REVISION	CHANGE	APPROVED	DATE
1	Published release	JTS	30/05/2025
1a	Formatted for website PDF	JTS	27/11/2025

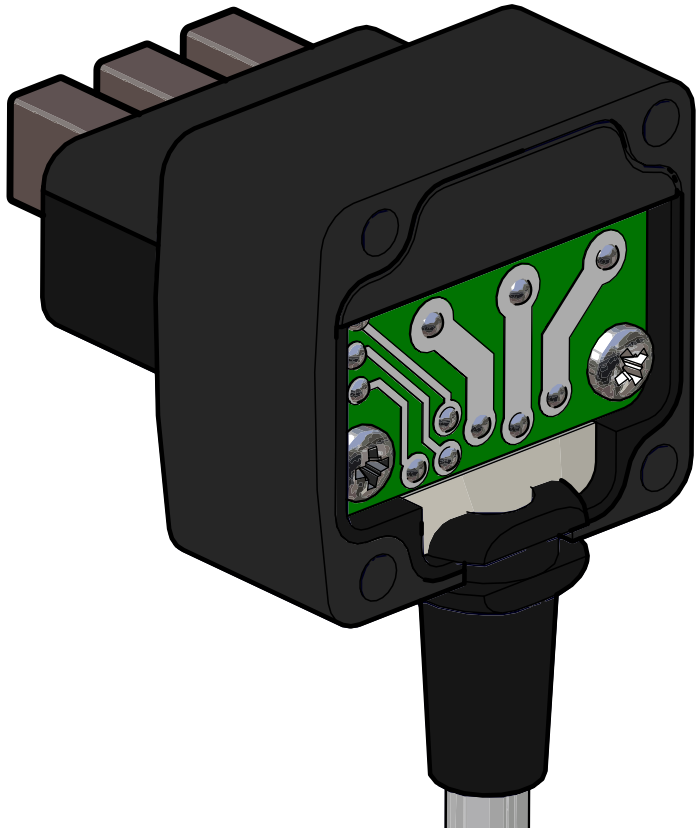
Airmaster Propellers Ltd
20 Haszard Rd, Massey,
Auckland 0614, NZ

Phone: (+64) 9 833 1794
E-mail: support@propellor.com
Web: www.propellor.com

ASI-7-4-1

SENSOR-BRUSH ASSEMBLY INSPECTION

PROCEDURE



SUBJECT:	
Service & Maintenance	
ASSEMBLY NO:	**APPLICABILITY:**
A0120 or A0122	All propeller models

1. TOPIC

1.1 Introduction

This document covers the recommended procedure for inspecting the condition of an Airmaster sensor-brush assembly and checking for correct installation.

The brushes that run on the slipring will progressively wear down during service. Once they have become so worn that the springs behind them are at full extension, the brushes will no longer provide sufficient contact with the slipring. This may be observed during an inspection of the propeller or may become apparent as an open circuit alarm (as indicated by all lamps flashing red on the controller).

> ⓘ *Note*
> *The expected service life for these carbon brushes is approximately 600 hrs when a mini slipring assembly is used, and approximately 300 hrs for a standard slipring assembly. Environmental factors also influence the service life of brushes.*

2. MATERIAL REQUIREMENTS

2.1 Parts

ITEM	QTY	PART NO.	DESCRIPTION	IMAGE
1.	1	A0120 or A0122	Airmaster Sensor-Brush Assembly	

2.2 Tooling

ITEM	QTY	DESCRIPTION	IMAGE
1.	1	9/64” Hex Key	
2.	1	Digital Multimeter (with probes)	
3.	As required	5mm or 6mm Hex Key **Size requirements may vary*	
4.	As required	Piece of Card	

