



McFarlane Aviation Products

Instructions for Continued Airworthiness McFarlane Aviation Inc. FAA-PMA Part Numbers:

Part Number Family	Part Number	Part Name
MC0411579	-4	Hinge Assembly
MC0511106	-106, -106B, -107, -107B	
MC0511280	-3, -4, -5, -5B, -6, -6B	
MC0411579	-4A, -4F	Hinge Half
MC0511106	-14, -15, -18, -18B, -19, -19B	
MC0511237	-1 & -2	
MC0511238	-7, -7B, -8, -8B	
MC0511239	-1, -2, -3, -4	Hinge Half, Undrilled
MC0511237	-1S & -2S	
7205	-1.63U, -1.63D, -2.00U	Hinge Pin, Reusable

FAA PMA Number: PQ3732CE

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Approved By:


 Quality Assurance Manager


 Engineering Manager


 Production Manager

Revisions

Revision	Date	Summary
Original	10/28/2019	Original release
A	12/11/2019	Added part numbers MC0511106-18, -19, -106, -107. Corrected hinge half part numbers in Introduction table.

List of Effective Pages

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INTRODUCTION

This document is intended to provide for the continued airworthiness of McFarlane Aviation, Inc. PMA replacement Cabin Door Hinge Assemblies, Hinge Halves, Undrilled Hinge Halves, and Reusable Cabin Door Hinge Pins eligible for installation on Cessna model 170 Series single engine aircraft.

Note: This document is highly similar to McFarlane ICA 7089, which concerns cabin door hinges for Cessna model 172 & 175 Series aircraft. Some part numbers in ICA 7089 are also contained in this document.

The part numbers are as follows:

- Hinge Assemblies: MC0411579-4, **MC0511106-106**, MC0511106-106B, **MC0511106-107**, MC0511106-107B, MC0511280-3, MC0511280-4, MC0511280-5, MC0511280-6, MC0511280-5B, MC0511280-6B
- Hinge Halves: MC0411579-4A, MC0411579-4F, MC0511106-14, MC0511106-15, **MC0511106-18**, MC0511106-18B, **MC0511106-19**, MC0511106-19B, MC0511237-1, MC0511237-2, MC0511238-7, MC0511238-8, MC0511238-7B, MC0511238-8B, MC0511239-1, MC0511239-2, MC0511239-3, MC0511239-4
- Hinge Halves, Undrilled: MC0511237-1S, MC0511237-2S
- Pin, Hinge, Cabin Door, Reusable: 7205-1.63U, 7205-1.63D, and 7205-2.00U

For all items not related to the installation of the McFarlane Aviation, Inc. parts listed above, refer to the basic airplane model service and parts manuals. This ICA contains two sections: 1. Hinges & Hinge Halves, 2. Hinge Pins. Refer to the section most applicable to the parts being replaced.

SYSTEM DESCRIPTION

Cessna model 170 Series aircraft each have two cabin doors. Each of these cabin doors is attached to the fuselage with two hinge assemblies (hinges). The hinges consist of two hinge halves and a hinge pin. The forward hinge half is attached to the fuselage with threaded fasteners, and the aft hinge half is attached to the cabin door with rivets. Hinge halves and assemblies with a "B" at the end of their part number feature a pre-bent stiffener. Removing the cabin doors to facilitate maintenance or other activities requires removal of the aforementioned threaded fasteners or removing the hinge pins. The original Cessna hinges are each assembled with a non-reusable hinge pin that can only be removed by destructive means. McFarlane has developed a reusable hinge pin design which can be removed and, if in suitable condition, reinstalled.

SECTION 1: HINGES & HINGE HALVES

Current part eligibility information can be found at: http://www.mcfarlaneaviation.com/reference/documents/Eligibility_Charts

McFarlane P/N (Assembly)	Installation Location	Replaces Cessna P/N	McFarlane P/N (Subcomponents: Fwd. Half, Aft Half, Pin)	McFarlane P/N (Undrilled Half)
MC0411579-4	Lower Left & Lower Right	0411579-4	MC0411579-4F, MC0411579-4A, 7205-2.00U	NA
MC0511106-106	Upper Left	0511106-106	MC0511106-14, MC0511106-18, 7205-1.63U	NA
MC0511106-106B	Upper Left	0511106-106	MC0511106-14, MC0511106-18B, 7205-1.63U	NA
MC0511106-107	Upper Right	0511106-107	MC0511106-15, MC0511106-19, 7205-1.63D	NA
MC0511106-107B	Upper Right	0511106-107	MC0511106-15, MC0511106-19B, 7205-1.63D	NA
MC0511280-3	Lower Left	0511280-3	MC0511239-1, MC0511239-3, 7205-2.00U	NA
MC0511280-4	Lower Right	0511280-4	MC0511239-2, MC0511239-4, 7205-2.00U	NA
MC0511280-5	Upper Left	0511280-1, 0511280-5	MC0511237-1, MC0511238-7, 7205-1.63U	MC0511237-1S
MC0511280-6	Upper Right	0511280-2, 0511280-6	MC0511237-2, MC0511238-8, 7205-1.63D	MC0511237-2S
MC0511280-5B	Upper Left	0511280-1, 0511280-5	MC0511237-1, MC0511238-7B, 7205-1.63U	MC0511237-1S
MC0511280-6B	Upper Right	0511280-2, 0511280-6	MC0511237-2, MC0511238-8B, 7205-1.63D	MC0511237-2S

