TYPE-CERTIFICATE
DATA SHEET

No. IM.P.135

for Propeller
HC-H3Y()-{}, PHC-H3Y()-{}

Type Certificate Holder
Hartzell Propeller Inc.
One Propeller Place
Piqua, OH 45356-2634
USA

For Models:
HC-H3YF-(1,2)
PHC-H3YF-(1,2)
HC-H3YN-2
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I. General

1. Type / Models

HC-H3Y / HC-H3YF-(1,2), HC-H3YN-2
PHC-H3Y / PHC-H3YF-(1,2)

2. Type Certificate Holder

Hartzell Propeller Inc.
One Propeller Place
Piqua, OH 45356-2634
USA

3. Manufacturer

Hartzell Propeller Inc.

4. Date of Application

HC-H3YF-(1,2):  09 August 2013
PHC-H3YF-(1,2):  09 August 2013
HC-H3YN-2:  09 August 2013

5. EASA Type Certification Date

HC-H3YF-(1,2):  08 April 2015
PHC-H3YF-(1,2):  08 April 2015
HC-H3YN-2:  08 April 2015

II. Certification Basis

1. State of Design Authority Certification Basis

Refer to FAA TCDS no. P35EA.

2. Reference Date for determining the applicable airworthiness requirements

18 August 1990.

3. EASA Certification Basis

3.1. Airworthiness Standards

HC-H3YF-(1,2); PHC-H3YF-(1,2); HC-H3YN-2:
JAR-P Change 7 effective 22 October 1987 plus Elect to Comply with CS-P 410(a) of CS-P Amdt. 1 effective 16 November 2006.
3.2. Special Conditions (SC)

None.

3.3. Equivalent Safety Findings (ESF)

None.

3.4. Deviations

None.

III. Technical Characteristics

1. Type Design Definition

The propeller type is defined by a propeller assembly drawing including a parts list (or later approved revisions).

(P)HC-H3YF-1: Drawing D-4245, rev AA, dated 06 October 1998

2. Description

The HC-H3Y and PHC-H3Y propellers have 3 blades and a hydraulically operated variable pitch control with constant speed. The -1 models do not feather. The -2 models incorporate feathering and unfeathering features (see Notes 3 and 4). The hub is milled out of Aluminium alloy. The blade materials are Aluminium alloy. 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

See Table of Section IV.

6. Hub / Blade Combinations

See Table of Section IV.
### 7. Control System

See Note 3.

### 8. Adaptation to Engine

See Note 1.

### 9. Direction of Rotation

See Note 5.

