

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION TYPE CERTIFICATE DATA SHEET NO. TE6CH	TE6CH Revision 29 Rolls-Royce Corporation 30 December 2016	
	AE 3007C AE 3007A AE 3007A1/1 AE 3007A1/2 AE 3007A1 AE 3007A1/3	AE 3007A1P AE 3007A3 AE 3007C1 AE 3007A1E AE 3007A2 AE 3007C2

Engine models described herein conforming with this data sheet (which is part of Type Certificate No. TE6CH) and other approved data on file with the Federal Aviation Administration, meet the minimum standards for use in certified aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations provided they are installed, operated, and maintained as prescribed by the manufacturer's FAA approved manuals and other FAA approved instructions.

Type certificate holder: Rolls-Royce Corporation
P.O. Box 420
Indianapolis, Indiana 46206-0420

Type certificate holder record: TE6CH originally issued to Allison Engine Company on 28 Feb 95.
TE6CH reissued to Rolls-Royce Corporation on 1 Sep 2000.

Model type description (see Note 12)

Ratings (see Notes 1&2)	AE 3007C ²	AE 3007A ¹	AE 3007A1/1 ¹	AE 3007A1/2 ¹	AE 3007A1 ¹	AE 3007A1/3 ¹
Takeoff, 5 min:						
Static thrust (lbf)	6442	7580	--	--	--	--
Fan shaft speed (rpm)	7376	7750	7716	7823	7903	--
Gas generator speed (rpm)	15388	15452	15603	15842	16013	--
Maximum continuous:						
Static thrust (lbf)	6442	6820	--	--	--	--
Fan shaft speed (rpm)	7376	7441	7404	7548	7613	--
Gas generator speed (rpm)	15388	15204	15366	15619	15778	--
Fan shaft rotation (ALF)	CCW	--	--	--	--	--
Dimensions of basic engine:						
Length (overall), in	115.08	--	--	--	--	--
Width (max), in	46.14	--	--	--	--	--
Height (max), in	55.70	--	--	--	--	--
C.G. location (dry, no aircraft accessories)*						
Engine station, in	93.58	93.9	--	--	--	--
Butt line, in	99.87	99.9	--	--	--	--
Water line, in	97.71	97.7	--	--	--	--
Weight, dry, lb	1614	1657	--	--	--	--

* C.G. references – STA 100.00 (engine axial station) = Compressor case aft splitline
WL 100.00 = Engine horizontal centerline (+ upward)
BL 100.00 = Engine vertical centerline (+ to the right, ALF)

Page No.	1	2	3	4	5	6	7	8
Rev No.	27	27	27	28	28	27	27	27

Legend: "--" indicates "same as previous model"
"--" indicates "not applicable"

Ratings (see Notes 1&2)	AE 3007A1P ¹	AE 3007A3 ¹	AE 3007C1 ²	AE 3007A1E ¹	AE 3007A2 ¹	AE 3007C2 ²
Takeoff, 5 min:						
Static thrust (lbf)	8338	7201	6764	8917	9440	7042
Fan shaft speed (rpm)	8059	7600	7518	8248	8146	7344
Gas generator speed (rpm)	15953	15329	15452	16128	16245	15196
Maximum continuous:						
Static thrust (lbf)	6820	--	6764	7339	8097	7042
Fan shaft speed (rpm)	7613	7430	7518	7801	7756	7344
Gas generator speed (rpm)	15778	15191	15452	15926	15975	15196
Fan shaft rotation (ALF)	CCW	--	--	--	--	--
Dimensions of basic engine:						
Length (overall), in	115.08	--	--	--	--	--
Width (max), in	46.14	--	--	--	--	--
Height (max), in	55.70	--	--	--	--	--
C.G. location (dry, no aircraft accessories)*						
Engine station, in	93.9	--	93.58	93.82	93.85	93.52
Butt line, in	99.9	--	99.87	99.87	99.87	99.88
Water line, in	97.7	--	99.71	97.65	97.70	97.59
Weight, dry, lb	1657	--	1617	1657	1681	1641

