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**MANDATORY**

**SERVICE  
BULLETIN**

## **MANDATORY SERVICE BULLETIN Z142/54a**

Technical content of the document approved  
on the basis of DOA Approval No. EASA.21J.110

„SAFETY RELATED“

1. **DATE:** March 8, 2007
2. **APPLICABLE TO:** All Z142 aircraft with unstrengthened wings.
3. **REASON:**
  - 3.1 After the AMU1 Acceleration Monitoring Unit has been entered into operation on ZLIN aircraft of Z42 series, it has been found out that real intensity of acrobatic operation of some aircraft considerably exceeds original expectations that have been used for determination of operation limits. These aircraft exceed determined total limit load spectra and limit design acrobatic load spectrum.  
To ensure a safety, it is necessary from these reasons to change the limits for acrobatic safe life.
  - 3.2 Aircraft safe life time prolongation from 3600 to 4800 hours TIS.
4. **ACTIONS REQUIRED:**
  - 4.1 **Limits for the aircraft with unstrengthened wings.**

The aircraft with unstrengthened wings cannot be further operated in ACROBATIC category.

    - 4.1.1 The aircraft with unstrengthened wings, which have not reached the limit of 190 hours TIS in ACROBATIC and/or UTILITY category, can reach this limit in UTILITY category only, at keeping the total safe life time limit of 3600 hours TIS.

A flight in ACROBATIC category is a flight during which acrobatic manoeuvres permitted in the Aircraft Log Book for ACROBATIC category are performed.

A flight in UTILITY category is a flight during which acrobatic manoeuvres permitted in the Aircraft Log Book for UTILITY category are performed.

Flight time is total time from the instant of aircraft first movement for the purpose of take-off to the instant when the aircraft finally stops in the end of that flight.

Aircraft operator is obliged to record flights performed in UTILITY category including pertinent flight time into the Aircraft Log Book.

Flights in UTILITY category are marked with U letter in the Aircraft Log Book.

Note:

Till this bulletin has been issued, it was prescribed to record flights performed in ACROBATIC and UTILITY category into Aircraft Log Book with symbol A.

4.1.2 Perform following works on the aircraft which have exceeded the limit of 190 hours TIS in ACROBATIC and/or UTILITY category:

- reconstruction of root wing part
- replacement of conic pins and bushings of main wing hinges
- replacement of pins of rear wing hinges

Further operation is possible in NORMAL category only up to the total safe life limit of 3600 hours TIS.

4.1.3 Mandatory replacements of airframe parts with limited safe life time:

Conic pins and bushings of main wing hinges	<ul style="list-style-type: none"> <li>- on the aircraft which have reached less than 190 hours TIS in ACROBATIC and UTILITY category – replace at nearest “C” inspection or overhaul.</li> </ul>
Pin of rear wing hinge	<ul style="list-style-type: none"> <li>- on the aircraft which have reached more than 190 hours TIS in ACROBATIC and UTILITY category and on which these parts have not been replaced during reconstruction of wing root part – replace at that „B“ or “C” inspection (or 600 hours inspection or overhaul) which comes first of all.</li> </ul>
Fitted bolts of upper outer and upper inner wing hinges	<p>In case of loosening or failure of even one single fitted bolt, replacement of all 20 bolts on both parts of upper hinge shall be performed</p>

## 4.1.4 Mandatory inspections of airframe parts:

Visual check of loosening or failure of fitted bolts of upper outer wing hinges (on upper side of the wing)	<ul style="list-style-type: none"> <li>- At pre-flight inspection</li> <li>- After 100 hours TIS or after 1 year, depending on what comes earlier</li> </ul>
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## 4.1.5 Cancel Mandatory Service Bulletin Z142/42a.

## 4.1.6 Pertinent changes of aircraft accompanying documentation.

**4.2 Aircraft safe life time prolongation from 3600 to 4800 hours TIS.**

Based on accomplishment of actions stated below, total safe fatigue life time can be increased from 3600 to 4800 hours TIS if demonstrably not more than 190 hours TIS in Acrobatic and / or Utility Category has been reached and reconstruction of root wing part has been performed.

4.2.1 Not later than at reaching total time of 3600 hours TIS, the aircraft shall be transferred to Normal Category only, even in case that maximum permitted limit of 190 hours TIS for ACROBATIC and/or UTILITY category operation has not been reached.

4.2.2 Performance of inspection after 100 hours TIS of operation according to Technical Manual of the aircraft.  
Performance of "A" inspection according to aircraft manual for operation without overhaul if the aircraft is operated in the maintenance system without overhauls.

