Please check web site at www.onboardsystems.com for the latest revision of this manual

Instructions for Continued Airworthiness

Cargo Swing Suspension System for the Airbus Helicopters models AS350B, AS350B1, AS350B2, AS350B3, AS350BA, AS350D

System Part Numbers
200-280-02, 200-280-03, 200-280-05, 200-280-06, 200-280-07, 200-280-08

STC SR01164SE

13915 NW 3rd Court Vancouver, Washington 98685 USA
Phone: 360-546-3072 Fax: 360-546-3073 Toll Free: 800-275-0883
www.OnboardSystems.com

THIS PAGE INTENTIONALLY LEFT BLANK

Record of Revisions

Rev.	*Date*	*Page(s)*	*Reason for Revision*
19	07/20/16	Section 5 page 3, Section 25 pages 3, 4, 7, 9, 13, 14	Added connector bracket P/N 235-274-00, updated manual to reflect that fuel drain guard may not be installed, updated Figures 25.5 and 25.6.
20	05/05/17	Section 5, page 9 and 13	Listed overhaul kit P/N 212-040-00 for swing suspension. Revised attach bolt diameter limit to .495” to standardize with cargo hook CMMs.
21	09/12/17	Section 12 pages 1 and 5	Added MIL-PRF-87257 as a compatible hydraulic fluid.
22	02/21/18	Section 5 page 9, 11, 12	Removed magnetic particle inspection requirement for load cell assembly, inserted instructions to return load cell to factory for inspection/calibration. Added additional inspection criteria for swing frame weldment.
23	04/30/20	Section 5 page 15	Corrected tightening instructions for nut P/N 510-440-00 (in step 14).
24	05/11/21	Section 0 page 1, Section 5, Section 11, Section 12 pages 10 thru 12, Section 25	Added kit P/N’s 200-280-07 and 200-280-08 w/ C-40 indicator and associated instructions. Re-organized Section 5 and lubrication section of Section 12.
25	06/17/22	Section 25 page 10	Corrected termination of Analog Out wires to the VEMD (swapped t and Y).
26	06/20/24	Section 5	Added disassembly and inspection of upper load cell joint to annual/100 hour inspection. Added C-40 Indicator P/N 210-293-01.
27	02/10/26	Section 5 pages 7 thru 16	Corrected nut P/N 510-718-00 to P/N 510-440-00, Corrected inspection criteria for Shaft Retaining Bushing P/N 290-740-00. Updated Figure 5.4 to show P/N 232-145-25 parts. General updates to inspection criteria in Table 5.2.
28	07/30/26	Section 5 pages 4 thru 18 Section 25 page 13	Added Special Inspection for Torsional Loads. Corrected bolt P/N 510-676-00 to P/N 510-506-00 in Table 5.1. Removed P/Ns from page 25-13.
29	09/03/26	Section 5 pages 1, 8, 18	Added grace period to inspection and overhaul intervals.

THIS PAGE INTENTIONALLY LEFT BLANK

List of Effective Pages

Title	Pages	Revision	Date
Cover	i, ii Blank	29	09/03/26
Record of Revisions	iii, iv Blank	29	09/03/26
List of Effective Pages	v, vi	29	09/03/26
Table of Contents	vii, viii	28	07/30/26
Section 0 Introduction	1	28	07/30/26
Section 0 Introduction	2	15	05/09/14
Section 4 Airworthiness Limitations	1, 2 Blank	18	12/04/15
Section 5 Inspection and Overhaul Schedule	1	29	09/03/26
Section 5 Inspection and Overhaul Schedule	2, 3	26	06/20/24
Section 5 Inspection and Overhaul Schedule	4 thru 7	28	07/30/26
Section 5 Inspection and Overhaul Schedule	8	29	09/03/26
Section 5 Inspection and Overhaul Schedule	9 thru 17	28	07/30/26
Section 5 Inspection and Overhaul Schedule	18	29	09/03/26
Section 11 Placards and Markings	1, 2	24	05/11/21
Section 12 Servicing	1	21	09/12/17
Section 12 Servicing	2	15	05/09/14
Section 12 Servicing	3, 4	12	12/19/11
Section 12 Servicing	5	21	09/12/17
Section 12 Servicing	6	8	08/06/10
Section 12 Servicing	7	15	05/09/14
Section 12 Servicing	8, 9	8	08/06/10
Section 12 Servicing	10 thru 12	24	05/11/21
Section 25 Equipment and Furnishings	1	24	05/11/21
Section 25 Equipment and Furnishings	2	9	08/24/10
Section 25 Equipment and Furnishings	3, 4	19	07/20/16
Section 25 Equipment and Furnishings	5	18	12/04/15
Section 25 Equipment and Furnishings	6	24	05/11/21
Section 25 Equipment and Furnishings	7	19	07/20/16
Section 25 Equipment and Furnishings	8, 9	24	05/11/21
Section 25 Equipment and Furnishings	10	25	06/17/22
Section 25 Equipment and Furnishings	11, 12	24	05/11/21
Section 25 Equipment and Furnishings	13	28	07/30/26
Section 25 Equipment and Furnishings	14 thru 30	24	05/11/21

THIS PAGE INTENTIONALLY LEFT BLANK

CONTENTS

Identification **Title, Page**

Section 0 **Introduction**
0.4 Scope, 1
0.5 Purpose, 1
0.6 Arrangement, 1
0.7 Applicability, 1
0.9 Abbreviations, 1
0.12 Precautions, 2
0.19 Distribution of Instructions for Continued Airworthiness, 2

Section 4 **Airworthiness Limitations**

Section 5 **Inspection and Overhaul Schedule**
5.1 Annual/100 Hour Inspection, 1
5.2 5 Year/1000 Hour Inspection, 7
5.3 Cargo Hook Overhaul Schedule, 18

Section 11 **Placards and Markings**
11.1 Placards, 1

Section 12 **Servicing**
12.1 Maintenance of the Hydraulic Release System, 1
12.2 Bleeding Hydraulic System, 5
12.3 Lubrication Information, 10

Section 25 **Equipment and Furnishings**
25.1 Cargo Hook Connector, 1
25.2 Description, 1
25.5 Component Weights, 4
25.12 Storage Instructions, 4
25.15 Troubleshooting, 5
25.16 Component Removal, 13
25.17 Component Re-installation, 20
25.18 General Procedures Instructions-Testing, 30

Figures

5.1 Hook Lock Indicator, Section 5 Page 2
5.2 Load Cell Inspection, Section 5 Page 4
5.3 Gimbal DU Bearing Inspection Criteria, Section 5 Page 5
5.4 Gimbal Assembly Inspection, Section 5 Page 6
5.5 Swing Frame Assembly Parts, Section 5 Page 9
5.6 Cable Assembly Attachment to Swing Frame, Section 5 Page 9
5.7 Suspension Cable Parts, Section 5 Page 10
5.8 Shackle Assembly Parts, Section 5 Page 10
5.9 Swing Frame Orientation, Section 5 Page 17
12.1 Checking Hydraulic Fluid Level, Section 12 Page 1
12.2 Master Cylinder Lever Disconnect, Section 12 Page 2
12.3 Master Cylinder Piston Removal, Section 12 Page 3
12.4 Master Cylinder Piston Seal Orientation, Section 12 Page 3
12.5 Slave Cylinder Piston Removal, Section 12 Page 4

Figures continued

12.6 Hydraulic Hook Bleed Kit, Section 12 Page 5
12.7 Hose Arrangement, Section 12 Page 6
12.8 Reservoir Disassembly, Section 12 Page 6
12.9 Screw and Stat-o-seal Removal, Section 12 Page 7
12.10 Injecting Hydraulic Fluid, Section 12 Page 7
12.11 Screw Re-installation, Section 12 Page 8
12.12 Checking System for Air, Section 12 Page 9
12.13 Shackle Assembly Lubrication, Section 12 Page 10
12.14 Upper Gimbal Grease Fitting Lubrication, Section 12 Page 11
25.1 System Overview, Section 25 Page 2
25.2 Fuel Drain Guard Overview, Section 25, Page 3
25.3 Fuel Drain Guard Components, Section 25, Page 3
25.4 Cargo Hook Electrical Connector, Section 25 Page 7
25.5 Wire Harness Routing, Section 25 Page 7
25.6 Electrical Schematic w/ C-39 Indicator, Section 25 Page 8
25.7 Load Weigh System Schematic w/ C-40, Section 25 Page 10
25.8 CAL Code on the C-39, Section 25 Page 11
25.9 C-40 Settings Screen, Section 25 Page 11
25.10 Changing Dampening Level, Section 25 Page 12
25.11 Suspension Attachment Hardware, Section 25 Page 13
25.12 Slave Cylinder Assembly Removal, Section 25 Page 14
25.13 Fixed Hydraulic Release Hose Routing, Section 25, Page 15
25.14 Cable Attachment to Frame at X1790.15, Section 25, Page 16
25.15 Release Lever Installation (B2 shown), Section 25, Page 16
25.16 Load Weigh Indicator (C-39 model shown), Section 25, Page 17
25.17 Load Cell Hardware, Section 25, Page 18
25.18 Fuel Drain Guard Removal, Section 25 Page 19
25.19 Suspension Cable Attachment, Section 25, Page 20
25.20 Cargo Hook Attachment Hardware, Section 25, Page 21
25.21 Slave Cylinder Assembly Installation, Section 25, Page 22
25.22 Hydraulic Hose & Electrical Harness Routing, Section 25 Page 23
25.23 Lever Adjustment, Section 25 Page 24
25.24 C-40 Model Re-installation, Section 25 Page 25
25.25 Shackle Assembly Installation, Section 25 Page 25
25.26 Sealant Application Location, Section 25, Page 27
25.27 Guard Retainer Assembly, Section 25, Page 27
25.28 Lever Installation, Section 25, Page 28
25.29 Cable Setting, Section 25, Page 29

Tables

5.1 Swing Suspension Parts List, Section 5 Page 10
5.2 Swing Suspension Inspection Criteria, Section 5 Page 12
11.1 Cargo Hook Suspension Placards, Section 11 Page 1
25.1 Cargo Hook Connector, Section 25 Page 1
25.2 Component Weights and CGs, Section 25 Page 4
25.3 Troubleshooting, Section 25 Page 5

Section 0
Introduction

0.4 Scope

The following information is necessary to carry out the service, maintenance, and inspection of the Cargo Swing Suspension System P/Ns 200-280-02, 200-280-03, 200-280-05, 200-280-06, 200-280-07, and 200-280-08.

0.5 Purpose

The purpose of this Instructions for Continued Airworthiness (ICA) manual is to provide the information necessary to inspect, service, and maintain in an airworthy condition the Cargo Hook Swing Suspension System.

0.6 Arrangement

This manual contains instructions for the service, maintenance, inspection and operation of the Cargo Hook Swing Suspension on Airbus Helicopters' AS350 series model helicopters. The manual is arranged in the general order that maintenance personnel would use to install, maintain and operate the Cargo Hook Swing Suspension System in service.

The arrangement is:

Section 0 Introduction.
Section 4 Airworthiness limitations (None apply to this System.)
Section 5 Inspection and overhaul schedule
Section 11 Placards and Markings
Section 12 Servicing
Section 25 Equipment and Furnishings

0.7 Applicability

These Instructions for Continued Airworthiness are applicable to the Cargo Swing Suspension System P/Ns listed in Section 0.4 on the Airbus Helicopters' AS350 series models. Refer to the appropriate Airbus Helicopter maintenance documentation for instructions regarding parts of the aircraft that interface with these systems.

0.9 Abbreviations

FAA Federal Aviation Administration
FAR Federal Aviation Regulation
ICA Instructions for Continued Airworthiness

0.12 Precautions

The following definitions apply to safety labels used in this manual.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



Draws the reader's attention to important or unusual information not directly related to safety.



Used to address practices not related to personal injury.

0.19 Distribution of Instructions for Continued Airworthiness

Before performing maintenance ensure that the Instructions for Continued Airworthiness (ICA) in your possession is the most recent revision. Current revision levels of all manuals are posted on Onboard Systems Int'l web site at www.onboardsystems.com. Also a Documentation Update Service is available on the web site. Registering for this service provides an e-mail or fax notification when a manual has been revised. Hard copies of all manuals are available from the factory, contact the factory at 800-275-0883 to request a copy.

Section 4
Airworthiness Limitations

The Airworthiness Limitations section is FAA approved and specifies inspections and other maintenance required under Secs. 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

No airworthiness limitations are associated with this type design change.

THIS PAGE INTENTIONALLY LEFT BLANK

Section 5
Inspection and Overhaul Schedule

The scheduled inspections (Annual/100 Hour and 5 Year/1000 Hour) are defined herein. If the system is subjected to unusual circumstances, extreme environmental conditions, etc., it is the responsibility of the operator to perform the inspections more frequently to ensure proper operation.

There is no maintenance to be performed on the C-39 or C-40 model load weigh indicators. Do not open the enclosure, if repair is needed return it to the factory.

5.1 Annual/100 Hour Inspection

Annually or 100 hours of external load operations, whichever comes first, inspect the cargo hook and suspension per the following. A one-month or 10-hour grace period can be applied if needed for maintenance scheduling convenience. No additional extension is allowed beyond this grace period. Refer to the Component Maintenance Manual (manual no. 122-015-00) for the cargo hook for additional inspection.

NOTICE

*Hours of external load operations should be interpreted to be **(1)** anything is attached to the primary cargo hook (whether a useful load is being transported) and **(2)** the aircraft is flying. If these conditions are **NOT** met, time does **NOT** need to be tracked.*

NOTICE

The optional C-40 Indicator (P/N 210-293-00 or 210-293-01) also records and displays hours of external load operations accumulated. This resettable hour-meter automatically logs when the external load goes above 50 lbs and stops counting when it goes under 25 lbs. For this method of tracking hours refer to the C-40 Owner's Manual for set-up and additional instructions.

5.1 Annual/100 Hour Inspection continued

1. Activate the electrical system and press the Cargo Release button to ensure the cargo hook electrical release system is operating correctly. The cargo hook must release. Reset the hook by hand after release and verify that it latches and the hook lock indicator is aligned with the engraved line on the manual release cover (see Figure 5.1).

CAUTION

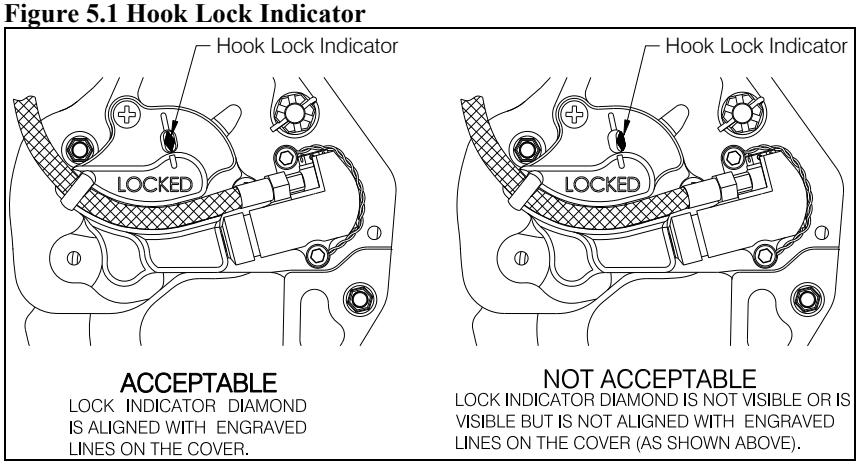
Depressing the electrical release button continuously in excess of 20 seconds will cause the cargo hook solenoid to overheat, possibly causing permanent damage.

The following instructions are applicable to cargo hook P/N 528-028-02 which is equipped with Surefire electrical release. With no load on the cargo hook perform the following.

- *Very* briefly press the Cargo Release switch, the cargo hook should not actuate and the load beam should remain closed.
- Press and hold the Cargo Release switch for a few seconds, the load beam should fall to the open position and the cargo hook solenoid should continue to cycle repeatedly.
- Push up on the load beam and verify that it latches and the hook lock indicator is aligned with the engraved line on the manual release cover.

2. Activate the hydraulic release system by pulling the release lever on the collective. The mechanism should operate smoothly, and the cargo hook must release. Return the load beam to its closed and locked position by hand and verify that the hook lock indicator on the side of the hook returns to the fully locked position. In the fully locked position, the hook lock indicator should align with the lines on the manual release cover (see Figure 5.1).

Figure 5.1 Hook Lock Indicator



5.1 Annual/100 Hour Inspection continued

3. Visually check for fluid leaks in the hydraulic release system. Some seeping or dampness is acceptable, but if drips or areas cleaned by fluid leaking are present the hook must not be used until the condition is repaired. See troubleshooting section to determine the course of action.
4. Check the fluid level in the master cylinder with the collective against the lower stop. The Master Cylinder features a transparent lid through which the fluid level can be checked. Hydraulic fluid must be visible over the baffle surface (reference Figure 12.1).
5. Check the hydraulic release system for air by pulling the lever firmly until it bottoms out. Check the push rod position (reference Figure 12.12). If some of the green ring on the push rod is visible, the system is adequately bled. If some of the green on the push rod is NOT visible with the lever completely pulled, the system has too much air in it and must be bled, see Section 12.2 for bleeding instructions.
6. Move the cargo hook and swing frame throughout their full ranges of motion and observe the hydraulic hose and electrical harnesses to ensure that they have enough slack. The hose or harnesses must not be the stops that prevent the cargo hook or swing frame from moving freely in all directions.
7. Inspect all pivoting joints to ensure that they rotate freely.
8. Visually inspect for presence and security of fasteners.
9. Visually inspect the electrical harnesses and their connections (including the strain relief at the load cell) for damage and security.
10. Visually inspect the hydraulic hose and its connection to the cargo hook for damage and security.
11. Visually inspect the cargo hook bumper for damage.
12. Visually inspect for cracks in swing frame halves. Pay special attention to the areas around the welds. The frame tubes contain a corrosion preventative compound, which may leak out through a crack and also provide an indication.
13. Visually inspect for dents, scratches and gouges in the swing frame halves. Refer to Table 5.2 for limits.
14. Inspect suspension cables for broken strands. Pass a cloth over the cables. This will clean the cables for a visual inspection and detect broken wires if the cloth snags on the cable. Ten randomly distributed broken strands in one cable lay (one complete rotation around the wire) or five broken strands in one strand in cable lay are considered unacceptable.
15. Visually inspect the suspension cables for crushing, un-stranding, kinking, loss of rope diameter in short lengths, unevenness of outer strands or other damage. Visually inspect for corrosion.

5.1 Annual/100 Hour Inspection continued

16. Disassemble and inspect the upper joint of the Load Cell (16) per the following, referring to Figure 5.4 for item numbers in parentheses ( ). If the Swing Frame Assembly has been subjected to torsional loading, see Special Inspection for Torsion involving further disassembly and inspection instructions in step 17.

    a. Remove the cotter pin (22), nut (21), washer (20), and Retaining Bushing (18) from the end of the bolt (19).

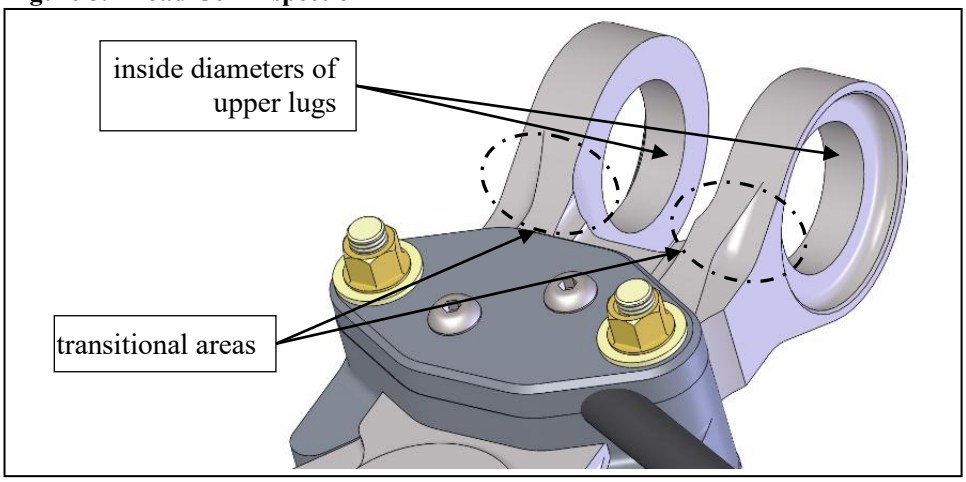
    b. While supporting the Load Cell and cargo hook (28), remove the bolt and the other Retaining Bushing (18) and slide the Gimbal Shaft (17) out of the joint, separating the load cell from the Gimbal (1.1).

    c. Visually inspect the Gimbal Shaft for signs of wear, such as pitting, galling, or reduction in diameter. If reduction in diameter is observed, refer to the criteria in Table 5.2.2. 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.

    d. Inspect the inside diameters of the upper lugs of the load cell (refer to Figure 5.1.5) for signs of wear such as pitting, galling, or elongation of the holes. If elongation is observed, refer to the size limits criteria in Table 5.2.2. There should be no visible wear, aside from light burnishing of the inside diameter surfaces. If the burnishing can be removed using Scotch Brite, it is considered light.

       Visually inspect for cracks around both lugs, including the transitional areas (indicated in Figure 5.2) where the lugs transition into the flat portion of the load cell. Inspect these areas on both sides.

