



DN-148.1\*  
EN-36.1\*  
FN-25.1\*

# SERVICE BULLETIN

DATE: 30 OCTOBER 1987  
PAGE 1 OF 6

**MANDATORY**

\*This Notice supercedes Service Information Notices DN-148, EN-36 and FN-25, dated 23 April 1987 and DN-105, dated 26 May 1982.

**SUBJECT:** INSPECTION OF MAIN TRANSMISSION OUTPUT SHAFT ASSEMBLY RING GEAR CARRIER (P/N 369D25132-BSC or -5).

**MODELS AFFECTED:** All McDonnell Douglas Helicopter Company (MDHC) 369D, 369E and 369F/FF Series helicopters equipped with 369D25100-BSC, -501 or -503 main transmission assemblies. All Spares 369D25100-BSC, -501 or -503 main transmission assemblies. All Spares 369D25132-BSC or -5 main transmission output shaft assemblies.

### NOTE

- Main transmission assemblies (369D25100-505) are not affected by this Notice. All 369D25132-3 Spares main transmission output shafts are not affected by this Notice.
- Owners/Operators are advised to replace all 369D25132-BSC and -5 output shafts at the earliest convenient date with the 369D25132-3 output shaft which will eliminate the necessity to perform the following periodic inspection. Those 369D25100-BSC, -501 and -503 transmissions will be reidentified as a -505 when the 369D25132-3 output shaft assembly is installed and the output pinion nozzle and input gear nozzle are reworked per COM, Part I, Section 5.

### **TIME OF COMPLIANCE:**

### NOTE

- If the periodic visual inspection per DN-148, EN-36 and FN-25 has already been complied with, the following periodic visual inspection does not have to be complied with again at 100 hours.
- It is recommended that compliance with Notice DN-147.1/EN-35.1/FN-24.1 be accomplished in conjunction with this Notice if not previously accomplished.

**Periodic Visual Inspection** - Shall be accomplished within the next 100 hours of helicopter operation and at each subsequent 300 hours of helicopter operation or if any of the following conditions exist:

- 1) metal particles found in the transmission;
- 2) excessive noise or vibration in the main transmission;
- 3) vibration in the aircraft that can not be reduced or eliminated by ordinary main rotor blade tracking and balancing procedures.

Helicopters that have transmission assemblies installed with less than 200 hours total time on the output shaft do not have to comply with this Notice until the next 300 hour or annual inspection, whichever occurs first.

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**PREFACE:** This Notice lists a procedure for a periodic visual inspection of the main transmission output shaft assembly to check for possible cracks in the lower welded disk, particularly in the area of the electron beam weld which attaches the lower disk to the output shaft; and in the upper disk, in the area of potential electron beam impingement directly in line with the welded area. The visual inspection is to be performed by disassembly of the transmission, and repeated at the interval specified until the 369D25132-3 output shaft is installed into the transmission.

It is to be noted that the time between overhaul (TBO) interval for the 369D25100-BSC, -501, -503 and -505 transmission assemblies are 3000 hours.

**REFERENCE PUBLICATIONS:**

- 369D/E HMI Vol. I (CSP-D-2) Revised 15 June 1985
- 369F/FF HMI Vol. I (CSP-F-2) Revised 15 April 1986
- 369DEF COM, Part I (CSP-DEF-5) Revised 15 March 1985

PARTS			
Nomenclature	Part No.	Qty.	Source
O - Ring	5-488-047-071	1	MDHC
O - Ring	MS29561-014	2	MDHC
O - Ring	MS29561-016	2	MDHC
O - Ring	MS29561 - 264	1	MDHC
O - Ring	MS29561-013	2	MDHC
O - Ring	MS29561-022	2	MDHC
O - Ring	MS29561-437	1	MDHC
Washer	SL61W-15F	AR	MDHC
Filter	ACA388F90	AR	MDHC

## TOOLS AND EQUIPMENT

Nomenclature	Source
10X Magnifying Glass	Commercial
Dye Penetrant Kit (MIL-I-25135)	Commercial

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**MANDATORY**



DN-148.1\*  
EN-36.1\*  
FN-25.1\*

# SERVICE BULLETIN

DATE: 30 OCTOBER 1987  
PAGE 3 OF 6

**MANDATORY**

## PERIODIC VISUAL INSPECTION

- a. Remove main transmission assembly (1, Fig. 1) from helicopter (Section 9, HMI Vol. I).
- b. Remove lubrication pump assembly (2, Fig. 1), tail rotor drive assembly (3, Fig. 1) and main rotor drive assembly (5, Fig. 1) from main transmission (COM, Part I, Section 2).
- c. Inspect output drive shaft per the following:

- 1. Inspect the upper surface of shaft for bulging or raised surfaces in the area noted in Figure 2.

