

## Service Bulletin SB-10, Revision A

February 10, 2020

Procedures specified in this service bulletin must be accomplished in accordance with accepted methods of aircraft maintenance and applicable government regulations. Appropriate log book entries must be made.

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### I. SUBJECT

This service bulletin addresses material defects found in some of the extruded material used in McFarlane Aviation, Inc (McFarlane). aileron hinge assembly, P/N: MC0523816-1. An inspection method to identify the defective material and the corrective actions are given in this document. The affected aileron hinge is used in Cessna aircraft models 150, 152, 170, 172, 175, 180, 182, 185, 205, and 210. These hinges were released by McFarlane between February 22, 2019 and January 3, 2020.

### II. BACKGROUND

McFarlane PMA aileron hinge assembly, P/N: MC0523816-1 is used at three locations along each aileron control surface to attach it to the aircraft wing (see Figure 1 below).

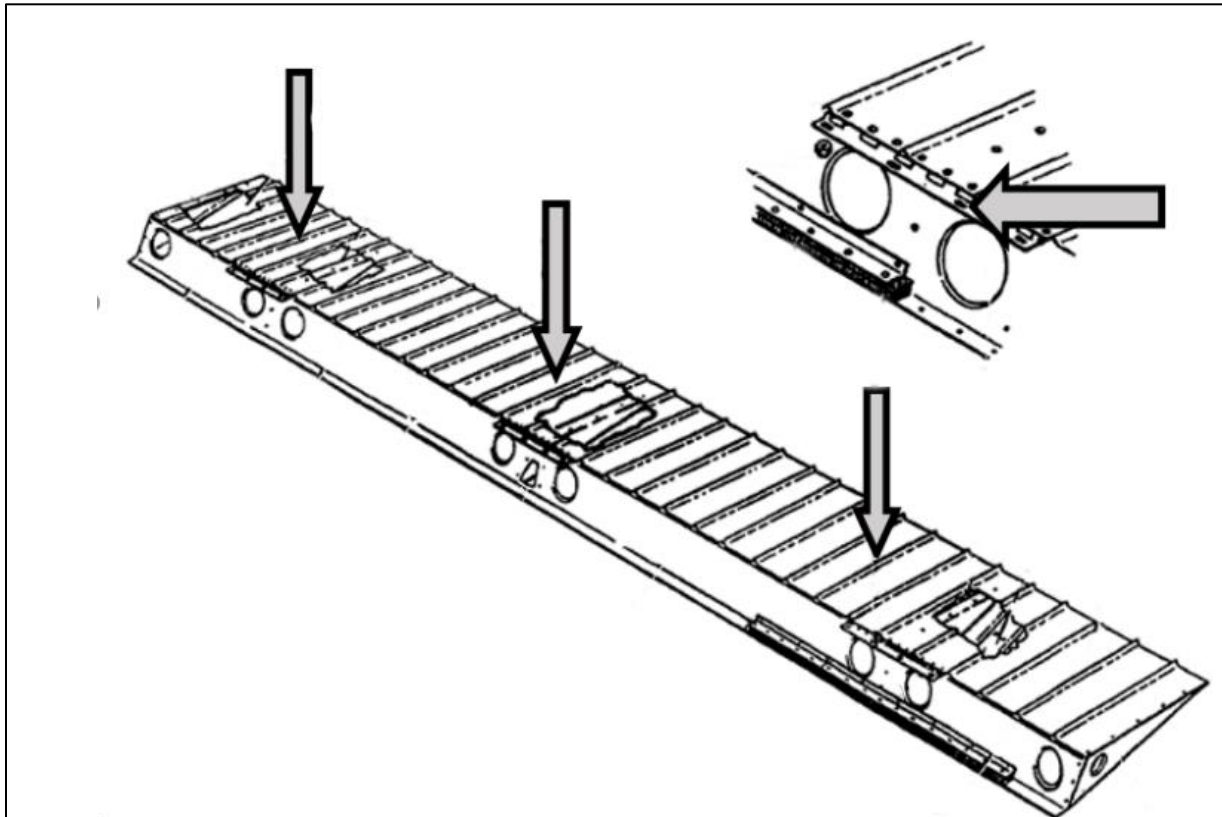


Figure 1 - Aileron Hinge Locations

The McFarlane aileron hinge assembly is created from three subcomponents, two unique hinge halves and a hinge pin. During production the three components are matched-fit with pins of various diameters. This reduces the gap between components and thus increases the life of the hinge assembly. Due to this design attribute the subcomponents are not interchangeable.

