AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

TYPE CERTIFICATE DATA SHEET Nº EH-8810

EH-8810-05
Sheet 01
HARTZELL
HC-C2Y

11 November 2008

Type Certificate Holder:

HARTZEL PROPELLER INC
One Propeller Place
Piqua, Ohio 45356
USA

Propellers of models described herein conforming with this data sheet, which is part of Type Certificate No. 8810, 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	Aluminum Alloy and composite to HC-C2YR-1 with blade N7605-( )
NUMBER OF BLADES	2 (two)

HUB ELIGIBLE HC-C2YK-1, -2, HC-C2YF-2 and HC-C2YR-1, -2.

Blade Eligible (See Notes 2 and 6)	Max. Continuous Power hp (rpm)	Takeoff power hp (rpm)	Diameter Limits (see note 2) m (in)	Approx. Max. Weight Compl. (see notes 3 & 7) kg (lb)
Non-Counterweighted Blades - Hub Model: all –1 and -2				
7666-0 to 7666-8	180 (2 900) or 250 (2 700)	180 (2 900) or 250 (2 700)	1.93 (76) to 1.73 (68) (-0 to –8)	23.13 (51)
7495-0 to 7495-6	250 (2 700)	250 (2 700)	1.88 (74) to 1.73 (68) (-0 to –6)	22.68 (50)
7497-0 to 7497-6	250 (2 700)	250 (2 700)	1.88 (74) to 1.73 (68) (-0 to –6)	23.50 (51.8)
8468-0 to 8468-12	285 (2 700)	285 (2 700)	2.13 (84) to 1.83 (72) (-0 to –12)	22.68 (50)
8475+2 to 8475-4	310 (2 700)	310 (2 700)	2.18 (86) to 2.03 (80) (+2 to –4)	23.59 (52)
8475-4 to 8475-6	350 (2 700)	350 (2 700)	2.03 (80) to 1.98 (78) (-4 to –6)	23.13 (51)
8475-6 to 8475-14	310 (2 700)	310 (2 700) or 300 (2 850)	1.98 (78) to 1.78 (70) (-6 to –14)	22.68 (50)
Non-counterweighted Blades – Hub models: HC-C2YR-1				
N7605-0 to N7605-10	215 (2 700)	215 (2 700)	1.93 (76) to 1.68 (66) (-0 to –10)	24.50 (43)
Counterweighted Blades – Hub models: all –2 and -4				
C7666-0 to C7666-8	180 (2 850) or 250 (2 700)	180 (2 850) or 250 (2 700)	1.93 (76) to 1.73 (68) (-0 to –8)	24.95 (55)
C8468-0 to C8468-12	260 (2 700)	260 (2 700)	2.13 (84) to 1.83 (72) (-0 to –12)	24.50 (54)

Weights apply to –1 constant speed hub with “F” flange. Add 0.54 kg (1.2 lb) for “L”, “K” and “R” flanges, 1.36 kg (3 lb) for feathering –2 hubs, 2.5 kg (5.5 lb) for feathering –2R hubs, and 1.81 kg (4 lb) for –4 model.

CERTIFICATION BASIS

Brazilian Type Certificate No. 8810 based on the RBHA 21.29 plus the following requirements.
RBHA 35, which endorses the 14 CFR Part 35 with amendments 35-1 through 35-6 effective 01 August 1990, applicable to the following models: HC-C2YF-2, HC-C2YK-1, -2, and HC-C2YR-1, -2.

TYPE CERTIFICATION

Model	Application	Issued TC
HC-C2YK-1	26 August 1987	08 August 1988
HC-C2YR-1	21 October 1996	01 September 1997
HC-C2YF-2	13 October 2005	23 December 2005

PRODUCTION BASIS Production Certificate No. 10 (FAA)

IMPORT REQUIREMENTS Each propeller imported separately must be accompanied by an Airworthiness Certificate for Export, attesting that the particular propeller 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 B HC -C 2 Y F -1 RAF, where:

B - Indicates dowel location with respect to centerline through blade sockets when viewing hub from flange mounting face.
Blank 90° and 270° clockwise
B 30° and 210° clockwise
C 150° and 330° clockwise
D 60° and 240° clockwise

HC - Hartzell controllable

- C - Basic design C denotes no integral shaft extension

2 - Number of blades

Y - Hartzell blade shank size

F - F denotes special flange with six 1/2" bolts on 4" bolt circle and two 1/2" drive dowels.
L denotes SAE No. 2 flange with six 7/16" bolts on 4-3/4" bolt circle and four 5/8" drive bushings
K denotes SAE No. 2 flange with six 1/2" bolts on 4-3/4" bolt circle and four 3/4" drive bushings
R denotes SAE No. 2 flange with six 1/2" bolts on 4-3/4" bolt circle and five 3/4" drive bushings

-1 - Denotes specific design features as:
-1, non-feathering, no counterweights, governor oil pressure increases pitch.
-2, feathering with or without counterweights, governor oil pressure decreases pitch.
-4, non-feathering, counterweights, governor oil pressure decreases pitch

