

**PLEASE CHECK WEB SITE AT [WWW.ONBOARDSYSTEMS.COM](http://WWW.ONBOARDSYSTEMS.COM) FOR  
THE LATEST REVISION OF THIS MANUAL**

***Instructions for  
Continued Airworthiness***

***Cargo Hook Sling  
Suspension System  
For the  
Airbus Helicopters AS350  
Series Helicopter***

***Part Number  
200-282-00***

***STC SR01165SE***



13915 NW 3<sup>rd</sup> Court, Vancouver, WA 98685 USA  
Phone: 360-546-3072 Fax: 360-546-3073 Toll Free: 800-275-0883  
[www.OnboardSystems.com](http://www.OnboardSystems.com)

THIS PAGE INTENTIONALLY LEFT BLANK

## Record of Revisions

<i>Revision</i>	<i>Date</i>	<i>Page(s)</i>	<i>Reason for Revision</i>
7	08/27/07	Section 0, 05-00-00 page 1, 25-00-00 pages 1, 7, 17, and 21	Revised electrical schematic (Figure 25-5) to incorporate Airbus Helicopters mod #07-3274. Added Section 0.12 Warnings, Cautions, and Notes and updated format where applicable.
8	10/29/07	25-00-00 page 7 thru 9	Revised electrical schematic (Figure 25-5) to incorporate data line and to show additional Airbus Helicopters wiring configuration. Added paragraph explaining electrical schematic.
9	10/28/09	25-00-00 page 19	Added caution note and revised figure 25-20.
10	03/11/10	05-00-00 page 3 & 4 25-00-00 page 7	Updated electrical schematic to reflect new load weigh harness configuration. Changed overhaul frequency criteria.
11	05/04/12	Section 0 page 1 Section 5, Section 25 pages 1, 7, 8, 15, 17, 19 & 21	Updated figure 25-15 to show correct part number for attach bolt. Updated precautions sections to current format. Updated all safety labels to current format. Updated 100 hour/annual inspection and removed daily check. Updated electrical schematic to show Airbus Helicopters mod 073275.
12	06/11/15	Section 4, Section 5, Section 25 pages 7, 8, 16, 17	Added 1000 hour/5 year inspection instructions for the suspension system, updated electrical schematic, corrected hardware in Figure 25-16 and updated tightening instructions. Updated Section 4 statement.
13	03/01/18	Section 5 pages 4 & 7	Revised instructions for returning load cell to the factory for inspection and calibration.

### Register Your Products for Automatic Notifications

Onboard Systems offers a free notification service via fax or email for product alerts and documentation updates. By registering your Onboard Systems products at our website, we will be able to contact you if a service bulletin is issued, or if the documentation is updated.

You can choose to receive notices on an immediate, weekly, or monthly schedule via fax, email or both methods. There is no charge for this service. Please visit our website at [www.onboardsystems.com/notify.php](http://www.onboardsystems.com/notify.php) to get started.

THIS PAGE INTENTIONALLY LEFT BLANK

## List of Effective Pages

<b>Title</b>	<b>Pages</b>	<b>Revision</b>	<b>Date</b>
Cover	i, ii Blank	13	03/01/18
Record of Revisions	iii, iv Blank	13	03/01/18
List of Effective Pages	v, vi Blank	13	03/01/18
Table of Contents	vii, viii	12	06/11/15
Section 0 Introduction	1, 2 Blank	8	10/29/07
Section 4 Airworthiness Limitations	1, 2 Blank	12	06/11/15
Section 5 Inspection and Overhaul Schedule	1 thru 3	12	06/11/15
Section 5 Inspection and Overhaul Schedule	4	13	03/01/18
Section 5 Inspection and Overhaul Schedule	5, 6	12	06/11/15
Section 5 Inspection and Overhaul Schedule	7	13	03/01/18
Section 5 Inspection and Overhaul Schedule	8	12	06/11/15
Section 11 Placards and Markings	1, 2 Blank	4	03/02/04
Section 25 Operation Instructions	1	11	05/04/12
Section 25 Operation Instructions	2	1	01/06/03
Section 25 Operation Instructions	3	4	03/02/04
Section 25 Operation Instructions	4, 5	1	01/06/03
Section 25 Operation Instructions	6	4	03/02/04
Section 25 Operation Instructions	7, 8	12	06/11/15
Section 25 Operation Instructions	9	8	10/29/07
Section 25 Operation Instructions	10	4	03/02/04
Section 25 Operation Instructions	11	5	06/20/05
Section 25 Operation Instructions	12 through 14	4	03/02/04
Section 25 Operation Instructions	15	11	05/04/12
Section 25 Operation Instructions	16, 17	12	06/11/15
Section 25 Operation Instructions	18	5	06/20/05
Section 25 Operation Instructions	19	11	05/04/12
Section 25 Operation Instructions	20	6	01/22/07
Section 25 Operation Instructions	21	11	05/04/12

THIS PAGE INTENTIONALLY LEFT BLANK

# TABLE OF CONTENTS

<u>Identification</u>	<u>Title, Page</u>
<b>Section 0</b>	<b>Introduction 00-00-00</b>
	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
<b>Section 4</b>	<b>Airworthiness Limitations 04-00-00</b>
	4.2 No airworthiness limitations, 1
<b>Section 5</b>	<b>Inspection and Overhaul Schedule 05-00-00</b>
	5.1 Cargo Hook Sling Suspension System Inspection, 1
	5.2 Cargo Hook Overhaul Schedule, 8
<b>Section 11</b>	<b>Placards and Markings 11-00-00</b>
	11.1 Placards, 1
<b>Section 25</b>	<b>Equipment and Furnishings 25-00-00</b>
	25.1 Cargo hook connector, 1
	25.2 Description, 2
	25.5 Component Weights, 3
	25.12 Storage Instructions, 3
	25.15 Troubleshooting, 4
	25.16 Component Removal, 10
	25.17 Component Re-installation, 16
	25.18 General Procedures Instructions-Testing, 21

***Figures***

- 5-1 Manual Release Cable Inspection, Section 5 Page 2
- 5-2 Manual Release Cable Conditions, Section 5 Page 2
- 5-3 Manual Release Cable Rigging, Section 5 Page 3
- 5-4 Sling Suspension Assembly Parts, Section 5 Page 5
- 25-1 Un-commanded cargo hook release, Section 25 Page 1
- 25-2 System Overview, Section 25 Page 2
- 25-3 Cargo Hook Electrical Connector, Section 25 Page 5
- 25-4 Wire Harness Routing Section 25 Page 6
- 25-5 Electrical Schematic, Section 25 Page 7
- 25-6 CAL Code, Section 25 Page 9
- 25-7 Changing Dampening Level, Section 25 Page 9
- 25-8 Manual Release Cable Connection, Section 25 Page 11
- 25-9 Manual Release Cover Removal, Section 25, Page 11
- 25-10 Fixed Manual Release Cable Routing, Section 25 Page 12
- 25-11 Cable Attachment at Landing Gear Fitting, Section 25 Page 13
- 25-12 Cable Attachment at Frame at 1790.15, Section 25 Page 13
- 25-13 Manual Release Lever, Section 25 Page 14
- 25-14 Load Weigh Indicator, Section 25 Page 14
- 25-15 Load Cell Attachment Hardware, Section 25 Page 15
- 25-16 Suspension Attachment Hardware, Section 25 Page 16
- 25-17 Cargo Hook Attachment Hardware, Section 25 Page 17
- 25-18 Manual Release Cable Fitting Adjustment, Section 25 Page 18
- 25-19 Manual Release Cable Connection, Section 25 Page 18
- 25-20 Manual Release Cable Rig, Section 25 Page 19

***Tables***

- 5-1 Sling Suspension Assembly Parts, Section 5 Page 6
- 5-2 Inspection Criteria, Section 5 Page 7
- 11-1 Cargo Hook Suspension Placard, Section 11 Page 1
- 25-1 Cargo Hook Connector, Section 25 Page 1
- 25-2 Component Weights and CGs, Section 25 Page 3
- 25-3 Troubleshooting, Section 25 Page 4



# *Section 0*

## Introduction

### 0.4 Scope

The following information is necessary to carry out the service, maintenance, and inspection of the Cargo Hook Sling Suspension System P/N 200-282-00.

### 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 P/N 200-282-00 Cargo Hook Sling Suspension System.

### 0.6 Arrangement

This manual contains instructions for the service, maintenance, inspection and operation of the Cargo Hook Sling Suspension System P/N 200-282-00 on Airbus Helicopters Model AS350 series helicopters. The manual is arranged in the general order that maintenance personnel would use to install, maintain and operate the Cargo Hook Sling 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 25 Equipment and Furnishings

### 0.7 Applicability

These Instructions for Continued Airworthiness are applicable to Cargo Hook Sling Suspension System P/N 200-282-00 (with Cargo Hook P/N 528-023-01) for the Airbus Helicopters AS350 Series Helicopters. Refer to the appropriate Airbus Helicopters ICA for instructions regarding parts of the aircraft that interface with the P/N 200-282-00 system.

### 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 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](http://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**

### **4.2 No 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

### 5.1 Cargo Hook Sling Suspension System Inspection Schedule

The scheduled inspection intervals noted below are maximums and are not to be exceeded. If the cargo hook 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.

