

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

E00008CH
Revision 1
Allison
AE 1107C

April 2, 1999

TYPE CERTIFICATE DATA SHEET NO. E00008CH

Engine models described herein conforming with this data sheet (which is part of Type Certificate No. E00008CH) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certified aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations provided they are installed, operated, and maintained as prescribed by the manufacturer's FAA approved manuals and other FAA approved instructions.

Type Certificate Holder: Allison Engine Company, Inc.
Indianapolis, Indiana 46206-0420

Model: AE 1107C

Type: Free turbine turboshaft engine, modular design, 14 stage axial compressor, annular combustor, 2 stage gas generator turbine, 2 stage power turbine, bottom mounted power section accessory gearbox, two single channel full authority digital electronic controls.

Model	AE 1107C (P/N 23060102)
-------	----------------------------

Ratings (see Note 1)

Takeoff (5 min, see Note 1):

Shaft Horsepower, SHP	4,637
Gas Generator Speed, rpm	15,113
Power Turbine Speed, rpm	14,267
Measured Gas Temperature °F	1,490

Maximum Continuous:

Shaft Horsepower, SHP	4,406
Gas Generator Speed, rpm	14,874
Power Turbine Speed, rpm	14,267
Measured Gas Temperature, °F	1,433

Principal Dimensions of Basic Engine:

Length (overall), in.	77.94
Diameter, Nominal, in.	24.50
Maximum Radial Projection, in.	21.10
C. G. location, dry (refer to Installation Drawings)	
Engine Axial Station, in.	98.985
Engine Buttock Line, in.	99.59
Engine Water Line, in.	97.98

Weight (dry), lb: 972.7

Page No.	1	2	3	4	5
Rev No.	1	1	1	1	1

 AE 1107C (P/N 23060102)

Engine Control System: (major components)	Lucas Aerospace full authority digital electronic control (FADEC), qty 2. Lucas Aerospace fuel pump & metering unit (FPMU) Lucas Aerospace compressor variable geometry (CVG) actuator.
Fuels:	MIL-T-5624 grades JP-4 and JP-5. MIL-T-83133 grade JP-8.
Lubrication Oil:	Oils conforming to MIL-L-23699 or MIL-L-7808 (MIL-T-23699 only for oil temperatures above those corresponding to an oil kinematic viscosity of 13,000 centistokes)
Ignition System:	Simmonds Precision Products, Inc. dual capacitance discharge, high energy type exciters, dual igniter plugs
Certification Basis:	14 CFR Part 33 dated February 1, 1965, with Amendments 1 through 15 inclusive. Original application for type Certificate dated April 3, 1995; Revised October 6, 1997 to include amendment 15.
Production Basis:	Production Certificate No. TBD, dated TBD.

NOTE 1.

Model	AE 1107C	(P/N 23060102)
-------	----------	----------------

Engine ratings are based on:

- Sea level static, ISA.
- 100% inlet pressure recovery
- Exhaust nozzle area of: 318.7 in²
- Zero relative humidity
- No inlet air distortion
- No customer bleed extraction
- No external power extraction
- No anti-ice airflow
- Fuel having an LHV of 18300 Btu/lb otherwise conforming to fuels specified for use with this engine
- Oil conforming to MIL-L-23699
- Minimum Specification Engine (100%)

NOTE 2.

Model	AE 1107C (P/N 23060102)
-------	----------------------------

Temperature Limits:

Measured Gas Temp.
(same as T4.5 and ITT)

Takeoff (5 minutes)	1566°F
Max. Continuous	1532°F
Starting	1500° F

Oil Inlet Temperature:

Max. Steady State	275°F
Max. Transient (1 min.)	285°F
Minimum	-40°F
	(MIL-L-23699)
	-65°F (MIL-L-7808)

External Engine Component Maximum Temperatures:

The maximum component operating temperatures are listed in the Installation Design Manual, CSP 34072 for the AE 1107C engine.

Fuel Pump Inlet Temp.:

Minimum	-65°F, or that temp. corresponding to 12 centistokes (Cs) fuel viscosity, whichever is higher.
Maximum steady state	135° F

NOTE 3.

Model	AE 1107C (P/N 23060102)
-------	----------------------------

Maximum Permissible Speeds:

Gas Generator:	
Steady State, rpm	15,404
Transient, rpm	15,558
Power Turbine:	
Steady State, rpm	14,267
Transient, rpm	15,480

NOTE 4.

Model	AE 1107C (P/N 23060102)
-------	----------------------------

Maximum Permissible Engine

Shaft Torque:

Transient, ft lb	1,837
Takeoff (5 min), ft lb	1,732
Max. Continuous, ft lb	1,622

NOTE 5.

