

June 19, 2024

Subject: Service Bulletin 159-054-00, Rev. 0 for Swing Suspension Load Cell / Gimbal Inspection

Affected Aircraft: Airbus AS350 and AS355

Affected Part Numbers: 200-280-01, 200-280-02, 200-280-03, 200-280-04, 200-286-01, 200-286-02, 200-292-01, 200-292-02, 200-455-00, 200-455-01, 200-455-02, 200-470-00, 200-470-01, 200-470-02

Dear Valued Customer:

Onboard Systems has issued a Service Bulletin for the above-referenced parts and we strongly recommend that all operators comply with the instructions provided. This service bulletin and updated manuals may also be downloaded from our website at:

<https://www.onboardsystems.com/document/bulletins>

Please review this information and determine if the equipment is still in your possession. If this equipment is no longer in your possession, please forward this notice to the current owner or to your customer, as applicable.

Disassembly for inspection and re-assembly requires a replacement cotter pin P/N 510-115-00 (MS24665-136 or equivalent). Onboard Systems will stock the materials required to comply with this service bulletin. All parts are supplied FOB Onboard's factory. Please contact us directly for more information.

Onboard Systems is dedicated to supporting helicopter external load operators and we welcome any feedback and comments you may have. If you have any questions or require additional information, please feel free to contact us.

Best regards,



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SERVICE BULLETIN

Subject: Swing Suspension Load Cell / Gimbal Inspection

Helicopters Affected: AS350 and AS355

Parts Affected: Kits installed under part numbers and STCs as listed in Table 1.

Table 1 – Affected Part Numbers

Aircraft	Kit Part Numbers	FAA STC
AS350	200-280-01 200-280-02 200-280-03 200-280-04	SR01164SE
AS350	200-470-00 200-470-01 200-470-02 200-455-00 200-455-01 200-455-02	SR02719SE
AS350	200-286-01 200-286-02	SR01393SE
AS355	200-292-01 200-292-02	SR01424SE

Compliance: Recommended (See **Action** on Page 2 for schedule)

Ownership: Please review this information and determine if the equipment is still in your possession. If this equipment is no longer in your possession, please forward this notice to the current owner or to your customer, as applicable.

Description: Onboard Systems has had a reported instance of a load cell structural failure resulting in loss of load. The failure resulted from excessive wear and galling at the load cell's gimbal that introduced stresses above the design limit, with a fatigue related failure mode. The cause of the galling was excessive wear of the DU bearings, which subsequently seized the Gimbal Shaft within the Load Cell Gimbal Assembly, thereby introducing fatigue loads, and ultimately, failure of the part.

Action: To comply with this service bulletin, perform the inspection as detailed in the Accomplishment Instructions within the next 20 hours of external load operations.

Manpower: Approximately 1.0 man-hour will be required to perform the inspection.

Required Parts: Contact Onboard Systems to order replacement parts as necessary.

Disassembly for inspection and re-assembly requires a replacement cotter pin P/N 510-115-00 (MS24665-136 or equivalent).

Special Tools: None

Weight and Balance: Not affected

Electrical Load Data: Not affected

Publications Affected:

Table 2 Affected ICA Manuals

Aircraft	Kit Part Number	Applicable ICA
AS350	200-280-01	123-011-01
	200-280-02	123-011-02
	200-280-03	123-011-02
	200-280-04	123-011-03
	200-470-00	123-051-00
	200-470-01	
	200-470-02	
	200-455-00	
	200-455-01	
	200-455-02	
	200-286-01	123-014-01
	200-286-02	123-014-02
	AS355	200-292-01
200-292-02		123-017-02

The latest manual revisions are available through Onboard Systems' web site at www.onboardsystems.com.

Contact Information: For additional assistance, contact Onboard Systems. Phone: 360-546-3072 or 1-800-275-0883. Email: Techhelp@OnboardSystems.com

Disposition of Parts Removed: Discard.

