UK CIVIL AVIATION AUTHORITY
PROPELLER TYPE CERTIFICATE DATA SHEET NO. 117

Issue 5
21st December 2001

1. CERTIFICATION

Propellers of types detailed below are approved for use on civil aircraft classified in the Transport Category (Passenger) listed in item 4 of this data sheet when they are installed, operated and maintained in accordance with the approved manufacturers' manual and other approved instructions.

2. CONSTRUCTOR

Dowty Aerospace Propellers
Anson Business Park
Cheltenham Road East
Gloucester
GL2 9QN

3. TYPE NUMBER

R408/6-123-F/17

4. APPROVED INSTALLATION

4.1 Installations

Propeller Model	Aircraft	Engine
R408/6-123-F/17	DHC-8 Model 400 DHC-8 Model 401 DHC-8 Model 402 Max Take-off Weight 65200 lb (29575 kg)	Pratt & Whitney PW150A Take-off power 5071 SHP (3782 kW) Take-off torque 26110 lbf ft (35405 Nm) at 1020 propeller rpm.

5. CERTIFICATION BASIS

5.1 JAA Certification Basis : JAR-P Change 7 dated 22 October 1987.
Orange Paper P/96/1 effective 8 August 1996.

5.2 JAA Special Conditions

SC1 Composite Blades
SC2 Failure Analysis
SC3 Bird Strike
SC4 Lightning Protection

6. PROPELLER PARTICULARS

6.1 Build Standard

Specified in List of Parts 697070002-010 or later approved issues.

6.2 Description

The propeller is variable pitch, constant speeding, feathering, reversing, using hydraulic control, counterweights and has six composite blades. Beta control provides manual pitch selection for aircraft braking and ground manoeuvring. Fully integrated, full authority, propeller electronic control system, supplied as part of the propeller equipment. The propeller electronic control software meets the Level 'A' (critical) standard of RTCA DO-178B.

6.3 Number and Description of Blades

Six blades of composite glass and carbon reinforced plastic construction, polyurethane coated and fitted with nickel leading edge sheath for erosion protection with electric de-icing overshoes.

6.4 Diameter and Pitch Limits

Diameter : 162 ins (4.115 m)

Pitch Limits : (at 0.7 blade pitch)

Feather angle	84.5°
Reverse angle	-19.0°
Flight Idle angle	16.5°

6.5 Rotation

Rotation is right hand tractor (clockwise when viewed from rear)

6.6 Engine Shaft Mounting

Flange with 15 studs, nuts and 3 dowels.

6.7 Weight (Dry)

Propeller complete with spinner - 555 lb (252 kg) approximate (reference only)

6.8 Equipment

The Standard of the associated equipment approved for use with this propeller is defined by the propeller equipment set drawing 697075001 Issue 28 or subsequent approved issue and published in AMM 1096. The equipment set comprises the following units.

Brush Block Bracket Assembly
Spinner – Aluminium or Composite
Propeller
Overspeed Governor
Pitch Control Unit
Beta Tube Assembly
Feather Pump
Propeller Electronic Controller - See 8.3 for software standard
Timer Monitor Control Unit - See 8.4 for software standard

7. LIMITATIONS

7.1 Operating Limitations.

7.1.1 Ground Operation

All ground running with the aircraft stationary should normally be conducted with the aircraft pointed into wind ±30°. The following limitations apply when the aircraft is not pointed into the wind ±30° :-

GROUND RUNNING

(STATIONARY OPERATION)

WIND SPEED	TORQUE/POWER RESTRICTION
Greater than 8 knots and less than or equal to 20 knots	Torque 15400 lbf ft (20882 Nm) Power 2990 SHP (2230 kW) at 1020 rpm
Greater than 20 knots and less than or equal to 45 knots	Torque 3978 lbf ft (5394 Nm) Power 500 SHP (373 kW) at 660 rpm
Continuous wind greater than 45 knots and less than or equal to 50 knots.	Torque 3660 lbf.ft (4960 Nm) Power 460 SHP (343 kW) at 660 rpm.
Gusting wind greater than 45 knots and less than or equal to 55 knots.	Torque 3660 lbf.ft (4960 Nm) Power 460 SHP (343 kW) at 660 rpm.

(TAXY OPERATION)

Greater than 8 knots and less than or equal to 45 knots.	Torque 3978 lbf ft (5394 Nm) Power 500 SHP (373 kW) at 660 rpm
Continuous wind greater than 45 knots and less than or equal to 50 knots.	Torque 3660 lbf.ft (4960 Nm) Power 460 SHP (343 kW) at 660 rpm.
Gusting wind greater than 45 knots and less than or equal to 55 knots	Torque 3660 lbf.ft (4960 Nm) Power 460 SHP (343 kW) at 660 rpm.