Model	AE 1107C (P/N 23060102)
-------	----------------------------

Pressure Limits:

Oil Pressure Limits:

Power Section (max), psid	60
Power Section (min), psid	35 @ 100% Ng 30 @ Idle Ng

Fuel Pump Inlet Pressure:

Minimum, psig	11.1
Maximum, psig	50

NOTE 6.

Accessory Drive Provisions:

Model	AE 1107C (P/N 23060102)				
-------	----------------------------	--	--	--	--

<u>Accessory</u>	<u>Direction of rotation</u>	<u>Speed ratio</u>	<u>Max torque cont. (lb-in)</u>	<u>Max torque static (lb-in)</u>	<u>Max overhung moment (in. lb)</u>
Starter	CW	1.0000	1080	3240	80

NOTE 7.

The maximum permissible customer compressor bleed air quantity for the AE 1107C engine as a percentage of the total engine inlet airflow is:

Model	AE 1107C (P/N 23060102)
-------	----------------------------

8th stage, %	N/A
10th stage, %	N/A
14th stage, %	0.7%

NOTE 8.

Mandatory replacement times (life limits) established for critical components and mandatory airworthiness inspections for the AE 1107C engine are published in the Time Limits Manual, CSP 34027.

NOTE 9.

Aircraft mounted engine control equipment consists of Qty. 2 FADEC units for the AE 1107C engine. The FADEC units are not to be installed in the fire zone, as specified in the Installation Design Manual, CSP 34072.

NOTE 10.

To meet the requirements of rain and hail ingestion, the aircraft inlet shall be limited to 200 in². In the event of extreme precipitation, airspeed should be reduced to 150 KIAS or below, and engine power should be maintained above 700 horsepower. These restrictions are specified in the Installation Design Manual, CSP 34072.

NOTE 11.

The airframe mounted FADEC units shall be grounded to the aircraft structure with captive mounting bolts. The surface to which the FADEC units mount shall conform to MIL-STD-5541, Class 3. The resistance between the FADEC mounting surface and aircraft structure shall be less than 2.5 milliohms.

The airframer is responsible for reducing the lightning current flowing into the torque shaft and subsequently onto engine control system harnesses to levels which will not cause upset or damage. This will usually involve low level lightning testing on the aircraft to determine how much current appears on the harnesses. These currents are then extrapolated to full threat lightning levels and injected onto the engine harnesses to show that the system is not upset or damaged.

Lightning testing, to determine FAR 33.28(d) limitations, has not been conducted. Aircraft installing these engines are restricted to Visual Meteorological Conditions (VMC) operations only.

NOTE 12.

This engine is in compliance with 14 CFR Part 34 requirements.

NOTE 13.

The AE 1107C model is intended for a US military application. Current US law does not require that public use or military aircraft/engines be operated or maintained in accordance with the FAA approved type design. Deliberate or planned operation of this model outside of the Type Design, to include but not limited to ratings, limitations, and instructions for continued airworthiness, is considered a violation of the Type Design and 14 CFR Part 33. Such operation may result in reduced levels of reliability and safety, and will most likely result in the inability for such engines or parts to be approved for future use in private or commercial operations governed by the CFR.

NOTE 14.

Low Cycle Fatigue (LCF) lives as defined in the Chapter 5 Life Limits and the Time Limits Manual, CSP 34027, are based on 5 separate missions defined by the using service. These 5 missions are: Amphibious-Land Assault/Troop Lift, Amphibious-Land Assault/External Cargo Lift, Amphibious-Land Training, Post Maintenance Check Flight and Long Range Special Operations. Actual service mission usage must be monitored to ensure that the engine is operated within the assumed LCF mission. If actual service proves to be more severe than the assumed LCF mission, rotor lives must be adjusted accordingly.

NOTE 15.

The AE 1107C model is intended for use only in a dual engine application.

NOTE 16.

The AE 1107C model is restricted to fixed engine attitude until tilt-rotor engine requirements are addressed.

NOTE 17.

Engine control functions that are implemented in airframe computers (limiters, Power Demand, etc.) must be demonstrated to meet the requirements of 14 CFR Part 33 during the aircraft certification.

NOTE 18.

The AE 1107C model is intended for installation in a U.S. military aircraft which does not have an FAA type certificate or FAA standard certificate of airworthiness. The AE 1107C Instructions for Continued Airworthiness (ICA) are incomplete at the time of engine certification. The ICAs must be completed and in compliance with 14 CFR Part 33.4 prior to delivery of the first FAA type certified aircraft with the AE 1107C installed, or upon issuance of a standard certificate of airworthiness for an aircraft with the AE 1107C engine installed.

...END...