

INSTALLATION INSTRUCTIONS

SUPPLEMENTAL TYPE CERTIFICATE

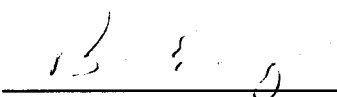
SA02821CH

CESSNA AIRCRAFT MODELS
180, 182, 185, 206, 207 & 210 SERIES

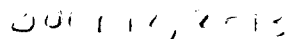
INSTALLATION OF HARTZELL PROPELLERS

(P)HC-()3YF-1RF/F8068(B,K)
(P)HC-()3YF-1RF/F7693DF(B,K)

FAA Approved: _____


Brian E. Meyer
STC ODA administrator
Hartzell ODA-100082-CE

Date: _____



LOG OF REVISIONS

Rev	Rev Date	Pages	Description of Revision	Approved	FAA Approved
IR	10/28/08	11	Initial Release	<i>Bob Minnis</i>	
A	7/6/09	All	Added STC number SA02821CH Incorporated the latest information and updated for STC issuance	<i>Bob Minnis</i>	
B	7/11/13	All	Added optional spinner mounting kit instructions for "C" hubs and A-2295-1 () spinners with A-2476-30 mounting kit (page 4)	<i>Mike Trudeau</i>	

PROPRIETARY INFORMATION

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WARNING.....USE OF THIS STC IS SUBJECT TO FEDERAL LAW 104-264 110 STAT. 3256.
SECTION 403. FEDERAL LAW PROHIBITS USE OF THE CONTENTS OF THIS STC WITHOUT
PERMISSION OR LICENSE FROM THE OWNER, HARTZELL PROPELLER, INC.

1.0 INTRODUCTION

The modification replaces the existing McCauley or Hartzell Propeller with the Hartzell-Propeller, model number (P)HC-()3YF-1RF/F8068(B,K)(-2) or (P)HC-()3YF-1RF/F7693DF(B,K)+2 constant speed propeller.

2.0 INSTALLATION INSTRUCTIONS

COMPATIBILITY OF THE INSTALLATION CHANGE WITH PREVIOUSLY APPROVED MODIFICATION MUST BE DETERMIND BY THE INSTALLER

2.1 Applicable Manuals:

- Hartzell Propeller Owner's Manual, 115N (Metal blade)
- Cessna Aircraft Company Maintenance Manual, Models 180, 182, 185, 206, 207 & 210
- FAA approved Airplane Flight Manual Supplement No. H0801-8

WARNING

Disconnect the ignition harness to the spark plugs before removing the existing propeller & spinner. Reconnect after the installation of the replacement propeller and spinner is completed.

Failure to comply can result in bodily injury when the propeller is rotated during removal or re-installation.

CAUTION

Wrap the blade shanks in several layers of masking or duct tape before removing the spinner dome to prevent damaging the blade and blade paint.

2.2 Removal and Installation

Removal / installation of the propeller spinner and propeller are to be accomplished in accordance with Hartzell Propeller Owner's Manual 115N rev. 12 or later approve revisions and Cessna Aircraft Company Maintenance Manual, Models 180, 182, 185, 206, 207 or 210.

Note: Optionally for ()HC-C3YF-() Propellers and A-2295-1 () Spinners (with A-2476-30 mounting kit), perform the following spinner bulkhead mounting sequence where additional clearance is required between the spinner bulkhead and engine cowling.

- a. Place spacer included in kit under the *head* of each spinner mounting bolt (6 places). This spacer may be factory installed under the nut on the aft side of the propeller hub, in this case, remove spacer and *relocate* to under the *head* of the bolt on the forward side of the propeller hub.
- b. Place two washers between the hub and the spinner bulkhead on each spinner mounting bolt (6 places).
- c. After the bulkhead is in place, put one washer and nut on each spinner mounting bolt and torque to specification in Hartzell Manual 115 ().

Note: If the propeller is equipped with an anti-ice or a de-ice system, follow the manufacturer's instructions for removing the components necessary for propeller removal. See Appendix A for Ice Protection Installation drawing

2.3 Tooling requirements

- Safety wire pliers
- Torque wrench (1/2 inch drive)
- Torque wrench adapter (Hartzell P/N BST-2860)
- 3/4 inch open end wrench

2.4 Consumables

- Quick Dry Stoddard Solvent or Methyl-Ethyl-Ketone (MEK)

2.5 Expendables

- 0.032 Stainless Steel Aircraft Safety Wire
- "O" ring – propeller to engine seal (C-3317-228) or other approved P/N

2.6 Pre-Installation

- Inspection of shipping package
 - Examine the exterior of the shipping container for signs of shipping damage, especially at the box ends around each blade. A hole, tear or crushed appearance at the end of the box (at the propeller tips) may indicate the propeller was dropped during shipment, possibly damaging the blades.

