

**MINISTÉRIO DA AERONÁUTICA
DEPARTAMENTO DE PESQUISAS E DESENVOLVIMENTO
CENTRO TÉCNICO AEROESPACIAL**

TYPE CERTIFICATE DATA SHEET Nº EA-9102-01

Type Certificate Holder:

de HAVILLAND INC.
123 Garratt Boulevard
Downsview, Ontario - M3K 1Y5
CANADA

EA-9102-01
Sheet 01

de HAVILLAND
DHC-8-100 SERIES
DHC-8-200 SERIES
DHC-8-300 SERIES

October 1999

This data sheet, which is part of Type Certificate No. 9102, 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-8-102 (Transport Category), approved 27 April 1992;
Model DHC-8-103 (Transport Category), approved 27 April 1992; and
Model DHC-8-106 (Transport Category), approved 30 March 1998.**

ENGINE DHC-8-102: 2 Pratt & Whitney Canada, Inc. PW120A or PW121
DHC-8-103: 2 Pratt & Whitney Canada, Inc. PW121
DHC-8-106: 2 Pratt & Whitney Canada, Inc. PW121

ENGINE LIMITS See approved Airplane Flight Manual.

PROPELLER AND PROPELLER LIMITS Hamilton Standard Model 14SF-7, blades SFA13() -0A
Diameter 3.96 m (13 ft)
Pitch settings at 0.75 radius:
- Feather 77.5°
- Flight fine 10.5°
- Ground fine -5.5°
- Full reverse -18.5°
Propeller speed (Np):
- Takeoff 1 200 rpm
- Max Continuous 1 200 rpm

AIRSPPEED LIMITS (IAS) Maximum operating (V_{MO}):
- 0 to 14 000 ft (6 350 m) 242 kt
- 15 000 ft (6 804 m) 239 kt
- 20 000 ft (9 072 m) 223 kt
- 25 000 ft (11 340 m) 207 kt
Flaps extended (V_{FE}):
- 35° (landing): 130 kt
- 15° (takeoff and approach): 148 kt
- 5° (takeoff): 148 kt

AIRSPPEED LIMITS (IAS) (Cont.)	Maneuvering (V_A) - sea level:	163 kt
	Max. gust intensity, rough air (V_B)	180 kt
	Minimum control speed - Air (V_{MCA}):	
	- Flaps 5°	79 kt
	- Flaps 15°	75 kt
	L. G. operation - (V_{LO}):	158 kt
	L. G. extended - (V_{LE}):	172 kt
L. G. doors open operative	140 kt	

C. G. RANGE See approved Airplane Flight Manual.

MAXIMUM WEIGHT Takeoff: - DHC-8-102: 15 650 kg (34 500 lb)
 - DHC-8-103: 15 650 kg (34 500 lb)
 - DHC-8-106: 16 466 kg (36 300 lb)
 For other weights see approved Airplane Flight Manual.

MAXIMUM OCCUPANTS Not to exceed 44, including 2 pilots, 1 attendant and 1 check pilot (40 passengers when fitted with an approved interior).

MAXIMUM BAGGAGE 454 kg (1 000 lb) (see Weight and Balance Manual for mixed passenger cargo configuration);
 907 kg (2 000 lb) with Mod 8/0063 or 8/0083.

OIL CAPACITY		US gal (liters)	kg (lb)
	Usable:	1.0 (3.8)	0.38 (0.83)
	Total:	4.7 (17.8)	1.77 (3.9)

CONTROL SURFACE MOVEMENTS: See Maintenance Manual Series 100 PSM 1-8-2

II – Model DHC-8-201 (Transport Category), approved 30 March 1998, and Model DHC-8-202 (Transport Category), approved 30 March 1998.

ENGINE DHC-8-201: 2 Pratt & Whitney Canada, Inc. PW123C
 DHC-8-202: 2 Pratt & Whitney Canada, Inc. PW123D

ENGINE LIMITS See approved Airplane Flight Manual.

PROPELLER AND PROPELLER LIMITS Hamilton Standard Model 14SF-23, blades SFA13() -0A

Diameter	3.96 m (13 ft)
Pitch settings at 0.75 radius:	
- Feather	77.5°
- Flight fine	10.5°
- Ground fine	-5.5°
- Full reverse	-18.5°
Propeller speed (N_p):	
- Takeoff	1 200 rpm
- Max Continuous	1 200 rpm

