

TYPE-CERTIFICATE DATA SHEET

No. IM.E.016 issue 10

for
FJ44/FJ33 Series Engines

Type Certificate Holder
Williams International Co.

Walled Lake
Michigan 48390-0200
USA

For Models:

FJ44-1A
FJ44-1AP
FJ44-2A
FJ44-2C
FJ44-3A
FJ44-3A-24
FJ44-3AP
FJ44-4A
FJ44-4A-32
FJ44-4A-QPM
FJ33-5A



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I. General

1. Type/ Model

FJ44-1A, FJ44-1AP, FJ44-2A, FJ44-2C, FJ44-3A, FJ44-3A-24, FJ44-3AP, FJ44-4A, FJ44-4A-32, FJ44-4A-QPM and FJ33-5A

2. Type Certificate Holder

Williams International Co., LLC
Walled Lake
Michigan 48390-0200
USA

3. Manufacturer

Williams International Co.

4. Date of Application

FJ44-1A	FJ44-1AP	FJ44-2A	FJ44-2C	FJ44-3A
28 February 1991	20 February 2004	12 September 1996	31 July 2000	22 February 2002
FJ44-3A-24	FJ44-3AP	FJ44-4A	FJ44-4A-32	FJ44-4A-QPM
1 December 2004	02 June 2011	11 September 2008	22 January 2013	10 February 2016
FJ33-5A				
27 May 2015				

5. Validation Reference Date:

8 December 1989 (original)

6. EASA Type Certification Date

FJ44-1A	FJ44-1AP	FJ44-2A	FJ44-2C	FJ44-3A
24 November 1992	8 March 2006	9 July 2001	9 July 2001	30 November 2005
FJ44-3A-24	FJ44-3AP	FJ44-4A	FJ44-4A-32	FJ44-4A-QPM
30 November 2005	4 May 2012	18 May 2011	17 April 2015	04 August 2017
FJ33-5A				
25 April 2017				



EASA Type Certification for the FJ44-1A, FJ44-2A and FJ44-2C engine models is granted in accordance with article 2 paragraph 3 (a)(i) of EU Commission Regulation EC 1702/2003, based on the CAA United Kingdom validation letter issued following the JAA Validation Recommendation.

II. Certification Basis

1. FAA Certification Basis Details:

see FAA TCDS E3GL

2. EASA Certification Basis

2.1. Airworthiness Standards

2.1.1. FJ44-1A

JAR-E change 7 plus amendment E/89/1, effective 24 October 1989
Emissions and Fuel Venting: ICAO Annex 16, Volume II, 2nd Edition, 1993

2.1.2. FJ44-2A and FJ44-2C

JAR-E change 9, effective 21 October 1994
Emissions and Fuel Venting: ICAO Annex 16, Volume II, 2nd Edition, 1993

2.1.3. FJ44-3A and FJ44-3A-24

JAR-E amendment 11 dated 1 November 2001
Emissions and Fuel Venting: EC 1702 Annex Part 21A. 18(b) dated 27 September 2003

2.1.4. FJ44-1AP

JAR-E amendment 11 dated 1 November 2001 with addition of the following applicable to p/n 72100-201 control system changes: Failure Analysis CS-E150, Controls CS-E 50.

Provisions for Instruments CS-E60. Fire Precautions CS-E 130 (e), of CS-E Amendment 3

Emissions and Fuel Venting: EC 1702 Annex Part 21A.18(b) dated 21 August 2012

2.1.5. FJ44-4A

CS-E Amendment 1 dated 10 December 2007
Emissions and Fuel Venting: EC 1702 Annex part 21A.18(b) dated 20 February 2008

2.1.6 FJ44-3AP

CS-E Amendment 3 dated 23 December 2010
Emissions and Fuel Venting: EC 1702 Annex Part 21A.18(b) dated 20 February 2008



2.1.7. FJ44-4A-32

CS-E Amendment 3, dated 23 December 2010
Emissions and Fuel Venting: EC 1702 Annex Part21A. 18(b) dated 21 August 2012

2.1.8. FJ33-5A

CS-E Amendment 3, dated 23 December 2010
Emissions and Fuel Venting: EC 1702 Annex Part21A. 18(b) dated 21 August 2012

2.1.9 FJ44-4A-QPM

CS-E Amendment 3 dated 23 December 2010
Emissions and Fuel Venting: EC 1702 Annex Part 21A 18(b) dated 21 August 2012

