



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

TYPE CERTIFICATE DATA SHEET Nº EM-1999T09

Type Certificate Holder:

CFM INTERNATIONAL, S.A.
PO Box 15514
Cincinnati, Ohio 45215-0514
USA

EM-1999T09-02

Sheet 01

CFMI

CFM56-7B18, -7B20, -7B22, -7B24, -7B26,
-7B27, -B27/B1, -7B27/B3, -7B26/B1, -
7B22/B1, -7B24/B1, -7B22/B2, -7B26/B2, -
7B20/2, -7B22/2, -7B24/2, -7B26/2, -7B27/2,
-7B18/3, -7B20/3, -7B22/3, -7B24/3, -
7B26/3, -7B27/3, -7B22/3B1, -7B22/3B2, -
7B24/3B1, -7B26/3B1, -7B26/3B2, -
7B26/3B2F, -7B27/3B1, -7B27/3B1F, -
7B27/3B3, -7B26/3F, -7B27/3F.

June 2007

Engines of models described herein conforming with this data sheet, which is part of Type Certificate No. 1999T09, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Brazilian Aeronautical Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other instructions.

I - MODELS CFM56-7B18, CFM56-7B20, CFM56-7B22, CFM56-7B24

TYPE High bypass turbofan; coaxial front fan/booster driven by multi-stage low pressure turbine, multi-stage compressor with one-stage high pressure turbine, single annular combustor.

Pavot

RATINGS		-7B18	-7B20	-7B22	-7B24
See Note 4	Takeoff (5 min. See Note 13), sea level, static thrust, daN (lb)	8 674 (19 500)	9 163 (20 600)	10 097 (22 700)	10 765 (24 200)
	Maximum continuous, sea level static thrust, daN (lb)	8 363 (18 800)	8 630 (19 400)	9 920 (22 300)	10 142 (22 800)
	Flat rating - Ambient Temperature				
	Takeoff, °C (°F)	30 (86)	--	--	--
Maximum continuous	25 (77)	--	--	--	
FUEL SYSTEM	See Note 7 for approved fuels				
	Fuel pump / SNECMA P/N (Combined boost and single element gear-type pump)	340-402-104	--	--	--
	Hydromechanical unit GE P/N:	1853M56	--	--	--
	Electronic control unit GE P/N:				
	- Hardware:	1851M50	--	--	--
		1853M33	--	--	--
		2042M67	--	--	--
		2044M16	--	--	--
	- Software	1853M78	--	--	--
		2044M25	--	--	--
	Identification plugs SNECMA P/N:	340-131-703	340-131-712	340-131-722	340-131-732
		340-131-707	340-131-717	340-131-727	340-131-737
		340-203-101	340-203-201	340-203-301	340-203-401
		340-198-650	340-198-850	340-199-250	340-200-050
		340-198-750	340-198-950	340-199-350	340-200-150
OIL	Synthetic type conforming to GE Specification D50TF1, Type I and Type II. CFMI Service Bulletin CFM56-7B 79-001 list approved brand oils.				
TEMPERATURE LIMITS		See Note 2	--	--	--

		-7B18	-7B20	-7B22	-7B24
PRESSURE LIMITS		See Note 3	--	--	--
IGNITION SYSTEM	GE Part Number - Two ignition units				
	Unison:	9238M66	--	--	--
	Simmonds:	1538M69	--	--	--
	Two igniter plugs:				
	Unison:	1374M12	--	--	--
	Champion:	1374M13	--	--	--
DIMENSIONS	Length (fan case forward flange to LPT frame aft flange), cm (in.)	250.75 (98.7)	--	--	--
	Width (maximum envelope), cm (in.)	211.80 (83.4)	--	--	--
	Height (fan case forward flange outer diameter), cm (in.)	182.90 (72.0)	--	--	--
WEIGHT	Includes basic engine accessories and optional equipment as listed in manufacturers engine specification, including engine mounted portions of the condition monitoring instrumentation, kg (lb)	2385.9 (5260)	--	--	--
CENTER OF GRAVITY	Station, engine only (refer to Installation Drawing), mm (in.)	5 269 ± 25 (207.4 ± 1.0)	--	--	--
II - MODELS	CFM56-7B26, CFM56-7B27, CFM56-7B27/B1, CFM56-7B27/B3				
TYPE	High bypass turbofan; coaxial front fan/booster driven by multi-stage low pressure turbine, multi-stage compressor with one-stage high pressure turbine, single annular combustor.				
RATINGS (See Note 4)	Takeoff (5 min. See Note 13), sea level, static thrust, daN (lb)	11 699 (26 300)	12 143 (27 300)	--	--
	Maximum continuous, sea level static thrust, daN (lb)	11 521 (25 900)	--	--	--

		-7B26	-7B27	-7B27/B1	-7B27/B3
RATINGS (CONT.)	Flat rating - Ambient Temperature				
	Takeoff, °C (°F)	30 (86)	--	--	--
	Maximum continuous	25 (77)	--	--	--
FUEL SYSTEM	See Note 7 for approved fuels	All Models			
	Fuel pump / SNECMA P/N (Combined boost and single element gear-type pump)	340-402-104	--	--	--
	Hydromechanical unit GE P/N:	1853M56	--	--	--
	Electronic control unit GE P/N:				
	- Hardware:	1851M50	--	--	--
		1853M33	--	--	--
		2042M67	--	--	--
		2044M16	--	--	--
	- Software	1853M78	--	--	--
		2044M25	--	--	--
	Identification plugs SNECMA P/N:	340-131-742	340-131-752	340-142-801	340-143-441
		340-131-747	340-131-757	340-142-901	340-143-451
		340-203-501	340-203-601	340-203-611	340-203-631
		340-200-850	340-201-450	340-201-650	340-202-050
		340-200-950	340-201-550	340-210-750	340-202-150
OIL	Synthetic type conforming to GE Specification D50TF1, Type I and Type II. CFMI Service Bulletin CFM56-7B 79-001 list approved brand oils.				
TEMPERATURE LIMITS		See Note 2	--	--	--
PRESSURE LIMITS		See Note 3	--	--	--

