FLIGHT TEST SCHEDULE

NEW BUILDS, MAJOR MODIFICATION, LAA TRANSFER OR REPAIR	LAA/FT- NEW Issue 15

A/C Type:	Reg:	Engine:	Gearbox ratio: :1

Propeller Type/ Designation:	Dia: Inch/mm*
Fixed pitch propellers. Pitch: _____ inches/mm, or_____degrees measured at _____ % radius/tip*	In-flight adjustable propellers. Controller Type/Make:

** Delete as appropriate*

WARNING

It is illegal to carry passengers on a test flight without a Permit to Fly in force, except persons performing duties in the aircraft in connection with the flight (normally the pilot and one observer).

Check flights entail greater risk than normal flight, and although it may be legal to carry passengers on a test flight with a Permit to Fly in force, it is strongly recommended that the pilot in command should, before accepting any other persons on a test flight, inform them that the risk is greater than on an ordinary flight.
A full seat harness or a diagonal shoulder strap must be fitted for spinning. A parachute should be worn.

IMPORTANT NOTES

1. Before flight, refer to the Certificate of Clearance (CofC) which may include minimum flying hours/number of landings, special requirements and/or operating limitations which must be complied with.

2. The first flight should be approximately 10-20 minutes duration, after which the aircraft should be inspected at all the main attachment points and the engine installation. Repeat the flight until satisfied that the aircraft is flying satisfactorily enough to undertake the test programme without other than strictly necessary maintenance.

1. INTRODUCTION

This schedule is applicable to all aircraft qualifying for issue of a Permit to Fly. It is not applicable to aircraft types not previously LAA approved, for which a separate schedule will be issued.

The intention of this schedule is to allow a general check of an aircraft against the stated operation in the Aircraft Flight Manual (AFM), Pilot's Operating Handbook (POH) or equivalent. If any of the test items are considered irrelevant or detrimental to the aircraft, discuss with LAA Engineering *before* embarking on the flight test.

Complete the sections within dashed boxes before commencing the flight test.

It is recommended that the tests are made in the sequence given. The results are to be written in ink in the spaces provided or elsewhere by deleting the appropriate statement.

For safety and legal reasons the aeroplane and its engine are at all times to be operated within the limits stated on the flight test authorisation, by cockpit placards and instrument colour coding, and by the Aircraft Flight Manual / Pilot's Operating Handbook. The normal operating checks and drills given in the Manual must be followed. Any variations should be investigated prior to submitting the application.

During the flight test, the crew must monitor the behaviour of all equipment and report any unserviceable items. In particular, if the test flight follows maintenance work, it is important to make sure that the items involved function satisfactorily, and that no additional faults have resulted accidentally.

Item 11 (Spinning) must be completed unless the aircraft is prohibited from spinning. This may be performed on a separate flight without an observer (note that weight and centre of gravity (CG) restrictions for spinning certain types mean that spinning must be conducted separately).

2. GENERAL

Aircraft Owner:			Aerodrome:		
Aerodrome Elevation:	ft	Aerodrome Temp:	°C	QNH:	mb

Weather significant to tests (eg. Cloud base, wind speed/direction, any turbulence, etc).

3. LOADING

Unless it is impractical to do so, the aircraft should be loaded to maximum take-off weight or maximum landing weight if it is lower. Ballast should be used in order to comply with any prescribed loading requirements. Any CG position is acceptable provided that it remains within the limits stated on the flight test authorisation from take-off and throughout the flight as fuel is consumed. *If data entered exceeds the weight or CG position limits stated in the flight test authorisation, this application will fail.*

Max Take Off/ Max Landing Weight (lb/kg)	lb kg lb kg	Permissible CG range (in/mm – fwd/aft* of datum)	in Fwd/Aft* mm	in Fwd/Aft* mm
Max Weight for spinning - Utility Category (lb/kg)	lb kg	Permissible CG range (in/mm – fwd/aft* of datum)	in Fwd/Aft* mm	in Fwd/Aft* mm
Take-off Weight (actual) (lb/kg)	lb kg	Take-off CG position (in/mm – fwd/aft* of datum)	in Fwd / Aft* mm	

* *Delete as appropriate*

If take-off is not at Max Take-Off Weight explain why:

4. PRE-FLIGHT

(i)	Aircraft conforms to legal requirement to be currently UK registered	YES - NO
(ii)	Valid flight test authorisation	YES - NO
(iii)	Pilot's requirements satisfied	YES - NO
(iv)	Third party insurance valid	YES - NO

Check that the following items are on board:-

(v)	Shoulder harness installed	SATISFACTORY - UNSAT
(vi)	Cabin fire extinguisher	SAT - UNSAT - NOT FITTED
(vii)	Placards	SAT - UNSAT

5. GROUND TESTS

5.1 Equipment

Check the following items for security and correct functioning:-

Safety harness/lap straps	SAT - UNSAT
Door/canopy fastening	SAT - UNSAT - N/A
Adjustment of pilots' seats and locking	SAT - UNSAT - N/A
Adjustment of rudder pedals and locking	SAT - UNSAT - N/A

5.2 Flying Controls and Engine Controls

Flying Controls - Check for full and free travel in the correct sense and backlash with harness on and tight:-

Elevator/Stabilizer	SAT - UNSAT	Elevator/Stabilizer trimmer	SAT - UNSAT - N/A
Ailerons	SAT - UNSAT	Aileron trimmer	SAT - UNSAT - N/A
Rudder	SAT - UNSAT	Rudder trimmer	SAT - UNSAT - N/A
Wing flaps	SAT - UNSAT - N/A	Slats (including locking)	SAT - UNSAT - N/A
Air brakes	SAT - UNSAT - N/A	Spoilers	SAT - UNSAT - N/A

Engine Controls (including friction/locking mechanisms)

Throttle	SAT - UNSAT	Carburettor heat	SAT - UNSAT - N/A
Propeller pitch	SAT - UNSAT - N/A	Cooling flap	SAT - UNSAT - N/A
Mixture	SAT - UNSAT - N/A	Fuel booster pump	SAT - UNSAT - N/A
Fuel selector/off valve	SAT - UNSAT	Choke	SAT - UNSAT - N/A
Alternate intake air	SAT - UNSAT - N/A		

5.3 Engine Run

The aeroplane should face cross-wind.
If wind strength makes parking cross-wind hazardous, face into wind.

Outside air temperature	°C

5.3.1 **Magneto check:-** Run engine to normal operating temperature – check RPM, pressures, temps, mag drops, carb heat drop. Check operation of engine and fuel controls.
State if single ignition is fitted ……..

	FROM AFM, POH	MEASURED
Magneto test RPM or RPM at which tested.		
Max drop permitted		
Max split permitted		
Carburettor Hot air or Alternate air test RPM		
No.1 magneto off RPM drop Electronic ignition? Y / N		
No.2 magneto off RPM drop Electronic ignition? Y / N		
Hot or Alternate air RPM drop FITTED / NOT FITTED		
If a carb temp gauge is fitted, record initial and max temps at maximum continuous RPM:		/
Minimum RPM (ground idle)		
Ignition cut RPM (Self-powering electronic ignitions)		**L** **R**

5.3.2 **Maximum power check**

With Wide Open Throttle (WOT), the engine must not over-speed when 'static' on the ground. *RPM data entered that exceeds the maximum permitted on the Operating Limitations sheet or flight test authorisation may fail the application. It should not be possible to exceed maximum permitted RPM. If it is, then something is wrong – check tacho. Otherwise an inappropriate or incorrectly adjusted propeller may be fitted.*

	(FROM AFM, POH)		(MEASURED)
MAX ALLOWABLE ENGINE RPM		MAX ACHIEVED STATIC RPM	
MAX ALLOWABLE OIL TEMPERATURE	_____ °C ____ °F	ACTUAL OIL TEMPERATURE	_____ °C _____ °F
ALLOWABLE OIL PRESSURES IDLE / MIN / MAX	/ / bar/psi*	ACTUAL OIL PRESSURES MIN / MAX	/ bar/psi*
MAX ALLOWED TEMP (CHT OR COOLANT)*	_____ °C ____ °F	ACTUAL MAX TEMP CHT/COOLANT*	_____ °C _____ °F
MAX ALLOWABLE EGT	_____ °C ____ °F	ACTUAL MAX HOTTEST EGT	_____ °C _____ °F
		MANIFOLD PRESSURE	In/Hg
		FUEL PRESSURE	bar/psi*

** Delete as appropriate*

6. TAXYING

Parking brake (including Lock and Release)	SAT - UNSAT - N/A
Brakes (including freedom from binding and normal ability to hold aircraft at high engine power)	SAT - UNSAT - N/A
Taxying (including nose-wheel steering/ tail-wheel steering/differential braking)	SAT - UNSAT

7. **TAKE-OFF:** to be made with full power and flaps (if fitted) at the take-off position.