2.2. Special Conditions (SC)

2.2.1 FJ44-1A

PC338-1: Ingestion of Rain and Hail

2.2.2 FJ44-2A and FJ44-2C

PC338.1: Ingestion of Rain and Hail
N1 Overspeed

2.2.3 FJ44-1AP, FJ44-3A and FJ44-3A-24

Programmed Logic Devices

2.2.4. FJ44-4A and FJ44-4A-32

None

2.2.5. FJ44-3AP

None

2.2.6. FJ33-5A

None

2.2.7 FJ44-4A-QPM

None

2.3. Deviations

None



2.4. Equivalent Safety Findings

2.4.1 FJ44-1A

JAR-E850: Compressor Fan and Turbine Shafts

2.4.2. FJ44-3A, FJ44-3A-24, FJ44-1AP

JAR-E740 Endurance Test



III. Technical Characteristics

1. Type Design Definition

FJ44-1A	Parts List 45700-104
FJ44-1AP	Parts List 72100-200, 72100-201
FJ44-2A	Parts List 5600, 56000-103, 56000-104
FJ44-2C	Parts List 60500, 60500-103
FJ44-3A	Parts List 67000-00, 67000-202
FJ44-3A-24	Parts List 75000-200
FJ44-3AP	Parts List 111000, 111000-202
FJ44-4A	Parts List 73200-200
FJ44-4A-32	Parts List 127000-200
FJ33-5A	Parts List 79400-201
FJ44-4A-QPM	Parts List 73200-201

2. Description

The FJ44-1A is a twin spool turbofan with a single-stage fan and a single-stage axial compressor directly driven by a two-stage turbine, a single-stage centrifugal compressor driven by a single stage turbine, an annular combustor and a full length bypass duct.

The FJ44-2A is similar to the FJ44-1A except that a new fan, two additional stages of IP compression, an exhaust mixer and an electronic fuel control unit (EFCU) have been incorporated.

The FJ44-2C is similar to the FJ44-2A except that an integrated hydromechanical fuel control (IFCU) has been incorporated.

The FJ44-3A is similar to the FJ44-2C except that an increased diameter fan and a dual channel Full Authority Digital Engine Control (FADEC) have been incorporated.

The FJ44-3A-24 is similar to the FJ44-3A except that it has a reduced thrust rating.

The FJ44-3AP engine is similar to the Model FJ44-3A, except that it has a new IP Compressor rotor and corresponding stators (3 stages).

The FJ44-1AP is similar to the FJ44-1A except that an increased pressure ratio fan, a new combustor, a new LP turbine, a dual channel FADEC and a new full length by-pass duct and exhaust mixer have been incorporated.

The FJ44-4A is similar to the FJ44-3A, geometrically larger by a factor of 1.1., and incorporates a composite inlet and aerodynamically improved IP compressor design.

The FJ44-4A-32 is identical to the FJ44-4A except that the engine has a reduced takeoff rating by incorporating reduced thrust schedules in the FADEC.

The FJ33-5A is similar to the FJ44-3AP, with smaller diameter and thrust rating. In addition, a new FADEC system consisting of a dual channel Engine Control Unit (ECU) and Fuel Control Unit (FCU) has been incorporated.



The FJ44-4A-QPM engine is similar to the FJ44-4A except that a new FADEC system consisting of dual channel Engine Control Unit (ECU) and Fuel Control Unit (FCU) has been incorporated.

For each engine model number, there may be minor differences in the engine configuration, including the addition of optional components, based upon specific airframe installation requirements. See Engine Assembly Part No. identified in Part III.1 for specific engine configuration.

3. Equipment

Engine equipment is specified by the applicable Type Design Definition.

4. Dimensions m (ins)

	FJ44-1A	FJ44-1AP	FJ44-2A and FJ44- 2C	FJ44-3A and FJ44- 3A-24	FJ44-3AP	FJ44-4A, FJ44-4A-32 and FJ44-4A-QPM	FJ33-5A
Overall Length	1.35 (53.3)	1.47 (57.9)	1.52 (59.8)	1.58 (62.4)	1.58 (62.4)	1.74 (68.6)	1.09 (42.7)
Overall Height	0.75 (29.6)	0.79 (31.1)	0.75 (29.6)	0.79 (31.1)	0.80 (31.6)	0.82 (32.3)	0.64 (25.1)

5. Dry Weight kg (lb)

FJ44-1A	FJ44-1AP	FJ44-2A	FJ44-2C	FJ44-3A and FJ44- 3A-24	FJ44-3AP	FJ44-4A, FJ44-4A-32 and FJ44-4A-QPM	FJ33-5A
208.7 (460)	212.3 (468)	240.5 (530)	235.9 (520)	242.7 (535)	234.1 (516)	304.0 (670)	144.7 (319)

