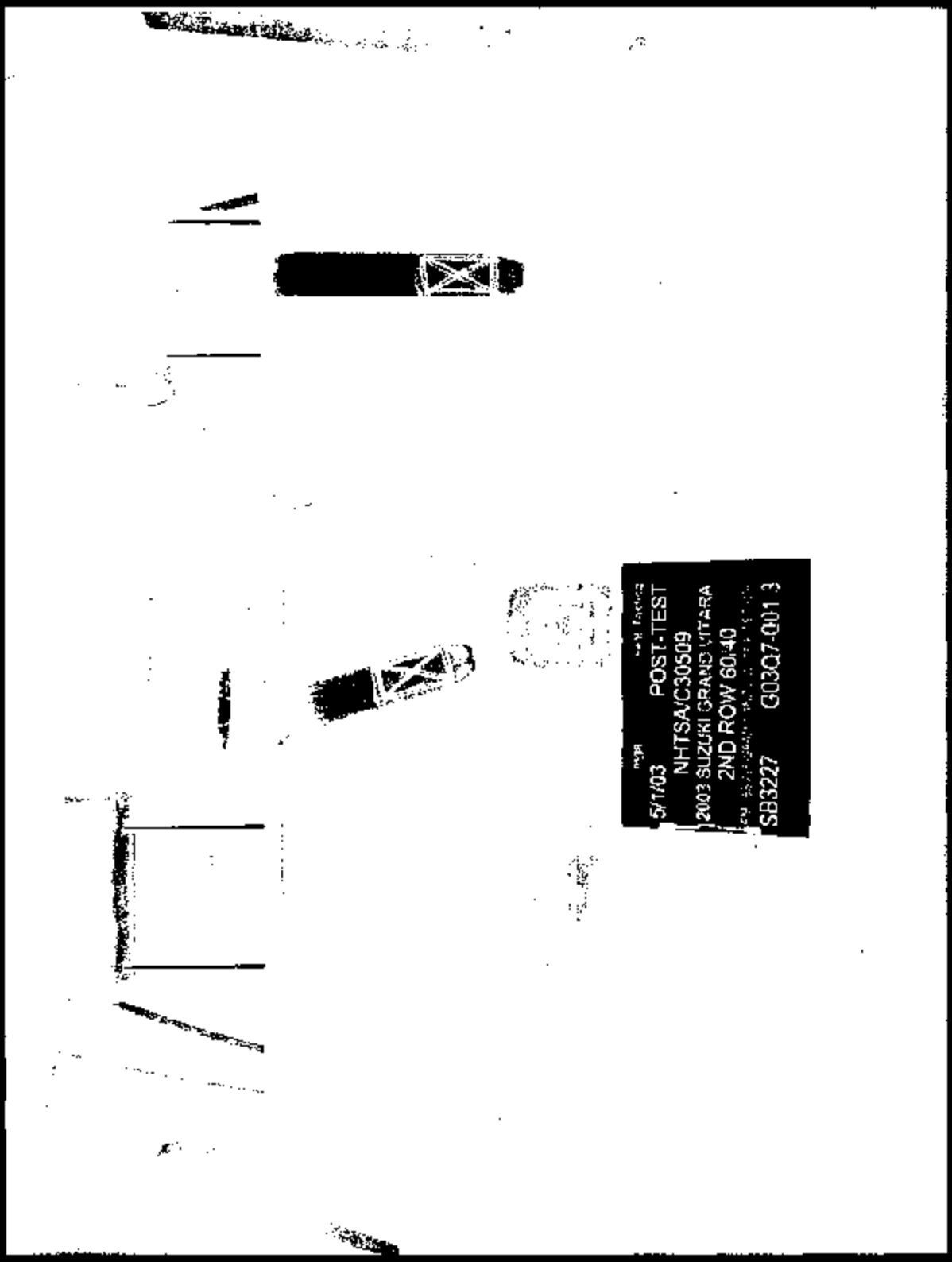


6.11 Post-test condition of each child restraint anchorage system
6.11.1 post-test 1 of 10

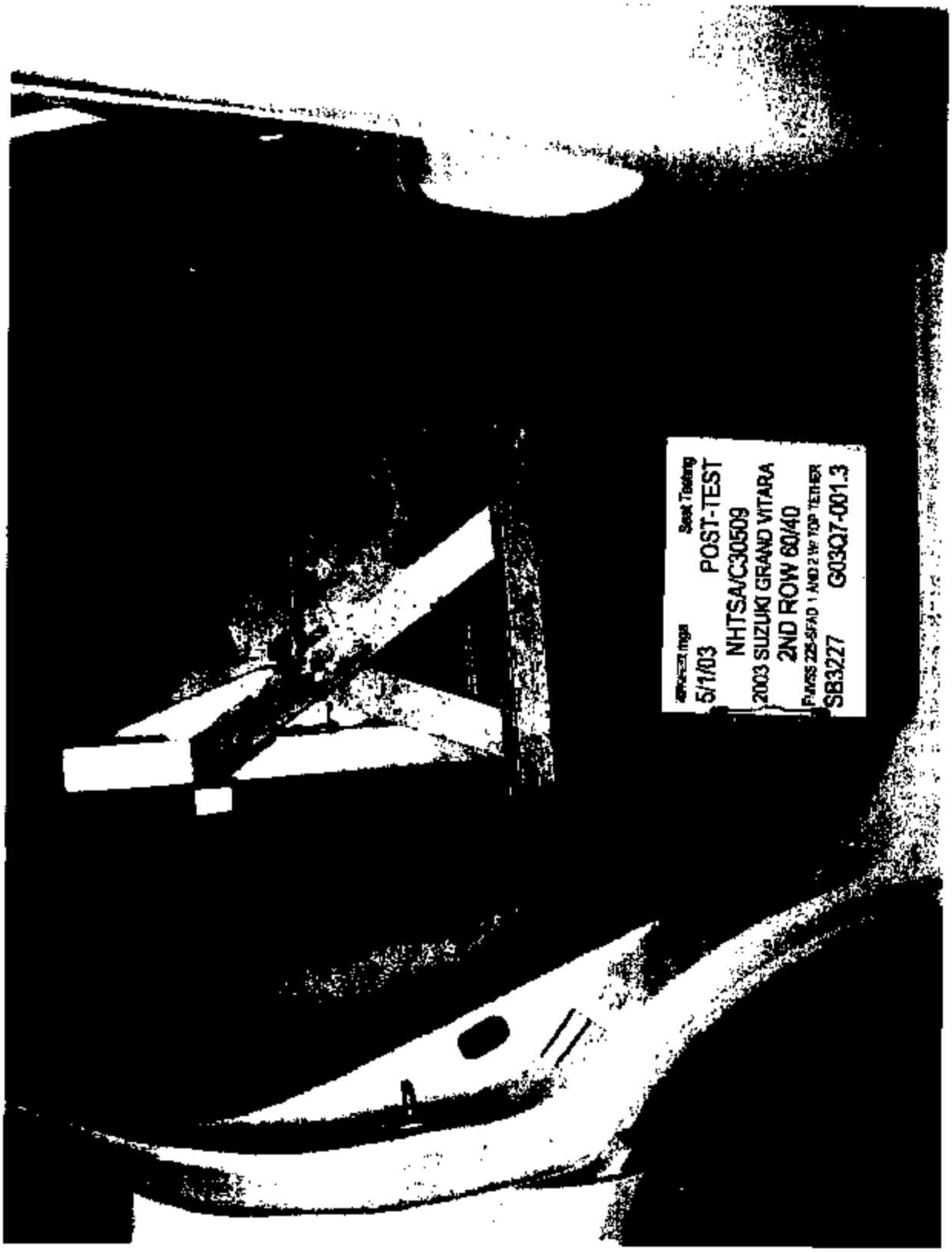


6.11.2 post-test 2 of 10

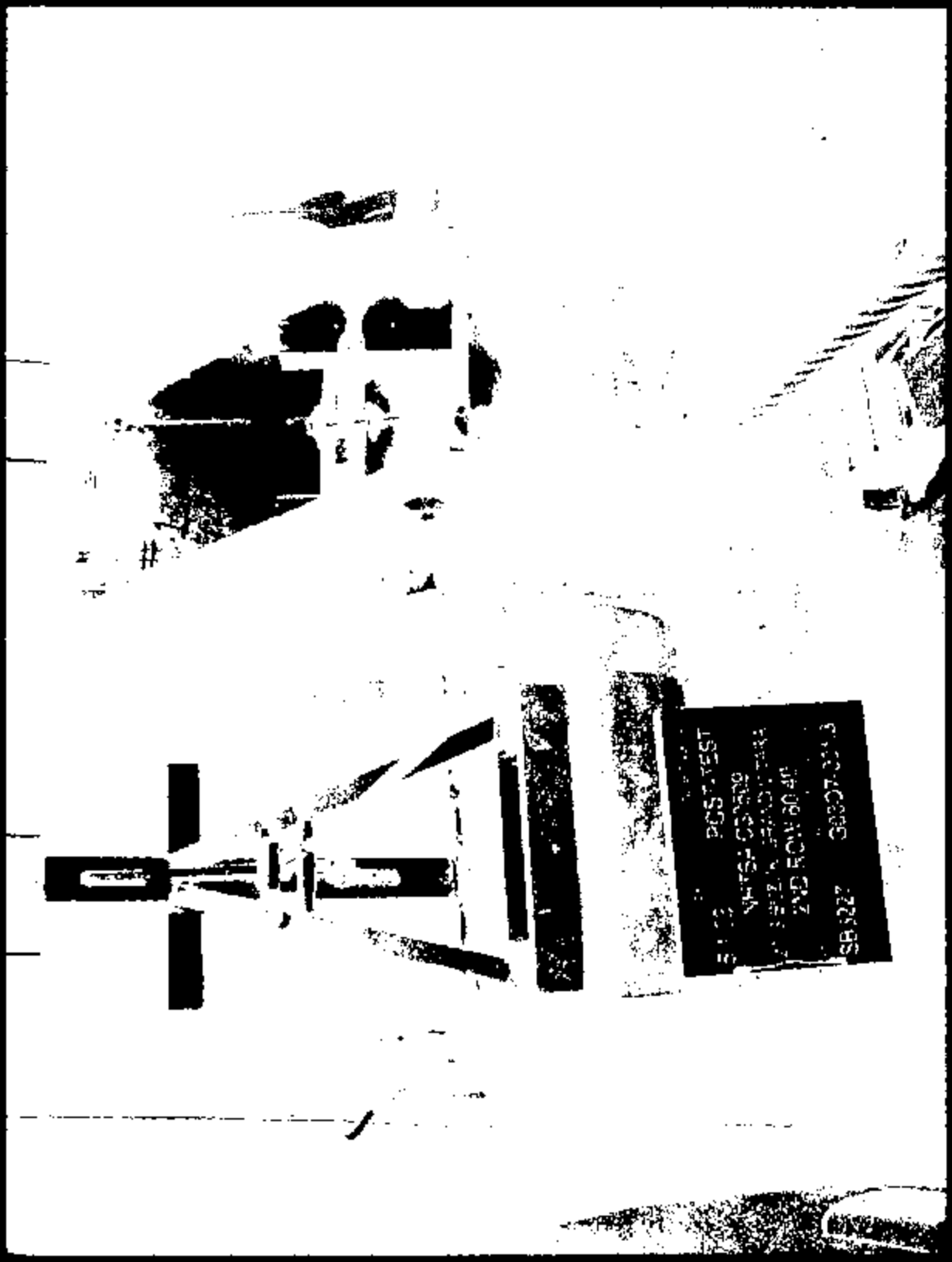
6.11.3 post-test 3 of 10



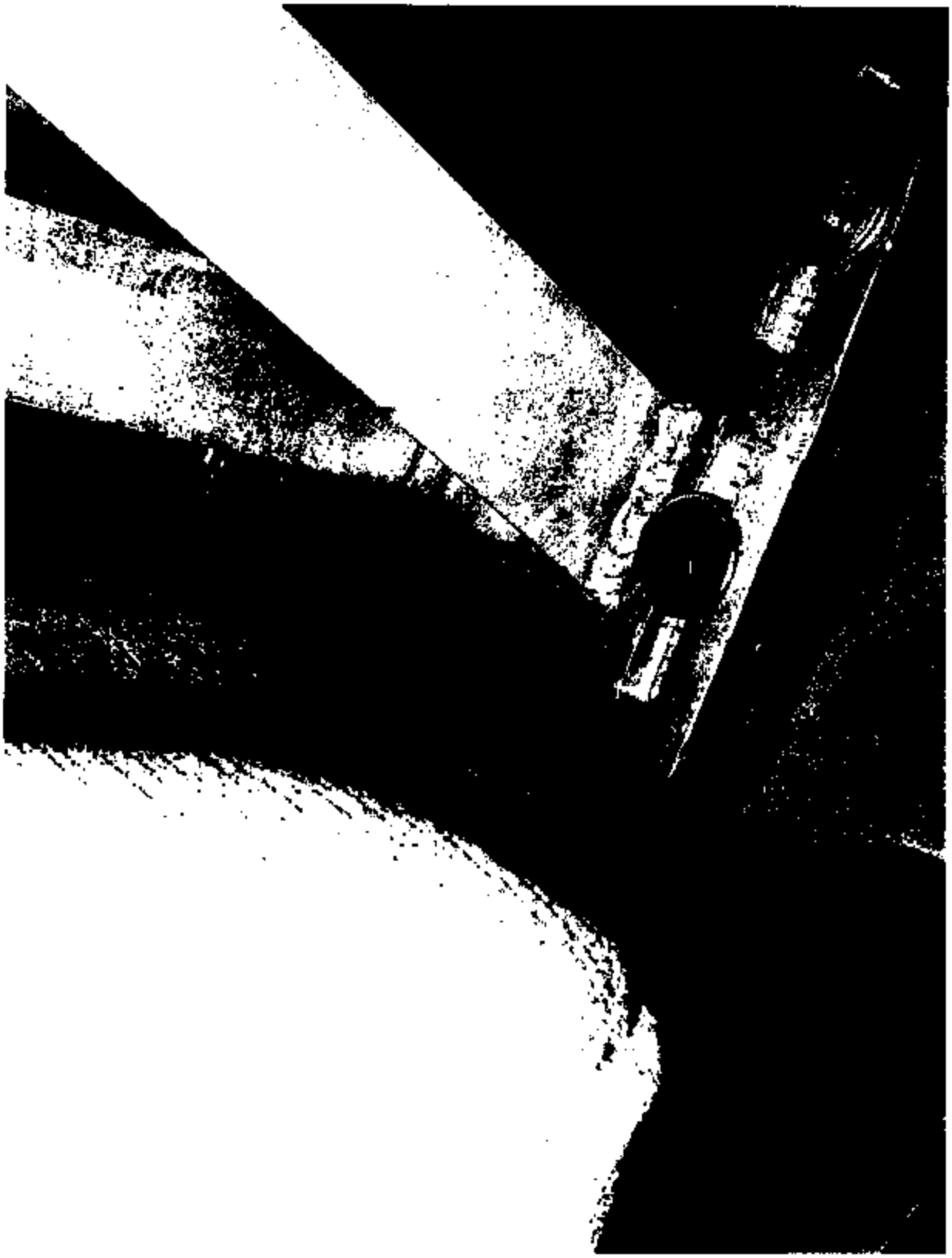
6.11.4 post-test 4 of 10



6.11.5 post-test 5 of 10

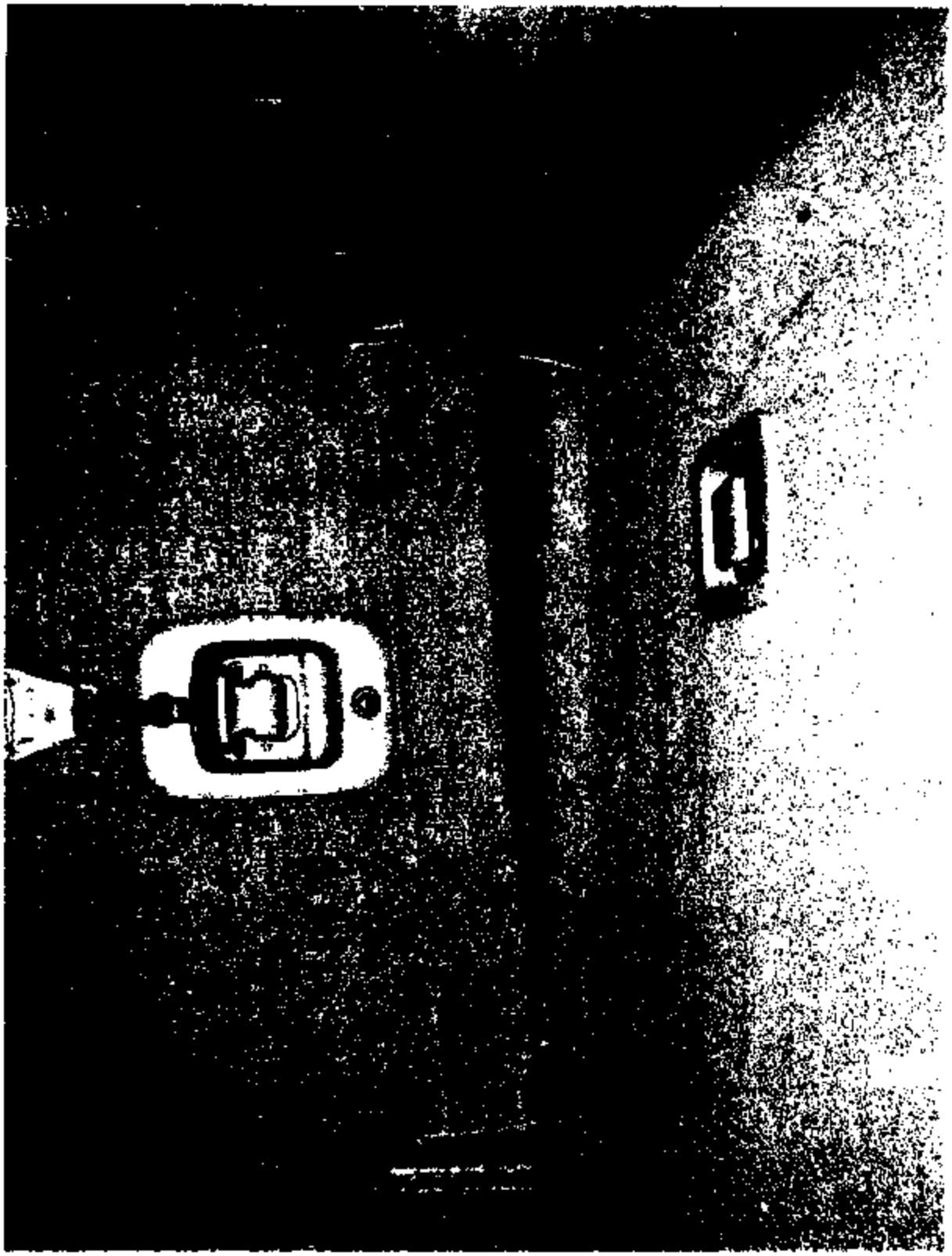


6.11.6 post-test 6 of 10

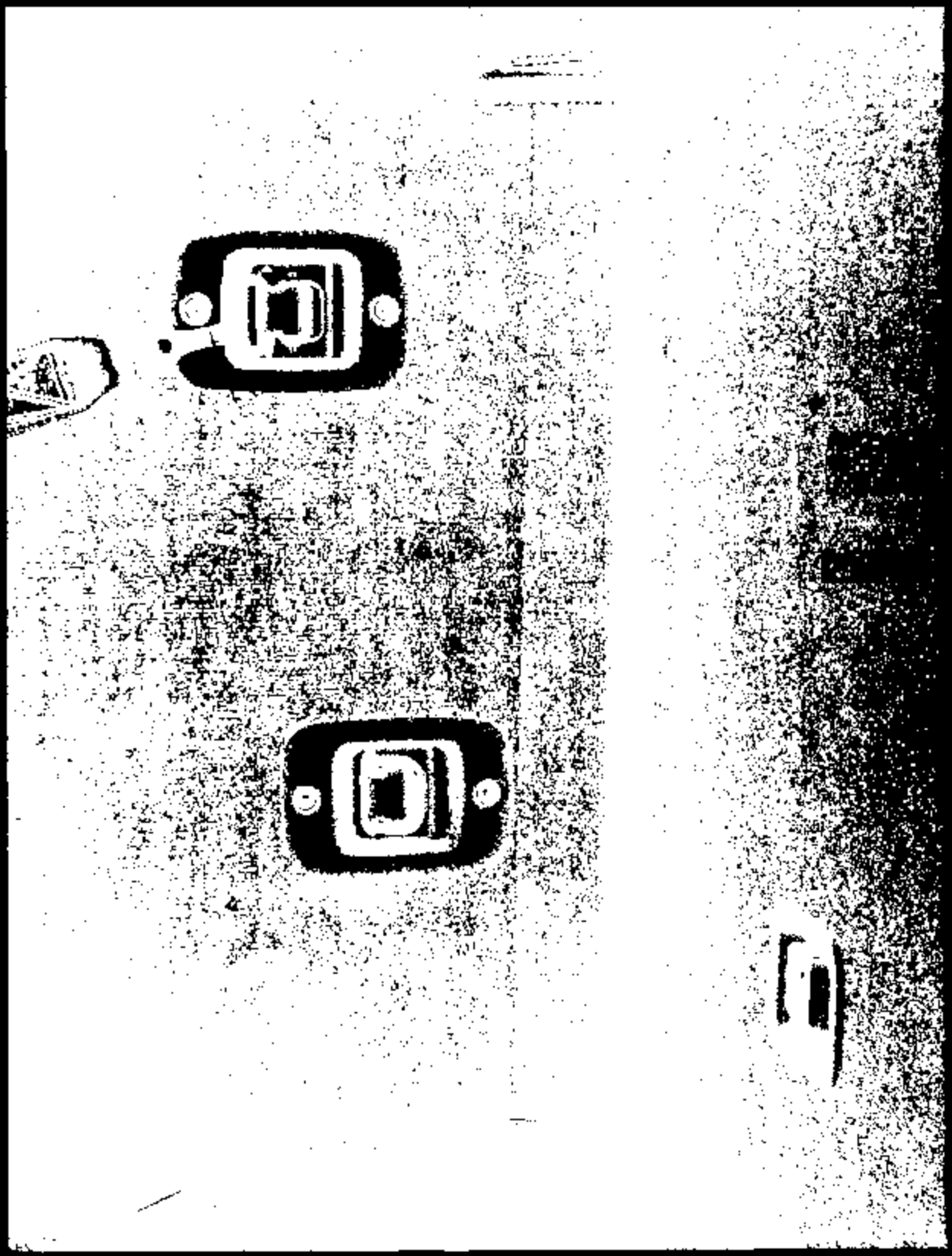


6.11.7 post-test 7 of 10

6.11.8 post-test 8 of 10

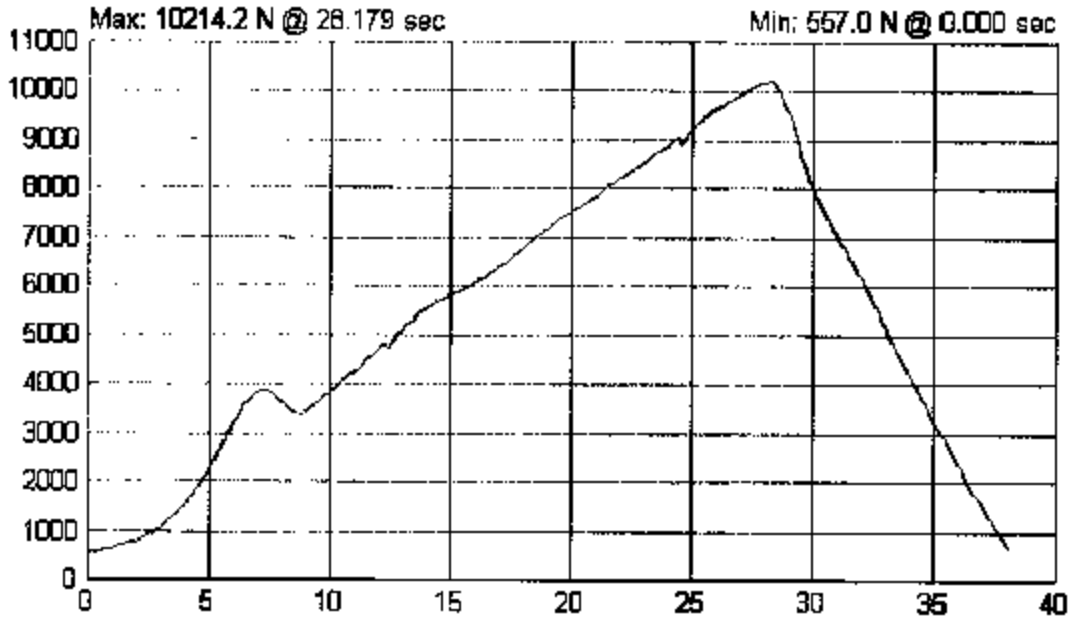


6.11.9 post-test 9 of 10

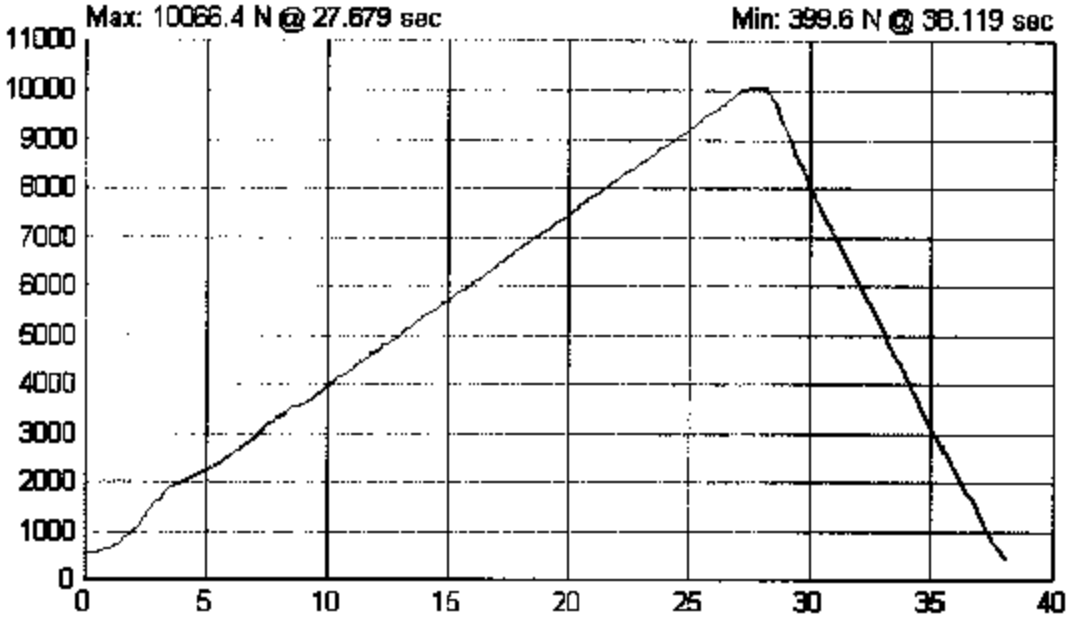


6.11.10 post-test 10 of 10

7.0 PLOTS



Run# SB3227: Rear Row Center Tether Anchor Test (S6.3.4) (N) vs. Time (sec)



Run# SB3227: Rear Row Right Tether Anchor Test (S6.3.4) (N) vs. Time (sec)

8.0 REPORT of VEHICLE CONDITION

REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

CONTRACT No.: DTNH22-02-D-11043 DATE: April 29, 2003

From: MGA Research Corporation, 446 Executive Drive, Troy, MI 48083

To: _____

The following vehicle has been subjected to compliance testing for FMVSS Nos. 201U and 225

The vehicle was inspected upon arrival at the laboratory for the test and found to contain all of the equipment listed below. All variances have been reported within 2 working days of vehicle arrival, by letter, to the NHTSA Industrial Property Manager (NAD0-30), with a copy to the OVSC COTR. The vehicle is again inspected, after the above test has been conducted, and all changes are noted below. The final condition of the vehicle is also noted in detail.

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Suzuki Grand Vitara XL-7

VEH. NHTSA NO.: C30509 VIN: JS3TX92V03[redacted] COLOR: Pearl White

ODOMETER READINGS: ARRIVAL 53 miles Date: 3/19/03

COMPLETION 53 miles Date: 4/29/03

PURCHASE PRICE: $N/A DEALER'S NAME:

ENGINE DATA: 6 Cylinders 2.7 Liters

TRANSMISSION DATA: X Automatic __Manual No. of Speeds 4

FINAL DRIVE DATA: __Rear Drive __ Front Drive X 4 Wheel Drive

TIRE DATA: Size P235/60R16

CHECK APPROPRIATE BOXES FOR VEHICLE EQUIPEMENT:

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Brad Reaume

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

REMARKS:

Salvage Only.

Equipment that is no longer on the test vehicle as noted on previous pages:

All equipment inventoried and placed in vehicle.

Explanation for equipment removal:

Windshield, I/P, and steering column removed for test. All removed parts were placed in the trunk.

Test Vehicle Condition:

Salvage Only.

RECORDED BY: Chris Greif DATE: April 29, 2003