---

**Annually or 100 hours of external load operations, whichever comes first, inspect the cargo hook and other kit components per the following.**

---



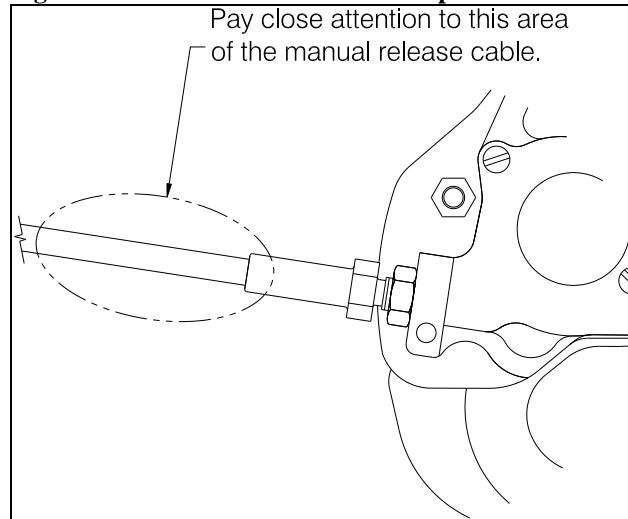
*Hours of external load operations should be interpreted to be (1) anything is attached to the primary cargo hook (whether or not a useful load is being transported) and (2) the aircraft is flying. If these conditions are **NOT** met, time does **NOT** need to be tracked.*

1. Visually inspect for corrosion on the exterior of cargo hook, load cell and link assembly components. Corrosion on the cargo hook side plates is cause for immediate overhaul. Additionally, any exfoliation corrosion in the upper attach lug area of the cargo hook is cause for immediate replacement of the side plate. Contact Onboard Systems for the latest revision of the cargo hook service manual.
2. Move the cargo hook throughout its full ranges of motion and observe the manual release cable and electrical harnesses to ensure that they have enough slack. The release cable and harnesses must not be the stops that prevent the cargo hook or suspension from moving freely in all directions.
3. Visually inspect for presence and security of fasteners and electrical connections.
4. Visually inspect the external electrical wire harnesses for damage and security.
5. Visually inspect the external manual release cable for damage and security.
6. Verify calibration of the load cell by lifting a load of known weight (see applicable Owner's Manual for instructions).

## 5.1 Cargo Hook Sling Suspension System Inspection continued

7. Visually inspect the manual release cable for damage, paying close attention to the flexible conduit at the area of transition to the cargo hook end fitting (refer to Figure 5-1). Inspect for splitting of the outer black conduit in this area and separation of the conduit from the steel end fitting.

**Figure 5-1 Manual Release Cable Inspection**

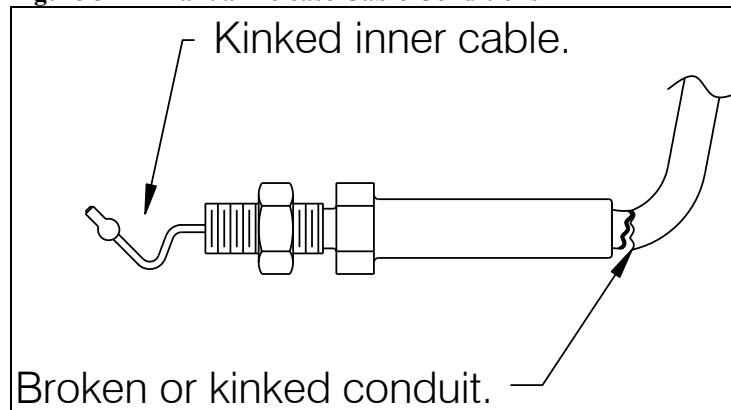


8. Remove the manual release cover from the cargo hook and inspect the visible section of the inner cable for kinks or frays.



*Manual release cables are wearable items and must be replaced as condition requires. Broken or kinked conduit, inner cable kinks (ref Figure 5-2), frays, or sticky operation are each cause for immediate replacement.*

**Figure 5-2 Manual Release Cable Conditions**

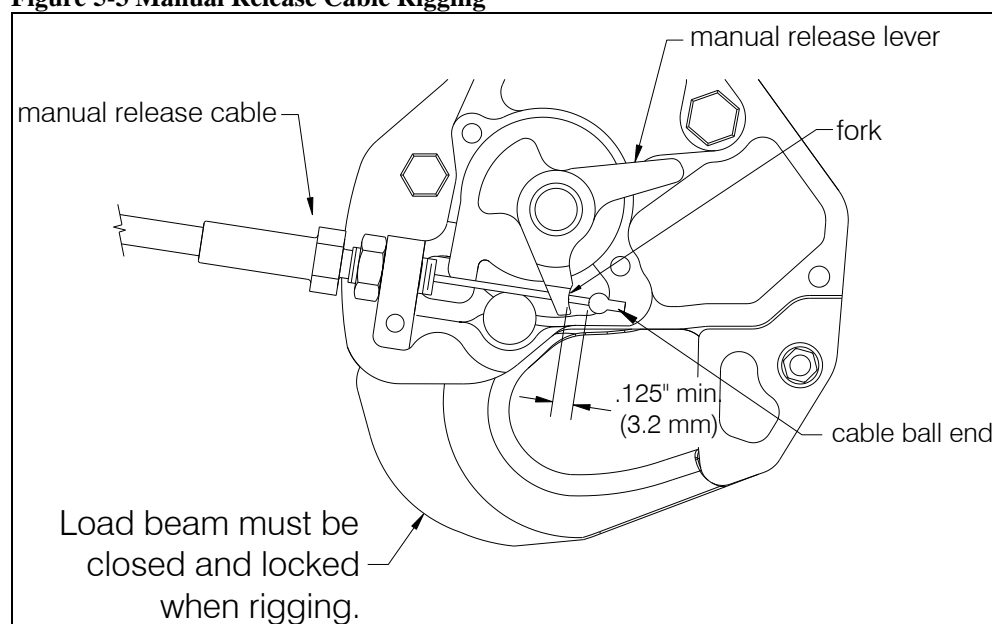


## 5.1 Cargo Hook Sling Suspension System Inspection continued

9. Remove the manual release cover from the cargo hook. With the cargo hook closed and locked, rotate the release lever in the clockwise direction to remove free play (this is felt as the lever rotates relatively easily for several degrees as the free play is taken up) and measure the gap between the cable ball end and the release lever fork with the manual release lever in the cockpit in the non-release position. This gap should be a minimum of .125 inches (3.2 mm) as shown in Figure 5-3.

If the gap does not measure at least .125", make adjustments at the cargo hook or at the manual release lever on the collective. Adjustments at the hook are done by disconnecting the manual release cable at the interface with the fixed manual release cable, loosening the jam nut, and rotating the manual release cable in the required direction.

**Figure 5-3 Manual Release Cable Rigging**



## 5.1 Cargo Hook Sling Suspension System Inspection continued

---

Every 5 years or 1000 hours of external load operations, whichever comes first, remove the suspension system from the aircraft, disassemble, and inspect the component parts per the following. Refer to Figure 5.1.5 for item numbers ( ) and Table 5.1.1 for their part numbers.

---

Remove the cargo hook suspension from the helicopter per Section 25.16.

Remove the cotter pin (11), nut (10), and washers (8, 9) from the end of the cargo hook attach bolt (7) and remove the attach bolt and washer (8) to separate the cargo hook (13) from the load cell assembly (12).

At the other pivot point of the load cell remove the cotter pin (11), nut (10), and washers (8, 9) from the end of the attach bolt (7) and remove the attach bolt and washer (8) to separate the gimbal assembly (1) from the load cell assembly.

### NOTICE

*Return the Load Cell Assembly (12) 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.*

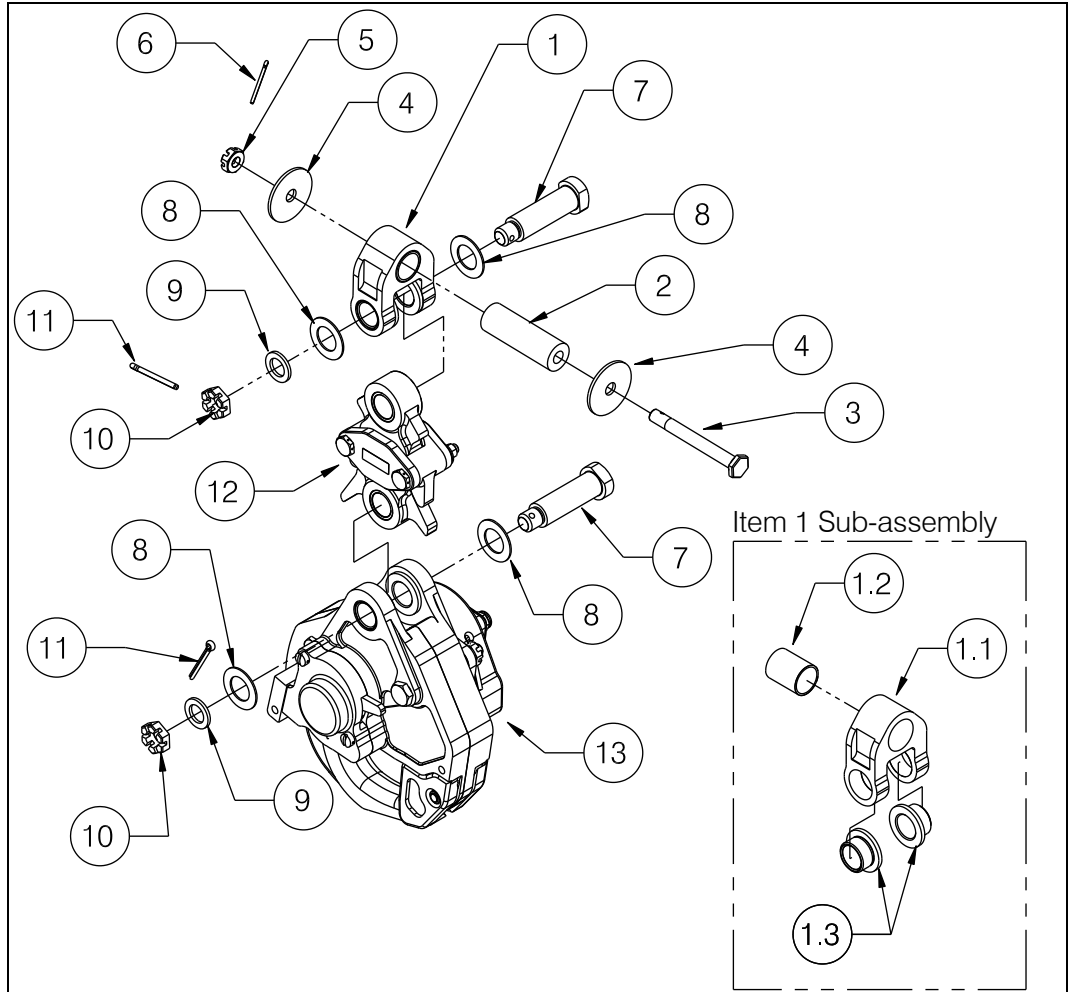
Perform inspection on the remaining parts per the instructions below. Refer to CMM 122-005-00 for inspection and overhaul of the cargo hook.

