

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

A27NM Revision 1 British Aerospace Model ATP January 23, 1990

TYPE CERTIFICATE DATA SHEET NO. A27NM

This data sheet, which is part of Type Certificate No. A27NM, prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder British Aerospace (Commercial Aircraft) Limited
 Airlines Division
 Chester Road
 Woodford
 Stockport
 Cheshire SK7 1QR
 England

British Aerospace ATP (Transport Category) approved August 31, 1988:

Engines Two Pratt & Whitney Canada , Model PW 124A, or Model PW 126A, (Modification 05000A) Turbo Propeller, Reduction gear ratio: 0.06 to 1.

Engine Limits PW 124A

OPERATING CONDITION	ENGINE / PROPELLER OPERATING LIMITS							
	MAX TORQ (g)	MAX NP (a)	MAX NH	MAX NL	MAX ITT	OIL PRESSURE	OIL (b) TEMP	TIME LIMIT
	%	%	%	%	°C	PSI	°C	
Maximum Takeoff	97.7	101.0	101.5	102.4	800	56 to 64 (c)	0 to 115	5 minutes
Maximum Continuous	90.8	101.0	101.5	102.4	800	56 to 64 (c)	0 to 115	unlimited
Normal Takeoff	87.9	101.0	101.5	102.4	770	56 to 64 (c)	0 to 115	5 minutes
Min Idle	-	-	Min 66	-	-	Min 41(d)	-40 to 115 (f)	unlimited
Starting	-	-	-	-	950 (e)	-	Min -54	-
Transient	120.0	115.0	-	-	840	41 to 100	-	20 seconds
Other	-	-	-	-	-	-	Max 120	20 minutes

Engine Limits PW 126A (Modification 05000A)

Maximum Takeoff	108.3 (h)	101.0	102.1	103.8	800	56 to 64 (c)	0 to 115	5 minutes
Maximum Continuous	108.3 (h)	101.0	102.1	103.8	800	56 to 64 (c)	0 to 115	unlimited
Normal Takeoff	108.3 (h)	101.0	100.6	101.5	765	56 to 64 (c)	0 to 115	5 minutes
Min Idle	-	-	Min 66	-	-	Min 41 (d)	Max 115	unlimited
Starting	-	-	-	-	950 (e)	-	Min -54	-
Transient	120.0	115.0	103.1	103.8	840	41 to 100	-	20 seconds
Other	-	-	-	-	-	-	Max 120	20 minutes

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NOTE: MAXIMUM TAKEOFF rating is the maximum certified for takeoff operation. This rating is referred to as Max Contingency in airplane markings and the Airplane Flight Manual. When the TAKEOFF mode is selected the MAXIMUM TAKEOFF rating is available through actuation of the fuel control Automatic Takeoff Power Control System (ATPCS) when engine is operating at the NORMAL TAKEOFF rating or manually by throttle movement.

NORMAL TAKEOFF rating is the maximum thrust to be set for takeoff operation with the aircraft Automatic Takeoff Power Control System (ATPCS) operative. This rating is referred to as Takeoff in airplane markings and the Airplane Flight Manual. When set, this rating ensures that the MAXIMUM TAKEOFF rating will be achieved upon actuation of ATPCS.

- (a) Overspeed due to propeller system malfunction permissible up to 115% for Max 15 minutes subject to maintenance action.
- (b) Oil temperature must be maintained above 45°C to ensure protection against intake icing.
- (c) Below 56 psi reduce power (NH less than 75%), below 41 psi shutdown.
- (d) Below flight idle.
- (e) 5 seconds
- (f) Power above flight idle not allowed for oil temperature below 0°C.
- (g) Never exceed torque limit (excluding transients) - 103.9% at a maximum NP of 85%.
- (h) The above limitations are defined by the torque capacity of the engine/gearbox combination. The torque settings for normal operation are given in the airplane flight manual.