Wing flap setting	degrees / Not fitted
Unstick speed	kts / mph
Engine RPM	
Oil Pressure	bar psi
Oil Temperature	°C °F
CHT/Coolant Temp	°C °F

Behaviour during take-off:- Record any abnormal features, eg. unusual tendency to swing, ease or difficulty of raising nose wheel/tail wheel, control forces (including any unusual control forces) or wing heaviness.

Was artificial stall warner triggered?	YES - NO – Not fitted

8. **CLIMB**

Flight conditions: **In stable conditions - clear of cloud, turbulence, thermals** and well clear of hills which could produce orographic lift or sink.

Configuration: **Normal** for best rate of climb (see Manual).

Power: **Maximum Continuous** with air intake in 'Cold' or 'Ram' air position.

Altimeter: 1013 mb (29.92 in Hg).

Speed: (knots/mph IAS)* Enter scheduled best rate of climb speed (V_Y); Before starting to record data, establish the aircraft in the climb at best rate of climb speed V_Y and maintain heading and speed ± 2 knots/mph throughout. (From AFM, POH)

To aid look-out it is permissible to turn during the climb.

Carry out gentle turns (max 10° bank angle).

Important notes:

1. Sustained 5 minute climb is normally required to be carried out to establish adequacy of cooling, proper functioning at altitude and to provide sufficient data points to calculate a reliable rate of climb figure. However, where the rate of climb exceeds 1500 ft/min, or an aircraft with a Cirrus Minor or Gipsy Major engine is fitted, then a 3 minute climb will be accepted.
2. Incomplete climbs due to airspace, cloud or other similar reasons will not be accepted.
3. Do not allow engine to exceed limits.
4. Plot and attach a copy of the climb performance results, preferably using the spreadsheet that is available from the flight testing section of the LAA website, or use the grid on page 12.

TIME (min)	ALTITUDE (ft) 1013 mb	IAS	RPM	OIL TEMP °C / °F*	OIL PRESS bar / psi*	CHT/CLNT °C / °F*	EGT °C / °F*
0							
1							
2							
3							
4							
5							

** Delete as appropriate*

Towards the end of the climb, record:

MANIFOLD PRESSURE	in Hg	FUEL PRESSURE	bar/psi*

If there is any difficulty in recording these figures during the timed climb, maintain the climb speed and power, and record them at the end of the climb. *RPM data entered that exceeds the maximum permitted in the flight test authorisation may fail the application. See 5.3.2 above.*

9. HANDLING

9.1 Stalls

To be made with propeller control fully fine and throttle closed at a safe altitude with wings level and in balance. Trim the aircraft to approximately 40% above stall speed.

Stall		1	2 (1)	3
Undercarriage (unless fixed) Airbrakes / Flaps		Up Up	Up Take-Off	Down Landing
Stall warning speed (IAS)				
Type of stall warning (eg horn, lamp, natural buffet etc.)				
OR	Speed at nose drop			
	Speed when pitch control reached back stop			
Did a wing drop? If so which wing?				
Maximum angle of bank during wing drop				
Other characteristics (eg buffet prior to stall)				

(1) To be made on aeroplanes where a take-off wing-flap setting is specified.

Notes: Deceleration to stall to be at 1 kt/sec (1 mph/sec) until either a clear nose drop occurs or until full aft pitch control is reached.

Required limits -

- If the aircraft has artificial stall warning, it must trigger at an indicated airspeed between 4 knots and 12 knots (4 mph to 14 mph) above the minimum speed observed and sound continually down to and throughout the stall.

9.2 Lateral and Directional Stability

The aircraft is to be flown at normal approach speed, power off with full flaps.
Medium rudder sideslips are to be carried out to port and starboard.

