



TYPE-CERTIFICATE DATA SHEET

No. IM.P.125

for

HC-E5 series propellers

Type Certificate Holder

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

For Models:

- HC-E5A-2
- HC-E5A-3
- HC-E5A-31
- HC-E5B-5
- HC-E5N-3
- HC-E5P-3



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I. General

1. Type/ Model

HC-E5 / HC-E5A-2, HC-E5A-3, HC-E5A-31, HC-E5B-5, HC-E5N-3, HC-E5P-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-E5A-2:	Before 2004*
HC-E5A-3:	08 April 2015
HC-E5A-31:	15 April 2019
HC-E5B-5:	Before 1991**
HC-E5N-3:	Before 1991**
HC-E5P-3:	15 November 2017

*: The exact Date of Application was not recorded in Switzerland joining EASA
1 December 2006.

** : The exact Date of Application was not recorded in individual EASA Member States.

5. EASA Certification Reference Date

18 August 1990: HC-E5B-5 and HC-E5A-2
19 March 2013: HC-E5N-3
26 July 2013: HC-E5A-3
30 August 2017: HC-E5P-3 and HC-E5A-31

6. EASA Type Certification Date

HC-E5A-2:	23 December 2004*
HC-E5A-3:	05 November 2015
HC-E5A-31:	22 May 2019
HC-E5B-5:	06 September 1991**
HC-E5N-3:	06 September 1991**
HC-E5P-3:	08 May 2018

*: The EASA Certification Date has been taken over from Switzerland joining EASA
1 December 2006.

** : The EASA Certification Date has been taken over from individual EASA Member States.



II. Certification Basis

1. State of Design Authority Certification Basis

Refer to FAA TCDS no. P20NE.

2. EASA Certification Basis

2.1. Airworthiness Standards

HC-E5B-5*:

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

HC-E5A-2*:

14 CFR Part 35 with amendments 35-1 through 35-6 effective 18 August 1990 and Special Condition no. 35-002-SC.

HC-E5N-3*:

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

HC-E5A-3, HC-E5P-3 and HC-E5A-31:

CS-P Amendment 1 effective 16 November 2006.

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

These 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.

2.2. Special Conditions

None

2.3. Equivalent Safety Findings

None

2.4. 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-E5A-2: Drawing E-6854, rev A, dated 16 August 2004

HC-E5A-3: Drawing 105475, dated 28 May 2015

HC-E5A-31: Drawing 106869, rev -, dated 14 January 2019

HC-E5B-5: Drawing E-2860, rev D, dated 10 March 1994

HC-E5N-3: Drawing D-3736, rev D, dated 23 October 1989

HC-E5P-3: Drawing 105914, rev A, dated 28 September 2017

2. Description

The propeller is a 5-blade variable pitch propeller with a hydraulically operated blade pitch change mechanism providing the operation mode "Constant Speed". The -2, -3 and -5 models incorporate feathering and unfeathering features. The -3 and -5 models are approved for installation as reversing propellers with appropriate reversing controls.

The -2 models do not reverse. (See Note 4).

The HC-E5A-31 model is identical except the beta feedback mechanism is electronic rather than hydro-mechanical.

The hub is a two piece aluminium hub. Each blade is supported in the hub with a ball thrust bearing. Optional equipment includes spinner and deicing (See Note 7).

3. Equipment

Spinner: See Note 7.

Governor: See Note 3.

Ice Protection: See Note 7.

4. Dimensions

See table of Section IV.

5. Weight

Depending on Propeller-Design Configuration:

See table of Section IV.

6. Hub/ Blade- Combinations

See table of Section IV.

7. Control System

Propeller governors: 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)	Max. Continuous kW - rpm (min ⁻¹)		Take Off kW - rpm (min ⁻¹)		Diameter Limits (cm) (See Note 2)	Approx. Max. Wt. Complete (kg) (See Notes 3,7)	Blade Construction (See Note 10)
<u>HC-E5N-3</u>							
E8218-0 to E8218-10	633,8	2200	633,8	2200	215,9 to 190,5 (-0 to -10)	81,2	Aluminum Alloy
E8492-0 to E8492-10	708,4	2000	708,4	2000	219,7 to 194,3 (-0 to -10)	83,5	Aluminum Alloy
NC8834-0 to NC8834-10	708,4	2000	708,4	2000	231,1 to 205,7 (-0 to -10)	68,9	Carbon Composite
<u>HC-E5B-5</u>							
E12902	1226,7	1390	1226,7	1390	335,3	76,2	Aramid Composite
<u>HC-E5A-2</u>							
E9193	1230,4	2000	1230,4	2000	238,7	79,4	Carbon Composite
<u>HC-E5A-3 and HC-E5A-31</u>							
NC10245-0 to NC10245-10	894,8	1700	894,8	1700	266,7 to 241,3 (-0 to -10)	69,4	Carbon Composite
<u>HC-E5P-3</u>							
NC10320-0 to NC10320-10	894,8	1700	894,8	1700	269,2 to 243,8 (-0 to -10)	69,9	Carbon Composite

