

*Forced  
Aeromotive  
Technologies*

# Instructions for Continued Airworthiness

## FAA-STC SA10232SC

Supercharged O-470-L, -R, -S, and -U Engines Installed On  
Cessna Models 182E, F, G, H, J, K, L, M, N, P, Q and R Aircraft

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NOTICE

This document must be referenced on Block 8 of FAA form 337 and added to the aircraft permanent record as required by 14 CFR Part 91, §91.417(a)(2)(vi) when the reference FAA-STC modification is accomplished on eligible aircraft. This document complies with the requirements of 14 CFR Part 23, §23.1529, in accordance with 14 CFR Part 23, Appendix G.

Model No. \_\_\_\_\_

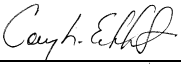

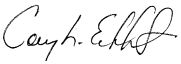



Aircraft Serial No. \_\_\_\_\_

Aircraft Registration No. \_\_\_\_\_

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## LOG OF REVISIONS


Revision Number	Revision Date	Approval	Affected Pages	Description of Revision
IR	03/05/2004		All	New
A	08/06/2004		6 10 11 12 13	5.3, para 2. Alignment marks for boost cutoff closed position changed to match installation instructions, II-182.  Parts list added.
B	01/04/2005		All  5, 8  9  10  13	Cessna 182 Q and R models and O-470-U engines added to header  Cessna 182 Q and R models and O-470-U engines added to section 2 and 15.  O-470-U added to section 15, engine operation  Kit # changed to match PMA Cessna 182 Q and R models and O-470-U engines added to eligibility list O-470-U pulley added Heat shields added  Weldon fuel pump P/Ns A8164A and A8164B added to parts list.
C	06/17/2006		11  13	Editorial correction  Belt added
D	12/21/2008		5 10 13	Multi-groove belt replacement Added item 5, 6, 18. Added item 103, 104.
E	2/27/2013		10-13	Removed kit list.

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<b>C</b>	<b>10/30/2014</b>		<b>7</b>	<b>Oil change, self oiled superchargers</b>
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## **1. INTRODUCTION**

This document outlines the compliance with 14 CFR 23.1529 “Instructions for Continued Airworthiness” for Forced Aeromotive Technologies, Inc. Supplemental Type Certificate (STC) No. SA10232C.

### **NOTICE:**

Section 15, titled “Airworthiness Limitations” is FAA approved and specifies maintenance required under 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved. To remain in compliance with the STC, the aircraft shall be maintained in accordance with these limitations.

This document supplements or supersedes the Cessna “Service Manual”, part numbers D138-1-13, revision 1, D637-1-13, revision 1, and P2006C3-13, change 3, or later approved revisions only in those areas listed herein.

## **2. GENERAL DESCRIPTION**

STC SA10232SC installs supercharged Teledyne Continental Motors Model No. O-470-L, -R, -S, or -U engines in the appropriate Cessna Models 182E, F, G, H, J, K, L, M, N, P, Q and R aircraft. This STC also installs dual electrical fuel pumps, fuel pump circuit breakers and switches, a fuel pressure gage, low fuel pressure and alternator inop annunciators, a cockpit controlled boost cutoff push-pull cable, and various placards.

This STC cannot be incorporated unless STC SA10233SC has been performed on either the appropriate O-470-L, -R, -S, or -U engine which installs the belt-driven Vortech VS-1 supercharger on the engine, alters the inductions system for the supercharger, and installs a boost cutoff control valve.

## **3. CONTROL, OPERATION INFORMATION, SPECIAL PROCEDURES**

Refer to basic Cessna Maintenance or Service Manual, basic Pilot’s Operating Handbook and Airplane Flight Manual Supplement 22001.

## **4. SERVICING INFORMATION**

Refer to basic Cessna Maintenance or Service Manual.

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## **5. MAINTENANCE INSTRUCTIONS**

Refer to basic Cessna 182 Series Maintenance Manual for information other than what is provided below.

