



SCHWEIZER SERVICE BULLETIN

B-257.1*
21 May 1993

MANDATORY

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SUBJECT: ONE-TIME INSPECTION OF LOWER COUPLING DRIVE SHAFTS, AND NEW ENGINE/ROTOR TACHOMETER MARKINGS

APPROVAL STATUS: MODIFICATION FAA APPROVED

MODELS AFFECTED:

- **PART I: Model 269A, TH55A, 269A-1, 269B, and 269C Helicopters equipped with any lower coupling drive shaft listed in the following:**
 - All lower coupling drive shafts produced by Hughes/McDonnell Douglas (any drive shaft with Serial Number prefix other than "S").
 - Lower coupling drive shafts produced by Schweizer; Serial Numbers S001-S256, S258-S339, S341-S382, S384-S448, S450-S476, S508, S511, S513, S519, S579, S582, S590, S597, S599, S612, S614, S616, and S617.

(Model 269C Helicopter Serial Number 1628 and subsequent were delivered from the factory with lower coupling drive shafts exempt from Part I inspection.)

- **PART II: All Model 269A, TH55A, 269A-1, 269B Helicopters, and Model 269C Helicopters Serial Numbers 0001 thru 1629.**

TIME OF COMPLIANCE: Parts I and II shall be accomplished on affected helicopters within the next 100 hours flight time, or 90 days from issue date of this bulletin whichever occurs first. If B-257 was previously complied with, reinspection in accordance with this bulletin is not necessary.

REFERENCE: 269 Series Basic HMI (Reissued: 15 March 1982; Revised 08 May 1992)

PREFACE: ● Surface defects can contribute to drive shaft failure.

- Field reports indicate that lower coupling drive shaft damage/failure has occurred as a result of engine declutched operation above the limits specified in the Pilot's Flight Manual.
- This Service Bulletin specifies a one-time inspection to check for drive shaft defects; provides marking data to display the speed limitation on the ENGINE/ROTOR tachometer to reinforce existing operating limits; and reiterates the prohibition of engine declutched operation above 1600 RPM.
- SAC recommends installation of Engine Overspeed Control Kit on 269C Model Helicopters to help prevent drive shaft failure due to overspeed.

(█) Denotes portion of text added or revised.

*Supersedes B-257, dated 20 Jan 1993

1 of 6

- Failure to comply with this Service Bulletin may lead to loss of control of the helicopter, and subsequent serious injury, death and/or property damage.
- This revision provides additional and clarified information to aid in the proper inspection of the lower coupling drive shafts. If B-257 was previously complied with, no further action is required.

NOTE

The Flight Manuals for Model 269A, TH55A, 269A-1, 269B, and 269C will be updated to reflect the instrument markings specified in this Service Bulletin.

TOOLS & EQUIPMENT

Nomenclature

Surface Comparator
(Model S-22)

Source

GAR Electroforming, Augusta
Drive, Danbury, Conn. 06810,
Fax 203-790-0700,
Phone: 203-744-4300

MATERIALS

Nomenclature

Mineral Spirits

Alcohol

Stoddard Solvent

3M Scotch Brite

BST-4 Presto Black

Contact Cement

Source

Commercial

Commercial

Commercial

Commercial

Birchwood Casey, 7900 Fuller
Road, Eden Prairie, MN 55344,
Fax: 612-937-7979,
Phone: 612-937-7931

Commercial

PROCEDURE:

**PART I: ONE-TIME INSPECTION FOR DEFECTS ON LOWER COUPLING DRIVE SHAFT
(SHORT SHAFT)**

- a. Remove lower coupling drive shaft (Basic HMI, Section 10).

NOTE

The following procedure is in addition to all other inspection requirements for the lower coupling drive shaft.

b. Drive Shaft Inspection.

NOTE

In steps (1) and (2) below, it is not necessary to remove grease retainer, rings, and boot from shaft. These parts may be moved on shaft as necessary to perform subsequent steps.

