

**BRITISH MICROLIGHT AIRCRAFT ASSOCIATION  
HOMEBUILT AIRCRAFT DATA SHEET (HADS)**

**NO: HM1 ISSUE: 29**

|   |   |   |
|---|---|---|
| TYPE  | Raj Hamsa X'Air (UK) * <i>(sometimes known as X'Air Mk.1)</i>   |   |
| (1) MANUFACTURER:                             | Individual aircraft are amateur-constructed, BMAA is responsible for continued airworthiness.   |   |
| (2) UK IMPORTER:                              | UK Importer of Kits, Wessex Light Aeroplane Co. Ltd,<br>7 Fullands Avenue, Taunton, TA1 3DE   |   |
| (3) CERTIFICATION:                            | BCAR SECTION S, (in the modification state at the date of manufacture or modification of any example)   |   |
| (4) DEFINITION OF BASIC STANDARD:             | <p>“RAND KARL s.a.r.l Manuel de Montage, X'Air”, as amended by BMAA list of amendments to comply with BCAR Section S (available from importer but summarised in Annex A to this HADS)</p> <p><b>Note:</b> Basic build standard <u>does not</u> include an electric starter, radio, strobes, or a battery. Any such fitted must be separately declared to the BMAA at build, or approved as modifications later.</p> |   |
| (5) COMPLIANCE WITH THE MICROLIGHT DEFINITION |   |   |
|   | (a) MTOW  | 450 kg  |
|   | (b) No. Seats   | 2   |
|   | (c) Maximum Wing Loading  | 28.125 kg/m <sup>2</sup>  |
|   | (d) V <sub>so</sub>   | 32.6 kn CAS   |
|   | (e) Permitted range of occupant weights   | Min 55 kg total weight<br>Max 90 kg per seat  |
|   | (f) Typical Empty Weight (ZFW)  | 232 kg  |
|   | (g) ZFW + 172 kg crew + 1 hr fuel<br>(Rotax 582 is 27 litres / 20 kg)   | 424 kg  |
|   | (h) ZFW + 86 kg pilot + full fuel<br>(63 litres / 45.36 kg)   | 363 kg  |
|   | (i) Max allowed ZFW at initial permit issue <sup>#</sup>  | 258 kg (582, V2 variants)<br>260 kg (R100 variants)<br>262 kg (912 & Jabiru variants)<br>263 kg (Verner variants)<br>266 kg (HKS700 variants)<br>258 kg (Hirth 3203 variants) |

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\* Note: During aircraft construction, this HADS is to be used with the X'Air stage inspection sheets, form BMAA/AW/022 (X'Air). If there is a conflict between the two, the latest HADS will always take precedence.

<sup>#</sup> The maximum ZFW is the lower of [(a)-(172kg+1hrs fuel at MCP)] or [(a)-(86kg+full fuel)].  
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**(6) POWER PLANTS**

| Designation           | X' Air 582(1) <sup>1</sup>  | X' Air 582(2) <sup>1</sup>  | X' Air 582(3) <sup>1</sup> | X' Air 582(4)                       | X' Air 582(5)               |
|-----------------------|---|-----------------------------|----------------------------|-------------------------------------|-----------------------------|
| Engine Type           | Rotax 582/48-2V upright   |                             |                            |                                     |                             |
| Reduction Gear        | Rotax B-type 2.58:1   |                             |                            | Rotax E-type<br>2.62:1              | Rotax C-type<br>3:1         |
| Exhaust System        | Rotax straight exhaust with double ball-joint, plus 6" vertical extension. <sup>2</sup> |                             |                            |                                     |                             |
| Intake System         | K&N dual or single combined air filter  |                             |                            |                                     |                             |
| Propeller Type        | Brolga square<br>tip, 3 blade<br>GA   | Ivoprop 3<br>blade GA       | Warp drive 3<br>blade GA   | Brolga square<br>tip, 3 blade<br>GA | Duc<br>Windspoon<br>2-blade |
| Propeller Dia x Pitch | 68", 12° pitch  | 64" or 65",<br>14.5° at tip | 64", 11.5°<br>pitch        | 68", 12° pitch                      | 68", 16° pitch <sup>3</sup> |
| Noise Type Cert No.   | 164M issue 1  | 164M issue 2 <sup>4</sup>   | 164M issue 3               | 164M issue 2                        | 164M issue 10               |
| MAAN approving        | 1453  | 1481, 1499                  | 1482                       | 1485 (+1521)                        | 1592                        |

| Designation           | X' Air 582(6)   | X' Air 582(7)                             | X' Air 582(8)          | X' Air 582(9)                    | X' Air 582(10)                 |
|-----------------------|---|---|------------------------|----------------------------------|--------------------------------|
| Engine Type           | Rotax 582/48-2V upright   |   |                        |                                  |                                |
| Reduction Gear        | Rotax C-type<br>3:1   | Rotax E-type<br>3.47:1                    | Rotax E-type<br>2.62:1 | Rotax E-type<br>3:1              | Rotax E-type<br>2.62:1         |
| Exhaust System        | Rotax straight exhaust with double ball-joint, plus 6" vertical extension. <sup>2</sup> |   |                        |                                  |                                |
| Intake System         | K&N dual or single combined air filter  |   |                        |                                  |                                |
| Propeller Type        | Brolga square<br>tip, 3 blade<br>GA   | Arplast<br>Ecoprop wide<br>chord, 3 blade | Ivoprop 3<br>blade GA  | Brolga square<br>tip, 3 blade GA | Arplast<br>Ecoprop, 3<br>blade |
| Propeller Dia x Pitch | 68", 16° pitch  | 170cm, pitch<br>19.5° @ 75%<br>radius     | 65", 14.5° at<br>tip   | 68", 16° pitch                   | 174cm, pitch<br>8.5° at tip    |
| Noise Type Cert No.   | 164M issue 5  | 164M issue 10                             | 164M issue 4           | 164M issue 6                     | 164M issue 8                   |
| MAAN approving.       | 1530  | 1572                                      | 1519                   | 1531                             | 1516                           |

<sup>1</sup> Builders should note that these combinations exceed the Rotax recommended inertia limit for the B-type gearbox, and the Rotax warranty will be invalidated.

<sup>2</sup> Extension essential to prevent fume ingress into cockpit at high power settings. Note that this requires modification to the exhaust from the standard Rotax part.

<sup>3</sup> Duc Windspoon propeller pitch is measured at the windspoon tip inside edge.

<sup>4</sup> Configuration X' Air 582(2) may include an after muffler and / or Rotax intake silencer without affecting noise certification or approval (MAAN 1499 refers).

