McFarlane Aviation Products

Instructions for Continued Airworthiness
McFarlane Aviation Inc. Push-to-Release Controls

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www.McFarlaneAviation.com/ICA

Approved By:

Quality Assurance Manager

Engineering Manager

Production Manager

Revisions

Revision	Date	Summary
Original	01/02/2013	Original release
A	08/29/2018	Added part numbers to effectivity table. Added Service Manual to Data section. Throughout, "Steel Ball" was "Ball Bearing". Formatting edits.

List of Effective Pages

Page	Rev/Date
1-4	01/02/2013
1-4	08/29/2018

Instructions for Continued Airworthiness
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FAA PMA Number: PQ3732CE

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Effectivity

McFarlane Part Number	Replaces Cessna Part Number	Aircraft Model Series*	Application*	Cessna Service Manual
MCS1224-4	S1224-1, S1224-2, S1224-3, S1224-4, 0513183-1, 0513183-2	172	Carburetor Heat Control	D138-1-13, D637-1-13
		175	Carburetor Heat Control	D138-1-13
MC0713050-2	0713050-2	180	Carburetor Heat Control	D138-1-13
		180	Mixture Control	D138-1-13
		182	Mixture Control	D138-1-13

** For specific aircraft model and serial number eligibility refer to McFarlane Aviation's web site for the latest PMA Supplement.*

INTRODUCTION

This document is intended to provide detailed installation instructions and instructions for the continued airworthiness of McFarlane Aviation, Inc. push to release controls, eligible for installation on various Cessna aircraft models. This document specifically addresses installation of the controls in eligible aircraft. For all items not related to the installation of the McFarlane Aviation, Inc. controls, refer to the basic airplane model service and parts manuals.

SYSTEM DESCRIPTION

Most single engine aircraft use push-pull controls to operate various engine and cabin environment functions such as carburetor heat, mixture, cabin heat and windshield defrost. The controls feature a moving spring steel wire that is routed in a flexible conduit from the pilot's control position to the appliance. The spring steel wire is attached to a knob shaft or lever on the pilot end and a simple lever or valve on the appliance end. Some of these controls use a "push-to-unlock" mechanism designed to maintain the control's position as set by the Pilot. The design of these "push-to-unlock" controls require the control to be partially disassembled to allow removal and installation of the control in an aircraft.

SPECIAL OPERATING INFORMATION

The operation of the carburetor heat system does not change with the installation of the McFarlane control; see applicable Cessna Model Service Manual for the operational control of this system.

PART REMOVAL, REPLACEMENT, AND SERVICE INFORMATION

The following instructions should be considered an augmentation of the aircraft manufacturer's service manual, providing additional detail to clearly illustrate removal and installation of the controls described herein. Neither these instructions nor installation of the McFarlane control have an impact on; nor is meant to replace the current installation, inspection and maintenance instructions found in the relevant aircraft manufacturer's Service Manual.

Removal

1. Inspect the control installation noting the routing of the control in the aircraft and the location of any clamps.
2. Disconnect the control's inner wire from the appliance arm or valve.
3. Remove all clamps securing the control's conduit to the aircraft.
4. Referring to Figure 1, while pressing the Push Knob to release the lock, pull the two knobs out until the Steel Ball is past the Panel Nut.
   Note: The Steel Ball is not restrained and is easily dislodged. Care must be taken to avoid losing the Steel Ball.
5. Remove the Steel Ball and the Push Knob/Release Shaft assembly.
6. Remove the Knob from the push rod.
7. Loosen the nut behind the instrument panel.
8. Remove the panel nut from control.
9. Retract the control from the hole in the instrument panel and carefully remove the control from the aircraft.

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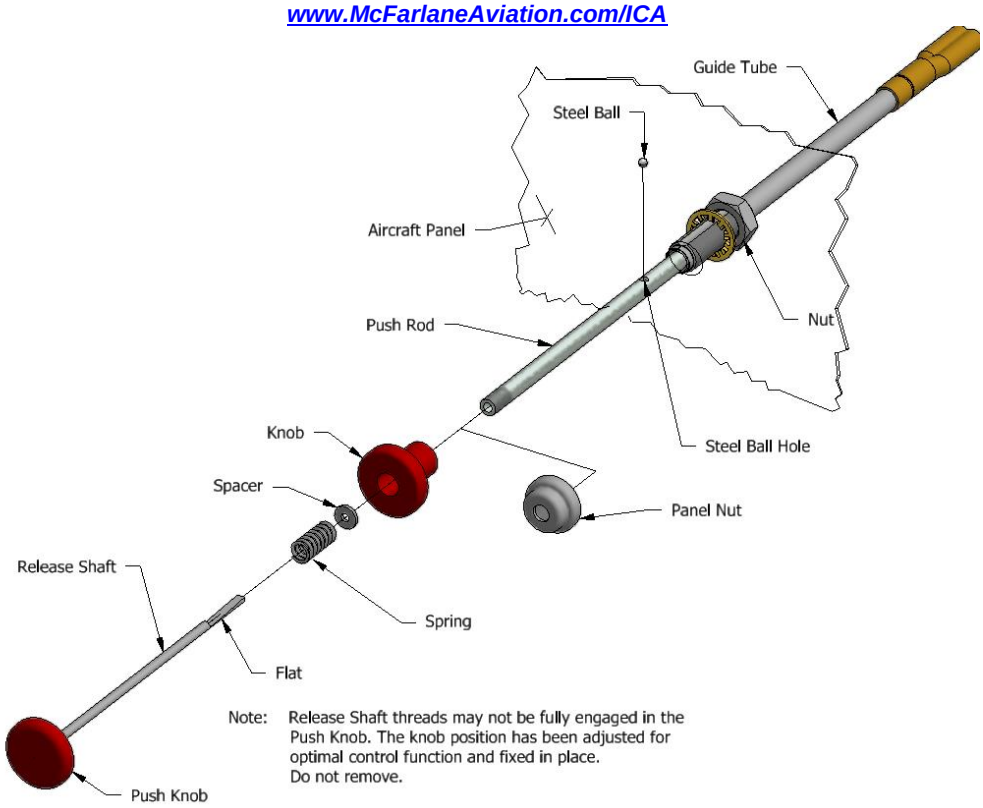