2.7 Uncrating

- Place the propeller on a firm support
- Remove the banding and any external wood bracing from the cardboard shipping container.
- Remove the cardboard from around the hub and blades. Place the propeller on a padded surface that supports the propeller over a large area. Never stand the propeller on a blade tip.
- Remove the plastic dust cover cup from the propeller-mounting flange (if installed).

2.8 Inspection after shipping

- After removing the propeller from the shipping container, examine the propeller components for shipping damage.

2.9 Placard and marking:

- Placard concerning other propellers are obsolete.

2.10 Perform static test, check for function and oil leakage.

- Perform full power static RPM check. Adjust low pitch stop per Section 4 of Hartzell Propeller Owner's Manual 115N. See Appendix B for suggested pitch stop settings.
- Check for proper governor control cable cushion, adjust as required.
- Adjust fuel flow in accordance with Cessna Service Instruction, TCM Engine Setup Procedures or in accordance with STC's that may be installed.
- TCM Service Information SID 97-3C or latest revision may also be used as a reference for fuel set-up.
- After adjustment is complete, final safety checks are made, safety wire installation as required, perform flight test and make all required log book entries.

2.11 Change weight and balance record and equipment list:

Installation

Hartzell Propeller (P)HC-()3YF-1RF/F7693DF(B,K)+2 propeller with spinner:

C3YF Weight = 77 Lb

G3YF Weight = 78 Lb

J3YF Weight = 80.0 Lb

Hartzell-Propeller (P)HC-()3YF-1RF/F8068(B,K)(-2) propeller with spinner:

C3YF Weight = 82 Lb

G3YF Weight = 83 Lb

J3YF Weight = 84.75 Lb

- 2.12 Post-installation dynamic balance of the propeller / engine combination is recommended per Section 61-00-45 Page 6-38 of the Hartzell Owner's Manual 145.
- 2.13 Make the appropriate logbook entries and return aircraft to service with FAA Form 337 referencing STC.

External configuration, mechanical and electrical interfaces, and limitations of the modified engine model remain identical to the currently approved aircraft models.

Note: All Hartzell-Propeller manuals and service information can be ordered through your Hartzell-Propeller distributor or (if prepaid) directly from:

Hartzell Propeller Inc.
One Propeller Place
Piqua, Ohio 45356

Email

techsupport@hartzellprop.com

Telephone

(937) 778-4379

8am - 5pm US Eastern Time

(937) 778-4376

after hours AOG support

Or web site <http://www.hartzellprop.com>

Cessna 180 Series

CESSNA MODEL	ENGINE RPM		PROP MODEL	DIAMETER INCHES		SPINNER
	MAX	MAX CONT		MAX	MIN	
180 (O-470- A)	2600	2600	(P)HC-C3YF-1RF/F8068(B,K)	82	78	A-2295-1P *
180 (O-470-K)	2600	2600	PHC-C3YF-1RF/F8068(B,K)	82	78	
180 (O-470-J)	2550	2550	(P)HC-C3YF-1RF/F8068(B,K)	82	78	
180-A & B (O-470-K)	2600	2600	PHC-C3YF-1RF/F8068(B,K)	82	78	
180-C, D, E ,F,G & H (O-470-L)	2600	2600	PHC-C3YF-1RF/F8068(B,K)	82	78	
180-C, D, E ,F,G & H (O-470-R)	2600	2600	(P)HC-C3YF-1RF/F8068(B,K)	82	78	
180-J (O-470-R&S)	2600	2600	(P)HC-C3YF-1RF/F8068(B,K)	82	78	
180- K (O-470-U)	2400	2400	(P)HC-C3YF-1RF/F8068(B,K)	82	78	

* Hartzell Spinner Part Number C-3535-1P may be used in place of the A-2295-1P on Cessna 180 aircraft.

