



Wheel Speed Sensor Magnetic Encoder Program Technical Specification

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 document provides the technical requirements for Wheel Speed Sensor (WSS) magnetic encoder component, which is a part of wheel bearing assembly.

1.2 Applicability. This document is used for driven and non-driven wheel bearing assemblies with magnetic encoders.

1.3 Remarks. The magnetic encoder provides a magnetic field signal to a wheel speed sensor as the wheel rotates. The encoder must be capable of providing the specified magnetic field signal in the specified environment throughout the life of the vehicle.

2 References

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

2.1 External Standards/Specifications.

SAE J1344

2.2 GM Standards/Specifications.

GMW3059

GMW14101 (ID)

GMW15531

GMW3116

GMW15443

(ID) = This standard is limited to internal distribution within General Motors and shall not be distributed outside this company. Contact the GM Lead Engineer for further instructions.

2.3 Additional References.

- CG1226 Front/Rear Brake Corner Assembly Program-Specific Technical Specification (ID)
- CG1227 Wheel Bearing Assembly (ID)

3 Requirements

3.1 Component Definition. The WSS encoder is molded onto the inboard bearing seal as a ring magnet for a driven bearing. For non-driven applications, the encoder is packaged inside a capped wheel bearing. The number of pole pairs is shown in CG1226.

3.1.1 Appearance. Not applicable.

3.1.2 Content. The WSS encoder ring.

3.1.2.1 Physical Content. Not applicable.

3.1.2.2 Functional Content. Not applicable.

3.1.3 Ambient Environment. The ambient and operating environments for the encoder are defined in CG1226.

3.1.4 Interfaces. The WSS encoder is an integral part of the wheel bearing assemblies. The encoder provides the signal for the WSS.

3.2 Product Characteristics. See the program specific technical specification for exceptions to the requirements in this section.

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3.2.1 Performance Requirements. The performance requirements outlined in Appendix A, Table A1 apply to the wheel bearing magnetic encoder target wheel over the operation temperature range and the target life. Refer to Figure 1 for air gap and test sensor locations.

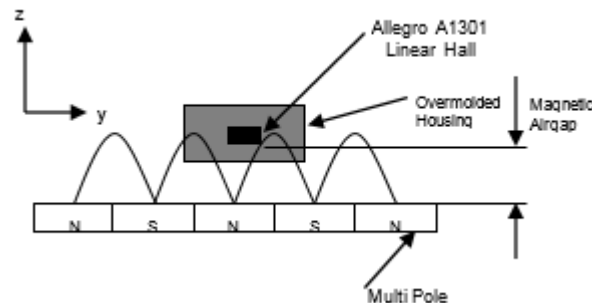


Figure 1: Magnetic Encoder Air Gap

The requirements apply to the encoder for the target life of the vehicle at the bandwidth parameters defined in CG1226.

Supplier shall provide the GM engineer with test data that verifies the worst case (± 3 sigma) performance will meet the requirements as stated in Appendix A, Table A1.

3.2.2 Physical Characteristics. The magnetic encoder target wheel shall be the integral part of the bearing seal for a driven bearing and inside a cap for a non-driven bearing. See Appendix A, Figure A1 for definition of physical characteristics.

3.2.3 Dependability. See Appendix A, Table A1.

3.2.4 Serviceability. Not applicable.

3.3 Design and Construction.

3.3.1 Materials, Processes and Parts Selection Guidelines.

3.3.1.1 Material Guidelines. The selected materials for parts used in this document shall meet material specification GMW3059. Plastic parts should be identified for recycling considerations with the subsystem design goal or recyclable per GMW3116. All recycled items shall be identified with appropriate symbols and identifications, per SAE J1344.

3.3.2 Design Guidelines and Constraints.

3.3.3 Identification and Marking. Not applicable.

3.3.4 Workmanship. The magnetic encoder target wheel assemblies shall meet or exceed the requirements for workmanship. Key areas related to workmanship would include, but are not limited to:

- Component cleanliness and the supply of components free of burrs, tool marks, and flashing, which may be detrimental to satisfactory assembly.
- Safe handling.
- Appearance.
- Function.

3.3.5 Interchangeability. Whenever possible, components should be interchangeable between vehicle platforms and programs.

3.4 Documentation. See CG1226.

3.5 Component Operator Training. Special connectors or connection operation shall be documented and conveyed back to GM engineering and the Product Assembly Documents support group. All operations shall be reviewed and approved for ergonomic compliance.

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