

**BMAA
HOMEBUILT AIRCRAFT DATA SHEET (HADS)**

NO: HM19 ISSUE: 1

SkyRanger LS (UK) *

- | | | |
|-----|---|---|
| (1) | MANUFACTURER | Individual aircraft are amateur constructed, BMAA is responsible for continued airworthiness. |
| (2) | UK IMPORTER | UK Importer of Kits, Flylight Airsports Ltd, Sywell Aerodrome, Northampton, NN6 0BT |
| (3) | CERTIFICATION | CS-VLA amendment 1 |
| (4) | DEFINITION OF BASIC STANDARD | SkyRanger Swift 2 Build manual Issue 0.4 SkyRanger Nynja (UK) Build Manual Issue 1.4 Nynja VLA Build Notes V5 |
| (5) | COMPLIANCE WITH THE VERY LIGHT AEROPLANE DEFINITION | |
| | (a) MTOW | 500 kg |
| | (b) No. Seats | 2 |
| | (c) Maximum Wing Loading | 39 kg/m ² |
| | (d) V _{so} | 34 kn CAS (Swift) 33 kn CAS (Nynja) |
| | (e) Permitted range of occupant weights | Min 55 kg total weight Max 120 kg per seat |
| | (f) Typical Empty Weight (ZFW) | 265–290 kg depending on variant |
| | (g) Max ZFW at initial permit issue MTOW - 172 kg crew - 1 hr fuel | 315 kg |

POWER PLANTS

| Designation | SkyRanger Swift LS 912 (1) | SkyRanger Swift LS 912S (1) (Not yet approved) | SkyRanger Nynja LS 912 (1) (Not yet approved) | SkyRanger Nynja LS 912S (1) |
|-----------------------|-------------------------------|--|---|--------------------------------|
| Engine Type | Rotax 912 UL | Rotax 912 ULS | Rotax 912 UL | Rotax 912 ULS |
| Reduction Gear | Rotax I = 2.27:1 | Rotax I = 2.43:1 | Rotax I = 2.27:1 | Rotax I = 2.43:1 |
| Exhaust System | Rotax or CKT | Rotax or CKT | Rotax or CKT | Rotax or CKT |
| Intake System | K&N | K&N | K&N | K&N |
| Propeller Type | Kiev 273/1700 3 blade | Kiev 283/1800 3 blade | Kiev 273/1700 3 blade | Kiev 283/1800 3 blade |
| Propeller Dia x Pitch | 170cm, 24°@35cm | 180cm, 35°@33.5cm | 170cm, 24°@35cm | 180cm, 35°@33.5cm |
| Max Static RPM | 5000 | 4850 | 5000 | 4850 |
| Max Cont RPM | 5500 | 5500 | 5500 | 5500 |
| MAAN approving | 2639 | TBD | TBD | 2685 |

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

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(6) MANDATORY LIMITATIONS

| | | | | | | | | | | | | | |
|---|---|-----------|--------|-----------|-------|-----|-------|---|-------|-----|--------|--------|--------|
| (A) Max Take-Off Weight | 500 kg 473 kg if modification number 40 Main gear Tapered Leg Not Fitted | | | | | | | | | | | | |
| (B) CG Limits | <i>Aft limit</i> 0.21m fwd of datum <i>FWD Limit</i> 0.36m fwd of datum <i>FWD Limit</i> 0.38m fwd of datum (Nynja Only) | | | | | | | | | | | | |
| (C) CG datum | (See Annex C). | | | | | | | | | | | | |
| (D) Seat Loadings | <table border="0" style="margin-left: 40px;"> <tr> <td></td> <td style="text-align: center;">Port</td> <td style="text-align: center;">Starboard</td> <td style="text-align: center;">Total</td> </tr> <tr> <td style="text-align: right;">Min</td> <td style="text-align: center;">55 kg</td> <td style="text-align: center;">-</td> <td style="text-align: center;">55 kg</td> </tr> <tr> <td style="text-align: right;">Max</td> <td style="text-align: center;">120 kg</td> <td style="text-align: center;">120 kg</td> <td style="text-align: center;">240 kg</td> </tr> </table> <p style="margin-left: 40px;"><i>Total subject to overall aircraft weight and balance limit – combined seat load may be reduced not below 172kg in order to remain within CG limits.</i></p> | | Port | Starboard | Total | Min | 55 kg | - | 55 kg | Max | 120 kg | 120 kg | 240 kg |
| | Port | Starboard | Total | | | | | | | | | | |
| Min | 55 kg | - | 55 kg | | | | | | | | | | |
| Max | 120 kg | 120 kg | 240 kg | | | | | | | | | | |
| (E) Never Exceed Speed V_{NE} | 111 kn CAS (Swift) 117 kn CAS (Nynja) | | | | | | | | | | | | |
| (F) Structural Cruising Speed V_{NO} | 96 kn CAS | | | | | | | | | | | | |
| (G) Manoeuvring Speed V_A | 85 kn CAS | | | | | | | | | | | | |
| (H) Flap Limiting Speed V_{FE} | 70 kn CAS | | | | | | | | | | | | |
| (I) Door Open Max Speed (2 piece doors only) | 72 kn CAS | | | | | | | | | | | | |
| (J) Permitted Manoeuvres | ±60° bank Non Aerobatic Normal acceleration limits, +4 / -2g | | | | | | | | | | | | |
| (K) Fuel Contents (Max Useable) | See Annex B | | | | | | | | | | | | |

