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# Service Bulletin

## Service Bulletin No. 054

### **Alternator P/N ES-13070-1 Fan Replacement**

#### 1. Planning Information

##### A. Effectivity

- (1) Kelly Aerospace and Hartzell Engine Technologies (HET) P/N ES-13070-1 alternators, S/N J032184 through S/N H-L090932 inclusive.
  - (a) Serial number prefix with "H-" indicate HET manufacture, no prefix indicates Kelly Aerospace manufacture.
  - (b) Alternators are new units which were sold or provided by Kelly Aerospace Thermal Systems LLC for use in Thermal Systems STC's.
  - (c) Some alternators within the S/N group may have fan's installed that do not conform to Fig. 3. These alternators are NOT AFFECTED.

**CAUTION:** DO NOT USE OBSOLETE OR OUTDATED INFORMATION. PERFORM ALL WORK OR INSPECTIONS IN ACCORDANCE WITH THE MOST RECENT REVISION OF THIS SERVICE BULLETIN (SB). INFORMATION CONTAINED IN THIS SB MAY BE SIGNIFICANTLY CHANGED FROM EARLIER REVISIONS. FAILURE TO COMPLY WITH THIS SB OR THE USE OF OBSOLETE INFORMATION MAY CREATE AN UNSAFE CONDITION THAT MAY RESULT IN DEATH, SERIOUS BODILY INJURY, AND/OR SUBSTANTIAL PROPERTY DAMAGE. REFER TO THE SB INDEX FOR THE MOST RECENT REVISION LEVEL OF THIS SB.

##### B. Concurrent Requirements

- (1) None

##### C. Reason

- (1) It has been discovered that P/N ES-13070-1 alternators manufactured by Kelly Aerospace and Hartzell Engine Technologies using a P/N 40397 steel fan may have a condition which could allow the fan blades to crack and potentially separate from the alternator.
- (2) Should the steel fan blades crack and separate from the alternator, damage may occur inside the engine compartment and/or the fan blades may exit the aircraft by piercing the engine cowling.
- (3) This condition may appear in P/N ES-13070-1 alternator's using a P/N 40397 steel fan, S/N J032184 through S/N H-L090932 inclusive. Kelly Aerospace S/N's will not have the H- prefix.
- (4) Notify the STC holder and applicable aircraft manufacturers of the alternator condition and effectivity.
- (5) Regulatory action is not expected.

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#### D. Description

- (1) This Service Bulletin provides Instructions for Continued Airworthiness (ICA).
- (2) This Service Bulletin is being issued to require the replacement of the existing steel fan P/N 40397, with an improved aluminum fan P/N 40995, on P/N ES-13070-1 alternators.

#### E. Compliance

- (1) At the next regularly scheduled maintenance event that requires removal of the engine cowling but not to exceed the next fifty (50) hours time in service or annual inspection.
  - (a) Follow Accomplishment instructions in Section 3 of this Service Bulletin.
- (2) Compliance with this Service Bulletin is the terminating action for this Service Bulletin.

#### F. Approval

- (1) FAA acceptance has been obtained on technical data in this publication that affects type design.

#### G. Manpower (per application)

- (1) If the fan can be replaced on wing, one (1) man hour is required at regularly scheduled maintenance and includes:
  - (a) Replacement of the existing alternator fan (on aircraft).
  - (b) Return to Service.
- (2) If the fan can not be replaced on wing, a total of two (2) man hours is required at regularly scheduled maintenance and includes:
  - (a) Removal and reinstallation of the alternator.
  - (b) Replacement of fan on the alternator.
  - (c) Return to Service.

#### H. Weight and Balance

- (1) No change.

#### I. Electrical Load Data

- (1) No change.

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#### J. References

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- (1) Applicable aircraft maintenance and parts manuals.
- (2) Applicable engine maintenance manual.
- (3) Applicable STC service supplements.

#### 2. Material Information

- (1) As required by this Service Bulletin, one (1) each, Fan, Alternator, P/N 40995, one (1) each Pulley Spacer, P/N 40760, one (1) each Fan Spacer, P/N 40915, and one (1) each Lock Washer, P/N 40523-4. (Parts must be obtained from Kelly Aerospace Thermal Systems LLC.)

#### 3. Accomplishment Instructions

**WARNING:** THIS PROCEDURE MUST BE PERFORMED BY COMPETENT AND QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH ENGINE AND AIRFRAME MAINTENANCE THAT IS SPECIFIC TO THE ELECTRICAL SYSTEM. FAILURE TO DO SO MAY RESULT IN ECONOMIC LOSS, EQUIPMENT DAMAGE, AND/OR PHYSICAL INJURY.