		-7B26	-7B27	-7B27/B1	-7B27/B3
IGNITION SYSTEM	GE Part Number - Two ignition units				
	Unison:	9238M66	--	--	--
	Simmonds:	1538M69	--	--	--
	Two igniter plugs:				
	Unison:	1374M12	--	--	--
	Champion:	1374M13	--	--	--
DIMENSIONS	Length (fan case forward flange to LPT frame aft flange), cm (in.)	250.75 (98.7)	--	--	--
	Width (maximum envelope), cm (in.)	211.80 (83.4)	--	--	--
	Height (fan case forward flange outer diameter), cm (in.)	182.90 (72.0)	--	--	--
WEIGHT	Includes basic engine accessories and optional equipment as listed in manufacturers engine specification, including engine mounted portions of the condition monitoring instrumentation, kg (lb)	2385.9 (5260)	--	--	--
CENTER OF GRAVITY	Station, engine only (refer to Installation Drawing), mm (in)	5 269 ± 25 (207.4 ± 1.0)	--	--	--
III - MODELS	CFM56-7B26/B1, CFM56-7B22/B1, CFM56-7B24/B1, CFM56-7B22/B2				
TYPE	High bypass turbofan; coaxial front fan/booster driven by multi-stage low pressure turbine, multi-stage compressor with one-stage high pressure turbine, single annular combustor.				
RATINGS (See Note 4)		-7B26/B1	-7B22/B1	-7B24/B1	-7B22/B2
	Takeoff (5 min. See Note 13), sea level, static thrust, daN (lb)	11 699 (26 300)	10097 (22700)	10765 (24200)	10097 (22700)
	Maximum continuous, sea level static thrust, daN (lb)	11 521 (25 900)	9920 (22300)	10142 (22800)	9920 (22300)
	Flat rating - Ambient Temperature				
	Takeoff, °C (°F)	30 (86)	36 (96.8)	41 (105.8)	50 (122)
	Maximum continuous	25 (77)	--	--	--

Legend: -- Same as preceding # Does not apply

Passer

		-7B26/B1	-7B22/B1	-7B24/B1	-7B22/B2
FUEL SYSTEM	See Note 7 for approved fuels	All Models			
	Fuel pump / SNECMA P/N (Combined boost and single element gear-type pump)	340-402-104	--	--	--
	Hydromechanical unit GE P/N:	1853M56	--	--	--
	Electronic control unit GE P/N:				
	- Hardware:	1851M50	--	--	--
		1853M33	--	--	--
		2042M67	--	--	--
		2044M16	--	--	--
	- Software	1853M78	--	--	--
		2044M25	--	--	--
	Identification plugs SNECMA P/N:	340-203-511	340-142-001	340-142-201	340-230-321
			340-142-101	340-142-301	
			340-203-311	340-203-411	
			340-199-450	340-200-250	
			340-199-550	340-200-350	
OIL	Synthetic type conforming to GE Specification D50TF1, Type I and Type II. CFMI Service Bulletin CFM56-7B 79-001 list approved brand oils.				
TEMPERATURE LIMITS		See Note 2	--	--	--
PRESSURE LIMITS		See Note 3	--	--	--
IGNITION SYSTEM	GE Part Number - Two ignition units				
	Unison:	9238M66	--	--	--
	Simmonds:	1538M69	--	--	--

IGNITION SYSTEM		-7B26/B1	-7B22/B1	-7B24/B1	-7B22/B2
(Cont.)	Two igniter plugs:				
	Unison:	1374M12	--	--	--
	Champion:	1374M13	--	--	--
DIMENSIONS	Length (fan case forward flange to LPT frame aft flange), cm (in.)	250.75 (98.7)	--	--	--
	Width (maximum envelope), cm (in.)	211.80 (83.4)	--	--	--
	Height (fan case forward flange outer diameter), cm (in.)	182.90 (72.0)	--	--	--
WEIGHT	Includes basic engine accessories and optional equipment as listed in manufacturers engine specification, including engine mounted portions of the condition monitoring instrumentation, kg (lb)	2 385.9 (5 260)	--	--	--
CENTER OF GRAVITY	Station, engine only (refer to Installation Drawing), mm (in.)	5 269 ± 25 (207.4 ± 1.0)	--	--	--
IV - MODELS	CFM56-7B26/B2, CFM56-7B20/2, CFM56-7B22/2, CFM56-7B24/2				
TYPE	High bypass turbofan; coaxial front fan/booster driven by multi-stage low pressure turbine, multi-stage compressor with one stage high pressure turbine, single annular combustor.				
RATINGS		-7B26/B2	-7B20/2	-7B22/2	-7B24/2
(See Note 4)	Takeoff (5 min. See Note 13), sea level, static thrust, daN (lb)	11 699 (26 300)	9 163 (20 600)	10 097 (22 700)	10 765 (24 200)
	Maximum continuous, sea level static thrust, daN (lb)	10 142 (22 800)	8 630 (19 400)	9 920 (22 300)	10 142 (22 800)
	Flat rating - Ambient Temperature				
	Takeoff, °C (°F)	35 (95)	30 (86)	--	--
	Maximum continuous	25 (77)	--	--	--
		-7B26/B2	-7B20/2	-7B22/2	-7B24/2

