

<b>SLICK AIRCRAFT COMPANY (Pty) Ltd</b> Box 1189, Halfway House, 1685 Republic of South Africa Doc no: SLK2-POH-01	<b>SLICK 540 AIRCRAFT: PILOT'S OPERATING HANDBOOK</b>	Page 1 of 16 Issue: 01
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# SLICK 540 AEROBATIC AIRCRAFT: PILOT'S OPERATING HANDBOOK

**NOTE:** This handbook is not intended to serve as a substitute for adequate and competent flight instruction, or knowledge of current airworthiness directives, or the applicable airworthiness requirements of your aviation authority. It is not intended to be a guide for basic flight instruction, nor a training manual.

This manual is designed to:

- help you operate your SLICK-540 aircraft with safety and confidence, and
- more fully acquaint you with the basic aircraft performance and handling characteristics.

Applicable to aircraft with registration : \_\_\_\_\_



Additional copies of this manual, document no SLK2-POH-01, can be obtained from your SLICK Aircraft Dealer.

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## **SLICK-540 PILOT'S OPERATING HANDBOOK**

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Section 2	Operating limits
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## SECTION I

### GENERAL INFORMATION

#### SUMMARY

The SLICK-540 is approved for all aerobatic manoeuvres.

Before operating the Slick 540 the pilot must be checked out by an authorized representative of the Slick Aircraft Company.

During take-off, flight and landing the aircraft responds as any typical aerobatic approved tail-wheel aircraft. The aircraft responds normally during stalling and spinning.

The aircraft is designed to resist very high g- forces. It has to be recognised that the full use of this capacity may exceed the physical loading capability of the pilot, as this depends on the individual's constitution. Special care has therefore to be taken during flights with high g-forces.

The aircraft is designed to be operated from paved surfaces only.

#### WEIGHTS

Maximum take-off mass, cruising flight	795 kg / 1750 lb
Maximum take-off mass, aerobatics	716 kg / 1575 lb
Empty mass (standard)	550 kg / 1210 lb

#### POWER PLANT

Engine (Lycoming)	AEIO-540-(modified)
Rated Horsepower	219 kW / 294 bhp
Rated Speed	2700 rpm
Propeller (3-blade, constant speed)	MTV-9-B-C/C198-25

#### FUEL

Fuel Capacity: Main tank	16 US gal / 60 litres
Wing tanks	10 US gal / 38 litres each
Fuel Aviation Grade (Min. Octane)	100 LL
Oil capacity during cruise	Min 10, max 12 litres
Oil Capacity during aerobatics	Min 8, max 11 litres

