

122-TRC-11-002

**SAFETY COMPLIANCE TESTING FOR FMVSS 122
Motorcycle Brake Systems**

LML Limited
2012 Genuine Scooter Company Stella
NHTSA No. CB1201

TRANSPORTATION RESEARCH CENTER INC.
10820 State Route 347
East Liberty, Ohio 43319



Final Report Completed: October 20, 2011


FINAL REPORT


Prepared Under Contract No.: DTNH22-06-C-00033

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
1200 New Jersey Avenue, S.E.
West Building, 4th Floor
OVSC (NVS-221)
Washington, DC 20590

Prepared for the Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-06-C-00033.


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Prepared By 

Approved By 

Approval Date: 10/20/11

Final Report Acceptance By OVSC:


Contract Technical Manager, Office of
Vehicle Safety Compliance

10/26/11
Acceptance Date

1. REPORT NUMBER: 122-TRC-11-002	2. GOVERNMENT ACCESSION NO.:	3. RECIPIENTS CATALOG NO.:	
4. TITLE AND SUBTITLE: Final report of FMVSS 122 Compliance Testing of a 2012 Genuine Scooter Company Stella, Motorcycle, NHTSA No. CB1201		5. REPORT DATE: October 20, 2011	
		6. PERFORMING ORGANIZATION CODE: TRC 20060110 / 2205	
7. AUTHOR(S): Project Manager: ALAN IDA Project Engineer: MICHAEL BILBEE		8. PERFORMING ORGANIZATION REPORT NO.: TRC-DOT-122-013	
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Transportation Research Center Inc. 10820 State Route 347 East Liberty, Ohio 43319		10. WORK UNIT NUMBER:	
		11. CONTRACT OR GRANT NO.: DTNH22-06-C-00033	
12. SPONSORING AGENCY NAME AND ADDRESS: U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (NVS-221) 1200 New Jersey Avenue S.E. West Wing 4 th Floor Washington, DC 20590		13. TYPE OF REPORT AND PERIOD COVERED: Final test report Tested: 9/7/11 to 10/20/11	
		14. SPONSORING AGENCY CODE: NVS-221	
15. SUPPLEMENTARY NOTES:			
16. ABSTRACT: Compliance tests were conducted on the subject 2012 Genuine Scooter Company Stella, Motorcycle, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-122-02 for the determination of FMVSS 122 compliance. Test anomalies identified were as follows: Stopping Distances for 45 mph 2 nd Effectiveness and 30 mph Final Effectiveness Tests were marginally longer than the requirements.			
17. KEY WORDS: Compliance Testing Safety Engineering FMVSS 122		18. DISTRIBUTION STATEMENT: Copies of this report are available from: NHTSA Technical Information Services NPO-411 1200 New Jersey Ave, S.E. Washington, DC 20590 Email: tis@nhtsa.dot.gov FAX: 202-493-2833	
19. SECURITY CLASSIF. (OF THIS REPORT): Unclassified	20. SECURITY CLASSIF. (OF THIS PAGE). Unclassified	21. NO. OF PAGES: 54	22.

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1.0 INTRODUCTION

Tests were conducted on a 2012 Genuine Scooter Company Stella Motorcycle, manufactured by LML Limited to determine compliance with FMVSS 122 "Motorcycle Brake Systems." All tests were conducted in accordance with the U.S. D.O.T., NHTSA Laboratory Procedure TP 122-02 and/or the corresponding TRC Inc. Test Procedure that was submitted to NHTSA for their approval. The Test Procedure was clearly described in the submitted document and has not been repeated in this report. This vehicle meets the definition of a motorcycle.

All stops were performed manually.

All tests were conducted by TRC Inc. personnel using the following TRC facilities:

Skid Pad

Instrumentation Check
Maximum Speed Test
First Effectiveness Test
Partial Service Brake System Test
Brake Burnish
Second Effectiveness Test
Fade and Recovery Test
Re-burnish
Final Effectiveness Test

Vehicle Dynamics Area

Water Recovery Test

Average PFC during the test period was 1.00 (Skid Pad) and 0.98 (VDA) utilizing the ASTM E1337 w/E1336 tire method.

This vehicle appears to meet the requirements of FMVSS 122.

DATA SHEET 1 (1 of 2)

VEHICLE INFORMATION

VEHICLE:	2012 GSC Stella	DATE:	9/07/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi		
ODOMETER START:	9 mi.	ODOMETER FINISH:	N/A		

Date of Manufacture: 01/2011

General Description:

Manufacturer	LML Limited
Make & Model	Genuine Scooter Company Stella
VIN	MD7CG84B4C3000433
Engine Type	Gasoline, 4-Stroke, Single Piston, Air Cooled, SOHC
Engine Displacement	9.15 in.³ (150 cm³)
Fuel Delivery	Carbureted
Transmission	4-speed manual
Final Drive	Direct
Wheelbase	49.5 in.

Tires:

	<u>Front</u>	<u>Rear</u>
Manufacturer	Sava	Sava
Type	Kran	Kran
Size	3.50-10 B14	3.50-10 B14
DOT Number	DOT H3 BF B14 35-491	DOT H3 BF B14 35-491
Pressure (cold)	17 psi	35 psi
Rim Label Information	DOT LML 3.50x10 15 01 11	DOT LML 3.50x10 15 01 11

Weights:

	<u>Front</u>		<u>Rear</u>		<u>Total</u>
	Mass (lb.)	% of Total	Mass (lb.)	% of Total	Mass (lb.)
Test Rider					169.0
Curb Weight (UVW)	84.2	31.5	183.3	68.5	267.5
Test Weight (UVW + rider + instrumentation)	159.0	34.0	308.5	66.0	467.5
GVWR (label)					595.0
GAWR (label)	176.0	29.6	419.0	70.4	595.0

FMVSS 122 - DATA SHEET 1 (2 of 2)

Brakes:

	<u>Front</u>	<u>Rear</u>
Actuation Method: mechanical, hydraulic, electric	Hydraulic	Mechanical
System Type: Individual control, Combined Brake System, Split-Service	Individual Control	Individual Control
Control	Hand Lever	Foot Pedal
Caliper Type	Floating, Double-sided, 2 pistons	N/A (Drum)
Number of Calipers	1	0
No. of Caliper Pistons	2 pistons	0
Caliper Piston Diameters	1.174 in. x 2 pistons	N/A
Rotor –Type/Number	Cross-drilled / 1 rotor / LZ 0061	N/A
Rotor Diameter	7.88 in.	N/A
Rotor Thickness/Min. Allowable Thickness	Not listed	N/A
Swept Area	26.70 in.²	27.29 in.²
Brake Pad Identification Numbers	EAC T18 HT / 10G220181	Jayna Magnum C2 & C4

DATA SHEET 2 (1 of 2)
MOTYORCYCLE BRAKE TEST SUMMARY

VEH.: 2012 GSC Stella

VEH. NHTSA NO.: CB1201;

LABORATORY: TRC Inc.

TEST SUMMARY	SPEED (mi/h)	STOP. DIST. (ft) Actual	STOP. DIST. (ft) Corrected	FRONT MAX. BRAKE LEVER FORCE (lb.)	REAR MAX. BRAKE LEVER FORCE (lb.)	NUMBER OF TESTS	PASS/ FAIL
Instrumentation Check	29.7	112.9	115.6	12.1	39.8	6	N/A
Speed Determination	53.3 (avg.)						N/A
1 st Effectiveness Test @ 30 mi/h (Service Brake System)	29.8	46.5	47.1	41.1	46.9	6	P
1 st Effectiveness Test @ 45 mi/h (Service Brake System)	44.0	90.2	94.5	46.4	50.3	6	P
1 st Effectiveness Test @ 30 mi/h (Partial) Hand Lever Only – Front Subsystem	29.6	55.3	56.8	36.5	N/A	6	P
1 st Effectiveness Test @ 30.0 mi/h (Partial) Foot Pedal Only – Rear Subsystem	29.6	72.4	74.3	N/A	73.3	6	P
1 st Effectiveness Test @ 45 mi/h (Partial) Hand Lever Only – Front Subsystem	44.1	128.9	134.3	33.0	N/A	6	P
1 st Effectiveness Test @ 45 mi/h (Partial) Foot Pedal Only – Rear Subsystem	44.9	182.2	183.2	N/A	75.8	6	P
Burnish Procedure	30.0					200	N/A
2 nd Effectiveness Test@ 30 mi/h (Service brake System)	29.5	39.9	41.2	39.1	43.9	6	P
2 nd Effectiveness Test@ 45 mi/h (Service brake System)	44.3	93.9	96.9	38.9	48.3	6	P*
2 nd Effectiveness Test@ 80 mi/h (Service brake System)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2 nd Effectiveness Test@ 115 mi/h (Service brake System)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fade and Recovery (Baseline)	30.0 (avg.)	105.4 (avg.)	105.6 (avg.)	13.1 (avg.)	35.1 (avg.)	3	N/A
Fade and Recovery (Fade Test)	44.6 (avg.)	136.9 (avg.)	139.1 (avg.)	21.5 (avg.)	40.9 (avg.)	10	N/A
Fade and Recovery (Recovery- 5 th stop)	30.5	103.5	100.1	12.4	32.5	5	P
Re-burnish Procedure	30.0					35	N/A
Final Effect. Test @ 30 mi/h (Service Brake System)	30.0	43.9	44.1	36.0	38.5	6	P*

