

# Robinson Helicopter Company

24747 CRENSHAW BLVD., TORRANCE, CA 90505 TELEPHONE (213) 539-0508

## MANDATORY SERVICE BULLETIN B-4

DATE: October 15, 1980 - Revised: October 28, 1980

ROTORCRAFT AFFECTED: Robinson Model R22

SUBJECT: Dye penetrant inspection aft end of upper steel tube frame assy. P/N A020-2.

HELICOPTER AFFECTED: Model R22 serial #0002 thru 0082 excepting those that have an upper frame A020-2 serial #0083 or higher installed.

TIME OF COMPLIANCE: At the first 100 hours of flight operation and each 100 hour inspection thereafter.

CORRECTIVE ACTION: Any frame which is cracked must be returned to the factory for repair or replacement.

BACKGROUND: Small cracks in the steel tube structure at the tail-cone attachment have been found in the prototype R22 and the first production aircraft at its 1000 hour inspection. To check for possible cracks in this area on other aircraft, the following inspection must be completed every 100 hours.

### MATERIALS REQUIRED:

1. Portable dye penetrant inspection kit similar or equivalent to Uresco model TT-101 spray can system.
2. Imron epoxy paint remover similar or equivalent to Tal Strip #2813 or other commercial epoxy paint remover.
3. Hand wire brush.
4. Flashlight & mirror.
5. Mechanics magnifying glass.
6. Zinc chromate primer or equivalent.
7. Imron epoxy paint gray color code 300-13 (with CA-4 catalyst) or equivalent.
8. Four NAS1304-22 bolts.
9. Four NAS679A4 nuts.
10. Five MS27151-13 pal nuts.
11. One tube of Torque Stripe.

REMOVAL OF THE A023 TAIL CONE ASSY.

Removal of the tail cone assembly will be necessary to perform the dye penetrant inspection of the A020-2 upper steel tube structure.

1. Cut all tie wraps necessary to disconnect the actuator motor wires, actuator cannon plug and wires, antenna wires, strobe lite wires and tail light - chip detector wires.
2. Disconnect and carefully secure the wires out of the way with masking tape.
3. Remove the two (2) pal nuts and NAS679-A4 nut that secure the A193-2 Flexplate to the A197-1 tail rotor drive shaft.

NOTE: Using a magic marker, place an "X" or other suitable marking on one ear of the flexplate. Now mark the ear on the tail rotor drive on the same side with the same mark.

4. When removing the NAS1304-3 or 4 bolts be sure to note the position of all the washers in the stack-up to insure proper reassembly. Record this information in the space provided.

NOTE: On reassembly the bolt head is always on the flexplate side of the installation. See fig. #1.

5. Remove the pal nut NAS679-A4 and NAS1304-8 that connects the A121-17 - Pull (P-P) tube to the A331-1 tail rotor bellcrank located at the tail cone attach points on the A020-2 upper frame assembly.
6. Remove the tail cone rain shroud that is attached to the aft cowling above the tail cone.

NOTE: On reinstallation it will be necessary to install the center two (2) screws first and tighten them, then the next outboard screws and tighten them and last install the outboard screws and tighten. (If the outboard screws are installed first you will not be able to reach the inboard nuts).

7. Remove the five (5) pal nuts and NAS 679-A4 nuts at the inside of the five (5) tail cone attach points. Using a soft face hammer, tap the NAS304-22 bolt outward from inside the tail-cone.
8. With someone to support the tail cone at the aft end, remove the four (4) NAS1304-22 bolts and the NAS1304-3 bolt that attach the tail cone to the frame.

REMOVAL OF THE A023 TAIL CONE ASSY. (Cont.)

9. Carefully remove the tail cone and store it where it will not be damaged. (Be careful that the antenna is not damaged when setting the tail cone down). Care should be taken not to strike the tail rotor blade - as their light weight makes them susceptible to impact damage.

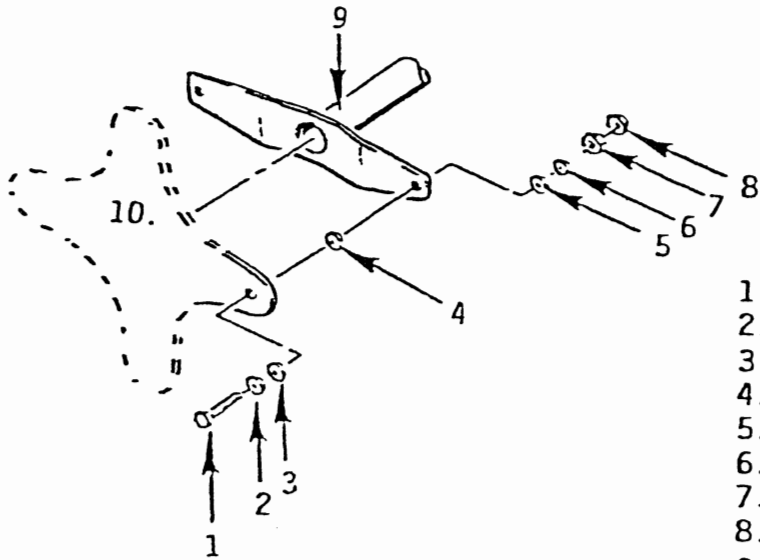
DYE - PENETRANT INSPECTION OF THE A020-2

