SLA-100 and SLA-80 Executive Operators Manual

G-**** serial Number *******

This manual is a legal document, which is approved for use with SLA 100-80 Executive aircraft it must remain with the aircraft, and not be amended

All pilots should read this manual before flying as pilot in command of the aircraft. NOTE (If you have any reservations about this Aircraft in any way, or Flying in this Aircraft please refrain from doing so)

Contents

Useful Abbreviations

IAS: Airspeed as shown by the airspeed indicator
CAS: Indicated airspeed corrected for position and instrument error
TAS: CAS corrected for altitude and temperature
GS: Speed of the A'/C relative to the ground

VA: Manoeuvring speed and the maximum speed below which, the application of full control movement, will not overstress the airframe
Vfe: Maximum speed at which the flaps can be extended
VR: speed at which the aircraft is rotated during take-off
VNE: The never exceed speed of the Aircraft
VNO: Maximum cruising speed, (Normal Operating)
VS_1: Stalling speed in clean configuration
VS_0: Stalling speed with flaps extended to Land configuration
VX: Best angle of climb speed, this produces the greatest gain in altitude in the shortest time horizontal distance
VY: Best rate of climb speed this delivers the greatest gain in altitude in the shortest time possible

Modification Record:

Issue 1: Original Issue; 11/07/2006

Issue 2: Alterations to text formatting; 22/11/2006

Issue 3: CG range extended, changes applied to page 4; 24/01/2012

1. INTRODUCTION

The SLA is a three-axis Microlight aircraft certified in the United Kingdom to British Civil Airworthiness requirements (BCAR) Section S at Issue 3.

2. DESCRIPTION OF THE AIRCRAFT

Introduction

The SLA is a fabric covered high wing monoplane with conventional tailplane and a fixed undercarriage. The seating is two-place, side by side and the controls are 3 axis.

Flying Controls.

The control column is centrally situated and may be operated by either pilot. Two sets of rudder pedals are provided and linked via cable and pulleys to the rudder. Electric flaps are operated by a toggle switch positioned on the instrument panel with a visual indicator Up / Down which is segmented for movement. Pitch trim is electrical using a servo actuator to move the trim tab; pilot demand being made by a toggle switch on the instrument panel with an adjacent indicator for displacement.

A single hand lever situated on the control stick operates the main wheel brakes; these are for parking only. Nose wheel steering is provided by a direct linkage from the rudder pedals.

Engine Controls.

Engine controls comprise a Throttle and Choke. Both are mounted on the instrument panel and work in the conventional sense; throttle opens forward and closes to the rear and the choke is set to on by pulling out and off by selecting in.

Other Equipment.

Conventional four point harness restraint for each occupant. The lap strap provides the lateral and fore/aft restraint whilst the shoulder straps provide torso slump and vertical security. It is recommended that lap strap tension be adjusted first, followed by the tensioning of the shoulder webs. The shoulder straps are worn at all times for maximum security. A central buckle secures the harness and a lifting action releases the harness in the event of an emergency or standard egress.

Doors

Pilot and passenger doors are constructed from a lightweight tubular steel frame covered with polycarbonate sheet. The top edge of the doors are hinged and, when released, the door is held up via a gas strut. Latches along the lower edge of the door secure them shut. The door latches are operated by rearward rotation of the handles to release and rearward to secure.

Fuel Tank

The aircraft is fitted with a large 100 litre capacity fuel tank; the full capacity is only available for use when the aircraft is flown solo. Tables and charts in Section 7 (Weight & Balance) detail the fuel capacity variation with crew mass.

A fuel drain is located under the fuselage behind the seats. A fuel drain is required prior to each flight in order to purge water and any loose sediment that may be in the tank sumps.

3. LIMITATIONS

The aircraft has been cleared for General Handling up to 60º angle of bank and slow speed flight including stalling. The aircraft is not cleared for spinning or aerobatic manoeuvres and is subject to the following limitations:

Day VMC conditions, within sight of the surface and may not be flown over built up areas.

Certified to a "permit to fly" standard.

Use for aerial work, other than flight instruction, prohibited.

Certified to a UK only standard; permission may be required from other host countries for over flight etc.

May not be flown above 10,000ft standard pressure altitude.

Maximum of 2 occupants

WEIGHT & BALANCE

CG Datum. The CG datum is at the front wheel axle centerline and measurements are in milli-meters (mm).

CG limits: At flight weight the CG limits are between 1000 mm to 1223 mm aft of datum (AOD). This range is sufficient to cover all combinations of approved pilot, passenger, fuel, baggage and build variation weights.

CG moment arms**.** The moment arms of the seats, fuel tank(s) and other items are shown in the Weight and CG report .

Weighing**.** The A/C will have been weighed when first built, and must be re-weighed at intervals as laid down by the BMAA and CAA details of the weighing must be entered in the aircraft logbook.

Maximum occupant mass = 110kg in one seat only see loading below.