- Carefully inspect the component parts in accordance with the instructions in Table 5-2. Inspect the parts in a clean, well-lit room using standard dimensional measuring tools and visual methods. Repair parts found within inspection limits. Replace any part found beyond limits. Refer to Figure 5-4 and Table 5-1 for part identification.



### 5.1 Cargo Hook Sling Suspension System Inspection continued

Figure 5-4 Sling Suspension Assembly Parts



## 5.1 Cargo Hook Sling Suspension System Inspection continued

**Table 5-1 Sling Suspension Assembly Parts**

<b>Item</b>	<b>Part No.</b>	<b>Description</b>	<b>Qty</b>
1	232-144-00	Gimbal Assembly	1
1.1	290-767-00	Gimbal	1
1.2	517-051-00	Bearing	1
1.3	290-294-00	Attach Bushing	2
2	290-766-00	Gimbal Shaft	1
3	510-451-00	Bolt	1
4	510-336-00	Washer	2
5	510-259-00	Nut	1
6	510-081-00	Cotter Pin	1
7	290-332-00	Attach Bolt	2
8	510-183-00	Washer	4
9	510-174-00	Washer	2
10	510-170-00	Nut	2
11	510-178-00	Cotter Pin	1
12	210-203-03*	Load Cell Assembly	1
13	528-023-01	Cargo Hook	1

\*Supersedes 210-203-00.

## 5.1 Cargo Hook Sling Suspension System Inspection continued

**Table 5-2 Inspection Criteria**

Item	Component	Inspection Criteria & Limit	Repair Action	Finish	Recommended replacement at 1000 hour/5 year
1.	Gimbal (1.1)	Dents, nicks, gouges, scratches and corrosion – 0.030 in. (0.76 mm) deep.	Glass bead blast at less than 30 PSI to remove corrosion. Blend at 10:1 ratio as required to provide smooth transitions. Replace bushings if required. Install bushings with zinc chromate primer (TTP-1757 or similar).	Passivate per AMS-QQ-P-35 or ASTM A967	No
2.	Gimbal (1.1)	Visible cracks	None. Replace.	N/A	No
3.	Bearing (1.2)	Wear – more than 50% copper showing	None. Replace.	N/A	Yes
4.	Attach Bushing (1.3)	Wear on ID – 0.520 in. (13.21 mm)	None. Replace.	N/A	Yes
5.	Gimbal Pin (2)	Wear on OD - .57 in. (14.48 mm)	None. Replace.	N/A	No
6.	Attach Bolt (7)	Wear on OD - .495 in. (12.57 mm)	None. Replace.	N/A	No
7.	Remaining bolts, nuts, washers	Wear, corrosion, or deterioration	None. Replace.	N/A	Yes
8.	Load Cell Assembly (12)	Wear on bushing IDs – 0.520 in. (13.21 mm). Dents, nicks, gouges, scratches and corrosion in link – 0.030 in. (0.76 mm) deep. Cracks in link.	Return to factory.		
9.	Cargo Hook (13)	Refer to CMM 122-005-00.			

Upon completion of inspection, re-assemble the cargo hook to load cell and load cell to gimbal assembly referring to Figure 5-4. Apply thin film of grease (Mobilgrease 28 or AeroShell 7 is recommended) to OD of each attach bolt. Tighten nuts to finger tight and rotate to previous castellation if necessary to insert cotter pin.

## 5.2 Cargo Hook Overhaul Schedule

Time Between Overhaul (TBO): 1000 hours of external load operations or 5 years, whichever comes first.



*Hours of external load operations should be interpreted to be (1) anything is attached to the primary cargo hook (whether or not 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.*

Overhaul instructions for the cargo hook are contained in Component Maintenance Manual 122-005-00. Contact Onboard Systems for guidance to locate authorized overhaul facilities.

## *Section 11*

# Placards and Markings

### 11.1 Placards

The 200-282-00 Cargo Hook Sling Suspension System Kit includes the following placard shown in Table 11-1.

Table 11-1 Cargo Hook Suspension System Placard

Placard part number and appearance	Location
<p data-bbox="435 659 626 688">P/N 215-167-00</p> <div data-bbox="261 709 816 829" style="border: 1px solid black; padding: 5px; text-align: center;"><p data-bbox="339 720 737 810"><b>MAX. HOOK LOAD</b> <b>1660 LBS. 750 KGS.</b></p></div>	<p data-bbox="881 653 1438 751">Located on the belly of the aircraft near the cargo hook suspension in clear view of the ground support personnel.</p>

THIS PAGE INTENTIONALLY LEFT BLANK

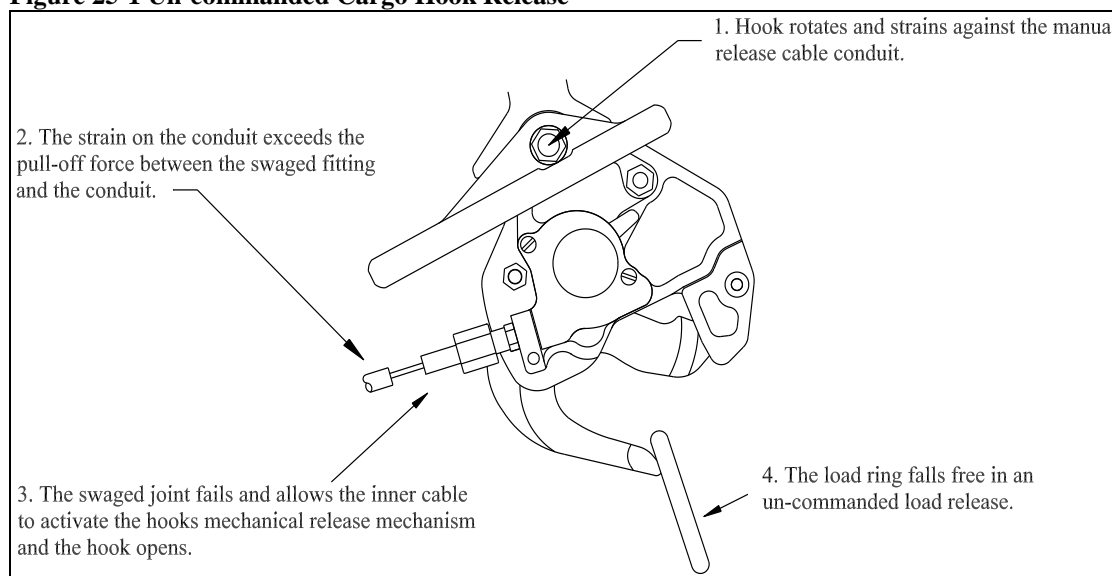
## Section 25

# Equipment and Furnishings



*Un-commanded cargo hook release will happen if the manual release cable is improperly restrained. The cable must not be the stops that prevent the Cargo Hook from swinging freely in all directions. If the Cargo Hook loads cause the hook to strain against the manual release cable the swaged end of the cable may separate allowing the inner cable to activate the cargo hook manual release mechanism. The result is an un-commanded release. Ensure that no combination of cyclic stick or Cargo Hook position is restrained by the manual release cable.*

**Figure 25-1 Un-commanded Cargo Hook Release**



### 25.1 Cargo hook connector

Listed below is the pin out for the cargo hook connector.

**Table 25-1 Cargo Hook Connector**

<i>Pin</i>	<i>Function</i>
A	Ground
B	Positive

## 25.2 Description

The Cargo Hook Sling Suspension System consists of four primary subsystems: Sling Suspension Assembly, Electrical Release System, Manual Release System, and the Load Weigh System.

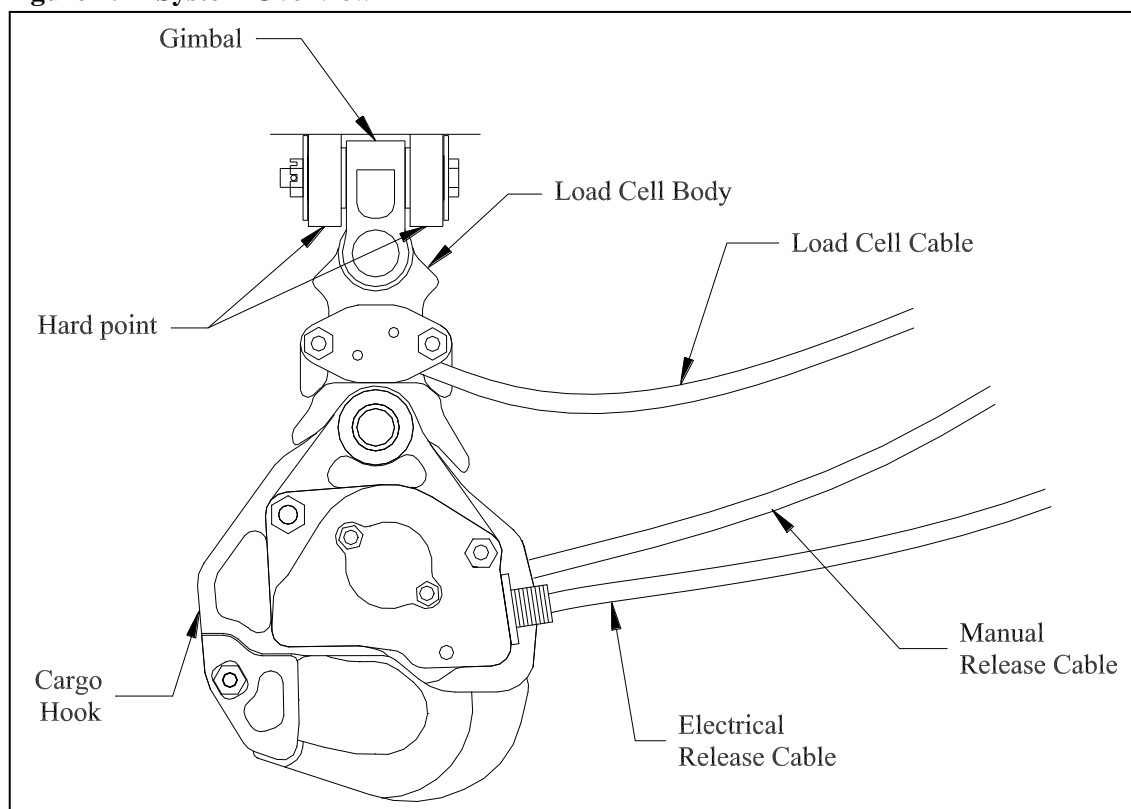
The Sling Suspension Assembly includes the cargo hook, the load cell body, and the Gimbal. It is attached to the hard point on the belly of helicopter through the Gimbal as illustrated below.

