BRITISH MICROLIGHT AIRCRAFT ASSOCIATION
HOMEBUILT AIRCRAFT DATA SHEET (HADS)

NO: HM12 ISSUE: 12

Escapade* / Sherwood Scout

(1)	MANUFACTURER	Individual aircraft are amateur constructed. BMAA is responsible for continued airworthiness.
(2)	UK SUPPLIER	Spares and support are available from TLAC, Little Snoring Airfield, Fakenham, Norfolk, NR21 0JL
(3)	CERTIFICATION	BCAR SECTION S (First example Issue 3)
(4)	DEFINITION OF BASIC STANDARD	MAAN 1695 Issue 1.

(5) COMPLIANCE WITH THE MICROLIGHT DEFINITION

(a)	MTOW	450 kg
(b)	No. Seats	2
(c)	Maximum Wing Loading	46 kg/m²
(d)	V_{S0}	33 kt CAS / MTOW
(e)	Permitted range of occupant weights	Min 55 kg total weight Max 120 kg per seat
(f)	Typical Empty Weight (ZFW)	255 kg (Jabiru 2200) 262 kg (Rotax 912)
(g)	Max ZFW at initial permit issue MTOW - 172 kg crew - 1 hr fuel (22 litres / 16 kg) (Jabiru engine)	262 kg (Jabiru 2200) 266 kg (Rotax 912) 266 kg (UL Power 260i)

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

(6) POWER PLANTS

Designation	Escapade Jabiru(1)	Escapade Jabiru(2) (not yet approved)	Escapade Jabiru(3)	Escapade Jabiru(4)
Engine Type	Jabiru 2200A (Serial 22A710 or later)			
Reduction Gear	Direct drive			
Exhaust System	Jabiru standard			
Intake System	Bing 94/40 carb, K&N filters			
Propeller Type	Newton wood	Powerfin, composite GA, 2 blade	Newton wood	Newton wood
Propeller Dia x Pitch	60” x 40”	64”, 9.5° at tip	60” x 42”	56” x 40”
Noise Type Cert No.	173M Issue 4	NYA	173M Issue 4	186M Issue 2
MAAN approving	1695	NYA	1962	2050

Designation	Escapade Jabiru(5)	Escapade ULP(1)	Escapade ULP(2)	
Engine Type	Jabiru 2200A (Serial 22A710 or later)	ULPower 260i	ULPower 260i	
Reduction Gear	Direct drive	N/A	N/A	
Exhaust System	Jabiru standard	ULPower stainless steel	ULPower stainless steel	
Intake System	Bing 94/40 carb, K&N filters	Fuel injection	Fuel injection	
Propeller Type	Hercules wood 2 blade	Hercules wood 2 blade	Newton R11 wood 2 blade	
Propeller Dia x Pitch	60” x 34”	58” x 42.5”	60” x 41”	
Noise Type Cert No.	173M	186M Issue 4	186M	
MAAN approving	2485	2280	2543	

Designation	Escapade 912(1)	Escapade 912(2)	Escapade 912(3)	
Engine Type	Rotax 912 UL			
Reduction Gear	Integral 2.27:1			
Exhaust System	CKT stainless steel exhaust part no. 87-1098			
Intake System	Rotax / Bing standard CD carburettors, K&N filters			
Propeller Type	Powerfin composite GA, 3 blade	Kiev composite GA, 3 blade	DUC Swirl composite GA, 3 blade	
Propeller Dia x Pitch	68", 12° at tip	170cm, 24°@35cm radius	1660mm, 20°@200mm from tip	
Noise Type Cert No.	186M Issue 1	186M Issue 1	186M Issue 3	
MAAN approving	1854	1878	2028	

(7) MANDATORY LIMITATIONS

(A) Max Take-Off Weight — 450 kg

(B) CG Limits *(provisional for flight testing, see Annex C)* — Aft limit: 15.5" AoD
FWD Limit: 9" AoD

(C) CG datum — 1.25" aft of wing leading edge at root (centreline of front spar)

(D) Cockpit Loadings

	Pilot	Passenger	Total
Min	55 kg	-	55 kg
Max	120 kg	120kg	240 kg

(Total cockpit load dependent upon whole aircraft W&CG)

(E) Never Exceed Speed — 114 kt CAS[1]

(F) Manoeuvring Speed — 70 kt CAS.

