BRITISH MICROLIGHT AIRCRAFT ASSOCIATION

MICROLIGHT TYPE ACCEPTANCE DATA SHEET (TADS)

**NO: BM045 ISSUE: 3**

**TYPE:** "MIRAGE" MK1 AND MK2, "MIRAGE" (Perring Tractor Conversion).

1. **MANUFACTURER:** ULTRALIGHT FLIGHT INC, USA
2. **UK IMPORTER:** None, Type Specialist L. Perring. 56 Green Lane, Radnage, High Wycombe, Bucks, HP14 4DN
3. **CERTIFICATION:** BCAR SECTION S, (in the modification state at the date of manufacture or modification of any example)
4. **DEFINITION OF BASIC STANDARD:** This TADS and MAANS 1217 and 1218.
5. **DIMENSIONS/WEIGHT FOR COMPLIANCE WITH MICROLIGHT DEFINITION**
   - (a) Wing area (inc canard area, excluding winglets): 10.7 m²
   - (b) Span: 10.06 m²
   - (c) Standard Mean Chord: 1.36 m
   - (d) Dry Empty Weight (standard aircraft): 125 kg
   - (e) Max Take-Off Weight: 235 kg
   - (f) Wing Loading (Weight Empty/Wing Area): 10.65kg/m²
   - (g) Wing Loading (Max Take-Off Weight/Wing Area): 20.7 kg/m²
   - (h) Number of seats: One
   - (i) Established Maximum power: 40 hp
POWER PLANTS

<table>
<thead>
<tr>
<th>Designation</th>
<th>Mirage (1)</th>
<th>Mirage (2)</th>
<th>Mirage (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Type</td>
<td>Cuyuna 428</td>
<td>Kawasaki TA440</td>
<td>Rotax 447</td>
</tr>
<tr>
<td>Reduction Gear</td>
<td>2:1 V-belt</td>
<td>2:1 V-belt</td>
<td>Rotax B-type 2.58:1</td>
</tr>
<tr>
<td>Exhaust System</td>
<td>Cuyuna</td>
<td>Ultralight Flight</td>
<td>Rotax</td>
</tr>
<tr>
<td>Intake System</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Propeller Type</td>
<td>Microprop Pusher</td>
<td>Newton Pusher</td>
<td>GSC Tech 2 2-blade tractor</td>
</tr>
<tr>
<td>Propeller Dia x Pitch</td>
<td>58” x 28”</td>
<td>52” x 36”</td>
<td>62” x 35”</td>
</tr>
<tr>
<td>Noise Type Cert No.</td>
<td>105M iss 1</td>
<td>105M iss 2</td>
<td>105M iss 3</td>
</tr>
</tbody>
</table>

MANDATORY LIMITATIONS: * To be placarded

(A) Max Take-off Weight: 235 kg *

(B) CG Limits: 368 to 419mm aft of datum (27% to 31% MAC)
Optimum 393mm aft of datum (29% MAC)

(C) CG datum: Wing leading edge

(D) Cockpit Loadings:

| Pilot and Baggage or Ballast (Min) | 55kg          | -          | 55kg * |
| Pilot and Baggage (Max)           | 90 kg         | -          | 90 kg * |

(E) Permanent Ballast, Weight and Position: none

(F) Empty CG: Approx. 458mm aft of datum

(G) Never Exceed Speed: 65 mph (56 kn) *

(H) Manoeuvring Speed: 55 mph (48 kn) *
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(I) Permitted Manoeuvres: Non Aerobatic. *
(J) Fuel Contents (Max Useable): 25 litres*