The Electrical Release System provides a means to release a cargo hook load by activating a switch in the cockpit.

The Manual Release System provides an additional means to release a hook load and is actuated by a handle mounted to the collective.

The Load Weigh System consists of the load cell on the suspension, an Indicator within the cockpit, and associated electrical wiring.

**Figure 25-2 System Overview**





## 25.5 Component Weights

The weights and cgs of the system components are listed in Table 25-2.

**Table 25-2 Component Weights and CGs**

<b>Item</b>	<b>Weight</b>	<b>Station</b>
Removable Provisions*	4.8 lbs (2.2 kg)	130.2 in (3307 mm)
Fixed Provisions**	2.7 lbs (1.2 kg)	92 in (2337 mm)
<b>Total</b>	<b>7.5 lbs (3.4 kg)</b>	<b>116.4 in (2958 mm)</b>

\* The removable provisions include the sling suspension w/ 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.

## 25.12 Storage Instructions

Clean the exterior Cargo Hook components thoroughly of excess dirt and grease with a rag before packaging. Pack the unit in a heat-sealable package. If the unit is to be stored for long periods in a tropical climate it should be packed in a reliable manner to suit local conditions. Refer to MIL-PRF-23199 and MIL-STD-2073-1 for additional guidance.

Package the unit 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 Helicopters maintenance manual for guidance on procedures relating to Airbus Helicopters parts that interface with this suspension system. Repair to the suspension system beyond what is described in this manual is not authorized by these instructions. Contact Onboard Systems for further guidance if necessary.

**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 does not operate electrically, manual cable release operates normally.	Open electrical circuit, faulty wiring, fuse, switch or solenoid.	Disconnect cable from electrical connector on cargo hook. 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).
Cargo hook operates electrically, but not manually.	Defective manual release cable. Defective manual release system.	Inspect manual release cable and cable connection to Cargo Hook. Remove and replace cargo hook (see Sections 25.16 and 25.17).
Load beam fails to re-latch after being reset.	Defective latch mechanism.	Remove and replace cargo hook (see sections 25.16 and 25.17).
Force required to release hook with lever on collective exceeds 14 lbs.	High cable friction or friction in internal mechanism of hook.	Remove cable from hook and check cable and hook independently (see below) to determine cause.
With release cable disconnected at hook, the force required to move manual release lever on collective exceeds 6 lbs.	Kinks or wear in cable, frozen water in cable, debris or damage to cable quick disconnect fitting or lever mechanism on cyclic	Inspect individual components to isolate problem. Remove and replace defective parts (see Sections 25.16 and 25.17 for remove and replace instructions for manual release cable).
Cargo hook manual release cable pull-off force exceeds 8 Lbs. (at the hook).	Friction in internal mechanism.	Remove and replace cargo hook (see Section 25.16 and 25.17)
Visibly loose fasteners or missing locking pins on suspension.	Visibly loose fasteners or missing locking pins.	Re-torque and reinstall locking pins per installation instructions.
Visibly loose electrical connector.	Visibly loose electrical connector.	Re-tighten connector
Visible cracks or corrosion on hook.	Visible cracks or corrosion.	Remove and replace cargo hook (see Sections 25.16 and 25.17).
Gouges or wear deeper than .090 on the cargo hook load beam.	Gouges or wear deeper than .090.	Remove and replace cargo hook (see Sections 25.16 and 25.17).
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).
Fuse opens when cargo hook is energized.	Short in the system, faulty wiring, fuse 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.

**Table 25-3 Troubleshooting continued**

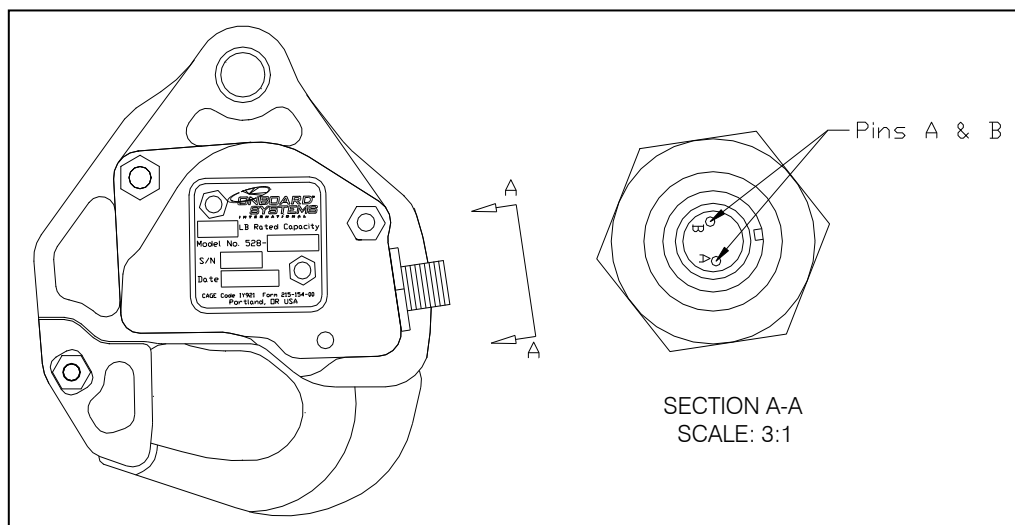
Load Weigh Indicator does not light up.	Faulty wiring or fuse.	Check the fuse (refer to Airbus Helicopters ICA) and wiring (see Note 2). If this doesn't help, remove and replace indicator per sections 25.16 and 25.17.
The displayed load on the Load Weigh Indicator is incorrect.	Incorrect calibration code.	Ensure the correct calibration code has been entered (see Note 3).
Indicator displayed load is not stable.	Dampening level is too low.	Adjust the dampening level to a higher number (see Note 4).
Indicator displayed load takes too long to change the reading when the load is changed.	Dampening level is too high.	Adjust the dampening level to a lower number (see Note 4).
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).

**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 25-3 Cargo Hook Electrical Connector**



**Table 25-3 Notes continued:**

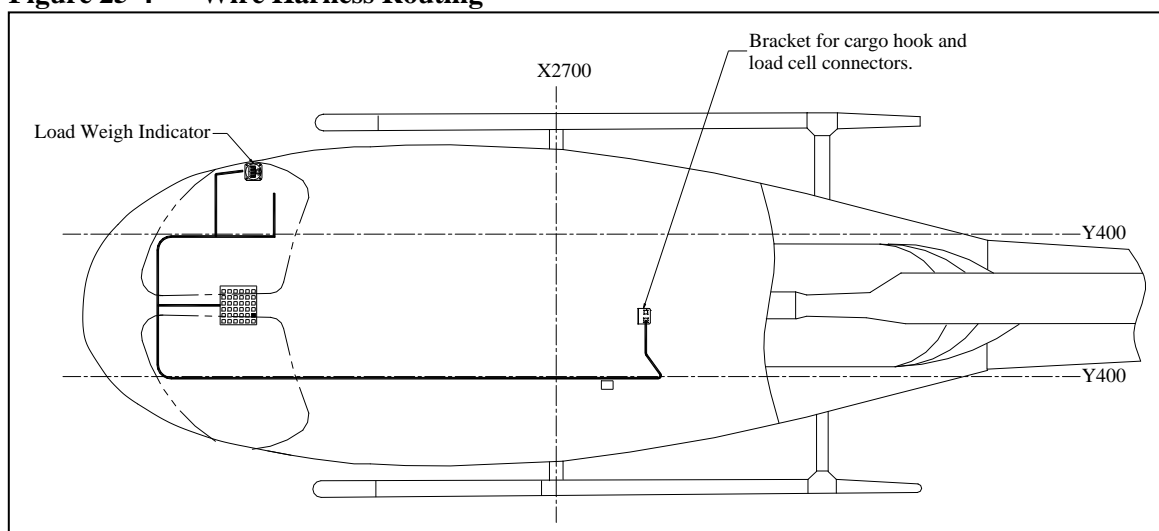
**2. Checking Wire Harnesses**

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) from the corresponding circuits (refer to Figure 25-5)

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 25-5 for electrical schematic.

