

## Airworthiness Directive

### ▶ Federal Register Information

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

Amendment 39-4930; AD 72-03-03 R3

Airworthiness Directives; CESSNA Models 150F, G, H, J, K, L, F150F, G, H, J, K, L, A150K, L, FA150K, L, 172F, G, H, I, K, L, F172F, G, H, K, R172E, F, G, H, FR172E, F, G, H, 177, 177A, B, 177RG, F177RG, 182E, F, G, H, J, K, L, M, N, A182J, K, L, M, N, 205, 205A, 206, P206, P206A, B, C, D, E, and , TP206A, B, C, D, E, U206, U206A, B, C, D, E, and , TU206A, B, C, D, E, 207 and T207, 210D, E, F, G, H, J, K, T210F, G, H, J Airplanes

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#### ▼ Preamble Information

AGENCY: Federal Aviation Administration, DOT

DATES: Effective October 15, 1984.

#### ▼ Regulatory Information

**72-03-03 R3 CESSNA:** Amendment 39-1385 as amended by Amendments 39-1431 and 39-1468 is further amended by Amendment 39-4930. Applies to the following airplanes:

MODELS	SERIAL NUMBERS
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150F, G, H, J, K, L	15061533 thru 15072629
F150F, G, H, J, K, L	F1500001 thru F15000738
A150K, L	A1500001 thru A1500277
FA150K, L	FA1500001 thru FA1500161
172F, G, H, I, K, L	17251823 thru 17259904
F172F, G, H, K	F17200086 thru F17200804
R172E, F, G, H	R1720001 thru R1720494
FR172E, F, G, H	FR17200001 thru FR17200305
177, 177A, B	17700001 thru 17701633
177RG	177RG0001 thru 177RG0212
F177RG	F177RG0001 thru F177RG0042
182E, F, G, H, J, K, L, M, N	18253599 thru 18260698
A182J, K, L, M, N	A18200001 thru A18200136
205, 205A	205-0001 thru 205-0577
206	2060001 thru 2060275
P206, P206A, B, C, D, E, and TP206A, B, C, D, E	P206-0001 thru P206-0647
U206, U206A, B, C, D, E, and TU206A, B, C, D, E	U206-0276 thru U20601673
207 and T207	20700001 thru 20700205
210D, E, F, G, H, J, K	21058221 thru 21059470
T210F, G, H, J	T210-0001 thru T210-0454

Compliance: Required as indicated, unless already accomplished.

To prevent inadvertent retraction of wing flap and to insure positive operation of the electrical wing flap actuators, accomplish the following:

A) On all aircraft with more than 100 hours time in service, within the next 25 hours time in service after the effective date of this AD, unless already accomplished within the previous 75 hours time in service, and thereafter at intervals not to exceed 100 hours time in service, visually inspect the actuator jack screw for condition of lubricant and presence of contamination and scale in accordance with the procedure described in Cessna Service Letter SE70-16, Supplement 1, dated July 10, 1970, or later FAA-approved revision. If any of the conditions prescribed in the inspection criteria are noted, prior to further flight, remove, clean and relubricate the actuator jack screw in accordance with Cessna Service Letter SE70-16, dated June 12, 1970, or later FAA-approved revision, or any equivalent procedure approved by Manager, Wichita Aircraft Certification Office, FAA, Central Region.

B) On all aircraft with more than 500 hours time in service, within the next 25 hours time in service after the effective date of this AD, unless already accomplished within the previous 75 hours time in service, remove, clean and relubricate the actuator jack screw in accordance with the procedure described in Cessna Service Letter SE70-16, dated June 12, 1970, or later FAA-approved revision, or any equivalent procedure approved by Manager, Wichita Aircraft Certification Office, FAA, Central Region.

C) In addition, on all aircraft at each annual inspection, or at intervals not to exceed 12 months, whichever occurs first, remove, clean and relubricate the actuator jack screw in accordance with the procedure described in Cessna Service Letter SE70-16, dated June 12, 1970, or later FAA-approved revision or any equivalent procedure approved by Manager, Wichita Aircraft Certification Office, FAA, Central Region.

1) NOTE: Compliance with paragraphs A, B, and C commenced on all applicable airplanes, except the Models A150K, and A150L, on July 28, 1970, and commenced on Models A150K and A150L, airplanes on November 10, 1970.

2) NOTE: Cessna Service Letter SE70-16, Supplement 2, dated August 28, 1970, specified some brand names of Molybdenum Disulfide Grease.

D) On or before January 1, 1973, modify the applicable aircraft in accordance with Cessna Service Letter SE72-2 dated January 21, 1972, and Cessna Service Letter SE72-2, Supplement 1, dated March 24, 1972, or alternatively Cessna Service Letter SE72-17 (Revision 1) dated January 12, 1973.

NOTE: The snubbers installed on certain airplanes per Cessna Service Letter SE72-2, Supplement 1, are not required with actuators specified by Cessna Service Letter SE72-17 (Revision 1).

E) Upon compliance with Paragraph D, the requirements of Paragraphs A, B, and C are no longer applicable.

F) An equivalent method of compliance with the AD may be used if approved by Manager, Wichita Aircraft Certification Office, Room 100, 1801 Airport Road, Wichita, Kansas 67209, telephone (316) 946-4400.

NOTE: The FAA recommends that the procedure for maintaining the flap system as specified in applicable Cessna Service Manuals be followed.

Amendment 39-1385 supersedes AD 70-15-16 (Amendments 39-1050 and 39-1104).

Amendment 39-1385 became effective February 1, 1972.

Amendment 39-1431 became effective April 13, 1972.

Amendment 39-1468 became effective June 27, 1972.

This Amendment 39-4930 becomes effective October 15, 1984.

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▼ **Comments**

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## Airworthiness Directive

### ▶ Federal Register Information

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

Docket No. 86-CE-71-AD; Amendment 39-6669; AD 87-20-03 R2

Airworthiness Directives; Cessna Model 150, A150, 152, A152, 170, 172, P172D, R172, 175, 177, 180, 182, R182, TR182, T182, 185, A185, 188, A188, 190, 195, 206, P206, U206, TP206, TU206, 207, T207, 210, T210, P210, 205, 336, 337, T337, P337, T303, F150, FA150, FRA150, FA152, F152, FP172, F172, FR172, F177RG, F182, FR182, F337, FP337 Series Airplanes

**PDF Copy (If Available):**

#### ▼ Preamble Information

AGENCY: Federal Aviation Administration, DOT

DATES: Effective September 24, 1990.

#### ▼ Regulatory Information

**87-20-03 R2 CESSNA:** Amendment 39-5729, as revised by Amendment 39-5863, is further revised by Amendment 39-6669. Docket No. 86-CE-71-AD.

Applicability: To the following model airplanes, certificated in any category.

<b>Models</b>	<b>Serial Numbers</b>
150A, 150B, 150C, 150D, 150E, 150F, 150G, 150H, 150J, 150K, 150L, 150M	15059019 thru 15079405
A150K, A150L, A150M	A1500001 thru A1500734
152, A152	All
170, 170A, 170B	18000 through 27169
172, 172A, 172B, 172C, 172D, 172E, 172F, 172G, 172H, 172I, 172K, 172L, 172M, 172N, 172P, 172Q	All
P172D	P17257120 thru P17257188
R172E, R172F, R172G, R172H, R172J	All
R172K	R1722000 thru R1723454
172RG	172RG0001 thru 172RG1191
175, 175A	55001 thru 56777
175B, 175C	17556778 thru 17557119
177, 177A, 177B, 177RG	All
180, 180A	30000 thru 32999
180A, 180B, 180C	50000 thru 50911
180D, 180E, 180F, 180G, 180H, 180J, 180K	18050912 thru 18053203
182, 182A, 182B, 182C, 182D, 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M, 182N, 182P, 182Q, 182R, T182, R182, TR182	All
185, 185A, 185B, 185C, 185D, 185E, A185E, A185F	All
188, 188A, A188, A188A, 188B, A188B, T188C	All
190, 195, 195A, 195B	7001 thru 7999, and 16000 thru 16183
206, U206, U206A, U206B, U206C, U206D, U206E, U206F, U206G, TU206A, TU206B, TU206C, TU206D, TU206E, TU206F, TU206G	All
P206, P206A, P206B, P206C, P206D, TP206A, TP206B, TP206C, TP206D	P206-0001 thru P206-0603, &
P206E, TP206E	P20600604 thru P20600647
207, T207, 207A, T207A	All
210, 210A, 210B, 210C, 210D, 210E, 210F, 210G, 210H, 210J, 210K, 210L, 210M, 210N, P210N, T210F, T210G, T210H, T210J, T210K, T210L, T210M, T210N, 210R, T210R, P210R	All
210-5 (205), 210-5A (205A)	205-0001 thru 205-0577
336	336-0001 thru 336-0195

337, 337A, 337B, 337C, 337D, 337E, 337F, 337G, 337H, T337B, T337C, T337D, T337E, T337F, T337G, T337H, P337H, T337H-SP	All
T303	All
F150G, F150H, F150J, F150K, F150L, F150M, FA150K, FA150L, FRA150L, FRA150M	All
FA152, F152	All
FP172	FP172-0001 thru FP172-0003
F172F, F172G, F172H, F172K, F172L, F172M, F172N, F172P, FR172E, FR172F, FR172G, FR172H, FR172J, FR172K	All
F177RG	All
F182P, F182Q	All
FR182	All
F337E, F337F, F337G, F337H	All
FP337	All

Compliance: Required as follows, unless already accomplished per AD 87-20-03 R1, Amendment 39-5863.

I. For airplanes operating for hire:

(A) For airplanes having less than 1,000 hours time-in-service (TIS) on the effective date of this AD, accomplish the AD requirements prior to the accumulation of 1,100 hours TIS;

(B) For airplanes having 1,000 or more hours TIS on the effective date of this AD, accomplish the AD requirements within the next 100 hours TIS;

(C) Following the actions of (A) or (B) above, repeat the inspection requirements of this AD at each 100 hours TIS. These inspections can be accomplished at the next scheduled inspection or the next 100 hours, whichever is later.

II. For airplanes operating under FAR Part 91 (not for hire):

(A) For airplanes having less than 1,000 hours TIS on the effective date of this AD, accomplish the AD requirements at the next annual inspection after the accumulation of 1,000 hours TIS;

(B) For airplanes having 1,000 or more hours TIS on the effective date of this AD, accomplish the AD requirements at the next annual inspection;

(C) Following the actions of (A) or (B) above, repeat the AD requirements at each annual inspection thereafter. To assure proper engagement of the seat locking mechanism and to preclude inadvertent seat slippage, accomplish the following on each pilot and copilot seat and all associated seat rails:

NOTE 1: Paragraph (a) of this AD is essentially unchanged from AD 87-20-03 R1, Amendment 39-5863 and is reprinted here for the convenience of the reader.

(a) In accordance with the appropriate compliance time requirement above, accomplish the following:

(1) Measure each hole in the seat track(s) for excessive wear. When checking these holes for wear, an allowance of 0.020 inches below the edge of the normal surface is permitted for the required measurement.

(i) If the wear dimension across any hole exceeds 0.36 inches but does not exceed 0.42 inches (see Figure 1), continue to measure each hole every 100 hours TIS for excessive wear.

(ii) If the wear dimension across any hole exceeds 0.42 inches, prior to further flight, replace the seat track.

(2) Visually inspect the seat rail holes for dirt and any debris, which may preclude engagement of the seat pin(s). Prior to further flight, remove any such material.

(3) Lift up on the forward edge of each seat to eliminate all vertical play. In this position, measure the depth of engagement of each seat pin. If the engagement of any pin is less than 0.15 inches (see Figure 2), prior to further flight, replace or repair necessary components to achieve a seat pin engagement of 0.15 inches or greater. If the track is worn, this dimension is measured from the worn surface, not the manufactured surface.

(4) Visually inspect seat rollers for flat spots. Assure all rollers and washers, which are meant to rotate, turn freely on their axle bolts (or bushings if installed). Prior to further flight, replace rollers having flat spots and any worn washers. If there is any binding between the bores of the rollers, washers, and axle bolts (or bushings if installed), prior to further flight, remove, clean, and reinstall these parts.

NOTE 2: Do not lubricate rollers, washers, axle bolts or bushings as the lubricant will attract dust and other particles which can cause binding.