2.3 Paperwork

ITEM	QTY	CODE	DESCRIPTION
1.	1	AR-xxx	Airmaster Slipring Assembly Drawing & BoM

3. PROCEDURE

3.1 Inspect Brush & Slipring Interface

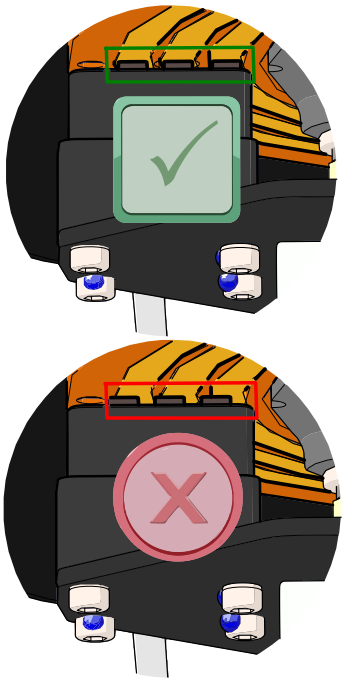
PROCEDURE

Step 1 Check Brush Alignment

- Check brushes align centrally with their respective sliprings and **do not overlap**.
- Check all fixture points for the brush block, mounting bracket and slipring assembly are secure and properly restrained (gently wobble by hand to check).
- Ensure that brushes are not liable to vibrate or shift while the engine is running.

Note
A torch or inspection mirror may be useful to inspect this area.

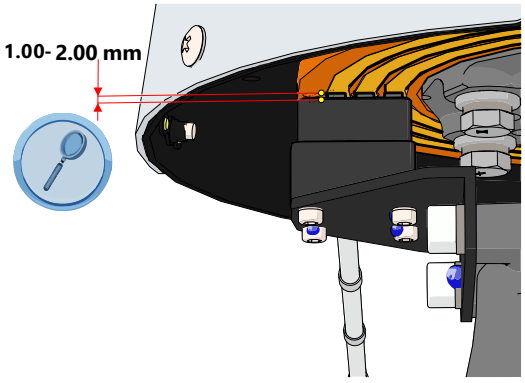
Note
A Rotax standard slipring assembly is shown.



Step 2 Check Sensor-Brush Block Position

- Check the distance from the front of the brush block to the slipring face does not exceed **1-2mm** (**0.08in**).

Note
A feeler gauge may be used for this purpose.



Step 3 Inspect Brushes & Slipring Interface

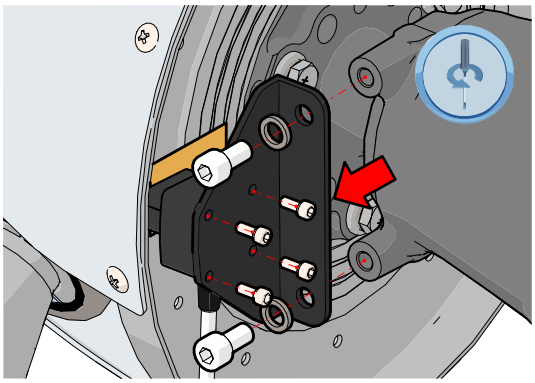
- Check brushes and sliprings are clean and free from any oils or grease.
- Check the visible area of each brush for signs of damage e.g. cracking.

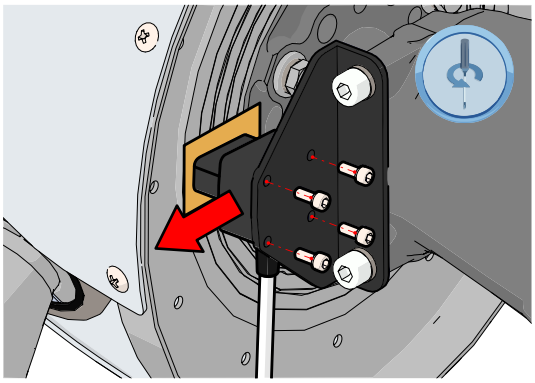
3.2 Inspect Sensor-Brush Block

PROCEDURE

Step 1 Remove Sensor-Brush Assembly

- Remove sensor-brush assembly by either of the following methods, based on which is most convenient:
  - Detach sensor-brush block from mounting bracket via (4) 8-32 UNC cap screws, then carefully slide the block out from between the bracket and slipring.
  - Remove mounting bracket from engine first, then detach sensor-brush assembly via (4) 8-32 UNC cap screws.
- Unplug sensor-brush cable connector from extension loom.





