European Aviation Safety Agency

EASA

TYPE-CERTIFICATE DATA SHEET

Number : IM.P.187
Issue : 06
Date : 27 November 2012
Type : Hartzell Propeller Inc.
(P)HC-J3Y series propellers

Models
PHC-J3YF-1
PHC-J3YF-2
PHC-J3Y1F-1
HC-J3YF-1
HC-J3YF-2

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I. General

1. Type / Models:

(P)HC-J3Y / PHC-J3YF-1, PHC-J3YF-2, PHC-J3Y1F-1, HC-J3YF-1, HC-J3YF-2

2. Type Certificate Holder :

Hartzell Propeller Inc.
Piqua, OH 45356
USA

3. Manufacturer :

Hartzell Propeller Inc.

4. Date of Application:

PHC-J3YF-1: Before 1977 *, **
PHC-J3YF-2: Before 1977 *
PHC-J3Y1F-1: 23 January 2009
HC-J3YF-1: Before 1977 *
HC-J3YF-2: Before 1977 *

*: The exact Date of Application was not recorded in individual EASA Member States.
**: Application for PHC-J3YF-1 with composite blade N7605 was made to EASA 08 September 2006.

5. EASA Certification Reference Date:

05 February 1971

6. EASA Certification Date:

PHC-J3YF-1: 10 October 1977 *, **
PHC-J3YF-2: 10 October 1977 *
PHC-J3Y1F-1:15 October 2009
HC-J3YF-1: 10 October 1977 *
HC-J3YF-2: 10 October 1977 *

*: The EASA Certification Date has been taken over from individual EASA Member States.
**: PHC-J3YF-1 with composite blades N7605: 24 May 2007.

II. Certification Basis

1. FAA Certification Basis: Refer to FAA TCDS no. P36EA

2. EASA Certification Basis:

2.1 Airwortiness Standards:

14 CFR Part 35 with amendments 35-1 through 35-6 effective 18 August 1990.

Note:
Application was made to EASA Member States before EASA was established. Refer to Commission Regulation (EC) No 375/2007 of 30 March 2007 amending Regulation (EC) No 1702/2003.

(P)HC-J3YF-1, PHC-J3Y1F-1 hubs with N7605 blade model (composite):

14 CFR Part 35 with amendments 35-1 through 35-8 effective 23 December 2008 and CS-P paragraphs 240, 360, 370 and 380 effective 24 October 2003.

2.2 Special Condition: None

2.3 Equivalent Safety Findings: None

2.4 Deviations: None

III. Technical Characteristics

1. Type Design Definition:

The (P)HC-J3Y propeller type is defined by a main assembly drawing (the parts list is on the drawing) or later approved revision.

(P)HC-J3YF-1:	Drawing D-4245 dated 03 December 1974 or Drawing E-6868 dated 22 September 1998
(P)HC-J3YF-2:	Drawing D-3280 dated 09 February 1968
(P)HC-J3YF-1N:	Drawing 101308 dated 12 June 2006.
(P)HC-J3Y1F-1N:	Drawing 102865 dated 11 August 2008.

2. Description:

The (P)HC-J3Y propeller is a 3-blade variable pitch propeller with a hydraulically operated blade pitch change mechanism providing the operation mode “Constant Speed”. The -1 models do not feather, the -2 models incorporate feathring and unfeathering features. (See Note 1 and 4)
The hub is milled out of aluminum alloy. The blade materials are:
- Aluminium alloy.
- Composite (N7605 blades).

Optional equipment includes spinner and ice protection.

3. Equipment:

Spinner:	See Note 7
Governor:	See Note 3
Ice Protection:	See Note 7

4. Dimensions:

See Table of Section IV.

5. Weight:

Depending on Propeller-Design Configuration:
See Table of Section IV.

6. Hub/Blade-Combinations:

See Table of Section IV.

