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THE LATEST REVISION OF THIS MANUAL**

**Instructions for  
Continued Airworthiness**

**Cargo Hook Suspension System  
For the  
Bell 206L & 407 Series**

**With  
Talon LC Keeperless  
Cargo Hook**

**System Part Numbers  
200-258-01, W/O Load Weigh  
200-259-02, W/ Load Weigh  
200-259-03, W/Load Weigh and 5V Lighting**

**STC SR00898SE**



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

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## Record of Revisions

<i>Revision</i>	<i>Date</i>	<i>Page(s)</i>	<i>Reason for Revision</i>
0	07/22/11	All	Initial Release
1	07/22/13	Section 5 Pages 6, 7, and 9	Changed P/N 290-371-01 to 290-371-02. Added penetrant inspection to pillow blocks and main beam. Updated definition of “external load operations”.
2	12/03/13	Section 0 page 2, Section 5 page 1, Section 25 pages 11 – 15	Updated Section 0.19 to reference notification service for documentation updates, standardized definition of “external load operations”, changed tightening instructions for nut on pin load cell and attach bolt, clarified manual release rigging instructions.
3	02/21/14	Section 5 Pages 6, 7	Simplified part descriptions.
4	07/11/14	Section 5 Page 5	Clarified inspection interval for suspension system.
5	08/24/15	Section 5 Pages 6 – 8 Section 25 Pages 2, 4, 12, 14	Added Load Cell P/N 210-301-01, added reference to Cargo Hook CMM for storage instructions.
6	03/08/18	Section 5 Pages 7, 8	Removed requirements for NDT. Changed attach bolt and pin load cell diameter limit to .495”.
7	11/17/20	Section 5 Page 5	Added instruction to return the pin load cell to the factory for inspection and calibration at 5 year/1000 hour inspection
8	08/27/21	Section 5 Pages 1, 7	Added instruction: “There is no maintenance to be performed on the C-39 load weigh indicator. Do not open the enclosure, if repair is needed return it to the factory”.  Listed link-style Load Cell Assembly (P/N 210-179-00 or P/N 210-179-01) as optional.

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# Section 0

## Introduction

### 0.4 Scope

The following information is necessary to carry out the service, maintenance, and inspection of the Cargo Hook Suspension System P/N 200-258-01 and P/N 200-259-02.

### 0.5 Purpose

The purpose of this Instructions for Continued Airworthiness (ICA) manual is to provide the information necessary to inspect, service and maintain the P/N 200-258-01 and P/N 200-259-02 Cargo Hook Suspension Systems in an airworthy condition.

### 0.6 Arrangement

This manual contains instructions for the maintenance, inspection, and operation of the Cargo Hook Suspension System P/N 200-258-01 and P/N 200-259-02 on Bell Model 206L and 407 series helicopters.

The manual is arranged in the general order that maintenance personnel would use to maintain and operate the Cargo Hook Kit 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 Cargo Hook Suspension Systems P/N 200-258-01 and 200-259-02 on the following Bell helicopters:

Model	Serial Numbers
206L	45001-45153
206L-1	45154 and on
206L-3	51001 and on
206L-4	52001 and on
407	All

The system replaces the Bell 206-706-341-101, -105, and -109 Auxiliary Equipment Kit- Cargo Hook. It must be installed with the Bell part number 206-706-341-7, -9, -103, -111, -113, -117, -123, or -125 Auxiliary Equipment Kit- Cargo Hook Provisions or Onboard Systems P/N 200-328-00 Fixed Provisions Kit.

## 0.9 Abbreviations

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

## 0.12 Precautions

The following definitions apply to precaution flags 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](http://www.onboardsystems.com).

Onboard Systems offers a free notification service via fax or e-mail for product alerts and documentation updates. By registering Onboard Systems products on the web site, we will be able to contact you if a service bulletin is issued, or if the documentation is updated.

Notices can be chosen to be received on an immediate, weekly, or monthly schedule via fax, email or both methods. There is no charge for this service. Please visit the Onboard Systems web site at [www.onboardsystems.com/notify.php](http://www.onboardsystems.com/notify.php) to get started.

# *Section 4*

## **Airworthiness Limitations**

### **4.2 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.

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## Section 5

# Inspection and Overhaul Schedule

### 5.1 Cargo Hook Suspension System Inspection

The scheduled inspection intervals noted below are maximums and are not to be exceeded. 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.

---

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

---

## NOTICE

*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. Press the Cargo Release button to ensure the cargo hook electrical release system is operating correctly. With no load on it, the cargo hook must release. Reset the cargo hook by hand after release.