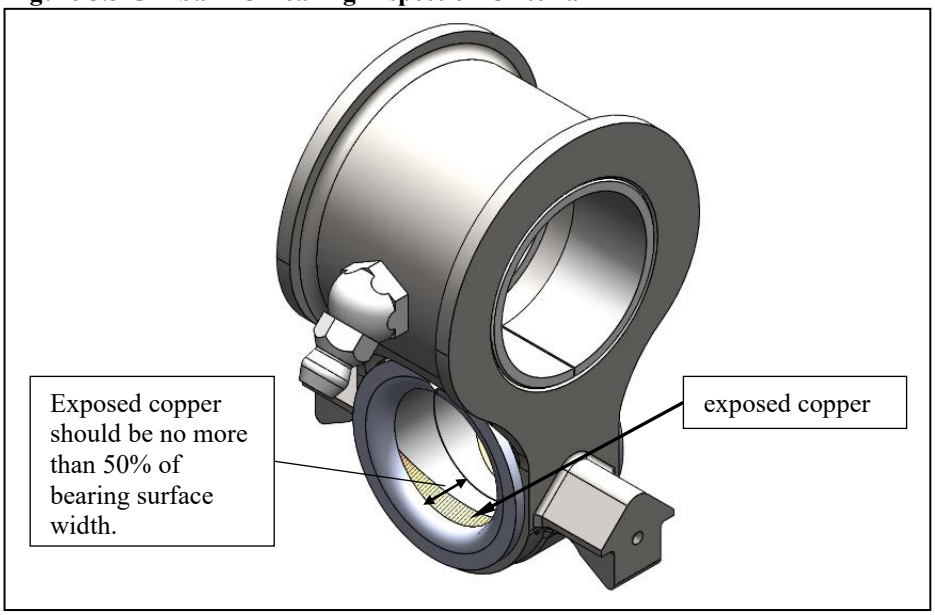
Figure 5.2 Load Cell Inspection



    e. Inspect the flanged DU bearings (1.2) of the Gimbal (1.1) that interface with the Gimbal Shaft. As these bearings wear, the low-friction PTFE layer is removed, exposing the copper layer below (ref. Figure 5.3). Across the width of the bearing surface, no more than 50% should be the exposed copper layer.

5.1 Annual/100 Hour Inspection continued

Figure 5.3 Gimbal DU Bearing Inspection Criteria



f. Replace worn or damaged parts. If DU bearings require replacement (refer to Section 5.2 for further disassembly instructions), press in with wet zinc chromate primer (TTP-1757 or equivalent) applied to the inside diameter of the mating hole.

g. Re-assemble the load cell to the Gimbal per Section 25.17.

Special Inspection for Torsional Loads

If the swing frame assembly is used with torsional loads (such as a fertilizer slinger bucket) that are attached directly to the cargo hook via a spreader bar (without any additional restraints), perform additional inspections as specified following.

WARNING

Loads attached to the cargo hook with a spreader bar (such as a typical fertilizer bucket) cause the swing frame assembly to react high torsional loads. Repetitive high torsional loads are damaging to the swing frame assembly and require an additional inspection as defined in the following step.

5.1 Annual/100 Hour Inspection continued

17. Disassemble the upper pivoting joint of the swing frame assembly to remove and inspect the Gimbal Assembly per the following.

    a. Remove the cotter pin (8), nut (9), Shaft Cap (5) and remove the bolt (10) and the other Shaft Cap.

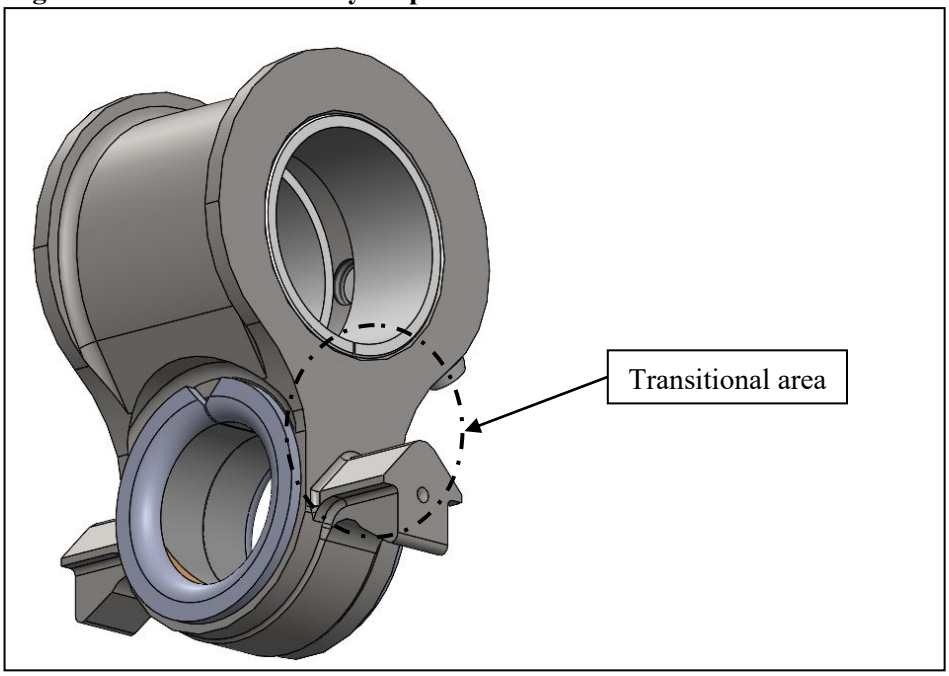
    b. Remove the Pivot Shaft while supporting each Swing Frame Half.

    c. Remove the Gimbal Assembly (1) and the Thrust Washers (15).

    d. Perform a visual inspection for cracks in the Gimbal (1.1), with specific attention on the transitional areas (on both sides) as identified in Figure 5.4 including around the base of the arrow-shaped feature.

    e. Re-assemble the upper pivoting joint per Section 5.2.

Figure 5.4 Gimbal Assembly Inspection



5.1 Annual/100 Hour Inspection continued

18. Visually inspect the load weigh indicator (C-39 or C-40 model) and its mounting bracket for damage and security.

If the C-40 Indicator (P/N 210-293-00 or P/N 210-293-01) is installed and connected to the VEMD for the function to increase the main rotor RPM perform the following.

19. Check the function of the C-40 Indicator to signal the VEMD to send N2 datum of 400 rpm to the FADEC when the measured external load is 331 lbs. (150 kg) or more. This function is applicable to AS350B3s with MOD 07-4716 incorporated. Perform check per the following.
    - From the Load screen rotate the rotary push button knob to enter the C-40 Settings screen.
    - Press the knob to enter the Settings menu.
    - Scroll down the menu to the Analog Test setting by rotating the knob and press the knob again.
    - A simulated load of 475 lbs. is output for 3 seconds, verify this load is displayed on the VEMD (if the engine is running in FLIGHT mode this also temporarily sends an N2 datum of 400 rpm to the FADEC resulting in a slight acceleration and deceleration of NR).

If fuel drain guard is installed perform the following.

20. Inspect all fuel drain guard parts for corrosion, gouges, nicks, and dents. If depth of corrosion pits, gouges, nicks, or dents exceed .060”, remove and replace damaged part(s).
21. Inspect Guard for damage that causes lever to bind or rub. Remove and replace Guard if it is obstructing free operation of lever.
22. Inspect for fuel leakage. If leakage is noted, re-apply sealant to Retainer as described in Section 25. Refer to Airbus Helicopter maintenance instructions for other possible causes.

5.2 5 Year/1000 Hour Inspection

Every 1000 hours of external load operations or 5 years, whichever comes first, remove the swing suspension system from the aircraft and disassemble*, inspect and re-assemble per this section. A 6-month or 100-hour grace period can be applied if needed for maintenance scheduling convenience. No extension to maintenance is allowed beyond this tolerance grace period.

*After disassembly return the Load Cell to the factory for inspection and calibration. The factory will inspect the condition of the load cell and perform acceptance test procedures including calibration and zero balance, repairing as necessary.

Removal

Remove the suspension by removing the quick release pins at the suspension cable attachments to the Shackle Assemblies (ref Figure 25.11) at the landing gear cross tubes. Remove the four Shackle Assemblies (42) from the aircraft.

Disassembly

For reference numbers in this section in parentheses ( ) refer to Figures 5.5 through 5.8.

1. Remove the four suspension cable assemblies from the swing frame feet by removing the cotter pin (35), nut (34), two washers (33) and bolt (31). Remove the Standoff Bushings (32).
2. Separate the Gimbal Assembly (36.1, 36.2, 36.3) from each suspension cable assembly by removing the cotter pin (35), nut (34), washer (33), and bolt (39).
3. Separate the Load Cell (16) and Cargo Hook (28) from the Swing Frame by removing the cotter pin (22), nut (21), washer (20), and Shaft Retaining Bushing (18) and sliding the Pivot Shaft (17) and bolt (19) out with the other Shaft Retaining Bushing (18).
4. At each end of the Frame Strut Weldment (2) remove the nut (7) and bolt (12) that secure the rod end fittings (13) to the swing frame feet.
5. At the upper pivoting joint of the swing frame remove the cotter pin (8) and nut (9) from the end of the bolt (10) and remove the Shaft Cap (5).
6. Slide the Swing Frame Half (3) off the Pivot Shaft (4) and remove the bumper (6), thrust washers (15), and Gimbal Assembly (1.1, 1.2, 1.3).
7. Slide the Pivot Shaft out of the opposite Swing Frame Half (3) and remove the other Shaft Cap (5) and bolt (10).
8. Separate the Cargo Hook (28) and Hook Bumper (23) from the Load Cell by removing the cotter pin (8), nut (27), and washers (25, 26) from the end of the Attach Bolt (24) and slide the Attach Bolt out, removing the other washer (25).
9. Remove spiral wrap from around the frame tubes.
10. Remove bushings if it is necessary that they be replaced. All self-lubricating bushings use an interference fit to hold them in place. Use an arbor press or similar to press the bushings out of the bore. Do NOT use heat.
11. If the load cell passes the damage/wear inspection return it to the factory (as noted above). Inspect the remaining parts per this section.

5.2 5 Year/1000 Hour Inspection continued

Figure 5.5 Swing Frame Assembly P/N 232-145-02 Parts

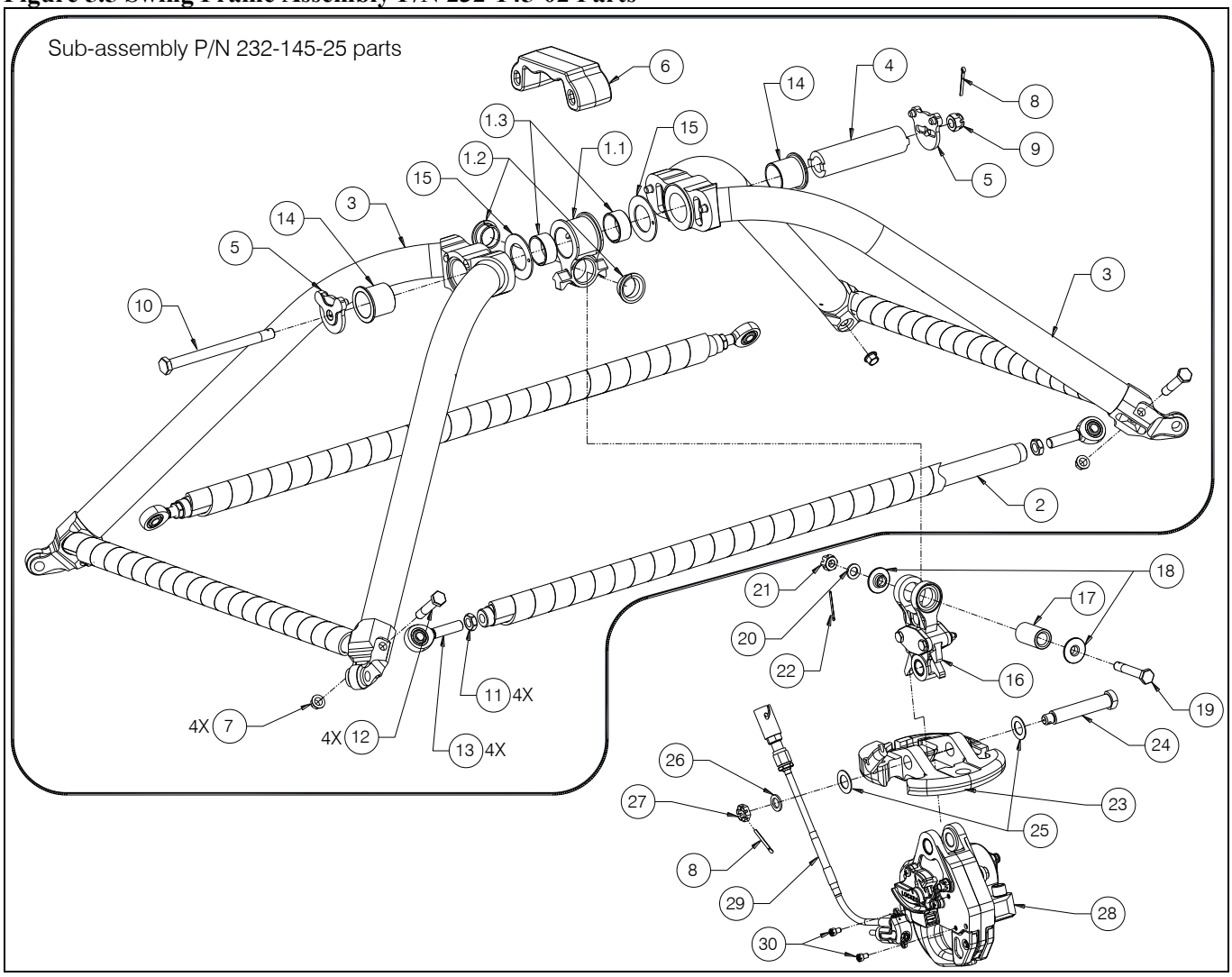
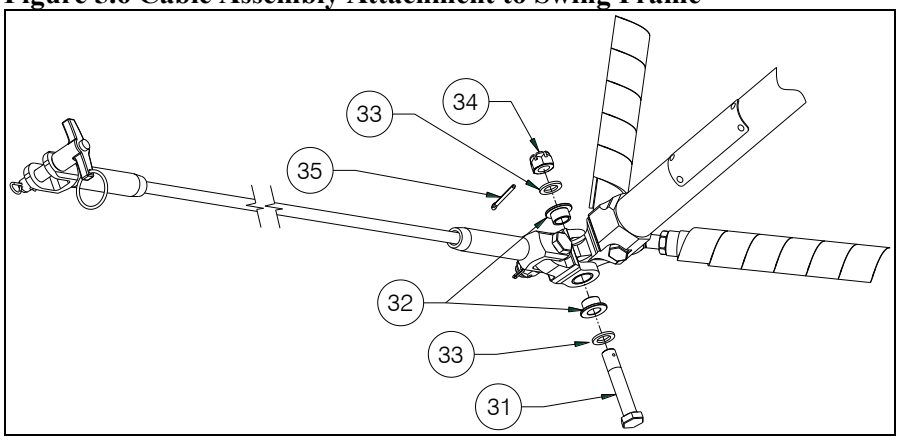


Figure 5.6 Cable Assembly Attachment to Swing Frame



5.2 5 Year/1000 Hour Inspection continued

Figure 5.7 Suspension Cable Parts

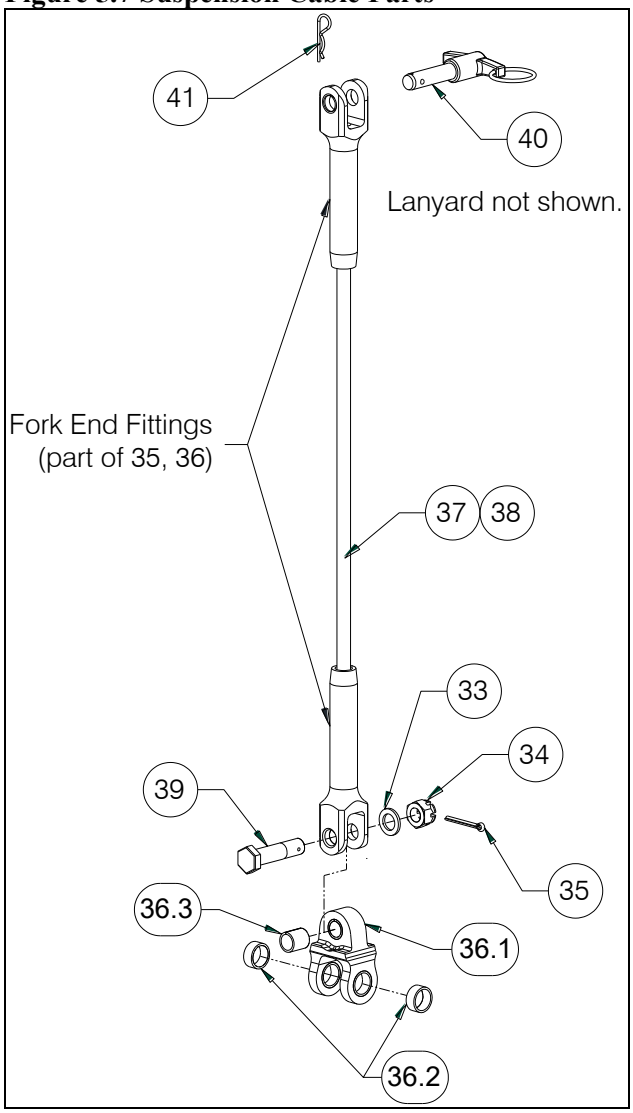
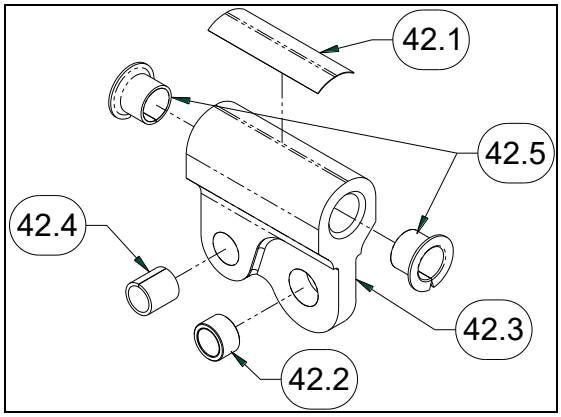


Figure 5.8 Shackle Assembly (42) Parts



5.2 5 Year/1000 Hour Inspection continued

Table 5.1 Swing Suspension Parts List

Item	Part No.	Description	Qty
1[1]	232-143-01	Gimbal Assembly	1
1.1	290-841-00	Gimbal	1
1.2	517-046-00	Flanged DU Bearing	2
1.3	517-056-00	DU Bearing	2
1.4[3]	518-003-00	Grease Fitting	1
2	235-116-00	Frame Strut Weldment	2
3	235-117-00	Swing Frame Half	2
4	290-842-00	Pivot Shaft	1
5	290-843-00	Cap-Shaft	2
6	290-862-00	Bumper	1
7	510-104-00	Nut	4
8	510-178-00	Cotter Pin	2
9	510-440-00	Nut	1
10	510-506-00	Bolt	1
11	510-510-00	Jam Nut	4
12	510-762-00	Bolt	4
13	517-055-00	Spherical Rod End	4
14	517-057-00	Flanged DU Bearing	2
15	517-058-00	Thrust Bearing	2
16	210-249-03	Load Cell	1
17	290-739-00	Shaft - Gimbal	1
18	290-740-00	Retaining Bushing - Shaft	2
19	510-443-00	Bolt	1
20	510-220-00	Washer	1
21	510-320-00	Nut	1
22	510-115-00	Cotter Pin	5
23	290-839-02	Hook Bumper	1
24	290-775-00	Attach Bolt	1
25	510-183-00	Washer	2
26	510-174-00	Washer	1
27	510-170-00	Nut	1
28	528-028-00	Cargo Hook	1
	528-028-02	Cargo Hook w/ Surefire	
29	232-168-00	Slave Cylinder Assembly w/Plumbing	1
30	510-531-00	Screw	2
Refer to Figure 5.6 and 5.7 for item numbers 31 through 41			
31	510-439-00	Bolt	4
32	290-749-00	Standoff Bushing	8
33	510-221-00	Washer	12
34	510-718-00[4]	Nut	8
35	510-178-00	Cotter Pin	8

5.2 5 Year/1000 Hour Inspection continued

Table 5.1 Swing Suspension Parts List continued

Item	Part No.	Description	Qty
36[1]	232-142-00	Lower Attach Gimbal Assembly	4
36.1	290-746-00	Gimbal	1**
36.2	517-048-00	DU Bearing	2**
36.3	517-016-00	DU Bearing	1**
37	232-177-00	Forward Attach Cable	2
38	232-178-00	Aft Attach Cable	2
39	510-438-00	Bolt	4
40	290-851-00	Quick Release Pin	4
41	514-048-00	Safety Pin	4
Refer to Figure 5.8 for items 42.1 through 42.5			
42[1]	232-137-01	Shackle Assembly	4
42.1	215-396-00	Shackle Assembly Placard	1**
42.2	290-750-00	Attach Fitting Bushing	1**
42.3	290-850-00	Shackle	1**
42.4	517-016-00	DU Bearing	1**
42.5	517-047-00	Flanged DU Bearing	2**
Items not shown in Figures			
-	270-126-00	Ground Strap	1
-	270-129-00	Electrical Harness Assembly	1

[1]Item not shown assembled.

[2]Quantity is per assembly.

[3] Not shown.

[4] P/N 510-226-00 and P/N 510-440-00 are approved alternates to P/N 510-718-00.

Notes:

4) Load Cell P/N 210-249-03 supersedes P/Ns 210-249-00, 210-199-01, and 210-199-00.

5) Spiral Wrap P/N 590-013-00 is wrapped around the horizontal swing frame tubes.

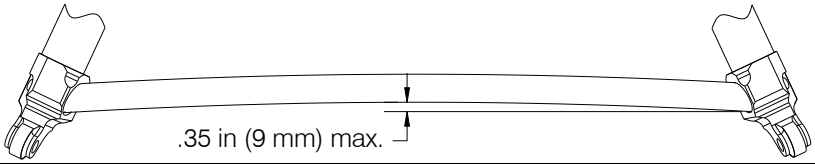
5.2 5 Year/1000 Hour Inspection continued

Inspection

Carefully inspect, and if necessary repair or replace*, the detail parts in accordance with the instructions in Table 5.2. Inspect the parts in a clean, well-lit room.

*Overhaul Kit P/N 212-040-00 is recommended to use for re-assembly of the swing suspension. The overhaul kit contains fasteners, bushings and other recommended items to be replaced. The cargo hook has its own Overhaul Kit, refer to its CMM.

