BRITISH MICROLIGHT AIRCRAFT ASSOCIATION

MICROLIGHT TYPE ACCEPTANCE DATA SHEET (TADS)

NO: BMO-21 ISSUE: 1

TYPE TIGER CUB 440, ROMAIN MODIFIED

(1) MANUFACTURER: MICROBIPLANE AVIATION (Now ceased trading) with J Romain modifications.

(2) UK IMPORTER: n/a


(4) DEFINITION OF BASIC DESIGN STANDARD: Not available, but see build standard owner's kit Building Instructions and J Romain drawings for Tiger Cub modifications.

(5) DIMENSIONS/WEIGHTS FOR COMPLIANCE WITH MICROLIGHT DEFINITION

(a) Wing area (inc canard area, excluding winglets): 12.9 m²
(b) Span:
   Top: 6.5m
   Bottom: 6.3m
(c) Standard Mean Chord: 1.97m
(d) Dry Empty Weight: 146kg
(e) Max Take-Off Weight: 250kg
(f) Wing Loading (Weight Empty/Wing Area): 11.3 kg/m²
(g) Wing Loading (Max Take-Off Weight/Wing Area): 19.4 kg/m²
(h) Fuel Capacity: 20 litres

DOCUMENT ISSUE STATUS

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<tr>
<th>Issue Number</th>
<th>Revision Reference</th>
<th>Date</th>
<th>Authorisation</th>
<th>Pages affected</th>
<th>Valid pages at this Issue</th>
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<tr>
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<td>Introduced by MAAN1103 5/1/93</td>
<td>BMAA 30/4/93</td>
<td>All new</td>
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BMAA: FEBRUARY 1983
(6) **POWER PLANTS**

<table>
<thead>
<tr>
<th>Designation</th>
<th>Tiger Cub 440 Romain Mod'd</th>
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</thead>
<tbody>
<tr>
<td>Engine Type</td>
<td>Fuji Robin EC44PM, Inv'td</td>
</tr>
<tr>
<td>Reduction Gear/ratio</td>
<td>2.61:1</td>
</tr>
<tr>
<td>Exhaust System</td>
<td>Nicklow</td>
</tr>
<tr>
<td>Intake System</td>
<td>-</td>
</tr>
<tr>
<td>Propeller Type</td>
<td>Romain</td>
</tr>
<tr>
<td>Propeller Dia x Pitch</td>
<td>58&quot; x 33&quot;</td>
</tr>
<tr>
<td>Noise Type Cert. No.</td>
<td>33M, Iss 2</td>
</tr>
</tbody>
</table>

**Noise requirement**

<table>
<thead>
<tr>
<th></th>
<th>1 Seat</th>
<th>2 Seat</th>
<th>ECAR Reference</th>
</tr>
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<tbody>
<tr>
<td>Registered Pre</td>
<td>1/4/86</td>
<td>80 dBA</td>
<td>N3-6, 3 Iss 4</td>
</tr>
<tr>
<td>Registered Post</td>
<td>1/4/86</td>
<td>76 dBA</td>
<td>N7-6, 1 Iss 4</td>
</tr>
</tbody>
</table>
MANDATORY LIMITATIONS:

*(a) Max Take-off Weight: 250kg
*(b) C G Limits: 30" to 32" AoD
(c) C G Datum: Front face of firewall

*(d) Cockpit Loadings

<table>
<thead>
<tr>
<th>Pilot or Ballast (min)</th>
<th>Front</th>
<th>Rear</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 kg</td>
<td></td>
<td></td>
<td>55 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pilot or Ballast (max)</th>
<th>Front</th>
<th>Rear</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 kg</td>
<td></td>
<td></td>
<td>90 kg</td>
</tr>
</tbody>
</table>

(e) Permanent Ballast, Weight and Position: None

(f) Empty C G: 27.5" typical

*(g) Never Exceed Speed: 70 knots

*(h) Manoeuvring Speed: 56 knots

*(i) Manoeuvre Limitations: Aerobatics prohibited, bank beyond 60° prohibited.

