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## TYPE-CERTIFICATE DATA SHEET

No. EASA.IM.P.505

**for Propeller**  
4C1-( ) series propellers

**Type Certificate Holder**  
Hartzell Propeller Inc.

One Propeller Place  
Piqua, OH 45356-2634  
USA

For Model:  
4C1-F650A1



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## **I. General**

### **1. Type / Model**

4C1 / 4C1-F650A1

### **2. Type Certificate Holder**

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

### **3. Manufacturer**

Hartzell Propeller Inc.

### **4. Date of Application**

4C1-( ): 22 May 2019

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

4C1-( ): 21 February 2020

## **II. Certification Basis**

### **1. State of Design Authority Certification Basis**

Refer to FAA TCDS no. P00019CH.

### **2. Reference Date for determining the applicable airworthiness requirements**

22 May 2019

### **3. EASA Certification Basis**

#### **3.1. Airworthiness Standards**

4C1-( ):

CS-P Amendment 1 dated 16 November 2006 as issued by EASA Decision No 2006/09/R, except the requirements of Subpart D as allowed by CS-P 10(b) (See Note 10a).

#### **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).

4C1-F650A1: Drawing 107463, Rev A, dated 31.01.2020

### **2. Description**

The 4C1 propeller has four blades and a hydraulically operated variable pitch control with constant speed. Each blade is supported in the hub with a ball thrust bearing which transfers all centrifugal and bending loads from the blade into the hub.

The model has neither feathering nor reverse capability (See Notes 3 and 4).

The two-piece hub is milled out of aluminium alloy. The blade material is carbon 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 184,40 cm to 199,64 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 hub model designation. (See Note 1 and 5)

## IV. Operating Limitations

Blades (see Note 2)	Maximum Continuous		Take Off		Diameter Limits (cm) (see Note 2)	Approx. Max Wt. Complete (kg) (see Notes 3 and 7)	Blade Construction
	kW	RPM (min <sup>-1</sup> )	kW	RPM (min <sup>-1</sup> )			
<u>Hub models: 4C1-( )(430 through 919) (See Note 1)</u>							
76C04-0 to 76C04-6	261,0	2700	261,0	2700	199,6 to 184,4 (-0 to -6)	28,03	Carbon Composite

### 1. Approved Installations

The propeller is initially intended for use on Cirrus SR22T aircraft. (See Note 10)

### 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**

### **Instruction for continued airworthiness (ICA):**

Propeller Owner's Manual and Logbook (incl. Airworthiness Limitations, if any)	Hartzell Manual 480 (*)
Propeller Overhaul Manual	Hartzell Manual 490 (*)
Composite Blade Overhaul Manual	Hartzell Manual 135F (*)
Standard Practices Manual	Hartzell Manual 202A (*)
Metal Spinner Maintenance Manual	Hartzell Manual 127 (*)

(\*): or later approved revision

### **Instruction for propeller installation and operation:**

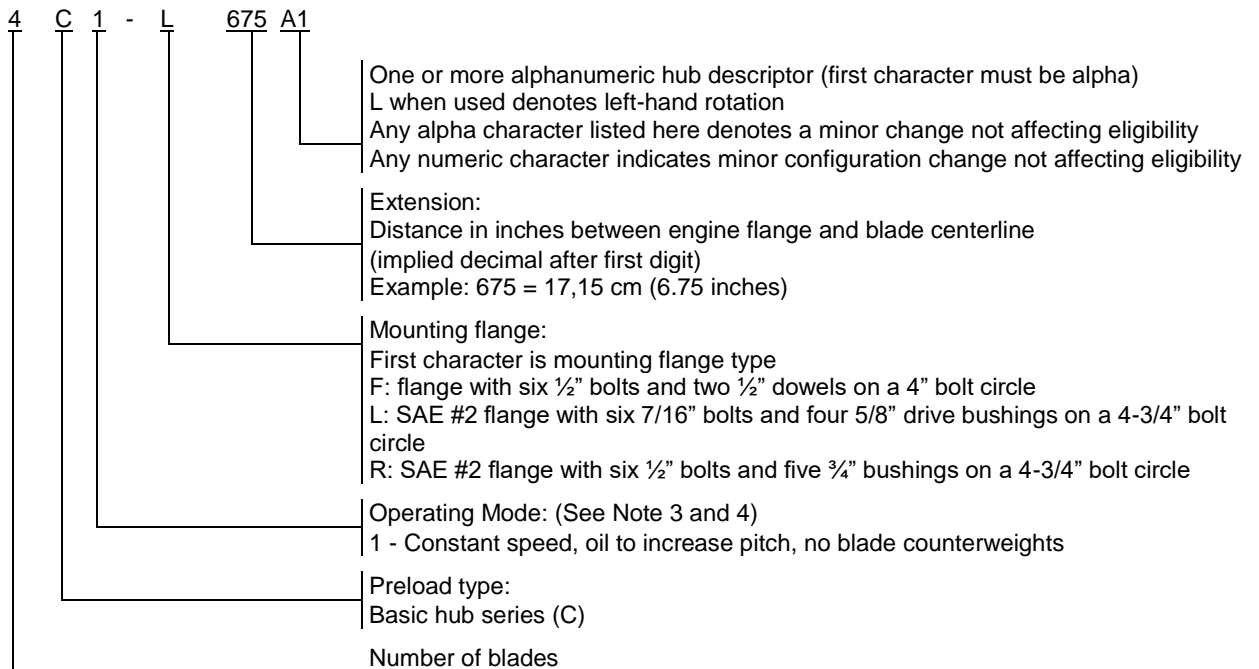
Propeller Integration Manual	Hartzell Manual 191 (*)
Service Bulletins	