DATA SHEET 2 (2 of 2)
MOTORCYCLE BRAKE TEST SUMMARY

TEST SUMMARY	SPEED (mph)	STOP. DIST. (ft) Actual	STOP. DIST. (ft) Corrected	FRONT MAX. BRAKE LEVER FORCE (Pounds)	REAR MAX. BRAKE LEVER FORCE (Pounds)	NUMBER OF TESTS	PASS/ FAIL
Final Effect. Test @ 45 mi/h (Service Brake System)	44.7	92.2	93.6	34.8	56.1	9	P
Final Effect. Test @ 80 mi/h (Service Brake System)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Effect. Test @ 115 mi/h (Service Brake System)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #1 @ 48.3 km/h	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #1 @ 96.6 km/h	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #2 @ 48.3 km/h	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Effect. Test – Split Service Brake Systems (Partial Service Brake System) SUBSYSTEM #2 @ 96.6 km/h	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parking Brake Test – 3-wheeled motorcycles only	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wet Recovery (Baseline – Average Maximum Forces)	30.2 (avg.)	94.4 (avg.)	94.6 (avg.)	13.7 (avg.)	39.0 (avg.)	3	N/A
Wet Recovery (Recovery – 5 th Stop)	29.9	111.1	111.9	15.7	48.2	5	P
Final Inspection (Durability)							P
Equipment Requirements							P

*See Contractor Comments in Appendix D.

**FMVSS 122 - DATA SHEET 3
INSTRUMENTATION CHECK (S7.2)**

VEHICLE:	2012 GSC Stella	DATE:	9/27/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	53
ODOMETER START:	23.6 mi.	ODOMETER FINISH:	26.0 mi	WIND VELOCITY (MPH):	10

REQUIREMENTS: Check instrumentation by making not more than 10 stops from 30 mi/h at a deceleration of not more than 10 ft/s², record results, repeat if necessary.

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft/s ²)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	29.9	131	136	203.9	204.7	6.2	4.8	18.0	12.0	6.8	5.0	No	Yes
2	29.9	145	137	169.6	170.6	7.7	6.0	23.0	14.9	7.9	6.0	No	Yes
3	29.5	147	134	168.9	175.0	7.2	5.5	2.5	0.2	7.8	5.7	No	Yes
4	29.7	147	134	112.9	115.6	12.1	9.0	39.8	24.1	11.1	8.9	No	Yes
5	30.0	147	134	180.3	180.5	8.1	4.6	35.3	25.0	8.2	5.4	No	Yes
6	29.6	147	133	140.5	144.0	9.2	6.2	33.8	20.6	9.1	6.6	No	Yes

REMARKS: _____
 DRIVER: Alan Ida
 RECORDED BY: Alan Ida DATE: 9-27-11
 APPROVED BY: Ken Webster

DATA SHEET 4
MAXIMUM SPEED

VEHICLE:	2012 GSC Stella	DATE:	9/27/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	53
ODOMETER START:	26.2 mi	ODOMETER FINISH:	27.9 mi	WIND VELOCITY (MPH):	10

MOTORCYCLE MAXIMUM SPEED DETERMINATION — Measure the speed that the motorcycle will attain in a distance of 1 mile from a standing start, but do not exceed 120 mi/h. If the speed is less than 60 mi/h, tests specified to commence at that speed shall be run at the multiple of 5 mi/h that is 4 mi/h to 8 mi/h less than the maximum speed measured.

TEST CONDITIONS:

Test Speed	Maximum speed attainable in 1mi. from a standing start on a level surface.
Initial Brake Temperature (IBT)	N/A
Runs Required	Two runs shall be made in opposite directions.

	DIRECTION	SPEED (mi/h)
Run No. 1	North	55.4
Run No. 2	South	51.2

Average = 53.3 mi/h

REMARKS: _____
 DRIVER: Alan Ida
 RECORDED BY: Alan Ida DATE: 9-27-11
 APPROVED BY: Ken Webster

**FMVSS 122 - DATA SHEET 5
FIRST (PREBURNISHED) EFFECTIVENESS TEST (S7.3.1)**

VEHICLE:	2012 GSC Stella	DATE:	9/27/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	59
ODOMETER START:	N/A*	ODOMETER FINISH:	N/A	WIND VELOCITY (MPH):	7

TEST CONDITIONS:

Test Speed	30 mi/h	45 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F
Runs Required	6	6
Maximum Stop Distance Allowed	54 ft.	121 ft.
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lb. Foot Pedal Force ≤ 90 lb.	Hand Lever Force ≤ 55 lb. Foot Pedal Force ≤ 90 lb.
Wheel Lockup	No	No
Brakes Utilized	Hand Lever and Foot Pedal	Hand Lever and Foot Pedal

30 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	29.9	136	137	60.9	61.2	27.2	19.5	47.5	31.1	23.2	17.1	NO	YES
2	30.0	147	138	54.2	54.1	21.6	17.4	73.6	44.9	24.2	19.1	NO	YES
3	29.7	150	137	54.1	55.2	29.2	22.3	44.6	34.8	24.7	19.0	NO	YES
4	29.6	150	135	48.2	49.5	22.9	18.1	62.9	40.5	23.5	20.3	NO	YES
5	29.6	139	134	52.0	53.5	30.5	22.5	57.3	35.5	26.9	19.1	NO	YES
6	29.8	139	138	46.5	47.1	41.1	32.4	46.9	32.0	28.2	21.8	NO	YES

45 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	44.6	135	135	107.6	109.3	39.1	28.0	51.4	36.7	25.6	20.8	NO	YES
2	44.0	134	134	109.3	114.5	38.6	25.0	54.2	37.6	26.9	20.4	NO	YES
3	44.0	140	136	90.2	94.5	46.4	33.7	50.3	29.0	29.5	23.9	NO	YES
4	45.0	144	135	116.4	116.7	36.4	27.4	66.4	34.1	27.3	20.1	NO	YES
5	44.0	134	134	110.6	115.7	36.6	27.0	70.5	39.3	29.6	20.6	NO	YES
6	44.2	132	133	103.1	106.8	36.6	24.4	54.8	34.8	29.3	21.5	NO	YES

REMARKS:

Speedometer & odometer stopped working at 29.7 miles, during 30 mph 1st Effectiveness stops. COTR indicated to log event and continue testing.

DRIVER: Alan Ida

RECORDED BY: Alan Ida

DATE: 9-27-11

APPROVED BY: Ken Webster

**FMVSS 122 - DATA SHEET 6 (1 of 2)
PARTIAL (PREBURNISHED) SERVICE BRAKE SYSTEM TEST (7.3.2)**

VEHICLE:	2012 GSC Stella	DATE:	9/29/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	65
ODOMETER START:	N/A	ODOMETER FINISH:	N/A	WIND VELOCITY (MPH):	11

REQUIREMENTS FOR A MOTORCYCLE WITH TWO INDEPENDENTLY ACTIVATED SERVICE BRAKE SUBSYSTEMS.

