

SERVICE BULLETIN # 65

Date: 20 December 1990
To: R22 Owners and Operators
Subject: Cracking of Fanwheel Assembly Hubs

Rotorcraft Affected: 1) R22 Helicopters S/N 1000 thru 1330.
2) Helicopters overhauled at RHC between 15 April 1989 and 15 March 1990.
3) Helicopters which received spare fanwheel assemblies that were shipped from RHC between 23 March 1989 and 15 February 1990. This includes spare assemblies which are not installed.

Time of Compliance: Part A: Whenever pre-flight check shows fan roll pin/torque stripe misalignment. At the next 100 hour or annual inspection or by 1 March 1991, whichever occurs first. Spare assemblies to be inspected before installation.

Background: There have been reports of cracked fanwheel hubs on a few R22 helicopters produced during the above period. In some cases, the fanwheel backing cone was also cracked. It has been determined that a particular series of hubs cracked from fretting when assembled with earlier revision cones.

Part A - One-Time Fan Removal and Inspection

- A.1) Remove the centrifugal blower per Section 6.210 of the Maintenance Manual.
- A.2) Separate the scroll halves and remove the fan.
- A.3) Inspect for radial clearance between the shoulder of the A186-1 fan hub and the A187 cone using a .005 feeler gage. There must be clearance completely around the hub. Visually inspect for signs of cracks or fretting on the hub, fanwheel and cone; also check for loose bolts. (See Figure 1)
- A.4) If there is .005 clearance between the hub and cone and no other problems are found, reinstall the fanwheel and scroll per Section 6.220 of the Maintenance Manual and enter this inspection in the helicopter maintenance records or spare part release tag.

- A.5) If indications of fretting, loose bolts or cracks are found, return the complete fanwheel assembly to RHC for repair.
- A.6) If no damage is found but there is less than .005 clearance between the hub and the cone, repair the fan per Part B.

Part B - One-Time Fan Disassembly, Inspection and Repair

- B.1) With felt pen, match mark the fanwheel, cone and hub next to a hub bolt hole. Disassemble. Tie a short piece of safety wire in each of the match-marked bolt holes.
- B.2) Strip and clean the hub, cone and back face of the fanwheel. CAUTION: If chemical strippers are used, do not allow stripper to get inside the trailing edges of the fan blades.
- B.3) Dye check or magnetic particle inspect the hub, cone and back face of the fanwheel.
- B.4) If cracks are found in the hub or cone, return the complete fan assembly to RHC. NOTE: Only the A524-1 fanwheel can be repaired locally by an approved repair facility per Section 6.230 of the Maintenance Manual.
- B.5) If no cracks are found, file the cone inner diameter to obtain .005/.020 clearance between the hub and the edge of the cone when the parts are pinned together with the bolts. Note: The diameter of the hole in the cone should be 2.030/2.050 inches after filing. Deburr and sand the edge of the hole to obtain a smooth surface finish.
- B.6) Mask the inner taper of the hub and the flat lugs at the bolt holes on the hub. Prime the hub, cone and the back face of the fanwheel. Use zinc chromate or epoxy primer. With a felt pen, mark the safety-wired bolt holes. Remove the safety wire.
- B.7) Align match marks and assemble A186-1 hub, A187-1 cone and A178-1 and -2 spacers with (6) NAS1305-11 bolts, (6) AN960-516L washers under bolt head and (6) AN960-516L washers under the (6) NAS679A5 nuts. Finger tighten. (See Figure 2)
- B.8) Install (8) NAS1303-3 bolts, (16) AN960-10 washers, and (8) NAS679-A3 nuts to outer diameter of A187-2 cone. Torque in a cross pattern on the nut side to 40 in-lbs plus nut drag (See Figure 2).
- B.9) On assembly, check and allow .016 in. max. play of hub between cone and fanwheel. If play is excessive, disassemble and install a second A178-1 spacer between the A524-1 fanwheel and the A186-1 hub. Reassemble and recheck. If play is within limits, loosen NAS679-A3 nuts. (See Figure 3)
NOTE: A maximum of (2) A178-1 spacers are permitted.

- B.10) Torque NAS1305 bolts and NAS679-A5 nuts, in cross pattern, to 200 in-lbs. plus drag on the nut side. Torque NAS1303 bolts and NAS679-A3 nuts, in a cross pattern, to 40 in-lbs plus drag on the nut side.
- B.11) Mask the tapered bore in the hub and prime cone and hardware with zinc chromate or epoxy primer. Final coat with gray paint.
- B.12) Reinstall the fanwheel and scroll on the helicopter and check the balance per Sections 6.220 and 6.240 of the Maintenance Manual. Enter this inspection and repair in the helicopter maintenance records.

