

ONBOARD SYSTEMS  
INTERNATIONAL

## SERVICE BULLETIN

Document No. 159-019-00 Rev 0

Date: February 22, 2007

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Vancouver, WA 98685  
USA

**Subject:** Cargo Hook Stress Corrosion Cracks.

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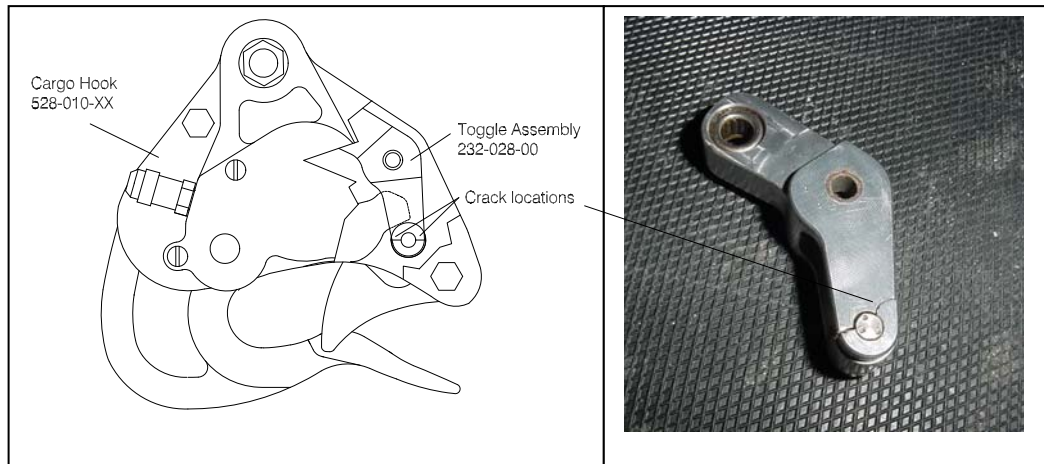
**Helicopters Affected:** All aircraft equipped with Onboard Systems Cargo Hook part number 528-010-01.

**Compliance:** Recommended within one year of the issue date of this Service Bulletin.

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**Description:** Onboard Systems has had two reported instances of failure of the Toggle Assembly, 232-028-00. The Toggle is an internal component of Cargo Hook 528-010-01 and is a primary element of the Cargo Hook locking mechanism. Figure 1 shows the location of the failure.

**Figure 1. Crack location**



**Cause:** Investigation of the failures has suggested that they were caused by Stress Corrosion Cracking (SCC). Specific mechanical, metallurgical, and corrosive conditions must be present in order for SCC to occur.

In the case of the Toggle Assembly, these conditions were satisfied by—

1. Residual stresses imposed by the press fit of the Load Beam Roller Pin
2. Corrosive salt water environment

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**Action:** This bulletin requires a two step action:

1. Visual check to see if cracks are visible in the Toggle. This must be accomplished before further Cargo Hook use and daily prior to external load operations until item 2 is accomplished. If cracks are found, the Cargo Hook must be removed from service and part 2 accomplished before additional use.
2. Replace the original Toggle with a redesigned Toggle, 232-028-01, at the next scheduled overhaul, or within one year from the approval date of this bulletin, whichever comes first.

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

**Manpower:**

Daily check; Approximately 0.1 man-hour will be required.  
Toggle replacement; Approximately 2 man-hours will be required.

If the Cargo Hook is already disassembled for scheduled inspection or overhaul, the kit installation will take no additional time. No machining operations are required. Installation consists of removing, replacing parts and performing Acceptance Test Procedures (ATP). Number of man-hours are based on hands-on time and may vary with personnel and facilities available.

**Required Material:** The following material is required for accomplishment of this bulletin and may be obtained from Onboard Systems:

232-028-01 Toggle Assembly  
290-306-01 Thrust Plate, Right  
290-304-01 Thrust Plate, Left

Safety wire and Silicone Sealant

**Special Tools:** Cargo Hook Test Stand

**Weight and Balance:** Not affected

**Electrical Load Data:** Not affected

**References:** none

**Publications Affected:** Owner's Manual 120-071-00



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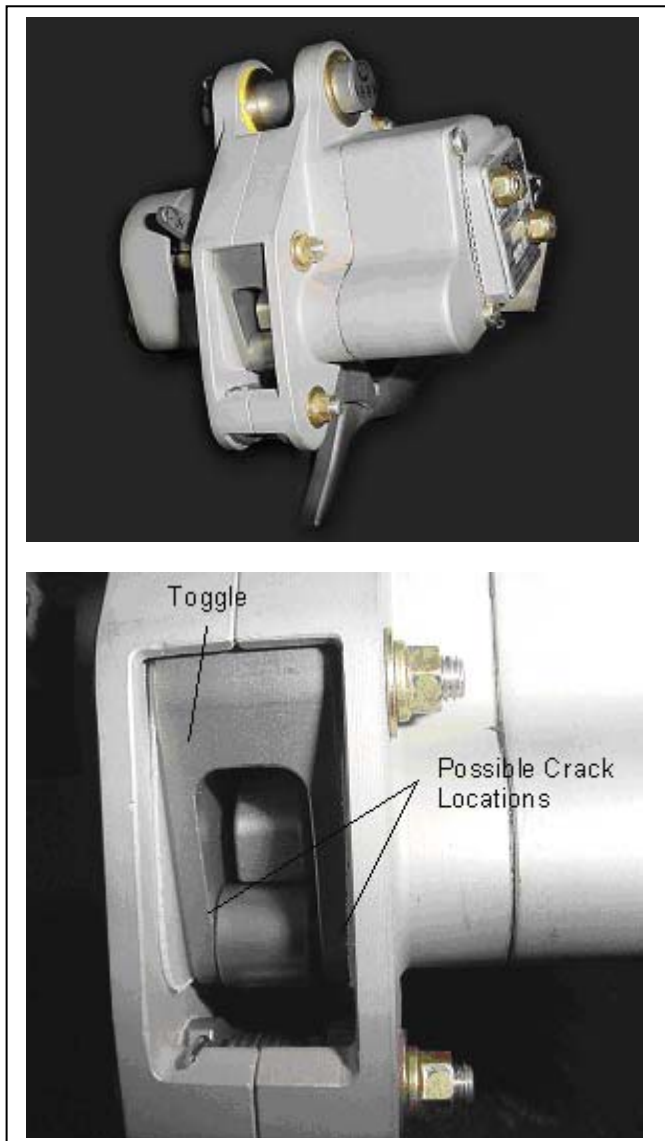
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**Accomplishment Instructions, Part One**

