636374

Safety Compliance Testing for FMVSS 121V

Air Brake Systems

Vehicle: MY 2003 Blue Bird, All American, 4x2, 84-Passenger, School Bus
Blue Bird Body Company
Report #: 121-TRC-02-001
NHTSA#: C30900
TRC Test #: 20010636/2000

Transportation Research Center Inc.

P. O. Box B-67

East Liberty, OH 43319-0367

October 2002

Final Report

U. S. Department of Transportation

National Highway Traffic Safety Administration

Safety Assurance

Office of Vehicle Safety Compliance

400 Seventh Street, SW

Room 6115 (NVS-220)

Washington, D.C. 20590

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16. Abstract

Compliance tests were conducted on the subject vehicle, a 2003 Blue Bird, All-American, 4x2, 84-Passenger School Bus, NHTSA No. C30900, at Transportation Research Center Inc. on September 9, 2002, through October 16, 2002. This test was conducted in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-121V-04, "Air Brake Systems." There were no test failures. It appears that the vehicle meets the requirements.

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Section 1.0

Purpose of Compliance Test

Purpose

Transportation Research Center Inc. (TRC) conducted this program for the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-02-P-01029. The purpose of this test was to determine if the subject vehicle, a 2003 Blue Bird, All American, 4X2, 84-passenger, school bus, NHTSA No. C30900, meets the performance requirements of FMVSS 121, "Air Brake Systems."

Test Procedure

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-121V-04. Data was obtained relative to FMVSS 121, "Air Brake Systems." Deviations from the procedure: The only test performed under section 10.2 "Laboratory Tests" was 10.2 I. "Brake Actuation and Release Timing." Under section 10.3 "Road Tests," park brake was tested under subsections H. and I. "Static Retardation Force Test" and "Grade Holding Test," respectively. The test sequence was performed as follows:

1. Burnish GVWR
2. Brake Actuation and Release Timing GVWR
3. Stability & Control GVWR
4. Stability & Control LLVW
5. Service Brake Stops GVWR
6. Emergency Brake – Primary Reservoir Failed GVWR
7. Emergency Brake – Secondary Reservoir Failed GVWR
8. Emergency Brake – Primary Control Line Failed GVWR
9. Park Brake – Grade Holding GVWR
10. Park Brake – Static Retardation Force GVWR
11. Service Brake Stops LLVW
12. Emergency Brake – Primary Reservoir Failed LLVW
13. Emergency Brake – Secondary Reservoir Failed LLVW
14. Emergency Brake – Primary Control Line Failed LLVW
15. Park Brake – Grade Holding LLVW

Although school busses are not required to perform subsection 10.3 D. "Stability and Control" test, it was performed as an indicant test for this vehicle.

The vehicle information is summarized in Section 2.0. The test data summary is located in Section 3.0, the test data is located in Section 4.0, and the test summary is located in Section 5.0. Appendix A contains the still photographic prints, and Appendix B contains the information that was shipped with the vehicle.

Section 2.0

Vehicle Information

Vehicle Information

The completed test vehicle is a 2003 Blue Bird, All American, 4x2, 84-passenger, school bus, NHTSA No. C30900, manufactured by the Blue Bird Body Company. The vehicle is a "pusher"-type, cab over, straight truck chassis school bus body with 84 passenger seats, and a wheelbase of 274 inches. The Gross Vehicle Weight Rating (GVWR) is 36,200 pounds, and the test vehicle is equipped with a Bendix 4-sensor, 4-modulator (4S/4M) anti-lock brake system.

Section 3.0

Test Data Summary

Test Data Summary

Table 1

Summary of Data for Laboratory Test "Application & Release Times"

Average Times in Seconds	Application Max Allowable 0.45 seconds		Release Max Allowable 0.55 seconds	
	Left Front	**Right Rear**	**Left Front**	**Right Rear**
Full System Operating	0.415	0.311	0.358	0.435
ABS Main Power Failed	0.411	0.304	0.353	0.433
ABS Wheel Sensor Failed (Open)	0.412	0.310	0.355	0.435
ABS Wheel Sensor Failed (Short)	0.415	0.310	0.358	0.435

The park brake chamber pressures were approx. 0.1 psi. 3 seconds after control valve actuated.

Table 2

Data Summary of the Stopping Distances

Distance in Feet (Corrected Dist.)	GVWR		LLVW		Maximum Allowable
	Minimum	**Maximum**	**Minimum**	**Maximum**	**(ft.)**
Service Brakes	223.0	236.1	174.7	199.5	GVWR – 280 LLVW – 280
Failed Primary Reservoir	343.8	395.6	185.1	211.5	613
Failed Secondary Reservoir	326.6	382.0	240.3	257.6	613
Failed Primary Control Line	236.2	278.8	172.0	177.2	613

The vehicle passed the indicant Stability and Control tests.

Section 4.0

Test Data

TEST DATA
Table 3
VEHICLE INFORMATION SHEET-FMVSS 121

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle Number: C30900

Test No.: 20010636/2000 Test Date(s): 09/09/02 – 10/16/02

Test Facility/Location: TRC /Transportation Research Center Inc.; East Liberty, Ohio

VIN: 1BABNBPA33F210494

GVWR 36,200 lbs. GAWRs: 13,200 lbs. Front, 23,000 lbs. Rear

CENTER OF GRAVITY HEIGHT (in): No Data

Initial Odometer: 764 mi.

Wheelbase: Bus (in): 274 in. Trailer, (in): N/A

Retarder(s) Type(s): None

Aerodynamic Treatments: Yes ____ No X

BRAKES:

	Type[1]	Size	Make	Lining (Edge Code)
Axles:				
1	S-Cam	16.5 x 5 in.	Meritor	MA 212 FF
2	S-Cam	16.5 x 7 in.	Meritor	R 301 FF
3	N/A	N/A	N/A	N/A

[1] Cam, disc, wedge, etc.

BRAKE DRUM/ROTOR:

	Type[2]	Make	Dust Shields Installed?
Axles:			
Front	Cast Drum	Arvin Meritor	No
Rear	Cast Drum	Arvin Meritor	No

[2] Cast or composite drum, vented or non-vented rotor, etc.

ACTUATION DETAILS:

	AIR CHAMBERS		SLACK ADJUSTERS			
	Make	Type[3]	Length or Wedge angle	Mfr	Cam	Rotation[4]
Axles:						
Front	MGM	24 (L3) Diaph.	5.5 in.	Meritor	Same	
Rear	MGM	30 (67-09)Diaph	6.0 in.	Meritor	Same	

[3] Size and diaphragm or piston
[4] Same or opposite to forward wheel rotation

TIRES

	Pressure (psi)	Size	Make	Model	Static Loaded Radius Measured	Static Loaded Radius Databook
Axles:						
Front	115 psi	425/65R22.5	Goodyear	G286	**19.5 in.	No Data
Rear	105 psi	11R22.5	Goodyear	G124	**19.3 in.	No Data

*Manufacturer supplied data.
**Measured at test GVWR.

REMARKS: There were dual tires at each wheel end on the rear axle.

ABS:

Mfr: Bendix Model: P/N 5010167-R00 Configuration: 4S/4M

FRONT SUSPENSION:

Type: Multi-Leaf Spring Make: Meritor Model: No Data

REAR SUSPENSION:

Type: Multi-Leaf Spring Make: Meritor Model: No Data

Rear Axle Spread, (in): N/A Overall Width (SAE J693): 97 in.

AIR SYSTEM:

Compressor Capacity (cfm): No Data

Cut-out (psi): 120 Cut-in (psi): 105

SPECIAL CONDITIONS:

Special conditions or equipment that might affect brake performance: None.

WEIGHTS (lbs.):

	Empty	LLVW	Burnish	Fully Loaded	GAWR
Axle: 1	7,080	7,690	13,190	13,190	13,200
2	12,860	12,770	22,990	22,990	23,000
Total:	19,940	20,460	36,180	36,180	36,200

REMARKS: None.

TEST DATA
TABLE 4
VERIFICATION OF REQUIRED EQUIPMENT

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 10-16-02 Drivers: K. Easterday Technician: K. Easterday

SERVICE BRAKES	YES	NO
All Wheels Equipped with Brakes	X	
All Brakes Equipped with Automatic Brake Adjusters	X	
Brake Adjustment Indicators are visible from a location adjacent to or beneath the vehicle	X	

ANTILOCK BRAKE SYSTEM	YES	NO
Antilock System Installed	X	
Proper axle control	X	
Comments:		
Antilock Warning Signal within Drivers Field-of-View Black letters, yellow background, no audible warning	X	

SERVICE RESERVOIRS	YES	NO
No. of Reservoirs 3		
Automatic Condensate drain valve(s) or supply reservoir	X	
Automatic Operation of condensate drain valve		X
Each Reservoir has a Drain Valve which can be manually operated	X	

PARKING BRAKES	YES	NO
Parking Brake Control Separate from Service Brake Control	X	

Parking Brake Control Accessible from Operator's Seat		X	
Parking Brake control is identified in a manner that specifies its operation		X	
Parking Brake Control Operates Parking Brakes of Towed Vehicle	X N/A	Yes	No

REMARKS: None

LABORATORY TESTS
TABLE 5
BRAKE ACTUATION AND RELEASE TIMES

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 09-27-02 Driver: K. Easterday Technician: C. Jenkins

FULL SYSTEM – ABS MAIN POWER ACTIVE

Run No.	Front Axle		Rear Axle	
	Apply (sec)	Release (sec)	Apply (sec)	Release (sec)
1	0.414	0.359	0.313	0.422
2	0.411	0.358	0.305	0.432
3	0.421	0.358	0.316	0.432
Avg.	0.415	0.358	0.311	0.435
FULL SYSTEM – ABS MAIN POWER FAILED				
1	0.405	0.359	0.304	0.433
2	0.414	0.350	0.304	0.433
3	0.414	0.350	0.304	0.433
Avg.	0.411	0.353	0.304	0.433
ABS WHEEL SENSOR FAILED – SHORTED				
1	0.411	0.347	0.305	0.432
2	0.421	0.358	0.316	0.432
3	0.414	0.368	0.309	0.442
Avg.	0.415	0.358	0.310	0.435
ABS WHEEL SENSOR FAILED – OPEN				
1	0.411	0.359	0.308	0.442
2	0.411	0.355	0.308	0.438
3	0.414	0.350	0.313	0.424
Avg.	0.412	0.355	0.310	0.435

REMARKS: To simulate the "Open" failure and immediately adjacent to the wheel, the right rear drive axle wheel speed sensor lead was disconnected. To simulate the "Shorted" failure and immediately adjacent to the wheel, the right rear drive axle wheel speed sensor connector was disconnected and with a jumper wire, the two exposed wire ends (prong receptacles) to the ABS ECU, were connected. For the ABS Active tests, the ignition was in the ON/RUN position with the engine not running. All tests were performed with the vehicle attached to "shop air" regulated to 100 psi maximum.

ROAD TESTS
TABLE 6
PARK BRAKE CHAMBER ACTUATION PRESSURE

PARKING BRAKE TEST

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Test Performed By: K. Easterday Date: 09-27-02

PARK BRAKE CHAMBER ACTUATION PRESSURE

AXLE # 1 (rear)

RUN NUMBER	PRESSURE IN PARKING CHAMBER AFTER 3 SECONDS (PSI)	
	LEFT	RIGHT
1	0.0	0.2
2	-0.1	0.1
3	0.1	0.1
AVERAGE	0	0.1

If average pressure is less than or equal to 3 psi, use 0 psi

REMARKS: None.

ROAD TESTS
Table 7
BURNISH

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle Number: C30900

8.1 BURNISH TEST WEIGHT AXLE 1: 13,190 lbs. AXLE 2: 22,990 lbs.			
Driver No.	**Date**	**Odometer Start**	**Odometer End**
1	09/24/02	778	1013
2	09/25/02	1013	1162
3	09/25/02	1162	1306
4			

	Date	**Time**	**Odometer**
Test Start	09/24/02	17:10	778
Test Finish	01/10/01	20:20	1306

	ADJUSTMENT LEVELS					
	1L	**1R**	**2L**	**2R**	**3L**	**3R**
Initial	01/09/01	01/09/01	01/09/01	01/09/01	N/A	N/A
1st	01/09/01	01/09/01	01/09/01	01/09/01	N/A	N/A
2nd	01/09/01	01/09/01	01/09/01	01/09/01	N/A	N/A
3rd	01/10/01	01/10/01	01/10/01	01/10/01	N/A	N/A
Final	01/11/01	01/11/01	01/11/01	01/11/01	N/A	N/A

REMARKS: The foundation brakes, suspension and axles were Meritor items. Therefore, for these types and models of brakes, the brakes were adjusted per Meritor's "Maintenance Manual 4" obtained via their website. The method utilized was the "free-stroke" method. This method specifies an adjustment range of ½ in. to 5/8 in. Except for the first adjustment check, which was performed at snub 53 due to high post-snub heat and a large temperature spread for the rear axle, the adjustment checks occurred at the standard prescribed intervals. The adjustments did not exceed the manufacturer's maximum allowable specifications, nor did the drivers indicate that brake drag was evident.

First adjustment at snub 53: strokes measured (LF 5/8", RF 5/8"; LR 1/8 ", RR 1/8"). The second adjustment at snub 250: strokes measured (LF 5/8"; RF 1/2"; LR 3/8", RR 1/4"). The third adjustment at snub 375: strokes measured (LF 5/8"; RF 5/8"; LR 1/4", RR 1/4"). Final adjustment strokes measured (LF 5/8"; RF 5/8"; LR 3/8", RR 1/4"). The brakes were adjusted to the manufacturer's specifications of 5/8" free stroke.

Snub #	Initial Speed (mph)	Average Cntrl Press. (psi)	Decel (ft/s^2)	Initial Brake Temperatures °F					
				1L	1R	2L	2R		
1	40	ND	9.6	58	91	94	92		
25	40	58	10.2	324	317	357	422		
50	40	59	11.0	273	275	474	554		
75	40	45	10.7	283	298	443	516		
100	40	52	10.7	283	303	500	553		
125	40	51	10.4	290	311	450	537		
150	40	43	10.2	280	313	475	525		
175	40	46	10.0	300	323	489	527		
200	40	45	10.0	285	303	454	508		
225	40	43	10.5	298	320	485	521		
250	40	34	9.4	341	348	380	449		
275	40	40	9.9	340	322	386	466		
300	40	40	9.6	319	294	347	395		
325	40	40	9.3	325	335	409	482		
350	40	40	9.1	328	315	399	463		
375	40	43	10.0	262	263	329	407		
400	40	44	9.9	293	304	390	474		
425	40	42	9.6	292	301	420	494		
450	40	36	8.3	306	314	450	511		
475	40	42	9.8	297	307	448	500		
500	40	43	9.9	295	304	449	496		

(Table continued on next page)

REMARKS: None.

