

**SERVICE BULLETIN SB-32**

**DATE:** 22 March 1999

**TO:** All R44 Owners, Operators, and Service Centers

**SUBJECT:** C188-3 Sprag Clutch

**ROTORCRAFT AFFECTED:** R44 Helicopters S/N 0001 thru 0541 and S/Ns 543, 556, and 565

**TIME OF COMPLIANCE:**

Part A: Within next 10 flight hours or by 12 April 1999, whichever occurs first

Part B: Within next 150 flight hours or by 31 July 1999, whichever occurs first

**BACKGROUND:** RHC has had several sprag clutches returned from service which, on disassembly, revealed cracked sprag ends within the unit. Symptoms of cracked sprags may include noise, leaking seals, or possible momentary drag when overrunning during autorotation. Investigation by the sprag clutch manufacturer revealed that a change in the sprag manufacturing process coincided with the manufacturing lots containing the cracked sprags. This change has now been corrected in the manufacturing process. Unfortunately, it is necessary to overhaul all clutches containing suspect sprags to insure that all suspect sprags are replaced and none could fail to disengage during autorotation.

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**COMPLIANCE PROCEDURE:**

**Part A:**

1. Check C188-3 sprag clutch data plate located on aft face of upper sheave. C188-3 sprag clutches S/N 0003 thru 0452 must be replaced. No further action is required for sprag clutches S/N 0453 and subsequent.
2. For C188-3 S/N 0003 thru 0452, insert enclosed Special Pilot Caution (page 3) between pages 4-8 and 4-9 in Normal Procedures section of Rotorcraft Flight Manual, then perform part B.

(OVER)

**Part B:**

**Note:** Unless otherwise specified, use R44 Maintenance Manual (MM) change 6 dated 18 Mar 99 or later.

1. If returning clutch assembly to RHC for sprag clutch replacement:

- A. Remove C018-2 clutch from aircraft per R44 MM Section 7.210.
- B. Remove C907 yoke and C195 yoke from clutch shaft per R44 MM Sections 7.260 and 7.270, respectively.
- C. Ship clutch to RHC.
- D. Install C907 yoke and C195 yoke on reworked clutch per R44 MM Sections 7.260 and 7.270, respectively. Proceed to step 3.

2. If replacing clutch assembly with an overhauled exchange clutch:

**Note:** MT528 bearing removal and installation tools are required to remove and install C184-2 bearing per steps C and D below.

- A. Order overhaul exchange C018-2 clutch assembly from RHC customer service. Clutches ordered to comply with this service bulletin will be supplied without C184-2 actuator bearings.
- B. Upon receipt of exchange clutch, remove clutch from aircraft per R44 MM Section 7.210.
- C. Remove C907 yoke, C195 yoke, and C184-2 bearing from clutch shaft per R44 MM Sections 7.260, 7.270, and 7.211, respectively.
- D. Install C184-2 bearing, C907 yoke, and C195 yoke on exchange clutch per R44 MM Sections 7.212, 7.260, and 7.270, respectively.

3. Reinstall clutch in aircraft per R44 MM Section 7.220.

4. Remove Special Pilot Caution from Rotorcraft Flight Manual.

5. Make appropriate maintenance record entries.

**APPROXIMATE COST:**

Parts: Aircraft S/N 0380 and subsequent are under warranty - no charge.  
(\$3600 core charge, if applicable, will be refunded if clutch core is returned to RHC within 15 days. Warranty applies to replacement clutch but does not include transportation or labor performed outside RHC factory).

Aircraft S/N 0379 and prior - Overhaul exchange price will be discounted to \$500 plus a \$3600 core charge, if applicable. Core charge will be refunded if clutch core is returned to RHC within 15 days.

Order must reference C188-3 sprag assembly S/N.

Labor: Part A: 0.1 Manhour  
Part B: 4.0 Manhours for overhaul exchange clutch  
3.0 Manhours if returning clutch to RHC

**Note:** Normal Service Center discounts do not apply. (Refer to RHC memo dated 28 May 1997).

## **URGENT**

### **SPECIAL PILOT CAUTION**

*To be inserted in the Normal Procedures Section of the Rotorcraft Flight Manual of all aircraft affected by R22 SB-85 and R44 SB-32.*

*Also distribute copies to all pilots flying these aircraft.*

Date: January 20, 1999

Revised: March 22, 1999

#### **To: All R22 and R44 Pilots**

Some sprags in overrunning clutches have been found cracked in service. A broken sprag could conceivably prevent the clutch from overrunning when entering autorotation. Until the clutch in this aircraft has been replaced, do not enter practice autorotations by rapidly closing or "chopping" the throttle. "Chopping" the throttle could result in a sudden loss of rotor RPM if the clutch failed to disengage.

Enter autorotation by first lowering collective and then rolling off just enough throttle to produce a small visible split between the rotor and engine tachometer needles. If the clutch fails to disengage, immediately complete a power recovery. Perform hovering autos only after checking the function of the overrunning sprag clutch prior to lift-off, then smoothly rolling off the throttle from a low hover with the skids no more than two feet above the ground.

Be sure to perform the sprag clutch check (split tach needles) before every flight, not just the first flight of the day.

Cut or fold along this line

*This page may be removed from the Flight Manual following clutch replacement.*