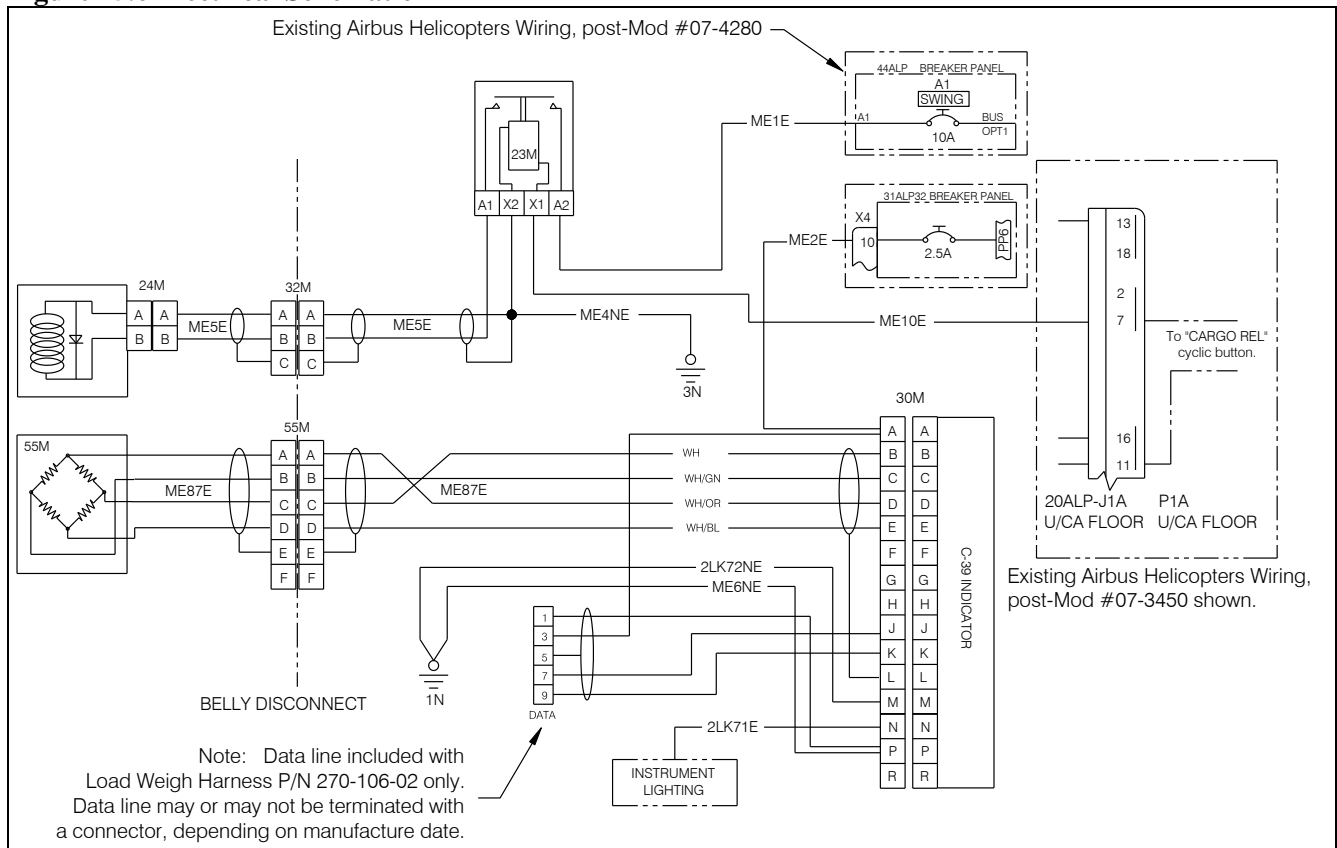
**Figure 25-4 Wire Harness Routing**



**2. Checking Wire Harnesses continued**

The electrical schematic for the electrical release system and the load weigh system is shown below. Airbus Helicopters modification #'s 07-3273, 07-3274, and 07-3475 are reflected below. Earlier Airbus Helicopters 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 the applicable Airbus Helicopters Wiring Diagrams Manual for additional information.

**Figure 25.6 Electrical Schematic**



2. Checking Wire Harnesses continued

Figure 25-5 Electrical Schematic, continued

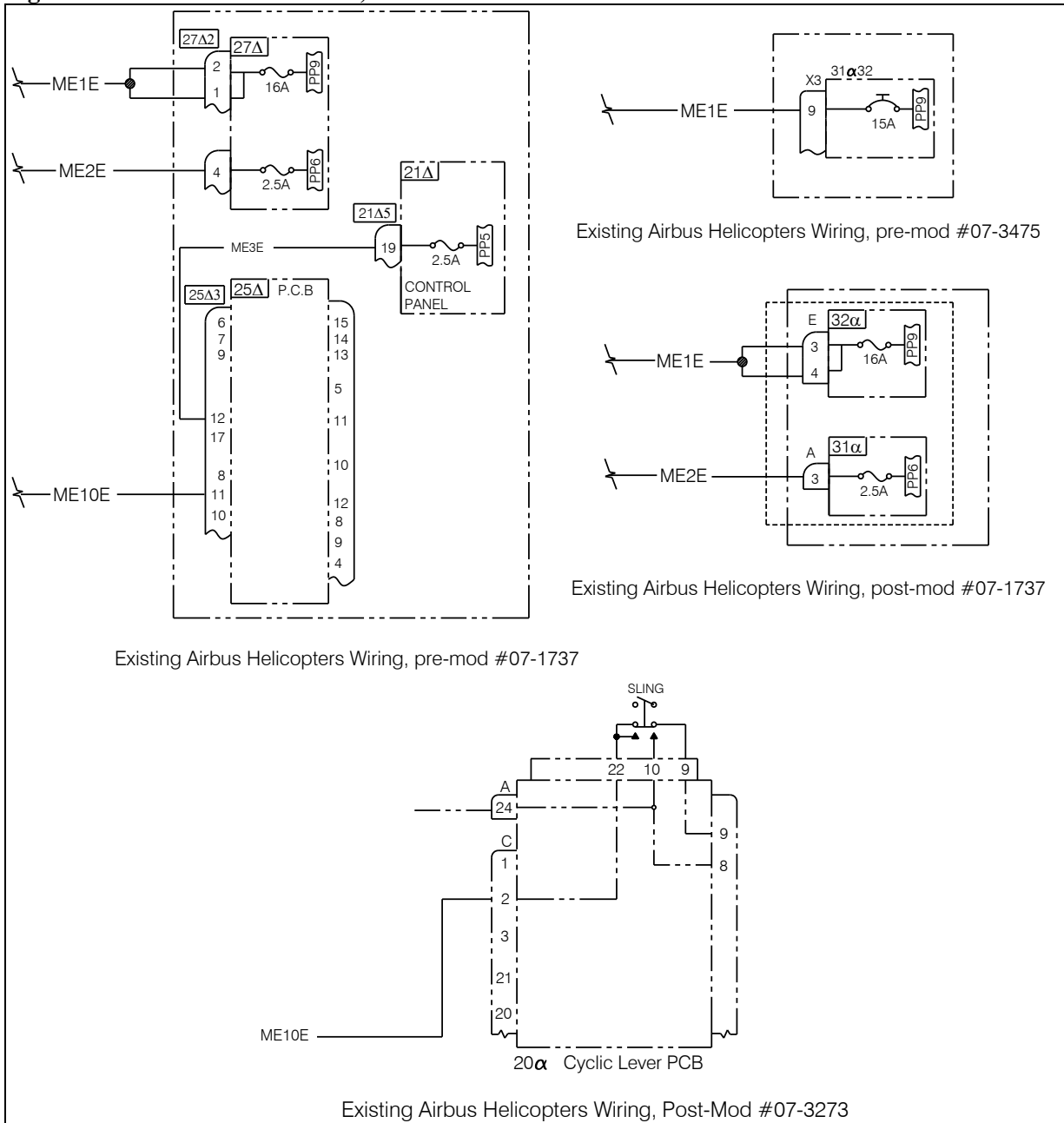
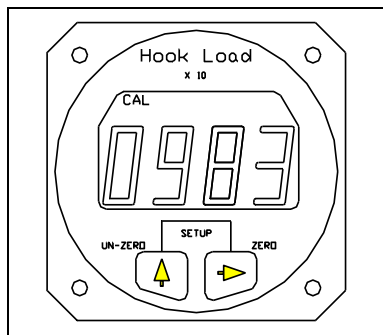


Table 25-3 Notes continued:

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

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 25-6 CAL Code

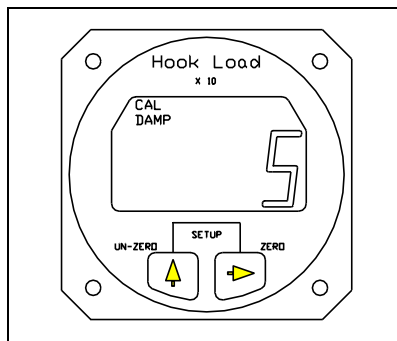


This code should match the code printed on the tag attached to the load cell cable. If this code does not match, contact Onboard Systems for further guidance.

4. **Adjusting dampening level:**

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, 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 25-7 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 lockwire.
2. Remove manual release cover by removing 2 screws.
3. Remove the manual and electrical release cables from the Cargo Hook.
4. Remove the cotter pin (P/N 510-178-00) from the Attach Bolt (P/N 290-332-00).
5. Remove the castellated nut (P/N 510-170-00) from the Attach Bolt.
6. Remove Attach Bolt and all washers.
7. Remove cargo hook from suspension system.

### **Suspension Removal**

1. Disconnect the load cell cable at the bulkhead connector on the belly of the aircraft.
2. Disconnect the electrical release cable at the bulkhead connector on the belly of the aircraft.
3. Disconnect the manual release cable at the quick release fitting.
4. Remove the cotter pin (P/N 510-178-00) from the bolt (P/N 510-451-00).
5. Remove the castellated nut (P/N 510-170-00) from the attach bolt.
6. Remove the attach bolt and all washers.
7. Remove Gimbal Pin (P/N 290-766-00) and remove suspension from aircraft.