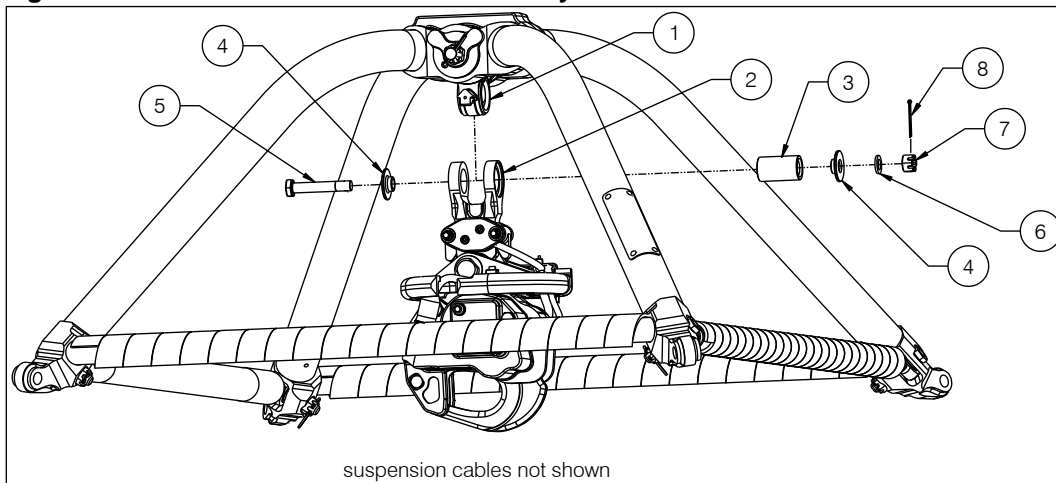
Material/Part availability: Contact Onboard Systems for parts availability.

Accomplishment Instructions:

Remove from aircraft, disassemble and inspect the upper joint of the Load Cell per the following, referring to Figure 1 for item numbers in parentheses (). For part numbers of these items, refer to Table 3.

1. Disconnect the electrical connections, ground strap and mechanical release connections at the aircraft.
2. Remove the Swing Frame Assembly from the helicopter by removing the four quick release pins at the shackles on the aircraft hard points.
3. Remove the cotter pin (8), nut (7), washer (6), Retaining Bushing (4) from the end of the bolt (5).

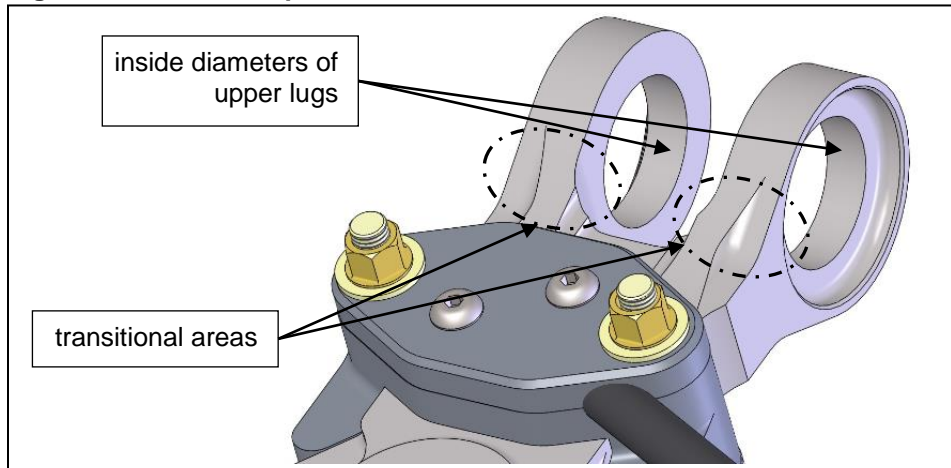
Figure 1 Load Cell/Gimbal Joint Disassembly



4. Remove the bolt and Retaining Bushing (4) under its head and slide the Gimbal Shaft (3) out from the Gimbal (1) and Load Cell (2) while supporting the cargo hook.
5. Visually inspect the Gimbal Shaft for signs of wear, such as pitting, galling, or reduction in diameter. If the diameter is less than .732 in. (18.6 mm), the Gimbal Shaft must be replaced. There should be no visible wear, except for light burnishing of the outside diameter surface. If the burnishing can be removed using Scotch Brite (3M P/N 7447), it is considered light.
6. Inspect the inside diameters of the upper lugs of the Load Cell (reference Figure 2) for signs of wear such as pitting, galling, or elongation of the holes. If the inside diameter of the lugs exceeds .759 in. (19.3 mm), the load cell must be replaced. There should be no visible wear, aside from light burnishing of the inside diameter surfaces. If the burnishing can be removed using the Scotch Brite, it is considered light.