Snub #	Initial Speed mph	Ambient Temp °F	Comments	Driver Initials
1	40	69	T/C repair at snub #3.	RH
25	40	67	100 °spread – off/cool.	RH
50	40	65	Spread - adj. rear brakes.	RH
75	40	59		RH
100	40	56		RH
125	40	56		RH
150	40	55		RH
175	40	54	Break	RH
200	40	51		RH
225	40	51		RH
250	40	58	Brake Adjustment Check	KE
275	40	65		KE
300	40	72		KE
325	40	72		KE
350	40	72		KE
375	40	43	Brake Adjustment Check	RH
400	40	41		RH
425	40	39		RH
450	40	39		RH
475	40	38		RH
500	40	38	Brake Adjustment Check	RH

REMARKS: None.

ROAD TESTS
TABLE 8
STABILITY & CONTROL-GVWR

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 10-01-02 Driver: K. Easterday Observer: None

Manually Controlled Retarder: No

Maximum Drive Through Speed 32 mph

75% of Max Drive Through Speed 24 mph

STABILITY & CONTROL-GVWR

Stop No.	Initial Speed (mph)	Apply Time (sec)	Approx. Dist. Out of Lane (ft)	Number Markers Hit	Comments
1	24.8	0.29	-0-	-0-	Video Tape
2	24.6	0.28	-0-	-0-	Video Tape
3	24.8	0.29	-0-	-0-	Video Tape
4	24.1	0.29	-0-	-0-	Video Tape

Ambient Temp.: 67 °F

Wind Speed: 9-12 mph

Direction: 232° SW

REMARKS: The vehicle remained in the lane during all 4 stops.
Apply Time – Time from zero psi control line/treadle pressure to 85 psi.

ROAD TESTS
TABLE 9
STABILITY & CONTROL-LLVW

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 10-02-02 Driver: K. Easterday Observer: None

Manually Controlled Retarder: No

Maximum Drive Through Speed 34 mph

75% of Max Drive Through Speed 25.5 mph

STABILITY & CONTROL-LLVW

Stop No.	Initial Speed (mph)	Apply Time (sec)	Approx. Dist. Out of Lane (ft)	Number Markers Hit	Comments
1	24.9	0.28	-0-	-0-	Video Tape
2	24.5	0.25	-0-	-0-	Video Tape
3	26.4	0.27	-0-	-0-	Video Tape
4	25.6	0.26	-0-	-0-	Video Tape

Ambient Temp.: 71 °F

Wind Speed: 10 mph

Direction: 89° E

REMARKS: The vehicle remained in the lane during all 4 stops.
Apply Time – Time from zero psi control line/treadle pressure to 85 psi.

ROAD TESTS
TABLE 10
SERVICE BRAKE STOPPING TEST-GVWR

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 10/02/02 Driver: K. Easterday Observer: None

BRAKE STROKE MEASUREMENTS: free stroke

Axle 1 Left/Right 5/8" / 5/8"

Axle 2 Left/Right 5/8 " / 5/8"

Axle 3 Left/Right N/A / N/A

Manually Controlled Retarder: No

60 MPH SERVICE BRAKE STOPS

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance Per SAE J299	In 12 foot Lane	Wheel Lock-up Indication	Comments
1	102	60.7	241.9	236.1	Y	N	Video Tape
2	104	60.0	225.7	225.5	Y	N	Video Tape
3	102	59.6	226.2	229.1	Y	N	Video Tape
4	101	60.1	227.2	226.1	Y	N	No comment
5	102	59.5	223.0	227.0	Y	N	No comment
6	101	60.2	224.5	223.0	Y	N	No comment

Ambient Temp.: 80 °F

Wind Speed: 13 mph

Direction: 233° SW

REMARKS: Actual and corrected stopping distances for each run do not exceed the maximum stopping distance requirement of **280 ft**.
Application Pressure sensed at the treadle Control Line output port.

ROAD TESTS
TABLE 11
EMERGENCY BRAKE STOPPING TEST, PRIMARY RESERVOIR FAILURE-GVWR

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 10-03-02 Driver: K. Easterday Observer: None

Manually Controlled Retarder: No

PRIMARY RESERVOIR FAILURE AT GVWR
60 MPH EMERGENCY BRAKE STOPS

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane	Wheel Lock-up Indication	Comments
1	94	60.2	398.3	395.6	Y	N	Video Tape
2	97	60.5	364.5	358.2	Y	N	Video Tape
3	95	60.7	362.5	353.7	Y	N	No comment
4	94	60.1	369.9	368.6	Y	N	No comment
5	95	60.5	355.1	349.1	Y	N	No comment
6	95	60.5	349.4	343.8	Y	N	No comment

Ambient Temp.: 81 °F

Wind Speed: 14 mph

Direction: 253° SW

REMARKS: The brake was applied within 5 seconds after activation of the low-pressure warning. Actual and corrected stopping distances for each run do not exceed the maximum stopping distance of **613 ft**.
Application Pressure sensed at the treadle Control Line output port.

ROAD TESTS
TABLE 12
EMERGENCY BRAKE STOPPING TEST, SECONDARY RESERVOIR FAILURE-GVWR

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 10-04-02 Driver: K. Easterday Technician: None

Manually Controlled Retarder: No

SECONDARY RESERVOIR FAILURE AT GVWR
60 MPH EMERGENCY BRAKE STOPS

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane	Wheel Lock-up Indication	Comments
1	26	59.3	319.0	326.6	Y	N	Video Tape
2	25	59.3	329.7	337.1	Y	N	Video Tape
3	21	59.7	378.6	382.0	Y	N	No comment
4	21	60.9	377.7	366.6	Y	N	No comment
5	20	60.3	358.1	354.2	Y	N	No comment
6	21	58.7	338.2	352.9	Y	N	No comment

Ambient Temp. 81 °F

Wind Speed: 26 mph

Direction: 175° SE

REMARKS: The brake was applied within 5 seconds after activation of the low-pressure warning. Actual and corrected stopping distances for each run do not exceed the maximum stopping distance of **613 ft**.
Application Pressure sensed at the treadle Control Line output port.

ROAD TESTS
TABLE 13
ROAD TESTS
EMERGENCY BRAKE STOPPING TEST,
PRIMARY CONTROL LINE FAILURE-GVWR
60 MPH EMERGENCY BRAKE STOPS

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 10-04-02 Driver: K. Easterday Technician None

Manually Controlled Retarder: No

PRIMARY CONTROL LINE FAILURE-GVWR
60 MPH EMERGENCY BRAKE STOPS

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance per SAE J299	In 12 foot Lane	Wheel Lock-up Indication	Comments
1	87	60.0	279.1	279.1	Y	N	Video Tape
2	101	60.1	247.6	246.6	Y	N	Video Tape
3	102	60.3	240.1	237.5	Y	N	No comment
4	101	59.5	237.1	241.0	Y	N	No comment
5	104	59.8	240.5	242.2	Y	N	No comment
6	103	60.1	237.2	236.2	Y	N	No comment

Ambient Temp.: 78 °F

Wind Speed: 24 mph

Direction: 165° SE

REMARKS: The brake was applied within 5 seconds after activation of the low-pressure warning. Actual and corrected stopping distances for each run do not exceed the maximum stopping distance of **613 ft**.
Application Pressure sensed at the treadle Control Line output port.

ROAD TESTS
TABLE 14
PARKING BRAKE TEST
STATIC RETARDATION FORCE-GVWR

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Test Performed By: K. Easterday Date: 10-08-02

Parking Brake Chamber Pressure: 0 psi

STATIC RETARDATION FORCE-GVWR

AXLE # 1 (Rear/Drive) DRAWBAR PULL — PEAK FORCE DURING WHEEL ROTATION (lbs.)

Brake Temperature Before Forward Pull: L 178°/R 192°			Before Reverse Pull: L 180°/R 190°	
Pull Direction	0° - 90° Rotation	90° - 180° Rotation	180° - 270° Rotation	270° - 360° Rotation
FORWARD	#1 9,463	#2 9,926	#3 9,669	#4 10,161
REVERSE	#5 10,155	#6 9,862	#7 9,792	#8 10,514
Brake Temperature After Forward Pull: L 164°/R 174°				
After Reverse Pull: L 162°/R 169°				

REMARKS: The minimum force requirement of 6,440 pounds was exceeded for each 90° rotation or pulls.

ROAD TESTS
TABLE 15
PARKING BRAKE TEST
20% GRADE HOLDING-GVWR

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Driver: K. Easterday Date: 10-07-02

Parking Brake Chamber Pressure 0 psi

20% GRADE HOLDING-GVWR

X GVWR __LLVW	Initial Brake Temperature (°F)	Control Pressure to Hold Vehicle (psi)	Movement to Become Stationary on Grade (inches)	Stationary on Grade For 5 minutes	
				Yes	No
Up Grade	LR-177°, RR-178°	40.1	-0-	X	
Down Grade	LR-151°, RR-150°	29.9	-0-	X	

Ambient Temp.: 56 °F

Wind Speed: 7 mph

Direction: 288° W

REMARKS: The test vehicle remained stationary of the grade facing upgrade and downgrade for the required 5-minute periods.

ROAD TESTS
TABLE 16
SERVICE BRAKE STOPPING TEST-LLVW

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 10/09/02 Driver: K. Easterday Observer: None

Manually Controlled Retarder: No

60 MPH SERVICE BRAKE STOPS

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance Per SAE J299	In 12 foot Lane	Wheel Lock-up Indication	Comments
1	77	60.4	202.2	199.5	Y	N	Video Tape
2	107	59.9	183.9	184.8	Y	N	Video Tape
3	105	60.0	174.6	174.7	Y	N	No comment
4	106	59.8	176.8	178.1	Y	N	No comment
5	104	59.5	181.5	184.7	Y	N	No comment
6	106	59.8	185.7	187.1	Y	N	No comment

Ambient Temp.: 61 °F

Wind Speed: 7 mph

Direction: 251° SE

REMARKS: Actual and corrected stopping distances for each run do not exceed the maximum stopping distance of **280 ft**.
Application Pressure sensed at the treadle Control Line output port.

ROAD TESTS
TABLE 17
EMERGENCY BRAKE STOPPING TEST, PRIMARY RESERVOIR FAILED-LLVW

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 10-10-02 Driver: K. Easterday Observer: None

Manually Controlled Retarder: No

PRIMARY RESERVOIR FAILURE AT LLVW
60 MPH EMERGENCY BRAKE STOPS

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance Per SAE J299	In 12 foot Lane	Wheel Lock-up Indication	Comments
1	89	60.9	217.6	211.5	Y	N	Video Tape
2	86	60.2	201.3	199.9	Y	N	Video Tape
3	95	59.6	186.8	189.1	Y	N	No comment
4	90	59.7	187.0	188.8	Y	N	No comment
5	90	59.6	182.7	185.1	Y	N	No comment
6	91	59.5	190.8	194.1	Y	N	No comment

Ambient Temp.: 52 °F

Wind Speed: 1 mph

Direction: 320° NW

REMARKS: The brake was applied within 5 seconds after activation of the low pressure warning. Actual and corrected stopping distances for each run do not exceed the maximum stopping distance of **613 ft**.
Application Pressure sensed at the treadle Control Line output port.

ROAD TESTS
TABLE 18
EMERGENCY BRAKE STOPPING TEST, SECONDARY RESERVOIR FAILURE-LLVW

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 10-10-02 Driver: K. Easterday Technician None

Manually Controlled Retarder: No

SECONDARY RESERVOIR FAILURE AT LLVW
60 MPH EMERGENCY BRAKE STOPS

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance Per SAE J299	In 12 foot Lane	Wheel Lock-up Indication	Comments
1	24	59.8	238.5	240.3	Y	N	Video Tape
2	22	58.9	243.1	252.0	Y	N	Video Tape
3	23	59.2	244.7	251.4	Y	N	No comment
4	24	59.3	239.7	245.7	Y	N	No comment
5	23	59.6	254.5	257.6	Y	N	No comment
6	24	60.1	247.8	247.1	Y	N	No comment

Ambient Temp. 60 °F

Wind Speed: 5 mph

Direction: 100° E

REMARKS: The brake was applied within 5 seconds after activation of the low-pressure warning. Actual and corrected stopping distances for each run do not exceed the maximum stopping distance of **613 ft**.
Application Pressure sensed at the treadle Control Line output port.

ROAD TESTS
TABLE 19
EMERGENCY BRAKE STOPPING TEST
PRIMARY CONTROL LINE FAILURE AT LLVW
60 MPH EMERGENCY BRAKE STOPS

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Date: 01-26-01 Driver: K. Easterday Observer: None

Manually Controlled Retarder: No

PRIMARY CONTROL LINE FAILURE AT LLVW
60 MPH EMERGENCY BRAKE STOPS

Stop	Application Pressure (psi)	Initial Speed (mph)	Actual Stopping Distance (feet)	Corrected Stopping Distance Per SAE J299	In 12 foot Lane	Wheel Lock-up Indication	Comments
1	99	60.4	175.8	173.6	Y	N	Video Tape
2	104	59.5	174.4	177.2	Y	N	Video Tape
3	105	59.8	174.2	175.2	Y	N	No comment
4	95	61.0	179.2	173.2	Y	N	No comment
5	104	59.7	170.1	172.0	Y	N	No comment
6	101	60.2	175.1	174.0	Y	N	No comment

Ambient Temp.: 62 °F

Wind Speed: 3 mph

Direction: 128° SE

REMARKS: The brake was applied within 5 seconds after activation of the low-pressure warning. Actual and corrected stopping distances for each run do not exceed the maximum stopping distance of **613 ft**.
Application Pressure sensed at the treadle Control Line output port.

ROAD TESTS
TABLE 20
PARK BRAKE TEST
20% GRADE HOLDING-LLVW

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No.: C30900

Driver: K. Easterday Date: 10-10-02

Parking Brake Chamber Pressure 0 psi

20% GRADE HOLDING-LLVW

___GVWR _X_LLVW	Initial Brake Temperature (°F)	Control Pressure to Hold Vehicle (psi)	Movement to Become Stationary on Grade (inches)	Stationary on Grade For 5 minutes	
				Yes	No
Up Grade	LR-182°, RR-177°	18.2	0	X	
Down Grade	LR-172°, RR-177°	24.2	0	X	

Ambient Temp.: 63 °F

Wind Speed: 2 mph

Direction: 86° E

REMARKS: The test vehicle remained stationary of the grade facing upgrade and downgrade for the required 5-minute periods.

ROAD TESTS
TABLE 21
FINAL INSPECTION

Vehicle: 2003 Blue Bird, All American School Bus NHTSA Vehicle No : C30900

Date: 10-16-02 Driver: K. Easterday Observer: None

Brake Stroke Measurements at full treadle apply

Axle 1 Left/Right 5/8 in. / 5/8 in.

Axle 2 Left/Right 3/8 in. / 1/2 in.

