DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A24EU
BRITISH AEROSPACE
Revision 4
HS 748 Series
2A
2B

February 1, 1982

TYPE CERTIFICATE DATA SHEET NO. A24EU

This data sheet which is a part of type certificate No. A24EU 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, AIRCRAFT GROUP
MANCHESTER DIVISION
Chester Road, Woodford, Bramhall,
Stockport, Cheshire SK7 1QR
ENGLAND.

I - Model HS 748 Series 2A (Transport Category) Approved 7 April 1972

Engines — 2 Rolls-Royce Dart MK 532-2L Turbo-Propeller.
Reduction gear ratio: 0.093 to 1.

or — 2 Rolls-Royce Dart MK 535-2 Turbo Propeller.
Reduction gear ratio: 0.093 to 1.

Fuel — Aviation Kerosene Specifications (as revised):

American MIL-T-5624 (Grade JP-5)
ASTM D.1655-68 Jet A or Jet A-1

I.A.T.A. Kerosene type fuel
Canadian 3-GP-23. Kerosene type.
British D.Eng.R.D. 2494, 2498 or 2453.

Note: The following departures from specification, D.Eng.R.D. 2494 are acceptable.

Flash Point - Minimum 70°F
Mercaptan sulphur percentage weight maximum 0.005% by weight.

Aviation wide-cut fuel specification (as revised):

American MIL-T-5624 (Grade JP-4)
ASTM D. 1655 Jet-B

I.A.T.A. Wide-cut (JP-4) Type fuel Canadian 3-GP-22.
wide-cut type. British D.Eng.R.D. 2486 or 2454.

Engine Limits

	Rating	Shaft HP	Jet Thrust	Engine r.p.m.	Propeller r.p.m.	Turbine Gas Temperature °C
Rolls Royce Dart MK 532-2L	Max. Takeoff (WET)	2040	520	15000	1395	905
	(DRY)	1835	485	15000	1395	810
	Max. Continuous	1835	485	15000	1395	920
Rolls Royce Dart MK 535-2	Max. Takeoff (WET)	2040	520	15000	1395	920
	(DRY)	1835	485	15000	1395	810
	Max. Continuous	2030	485	15000	1395	920

Propeller and propeller limits

2 Dowty Rotol Type CR.212/4-30-4/22 or CR 251/4-30-4/49, R.A. 25953-1 Blades
Diameter 12 feet
Pitch settings at 0.7 radius station
Ground Fine 0° Fine 18°, feathered 84°21', Low pitch warning 16°.
Restricted speed range: Continuous operation between 8500 and 9500 engine r.p.m. is to be avoided during ground operations.

Airspeed limits

Vmo (Maximum Operating)	
From sea level to 15000 feet	225 kts.
Above 15000 feet	215 kts.
Va (Maneuvering)	155 kts.
Vfe (Flap Speeds)	
Flap deflection 7 1/2°	180 kts.
Flap deflection 15°	180 kts.
Flap deflection 22 1/2°	140 kts.
Flap deflection 27 1/2°	120 kts.
Vlo (Landing Gear Operation)	
Operation	160 kts.
Extended	160 kts.
Vllo (Landing Light Operation)	
Operation	140 kts.
Extended	140 kts.
Vmc (Minimum Control Speed)	82 kts.
	81 kts. (Flaps 22 1/2°)

C.G. range (Landing gear extended)

Landing gear retraction moment - 68,564 lb. in. (Nose down)

Weight (lb)	Forward % S.M.C.	Forward Aft of Datum (ins)	Aft % S.M.C.	Aft Aft of Datum (ins)
24,000	12.20	57.00	32.20	76.78
27,000	12.20	57.00	32.20	76.78
30,000	13.70	58.50	32.20	76.78
40,000	19.00	63.75	35.20	79.80
44,495	21.30	66.00	35.20	79.80

Straight line variation between weights

Maximum weights	Maximum Take-off weight	44,495 lb.
	Maximum Landing Weight	43,000 lb.
	Maximum Zero Fuel Weights	37,500 lb.
		38,500 lb. (with Modification 4080)

Maximum baggage

Baggage holds located according to the passenger layout.

Between fuselage formers 252 in. forward and 126 in. forward of the fuselage datum the maximum permissible floor loading is 110 lb. per sq. ft. over full width of fuselage, or 155 lb. per sq. ft. with an unloaded 20 inch central aisle.

Between fuselage formers 126 in. forward of the fuselage datum to 306 in. aft of fuselage datum the maximum permissible floor loading is 100 lb. per sq. ft. over full width of fuselage, or 130 lb. per sq. ft. with an unloaded 20 inch central aisle.

