European Aviation Safety Agency

EASA

TYPE-CERTIFICATE DATA SHEET

Number : P.003
Issue : 1
Date : 07 March 2005
Type : Avia Propeller Ltd.
AV-844 series propellers

Variants
AV-844-1

List of effective Pages:

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I. General

1. Type/Variants:

AV-844 / AV-844-1

2. Type Certificate Holder:

Avia Propeller Ltd.
Beranovych 65/666
199 00 Praha 9 – Letnany
Czech Republic

3. Manufacturer:

Avia Propeller Ltd.
Beranovych 65/666
199 00 Praha 9 – Letnany
Czech Republic

4. EASA Certification Application Date:

AV-844-1			
03 September 2003			

Note: Application was made to CAA Czech Republic before EASA had been established. The application date has also been used as reference date for determining the applicable airworthiness standards.

5. EASA Certification Date:

AV-844-1			
07 March 2005			

II. Certification Basis

1. EASA Certification Basis:

1.1 Airworthiness Standards:
JAR-P Change 7 dated 22 October 1987 as modified by Amendment P/96/1 of August 8, 1996

1.2 Special Conditions (SC): None

1.3 Exemptions: None

1.4 Equivalent Safety Findings (ESF): None

III. Technical Characteristics

1. Type Design Definition:

The AV-844-1 propeller model covers the following design configurations, which mainly have a different mechanical design of the blade pitch change mechanism, and each one of the design configuration optionally may have different versions of the hub flange. Each design configuration is defined by a main assembly drawing and an appropriate parts list.

AV-844-1-(*1) and AV-844-1-(*1)-C
Design Configuration “Constant Speed”
Drawing No. 103-0004 dated December 3, 2004 (*2)
Parts List No. R-103-0004 dated December 3, 2004 (*2)

AV-844-1-(*1)-C-F
Design Configuration “Constant Speed, Feather”
Drawing No. 103-0003 dated December 3, 2004 (*2)
Parts List No. R-103-0003 dated December 3, 2004 (*2)

AV-844-1-(*1)-C-F-R(W)
Design Configuration “Constant Speed, Feather, Reverse (System Walter)”
Drawing No. 103-0000 dated November 9, 2004 (*2)
Parts List No. R-103-0000 dated November 9, 2004 (*2)

AV-844-1-(*1)-C-F-R(G)
Design Configuration “Constant Speed, Feather, Reverse (System Garrett)”
Drawing No. 103-0001 dated November 18, 2004 (*2)
Parts List No. R-103-0001 dated November 22, 2004 (*2)

AV-844-1-(*1)-C-F-R(P)
Design Configuration “Constant Speed, Feather, Reverse (System Pratt & Whitney)”
Drawing No. 103-0002 dated November 25, 2004 (*2)
Parts List No. R-103-0002 dated November 26, 2004 (*2)

Note:

(*1) optionally different versions of hub flange available
B = AS-127-D, SAE No.2 mod., ½ inch bolts
D = ARP 502
E = ARP 880

(*2) At a revision, the Drawing No. or the Parts List No. will be completed with the current revision letter, e.g. from 103-0000 in 103-0000-A.

2. Description:

4-blade variable pitch propeller with a hydraulically operated blade pitch change mechanism providing the operation modes “Constant Speed”, “Feather”, and “Reverse”. The hub and blades are milled out of aluminum alloy. Optionally the propeller may have installed a spinner and ice protection equipment.

3. Equipment:

Spinner:	according to Avia Propeller Service Bulletin No. 2
Governor:	according to Avia Propeller Service Bulletin No. 3
Ice Protection:	according to Avia Propeller Service Bulletin No. 4

4. Dimensions:

Propeller-Diameter: max. 245 cm

5. Weights:

Propeller-Design Configuration

“Constant Speed”:	approx. 52 kg
“Constant Speed, Feather”:	approx. 54 kg
“Constant Speed, Feather, Reverse”:	approx. 55 kg

6. Hub/Blade-Combinations:

Hub	Blade-Type
AV-844-1	-402, -406, - 407, -408, -409, -410, -411, -413

7. Control System:

Hydraulically operating governors corresponding to the data of Avia Propeller Service Bulletin No. 3.

8. Adaptation to Engine:

Hub flanges corresponding to the particular letter in the propeller designation (see chapter VI.5.)

9. Sense of Rotation:

Sense of rotation (viewed in flight direction) corresponding to the particular letter in the propeller designation (see chapter VI.5.).

