mga research corporation

Vehicle Equipment Safety Commission
Regulation V-5
Weight Carrying Hitch Tests

05-16 Nissan Frontier Rear Bumper
Reflexxion Part Number: 406951
Parts Link Number: NI1103115
Class 2 Rating

Test Date: November 8, 2007

Report Date: November 16, 2007

MGA Ref. No.: C08Q3-003.8

MGA Test #s: Q07675 - Q07679

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SIGNATURE APPROVAL PAGE

Procedure: MGA Force vs. Deflection dated May 8, 2006
Vehicle Equipment Safety Commission V-5 dated July 1977
SAE J684 dated June 2004

Total Pages: 27

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The results presented in this report relate only to the specified test items.

1.0 Test Description

This report documents the results of five quasi static load tests conducted to the Vehicle Equipment Safety Commission Regulation V-5 dated July 1977 on a 05-07 Nissan Frontier Rear Bumper. Class 2 test loads were applied to the test article.

The bumpers were rigidly mounted to a test fixture using the provided mounting assemblies. All test loads were applied to the center of the ball at a rate less than 150 lbs per second, and held for a minimum of 5 seconds. The angle of the ball from vertical, relative to its original axis, was measured before and after each load application.

The leftward and rightward transverse tests were performed using the same setup. The leftward transverse load was applied by pushing with the cylinder. The rightward transverse load was applied by pulling with the cylinder. Due to the geometry of the step bumper, the cylinder was positioned 20 degrees from true lateral. The applied test load was proportionally increased above the required minimum load in order to compensate for the 20 degree offset.

Per the V-5 regulation, each hitch shall be capable of withstanding the forces applied, without causing permanent deformation of the ball platform, such that the final position of the ball axis shall not depart more than five degrees from its original, nominally vertical, position.

2.0 Data Summary

MINIMUM TEST LOADS FOR CLASS 2 RATING

Test	Description	Horizontal Load [lbs]	Vertical Load [lbs]
A	Downward vertical force with compressive longitudinal force.	2125	2125
B	Tensile longitudinal force with downward vertical force.	2335	525
C	Compression longitudinal force with downward vertical force.	2335	525
D	Left transverse force.	1200	
E	Right transverse force.	1200	

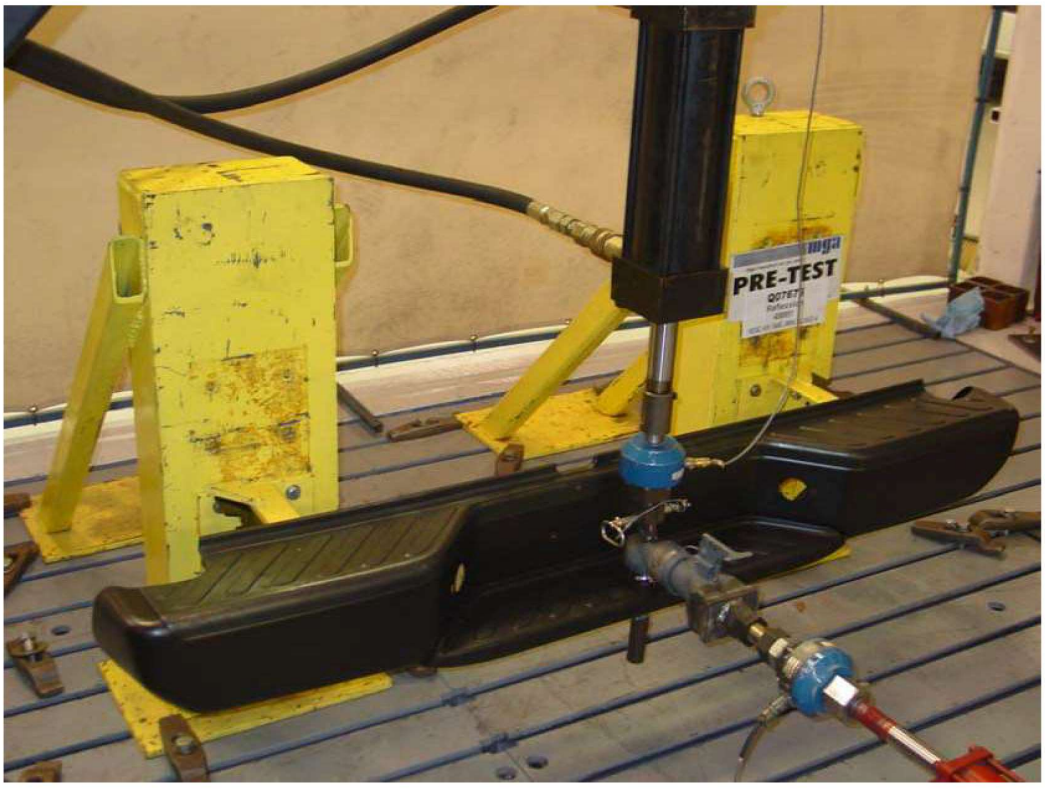
TEST DATA FOR 05-07 NISSAN FRONTIER REAR BUMPER