Minimum allowable take off fuel = 13 litres

Maximum allowable take off fuel = 100litres (solo, see Mass/CG below)

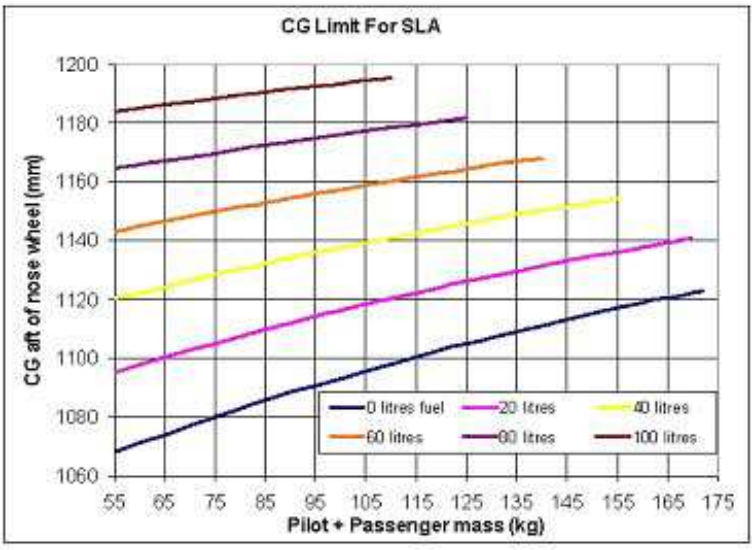
Maximum allowable baggage = 5kg (conditional, see Mass/CG)

Mass/CG (Composition of the useful load):

The maximum allowable cockpit mass is set at 172kg with the minimum required 13 litres of fuel. This can be traded according to the pilot, passenger, luggage and fuel load as shown in the graph below. To use the graph, add the pilot and passenger mass, enter at this value on the X axis. Go vertically to the fuel volume and then read the CG location from the Y axis.

Prior to each flight ensure that the sum of the crew plus fuel and bags does not exceed 450Kg and the CG must be in the permitted range.

Maximum allowable baggage is 5kg. However, baggage may ONLY be carried if the combined crew weight is less than or equal to 167 Kg.



Weights:

The maximum all up weight	450kg
Maximum empty weight	268 Kg
Minimum person weight	55kg
Maximum Cockpit load	172kg
Maximum load per seat	110kg

Flight load factors:	+4g at Va
	+4 / -1.5g at Vne

Speeds:

Never exceed speed (Vne)	119mph IAS = 103 Kts
Design maneuvering speed (Va)	86mph IAS = 74 Kts
Flap limiting speed (Vfe)	69mph IAS = 60 Kts
Stall speed Vso	Less **than 38mph IAS = 33 Kts**
Stall speed clean	**43mph (IAS) = 38 Kts**

Aileron, elevator and rudder limitations

- Airspeed up to Va: It is permissible to apply full aileron, rudder and elevator deflections if appropriate and safe to do so. This will be at the discretion of the pilot and full range control inputs should only be used by experience pilots as it will cause large and rapid responses.
- Between Va and Vne: It is only permissible to apply up to 1/3rd control deflections between Va and Vne. It should be noted that small control inputs at higher velocities will have a large effect on the aircraft directional response so caution should be used at all times.

Wind:

Cross wind limit	15mph =13 Kts
All directions	30mph =26 Kts

Flight in rain: Avoid if possible to prevent propeller damage.

Doors: Flight without the doors fitted is not permitted

Engine:

RPM
912UL & S: 5800 rpm for five minutes Max Continuous power 5500 rpm

Cylinder Head Temperature
912UL: 150 degrees C
912S: 135 degrees C

Water Temperature
912UL & S: 115 degrees C

Exhaust Gas Temperature

912UL & S: 880 degrees C take off otherwise 850

Oil Pressure
912UL & S: Max 7-bar normal 2-5 bar Minimum 1.5 bar

Oil Temperature
912UL: 140 degrees C Minimum 50 degrees C
912S: 130 degrees C Minimum 50 degrees C

Fuel pressure
912UL & S: 0.15 – 0.4 bar

Required minimum cockpit equipment :

- Air speed indicator
- Altimeter
- Engine Temperatures and pressure
- Compass
- Fuel gauge

Control sense and direction of the control surfaces stated:

The control senses are :

Roll:	stick right for right wing down
Pitch	stick back for nose up
Yaw	right peddle forwards for nose right
Trim	Switch up for nose down, down for nose up
Wing Flaps	Switch down for flaps down
Throttle	Forward to increase power
Propeller	Fixed Pitch
Mixture	Fixed
Switches	Up for on Down for off.

4. EMERGENCY PROCEDURES

Electronic Instrument failure Land "as soon as practicable"

Engine Failure Before Take-Off: Close throttle apply parking brake, all switches off.

Engine Failure After Take-Off: Lower nose to establish an approach speed of 53mph IAS= 46 Kts and land straight ahead or near to straight ahead, do not attempt to turn back if the aircraft height is below 500ft.