TEST CONDITIONS: Subsystem 1

Test Speed	30 mi/h	45 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F
Runs Required	6	6
Maximum Stop Distance Allowed	121 ft.	273 ft.
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No	No
Brakes Utilized	Front - Hand Lever	Front - Hand Lever

TEST CONDITIONS: Subsystem 2

Test Speed	30 mi/h	45 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F
Runs Required	6	6
Maximum Stop Distance Allowed	121 ft.	273 ft.
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No	No
Brakes Utilized	Rear – Foot Pedal	Rear – Foot Pedal

30 mi/h DATA — Brake Subsystem 1, Describe: Front Only (Hand Lever)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	30.0	144		65.2	65.2	30.4	25.6			19.5	15.6	NO	YES
2	30.2	147		61.8	61.2	34.5	27.8			21.6	16.6	NO	YES
3	30.0	150		63.9	64.1	35.3	26.1			22.1	16.2	NO	YES
4	29.7	142		55.9	56.9	37.5	29.6			23.3	17.8	NO	YES
5	29.6	147		55.3	56.8	36.5	27.8			23.6	17.9	NO	YES
6	29.9	135		61.9	62.3	38.8	28.1			22.3	16.6	NO	YES

FMVSS 122 - DATA SHEET 6 (2 of 2)

45 mi/h DATA — **Brake Subsystem 1**, Describe: Front Only (Hand Lever)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lb.)		Rear Brake Lever Force (lb.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	44.9	143		139.0	139.4	39.3	27.5			20.7	16.5	NO	YES
2	44.7	133		143.0	145.3	36.7	25.5			23.6	16.4	NO	YES
3	44.5	138		140.5	143.7	39.6	27.5			21.7	16.5	NO	YES
4	44.4	141		134.7	138.2	32.4	25.3			20.5	16.4	NO	YES
5	44.6	134		141.1	143.9	33.6	24.5			21.9	16.3	NO	YES
6	44.1	133		128.9	134.3	33.0	26.2			22.6	17.4	NO	YES

30 mi/h DATA — **Brake Subsystem 2**, Describe: Rear Only (Foot Pedal)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lb.)		Rear Brake Lever Force (lb.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	30.4		140	93.9	91.6			70.1	49.7	14.2	10.3	NO	YES
2	30.1		147	97.3	96.4			70.3	51.4	14.4	10.6	NO	YES
3	29.8		150	96.9	97.9			68.6	46.8	14.3	10.8	NO	YES
4	29.6		149	72.4	74.3			73.3	52.0	16.9	13.0	NO	YES
5	29.6		149	86.5	88.6			71.1	51.8	15.2	11.2	NO	YES
6	29.9		149	95.0	95.9			77.8	54.3	14.7	10.4	NO	YES

45 mi/h DATA — **Brake Subsystem 2**, Describe: Rear Only (Foot Pedal)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	44.5		147	190.2	194.3			79.1	55.0	16.1	10.8	NO	YES
2	44.4		146	198.2	203.7			67.4	53.7	13.3	10.7	NO	YES
3	44.4		148	213.1	219.1			77.0	57.5	12.8	10.4	NO	YES
4	44.9		146	182.2	183.2			75.8	55.7	15.9	11.9	NO	YES
5	44.7		148	210.1	212.7			77.3	60.8	13.8	10.6	NO	YES
6	44.4		147	204.2	209.7			68.5	57.2	12.9	10.4	NO	YES

REMARKS: _____

DRIVER: Alan Ida

RECORDED BY: Alan Ida

DATE: 9-29-11

APPROVED BY: Ken Webster

**FMVSS 122 - DATA SHEET 7
BURNISH PROCEDURE (S7.4)**

VEHICLE:	2012 GSC Stella	DATE:	9/29/11 & 10/10/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	79
ODOMETER START:	N/A	ODOMETER FINISH:	N/A	WIND VELOCITY (MPH):	6

TEST CONDITIONS:

Test Speed	30 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
Runs Required	200
Deceleration Rate	12 ft/s ²
Actuation Forces	Hand Lever and foot pedal force limits do not apply during this procedure.
Cooling Speed	Accelerate at maximum rate to 30 mi/h immediately and maintain that speed until making the next stop
Stop Interval	The braking interval shall be either the distance necessary to reduce the brake temperature to between 130°F and 150°F or 1 mile, whichever comes first.
Post Burnish Adjustments	After burnishing adjust the brakes in accordance with the manufacturer's recommendation.
Wheel Lockup	
Brakes Utilized	Hand Lever and Foot Pedal

BURNISH

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)				Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	30.4	135	136			14.2		9.6		11.5	8.5	NO	YES
25	30.2	150	136			10.9		50.5		11.6	9.4	NO	YES
50	29.9	141	138			15.1		28.3		12.3	10.0	NO	YES
75	30.0	150	141			11.9		43.8		12.1	10.0	NO	YES
100	29.7	150	137			12.5		43.5		13.6	10.4	NO	YES
125	30.2	150	148			12.6		27.6		10.7	8.0	NO	YES
150	30.0	145	150			11.8		21.6		10.7	8.1	NO	YES
175	30.4	150	149			12.8		20.0		12.1	8.2	NO	YES
200	29.9	134	149			11.7		26.3		13.0	9.6	NO	YES

REMARKS: _____

DRIVER: Alan Ida
 RECORDED BY: Alan Ida DATE: 10-10-11
 APPROVED BY: Ken Webster

**FMVSS 122 - DATA SHEET 8
SECOND EFFECTIVENESS TEST (S7.5)**

VEHICLE:	2012 GSC Stella	DATE:	10/11/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	58
ODOMETER START:	N/A	ODOMETER FINISH:	N/A	WIND VELOCITY (MPH):	0

TEST CONDITIONS:

Test Speed	30 mi/h	45 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F
Runs Required	6	6
Maximum Stop Distance Allowed	43 ft.	95 ft.
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No	No
Brakes Utilized	Hand Lever and Foot Pedal	Hand Lever and Foot Pedal

30 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1	29.6	149	136	46.8	48.2	32.2	19.3	61.1	37.4	30.5	21.6	NO	YES
2	30.0	145	139	46.6	46.7	31.1	19.0	54.6	31.8	29.1	21.7	NO	YES
3	29.8	149	141	45.6	46.1	36.0	24.2	56.4	35.4	30.0	22.7	NO	YES
4	29.9	148	134	44.5	44.9	38.5	22.3	54.1	35.3	34.1	23.2	NO	YES
5	29.6	147	134	42.3	43.4	39.9	25.0	54.7	29.0	33.4	24.0	NO	YES
6	29.5	136	133	39.9	41.2	39.1	27.2	43.9	27.1	33.8	25.3	NO	YES

45 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			Max	Avg	Max	Avg	Max	Avg		
1	44.5	141	134	109.9	112.3	38.1	23.6	42.8	25.9	31.9	21.3	NO	YES
2	44.8	138	135	106.0	106.8	41.8	26.3	33.2	23.0	31.0	22.4	NO	YES
3	44.9	143	135	110.9	111.3	36.1	26.4	33.8	24.6	30.9	21.7	NO	YES
4	44.3	140	133	93.9	96.9	38.9	24.8	48.3	35.6	30.8	23.9	NO	YES
5	45.2	148	135	99.7	98.8	30.8	22.6	40.1	28.2	29.5	23.5	NO	YES
6	44.9	135	137	96.9	97.3	36.0	23.7	57.8	31.8	30.0	23.8	NO	YES

REMARKS: The vehicle did not pass the 45 mph 2nd Effectiveness Test by a marginal amount. The COTR indicated to continue with the test. See Contractor Comments in Appendix D.

DRIVER: Alan Ida

RECORDED BY: Alan Ida **DATE:** 10-11-11

APPROVED BY: Ken Webster

FMVSS 122 - DATA SHEET 9 (1 of 3)
FADE AND RECOVERY TEST (S7.6)

VEHICLE:	2012 GSC Stella	DATE:	10/11/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	76
ODOMETER START:	N/A	ODOMETER FINISH:	N/A	WIND VELOCITY (MPH):	11

TEST CONDITIONS: Baseline

Test Speed	30 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
Runs Required	3
Deceleration Rate	10 to 11 ft/s ²
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

30 mi/h DATA — Fade and Recovery Baseline Data (S7.6.1)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M	A	M	A	M	A		
1	30.0	141	136	115.6	115.5	11.5	7.9	37.3	21.6	13.9	9.0	NO	YES
2	30.0	150	136	102.3	102.3	14.0	8.9	35.2	20.5	13.3	10.1	NO	YES
3	29.9	149	134	98.3	99.0	13.8	8.0	32.8	19.0	13.0	9.8	NO	YES
Average Max. Actuation Forces (to be used in computing 5 th recovery stop actuation force limits)						13.1		35.1					

TEST CONDITIONS: Fade

Test Speed	45 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
IBT – Subsequent Stops	Temps. Occurring at distance intervals.
Number of Stops	10
Deceleration Rate	14 – 17 ft/s/s
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Stop Interval	2112 ft.
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

DATA SHEET 9 (2 of 3)

45 mi/h DATA — Fade Stops (S7.6.2)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	44.4	137	133	124.6	128.3	19.4	14.6	33.7	20.7	24.8	16.8	No	Yes
2	44.8	206	136	176.5	177.7	20.9	14.0	36.4	28.0	17.4	13.2	No	Yes
3	43.7	249	138	155.6	164.7	18.1	10.9	46.8	30.8	18.9	14.6	No	Yes
4	45.1	249	142	144.3	143.7	24.2	15.1	39.3	29.5	15.7	15.6	No	Yes
5	44.9	263	146	133.0	133.5	22.7	16.5	47.0	34.1	22.6	17.5	No	Yes
6	44.9	261	151	116.2	116.8	23.7	18.7	33.5	26.6	23.6	19.6	No	Yes
7	44.8	259	156	126.5	127.5	21.7	15.8	48.4	29.1	24.0	18.1	No	Yes
8	45.0	260	158	130.4	130.2	22.5	16.0	40.5	33.5	22.1	17.8	No	Yes
9	44.7	281	162	144.8	147.0	20.0	13.6	42.3	32.5	19.2	15.3	No	Yes
10	44.1	281	166	117.3	122.0	21.5	15.0	41.2	29.8	22.6	17.8	No	Yes

TEST CONDITIONS: Recovery

Test Speed	30 mi/h
First Stop Initial Brake Temperature (IBT)	Temperature achieved at completion of fade stop procedure
IBT – Subsequent Stops	Temps. Occurring at distance intervals.
Number of Stops	5
Deceleration Rate	10 to 11 ft/s ²
Maximum Allowable Brake Actuation Forces for Stops 1 through 4	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Maximum Allowable Brake Actuation Forces for Stop 5	See Recovery Stop Actuation Force Limit computation Table Below
Stop Interval	1 mile
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

REQUIREMENT: for the fifth recovery stop shall be within plus 20 pounds and minus 10 pounds of the baseline check average force, but not less than 0 pounds.