**Modified (STC's)
C-180**

STC No.	Engine	BHP / RPM's	Prop Model	DIAMETER INCHES	
SA09055SC	O-520	235 / 2700	(P)HC-C3YF-1RF/F8068(B,K)	82	78
SA09530SC	O-470	250 / 2625	(P)HC-C3YF-1RF/F8068(B,K)	82	78
SA09530SC Cessna 180K	O-470	250 / 2625	(P)HC-C3YF-1RF/F8068(B,K)	82	78
SA09018SC	O-520	280 / 2700	(P)HC-G3YF-1RF/F8068(B,K)	82	78
SA01345AT	IO-520	300 / 2850	(P)HC-C3YF-1RF/F8068(B,K)	82	78
SA09132SC	O-550	285 / 2700	(P)HC-G3YF-1RF/F8068(B,K)	82	78

SA09055SC, SA09530SC, and SA09132SC use a D-5732-P spinner assemblies. SA09132SC is also eligible for a C-4582-P. SA01345AT uses a C-3535-1P Spinner assembly.

Cessna 182 Series

CESSNA MODEL	ENGINE RPM		PROP MODEL	DIAMETER INCHES		SPINNER
	MAX	MAX CONT		MAX	MIN	
182 (O-470-L)	2600	2600	PHC-G3YF-1RF/F8068	82	78	D-4798-3P
182A thru 182G (O-470-L)	2600	2600	PHC-G3YF-1RF/F8068	82	78	D-4798-3P (A-G)
182-H Thru 182-N, (O-470-R)	2600	2600	(P)HC-G3YF-1RF/F8068	82	78	D-4798-1P
182- P, F182P (O-470-S)	2600	2600	(P)HC-G3YF-1RF/F8068	82	78	D-4798-1P
182-Q & R, F182Q (O-470-U)	2400	2400	(P)HC-G3YF-1RF/F8068	82	78	D-4798-1P

**Modified (STC's)
C-182**

STC No.	Engine	BHP / RPM's	Prop Model	DIAMETER INCHES	
				MAX	MIN
SA8951SW	O-470	250 / 2600	(P)HC-G3YF-1RF/F8068(B,K)	82	78
SA09530SC	O-470	250 / 2625	(P)HC-G3YF-1RF/F8068(B,K)	82	78
SA01443AT	O-470	252 / 2625	(P)HC-G3YF-1RF/F8068(B,K)	82	78
SA09026SC	O-520	280 / 2700	(P)HC-G3YF-1RF/F8068(B,K)	82	78
SA01302AT	IO-520	300/2850	(P)HC-G3YF-1RF/F8068(B,K)-2	80	78
SA461NW	IO-520	300 / 2850	(P)HC-G3YF-1RF/F8068(B,K)-2	80	78
SA01218AT	IO-550	300 / 2700	(P)HC-G3YF-1RF/F8068(B,K)	82	78
SA09133SC	O-550	285 / 2700	(P)HC-G3YF-1RF/F8068(B,K)	82	78

SA09026SC and SA09133SC are eligible for the D-5732-P or C-4582-P spinner. SA 01302AT and SA01218AT are eligible for the D-5732-P. SA8951SW, SA09530SW, and SA01443AT are eligible for the D-4798-3P (182 – 182G) or D4798-1P (182H – 182Q).

Cessna 185 Series

CESSNA MODEL	ENGINE RPM		PROP MODEL	DIAMETER INCHES		SPINNER
	MAX	MAX CONT		MAX	MIN	
185 thru 185E (IO-470-F)	2625	2625	PHC-C3YF-1RF/F8068(B,K)	82	78	C-3575-P
A185E A185F (IO-520-D)	2850	2700	(P)HC-C3YF-1RF/F8068(B,K)-2	80	78	

**Modified (STC's)
C-185**

STC No.	Engine	BHP / RPM's	Prop Model	DIAMETER INCHES		SPINNER
				MAX	MIN	
SA525NW	IO-520	300/2850	(P)HC-C3YF-1RF/F8068-2(B,K) (P)HC-C3YF-F/F7693DF(B,K) +2	80	78	C-3575-P
SA1522GL	IO-550	300 / 2700	(P)HC-C3YF-1RF/F8068(B,K) (P)HC-C3YF-RF/F7693DF(B,K) +2	82	78	
SA2933SO	IO-550	300 / 2700	(P)HC-C3YF-1RF/F8068(B,K) (P)HC-C3YF-RF/F7693DF(B,K) +2	82	78	

STC SA2933SW is also eligible for the C-3535-1P spinner assembly.

