
TYPE-CERTIFICATE DATA SHEET

UK.TC.P.002

For Propeller

R408 Series Propellers

Type Certificate Holder

Dowty Propellers
Gloucester Business Park
4100 Hurricane Road
Gloucester
GL3 4AQ

Model(s): R408/6-123-F/17

Issue: 1

Date of issue: 20 September 2023

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Section 1 Type R408/6-123-F/17

I. General

1. Type / Variant or Model

R408/6-123-F/17

2. Type Certificate Holder

Dowty Propellers
Gloucester Business Park
4100 Hurricane Road
Gloucester
GL3 4AQ
Design Organisation Approval No.: UK.21J.0008

3. Manufacturer

Dowty Propellers, a GE Aerospace Company

4. Certification Application Date

R408/6-123-F/17
15 November 1995

5. Certification Date

R408/6-123-F/17
16 April 1999

Before issue of this UK CAA Type Certificate and Data Sheet, the Type Certification of the R408/6-123-F/17 propeller was covered by EASA Propeller Type Certificate Number P.002 and at the time of the original certification was covered by CAA-UK Propeller Type Certificate Number 117.

II. Certification Basis

1. JAR-P Change 7 dated 22 October 1987. Orange Paper P/96/1 effective 8 August 1996.

2. Special Conditions:

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

3. Deviations:

None

4. Equivalent Safety Findings (ESF):

None

5. Environmental Requirements:

None

III. Technical Characteristic

1. Type Design Definition

Design Definition	List of Parts	Equipment Set Drawing
R408/6-123-F/17	697070002-010 issue 1or later approved issues	697075001 issue 28 or later approved issues

2. Description

The Propeller is a variable pitch, constant speed, feathering, reversing type, using hydraulic control and counterweights, with six composite blades. Beta control provides manual pitch selection for aircraft braking and ground manoeuvring. An 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. The R408/6-123-F/17 is approved for operation on the Bombardier Q400 Dash 8 aircraft.

3. Equipment

3.1 The standard of the associated equipment approved for use with this propeller type is defined by the propeller equipment set drawing and published in AMM maintenance manual as follows:

Type Definition	R408/6-123-F/17
AMM Publication	1096
Equipment Set Drawing	697075001

3.2 The equipment set comprises the following LRUs:

R408/6-123-F/17
Propeller Spinner (Aluminum or Composite) Feather Pump Overspeed Governor Beta Tube Assembly Pitch Control Unit Brush Block Bracket Assembly Propeller Electronic Controller Timer Monitor Control Unit

3.3 Software Standard: See Section 7.

4. Dimensions

Diameter: 4.115 meters (162 inches)

5. Weight

R408/6-123-F/17
Propeller complete with spinner 252 kg (555lbs) approximate (reference only)

6. Hub / Blade - Combinations

Combinations	R408/6-123-F/17
Blade Part No	697071002 issue 1, or later
Hub Part No	697071230 issue 2, or later

7. Control System

7.1 Hydraulically actuated blade pitch is controlled by the Pitch Control Unit (PCU) which is electronically controlled by the Propeller Electronic Controller (PEC). An Overspeed Governor (OSG) utilising flyweights in conjunction with blade counterweights prevents propeller overspeed.

7.2 PEC Software Standard : UD1079 (Strike 23)
TMCU Software Standard : UD1081 (Strike 9)
These are the original certification software standard. The equipment may be used with later approved PEC software standards controlled in accordance with Dowty Propellers documents as follows:

Title	PEC Report No.	TMCU Report No.	RTCA DO 178B Doc. No.
Software Accomplishment Summary	699008957	699009957	11.20
Software Configuration Index	699008956	699009956	11.15 and 11.16
Plan for Software Aspects of Certification	699008955	699009955	11.1

8. Adaptation to Engine

Flange with 15 studs, attachment nuts and 3 dowels.

9. Sense of Rotation

Rotation is right hand tractor (clockwise when viewed in the direction of flight).

IV. Operating Limitations

Operation of the propeller system outside of the limitations stated below is prohibited unless permitted by revision of the aircraft flight manual.

1. **Propeller Speed**

The following propeller speed information applies to the R408/6-123-F/17 propeller variant:

Take-off Propeller Speed (100%)	1020 rpm
Maximum Transient Propeller Overspeed (115%) (115% for a single excursion time of 30 seconds)	1173 rpm

In the case of a propeller control failure, propeller overspeed of 1072 rpm (105%) is allowed for the completion of the flight.

