DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

P31EA
Revision 15
Hartzell
HC-F3Y, HC-M3Y
April 11, 2014

TYPE CERTIFICATE DATA SHEET NO. P31EA

Propellers of models described herein conforming with this data sheet (which is part of Type Certificate No. P31EA) and other approved data on file with the Federal Aviation Administration meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Federal Aviation Regulations provided they are installed, operated and maintained as prescribed by the approved manufacturer's manuals and other approved instructions.

Type Certificate Holder	Hartzell Propeller Inc. Piqua, OH 45356
Type	Constant speed; hydraulic (See Notes 3 and 4)
Engine shaft	Special flange (See Note 1)
Hub material	Aluminum Alloy
Blade material	See Below
Number of blades	Three
Hub models	HC-F3YK-1, -2; HC-F3YR-1, -2; HC-M3YR-1 (see Notes 1 and 4)

Blades (See Note 2)	Maximum Continuous HP	Maximum Continuous RPM	Takeoff HP	Takeoff RPM	Diameter Limits (See Note 10)	Approx. Max. Wt. Complete (For Reference Only) (See Notes 3 and 7)	Blade Construction (See Note 10)
Non-Counterweighted Propellers HC-F3YK-1, HC-F3YR-1, HC-M3YR-1							
7282-0 to 7282-6	300	2700	300	2700	74" to 68" (-0 to -6)	71.0 lb.	Aluminum Alloy
7392-0 to 7392-10	350	2850	350	2850	75" to 65" (-0 to -10)	75.5 lb.	Aluminum Alloy
7479-2 to 7479-8	380	2900	380	2900	74" to 68" (-2 to -8)	79.0 lb.	Aluminum Alloy
7663-0 to 7663-10	310	2800	310	2800	78" to 68" (-0 to -10)	72.0 lb.	Aluminum Alloy
7666-0 to 7666-10	310	2700	310	2700	78" to 68" (-0 to -10)	79.0 lb.	Aluminum Alloy
8459-0 to 8459-14	400	2700	400	2700	86" to 72" (-0 to -14)	75.0 lb.	Aluminum Alloy
8465-0 to 8465-14	400	2700	400	2700	86" to 72" (-0 to -14)	77.0 lb.	Aluminum Alloy
8467-0 to 8467-14	400	2575	400	2575	86" to 72" (-0 to -14)	81.0 lb.	Aluminum Alloy
8468-0 to 8468-14	400	2700	400	2700	86" to 72" (-0 to -14)	78.0 lb.	Aluminum Alloy
8470-0 to 8470-14	400	2700	400	2700	86" to 72" (-0 to -14)	77.0 lb.	Aluminum Alloy
8475-0 to 8475-14	400	2575	400	2575	86" to 72" (-0 to -14)	81.0 lb.	Aluminum Alloy
8477-0 to 8477-14	400	2575	400	2575	86" to 72" (-0 to -14)	84.0 lb.	Aluminum Alloy

Blades (See Note 2)	Maximum Continuous HP	Maximum Continuous RPM	Takeoff HP	Takeoff RPM	Diameter Limits (See Note 10)	Approx. Max. Wt. Complete (For Reference Only) (See Notes 3 and 7)	Blade Construction (See Note 10)
Non-counterweighted propellers – HC-M3YR-1							
7693-0 to 7693-10	350	2700	350	2700	78” to 68” (-0 to -10)	76.0 lb.	Aluminum Alloy
Non-counterweighted propellers – HC-F3YR-1							
7693+2 to 7693-10	350	2700	350	2700	80” to 68” (+2 to -10)	76.0 lb.	Aluminum Alloy
8068+2 to 8068-10	350	2700	350	2700	84” to 72” (+2 to -10)	80.0 lb.	Aluminum Alloy
NG8301-0 to NG8301-10	350	2700	350	2700	85” to 75” (-0 to -10)	65.0 lb.	Composite
Counterweighted propellers – HC-F3YK-2, HC-F3YR-2							
C7479-2 to C7479-8	380	2900	380	2900	74” to 68” (-2 to -8)	88.0 lb.	Aluminum Alloy
C7663-0 to C7663-10	310	2800	310	2800	78” to 68” (-0 to -10)	81.0 lb.	Aluminum Alloy
C7666-0 to C7666-10	310	2700	310	2700	78” to 68” (-0 to -10)	88.0 lb.	Aluminum Alloy
C8459-0 to C8459-14	400	2700	400	2700	86” to 72” (-0 to -14)	84.0 lb.	Aluminum Alloy
C8465-0 to C8465-14	400	2700	400	2700	86” to 72” (-0 to -14)	86.0 lb.	Aluminum Alloy
C8467-0 to C8467-14	400	2575	400	2575	86” to 72” (-0 to -14)	90.0 lb.	Aluminum Alloy
C8468-0 to C8468-14	400	2700	400	2700	86” to 72” (-0 to -14)	87.0 lb.	Aluminum Alloy
C8470-0 to C8470-14	400	2700	400	2700	86” to 72” (-0 to -14)	86.0 lb.	Aluminum Alloy
C8475-0 to C8475-14	400	2575	400	2575	86” to 72” (-0 to -14)	90.0 lb.	Aluminum Alloy
C8477-0 to C8477-14	400	2575	400	2575	86” to 72” (-0 to -14)	93.0 lb.	Aluminum Alloy

