
STANDARD MINOR MODIFICATION – ENGINE/AIRFRAME TRACKER

Introduction

This leaflet contains the required information to permit straightforward fitment of a tracker in a microlight aeroplane. A tracker that is not permanently attached to the aircraft (i.e. removed before flight) is considered a removable tracker and therefore does not require a modification.

This leaflet permits only certain ways of installing a tracker. This is because these ways are known to be straightforward, risk and hassle free. This doesn't mean that there aren't other ways of fitting a tracker, but if you wish to do it in another way, this must be done through a more conventional mod application (at greater cost) and more information than is required here may be requested by the BMAA Technical Office. In particular, fitment of a tracker powered by the aircraft's battery, or weighing more than 250g cannot be approved using this leaflet.

Notwithstanding the simple approach taken by this TIL, it is the aircraft owner's responsibility to ensure that all materials used in a modification are of adequate quality, that proper aircraft engineering standards are applied, that this modification does not create any safety problem when combined with any other modification to the aircraft, and that no relevant information has been withheld from the BMAA or Inspector.

Note that the installation is only approved on a no-hazard basis, and does not check the functionality or reliability of the tracker.

Permitted Options

- 1 Antenna type
 - 1.1 The tracker may have an integral antenna, or...
 - 1.2 The tracker may have an additional separate antenna.
- 2 Power Supply
 - 2.1 The tracker may have an internal or integral battery, or...
 - 2.2 The tracker may be powered by an external battery not fitted to the aircraft.
- 3 Tracker Location
 - 3.1 The tracker can only be mounted inside the aircraft and outside the airflow.
 - 3.2 The tracker should be fitted in accordance with the manufacturer instructions.
- 4 Tracker Weight
 - 4.1 The maximum weight of the tracker is 250 grams. (If a heavier tracker is to be fitted consult with BMAA technical office prior to proceeding.)

Essential Safety Checks

- 1 Tracker
 - 1.1 When installing a tracker, on no account should primary structure be cut, drilled or altered in any way. If in doubt, ask.
 - 1.2 The tracker (including any mounting brackets and integral batteries) must be weighed.
 - 1.3 A load test, using scales or a spring balance to 9 times the tracker weight forwards, 4.5 times the instrument weight up and down, 3 times the tracker weight to port and starboard must be carried out.
 - 1.4 If the tracker is to be mounted on the engine it must be mechanically attached to ensure that it can withstand both heat and vibration. It must not be located in a position that will affect the aircraft cooling, or any aircraft controls.

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- 1.5 When mounting a tracker, if a new cutout or hole is required, this is only acceptable if it is not load bearing primary structure. If unsure, make certain first and cut later.

- 2 Antenna
 - 2.1 Any additional separate antenna is to be attached to the aircraft using Velcro, cable ties or similar. Cables must be fixed securely so as not to impede free movement in/out of the aircraft, and must conform to the safety checks in section 3 of the form.
 - 2.2 The antenna must be mounted out of the airflow.

- 3 Aircraft Weight and Balance
 - 3.1 The last weight report must be checked to ensure that the additional weight of the installation won't put the aircraft overweight.
 - 3.2 For a 3-axis microlight aircraft, the inspector must calculate, from the known weight and position of the new instrument the empty CG change, and satisfy themselves that this will not in any condition make the aircraft go outside the permitted CG limits. If a W&CG report is not held for the aircraft, one must be prepared or BMAA HQ contacted for the file copy (Note: it is an ANO requirement that whenever an aircraft is weighed, details of the weighing are included in the aircraft logbook).
 - 3.3 The inspector must make an amended weight and balance entry in the aircraft logbook.

- 4 Electrical Interference
 - 4.1 If a radio is fitted, check that the tracker does not cause excessive interference. A small increase in the use of the radio's squelch control to suppress tracker 'noise' is acceptable, but if the squelch cannot completely remove the interference, or the quality of received transmissions is significantly affected by the tracker, remedial action is required.
 - 4.2 For all other electrical instruments such as EFIS, Transponder, GPS etc check that there is no additional interference and that the displays and instrument accuracy are unaffected.