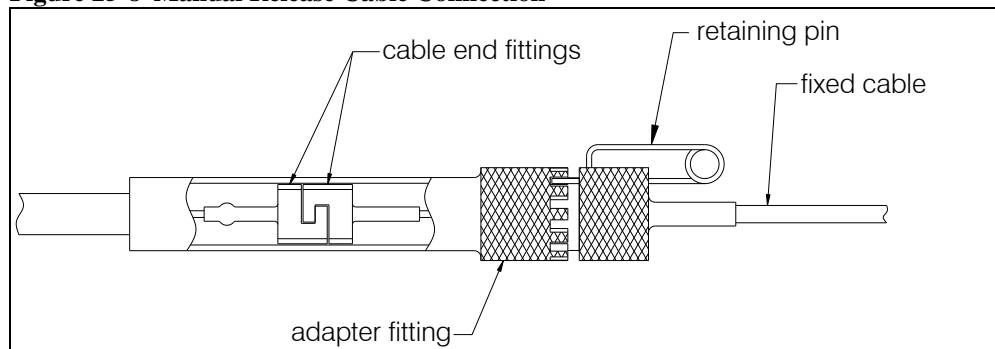


## 25.16 Component Removal continued

### Removable Manual Release Cable (P/N 268-024-02) Removal

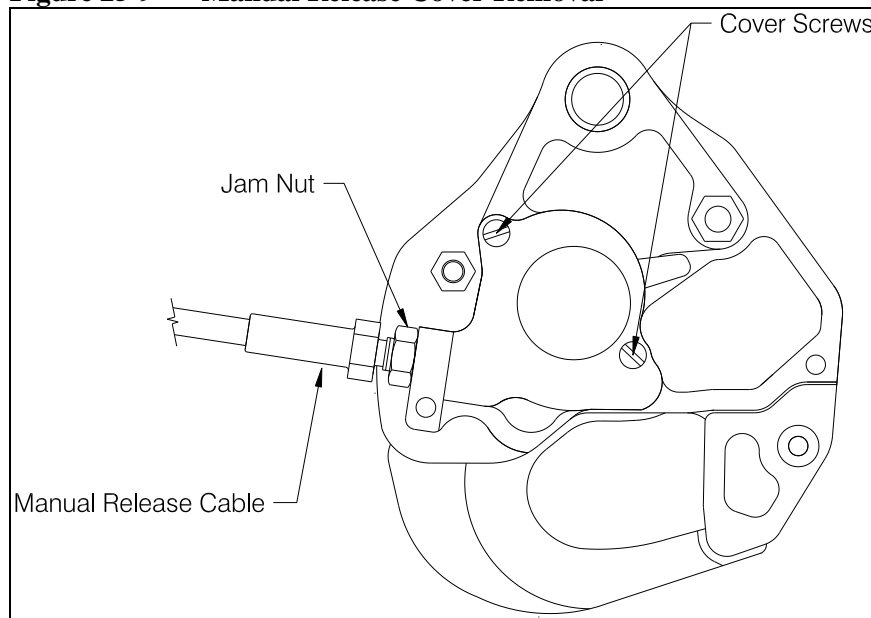
1. Disconnect the cable at the joint with the fixed manual release cable on the belly of the helicopter by disengaging the retaining pin and unthreading the Adapter Fitting.

**Figure 25-8 Manual Release Cable Connection**



2. At the other end of the cable (at the cargo hook) remove the two screws that secure the manual release cover to the hook (see below) and unhook the cable ball end from the fork fitting.

**Figure 25-9 Manual Release Cover Removal**



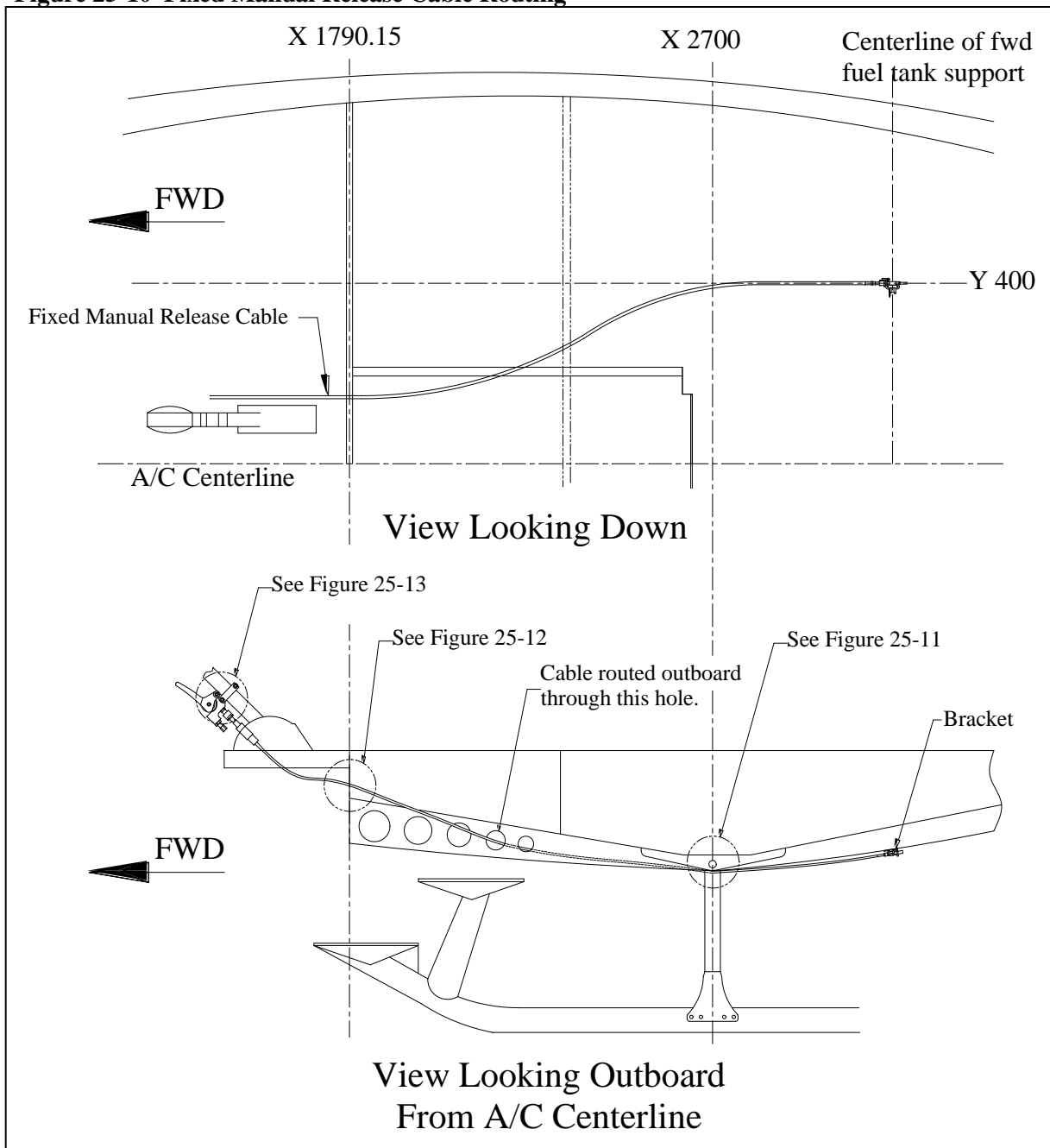
3. Loosen the jam nut and unthread the release cable from the hook.

## 25.16 Component Removal continued

### Fixed Manual Release Cable Assembly (P/N 268-025-00) Removal

The fixed manual release cable is routed from the release lever mounted to the collective stick to the bracket on the belly of the helicopter where it is mated with the removable section of the cable.

Figure 25-10 Fixed Manual Release Cable Routing

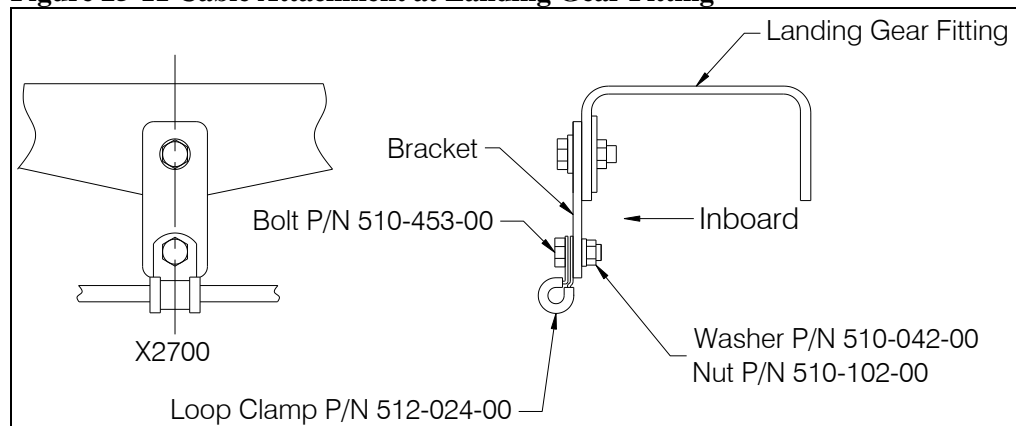


## 25.16 Component Removal continued

### Fixed Manual Release Cable Assembly Removal continued

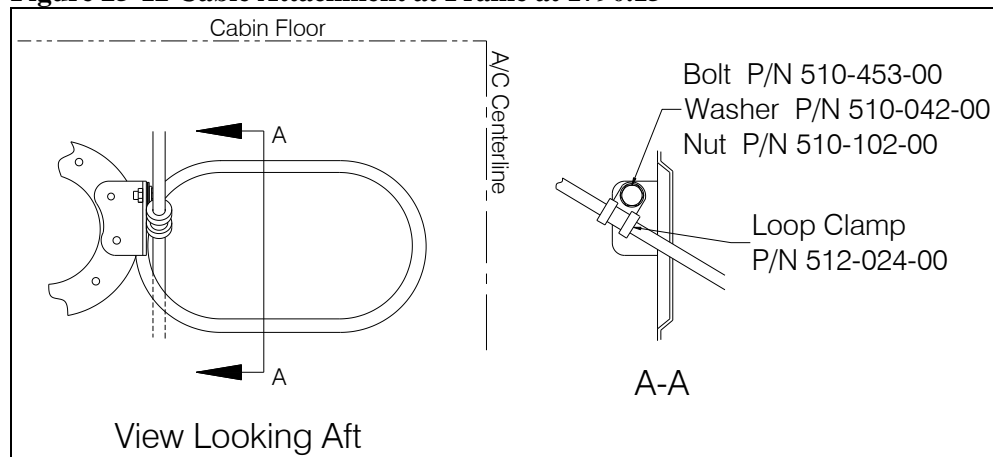
1. Unclip the end of the cable assembly from the bracket on the belly of the helicopter.
2. Remove the loop clamp from the bracket at the RH forward landing gear fitting and remove it from the cable.

