CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP

MICROLIGHT TYPE APPROVAL DATA SHEET (TADS)

NO: BM 9 ISSUE: 10

TYPE:		Pegasus XL-R
(1)	MANUFACTURER:	Solar Wings Ltd, now supported by P & M Aviation Ltd, Unit B, Crawford St, Rochdale, Lancashire, OL16 5NU
(2)	UK IMPORTER:	N/A
(3)	CERTIFICATION:	BCAR SECTION S - Advance Issue March 1983 List of Section S Blue Papers and Additional CAA Requirements: N/A.
(4)	DEFINITION OF BASIC STANDARD:	Pegasus XL-R Drawing Schedule Dated: 25.7.85

(5) COMPLIANCE WITH THE MICROLIGHT DEFINITION

(a) MTOW	350 kg (365kg with mod. SW0044)
(b) No. Seats	2
(c) Maximum Wing Loading	20.92 kg/sq m
(d) Vso	31mph CAS
(e) Permitted range of pilot weights	55 – 95 kg per seat.
(f) Typical Empty Weight (ZFW)	155 kg
(g) ZFW + 172 kg crew + 1 hr fuel (17litres /12 kg)	339 kg
(h) ZFW + 86 kg pilot + full fuel (46.5litres / 33kg)	274 kg
(i) Max ZFW at initial permit issue	166kg (181kg with mod SW0044)

(6) POWER PLANTS

Designation	Pegasus XL-R	Pegasus XL-R (See App No. 4)	Pegasus XL-R (See App No. 4)	Pegasus XL-R (See App No. 4)
Engine Type	Rotax 447 Upright	Rotax 462 Liquid Cooled Upright Low Noise Variant	Rotax 462 Liquid Cooled Upright High Power Variant	Rotax 462 Liquid Cooled Upright high Power Variant
Reduction Gear	2.58:1	2.58:1	2.58:1	2.58:1
Exhaust System	Rotax High Performance	Rotax Low Noise	Rotax High Performance	Rotax High Performance
Intake System	Rotax intake silencer with K&N filter	Rotax intake silencer with K&N filter	Rotax intake silencer with K&N filter	Rotax intake silencer with K&N filter
Propeller Type	Newton	Newton	Newton	Arplast Type 162
Propeller Dia x Pitch	62" x 36"	65" x 44"	62" x 44"	162 cm dia 16° pitch at 53.8cm
Noise Type Cert No.	17M	40M	40M (Issue 2)	40M (Issue 2)
AAN approving configuration	19184	19766P	23788	23788

(7) MANDATORY LIMITATIONS:

(A) Max Take-Off Weight 350kg (365kg with mod. SW0044)

(B) CG Limits *N/A*
(C) CG datum N/A
(D) Cockpit Loadings

	Front	Rear	Total
Min	55Kg	-	55kg
Max	95kg	95kg	190kg

(E) Never Exceed Speed 67mph
(F) Manoeuvring Speed 67mph
(G) Permitted Manoeuvres 30° Nose up / 30° nose down
Non Aerobatic
Normal acceleration limits, +4 / -2g

(H) Fuel Contents (Max Useable) 24 litres (46.5 litres mod. SW0044)

(I) Power Plant See Table

Engine	Rotax	Rotax 462		
Max RPM	6800 Cont 6500	6800 Cont 6500		
MAX CHT	235°C	185°C		
MAX EGT	N/A	N/A		
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	Non-Deterg 2 Stroke Self Mix	Non-Deterg 2 Stroke Self Mix		
Gearbox oil spec	EP 90 AP1-GL3 or higher	EP 90 AP1-GL3 or higher		
Fuel/Oil Mix	Normal 50:1 Running 50:1	50:1		
Coolant Temperature	N/A	80°C		
Oil Pressure	N/A	N/A		
Oil Temperature	N/A	N/A		
Fuel Pressure	0.2 – 0.4 bar	0.2-0.4bar		

(8) INSTRUMENTS REQUIRED:

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

(9) CONTROL DEFLECTIONS:

N/A Weightshift Flexwing, control deflections limited by structure.

