UNITED KINGDOM
CIVIL AVIATION AUTHORITY

BA 16
Issue 16
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BRITISH AEROSPACE
BAe 146 SERIES 100 / 200 / 300
AVRO 146 SERIES RJ70/RJ85/RJ100/RJ115

TYPE CERTIFICATE DATA SHEET NO. BA16

This data sheet which is part of CAA Type Certificate No. BA16, prescribes conditions and limitations under which the product, for which the type certificate was issued, meets the airworthiness requirements of the Civil Aviation Authority.

TYPE CERTIFICATE HOLDER:

British Aerospace Operations Ltd
British Aerospace Regional Aircraft
Chester Road
Woodford
Cheshire
SK7 1QR

MANUFACTURER:

British Aerospace (Regional Aircraft) Ltd

AIRCRAFT TYPE/ MODEL NUMBER(S):

BAe 146
Series 100 Certificated 4 February 1983
Series 200 Certificated 3 June 1983
Series 300 Certificated 6 September 1988

AVRO 146
RJ70 Certificated 24 August 1993
RJ85 Certificated 23 April 1993
RJ100 Certificated 2 July 1993
RJ115 Certificated 22 July 1993

NOTE: AVRO 146 aircraft are the following construction numbers: E3221 and subsequent, plus E2208 but excluding E3222 and E2227.

TYPE DESIGN DEFINITION:

The BAe 146 aircraft minimum type design standards for certification are defined by the following BAe design standards and modifications:-

Series 100 HTD.D.461.00.0004
Series 200 HTD.D.462.00.0009
Series 300 HCM00000T Aircraft Part No. HC000H1016 at Issue 1 and subsequent

Type Design Definition cont'd

The AVRO 146 aircraft minimum type design standards for certification are defined in the following BAe modifications:-

RJ70	HCM 60401Z Aircraft part no. HC000H1401-000 at Issue 3 and subsequent.
RJ85	HCM 60402Z Aircraft part no. HC000H1402-000 at Issue 2 and subsequent.
RJ100	HCM 60403Z Aircraft part no. HC000H1403-000 at Issue 4 and subsequent.
RJ 115	HCM 60403Z Aircraft part no. HC000H1403-001 at Issue 1 and subsequent.

CERTIFICATION BASIS:

BAe 146 Series 100 and 200

The following requirements are the basis of certification of the BAe 146 type design for the Series 100 and 200 aircraft.

(a) JAR Part 1 Definitions and Abbreviations

(b) JAR Part 25 Change 5 Large Aeroplanes

NOTE: The basis of certification of the BAe 146 type design for the Series 100 and 200 has been raised in relation to the requirements JAR 25.307 to 25.351 inclusive to change 10, associated with the increase in Maximum Zero Fuel Weight on the Series 200. Ref. BAe modification HCM00021J and CAA letter dated 28 November 1988.

(c) CAA Airworthiness Notices

Compliance is required in respect of any relevant Airworthiness Notice.

(d) CAA Specifications

Specification No. 10, Issue 1 (May 1974) Flight Data Recorders

Specification No. 11, Issue 1 (May 1974) Cockpit Voice Recorders

Specification No. 12, Issue 1 (May 1974) Underwater Sonar Location Devices

Specification No. 14, Issue 2 (Sept 1976) Ground Proximity Warning Devices

(e) Additional Items not covered in JAR which were taken into account during design.

d.1 Equipment Performance Standards
d.2 Flight Representative of Typical Operational Use

Reference BCAR Section A5-2 paragraph 2.3.1, one aircraft of the final build standard has completed 200 flying hours representative of typical operational use.

d.3 System Safety Assessments

BCAR Paper 670 provides additional interpretative material.

(f) Complementary Conditions

BAe 146 Complementary Conditions revision 1 as notified by CAA letter ref. 9/30/ADH3313 dated 20th October 1979 and 19th April 1982.

Complete Sections of BCAR

BCAR Section A, Issue 22 - Certification and Approval Procedures put in place of Chapter A3-3 the draft text in the revision of A3-3 dated 12th December 1978.

