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## TYPE-CERTIFICATE DATA SHEET

No. P.012

**for Propeller**  
FH385/FH386 series

**Type Certificate Holder**  
RATIER-FIGEAC

Avenue Ratier – B.P. N° 2  
46101 Figeac Cedex  
France

For Models:  
FH385  
FH386



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## TABLE OF CONTENTS

|                                                                                   |          |
|-----------------------------------------------------------------------------------|----------|
| <b>I. General .....</b>                                                           | <b>4</b> |
| 1. Type / Models .....                                                            | 4        |
| 2. Type Certificate Holder .....                                                  | 4        |
| 3. Manufacturer .....                                                             | 4        |
| 4. Date of Application .....                                                      | 4        |
| 5. EASA Type Certification Date .....                                             | 4        |
| <b>II. Certification Basis.....</b>                                               | <b>4</b> |
| 1. Reference Date for determining the applicable airworthiness requirements ..... | 4        |
| 2. EASA Certification Basis .....                                                 | 4        |
| 2.1. Airworthiness Standards .....                                                | 4        |
| 2.2. Special Conditions (SC) .....                                                | 4        |
| 2.3. Equivalent Safety Findings (ESF) .....                                       | 4        |
| 2.4. Deviations .....                                                             | 4        |
| <b>III. Technical Characteristics .....</b>                                       | <b>5</b> |
| 1. Type Design Definition .....                                                   | 5        |
| 2. Description .....                                                              | 5        |
| 3. Equipment.....                                                                 | 5        |
| 4. Dimensions .....                                                               | 6        |
| 5. Weight .....                                                                   | 6        |
| 6. Hub / Blade Combinations .....                                                 | 6        |
| 7. Control System.....                                                            | 6        |
| 8. Adaptation to Engine .....                                                     | 6        |
| 9. Direction of Rotation.....                                                     | 6        |
| <b>IV. Operating Limitations .....</b>                                            | <b>6</b> |
| 1. Approved Installations .....                                                   | 6        |
| 2. Maximum Take Off Power, Speed, and Torque .....                                | 6        |
| 3. Maximum Continuous Power, Speed, and Torque .....                              | 7        |
| 4. Inadvertent Maximum Overspeed and Overtorque: .....                            | 7        |
| 5. Propeller Pitch Angle.....                                                     | 7        |
| <b>V. Operating and Service Instructions .....</b>                                | <b>7</b> |
| <b>VI. Notes .....</b>                                                            | <b>7</b> |
| <b>SECTION: ADMINISTRATIVE .....</b>                                              | <b>8</b> |
| I. Acronyms and Abbreviations .....                                               | 8        |
| II. Type Certificate Holder Record .....                                          | 8        |
| III. Change Record .....                                                          | 8        |



## **I. General**

### **1. Type / Models**

FH385, FH386

### **2. Type Certificate Holder**

RATIER-FIGEAC

Avenue Ratier – B.P. N° 2

46101 Figeac Cedex

France

Design Organisation Approval No.: EASA.21J.217

### **3. Manufacturer**

RATIER-FIGEAC

### **4. Date of Application**

FH385, FH386: 09 December 2003

### **5. EASA Type Certification Date**

FH385, FH386: 22 March 2012

## **II. Certification Basis**

### **1. Reference Date for determining the applicable airworthiness requirements**

22 March 2009

### **2. EASA Certification Basis**

#### **2.1. Airworthiness Standards**

CS-P Amendment 01, dated 16 November 2006

#### **2.2. Special Conditions (SC)**

SC1: Spinner Bird Impact Assessment

#### **2.3. Equivalent Safety Findings (ESF)**

None

#### **2.4. Deviations**

None



### III. Technical Characteristics

#### 1. Type Design Definition

The FH385 and FH386 propeller models are defined by a propeller system part number and an associated parts list:

|       | Propeller System Part Number | Parts List  | Propeller Part Number (*)                 |
|-------|------------------------------|-------------|-------------------------------------------|
| FH385 | FH385000003                  | NDDFH385000 | FH395000004<br>FH395000005<br>FH395000006 |
| FH386 | FH386000003                  | NDDFH386000 | FH396000004<br>FH396000005<br>FH396000006 |

(\*) Or later approved revision.

#### 2. Description

Variable pitch tractor propeller with feathering and reversing capability. The hub is made of steel, the eight blades have a steel shank bonded to a graphite spar and an aramid fiber envelope. The blade leading edge is protected by an electrical deicer boot and a nickel sheath.

The propeller hydromechanical blade pitch actuator is controlled by a propeller control module which is connected to the engine FADEC.

The FH385 propeller rotates counter-clockwise and the FH 386 propeller rotates clockwise (viewed from Aft Looking Forward - ALF).

#### 3. Equipment

The following equipment is part of the propeller Type Certificate:

|                                       | Part Number (*)                                                    |
|---------------------------------------|--------------------------------------------------------------------|
| Propeller Control Module (PCM)        | FH392000002, FH392000004, FH392000005,<br>FH392003000, FH392010000 |
| External pipe                         | FH386012000, FH386026000                                           |
| Propeller Main Pump                   | FH391000003                                                        |
| Propeller Auxiliary Pump              | FH397000002, FH397000003, FH397010000                              |
| Transfer tube                         | FH393000001, FH393000002                                           |
| Pitchlock tube                        | 1006242-1                                                          |
| NP/Beta Sensor Set                    | FH398010004, FH398010006                                           |
| Brushblock                            | FH390000002, FH390000003                                           |
| De-icer Stationary Control Unit (SCU) | FH394000005, FH394000006                                           |
| De-icer Rotating Control Unit (RCU)   | FH404000003                                                        |
| Front Spinner Assembly                | FH403010005, FH403010007, FH403010008                              |
| Rear Cover Assembly                   | FH403013003, FH403069000                                           |

(\*) Or later approved revision.