Engine Failure In Flight: Lower nose and trim for the best glide (60 mph IAS = 52Kts). The glide ratio will be lower than the normal engine idle, at about 7.5 to 1, due to the additional drag of the static propeller. On approach it is best practice to approach with the flaps raised and aim for a touch down 1/3rd of the way down the usable runway to ensure threshold clearance. Full flap should be deployed to ensure a safe touchdown and the airspeed maintained to the normal round out height; this will ensure an early touchdown. Hold off , land as normal.

Engine Fire in Flight: Close fuel cock, open throttle fully, make emergency radio call if time permits, when engine stops turn off mag switches but keep battery master on for the flaps, treat as engine failure in flight. On landing raise the flaps, turn off battery master and vacate aircraft as soon as possible after landing.

Fire in the cockpit: Close all ventilation, switch off all unnecessary electrical services and land immediately and vacate the aircraft.

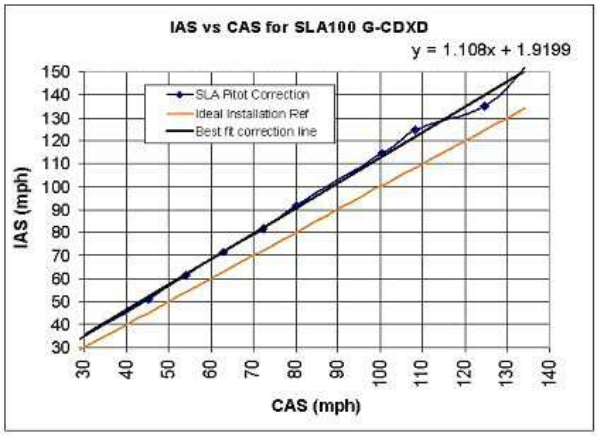
Emergency Landing on Water: Try to land into wind with a high nose attitude. Before impact, pilot and passenger must be prepared to release their harnesses, it may also be beneficial to release the doors
before impact. If wearing lifejackets, do not inflate them until outside the aircraft. Note that it is very hard to judge height above water.

5. NORMAL OPERATING PROCEDURES

The following section contains the normal operational procedures for the SLA. For a more complete list refer to the aircrafts Type Acceptance Data Sheet (TADS).

The aircraft has in Airspeed Indicator (ASI), calibrated in mph or Kts which will display Indicated Airspeed (IAS) for the conditions flown on the day. The accuracy of the aircraft ASI will be dependant on the pitot-static system, the altitude flown and the Outside Air Temperature (OAT) of the day.

Calibration of the pitot-static system has been carried out by the manufacturer and the locations of the pitot and static references has resulted in an over reading ASI following the graph shown below:



To use the graph to correct for the pitot-static installation errors find the IAS along the vertical axis and move across the graph to find the intercept with the back line; the CAS can then be read off of the horizontal axis.

The limits were determined when the aircraft was test flown and are displayed on the aircraft placard in terms of IAS

For flight the following installed instruments must be serviceable:
ASI, Altimeter, Slip, RPM, Compass, Water or Cylinder Head Temperature, Oil Temperature, Oil Pressure.

The Placard displays the following flight data:
Airspeeds For Normal Operations

Placard for the A/C

Stall Speed Full flaps	38mph (IAS) = 33 Kts
Stall speed clean	43mph (IAS) = 38 Kts
Best climb	68mph (IAS) = 59 Kts
Approach speed	53mph (IAS) = 46 Kts
Best Glide	60mph (IAS) = 52 Kts
Flap limiting speed (Vfe)	69mph (IAS) = 60 Kts
Design Maneuvering speed (Va)	86mph (IAS) = 74 Kts

Never exceed speed (Vne)	119mph mph (IAS) = 103 Kts
Cross wind limit	15mph mph (IAS) = 13 Kts

Pre-Flight Inspection.

Engine.

Carry out an engine pre-flight inspection following the instructions contained in the Engine Manual

Oil. Oil level must be checked before each flight. An access panel has been provided to enable the oil level to be checked without the need to remove the complete engine cowling. The oil is checked using a dipstick located beneath the filler cap on top of the reservoir; the oil has to be between the lines marked on the dipstick. Care should be taken, as the oil reservoir may be hot. Oil changes must be performed at the Rotax service intervals (See engine Manual). When changing the engine oil the oil filter must also be replaced with a filter of Rotax approved specification.

Coolant. The coolant & water must be checked prior to flight by observation of the water level at the pressure relief filler cap. An access panel has been provided to enable the water check without the need to remove the engine cowl. The water level should be within 30mm of the cap rim to be acceptable. Should additional coolant be required then fill with a minimum water/antifreeze mixed to a 50/50% ratio.

Aircraft.

The following is a brief summary of the minimum pre-flight inspection

Cockpit
- Master switch OFF
- Ignition/Mag switches OFF
- Condition of choke and choke cable
- Condition and security of all flying controls.
- Check condition of all instruments
- Check harnesses for security and condition.
- Check seats are secure.
- Check fuel filter is clean.
- Check sufficient fuel for the planned flight.
- Check wing leading and trailing edge bolts secure

Underside
- If the aircraft has not flown within 24 hrs, drain a small amount of fuel from the drain tap using a standard tool and check for water.