(5) Measure the wall thicknesses of the roller housing and the tang (see Figure 2). If the tang thickness has worn to less than 1/2 the housing thickness, prior to further flight, replace the roller housing.

(6) Check the spring(s) that keep the lock pin(s) in position in the track holes for positive engagement action. Prior to further flight, replace any spring which does not provide positive engagement.

(7) Visually inspect the seat tracks for cracks in accordance with Cessna Single Engine Service Information Letter SE83-6, dated March 11, 1983. Prior to further flight, replace any seat rail exceeding the crack criteria as specified in SE83-6 with an airworthy rail.

(b) The options listed in AD 87-20-03 R1, Amendment 39-5863, for the temporary operation of the airplane are no longer an acceptable means of compliance with the requirements of this AD, but may be retained if desired.



(c) Airplanes may be flown in accordance with FAR 21.197 to a location where this AD may be accomplished.

(d) Any parts replaced per this AD are exempt from the inspections required herein until such parts have attained 1,000 hours TIS.

(e) An alternate method of compliance or adjustment of the initial or repetitive compliance times, which provides an equivalent level of safety, may be approved by the Manager, Wichita Aircraft Certification Office, Federal Aviation Administration, 1801 Airport Road, Room 100, Wichita, Kansas 67209.

NOTE 3: The request should be forwarded through an FAA Maintenance Inspector, who may add comments and then send it to the Manager, Wichita Aircraft Certification Office.

All persons affected by this directive may obtain copies of the document referred to herein upon request to the Cessna Aircraft Company, Customer Service, P.O. Box 1521, Wichita, Kansas 67201; or may examine this document at the Federal Aviation Administration, Office of the Assistant Chief Counsel, Room 1558, 601 E. 12th Street, Kansas City, Missouri 64106.

Airworthiness Directive 87-20-03 R2 revises AD 87-20-03 R1 (Amendment 39-5863) which revised AD 87-20-03 (Amendment 39-5729).

This amendment (39-6669, AD 87-20-03 R2) becomes effective on September 24, 1990.

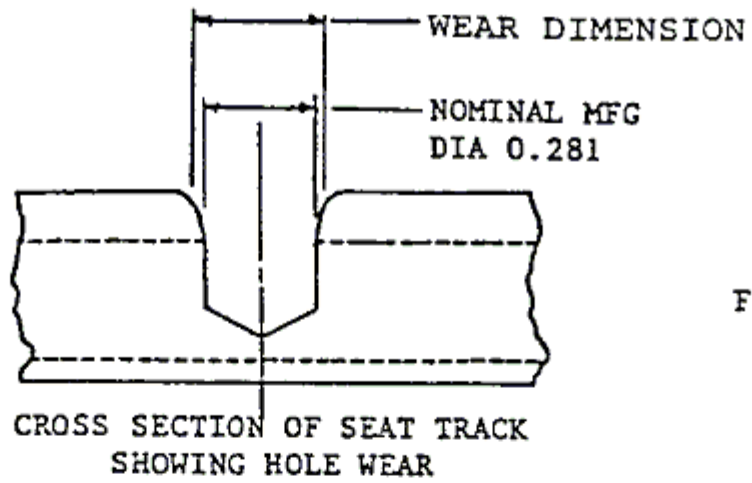


FIGURE 1

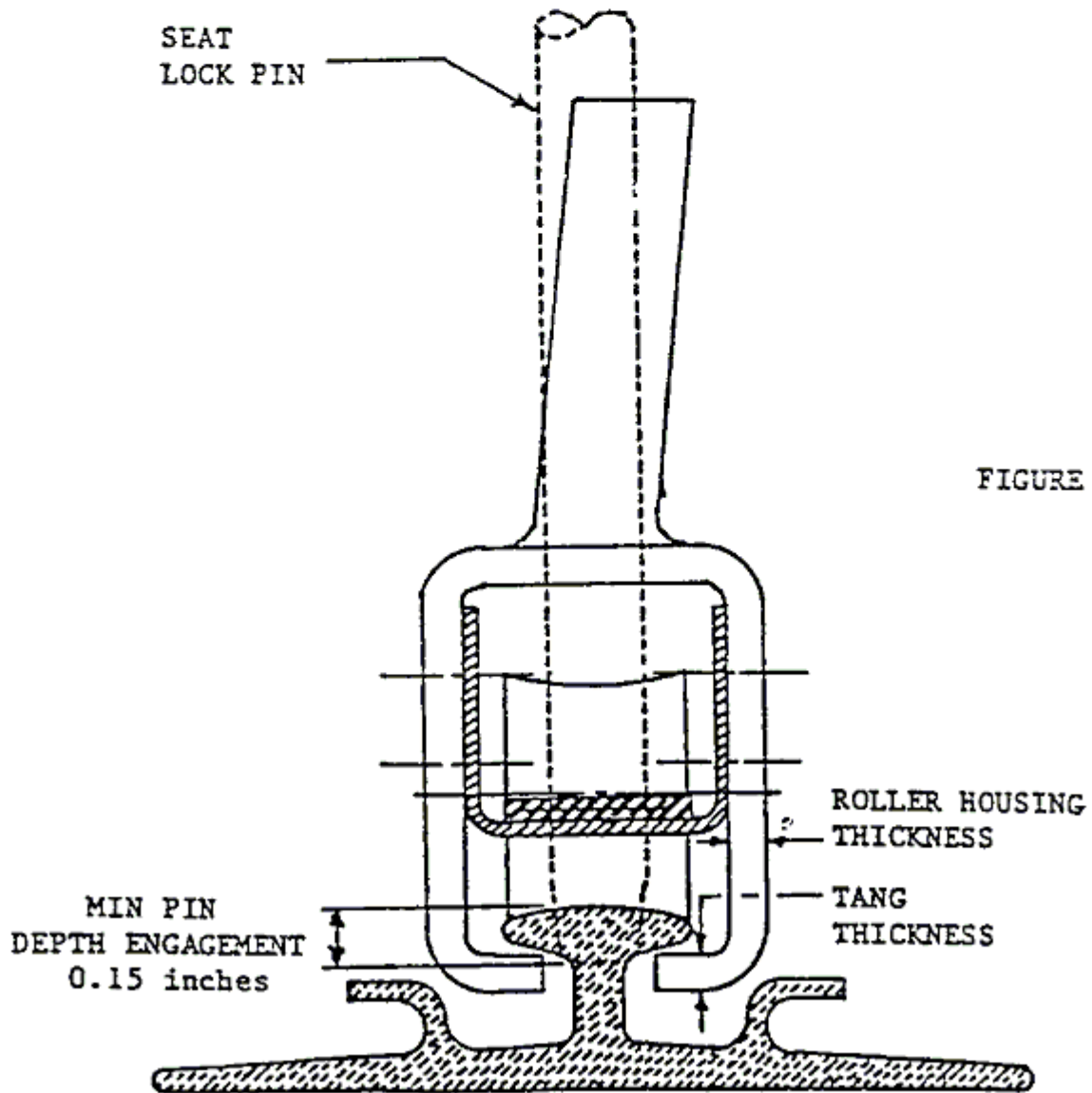


FIGURE 2

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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2008-0052; Directorate Identifier 2008-NE-01-AD; Amendment 39-15672; AD 2008-19-05]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Engine Components, Inc. (ECi) Reciprocating Engine Cylinder Assemblies**

**AGENCY:** Federal Aviation Administration (FAA), Department of Transportation (DOT).

**ACTION:** Final rule.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for Lycoming Engines (formerly Textron Lycoming) models 320, 360, and 540 series, "Parallel Valve" reciprocating engines, with certain Engine Components, Inc. (ECi) cylinder assemblies, part number (P/N) AEL65102 series "Titan", installed. This AD requires initial and repetitive visual inspections and compression tests to detect cracks at the head-to-barrel interface, replacement of cylinder assemblies found cracked, and replacement of certain cylinder assemblies, at new reduced times-in-service. This AD results from reports of 45 failures with head separations of ECi cylinder assemblies. We are issuing this AD to prevent loss of engine power due to cracks at the head-to-barrel interface in the cylinder assemblies and possible engine failure caused by separation of a cylinder head, which could result in loss of control of the aircraft.

**DATES:** This AD becomes effective October 20, 2008.

**ADDRESSES:** You can get the service information identified in this AD from Engine Components, Inc., 9503 Middlex, San Antonio, TX 78217; Phone (800) 324-2359; fax (210) 820-8102; <http://www.eci2fly.com>.

The Docket Operations office is located at Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590-0001.

**FOR FURTHER INFORMATION CONTACT:** Peter W. Hakala, Aerospace Engineer, Special Certification Office, FAA, Rotorcraft Directorate, 2601 Meacham Blvd., Fort Worth, TX 76193; e-mail: [peter.w.hakala@faa.gov](mailto:peter.w.hakala@faa.gov); telephone (817) 222-5145; fax (817) 222-5785.

**SUPPLEMENTARY INFORMATION:** The FAA proposed to amend 14 CFR part 39 with a proposed AD. The proposed AD applies to Lycoming Engines (formerly Textron Lycoming) models 320, 360, and 540 series, "Parallel Valve" reciprocating engines, with certain Engine Components Inc. (ECi) cylinder assemblies, part number (P/N) AEL65102 series "Titan", installed. We published the proposed AD in the Federal Register on May 19, 2008 (73 FR 28756). That action proposed to require initial and repetitive visual inspections and compression tests to detect cracks at the head-to-barrel interface, replacement of cylinder assemblies found cracked, and replacement of certain cylinder assemblies, at new reduced times-in-service.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Operations office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Operations office (telephone (800) 647-5527) is provided in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

### **Comments**

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

### **Request To Reduce the Economic Impact**

One commenter, the Aircraft Owners and Pilots Association, states that the 50-hour inspection interval should be increased to 100 hours, to reduce the economic impact of the cylinder assembly inspections. Another commenter, a private citizen, states that the cost of the 50-hour inspections was not considered in the NPRM economic estimate.

We do not agree. We selected the 50-hour inspection interval so that aluminum cylinder cracks could be detected before a head separation occurred. By removing leaking cylinder heads discovered during the periodic 50-hour inspections, the probability of having an in flight head separation is greatly reduced. Also, the 50-hour inspection interval coincides with the scheduled maintenance for normal engine oil and filter changes. Also, the costs of compliance in the NPRM did include costs for the additional cylinder assembly inspections. We did not change the AD.

### **Retiring Cylinder Assemblies at Time-Between-Overhaul Is Too Expensive**

One commenter, a private citizen, states that it is too expensive to retire all the subject cylinder assemblies at the normal overhaul time. Another commenter, a private citizen, states that it is unreasonable for general aviation airplane owners, in Part 91 use, to be required to retire cylinder assemblies at the time-between-overhaul or at normal engine overhaul time.

We do not agree. The subject cylinder assemblies can be safely run to the normal TBO with the required 50-hour inspections, with compression tests. Because of metallurgical analysis results of the fatigue cracks in the aluminum alloy cylinder heads, and also the history of the head separation hours-in-service, the probability of a head separation is greater with the subject cylinder assemblies running past the time-between-overhaul time. Therefore, we do not consider the cylinder assemblies to be airworthy past the normal engine overhaul time. We did not change the AD.

## **Cylinder Assembly Serial Number Range Is Different in the ECI Mandatory Service Bulletin**

One commenter, ECI, states that the cylinder assembly serial number range in the proposed AD for the Group "B" cylinders is slightly different from the serial numbers listed in the ECI Mandatory service Bulletin No. 08-1. The commenter states that several additional cylinder serial numbers should be included in Group "B".

We do not agree. We researched the cylinder assembly serial numbers in the proposed AD and they are correct. The Group "A" cylinder assemblies go up to serial number 35171-22. The Group "B" cylinder assemblies start at serial number 35239-01. We discussed the serial number comment with ECI. They agree that the serial number range in the proposed AD is correct. ECI states that they have revised the serial numbers in ECI. Mandatory Service Bulletin (MSB) No. 08-1 to match the serial numbers in the AD, and issued MSB No. 08-1, Revision 3, dated August 19, 2008. We now reference this MSB Revision 3 in the AD.

