

U.S. DEPARTMENT OF TRANSPORTATION  FEDERAL AVIATION ADMINISTRATION  TYPE CERTIFICATE DATA SHEET E00078NE	TCDS NUMBER E00078NE REVISION: 7 DATE: June 14, 2012  GENERAL ELECTRIC COMPANY MODELS:  GEnx-1B54, GEnx-1B58, GEnx-1B64, GEnx-1B67, GEnx-1B70, GEnx-1B54/P1, GEnx-1B58/P1, GEnx-1B64/P1, GEnx-1B67/P1, GEnx-1B70/P1, GEnx-1B70/72/P1, GEnx-1B70/75/P1, GEnx-1B74/75/P1, GEnx-1B75/P1, GEnx-2B67, and GEnx-2B67B
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Engines of models described herein conforming with this data sheet (which is part of Type Certificate Number E00078NE) 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:           General Electric Company  
   GE Aviation  
   1 Neumann Way  
   Cincinnati, OH 45215-6310

GE Aviation	GEnx-1B54	GEnx-1B58	GEnx-1B64	GEnx-1B67	GEnx-1B70
TYPE	<p>The GEnx-1B engine is a dual rotor, axial flow, high bypass ratio turbofan. The 10-stage high pressure compressor is driven clockwise (Aft Looking Forward) by a 2-stage high pressure turbine. The single stage fan and 4-stage low pressure compressor are driven counterclockwise (Aft Looking Forward) by a 7-stage low pressure turbine. The engine control system includes a Full Authority Digital Engine Control (FADEC), which has an aircraft connection for digital communication. An engine monitoring unit (EMU) provides vibration level signals to the aircraft.</p> <p>The GEnx-2B engine is a dual rotor, axial flow, high bypass ratio turbofan. The 10-stage high pressure compressor is driven clockwise (Aft Looking Forward) by a 2-stage high pressure turbine. The single stage fan and 3-stage low pressure compressor are driven counterclockwise (Aft Looking Forward) by a 6-stage low pressure turbine. The engine control system includes a Full Authority Digital Engine Control (FADEC), which has an aircraft connection for digital communication. An engine monitoring unit (EMU) provides vibration level signals to the aircraft.</p>				
RATINGS (See NOTE 5) Maximum continuous at sea level, static thrust, lb fan speed, rpm  Takeoff (5 min. see NOTE 12) at sea level, static thrust, lb fan speed, rpm  Flat rating ambient temperature Takeoff Maximum Continuous	56,300  2,166  57,400 2,184  86°F / 30°C 77°F / 25°C	--  --  61,000 2,239  -- --	61,500  2,247  67,000 2,326  -- --	--  --  69,400 2,360  -- --	66,500  2,319  72,300 2,401  -- --

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LEGEND: "--" INDICATES "SAME AS PRECEDING MODEL"