Engine
- Remove the upper engine cowling / inspection panels*
- Check oil level and condition in oil tank
- Check water level

• Check security of engine mounts
• Check security of spark plug caps and leads
• Check security of water and oil hoses and connections
• Check security of electrical connections
• Check prop bolts protruding from securing nuts
• Generally look for any fluid leaks or loose fastenings
• Replace the cowling and all securing screws

Starting from the front of the A/C, inspect:
• Condition of the propeller: no cracks or nicks
• Condition and security of the spinner, if fitted
• Condition of the nose wheel tyre and its inflation pressure
• Security of the nose wheel spat and fairing
• Security of the engine cowling

Moving down the starboard side of the aircraft (right) and along the starboard wing, inspect:
• Condition of door, hinges and latches
• Starboard undercarriage leg
• Tyre condition and pressure
• Security of wheel spat if fitted
• Check for any hydraulic leaks from brake / pipes
• Security of wing strut lower attachment bolt
• Jury strut brackets
• Wing struts and jury struts straight
• Looking through the inspection panels in the lower surface, check that the wing strut forward upper attachment is secure and the condition of the aileron pulleys and cables
• The general condition of leading edge fabric and covering of the wing
• Aileron movement and hinges, attachment of cables and control horn
• Check the Flap hinges, and security of actuating rod attachments
• Condition of wing fabric covering and security of battens

Moving towards the rear of the A/C, inspect:
• Check the fabric covering on tail surfaces.
• Security of horizontal tail mounting bolts and fabric covering, and the lacing
• Check the elevator and hinges, horns and cables
• Check for any damage to the Trim-tab rudder and hinges, horns and cables
• Look at the general alignment of vertical and horizontal tail surfaces
• Check the condition of bracing wires and their terminations

Moving forwards to the port wing (left), inspect:
• Check the Port undercarriage leg
• Check the tyre condition and pressure
• Security of wheel spat
• Check for any hydraulic leaks on the brakes /pipes
• Security of wing strut lower attachment bolt
• Jury strut brackets
• Wing struts and jury struts straight
• Check the condition of wing fabric covering and security of battens

• Flap, hinges, and security of actuating rod attachment
• Aileron movement and hinges, attachment of cables and control horn condition
• Looking through the inspection panels in the lower surface, check that the wing strut forward upper attachment is secure and the condition of the aileron pulleys and cables
• General condition of leading edge fabric and covering
• Condition of door, hinges and latches
• Static vent is clear of obstructions
• Standing back from the A/C assess the overall symmetry of the aircraft.

Starting.

The actual starting procedures for a particular engine are contained in the relevant engine manual supplied with this manual.
Pre Start
Remove Pitot cover before Flight
Seat belts on
Full and free movement of controls
Set Altimeter
Note Fuel is sufficient for flight
Set throttle and choke
Master switch on
Ignition / Mags on
Instrument switched OFF
When engine has started
Switch instrument ON
Check T's and P's
Check Brakes

Taxiing.

Taxi checks
• Brakes functioning
• Compass moving when aircraft turned
• Slip ball moving when aircraft turned
• Engine temps warming, no limits have been exceeded

Before taxiing ensure that the engine has run for at least 2 minutes from cold. Warm engine up at 2000 rpm for min two minutes; continue at 2500 until correct operation temperatures are reached. Do not use high RPM until the engine has reached its minimum flight Operating temps. Taxi at no more than a brisk walking pace, somewhat less if the surface is rough. Steering is effected through the rudder pedals, which are linked directly to the nose wheel. Microlight aircraft are easily blown over in winds over 28mph=25*kts. It is imperative that when taxiing in strong winds the correct control placements are used. With a head-wind hold the stick into wind and the elevator neutral. With a tail-wind hold the stick away from the wind with the elevator held down.

Before take off

Warm engine up at 2000 rpm for min two minutes; continue at 2500 until correct operation temperatures are reached

Before Take-off Checklist:

• Position the aircraft into wind, brakes held on
• Set recommended warm up RPM
• **C - Controls**
• Check controls for full and free movement
• Check visually that the controls are moving in the correct sense
• **H - Harness and Hatches**
• Check harnesses and hatches are secure, no loose objects
• **I – Instruments and engine**
• Check flight instruments are set and serviceable
• Check engine instruments are serviceable, minimum operating temps
• Check choke is OFF
• Set recommended RPM and check mag drop
• Check for smooth idle
• Increase power to maximum that the brakes will hold
• Check engine indications normal
• Reset recommended smooth fast idle RPM
• **F – Fuel and Flaps**
• Check fuel tap is ON
• Check contents sufficient for flight
• Cycle flaps and check symmetrical operation, detent operation
• Set flap as required
• **T - Trim**
• Check trim set for takeoff
• **W – Wind (and emergencies)**
• Check wind speed and direction
• Consider emergency actions
• **A – All clear**
• Confirm all clear on approach
• R/T call if required and line up on runway

Normal take-off: For a non-performance takeoff, into wind, flaps can either be left up (cruise) position, or half deployed (11 degrees). When lined up and rolling straight smoothly apply full power. Keep ground roll straight using the rudder whilst holding the ailerons neutral and with the elevator slightly up to reduce the weight on the nose wheel. When the airspeed rises to 45mph IAS = 40 Kts gently ease the stick back and rotate off. Adopt a shallow climb attitude allowing the airspeed to increase to 68mph IAS = 59 Kts and adopt a climbing attitude to hold this airspeed. Above 300 feet AGL the flaps are stowed (if applicable), there will be a slight tendency for the aircraft to pitch up requiring a small adjustment to the trim.

