

HS No 636892

**REPORT NUMBER: 221-MGA-03-004**

**SAFETY COMPLIANCE TESTING FOR  
FMVSS NO. 221  
SCHOOL BUS BODY JOINT STRENGTH**

**Mid Bus Inc.  
2003 Mid Bus Guide School Bus  
NHTSA No.: C30903**

**PREPARED BY:  
MGA RESEARCH CORPORATION  
5000 WARREN ROAD  
BURLINGTON, WI 53105**



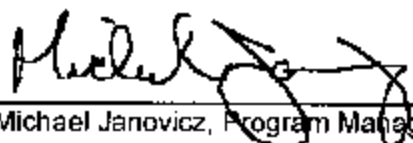
**Final Report Date: October 2, 2003**

**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 6115 (NVS-220)  
WASHINGTON, D.C. 20590**

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Prepared by:  Date: October 2, 2003  
John Roberts, Project Engineer

Reviewed by:  Date: October 2, 2003  
Michael Janovicz, Program Manager

FINAL REPORT ACCEPTED BY:



10/08/03  
Date of Acceptance

### Technical Report Documentation Page

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<b>7. Author(s)</b> John Roberts, Project Engineer Michael Janovicz, Project Manager		<b>8. Performing Organization Report No.</b> 221-MGA-03-004	
<b>9. Performing Organization Name and Address</b> MGA Research Corporation 5000 Warren Road Burlington, WI 53105		<b>10. Work Unit No.</b>	
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		<b>14. Sponsoring Agency Code</b> NVS-220	
<b>15. Supplementary Notes</b>			
<b>16. Abstract</b> Compliance tests were conducted on the subject 2003 Mid Bus Guide School Bus, NHTSA No. C30903 accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-221-02 for the determination of FMVSS 221 compliance.  <b>TEST FAILURES:</b> Four (4) test failures MSSRR1184BRH, MSRCME283BRO, MSRCMI383BRH and MSFRRE484CRH failed to meet the minimum load requirements			
<b>17. Key Words</b> Compliance Testing Safety Engineering FMVSS 221		<b>18. Distribution Statement</b> Copies of this report are available from: NHTSA Technical Information Services (TIS) Room 5108, (NPO-230) 400 Seventh Street, S.W. Washington, D.C. 20590 (202) 366-4946	
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**SECTION 1**  
**PURPOSE OF COMPLIANCE TEST**

Tests were conducted on a MY2003 Mid Bus Guide School Bus, NHTSA No. C30903, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-221-02 to determine compliance to the requirements of Federal Motor Vehicle Safety Standards (FMVSS) 221, "School Bus Body Joint Strength".

This program is sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-02-D-01057.

## SECTION 2 TEST PROCEDURE

The MY2003 Mid Bus Guide School Bus, NHTSA No. C30903, was subjected to FMVSS 221 testing on August 27, 2003.

The joint samples were selected in conjunction with the Contract Officer's Technical Representative (COTR). Four 12 x 48 inch samples were selected. They were removed from the bus using a metal shear and/or SawzAll type of cutter.

After each sample area had been removed from the bus, the sample was cut to the specific dimensions. Each specimen was carefully shaped to the final size using supports as specified in FMVSS 221. Additionally, temperature monitoring stickers were placed at the specified locations of each sample to ensure the sample temperature did not exceed 140°F during the shaping operation.

The samples were tested using the MGA 50,000 pound tensile tester. The force applied was measured directly at the upper clamp. The upper clamp was attached to the load cell and the lower clamp was attached to the load frame.

The gripping devices were fabricated from 3" x 3" angle iron. Slots were milled on the face that mounted to the machine, in order to allow for fore and aft movement of the clamps. This allowed the specimens to be fixtured so that the axis of the test specimen coincided with the centerline axis of the tensile tester heads.

The test specimen was inserted in between the grips, and the grips were then bolted together using 7 size ½" bolts. The bolts were inserted through one grip, through the test specimen, and then through the other grip. This prevented any slipping of the test sample in the grips, while fully distributing the clamping force across the entire end width of the test sample. Post test examination of the specimens indicated that no load was applied to the clamp mounting holes.

The rate of load application was ¼ inch per minute. The force and displacement were recorded and displacement vs. time was plotted to monitor the displacement rate.

**SECTION 3**  
**TEST DATA SUMMARY**

A total of four samples were tested for this vehicle. The samples were selected from the Right Rear Interior, Rear Exterior Roof, Mid Interior Roof, and Right Rear Exterior Floor.

Joint Location	Maximum Load (N)	60% of Material Strength (N)	PASS/FAIL
Right Rear Interior (1)	11,663.2	23,062.1	FAIL
Rear Exterior Roof (2)	17,058.0	31,813.1	FAIL
Mid Interior Roof (3)	8,999.2	21,085.4	FAIL
Right Rear Exterior Floor (4)	3,660.0	20,545.8	FAIL

The maximum forces measured, and the displacement rate used, are provided in Section 7.  
The photographs taken from the samples are provided in Sections 6 and 8.

**SECTION 4**  
**COMPLIANCE TEST DATA**

The following data sheets document the results of FMVSS 221 testing on the MY2003 Mid Bus Guide School Bus, NHTSA No. C30903.



**DATA SHEET 1  
ADMINISTRATIVE DATA SHEET**

Test Vehicle: **2003 Mid Bus Guide School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30903**  
 Test Date: **8/27/03**

**INCOMPLETE VEHICLE (IF APPLICABLE)**

Manufacturer:	Chevrolet Motor Division
Model:	Express Commercial Cutaway
VIN:	1GBJG31U431110295
Build Date:	09/02
Certification Date:	09/02

**COMPLETED VEHICLE (SCHOOL BUS)**

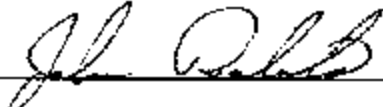
Manufacturer:	Mid Bus
Make/Model:	School Bus/Guide
VIN:	1GBJG31U431110295
NHTSA No.:	C30903
Color:	Yellow
GVWR:	5443 kg
Build Date:	09/02
Certification Date:	12/02

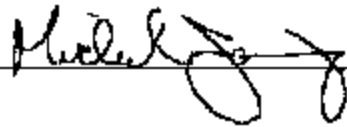
**DATES**

Vehicle Receipt:	April 17, 2003
Start of Compliance Test:	August 26, 2003
Completion of Compliance Test:	August 27, 2003

**COMPLIANCE TEST:**

All tests were performed in accordance with the references outlined in TP-221-02.

Recorded By: 

Approved By: 

Date: October 2, 2003


**DATA SHEET 2**  
**SUMMARY OF DATA**

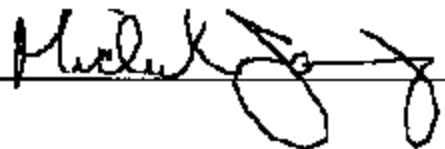
Test Vehicle: **2003 Mid Bus Guide School Bus**  
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30903**  
Test Date: **8/27/03**

Joint Specimen Identification	Joint Location Description and (Number)	Joint Load Reqmt (N) (60%)	Max. Load at Joint Separation (N)	Calculated Material Strength (N)	PASS/FAIL
MSSRRI184BRH	Right Rear Interior Side (1)	23,062.1	11,663.2	38,436.5	FAIL
MSRCME283BRO	Rear Exterior Roof (2)	31,813.1	17,058.0	53,022.1	FAIL
MSRCMI383BRH	Mid Interior Roof (3)	21,085.4	8,999.2	35,142.1	FAIL
MSFRREH484CRH	Right Rear Exterior Floor (4)	20,545.8	3,660.0	34,243.6	FAIL

Comments: NONE

Recorded By: 

Approved By: 

Date: October 2, 2003

**DATA SHEET 3**  
**JOINT STRENGTH WHEN ASTM MATERIAL PROPERTIES ARE KNOWN**

Test Vehicle: **2003 Mid Bus Guide School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30903**  
 Test Date: **8/27/03**

Specimen Description:	Right Rear Interior Side (1)
Joint Number:	MSSRR184BRH

	Weaker Member	Stronger Member
Material	1020 Galvanized	—
Tensile Strength (MPa)	379.2	—
Gage/Thickness (mm)	26 / .551	—
Fastener Holes (No./Diameter – mm.)	4 / 4.826	—
Net Area (Sq. mm.)	101.4	—
Material Strength (N)	38,436.5	—
60% of Material Strength (N)	23,062.1	—
Maximum Load From Tensile Test of Joint (N)	11,663.2	—
PASS/FAIL	<b>FAIL</b>	—

1. Rivet Spacing 58 mm, material specifications provided by Mid Bus

Comments: NONE

Recorded By: 

Approved By: 

Date: October 2, 2003

**DATA SHEET 3... (Continued)**

**JOINT STRENGTH WHEN ASTM MATERIAL PROPERTIES ARE KNOWN**

Test Vehicle: **2003 Mid Bus Guide School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**


NHTSA No.: **C30903**  
 Test Date: **8/27/03**

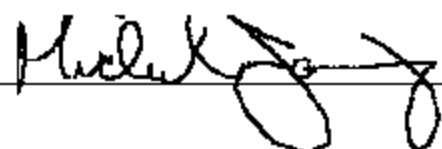
Specimen Description:	Rear Exterior Roof (2)
Joint Number:	MSRCME283BRO

	Weaker Member	Stronger Member
Material	1008 Galvanized	--
Tensile Strength (MPa)	337.8	---
Gage/Thickness (mm)	22 / .853	---
Fastener Holes (No./Diameter - mm.)	4 / 4.826	---
Net Area (Sq. mm.)	157	---
Material Strength (N)	53,022.1	---
60% of Material Strength (N)	31,813.1	---
Maximum Load From Tensile Test of Joint (N)	17,058.0	---
PASS/FAIL	<b>FAIL</b>	---

1. Rivet Spacing 63 mm, material specifications provided by Mid Bus

Comments: Joint Number Should Be MSRCME283BAO

Recorded By: 

Approved By: 

Date: October 2, 2003

**DATA SHEET 3... (Continued)**

**JOINT STRENGTH WHEN ASTM MATERIAL PROPERTIES ARE KNOWN**

Test Vehicle: **2003 Mid Bus Guide School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**


NHTSA No.: **C30903**  
 Test Date: **8/27/03**

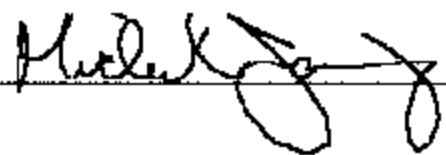
Specimen Description:	Mid Interior Roof (3)
Joint Number:	MSRCMI383BRH

	Weaker Member	Stronger Member
Material	1008 Galvanized	--
Tensile Strength (MPa)	337.8	--
Gage/Thickness (mm)	28 / .551	--
Fastener Holes (No./Diameter - mm.)	3 / 4.826	--
Net Area (Sq. mm.)	104	--
Material Strength (N)	35,142.1	---
60% of Material Strength (N)	21,085.4	---
Maximum Load From Tensile Test of Joint (N)	8,999.2	---
PASS/FAIL	FAIL	---

1. Rivet Spacing 63 mm, material specifications provided by Mid bus

Comments: NONE

Recorded By: 

Approved By: 

Date: October 2, 2003

**DATA SHEET 3... (Continued)**

**JOINT STRENGTH WHEN ASTM MATERIAL PROPERTIES ARE KNOWN**

Test Vehicle: **2003 Mid Bus Guide School Bus**  
 Test Lab: **MGA Research-Wisconsin Operations**


NHTSA No.: **C30903**  
 Test Date: **8/27/03**


Specimen Description:	Right Rear Exterior Floor (4)
Joint Number:	MSFRREH484CRH

	Weaker Member	Stronger Member
Material	1008 Galvanized	---
Tensile Strength (MPa)	337.8	---
Gage/Thickness (mm)	26 / .551	---
Fastener Holes (No./Diameter - mm.)	4 / 4.826	---
Net Area (Sq. mm.)	101.4	---
Material Strength (N)	34,243.6	---
60% of Material Strength (N)	20,545.8	---
Maximum Load From Tensile Test of Joint (N)	3,660.0	---
PASS/FAIL	FAIL	---

1. Rivet Spacing 50 mm, material specifications provided by Mid Bus

Comments: Joint Number Should BE MSFRREH484CAH

Recorded By: 

Approved By: 

Date: October 2, 2003

**SECTION 5**  
**INSTRUMENTATION AND EQUIPMENT LIST**

Test Vehicle: **2003 Mid Bus Guide School Bus**  
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C30903**  
Test Date: **8/27/03**

Equipment	Description	Model/Serial No.	Cal. Date	Next Cal. Date
Computer	HP	Vectra / US03263612	—	—
A/D Interface	Metrabyte	DAS-1802	—	—
Load Cell	Interface	138773	6/19/03	12/19/03
Linear Potentiometer	Ametek	17167	8/9/03	2/9/04
Digital Caliper	Mitutoyo	CD-6"GS/ 0004174	10/18/02	10/18/03
Steel Tape	Stanley	Powerlock / 149	5/30/03	11/30/03
Temp. Recorder	Dickson	TR320 / 03039010	2/1/03	2/1/04
Temp. Stickers	McMaster- Carr	60°C 5952K21	One Time Usage	—