This instruction is to be accomplished daily prior to external load operations. It is not required when the helicopter is not used for external load operations.

1. Visually check the Toggle for cracking or separation, as viewed in figure 2 in the assembled Cargo Hook.
2. Operate the Cargo Hook per the operating procedures in the Owner's Manual. If the Cargo Hook does not function properly, it must be removed from service and the part 2 instructions must be accomplished prior to use.

**Figure 2. Crack Locations in Toggle 232-028-00**



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3. If part 2 of this bulletin has been complied with, the modified hook can be identified by a 1 stamped on the visible portion of the Toggle, see figure 3. If Part two of this bulletin has been complied with, no further action is required.

**Figure 3. Stamp location**



**Accomplishment Instructions, Part Two:**

This instruction is to be accomplished if cracks or discrepancies in operation are discovered in Part One, at the next scheduled overhaul, or within one year from the approval date of this service bulletin, whichever comes first.

1. Remove Cargo Hook from aircraft. Refer to appropriate Owner's Manual instructions.
2. Disassemble Cargo Hook per Service Manual instructions. Remove Toggle 232-028-00 and replace with Toggle 232-028-01\*.  
*\*(The P/N 232-028-01 Toggle includes all the bearings and bushings installed and also a Load Beam Roller and Pin. The new Toggle can be distinguished from the old toggle by a 1 stamped on it. This will be visible after assembly.)*
3. Remove Thrust Plates 290-306-00 from the inside of the cargo hook side plate on the solenoid side and 290-304-00 from the inside of the opposite side plate and replace with Thrust Plates 290-306-01 and 290-304-01 respectively as shown in Fig. 4\*\*.

*\*\*The Thrust Plates must be replaced or the new Toggle will not function properly.*



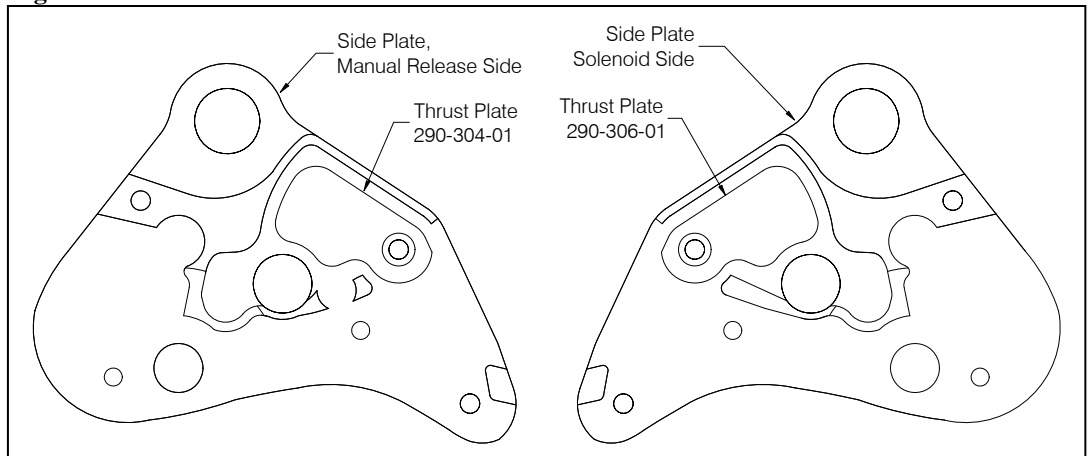
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**Figure 4. Install New Thrust Plates.**



- Complete assembly procedures and Acceptance Test Procedures per Service Manual instructions. Alter the part number on the serial number plate by stamping or vibro-engraving per the following chart.

Original part number	Part number after Service Bulletin compliance
528-010-01	528-010-05

- Re-install Cargo Hook onto aircraft.
- Connect the manual release cable to the cargo hook. Refer to applicable Owner's Manual to verify setting for manual release cable rigging at the cargo hook.
- Connect electrical harness to the cargo hook.
- Perform the following checks.

Ensure that the manual release cable assembly and the electrical release harness have enough slack to allow full swing of the cargo hook and suspension without straining or damaging the cable or harness.

Apply a 10 to 20 pound load to the cargo hook load beam and pull the mechanical release lever in the cockpit, the cargo hook should release.

Close the cargo hook release circuit breaker and position the battery switch to the ON position. Apply a 10 to 20 pound load to the cargo hook load beam and depress the cargo hook electrical release button in the cockpit, the cargo hook should release.

- Make logbook entry.

