Instructions for Continued Airworthiness

McFarlane Aviation, Inc. FAA-PMA Part Numbers MC0743624-2 Shimmy Dampener Assembly.
FAA PMA Number: PQ3732CE

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Approved By:

Quality Assurance Manager

Engineering Manager

Production Manager

CHECKED BY:

Revisions

Revision	Author	Date	Summary
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List of Effective Pages

Page	Rev	Date
ALL	Original	07/30/2021

Contents

INTRODUCTION

This document is intended to provide for the continued airworthiness of McFarlane Aviation, Inc. PMA replacement shimmy dampener assembly eligible for installation on various Textron aircraft. The part number is MC0743624-2 For all items not related to the installation of the McFarlane Aviation, Inc. shimmy dampener assembly, refer to the basic airplane model service and parts manuals.

Table 1: McFarlane PMA Part Eligibility

Cessna P/N	McFarlane P/N	Aircraft Eligibility
0743624-2	MC0743624-2	206, 206H, P206B, P206C, P206D, P206E, TU206B, TU206C, TU206D, TU206E, TU206F, TU206F, TU206G, T206H, U206, U206A, U206B, U206C, U206D, U206E, U206F, U206F, U206G, 207, 207A, T207, T207A, 210G, 210H, 210J, 210K, 210L, 210M, 210N, 210R, P210N, P210R, T210G, T210H, T210J, T210K, T210L, T210M, T210N, T210R
SE1068-3		
SE1068-4		
SE1068-5		
SE1068-6		

SPECIAL OPERATING INFORMATION

The control and operation of the nose gear does not change with the installation of the McFarlane Aviation, Inc. Shimmy Dampener Assembly; see applicable Cessna/Textron Service Manual for the operational information.

PART REMOVAL, REPLACEMENT, AND SERVICE INFORMATION

Remove the old Cessna P/N 0743624-2 Shimmy Dampener and install the McFarlane replacement Shimmy Dampener Assembly P/N MC0743624-2 as applicable per the applicable Cessna/Textron Model Service Manual.

Refer to the applicable Cessna/Textron Model Service Manual for removal/installation instructions and the applicable Cessna/Textron Model Parts Manual for the hardware part numbers.

TROUBLESHOOTING

None Applicable

PLACARDS

None applicable

DATA

None Applicable

INSPECTION

No alteration from existing inspection requirements

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.