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(L) Power Plant

| | | |
|-------------------|---|---|
| Engine | Rotax 912 | Rotax 912S |
| Max RPM | 5800 (5 min) 5500 (continuous) | 5800 (5 min) 5500 (continuous) |
| Max CHT | 150°C ¹ | 135°C ¹ |
| Max EGT | 880°C | 880°C |
| Max.Coolant Temp. | 120 °C ² | 120 °C ² |
| Fuel Spec | 90 Ron minimum unleaded to EN 228 Normal, Super or Super Plus, AVGAS 100LL, UL91. (Unleaded preferred – see engine manual) | 95 Ron minimum unleaded to EN 228 Super or Super Plus, AVGAS 100LL, UL91. (Unleaded preferred – see engine manual) |
| Engine Oil Spec | RON 424, SAE 10 W-40 (See engine manual) | RON 424, SAE 10 W-40 (See engine manual) |
| Oil Pressure | Normal 2-5 bar above 3500 rpm Min 0.8 bar below 3500 Max 7 bar | Normal 2-5 bar above 3500 rpm Min 0.8 bar below 3500 Max 7 bar |
| Oil Temperature | 50 - 140°C | 50 - 130°C |
| Fuel pressure | 0.15 -0.4 bar* *0.5bar with fuel pump S/N 11.0036 or later | 0.15 -0.4 bar* *0.5bar with fuel pump S/N 11.0036 or later |

(7) INSTRUMENTS REQUIRED

| | | | | | |
|--------------------------------|-----------------------|---|----------|----------|-----------|
| ASI | Altimeter | RPM | EGT | Compass | Slip ball |
| Required to $V_{NE} + 5\%$ CAS | Required to 10,000 ft | Required to 10% above max revs for engine fitted. | Optional | Required | Required |

| | | | | |
|-----------------------|-----|-----------|-------------|---|
| Coolant temp | CHT | Oil Temp. | Oil. Press. | Fuel pressure |
| At least one required | | Required | | Required, first example of new engine types only. |

¹ If no coolant temperature gauge is fitted, max CHT must be limited to max coolant temperature of 120°C.

² If using water-based coolant, 1.2bar pressure cap is mandatory. If waterless coolant is used, max 150°C for the 912UL and max 135°C for the 912ULS. Waterless coolant must not be used on engines with the engine type designation extended with suffix -01 (Rotax Service Bulletin SB-912-068UL R2).

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(8) CONTROL DEFLECTIONS

| | | | |
|----------------|--|--------------------------|-------------------------|
| Elevator UP: | 25±2° | Tailplane trim tab UP: | Swift 30±5° Nynja 35±5° |
| Elevator DOWN: | 25±2° | Tailplane trim tab DOWN: | Swift 40±5° Nynja 35±5° |
| Ailerons UP: | 25±2° | Rudder LEFT: | 25±2° |
| Ailerons Down: | 20±2° | Rudder RIGHT: | 25±2° |
| Flaps: Swift | 50mm, 105mm, 180mm, ±10mm, (5mm difference between sides) <i>Flaps settings are at the trailing edge below a straight edge rested across the top of the fuselage.</i> | | |
| Flaps: Nynja | 0°, 8°, 19° ± 2°, (1° difference between sides) <i>Neutral setting is 125mm from nearest edge of fuselage fairing to centre of end of flap trailing edge tube. ± 10mm tolerance</i> | | |

Ailerons neutral is with aileron trailing edges level with flap trailing edges at zero° flap setting³.