Legend: -- Same as preceding # Does not apply

Passor

FUEL SYSTEM		All Models			
See Note 7 for approved fuels					
	Fuel pump / SNECMA P/N (Combined boost and single element gear-type pump)	340-402-104	--	--	--
	Hydromechanical unit GE P/N:	1853M56	--	--	--
	Electronic control unit GE P/N:				
	- Hardware:	1851M50	--	--	--
		1853M33	--	--	--
		2042M67	--	--	--
		2044M16	--	--	--
	- Software	1853M78	--	--	--
		2044M25	--	--	--
	Identification plugs SNECMA P/N:	340-203-521	340-138-710	340-138-720	340-138-730
			340-138-715	340-138-725	340-138-735
			340-203-201	340-203-301	340-203-401
OIL	Synthetic type conforming to GE Specification D50TF1, Type I and Type II. CFMI Service Bulletin CFM56-7B 79-001 list approved brand oils.				
TEMPERATURE LIMITS		See Note 2	--	--	--
PRESSURE LIMITS		See Note 3	--	--	--
IGNITION SYSTEM	GE Part Number - Two ignition units				
	Unison:	9238M66	--	--	--
	Simmonds:	1538M69	--	--	--

		-7B26/B2	-7B20/2	-7B22/2	-7B24/2
	Two igniter plugs:				
	Unison:	1374M12	--	--	--
	Champion:	1374M13	--	--	--
DIMENSIONS	Length (fan case fwd flange to LPT frame aft flange), cm (in.)	250.75 (98.7)	--	--	--
	Width (maximum envelope) , cm (in.)	211.80 (83.4)	--	--	--
	Height (fan case forward flange outer diameter), cm (in.)	182.90 (72.0)			
WEIGHT	Includes basic engine accessories and optional equipment as listed in manufacturers engine specification, including engine mounted portions of the condition monitoring instrumentation, kg (lb)	2 385.9 (5 260)	2 431.3 (5 360)	--	--
CENTER OF GRAVITY	Station, engine only (refer to Installation Drawing), mm (in.)	5 269 ± 25 (207.4 ± 1.0)	--	--	--
V - MODELS	CFM56-7B26/2, CFM56-7B27/2, CFM56-7B18/3, CFM56-7B20/3				
TYPE	High bypass turbofan; coaxial front fan/booster driven by multi-stage low pressure turbine, multi-stage compressor with one stage high pressure turbine, single annular combustor.				
RATINGS (See Note 4)	Takeoff (5 min. See Note 13), sea level, static thrust, daN (lb)	11 699 (26 300)	12 143 (27 300)	8 674 (19 500)	9 163 (20 600)
	Maximum continuous, sea level static thrust, daN (lb)	11 521 (25 900)	--	8 636 (18 800)	8 630 (19 400)
	Flat rating - Ambient Temperature				
	Takeoff, °C (°F)	30 (86)	--	--	--
	Maximum continuous	25 (77)	--	--	--

		-7B26/2	-7B27/2	-7B18/3	-7B20/3
FUEL SYSTEM	See Note 7 for approved fuels	All Models			
	Fuel pump / SNECMA P/N (Combined boost and single element gear-type pump)	340-402-104	--	--	--
FUEL SYSTEM (Cont.)					
	Hydromechanical unit GE P/N:	1853M56	--	--	--
	Electronic control unit GE P/N:				
	- Hardware:	1851M50	--	--	--
		1853M33	--	--	--
		2042M67	--	--	--
		2044M16	--	--	--
	- Software	1853M78	--	--	--
		2044M25	--	--	--
	Identification plugs SNECMA P/N:	340-138-740	340-138-750	340-203-101	340-203-201
		340-138-745	340-138-755		
		340-203-501	340-203-601		
OIL	Synthetic type conforming to GE Specification D50TF1, Type I and Type II. CFMI Service Bulletin CFM56-7B 79-001 list approved brand oils.				
TEMPERATURE LIMITS		See Note 2	--	--	--
PRESSURE LIMITS		See Note 3	--	--	--
IGNITION SYSTEM	GE Part Number - Two ignition units				
	Unison:	9238M66	--	--	--
	Simmonds:	1538M69	--	--	--
	Two igniter plugs:				
	Unison:	1374M12	--	--	--
	Champion:	1374M13	--	--	--