Axle 3 Left/Right N/A / N/A

Service Brakes	**YES**	**NO**
All Brakes Structurally Intact	X	
All Brakes Function Properly	X	
All Brakes Adjusted Within Manufacturer's Recommendation	X	

Final Odometer: 1,630 mi.

REMARKS: No lining tear out was observed. All brake parts were undamaged. No lubricant appeared to contaminate the linings. The front linings appeared to have approximately 85% total averaged drum contact. The rear linings appeared to have approximately 85% total averaged drum contact. Drums presented slight material transfer, moderate polish and light debris. Overall, drums and linings presented normal appearance and color.

Section 5.0

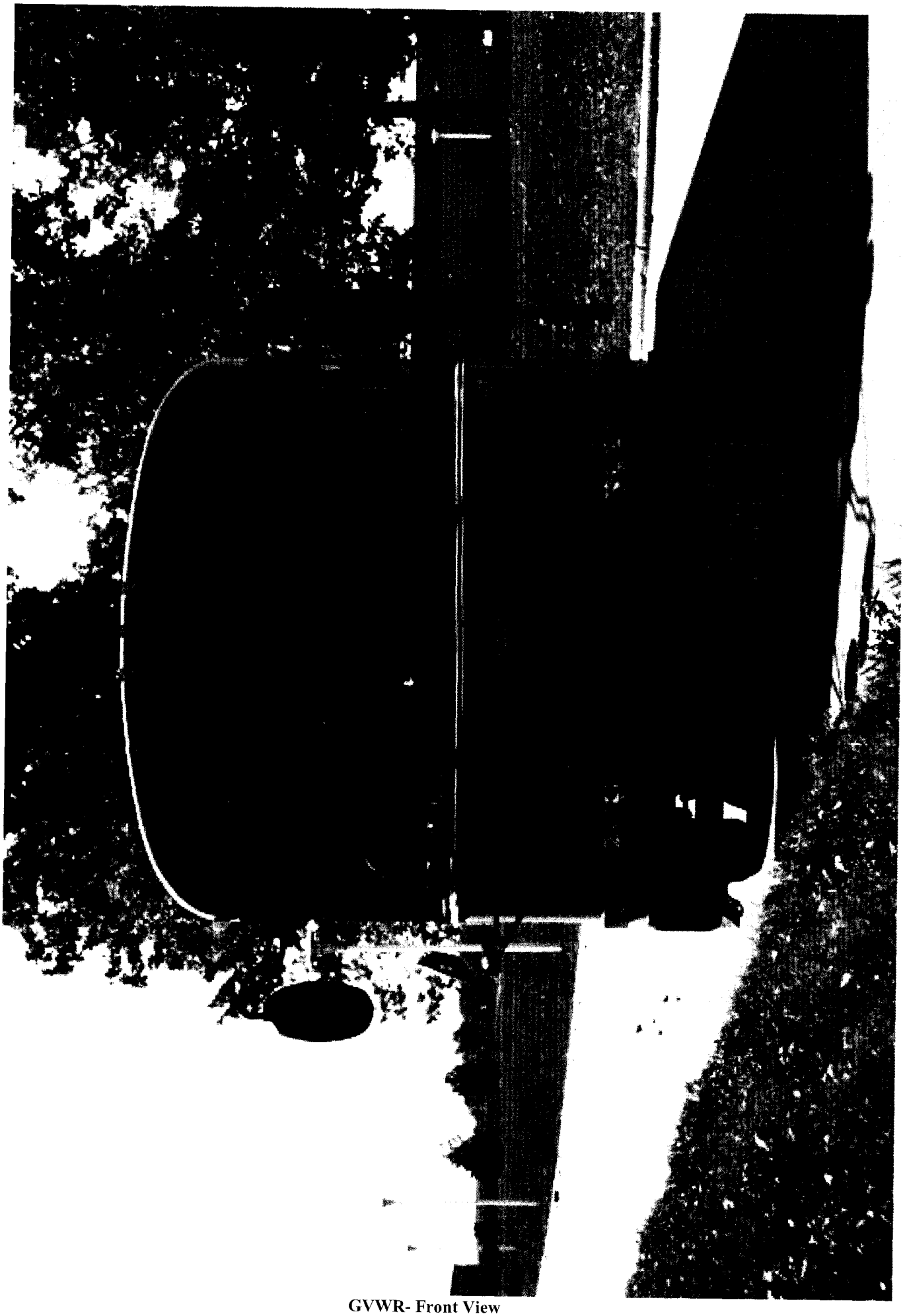
Instrumentation List

Table
Instrumentation List

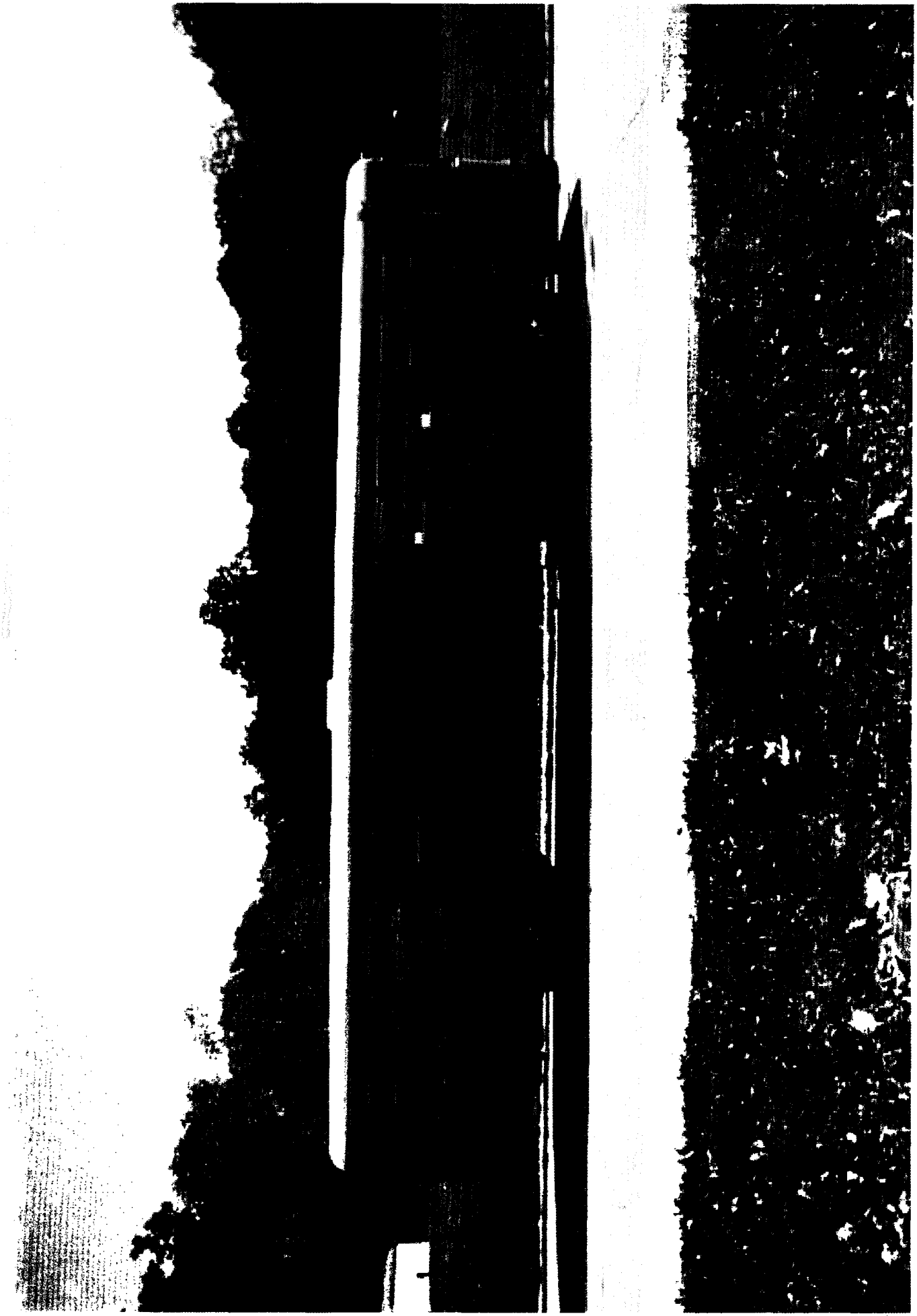
Instrumentation	Description	Serial Number (I.D. No.)	Calibration Date	Next Calibration Date
A-DAT DSR-6 Radar Fifth Wheel	Used to measure speed & distance	140.0119	Daily on a measured mile	
Servo-Tec Wheel Tach Generator	Used to indicate wheel lock	Type ST-7337A-2N (typical)	No calibration. All output voltages at 10 mph	
Both Front Wheel Generator	Used to indicate wheel lock	"	"	
Both Intermeds. Wheel Generator	Used to indicate wheel lock	"	"	Not Appl.
Both Rear Wheel Generators	Used to indicate wheel lock	"	"	
Fluke Model 77 Multimeter	Used to measure wheel tach voltage output	Model 26	06/14/02	06/14/03
Sensotec Load Cell	Used to measure draw bar force for static retardation test	297645	10/03/02	10/03/03
Sensotec Pressure Transducer	Used to measure primary control line pressure	PT-355434	Calibrated before test using a dead weight calibrator	
Sensotec Pressure Transducer	Used to measure primary reservoir pressure	PT-827090	Calibrated before test using a dead weight calibrator	
Sensotec Pressure Transducer	Used to measure left front brake chamber pressure	PT-351132	Calibrated before test using a dead weight calibrator	
Sensotec Pressure Transducer	Used to measure right inter. brake chamber pressure	N/A	Calibrated before test using a dead weight calibrator	Not Utilized
Sensotec Pressure Transducer	Used to measure right rear brake chamber pressure	PT-359018	Calibrated before test using a dead weight calibrator	
United States Gauge Pressure Transducer	Used to visually measure control line pressure	AG – 010	04/04/02	04/04/03
Setra Accelerometer	Used to indicate brake treadle movement and deceleration	A167627	08/09/02	08/09/03
Dead weight Calibrator	Used to calibrate pressure transducers	DW-6253	01/04/02	01/04/03
LINK System	Used for data acquisition	2030	04/09/02	04/09/03
Toledo Mettler Scales	Used for determining mass	SCIS-6118485-6TX	08/13/02	11/13/02
Dell PC (used with LINK)	Used for data acquisition	43270	Not Appl.	Not Appl.

