



FLIGHT TEST CHECKS

ELECTRIC AND MANUALLY OPERATED IN-FLIGHT ADJUSTABLE PROPELLERS			LAA/FT - EIFA PROP Issue 3	
A/C Type:	Reg:	Engine:	Gearbox ratio: :1	
Propeller Type/ Designation:		Dia: in/mm*	Controller Type:	
Loaded Weight: (min 90% MTOW)	lb* / kg*	CG: Aft/Fwd* of datum	OAT: °C	QNH mb

* Delete as appropriate.

1. ENGINE LIMITATIONS (From Pilot's Operating Handbook (POH))

MAX OIL TEMPERATURE	MIN/MAX OIL PRESSURE	MAX TEMPERATURE CHT/COOLANT*	MAX EGT
_____ °C _____ °F*	/ bar/psi*	_____ °C _____ °F*	_____ °C _____ °F*

2. GROUND RUN - FINE PITCH STOP

With the propeller blades at full fine pitch, constant speed controller (if fitted) set to MANUAL mode and with Wide Open Throttle (WOT), the engine must not over-speed when 'static' on the ground. e.g. for the Rotax 912/914 series engines, max rpm 5800 (CS-VLA 33 refers).

MAX ALLOWABLE ENGINE RPM		MAX ACHIEVED STATIC RPM	
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3. TAKE-OFF (Valid Permit Flight Release Certificate (PFRC) issued by LAA Engineering required)

The take-off is to be made with flaps (if fitted) in the take-off position, propeller set to TAKE-OFF. As soon as possible after unstick, record: -

UNSTICK SPEED	_____ kts _____ mph*	UNSTICK RPM	
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4. 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: 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)

Note: Where rate of climb exceeds 1500 ft/min, or an aircraft with a Cirrus Minor or Gypsy Major engine is fitted, then a 3 minute climb will be acceptable.

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

Towards the end of the climb, record:

MANIFOLD PRESSURE	in Hg	FUEL PRESSURE	bar/psi*
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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 PFRC and incomplete climb due to airspace restrictions will fail the application.

5. 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 coupling should happen to couple in an unfortunate way with the resonant frequency of the propeller blades in bending, or the aerodynamic buffer 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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6. ELECTRIC CONSTANT SPEED CONTROL

FITTED YES / NO

When set to AUTOMATIC mode, with an airspeed between V_{FE} and V_{NO} and with appropriate throttle settings the constant speed controller must control the propeller pitch to limit the engine RPM to the pre-set speeds ± 50 RPM in all available settings.

MODE	PRE-SET RPM	ACTUAL RPM
TAKE-OFF		
CLIMB		
CRUISE		

7. LEVEL FLIGHT

At a constant altitude 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: -

POWER SETTING	RPM	MAN PRESS	IAS kts/mph*	OIL T °C / °F*	OIL P bar/psi*	CHT/CLNT °C/°F*	EGT °C/°F*	FUEL FLOW Lit/Gal*/ hr
WOT & MAX RPM								
NORMAL CRUISE								
ECONOMY CRUISE								

8. FEATHER FUNCTION

FITTED YES / NO

This test is mandatory for motor gliders but optional for aeroplanes that are fitted with a feathering propeller. If the test is not carried out in an aeroplane fitted with a feathering propeller, a cockpit placard must be fitted stating that the feathering function must not be used except in emergency.

PLACARD FITTED YES / NO / N/A

Refer to the Pilot's Operating Handbook/engine manufacturer's instructions for engine shut-down/re-start procedures, where available. Take care on re-starting not to allow a build up of fuel/air mixture in the cylinders with ignition off. Only where it is possible to re-start the engine in flight, at a height sufficient to do so and over a suitable landing site, shut down the engine and slow the aircraft gradually to allow the propeller to stop wind-milling (caution not to stall the aircraft). Operate the FEATHER function then, after the blades have reached their full feather position, un-feather the blades again. When un-feathering is complete, re-start the engine by wind-milling if possible (do not exceed V_{NE}). Record the airspeeds at which the propeller stops and starts below. Repeat the procedure but re-start the engine by using the starter. Check that the engine stops and re-starts without excessive vibration or other detrimental behaviour.

SAT	UNSAT	PROP WIND-MILLING SPEEDS: STOPPING: _____ kts. STARTING: _____ kts.
		COMMENTS:

9. COARSE PITCH STOP

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 PFRC or Operating Limitations sheet. Never exceed the V_{NE} . Beware of false reading ASI. Airspeed or RPM data entered that exceeds the maximum permitted will fail the application.

- a) With the propeller blades at full coarse pitch, constant speed controller (if fitted) set to MANUAL mode, increase speed up to V_{NE} at the 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}	
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b) **Non-certified propellers only need comply.**

With the propeller blades at full coarse pitch, constant speed controller (if fitted) set to MANUAL, the aeroplane must demonstrate an ability to safely go-around and provide a positive rate of climb, with the aeroplane at maximum gross weight, undercarriage up where possible, take-off flap set, under International Standard Atmosphere (ISA) conditions (provided that this has no detrimental effect on the engine).

CLIMB AIRSPEED	_____ kts _____ mph*	RPM IN CLIMB	
TIME THROUGH 500 FT	SECONDS	RATE OF CLIMB (ht change ÷ secs x 60)	Ft/Min (min 300 ft/min)

10. REVERSE FUNCTION

FITTED YES/NO

Note: Reverse function must not be used whilst airborne.

During the landing roll and with all wheels in contact with the ground, select the REVERSE function and check that the level of instability caused by disturbed airflow over the control surfaces is not detrimental to adequate control, first at minimum power then at power sufficient to provide effective braking.

SAT	UNSAT	COMMENTS:
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11. 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.:		

12. 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:	Licence No.:
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Once completed, send this form to LAA Engineering. Send in also the aircraft Operating Limitations sheet.

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