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|-----------------------|---|-----------------------------|--------------------------------------|-----------------------------|-------------------------------------|
| Designation           | X' Air 582(11)  | X' Air 582(12)              | X' Air 582(13)<br>(Not yet approved) | X' Air 582(14)              | X' Air 503(2)<br>(Not yet approved) |
| Engine Type           | Rotax 582/48-2V upright   | Rotax 582/48-2V upright     | Rotax 582/48-2V upright              | Rotax 582/48-2V upright     | Rotax 503 upright                   |
| Reduction Gear        | Rotax B-type<br>2.58:1  | Rotax E-type<br>3.0:1       | Rotax C-type<br>3:1                  | Rotax E-type<br>3.47:1      | Rotax B-type<br>(ratio TBC)         |
| Exhaust System        | Rotax straight exhaust with double ball-joint, plus 6" vertical extension. <sup>2</sup> |                             |                                      |                             |                                     |
| Intake System         | K&N dual or single combined air filter  |                             |                                      |                             | TBC                                 |
| Propeller Type        | Duc Windspoon<br>2-blade  |                             | Catto, 3-blade                       | Duc Windspoon<br>3-blade    | Duc<br>Windspoon 2<br>blade         |
| Propeller Dia x Pitch | 68", pitch<br>11.5 <sup>o3</sup>  | 68", pitch 16 <sup>o3</sup> | 68", pitch tbd                       | 68", pitch 14 <sup>o3</sup> | 68", pitch tbd                      |
| Noise Type Cert No.   | 164M issue 8  | 164M issue 12               | TBD                                  | 164M issue 16               | TBD                                 |
| MAAN approving.       | 1557  | 1621                        | TBD                                  | 1753                        | TBD                                 |

|                       |  |  |                         |   |                                      |
|-----------------------|--|--|-------------------------|---|--------------------------------------|
| Designation           | X' Air 912(1)                              | X' Air V2(1)                                 | X' Air V2(2)            | X' Air 532(1) <sup>1</sup><br>(Not yet approved)  | X' Air 3203(1)<br>(G-CCES only)      |
| Engine Type           | Rotax 912UL                                | Simonini Victor II upright                   |                         | Rotax 532-2V upright  | Hirth 3203E upright                  |
| Reduction Gear        | 2.43:1                                     | Simonini C-type 2.76:1                       |                         | Rotax B-type<br>2.58:1  | Hirth G50<br>3.16:1                  |
| Exhaust System        | WLAC stainless steel, as per X' Air Falcon | Simonini twin long exhaust, p/n100301-100306 |                         | Rotax straight exhaust with double ball-joint, plus 6" vertical extension. <sup>2</sup> | Hirth mild steel with one ball joint |
| Intake System         | K&N dual or single combined air filter     |  |                         |   |                                      |
| Propeller Type        | Arplast Ecoprop 3-blade                    |  | Duc windspoon 3-blade   | Brolga square tip, 3 blade GA   | Brolga square tip, 3 blade GA        |
| Propeller Dia x Pitch | 170cm, pitch 14° at ¾ radius               | 170cm, 9°                                    | 68", 13.5 <sup>o3</sup> | 68", pitch tbd  | 68", pitch 16°                       |
| Noise Type Cert No.   | 164M issue 12                              | 164M issue 8                                 | 164M issue 8            | TBD   | TBD                                  |
| MAAN approving        | 1623                                       | 1549   | 1536                    | TBD   | 1793                                 |

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| Designation           | X' Air Jabiru(1)                         | X' Air Jabiru(2) | X' Air Jabiru(3)      | X' Air Jabiru(4)                           | X' Air R100(1)                              |
|-----------------------|--|------------------|-----------------------|--|---|
| Engine Type           | Jabiru 2200 horizontal                   |                  |                       |  | BMW R100RS <sup>5</sup>                     |
| Reduction Gear        | Direct Drive                             |                  |                       |  | Rotax C-type 3.47:1                         |
| Exhaust System        | Jabiru part No. CM02580                  |                  |                       |  | 2 into 1 overwing silencer, stainless steel |
| Intake System         | Bing type 64/32 carb + K&N filters       |                  |                       |  | 2 x Dellerto Carbs + K&N filters            |
| Propeller Type        | Arplast Ecoprop 166 R 4T 110/2 (2-blade) |                  | Newton Laminated Wood | Chris Lodge 2-blade as per drawing CJL 150 | Powerfin F, 3 blade GA                      |
| Propeller Dia x Pitch | 166cm, 5° at tip                         | 166cm, 7° at tip | 60" x 42"             | 60" x 32"                                  | 75", pitch 12°                              |
| Noise Type Cert No.   | 164M issue 7                             | 164M issue 10    | 164M issue 15         | 164M issue 18                              | 164M issue 15                               |
| MAAN approving        | 1529                                     | 1567             | 2023                  | 2185                                       | 1568  |

<sup>5</sup> Horizontal engine. Drawings for mounts and adaptor plates for this engine and gearbox may be obtained from Ray Everitt, 30 School Lane, St Martins, Shropshire. Note that since a certificate of conformity is not available for this engine, 25hours endurance testing is required on each example.

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| Designation              | X' Air R100(2)                                  | X' Air R100(3)                                       | X' Air 133(1)                         | X' Air 133(2) | X' Air 133(3)               |
|--------------------------|---|--|---------------------------------------|---------------|-----------------------------|
| Engine Type              | BMW R100RS <sup>6</sup>                         |  | Verner 133M / 133MK                   |               |                             |
| Reduction Gear           | Rotax C-type<br>3.0:1                           | Rotax C-type<br>3.0:1                                | 2:1 integral                          |               |                             |
| Exhaust System           | 2 into 1<br>overwing<br>silencer, mild<br>steel | 2 into 1<br>overwing<br>silencer,<br>stainless steel | Verner 600mm steel exhaust.           |               |                             |
| Intake System            | 2xBing 40mm<br>CV                               | 2xBing 32mm<br>CV                                    | Twin Dellorto / Bing 64               |               |                             |
| Propeller Type           | Duc<br>Windspoon, 3<br>blade GA                 | Duc<br>Windspoon, 3<br>blade GA                      | Duc<br>Windspoon, 2<br>blade GA       | Newton wood   | Kiev 283/1800,<br>3-blade   |
| Propeller Dia x<br>Pitch | 68", pitch 12° <sup>3</sup>                     | 68", pitch 12° <sup>3</sup>                          | 68", pitch 12°<br>to 16° <sup>3</sup> | 72" x 45"     | 1810mm, pitch<br>28° @ 35cm |
| Noise Type Cert<br>No.   | 164M issue 13                                   | 164M issue 13  | 164M issue 15                         | 164M issue 15 | 164M issue 19               |
| MAAN approving           | 1601  | 1596   | 1722                                  | 1889          | 2166                        |

<sup>6</sup> Horizontal engine. Drawings for mounts and adaptor plates for this engine and gearbox may be obtained from Ray Everitt, 30 School Lane, St Martins, Shropshire. Note that since a certificate of conformity is not available for this engine, 25hours endurance testing is required on each example.