7.1.2 Flight Operations - Take-off.

The limitations of Section 7.1.1 apply until the aircraft speed is greater than the windspeed.

Alternatively, a rolling take-off procedure may be used as follows when take off is conducted out of wind (45° to 315°):

WIND SPEED	INITIAL STATIC TORQUE/ POWER RESTRICTION
Greater than 8 knots and less than or equal to 45 knots.	Torque 3978 lbf ft (5394 Nm) Power 500 SHP (373 kW) at 660 rpm As soon as brakes are released 100% take off power can be selected.
Greater than 45 knots and less than 50kts continuous and less than 55kts gusting.	Torque 3660 lbf.ft (4960 Nm) Power 460 SHP (343 kW) at 660 rpm As soon as brakes are released 100% take off power can be selected

7.1.3 Ground Operation

A PLA less than Flight Idle must not be selected at airspeeds greater than 150 knots Equivalent Airspeed (EAS).

7.1.4 Equipment Operation

The Propeller is not to be operated with oil temperatures below 0°F (-18°C).

7.2 The following declared limitations and ratings shall apply:

Take-off Power, 100%	5071 SHP (3782 kW)
Take-off Propeller Torque, 100%	26110 lbf ft (35405Nm)
Take-off Propeller Speed, 100%	1020 rpm
Maximum Continuous Power, 100%	5071 SHP (3782 kW)
Maximum Continuous Propeller Torque, 100%	26110 lbf ft (35405 Nm)
Maximum Transient Propeller Overspeed, 115%	1173 rpm
Maximum Permitted Transient Propeller Overtorque	
100% to 108%	28,199 lbf.ft (38,237 Nm)
- no restriction on number of occurrences	
108% to 135%	35,248 lbf.ft (47,796 Nm)
- maximum of 300 occurrences, see note 7	

8. GENERAL

8.1 The approval does not show that compliance with the aircraft de-icing requirements has been achieved.

8.2 Drawings and Specifications

General Arrangement Drawing	697070102
Installation Drawing	697070002
Design Specification	95DS0612

8.3 Propeller Electronic Control Software Standard UD1079 (Strike 23)

The equipment may be used with later approved PEC software standards controlled in accordance with Dowty Aerospace Propellers documents as follows:

TITLE	REPORT No.	RTCA Do 178B Doc. No.
Software	699008957	11.20

Accomplishment Summary		
Software Configuration Index	699008956	11.15 and 11.16
Plan for Software Aspects of Certification	699008955	11.1

8.4 Timer Monitor Control Unit Software Standard UD1081 (Strike 9)

The equipment may be used with later approved Timer Monitor Control Unit software standards controlled in accordance with Dowty Aerospace Propellers documents as follows:-

TITLE	REPORT No.	RTCA Do 178 Doc. No.
Software Accomplishment Summary	699009957	11.20
Software Configuration Index	699009956	11.15 and 11.16
Plan for Software Aspects of Certification	699009955	11.1

9. MANUALS

	CMM	**Propeller Maintenance Manual.**
Brush Block Bracket Unit	30-60-05	1096
Timer/Monitor Control Unit	30-60-06	1096
Propeller	61-10-46	1096
Spinner Part No. 697069001	61-10-47	1096
Spinner Part No. 697069002	61-10-48	1096
Hub Actuator	61-10-49	-
Blade / Bearing	61-10-50	-
Feather Pump	61-20-31	1096
Beta Tubes	61-20-46	1096
Pitch Control Unit	61-20-47	1096
Overspeed Governor	61-20-48	1096

NOTES

1. The propeller approved does not consider compliance with the aircraft de-icing requirements.

2. Component life limitations are specified in the approved Airworthiness Limitations sections of Maintenance Manual.

3. Mandatory Propeller inspections are specified in the Airworthiness Limitations Section of the Maintenance Manual.

4. The Propeller restoration time/calendar life detailed in Dowty Aerospace Propeller service bulletin, specified in the Maintenance Manual.

5. The hydraulic fluids for use in the propeller and its control system are specified in the Airworthiness Limitations Section of the Maintenance Manual.

6. The propeller and its control system have been approved with an overspeed "get-home" capability to cater for propeller control malfunctions. The Propeller Maintenance Manual 1096 operating limits defines the overspeed limit.

7. Transient propeller inadvertent over-torque between 108% and 135% is permitted but is limited to a total number of 300 events in the life of a hub or blade assembly. (Ref: Propeller Maintenance Manual 1096).