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

10.1 Manuals approved for use with this aircraft.

(a) Operators Manual Reference SW-406-2 (447 engine)
(b) Rotax 447 and 462 engine operator's manuals.
(c) Operators manual ref SW-406-7
(d) Operators manual appendix for operation at 365kg with 47 litre tank (mod 0044)

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). If MTOW can be exceeded with full fuel and maximum cockpit weight, the fuel loads at MTOW for fuel capacity in increments of 10 litres 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:

Service Bulletin	Description	Notes	Issued
0001	Keel tube oversleeve replacement	MANDATORY	15/2/88
0002	Fuel System	MANDATORY	24/6/87
0003	Wiring of CHT/RPM/CHT	Advisory	26/2/87
0004	Throttle Stop	Advisory	29/4/87
0005	Front axle bolt	Advisory	29/4/87
0006	Front Forks	Advisory	29/4/87
0008	Plug caps	Advisory	26/2/87
0014	Vent system	Compulsory	29/4/87
0015	Exhaust system	Advisory	29/4/87
0016	Keel chafing	Serial no's prefixed "WA" only	22/12/87
0017	Prop bolt torque	Advisory	21/5/87
0019	Prop bolts	MANDATORY	23/12/87
0022	462 engine impeller	Advisory	20/7/88
0024	Prop bolt torque	Advisory	7/6/89
0026	Monopole length	MANDATORY	22/9/89
0029	Tyre pressure 22psi	Advisory	20/1/91
0034	Plastic fuel tank 46l	Optional	14/11/91
0035	Fatigue life	Advisory	17/3/95
0037	High Power 462	Optional	7/2/94
0038	Aerotow system	Optional	7/2/94
0087	Leading Edge Bolts	MANDATORY	13/5/97
109	Component life extension	Advisory	21/3/02

See Annex A for required modifications.

Annual Bettsometer test is to be carried out to 1060 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: 392 fpm at 40 IAS. (447 engine)
402 fpm at 40 IAS. (462LN engine)
600 fpm at 40 IAS. (462HP engine)

Stall or Minimum Flying Speed: 31mph IAS at MTOW / idle.

