

Service Letter: 449

Date: May 23, 2018

Title: Corrosion Inspection and Preventative Maintenance

Models: 7EC (serial numbers 2006 and up), 7ECA, 7GCAA, 7KCAB, 7GCBC, 8KCAB and 8GCBC (all serial numbers)

Description: Corrosion has been reported on several aircraft based in moderate and severe operating environments. This service letter is intended to supplement Advisory Circular 43-4A and provide guidance for affected components.

Corrosion protection per American Champion specification CFP-2 is recommended for new aircraft that are expected to be based in moderate or severe operating environments. CFP-2 corrosion protection does not preclude the inspection and preventative maintenance required by this service letter.

The inspection procedures described herein are not intended to be a substitute for a properly performed 100-hour / annual inspection. Refer to Advisory Circular (AC) 43.13-1B: Acceptable Methods, Techniques, and Practices: Aircraft Inspection and Repair.

Preventative Maintenance:

1. Identify operating environment using Advisory Circular 43-4A figures 4-15 through 4-20. Consideration should be given to local weather conditions (i.e. marine layer, industrial pollution, etc) and to the aircraft storage (i.e. outside, enclosed hangar, etc).
2. Inspect aircraft for corrosion at the following intervals:
 - a. Mild zones - every 90 days
 - b. Moderate zones - every 45 days
 - c. Severe zones - every 15 days
3. Wash aircraft per Service Letter 450 when it appears dirty. Washing should not to exceed the following intervals (remove insect residue after every flight per Service Letter 450):
 - a. Mild zones - every 180 days
 - b. Moderate zones - every 90 days
 - c. Severe zones - every 30 days
4. Service exterior lubrication points per airplane maintenance manual at the following intervals and after washing (i.e. rudder hinges, elevator hinges, aileron hinges, flap hinges, trim tab hinges, control cable to horn attach points, aileron bellcrank, aileron pushrod ends, flap pushrod ends, and trim tab pulleys):
 - a. Mild zones - every 180 days
 - b. Moderate zones - every 90 days
 - c. Severe zones - every 30 days
5. Apply corrosion inhibitor after washing and at the following intervals (or more frequently):
 - a. Mild zones - every 180 days
 - b. Moderate zones - every 90 days
 - c. Severe zones - every 30 days

Corrosion Areas:

The following list is intended to be a general guide to areas where corrosion has been reported.

Wing Skins

Leading edge skin material is alclad 2024-T3 aluminum sheet of .020 or .025 thickness. Corrosion in the form of pitting under the fabric covering may occur. Aircraft manufactured in 2001 and later have an etching wash primer applied to the leading edge skins. Aircraft manufactured prior to 2001 do not have leading edge skin corrosion protection beyond the use of alclad material. Corrosion tends to begin near openings in the fabric (i.e. stall switch, inspection covers) and where items are secured with PK screws (i.e. wing tips, speed fairings, stall switch, fuel vent, inspection covers).

In moderate and severe operating zones stainless PK screws should be replaced with equivalent zinc plated steel PK screws.

Monitor the leading edge skin condition. Corrosion will slowly cause the fabric and paint to raise into blisters - the fabric and paint condition will appear more severe than the actual condition of the skin. The raised areas should be identified by size; large (.010 to .030 inches in height) and small (less than .010 inches in height). The combined spanwise length of areas with large blisters should not exceed 50% of individual wing span.

If blisters are greater than .030 inches in height, if large blisters density exceeds 1 per square inch, or if the leading edge skin condition is otherwise in question remove a 3.0 inch diameter section of fabric to gauge the extent of corrosion. Pitting should not exceed a depth of .005 inches - more severe pitting should be addressed by repair or replacement of the leading edge skins. Repair fabric with 8.0 inch diameter patch per airplane maintenance manual.

At the time of wing recovering corrosion protection should be applied to the leading edge skins. If recovering per American Champion specification CFI-1 using 30-NF glue, apply PPG ESU400 or equivalent wash primer to leading edge skins. If covering by another method - refer to covering system approval holder to determine compatible corrosion protection.

Wing Strut Attach Fittings

Remove the leading edge skin access covers and open the fabric inspection rings at the main strut to wing attach locations. Reposition the upper speed fairings by removing the attachment screws and sliding the fairing as required for access.

Wing strut attach fitting material is 2024-T351 with conversion coating per MIL-DTL-5541, Type I, Class 1A. Pitting, intergranular, and exfoliation types of corrosion have been reported. Pitting up to .002 inches deep may be removed using a 33335K2 or equivalent brush. Restore conversion coating using M-CR 1132 pen or equivalent product. More severe pitting or other types of corrosion require replacement of the wing strut attach fitting.

Apply corrosion inhibitor by spraying or wiping.