"-" NOT APPLICABLE

NOTE: SIGNIFICANT CHANGES ARE BLACK-LINED IN THE LEFT MARGIN

<b>I. MODELS (cont.)</b>	<b>GEnx-1B54</b>	<b>GEnx-1B58</b>	<b>GEnx-1B64</b>	<b>GEnx-1B67</b>	<b>GEnx-1B70</b>
MODEL LIST (Engine Configuration)	GEnx-1B54G01 GEnx-1B54G02 GEnx-1B54G03 GEnx-1B54G04 GEnx-1B54G05	GEnx-1B58G01 GEnx-1B58G02 GEnx-1B58G03 GEnx-1B58G04 GEnx-1B58G05	GEnx-1B64G01 GEnx-1B64G02 GEnx-1B64G03 GEnx-1B64G04 GEnx-1B64G05	GEnx-1B67G01 GEnx-1B67G02 GEnx-1B67G03 GEnx-1B67G04 GEnx-1B67G05	GEnx-1B70G01 GEnx-1B70G02 GEnx-1B70G03 GEnx-1B70G04 GEnx-1B70G05
COMPONENTS (GE P/Ns)					
Fuel Metering Unit	2122M20	--	--	--	--
FADEC Hardware	2121M82 2447M85	-- --	-- --	-- --	-- --
FADEC Software	2124M23P13 (G03-G05 Model List)	--	--	--	--
Configuration Box Engine Configuration	2400M60P03 (G03 Model List) 2400M60P06 (G04/G05 Model List)	-- --	-- --	-- --	-- --
FADEC Rating Plug	2125M31P62	2125M31P08	2125M31P68	2125M31P20	2125M31P74
Fuel Pump	2122M22	--	--	--	--
IGNITION SYSTEM					
Two ignition exciters GE P/N	2121M94	--	--	--	--
Two igniter plugs GE P/N	1754M84	--	--	--	--
PRINCIPAL DIMENSIONS (in)					
Length (Fan spinner to aft centerbody flange)	194.9 in	--	--	--	--
Width (maximum envelope)	139.1 in	--	--	--	--
Height (maximum envelope)	137.2 in	--	--	--	--
WEIGHT (DRY)					
Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	13,505 lbs (G01-G03 Model List) 13,552 lbs (G04/G05 Model List)	-- --	-- --	-- --	-- --
CENTER OF GRAVITY LOCATIONS (in); Engine only					
Station (axial)	216.1 in. (G01-G03 Model List) 216.6 in. (G04/G05 Model List)	-- --	-- --	-- --	-- --
Waterline	99.9 in.	--	--	--	--
Buttline	100.7 in.	--	--	--	--

I. MODELS (cont.)	GEEnx-1B54/P1	GEEnx-1B58/P1	GEEnx-1B64/P1	GEEnx-1B67/P1	GEEnx-1B70/P1
<b>RATINGS (See NOTE 5)</b>					
Maximum continuous at sea level,					
static thrust, lb	56,300	--	61,500	--	66,500
fan speed, rpm	2,166	--	2,247	--	2,319
Takeoff (5 min. see NOTE 12) at sea level,					
static thrust, lb	57,400	61,000	67,000	69,400	72,300
fan speed, rpm	2,184	2,239	2,326	2,360	2,401
Flat rating ambient temperature					
Takeoff	86°F / 30°C	--	--	--	--
Maximum Continuous	77°F / 25°C	--	--	--	--
<b>MODEL LIST (Engine Configuration)</b>	GEEnx-1B54/P1G01	GEEnx-1B58/P1G01	GEEnx-1B64/P1G01	GEEnx-1B67/P1G01	GEEnx-1B70/P1G01
<b>COMPONENTS (GE P/Ns)</b>					
Fuel Metering Unit	2122M20	--	--	--	--
FADEC Hardware	2121M82 2447M85	--	--	--	--
FADEC Software	2124M23P13	--	--	--	--
Configuration Box Engine Configuration	2400M60P10	--	--	--	--
FADEC Rating Plug	2125M31P62	2125M31P08	2125M31P68	2125M31P20	2125M31P74
Fuel Pump	2122M22	--	--	--	--
<b>IGNITION SYSTEM</b>					
Two ignition exciters GE P/N	2121M94	--	--	--	--
Two igniter plugs GE P/N	1754M84	--	--	--	--
<b>PRINCIPAL DIMENSIONS (in)</b>					
Length (Fan spinner to aft centerbody flange)	194.9 in	--	--	--	--
Width (maximum envelope)	139.1 in	--	--	--	--
Height (maximum envelope)	137.2 in	--	--	--	--
<b>WEIGHT (DRY)</b>					
Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	13,552 lbs	--	--	--	--
<b>CENTER OF GRAVITY LOCATIONS (in); Engine only</b>					
Station (axial)	216.6 in	--	--	--	--
Waterline	99.9 in.	--	--	--	--
Buttline	100.7 in.	--	--	--	--