		-7B26/2	-7B27/2	-7B18/3	-7B20/3
DIMENSIONS	Length (fan case fwd flange to LPT frame aft flange), cm (in.)	250.75 (98.7)	--	--	--
	Width (maximum envelope) , cm (in.)	211.80 (83.4)	--	--	--
	Height (fan case forward flange outer diameter), cm (in.)	182.90 (72.0)	--	--	--
WEIGHT	Includes basic engine accessories and optional equipment as listed in manufacturers engine specification, including engine mounted portions of the condition monitoring instrumentation, kg (lb)	2 431.3 (5 360)	--	2 385.9 (5 260)	--
CENTER OF GRAVITY	Station, engine only (refer to Installation Drawing), mm (in.)	5 269 ± 25 (207.4 ± 1.0)	--	--	--
VI - MODELS	CFM56-7B22/3, CFM56-7B24/3, CFM56-7B26/3, CFM56-7B27/3				
TYPE	High bypass turbofan; coaxial front fan/booster driven by multi-stage low pressure turbine, multi-stage compressor with one stage high pressure turbine, single annular combustor.				
RATINGS (See Note 4)	Takeoff (5 min. See Note 13), sea level, static thrust, daN (lb)	10 097 (22 700)	10 765 (24 200)	11 699 (26 300)	12 143 (27 300)
	Maximum continuous, sea level static thrust, daN (lb)	9 920 (22 300)	10 142 (22 800)	11 521 (25 900)	--
	Flat rating - Ambient Temperature				
	Takeoff, °C (°F)	30 (86)	--	--	--
	Maximum continuous	25 (77)	--	--	--
FUEL SYSTEM	See Note 7 for approved fuels	All Models			
	Fuel pump / SNECMA P/N (Combined boost and single element gear-type pump)	340-402-104	--	--	--
	Hydromechanical unit GE P/N:	1853M56	--	--	--

FUEL SYSTEM (Cont.)	Electronic control unit GE P/N:	-7B22/3	-7B24/3	-7B26/3	-7B27/3
	- Hardware:	1851M50	--	--	--
		1853M33	--	--	--
		2042M67	--	--	--
		2044M16	--	--	--
	- Software	1853M78	--	--	--
	2044M25	--	--	--	
	Identification plugs SNECMA P/N:	340-203-301	340-203-401	340-203-501	340-203-601
OIL	Synthetic type conforming to GE Specification D50TF1, Type I and Type II. CFMI Service Bulletin CFM56-7B 79-001 list approved brand oils.				
TEMPERATURE LIMITS		See Note 2	--	--	--
PRESSURE LIMITS		See Note 3	--	--	--
IGNITION SYSTEM	GE Part Number - Two ignition units				
	Unison:	9238M66	--	--	--
	Simmonds:	1538M69	--	--	--
	Two igniter plugs:				
	Unison:	1374M12	--	--	--
	Champion:	1374M13	--	--	--
DIMENSIONS	Length (fan case fwd flange to LPT frame aft flange), cm (in.)	250.75 (98.7)	--	--	--
	Width (maximum envelope) , cm (in.)	211.80 (83.4)	--	--	--
	Height (fan case forward flange outer diameter), cm (in.)	182.90 (72.0)			
WEIGHT	Includes basic engine accessories and optional equipment as listed in manufacturers engine specification, including engine mounted portions of the condition monitoring instrumentation, kg (lb)	2 385.9 (5 260)	--	--	--

		-7B22/3	-7B24/3	-7B26/3	-7B27/3
CENTER OF GRAVITY	Station, engine only (refer to Installation Drawing), mm (in.)	5 269 ± 25 (207.4 ± 1.0)	--	--	--
VII - MODELS	CFM56-7B22/3B1, CFM56-7B22/3B2, CFM56-7B24/3B1, CFM56-7B26/3B1				
TYPE	High bypass turbofan; coaxial front fan/booster driven by multi-stage low pressure turbine, multi-stage compressor with one stage high pressure turbine, single annular combustor.				
		-7B22/3B1	-7B22/3B2	-7B24/3B1	-7B26/3B1
RATINGS (See Note 4)	Takeoff (5 min. See Note 13), sea level, static thrust, daN (lb)	10 097 (22 700)	--	10 765 (24 200)	11 699 (26 300)
	Maximum continuous, sea level static thrust, daN (lb)	9 920 (22 300)	--	10 142 (22 800)	11 521 (25 900)
	Flat rating - Ambient Temperature				
	Takeoff, °C (°F)	36 (96.8)	50 (122)	41 (105.8)	30 (86)
	Maximum continuous	25 (77)	--	--	--
FUEL SYSTEM	See Note 7 for approved fuels	All Models			
	Fuel pump / SNECMA P/N (Combined boost and single element gear-type pump)	340-402-104	--	--	--
	Hydromechanical unit GE P/N:	1853M56	--	--	--
	Electronic control unit GE P/N:				
	- Hardware:	1851M50	--	--	--
		1853M33	--	--	--
		2042M67	--	--	--
		2044M16	--	--	--
	- Software	1853M78	--	--	--
		2044M25	--	--	--

		-7B22/3B1	-7B22/3B2	-7B24/3B1	-7B26/3B1
FUEL SYSTEM (Cont.)					
	Identification plugs SNECMA P/N:	340-203-611	340-203-321	340-203-411	340-203-511
OIL	Synthetic type conforming to GE Specification D50TF1, Type I and Type II. CFMI Service Bulletin CFM56-7B 79-001 list approved brand oils.				
TEMPERATURE LIMITS		See Note 2	--	--	--
PRESSURE LIMITS		See Note 3	--	--	--
IGNITION SYSTEM	GE Part Number - Two ignition units				
	Unison:	9238M66	--	--	--
	Simmonds:	1538M69	--	--	--
	Two igniter plugs:				
	Unison:	1374M12	--	--	--
	Champion:	1374M13	--	--	--
DIMENSIONS	Length (fan case fwd flange to LPT frame aft flange), cm (in.)	250.75 (98.7)	--	--	--
	Width (maximum envelope) , cm (in.)	211.80 (83.4)	--	--	--
	Height (fan case forward flange outer diameter), cm (in.)	182.90 (72.0)			
WEIGHT	Includes basic engine accessories and optional equipment as listed in manufacturers engine specification, including engine mounted portions of the condition monitoring instrumentation, kg (lb)	2 385.9 (5 260)	--	--	--
CENTER OF GRAVITY	Station, engine only (refer to Installation Drawing), mm (in.)	5 269 ± 25 (207.4 ± 1.0)	--	--	--