4.2.3 Technical Commission of Aircraft Manufacturer shall perform an inspection to consider technical condition of the aircraft and to decide what inspections and repairs up to the level of overhaul or "C" inspection shall be performed.

4.2.4 Reconstruction of root part of main wing spar shall be performed at the latest at total number of 3600 hours TIS on that aircraft on which this reconstruction has not been performed yet.

The reconstruction consists in:

- Replacement of original Z42.2111-00.12 and Z42.2211-00.12 lower hinges with strengthened L242.2111-00.12 and L242.2211-00.12 lower hinges.
- Replacement of Z42.2111-00.32 and Z42.2211-00.32 reinforcements made of Z424253.61 aluminium alloy with new reinforcements made of L-CM3.7 steel.
- Addition of L242.2111-00.45 reinforcement on the web of root part of main wing spar.
- Replacement of all fitted bolts which fasten Z42.2100-00.26 upper outer hinges and Z42.2111-00.21 upper inner hinges (see picture in enclosure).

4.2.5 Replacement of the pressure gauge of lower flange of main fuselage spar with new gauge shall be performed.

4.2.6 Aircraft maintenance from time of 3600 hours TIS up to expiration of total safe life of 4800 hours TIS is based on performance of periodical inspections up to 100 hours TIS level (or "A" inspections), annual inspections inclusive. Performance of inspections after 600 hours TIS and overhauls (or "B" and "C" inspections) is superseded by performance of periodical inspections by Technical Commission of Aircraft Manufacturer after each 200 hours TIS.

4.2.7 Pertinent changes of aircraft accompanying documentation.

4.2.8 Cancel Mandatory Service Bulletin Z142/49a-Rev.1.

**Warning:**

The aircraft with unstrengthened wings on which the reconstruction of root wing part has been performed but at which the limit of 190 hours TIS in ACROBATIC and/or UTILITY category has been exceeded can be operated in NORMAL category only up to the total limit of 3600 hours TIS.

**5. ACCOMPLISHMENT:** Immediately after bulletin receipt.

**6. PERFORMED BY:** 6.1 **Limits for the aircraft with unstrengthened wings, see paragraph 4.1:**

Operator (replacement of pages in accompanying documentation).

**6.2 Aircraft safe life time prolongation from 3600 to 4800 hours TIS, see paragraph 4.2:**

6.2.1 Inspection by Technical Commission of the Aircraft Manufacturer on operator's order.

6.2.2 With regard to complexity of works and experiences from aircraft operation, reconstruction of root part of main wing spar shall be performed by the aircraft manufacturer on operator's order.

6.2.3 Operator (replacement of pages in accompanying documentation).

**7. COSTS COVERED BY:** Operator

**8. MATERIAL:** **8.1 Limits for the aircraft with unstrengthened wings, see paragraph 4.1:**

8.1.1 New pages of accompanying documentation – see Enclosures.

**8.2 Aircraft safe life time prolongation from 3600 to 4800 hours TIS, see paragraph 4.2:**

8.2.1 Material for reconstruction of root wing part (lower hinges including fasteners) will be supplied by aircraft manufacturer as a part of wing reconstruction order.

8.2.2 AP-6 pressure gauge (or new 308/III version) will be supplied by manufacturer on order.

8.2.3 New pages of accompanying documentation – see Enclosures.

**9. PROCEDURES:** **9.1 Limits for the aircraft with unstrengthened wings, see paragraph 4.1:**

Replace original pages of manuals by new pages.  
Record change accomplishment into List of Changes.

**9.2 Aircraft safe life time prolongation from 3600 to 4800 hours TIS:**

9.2.1 Technical Commission of the Aircraft Manufacturer will perform aircraft inspection at operator's expenses. A range of necessary aircraft repairs will be determined on the basis of this inspection.

- 9.2.2 Transfer aircraft operation to “N” (NORMAL category).
- 9.2.3 Perform following works on each aircraft:
- a) Reconstruction of root part of main wing spar (according to para. 4 of this bulletin).
  - b) Replacement of AP-6 pressure gauge of main fuselage spar by a new one.
- 9.2.4 Record works performance to Aircraft Log Book.
- 9.2.5 Replace original pages of manuals by new pages.  
Record change accomplishment into List of Changes.

**10. ENCLOSURE:**

- 10.1 Picture of modification of main wing spar.
- 10.2 New pages of accompanying documentation with date of issue 8.3.2007:
- Technical Manual of the Z142 Aircraft, Czech version:  
8; 78; 103A; 103B; 103C; 105; 106D; 106E
  - Technical Manual of the Z142 Aircraft, English version:  
8; 78; 103A; 103B; 103C; 105; 107



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