

MICROLIGHT TYPE APPROVAL DATA SHEET (TADS)

NO: BM2 ISSUE 7:

- TYPE: Gemini Sprint
- (1) MANUFACTURER: Mainair Sports Ltd. Now supported by P & M Aviation Ltd., Unit B, Crawford Street
Rochdale, Lancashire, OL16 5NU.
- (2) UK IMPORTER: N/A
- (3) CERTIFICATION: BCAR Section S, Advance Issue March 1983
- (4) DEFINITION OF BASIC STANDARD: 440 Dual Master List of Drawings, Issue 2
- (5) COMPLIANCE WITH THE MICROLIGHT DEFINITION
- | | |
|---|----------------------------------|
| (a) MTOW | 338 kg |
| (b) No. Seats | 2 |
| (c) Maximum Wing Loading | 20.2 kg/m ² |
| (d) V _{so} | 26 kts (30 mph) |
| (e) Permitted range of pilot weights | 55 – 90 kg per seat. |
| (f) Typical Empty Weight (ZFW) | 142.5 kg |
| (g) ZFW + 172 kg crew + 1 hr fuel
(litres / kg) | (440) 334.5 kg
(447) 325.5 kg |
| (h) ZFW + 86 kg pilot + full fuel
(litres / kg) | (440) 260 kg
(447) 260 kg |
| (i) Max ZFW at initial permit issue | 146 kg |

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP

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(6) POWER PLANTS

Designation	<i>Gemini Sprint 440</i>	<i>Gemini Sprint 440</i>	<i>Gemini Sprint 447</i>
Engine Type	<i>Fuji Robin EC44PN Upright</i>	<i>Fuji Robin EC44PN Inverted</i>	<i>Rotax 447 Inverted</i>
Reduction Gear	<i>2.67:1</i>	<i>2.67:1</i>	<i>2.58:1</i>
Exhaust System	<i>Rota Flow Underslung</i>	<i>Rota Flow Underslung</i>	<i>Rotax 2 x 90 Underslung</i>
Intake System	<i>Unique Foam Muffler</i>	<i>Unique Foam Muffler</i>	<i>Rotax Intake Muffler</i>
Propeller Type	<i>Mainair Sports Round Tip</i>	<i>Mainair Sports Round Tip</i>	<i>Mainair</i>
Propeller Dia x Pitch	<i>62" x 30"</i>	<i>62" x 30"</i>	<i>62" x 37"</i>
Noise Type Cert No.	<i>5M</i>	<i>12M</i>	<i>12m</i>
AAN approving configuration	<i>18309</i>	<i>18855</i>	<i>18897</i>

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(7) MANDATORY LIMITATIONS:

(A) Max Take-Off Weight	338 Kg			
(B) CG Limits	N/A			
(C) CG datum	N/A			
(D) Cockpit Loadings	Front	Rear	Total	
	Min 55kg	15 kg	70 kg	
	Max 90kg	90 kg	180 kg	
(E) Never Exceed Speed	51 knots (59 mph)			
(F) Manoeuvring Speed	38 knots (44 mph)			
(G) Permitted Manoeuvres	30° Nose up / 30° nose down 60deg Max Bank Angle Non Aerobatic Normal acceleration limits, +4 / -0g			
(H) Fuel Contents (Max Useable)	44 litres			

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(I) Power Plant See Table

Engine	Fuji 440 Upright or Inverted	<i>Rotax 447 Inverted</i>		
Max RPM	6900	6800		
MAX CHT	218 degC	250 degC		
MAX EGT	815 degC	650 degC		
Fuel Spec	83 MON or 90 RON minimum unleaded to BS(EN)228 or 97+ octane 4-star /MOGAS leaded fuel to BS 4040, or AVGAS 100LL.			
Engine Oil Spec	Two Stroke Oil ASTM/CEC Standards, API- TC Classification	Two Stroke Oil ASTM/CEC Standards, API- TC Classification		
Gearbox oil spec	N/A	API-GL5 or GL6, SAE 140 EP		
Fuel/Oil Mix	40/1	50/1		
Coolant Temperature	N/A	N/A		
Oil Pressure	N/A	N/A		
Oil Temperature	N/A	N/A		
Fuel Pressure	N/A	N/A		

(8) INSTRUMENTS REQUIRED:

ASI	Altimeter	RPM	CHT / EGT	Compass	Coolant temp	Fuel Pressure	VSI	Slip ball
Required (to 90 mph min.)	Required	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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(9) CONTROL DEFLECTIONS: N/A

Elevator UP:	±	Tailplane trim UP:	±
Elevator DOWN:	±	Tailplane trim DOWN	±
Ailerons* UP:	±	Rudder LEFT:	±
Ailerons* Down:	±	Rudder RIGHT:	±

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

10.1 Manuals approved for use with this aircraft.

Gemini/Triflyer Sprint Microlight Manual

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.

