



STEPBUMPERS.....

EXAMINATION OF FEDERAL STANDARDS AND GUIDELINES IN TESTING OF NON-STRUCTURAL PARTS





✓ **TRUSTED** ✓ **TESTED** ✓ **CERTIFIED**
CLASS AAA SAFETY PARTS



Functional Performance Measurement By Crashworthiness & Occupant Safety Experts

STATEMENT: The content of this document is copyrighted and proprietary to Diamond Standard Parts, LLC and may not be used or republished without our written consent. The documentation, certified test results and crashworthiness expert validations are in basis of fact, truthfully and faithfully presented. The focus centers on Stepbumpers (a non-structural safety category) and the mandatory Vehicle Equipment Safety Commission (VESC) Regulation V-5 testing all manufacturers must pass and the extensive testing conducted by Diamond Standard to the V-5 test limits and to extreme V-5 limits. Comparative testing of full stepbumper assemblies is between Diamond Standard Brand Alternative Parts, offshore competition, and OEM.

Diamond Standard Companies, since 2002 have invested extensively in dynamic, destructive, quasi-static and VESC V-5 towability third party testing by crashworthiness experts of OEM, Diamond Standard, and competitive parts. To date, tests covering more than 3,000 parts have been conducted across all Diamond Standard part categories at a cost in excess of \$2,000,000 to provide an assurance of part functional performance and advance a state-of-the-art industry understanding of quality and its affect on part performance. To our knowledge, Diamond Standard is the **only manufacturer to conduct such extensive testing** by crashworthiness experts and willing to publish those test results for total transparency.

MGA Design Research of Burlington, Wisconsin, was chosen as the third party test facility due to its 34 year history of providing companies such as General Motors, Ford, Chrysler, Hyundai, Toyota and others, with dynamic IIHS protocol and crash evaluation testing. Just as the testing and certification of comparative part performance is impressive as it is expansive, Diamond Standard has used several prominent experts from the crash industry for purposes of designing and validating the third party testing results certified by MGA as an added assurance on the functional performance of our branded parts across all part categories.



James R. Hackney – Widely considered by the industry as the “Father of Safety” and former Director of Crashworthiness at NHTSA. Co-Author of the paper “New Car Assessment – Five Star Crash Rating – Vehicle Safety Performance Characteristics”. Jim was critical in designing Diamond Standard testing protocols and evaluating results just as he was instrumental in a majority of the safety devices now standard on vehicles throughout the world.



Dr. David Breed – The recipient of the H. H. Bliss Award as one of the inventors of the Air Bag & NHTSA Award for Safety Engineering, David’s distinguished career spanning 40 years includes numerous SAE publications and approximately 200 patents in the automotive products field involving air bags and occupant sensing systems for smart Air Bag characteristics. Chairman of both Automotive Technologies International and Intelligent Technologies International of Boonton, New Jersey, David has been critical in shedding light on the industry accepted fixed barrier testing, crash pulse and occupant safety affect of comparative bumper systems and subject of this document.



George W. Neat – Former NHTSA expert and Chief of the Vehicle Crashworthiness Division, U. S. Department of Transportation/Volpe National Transportation Systems Center. George’s career with DOT spanned 35 years in transportation safety and technology applicable to the automotive industry, including innovative airbag expansion devices and crash dummy instrumentation.



Rudy H. Arendt – Former VP and co-founder of MGA Research Corporation and recognized worldwide as an expert in designing vehicle crashworthiness and automotive safety testing.

"One Quality Manufacturing" From Diamond Standard One Brand - One Vision - One Mission



A Letter From Michael J. O'Neal, President of Diamond Standard Parts, LLC

The Diamond Standard Brand culture of quality is a commitment to the industry through "ONE QUALITY MANUFACTURING" that separates our manufacturing promise and delivery from ALL other manufacturers of non-structural and structural parts for the North American market. One part quality and materials, no dual line substandard parts for other markets, to meet the promise we envisioned when we created the brand seven years ago.

