



TYPE CERTIFICATE DATA SHEET Nº EA-2016T07

Type Certificate Holder:

VIKING AIR LIMITED
 1959 de Havilland Way
 Sidney, British Columbia
CANADA, V8L 5V5

EA-2016T07
 Sheet 01

VIKING AIR LIMITED
 DHC-6 SERIES 400

06 October 2016

This data sheet, which is part of Type Certificate No. 2016T07, prescribes conditions and limitations under which the product for which the Type Certificate was issued meets the airworthiness requirements of the Brazilian Aeronautical Regulations.

I – Model DHC-6 Series 400 (NORMAL CATEGORY), approved 06 October 2016.

- ENGINES** 2 (two) Pratt & Whitney Canada, Inc. PT6A-34.
- FUEL** For list of approved jet fuels refer to Pratt & Whitney Canada Inc. Service Bulletin No.1244, latest issue.
- OIL** For list of approved lubricating oils refer to Pratt & Whitney Canada Inc. Service Bulletin No.1001, latest issue.

ENGINE LIMITS	<u>RATING</u>	<u>ESHP</u>	<u>SHP</u>
	Take-off (5 min.)	652*	620*
	Max. Continuous	652*	620*

*Available to 42°C (108°F) Ambient Temperature. (S.L.)

Temperature Limits (Inter-Turbine)

Take-off	790°C (1,454°F)
Max. Continuous	790°C (1,454°F)
Starting (2 sec.)	1090°C (1,994°F)

Torque Limits

Take-off	50 psi (1,536 lb-ft)
Max. Continuous	50 psi (1,536 lb-ft)

Gas Generator

Take-off	38,100 rpm (101.6%)
Max. Continuous	38,100 rpm (101.6%)

Oil Temperature

Starting	-40°C (-40°F) Minimum
Take-off	10°C to 99°C (50°F to 210.2°F)
Max. Continuous	10°C to 99°C (50°F to 210.2°F)

ENGINE LIMITS (cont'd)

Oil Pressure

Normal (27,000 rpm & above) 85 to 105 psig
 Minimum (below 27,000 rpm) 40 psig

PROPELLER & PROPELLER LIMITS

2 Hartzell
 Hub HC-B3TN-3D(Y)*
 Blades T10282N(B)**
 Diameter 8 ft. 6 in. Nominal
 (8 ft. 4 in. min. after repairs)

*(Y) designates Zero Thrust Latches

** (B) designates De-icing Boots

Pitch Settings at 30 in. Station

Feather +87°
 Take-off Low Pitch +17°
 Idle Blade Angle +11°
 Reverse Blade Angle -15°

Propeller (Np)

Take-off 2,110 rpm (96%)
 Max. Continuous 2,110 rpm (96%)

AIRSPEED LIMITS (IAS)

Landplane (KCAS) Landplane (KIAS)

V_{MO} Max. Operating

Sea Level to 6,700 ft	170	166
10,000 ft	160	156
15,000 ft	145	141
20,000 ft	130	126
25,000 ft	115	112

V_A Design Manoeuvring 136* 132*

V_{MC} Minimum Control

Flap 10° 66 64

V_{FE} Flaps Extended

0° to 10° 105 103

V_{FE} Flaps Extended

11° to 37° 95 93

*Reduce V_A=V_{MO} above 18,000 ft

MAXIMUM WEIGHT

Landplane

	<u>kg</u>	<u>lb</u>
Take-off	5,670	12,500
Landing	5,579	12,300*

* Main-wheel Tire Pressure 38 psi
 Below-29°C (-20°F) 34 psi

CG LIMITS

Landplane

- a) Maximum Take-off Weight is 5,670 kg (12,500 lb)
 - Forward Limit 20% M.A.C. (Sta. 203.84), 5,261 kg (11,600 lb) rising linearly to 25% M.A.C. (Sta. 207.74), 5,670 kg (12,500 lb)
 - Aft Limit 36% M.A.C. (Sta. 216.32) at all weights
- b) Maximum Landing Weight is 5,579 kg (12,300 lb)
 - Forward Limit 20% M.A.C. (Sta. 203.84), 4,989 kg (11,000 lb) rising linearly to 25% M.A.C. (Sta. 207.74), 5,579 kg (12,300 lb)
 - Aft Limit 36% M.A.C. (Sta. 216.32) at all weights

