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CARGO HOOK
Suspension, Hook, and Load Weigh Systems

CROPHAWK
Flow Monitoring Systems

ENGINEERING
Customer Directed Development

SERVICE BULLETIN

Document No. 159-010-00 Rev 0
Sept. 24, 2003

Model affected: Bell 204B, 205A, 205A-1, 212, 412, 412EP and Garlick UH-1H.

Subject: Cargo Hook enhanced safety.

Helicopters Affected: All aircraft with Onboard Systems Keeperless Hook, part number 528-020-00 or -02 installed under STCs SR00699SE and SR00713SE and Canadian STCs SH99-217 and SH99-215.

Compliance: Optional.

Description: It is possible to drop foreign objects into an upward facing slot for the manual release lever on the hook causing the hook to not properly latch. This can result in an uncommanded release of the load. One known incidence of this has occurred in the field. In this incident a plastic wire tie was inadvertently dropped during maintenance operations. The wire tie fell into the open slot and lodged in such a way as to cause the release mechanism to not completely lock. Sometime after take off the mechanism opened and dropped the load. In order for this to occur the mechanism must be stuck in a very narrow band corresponding to approx. 1/8 inch of lever movement in the middle of its travel between full open and locked. In this position the Locked indicator line would not be lined up. If the lever was any more towards the locked position the hook will not open and if it is any more towards the open position the hook will not support any load at all.

The actions required by this service bulletin are in two parts as described below.

Part One of this bulletin is a change to the Rotorcraft Flight Manual Supplement Procedures section. It now requires the operator to observe that the Locked indicator on the hook is lined up during the preflight functional check.

Part Two of this bulletin is elimination of the manual release lever and replacement of the cover with one that has no top facing opening.

Approval: The engineering design aspects of this bulletin are FAA/DER approved.

Manpower: Removal and replacement of the Manual Release Lever and Cover will require 1.5 man-hours. Removal and Replacement of the Suspension System to allow the work to be accomplished on the bench will require 1.5 additional man-hours. Man-hours are based on hands-on time and may vary with personnel and facilities available. No machining operations are required. Installation consists of removing and replacing parts.

Required Material: The following material is required for accomplishment of this bulletin and may be obtained from Onboard Systems:
Qty 1 P/N 121-020-00 Rotorcraft Flight Manual Supplement
Qty 1 P/N 290-521-03 Cam Hub Knob
Qty 1 P/N 290-537-03 Manual Release Cover
Qty 1 P/N 215-159-00 Serial Number Plate
.032 Safety Wire
Special Tools: Not required

Weight and Balance: Not affected

Electrical Load Data: Not affected

Publications Affected: Owners Manual P/N 120-083-00
Service Manual P/N 122-004-00
Rotorcraft Flight Manual Supplement P/N 121-020-00

Accomplishment Instructions Part One

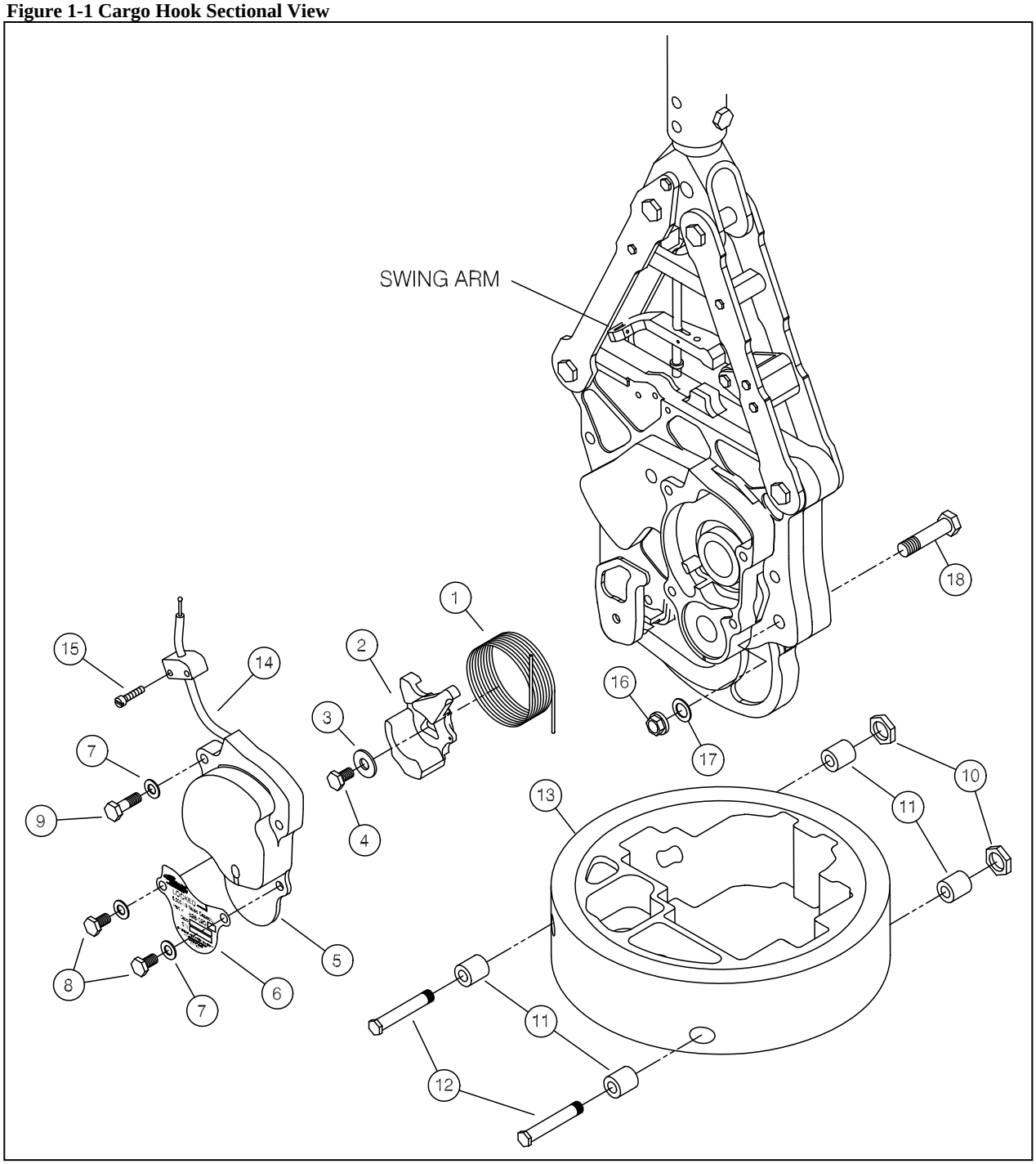
This step is to be accomplished prior to external load operations.
1. Visually check to determine if Locked indication is aligned when hook is in the locked position.
2. Remove and replace the Rotorcraft Flight Manual Supplement.
3. Record compliance with Part One steps 1 and 2 in the aircraft logbook as appropriate.