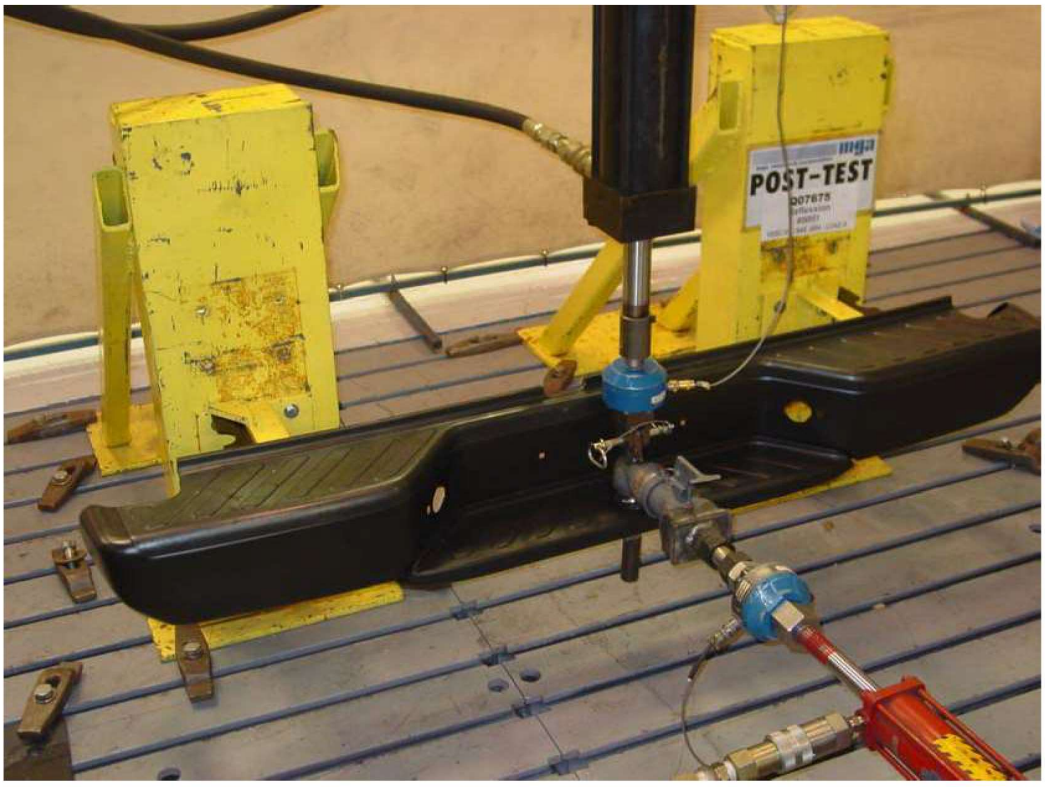
		MAXIMUM LOAD		BALL AXIS MOVEMENT*	
Test	MGA Test #	Horizontal Load [lbs]	Vertical Load [lbs]	Pre-Test [deg]	Post-Test [deg]
A	Q07675	2133.98	2131.4	0.0º	0.3º
B	Q07676	2341.89	536.3	0.3º	1.2º
C	Q07677	2343.87	535.3	1.2º	0.6º
D	Q07678	1224.53**		0.6º	0.7º
E	Q07679	1231.64**		0.7º	0.7º
				NET MOVEMENT	0.7º

* All values listed are relative to the original, nominally vertical position (Pre-Test, Load A).