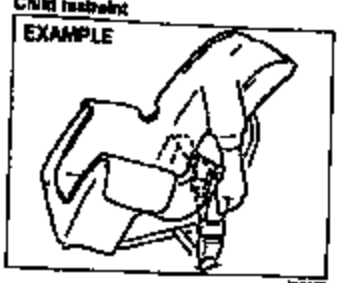
APPROVED BY: Brad Reaume

APPENDIX A
OWNERS MANUAL CHILD RESTRAINT SYSTEMS

Be sure to inspect all seat belt assemblies after any collision. Any seat belt assembly which was in use during a collision (other than a very minor one) should be replaced, even if damage to the assembly is not obvious. Any seat belt assembly which was not in use during a collision should be replaced if it does not function properly or is damaged in any way.

Child Restraint Systems

Child restraint



Infant restraint - rear seat only

Booster seat

BEFORE DRIVING

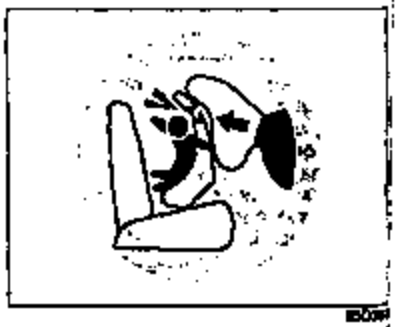
SUZUKI highly recommends that you use a child restraint system to restrain infants and small children. Many different types of child restraint systems are available; make sure that the restraint system you select meets Federal Motor Vehicle Safety Standards.