7. Control System:

Propeller governors: See Note 3

8. Adaptation to Engine:

Special flange: See Note 1

9. Direction of Rotation:

Direction of rotation (viewed in flight direction) as identified by a letter-code in the propeller designation. (See Note 5)

IV. Operational Limits

Blades (See Note 2)	Max. Continous kW - rpm (min^{-1})		Take Off kW - rpm (min^{-1})		Diameter Limits (cm) (See Note 2)	Approx. Max. Wt. Complete (kg) (See Notes 3,7)	Blade Construction (See Note 10)
			Non-Counterweighted Propellers HC-J3YF-1, PHC-J3YF-1				
7391-0 to 7391-10	261	1700	261	2700	190,5 to 165,1 (-0 to -10)	36,4	Aluminum Alloy
7392-0 to 7392-10	261	2850	261	2850	190,5 to 165,1 (-0 to -10)	34,2	Aluminum Alloy
7479-2 to 7479-8	283,4	2900	283,4	2900	188 to 172,7 (-2 to -8)	35,4	Aluminum Alloy
7498-0 to 7498-10	261	2700	261	2700	193 to 167,6 (-0 to -10)	32,9	Aluminum Alloy
N7605-0 to N7605-10	261	2700	261	2700	198 to 172,7 (-0 to-10)	28,3	Composite
7663-0 to 7663-10	261	2800	261	2800	198 to 172,7 (-0 to -10)	33,1	Aluminum Alloy
7666-0 to 7666-10	231,2	2700	231,2	2700	198 to 172,7 (-0 to -10)	34,9	Aluminum Alloy
7691-0 to 7691-10	261	2850	261	2850	198 to 172,7 (-0 to -10)	32,2	Aluminum Alloy
7693+2 to 7693-10	261	2700	261	2700	203,2 to 172,7 (+2 to -10)	34,9	Aluminum Alloy
7694-0 to 7694-10	231,2	2700	231,2	2700	198 to 172,7 (-0 to -10)	34,5	Aluminum Alloy
8068+2 to 8068-10	261	2700	261	2700	213,4 to 182,9 (+2 to -10)	36,7	Aluminum Alloy
8068-2 to 8068-10	261	2700	231,2	2850	203,2 to 182,9 (-2 to -10)	36,7	Aluminum Alloy
8459-0 to 8459-14	298,3	2700	298,3	2700	218,4 to 182,9 (-0 to -14)	34,0	Aluminum Alloy
8465-0 to 8465-14	298,3	2700	298,3	2700	218,4 to 182,9 (-0 to -14)	35,4	Aluminum Alloy
8467-0 to 8467-14	298,3	2575	298,3	2575	218,4 to 182,9 (-0 to -14)	37,2	Aluminum Alloy
8468-0 to 8468-14	298,3	2700	298,3	2700	218,4 to 182,9 (-0 to -14)	35,8	Aluminum Alloy
8468-6 to 8468-14	231,2	2850	231,2	2850	203,2 to 182,9 (-6 to -14)	35,8	Aluminum Alloy
8470-0 to 8470-14	298,3	2700	298,3	2700	218,4 to 182,9 (-0 to -14)	35,4	Aluminum Alloy
8475+2 to 8475-14	324,4	2266	324,4	2266	223,5 to 182,9 (+2 to -14)	37,2	Aluminum Alloy
8475-0 to 8475-14	298,3	2650	298,3	2650	218,4 to 182,9 (-0 to -14)	35,4	Aluminum Alloy
8477-0 to 8477-14	298,3	2575	298,3	2575	218,4 to 182,9 (-0 to -14)	36,7	Aluminum Alloy
			Non-Counterweighted Propeller PHC-J3Y1F-1				
N7605-0 to N7605-10	261	2700	261	2700	198 to 172,7 (-0 to-10)	26,2	Composite