#### BAGGAGE

Maximum Baggage	15 kg
Baggage Space	6 cub ft

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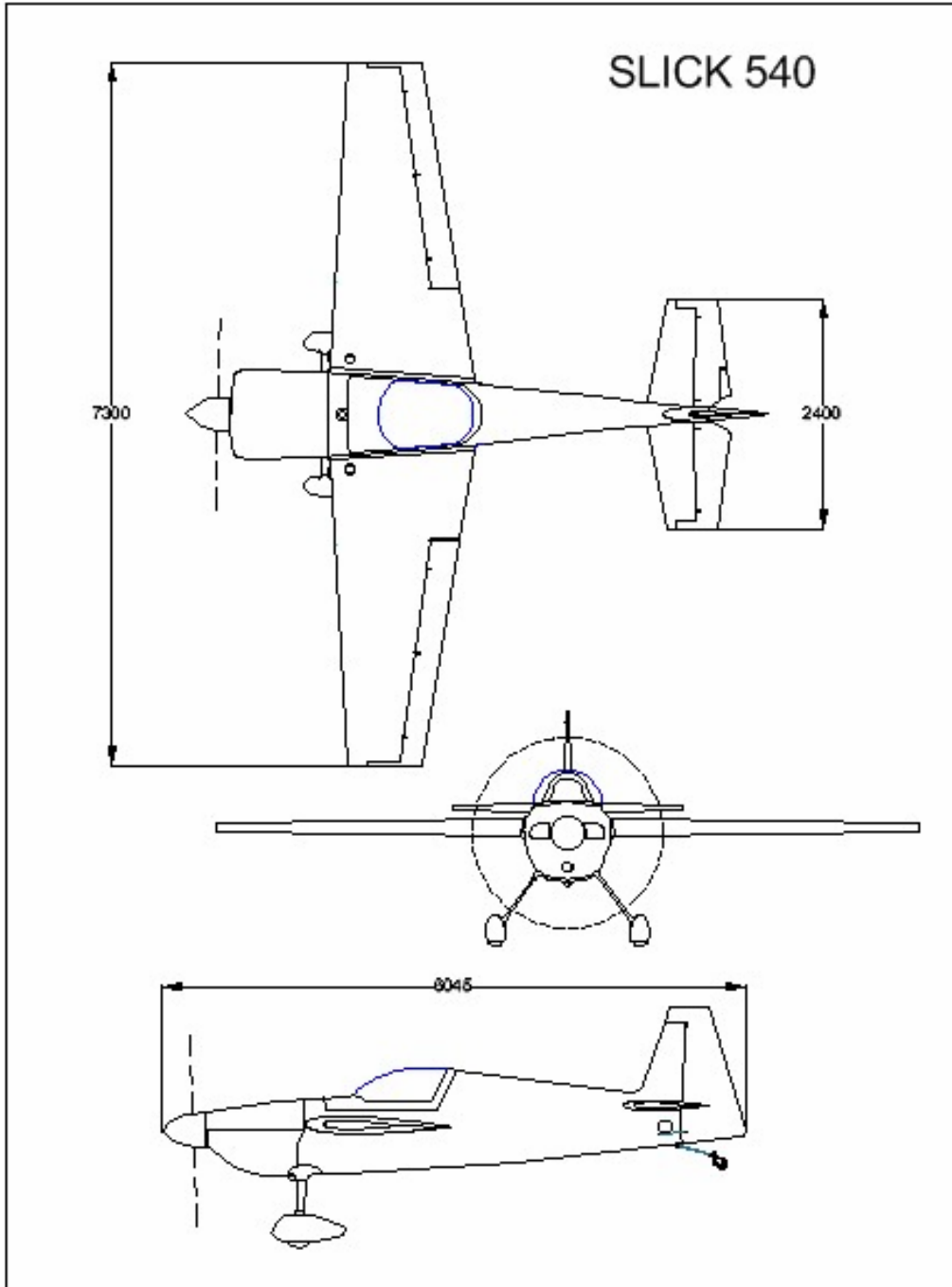
**DIMENSIONS**

Wing Span	7.30 m / 23.95 ft
Wing Area	8.63 sq m / 92.8 sq ft
Length	6.05 m / 19.84 ft
Height (at prop)	2.465 m / 8.1 ft
Propeller Diameter	84 ins
Control deflections:	All controls 25° +/- 2° symmetrical

**LANDING GEAR**

Wheel Base	4.44 m / 14.56 ft
Wheel Track	1.51 m / 7.48 ft
Tire Pressure	42 psi
Tire Size Main (four ply rating)	500 x 5
Tail wheel, castoring, lockable	3" dia

**SLICK-540 AIRCRAFT BASIC LAY-OUT**



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## SECTION 2

### OPERATING LIMITS

Airspeed limitations:

Normal flight range (green)	$V_S=59\text{kts} / 68\text{mph}$ to $V_A=187\text{kts} / 215\text{mph}$
Caution range (yellow)	$V_A=187\text{kts} / 215\text{mph}$ to $V_{NE}=226 / 260\text{mph}$
Maximum speed (red line)	$V_{NE} = 226 \text{ kts} / 260\text{mph}$

Recommended entry speeds for approved maneuvers:

Loop:	positive	above 120 kts / 140 mph
	negative	above 120 kts / 140 mph
Roll:	Left & right	100 kts / 115 mph to 187 kts / 215 mph
Snap roll:	positive	max. 120 kts / 140 mph
	negative	max. 120 kts / 140 mph

Rated max. engine power: 294 bhp at 2700 rpm

Normal cruise: 2400 rpm / 20" –22" MP / Peak + 2 lines rich  
(approx 165 mph and approx 11.5 US gph)

Long range: 2200 RPM / 20" –22" MP / Peak + 1 line rich  
(approx 160 mph and approx 9.8 US gph)

Min. fuel octane: 100 LL

Oil pressure: Minimum (red fine) 25 psi  
Normal (green arc) 60-90 psi  
Maximum (red fine) 100 psi

Oil temperature: Normal (green) from 100°F (38°C) to 240°F (115°C)

Fuel pressure: Normal (green) from 0 psi to 12 psi.