BCAR Section N, Issue 2 - Noise

BCAR Section R, Issue 4 - Radio

BAe 146 Series 300

The requirements for the basis of certification of BAe 146 type design for the Series 300 aircraft are the same as for the Series 100 and 200 aircraft except for the following:-

JAR Part 25 Change 5 Large Aeroplanes with the exception of subpart C "Structure" and the following requirements of subpart "D" 'Design and Construction' which are at Change 10.

JAR	25.629	Flutter deformation and fail safe criteria
	25.783	Doors
	25.787	Stowage compartments
	25.789	Retention of items of mass in the passenger and crew compartments, and galleys.
	25.803	Emergency Evacuation
	25.811	Emergency exit marking
	25.812	Emergency lighting
	25.853	Compartment Interiors
	25.858	Cargo compartment fire detection system
	25.863	Flammable fluid fire protection

The applicable requirements for the installation of the LF507-1H engine (modification HCM01000E) and for the increase in operating weights (modification HCM01000H/K) are defined as follows, based on JAR Part 25 Change 12.

JAR	25.251	Vibration and Buffeting
	25.903(a)	Engine Type Certification
	25.1091(e)	Air Intake, foreign object ingestion
	25.1093(b)(2)	Air Intake, system de-icing and anti-icing provisions
	25.1163(a)(3)	Powerplant Accessories, oil contamination
	25.1305(d)(1) and ACJ	Powerplant Instruments thrust indicator

AVRO 146 - All Models

The requirements for the basis of certification of AVRO 146 type design for the RJ70 , RJ85, RJ100 and RJ115 aircraft are the same as for the BAe 146 Series 300 aircraft except for the following additions:

JAR All Weather Operations (AWO) Subparts 1, 2 and 3 at Change 1.
CAA Special Condition No. 01 - Engine Fadec systems
CAA Special Condition No. 02 - High Intensity Radiated Fields
CAA Special Condition No. 03 - Lightning Protection Indirect effects.
CAA Special Condition No. 04 - EGPWS

AMJ 20X-1 to JAR E Section E	- Aircraft Propulsion Systems with Electronic Controls
NPA-E-10 to JAR E Section E	- Approval of Engines and Associated equipment.
NPA AWO-XX dated July 1991	- Low Weather Minima : Go-around Performance (AWO 243).

For the LF507-1F engine installation (BAe Modification HCM01082L) the JAR Part 25 requirements as defined under the BAe 146 Series 300 with the LF507-1H engine are used.

CERTIFICATION CATEGORY:

UK: Transport Category (Passenger) - All BAe 146 Series and all AVRO 146 Models
UK: Transport Category (Cargo) - BAe 146 Series 100, 200 and 300 only

NOTES (1) The BAe 146 Series 200 freighter aircraft is introduced by BAe modification HCM50201S (Ref. Doc. BAe 3.5 Particular amdt.P1)

(2) The BAe 146 Series 300 freighter aircraft is introduced by BAe modification HCM50214S (Ref. Doc. BAe 3.10 Particular amdt. P14)

(3) The BAe 146 Series 200 passenger aircraft may change operation when used as a convertible aircraft by embodiment of BAe modification HCM50201U or HCM50215A (Ref. Doc. BAe 3.5 Particular amdt. P40)

(4) The BAe 146 Series 200 freighter aircraft may change operation when used as a horse transporter by embodiment of BAe modification HCM50213A or B. (Ref. Doc. BAe 3.5 Particular amdt. P25)

(5) BAe 146 Series 100 freighter aircraft is introduced by BAe modification HCM 50211A (Ref. Doc. BAe 3.2 Particular amdt. P152)

(6) The BAe 146 Series 300 freighter aircraft may change operation when used as a horse transporter by embodiment of BAe modification HCM 50213E (Ref. Doc. BAe 3.10 Particular amdt.P23).

PERFORMANCE CATEGORY: UK Group A

FLIGHT MANUAL:

BAe 146	Series 100 Flight manual document	BAe 3.2	(UK)
	Series 100A "	BAe 3.3	(FAA)
	Series 200 "	BAe 3.5	(UK)
	Series 200A "	BAe 3.6	(FAA)
	Series 200 "	BAe 3.7	(Australia)
	Series 200 "	BAe 3.9	(Canada)
	Series 300 "	BAe 3.10	(UK)
	Series 300A "	BAe 3.11	(FAA)
	Series 300 "	BAe 3.12	(Australia)
	Series 100 "	BAe 3.13	(Australia)

AVRO 146 All Models : Flight manual document BAe 4.1

ENGINE:

BAe 146
Four Textron Lycoming LF507-1H. No intermixing permitted. BAe 146-300 only.
Four Avco Lycoming ALF502 R-3A or ALF502 R-5 or any combination operating at R-5 rating.
Four Avco Lycoming ALF502 R-3 or ALF502 R-5 or any combination operating at R-3 rating. BAe146 100 only.