### NOTE

- Any shafts with bulging or raised surfaces in this area shall be rejected for service and returned to MDHC.
    - If any indication of cracking is noted in step 2 or 3 below (see Figure 3), discard shaft and install 369D25132-3 shaft.
    - Those shafts which have questionable indications shall be sent to MDHC Warranty and Repair for interpretation.

- 2. Using a 10X magnifying glass, visually inspect upper surface of shaft for indications of cracks in the area noted in Figure 3.

- 3. Perform dye penetrant inspection, per MIL-I-25135, on upper and lower disk surfaces allowing dye penetrant to remain on disk surfaces for a minimum of five minutes. Using a 10X magnifying glass, visually inspect both surfaces for indications of cracks.

- d. Operators with 369D25100-BSC transmission assemblies shall rework the 369D25164-13 output pinion nozzle and the 369D25165 input gear nozzle per COM, Part 1, Section 5.

- e. Reassemble main transmission (COM, Part I, Section 6) and reinstall transmission in helicopter (HMI Vol. I, Section 9).

- f. If a 369D25132-3 output shaft has been installed in the transmission assembly, then, using a vibro-pencil, reidentify main transmission assembly as 369D25100-505 on the transmission ID plate.

- g. Record compliance with this Notice in the Compliance Record Section of the helicopter Log Book.

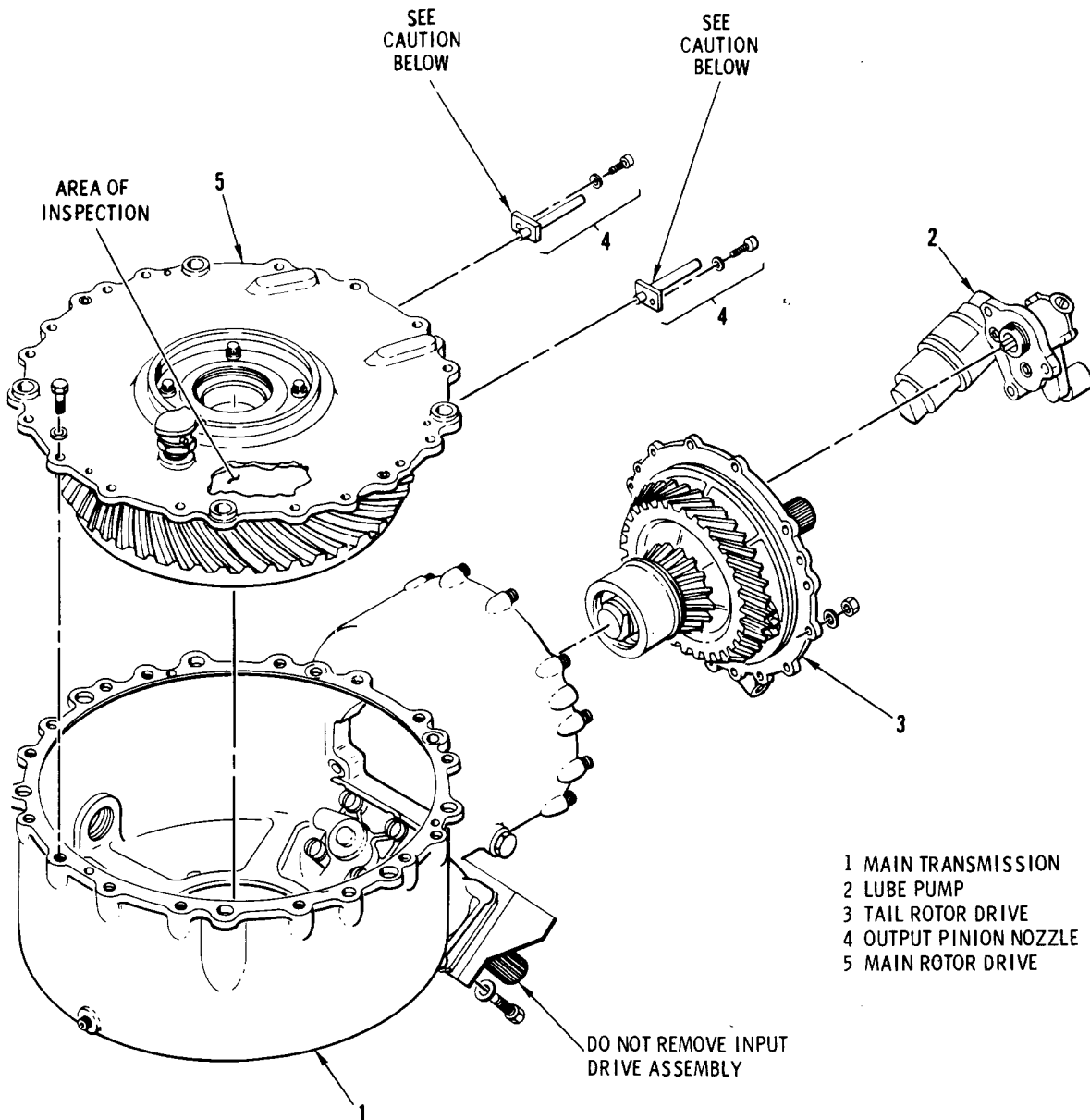
**WEIGHT AND BALANCE:** Weight and balance not affected.

