



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

TYPE CERTIFICATE DATA SHEET Nº EH-8712

Type Certificate Holder:

HARTZELL PROPELLER INC.

One Propeller Place

Piqua, OH 45356

USA

EH-8712-03

Sheet 01

HARTZELL

HC-E3Y

HC-I3Y

21 July 2009

Propellers of models described herein conforming with this data sheet, which is part of Type Certificate No. 8712, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Brazilian Aeronautical Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other instructions.

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 ELIGIBLE

HC-E3YR-1, HC-I3YR-1 and HC-I3Y1R-1

Blade Eligible (See Note 2)	Max. Continuous Power		Takeoff power		Diameter Limits (See Note 2)		Approx. Max. Weight Compl. (See Notes 3 and 7)		Blade Construction
	hp	rpm	hp	rpm	m	in	kg	lb	
<u>Non-Counterweighted Propeller - Hub Model HC-E3YR-1</u>									
7663-0 to 7663-10	310	2800	310	2800	1.98	78 to 1.72 68 (-0 to -10)	34.24	75.5	Aluminum alloy
7392-0 to 7392-10	350	2850	350	2850	1.90	75 to 1.65 65 (-0 to -10)	36.29	80.0	Aluminum alloy
<u>Non-Counterweighted Propeller - Hub Model HC-I3YR-1</u>									
7890	400	2700	400	2700	2.03	80	30.39	67.0	Aramid Composite
N7605+2 to N7605-10	350	2700	350	2700	2.03	80 to 1.72 68 (+2 to -10)	28.35	62.5	Composite
<u>Non-Counterweighted Propellers – Hub Model HC-I3Y1R-1</u>									
N7605+2 to N7605-10	350	2700	350	2700	2.03	80 to 1.72 68 (+2 to -10)	26.30	58.0	Composite

CERTIFICATION BASIS

RBHA 35 (Brazilian Requirements for Aeronautical Certification), which endorses the 14 CFR Part 35 effective 1 February 1965, with amendments 35-1 and 35-2 thereto.

The following models were added, updated or revised in accordance with 14 CFR Part 35 with amendments 35-1 and 35-4 effective 2 May 1977: HC-E3YR-1

The following models were added, updated or revised in accordance with 14 CFR Part 35 with amendments 35-1 through 35-5 effective 14 October 1980: HC-E3YR-1, HC-I3YR-1

The following models were added, updated or revised in accordance with 14 CFR Part 35 with amendments 35-1 through 35-6 effective 1 August 1990: HC-E3YR-1, HC-I3YR-1, HC-I3Y1R-1

TYPE CERTIFICATION

Model	Application	Issued TC
HC-E3Y	07 Feb. 1986	18 Sep. 1987
HC-I3Y	17 Dec. 1998	22 June 1999

PRODUCTION BASIS

Production Certificate no. 10

IMPORT REQUIREMENTS Each propeller imported separately and/or spare parts must be accompanied by an export airworthiness approval issued by the primary authority, attesting that the particular propeller and/or parts were submitted to the governmental quality control before delivery and are in conformity with the ANAC approved type design.

NOTES:

NOTE 1 Hub Model Designation: () HC - E 3 Y 1 R - 2 AF, where:

() Indicates dowel location with respect to centerline through blade sockets when viewing hub from flange mounting face

	Dowel Pin	T/C
Blank:	90 & 270 deg.	30 deg. Clockwise
E:	0 & 180 deg.	240 deg. Clockwise
P:	0 & 180 deg.	120 deg. Clockwise

HC Hartzell Controllable

E E denotes a 5 inch integral shaft extension
I denotes a 2 inch integral shaft extension

3 Number of blades

Y Hartzell blade shank size

1 Denotes hub design modification compatible only with blade models listed in the front of this Data Sheet

R Denotes SAE n^o2 flange with six 1/2" bolts and five 3/4" drive bushings on a 4-3/4" bolt circle

F Denotes special flange with six 1/2" bolts and two 1/2" dowels on a 4" bolt circle