Fuel	<u>Grade (Type)</u>	<u>Specification</u>
	Kerosene Type (AVTUR:JP1)	D Eng RD 2453 Issue 4 Am 1 D Eng RD 2494 Issue 8 Am 1 ASTM D1655-74 Jet A ASTM D1655-74 Jet A-1 3-GP-23h IATA Nov 1978: Kerosene Type
	Wide Cut Fuels (AVTAG:JP4)	D Eng RD 2454 Issue 4 Am 1 D Eng RD 2486 Issue 9 Am 1 ASTM D1655 IATA Nov 1978 JP 4 type 3-GP-22h MIL-T-5624J JP4 grade AIR 3407/8 (French) TL 9130-006 Issue 4 (German) CAN 2-3 22M 78 (Canadian)
	High Flash Point (AVCAT: JP5)	D Eng RD 2498 Issue 7 D Eng RD 2452 Issue 2 3-GP-24g (Canadian) MIL-T-5624J JP5 grade AIR 3404/C (French) TL 9130-007 Issue 4 (German)
	Emergency Fuels	MIL-G-5572 aviation gasoline Limited to 150 hours use. Engines to be removed for overhaul after this time period.

Fuel Temperature Limits Aircraft must not be operated with fuel temperature exceeding 54°C or below -48°C.

Propeller and Propeller Limits Two British Aerospace Hamilton Standard 6/5500/F-1.
 Diameter 13.75 feet.
 Pitch settings at 0.75 radius station.
 Maximum reverse -16° , Ground Idle -7.9°
 Flight Idle 12.5°
 Takeoff 10.5°
 Low pitch warning below 10° , Feathered 76°
 Speed range: Takeoff, maximum continuous and maximum takeoff 1,212 rpm. Climb and cruise 1,020 rpm. Flight Range 950 to 1,212 rpm. Quiet taxi mode 825 to 1,212 rpm. Any ground check requiring continuous operation above 920 prop rpm or between 620 and 720 prop rpm is prohibited except for pre-flight checks of short duration.

Airspeed Limits

V_{MO} (Maximum Operating)	
227 knots IAS	at sea level
increasing linearly to	
230 knots IAS	up to 15,000 ft.
220 knots IAS	above 15,000 ft
increasing linearly to	
221 knots IAS	up to 22,000 ft
decreasing linearly to	
208 knots IAS	at 25,000 ft.
V_A (Maneuvering - flaps retracted)	
= 170 knots IAS at all altitudes	
V_{FE} (Flap Speeds)	
180 knots IAS	7° flap
180 knots IAS	15° flap
150 knots IAS	20° flap (with Mod 05000A)
140 knots IAS	22° flap
130 knots IAS	27° flap
140 knots IAS	29° flap (with Mod 05000A)
V_{LO} (Landing Gear Operation)	
180 knots IAS	Lowering
150 knots IAS	Retraction
V_{LE} (Landing Gear Extended)	
180 knots IAS	
Minimum Control Speeds:	
(In the air) $V_{MC} = 97$ knots IAS	with 0° or 7° flap
92 knots IAS	with 15° flap
(On or near the ground)	
With 7° flap $V_{mcg} = 99$ knots IAS	at weight up to 38,500 lbs.
increasing linearly with weight to	
101.5 knots IAS	50,500 lbs
With 15° flap $V_{mcg} = 95$ knots IAS	at weights up to 38,500 lbs.
increasing linearly with weight to	
100 knots IAS	at 50,550 lbs.
(During landing)	
$V_{mcl} = 90$ knots IAS	with 20° flap (with Mod 05000A)
90 knots IAS	with 22° flap
88 knots IAS	with 27° flap
88 knots IAS	with 29° flap (with Mod 05000A)

CG Range

(Landing Gear Extended)

Landing Gear Retraction Moment - 81,719 lb. in.

Weight (lb)	Forward (In Flight)	Forward (Takeoff & Landing)	AFT
	Aft of Datum (ins)	Aft of Datum (ins)	Aft of Datum (ins)
28,000	49.0	51.4	66.5
30,000	-	-	66.5
33,070	49.0	-	-
33,400	-	51.4	-
38,000	-	-	75.5
46,800	60.05	62.2	76.85
50,550	61.7	63.7	77.25

Straight line variations between weights.

NOTE: With 27° or 29° flap selected for landing, the forward CG limit is 58.0 inches aft of Datum below 41,430 lbs.

Maximum Weights

Maximum Ramp Weight 50,700 lbs
 Maximum Takeoff Weight 50,550 lbs
 Maximum Landing Weight 49,050 lbs
 Maximum Zero Fuel Weight 46,800 lbs

Maximum Baggage

Baggage hold located according to passenger layout.