(9) PILOT'S NOTES, MAINTENANCE MANUALS, PLACARDS

(9.1) Manuals approved for use with this aircraft

- (a) Construction to SkyRanger Swift Manual Issue 0.4, or SkyRanger Nynja Build Manual Issue 1.4.
- (b) *Above may be amended by SkyRanger Wing Fold Installation Instructions Issue 1.1*
- (c) Nynja VLA Build Notes V5.
- (d) SkyRanger Swift Operators Manual, Issue 2 or later, or SkyRanger Nynja Operators Manual latest issue.
- (e) *Above may be amended by SkyRanger Wing Fold Operators Manual Issue 1.2*
- (f) Engine Manual to be at Annex B to the Operators Manual.
- (g) Maintain to Operators Manual.

(9.2) 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 (50 or 60 litres), fuel type(s), and if MTOW can be exceeded with full fuel and 240kg cockpit weight, the fuel loads at MTOW for cockpit weights of 240kg / 230kg / 220kg etc. at 10kg intervals down to the maximum fuel load. An example is shown at Annex D.

(d) ASI Placard

A correction placard from 30 kn CAS to V_{NE} at no more than 10 kn intervals, and at V_{so}, V_a, V_{no} 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.

The ASI must be marked with the following:

- a. For the never-exceed speed V_{NE}, a radial red line.
- b. For the caution range, a yellow arc extending from the red radial line to the upper limit of the green arc.
- c. For the normal operating range a green arc with the lower limit at V_{SI} with maximum weight and with wing flaps retracted, and the upper limit at maximum structural cruising speed V_{NO}.
- d. For the flap operating range, a white arc with the lower limit at V_{SO} at the maximum weight and the upper limit at the flaps-extended speed V_{FE}.

(e) Pitch Trimmer Instructions See Annex D.

³ Early aircraft are rigged such that aileron neutral is with aileron trailing edges 5mm below flap trailing edges at zero° flap setting. This alternative aileron neutral position remains acceptable.

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- (f) Switches See Annex D.
- (g) Operating Limitations Placard

A placard stating 'This aeroplane is classified as a very light aeroplane approved for day VFR only, in non-icing conditions. All aerobatic manoeuvres including intentional spinning are prohibited. See Flight Manual for other limitations'

Note: It is recommended that airspeed placards are not fitted to new aircraft until after flight testing, due to the requirement for pitot-static system calibrations. Once calibrated, main airspeed limitations are also to be marked on the dial i.a.w. normal aviation practice.

(10) **MANDATORY MODIFICATIONS / SERVICE BULLETINS / AIRWORTHINESS DIRECTIVES ETC**

See Annex A for required modifications.
See Annex E for fabric testing (Betts test) requirements.

CAA MPD 2004-03 applies to Classic and Swift variants: mandatory fitment of seat bracing modification as per SkyRanger Service Bulletin 001, approved by BMAA MAAN1744.

CAA MPD 2006-007 applies to Classic and Swift variants with CKT exhaust (Rotax 912 and 912S variants): mandatory fitment of steady bracket modification as per SkyRanger Service Bulletin 2000/1, approved by BMAA MAAN 2000.

CAA MPD 2006-008 applies to this aircraft type: mandatory application of intumescent fire-resistant paint to inside of engine cowlings as per SkyRanger Service Bulletin 2000/2, approved by BMAA MAAN 2000.

CAA MPD 2006-009 applies to this aircraft type with Kiev propellers: mandatory check of installation as per SkyRanger Service Bulletin 2000/3, approved by BMAA MAAN 2000.

CAA MPD 2014-001-E applies to this aircraft type: inspection of the control cable shackles and elevator joiner for incorrect material type as per BMAA Service Bulletin 2462 Issue 2.

(11) **MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT**

V_{SO} not to be more than 45 kn CAS at MTOW. See Annex F for other performance data.