CESSNA MODELS
206, 207, 210
PARTS OVERVIEW
MC0746324-2

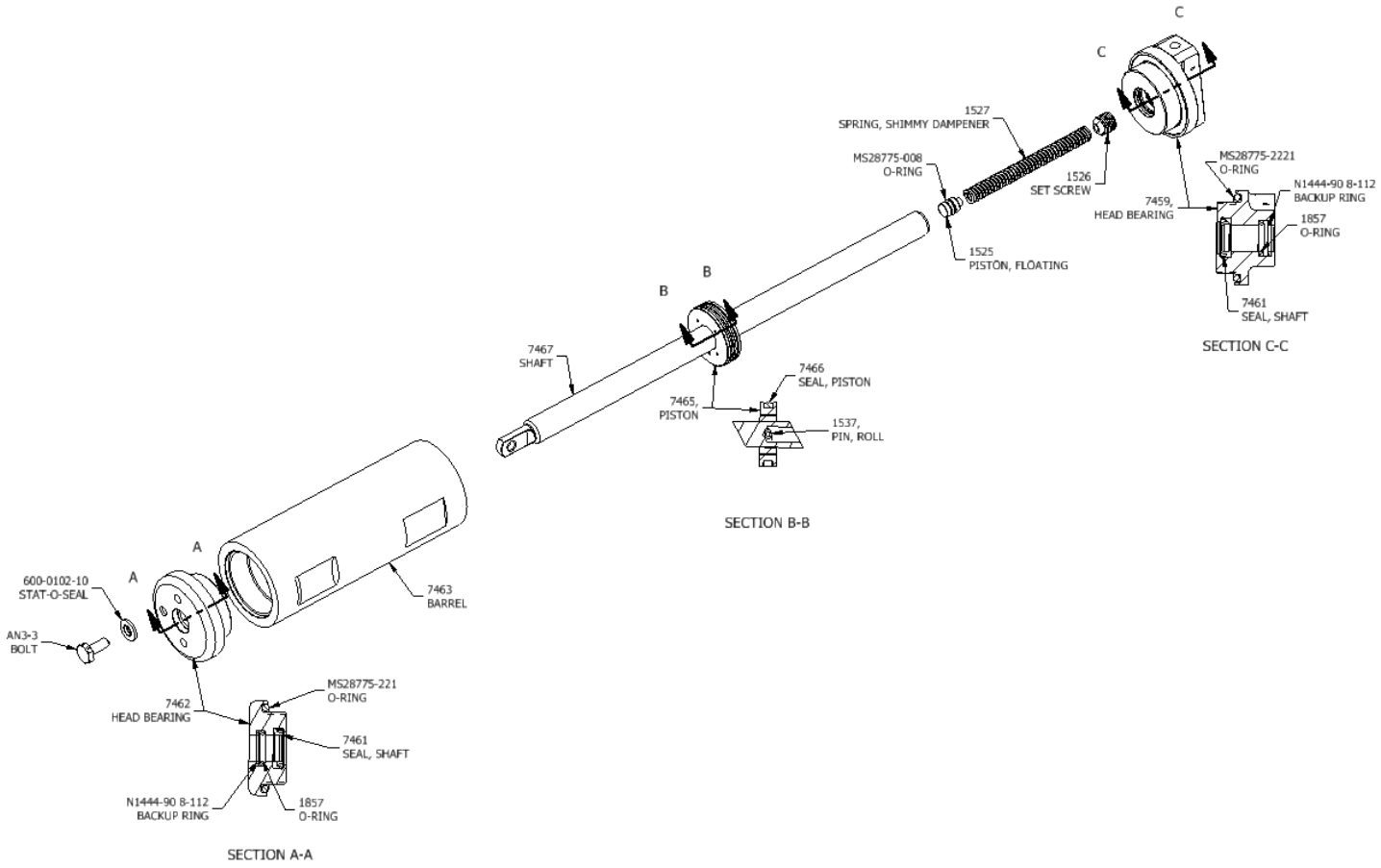

FIGURE 1 – Exploded View of McFarlane Aviation, Inc. P/N MC0743624-2 Shimmy Dampener Assembly

