MICROLIGHT TYPE ACCEPTANCE DATA SHEET (TADS)

NO: BM059  ISSUE: 1

TYPE: Striker Dual/Invader

(1) MANUFACTURER:
   WING: Flexiform Skysails (UK No longer trading)
   TRIKE: Hornet (UK No longer trading)

(2) UK IMPORTER:
   N/A

(3) CERTIFICATION BASIS: BCAR Section S
   requirements listed in CAA document
dated 17th January 1986, ref:9/30/UL18

(4) DEFINITION OF BASIC STANDARDS: As defined in these TADS and MAAN 1366.

(5) DIMENSIONS/WEIGHT OF COMPLIANCE WITH MICROLIGHT DEFINITION:
(a) Wing Area
   (inc Canard area, excl winglets): 17.4 to 22 m²
(b) Span: 11.36 m
(c) Standard Mean Chord: 1.53 to 1.94 m
(d) Dry Empty Weight: 145-150 kg
(e) Max Take-Off Weight: 322 kg
(f) Wing Loading (Weight Empty/Wing Area): 6.59 to 8.62 kg/m²
(g) Wing Loading (Max Take-Off Weight Wing Area): 14.64 to 18.5 kg/m²
(h) Fuel Capacity 25 litres

Amendments/issues:

1) Initial Issue concurrently with issue 1 of MAAN 1366.
POWER PLANTS: FUJI ROBIN EC442PM is an acceptable powerplant, but subject to compulsory crankshaft replacement in appendix 1.

<table>
<thead>
<tr>
<th>Designation</th>
<th>AS IN &quot;TYPE&quot; ABOVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Type</td>
<td>FUJI ROBIN EC44PM INVERTED</td>
</tr>
<tr>
<td>Reduction Gear</td>
<td>2.8:1 BELT DRIVE</td>
</tr>
<tr>
<td>Exhaust System</td>
<td>NICKLOW</td>
</tr>
<tr>
<td>Intake System</td>
<td>FILTERS ONLY</td>
</tr>
<tr>
<td>Propeller Type</td>
<td>LAMINATED WOOD</td>
</tr>
<tr>
<td>Propeller Dia x Pitch</td>
<td>60&quot; x 32&quot;</td>
</tr>
<tr>
<td>Noise Type Cert No.</td>
<td>3M ISSUE 2</td>
</tr>
</tbody>
</table>
Noise Requirement

<table>
<thead>
<tr>
<th>1 Seat</th>
<th>2 Seat</th>
<th>BCAR Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered Pre 1/4/86</td>
<td>80dBA</td>
<td>84dBA</td>
</tr>
<tr>
<td>Registered Post 1/4/86</td>
<td>76dBA</td>
<td>80dBA</td>
</tr>
</tbody>
</table>

(7) MANDATORY LIMITATIONS:

(A) Max Take-off Weight: 322 KG
(B) C G Limits (3-Axis Aircraft): N/A
(C) C G Datum N/A

(D) Cockpit Loadings: Front Rear Total
Pilot and Baggage or Ballast (Min) 65KG 65KG
Pilot and Baggage (Max) ** ** 154KG
(** = Max limit subject to not more than 90kg in one seat)

(E) Permanent Ballast, Weight and Position: N/A
(F) Empty C of G (3-Axis Aircraft): N/A
(G) Never Exceed Speed: 60 knots (69mph)
(H) Manoeuvring Speed: 38 knots (44mph)
(I) Permitted Manoeuvres: Non-Aerobatic, Pitch <30°, Roll <60°
(J) Fuel Contents (Max Useable): 25 litres
(K) Power Plant: see table below:

<table>
<thead>
<tr>
<th>Engine</th>
<th>FUJI ROBIN EC442PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max RPM</td>
<td>7000</td>
</tr>
<tr>
<td>MAX CHT</td>
<td>250 C</td>
</tr>
<tr>
<td>Fuel Spec</td>
<td>4 STAR OR PREMIUM UNLEADED</td>
</tr>
<tr>
<td>Oil Spec</td>
<td>2 STROKE OIL</td>
</tr>
<tr>
<td>Fuel/Oil Mix</td>
<td>40:1</td>
</tr>
<tr>
<td>Max EGT</td>
<td>N/K</td>
</tr>
<tr>
<td>Oil Press</td>
<td>N/A</td>
</tr>
<tr>
<td>Oil Temp</td>
<td>N/A</td>
</tr>
</tbody>
</table>
(8) INSTRUMENTS REQUIRED FOR TYPE ACCEPTANCE:

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASI</td>
<td>0-70 mph or Wrist Type</td>
</tr>
<tr>
<td>Altimeter</td>
<td>N/A</td>
</tr>
<tr>
<td>RPM</td>
<td>N/A</td>
</tr>
<tr>
<td>CHT</td>
<td>N/A</td>
</tr>
<tr>
<td>Compass</td>
<td>N/A</td>
</tr>
</tbody>
</table>

(9) CONTROL DEFLECTIONS (3-Axis Systems): N/A

<table>
<thead>
<tr>
<th>Control</th>
<th>Up/-</th>
<th>Down/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch Control</td>
<td>Up/-</td>
<td>Down/-</td>
</tr>
<tr>
<td>Tailplane Trim</td>
<td>Up/-</td>
<td>Down/-</td>
</tr>
<tr>
<td>Ailerons</td>
<td>Up/-</td>
<td>Down/-</td>
</tr>
<tr>
<td>Rudder</td>
<td>Left/-</td>
<td>Right/-</td>
</tr>
<tr>
<td>Steering</td>
<td>Left:- 45°</td>
<td>Right:- 45°</td>
</tr>
<tr>
<td>Spoilers</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

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


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

See appendix 1 for necessary modifications including the compulsory Striker wing and reduction drive modifications.

(12) MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT

Rate of Climb: 500 fpm at 35 mph.

Stalling Speed: 29mph

Notes:

1. G a Drawings and/or colour photographs illustrating the principal features of the aircraft submitted for type approval shall be attached to, and form part of, this Data Sheet.
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APPENDIX 1

Modifications:

The following modifications must be incorporated on each of the above Dual Striker and Sealander variants, in order to comply with the requirements and to qualify for the issue of a Permit to Fly.

S 605 Modification of Dual Striker and Dual Sealander wings according to BMAA Defect Warning 024, dated 19/11/85, must be made, covering:

(a) Extension of bowsprit, (b) Revision of outer bowsprit to leading edge rigging, (c) Revision of top front rigging, (d) Revision of control frame to bowsprit rigging, (e) Addition of control frame to noseplate rigging, (f) Revision of the inner wing wires, (g) Minimum dimensions and reinforcement sleeving of control frame uprights.

S 627 On upright engined versions with Mainair-reduction drive, the rear bearing mounting plates must be changed to those with modified bolt hole positions shown as "B" on Mainair Sports Service bulletin No. 12.

S 689 Where hand and foot throttles are combined in a joining box (2 cables into one), each end of each cable must be wire locked to retain the outer in its locating ferrule.

S 787 Where a baggage pouch is provided this must be labelled limiting its use to loads of no more than 2kg.

S 901 An electrical bond is to be incorporated between the engine and the airframe.

S 903 The reduction drive shaft must be replaced with one of the same dimensions to at least EN24T specification. The shaft must be stamped "T" on the end to signify the shaft has been modified.

1/4" propeller bolts must be replaced with M8.8 or S96 spec 5/16" ones. 5/16" Propeller bolt torque is 8-10 ft/lbs.

Where 3mm propeller load spreading faceplates are used, these must be replaced with 1/4" HS30TF or NS8 aluminium alloy ones OR steel washers of at least 1mm thickness and 30mm diameter be fitted so as to spread the load.

S 993 A fire resistant fuel line(s) must be fitted for a distance of at least 45cm (18 inches) from the engine and routed as far as possible on the opposite side of the engine to the exhaust.
APPENDIX 1

S 1141 The wiring for the ignition switch must be fire resistant adjacent to the engine or located so that in the event of an engine fire the engine can be stopped. NOTE: Ignition wiring located forwards of fuel carrying components is considered to satisfy this requirement.

S 1145 The ignition switch must be rated at at least 250 volts.

S 1193 The cowling must be protected by fireproof material or trimmed to avoid impingement of hot exhaust gasses on the GRP cowl.

S 1303 Where an altimeter is not permanently installed, a wrist mounted altimeter is acceptable; in such cases a placard must be installed stating clearly that a wrist mounted altimeter is required.

S 1519 A Placard is to be installed in full view of the pilot stating "maximum suspended load from the wing 272kg" OR a placard for each individual aeroplane giving the maximum all-up weight derived from the suspended load limit of 272kg and the trike with full fuel.

S 1542 A placard is to be installed in full view of the pilot which quotes the limiting speeds \( V_A \) and \( V_{NE} \) defined in these TADS.

IN ADDITION

As a further condition of Type Acceptance and the issue of Individual Exemption, the pilot must wear a protective crash helmet and the aircraft be placarded to this effect.