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|--------------------------|--|----------------------------------|--|--|--|
| Designation              | X' Air 202(1)<br>(Not yet approved)        | X' Air 700(1)+<br>X' Air 700(1a) |  |  |  |
| Engine Type              | Zanzottera<br>MZ 202 upright               | HKS 700E V3<br>upright           |  |  |  |
| Reduction Gear           | Zanzottera<br>Centrifugal<br>Clutch 3.11:1 | Integral, 2.58:1                 |  |  |  |
| Exhaust System           | Zanzottera rear<br>mounted 2 x<br>90° bend | (1) One-off<br>(1a) HKS Std.     |  |  |  |
| Intake System            | 2 x Dellerto<br>Carbs + K&N<br>filters     | Twin K&N                         |  |  |  |
| Propeller Type           | TBD  | Duc windspoon<br>2-blade         |  |  |  |
| Propeller Dia x<br>Pitch | TBD  | 68", 11° <sup>3</sup>            |  |  |  |
| Noise Type Cert<br>No.   | TBD  | 164M issue 8                     |  |  |  |
| MAAN approving           | TBD  | 1543/1594 <sup>7</sup>           |  |  |  |

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<sup>7</sup> Because the exhaust installation on the X' Air 700(1) initial approval is a one-off, subsequent examples, whilst considered approved from a performance and handling viewpoint, will require new approval of the exhaust design, including 25 hours for compliance with S903. Examples using the standard HKS exhaust, designated 700(1a), are approved under MAAN1594 and do not require further approval.

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(7) MANDATORY LIMITATIONS:

|                                 |  |   |       |
|---------------------------------|--|---|-------|
| (A) Max Take-Off Weight         | 450 kg   |   |       |
| (B) CG Limits                   | <i>Aft limit</i>   | 4.5" fwd of datum<br>5.2" fwd of datum (Jabiru<br>engined variants only) <sup>8</sup> |       |
| (C) CG datum                    | <i>FWD Limit</i>   | 11" fwd of datum<br>Mainwheel axle centreline (see annex C).                          |       |
| (D) Cockpit Loadings            | Port   | Starboard   | Total |
|                                 | Min  | 55 kg   | -     |
|                                 | Max  | 90 kg   | 90 kg |
| (E) Never Exceed Speed          | 83 kn CAS <sup>9</sup>   |   |       |
| (F) Manoeuvring Speed           | 65kn CAS   |   |       |
| (G) Permitted Manoeuvres        | 45° Nose up / 30° nose down<br>Non Aerobatic<br>Normal acceleration limits, +4 / -2g |   |       |
| (H) Fuel Contents (Max Useable) | 63 litres  |   |       |

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<sup>8</sup> Jabiru engined variants have undergone spinning tests to clear an aft CG of 5.2", during the approval of MAAN1567.

<sup>9</sup> Flight test limit V<sub>df</sub>=92 kn CAS.

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(I) Power Plant

| Engine                        | Rotax 582/48-2V  | Rotax 532-2V          | Rotax 912UL                  | Simonini Victor II               | Jabiru 2.2L                | HKS700E                       | BMW R100RS                                 | Verner 133M / 133MK          |
|-------------------------------|--|-----------------------|------------------------------|----------------------------------|----------------------------|-------------------------------|--|------------------------------|
| Max RPM                       | 6,800  | 6,800                 | 5,800<br>(5,500 cont)        | 6,500                            | 3,300                      | 6,200<br>(5,800 cont)         | 6,500<br>(6,000 cont)                      | 5,500<br>(4,500 cont)        |
| Max CHT                       | 150°C  | 180°C                 | 150°C                        | 120°C<br>(20°C differential )    | 250°C                      | 230°C                         | 250°C                                      | 230°C                        |
| Max EGT                       | 650°C  | 650°C                 | 900°C                        | 620°C<br>(20°C differential )    | N/A                        | N/A                           | 800°C                                      | 750°C                        |
| Fuel spec                     | 83MON or 90RON min unleaded to BS(EN)228 or 97+ octane MOGAS leaded fuel to BS4040, or AVGAS 100LL |                       |                              |                                  |                            | 90+ RON unleaded to BS(EN)228 | Unleaded MOGAS to BS(EN)228 or Avgas 100LL | 95+ RON MOGAS or Avgas 100LL |
| Engine oil spec               | as per engine manual   | as per engine manual  | as per engine manual         | as per engine manual             | as per engine manual       | as per engine manual          | as per engine manual                       | as per engine manual         |
| Gearbox oil spec              | as per gearbox manual  | as per gearbox manual | as per gearbox manual        | as per gearbox manual            | N/A                        | as per gearbox manual         | as per gearbox manual                      | As per engine (integral)     |
| Fuel/oil mix                  | 50:1   | 50:1                  | 4-stroke, add no oil         | 33:1 (unleaded)<br>40:1 (leaded) | 4-stroke, add no oil       | 4-stroke, add no oil          | 4-stroke, add no oil                       | 4-stroke, add no oil         |
| Max coolant temp              | 80°C   | 80°C                  | 150° by CHT gauge            | N/A                              | N/A                        | N/A                           | N/A  | N/A                          |
| Max oil pressure              | N/A  | N/A                   | 7 bar @ start, 5 bar normal  | N/A                              | 76psi                      | 58psi                         | 72.5psi @ 4000rpm                          | 70psi                        |
| Min oil pressure              | N/A  | N/A                   | 0.8 bar @ idle, 2 bar normal | N/A                              | 31psi normal, 11psi @ idle | 29psi @ 5000rpm, 17psi @ idle | 58psi @ 4000rpm                            | 15psi                        |
| Oil temperature               | N/A  | N/A                   | 50-140°C                     | N/A                              | 118°C cont                 | 50-100°C                      | 110°C                                      | 50-100°C                     |
| Fuel pressure at cruise power | 0.2-0.4 bar  | 0.2-0.4 bar           | 0.15-0.4 bar                 | 0.2-0.4 bar                      | TBD                        | 0.2-0.5 bar                   | TBD  | 2.2-10.1psi                  |

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(8) Instruments Required:

| ASI*  | Altimeter* | RPM      | EGT                         | Compass  | Coolant temp            | CHT | Fuel Pressure | VSI      | Slip ball |
|---|------------|----------|-----------------------------|----------|-------------------------|-----|---------------|----------|-----------|
| Required to 88 kn CAS (calibrated) on scale, and 92kn CAS before stop <sup>10</sup> | Required   | Required | Required (2-stroke engines) | Required | At least one required** |     | Required      | Optional | Optional  |

\*An exterior static vent is to be fitted immediately forward of a leading edge wing strut at least 8 inches below the wing lower skin, serving both the ASI and altimeter, + if fitted, the VSI. If a 2-tube combined pressure head is used, the static must be shorter than, and directly below, the pitot tube.