### **Conclusion**

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD as proposed. We have determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

### **Costs of Compliance**

We estimate that this AD will affect 13,000 ECI cylinder assemblies installed in aircraft of U.S. registry. The visual inspection and compression tests will take about 4 work-hours for each engine. An individual cylinder replacement will require \$1,100 for parts and 6 work-hours. Lycoming engines with a set of 4 ECI cylinders will require 12 work-hours for the cylinder replacement. Lycoming engines with a set of 6 ECI cylinders will require 16 work-hours for the cylinder replacement. We estimate 18 percent of the affected population of cylinders will be replaced. We estimate the total cost of the AD to U.S. operators to be \$7,952,000. Our estimate is exclusive of any possible warranty coverage.

### **Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in subtitle VII, part A, subpart III, section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

(1) Is not a "significant regulatory action" under Executive Order 12866;

(2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary at the address listed under ADDRESSES.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Safety.

### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends 14 CFR part 39 as follows:

### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive:



**2008-19-05 Engine Components, Inc. (ECi):** Amendment 39-15672. Docket No. FAA-2008-0052; Directorate Identifier 2008-NE-01-AD.

**Effective Date**

(a) This airworthiness directive (AD) becomes effective October 20, 2008.

**Affected ADs**

(b) None.

**Applicability**

(c) This AD applies to the Lycoming Engines (formerly Textron Lycoming) models 320, 360, and 540 series, "Parallel Valve", reciprocating engines listed in Table 1 of this AD, with ECi cylinder assembly, part number (P/N) AEL65102 series "Titan", and with cylinder head, P/N AEL85099, installed.

(1) The applicable cylinder assembly serial numbers (SNs) are SN 1138-02 through SN 35171-22, (referred to in this AD as Group "A" cylinder assemblies); and

(2) SN 35239-01 through SN 37016-28 (referred to in this AD as Group "B" cylinder assemblies).

(3) Note that the cylinder assembly P/N is at the crankcase end of the cylinder assembly, and might be difficult to see. As a guide in determining if your cylinder assemblies are affected, all affected cylinder assemblies have cylinder head P/N AEL85099. The cylinder head P/N is at the top of the cylinder head, near the intake and exhaust valve springs, and is easier to locate than the cylinder assembly P/N.

(4) Note that the set of numbers appearing on the cylinder, above and to the left of the SN, in the form of "123456" is not used for determining applicability.

**Table 1—Engine Models**

<b>Cylinder Assembly Part Number:</b>	<b>Installed on Engine Models:</b>
AEL65102-NST04	<p><b>O-320-A1B, A2B, A2C, A2D, A3A, A3B, B2B, B2C, B2D, B2E, B3B, B3C, C2B, C2C, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H</b></p> <p><b>IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B</b></p> <p><b>AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B</b></p> <p><b>AIO-320-A1A, A1B, A2A, A2B, B1B, C1B</b></p> <p><b>LIO-320-B1A</b></p>



AEL65102-NST05	<b>IO-320-C1A, C1B, C1F, F1A</b> <b>LIO-320-C1A</b>
AEL65102-NST06	<b>O-320-A1A, A2A, A2B, A2C, A3A, A3B, A3C, E1A, E1B, E2A, E2C, (also, an O-320 model with no suffix)</b> <b>IO-320-A1A, A2A</b>
AEL65102-NST07	<b>IO-320- B1A, B1B</b> <b>LIO-320- B1A</b>
AEL65102-NST08	<b>O-320-B1A, B1B, B2A, B2B, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C3A, C3B, C3C, D1A, D1B, D2A, D2B, D2C</b>
AEL65102-NST10	<b>O-360-A1A, A1C, A1D, A2A, A2E, A3A, A3D, A4A, B1A, B1B, B2A, B2B, C1A, C1C, C1G, C2A, C2B, C2C, C2D, D1A, D2A, D2B</b> <b>IO-360-B1A, B1B, B1C</b> <b>HO-360-A1A, B1A, B1B</b> <b>HIO-360-B1A, B1B</b> <b>AEIO-360-B1B</b> <b>O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, A4A5, A4B5, A4C5, A4D5, B1A5, B1B5, B1D5, B2A5, B2B5, B2C5, B2C5D, B4A5, B4B5, B4B5D, D1A5, E1A, E4A5, E4B5, E4C5, F1A5, F1B5, G1A5, G2A5</b> <b>IO-540-C1B5, C1C5, C2C, C4B5, C4B5D, C4C5, D4A5, D4B5, N1A5, N1A5D</b>
AEL65102-NST12	<b>O-360- A1A, A1AD, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A1P, A2A, A2D, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A4P, A5AD, B1A, B2C, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, C4F, C4P, D2A, F1A6, G1A6</b> <b>HO-360 –C1A</b> <b>LO-360-A1G6D, A1H6</b> <b>HIO-360-B1A, B1B, G1A</b> <b>LTO-360-A1A6D</b> <b>TO-360-A1A6D</b> <b>IO-360-B1B, B1BD, B1D, B1E, B1F, B1F6, B1G6, B2E, B2F, B2F6, B4A, E1A, L2A, M1A, M1B</b> <b>AEIO-360-B1B, B1D, B1E, B1F, B1F6, B1G6, B1H, B2F, B2F6, B4A, H1A, H1B</b> <b>O-540-A4D5, B2B5, B2C5, B2C5D, B4B5, B4B5D, E4A5, E4B5, E4B5D, E4C5, G1A5, G1A5D, G2A5, H1A5, H1A5D, H1B5, H1B5D, H2A5, H2A5D, H2B5D</b> <b>IO-540-C4B5, C4B5D, C4D5, C4D5D, D4A5, D4B5, D4C5, N1A5, N1A5D, T4A5D, T4B5, T4B5D, T4C5D, V4A5, V4A5D</b> <b>AEIO-540-D4A5, D4B5, D4C5, D4D5</b>

AEL65102-NST26	<b>IO-540-J4A5, R1A5</b> <b>TIO-540-C1A, E1A, G1A, H1A</b>
AEL65102-NST38	<b>IO-360-F1A</b> <b>TIO-540-AA1AD, AB1AD, AB1BD, AF1A, AG1A, AK1A, C1A, C1AD, K1AD</b> <b>LTIO-540-K1AD</b>
AEL65102-NST43	<b>O-360-J2A</b> <b>O-540-F1B5, J1A5D, J1B5D, J1C5D, J1D5D, J2A5D, J2B5D, J2C5D, J2D5D, J3A5, J3A5D, J3C5D</b> <b>IO-540-AB1A5, W1A5, W1A5D, W3A5D</b>
AEL65102-NST44	<b>O-540-L3C5D</b>

For information, the Lycoming Engines (formerly Textron Lycoming) models 320, 360, and 540 series, "Parallel Valve", reciprocating engines are installed on, but not limited to, the aircraft listed in the following Table 2:

**Table 2—Engines Installed On, But Not Limited To**

<b>Engine Models:</b>	<b>Installed on , But Not Limited To:</b>
O-320-A1A	Piper Aircraft: Tri-Pacer (PA-22 “150”, PA-22S “150”), Apache (PA-23), Pawnee (PA-25) Doyn Aircraft: Doyn-Cessna (170, 170A, 170B) Mooney Aircraft: Mark (20A) Dinfia: Ranquel (1A-46) Simmering-Graz Pauker: Flamingo (SGP-M-222) Aviamilano: Scricciolo (P-19) Vos Helicopter Co.: Spring Bok
O-320-A1B	Piper Aircraft: Tri-Pacer (PA-22 “150”, PA-22S “150”), Apache (PA-23) Doyn Aircraft: Doyn-Cessna (170, 170A, 170B) S.O.C.A.T.A.: Horizon (Gardan)
O-320-A2A	Piper Aircraft: Tri-Pacer (PA-22 “150”, PA-22S “150”), Agriculture (PA-18A “150”) Super Cub (PA -18 “150”), Caribbean (PA-22 “150”), Pawnee (PA-25) Intermountain Mfg. Co.: Call Air Texas (A-5, A-5T) Lake Aircraft: Colonial (C-1) Rawdon Bros.: Rawdon (T-1, T-15, T-15D) Shinn Engineering: Shinn (2150-A) Dinfia: Ranquel (1A)46) Neiva: (1PD-5802) Sud: Gardan-Horizon (GY-80)

LaVerda: Falco (F8L Series II, America)

Malmo: Vipar (MF1-10)

Kingsford Smith: Autocrat (SCRM-153)

Aero Commander: 100

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O-320-A2B	Piper Aircraft: Tri-Pacer (PA-22 “150”, PA-22S “150”), Cherokee (PA-28 “150”), Super Cub (PA -18 “150”) Champion Aircraft: Challenger (7GCA, 7GCB, 7KC), Citabria (7GCAA, 7GCRC), Agriculture (7GCBA) Beagle: Pup (150) Artic: Interstate S1B2 Robinson: R-22 Varga: Kachina 2150A
O-320-A2C	Robinson: R-22 Cicare: Cicare AG Bellanca Aircraft: Citabria 150 (7GCAA), Citabria 150S (7GCBC)
O-320-A2D	Piper Aircraft: Apache (PA-23)
O-320-A3A	Doyn Aircraft: Doyn-Cessna (170, 170A, 170B) Corben-Fettes: Globe Special (Globe GC-1B)
O-320-A3B	Piper Aircraft: Apache (PA-23) Doyn Aircraft: Doyn-Cessna (170, 170A, 170B) Teal II: TSC (1A2)
O-320-B1A	Piper Aircraft: Apache (PA-23 “160”) Doyn Aircraft: Doyn-Cessna (170, 170A, 170B) Malmo: Vipar (MF1-10)
O-320-B1B	Piper Aircraft: Apache (PA-23 “160”) Doyn Aircraft: Doyn-Cessna (170, 170A, 170B)
O-320-B2A	Piper Aircraft: Tri-Pacer (PA-22 “160”, PA-22S “160”)
O-320-B2B	Piper Aircraft: Tri-Pacer (PA-22 “160”, PA-22S “160”) Beagle: Airedale (D5-160) Fuji-Heavy Industries: Fuji (F-200) Uirapuru: Aerotec 122
O-320-B2C	Robinson: R-22
O-320-B2D	Maule: MX-7-160
O-320-B2E	Lycon
O-320-B3A	Piper Aircraft: Apache (PA-23 “160”) Doyn Aircraft: Doyn-Cessna (170, 170A, 170B)

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O-320-B3B	Piper Aircraft: Apache (PA-23 “160”) Doyn Aircraft: Doyn-Cessna (170, 170A, 170B) Sud: Gardan (GY80-160)
O-320-C1A	Piper Aircraft: Apache (PA-23 “160”) Riley Aircraft: Rayjay (Apache)
O-320-C1B	Piper Aircraft: Apache (PA-23 “160”)
O-320-C3A	Piper Aircraft: Apache (PA-23 “160”)
O-320-C3B	Piper Aircraft: Apache (PA-23 “160”)
O-320-D1A	Sud: Gardan (GY-80) Gyroflug: Speed Cancard Grob: G115
O-320-D1F	Slingsby: T67 Firefly
O-320-D2A	Piper Aircraft: Cherokee (PA-28S “160”) Robin: Major (DR400-140B), Chevalier (DR-360), (R-3140) S.O.C.A.T.A.: Tampico TB9 Slingsby: T67C Firefly Daetwyler: MD-3-160 Nash Aircraft Ltd.: Petrel Aviolight: P66D Delta General Avia: Pinguino
O-320-D2B	Beech Aircraft: Musketeer (M-23) Piper Aircraft: Cherokee (PA-28 “160”)
O-320-D2J	Cessna Aircraft: Skyhawk 172
O-320-D3G	Piper Aircraft: Warrior II, Cadet (PA-28-161)
O-320-E1A	Grob: G115
O-320-E1C	M.B.B. (Messerschmitt-Boelkow-Blohm): Monsun (BO-209-B)
O-320-E1F	M.B.B.: Monsun (BO-209-B)
O-320-E2A	Piper Aircraft: Cherokee (PA-28 “140”, PA-28 “150”) Robin: Major (DR-340), Sitar, Bagheera (GY-100-135) S.O.C.A.T.A.: Super Rallye (MS-886), Rallye Commodore (MS-892) Siai-Marchetti: (S-202) F.F.A.: Bravo (AS-202/15) Partenavia: Oscar (P66B), Bucker (131 APM) Aeromot: Paulistina P-56 Pezetel: Koliber 150