Diamond Standard Brand parts are third party comparatively tested and are designed, manufactured, and sold to perform in the same manner in a collision as the parts that came on the vehicle when new or any service parts made or sold by the OEM to replace them. We will not manufacture parts that do not meet this criteria. Comparative parts testing by MGA Design Research and respected certification bodies are part of an extensive campaign of full accountability, repeatability and sustainability of the brand on all quality measures including equivalent functional performance versus the OEM service parts they replace.

You can't create the system that produces parts that perform in the same way as the vehicle's original collision management system without developing a "Culture of One Quality Manufacturing" in your team platform. Further, written sustainable policy goals that spell out what this means must be inherent in the manufacturing guide followed by all employees. Everyone must understand that there is no exception to the rule, no bending of the plan and no leniency for any manner of fraudulent reporting and submissions by company or third party companies.

Diamond Standard Brand parts are certified by NSF, MGA and CAPA where applicable by product line. We are proud of the achievement of our "One Quality" front steel bumpers having been certified in providing equivalent functional performance versus OEM by MGA and on all dimensions of quality by NSF and CAPA. One part quality.....three separate certifications.

Diamond Standard's ongoing leadership in raising industry alternative quality parts standards and certifying of alternative non-structural stepbumper full assemblies and structural front bumpers, brackets, reinforcement bars, and absorbers by NSF and CAPA has created opportunities for other manufacturers to certify their parts of this type. The fact below the surface is that some of these manufacturers are the very companies that produce, manufacture and/or consolidate the same substandard parts that create the need for certification in the first place. Read this again....

How can this fact be ignored? The manufacture, existence and installation of substandard parts continues today based on price, not quality, driven models. Would it be permissible for a company to knowingly make a toy with lead based paint based on a price model to satisfy a segment for one market and have the same toy certified for the same market based on the correct safe paint used on the same part? In best cases a generic model of a product or private labeled product mimics in a similar manner the branded product that is by it's design or material content more expensive. However, low cost and cheaper non-performing non-structural and structural parts in collision management systems should not be utilized and the manufacturers involved in the manufacture, sale or supply of them must be prohibited from certifying ANY parts as long as they are the source of and contributors to this problem.

The benefits to the industry adopting ZERO tolerance for a manufacturing group to attain certification of structural parts without a total commitment to the quality and integrity of structural parts for sale in the US and Canada are immense and numerous. The industry could benefit immediately by eliminating the possibility of part substitution of a substandard part for a certified part, eliminating the need and high cost of dual inventories at the distributor level and help reduce the number of collision totals which continue to run chronically high.

I call upon the industry manufacturers to join Diamond Standard in a culture of quality parts commitment for the North American market. I call upon those people who certify products to start their process at the company level and demand that a company can't be involved with certification of structural parts until they abandon the dual manufacturing, private label sourcing, sale or consolidation of non-certifiable structural parts.

A handwritten signature in blue ink, appearing to read 'Michael J. O'Neal'.

DIAMOND STANDARD STEPBUMPER COMPONENTS AND BACKGROUND

CERTIFIED DIAMOND STANDARD VESC V-5 RATED STEPBUMPERS AND FACE PLATES PRECISION ENGINEERED TO FIT

Part Description: Reflexxion manufactured Diamond Standard Brand full assembly stepbumper systems and stepbumper face bars come ready to mount and meet all State and Federal Safety Requirements. Those include permanent identification on the part, like kind and quality fit, form, finish in terms of quality including functionality, performance and safety. Depending on the application chosen, Diamond Standard Brand stepbumper full assembly models include the face bar, hitch pull bar, top and face pads, mounting brackets, support braces and connecting parts, license lamps, and full bolt assembly packets necessary for the full replacement.