Figure 1. Exploded view of typical “push-to-release” type control.

Installation

1. Pressing the Push Knob to release the lock, pull the two knobs out until the Steel Ball is past the Panel Nut.
   Note: The Steel Ball is not restrained and is easily dislodged. Care must be taken to avoid losing the Steel Ball.
2. Remove the Steel Ball and the Push Knob/Release Shaft assembly.
   Do not disassemble the Push Knob from the Release Shaft.
3. Unscrew the Knob from the Push Rod. Do not remove the Push Rod from the control.
4. Remove the Panel Nut.
5. Insert the control through the aircraft instrument panel from the back side of the panel.
6. Re-install the Panel Nut on the control making sure it is fully threaded on the control threads. Tighten the nut from the back side of the panel to secure the control in the aircraft.
7. Reinstall the Knob on the Push Rod ensuring it has fully engaged the Push Rod threads.
8. If used, install the Spacer in the counter-bore of the Knob.
9. Insert the Release Shaft through the Spring and into the bore of the Push Rod. Rotate the Release Shaft until the ramp flat is oriented toward the hole as shown in Figure 2.
10. While depressing the Push Knob, place the Steel Ball in the Steel Ball Hole and insert the Push Rod into the Guide Tube until the ball is well inside the Guide Tube.
11. Press and pull on the Knob to ensure the control has sufficient holding strength. Test the control for smooth operation.
12. Route and install conduit clamps and wire clamping components as noted in the original installation. Rig the control for proper flapper valve travel as per the aircraft service manual and secure conduit and inner wire clamps. Cycle the control several times to verify proper function of the control before returning aircraft to service. The control must work smoothly throughout the full range of travel with the push knob depressed. The control must lock into place when the push knob is released. The airbox flapper valves must open and close completely. Slippage of the inner wire or the conduit is not allowed.

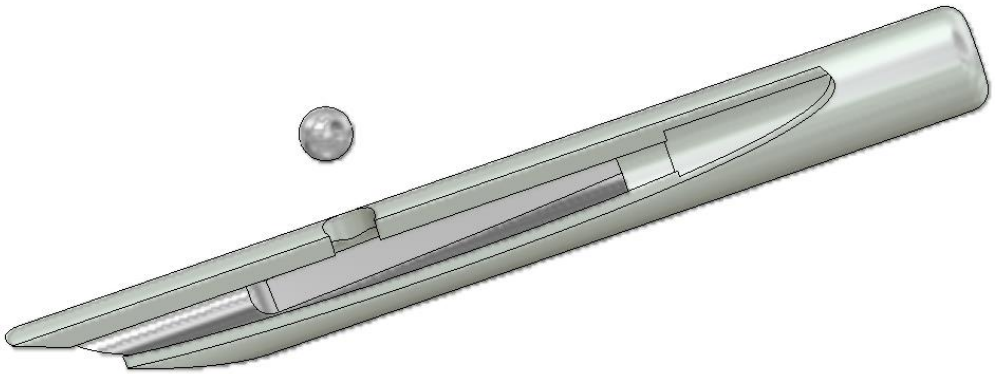

Figure 2. Orient the release shaft ramp towards the hole as shown when installing ball.

TROUBLESHOOTING

Refer to the applicable Cessna Model Service Manual for troubleshooting instructions and the applicable Cessna Illustrated Parts Catalog for mating hardware and higher assembly part numbers. See listing in Data Section below. For troubleshooting, refer to Section 12 in Cessna Manual D637-1-13.

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 D138-1-13 (1962 and prior)
  - 100 series Service Manual D637-1-13 (1963 thru 1968)
- Relevant Cessna Model Illustrated Parts Catalog.
  - 180/182 IPC P529-12

INSPECTION
Inspection intervals for the Carburetor Heat Control and related system are not affected by the use of the McFarlane PMA control. Refer to the Cessna Service Manual for inspection instructions.

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