O-320-E2C	Beech Aircraft: Musketeer III (M -23III) M.B.B.: Monsun (BO-209-B)
O-320-E2D	Cessna Aircraft: Cardinal (172-I, 177)
O-320-E2F	M.B.B.: Monsun (BO-209-B), Wassmer Pacific (WA-51)
O-320-E2G	American Aviation Corp.: Traveler
O-320-E3D	Piper Aircraft: Cherokee (140) Beech Aircraft: Sport
IO-320-B2A	Piper Aircraft: Twin Comanche (PA-30)
IO-320-B1C	Hi. Shear: Wing
IO-320-B1D	Ted Smith Aircraft: Aerostar
IO-320-C1A	Piper Aircraft: Twin Comanche (PA-30 Turbo)
IO-320-D1A	M.B.B.: Monsun (BO-209-C)
IO-320-D1B	M.B.B.: Monsun (BO-209-C)
IO-320-E1A	M.B.B.: Monsun (BO-209-C)
IO-320-E1B	Bellanca Aircraft
IO-320-E2A	Champion Aircraft: Citabria
IO-320-E2B	Bellanca Aircraft
IO-320-F1A	CAAR Engineering: Carr Midget
LIO-320-B1A	Piper Aircraft: Twin Comanche (PA-39)
LIO-320-C1A	Piper Aircraft: Twin Comanche (PA-39)
AIO-320-B1B	M.B.B.: Monsun (BO-209-C)
AEIO-320-D1B	Slingsby: T67M Firefly
AEIO-320-D2B	Hindustan Aeronautics Ltd.: HT-2
AEIO-320-E1A	Bellanca Aircraft Champion Aircraft
AEIO-320-E1B	Bellanca Aircraft Champion Aircraft: Decathlon (8KCAB-CS)
AEIO-320-E2B	Bellanca Aircraft Champion Aircraft: Decathlon (8KCAB)
O-320-A1A	Riley Aircraft: Riley Twin
O-360-A1A	Beech Aircraft: Travel Air (95, B-95) Piper Aircraft: Comanche (PA-24) Intermountain Mfg. Co.: Call Air (A-6) Lake Aircraft: Colonial (C-2, LA -4, 4A or 4P) Doyn Aircraft: Doyn-Cessna (170B, 172, 172A, 172B)

Mooney Aircraft: Mark “20B” (M-20B)  
 Earl Horton: Pawnee (Piper PA-25)  
 Dinfia: Ranquel (1A-51)  
 Neiva: (1PD-5901)  
 Regente: (N-591)  
 Wassmer: Super 4 (WA-50A), Sancy (WA-40), Baladou (WA-40), Pariou (WA-40)  
 Sud: Gardan (GY-180)  
 Bolkow: (207)  
 Partenavia: Oscar (P-66)  
 Siai-Marchetti: (S-205)  
 Procaer: Picchio (F-15-A)  
 S.A.A.B.: Safir (91-D)  
 Malmo: Vipan (MF-10B)  
 Aero Boero: AB-180  
 Beagle: Airedale (A-109)  
 DeHavilland: Drover (DHA-3MK3)  
 Kingsford-Smith: Bushmaster (J5-6)  
 Aero Engine Service Ltd.: Victa (R-2)

O-360-A1AD	S.O.C.A.T.A.: Tabago TB-10
O-360-A1D	Piper Aircraft: Comanche (PA-24) Lake Aircraft: Colonial (LA -4, 4A or 4P) Doyn Aircraft: Doyn-Beech (Beech 95) Mooney Aircraft: Master “21” (M-20E), Mark “20B”, “20D”, (M20B, M20C), Mooney Statesman (M-20G) Dinfia: Querandi (1A-45) Wassmer: (WA-50) Malmo: Vipan (MF1-10) Cessna Aircraft: Skyhawk Doyn Aircraft: Doyn-Piper (PA -23 “160”)
O-360-A1F6	Cessna Aircraft: Cardinal
O-360-A1F6D	Cessna Aircraft: Cardinal 177 Teal III: TSC (1A3)
O-360-A1G6	Aero Commander
O-360-A1G6D	Beech Aircraft: Duchess 76
O-360-A1H6	Piper Aircraft: Seminole (PA-44)

O-360-A1LD	Wassmer: Europa WA-52
O-360-A1P	Aviat: Husky
O-360-A2A	Center Est Aeronautique: Regente (DR-253) S.O.C.A.T.A.: Rallye Commodore (MS-893) Societe Aeronautique Normande: Mousquetaire (D-140) Bolkow: Klemm (K1-107C) Partenavia: Oscar (P-66) Beagle: Husky (D5-180) (J1-U)
O-360-A2D	Piper Aircraft: Comanche (PA-24), Cherokee "C" (PA-28 "180") Mooney Aircraft: Master "21" (M-20D), Mark "21" (M-20E)
O-360-A2E	Std. Helicopter
O-360-A2F	Aero Commander: Lark (100) Cessna Aircraft: Cardinal
O-360-A2G	Beech Aircraft: Sport
O-360-A3A	C.A.A.R.P.S.A.N.: (M-23III) Societe Aeronautique Normande: Jodel (D-140C) Robin: Regent (DR400/180), Remorqueur (DR400/180R). R-3170 S.O.C.A.T.A.: Rallye 180GT, Sportavia Sportsman (RS-180) Norman Aeroplace Co.: NAC-1 Freelance Nash Aircraft Ltd.: Petrel
O-360-A3AD	S.O.C.A.T.A.: TB-10 Robin: Aiglon (R-1180T)
O-360-A4A	Piper Aircraft: Cherokee "D" (PA-28 "180")
O-360-A4D	Varga: Kachina
O-360-A4G	Beech Aircraft: Musketeer Custom III
O-360-A4K	Grumman American: Tiger Beech Aircraft: Sundowner 180
O-360-A4M	Piper Aircraft: Archer II (PA-28 "18") Valmet: PIK-23
O-360-A4N	Cessna Aircraft: 172 (Optional)
O-360-A4P	Penn Yan: Super Cub Conversion
O-360-A5AD	C. Itoh and Co.: Fuji FA -200
O-360-B2C	Seabird Aviation: SB7L
O-360-C1A	Intermountain Mfg. Co.: Call Air (A-6)
O-360-C1E	Bellanca Aircraft: Scout (8GCBC-CS)

O-360-C1F	Maule: Star Rocket MX-7-180
O-360-C1G	Christen: Husky (A-1)
O-360-C2B	Hughes Tool Co.: (269A)
O-360-C2D	Hughes Tool Co.: (269A)
O-360-C2E	Hughes Tool Co.: (YHO-2HU) Military Bellanca Aircraft: Scout (8GCBC FP)
O-360-C4F	Maule: MX-7-180A
O-360-C4P	Penn Yan: Super Cub Conversion
O-360-F1A6	Cessna Aircraft: Cutlass RG
O-360-J2A	Robinson: R22
IO-360-B1A	Beech Aircraft: Travel-Air (B-95A) Doyn Aircraft: Doyn-Piper (PA -23 "200")
IO-360-B1B	Beech Aircraft: Travel-Air (B-95B) Doyn Aircraft: Doyn-Piper (PA -23 "200") Fuji: (FA-200)
IO-360-B1D	United Consultants: See-Bee
IO-360-B1E	Piper Aircraft: Arrow (PA-28 "180R")
IO-360-B1F	Utva: 75
IO-360-B2E	C.A.A.R.P. C.A.P. (10)
IO-360-B1F6	Great Lakes: Trainer
IO-360-B1G6	American Blimp: Spector 42
IO-360-B2F6	Great Lakes: Trainer
LO-360-A1G6D	Beech Aircraft: Duchess
LO-360-A1H6	Piper Aircraft: Seminole (PA-44)
IO-360-E1A	T.R. Smith Aircraft: Aerostar
IO-360-L2A	Cessna Aircraft: Skyhawk C-172
IO-360-M1A	Diamond Aircraft: DA-40
IO-360-M1B	Vans Aircraft: RV6, RV7, RV8 Lancair: 360
AEIO-360-B1F	F.F.A.: Bravo (200) Grob: G115/Sport-Acro
AEIO-360-B1G6	Great Lakes
AEIO-360-B2F	Mundry: CAP-10
AEIO-360-B4A	Pitts: S-1S
AEIO-360-H1A	Bellanca Aircraft: Super Decathlon (8KCAB-180)



AEIO-360-H1B	American Champion: Super Decathlon
VO-360-A1A	Brantly Hynes Helicopter: (B-2)
VO-360-A1B	Brantly Hynes Helicopter: (B-2, B2-A). Military (YHO-3BR)
VO-360-B1A	Brantly Hynes Helicopter: (B-2, B2-A)
IVO-360-A1A	Brantly Hynes Helicopter: (B2-B)
HO-360-B1A	Hughes Tool Co.: (269A)
HO-360-B1B	Hughes Tool Co.: (269A)
HO-360-C1A	Schweizer: (300C)
HIO-360-B1A	Hughes Tool Co.: Military (269-A-1). (TH-55A)
HIO-360-B1B	Hughes Tool Co.: (269A)
HIO-360-G1A	Schweizer: (CB)
O-540-A1A	Rhein-Flugzeugbau: (RF-1)
O-540-A1A5	Piper Aircraft: Comanche (PA-24 "180") Helio: Military (H-250) Yoeman Aviation: (YA-1)
O-540-A1B5	Piper Aircraft: Aztec (PA-23 "250"), Comanche (PA-24 "250")
O-540-A1C5	Piper Aircraft: Comanche (PA-24 "250")
O-540-A1D	Found Bros.: (FBA-2C) Dornier: (DO-28-B1)
O-540-A1D5	Piper Aircraft: Aztec (PA-23 "250"), Comanche (PA-24 "250"), Military Aztec (U-11A) Dornier: (DO-28)
O-540-A2B	Aero Commander: (500) Mid-States Mfg. Co.: Twin Courier (H-500), (U-5)
O-540-A3D5	Piper Aircraft: Navy Aztec (PA-23 "250")
O-540-B1A5	Piper Aircraft: Apache (PA-23 "235")
O-540-B1B5	Piper Aircraft: Comanche (PA-24 "250") Doyn Aircraft: Doyn-Piper (PA-24 "250")
O-540-B1D5	Wassmer: (WA-421)
O-540-B2B5	Piper Aircraft: Pawnee (PA-25 "235"), Cherokee (PA -28 "235"), Aztec (PA -23 "235") Intermountain Mfg. Co.: Call Air (A-9) Rawdon Bros.: Rawdon (T-1) S.O.C.A.T.A.: Rallye 235CA
O-540-B2C5	Piper Aircraft: Pawnee (PA-25 "235")

O-540-B4B5	Piper Aircraft: Cherokee (PA-28 “235”) Embraer: Corioca (EMB-710) S.O.C.A.T.A.: Rallye 235GT, Rallye 235C Maule: Star Rocket (MX-7-235), Super Rocket (M-6-235), Super Std. Rocket (M-7-235)
O-540-E4A5	Piper Aircraft: Comanche (PA-24 “260”) Aviamilano: Flamingo (F-250) Siai-Marchetti: (SF-260), (SF-208)
O-540-E4B5	Britten-Norman: (BN-2) Piper Aircraft: Cherokee Six (PA-32 “260”)
O-540-E4C5	Pilatus Britten-Norman: Islander (BN-2A-26), Islander (BN-2A-27), Islander II (BN-2B-26), Islander (BN-2A-21), Trislander (BN-2A-Mark III-2)
O-540-F1B5	Omega Aircraft: (BS-12D1) Robinson: (R-44)
O-540-G1A5	Piper Aircraft: Pawnee (PA -25 “260”)
O-540-H1B5D	Aero Boero: 260
O-540-H2A5	Embraer: Impanema “AG” Gippsland: GA-200
O-540-H2B5D	Aero Boero: 260
O-540-J1A5D	Maule: Star Rocket (MX-7-235), Super Rocket (M-6-235), Super Std. Rocket (M-7-235)
O-540-J3A5	Robin: R-3000/235
O-540-J3A5D	Piper Aircraft: Dakota (PA -28-236)
O-540-J3C5D	Cessna Aircraft: Skylane RG
O-540-L3C5D	Cessna Aircraft: TR-182, Turbo Skylane RG
IO-540-C1B5	Piper Aircraft: Aztec B (PA-23 “250”), Comanche (PA-24 “250”)
IO-540-C1C5	Riley Aircraft: Turbo-Rocket
IO-540-C4B5	Piper Aircraft: Aztec C (PA-23 “250”), Aztec F Wassmer: (WA4-21) Avions Pierre Robin: (HR100/250) Bellanca Aircraft: Aries T-250 Aerofab: Renegade 250
IO-540-C4D5	S.O.C.A.T.A.: TB-20
IO-540-C4D5D	S.O.C.A.T.A.: Trinidad TB-20
IO-540-D4A5	Piper Aircraft: Comanche (PA-24 “260”) Siai-Marchetti: (SF-260)