APPENDIX A

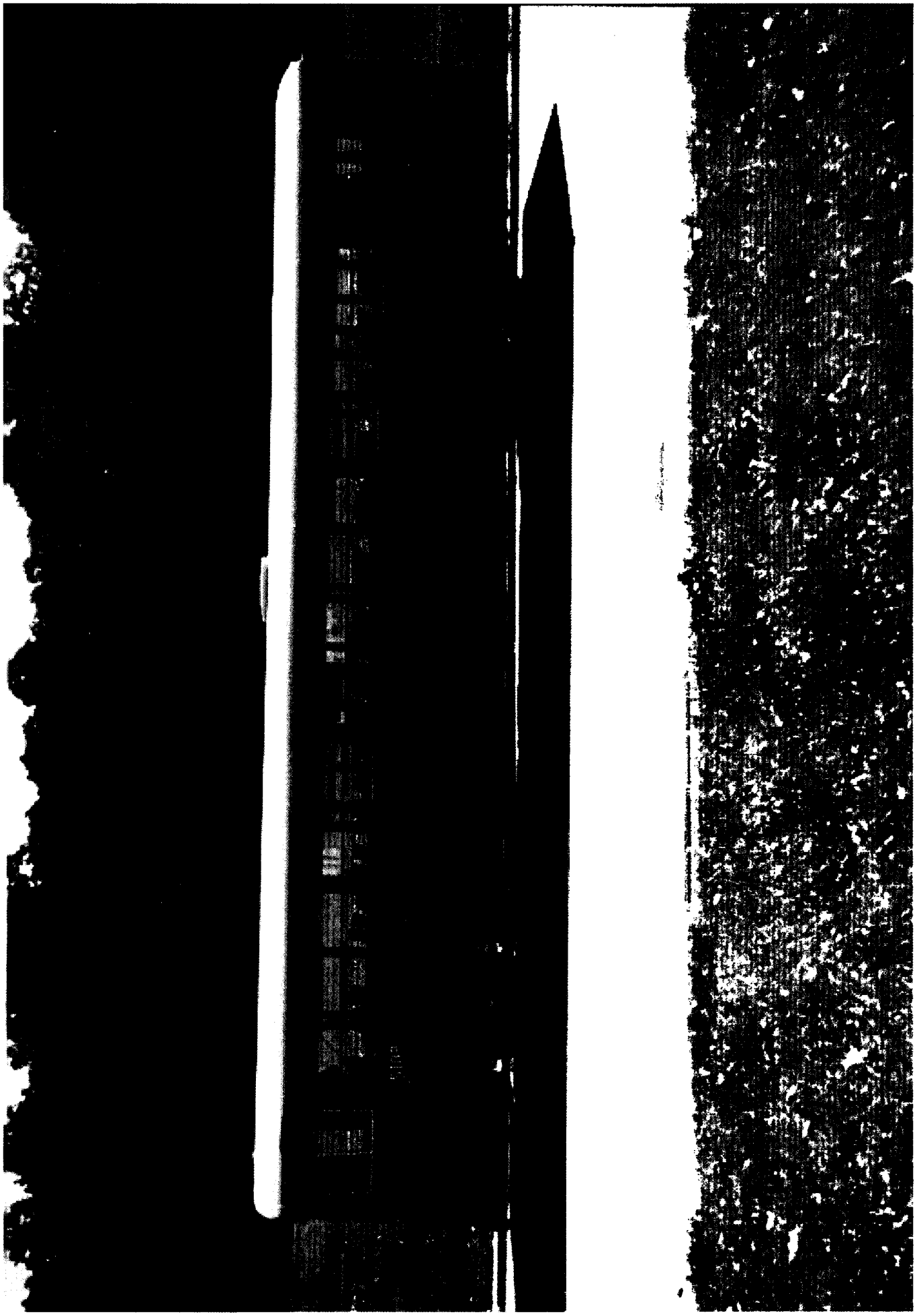
PHOTOGRAPHS



GVWR- Front View



GVWR- Right Side View



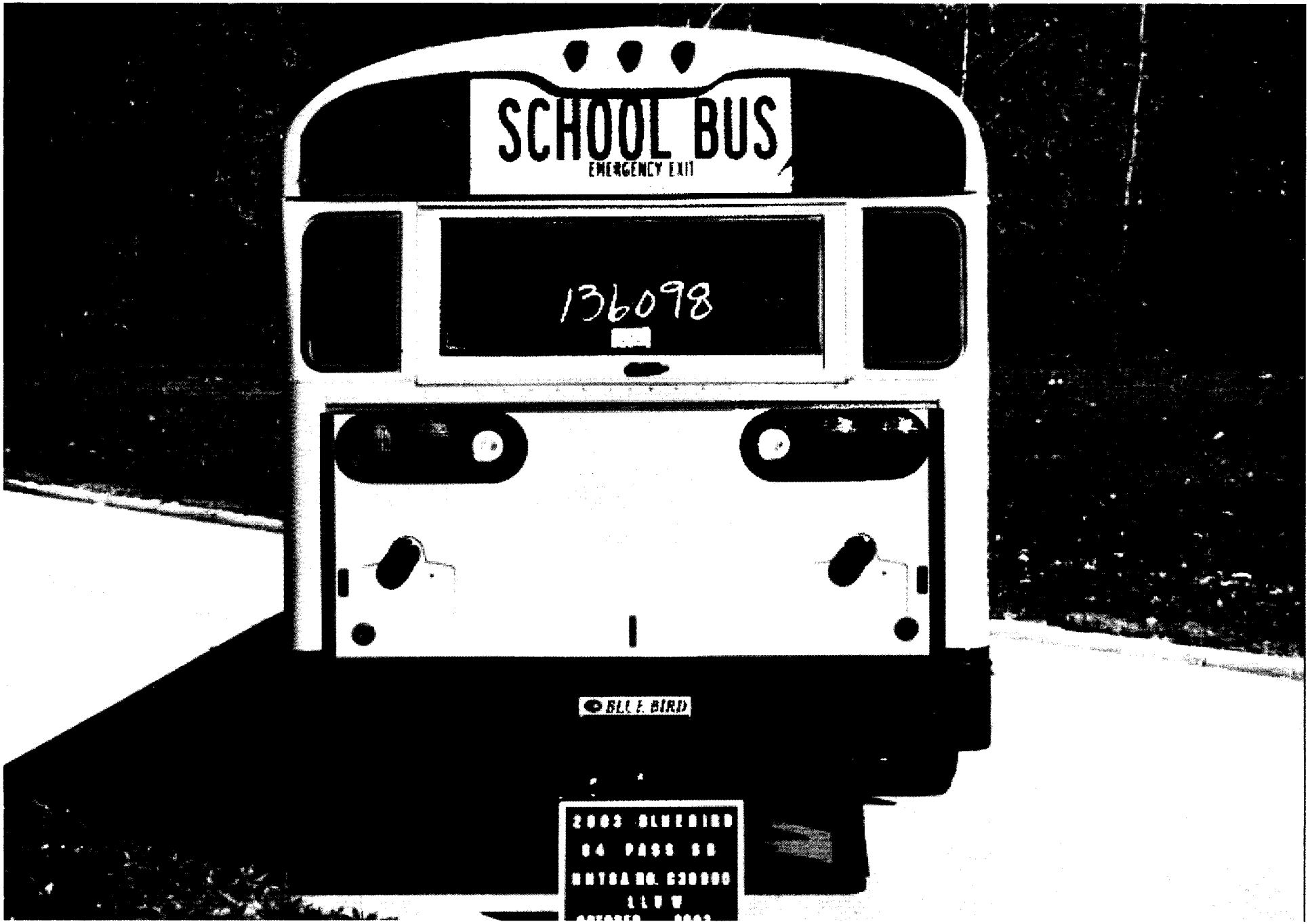
GVWR- Left side view

GVWR- Rear View

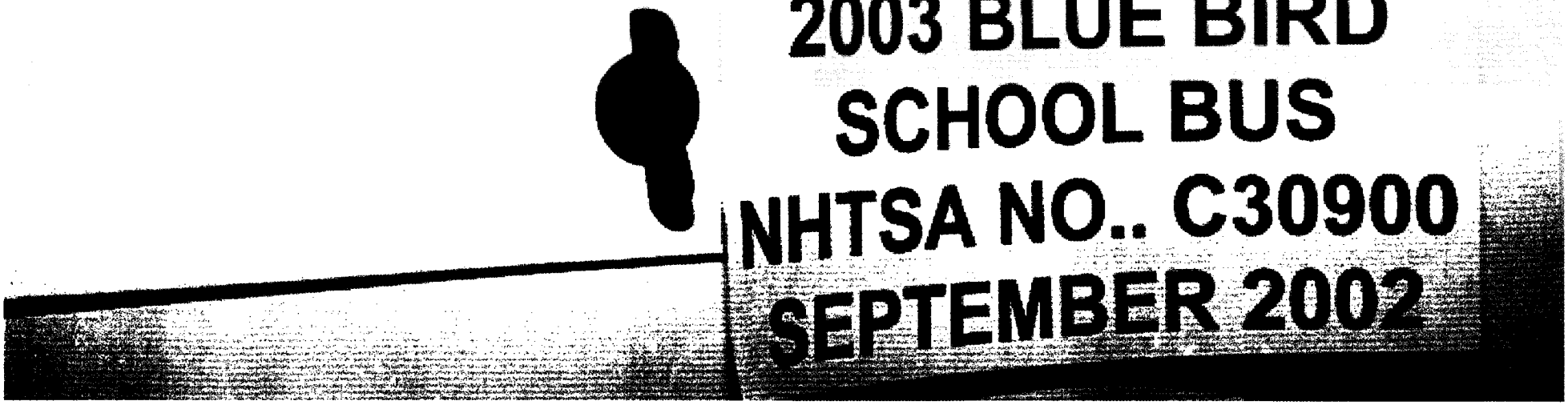
LLVW- Front View

LLVW- Right Side View

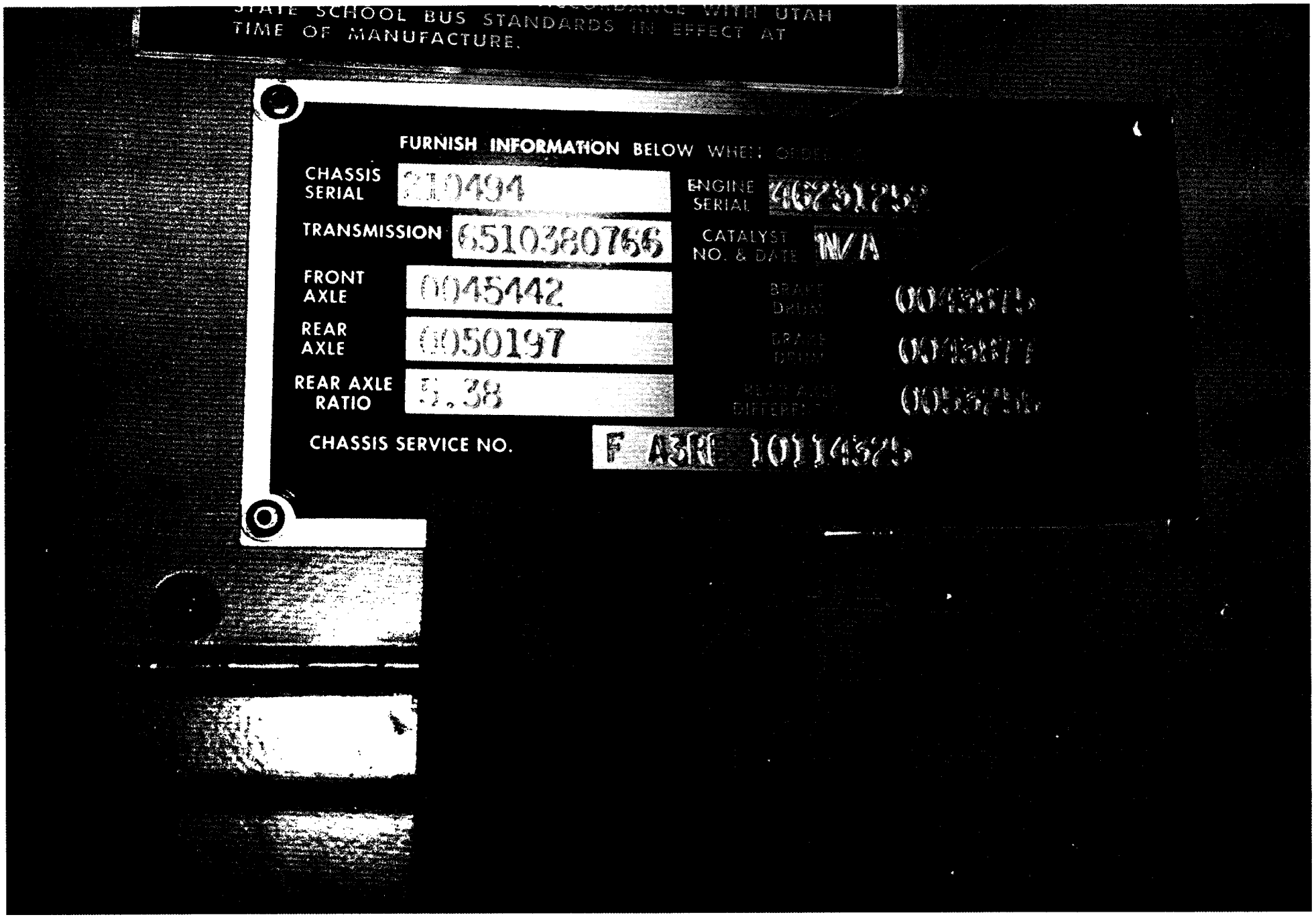
LLVW- Left Side View



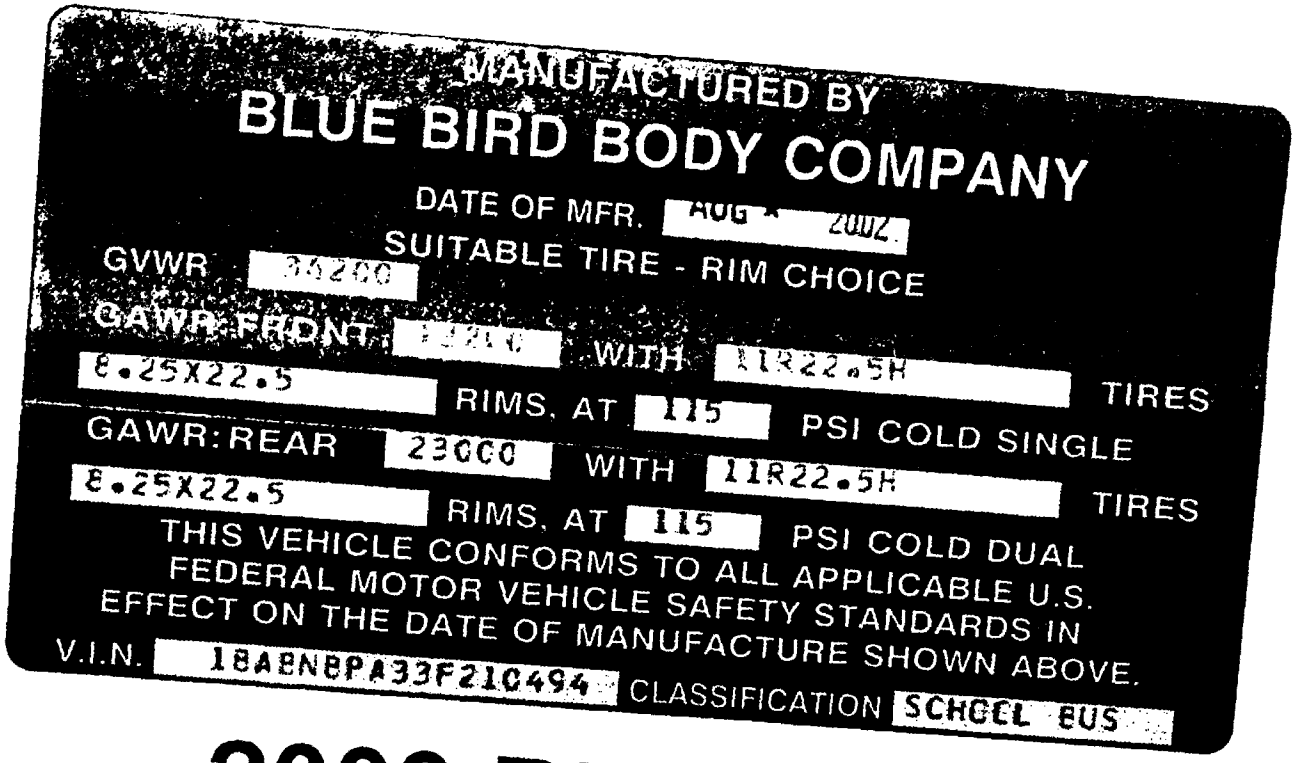
LLVW- Rear View



Manufacturer's Body Placard



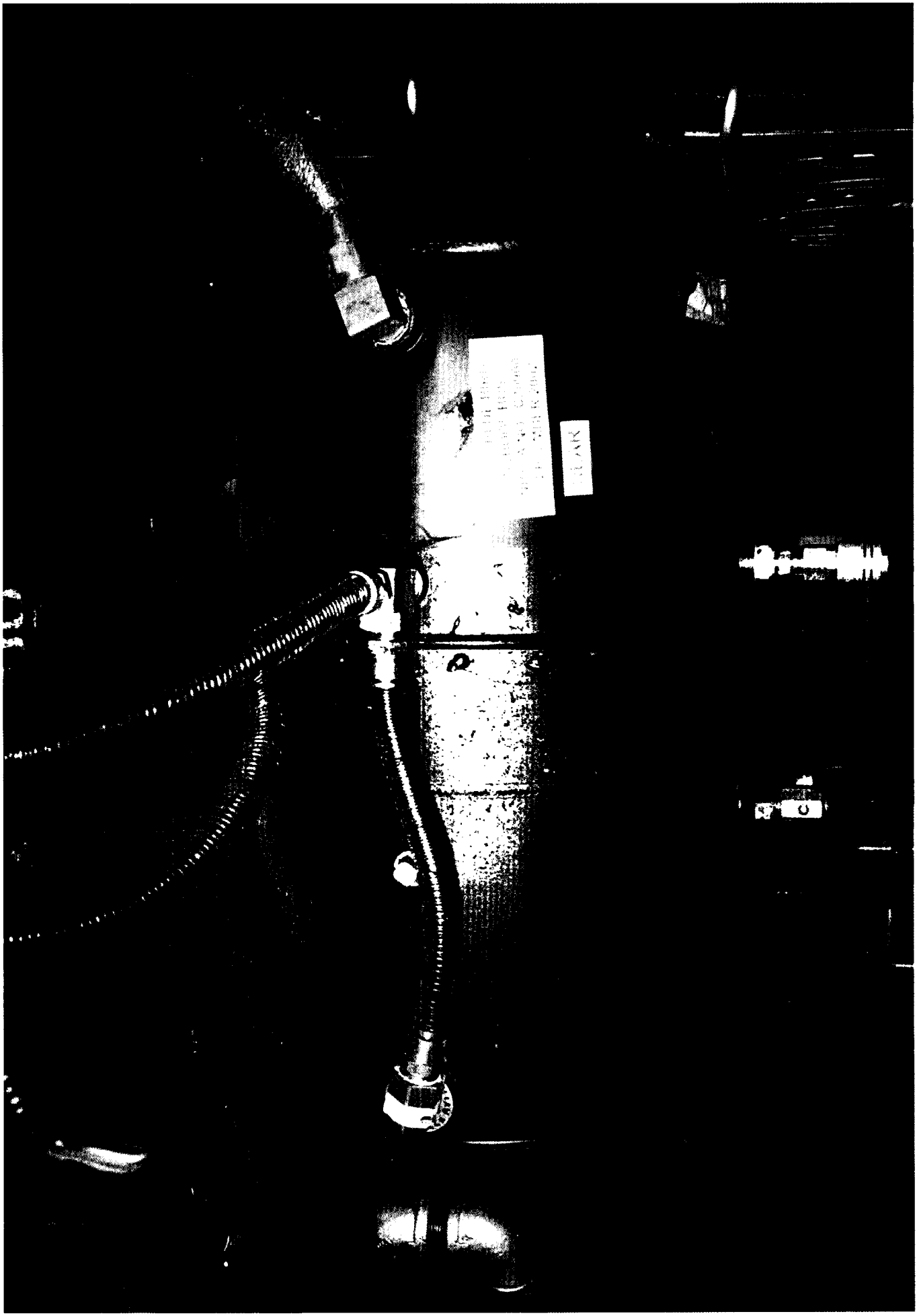
Manufacturer's Service Information Placard



