Steering Wheel Diameter Measurement

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. This procedure provides a standard technique for use in measuring the diameter of vehicle steering wheels. This information is required for processing tests where steering torque is measured.

1.2 Applicability. This procedure is applicable to any steering wheel. Unusual shapes may require additional measurements.

1.3 Remarks. For vehicle dynamics tests which include steering torque measurements, replace the Original Equipment (OE) steering wheel with an instrumented torque measurement wheel. For these tests, it is necessary to measure the diameter of the OE steering wheel in order to calculate steering wheel rim force.

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.

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. Metric scale.

3.3 Test Vehicle/Test Piece. The steering wheel should accurately represent design intent.

3.4 Test Time.

Calendar time:	1 days
Test hours:	0.1 hours
Coordination hours:	0.25 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. Not applicable.

4.2 Conditions. The steering wheel diameter measurements may be performed with the OE steering wheel installed on the test vehicle or on the steering wheel after removal from the vehicle.

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.

4.3 Instructions.

4.3.1 Two (2) measurements are to be made of the steering wheel on the vehicle:

- Horizontal steering wheel diameter (mm).
- Vertical steering wheel diameter (mm).

4.3.2 For the purposes of this measurement, steering wheel misalignment is to be ignored. All measurements are to be made with the steering wheel in the design intent straight ahead position.

4.3.3 Measurements shall be made from the center to the center of the steering wheel rim (not outside to outside). An estimate of the center of the rim is adequate for the purpose of this measurement.

Note: the center of the rim does not always coincide with the highest point on the rim.

4.3.4 All measurements shall be made along lines passing through a projection of the steering column axis. Typically, these lines will be along the major and minor axes of the wheel. The horizontal and vertical measurements shall be made at right angles to each other.

4.3.5 For steering wheels with significantly different horizontal and vertical diameters (difference exceeding 25 mm), or for vehicles with a discontinuous steering wheel rim ("butterfly" wheels), make a note on the Test Vehicle Description (TVD) Sheet and notify the test engineer (see Figure 1). See Appendix A for a sample TVD data sheet.

4.3.6 The tolerance for this measurement is ± 3 mm.

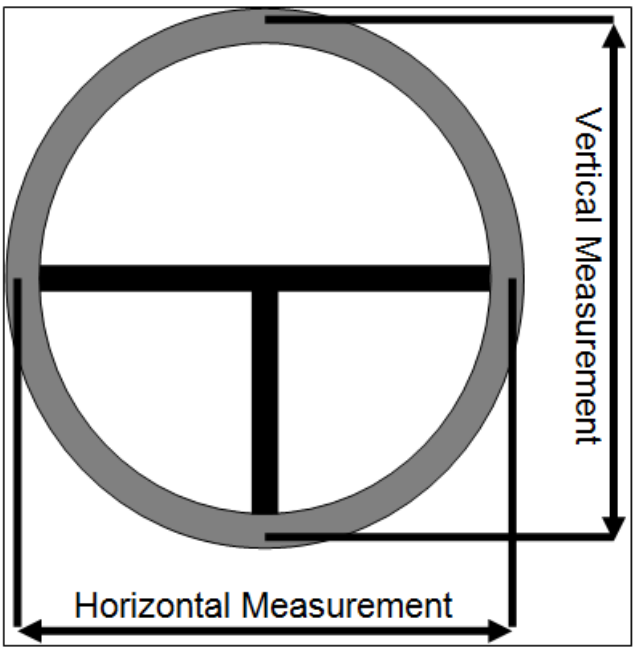

Figure 1: Measurement Locations

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