1. Approved Installations

The HC-E5 series propellers are intended to be installed at King Air aircraft models. The HC-E5A-31 is controlled by an integrated electronic system which is part of the engine type design. It is used only with the Pratt & Whitney PT6E-67XP series engine.

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

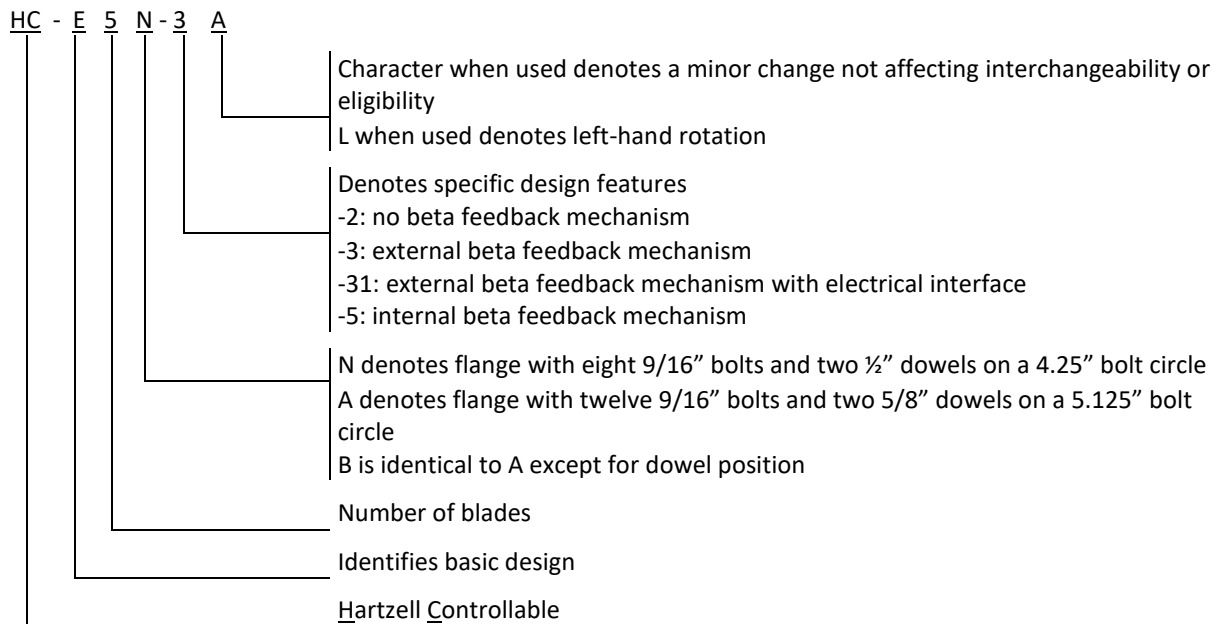
Integration Manual	Hartzell Manual 190*
Standard Practices Manual	Hartzell Manual 202A*
Propeller Owner's Manual and Logbook (incl. Airworthiness Limitations)	Hartzell Manuals 147* and 149*
Aluminium Blade Overhaul Manual	Hartzell Manual 133C*
Composite Blade Overhaul Manual	Hartzell Manual 135F*
Metal Spinner Maintenance Manual	Hartzell Manual 127*
Five Blade Lightweight Turbine Propeller Maintenance Manual	Hartzell Manual 158A*
Service Bulletins	