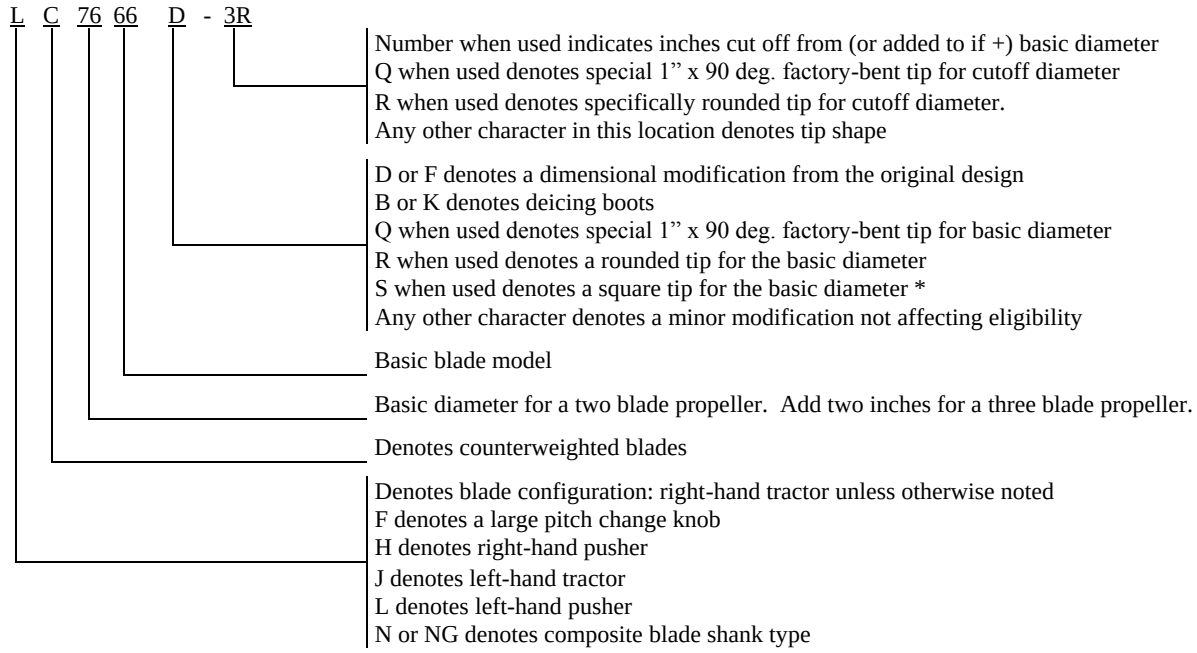
Certification Basis:	14 CFR Part 35 with amendment 35-1 effective February 1, 1965.
	Type Certificate No. P31EA issued May 1, 1967 under Delegated Option Authorization provisions of FAR Part 21 Subpart J. Date of application for Type Certificate: April 28, 1967.
	The following models were approved under the original certification basis: HC-F3YK-1, -2; HC-F3YR-1, -2
	The following models were added, updated or revised in accordance with 14 CFR Part 35 with amendments 35-1 and 35-2 effective April 3, 1967: HC-F3YK-1, -2; HC-F3YR-1, -2
	The following models were added, updated or revised in accordance with 14 CFR Part 35 with amendments 35-1through 35-6 effective August 18, 1990: HC-F3YR-1, -2; HC-M3YR-1
	The following models were added, updated or revised in accordance with 14 CFR Part 35 with amendments 35-1 through 35-8 effective December 23, 2008: HC-F3YR-1
	The following models were added, updated or revised in accordance with 14 CFR Part 35 with amendments 35-1 through 35-9 effective March 19, 2013: HC-F3YR-1
Production Basis:	Production Certificate no. 10