Climb: When in the climb the nose high attitude and will obscure forward view. For safety reasons it is recommended that a periodic weave or lowering of the nose is practiced to clear the blind spot. For prolonged ascents a cruise climb at reduced power setting and slightly higher airspeed is recommended

as this will increase forward field of view and maintain a cooler running engine.

Short field takeoff: For a short takeoff select half flap deflection (11 deg). Start takeoff roll from as close to the beginning of the field as possible. Hold the elevator neutral (smooth surfaces only) or slightly up (rough runways). When the airspeed increases to 45mph IAS 40 Kts rotate and lift off. Once airborne allow the aircraft to accelerate to 50mph IAS 44 Kts for best obstacle clearance.

Should power loss be experienced at the early climb out stage prompt action will be needed to lower the nose to obtain glide speed.

When clear of obstacles allow the aircraft to accelerate to 68mph IAS 59 Kts and at 300 feet AGL retract the flaps.

It is important to always pick an abort point before attempting to take off from a short field. If the aircraft approaches the abort point before lifting the takeoff should be stopped by closing the throttle.

Soft field takeoff: Select half flap. Avoid stopping the aircraft whilst entering the runway and roll into the takeoff run. Hold the stick aft until the nose wheel un-sticks and then balance the aircraft in the rotate attitude whilst speed increases. This will help reduce rolling resistance and keep overall drag to a minimum. Allow the aircraft to lift off at around 45mph IAS 40 Kts and accelerate to 68mph IAS 59 Kts before adopting the climbing attitude. At 300 feet clean up the flaps.

Crosswind takeoff: The maximum takeoff/ landing crosswind limit is 15mph =13 Kts. Pilots are advised to avoid crosswind components greater than 15mph =13 Kts especially if the cross wind is gusting. Flaps are not recommended during a cross wind take off. At the start of the takeoff roll hold the stick in the direction of the wind to raise the into wind aileron to prevent the wing being picked up early, hold the elevator neutral. Use the rudder to steer straight.
Allow the aircraft to accelerate, reduce the aileron deflection as the speed picks up and rotate off at 68mph IAS 59 Kts. Adopt a shallow climb attitude and gently yaw the aircraft into wind to counter the drift; centralise the ailerons as required.

Normal landing: Set full flaps and approach at 53mph IAS 46 Kts; this speed can be increased to 58mph IAS 51 Kts in turbulent conditions. Round out should be initiated around 15-20 ft and hold-off 3-4 ft above the runway. Maintain back pressure on the stick, touching down on the main wheels and gently lowering the nose wheel as the ground speed reduces.

Short field landing: Same procedure as for normal landing, however accuracy is the key.
Accurate airspeed control is the key to short field performance and pilots new to the A/C must practice until this is achieved to be able to land in the

Published distance.

Soft field landing: Hold off for as long as possible to touch down slow and gently. apply full up elevator to keep the nose wheel up as long possible. Continue to hold up elevator when
the nose wheel is on the ground.

Cross wind landing: The a/c has a maximum crosswind component of 15mph =13 Kts. Land clean or with half flap. Set up a powered approach at a little higher airspeed than normal – around 60mph IAS 52 Kts. On finals yaw the aircraft (crab) into wind to maintain an accurate bearing on the runway centerline. Maintain the crabbed alignment to the point of rounding out. At this point coordinate the hold off with a gentle yaw to align the airframe axis with the runway centerline; hold off to touch down.

Alternatively the wing down method could be used; just before round out the into-wind wing is lowered and the airframe is yawed straight. Correct the cross wind drift by raising of lowering the into wind wing. Round out and hold off touching down with the into wind wheel first. Try to land after a short hold off without allowing the airspeed to decay too much. This will assist in maintaining control response.

Whichever method of landing used (wing down or crab) crosswind landings must be accurately 'flown' whilst on the ground to prevent the into wind wing lifting.

Using the wing down method aircraft touches down on the into wind main wheel first. Progressive aileron deflection should applied into wind as the speed decays to control the rate of decent of the down wind wheel. The nose gear should be held off initially and gently lowered before rudder authority reduces and aerodynamic directional control is lost. As the nose wheel touches straighten the rudder to avoid a steering snatch due to the rudder deflection applied against the crosswind. When the nose wheel is down maintain aileron into-wind and neutral or light forward elevator pressure should be applied to ensure adequate nose-wheel steering avoid yawing into wind.