ISSUE HISTORY

| <u>Issue No.</u> | <u>Reason and Signatory</u> |
|------------------|-----------------------------|
| 1 | 14/03/2018 Initial issue |

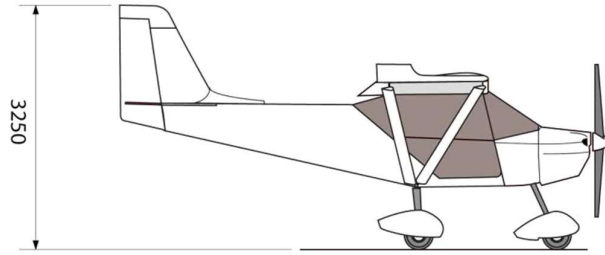


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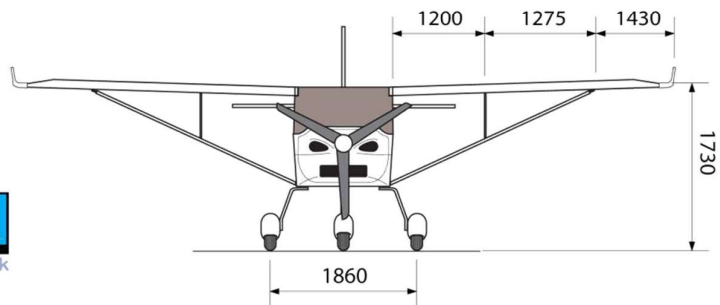
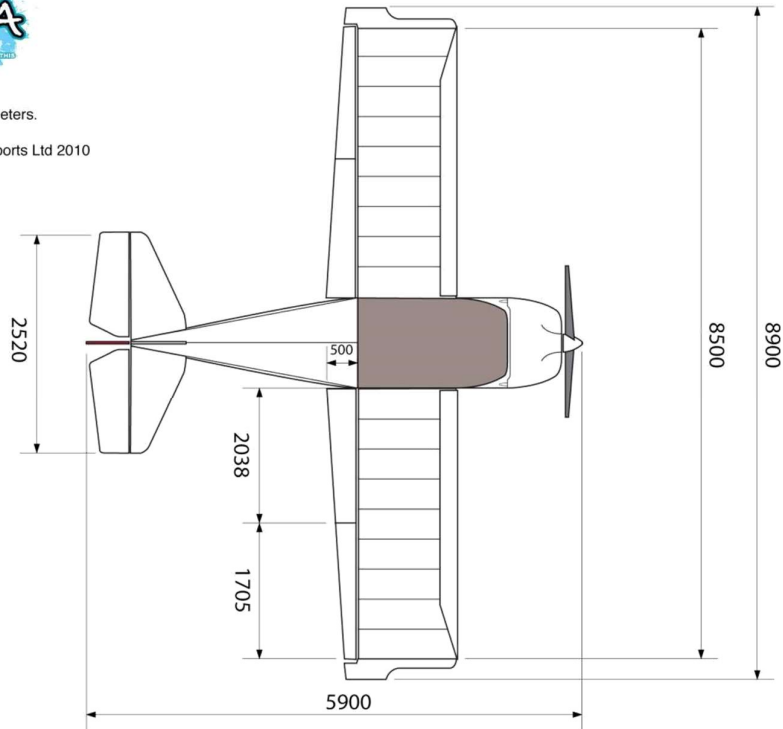
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ILLUSTRATION OF AIRCRAFT

SkyRanger Nynja



Do not scale.
All dimensions in millimeters.
Drawing: 11 12 2010
Copyright: Flylight Airsports Ltd 2010



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Some dimensions and design details vary between the Swift and Nynja variants

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ANNEX A

MANDATORY MODIFICATIONS

The following mandatory mods apply to early Swift variants. They are now incorporated into the build standard and build manuals and are included here solely for historic reasons.