VIII - MODELS CFM56-7B26/3B2, CFM56-7B26/3B2F, CFM56-7B27/3B1, CFM56-7B27/3B1F

Legend: -- Same as preceding # Does not apply

Paros

		-7B26/3B2	-7B26/3B2F	-7B27/3B1	-7B27/3B1F
TYPE	High bypass turbofan; coaxial front fan/booster driven by multi-stage low pressure turbine, multi-stage compressor with one stage high pressure turbine, single annular combustor.				
RATINGS See Note 4	Takeoff (5 min. See Note 13), sea level, static thrust, daN (lb)	11 699 (26 300)	--	12 143 (27 300)	--
	Maximum continuous, sea level static thrust, daN (lb)	10 142 (22 800)	11 521 (2 900)	--	--
	Flat rating - Ambient Temperature				
	Takeoff, °C (°F)	35 (95)	30 (86)	--	--
	Maximum continuous	25 (77)	--	--	--
FUEL SYSTEM	See Note 7 for approved fuels	All Models			
	Fuel pump / SNECMA P/N (Combined boost and single element gear-type pump)	340-402-104	--	--	--
	Hydromechanical unit GE P/N:	1853M56	--	--	--
	Electronic control unit GE P/N:				
	- Hardware:	1851M50	--	--	--
		1853M33	--	--	--
		2042M67	--	--	--
		2044M16	--	--	--
	- Software	1853M78	--	--	--
		2044M25	--	--	--
	Identification plugs SNECMA P/N:	340-203-521	340-205-111	340-203-611	340-205-021
OIL	Synthetic type conforming to GE Specification D50TF1, Type I and Type II. CFMI Service Bulletin CFM56-7B 79-001 list approved brand oils.				
TEMPERATURE LIMITS		See Note 2	--	--	--

		-7B26/3B2	-7B26/3B2F	-7B27/3B1	-7B27/3B1F
PRESSURE LIMITS		See Note 3	--	--	--
IGNITION SYSTEM	GE Part Number - Two ignition units				
	Unison:	9238M66	--	--	--
	Simmonds:	1538M69	--	--	--
	Two igniter plugs:				
	Unison:	1374M12		--	--
	Champion:	1374M13		--	--
DIMENSIONS	Length (fan case fwd flange to LPT frame aft flange), cm (in.)	250.75 (98.7)	--	--	--
	Width (maximum envelope) , cm (in.)	211.80 (83.4)	--	--	--
	Height (fan case forward flange outer diameter), cm (in.)	182.90 (72.0)			
WEIGHT	Includes basic engine accessories and optional equipment as listed in manufacturers engine specification, including engine mounted portions of the condition monitoring instrumentation, kg (lb)	2 385.9 (5 260)	--	--	--
CENTER OF GRAVITY	Station, engine only (refer to Installation Drawing), mm (in.)	5 269 ± 25 (207.4 ± 1.0)	--	--	--
IX - MODELS	CFM56-7B27/3B3, CFM56-7B26/3F, -7B27/3F				
TYPE	High bypass turbofan; coaxial front fan/booster driven by multi-stage low pressure turbine, multi-stage compressor with one stage high pressure turbine, single annular combustor.				

		-7B27/3B3	-7B26/3F	-7B27/3F
RATINGS (See Note 4)	Takeoff (5 min. See Note 13), sea level, static thrust, daN (lb)	12 143 (27 300)	11 699 (26 300)	12 143 (27 300)
	Maximum continuous, sea level static thrust, daN (lb)	11 521 (25 900)	--	--
	Flat rating - Ambient Temperature			
	Takeoff, °C (°F)	30 (86)	--	--
	Maximum continuous	25 (77)	--	--
FUEL SYSTEM	See Note 7 for approved fuels	All Models		
	Fuel pump / SNECMA P/N (Combined boost and single element gear-type pump)	340-402-104	--	--
	Hydromechanical unit GE P/N:	1853M56	--	--
	Electronic control unit GE P/N:			
	- Hardware:	1851M50	--	--
		1853M33	--	--
		2042M67	--	--
		2044M16	--	--
	- Software	1853M78	--	--
		2044M25	--	--
	Identification plugs SNECMA P/N:	340-203-631	340-205-101	340-205-001
OIL	Synthetic type conforming to GE Specification D50TF1, Type I and Type II. CFMI Service Bulletin CFM56-7B 79-001 list approved brand oils.			
TEMPERATURE LIMITS		See Note 2	--	--
PRESSURE LIMITS		See Note 3	--	--