See Note 1

6. Ratings

Model	Static Thrust daN (lbf)	
	Take off (5 minutes)	Maximum Continuous
FJ44-1A	845 (1900) at 22.2°C (72 °F)	845 (1900) at 15°C (59 °F)
FJ44-1AP	847 (1965) at 22.2°C (72 °F)	867 (1950) at 15°C (59 °F)
FJ44-2A	1023 (2300) at 22.2°C (72 °F)	1023 (2300) at 15°C (59 °F)
FJ44-2C	1068 (2400) at 22.2°C (72 °F)	1068 (2400) at 15°C (59 °F)
FJ44-3A	1254 (2820) at 26.1°C (79 °F)	1254 (2820) at 11.7°C (53 °F)
FJ44-3A-24	1107 (2490) at 22.2°C (72 °F)	1107 (2490) at 15°C (59 °F)
FJ44-3AP	1358 (3052) at 22.2°C (72 °F)	1358 (3052) at 11.7°C (53 °F)
FJ44-4A	1610 (3,621) at 26.1°C (79 °F)	1531 (3,443) at 7.8°C (46 °F)
FJ44-4A-32	1437 (3,230) at 32.2°C (90 °F)	1435 (3,227) at 20°C (68 °F)
FJ44-4A-QPM	1608 (3,616) at 22.7°C (73°F) Maximum 1528 (3,435) at 22.7°C (73°F) Normal	1527 (3,433) at 15°C (59°F)
FJ33-5A	821 (1846) at 15.6°C (60°F)	821 (1846) at 7.8°C (46°F)

See Notes 2 and 3.



7. Control System

The FJ44-1A has a hydromechanical Fuel Control with High Pressure Rotor (N2) speed governing.
The FJ44-2A has a single channel electronic fuel control with N2 speed governing in hydromechanical mode.
The FJ44-2C has a hydromechanical integrated fuel control with N2 speed governing.
The FJ44-3A, FJ44-3A-24, FJ44-3AP, FJ44-1AP, FJ44-4A, FJ44-4A-32, FJ44-4A-QPM and FJ33-5A have a dual channel Full Authority Digital Engine Control system.

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

Refer to applicable Maintenance Manual for approved fuels, oils and additives.

9. Aircraft Accessory Drives

The following information applies to the engine accessory gearbox drives for FJ44-1A, FJ44-1AP, FJ44-2A, FJ44-2C, FJ44-3A, FJ44-3A-24 and FJ44-3AP models:

Drive	Rotation Direction Facing Pad	Speed Ratio to N2*	Maximum Continuous Torque Nm (in lb)	Maximum Overload Torque ** Nm (in lb)	Maximum Static Torque Nm (in lb)	Maximum Weight kg (lb)	Maximum Overhung Moment Nm (in lb)
Starter	CW	0.2859	See installation instructions as identified in Part V.	See installation instructions as identified in Part V.	-74,58 (-660)	17.24 (38)	23.73 (210)
High Speed Accessory ++	CW	0.1906	6.55 (58)	9.60 (85)	11.30 (100)	2.27 (5) FJ44-3AP: 1.69 (15)	1.69 (15) FJ44-3AP: 6.21 (55)
Low Speed Accessory ++	CW	0.1092	11.41 (101)	16.95 (150)	11.30 (100)	4.54 (10)	3.39 (30)

* 100% High Pressure Rotor Speed (N2) is 41,200 rpm

** 5 minutes per 4 hour operating period

+ start or breakaway torque is negative for torque into drive pad

++ engine is equipped with either a low speed or a high speed accessory drive pad.



The following information applies to the engine accessory gearbox drives for FJ44-4A, FJ44-4A-32 and FJ44-4A-QPM models:

Drive	Rotation Direction Facing Pad	Speed Ratio to N2*	Maximum Continuous Torque Nm (in lb)	Maximum Overload Torque** Nm (in lb)	Maximum Static Torque+ Nm (in lb)	Maximum Weight kg (lb)	Maximum Overhung Moment Nm (in lb.)
Starter	CW	0.3146	See Installation Instructions as identified in Part V.	See installation Instructions as identified in Part V.	-74,58 (-660)	17.24 (38)	24.86 (220)
High Speed Accessory	CCW	0.3146	See installation instructions as identified in Part V.	See installation instructions as identified in Part V.	14.12 (125)	17.24 (8)	24.86 (220)
Low Speed Accessory	CW	0.1506	15.25	195	15.25 (135)	4.54 (10)	5.65 (50)

- * 100% High Pressure Rotor Speed (N2) is 37,450 rpm
- ** 5 minutes maximum in any 4-hour operating period
- + Start or breakaway torque is negative for torque into drive pad

The following information applies to the engine accessory gearbox drives for FJ33-5A model.