The resultant alteration to affected models as described by procedures in this Notice has been shown to comply with Federal Aviation Regulations and is FAA Approved.

**MANDATORY**

# SERVICE BULLETIN

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CAUTION: OUTPUT PINION NOZZLE ASSEMBLIES (4) MUST BE REMOVED BEFORE REMOVING MAIN ROTOR DRIVE ASSEMBLY (5). IDENTIFY NOZZLE ASSEMBLIES (4) TO REINSTALL EACH NOZZLE IN SAME LOCATION

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Figure 1. Main Transmission - Major Components

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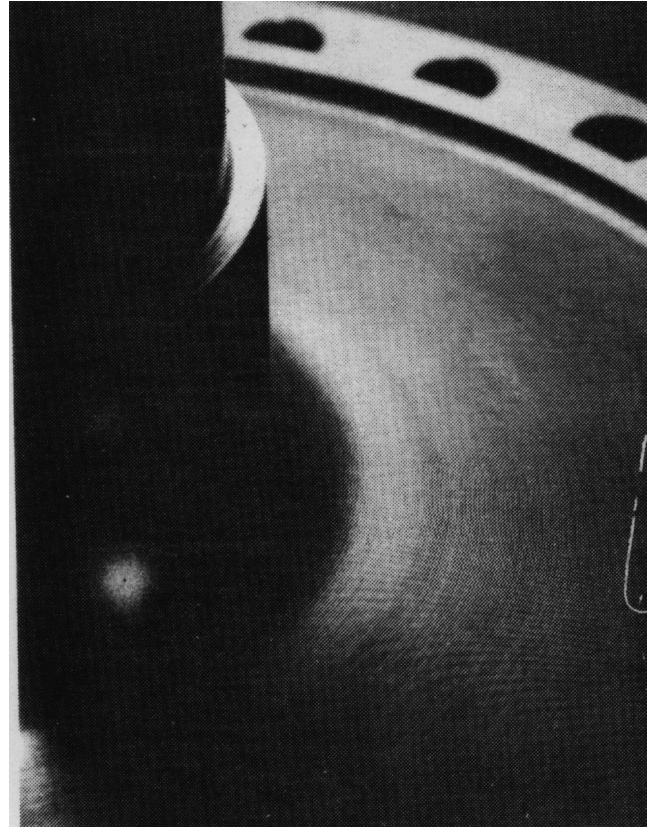
# SERVICE BULLETIN

DATE: 30 OCTOBER 1987  
PAGE 5 OF 6

**MANDATORY**



**UNACCEPTABLE**



**ACCEPTABLE**

ANY BULGING OR RAISED  
SURFACE IN THIS AREA  
IS NOT ALLOWED ON THE  
UPPER DISK SURFACE  
(INSPECT TOTAL  
CIRCUMFERENCE)