- (1) Move grease retainer to center of drive shaft to expose retainer ring (Figure B-257.1-1). Carefully break the bond to allow retainer ring to slide on shaft.
- (2) Cut safety wire from alignment ring and remove boot ring from boot to allow these parts to slide on shaft.
- (3) Thoroughly clean grease and bonding residue from drive shaft.
- (4) Visually inspect drive shaft between forward and aft splines, with particular attention to end radii, for cracks, machining steps, manufacturing tool marks, surface defects, and lack of clean up during the production grinding operation. (See Note below.) (Figure B-257.1-1)

NOTE

The drive shaft is machined to a 125-250 finish, ground to a 32 finish, then shot peened and coated with manganese phosphate or black oxide. In the above inspection look for areas where the 125-250 machine finish has not been removed in the grinding operation. A rough or coarse manganese phosphate coating and/or the effects of shot peening (small indentations or compressions) may change the surface finish value, but are not cause for rejection.

Small indentations near the center of the drive shaft are the result of hardness testing, and are not cause for rejection.

A surface comparator may be used to aid in this inspection. DO NOT USE A PROFILOMETER FOR THIS INSPECTION.

Perform inspection for cracks, steps, tool marks and defects in accordance with PART I: b. (4) prior to removing any protective coating.

- (5) If unable to adequately inspect driveshaft for lack of clean up during the grinding operation due to the phosphate coating, perform the following procedures:
 - (a) Clean and degrease shaft with either mineral spirits, alcohol, or stoddard solvent.
 - (b) Lightly abrade surface by hand with 3M scotch brite.
 - (c) Inspect drive shaft in accordance with PART I: b.(4).
- (6) If defects are found, the drive shaft must be retired from service or returned to SAC for further evaluation and disposition. Install serviceable drive shaft (PART I: c.).

c. Drive Shaft Assembly and Installation.

- (1) If protective coating was removed from drive shaft, touch up affected area with BST-4 Presto Black in accordance with manufacturer's instructions. Locate and reassemble grease retainer, rings, and boot on drive shaft (Figure B-257.1-1).
- (2) Lubricate and install lower coupling drive shaft (Basic HMI, Section 10).

d. Record compliance with PART I of this Service Bulletin in the aircraft records.

PART II: INSTALLATION OF NEW TACHOMETER MARKINGS

a. Install declatched limit marking on ENGINE/ROTOR tachometer using the method described in step b. or step c. (The method used is at the discretion of the owner/operator.)

b. Installation of marking, without disassembly (Figure B-257.1-2):

- (1) Using pressure sensitive vinyl decal material or paint, install a red triangle on lens of ENGINE/ROTOR tachometer at 1600 RPM.
- (2) Paint a white slippage mark at bottom of lens and across adjacent surface of lens frame.
- (3) Record compliance with PART II of this Service Bulletin in the aircraft records.

c. Installation of markings, repair facility (Figure B-257.1-2):

- (1) Remove ENGINE/ROTOR tachometer from instrument panel (Basic HMI, Section 14).
- (2) Have red triangle permanently marked on face of ENGINE/ROTOR tachometer at an FAA approved repair facility, in accordance with AC43.13-1A.
- (3) Install ENGINE/ROTOR tachometer in instrument panel (Basic HMI, Section 14).

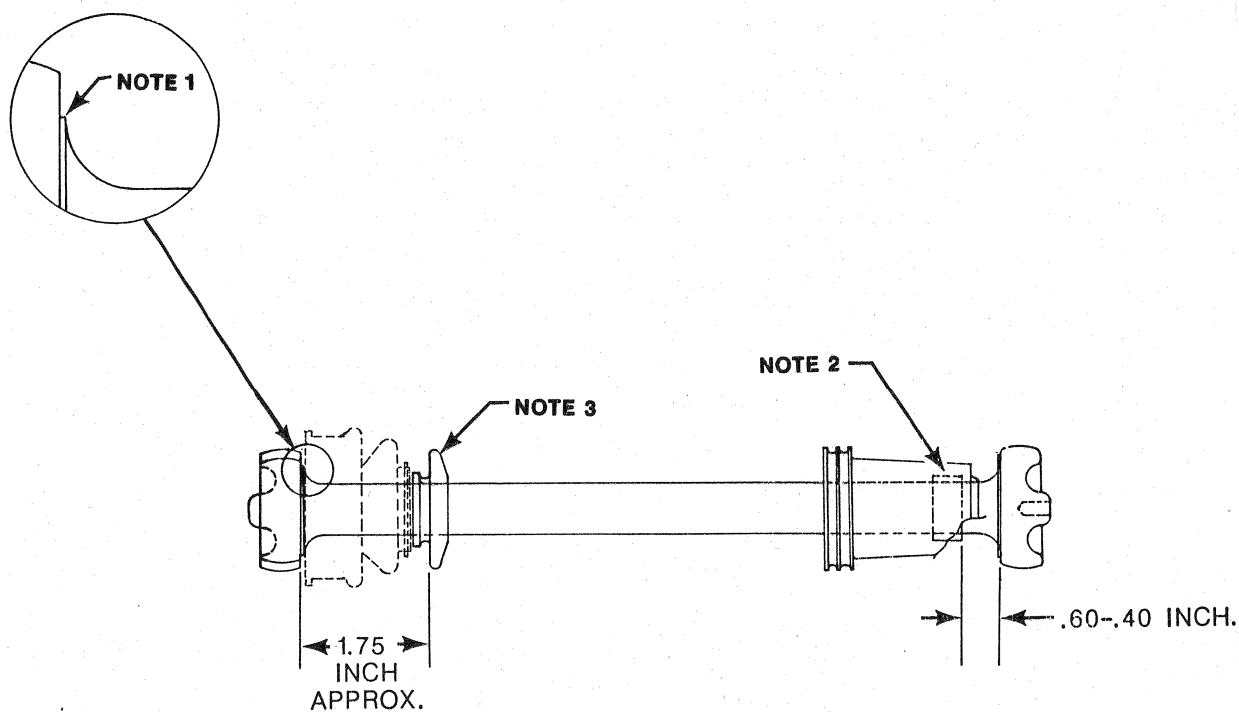
d. Record compliance with PART II of this Service Bulletin in the aircraft records.