*(j) Fuel Contents (Max Usable): 20 litres

(k) Power Plant: See Table below

<table>
<thead>
<tr>
<th>ENGINE</th>
<th>Fuji Robin EC44PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max RPM</td>
<td>7000</td>
</tr>
<tr>
<td>Max CHT</td>
<td>230°C</td>
</tr>
<tr>
<td>Max BGT</td>
<td>N/A</td>
</tr>
<tr>
<td>Fuel Spec</td>
<td>92 octane min petrol/oil</td>
</tr>
<tr>
<td>Engine Oil Spec</td>
<td>Non-synth prem 2-stroke</td>
</tr>
<tr>
<td>Gearbox Oil Spec</td>
<td>N/A</td>
</tr>
<tr>
<td>Fuel/Oil Mix</td>
<td>40 : 1</td>
</tr>
<tr>
<td>Oil Pressure</td>
<td>N/A</td>
</tr>
<tr>
<td>Oil Temp</td>
<td>N/A</td>
</tr>
<tr>
<td>Coolant Temp</td>
<td>N/A</td>
</tr>
</tbody>
</table>
INSTRUMENTS REQUIRED FOR TYPE ACCEPTANCE:

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Required</th>
<th>Recommended</th>
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</thead>
<tbody>
<tr>
<td>ASI Altimeter</td>
<td>Required</td>
<td>Recommended</td>
</tr>
<tr>
<td>RPM</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>CHT</td>
<td>Required</td>
<td></td>
</tr>
<tr>
<td>Compass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EGT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coolant Temp.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition: Slip indicator

CONTROL DEFLECTIONS (3-AXIS SYSTEMS):

- **Pitch Control**
  - Up: 15° +/- 1°
  - Down: 15° +/- 2°

- **Tailplane Trim**
  - Up: N/A
  - Down: N/A

- **Ailerons**
  - Up: 5" at T.E.
  - Down: 1" at T.E.

- **Rudder**
  - Left: 4.5" at T.E.
  - Right: 4.5" at T.E.

- **Steering**
  - Left: 27°
  - Right: 27°

- **Spoilers**
  - N/A

PILOT'S NOTES, MAINTENANCE MANUALS REFERENCES:

- Microlight Airworthiness Approval Note MAAN no 1103
- Tiger Cub 440 Pilot's Operating Manual
- Tiger Cub 440 Kit Building Instructions in association with Romain Modifications as Appendix 1.

MANDATORY MODIFICATIONS/SERVICE BULLETINS/AIRWORTHINESS DIRECTIVES, ETC:

See Appendices.

APPROVED OPTIONAL MODIFICATIONS

MINIMUM PERFORMANCE AT MAX T/O WEIGHT:

- Rate of Climb: 500 ft/minute
- Climb Speed: 45 mph
- Stall or Minimum Flying Speed: 35 mph
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G A Drawings and/or colour photographs illustrating the principal features of the aircraft described herein, shall be attached to, and form part of, this Data Sheet.

<table>
<thead>
<tr>
<th>Issue</th>
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</tr>
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<tbody>
<tr>
<td>1</td>
<td>30 April 1983</td>
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[Signature]
Areas affected by modifications required for conversion of standard Tiger Cub 440 to Tiger Cub 440 Romain Modified.

Modifications affecting the following areas are required for the conversion of the standard Tiger Cub 440 to the Tiger Cub 440 Romain Modified (as referred in MAAN 1103):

- Fin and rudder.
- Undercarriage.
- Aileron control system.
- Lower ailerons.
- Upper ailerons.
- Cross bracing between inter planar struts.
- Jury struts at root end of wing spars.
- Fuel tank.
- Harness.
- Transparent side panels and cockpit access door.
- Engine cowling.
- Rear cylinder head.
- Propeller and reduction.
- Propeller shaft material.
- Wing covering material.
Required modifications to Tiger Cub 440 Romain Modified for issue of Permit To Fly

The following modifications must be incorporated on each Tiger Cub 440 Romain Modified in order to comply with the requirements and to qualify for the issue of Permit To Fly. (Bulletins/modifications prefixed "TCD" are obtained via Mr R Light of Tiger Cub Developments Ltd).

1) **S171**  
   (a) Elevator trim and rudder centring springs must be fitted in accordance with TCD TM 013A and B.  
   (b) Provide lifting aerodynamic centre section as TCD TM 018.

2) **S603 & S721(a)**  
   (a) Main undercarriage axle to be re-enforced with close fitting inner sleeve or modified in accordance with TCD TM 001.  
   (b) Main wheels to be replaced as TCD TM 002.

3) **S609**  
   (a) Drain holes to be provided in flying surfaces as TCD 023.  
   (b) Wooden components of flying surfaces to be provided with additional protection as TCD TM 031.

4) **S671**  
   Elevator hinge bearing sleeves to be bonded as TCD 022.