5 th Recovery Stop Actuation Force Limit Computations (S5.4.3)			
Service Brake 1 (Front Brake)		Service Brake 2 (Rear Brake)	
Lower Limit – Average Max. Force (13.1 lbs.) minus 10 lbs.	Upper Limit – Average Max. Force (13.1 lbs.) Plus 20 lbs.	Lower Limit – Average Max. Force (35.1 lbs.) minus 10 lbs.	Upper Limit – Average Max. Force (35.1 lbs.) Plus 20 lbs.
3.1	33.1	25.1	55.1

DATA SHEET 9 (3 of 3)

30 mi/h Recovery Stop Data (S7.6.3) —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M	A	M	A	M	A		
						a	v	a	v	a	v		
1	30.4	145	168	115.6	112.4	14.1	10.4	36.1	23.7	12.7	9.5	No	Yes
2	30.1	172	168	97.3	97.0	14.2	10.0	34.1	25.5	14.8	10.7	No	Yes
3	30.2	212	169	97.2	96.3	13.9	9.1	37.0	25.3	13.3	10.4	No	Yes
4	30.2	251	169	93.4	92.4	12.9	9.9	34.4	24.6	13.8	10.8	No	Yes
5	30.5	275	170	103.5	100.1	12.4	8.6	32.5	23.7	13.1	10.0	No	Yes

REMARKS:

DRIVER: Alan Ida
 RECORDED BY: Alan Ida DATE: 10-11-11
 APPROVED BY: Ken Webster

FMVSS 122 - DATA SHEET 10

REBURNISH PROCEDURE (S7.7)

VEHICLE:	2012 GSC Stella	DATE:	10/13/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	60
ODOMETER START:	N/A	ODOMETER FINISH:	N/A	WIND VELOCITY (MPH):	11

TEST CONDITIONS:

Test Speed	30 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
Runs Required	35
Deceleration Rate	12 ft./s ²
Actuation Forces	Hand Lever and foot pedal force limits do not apply during this procedure.
Cooling Speed	Accelerate at maximum rate to 30 mph immediately and maintain that speed until making the next stop
Stop Interval	The braking interval shall be either the distance necessary to reduce the brake temperature to between 130°F and 150°F or 1 mile, whichever comes first.
Post Burnish Adjustments	After burnishing adjust the brakes in accordance with the manufacturer's recommendation.
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)				Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (fpsps)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x		M a x		M a x			
1	30.2	148	138			13.8		34.9		14.6		No	Yes
5	30.1	150	136			12.5		33.3		13.6		No	Yes
10	29.8	149	134			10.9		44.0		13.4		No	Yes
15	30.1	145	137			12.1		31.0		13.2		No	Yes
20	30.0	150	138			12.8		38.5		14.3		No	Yes
25	29.6	144	137			10.5		37.5		12.7		No	Yes
30	30.1	146	138			10.9		40.5		13.4		No	Yes
35	30.3	141	140			9.1		44.3		14.0		No	Yes

REMARKS: _____
 DRIVER: Alan Ida
 RECORDED BY: Alan Ida DATE: 10-13-11
 APPROVED BY: Ken Webster

**FMVSS 122 - DATA SHEET 11 (1 of 2)
FINAL EFFECTIVENESS TEST (S7.8.1)**

VEHICLE:	2012 GSC Stella	DATE:	10/13/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	60
ODOMETER START:	N/A	ODOMETER FINISH:	N/A	WIND VELOCITY (MPH):	11

TEST CONDITIONS:

Test Speed	30 mi/h	45 mi/h	80 mi/h	115 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F	130°F to 150°F	130°F to 150°F	130°F to 150°F
Runs Required	6	6	4	4
Maximum Stop Distance Allowed	43 ft.	95 ft.	345 ft.	791 ft.
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No	No	No	No
Brakes Utilized	Hand Lever and Foot Pedal	Hand Lever and Foot Pedal	Hand Lever and Foot Pedal	Hand Lever and Foot Pedal

30 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M	A	M	A	M	A		
						x	g	x	g	x	g		
1	29.8	142	134	45.1	45.7	38.5	23.7	51.6	35.8	32.2	23.0	NO	YES
2	30.1	142	132	45.2	44.9	32.4	18.3	58.3	35.6	29.8	22.4	YES	YES
3	29.7	144	132	44.6	45.5	32.5	18.7	47.8	28.4	34.5	22.3	NO	YES
4	29.9	143	136	47.7	47.8	37.3	22.4	53.6	36.1	32.8	22.5	NO	YES
5	30.0	140	136	44.6	44.5	33.0	22.9	44.0	31.0	30.8	23.1	NO	YES
6	30.0	143	136	43.9	44.1	36.0	27.3	38.5	27.4	31.7	23.9	NO	YES

DATA SHEET 11 (2 of 2)

45 mi/h DATA —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	45.0	134	133	104.6	104.5	39.3	25.7	42.6	28.1	33.2	23.4	NO	YES
2	44.3	141	135	96.0	98.9	39.1	27.5	49.4	33.3	31.6	24.2	NO	YES
3	44.6	138	134	96.9	98.7	40.3	28.1	39.1	27.8	33.7	24.1	NO	YES
4	45.0	138	136	99.0	99.0	38.1	25.8	48.8	32.1	33.8	24.1	NO	YES
5	45.0	138	135	97.7	97.8	32.2	20.8	41.7	20.9	30.5	20.8	NO	YES
6	44.6	138	136	104.2	106.3	31.6	25.4	38.3	26.0	28.9	22.1	NO	YES
7	45.3	138	133	104.9	103.6	34.1	23.0	56.3	31.0	30.8	22.8	NO	YES
8	45.0	138	133	93.7	93.7	34.5	26.5	47.8	29.1	32.0	25.0	NO	YES
9	44.7	137	133	92.2	93.6	34.8	24.0	56.1	29.4	32.3	24.5	NO	YES

REMARKS:

For the 30 mph Final Effectiveness Test, the vehicle did not meet the stopping distance requirement by a marginal amount. The COTR instructed TRC Inc. to continue testing.

For the 45 mph Final Effectiveness Test, after 6 stops were completed, the vehicle did not meet the stopping distance requirement. Therefore, the COTR instructed TRC Inc. to perform 3 additional stops (9 total) in attempt to meet the requirement. The vehicle met the requirements for the 45 mph Final Effectiveness stops.

DRIVER: Alan Ida

RECORDED BY: Alan Ida

DATE: 10-13-11

APPROVED BY: Ken Webster

FMVSS 122 - DATA SHEET 12 (1 of 2)

WATER FADE AND RECOVERY TEST (S7.10.1) & (S7.10.2)

VEHICLE:	2012 GSC Stella	DATE:	10/13/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	63
ODOMETER START:	N/A	ODOMETER FINISH:	N/A	WIND VELOCITY (MPH):	9

TEST CONDITIONS: Baseline Stops

Test Speed	30 mi/h
Initial Brake Temperature (IBT)	130°F to 150°F
Runs Required	3
Deceleration Rate	10 to 11 ft./s ²
Maximum Allowable Brake Actuation Forces	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

30 mi/h DATA — Baseline Data (S7.10.1)

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	30.6	130	134	95.7	95.9	11.2	6.7	48.7	27.0	14.3	10.1	NO	YES
2	29.9	150	139	94.6	95.3	14.0	7.0	36.5	26.7	12.8	10.2	NO	YES
3	30.0	148	138	92.9	92.7	15.9	8.1	31.8	22.8	14.4	10.7	NO	YES
Average Max. Actuation Forces (to be used in computing 5 th recovery stop actuation force limits)						13.7		39.0					

Immerse rear brake in water fully released for 2 minutes followed by immersion of the front brake in water fully released for 2 minutes.