Cessna 206 Series

CESSNA MODEL	ENGINE RPM		PROP MODEL	DIAMETER INCHES		SPINNER
	MAX	MAX CONT		MAX	MIN	
206 U206 U206A	2700	2700	(P)HC-C3YF-1RF/F8068(B,K) (P)HC-C3YF-RF/F7693DF(B,K)+2	82 80	78 78	A-2295-1(P)
U206B Thru U206G (To S/N 4074)	2850	2700	(P)HC-C3YF-1RF/F8068(B,K)-2 (P)HC-C3YF-RF/F7693DF(B,K) +2	80	78	A-2295-1(P)
U206G (from S/N 4075 & on)	2850	2700	(P)HC-J3YF-1RF/F8068(B,K)-2 (P)HC-J3YF-RF/F7693DF(B,K) +2	80	78	C-4582-(1)P
TU206A Thru TU206F (to S/N 2199)	2700	2700	(P)HC-C3YF-1RF/F8068(B,K) (P)HC-C3YF-RF/F7693DF(B,K)+2	82 80	78 78	A-2295-1(P)
TU206F (S/N 2200- 3521)	2700	2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-RF/F7693DF(B,K)+2	82 80	78 78	C-4582-(1)P
TU206G	2700	2600	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-RF/F7693DF(B,K)+2	82 80	78 78	
P206	2700	2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-RF/F7693DF(B,K)+2	82 80	78 78	
P206 A Replaces McCauley C58, C79, 90)	2700	2700	(P)HC-C3YF-1RF/F8068(B,K) (P)HC-C3YF-RF/F7693DF(B,K)+2	82 80	78 78	A-2295-1(P)
P206 A Replaces McCauley C73, C77, 88)	2700	2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-RF/F7693DF(B,K)+2	82 80	78 78	C-4582-(1)P
P206B Thru P206E	2700	2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-RF/F7693DF(B,K)+2	82 80	78 78	

Cessna 206 Series

Continued

CESSNA MODEL	ENGINE RPM		PROP MODEL	DIAMETER INCHES		SPINNER
	MAX	MAX CONT		MAX	MIN	
TP206 A Replaces McCauley C78, C79, C90)	2700	2700	(P)HC-C3YF-1RF/F8068(B,K) (P)HC-C3YF-RF/F7693DF(B,K)+2	82 80	78 78	A-2295-1(P)
TP206 A Replaces McCauley C70, C77, C88)	2700	2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-F/F7693DF(B,K)+2	82 80	78 78	C-4582-(1)P
TP206B Thru TP206E	2700	2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-F/F7693DF(B,K)+2	82 80	78 78	

Modified (STC's) C-206

STC No.	Engine	BHP / RPM's	Prop Model	DIAMETER INCHES		SPINNER
				MAX	MIN	
SA10010SC	IO-550-F	300 / 2700	(P)HC-(C,J)3YF-1RF/F8068(B,K) (P)HC-(C,J)3YF-RF/F7693DF(B,K) +2	82 80	78	A-2295-(1,2)P or C-4582-(1)P
SA00332AT	IO-550-F	300 / 2700	(P)HC-(C,J)3YF-1RF/F8068(B,K) (P)HC-(C,J)3YF-RF/F7693DF(B,K) +2	82 80	78	A-2295-(1,2)P or C-4582-(1)P
SA1482GL	IO-550-F	300 / 2700	(P)HC-(C,J)3YF-1RF/F8068(B,K) (P)HC-(C,J)3YF-RF/F7693DF(B,K) +2	82 80	78	A-2295-(1,2)P or C-4582-(1)P
SA02507AT-D	IO-550-N	310 / 2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-RF/F7693DF(B,K) +2	82 80	78 78	C-4582-(1)P

Cessna 207 Series

CESSNA MODEL	ENGINE RPM		PROP MODEL	DIAMETER INCHES		SPINNER
	MAX	MAX CONT		MAX	MIN	
207	2850	2700	(P)HC-C3YF-1RF/F8068(B,K)-2 (P)HC-C3YF-RF/F7693DF(B,K)	80	78	A-2295-1P
T207	2700	2600	(P)HC-C3YF-1RF/F8068(B,K) (P)HC-C3YF-RF/F7693DF(B,K)+2	82 80	78 78	
207A	2850	2700	(P)HC-C3YF-1RF/F8068(B,K)-2 (P)HC-C3YF-RF/F7693DF(B,K)	80	78	
T207A	2700	2600	(P)HC-C3YF-1RF/F8068(B,K) (P)HC-C3YF-RF/F7693DF(B,K) +2	82 80	78 78	

Modified (STC's) C-207

STC No.	Engine	BHP / RPM's	Prop Model	DIAMETER INCHES	
				MAX	MIN
SA10011SC	IO-550-F	300 / 2700	(P)HC-C3YF-1RF/F8068(B,K) (P)HC-C3YF-RF/F7693DF(B,K) +2	82	78

Spinner P/N "A-2295-1P" must be used with the STC SA10011SC hub installation.