Whilst maintaining rudder application, the aileron control is then to be released and the tendency for the depressed wing to rise is to be checked.

	Port Sideslip (port wing low)	Stbd Sideslip (stbd wing low)	COMMENTS
Ailerons released	SAT - UNSAT	SAT – UNSAT	

Whilst maintaining aileron application, the rudder control is to be released and the tendency for the nose to swing into the direction of the turn is to be checked.

Rudder released	SAT - UNSAT	SAT - UNSAT	

If the ailerons or rudder do not self-centre, excessive friction may be the cause. To check the aerodynamic stability, return the appropriate control to neutral and check that the depressed wing rises/nose swings into the direction of the turn. Comment as appropriate. Excessive friction must be corrected at the first opportunity.

9.3 **Simulated Baulked Landing.** Set the aircraft in the approach configuration and record behaviour in simulated overshoot using full power.

Throttle response		Engine RPM		Oil Pressure	
Tendency to pitch and yaw ('stick' free – i.e. stick & rudder) on application of throttle and (if applicable) flaps retraction.	Throttle: Flaps retraction: (e.g. nose up or down and/or to port or stbd.)				

10. POWER AND SPEED CHECKS

10.1 Vibration

Check for signs of vibration or buffeting throughout the rpm range and in all phases of ground running as well as in flight. This may result if the natural frequency of vibration of the engine on its mount rubbers, or the tail surfaces or fuselage, or of the engine/reduction drive should happen to couple in an unfortunate way with the resonant frequency of the propeller blades in bending, or the aerodynamic buffet coming from the slipstream.
It may also indicate that the propeller is out of track or out of balance.

SAT	UNSAT	COMMENTS:

10.2 Level Flight

At a constant altitude in stable conditions not above 2000 feet, after at least 2 minutes at each of the throttle settings required (provided that this has no detrimental effect on the engine), record:-

THROTTLE SETTING	RPM	IAS	OIL T	OIL P	CHT/CLNT	EGT	FUEL FLOW Lit / Gal* / hr
ECONOMY CRUISE							
NORMAL CRUISE							
MAX CONT ENG RPM							
MAX LVL FLT SPD*							
WOT REACHED?	YES / NO						

* DO NOT EXCEED ENGINE LIMITS

10.3 MAXIMUM RATED ENGINE RPM = _____

Fly with maximum rated RPM. If max rated RPM cannot be achieved in level flight, dive sufficiently while maintaining WOT to achieve max rated RPM (not exceeding $V_{NE)}$ then smoothly and continuously throttle back to idle. Report any undesirable vibration or behaviour. **CAUTION:** With 2-stroke engines, a mid-throttle setting at high RPM may result in a rapid increase in EGT leading to piston seizure. Do not allow engine to exceed maximum EGT.
COMMENTS:

10.4 Dive to V_{NE} - THIS TEST MUST ONLY BE FLOWN IN SMOOTH AIR CONDITIONS

The purpose of this test is to demonstrate safe handling of the aircraft at V_{NE} and to check this can be achieved without exceeding max permitted RPM. The V_{NE} speed is stated in the flight test authorisation or Operating Limitations sheet. Never exceed the V_{NE}. Beware of false reading ASI. Airspeed or RPM data entered that exceeds the maximum permitted may fail the application. See 5.3.2 above. It is permitted to conduct the V_{NE} dive solo.

Increase speed up to V_{NE} at shallowest dive angle possible by maintaining sufficient power but keeping RPM within maximum permissible. If any unusual airframe or control vibration is felt, immediately reduce speed by closing the throttle and gradually pulling the control column back.

Scheduled V_{NE} (from flight test authorisation/Operating Limitations)	knots mph

Any unusual behaviour.		
Whether the control forces and responses over small angles are normal.		
Steadiness of propeller governing (if applicable).		
Maximum IAS	knots mph	
Record maximum engine RPM =	Was throttle fully closed? Y / N	

Regain cruising flight by closing throttle and gradually pulling the control column back.

Engine behaviour on closing throttle:	SAT - UNSAT
Propeller governing:	SAT – UNSAT – N/A

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11. **SPINS (Applicable only to aeroplanes cleared for deliberate spinning).**

Note that it may not be possible to conduct this item on the same flight as the other items due to loading / CG restrictions. If flown separately:

Date	A/C weight	CG

A minimum of one spin is to be made in each direction. Recovery should be initiated after two turns.

