



Durability Event: Curb Pushaway

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. Measure steering system loads given a 445 N (100 lb) steering wheel rim force input with the front wheels turning against a fixed curb.

1.2 Applicability. Passenger cars and light-duty trucks.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW15445

3 Resources

3.1 Facilities. Facility capable of restraining a fixed curb with a level area surfaced with “3M General Purpose Safety Walk” anti-slip surface and of sufficient size to accommodate both front wheels of the test vehicle. The General Purpose anti-slip surface consists of aluminum oxide abrasive particles bonded by a tough, durable polymer to a dimensionally stable plastic film. The backing is coated with a pressure sensitive adhesive covered by a removable protective liner. Information for typically ordered product; roll of 91 cm x 1829 cm (36 in x 60 ft) material.

- 3M Company, Commercial Division
- No. 610 Black General Purpose Safety Walk
- Stock No. 70070544450
- UPC No. 0401119239

When dry, this product has the following coefficient of friction with rubber:

- Dynamic = 1.24
- Static = 1.32

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment.

3.2.1 Torque measuring steering wheel, or other device, to monitor 445 N (100 lb) tangential force limit on steering wheel rim.

3.2.2 Angle measuring steering wheel, or other device, to indicate full steer turns.

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3.2.3 A 152 mm (6 in) high moveable curb with a 3 mm (1/8 in) radius on the top edge. The curb must be long enough so that no portion of the tire will contact the ends of the curb. A curb that is 1067 mm (42 in) long is common.

3.2.4 Instrumentation to measure and record requested parameters on desired components.

3.3 Test Vehicle/Test Piece.

3.3.1 Select steering system to give maximum loads into measured components. Consider the following:

- Radius of the steering wheel (maximum design radius)
- Steering gear (manual or power) that will produce the highest loads on the evaluated components
- Steering pump output

3.3.2 Tires and Wheels. Consider factors for tire and wheel assemblies that may produce maximum load to steering components, such as:

- Tires with greatest width and aspect ratio
- Wheel material
- Tires worn down to the wear indicators on the tread

3.3.3 Tires. Consider factors that may affect tire friction and stiffness such as:

- Tire wear (more wear may be more friction)
- Compound
- Construction
- Manufacturer
- Recommended inflation

The preceding information is available from the Tire and Wheel Lab.

If new or nearly new tires must be used, then tires should be "broken-in" by running 2 laps of the turnaround loop at the Vehicle Dynamic Test Area (VDTA) at 160 km/h (100 mph) with Maximum Rate Brake Applications (no wheel lock-up) or a similar schedule on a circular track at 160 km/h (100 mph) in the lane where Maximum Rate Brake is permitted.

Applications (no wheel lock-up) are allowed. Often, worn tires can be obtained by scheduling measurements after other aggressive driving schedules.

3.4 Test Time.

Calendar time:	1 day
Test hours:	3 hours
Coordination hours:	2 hours

3.5 Test Required Information.

3.5.1 If ballast is unspecified by the test requester, obtain Gross Vehicle Mass (GVM) as defined in GMW15445 Vehicle Ballast.

3.5.2 Tire Pressure. Determine cold tire pressure specification. This specification shall be the nominal tire pressure for GVM to be specified for the model being measured. If no specification is available, then use the lowest pressure specified for similar applications [i.e., for 241 kPa (35 psi) tires, the typical pressure specification might be 207 kPa (30 psi)].

3.5.3 Requested measurement parameters and components.

3.5.4 Engine cradle bolt torque, if applicable.

3.5.5 Determine whether tires need to be broken in and specify break-in per 3.3.3 for test.

3.5.6 Determine whether to set front-end alignment at maximum positive camber. This may cause higher steering loads.

3.6 Personnel/Skills. Technician skilled in instrumentation.

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