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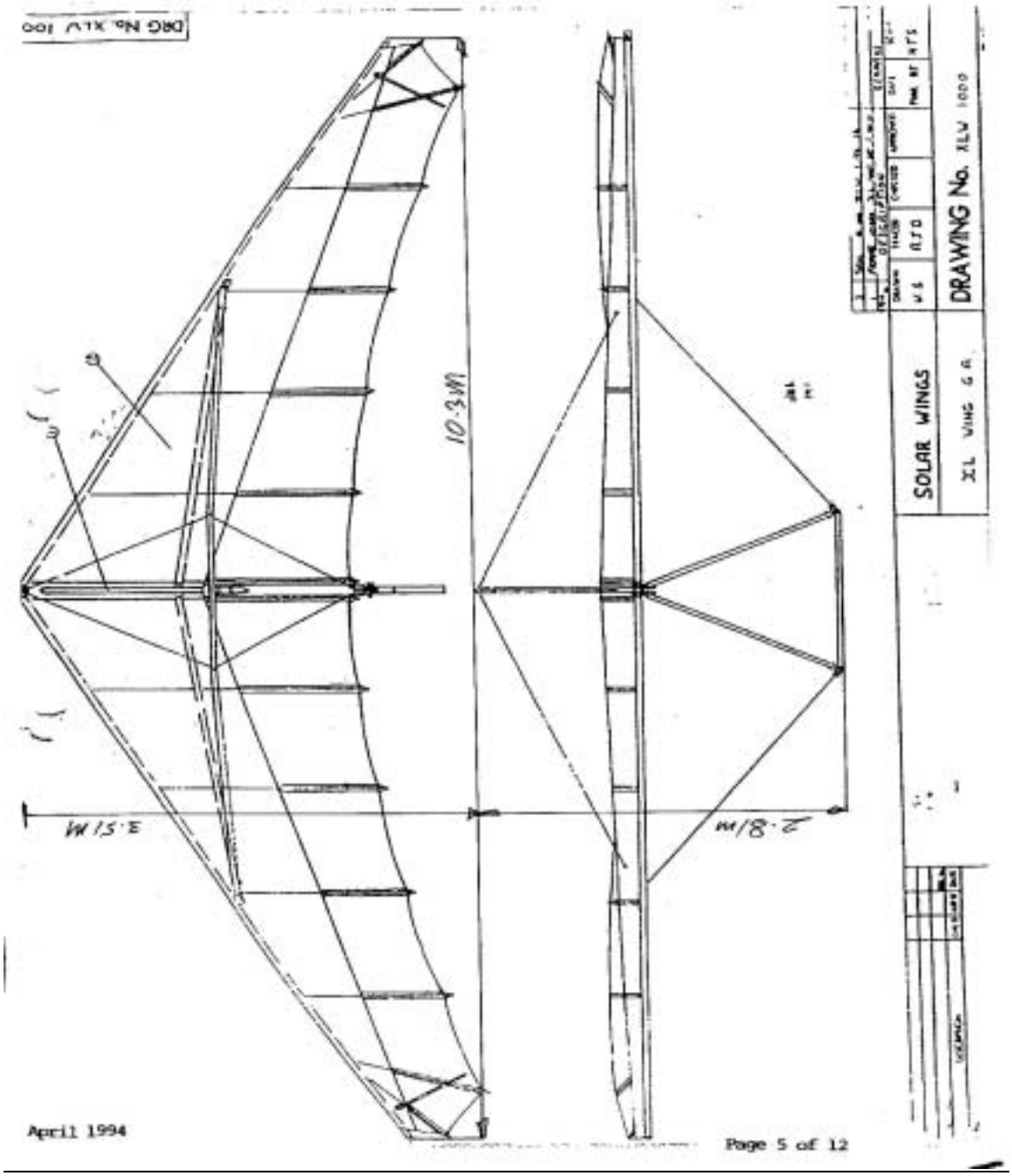
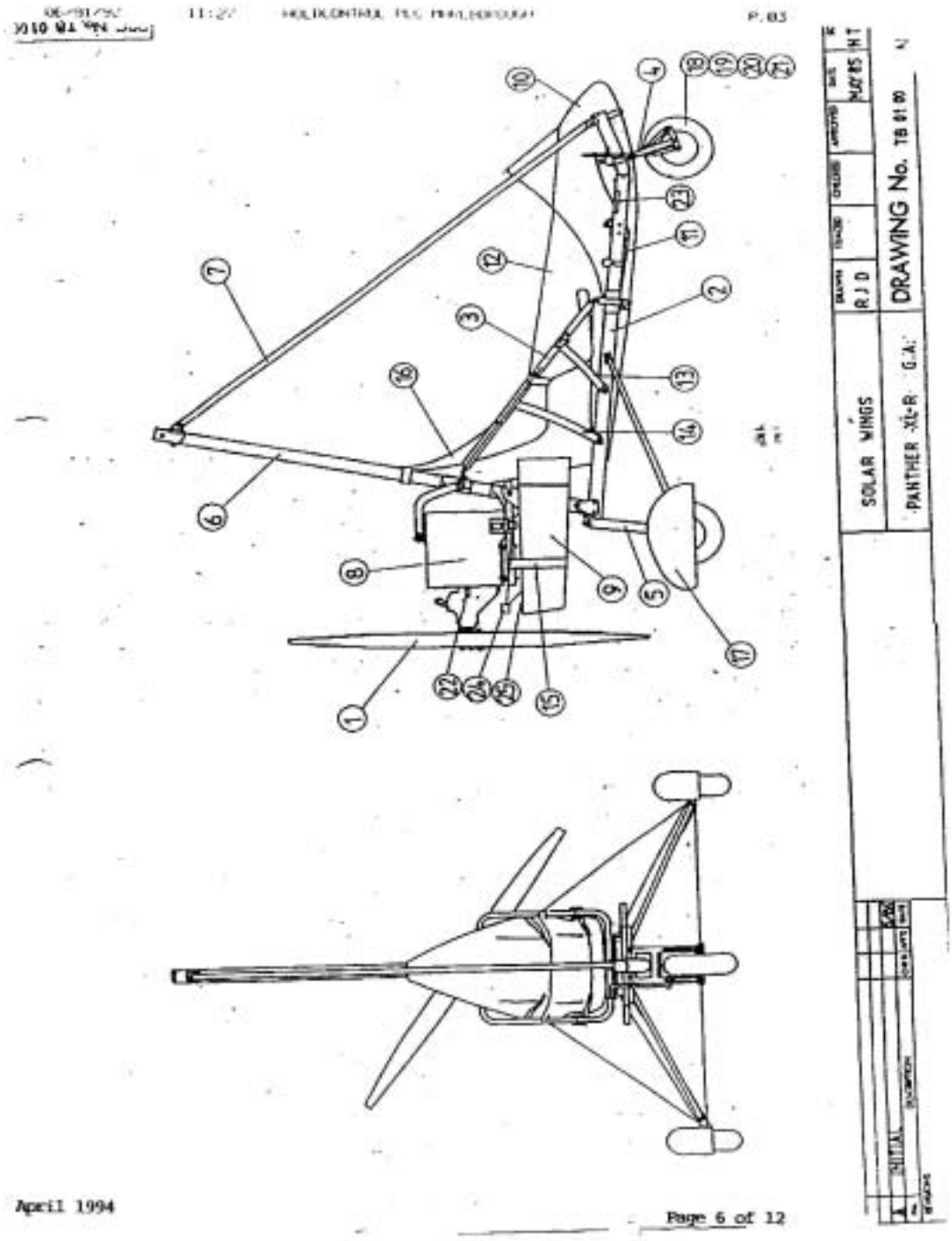
Issue No.		Reason and signatory
1	14/08/85	Initial issue W A BEVAN
2	12/11/85	Para 14 New info W A BEVAN
3	06/10/86	Mod No 0005 Rotax 462 introduced J D WATKINS
4	17/03/89	Appendix 1 Iss 1 added J D WATKINS
5	23/01/91	Appendix 2 re-issued to include Rotax 462 engine and other changes to add new info. K D RUSSELL
6	09/12/91	Appendix 3 raised and cross-referenced in the main TADS to reflect increased fuel capacity. K D RUSSELL
7	05/10/92	Appendix 4 raised to introduce Rotax 462 (High Power) engine cross reference in main TADS. K D RUSSELL
8	01/04/94	Appendix 5 raised to reflect modification No. 102 (Aero Tow System) K D RUSSELL
9	31/03/03	Re-issued in new format J BARRATT
10	06/07/05	New company name J Barratt