All child restraint systems are designed to be secured in vehicle seats by either seat belts (lap belts or the lap portion of lap-shoulder belts) or by special rigid lower anchor bars built into the seats. Whenever possible, SUZUKI recommends that child restraint systems be installed on the rear seat. According to accident statistics, children are safer when properly restrained in rear seating positions than in front seating positions.

If you must use a front-facing child restraint in the front passenger's seat, be sure to move the front passenger's seat as far back as possible.

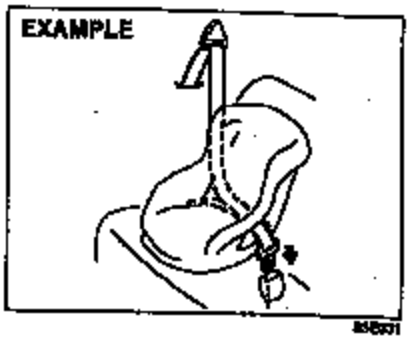
Children could be endangered in a crash if their child restraints are not properly secured in the vehicle. When installing a child restraint system, be sure to follow the instructions below. Be sure to secure the child in the restraint system according to the manufacturer's instructions.

In an accident or sudden stop, the 2nd row armrest could fall forward. If there is a child in a rear-facing child restraint in the center seating position, the falling armrest could injure the child. Make sure the armrest is back in the seat and locked when not in use.



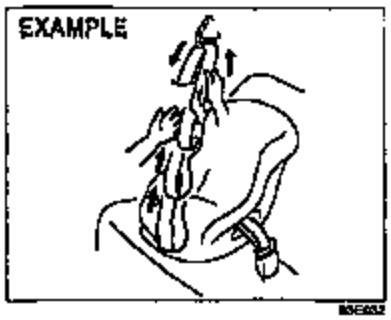
Do not install a rear-facing child restraint in the front passenger's seat. If the passenger's air bag inflates, a child in a rear-facing child restraint could be seriously injured. The back of a rear-facing child restraint would be too close to the inflating air bag.

Installation with Lap-Shoulder Seat Belts (Child Restraint with No Top Strap)

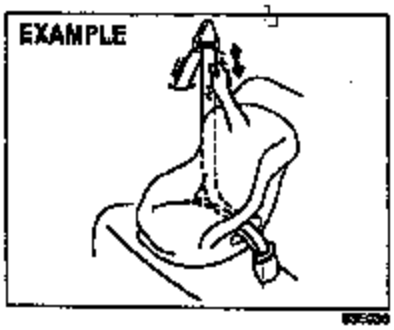


Install your child restraint system according to the instructions provided by the child restraint system manufacturer. If you install the child restraint system in the front seat, be sure to slide the seat to the rearmost position. After making sure that the seat belt is securely latched:

1) Pull all of the remaining webbing out of the retractor. You will hear a click, which means that the emergency locking retractor (ELR) has converted to function as an automatic locking retractor (ALR).

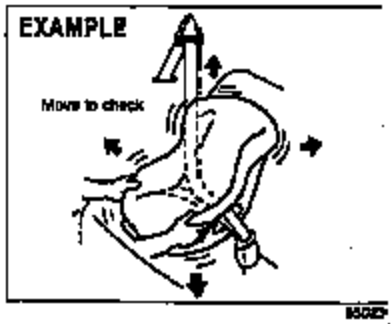


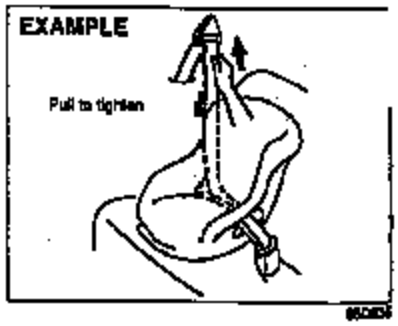
2) Allow the extra webbing to retract, and pull the webbing toward the retractor to take up any slack. Make sure that the lap portion of the belt is tight around the child restraint system and the shoulder portion of the belt is positioned so that it can not interfere with the child's head or neck.



3) Make sure that the retractor has converted to the ALR mode by trying to pull webbing out of the retractor. If the retractor is in the ALR mode, the belt will be locked.

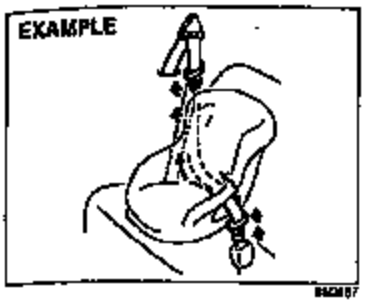
If the retractor is not in the ALR mode, the child restraint system can move or tip over when your vehicle turns or stops abruptly.





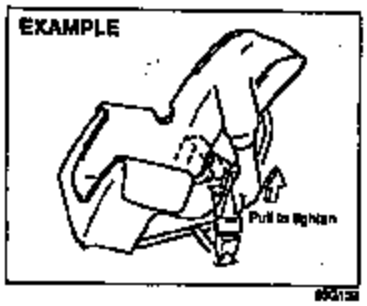
4) Try moving the child restraint system in all directions, to make sure it is securely installed. If you need to tighten the belt, pull more webbing toward the retractor.

To revert from ALR to ELR



When you unbuckle the seat belt and allow it to retract to a certain length, the retractor will automatically revert back to the normal ELR mode.

Installation with a Lap Belt (Child Restraint with No Top Strap)

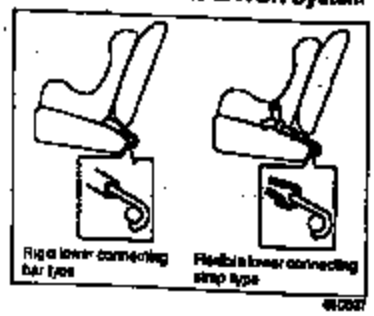


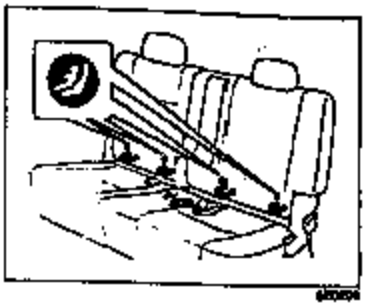
Install your child restraint system according to the instructions provided by the child restraint system manufacturer.

When installing the child restraint in the 2nd row seat center position, make sure the armrest is secured in the stowed position. Refer to the "Armrest" section.

To lengthen or lighten the belt, refer to the "Lap Belt" item in the "Seat Belts and Child Restraint Systems" section. After making sure that the seat belt is securely latched, try moving the child restraint system in all directions, to make sure it is securely installed. If you need to lighten the belt, pull the free end of the webbing.

Installation with the LATCH System





Your vehicle is equipped with lower anchors for securing up to one or two standard LATCH-type child restraint(s) in the second row seats. (LATCH stands for

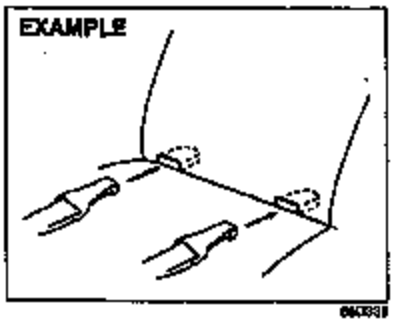
Lower Anchors and Tethers for Children.) The anchors are located where the rear of the seat cushion meets the bottom of the seatback. Their position is identified by a small round label affixed to the seatback.

Install the LATCH-type child restraint system according to the instructions provided by the child restraint system manufacturer. After installing, try moving the child restraint system in all directions, especially forward, to make sure the flexible straps or rigid connecting bars are securely latched to the anchors.

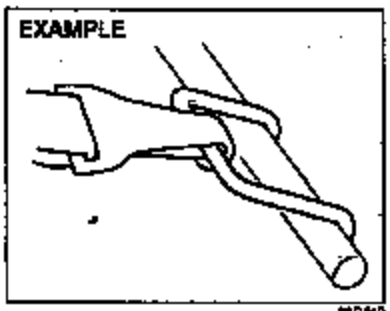
NOTE:
Although there are three second row seating positions, you cannot install three LATCH type child restraints in the second row seats. You can install one or two LATCH restraint(s). Be sure to install the LATCH type child restraint(s) in the outboard seating positions.