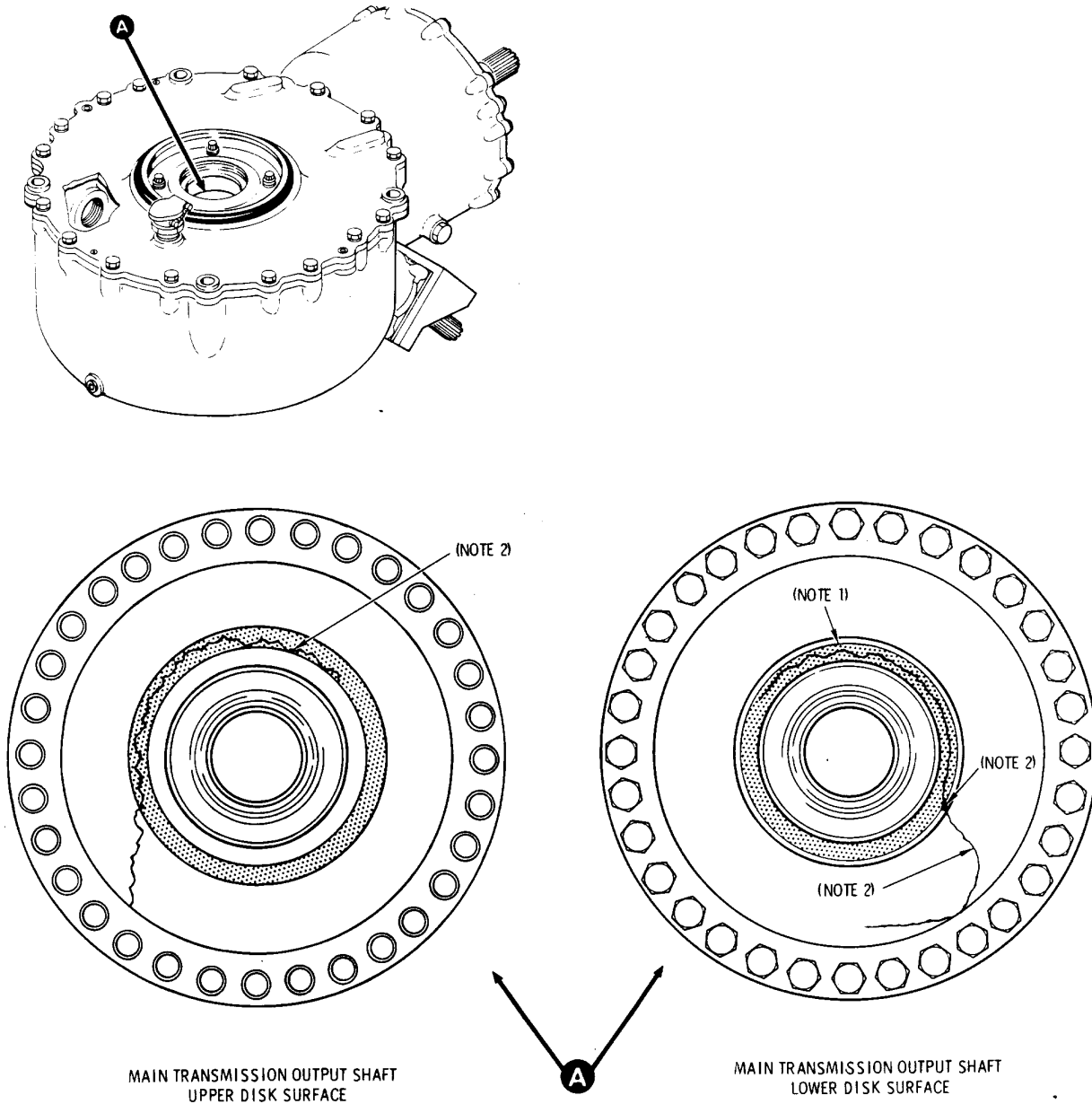
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Figure 2. Inspection of Upper Web of Output Shaft

**MANDATORY**

# SERVICE BULLETIN

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**NOTES:**

1. PAY PARTICULAR ATTENTION FOR CRACKS IN AREA OF ELECTRON BEAM WELD WHICH ATTACHES LOWER DISK TO OUTPUT SHAFT (SHADED AREA 360°).
2. PAY PARTICULAR ATTENTION FOR CRACKING OR CHIPPING IN FLAT SURFACE OF DISKS. SIMULATED CRACK PROPAGATION AND CHIPPING IS SHOWN.

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Figure 3. Periodic Inspection of Transmission Output Shaft

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