

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION TYPE CERTIFICATE DATA SHEET E44NE	TCDS NUMBER E44NE REVISION: 5* DATE: February 1, 2008 CFE COMPANY MODELS: CFE738-1-1B
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Engines of models described herein conforming with this data sheet (which is a part of Type Certificate Number E44NE) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certificated 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 approved manufacturer's manuals and other approved instructions.

TYPE CERTIFICATE (TC) HOLDER: CFE COMPANY
 111 South 34th Street
 Phoenix, AZ 85034

1. MODELS	CFE738-1-1B
TYPE	Turbofan, Single Stage Fan, Five Stage Axial Compressor, Single Stage Centrifugal Compressor, Annular Combustion Chamber, Two Stage High Pressure Turbine, Three Stage Low Pressure Turbine
RATINGS (See NOTE 5) Sea Level Static Thrust, lb	
Maximum Takeoff (5 min.) (See NOTES 12, 16 & 17)	5937
Normal Takeoff (5 min.) (See NOTES 12, 16 & 17)	5918
Maximum Continuous (See NOTE 12)	5613
Rating ambient temperature	
Maximum Takeoff	100°F (37°C)
Normal Takeoff	86°F (30°C)
Maximum Continuous	86°F (30°C)
FUEL CONTROL	Fuel control and power management are controlled by a Full Authority Digital Electronic Control (FADEC) computer based system. The hardware and software configurations of this system and the associated engine fuel pump and hydromechanical unit are controlled by an approved engine equipment list for each specific engine model and aircraft application.
FUEL	Fuel conforming to General Electric Fuel Specification No. D50TF2, or current revision. See CFE738 Engine Installation Manual IM-7550 for specific fuels approved per the subject specifications. No. 3 Jet Fuel per GB6537-94 and No. 3A Jet Fuel per GB6537-05 is approved and conforms to the latest revision of General Electric Company jet fuel specification No. D50TF2
OIL	Oil conforming to General Electric Specification No. D50TF1, or Honeywell International, Inc oil specification EMS53110, current revision. See CFE738 Engine Installation Manual IM-7550 for specific oils approved per the subject specifications.

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LEGEND: "--" INDICATES "SAME AS PRECEDING MODEL"
"---" NOT APPLICABLE
NOTE: SIGNIFICANT CHANGES IF ANY, ARE BLACK-LINED IN THE LEFT HAND MARGIN

I. MODELS (cont.)	CFE738-1-1B		
PRINCIPAL DIMENSIONS	The Principal Dimensions are listed on the approved Installation Drawing for each engine model.		
WEIGHT (dry maximum), pounds	1325 pounds (See NOTE 14)		
CENTER OF GRAVITY LOCATION, (in)	The Center of Gravity is listed on the approved Installation Drawing for each engine model.		
IGNITION SYSTEM	The ignition system is a dual-channel, continuous duty, capacitive discharge unit with independent circuits to each ignitor plug. The authorized ignition system components are controlled by the approved engine equipment list.		
CERTIFICATION BASIS (See NOTE 13)	FAR 33, effective February 1, 1965, as amended by 33-1 through 33-14, dated August 10, 1990.		
	<u>Model</u>	<u>Date of Application</u>	<u>Type Certificate No. E44NE Issued</u>
	CFE738-1-1B	March 16, 1990	December 17, 1993
PRODUCTION BASIS	Production Certificate No.108 issued January 13, 1961, and No. 413 issued March 4, 1965, under license from CFE Company, Phoenix, AZ.		

NOTES

NOTE 1. Maximum permissible engine operating speeds for the engine rotors are as follows:

CFE738-1-1B

Low pressure rotor (N1), rpm

Maximum Takeoff/Normal Takeoff 9,400

Maximum continuous 9,400

High pressure rotor (N2), rpm

Maximum Takeoff/Normal Takeoff 28,000

Maximum continuous 27,715

NOTE 2. Maximum permissible temperatures are as follows:

Interturbine temperature (T4.5), °F(°C)

Maximum Takeoff (5 min.) 1634°F (890°C)

Normal Takeoff (5 min.) 1587°F (864°C)

Maximum Continuous 1582°F (861°C)

Oil inlet temperature, °F(°C)

Continuous operation: 280°F (138°C)

Transient operation (3 min.): 280°F (138°C) - 311°F (155°C)

Fuel inlet temperature

(at engine fuel pump inlet), °F(°C): 135°F (57°C)

NOTE 3. Fuel and Oil Pressure Limits

Fuel Pump Inlet Pressure:

Minimum: 5 PSI above true vapor pressure
 Maximum: 50 PSIG

Oil Pressure:

Minimum (idle): 30 PSIG
 Normal Operating Range: 60-85 PSIG
 Transient (3 min): 85-100 PSIG

NOTE 4. ACCESSORY DRIVE PROVISIONS

Accessory Drive	Pad Type	Speed Ratio (3)	Rotation Facing Pad	Maximum Torque (in-lb)			Maximum Accessory Weight (lbs)	Overhung Moment Max (lb-in)
				Static	Continuous	Overload (2)		
Alternator (D1)	AS468B-AV1 Mod (1)	0.4418	CCW	1700	218	327	40	200
Alternator (D2)	AS468B-AV1 Mod (1)	0.3666	CCW	1700	263	394	40	200
Starter (D3)	AS468B-AV1 Mod (1)	0.5868	CCW	3900	1764 ⁽⁵⁾	2712 ⁽⁵⁾	25	150
Hydraulic Pump (D4)	AS961B-1 Mod (1)	0.3082	CCW	600	210	315	10	30
Optional Hyd Pump (D5)	AS961B-1 Mod(1)	0.3666	CCW	1700	263	394	40	200

NOTES:

(1) Refer to the application pad definition on the Installation Drawing for detailed information.
 (2) 5 minutes per each 4 hour period.
 (3) The accessory gearbox is driven from the High Pressure spool.
 (4) The engine Installation Manual lists the maximum combined simultaneous horsepower extraction for the alternator and hydraulic pump drives.
 (5) Limited to starts.

NOTE 5. Engine ratings are based on calibrated test stand performance under the following conditions:

Static sea level standard conditions of 59øF and 29.92 inches Hg.
 No aircraft accessory loads or air extraction.
 No anti-icing; no inlet distortion; no inlet screen losses; and 100% ram recovery.
 Inlet and exhaust system as defined in the engine Installation Manual IM-7550.
 Specified fuel having an average lower heating value of 18,400 BTU/lb; specified lube oil.

- NOTE 6. Maximum Compressor Bleed Air Extraction:
- | | Percent of
<u>Core Airflow</u> |
|-----------------------|-----------------------------------|
| Low Pressure Bleed | 8.0 |
| High Pressure Bleed | 5.5 |
| Total LP and HP Bleed | 12.0 |
- NOTE 7. These engine models meet FAA requirements for operation in icing conditions within the envelope defined in FAR 25, Appendix C when installed and operated in accordance with approved data and instructions.
- NOTE 8. The maximum permissible inlet distortion is defined in the Engine Installation Manual IM-7550.
- NOTE 9. Life limits, established for critical rotating components, are published in the approved engine Light Maintenance Manual, Report Number 72-06-03, Airworthiness Limitations Section.
- NOTE 10. Recommended engine inspection intervals are published in the approved engine Light Maintenance Manual, Report Number 72-06-03.
- NOTE 11. The operating temperature limits for specified components and accessories defined in the Engine Installation Manual IM-7550 must be observed when operating the installed engine.
- NOTE 12. Sea level static minimum rated thrust varies linearly between ambient temperature points shown below, but is flat rated below 59°F (15°C).
- | | SLS/59°F(15°C) | SLS/86°F(30°C) | SLS/100°F(37°C) |
|--------------------|----------------|----------------|-----------------|
| Maximum Takeoff | 5888 | 5918 | 5937 |
| Normal Takeoff | 5888 | 5918 | 5454 |
| Maximum Continuous | 5613 | 5613 | N/A |
- NOTE 13. The engine model meets the requirements of FAR Part 34, original effective September 10, 1990.
- NOTE 14. The engine weight includes all components of the basic engine as defined by the approved engine equipment list. Components that are certified as part of the aircraft under FAR Part 25 and other optional equipment which are mounted on the engine are not included in the basic engine weight.
- NOTE 15. Engine Installation Manual IM-7550 and Operating Instructions IM-8007 contain additional FAA approved engine data.
- NOTE 16. The CFE738-1-1B engine normal takeoff interturbine temperature (T4.5) limit has been established to assure that a fully degraded engine at the normal takeoff rating will achieve the maximum takeoff (APR) rated thrust without exceeding the maximum takeoff T4.5 limit.
- NOTE 17. The time limit at the normal takeoff rating is five minutes and shall include any time accumulated above the normal takeoff rating.
- NOTE 18. The CFE738-1 engine model was removed from Type Certificate E44NE at the request of the type certificate holder. No CFE738-1 engine models are in existence.
- NOTE 19. Criteria pertaining to the dispatch and maintenance requirements for engine control systems are specified in CFE Report No. CFE1229(33)-4, which defines the various configurations and maximum operating intervals.