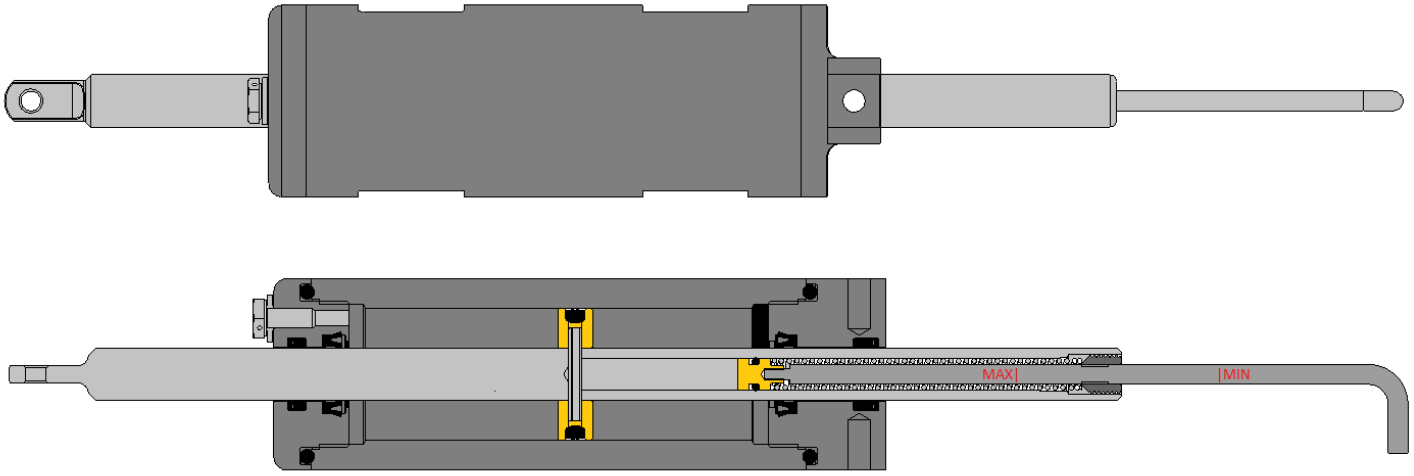

FIGURE 2 – FLOATING PISTON LOCATION

FLOATING PISTON LOCATION INFORMATION

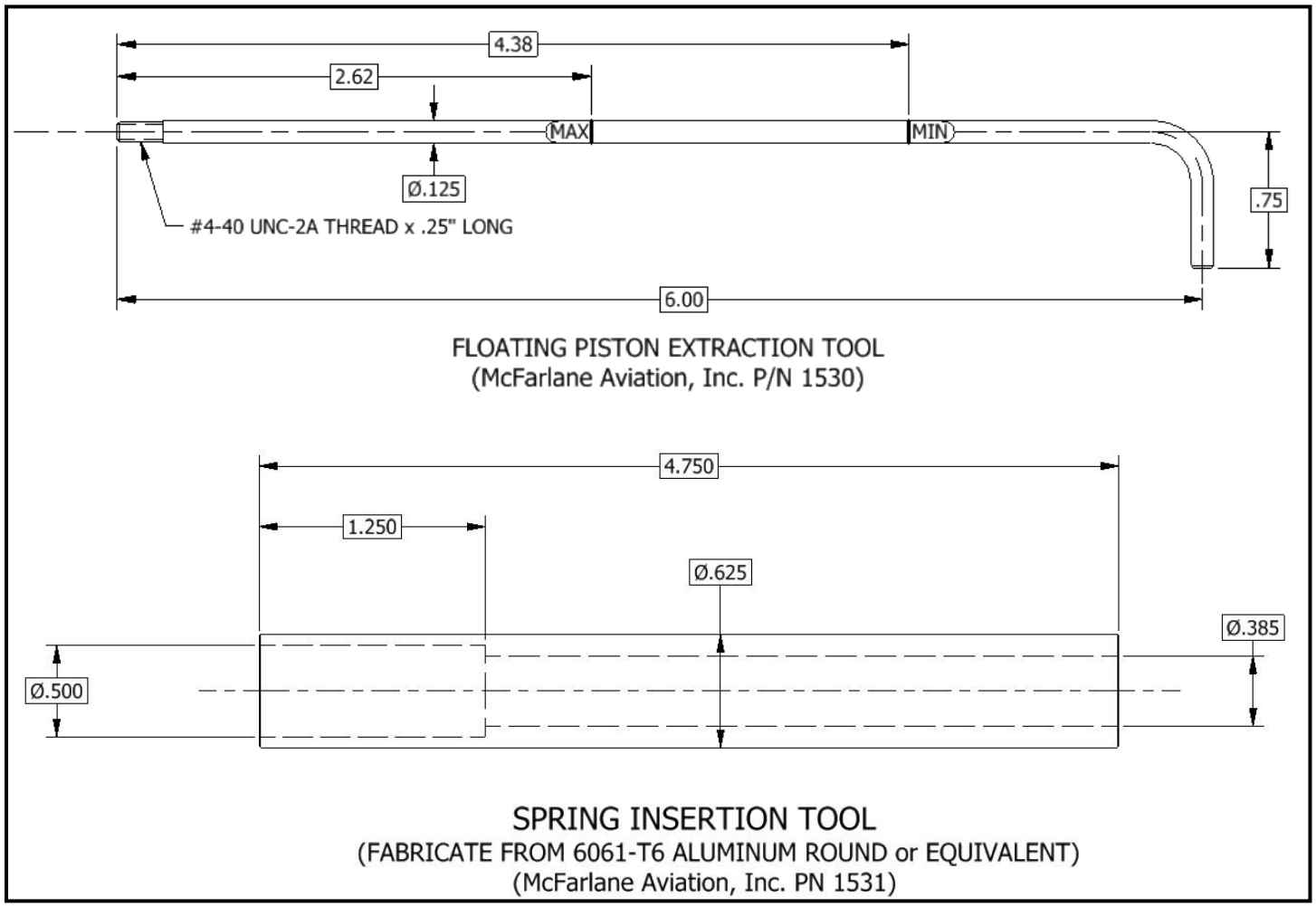

FIGURE 3 –SHIMMY DAMPENER SERVICE TOOLS

Servicing Instructions

Remove the old Cessna P/N 0743624-2 Shimmy Dampener and install the McFarlane replacement Shimmy Dampener Assembly per the applicable Cessna/Textron Model Service Manual.

Refer to the applicable Cessna/Textron Model Service Manual for removal/installation instructions and the applicable Cessna/Textron Model Parts Manual for the hardware part numbers. NOTE: McFarlane Aviation, Inc. replacement hardware and seal kits are available for purchase if the originals are not re-useable.

The following service information is to be utilized when checking the operation and fluid level on the McFarlane Shimmy Dampener Assembly while on the aircraft.

A. SHIMMY DAMPENER – CHECKING OPERATION
   1) The operation of the shimmy dampener can be checked without removing the unit from the aircraft.
   2) Remove the clevis bolt and nut which attaches the clevis end of the shaft to the aircraft.
   3) Manually push and pull the shaft in and out of the shimmy dampener barrel being careful to not pull out too far where the non-clevis end of the shaft recesses into the end of the barrel (oil could be lost). During this push and pull process, observe if the stroking is erratic or produces a noise identifying air inside the barrel.
   4) If there is any concern that the shimmy dampener is not performing correctly (is low on fluid), refer to SHIMMY DAMPENER – CHECKING FLUID LEVEL.
   5) If the shimmy dampener is functioning properly, reinstall the shimmy dampener per the Cessna/Textron Model Service Manual.

B. SHIMMY DAMPENER - CHECKING FLUID LEVEL
1) The Fluid Level of the shimmy dampener can be checked without removing the unit from the aircraft.
2) Measure the piston (P/N 1525) position in the shaft (P/N 7467) (See Figure 2), by inserting the floating piston extraction tool (P/N 1530) into the vent hole of the set screw (P/N 1526). If the extraction tool is an older model a 0.060" diameter wire may be used instead (mark the min and max lines on the wire per Figure 3). Insert the tool until it hits the unthreaded part of the piston. DO NOT THREAD ONTO PISTON. If the end of the rod is between the "MIN" and "MAX" lines, the shimmy dampener fluid level is sufficient.
3) If the position of the piston (P/N 1525) indicates a need to add fluid (outside of minimum line), refer to SHIMMY DAMPENER HYDRAULIC FLUID ADDITION, ONLY.