Control surface movements

Elevator	Up	22°	Down	8.5°
Trim Tabs	Up	7°	Down	10°
Geared Tab (0.4 Basic Gearing)	Up	3.4°	Down	8.8°
Rudder	Right	20°	Left	20°
Spring Tab (Rudder Locked)	Right	28°	Left	28°
Trim Tab	Right	19.5°	Left	13.5°
Ailerons	Up	18.5°	Down	18.5°
Trim Tabs (Starboard Aileron Only)	Up	10°	Down	10°
Geared Tabs (0.45 Basic Gearing)	Up	9°	Down	9°

Flaps 27.5° total angle of travel

The rigging instructions including tolerances are given in the CAA Approved Maintenance Manual.

II - Model HS 748 Series 2B (Transport Category) Approved December 19, 1980

Engines

2 Rolls-Royce Dart MK 535-2 Thrub-Propeller.
Reduction gear ratio: 0.093 to 1.

Fuel

See Section I.

Engine limits

See Section I.

Propeller and propeller limits

See Section I.

Airspeed limits (I.A.S.)

Vmo (Maximum Operating)		
From sea level to	15,000 feet	220 kts.
		225 kts. (with Mod. 6751)
Above	15,000 feet	215 kts.
Va (Maneuvering)		155 kts.
Vfe (Flap Speeds)		
Flap deflection 7 1/2°		180 kts.
Flap deflection 15°		180 kts.
Flap deflection 22 1/2°		140 kts.
Flap deflection 27 1/2°		120 kts.

Vlo (Landing Gear Operation)

Operation	160 kts.
Extended	160 kts.

Vllo (Landing Light Operation)

Operation	140 kts.
Extended	140 kts.

Vmc (Minimum Control Speed) 82 kts.
81 kts. (Flaps 22 1/2°)

C.G. range (Landing gear extended)

Landing gear retraction moment - 68,564 lb. in. (Nose down)

Weight (lb)	Forward % S.M.C.	Forward Aft of Datum (ins)	Aft % S.M.C.	Aft Aft of Datum (ins)
24,000	12.20	57.00	32.20	76.78
27,000	12.20	57.00	32.20	76.78
30,000	13.70	58.50	32.20	76.78
38,500	18.20	63.00	37.80	82.30
46,500	22.30	67.00	37.80	82.30

Straight line variation between weights

Maximum weights

Maximum Takeoff weight	46,500 lb.
Maximum Landing Weight	43,000 lb.
Maximum Zero Fuel Weights	37,500 lb.
	38,500 lb. (with Modification 4080)

Maximum baggage

Baggage holds located according to the passenger layout.

Between fuselage formers 252 in. forward and 198 in. aft of the fuselage datum, the maximum permissible floor loading is 200 lb. per sq. ft. over full width of fuselage except the areas between fuselage formers 162 in. forward and 180 in. aft outside a 34 in. center aisle where the maximum permissible floor loading is 150 lb. per sq. ft.

Between fuselage formers 198 in. aft and 306 in. aft of fuselage datum the maximum permissible floor loading is 100 lb. per sq. ft.

Control surface movements

Elevator	Up	22°	Down	8.5°
Trim Tabs	Up	7°	Down	10°
Geared Tab (0.4 Basic Gearing)	Up	4.25°	Down	11°
Rudder	Right	20°	Left	20°
Spring Tab (Rudder Locked)	Right	28°	Left	28°
Trim Tab	Right	19.5°	Left	13.5°
Ailerons	Up	18.5°	Down	18.5°
Trim Tabs (Starboard Aileron Only)	Up	10°	Down	10°
Geared Tabs (0.35 Basic Gearing)	Up	6.5°	Down	6.5°

Flaps 27.5° total angle of travel

The rigging instructions including tolerances are given n the CAA Approved Maintenance Manual.

