

ALPI PIONEER 300 AND PIONEER 300 HAWK

Issue 10			
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Section 1 - Introduction1.1 UK contact

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1.2 Description

The Pioneer 300 is a small two-seat, low-wing aircraft, with an airframe mainly of wooden construction. The aircraft is supplied in the form of a fast-build kit for amateur construction. The fuselage is fitted with composite shells which provide the external shape. A sliding canopy and electrical retracting tricycle undercarriage are fitted. The only engines currently accepted by the LAA are the Rotax 912-ULS and the Jabiru 3300A.

With a maximum gross weight of 530 Kg the Pioneer 300 is only eligible as an SEP Aeroplane in the UK, not a microlight.

The Pioneer 300 Hawk is a later variant with fully ply-covered wings, an improved design of noseleg, undercarriage doors and an increased max gross weight of 560 Kg with slightly revised cg limits.

Note that the only propeller(s) approved for an individual aircraft are those listed on the individual aircraft's Operating Limitations document or in the PTL/1 (Propeller Type List) for the type.

Section 2 – Mandatory information for owners, operators and inspectors2.1 Fast Build Kit 51% Compliance

Technical leaflet TL.11 shows the contents of the accepted fast build kit.

2.2 Build Manual

A special UK Build Manual has been created by Pioneer Aviation.

2.3 Build Inspections

Build inspection schedule 52 (Pioneer 300 aircraft).
 Inspector approval codes A-A or A-W or A-K. Inspector signing off final inspection also requires 'first flight' endorsement.

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2.4 Flight Manual

Special UK Flight Manual supplied with kit.

2.5 Mandatory Permit Directives

None applicable specifically to this aircraft type.

Also check the LAA website for MPDs that are non-type specific (e.g. engine and equipment).

2.6 LAA Required Modifications (including LAA issued AILs, SBs, etc)

A great many modifications were required to the Italian design to qualify for LAA acceptance, too many to list here. These modifications are incorporated in the kit as supplied by Pioneer Aviation UK. Due to the extent of the modifications, it would not be feasible to retrospectively modify a kit or finished aircraft that was not supplied to the UK specification.

<i>Reference</i>	<i>Description</i>	<i>Applicability</i>
MOD/330/002 issue 2	Visual inspection of main spar attachment bolts and boltholes	Pioneer 300
MOD/330/003 issue 1 (SB09/04)	Undercarriage – Modification to system	Pioneer 300
MOD/330A/002 issue 1	Visual inspection of main spar attachment bolts and boltholes	Pioneer 300 Hawk
MOD/330A/003 issue 1 (SB09/04)	Undercarriage – Modification to system	Pioneer 300 Hawk

2.7 Additional engine operating limitations to be placarded
(or shown by instrument markings)

Refer to the engine manufacturer's latest documentation for the definitive parameter values.

With Rotax 912-ULS engine:

Maximum CHT: 135°C
 Max Coolant Temp: 120°C (with 50/50 Glycol/water coolant)
 Oil Temp Limits: 50°C to 130°C (Normal 90-110°C)
 Oil Pressure: 2-5 Bar
 Minimum Fuel Pressure: 0.15 bar

With Jabiru 3300 engine:

Maximum CHT: 180°C (200° for five minutes)
 Oil Temp Limits: 50°C to 118°C (Normal 80-100°C)
 Oil Pressure: 32-76 psi
 Minimum Fuel Pressure: 0.75 psi

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2.8 Control surface deflections

Ailerons	Up: 95mm min Down: 65mm min	(Measured at tip trailing edge, both ailerons identical)
Elevators	Up: 19° -1/+2° Down: 14° -1/+2°	
Elevator tab	Up: 16° Down: 16°	
Rudder	Left 20° -1/+2° Right 20° -1/+2°	
Flap	Down 0° - 12° - 20° - 30°	

2.9 Operating Limitations and Placards

(Note that the wording on an individual aircraft's Operating Limitations document takes precedence, if different.)

Engine Limitations

Maximum Engine RPM: Rotax 912-ULS: 5800 Jabiru 3300A
: 3300

Maximum continuous engine RPM: Rotax 912-ULS 5500 Jabiru 3300A
: N/A

Airspeed Limitations

Maximum Ind. Airspeed: 150 kts

Maximum Ind. Airspeed flaps extended: 80 kts

Other Limitations

The aircraft shall be flown by day and under Visual Flight Rules only.

Smoking in the aircraft is prohibited.