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

A placard is to be fitted showing fuel capacity (litres), fuel type(s), fuel:oil ratio (if relevant) and if MTOW can be exceeded with full fuel and maximum 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) Switches

See Annex D.

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NO: BM2 ISSUE 7:

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

SB 17 MK1 Monopole Checks
SB 34 Front Stub Checks
SB 45 Shoulder Straps

Annual Bettsometer test is to be carried out to 1050 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: 400 fpm at 34 (39mph) IAS.

Stall or Minimum Flying Speed: 26kts (30mph) IAS at MTOW / idle.

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NO: BM2 ISSUE 7:

Issue History

<u>Issue No.</u>		<u>Reason and signatory</u>
1	30/04/85	Initial Issue
2	01/08/86	Addition of Noise Certification
3	05/12/86	Corrections to engine and propeller designations
4	20/04/94	Addition of Fuji Robin EC44PM engine with Nicklow exhaust
5	18/03/03	Re-issue using new TADS format
6	06/07/05	New company name J BARRATT
7	18/11/09	To record Modification Number 187, which increases seat load to 110kg but still with a total cockpit load of 180g.


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ANNEX A – MANDATORY MODIFICATIONS

Mod 98 Shoulder Straps

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.

Mod 1	Single Lap Seat Belts
Mod 2	Extended Front Stub
Mod 4	Nylon Steering Bearings
Mod 6	Wheel Spats
Mod 7	Rear Seat Steering
Mod 14	Fuji Prop Bolts
Mod 15	Vertical Strut Mk11
Mod 25	Sprung Throttle Mixer Box
Mod 29	Cranked Seat Frame Hinge
Mod 187	Increase Seat Load Limit To 110kg

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ANNEX C - WEIGHING INFORMATION

1. CG Datum: N/A
2. Weighing attitude: N/A
3. Mainwheel moment arm: N/A
4. Nosewheel moment arm: N/A (units) (direction) of datum
5. Fuel moment arm: N/A (units) (direction) of datum
6. Crew moment arm: N/A (units) (direction) of datum
7. Crew weights: Minimum 55 kg / maximum 90 kg
(maximum reducible, not below 86 kg, if required).
8. Aft CG Limit: N/A (units) (direction) of datum
9. Fwd CG Limit: N/A (units) (direction) of datum

ANNEX D - EXAMPLE PLACARDS

(a) Flight Limitations and Engine Limitations Placard (to be visible to pilot)

GEMINI SPRINT 447	
MAX ALL UP WEIGHT	338KG
EMPTY WEIGHT	142.5KG
STALL SPEED	30MPH
Vne NEVER EXCEED	59MPH
LANDING APPROACH SPEED	42MPH
MAXIMUM CROSSWIND TAKE OFF/LANDING	10MPH
MAX EGT	650degC
MAX CHT	250degC
MAX RPM	6800
WARNING	
THIS IS A NON AEROBATIC AEROPLANE	
MAXIMUM NOSE UP 30deg	
MAXIMUM NOSE DOWN 30deg	
MAXIMUM BANK ANGLE 60deg	
SPINNING ATTEMPTS PROHIBITED	
NO WHIPSTALLS LOOPS TAILSLIDES OR AEROBATIC MANOEUVRES	
DO NOT EXCEED MAXIMUM LOAD	

GEMINI SPRINT 440	
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(b) Fuel Limitations Placard (to be located near to filler cap)

<u>FUEL</u>	
Capacity ___ Litres	
50:1 2 Stroke oil (Rotax 447)	
40:1 2 Stroke oil (Fuji 440)	
<u>Cockpit Weight (kg)</u>	<u>Max. Fuel Load (litres)</u>
180	
170	
....	
.... Or below	Full fuel
83 MON or 90 RON minimum unleaded to	
BS(EN)228 or 97+ octane 4-star / MOGAS leaded	
fuel to BS 4040, or AVGAS 100LL	

(c) Switches

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



**UNITED KINGDOM
CIVIL AVIATION AUTHORITY**

MPD No: 1995-005 R1

MANDATORY PERMIT DIRECTIVE

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: 1995-005 R1 MAINAIR SPORTS

Subject: Inspection of the main vertical strut (pylon) for cracks or deformation.

Applicability: Mainair Sports microlights as detailed in Mainair Sports Airworthiness Bulletin No 17.

Compliance: Inspect the main vertical strut (pylon) for cracks or deformation in accordance with Mainair Sports Airworthiness Bulletin No 17.

This MPD becomes effective on 29 December 1995 and supersedes CAA AD 003-10-85. Revision 1 (editorial amendment) becomes effective on 18 January 2001.