AE 3007A Series and AE 3007C Series	
Engine control system (see Note 10)	Goodrich Full Authority Digital Electronic Control (FADEC) – Qty 2. Goodrich Fuel Pump & Metering Unit (FPMU) – Qty 1. Goodrich Compressor Variable Geometry (CVG) actuator – Qty 1.
Fuels	Kerosene, commercial turbine fuel conforming to MIL-DTL-5624, NATO F-40 (JP-4) and NATO F-44 (JP-5); MIL-DTL-83133, NATO F-34 (JP-8) and NATO F-35; ASTM-D-1655, Jet A and A1; ASTM-D-6615, Jet B; GOST 10227-2013, TS-1 and RT; GOST 10227-86, TS-1 and RT; GB6537-94, RP-3; GB 6537-2006 No. 3 Jet Fuel; GSTU 32.00149943.011-99, TC-1; GSTU 320.00149943.007-97, PT
Lubrication oil	Synthetic oil conforming to MIL-PRF-23699F and subsequent or MIL-PRF-7808L [below –40°F, (–40°C)] and subsequent.
Ignition system	BF Goodrich Aerospace, Engine Electrical Systems Division dual capacitance discharge, high energy type exciters, dual igniter plugs.

	AE 3007A Series (excluding AE 3007A2)	AE 3007 A2	AE 3007C Series	AE 3007C2
Certification basis	14 CFR Part 33 effective 1 Feb 65, including Amendments 33-1 through 33-15	14 CFR Part 33 effective 1 Feb 65, including Amendments 33-1 through 33-15, plus 14 CFR §33.76 Amendment 20 (Bird ingestion) 14 CFR §33.78 (a) (2) Amendment 19 (Rain and hail ingestion)	14 CFR Part 33 effective 1 Feb 65, including Amendments 33-1 through 33-14	14 CFR Part 33 effective 1 Feb 65, including Amendments 33-1 through 33-14 14 CFR 33.28 Amendment 15 (Electrical and electronic control systems) 14 CFR §33.76 Amendment 20 (Bird ingestion) 14 CFR §33.78 (a) (2) Amendment 19 (Rain and hail ingestion)
	14 CFR Part 34, Amendment 5, effective 31 Dec 2012. See Note 14 for detailed summary of the certification basis for fuel venting and exhaust emissions by engine model.	--	--	--
Production basis	Production Certificate No. 310	--	--	--

Application for Type Certificate dated 24 May 90, amended 22 Dec 92.
Original Type Certificate No. TE6CH issued 28 Feb 95.

Model	Added to TC	Model	Added to TC	Model	Added to TC
AE 3007C	28 Feb 95	AE 3007A1	6 Nov 98	AE 3007C1	29 Oct 2001
AE 3007A	27 Nov 96	AE 3007A1/3	27 May 99	AE 3007A1E	2 Aug 2002
AE 3007A1/1	15 Apr 98	AE 3007A1P	6 Aug 99	AE 3007A2	15 April 2010
AE 3007A1/2	15 Jun 98	AE 3007A3	7 Sep 99	AE 3007C2	24 July 2013

NOTE 1 The following criteria apply to the AE 3007A

Series engine ratings:

1. Sea level static, 29.92 in Hg
2. 100% inlet pressure recovery
3. Exhaust nozzle area (A9) of 670.1 in²
4. Zero percent relative humidity
5. No inlet air distortion
6. No customer bleed extraction
7. No anti-ice airflow
8. No external power extraction
9. ISA ambient conditions for thrust
10. Flat rated temperatures for rotor speeds

NOTE 2 The following criteria apply to the AE 3007C

Series engine ratings:

1. Sea level static, 29.92 in Hg
2. Typical inlet pressure recovery
3. Exhaust nozzle area (A9) of 650 in²
4. Zero percent relative humidity
5. No inlet air distortion
6. No customer bleed extraction
7. No anti-ice airflow
8. No external power extraction
9. ISA ambient conditions for thrust
10. Flat rated temperatures for rotor speeds