Direction of rotation	Left	Right
Whether spin or spiral dive		
Turns to recover		
Any abnormality of spin or recovery	SAT - UNSAT	SAT - UNSAT

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12 **FUNCTIONING CHECKS**

When appropriate during the flight, check the following:-

12.1 **Flying Controls**

	Friction	Backlash	Are control forces normal?
Elevator/Stabilizer	SAT - UNSAT	SAT - UNSAT	YES - NO
Aileron	SAT – UNSAT	SAT - UNSAT	YES - NO
Rudder	SAT – UNSAT	SAT - UNSAT	YES - NO
Elevator/Stabilizer Trimmer	SAT - UNSAT - N/A	SAT - UNSAT	YES - NO
Aileron Trimmer	SAT - UNSAT - N/A	SAT - UNSAT	YES - NO
Rudder Trimmer	SAT - UNSAT - N/A	SAT - UNSAT	YES - NO

During normal cruise, check that the aeroplane:-

(a)	can be trimmed to fly level	YES - NO
(b)	has no tendency to fly one wing low	SAT - UNSAT
(c)	flies straight with slip indicator central	YES - NO

Simulated pitch trim run-away (State if electric trim not fitted……)

For this test item, guard or gently hold the control column without applying force to it in readiness for rapid pitching. Be aware that negative or even zero g can be alarming.
Where electric pitch trim is fitted, from trimmed level flight, simulate a pitch trim run-away by operating the pitch trim nose up continuously until 4 seconds *after* the aircraft begins to pitch and check at a representative range of airspeeds, **but initially at a low speed for safety reasons**, that there is no hazardous effect - e.g. extreme stick force, pitch rate, aircraft attitude, etc. The pilot must stop trimming and level off if the pitch rate or 'g' is excessive or the aircraft is about to reach a hazardous attitude, airspeed, etc.
Before re-trimming, return the aircraft to level flight and its original speed and comment on the out-of-trim stick force required to maintain steady level flight (e.g. 10 kgs/lbs or light/moderate/strong, etc.) and then, by gently releasing the controls, the resulting stick-free pitch rate, (e.g. 15 deg/sec or slow/moderate/rapid, etc.)
Repeat these checks with nose down trim.

SAT	UNSAT	Out of trim force nose up:	Nose down:
		Stick free pitch rate nose up:	Nose down:

12.2 **Flight Instruments**

Check for satisfactory functioning.

SAT	UNSAT	Comments:

12.3 **Gyro Instruments**

Check behaviour of gyroscopic instruments.

SAT	UNSAT	Comments:

If air-pump driven, record:- Press gauge _____ during cruise at _____ RPM

12.4 **Cabin Heat**

Check for satisfactory functioning on the ground and in the air, including detection of excessive CO.

SAT	UNSAT	Comments:

12.5 **Other Instruments**

Check for satisfactory functioning.

SAT	UNSAT	Comments:

12.6 **Electrical / Avionics Systems**

Check all electrical and avionics equipment for satisfactory operation and that no equipment, instrumentation or indications are adversely affected due to electromagnetic interference:-

SAT	UNSAT	Comments:

Record generator charging rate under maximum electrical load. _____ Amps

12.7 **Engine**

Check all indicators, controls and responses to be normal and that there is no undue vibration.

SAT - UNSAT

12.8 **Unpowered and Powered Wing-flaps or Airbrakes (State if not fitted ……)**

Confirm no roll induced when operating flaps/airbrakes SAT - UNSAT

Ease of operation at flap/airbrakes limit speed SAT - UNSAT

12.9 **Powered Wing-flaps/Airbrakes** (Omit for unpowered or no flaps)

Operate as follows, recording time and any unusual change of longitudinal trim with flap position and any significant change in lateral trim.

12.9.1

	Limit Speed	Time	Comments
From Up to Take-off *		(sec)	
From Take-off to Down *		(sec)	

**at about 5 kts/mph below limiting speed for setting*.

If the flap does not move to the full down position:-

(a) Record angle at which flaps stops	degrees
(b) With flap selected Down, reduce speed until flap reaches full down position. Record IAS.	knots/mph

12.9.2

	Time	Comments
From Down to Take-off †	(sec)	
From Take-off to Up †	(sec)	

† *at any convenient speed below limiting speeds*.