2. **Driving Power**

The following driving power information applies to the R408/6-123-F/17 propeller variant:

2.1 Torque Limits : Nm (lbf ft)

Take-off Propeller Torque (100%)	35405 (26110)
Maximum continuous Propeller Torque (100%)	35405 (26110)
Maximum Permitted Transient (No restriction on number of occurrences) Propeller Overtorque (108%)	38237 (28199)
Maximum Permitted Transient (Maximum of 300 occurrences, see note 7) Propeller Overtorque (108% - 135%)	47796 (35248)

2.2 Power Limits : kW (SHP)

Take-off Power (100%)	3782 (5071)
Maximum Continuous Power (100%)	3782 (5071)
Maximum Reverse Power	1119 (1500)

3. **Propeller Blade Angle**

The following propeller blade angles apply to the R408/6-123-F/17 propeller variant and are for blade angles stated at two thirds radius ('station J-J') and 0.7 radius:

	Station J-J	0.7 radius
Feather Angle	-86.00° nominal	84.45° nominal (± 0.12° tolerance)
Reverse Angle	-17.75° nominal	-19.30° nominal (± 0.25° tolerance)
Flight Idle Angle (hydraulic 'stop')	17.55° nominal	16.00° nominal

4. Cross-Wind Limitations

The cross-wind ground and flight limitations are stated in the Propeller Operating Limitations, (as declared in PMM publication number 1096 for the R/408-123-F/17), and stated in the applicable Aircraft Flight Manual.

5. General Limitations

- 5.1 Power Lever Angle (PLA) Position : A PLA less than Flight Idle must not be selected at airspeeds greater than 150 knots Equivalent Airspeed (EAS)
- 5.2 Equipment Operation : The propeller is not to be operated with oil temperature below -18°C (0°F).

V. Operating and Service Instructions

Instructions and information on unit Description, Operation, Fault Isolation, Servicing, Removal/Installation, Adjustment Test, Cleaning/Painting and Repairs are covered in Propeller Maintenance Manual (PMM) (publication number 1096 for the R/408-123-F/17). Assembly / Disassembly are covered in the following Component Maintenance Manuals (CMM):

COMPONENT MAINTENANCE MANUALS	CMM CHAPTER NUMBERS
Spinner (Aluminum Alloy)	61-10-47
Spinner (Composite)	61-10-48
Overspeed Governor	61-20-48
Pitch Control Unit	61-20-47
Beta Tubes	61-20-46
Propeller Unit	61-10-46
Hub Actuator	61-10-49
Blade and Bearing	61-10-50
Brush Block Bracket Unit	30-60-05
Brush Block	Not Applicable
Feathering Pump	61-20-31
Propeller Electronic Controller	61-20-01
Timer Monitor Control Unit	30-60-06

VI. Notes

1. The propeller approval does not consider compliance with the aircraft de-icing requirements.
2. Component life limitations are specified in the approved Airworthiness Limitations Sections of the Maintenance Manual.
3. Mandatory Propeller inspections will be specified in the Airworthiness Limitations Section of the Maintenance Manual.
4. The Propeller restoration time/calendar life will be detailed in Dowty Propellers service bulletin, specified in the Maintenance Manual.
5. The hydraulic fluids for use in the propeller and its control system will be specified in the Airworthiness Limitations Section of the Maintenance Manual.
6. The propeller and its control system will be approved with an overspeed “get-home” capability to cater for propeller control malfunctions. The Propeller Maintenance Manual 1096 operating limits will define 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).

Section 2 Administrative

I. Acronyms and Abbreviations

Acronym / Abbreviation	Definition
CAA	Civil Aviation Authority
EASA	European Union Aviation Safety Agency
TC	Type Certificate
TCDS	Type Certificate Data Sheet
TCH	Type Certificate Holder

II. Type Certificate Holder Record

TCH Record	Period
Dowty Propellers Gloucester Business Park 4100 Hurricane Road Gloucester GL3 4AQ	Present. No changes.

III. Amendment Record

TCDS Issue No.	TCDS Issue Date	Changes	TC Issue and Date
Issue 1	20 September 2023	The content of the initial issue of this UK CAA TCDS was taken from EASA TCDS No. EASA.P.002 Issue 3 dated 5 March 2008 which was the current EASA version at 31 December 2020 and therefore the version of the TCDS for the R408 series propeller accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement. This has been changed at issue 1 to reflect; <ul style="list-style-type: none">- Removal of the R408/6-123-F/20 which was intended for operation on the Shaanxi Aircraft Industry Group Y8F600 aircraft.	Issue 1 20 September 2023

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