**Figure 25-11 Cable Attachment at Landing Gear Fitting**



3. Moving farther forward, remove the cushioned loop clamp at the bracket at frame at X1790.15 and remove it from the cable.

**Figure 25-12 Cable Attachment at Frame at 1790.15**

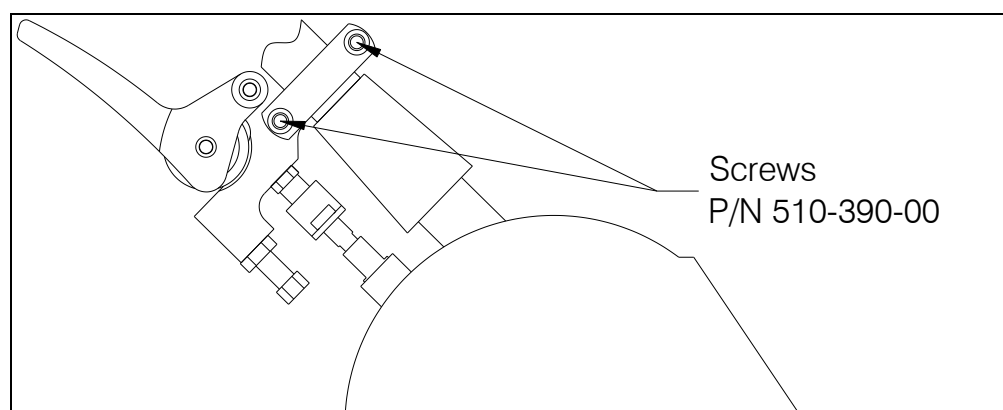


## 25.16 Component Removal continued

### Fixed Manual Release Cable Assembly Removal continued

4. Above the floor and on the collective stick remove the release lever by removing two screws (see below).

**Figure 25-13 Manual Release Lever**

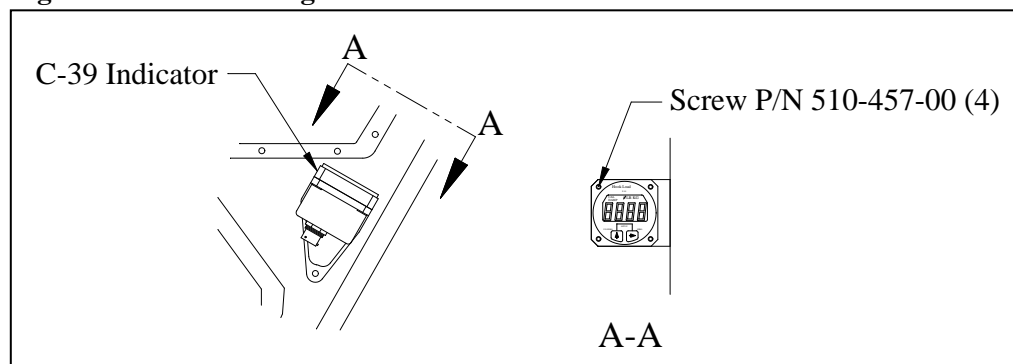


5. Feed the cable forward and then up through the slot in the floor. Note: remove the grommet from the slot to allow the end fitting on the cable to be fed through.

### Load Weigh Indicator Removal

1. Disconnect electrical connector from the back of indicator.
2. Remove the four screws (P/N 510-457-00) that secure the indicator to the mounting bracket.

**Figure 25-14 Load Weigh Indicator**

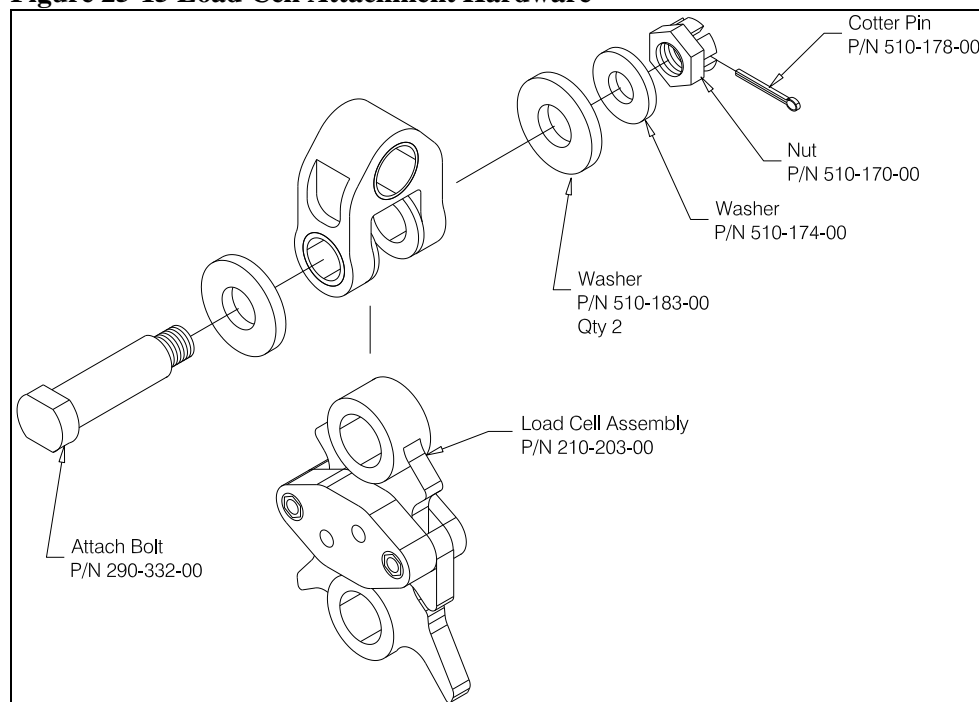


## 25.16 Component Removal continued

### Load Cell Removal

1. Disconnect the electrical connector on the belly of the helicopter.
2. Remove the Cargo Hook per the above instructions.
3. Remove the Load Cell Assembly from the gimbal on the helicopter hard point (not shown) by removing the hardware as illustrated below.

**Figure 25-15 Load Cell Attachment Hardware**

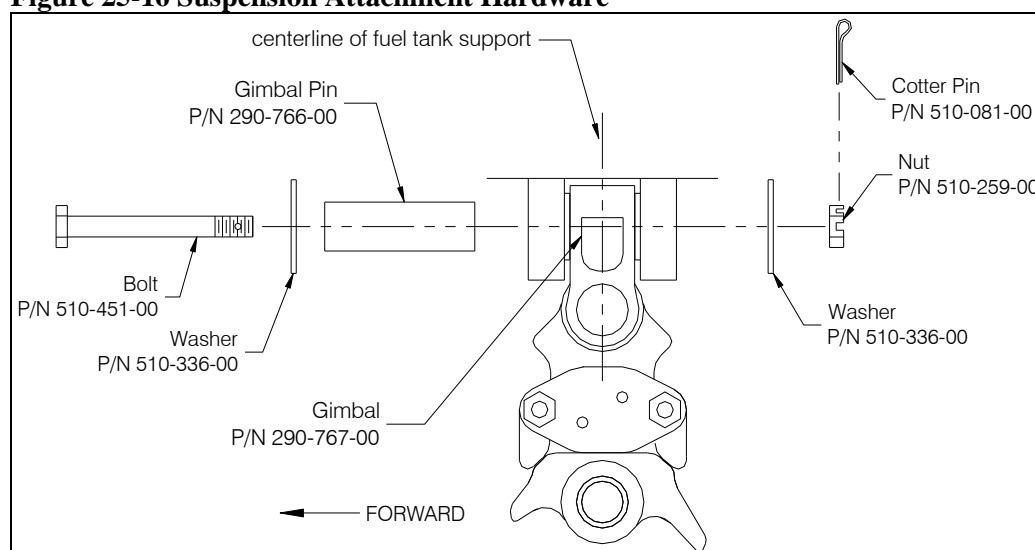


## 25.17 Component Re-installation

### Suspension Re-installation

1. Attach the suspension Gimbal (P/N 290-767-00) to the hard point by installing the Gimbal Pin (P/N 290-766-00), washer (P/N 510-336-00), and bolt (P/N 510-451-00).
2. Install washer (P/N 510-336-00) and castellated nut (P/N 510-259-00) over bolt end.
3. Tighten nut to finger tight then rotate to previous castellation if necessary to insert cotter pin. Install and secure cotter pin P/N 510-081-00.
5. Connect the load cell cable connector to the bulkhead connector on the belly of the aircraft.

