TYPE-CERTIFICATE
DATA SHEET

No. IM.P.133

for
HC-D4, HC-E4 series propellers

Type Certificate Holder
Hartzell Propeller Inc.

One Propeller Place
Piqua, OH 45356-2634
USA

For Models:
HC-D4N-2
HC-D4N-3
HC-D4N-5
HC-D4P-5
HC-E4A-2
HC-E4A-3
HC-E4N-2
HC-E4N-3
HC-E4N-5
HC-E4P-3
HC-E4P-5
HC-E4W-3
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I. General

1. Type / Models

HC-D4 / HC-D4N-(2,3,5), HC-D4P-5
HC-E4 / HC-E4A-(2,3), HC-E4N-(2,3,5), HC-E4P-(3,5), HC-E4W-3

2. Type Certificate Holder

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

3. Manufacturer

Hartzell Propeller Inc.

4. Date of Application

<table>
<thead>
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<td>HC-E4W-3</td>
<td>04 January 2016</td>
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*: The Date of Application has been taken over from individual EU Member States.

5. EASA Type Certification Date

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<td>HC-D4P-5</td>
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<td>HC-E4A-(2,3)</td>
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<td>27 July 2018</td>
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*: The EASA Certification Date has been taken over from individual EU Member States.

II. Certification Basis

1. State of Design Authority Certification Basis

Refer to FAA TCDS no. P10NE.
2. Reference Date for determining the applicable airworthiness requirements

04 December 1984: HC-D4N-(2,3,5), HC-D4P-5, HC-E4A-(2,3), HC-E4N-(2,3,5) and HC-E4P-5.
19 March 2013: HC-E4P-3 and HC-E4W-3.

3. EASA Certification Basis

3.1. Airworthiness Standards

HC-D4N-2; HC-D4P-5:

HC-D4N-5; HC-E4N-2; HC-E4P-5:

HC-E4A-2; HC-D4N-3:

HC-E4N-(3,5); HC-E4A-3:
14 CFR Part 35 effective 26 July 2013 with amendments 35-1 through 35-9A.

HC-E4P-3; HC-E4W-3:
CS-P Amendment 1 dated 16 November 2006 as issued by EASA Decision No 2006/09/R.

Note 1:
Application was made to EASA Member States before EASA was established. Refer to Commission Regulation (EU) No 748/2012.

Note 2:
The above mentioned propeller models are EASA certified based on member states approvals prior to EASA existence. The original and updated FAA certification basis as indicated above had been taken over from the FAA TCDS.

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).

HC-D4N-5: Drawing E-6850, rev. H, dated 06.02.2015
HC-D4P-5: Drawing D-3370 rev. AC, dated 06.02.2015
HC-E4N-2: Drawing E-6772, rev. O, dated 06.02.2017
HC-E4N-3: Drawing 106800, rev. -, dated 22.08.2016
HC-E4P-3: Drawing 103772, rev. 0, dated 26.08.2015
HC-E4W-3: Drawing E-7547, rev G, dated 30.01.2015

2. Description

The HC-D4 and HC-E4 propellers have 4 blades and a hydraulically operated variable pitch control with constant speed, feathering and unfeathering capability.
The -2 models do not reverse. The -3 and -5 models incorporate reverse. (See Notes 1 and 4).
The hub is milled out of Aluminium alloy. The blade materials are of Aluminium alloy or Composite.
Optional equipment includes spinner and ice protection.

3. Equipment

Spinner: See Note 7
Governor: See Note 3
Ice Protection: See Note 7
4. Dimensions
Diameters from 193.0 cm to 304.8 cm. (See Table of Section IV)