Counterweighted Propellers HC-J3YF-2, PHC-J3YF-2

C7391-0 to C7391-10	261	2700	261	2700	190,5 to 165,1 (-0 to -10)	41,1	Aluminum Alloy
C7479-2 to C7479-8	283,4	2900	283,4	2900	188 to 172,7 (-2 to -8)	39,0	Aluminum Alloy
C7663-0 to C7663-10	261	2800	261	2800	198 to 172,7 (-0 to -10)	36,7	Aluminum Alloy
C7666-0 to C7666-10	231,2	2700	231,2	2700	198 to 172,7 (-0 to -10)	38,6	Aluminum Alloy
C7691-0 to C7691-10	261	2850	261	2850	198 to 172,7 (-0 to -10)	35,8	Aluminum Alloy
C8459-0 to C8459-14	298,3	2700	298,3	2700	218,4 to 182,9 (-0 to -14)	37,6	Aluminum Alloy
C8465-0 to C8465-14	298,3	2700	298,3	2700	218,4 to 182,9 (-0 to -14)	39,0	Aluminum Alloy
C8467-0 to C8467-14	298,3	2575	298,3	2575	218,4 to 182,9 (-0 to -14)	40,8	Aluminum Alloy
C8468-0 to C8468-14	298,3	2700	298,3	2700	218,4 to 182,9 (-0 to -14)	39,5	Aluminum Alloy
C8468-6 to C8468-14	231,2	2850	231,2	2850	203,2 to 182,9 (-6 to -14)	39,5	Aluminum Alloy
C8470-0 to C8470-14	298,3	2700	298,3	2700	218,4 to 182,9 (-0 to -14)	39,0	Aluminum Alloy
C8475+2 to C8475-14	324,4	2266	324,4	2266	223,5 to 182,9 (+2 to -14)	40,8	Aluminum Alloy
C8475-0 to C8475-14	298,3	2650	298,3	2650	218,4 to 182,9 (-0 to -14)	40,8	Aluminum Alloy
C8477-0 to C8477-14	298,3	2575	298,3	2575	218,4 to 182,9 (-0 to -14)	42,2	Aluminum Alloy

1. Maximum Take Off Power and Speed:

See Table of Section IV.

2. Maximum Continuous Power and Speed:

See Table of Section IV.

3. Propeller Pitch Angle:

See Note 3.

