TYPE-CERTIFICATE
DATA SHEET

No. IM.E.249

for Engine
T5309 and T5311 series engines

Type Certificate Holder
Ozark Aeroworks, LLC
3300 S. Golden Ave. (S. Farm Rd. 135)
Springfield, Missouri 65807
USA

For Models:

T5309A
T5309B
T5309C
T5311A
T5311B
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I. General

1. Type / Models

T5309A, T5309B, T5309C, T5311A, T5311B

2. Type Certificate Holder

Ozark Aeroworks, LLC
3300 S. Golden Ave. (S. Farm Rd. 135)
Springfield, Missouri 65807
USA

3. Manufacturer

Textron Lycoming (previously: Avco Lycoming Engine Group), Stratford Division,
Stratford, Connecticut 06497, USA
Avco Lycoming, Charleston Plant, Charleston, South Carolina 29411, USA

4. Date of Application

Application had been made to individual European National Aviation Authorities (NAA) before 28 September 2003.

5. EASA Type Certification Date

<table>
<thead>
<tr>
<th>T5309A</th>
<th>T5309B</th>
<th>T5309C</th>
<th>T5311A</th>
<th>T5311B</th>
</tr>
</thead>
</table>

EASA Type Certification for the T5309 and T5311 series engines is granted, in accordance with article 2 paragraph 3 (a) (i) of EU Commission Regulation EC 1702/2003, based on NAA approvals prior to 28 September 2003 in several EU Member States.
EASA TC and TCDS EASA.IM.E.249 replaces all TC and TCDS previously issued in the EASA countries for the for the T5309 and T5311 series engines.
II. Certification Basis

1. State of Design Authority Certification Basis

See FAA TCDS E1EA

2. EASA Certification Basis

2.1. Airworthiness Standards

<table>
<thead>
<tr>
<th>Model</th>
<th>Certification Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>T5309A</td>
<td>CAR 13, effective June 15, 1956</td>
</tr>
<tr>
<td>T5309B</td>
<td>CAR 13, as amended by 13-1, 13-2 and 13-3</td>
</tr>
<tr>
<td>T5309C</td>
<td></td>
</tr>
<tr>
<td>T5311A</td>
<td></td>
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<tr>
<td>T5311B</td>
<td></td>
</tr>
</tbody>
</table>

2.2. Special Conditions (SC)

None

2.3. Equivalent Safety Findings (ESF)

None

2.4. Deviations

None

2.5. Environmental Protection

N/A

III. Technical Characteristics

1. Type Design Definition

As defined by the applicable parts list.

2. Description


3. Equipment

Engine equipment is specified by the Engine Equipment List part number as referenced in the Type Design Definition.
4. Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Nominal Length (mm/inch)</th>
<th>Nominal Diameter (mm/inch)</th>
<th>Nominal Radius (mm/inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All models</td>
<td>1214 (47.8)</td>
<td>602 (23.7)</td>
<td>344 (13.56)</td>
</tr>
</tbody>
</table>

5. Dry Weight

<table>
<thead>
<tr>
<th>Engine</th>
<th>Weight (kg/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T5309A</td>
<td>220 (485)</td>
</tr>
<tr>
<td>T5309B</td>
<td>222 (490)</td>
</tr>
<tr>
<td>T5309C</td>
<td></td>
</tr>
<tr>
<td>T5311A</td>
<td>225 (496)</td>
</tr>
<tr>
<td>T5311B</td>
<td></td>
</tr>
</tbody>
</table>

(1) The engine weight includes essential engine accessories but excludes starter, two tachometer generators, oil tank and oil cooler.

6. Ratings

<table>
<thead>
<tr>
<th></th>
<th>Maximum Continuous kW (hp)</th>
<th>Take off (5 minutes) kW (hp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All models, at nominal output shaft speed of 6610 rpm</td>
<td>671 (900)</td>
<td>820 (1100)</td>
</tr>
</tbody>
</table>

Note: Engine ratings are based on calibrated stand performance under the following conditions:
- Static sea level standard conditions of 15°C (59°F) and 1013 mbar (29.92 in. Hg.)
- No inlet duct losses, no loading of the accessory drives and minimum permissible bleed air flow.
- Exhaust configuration as defined by Ozark Aeroworks, LLC drawing 1-000-029-03.

7. Control System

The T5309 and T5311 series engines are controlled by a hydromechanical fuel control system.

8. Fluids (Fuel, Oil, Coolant, Additives)

       ASTM D6615: Jet B.