Immediately after completion of the wetting, accelerate to initial test speed without applying the brakes. Upon reaching the initial test speed, immediately conduct the wet brake recovery stops.

DATA SHEET 12 (2 of 2)

TEST CONDITIONS: Wet Brake Recovery Stops

Test Speed	30 mi/h
First Stop Initial Brake Temperature (IBT)	Temperature achieved at completion of brake wetting.
IBT – Subsequent Stops	Temps. Occurring at end of each stop.
Number of Stops	5
Deceleration Rate	10 to 11 ft./s ²
Maximum Allowable Brake Actuation Forces for Stops 1 through 4	Hand Lever Force ≤ 55 lbs. Foot Pedal Force ≤ 90 lbs.
Maximum Allowable Brake Actuation Forces for Stop 5	See Recovery Stop Actuation Force Limit computation Table Below
Stop Interval	Distance sufficient to accelerate to initial test speed.
Wheel Lockup	No
Brakes Utilized	Hand Lever and Foot Pedal

REQUIREMENT: for the **5th** recovery stop shall be within plus 20 pounds and minus 10 pounds of the baseline check average force, but not less than 0 pounds.

5th Recovery Stop Actuation Force Limit Computations (S5.4.3)			
Service Brake 1 (Front Brake)		Service Brake 2 (Rear Brake)	
Lower Limit – Average Max. Force (13.7 lbs.) minus 10 lbs	Upper Limit – Average Max. Force (13.7 lbs.) Plus 20 lbs.	Lower Limit – Average Max. Force (39.0 lbs.) minus 10 lbs.	Upper Limit – Average Max. Force (39.0 lbs.) Plus 20 lbs.
3.7 lbs.	33.7 lbs.	29.0 lbs.	59.0 lbs.

30 mi/h Recovery Stop Data (S10.2) —

Stop No.	Test Speed (mi/h)	Initial Brake Temp. (°F)		Actual Stopping Distance (ft.)	Corrected Stopping Distance (ft.)	Front Brake Lever Force (lbs.)		Rear Brake Lever Force (lbs.)		Vehicle Decel. (ft./s/s)		Wheel Lockup	Stay In Lane
		Front	Rear			M a x	A v g	M a x	A v g	M a x	A v g		
1	30.0	66	71	106.9	106.9	13.4	9.6	40.7	24.6	14.6	9.9	NO	YES
2	30.6	114	72	111.0	106.7	15.2	10.0	37.0	24.7	13.6	9.8	NO	YES
3	30.2	162	73	117.9	116.6	11.8	8.5	50.1	33.6	13.3	9.2	NO	YES
4	30.2	190	75	107.6	106.4	11.5	8.7	46.4	30.6	11.8	9.5	NO	YES
5	29.9	205	77	111.1	111.9	15.7	8.8	48.2	30.3	12.5	9.0	NO	YES

REMARKS: _____
 DRIVER: Alan Ida
 RECORDED BY: Alan Ida DATE: 10-13-11
 APPROVED BY: Ken Webster

FMVSS 122 - DATA SHEET 13

FINAL INSPECTION – DURABILITY (S5.8/S7.11)

VEHICLE:	2012 GSC Stella	DATE:	10/18/11	NHTSA NUMBER:	CB1201
TIRE PRESSURE (FRONT):	17 psi	TIRE PRESSURE (REAR):	35 psi	AMBIENT TEMP. °F:	NA
ODOMETER START:	N/A	ODOMETER FINISH:	N/A	WIND VELOCITY (MPH):	NA

Upon completion of all tests, perform the following:

Requirement – brake system disassembled	PASS/FAIL
Inspect the entire brake system for detachment or fracture of any component	P
Inspect the brake linings for detachment from the shoe or pad.	P
Inspect the wheel cylinder, master cylinder, brake hoses and axle seals for fluid or lubricant leakage	P

REMARKS: _____
 RECORDED BY: Alan Ida DATE: 10-18-11
 APPROVED BY: Ken Webster

FMVSS 122 –DATA SHEET 14 (1 of 2)

FINAL INSPECTION – EQUIPMENT REQUIREMENTS (S5.1)

BRAKE SYSTEM INSPECTION REQUIREMENTS	TEST VEHICLE COMPLIANCE	DATA	
		YES	NO
S5.1 - Motorcycle shall have either a split service brake system or two independently actuated service brake systems.	Motorcycle has split service brake system?		X
	Motorcycle has two independently actuated service brake systems?	X	
S5.1.1 - Failure of any component in a mechanical service brake system shall not result in a loss of braking ability in the other service brake system on the vehicle.	If vehicle has a mechanical service brake system, would component failure result in loss of braking in other service brake system?		X
S5.1.2 - Leakage failure in hydraulic service brake system shall not result in a loss of braking ability in other service brake system on the vehicle.	If vehicle has hydraulic service brake system, would leakage failure in one service brake system result in a loss of braking ability in other service brake system?		X
S5.1.2.1 - Each master cylinder shall have a separate reservoir for each brake circuit, with each reservoir filler opening having its own cover, seal, and cover retention device. Each reservoir shall have a minimum capacity equivalent to one and one-half times the total fluid displacement resulting when all the wheel cylinders or caliper pistons serviced by the reservoir move from a new lining, fully retracted position to a fully worn, fully applied position. Where adjustment is a factor, the worst condition of adjustment shall be used for this measurement.	Vehicle meets master cylinder reservoir requirements? Attach annotated calculations for each reservoir capacity. (Data Sheet 17 & Appendix A)	X	
S5.1.2.2 - Each motorcycle shall have a brake fluid warning statement that reads as follows, in letters at least 2.38 mm high: Warning: clean filler cap before removing. Use only ---fluid from a sealed container. (Inserting the recommended type of brake fluid as specified in 49 CFR 571.116, e.g., DOT 3.) The lettering shall be: (A) Permanently affixed, engraved, or embossed (B) Located so as to be visible by direct view, either on or within 4 inches of the brake-fluid reservoir filler plug or cap (C) Of a color that contrasts with its background, if it is not engraved or embossed	Vehicle meets master cylinder warning statement requirements? Recommended brake fluid type: _____DOT4_____	X	

(Continued on next page)

DATA SHEET 14 (2 of 2)

BRAKE SYSTEM INSPECTION REQUIREMENTS	TEST VEHICLE COMPLIANCE	DATA	
		YES	NO
<p>S5.1.3 -</p> <p>(A) Each motorcycle equipped with a split service brake system shall have one or more electrically operated service brake system failure indicator lamps that is mounted in front of and in clear view of the driver, and that is activated —</p> <p>(1) In the event of pressure failure in any part of the service brake system, other than a structural failure of either a brake master cylinder body in a split integral body type master cylinder system or a service brake system failure indicator body, before or upon application of not more than 20 lb of pedal force upon the service brake.</p> <p>(2) Without the application of pedal force, when the level of brake fluid in a master cylinder reservoir drops to less than the recommended safe level specified by the manufacturer or to less than one-half the fluid reservoir capacity, whichever is greater.</p> <p>(B) All failure indicator lamps shall be activated when the ignition switch is turned from the "off" to the "on" or to the "start" position.</p> <p>(C) Except for the momentary activation required by S5.1.3.1(b), each indicator lamp once activated, shall remain activated as long as the condition exists, whenever the ignition switch is in the "on" position. An indicator lamp activated when the ignition is turned to the "start" position will be deactivated upon return of the switch to the "on" position unless a failure exists in the service brake system.</p> <p>(D) Each indicator lamp shall have a red lens with the legend "Brake Failure" on or adjacent to it in letters not less than three thirty-seconds of an inch high that shall be legible to the driver in daylight when lighted.</p>	<p>Does vehicle have a brake system failure indicator lamp?</p> <p>Number of brake system failure indicator lamps: _____</p> <p>Does failure indicator lamp conform to operational and physical requirements?</p>	N/A	N/A
<p>S5.1.4 - Each three-wheeled motorcycle shall be equipped with a parking brake of a friction type with a solely mechanical means to retain engagement.</p>	<p>If a three-wheeled motorcycle, is it equipped with a parking brake?</p>	N/A	N/A
<p>S5.1.5 - The brake system shall be installed so that the lining thickness of the drum brake shoes may be visually inspected, either directly or by use of a mirror without removing the drums, and so that disc brake friction lining may be visually inspected without removing the pads.</p>	<p>Can the drum brake lining thickness and disc brake lining thickness be inspected without removal of drum or disc brake pads?</p> <p>Is a mirror required?</p>	X	X