\*\* CHT, Oil temperature and oil pressure gauges are mandatory for 4-stroke engined aircraft.

(9) CONTROL DEFLECTIONS:

|                 |        |                      |         |
|-----------------|--------|----------------------|---------|
| Elevator UP:    | 27°±2° | Tailplane trim UP:   | 60°-15° |
| Elevator DOWN:  | 27°±2° | Tailplane trim DOWN: | 60°-15° |
| Ailerons* UP:   | 22°±3° | Rudder LEFT:         | 20°±2°  |
| Ailerons* Down: | 22°±3° | Rudder RIGHT:        | 20°±2°  |

\*Aileron deflections are measured at the outboard lower surface. The neutral position should be that with the outboard aileron lower surface 4½±1½° trailing-edge-up compared to the wingtip lower surface (with the control column vertical). This should approximately correspond to the “trailing-edge-up” turnbuckle being fully tightened.

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

10.1 Manuals approved for use with this aircraft.

- (a) Raj Hamsa X' Air (UK) Operators Manual, issue 1 to AL1.
- (b) Manufacturer's engine manual (contained at Annex B of the operators manual for a particular aircraft)
- (c) Other manuals as listed at Annex F of the operators manual for a particular aircraft.
- (d) Construction to X' Air (UK) construction manual, Original issue (25 April 1999)
- (e) Construction to Wessex Light Aeroplane Co. Ltd, Modifications and Additions for the X' Air Microlight Aircraft to comply with Section S Airworthiness Requirements.
- (f) Maintenance may be to either Raj Hamsa X' Air(UK) operator's manual or Microlight Maintenance Schedule MMS-1 at the operator's discretion.

10.2 The following placards are to be fitted:

- (a) Flight Limitations Placard (to be visible to pilot) See Annex D.
- (b) Engine Limitations Placard (to be located near to engine instruments) See Annex D.

<sup>10</sup> To give a low risk of failing to meet this when the aircraft is calibrated in flight test, it is *recommended* that instruments with a scale to at-least 100 kn IAS (115 mph IAS) are fitted.

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(c) Fuel Limitations Placard (to be located near to filler cap)

A placard is to be fitted showing fuel capacity (63 litres), fuel type(s), fuel:oil ratio (if relevant) and, if MTOW can be exceeded with full fuel and 180kg cockpit weight, the fuel loads at MTOW for cockpit weights of 180kg / 170kg / 160kg etc. at 10kg intervals down to the maximum fuel load. An example is shown at Annex D.

(d) ASI Placard

Unless at in-flight calibration all ASI readings were within 2 kn of CAS, a correction placard from 30 to 83 kn CAS at no more than 10 kn intervals, and at V<sub>so</sub>, V<sub>a</sub> and best glide speed, must show the corrections from IAS to CAS. For values, see the approval MAAN for the particular aircraft. An example is shown at Annex D.

(e) Pitch Trimmer Instructions

See Annex D.

(f) Switches

See Annex D.

Note: It is recommended that airspeed placards are not fitted to new aircraft until after flight testing, due to the requirement for pitot-static system calibrations.

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

See Annex A for required modifications.

BMAA SB 1741.1, (Mandatory) Mandatory inspection of elevator and rudder hinge brackets.

BMAA SB 1741.2, (Mandatory) Check on correct adjustment of ailerons.

**Note: Any aircraft complying with this HADS at issue 21 or later may be considered to comply with SB 1741.2. Inspectors should note that the aileron setting datum used is different, and the two documents should not be confused.**

BMAA SB 1741.3, (Advisory) Reminder to operators of correct baggage compartment fitment, and correct operators manual.


BMAA SB 2298.1, (Strongly Recommended). The three aileron turnbuckles to be inspected for deep tooling marks and replaced if found.

Annual Bettsometer test is to be carried out to 1360 grammes with wing sails fitted and tensioned to flight. Test must be to both upper and lower surfaces.

(12) MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT

Rate of Climb: See approval MAAN (43 kn CAS best speed).

Stall or Minimum Flying Speed: 35 kn CAS at MTOW / 6" fod CG / idle.

|                |   |                                      |                   |
|----------------|---|--------------------------------------|-------------------|
| BMAA Approval: |  | B J Syson<br>Chief Technical Officer | 16 September 2010 |
|----------------|---|--------------------------------------|-------------------|