If your LATCH restraint has flexible tower connecting straps, these general instructions apply:

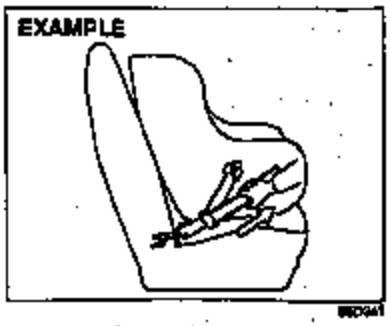
1) If possible, fold the seatback rearward for easier installation.



2) Place the child restraint in the second row seat, feeding the strap hooks through the slots in the seat cushion or the slots in the seatback bottom.



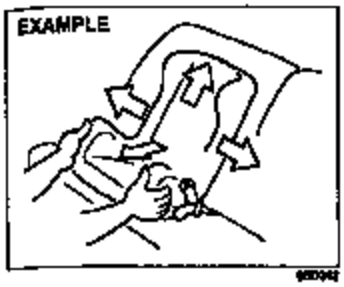
3) Snap the strap hooks to the anchors. Take care not to pinch your fingers.



4) Return the seatback to the normal, upright position. Tighten the lower straps as described in the child restraint

owner's manual. Attach the top tether strap, if applicable.

EXAMPLE



5) Make sure the child restraint is securely fastened by trying to move the child restraint system in all directions, especially forward.

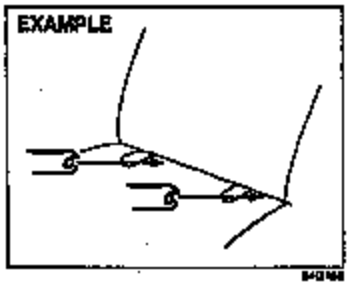
WARNING

The seatback should always be securely latched in a fairly upright position when any type of child seat is installed. An unlatched or reclined seatback will reduce the intended effectiveness of the child restraint system.

If your LATCH restraint has rigid lower connecting bars, these general instructions apply:

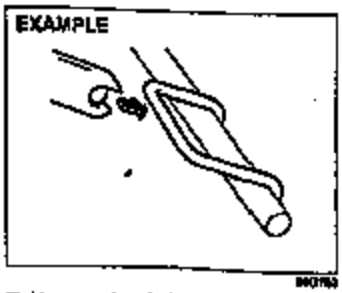
1) If possible, fold the seatback rearward for easier installation.

EXAMPLE



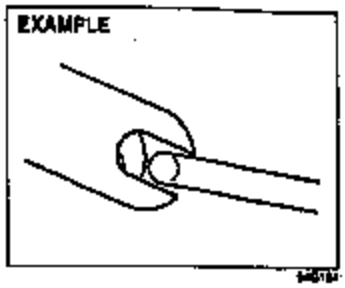
2) Place the child restraint in the second row seat, inserting the connecting bars through the slots in the seat cushion or the slots in the seatback bottom.

EXAMPLE



3) Use your hands to carefully align the connecting bar lips with the anchors. Take care not to pinch your fingers.

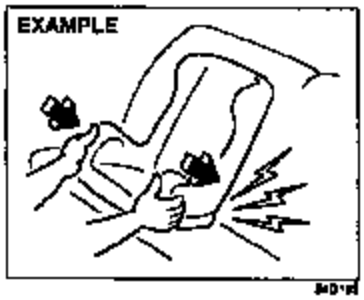
EXAMPLE



4) Push the child restraint toward the anchors so that the connecting bar lips

are partially hooked to the anchors. Use your hands to confirm the position.

EXAMPLE



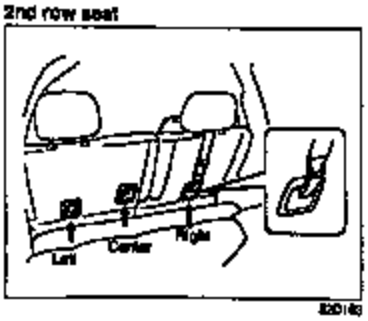
5) Grasp the front of the child restraint and push the child restraint forcefully to latch the connecting bars. Make sure they are securely latched by trying to move the child restraint system in all directions, especially forward.
6) Return the seatback if folded. Attach the top tether strap, if applicable.

WARNING

The seatback should always be securely latched in a fairly upright position when any type of child seat is installed. An unlatched or reclined seatback will reduce the intended effectiveness of the child restraint system.

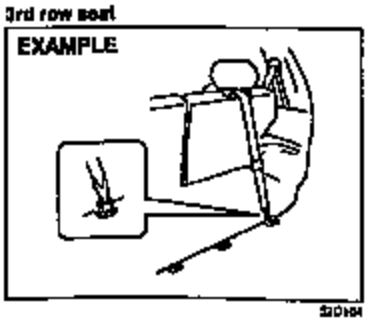
Installation-Child Restraint with Top Strap

2nd row seat



3rd row seat

EXAMPLE



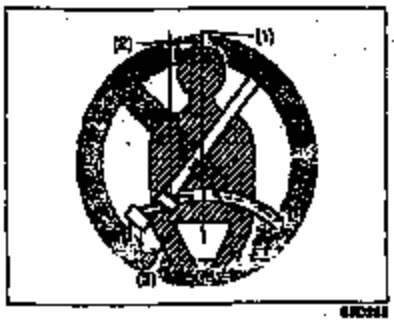
Some child restraint systems require the use of a top strap. For 2nd row seats, top strap anchor brackets are located on the back of the 2nd row seatbacks; and for 3rd row seats, located on the floor of the rear cargo area, along the outside edge. Install the child restraint system as follows:

1) Secure the child restraint on the rear seat using the procedure described above for securing a restraint system that does not require a top strap.
   When installing the child restraint in the 2nd row seat center position, make sure the armrest is secured in the stowed position. Refer to the "Armrest" section.
2) Lift up the anchor bracket. Hook the top strap to the anchor bracket and tighten the top strap according to the instructions provided by the child restraint system manufacturer. Be sure to attach the top strap to the corresponding anchor located directly behind the child restraint. Do not attach the top strap to the luggage restraint loops (if equipped).

Do not attach the child restraint top strap to the luggage restraint loops (if equipped). Incorrectly attached top strap will reduce the intended effectiveness of the child restraint system.

8) When routing the top strap at an outboard seating position, be sure to pass it between the head restraint and the rear seatback as shown. (Refer to "Head Restraints" section for details on how to raise or lower the head restraint.)
4) Make sure that cargo does not interfere with routing of the top strap.

Seat Belt Extender



(1) Center of body
(2) Less than 152 mm (6 inches)
(3) Open end of extender buckle

If a front seat belt cannot be fastened securely because it is not long enough, see your authorized SUZUKI dealer for a seat belt extender. After inspecting the relationship between the seat belt length, the occupant's body size, and the seat adjustment (the driver's seat should always be adjusted as far back as possible while still maintaining control of the vehicle, and the passenger seat should be adjusted as far back as possible), he can select the appropriate seat belt extender for either the driver or passenger seat.

- A seat belt extender should only be used for the person, vehicle and seating location it was provided for.
- When using the extender, ensure that both ends are latched securely. Do not use the extender if the open end of the extender's buckle is within 152 mm (6 inches) of the center of the occupant's body (See diagram). Use of the extender when the buckle is too close to the center of the body could increase the risk of abdominal injury in the event of an accident, and could cause the shoulder belt to be positioned incorrectly.
- Seat belt extenders are not intended for use by pregnant women, and should only be used upon approval by their medical advisors.
- Remove and stow the extender when it is not being used.