AIRSPEED LIMITS (IAS)	Maximum operating (V_{MO}):		
	- 0 to 14 000 ft (6 350 m)		242 kt
	- 15 000 ft (6 804 m)		239 kt
	- 20 000 ft (9 072 m)		223 kt
	- 25 000 ft (11 340 m)		207 kt
	Flaps extended (V_{FE})		
	- 35° (landing):		130 kt
	- 15° (takeoff and approach):		148 kt
	- 5° (takeoff):		148 kt
	Maneuvering (V_A) - sea level:		163 kt
	Max. gust intensity, rough air (V_B)		180 kt
	Minimum control speed - Air (V_{MCA}):		
	- Flaps 5°		79 kt
	- Flaps 15°		75 kt
	L. G. operation - (V_{LO}):		158 kt
L. G. extended - (V_{LE}):		172 kt	
L. G. doors open operative		140 kt	
C. G. RANGE	See approved Airplane Flight Manual.		
MAXIMUM WEIGHT	Takeoff: - All models: 16 466 kg (36 300 lb) For other weights see approved Airplane Flight Manual.		
MAXIMUM OCCUPANTS	Not to exceed 44, including 2 pilots, 1 attendant and 1 check pilot (40 passengers when fitted with an approved interior).		
MAXIMUM BAGGAGE	907 kg (2 000 lb) (see Weight and Balance Manual for mixed passenger cargo configuration).		
OIL CAPACITY		US gal (liters)	kg (lb)
	Usable:	1.9 (7.2)	0.72 (1.6)
	Total:	5.5 (20.8)	4.57 (2.07)
CONTROL SURFACE MOVEMENTS:	See Maintenance Manual Series 200 PSM 1-82-2		
III – <u>Model DHC-8-301 (Transport Category)</u>, approved 27 April 1992;			
<u>Model DHC-8-311 (Transport Category)</u>, approved 10 October 1991; and			
<u>Model DHC-8-315 (Transport Category)</u>, approved 18 November 1998.			
ENGINE	DHC-8-301, -311: 2 Pratt & Whitney Canada, Inc. PW123 DHC-8-315: 2 Pratt & Whitney Canada, Inc. PW123E		
ENGINE LIMITS	See approved Airplane Flight Manual.		

PROPELLER AND PROPELLER LIMITS Hamilton Standard Model 14SF-15 or 23, blades SFA13() -0A

Diameter 3.96 m (13 ft)

Pitch settings at 0.75 radius:

- Feather 77.5°

- Flight fine 11.5°

- Ground fine -7.5°

- Full reverse -18.5°

Propeller speed (Np):

- Takeoff 1 200 rpm

- Max Continuous 1 200 rpm

AIRSPEED LIMITS (IAS)Maximum operating (V_{MO}):

- 0 to 17 000 ft (7 711 m) 243 kt

- 20 000 ft (9 072 m) 232 kt

- 25 000 ft (11 340 m) 214 kt

For DHC-8-301:

Flaps extended (V_{FE})

- 35° (landing): 135 kt

- 15° (takeoff and approach): 149 kt

- 5° (takeoff): 160 kt

Maneuvering (V_A) - sea level: 176 ktMax. gust intensity, rough air (V_B) 188 kt

Minimum control speed - air

(V_{MCA}):

- Flaps 5° 83 kt

- Flaps 15° 77 kt

L. G. operation - (V_{LO}): 158 ktL. G. extended - (V_{LE}): 173 kt

L. G. doors open operative 140 kt

For DHC-8-311, -315:

Flaps extended (V_{FE})

- 35° (landing): 138 kt

- 15° (takeoff, approach,

landing): 150 kt

- 10° (takeoff, approach, landing): 154 kt

- 5° (takeoff): 163 kt

Maneuvering (V_A) - sea level: 177 ktMax. gust intensity, rough air (V_B) 190 kt

Minimum control speed - air

(V_{MCA}):

- Flaps 15° 78 kt

- Flaps 10° 80 kt

- Flaps 5° 83 kt

- Flaps 0° 95 kt

L. G. operation - (V_{LO}): 163 ktL. G. extended - (V_{LE}): 173 kt

L. G. doors open operative 140 kt

C. G. RANGE See approved Airplane Flight Manual.

MAXIMUM WEIGHT Takeoff:
 - All models: 18 640 kg (41 100 lb).
 - DHC-8-311, -315:
 19 000 kg (41 880 lb) with CR803SO00001 incorporated
 19 500 kg (43 000 lb) with CR803SO00002 incorporated
 For other weights see approved Airplane Flight Manual.

MAXIMUM OCCUPANTS Not to exceed 61, including 2 pilots, 2 attendants and 1 check pilot (56 passengers when fitted with an approved interior).

MAXIMUM BAGGAGE 1 130 kg (2 500 lb) for standard baggage compartment (see Weight and Balance Manual for other configurations; see note 5 for DHC-8-311 cargo/combi version).