Drive	Rotation Direction, Facing Pad	Speed Ratio Driven/ N2*	Maximum Continuous Torque Nm (in lb)	Maximum Overload Torque** Nm (in lb)	Maximum Static Torque + Nm (in lb)	Maximum Weight kg (lb.)	Maximum Overhung Moment Nm (in-lb.)
Starter Generator	CW	0.22885	See Installation Instructions as identified in Part V.	See Installation Instructions as identified in Part V.	-74.58 (-660)	17.24 (38)	23.73 (210)
Accessory	CW	0.15257	See Installation Instructions as identified in Part V.	See Installation Instructions as identified in Part V.	11.30 (100)	6.80 (15)	6.21 (55)

- * 100% High Pressure Rotor Speed (N2) is 51,500 rpm
- ** 5 minutes maximum in any 4-hour operating period
- + Start or breakaway torque is negative for torque into drive pad



10. Maximum Permissible Air Bleed Extraction

See notes 5 & 6

10.1. High Pressure Bleed (% of core airflow)

Model	Maximum Both Ports	Maximum One Port	Minimum	Maximum Starting
FJ44-1A	13.0	6.5	0	143.2 mm ² (0.222 in ²) sharp edge orifice, equivalent flow
FJ44-1AP	12.0 or 18.5 kg/min (40.8 lbs/min) Whichever is less	6.0 or 18.5 kg/min (40.8 lbs/min) Whichever is less		143.2 mm ² (0.222 in ²) sharp edge orifice, equivalent flow
FJ44-2A	12.0 or 20.41 kg/min (45 lb/min) whichever is less	6.0 or 20.41 kg/min (45 lb/min) whichever is less	0	143.2 mm ² (0.222 in ²) sharp edge orifice, equivalent flow
FJ44-2C	12.0 or 20.41 kg/min (45 lb/min) whichever is less	6.0 or 20.41 kg/min (45 lb/min) whichever is less	0	143.2 mm ² (0.222 in ²) sharp edge orifice, equivalent flow
FJ44-3A	20.0 or 22.68 kg/min (50 lb/min) whichever is less	10.0 or 22.68 kg/min (50 lb/min) whichever is less	12.9 mm ² (0.020 in ²) sharp edge orifice, equivalent flow	143.2 mm ² (0.222 in ²) sharp edge orifice, equivalent flow
FJ44-3A-24	20.0 or 22.68 kg/min (50 lb/min) whichever is less	10.0 or 22.68 kg/min (50 lb/min) whichever is less	34.2 mm ² (0.053 in ²) sharp edge orifice, equivalent flow	143.2 mm ² (0.222 in ²) sharp edge orifice, equivalent flow
FJ44-3AP	20.0 or 26.76 kg/min (59 lb/min) whichever is less	10.0 or 26.76 kg/min (59 lb/min) whichever is less	0	143.2 mm ² (0.222 in ²) sharp edge orifice, equivalent flow
FJ44-4A	21.32 kg/min (47 lb./min)	21.32 kg/min (47 lb./min)	0	173.5 mm ² (0.269 in ²) sharp edge orifice, equivalent flow
FJ44-4A-32	20.0 or 18.60 kg/min (41 lb./min) whichever is less	10.0 or 18.60 kg/min (41 lb./min) whichever is less	0	173.5 mm ² (0.269 in ²) sharp edge orifice, equivalent flow
FJ44-4A-QPM	19.7 kg/min* (43.5 lb/min)*	19.7 kg/min* (43.5 lb/min)*	0	173.5 mm ² (0.269 in ²) sharp edge orifice, equivalent flow
FJ33-5A	18.14 kg/min (40 lb./min)	18.14 kg/min (40 lb./min)	0	91.6 mm ² (0.142 in ²) sharp edge orifice, equivalent flow



10.2 IP Compressor Bleed

IP compressor bleed is optional for the engine models identified below. See part list identified in Part III.1 for specific engine configuration. Bleed flow is limited to the flow which can be extracted from the single bleed port when discharged to ambient static pressure. See Operating Instructions identified in Part V to determine effect of bleed on engine performance. IP compressor bleed is available on the following engine models:

FJ44-2A
FJ44-2C

10.3 Fan Bleed

Fan bleed is optional for the engine models identified below. See parts list identified in Part III.1 for specific engine configuration. Bleed flow is limited to the flow which can be extracted from one bleed port when discharged to ambient static pressure. See Operating Instructions identified in Part V to determine the effect of bleed on engine performance. Fan bleed is available on the following engine models:

FJ44-1AP
FJ44-2A
FJ44-2C
FJ44-3A
FJ44-3A-24
FJ44-3AP
FJ44-4A
FJ44-4A-32
FJ33-5A

IV. Operational Limits

1. Temperature Limits

1.1 Maximum Interturbine Temperature (ITT): (Measured average of six thermocouples)

Model	Take off (5 minutes) ^{°C} (^{°F})	Maximum Continuous ^{°C} (^{°F})	Transient ^{°C} (^{°F})	Maximum Starting
FJ44-1A	820 (1508)	796 (1465)	832 (1530) for 10 seconds	See Operating Instructions
FJ44-1AP	855 (1571)	835 (1535)	---	See Operating Instructions
FJ44-2A	820 (1508)	805 (1481)	835 (1535) for 10 seconds	See Operating Instructions
FJ44-2C	820 (1508)	805 (1481)	835 (1535) for 10 seconds	See Operating Instructions
FJ44-3A	877 (1610)	841 (1545)	891 (1635) for 10 seconds	See Operating Instructions
FJ44-3A-24	877 (1610)	841 (1545)	891 (1635) for 10 seconds	See Operating Instructions



Model	Take off (5 minutes)°C (°F)	Maximum Continuous °C (°F)	Transient °C (°F)	Maximum Starting
FJ44-3AP	872 (1601)	844 (1552)	877 (1611) for 10 seconds	See Operating Instructions
FJ44-4A	855 (1571)	835 (1535)	No transient permitted	See Operating Instructions
FJ44-4A-32	855 (1571)	835 (1535)	No transient permitted	See Operating Instructions
FJ44-4A-QPM	855 (1571)	835 (1535)	No transient permitted	See Operating Instructions
FJ33-5A	862 (1583)	836 (1537)	877 (1611) for 10 sec	See Operating Instructions

Refer to Engine Operating Instructions for time/temperature envelope and inspection requirements when limits are exceeded.

1.2 Fuel Temperature:

Refer to relevant Installation Manual.

1.3 Oil Temperature: (Measured at oil cooler exit)

Model	Maximum °C (°F)	Minimum Start and Idle (ground & flight)°C (°F)	Minimum Takeoff °C (°F)
FJ44-1A	121 (250)	-40 (-40)	10 (50)
FJ44-1AP	135 (275) 149 (300) for 5 minutes	-40 (-40)	10 (50)
FJ44-2A	135 (275) 149 (300) for 5 minutes	-40 (-40)	10 (50)
FJ44-2C	135 (275) 149 (300) for 5 minutes	-40 (-40)	10 (50)
FJ44-3A	135 (275) 149 (300) for 5 minutes	-40 (-40)	10 (50)
FJ44-3A-24	135 (275) 149 (300) for 5 minutes	-40 (-40)	10 (50)
FJ44-3AP	135 (275) 149 (300) for 5 minutes	-40 (-40)	10 (50)
FJ44-4A	135 (275) 149 (300) for 5 minutes when operating below 80% N2	-40 (-40)	10 (50)
FJ44-4A-32	135 (275) 149 (300) for 5 minutes when operating below 80% N2	-40 (-40)	10 (50)



Model	Maximum °C (°F)	Minimum Start and Idle (ground & flight) °C (°F)	Minimum Takeoff °C (°F)
FJ44-4A-QPM	135 (275) 149 (300) for 5 minutes when operating below 80% N2	-40 (-40)	10 (50)
FJ33-5A	135 (275) 149 (300) for 5 minutes when operating below 80% N2	-40 (-40)	10 (50)

1.4 Ambient Temperature:

Model	Maximum °C (°F)	Minimum °C (°F)	Minimum Starting °C (°F)
FJ44-1A	121 (250)	-54 (-65)	-40 (-40)
FJ44-1AP	149 (300)	-54 (-65)	-40 (-40)
FJ44-2A	121 (250)	-54 (-65)	-40 (-40)
FJ44-2C	149 (300)	-54 (-65)	-40 (-40)
FJ44-3A	149 (300)	-54 (-65)	-40 (-40)
FJ44-3A-24	149 (300)	-54 (-65)	-40 (-40)
FJ44-3AP	149 (300)	-54 (-65)	-40 (-40)
FJ44-4A	149 (300)	-54 (-65)	-40 (-40)
FJ44-4A-32	149 (300)	-54 (-65)	-40 (-40)
FJ44-4A-QPM	149 (300)	-54 (-65)	-40 (-40)
FJ33-5A	149 (300)	-54 (-65)	-40 (-40)