No. Brief Description

- 1 All control cables changed from 2.5mm diameter to 3mm diameter 7x19 stainless steel, minimum breaking load 5.0kN. (Not rear fuselage bracing, rudder centring or rudder stop cables.)
- 2 Control stick and supporting structure redesigned, including aileron torque tube and associated horn. Aileron and elevator stops incorporated into design
- 3 Rudder stops arranged using 2.5mm diameter 7x19 stainless steel cable, minimum breaking load 3.4kN, between cable attachments on rudder pedals and central fuselage tubes.
- 4 Dual throttles redesigned – see UK build manual at current issue.
- 5 Rudder, elevator and aileron horns redesigned – see UK build manual at current issue.
- 6 Arrangement of control cable pulleys and flap handle changed – see UK build manual at current issue.
- 7 Flap handle incorporates a bend mid-length to maintain hand clearance from pulleys.
- 8 Flap detent lever altered to accommodate changed flap handle geometry.
- 9 Nose-wheel steering bar strengthened. (Distinguished by use of box-section bar.)
- 10 Arrangement of pulleys in wings changed to improve rigidity – see UK build manual at current issue.
- 11 Elevator trimmer system modified to incorporate closed loop system.
- 12 Nose-leg lower mount braced top and bottom with steel plates, mounting bolt sleeved.
- 13 Nose-leg reinforced with steel inner sleeve, 2mm wall thickness.
- 14 Main UC drag links redesigned, now consists of U-channel brackets with stainless steel tube between.
- 15 Fuselage side rail tubes now use inner sleeve and U-bracket rear fitting.
- 16 Orientation of jury-strut upper mounting brackets changed, long side down most. Does not apply if aerofoil tube jury struts (optional mod. 15) are fitted.
- 17 Upper doorframes made from 5/8” diameter aluminium tube.
- 18 Firewall extended upwards to upper cowling.
- 19 Fire-resistant acoustic foam applied to cockpit side of firewall.
- 20 Fire-resistant paint applied to inside of engine cowlings as set out in service bulletin SB 2000/2. Mandatory for all aircraft.
- 21 Fuel system designed and defined to comply with Section S – refer to UK build manual at current issue.
- 22 Wooden load spreader bars placed at forward upper tank supporting points.
- 23 Tank securing straps arrangement changed. Now one-piece and incorporate stainless steel ring.
- 24 Fitment of ventral fin. (This may be of either Flylight type, or French “Vmax” type supplied through Flylight from 2003)
- 25 Fitment of seat bracing, as set out in SkyRanger SB 001. Applies to both standard seats and adjustable reach seats (optional mod. 20).
- 26 Fitment of tailpipe steady bracket on CKT exhaust (applies to Rotax 912 and 912S variants; mandatory for Rotax 912S variants) as set out in service bulletin SB 2000/1.
- 27 Swift variants only. Fitment of extended inner sleeves at root of front wing spars.

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No. Brief Description

- 28** Swift variants only. Fitment of aerofoil tube jury struts (optional mod. 15).
29 Swift variants only. Fitment of extended roof batten that runs down the centre of the windscreen (optional mod. 16).

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 – however these should be described in other BMAA approval documentation.

- The following key applies:
- ✓ Part of the build standard. Not optional.
 - Optional – standard
 - Optional – non-standard
 - X Not applicable

| <u>No.</u> | <u>Brief Description</u> | Swift | Nynja |
|------------|--|--------|--------|
| 1 | Baggage hammock behind seats and above fuel tanks. This is to be placarded with a limit of 10kg if fitted. | ○ | ○ |
| 2 | 2(a) Single piece door, or 2(b) Two piece door. (One of these options should normally be fitted) | ○ ○ | ○ ○ |
| 3 | 3(a) 50 litre fuel tank, or 3(b) 60 litre fuel tank (inspectors to confirm cross-tube tu40 and diagonal bracing tubes tu27 are 22mm diameter, not 20mm) (One of these options must be fitted. Inspectors to confirm fuel limitations placard matches fuel tank capacity.) | ○ ● | ○ ● |
| 4 | Aileron cable attachment modification (to help avoid mis-rigging). There are two versions of this modification: ‘handed’ ends to the (continuous) aileron cables, as set out in Sky Ranger SB 002; handed de-rig ‘breaks’ in the aileron cables, introduced for the Nynja, but can also be fitted to Classic/Swift. | ○ | ● |
| 5 | Wing fold modification. | ○ | ○ |
| 6 | Use of 8mm steel or stainless steel wing pins in place of bolts. | ○ | ○ |
| 7 | Fitment of CKT stainless steel exhaust (Rotax 912 and 912S configurations only) 7(a) Original type CKT exhaust 7(b) Nynja type CKT exhaust (requires repositioned oil cooler on Classic and Swift) Up to August 2014, there was no distinction made between these two exhausts. Prior to August 2014 option 7 fitted to a Classic or Swift was 7(a); option 7 fitted to a Nynja was 7(b). | ○ ○ | X ○ |
| 8 | Fitment of Flylight/CKT cabin heat (to be fitted with optional mod. 7 only) | ○ | ○ |

