



Tire and Wheel Assembly Dynamic Balancer Test

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 purpose of this document is to describe the method for determining Dynamic Balancer (DBAL) parameters for passenger car and light truck tires under controlled laboratory conditions.

1.2 Applicability. This procedure applies to laboratory style DBAL machines for passenger car and light truck tires.

1.3 Remarks.

1.3.1 Tire-wheel assemblies and wheels, measured values of interest include; static imbalance, couple imbalance, inboard imbalance, and outboard imbalance.

1.3.2 This procedure applies to tire-wheel assemblies and wheels being tested on the DBAL machine, running at 100 rpm to 1000 rpm (25 mph to 83 mph), at capped inflation pressure.

1.3.3 DBAL data is used in such applications as vehicle sensitivity tests, plant audits, and analysis of tire-wheel assemblies from complaint vehicles.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW16590

2.3 Additional References.

- Global Tire and Wheel Test System (GTWTS) database
(<https://iamteam.share.gm.com/Lists/GLENDASchedule/DispForm.aspx?ID=910>) (ID)

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3 Resources

3.1 Facilities.

3.1.1 Machine calibrations should be done annually, and should include a process to monitor the machines measurement performance (Equipment Variation (EV) test). This would require a calibrated tire-wheel assembly "Master", with known calibrated weights. See Figure 1.

3.2 Equipment.

3.2.1 All details associated with the test apparatus (Figure 1) are included in the DBAL manufacturer's documentation (General Motors North America (GMNA) - International Wheel and Tire, Dynamic Balancer (DBAL) Program Users Guide).

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Figure 1: Tire Wheel System (TWS) Dynamic Balancer

3.2.2 A calibration tire/wheel assembly “Master”, for DBAL EV testing and part set up. See Figures 2 and 3.



Figure 2: Calibration Assembly “Master”



Figure 3: Calibration Weight

3.2.3 Fixture for clamping wheel assembly. See Figures 4 and 5.

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Figure 4: GMNA – Spindle Tooling with Collet



Figure 5: Assembly Plant Multi-Jaw Tooling

3.3 Test Vehicle/Test Piece.

3.3.1 Tire/wheel assemblies and wheels.

3.4 Test Time.

Calendar time: 0.5 days

Test time: 1 hours

Coordination time: 0.5 hours

3.5 Test Required Information.

3.5.1 All required test information should be generated by Global Tire and Wheel Test System (GTWTS).

3.6 Personnel/Skills. Personnel with proper laboratory safety and test equipment training.

4 Procedure

4.1 Preparation.

4.1.1 All debris must be removed from the tire (i.e., rocks, tape, and dirt).

4.1.2 All surfaces of the dynamic balancer spindle tooling, including the multi-jaw chuck, collet, or cone (see Figure 6) should be cleaned using light oil on a lint free cloth.

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