		-7B27/3B3	-7B26/3F	-7B27/3F
IGNITION SYSTEM	GE Part Number - Two ignition units			
	Unison:	9238M66	--	--
	Simmonds:	1538M69	--	--
	Two igniter plugs:			
	Unison:	1374M12	--	--
	Champion:	1374M13	--	--
DIMENSIONS	Length (fan case fwd flange to LPT frame aft flange), cm (in.)	250.75 (98.7)	--	--
	Width (maximum envelope) , cm (in.)	211.80 (83.4)	--	--
	Height (fan case forward flange outer diameter), cm (in.)	182.90 (72.0)		
WEIGHT	Includes basic engine accessories and optional equipment as listed in manufacturers engine specification, including engine mounted portions of the condition monitoring instrumentation, kg (lb)	2 385.9 (5 260)	--	--
CENTER OF GRAVITY	Station, engine only (refer to Installation Drawing), mm (in.)	5 269 ± 25 (207.4 ± 1.0)	--	--
IMPORT REQUIREMENTS	Each engine imported separately and/or spare parts must be accompanied by an export airworthiness approval issued by FAA or EASA (or a third country authority, in case of used engine imported from such country) attesting that the particular engine and/or parts were submitted to the governmental quality control before delivery and are in conformity with the ANAC approved type design. The ANAC type design is the same FAA or EASA type design.			

**CERTIFICATION
BASIS**

RBHA 33 (Brazilian Requirements for Aeronautical Certification), which endorses to Federal Aviation Regulations (FAR) Part 33 effective on 01 February 1965, with Amendments 33-1 through 33-15. In addition, the engines are in compliance with the emissions requirements of RBHA 34 which corresponds to FAR Part 34.

<u>Model</u>	<u>Application</u>	<u>Issued TC</u>
CFM56-7B18	09 October 1998	19 October 1999
CFM56-7B20	09 October 1998	19 October 1999
CFM56-7B22	09 October 1998	19 October 1999
CFM56-7B24	09 October 1998	19 October 1999
CFM56-7B26	09 October 1998	19 October 1999
CFM56-7B27	09 October 1998	19 October 1999
CFM56-7B27/B1	02 March 2004	10 March 2004
CFM56-7B27/B3	02 March 2004	10 March 2004
CFM56-7B26/B1	02 March 2004	10 March 2004
CFM56-7B22/B1	02 March 2004	10 March 2004
CFM56-7B24/B1	02 March 2004	10 March 2004
CFM56-7B22/B2	02 March 2004	10 March 2004
CFM56-7B26/B2	02 March 2004	10 March 2004
CFM56-7B20/2	02 March 2004	10 March 2004
CFM56-7B22/2	02 March 2004	10 March 2004
CFM56-7B24/2	02 March 2004	10 March 2004
CFM56-7B26/2	02 March 2004	10 March 2004
CFM56-7B27/2	02 March 2004	10 March 2004
CFM56-7B27/3	07 June 2007	25 June 2007
CFM56-7B27/3F	07 June 2007	25 June 2007
CFM56-7B27/3B1	07 June 2007	25 June 2007
CFM56-7B27/3B1F	07 June 2007	25 June 2007
CFM56-7B27/3B3	07 June 2007	25 June 2007
CFM56-7B26/3	07 June 2007	25 June 2007
CFM56-7B26/3F	07 June 2007	25 June 2007
CFM56-7B26/3B1	07 June 2007	25 June 2007
CFM56-7B26/3B2	07 June 2007	25 June 2007
CFM56-7B26/3B2F	07 June 2007	25 June 2007
CFM56-7B24/3	07 June 2007	25 June 2007
CFM56-7B24/3B1	07 June 2007	25 June 2007

**CERTIFICATION
BASIS (Cont.)**

<u>Model</u>	<u>Application</u>	<u>Issued TC</u>
CFM56-7B22/3	07 June 2007	25 June 2007
CFM56-7B22/3B1	07 June 2007	25 June 2007
CFM56-7B22/3B2	07 June 2007	25 June 2007
CFM56-7B20/3	07 June 2007	25 June 2007
CFM56-7B18/3	07 June 2007	25 June 2007

Special conditions:

1. Bird strikes, Kg (lb): - large birds: 2.72 (5.06)
- medium birds: 1.13 (2.49)
- small birds.
2. Water ingestion: - AIA Advisory Proposal PC 338-1, dated June 1990.

NOTES:**NOTE 1** Maximum Permissible Engine Rotor Speeds (all models):

Low pressure rotor (N1) rpm (%) 5 382 (104)
High pressure rotor (N2) rpm (%) 15 183 (104)

100% N1 = 5 175 rpm, 100% N2 = 14 460 rpm

NOTE 2 Maximum Permissible Temperatures - °C (°F)

a) Turbine Exhaust Gas (T495) (See Note 14)

As measured by a harness of eight thermocouples located at the second stage low pressure turbine vane:

NOTE 2 (Cont.)	Takeoff (5 min.)	950°C (1 742 °F)
	Maximum continuous	925°C (1 697 °F)
	Starting	725°C (1 337 °F)
	Time temperature envelope	CFMI-TP.01.14
	(Refer to model's S.O.I.)	

c) Fuel Pump Inlet: Refer to the Appropriate Installation Manual

d) Oil Supply (See Note 18)	
Continuous operation	140°C (284°F)
Transient (45 minutes)	155°C (311°F)

NOTE 3 Fuel And Oil Pressure Limits

Fuel limits:

Fuel system pressure limits required to meet all engine operating conditions extend from a minimum fuel pressure of not less than 5 psia (0.35 bar absolute) above the true fuel vapor pressure to a maximum fuel pressure of 148 psia (10.2 bar absolute) with a fuel vapor/liquid ratio <0.45 at all conditions. For specific installation limits, see Installation Manual, CFM7B01, Part A, Section 5, Figures A2 and A3.