Note that these checks need to be made when the tracker actually transmits information and therefore the duration between transmit times need to be known.

What to do once you have fitted your tracker

In conjunction with your inspector, fill in the form on pages 3 and 4 of this TIL, and return it to the BMAA. The BMAA will return this form to you, with the full modification approval number shown at the bottom of the page. This modification number must then be entered in the aircraft logbook, and together with the form shown to your inspector at Permit inspection.

It is acceptable to send in the form with your permit renewal form.

Aircraft must be wholly owned by BMAA members. A BMAA Ownership Trustee Grid should be submitted with this form for syndicate, group and company owned aircraft.

BRITISH MICROLIGHT AIRCRAFT ASSOCIATION

TECHNICAL INFORMATION LEAFLET

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BMAA – STANDARD MINOR MODIFICATION CHECKLIST: TIL 109

Reg: G-	Aircraft type:	Serial No:
Owners name:		Owners BMAA No:
<i>¹ BMAA Aircraft Ownership Trustee Grid required for syndicate/group/company owned aircraft</i>		

Installation Details

Make and Model		Tracker Weight		g
		Total Installation Weight		g

<i>Tick one box per section</i>					
1. Tracker Location	On Engine	<input type="checkbox"/>	2. Power Supply	Integral Battery	<input type="checkbox"/>
	In Engine Compartment	<input type="checkbox"/>		External Power Supply	<input type="checkbox"/>
	Airframe (State Location)	<input type="checkbox"/>	3. Antenna	Integral	<input type="checkbox"/>
	<input type="text"/>			Separate	<input type="checkbox"/>

Safety Checks

<u>CHECK</u>	<u>ACTION</u>	<u>COMMENTS</u>	<u>INSPECTOR'S INITIALS</u>
<i>1 All Tracker types</i>			
1.1	No primary structure drilled or altered		
1.2	Tracker outside airflow		
1.3	Installation load tested		
1.4	Aircraft within weight & CG limits – amended weight & balance entry in aircraft logbook		
1.5	Fitted in accordance with tracker instructions.		
<i>2 Engine Mounted Tracker</i>			
2.1	Not in a very heat sensitive area		
2.2	In accordance with temperature limits from tracker manufacturer		
2.3	Engine controls not restricted		
2.4	Engine cooling not restricted		

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<u>CHECK</u>	<u>ACTION</u>	<u>COMMENTS</u>	<u>INSPECTOR'S INITIALS</u>
<i>3 General installation checks</i>			
3.1	Cables and other components properly secured		
3.2	Quick-release fasteners used for de-riggable parts of airframe		
3.3	No holes or cuts made in airframe		
<i>4 Antenna installation</i>			
4.1	Secure and clear of propeller & exhaust		
<i>5 Electrical interference</i>			
5.1	No excessive interference on Radio		
5.2	No interference on other electrical equipment, including displays		

OWNER'S DECLARATION

I declare that the foregoing information is correct to the best of my knowledge and I will not change the installation design once approved.

Signed:

Name:

Date:

INSPECTOR'S DECLARATION

I declare that the foregoing information is correct and the installation is fit to be flown.

Signed:

BMAA Inspector #:
BMAA Member #:

Date:

This form must be sent with BMAA Aircraft Ownership Trustee Grid (if applicable) to*:-

technical.office@bmaa.org

BMAA Office Approval:	(signed)	(Name)
Mod No.: G-_____ / TIL120 / 20 __ / _____		(Date)

**Whilst waiting for this form to be returned by the BMAA the aircraft may be flown for upto one calendar month from the Inspection date above. Once this form is returned to you signed please enter the full modification approval number above in your aircraft logbook and retain this sheet with your aircraft records.*