Table 5.2 Swing Suspension Inspection Criteria continued

Seq	Component	Inspection Criteria & Limit	Repair Action	Finish	Recommended replacement at overhaul
1.	Gimbal (1.1), Gimbal (36.1)	Surface cracks – inspect under illuminated magnification (minimum 2X / 4 diopter).	None. Cracks of any size are cause for part replacement.	N/A	No
2.	Frame Strut Weldment (2)	Dents, gouges, and scratches – 0.020 in. (0.51 mm) deep.	Blend at 10:1 ratio as required to provide smooth transitions.	Protect affected surfaces with MIL-PRF-23377 Type 1 primer or equivalent and MIL-PRF-85285 Type 1 coating or equivalent.	No
		Surface cracks – inspect under illuminated magnification (minimum 2X / 4 diopter).	None. Cracks of any size are cause for part replacement.	N/A	
3.	Swing Frame Weldment (3)	Dents, gouges, and scratches – 0.020 in. (0.51 mm) deep.	Blend at 10:1 ratio as required to provide smooth transitions.	Protect affected surfaces with MIL-PRF-23377 Type 1 primer or equivalent and MIL-PRF-85285 Type 1 coating or equivalent.	No
		Surface cracks – inspect under illuminated magnification (minimum 2X / 4 diopter).	None. Cracks of any size are cause for part replacement.	N/A	
		Lateral tube bent in any direction, gap measured along a straight edge is >.35” (8.9 mm), see below.	None.	N/A	
					
4.	Pivot Shaft (4)	Wear on outside diameter, diameter less than 0.990” (25.1 mm).	None	N/A	No

5.2 5 Year/1000 Hour Inspection continued

Table 5.2 Swing Suspension Inspection Criteria continued

Seq	Component	Inspection Criteria & Limit	Repair Action	Finish	Recommended replacement at overhaul
5.	Shaft Cap (5)	Dents, nicks, cracks, gouges, scratches and corrosion – 0.060 in. (1.52 mm) deep.	Blend at 10:1 ratio as required to provide smooth transitions.	Passivate per AMS-QQ-P-35 or ASTM A967.	No
6.	Bumper (6)	Gouges and scratches greater than .060" deep. Splitting.	None.	N/A	No
7.	DU Bearing (1.2, 1.3, 14, 36.2, 36.3, 42.4, 42.5)	Wear – more than 50% copper showing.	None	N/A	Yes
8.	Rod End (13)	Wear on or elongation of inside diameter of spherical bearing, diameter greater than .330 in. (8.4 mm). Binding of spherical bearing in its housing.	None	N/A	No
9.	DU Thrust Washer (15)	Wear on side facing Gimbal – more than 50% copper showing.	None.	N/A	Yes
10.	Load Cell Assembly (16)	Dents, gouges, and scratches greater than .020 in. deep in the load link.	Blend at 10:1 ratio as required to provide smooth transitions.	Passivate per AMS-QQ-P-35 or ASTM A967.	No
		Pitting, galling, or wear on inside diameter of upper lugs. Diameter greater than .759 in. (19.3 mm).	None.	N/A	
		Dents, gouges, and scratches greater than .060 in. (1.5 mm) deep in the Covers.	Blend at 10:1 ratio as required to provide smooth transitions.	Apply conversion coating (MIL-DTL-5541) to affected Cover surfaces.	
		Wear on ID of bushing - 0.520 in. (13.2 mm)	None.	N/A	
11.	Gimbal Shaft (17)	Wear on OD - .732 in. (18.6 mm). Pitting and galling on OD.	None	N/A	No
12.	Retaining Bushing (18)	Wear on flange – thickness less than .052 in. (1.32 mm)	None	N/A	No

5.2 5 Year/1000 Hour Inspection continued

Table 5.2 Swing Suspension Inspection Criteria continued

Seq	Component	Inspection Criteria & Limit	Repair Action	Finish	Recommended replacement at overhaul
13.	Hook Bumper (23)	Gouges and scratches greater than .060 in (1.5 mm) deep.	None	N/A	No
14.	Attach Bolt (24)	Wear on OD - .495 in. (12.6 mm)	None	N/A	No
15.	Fork End Fitting of Suspension Cable (37, 38)	Wear on ID of clevis holes - 0.397 in. (10.1 mm)	None	N/A	No
		Dents, gouges and scratches – 0.020 in. (0.51 mm) deep	Blend at 10:1 ratio to provide smooth transitions.	Parts are 303 stainless steel, no touch up finish required.	No
		Surface cracks – inspect under illuminated magnification (minimum 2X / 4 diopter).	None.	N/A	No
16.	Wire Rope of Suspension Cable (37, 38)	Inspect for damage as detailed in 100 hour/Annual Inspection	None.	N/A	No
17.	Quick Release Pin (40)	Wear on OD - 0.362 in. (9.2 mm)	None	N/A	No
18.	Shackle (42.3)	Dents, gouges and scratches – 0.020 in. (0.51 mm) deep	Blend at 10:1 ratio to provide smooth transitions.	Protect affected surfaces with MIL-PRF-23377 Type 1 epoxy primer or equivalent and MIL-PRF-85285 Type 1 coating or equivalent.	No
19.	Cargo Hook (28)	Refer to Component Maintenance Manual (CMM) 122-015-00			
20.	All remaining nuts, bolts, cotter pins, washers	Wear, corrosion or deterioration.	None.	N/A	Yes
21.	Serial Number Plate	Damaged or illegible	None.	N/A	No

5.2 5 Year/1000 Hour Inspection continued

Re-assembly

Re-assemble the suspension frame per the following (refer to Figure 5.2 through Figure 5.5 for item numbers).

1. Install replacement self-lubricating bushings with wet zinc chromate primer (TTP-1757 or equivalent) applied to the bushing OD.
2. Apply a light film of grease (Mobilgrease 28 is recommended) to the outside diameter of the Pivot Shaft (4) and insert it through one frame half, thrust washer* (15), Gimbal Assembly, thrust washer* (15) and through second frame half. Do not fully seat frame halves yet.

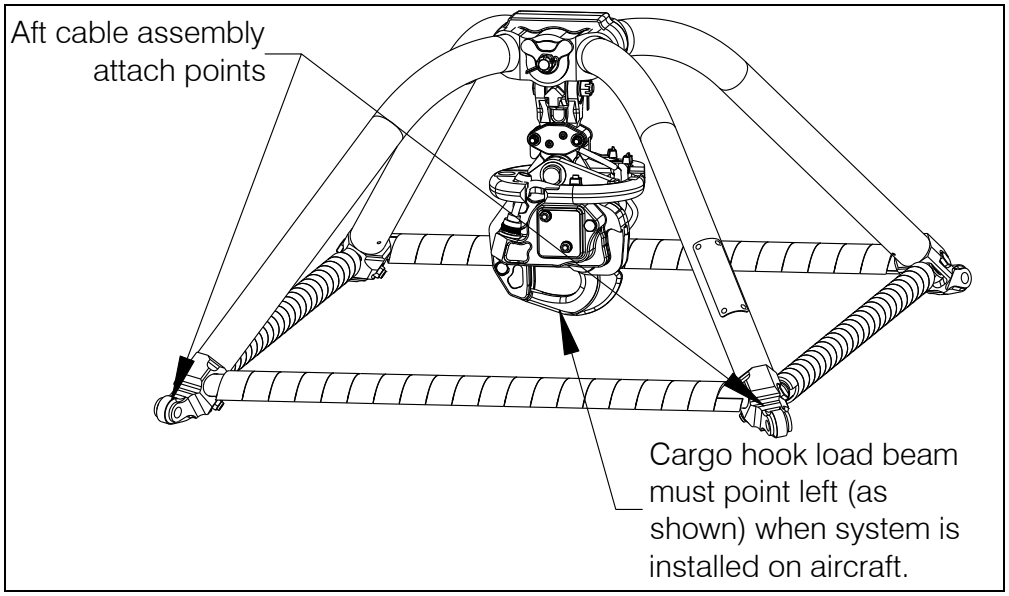
   * Ensure Teflon impregnated wear surfaces (darker sides) of thrust washers are facing gimbal.
3. Rotate the Pivot Shaft so that the raised "keys" at each end are horizontal.
4. Align the rod ends (13) to seat in the pockets of the swing frame feet.
5. Before fully seating and securing the frame halves together position the bumper (6) in between them.
6. Capture each end of the Pivot Shaft with Shaft Caps (5), insert bolt (10) through, and thread the nut (9) on. Ensure that the rod ends are aligned with the holes in both feet.
7. Torque the nut (9) to 20 ft-lbs. Rotate the nut to the next castellation, not to exceed 30 ft-lbs.
8. Install and secure cotter pin (8).
9. Secure rod ends to frame feet with bolt (12) and nut (7). Torque to 8 – 12 ft-lbs.
10. Ensure the rod ends at each end of the frame struts are parallel, i.e.- the rod ends should be able to be rotated within the limits of the pockets in the frame feet. If necessary, loosen a jam nut (11), rotate the strut so the tightened rod end is against the pocket, rotate other rod end in the same direction (to be parallel), and tighten its jam nut.
11. Attach the Load Cell Assembly (16) to the Gimbal Assembly (1) per section 25.18.
12. Attach the Cargo Hook (28) and Hook Bumper (23) to the Load Cell Assembly per section 25.18.
13. Apply grease (Mobilgrease 28 is recommended) to the holes of the Fork End Fittings of the Forward and Aft Suspension Cable Assemblies (37, 38).
14. Assemble the Gimbal Assemblies (36) onto the Fork End Fittings with bolt (39), washer (33), and nut (34).
15. Tighten nut (34) to finger tighten then rotate to next castellation if necessary to insert cotter pin. Ensure the Gimbal Assembly pivots freely on the bolt (back off to previous castellation if it does not). Install cotter pin (35).
16. Apply grease (Mobilgrease 28 is recommended) to the shank of the bolts (31).

5.2 5 Year/1000 Hour Inspection continued

Re-assembly

17. Fasten the Gimbal Assemblies of the two longer Suspension Cable Assemblies onto the aft feet of the Swing Frame Assembly and the two shorter Suspension Cable Assemblies onto the forward feet of the Swing Frame Assembly (reference Figure 5.6 for orientation). At each joint, assemble with bolt (31), washers (33), Standoff Bushings (32), and nut (34). Tighten nut to 95-110 in-lbs and rotate to next castellation to insert cotter pin (35).

Figure 5.9 Swing Frame Orientation



18. Re-install the Shackle Assemblies to the aircraft hard points at the forward and aft landing gear cross tubes per Section 25.17.
19. Re-install the suspension system on the aircraft per Section 25.17.

5.3 Cargo Hook Overhaul Schedule

Time Between Overhaul (TBO) for the cargo hook: 5 years or 1000 hours of external load operations, whichever comes first. A 6-month or 100-hour grace period can be applied if needed for maintenance scheduling convenience. No extension to maintenance is allowed beyond this tolerance grace period.

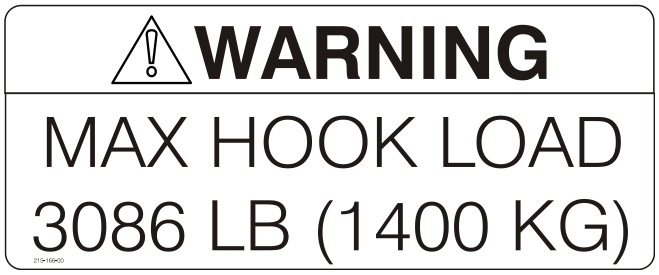
Contact Onboard Systems for the latest revision of overhaul instructions for the cargo hook and guidance to locate authorized overhaul facilities.

Section 11
Placards and Markings

11.1 Placards

The Cargo Hook Swing Suspension System Kits include the following placards shown in Table 11.1.

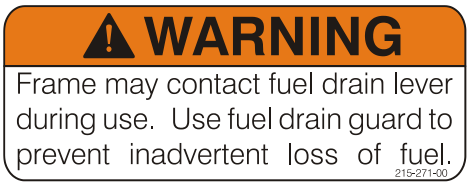
Table 11.1 Cargo Hook Suspension System Placards

Placard part number (P/N) and appearance	Location
P/N 215-166-00:  or P/N 215-168-00:  	Located on the belly of the aircraft near the cargo hook suspension in clear view of the ground support personnel. P/N 215-166-00 is applicable to the AS350B3 model. P/N 215-168-00 is applicable to the AS350B, AS350B1, AS350B2, AS350BA and AS350D models.

continued

11.1 Placards, continued

Table 11.1 Cargo Hook Suspension System Placards, continued

Placard part number and appearance	Location
 (text is engraved on manual release lever shown)	Located on the release lever of the hydraulic release master cylinder assembly. Master cylinder assembly is located on the collective.
P/N 215-271-00 	Located on the swing suspension frame near the serial number plate.
P/N 215-336-00 	Mounted on the bottom of solenoid housing of cargo hook P/N 528-028-02 (included with kit P/Ns 200-280-05 and 200-280-06 only).
P/N 215-343-00 	Located adjacent to the cargo hook release switch on the cyclic (included with kit P/Ns 200-280-05 and 200-280-06 only).

Section 12
Servicing

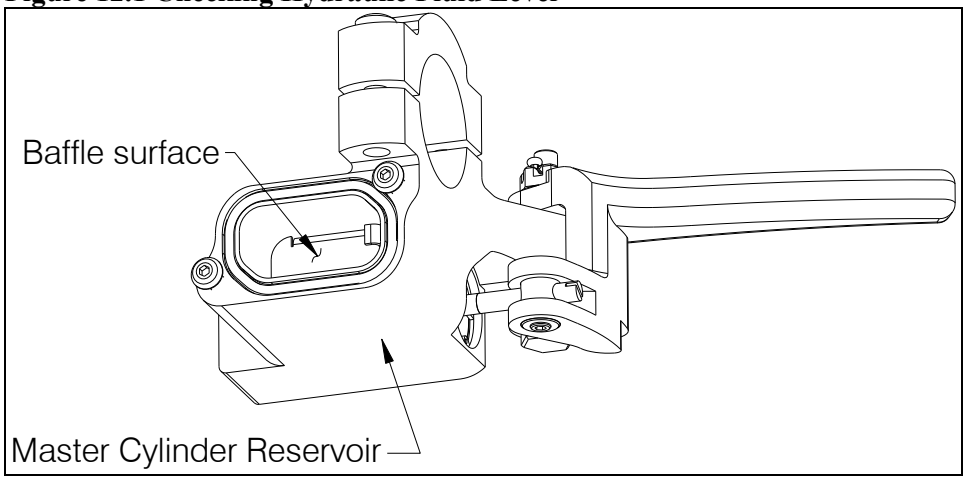
12.1 Maintenance of the Hydraulic Release System

The system is filled with fluid at installation and does not consume fluid unless it leaks out. If any leakage is detected, the fluid level should be immediately checked.

To check the fluid level:

1. Position the collective against the lower stop.
2. The Master Cylinder features a transparent lid through which the fluid level can be checked. Hydraulic fluid must be visible over the baffle surface (see Figure 12.1).
3. Remove lid and add MIL-PRF-87257 (optional: MIL-PRF-5606) hydraulic fluid as required until the baffle surface is partially or fully submerged.

Figure 12.1 Checking Hydraulic Fluid Level



If leakage is noted around any plumbing fittings, the fittings may be tightened until the leakage quits. If leakage is noted around the pistons in either the master or slave cylinders the leaking cylinder must be repaired. See the instructions for repair in this section.

12.1 Maintenance of the Hydraulic Release System continued

Master Cylinder Repair

If fluid is leaking around the piston, the only repair is to remove and replace the cup seal and O-ring. The master cylinder must be disassembled, inspected and then re-assembled with new seals.

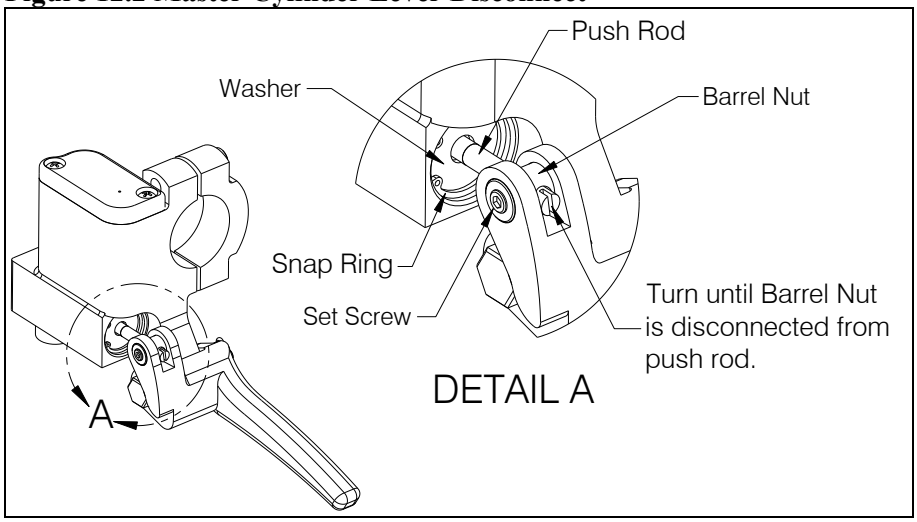
Disassembly:

1. Remove snap ring. Use caution when removing the snap ring since the piston is spring loaded against the washer and snap ring. The piston will pop out of the housing when the snap ring is removed. Use the lever to put pressure on the piston while removing snap ring.
2. Loosen the set screw and disconnect barrel nut on lever from the push rod. See Figure 12.2.
3. Remove the piston and spring. See Figure 12.3 for parts breakdown.
4. Inspect the master cylinder bore for scratches. If any scratches or gouges are visible in the bore, the master cylinder must be replaced.

Re-assembly

1. If the bore condition is acceptable, replace the lip seal and O-ring on the piston assembly. Maintain orientation as shown in Figure 12.4. Stretch seals over piston into grooves.
2. To assemble the master cylinder, lubricate the piston seals and cylinder bore generously with hydraulic fluid.
3. Place the spring in the cylinder bore.
4. Pass the push rod through the washer.
5. Thread the push rod into the barrel nut until approximately 1/16” of thread is visible through the opposite side of the barrel nut.
6. Insert the small spring into the piston assembly and insert the piston assembly into the master cylinder bore using a firm rocking motion.
7. Use the lever to compress the spring and hold the piston in place.
8. Use snap ring pliers to install the snap ring.
9. Secure push rod threads by tightening set screw.

Figure 12.2 Master Cylinder Lever Disconnect



12.1 Maintenance of the Hydraulic Release System, continued

Master Cylinder Repair continued

Figure 12.3 Master Cylinder Piston Removal

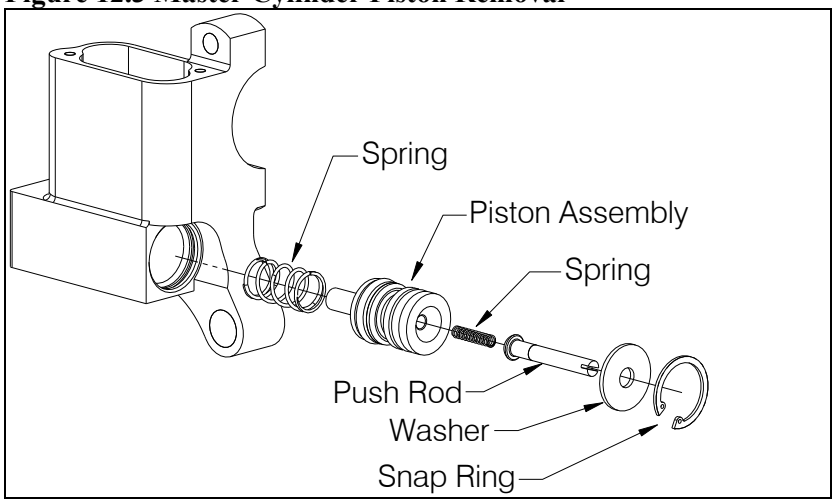
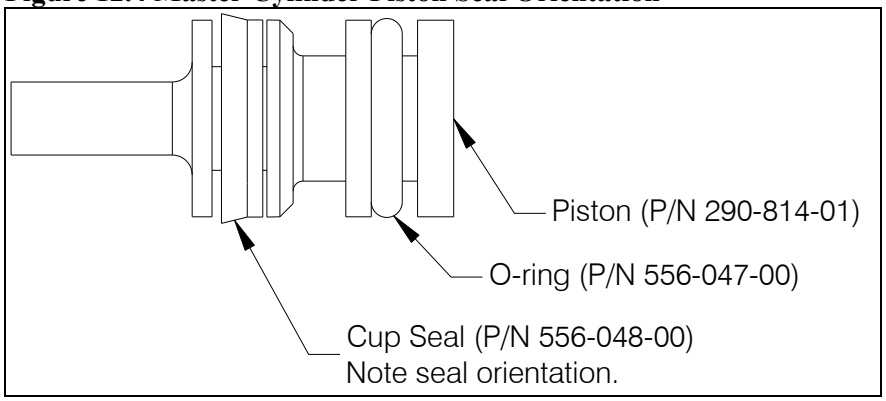


Figure 12.4 Master Cylinder Piston Seal Orientation



Slave Cylinder Repair

If the slave cylinder is leaking fluid around the piston rod, the only repair possible is to remove and replace the quad ring or cup seal (earlier production units of the slave cylinder assembly used a cup seal instead of the quad ring).

Disassembly:

1. Remove cap, piston, and seal (see Figure 12.5).
2. Inspect bore of slave cylinder for scratches or gouges. If any are present the assembly must be replaced.
3. Remove bushing in cap by pressing it out.
4. Remove quad ring (or cup seal) by stretching it over the piston.