Flat Rated Temperatures

	Takeoff	Max Continuous
AE 3007C, AE 3007A, AE 3007A1/1, AE 3007A3, AE 3007C1, AE 3007C2	ISA + 15°C ISA + 27°F	ISA + 15°C ISA + 27°F
AE 3007A1/2	ISA + 23°C ISA + 41°F	ISA + 23°C ISA + 41°F
AE 3007A1, AE 3007A1/3	ISA + 30°C ISA + 54°F	ISA + 30°C ISA + 54°F
AE 3007A1P	ISA + 19°C ISA + 34°F	ISA + 19°C ISA + 34°F
AE 3007A1E	ISA + 19°C ISA + 34°F	ISA + 30°C ISA + 54°F
AE 3007A2	ISA + 15°C ISA + 27°F	ISA + 20°C ISA + 36°F

NOTE 3 Temperature limits, °F (°C)

To ensure operation of the engine at the correct Measured ITT temperature limits allowable ITT Trim Plug ranges are published in the Maintenance Manual

	AE 3007C	AE 3007C1	AE 3007C2
Measured interstage turbine temperature (T4.5/ITT):			
Takeoff, 5 min	1630 (888)	1665 (907)	1650 (899)
Maximum continuous	1562 (850)	1575 (857)	1593 (867)
Starting	1472 (800)	1472 (800)	1472 (800)
Transient Starting (5 Seconds)	1562 (850)	1562 (850)	1562 (850)

For AE 3007C and AE 3007C1 model engines Pre SB AE 3007C-73-053, or SB AE 3007C-73-054, or SB AE 3007C-73-055 (engine control software version C9.2), the following alternate Takeoff and Maximum continuous temperature limits are available.

	AE 3007C	AE 3007C1
Measured interstage turbine temperature (T4.5/ITT):		
Takeoff, 5 min	1639 (893)	1650 (899)
Maximum continuous	1582 (861)	1593 (867)

	AE 3007A	AE 3007A1/2
Measured interstage turbine temperature (T4.5/ITT):		
Takeoff, 5 min	1690 (921)	1738 (948)
Maximum continuous	1600 (871)	1653 (901)
Starting	1472 (800)	1472 (800)

	AE 3007A1/1	AE 3007A1	AE 3007A1P	AE 3007A1/3	AE 3007A3
Measured interstage turbine temperature (T4.5/ITT):					
Takeoff, 5 min	1690 (921)	1738 (948)	1738 (948)	1738 (948)	1738 (948)
Maximum continuous	1605 (874)	1653 (901)	1653 (901)	1653 (901)	1653 (901)
Starting	1472 (800)	1472 (800)	1472 (800)	1472 (800)	1472 (800)
Transient Starting (5 Seconds)	1562 (850)	1562 (850)	1562 (850)	1562 (850)	1562 (850)

	AE 3007A1E	AE 3007A2
Measured interstage turbine temperature (T4.5/ITT):		
Takeoff, 5 min	1778 (970)	1778 (970)
Transient Takeoff Acceleration (90 Seconds)	1821 (994)	1821 (994)
Starting	1472 (800)	1472 (800)
Transient Starting (5 Seconds)	1562 (850)	1562 (850)

NOTE 4 Maximum allowable rotor speeds, rpm (%)

	AE 3007C, AE 3007C1	AE 3007A, AE 3007A1/2, AE 3007A3	AE 3007A1, AE 3007A1/1, AE 3007A1/3, AE 3007A1P	AE 3007A1E	AE 3007A2	AE 3007C2
Low pressure turbine (N1)	8700	8700	8700	8700	8500	8105
High pressure turbine (N2)	16123	16270 (102.5)	16,270 (102.5) or 16440 (102.5) or 16667 (102.5)	16667 (105.0)	16667 (105.0)	16300

The following statements apply to this Note 4:

- (1) For all AE 3007A Series models, the installed trim plug shall be within the allowable ITT Trim Plug ranges published in the Airworthiness Limitations Section of the Maintenance Manual, reference CSP34012 or CSP34022.
- (2) The AE 3007A1, AE 3007A1/1, AE 3007A1/3, and AE 3007A1P models that comply with Service Bulletin AE 3007A-73-090 or equivalent, are cleared to 16440 or 16667 rpm. Otherwise, maximum allowable N2 speed is 16270 rpm for these models. See Maintenance Manual Task Number 77-21-25-400-801 to select the correct ITT Trim Plug for these configurations.

