



Component Technical Specification (CTS) - Actuator Assembly - Active Hood Front (Mechanism)

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 contains technical specifications required of an active hood actuator mechanism on GM vehicles. This actuator mechanism is part of an active hood lift system for the purpose of improving pedestrian protection performance. A hood lift actuator is used to deploy this actuator mechanism.

1.2 Applicability. This Component Technical Specification (CTS) is applicable to front mounted active hood lift devices.

1.3 Remarks. GM will provide the actuator mechanism assembly level math and Geometric Dimensioning and Tolerancing (GD&T) drawing. The supplier is responsible to generate individual component GD&T.

The supplier is encouraged to recommend rivet, hole and pin dimensions and tolerances should that be necessary to meet the performance requirements listed in Section 3 of this document.

Note: In the event of a conflict between the text of this specification and the documents cited herein, the text of this specification takes precedence.

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	GMW14573	GMW15272
GMW3116	GMW14872	GMW15357
GMW14089	GMW15049	GMW15862

2.3 Additional References.

- GM Part Number 22786807
- GM1738 – GM Packaging and Identification Requirements for Production Parts
- GM1829 Analysis Development Validation (ADV) Plan and Report
- GM3660 GM Commodity Validation Sign-off
- Statement of Requirements (SOR) Appendix F10
- SSTS

3 Requirements

3.1 System/Subsystem/Component/Part Definition. The actuator mechanism is made up of the following parts:

- Actuator assembly – body side bracket
- Torsion spring

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- Actuator assembly – actuator mounting bracket
- Actuator assembly – sliding bracket
- Anchor posts
- Reset spring
- Slider rivets
- Blind rivets
- Spring retainer post

3.1.1 Appearance.

3.1.1.1 Setup/Procedure. Verify acceptable appearance of the actuator mechanism.

3.1.1.2 Requirement. The following shall be approved by the responsible GM engineer.

- No objectionable burrs, tool marks, sharp edges, flashing, rivet peen cracking.
- Minimum die notches.
- Approved direction of pierced holes.
- No supplier labels or trademarks.

3.1.2 Content.

3.1.2.1 Physical Content. Not applicable.

3.1.2.2 Functional Content. Not applicable.

3.1.3 Ambient Environment. The actuator mechanisms are packaged in wet zones, outboard of closure sealing systems. They shall be able to withstand any combination of environmental conditions that they may be exposed to during the stated life of the vehicle as specified in 3.1.5.

Operation Environmental conditions for all usage are as in Table 1.

Table 1: Environmental Conditions

Classification		Temperature	Humidity
Normal	Nominal	23 °C ± 5 °C	Ambient
	Humid	38 °C ± 3 °C	95% ± 5%
	Hot	85 °C ± 3 °C	5% ± 5%
	Cold	-30 °C ± 3 °C	Ambient
Extreme	Max Hot	120 °C ± 3 °C	5% ± 5%
	Max Cold	-40 °C +0/-3 °C	Ambient

Max = Maximum

3.1.4 Interfaces. Not applicable.

3.1.5 Usage Definition. The customer usage of this actuator mechanism is defined as maximum normal usage in 241 400 km (150 000 mi) of customer driving. The environmental exposure target life is 15 years.

3.2 Product Characteristics.

3.2.1 Performance Requirements. All requirements are to be met during the target life of the vehicle specified in 3.1.5 unless otherwise noted.

3.2.1.1 Corrosion Resistance.

3.2.1.1.1 Setup/Procedure. The actuator assembly shall meet the corrosion requirements in GMW15272 (Underhood Medium/Low Visibility) when tested to GMW14872, Underhood (UH), All-Splash Protection Not Defined (ND), 4 sprays per cycle, Method 1/2, Exposures B and D.

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3.2.1.1.2 Requirement. For this test the same requirements apply as for the actuator mechanism on a finished vehicle which must meet corrosion performance per GMW15272. The following items (a and b) are listed here for convenience, refer to GMW15272 document for the latest information.

- a. Cosmetic criteria: minimum 10 rating (rating scale per GMW15357) at 0 years.
- b. Cosmetic criteria: minimum 8 rating (rating scale per GMW15357) at 5 years.
- c. Functional criteria: actuator mechanism must meet the force requirements per Section 3.2.1.3 at 10 years.

3.2.1.2 Peened Slider Pin Push-out Strength.

3.2.1.2.1 Setup. As shown in Figure 1.

3.2.1.2.2 Procedure. Apply 9 kN as shown in Figure 1.

3.2.1.2.3 Requirement. After the application of the load in 3.2.1.2.2:

- a. The pin shall not separate from the actuator mechanism.
- b. The actuator mechanism shall be operable.

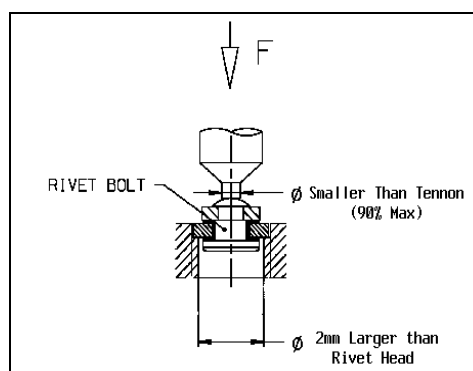


Figure 1: Peened Joint Push-out Test Setup

3.2.1.3 Sliding Bracket Movement – Smoothness and No Bind.

3.2.1.3.1 Setup. Build a full actuator mechanism assembly without the shear rivets. Mount the body side bracket to a rigid fixture and constrain at body attachment points as shown in Figure 2.

3.2.1.3.2 Procedure. Apply a force to the sliding bracket to move it to the fully extended position. Peak force should not exceed 150 N.

3.2.1.3.3 Requirement. During force application and entire travel, the sliding bracket movement must be smooth with no bind.

3.2.1.4 Blind Rivet Pull Out Force.

3.2.1.4.1 Setup. Fix the actuator mechanism at the body attachments, see Figure 2.

3.2.1.4.2 Procedure. Apply force at a specified location on the hood side link in direction normal to the link until blind rivets separate the two joining links. See Figure 3.

3.2.1.4.3 Requirement. Minimum pull out force shall be 5 kN.

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