See applicable Ozark Aeroworks, LLC Maintenance Manual for equivalent fuels and additives as well as for oils.
9. Aircraft Accessory Drives

<table>
<thead>
<tr>
<th>Drive</th>
<th>AND Type</th>
<th>No. Required</th>
<th>Gear Ratio</th>
<th>Maximum Torque Nm (in.-lb.)</th>
<th>Static Nm (in.-lb.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Continuous</td>
<td>Short time (1)</td>
</tr>
<tr>
<td>Gas producer tachometer</td>
<td>20005 XV-B Modified</td>
<td>1</td>
<td>0.1670</td>
<td>0.8 (7)</td>
<td>----</td>
</tr>
<tr>
<td>Starter-generator</td>
<td>20002 XII-D Modified</td>
<td>1</td>
<td>0.2833</td>
<td>24.9 (220)</td>
<td>36.2 (320)(3)</td>
</tr>
<tr>
<td>Power takeoff</td>
<td>20002 XII-D Modified</td>
<td>1</td>
<td>0.5397</td>
<td>17 (150)</td>
<td>25.4 (225)</td>
</tr>
<tr>
<td>Power turbine tachometer</td>
<td>20005 XV-B Modified</td>
<td>1</td>
<td>0.1992</td>
<td>0.8 (7)</td>
<td>----</td>
</tr>
</tbody>
</table>

Rotation of all drives: clockwise

(1) Maximum permissible torque for 5-minute periods, recurring at not less than 4-hour intervals.
(2) Maximum permissible torque during starts is 146 Nm (1296 in.-lb.).
(3) Generator torque in excess of 36.2 Nm (320 in.-lb.) is permissible up to a maximum of 70.6 Nm (625 in.-lb.) for a period of not more than 15 seconds.

The customer accessory horsepower extraction limits are presented in the Ozark Aeroworks, LLC Manual of FAA Approved Data.

10. Maximum Permissible Air Bleed Extraction

Maximum permissible air bleed extraction shall be in accordance with Figure 4 in the Ozark Aeroworks, LLC Manual of FAA Approved Data.

IV. Operating Limitation

1. Temperature Limits
   1.1 Exhaust Gas Temperature (EGT) Limits:

   Maximum permissible exhaust gas temperature varies with ambient temperature as shown in the Ozark Aeroworks, LLC Manual of FAA Approved Data. The exhaust gas temperature is measured by three thermocouples located in the exhaust diffuser of the engine.

   1.2 Oil Temperature Limits:

   Oil outlet temperature: 149°C (300°F)

   1.3 Fuel Control Temperature Limits:

   Fuel control ambient temperature: 116°C (240°F)

   1.4 Other Temperature Limits:

   Ignition unit surface temperature: 114°C (238°F)
   Igniter solenoid valve surface temperature: 121°C (250°F)
   Air bleed control ambient temperature: 127°C (260°F)
2. Speed Limits

Maximum permissible gas producer speeds:
- Take off: 25200 rpm
- Maximum continuous: 24700 rpm

Maximum power turbine speed at all conditions including take off: 21300 rpm

Nominal power turbine operating speed: 21190 rpm

3. Maximum Permissible Torque Limits (Nm)

Power turbine output shaft torque limits:
- Take off: 1255 Nm (926 ft.-lb.)
- Maximum continuous: 1152 Nm (850 ft.-lb.)

4. Pressure Limits

4.1 Fuel Pressure

Maximum pressure: 345 kPa gauge (50 psig)

4.2 Oil Pressure Limits

Ground idle, minimum: 69 kPa (10 psi)
Operating range: 138...552 kPa (20...80 psi)
Take off and max. continuous, minimum: 414 kPa (60 psi)

5. Installation Assumptions:
The installation assumptions are quoted in the applicable installation instructions.

6. Time Limited Dispatch (TLD)

N/A

7. ETOPS Capability

The T5309 and T5311 series engines are not approved for ETOPS capability in accordance with CS-E 1040.

V. Operating and Service Instructions

Manuals: For Operating Instructions, see Section 71-00 Powerplant of the applicable Maintenance Manual

Instructions for Continued Airworthiness:

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<tbody>
<tr>
<td>T5309 Series</td>
<td>T5309-2</td>
<td>T5309-3</td>
<td>T5309-5</td>
<td>T5309/T5311 Series</td>
</tr>
<tr>
<td>T5311 Series</td>
<td>T5311-2</td>
<td>T5311-3</td>
<td>T5311-5</td>
<td>T5309/T5311 Series</td>
</tr>
</tbody>
</table>
VI. Notes

Note 1: The EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in Service Bulletin T5309/T5311-0002 Rev. 2 dated March 6, 1989. Title: Rotating Component Service - Life Limits.

Note 2: These engines meet FAA requirements for operation in icing conditions, for adequate turbine disc integrity and rotor blade containment and do not require airframe mounted armouring.