Enquiries regarding this MPD should be made to the United Kingdom Civil Aviation Authority, Aircraft Maintenance Approvals Section, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex RH6 0YR. Telephone: +44 (0)1293 573149 Telefax: +44 (0)1293 573993.



**UNITED KINGDOM
CIVIL AVIATION AUTHORITY**

MPD No: 1995-016

MANDATORY PERMIT DIRECTIVE

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: 1995-016 MAINAIR SPORTS

Subject: Front Stub heavy landing overload damage.

Applicability: Mainair Sports Gemini trike microlights up to Serial No 534.

Compliance: Before next flight inspect the front stub in accordance with Mainair Sports Service Bulletin No 34.

This MPD becomes effective on 29 December 1995 and supersedes CAA AD 015-07-90.

Enquiries regarding this MPD should be made to the United Kingdom Civil Aviation Authority, Aircraft Maintenance Approvals Section, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex RH6 0YR. Telephone: +44 (0)1293 573149 Telefax: +44 (0)1293 573993.



**UNITED KINGDOM
CIVIL AVIATION AUTHORITY**

MPD No: 2001-004

Issue Date: 3 September 2001

MANDATORY PERMIT DIRECTIVE

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: 2001-004 MAINAIR SPORTS

Subject: Upper torso restraint for passengers.

Applicability: Mainair Sports two seat microlights.

Reason: As a result of a recent fatal accident, AAIB Recommendation 2001-52 has been issued. This recommends that manufacturers of UK registered microlight aircraft provide upper body restraint to the rear seats where forward movement of a passenger could cause injury to the pilot. This recommendation was accepted by the CAA.

Compliance: At the next Permit to Fly renewal or before 25 January 2002, whichever is sooner, install shoulder straps for use by passenger, in accordance with Mainair Sports Service Bulletin No 45.

A copy of the Service Bulletin and further information can be obtained from:

Mainair Sports
Unit B
Crawford Street
Rochdale
Lancashire
OL16 5NU

Tel: 01706 655134
Fax: 01706 631561
Email: flying@mainairsports.co.uk

Record compliance with this MPD in the aircraft log book.

This MPD becomes effective on 7 September 2001.

Enquiries regarding this MPD should be made to the United Kingdom Civil Aviation Authority, Applications and Certification Section, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR Telephone: +44(0)1293 573149 Telefax: +44(0)1293 573993.



EMERGENCY MANDATORY PERMIT DIRECTIVE



Number: 2016-011-E

Issue date: 23 November 2016

In accordance with Article 41(1) of The Air Navigation Order 2016, 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.