2. Maximum Permissible Rotor Speeds:

2.1 Low Pressure Rotor: (N1) - rpm (%)

Model	Take off	Maximum Continuous	Transient
FJ44-1A	18,000 (104.4)	18,000 (104.4)	18,160 (105.3) for 20 s
FJ44-1AP	18,055 (104.69)	18,055 (104.69)	no transient permitted
FJ44-2A	18,150 (105.2)	18,150 (105.2)	18,350 (106.4) for 30 s
FJ44-2C	18,300 (106.1)	18,300 (106.1)	18,500 (107.3) for 30 s
FJ44-3A	18,500 (102.8)	18,500 (102.8)	18,700 (103.9) for 20 s
FJ44-3A-24	18,500 (102.8)	18,500 (102.8)	18,700 (103.9) for 20 s
FJ44-3AP	18,853 (104.7)	18,853 (104.7)	19,033 (105.7) for 30 s
FJ44-4A	17,139 (104.8)	17,139 (104.8)	17,303 (105.8) for 2 min
FJ44-4A-32	17,139 (104.8)	17,139 (104.8)	17,303 (105.8) for 2 min
FJ44-4A-QPM	17,139 (104.8)	17,139 (104.8)	17,303 (105.8) for 2 min
FJ33-5A	23,566 (104.7)	23,566 (104.7)	23,791 (105.7) for 30 s

2.2 High Pressure Rotor: (N2) - rpm (%)

Model	Take off	Maximum Continuous	Transient
FJ44-1A	40,900 (99.3)	40,900 (99.3)	N/A
FJ44-1AP	41,200 (100.0)	40,900 (99.3)	N/A
FJ44-2A	40,700 (98.8)	40,700 (98.8)	N/A
FJ44-2C	40,900 (99.3)	40,900 (99.3)	N/A
FJ44-3A	41,200 (100.0)	41,200 (100.0)	41,500 (100.7) for 20 s
FJ44-3A-24	41,200 (100.0)	41,200 (100.0)	41,500 (100.7) for 20 s
FJ44-3AP	41,550 (100.9)	41,550 (100.9)	41,850 (100.6) for 30 s
FJ44-4A	37,773 (100.9)	37,773 (100.9)	38,045 (101.6) for 2 min
FJ44-4A-32	37,773 (100.9)	37,773 (100.9)	38,045 (101.6) for 2 min
FJ44-4A-QPM	37,773 (100.9)	37,773 (100.9)	38,045 (101.6) for 2 min
FJ33-5A	51,703 (100.4)	51,703 (100.4)	51,844 (100.7) for 30 s

If limits are exceeded, refer to Engine Operating Instructions for maintenance action.



2.3 Reference (100%) Shaft Speeds:

Model	Low Pressure Rotor (N1) rpm	High Pressure Rotor (N2) rpm
FJ44-1A	17,245	41,200
FJ44-1AP	17,245	41,200
FJ44-2A	17,245	41,200
FJ44-2C	17,245	41,200
FJ44-3A	18,000	41,200
FJ44-3A-24	18,000	41,200
FJ44-3AP	18,000	41,200
FJ44-4A	16,360	37,450
FJ44-4A-32	16,360	37,450
FJ44-4A-QPM	16,360	37,450
FJ33-5A	22,500	51,500



3. Pressure Limits

3.1 Fuel Pressure

Refer to applicable Installation Instructions

3.2 Oil Pressure

kPa (psig) Measured at Oil Cooler Exit:

	Maximum		Minimum		
		5 min, above N ₂ =32,960rpm	above N ₂ =32,960rpm	Idle to N ₂ =32,960rpm	5 min, Idle to N ₂ =32,960rpm
FJ44-1A	620.5 (90)	689.4 (100)	310.3 (45)	241.3 (35)	172.4 (25)
FJ44-1AP	827.4 (120)	896.3 (130)	310.3 (45)	241.3 (35)	158.6 (23)
FJ44-2A	620.5 (90)	689.4 (100)	310.3 (45)	241.3 (35)	158.6 (23)
FJ44-2C	620.5 (90)	689.4 (100)	310.3 (45)	241.3 (35)	158.6 (23)
FJ44-3A	620.5 (90)	689.4 (100)	310.3 (45)	241.3 (35)	158.6 (23)
FJ44-3A-24	620.5 (90)	689.4 (100)	310.3 (45)	241.3 (35)	158.6 (23)
FJ44-3AP	827.4 (120)	896.3 (130)	310.3 (45)	241.3 (35)	158.6 (23)

	Maximum		Minimum		
		5 min, above N ₂ =29,960rpm	above N ₂ =29,960rpm	Idle to N ₂ =29,960rpm	5 min, Idle to N ₂ =29,960rpm
FJ44-4A	827.4 (120)	896.3 (130)	275.8 (40)	206.8 (30)	158.6 (23)
FJ44-4A-32	827.4 (120)	896.3 (130)	275.8 (40)	206.8 (30)	158.6 (23)
FJ44-4A-QPM	827.4 (120)	896.3 (130)	275.8 (40)	206.8 (30)	158.6 (23)

	Maximum		Minimum		
		5 min	above N ₂ =41,200rpm	Idle to N ₂ =41,200rpm	5 min, Idle to N ₂ =41,200rpm
FJ33-5A	827.4 (120)	896.3 (130)	310.3 (45)	241.3 (35)	158.6 (23)

4. Installation Assumptions:

The installation assumptions are quoted in the applicable Engine Installation Manual.