NOTE

Engine operation in excess of 1600 rpm with the clutch disengaged is prohibited. To prevent lower coupling drive shaft damage due to overspeed in the event that the pilot inadvertently exceeds the 1600 RPM limit, SAC recommends installation of Engine Overspeed Control Kit, P/N 269A4997-1 or -3 as applicable on Model 269C Helicopters.

WEIGHT AND BALANCE

Weight and balance are not affected.



NOTES:

1. SHOULDER AREA OUTBOARD OF RADIUS IS MACHINED WITH A STEP IN THIS AREA AND IS NOT CAUSE FOR REJECTION - TYPICAL BOTH ENDS.
2. CEMENT RETAINER RING IN PLACE USING CONTACT CEMENT (OR EQUIVALENT).
3. SECURE ALIGNMENT RING IN PLACE USING TWO WRAPS OF SAFETY WIRE.

Figure B-257.1-1. Lower Coupling Drive Shaft

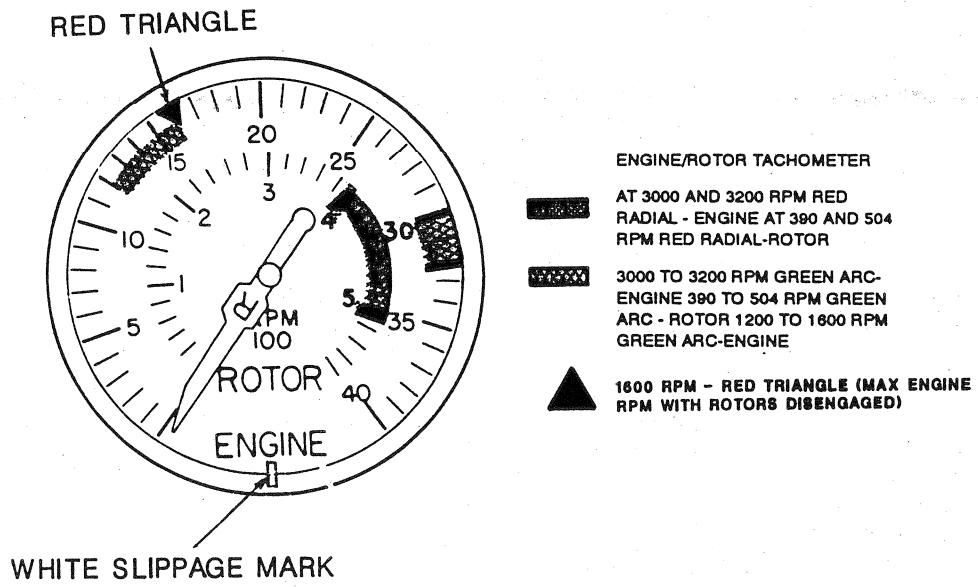


Figure B-257.1-2. Instrument Markings, ENGINE/ROTOR Tachometer