AIRWORTHINESS BULLETIN

Metro/Merlin Main Landing Gear Yoke Torque Link Lug Inspection

AWB 32-023 **Issue** : 1
Date : 4 February 2015

1. Effectivity

All Fairchild Swearingen Metro and Merlin aircraft (all variants of SA226 and SA227 aircraft).

2. Purpose

To alert operators of the need to inspect, in detail, the internal bore of all main landing gear yoke torque link lugs for stress corrosion cracking and wear outside of the manufacturers specified limits.

3. Background

CASA has received reports of Main Landing Gear (MLG) yoke torque link lug failures on three Australian registered SA227 Metro 23 aircraft. A significant failure occurred during a landing roll, resulting in the aircraft departing the runway due to failure of the torque link function. The ATSB have investigated this occurrence (ATSB Investigation AO-2014-028) and found Stress Corrosion Cracking to be the contributing factor. A similar failure of cracking in the yoke lugs was found on a Canadian aircraft during a daily inspection.

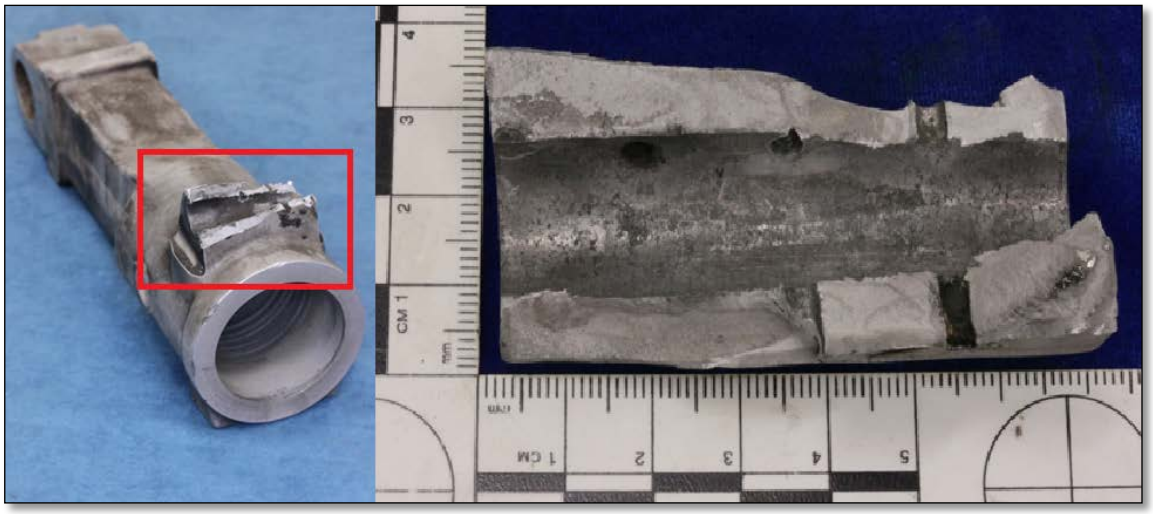

Figure 1 - Failed MLG Yoke Lug

Figure 1 shows the fracture of the lug can occur in the same plane as the spring (retaining) pin. On the inside surface of the lug, pitting corrosion can be clearly seen. The presence of unused spring pin holes on the landing gear torque link shaft may have allowed moisture to enter the bore and initiate this pitting corrosion. As per the manufacturer's instructions, these unused pin holes should be filled with sealant, not non-flexible fillers such as resin. M7 Aerospace SB 227-32-046 and SB CC7-32-012 specify filling these holes with MIL-S-8802 sealant (PR 1422). Importantly the lug shown in Figure 1 above had no sealant present in the unused spring pin holes.

It should also be noted that moisture can also enter the bore of the lug via the interface between the lug and mating torque link lug.

