

Service Bulletin

Title: Bell 407 Driveshaft Mounted Pulley and Drive Ring installation inspection

Date: 4 December 2014

Applicability: Owner/Operators of Bell 407 Helicopters with STC SR00222DE Air

Conditioning System

(This service bulletin supersedes the SB407-101 Service Bulletin)

Reference: FAA / STC # SR00222DE, Bell 407 Air Conditioning System

407EC-300 Compressor Installation Drawing

407EC-200M-2 Instructions for Continued Airworthiness (ICA)

Compliance: Part 1: (One time) Within 25 hours of flight time after receipt of this

bulletin

Part 2: (Repetitive) Every 100 or 150 hours inspection (following Bell Helicopter Maintenance Manual chapter 12 grease lubrication intervals

for tail rotor driveshaft splines)

A. Discussion:

Proper torqueing of the compressor pulley and installation of the drive ring assembly is critical to ensure trouble free operation of the air conditioner system. There have been field reports of the compressor pulley loosening and causing damage to the oil cooler blower shaft.

The purpose of this bulletin is to expand and clarify the pulley and drive ring installation and inspection procedures.

This bulletin also introduces a new minimum and maximum torque for the pulley installation procedure for installations prior to kit S/N AC407-080 that have not upgraded using SB 407-301 and still have P/N S-3532EC-1 pulley and P/N S-3532EC-3 drive ring and current installations with P/N S-3532EC-4 pulley and P/N S-3532EC-5 drive ring installed. It also shows configuration differences of the S-3532EC-5 drive ring.

B. Weight & Balance:

There is no change in weight due to the inspection and possible rework.

C. Revision History:

Revision	Issue Date	Inserted By	Approved	Description of Changes		
N/C	8/19/14	RL	MK	Initial Release		
А	8/25/14	RL	MK	Clarified inspection/rework instructions		
В	8/29/14	RL	MK	Corrected STC number in header		
С	10/10/14	BD	MK	Added old configuration to discussion, clarified Part 2 instructions, edited callouts in figure 4.1, added note to address placard		

D	12/4/2014	KM	MK	Added	superseding	note	under
				applicability section			

Inspection/Rework Instructions:

Part 1: (One time) Within 25 hours of flight-time after receipt of this bulletin

- 1. Prepare helicopter for maintenance according to applicable BHT-407-MM maintenance manual. Remove components as necessary to gain access to the affected area.
- 2. Check security of the air conditioner pulley.
 - a. Locate the air conditioner compressor and cut the safety wire on the belt tensioning link assembly jam nuts. Loosen belt tensioning upper mounting bolt. Loosen the compressor lower mounting bolt to allow the compressor to swivel on the compressor mount (Figure 2-1).
 - b. Adjust the tensioning link assembly to loosen compressor drive belt. Check S-3532EC-4/-1 drive pulley for play relative to the oil cooler blower shaft, both in the direction of rotation as well as for lateral movement relative to the shaft (Figure 3-1 & 4-1).
 - c. If there is no detectable play, inspect area around the base of the drive ring at the shaft for any buildup of metal dust/powder residue.
 - d. If there is no play or metal dust/powder residue present, tension the belt per manual 407EC-200M-2 and continue to step 3.
 - e. If there is any detectable looseness, and/or if there is metal dust/powder residue present, remove the S-3532EC-5/-3 drive ring and S-3532EC-4/-1 pulley. Inspect the oil cooler blower shaft for wear or damage.
 - f. See Figure 1-1 to determine drive ring configuration. It is advisable to order the latest revision (Rev. R or later) drive ring for reinstallation. This newer drive ring has more spline contact area and may be installed in place of the older versions at the operator's discretion.

NOTE

Performance of the following steps is critical to proper installation. Improper installation can lead to damage of the oil cooler blower shaft spline. The new torque range for the S-3532EC-4/-1 pulley is 450-600 in-lbs. Contact ACC if your placard P/N S-2501EC-1 does not reflect the new torque values.

g. If there is no damage to the drive ring or to the shaft (or if damage to the shaft is within limits), begin reinstallation by installing shim part number S-3534EC-1 or S-3534EC-2, whichever was originally installed (See Figure 4). If neither shim was installed, then install S-3534EC-1, unless it causes unacceptable belt misalignment, in which case it may be omitted. Next, thread the S-3532EC-4/-1 drive pulley onto the oil cooler blower shaft and torque to 450 in-lbs. Apply grease to the splines of the S-3532EC-5/-3 drive ring according to Bell requirements for the adjacent flex coupling spline (refer to BHT-407-MM-2, Table 12-2).

CAUTION

Under no circumstance should the installer start at a high pulley torque and back off to achieve alignment by rotating the pulley counterclockwise. Backing off on the torque during installation is likely to result in loosening of the pulley during operation, leading to damage to the oil cooler blower shaft spline. Alignment must be reached while rotating the pulley clockwise and increasing the torque of the pulley to ensure proper installation. Do not exceed 600 in-lbs. when torqueing the pulley.

