DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A20EA
Revision 5
Bombardier
DHC-7-1
DHC-7-100
DHC-7-101
DHC-7-102
DHC-7-103

September 27, 2010

TYPE CERTIFICATE DATA SHEET NO. A20EA

This data sheet, which is a part of type certificate No. A20EA 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	Viking Air Limited 9574 Hampden Road Sidney, British Columbia Canada V8L 5V5
Type Certificate Holder Record	Bombardier Inc. Regional Aircraft 123 Garratt Boulevard Downsview Ontario M3K 1Y5 Canada

I - Model DHC-7-1 (Formerly DHC-7) (Transport Category) Approved April 25, 1977

Airspeed limits (CAS) (See approved Aircraft Flight Manual for additional information)

	m.p.h.	knots
Vmo (Max. Operating)	270	235
Vb (Design Speed for max. gust intensity	199	173
Va (Maneuvering)	179	155
Vmc (Minimum Control Speed for takeoff and climb)		
25° flap	75	65
17° flap	79	69
Vfe (Flaps Extended)		
17° deflection	173	150
25° deflection	138	120
45° defection	127	110
Vle (Landing Gear Extended)	190	165
Vlo (Landing Gear Operation)	173	150
Maximum Speed for opening direct vision (D.V.) windows	189	164

Maximum weights

Ramp	41,300 lb.
Takeoff	41,000 lb.
Landing	39,000 lb.
Zero Fuel	35,500 lb.

C.G. range

Landing Gear Extended
Forward limit 25 percent MAC (Sta. 447.54) all weights
Aft limit 40 percent MAC (Sta. 465.22) all weights

Serial Nos. eligible S/N 1 and 2

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Approved Publications	Aircraft Definition	AEROC 7.1.AC.1 Section 3
	Flight Manual	PSM 1-7-1A
	Structural Component Life and Inspection Requirements	PSM 1-7-2 Chapter 5

II - Model DHC-7-100 (Transport Category) Approved November 9, 1977
DHC-7-101 (Transport Category) Approved May 2, 1979
DHC-7-102 (Transport Category) Approved May 2, 1979
DHC-7-103 (Transport Category) Approved May 2, 1979

The DHC-7-101 is the same as the DHC-7-100 except that a large cargo door in the forward left hand side of the cabin has replaced the Type III emergency exit in that position. Two additional Type III exits are located on each side at approximately the mid cabin. A cargo/passenger interior with a structurally strengthened cabin floor is standard.

The DHC-7-103 is the same as the DHC-7-102 except for those same differences between the DHC-7-101 and DHC-7-100 stated above. (See Note 4 for conversion from -100 to -102 or from -101 to -103.)

Airspeed limits (CAS) (See approved Aircraft Flight Manual for additional information)

	m.p.h.	knots
Vmo (Max. Operating)	270	235
Vb (Design Speed for max. gust intensity)	201	175
Va (Maneuvering)	179	155
Vmc (Minimum Control Speed for takeoff and climb)		
25° flap	75	65
15° flap	79	69
Vfe (Flaps Extended)		
15° deflection	173	150
25° deflection	138	120
45° deflection	127	110
Vle (Landing Gear Extended)	190	165
Vlo (Landing Gear Operation)	173	150
Maximum Speed for opening direct vision (D.V.) windows	189	164

Maximum weights

	DHC-7-100/-101	DHC-7-102/-103
Ramp	43,300 lb.	44,100 lb.
Takeoff	43,000 lb.	44,000 lb.
Landing	41,000 lb.	42,000 lb.
Zero Fuel	39,000 lb.	39,000 lb.

