REVISION	CHANGE	APPROVED	DATE
1	Published release	JTS	27/11/2025

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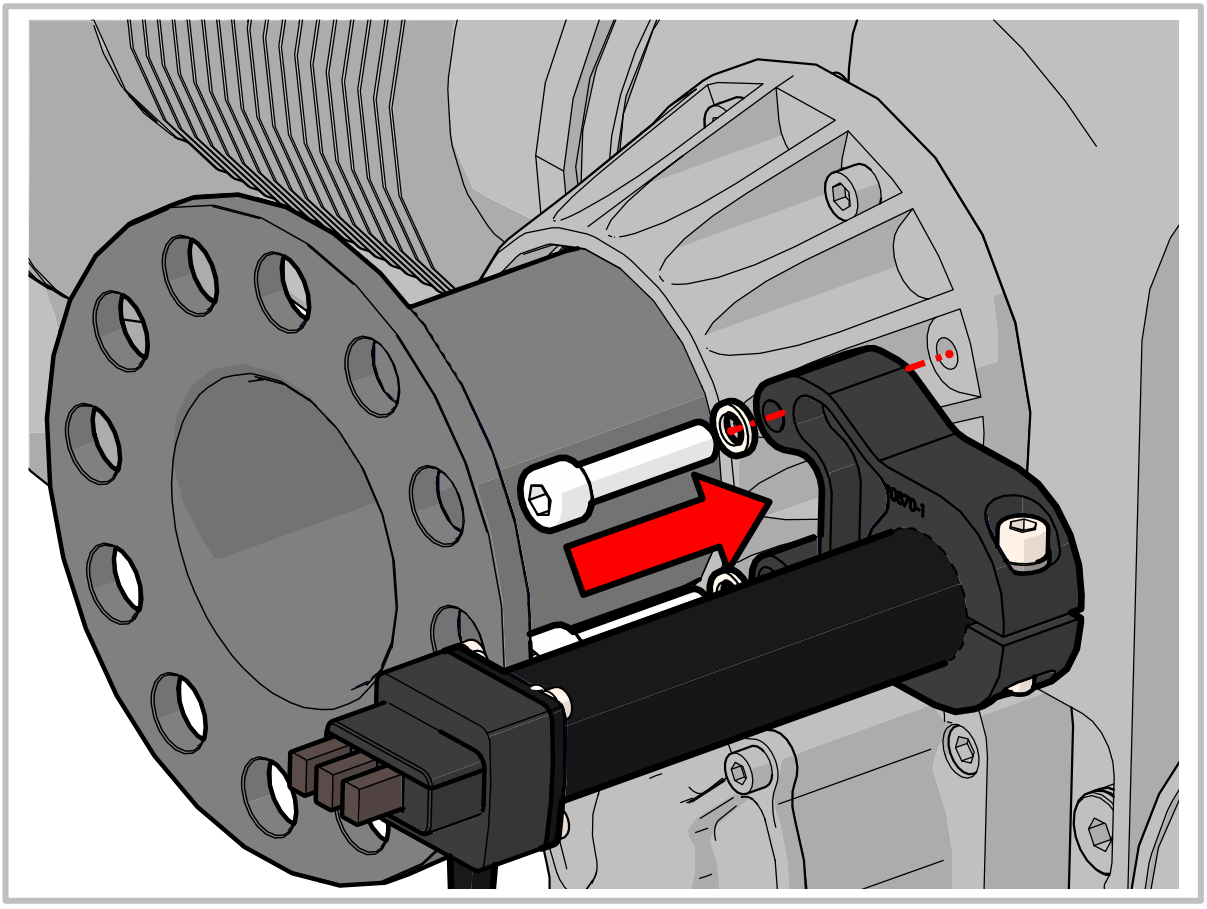
ASI-4-8-4

SENSOR-BRUSH INSTALLATION (UL-POWER)

PROCEDURE



SUBJECT:	
Sensor-Brush Installation	
ASSEMBLY NO:	**APPLICABILITY:**
AR-Uxxx	All propeller models used with a UL-Power engine

1. TOPIC

1.1 Introduction

This document covers the procedure for mounting an Airmaster sensor-brush assembly to a UL-Power engine.

Airmaster offer a range of mounting bracket solutions designed for UL-Power engines, accommodating engine flanges that feature either of the following propeller bolt patterns:

- Standard Rotax bolt pattern (4-inch PCD)
- SAE-1 bolt pattern (4.375-inch PCD)
- SAE-2 bolt pattern (4.75-inch).

These brackets are available in four lengths:

- 35mm
- 55mm (standard)
- 90mm
- 110mm

The installation procedure is consistent across all variants.

It is recommended that installers mount the hub to the engine flange beforehand and attach the sensor-brush assembly to its extension bracket before proceeding.