General arrangement drawings.




SOLAR WINGS
PANTHER XL-R
DRAWING No.
R J D
April 1994
Page 6 of 12

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP

MICROLIGHT TYPE APPROVAL DATA SHEET (TADS)

NO: BM 9 ISSUE: 10

ANNEX A – MANDATORY MODIFICATIONS

Mod ref	Description	Notes	Introduced
SW0018	Fuel tank breather		30/3/89
SW0019	Prop bolts ¼" to 8mm	462 LC engine	30/3/89
PG123	Leading Edge Bolts	Increase to 10mm	22/5/97

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	Introduced
SW 0016,0017	Front brake fitting		1/11/88
SW0020	Protection sleeve on keel		30/3/89
SW0025	462 coolant bottle		30/3/89
SW0026	Paraplegic controls mod.		17/3/89
SW0027	Carb heat optional		30/3/89
SW0029	Prop bolt torque 10ftlb	462 engine	30/3/89
SW0030	Sail patch detail changes	From TB1466 on	30/3/89
SW0031	Oversleeve on basetube	From TB 1378 on	30/3/98
SW0036	Exhaust guard on seatframe		13/9/89
SW0038	Instructor bars		13/9/89
SW0044	MAUW to 365kg with plastic 47 litre tank		12/12/91
SW0045	Front brake reinforcement		14/2/90
SW0053	T/E grommets	From WA1449	11/12/90
SW0060, 0071	New hand throttle, choke and ign switch		17/4/91
SW0072	Trike side cable shackes removed		17/4/91
SW0073	New Pitot Mount		17/4/91
SW0078	L/E channels standardised Q wing & XL		5/9/91
SW0083	Ballast container		10/11/93
SW0086	Bolt-on exhaust guard		10/11/93
SW0092	Large radiators on 462		15/7/92