MINIMUM CREW

One Pilot

MAXIMUM OCCUPANTS

19 (excluding pilot seats)

MAXIMUM BAGGAGE

	<u>kg</u>	<u>lb</u>	
Forward	136	300	(+25.0 in.)
Rear	227	500	(+354.0 in.)
Rear Extension Shelf	68	150	(+391.0 in.)

*Total Rear+Rear Extension Shelf not to exceed 227 kg (500 lb) maximum.

FUEL CAPACITY

<u>Usable Fuel*</u>	<u>Litres</u>	<u>Imp. Gal.</u>	<u>U.S. Gal.</u>
Forward Tank (+162.5 in.)	686	151	181
Rear Tank (+240.0 in.)	746	164	197
Total	1,432	315	378

*See NOTE 1(b) for Weight and Balance.

OIL CAPACITY

<u>Usable Oil*</u>	<u>Litres</u>	<u>Imp. Gal.</u>	<u>U.S. Gal.</u>
Left (+177.0 in.)	6.8	1.2	1.5
Right (+177.0 in.)	6.8	1.2	1.5
Total	13.6	2.4	3.0

*See NOTE 1(c) for Weight and Balance.

SERIAL NUMBERS ELIGIBLE

845 and Subsequent, incorporating MOD 6/2303

TYPE DESIGN DEFINITION

Viking Air Limited Top Drawing C61000-9.

FLIGHT MANUAL

DHC-6 Twin Otter Airplane Flight Manual (Series 400), PSM 1-64-1A and ANAC Registered Airplanes Supplement 54 must be in the aircraft at all times.