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| No. | <u>Brief Description</u> | Swift | Nynja |
|------------|---|--------------|--------------|
| 9 | Fitment of Flylight wheel spats 9(a) Original style wheel spats 9(b) 'Teardrop' style wheel spats When wheel spats 9(b) were introduced in August 2014, the original style spats were re-designated as 9(a). | O O | O O |
| 10 | Fitment of Flylight wing tip fairings | O | O |
| 11 | Fitment of spinner for Kiev propellers | O | O |
| 12 | Fitment of spinner for Jabiru engines | X | X |
| 13 | Alternative covering material: fitment of Porcher Marine 2420 ('Xlam') fabric covering in place of Dacron covering | O | O |
| 14 | Short wing option. Aerofoil tube jury struts (optional mod. 15) and the extended roof batten (optional mod. 16) must be fitted as well. | ✓ | ✓ |
| 15 | Alternative, Flylight aerofoil tube jury struts. Can be incorporated into a long wing variant in accordance with Flylight document 'Retrofit of Aerofoil Struts to Classic Wing', authorised by MAAN 2277. | ✓ | ✓ |
| 16 | Fitment of Flylight extended roof batten that runs down the centre of the windscreen | ✓ | ✓ |
| 17 | Fitment of Flylight transverse batten immediately behind the fuel tanks. | ● | X |
| 18 | Fitment of Flylight sprung door latches | ● | ✓ |
| 19 | Fitment of Flylight Mk II, large, composite, instrument panel | O | X |
| 20 | Fitment of Flylight adjustable reach seats. (For Nynja variants requires fitment of Classic/Swift style seats.) | O | O |
| 21 | Fitment of Flylight centre console | O | O |
| 22 | Fitment of wing root fairings manufactured and supplied by K Woods. (Fitment is to be made in accordance with the 'Installation instructions for the SkyRanger wing root fairings designed and manufactured by Kevin Woods', Issue 1, supplied with the parts. Flylight do not provide build support for the fitment of these parts.) Nynja variant is fitted with its own wing root fairing as standard. | O | X |
| 23 | Lowered pilot's seat implemented in accordance with Flylight document 'SkyRanger seat modification to give increased headroom for pilots tall in the back' dated 8 June 2008. Consolidated control cable pulley block (optional mod. 24) must be implemented as well. (For Nynja variants requires fitment of Classic/Swift style seats.) | O | O |
| 24 | Consolidated control cable pulley block implemented in accordance with Flylight document 'SkyRanger port rudder pulley block consolidation' dated 16 December 2009. | O | ✓ |
| 25 | Composite seats (must have op mod 24 fitted as well for this) | O | ✓ |
| 26 | Nynja wingtip fairings. | O | ● |
| 27 | Wing strut end fairings | O | ● |
| 28 | Console instrument panel | O | ✓ |
| 29 | Fuel tank pickup fitting | O | ✓ |

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| No. | <u>Brief Description</u> | Swift | Nynja |
|------------|---|--------------|--------------|
| 30 | Nynja control stick and integral elevator horn / joiner | O | ✓ |
| 31 | Nynja two-piece door – upper door fixing / hinge method | O | ✓ |
| 32 | Flylight external fuel filler | O | ✓ |
| 33 | Large diameter balance pipe between fuel tanks | O | O |
| 34 | Nynja spec TU9 main cross member and main gear internal drag reaction braces | O | ✓ |
| 35 | Nynja type TU34 front door pillar, door system and throttle control system | O | ✓ |
| 36 | Deletion of ventral fin, and incorporation of Nynja upper fin extension fairing and rudder. a) Short Extension b) Long Extension | O | ✓ |
| 37 | Nynja spec front leg gear | ✓ | ✓ |
| 38 | Flap lever and supporting structure reinforced (LS) | ✓ | ✓ |
| 39 | Front lift strut to spar attachment bracket (LS) | ✓ | ✓ |
| 40 | Main-gear tapered leg, internal drag bracing, Beringer wheels, brakes and master cylinder brake handle. (LS) ⁴ a) Beringer axle mount bracket b) Best-Off axle mount bracket | ✓ | ✓ |
| 41 | Stainless steel firewall (LS) | ✓ | ✓ |
| 42 | Larger Oil Cooler (95mm) (LS) 912ULS Only | ✓ | ✓ |
| 43 | Emergency electric fuel pump (LS) | ✓ | ✓ |
| 44 | Fuel tank vents linked together (LS) | ✓ | ✓ |
| 45 | Cabin heater bypass (LS) | ✓ | ✓ |
| 46 | Large trim tab (LS) | ✓ | ✓ |
| 47 | Carb breather drains (LS) | ✓ | ✓ |

⁴If Modification 40: Main-gear tapered leg is not fitted then maximum take-off weight limited to 473kg.