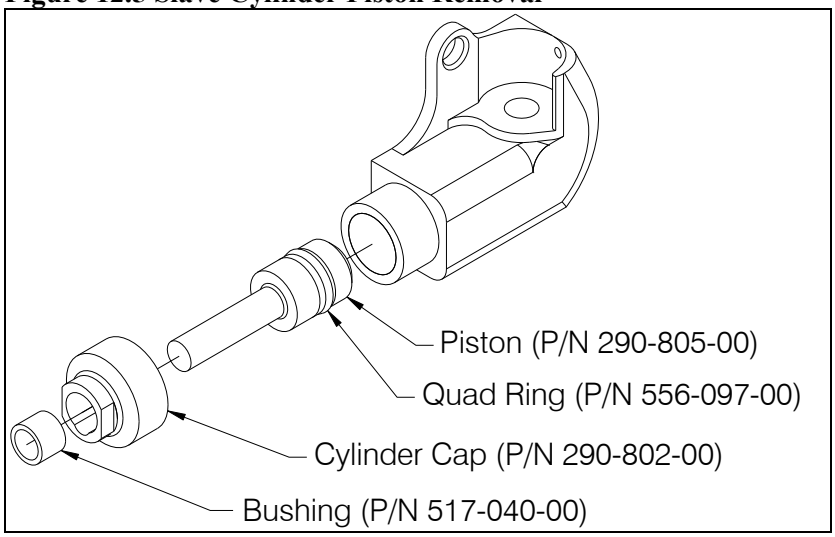
Re-assembly:

1. Press new bushing into cap.
2. Stretch new quad ring over piston into groove.
3. Clean and lubricate cylinder bore and piston seal with hydraulic fluid.
4. Insert piston into cylinder taking care not to damage edges of quad ring.
5. Screw on cap and torque to 50-60 in-lbs.

12.1 Maintenance of the Hydraulic Release System continued

Slave Cylinder Repair continued

Figure 12.5 Slave Cylinder Piston Removal



12.2 Bleeding Hydraulic System

Filling and bleeding the hydraulic release system is most easily accomplished on the bench, prior to installation on the aircraft. This process may also be accomplished after the system is installed. Filling and bleeding requires two persons, one to inject hydraulic fluid through the system and the other to observe the reservoir.

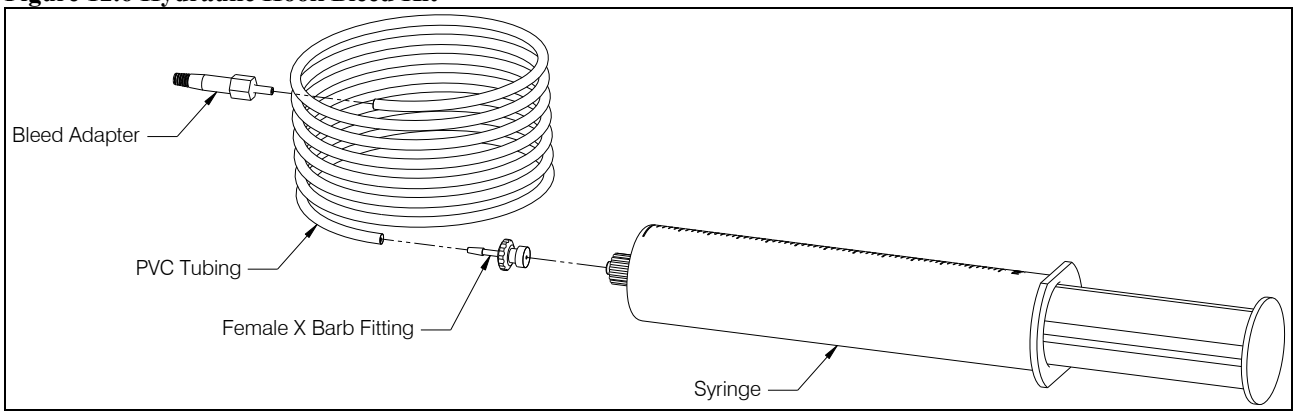
Bleeding procedure:

1. Obtain the hydraulic hook bleed kit, 212-014-02. This kit consists of 2 ounces of MIL-PRF-87257 fluid, a syringe, a female barb fitting, a length of PVC tubing, and a bleed adapter fitting. The bleed kit is included in new hydraulic hook kits. Assemble the bleed kit by press fitting each component together as shown.

NOTICE

MIL-PRF-5606 fluid is also compatible with the hydraulic system and was formerly included with new cargo hook kits. It is interchangeable and miscible with MIL-PRF-87257 fluid.

Figure 12.6 Hydraulic Hook Bleed Kit



2. If the system is already installed on the aircraft, place an absorbent towel under the master cylinder. If the master cylinder is not installed on the aircraft, lightly clamp the master cylinder in a vise to hold it in a vertical position and position the slave cylinder so that its level is below the level of the master cylinder.

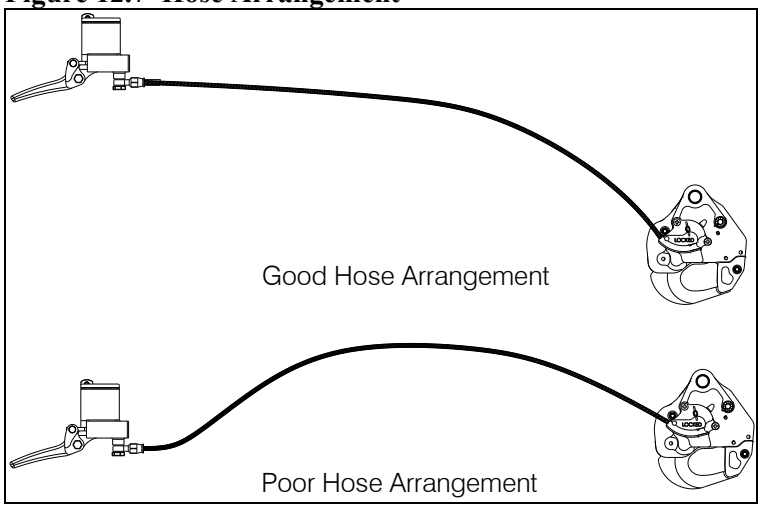
NOTICE

Use best shop practices to keep foreign material out of the hydraulic system. FOD will plug orifices, damage seals and/or scratch sealing surfaces necessitating system rebuild. Use only clean hydraulic fluid from sealed containers.

12.2 Bleeding Hydraulic System, continued

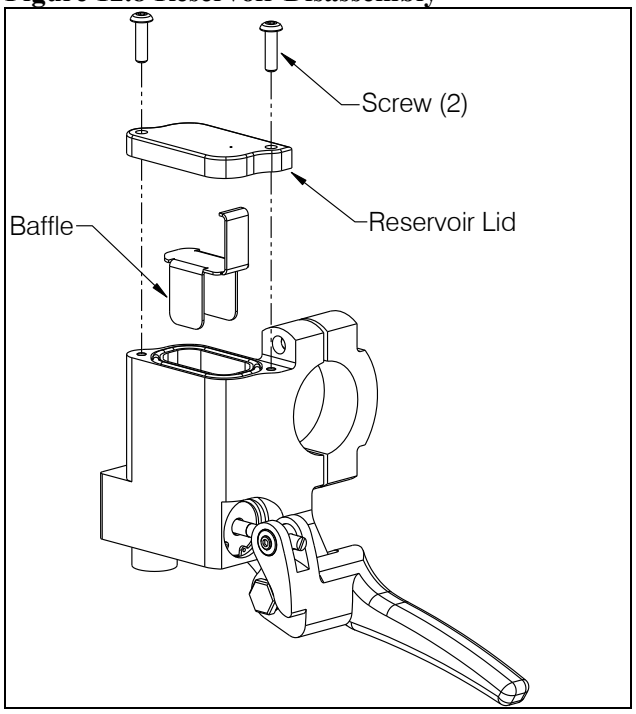
3. Connect the master cylinder assembly to the slave cylinder assembly if not already done. If filling or bleeding on the bench, as much as possible, arrange the hoses uncoiled, straight and running uphill. See Figure 12.7.

Figure 12.7 Hose Arrangement



4. Remove screws, reservoir lid, and baffle from the master cylinder reservoir as shown in Figure 12.8.

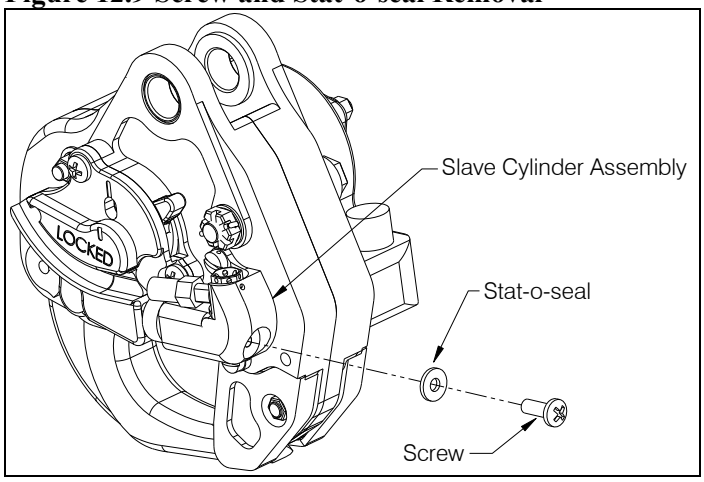
Figure 12.8 Reservoir Disassembly



12.2 Bleeding Hydraulic System, continued

5. Remove the screw and stat-o-seal on the slave cylinder, see Figure 12.9.

Figure 12.9 Screw and Stat-o-seal Removal



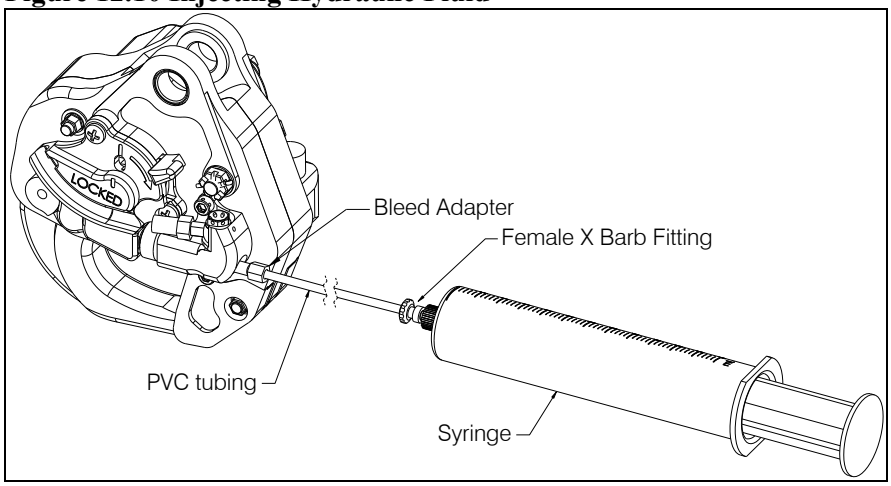
6. Fill the syringe with approximately 35 cc of hydraulic fluid and purge any remaining air in the syringe and tubing. Screw the end of the bleed adapter into the screw hole on the slave cylinder to create a tight seal. See Figure 12.10.

7. While observing the reservoir, **slowly** push on the syringe plunger to force fluid through the slave cylinder, hydraulic hose, and up to the master cylinder reservoir. There will be some resistance during filling—this is normal.

⚠ CAUTION

Injecting the fluid into the system too rapidly may cause the fluid to spray up and out of the master cylinder reservoir. Wear safety glasses when observing fluid reservoir while filling.

Figure 12.10 Injecting Hydraulic Fluid



12.2 Bleeding Hydraulic System, continued

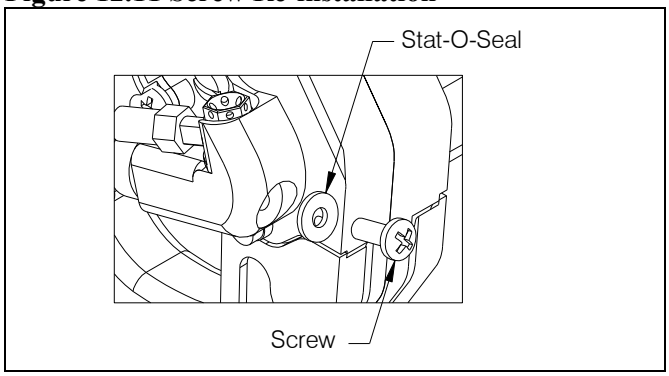
8. Continue to force fluid into the master cylinder reservoir until the reservoir is approximately half full

NOTICE

If bleeding an already filled system, you may need to draw fluid from the master cylinder reservoir during this step to prevent overflow.

9. Remove the bleed adapter from the screw hole. Re-install the Stat-O-Seal (P/N 510-496-00) and screw (P/N 510-493-00), see Figure 12.11.

Figure 12.11 Screw Re-installation



10. Allow the system to rest for several minutes. This will allow any air to rise through the system.

11. Very **slowly** pull the release lever on the master cylinder and watch for bubbles. If bubbles are observed rising within the reservoir, continue to slowly cycle the lever until there are no more. Actuating the lever releases air trapped within the master cylinder.

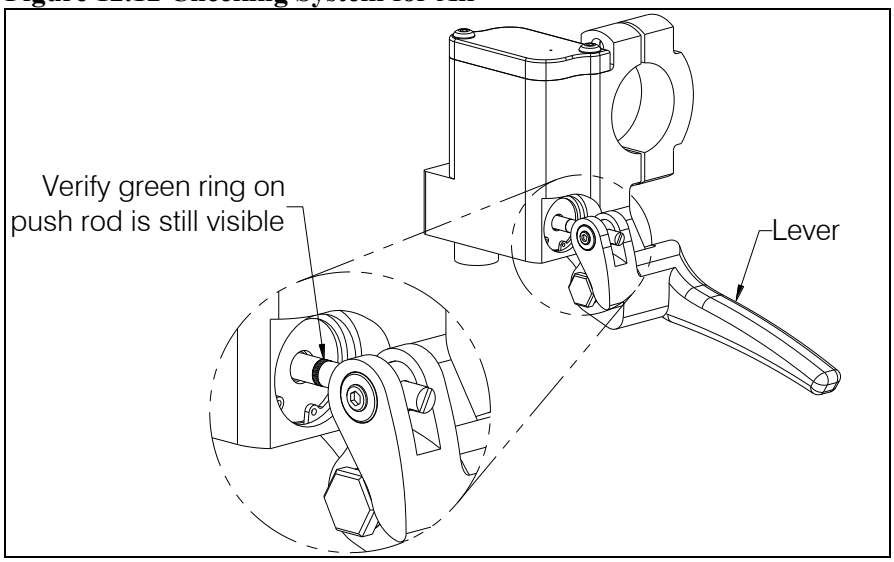
CAUTION

Pull the lever very slowly! When the reservoir is not baffled and capped, a hard pull will cause fluid to erupt over the edge of the reservoir.

12.2 Bleeding Hydraulic System, continued

12. Check the system for air by actuating the lever firmly until it bottoms out. Check the push rod position (see Figure 12.12). If the green area on the push rod is visible, proceed to step 13. If the green on the push rod is not visible with the lever completely pulled, the system has too much air in it and needs further bleeding. To do this, repeat steps 5 – 11.

Figure 12.12 Checking System for Air



13. After the system is properly bled, verify that the reservoir is approximately half full of hydraulic fluid.
14. Re-install the baffle and the reservoir lid. Fluid should be visible above the baffle.
15. Check the system for proper operation. Fully actuate the release lever. The hook must open and the lever must have a firm feel.
16. Disassemble and thoroughly clean the bleed kit with isopropyl alcohol. Allow it to dry. Not cleaning the syringe will render it unusable. Reassemble and store for next use.

12.3 Lubrication Information

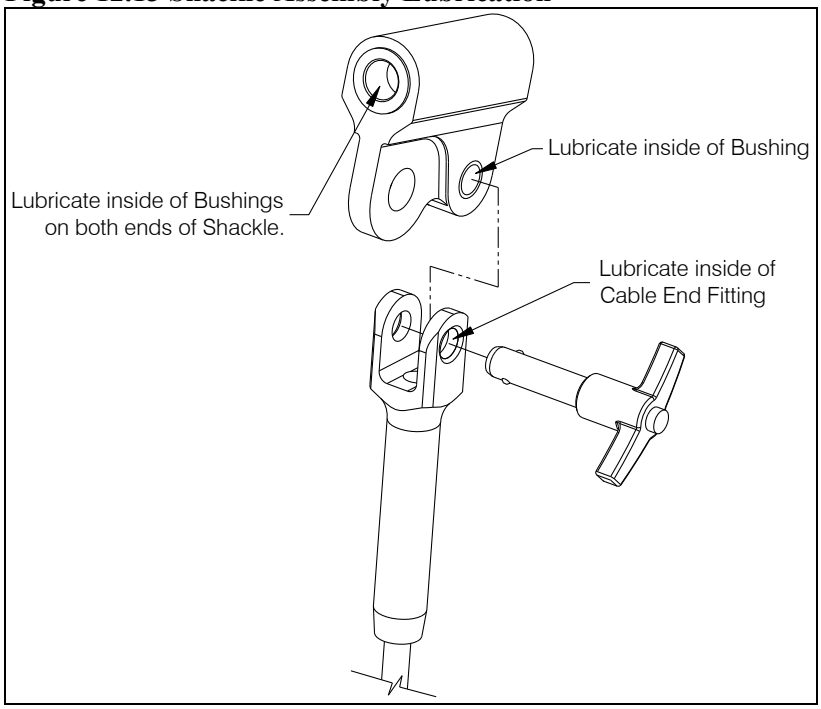
Lubrication of the Cargo Hook Swing Suspension system is required every 500 hours of operation. To obtain maximum life under severe duty conditions such as logging or seismic work, it is recommended to lubricate the Swing Suspension every 250 hours. Recommended types of lubricant are AeroShell 17 (MIL-PRF-21164) or Mobilgrease 28 (MIL-PRF-81322).

Lubricate the Cargo Hook Swing Suspension at points noted in Figure 12.13 and 12.14.

Shackle Assembly Lubrication

Remove the Shackle Assemblies from the aircraft hard points and lubricate them and the mating fittings on the suspension cables as shown in Figure 12.13.

Figure 12.13 Shackle Assembly Lubrication

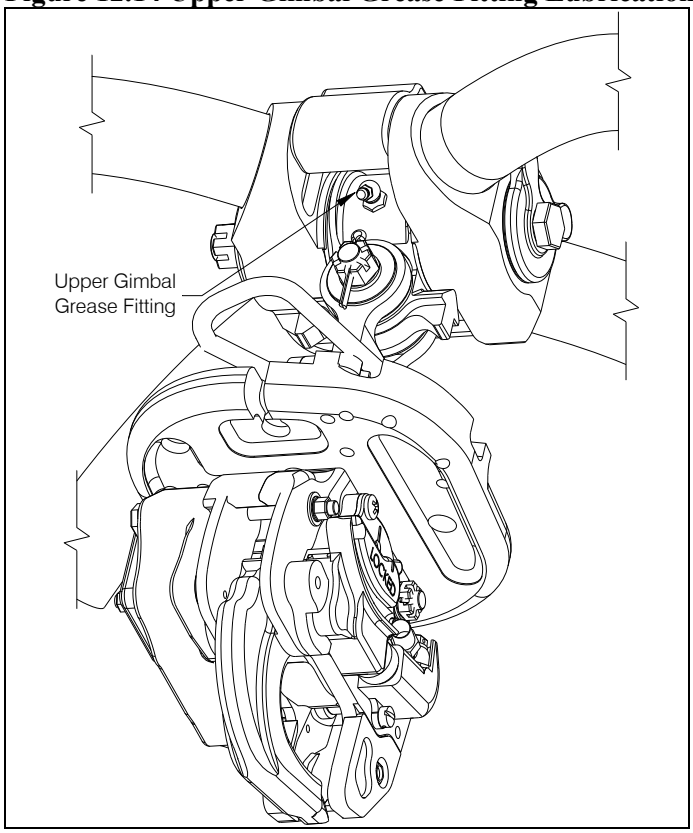


12.3 Lubrication Information continued

Upper Gimbal Grease Fitting

Lubricate Upper Gimbal Assembly at the grease fitting located as shown in Figure 12.14. Rotate the hook slightly to access the grease fitting. Pump until fresh grease comes out around ends of upper gimbal. Wipe off excess. This fitting lubricates the gimbal and the thrust washers. It does not lubricate the bearings in the steel frame. The grease fitting is provided for additional lubrication outside of the normal lubrication schedule. If this area is disassembled for inspection, apply grease all bearing surfaces when re-assembling.

Figure 12.14 Upper Gimbal Grease Fitting Lubrication



12.3 Lubrication Information continued

Hook Corrosion Prevention

In marine or other corrosive environments, the life of the cargo hook can be increased by periodically treating with a corrosion preventative compound such as ACF-50. Spray exterior of cargo hook with corrosion preventative compound and wipe off excess with a rag.

The amount and frequency of application will vary depending on climate. In dry dusty environments it is not recommended to treat for corrosion since the oily residue on the inside of the cargo hook that cannot be wiped off, could attract and retain dust and sand. In addition, corrosion is not likely to be a problem in these conditions. For offshore or coastal operations, treatment could be done every two weeks.

Section 25
Equipment and Furnishings

25.1 Cargo Hook Connector

Listed below is the pin out for the cargo hook connector. Early production units of cargo hook P/N 528-028-00 are polarity sensitive due to an internal arc suppressing diode and cargo hook P/N 528-028-02 is polarity sensitive.

Table 25.1 Cargo Hook Connector

Pin	*Function*
A	Ground
B	Power

25.2 Description

The Cargo Hook Swing Suspension System consists of four primary sub-systems, these are the Swing Suspension Assembly, Hydraulic Release System, Electrical Release System, and Load Weighing System.

The Swing Suspension Assembly is attached to hard points and suspended below the belly of the helicopter by its four cable assemblies. The cable assemblies are attached to a welded frame assembly, which supports the cargo hook and a load cell through a gimbal (ref. Figure 25.1).