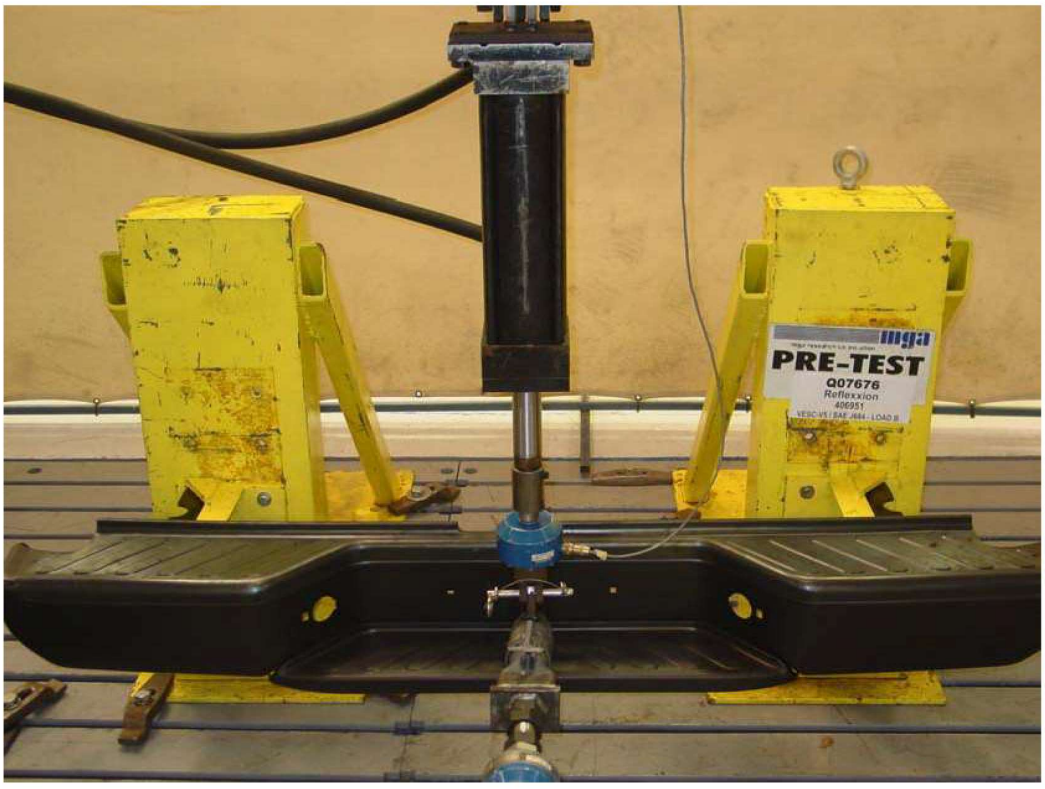
** This is the actual transverse load based upon the test setup, calculated from the equation: ACTUAL TRANSVERSE LOAD = APPLIED LOAD * COS (20º)