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ANNEX C

WEIGHING INFORMATION

| | |
|----------------------|--|
| CG Datum | Nynja at Mainwheel axle centreline Swift at Mainwheel axle centreline if Modification 34 Main gear internal drag reaction braces fitted. Swift at 0.04m forward of Mainwheel axle centreline, external drag reaction brace fitted. Positive is forward of datum |
| Weighing attitude | Sitting on all three wheels on level ground and with correct tyre pressures, the horizontal tailplane trailing edge tube (forward of the elevator) is to be 10mm below the horizontal tailplane leading edge tube for the Swift, 8mm for the Nynja. |
| Mainwheel moment arm | 0m (Nynja) 0m (Swift with internal drag reaction braces fitted) 0.04m AoD (-0.04m) (Swift with external drag reaction braces fitted) |
| Nosewheel moment arm | 1.45m FoD |
| Fuel tank | 0.29m AoD (-0.29m), capacity 50 litres or 60 litres |
| Crew | 0.15m FoD, Min 55 kg, max 120kg per seat (In case of difficulties remaining within CG, reduce crew seat weight and placard TOTAL seat weight limit as well as 120kg individual seat limit. Total limit may not be less than 172kg.) |
| Baggage | 0.29m AoD (-0.29m), 10kg maximum |
| Aft CG Limit | 0.21m FoD |
| Fwd CG Limit | 0.36m FoD 0.38m FoD (Nynja Only) |

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ANNEX D

EXAMPLE PLACARDS

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

| <u>SkyRanger [Engine] [Registration]</u> | |
|--|----------------------|
| Never Exceed Speed: | _____ IAS * |
| Max Structural Cruise Speed: | _____ IAS * |
| Manoeuvring Speed : | _____ IAS * |
| Flap limiting speed | _____ IAS * |
| Stall Speed (with flaps): | _____ IAS * |
| Stall speed (clean): | _____ IAS * |
| Best climb speed: | _____ IAS * |
| Best glide speed: | _____ IAS* |
| Bank angle limits: | +/- 60° |
| Normal Acceleration Limits: | +4 / -2g |
| Empty Weight: | _____ kg ** |
| Max Take-Off Weight: | 500 kg ** |
| Minimum Seat Weight: | 55 kg |
| Maximum Seat Weight: | 120 kg in each seat. |

This aeroplane is classified as a very light aeroplane approved for day VFR only, in non-icing conditions. All aerobatic manoeuvres including intentional spinning are prohibited. See Flight Manual for other limitations.

*Values and units IAS will be given in the approval MAAN for the individual aircraft.

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

(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. Also, main limitations are to be shown as coloured markers (red for danger, amber for caution) on the instrument displays.

(c) Maximum Fuel Capacity and Fuel Specification Placard

| <u>FUEL</u> |
|---|
| Capacity 60 Litres |
| 90 Ron minimum unleaded to EN 228 Normal, Super or Super Plus, AVGAS 100LL, UL91. (for Rotax 912) |
| 95 Ron minimum unleaded to EN 228 Super or Super Plus, AVGAS 100LL, UL91. (for Rotax 912S) |

Only applicable engine fuel type required.

(d) Fuel Limitations Placard (to be visible to the pilot)

A “cockpit load Vs fuel” placard based on the most recent weight report for the aircraft must be displayed for the pilot.

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(e) ASI Correction Placard (to be close to the ASI)

This is only an example. In particular, values are not applicable to non-Swift variants. For actual values see the approval MAAN for the particular aircraft.

| | | | | | | | | | | | | | | |
|-------------------------------------|------------------------------|------------------------------|-----------|----------------------------|-----------|-----------------------------------|---------------------|------------------------------|-----------|-----------------------------|-----------|------------------------------|------------|-------------------------------|
| Kn CAS (calibrated) | 34 V_{S0} | 36 V_{S1} | 40 | 47 min sink | 50 | 52 glide/ approach | 57 climb | 70 V_{FE} | 80 | 85 V_A | 90 | 96 V_{NO} | 100 | 111 V_{NE} |
| Kn / Mph IAS (indicated) | | | | | | | | | | | | | | |

The ASI must also be marked with the main IAS limiting speeds in accordance with normal aviation practice.