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ISSUE HISTORY

|                  |  |
|------------------|--|
| BMO63 Issues A-D | Drafts, for flight test purposes only  |
| BMO63 Issue 1    | Authorised by MAAN 1453 issue 1, configuration X'Air 582(1)  |
| HM1 Issue 1      | New format, new configuration definitions, addition of mandatory modification 23.  |
| HM1 Issue 2      | Authorised by MAAN 1481, approval of configuration X'Air 582(2).   |
| HM1 Issue 3      | Addition of optional modifications 6-8; new configurations and minor typographic corrections.  |
| HM1 Issue 4      | Approval of configuration X'Air 582(4), addition of Annex E, points 1-4.   |
| HM1 issue 5      | Change of title to X'Air Mk.1 (due to impending import of a Mk.2). Annex E, points 5-7. Addition of configuration X'Air 582(8); authorised by MAAN 1519.   |
| HM1 issue 6      | Clarification of Jabiru(1) configuration details. Moving of fwd CG limit from 9" to 10.5" FoD (authorised by MAAN 1515).   |
| HM1 issue 7      | Clarification of 700(1) configuration details and engine limitations. Addition of HKS 700(E) engine limitations, addition of Annex E points 8 – 9. Addition of configuration X'Air 582(6) authorised by MAAN 1530.   |
| HM1 issue 8      | Expansion of Annex E point 9. Alteration several configurations not yet approved. Approval of configurations V2(1), 700(1). Addition of optional modifications 9 – 11 by read-across from X'Air Mk.2. Authorised by MAANs 1543, 1549.  |
| HM1 issue 9      | Addition of configuration V2(2), authorised by MAAN 1536.  |
| HM1 issue 10     | Addition of configuration 582(9), authorised by MAAN 1531.   |
| HM1 issue 11     | Addition of configuration 582(10), authorised by MAAN 1516. Also addition of Simonini engine limitations.  |
| HM1 issue 12     | Correction of incorrect 72" and 58" diameter Duc propeller references to 68". Approval of configuration 582(11). Authorised by MAANs 1529 & 1557.  |
| HM1 issue 13     | Addition of configuration 582(5), authorised by MAAN 1592. Minor editorial changes, including indication where configurations are unapproved.  |
| HM1 issue 14     | Addition of configuration 582(7), authorised by MAAN 1572, and configuration Jabiru(2), authorised by MAAN 1567. Addition of further approved optional modifications (12 & 13 weight saving and 14 cockpit stowage compartment as per X'Air mk2 Falcon). Addition of Point 11 on 'Points for special attention': lateral control stops. Change in wording of Engine Limitations placard requirements. Minor changes to configurations not yet approved. Increase in forward CG range limit to 11" forward of datum, following flight testing associated with MAAN1623. |
| HM1 issue 15     | Addition of configuration 582(12), authorised by MAAN 1621.  |
| HM1 issue 16     | Approval of configuration R100(3), authorised by MAAN 1596. Deletion of engine information for Rotax 503. Addition of Point 12 on 'Points for special attention': baggage compartments. Addition of note relating to modification state of Jabiru engines approved to date.  |
| HM1 issue 17     | Approval of configuration 912(1), authorised by MAAN 1623. Addition of engine information for Rotax 912 UL.  |
| HM1 issue 18     | Approval of configuration 700(1a), authorised by MAAN 1594. Addition of optional modification 15: installation of wide doors.  |
| HM1 issue 19     | Approval of configuration R100(2), authorised by MAAN 1601. Addition of mandatory modification 24: exhaust extension on 582 installations.   |
| HM1 issue 20     | Approval of configuration R100(1), authorised by MAAN 1568. Addition of Annex F. Clarification of aileron reflex setting angle and change to wording of 'Points for special attention' item 12 and addition of items 13 and 14, referenced in BMAA SB1741. Clarification of maximum zero fuel weights for different variants.  |
| HM1 issue 21     | Approval of configuration 133(1), authorised by MAAN 1722. Modification to references used for aileron setting.  |
| HM1 issue 22     | Addition of optional modification 16 (luggage compartment). Addition of Points for Special Attention 15 (Dellorto carburettors). Deletion of optional modification 14 (X'Air Falcon type luggage compartment). Authorised by MAANs 1683 issue 2 and 1789 issue 1.  |

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|              |  |
|--------------|--|
| HM1 issue 23 | Approval of configuration 582(14), authorised by MAAN 1753.  |
| HM1 issue 24 | Modification to ASI requirements. Approval of configuration 133(2), authorised by MAAN 1889.   |
| HM1 issue 25 | Addition of configuration 582(3), authorised by MAAN 1482.   |
| HM1 issue 26 | Addition of optional modification 17 (aluminium wide doors), assessed as part of MAAN 1669. Addition to Annex E. Addition of configuration Jabiru(3), authorised by MAAN 2023. Addition of ANO mandatory placards. |
| HM1 issue 27 | Addition of optional modification 18 ('Mylar' covers), approved by MAAN 2112.  |
| HM1 issue 28 | Addition of configuration 133(3) approved by MAAN 2166, configuration Jabiru(4) approved by MAAN 2185 and configuration 3203(1) approved by MAAN 1793.<br>Improvements to formatting.                              |
| HM1 issue 29 | Addition of BMAA SB 2298.1 in Section 11 and Annex E of this document.   |

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Illustration of Aircraft - 3 View

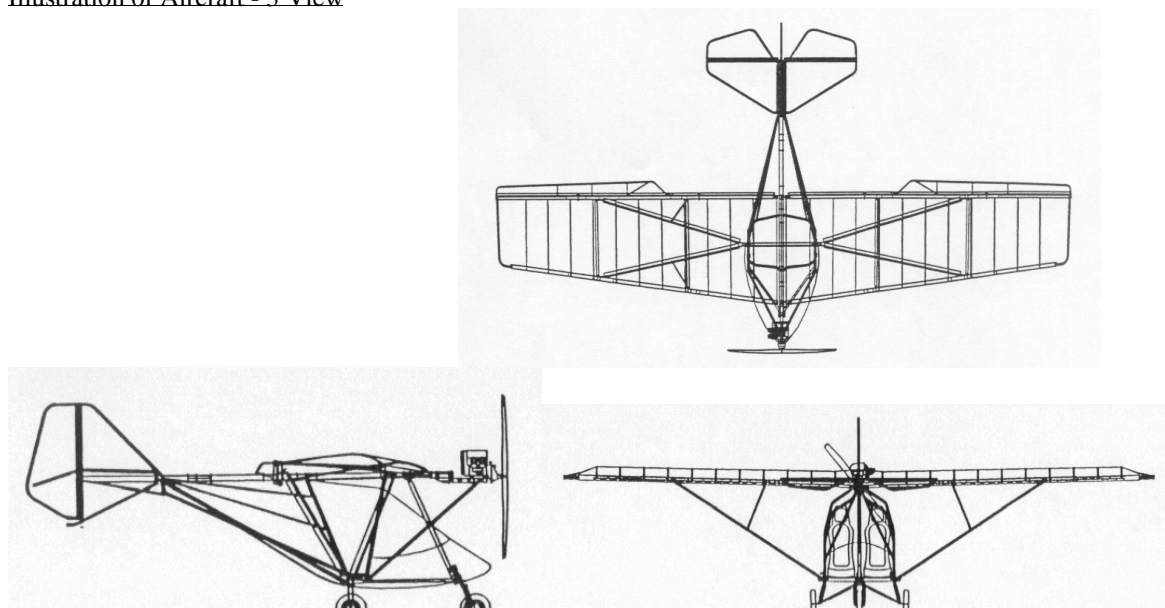


Illustration of Aircraft – Photograph



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**ANNEX A – MANDATORY MODIFICATIONS**