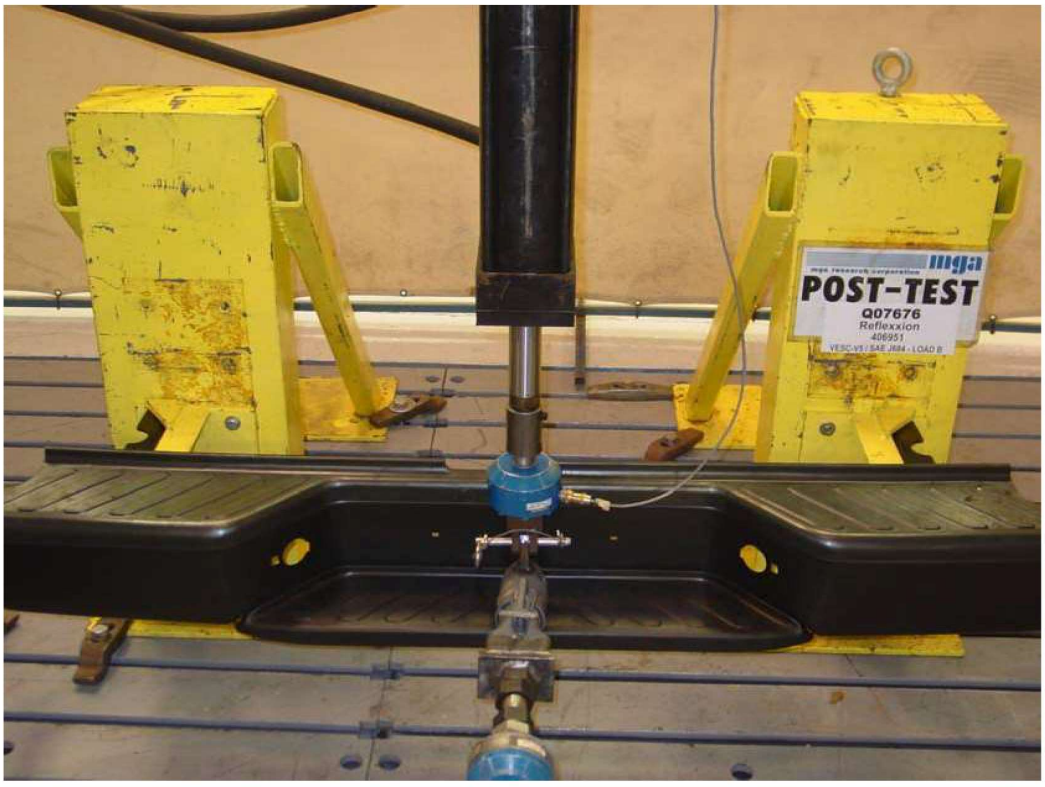
Test Article: 406951 V-5 Hitch Test Load A
Test Lab: MGA Wisconsin Operations Test Date: 11/8/2007