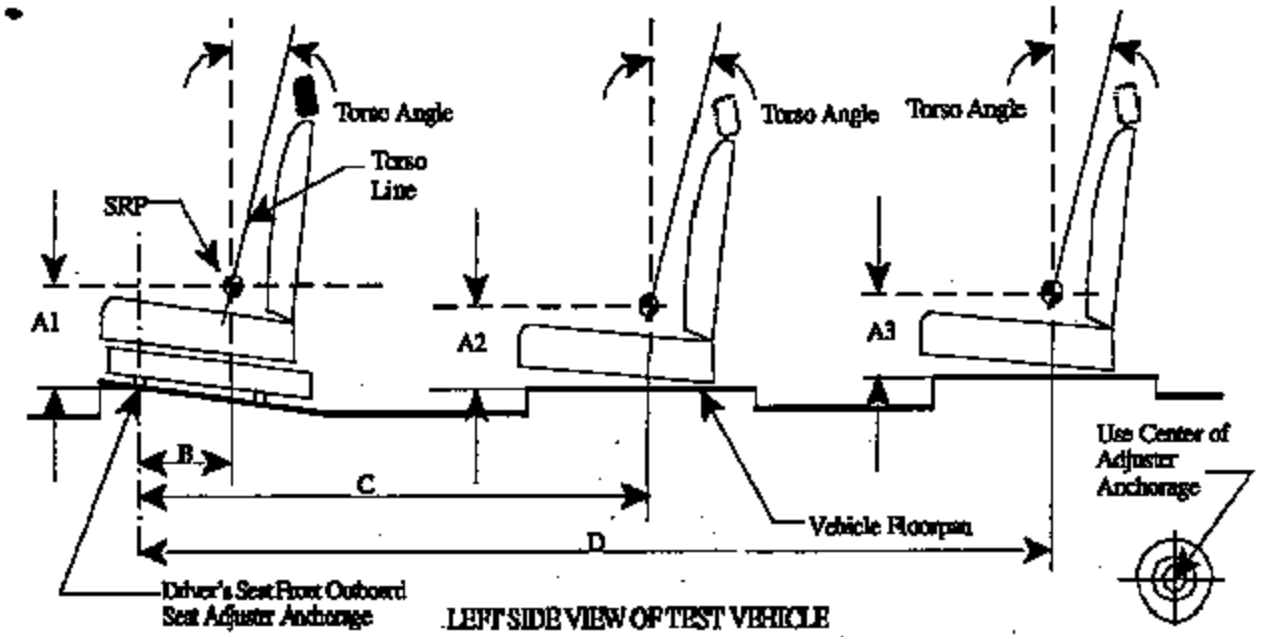
Failure to follow these instructions may increase the risk of injury in a crash.
- **Only use an extender for the person, vehicle and seating position it was provided for.**
- **Do not use if open end of extender's buckle is within 152 mm (6 inches) of center of occupant's body (See diagram).**

APPENDIX B
MANUFACTURER'S DATA (OVSC FORM 14)

FORM 14
Page 1 of 10

SEAT REFERENCE POINT (SRP) AND TORSO ANGLE DATA
FOR FMVSS 225
(All dimensions in mm[1])

Model Year: 2003 ; Make: SUZUKI ; Model: GRAND VITARA XL-7 ; Body Style: 4-door SUV
Seat Style: Front row: Bucket ; Second row: 60/40Split-folding ;Third row: 50/50 Split-folding



LEFT SIDE VIEW OF TEST VEHICLE

C30509

Table 1. Seating Positions[1] and Torso Angles

		Left (Driver Side)	Center (if any)	Right
A1		(Driver) 311mm	None	(Front Passenger) 311mm
A2		379mm (348mm*)	379mm (348mm*)	379mm (348mm*)
A3		157mm (348mm*)	None	157mm (348mm*)
B		335mm	None	335mm
C		1164mm	1164mm	1164mm
D		1905mm	None	1905mm
Torso Angle (degree)	Front Row	22°	None	22°
	Second Row	20°	14°	20°
	Third Row	20°	None	20°

Note: 1. All dimensions are in mm. If not, provide the unit used.

*In the ( ) of A2 and A3, the height between SRP and Driver's seat front outboard seat adjuster anchorage, are provided as a reference.

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Page 3 of 10

SEATING REFERENCE POINT
FOR FMVSS 225
(All dimensions in mm)

Model Year: 2003 ; Make: SUZUKI ; Model: GRAND VITARA XL-7 ; Body Style: 4-door SUV
Seat Style: Front row: Bucket ; Second row: 60/40 Split-folding ; Third row: 50/50 Split-folding

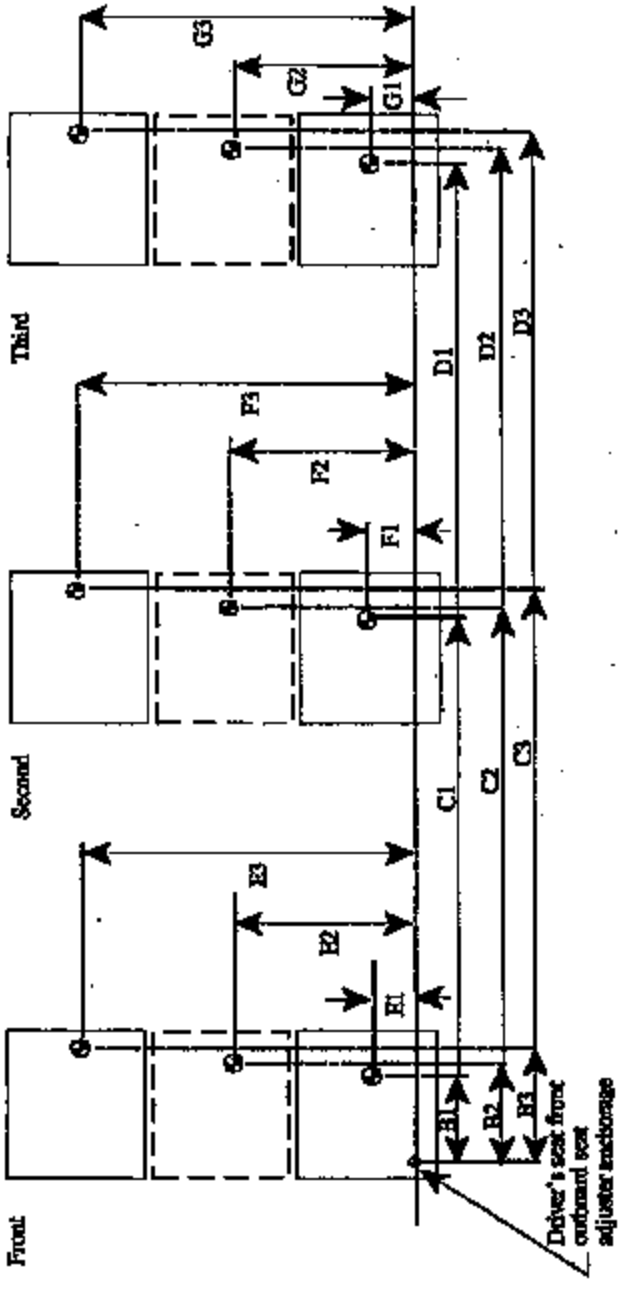

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Table 2. Seating Reference Point and Tether Anchorage Locations

Seating Reference Point (SRP)		Distance from Driver's front outboard seat adjuster anchorage[1]
Front Row	B1	335mm
	E1	198mm
	B2	None
	E2	None
	B3	335mm
	E3	918mm
Second Row	C1	1164mm
	F1	1196mm
	C2	1144mm
	F2	498mm
	C3	1164mm
	F3	918mm
Third Row	D1	1905mm
	G1	283mm
	D2	None
	G2	None
	D3	1905mm
	G3	833mm

Note: 1. Use the center of anchorage.