1. The following bolts are to be modified.
  - (a) Control column pivot bolts to be drilled through 1.6mm and secured with a clevis pin outside the Nyloc nut.
  - (b) Trim lever pivot bolt replaced with M6 x 60mm bolt, and modified as above.
  - (c) QTY 5 elevator push-rod bolts, as (b) above.
2. All flying control stainless steel hinge brackets drilled through to 5mm diameter and fitted with 5mm hexagon head bolts, drilled and locked with clevis pins.<sup>11</sup>
3. Use of nyloc nut for securing pulley to cockpit pitch trimmer arm.
4. Groove and lug at end of cable, cockpit pitch trimmer.
5. Clear nylon runner and lubrication for pitch trim cable.
6. Wire locking of tailplane strut-bolts.
7. Control column lateral control stops - introduction of.<sup>12</sup>
8. Forward throttle stop - introduction of.
9. Use of cable ties to improve security of seat back..
10. Introduction of link brackets, front and rear jury struts.
11. Introduction of link between jury struts.<sup>13</sup>
12. Replacement of pod, instrument panel and windscreen nuts with nyloc type.
13. Replacement of sump drains with spring loaded light aircraft “Curtiss” type. (Before incorporating, note also the availability of optional modification No.9 below).
14. Secured spacers (4 off) between pod base and cockpit floor.
15. Covering of tube between seat bases with durable protective tape.
16. Short hose between tanks to be rubber fuel-rated type.
17. Introduction of a mechanism counter-spring in each wheel brake.
18. Confirmation that the brakes and engine starting of the particular aircraft will either permit starting whilst strapped into the pilots seat, or that the aircraft can safely be started outside the aircraft without need for a person seated inside the aircraft.
19. Rudder centring springs at nosewheel, connected to short 2mm diameter swaged cables
20. Insertion of Nylon spacing washers at the pin-jointed ends of all jury and drag struts.
21. Extension of rudder central tube using internal sleeve and extension piece, using QTY 2 bolts to transfer loads to the rudder.<sup>14</sup>
22. Two Velcro tails, and associated velcro strip on the wing sail root underside are to be fitted to the wing

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<sup>11</sup> Mod No.2 should be part of standard kits supplied from early 2000; specifically kits 500, 502, & 504 onwards.

<sup>12</sup> Mod No.7 should be part of standard kits supplied from early 2000; specifically kits 500, 502, & 504 onwards.

<sup>13</sup> Mods No. 10 and 11. should be part of standard kits supplied from early 2000; specifically kits 500, 502, & 504 onwards.

<sup>14</sup> Mod No. 21 should be incorporated (by use of a longer tube, no internal sleeve is required) from kit 559 onwards (kits supplied from August 2000).

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spacer panel trailing edge.

23. Fitment of M4 bolt as cable retainer through central aileron pulley bracket. This must not be drilled and fitted in situ, the bracket must be removed to prevent accidental damage.
24. Rotax 582 engines to incorporate 6" vertical extension on exhaust.

ANNEX B - APPROVED OPTIONAL MODIFICATIONS

The installation of all optional modifications is to be inspected by a BMAA inspector and an entry made in the appropriate logbook(s). Note that other approved modifications may exist which are not listed here.

1. Installation of curved shim washers at lower of 3 rudder hinges to ensure alignment of hinges and reduce wear.
2. Parking brake, supplied by Wessex Light Aeroplane Company. Inspectors must confirm that this will hold the aircraft still on grass with 5,000 RPM set (Rotax engines), or equivalent power for non-Rotax engines.
3. Installation of a separately switched electric booster pump, located between and below the two fuel tanks. This modification becomes MANDATORY if the fuel pressure is unable to remain above 0.2 bar / 3 psi between 3500 and 6500 rpm (2-stroke engines) or between flight idle and max-continuous (4-stroke engines) and the problem cannot be fixed by other means.
4. Fitment of **narrow** doors (to be of Wessex Light Aeroplane Company manufacture, or other as approved by BMAA modification). The original Rand Karl / Raj Hamsa lightweight doors are unacceptable.

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5. Installation of BRS canister subject to the following:
- a. Location on centreline aft of seats, firing down-left through largest fabric panel. To be attached to the rising fuse tube, with centre of canister 23" aft of mainwheel datum, using BRS tube clamp. Before installation the BRS manufacturer must be consulted concerning whether the model fitted will pass through this fabric panel, and if necessary a sacrificial "weak" panel may need to be fitted using lacing or Velcro.
  - b. Main bridle to be routed around outside of all longerons, to fuse tube, S-folded using weak cable ties.
  - c. Two Kevlar bridles to be attached to fuse-tube / rising fuse tube junctions fore and aft of cockpit. These are to be weakly secured "S-folded" and underneath the fabric.
  - d. Handle to be on the centreline, between and slightly behind pilots, at roof of cabin.
  - e. The handle is to be red, and provided with a locking pin.
  - f. A new W&CG report is to be prepared with the BRS fitted, and submitted to the BMAA. If ballast is required to keep the aircraft within CG limits, a suitable metal plate is to be screwed securely to the floor pan in front of the pilots feet, as near as possible to the centreline. [Note: the BRS moves the CG significantly rearwards, it may therefore be difficult to stay within CG limits without the mass of an electric start, battery and associated larger gearbox at the engine.]
  - g. The BRS manual is to be permanently attached to the aircraft operators manual.
  - h. There is to be a stowage point for the safety pin in front of, and in view of, the pilot.
  - i. The following placards are to be fitted to the aircraft. They must be large and clearly visible.

(i) Adjacent to operating handle

|  |
|--|
| <p><b>WARNING</b><br/><b>EMERGENCY PARACHUTE</b><br/><b>PULL HANDLE SHARPLY</b><br/>Unapproved equipment - see Pilots Handbook</p> |
|--|

(ii) On outside of fuselage, in line with drogue gun

|  |
|--|
| <p><b>WARNING</b><br/><b>BALLISTIC PARACHUTE BEHIND THIS COVER</b><br/><b>KEEP CLEAR</b></p> |
|--|

6. Spats, of type supplied by Wessex Light Aeroplane Company. If fitted after manufacture, a new W&CG report is to be prepared; if this is done using existing weighing data, add 0.45kg to the recorded load at each Mainwheel.
7. Bend to top edge of wing support stainless steel brackets to avoid weld confliction i.a.w. Wessex drawings and instructions.
8. Filing 1.0 - 1.5mm from mainwheel bearing distance-piece to ensure stub-end is flush with wheel casting at the other side.
9. Use of drain cock adaptors, made up i.a.w. Wessex Light Aeroplane Company drawings between original fuel tank drain cocks and required Curtiss drain cock, instead of drilling tank and fitting Curtiss drain directly.

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10. Lightweight chest straps with quick-release clips to be attached just above the harness front-buckles.
11. Wider X' Air Mk.2 door opening.
12. Fitment of lightweight CFRP floor pan, replacing original plywood floor pan.
13. Fitment of lightweight alloy wheels in place of original Indian-supplied wheels.
14. [Deleted]
15. Fitment of composite framed doors for the **wide** door opening (to be of Wessex Light Aeroplane Company or X' Air Ireland manufacture, or other as approved by BMAA modification), which include catches at the bottom and mid positions. (see optional modification 4 for the narrow door option).
16. Sealed X' Air Mk.1 baggage compartment (max 5kg capacity), of type supplied by Wessex Light Aeroplane Company, modified according to the fitting instructions supplied by WLAC **and approved by MAAN 1789**. If fitted after manufacture, a new W&CG report is to be prepared; if this is done using existing weighing data, add 0.6kg at 12" aft of datum, and treat as a second fuel tank of 7 litres capacity at 12" aft of datum
17. Fitment of aluminium alloy framed doors for the **wide** door opening (to be of Wessex Light Aeroplane Company or X' Air Ireland manufacture, which include catches at the bottom and mid positions. (see optional modification 4 for the narrow door option).
18. Covers manufactured from Dimension Polyant 180 LL (known as 'Mylar') supplied by Wessex Light Aeroplane Company.