Note 1: Hub Model Designation (See Notes 2, 4, 5 and 6)

HC - F 3 Y K - 1 AF

- AF
  - F when used denotes modified pitch change system
  - L when used denotes left hand rotation
  - A when used denotes one-piece shaft extension. Absence of "A" indicates a bolted-on extension.
  - N when used indicates compatibility with "N" prefix blades
  - Any other character denotes a minor change not affecting eligibility
- 1
  - Denotes specific design features
  - -1: non-feathering, no counterweights, governor oil pressure increases pitch
  - -2: feathering with counterweights, governor oil pressure decreases pitch
- K
  - K denotes flange with six 1/2" bolts and four 3/4" drive bushings on a 4-3/4" bolt circle.
  - R denotes flange with six 1/2" bolts and five 3/4" drive bushings on a 4-3/4" bolt circle.
- Y — Hartzell blade shank size
- 3 — Number of blades
- F — Identifies basic design. "F" denotes 3.0 inch shaft extension.
- HC — Hartzell Controllable

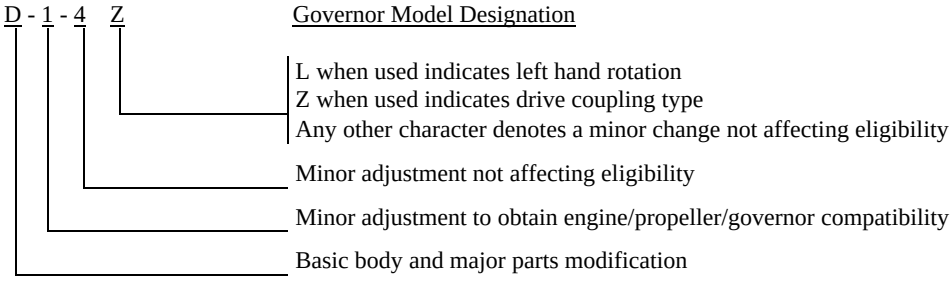
Note 2: Blade Model Designation (See Notes 5 and 6)



* 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.

Note 3: Pitch Control (See Notes 4 and 10)

(a) Approved with Hartzell governors per drawings C-4770 and C-4772. Wt.: 4.5 lb.



(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.

(c) Maximum governor output pressure: 350 psi for all propeller models

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

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

Reversing Not applicable

Note 5: Left-Hand Models (See Notes 1 and 2)

The left-hand version of an approved propeller model is approved at the same rating and diameter as listed for the right-hand model.

Note 6: Interchangeability (See Notes 1 and 2)

(a) Propellers

Propeller models HC-F3YR-1RF and HC-F3YR-1ARF are interchangeable.

(b) 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.

(c) Blades

Shot-peened blades may replace non shot-peened blades either individually or as a set

(d) Ice protection systems

Refer to Hartzell Service Letter HC-SL-30-260 for ice protection system component interchangeability.

Note 7: Accessories (See Note 10)

(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.

(b) Propeller spinner (weight of spinner extra)

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

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

Note 8: Shank Fairings Not applicable.

Note 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. (inches)	Min. Dia. (inches)	Placards
HC-F3YR	7479	LYC TIO-541 series, 7.3 to 1 compression ration or less, one 6^{th}, one 5^{th}, one 4^{th} and one 3.5^{th} order dampers, 380 HP at 2900 RPM or less	74	70	none
HC-F3YR	F7663D-2Q	LYC IO-540-C4B5, N1A5, W3A5D	76	76	none
HC-F3YR	F8468( )-8Q	LYC IO-540-K1A5	78	78	none
HC-F3YR	F8468( )-8Q	LYC TIO-540-J2BD	78	78	none

Note 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.

Note 11: Retirement Time

(a) Life Limits and Mandatory Inspections

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

Note 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 recommended overhaul periods.

END