<b>I. MODELS (cont.)</b>	<b>GENx-1B70/72/P1</b>	<b>GENx-1B70/75/P1</b>	<b>GENx-1B74/75/P1</b>	<b>GENx-1B75/P1</b>
<b>RATINGS (see NOTE 5)</b>				
Maximum continuous at sea level,				
static thrust, lb	66,500	--	68,600	68,800
fan speed, rpm	2,319	--	2,375	2,378
<b>Takeoff (5 min. see NOTE 12) at sea level,</b>				
static thrust, lb	72,300	--	76,700	77,600
fan speed, rpm	2,401	--	2,496	2,510
<b>Flat rating ambient temperature</b>				
Takeoff	93.4°F / 34.1°C	101.8°F / 38.8°C	89°F / 31.7°C	86°F / 30°C
Maximum Continuous	77°F / 25°C	--	--	--
<b>MODEL LIST (Engine Configuration)</b>	GENx-1B70/72/P1G01	GENx-1B70/75/P1G01	GENx-1B74/75/P1G01	GENx-1B75/P1G01
<b>COMPONENTS (GE P/Ns)</b>				
Fuel Metering Unit	2122M20	--	--	--
FADEC Hardware	2121M82 2447M85	--	--	--
FADEC Software	2124M23P13	--	--	--
Configuration Box Engine Configuration	2400M60P10	--	--	--
FADEC Rating Plug	2125M31P32	2125M31P80	2125M31P44	2125M31P50
Fuel Pump	2122M22	--	--	--
<b>IGNITION SYSTEM</b>				
Two ignition exciters GE P/N	2121M94	--	--	--
Two igniter plugs GE P/N	1754M84	--	--	--
<b>PRINCIPAL DIMENSIONS (in)</b>				
Length (Fan spinner to aft centerbody flange)	194.9 in	--	--	--
Width (maximum envelope)	139.1 in	--	--	--
Height (maximum envelope)	137.2 in	--	--	--
<b>WEIGHT (DRY)</b>				
Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	13,552 lbs	--	--	--
<b>CENTER OF GRAVITY LOCATIONS (in); Engine only</b>				
Station (axial)	216.6 in	--	--	--
Waterline	99.9 in.	--	--	--
Buttline	100.7 in.	--	--	--

<b>I. MODELS (cont.)</b>	<b>GEnx-2B67</b>	<b>GEnx-2B67B</b>
<b>RATINGS (see NOTE 5)</b>		
Maximum continuous at sea level,		
static thrust, lb	58,500	--
fan speed, rpm	2,604	--
Takeoff (5 min. see NOTE 12) at sea level,		
static thrust, lb	67,400	--
fan speed, rpm	2,806	--
Flat rating ambient temperature		
Takeoff	86°F / 30°C	--
Maximum Continuous	77°F / 25°C	--
<b>MODEL LIST</b> (Engine Configuration)	GEnx-2B67G01 GEnx-2B67G02	GEnx-2B67BG01
<b>COMPONENTS (GE P/Ns)</b>		
Fuel Metering Unit	2122M20	--
FADEC Hardware	2124M70	--
FADEC Software	2124M22P07	--
Configuration Box Engine Configuration	2400M60P04	2400M60P08
FADEC Rating Plug	2125M31P20	--
Fuel Pump	2122M22	--
<b>IGNITION SYSTEM</b>		
Two ignition exciters GE P/N	2139M52	--
Two igniter plugs GE P/N	1754M84	--
<b>PRINCIPAL DIMENSIONS (in)</b>		
Length (Fan spinner to aft centerbody flange)	185.0 in	--
Width (maximum envelope)	126.0 in	--
Height (maximum envelope)	127.3 in	--
<b>WEIGHT (DRY)</b>		
Includes basic engine, basic engine accessories, and optional equipment as listed in the manufacturer's engine specifications.	12,400 lbs	--
<b>CENTER OF GRAVITY LOCATIONS (in); Engine only</b>		
Station (axial)	218.0 in.	--
Waterline	98.4 in.	--
Buttline	99.9 in.	--

I. MODELS (cont.)	ALL
FUEL	See NOTE 7 for approved fuels.
OIL	Refer to GENx-1B Service Bulletin 79-0001 and GENx-2B Service Bulletin 79-0001 and its latest revision for detailed information pertaining to Type 2 oils. These Service Bulletins cover the approved oils conforming to General Electric Specification D50TF1 or the latest revisions that are authorized.