IO-540-D4B5	Cerva: (CE-43 Guepard)
IO-540-J4A5	Piper Aircraft: Aztec (PA-23 “250”)
IO-540-R1A5	Piper Aircraft: Comanche (PA-24)
IO-540-T4A5D	General Aviation: Model 114
IO-540-T4B5	Commander: 114B
IO-540-T4B5D	Rockwell: 114
IO-540-T4C5D	Lake Aircraft: Seawolf
IO-540-V4A5	Maule: MT-7-260, M -7-260 Aircraft Manufacturing Factory
IO-540-V4A5D	Brooklands: Scoutmaster
IO-540-W1A5	Maule: MX-7-235, MT-7-235, M7-235
IO-540-W1A5D	Maule: Star Rocket (MX-7-235), Super Rocket (M-6-235), Super Std. Rocket (M-7-235)
IO-540-W3A5D	Schweizer: Power Glider
AEIO-540-D4A5	Christen: Pitts (S-2S), S-2B) Siai-Marchetti: SF-260 H.A.L.: HPT-32 Slingsby: Firefly T3A
AEIO-540-D4B5	Moravan: Zlin-50L H.A.L.: HPT-32
AEIO-540-D4D5	Burkhart Grob: Grob G, 115T Aero
TIO-540-C1A	Piper Aircraft: Turbo Aztec (PA-23-250)
TIO-540-K1AD	Piper Aircraft
TIO-540-AA1AD	Aerofab Inc.: Turbo Renegade (270)
TIO-540-AB1AD	S.O.C.A.T.A.: Trinidad TC TB-21
TIO-540-AB1BD	Schweizer
TIO-540-AF1A	Mooney Aircraft: “TLS” M20M
TIO-540-AG1A	Commander Aircraft: 114TC
TIO-540-AK1A	Cessna Aircraft: Turbo Skylane T182T
LTIO-540-K1AD	Piper Aircraft

### Unsafe Condition

(d) This AD results from reports of 45 failures with head separations of ECi cylinder assemblies. We are issuing this AD to prevent loss of engine power due to cracks at the head-to-barrel interface in the cylinder assemblies and possible engine failure caused by separation of a cylinder head, which could result in loss of control of the aircraft.

## **Compliance**

(e) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

### **Engines Not Overhauled or Cylinder Assemblies Not Replaced Since New**

(f) If your engine has not been overhauled or had any cylinder assemblies replaced since new, no further action is required.

### **Engines Overhauled or Cylinder Assemblies Replaced Since New**

(g) If your engine was overhauled or had a cylinder assembly replaced since new, do the following:

(1) Before further flight, inspect the maintenance records and engine logbook to determine if the overhaul or repair facility used ECI cylinder assemblies, P/N AEL65102, with cylinder head, PN AEL85099, with a SN 1138-02 through SN 35171-22, or a SN 35239-01 through SN 37016-28, installed.

(2) If the cylinder assemblies are not ECI, P/N AEL65102, no further action is required.

(3) If the cylinder assemblies are ECI, P/N AEL65102, and if the serial number is not listed in this AD, no further action is required.

(4) If the cylinder assemblies are ECI, P/N AEL65102, and if the serial number is listed in this AD, do the following:

### **Group "A" Cylinder Assemblies**

(i) For Group "A" cylinder assemblies:

(A) Perform an initial visual inspection as specified in paragraphs (h) through (j) of this AD, and an initial compression test as specified in paragraphs (k) through (o) of this AD, within the next 10 operating hours time-in-service (TIS), if the cylinder assembly has 350 or more operating hours TIS on the effective date of this AD, but fewer than 2,000 operating hours TIS.

(B) Perform an initial visual inspection as specified in paragraphs (h) through (j) of this AD, and an initial compression test as specified in paragraphs (k) through (o) of this AD, before exceeding 350 operating hours TIS, if the cylinder assembly has fewer than 350 operating hours TIS on the effective date of this AD.

(C) Replace cylinder assemblies installed in helicopter engines within the next 25 operating hours TIS after the effective date of this AD if the cylinder assembly has 1,500 operating hours TIS or more on the effective date of this AD.

(D) Replace cylinder assemblies installed in airplane engines within the next 25 operating hours TIS after the effective date of this AD if the cylinder assembly has 2,000 operating hours TIS or more on the effective date of this AD.

(E) Perform repetitive visual inspections as specified in paragraphs (h) through (j) of this AD, and repetitive compression tests as specified in paragraphs (k) through (o) of this AD, within every 50 operating hours TIS.

(F) Replace cylinder assemblies installed in helicopter engines that pass the visual inspections and compression tests, no later than 1,500 operating hours TIS after the effective date of this AD.

(G) Replace cylinder assemblies installed in airplane engines that pass the visual inspections and compression tests, no later than 2,000 operating hours TIS after the effective date of this AD.

### **Group "B" Cylinder Assemblies**

(ii) For Group "B" cylinder assemblies:

(A) Perform an initial visual inspection as specified in paragraphs (h) through (j) of this AD, and initial compression test as specified in paragraphs (k) through (o) of this AD, within an additional 10 operating hours TIS.

(B) Replace the cylinder assembly within the next 25 operating hours TIS after the effective date of this AD if the cylinder assembly has 350 or more operating hours TIS on the effective date of this AD.

(C) Replace cylinder assemblies that pass the initial visual inspections and compression tests, before exceeding 350 operating hours TIS after the effective date of this AD.

### **Visual Inspection**

(h) Visually inspect around the exhaust valve side, for cracks or any signs of black or white residue of combustion leakage from cracks.

(i) Replace cracked cylinder assemblies before further flight.

(j) Information on cylinder assembly visual inspection can be found in ECI Mandatory Service Bulletin (MSB) No. 08-1, Revision 3, dated August 19, 2008.

### **Cylinder Assembly Compression Test**

(k) Compression test the cylinder assembly.

(l) Information on cylinder assembly compression testing can be found in ECI MSB No. 08-1, Revision 3, dated August 19, 2008.

(m) During the compression test, if the cylinder pressure gauge reads below 70 pounds-per-square-inch, apply a water and soap solution to the side of the leaking cylinder, near the head-to-barrel interface.

(n) Replace the cylinder assembly before further flight, if air leakage and bubbles are observed on the side of the cylinder assembly, near the head-to-barrel interface.

(o) Repair or replace the engine cylinder assembly before further flight if the cause of the low gauge reading in paragraph (m) of this AD is from leaking intake or exhaust valves, or from leaking piston rings.

### **Prohibition of ECI Cylinder Assemblies Affected by This AD**

(p) After the effective date of this AD, do not install any ECI cylinder assembly, P/N AEL65102, with cylinder head, P/N AEL85099, and with SN 1138-02 through SN 35171-22, or SN 35239-01 through SN 37016-28, onto any engine, and do not attempt to repair or reuse these ECI cylinder assemblies.

### **Alternative Methods of Compliance**

(q) The Manager, Special Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

## **Special Flight Permits**

(r) Under 14 CFR 39.23, we will not approve special flight permits for this AD for engines that have failed the visual inspection or the cylinder assembly compression test required by this AD.

## **Related Information**

(s) ECI Mandatory Service Bulletin No. 08-1, Revision 3, dated August 19, 2008, pertains to the subject of this AD.

(t) Contact Peter W. Hakala, Aerospace Engineer, Special Certification Office, FAA, Rotorcraft Directorate, 2601 Meacham Blvd., Fort Worth, TX 76193; e-mail: [peter.w.hakala@faa.gov](mailto:peter.w.hakala@faa.gov); telephone (817) 222-5145; fax (817) 222-5785, for more information about this AD.

Issued in Burlington, Massachusetts, on September 5, 2008.

Peter A. White,

Assistant Manager, Engine and Propeller Directorate, Aircraft Certification Service.

[FR Doc. E8-21125 Filed 9-12-08; 8:45 am]

[Federal Register: December 24, 2008 (Volume 73, Number 248)]  
[Rules and Regulations]  
[Page 78939-78944]  
From the Federal Register Online via GPO Access [wais.access.gpo.gov]  
[DOCID:fr24de08-8]

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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2008-1328; Directorate Identifier 2008-CE-066-AD; Amendment 39-15776; AD 2008-26-10]**

**RIN 2120-AA64**

**Airworthiness Directives; Cessna Aircraft Company 172, 175, 177, 180, 182, 185, 188, 206, 207, 208, 210, 303, 336, and 337 Series Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule; request for comments.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain Cessna Aircraft Company (Cessna) 172, 175, 177, 180, 182, 185, 188, 206, 207, 208, 210, 303, 336, and 337 series airplanes. This AD requires you to inspect the alternate static air source selector valve to assure that the part number identification placard does not obstruct the alternate static air source selector valve port. If the part number identification placard obstructs the port, this AD also requires you to remove the placard, assure that the port is unobstructed, and report to the FAA if obstruction is found. This AD results from reports of airplanes found with alternate static air source selector valve port obstruction caused by improper installation of the part number identification placard. The actions specified by this AD are intended to prevent erroneous indications from the altimeter, airspeed, and vertical speed indicators, which could cause the pilot to react to incorrect flight information and possibly result in loss of control.

**DATES:** This AD becomes effective on January 5, 2009.

On January 5, 2009, the Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD.

We must receive any comments on this AD by February 23, 2009.

**ADDRESSES:** Use one of the following addresses to comment on this AD.

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590.

- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

To get the service information identified in this AD, contact Cessna Aircraft Company, P.O. Box 7704, Wichita, Kansas 67277; telephone: (800) 423-7762 or (316) 517-6056; Internet: <http://www.cessna.com>.

To view the comments to this AD, go to <http://www.regulations.gov>. The docket number is FAA-2008-1328; Directorate Identifier 2008-CE-066-AD.

**FOR FURTHER INFORMATION CONTACT:** Ann Johnson, Aerospace Engineer, FAA, Wichita Aircraft Certification Office, 1801 Airport Road, Room 100, Wichita, Kansas 67209; telephone: 316-946-4105; fax: 316-946-4107; e-mail address: [ann.johnson@faa.gov](mailto:ann.johnson@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

Reports of improper installation of the part number (P/N) identification placard on P/N 2013142-18 alternate static air source selector valves prompted us to issue AD 98-01-01, Amendment 39-10286 (63 FR 3455, January 23, 1998), which applies to certain Cessna Aircraft Company (Cessna) Models 172R and 182S airplanes, and AD 2008-10-02, Amendment 39-155508 (73 FR 24168, May 2, 2008), which applies to certain Cessna 172, 175, 180, 182, 185, 206, 207, 208, 210, and 303 series airplanes.

These ADs require inspecting the alternate static air source selector valve to determine if the P/N identification placard obstructs the alternate static air source selector valve port and removing the placard if obstruction is found. These ADs also require reporting to the FAA if obstruction is found.

These assemblies are required for flight into instrument flight rules (IFR) conditions as defined in §91.411 of the Federal Aviation Regulations (14 CFR 91.411). Use of these assemblies is optional in visual flight rules (VFR) conditions.

After issuing AD 98-01-01 and AD 2008-10-02, we received reports of 15 airplanes not previously affected by either AD with a P/N 2013142-18 installed and the alternate static air source selector valve port was found obstructed by the P/N identification placard.

We have been informed that all P/N 2013142-18 alternate static air source selector valves shipped from Cessna Parts Distribution between January 1, 1993, and March 31, 2008, may have port obstruction caused by the P/N identification placard.

This condition, if not corrected, could result in the altimeter, airspeed, and vertical speed indicators displaying erroneous indications. This could cause the pilot to react to incorrect flight information and possibly result in loss of control.