#### IV. Operating Limitations

<table>
<thead>
<tr>
<th>Blades (see Note 2)</th>
<th>Maximum Continuous kW</th>
<th>Take Off kW</th>
<th>Diameter Limits (cm) (see Note 2)</th>
<th>Approx. Max Wt. Complete (kg) (see Notes 3 and 7)</th>
<th>Blade Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RPM (min⁻¹)</td>
<td>RPM (min⁻¹)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-Counterweighted Propellers HC-H3YF-1, PHC-H3YF-1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7490-0 to 7490-10</td>
<td>261,0</td>
<td>2850</td>
<td>261,0</td>
<td>193,0 to 167,6 (-0 to -10)</td>
<td>32,6 Aluminum Alloy</td>
</tr>
<tr>
<td>7691-0 to 7691-10</td>
<td>261,0</td>
<td>2850</td>
<td>261,0</td>
<td>198,1 to 172,7 (-0 to -10)</td>
<td>34,9 Aluminum Alloy</td>
</tr>
<tr>
<td>7693-0 to 7693-10</td>
<td>261,0</td>
<td>2700</td>
<td>261,0</td>
<td>198,1 to 172,7 (-0 to -10)</td>
<td>37,2 Aluminum Alloy</td>
</tr>
<tr>
<td>8068+2 to 8068-10</td>
<td>261,0</td>
<td>2700</td>
<td>261,0</td>
<td>213,4 to 182,9 (+2 to -10)</td>
<td>36,7 Aluminum Alloy</td>
</tr>
<tr>
<td>8468-0 to 8468-14</td>
<td>298,3</td>
<td>2700</td>
<td>298,3</td>
<td>218,4 to 182,9 (-0 to -14)</td>
<td>35,8 Aluminum Alloy</td>
</tr>
<tr>
<td><strong>Counterweighted Propellers: PHC-H3YF-2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C7453-0 to C7453-8</td>
<td>231,2</td>
<td>2800</td>
<td>231,2</td>
<td>193,0 to 172,7 (-0 to -8)</td>
<td>38,6 Aluminum Alloy</td>
</tr>
<tr>
<td><strong>Counterweighted Propellers: HC-H3YF-2; PHC-H3YF-2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C7693-0 to C7693-10</td>
<td>298,3</td>
<td>2700</td>
<td>298,3</td>
<td>198,1 to 172,7 (-0 to -10)</td>
<td>38,1 Aluminum Alloy</td>
</tr>
<tr>
<td><strong>Counterweighted Propellers: HC-H3YF-2; HC-H3YN-2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C7479-2 to C7479-8</td>
<td>283,4</td>
<td>2900</td>
<td>283,4</td>
<td>187,9 to 172,7 (-2 to -8)</td>
<td>39,9 Aluminum Alloy</td>
</tr>
<tr>
<td>C7663-0 to C7663-10</td>
<td>231,2</td>
<td>2800</td>
<td>231,2</td>
<td>198,1 to 172,7 (-0 to -10)</td>
<td>36,7 Aluminum Alloy</td>
</tr>
<tr>
<td>C7666-0 to C7666-10</td>
<td>231,2</td>
<td>2700</td>
<td>231,2</td>
<td>198,1 to 172,7 (-0 to -10)</td>
<td>38,6 Aluminum Alloy</td>
</tr>
<tr>
<td>C8459-0 to C8459-14</td>
<td>231,2</td>
<td>2700</td>
<td>231,2</td>
<td>218,4 to 182,9 (-0 to -14)</td>
<td>37,6 Aluminum Alloy</td>
</tr>
<tr>
<td>C8465-0 to C8465-14</td>
<td>231,2</td>
<td>2700</td>
<td>231,2</td>
<td>218,4 to 182,9 (-0 to -14)</td>
<td>39,0 Aluminum Alloy</td>
</tr>
</tbody>
</table>

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1. Approved Installations

See Note 9.

2. Maximum Take Off Power and Speed

See Table of Section IV.

3. Maximum Continuous Power and Speed

See Table of Section IV.

4. Propeller Pitch Angle

See Note 3.

V. Operating and Service Instructions

<table>
<thead>
<tr>
<th>Airworthiness Limitations</th>
<th>Hartzell Manual 115N (*) for propellers with aluminium blades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overspeed Limits</td>
<td>Hartzell Manual 115N (<em>) for propellers with aluminium blades or Hartzell Manual 202A (</em>)</td>
</tr>
<tr>
<td>Propeller Owner’s Manual</td>
<td>Hartzell Manual 115N (*) for propellers with aluminium blades</td>
</tr>
<tr>
<td>Blade Overhaul Manual</td>
<td>Hartzell Manual 133C (*)</td>
</tr>
<tr>
<td>Propeller Overhaul Manual</td>
<td>Hartzell Manual 117D (*)</td>
</tr>
<tr>
<td>Service Bulletins</td>
<td></td>
</tr>
</tbody>
</table>

(*): or later approved revision
VI. Notes

1. **Hub Model Designation:** (See Notes 4 and 5)

<table>
<thead>
<tr>
<th>P</th>
<th>HC</th>
<th>H</th>
<th>3</th>
<th>Y</th>
<th>F</th>
<th>RF</th>
</tr>
</thead>
<tbody>
<tr>
<td>F when used denotes modified pitch change system</td>
<td>K when used with -2 models indicates specific flange mounting studs</td>
<td>L when used denotes left hand rotation</td>
<td>R when used denotes 139.35 cm² piston area</td>
<td>U denotes feather assist spring for -2 models</td>
<td>Any other character denotes a minor change not affecting eligibility</td>
<td></td>
</tr>
</tbody>
</table>

Denotes specific design features

-1: non-feathering, no counterweights, governor oil pressure increases pitch

-2: feathering with counterweights, governor oil pressure decreases pitch

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

N denotes flange with eight 9/16" bolts and two 1/2" dowels on a 4.24" bolt circle