AVRO 146
Four Textron Lycoming LF507-1F only.

AUXILIARY POWER UNIT:

BAe 146 and AVRO 146

One AiResearch GTCP 36-100(M) auxiliary power unit, by embodiment of BAe modification HCM30027A
or
One AiResearch GTCP 36-150(M) auxiliary power unit by embodiment of BAe modification HCM36019A.

or

One Sundstrand T-62T-46C-3 auxiliary power unit by embodiment of BAe modification HCM30373A.

BASIC MAXIMUM WEIGHTS:

BAe 146

	Series 100	Series 200	Series 300
Max Total Weight Authorised	34,700 kg (76,500 lb)	40,823 Kg (90,000 lb)	43,318 kg (95,500 lb)
Maximum take-off weight	34,473 kg (76,000 lb)	40,596 kg (89,500 lb)	43,091 kg (95,000 kg)
Maximum landing weight	32,817 kg (72,350 lb)	35,153 kg (77,500 lb)	37,648 kg (83,000 lb)
Maximum zero fuel weight	29,483 kg (65,000 lb)	32,204 kg (71,000 lb)	35,153 kg (77,500 lb)

AVRO 146

	RJ70	RJ85	RJ100	RJ115
Max Total Weight Authorised	38,328 kg (84,500 lb)	42,410 kg (93,500 lb)	44,451 kg (98,000 lb)	46,266 kg (102,000 lb)
Maximum take-off weight	38,101 kg (84,000 lb)	42,184 kg (93,000 lb)	44,225 kg (97,500 lb)	46,039 kg (101,500 lb)
Maximum landing weight	37,875 kg (83,500 lb)	38,555 kg (85,000 lb)	40,142 kg (88,500 lb)	40,142kg (88,500 lb)
Maximum zero fuel weight	32,432 kg (71,500 lb)	35,833 kg (79,000 lb)	37,421 kg (82,500 lb)	37,421 kg (82,500 lb)

ALTERNATIVE MAXIMUM WEIGHTS

The maximum weights for the BAe 146 and AVRO aircraft may be as shown in the following tables when the respective BAe or AVRO modification listed against each weight increase is embodied and the aircraft is operated in accordance with the CAA approved Flight Manual.

BAe 146 Series 100

	Maximum Weight Permitted	Modification Number
Max Total Weight Authorised	37,535 kg (82,750 lb) 38,328 kg (84,500 lb)	No Mod required HCM00020U
Maximum take-off weight	37,308 kg (82,250 lb) 38,101 kg (84, 000 lb)	No Mod required HCM00020U
Maximum landing weight	33,270 kg (73,350 lb) 35,153 kg (77,500 lb)	HCM00020N HCM00020P
Maximum zero fuel weight	29,937 kg (66,000 lb) 30,390 kg (67,000 lb) 30,617 kg (67,500 lb) 31,071 kg (68,500 lb)	No Mod required HCM00020G HCM00020H HCM00020J

AVRO 146 -RJ70

	Maximum Weight Permitted	Modification Number
Max Total Weight Authorised	41,049 kg (90,500 lb) 43,318kg (95,500 lb)	HCM00020Z or HCM 40373C HCM40373A
Maximum take-off weight	40,823 kg (90,000 lb) 43,091 kg (95,000 lb)	HCM00020Z or HCM 40373C HCM40373A
Maximum landing weight	No increase available	
Maximum zero fuel weight	33,792 kg (74,500 lb)	HCM00020X or HCM 40373B

BAe Series 200

	Maximum Weight Permitted	Modification Number
Max Total Weight Authorised	42,410 kg (93,500 lb)	HCM00021U
Maximum take-off weight	42,184 kg (93,000 lb) 41,367 kg (91,200 lb)	HCM00021U HCM40420A
Maximum landing weight	36,740 kg (81,000 lb) 35,788 kg (78,900 lb)	HCM 00021N HCM 40420B
Maximum zero fuel weight	33,339 kg (73,500 lb) 34,091 kg (75,000 lb) 34,745 kg (76,600 lb)	HCM00021G HCM00021H (Freighter Aircraft) HCM00021J (Passenger aircraft) HCM50218A*

* Increase from Mmo 0.7 not permitted when this modification is embodied.