(K) Power Plant

<table>
<thead>
<tr>
<th>Engine</th>
<th>Kawasaki TA440</th>
<th>Rotax 447</th>
<th>Cuyuna 428</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max RPM</td>
<td>6500</td>
<td>6900</td>
<td>6500</td>
</tr>
<tr>
<td>MAX CHT</td>
<td>-</td>
<td>250 ºC</td>
<td>-</td>
</tr>
<tr>
<td>MAX EGT</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fuel Spec</td>
<td>Petroleum Spirit</td>
<td>Petroleum Spirit</td>
<td>Petroleum Spirit</td>
</tr>
<tr>
<td>Engine Oil Spec</td>
<td>2-stroke oil</td>
<td>2-stroke oil</td>
<td>2-stroke oil</td>
</tr>
<tr>
<td>Gearbox oil spec</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fuel/Oil Mix</td>
<td>40:1</td>
<td>50:1</td>
<td>40:1</td>
</tr>
</tbody>
</table>

(8) INSTRUMENTS REQUIRED FOR TYPE ACCEPTANCE:

<table>
<thead>
<tr>
<th>ASI</th>
<th>Altimeter</th>
<th>RPM</th>
<th>CHT</th>
<th>EGT</th>
<th>Compass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hall or Dwyer wind-meter</td>
<td>Required (Wrist mounted acceptable)</td>
<td>optional</td>
<td>optional</td>
<td>optional</td>
<td>optional</td>
</tr>
</tbody>
</table>

(9) CONTROL DEFLECTIONS:

| Elevator UP | 30º (+5º / -3º) | Elevator Trim | none |
| Elevator DOWN | 37º (+ 3º) | Steering / Spoilers | none |
| Ailerons UP | none | Rudder LEFT | 37º (± 3º) |
| Ailerons DOWN | none | Rudder RIGHT | 37º (± 3º) |

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(10) PILOT'S NOTES, MAINTENANCE MANUALS REFERENCES:


(11) MANDATORY MODIFICATIONS/SERVICE BULLETINS/AIRWORTHINESS
DIRECTIVES ETC:

See document FS007 and Annex A to this TADS.

(12) MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT

Rate of Climb: 400 fpm (based upon Kawasaki Engine)
Stall or Minimum Flying Speed: 28 mph (24 kn) IAS

(13) RIGGING DETAILS

Dihedral: Each wing 6° up from the horizontal plane
Washout: 0° to ½°. Washout effect produced by tip design.
Tailplane: Incidence -5° to -8° relative to mainplane.

<table>
<thead>
<tr>
<th>BMAA Approval:</th>
<th>G B Gratton Chief Technical Officer</th>
<th>6 October 1998</th>
</tr>
</thead>
</table>

Issue History

Issue 1 Original issue

Issue 2 Addition of propeller data and noise certificate for Rotax 447 tractor version. Signatory WG Brooks, CTO, BMAA.

Issue 3 Clarification of rigging details. Signatory G B Gratton, CTO, BMAA.
Illustration of Aircraft
MODIFICATIONS REQUIRED IN ADDITION TO BMAA DOCUMENT FS007

1) Cable guides to be secured against sliding into control pulleys.

2) Control pulley guards to be checked that rotation of the guard causing cable fouling is not possible.

3) Cable guides or fairleads are required on the rear fuselage booms.

4) The keel must be carefully checked for cracks around the engine mountings and shaft bearing supports. (Pusher version only).

5) The propeller attachment must be checked for security every 5 hours. (Pusher version only).

6) Rudder cables must be checked to be at least 2mm diameter, and not over 2.5mm diameter, 7x7 galvanised or stainless steel wire rope.

7) Rudder pedal stops must be provided, capable of withstanding a foot load of 90kgf without deformation (S397).

8) Elevator cables must be checked to be at least 2mm diameter, and not over 2.5mm diameter, 7x7 galvanised or stainless steel wire rope.

9) An undercarriage spreader cable of at least 2.5mm diameter must be fitted.

10) The tailplane trailing edge must be packed to achieve a hands off trim speed between 1.3 and 2 x stall speed. Alternatively a trim tab 300 x 100 mm may be fitted to the elevator trailing edge and adjusted to achieve the correct trim speed.