Cessna 210 Series

CESSNA MODEL	ENGINE RPM		PROP MODEL	DIAMETER INCHES		SPINNER
	MAX	MAX CONT		MAX	MIN	
210,210-A, B, C, 210-5(A)	2625	2625	(P)HC-C3YF-1RF/F8068(B,K)	82	78	A-2295-1(P)
210D	2700	2700	(P)HC-C3YF-1RF/F8068(B,K)	82	78	
210-E and 210-F	2700	2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-F/F7693DF(B,K)+2	82 80	78 78	C-4582-1(P)
210-G thru 210-J	2700	2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-F/F7693DF(B,K)+2	82 80	78 78	
210-K and 210-L	2850	2700	(P)HC-J3YF-1RF/F8068(B,K)-2 (P)HC-J3YF-F/F7693DF(B,K)	80	78	
210-M	2850	2700	(P)HC-J3YF-1RF/F8068(B,K)-2 (P)HC-J3YF-F/F7693DF(B,K)	80	78	
210-N	2850	2700	(P)HC-J3YF-1RF/F8068(B,K)-2 (P)HC-J3YF-F/F7693DF(B,K)	80	78	
T210-F	2700	2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-F/F7693DF(B,K)+2	82 80	78 78	
T210-G Thru T210-L	2700	2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-F/F7693DF(B,K) +2	82 80	78 78	
T210-M	2700	2600	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-F/F7693DF(B,K)+2	82 80	78 78	
T210N	2700	2600	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-F/F7693DF(B,K)+2	82 80	78 78	
P210N	2700	2600	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-F/F7693DF(B,K) +2	82 80	78 78	

**Modified (STC's)
 C-210**

STC No.	Engine	BHP / RPM's	Prop Model	DIAMETER INCHES		SPINNER
				MAX	MIN	
SA00274AT	IO-550	300 / 2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-F/F7693DF(B,K) +2	82 80	78 78	C-4582-1(P)
SA03141AT	IO-550	300 / 2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-RF/F7693DF(B,K) +2	82	78	
SA3104SO	IO-550	300 / 2700	(P)HC-J3YF-1RF/F8068(B,K) (P)HC-J3YF-RF/F7693DF(B,K) +2	82	78	
SA09952SC	IO-550	300 / 2700	(P)HC-(C,J)3YF-1RF/F8068(B,K) (P)HC-(C,J)3YF-RF/F7693DF(B,K) +2	82	78	D-5732-P

END

APPENDIX A

Propeller de-ice kits (28 volt) eligible on the following models, and from 3 blade to 3 blade only;

Airframe de-ice kit number 103307

210/T210 s/n 21059503 through 21061141

Airframe de-ice kit number 103308

210/T210 s/n 21061142 through 21064897

P210N – P210-00001 through P210-00834

See Hartzell Propeller Inc Airframe De-ice Drawing number 103576 for installation details.

APPENDIX B

Pitch Stop Settings: Degrees measured at 30" station

Blade Design	Horsepower	RPM	Low	High
F7693DF+2	300	2850	11.0 +/- .2	32.0 +/- 1.0
F7693DF+2	285	2700	12.1 +/- .2	32.0 +/- 1.0
F7693DF+2	300 – 310	2700	12.8 +/- .2	32.0 +/- 1.0
F8068 -2	300	2850	11.3 +/- .2	32.0 +/- 1.0
F8068	235	2700	11.3 +/- .2	32.0 +/- 1.0
F8068	230 - 250	2600	12.3 +/- .2	32.0 +/- 1.0
F8068	250 - 260	2625	12.3 +/- .2	32.0 +/- 1.0
F8068	280 -285	2700	12.3 +/- .2	32.0 +/- 1.0
F8068	230	2400	13.0 +/- .2	32.0 +/- 1.0
F8068	300-310	2700	13.0 +/- .2	32.0 +/- 1.0

If necessary, adjust low pitch stops per Section 4 of Hartzell Propeller Owner's Manual No. 115N. Should low pitch stop need to be adjusted more than 1 degree (3/4 turn), this may be an indication that your engine is not making rated horsepower.

The above data represent **SEA LEVEL** standard day conditions.

CAUTION

Special attention should be made when checking the stop setting for a turbocharged engine. The ability of these engines to maintain rated power to well above 12,000 ft MSL, where the air density is much less, will allow the RPM's to be much higher than that of the sea level propeller setting. It is recommended that propeller adjustment be made at sea level. If this is not practicable, setting the propeller at greater than 3000 ft. density altitudes may affect the engine fuel metering especially in the mid range.