**CERTIFICATION BASIS**

GENx-1B54, -1B58, -1B64, -1B67, and -1B70

- 14 CFR Part 33, effective February 1, 1965, as amended by 33-1 through 33-21 and amendment 33-23 section 33.76.
- Fuel Venting and Exhaust Emissions Standards, 14 CFR Part 34, effective September 10, 1990, as amended by 34-1 through 34-4.
- GENx-1B Fan Blade Special Condition (33-006-SC)
- Equivalent Level of Safety (ELOS) Findings:
  - o ELOS No. 8040-ELOS-08-NE02 to 14 CFR §33.87(a) and (b)
    - Applicable to engines with high pressure turbine stage 1 blade part number 2305M26P03 and/or combustor fuel nozzle part numbers 2255M88P09, 2255M88P10, and 2256M66P10
  - o ELOS No. 8040-ELOS-08-NE03 to 14 CFR §33.27(c)
  - o ELOS No. 8040-ELOS-08-NE04 to 14 CFR §33.90
    - Applicable to engines with combustor chamber part numbers 2257M40G03/G04
  - o ELOS No. 8040-ELOS-08-NE05 to 14 CFR §33.77
  - o ELOS No. 8040-ELOS-10-NE03 to 14 CFR §33.68(a)

GENx-1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1

- 14 CFR Part 33, effective February 1, 1965, as amended by 33-1 through 33-21 and amendment 33-23 section 33.76.
- Fuel Venting and Exhaust Emissions Standards, 14 CFR Part 34, effective September 10, 1990, as amended by 34-1 through 34-4.
- GENx-1B Fan Blade Special Condition (33-006-SC)
- Equivalent Level of Safety (ELOS) Findings:
  - o ELOS No. 8040-ELOS-12-NE01 to 14 CFR §33.27(c)
  - o ELOS No. 8040-ELOS-12-NE02 to 14 CFR §33.68(a)
  - o ELOS No. 8040-ELOS-08-NE05 to 14 CFR §33.77
  - o ELOS No. 8040-ELOS-12-NE03 to 14 CFR §33.87(a) and (b), and §33.93(a)

GENx-2B67 and -2B67B

- 14 CFR Part 33, effective February 1, 1965, as amended by 33-1 through 33-21, and amendment 33-23 section 33.76.
- Fuel Venting and Exhaust Emissions Standards, 14 CFR Part 34, effective September 10, 1990, as amended by 34-1 through 34-4.
- GENx-2B Fan Blade Special Condition (33-007-SC)
- Equivalent Level of Safety (ELOS) Findings:
  - o ELOS No. 8040-ELOS-09-NE01 to 14 CFR §33.27(c)
  - o ELOS No. 8040-ELOS-09-NE02 to 14 CFR §33.77(c) and (e)
  - o ELOS No. AT2432EN-E8040-ELOS-10-NE02 to 14 CFR §33.78

TYPE CERTIFICATE E00078NE

MODELS	APPLICATION DATE	ISSUE/AMMENDED
GENx-1B54	Dec. 13, 2004	March 31, 2008
GENx-1B58	May 24, 2005	March 31, 2008
GENx-1B64	Dec. 13, 2004	March 31, 2008
GENx-1B67	May 24, 2005	March 31, 2008
GENx-1B70	Dec. 13, 2004	March 31, 2008
GENx-1B54/P1	September 21, 2010	June 14, 2012
GENx-1B58/P1	September 21, 2010	June 14, 2012
GENx-1B64/P1	September 21, 2010	June 14, 2012
GENx-1B67/P1	September 21, 2010	June 14, 2012
GENx-1B70/P1	September 21, 2010	June 14, 2012
GENx-1B70/72/P1	September 21, 2010	June 14, 2012
GENx-1B70/75/P1	September 21, 2010	June 14, 2012
GENx-1B74/75/P1	September 21, 2010	June 14, 2012
GENx-1B75/P1	September 21, 2010	June 14, 2012
GENx-2B67	Feb. 28, 2006	July 22, 2010
GENx-2B67B	Oct. 15, 2010	September 12, 2011

PRODUCTION BASIS

Production Certificate No. 108

**NOTES**

NOTE 1. MAXIMUM PERMISSIBLE ENGINE ROTOR SPEEDS

GENx-1B54, -1B58, -1B64, -1B67, -1B70

Low pressure rotor (N1)	2,726 RPM
High pressure rotor (N2)	13,425 RPM

NOTES:

- A) 100 percent N1 is 2,560 RPM
- B) 100 percent N2 is 11,377 RPM

GENx-1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1

Low pressure rotor (N1)	2,778 RPM
High pressure rotor (N2)	13,539 RPM

NOTES:

- A) 100 percent N1 is 2,560 RPM
- B) 100 percent N2 is 11,377 RPM

GENx-2B67, -2B67B

Low pressure rotor (N1)	3,026 RPM
High pressure rotor (N2)	13,425 RPM

NOTES:

- A) 100 percent N1 is 2,835 RPM
- B) 100 percent N2 is 11,377 RPM

NOTE 2. MAXIMUM PERMISSIBLE TEMPERATURES

GENx-1B54, -1B58, -1B64, -1B67, -1B70

Indicated turbine exhaust gas temperature (T49) [see NOTE 5]

Takeoff 5 minutes (see NOTE 12)	1,895°F (1,035°C)
30 seconds Maximum Transient	1,904°F (1,040°C)
Maximum Continuous	1,841°F (1,005°C)

Ground starts (manual or auto)	1,382°F (750°C)
Inflight starts (manual or auto)	1,607°F (875°C)
Inflight starts (high power fuel cut)	1,787°F (975°C)

Oil temperature limits

Continuous	320°F (160°C)
Transient (15 minutes)	350°F (177°C)

GENx-1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1

Indicated turbine exhaust gas temperature (T49) [see NOTE 5]

Takeoff 5 minute (see NOTE 12)	1,940°F (1,060°C)
30 seconds Maximum Transient	1,949°F (1,065°C)
Maximum Continuous	1,886°F (1,030°C)

Ground starts (manual or auto)	1,382°F (750°C)
Inflight starts (manual or auto)	1,607°F (875°C)
Inflight starts (high power fuel cut)	1,787°F (975°C)

Oil temperature limits

Continuous	320°F (160°C)
Transient (15 minutes)	350°F (177°C)

GENx-2B67, -2B67B

Indicated turbine exhaust gas temperature (T49) [see NOTE 5]

Takeoff 5 minute (see NOTE 12)	1,940°F (1,060°C)
30 seconds Maximum Transient	1,949°F (1,065°C)
Maximum Continuous	1,886°F (1,030°C)

Ground starts (manual or auto)	1,382°F (750°C)
Inflight starts (manual or auto)	1,607°F (875°C)
Inflight starts (high power fuel cut)	1,787°F (975°C)

Oil temperature limits

Continuous	320°F (160°C)
Transient (15 minutes)	350°F (177°C)

NOTE 3. FUEL AND OIL PRESSURE LIMITS

FUEL PRESSURE LIMITS AT THE ENGINE PUMP INLET

The limit is from minimum fuel pressures of not less than the greater of true vapor pressure plus 5.0 psi or ambient plus 5.0 psi to a maximum of 70 psig.

For the GENx-1B, on the 787 aircraft, the minimum fuel pressure limit is extended down to minimum fuel pressure of 3.5 psia and maximum vapor-to-liquid ratio (v/l) of 0.45 for up to 60 minutes followed by up to 600 minutes with minimum fuel pressure of 3.5 psia and a maximum vapor-to-liquid ratio (v/l) of 0.28.

OIL PRESSURE LIMITS

See Figure 8-1 of GENx-1B Operating Instructions GEK 112857 and GENx-2B Operating Instructions GEK 114113 for definition of minimum and maximum oil pressures.

NOTE 4. GENx ACCESSORY DRIVE CHARACTERISTICS

GENx-1B54, -1B58, -1B64, -1B67, and -1B70

Accessory	Defined By	Rotation (See Comment A)	Gear Ratio to Core Rotor	Drive Shaft (RPM)	Maximum Weight LB (KG)	Maximum Overhung Moment IN-LB (N·m)	Shear Torque IN-LB (N·m)	Continuous Pad Rating HP (Inflight -total for both VFSG's)	Overload [HP]
VFSG 1	ICNR -GE-BE059	CCW	1.1331	12,891.30	234.4 (106.3) WET	1,718 (194.4)	19,596-20,220 (2,214-2,285)	692 (Dual Engine) 790 (Single Engine)	See Comment C
VFSG 2	ICNR-GE-BE060	CCW	1.1331	12,891.30	234.4 (106.3) WET	1,718 (194.4)	19,596-20,220 (2,214-2,285)	692 (Dual Engine) 790 (Single Engine)	See Comment C
Hydraulic Pump	ICNR-GE-BE057	CCW	0.4438	5,049.10	30.3 (13.74) WET	140 (15.81) WET	2,625-3,715 (297-420)	62	85 [5 sec]
Core Turn	0.5 Square Drive/ Dwg-2305M71	CCW	0.6773	7,705.60	N. A.	N. A.	N. A.	N. A.	N. A.