CYCLE TIME REDUCTION CAN LEAD TO FEWER RENTAL CAR DAYS

Delivery as a full assembly ready to mount reduces R & R labor time frames and cycle times compared to ordering and assembling all the individual parts required with OEM stepbumpers which are most often not offered as a full assembly. According to SCRS, State Farm has made reference in the past to reducing car rental by one day would decrease the cost of their insured repairs by \$43,000,000. This translates to over \$200,000,000 savings for the top 25 carriers with a one day reduction in rental car costs. The availability of Diamond Standard Brand full stepbumper assemblies available nationwide within 24 – 48 hours can lead to a reduction in cycle time days versus OEM applications which are not available as full assemblies. For the collision center, ready to mount full assemblies versus the costly and time consuming OEM assembly of individual parts, addresses Key Performance Indicators (KPIs) of increasing productivity, lowering R & R costs, improving cycle time and reducing the number of separate part deliveries and inspections of those assembly parts.

334 PARTS & MULTI-PURPOSE VEHICLE APPLICATIONS



SALES, CLAIM HISTORY

For the 15 year period 1997 – 2011, Reflexxion Automotive sold **1,430,718** stepbumper full assemblies and face bars experiencing **ZERO** claims for a structural part failure.

NON-STRUCTURAL STEPBUMPER REGULATIONS AND TESTING REQUIREMENTS



NHTSA issued the following statement regarding Multi-Purpose Vehicle Stepbumpers in the agency's issuance of "Bumper Q & A's."

#4. Are all vehicle classes required to meet the Federal bumper standard?

No. The Federal bumper standard does not apply to vehicles other than passenger cars (i.e., sport utility vehicles (SUVs), minivans, or pickup trucks). The agency has chosen not to regulate bumper performance or elevation for these vehicle classes because of the potential compromise to the vehicle utility in operating on loading ramps and off road situations.

**INSURANCE INSTITUTE
FOR HIGHWAY SAFETY**

News Release | July 1, 2008

Federal bumper rules should apply to SUVs, pickups, vans, and cars alike

Car bumper rules don't apply to light trucks. In fact, it's still legal to sell these vehicles without any bumpers at all. Federal regulators' longstanding thinking is that requiring light trucks to have bumpers would compromise off-road navigation and make it hard to use these vehicles at loading ramps. The Institute counters that putting damage-resistant bumpers on light trucks needn't compromise utility.

Mike O'Neal, President of Diamond Standard Parts, LLC makes the further statement..."After many consultations with industry experts, we aren't aware of any Federal regulations which involve rear bumpers on light trucks".

Purpose & Policy Regarding VESC Regulation V-5 Testing

Diamond Standard's patent belief is that individual part criteria established by OEM in its original parts has created the standard range to which all non-structural and structural parts in collision must be held. A Diamond Standard multi-purpose stepbumper, therefore, must achieve the same standard of functional performance to ensure the performance of the stepbumper system has been properly and effectively restored. In absence of a Federal Standard governing stepbumpers such as the 49 CFR 581 bumper standard for passenger cars, the only Federal requirement of the manufacturer is to pass the Vehicle Equipment Safety Commissions performance standard established in VESC Regulation V-5 testing. No comparative testing versus OEM assemblies is required as the mandated test is pass or fail.

VESC Minimum Requirements for Vehicle Connecting Devices and Towing Methods

1. PURPOSE 1.1 The purpose of this regulation V-5 is to provide the states with a uniform minimum requirement for motor vehicle connecting devices and towing methods. It is designed to increase highway safety by reducing towing and hitch related accidents.

2. SCOPE 2.1 The scope of this regulation is directed to the regulation of trailer hitches and towing devices, towing methods, testing methods, certification requirements, installation compliance and other requirements as herein defined in this regulation.

8. IDENTIFICATION-INSTALLATION-MAINTENANCE-COMPLIANCE 8.3

Each manufacturer shall be responsible for the performance ability of the device(s) or system which he manufactures for use by a prospective owner, lessee, or borrower. Each manufacturer, packager, or seller described shall be known as the "Responsible Manufacturer".