Each hinge half is machined from extruded aluminum hinge stock. For the purpose of inspection, the hinge half features are defined as follows:

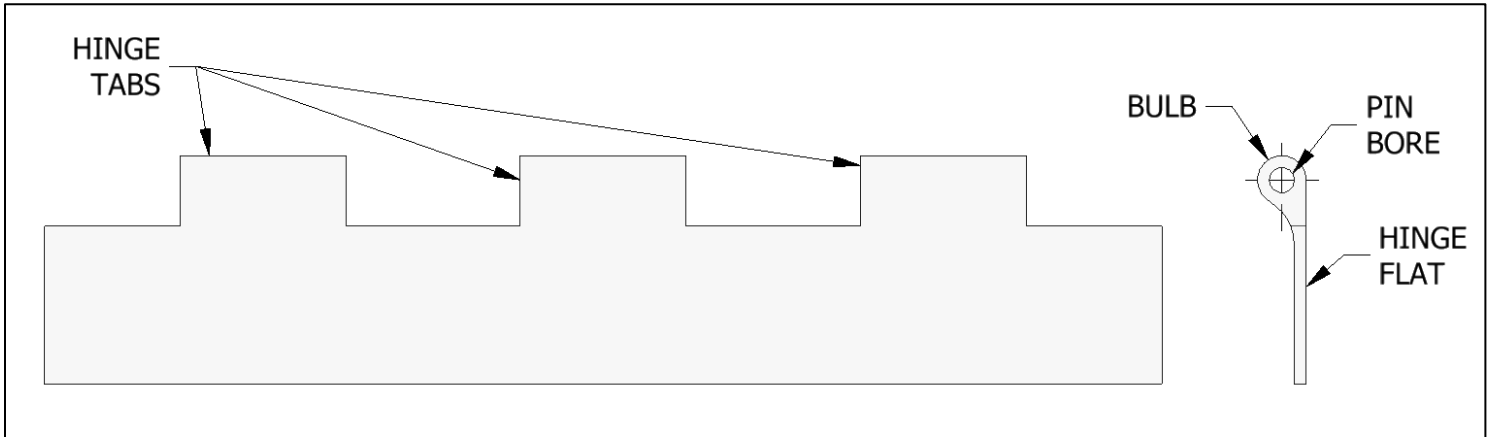


Figure 2 - Hinge Design Features

### III. AFFECTED AIRCRAFT

The McFarlane hinge, P/N: MC0523816-1, is eligible for installation on the following Aircraft:

Table 1 – Eligible Cessna Aircraft Eligibility for Aileron Hinge, P/N: MC0523816-1

Series	Model	Beginning S/N	Ending S/N	Series	Model	Beginning S/N	Ending S/N
150	150	17001	17999	175	175	55001	56238
150	150	59001	59018	175	175A	56239	56777
150	150A	15059019	15059350	175	175B	17556778	17557002
150	150B	15059351	15059700	175	175C	17557003	17557119
150	150C	15059701	15060087	180	180	30000	32661
150	150D	15060088	15060772	180	180A	32662	50355
150	150E	15060773	15061532	180	180B	50356	50661
150	150F	15061533	15064532	180	180C	50662	50911
150	150G	15064533	15067198	180	180D	18050912	18051063
150	150H	15067199	15069308	180	180E	18051064	18051183
150	150J	15069309	15071128	180	180F	18051184	18051312
150	150K	15071129	15072003	180	180G	18051313	18051445
150	150L	15072004	15075781	180	180H	18051446	18052284
150	150M	15075782	15079405	180	180J	18052285	18052770
150	A150K	A1500001	A1500226	180	180K	18052771	18053203
150	A150L	A1500227	A1500523	182	182	33000	33842
150	A150M	A1500524	A1500734	182	182A	33843	51556
150	F150F	F1500001	F1500067	182	182B	51557	52358
150	F150G	F1500068	F1500219	182	182C	52359	53007
150	F150H	F1500220	F1500389	182	182D	18253008	18253598
150	F150J	F1500390	F1500529	182	182E	18253599	18254423