### **Relevant Service Information**

We reviewed Cessna Single Engine Service Bulletin, SB08-34-02, Revision 1, and Cessna Caravan Service Bulletin CAB08-4, Revision 1, both dated October 6, 2008; Cessna Single Engine Service Bulletin SEB08-5 and Cessna Multi-engine Service Bulletin MEB08-6, both dated October 13, 2008.

The service information describes procedures for inspecting the alternate static air source selector valve to assure that the P/N identification placard does not obstruct the alternate static air source selector valve port.



## **FAA's Determination and Requirements of This AD**

We are issuing this AD because we evaluated all the information and determined the unsafe condition described previously is likely to exist or develop on other products of the same type design. This AD requires inspecting the alternate static air source selector valve to assure that the P/N identification placard does not obstruct the alternate static air source selector valve port. If the P/N identification placard obstructs the port, this AD requires you to remove the placard, assure that the port is unobstructed, and report to the FAA if obstruction is found.

## **FAA's Determination of the Effective Date**

Since an unsafe condition exists that requires the immediate adoption of this AD, we determined that notice and opportunity for public comment before issuing this AD are impracticable, and that good cause exists for making this amendment effective in fewer than 30 days.

## **Comments Invited**

This AD is a final rule that involves requirements affecting flight safety, and we did not precede it by notice and an opportunity for public comment. We invite you to send any written relevant data, views, or arguments regarding this AD. Send your comments to an address listed under the ADDRESSES section. Include the docket number "FAA-2008-1328; Directorate Identifier 2008-CE-066-AD" at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of the AD. We will consider all comments received by the closing date and may amend the AD in light of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive concerning this AD.

## **Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

## **Regulatory Findings**

We determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866;
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket.

### **Examining the AD Docket**

You may examine the AD docket that contains the AD, the regulatory evaluation, any comments received, and other information on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Office (telephone (800) 647-5527) is located at the street address stated in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

#### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding a new AD to read as follows:



**2008-26-10 Cessna Aircraft Company:** Amendment 39-15776; Docket No. FAA-2008-1328; Directorate Identifier 2008-CE-066-AD.

**Effective Date**

(a) This AD becomes effective on January 5, 2009.

**Affected ADs**

(b) This AD relates to AD 98-01-01, Amendment 39-10287 and AD 2008-10-02, Amendment 39-15508. These ADs can be found on the Internet at the following Web site: <http://rgl.faa.gov/>.

**Applicability**

(c) This AD applies to all serial numbers (S/Ns) of the airplanes listed in Table 1 of this AD, certificated in any category, that:

(1) Were initially delivered from the manufacturer between January 1, 1993, and March 31, 2008, unless the modification/rework required in AD 2008-10-02 has been done and you remain in compliance with that AD; or

(2) Have a part number (P/N) 2013142-18 installed as a replacement part anytime after January 1, 1993, unless the modification/rework required in AD 2008-10-02 has been done and you remain in compliance with that AD.

Note 1: The affected part was shipped from Cessna Parts Distribution (CPD) between January 1, 1993, and March 31, 2008.

Note 2: P/N 2013142-18 replaced P/Ns 2013142-9, -13, and -17.

**Table 1. – Applicable Airplane Models**

<b>Models</b>		
172	F172K	177
172A	F172L	177A
172B	F172M	177B
172C	F172N	177RG
172D	F172P	F177RG
172E	FR172E	180
172F (USAF T-41A)	FR172F	180A
172G	FR172G	180B
172H (USAF T-41A)	FR172H	180C
172I	FR172J	180D
172K	FR172K	180E
172L	P172D	180F

172M	R172E (USAF T-41B), (USAF T-41C and D)	180G
172N	R172F (USAF T-41)	180H
172P	R172G (USAF T-41C or D)	180J
172Q	R172H (USAF T-41D)	180K
172R	R172J	182
172S	R172K	182A
F172D	172RG	182B
F172E	175	182C
F172F	175A	182D
F172G	175B	182E
F172H	175C	182F
182G	A185F	U206D
182H	206	U206E
182J	206H	U206F
182K	P206	U206G
182L	P206A	207
182M	P206B	207A
182N	P206C	T207
182P	P206D	T207A
182Q	P206E	208
182R	T206H	208B
182S	TP206A	210
182T	TP206B	210A
F182P	TP206C	210B
F182Q	TP206D	210C
FR182	TP206E	210D
R182	TU206A	210E
T182	TU206B	210F
T182T	TU206C	210G
TR182	TU206D	210H
185	TU206E	210J
185A	TU206F	210K
185B	TU206G	210L
185C	U206	210M
185D	U206A	210N
185E	U206B	210R
A185E	U206C	210-5 (205)
210-5A (205A)	FT337F	
T210F	M337B (USAF 02A)	
T210G	T337B	
T210H	T337C	
T210J	T337D	
T210K	T337E	
T210L	T337F	
T210M	T337H	
T210N	T337H-SP	
T210R		
T303		

336		
337		
337A (USAF 02B)		
337B		
337C		
337D		
337E		
337F		
337G		
337H		
F337E		
F337F		
F337G		
F337H		
FT337E		

### Unsafe Condition

(e) This AD is the result of reports of improper installation of the part number identification placard on the alternate static air source selector valve. We are issuing this AD to prevent erroneous indications from the altimeter, airspeed, and vertical speed indicators, which could cause the pilot to react to incorrect flight information and possibly result in loss of control.

### Compliance

(e) To address this problem, you must do the following, unless already done. A person authorized to perform maintenance as specified in 14 CFR section 43.3 of the Federal Aviation Administration Regulations (14 CFR 43.3) is required to do all the actions required in this AD.

Actions	Compliance	Procedures
(1) <u>For all affected airplanes that are not equipped for flight under instrument flight rules (IFR):</u> Inspect the alternate static air source selector valve to assure that the part number identification placard is not obstructing the port.	Within the next 100 hours time-in-service (TIS) after January 5, 2009 (the effective date of this AD) or within the next 4 months after January 5, 2009 (the effective date of this AD), whichever occurs first.	Following the procedures in Cessna Single Engine Service Bulletin SB08-34-02, Revision 1, dated October 6, 2008; Cessna Caravan Service Bulletin CAB08-4, Revision 1, dated October 6, 2008; Cessna Single Engine Service Bulletin SEB08-5, dated October 13, 2008; or Cessna Multi-engine Service Bulletin MEB08-6, dated October 13, 2008, as applicable.

<p>(2) <u>For all affected airplanes that are equipped for flight under instrument flight rules (IFR):</u></p>	<p>(A) Inspect within the next 10 days after January 5, 2009 (the effective date of this AD); or</p> <p>(B) Install placards before further flight after January 5, 2009 (the effective date of this AD).</p>	<p>Following the procedures in Cessna Single Engine Service Bulletin SB08-34-02, Revision 1, dated October 6, 2008; Cessna Caravan Service Bulletin CAB08-4, Revision 1, dated October 6, 2008; Cessna Single Engine Service Bulletin SEB08-5, dated October 13, 2008; or Cessna Multi-engine Service Bulletin MEB08-6, dated October 13, 2008, as applicable.</p>
<p>(i) Inspect the alternate static air source selector valve to assure that the part number identification placard is not obstructing the port; or</p> <p>(ii) Fabricate a placard that incorporates the following words (using at least 1/8-inch letters) and install this placard on the instrument panel within the pilot's clear view: "IFR OPERATION IS PROHIBITED" and "USE OF THE ALTERNATE STATIC AIR SOURCE IS PROHIBITED."</p>	<p>Within the next 100 hours TIS after January 5, 2009 (the effective date of this AD) or within the next 4 months after January 5, 2009 (the effective date of this AD), whichever occurs first. After doing the inspection, remove the placards installed in accordance with paragraph (e)(2)(ii) of this AD before further flight.</p>	<p>Following the procedures in Cessna Single Engine Service Bulletin SB08-34-02, Revision 1, dated October 6, 2008; Cessna Caravan Service Bulletin CAB08-4, Revision 1, dated October 6, 2008; Cessna Single Engine Service Bulletin SEB08-5, dated October 13, 2008; or Cessna Multi-engine Service Bulletin MEB08-6, dated October 13, 2008, as applicable.</p>
<p>(4) <u>For all affected airplanes:</u> If the alternate static air source selector valve port is found obstructed by the part number identification placard during the inspection required in paragraphs (e)(1), (e)(2)(i), and (e)(3) of this AD, remove the placard from the valve body, discard the placard, and assure that the port is open and unobstructed.</p>	<p>Before further flight after the inspection required in paragraphs (e)(1), (e)(2)(i), and (e)(3) of this AD.</p>	<p>Following the procedures in Cessna Single Engine Service Bulletin SB08-34-02, Revision 1, dated October 6, 2008; Cessna Caravan Service Bulletin CAB08-04, Revision 1, dated October 6, 2008; Cessna Single Engine Service Bulletin SEB08-5, dated October 13, 2008; or Cessna Multi-engine Service Bulletin MEB08-6, dated October 13, 2008, as applicable.</p>

(5) <u>For all affected airplanes:</u> When a replacement valve is needed, only install a P/N 2013142-18 alternate static air source selector valve that has been inspected and the port is found free from obstruction.	As of 10 days after January 5, 2009 (the effective date of this AD).	A person authorized to perform maintenance as specified in 14 CFR section 43.3 of the Federal Aviation Administration Regulations (14 CFR 43.3) is required to do the inspection.
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(f) Report to the FAA the results of the inspection required by this AD where an obstruction was found.

(1) Submit this report within 10 days after the inspection or 10 days after the effective date of this AD, whichever occurs later.

(2) Use the form in Figure 1 of this AD and submit it to FAA, Manufacturing Inspection District Office, Mid-Continent Airport, 1804 Airport Road, Room 101, Wichita, Kansas 67209; or fax to (316) 946-4189.

(3) The Office of Management and Budget (OMB) approved the information collection requirements contained in this regulation under the provisions of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.) and assigned OMB Control Number 2120-0056.

<b><i>AD 2008-26-10 INSPECTION REPORT</i></b>	
<b>(REPORT <u>ONLY</u> IF A PART NUMBER IDENTIFICATION PLACARD IS OBSTRUCTING THE STATIC AIR SOURCE SELECTOR VALVE PORT)</b>	
<i>1. Inspection Performed By:</i>	<i>2. Phone:</i>
<i>3. Airplane Model:</i>	<i>4. Airplane Serial Number:</i>
<i>5. Airplane Total Hours TIS:</i>	
<i>6. Date of AD inspection:</i>	
<i>7. Inspection Results: (Note: Report <b>only</b> if a part number identification placard is obstructing static air source valve port.)</i>	<i>8. Corrective Action Taken:</i>

Mail report to: Wichita Manufacturing Inspection District Office, Mid-Continent Airport, 1804 Airport Road, Room 101, Wichita, Kansas, 67209; or fax to (316) 946-4189

**Figure 1**

## **Alternative Methods of Compliance (AMOCs)**

(g) The Manager, Wichita Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Send information to ATTN: Ann Johnson, Aerospace Engineer, FAA, Wichita ACO, 1801 Airport Road, Room 100, Wichita, Kansas 67209; telephone: 316-946-4105; fax: 316-946-4107; e-mail address: [ann.johnson@faa.gov](mailto:ann.johnson@faa.gov). Before using any approved AMOC on any airplane to which the AMOC applies, notify your appropriate principal inspector (PI) in the FAA Flight Standards District Office (FSDO), or lacking a PI, your local FSDO.

(h) AMOCs approved for AD 2008-10-02 are approved for this AD.

## **Material Incorporated by Reference**

(i) You must use Cessna Single Engine Service Bulletin, SB08-34-02, Revision 1, dated October 6, 2008; Cessna Caravan Service Bulletin CAB08-4, Revision 1, dated October 6, 2008; Cessna Single Engine Service Bulletin SEB08-5, dated October 13, 2008; and Cessna Multi-engine Service Bulletin MEB08-6, dated October 13, 2008, to do the actions required by this AD, unless the AD specifies otherwise.

(1) The Director of the Federal Register approved the incorporation by reference of this service information under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) For service information identified in this AD, contact Cessna Aircraft Company, P.O. Box 7704, Wichita, Kansas 67277; telephone: (800) 423-7762 or (316) 517-6056; Internet: <http://www.cessna.com>.

(3) You may review copies at the FAA, Central Region, Office of the Regional Counsel, 901 Locust, Kansas City, Missouri 64106; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

Issued in Kansas City, Missouri, on December 15, 2008.

