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# 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**

HC-D4N-(2,3,5):	04 February 2003*
HC-D4P-5:	04 February 2003*
HC-E4A-(2,3):	04 February 2003*
HC-E4N-(2,3,5):	19 November 1999*
HC-E4P-5:	04 February 2003*
HC-E4P-3:	04 January 2016
HC-E4W-3:	04 January 2016

\*: The Date of Application has been taken over from individual EU Member States.

### **5. EASA Type Certification Date**

HC-D4N-(2,3,5):	12 February 2003*
HC-D4P-5:	12 February 2003*
HC-E4A-(2,3):	12 February 2003*
HC-E4N-(2,3,5):	31 January 2000*
HC-E4P-5:	12 February 2003*
HC-E4P-3:	27 July 2018
HC-E4W-3:	27 July 2018

\*: 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:

14 CFR Part 35 effective 14 October 1980 with amendments 35-1 through 35-5.

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

14 CFR Part 35 effective 18 August 1990 with amendments 35-1 through 35-6.

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

14 CFR Part 35 effective 19 March 2013 with amendments 35-1 through 35-9.

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-2:	Drawing E-6503,	rev. J,	dated 16.03.2015
HC-D4N-3:	Drawing 06106,	rev. A,	dated 20.05.2016
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-E4A-2:	Drawing E-7018,	rev. K,	dated 25.02.2015
HC-E4A-3:	Drawing E-4696,	rev. J,	dated 25.02.2015
HC-E4N-2:	Drawing E-6772,	rev. O,	dated 06.02.2017
HC-E4N-3:	Drawing 106800,	rev. -,	dated 22.08.2016
HC-E4N-5:	Drawing 106504,	rev. B,	dated 20.12.2016
HC-E4P-5:	Drawing D-3220,	rev. AI,	dated 25.02.2015
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

Blades (see Note 2)	Maximum Continuous		Takeoff		Diameter Limits (cm) (see Note 2)	Approx. Max Wt. Complete (kg) (see Notes 3 and 7)	Blade Construction (see Note 10)
	kW	RPM (min <sup>-1</sup> )	kW	RPM (min <sup>-1</sup> )			
<u>HC-D4N-(2,3)</u>							
D9383-0 to D9383-10	708,4	2000	708,4	2000	238,8 to 213,4 (-0 to -10)	68,9	Aluminium Alloy
D9512-0 to D9512-10	708,4	2040	708,4	2040	243,8 to 218,4 (-0 to -10)	68,9	Aluminium Alloy
<u>HC-D4N-3</u>							
D9083-0 to D9083-10	708,4	2000	708,4	2000	231,1 to 205,7 (-0 to -10)	65,8	Aluminium Alloy
D9290-0 to D9290-10	559,3	2200	559,3	2200	236,2 to 210,8 (-0 to -10)	61,7	Aluminium Alloy
D9510-0 to D9510-10	559,3	2200	559,3	2200	243,8 to 218,4 (-0 to -10)	66,5	Aluminium Alloy
D9511-0 to D9511-10	633,8	2200	633,8	2200	243,8 to 218,4 (-0 to -10)	68,9	Aluminium Alloy
D9515-0 to D9515-10	633,8	2200	633,8	2200	243,8 to 218,4 (-0 to -10)	68,9	Aluminium Alloy
<u>HC-D4N-5</u>							
D9327-0 to D9327-10	820,3	2000	820,3	2000	238,8 to 213,4 (-0 to -10)	68,5	Aluminium Alloy
D8501-0 to D8501-10	596,6	2000	596,6	2000	218,4 to 193,0 (-0 to -10)	58,9	Aluminium Alloy
<u>HC-D4P-5</u>							
D10541-0 to D10541-10	745,7	1700	745,7	1700	269,2 to 243,8 (-0 to -10)	74,8	Aluminium Alloy
<u>HC-E4P-5</u>							
E11990	745,7	1540	745,7	1540	304,8	59,8	Aluminium Alloy
<u>HC-E4A-3</u>							
E10477-0 to E10477-10	894,8	1700	894,8	1700	266,7 to 241,3 (-0 to -10)	72,6	Aluminium Alloy
E10478-0 to E10478-10	894,8	1700	894,8	1700	266,7 to 241,3 (-0 to -10)	76,4	Aluminium Alloy