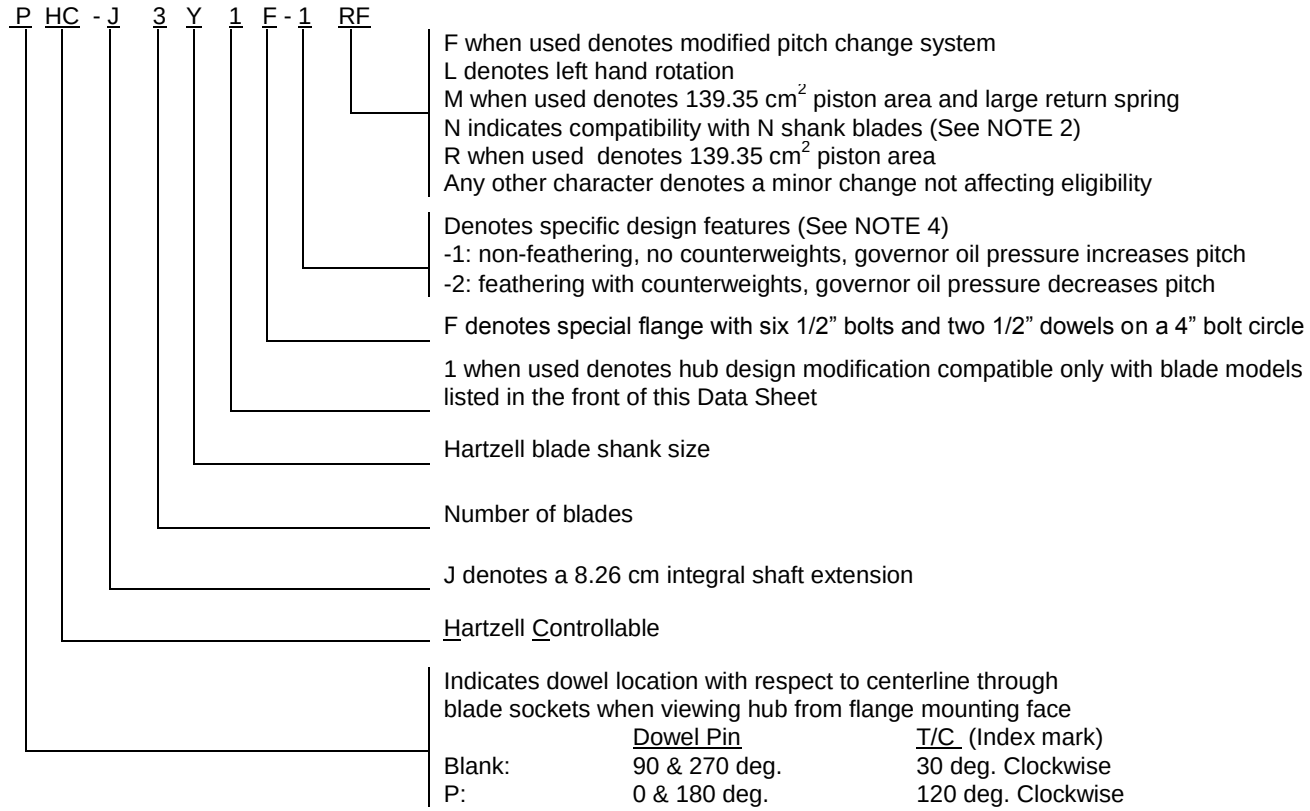
V. Operating and Service Instructions

Airworthiness Limitations	Hartzell Manuals 113B( ) for non-feathering models, Hartzell Manuals 117D( ) for feathering models *
Overspeed and Overtorque Limits	Hartzell Manual 202A ( ) *
Propeller Owner's Manual	Hartzell Manual 145, Revision 3, July 2006 ( ) for propellers with composite blades, Hartzell Manual 115N ( ) for propellers with aluminium blades *
Service Bulletins	

*: or later approved revision

VI. Notes

1. Hub Model Designation:



2. Blade Model Designation:

L C 76 63 D - 3R

- 3R: Number when used indicates inches cut off from (or added to if +) basic diameter
  Q when used denotes special 1" x 90 deg. factory-bent tip. No cutoff permitted.
  R when used denotes specifically rounded tip for cutoff diameter.
  Any other character in this location denotes tip shape
- D: D or F denotes a dimensional modification from the original design
  B or K denotes deicing boots
  C when used with N7605 blades denotes material modification (See Note 6)
  R when used denotes a rounded tip for the basic diameter
  S when used denotes a square tip for the basic diameter *
  Any other character denotes a minor modification not affecting eligibility
- 63: Basic blade model
- 76: Basic diameter for a two blade propeller. Add 5.08 cm for three blade propellers.
- C: Denotes counterweighted blades
- L: Denotes blade configuration: right-hand tractor unless otherwise noted
  F denotes a large pitch change knob
  H denotes right-hand pusher
  J denotes left-hand tractor
  L denotes left-hand pusher
  N denotes composite blade shank type

* Blades may incorporate either round or square tips, yet may not be marked with an "R" or "S" in their model designation. This character is used to distinguish between two or more tip shapes available at the same diameter. Certain blades use "S" to denote shot peening of the exterior surface. (See Note 6)

3. Pitch Control:

(a) Approved with Hartzell governors per drawings C-4770 and C-4772. Wt.: 2.04 kg (See Note 10)

D - 1 - 4 Z — Governor Model Designation

- Z: L when used indicates left hand rotation
  Z when used indicates drive coupling type
  Any other character denotes a minor change not affecting eligibility
- 4: Minor adjustment not affecting eligibility
- 1: Minor adjustment to obtain engine/propeller/governor compatibility
- D: Basic body and major parts modification

(b) The -2 models have counterweighted blades and use oil to decrease pitch. The -1 models do not have counterweighted blades and use oil to increase pitch. (See Note 4)

(c) Maximum governor output pressure: 2413.16 KPa for all propeller models

(d) All governors must be approved as part of the aircraft installation regardless of manufacturer. (See Note 10)

4. Feathering: The -1 models do not feather.
The -2 models incorporate feathering and unfeathering features.
Reversing: Not applicable

5. Left-Hand Models:
The left-hand version of an approved propeller model is approved at the same rating and diameter as listed for the right-hand model. (See Notes 1 and 2)

6. Interchangeability:

(a) Governors
Hartzell governors with a “Z” suffix in their model designation may be used interchangeably with corresponding governors without the “Z”. For example, the F-6-24Z is a replacement for the F-6-24 and the F-6-24 is a replacement for the F-6-24Z.

(b) Blades
1. Shot-peened blades may replace non shot-peened blades either individually or as a set. (See Note 2)

2. N7605C( ) blades may replace N7605( ) blades either individually or as a set. N7605( ) blades may not replace N7605C() blades.

(c) Ice Protection Systems
Refer to Hartzell Service Letter HC-SL-30-260 for ice protection system component interchangeability.

7. Accessories:
(a) Propeller ice protection system (weight of ice protection equipment extra)

(1) Propeller models listed in this data sheet are approved for use with propeller ice protection equipment listed in Hartzell Manual 159 or in other Hartzell type design data.

(2) All propeller ice protection equipment must be approved as part of the aircraft installation regardless of manufacturer. (See Note 10)

(b) Propeller spinner (weight of spinner extra)

(1) Approved with Hartzell and other manufacturers’ spinner when listed on Hartzell type design data.