Inspection

The review of the compliance of the listed Dual Striker and Sealander variants listed above with the airworthiness requirements of the nominated paragraphs of BCAR Section S has indicated a number of areas where particular attention must be given by each BMAA Inspector responsible for inspection of such aeroplanes and these are listed below:-

S 605 (i) Pylons must be checked for cracks and fretting in the area of the pylon folding connection at the pivot bolt and locking pins, both in the welded engine mount and the pylon itself.
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S 607 Check for correct assembly and locking of wheels onto axles.

S 609 Check that any flexible coating or covering of steel components has been removed and that alternative non-flexible protective coating or plating is used.

S 612 Tangs and thimbles at rigging ends must be checked to ensure the thimble has not been twisted around the tang. The use of Never Kinks or heat shrink tubing is advised to prevent kinking.

S 657 The hangpoint area does not meet the requirement for the joint to have a reserve factor of 6.667 with respect to the softest bearing material in the joint. (actual reserve is approximately 4 on bearing strength and 3 on bolt shear strength) Therefore it must be inspected for wear at 25 hour intervals, and be replaced when wear exceeds 0.2mm on the 5/16" hangbolt. Hangbolt material spec must be AN-5 or S96 or M8.8, plated and de-embrittled.

S 671 Ensure that the throttle controls work smoothly under all conditions without sticking.

S 901 (i) The spark plug caps should be held in place by straps to the cylinder head casing.

(ii) Check all the engine and reduction drive mounting plates including the head stay, for fatigue cracks. A twenty hour maximum inspection interval is advised. In particular, on upright engine installations check for:

a) No undercut on the walls of the bearing recess which would significantly reduce the material thickness between the recess wall and the flange mounting holes.

b) No scratches or machining marks on highly stressed areas of the plate (remove by polishing if necessary).

c) Correct alignment of the plate, without bend or twist due to cylinder head angle and bottom angle.

(iii) Check the reduction drive bearing outers do not turn in their housings.

(iv) Ensure that any bearing spacer on the reduction drive shaft is firmly locking the bearings in position. Replace if worn with a new steel tubular spacer.

(v) Check that the propeller hub casting shows no sign of cracking immediately forward of the propeller boss.
(vi) Where the Fuji Robin 2PM engine is installed (e.g. EC442PM), the crankshaft must be replaced with a heavy duty unit. The Heavy Duty crank is identified by the size of the magneto end nut which is 32mm across the flats. Engines with H.D. crankshaft are often identified with the stamp "CX" on the casing below the engine serial number plate and on the face of the starter motor flange.

(vii) Check for any looseness of propeller bolts at the flange.

S 903 On units with "trough like" cast reduction drive systems, pay particular attention to propeller balance which must be checked every 20 hours. Advise parking with propeller horizontal to prevent assymmetric water ingress. Ensure the reduction drive jacking-studs are replaced every 50 hours, or are replaced with M8.8 spec bolts and solid metal shims.

S 925 Propeller Clearance It is essential that each wing installed on an individual trike is inspected and checked for adequate clearance of all rigging and components, in particular with respect to the complete propeller arc, making proper and full allowance for all possible positions of the wing either in flight or on the ground. The minimum acceptable clearance in the radial plane is 75mm.

S 951 Check that the layout of fuel lines does not give rise to potential vapour locks.

S 975 Fuel Tank Vents Inspection must be made to satisfy that the fuel tank vent discharges clear of the aeroplane.

S 995 Check that fuel valves and controls are properly installed according to the requirements of S 995.

S 1125 Check for cracks throughout the exhaust and loose baffles. If only two mounting points are used then ensure that a backup wire is fitted to prevent failure of a mounting allowing the exhaust to foul the propeller.

S 1301 Equipment, Function The suitability, function and safe installation of equipment installed must be checked by inspection for each aircraft.

S 1303 Where an altimeter is not installed, a placard must be furnished stating a wrist altimeter must be worn.
APPENDIX 1

S 1519 A Placard is to be installed in full view of the pilot stating "maximum suspended load from the wing 272kg" OR a placard for each individual aeroplane giving the maximum all up weight derived from the suspended load limit of 272kg and the trike with full fuel.

S 1542 A placard is to be installed in full view of the pilot which quotes the limiting speeds $V_A$ and $V_{NE}$ defined in these TADS.

In addition inspectors must pay attention to the those items listed under Flexiform Striker, Flexiform Sealander, in the BMAA inspectors compilation of defect reports and the spotlights section of the BMAA inspectors handbook. Inspectors must be satisfied that the above modifications, inspections and service bulletins have been complied with.