Maximum take-off weight: aerobatic = 716 kg / 1575lb, cruise = 795 kg / 1750 lb

Maximum fuel capacity: 36 US gal (137 litres)  
main tank + header = 16 US gal (60litres)  
Wing tanks 10 US gal each (38 litres each)

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Maximum load factors: positive 10 g, negative -10 g

Operation only during daylight and VFR conditions.

No flights into known icing conditions are permitted.

During aerobatics no baggage is permitted.

Do not fly more than 10 sec. in the following attitudes:

1. Vertical flight, steep dive.
2. Inverted flight, steep dive.
3. Zero g manoeuvre.
4. Wing-down or knife-edge flights.

In these modes the oil system may not scavenge and engine damage can occur.  
(Lycoming recommendation).

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## SECTION 3

### EMERGENCY PROCEDURES

#### Engine failure after take-off

- |                             |                                 |
|-----------------------------|---------------------------------|
| 1. Glide straight ahead     | 90 mph IAS                      |
| 2. Fuel selector            | Main tank                       |
| 3. Mixture                  | Rich                            |
| 4. Prop Control             | Low RPM                         |
| If engine does not restart: | Fuel pump ON.                   |
| If engine does not restart: | Proceed landing with power off. |

#### Landing with power off

- |                       |                    |
|-----------------------|--------------------|
| 1. Glide (best angle) | 100 mph            |
| 2. Fuel selector      | Off                |
| 3. Ignition           | Off                |
| 4. Mixture            | Lean               |
| 5. Landing            | Level off normally |

#### Landing in woods, corn or water

- |                       |  |
|-----------------------|--|
| 1. Glide (best angle) | 100 mph  |
| 2. Fuel selector      | Off  |
| 3. Ignition           | Off  |
| 4. Mixture            | Lean   |
| 5. Landing            | Take surface of obstacle as landing surface and touch down with minimal speed. |

#### Bail out with parachute

- |  |            |
|--|------------|
| 1. Headset   | Disconnect |
| 2. Canopy  | Open       |
| 3. Seatbelts   | Open       |
| 4. Stand up on the seat and push stick forwards with one foot. |            |
| 5. Open parachute when free from airplane.                     |            |

**Loss of elevator control**    steer with pitch trim

**Loss of aileron control**    steer with rudder, only flat curves.

**Loss of rudder control**    steer with aileron, hold direction with brakes after touch-down.

In all cases described above you should select a long and wide landing area and the throttle should be handled very carefully. Flare out carefully and touch down at a flat angle.

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**If a hard landing can not be avoided:**

- Fuel selector           off
- Ignition               off

After a hard landing disembark quickly and stay away from the aircraft until the possibility of fire has diminished.

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## SECTION 4

### NORMAL OPERATING PROCEDURES

#### Preflight Check

1. Check aircraft logbooks
2. Check g meter reading in aircraft to ensure it was not overstressed.
3. Check avionics OFF
4. Remove baggage prior to aerobatic flight
5. Look in rear fuselage to ensure foreign objects are removed
6. Check battery clamps
7. Check controls for free and easy movement, correct sense, no slack
8. Check main wheels and tires for inflation and excess wear
9. Check tail wheel, lock mechanism and tracking when locked
10. Check oil level (do not over tighten cap) and fuel level (ensure proper locking of cap)
11. Check propeller for nicks
12. Remove engine inlet and pitot covers
13. Check if aircraft is clean and polished, especially canopy
14. Remove wheel chocks

#### Embarking

1. Put parachute on before entering cockpit
2. Look aft to ensure free control movements (baggage compartment removed)
3. Prepare harness
4. Prepare cockpit: Sequence chart, g meter, maps, headset (should not have bare metal on top to prevent scratching canopy), keys
5. Clean shoes, (at least shake off dust)
6. If possible, avoid standing on the wing
7. Push in circuit breakers, avionics OFF
8. Pull harness tight, but shoulder harness only lightly (the torso must not be compressed in negative manoeuvres, but allowed to move freely)
9. Check all flight controls to full and free travel