(2) All propeller spinners must be approved as part of the aircraft installation regardless of manufacturer. (See Note 10)

8. Shank Fairings: Not applicable.

9. Special Limits:

Table of Propeller - Engine Combinations
Approved Vibrationwise for Use on Normal Category Single Engine Tractor Aircraft

The maximum and minimum propeller diameters that can be used from a vibration standpoint are shown below. No reduction below the minimum diameter listed is permissible, since this figure includes the diameter reduction allowable for repair purposes.

The engine models listed below are the configurations on the engine type certificate unless specifically stated otherwise. Modifications to the engine or airframe that alter the power of the engine models listed below during any phase of operation have the potential to increase propeller stresses and are not approved by this list. Such modifications include, but are not

limited to, the addition of a turbocharger or turbonormalizer, increased boost pressure, increased compression ratio, increased RPM, altered ignition timing, electronic ignition, full authority digital engine controls (FADEC), or tuned induction or exhaust. Also, any change to the mass or stiffness of the crankshaft/counterweight assembly is not approved by this list.

Hub Model	Blade Model	Engine Model	Max. Dia. (cm)	Min. Dia. (cm)	Placards
HC-J3YF PHC-J3YF	F7391D	TCM IO-550-N, -P, -R TCM IOF-550-N, -P, -R	190,5	182,9	none
HC-J3YF	7663	TCM IO-520-A, -J, TCM TSIO-520-A, -C, -H	193,0	188,0	none
PHC-J3YF	7663	TCM IO-520-B, -C, TCM TSIO-520-B, -D	193,0	188,0	none
PHC-J3YF	F7663	TCM TSIO-360-GB, -LB, -MB	193,0	188,0	none
PHC-J3YF	F7663-2Q	TCM TSIO-520-R, -C, -H, -M, -P, -AF, -CE	193,0	193,0	none
PHC-J3YF	F7691( )	TCM IO-520-A, -B, -BA, -BB, -C, -CB, -D, -E, -F, -J, -K, -L, -M, -MB	198,1	195,6	Do not exceed 50,8 cm MP below 2200 RPM
PHC-J3YF	F7691( )	TCM IO-550-A, -B, -C, -D, -F, -G, -L	198,1	195,6	Do not exceed 50,8 cm MP below 2200 RPM
HC-J3YF PHC-J3YF	F7693( )	TCM IO-550-A, -B, -C, -D, -E, -F, -G, -L, -N, -P, -R, TCM TSIO-550-B, -C, -E	198,1	190,5	none
PHC-J3YF	F8068	TCM IO-520-A, -J IO-550-D, -E, -F, -L TSIO-520-C, -G, -H, -M, -R, -P, -AF, -CE	208,3	198,1	none
PHC-J3YF	F8068-2	TCM IO-520-D, -E, -F, -L	203,2	198,1	none
PHC-J3YF	F8468	TCM TSIO-520-L, -LB	203,2	193,0	none
PHC-J3YF	F8468A( )	TCM TSIO-520-C, -G, -H, -M, -N, -P, -R, -T, -AF	203,2	195,6	none

10. Propeller installation must be approved as part of the aircraft Type Certificate and demonstrate compliance with the applicable aircraft airworthiness requirements.

Propeller models listed herein consist of basic hub and blade models. Most propeller models include additional characters to denote minor changes and specific features as explained in Notes 1 and 2. Refer to the aircraft Type Certificate Data Sheet for the specific propeller model applicable to the installation.

Propellers with composite blades must be evaluated for bird impact resistance prior to approval on any type aircraft. Hartzell Propeller must perform tests and/or analyses based on aircraft configuration and operating conditions to determine the potential hazard as a result of a bird impact.

11. Retirement Time:
(a) Life Limits and Mandatory Inspections

(1) Airworthiness limitations, if any, are specified in Hartzell Manuals 113( ), 115N, 117( ) or 145( ).

12. Special Notes:

(a) Refer to Hartzell Manual no. 202( ) for overspeed and overtorque limits.

(b) Refer to Hartzell Service Letter HC-SL-61-61( ) for overhaul periods.

13. EASA Type Certificate and Type Certificate Data Sheet No. IM.P.187 replace the associated Type Certificates and Type Certificate Data Sheets of the EASA Member States.