9. CERTIFICATION AND/OR TESTING 9.1 Each responsible manufacturer shall certify to the Commissioner or to an Equipment Approval Program or agency designated by the Commission, that each of his devices or systems, when installed in accordance with his published instructions, complies with and meets the requirement of this regulation.

Meeting the VESC V-5 regulation for towability determines each hitch capable of withstanding the tow forces applied without causing permanent deformation of the ball platform which in final position the ball must not depart more than the allowable 5 degrees from it's nominal vertical beginning position. Testing and Certification of all Diamond Standard full assembly stepbumper systems' performance in meeting the VESC V-5 regulation is conducted at MGA Design Research (www.mgaresearch.com) a requirement of NSF's Automotive Parts Certification Program.

MGA TESTING CREDENTIALS



Purpose & Policy

The individual part criteria established by OEM in its original parts created the standard to which all parts in collision must be held. It is mandatory a Diamond Standard part be certified as providing the same standard of functional performance as OEM to ensure the safety of the vehicle has been properly and completely restored. For full stepbumper assemblies with pull bars it is mandatory the part be tested and certified as passing the VESC V-5 regulation dimensions of quality by MGA Design Research, Burlington, WI.

Scope of Certification

Diamond Standard group has engaged the services of MGA since 2002 to provide extensive destructive, dynamic comparative performance testing to OEM service parts within a credible, independent third party system of testing by industry crash experts. Tests covering one hundred and twenty-five (125) Diamond Standard full assembly stepbumpers and their vehicle applications have been conducted and the performance certified as meeting or exceeding the VESC V-5 towability standard by MGA, a requirement of NSF's Automotive Parts Certification Program.

About MGA Testing & Certification

MGA Design Research (www.mgaresearch.com) is an accredited, recognized worldwide leading independent provider of engineering consulting, automotive testing technologies and state-of-the-art facilities and staff of test experts. MGA's global footprint offers the automotive industry a comprehensive array of products and services related to consulting, testing and government compliance issues. The MGA client base includes all original equipment car manufacturers, the aerospace industry, IIHS and the U.S. military providing services for virtually every global vehicle regulation from full-vehicle level to component-level certification of interior and exterior components.

Diamond Standard - MGA Test Log - V-5

<u>Diamond Standard Part #</u>	<u>Replacement Part for</u>	<u>Test Date</u>	<u>MGA Test Reference #</u>	<u>Class</u>
GM1103147DS	07-12 Silverado/Sierra w/o Sensor	4/23/2008	C08Q3-003.25	3
GM1103122DS	99-06 Silverado/Sierra (2007 Classic)	10/6/2005	C085C3-012.5	3
GM1103146DS	04-08 Colorado/Canyon	1/3/2006 1/17/2008	C0613-001.2 C08Q3-003.22	1
FO1103167DS	09-10 F-150 SS w/o Tow Package	9/17/2010	C10Q3-005.38	3
FO1103145DS	06-08 F-150 Flareside Pull Bar Style w/o sensor	11/8/2007	C08Q3.003.12	3
FO1103130DS	04-05 F-150 Flareside Pull Bar Style w/o sensor	11/7/2007	C08Q3-003.4	3
FO1103101DS	97-03 F-150/250 LD Styleside	10/4/2005	C05C3-012.2	3
NI1103113DS	04-07 Armada w/Sensor Holes	11/8/2007	C08Q3-003.6	3
TO1103116DS	07-09 Tundra	1/9/2009	C09Q3-005.2	3

(Example of one of the pages from the Diamond Standard VESC V-5 Test Log)

CERTIFIED VESC V-5 REGULATION COMPLIANT TOWING REQUIREMENT & PERFORMANCE

Diamond Standard and its manufacturing group of structural and non-structural parts with 32+ years of automotive structural part manufacturing expertise, brings a quality standard unrivaled in alternative parts. Diamond Standard Brand stepbumpers are designed to exacting engineering standards to produce the criteria of safety, crashworthiness and towability, demanded by best practice shops, insurers and consumers.