### **5.1 REPLACEMENT OF SUPERCHARGER BELT**

1. Loosen the two bolts securing the idler pulley and remove the belt.
2. After placing the new belt on the pulleys, adjust the tension by pressing the idler pulley down against the belt and tightening the adjustment bolts. Tighten the belt until a 9.5 lb. pull on the center of the lower portion of the belt results in a .25 inch of belt deflection.
3. After 2 flight hours re-check belt tension. Tighten the belt until a 8.0 to 9.5 lbs. pull on the center of the lower portion of the belt results in a .25 inch of belt deflection.
4. For aircraft equipped with a 4 groove multi-v belt , after 2 hours, re-tension the belt until a 6.5 to 7.6 lbs. pull on the center of the lower portion of the belt results in .25 inch of belt deflection.

### **5.2 REPLACEMENT OF ALTERNATOR BELT**

1. Loosen the two bolts securing the idler pulley and remove the belt from the supercharger.
2. Remove the SCAT connected to the supercharger airbox and remove the airbox from the supercharger by loosening the clamp and sliding the airbox forward. The carburetor heat control can remain connected.
3. Disconnect the oil line to the supercharger at its connection to the supercharger. Loosen the upper clamp on the supercharger oil drain hose located at the rear of the supercharger and behind the alternator.
4. Remove the two nuts and bolts at the upper rear of the supercharger mount that connect the mount to the L-shaped bracket which is bolted to the left accessory pad.
5. Loosen the one bolt and remove the two metal stop nuts that hold the supercharger to the crankcase.
6. Remove the supercharger by sliding it out from the engine and up, pulling the oil drain from the oil drain hose (the clamp loosened in step 3).
7. Replace the alternator belt with appropriate belts and using procedures outlined in the basic Cessna Maintenance or Service Manual.
8. Replacement of the supercharger is the reverse of the removal procedure.

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## **5.3 ADJUSTMENT OF BOOST CUT-OFF CABLE**

1. Accurate cable adjustment is necessary for proper supercharger performance.
2. To adjust the cable for proper operation, rotate the valve lever upward (the valve is now closing) aligning the marks on the valve shaft and the valve housing so that the mark on the shaft is rotated two mark widths past the mark on the housing. Notice that the lever is slightly above a 90° angle (perpendicular) to the intake duct. Tighten the clamp on the cable housing so that the valve lever will touch the cable housing and stop its upward movement at this point.
3. After making sure that the Boost Cutoff control in the cockpit is in the full forward position, loosen the cable nut and press the lever downward and align the marks on the valve shaft and the shaft housing and tighten the cable nut. The valve lever will be down approximately 45° to the supercharger duct and the butterfly valve will be in the full open position. Check the operation of the Boost Cutoff control.

## **5.4 OIL CHANGE, SELF LUBRICATED SUPERCHARGERS**

Oil should be changed every 100 hours. Oil level should be checked every 50 hours. Self oiling superchargers can be identified by the lack of oil lines going into and out of the supercharger and by the presence of the oil dipstick at the top of the supercharger for checking the oil level.

Checking the oil level:

1. Ensure that the .06" copper washer is located on the dipstick base.
2. Thread the clean dipstick into the unit until it seats.
3. Once the dipstick has seated, remove the dipstick from the unit. Fluid should register in the crosshatched area on the dipstick.
4. **DO NOT OVERFILL.** Drain excess fluid from the unit if it is above the maximum level on the dipstick.

Changing the oil:

Empty the supercharger of oil by opening the drain at the bottom. When completely drained refill the supercharger with 4 ounces of oil. Verify proper oil level by using the dipstick. Do not overfill. **USE ONLY APPROVED OIL SUPPLIED BY**

**Forced Aeromotive Technologies, Inc.**  
7161 S. Peoria Street 18E  
Englewood, CO 80112  
[www.forcedaeromotive.com](http://www.forcedaeromotive.com)

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## **6. TROUBLESHOOTING INSTRUCTIONS**

For troubleshooting guidance contact Forced Aeromotive Technologies, Inc. for assistance.

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[www.forcedaeromotive.com](http://www.forcedaeromotive.com)

## **7. REMOVAL AND REPLACEMENT INFORMATION**

Remove and replace as specified in Forced Aeromotive Installation Drawing II-182, Rev. C, dated 02/24/04 or later FAA approved revision. For replacement parts contact Forced Aeromotive at the following address.