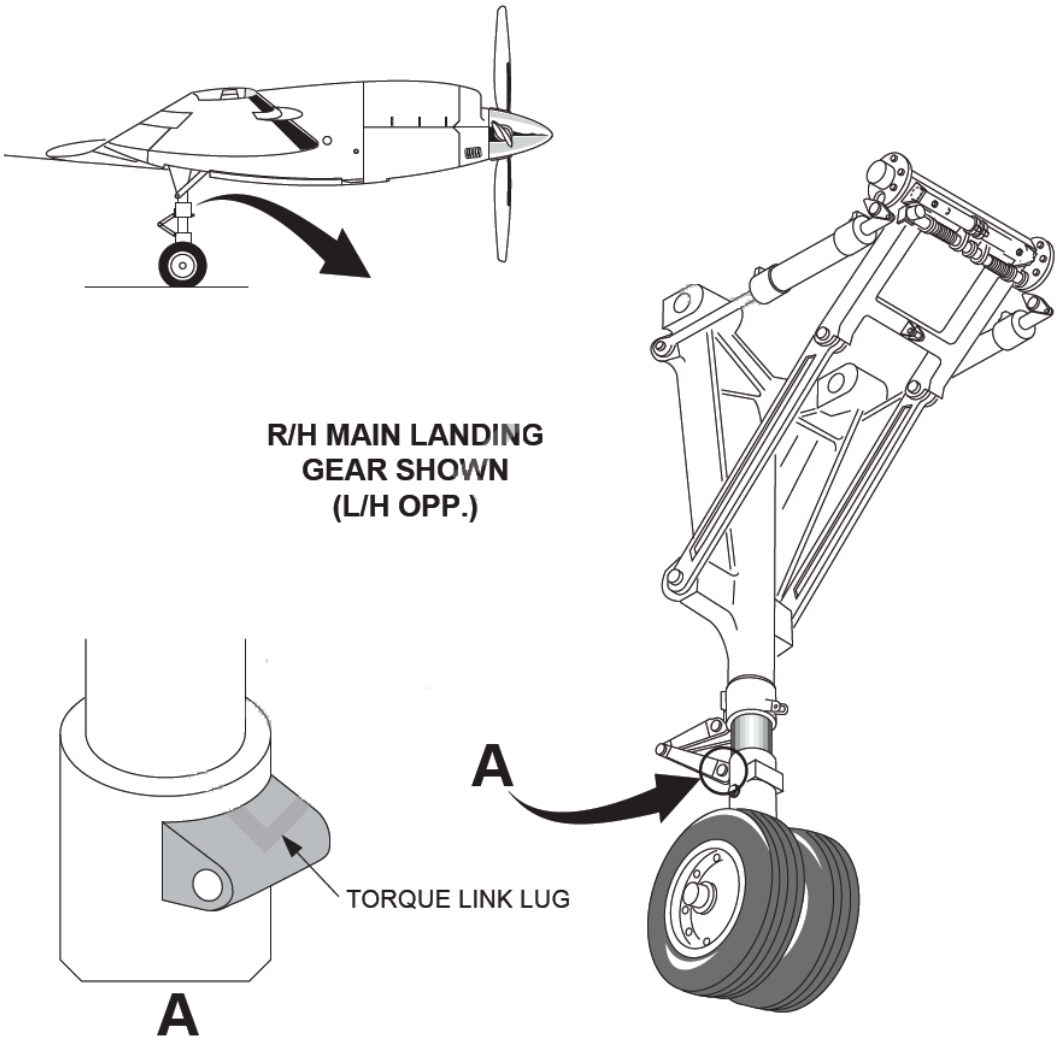

Figure 2 – MLG Torque Link Lug Location

Although there have been other areas of the landing gear inspected by NDT or detailed visual inspection, there are currently no detailed visual inspections or NDT requirements for the internals of the lug where this stress corrosion cracking is occurring.

M7 Aerospace is currently drafting service bulletins to address this issue for all SA226 and SA227 aircraft. The service bulletins will call for High Frequency Eddy Current inspections of the lug as well as detailed visual inspections of the lower lug, torque link shaft, internal surfaces and spring pin holes for the presence of corrosion.

4. Recommendations

1. At the earliest opportunity, CASA recommends operators consider:

A. For operators with landing gear yoke torque link lugs with unused spring pin holes; carrying out a check for the presence of the correct sealant used for filling the unused spring pin holes in the yoke lug to prevent moisture ingress. If any doubt exists as to the type and integrity of the sealant the sealant should be replaced. Refer M7 Aerospace SB 227-32-046 (for aircraft with 16K landing gear) and SB CC7-32-012 (for commuter category aircraft).

2. CASA recommends at the next scheduled maintenance check:

A. Performing a detailed inspection of the MLG yoke torque link lug (upper & lower) for any signs of corrosion in accordance with M7 Aerospace inspection criteria (SRM 51-30-07). This will involve the removal of the retaining (spring) pins and the torque link shafts in order to inspect the lug bores. If corrosion is found, act in accordance with approved corrosion prevention and control techniques (SRM 51-30-08).

B. Ensuring all greased fittings on the torque links are working as intended (not blocked). Additionally, inspect all assemblies for excessive wear and replace as necessary. Particular attention should be given to excessive “play” caused by wear and tear on the side faces of the lug and the bushes in the torque links.

5. Reporting

All reports of MLG yoke torque link lug failures should be reported to CASA via the SDR system, or sent via email to SDR@casa.gov.au.

6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link e-mail address:

AirworthinessBulletin@casa.gov.au

or in writing, to:

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Standards Division
Civil Aviation Safety Authority
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