**ANNEX C - WEIGHING INFORMATION**

1. CG Datum: Mainwheel axle centreline (positive forward)
2. Weighing attitude: All 3 wheels on a level surface.
3. Mainwheel moment arm: 0
4. Nosewheel moment arm: 55" fwd of datum
5. Fuel moment arm: 10" aft of datum (63 litres maximum capacity)
6. Crew moment arm: 6" fwd of datum
7. Crew weights: Minimum 55 kg / maximum 90 kg  
(maximum reducible, not below 86 kg, if required).
8. Baggage compartment (if fitted): treat as an additional fuel tank of capacity 7 litres (5kg) at a position 12" aft of datum
9. Aft CG Limit: 4.5" fwd of datum (5.2" for Jabiru engined aircraft)
10. Fwd CG Limit: 11" fwd of datum
11. BRS Moment arm: 23" aft of datum (if fitted).

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**ANNEX D - EXAMPLE PLACARDS**

(a) **Flight Limitations Placard (to be visible to pilot)**

|  |                             |
|--|-----------------------------|
| <i>X' Air [Engine] [Registration]</i>          |                             |
| Never Exceed Speed:                            | _____ IAS *                 |
| Manoeuvring Speed :                            | _____ IAS *                 |
| Stall Speed:                                   | _____ IAS *                 |
| Best climb speed:                              | _____ IAS *                 |
| Best glide speed:                              | _____ IAS*                  |
| Pitch Limits:                                  | 30° nose down, 45° nose up. |
| Bank angle limits:                             | +/- 60°                     |
| Maximum Stall entry rate:                      | 5 kn/s                      |
| Normal Acceleration Limits:                    | +4 / -2g                    |
| Empty Weight:                                  | _____ kg **                 |
| Max Take-Off Weight:                           | 450 kg                      |
| Minimum Cockpit Weight:                        | 55 kg                       |
| Maximum Cockpit Weight:                        | 90 kg in each seat.         |
| Aerobatics and deliberate spinning prohibited. |                             |

\*Values and units IAS will be given in the approval MAAN for the individual aircraft.

\*\* This must match the most recent W&CG report for the aircraft.

(b) **Engine Limitations Placard (to be located near to engine instruments)**

All engine parameter limitations are to be shown as coloured markers (red for danger, amber for caution) on the instrument displays. A placard mounted close to the engine instruments showing these limitations is also recommended.

(c) **Fuel Limitations Placard (to be located near to filler cap)**

|  |                         |
|--|-------------------------|
| <b>FUEL</b>  |                         |
| Capacity 63 Litres   |                         |
| 50:1 2-Stroke Oil / Add No Oil <sup>15</sup>   |                         |
| Cockpit Weight (kg)  | Max. Fuel Load (litres) |
| 180  |                         |
| 170  |                         |
| ....   |                         |
| ... Or below   | 63 litres               |
| 83 MON or 90 RON minimum unleaded to BS(EN)228 or 97+<br>octane 4-star / MOGAS leaded fuel to BS 4040, or AVGAS<br>100LL |                         |

(d) **ASI Placard**

|  |                  |           |                                |                        |           |                  |           |           |                   |
|--|------------------|-----------|--------------------------------|------------------------|-----------|------------------|-----------|-----------|-------------------|
| <b>Kn CAS<br/>(calibrated)</b>           | <b>33<br/>Vs</b> | <b>40</b> | <b>43<br/>climb/<br/>glide</b> | <b>50<br/>approach</b> | <b>60</b> | <b>65<br/>Va</b> | <b>70</b> | <b>80</b> | <b>83<br/>Vne</b> |
| <b>mph/knots<br/>IAS<br/>(indicated)</b> |                  |           |                                |                        |           |                  |           |           |                   |

<sup>15</sup> Delete as appropriate.  
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(e) Pitch Trimmer Instructions

|  |
|--|
| PITCH TRIM    nose down ←    → nose up |
|--|

(f) Switches

All switches are to be marked with function and sense (up=on, down=off).

(g) Baggage Compartment (if optional modification 14 fitted)

“MAX 3 kg”

(h) Baggage Compartment (if optional modification 16 fitted)

“MAX 5 kg”

(i) Placards required by the ANO

The following mandatory placards must be fitted:

“Occupant warning – this aircraft has not been certificated to an International Requirement.”

A ‘no smoking’ sign must be displayed.

ANNEX E - POINTS FOR SPECIAL ATTENTION

In service, the following points have been found to be commonly recurring problems, and Inspectors must give special attention to the following both during initial approval, and during later inspections.

1. Visible scores, from the manufacturing process, to stainless steel wing-strut brackets. Any parts found to display visible scores are faulty and must be replaced with new parts before any further flight.
2. Failure to provide a full 6” vertical extension to the exhaust (Rotax engined variants).
3. Failure to ensure a leak-free external static source, or inadvertent deletion of the external static source.
4. Failure to properly apply a proprietary threadlocking compound to the wheel hub bolts.
5. Poor hole fitting at tailplane bolts, which tends to cause chafing. Acceptable solutions are part replacement (recommended at initial construction) or drilling through, deburring, and fitment of a slightly larger, AN type bolt.
6. Placards must be as stated in the approval **MAAN**, and not use CAS values as given in the HADS.
7. Ivoprop propellers are defined on this HADS by actual propeller pitch as measured at the tip. Table A1 below shows the Ivoprop “nominal” pitch setting and how to obtain it for configurations used. Ivoprops are either of the “easy-adjust” screw-cam adjusting type, or the earlier spacer adjusting type.

Table A1 – Ivoprop settings

| Diameter | Pitch | Nominal Pitch | Turns from<br>Neutral | Protruding<br>Screw<br>(mm) | No. Spacers |            |
|----------|-------|---------------|-----------------------|-----------------------------|-------------|------------|
|          |       |               |                       |                             | Head side   | Block Side |
| 64 / 65” | 14.5° | 8.5°          | 1½                    | 34mm                        | 1           | 5          |

8. Failures to take into account the requirements of BMAA TIL 007 and 027 during the design and installation of the engine and instrument fittings.