(G) Flaps Limiting Speed — 66 kt CAS

(H) Permitted Manoeuvres — 60° bank
Non Aerobatic
Normal acceleration limits, +4 / -2g

(I) Fuel Contents (Max Useable) — 70 litres

[1] Flight test limit, V_{DF} = 127 kt CAS.

(J) Power Plant

Engine	Jabiru 2.2L	Rotax 912 UL	ULPower 260i
Max RPM	3,100	5,800 (5,500 continuous)	3,300 (2,800 continuous)
Max CHT	175°C climb power 150°C cruise power	150°C	190° 160° continuous
Max EGT	N/A	900°	N/A
Fuel Spec	83 MON or 90 RON minimum unleaded to BS(EN)228 or 97+ octane MOGAS leaded fuel to BS 4040, or AVGAS 100LL.		95+ Octane RON unleaded to BS(EN)228 or AVGAS 100LL
Engine Oil Spec	As required by engine manual		
Gearbox oil spec	N/A	Integral with engine	N/A
Fuel/Oil Mix	N/A	N/A	N/A
Max. Coolant Temperature	N/A	120°C	N/A
Max. Oil Pressure	525kPa / 76psi	5 bar	8 bar
Min. Oil Pressure	220 kPa / 31psi – normal use. 80 kPa / 11psi @ idle	1.5 bar	1.5 bar
Oil Temperature	118°C cont.	50 – 140°C	50 – 115°C
Fuel pressure at cruise power	N/A	0.2 – 0.5 bar at 3,000 RPM	2.8 – 3.2 bar

(8) INSTRUMENTS REQUIRED

ASI	Altimeter	RPM	EGT	Compass	Coolant Temp	CHT	Oil Temp	Oil Pressure	Fuel Pressure	Voltmeter	VSI	Slip ball
Required (to at-least 1.05 V_{NE} once calibrated)	Required	Required	Required for 2-stroke engines	Required	At least one required		Required for 4-stroke engines		Required for ULPower 260i	Required for ULPower 260i	Optional	Required

Maximum permitted total weight of complete instrument panel without strengthening modifications: 5kg for original GFRP panel, 5.5kg for later vacuum-formed plastic panel.

(9) CONTROL DEFLECTIONS

Elevator UP:	28±2°	Tailplane trim UP:	20 ± 5°
Elevator DOWN:	16 ± 2 °	Tailplane trim DOWN	40 ± 5°
Ailerons UP:	30 ± 5°	Rudder LEFT:	28 ± 2°
Ailerons DOWN:	30 ± 5°	Rudder RIGHT:	28 ± 2°
Flaps UP:	0		
Flaps DOWN:	15°, 28°, 40° ± 2°		

(10) PILOT'S NOTES, MAINTENANCE MANUALS REFERENCES

10.1 Manuals approved for use with this aircraft.

(a) Sherwood Scout Pilot's Operating Manual & Maintenance Manual – Issue 2, December 2021.
(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 Escapade Construction Manual – Revision 4.

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, fuel type(s), fuel:oil ratio (if relevant) and also the fuel loads at MTOW for cockpit weights of 200kg / 190kg / 180kg etc. at 10kg intervals down to the maximum fuel load. An example is shown at Annex D.

(d) ASI Placard

A correction placard from V_{S0} to V_{NE} at no more than 10 kt intervals, and at V_{S0}, V_{S1}, V_A 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.

Additionally, the ASI is to be marked in appropriate colours in accordance with normal aviation practice with the normal operating speed range, V_{NE}, flap limiting speeds, and best glide speed.

(e) Pitch Trimmer Instructions See Annex D.

(f) Switches See Annex D.

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

See Annex A for required modifications.

CAA - Mandatory Permit Directives (AIRFRAME ONLY)

MPD 2007-009	Change in pitch trim tab setting angle limits
MPD 2022-004-E	Seat Locking and Secondary Seat Restraint – Inspection

UK Supplier - Service Bulletins

Designation	Classification	Subject
TLAC SB 01-2021	MANDATORY	Seat locking and secondary seat restraint system (both seats)

Latest Bulletins - https://www.g-tlac.com/login/ (User Name: **G-WOLV** Password: **BMAA**)

(12) MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT

Rate of Climb:	See Annex F
Stall or Minimum Flying Speed:	33 kt CAS at MTOW in landing configuration 35 kt CAS in cruise configuration.