Diamond Standard part protocols and standards are based on the original part. Certified functional performance comparability to the system which came on the original vehicle is a requirement of a full assembly stepbumper system before it becomes approved as a Diamond Standard Brand part.

VESC Regulation V-5 testing is utilized across all Diamond Standard alternative full assembly stepbumper systems to determine each hitch shall be capable of withstanding the forces applied. The test protocol is followed by rigidly mounting the bumpers to a test fixture. All test loads are applied above the minimum test loads for the class rating and the angle of the ball from vertical relative to its original axis is measured before and after each of the quasi-static load tests. Test "A" applies equal load forces horizontally and vertically simultaneously equaling 5,700 lbs. Tests "B & C" measure the impact of attempting to pull off the ball with increased horizontal load factors while maintaining downward pressure with loads of at least 3,471 lbs.

TEST DATA FOR 00-06 TOYOTA TUNDRA REAR BUMPER

Test	MGA Test #	MAXIMUM LOAD		BALL AXIS MOVEMENT*	
		Horizontal Load [lbs]	Vertical Load [lbs]	Pre-Test [deg]	Post-Test [deg]
A	Q07670	2845.29	2855.2	0.0°	0.4°
B	Q07671	2691.87	779.3	0.4°	0.1°
C	Q07672	2696.77	779.6	0.1°	0.5°
NET MOVEMENT					0.4°

A VESC V-5 test of a 2000 – 2006 Toyota Tundra stepbumper Class 3 test loads were applied above the minimum load requirements to the test article. As can be seen in the test result performance chart documentation, per the V-5 regulation, the hitch was capable of withstanding the forces applied registering a net ball axis movement of 0.4 degrees which exceeds the standard's performance.



The post damage photo documentation for this VESC V-5 test of a 1994 – 2001 Dodge Ram stepbumper to the left results in a net tow ball axis movement of 1.7 degrees as compared to the allowable Regulation movement of 5 degrees from its original, nominally vertical position.

TEST DATA FOR 04-07 FORD F150 FLARE-SIDE REAR BUMPER

Test	MGA Test #	MAXIMUM LOAD		BALL AXIS MOVEMENT*	
		Horizontal Load [lbs]	Vertical Load [lbs]	Pre-Test [deg]	Post-Test [deg]
A	Q07655	2845.78	2858.3	0.0°	0.8°
B	Q07656	2684.53	779.6	0.8°	1.2°
C	Q07657	2698.93	779.2	1.2°	1.3°
NET MOVEMENT					1.2°

The performance chart documentation (above) for this VESC V-5 Regulation test of a 2004 – 2007 Ford Flareside stepbumper registers a net tow ball axis movement of 1.2 degrees confirming the hitch was capable of withstanding the towability forces significantly better than the federal standard requirement performance.

EXTREME TEST TO TWICE THE VESC V-5 REGULATION

LOAD CASE-A (CHROME)



LOAD CASE-E (CHROME)



LOAD CASE-E (PAINTED)



MGA Reference #C12Q3-007.4 Test Results and Description

The MGA report indicated above documents the certified results of three (3) quasi-static load tests using VESC V-5 standard methodology on three (3) new Diamond Standard rear stepbumper assemblies for the 1988 – 1998 Chevrolet Silverado. The applied extreme loads were more than twice the minimum loads defined in the VESC V-5 regulation and were conducted on the two (2) most extreme VESC V-5 test cells simulating hard braking and right traverse force of a sideways jackknife trailer position. The tests were conducted to gain understanding and clarity of part performance under extreme towing conditions where loaded trailer weights exceed the manufacturer’s stated Gross Trailer Weight (GTW).