Between fuselage formers 378 in. forward and 252 in. forward of the fuselage datum, maximum permissible floor loading is 100 lb/ft² over the full width of the fuselage and a maximum load of 1,700 lbs.

Between fuselage formers 308 in. aft and 378 in. aft of the fuselage datum, maximum permissible floor loading is 100 lb/ft² over the full width of the fuselage and a maximum load of 2,325 lbs.

Flying Control Surface Angular Travel

Rudder	19° + 1° - 0°	Right	19° + 1° - 0°	Left
Spring Tab (rudder locked)	20° + 3° - 1.5°	Right	20° + 3° - 1.5°	Left
Geared Trim Tab (trim movement)	9.15° + 1° - 0°	Right	15.15° + 1° - 0°	Left
Ailerons	20° ± 0.5°	Up	20° + 0.5°	Down
Trim Tabs (right aileron only)	15.5° + 1.5° - 0°	Up	15.5° + 1.5° - 0°	Down
Geared Tabs	5°	Up	1° to 3.5°	Down
Elevator	22° + 1° - 0°	Up	13.5° + 1° - 0°	Down
Tab (Balance mode)	5.0° ± 1°	Up	8.1° ± 1°	Down
Tab (trim mode)	3.2° ± 1°	Up	11.2° ± 1°	Down

Flaps total angle of travel 27° or 29° (with Mod 05000A)

The rigging instructions including tolerances are given in the Manufacturers Recommended Maintenance Manual.

Minimum Crew

2 - Pilot and Co-pilot

Maximum Passengers

68

Maximum Operating Altitude

25,000 ft

Fuel Capacity	Two integral wing fuel tanks each of 854 US usable gallons capacity. Moment arm plus 82.3 in. (ie aft of CG datum point). Maximum fuel density 7.1 lb/U.S. gallon Minimum fuel density 6.0 lb./ U.S. gallon
Oil Capacity Movement	Two oil tanks each 5.72 US gallons capacity, including propeller pitch control oil. arm -10 in. (ie forward of CG datum point).
Datum	The zero datum of the airplane is the forward face of the rear spar former. The CG datum is 108.3 in. forward of zero datum.
Standard Mean Chord (SMC)	The standard mean chord is 100.632 in. The leading edge of the standard mean chord is 44 in. aft of the CG datum.
Leveling Means	The seat rail in the forward fuselage adjacent to the left hand forward passenger door.
Operating Limitations	Aircraft shall be operated in compliance with the operating limitations specified in the CAA approved Flight Manual Document No ATP 002 dated August 25, 1988, or for aircraft with Mod 05000A Flight Manual Document No. ATP 0004 dated December 14, 1989 or later approved revisions.
Serial Nos. Eligible	A United Kingdom Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" below must be submitted for each individual airplane for which application for United States certification is made.
Import Requirements	<p>To be considered eligible for operation in the United States, each airplane manufactured under this type certificate must be accompanied by a Certificate of Airworthiness for Export signed by a representative of the United Kingdom Civil Aviation Authority, containing the following statement: "The airplane covered by this certificate has been examined, tested and found to conform to the type design approved under FAA Type Certificate No. A27NM and is in a condition for safe operation." Only Model ATP airplanes manufactured in the United Kingdom and accompanied by a CAA-UK export certificate of airworthiness are eligible for a United States airworthiness certificate.</p> <p>The U.S. airworthiness certification basis for aircraft type certificated under 21.29 of the FAR and exported by the country of manufacture is 21.183(c) or 21.185(c). The US airworthiness certification basis for aircraft type certificated under 21.29 exported from countries other than the country of manufacture (eg third party country) is 21.183(d) or 21.183 (b).</p>

Certification Basis

1. JAR 25 including changes 1 through 10
2. The following section of FAR Part 25 effective February 1, 1965 as amended through Amendment 25-56:

25.1041	25.671(c)(1)	25.954	25.1305 (c)(6) and (7)
25.1091	25.693	25.993 (c)	25.1309 (a), (b), (c), (d), (e)
25.1093 (b)(1)(i) and (ii), (b)(2)	25.729 (e)	25.994	25.1331 (a)(3)
25.1103	25.735 (f)(1)	25.1013	25.1337 (a)(1) and (3)
25.119 (b)	25.773 (b)(1)(ii), (b)(2)	25.1015	25.1353 (a), (c)(5), (c)(6)
25.125 (a)	25.777 (e), (g)	25.1019	25.1401 (b), (f)
25.201(d)	25.781	25.1041	25.1411 (a)(2)
25.331 (c)(1)	25.783(f)	25.1091	25.1415 (d), (e)
25.351 (a)(1)	25.785 (g)	25.1093 (b)(1)(i) and (ii), (b)(2)	25.1438 (a),(b), (c)
25.361 (b)	25.787 (a)	25.1103	25.1501
25.335 (b)(2)	25.803	25.1121	25.1513
25.365 (a), (d)	25.809(j)	25.1123	25.1521 (b) and (c)
25.511 (b)(6)	25.832	25.1141 (f)(2)	25.1522
25.571 (b)(6)	25.843 (a)	25.1142	25.1547 (c)
25.581	25.901 (c)	25.1143 (f)	25.1549
25.613	25.903 (d)(1)	25.1181	25.1583 (a) (4) , (I)
25.615	25.939 (a)	25.1191	25.1585 (a)(1) through (10)
25.621	25.943	25.1195	25.1587 (a), (b) (4)
25.631	25.951 (a)	25.1303 (c)(1)	

3. The applicant elected to have the following later requirements added to the TC basis:
 - 25.812 as amended by Amendment 25-58
 - 25.853 as amended by Amendment 25-59
 - 25.904 as amended by Amendment 25-62
4. Special Condition 25-ANM-17 dated March 9, 1988, concerning engine control lightning protection.
5. Exemption No. 4812 docket No 013NM concerning 25.571 (e)(2) sustaining structural damage from the loss of a propeller blade impact.
6. Equivalent safety findings exist with respect to the following sections of the FAR:
 - Section 25.783 (f) via pressurization test.
 - Section 25.773 (b)(2) by additional design requirements and flight evaluation.
7. Special Federal Aviation Regulation No 27, effective February 1, 1974, including Amendments 27-1 through 27-6 (Fuel Venting and exhaust Emissions).
8. Part 36, effective December 1, 1969, including Amendment 36-1 through 36-14. Amendment 36-1 through 36-16 (Mod 050004).
9. BAE elected to demonstrate compliance with 25.1419: Ice Protection.
Date of Application for Type Certificate April 5, 1982

In accordance with 14 CFR Section 21.29, the FAA has determined the above noted certification basis item 1 through 6 are equivalent to or exceed FAR Part 25 as amended through 25-56 requirements.

Service Information

Structural Repair Manual and Service bulletins are approved by the Civil Aviation Authority through the Manufacturers CAA approval ref DAI/1103/38 and include a statement to that effect. The statement may be interpreted as "FAA approved". The Airworthiness Limitations Section of the Maintenance Manual (Chapter 5) is FAA approved.

Required Equipment	<p>The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification.</p> <p>Federal Aviation Administration (FAA) approved Airplane Flight Manual, BAE Model ATP, Document No ATP 002 dated August 25, 1988, published in the English language (CAA-UK approved on behalf of the FAA) or later CAA-UK approved revision, is required.</p> <p>For aircraft with Modification 05000A Federal Aviation Administration (FAA) approved Airplane Flight Manual, Bae Model ATP, Document No ATP 004 dated December 14, 1989 published in the English language (CAA approved on behalf of the FAA) or later CAA-UK approved revision, is required.</p> <p>Airplane Weight and Balance Manual Number BAe-MWE-R-ATP-2000 series.</p>
Available Documents	Maintenance Review Board Report, Document No MRB ATP-01
NOTE 1	<p>Weight and Balance</p> <p>(a) Current Weight and Balance Manual included in certificated empty weight and loading instructions must be provided for each aircraft at the time of original certification and at all times subsequently. British Aerospace "Weight and Balance Manual" No BAe-MWE-R-ATP-2000 series contains all the loading information required for each aircraft in its delivery configuration.</p> <p>(b) The airplane must be loaded so that the CG is within the specified limits at all times when all influences on CG position have been considered.</p> <p>(c) The Weight and Balance defined in (a) above quotes the quantities of usable fuel as determined by the critical conditions of FAR 25.959. Undrainable fuel, being that remaining in the aircraft when all fuel drain valves are opened on the ground, is also quoted in the Weight and Balance Manual.</p>
NOTE 2	All placards required in the Approved Airplane Flight Manual must be installed in the appropriate location.

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