ISSUE HISTORY

Issue A	Draft, to permit initial construction.
Issue B	Draft, for flight testing
Issues C, D	Galley proof of proposed Issue 1.
Issue 1	Initial approval, authorised by MAAN 1695
Issue 2	Addition of 912 configuration, authorised by MAAN 1854
Issue 3	Introduction of optional 15" main gear tyres; introduction of mandatory internal sleeving of castering noseleg assembly: details held in Escapade post-approval file circa July 2005. Correction of incorrect fuel capacity (70L not 80L).
Issue 4	Addition of 912(2) configuration, authorised by MAAN 1878. Addition of requirement for oil temperature and pressure gauges for 4-stroke engines. Modification to maximum empty weights by read-across from Sky Ranger. Addition of optional mods for Willens harness and alternative throttle cable.
Issue 5	Addition of larger pitch trim tab (optional modification B4) and modifications to pitch trim tab setting parameters, authorised by MAAN 1937. Changes to the 912 variant field performance, authorised by MAAN 1954 & 1925. Addition of optional mod B5, electric carb heat. Addition of optional mod B6, throttle cable option. Addition of optional mod B7, brake option. Addition of Points for Special Attention. Addition of Jabiru(3) configuration, authorised by MAAN 1962.
Issue 6	Addition of Jabiru(4) approved by MAAN 2050. Addition of optional modifications B8 (Skyflash wing-tip strobes – MAAN 2153) and B9 (VLA control sticks – MAAN 2182). Correction of V_{NE} in Annex D. Correction of moment arm datum. Updated POH and Build Manual issue. Correction to figure for 1hr of fuel for Jabiru engine in Section 5g, from 27 to 22 litres. New address for UK Supplier. Addition of points 7 and 8 to Annex E. Improvements to wording and formatting.
Issue 7	Addition of ULP(1) configuration, authorised by MAAN 2280. 912 coolant temp added. Crew rearward seat position moment arm corrected from 18" to 17". This was originally measured incorrectly from the forward seat position moment arm.
Issue 8	Addition of 912(3) configuration, authorised by MAAN 2028.
Issue 9	Fuel Pressure gauge and Voltmeter added to required instruments for ULPower 260i engine. Formatting improvements.
Issue 10	Addition of Jabiru(5) variant approved by MAAN 2485.
Issue 11	Addition of ULP(2) variant approved by MAAN 2543.
Issue 12	Change of name – Sherwood Scout (Escapade still correct for legacy airframes). Sherwood Scout Pilot's Operating Manual & Maintenance Manual – Issue 2, December 2021. Addition of MPDs: 2007-009, 2022-004-E & SB: TLAC SB 01-2021. Annex E added trim tab.

BMAA Approval:		R Pattrick Design Approval **Engineer**	22 February 2022

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ILLUSTRATION OF AIRCRAFT

Nosewheel variant

Tailwheel variant

ANNEX A – MANDATORY MODIFICATIONS

No.	Description
A1	(Castoring Nosewheel aircraft only): Introduction of internal 1" x 0.120" x 12" 4130 sleeve, secured with rosette welding on either side of leg at 2", 6" and 10" from lower welded leg joint. *(Note: all nosewheels already supplied should be of this standard).*

ANNEX B – APPROVED OPTIONAL MODIFICATIONS

No.	Description
B1	15" reduced size tyres (as an alternative to the standard 18" tyres)
B2	Willens harness (in place of original Just Aircraft harness), provided through Reality aircraft.
B3	Eurostar throttle mechanism (912 variants only)
B4	Larger pitch trim tab
B5	"Ice Eliminator" carburettor heater (Jabiru installations only), switch(es) to be arranged 'down' for off.
B6	Alternative throttle mechanism (Airworld UK/Aircraft Spruce p/n 301654)
B7	a. Toe operated hydraulic brakes
	b. Heel operated drum brakes (as per Easy Raider)
B8	Skyflash wing-tip strobes
B9	VLA (curved) Control Sticks

ANNEX C - WEIGHING INFORMATION

Note: W&CG should be checked with baggage compartment empty.