AVRO 146 -RJ85

	Maximum Weight Permitted	Modification Number
Max Total Weight Authorised	44,225 kg (97,500 lb)	HCM00021X
Maximum take-off weight	43,998 kg (97,000 lb)	HCM00021X
Maximum landing weight	No increase available	
Maximum zero fuel weight	No increase available	

BAe 146 Series 300

	Maximum Weight Permitted	Modification Number
Max Total Weight Authorised	44,452 kg (98,000 lb) 43,358 kg (100,000 lb)	HCM01000B HCM01000K
Maximum take-off weight	44,225 kg (97,500 lb) 45,132 kg (99,500 lb)	HCM01000B HCM01000K
Maximum landing weight	38,328 kg (84,500 lb) 39,235 kg (86,500 lb)	HCM01000B HCM01000H
Maximum zero fuel weight	35,289 kg (77,800 lb) 35,606 kg (78,500 lb) 35,833 kg (79,000 lb) 36,514 kg (80,500 lb)	HCM01000D HCM01000B or HCM50245A HCM01000G (Freighter only) HCM01000H or HCM50244A

AVRO 146-RJ100

	Maximum Weight Permitted	Modification Number
Max Total Weight Authorised	46,266 kg (102,000 lb)	HCM01000L
Maximum take-off weight	46,039 kg (101,500 lb)	HCM01000L
Maximum landing weight	No increase available 39,235 kg (86,500 lb)	 HCM60346N
Maximum zero fuel weight	No increase available 36,514 kg (80,500 lb)	 HCM60346N

NOTE: HCM60346N applicable to aircraft E3221 only

AVRO 146-RJ115

No increase available.

DIMENSIONS:

Aircraft	BAe 146	Series 100	Series 200	Series 300
Model	AVRO 146	RJ70	RJ85	RJ100/RJ115
Length		26.190m (85ft 11in)	28.550m (93ft 8in)	31.00m (101ft 8in)
Wingspan		26.340m (86ft 5in)	26.340m (86ft 5in)	26.340m (86ft 5in)
Height		8.61m (28ft 3in)	8.61m (28ft 3in)	8.59m (28ft 2in)
Wing area		77.30m^2 832 sq.ft	77.30m^2 832 sq.ft	77.30m^2 832 sq.ft

MINIMUM CREW: The minimum flight crew is two, pilot and co-pilot.

MAXIMUM OCCUPANTS/PASSENGERS: **BAe 146**

Series 100 Number of persons, including crew is not to exceed 100
Series 200 Number of persons, including crew is not to exceed 118
Series 300 Number of persons, including crew is not to exceed 118
(See Note 1)

AVRO 146

RJ 70 Number of persons, including crew is not to exceed 100
RJ 85 Number of persons, including crew is not to exceed 118
RJ 100 Number of persons, including crew is not to exceed 118
RJ 115 Number of persons, including crew is not to exceed 124

NOTES:

(1) With the introduction of Type III exits to the Series 300, reference BAe modification HCM40301A, the number of persons, including crew is not to exceed 124.

(2) Number of occupants is limited by an approved seating layout.

OPERATING LIMITATIONS: Refer to the relevant Aircraft Flight Manual, Section 2.

MANDATORY MAINTENANCE INSTRUCTIONS: Refer to the Aircraft Maintenance Manual (AMM) Chapter 5.

NOISE:

BAe 146

Series 100	CAA Noise Type Certificate 51
Series 200	CAA Noise Type Certificate 55
Series 300	CAA Noise Type Certificate 102

AVRO 146

RJ70	CAA Noise Type Certificate 175
RJ85	CAA Noise Type Certificate 169
RJ100/RJ115	CAA Noise Type Certificate 173

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