CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP

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/m²
(d) Vso	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

(6) POWER PLANTS

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

(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		

(I) Power Plant See Table

Engine	Fuji 440 Upright or Inverted	*Rotax 447 Inverted*		
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

(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.

(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

Issue No.		Reason and signatory
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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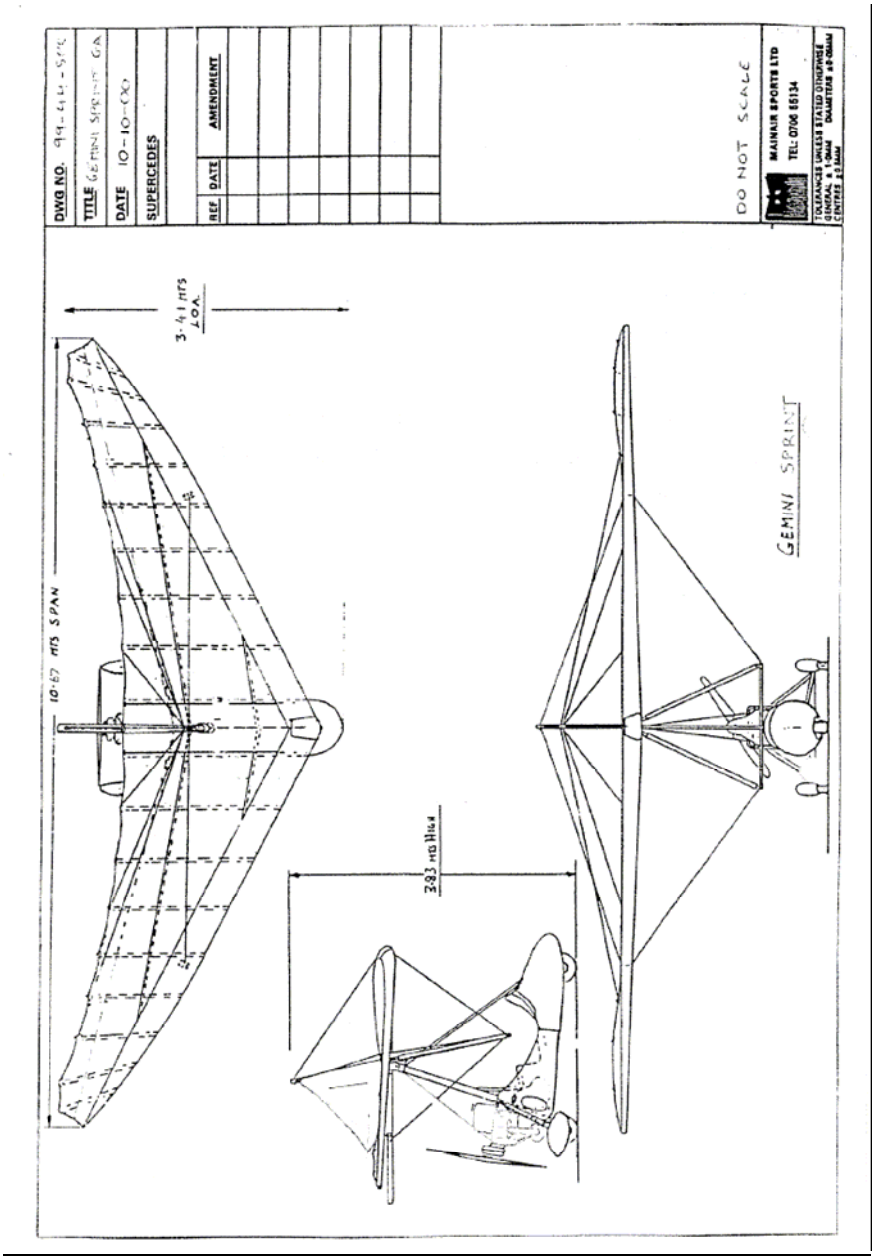
Illustration of Aircraft - 3 View



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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

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
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
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WARNING
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MAXIMUM BANK ANGLE 60deg
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NO WHIPSTALLS LOOPS TAILSLIDES OR AEROBATIC MANOEUVRES
DO NOT EXCEED MAXIMUM LOAD

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

FUEL
Capacity __ Litres
50:1 2 Stroke oil (Rotax 447)
40:1 2 Stroke oil (Fuji 440)

Cockpit Weight (kg)	Max. Fuel Load (litres)
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).