C. SHIMMY DAMPENER HYDRAULIC FLUID ADDITION, ONLY
1) Remove the shimmy dampener from the airplane. (Refer to applicable Cessna/Textron Model Service Manual)
2) Position the shaft and piston assembly all the way to the non-fill hole head bearing end (P/N 7459)
3) Position the shimmy dampener so the barrel is vertical but with the Fill Plug on the top of the assembly and remove the fill plug.
4) Thread the piston extraction tool (P/N 1530) fully onto the floating piston (P/N 1525), **very slowly** pull the floating piston from inside of the shaft until the extraction tool Max indicator line is well above the end of the shaft.
5) Fill the chamber of the barrel thru the filler plug opening with MIL-PRF-5606H fluid using a syringe and needle or equivalent. Assure that all air is out of the barrel reservoir. Let dampener set vertical for a period of time with the filler plug open to allow air bubbles to drift up and out of the fluid. Overfill, if necessary, to assist in purging air out of reservoir.
6) Gently depress the floating pin extraction tool until the max line is approximately flush with the end of the shaft and hold in place while re-installing the stat-o-seal and fill plug (hand tight only for temporary).
7) Tighten the filler plug and wipe any excess fluid off of the assembly exterior.
8) Operate the completed unit by hand at the full stroke of travel to check for air. Air will make a gurgling noise as the shaft travels in and out.
9) Check for proper "feel" while cycling. The dampener should have freedom of travel at slow cycling speeds and substantial resistance at fast cycling speeds with consistent resistance for a set speed with no jerks or sudden slides.
10) If air is trapped in the shimmy dampener assembly, repeat SHIMMY DAMPENER HYDRAULIC FLUID ADDITION, ONLY Steps 2 thru 10 ABOVE.
11) Tighten the fill plug to 19 to 24 inch-lbs. torque and re-wire the safety wire on the assembly.
12) Clean the dampener with cleaning agent.
13) Dry the dampener with a clean cloth.
14) Re-install the shimmy dampener on the airplane. (Refer to applicable Cessna/Textron Model Service Manual)

The following service information is to be utilized when servicing the McFarlane Shimmy Dampener Assembly P/N MC0743624-2:

A. SHIMMY DAMPENER DISASSEMBLY AND REPAIR
If an issue has been found while servicing the shimmy dampener assembly, do the disassembly as follows (See Figure 1 or Figure 3):
Remove the filler plug and drain the hydraulic fluid from the shimmy dampener assembly.
1) Remove the setscrew, spring and floating piston from the shaft assembly. (See Figure 6 for Service Tool Recommendation)
2) Remove the head bearings from each end of the barrel.
3) Pull the shaft assembly from the barrel.
4) Remove all O-rings and backup rings and replace with new components.
5) Examine the piston, shaft, spring, floating piston and set screw for serviceability. NOTE: Only minor scuffing of the piston OD is acceptable.
6) Examine the piston to shaft attachment (spring pin).
7) Examine the inside surface of the barrel. The barrel should not have any deep scratches or gouges. Minor discoloration or small scratches are acceptable.
8) No corrosion or significant finish defects are allowed.

9) Clean all parts in a petroleum solvent or mild water/detergent solution. All parts must be rinsed, cleaned, and dried.
10) Replace all O-rings and backup rings, filler plug and any other damaged parts (Note: All Replacement parts and Seal Kit P/N SDKT-7 are available thru McFarlane Customer Service)

B. SHIMMY DAMPENER ASSEMBLY (Refer to Figure 1)
1) Before you assemble the shimmy dampener, make sure there are no sharp edges on the parts that can result in damage of the O-rings or packing ring when assembled. Lubricate all internal parts with MIL-PRF-5606H hydraulic fluid before assembly.

CAUTION: Dirt and dust can cut the seals in the barrel. Keep all parts clean during assembly.

2) Install a new O-ring on the floating piston. Then install the floating piston, spring, and setscrew in the shaft. Replace self-locking set screw P/N 1526 if installation torque is minimal. (Note floating piston orientation) (See Figure 6 for Service Tool Recommendation)
3) If removed, install the piston to the shaft with the spring pin (Note: ensure that all holes in the piston line up with those on the shaft). The shaft or piston must be supported during pin installation with plastic or wood.
4) Install the shaft assembly in the barrel.
5) Install new seals, O-rings, and backup rings in the internal and external grooves of the head bearings.
6) Tighten head bearing (P/N 7642) to 40 - 60 ft-lbs. to barrel (P/N 7463). Tighten head bearing (P/N 7459) to 90 – 110 ft-lbs. to barrel (P/N 7643)
7) Tighten bolt (P/N AN3-3) into head bearing (P/N 7642) to 1.6 – 2.0 ft-Lbs.
8) Service the shimmy dampener. (Refer to Shimmy Dampener Servicing below)
9) Install the shimmy dampener on the nose landing gear. (Refer to applicable Cessna/Textron Model Service Manual)