#### Starting engine (same for cold and warm start):

- |    |                   |                  |
|----|-------------------|------------------|
| 1. | Fuel selector:    | Main tank        |
| 2. | Mixture:          | Rich             |
| 3. | Purge valve       | Open             |
| 4. | Throttle          | 1 cm open        |
| 5. | Fuel pump         | ON to prime, OFF |
| 6. | Mixture           | Lean             |
| 7. | Turn key to start |                  |

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- |     |              |  |
|-----|--------------|--|
| 8.  | Mixture      | Move slowly and smoothly to rich, as soon as the engine fires. |
| 9.  | Oil pressure | Check increasing reading                                       |
| 10. | Idling       | 1000 -1200 RPM (max. 2000 RPM on ground)                       |
| 11. | Tailwheel    | Unlocked for taxiing   |

**Engine check** To be performed before first flight of each day.

- |    |                        |  |
|----|------------------------|--|
| 1. | All engine instruments | Green, normal                                |
| 2. | Mixture                | Rich   |
| 3. | Prop. Control          | High RPM                                     |
| 4. | Throttle               | 1800 RPM                                     |
| 5. | Magneto check          | Max. drop 175 RPM<br>Max. difference 100 RPM |
| 6. | Ignition               | Both   |
| 7. | Prop. Control          | Pull 3 times                                 |
| 8. | RPM drop               | Max. 300 RPM                                 |
| 9. | Prop control           | Set to high RPM                              |

### Check for take-off

- |    |                        |                     |
|----|------------------------|---------------------|
| 1. | All engine instruments | Green, normal       |
| 2. | All flight instruments | Set and checked     |
| 3. | Trim                   | Neutral             |
| 4. | Controls               | Free and clear      |
| 5. | Tailwheel              | Locked for take-off |

### Take-off

- |    |              |                       |
|----|--------------|-----------------------|
| 1. | Climb        | Minimum 95 mph        |
| 2. | Throttle     | 25" manifold pressure |
| 3. | Prop control | 2500 RPM              |

### Aerobatics

- No loose articles in aircraft
- Check harness tight when comfortably seated (shoulder harness not over tightened)
- Check cockpit from left to right, in particular:
  - Oil pressure steady (no deviation for 15 sec during pitch from positive to negative or reversed)
  - Fuel quantity (maximum 16 US gal for aerobatics)
  - G meter reset (check audio warning if fitted)
- Correct power setting:

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For training, maximum 2600 RPM / MP variable / Mixture full rich  
 For competition, Max 2700 RPM, MP variable / Mixture full rich

5. Check for free airspace (announce intentions on relevant frequency)
6. Check for sufficient altitude

## Landing

- |    |                |  |
|----|----------------|--|
| 1. | Tailwheel      | Locked                                     |
| 2. | Mixture        | Rich                                       |
| 3. | Prop control   | High RPM                                   |
| 4. | Final approach | 95 – 100 mph IAS (touch down appr. 85 mph) |
| 5. | Touch down     | 3-point                                    |

Touch down speed is slightly higher than the minimum speed as the landing gear does not allow maximum angle of attack.

The demonstrated crosswind component is maximum 20kts (10 m/s)

Landing distance over a 15 m obstacle with no wind at MSL is minimum 350m. Ground roll distance is minimum 100 m. (Minimum runway length 400 m)

## Engine shut-off

- |    |             |      |
|----|-------------|------|
| 1. | Avionics    | Off  |
| 2. | Mixture     | Lean |
| 3. | Purge valve | Shut |
| 4. | Ignition    | Off  |

## Disembarking

1. Open harness all the way.
2. Check avionics "OFF".
3. Note "g"-meter readings (do not reset) and Hobbs meter reading for flight folio
4. Disembark with parachute – avoid standing on wing other than on spar areas
5. Remove loose articles and personal equipment (headset, sequence chart, maps etc)
6. Take parachute off after disembarking

## Post flight Checks

1. Leave the aircraft clean (incl cockpit)
2. Visually inspect aircraft
3. When possible hangar the aircraft and place chocks
4. Replace engine inlet and pitot covers and place oil drip tray
5. Visually check cockpit
6. Avionics OFF
7. Visually check for loose items in cockpit and aft fuselage

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8. Complete flight folio (incl "g"-meter readings, Hobbs reading, fuel and oil levels)

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## SECTION 5

### PERFORMANCE

Performance figures are for the standard SLICK-540 airplanes flown at gross weight under standard conditions at sea level or stated altitude. All landing and take-off distances are for dry level paved runways.