NOTE 5 Accessory drive provisions

	Direction of rotation (FLA)	Speed ratio	Normal load (HP)****	Cyclic overload load (HP)****	Failure overload load (HP)****	Max shear torque (in lb)	Max overhung moment (in lb)
Generator 1	CW	0.745	23.5	43.5	--	1600	300
Generator 2	CW	0.745	23.5	43.5	--	1600	300
Hydraulic pump	CW	0.473	13.0	37.3	42	1840	160

****The maximum total accessory horsepower extraction for all thrust settings and flight conditions is 60 HP. An overload limit of 80 HP is permitted for a period of five minutes at all thrust settings and all flight conditions below 45,000 feet. Cyclic overload is defined as five minutes per one hour of operation. Failure overload is defined as one minute per 10,000 hours of operation.

NOTE 6 Oil and fuel inlet pressure limits, psig

	AE 3007C, AE 3007C1	AE 3007A Series	AE 3007C2
Oil pressure limits:			
Minimum below 88% N2 (N2 < 14000 rpm)	34	--	--
Minimum above 88% N2 (N2 ≥ 14000 rpm)	48	--	--
Maximum, no time limit ⁽¹⁾	95 ⁽²⁾⁽⁴⁾ (105) ⁽²⁾⁽⁴⁾⁽⁵⁾	110	105
Maximum, up to 5 minutes	—	115 ⁽⁴⁾	—
Maximum, up to 2 minutes	155 ⁽²⁾⁽⁴⁾	155 ⁽³⁾⁽⁴⁾	155
Fuel pump inlet pressure limits for Jet A, Jet A-1/JP-5 and Jet B/JP-4:			
Minimum –	Refer to Section 1 of the Installation Design Manual (Note 3)		
Maximum	55	--	--

⁽¹⁾ With oil temperature > 70°F

⁽²⁾ Compliance with Service Bulletin AE 3007C-79-029 or equivalent is required.

⁽³⁾ Compliance with Service Bulletin AE 3007A-79-025 or equivalent is required.

⁽⁴⁾ Refer to the Abnormal Operation Section of the following Operations Manuals (Note 3)

⁽⁵⁾ Compliance with Service Bulletin AE 3007C-79-042 or equivalent is required. On engines complying with Service Bulletin AE 3007C-79-042 the maximum allowable oil pressure of 105 PSIG will be indicated as 95 PSIG. All operating procedures and limitations are applied using the indicated oil pressure.

NOTE 7 Maximum engines bleed flow, percent of core airflow

AE 3007C, AE 3007C1, AE 3007C2	AE 3007A	AE 3007A1/1, AE 3007A1/2, AE 3007A1, AE 3007A1/3, AE 3007A1P, AE 3007A3	AE 3007A1E, AE 3007A2

8 th stage	7.0%	—	—	—
9 th stage	—	8.5%	7.9%	6.9%
14 th stage	12.0%	10.5%	9.3%	9.6%
8 th + 14 th stages	17.5%	—	—	—
9 th + 14 th stages	—	18.0%	16.5%	16.0%
Fan bypass	—	90 lbm/min	--	--

NOTE 8 Mandatory replacement times (life limits) established for critical components and mandatory airworthiness inspections are published in the Airworthiness Limitations Section of the Maintenance Manual (Note 3).

NOTE 9 The accessory gearbox mounted accessories provided as part of the engine include Permanent Magnet Alternator (PMA), Fuel Pump & Metering Unit (FPMU) and Oil Pump. Additional accessory gearbox mounting pads are also provided on the engine for the engine starter, two aircraft electrical generators and one aircraft system hydraulic pump.