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9. Incorrect flight manual – some kits have been inadvertently provided with the incorrect, Raj Hamsa manual (issued in India), not the “Raj Hamsa X’Air (UK) Operators’ Manual”, which carries a BMAA approval statement on the front page, incorporating the approval MAAN, W&CG report for the aircraft, etc and be in its own binder.
10. Manufactured tear at corner of rudder and elevator hinge brackets. These should be checked during construction, and a tear, if found, is to be removed by introducing a smooth internal radius using appropriate hand tools. Subject this area to a thorough visual inspection during permit renewal / annual inspection; if fatigue crack propagation is found, *replace the bracket before further flight*. BMAA SB 1741.1 refers. **Note: It is anticipated that this point may be addressed in the future by replacement of the part, and new Service Bulletins should be monitored for this.**
11. Mandatory modification number 7 (introduction of lateral control stops) should now be incorporated in the kits, however it is important that particular attention is made to ensure that the aileron deflections are within limits:  $22^{\circ}\pm 3^{\circ}$  up,  $22^{\circ}\pm 3^{\circ}$  down from a  $7.5^{\circ}$  up datum (as noted on the stage inspection sheet).
12. It has been discovered that some X’Air kits have inadvertently been supplied with an unapproved foreign baggage compartment. This is behind the seats and is identified by two metal "stringers" at it's front and rear edges and an open top; it may be placarded at 20kg. If found fitted to any X’Air this is to be removed before further flight. Please note that a different type, sewn into the rear bulkhead and placarded with a 3kg limit is not affected. Approval of this unapproved baggage compartment is not expected and removal should be regarded as permanent. BMAA SB 1741.3 refers.  
  
It should be noted that optional modification No.16 above is a modified version of this compartment, and may be fitted.
13. There is concern that some X’Air builders or their inspectors have modified the aileron setting turnbuckle (located in the upper fuselage just behind the wing root) due to a misunderstanding over the correct aileron settings. This turnbuckle should be checked before further flight; if there is any evidence that the item has been modified, the aircraft must not be flown until a replacement item is sourced from the Wessex Light Aeroplane Co., fitted and the ailerons reset in accordance with Section 9 above. BMAA SB 1741.2 refers.
14. It has been discovered that some X’Air aircraft are not being operated with the correct UK operators manual. This is distinguished by an approval statement from the BMAA on the front cover. If an aircraft is being operated with any other manual, that manual must be either discarded or marked "Not approved for UK use", and the Wessex Light Aeroplane Company contacted for a copy of the correct manual. SB 1741.3 refers.
15. Inspectors must ensure that any example of the type fitted with a Verner engine has a Dellorto carburettor fitted which has two black floats and not a single white float. WLAC SB WV001 refers.
16. The engine starter solenoid must be fitted as close as possible to the battery in order that the unfused/unswitched length of cable is as short as possible (build manual refers).
17. During build, inspectors must ensure that the battery is securely housed. Battery mount options 1 & 2 of the build manual need not have load tests performed. Details of any other battery installation must be supplied to the BMAA along with load test results.
18. Check that there is no damage on the structural member where the throttle lever might come into contact with it as a stop (closed throttle position).
19. Check for corrosion of rear wing attachment plates (p/n 102125) at least annually.
20. Visible scores, from the manufacturing process, to the aileron turnbuckles. Any turnbuckles that contain deep scores must be replaced. See BMAA SB 2298.1.

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ANNEX E

SCHEDULED PERFORMANCE FOR APPROVED CONFIGURATIONS

| Configurations | TODR, metres<br><i>(unfactored in italics)</i> | LDR, metres | Climb Rate, fpm | Glide Ratio |
|----------------|--|-------------|-----------------|-------------|
| Rotax 582      | 350 (269)                                      | 230         | 595/625*        | 6.7:1       |
| Jabiru 2.2     | 510 (390)                                      | 230/480*    | 380             | 6.7:1       |
| Simonini V2    | 284 (191)/<br>273 (210)*                       | 230         | 595             | 6.7:1       |
| HKS700E        | 455 (350)                                      | 230         | 290             | 6.7:1       |
| BMW R100RS     | *  | *           | *               | 6.7:1       |
| Rotax 912      | 325 (250)                                      | 366         | 1150            | 6.7:1       |
| Verner 133M    | 312m (240)                                     | 230         | 620             | 6.7:1       |
| Hirth 3203     | 299m (230)                                     | 268         | 640             | 6.7:1       |

All scheduled performance values are for ISA, sea-level, still-air conditions, with a short dry –grass runway surface. Take-off and landing values are over a 15m (50ft) obstacle clearance height.

\*Depends on powerplant configuration, refer to approval MAAN for individual aircraft.



# **MANDATORY PERMIT DIRECTIVE**

In accordance with Article 9A(5)(b) of the Air Navigation Order 2000 as amended, the following action required by this Mandatory Permit Directive (MPD) is mandatory for applicable aircraft registered in the United Kingdom operating on a UK CAA Permit to Fly.

## **MPD: 2004-001 X'AIR**

**Subject:** Inspection of ailerons.

**Applicability:** X'Air Mk 1 microlights. Note: X'Air Mk1 microlights have a designation in the format 'X'Air [engine] ([designation])', e.g. X'Air 584(4) or X'Air Jabiru (1).

**Reason:** The CAA have been advised that the instructions requiring reflexing of the ailerons during build of some X'Air Mk 1 microlights have been mis-interpreted. As a result, there may be aircraft with mis-set ailerons, which would lead to unsafe handling qualities during flight. In addition, the CAA has been advised that unauthorised alterations may have been made to the turnbuckles in the aileron circuit in some aircraft.

**Compliance:** Before further flight from the effective date of this MPD, inspect and correct if necessary, the setting of each aileron in accordance with British Microlight Aircraft Association (BMAA) Service Bulletin 1741.2, which is Appendix B to Microlight Airworthiness Approval Note (MAAN) 1741.

Before further flight from the effective date of this MPD, inspect each aileron adjustment turnbuckle for any modifications, in accordance with BMAA Service Bulletin 1741.2. If the turnbuckle has been modified in any way, the turnbuckle must be replaced with a new turnbuckle.

A copy of BMAA MAAN 1741 and further information can be obtained from:

British Microlight Aircraft Association  
Bullring  
Deddington  
Banbury, Oxon, OX15 0TT

Tel: 01869 338888  
Fax: 01869 337116  
Email: [cto@bmaa.org](mailto:cto@bmaa.org)

Replacement turnbuckles can be sourced from:

The Wessex Light Aeroplane Company Ltd  
7 Fullands Avenue  
Taunton, Somerset, TA1 3DE

Tel/fax: 01823 256258

Record compliance with this MPD in the aircraft log book.

This MPD becomes effective on 12 January 2004.