OIL CAPACITY	US gal (liters)	kg (lb)
Usable:	1.9 (7.2)	0.72 (1.6)
Total:	5.5 (20.8)	4.57 (2.07)

CONTROL SURFACE MOVEMENTS: See Maintenance Manual Series 300 PSM 1-83-2

DATA PERTINENT TO ALL MODELS EXCEPT AS INDICATED:

FUEL	Type	Specifications	
		Canada	USA
Kerosene:	- JET A, A-1	CGSB 3.23	ASTM D1655
	- JP5	3-GP-24	MIL-T-5624
	- JP8		
Wide Cut:	- JET B	CGSB 3.22	ASTM D1655
	- JP-4	CGSB 3.22	MIL-T-5624

OIL Oils conforming to Pratt & Whitney Aircraft of Canada Ltd. PWA 521 Type II Specifications (See AFM as listed Approved Publications)

DATUM Plate located on centerline at Station 423.0 in. (1 074.4 cm) on underside of fuselage.

LEVELING MEANS Plumb bob and target in RH emergency exit opening.

MINIMUM CREW 2 (pilot and copilot)

FUEL CAPACITY	kg	lb	US gal	liters	Imp Gal
Usable	2 575	5 678	835	3 160	695
Unusable	40	87	13	49	11
Total	2 615	5 765	848	3 209	706

MAXIMUM OPERATING ALTITUDE	Take-off and Landing: 3 048 m (10 000 ft) Enroute: 7 620 m (25 000 ft)
TEMPERATURE OPERATING LIMITS	See approved Airplane Flight Manual.
SERIAL NUMBERS ELIGIBLE	A Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for a Brazilian Certificate of Airworthiness is made. - Series 100 : Serial number 2 and subsequent. - Series 200 : Serial number 391 and subsequent. - Series 300 : Serial number 100 and subsequent.
IMPORT ELIGIBILITY	A Brazilian Certificate of Airworthiness may be issued on the basis of on an Transport Canada Export Certificate on Airworthiness (or a third country Export Certificate on Airworthiness, in case of used aircraft imported from such country), including the following statement: “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. 9102 and in condition of safe operation”. The CTA Report H.10-1210-03, dated 13 April 1993 and H.10-1214-00, dated 02 August 1999, or further revisions, contain the Brazilian requirements for the acceptance of these airplanes.
CERTIFICATION BASIS	RBHA 25, corresponding to FAR 25 effective 01 February 1965, including amdts. 25-1 through 25-51 plus RBHA/FAR 25.832 amdt. 25-56. <u>Series 200 additional requirements:</u> RBHA/FAR 25 amdts. 25-52 through 25-66 plus RBHA/FAR 25.963(e) amdt. 25-69; RBHA/FAR 25.361 amdt. 25-72 and RBHA/FAR 25.729(e), amdt. 25-75, with the following exceptions (see Note 7): RBHA/FAR 25.365(e) amdt. 25-54, RBHA/FAR 25.561 amdt. 25-64, RBHA/FAR 25.562 amdt. 25-64, RBHA/FAR 25.783 amdt. 25-54, RBHA/FAR 25.785 amdt. 25-64, RBHA/FAR 25.904 amdt. 25-62, and RBHA/FAR 25.1091(e) amdt. 25-57. <u>Series 300 additional requirements:</u> RBHA/FAR 25.812 amdt. 25-58, RBHA/FAR 25.853 amdt. 25-59 (Model 301 only) and RBHA/FAR 25.853 amdt. 25-66 (Models 311 and 315). <u>Additional Airworthiness Requirements</u> (Series 100, 200 and 300, as applicable): 1. Transport Canada Airworthiness Manual Advisory 525/1 Stalls, compliance dated 09 July 1984, Airworthiness Manual 525.207(b) Stall Warning, initial issue dated 1986, and 525.201(d) Stall Demonstration, initial issue dated 1986. 2. Low temperature operations reference Transport Canada Additional Airworthiness Requirements Review Document dated 10 September 1984.

**CERTIFICATION BASIS
(Cont.)**

3. Spoiler policy reference DOT Letter 5010-10-366 (ABE/L) dated 20 September 1984.
4. Noise:
 - Models 102, 103, 106, 301 and 311: ICAO Annex 16 first edition, Volume 1, Chapter 3, applicable on 26 Nov. 1981.
 - Models 201, 202 and 315: ICAO Annex 16 third edition, Volume 1, Chapter 3, Amendment 4, applicable on 11 November 1993.
5. Emission Requirements:
 - Models 102, 103, 106, 301 and 311: SFAR 27 dated 12 December 1973, including amendments 27-1 through 27-5.
 - Models 201, 202 and 315: ICAO Annex 16, Second Edition, Volume II, Amendment 2, applicable on 11 November 1993.
6. For model 311 only: cargo compartment classification RBHA/FAR 25.857(b)&(d) amdt. 25-60 for the 20, 40 & 48 passenger configurations.