**SECTION 6  
PHOTOGRAPHS**

**TABLE OF PHOTOGRAPHS**

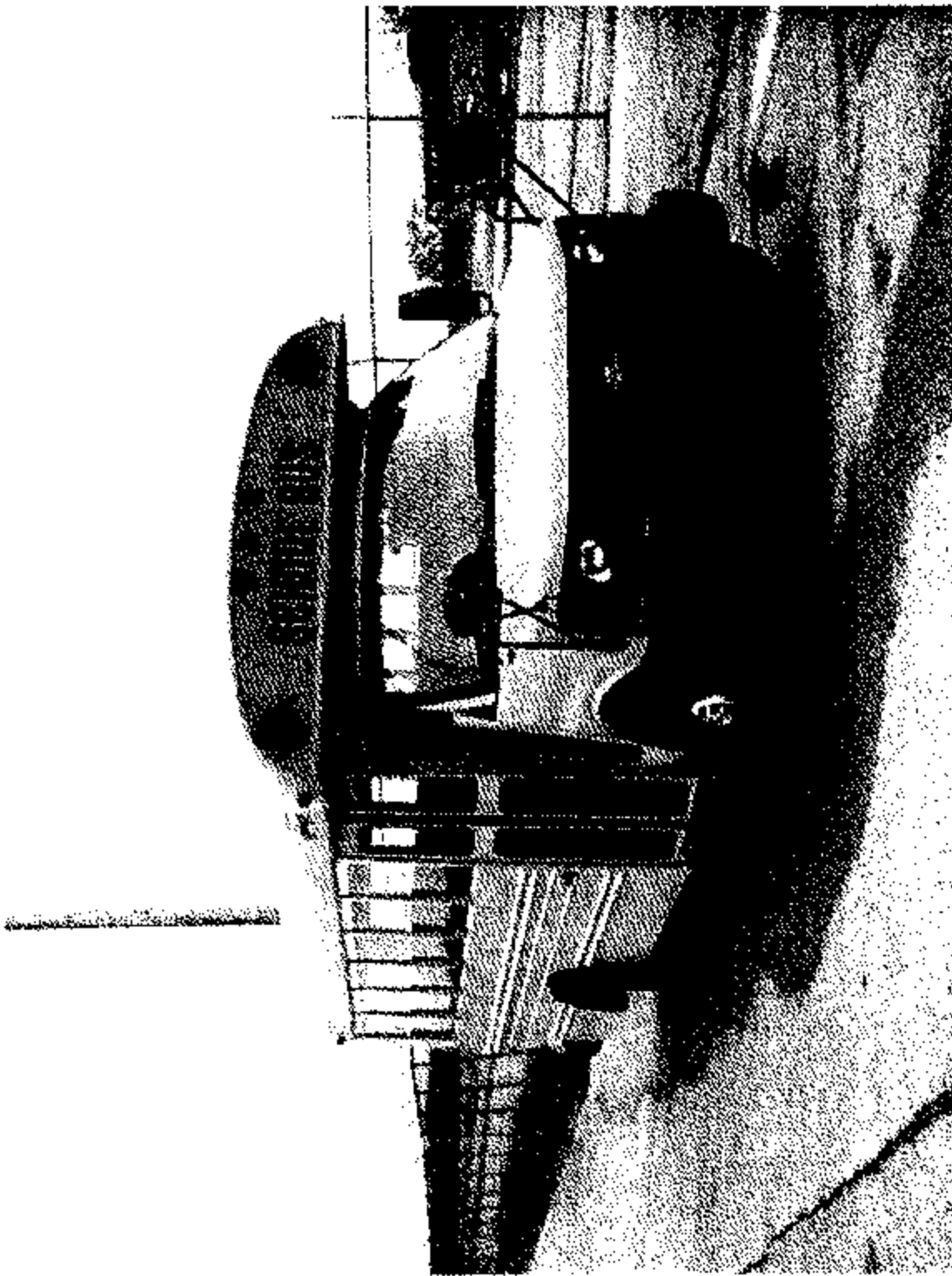
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Test Vehicle: 2003 Mid Bus Guide School Bus

Procedure: FMVSS 221

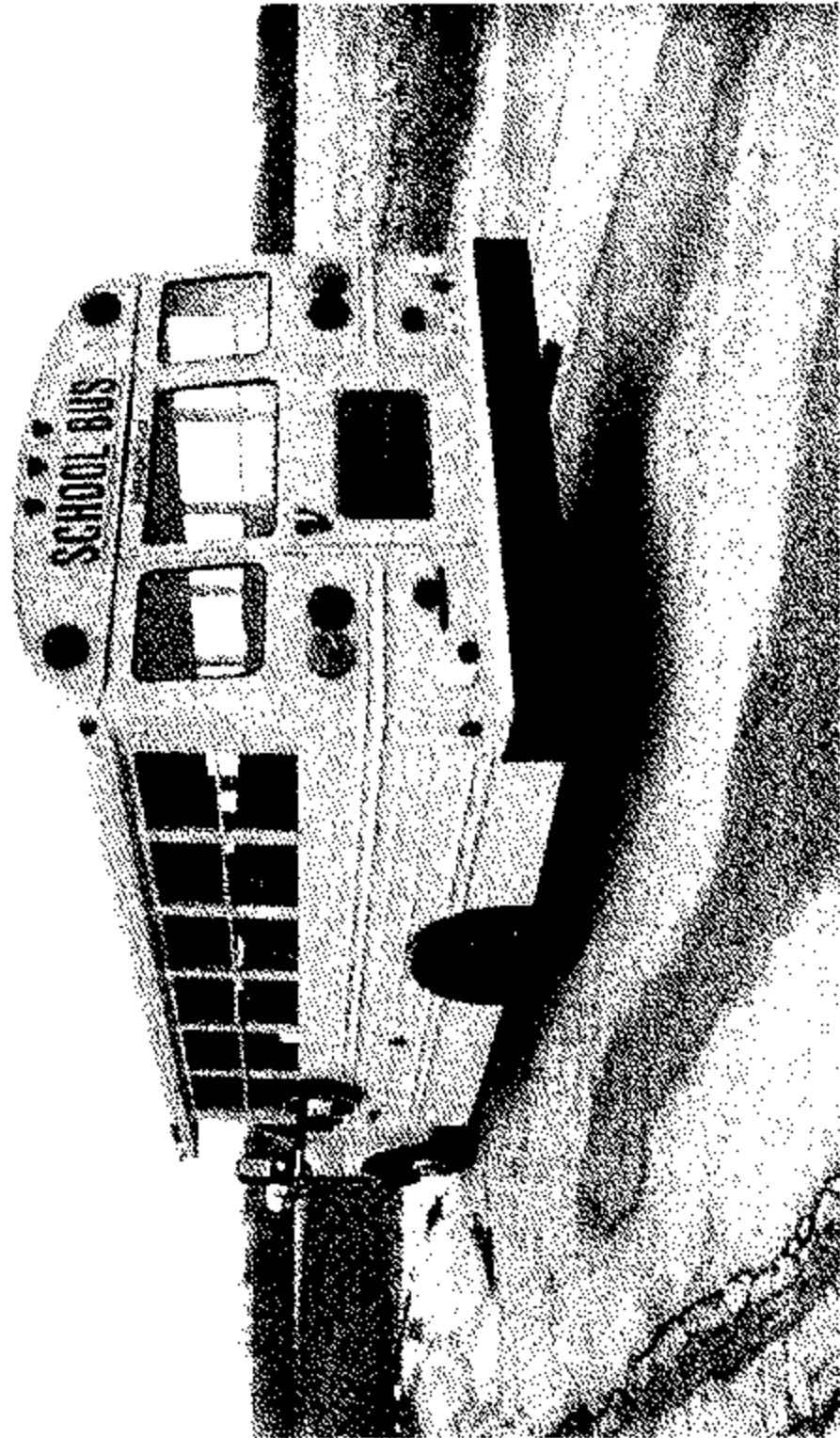
NHTSA No.: C30903



Left Front ¾ View of School Bus

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No.: C30903



Left Rear 3/4 View of School Bus

Test Vehicle:  
Procedure:

2003 Mid Bus Guide School Bus  
FMVSS 221

NHTSA No.: C30903

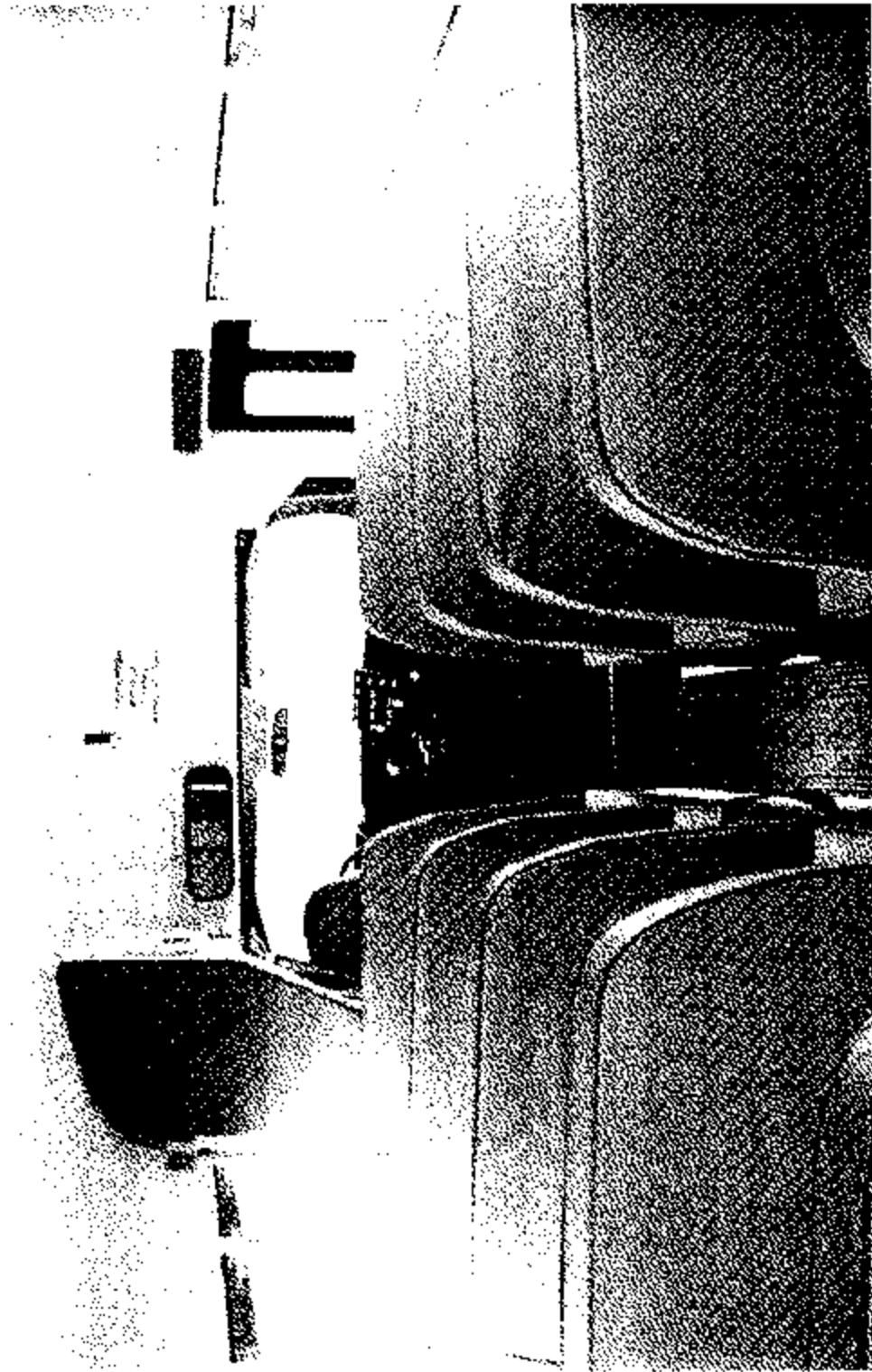
MFD. BY: MID BUS INC.	
PLUFFTON, OH 45817	
DATE OF MFR. MO. 12	YR. 02
INC. VEH. MFD. BY:	
Chevrolet Motor Division	
DATE OF INC. VEH. MFR.	
MO. 09	YR. 02
GVWR:	
5443	KG ( 12,000 LB)
GVWR FRONT:	
1951	KG ( 4,300 LB)
GVWR INTERMEDIATE (1):	
	KG ( LB)
GVWR INTERMEDIATE (2):	
	KG ( LB)
GVWR REAR:	
3901	KG ( 8,500 LB)
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S.A. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT IN:	
MO. 09	YR. 02
VEHICLE IDENTIFICATION NUMBER:	
1GB06310431110295	
VEHICLE TYPE: School Bus	
CSD-7460-S-030097	

