



Measurement of Vehicle Turning Circle

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. The primary purpose of this procedure is to determine a vehicle's inner and outer turning circle diameters (wall to wall and curb to curb).

1.2 Applicability. This test procedure applies to all passenger cars.

1.3 Remarks. Turning circle diameters are used as engineering information to evaluate a vehicle relative to targeted program specifications and to other vehicles.

2 References

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

2.1 External Standards/Specifications.

ISO 9001

2.2 GM Standards/Specifications.

None

3 Resources

3.1 Facilities. Level dry surface needed.

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 Necessary equipment for this test will include:

- Measuring tape
- Plumb bob
- Slide calliper rule
- T-square

3.3 Test Vehicle/Test Piece. This test procedure applies to any vehicle equipped with the requested content.

3.4 Test Time.

Test hours: 2 Hours

Coordination hours: 1 Hours

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Operator must be qualified and documented as capable to run this test as required by ISO 9001.

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4 Procedure

4.1 Preparation.

4.1.1 Refuel vehicle (full according to fuel gauge) and adjust to the maximum specified tire pressure for the vehicle.

4.1.2 (Optional) Load vehicle with 75 kg on the front passenger seat.

4.1.3 Measure the following parameters on a wheel alignment facility and record on data sheet to document these characteristics of the test vehicle. A sample data sheet is shown in Appendix A, Data Sheet A1. On vehicles with the steering lock in the steering gear, use full lock position; on vehicles with the steering lock on the steering knuckle, override the steering wheel by applying a force of 100 N to the steering wheel rim.

4.1.3.1 Static steering wheel angle at full lock (or equivalent) for left hand and right hand turns.

4.1.3.2 Static road wheel angle for both the inner and outer front wheels at full lock (or equivalent) for left hand and right hand turns.

4.1.3.3 Difference in wheel toe angles for the inner and outer front wheels with the inner road wheel angle at 20 degrees for left hand and right hand turns.

4.1.3.4 Set the toe angles so they are correct at zero steering wheel angle, if necessary.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.2.2.1 The vehicle is to be loaded with the driver and 75 kg on the front passenger seat.

4.3 Instructions.

4.3.1 Outer Clearance Circle to the Left.

4.3.1.1 Drive at very low speed a left hand side circle at maximum steer angle, as determined in 4.1.3.1. Position a marking at three (3) points on the circle in a way that the outermost right hand side point of the vehicle body just contacts them. The intent is that the sides shall be equally long.

4.3.1.2 Measure the front right hand side curb stone clearance (j), and record on data sheet (see Figure 1).

4.3.1.3 Measure the front right hand side body overhang (k), and record on data sheet (see Figure 1).

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