2003 BLUE BIRD SCHOOL BUS NHTSA NO.. C30900 SEPTEMBER 2002

Manufacturer's Vehicle and Tire Certification Placard

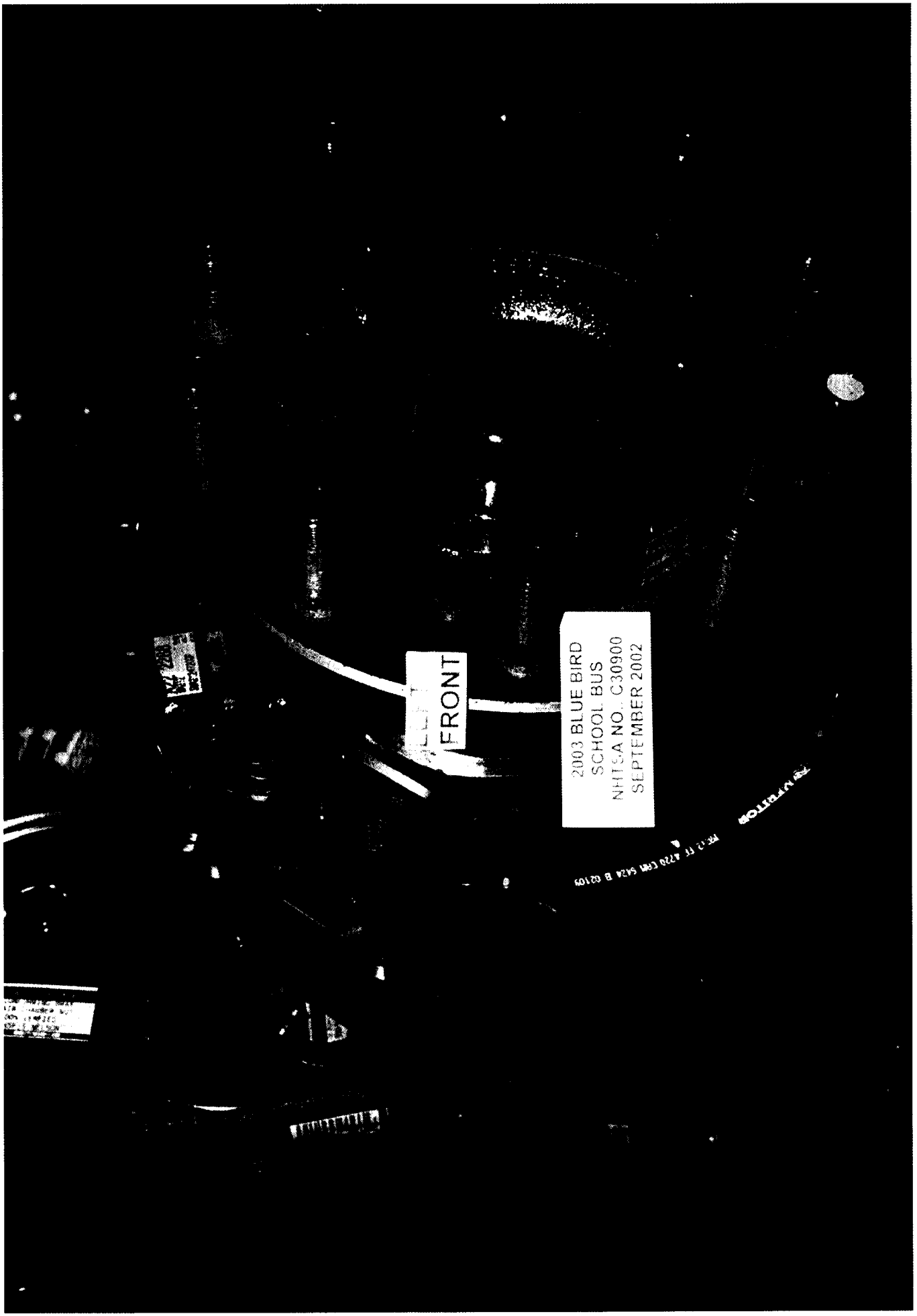
Manufacturer's Body Information Placard



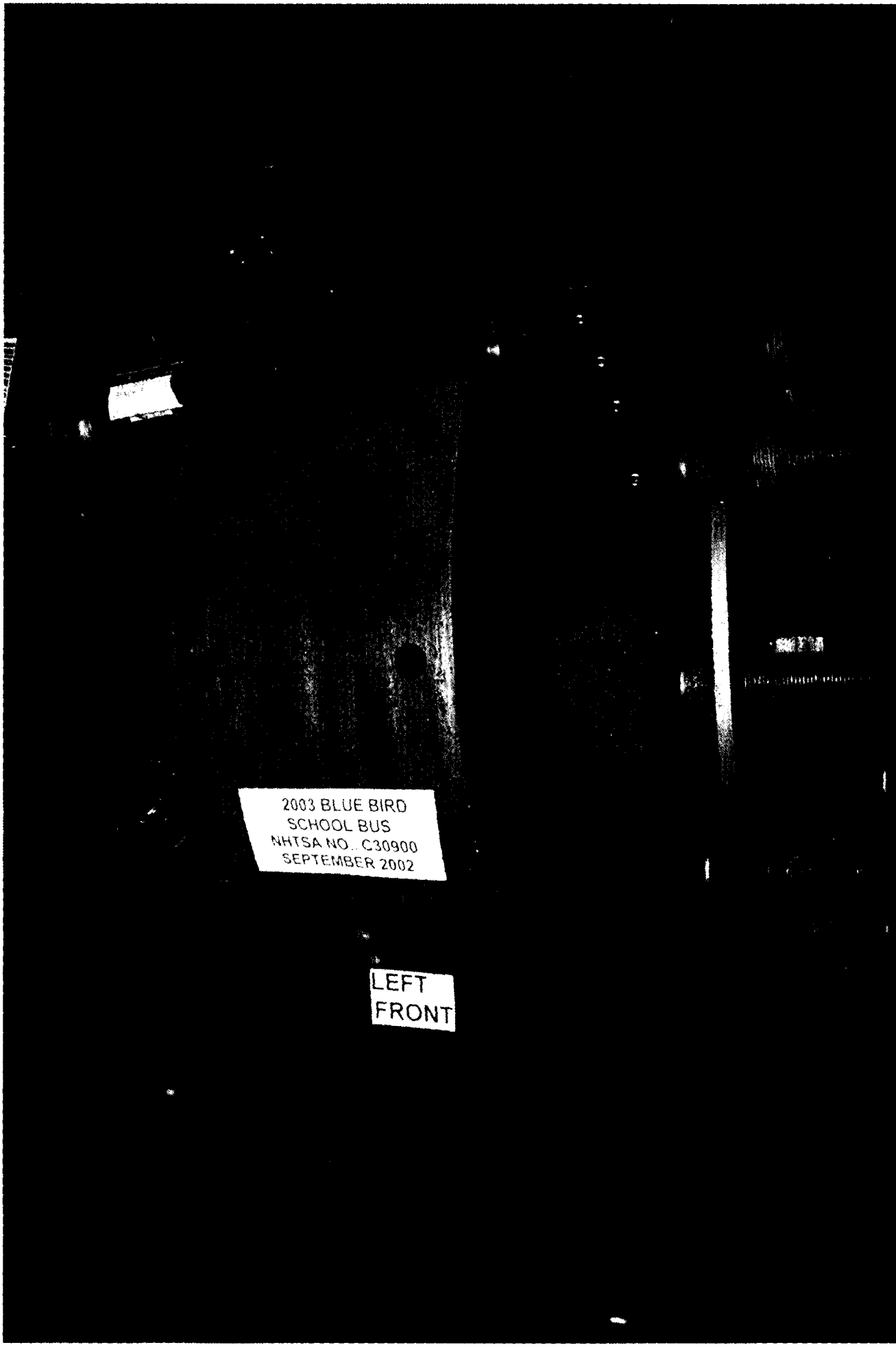
Combination Supply (Wet) and Primary (Rear) Reservoir

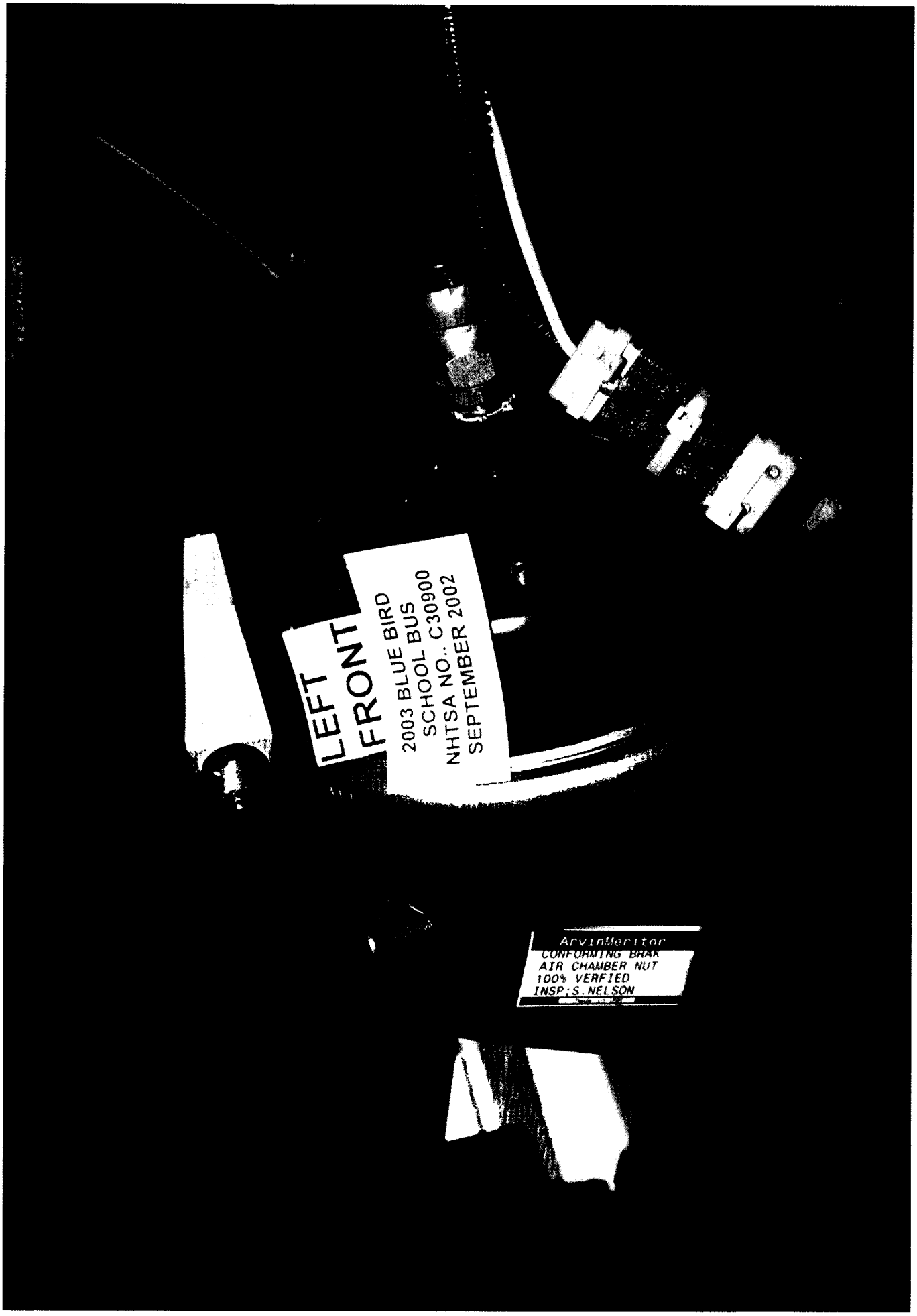
Combination Accessory and Secondary (Front) Reservoir

