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Note 1: This AD applies to each helicopter identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For helicopters that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must use the authority provided in paragraph (d) to request approval from the FAA. This approval may address either no action, if the current configuration eliminates the unsafe condition, or different actions necessary to address the unsafe condition described in this AD. Such a request should include an assessment of the effect of the changed configuration on the unsafe condition addressed by this AD. In no case does the presence of any modification, alteration, or repair remove any helicopter from the applicability of this AD.

Compliance: Required as indicated, unless accomplished previously.

To prevent slippage of the T/R drive, loss of directional control, and subsequent loss of control of the helicopter, accomplish the following:

(a) Before further flight, install alignment dots as follows:

(1) Remove the transparent inspection cover on the tail cone and rotate the T/R blades so that one blade leading edge is aligned with the tail cone centerline. Mark a dot on the tail cone skin aligned with the tip of the blade leading edge. With the same alignment, mark a dot on the centerline of the tail cone skin at the edge of the inspection hole, and mark a corresponding dot on the drive shaft flange.

(2) Position the aft T/R blade with leading edge approximately 45-degrees above horizontal. Engage the clutch and rotor brake if the helicopter is so equipped. Use the engine ring gear holding tool, part number (P/N) MT091-1, or an FAA-approved equivalent, to keep the engine from rotating.

(b) Conduct the following daily preflight checks for misalignment of the alignment

dots until compliance with paragraph (c) of this AD has been accomplished: Check for misalignment of the alignment dots installed on the tail cone skin and the drive shaft flange by rotating the T/R blade so that the alignment dot is visible in the inspection window and the tip of the T/R blade leading edge aligns with the dot on the tail cone skin. Ensure that the drive shaft flange dot is aligned with the dot on the centerline of the tail cone skin at the edge of the inspection window. If any misalignment is detected, before further flight, replace the T/R gearbox with an airworthy one that has been determined to have both the input and output keys installed in accordance with paragraph (c) of this AD or other FAA-approved procedures, or is exempt from the requirements of this AD as listed in the applicability section of this AD. The checks required by this AD may be performed by an owner/operator holding at least a private pilot certificate and must be entered into the aircraft records showing compliance with this AD, in accordance with sections 43.11 and 91.417(a)(2)(v) of the Federal Aviation Regulations.

(c) Within the next 100 hours time-in-service (TIS) after the effective date of this AD, or at the next annual inspection, whichever occurs first, verify installation of both the input and output shaft keys as follows:

(1) Cut and remove the safety wire securing the chip detector to the sight gage on the T/R gearbox. Place a container under the T/R gearbox to catch the drained oil and remove the chip detector. Remove and discard the gasket on the chip detector.

(2) Remove the T/R gearbox from the helicopter in accordance with the applicable maintenance manual.

(3) Cut and remove the safety wire securing the filler vent plug to the sight gage on the T/R gearbox and remove the filler vent plug and sight gage. Remove and discard the gasket on the filler vent plug and sight gage.

(4) Remove and disassemble the output cartridge, P/N A111-1, from the T/R gearbox case, P/N A109-1 (see figure 1) as follows:

(i) Place a mark across the gear case, P/N A109-1, and output cartridge, P/N A111-1, with a felt pen or grease pencil to ensure proper reassembly.

(ii) Cut and remove the safety wire around the four MS20074-04-06 bolts, securing the output cartridge to the gear case. Remove the four bolts and AN960-416L washer(s). Separate the output cartridge from the gear case (see figure 1).

(iii) Remove and discard the safety wire, MS16562-24 or 52-022-094-0437 roll pin, and MS14145L6 or LCN6M-624 retaining nut. Remove the AN960-616L washer(s) and the washer, P/N A141-2, noting the washer(s) location for reassembly. Do not damage the output shaft, P/N A107-1, or the shim(s), P/N A118-1 through -6, located next to the flange of the output cartridge when removing the retaining nut.

(iv) Visually inspect for the presence of the output shaft key, P/N A114-2, between the pinion gear, P/N A545-1, and the output shaft (see figure 2).

(v) If the output shaft key is missing, replace the T/R gearbox with an airworthy

one that has been determined to have the output key installed. Report any T/R gearbox that has a missing key within 10 days after the inspection to the Manager, Los Angeles Manufacturing Inspection Office, FAA, Northwest Mountain Region, 3960 Paramount Blvd., Lakewood, California 90712, telephone (310) 627-5290, fax (310) 627-5293. Reporting requirements have been approved by the Office of Management and Budget and assigned OMB control number 2120-0056.

(vi) If the output key is installed, reinstall the washer, P/N A141-2, and AN960-616L washer(s). Install a MS14145L6 or LCN6M-624 retaining nut, and torque to 200-250 in.-lbs. plus 20-25 in.-lbs. nut drag (maximum 275 in.-lbs.). Install a MS16562-24 or 52-022-094-0437 roll pin, and safety wire using 0.032-inch stainless steel safety wire. The safety wire pigtail must be wrapped tightly around the retaining nut. Vibro-etch the final rule AD number on the output cartridge attachment flange.

(5) Remove and disassemble the input cartridge, P/N A110-1, from the T/R gear case, P/N A109-1, as follows:

(i) Place two marks across the gear case, P/N A109-1, and input cartridge, P/N A110-1, with a felt pen or grease pencil to ensure proper reassembly.

(ii) Cut and remove the safety wire around the four MS20074-04-06 bolts securing the input cartridge to the gear case. Remove the four bolts and AN960-416L washer(s). Separate the input cartridge from the gear case (see figure 1).

(iii) Secure the input cartridge to a block of wood through the two bolt holes in the input shaft assembly, P/N A116-1 (see figure 1). Place the block of wood in a vise. Remove and discard the safety wire, roll pin, and retaining nut. Remove the AN960-616L washer(s), and washer, P/N A141-1, noting the washer(s) location for reassembly. Do not damage the input shaft or shim(s), P/N A118-1 through -6, located next to the flange of the input cartridge.

(iv) Visually inspect for the presence of the input shaft key, P/N A114-1, between the gear, P/N A545-2, and the input shaft (see Note on figure 2).

(v) If the input shaft key is missing, replace the T/R gearbox with an airworthy one that has been determined to have the input key installed. Report any T/R gearbox that has a missing key within 10 days after the inspection to the Manager, Los Angeles Manufacturing Inspection District Office, FAA, Northwest Mountain Region, 3960 Paramount Blvd., Lakewood, California 90712, telephone (310) 627-5290, fax (310) 627-5293. Reporting requirements have been approved by the Office of Management and Budget, and assigned OMB control number 2120-0056.

(vi) If the input key is installed, reinstall the AN960-616L washer(s) and washer, P/N A141-1. Install a MS14145L6 or LCN6M-624 retaining nut, and torque to 200-250 in.-lbs. plus 20-25 in.-lbs. nut drag (maximum 275 in.-lbs.). Install a MS16562-24 or 52-022-094-0437 roll pin and safety wire using 0.032-inch stainless steel safety wire. The safety wire pigtail must be wrapped tightly around the retaining nut. Remove the two