Mod ref	Description	Notes	Introduced
SW0094	High power 462 engine	AAN 23788	13/10/92
SW0100	Q type luffline pulley		10/11/93
SW0102	Aerotow system	AAN 23788 add.2	25/4/92
SW0105	Strengthened Nylite Wheel		10/11/93
SW0108	Pull start on pylon		10/11/93
PG35	XL tug wear points		30/5/95
PG133	New Rotax after muffler mounting		14/7/97
PG257,PG258, PG261, PG262	Stainless steel cables introduced		10/3/99

ANNEX C

WEIGHING INFORMATION

The Pegasus XL wing weighs 52 kg and is not subject to more than +-1kg variation.

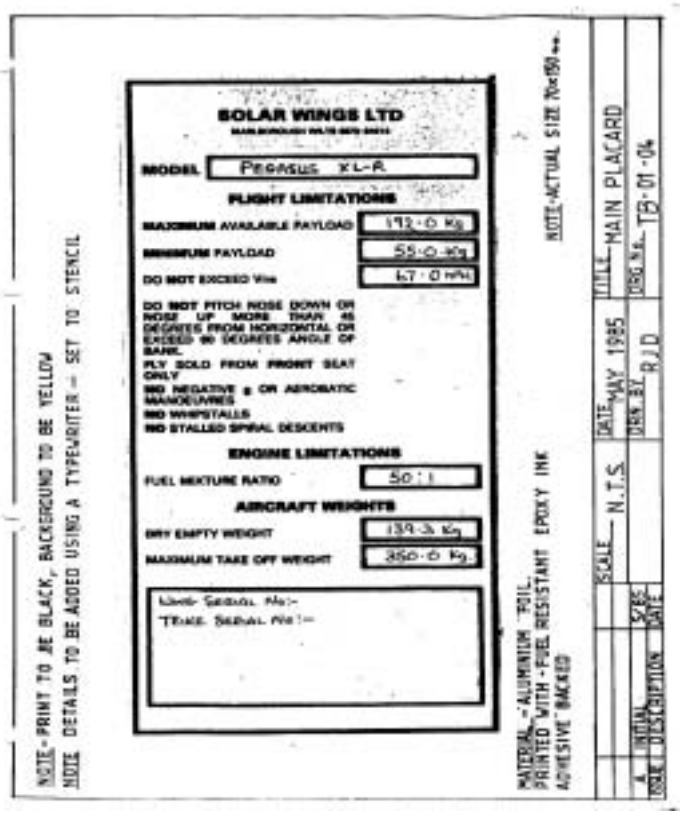
The best way of weighing the trike is by suspension from the hangpoint, using a tension balance.

The CG position of the trike is not critical as it only has a small effect on the speed range, not the trim speed.

ANNEX D

EXAMPLE PLACARDS

(a) Flight Limitations Placard (to be visible to pilot).
Note MAUW = 365kg when modification 0044 is incorporated (46.5 litre plastic fuel tank).



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

A placard showing the limitations for all indicated engine parameters is to be mounted close to the engine instruments. This requirement need not be complied with for limitations shown as coloured markers (red for danger, amber for caution) on the instrument displays.

(c)Fuel Limitations Vs Max Cockpit Load Placard (to be visible to the pilot)

Only required if max cockpit load, full fuel and ZFW can exceed Max AUW

Empty Wt **Kg**
Date

Fuel Load (litres)	**Max Cockpit Wt (kg)**
65	
55	
45	
35	
25	
15	
5	

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

The original specified 4 star fuel is no longer available, current alternatives below:

Small tank:

FUEL
Capacity 24.4 Litres Usable
(50:1 2 Stroke oil)
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

Large tank:

FUEL
Capacity 46.5 Litres Usable
(50:1 2 Stroke oil)
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

(e) Switches

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