Items of Equivalent Safety:

1. Pilot compartment view RBHA/FAR 25.773(b)(2)
2. Ditching emergency exits for passengers RBHA/FAR 25.807(d)(2) (DHC-8-311 and 315 with CR803SO0001 or CR803SO0002 incorporated)

Special Conditions:

1. Automatic take-off power control system (ATPCS) (ref. FAA Special Conditions No. 25.-ANM-3; TC Letter 5010-10-366 (ABP/L) dated February 24, 1984).
2. Steep Approach and Short Landing – (ref.: TC letter 5010-10-366 (ABP/L) dated June 7, 1985)

Exemptions:

1. RBHA/FAR 25.571(e)(2) Propeller Debris (ref. FAA exemption No. NM-102; ref. TC letter 5010-10-366 (ABP/A) dated 10 February 1984).
2. RBHA/FAR 25.807(c)(1) 40 passenger configuration Series 100 and 200 (ref. FAA exemption No. 4723 dated 24 October 1986; ref. TC letter 5010-10-366 dated 14 March 1986).
3. For Series 300, exemption No. 89-2 dated 03 February 1989, RBHA/FAR 25.785(h), Flight Attendants Seat.

Compliance with the following additional optional requirements has been established:

1. Ice Protection - RBHA/FAR 25.1419

Compliance with RBHA/FAR 25.801 has been established when the safety equipment requirements of RBHA/FAR 25.1411 and the ditching equipment requirements of RBHA/FAR 25.1415 are satisfied.

REQUIRED EQUIPMENT

The basic required equipment, as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the airplane.

NOTES

NOTE 1: Weight and Balance: current weight and balance report including list of equipment included in certificated empty weight, and loading instructions must be provided for each aircraft at the time of original certification and at all times thereafter.

NOTE 2: Markings and Placards: the aircraft must be operated in accordance with the Transport Canada approved Brazilian Airplane Flight Manual. Required placards translated into Portuguese are listed in the last revision of the acceptance report H.10-1210 or H.10-1214.

NOTE 3: Continuing of Airworthiness: Service Bulletins, structural repair manuals, and aircraft flight manuals which contain a statement that the document is Transport Canada approved are accepted by the CTA and are considered CTA approved. These approvals pertain to the type design only.
Compliance with the tasks and intervals specified in the "Airworthiness Limitations Section", section of the Maintenance Program listed in Approved Publications, is required to ensure continuing compliance with the type certification basis. Components which are life limited are also listed in the "Airworthiness Limitations Section".

Approved Publications:

1. Airworthiness Limitations (Part 2) and MRB Report (Sections 2 and 3) of the Maintenance Program:
 - Series 100: PSM 1-8-7;
 - Series 200: PSM 1-82-7; and
 - Series 300: PSM 1-83-7.
2. Definition Report AEROC 8.1.AC.1

NOTE 4 The CTA approved type design corresponds to the Transport Canada approved type design plus the following specific requirements:

1. Transport Canada Approved Brazilian AFM:
 - Series 100: PSM 1-81-1A (Models 102, 103 and 106)
 - Series 200: PSM 1-82-1A (Model 201, 202)
 - Series 300: PSM 1-83-1A (Model 301, 311 and 315)
2. Markings and placards in Portuguese or bilingual;
3. Milibar scale for ECS selector;
4. Battery powered stand by attitude indicator;
5. No.1 ADF on essential bus;
6. Cockpit door blow-out panel;
7. Additional 1.58 Kg (3.5 lb) portable fire extinguisher;
8. Standby altimeter in milibar; and
9. Face mask assembly.

NOTE 5: For **DHC-8-311**: all cargo, 20, 40 or 48 passenger configurations with a moveable passenger/cargo bulkhead located at station 197.0, 354.0, 515.0 or 579.0 respectively. For the 20, 40 and 48 passenger configurations DHC-8-311 Flight Manual Suppl. 42, Iss. 3, Cargo Loading Manual PSM 1-83-8A, Suppl. 1, Iss. 3 and Weight & Balance Manual PSM 1-83-8C are required (S/N 230 & 242).

NOTE 6: Modifications required to convert a Model DHC-8-102 to a -103, a -102/-103 to a -106, and a -311 to a -315 are identified in de Havilland definition report AEROC 8.1.AC.1 listed in approved publications.

NOTE 7: The DHC-8 Series 200 was certificated as a derivative of the Series 100 aircraft. The applicable certification basis is the same as the Series 100, but the manufacturer elected to demonstrate compliance with FAR Part 25, up to Amendment 25-66, less the exceptions shown under the Series 200 certification basis.

JOSÉ LUIZ R. BELDERRAIN – Ten.-Cel.-Eng.
Chefe da Divisão de Homologação Aeronáutica
(Chief, Divisão de Homologação Aeronáutica)

SILOMAR CAVALCANTE GODINHO – Cel.-Av.
Diretor do Instituto de Fomento e Coordenação Industrial
(Director, Instituto de Fomento e Coordenação Industrial)