Comments:

- A. Rotation is defined facing the pad.
- B. 100 percent engine core speed is 11,377rpm.
- C. 1,021 HP total both drive pads at flight idle, with no more than 528 HP on any one drive pad for up to 1 second [single engine].  
866 HP total both drive pads at flight idle, with no more than 471 HP on any one drive pad for up to 5 minutes [dual engine].

NOTE 4.  
(cont.)

GEnx ACCESSORY DRIVE CHARACTERISTICS (continued)

GEnx-1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, -1B75/P1

Accessory	Defined By	Rotation (See Comment A)	Gear Ratio to Core Rotor	Drive Shaft (RPM)	Maximum Weight LB (KG)	Maximum Overhung Moment IN-LB (N-m)	Shear Torque IN-LB (N-m)	Continuous Pad Rating HP (Inflight -total for both VFSG's)	Overload [HP]
VFSG 1	ICNR -GE-BE059	CCW	1.1331	12,891.30	234.4 (106.3) WET	1,718 (194.4)	19,596-20,220 (2,214-2,285)	676 (Dual Engine) 720 (Single Engine)	See Comment C
VFSG 2	ICNR-GE-BE060	CCW	1.1331	12,891.30	234.4 (106.3) WET	1,718 (194.4)	19,596-20,220 (2,214-2,285)	676 (Dual Engine) 720 (Single Engine)	See Comment C
Hydraulic Pump	ICNR-GE-BE057	CCW	0.4438	5,049.10	30.3 (13.74) WET	140 (15.81) WET	2,625-3,715 (297-420)	62	85 [5 sec]
Core Turn	0.5 Square Drive/ Dwg-2305M71	CCW	0.6773	7,705.60	N. A.	N. A.	N. A.	N. A.	N. A.

Comments:

- A. Rotation is defined facing the pad.
- B. 100 percent engine core speed is 11,377rpm.
- C. 1,021 HP total both drive pads at flight idle, with no more than 528 HP on any one drive pad for up to 1 second [single engine].  
866 HP total both drive pads at flight idle, with no more than 471 HP on any one drive pad for up to 5 minutes [dual engine].

NOTE 4.  
(cont.)

GEnx ACCESSORY DRIVE CHARACTERISTICS (continued)

GEnx-2B67 and -2B67B

Accessory	Defined by	Rotation (See Comment A)	Gear Ratio to Core Rotor	Drive Shaft (RPM)	Static Weight LB	Maximum Overhang Moment IN-LB	Shear Torque	Torque
IDG	747-8 Boeing engine specification	CCW	0.6696	4654 to 8989 (See Comment C)	IDG 126.8 QAD 5.6	900	9000 ± 400 in-lb	(in-lb) 2245 - CONTINUOUS 3575 – TRANSIENT (See Comment D) 5250 – MOMENTARY (See Comment E)
HYDRAULIC PUMP	747-8 Boeing engine specification	CCW	0.3157	2194 to 4238	40.1 DRY	261 WET	4550 ± 300 in-lb	(in-lb) 1103 - CONTINUOUS 1790 – TRANSIENT (See Comment F) 4250 – FAILURE (See Comment G)
AIR TURBINE STARTER	M50TF4062	CCW	1.1331	58.4 % N2 (5863 RPM) MAX CUT OUT	49.38	300	1685 ft-lb	(ft-lb) Cold Day APU Start 617 XBL Start 820
CORE TURN	0.5 SQUARE DRIVE	CCW	0.6773	7705.6	N.A.	N.A.	N.A.	N.A.