**Table 1 – Eligible Cessna Aircraft Eligibility for Aileron Hinge, P/N: MC0523816-1 (Continued)**

Series	Model	Beginning S/N	Ending S/N	Series	Model	Beginning S/N	Ending S/N
150	F150K	F15000530	F15000658	182	182F	18254424	18255058
150	F150L	F15000659	F15001143	182	182G	18255059	18255844
150	F150M	F15001144	F15001428	182	182H	18255845	18256684
150	FA150K	FA1500001	FA1500081	182	182J	18256685	18257625
150	FA150L	FA1500082	FA1500120	182	182K	18257626	18258505
150	FRA150L	FRA1500121	FRA1500261	182	182L	18258506	18259305
150	FRA150M	FRA1500262	FRA1500336	182	182M	18259306	18260055
152	152	15279406	15286033	182	182N	18260056	18260825
152	A152	A1520735	A1521049	182	182P	18260826	18265175
152	F152	F15201429	F15201980	182	182Q	18265176	18267715
152	FA152	FA1520337	FA1520425	182	182R	18267716	18268333
170	170	18000	18729	182	182R	18268384	18268615
170	170A	18730	20266	182	182S	18280001	18280944
170	170A	19200	20266	182	182T	18280945	182999999
170	170B	20267	20999	182	F182P	F18200001	F18200025
170	170B	25000	27169	182	F182Q	F18200026	F18200169
172	172	28000	46754	182	FR182	FR18200001	FR18200070
172	172A	46755	47746	182	R182	R18200001	R18202041
172	172B	17247747	17248734	182	T182	18267716	18268333
172	172C	17248735	17249544	182	T182	18268384	18268615
172	172D	17249545	17250572	182	T182T	T18208001	T182999999
172	172E	17250573	17251822	182	TR182	R18200584	R18202041
172	172F (T-41A)	17251823	17253392	185	185	1850001	1850237
172	172G	17253393	17254892	185	185A	1850238	1850512
172	172H (T-41A)	17254893	17256512	185	185B	1850513	1850653
172	172I	17256513	17257161	185	185C	1850654	1850776
172	172K	17257162	17259223	185	185D	1850777	1850967
172	172L	17259224	17260758	185	185E	1850968	1851149
172	172M	17260759	17267584	185	A185E	18501600	18502090
172	172N	17267585	17274009	185	A185E	1850968	1851599
172	172P	17274010	17276673	185	A185F	18502091	18504448
172	172Q	17275869	17276516	205	210-5 (205)	2050001	2050480
172	172R	17280001	17299999	205	210-5A (205A)	2050481	2050577
172	172RG	172RG0001	172RG1191	210	210	57001	57575
172	172S	172S8001	172S99999	210	210A	21057576	21057840
172	F172D	F1720001	F1720018	210	210B	21057841	21058085
172	F172E	F1720019	F1720085	210	210C	21058086	21058220

**Table 1 – Eligible Cessna Aircraft Eligibility for Aileron Hinge, P/N: MC0523816-1 (Continued)**

Series	Model	Beginning S/N	Ending S/N	Series	Model	Beginning S/N	Ending S/N
172	F172F	F1720086	F1720179	210	210D	21058221	21058510
172	F172G	F1720180	F1720319	210	210E	21058511	21058715
172	F172H	F17200655	F17200754	210	210F	21058716	21058818
172	F172H	F1720320	F1720431	210	210G	21058819	21058936
172	F172H	F1720432	F1720435	210	210H	21058937	21059061
172	F172H	F1720436	F1720442	210	210J	21059062	21059199
172	F172H	F1720443	F1720443	210	210K	21059200	21059502
172	F172H	F1720444	F1720446	210	210L	21059503	21061573
172	F172H	F1720447	F1720654	210	210M	21061574	21062954
172	F172K	F17200755	F17200804	210	210N	21062955	21064135
172	F172L	F17200805	F17200904	210	210N	21064136	21064897
172	F172M	F17200905	F17201514	210	210R	21064898	21065009
172	F172N	F17201515	F17202039	210	P210N	P21000001	P21000834
172	F172P	F17202040	F17202254	210	P210R	P21000835	P21000874
172	FP172	FP1720001	FP1720003	210	T210F	T2100001	T2100197
172	FR172E	FR17200001	FR17200060	210	T210G	T2100198	T2100307
172	FR172F	FR17200061	FR17200145	210	T210H	T2100308	T2100392
172	FR172G	FR17200146	FR17200225	210	T210J	T2100393	T2100454
172	FR172H	FR17200226	FR17200350	210	T210K	21059200	21059502
172	FR172J	FR17200351	FR17200559	210	T210L	21059503	21061573
172	FR172J	FR17200562	FR17200590	210	T210M	21061574	21062954
172	FR172K	FR17200591	FR17200675	210	T210N	21062955	21064135
172	P172D	P17257120	P17257188	210	T210N	21064136	21064897
172	R172K	R1722000	R1723454	210	T210R	21064898	21065009