2 Denotes specific design features (See Note 4)

AF L denotes left hand rotation
T denotes spring kit (package) in hub extension
U denotes spring kit (package) in propeller dome
R when used with -1 model denotes a piston area of 21.6 sq. in.
A or F when used denotes modified pitch change system
Any other character denotes a minor change not affecting eligibility

NOTE 2 Blade Model Designation: F C 76 63 D - 3R where:

- F Denotes blade configuration: right-hand tractor unless otherwise noted
F denotes a large pitch change knob
J denotes left-hand tractor
L or H denotes left-hand pusher or right-hand pusher respectively
N denotes composite blade shank type
No prefix is used for composite blades
- C Denotes counterweighted blades
- 76 Basic diameter for a two blade propeller. Add two inches for three blade propellers. *
- 63 Basic blade model
- D D or F denotes a dimensional modification from the original design
B or K denotes deicing boots
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
- 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

* Do not add two inch diameter correction to the 9684 blade designs.

** 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

(a) Approved with Hartzell governors per drawings C-4770 and C-4772. Wt: 2.04 kg (4.50 lb).

Governor model designation: D - 1 - 4 - Z

- 4 Minor adjustment not affecting eligibility
1 Minor adjustment to obtain engine/propeller/governor compatibility
D Basic body and major parts modification

L When used indicates left hand rotation

Z When used indicates drive coupling type

Any other character denotes a minor change not affecting eligibility

- (b) **The -1 propeller models use oil to increase pitch and do not have counterweighted blades. The -2 and -7 models have counterweighted blades and use oil to decrease pitch. (See Note 4)**
- (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. (See Note 10)**

NOTE 4 (a) Feathering: The -1 and -7 models do not feather.

NOTE 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)

NOTE 6 Interchangeability

(a) Propellers

“F” type propellers with the modified pitch change system are interchangeable with corresponding propellers with the standard pitch change system. (See Notes 1 and 2)

(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 (See Note 2)

(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 anti-icing (weight of anti-icing system extra)

(1) Approved with fluid feed boots listed on Hartzell approved type design data when installed in accordance with Hartzell specification H-S-2 or Hartzell Manual no 133().

(2) Approved with fluid feed equipment listed in Hartzell approved type design data on propeller models for which equipment is available.

(b) Propeller deicing (weight of deicing equipment extra)

(1) Approved with Goodyear Ice Guards (electrical propeller deicer) when installed in accordance with instructions outlined in Goodyear Report no. AP-147 dated 23 October 1961.

(2) Approved with Goodrich electrical deicing kit 5EXXXX-X, 7EXXXX-X, 77-XXX, 67-XXX, or 65-XXX when the specific kit number is listed on Hartzell type design data and installed in accordance with Goodrich Report no. ATA 30-60-07.

(3) Approved with ice protection equipment when listed on Hartzell type design data.

(c) Propeller spinner (weight of spinner extra)

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

(d) Pressure control valve (weight of pressure control valve extra)

Required for operation of -7 model propellers

NOTE 8 Shank Fairing

Not applicable.

NOTE 9 Special Limits

Table of Propeller - Engine Combinations.

Approved Vibration wise 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.

<u>Hub Model</u>	<u>Blade Model</u>	<u>Engine Model</u>	<u>Max. Dia. (inches)</u>	<u>Min. Dia.</u>	<u>Placards</u>
HC E3YR	F7673()R F7673()-()R	LYC TIO-540-S1AD	78	76	none
HC E3YR	()8468	LYC TIO-540-A2B	80	78	none
HC E3YR	8468	LYC IO-540-K1A5, - K1B5, -K1C5, -K1D5, -L1A5, -M1A5	84	76	none
HC E3YR	F8475	LYC IO-720-A1A, - A1B, -A1BD	82	80	none
HC E3YR	F8475	LYC IO-720-A1A, - A1B, -A1BD	80	76	none
HC E3YR	F9587A-10	LYC TIO-540-J2B	87	86	do not exceed 30 inches manifold pressure below 2 400 rpm

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

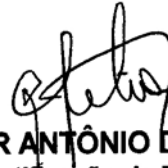
(a) Life Limits and Mandatory Inspections

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

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 overhaul periods.



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