



Fit, Form, Function and Interchangeability Definitions

1 Introduction

Note: Nothing in this standard supersedes 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 specification is to define simple, clear and concise meanings of Fit, Form, Function and Interchangeability, in relationship to components, subsystems and systems for both vehicle and powertrain groups.

1.2 Applicability. This standard applies to all phases of vehicle and powertrain development, validation and continuous improvement.

1.3 Remarks. The definitions for Fit, Form, Function and Interchangeability are used to decide when a component, subsystem or system part iteration requires a new part number, for traceability and vehicle breakpoint in the production environment to support Vehicle Safety, Customer Satisfaction and Field investigations. Reference GMW15862, Global Release Council (GRC) 3.1.1 and ENG 001 Part Number Policy.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3059

GMW15862

GMW16331

GMW17081

2.3 Additional References.

ENG 001 (ID)

GRC 3.1.1 (ID)

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(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.

3 Requirements

3.1 Guiding Principles.

3.1.1 The definitions for these noun names (Fit, Form, Function and Interchangeability) provide context and do not describe processes (i.e., metal forming, door fitting, etc.)

3.1.2 The term **part** used in these definitions refers to a component, subsystem or system, for both vehicle and powertrain.

3.1.3 The definitions for Fit, Form, Function and Interchangeability apply:

- Regardless of where the component, subsystem or system is assembled.
- Regardless if the design is from a supplier or internal within GM.

3.1.4 If parts are interchangeable, then serviceability is not affected.

3.2 Definitions.

3.2.1 Fit. Fit is defined as the ability of an item to physically interface or interconnect with or become an integral part of another item or assembly. This defines the relationship between the part(s), the assembly, packaging and manufacturability (including fixtures, gages, and containers).

3.2.2 Form. Form is defined as the shape, size, dimensions, mass, composition and/or other physical attributes which uniquely characterize a part(s).

Note: Color, gloss and grain are not considered in Form, but are considered Function.

3.2.3 Function. Function of a part is defined as its expected performance defined by its requirements both intended and/or documented. Function is the reason for the part's existence, which also includes secondary functions (i.e., not identified as primary function of the part).

3.2.4 Interchangeability. A part is said to be interchangeable with another part when the Fit, Form and Function are identical.

To be considered interchangeable, the parts must be interchangeable with one another for all released usages (model year and applications), without any alterations of the parts or alterations of adjoining parts.

3.3 Examples.

3.3.1 Change of Fit, as defined in 3.2.1.

- The height of the clip tower is changed on a garnish trim part which then affects the fit to the headliner.
- The Inside Diameter (ID) or Outside Diameter (OD) is changed on a hose or fitting.
- Changes that occur to design due to quality issues (i.e., fit and finish).
- Changes that are made to compensate for customer dissatisfiers, such as buzz, squeak and rattle.
- The change in door fit to the Instrument Panel (IP).
- Changes that occur to design due to attachment strategies.
- Changes that occur to design due to part markings, see GMW17081.
- Changes that occur to design due to brandings, see GMW16331.

3.3.2 Change of Form, as defined in 3.2.2.

- Changes in material property (affecting form and function).
- The change in the thickness of a part.
- The change of the length of a wire harness.
- Changes that occur to design due to bends in application (i.e., an installed radiator hose).
- Changes to a radius of an A-surface (see 6.1).
- The addition of ribs for structural rigidity, or the addition of secondary attachment points.
- Changes to fuel line bending angles for vehicle installation.

3.3.3 Change of Function, as defined in 3.2.3.

- Change in color, grain or gloss as presented to the customer or specified as a requirement.
- Changes to graphics on buttons, switches, touchpads, etc.
- Software or calibration changes.
- Changes to mechanisms.
- Change in mass.
- Change to the amount of grease in a bearing (addition or deletion).
- Changes to primary or secondary application, i.e., an Air Conditioning (AC) duct's primary function is to deliver air, but might have a secondary function to act as an attachment point for a wiring harness.
- Changes in features needed for assembly processes, i.e., locating features, Electrodeposition Primer (ELPO) draining holes, transfer holes, error proofing features.