Auxiliary Supply (Wet) Reservoir

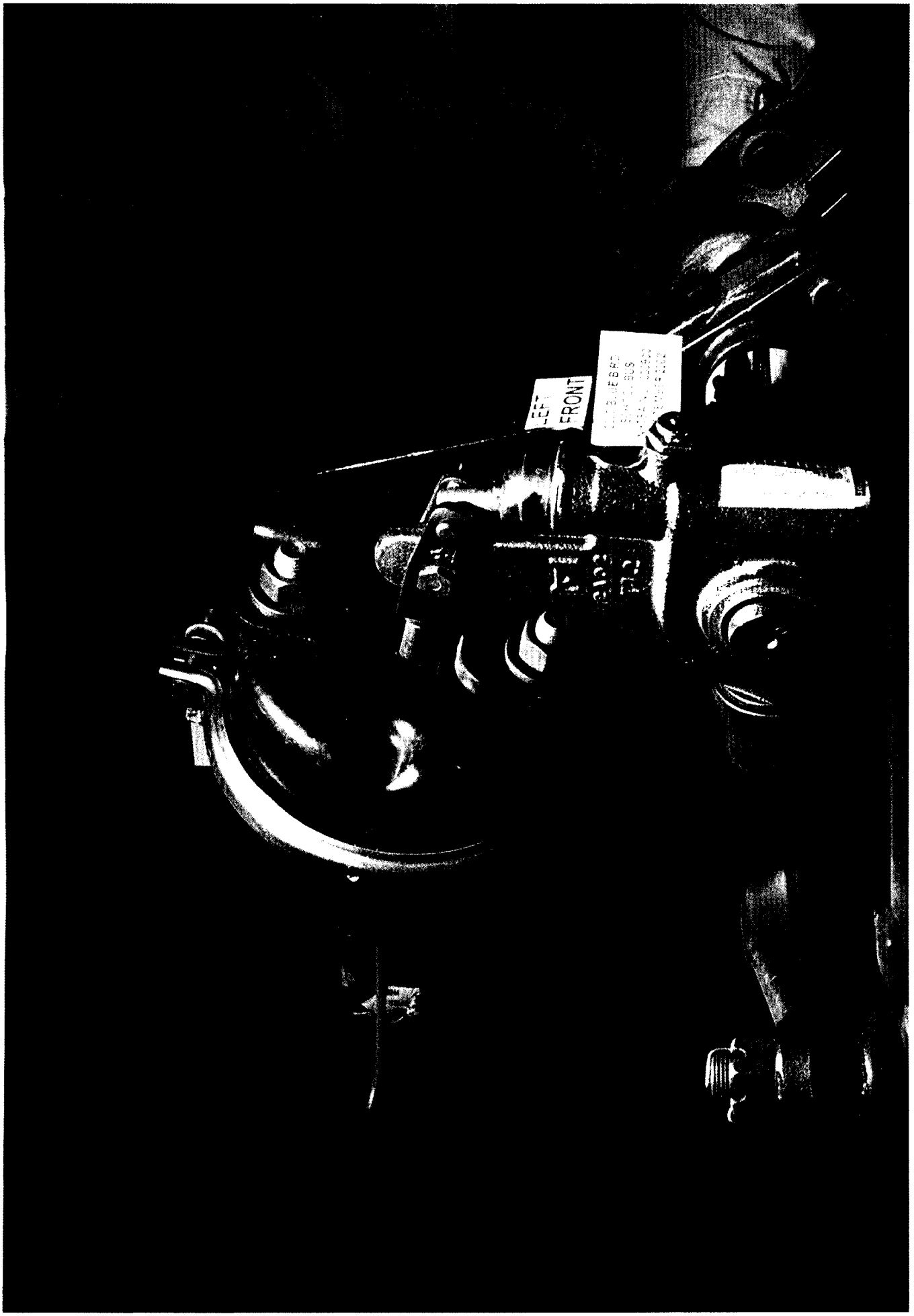


Left Front Brake Assembly


2003 BLUE BIRD
SCHOOL BUS
NHTSA NO. C30900
SEPTEMBER 2002
LEFT
FRONT

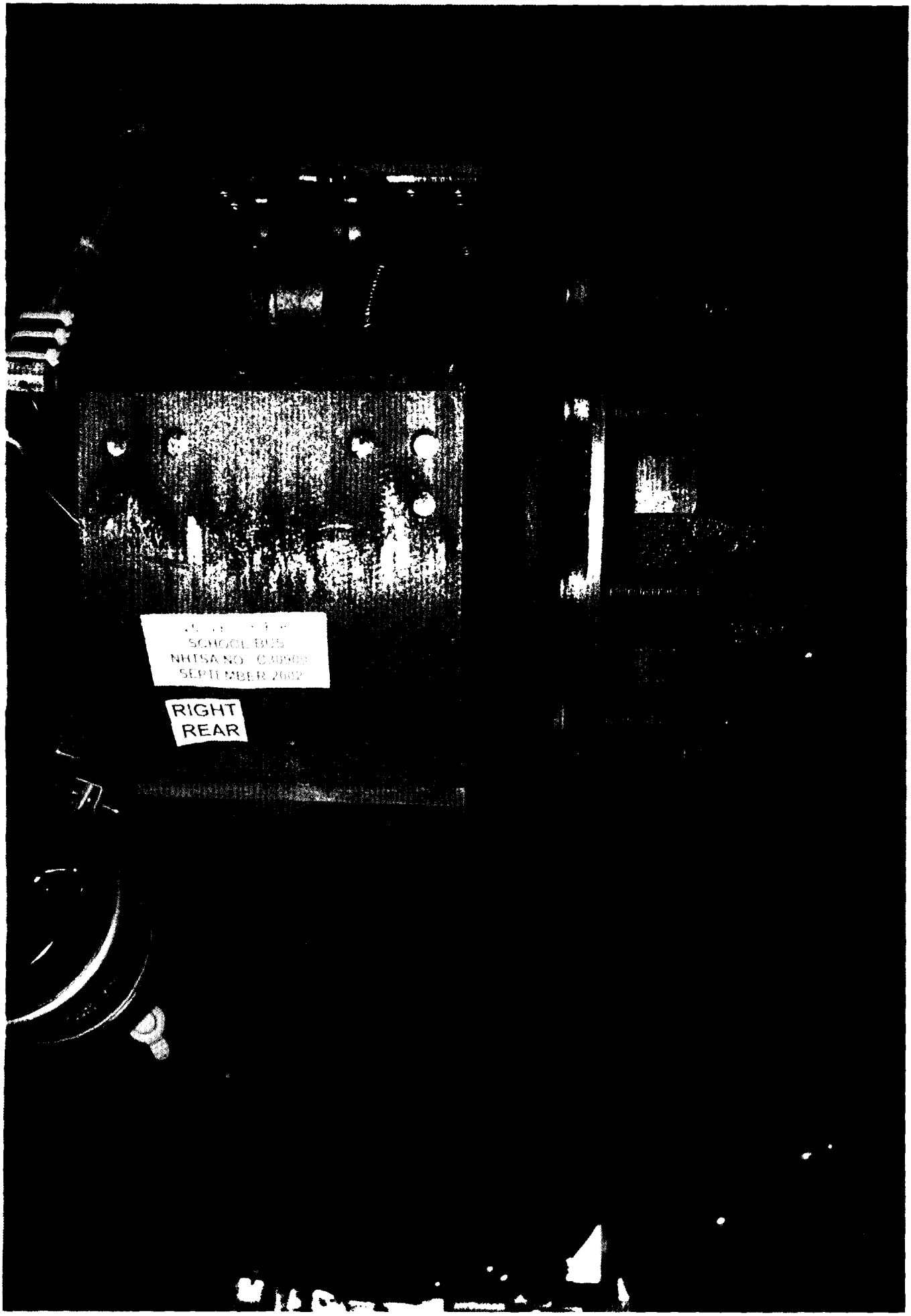


Left Front Brake Chamber

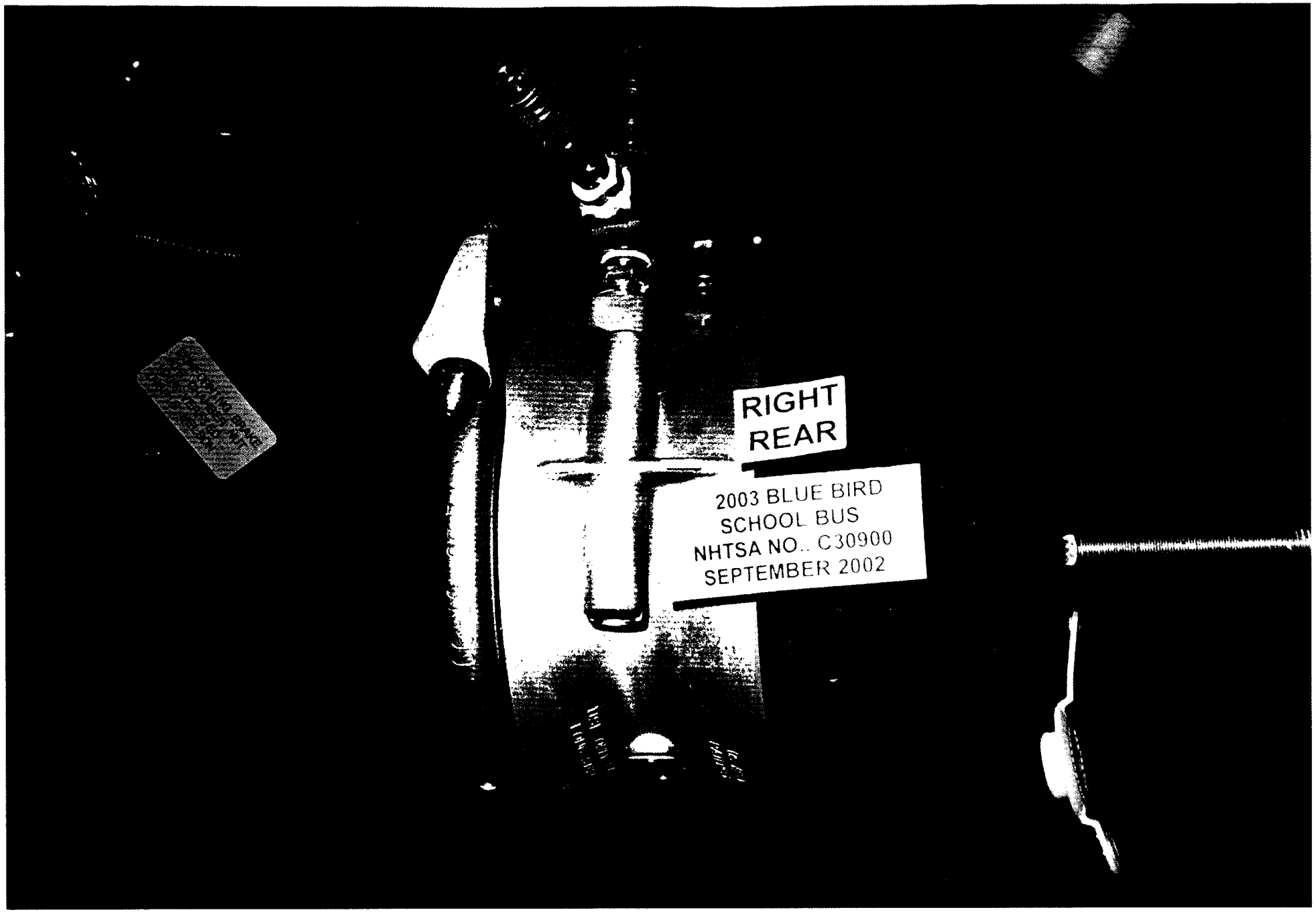


Left Front Slack Adjuster

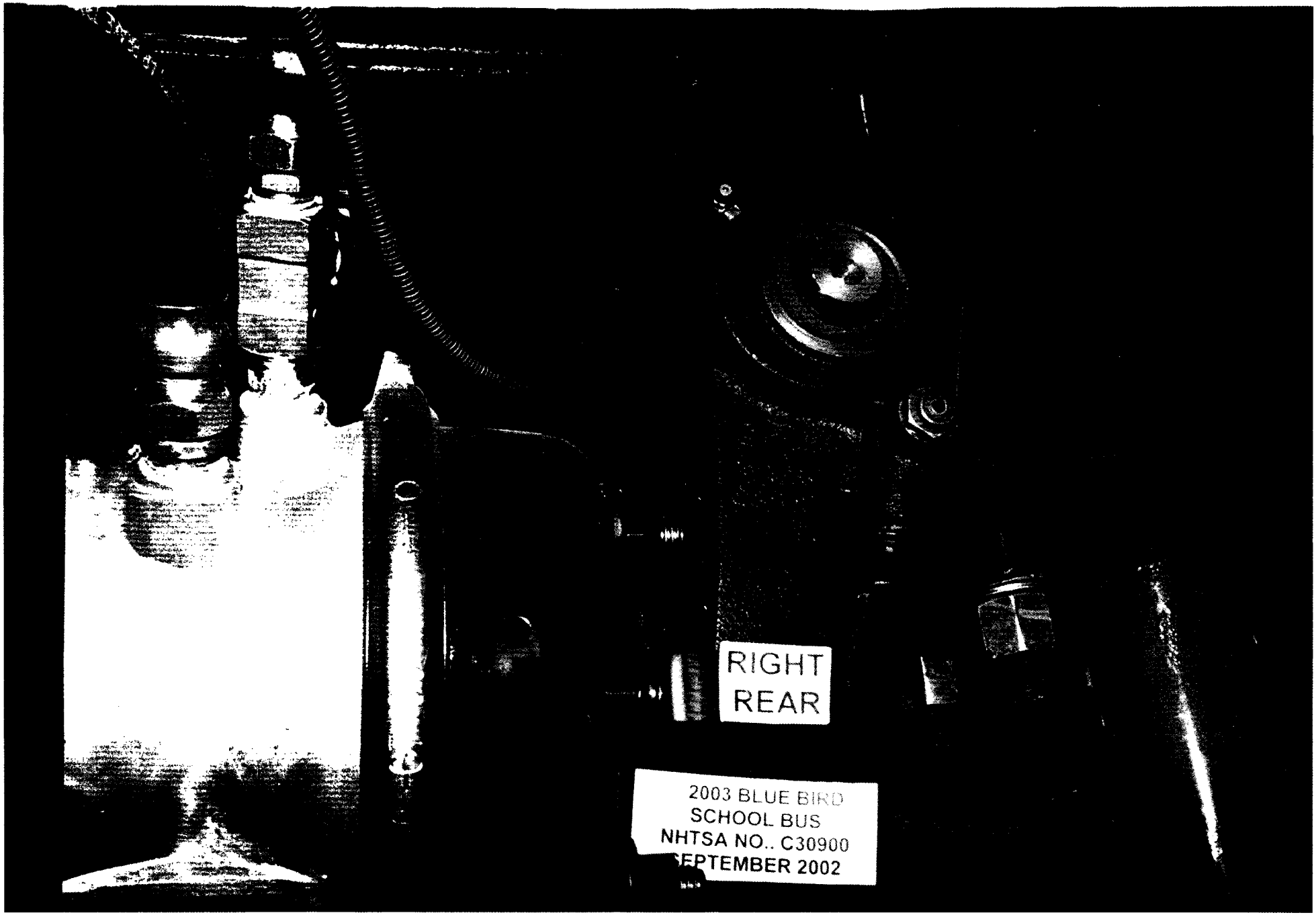
Right Rear Brake Assembly



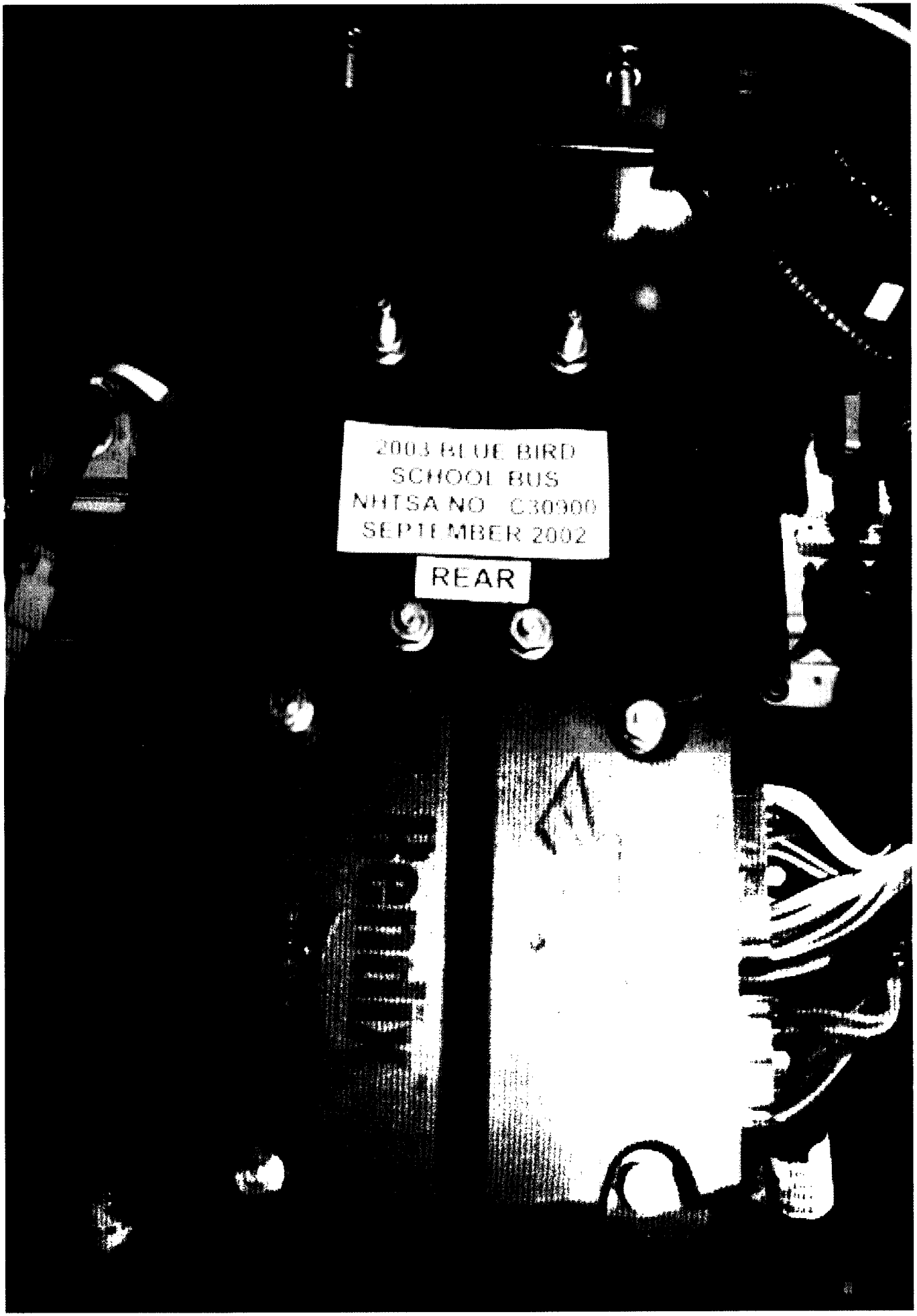
Right Rear Thermocouple Installation



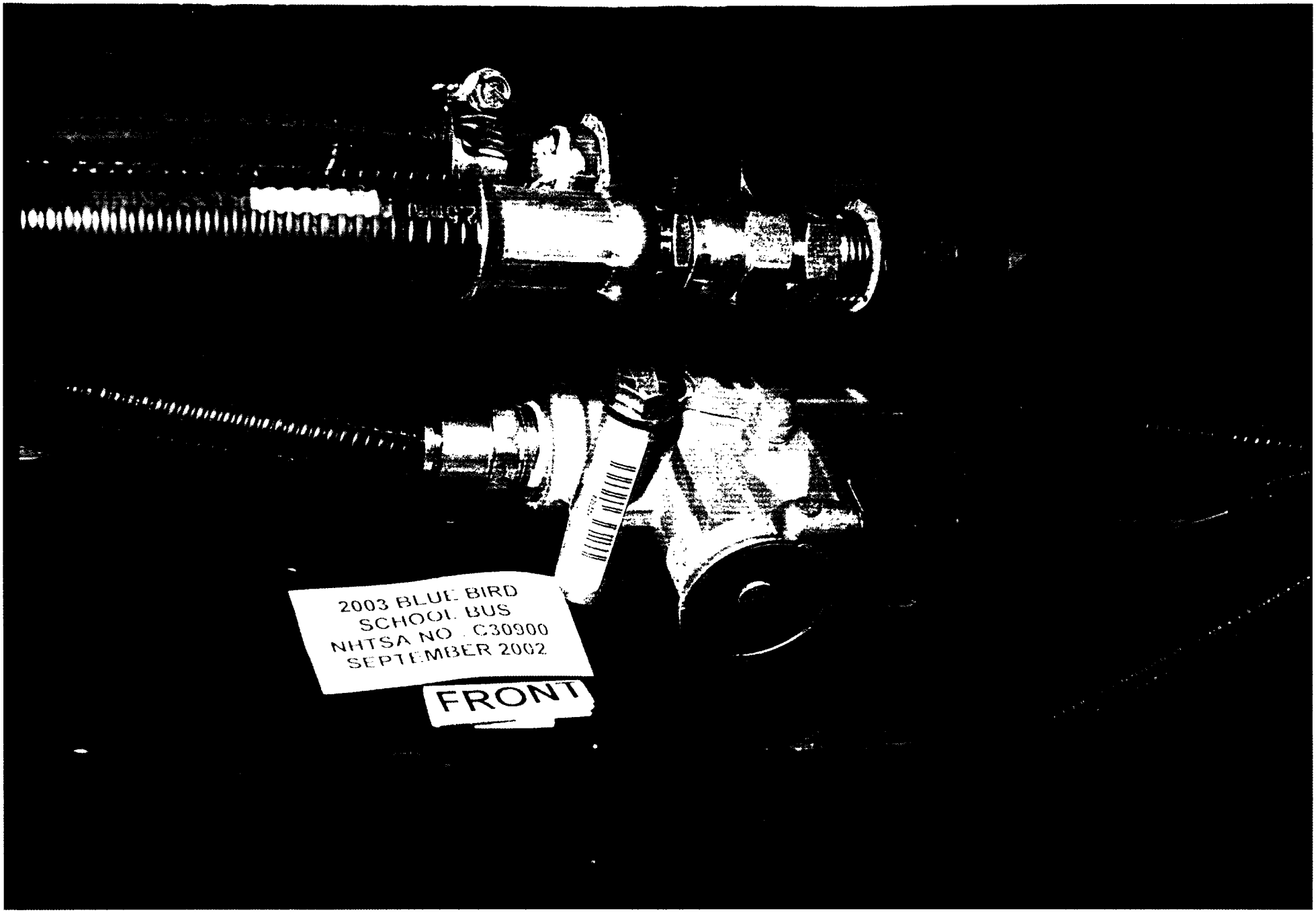
Right Rear Brake Chamber



Right Rear Slack Adjuster

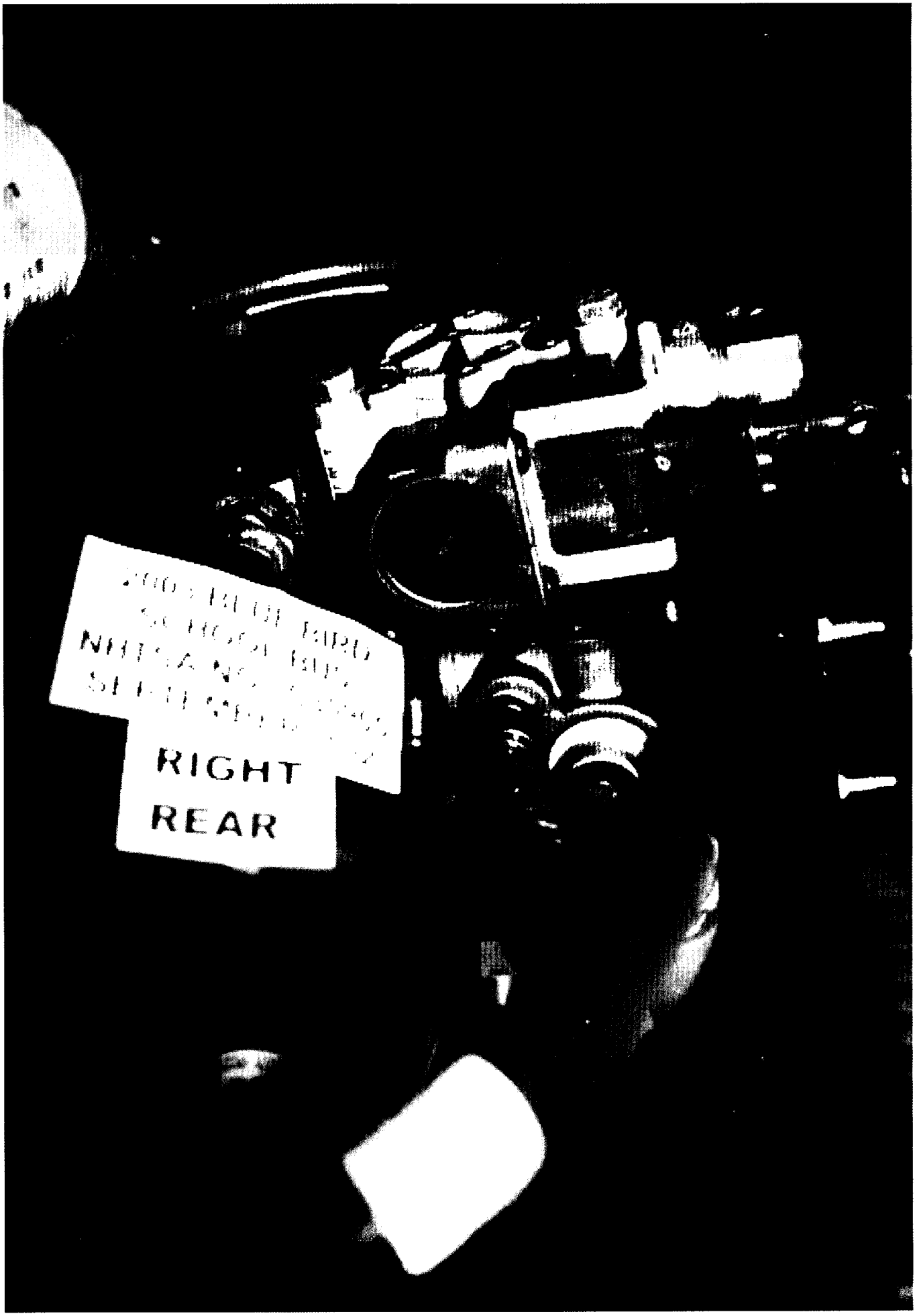