## IV. AFFECTED PARTS

Affected McFarlane aileron hinges are P/N: MC0523816-1, shipped between February 22, 2019 and January 3, 2020. The production lots for these parts are **JO55493, JO55519, JO56823, JO57775, & JO60003**.

## V. IDENTIFICATION METHODS

Aircraft service records for aircraft listed in Section III of this document must be reviewed to determine if a McFarlane aileron hinge from the affected part list has been installed. If the affected aileron hinges have been installed, the hinges must be inspected per section VII instructions. If aircraft service records show the aileron hinges have not been installed or purchased between the dates of February 22, 2019 and January 3, 2020, or were replaced with non-McFarlane parts, this service bulletin is not applicable. This service bulletin is applicable to all hinges purchased between February 22, 2019 and January 3, 2020.



**Figure 3 - Example Laser Etched Hinge Marking**

**Note:** *In an unpainted state, McFarlane aileron hinges are anodized and appear gold in color. Further, the aileron hinge marking most likely appears on the riveted half of the hinge and will be obscured when installed. In most cases, the aircraft service records will be needed to determine if an affected aileron hinge has been previously installed. This service bulletin must be considered applicable to any hinges purchased between February 22, 2019 and January 3, 2020 and not installed.*

## VI. COMPLIANCE

Disassembly and inspection of the McFarlane aileron hinge is mandatory and must be completed within the next 25 hours time-in-service (TIS) after February 7, 2020 or within the next 6 months after February 7, 2020, whichever comes first if the aileron hinge is one of the lots listed in section IV of this service bulletin.

If the inspection identifies extrusion cracks or delamination of the hinge bulb, immediate replacement of the hinge is required prior to further flight.

The requirements of Section VII are one time only. There are no recurring requirements.

Uninstalled aileron hinges from the affected lots must be returned to McFarlane.

