



Type Certificate Data Sheet

Number: A-77

Issue No.: 6

Approval Date: Refer Below

Issue Date: January 31, 2006

This Data Sheet which is part of Type Certificate No. A-77 prescribes the conditions and limitations under which the product(s) for which the Type Certificate was granted meet(s) the standards of airworthiness required by the Canadian Aviation Regulations.

Type Certificate Holder

Viking Air Limited
9574 Hampden Road
Sidney, British Columbia
V8L 5V5

Models

DHC-5 DHC-5E

1. MODEL DHC-5 (Transport Category) Approved April 7, 1967

Engines 2 General Electric CT64-810-1

Fuel MIL-T-5624 Grade JP4 or Grade JP5

Oil MIL-L-7808E

Engine Rating		<u>KW</u>	<u>ESHP</u>
Takeoff (5 Minutes)		2125	2850
Maximum continuous		1726	2315

Engine Limits	Power Turbine	630°C (5 minutes)	1166°F
	Inlet Temperature (T ⁵)	588°C (Maximum continuous)	1090°F
	Torque	1356Nm (Maximum continuous)	1000 ft. lbs.
	Gas Generator (Ng)	104% (17,800 RPM) (Maximum continuous)	
		104% (17,800 RPM) (Maximum Reverse)	
		107% (18,330 RPM)	



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Engine Limits
(Cont'd)

Oil Pressure		
Ground Idle	30 to 50 psig	
Maximum Power	55 to 85 psig	
Oil Temperature		
Maximum Engine and Speed Decreaser Gear	107°C	(225°F)
Minimum for Starting	-54°C	(-65°F)
Minimum for Operating	-54°C	(-65°F)

Propeller

2 Hamilton Standard	
Model	63E60-13
Hub	63E60
Blades	A7139B-0
Diameter	441.96 cm (14.5 feet)
Pitch Settings at Station	72
Feather	75°
Normal Fine	17.2°
Ground Fine	-2.2°
Hydraulic Fluid	MIL-H-5606A
Hydraulic Capacity	18.2 Litres 16 Quarts (Imperial) 19 Quarts (U.S.)

Propeller Limits

Propeller (Np)	1,160 rpm - Maximum continuous 1,512 rpm - Maximum transient (5 seconds)
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Airspeed Limits

		MPH		KNOTS	
		<u>CAS</u>	<u>(IAS)</u>	<u>CAS</u>	<u>(IAS)</u>
V _{MO}	(Max. operating) S.L.	265	(259)	230	(225)
	10,000 ft	237	(233)	206	(202)
	20,000 ft	211	(207)	183	(180)
V _A	(Maneuvering)	161	(159)	140	(138)
V _{LO}	(Landing Gear Operating)	161	(159)	140	(138)
V _{LE}	(Landing Gear Extended)	184	(181)	160	(157)
V _{FE}	(Flaps Extended)	0°	143 (142)	124 (123)	
		7°	138 (137)	120 (119)	
		17°	132 (131)	115 (114)	
		30°	121 (120)	105 (104)	
V _{MC}	(Minimum Control)	92	(92)	80	(80)
Maximum Speed with Cargo Door Open and Ramp Extended					
		161	(159)	140	(138)

Weight Limits

Takeoff	17237 kg (38000 lb)
Landing	16556 kg (36500 lb)
Zero Fuel	15422 kg (34000 lb)
(See NOTE 2)	

C.G. Limits

For Weights - landing gear extended:	
Forward Limit	26.5% MAC (Sta 337.8)
Aft Limit	41.5% MAC (Sta 365.4)

Datum

The reference datum is 410.08 cm (161.45 inches) forward of the jig point which is marked at a plate on the center-line of the fuselage underside at the joint between the cockpit and the cabin.

Levelling Means

Plumb-bob suspension and target located on port side of doorway in cabin forward bulkhead.

Minimum Crew

Pilot and co-pilot.



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Maximum Passengers None, Cargo only.

Cargo Loading Limitations See DHC-5 Buffalo Weight and Balance Manual, PSM1-5-8

Fuel Capacity NOTE: Outer tanks are the main tanks and must be filled before any fuel is added to the inner tanks.

	<u>TANK</u>	<u>USABLE</u>		
		<u>Litres</u>	<u>Imp. gal.</u>	<u>U.S. gal.</u>
Outer tank	- port	1509	332	399
	- stbd	1509	332	399
Inner tank	- port	2423	533	640
	- stbd	2423	533	640
TOTAL		7864	1730	2078

	<u>TANK</u>	<u>Litres</u>	<u>USABLE</u>			
			<u>Imp. Gal.</u>	<u>U.S. Gal.</u>	<u>kg</u>	<u>lb</u>
Port		22.7	5	6	20.4	45
Stbd.		22.7	5	6	20.4	45
Total:		45.4	10	12	40.8	90

Maximum Operating Altitude 25,000 ft.