1	CG Datum	1.25" aft of wing leading edge at root (centreline of front spar)[2]
2	Weighing attitude	Headrack level, all tyre pressures to be checked (pressures as operators manual). *(Nosewheel variant only – this should equate to all three wheels on level surface.)*
3	Mainwheel moment arm	28.25" AoD (nosewheel variant) 8.75" FoD (-8.75") (tailwheel variant)
4	Nosewheel moment arm	35" FoD (-35")
5	Tailwheel moment arm	160.75" AoD
6	Crew	12" AoD (nominal occupant weights below 75kg) 17" AoD (nominal occupant weights above 75kg)
7	Crew weights	Minimum 55 kg / maximum 120 kg per seat. (Maximum reducible, not below 86 kg, if required for CG purposes).
8	Fuel moment arm[3]	15" AoD (nominal capacity 70 litres = 50.4 kg)
9	Baggage	35kg moment arm 55" AoD. Baggage limit may be reduced if required for CG purposes.
10	Fwd CG limit	9" AoD
11	Aft CG limit	15.5" AoD

[2] Note that at previous issues of this HADS (Issue 5 or older), the datum was incorrectly stated as the front face of the wing leading edge at the root. Weight reports produced prior to Issue 6 will be correct (calculations will not change).

[3] Note: no separate consideration need be made of the collector tank in the balance calculation as CG limits already take into account all variations in CG due to this tank. However, volume of fuel carried in the collector tank should be accounted for in the overall aircraft fuel load when calculating take-off weight.

ANNEX D - EXAMPLE PLACARDS

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

Escapade *[Engine] [Registration]*	
Bank angle limits:	+/- 60°
Normal Acceleration Limits:	+4 / -2g
Empty Weight:	____ kg **
Max Take-Off Weight:	450 kg
Minimum Cockpit Weight:	55 kg
Maximum Cockpit Weight:	120 kg in each seat.
Maximum Baggage Load:	35 kg
Aerobatics and deliberate spinning prohibited.	

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

(b) Engine Limitations Placard

A placard showing the limitations for all indicated engine parameters is to be mounted close to the engine instruments. Also limitations must be shown as coloured markers (red for danger, amber for caution) on the instrument displays.

(c) Fuel Limitations Placard

The following placard is to be displayed close to the fuel sight gauge or one adjacent to each filler cap, and amended according to the specific variant of the aircraft. For aircraft to be configured solely in nosewheel or tailwheel configuration, either the central or right hand column may be omitted.

FUEL Total Capacity 70 Litres (4-stroke, add No Oil)		
Cockpit Load (kg) (including baggage)	Nosewheel Max Fuel Load (litres)	Tailwheel Max Fuel Load (litres)
	70 (full)	**70 (full)**
83 MON or 90 RON minimum unleaded to BS(EN)228 or AVGAS 100LL		
Note: Vent pipes in filler caps should always be pointing forward when fully tightened.		

(d) ASI Placard

The values in this placard must reflect those published in the approval MAAN for the aircraft or as modified by BMAA or CAA approval. Best climb speed also to be shown on placard, but varies between aircraft – check Annex F and approval MAAN for individual aircraft.

Kt CAS (calibrated)	33 V_{S0}	35 V_{S1}	40	47 Best glide	50 Approach	60	66 V_F Flap limit	70 V_A	80	90	100	110	114 V_{NE}
_____IAS (Indicated)													

Stall speeds are at MTOW; less at lower weights.

A red radial line is to be marked on the ASI dial at V_{NE}; an amber arc is to be marked between V_A and V_{NE}; a white arc is to be marked between V_S and V_F. Note that this can only be done once the ASI is calibrated during initial flight testing.

(e) Pitch Trimmer Instructions

Nose-up and nose-down operation are to be marked. The take-off trim setting must also be indicated on the trimmer control or display.

(f) Miscellaneous

All switches must be placarded with function and sense of operation (up=on, down=off) even if the placards are not listed below. Also all fuses are to be placarded with rating and function.