12.10 **Undercarriage - Normal Operation (State if fixed undercarriage ……)**

Power-operated systems - time extension and retraction at limiting speed(s).

From Up to Down (sec) From Down to Up (sec)

Manually operated systems - check operation. SAT - UNSAT

Check undercarriage unsafe warning. With undercarriage retracted, select pitch control fully fine, flaps fully down, close throttle until warning sounds, record:-

RPM Manifold pressure in Hg

Confirm warning satisfactory. SAT / UNSAT

12.11 **Fuel System**

During flight, feed from each fuel tank or source in turn for not less than 3 minutes.

Record:-

System functioning on each tank outlet. (identify which)				
Fuel selector	SAT-UNSAT	SAT-UNSAT	SAT-UNSAT	SAT-UNSAT
Fuel gauges	SAT-UNSAT	SAT-UNSAT	SAT-UNSAT	SAT-UNSAT

13. **Radio – Make / Model**: …….. (state if not fitted)

Check radio transmit/receive at 20nm distance at a height of 2000 ft above the ground station. At greater heights the range must be correspondingly greater.

Ground Station	Freq	A/C Position and distance from station	Alt	Signal TX	Signal RX

14. **Emergency Extension of Undercarriage (if applicable)**

(Note: This check should only be conducted if the normal system operation can be restored in-flight.)

Final extension of the gear before landing to be made on the emergency system.

Record operation:-	SAT - UNSAT - N/A – Fixed

15. **LANDING**

With undercarriage extended and wing-flaps in the landing position, carry out a normal landing following an approach at the speed specified in the AFM:-

Behaviour during landing: Record any abnormal features, eg. inability to trim, unusual control forces, difficulty in flaring, 'wheelbarrowing', porpoising or nose wheel shimmy after touchdown.	

Was artificial stall warner triggered?	YES - NO – Not fitted

16. **POST-FLIGHT**

16.1 **Placards**

Check that all Cockpit, Cabin, Baggage Space and external placards are fitted and legible.	