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HINGES & HINGE HALVES – SPECIAL OPERATING INFORMATION

The control and operation of the cabin door does not change with the installation of the McFarlane cabin door hinges or hinge halves; see applicable Cessna model 170 series Service Manual for the operational control of this system.

HINGES & HINGE HALVES – PART REMOVAL, REPLACEMENT, AND SERVICE INFORMATION

Note: For best results, McFarlane recommends replacing complete hinge assemblies and replacing both the upper and the lower hinges simultaneously.

Hinge half removal and replacement:

1. There may be a film of paint connecting the hinge half to the door and/or fuselage. If it is present, score the paint with a sharp razor blade or utility knife.
2. Disconnect door stops and other non-hinge connections to the fuselage. Remove interior trim as needed to access to the hinge half fasteners.
3. Remove the old hinge pin(s) per the applicable Cessna model 170 Series Service Manual. If replacing an aft hinge half, remove the door from the aircraft.
4. **Aft Hinge Half Removal:** Remove the rivets fastening the aft hinge half to the door, taking care not to damage the door or rivet holes. Remove the hinge halves from the door.
Note: Some rivet removal techniques can be found in FAA Advisory Circular 65-15A, page 177. This document can be downloaded from: https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/23018
5. **Forward Hinge Half Removal:** Remove the forward hinge halves from the fuselage by removing the threaded fasteners.
6. As needed, perform surface cleaning, corrosion repair, and paint preparation of the door & fuselage skins prior to installing the replacement hinge half.
7. **Aft Hinge Half Installation:** Prior to riveting, temporarily install the aft hinge half with cleco fasteners to facilitate door and hinge alignment and checking for proper function. Once alignment and function are appropriate, install the McFarlane aft hinge halves onto the door with appropriate rivets. *Note: Upper aft hinge half P/Ns MC0511106-18B & -19B contain pilot holes, which must be enlarged and drifted as appropriate to the proper size and location. For MC0511238-XX aft hinge halves, only two fastener holes are drilled completely through. The rest are to be drilled at the time of installation. Before installing MC0511238-XX upper aft hinge halves, use a straight edge to verify whether the original hinges are bent or straight.*
8. **Forward Hinge Half Installation:** Install the McFarlane forward hinge half onto the fuselage with appropriate threaded fasteners, tightening fully after the door and hinge alignment and function are appropriate. *Note: McFarlane Aviation recommends replacing the threaded fasteners with new parts at this time.*
9. Lubricate with a solid film lubricant (as specified for piano-style hinges in the applicable Cessna 170 Series Service Manuals) or with a light coating of oil.
10. Reinstall the door by installing the McFarlane hinge pins per the instructions in Section 2 of this document or by installing NEW Cessna pins. *Note: Cessna pins are not reusable, so a new pin is needed every time a Cessna pin is removed.*
11. McFarlane provides the hinges with a primer coating. For complete corrosion protection, the primed hinges **MUST** be painted. The McFarlane hinge pins do not require painting.
12. Reconnect door stops and other non-hinge connections to the fuselage. Reinstall interior trim.

When replacing a hinge half with an undrilled part, the installer must locate, mark, and drill the fastener holes. The above instructions apply except for the following:

1. The hole pattern must be marked on the undrilled part. Some suggestions for performing this are:
 -) After removing the old hinge half, use it to create a drill template.
 - OR
 -) Only remove the hinge half to be replaced, maintaining the door's location and alignment within the door opening. Attach the undrilled half with a McFarlane reusable pin. Using a strap duplicator or accessing the holes from the back side, mark the hole drill centers on the undrilled part.
2. Drill the fastener holes through the part, maintaining perpendicularity between the bit and the part while drilling.
3. Before installing the hinge half, treat the edges of the drilled holes with primer to help prevent corrosion.

No exceptions to Cessna instructions, specific to the McFarlane hinge halves, apply. The McFarlane hinge halves install using the same methods and hardware.