Certification Label

Tes: Vehicle:  
Procedure

2003 Mid Bus Guide School Bus  
FMVSS 221

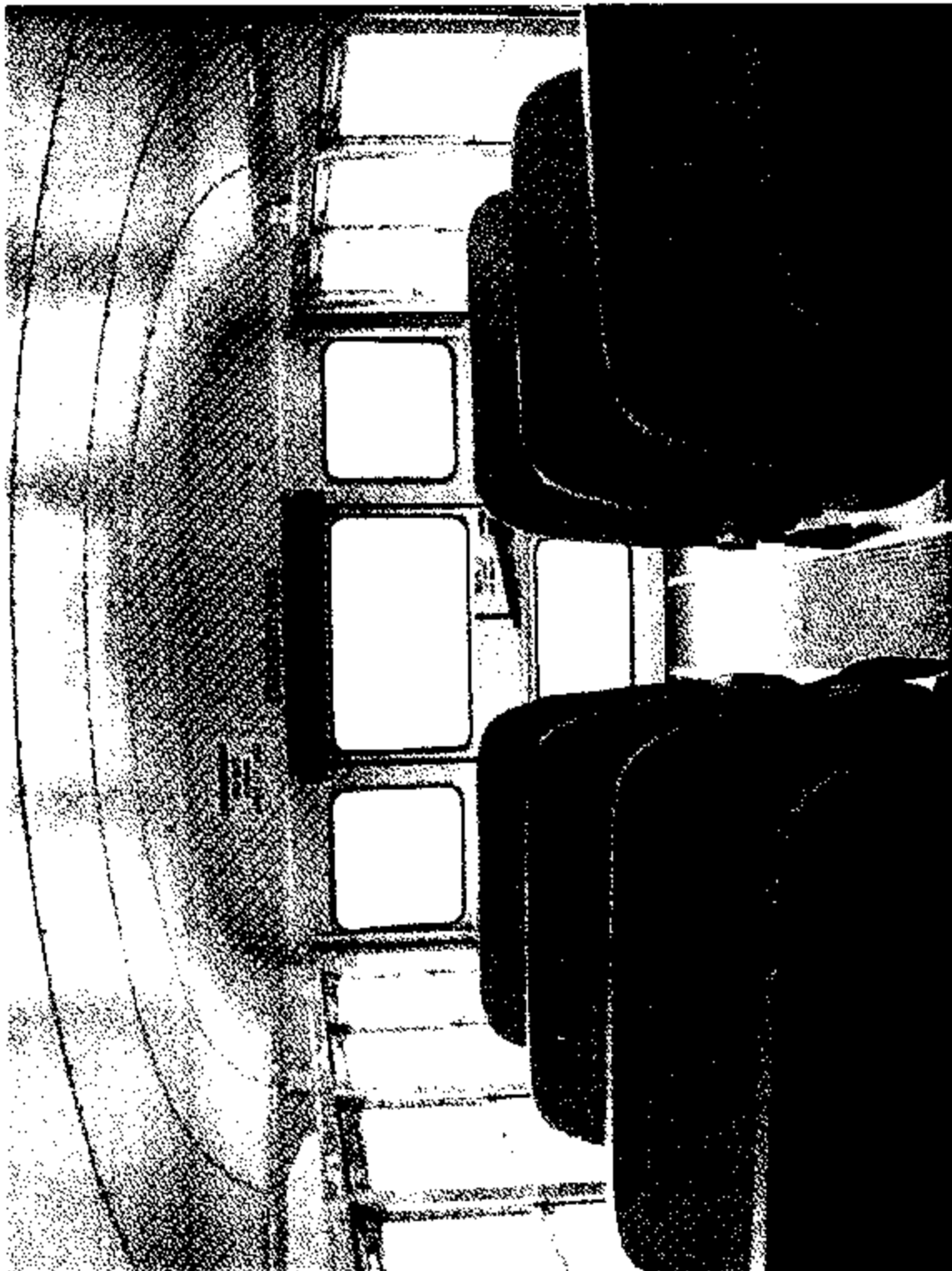
NHISA No. C30903



Rear to Front Interior View

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No. C30903



Front to Rear Interior View

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

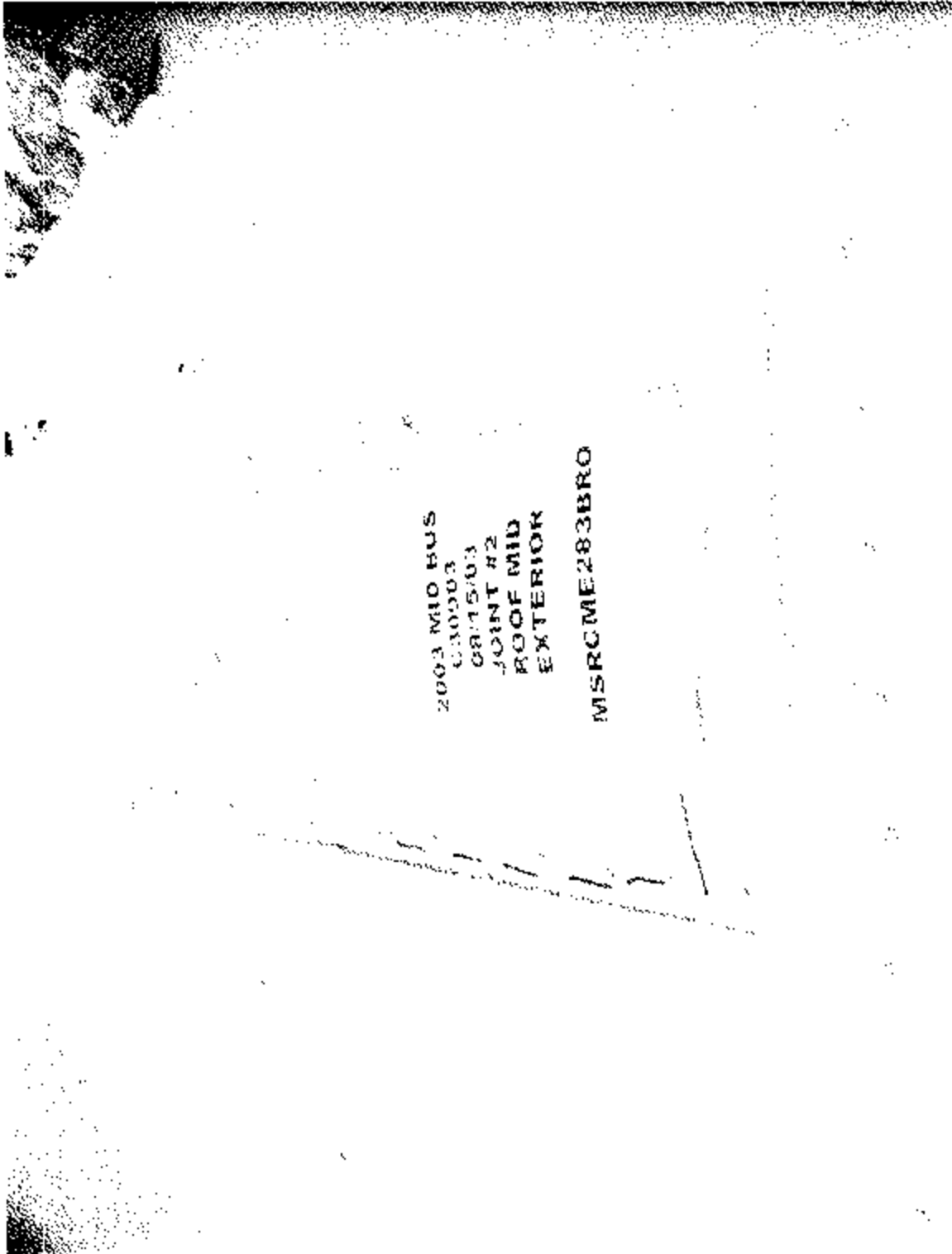
NHTSA No: C30903



Sample #1 Marked on Bus Before Cutout

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No. C30903



2003 MID BUS  
C30903  
JOINT #2  
ROOF MID  
EXTERIOR

MISRCME283BRO

Sample #2 Marked on Bus Before Cutout

Test Vehicle:  
Procedure:

2003 Mid Bus Guide School Bus  
FMVSS 221

NHTSA No.: C30903

2003 MID BUS  
C30903  
08/15/03  
JOINT #3  
ROOF MID  
INTERIOR

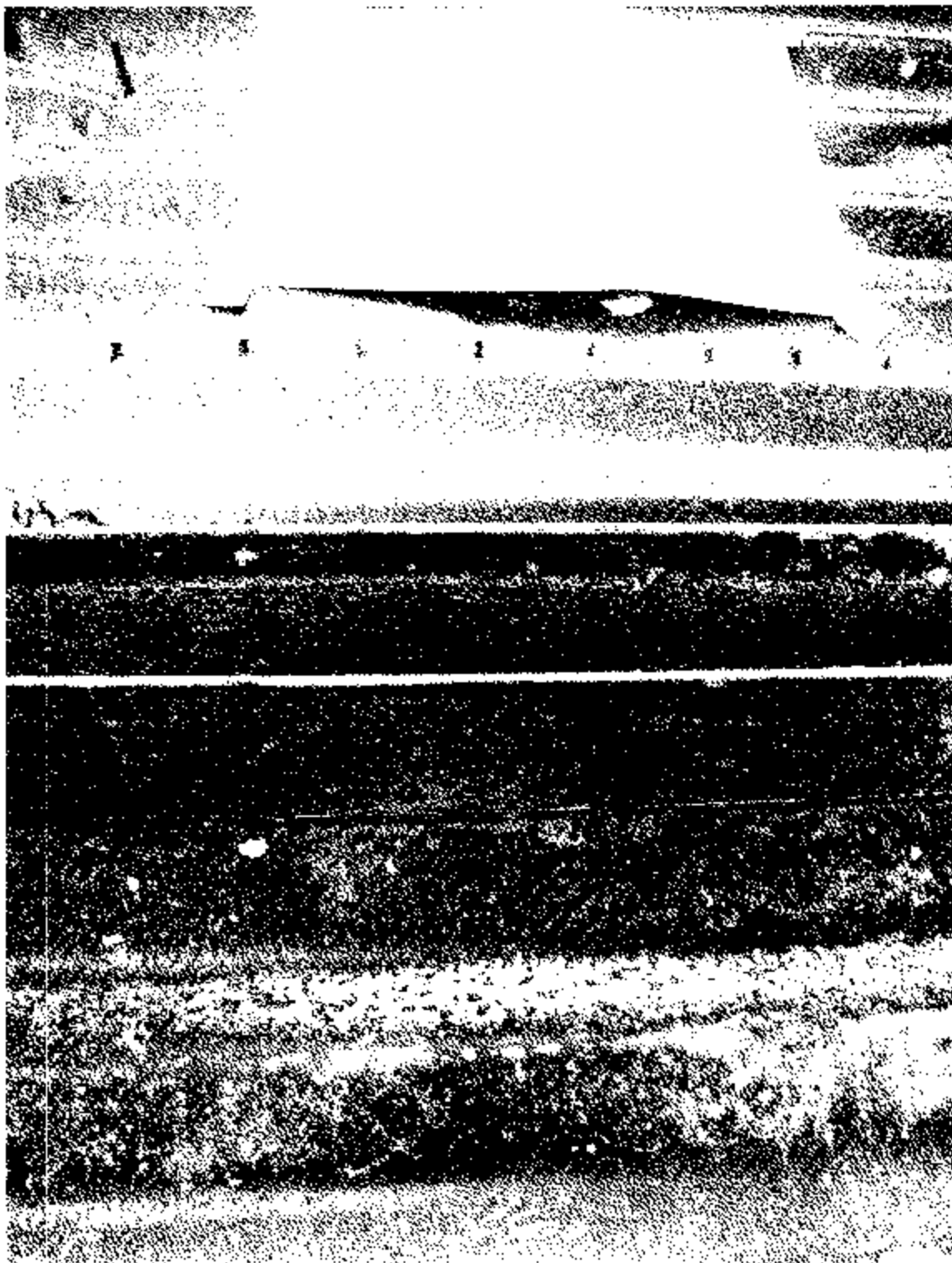
MSRCMI383BRH

Sample #3 Marked on Bus Before Cutout



Test Vehicle 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

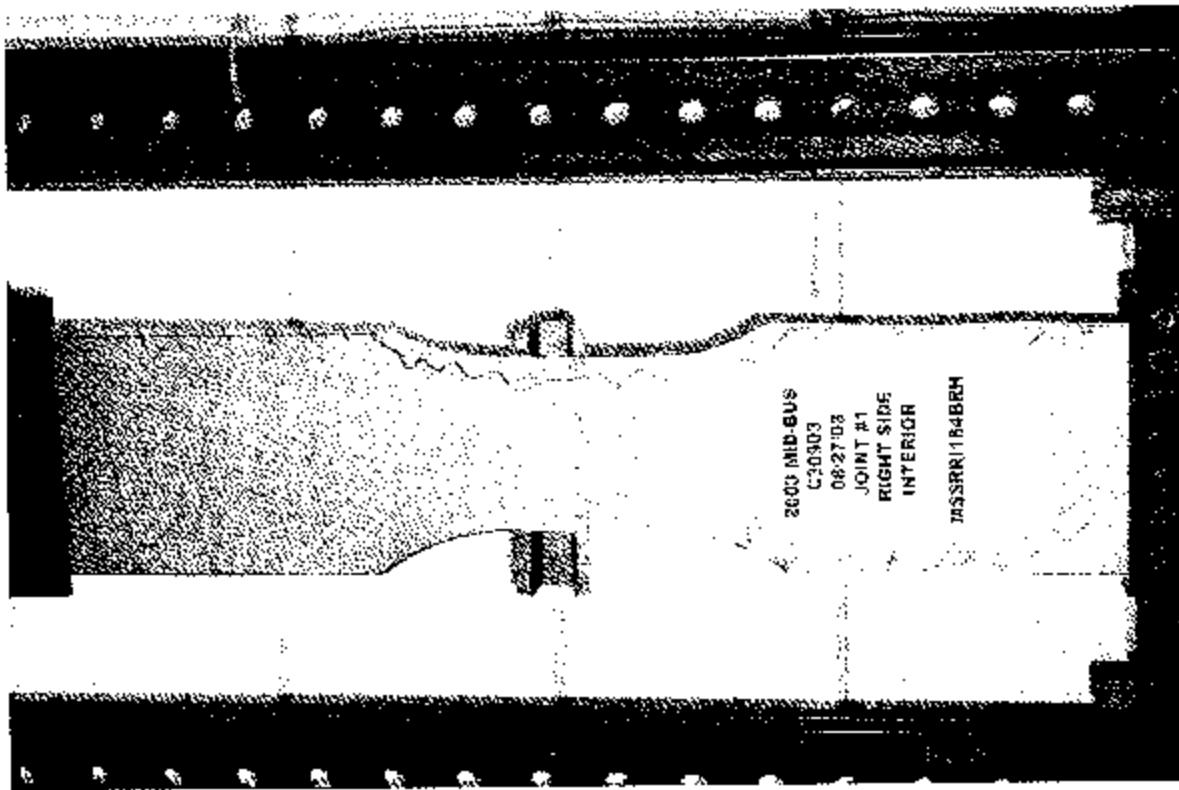
NHTSA No.: C30903



Sample #4 Marked on Bus Before Cutout

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No.: C30903

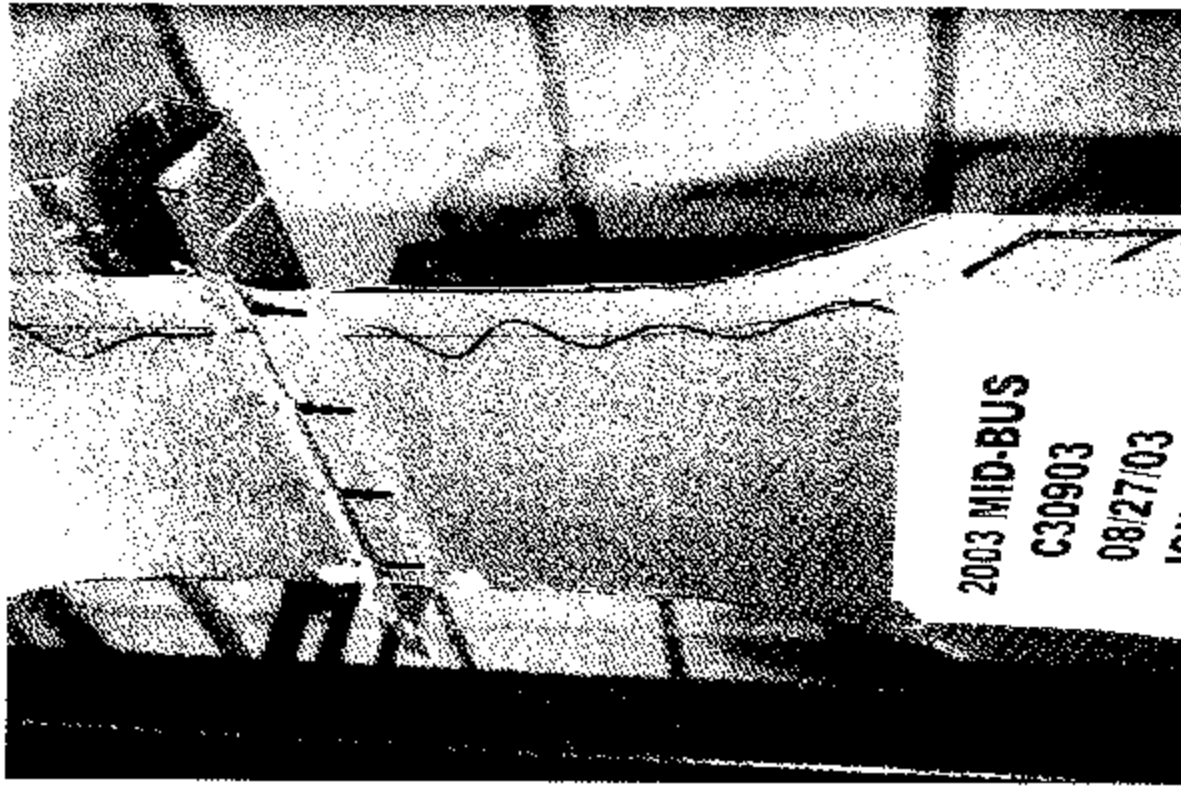


Sample #1 Installed in Test Machine (Pre-Test)

Test Vehicle:  
Procedure:

2003 Mid Bus Guide School Bus  
FMVSS 221

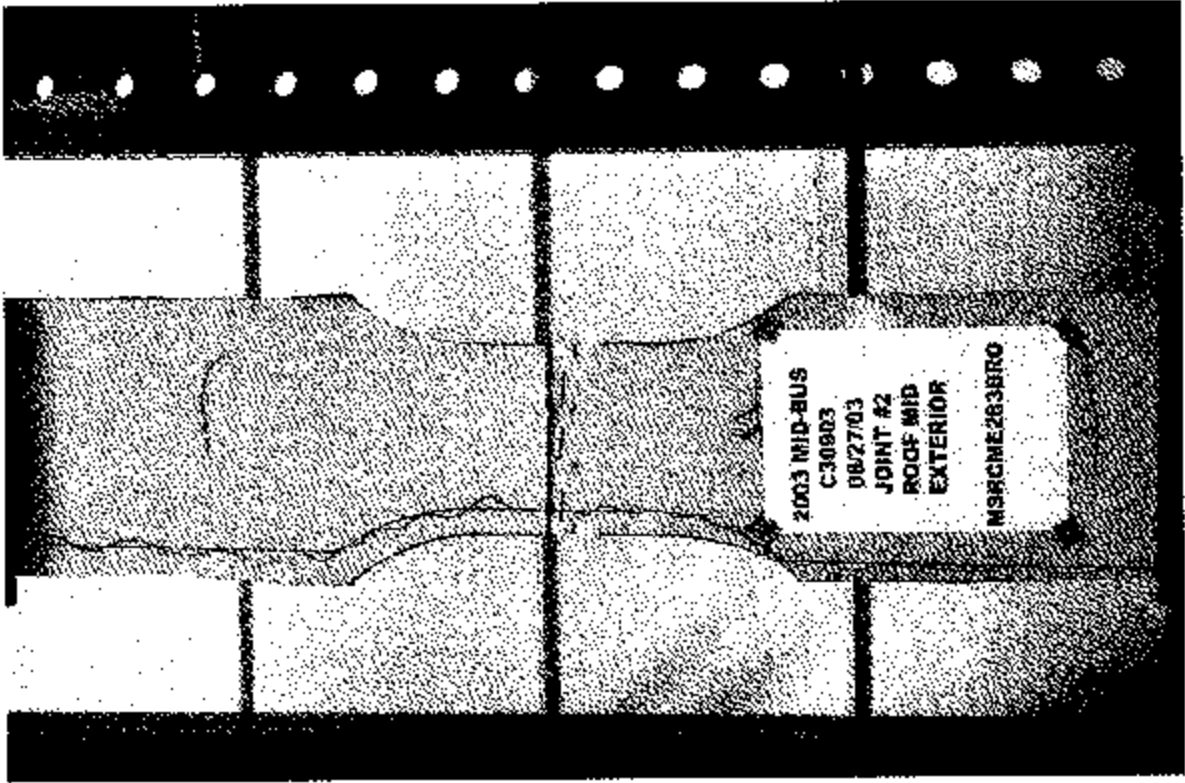
NHTSA No.: C30903



Sample #1 Post-Test Separation

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No.: C30903

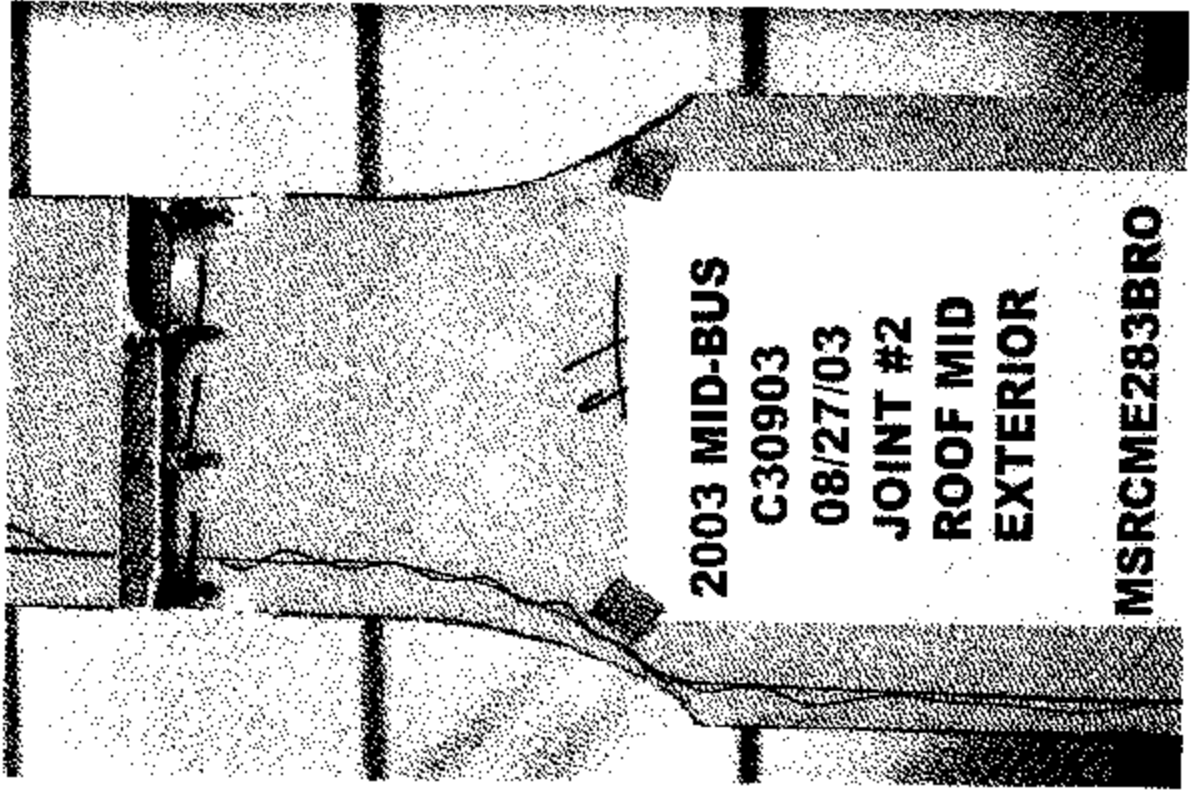


Sample #2 Installed in Test Machine (Pre-Test)

Test Vehicle:  
Procedure:

2003 Mid Bus Guide School Bus  
FMVSS 221

NHTSA No.: C30903

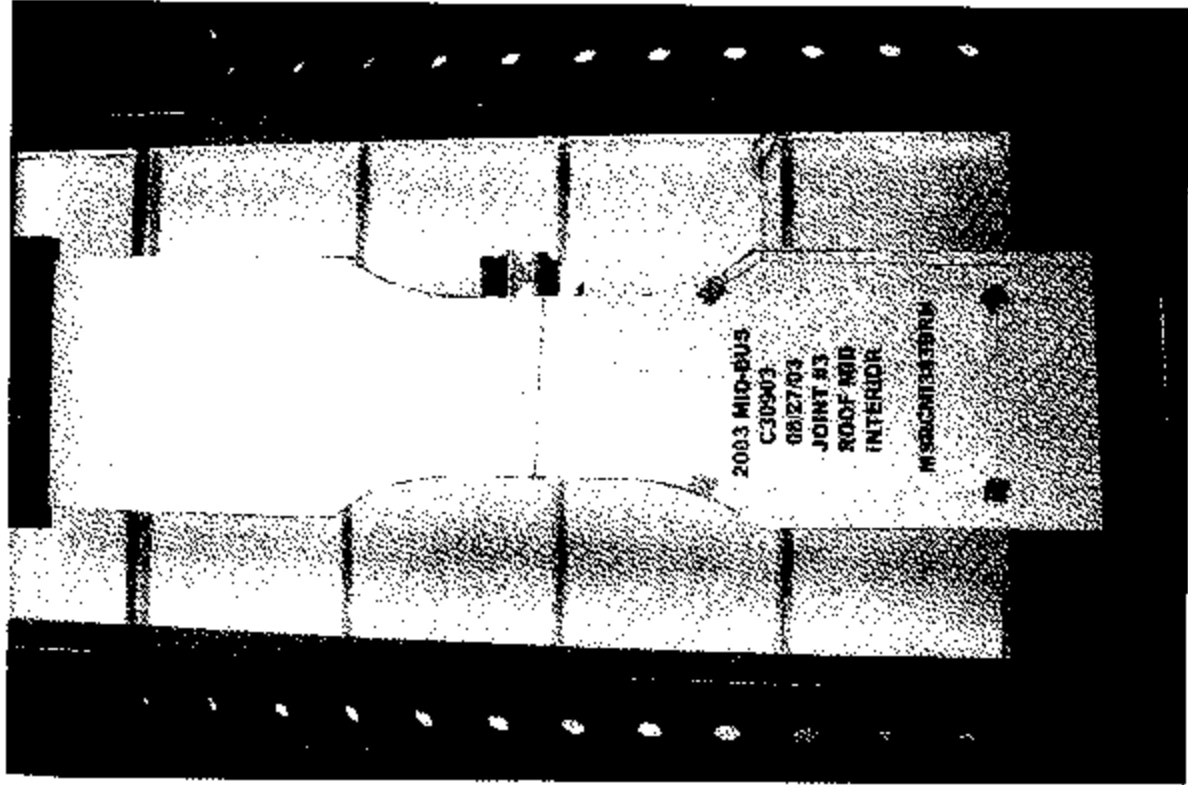


Sample #2 Post-Test Separation

Test Vehicle:  
Procedure:

2003 Mid Bus Guide School Bus  
FMVSS 221

NHTSA No.: C30903

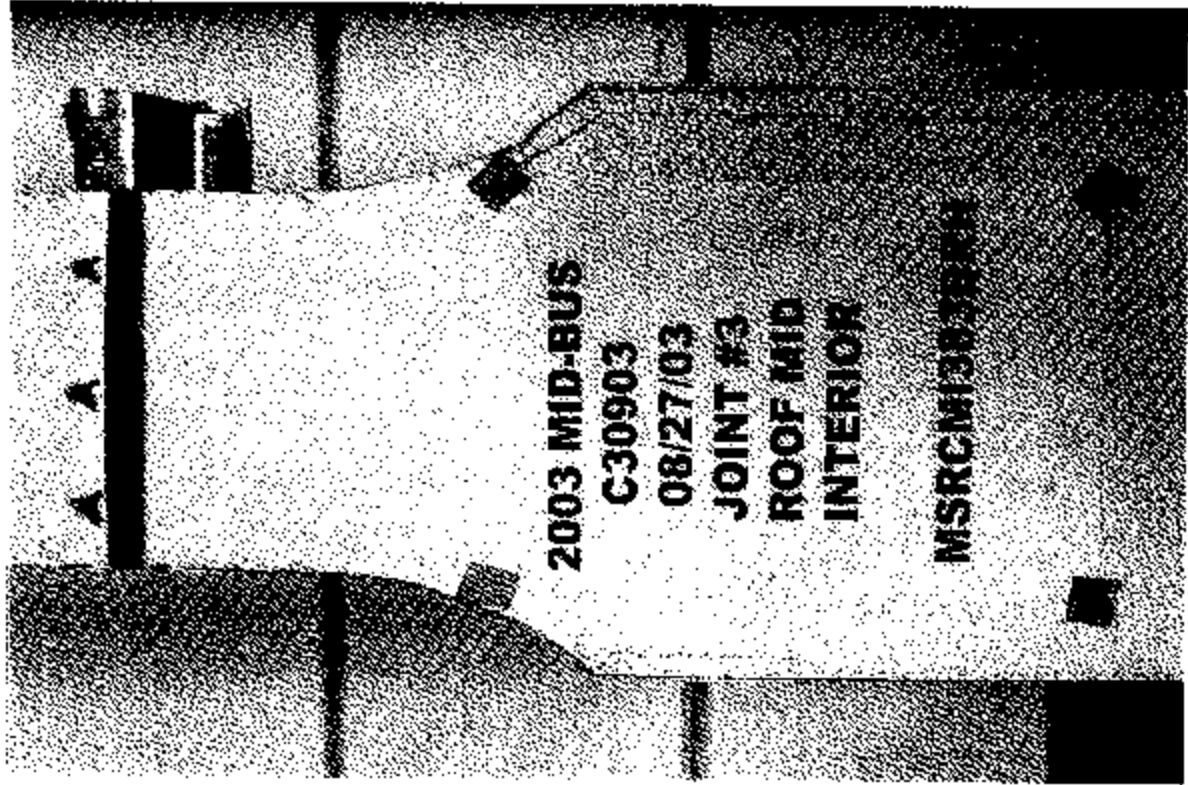


Sample #3 Installed in Test Machine (Pre-Test)

Test Vehicle:  
Procedure:

2003 Mid Bus Guide School Bus  
FMVSS 221

NHTSA No.: C30903

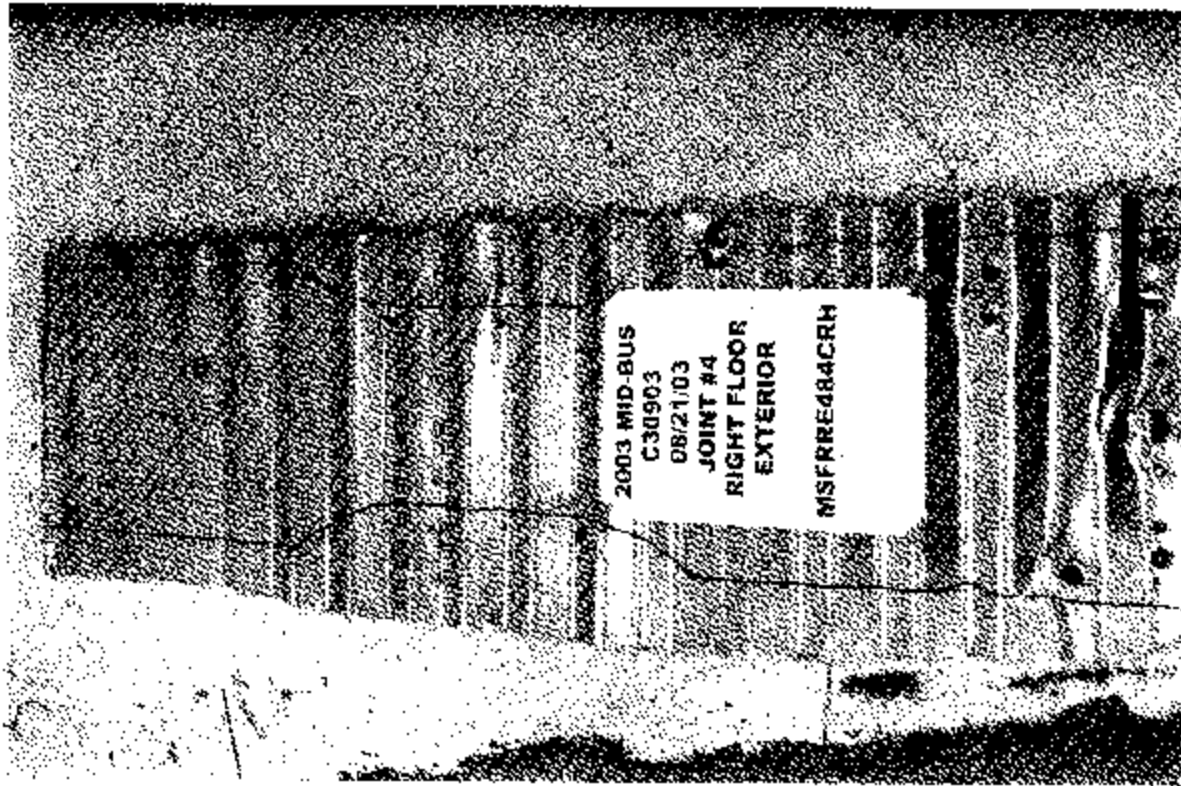


Sample #3 Post-Test Separation

Test Vehicle:  
Procedure:

2003 Mid Bus Guide School Bus  
FMVSS 221

NHTSA No.: C30903

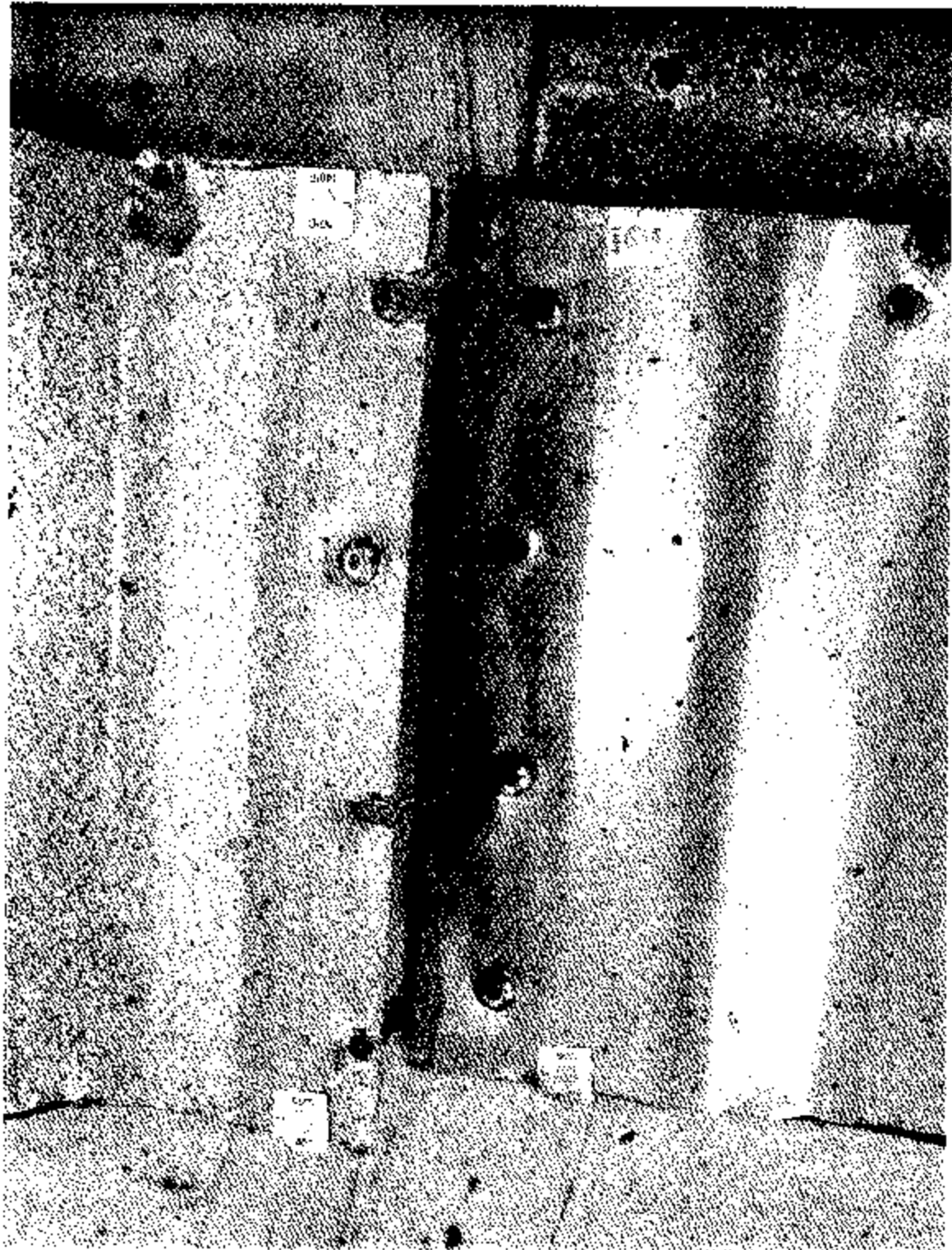


Sample #4 jk(Pre-Test)



Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No.: C30903



Sample #4 Post Test Separation

**SECTION 7  
TEST PLOTS**

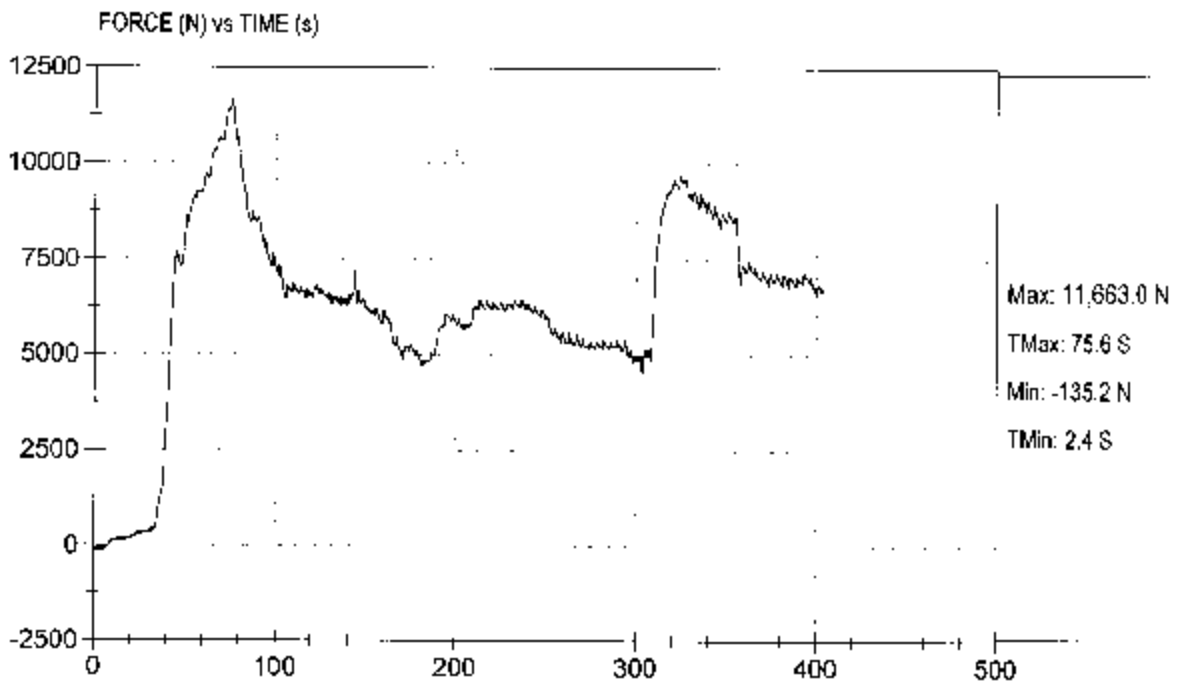
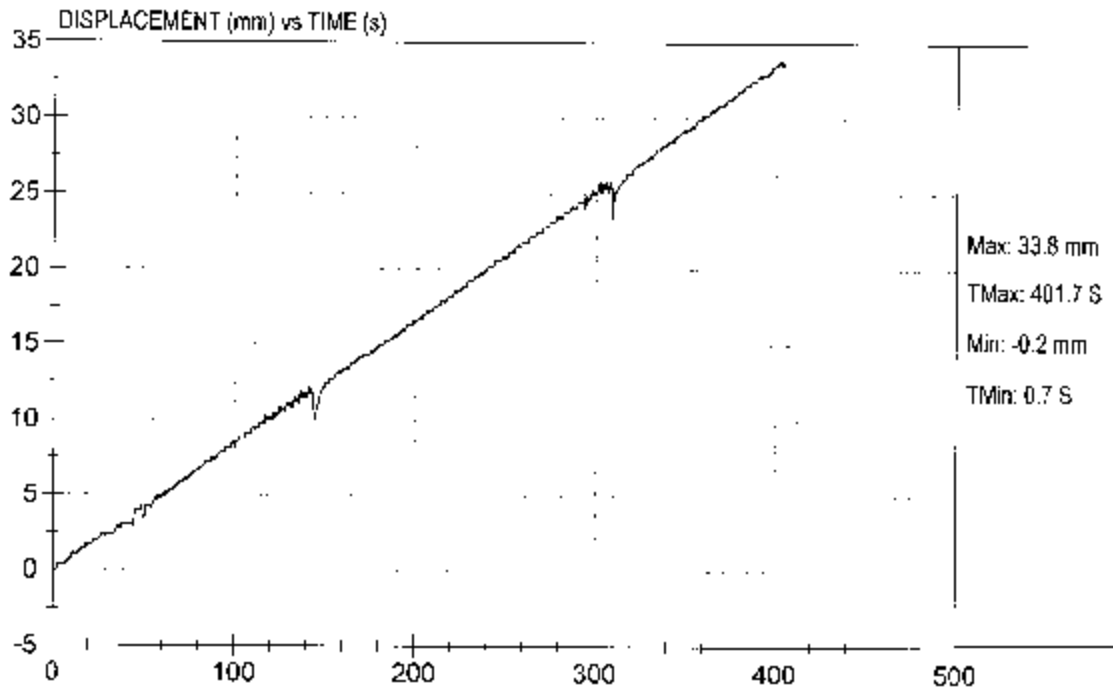
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4	Joint Strength, #4, Force vs. Time & Displacement vs. Time	34