5. Time Limited Dispatch:

Dispatch of aircraft fitted with FJ44-1AP, FJ44-3A, FJ44-3A-24, FJ44-3AP, FJ44-4A, FJ44-4A-32, FJ44-4A-QPM or FJ33-5A engines is permitted with certain control system faults present subject to the limitations identified in Chapter 5 of the Airworthiness Limitations Section (ALS) of the applicable Maintenance Manual.



V. Operating and Service Instructions

Model	Engine Assembly Part Number	Maintenance Manual	Engine Manual	Installation Instructions	Operating Instructions
FJ44-1A	45700-104	50773	50774	50772	50771
FJ44-1AP	72100-200	73568	73569	75274	75274
	72100-201	73568	73569	75274-201	75274-201
FJ44-2A	56000	56210	59870	56208	56209
	56000-103				
	56000-104				
FJ44-2C	60500	64135	74118	63784	63785
	60500-103				
FJ44-3A	67000-200	68585	68659	68583	68584
	67000-202	68585-202	68659-202	68583-202	68584-202
FJ44-3A-24	75000-200	68585	68659	68583	68584
FJ44-3AP	111000	111339	111341	111366	111366
	111000-202	111339-202	111341	111366-202	111366-202
FJ44-4A	73200-200	110990	110992	110675	110675
FJ44-4A-32	127000-200	110990	110992	119190	119190
FJ44-4A-QPM	73200-201	110990-201	110992	110675-201	110675-201
FJ33-5A	79400-201	111343-201	111345	112471	112471

VI. Notes

1. Standard Equipment

Engine dry weight included the following standard equipment: oil cooler, integral oil tank, accessory drives, customer bleed interfaces, rotor speed transducers, ITT thermocouples and wiring harnesses; fuel and oil filter impeding by pass sensors; fuel flowmeter mounting provisions. Engine dry weight does not include starter; propelling nozzle; or ignition system electrical source. See Installation instructions for complete dry weight details.

Engine gearbox mounted equipment:

Model	Lubrication Pump	Fuel Control	Fuel Pumps	Permanent Magnet Alternator (PMA)
FJ44-1A	Standard Equipment	Standard Equipment (HMU)	Standard Equipment	-
FJ44-1AP	Standard equipment	Standard equipment (FDU)	Integral with FDU	Integral with FDU
FJ44-2A	Standard equipment	Standard equipment (HMU)	Standard equipment	-
FJ44-2C	Standard equipment	Standard equipment (IFCU)	Integral with IFCU	-



Model	Lubrication Pump	Fuel Control	Fuel Pumps	Permanent Magnet Alternator (PMA)
FJ44-3A	Standard equipment	Standard equipment (FDU)	Integral with FDU	Integral with FDU
FJ44-3A-24	Standard equipment	Standard equipment (FDU)	Integral with FDU	Integral with FDU
FJ44-3AP	Standard equipment	Standard equipment (FDU)	Integral with FDU	Integral with FDU
FJ44-4A	Standard equipment	Standard equipment (FDU)	Integral with FDU	Integral with FDU
FJ44-4A-32	Standard equipment	Standard equipment (FDU)	Integral with FDU	Integral with FDU
FJ44-4A-QPM	Standard equipment	Standard equipment	Integral with FCU	Integral with FCU
FJ33-5A	Standard equipment	Standard equipment	Integral with FCU	Integral with FCU

Airframe Mounted Equipment

Model	TT2 Sensor	TT2/PT2 Sensor	TT2 Probe	PT2 Sensor	ECU	FADEC
FJ44-1A	-	-	-	-	-	-
FJ44-1AP	-	Standard equipment (72100-200)	Standard equipment (72100-201)	Standard equipment (72100-201)	-	Standard equipment
FJ44-2A	Standard equipment	-	-	-	Standard equipment	-
FJ44-2C	-	-	-	-	-	-
FJ44-3A	-	Standard equipment	-	-	-	Standard equipment
FJ44-3A-24	-	Standard equipment	-	-	-	Standard equipment
FJ44-3AP	-	-	Standard equipment	Standard equipment	-	Standard equipment
FJ44-4A	-	-	Standard equipment	Standard equipment	-	Standard equipment
FJ44-4A-32	-	-	Standard equipment	Standard equipment	-	Standard equipment
FJ44-4A-QPM	-	-	Standard equipment	Standard equipment	Standard equipment	-
FJ33-5A	-	-	Standard equipment (Quantity 2)	Standard equipment	Standard equipment	-



2. Engine Ratings

Engine ratings are based on static un-installed thrust stand performance at the following conditions:

- 0% humidity
- Sea level ambient pressure of 101.3 kPa (14.69 psia)
- No aircraft accessory gearbox loads
- No aircraft air bleed
- 0% inlet total pressure loss
- Exhaust nozzle as specified in the applicable engine installation manual

Variation of the rated thrust with the ambient temperature is included in the Installation Instructions identified in Section V.