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#### A. Identification (Alternator Fan)

- (1) Locate the alternator nameplate per Figure 2 and observe the serial number. The alternator IS AFFECTED if the alternator has P/N 40397 fan installed (refer to Figure 3) and has S/N J032184 through S/N H-L090932 inclusive.
  - (a) If an alternator within the S/N group above has a fan installation that does not conform to the P/N 40397 fan shown in Fig. 3, the alternator is NOT AFFECTED. Proceed to section 3.D.

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#### B. Corrective Action:

- (1) The corrective action for this service bulletin requires that the steel fan P/N 40397, two spacers, and lock washer be removed and replaced with a new aluminum fan P/N 40995, new pulley spacer P/N 40760, new fan spacer P/N 40915, and new lock washer P/N 40523-4. Replacement may be performed with the alternator installed on the aircraft if adequate access is available.
- (2) To remove the original steel fan (P/N 40397), use the following instructions:

**CAUTION:** THE PULLEY IS ALUMINUM AND CAN BE BENT OR DAMAGED SHOULD ANY TYPE OF UNPROTECTED METAL TOOL BE USED TO HOLD THE PULLEY.

**NOTE:** These instructions may be used whether the alternator is on or off the aircraft. If alternator removal is required, use the STC holder's ICA information for the removal, installation, testing and adjustment of the alternator.

- (a). When removing the fan and pulley, use the appropriate aircraft, engine and/or STC service instruction or manual and release the tension on the alternator belt. Remove the belt from the pulley.
  - (b). Hold the pulley firmly with a strap wrench. Using a wrench with a 15/16 inch socket, rotate the pulley nut counter clockwise to loosen and remove.
  - (c). Remove and discard lock washer, pulley spacer, fan spacer, and fan. Retain nut and pulley.
- (3) To install the new aluminum fan (P/N 40995), use the following instructions:
    - (a) Prior to installing the new fan:
      - (i) Inspect the rotor shaft, shaft threads, woodruff key, and bearing area for damage. If damage is apparent, replace the alternator
      - (ii) Inspect the pulley and pulley nut for condition. If damaged replace.
    - (b) Place the new fan spacer P/N 40915, new aluminum fan P/N 40995, new pulley spacer P/N 40760, and the existing pulley, on the rotor shaft as shown in Figure 1.
    - (c) Place a new lock washer P/N 40523-4 on the rotor shaft and apply Loctite® 271 on the rotor shaft threads. Place existing nut on the shaft and tighten.
    - (d) Using a strap wrench to hold the pulley and a calibrated torque wrench with a 15/16 inch socket, torque the nut to 67 to 77 ft-lbs to secure fan and pulley assembly.
    - (e) Using a dial indicator, zero the indicator on the face of pulley. Rotate pulley to check runout. Runout must not exceed 0.008 inch.
    - (f) Install the belt on the pulley and tension using the appropriate aircraft/engine and/or STC service instructions or manual.

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#### C. Return to Service

- (1) After completion of the regularly scheduled maintenance event or annual, the aircraft will be ready for “return to service”.
- (2) Perform the recommended alternator operational tests in accordance with applicable AFM or POH, and the applicable aircraft/STC maintenance manual.

#### D. Maintenance Record

- (1) Upon successful completion of this Service Bulletin per the applicable compliance listed, make an appropriate logbook entry noting compliance.
  - (a) Compliance with this Service Bulletin is terminating action for the Service Bulletin.

#### 4. Contact Information:

- A. Information pertaining to these alternators and their usage must be made through Kelly Aerospace Thermal Systems LLC.

Kelly Aerospace Thermal Systems  
1625 Lost Nation Road  
Willoughby, OH 44094 USA  
Tel: +1.440.951.4744  
Fax:+1.440.951.4725  
E-mail: sales@kellyaerospace.com

- B. General information regarding SB 054 may be obtained through Hartzell Engine Technologies Technical Support at +1.334.386.5441 or via Fax +1.334.386.5450. For e-mail communication use techsupport@hartzellenginetech.com.