1.2 Prerequisites

- Mount hub to the engine flange in accordance with the applicable installation procedure**.**

> ⓘ *Note*
> *The illustrations in this document do not show the hub mounted to the engine flange. This is to illustrate the sensor-brush mounting components more clearly as they would otherwise be obstructed from view.*

- Inspect brushes for signs of damage or defect. Check brushes travel smoothly and evenly through the brush holder when they are compressed.
- Attach sensor-brush block (*A0120*) to UL brush head extension bracket (*P0872-x*) in accordance with procedure ***ASI-4-8-1***.

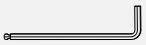
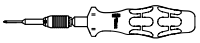
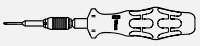
> ⓘ *Note*
> *Generally, new propellers are supplied with the sensor-brush assembly pre-fitted to its mounting bracket, but in some cases, this must be performed by the installer.*

2. MATERIAL REQUIREMENTS

2.1 Parts

ITEM	QTY	PART NO.	DESCRIPTION	IMAGE
1.	1	A0120	Airmaster Sensor-Brush Assembly	
2.	1	AR-Uxxx	Airmaster UL Standard Slipring Assembly	

2.2 Tooling

ITEM	QTY	DESCRIPTION	IMAGE
1.	1	5mm Hex Key	
2.	1	Torque Screwdriver (5mm Hex Bit) [8-10Nm]	
3.	As required	Digital Multimeter (with probes)	

2.3 Consumables

ITEM	QTY	DESCRIPTION	IMAGE
1.	As required	Cleaning Agent (Non-Corrosive) *(e.g. Loctite® SF 7063, Methylated Spirits)*	
2.	As required	Paper Towels, Clean Cloth (or similar)	
3.	As required	Torque-Seal	
4.	As required	Piece of Card	

2.4 Paperwork

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

3. PROCEDURE

3.1 Mount Sensor-Brush Bracket (UL-Power)

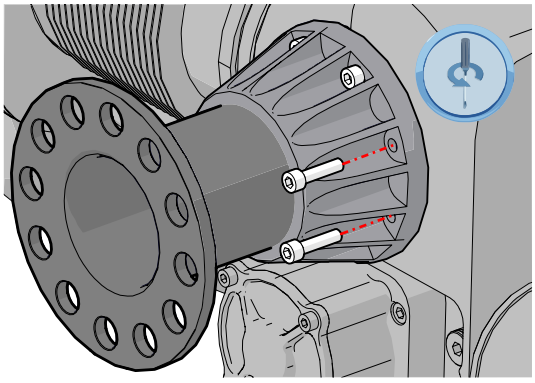
PROCEDURE

Step 1 Remove Thrust Bearing Mount Screws

- Remove (2) right-most (facing engine) M6 cap screws retaining the thrust bearing mount to the front of the UL-Power engine.

Note *Store in case needed for future use.*

Attention *5mm Hex key*

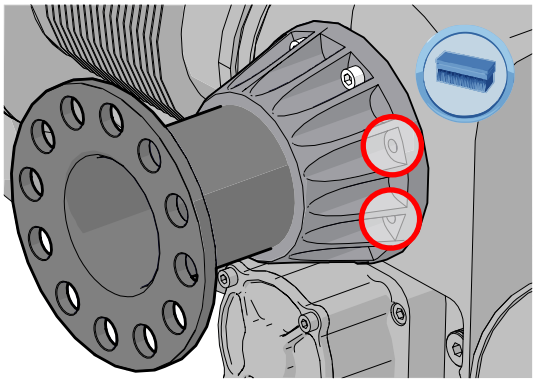


Step 2 Clean Mounting Holes

- Clean (2) holes and surface surrounding the area where bolts were removed.

Caution
Any paint or debris left remaining in this area may lead to misalignment of the brushes and sliprings.

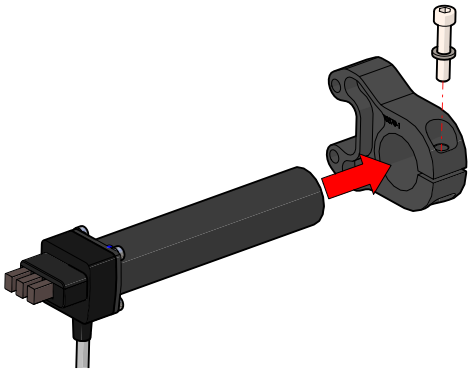
Attention *Cleaning agent, Paper towel*



Step 3 Assemble Mounting Bracket

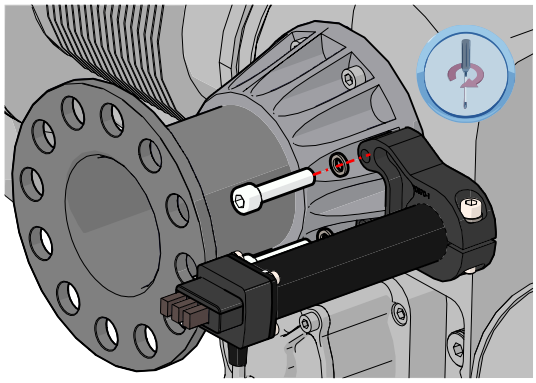
- Loosely fit (1) M6 x 30mm cap screw (*P0880*) and Nord-Lock® washer pair (*P0860*) into the brush head mounting bracket (*P0870-x*).