1. Maximum number of occupants authorised to be carried: two
2. The aircraft must be operated in compliance with the following operating limitations, which shall be displayed in the cockpit by means of placards or instrument markings:
 - 2.1 Aerobatic Limitations
Aerobatic manoeuvres are prohibited.
Intentional spinning is prohibited.
 - 2.2 Loading Limitations (Pioneer 300)
Maximum Total Weight Authorised: 530 kg
CG Range: Forward limit 730 mm aft of datum at gross weights up to 420 kg, 800 mm aft of datum at 530 kg, with linear variation between these points at intermediate weights. Aft limit 895 mm aft of datum.
Datum Point is: front face of the firewall

Loading Limitations (Pioneer 300 Hawk or Pioneer 300 with Hawk noseleg)
Maximum Total Weight Authorised: 560 kg

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CG Range: Forward limit 730 mm aft of datum at gross weights up to 420 kg, 820 mm aft of datum at 560 kg, with linear variation between these points at intermediate weights. Aft limit 895 mm aft of datum.
Datum Point is: front face of the firewall

- 2.3 Engine Limitations
Maximum Engine RPM: 5800 (Rotax 912-ULS), 3300 (Jabiru 3300)
Maximum continuous engine RPM: 5500 (Rotax 912-ULS)
- 2.4 Airspeed Limitations
Maximum Indicated Airspeed (V_{NE}): 150 knots IAS
Max Indicated Airspeed Flaps Extended: 80 knots IAS
- 2.5 Other Limitations
The aircraft shall be flown by day and under Visual Flight Rules only.
Smoking in the aircraft is prohibited.

Additional Placards:

“Occupant Warning - This Aircraft has not been Certificated to an International Requirement”

A fireproof identification plate must be fitted to fuselage, engraved or stamped with aircraft’s registration letters.

2.10 Maximum permitted empty weight

<i>Model</i>	<i>Engine</i>	<i>Maximum empty weight</i>
Pioneer 300	Rotax 912-ULS	345 kg
Pioneer 300 Hawk	Rotax 912-ULS	375 kg

Section 3 – Advice to owners, operators and inspectors

3.1 Maintenance Manual

Operator’s Manual includes manufacturer’s maintenance schedule for the airframe. For airframe rigging information consult build manual. For engine maintenance consult engine manufacturer’s schedule.

3.2 Standard Options

- Individual toe brakes (taking the place of standard dual hand brake)
- GT fixed pitch propeller rather than VP propeller
- If the Pioneer 300 is fitted with the Pioneer 300 Hawk noseleg, the maximum gross weight can be increased to 560 Kg and cg range amended to match that of Pioneer Hawk 300.

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3.3 Manufacturer's Information (including Service Bulletins, Service Letters, etc)

The following bulletins are highly recommended by the LAA (unless mandated above); the indicated compliance level is as recommended by the factory.

<i>Ref</i>	<i>Date</i>	<i>Description</i>	<i>Factory compliance status</i>	<i>Applicability</i>
OSB1		Brake disc holding bolts to be drilled and wire-locked.		All models
002		Undercarriage microswitch.	N/A	None [Cancelled 11/2006]

3.4 Special Inspection Points

- With Rotax engine fitted, Rotax 912 series installation checklist to be completed (apart from flight test section) as part of final inspections prior to applying for Permit to Fly.
- Adequate over-centre on undercarriage retraction system.
- Reduction of friction in elevator control system. With a spring balance lifting the elevator trailing edge near the aircraft centerline, the force required to raise the elevator through neutral should be no more than 0.15 kg more than the force required to allow it to fall gently through neutral (e.g. 1.4 kg to fall, 1.55 kg to raise)
- Inclusion of stall warner system.
- Microswitch fitted to switch off the gear warning horn when the power is above cruise setting.
- Undercarriage retract switch must have a double-action détente.
- When fitting wing panels, take care not to over-size the holes for the wing attachment pins.
- With fixed pitch propeller, nose ballast is likely to be required to achieve a satisfactory centre of gravity position.
- Check that electric cables in nosewheel bay cannot snag on noseleg and prevent undercarriage lowering. Cables must be properly restrained clear of all moving parts.

3.5 Special Test Flying Issues

- Variable pitch propeller schedule if VP propeller fitted.
- As a result of the original UK flight testing, the friction in the elevator circuit has been reduced, the centre of gravity range has been amended, an artificial stall warner fitted, a microswitch added to switch off the gear warning horn when the power is above cruise setting, the undercarriage retract switch has been replaced by one with a double-action detente and the operating procedure associated with the switching on of the electrical gyro instruments has been amended to allow them to be switched on before take off.
- Problems have been experienced with maintaining the rather delicate adjustment of the undercarriage down stop microswitches. In order to ensure that the electric gear retraction system is pressing the undercarriage fully against the over-centre down stop, it is recommended that from time to time the pilot lowers the gear in flight with the electric system and then uses the emergency mechanical retraction system handle to check that the gear is fully down and cannot be moved harder

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against the stop manually. Any further movement available from the mechanical system indicates that the electric system microswitch stops are out of adjustment and may not be providing the proper over-centre position, which could lead to gear collapse particularly under heavy sideloads when taxiing.

- If the optional toe brakes are fitted, be careful not to operate the toe brakes inadvertently when the rudder is deflected. Due to the geometry of the toe brake system, as one rudder pedal is pushed, the brake pedal on the other pedal moves back towards the pilot and can press against the pilots foot without him realising it, leading to braking on the side opposite to the way the pilot wishes to turn. This can lead to difficulty with apparent loss of rudder authority on take off and landing. To avoid this problem, ensure that feet are well clear of brake pedals except when braking is required.
- If problems are experienced with longitudinal stability, which manifests itself in finding that the aircraft flies at a wide range of airspeeds in trim without having to alter the trimmer setting, check elevator friction is not excessive, it must comply with the range specified under 'special inspection points' above in order for the aircraft to be stable at aft cg.

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