Blades (see Note 2)	Maximum Continuous		Takeoff		Diameter Limits (cm) (see Note 2)	Approx. Max Wt Complete (kg) (see Notes 3 and 7)	Blade Construction (see Note 10)
	kW	RPM (min <sup>-1</sup> )	kW	RPM (min <sup>-1</sup> )			
E10479-0 to E10479-8	894,8	1700	894,8	1700	266,7 to 246,4 (-0 to -8)	70,8	Aluminium Alloy
E10950	1044,0	1735	1044,0	1735	279,4	59,9	Aramid Composite
<u>HC-E4A-2</u>							
E9612-0 to E9612-10	969,4	2000	969,4	2000	246,4 to 221,0 (-0 to -10)	70,3	Aluminium Alloy
E9673-0 to E9673-10	1193,1	2000	1193,1	2000	246,4 to 221,0 (-0 to -10)	70,3	Aluminium Alloy
<u>HC-E4N-(2,3,5), HC-E4A-(2,3); HC-E4P-5</u>							
D9390-0 to D9390-10	708,4	2000	708,4	2000	238,8 to 213,4 (-0 to -10)	67,8	Aluminium Alloy
<u>HC-E4N-(,3,5), HC-E4A-3; HC-E4P-5</u>							
D9391-0 to D9391-10	708,4	2000	708,4	2000	238,8 to 213,4 (-0 to -10)	67,8	Aluminium Alloy
<u>HC-E4N-3</u>							
E8190	559,3	2200	559,3	2200	207,6	54,4	Aramid Composite
D8292-0 to D8292-6	596,6 or 507,1	2000 2200	596,6 or 507,1	2000 2200	209,6 to 194,3 (-0 to -6)	54,9	Aluminium Alloy
D8990-0 to D8990-10	559,3	2200	559,3	2200	228,6 to 203,2 (-0 to -10)	64,4	Aluminium Alloy
E9083-0 to E9083-10	708,4	2000	708,4	2000	231,1 to 205,7 (-0 to -10)	65,7	Aluminium Alloy
D9290-0 to D9290-10	559,3	2200	559,3	2200	236,2 to 210,8 (-0 to -10)	61,7	Aluminium Alloy
D9511-0 to D9511-10	633,8	2200	633,8	2200	243,8 to 218,4 (-0 to -10)	68,9	Aluminium Alloy
D9900-0 to D9900-10	633,8	2000	633,8	2000	254,0 to 228,6 (-0 to -10)	65,8	Aluminium Alloy
NC9208+2 to NC9208-10	633,8	2000	633,8	2000	241,3 to 210,8 (+2 to -10)	52,2	Carbon Composite
<u>HC-E4P-3</u>							
E10479-0 to E10479-8	834,8	1700	834,8	1700	266,7 to 246,4 (-0 to -8)	70,8	Aluminium Alloy



Blades (see Note 2)	Maximum Continuous		Takeoff		Diameter Limits (cm) (see Note 2)	Approx. Max Wt Complete (kg) (see Notes 3 and 7)	Blade Construction (see Note 10)
	kW	RPM (min <sup>-1</sup> )	kW	RPM (min <sup>-1</sup> )			
<u>HC-E4N-2</u>							
E9512-0 to E9512-10	708,4	2040	708,4	2040	243,8 to 218,4 (-0 to -10)	68,9	Aluminium Alloy
<u>HC-E4N-5</u>							
D9690-0 to D9690-10	708,4	2000	708,4	2000	246,4 to 221,0 (-0 to -10)	69,9	Aluminium Alloy
NC10904-0 to NC10904-10	820,3	1591	820,3	1591	279,4 to 254,0 (-0 to -10)	60,8	Carbon Composite
<u>HC-E4N-(2,3,5)</u>							
E8501-0 to E8501-10	596,6 or 507,1	2000 or 2200	596,6 or 507,1	2000 or 2200	218,4 to 193,0 (-0 to -10)	59,0	Aluminium Alloy
<u>HC-E4W-3</u>							
D8990-0 to D8990-10	579,4	2080	579,4	2080	228,6 to 203,2 (-0 to -10)	64,4	Aluminium Alloy
D9290-0 to D9290-10	559,3	2200	559,3	2200	236,2 to 210,8 (-0 to -10)	61,7	Aluminium Alloy
D9083-0 to D9083-10	708,4	2080	708,4	2080	231,1 to 205,7 (-0 to -10)	65,8	Aluminium Alloy