Test #	Bumper	Load Case	Min. Horizontal Load (lbs)	Target Horizontal Load (lbs)	Min. Vertical Load (lbs)	Target Horizontal Load (lbs)
Q12115	Chrome	A	2830	6000	2830	3000
Q12107	Painted	E	1500	3000		
Q12108	Chrome	E	1500	3000		

Test #	Maximum Load		Ball Axis Movement		
	Horizontal Load (lbs)	Vertical Load (lbs)	Pre-Test (deg)	Post-Test (deg)	Net Movement
Q12115	6626	3183	3.3	1.2	2.1
Q12107	3207		3.9	3.7	0.2
Q12108	3205		1.2	1.1	0.1

One chrome stepbumper was subjected to the hard brake simulation test applying a downward vertical force more than twice the VESC V-5 load requirement with a compressive longitudinal force significantly above the VESC V-5 requirement. A chrome and painted stepbumper were subjected to the right transverse jackknife simulation test to establish there is no difference in performance by coating. While there was deformation as indicated by the ball axis movement, the ball and tongue coupling remained intact in each test.

July 9, 2012

Extreme Testing Review and Statement from George W. Neat Regarding Towing Device Regulations for Multipurpose Vehicles, e.g., SUVs, Pickups and Light Trucks

The purpose of this statement is to point out the VESC minimum performance requirements for performance of multipurpose vehicle stepbumper systems and review testing conducted to these minimum requirements and modified extreme levels.

VESC V-5, "Minimum Requirements for Motor Vehicle Connecting Devices and Towing Methods," which was adopted in July 1968 and most recently revised in July 1977, provides certification and testing procedures to evaluate the ability of a trailer hitch to withstand forces consistent with the hitch rating in terms of Maximum Gross Trailer Weight (MGTW). VESC V-5 includes a description of a test fixture. Five different tests are defined in Table 2 of VESC V-5:

- A – A downward vertical force combined with a compressive longitudinal force
- B – A tensile longitudinal force combined with a downward vertical force
- C – A compressive longitudinal force combined with a downward vertical force
- D – A left transverse force
- E – A right transverse force

On October 6, 2005, MGA Research Corporation in Burlington Wisconsin conducted Weight Carrying Hitch Tests using the procedures specified in VESC-5. The five tests defined in Table 2 of VESC-5 were conducted using a hitch attached to a Diamond Standard 88-98 Chevrolet/GMC Fleetside Rear Bumper. The results of these tests were documented in MGA report C05C3-012.4 dated October 6, 2005. Applying the formula defined in Table 2 of VESC-5 for a Maximum Gross Trailer Weight of 5,000 pounds, the minimum peak horizontal load was 2,830 pounds and the minimum peak vertical load was also 2,830 pounds for Test-A. The actual peak horizontal load of 2,906 pounds and the peak vertical load of 2,942 pounds both exceeded these minimum requirements. Similarly, the required peak horizontal load for Test-E in the MGA tests was 1,620 pounds as compared to the required value of 1,500 pounds.

Paraphrasing VESC-5, each hitch, when tested as defined in Table 2, 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. For the tests discussed above, the change in angle for Test A was 1.7 degrees and the change for Test E was 0.2 degrees, both well within the five degree specified limit. The changes in angle for tests B, C, and D were 1.5, 0.1, and 0.2 degrees respectively. Therefore, the hitch being tested exceeded the requirements as defined by VESC-5.

In a report C12Q3-007.4, dated May 5, 2012, MGA Research Corporation reported the results of three Weight Carrying Hitch Tests conducted on a hitch attached to a Diamond Standard 88-98 Chevrolet Silverado Rear Step Bumper. The hitch being tested had a Maximum Gross Trailer Weight rating of 5,000 pounds, which is the same as the hitch tested in 2005. One test was conducted using a modified version of the specifications for Test-A and two tests were conducted using a modified version of the specifications for Test-E. For Test A, a horizontal load of 6,626 pounds and a vertical load of 3,183 pounds were used, which exceeded loads of 2,830 pounds for both horizontal and vertical loads as specified according to Table 2 in VESC-5. Loads for Test E were 3,207 pounds and 3205 pounds compared to the requirement to exceed 1,500 pounds as defined by VESC-5. The change in angle for Test-A was 2.1 degrees; the changes in angle for the two Test-E samples were 0.2 degrees and 0.1 degrees.