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS (ICA) (See NOTE 4)	<p>The ICA consist of the following Viking Air Limited documents:</p> <table border="0"> <tr> <td>Aircraft Maintenance Manual (AMM)</td> <td>PSM 1-64-2</td> </tr> <tr> <td>Structural Repair Manual (SRM)</td> <td>PSM 1-6-3</td> </tr> <tr> <td>Illustrated Parts Catalogue (IPC)</td> <td>PSM 1-64-4</td> </tr> <tr> <td>Corrosion Prevention and Control Manual (CPCP)</td> <td>PSM 1-6-5</td> </tr> <tr> <td>Inspection Requirements Manual</td> <td>PSM 1-6-7</td> </tr> <tr> <td>Structural Components Service Life Limits Manual</td> <td>PSM 1-6-11</td> </tr> <tr> <td>Airworthiness Limitations - Avionics</td> <td>PSM 1-6-13</td> </tr> </table>	Aircraft Maintenance Manual (AMM)	PSM 1-64-2	Structural Repair Manual (SRM)	PSM 1-6-3	Illustrated Parts Catalogue (IPC)	PSM 1-64-4	Corrosion Prevention and Control Manual (CPCP)	PSM 1-6-5	Inspection Requirements Manual	PSM 1-6-7	Structural Components Service Life Limits Manual	PSM 1-6-11	Airworthiness Limitations - Avionics	PSM 1-6-13
Aircraft Maintenance Manual (AMM)	PSM 1-64-2														
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Structural Components Service Life Limits Manual	PSM 1-6-11														
Airworthiness Limitations - Avionics	PSM 1-6-13														
DATUM	Station 0 is 277.67 cm (109.32 in.) forward of a jig point which is marked by a plate attached to the bulkhead between the cockpit and the cabin.														
LEVELING MEANS	The cabin floor rails provide a surface for levelling the airplane both laterally and longitudinally. The cabin floor level is 15 in. below water line zero.														
M.A.C.	198.1 cm (78 in.). (The wing leading edge is at Station 188.24.)														
CONTROL SURFACE MOVEMENTS	See DHC-6 Twin Otter (Series 400) Maintenance Manual, PSM 1-64-2, for rigging procedure and measurements.														
MAXIMUM OPERATING ALTITUDE	25,000 ft (when supplementary breathing equipment is provided for all occupants in accordance with the operating rules).														
REQUIRED EQUIPMENT	The basic required equipment as prescribed by the applicable airworthiness requirements (see Certification Basis) and operating rules must be installed in aircraft. The equipment that was required to be installed in the aircraft for certification is identified in Viking Report AEROC 6.6.G.1.														
PLACARDS	The required translated placards are described in the Flight Manual Supplement 54 – ANAC Registered Airplanes, and must be installed in the appropriate locations.														
IMPORT REQUIREMENTS	<p>A Brazilian Certificate of Airworthiness may be issued on the basis of the Airworthiness Certificate for Exportation issued by the TCCA, including the following statement:</p> <p style="padding-left: 40px;">“The aircraft covered by this certificate has been inspected, tested and found to be in conformity with the Brazilian approved type design as defined by the Brazilian Type Certificate no. 2016T07 and in condition of safe operation”.</p>														
CERTIFICATION BASIS	<p>1. RBHA 23 corresponding to Part 23 of Title 14 of the United States Code of Federal Regulations (FAR 23) Amendment (Amdt.) 23-1 through 23-6; Amdt. 23-8 (23.1529) and Amdt. 23-9 (23.1441, 23.1443, 23.1447, 23.1449); plus Special Federal Aviation Regulation Number 23 (SFAR 23) dated June 7, 1969 and Amdt. SFAR 23-1 dated December 24, 1969; except as follows:</p> <ul style="list-style-type: none"> • §§23.25; 23.49; 23.51; 23.65; 23.67; 23.75; 23.77; 23.145; 23.161; 23.175; 23.207; 23.361; 23.367; 23.371; 23.423; 23.425; 23.572; 23.617; 23.629; 23.643; 23.677; 23.721; 23.867; 23.901; 23.933; 23.939; 23.955; 23.991; 23.997; 23.1041; 23.1043; 23.1093; 23.1103; 23.1111; 23.1121; 														

**CERTIFICATION BASIS
(cont'd)**

23.1141; 23.1155; 23.1305; 23.1323; 23.1413; 23.1501; 23.1505; 23.1527; 23.1545; 23.1557; 23.1563; 23.1583; 23.1585; and 23.1587 as amended by Amdt. 23-7;

- §§23.783(a), (b), (c)(1), (c)(3), and (c)(4); 23.785(a), (b), (c), (f), (g)(2), (h), (i), (j), (k), and (l); 23.787(a), (b), (d), (f), and (g); 23.803; 23.807(a), (b), (c), and (d); 23.815; and 23.851(a) and (b) as amended by Amdt. 23-34; and
- §§23.853(a), (c), (d)(3)(i) and (ii); and 23.1359(c) as amended by Amdt. 23-49.

See NOTE 6 for information regarding compliance with SFAR 23 and Amdt. SFAR 23-1.

2. In addition, for those areas of the aircraft affected by the installation of the EFIS avionics suite (See NOTE 8), the following requirements, which were the latest in effect in FAR 23 Amdt. 23-57 on the date of application for the DHC-6 Series 400:

- FAR 23 Subpart B: §§23.143 - Amdt. 23-50 (with respect to S.O.O. 6221 AFCS [Autopilot] Installation only);
- FAR 23 Subpart D: §§23.771 - Amdt. 23-14; 23.773 - Amdt. 23-45; 23.777 and 23.779 - Amdt. 23-51; 23.781 - Amdt. 23-33; 23.677 (S.O.O. 6221 AFCS [Autopilot] Installation only) and 23.867 - Amdt. 23-49;
- FAR 23 Subpart E: §§23.901- Amdt. 23-53; 23.963 - Amdt. 23-51;
- FAR 23 Subpart F: §§23.1367 and 23.1381 - Amdt. 23-0; 23.1301, 23.1327 and 23.1335 - Amdt. 23-20; 23.1457 and 23.1459 - Amdt. 23-35; 23.1322, 23.1331 and 23.1357 - Amdt. 23-43; 23.1303, 23.1307, 23.1309, 23.1311, 23.1321, 23.1323, 23.1326, 23.1329, 23.1351, 23.1353, 23.1359, 23.1361, 23.1365 and 23.1431 - Amdt. 23-49; 23.1325 - Amdt. 23-50; 23.1337 - Amdt. 23-51; 23.1305 - Amdt. 23-52; and 23.1308 - Amdt. 23-57; and
- FAR 23 Subpart G: §§23.1551 - Amdt. 23-0; 23.1547 - Amdt. 23-20; 23.1501 and 23.1541 - Amdt. 23-21; 23.1529 - Amdt. 23-26; 23.1549 and 23.1557 - Amdt. 23-45; 23.1543, 23.1545, 23.1553, 23.1555, 23.1559, 23.1581, 23.1583, 23.1585, 23.1587, 23.1589 - Amdt. 23-50.

3. For airplanes when operated in accordance with Airplane Flight Manual Supplement 37 - Supplemental Performance Data, document PSM 1-64-1A, Section 9-37:

- i) The following requirements of FAR 23 as amended up to and including Amdt. 23-57 as applicable to the commuter category apply in place of the FAR 23 requirements listed in section 1:
§§23.25; 23.45; 23.49; 23.51; 23.53; 23.55; 23.57; 23.59; 23.61; 23.63; 23.65; 23.66; 23.67; 23.69; 23.73; 23.75; 23.77; 23.149; 23.1581; 23.1583; 23.1585; 23.1587 and 23.1589; and
- ii) In addition, the following requirements of the 14 CFR Part 25 (FAR 25) up to and including Amdt. 25-23 apply:
§§25.105; 25.107; 25.109; 25.111; 25.113; 25.115; 25.119; 25.121; 25.123; and 25.125.

**CERTIFICATION BASIS
(cont'd)**

4. RBAC 34 corresponding to Part 34 of Title 14 of the United States Code of Federal Regulations Amdt. 34-1 through 34-4.
5. RBHA 36 Amendment 00 corresponding to ICAO Annex 16, Volume I, Chapter 10, Amendment 8.
6. Equivalent Safety Items:
 - Circuit Protection - 14 CFR § 23.1357(b);
 - LED Lights -14 CFR § 23.1397(c);
 - Airspeed Indicator Flap Markings - 14 CFR§ 23.1545(b)(4); and
 - Engine Instrument Display - 14 CFR § 23.1549(b) & (c).

**APPROVED
INSTALLATIONS**

Item 201 - Ski Installations

a) Wheel/Ski

Bristol Model 3000 nose-wheel/ski and Model 5500 main-wheel/ski installed to Viking Drawing C6US1000, G.A. Ski Installation. Aircraft to be operated in accordance with appropriate Approved Viking Flight Manual Supplement.

Item 203 - Intermediate Floatation Gear

Viking Intermediate Floatation Gear installed to Viking Drawing C6U1000. Aircraft to be operated in accordance with appropriate Approved Viking Flight Manual Supplement.

Item 204 - Aircraft Ice Protection

Approved for operation in icing when equipped with following Viking Modifications:

Mods 6/1043, 6/1066, 6/1089, 6/2028, 6/2042 and 6/2045; plus S.O.O. 6004, S.O.O. 6187 and S.O.O. 6202 or S.O.O. 6237.

Aircraft to be operated in accordance with appropriate Approved Viking Flight Manual Supplement.

Item 205 - Auto Pilot Installation

S.O.O. 6221 AFCS (Autopilot)

Item 206 - Interior Installation

Commuter interior installed to Viking Mod. 6/2013.