Comments:

- A. Rotation is defined facing the pad
- B. 100 percent engine core speed is 11,377rpm.
- C. IDG online speed: 4,600 rpm. Load is removed when input remains 4,450 RPM or less for 150 ± 50 ms.
- D. Once every 1,000 engine operating hours.
- E. Once every 5,000 engine operating hours.
- F. Peak running torque at engine start and at maximum flow for simultaneous flap and gear operation (takeoff condition).
- G. Torque experienced during an input shaft shear event.

NOTE 5. ENGINE RATINGS

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

1. Sea level static, standard pressure (14.696 psia), 59 °F
2. No customer bleed or customer horsepower extraction
3. Ideal inlt, 100% ram recovery
4. Production aircraft flight cowling
5. Production instrumentation
6. Fuel lower heating value of 18,400 BTU/lb

NOTE 6. MAXIMUM PERMISSABLE BLEED AIR EXTRACTION

GEnx-1B54, -1B58, -1B64, -1B67, and -1B70  
(applicable to engines not equipped with a booster anti-ice system)

	Stage 7 - Percent W25
Any Power Setting	3.3%

GEnx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1  
(applicable to engines equipped with a booster anti-ice system)

Percent Corrected Fan Speed (N1K)	Stage 7 - Percent W25
0 to 31.3	5.0%
31.3 to 66.4	4.7%
> 66.4	3.3%

Comments:

- A. 100% engine fan speed is 2,560 RPM
- B. 3.3% W25 is the maximum flow delivered to the engine inlet anti-ice system at any power setting.

GEnx-2B67 and -2B67B

%N1K	CDP Bleed Percent W25	
	T2 ≥ 67F	T2 < 67 F
0	13	13
81.1	13	13
81.1	8	10
88.2	8	10
88.2	8	8.5
91.7	8	8.5
91.7	8	8
120.0	8	8

%N1K	S4 Bleed Percent W25
0	7.28%
15.9	7.28%
21.2	7.28%
50.0	7.28%
50.0	7.85%
75.8	7.85%
75.8	7.65%
81.1	7.65%
84.7	7.85%
91.7	7.85%
108.6	6.00%
108.6	5.00%
120.0	5.00%

NOTE: 100% engine fan speed is 2,835 RPM

NOTE 7. FUEL

Refer to GEnx-1B Service Bulletin 73-0001 and GEnx-2B Service Bulletin 73-0001 for detailed information pertaining to fuels and additives. These Service Bulletins cover the eligible fuels listed per GE Aviation Specification D50TF2. Eligible fuel classifications are:

- Class A – Aviation Kerosene
- Class C – Low Freeze Kerosene
- Class D – High Flash Kerosene
- Class E – Low Flash Kerosene

NOTE: Class B – (Jet B, JP4) is prohibited

NOTE 8. LIFE LIMITS

Life limits for critical rotating components for the GEnx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1 are published in Chapter 5 of the GEnx Engine Manual, GEK 112851.

The GEnx-2B67 and -2B67B cyclic life limits are published in Chapter 5 of the GEnx Engine Manual GEK 114119.

The GEnx-1B and GEnx-2B cyclic life limits are based on a commercial mission cycle, which consists of a start, takeoff, climb, cruise, descent, and landing. Use (or non-use) of a fan reverser for braking during landing does not affect cycle counts. Each of the following constitutes one cycle:

- (1) a flight consisting of a takeoff and landing,
- (2) a touch-and-go landing or simulated touch-and-go landing (no weight on wheels) for pilot training.

NOTE 9. THRUST SETTING PARAMETER

Power setting, power checks, and control of engine thrust output in all operations are based on Fan Speed (N1). Speed sensors are included in the engine assembly for this purpose.

NOTE 10. ICING CONDITIONS

Requirements and limitations for ground operation in icing conditions are specified in:

Operating Instructions GEK 112857 for the GEnx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1.

Operating Instructions GEK 114113 for the GEnx-2B67 and -2B67B.

NOTE 11. NEGATIVE G OPERATION

During "negative-G" operation only, it is permissible to operate below minimum oil pressure for a maximum of 15 seconds, as specified in:

GEnx Operating Instructions, GEK 112857, Section 8, for the GEnx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1 minimum oil pressure definition.

GEnx Operating Instructions, GEK 114113, Section 8, for the GEnx-2B67 and -2B67B minimum oil pressure definition.