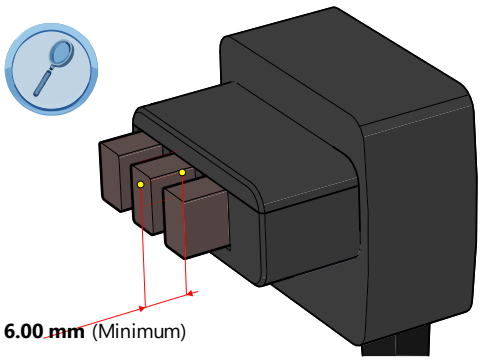
Caution
Insert a piece of card between the brushes and slipring to protect the brushes as the sensor-brush assembly is removed.

Note
Standard slipring and sensor-brush bracket shown.

Attention
9/64" Hex-key (for 8-32 UNC cap screws)
5mm or 6mm Hex-key (depending on bracket).

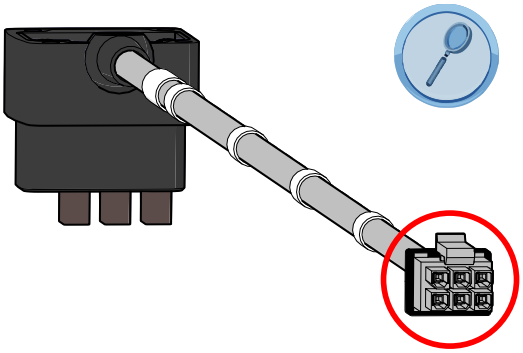
Step 2 Inspect Brushes

- Inspect brushes for damage (e.g. cracking) under good illumination.
- Inspect brushes for wear, ensuring they protrude at least 6mm from the front face of the brush holder.



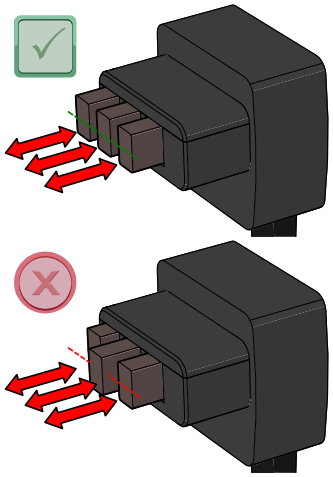
Step 3 Inspect Brush Loom

- Inspect sensor-brush cable for signs of damage (e.g. chaffing).
- Inspect cable connector for signs of damage or water ingress. Ensure latch is functional.
- Check pins inside connector are inserted properly and are not bent.



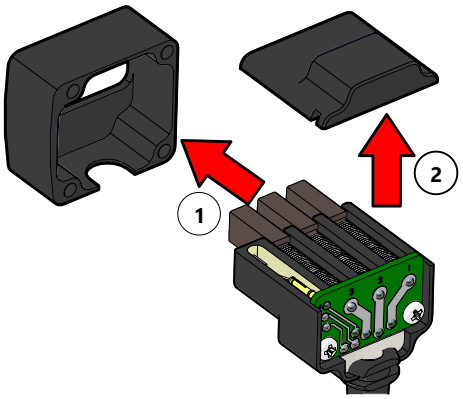
Step 4 Check Brush Travel

- Carefully compress and release the brushes in unison to check they travel smoothly and evenly through the brush holder (without sticking).



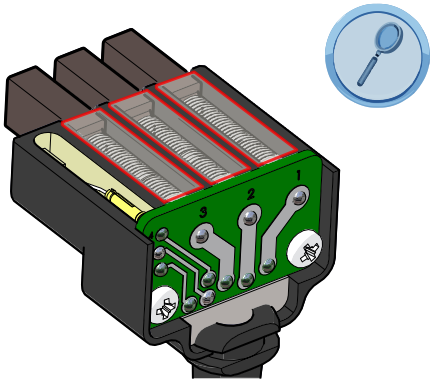
Step 5 Dismantle Block Head

- Remove outer casing by sliding it over the front of the sensor-brush block.
- Remove plastic cover.