### 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

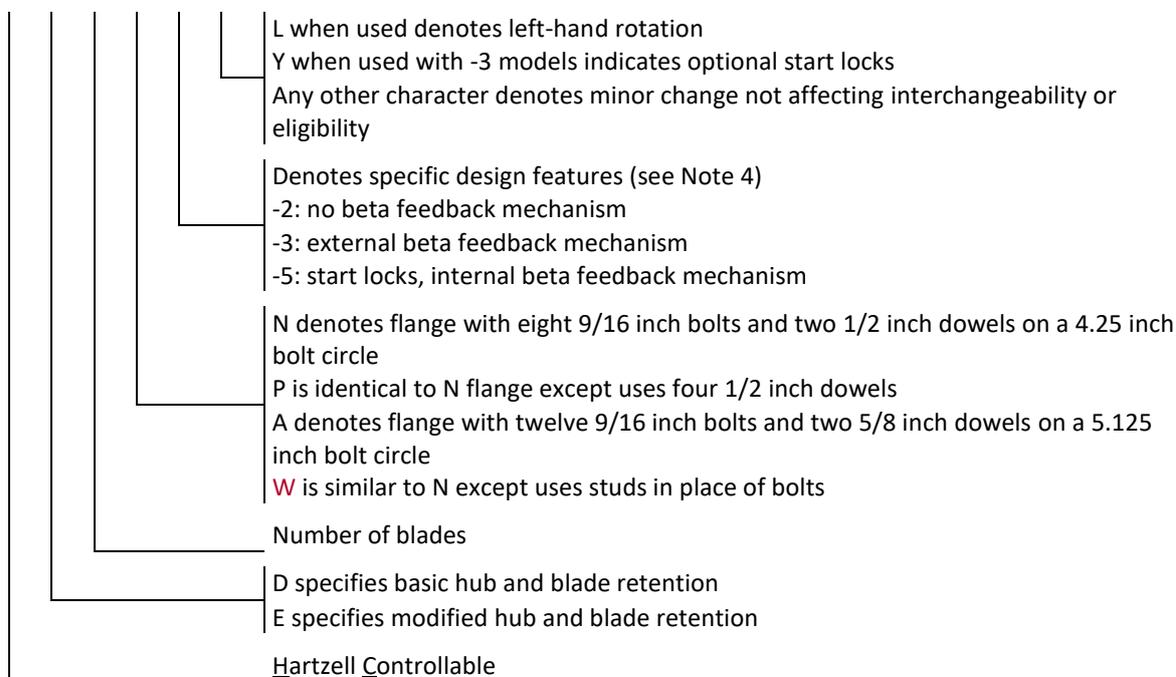
Propeller Owner's Manual (incl. Airworthiness Limitations, if any)	Hartzell Manual 149 (*) for propellers with aluminium blades Hartzell Manual 147 (*) for propellers with composite blades
Propeller Overhaul Manual	Hartzell Manuals 141(*), 142(*), 143A (*), 156A(*)
Propeller Blade Overhaul Manual	Aluminium blades: Hartzell Manual 133C (*) Composite blades: Hartzell Manual 135F(*)
Standard Practices Manual	Hartzell Manual 202A (*)
Service Bulletins	

(\*): or later approved revision

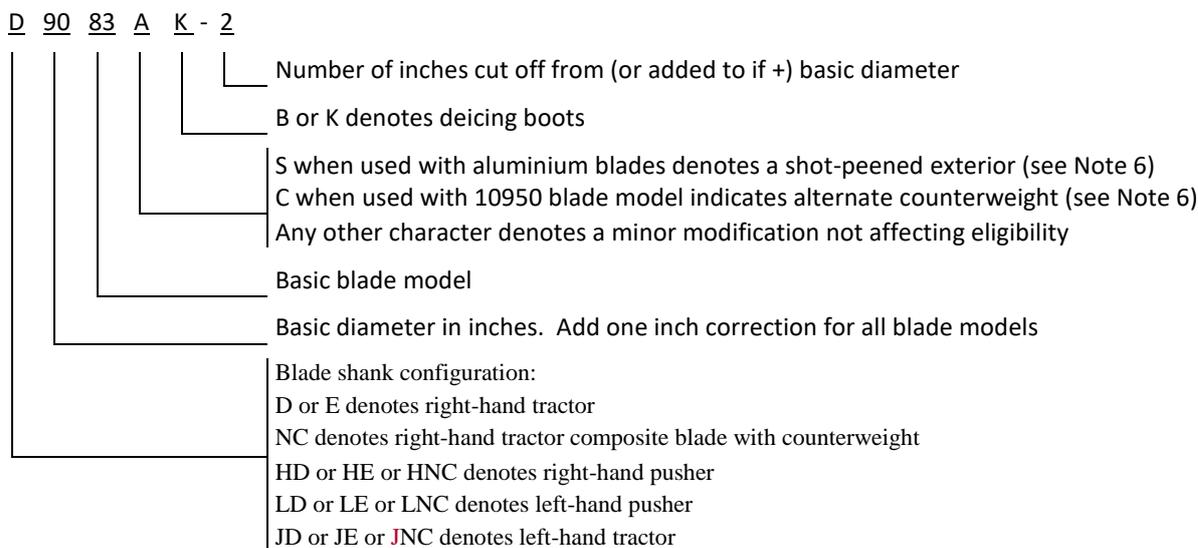
## VI. Notes

### 1. Hub Model Designation:

HC - D 4 N - 2 A



## 2. Blade Model Designation:



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

Maximum output pressure:	HC-E4A-(2,3) models:	4826,33 kPa
	HC-(D,E)4(N,P)-(2,5) models:	4205,80 kPa
	HC-(D,E)4(N,P,W)-3 models:	3447,38 kPa

- All propeller models have counterweighted blades and use governor oil to decrease pitch. (See Note 4)
- 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.
- 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 E10950PB 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) E10950PCK blades may replace E10950PK 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 5EXXXX-X, 7EXXXX-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( ).

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.

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**SECTION: ADMINISTRATIVE**

**I. Acronyms and Abbreviations**

None.

**II. Type Certificate Holder Record**

N/A.

**III. Change Record**

<b>Issue</b>	<b>Date</b>	<b>Changes</b>	<b>TC issue</b>
Issue 06	05 May 2017	New EASA TCDS template to issue 06. No change records available within issue 05. Adding a new blade NC10904.	05 May 2017
Issue 07	27 July 2018	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.	27 July 2018

-END-