- h. Install the drive ring onto the oil cooler blower splined shaft in the proper orientation, in a position where 4 of the holes in the drive ring most closely align with 4 holes in the pulley. Slowly tighten the pulley further by rotating it in the clockwise direction only (looking aft) until 4 holes of both components are fully aligned.
- i. Once 4 holes are aligned and after verifying the final pulley torque is in the range of 450-600 in-lbs., install 4X S-3532EC-11 bolts with 4X NAS143-4C washers into the aligned holes. Torque bolts to 60-80 in-lbs. Do not make any fastener substitutions. Safety wire the S-3532EC-11 bolts per BHT-407-MM. Safety wire must be routed so that it does not contact oil cooler blower splines or splined adapter.
- j. If alignment of the 4 bolt holes is not achieved by the time 600 in-lbs. of pulley torque is reached, remove the drive ring from the splines and rotate it 1 spline in either direction so as to create better hole alignment. Fully loosen the pulley then repeat the procedure. Trial and error may be necessary to find a spline position for the drive ring that allows proper alignment of 4 bolt holes.
- 3. Install previously removed components and perform functional test per applicable maintenance manuals.
- 4. Secure aircraft.
- 5. Make an entry in the helicopter logbook and historical service records indicating compliance with Part 1 of this Service Bulletin.

Part 2: (Repetitive) Every 100 or 150 hrs. inspection (following Bell's Grease Lubrication Intervals for tail rotor driveshaft splines)

- 1. Perform steps 1-4 of Part 1.
- 2. Make an entry in the helicopter logbook and historical service records indicating compliance with Part 2 of this Service Bulletin.

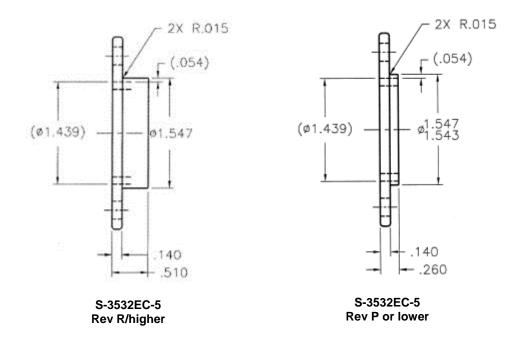


Figure 1.1 S-3532EC-5 Drive Ring Configurations

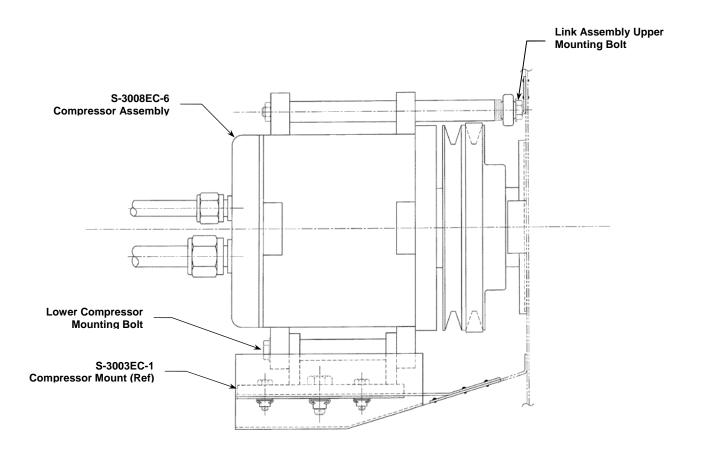


Figure 2.1
Air Conditioner Compressor Installation
(View Looking Inboard, LH Side)

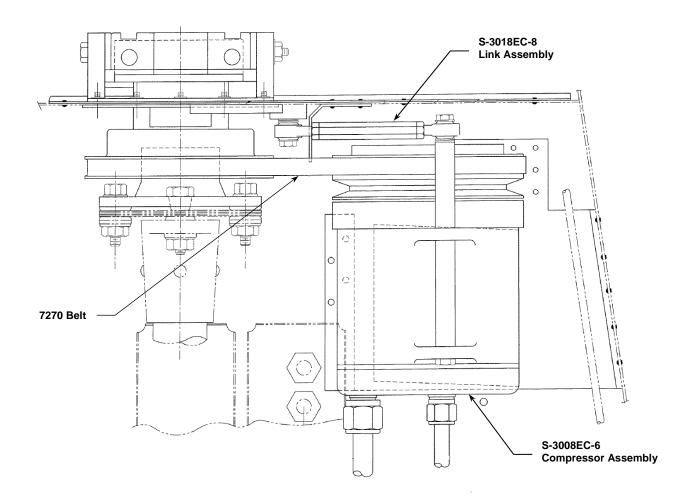


Figure 3.1
Air Conditioner Compressor Installation
(View Looking Down)

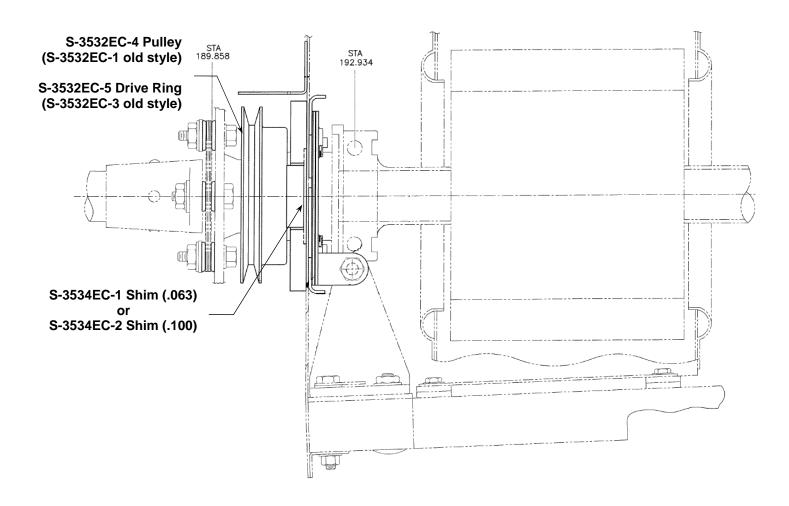


Figure 4.1
Oil Cooler Blower Shaft Assembly
(View Looking Inboard, LH Side)