*: or later approved revision

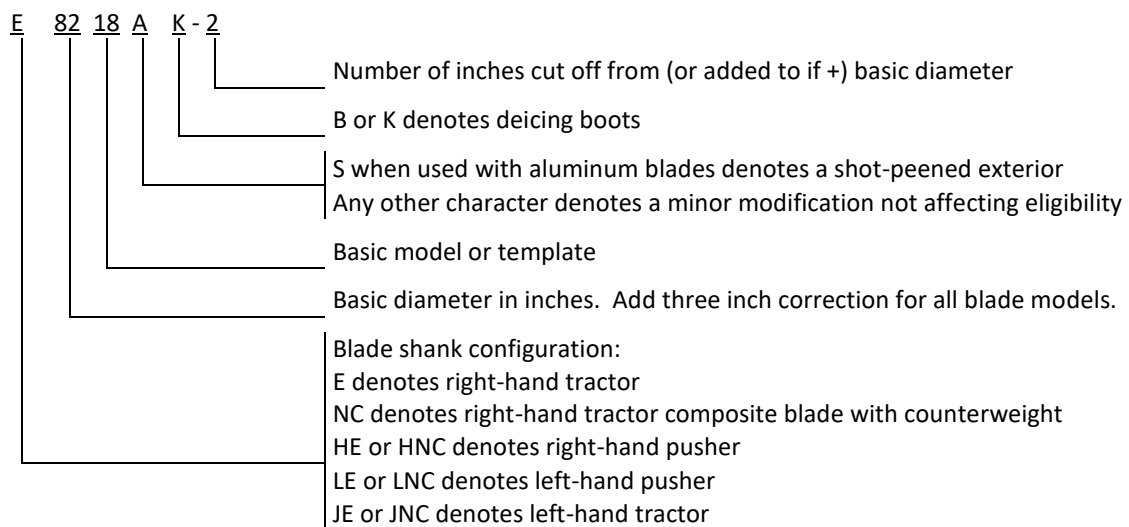


VI. Notes

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



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



3. Pitch Control: (Weight of pitch control extra) (See Notes 4 and 10)
- (a) Maximum output pressure: 4826,33 kPa.
 - (b) All propeller models have counterweighted blades and use governor oil to decrease pitch.
 - (c) The Hartzell propeller model HC-E5A-2 with E9193 blades is controlled by an integrated control system which is part of the engine type design. The propeller model HC-E5A-2 with E9193 blades complies with the propeller airworthiness requirements when used with the Pratt & Whitney PT6A-68B 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. Maximum output pressure for the HC-E5A-2 propeller model: 4826,33 kPa.
 - (d) Hartzell propeller model HC-E5A-31() is controlled by an integrated electronic system which is part of the engine type design. Propeller model HC-E5A-31() complies with the propeller airworthiness requirements when used only with the Pratt & Whitney PT6E-67XP series engine, whose electronic software is written based on inputs from Hartzell's dynamic simulation models. Any changes to the engine or propeller, including its control system, which affects or may affect the propeller or aircraft approval must be substantiated to demonstrate that the propeller as integrated with the engine, including its control system, still complies with the propeller and the engine certification basis.
 - (e) All governors and propeller control systems must be approved as part of the aircraft installation regardless of manufacturer.
4. Feathering:
- (a) The -2, -3 and -5 models incorporate feathering and unfeathering features.
- Reversing:
- (a) The -3 and -5 models are approved for installation as reversing propellers with reversing controls.
 - (b) The -2 models do not reverse.
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 Note 2)
- (a) Shot-peened blades may replace non shot-peened blades either individually or as a set.
 - (b) 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.
 - (2) Approved with Safeway deice equipment when installed in accordance with Safeway Installation Manual, Hartzell Manual 133() for aluminum blades or Manual 135() for composite blades, and associated STC or PMA documentation.
 - (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-E5A-2 with blade model E9193 is approved with Pilatus Aircraft Ltd. air conditioning system pulley drive P/N 521.55.21.002.

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. This propeller has 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 and 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 recommended 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.125 replace the associated Type Certificates and Type Certificate Data Sheets of the EASA Member States.



SECTION: ADMINISTRATIVE

I. Acronyms and Abbreviations

N/A

II. Type Certificate Holder Record

N/A

III. Change Record

Issue	Date	Changes	TC issue
Issue 01	24 September 2013	Initial Issue. Add hub HC-E5A-2, HC-E5B-5 and HC-E5N-3 models	24 September 2013
Issue 02	03 July 2014	Add blade E8492 model	N/A
Issue 03	05 November 2015	Add hub HC-E5A-3 and blade NC10245 model	05 November 2015
Issue 04	08 May 2018	Add hub HC-E5P-3 and blade NC10320 model	08 May 2018
Issue 05	22 May 2019	Add hub HC-E5A-31	22 May 2019

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