Hartzell blade shank size

Number of blades

'hui" denotes a 10.8 cm integral shaft extension

Hartzell Controllable

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 |
P | 0 & 180 deg. 120 deg. Clockwise |

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

<table>
<thead>
<tr>
<th>FL</th>
<th>C</th>
<th>76</th>
<th>66</th>
<th>D</th>
<th>-3R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of inches cut off from (or added to if +) basic diameter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q when used denotes special 2.54 cm x 90 deg. factory-bent tip for cutoff diameter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R when used denotes specifically rounded tip for cutoff diameter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any other character in this location denotes tip shape</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D or F denotes a dimensional modification from the original design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B or K denotes deicing boots</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R when used denotes a rounded tip for the basic diameter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S when used denotes a square tip for the basic diameter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any other character denotes a minor modification not affecting eligibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic blade model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic diameter for a two blade propeller. Add 5.08 cm for three blade propellers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Note: 5.08 cm correction does not apply to C9684 blade design)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denotes counterweighted blades</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denotes blade configuration: right-hand tractor unless otherwise noted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F denotes a large pitch change knob</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J denotes left-hand tractor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L or H denotes left-hand pusher or right-hand pusher respectively</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*: 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.
3. **Pitch Control:** (See Notes 4, 6 and 10)

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

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

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

   (c) Maximum governor output pressure: 2413.2 kPa for all propeller models

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

4. **Feathering:**

   The -1 models do not feather.
   
   The -2 models incorporate feathering and unfeathering features.

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.

6. **Interchangeability:** (See Notes 2 and 3)

   (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-6-242Z is a replacement for the F-6-24 and the F-6-24 is a replacement for the F-6-242Z.

   (b) Blades

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

   (c) Ice protection systems

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

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

1. Approved with fluid feed boots listed in Hartzell type design data when installed in accordance with Hartzell specification H-S-2 or Manual 133.

2. Approved with fluid feed equipment listed in Hartzell 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 5E-XXXX-X, 7E-XXXX-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.

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.

<table>
<thead>
<tr>
<th>Hub Model</th>
<th>Blade Model</th>
<th>Engine Model</th>
<th>Max. Dia. (cm)</th>
<th>Min. Dia. (cm)</th>
<th>Placards</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHC-H3YF</td>
<td>F7490</td>
<td>TCM TSIO-550-B</td>
<td>193,0</td>
<td>191,8</td>
<td>Do not exceed 76,2 cm manifold pressure below 2500 RPM</td>
</tr>
<tr>
<td>PHC-H3YF</td>
<td>F7490</td>
<td>TCM IO-550-G</td>
<td>193,0</td>
<td>191,8</td>
<td>none</td>
</tr>
<tr>
<td>PHC-H3YF</td>
<td>F7691( )</td>
<td>TCM IO-550-A -B -C -D -E -F -J -L -M -MB</td>
<td>198,1</td>
<td>195,6</td>
<td>Do not exceed 50,8 cm manifold pressure below 2200 RPM</td>
</tr>
<tr>
<td>PHC-H3YF</td>
<td>F7691( )</td>
<td>TCM IO-550-A -B -C -D -E -F -G -L</td>
<td>198,1</td>
<td>195,6</td>
<td>Do not exceed 50,8 cm manifold pressure below 2200 RPM</td>
</tr>
<tr>
<td>HC-H3YF</td>
<td>F7693( )</td>
<td>TCM IO-550-A -B -C -D -E -F -G -L -N -P -R</td>
<td>198,1</td>
<td>190,5</td>
<td>None</td>
</tr>
</tbody>
</table>
10. Propeller installation must be approved as part of the aircraft Type Certificate to 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.

11. Retirement Time:

   (a) Life Limits and Mandatory Inspections

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

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.135 replace the associated Type Certificates and Type Certificate Data Sheets of the EASA Member States.

SECTION: ADMINISTRATIVE

I. Acronyms and Abbreviations

None.

II. Type Certificate Holder Record

N/A.

III. Change Record

<table>
<thead>
<tr>
<th>Issue</th>
<th>Date</th>
<th>Changes</th>
<th>TC issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issue 01</td>
<td>08 April 2015</td>
<td>Initial Issue</td>
<td>08 April 2015</td>
</tr>
</tbody>
</table>

-END-