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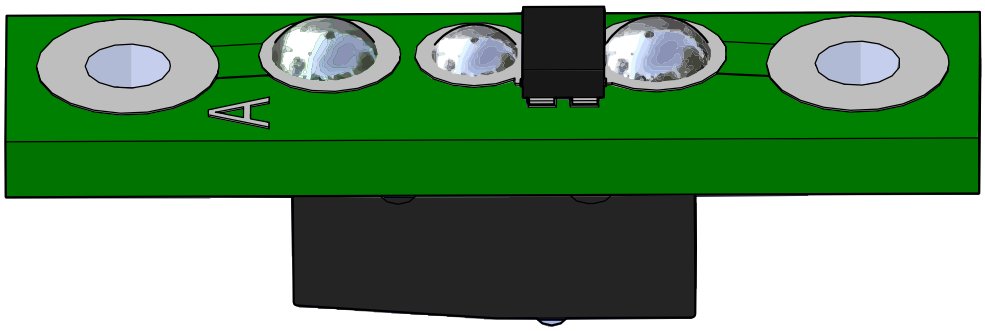
ASI-7-4-2

HUB MICROSWITCH FUNCTIONAL TEST

PROCEDURE



SUBJECT:	
Service & Maintenance	
ASSEMBLY NO:	**APPLICABILITY:**
A0480(H) or A0481(H)	All propeller models

1. TOPIC

1.1 Introduction

This document covers the procedure for testing an Airmaster microswitch located inside the propeller hub. It is recommended that all microswitches are tested if an issue is suspected.

Symptoms of a failed microswitch may include open circuit alarms (all lamps flashing red on the controller), improper operation of the adjustable pitch limit stops, or anomalous indications displayed by the controller.

Defective microswitches must be removed from service and replaced with new parts from Airmaster.

1.2 Function

Each microswitch is comprised of a single-pole double-throw (SPDT) microswitch and rectifier diode assembled on a printed circuit board (PCB).

> ⓘ *Note*
> *The diode component is not incorporated for microswitches used in DSD propeller models.*

These microswitches control the power supplied to the pitch change motor within the hub. They are activated based on blade angle and prevent the propeller from exceeding its adjustable pitch stop limits.

> ⓘ *Note*
> *For example, when the propeller blades are adjusted to the fine pitch limit, the corresponding fine limit microswitch is actuated. This halts power to the motor and prevents further blade adjustment in the fine pitch direction.*

Typically, one microswitch is incorporated for each circuit within the propeller (i.e. fine, coarse, and feather/reverse). Some circuits may incorporate an extra microswitch as a safeguard. However in DSD propeller models only two microswitches are incorporated.

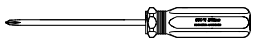
> ⓘ *Note*
> *For more information on the layout of microswitches in different hub models, refer to **ASI-5-3-1**.*

2. MATERIAL REQUIREMENTS

2.1 Parts

ITEM	QTY	PART NO.	DESCRIPTION	IMAGE
1.	As required	A0480(H) or A0481(H)	Microswitch PCB Assy A or B (High Power)	

2.2 Tooling

ITEM	QTY	DESCRIPTION	IMAGE
1.	1	Digital Multimeter (*with probes*)	
2.	1	PH2 Screwdriver	

3. PROCEDURE

3.1 Preparation

- Remove microswitches from microswitch mount assembly (hub) using a PH2 screwdriver.

> *Note*
> *Before removing microswitches, take a photo of the wiring connections to serve as visual reference for subsequent reassembly.*

- Note that each microswitch features two terminals, as distinguished by an 'A' (or 'B') marked on the flat (soldered) side of the circuit board.
- To perform the following tests, multimeter probes are brought in contact with both microswitch terminals and measurements are taken to assess the electrical functionality of the microswitch and diode components.

3.2 Inspect Microswitch

Inspect the microswitch as follows:

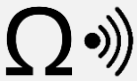
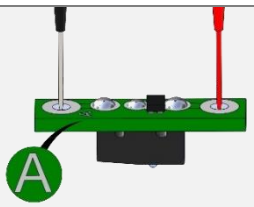
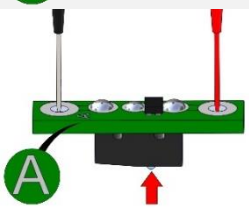
- Check for signs of damage or loose connection of the microswitch components.
- Check soldered connections are secure and solder joints do not contact.
- Actuate the microswitch (blue button) to check smooth function without sticking.
- Check there is an even gap (< 1mm) between the microswitch and the circuit board.

3.3 Test Microswitch Function

Perform this test as follows:

- Set multimeter to continuity or resistance-meter setting (0 - 1kΩ).
- Measure resistance/continuity across microswitch terminals with microswitch open and closed.

> *Note* *Polarity of multimeter probes does not affect readings.*

TEST	MULTIMETER SETTING	TEST SETUP	EXPECTED READING	☑
1.			Continuity (0 - 0.2Ω)	☐
2.			No Continuity (1kΩ+ or "OL" displayed)	☐

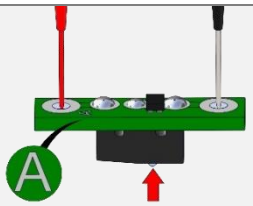
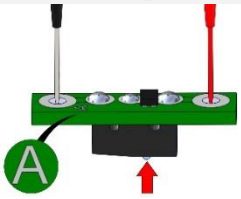
3.4 Test Diode Function (A-Microswitch)

Perform this test as follows:

- Set multimeter to diode-test setting.
- Measure voltage across microswitch terminals in the forward and reverse-bias positions while the microswitch is actuated.

ⓘ *Note* *Polarity of multimeter probes affects readings.*

ⓘ *Note* *This test is not applicable for microswitches from DSD hub models, as no diode is used.*

TEST	MULTIMETER SETTING	TEST SETUP	EXPECTED READING	☑
1.			0.1 – 0.5V	☐
2.			1kΩ+ (“OL” displayed)	☐

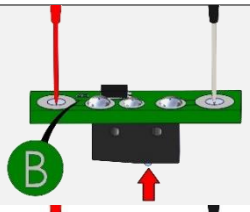
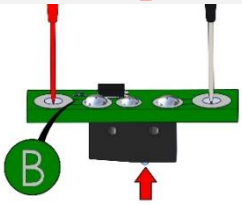
3.5 Test Diode Function (B-Microswitch)

Some hub models (e.g. 2-port hubs) incorporate an alternative B-microswitch (*A0481(H)*). These are the reverse configuration of the A-microswitch (*A0480(H)*) shown above. They are differentiated by a ‘B’ marked on the flat side of the circuit board. The diode for B-microswitches can be tested as follows:

- Set multimeter to diode-test setting.
- Measure voltage across microswitch terminals in the forward and reverse-bias positions while the microswitch is actuated.

ⓘ *Note* *Polarity of multimeter probes affects readings.*

ⓘ *Note* *This test is not applicable for microswitches from DSD hub models, as no diode is used.*

TEST	MULTIMETER SETTING	TEST SETUP	EXPECTED READING	☑
1.			0.1 – 0.5V	☐
2.			1kΩ+ (“OL” displayed)	☐