REMARKS: _____
RECORDED BY: Alan Ida **DATE:** 10-18-11
APPROVED BY: Ken Webster

DATA SHEET 15

CALCULATION OF MINIMUM RESERVOIR VOLUME REQUIREMENTS

BRAKE		LINING		
LOCATION	TYPE	DESCRIPTION	MINIMUM THICKNESS	THICKNESS TO FULLY WORN (1) in.**
Front Brake	Drum	Leading	Pretest 0.150	0.04
		Primary	Post Test 0.145	
		Inboard - X	□Δ 0.005 in.	
	Disc - X	Trailing	Pretest 0.148	0.04
		Secondary	Post Test 0.144	
		Outboard - X	□Δ 0.004	
LINING CLEARANCE:	Diametral (2) – N/A	Inboard - 0 in.	Outboard - 0 in.	
WHEEL CYLINDER DIAMETER (3) – N/A		CALIPER PISTON DIAMETER (3) - 1.174 in. (x2 pistons)		
SHOE CAGE DIAMETER (4) <u> N/A </u> ; CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C.: <u> N/A </u>				
Rear Brake	Drum - X	Leading	Pretest 0.142 in.	0.04
		Primary	Post Test 0.136 in.	
		Inboard - X	Δ□ 0.006 in.	
	Disc	Trailing	Pretest 0.134 in.	0.04
		Secondary	Post Test 0.128 in.	
		Outboard - X	□Δ 0.006 in.	
LINING CLEARANCE:	Diametral (2) – N/A	Inboard – 0 in.	Outboard – 0 in.	
WHEEL CYLINDER DIAMETER (3) – N/A		CALIPER PISTON DIAMETER (3) – N/A		
SHOE CAGE DIAMETER (4) – N/A		CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C.: <u> N/A </u>		
SUBSYSTEM 1 CONSISTS OF:	Front – X			
SUBSYSTEM 2 CONSISTS OF:	Rear – X			
(1) MFRS RECOMMENDATIONS – None. REAR - TOP OF RIVET HEADS - NA FRONT - 1/32 INCH – NA				
(2) DRUM BRAKES, MEASURED AT HORIZONTAL CENTERLINE - NA				
(3) MFRS DATA - NA				
(4) RESET POSITION - NA				

Comments: No manufacturer's data available.

**Per Standard's Engineer, utilized 1 mm (0.040 in.) as default.
See Appendix A for calculations.

DATA SHEET 16

VEHICLE ARRIVAL CONDITION REPORT

CONTRACT NO. DTNH22-06-C-0033 DATE: 9/01/11

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2012 / Genuine Scooter Company / Stella / Motorcycle

MANUFACTURE DATE: 01/11 NHTSA NO.: CB1201

BODY COLOR: Yellow VIN: MD7CG84B4C3000433

ODOMETER READING: 9 mile GVWR: 270 KG

LIST OF FMVSS TESTS PERFORMED BY THIS LAB: 122

- THERE ARE NO DENTS OR OTHER INTERIOR OR EXTERIOR FLAWS
- THE VEHICLE HAS BEEN PROPERLY MAINTAINED AND IS IN RUNNING CONDITION
- THE STORAGE COMPARTMENT CONTAINS AN OWNER'S MANUAL, WARRANTY DOCUMENT, CONSUMER INFORMATION, AND EXTRA SET OF KEYS
- PROPER FUEL FILLER CAP IS SUPPLIED ON THE TEST VEHICLE

REMARKS:

Equipment that is no longer on the test vehicle as noted on Vehicle Arrival Condition Report:
None.

Explanation for equipment removal:
N/A

Test Vehicle Condition:

The battery could not maintain a charge upon delivery, therefore, the engine would not start. The kick starter did not function properly. The battery was determined to be low on fluid, so distilled water was added to the cells and the battery was charged. After adding distilled water, the battery maintained it's charge and was able to start without assistance.

RECORDED BY: Alan Ida
APPROVED BY: Ken Webster

DATE: 9-01-11
DATE: 10-20-11

DATA SHEET 17

VEHICLE COMPLETION CONDITION REPORT

CONTRACT NO. DTNH22-06-C-0033 DATE: 10/18/11

MODEL YEAR/MAKE/MODEL/BODY STYLE: 2012 / Genuine Scooter Company / Stella / Motorcycle

MANUFACTURE DATE: 01/11 NHTSA NO.: CB1201

BODY COLOR: Yellow VIN: MD7CG84B4C3000433

ODOMETER READING: 265 miles GVWR: 270 KG

LIST OF FMVSS TESTS PERFORMED BY THIS LAB: 122

- THERE ARE NO DENTS OR OTHER INTERIOR OR EXTERIOR FLAWS
- THE VEHICLE HAS BEEN PROPERLY MAINTAINED AND IS IN RUNNING CONDITION
- THE STORAGE COMPARTMENT CONTAINS AN OWNER'S MANUAL, WARRANTY DOCUMENT, CONSUMER INFORMATION, AND EXTRA SET OF KEYS
- PROPER FUEL FILLER CAP IS SUPPLIED ON THE TEST VEHICLE

REMARKS:

Equipment that is no longer on the test vehicle as noted on Vehicle Arrival Condition Report:
None.

Explanation for equipment removal:
N/A

Test Vehicle Condition:

The odometer and speedometer is non-functional. The kick starter is also non-functional. The adhesive for the Stella emblem did not hold so the badge is loose.

RECORDED BY: Alan Ida
APPROVED BY: Ken Webster

DATE: 10-18-11
DATE: 10-20-11

APPENDIX A

DETERMINATION OF MASTER CYLINDER MINIMUM VOLUME REQUIREMENTS

The procedure followed for determining the minimum volume requirements is outlined below and used in conjunction with Data Sheet 17.

SYSTEM DESCRIPTIONS:

Front Calipers: Single two-piston, double sided caliper with 1.174 inch pistons. The caliper pistons are served by the front master cylinder.

Rear Caliper: No rear caliper. The rear brake is drum-based.

Front Master Cylinder: Hand lever with integral reservoir. Serves two pistons of the single front caliper. Reservoir capacity is **20.0 mL**.

Rear Master Cylinder: No master cylinder. Foot pedal with mechanical actuation using a cam.

DISC BRAKES

VOLUME REQUIREMENT CALCULATION:

Volume Required, $V_v = [(\Delta t_i + \Delta t_{ic}) \times [\pi(D^2)]/4] + [(\Delta t_o + \Delta t_{oc}) \times [\pi(D^2)]/4] \times 1.5$, where –

- V_v = Volume required per wheel
- Δt = Change in thickness (average)
- i = Inboard
- o = Outboard
- c = Clearance
- D_1 = Caliper cylinder diameter
- D_2 = Caliper cylinder diameter

FRONT REQUIREMENTS:

$$\Delta t_i = 0.110 \text{ in.}$$

$$\Delta t_o = 0.108 \text{ in.}$$

$$\Delta t_{ic} = 0.000 \text{ in.}$$

$$\Delta t_{oc} = 0.000 \text{ in.}$$

$$D_1 = 1.174 \text{ in.}$$

$$D_2 = 1.174 \text{ in.}$$

$$\begin{aligned} V_{\text{Front}} &= [[(0.110) \times [\pi(1.174^2)]/4 \times 1 \text{ piston}] + [(0.108) \times [\pi(1.174^2)]/4 \times 1 \text{ piston}]] \times 1.5 \\ &= [[0.119 \text{ in.}^3] + [0.117 \text{ in.}^3]] \times 1.5 \\ &= [0.236 \text{ in.}^3] \times 1.5 \\ &= 0.354 \text{ in.}^3 \\ &= \mathbf{5.8 \text{ mL}} \end{aligned}$$

APPENDIX B

INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)

VEHICLE: 2012 Genuine Scooter Company Stella

NHTSA NO: CB1201

Date: 10/20/11

INSTRUMENT	IDENTIFICATION/SERIAL NUMBER	CALIBRATION DATE	NEXT CALIBRATION
Data Acquisition System – Racelogic VBOX 3i	018335	5-10-11	5-10-12
Software – Racelogic VBOX Tools	V02.2.2, Build 042	N/A	N/A
Hand Lever Force Transducer – Vishay Micromeasurement, 350 Ohm, ¼ in.	NA - Custom	Per Test	Per Test
Hand Lever Force Amplification – Sensotec P/N: 060-6827-02	1149944: Front 976382: Rear	Per Test	Per Test
Push / Pull Gauge – Imada Digimatic PS232C	173727	7-26-11	7-26-12
Accelerometer – GPS based within VBOX 3i	018335	5-10-11	5-10-12
Fifth Wheel – GPS based within VBOX 3i	018335	5-10-11	5-10-12
Wind Velocity/Direction Gauge – Davis Model 6410	070817N03	5-10-11	5-10-12
Ambient Temperature Gauge – Davis Model 6152	070817N01	5-10-11	5-10-12
Brake Thermocouple Meter – VBOX 3i	018883	Per Test	Per Test
Tire Pressure Gauge – Intercomp 360045	0113SS11051	9-28-11	12-28-11
Vehicle Weight – Toledo/Mettler Scales JAGXTREME 3000, (Bldg. 70)	SN 5225831-5JC	8-11-11	11-11-11