IV. Operational Limitations

1. Propeller Speed:

max. 2200 min^{-1}

2. Driving Power:

max. 540 kW for a propeller-diameter/-speed of max. 245 cm / 2080 min^{-1} (see chapter VI.4.)

max. 634 kW for a propeller-diameter/-speed of max. 235 cm / 2200 min^{-1} (see chapter VI.4.)

3. Propeller Pitch Angle:

from -20° to +86°

V. Operating and Service Instructions

Operation and Installation Manual for hydraulically controlled variable pitch propeller Operation and Installation Manual for reversible hydraulically controlled variable pitch propeller; Reverse-Systems (G), (P), (W) Operation and Installation Manual for hydraulic constant speed governor P-8( )( )-( )	No. EN-1366 Issue December 3, 2004 (*) No. EN-1320 Issue December 1, 2004 (*) E-1048 Issue May 26, 2004 (*)
Overhaul Manual and Parts List for hydraulically controlled variable pitch propeller Overhaul Manual and Parts List for reversible hydraulically controlled variable pitch propeller; Reverse-Systems (G), (P), (W)	No. EN-1367 Issue December 3, 2004 (*) No. EN-1291 Issue November 1, 2004 (*)
Service Bulletins	as noted in the current List of Service Bulletins

(*) effective is the declared issue or a later approved revision

VI. Notes

1. The suitability of a propeller for a certain aircraft/engine-combination must be demonstrated within the scope of the type certification of the aircraft.

2. Propeller/engine/aircraft-combinations that have been demonstrated to comply with the requirements of JAR-P 60(b), 160(b), 190 and 220 are listed in Avia Propeller Service Bulletin No. 5.

3. The overhaul intervals recommended by the manufacturer are listed in Avia Propeller Service Bulletin No. 1.

4. The maximum driving power 540 kW for a propeller-diameter/-speed of max. 245 cm / 2080 min^{-1} has been demonstrated by the endurance test according to JAR-P 210(b)(1)(i).

The maximum driving power of 634 kW for a propeller-diameter/-speed of max. 235 cm / 2200 min^{-1} has been proved by analysis.

5. Propeller designation system

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                          Hub            /          Blade
AV  - 844 - 1 - E - ( ) - ( ) -  ( ) - ( ) - ( )  /  ( ) ( ) 245 – 407 ( )
1 2   3 4   5   6    7    8     9    10  11      1  2    3      4    5
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Hub

1 Avia Propeller (manufacturer)

2 A - Automatic Propeller
F - Fix Pitch Propeller
G - Ground adjustable Propeller
V - Variable Pitch Propeller

3 Blade Root diameter (72, 80, 84)

4 Number of Blade

5 No. of variant of the propeller model

6 code letter for flange type
A = Motorglider engines bolt, 7/16 inch - 20 UNF, circle dia 80 mm
B = AS-127-D, SAE No.2 mod., ½ inch - 20 UNF bolts
C = SAE No. 2 mod., 7/16 Inch - 20 UNF bolts
D = ARP 502
E = ARP 880
F = SAE No. 1., 3/8 inch - 24 UNF bolts
G = Walter/LOM flange M 10 bolts
H = PW 115, 9/16 inch – 18 UNF
K = M14 Flange

7 code letter for counterweights
blank = no or small counterweights for pitch change forces to decrease pitch
C = counterweights for pitch change forces to increase pitch

8 code letter for feather provision
blank = no feather position possible
F = feather position installed

9 code letter for reverse provision
blank = no reverse position possible
R = reverse position installed

10 code letter for reverse system
(A) = System Allison
(G) = System Garrett
(M) = System Muhlbauer
(P) = System Pratt & Whitney
(W) = System Walter

11 code letter for design changes
small letter for changes which do not affect interchangeability
capital letter for changes which restrict or exclude interchangeability

Blade

1 code letter for position of pitch change pin
- Blank = pitch change pin position for pitch change forces to decrease pitch
- C = pitch change pin position for pitch change forces to increase pitch
- CF = pitch change pin position for feather provision; pitch change forces to increase pitch
- CR = pitch change pin position for reverse provision; pitch change forces to increase pitch
- CFR = pitch change pin position for feather and reverse provision; pitch change forces to increase pitch

2 code letter for blade design and installation
- blank = right-hand tractor
- RD = right-hand pusher
- L = left-hand tractor
- LD = left-hand pusher

3 propeller diameter in cm

4 No. of blade type (contains design configuration and aerodynamic data) according to the certified hub/blade – combinations

5 code letter for design changes
small letter for changes which do not affect interchangeability of blade set
capital letter for changes which restrict or exclude interchangeability of blade set