**Figure 25-16 Suspension Attachment Hardware**

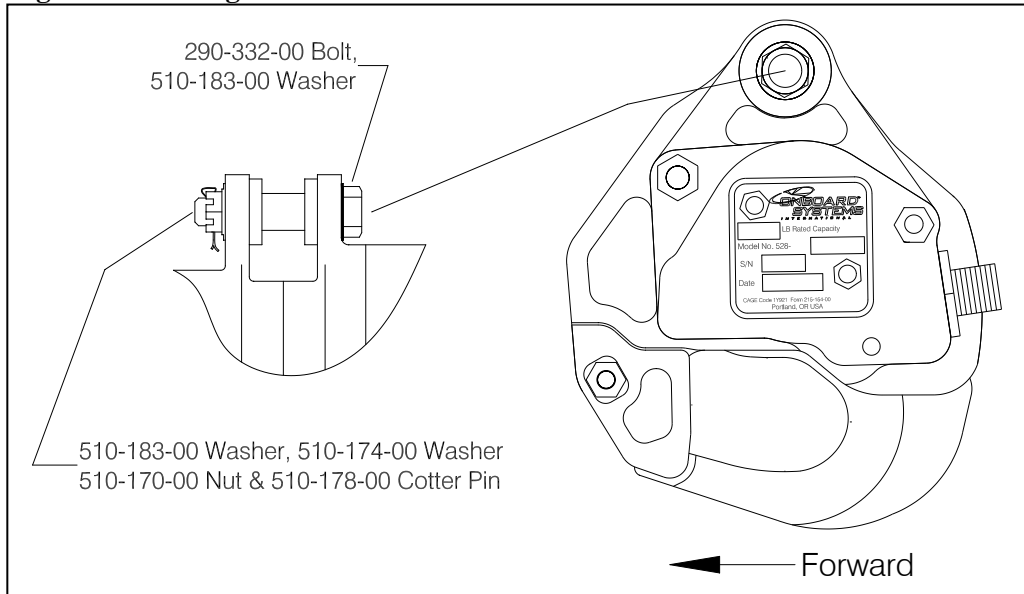


## 25.17 Component Re-installation continued

### Cargo Hook Re-installation

1. Attach the Cargo Hook (P/N 528-023-01) to the suspension system by installing the bolt (P/N 290-332-00) and washer (P/N 510-183-00) as illustrated below.
2. Install washer (P/N 510-183-00) and washer (P/N 510-174-00) over bolt end.
3. Tighten nut P/N 510-170-00 on bolt P/N 290-332-00 to finger tight, then rotate nut to previous castellation if necessary to insert cotter pin. Install and secure cotter pin P/N 510-178-00.
4. Connect the electrical release cable at the bulkhead connector at the belly of the aircraft and the other end to the Cargo Hook.
5. Connect the manual release cable at the quick release fitting and route through quick disconnect clamps on the belly of the aircraft to the cargo hook.

**Figure 25-17 Cargo Hook Attachment Hardware**



**NOTICE**

*The Cargo Hook load beam must point forward when installed.*

## 25.17 Component Re-installation continued

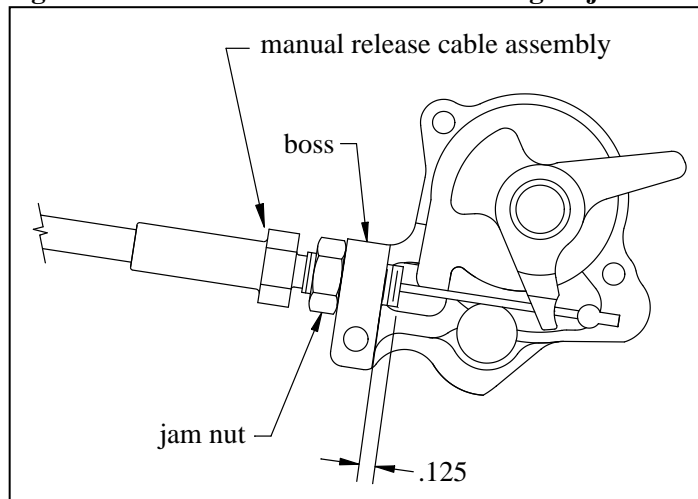
### Removable Manual Release Cable Re-installation

Connect the removable manual release cable to the cargo hook first, per the following instructions:

Remove the manual release cover from the cargo hook (see Figure 25-9). Thread the fitting at the end of the manual release cable into the manual release boss on the hook side plate until the threads protrude approximately .125" beyond the boss and secure with jam nut (as shown in Figure 25-18).

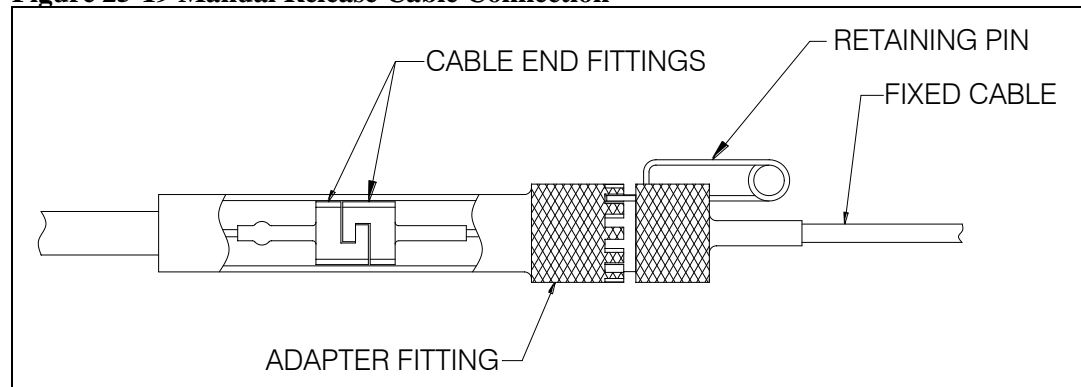
Leave the cover off of the cargo hook until the other end of the release cable is connected, in order to verify proper setting.

**Figure 25-18 Manual Release Cable Fitting Adjustment**



Connect the other end of the release cable to the fixed section of the manual release cable by mating the cable end fittings together as shown below (slide back the Adapter Fitting to access fitting on removable cable). Slide the Adapter Fitting forward and thread it onto the fixed cable fitting, and engage a castellation on the Adapter Fitting with the retaining pin and lock it in place. Snap the Adapter Fitting into the existing clip mounted to the belly of the helicopter.

**Figure 25-19 Manual Release Cable Connection**





## 25.17 Component Re-installation continued

### Manual Release Cable Re-installation continued

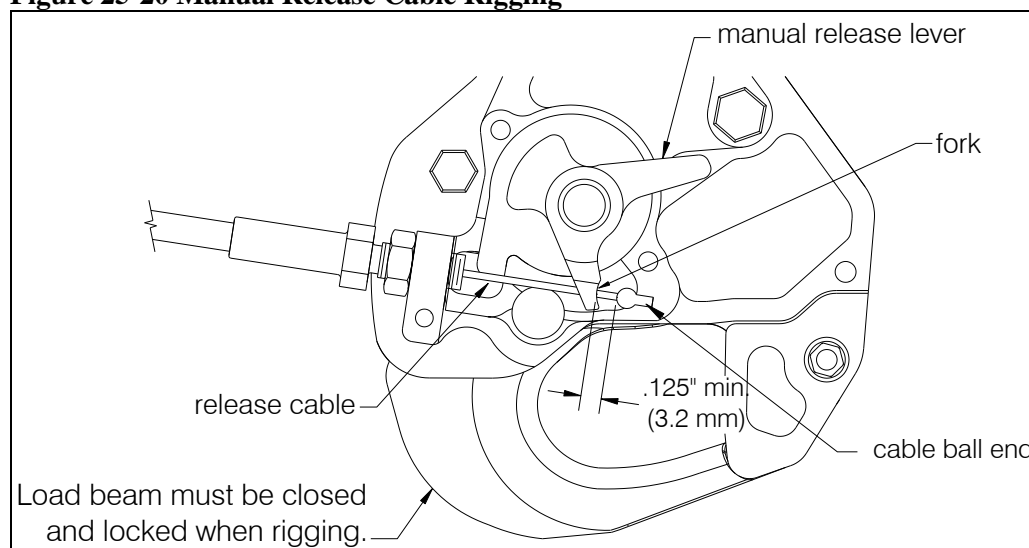
#### Verify proper setting at the hook:

Place the cable ball end fitting into the hook manual release fork fitting as illustrated in Figure 25-20. Move the manual release lever in the clockwise direction until it is against the cam stop. Measure the cable ball end free play with the manual release handle in the cockpit in the non-release position. The gap must be a minimum of .125" (see below).



*Manual release cable rigging must be done with the cargo hook in the closed and locked position.*

**Figure 25-20 Manual Release Cable Rigging**



If the gap measures less than .125", make adjustments at the hook only. This is done by disconnecting the cable at the interface with the fixed manual release cable (Figure 25-19), loosening the jam nut, and rotating the cable in the required direction.

## **25.17 Component Re-installation** continued

### **Fixed Manual Release Cable Assembly Re-installation**

1. Feed the end of the cable through the slot in the floor and re-install grommet.
2. Install the release lever onto the collective stick with the two screws (P/N 510-390-00).
3. Install the loop clamp around the release cable at the bracket at frame at X1790.15 with hardware as shown in Figure 25-12.
4. Install the loop clamp around the release cable at the Attachment Bracket with hardware as shown in Figure 25-11.
5. Clip the end of the cable assembly onto the bracket on the belly of the helicopter.

### **Load Weigh Indicator Re-installation**

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

### **Load Cell Re-installation**

1. Attach the load cell assembly (P/N 210-203-00) to the gimbal fitting on the suspension frame with hardware as illustrated in Figure 25-15.
2. Connect the load cell electrical cable connector on the load cell cable to the connector on the belly of the helicopter.

## 25.18 General Procedural Instructions-Testing

After re-installation of the cargo hook, manual release cable, electrical release harness or any other major component 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 mechanism should operate smoothly and the Cargo Hook must release. Reset the hook by hand after the release. If the hook does not release or relatch, do not use the unit until the difficulty is resolved.

# CAUTION

*The release 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.*

2. Activate the release handle located between the seats to test the cargo hook manual release mechanism. The mechanism should operate smoothly and the Cargo Hook must release. Reset the hook by hand after release. If the hook does not release or relatch do not use the unit until the difficulty is resolved.
3. Swing the installed Cargo Hook to ensure that the manual release cable assembly and the electrical release cable have enough slack to allow full swing of the suspension assembly without straining or damaging the cables. The cables must not be the stops that prevent the Cargo Hook from swinging freely in all directions.