



FLIGHT TEST CHECKS

FIXED PITCH AND GROUND ADJUSTABLE PROPELLERS			LAA/FT- FIXED PROP Issue 10
A/C Type:	Reg:	Engine:	Gearbox ratio: :1
Propeller Type/ Designation:		Dia: Inch/mm*	Pitch: ___ins/mm or ___deg at ___% radius/tip*
Loaded Weight: (min 90% MTOW) _____ lb* _____ kg*	CG: _____ in/mm* Aft/Fwd* of datum	OAT: °C	QNH _____ mb

* Delete as appropriate.

1. ENGINE RUNS

The aircraft should face cross-wind.

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

Magneto check:- Run engine to normal operating temperature – check RPM, pressures, temps, mag drops, carb heat drop. Check operation of engine and fuel controls.

FROM AFM, POH		MEASURED	
Magneto test RPM or RPM at which tested	<input type="text"/>	No.1 magneto off RPM drop	<input type="text"/>
Max Drop Permitted	<input type="text"/>	Max Split Permitted	<input type="text"/>
Carburettor Hot air or Alternate air test RPM	<input type="text"/>	Hot air or Alternate air RPM drop	<input type="text"/>

RPM data entered that exceeds the maximum permitted on the Operating Limitations sheet or flight test authorisation will 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.

Maximum Power:- With Wide Open Throttle (WOT), the engine must not over-speed when 'static' on the ground.

(FROM AFM, POH)		(MEASURED)	
MAX ALLOWABLE ENGINE RPM	<input type="text"/>	MAX ACHIEVED STATIC RPM	<input type="text"/>
MAX ALLOWABLE OIL TEMPERATURE	_____ °C _____ °F	ACTUAL OIL TEMPERATURE	_____ °C _____ °F
MIN/MAX ALLOWABLE OIL PRESSURE	/ bar/psi*	ACTUAL MIN/MAX OIL PRESSURE	/ 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

2. TAKE-OFF (Valid flight test authorisation issued by LAA Engineering required)

The take-off is to be made with full power and flaps (if fitted) in the take-off position. As soon as possible after unstick, record: -

UNSTICK SPEED	_____ Kts _____ MPH*	UNSTICK RPM	
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3. CLIMB

Flight conditions: **Clear of cloud and turbulence**, and well clear of any hills which could produce wave conditions.

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

Power: **Maximum Continuous** with air intake in 'Cold' or 'Ram' air position. With the throttle wide open in the climb, the engine must not over-speed. (CS-VLA 33 refers).

Speed: (knots/mph IAS)	Enter scheduled best rate of climb speed, V_Y ; Establish the aircraft in the climb at best rate of climb speed and maintain steady heading and speed ± 2 knots/mph throughout. (From POH)
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To aid look-out it is permissible to turn during the climb. Carry out gentle turns (max 10° bank angle).

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 4.

TIME (min)	ALTITUDE (FT) 1013 mb	IAS	RPM	OIL TEMP	OIL PRESS	CHT/CLNT	EGT
0							
1							
2							
3							
4							
5							

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 on the flight test authorisation, which may be less than stated on the Operating Limitations, may fail the application.

4. VIBRATION

Check for signs of vibrations 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:
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5. 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 CONTINUOUS ENGINE RPM							
MAX LEVEL FLIGHT SPEED*							
WOT REACHED?	YES / NO						

* DO NOT EXCEED ENGINE LIMITS

6. 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:

7. DIVE TO V_{NE} - THIS TEST MUST ONLY BE FLOWN IN SMOOTH AIR CONDITIONS

The purpose of this test is to check that flight at V_{NE} 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.

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

AIRSPEED (V_{NE})	_____kts _____mph*	RPM AT V_{NE}	
PEAK EGT OBSERVED	_____°C _____°F*	ESTIMATED THROTTLE POSITION	

8. COMPARISON WITH PREVIOUSLY FITTED PROPELLER

Previously fitted propeller Type/ Designation:	Dia: _____ Inch/mm*	Pitch: _____ins/mm or _____deg at _____ % radius/tip*
If possible, comment on relative performance, vibration, etc.:		

9. CERTIFICATION

I certify that I have flown the above aircraft and that the above checks have been carried out to my satisfaction.

Name:	Signed:	Date of Test:	Licence No.:
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Once completed, send this form to LAA Engineering. Send in also the **original** aircraft Operating Limitations document. (Refer to Technical Leaflet TL 2.02)

Important note: Following conclusion of satisfactory flight test, the modified aircraft must not be flown until issue of modification final approval.

Either complete and submit a plot from the spreadsheet available on the LAA web site or enter appropriate scales and plot climb results on grid below and draw on best fit slope then calculate the average rate of climb.

Ave ROC = _____ fpm

Climb Performance