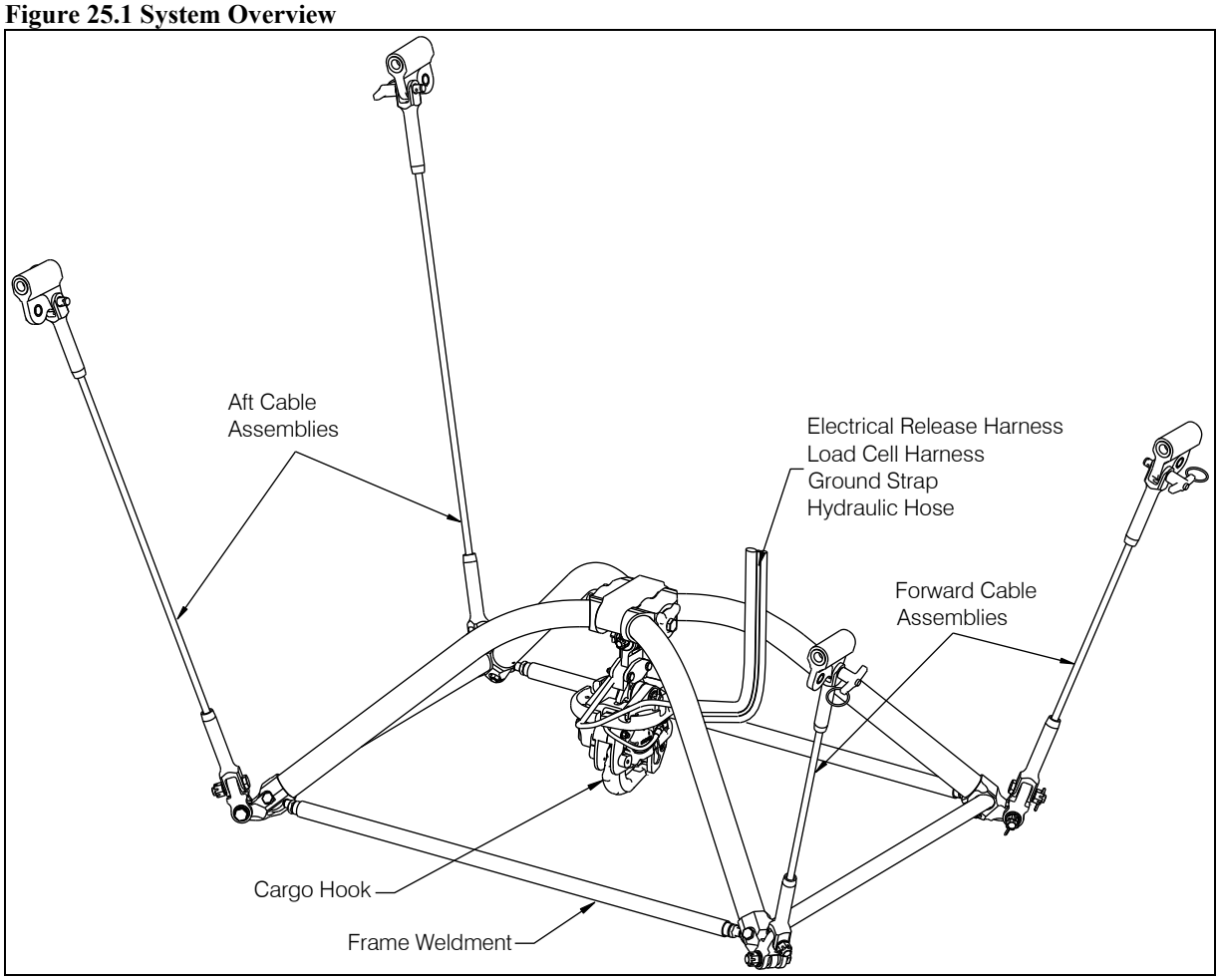
The Electrical Release System provides a means to release a cargo hook load through the use of a switch in the cockpit. An optional cargo hook (P/N 528-028-02) with Surefire includes a time delay circuit built into the cargo hook's electrical release system. This feature is a safety enhancement to protect against inadvertent load release due to accidental contact with the cargo release switch or mistaken actuation of the release switch when another is intended. Surefire makes the electrical release a more deliberate pilot command by requiring that the release switch be depressed and held for more than a 1/2 second to open the cargo hook. In addition to its P/N, a cargo hook with Surefire can be identified by a gold anodized solenoid housing in and a placard on the underside of the solenoid housing that specifies that the electrical release is delayed ½ second.

The Hydraulic Release System provides an additional means to release a cargo hook load and consists of a release lever mounted to the collective, a hose routed from the release lever to the hook, and a piston at the hook that actuates the internal release mechanism when the lever is pulled.

The Load Weigh System consists of an indicator mounted within the cockpit, the load cell on the suspension, and associated wiring. It provides the pilot with an indication of the weight of the external load on the cargo hook. There are two eligible indicator models, the C-39 Indicator (P/N 210-095-00) or the next generation C-40 Indicator which is included with kit P/N's 200-280-07 and 200-280-08. The C-40 Indicator's Analog Out signal can be connected to the VEMD (with the applicable Airbus mod) to serve as part of the system to increase the main rotor RPM when an external load of 150 kg or greater is measured by the load cell.

25.2 Description continued

Figure 25.1 System Overview



The Fuel Drain Guard (see Figure 25.2 and Figure 25.3) protects the fuel drain valve on AS350 helicopters from accidentally being opened. The fuel drain valve is located on the bottom of the fuel tank and extends below the belly of the helicopter. This location makes it vulnerable to damage or un-commanded fuel drainage on helicopters equipped with a cargo hook swing suspension. The most common occurrence of the cargo hook swing suspension striking the fuel drain valve happens when the helicopter lands on snow or on uneven terrain. The swing suspension has limited ground clearance and when the skid gear sinks into the snow, the swing suspension is pushed upward into the fuel drain valve, opening it and causing fuel to drain. The fuel drain valve can also be opened in flight by the swing suspension flying vertically due to aerodynamics when ferrying with no load or from recoil effects from releasing large cargo hook loads.

The Fuel Drain Guard provides mechanical protection for the fuel drain valve to prevent accidental contact while interfacing with Airbus Helicopter's existing valve, lever and control cable. The kit includes a Bracket, which replaces Airbus Helicopter's bracket and provides an optimized mounting point for the control cable.

25.2 Description continued

NOTICE

*The fuel drain guard may not be present on all installations, prior to 2010 it was not included with the 200-280 series kits and it is **not** compatible with the Airbus Helicopters crash resistant fuel tank.*

Figure 25.2 Fuel Drain Guard Overview

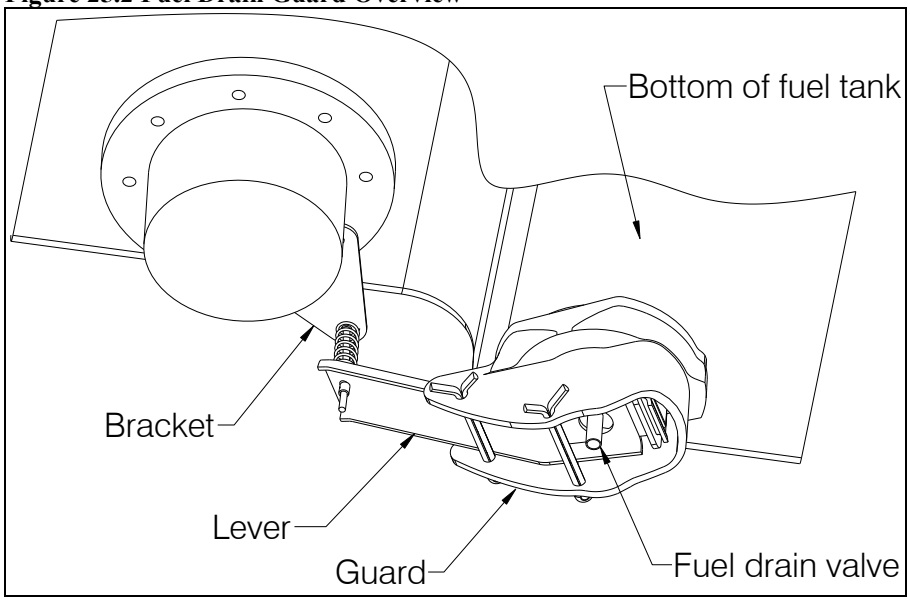
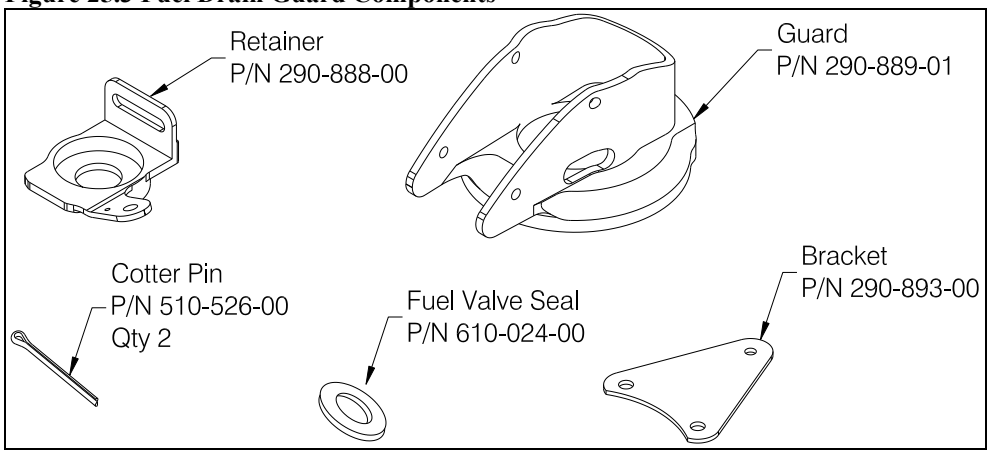


Figure 25.3 shows the components of the Fuel Drain Guard installation.

Figure 25.3 Fuel Drain Guard Components



25.5 Component Weights

The weights and cgs of the systems are listed in Table 25.2.

Table 25.2 Component Weights and CGs

Item	Weight	Station
Removable Provisions*	30.0 lbs (13.6 kg)	133 in (3375 mm)
Fixed Provisions**	5.5 lbs (2.5 kg)	110 in (2794 mm)
Fuel Drain Guard***	0.40 lbs (.18 kg)	135 in. (3430 mm)
Total	35.9 lbs (16.3 kg)	129.4 in (3288 mm)

* The removable provisions include the swing suspension with cargo hook, external manual release cable, and external electrical release cable. These items are easily removed if they are not needed on the helicopter's mission. Refer to Suspension System Removal in Section 25.16 for removal instructions.

** The fixed provisions are those items of the kit that remain on the aircraft. These include the fixed manual release cable, internal electrical wire harnesses, the load weigh indicator, and the miscellaneous brackets that support these items. These components would typically be left on the aircraft when configuring the aircraft for non-external load work.

*** Included with newer kits (kits shipped after August 2010) and is not installed with the Airbus Helicopters crash resistant fuel tank.

25.12 Storage Instructions

For temporary storage the master cylinder must be stored with the reservoir lid up. The lid contains an air vent that will allow hydraulic fluid to drain out if left inverted. If long term storage or shipping must be done where the orientation of the master cylinder cannot be controlled, the reservoir must be drained. Remove the hose attached to the master cylinder and drain it as well. Seal the hydraulic parts in a plastic bag for shipping or storage to prevent dirt contamination. The slave cylinder end needs no special handling.

Clean the exterior Cargo Hook and Swing Frame components thoroughly of excess dirt and grease with a rag before storing. Refer to the Cargo Hook Component Maintenance Manual for storage instructions for the cargo hook.

It is recommended that the cables be removed from the Swing Frame for shipping or storage to reduce the possibility of the cables being kinked. Package the Swing Frame in a suitable fiberboard box and cushion the unit to prevent shifting. Seal the fiberboard box with tape and mark the box with the contents and date of packaging.

25.15 Troubleshooting

Table 25.3 is provided with the intention of isolating the cause of malfunctions within the system. Sections 25.16 and 25.17 include instructions for removing and replacing defective components. Refer to the appropriate Airbus Helicopter maintenance documentation for guidance on procedures relating to Airbus Helicopter parts that interface with this suspension system.

Table 25.3 Troubleshooting

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
Cargo hook does not operate electrically or manually.	Defective internal mechanism.	Remove and replace cargo hook (see sections 25.16 and 25.17).
Cargo hook P/N 528-028-00 does not operate electrically, hydraulic release operates normally.	Open electrical circuit, faulty wiring, fuse/circuit breaker, switch or solenoid.	Using multi-meter, check for 3.0 to 4.0 ohms between pins A and B of electrical connector (see note 1 below). If open indication is obtained, remove and replace cargo hook (see sections 25.16 and 25.17) or repair per CMM 122-015-00. Check the aircraft circuit for opens and shorts by using a multi-meter on the hook connector. When the release switch is pressed 28V aircraft voltage should be seen on the connector pins.
Cargo hook P/N 528-028-02 (includes Surefire time delay circuit) does not operate electrically, hydraulic release operates normally.	Release switch not held down long enough. Open electrical circuit, faulty wiring, circuit breaker, switch or solenoid.	Hold the release switch for a longer time. The time delay circuit incorporates an electronic delay of approximately ½ second after which time the hook solenoid will activate repeatedly. If the release switch is not held down long enough the cargo hook's solenoid will not activate. Check the aircraft circuit for opens and shorts by using a multi-meter on the hook connector. When the release switch is pressed 28V aircraft voltage should be present on the connector pins. Check the aircraft connector polarity. The time delay circuit is polarity sensitive and protected against reverse polarity. +28V should be on pin B and ground on pin A. Check the power pins on the hook itself. A multi-meter set to the kilo-ohms range should read between 2-8Kohms. Some auto-ranging meters will not read properly so be sure to try a manual kilo-ohms range. If the meter reads open or short there is a problem with the solenoid module itself and the hook should be replaced or repaired per CMM 122-015-00.
Cargo hook operates electrically, but not manually.	Leaks in hydraulic hose system. Air in hydraulic hose system. Jammed slave cylinder.	Check for leaks in hydraulic hose system and correct defects if found. Bleed hydraulic system per this manual. Remove slave cylinder from hook and check for proper operation while actuating the manual release lever on the collective. Repair as required.
Load beam fails to re-latch after being reset.	Defective latch mechanism.	Remove and replace cargo hook (see sections 25.16 and 25.17) or repair per CMM 122-015-00.

Table 25.3 Troubleshooting continued

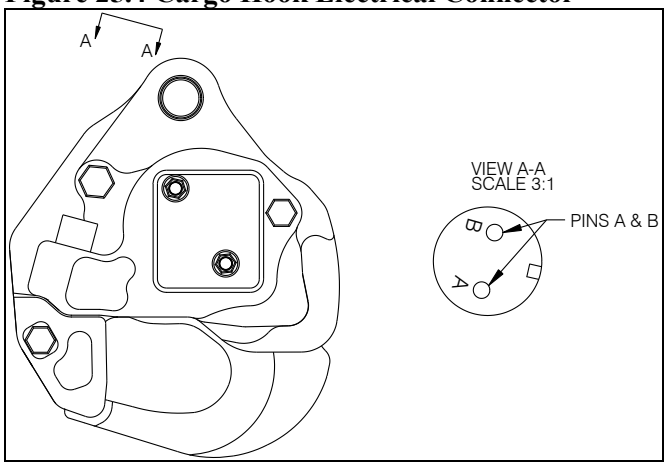
MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
Force required to release hook with lever on collective exceeds 14 lbs.	Friction in internal mechanism or defective hydraulic system.	Remove slave cylinder from hook and manually operate master cylinder. If operation feels free and force is less than 5 lbs. remove and replace the cargo hook (see Section 25.16 and 25.17) or repair per the CMM 122-015-00.
Hydraulic fluid leaks at hose fittings.	Loose fittings	Tighten fittings. Check fluid level in reservoir. Bleed hydraulic system per Section 12.2.
Hydraulic fluid leaks around master or slave cylinder pistons.	Leaking seals	Replace master or slave cylinder assembly or repair per Section 12 of this manual.
Cargo hook fails to open or re-lock properly.	Failure to open or re-lock properly.	Remove and replace cargo hook (see Sections 25.16 and 25.17) or repair per CMM 122-015-00.
Fuse/circuit breaker opens when cargo hook is energized.	Short in the system, faulty wiring, fuse/circuit breaker or solenoid.	Check for shorts to ground along length of wire harness (see note 2). Check solenoid resistance (see note 1), repair or replace defective parts.
Load Weigh Indicator does not light up.	Faulty wiring or fuse or circuit breaker.	Check the fuse or circuit breaker (refer to Airbus Helicopters maintenance manual) and wiring (see Note 1). If this doesn't help, remove and replace indicator per sections 25.16 and 25.17.
The displayed load on the Indicator is incorrect.	Incorrect calibration code.	Ensure the correct calibration code has been entered (see Note 3).
C-39 Indicator displayed load is not stable.	Dampening level is too small.	Adjust the dampening level to a larger number (see Note 4).
C-39 Indicator displayed load takes too long to change the reading when the load is changed.	Dampening level is too large.	Adjust the dampening level to a smaller number (see Note 4).
C-39 Indicator does not change with changing hook loads.	Defective load cell, indicator failure or damaged wire harness.	Check for damaged wire harness (see note 2), remove and replace wire harness assembly or load cell (see sections 25.16 and 25.17).
Indicator displays large negative load	Indicator was zeroed under load.	Un-zero the indicator. Refer to applicable Owner's Manual for instructions.
C-40 Indicator analog bar not in sync with displayed load	Indicator is zeroed; analog bar always displays un-zeroed load.	Un-zero the indicator.

Table 25.3 Notes:

1. **Checking resistance at pins A and B.**

   Check for 3.0 to 4.0 ohms between pins A and B of electrical connector located on the cargo hook (see below).

Figure 25.4 Cargo Hook Electrical Connector



2. **Checking Wire Harnesses.**

   As appropriate, before working on a circuit, e.g. - inspection, removal-installation of components, check that the aircraft system is not energized:
   - "EXT. PWR. BAT." push-button is released.
   - External power connector is not supplied.
   - Further precaution: remove the fuse(s) or open the circuit breakers at the corresponding circuits (refer to Figure 25.6).

   The wire harnesses are routed with and secured to existing wire bundles and are located approximately as shown below. Remove lower fairings to inspect wiring underneath the cabin floor. Inspect for general condition and chafing along length of wire runs. See Figure 25.6 for electrical schematic.

Figure 25.5 Wire Harness Routing

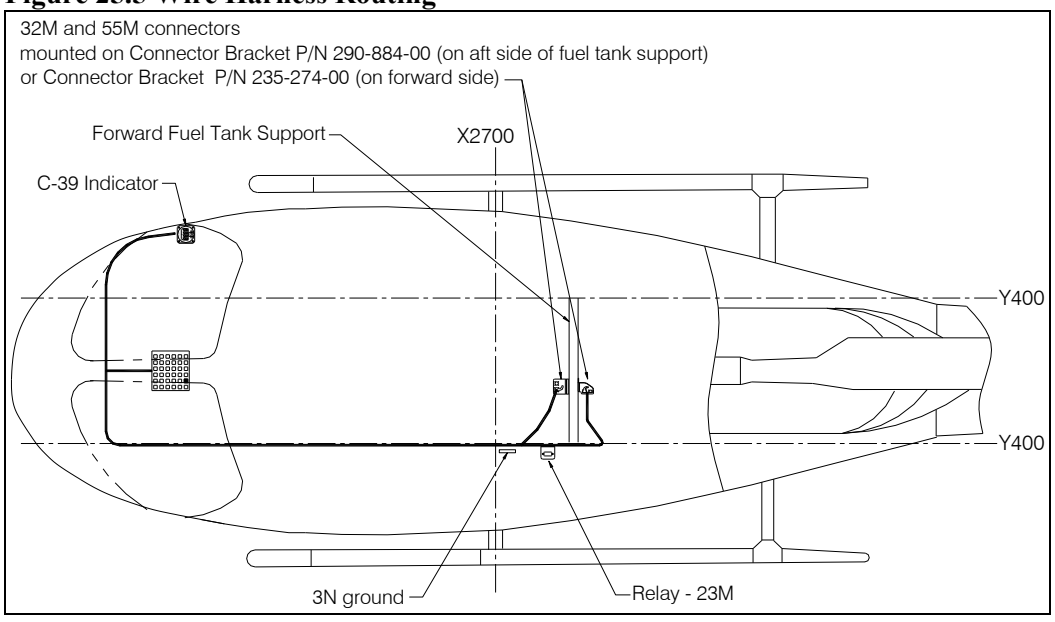


Table 25.3 Notes continued

2. Checking Wire Harnesses continued

The electrical schematic for the electrical release system and the load weigh system is shown below. Airbus Helicopter modification #'s 07-4280 and 07-3450 are reflected below. Earlier Airbus Helicopter configurations which affected how and where wire numbers ME1E, ME2E and ME10E of the electrical release harness and load weigh harness interface with the helicopter are shown on the following page. Refer to Figure 25.7 for the C-40 Indicator schematic including the optional wiring to the VEMD. Refer to the applicable Airbus Helicopter Wiring Diagrams Manual for additional information on aircraft-side wiring.