**Forced Aeromotive Technologies, Inc.**  
7161 S. Peoria Street 18E  
Englewood, Co 80112  
[www.forcedaeromotive.com](http://www.forcedaeromotive.com)

## **8. DIAGRAMS**

Refer to basic Cessna 182 Series Maintenance or Service Manual and Forced Aeromotive Installation Drawing II-182, Rev. C, dated 02/24/04 or later FAA approved revision.

## **9. SPECIAL INSPECTION REQUIREMENTS**

Conduct routine inspections on the engines, airframe, and propeller in accordance with appropriate basic Teledyne Continental Motors Engine Maintenance Manual, basic Cessna 182 Series Maintenance Manual, and basic Hartzell Propeller Maintenance Manual except as noted below.

### **9.1 INSPECTION OF SUPERCHARGER AND ALTERNATOR BELTS**

For every 100 flight hours, conduct routine inspections on the alternator and supercharger belts for wear.

### **9.2 INSPECTION OF SUPERCHARGER OIL NOZZLE**



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At each annual inspection, remove the supercharger oil inlet line and remove the oil nozzle. Clean the nozzle with compressed air and replace it and reconnect the oil line.

## **9.3 INSPECTION OF BOOST CUT-OFF CONTROL CABLE RIGGING**

At each annual inspection, ensure the boost cutoff cable and valve are rigged according to the following steps.

1. Fully push in the cockpit boost cutoff control and ensure the aft marks on the valve lever and housing are aligned.
2. Fully pull the cockpit boost cutoff control and ensure the forward marks on the valve lever and housing are aligned.

If marks are not aligned, adjust boost cutoff control cable according to Section 5.3 of this document.

There are no mandatory replacement times on any new components.

## **10. APPLICATION OF SPECIAL TREATMENTS**

None

## **11. DATA**

None

## **12. SPECIAL TOOLS**

None Required

## **13. ADDITIONAL INFORMATION FOR COMMUTER CATEGORY AIRCRAFT**

Not Applicable

## **14. RECOMMENDED OVERHAUL PERIOD**

Engine: 1400 Hours after STC installation, or next required overhaul per Continental Motors O-470 series Overhaul Manual, P/N X30586A, which ever comes first.

Supercharger: 1400 Hours after STC installation

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## 15. AIRWORTHINESS LIMITATIONS

**NOTICE:**

This section is FAA approved and specifies maintenance required under 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved. To remain in compliance with the STC, the aircraft shall be maintained in accordance with these limitations.

There are no changes to the airworthiness limitations of the O-470-L, -R, -S, and -U engines or Cessna 182E, F, G, H, J, K, L, M, N, P, Q and R aircraft from those, which are listed in basic Cessna 182 Series Pilot Operating Handbook, basic Teledyne Continental Engine Maintenance Manual, or Basic Cessna 182 Series Maintenance Manual except for the following:

### ENGINE OPERATION

Manifold Pressure ..... 28 inHg  
Propeller Speed .....(O-470-L, -R, -S engines).....2600 RPM  
.....(O-470-U engines).....2400 RPM

### FUEL

Minimum Fuel Grade ..... 100LL (Blue)

### INSTRUMENT MARKINGS

Manifold Pressure Gage:  
Red-Line..... 28 inHg  
Normal Operating Range (Green-Arc)..... 15-23 inHg

Fuel Pressure Gage:  
Warning (Red-Arc) ..... 0-1.5 psig  
Cautionary (Yellow-Arc) ..... 1.5-4.0 psig  
Normal (Green Arc) ..... 4.0-7.0 psig

There are no changes to the airworthiness limitations of the propeller from those which are listed in the basic Cessna 182 Series Maintenance Manual or basic Hartzell Propeller Maintenance Manual.

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### **16. REVISION**

Each time this ICA is revised or reissued, the revised ICA will be distributed to operators using a Service Letter/Bulletin by Forced Aeromotive Technologies. This revision will include a new Log of Revisions page along with the revised pages. The lower right hand corner of each revised page will reflect the revision letter. That portion of text or an illustration, which has been revised by the addition of, or change in, information is denoted by a solid revision bar located adjacent to the area of change, and placed along the outside margin of a page. Revision bars show only information changed within latest revision.

### **17. ASSISTANCE**

For assistance with ICA issues not addressed herein, contact Forced Aeromotive Technologies at the following address or phone number.

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Englewood, Co 80112

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