RAF - R when used denotes a larger piston area (See Note 4)
B denotes modified pitch change system
G denotes Hartzell damper system
H denotes spinner mounting kit
U denotes feather assist spring assembly kit installed within cylinder
F denotes modified pitch change knob
C denotes spinner arrangement
L when used denotes left hand rotation (see Note 5)
P when used denotes a hub unit with a “B” suffix serial number
N Indicates compatibility with N shank blades
Any other character denotes a minor change not affecting eligibility

NOTE 2 Blade Model Designation L C 76 66 D -3R, where:

L - Denotes blade configuration: right-hand tractor unless otherwise noted
F denotes large pitch change knob
J prefix denotes left hand tractor
L prefix denotes left hand pusher
N denotes composite blade shank type
C - Denotes counterweighted blades
76 - Basic diameter in inches
66 - Basic model or template
D B or K denotes deicing boots
D denotes dimensional modification from original design
R when used denotes rounded tip for the basic diameter
S when used denotes 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
R when used denotes specifically rounded tip
Q when used denotes special 1" 90° factory-bent tip

* 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 Note 10)

(a) Approved with Hartzell governors per drawing C-4770, C-4771 and C4772. Wt.: 4.5 lb

D - 1 - 4 Z Governor model designation

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

(b) The –2 and –4 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. (see note 10)

NOTE 4
(a) Feathering. The -1 and -4 models do not feather. The -2 models incorporate feathering and unfeathering features.
(b) Reversing. Not applicable.
(c) Piston size. The -2R model differs from the -2 model in that the -2R has a piston area of 20.2 sq. in. and the -2 has a piston area of 16.25 sq. in.

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 & 2.

NOTE 6 Interchangeability.

(a) Blades.

Blades with counterweights (having "C" prefix) can replace non-counterweighted blades on feathering propellers (Hub Model Suffix -2 or -2R) only, providing the air charge is reduced to 80 psi at 70°F. Attached decal specifying air charge must be changed accordingly.

Shot-peened blades may replace non shot-peened either individually or as a set (see Note 2).

(b) Propellers.

"F" type propellers with larger pitch change knobs are interchangeable with corresponding propellers with the standard pitch change system (See Notes 1 and 2).

Propellers model containing a “P” suffix, for example HC-C2YR-1BFP, may replace corresponding models without the “P” suffix, for example HC-C2YR-1BF. Propeller models without the “P” suffix may not replace those containing the “P” suffix. See Note 1.

(c) Governors

Hartzell governors with “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.

(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 the equipment is available.

(b) Propeller Deicing (weight of anti-icing system 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 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)

(1) Approved with Hartzell and other manufacturer’s spinners when listed on Hartzell approved type design data.

(d) Propeller Damper C-1576

(1) Approved for used with Hartzell Propeller Model HC-C2Y. Wt: 8.0 lb.

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 turbo normalizer, 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-C2YR-1BFP	F7497	LYC O-360-A1A, -A1C, -A1D, -A1F, -A1G, -A1H, -A1P	74	72	None
HC-C2YR-1BFP	F7497	LYC O-360-A1A, -A1B, -A1C, -A1D, -C1A, -C1B, C1C, -C1F, D1A.	74	72	Continuous operation is prohibited above 24 inches manifold pressure between 2 350 and 2 550 rpm
HC-C2YR-1BFP	F7497	LYC IO-360-A1B6, -A1B6D, -A1D6, -A1D6D, -C1C6, C1D6, -C1E6, C1E6D.	74	72	None
HC-C2YK HC-C2YR	7666 F7666	LYC O-360-A1A, -A1AD, -A1C, -A1D, -A1F, -A1G, -A1LD, -B1A, -B1B, -C1A, -C1C, -C1F, -C1G, -D1A	76	72	Avoid continuous operation between 2 000 and 2 250 rpm
HC-C2YK HC-C2YR	7666 F7666A	LYC O-360-C1E, -C1F	76	72	Avoid continuous operation between 2 000 and 2 350 rpm
HC-C2YK HC-C2YR	F7666A-2Q	LYC O-360-A1A, -A1C, -A1D, -A1F, -A1G, -B1A, -B1B, -C1A, -C1C, -C1F, -D1A	74	74	Avoid continuous operation between 2 000 and 2 250 rpm
HC-C2YK	7666	LYC IO-360-A1A, -A1B, -A1C, -C1A, -C1B, -C1C, -D1A	74	72	Avoid continuous operation between 2000 and 2350 rpm
HC-C2YK	7666	LYC IO-360-B1A, -B1C	74	72	Avoid continuous operation between 2 000 and 2 250 rpm
HC-C2YK HC-C2YR	F7666( )-3Q	LYC IO-360-A3B6D	73	73	None
HC-C2YK HC-C2YR	F7666 F7666A	LYC O-360-E1A6D	74	72	None
HC-C2YK HC-C2YR	F7666A-2	LYC O-360-A1F6D	74	73	None
HC-C2YR	F7666A-( )R	LYC TO-360-E1A6D	74	72	None