Accomplishment Instructions Part Two:
Part Two is to be accomplished within 6 months of the date of this bulletin or sooner.
1. Remove the suspension system and hook from the helicopter. Refer to appropriate maintenance manual. For the following instructions refer to figure 1-1 of this document.
2. Remove the Bumper Ring from the hook. To do this remove the bolts, spacers and nuts that attach the bumper (items 10, 11 and 12) and bolt, nut, and washer (items 16, 17, and 18). This will allow the bumper to slide off the bottom of the hook.
3. Disconnect manual release cable from swing arm.
4. Remove items (1-8) from the hook.
5. Place the cam hub spring (1) into the spring pocket on the outside of the hook and install the new cam hub knob (2) over it. You will need to clock the spring approximately 90 degrees by engaging it in a hole in the cam hub knob and rotating it to align with the triangular drive lug on the cam shaft. Install the cam hub knob bolt (4) and washer (3) with lockwire.
6. Remove the manual release cable (14) from the previously removed cover assy. The cable housing is screwed into the cover. To remove the cable housing rotate it counterclockwise, it should back out of the hole.
7. Screw the manual release cable assembly (14) into the new manual release cover (5).
8. With a steel stamp set or vibro-engraver transfer the serial number from the original Serial Number Plate to the new one. Stamp the new part number according to the following chart:

Original Part No.	New Part No.
528-020-00	528-020-04
528-020-01	528-020-05
528-020-02	528-020-06
528-020-03	528-020-07

9. While engaging the release cable end ball shank with the cable fork on the cam hub knob (2), install the manual release cover onto the manual release side plate with the four bolts (6,9), washers (7), new serial number plate (6) and lockwire.
10. Pull the release cable and verify that the mechanism moves freely.
11. Install the two mount block screws (15) into the hook body.
12. Connect the manual release cable to the swing arm.
13. Check and adjust the rigging of the manual release cables as described in the following instructions.

Figure 1-1 Cargo Hook Sectional View



Suspension System Manual Release Adjustment

1. Adjust the conduit of the manual release cable to obtain 0.03 to 0.08 inch dimension shown in Figure 1-2 and secure clamp shown in detail A of the Suspension System Detail section.
2. Reinstall suspension onto aircraft per maintenance manual instructions.
3. Adjust connector 204-070-995, to obtain 0.10 inch over-travel in the control cable.
4. The stop bolt of the swing arm should be in contact with the top of the cargo hook case and the swing arm should be parallel to the plane of the main hook attachment bolts when the 0.10 inch measurement is taken.
5. By grasping the top of the lower control cable, apply tension until all the backlash is taken out. Measure the clearance of the lower control cable ball terminal to the swing arm as shown in figure 1-2. This measurement shall be 0.12 to 0.18 inches when system is rigged and load beam is latched. If adjustment is made to the stop bolt in order to obtain proper clearance, recheck adjustment of control cable and conduit.
6. With the cargo hook release pedal against the FORWARD stop, check for the following conditions:
7. Ensure that the spring assembly 204-070-998, does not bottom. If the spring assembly should bottom, return the cargo hook pedal to the aft stop and check control cable tension. Cable tension should be 20 to 24 pounds.
8. Check the operation of the mechanical release with at least 20 pounds load on the cargo hook load beam.
9. Ensure the swing arm is full up. Ensure swing arm is not stopped by the bottom end of the control cable outer housing.
10. Ensure cargo hook load beam unlocks.
11. Release the cargo hook pedal and ensure that both the upper and lower manual release cables return to the locking position.
12. See the Bell Helicopter service instructions that cover the original cargo hook suspension system for additional instructions.
13. Check manual and electrical release rigging and function per maintenance manual instructions.
14. Record compliance with Part Two in the aircraft logbook.

Figure 1-2 Suspension System Manual Release Arrangement