



<b>AEROSPACE RECOMMENDED PRACTICE</b>	<b>ARP5724</b>	
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Aerospace - Testing of Electromechanical Actuators, General Guidelines For		

RATIONALE

The test methodologies applicable to Electromechanical Actuators (EMAs) require considerations unique to EMAs for certain requirements and tests, as compared to conventional hydraulic servoactuators or electrohydrostatic actuators. This ARP satisfies the need for such a document which discusses such tests specific to EMAs, and recommends test methodologies unique to EMAs.

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## 1. SCOPE

This document provides an overview of the tests, and issues related to testing, that are unique to Electromechanical Actuators (EMAs). The tests, and issues documented, are not necessarily all-inclusive. This document discusses both the tests applicable to EMAs and the test methodologies to accomplish the test objectives.

EMAs may be used in a wide variety of applications such as utility, secondary flight controls and primary flight controls, in a wide variety of markets including manned and unmanned civil and military aircraft, small missile fin and thrust vector control applications up to high powered utility and flight controls. EMAs may also have either a rotary or a linear output, be servo controlled or use simple open loop point-to-point or other control topologies. As such this document covers a wide range of potential applications, the application of any given test requirement is determined by the application and the user. This document attempts to provide basic guidance on which tests should be considered for various applications. This document also lists tests that are not unique to EMAs, but are still applicable to EMAs. In these instances a discussion of such tests is not contained in this document, and as applicable, the reader may reference the appropriate documents as indicated in the text.

While many EMA configurations include digital power drive electronics (PDE), the specific tests required for the electronic hardware, software, or firmware are outside the scope of this document.

### 1.1 Purpose

The purpose of this document is to facilitate the generation of test specifications, plans and procedures for EMAs. It covers unit integration tests, acceptance tests, and qualification tests.

The tests and test methodologies discussed in this document, while not necessarily all inclusive, are also not to be construed as mandatory. They are advisory, with the user bearing the responsibility to ensure that all relevant specification requirements for the user's equipment are met by the test specifications and procedures generated, and that they preclude any undesirable over testing.

### 1.2 Field of Application

This document focuses on EMA issues irrespective of the application of the EMA - whether military or commercial. It shall be the procuring agencies responsibility to ensure that particular qualification or certification requirements, or applicable specifications, standards or regulations for the intended application are satisfied by the EMA design, and the tests and test methods that are developed.

## 2. REFERENCES

### 2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.