Oil limits:

The minimum pressure limit is 13 psid (90 kPa differential). The maximum pressure limit during cold starts is 305 psid (2102 kPa differential), limited by a pressure-relief valve. See Note 12.

NOTE 4 Accessory Drive Provisions (All Models)

Electrical:		Hydraulic Pump:	
Rotation (1)	C	Rotation (1)	C
Speed ratio to core (2)	0.565	Speed ratio to core (2)	0.256
Pad Rating (kW)	135	Pad Rating (kW)	1 550
Shear Torque (in.lb)	9 000	Shear Torque (in.lb)	4 400
Maximum overhung moment (in.lb)	950	Maximum overhung moment (in.lb)	500

(1) C = Clockwise Facing Pad / CC = Counterclockwise Facing Pad

(2) 100% Core Engine Speed = 14 460 rpm

NOTE 5

Engine ratings are based on calibrated stand performance (sea level static) under the following conditions:

- Takeoff thrust is nominally independent of ambient temperature (flat rated) up to ambient temperature of :
 - Std + 15°C (30°C / 86°F) for all models except -7B22/B1 and -7B24/B1
 - Std + 21°C (36°C / 96.8°F) for -7B22/B1 and -7B22/3B1
 - Std + 26°C (41°C / 105.8°F) for -7B24/B1 and -7B24/3B1
 - Std + 20°C (35°C / 95°F) for -7B26/B2 and -7B26/3B2
 - Std + 35°C (50°C / 122°F) for -7B22/B2 and -7B22/3B2
- Maximum continuous is nominally independent of ambient temperature (flat rated) up to ambient temperature of Std. + 10°C (25°C/ 77°F) for all models.
- Zero customer bleed and horsepower extraction.
- 100% inlet recovery.
- Based on the production flight exhaust system.

NOTE 6Maximum Permissible Air Bleed Extraction (All Models)

Location	Fan Corrected Speed	Flow Limit
Fan Discharge	All speeds above minimum idle	2% fan airflow
HPC Stage 5 only	All speeds above minimum idle	10% core airflow (up to 5.92 lbm/sec)
Compressor discharge only	Minimum idle to 61% N1K	12% core airflow
	61% to 82.5% N1K	Linear variation from 12% to 7% core airflow
	Above 82.5% N1K	7% core airflow
HPC Stage 5 and compressor discharge combined	Minimum idle to 61% N1K	13% core airflow
	61% to 82.5% N1K	Linear variation from 13% to 10% core airflow
	Above 82.5% N1K	10% core airflow

- NOTE 7** Approved fuel conforming to GE Specification D50TF2. MIL-T-5624, Grades JP-4 or JP-5, ASTM D 1655, Jet A, A1 and B are consistent with this GE Specification. Primary fuel is Jet A, with other fuels listed being acceptable alternates. No fuel control adjustment is required when changing from primary to alternate fuels. Use of aviation gasoline is not authorized. Consult Specific Operating Instructions, CFMI-TP.01.14, Section 3, for additive usage.
- NOTE 8** Life limits established for critical rotating components are published in Chapter 5 of the CFM56-7B Engine Shop Manual, CFM-TP.SM.10
- NOTE 9** Power setting, power checks and control of engine thrust output in all operations is to be based on CFMI engine charts referring to fan speed. Fan speed sensors are included in the engine assembly for this purpose.
- NOTE 10** The type certificate holder, CFM International, S.A., is a company established and jointly owned by Societe Nationale l'Etude et de Construction de Moteurs d'Aviation (SNECMA) of France and the General Electric Company for the certification, sale, and support of CFM56 series engines. With respect to the benefits of type certification for production, General Electric and SNECMA function as licensees of CFM International, S.A.
- NOTE 11** This type certificate applies to engines produced in the United States under Type Certificate No. E00056EN and to engines produced in France under Type Certificate **EASA.E004**. Engines of the same model designation produced in United States are identical to and fully interchangeable with engines produced in France.
- These engines, when produced by General Electric, are identified by serial number prefix 874, 876, 888, 890 or 659; when produced by SNECMA, they are identified by the prefix 875, 877, 889, 891 or 653..
- NOTE 12** The minimum permissible idle in flight corresponds to $N_2=64.7\%$ (9 350 rpm) below $-3.8^\circ\text{C} / 25^\circ\text{F}$. Between $-3.8^\circ\text{C} / 25^\circ\text{F}$ and $4.4^\circ\text{C} / 40^\circ\text{F}$, the idle speed varies from 64.7% (9 350 rpm) to 58.8% (8 500 rpm). Above $4.4^\circ\text{C} / 40^\circ\text{F}$, the minimum permissible idle speed is 58.8% (8 500 rpm). This is a non-adjustable limit, preset into the ECU Control schedule.
- NOTE 13** During negative-g operation only, it is permissible to operate below minimum oil pressure (13 psid) for a maximum of 10 seconds. See Specific Operating Instructions, CFMI-TP.01.14, Section 6.
- NOTE 14** The normal 5 minute takeoff rating may be extended to 10 minutes for engine out contingency.
- NOTE 15.A** The indicated maximum permissible takeoff exhaust gas temperature (EGT) is $950^\circ\text{C} / 1\ 742^\circ\text{F}$. These indicated takeoff EGT redlines are accomplished via an EGT shunt and an EGT trim in the ECU software as noted below.
The effect on EGT (units $^\circ\text{C}$) with respect to the indicated takeoff EGT redline value of $950^\circ\text{C} / 1\ 742^\circ\text{F}$ for each of the models is summarized below:

Model	Actual Measured Takeoff Redline Value	Indicated Takeoff EGT level with 30°C Shunt Only*	Maximum EGT Trim Level**	Indicated Takeoff EGT Redline
7B18	857	887	63	950
7B20	884	914	36	950
7B22 , 7B22/B1	886	916	34	950
7B22/B2	920	950	0	950
7B24, 7B24/B1	908	938	12	950
7B26, 7B26/B1, 7B26/B2	920	950	0	950
7B27, 7B27/B1, 7B27/B3	920	950	0	950

* EGT shunt adds 30°C to actual measured engine EGT on CFM56-7B series to provide an indicated EGT level. This EGT shunt is triggered above 8 500 rpm core speed for all CFM56-7B series engines.