Kim Smith,  
Manager, Small Airplane Directorate,  
Aircraft Certification Service.





"TAKE YOUR CESSNA HOME  
FOR SERVICE AT THE SIGN  
OF THE CESSNA SHIELD"

# single-engine SERVICE LETTER

MARKETING DIVISION • CESSNA AIRCRAFT COMPANY  
WICHITA, KANSAS 67201 • CABLE ADDRESS / CESSCO WICHITA

January 21, 1972

SE72-2

**SUBJECT:** WING FLAP ACTUATOR MODIFICATION

**AIRCRAFT AFFECTED:** All Single Engine Aircraft with Electric Wing Flaps

Single Engine Service Letters SE70-16 and Supplements 1 and 2 covered the proper inspection and lubrication that would result in reliable operation of the flap actuator jack screws on single engine aircraft equipped with electric wing flaps.

To further improve the flap system on these airplanes and to avoid any possibility of inadvertent flap actuator malfunctions, a design change was phased into production beginning in late 1971.

To also provide greater reliability for earlier aircraft, the following two programs have been developed for modifying flap actuators on in-service aircraft.

**I. AIRCRAFT WITH STRUT SUPPORTED WINGS**

Service Kit SK150-37A applies to this group of aircraft and provides necessary parts and instructions for adding a hydraulic snubber to existing flap actuators. This snubber does not affect normal extension or retraction of the wing flaps but protects against inadvertent flap retraction due to actuator slippage.

<u>KIT NUMBER</u>	<u>MODELS AFFECTED</u>	<u>SERIALS AFFECTED</u>	<u>SUGGESTED LIST PRICE</u>
SK150-37A	150	15061533 thru 15072629	\$21.30 (A)
	F150	F150-0001 thru F15000738	
	A150	A1500001 thru A1500277	
	FA150	FA1500001 thru FA1500121	
	FRA150	FRA1500122 thru FRA1500161	
	172	17251823 thru 17259904	
	F172	F172-0086 thru F1720804	
	R172	R17200001 thru R17200494	
	FR172	FR17200001 thru FR17200306	
	182	18253599 thru 18260698	
	A182	A182-0001 thru A18200136	
	205	205-0001 thru 205-0577	
	206	206-0001 thru 206-0275	
	U206/TU206	U206-0276 thru U20601673	
	P206/TP206	P206-0001 thru P20600647	
	207/T207	20700001 thru 20700205	
	210	21058221 thru 21058818	
	T210	T210-0001 thru T210-0197	

Continued.....

II. AIRCRAFT WITH CANTILEVER WINGS

The Service Kits shown below apply to this group of aircraft and provide parts and instructions for installing the new recirculating ball screw assembly (now being used on production aircraft).

<u>KIT NUMBER</u>	<u>MODELS AFFECTED</u>	<u>SERIALS AFFECTED</u>	<u>SUGGESTED LIST PRICE</u>
SK177-17A	177	17700001 thru 17701023	\$55.20 (A)
SK177-18A	177 177RG F177RG	17701024 thru 17701633 177RG0001 thru 177RG0212 F177RG0001 thru F177RG0042	\$48.60 (A)
SK210-68A	210 T210	21058937 thru 21059470 T210-0308 thru T210-0454	\$23.70 (A)
SK210-69	210 T210	21058819 thru 21058936 T210-0198 thru T210-0307	\$64.40 (A)

(Service Kits are available through the Cessna Dealer Organization.)

RETROFITTING OF ALL AIRCRAFT WILL BE REQUIRED BY JANUARY 1, 1973.

Because this modification is required on all aircraft, a parts allowance (based on model year) will be provided for all aircraft. In addition, an installation labor allowance will be paid for all 1970 and 1971 models.

To be eligible for this cost allowance, modifications must be completed and a Credit Claim submitted by the following dates:

Domestic and Canada ..... February 1, 1973  
Export ..... April 1, 1973

Service Letter SE70-16 requires cleaning, careful inspection and lubrication of the flap actuator at each 100 hours plus complete removal of the actuator at each annual inspection. Compliance with this Service Letter reduces these maintenance requirements ---- actuator screws, which have been modified, need only to be visually inspected at each 100 hour and annual inspection period and lubricated as required.

The subject of this Service Letter is covered by Airworthiness Directive 72-3-3, dated January 25, 1972.

Owners are urged to contact their dealers for further details concerning this important program.

(Owner Notification System - No. 2)

\*\*\*\*\*

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

\*\*\*\*\*



"TAKE YOUR CESSNA HOME  
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# single-engine SERVICE LETTER

MARKETING DIVISION • CESSNA AIRCRAFT COMPANY  
WICHITA, KANSAS 67201 • CABLE ADDRESS / CESSCO WICHITA

March 24, 1972

SE72-2  
(Supplement #1)

SUBJECT: WING FLAP ACTUATOR MODIFICATION  
(Supplemental)

AIRCRAFT AFFECTED:

All single engine aircraft with electric wing flaps.

REASON FOR LETTER:

Following is revised and supplemental information pertaining to Service Letter SE72-2, dated January 21, 1972.

\* REVISIONS:

1. Spring-type spacers have been added to Service Kit SK150-37. These spacers are installed as shown in Figure 1 below and serve to locate the flap motor to actuator coupling centrally insuring proper engagement of the motor shaft and actuator shaft.

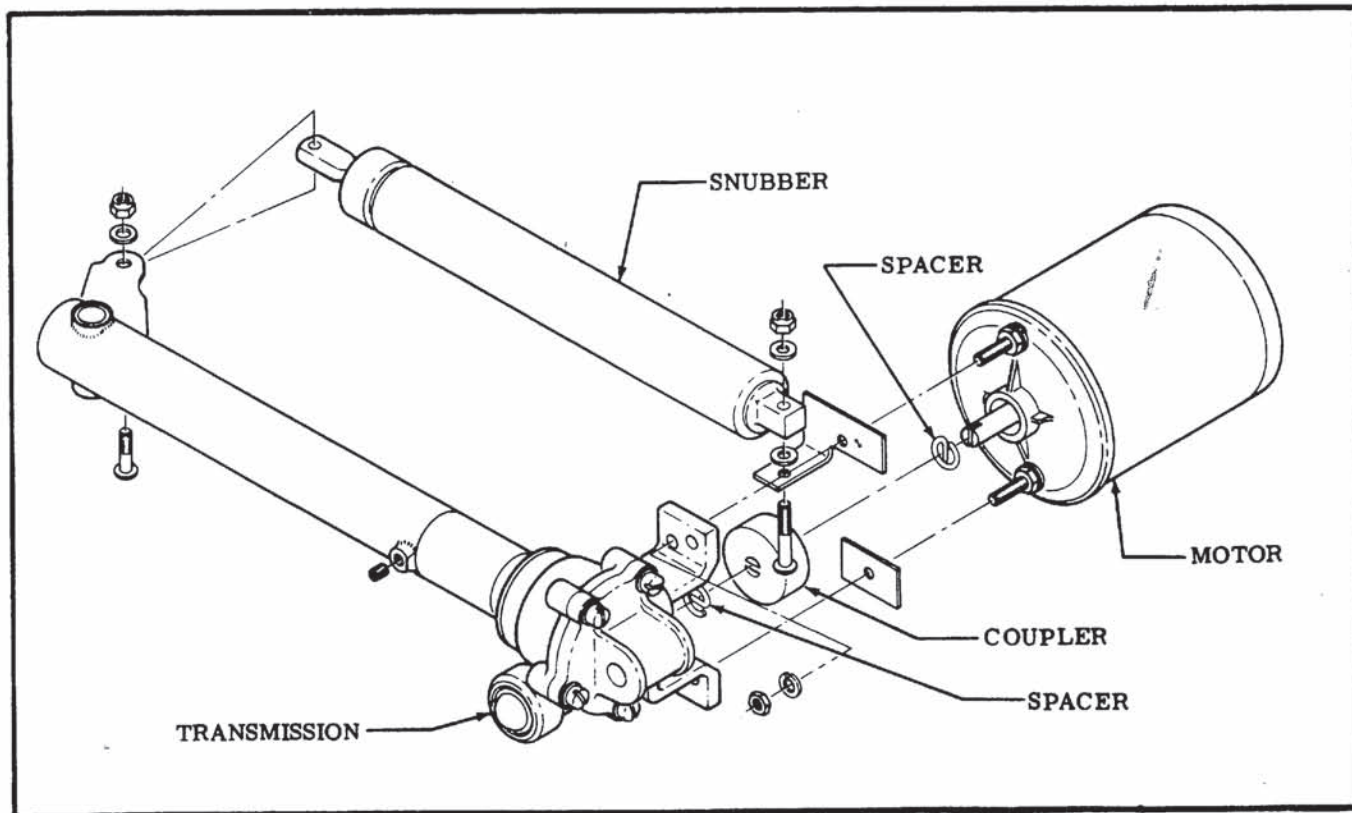


Figure 1. Spacer Installation.

Continued.....

Aircraft which have already been modified per SK150-37 should have the spring spacers installed at the next convenient maintenance period. Spring spacers are available through the Cessna Dealer Organization.

<u>Part Number</u>	<u>Description</u>	<u>Qty. Req'd.</u>	<u>Suggested List Price</u>
0460203-1	Spring Spacer	2	\$0.09 (S) each

Service Kits which contain the spacer will be identified as SK150-37B.

- The wing rib modification necessary on Model 182 aircraft with long range tanks is also applicable to Model 205 aircraft with long range tanks. Service Kit SK150-37 (Section e) will be revised to reflect this requirement and will be identified as SK150-37B.
- Wing flaps on early 1968 Model 210 aircraft (serials 21058937 thru 21059030 and T210-0308 thru T210-0378) will be full up (0°) when the ball nut is set at 0.12 ± .03" from the transmission housing.

Flaps on aircraft after 21059030 and T210-0378 will be full down (30°) when the ball nut is set at 0.12 ± .03" from the transmission housing.

Service Kit SK210-68A (Sections f and g) will be revised to clarify this point. Revised Service Kit instructions are dated February 29, 1972.

- Reims aircraft affected serialization has been changed to read as follows:

<u>Kit Number</u>	<u>Models Affected</u>	<u>Serials Affected</u>
SK150-37A	F150	F150-0001 thru F15000738 (except F15000701 and F15000737)
	FA150	FA1500001 thru FA1500122 (except FA1500121)
	F172	F172-0086 thru F1720804
	FR172	FR17200001 thru FR17200292 (except FR17200278, 0280, 0283, 0284, 0286, 0287, 0288)
SK177-18A	F177RG	F177RG0002 thru F177RG0037 (except F177RG0001, 021, 022, 023, 029, 031, 034)

- Prior to installation, the flap actuator screw assembly in SK177-17A, SK177-18A, SK210-68A and SK210-69 should be inspected for signs of metal particles or other foreign material on the screw threads.

If particles are present, wash the screw assembly with solvent to remove the particles. Run the screw several times to ensure that all particles are worked out of the nut. After all particles have been removed, apply 10 weight oil to the screw threads and proceed with the installation.

\* MAINTENANCE REQUIREMENTS

Following is a summary of the periodic maintenance required on flap actuators:

Model

Pre-1972  
(not modified  
per SE72-2)

Clean, inspect, and lubricate each 100 hours of operation and completely remove, clean, inspect, and lubricate at next annual inspection in accordance with Service Letter SE70-16.

Lubricant: MIL-G-211164 Grease

Pre-1972  
(Modified  
per SE72-2)

Visually inspect at each 100 hour and annual inspection. Clean and lubricate as required.

Lubricant: 1) MIL-G-211164 Grease for strut supported wing aircraft.

2) No. 10 weight oil for cantilever wing aircraft.

1972 and on

Visually inspect at each 100 hour and annual inspection. Clean and lubricate as required.

Lubricant: No. 10 weight oil

(Owner Notification System - No. 2)

\* \* \* \* \*

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

\* \* \* \* \*

THE CESSNA AIRCRAFT COMPANY



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# CUSTOMER CARE OWNER ADVISORY

MARKETING DIVISION / CESSNA AIRCRAFT COMPANY / WICHITA, KANSAS 67201 / CABLE ADDRESS - CESSCO WICHITA

April 23, 1979

SE79-6A

Dear Cessna Owner:

An improved means of attaching the engine and propeller controls, which utilize a ball bearing type rod end, is now being used on all production single engine aircraft.

