



McFarlane Aviation Products

Instructions for Continued Airworthiness

McFarlane Aviation Inc. FAA-PMA Part Number 1111 Stabilizer Screwjack Actuator Kit.

FAA PMA Number: PQ3732CE

Notice: Verify that this document is the latest approved revision before use! Current version can be found at: www.McFarlaneAviation.com/ICA

Approved By:


Quality Assurance Manager


Engineering Manager


Production Manager

Revisions

Revision	Date	Summary
Original	04/05/2010	Original release
A	10/26/2010	Updated Assistance and Revision Section. Latest revision now available on website.
B	06/01/2011	Added alignment marks and hinge P/Ns to figure. Added Service and Parts Manual part numbers. Expanded bearing seating instructions.
C	12/11/2011	Added new chain assy. 6361. Deleted reference to part numbers 6464 and 6463
D	02/22/2017	Added identifiers for not-provided parts to figure.
E	06/05/2020	Bearing bore prep instructions, added additional instructional diagrams.

List of Effective Pages

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INTRODUCTION

This document is intended to provide for the continued airworthiness of McFarlane Aviation, Inc. PMA Stabilizer Screwjack Actuator Kit eligible for installation on various Cessna model aircraft. The kit part number is 1111 and is comprised of the parts required to overhaul two (2) actuators; (there are two such actuators on each aircraft). This document specifically concerns the installation of the overhaul kit. For all items not related to the installation of the McFarlane Aviation, Inc. overhaul kit, refer to the basic airplane model service and parts manuals.

SYSTEM DESCRIPTION

Cessna Model Series 180, 185, and 182 (through 182D) employ two screw driven actuators to manipulate the position of the horizontal stabilizers. Due to wear and corrosion, overhaul of these actuators is routinely required. Replacement of the sprocket, bushings, bearing, retainer collar, screw bar, barrel, retainer pin, and chain/chain pin may be performed to return the part to optimal condition.

Retain and Re-use the following parts:

Hinge Assembly PN 0712500-5 (LH) or -6 (RH)

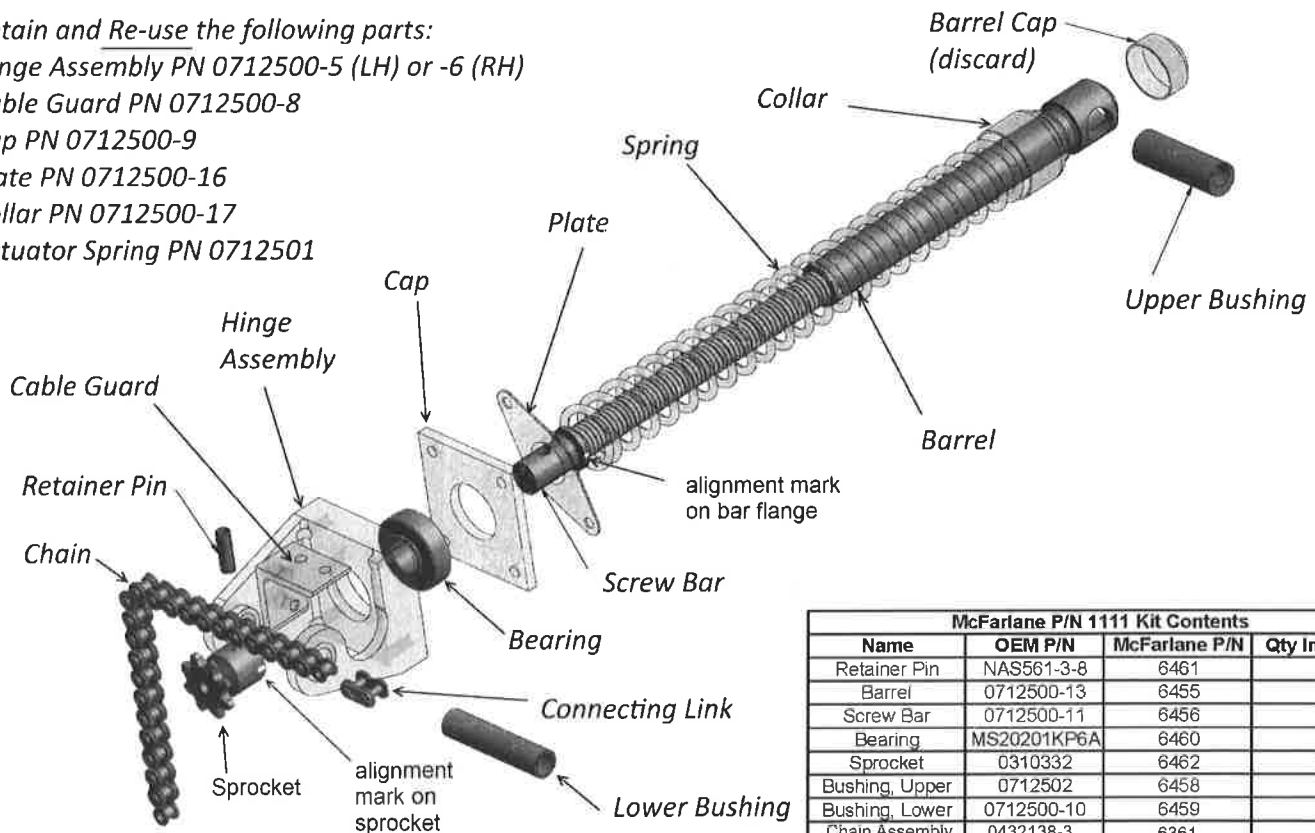
Cable Guard PN 0712500-8

Cap PN 0712500-9

Plate PN 0712500-16

Collar PN 0712500-17

Actuator Spring PN 0712501



McFarlane P/N 1111 Kit Contents			
Name	OEM P/N	McFarlane P/N	Qty Included
Retainer Pin	NAS561-3-8	6461	2
Barrel	0712500-13	6455	2
Screw Bar	0712500-11	6456	2
Bearing	MS20201KP6A	6460	2
Sprocket	0310332	6462	2
Bushing, Upper	0712502	6458	2
Bushing, Lower	0712500-10	6459	2
Chain Assembly	0432138-3	6361	1

Note: McFarlane P/N 6457 is an assembly consisting of part numbers 6456, 6460, and 6462, which have been match drilled as a set. P/N 6361 is an assembly consisting of a length of # 25 chain and two connecting links.