Power off landing: Should the engine fail on the approach (or during any other phase of flight) it is essential to lower the nose and trim for the best glide (60 mph IAS 52 Kts). The glide ratio will be lower than the normal engine idle, at about 7.5 to 1, due to the additional drag of the static propeller. On approach it is best practice to approach with the flaps raised and aim for a touch down 1/3rd of the way down the usable runway to ensure threshold clearance. Crossing the threshold, select full flap and maintain airspeed to the normal round out height; this will ensure an early touchdown. Hold off , land as normal .

Cruise: The A/C has a large range of cruise speed. At the higher values fuel

consumption will be correspondingly higher. Cruise is set up in the normal way by selecting the required attitude and power and trimming off any residual pitch forces.

Turning: Turning requires a significant rudder co-ordination to maintain balance. During any turn the stall speed will increase and this will be proportional to bank angle. The stalling speed at 30 degree bank will rise to 44mph IAS 40 Kts at max takeoff weight.

Flight in Turbulence: The A/C has powerful controls and handles turbulence well. However, do not fly above the manouvre speed (Va) of 86mph IAS 78 Kts in turbulence. At speeds above Va it is possible for strong gusts to overstress the aircraft.

Stalling:

Stall Speed Full flaps	38mph IAS 33 Kts
Stall speed clean	43mph IAS 38 Kts

These speeds represent the worse case in normal service. Lower takeoff weights and more rearward CG will lower the stalling speed.
Pilots should also remember that:

- Stall speed increases during turns and maneuvers
- Ice on the aircraft will also increase stalling speeds.

Slow flight characteristics prior to stall can be indicated by:

• Lightening of controls accompanied by reduced effectiveness
• Reduced airflow noise (most noticeable at low power settings)
• High nose attitude
• Rearwards position of control stick and back pressure
• A slight buffet may be felt at the insipient stage of the stall

To recover normal operating airspeed at the slow flight stage, simply move the stick forwards and apply power.

Wings Level, Power Off Stall: The aircraft can safely be stalled at a deceleration rate of 1mph/s =1Kt/s. Max pitch attitude is 45 degrees, and stall warning is given about 2mph / 1 Kt/s above the stall by buffet. Stall is normally marked by a mushing descent with buffet or nose drop.
If the stall is approached at a greater rate of speed decay (5mph/s = 4 Kts/s) it is possible to achieve a stall break.

Stall recovery is effected by lowering the nose and applying full power as soon as the airspeed exceeds 50mph IAS 44 Kts the nose can then be raised back to level flight. The expected height loss between stall and a co-ordinated recovery is approximately 50 ft with power and 100 ft without power.

Wings Level, Power On Stall: Characteristics are similar to the power off case except the nose will achieve a higher pitch up attitude. The slipstream and torque effect of the high power settings requires more positive rudder correction during the approach to the stall. Stalling out of balance can result in considerable wing drop if left unchecked. Power on stall recovery is achieved by pitching the nose down (stick forwards) whilst correcting any wing drop using opposite rudder. Once airspeed has been restored the aircraft can be re-trimmed.

Turning Stalls: Stall speeds are increased with bank angle. The A/C often has the characteristic of rolling towards wings level as the stall occurs. Recovery is standard. Move the stick forwards to reduce angle of attack and apply power. At the same time apply opposite rudder against any rolling tendency. Once the aircraft is safely above the stalling speed co-coordinated aileron and rudder can be used to level the wings.
The stalling speed at 30° angle of bank will increase to 44mph IAS 38 Kts at max takeoff weight and a power on recovery can be achieved with less than 100ft of height loss.

Aerobatics: Not permitted.

Departures from Controlled Flight, Spinning: Deliberate spinning is prohibited. However, it is may be possible by extreme control deflections to enter a spin through extreme miss-handling. Typical maneuvers that could lead to an inadvertent spin entry include stalling the aircraft in a turn or extreme rudder imbalance at the point of a stall. Should this happen, the spin can be recognized by a steep nose-down pitch attitude (about 45 degrees nose down) and rapidly yawing one way or the other. For the SLA it is recommended that recovery is effected by closing the throttle and centralising the controls. The spin should stop and the a/c enter a steep nose down dive. As the airspeed increases the nose can be gently raised back to level flight.

If the recommended SLA recovery proves to be ineffective, a standard spin recovery should be attempted by ensuring idle power is selected and then applying full opposite rudder to the rotation. Finally apply forward stick. When the rotation has stopped then centralise the rudder, allow the airspeed to increase in a dive and gently ease out to level when flying speed has been achieved.

Other Departures from Controlled Flight **:** Other departures from controlled flight are likely either to be due to damage to the aircraft, or hazardous flying conditions. In any case, land as soon as possible and examine the aircraft, particularly the flying controls, for any damage.

Leaving the Aircraft

Park the A/C nose into wind tie down using ropes attached to the upper wing struts at the wing spar interface and apply the parking brake.