(f) Pitch Trimmer Instructions

PITCH TRIM nose down ← → nose up

(g) Switches

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

(h) Flaps

The flap operating lever is to be marked, in view of a pilot strapped into the left hand seat, with each flap setting (CR, TO, LD).

(i) Baggage Hammock (if fitted)

MAXIMUM 10kg

(j) Wing fold mechanism (if fitted)

A placard stating “Not to be trailered without additional wing support” is to be displayed in a conspicuous place on each upper cabin tube, to be visible when the wing is pulled out.

(k) Two-piece doors (if fitted)

A placard (or an entry on placard d) above) showing a maximum door-open speed of 72 kn CAS (IAS to be shown if on a separate placard).

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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.

No. Brief Description

- 1** Placards and limitations must be as stated in the approval **MAAN**, and not use CAS values as given in the HADS.
- 2** Failures to take into account the requirements of BMAA TIL 027 and TIL 059 during the design and installation of the engine and instrument fittings.
- 3** If the 60 litre fuel tank is fitted, inspectors must confirm that the cross-member and diagonal bracing tubes are 22mm diameter, not 20mm.
- 4** Kiev propeller bolts must be fitted through clearance holes in the spacer, not through larger diameter lightening holes. Incorrect assembly causes undue bending stress and can result in propeller bolt failure.
- 5** Fracture of plastic saddle washers. Problem can be caused by over-tightening, exposure to Loctite or failure to remove moulding flashes before use. Plastic saddle washers should not be present on both sides of rudder control hinges.
- 6** Incorrect fitment of the fuel tank balance pipe (incorporating the fuel drain) and dip tube. Balance pipe / drain fittings should be fitted as low as is practical on the flat bevelled area on the inside rear corner of each fuel tank. The dip tube must draw fuel from above the balance pipe / drain fitting such that when the dip tube can draw no more fuel it must still be possible to drain at least 0.12 litres of fuel from the tanks. In addition the dip tube must not be so short that its end is positioned above the moulding line at the top of the bevelled area at the rear of the tank. See the build manual at current issue for more details.
- 7** Aileron horn stops. Short plastic sleeves are fitted over the central cabin tubes tu19 at the bottom of the control stick to act as aileron control stops. These have been known to slip down the tubes. Ensure that the plastic sleeves are secure and that the aileron horn contacts the sleeves at the limit of aileron movement. If the plastic sleeves have slipped, reposition and secure, and check the aileron control cables for abrasion along their entire length.
- 8** Lowered pilot's seat (optional mod. 23). Ensure that axle tube tu9 is not abraded by inner seat support bracket (fatigue crack initiator).
- 9** Annual Bettsometer test is to be carried out as follows:
 'Dacron' fabric: to 1000 grammes / 1.2mm needle with wing sails fitted and tensioned to flight. Test must be to both upper and lower surfaces. Stitching to be tested to 1360 grammes / 1.2mm needle.
 'Porcher Marine' fabric: to 1360 grammes / 1.2mm needle with wing sails fitted and tensioned to flight. Test must be to both upper and lower surfaces and stitching.
- 10** Check the undercarriage leg for surface corrosion on any exposed surface to the aircraft and in particular at the mounting bolts and mounting blocks at the U bolts.
- 11** Check all control cable pulleys for corrosion and wear, and ensure that they have been rotated in accordance with the Operators Manual.

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ANNEX F

SCHEDULED PERFORMANCE FOR APPROVED VARIANTS

All performance values are at ISA S/L conditions, MTOW, fwd CG unless stated otherwise. Take-off and landing distances are given for short dry grass fields, clearing 15m obstacle height. Take-off distances include 1.3 safety factor.

| <u>Variants</u> | <u>TODR (TO Flaps)</u> | <u>LDR (LD Flaps)</u> | <u>Climb rate</u> | <u>Vy</u> | <u>Notes</u> |
|-----------------|----------------------------|---------------------------|-------------------|-----------|---------------------------|
| Swift 912(1) | 385m | 310m | 850 fpm | 57 KCAS | Approach speed 52 KCAS |
| Swift 912S(1) | 336m | 310m | 1100 fpm | 57 KCAS | Approach speed 52 KCAS |
| Nynja 912(1) | 385m | 310m | 850 fpm | 58 KCAS | Approach speed 52 KCAS |
| Nynja 912S(1) | 236m | 310m | 1100 fpm | 58 KCAS | Approach speed 52 KCAS |