Figure 25.6 Electrical Schematic w/ C-39 Indicator

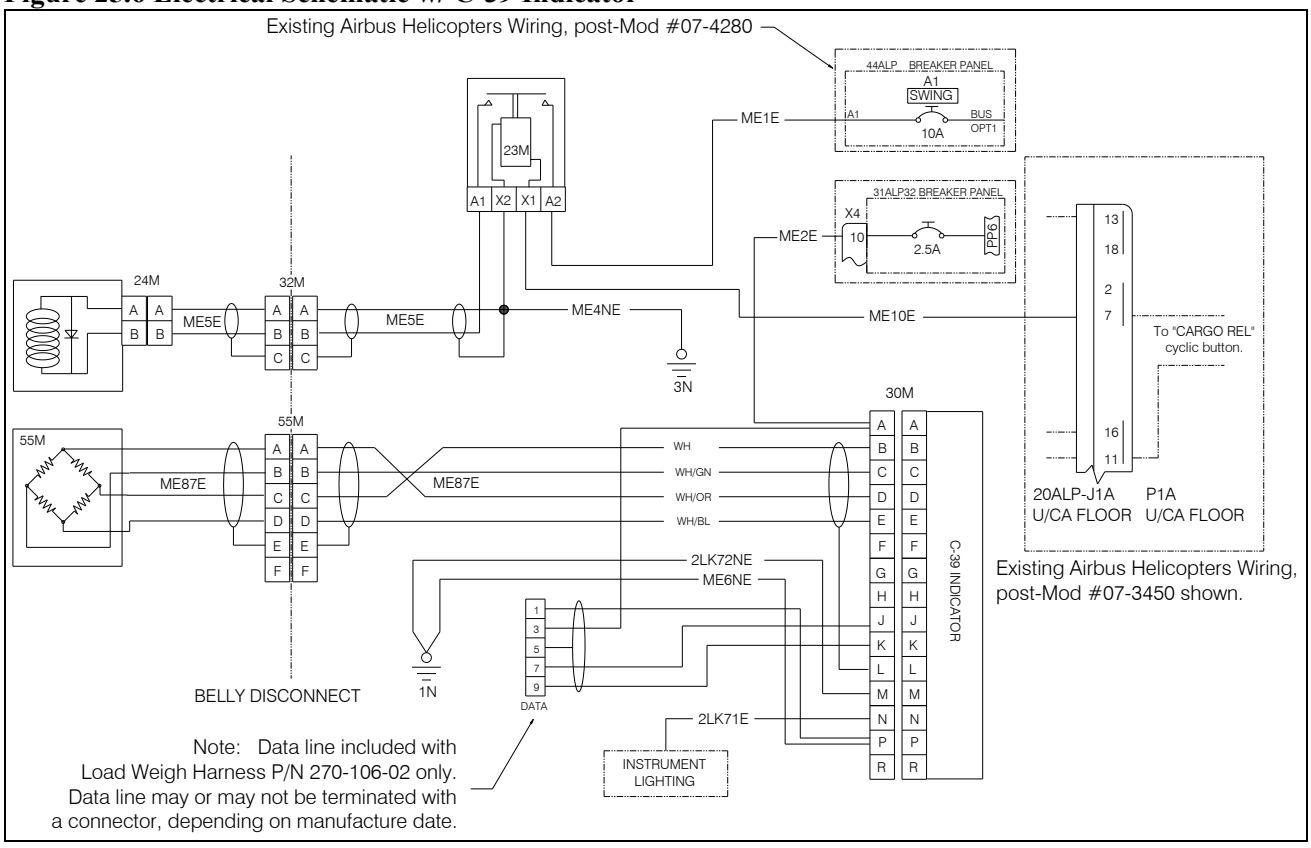


Table 25.3 Notes continued

2. Checking Wire Harnesses continued

Figure 25.6 Electrical Schematic, continued

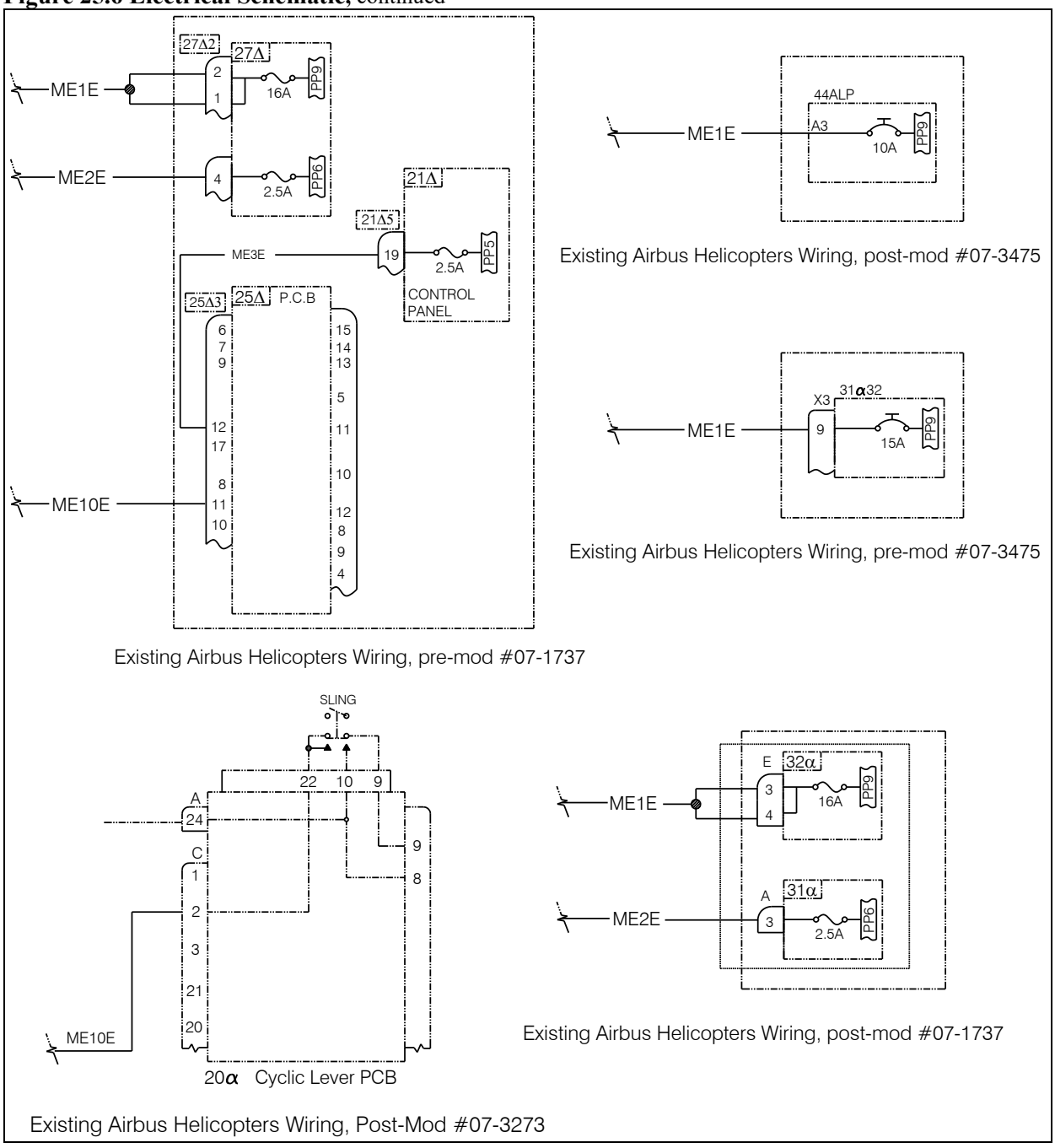


Table 25.3 Notes continued

2. Checking Wire Harnesses continued

The schematic below represents the C-40 Indicator with the optional VEMD connection. If this harness was modified per modification kit P/N 200-472-00, the DATA line may also be present (refer to Figure 25.6 for DATA line pin out to 30M connector).

Figure 25.7 Load Weigh System Schematic w/ C-40

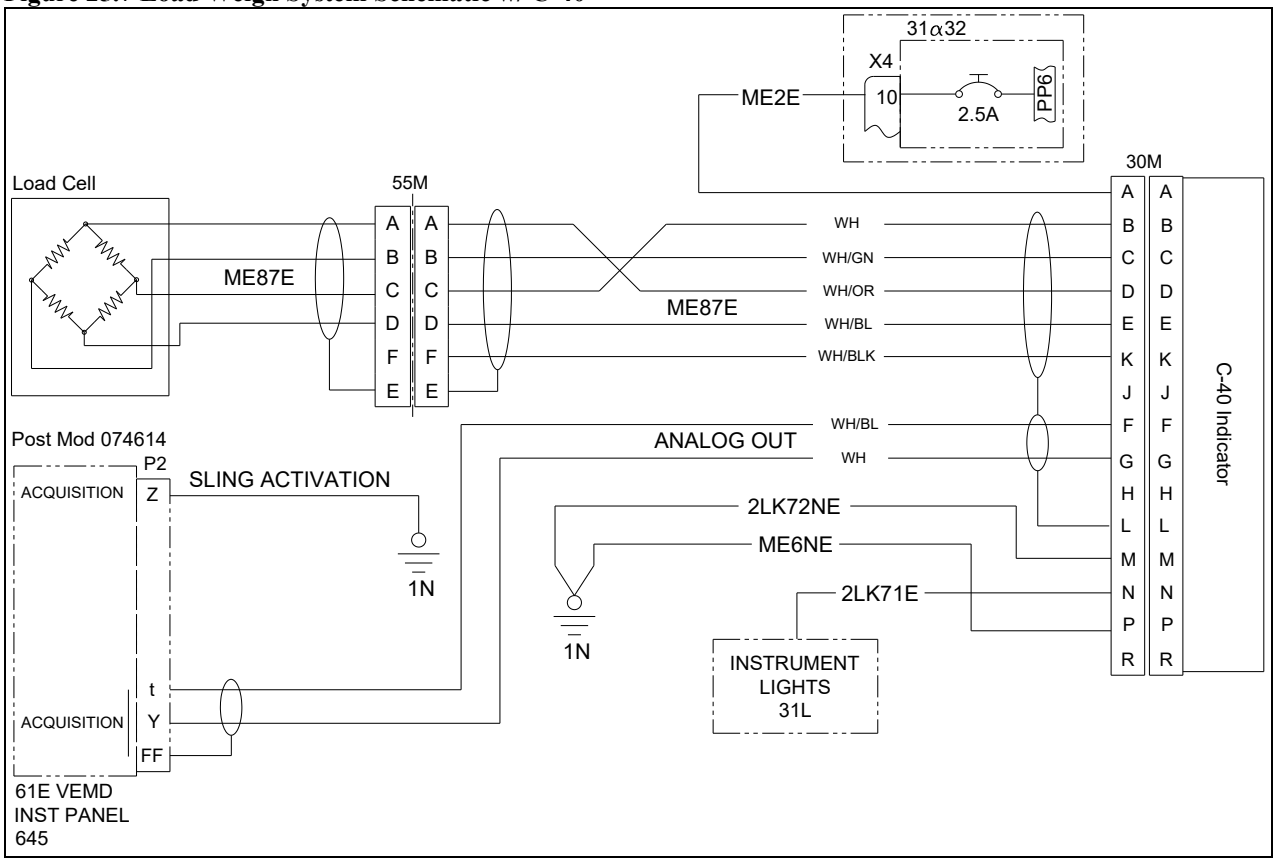
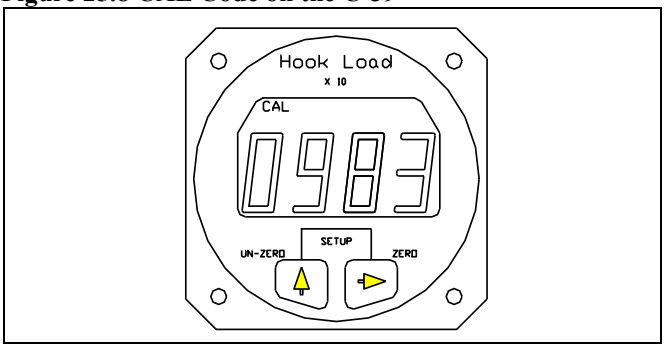


Table 25.3 Notes continued

3. **Checking Load Weigh Indicator calibration code:**

For the C-39 Indicator: With the Indicator powered up and in the Run Mode, press both buttons at the same time to go to Setup. Scroll through the menu until the word CODE is displayed, then press the Right button. The display should look like this:

Figure 25.8 CAL Code on the C-39



This code should match the code printed on the tag attached to the load cell cable. If this code does not match, contact Onboard Systems for further guidance.

On the C-40 Indicator: To enter the C-40 Settings menu, from the Load screen rotate the knob and the Settings introduction screen will appear. Press the knob again to enter the Settings menu. To scroll through the Settings menu, rotate the knob right to advance to Cal Code to view it.

Figure 25.9 C-40 Settings Screen



This code should match the code printed on the tag attached to the load cell cable.

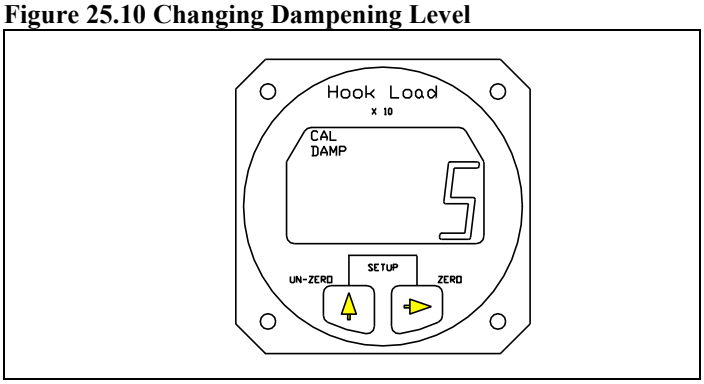
If this code does not match, contact Onboard Systems for further guidance.

Table 25.3 Notes continued

4. Adjusting dampening level:

Adjusting dampening level is applicable to the C-39 Indicator only. With the C-39 Indicator powered up and in the Run Mode, press both buttons at the same time to go to Setup. Scroll through the menu, using the Left button, until the word DAMP is displayed. To look at or change the Dampening Level press the Right button. The display should look like this:

Figure 25.10 Changing Dampening Level



The CAL and the DAMP legend is turned on and the previously set dampening level is displayed. To return to Run without changing the current dampening level press both the Right and Left buttons at the same time. To change the dampening number, use the Left button to scroll the blinking digit to the desired number. Ten dampening levels are available, from 0 through 9. At level 0 the display responds to the slightest change in weight. However, if the load bounced even slightly, the display digits would respond instantly, making the display look unstable. With a dampening level of 9, the display would be stable under the most turbulent conditions, however, it would take several seconds for the display to respond to a change in weight. The ideal dampening level will depend on the flying conditions. A mid-range setting of 5 or 6 is usually adequate. After the selection has been made press both the Right and Left buttons at the same time to return to Run.

25.16 Component Removal

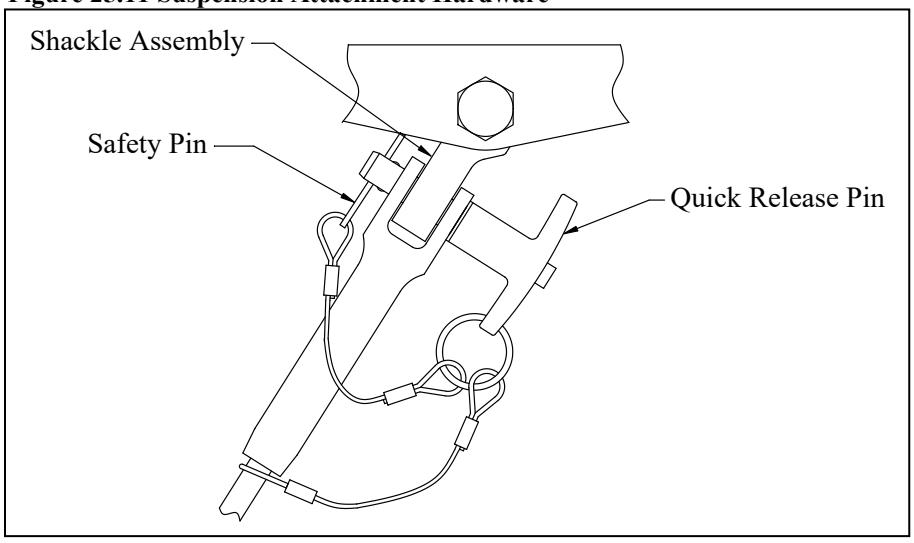
Cargo Hook Removal

1. Cut and remove all lock-wire.
2. Remove the slave cylinder assembly by removing two screws (refer to Figure 25.12) and associated ty-raps.
3. Disconnect the electrical release harness connector and ground strap from the Cargo Hook and associated ty-raps at the bumper.
4. Remove the cotter pin (P/N 510-178-00) from the attach bolt (P/N 290-775-00) (refer to Figure 25.20).
5. Remove the castellated nut (P/N 510-170-00) from the attach bolt.
6. Remove attach bolt and all washers.
7. Remove the Cargo Hook from suspension system.
8. Remove the Hook Bumper (P/N 290-839-02) from the cargo hook.

Suspension System Removal

1. Disconnect the load cell harness at the bulkhead connector on the bracket at belly of the aircraft.
2. Disconnect the electrical release harness at the bulkhead connector on the bracket at the belly of the aircraft.
3. Disconnect the ground strap at the quick disconnect near the bulkhead connectors on the belly of the aircraft.
4. Disconnect the hydraulic hose at the quick release fitting.
5. Remove the Safety Pins and Quick Release Pins at the 4 joints where the suspension cable ends mate with the Shackle Assemblies as illustrated below.

Figure 25.11 Suspension Attachment Hardware

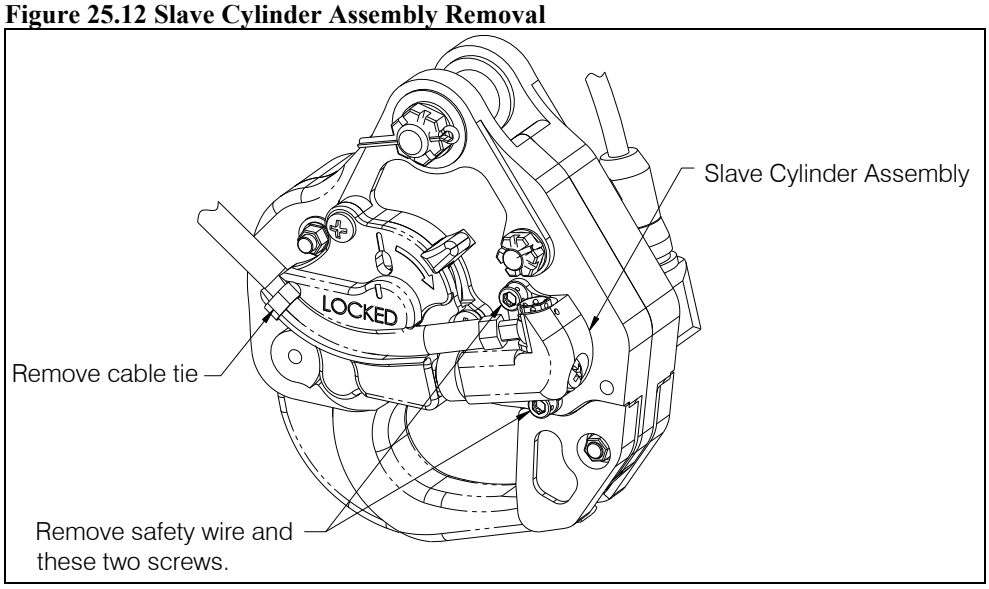


25.16 Component Removal continued

Slave Cylinder Assembly Removal

1. Disconnect the hose at the quick disconnect coupling at the belly of the helicopter.
2. Cut safety wire and remove the two screws that secure the slave cylinder assembly to the cargo hook. Remove all cable ties that secure the hydraulic hose to the cargo hook and the bumper (not shown in figure below).

Figure 25.12 Slave Cylinder Assembly Removal

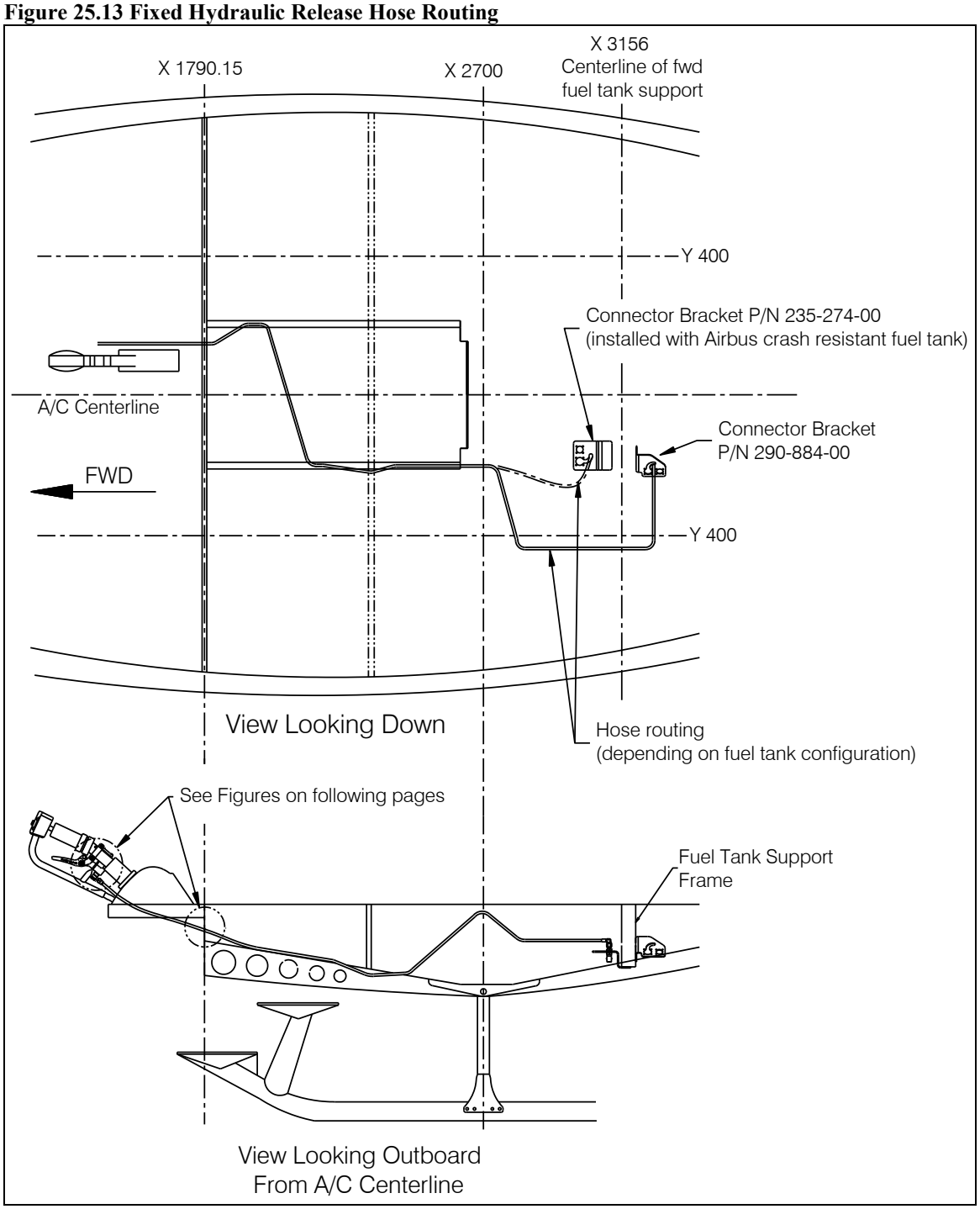


25.16 Component Removal continued

Fixed Hydraulic Release Hose Assembly Removal

The fixed hydraulic release hose is routed from the release lever mounted to the collective shaft to a connector bracket on the forward fuel tank support of the helicopter where it is mated with the removable section of the hydraulic release system.