Cover the windscreen to prevent damage from intense sunlight, scratches etc. Note that care should be taken to prevent dragging of the covers during fitting. Clean the polycarbonate screens with a soft cloth or using with a weak soap solution.

Remove Pitot Cover before flight

6. PERFORMANCE

Best climb speed: Achieved at 68mph IAS 59 Kts giving a climb rate of 870ft/min.

The best glide speed: 60mph IAS 52 Kts at 560ft/min sink giving a glide ratio of 8.3 to 1.

Takeoff performance: Take-off performance for short dry grass :

SLA 100:	Distance from brakes off to rotation	= 120m
	Distance from brakes off to 15m height	= 166m
SLA 80:	Distance from brakes off to rotation	= 129m
	Distance from brakes off to 15m height	= 191m

Landing performance: Landing onto short dry grass zero wind speed:

SLA 100 & 80:	Distance from 15m height to touch down	= 114m
	Distance from 15m height to full stop	= 202m

Approach speed 53mph IAS 46 Kts with full flaps.

It is recommended that these figures be increased by 30% when landing in maximum crosswind.

7. WEIGHT & BALANCE

CG Datum. The CG datum is at the front wheel axle centerline and measurements are in metres and kg.

CG limits: 1068 mm aft of datum (aod) to 1195 mm aod

CG moment arms**.** The moment arms of the seats, fuel tank(s) and other items are shown in the Weight and CG report .

Weighing**.** The A/C will have been weighed when first built, and must be re-weighed at intervals as laid down by the BMAA and CAA details of the weighing must be entered in the aircraft logbook.

Maximum occupant mass = 110kg in one seat only see loading below.

Minimum allowable take off fuel = 13 litres

Maximum allowable take off fuel = 100litres (solo, see Mass/CG below)

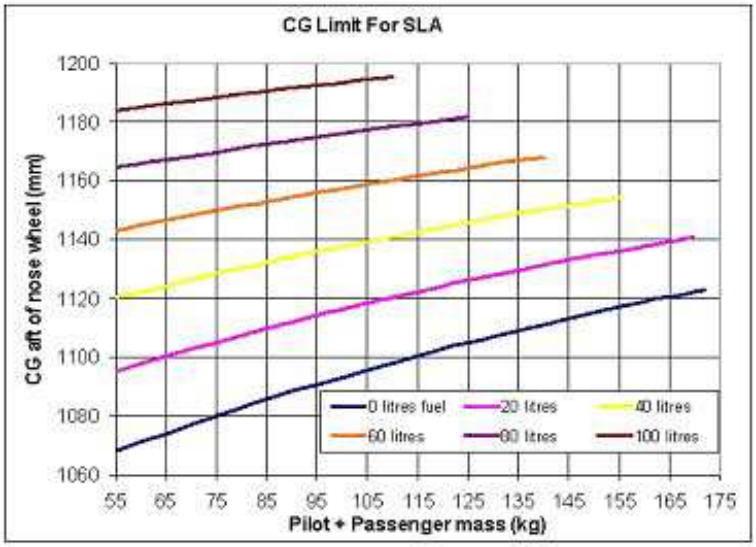
Maximum allowable baggage = 5kg (conditional, see Mass/CG)

Mass/CG (Composition of the useful load):

The maximum allowable cockpit mass is set at 172kg with the minimum required 13 litres of fuel. This can be traded according to the pilot, passenger, luggage and fuel load as shown in the graph below. To use the graph, add the pilot and passenger mass, enter at this value on the X axis. Go vertically to the fuel volume and then read the CG location from the Y axis.

Prior to each flight ensure that the sum of the crew plus fuel and bags does not exceed 450Kg and the CG must be in the permitted range.

Maximum allowable baggage is 5kg. However, baggage may ONLY be carried if the combined crew weight is less than or equal to 167 Kg.



Pilots should be aware that stick forces and displacements will become lighter with aft CG (typically a heavy crew and full fuel) and heavier with forward CG (typically low fuel, light pilot only). In addition, at aft Cg, the stability will be reduced and as a consequence the aircraft will have less tendency to return to the stable condition when in, for example, turbulent conditions.

Flying outside of the permitted CG limits is prohibited

8. RIGGING & DERIGGING

To attach the wings to the SLA:

• With the wing tip raised to approximately the rigged height, slide the wing root into place to engage in the root brackets.
• Insert the wing root fixing bolts
• Attach the lift struts and jury struts
• Tighten all attachment bolts and insert safety rings
• Connect flap pushrod
• Connect Pitot line
• Connect aileron cables
• Ensure aileron cables are crossed as per placard in cockpit on central upright.
• Final inspection of all nuts and bolts, cable routing and attachments

To remove the wings from the SLA:

• Disconnect aileron cables
• Disconnect pitot line
• Disconnect flap pushrods
• Remove safety rings from lift strut bolts
• Remove nuts from lift strut bolts and spar bolts
• Support wing tip
• Remove lift struts
• Remove spar bolts (wing root)
• Slide wing outwards until spar is clear of cabin.