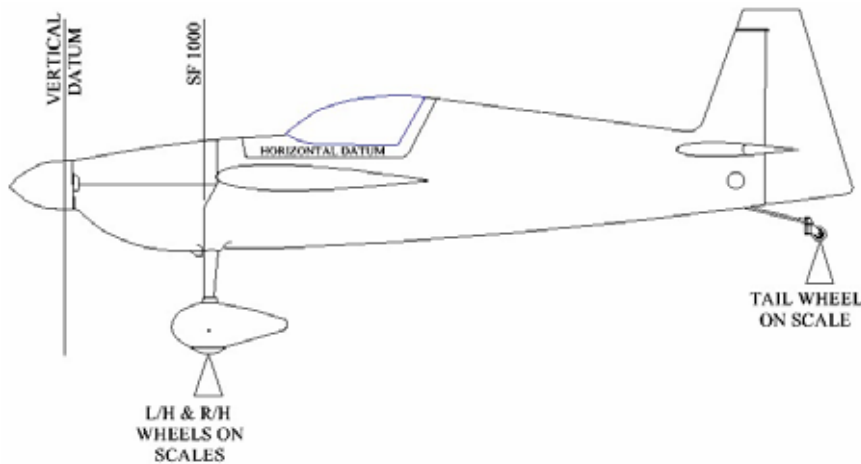
Take-off Ground Run	220 m
Take-off over 50 ft barrier	350 m
Best Rate of Climb Speed (IAS)	87 kts / 100 mph
Best Rate of Climb	3400 ft/min
Service Ceiling (ft)	19,500
Maximum level speed (IAS)	180 kts / 207 mph
Maximum dive speed (IAS)	226 kts / 260 mph
Cruising Speed (75% power at sea level) (IAS)	160 kts / 185 mph
Stalling Speed (mph IAS)	59 kts / 68 mph
Landing Ground Roll (normal)	250 m
Landing Distance over 50 ft barrier	350 m
Fuel Consumption (2700 rpm 100% power)	24 US gal/hr
Fuel Consumption (2400 rpm 75% power)	16 US gal/hr (60 lit/h)
Cruising Range (75% power at 6300 ft)	300 nm (+30 min reserve)

## SECTION 6

### MASS, CENTRE OF GRAVITY LIMITATIONS AND PAYLOAD

#### Weighing procedure

The aircraft is to be weighed using the procedure described below at least every 5 years or whenever changes are made which may affect its mass and balance.



#### Procedure:

1. Weighing should be done in a closed hangar to eliminate wind effects.
2. Check that all the equipment as per Section 7: Equipment List is fitted in the aircraft.
3. Level the aircraft by raising the tail wheel until the cockpit sill is horizontal (use a spirit level).
4. Drain all fuel from the main and wing tanks, and check the oil level in the engine.
5. The vertical datum plane is the 1000mm forward of the aft edge of the bottom engine cowl, positive distances measured aft.
6. Determine the axial distance of each main wheel and the tail wheel from the datum (firewall) and enter values in the table (Appendix A).
7. Determine the weight (mass reading) on the scale under each main wheel and the tail wheel and enter the values in the table.
8. Calculate the total empty equipped mass by adding the three scale readings.
9. Calculate the empty CG position in mm aft of datum by dividing the total moment (kg.mm) by the total weight (kg)

#### Centre of Gravity location

The acceptable empty CG range is from 1345 to 1420 mm aft of datum.

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## SECTION 7

### EQUIPMENT

The following equipment is standard on the aircraft and is taken into account in the empty mass and balance data of section 6 above:

<b>EQUIPMENT</b>	<b>MASS (kg)</b>	<b>DISTANCE from datum (mm)</b>
Altimeter		
Air speed indicator		
Engine RPM		
Oil press & temp gauge		
CHT & EGT gauge		
Manifold press & fuel flow		
G-meter		
Magnetic compass		
VHF radio		
Transponder		
5-point harness		