CONCLUSION

The 2012 Diamond Standard tests demonstrate that the minimum conditions as defined by VESC-5 have been met and exceeded in a more meaningful test of load carrying devices. When the horizontal loads were more than doubled, the angular shift for Test-E was essentially the same as for the specified loads. For Test-A, the net change in angle of 2.1 degrees is only slightly larger than the 1.7 degrees resulting from the specified force used in the 2005 tests, and less than half the limiting value of five degrees as specified in VESC-5. Additional testing is recommended in order to develop a meaningful test specification. I believe that a federal regulation requiring all vehicle models with trailer hitches be tested with a procedure of the type discussed above. This is particularly important for multipurpose vehicles.

George W. Neat – Former NHTSA expert and Chief of the Vehicle Crashworthiness Division, U. S. Department of Transportation/Volpe National Transportation Systems Center.

DIAMOND STANDARD COMPARATIVE TESTING LEADS TO OEM ADVISORY

Diamond Standard issued a bumper system advisory in September, 2011 stating that replacement of the original 1995 – 2004 Toyota Tacoma rear stepbumper assembly with the assembly made and private labeled under at least three additional names for sale in the USA may lead to permanent damage to the face bar in normal towing operations. The advisory was reinforced by Toyota also issuing an advisory cautioning the industry on face bar deformation on the Aplonex brand.

1995-2004 TOYOTA TACOMA

9999 TOYOTA MOTOR CORPORATION TOYOTA TACOMA S10 APPROPRIATE HANDLING- LETTER TO THE SECRETARY FROM RE TOW BUMPER SYSTEM FAILURE *TOW THE ISSUE INVOLVED REPLACEMENT OF THE ORIGINAL 1995-2004 TOYOTA TACOMA REAR STEP BUMPER ASSEMBLY MADE BY APLONEX AND PRIVATE LABELED UNDER AT LEAST TWO ADDITIONAL NAMES FOR SALE IN THE USA. MAY LEAD TO PERMANENT DAMAGE TO THE FACE BAR AREA IN NORMAL TOWING OPERATIONS. *JB CON *****	
DATE OF INCIDENT (YYYYMMDD)	20111001 (Year 2011)
NHTSA's Internal Unique sequence number.	886190
VOQ	10429868
WAS VEHICLE INVOLVED IN A CRASH, "Y" OR "N"	N
WAS VEHICLE INVOLVED IN A FIRE "Y" OR "N"	N
NUMBER OF PERSONS INJURED	
NUMBER OF FATALITIES	
SPECIFIC COMPONENT'S DESCRIPTION	STRUCTURE:BODY:BUMPERS
VEHICLE'S VIN#	
The following VINs may also be affected. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99	
DATE ADDED TO FILE (YYYYMMDD)	20111011
DATE COMPLAINT RECEIVED BY NHTSA (YYYYMMDD)	20111011

Diamond Standard, as part of its on-going testing protocol, submitted a Diamond Standard and offshore competitive part to MGA for Class III, VESC V-5 regulation testing. The test conducted in August, 2011 represented the second test of the Diamond Standard part which passed the V-5 standard in December, 2007. All parts passed the tongue and tow requirements for Class III testing but the offshore competition parts failed in the right transverse load test simulating sideways trailer pulling action which caused pronounced and confirmed warping in the face bar area. Specifically, the warping was the result of the flex of the pull bar and located at both ends of the pull bar as documented in the pictorial below. The Diamond Standard parts' face bar integrity and appearance were not compromised.