Section V lists multiple engine assembly part numbers for some engine models. These additional part numbers are for alternative configurations of the basic engine model that include integrated Propulsion System components such as inlets, bleed or exhaust systems. These components are part of the engine type. While some of these alternative configurations may have engine thrust reduced from that identified in accordance with the conditions identified above, the base engine model in all cases produces the rated thrust published in the ETCDS. See the Installation Instructions identified in Section V for the thrust associated with each unique engine assembly part number.

One engine inoperative operation

For the FJ44-1A, FJ44-1AP, FJ44-2C, FJ44-3A, FJ44-3A-24, FJ44-3AP, FJ44-4A, FJ44-4A-32 and FJ44-4A-QPM engine models, the take-off rating and its associated operating limitations may be used for a duration not exceeding 10 minutes for one engine inoperative contingency.

3. Thrust Setting

Setting of engine thrust is to be based on power setting charts referencing Low Pressure rotor speed (N1). Refer to the applicable engine operating instructions.

4. Motive Flow

Fuel from the motive flow port on the fuel control unit may be extracted to drive jet or turbine pumps in the aircraft fuel system. Refer to the applicable engine installation instructions.

5. Anti-Icing and De-Icing Requirements

The FJ44-1A and FJ44-2C engines meet JAR-E engine icing requirements without the use of an active anti-icing system.

The FJ44-1AP, FJ44-2A and FJ44-3A, FJ44-3A-24, FJ44-3AP, FJ44-4A, FJ44-4A-32 and FJ33-5A engines require an aircraft supplied electrical power source to provide TT2 (FJ44-2A, FJ44-1AP (72100-201), FJ44-3AP, FJ44-4A, FJ44-4A-32, FJ44-4A-QPM and FJ33-5A) or TT2/PT2 (FJ44-1AP (72100-200)),



FJ44-3A and FJ44-3A-24) sensor anti-icing. Specific requirements for the electrical power source are provided in the applicable engine installation instructions.

For airframe and engine inlet duct icing protection, high pressure bleed air may be extracted up to the maximum bleed extraction limits subject to the restrictions in Note 6.

6. Power Ratings for High Customer Bleed Air Usage

Use of large amounts of high pressure bleed air, such as for aircraft anti-icing, may require reduced thrust settings. Refer to the applicable engine operating instructions.

7. Rotor Disk Integrity and Blade Containment

FJ44/FJ33 series engines meet JAR-E requirements for rotor disk integrity and blade containment. Certain rotor parts are life limited. These life limits are listed in the applicable engine maintenance manual.

8. Airworthiness Limitations

The EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the applicable "Engine Maintenance Manual" document, chapter 5 "Airworthiness Limitations".

9. Engine Mount System

Refer to the applicable engine installation instructions for engine mount dimensions and load limits.

10. Optional Aft Mount

The engine manufacturer supplies optional aft mount rings that position the aft mount attachment point to suit specific aircraft installations. Refer to the applicable engine installation instructions for details.

11. Icing Conditions

For ground operation in icing conditions, requirements, limitations and notes are specified in FJ44- 3AP, FJ44-4A, FJ44-4A-32, FJ44-4A-QPM and FJ33-5A Operating Instructions Manual.



SECTION: ADMINISTRATIVE

I. Acronyms and Abbreviations

n/a

II. Type Certificate Holder Record

n/a

III. Change Record

Issue	Date	Changes	TC issue
Issue 01	01 December 2005	Initial Issue	
Issue 02	08 March 2006	Issue 02	
Issue 03	12 November 2007	Issue 03	
Issue 04	18 May 2011	Issue 04	
Issue 05	08 May 2012	Issue 05	
Issue 06	07 May 2014	Issue 06	
Issue 07	19 May 2014	Issue 07	
Issue 08	17 April 2015	Addition of FJ44-4A-32 model	
Issue 09	25 April 2017	Addition of FJ33-5A	25 April 2017
Issue 10	04 August 2017	Addition of FJ44-4A-QPM	04 August 2017

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