QUALITY ASSURANCE Alan Ida

Comments:

APPENDIX C

TEST VEHICLE PHOTOGRAPHS



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Left Front 3/4 View



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Right Rear 3/4 View

MANUFACTURED BY : LML LIMITED

01/2011

(GVWR 270 KG(595 LB)
(GAWR FRONT 80 KG(176 LB) WITH 3.50-10 51 J TIRE, 10x3.50 RIM.
(AT 117KPA (17PSI) COLD

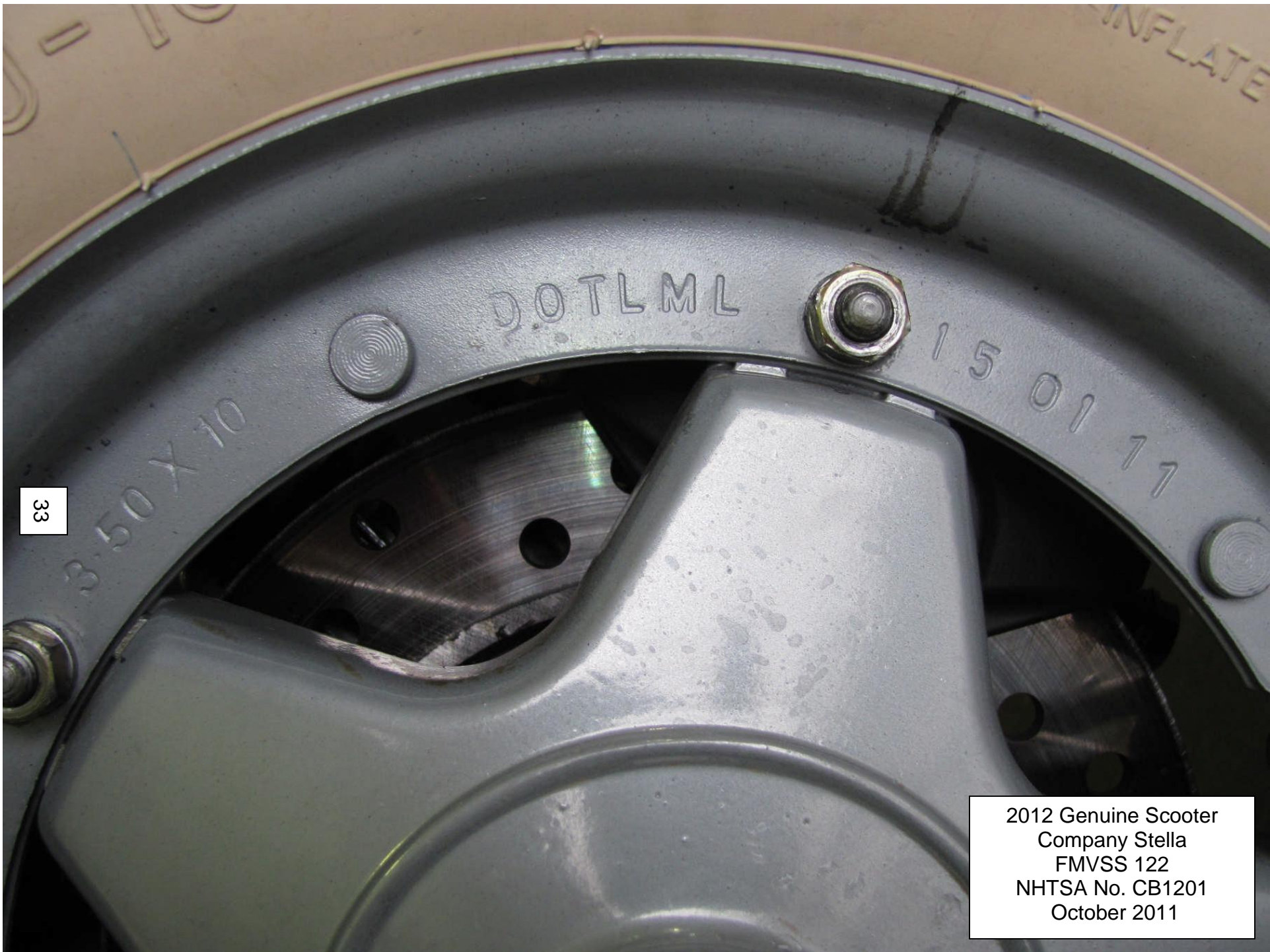
(GAWR REAR 190 KG(419 LB) WITH 3.50-10 51 J TIRE, 10x3.50 RIM.
(AT 241KPA (35PSI) COLD

32 THIS VEHICLE CONFORMS TO ALL APPLICABLE US FEDERAL
I MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE
I DATE OF MANUFACTURE SHOWN ABOVE

VIN · MD7CG84B4C3000433 TYPE: MOTORCYCLE

2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Vehicle Certification Label



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

FMVSS 120 Wheel (Front) Information Label



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DOT H3 BF B14 TWI 35-491

2012 Genuine Scooter
Company Stella
FMVSS 122
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FMVSS 120 Tire (Front) Information Label



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

FMVSS 120 Wheel (Rear) Information Label



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

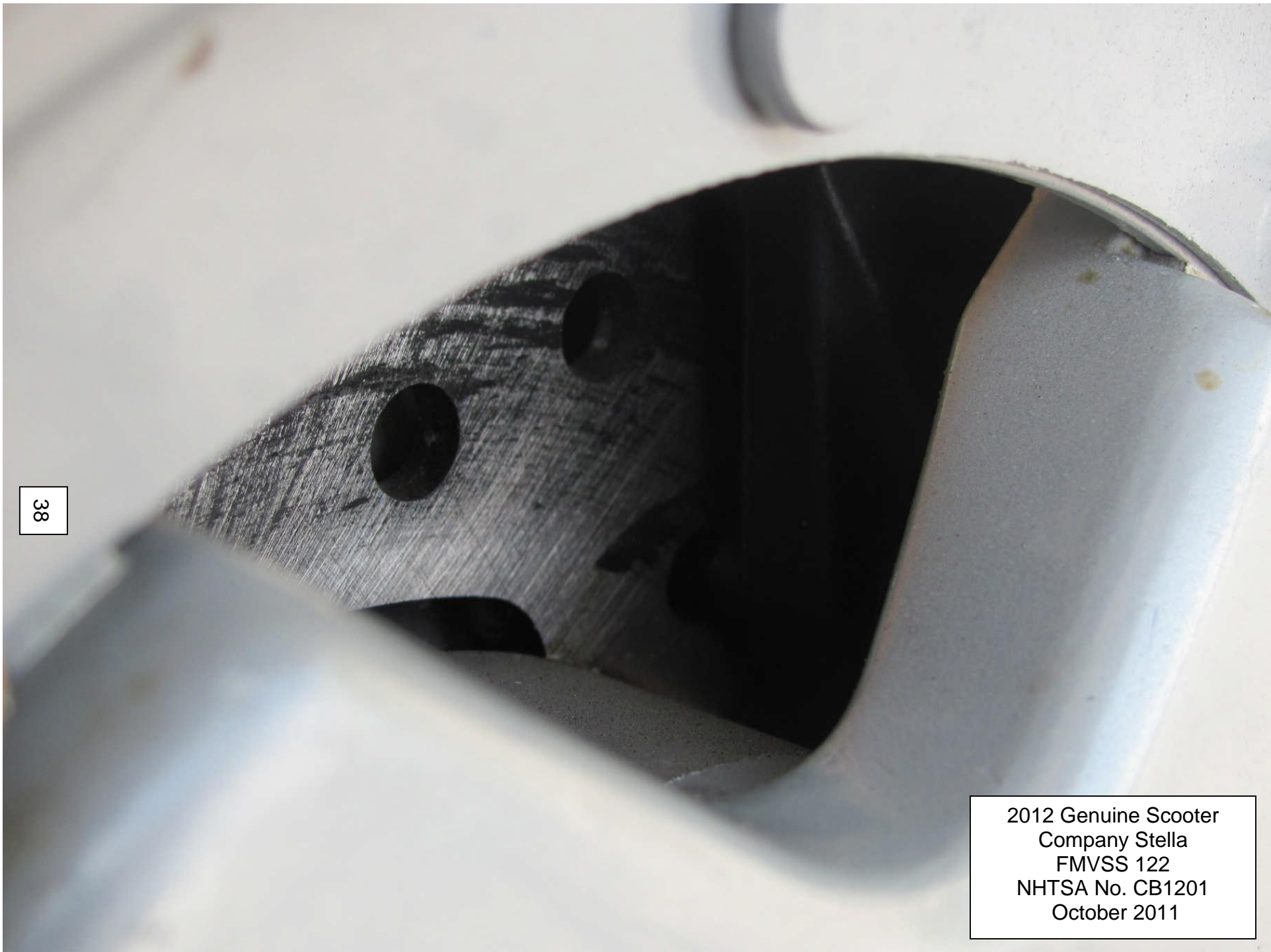
FMVSS 120 Tire (Rear) Information Label



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Front Master Cylinder Warning Label (Reservoir Cover)