The McFarlane Aviation, Inc. overhaul kit provides the parts indicated. Cessna Aircraft does not provide these parts in a kit form. The McFarlane PMA barrel, screw bar, bushings, and sprocket differ from the OEM parts in that they are made of corrosion resistant alloys (duplex stainless steel or Monel); providing for superior corrosion resistance and longer part life.

*Note: The McFarlane Sprocket replaces both the original sprocket (Cessna P/N 0310332) **and** the retaining collar (Cessna P/N 0712500-7).*

SPECIAL OPERATING INFORMATION

The control and operation of the actuator does not change with the installation of the overhaul kit; see applicable Cessna Model Service Manual for the operational control of this system.

PART REMOVAL, REPLACEMENT, AND SERVICE INFORMATION

Remove the Cessna stabilizer actuators and install the McFarlane stabilizer actuators per the applicable Cessna Model Service Manual.

Refer to the applicable Cessna Model Service Manual for installation/maintenance instructions and the applicable Cessna Illustrated Parts Catalog for component part numbers.

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

1. Do not use lapping compounds on the McFarlane barrels and screw bars during replacement.
2. Cessna parts cannot be used to replace McFarlane Components.

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

Due to inconsistency found in the original Cessna hinge bearing housings, the bearing bores must be measured and adjusted as necessary to accommodate the more precise bearings utilized in this STC. Failure to do so could result in rough operation/rotation and a shortened life for the bearing.

Bearing Removal and Installation Prep Instructions:

1. Check bore of housing and bearing outer race for proper size and roundness by taking at least four measurements at different locations as illustrated.
2. Calculate average bore measurement and average bearing OD measurement.
3. Subtract housing ID average from bearing OD average to obtain the interference. Utilize the figures and tables below for calculations.

Location	Bearing OD (Per spec: 0.8745"- 0.8750")	Housing Bore (Per spec: 0.8739"- 0.8744")
A		
B		
Average:		

Bearing OD Avg.	-	Housing Bore Avg.	=	Interference

4. If interference is greater than 0.0011", run sandpaper or emery cloth on the housing ID. Remove material evenly and slowly around bore.
5. Repeat steps 1 thru 4 for the bore until interference is less than 0.0011".
6. Check bore for any gouges, dents, etc.
7. Clean the bore and bearing of any grit, residue, etc.

Bearing Installation Instructions:

1. After applying a light coating of lubricant, check bearing alignment with bore in housing.
2. Using a press tool (tube with max OD of 0.873" and min ID of .500"), press down on outer race of the bearing with just enough force to start the bearing into the bore.
3. Stop pressing bearing and re-check alignment between bearing and housing.
4. Continue pressing bearing into housing. Do not exceed 250 lbs of force.
5. Press resistance will increase substantially when bearing is fully seated against housing shoulder. (Note that outer race of bearing may protrude a few thousandths above housing when bearing is fully seated; please see detail view below.)
6. Remove all excess penetrating oil.

After bearing installation: Inner race should turn smoothly and freely when rotated.

Caution: Do not press bearing here; this can damage the bearing.

Press outer race only.

BEARING HOUSING

DETAIL VIEW

Possible slight protrusion when bearing fully seated.

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Assembly Instructions:

1. Align the alignment marks on the screw bar flange and the sprocket and insert sprocket over the end of the screw bar to its deepest point.
Note: The alignment marks indicate the best fit of the retainer pin (roll pin).
2. Install retainer pin and secure the pin with safety wire through the pin center. **Caution: Use only included pin. Pin is strength critical.**
3. Omit Cessna Part Number 0712500-19 barrel cap.
4. Finish installation and rigging per Cessna Service Manual instructions. **Caution:** The threaded screw bar, bearing, and sprocket are match drilled as a set and selectively fit with the barrel. Do **NOT** interchange components.

TROUBLESHOOTING

Refer to the applicable Cessna Model Service Manual for troubleshooting instructions and the applicable Cessna Illustrated Parts Catalog for component part numbers. See listing in Data Section below. For troubleshooting, refer to Figure 11-3 in Manual D138-13, Figure 9-3 in Manual D637-13, and Figure 10-3 in Manual D2000C4-13. The following troubleshooting instructions, specific to the McFarlane parts, apply:

1. If the stabilizer is sluggish or jams, clean the barrel and screw jack and re-apply a coating of MIL-PRF-23827 low temperature grease.

PLACARDS

None applicable

DATA

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

- Relevant Cessna Model Service Manuals.
 - 100 series Service Manual D138-13 (1962 and Prior)
 - 100 series Service Manual D637-13 (1963 thru 1968)
 - 180 & 185 Service Manual D2000C4-13 (1969 thru 1976)
- Relevant Cessna Model Illustrated Parts Catalog.
 - 180/185/A185 IPC P527-12 (1961-1973) dated 6/15/1974 or P699-12 (1974-1986) dated 2/3/1997
 - 180/182 IPC P259-12 dated 6/1/1967

INSPECTION

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.