ABS Electronic Control Module



Front ABS Modulator (typ)

Left Front ABS Angular Velocity Sensor



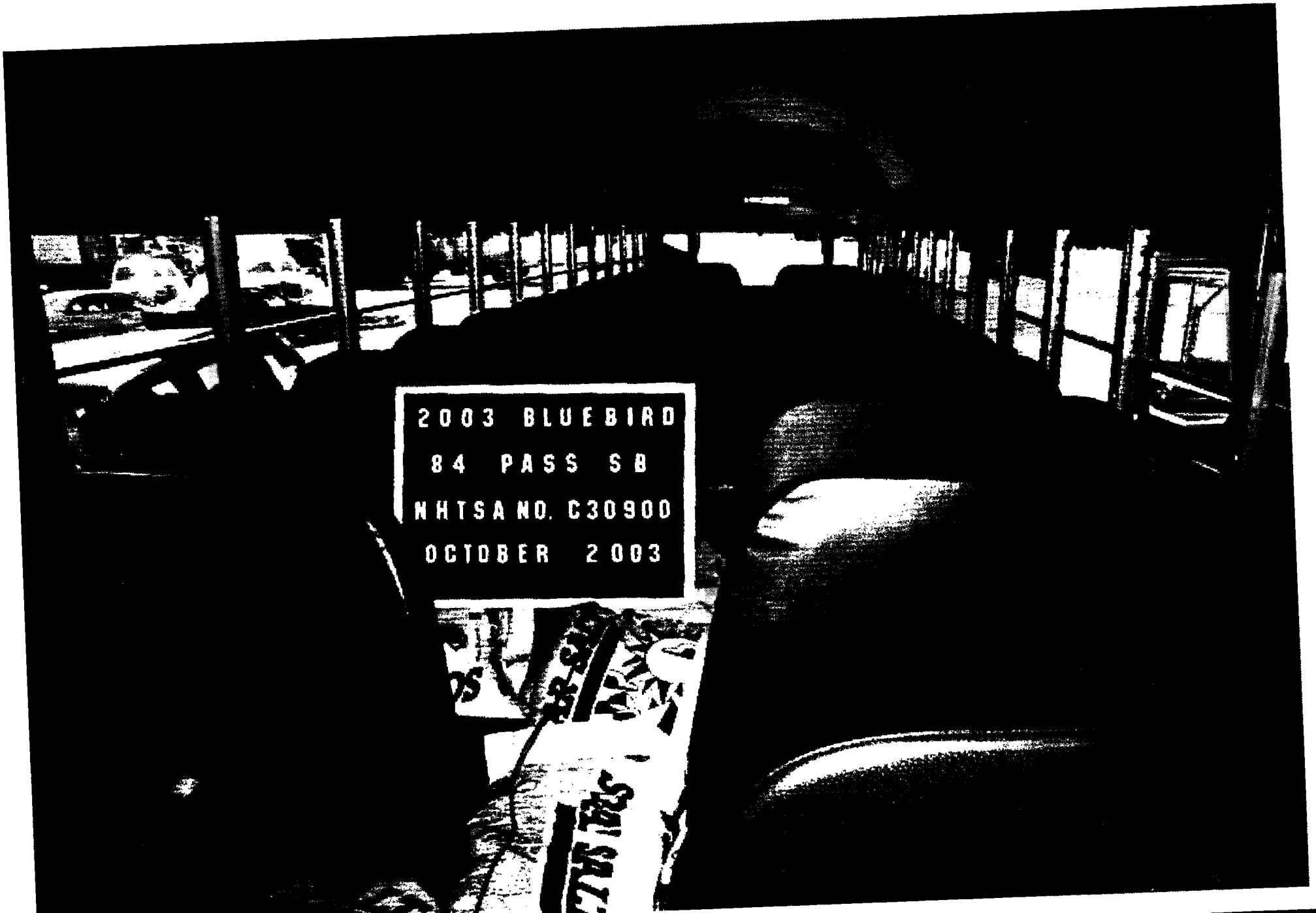
Rear ABS Modulator (typ)

Right Rear ABS Angular Velocity Sensor

Instrumentation in Vehicle


RouteM

Instrumentation in Vehicle



Ballast in Vehicle

Ballast in Vehicle

APPENDIX B

MANUFACTURER SUPPLIED INFORMATION

F136098
F210494

DUPLICATE

PICKUP DATE 09/01/02

F136098
F210494

CONTROLLED DOCUMENT

DATE - 06/12/02 PRODUCTION ORDER FOR *** BODY NO. F136098 *** SCHEDULE NO. 02-28 ITEM 0 01321 PAGE 1
DISTRIBUTOR BRYSON SALES AND SERVICE INC CUST DOT/NHTSA