- Slide brush head extension (*P0872-x*) (with sensor-brush block attached) through the mounting bracket to a rear position.



Step 4 Mount Sensor-Brush Bracket

- Mount the assembled bracket to the engine's thrust bearing mount with (2) M6 x 45mm cap screws (*P0881*) and Nord-Lock® washer pairs (*P0860*).



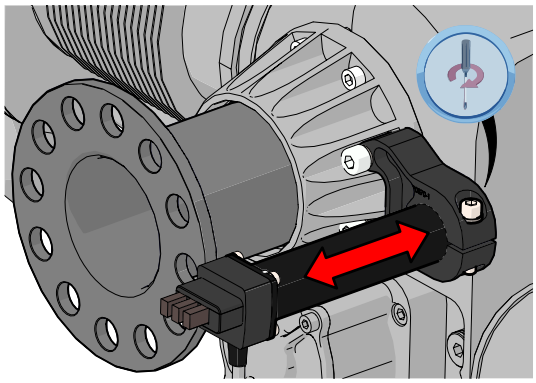
> ⚠ ***Caution***
> *The carbon brushes are delicate, and side-loading should be avoided. While the sensor-brush assembly is positioned, use a piece of card to compress the brushes as they slide across the propeller's slipring assembly.*

- Torque cap screws to **10Nm (7.4ft-lbs)**.
- Indicate with torque-seal.

> ⓘ *Attention*
> *Torque screwdriver (5mm hex bit), Torque-seal*

Step 5 Set Sensor-Brush Block Stand-Off

- Slide the brush head extension through the bracket to achieve a gap of approx. **1-2mm (0.08in)** between the brush block and the sliprings.
- Check brushes align with centreline of hub.
- Once the brush head position is set correctly, torque the clamping cap screw to **8Nm (5.9ft-lbs)**.
- Indicate with torque-seal.



> ⓘ *Note*
> *There is no requirement to lock-wire bolts when Nord-Lock® washers are used.*

> ⓘ *Attention*
> *Torque screwdriver (5mm hex bit), Torque-seal*

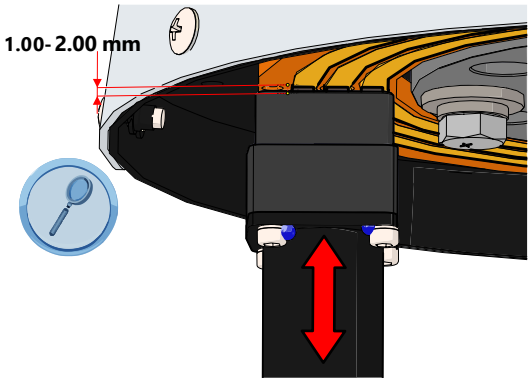
3.2 Check Sensor-Brush Installation

PROCEDURE

Step 1 Check Sensor-Brush Block Stand-Off

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

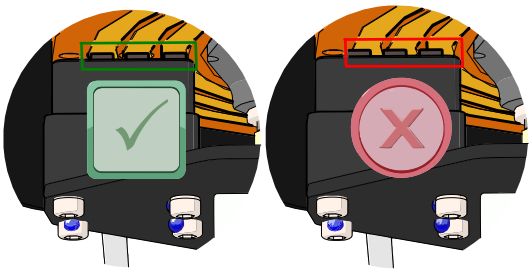
> *Note*
> *If this condition is not met, adjust the position of the sensor-brush block in the clamping bracket.*



Step 2 Check Sensor-Brush Alignment

- Check carbon brushes align centrally with their respective sliprings and do not overlap.

> *Note*
> *If this condition is not met, small modifications to the mounting bracket may be required. A round file may be used to elongate the bracket mounting holes to correct brush alignment.*



Step 3 Check for Electrical Shorts

- Check there is no electrical continuity between each brush/slipring and the sensor-brush mounting bracket/ground (>1kΩ).

> *Attention* *Digital multimeter (with probes)*

3.3 Subsequent Action

Perform the following tasks once this procedure is complete:

- Connect sensor-brush assembly cable to extension loom (*A0125-x*). This loom is routed through the engine bay and connected to the controller [CN2].