## VII. ACCOMPLISHMENT INSTRUCTIONS

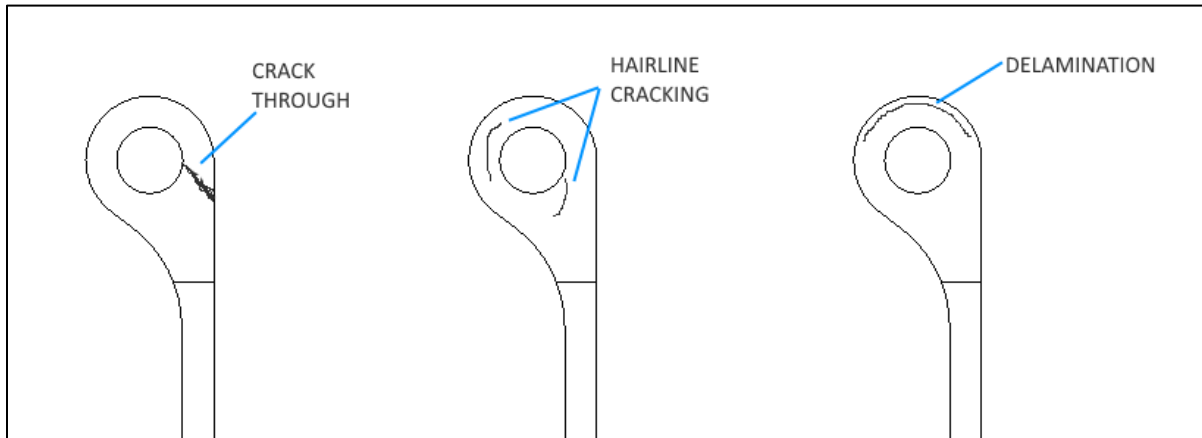
### A. Disassembly

1. The hinge halves must be separated for proper inspection.
2. Remove the three attachment screws that lock the hinge pins into place.
3. Remove the hinge pins. **Be sure not to mix the aileron hinge pins as they are select fit for each hinge.**
4. Carefully support the aileron for inspection.
5. Inspect the affected hinges per Section VII B.

### B. Inspection

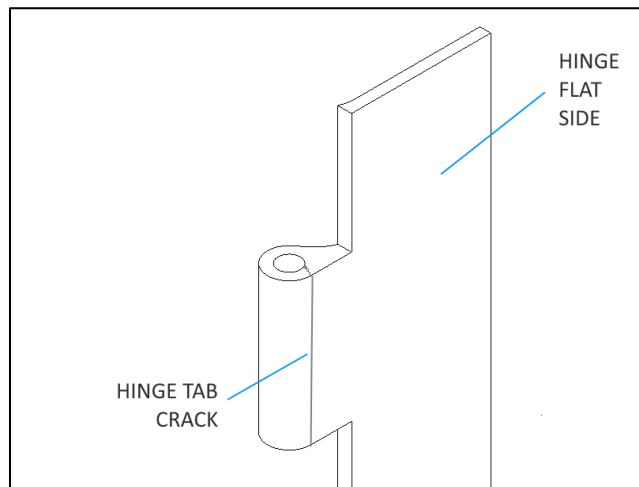
1. Ensure that you can view each end of each of the aileron hinge tabs. This may require removal of paint from around each tab area to ensure full visibility.

2. Clean the hinge tab with appropriate solvent or detergent to expose the ends and body of the tab. All end surfaces must be clean and clear for inspection.
3. Using 10X magnifier, carefully inspect the ends of each hinge tab of each hinge half (surface and wing hinge half), for internal cracks and/or delamination in the bulb around the pin bore. Cracks and delamination defects appear as small lines that can extend from the pin bore to the outside surface of the tab or lines traveling around the pin bore. Refer to Figure 4 for examples of known defects.



**Figure 4 – Known Internal Cracking and Delamination Defects**

4. Inspect the visible hinge flat surface with a 10X magnifier. Inspect the flat side of each hinge tab for external cracks that extend the length of the hinge tab. Refer to Figure 5 for examples of possible defects.



**Figure 5 – Known External Cracking Defect**

5. If any cracks or defects are detected in either hinge half, remove and replace the hinge assembly per the instructions of aircraft service manual.

### **C. Reassembly and Return to Service**

1. Reinstall the ailerons in the opposite manner as they were removed.
2. Using the service manual complete all required checks to return the aircraft to service
3. Make appropriate aircraft maintenance record entry for compliance with this service bulletin

## **VIII. MATERIAL PRICE AND AVAILABILITY**

Part number MC0523816-1 aileron hinges are available from McFarlane

## IX. CREDIT INFORMATION

McFarlane will issue a credit of \$50.00 per aileron inspected from the affected lots (see Section IV). In addition, McFarlane will issue a credit of \$40.00 per aileron hinge replaced from the affected lots. Part Credit and a ground freight allowance will be provided upon return of any defective parts. To receive credit for compliance with this service bulletin the aircraft N-number, model, and serial number along with a copy of the aircraft maintenance record entry showing compliance with this service bulletin will need to be provided.

## X. DISTRIBUTION

This service bulletin has been distributed to all customers for whom McFarlane has sales records indicating the purchase of affected parts. All McFarlane service bulletins may also be found at [www.mcfarlaneaviation.com](http://www.mcfarlaneaviation.com). Please forward this urgent information to the current owner or operator of the affected aircraft. For further information or questions call (800) 544-8594 or (785) 594-2741. All persons are free to copy this bulletin if it is copied in its entirety with no alterations or additions.