16.2 **Lighting**

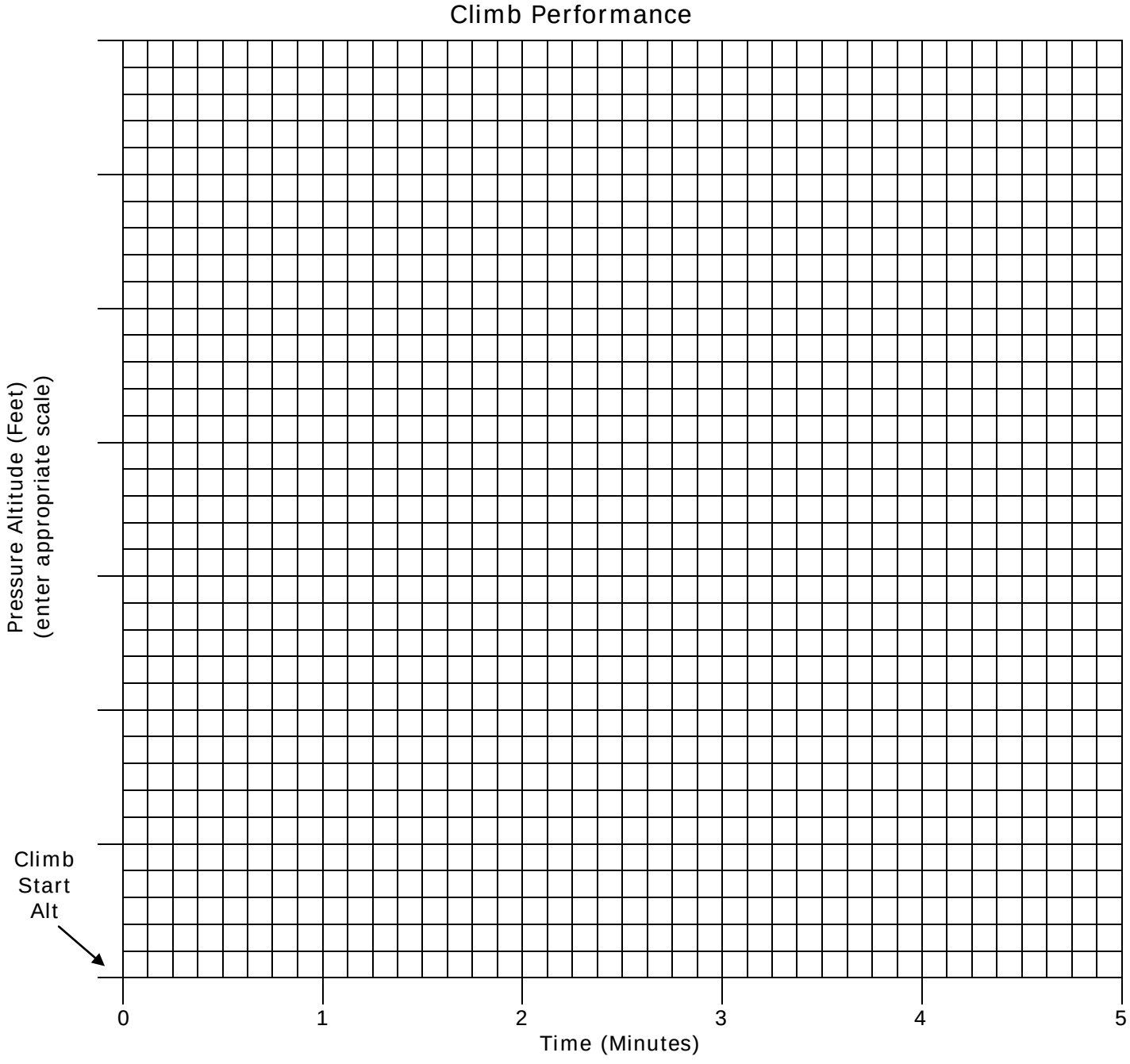
Check that all external and internal lighting is serviceable.	

16.3 **Check Flight Certificate**

Complete the Check Flight Certificate at the end of this schedule.

Enter appropriate scales and plot the climb results on the grid below and draw on the best fit slope then calculate the average rate of climb.

Ave ROC = _____ fpm



FLIGHT TEST CERTIFICATE

NEW BUILDS, MAJOR MODIFICATION, LAA TRANSFER OR REPAIR	LAA/FTC Issue 15

Aircraft Type:			
Date of Test:	Pilot:	Observer:	Reg:

Defects, or write 'None'

Classification (see overleaf)

No.	Defect	-/R/FT

(continue overleaf as necessary)

Conclusions/Comments

(continue overleaf as necessary)

Total time flown for test purposes:	
2 hour/max endurance flight time: *(If required by CofC)*	
No. of satisfactory landings carried out:	

I HEREBY CERTIFY that I have flown the above aircraft and that the characteristics are carefully and truthfully recorded. In my opinion this aircraft flies satisfactorily and shows no unsafe or abnormal characteristics and has recorded the flight time and number of satisfactory landings, where appropriate, as above.
I have detailed the deficiencies and unsatisfactory features above. Those items annotated R or FT must be dealt with as shown in the notes overleaf.

Name:	Signed:	Date:	Licence No.:

NOTES

General

Pilots using this document should be familiar with the tests and techniques needed.

Reg: Enter the aircraft registration mark.

Pilot: Pilot in command (PIC)

Airfield: Departure airfield.

Weight: Actual all up weight. Also delete Kg or Lbs as appropriate.

CG: Actual centre of gravity expressed as distance from datum stated on flight test authorisation.

Defects

Enter all defects from the flight.

No.: The first column is to allow the items to be numbered.

Defect: Enter details of the defect.

-/R/FT: Classify each defect according to its impact on safety. Items requiring *rectification* before further or before the issue of the Permit to Fly should be marked 'R'. Additionally, items that require *re-checking in-flight following rectification* should be marked 'FT'. Items *requiring both* should be marked 'R/FT'.

Conclusions/Comments

Any conclusions, notes or comments useful for tracking defects may be entered.

Name: Only the pilot who carried out the test may sign this sheet.

(continued from previous page)