C. SHIMMY DAMPENER SERVICING (Replacing the Hydraulic Oil)
(NOTE: Ambient temperature for the dampener and hydraulic fluid should be at approximately 70°F during this servicing process)

Draining The Shimmy Dampener

1) Do the servicing of the shimmy dampener as follows (Refer to Figure 1):
2) Remove the shimmy dampener from the airplane. (Refer to applicable Cessna/Textron Model Service Manual).
3) Position the shaft assembly all the way to the non-fill hole head bearing end (P/N 7459). And place the shimmy dampener assembly vertical so that the filler plug is facing up.
4) Remove the filler plug using a 3/8” wrench, then rotate the shimmy dampener assembly over to drain the hydraulic fluid from the shimmy dampener assembly.
5) Remove the set screw (P/N 1526) and spring (P/N 1527) using a 3/16” hex key driver. With the piston extraction tool (P/N 1531), **slowly** pull the floating piston (P/N 1525) out of the shaft.
6) Empty any remaining fluid in the barrel or shaft reservoirs and return shimmy dampener assembly to the vertical position with the filler plug up.

Filling The Shaft chamber With Fluid

1) Fill the shaft chamber with new MIL-PRF-5606H fluid to the top of the threaded area.
2) Gently re-insert the floating piston just until the piston O ring is sealing.
3) Rotate the assembly so the filler plug is up and let it sit for several hours for air bubbles to rise.
4) At the end of the rest period, with the fill plug opening still up, insert the piston extraction tool and **slowly** push the piston in about 1/2 of an inch to push any air bubbles into the barrel chamber. The shaft chamber should now be air free.

Filling the Barrel Chamber

5) With the filler opening upright, fill the barrel chamber with fluid.
6) Let the assembly sit upright with the filler plug open for 30 minutes or more to allow air bubbles to drift up and out of the fluid.
7) Install the filler plug and cycle the piston assembly up and down several times.
8) When cycling, if air bubbles are felt or heard, repeat step 6.

Adjusting The Fluid Level and Final Assembly

1) Screw the floating piston extraction tool into the floating piston. With the assembly vertical with the filler plug open and up, slowly depress the piston until the max line is approximately flush with the end of the shaft and re-install the stat-o-seal and fill plug (hand tight only for temporary). Some fluid and any air should leak out.
2) Remove the floating piston extraction tool and install the spring and vented set plug.
3) Operate the completed unit by hand at the full stroke of travel to check for air. Air will make a gurgling noise as the shaft travels in and out.
4) Check for proper “feel” while cycling. The dampener should have freedom of travel at slow cycling speeds and substantial resistance at fast cycling speeds with consistent resistance for a set speed with no jerks or sudden slides.
5) If air is trapped in the shimmy dampener assembly, repeat SHIMMY DAMPENER HYDRAULIC FLUID ADDITION, ONLY Steps 2 thru 10 ABOVE.
6) Tighten the filler plug to 19-24 inch/lbs. and wipe any excess fluid off of the assembly exterior.
7) Safety wire the assembly.
8) Clean the dampener with cleaning agent.
9) Dry the dampener with a clean cloth.
10) Re-install the shimmy dampener on the airplane. (Refer to applicable Cessna/Textron Model Service Manual)

NOTE: PRE-FLIGHT CHECK LIST AND 100 HOUR AIRCRAFT INSPECTION ARE NOT ALTERED AS A RESULT OF THIS INSTALLATION.