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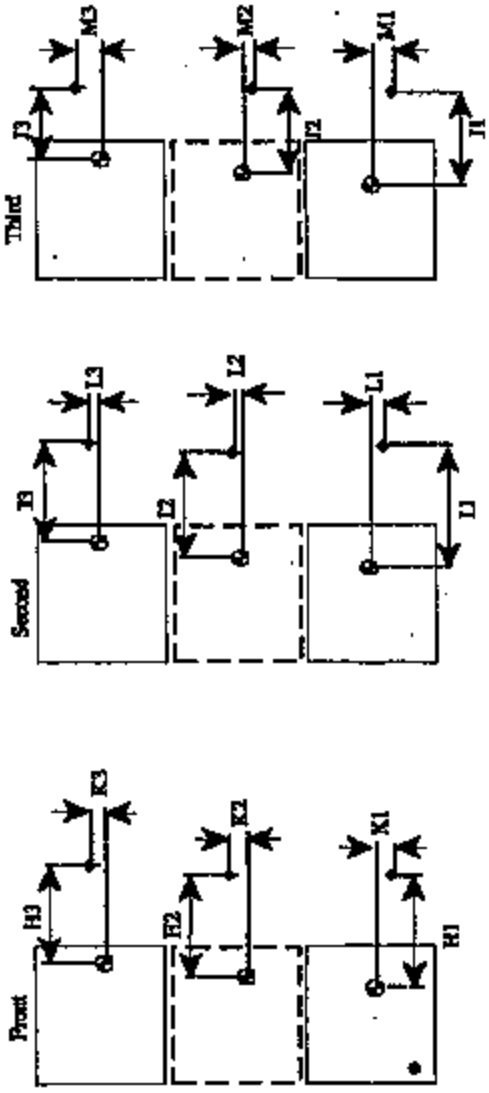
TETHER ANCHORAGE LOCATIONS
FOR FMVSS 225
(All dimensions in mm)

Model Year: 2003 ; Make: SUZUKI ; Model: GRAND VITARA XL-7 ; Body Style: 4-door SUV
Seat Style: Front row: Bucket ; Second row: 60/40 Split-folding ; Third row: 50/50 Split-folding



●: SRP
+: Tether anchorage

Note: 1. The location shall be measured at the center of the bar.

FORM 14
Page 6 of 10

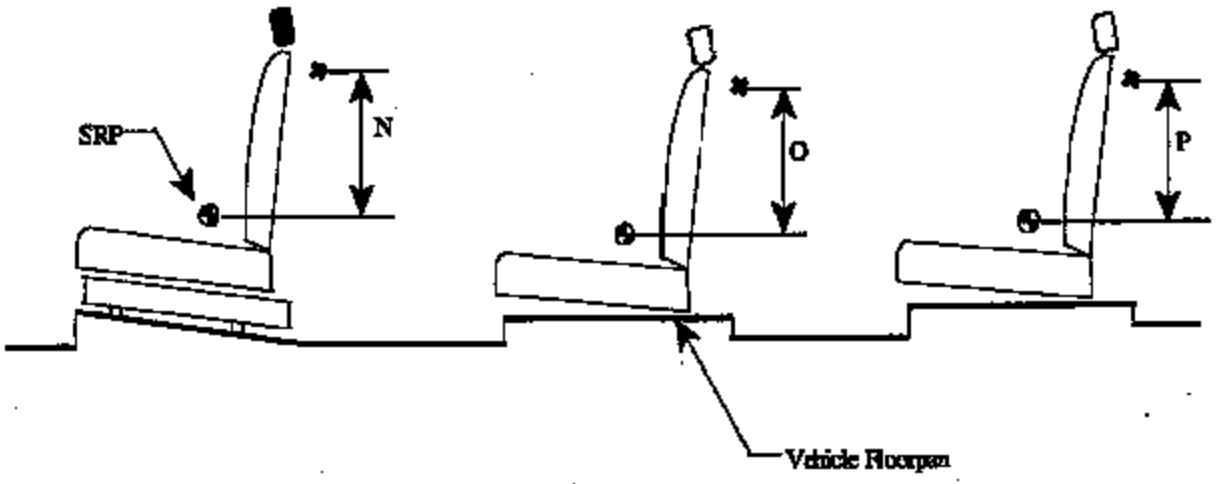
Table 3. Seating Reference Point and Tether Anchorage Locations

Seating Reference Point (SRP)	Distance from SRP	
Front Row	H1	None
	K1	None
	H2	None
	K2	None
	H3	None
	K3	None
Second Row	I1	242mm
	L1	23mm
	I2	278mm
	L2	13mm
	I3	242mm
	L3	10mm
Third Row	J1	575mm
	M1	30mm
	J2	None
	M2	None
	J3	575mm
	M3	30mm

Note: 1. Use the center of anchorage.

TETHER ANCHORAGE LOCATIONS - VERTICAL
FOR FMVSS 225
(All dimensions in mm)

Model Year: 2003 ; Make: SUZUKI ; Model: GRAND VITARA XL-7 ; Body Style: 4-door SUV
Seat Style: Front row: Bucket ; Second row: 60/40 Split-folding ;Third row: 50/50 Split-folding



LEFT SIDE VIEW OF TEST VEHICLE

Table 4. Vertical Dimension For The Tether Anchorage

Seating Row	Vertical Distance from Seating Reference Point	
Front Row	N1 (Driver)	None
	N2 (Center)	None
	N3 (Right)	None
Second Row	O1 (Left)	69mm
	O2 (Center)	127mm
	O3 (Right)	69mm
Third Row	P1 (Left)	92.7mm
	P2 (Center)	None
	P3 (Right)	92.7mm

Note: 1. All dimensions are in mm. If not, provide the unit used.

Test Procedures Used for Compliance Tests

Tether Anchorages

Seating Location		FMVSS Section(s) - Req.
Front	Driver	N/A
	Center (if any)	None
	Right (if any)	N/A
Second	Left	S6.3.4
	Center	S6.3.4
	Right (if any)	S6.3.4
Third	Left	S6.3.4
	Center	None
	Right	S6.3.4
Fourth	Left	None
	Center	None
	Right	None

Lower Anchorages

Seating Location		FMVSS Section(s) - Req.
Front	Driver	N/A
	Center (if any)	None
	Right (if any)	N/A
Second	Left	S15.2
	Center	N/A
	Right	S15.2
Third	Left	N/A
	Center	None
	Right	N/A
Fourth	Left	None
	Center	None
	Right	None

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Page 10 of 10

For each anchorage system, provide the following information:

1. **Lower Anchorage Dimensions:** Whether the anchorages are certified with S15.1.2.1 of FMVSS No. 225.

GRAND VITARA XL-7 anchorages are certified with S15.1.2.1 of FMVSS No. 225.

2. **Lower Anchorage Location:** Whether the anchorages are certified with S15.1.2.2 of FMVSS No. 225. If the anchorages are certified with S15.1.2.2, provide the pitch, roll and yaw angles.

GRAND VITARA XL-7 anchorages are certified with S15.1.2.1 of FMVSS No. 225.
Pitch angle: 9 degrees
Roll angle: 0 degrees
Yaw angle: 0 degrees

3. **Lower Anchorage Marking and Conspicuity:** Whether the anchorages are certified with S15.4 of FMVSS No. 225. If guidance fixtures are used, provide the location of the seating systems that are equipped with the guidance fixture.

GRAND VITARA XL-7 anchorages are certified with S15.4 of FMVSS No. 225.

A permanent seat marking feature appears on the seat back above each of the lower anchorage points.

No guidance fixture is used.

4. **Location of Tether Anchorage:** Applicable section of FMVSS No. 225 for the option used for its certification.

GRAND VITARA XL-7 is certified with S6.2.1 of FMVSS No. 225 (not with S6.2.2).

5. **Number of Tether Anchorage:** Applicable section of FMVSS No. 225 for the option used for its certification

GRAND VITARA XL-7 is certified with S4.4 of FMVSS No. 225 (not with S4.5).