The throttle, mixture, and propeller control cable ends are now being secured to the engine with a predrilled AN bolt, castellated nut and a cotter pin.

It is recommended that you have this improved control attachment made to your aircraft at the next 100 hour or annual inspection.

For further information, contact your local Cessna Dealer referencing Service Information Letter SE79-6.

Your affected aircraft serial and registration number is shown on the mailing label.

\* \* \* \* \*

CESSNA SINGLE ENGINE  
CUSTOMER SERVICES

150 72107

66076



"TAKE YOUR CESSNA HOME  
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# SINGLE ENGINE CUSTOMER CARE SERVICE INFORMATION LETTER

MARKETING DIVISION / CESSNA AIRCRAFT COMPANY / WICHITA, KANSAS 67201 / CABLE ADDRESS - CESSCO WICHITA

April 16, 1979

SE79-6

SUBJECT: ENGINE CONTROL ATTACHMENT

AIRCRAFT APPLICABILITY: All Single Engine Aircraft Prior to Model Year 1979

An improved means of attaching the engine and propeller controls, which utilize a ball bearing type rod end, is now being used on all production single engine aircraft.

The throttle, mixture, and propeller control cable ends are now being secured to the engine with a predrilled AN bolt, castellated nut, and a cotter pin.

Replacement of any undrilled bolts and self-locking nuts with an AN bolt of appropriate size and length, predrilled for use with an AN 310 castellated nut and cotter pin is recommended. This improved type attachment should be incorporated on all earlier aircraft at the next 100 hour or annual inspection.

NOTE: Steel AN bolts with an undrilled shank are identified with an "A" suffix (AN3-6A). A steel bolt of the same size, with the shank drilled for castellated nut and cotter pin, is identified as -- AN3-6. Aluminum AN bolts are not to be used in this application.

A copy of the related Owner Advisory is attached and is being sent to registered owners.

\* \* \* \* \*

(Owner Notification System - No. 1)

CESSNA AIRCRAFT COMPANY



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# single-engine SERVICE LETTER

MARKETING DIVISION • CESSNA AIRCRAFT COMPANY  
WICHITA, KANSAS 67201 • CABLE ADDRESS / CESSCO WICHITA

January 12, 1973

**REVISION NOTICE: This revised Service Letter  
supersedes the original issue dated 5-19-72.**

SE72-17  
(Revision 1)

**SUBJECT: FLAP ACTUATOR ASSEMBLY - REPLACEMENT OF COMPONENTS**

**AIRCRAFT AFFECTED: Pre-1972 Models 150 thru 210 Series with electric wing flaps**

**REASON FOR LETTER:**

Several changes have been made within the past twelve months which have affected the interchangeability of electric flap actuator assembly components on pre-1972 single engine aircraft. These changes are covered in Service Letters SE72-2, SE72-2 (Supplement 1), and the original issue of SE72-17.

In the interest of standardizing parts requirements and in order to continue to provide adequate field support of flap actuator assembly components, earlier configuration flap actuator assemblies will be phased out when existing inventories are exhausted. The new actuator assemblies are being made available for updating earlier in-service aircraft to the latest configuration if replacement becomes necessary.

A Parts Information Chart is attached for your convenience and should be retained for future reference when ordering replacement actuator assembly components until such time as applicable Parts Catalogs are revised to include necessary information.

**REMARKS:**

This Service Letter and attached information supersedes and replaces the original issue of SE72-17 and its attachments.

Continued.....



MAINTENANCE REQUIREMENTS FOR ELECTRIC FLAP ACTUATORS

Following is a summary of periodic maintenance required on flap actuator assemblies.

- \* Pre-1972 (Modified per SE72-2) \*\*  
Visually inspect at each 100 hour and annual inspection. Clean and lubricate as required.  
Lubricant: (1) MIL-G-211164 Grease for strut supported wing aircraft.  
(2) SAE No. 10 weight oil for cantilever wing aircraft.

\*\* Modification per SE72-2 required by January 1, 1973.

- \* Pre-1972 (converted to the new actuator assemblies) and 1972 and on.  
Visually inspect at each 100 hour and annual inspection. Clean and lubricate as required.  
Lubricant: SAE No. 10 weight oil.

(Owner Notification System - No. 1)

\*\*\*\*\*

THE CESSNA AIRCRAFT COMPANY

## SINGLE ENGINE AIRCRAFT FLAP ACTUATOR PARTS INFORMATION CHART

The following information shows the part numbers of new components to be installed in place of existing flap actuator components if replacement is necessary. Additional parts and/or Service Kits required to complete the change-over to the new components are also shown.

### NOTE

Information sheets will be included with each new unit shipped from the Cessna Service Parts Center to provide special instructions for required modifications as necessary.

### Suggestions To Follow When Using The Following Chart

1. First, determine the part numbers of components to be replaced from existing Parts Catalogs as applicable to aircraft Model and Serial Number.
2. Once the part numbers of existing components are determined, locate existing part numbers under SUPERSEDED PART NO. column.
3. Read NEW part number under SUPERSEDING PART NO. column.
4. Additional Parts/Service Kits required to install the new components are noted under the MODIFICATION REQUIRED column.
5. A detailed parts breakdown of the new configuration Flap Actuator Assemblies is provided at the end of the Chart in order to provide detailed component part numbers available for in-service aircraft which HAVE incorporated the new Flap Actuator Assemblies.

Suggested list prices for available components are shown as applicable.

INTERCHANGEABILITY OF FLAP MOTORS

12 VOLT ELECTRICAL SYSTEM

SUPERSEDED PART NO.	SUPERSEDING PART NO.	MODIFICATION REQUIRED
0760657-3 M072218A	C301002-0103	Replace existing flap switch with S1661-1 switch. (See Note Below)
C301001-0208 C301001-0304 C145-200 1045641	C301002-0103	Install 2 ea. S1636-2 terminals and 1 ea. S1638-2 housing. (See Note Below)
0760657-7 DF51C C301001-0210 C100-100 C301001-0704	C301002-0103	None (See Note Below)

24 VOLT ELECTRICAL SYSTEM

SUPERSEDED PART NO.	SUPERSEDING PART NO.	MODIFICATION REQUIRED
C301001-0504 1562025-3 1045603	C301002-0104	Install 2 ea. S1636-2 terminals and 1 ea. S1638-2 housing. (See Note Below)
C301001-0505 C301001-0902	C301002-0104	None (See Note Below)

NOTE

When C301002-0103 or C301002-0104 (Motor) is installed in conjunction with SK150-37, replace mounting studs with 2 ea. AN3-5A Bolts and 2 ea. AN935-10 Washers.

INTERCHANGEABILITY OF ACTUATORS AND ACTUATOR ASSEMBLIES

SUPERSEDED PART NO.	SUPERSEDING PART NO.	MODIFICATION REQUIRED
0760657-1 0760657-2 * 1016584 0760657-5 0760657-6 0760657-8 0760657-9 1045657  *C301001-0201 *C100-05 *C301001-0202 *C301001-0207 *C301001-0301 *C301001-0302 *C301001-0303 *C301001-0701	C301002-0301	Install SK150-41  Incorporate 1 ea. S1661-1 switch in addition to SK150-41 on: 15061533 thru 15063135 F150-0001 thru F150-0034 17251823 thru 17254274 F172-0086 thru F17200319 18253599 thru 18257066, 18257069, and 18257072 A182-0001 thru A182-0006 205-0001 thru 205-0577 206-0001 thru 206-0275 P206-0001 thru P206-0239 U206-0276 thru U206-0550 21057841 thru 21058737 T210-0001 thru T210-0152
<p><u>NOTE</u></p> <p>Part numbers noted by (*) are superseded by C301002-0303 ONLY WHEN USED ON:</p> <p>18258506 thru 18260698                      A182-0097 thru A18200136                      20700001 thru 20700205                      U206-0915 thru U20601673                      P206-0420 thru P20600647</p> <p>See the following for Modifications required to install C301002-0303.</p>		
*C301001-0201 *C100-05 *C301001-0301 *C301001-0701	C301002-0303	None
*C301001-0202 *1016584 *C301001-0302 *C301001-0207 *C301001-0303	C301002-0303	Install 2 ea. S1636-2 terminals and 1 ea. S1638-2 housing.
C301002-0101	C301002-0301	None

Continued.....

INTERCHANGEABILITY OF ACTUATORS AND ACTUATOR ASSEMBLIES

SUPERSEDED PART NO.	SUPERSEDING PART NO.	MODIFICATION REQUIRED
C301001-0202 C301001-0601 C301001-0602 C301001-0801 1045900	C301002-0302 (24 Volt)	Install SK150-41  Incorporate 1 ea. S1661-1 switch in addition to SK150-41 ON:  15061533 thru 15063135 F150-0001 thru F150-0034 17251823 thru 17254274 F172-0086 thru F17200319 18253599 thru 18257066, 18257069, and 18257072 A182-0001 thru A182-0006 205-0001 thru 205-0577 206-0001 thru 206-0275 P206-0001 thru P206-0239 U206-0276 thru U206-0550 21057841 thru 21058737 T210-0001 thru T210-0152
C301002-0102	C301002-0302	None
C301001-0204 C101-06	C301002-0203	SK177-17, SK177-18, SK210-68, or SK210-69 as applicable, must have been installed or be installed with this installation per Service Letter SE72-2.
C301001-0203 C301001-0205 C301001-0702	C301002-0201	SK177-17, SK177-18, SK210-68, or SK210-69 must have been installed or be installed with this installation per Service Letter SE72-2.
C301001-0206 C301001-0209	C301002-0201	SK177-17, SK177-18, SK210-68, or SK210-69 must have been installed or be installed with this installation per Service Letter SE72-2.  Install 2 ea. S1636-2 terminals and 1 ea. S1638-2 housing.
C145-30-2	C301002-0203	None
C301002-0105 C301002-0305	C301002-0308	None
C301002-0106	C301002-0105	None
0760657-4	C301001-0211	None

NEW CONFIGURATION FLAP ACTUATOR ASSEMBLY DETAILED PARTS

Each Flap Actuator Assembly consists of a motor, actuator, and a coupling. Part numbers of available components are shown below. Since individual components are not totally compatible with earlier systems, the information provided below will only apply to those aircraft which HAVE converted to the new units and 1972 Models and on.

<u>FLAP ACTUATOR ASSEMBLY</u>	consists of:	<u>MOTOR</u>	<u>ACTUATOR</u>	<u>COUPLING</u>
24 C301002-0201		C301002-0103	C301002-0203	C301001-0211
C301002-0202		C301002-0104 (24 Volt)	C301002-0203	C301001-0211
C301002-0301		C301002-0103	C301002-0308 (Actuator/ Switch Bar Assembly)	C301001-0211
C301002-0302		C301002-0104 (24 Volt)	C301002-0308 (Actuator/ Switch Bar Assembly)	C301001-0211
C301002-0303		C301002-0103	C301002-0306	C301001-0211
C301002-0304		C301002-0104 (24 Volt)	C301002-0306	C301001-0211

COST INFORMATION:

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>SUGGESTED LIST PRICE</u>
C301001-0211	Coupling	\$ 1.30 (A)
C301002-0103	Motor (12V)	\$ 25.20 (A)
C301002-0104	Motor (24V)	\$ 27.80 (A)
C301002-0201	Actuator Assembly	\$ 84.70 (A)
C301002-0202	Actuator Assembly	\$ 89.50 (A)
C301002-0203	Actuator	\$ 49.10 (A)
C301002-0301	Actuator Assembly	\$106.00 (A)
C301002-0302	Actuator Assembly	\$ 96.60 (A)
C301002-0303	Actuator Assembly	\$ 93.90 (A)
C301002-0304	Actuator Assembly	\$ 96.60 (A)
C301002-0306	Actuator	\$ 66.00 (A)
C301002-0308	Actuator/Switch Bar Assembly	\$ 66.00 (A)
M072218A	Motor (12V)	\$ 29.30 (A) (Limited Supply Only)
SK150-41A	Flap Actuator Replacement (consists of wing rib and wiring circuit mod.)	\$ 38.40 (A)
S1661-1	Switch - Flap Selector	\$ 10.10 (S)
S1636-2	Terminals	\$ .06 (S)
S1638-2	Housing	\$ .14 (S)