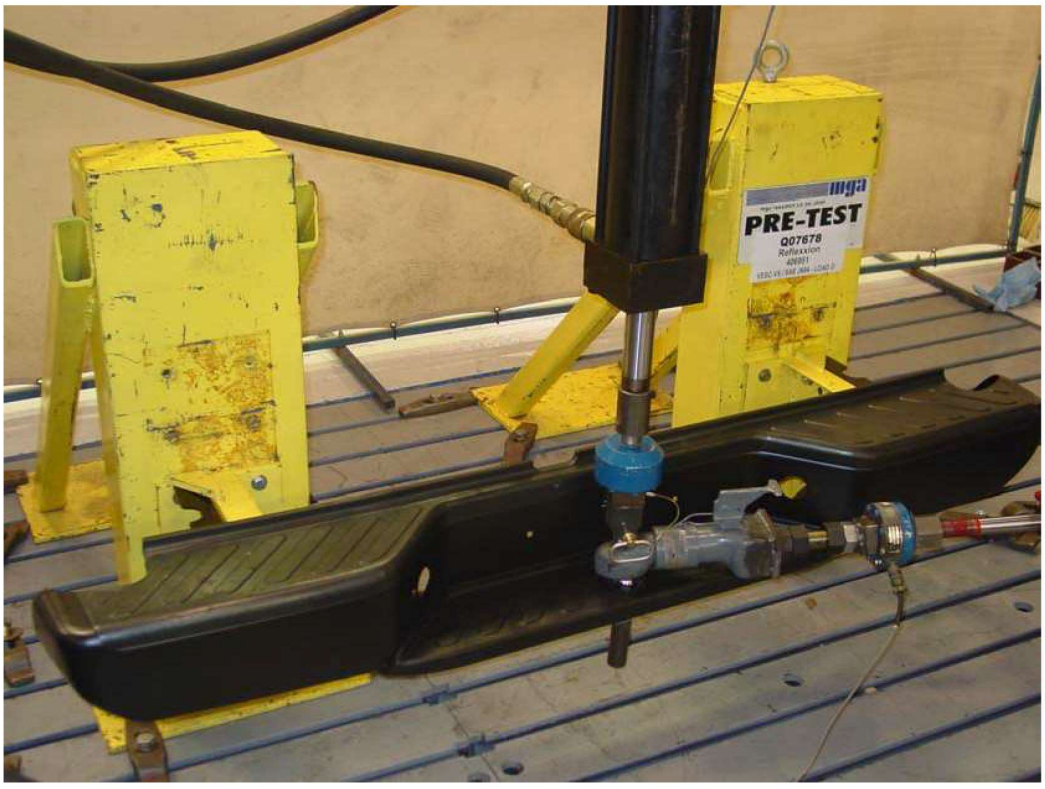


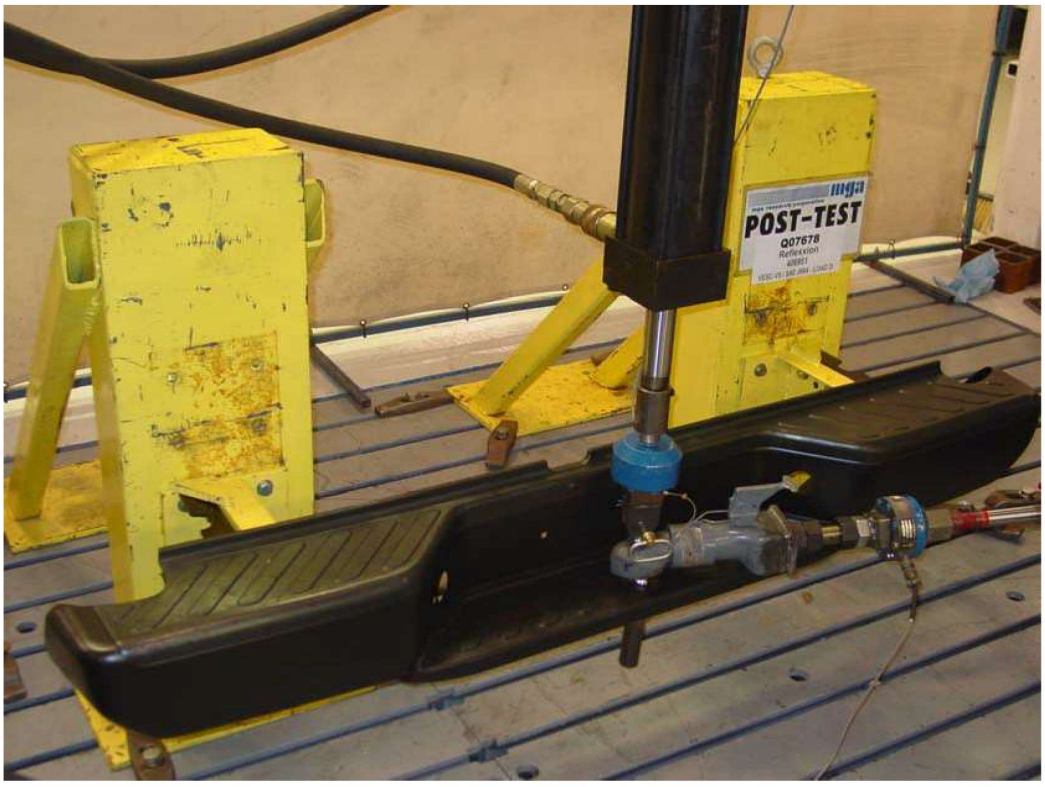
Test Article: 406951 V-5 Hitch Test Load B
Test Lab: MGA Wisconsin Operations Test Date: 11/8/2007





Test Article: 406951 V-5 Hitch Test Load D
Test Lab: MGA Wisconsin Operations Test Date: 11/8/2007





Test Article: 406951 V-5 Hitch Test Load D
Test Lab: MGA Wisconsin Operations Test Date: 11/8/2007