NOTES:

NOTE 1

- a) The current Weight and Balance Handbook, PSM 1-64-8 for the Series 400, giving the list of equipment included in the empty weight and loading instructions, must be in each aircraft except in the case of operators having an approved weight control system.
- b) The following amount of unusable fuel is included in the empty weight:

	<u>Litres</u>	Imp. <u>Gal.</u>	U.S. <u>Gal.</u>
Unusable	13.6	3.0	3.5

- c) For weight and balance purposes the total oil including system and tank is included in the empty weight and equals 24.5 kg (54 lb) at +177 in.

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- NOTE 2** The following placards must be displayed in clear view of the pilot at all times:
- "This airplane must be operated as a Normal Category Airplane in compliance with the operating limitations stated in the form of placards, markings and manuals";
 - "No acrobatic manoeuvres (including spins) are approved";
 - "Day, Night, VFR";
 - "IFR"; and
 - "This airplane is equipped for operation in icing conditions" when the aircraft is fitted with Item 204.
- NOTE 3** Maximum continuous single generator load is limited to:
- 200 amps in Flight conditions up to 51.5°C (125°F).
 - 200 amps in Ground conditions up to 7°C (45°F).
 - 160 amps in Ground conditions from 7°C to 51.5°C (45°F to 125°F).
- NOTE 4** Service Bulletins (SBs) are contained in PSM 1-6-SB/TAB.
- NOTE 5** The DHC-6 Series 400 must have a long nose (Viking Mod. 6/2020).
- NOTE 6** All aircraft are compliant with SFAR 23 and Amendment 23-1 as delivered.
SFAR 23 and Amendment SFAR 23-1 information has been included in Airplane Flight Manual PSM 1-64-1A.
Compliance with the service life limits specified in DHC-6 Twin Otter Structural Components Service Life Limits Manual, PSM 1-6-11 is required.
- NOTE 7** An engine fire extinguisher system must be installed in accordance with Viking Air Limited drawing C6SW1100 or other approved data.
- NOTE 8**
- The electrical system upgrade consists of removing the AC system; replacing the starter-generator and the DC system wiring, connectors, lights (strobe, navigation, nose-wheel position indicator, and interior) and door proximity switches, and installing an increased capacity battery, 12V DC outlets in the cockpit and an optional pulsing landing light system.
 - The cockpit and avionics upgrades consist of replacing the conventional primary flight instruments, engine instruments and crew alerting system with an integrated Honeywell Primus Apex® EFIS avionics suite; the installation of /provisions for comm/nav equipment, radar altimeter (second radar altimeter optional), flight director, autopilot (optional), flight management system (second flight management system optional), SBAS GPS upgrade (optional), synthetic vision system (optional), TCAS I, TCAS II (optional), ADS-B Out (optional), Class A TAWS, CVR, FDR, weather radar and cabin public address system; and related changes to the electrical system, circuit breakers and switches.
 - Aircraft equipped with Mod. 6/2303 to be operated in accordance with Approved Viking Series 400 Flight Manual Supplement 50.
- NOTE 9** In support of compliance with FAR 23.1309 at Amendment 23-57 for all avionics, the DHC-6 Series 400 is a Class IV aircraft in the meaning of FAA Advisory Circular (AC) 23.1309-1E.
- NOTE 10** The differences of the Brazilian airplanes in relation to the basic TCCA type design are summarized below:
- The Brazilian Airplane Flight Manual front page for AFM No. PSM 1-64-1A;

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- NOTE 10** 2. Incorporation, in the Brazilian AFM, of the Flight Manual Supplement No. 9-54 –
(cont'd) ANAC Registered Airplanes; and
3. Marking and placards (see PLACARDS section in this TCDS).

**MÁRIO IGAWA**

Gerente-Geral de Certificação de Produto Aeronáutico
(General Manager, Aeronautical Product Certification)