The tail plane is not designed to be a regular de-rig item, however it may be removed for long distance trailering, as may the rudder. When re assembling these parts replace all Nyloc nuts that were removed for disassembly. And must be inspected by a BMAA inspector

MANUAL

The operators and maintenance manual for the engine fitted to this aircraft follows this page.

And then

MAINTENANCE SCHEDULE Reference to the
The BMAA maintenance schedule MMS-1

Followed by a typical
WEIGHT AND BALANCE REPORT

9. ROUTINE MAINTENANCE

Aircraft Structure

The aircraft is to be maintained to Microlight Maintenance Schedule MMS-1, Engine maintenance should be in accordance with the engine maintenance manual.

The following additional points are required during routine airframe maintenance and inspection:
Monthly Check removes pitot connector and drain any moisture found at the lift strut connection point
• When inspecting control runs it is good practice to rotate pulleys 90 degrees to reduce wear spots.
• If a wooden propeller is fitted, check securing bolts for tightness after seasonal changes in temperature and humidity
inspection of the A/C:
• Wing battens should not be removed to check profile. An external template of batten profile can be made on stiff card or plastic and shape can be checked by lying the template externally over the battens whilst still in place.
• It should not be necessary to remove fuselage covering to inspect the rear fuselage structure. it can be accessed internally
• Do not clean spark plugs. Simply replace when they have reached their specified life.
Component life / major inspections.
It is recommended that after 1000 hours or 5 years that the SLA should be subject to a major strip down inspection. This inspection should include the following points:
• Removal of covering • Replacement of leading and trailing edge spar to fuselage securing bolts
• Replacement of the lift strut securing bolts **Lower lift strut bolts** must be changed at a maximum of 500 hours, due to fatigue life analysis.
• Replacement of all fastenings exhibiting corrosion or significant wear
• Detailed inspection of all airframe components for distortion, corrosion and wear. Replace where required.
• Detailed inspection of all critical bolted joints for movement and cracking of holes.
Elevator cables should be regularly inspected for wear at the point where they pass through the pulleys behind the control stick. It is strongly recommended they are changed either on condition or at a maximum of 500 hours.
All other control cables . It is strongly recommended they are changed either on condition or at a maximum of 1000 hours.

Engine Maintenance. Engine maintenance must be carried out in accordance with the approved Rotax procedures as indicated in the manual supplied with the Aircraft (as modified by any service bulletins if applicable). The Rotax manual provides maintenance schedule, routine engine maintenance that can be carried out by the owner/operator.

It is recommended that if the owner/operator is not confident in their ability to carry out any maintenance work then professional assistance should be sought.

10. REPAIR

General. Repairs should either be carried out as described below, or to a scheme approved by the Manufacturer. After repairs, you should always obtain a "second inspection" from a qualified pilot or (preferably) BMAA/PFA inspector after making any repair, who should sign in the logbook that they have inspected the repair and consider it safe before next flight

Sail Repairs. Sail (flexible surface) repairs must be carried out in accordance with the manufacturer and or BMAA Technical Information Leaflet TIL 015.

Repairs to tubular structure, springs, pulleys, cables, bolts, nuts, etc. Any such damaged parts must not be repaired and the aircraft must not be flown once the damage has been identified. Identical replacement parts must be fitted before any further flight, and their installation inspected and signed off in the logbook by a BMAA inspector.

Repairs to the Engine. These should be carried out in accordance with the maintenance manual for the engine fitted.

Weight values for this A/C the following describes the basic dimensions of the Aircraft:

Length 5.72m
Height 2.26m
Span 9.69m
Mean chord 1.5m
Wing area 14.1m2
Dihedral angle 1.2 degrees
Sweepback angle 0 degrees
Washout 1 degree
Fin area 0.4m2
Rudder area 0.46m2*
Horizontal tail plane area 1.08m2
Elevator area 0.92m2
Aspect ratio 6.33
Undercarriage track width 1.6m
Undercarriage wheelbase 1.4m
Fuel capacity 100 liters
Tyre Pressure 26psi

MANUALS, PLACARDS AND INFORMATION

The EFIS is to be operated in accordance with MGL Stratomaster Enigma Series EFIS User Manual.

General operation

- *The pilot must familiarise himself with the instrument before flight – in particular to ensure he can easily return to a default screen.*

User configuration

- *Screens intended to be displayed during flight must contain the required instruments as defined in the SLA TADS BM 74 in its latest issue.*
- *Air speed and power plant instruments: must be displayed in the same units as corresponding limitations are placarded.*
- *Power plant instruments: maximum and, if applicable, minimum safe operating limits must be marked with a clear warning, eg a red line or red sector.*
- *Air speed indication (recommended): speed ranges Vso-Vfe, Vso-Va and >Vne should be clearly marked white, green and red respectively, eg with coloured lines or sectors.*
- *Advice must be taken from Medway Microlights or the BMAA if the displayed air speed is to be corrected for position errors (because all airspeed limitations are provided as Indicated Air Speeds, not Calibrated Air Speeds).*