BODY

MODEL = A3 RE 8400 LENGTH = 3904 NBR BODIES = 001
VEH-CLAS = SCHOOL BUS OVER 10,000 VIN = 1BABNBPA33F210494
HEADROOM = 74 W/S-STYLE = 4FF STEP = 24 HGT =
SKIRT = 19 STATE = UTAH

CHASSIS

NUMBER = F210494 MAKE = CUMN MODEL =
ENG MODEL = BRAKE TYPE = A WHEELBASE = 273
COWL-AXLE = TIRESIZE = 11RX22.5H
CHAS SCHEDULE NO. 02-28 AXLE-RATIO = AXLE,REAR,MERITOR,2300

TEMPORARY

NONE

STANDARD

00274-02		MAP,HEADED,EMERGENCY DOOR,4IN PAD
01062		WHEELHOUSING MOLDED
01063		WHEELHOUSING MOLDED
01485-01		INSULATED COMPLETE
02016-01	DEL	WARNING SYS FS DUAL HOODS SEQ
02230		DOOR SWITCH,STEPWELL LIGHT
02824-01		SEAT,DRVR,BSIRM,BLACK VINYL
03110		GRIP HANDLES
03180		VISOR PLEXIGLASS LEFT SIDE
03316		4 PC FLAT TINTED W/S
03475-14		BODY CONSTRUCTION FMVSS 221
30055-01		DRIVERS UNDERSEAT HEATER
30056-02		HOSE,HTR,BLACK RUBBER,W/STD CLAMPS
30116-01		LIGHTS,DIRECTIONALS,REAR,RED
30120-01		LIGHTS,DIR,FRONT AMBER
30168-01		DOME,1 NOW/1 SWITCH,CONFIG
30173-01		LIGHT,4IN STOP/TAIL/LICENSE
30175-01		LIGHT,7" STOP/TAIL,ROUGH LENS,INCAN
30176-01		LIGHT,8" BACKUP,INCAN
30[illegible]-01	DEL	STOP ARM W/LIGHT,STD REFL,REC
[illegible]		LIGHT,SWITCH PANEL,CHASSIS CTRL
[illegible]		LETTERING,"SCHOOL BUS" 8"/1" STROKE
[illegible]		VINYL,REFLECTIVE,ROOF HATCH,YELLOW
[illegible]		VINYL,REFLECTIVE,RR EMER WDW YELLOW
[illegible]		VINYL,REFLECTIVE,P/D WINDOW YELLOW
[illegible]		VINYL,REFLECTIVE,SD EMER DR YELLOW
[illegible]		MIRROR,ROSCO,AVIA,9X17,DETENT
[illegible]		MIRROR,CROSSVIEW,ROSCO,MINI HAWKEYE
[illegible]		PANEL,MODESTY,BARRIER,ENT DOOR
[illegible]		UPHOLSTERY,SOLID,BURGUNDY
[illegible]		DOOR,ENTRANCE,OUTWARD OPENING
[illegible]		DOOR CONTROL,AIR POWERED
[illegible]		COVERING,FLOOR,RUBBER,BLACK
31049-01		HANDRAIL,ENT DR,BARRIER 3.25 - 5.25
31166-01		LIGHT,STEPWELL,6 CANDLE
31166-01		MARKER LGT CONTROL,STEPWELL LGT
31188-01		GLASS,ENT DR,LOWER,TEMPERED
31189-01		GLASS,ENT DR,UPPER,TEMPERED
40000-04	DEL	AXLE,STEER,MERITOR,12,000 LBS GAWR
40004-01		SUSPENSION,SPRG,FRT,PARABOLIC
40005-01		SUSPENSION,SPRG,REAR,FLAT LEAF
40018-22	DEL	AXLE,REAR,MERITOR,19000 LB,4.33
40048-01		LUBRICATION,GREASE FRT,OIL REAR
40052-03		ADJ,SLK,AUTO,MERITOR
40070-06		BRAKES,AIR,MERITOR,5"FRT/7"RR
40076-01		BRAKES,ANTI-LOCK(ABS),AIR
40086-04		BUMPER,REAR,STEEL
40088-01		BUMPER,FRONT,STEEL 12IN
40097-02		COLUMN,STEERING,TILT/TELESCOPING
40098-01		CRUISE CONTROL
40108-02		HOSES,COOLING,BLACK RUBBER
40127-02		GUARD,DRIVE LINE,1 PCE SHAFT
40133-05		ALTERNATOR,L-N,160 AMP LEACHANDLER
40142-02		BATTERY,ONE 8D
40177-02	DEL	ENGINE,CUMN ISB,DSL,[illegible] 190HP
40215-02		EXHAUST,YELLOW FLEX
40216-04		TAILPIPE,UNDER BUMPER,TURN-DOWN
40233-06		FILTER,FUEL,RACOR 490R30
40241-01	DEL	FUEL SYSTEM,DSL,60 GAL BFR RH FILL
40280-04		GAUGE,SPEEDOMETER, MILES
40280-06		CLOCK
40291-09		TIRES,MICH,11R22.5H XZE LRH
40421-01	DEL	TRANSMISSION,AT545
40440-03	DEL	WHEELS,STEEL,7.5/22.5 DSC,HUB-PILOT
40452-03		WHEELBASE,273 IN

CHASSIS

		AXLE,STEER,MERITOR,13,200 LBS GAWR
		AXLE,REAR,MERITOR,23000 LB,5.38
		ENGINE,CUMN ISB,DSL,EPA CERT,225HP
40241-02		FUEL SYSTEM,DSL,100 GAL BFR RH FILL
40422-01		TRANSMISSION,MD3060,5 SP
40440-04		WHEELS,STEEL,8.25X22.5 DSC,HUB-PILO

BODY

		EMERGENCY DOOR LS 28IN
		6LH
		4 WINDOW,P/O W/BUZZER, 9IN S/S
		10LH,10RH,[illegible]LH,5RH
30030-04		VENT,SPEC,FULL POP UP,VALUE,W/VENT
		8TH
*30196-01		HOODS,WARNING LIGHTS,INDIVIDUAL
*40241-02		FUEL SYSTEM,DSL,100 GAL BFR RH FILL

ELECTRICAL

DIAGRAM	*** SECTIONS	FJ	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
	CLICKS	87	84	80	76	72	68	64	60	56	52	48	44	40	36	32	28

CONTINUED

ELECTRICAL

*00429	EMERGENCY DOOR LS 2PIN 6LH	30210-04	SWITCH,W/L START,LOC,RH
*30030-04	VENT,SPEC,FULL POP UP,VALUE,W/VENT 8TH	30210-10	LIGHTS,PILOT,W/L SYSTEM,LOC,RH
		30210-18	SWITCH,DOOR CONTROL,LOC,RH
30101-02	WIRING,CL/MK/ID,PARK LGT CONTROLLED	30211-04	CONTROLS,CONFIG,W/L,OPT #4,8-LGT,RH
30102-04	LIGHTS,CL/MK,TEAR DRP,2 AMBER,2 RED	30218-07	SWITCH,W/L,MASTER,GREEN PILOT
30103-03	LIGHTS,ID,TEAR DROP	30225-01	SWITCH,W/L START,MANUAL
30105-04	LIGHTS,CL/MK,TEAR DROP	30228-02	INDICATOR,W/L SYSTEM,AMBER/RED
30151-02	LIGHTS,DOME,6 CANDLEPOWER	*30295-03	STOP ARM LOCATION,FRONT
30193-01	FLASHER,W/L SYSTEM,WELDON	*30296-04	STOP ARM W/LIGHT,NON-REFL,AIR
30196-01	HOODS,WARNING LIGHTS,INDIVIDUAL	30316-01	WIRING,W/L SYSTEM,14 GA
30200-02	LIGHTS,WRNG,INCAN,8-LGT,WELDON	31201-01	WIRING,P/O WINDOW,DRS BUZ. ONLY)
30201-02	SEQUENCE,W/L SYSTEM,NON-SEQUENTIAL	31201-04	BUZZER,REAR EMERG WINDOW
30210-02	SWITCH,W/L MASTER,LOC,RH	31201-05	BUZZER,L/H SIDE EMERG DOOR
		*40177-04	ENGINE,CUMN ISB,DSL,EPA CERT,225HP

PAINT

30395-02	PAINT DESIGN,BKGROUND,WRNG LIGHT

SEATS

28 SEATS *** SEATING CAPACITY = 04, BASED ON OPTIONS LISTED IN DATA BOOK ***

02712-39	13 DOT SCHOOL BUS SEAT 39IN	12700-02	SB 39 FLIP SEAT LH
02712-39L	12 DOT SCHOOL BUS SEAT 39IN	30820-04	BARRIER, 39 INCH
02721-01	DOT-TF SB SEATS REAR 39L-39R	30820-04L	BARRIER, 39 INCH

ACCESSORIES

00374-02	RETAINER SIDE EMERG DOOR LH	30295-03	STOP ARM LOCATION,FRONT
06201-06	CERTIFICATION PLATE - UTAH	30296-04	STOP ARM W/LIGHT,NON-REFL,AIR

REFERENCE

02016-04	WARNING SYS FS INDVDL HOODS N/SEQ	30121-02	WIRING,DIR,REAR
30029-01	WIRING,VENT,ROOF HATCH,BUZZER ONLY	30121-04	WIRING,DIR,REAR,ENGINE COMPARTMENT
30101-03	WIRING,CL/MK,CORNER,2 FRONT,2 REAR	30297-01	WIRING,S/ARM,VAC/AIR,W/INCAND LGTS
30101-06	WIRING,CL/MK,INTERMEDIATE	30327-01	ENGLISH SWITCH PANEL
30121-01	WIRING,DIR,FRONT		

* * * * PUT A PARTS MANUAL IN THIS UNIT * * * *

BODYPLAN

CONTINUED

F136098
F210494

DUPLICATE

PICKUP DATE 09/01/02 F136098 F210494

CONTROLLED DOCUMENT

DATE - 06/12/02 PRODUCTION ORDER FOR *** BODY NO. F136098 *** SCHEDULE NO. 02-28 ITEM 0 01321 PAGE 3

BODYPLAN

BODY SECTIONS (BS)
LEFT: 28 FRT, 28, 28, 28, 28FSED, 28 SED, 28RSED, 28, 28, 28, 28, 28, 28 28 28RR
RIGHT: 28 FRT, 28, 28, 28, 28FSED, 28DSED, 28RSED, 28, 28, 28, 28, 28, 28 28 28RR

FLOOR GUSSETS (FG)
LEFT: 84WH13F27R LH, 56, 28SED, 84, 28, 56WH2F9R LH, 40.5RR LH
RIGHT: 84WH13F27R RH, 84, 84, 28, 56WH2F9R RH, 40.5RR RH

FLOOR PANELS (FP)
RIGHT: 63WH13F5R, 28GNO, 28, 28, 28, 21, 28, 28, 28, 56WH2F9R, 14 14 13REAR

HEADLINING PANELS (HL)
RIGHT: 56 F, 56 F, 56 F, 56 F, 56 F, 56 F, 56 F, 28 REAR

INSIDE PANELS (IS)
LEFT: 140, 28SED, 140, 56, 56RR LH
RIGHT: 140, 140, 84, 56RR RH

OUTSIDE PANELS (OS)
LEFT: 56, 56, 28FSED LH, 28SED, 56, 56, 56, 28-28-28LH RR
RIGHT: 56, 56, 56, 56, 56, 56, 28-28-28RH RR

RUB RAILS (R/RL)
LEFT: NUM25.5, NUM36, END, NUM20, NUM36, END, NUM20, NUM29, END, NUM31, NUM1, NUM1, END
RIGHT: NUM60, END, NUM60, END, NUM10, NUM41, END, NUM31, NUM5, END

ROOF PANELS (RP)
RIGHT: 56, 56, 56, 56, 56, 56, 56, 28

WINDOWS (WDO)
LEFT: 28S9, 28S9, 28S9, 28S9, 28PD9, 28SED, 28S9, 28S9, 28S9, 28PD9, 28S9, 28S9, 28S9, 28S9, 28PNL RR
RIGHT: 28S9, 28S9, 28S9, 28S9, 28PD9, 28S9, 28S9, 28S9, 28S9, 28PD9, 28S9, 28S9, 28S9, 28S9, 28PNL RR

WIRE MOLDING (WM)
LEFT: 140, 140, 112, 28RR LH
RIGHT: 28FRT, 140, 140, 84, 28RR RH

SEATPLAN

CONTINUED

SEATPLAN

BARRIER WIDTH (BW)
LEFT: G39
RIGHT: G39

GUSSET PUNCH PLAN (GPP)
LEFT: 8".12:11.36:12., $24.54, $52.51, $80.48, $108.46, $136.44, $181.44, $192.28, $219.00, $245.71, $272.43, $299.14, $325.86,
$352.57, $379.29
RIGHT: F1.00:7.23:8.48, $20.07, $47.70, $75.33, $102.96, $130.59, $158.23, $185.86, $213.49, $241.12, $268.75, $296.39, $324.02,
$351.65, $379.28

KNEE CLEARANCE (KC)
LEFT: 25.48
RIGHT: 25.13

SEAT PLACEMENT (SP)
LEFT: 7.375D, 19.475S, 47.45S, 75.425S, 103.4S, 131.375S, 140SED, 176.38SF, 187.22S, 213.935S, 240.65S, 267.365S, 294.08S,
320.795S, 347.51S, 374.225S
RIGHT: 3.25D, 15.007S, 42.639S, 70.271S, 97.903S, 125.535S, 153.167S, 180.799S, 208.431S, 236.063S, 263.695S, 291.327S, 318.959S,
346.591S, 374.223S

SEAT SPACING (SS)
LEFT: 27.00
RIGHT: 27.63

SEAT WIDTH (SW)
LEFT: G39, G39, G39, G39, G39, F39, G39, G39, G39, G39, G39, G39, G39, G39
RIGHT: G39, G39, G39, G39, G39, G39, G39, G39, G39, G39, G39, G39, G39, G39

TYPE SEATS (TS)
RIGHT: SCHOOL BUS

END F136098

APPENDIX C

ENGINEER'S COMMENTS

ENGINEER'S COMMENTS

The test vehicle acquired was essentially new and in excellent operating condition. For this test, the brake components as installed on the new test vehicle, were utilized.

The test vehicle was provided by NHTSA/OVSC and was driven from the manufacturer in Georgia to TRC while towing the driver's chase vehicle.

The rear drive axle ran hotter than the steer axle throughout the burnish. The average rear drive axle temperatures were approximately 480° F, and steer axle approximately 300° F. The maximum temperature of 553° F occurred at the right rear drive axle brake. The maximum side-to-side axle temperature differential of 86° F occurred at the rear axle during snub 250. The rear axle temperature differentials varied from 50 to 90 degrees throughout the burnish.