( )HC-C2YK ( )HC-C2YR	( )7666( )-4Q	LYC IO-360-B1A, -B1B, -B1D, -B1E, -B1F, -E1A, -F1A	72	72	Avoid continuous operation between 2 000 and 2 250 rpm
HC-C2YK HC-C2YR	F7666A-4Q	LYC O-360-A1A, -A1C, -A1D, -A1F, -A1G, -B1A, -B1B, -C1A, -C1C, -D1A	72	72	Avoid continuous operation between 2 000 and 2 250 rpm
HC-C2YK	F7666A-4Q	LYC IO-360-A1B6	72	72	None
HC-C2YK HC-C2YR	7666-4Q	LYC IO-360-A1A, -A1B, -A1C, -C1A, -C1B, -C1C, -D1A	72	72	Avoid continuous operation between 2 000 and 2 350 rpm
HC-C2YK	7666	LYC IO-360-B1A, -B1B, -B1C, -B1D, -B1E, -B1F, -E1A, -F1A	74	72	Avoid continuous operation between 2 000 and 2 250 rpm
HC-C2YK	7666	LYC IO-360-B1A, -B1B, -B1C, -B1D, -B1E, -B1F, -E1A, -F1A	76	74 ½	Avoid continuous operation between 2 000 and 2 250 rpm
HC-C2YK HC-C2YR	7666	LYC IO-360-A1B6, -A1D6, -C1C6, -C1E6	76	76	None when used with Hartzell C-1576 damper
HC-C2YK HC-C2YR	7666	LYC IO-360-A1B6, -A1D6, -C1C6, -C1E6	76	76	Avoid continuous operation between 2 000 and 2 400 rpm
HC-C2YK HC-C2YR	7666	LYC O-360-F1A6	74	72	None
HC-C2YK HC-C2YR	( )7666	LYC IO-360-A1B6D	74	72	None
HC-C2YK HC-C2YR	7666A F7666A	LYC IO-360-C1C	74	72 ½	Avoid continuous operation between 2 000 and 2 350 rpm
HC-C2YK HC-C2YR	F7666A	LYC TIO-360-C1A6D LYC TO-360-C1A6D	76	75	Do not operate above 36 inches manifold pressure at engine speeds below 2 400 rpm
HC-C2YK HC-C2YR	F7666	LYC IO-360-A1B6, -A1D6, -C1C6, -C1E6	74	72	None
HC-C2YF	8468	TCM O-470-R	84	80	None
HC-C2YF	8468	TCM IO-470-D, -E, -F, -G, -H, -M, -N, -R, -S	84	84	Avoid continuous operation between 2 100 and 2 225 rpm.
HC-C2YF	8468	TCM IO-470-D, -E, -F, -G, -H, -M ,-N, -R, -S	82	80	None
HC-C2YF	8468	TCM IO-470-D, -E, -F, -G, -H, -M ,-N, -R, -S	78	78	Do not exceed 23 inches manifold pressure below 2 300 rpm.
HC-C2YK	8468-10R	LYC TIO-360-A1A, -A1B	74	74	Avoid continuous operation between 1 975 and 2 200 rpm.
HC-C2YK HC-C2YR	8468	LYC O-540-B4A5, -B4B5	84	77	None
HC-C2YR	F8468AR	LYC O-540-B4B5, -J1A5D, -J3A5, LYC IO-540-W1A5, -W1A5D	81	77	None

HC-C2YF	8475	TCM IO-520-A, -J, TCM TSIO-520-A, -C, -G, -H	80	77	None

HC-C2YF	8475	TCM IO-520-D, -E, -F, -K, -L	78	77	None
HC-C2YK HC-C2YR	8475R	LYC IO-540-K1B5, -K1C5, -L1A5, -M1A5	84	84	None
HC-C2YK HC-C2YR	8475R	LYC IO-540-K1A5, -K1D5, -K1G5	84	78	None
HC-C2YK HC-C2YR	8475D	LYC IO-540-K1A5, -K1G5, -K1A5D, -K1G5D	83	78	None
HC-C2YK HC-C2YR	8475	LYC IO-540-K1A5, -K1B5, -K1C5, -L1A5, -M1A5	83	78	None
HC-C2YK HC-C2YR	8475	LYC TIO-540-A1A	80	80	None
HC-C2YK HC-C2YR	8475+2	LYC IO-540-K1A5, -K1B5, -K1C5, -K1D5, -L1A5, -M1A5	86	86	Do not exceed 24 inches manifold pressure between 2 300 and 2 475 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.
Propeller with composite blades must be evaluated for bird impact resistence prior to approval on any type aircraft Hartzell Propeller must perform test and/or analyses based on aircraft configuration and operating conditions to determine the potential hazard as a result of a bird strike.

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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