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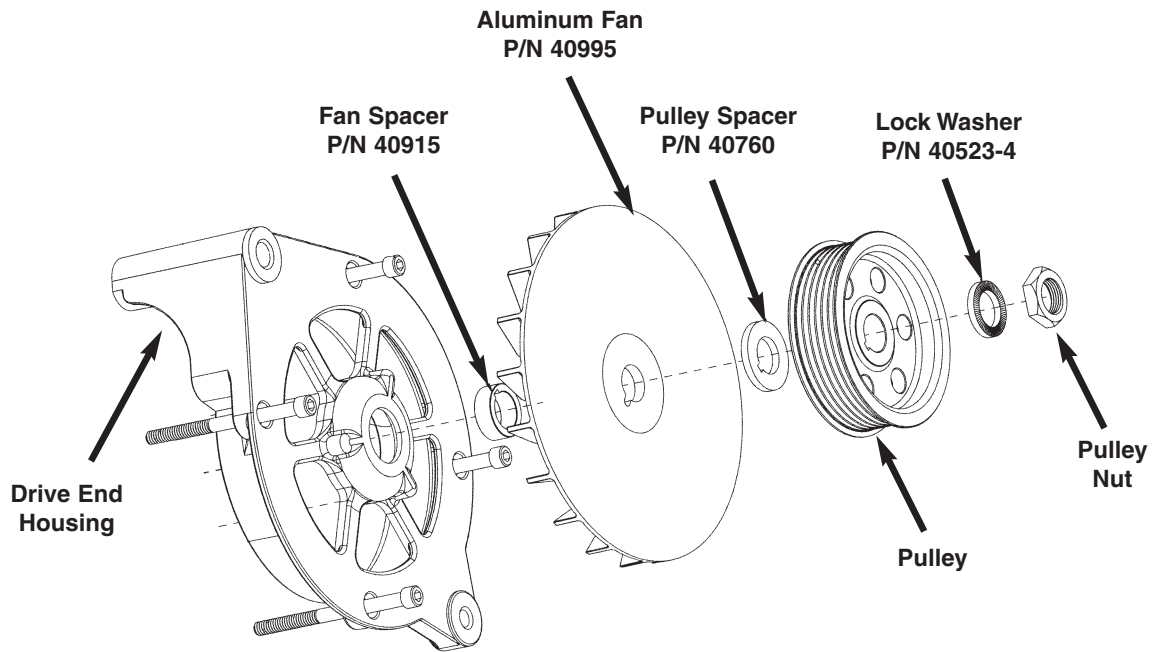


Figure 1 - Fan & Pulley Installation  
(Exploded View)

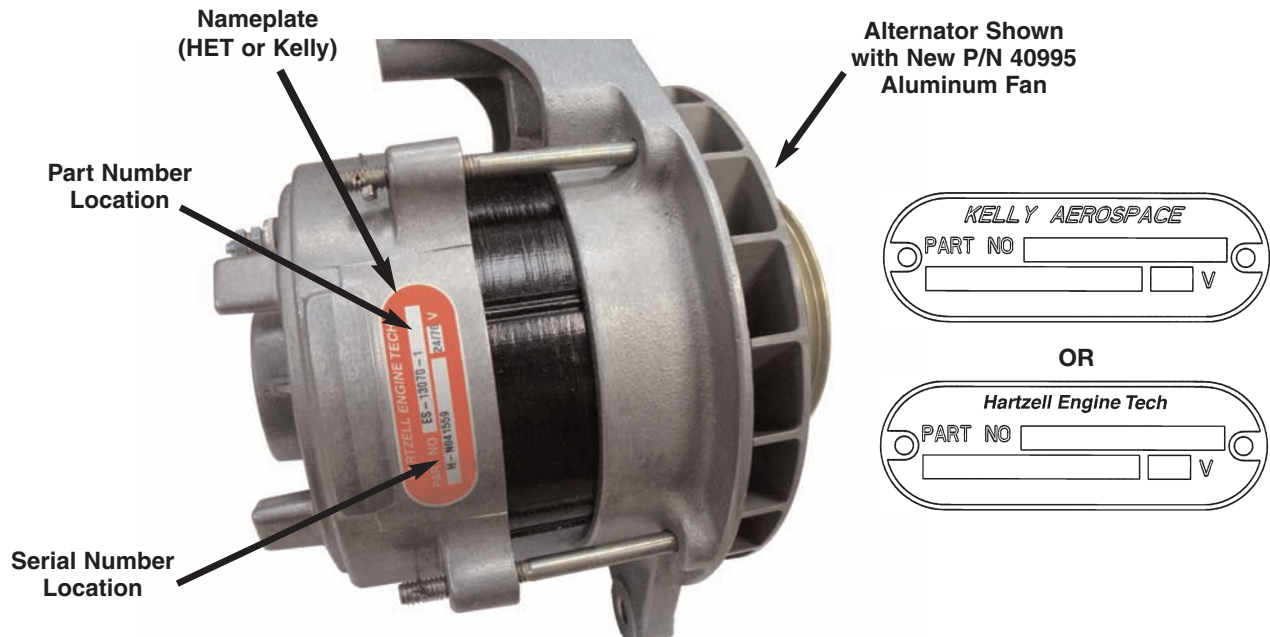


Figure 2 - Typical ES-13070-1 Alternator

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**Figure 3 - P/N 40397 Steel Fan Identification  
(Remove Fan & Discard)**



**Figure 4 - P/N 40995 Aluminum Fan Identification  
(Replacement Fan)**

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