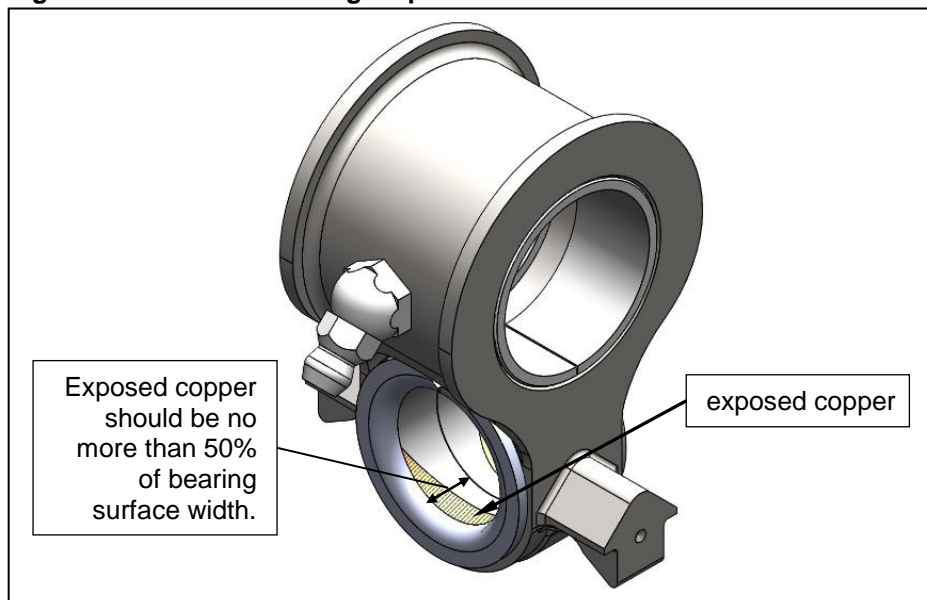
Visually inspect for cracks around both lugs, including the transitional areas (reference Figure 2) where the lugs transition into the flat portion of the Load Cell. Inspect these areas on both sides.

Figure 2 Load Cell Inspection



7. If the Load Cell requires replacement, refer to the applicable ICA manual as referenced in Table 2.
8. Inspect the flanged DU bearings of the Gimbal (1) that interface with the Gimbal Shaft. As these bearings wear, the low-friction PTFE layer is removed, exposing the copper layer below. Across the width of the bearing surface, no more than 50% should be the exposed copper layer (reference Figure 3).

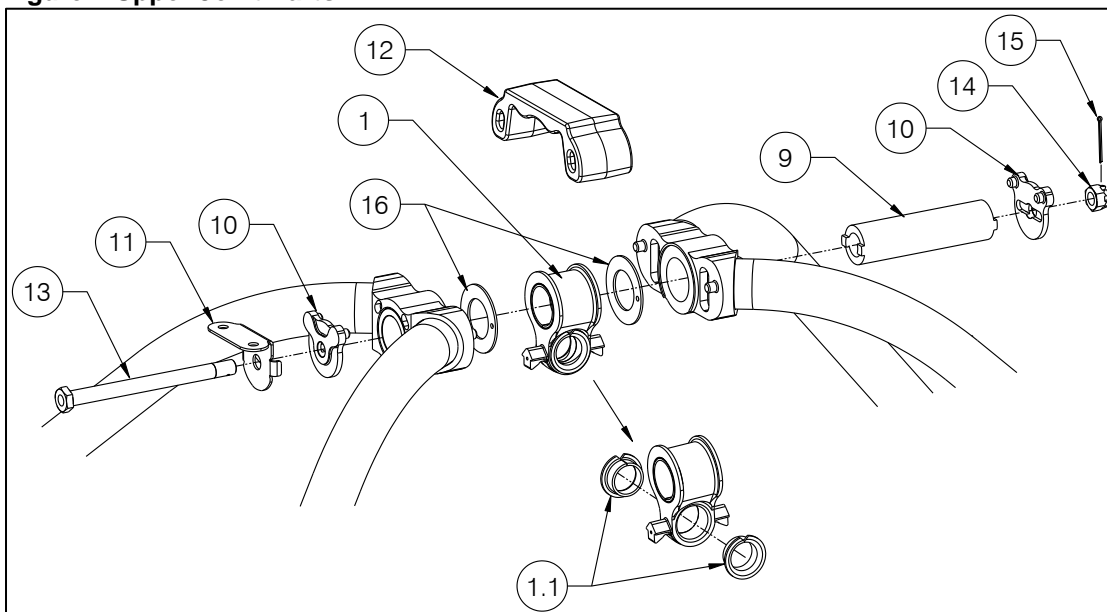
Figure 3 Gimbal DU Bearing Inspection Criteria



9. If the DU bearings require replacement, disassemble the upper joint of the swing frame to remove the Gimbal per the following. Refer to Figure 4 and Table 3 for item numbers in parentheses ().
 - a. At the upper pivoting joint, remove the cotter pin (15) and nut (14) from the end of the bolt (13) and remove the Shaft Cap (10).