C.G. range (Landing Gear Extended)

Weight lb.	Forward Limits % MAC (Sta.)	Aft. Limits % MAC (Sta.)
DHC-7-100/-101		
all weights to 42,000	25% (447.54)	43% (468.75)
42,000 to 43,000	Linear variation from 25 to 26% (448.72)	43% (468.75)
43,000 to 43,300	26% (448.72)	43% (468.75)
DHC-7-102/-103		
all weights to 42,000	25% (447.54)	43% (468.75)
42,000 to 44,000	Linear variation from 25 to 27% (449.90)	43% (468.75)
44,100	27% (449.90)	43% (468.75)

Serial Nos. eligible S/N 3 and subsequent (See Note 4)

Approved Publications		DHC-7-100/-101	DHC-7-102/-103
	Aircraft Definition	AEROC 7.1.AC.1 Section 4	AEROC 7.1.AC.1 Section 5
	Flight Manual	PSM 1-71-1A*	PSM-17-1A
	Structural Component Life and Inspection Requirements	PSM 1-7-2 Chapter 5	PSM 1-7-2 Chapter 5

**Note: Add Supplement 8 for DHC-7-101/-103 airplanes (cargo/passenger interior)*

DATA PERTINENT TO ALL MODELS EXCEPT AS INDICATED

Engines	4-Pratt and Whitney Aircraft of Canada, Limited PT6A-50 (T.C. E4EA)
Fuel	Fuels conforming to Pratt and Whitney Aircraft of Canada Limited Specification No. PWA 522 Kerosene Type Jet A, Jet A-1, JP-4, JP-5, or Jet B.
Oil	Pratt and Whitney Aircraft of Canada approved oils to conform to Specification No. PWA-521 Type II.
Engine limits	Engine Rating (Power Limits) Takeoff (5 min.) 1120 s.h.p. Max. Continuous 973 s.h.p. Temperature Limits (Inter Turbine) Takeoff 1472°F (800°C) Max. Continuous 1472°F (800°C) Torque Limits Takeoff 4860 ft. -lb. Max. Continuous 4860 ft. -lb. Gas Generator Limits Takeoff (5 min.) 38,500 r.p.m. (102.7 percent) Max. Continuous 38,100 r.p.m. (101.6 percent) Power Turbine Output Shaft r.p.m. Takeoff 1210 r.p.m. Max. Continuous 1210 r.p.m.
Propeller and propeller limits	4-Hamilton Standard 24 PF-305 Blade PFA12B1-9B Diameter 11 ft. 3 in. nominal Pitch settings at 0.75 radius: Feather 78.0° Flight fine 6.5° Ground fine - 8.5° Full reverse -18.7° Propeller (Np) - Takeoff 1210 r.p.m. Max. Continuous 1210 r.p.m.
Datum	Station 0 is 248.0 inches forward of the jig point marked by a plate located on airplane center line on the underside of the fuselage.
Mean aerodynamic chord (MAC)	117.84 in. (Leading edge of M.A.C. + 418.08 in.)

Leveling means

Longitudinal: Pads on fore and aft faces of right hand aft door opening.
Lateral: Levelling bar on forward face of bulkhead (Station 147.0 in. in nose compartment).

Minimum crew

2 - (pilot and copilot)

Maximum occupants

DHC-7-100/-102 (Passenger Carrying Interior)
Not to exceed 59, including 2 pilots, 2 attendants and 1 check pilot. (54 passengers when fitted with an approved interior).

DHC-7-101/-103 (Cargo/Passenger Interior)
Not to exceed 55, including 2 pilots, 2 attendants and 1 check pilot. (50 passengers when fitted with an approved interior).

Aft baggage or cargo limitations

S/N 1 and Subsequent; 2200 lb. with Mod. 7/1156 incorporated and moment arm +735.0 for uniformly distributed loading.

S/N 3 and Subsequent; 2800 lb. with S007036 interior incorporated.

Floor Loading (max.)	Aisles	Under Seats
DHC-7-1/-100/-102	75 p.s.f.	37.5 p.s.f.
DHC-7-101/-103	200 p.s.f.	200 p.s.f.