Figure 25.13 Fixed Hydraulic Release Hose Routing

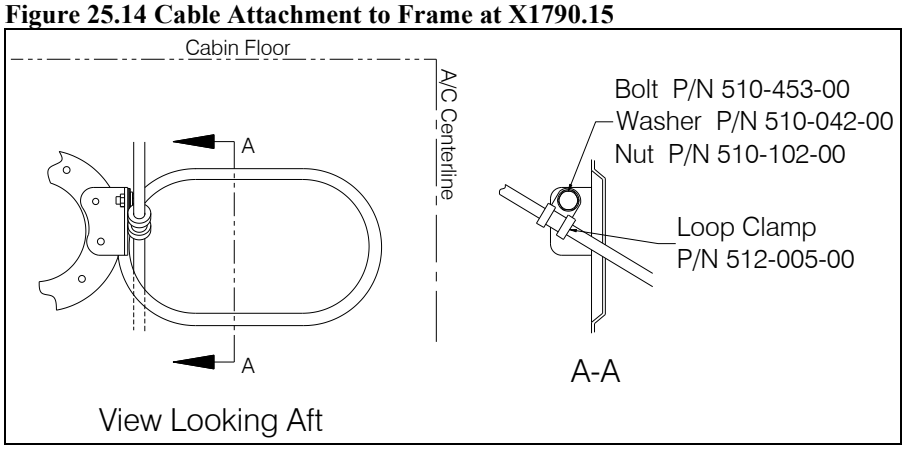


25.16 Component Removal continued

Fixed Hydraulic Release Hose Assembly Removal continued

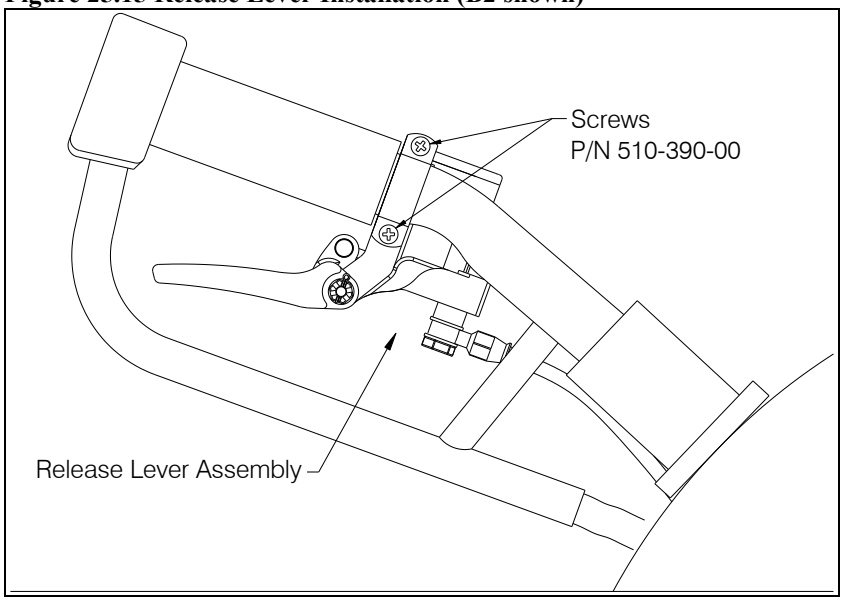
1. Disconnect the external section of the hydraulic hose at the quick disconnect fitting at the forward fuel tank support.
2. Remove the electrical release connector from its position by removing four nuts, washers and screws that secure it to the bracket.
3. Loosen the nut on the quick disconnect fitting on the bracket and slide the fitting out of the slot and out through the electrical connector hole.
4. Moving forward along the hose, remove all ty-raps and the loop clamp at the bracket at frame at STA 1790.15 and remove it from the hose.

Figure 25.14 Cable Attachment to Frame at X1790.15



5. Feed the cable forward and then up through the slot in the floor.
6. Above the floor and on the collective shaft remove the release lever by removing two screws (see below).

Figure 25.15 Release Lever Installation (B2 shown)



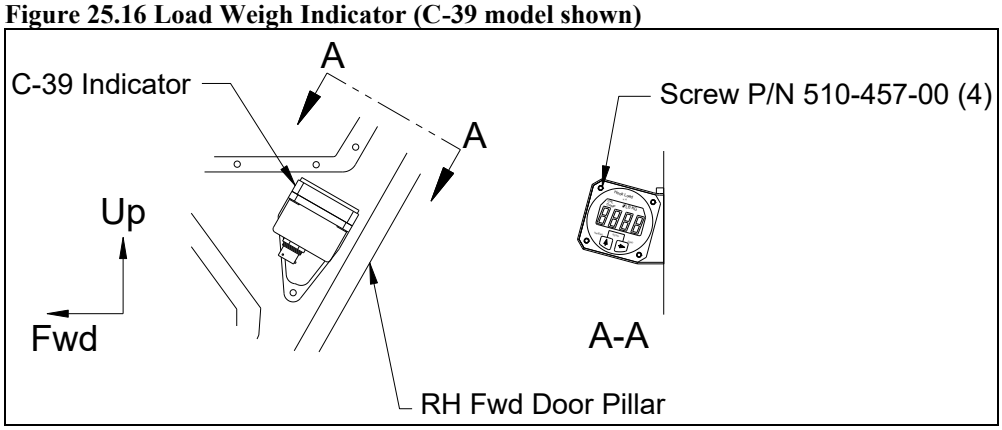
25.16 Component Removal continued

Load Weigh Indicator Removal

The Indicator is located on the RH forward door pillar.

1. Disconnect electrical connector from the back of indicator.
2. Remove the mounting screws that secure the indicator to the mounting bracket and remove the indicator.

Figure 25.16 Load Weigh Indicator (C-39 model shown)



Shackle Assembly Removal

The Shackle Assemblies attach to the two airframe splice fittings at the forward landing gear cross tubes and at the two half-clamps at the aft landing gear cross tubes and serve to attach the suspension cables of the Cargo Swing Suspension. They are attached with Airbus hardware.

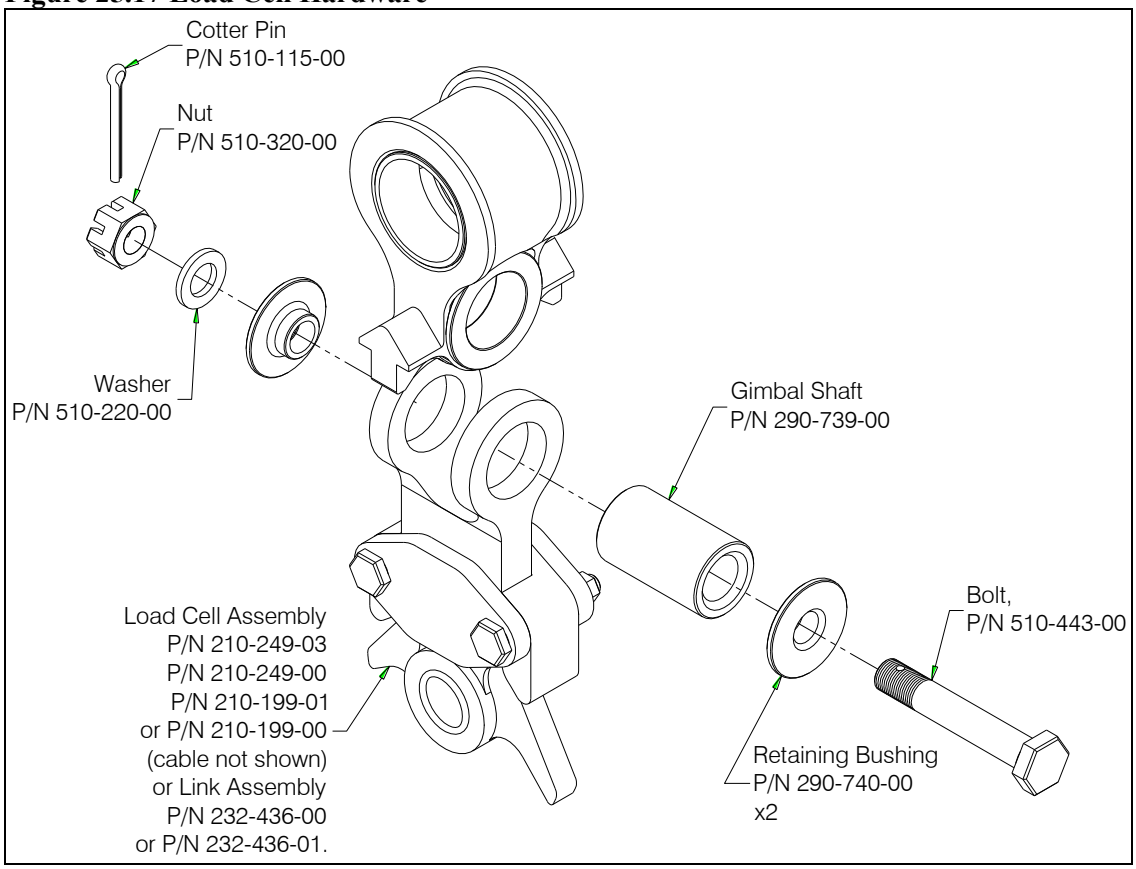
1. Remove the nut and washer from the end of the bolt.
2. Remove the bolt and washer under its head and remove the Shackle Assembly from the aircraft.

25.16 Component Removal continued

Load Cell Removal

1. Remove the Cargo Hook per the above instructions.
2. Disconnect the electrical connector at the belly of the helicopter.
3. Remove the Load Cell Assembly from the gimbal on the suspension frame (not shown) by removing the hardware as illustrated in Figure 25.17.

Figure 25.17 Load Cell Hardware



Self-lubricated Bushing Removal

All self-lubricated bushings use an interference fit to hold them in place. Use an arbor press or similar to press the bushings out of bore they are mounted in.

CAUTION

Do not use heat on any of the parts when removing the self-lubricated bushings. These parts are all heat-treated and using heat may affect their mechanical properties.

25.16 Component Removal continued

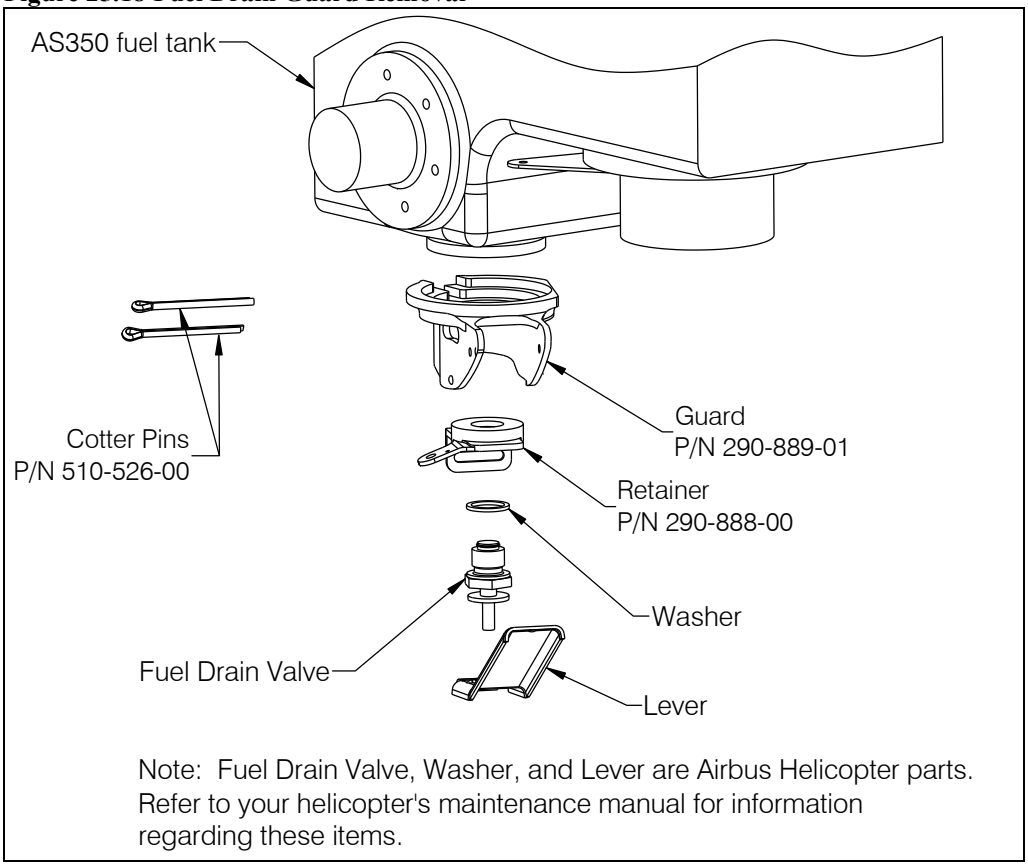
Fuel Drain Guard Removal

NOTICE

The fuel drain guard may not be present with all cargo swing installations (it was not included with earlier kits (prior to 2010)) and is not installed with the Airbus crash resistant fuel tank.

1. Drain fuel tank.
2. Remove cotter pins from Guard.
3. Remove lever.
4. Remove safety wire between fuel tank valve and retainer tab.
5. Remove ground strap from Retainer.
6. Unthread fuel drain valve from tank and remove it and washer.
7. Remove Guard and Retainer.
8. Remove Bracket.

Figure 25.18 Fuel Drain Guard Removal



25.17 Component Re-installation

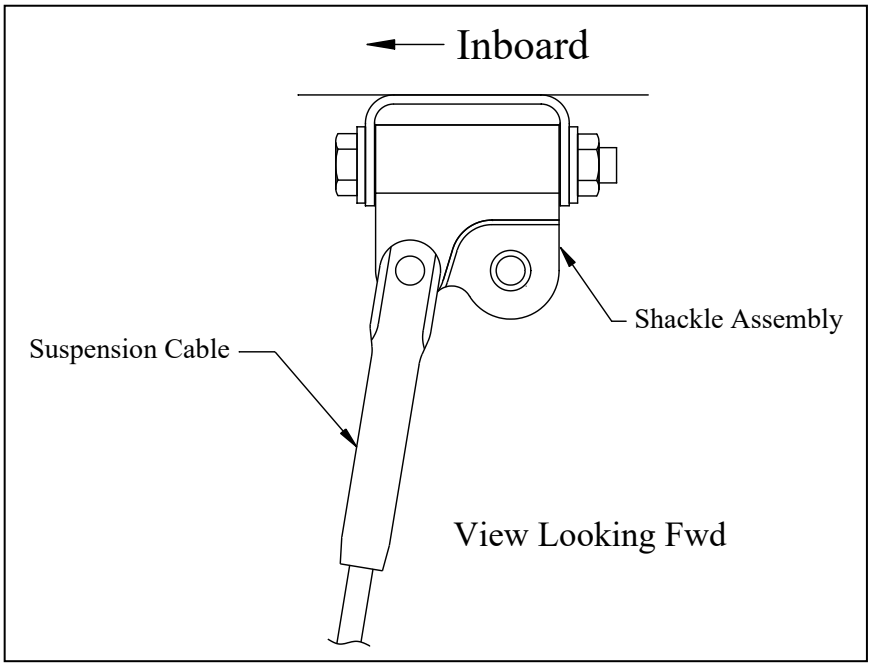
Suspension Re-installation

1. Install the Swing Suspension by securing the shorter suspension cables to the forward Shackle Assemblies and the longer suspension cables to the aft Shackle Assemblies with the quick release pins. Secure quick release pins with attached safety pins.

   IMPORTANT: Suspension cables must be pinned to the **INBOARD** holes of the Shackle Assemblies (See Figure 25.19).

2. Connect the load cell harness connector to the bulkhead connector on the bracket at the belly of the aircraft.
3. Connect the electrical release harness connector to the bulkhead connector on bracket at the belly of the aircraft.
4. Connect the ground strap attached to the cargo hook to the ground strap attached to the aircraft.
5. Connect the hydraulic release hose to the quick disconnect coupling on the bracket at the belly of the aircraft.

Figure 25.19 Suspension Cable Attachment

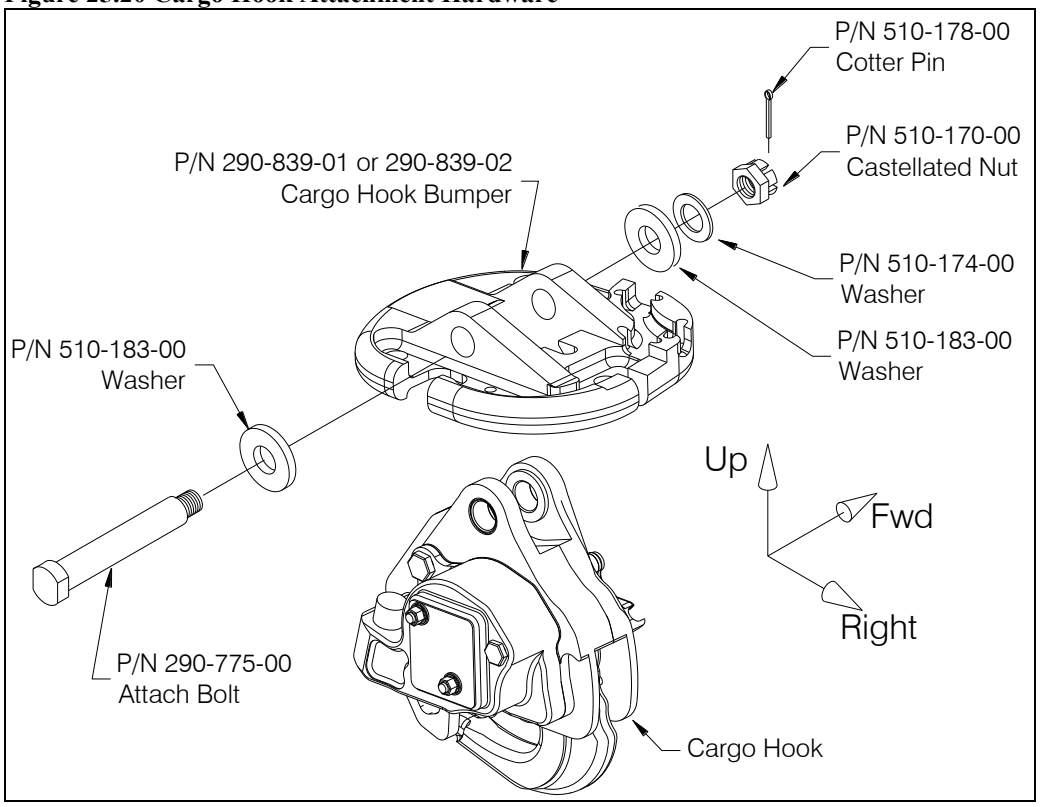


25.17 Component Re-installation continued

Cargo Hook Re-installation

1. Attach the Cargo Hook (P/N 528-028-00 or 528-028-02) to the load cell on the suspension system by placing the Hook Bumper over the Cargo Hook and installing the attach bolt through the load cell (not shown below) with washer.
2. Install washers and nut over bolt end.
3. Tighten nut to finger tight until seated, then rotate to next castellation if necessary to install and secure cotter pin.
4. Install Slave Cylinder Assembly w/Plumbing (P/N 232-168-00) per this section.
5. Install the ground strap (P/N 270-125-00) with screw (P/N 510-391-00).
6. Install electrical release harness (P/N 270-129-00) per this section.
7. Route electrical harnesses, ground strap, and hydraulic hose through the channel in the bumper and secure with ty-wraps. See Figure 25.22.

Figure 25.20 Cargo Hook Attachment Hardware



NOTICE

The Cargo Hook load beam must point to the left side of the helicopter when looking from the rear (as shown above).

25.17 Component Re-installation continued

Slave Cylinder Assembly Re-installation

Connect the slave cylinder assembly to the cargo hook first, per the following instructions.

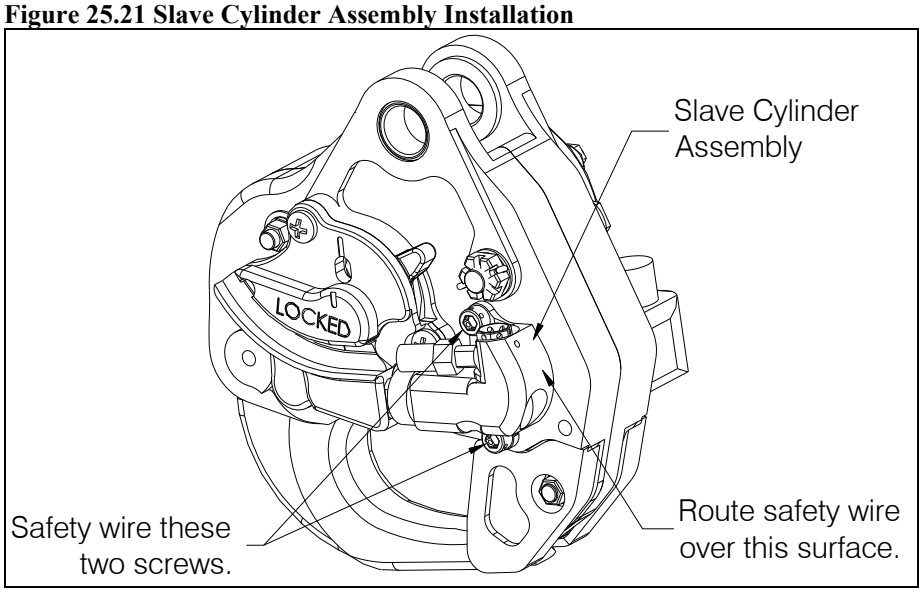
1. Ensure that the piston is in the retracted position. If the piston needs to be retracted connect the quick disconnect coupling and push the piston in.

NOTICE

The piston will not be able to be retracted if the hydraulic hose is not connected at the quick disconnect.