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Visual Inspection of Front Brake Lining Thickness



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Visual Inspection of Rear Brake Lining Thickness

**20060110 / 2205
Vehicle # CB1201**

Front

INBOARD LINING

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OUTBOARD LINING



2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Pre-Test Front Pad Condition (Inner and Outer)

20060110 / 2205
Vehicle # CB1201

REAR

LEADING LINING

TRAILING LINING



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Pre-Test Rear Lining Condition (Leading and Trailing)



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

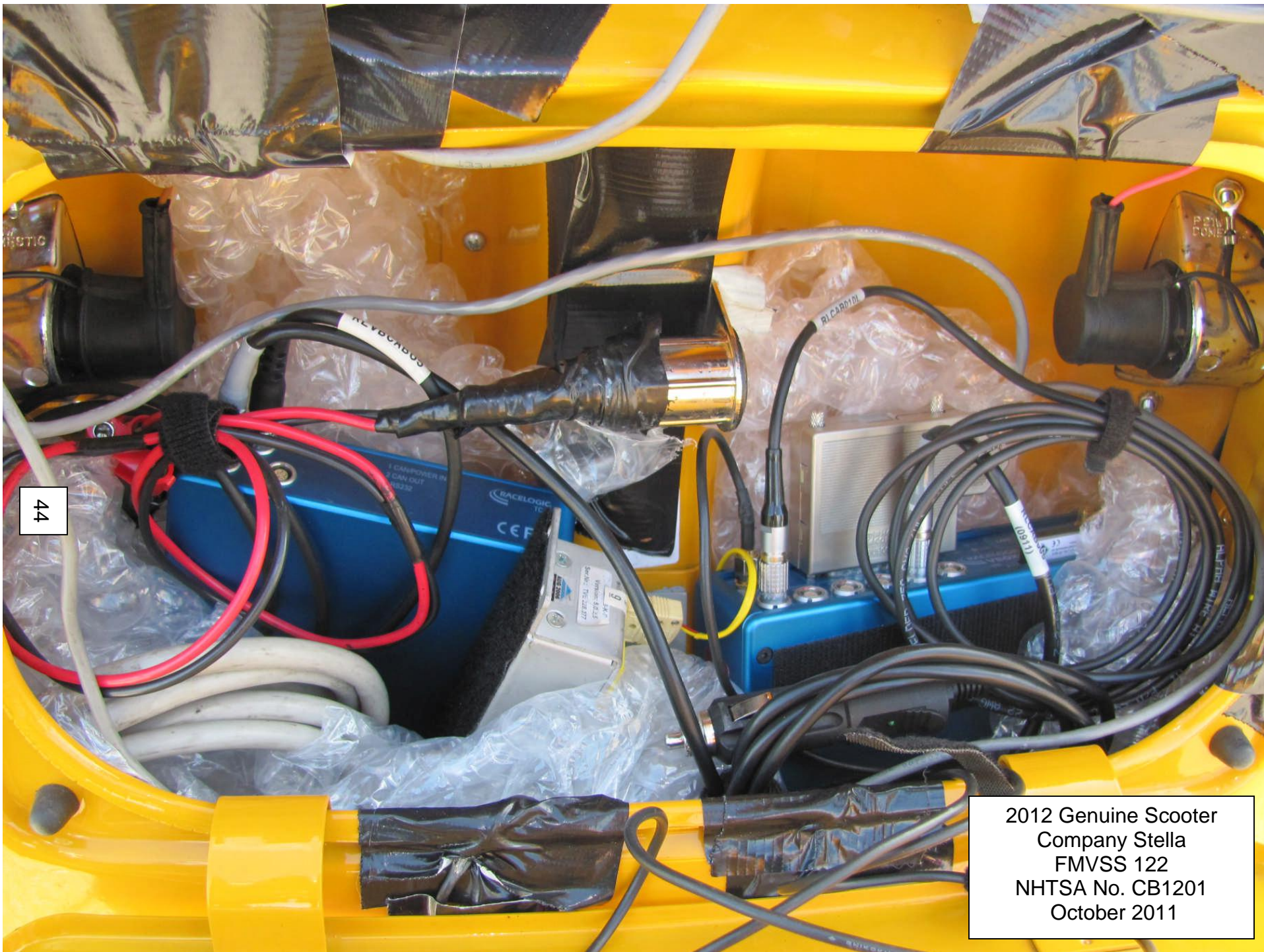
Left Front 3/4 View - Instrumented



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Right Rear 3/4 View - Instrumented



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Instrumentation Installed on Vehicle



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Ballast Installed on Vehicle



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Front Brake Lever Strain Gauge



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Rear Brake Pedal Transducer

**20060110 / 2205
Vehicle # CB1201**

Front

INBOARD LINING

OUTBOARD LINING

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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Condition, Front Brake Pads – Post Test

20060110 / 2205
Vehicle # CB1201

Rear

TOP LINING

BOTTOM LINING



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2012 Genuine Scooter
Company Stella
FMVSS 122
NHTSA No. CB1201
October 2011

Condition, Rear Brake Linings – Post Test

APPENDIX D

**CONTRACTOR'S COMMENTS
PROCEDURE MODIFICATION (IF APPLICABLE)
TEST FACILITY**

CONTRACTOR'S COMMENTS

Upon delivery of the vehicle, the battery did not maintain the required amperage to start the vehicle with the onboard electric starter. The kick starter malfunctioned and could not successfully start the engine. Therefore, distilled water was added to the battery cells and the battery was charged. After the distilled water was added, the battery maintained the charge and was able to start with the electric starter motor.

On 9/27/11, during the 30 mph 1st Effectiveness stops, the speedometer and odometer stopped working at 29.7 miles.

During the testing, the adhesive from the front Stella emblem came off, which made the badge fall off.

For the 45 mph 2nd Effectiveness Test, the shortest corrected stopping distance achieved was 96.9 feet, while the passing requirement is 95 feet. The COTR was notified and instructed TRC Inc. to continue testing since the amount of non-compliance was marginal.

For the 30 mph Final Effectiveness Test, the shortest corrected stopping distance achieved was 44.1 feet, while the passing requirement is 43 feet. TRC Inc. was instructed by the COTR to continue testing since the amount of non-compliance was marginal. For the 45 mph Final Effectiveness Test, 6 stops were performed with the shortest corrected stopping distance of 97.8 feet (requirement is 95 feet). The COTR instructed TRC Inc. to perform 3 additional stops, which resulted in a passing stop of 93.6 feet.

For both the 45 mph 2nd Effectiveness test and the 30 mph Final Effectiveness testing, the stopping distances are marginally longer than specified. However, under different test variables such as ambient environmental conditions, rider ability and brake application rates, surface friction, etc., along with additional attempts, it appears likely that the vehicle will meet the required stopping distances.

TRC SKID PAD

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

The overall dimensions of the pad are 9,000 feet by 84 feet with loops on the north and south ends. Both turnaround loops have a 309-foot radius and are 16 feet wide with a 25 percent super elevation. The loops can accommodate speeds of 45 mph with zero side force and 60 mph with 0.5g lateral acceleration. The acceleration/deceleration lanes at each end are 3,280 feet in length.

The Skid Pad is constructed of Portland cement and contains a constant grade of 0.5%. The load capacity of the skid pad is 36,000 pounds maximum single axle weight and 48,000 pounds maximum tandem axle weight.

Varying surface textures in the main test area are ideal for testing tire and/or brake system performance on different surfaces as characterized by "skid numbers." The skid pad is also used for acceleration studies, aerodynamics, rolling resistance, noise testing, and top speed determination.

APPENDIX E

NOTICE OF POSSIBLE NON-COMPLIANCE

This vehicle (CB1201) appears to meet the requirements of the FMVSS 122 standard.