5. Weight
Depending on Propeller-Design Configuration. (See Table of Section IV)

6. Hub / Blade Combinations
Details are mentioned within Table of Section IV.

7. Control System
Propeller governor. (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. Operating Limitations

<table>
<thead>
<tr>
<th>Blades (see Note 2)</th>
<th>Maximum Continuous kW</th>
<th>RPM (min⁻¹)</th>
<th>Takeoff kW</th>
<th>RPM (min⁻¹)</th>
<th>Diameter Limits (cm) (see Note 2)</th>
<th>Approx. Max Wt. Complete (kg) (see Notes 3 and 7)</th>
<th>Blade Construction (see Note 10)</th>
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<td>HC-D4N-(2,3)</td>
<td>D9383-0 to D9383-10</td>
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<td>D9083-0 to D9083-10</td>
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<td>Maximum Continuous kW</td>
<td>Takeoff kW</td>
<td>Diameter Limits (cm)</td>
<td>Approx. Max Wt Complete (kg)</td>
<td>Blade Construction (see Note 10)</td>
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<td>Blades (see Note 2)</td>
<td>Maximum Continuous kW</td>
<td>RPM (min⁻¹)</td>
<td>Takeoff kW</td>
<td>RPM (min⁻¹)</td>
<td>Diameter Limits (cm) (see Note 2)</td>
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<td>Blade Construction (see Note 10)</td>
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<td>820,3</td>
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<td>279,4 to 254,0 (-0 to -10)</td>
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<td>708,4</td>
<td>1591</td>
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<td>596,6</td>
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<td>218,4 to 193,0 (-0 to -10)</td>
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<td>2200</td>
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<td>236,2 to 210,8 (-0 to -10)</td>
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<td>231,1 to 205,7 (-0 to -10)</td>
<td>65,8</td>
<td>Aluminium Alloy</td>
</tr>
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</table>

1. **Approved Installations**

Refer to Hartzell Application Guide 159 for list of approved installations.

2. **Maximum Take Off Power and Speed**

Details are mentioned within Table of Section IV.

3. **Maximum Continuous Power and Speed**

Details are mentioned within Table of Section IV.

4. **Propeller Pitch Angle**

The propeller has variable pitch capability. Pitch control is provided by a governor. (See Note 3)
V. Operating and Service Instructions

| Propeller Owner’s Manual (incl. Airworthiness Limitations, if any) | Hartzell Manual 149 (*) for propellers with aluminium blades  
| Hartzell Manual 147 (*) for propellers with composite blades |
| Propeller Overhaul Manual | Hartzell Manuals 141(*), 142(*), 143A (*), 156A(*) |
| Propeller Blade Overhaul Manual | Aluminium blades: Hartzell Manual 133C (*)  
| Composite blades: Hartzell Manual 135F(*) |
| Service Bulletins | (*): or later approved revision |

VI. Notes

1. **Hub Model Designation:**

   Hartzell Controllable

   - **HC - D 4 N - 2 A**
   - L when used denotes left-hand rotation
   - Y when used with -3 models indicates optional start locks
   - V when used indicates a hub that accommodates a GC blade shank
   - Any other character denotes minor change not affecting interchangeability or eligibility
   - Denotes specific design features (see Note 4)
   - -2: no beta feedback mechanism
   - -3: external beta feedback mechanism
   - -5: start locks, internal beta feedback mechanism
   - N denotes flange with eight 9/16 inch bolts and two 1/2 inch dowels on a 4.25 inch bolt circle
   - P is identical to N flange except uses four 1/2 inch dowels
   - A denotes flange with twelve 9/16 inch bolts and two 5/8 inch dowels on a 5.125 inch bolt circle
   - W is similar to N except uses studs in place of bolts
   - Number of blades
   - D specifies basic hub and blade retention
   - E specifies modified hub and blade retention
2. **Blade Model Designation:**

D 90 83 A K - 2

- Number of inches cut off from (or added to if +) basic diameter
- B or K denotes deicing boots
- S when used with aluminium blades denotes a shot-peened exterior (see Note 6)
- C when used with 10950 blade model indicates alternate counterweight (see Note 6)
- H when used designates a blade manufactured with erosion protection on the leading edge
- Any other character denotes a minor modification not affecting eligibility

<table>
<thead>
<tr>
<th>Basic blade model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic diameter in inches. * Add one inch correction for all blade models</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blade shank configuration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>D or E denotes right-hand tractor</td>
</tr>
<tr>
<td>NC denotes “N” shank right-hand tractor composite blade with counterweight</td>
</tr>
<tr>
<td>GC denotes “G” shank right-hand tractor composite blade with counterweight</td>
</tr>
<tr>
<td>HD or HE or HNC denotes right-hand pusher</td>
</tr>
<tr>
<td>LD or LE or LNC denotes left-hand pusher</td>
</tr>
<tr>
<td>JD or JE or JNC denotes left-hand tractor</td>
</tr>
</tbody>
</table>

*: Diameter limits are nominal diameters of the assembled propeller. They do not include the +/- one eight inch (20.32 cm) manufacturing tolerance the FAA allows for propellers with basic diameter less than 14 feet (426.72 cm).