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SECTION 2: HINGE PINS

HINGE PINS – SYSTEM DESCRIPTION

Current part eligibility information can be found at: www.mcfarlaneaviation.com/reference/documents/Eligibility%20Charts

McFarlane P/N	Installation Location	Replaces Cessna P/N
7205-1.63U	Upper Left	0711001-59, NAS41-2-1.625
7205-1.63D	Upper Right	
7205-2.00U	Lower Left and Right	0411579-3, 0517019-12, NAS41-2-2, NAS41-2-2.000

The letter "U" or "D" at the end of the hinge's part number indicates the hook's bend direction, which may affect on which side of the aircraft it can be installed. To identify whether a pin is a "U" or "D" pin, lay it on a table in front of you as shown in Figure 1. The long leg will be oriented vertically and will be on your left. When in this orientation:

-) The "U" pin's hook (shown) will curl upward, away from the table.
-) The "D" pin's hook (not shown) will curl downward, towards the table.



Figure 1 – Left: "U" style hinge pin, with upturned hook. Right: "D" style hinge pin, with downturned hook.

HINGE PINS – SPECIAL OPERATING INFORMATION

The control and operation of the cabin door hinge does not change with the installation of the reusable cabin door hinge pin; see applicable Cessna model 170 Series Service Manual for the operational control of this system.

HINGE PINS – PART REMOVAL, REPLACEMENT, AND SERVICE INFORMATION

Remove the old hinge pin per the applicable Cessna Model 170 Series Service Manual.

No exceptions to the Cessna instructions, specific to the McFarlane parts, apply.

The following instructions, specific to the McFarlane parts, apply:

Install the McFarlane reusable hinge pin as follows:

1. Lubricate with a solid film lubricant (as specified for piano-style hinges in Cessna 170 and 172 Series Service Manuals) or with a light coating of oil.
2. With the pin unhooked (open), insert the pin into the topmost hinge knuckle hole. Gently pull the pin's hook away from the hinge knuckle if needed, but only far enough to clear it and prevent paint damage.
3. While maintaining alignment between the forward and aft hinge halves, slide the pin through all hinge knuckle holes until the pin's bend just begins to enter the knuckle hole.
4. Rotate the pin so the hook's tip is nearest to the aircraft skin. While maintaining this orientation, hook/close the pin as you would a safety pin.

Note: McFarlane reusable hinge pins are **NOT** to be installed on aircraft equipped with an emergency door-release system!

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TROUBLESHOOTING

The following troubleshooting instructions, specific to the McFarlane hinges and pins, apply:

1. Door binds during operation.
 - a. Upper and lower hinges are misaligned relative to each other. Upper and lower hinge pins must be on the same hinge line (coaxial).
 - b. One or both hinge halves of a hinge assembly are misaligned. Hinge knuckle pin holes must be on the same hinge line (coaxial).
2. Door sags and doesn't align.
 - a. Hinge pin is worn and/or undersized. Use a new McFarlane hinge pin or a new Cessna hinge pin.
 - b. Knuckles and/or knuckle pin holes are excessively worn. Replace affected hinge halves.
 - c. Hinge halves are misaligned and/or upper and lower hinges are misaligned.
3. Hinge pin cannot be inserted or inserts with great difficulty.
 - a. Ensure the knuckle holes of adjacent halves are aligned.
 - b. Ensure the knuckle holes are clear, clean and not obstructed with metal burrs, paint, debris, corrosion, pieces of previous pins, etc.
 - c. Lubricate pin and knuckle holes with a solid film lubricant or a light coating of oil.
4. Hinge pin cannot be hooked after insertion, regardless of orientation.
 - a. Ensure the pin is inserted from the top, with the hook on the bottom edge.
 - b. Ensure that you have the correct pin for the installation location (i.e. upper left, upper right, lower left, lower right).

PLACARDS

None applicable

DATA

All information to support the continued airworthiness of these replacement parts is as defined herein and contained in:

-) Relevant Cessna model 170 Series Service Manuals.
-) Relevant Cessna model 170 Series Illustrated Parts Catalogs.

INSPECTION

McFarlane cabin door hinges and reusable cabin door hinge pins must be inspected as part of pre-flight checks. Ensure the pins are hooked closed and are free of damage, corrosion, and breakage. Inspect the hinge half knuckles for cracks and bending.

Outside of these checks, McFarlane reusable cabin door hinge pins should be inspected at the same intervals as the original pins and adjacent components of the cabin door and its retention systems, as contained in relevant Cessna model 170 Series Service Manuals.

RECOMMENDED OVERHAUL PERIODS

No additional overhaul time limitations exist with the use of these parts.

AIRWORTHINESS LIMITATIONS

The Airworthiness Limitations section is FAA approved and specifies maintenance required under Sec. 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved. No additional airworthiness limitations exist.

ASSISTANCE & REVISIONS

ICA revisions shall be made available on the McFarlane website, www.mcfarlaneaviation.com/ICA. For questions or assistance regarding these Instructions for Continued Airworthiness (ICA), contact McFarlane Aviation, Inc via email or phone.

Email: engineering@mcfarlaneaviation.com Phone: 1-800-544-8594 (within the US) or 1-785-594-2741.