- b. Remove the bolt, bracket (11) (present on CRFS configurations only) and the other Shaft Cap (10).
- c. While supporting the Swing Frame halves, slide the Pivot Shaft (9) out to remove the Gimbal (1).
- d. Remove the DU bearings (1.1) by tapping out the first one from the opposite side with a flat screwdriver or similar and hammer and then pushing out the other one.
- e. Press in replacement DU bearings with wet zinc chromate primer (TTP-1757 or equivalent) applied to mating hole of Gimbal.

Figure 4 Upper Joint Parts



Re-assemble the upper joint per the following.

1. Position the Gimbal and thrust washers* (16) between the swing frame halves and align the holes.

* Ensure Teflon impregnated wear surfaces (darker sides) of thrust washers are facing Gimbal.

2. Apply a light film of grease (Mobilgrease 28 is recommended) to the outside diameter of the Pivot Shaft (9) and insert it through one frame half, thrust washer, Gimbal (1), thrust washer and through second frame half.

* Ensure Teflon impregnated wear surfaces (darker sides) of thrust washers are facing Gimbal.

3. Rotate the Pivot Shaft so that the raised “keys” at each end are horizontal.
4. Before fully securing the frame halves, ensure the slots in the bumper (12) are engaging with the pins on the swing frame halves.
5. Capture each end of the Pivot Shaft with Shaft Caps and place the bracket (if present) over the forward Shaft Cap and insert the bolt through and thread the nut on. Torque the nut to 20 ft-lb and rotate to next castellation, not to exceed 30 ft-lbs.
6. Install and secure cotter pin (15).

Re-assemble the Load Cell onto the Gimbal per the following. If the Load Cell requires replacement, refer to the applicable ICA manual for instructions.

1. With the Cargo Hook positioned so that its load beam points to the left when installed, align the lugs of the Load Cell with the lower pivot hole of the Gimbal.
2. Insert the Gimbal Shaft (3) through the Load Cell (2) and Gimbal (1) and position a Retaining Bushing (4) on either side.
3. Insert the bolt (5) through and secure with washer (6) and nut (7).
4. Tighten nut to 60-70 in-lb and rotate to next castellation if necessary to insert cotter pin (8). Install cotter pin.
5. Verify that the load cell pivots independently of the bolt.

CAUTION

The load cell must pivot freely about its upper attach point independently of the bolt and nut at this pivot point. If necessary back the nut off to the previous castellation to achieve this.

Table 3 lists the parts that are referred to herein. For a complete listing of parts for the swing frame assembly, refer to the applicable ICA (as listed in Table 2).

Table 3 Parts List

Item	Part No.	Description	Qty
1*	232-143-01	Gimbal Assembly	1
1.1	517-046-00	Flanged DU Bearing	2
2	210-249-03* or 210-312-00 or 210-249-05**	Load Cell	1
3	290-739-00	Shaft - Gimbal	1
4	290-740-00	Retaining Bushing - Shaft	2
5	510-443-00	Bolt	1
6	510-220-00	Washer	1
7	510-320-00	Nut	1
8	510-115-00	Cotter Pin	1
9	290-842-00	Pivot Shaft	1
10	290-843-00	Cap-Shaft	2
11***	235-170-00	Bracket	1
12	290-862-00	Bumper	1
13	510-676-00*** or 510-506-00	Bolt	1
14	510-718-00	Nut	1
15	510-178-00	Cotter Pin	2
16	517-058-00	Thrust Washer	2

*Applicable to AS350 models, supersedes P/Ns 210-249-00, 210-199-01, and 210-199-00

** Applicable to AS355 models, supersedes P/N 210-249-02.

*** Applicable to CRFS compatible configurations only.

Record of Revisions

Revision	Date	Reason for Revision
0	06/19/2024	Original Issue