

MICROLIGHT TYPE APPROVAL DATA SHEET (TADS)

NO: BM-83 ISSUE: 1

TYPE:

Flight Design CTSL

- (1) MANUFACTURER: P & M Aviation Ltd, Unit B, Crawford St, Rochdale
(UK type approval holder for Flight Design GMBH)
- (2) UK IMPORTER: P & M Aviation Ltd
- (3) CERTIFICATION: BCAR section S issue 6, CS-VLA Parts C & D
- (4) DEFINITION OF BASIC STANDARD: AE 0110 0001, revision 0, dated 25-Mar-14
- (5) COMPLIANCE WITH THE MICROLIGHT DEFINITION:
- | | |
|--|--------------------------------------|
| (a) MTOW | 472.5 kg |
| (b) No. Seats | 2 |
| (c) Maximum Wing Loading | 47.2 kg/m ² |
| (d) V _{so} | 34 kt CAS |
| (e) Permitted range of pilot weights | 55 – 100 kg per seat
180 kg total |
| (f) Typical Empty Weight (ZFW) | 288 kg |
| (g) ZFW + 172 kg crew + 1 hr fuel
(14 litres / 10 kg) | 469 kg |
| (h) ZFW + 86 kg pilot + full fuel
(62 litres / 44.6 kg) | 467.6kg |
| (i) Max ZFW at initial permit issue | 291 kg |

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(6) POWER PLANTS:

Designation	Rotax 912 ULS	Rotax 912 ULS
Engine Type	4 cylinder 4 stroke horizontally opposed	4 cylinder 4 stroke horizontally opposed
Reduction Gear	2.43:1	2.43:1
Exhaust System	Rotax underslung muffler	Rotax underslung muffler
Intake System	2 x K&N filters	2 x K&N filters
Propeller Type	Neuform Novaprop TXR2	Warp Drive 3 bladed carbon composite
Propeller Dia x Pitch	1660mm x 21° at blade undersurface at 75% radius	1676mm x 19° at blade undersurface at tip
Noise Type Cert No.	174M issue 1	174M issue 2
AAN approving configuration	BMAA-1068 issue 2	BMAA-1068 issue 2

(7) MANDATORY LIMITATIONS:

- (a) Max Take-Off Weight 472.5kg (nb mandatory parachute fit)
- (b) CG Limits
 - Aft limit 450mm aft of datum (38% mac)
 - FWD Limit 271mm aft of datum (23% mac)
- (c) CG datum Leading edge at any point of span
- (d) Cockpit Loadings

	Port	Starboard	Total
Min	0kg	0kg	55kg
Max	100kg	100kg	180kg
- (e) Never Exceed Speed 150 kt
- (f) Manoeuvring Speed Va 89 kt
- (g) Max speed for full flap Vf 66 kt
- (h) Max rough air speed Vc 118 kt
- (i) Permitted Manoeuvres
 - Non Aerobatic
 - Normal acceleration limits, +3.8 -1.5g
- (j) Fuel Contents (Max Usable) 130 ltr

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(I) Power Plant See Table

Engine	Rotax 912 ULS
Max RPM	5800 (5min) 4400 (Continuous)
MAX CHT	135°C
MAX EGT	880°C
Fuel Spec	95 RON minimum unleaded to BS(EN)228 Premium, Premium plus or 97+ octane 4-star /MOGAS leaded fuel to BS 4040, or AVGAS 100LL. (Unleaded preferred – see engine manual).
Engine Oil Spec	SAE 10W-40 To API SF or SG See engine manual viscosity table.
Gearbox oil spec	Integral supply with engine
Cylinder Head Temperature	135° C
Coolant Temperature	50 – 135° C (100% Glycol) 50 – 120°C (50% ethylene glycol/water)
Oil Pressure	Normal 2-5 bar above 3,500 rpm Min 0.8bar at idle Max 7bar
Oil Temperature	50 – 130° C
Fuel Pressure	0.15 – 0.4 bar

(8) INSTRUMENTS REQUIRED:

ASI	Altimeter	RPM	CHT	Coolant	Oil press/temp	Slip ball	Compass
Yes (32-160kt)	Yes	Yes	Yes	Yes if water in coolant	Yes	Recommended	Recommended

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(9) CONTROL DEFLECTIONS:

Control Surface	Datum	Deflection
Ailerons	Neutral, measure from flap T.E ,flaps up	Up 27° Down 12° +-2°
Flaps	Fuselage fairing trailing edge	Flaps fully up = -12° +- 2° Flaps 0 (takeoff) = 0° +-2° Flaps fully down = 35° +-2°
Stabilator	Fairing on fuselage align With stabilator	Up 13.5° +-2° Down 9° +-2°
Trim tab	With stabilator full up And trim full down	45mm +-5mm
	With stabilator full down And trim full up	45mm +-5mm
Rudder	Rudder horn aligned with fin, apply full pedal deflection	Left 140mm ±11mm, Right 140mm ±11mm

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

10.1 Manuals approved for use with this aircraft

- (a) P&M Aviation Ltd manual ref : CTSL Man current issue
- (b) Rotax 912 engine (all versions) operators manual current issue

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10.2 The following placards are to be fitted (see manual for full set)

Main Placard, LH window pillar by pilot’s head:

<u>LIMITATIONS: CTSL</u>		
P&M SERIAL NO		
EMPTY WEIGHT		<input type="text"/>
<small>(MAX EMPTY WEIGHT 291.5KG)</small>		
MAX A UW		472.5KG
<i>TOTAL LOAD</i>		<i>FUEL</i>
55- KG		130L(FULL)
KG		72L
KG		31L
172 KG		13L
Vso FLAPS	35°	34KT
VS1 FLAPS	-12°	48KT
VFe MAX FLAPS		66KT
Va MANOEUVRE		89KT
Vc CRUISE		118KT
Vne		150KT
MAX CONTIN RPM		4400
OIL PRESS (3500+ rpm)		2-5BAR
OIL TEMP MAX		130°C
CHT MAX		135°C
COOLANT (WATER/GLYCOL)		120°C
COOLANT (100% GLYCOL)		135°C
NON-AEROBATIC, NO INTENTIONAL SPINS.		
MANOEUVRE LIMITS		+3.8G, -1.5G

On main panel:

Takeoff Checklist Summary	
Pre-flight Checklist.....	confirm complete
All Doors.....	confirm closed
Safety Belts.....	confirm fastened
Fuel Quantity.....	confirm checked
Fuel Valve.....	confirm open
Before Takeoff Checklist...	confirm complete
Pitch Trim.....	confirm neutral
Choke, Carb Heat.....	confirm off
Flight Controls.....	confirm checked
Flaps.....	confirm set
Parachute.....	confirm armed
Warning: Checklist summary only	
Compete checklists by manual are mandatory	

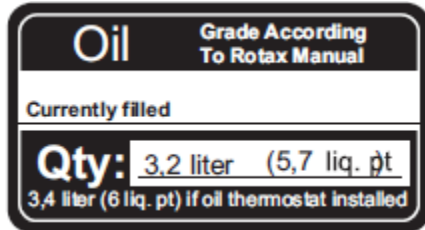
At each filler cap:

APPROVED FUEL TYPES AND QUANTITY:	
MOGAS	
EN 228 Normal min. RON 90	
EN 228 Super min. RON 90	
EN 228 Super plus min. RON 90	
CAN/CGSB-3.5 Quality 3 min. AKI 87	
US Gasoline Premium ASTM D4814 min. AKI 87	
AVGAS	
AVGAS 100LL ASTM D910	
AVGAS UL91 ASTM D7547	
65 l (17 US.gal) total, 63 l (16.5 US.gal) usable	
- per side -	

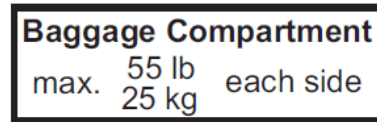
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At cowl hatch:

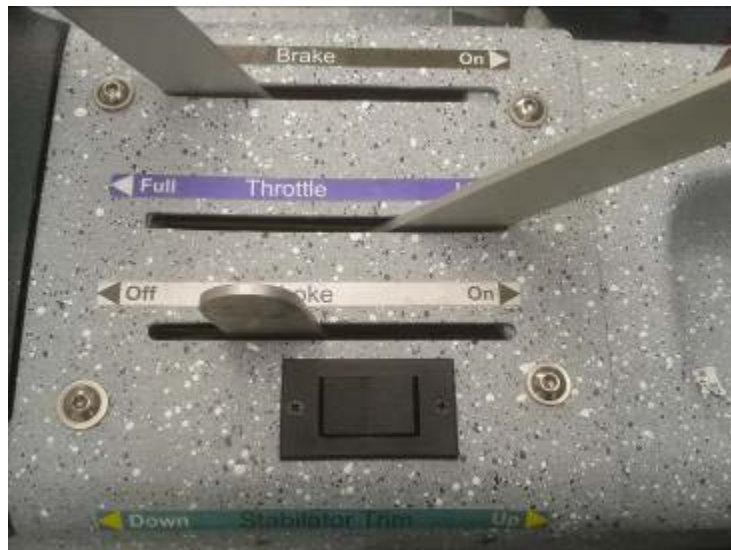


At baggage door:



switch off avionics before engine start or stop

At throttle control console:



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Flap, magnetos, fuel valve and circuit breakers on main panel lower section:



Adjacent to parachute handle between seats:

**WARNING – EMERGENCY PARACHUTE
REMOVE PIN BEFORE FLIGHT.**

- 1) TURN IGNITION OFF
- 2) PULL HANDLE

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On fuselage top, behind wing on the parachute panel:



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

Nil

(12) MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT


Rate of Climb: 1000 fpm at 60kt IAS

Stall or Minimum Flying Speed: 34kt IAS at MTOW / idle

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Issue History

<u>Issue No.</u>	<u>Reason and signatory</u>
1 05 Jan 2015	Initial Issue  A C Love

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ANNEX A – MANDATORY MODIFICATIONS

None

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 ref	Description	Notes	Issued
BMAA AAN 1018	Manual trim option	As per CTSW	22/06/06

ANNEX C - WEIGHING INFORMATION

1. CG Datum: Leading edge of wing at any point (except stall strips)
2. Weighing attitude: Fuselage cockpit tunnel horizontal
3. Mainwheel moment arm: 584 mm aft of datum
4. Nosewheel moment arm: -883 mm fwd of datum
5. Fuel moment arm: 210 mm aft of datum
6. Crew moment arm: 520 mm aft of datum
7. Baggage moment arm: 1200 mm aft of datum (max 25kg)
8. Crew weights: Minimum 55kg / maximum 180kg
9. Aft CG Limit: 450mm aft of datum (38% MAC)
10. Fwd CG Limit: 271mm aft of datum (23% MAC)

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ANNEX D - GENERAL ARRANGEMENT DRAWING

EXAMPLE PLACARDS