DATA PERTINENT TO ALL MODELS

Minimum crew	2 - (Pilot and Co-Pilot)
Maximum passengers	50 with one (1) flight attendant 52 with two (2) flight attendants
Maximum operating altitude	25,000 ft.
Fuel capacity	Two integral wing fuel tanks each 840 U.S. gallons. Moment arm plus 82.3 in. (i.e. aft of C.G. datum point). See NOTE 1(b) for data on system fuel and oil.
Oil capacity	Two oil tanks each 3.977 U.S. gallons capacity, including propeller feathering oil of 1.20 U.S. gallons. The oil tank is integral with the Rolls-Royce Dart Engines. Moment arm - 48.0 in. (i.e. forward of C.G. datum point). See NOTE 1 (b) for data on system fuel and oil.
Datum	Zero moment datum located on the center line of the aircraft 108.3 in. forward of the fuselage and datum (the datum face of the fuselage former at the rear spar). The C.G. datum point is a mushroom headed bolt marked C.G. origin on each side of the fuselage. The C.G. datum point is also 263.7 in. aft of the extreme forward tip of the fuselage and 108.3 inches forward of the fuselage datum.
Standard mean chord (S.M.C.)	The standard mean chord is 98.77 in. and the leading edge of the standard mean chord is 43.15 in aft of the C.G.datum.
Leveling means	The seat rail in the forward fuselage adjacent to the forward freight door.
Other operating limitations	Aircraft shall be operated in compliance with the operating limitations specified in the CAA Approved Flight Manual Document No. A01.10. 1. Series 2A with Rolls Royce Dart MK 532-2L engines installed, Amendments G/5 and P/3 of AFM are required. 2. Series 2A with Rolls Royce Dart MK 535-2 engines installed, Amendment G/5 of AFM are required. 3. Series 2B with Rolls Royce Dart MK 535-2 engines installed, Amendments G/5 and P/4 are required.
Certification basis	FAR 21.19, FAR 25, effective 1 February 1965, including Amendments 25-1 through 25-20, Special Conditions No. 25-24-EU-4 dated 9 June 1970. FAR 36, effective 1 December 1969, including Amendments 36-1 through 36-9. Compliance with FAR 25, Amendments 25-7 through 25-20 which were not required based on the effective application date in accordance with FAR 21.17(c)(2) was elected by the manufacturer in accordance with FAR 21.17(d). Type Certificate No. A24EU, issued 7 April 1972. Effective Date of Application for Type Certificate per FAR 21.17(c)(2): 7 April 1967. Compliance with FAR 25.1419 has been shown. Pursuant to FAR 21.29(a)(1)(ii), Type Certificate A24EU was issued in validation of the United Kingdom Civil Aviation Authority Certification of Compliance with the following standards which were found to provide a level of safety to the above "Certification Basis".

1. BCAR Sections D and J in effect on 15 September 1966.

2. FAA additional requirements listed in ARB Validation Arrangements (V.A. Note 1) Issue 2, dated 21 May 1967.

3. Revised paragraphs of FAR 25 as amended by Amendments 25-7 through 25-20.

4. Special Conditions No. 25-24-EU-4 dated 9 June 1970.

5. FAR 36 effective 1 December 1969, including Amendments 36-1 through 36-9.

Serial Nos. eligible — The United Kingdom Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application of certification is made.

Import requirement — A United States Airworthiness Certificate may be issued on the basis of a United Kingdom 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 Type Certificate No. A24EU, and to be in a condition for safe operation."

Service information — Maintenance and Structural Repair Manuals and all 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".

Equipment — The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification.
Approved equipment is included in the Schedule of Equipment Drawing No. A 3767.

In addition, the following items of equipment are required.

Control Column stick shaker	- Safe Flight - Pt. No. C74002
Lift Transducer	- Safe Flight - Pt. No. C74007 (2 required).

NOTES

NOTE 1. (a) Current weight and balance report, including list of equipment included in the certificated empty weight and loading instructions when necessary, must be in each aircraft at the time of original certification.

(b) "Unusable Fuel and System Oil" and all hydraulic fluid must be included with certificated empty weight.

Unusable fuel is that quantity of fuel in the system and in the tanks which is unavailable to the engine under critical flight conditions as defined in FAR 25.959. This unusable fuel includes "system fuel" which is defined as the quantity required to fill the system and tanks outlet level when the airplane is in the ground level attitude. The fuel gauges are calibrated to read zero during level flight with the unusable fuel in the tanks.

The total amount of fuel is as follows:

Usable Fuel @ 6.75 lb/gal.	Unusable Fuel @ 6.75 lb/gal.
1680 U.S. gallons	3.6 U.S. gallons

System Oil is that amount of oil required to fill the oil system and tanks which is not available for normal engine lubrication. The propeller feathering oil is not considered usable oil and is included in "System Oil". System oil weight is 37 lb. The oil tank capacity shown in this specification is the total oil for which the tanks are placarded. Dipstick readings indicate the amount of oil required to fill the tank.

NOTE 2. All placards required in the Approved Airplane Flight Manual must be installed in the appropriate location.

NOTE 3. The service life for aircraft structural parts which are fatigue critical are listed in the HS 748 Recommended Maintenance Schedule, pages 12 to 18 inclusive, and may not be changed without FAA approval.

NOTE 4. The approval fuel additives are listed in the CAA Approved Flight Manual Document A01.10.

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