- 1 Carefully clean all paint, primer, oil, grease, etc. from the steel tube structure around and adjacent to the four cone mounts. See fig. #2.
- 2 Apply the epoxy paint remover and allow the softening action to complete. (temperature affects time required).
3. Remove the softened paint by hand using a wire brush. Be sure the steel structure is perfectly clean before application of the dye penetrants.
4. Carefully follow the instructions included with the dye penetrant kit to be used, especially timing and quantity materials involved, or per general instructions contained in FAR 43, EA-AC43.13 - 1A and 2A, Aircraft Inspection & Repair, Chapter 7, Section 3, Paragraph 300.
5. Carefully check for cracks in and around each weld bead and along each steel supporting tube for at least two inches away from the weld beads. It is unlikely a crack will be found; however, should one occur, call R.H.C. Customer Service at 213/539-0508 for further instruction.
6. If no cracks are found, clean all the inspection materials from the steel tubing.
7. Prime with good quality chromate primer and allow adequate drying time.
8. Refinish the area with gray Imron epoxy top coat or equivalent. Allow finish to dry prior to tail cone installation.
9. Reinstall tail cone using reverse procedure, however, be sure to use new attaching nuts and bolts, and pal nuts.
10. Carefully torque the attach bolts to 100 in/lbs. per the R.H.C. maintenance manual paragraph 12-3, and torque stripe.
11. Make all mechanical and electrical connections and inspect prior to release for flight.

POSITION OF REMOVED PARTS: Discard bolts at site.

APPROVED:

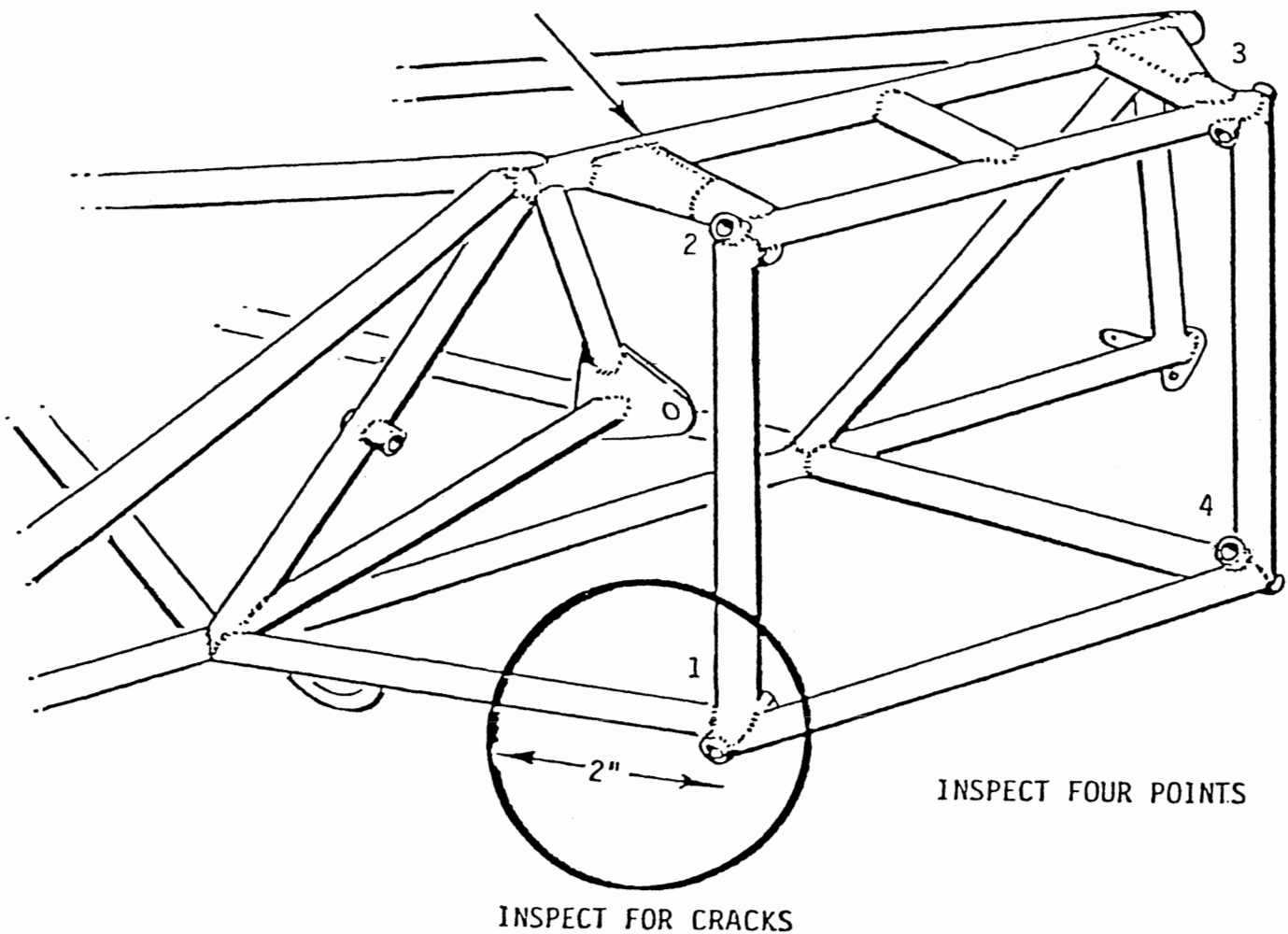
FIG. 1



1. NAS 1304-3 or -4 BOLT
2. AN960-416L WASHER
3. 559-4 NICKLE PLATED RADIUS WASHER
4. " " " " "
5. AN960-416 or 416L AS REQ.
6. " " " " "
7. NAS 679-A4 NUT
8. MS27151-13 PALNUT
9. TAIL ROTOR DRIVE SHAFT FLANGE
10. FLEX PLATE

UPPER FRAME A020-2

FIG. 2



INSPECT FOUR POINTS

INSPECT FOR CRACKS