



Damper Mount Structural Fatigue 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 standard is to outline a method for validating the structural integrity of a damper tube assembly (suspension shock). This is aimed at the structural components and does not require hydraulic assemblies. For dampers with spring seats, refer to GMW14250 for spring seat fatigue. For dampers with stab bar brackets, refer to GMW14247.

1.2 Applicability. This procedure applies to the lower mounting interface of all suspension dampers (clevis, eye ring). This procedure applies to systems where bushing wind-up is considered negligible. If significant rates and/or lateral loads are in the system, test conditions need to be altered to include them.

1.3 Remarks. The structural integrity of the damper is required to ensure the safety and proper function in a vehicle. The damper structure must withstand defined vehicle loads without loss of function.

2 References

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

2.1 External Standards/Specifications.

ISO 17025

2.2 GM Standards/Specifications.

GMW14247

GMW14250

2.3 Additional References.

Component Technical Specifications (CTS)

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.

3.1.2.1 Alternatives will need to have the capability to complete the test and processing per this procedure.

3.2 Equipment. Damper Structural Fatigue is normally performed with servo-hydraulic test stands (e.g., MTS Systems Corporation).

3.2.1 Servo-hydraulic test rig with load capability sufficient to meet test loads for design element.

3.2.1.1 Servo-hydraulic actuator of sufficient load capability (reference Component Technical Specifications (CTS) and see Design Responsible Engineer (DRE) for values).

3.2.1.2 Load cell with sufficient load range (reference CTS and see DRE for values).

3.2.1.3 Force control device with closed circuit for regulation of cycling forces (reference CTS and see DRE for values).

3.2.1.4 Method for counting cycles and monitoring load required.

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3.2.2 Test system must be capable of running at required frequencies without any appreciable system noise in the control loop.

3.2.3 Fixture that will be representative of vehicle interface and provide a rigid constraint of the damper system (see Figure 1).

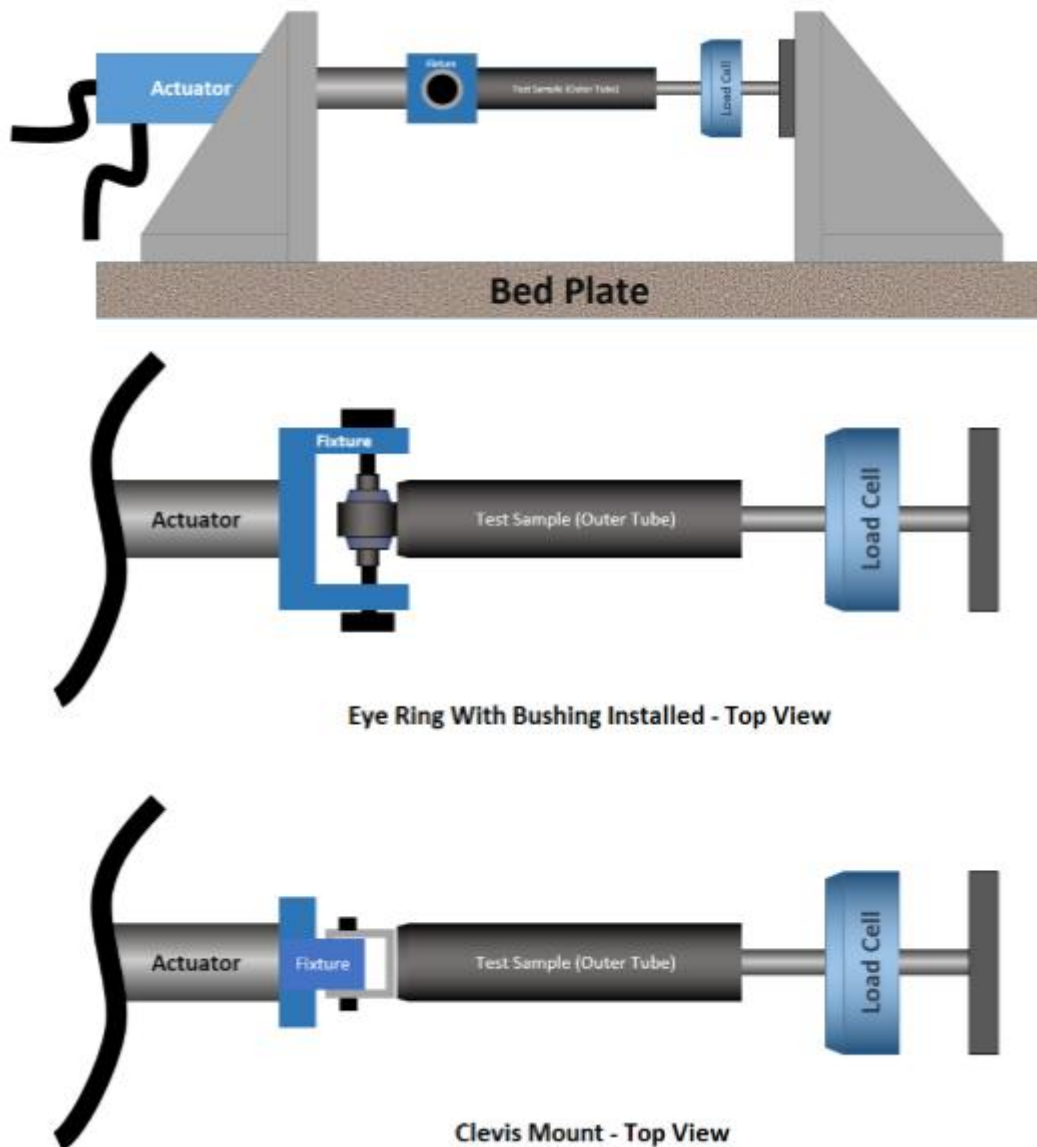


Figure 1: Test Setup

3.3 Test Vehicle/Test Piece. A minimum number of samples to meet the reliability and confidence for validation should be tested. Typically six (6) parts should be tested. See Figure 2 for types of damper mounting.

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