5) **S959**  
   Unusable fuel: a placard is to be provided stating: "THIS AIRCRAFT MUST NOT TAKE OFF WITH LESS THAN 2 GALLONS (IMP) FUEL".

6) **S993**  
   A fire resistant fuel line is to be fitted between the engine bulkhead and the engine, and routed as far as possible on the opposite side of the engine to the exhaust.

7) **S995**  
   A fuel shut-off valve is to be fitted within easy reach of the pilot, and clearly marked with its ON and OFF positions.

8) **S1141**  
   The wiring for the ignition switch must be at least fire resistant from the engine at least as far as the bulkhead or be sleeved with a fire resistant material.

9) **S421**  
   The stabilator spar sleeve is to be replaced with a longer sleeve measuring 43 inches, with stress relieving "V" notches of 4 inches each end, material HT30TP alloy, 1 inch diameter x 16 g. To be located centrally in the spar, TCD TM 026 refers and provides an acceptable option using two sleeves of 17 g.

10) A slip indicator must be fitted in full view of the pilot.
In addition, the following service bulletins issued by the manufacturer or by Tiger Cub Developments (for BMAA Godfather) must be actioned on each Tiger Cub 440 Romain Modified aeroplane when being inspected for the purpose of issuing the Permit To Fly:

MB SB 002 Aileron hinges.
MB SB 003 Flying and landing wire termination.
MB SB 004 Sharp gear down units, prop bolts.
MB SB 005 Elevator operating tube.
MB SB 006 Recoil pull starter.
MB SB 007 Tailplane bearing blocks.
MB SB 009 Flying wire lengths.
MB SB 011 Throttle lever movement.
MB SB 012 Rear landing wire root termination.
MB SB 013 Correction to assembly of rudder pulley guards.
MB SB 014 Rear spar hinge bolts.
MB SB 015 Safety locking of aileron pulley nuts.
MB SB 018 Windscreen.
MB SB 019 Flying and landing wire crossover support.
MB SB 020 Rear fuselage bulkhead.
TCD/SB 024 Engine mounting.
TCD/SB 025 Wing tips during ground transportation.

**Inspection.**

The review of the compliance of the Tiger Cub 440 Romain Modified with the airworthiness requirements of BCAR Section S has indicated a number of areas where particular attention must be given by each BMAA Inspector responsible for the inspection of the Tiger Cub 440 Romain Modified, and these areas are listed below:

(1) Inspection is required to establish that each of the modifications listed above has been carried out to an airworthy standard and that the Service Bulletins called up have been complied with.

(2) The bond between the fuselage longerons and the foam sides and tops is to be checked by ensuring that there is no wrinkling of the fabric adjacent to these bonds when loads are applied at the tail. Internal inspection must also be made.
Each hand finished component is to be checked for corrosion and adequate protection, in addition to normal overall inspection for corrosion.

A check is to be made to ensure that the aileron spar has been modified in accordance with MBA Maintenance Manual, page 4-4.

The stabilator is to be examined for satisfactory performance of the bond between its spar and the foam. Creasing of the surface fabric in the vicinity of the spar run, on the upper or lower surfaces, whilst loads are applied to the stabilator, must not be accepted.

In view of the individual nature of kit construction, each control surface stop must be examined for satisfactory performance, together with ensuring control surface range of movement is within limits.

Cables must be examined for any signs of wear or fraying around pulleys.

Ensure satisfactory guarding of cables at all pulleys, particularly upper rudder pulleys.

Ensure that, where turnbuckles are fitted in the control system, they do not bind against any surface.

Ensure throttle control provides full travel of the throttle slides.

Ensure throttle and choke controls are clearly distinguishable and arrange for easy operation without fouling.

Ensure satisfactory electrical bonding between engine and airframe.

Ensure compatibility of engine + reduction + propeller and satisfactory performance.

Ensure that the four exhaust springs are wired so that they will be prevented from falling away from the aircraft in the event of breakage.

Ensure that the layout of the fuel lines does not give rise to potential vapour locks.

Ensure that the internal fuselage, particularly in the vicinity of the fuel tank, is not suffering from damage, due to fuel seepage or spillage.

Ensure that fuel tank is either readily removable or provided with means of drainage.

Ensure that the required instrumentation is fitted:

Airspeed indicator,
Altimeter,
Slip indicator
Cylinder Head Temperature Gauge.

Ensure compliance with BMAA General Note GN-(89)-014 concerning rear hinged doors.