Strut Fittings

The strut fittings are located in the upper and lower ends of the main wing strut. Reposition the upper and lower speed fairings by removing the attachment screws and sliding the fairings as required for access.

The lower fittings are subject to exhaust deposits. Clean fittings using a 7187T28 (McMaster-Carr) or equivalent brush and mineral spirits. Depending on amount of soil present it may be necessary to use AERO CLEAN or other MIL-C-43616D cleaning compound. Cleaning compounds meeting MIL-PRF-85570D, Type I, 1A, or II may also be used. After cleaning rinse thoroughly with fresh, clean water.

Strut fitting material is 2024-T351 with conversion coating per MIL-DTL-5541, Type I, Class 1A. Pitting, intergranular, and exfoliation types of corrosion of the fittings have been reported. Pitting up to .002 inches deep may be removed using a 33335K4 or equivalent brush. Restore conversion coating using M-CR 1132 pen or equivalent product. More severe pitting or other types of corrosion should be addressed by replacement of the main struts or strut fittings.

Apply corrosion inhibitor by spraying or wiping.

Landing Gear Legs and U-bolt Bar Assembly

Landing gear legs and the u-bolt bar assembly are subject to exhaust deposits. Clean u-bolt bar area using a 7187T28 or equivalent brush and mineral spirits. Depending on amount of soil present it may be necessary to use AERO CLEAN or other MIL-C-43616D cleaning compound. Cleaning compounds meeting MIL-PRF-85570D, Type I, 1A, or II may also be used. After cleaning rinse thoroughly with fresh, clean water.

Aluminum gear legs have been reported with pitting type corrosion due to abrasion and insect remains. Gear leg material is 7075-T6 with protective finish per American Champion specification CFP-1. Visually inspect the gear leg for corrosion and finish condition. Repair finish defects with ESU400 wash primer and polyurethane top coat per CFP-1 or equivalent finish. Corrosion up to .020 inches of depth may be removed by abrading, brushing, or grinding. Use 4800A52 or equivalent brush and 10555B or equivalent sanding disk. Blend depressions per Advisory Circular 43.13-1B figures 6-14, 6-15, and 6-16. Repair finish per CFP-1.

Steel gear legs have been reported with intergranular and exfoliation types of corrosion. Gear leg material is 4130, 4340, or 6150 steel with protective finish per American Champion specification CFP-1. Corrosion is more prevalent on the thicker 8GCBC gear legs where quenching may result in cracks along the midline of the part. While not a structural concern (the cracks are located in areas of low stress) corrosion may develop. Visually inspect the gear leg for corrosion and finish condition. Repair any finish defects with DPLF primer and polyurethane top coat per CFP-1 or equivalent finish. Corrosion up to .020 inches of depth may be removed by abrading, brushing, or grinding. Use 4800A52 or equivalent brush and 36688 or 10554B or equivalent sanding disks. Blend depressions per Advisory Circular 43.13-1B figures 6-14, 6-15, and 6-16. Repair finish per CFP-1.

Apply corrosion inhibitor to u-bolt bar, attach bolts, and gear leg (at u-bolt location) by spraying or wiping.

Products:

Table I: Recommended Products

Description	Part Number	Supplier	Purpose
Mineral Sprits	-	Any	Cleaning
Aero Clean	0864-002	LHB Industries	Cleaning
Nylon Brush	7187T28	McMaster-Carr	Soil Removal
Stainless Steel Brush	33335K2	McMaster-Carr	Corrosion Removal (Aluminum)
Stainless Steel Brush	33335K4	McMaster-Carr	Corrosion Removal (Aluminum)
Stainless Steel Brush	4800A52	McMaster-Carr	Corrosion Removal (Steel)
Conditioning Disk	10555B	Superior Abrasives	Corrosion Removal (Aluminum)
Conditioning Disk	10554B	Superior Abrasives	Corrosion Removal (Steel)
Sanding Disk	36688	Superior Abrasives	Corrosion Removal (Steel)
Applicator Pen	M-CR 1132	Henkel	Corrosion Protection
ACF-50	10013	Lear Chemical	Corrosion Inhibitor (Fluid Thin Film)
CorrosionX	80101	Corrosion Technology	Corrosion Inhibitor (Fluid Thin Film)
So Sure	954-000	LHB Industries	Corrosion Inhibitor (Fluid Thin Film)
LPS3	00316	ITW Pro Brands	Corrosion Inhibitor (Semi-Firm Film)
So Sure	0944-000	LHB Industries	Corrosion Inhibitor (Hard Film)
Wash Primer (CFP-1)	ESU400	PPG	Primer
Epoxy Primer (CFP-1)	DPLF	PPG	Primer
Polyurethane (CFP-1)	ESSS	PPG	Top Coat