Choke – Pull ON	Carb heat – Pull HOT (Jabiru hot air type)	Throttle – Push OPEN
Smoking Prohibited	Baggage Max 35kg (or as noted in the MAAN for an individual aircraft)	

ANNEX E - POINTS FOR SPECIAL ATTENTION

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

1. Placards must be as stated in the approval **MAAN**, and not use CAS values as given in the HADS.
2. (Jabiru engines) Carb heat knob must be adjusted so that when pulled out (to hot), it can be pushed straight back in (to cold) without need for rotation or other action beyond a simple push.
3. (Jabiru engines) Carb heat and choke controls must be clearly visually distinguished from each other by knob shape and colour.
4. (Jabiru engines) 'Ice Eliminator' carb heater (if installed). Switch(es) must be arranged such that 'down' is off. Switches supplied with 'up' and 'down' = on and 'middle' = off must be altered such that full 'down' is off, or two switches to be installed with 'down' = off.
5. The rudder cable guides that run down the fuselage must not be opened out: they must remain intact and the cable threaded through.
6. Tail spring retainers are designed to be weak points to prevent damage to more important structure: they must not be modified (strengthened) in any way.
7. (Tricycle gear variants) An isolated failure of the nose-leg shock absorber has been reported in which the shock absorber detached from the engine mounting frame when unloaded with predictable results on the next landing. Inspect carefully for deformation of the 'cup' in the engine mounting frame at the top of the shock absorber (which supports the nose-leg in rebound and during flight). Report any problems to the BMAA Technical Office.
8. An isolated failure of a tail plane support strut has been reported due to corrosion and/or fatigue at the flattened end where it bolts to the tail plane. Tooling marks from the manufacturing process may have initiated the problem. Inspect carefully for deep tooling marks, cracks and/or corrosion and report any problems to the BMAA Technical Office. Ensure owner is aware and able to inspect satisfactorily as part of daily inspection.
9. **Seat Adjustment Pin and Strap** – Ensure that the seat adjustment is working correctly and that the seats have full fore and aft travel. Also ensure that the tee-handle locking pin system is working correctly and fully engaging into the seat adjustment track beneath the seat. Ensure that the secondary restraint cam lock strap is in good condition, correctly positioned, correctly orientated and fully functioning. Ensure that the seat adjustment track is correctly aligned with no distortion and ensure that there are no witness marks that might indicate that the seat pin is not running central to adjustment track.
10. **Trim Tab** - Some failures of the Trim tab system have been reported by owners and operators. It appears that over the years a number of different variants of the trim system have been in operation. BMAA recommends contacting TLAC in order to obtain the latest specification of system incorporating the spring.

ANNEX F - SCHEDULED PERFORMANCE FOR APPROVED VARIANTS

All performance values are at ISA S/L conditions, MTOW, fwd CG, short dry grass. Take-off and landing distances are to/from 15m (50ft) screen height.

Nosewheel configuration

Variants	TODR	LDR	Climb rate	V_Y	Notes
Jabiru	365m (281m unfactored)	299m	1000 ft – 710 fpm 2000 ft – 670 fpm 3000 ft – 630 fpm 4000 ft – 590 fpm	47 KCAS	Engines after serial 22A710
912	490m (377m unfactored)	269m	1000 ft – 1100 fpm 2000 ft – 1000 fpm 3000 ft – 900 fpm 4000 ft – 800 fpm	53 KCAS	LDR may be up to 480m if throttle mechanism results in a high idle speed.

Tailwheel configuration

Variants	TODR	LDR	Climb rate	V_Y	Notes
Jabiru	300m (231m unfactored)	344m	1000 ft – 950 fpm 2000 ft – 760 fpm 3000 ft – 630 fpm 4000 ft – 540 fpm	47 KCAS	Engines after serial 22A710
912	402m (309m unfactored)	309m	1000 ft – 840 fpm 2000 ft – 770 fpm 3000 ft – 710 fpm 4000 ft – 670 fpm	53 KCAS	LDR may be up to 550m if throttle mechanism results in a high idle speed.
ULP 260i	470m (360m unfactored)	325m	1050 fpm	53 KCAS	