(\*): or later approved revision

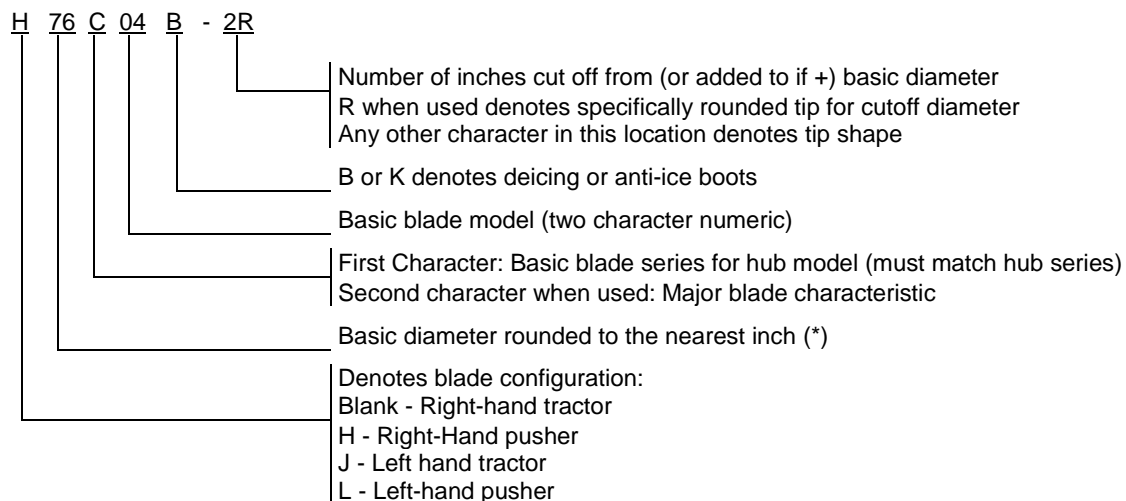


## VI. Notes

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



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



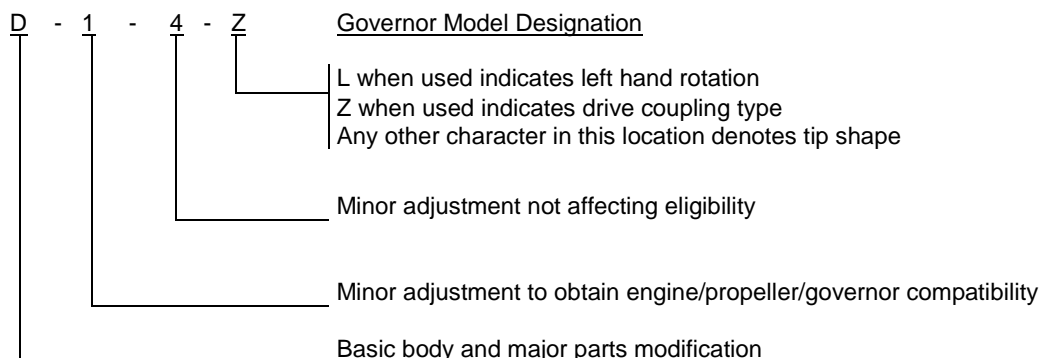
(\*): Diameter limits are nominal diameters of the assembled propeller. They do not include the + or - 1/8 inch manufacturing tolerance the FAA allows for propellers with a basic diameter of less than 14 feet (426,72 cm).





3. Pitch Control: (weight of pitch control extra) (See Notes 4 and 10)

- (a) Approved with Hartzell governors per drawings C-4770 and C-4772. Wt: 2,04 kg (4.5 lb) (See Note 10).



- (b) Maximum output pressure: 2413,16 kPa (350 psig)

- (c) The 4C1 models use governor oil to increase pitch and do not have counterweighted blades (See Note 4)

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

4. Feathering: Not applicable.

Reversing: Not applicable.

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:

- (a) Propellers  
Not applicable

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

- (c) Blades  
Not applicable

- (d) Ice Protection Systems  
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 ice protection system (weight of ice protection equipment extra)

- (1) 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.
- (2) All propeller ice protection equipment must be approved as part of the aircraft installation regardless of manufacturer. (See NOTE 10)

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 turbnormalizer, 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.

<u>Hub Model</u>	<u>Blade Model</u>	<u>Engine Model</u>	<u>Max. Dia. (cm)</u>	<u>Min. Dia. (cm)</u>	<u>Placards</u>
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10. The suitability of a propeller for a certain aircraft/engine combination must be demonstrated within the scope of the type certification of the aircraft.

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. Special Limits:

(a) Life Limits and Mandatory Inspections

- (1) Airworthiness limitations, if any, are specified in Hartzell Manual 480.

The propeller CMACO must evaluate the propeller installation for each new aircraft installation to assess possible change in the airworthiness limitations.

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".

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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 01	21 February 2020	Initial Issue	21 February 2020

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