#### 4. Dimensions

Propeller diameter: 5.334 m

#### 5. Weight

Maximum: 683 kg

#### 6. Hub / Blade Combinations

|       | Hub Part Number          | Blade Part Number                |
|-------|--------------------------|----------------------------------|
| FH385 | FH401000004, FH401100000 | FH405000006 (*), FH405500000 (*) |
| FH386 | FH401000004, FH401100000 | FH406000006 (*), FH406500000 (*) |

(\*) Because of the difference in mass, installation of blades is authorized by pairs of opposite blades.

#### 7. Control System

The propeller pitch control is performed by the Propeller Control Module which is connected to the aircraft and to the engine Full Authority Digital Engine Control (FADEC).

#### 8. Adaptation to Engine

24 X 25.065 mm diameter dowel bolts equally spaced on a circle of 338.33 mm.

#### 9. Direction of Rotation

FH385: Counterclockwise, ALF

FH386: Clockwise, ALF

### IV. Operating Limitations

#### 1. Approved Installations

|          |                                                                                       |                                                                                                                                                                                                                   |
|----------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Engine   | EPI Europrop International GmbH<br>TP400-D6 turbo-propeller engine<br>(TC EASA E.033) | With Engine Control Unit application software P/N EPI5F23S7FCS110, or later approved revision.<br>With Engine Protection and Monitoring Unit protection software P/N EPI5A23S2FCS110, or later approved revision. |
| Aircraft | AMSL<br>A400M large aeroplane                                                         | In accordance with the instructions and limitations provided in the Propeller Installation Manual RF00607 V00 and Propeller Operation Manual RF00608 V00, or later approved revisions.                            |

#### 2. Maximum Take Off Power, Speed, and Torque

Take Off Power: 8251 kW (11065 shp)

Take Off Speed: 860 rpm

Take Off Torque: 91618 N.m



### 3. Maximum Continuous Power, Speed, and Torque

Maximum Continuous Power: 7971 kW (10690 shp)

Maximum Continuous Speed: 842 rpm

Maximum Continuous Torque: 90407 N.m

### 4. Inadvertent Maximum Overspeed and Overtorque:

Inadvertent Maximum Overspeed: 948 rpm

Inadvertent Maximum Overtorque:

- 122876 N.m if propeller is equipped with at least one blade P/N FH405000006 or FH406000006
- 153692 N.m for other propellers

Inadvertent Maximum Overtorque in Feather: 54365 N.m

### 5. Propeller Pitch Angle

From -21.7° up to +83° measured at 75% blade radius

## V. Operating and Service Instructions

|                                     |         |
|-------------------------------------|---------|
| Manuals                             |         |
| Propeller Installation Manual (PIM) | RF00607 |
| Propeller Operation Manual (POM)    | RF00608 |

|                                                                         |                                  |
|-------------------------------------------------------------------------|----------------------------------|
| Instructions for Continued Airworthiness (ICA)                          |                                  |
| Propeller Data Modules from Aircraft Maintenance Manual                 | PMC-AJ-844BB-10000-01            |
| Component Maintenance Manual (CMM) – Propeller System                   | 61-10-63                         |
| Component Maintenance Manual (CMM) – Left Hand Blade – Right Hand Blade | 61-11-02                         |
| Other Component Maintenance Manuals (CMM)                               | as published<br>by RATIER-FIGEAC |
| Service Bulletins                                                       | as published<br>by RATIER-FIGEAC |

## VI. Notes

1. The EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the applicable Data Module Codes AJ-A-05-10-00-61AAA-030A-D entitled "Time Limits (FH385/FH386 Propeller) - Technical Data (Airworthiness Limitations (Life Limits) & Recommended Life)" and AJ-A-05-20-61-00AAA-030A-D entitled "Scheduled Maintenance Checks List (FH385/FH386 Propeller) - Technical Data (Airworthiness Limitations (Mandatory Inspections) & Recommended Inspections)". The same Data Module Codes contain the recommended replacement or maintenance intervals.

2. Compliance with CS-P 360 was demonstrated for a 1.8 kg bird.



## **SECTION: ADMINISTRATIVE**

### **I. Acronyms and Abbreviations**

n/a

### **II. Type Certificate Holder Record**

n/a

### **III. Change Record**

| <b>Issue</b> | <b>Date</b>         | <b>Changes</b>                 | <b>TC issue</b>                 |
|--------------|---------------------|--------------------------------|---------------------------------|
| Issue 01     | 22 March 2012       | Initial Issue                  | Initial Issue,<br>22 March 2012 |
| Issue 02     | 18 November<br>2013 | Several Major Changes          |                                 |
| Issue 03     | 28 October 2014     | Major Change Approval 10049271 |                                 |
| Issue 04     | 15 December<br>2015 | Editorial Changes              |                                 |

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