Control Surface Movements See DHC-5 Buffalo Maintenance Manual, PSM1-5-2.

Serial Numbers Eligible 1 to 4 inclusive (See NOTE 1)



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2. Model DHC-5E "Transporter" (Transport Category) Approved March 26, 1981

Engines 2 General Electric CT64-820-4

Fuel MIL-T-5624 Grade JP4 or Grade JP5 conforming to G.E. Spec. No. D50TF2
Commercial Jet A, Jet A-1 and Jet B, (ASTM D-1655-71)

Oil MIL-L-23699 or MIL-L7808 conforming to G.E. Spec. No. D50TF1

Engine Limits	Torque lb.-ft. (Nm)	Prop. Shaft RPM (%)	Gas Gen. RPM (%)	Turb. Inlet Temp. T5 °C (°F)	SHP S.L. Static (kw)	Equiv. SHP (kw)
Takeoff (5 Min.)	1075 (1457)	1160 (100)	18230 (100)	743 (1370)	3133 (2336)	3227 (2406)
Max. Continuous	1075 (1457)	1160 (100)	17800 (97.6)	704 (1300)	2745 (2047)	2830 (2110)
Max. Transients	1670 (2263) (5 sec)	1392 (120) (5 sec)	18500 (101.5) (10 sec)	743-800 (1370-1472)		
Starting*	3 seconds			900 (1652)		

Fuel Pressure		<u>Min.</u>	<u>Max.</u>
Inlet Press. without boost		9 PSIA	50 PSIG

Oil Pressure		<u>Engine</u>	<u>SDG</u>
Maximum Operating		100 PSID	* 100 PSID
Minimum Operating		50 PSID	60 PSID
Minimum Ground Idle		10 PSID	5 PSID

* Refer to Operating/Maintenance Instructions for operating range limits and for reduced oil pressure limits above 15,000 ft. altitude.



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Oil Temperature		<u>°C</u>	<u>°F</u>
	Maximum Operating	116	242 (5 minutes)
	Maximum Continuous	107	225
	Minimum	-53	-63 (MIL-L-7808)
		-40	-40 (MIL-L-23699)

Propellers 2 Hamilton Standard 63E60-25

Propeller Limits	Blades	A7139C-0
	Diameter	441.96 cm (14.5 feet)
	Pitch Setting at Station 72	
	Feathered	+75°
	Flight Fine	+ 6.8°
	Reverse	-27.0°
	RPM: Max. Continuous	1160
	Takeoff (5 minutes)	1160

Airspeed Limits	CAS	IAS
	Knots (km/h)	Knots (km/h)
V _{MO} (max. Operating)		
S.L. to 5,000 ft.	230 (426)	227 (421)
10,000 ft.	217 (402)	215 (398)
15,000 ft.	203 (376)	201 (372)
20,000 ft.	190 (352)	188 (348)
25,000 ft.	177 (328)	175 (324)
30,000 ft.	163 (302)	161 (298)
V _B (max. gust)	154 (285)	152 (282)
V _A (maneuvering)	143 (265)	141 (261)
V _{FE} (flaps extended)		
0 - 7°	140 (259)	138 (256)
12°	128 (237)	126 (233)
25°	115 (213)	114 (211)
V _{LE} (Landing Gear extended)	160 (296)	158 (293)
V _{LO} (Landing Gear Operation)	140 (259)	138 (256)
V _{MCA} (Min. Control Speed)	75 (139)	75 (139)
Takeoff & Climb		



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Flight Load Factors	Flaps up	+2.5g	-1.5g
	Flaps down	+2.0g	0.0g
Maximum Weights	Ramp	18,734 kg	(41,300 lb.)
	Takeoff	18,598 kg	(41,000 lb.)
	Landing	18,144 kg	(40,000 lb.)
	Zero Fuel (See NOTE 2)	18,144 kg	(40,000 lb.)

C.G. Limits For all Weights - Landing Gear Extended:
 Forward Limit 26.5% MAC (Sta. 337.83)
 Aft Limit 41.5% MAC (Sta. 365.35)

Datum The reference datum is 410.08 cm (161.45 inches) forward of the jig point which is marked at a plate on the centre-line of the fuselage underside at the joint between the cockpit and the cabin.