Test Desc: MSSRR1184BRH (Right Rear Int. Side) (\*)  
Component ID: Mid Bus

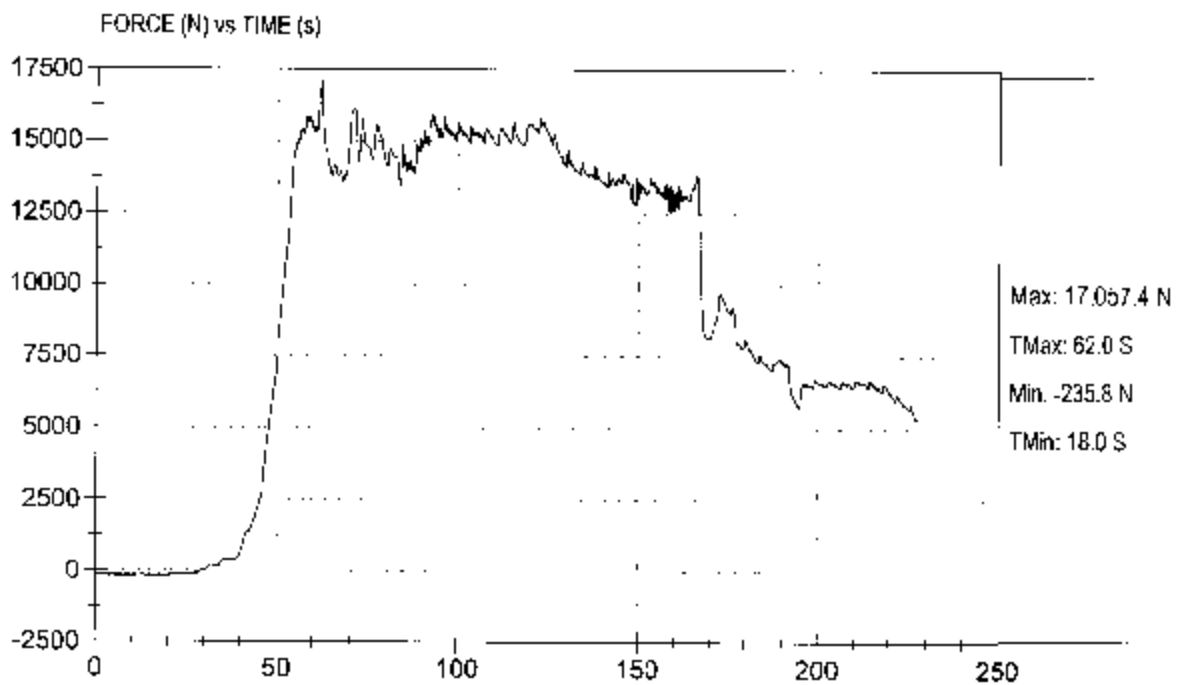
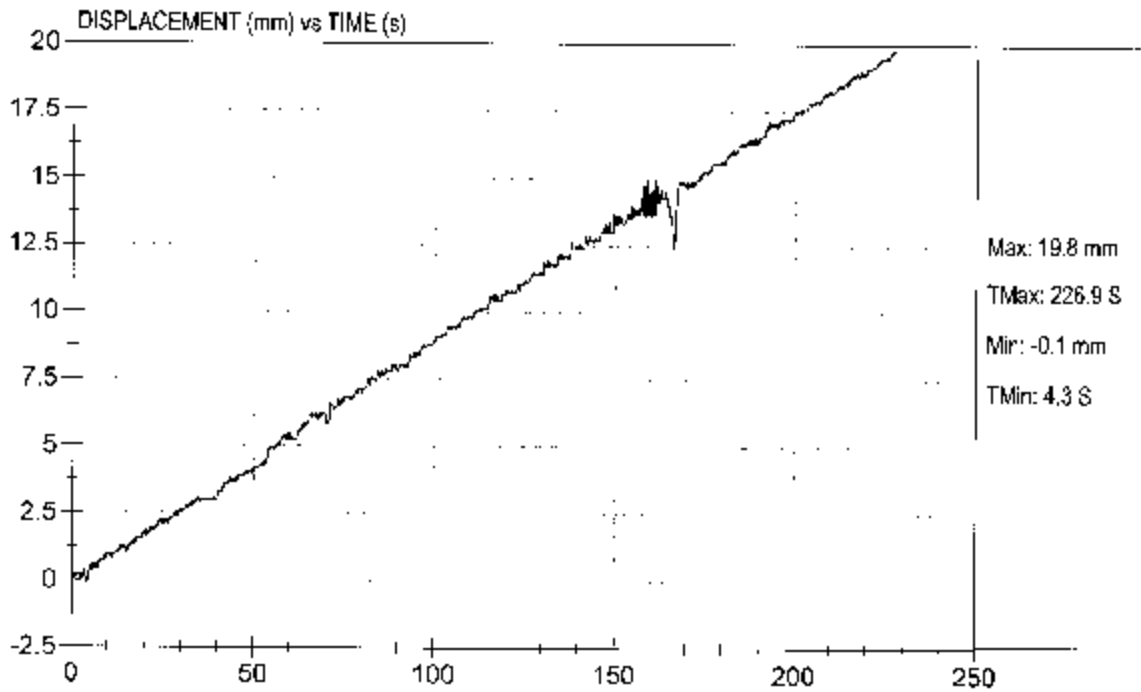
Test Date: 8/27/03  
NHTSA #: C30903





Test Desc: MSRCME283BRO (Rear Ext. Roof) (2)  
Component ID: Mid Bus

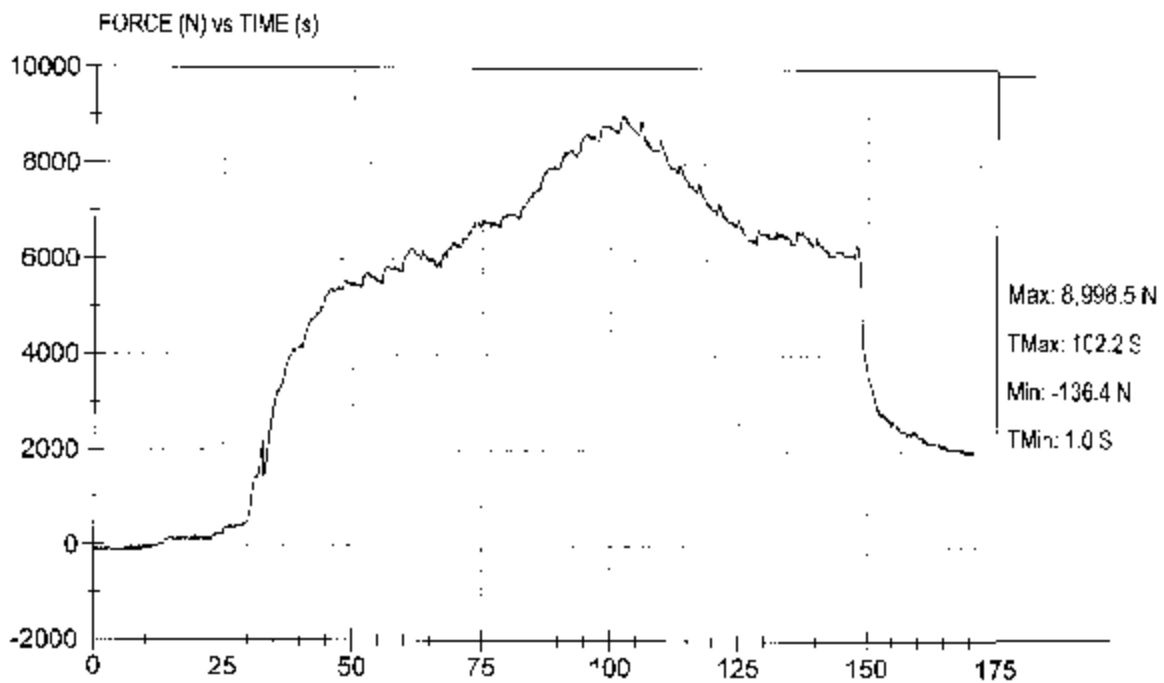
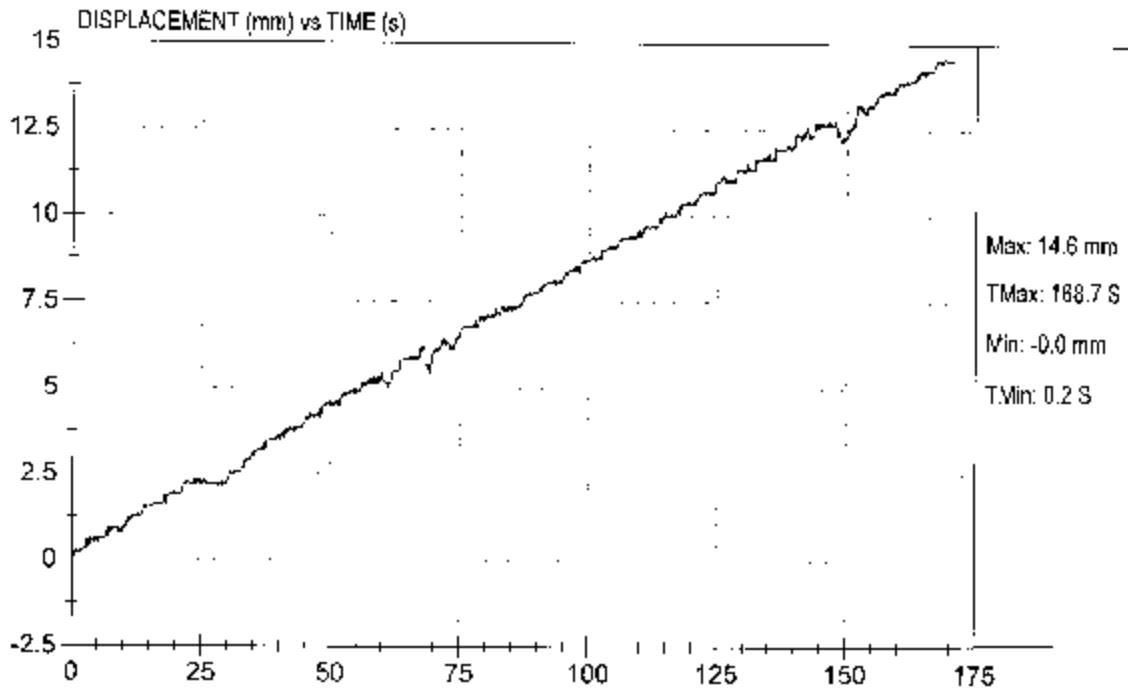
Test Date: 8/27/03  
NHTSA #: C30903