2. Insert the nose of the slave cylinder assembly into the side of the cargo hook as shown below and install the mounting screws (P/N 510-531-00).
3. Install safety wire between these screws around the backside of the slave cylinder. See Figure 25.21.
4. Route the hydraulic hose along the manual release cover and up through the hook bumper, along with the electrical cables and ground strap, as shown in Figure 25.22. Secure components to bumper with ty-wraps as shown.
5. Connect the quick disconnect coupling at the belly of the helicopter.

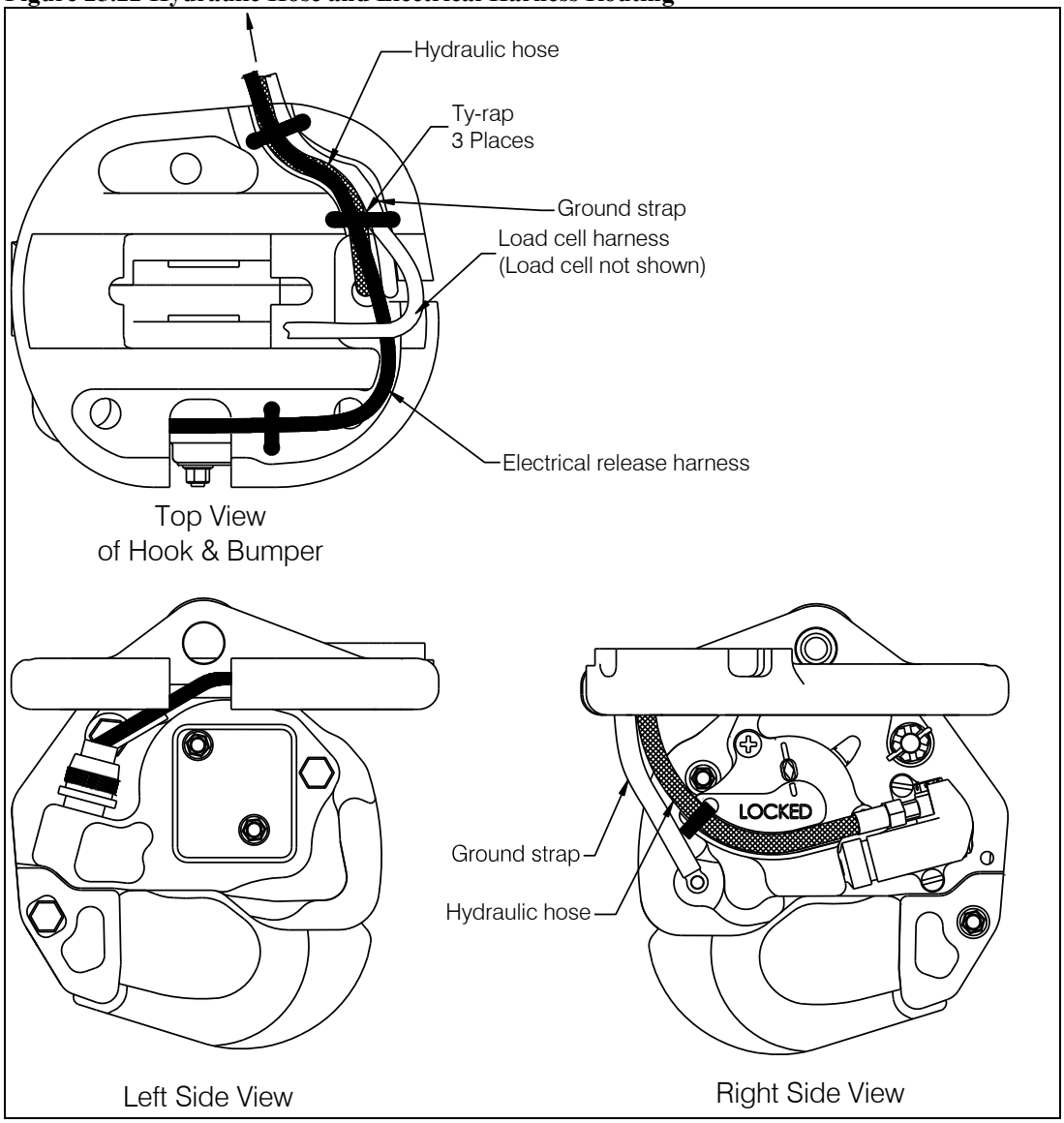
Figure 25.21 Slave Cylinder Assembly Installation



25.17 Component Re-installation continued

Slave Cylinder Assembly Re-installation continued

Figure 25.22 Hydraulic Hose and Electrical Harness Routing

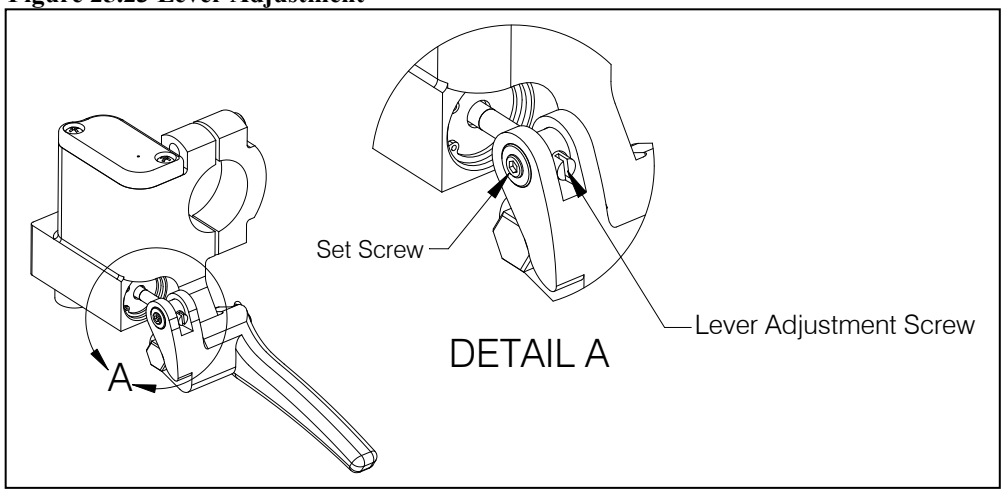


25.17 Component Re-installation continued

Fixed Hydraulic Release Hose Re-installation

1. Install the master cylinder and release lever onto the collective shaft with the two screws (P/N 510-390-00).
2. Feed the end of the hydraulic hose through the slot in the floor. The grommet may have to be temporarily removed to allow the fitting to pass through.
3. Install the loop clamp around the release cable at the bracket at frame at 1790.15 with hardware as shown in Figure 25.14.
4. Route the hose as shown in Figure 25.13 securing it at the same points as the original installation and install the quick disconnect coupling to the connector bracket attached to the fuel tank support.
5. After completing installation of the hydraulic system (both fixed and removable) bleed the system per section 12.2. If the hoses have not been disassembled, the system may not need to be bled.
6. If necessary adjust position of lever (see below) on master cylinder to give full stroke of lever. Secure lever adjustment screw with set screw. Ensure there is no interference in any combination of control movements.

Figure 25.23 Lever Adjustment



25.17 Component Re-installation continued

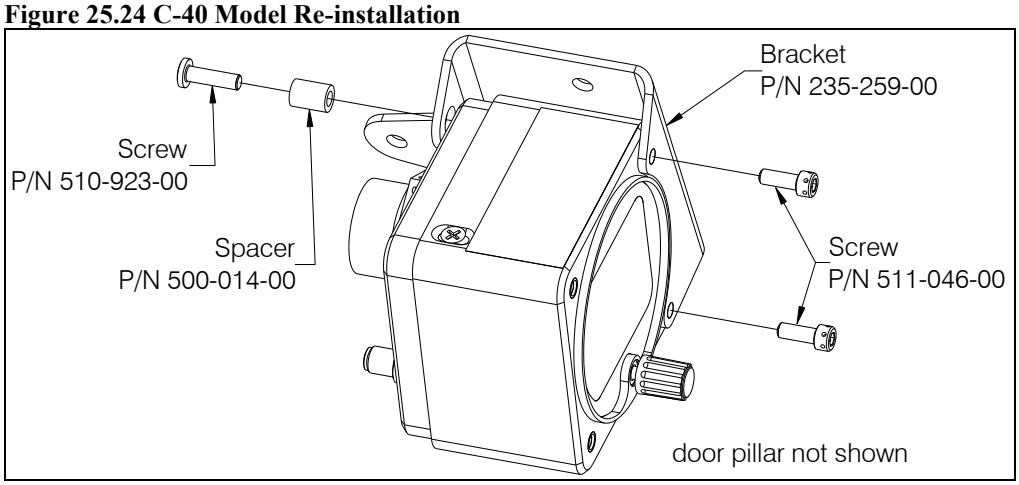
C-39 Model Indicator Re-installation

1. Place the Load Weigh Indicator into the mounting bracket (P/N 290-772-00) on the RH door pillar and secure with four screws (P/N 510-457-00).
2. Connect the electrical harness to the connector on the back of the indicator.

C-40 Model Indicator Re-installation

1. Place the Load Weigh Indicator into the mounting bracket on the RH door pillar and secure with two screws (P/N 511-046-00) on the display side and a spacer (P/N 500-014-00) and screw (P/N 510-923-00) on the connector side. Safety-wire the screws on the display side per MS33540.
2. Connect the electrical harness to the connector on the back of the indicator.

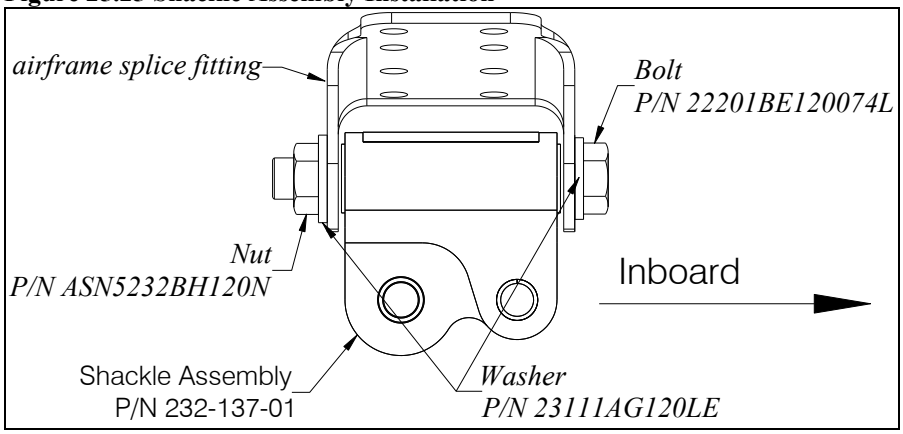
Figure 25.24 C-40 Model Re-installation



Shackle Assembly Re-installation

1. Attach a Shackle Assembly (orient smaller lobe inboard as shown) to each of the two airframe splice fittings (shown below) at the forward landing gear cross tube and at the two half-clamps at the aft landing gear cross tube. Use Airbus hardware part numbers (shown in italics).
2. Tighten the nuts to 12.5 to 17.5 ft-lbs. (17 – 23 Nm). Verify Shackle Assemblies rotate freely after tightening nuts.

Figure 25.25 Shackle Assembly Installation



25.17 Component Re-installation continued

Load Cell Re-installation

1. Attach the load cell assembly to the gimbal fitting on the suspension frame with hardware as illustrated in Figure 25.17.
2. Tighten nut to 60-70 in-lbs and rotate to next castellation if necessary to insert cotter pin.

CAUTION

The Load Cell Assembly must pivot freely about its upper attach point independently of the bolt (P/N 510-443-00) and nut, if necessary back the nut off to previous castellation to achieve this.

3. Connect the load cell harness connector to the connector on the belly of the helicopter.
4. Attach load cell harness to bumper with cable ties. Ensure the harness does not get pulled or pinched at any point in the full range of motion of the cargo hook and swing frame assembly.

NOTICE

A Link Assembly (P/N 232-436-00 or P/N 232-436-01) can be installed in place of the Load Cell Assembly. It is installed using the same hardware as the Load Cell Assembly. The Link Assembly does not provide load weighing.

25.17 Component Re-installation continued

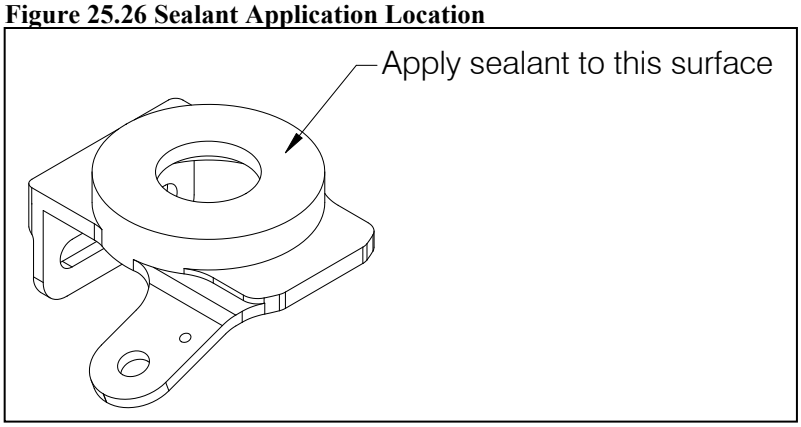
Fuel Drain Guard Re-installation

NOTICE

The fuel drain guard may not be present with all cargo swing installations (it was not included with earlier kits (prior to 2010)) and is not installed with the Airbus crash resistant fuel tank.

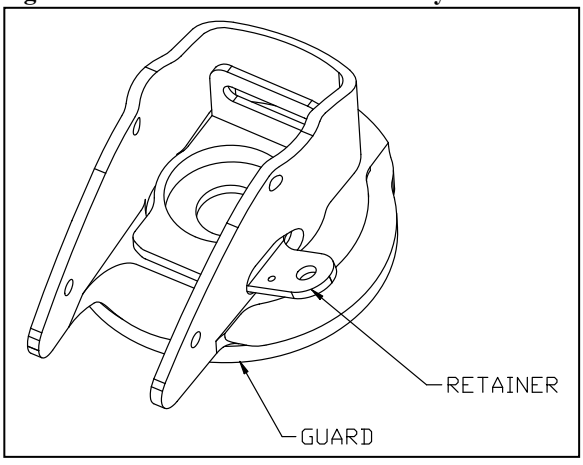
1. Remove residual sealant from the tank and Retainer, P/N 290-888-00, taking care not to mar the sealing surfaces. Prepare the areas for sealing per Airbus Helicopter Standard Practices Manual.
2. Prepare PR1422-B or equivalent sealant per Airbus Helicopter Standard Practices Manual. Apply sealant to Retainer as shown in Figure 25.26.

Figure 25.26 Sealant Application Location



3. Place the Retainer (P/N 290-888-00) inside the Guard (P/N 290-889-01), by inserting the tab through the slot in the Guard. See Figure 25.27.

Figure 25.27 Guard/Retainer Assembly



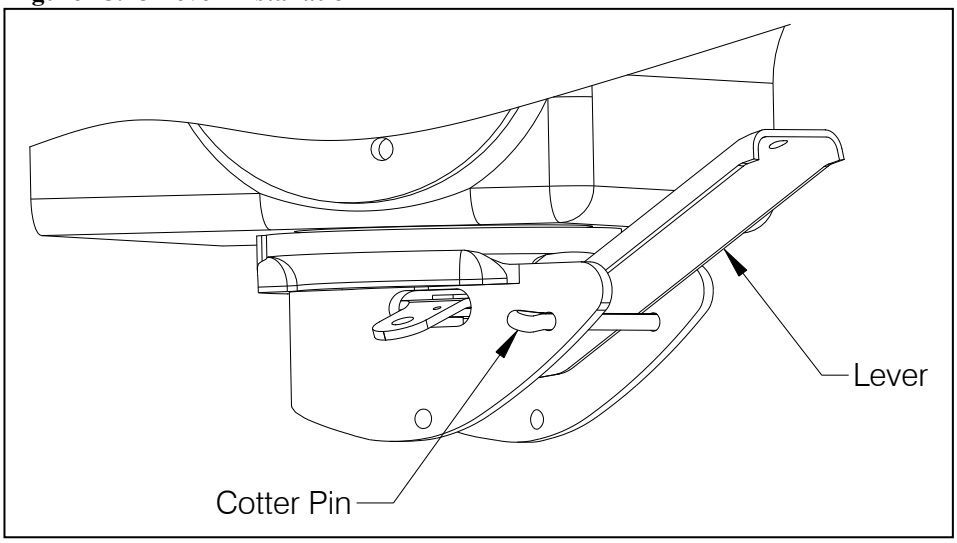
4. Place these two items onto the boss on the bottom of fuel tank, aligning the notch in the Guard with the key on the bottom of the fuel tank.

25.17 Component Re-installation continued

Fuel Drain Guard Re-installation continued

5. Secure the Guard and Retainer by re-installing the Fuel Drain Valve with new Fuel Valve Seal, 610-024-00. Use a flat-blade screwdriver to prevent the Retainer from twisting when tightening the Fuel Drain Valve. Torque per Airbus Helicopter specifications.
6. Secure the Fuel Drain Valve with safety wire using the small hole in the retainer tab.
7. Re-install the electrical connections to the Retainer tab per Airbus Helicopter Electrical Bonding Procedure. Refer to Airbus Helicopter Standard Practices Manual, 20.02.07.
8. Install the Lever by placing it in Retainer slot and rotating upwards. Secure with cotter pin (P/N 510-526-00).

Figure 25.28 Lever Installation



9. Install a second cotter pin through the other holes in the Guard (this cotter pin is for valve protection only and is not used for rigging purposes).

25.17 Component Re-installation continued

Fuel Drain Guard Re-installation continued

10. Prepare to install Bracket (P/N 290-893-00) by threading the control cable through the Bracket hole. Install Bracket using the two screws removed previously.

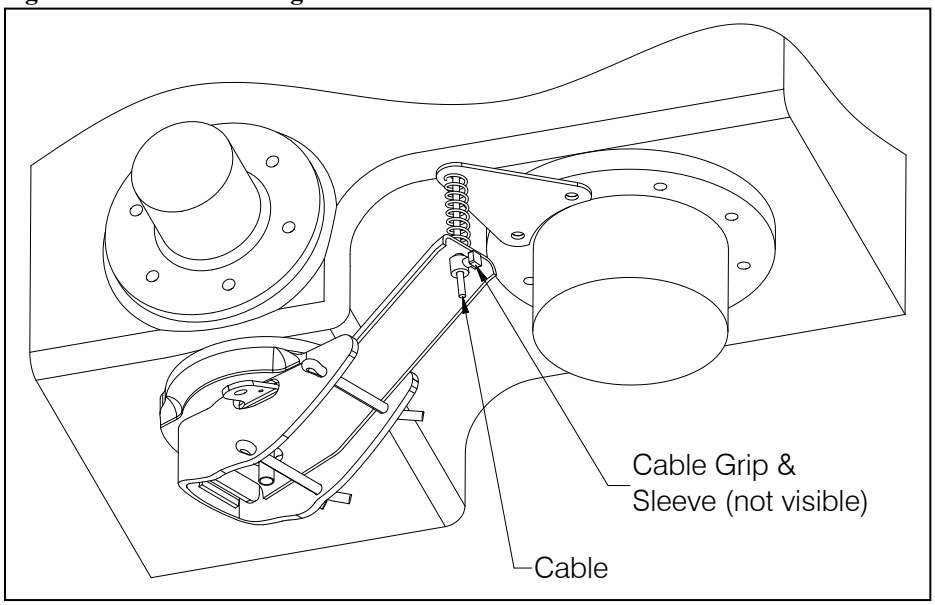
11. Pass the cable through the Spring (Airbus Helicopter P/N 350A55-1044-21) and Lever (Airbus Helicopter P/N 350A55-1043-21). Slide the Sleeve (Airbus Helicopter P/N N1-5ALU) over the cable and secure with Cable Grip (Airbus Helicopter P/N 58-2-009).

⚠ CAUTION

To avoid inadvertent fuel loss, Airbus Helicopter P/N 58-2-009 Cable Grip must be used with this installation.

12. Adjust the cable travel by doing the following: allow the lever to rest against the cotter pin stop. Slide the Cable Grip up to the bottom of the lever and secure.

Figure 25.29 Cable Setting



13. Allow the sealant to cure per Airbus Helicopter Standard Practices Manual before adding fuel. Verify proper cure of unused sealant.

14. Refill fuel tank and check for leaks.

25.18 General Procedural Instructions-Testing

After re-installation of the cargo hook or electrical or hydraulic release system components, perform the following.

1. Activate the electrical system and press the Cargo Hook release button to ensure the cargo hook electrical release is operating correctly. The Cargo Hook must release. Reset the hook by hand after the release. If the hook does not release or re-latch, do not use the unit until the difficulty is resolved.

   CAUTION

   The cargo hook solenoid is intended to be energized only intermittently. Depressing the electrical release button continuously in excess of 20 seconds will cause the release solenoid to overheat, possibly causing permanent damage.

   The following instructions are applicable to cargo hook P/N 528-028-02 which is equipped with Surefire electrical release. With no load on the cargo hook perform the following.
   - *Very* briefly press the Cargo Release switch, the cargo hook should not actuate and the load beam should remain closed.
   - Press and hold the Cargo Release switch for a few seconds, the load beam should fall to the open position and the cargo hook solenoid should continue to cycle repeatedly.
   - Push up on the load beam and verify that it latches and the hook lock indicator is aligned with the engraved line on the manual release cover.

2. Activate the hydraulic release system by pulling the release lever on the collective in the cockpit. The mechanism should operate smoothly and the cargo hook must release. Return the load beam to its closed and locked position by hand after release. Verify that the hook lock indicator on the side of the hook returns to the fully locked position. In the fully locked position the hook lock indicator should align with the lines on the manual release cover (see Figure 5.1). If the hook does not release or re-latch, do not use the unit until the problem is resolved.

3. Swing the installed Cargo Hook and the suspension to ensure that the hydraulic release hose, the electrical harnesses, and ground strap have enough slack to allow full swing of each component without straining or damaging the cables. The cables must not be the stops that prevent the Cargo Hook or the suspension from swinging freely in all directions.