



AEROSPACE INFORMATION REPORT

AIR5883™

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Superseding AIR5883A

(R) Landing Gear Shock Strut Bearing Selection

RATIONALE

This Aerospace Information Report (AIR) is intended for aircraft landing gear shock strut designers and is being updated as part of the Five-Year Review process and is intended to provide normally utilized criteria of aircraft landing gear shock strut bearing selection.

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1. SCOPE

This document defines the criteria used for the selection and placement of landing gear shock strut upper and lower bearings (see Figure 1).

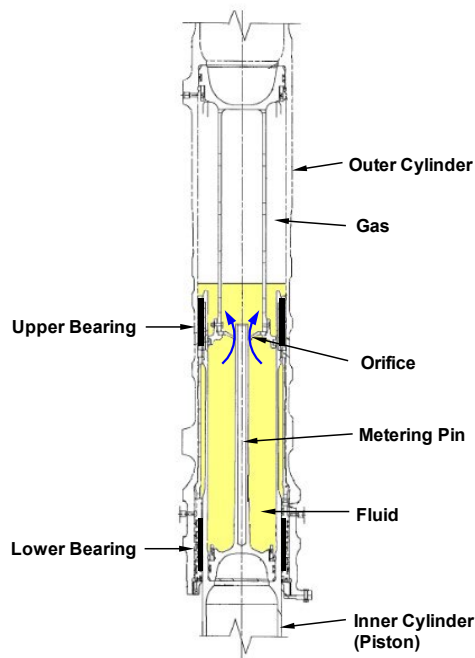


Figure 1 - Typical landing gear shock strut diagram

Common problems associated with shock strut bearings are presented herein.

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.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS4533	Copper-Beryllium Alloy, Bars and Rods, 98Cu - 1.9Be, Solution and Precipitation Heat Treated (TF00, formerly AT)
AMS4534	Copper-Beryllium Alloy, Bars and Rods, 98Cu - 1.9Be, Solution Heat Treated, Cold Worked, and Precipitation Heat Treated (TH04, Formerly HT)
AMS4535	Copper-Beryllium Alloy, Mechanical Tubing, 98Cu - 1.9Be, Solution and Precipitation Heat Treated (TF00, formerly AT)
AMS4590	Extrusions, Nickel-Aluminum Bronze, Martensitic, 78.5Cu - 10.5Al - 5.1Ni - 4.8Fe, Quenched and Tempered (TQ50)

AMS4596	Copper Nickel Tin Alloy, Bars and Rods, 77Cu - 15Ni - 8Sn, Solution Annealed and Spinodal Hardened (TX 00)
AMS4597	Copper-Nickel-Tin Alloy, Bars and Rods, 77Cu - 15Ni - 8Sn, Solution Annealed, Cold Finished and Spinodal Hardened (TX TS)
AMS4640	Aluminum Bronze, Bars, Rods, Shapes, Tubes, and Forgings, 81.5Cu - 10.0Al - 4.8Ni - 3.0Fe, Drawn and Stress Relieved (HR50) or Temper Annealed (TQ50)
AMS4880	Aluminum Bronze Alloy, Centrifugal and Continuous-Cast Castings, 81.5Cu - 10.3Al - 5.0Ni - 2.8Fe, Quench Hardened and Temper Annealed (TQ50)
AMS4881	Nickel-Aluminum-Bronze, Martensitic, Sand, Centrifugal and Continuous Castings, 78Cu - 11Al - 5.1Ni - 4.8Fe, Quench Hardened and Temper Annealed
AIR5913	Landing Gear Component Heat Damage
AIR6280	Overview of Aircraft Landing Gear Shimmy Analysis Methods
ARP4912	Design Recommendations for Spare Seals in Landing Gear Shock Struts
ARP5935	Use of HVOF Thermal Spray Coatings for Hard Chrome Replacement in Landing Gear Applications
AS81820	Bearings, Plain, Self-Aligning, Self-Lubricating, Low Speed Oscillation
AS81934	Bearings, Sleeve, Plain and Flanged, Self-Lubricating

2.1.2 U.S. Government Publications

Copies of these documents are available online at <https://quicksearch.dla.mil>.

MIL-L-8552 Landing Gear, Aircraft Shock Absorber (Air-Oil Type)

2.2 Definitions

2.2.1 ALLOWABLE LINER WEAR (LINED BEARINGS)

A lined bearing is considered no longer serviceable when a portion of the wear coating has been worn to a degree that could affect the shock strut operation. Wear definition of the liner material is usually related to the maximum allowable clearance between the bearing and the cylinder or the bearing and the inner cylinder (piston).

2.2.2 LADDER CRACKING

Lateral cracks found on the chrome surface of the shock strut inner cylinder (piston). Refer to AIR5913.

2.2.3 LINER DELAMINATION (LINED BEARINGS)

The separation of the liner material from the metallic backing.

2.2.4 SLIP-STICK (STICTION)

The buildup of static friction between stationary surfaces being released to dynamic friction, which results in sliding and stopping as load is being applied to, or removed from, mating surfaces. Also referred to as ratcheting.