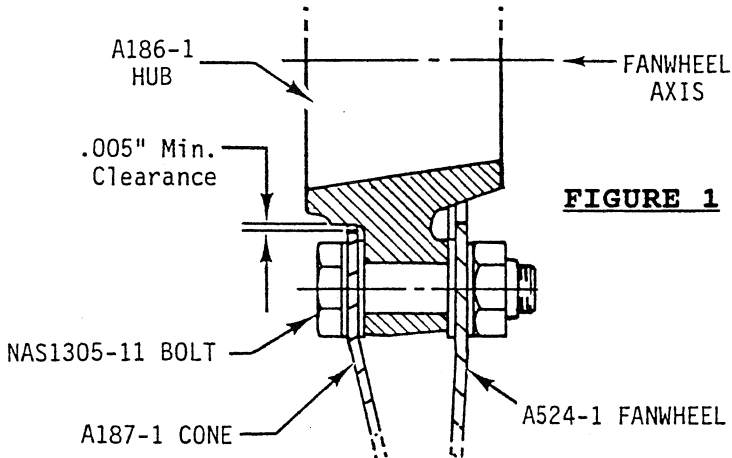


FIGURE 1

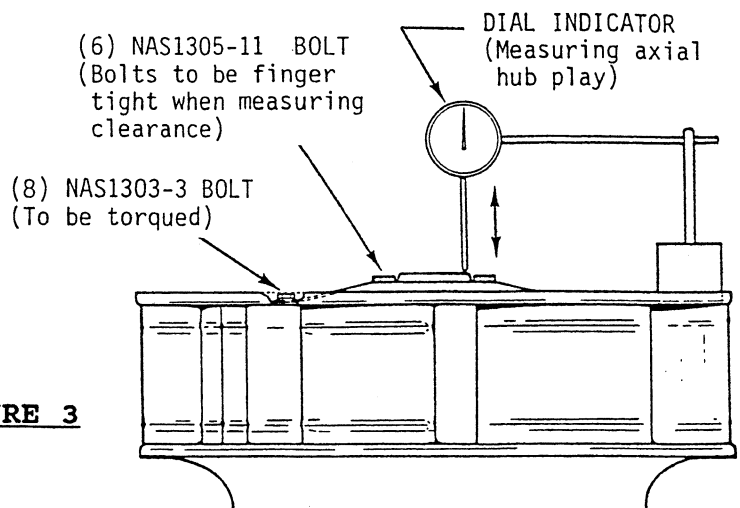
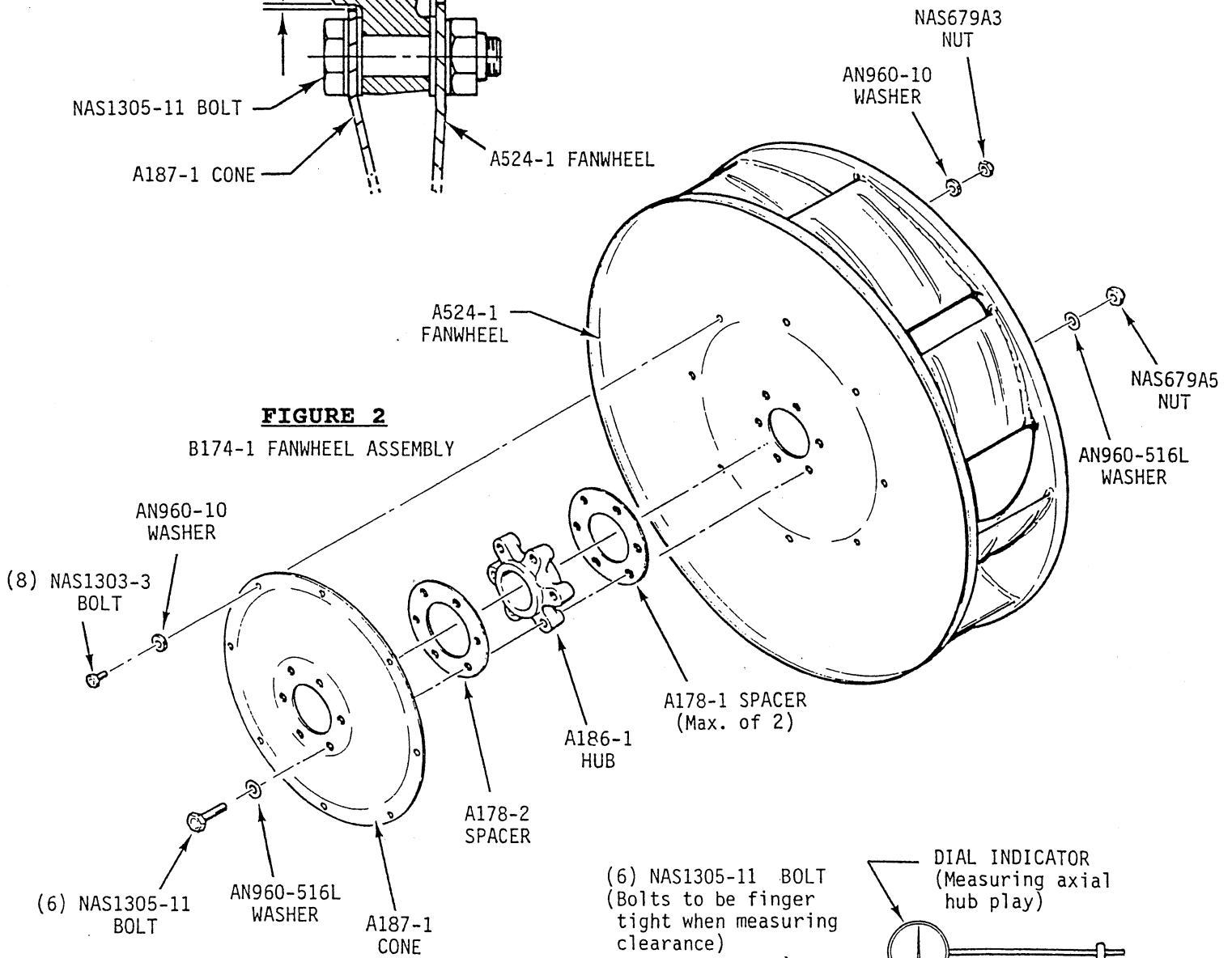


FIGURE 3