NOTE 12. TAKEOFF TIME LIMIT

The normal 5-minute takeoff time limit may be extended to 10 minutes for engine out contingency.

NOTE 13. TIME LIMITED DISPATCH CRITERIA

Criteria pertaining to the engine control systems' dispatch and maintenance requirements are specified in:

For the GEnx-1B54, -1B58, -1B64, -1B67, 1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1 engine models: General Electric FADEC Control System Time Limited Dispatch Summary Document, GEK 112858, and the Airworthiness Limitations Section of the GEnx Engine Manual, GEK 112851, which define the various configurations and maximum operating intervals.

For the GEnx-2B67 and -2B67B engine models: General Electric FADEC Control System Time Limited Dispatch Summary Document, GEK 114112, and the Airworthiness Limitations Section of the GEnx Engine Manual, GEK 114119, which define the various configurations and maximum operating intervals.

NOTE 14 Deleted.

NOTE 15. FAN BLADE REPAIR

Approval of repairs of the fan blade composite material in the root section of the fan blade up to the inner annulus flow path line must be coordinated with the FAA Engine Certification Office. Substantiation of the repairs must show that compliance to GENx-1B Special Condition No. 33-006-SC or GENx-2B Special Condition No. 33-007-SC is maintained.

NOTE 16. EMISSIONS

The following engine models manufactured after December 31, 2007 comply with 14 CFR Part 34 effective September 10, 1990, as amended by 34-1 through 34-4:

GENx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1  
GENx-2B67 and -2B67B

In addition, the engine manufacturer has provided data showing that these engine models comply with the ICAO emissions standards of Annex 16, Volume II, Third edition, (also known as CAEP/6).

NOTE 17. INDUCTION SYSTEM ICING

Demonstration of compliance to 14 CFR Part 33 Section 33.68, Induction System Icing, is installation specific to the Boeing B787-8 model aircraft for the GENx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1 engine models, and B747-8 for the GENx-2B67 and -2B67B engine models. Installation of these engine models on different airplane models or type will require a separate evaluation and finding of compliance to Section 33.68.

NOTE 18. Deleted.

NOTE 19. AIRCRAFT MODELS

The GENx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1 engine models are limited to installation on the Boeing B787-8, and -9 model(s) aircraft only with respect to the installed power response characteristics. The GENx-2B67 and -2B67B engine models are limited to installation on the Boeing B747-8 model aircraft only with respect to the installed power response characteristics. Any bill-of-material changes that could significantly and adversely affect power response will have to be reassessed.

NOTE 20. COMMERCIAL ENGINES IN MILITARY SERVICE

FAA-certified commercial engines in military service are not necessarily operated or maintained in accordance with the type design certification basis or Federal Aviation Regulations contained in CFR Title 14. Commercial-service use of GENx series engines or engine parts thereof that have operated in military applications is prohibited unless specific prior FAA approval is granted.

NOTE 21. EXTENDED TWIN ENGINE OPERATIONS (ETOPS)

The GENx-1B54, -1B58, -1B64, -1B67, and -1B70 engine models (defined by the G03, G04 and G05 model lists), the GENx-1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1 engine models, and the GENx-2B67 and -2B67B (defined by the GENx-2B67G01, GENx-2B67G02, and GENx-2B67BG01 model lists) comply with the requirements of 14 CFR Part 33, sections 33.4, Appendix A, A33.3(c), 33.71(c)(4), and 33.201, and are therefore eligible for installation on ETOPS and Early ETOPS approved airplanes. The demonstrated diversion time is 330 minutes at maximum continuous power plus 15 minutes at hold and go-around power. ETOPS eligibility does not constitute airplane or operational level approvals necessary to conduct ETOPS flights.

For the GENx-1B54, -1B58, -1B64, -1B67, -1B70, -1B54/P1, -1B58/P1, -1B64/P1, -1B67/P1, -1B70/P1, -1B70/72/P1, -1B70/75/P1, -1B74/75/P1, and -1B75/P1 engine models installed on B787 aircraft, the engine fuel pump must be replaced prior to the next ETOPS flight after any single suction feed operation event of duration greater than 30 minutes. Suction feed operation is defined by engine pump inlet fuel pressure less than the greater of true vapor pressure plus 5.0 psi or ambient plus 5.0 psi.