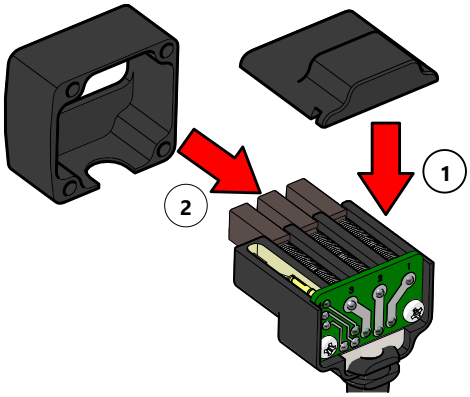
Step 6 Inspect Brush Channels

- Examine brush channels under good illumination. Check for the following:
  - Damaged or frayed brush leads (gently tug each brush to check brush lead is secure).
  - Deformed or sticky springs.
  - Accumulation of carbon dust or moisture.
  - Damaged brush holder channels (e.g. deformation from overheating).

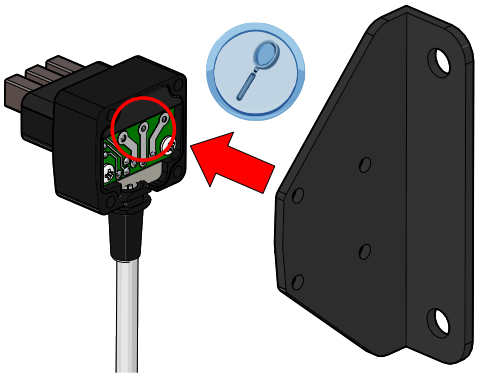


Step 7 Reassemble Block Head

- Place plastic cover on top of brush block.
- Slide metal casing over front of brush block.

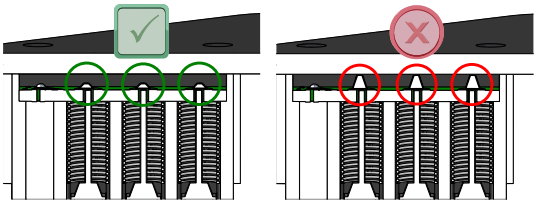


Step 8 Check Solder Joint Height



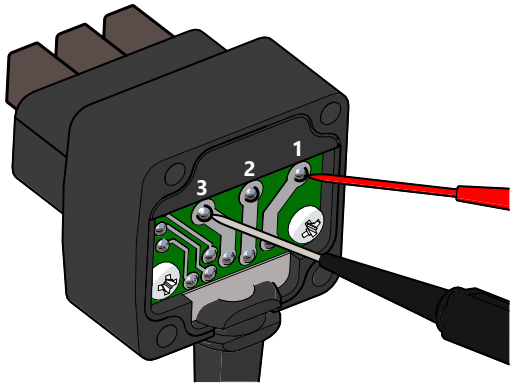
- Dry-fit sensor-brush block against mounting bracket.
- Check solder joints located on rear circuit board do not contact the bracket (this may create an electrical short).
- Trim solder joints as necessary to prevent contact.

Note
Rotax standard mounting bracket (P0259) is shown.



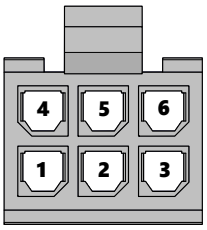
Attention *Wire Cutter (as required)*

Step 9 Check Electrical Continuity



- Check there is no continuity between brushes.
- Check there is no continuity between each brush and the brush block casing.
- Check for continuity between each brush and the corresponding pin in the cable connector (refer below). No continuity should exist in any other configurations.

BRUSH POSITION	PCB PAD NO.	CONNECTOR PIN [CN2]
Inner	1	4
Centre	2	5
Outer	3	6



Attention *Digital Multimeter (with probes)*

3.3 Subsequent Action

Perform the following tasks once this procedure is complete:

- Remount sensor-brush assembly in the reverse sequence of the removal process:
  - Attach sensor-brush block to mounting bracket in accordance with procedure ***ASI-4-8-1.***
  - Remount sensor-brush assembly to engine in accordance with the applicable installation procedure.