Passing the VESC V-5 standard is a requirement of any manufacturer of stepbumper systems with the regulation intended to reduce towing and hitch related accidents by testing the connecting arrangements used for drawing trailers by mechanical power. Based on the limited understanding by the consumer of proper and safe towing procedures documented on the opposite page, including unsafe towing load weights, Diamond Standard believed it important to gain understanding and clarity of part performance through VESC V-5 testing at twice the load levels of the standard test and share that with the industry.

TOWING TROUBLES: DANGER ON AMERICA'S ROADS



The much publicized 2006 study from Customer Profiles, Ltd., and Master Lock, showed an alarming number of trailer owners have had little or no training in proper and safe towing procedures including properly calculating and understanding vehicle, tow and tongue weight ratings which are essential to towing safety. Master Lock's annual Towing Troubles research on how Americans tow, knowledge of towing practices, and safe towing tips are located at www.towingtroubles.com.

Diamond Standard Parts, LLC, is committed to the issue of safety and supplying parts which underpin the goal of repair.....a complete, safe repair and advancing industry understanding of part performance through credible part testing and the published test results. With regard to stepbumpers, and specifically our full assemblies with tow bars, we are mandated as the manufacturer to pass VESC V-5 testing for towability to the exacting Federal requirements/limits set forth in simulating towing stressors on the towing system with the hitch ball mounted within the stepbumper.

The consumer is ultimately responsible for towing safety and proper tow weight distribution and trailer coupling. Yet it is their limited knowledge of such techniques along with the earlier VESC V-5 comparative test that prompted us to double the Federal standard test limits of a Class III hitch to test those extreme conditions on the Diamond Standard Brand stepbumper assembly and publish the results.

Load The Trailer Right

For the benefit of the larger audience these are the definitions of weights and definitions of Class I, II and III Vehicles towing limits.

Gross Vehicle Weight (GVW) is the actual weight of the fully loaded vehicle, or trailer including all cargo, fluids, passengers and optional equipment.

Gross Trailer Weight (GTW) is the same as GVW when referring to a trailer.

Tongue Weight (TW) is the downward force or trailer's weight that presses down on the trailer hitch and typically 10% of the gross trailer weight. To tow safely, the tongue weight must be sufficiently positive when the trailer is empty and/or fully loaded and achieved by loading the trailer with 60% of its cargo weight distributed evenly and forward of the trailer axle and secured and braced. Too much tongue weight puts added downward stress on the hitch and potentially raises the tow vehicle's front end and tires with the vehicle less responsive to steering. Too little weight and will cause the trailer to sway.

Gross Combination Weight Rating (GCWR) is the maximum safe weight of the combined tow vehicle and trailer including all people, luggage and other material.

CLASS I
Light Duty
2,000 lbs. (GTW)
200 lbs. (TW)

CLASS II
Medium Duty
3500 lbs. (GTW)
300 lbs. (TW)

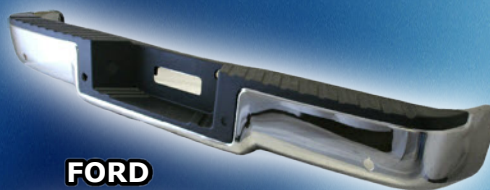
CLASS III
Heavy Duty
3500-5000 lbs. (GTW)
350-500 lbs. (TW)



✓ **TRUSTED** ✓ **TESTED** ✓ **CERTIFIED**
CLASS AAA SAFETY PARTS

Diamond Standard Brand Stepbumper Full Assemblies Assurance

- ◆ **"One Quality" Parts Manufactured to Exacting Standards of Quality and Performance**
- ◆ **Tested and Certified to the VESC V-5 Federal Standards**
- ◆ **334 Parts and Applications Are Covered Under The Exclusive Diamond Standard Security Shield Program**
- ◆ **Full Assembly Bumpers, Ready to Install, Reduce Cycle Time**



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