** The EGT trim function adds the values noted above to the indicated EGT levels. This EGT trim is only triggered at mach numbers from 0 to 0.40 and when the core speed is greater than 11 200 rpm. This function is only applicable for the 7B18, 7B20, 7B22, 7B22/B1, 7B24/B1 and 7B24 engine models.

NOTE 15.B The indicated maximum permissible maximum continuous EGT is 925°C corresponding to an actual measured EGT of 895°C on CFM56-7B series engines. EGT shunt adds 30°C to actual measured engine EGT on CFM56-7B series to provide an indicated EGT level. This EGT shunt is triggered above 8 500 rpm core speed for all CFM56-7B series engines.

NOTE 15.C The CFM56-7B series engines are certified with an indicated maximum permissible take off EGT transient allowance of 960°C for 20 seconds. This equates to a 10°C increase above the maximum permissible indicated value of 950°C.

NOTE 16 Obsolete.

NOTE 17 Criteria pertaining to the dispatch and maintenance requirements for the engine control systems are specified in the airworthiness limitation section of the CFM56-7B Engine Shop Manual (CFM-TP.SM.10), which defines the various configurations and maximum operating intervals.

- NOTE 18** The actual maximum permissible oil temperature for starting and idle conditions is 10°C higher for continuous operation and 5°C higher for transient operation than the corresponding indicated oil temperatures.
 An indicated oil temperature for continuous operation of 140°C (284°F) corresponds to an actual oil temperature of 150°C (302°F).
 An indicated oil temperature for transient operation of 155°C (311°F) corresponds to an actual oil temperature of 160°C (320°F).

- NOTE 19** The models shown on this TCDS have the following general characteristics:

<u>Model</u>	<u>Characteristics</u>
CFM56-7B18	Base model
CFM56-7B20	Same as CFM56-7B18 except for increased thrust ratings.
CFM56-7B22	Same as CFM56-7B18 except for increased thrust ratings.
CFM56-7B24	Same as CFM56-7B18 except for increased thrust ratings.
CFM56-7B26	Same as CFM56-7B18 except for increased thrust ratings.
CFM56-7B27	Same as CFM56-7B18 except for increased thrust ratings.
CFM56-7B27/B1	Same as CFM56-7B27 except for optimized power management at takeoff.
CFM56-7B27/B3	Same as CFM56-7B27 except intended for business jet application.
CFM56-7B26/B1	Same as CFM56-7B26 except intended for business jet application.
CFM56-7B26/B2	Same as CFM56-7B26 except for extended high altitude and temperature ratings above corner point takeoff.
CFM56-7B22/B2	Same as CFM56-7B22 except for extended high altitude and temperature ratings above corner point takeoff.
CFM56-7B24/B1	Same as CFM56-7B24 except for extended flat rated temperature for takeoff.
CFM56-7B22/B1	Same as CFM56-7B22 except for extended flat rated temperature for takeoff.
CFM56-7B20/2	Same as CFM56-7B20 except for a double annular compressor.
CFM56-7B22/2	Same as CFM56-7B22 except for a double annular compressor.
CFM56-7B24/2	Same as CFM56-7B24 except for a double annular compressor.
CFM56-7B26/2	Same as CFM56-7B26 except for a double annular compressor.
CFM56-7B27/2	Same as CFM56-7B27 except for a double annular compressor.

NOTE 19	CFM56-7B18/3	Same as CFM56-7B18 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
(Cont.)	CFM56-7B20/3	Same as CFM56-7B18 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B22/3	Same as CFM56-7B18 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B24/3	Same as CFM56-7B18 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B26/3	Same as CFM56-7B18 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B27/3	Same as CFM56-7B18 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B22/3B1	Same as CFM56-7B22/B1 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B22/3B2	Same as CFM56-7B22/B2 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B24/3B1	Same as CFM56-7B24/B1 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B26/3B1	Same as CFM56-7B26/B1 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B26/3B2	Same as CFM56-7B26/B2 except for increased thrust ratings, low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B26/3B2F	Same as CFM56-7B26/3B2 except for increased EGT limits.
	CFM56-7B27/3B1	Same as CFM56-7B1 except for low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B27/3B1F	Same as CFM56-7B27/3B3 except for increased EGT limits.
	CFM56-7B27/3B3	Same as CFM56-7B3 except for low emissions combustor and redesigned compressor and HPT rotor.
	CFM56-7B26/3F	Same as CFM56-7B26/3 except for increased EGT limits.
	CFM56-7B27/3F	Same as CFM56-7B27/3 except for increased EGT limits.

**CLÁUDIO PASSOS SIMÃO****Gerente Geral, Certificação de Produtos Aeronáuticos
(Manager, Aeronautical Products Certification)**