3. **Pitch Control: (Weight of pitch control extra):**

<table>
<thead>
<tr>
<th>Maximum output pressure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>HC-E4A-(2,3) models: 4826,33 kPa</td>
</tr>
<tr>
<td>HC-(D,E)4(N,P)-(2,5) models: 4205,80 kPa</td>
</tr>
<tr>
<td>HC-(D,E)4(N,P,W)-3 models: 3447,38 kPa</td>
</tr>
</tbody>
</table>

(a) All propeller models have counterweighted blades and use governor oil to decrease pitch. (See Note 4)

(b) The Hartzell propeller model HC-E4A-2( ) is controlled by an integrated control system which is part of the engine type design. The propeller model HC-E4A-2 complies with the propeller airworthiness requirements when used with the Pratt & Whitney PT6A-68 series engine only. Any change to the engine, including its control system, which affects or may affect the propeller approval must be substantiated to demonstrate that the propeller as integrated with the changed engine, including its control system, still complies with the propeller certification basis. Also, any change to the engine resulting from a change to the propeller must be substantiated to demonstrate that the changed engine still complies with the engine certification basis.

(c) All governors and propeller control systems must be approved as part of the aircraft installation regardless of manufacturer. (See Note 10)

4. **Feathering:** The -2, -3 and -5 models incorporate feathering and unfeathering features.

**Reversing:** The -3 and -5 models are approved for installation as reversing propellers with appropriate reversing controls.
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) Shot-peened blades may replace non shot-peened blades either individually or as a set. (See Note 2)

(b) E10950[CB] blades may replace E10950[PB] blades models either in pairs or as a set. Opposing pairs of blades in the hub must have the same designation. (See Note 2)

(c) E10950[PK] blades may replace E10950[PK] blades models either in pairs or as a set. Opposing pairs of blades in the hub must have the same designation. (See Note 2)

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

7. **Accessories:**

(a) 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. (See Note 10)

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

(1) Approved with Goodrich electrical deicing kit 5EXXX-X, 7EXXX-X, 65-XXX, 67-XXX, or 77-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, Goodrich drawing no. 7E1284 or Beech installation drawing no. 50T-389045.

(2) Approved with Safeway deice equipment when installed in accordance with Safeway Installation Manual no. 6927 or E-5735-14 and Hartzell Manual 133( ) for aluminium blades or Manual 135( ) for composite blades, and associated STC or PMA documents.

(3) 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.

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

(c) Propeller pulley drive. (Weight of pulley drive extra)

(1) Propeller model HC-E4A-2( ) used on Beechcraft models 3000 and AT-6( ) uses containment ring P/N 133-910029-11 and air conditioning system drive pulley P/N 133-910029-7 or 133-1400-1.

(2) Propeller model HC-D4N-2( ) with blade model D9512( ) is approved with Pilatus Aircraft Ltd. air conditioning system pulley drive P/N PC-9-1401-1 and pulley centering ring P/N PC-9-1402-1.

(3) Propeller model HC-D4N-2( ) with blade model D9512( ) is approved with EADS PZL air conditioning system pulley drive P/N 837.76.610-08-0.
8. **Shank Fairings:** Not applicable.

9. **Special Limits:** Not applicable.

10. The propeller installation must be approved as part of the aircraft Type Certificate to demonstrate compliance with the applicable aircraft airworthiness standards.

   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.

10a. The propellers have been certificated in accordance with CS-P subparts A, B and C. Compliance with the requirements of Subpart D, which is specific to each aircraft installation, has not yet been demonstrated.

11. **Retirement Time:**

    (a) Life Limits and Mandatory Inspections

        (1) Airworthiness limitations, if any, are specified in Hartzell Manuals 147( ) or 149( ).

        (2) The appropriate propeller organisation must evaluate the propeller installation for each new aircraft installation to assess possible changes in the airworthiness limitation.

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. The EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the applicable Propeller Owner’s Manual, chapter 5 "Airworthiness Limitations".

14. EASA Type Certificate and Type Certificate Data Sheet No. IM.P.133 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 06</td>
<td>05 May 2017</td>
<td>New EASA TCDS template to issue 06. No change records available within issue 05. Adding a new blade NC10904.</td>
<td>05 May 2017</td>
</tr>
<tr>
<td>Issue 07</td>
<td>27 July 2018</td>
<td>Adding HC-E4P-3 and HC-E4W-3 hub models and E10479, D8990, D9290 and E9083 blade models as listed on the FAA TCDS P10NE Revision 30 plus editorial changes.</td>
<td>27 July 2018</td>
</tr>
<tr>
<td>Issue 08</td>
<td>22 April 2022</td>
<td>Adding propeller blade model E10991 (EASA major change approval 10079084)</td>
<td>NA</td>
</tr>
</tbody>
</table>

-END-