Issue 8   Option to increase max gross weight to 560 Kg added  Dated  17.3.08

1. UK contact

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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.

3. Fast Build Kit 51% Compliance

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


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

5. 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


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

7. Flight Manual

Special UK Flight Manual supplied with kit
8. **Mandatory Permit Directives**

None applicable specifically to this aircraft type, but note

MPD: 1998-019-R1  Flexible Fuel Tubing  Applies to all aircraft

9. **LAA Mandatory Modifications**

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.

10. **Service Bulletins**

- Alpi Service Bulletin OSB1 Brake disc holding bolts to be drilled and wire locked
- 002 cancelled November 2006 – This bulletin was cancelled due to problems experienced with it. This bulletin added a cover to the undercarriage microswitch under the seat to prevent undercarriage collapse due to inadvertent interference with microswitch setting.
- For Rotax 912 series and 914 series engines, there are many Rotax service bulletins dealing with a variety of important safety topics. Copies of the bulletins applicable to individual engines by engine serial can be downloaded directly from the Rotax website at [http://www.rotax-aircraft-engines.com](http://www.rotax-aircraft-engines.com). More information is available on [www.skydrive.co.uk](http://www.skydrive.co.uk)

11. **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.

12. **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 overcentre 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 (eg 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
13. Operating Limitations and Placards

Maximum number of occupants authorised to be carried: Two
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:

Aerobatic Limitations
Intentional spinning is prohibited.
Aerobatic manoeuvres are prohibited

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, 800mm aft of datum at 530 Kg gross weight, 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 300 Hawk noseleg)
Maximum Total Weight Authorised: 560 Kg
CG Range: Forward limit 730 mm aft of datum at gross weights up to 420 Kg, 820mm aft of datum at 560 Kg gross weight, with linear variation between these points at intermediate weights. Aft limit 895 mm aft of datum.
Datum Point is: front face of the firewall.

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.

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

Fireproof identification plate must be fitted to fuselage, engraved or stamped with aircraft’s registration letters.
14. Additional Engine Limitations/Placards

(Rotax 912-ULS)

- Maximum CHT: 135°C
- Max Coolant Temp: 115°C (with 100% Evans coolant)
- Oil Temp Limits: 50°C to 130°C (Normal 90-110°C)
- Oil Pressure: 2-5 Bar (maximum 7 Bar at cold start-up)
- Minimum Fuel Pressure: 0.15 bar
- Maximum fuel pressure: 0.4 bar

15. Maximum Permitted Empty Weight

<table>
<thead>
<tr>
<th>Model</th>
<th>Engine</th>
<th>Max empty weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pioneer 300</td>
<td>Rotax 912-ULS</td>
<td>345 Kg</td>
</tr>
<tr>
<td>Pioneer 300 Hawk</td>
<td>Rotax 912-ULS</td>
<td>375 Kg</td>
</tr>
</tbody>
</table>

16. Special Test Flying Issues

- Rotax 912-ULS Flight test schedule

- 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 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.

17. Control surface deflections

<table>
<thead>
<tr>
<th>Surface</th>
<th>Up</th>
<th>TBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ailerons</td>
<td>Up:</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td>Down:</td>
<td>TBD</td>
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<tr>
<td>Elevators</td>
<td>Up:</td>
<td>TBD</td>
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<tr>
<td></td>
<td>Down:</td>
<td>TBD</td>
</tr>
<tr>
<td>Rudder</td>
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<tr>
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<td>TBD</td>
</tr>
<tr>
<td>Flap</td>
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<td>TBD</td>
</tr>
<tr>
<td>Elevator tab</td>
<td>Up and down</td>
<td>TBD</td>
</tr>
</tbody>
</table>

18. Significant Airworthiness Approval Notes

- PFA-330-468 issue 1 912-ULS engine, VP prop, prototype acceptance
- PFA-330-468 issue 2 912-ULS engine, VP prop, series acceptance
- PFA-330-468 issue 3 912-ULS engine, GT fixed pitch prop alternative added
- PFA-330-468 supp 1 912-ULS engine, Hawk variant
- PFA-330-468 supp 2 Jabiru 3300A engine, fixed pitch propeller

Approved:

F.R. Donaldson  
Chief Engineer

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