

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A20EA
Revision 4
Bombardier
DHC-7-1
DHC-7-100
DHC-7-101
DHC-7-102
DHC-7-103

January 31, 2006

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)		
		<u>m.p.h.</u>	<u>knots</u>
	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° 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	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		

Page No.	1	2	3	4	5
Rev. No.	4	1	1	1	1

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)

	<u>m.p.h.</u>	<u>knots</u>
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

	<u>DHC-7-100/-101</u>	<u>DHC-7-102/-103</u>
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)

	<u>DHC-7-100/-101</u>	
<u>Weight</u>	<u>Forward Limits</u>	<u>Aft. Limits</u>
<u>lb.</u>	<u>% MAC (Sta.)</u>	<u>% MAC (Sta.)</u>
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)
<u>DHC-7-102/-103</u>		
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		<u>DHC-7-100/-101</u>	<u>DHC-7-102/-103</u>
	Aircraft Definition	AEROC 7.1.AC.1	AEROC 7.1.AC.1
		Section 4	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	<u>DHC-7-100/-102 (Passenger Carrying Interior)</u> Not to exceed 59, including 2 pilots, 2 attendants and 1 check pilot. (54 passengers when fitted with an approved interior). <u>DHC-7-101/-103 (Cargo/Passenger Interior)</u> 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.																																																																					
	<table border="0"> <tr> <td><u>Floor Loading (max.)</u></td> <td><u>Aisles</u></td> <td><u>Under Seats</u></td> </tr> <tr> <td>DHC-7-1/-100/-102</td> <td>75 p.s.f.</td> <td>37.5 p.s.f.</td> </tr> <tr> <td>DHC-7-101/-103</td> <td>200 p.s.f.</td> <td>200 p.s.f.</td> </tr> </table>	<u>Floor Loading (max.)</u>	<u>Aisles</u>	<u>Under Seats</u>	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.																																																												
<u>Floor Loading (max.)</u>	<u>Aisles</u>	<u>Under Seats</u>																																																																				
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	<table border="0"> <thead> <tr> <th></th> <th><u>U.S. Gal.</u></th> <th><u>Imp. Gal.</u></th> <th><u>Weight-lb.</u></th> <th><u>Moment Arm-in.</u></th> </tr> </thead> <tbody> <tr> <td><u>TOTAL</u></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2 inner tanks (ea).</td> <td>315</td> <td>262</td> <td>2142</td> <td>+462.0</td> </tr> <tr> <td>2 outer tanks (ea).</td> <td>425</td> <td>354</td> <td>2890</td> <td>+462.0</td> </tr> <tr> <td>Total</td> <td>1480</td> <td>1232</td> <td>10,064</td> <td>+462.0</td> </tr> <tr> <td><u>UNUSABLE</u></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2 inner tanks (ea).</td> <td>4.6</td> <td>3.8</td> <td>31</td> <td>+462.0</td> </tr> <tr> <td>2 inner tanks (ea).</td> <td>5.6</td> <td>4.7</td> <td>38</td> <td>+462.0</td> </tr> <tr> <td>Total</td> <td>20.4</td> <td>17.0</td> <td>139</td> <td>+462.0</td> </tr> <tr> <td>Oil capacity</td> <td><u>USABLE</u></td> <td>1.0</td> <td>0.8</td> <td>7.5</td> <td>+396.0 (per Inboard Engine) +411.4 (per Outboard Engine)</td> </tr> <tr> <td></td> <td><u>UNUSABLE</u></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Inboard Engine</td> <td>3.4</td> <td>2.7</td> <td>25.5</td> <td>+396.0</td> </tr> <tr> <td></td> <td>Outboard Engine</td> <td>3.25</td> <td>2.6</td> <td>24.4</td> <td>+411.4</td> </tr> </tbody> </table>		<u>U.S. Gal.</u>	<u>Imp. Gal.</u>	<u>Weight-lb.</u>	<u>Moment Arm-in.</u>	<u>TOTAL</u>					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	<u>UNUSABLE</u>					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	<u>USABLE</u>	1.0	0.8	7.5	+396.0 (per Inboard Engine) +411.4 (per Outboard Engine)		<u>UNUSABLE</u>						Inboard Engine	3.4	2.7	25.5	+396.0		Outboard Engine	3.25	2.6	24.4	+411.4
	<u>U.S. Gal.</u>	<u>Imp. Gal.</u>	<u>Weight-lb.</u>	<u>Moment Arm-in.</u>																																																																		
<u>TOTAL</u>																																																																						
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																																																																		
<u>UNUSABLE</u>																																																																						
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	<u>USABLE</u>	1.0	0.8	7.5	+396.0 (per Inboard Engine) +411.4 (per Outboard Engine)																																																																	
	<u>UNUSABLE</u>																																																																					
	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	<p>FAR Part 25 dated February 1, 1965, plus Amendments 25-1 through 25-31 inclusive.</p> <p>Additional FAA Requirements:</p> <p>(a) FAR Part 36 dated December 1, 1969, plus Amendments 36-1 through 36-5 inclusive.</p> <p>(b) SFAR 27 dated February 1, 1974, plus Amendments SFAR 27-1 and 27-2.</p> <p>(c) Special conditions No. 25-53-EA-10 dated May 7, 1973, (FAA Docket No. 12810).</p> <p>(1) Conventional mode of operation</p> <p>(2) STOL mode of operation.</p> <p>Date of Application for Type Approval April 30, 1972. Type Certificate A20EA issued April 25, 1977.</p> <p>Compliance with the following optional requirement has been established: Ice Protection FAR 25.1419 Ditching FAR 25.801</p>
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.	<p>(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.</p> <p>(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).</p> <p>(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:</p> <p>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)</p>
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.	<p>The DHC-7-100 may be converted to the -102 or the DHC-7-101 to the -103 by incorporation of the following modifications:</p> <p>DeHavilland Modification No. 7/1271 (Rear Fuselage), 7/1337 (Inboard Nacelle) and 7/1393 (Fore Rudder).</p>

.....END.....