Fuel capacity

	U.S. Gal.	Imp. Gal.	Weight-lb.	Moment Arm-in.
TOTAL				
2 inner tanks (ea).	315	262	2142	+462.0
2 outer tanks (ea).	425	354	2890	+462.0
Total	1480	1232	10,064	+462.0
UNUSABLE				
2 inner tanks (ea).	4.6	3.8	31	+462.0
2 inner tanks (ea).	5.6	4.7	38	+462.0
Total	20.4	17.0	139	+462.0

Oil capacity

USABLE	1.0	0.8	7.5	+396.0 (per Inboard Engine) +411.4 Outboard Engine
UNUSABLE				
Inboard Engine	3.4	2.7	25.5	+396.0
Outboard Engine	3.25	2.6	24.4	+411.4

Maximum operating altitude

25,000 ft. (when supplementary breathing equipment is provided for all occupants).
20,400 ft. (limited by cabin pressure altitude requirements of FAR 25.841(a)).

Maximum ambient temperature

ISA (Sea Level) +36.6°C. (+66°F)

Control surface movements

See DeHavilland Report AEROC 7.2.AC.0. Section 1.3 Page 1, Issue 2.

Generator limits

D.C. Generators:

Ground	80 percent	(200 amp.)
Flight	100 percent	(250 amp.)

A.C. Generators:

Ground 15 amp. per phase at 5°C to
3 amp. per phase at 52°C (linear variation)
Flight 30 amp. per phase at 5°C to
15 amp. per phase at 52°C (linear variation)

Serial Nos. eligible

S/N 1 and subsequent

Import eligibility	A U.S. Airworthiness Certificate may be issued on the basis of the Canadian Department of Transport "Certificate of Airworthiness for Export" signed by or for the Minister of Transport. This form must contain the following statement: "This certifies that the aircraft described below has been manufactured in conformity with data forming the basis for the D.O.T. Aircraft Type Approval No. A-120, Issue 3, dated August 30, 1979, (FAA Type Certificate No. A20EA).
Certification basis	FAR Part 25 dated February 1, 1965, plus Amendments 25-1 through 25-31 inclusive. Additional FAA Requirements: (a) FAR Part 36 dated December 1, 1969, plus Amendments 36-1 through 36-5 inclusive. (b) SFAR 27 dated February 1, 1974, plus Amendments SFAR 27-1 and 27-2. (c) Special conditions No. 25-53-EA-10 dated May 7, 1973, (FAA Docket No. 12810). (1) Conventional mode of operation (2) STOL mode of operation. Date of Application for Type Approval April 30, 1972. Type Certificate A20EA issued April 25, 1977. Compliance with the following optional requirement has been established: Ice Protection FAR 25.1419 Ditching FAR 25.801 <u>Part 26- Continued Airworthiness and Safety Improvements for Transport Category Airplanes:</u> Based on § 21.101(g) for changes to TCs, applicable provisions of part 26 are included in the certification basis. For any future Part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections. Compliance has been found for 14 CFR § 26.11 (Amdt. No. 26-0)
Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification.

NOTE 1.

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

(b) System or unusable fuel, which must be included in the empty weight, is the amount of fuel required to fill the system plumbing and tank to the undrainable level (1.5 gal. total), plus unavailable fuel in the fuel tanks (18.9 gal. total). The total amount of "system fuel" 20.4 gal. total, 139 lb. (+462.0).

(c) System oil, which must be included in empty weight, is the amount of oil necessary for engine lubrication and propeller operation. The total amount of "system oil" is as follows:

6.8 gal. (total) contained in inboard engines, 5.10 lb. (+396.0)
6.5 gal. (total contained in outboard engines, 48.8 lb. (+411.4)

NOTE 2. All placards required in the approved flight manual must be installed in the appropriate location.

NOTE 3. For models -1, -100, -101, -102, and -103 airplanes the retirement times recorded in DeHavilland Manual PSM 1-7-2 Chapter 5 must be complied with.

NOTE 4. The DHC-7-100 may be converted to the -102 or the DHC-7-101 to the -103 by incorporation of the following modifications:

DeHavilland Modification No. 7/1271 (Rear Fuselage), 7/1337
(Inboard Nacelle) and 7/1393 (Fore Rudder).

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