Levelling Means Plumb-bob suspension and target located on the port side of the doorway in the cabin forward bulkhead.

Minimum Crew Two (Pilot and Co-Pilot)

Maximum Occupants Fifty-one (including the minimum crew and a position for a check pilot), when equipped with an approved interior.

Maximum Cargo See DHC-5 Buffalo Weight and Balance Handbook PSM1-5E-8.

Maximum Altitude 30,000 feet when operating in the cargo configuration.
 30,000 feet with passengers when equipped with an approved passenger oxygen system.

Outside Air Temp. Limits ISA + 36.6°C (ISA + 66°F)



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Fuel Capacity NOTE: Outer tanks are the main tanks and must be filled before any fuel is added to the inner tanks.

	<u>Litres</u>	<u>Imp. Gals.</u>	<u>U.S. Gals.</u>	<u>kg</u>	<u>lb.</u>
Outer Port	1568	345	414	1221	2691
Outer Stbd	1568	345	414	1221	2691
Inner Port	2423	533	640	1886	4157
Inner Stbd	<u>2423</u>	<u>533</u>	<u>640</u>	<u>1886</u>	<u>4157</u>
Total:	7982	1756	2108	6214	13696

Unusable Fuel

Outer Port	15.9	3.5	4.2	12.5	27.5
Outer Stbd	15.9	3.5	4.2	12.5	27.5
Inner Port	30.0	6.5	7.8	23.1	51.0
Inner Stbd	<u>30.0</u>	<u>6.5</u>	<u>7.8</u>	<u>23.1</u>	<u>51.0</u>
Total:	91.8	20.0	24.0	71.2	157.0

Oil Capacity Usable/Engine 7.6 1.7 2 6.6 15.0

Control Surface Movements See DHC-5 Buffalo Maintenance Manual PSM1-5-2.

Placards Internal and External required placards and labels are defined on de Havilland of Canada Drawings C5F1003, C5F1004 and C5SK25940.

Required Equipment The basic required equipment as prescribed in the appropriate airworthiness standards, (see Basis of Certification) is listed in the DHC-5 Buffalo Weight and Balance Manual, PSM1-5E-8.

Definition of Aircraft de Havilland Report Aeroc 5.1.AC.1, Section 4 identifies the modification embodied to obtain the DHC-5E variant of the airplane.

Approved Publications DHC-5 Buffalo Airplane Flight Manual, PSM1-5E-1A
DHC-5 Buffalo Inspection Requirements Manual, PSM1-5E-7

Life Limited Parts See PSM1-5E-7, Chapter 5-10-11

Serial Numbers Eligible 108 and subsequent serial numbers designated as DHC-5E airplanes which embody S00 5038.



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DATA PERTINENT TO ALL MODELS EXCEPT AS INDICATED

- Basis of Certification
- (a) FAA Civil Air Regulations, Part 4b, dated December 31, 1953, including Amendment 4b-1 through 4b-12 inclusive, Special Regulation SR422B and Special Conditions dated February 27, 1964, amended March 2, 1964, transmitted to the de Havilland Aircraft of Canada Limited under cover of the Canadian Department of Transport's letter reference 5010-10-239 (CAE) dated March 5, 1964.
 - (b) Canadian Department of Transport "Special Spoiler Policy" applicable to the DHC-5E Transporter Airplane.
 - (c) The serially connected rudder is powered by dual hydraulic systems but does not have a trim control as defined by CAR 4b.322(e). The rudder system has been accepted on the basis of equivalent safety.

Date of Application October 24, 1962.

NOTE 1 Applicable only to DHC-5 (U.S. Army CV-7A) Airplanes, Serial Numbers 1 through 4 inclusive:- Prior to the issue of a Certificate of Airworthiness for civil use, it must be shown that the items outlined in Appendix "A" of the Canadian Department of Transport's letter dated March 16, 1967 to the de Havilland Aircraft of Canada, Limited comply with the applicable requirements.

NOTE 2 The current DHC-5 Buffalo Weight and Balance Handbook, Part Number PSM1-5E-8 for the DHC-5E Airplane, (or PSM1-5-8 for the DHC-5), giving the empty weight and loading instructions, must be in each airplane except in the case of operators having an approval weight control system.

NOTE 3 Effective 31 January 2006, Type Certificate A-77 and the design responsibility for all Models listed on this data sheet were transferred from Bombardier Inc. to Viking Air Limited.

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J.D. Turnbull
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Aircraft Certification
for Minister of Transport