NOTE 10 Aircraft mounted engine control equipment consists of two FADEC assembly units, associated sensors and equipment as defined in the following Turbofan Engine Assembly Drawings:

AE 3007C	23057202 revision CW and later
AE 3007A	23054002 revision DM and later
AE 3007A1/1	23070002 revision AD and later
AE 3007A1/2	23070443 revision H and later
AE 3007A1	23070991 revision E and later
AE 3007A1/3	23070402 revision A and later
AE 3007A1P	23070401 revision F and later
AE 3007A3	23070412 revision J and later
AE 3007C1	23074408 revision A and later
AE 3007A1E	23074862 revision D and later
AE 3007A2	23087636 initial release and later
AE 3007C2	23090589 revision M and later

For AE 3007A1E with two P/N 23076287 FADECs (B7.4 Software) the following restriction applies:
 (a) Verify N2 speed is less than 9,000 rpm (56%) prior to initiating any restart attempt.

NOTE 11 The FAA-approved time limits that AE 3007C Series and AE 3007A Series engines may operate with control system faults present are defined by the Mandatory Inspections, Systems Description Section (05-13-00) and the Time Limits, System Description Section (05-14-00) of the Maintenance Manual (Note 3). Installation requirements are in the Installation Design Manual (Note 3), while normal and abnormal operational procedures are in the Operations Manual (Note 3).

NOTE 12 AE 3007A Series and AE 3007C Series engines are direct drive turbofan engines of modular design which incorporate

- A single stage fan connected to a three-stage low pressure turbine.
- A 14-stage axial compressor with variable vanes (including inlet guide vanes) for the first six stages, an annular combustor, and a two-stage high pressure turbine.
- A full-length composite outer duct.
- Fore and aft mounting provisions, which allow either underwing pylon or aft fuselage mounting installation.

The following table highlights differences between the models:

	AE 3007C Series	AE 3007A Series excluding AE 3007A2	AE 3007A2	AE 3007C2
Fan blades	P/N 23060567 (Type III)	P/N 23061623 (Type IV)	P/N 23089091 (Type X)	P/N 23089091 (Type X)
High pressure compressor bleed	8 th stage	9 th stage	9 th stage	8 th stage
Fan bypass bleed	No	Yes	Yes	No
Rear mount support ring	Rotatable position	Fixed position	Fixed position	Fixed position
Fuel flow meter, Rolls-Royce supplied	No	Yes	Yes	No

NOTE 13 Compliance with Service Bulletin AE 3007A-72-384 or equivalent is required for the AE 3007A2 Model.

NOTE 14 The following emissions standards promulgated under 14 CFR Part 34, Amendment 5, effective 31 Dec 2012, and 40 CFR Part 87, effective 18 July 2012, have been complied with for engine models listed.

Engine Model(s)	Emissions Standards	
AE 3007C AE 3007A	Fuel Venting	14 CFR §§ 34.10(b) and 34.11; in addition, 40 CFR §§ 87.10(b) and 87.11, as amended.
AE 3007A1/1	Smoke Number (SN)	14 CFR §34.21(e)(2); in addition, 40 CFR § 87.23(c)(1).
AE 3007A1 AE 3007A1/3	Carbon Monoxide (CO)	14 CFR § 34.21(d)(1)(ii); in addition, 40 CFR § 87.23(c)(1).
AE 3007A1P AE 3007A3	Hydrocarbons (HC)	14 CFR § 34.21(d)(1)(i); in addition, 40 CFR § 87.23(c)(1).
AE 3007C1 AE 3007A1E	Oxides of Nitrogen (NOx)	14 CFR § 34.23(b)(1); in addition, 40 CFR § 87.23(c)(3) (Tier 8).
AE 3007A2 AE 3007C2	In addition to the FAA's findings of compliance based on the certification requirements defined in this TCDS, the engine manufacturer has declared that the ICAO emissions standards identified in Annex 16, Volume II, Third Edition, Part III, Chapter 2, Section 2.2.2 for SN, Section 2.3.2 for CO and HC, Section 2.3.2.e for NOx (also known as CAEP/8), and Part II Chapter 2 for fuel venting have also been demonstrated.	
AE 3007A1/2†	14 CFR Part 34 and 40 CFR Part 87 as above except Oxides of Nitrogen (NOx) per 14 CFR Part 34.21(d)(1)(iv) (Tier 2).	

† No longer in production

...END...