Type Approval Holder's Name: P&M Aviation Ltd	Type/Model Designation(s): Various, see below																																																																																
Title:	Clevis Pin / Split Ring Installations – Inspection / Replacement																																																																																
Manufacturer:	P&M Aviation Ltd																																																																																
Applicability:	<p>All Microlights where P & M Aviation Ltd is the Type Approval Holder:</p> <table border="1"> <thead> <tr> <th>TADS No.</th> <th>Aircraft Type</th> <th>TADS No.</th> <th>Aircraft Type</th> </tr> </thead> <tbody> <tr> <td>BM2</td> <td>Gemini Sprint</td> <td>BM43</td> <td>Mainair Mercury</td> </tr> <tr> <td>BM3</td> <td>Tri-Flyer Sprint</td> <td>BM44</td> <td>Pegasus Quasar 2 TC</td> </tr> <tr> <td>BM4</td> <td>Gemini Flash</td> <td>BM45</td> <td>Cyclone AX3//503</td> </tr> <tr> <td>BM5</td> <td>Panther XL-S</td> <td>BM46</td> <td>Pegasus Quantum 15 (Rotax 2-stroke engines)</td> </tr> <tr> <td>BM9</td> <td>Pegasus XL-R</td> <td>BM47</td> <td>Mainair Blade</td> </tr> <tr> <td>BM10</td> <td>Pegasus Flash</td> <td>BM50</td> <td>Pegasus Quantum 15-912</td> </tr> <tr> <td>BM17</td> <td>Pegasus Flash 2</td> <td>BM51</td> <td>Mainair Blade 912</td> </tr> <tr> <td>BM14</td> <td>Gemini Flash 2</td> <td>BM53</td> <td>Cyclone AX2000</td> </tr> <tr> <td>BM16</td> <td>Scorcher</td> <td>BM54</td> <td>Mainair Rapier</td> </tr> <tr> <td>BM17</td> <td>Pegasus Flash 2</td> <td>BM56</td> <td>Pegasus Quantum 15-HKS</td> </tr> <tr> <td>BM23</td> <td>Gemini Flash 2 Alpha</td> <td>BM60</td> <td>Mainair Blade 912S</td> </tr> <tr> <td>BM25</td> <td>Pegasus XL-Q</td> <td>BM65</td> <td>Flight Design CT2K (rudder control)</td> </tr> <tr> <td>BM27</td> <td>Chaser S</td> <td>BM66</td> <td>Pegasus Quik</td> </tr> <tr> <td>BM28</td> <td>Pegasus Photon</td> <td>BM70</td> <td>Quik GT450</td> </tr> <tr> <td>BM31</td> <td>Chaser S 1000</td> <td>BM72</td> <td>Flight Design CTSW (rudder control)</td> </tr> <tr> <td>BM33</td> <td>Chaser S 508</td> <td>BM77</td> <td>QuikR</td> </tr> <tr> <td>BM37</td> <td>Chaser S 447</td> <td>BM80</td> <td>Quik GTR</td> </tr> <tr> <td>BM38</td> <td>Pegasus Quasar</td> <td>BM81</td> <td>PulsR</td> </tr> <tr> <td>BM42</td> <td>Pegasus Quasar – TC</td> <td>BM83</td> <td>Flight Design CTSL (rudder control)</td> </tr> </tbody> </table>	TADS No.	Aircraft Type	TADS No.	Aircraft Type	BM2	Gemini Sprint	BM43	Mainair Mercury	BM3	Tri-Flyer Sprint	BM44	Pegasus Quasar 2 TC	BM4	Gemini Flash	BM45	Cyclone AX3//503	BM5	Panther XL-S	BM46	Pegasus Quantum 15 (Rotax 2-stroke engines)	BM9	Pegasus XL-R	BM47	Mainair Blade	BM10	Pegasus Flash	BM50	Pegasus Quantum 15-912	BM17	Pegasus Flash 2	BM51	Mainair Blade 912	BM14	Gemini Flash 2	BM53	Cyclone AX2000	BM16	Scorcher	BM54	Mainair Rapier	BM17	Pegasus Flash 2	BM56	Pegasus Quantum 15-HKS	BM23	Gemini Flash 2 Alpha	BM60	Mainair Blade 912S	BM25	Pegasus XL-Q	BM65	Flight Design CT2K (rudder control)	BM27	Chaser S	BM66	Pegasus Quik	BM28	Pegasus Photon	BM70	Quik GT450	BM31	Chaser S 1000	BM72	Flight Design CTSW (rudder control)	BM33	Chaser S 508	BM77	QuikR	BM37	Chaser S 447	BM80	Quik GTR	BM38	Pegasus Quasar	BM81	PulsR	BM42	Pegasus Quasar – TC	BM83	Flight Design CTSL (rudder control)
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Reason:	<p>Following maintenance, a clevis pin came out of the RP-4 roll trim system pulley on a QuikR causing a left turn. The split ring securing the clevis pin had come out. It is not known if the ring was disturbed during the maintenance.</p> <p>The split ring which came out was the same “spiral start” pattern as that which has caused trouble before (see Service Bulletin 139). This pattern of ring has no positive stop, so that simple rotation of the ring (e.g. caused by it getting caught on something) will cause it to disengage. Disengagement of the split ring and subsequent clevis pin departure could affect the control of the aircraft.</p>
Effective Date:	24 November 2016
Compliance/Action:	<p>Compliance is required as follows, unless previously accomplished:</p> <ol style="list-style-type: none"> 1. Before further flight, from the effective date of this MPD, inspect all clevis pin / split ring installations on the aircraft in accordance with paragraph 2 of P & M Aviation Ltd Service Bulletin 144. 2. If the inspection in paragraph 1 reveals any spiral start pattern split rings they must be replaced in accordance with paragraph 2 of P & M Aviation Ltd Service Bulletin 144 before further flight. 3. Record the inspection from paragraph 1 and any necessary rectification action from paragraph 2 in the aircraft technical log in accordance with paragraph 3 of P & M Aviation Ltd Service Bulletin 144. 4. Repeat the actions in paragraphs 1, 2 and 3 at each Permit to Fly revalidation.
ENSURE COMPLIANCE WITH THIS MPD IS RECORDED IN THE AIRCRAFT LOGBOOK	
Reference Publications:	P & M Aviation Ltd Service Bulletin Number 144, Issue 3, dated 27 October 2016.
Remarks:	<ol style="list-style-type: none"> 1. This MPD was not posted for consultation because of the urgency of the requirement. 2. Enquiries regarding this Mandatory Permit Directive should be referred to: GA Unit, Civil Aviation Authority, Safety and Airspace Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR. <p>Tel: +44 (0)1293 573988 E-mail: ga@caa.co.uk</p>