Test Desc: MSRCMI383BRH (Mid Int. Roof) (3)  
Component ID: Mid Bus

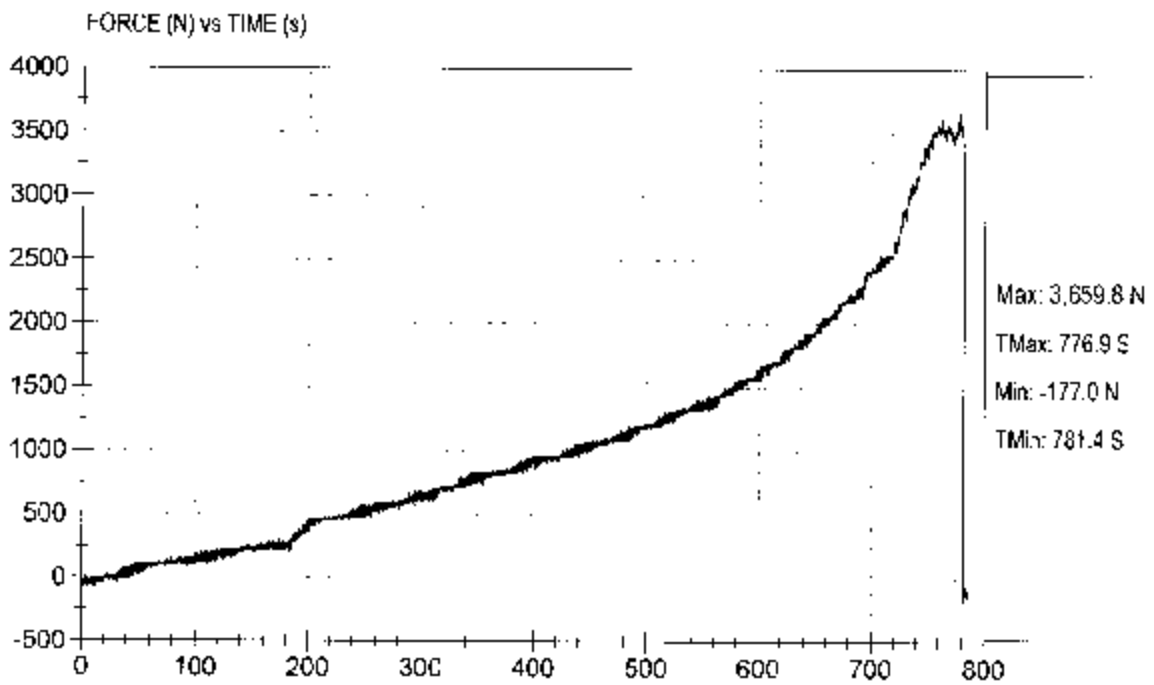
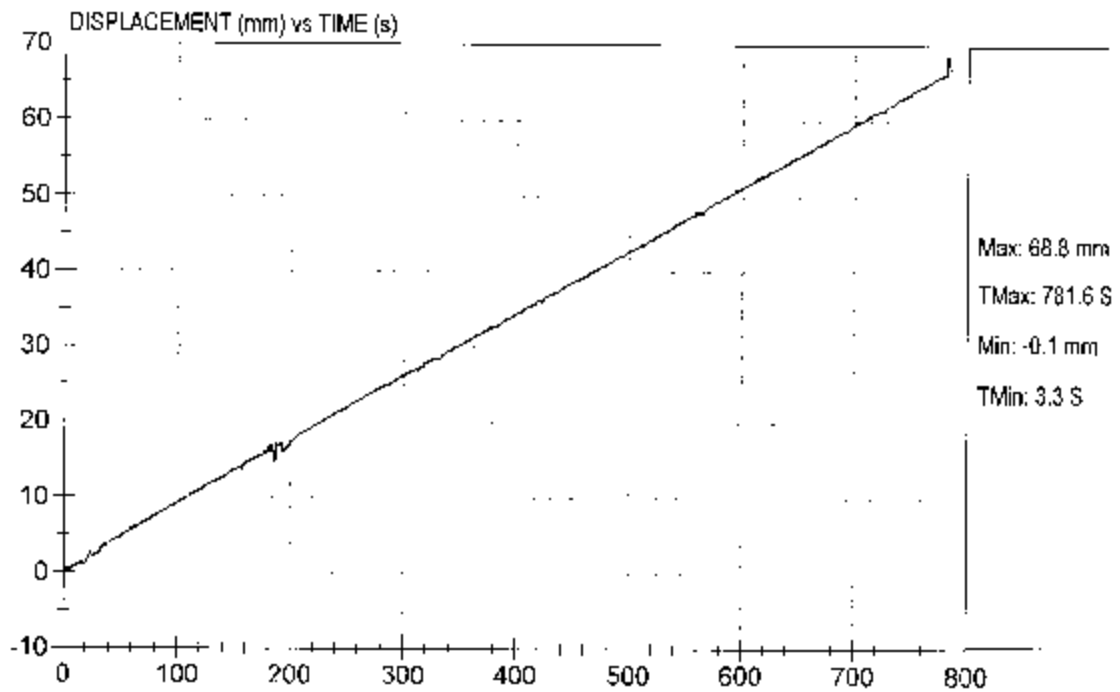
Test Date: 8/27/03  
NHTSA #: C30903





Test Desc: MSFRREH484CRH (Right Rear Ext Floor) (4)  
Component ID: Mid Bus

Test Date: 8/27/03  
NHTSA #: C30903



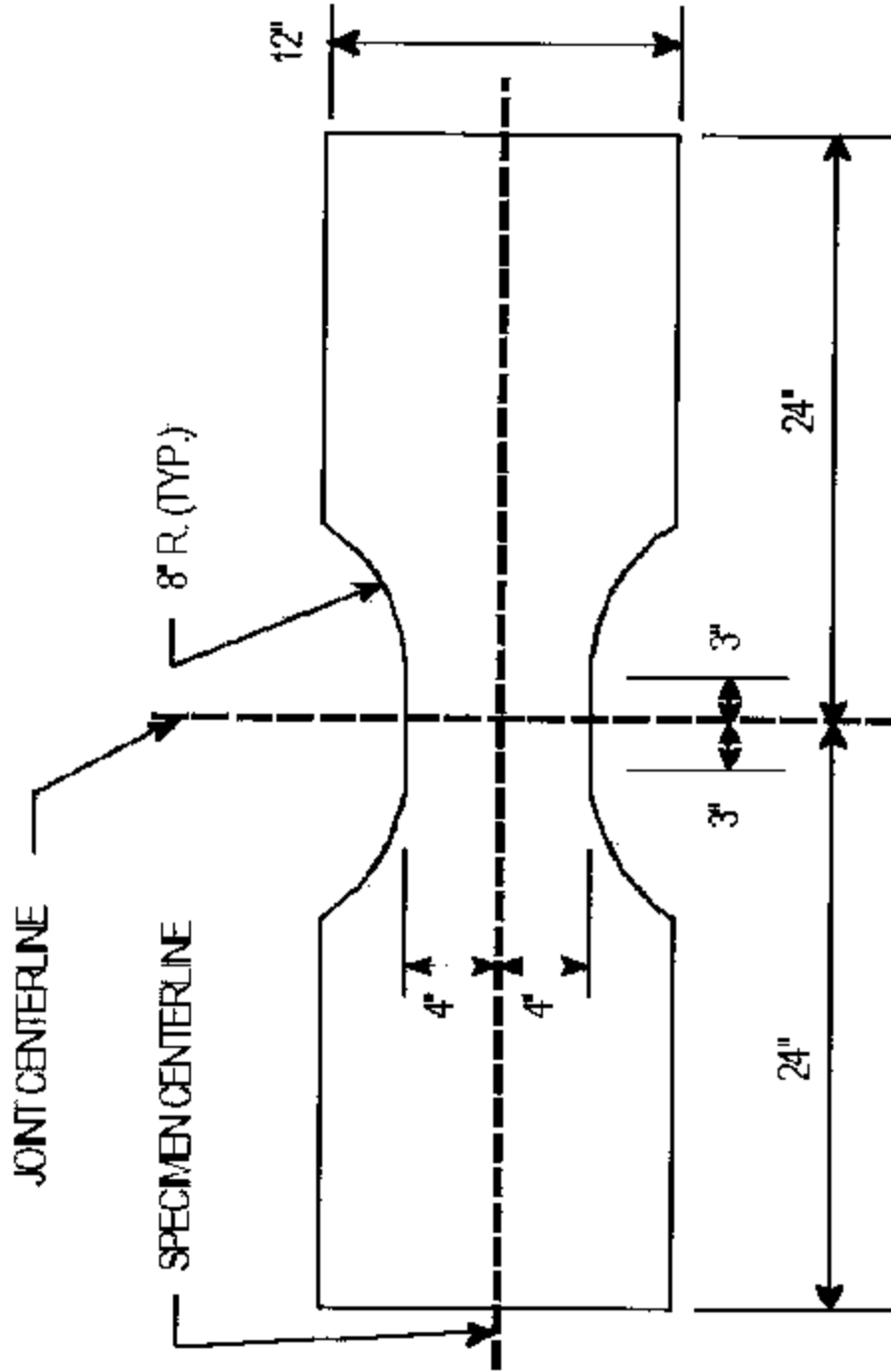
**SECTION 8**  
**JOINT CONFIGURATIONS**

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Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No.: C30903

**DIMENSION REQUIREMENTS OF BODY PANEL SPECIMEN  
WHOSE JOINT SEGMENT IS 8 INCHES LONG**





Test Vehicle:  
Procedure:

2003 Mid Bus Gulde School Bus  
FMVSS 221

NHTSA No.: C30903



Front View of Joint #1

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No.: C30903

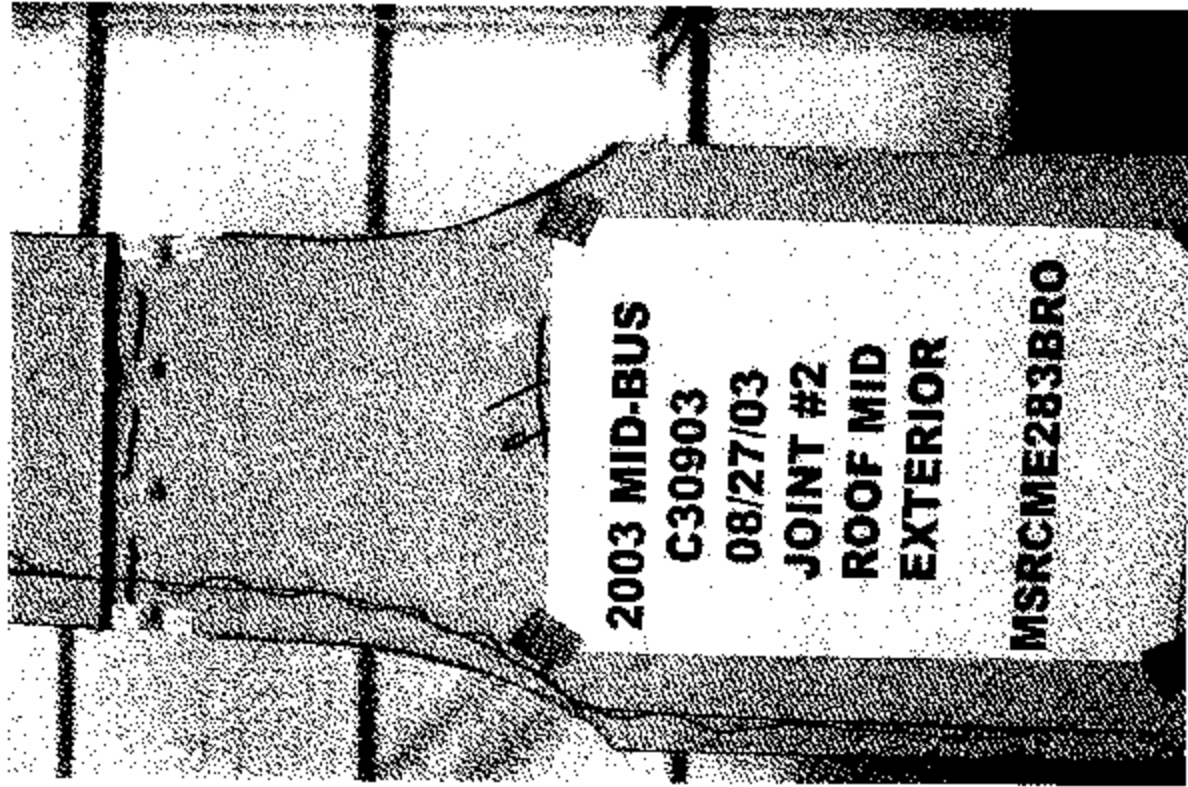


End View of Joint #1

Test Vehicle:  
Procedure:

2003 Mid Bus Guide School Bus  
FMVSS 221

NHTSA No.: C30903



Front View of Joint #2

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No.: C30903

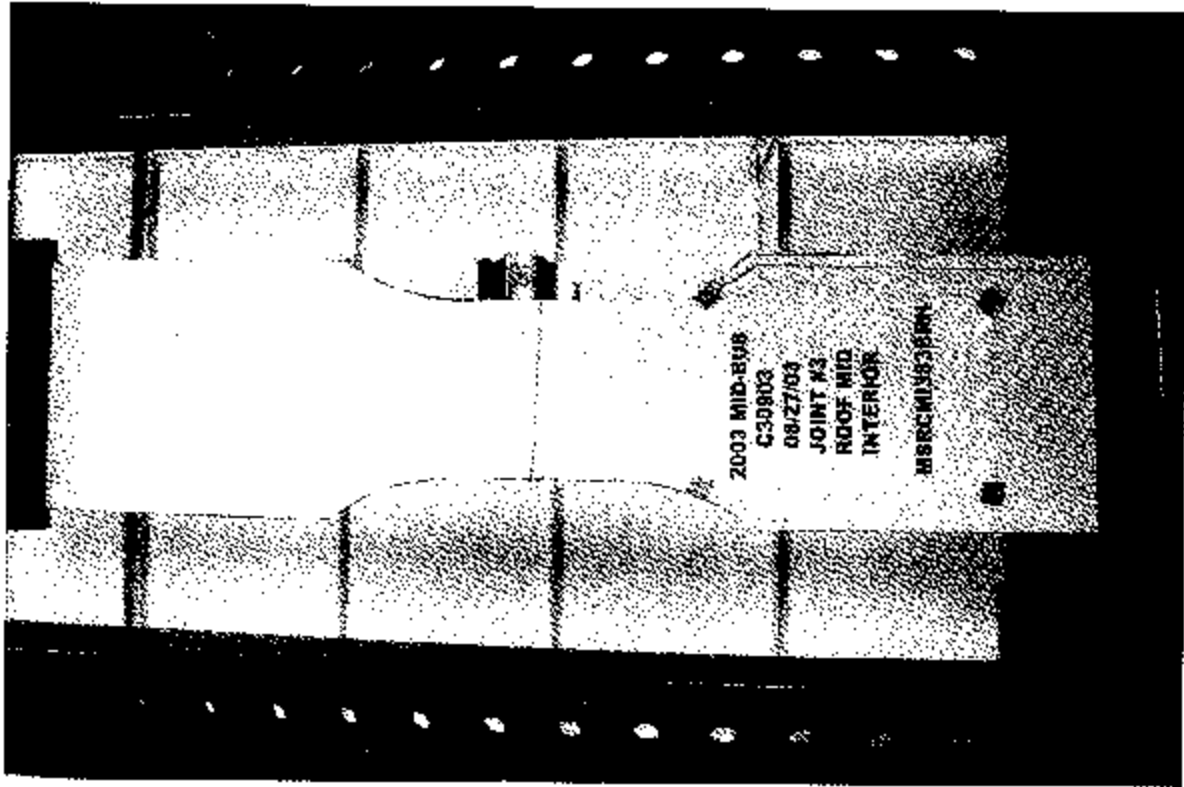


End View of Joint #2

Test Vehicle:  
Procedure:

2003 Mid Bus Guide School Bus  
FMVSS 221

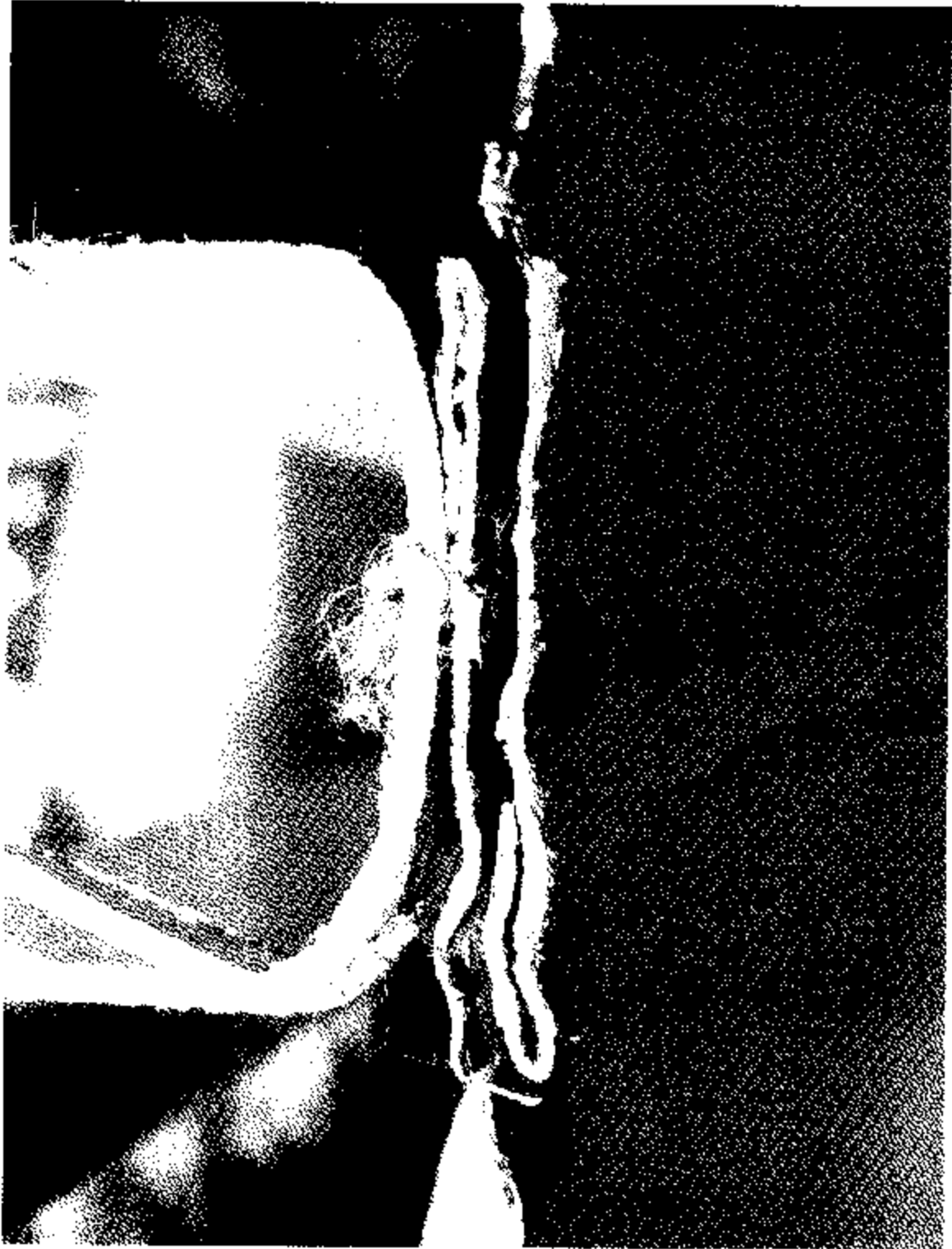
NHTSA No.: C30903



Front View of Joint #3

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

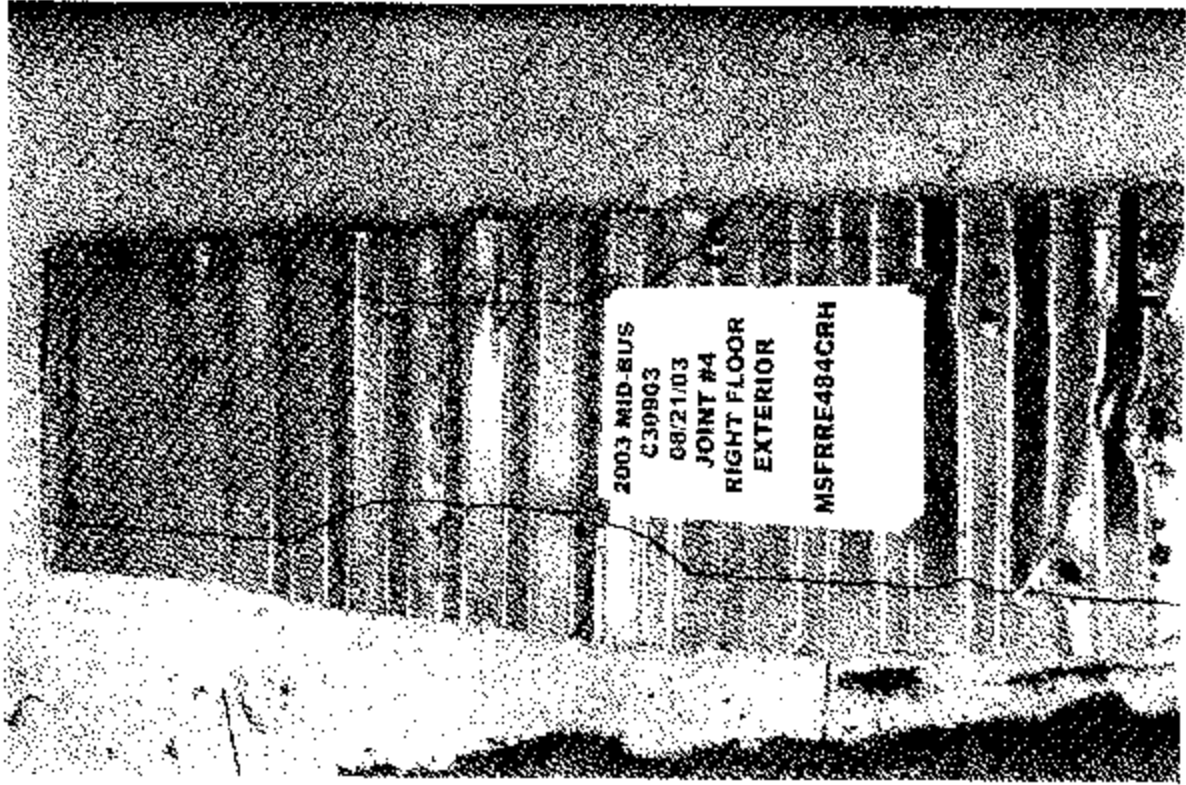
NHTSA No.: C30903



End View of Joint #3

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No.: C30903



Front View of Joint: #4

Test Vehicle: 2003 Mid Bus Guide School Bus  
Procedure: FMVSS 221

NHTSA No.: C30903



End View of Joint #4



**SECTION 9**  
**LABORATORY NOTICE OF TEST FAILURE**



**LABORATORY NOTICE OF TEST FAILURE TO OVSC**

Test Procedure:	FMVSS 221	Test Date:	August 27, 2003
Test Vehicle:	2003 Mid Bus Guide	Test Lab:	MGA Research Corp.
NHTSA No.:	C30903	Project Engineer:	Michael Janovicz
Contract No.:	DTNH22-02-D-01057	Delivery Order No.:	Contract
MFR.:	Mid-Bus Inc.	VIN:	1GBJG31U431110295
Build Date:	12/02		

**TEST FAILURE DESCRIPTION**

Interior side panel MSSRRI184BRH failed to meet load requirement of 23,062 newtons when tensile tested as described in 49 CFR 571.221 Actual load was 11,662 newtons

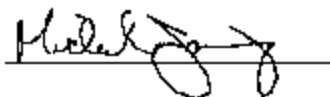
**FMVSS REQUIREMENTS DESCRIPTION**

Paragraph S.5: "When tested in accordance with the procedure of S6, each body panel joint shall be capable of holding the body panel to the member to which it is joined when subjected to a force of 60% of the tensile strength of the weakest joined body panel determined pursuant to S6.2."

**Remarks:** No remarks.

Notification to NHTSA (COTR): Amanda Prescott

Date: August 29, 2003

By: 

**LABORATORY NOTICE OF TEST FAILURE TO OVSC**

Test Procedure:	FMVSS 221	Test Date:	August 27, 2003
Test Vehicle:	2003 Mid Bus Guide	Test Lab:	MGA Research Corp.
NHTSA No.:	C30903	Project Engineer:	Michael Janovicz
Contract No.:	DTNH22-02-D-01057	Delivery Order No.:	Contract
MFR.:	Mid-Bus Inc.	VIN:	1GBJG31U431110295
Build Date:	12/02		

**TEST FAILURE DESCRIPTION**

Interior side panel MSRCME283BRO failed to meet load requirement of 31,813 newtons when tensile tested as described in 49 CFR 571.221. Actual load was 17,058 newtons

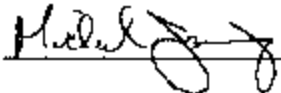
**FMVSS REQUIREMENTS DESCRIPTION**

Paragraph S.5: "When tested in accordance with the procedure of S6., each body panel joint shall be capable of holding the body panel to the member to which it is joined when subjected to a force of 60% of the tensile strength of the weakest joined body panel determined pursuant to S6.2."

**Remarks:** No remarks.

Notification to NHTSA (COTR): Amanda Prescott

Date: August 29, 2003

By: 



**LABORATORY NOTICE OF TEST FAILURE TO OVSC**

Test Procedure:	FMVSS 221	Test Date:	August 27, 2003
Test Vehicle:	2003 Mid Bus Guide	Test Lab:	MGA Research Corp.
NHTSA No.:	C30903	Project Engineer:	Michael Janovicz
Contract No.:	DTNH22-02-D-01057	Delivery Order No.:	Contract
MFR.:	Mid-Bus Inc.	VIN:	1GBJG31U431110295
Build Date:	12/02		

**TEST FAILURE DESCRIPTION**

Interior side panel MSRCMI383BRH failed to meet load requirement of 21,085 newtons when tensile tested as described in 49 CFR 571.221. Actual load was 8,998 newtons

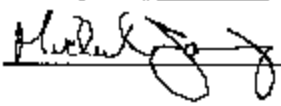
**FMVSS REQUIREMENTS DESCRIPTION**

Paragraph S.5: "When tested in accordance with the procedure of S6, each body panel joint shall be capable of holding the body panel to the member to which it is joined when subjected to a force of 60% of the tensile strength of the weakest joined body panel determined pursuant to S6.2."

**Remarks:** No remarks.

Notification to NHTSA (COTR): Amanda Prescott

Date: August 29, 2003

By: 

**LABORATORY NOTICE OF TEST FAILURE TO OVSC**

Test Procedure:	FMVSS 221	Test Date:	August 27, 2003
Test Vehicle:	2003 Mid Bus Guide	Test Lab:	MGA Research Corp.
NHTSA No.:	C30903	Project Engineer:	Michael Janovicz
Contract No.:	DTNH22-02-D-01057	Delivery Order No.:	Contract
MFR.:	Mid-Bus Inc.	VIN:	1GBJG31U431110295
Build Date:	12/02		

**TEST FAILURE DESCRIPTION**

Interior side panel MSFRRE484RH failed to meet load requirement of 20,546 newtons when tensile tested as described in 49 CFR 571.221. Actual load was 3,660 newtons.

**FMVSS REQUIREMENTS DESCRIPTION**

**Paragraph S.5:** "When tested in accordance with the procedure of S6, each body panel joint shall be capable of holding the body panel to the member to which it is joined when subjected to a force of 60% of the tensile strength of the weakest joined body panel determined pursuant to S6.2."

**Remarks:** No remarks.

Notification to NHTSA (COTR): Amanda Prescott

Date: August 29, 2003

By: 