## CAUTION

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

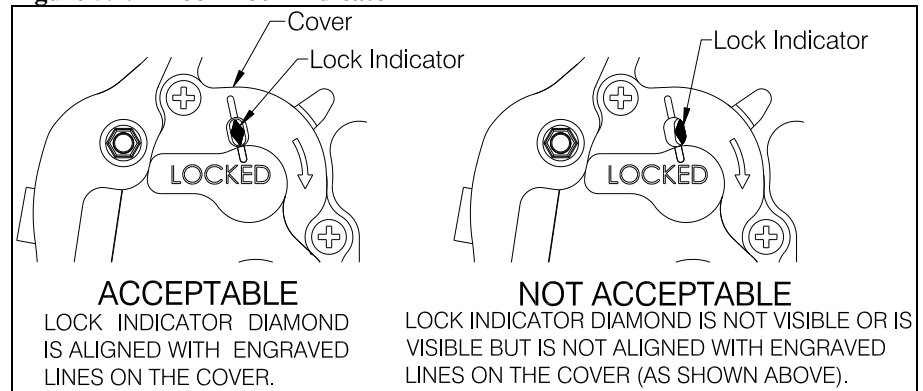
2. Check the manual release system by pulling the release lever in the cockpit. With no load on it, the cargo hook must release. Reset the cargo hook by hand after release. Verify that the hook lock indicator on the side of the hook returns to the fully locked position.

## CAUTION

*In the fully locked position the hook lock indicator must align with the lines on the manual release cover (see Figure 5.1.1).*

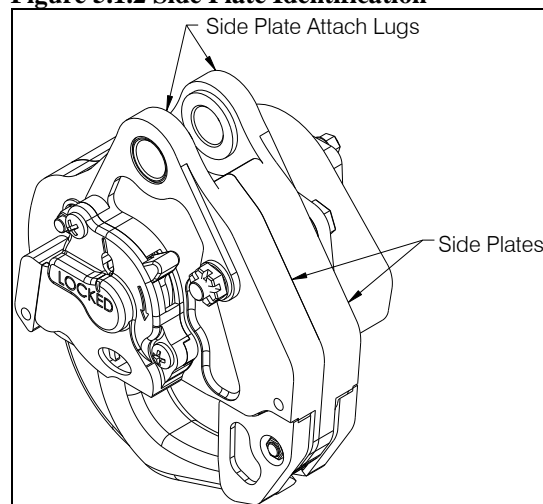
## 5.1 Cargo Hook Suspension System Inspection continued

**Figure 5.1.1 Hook Lock Indicator**



3. Visually inspect for corrosion on the exterior of cargo hook and suspension system components (refer to Table 5.1.2 for limits for suspension 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 component maintenance manual.

**Figure 5.1.2 Side Plate Identification**

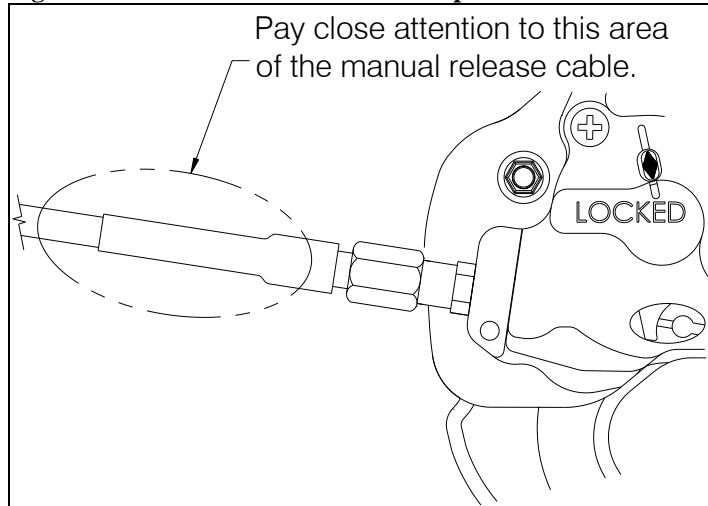


4. Move the cargo hook and the suspension system throughout their full ranges of motion and observe the manual and electrical release cables to ensure that they have enough slack. The cables must not be the stops that prevent the cargo hook or suspension from moving freely in all directions.
5. Move the cargo hook carriage back and forth on the beam to ensure that it rolls freely and that there are no obstructions within the beam.
6. Move all suspension system components at their pivot points to verify that they rotate freely.
7. Visually inspect for presence and security of fasteners and electrical connections.
8. Visually inspect the external electrical release harness and load weigh harness (if installed) for damage and security.

## 5.1 Cargo Hook Suspension System Inspection continued

9. 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 5.1.3). Inspect for splitting of the outer black conduit in this area and separation of the conduit from the steel end fitting.

**Figure 5.1.3 Manual Release Cable Inspection**

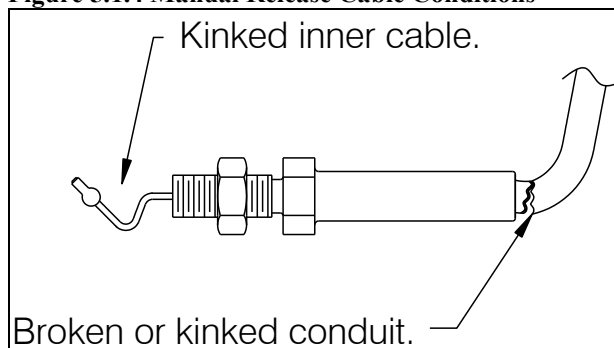


10. Remove the manual release cover from the cargo hook and inspect the visible section of the inner cable for kinks or frays.



*Manual release cables are wearable items and must be replaced as condition requires. Broken or kinked conduit, inner cable kinks (ref Figure 5.1.4), frays, or sticky operation are each cause for immediate replacement.*

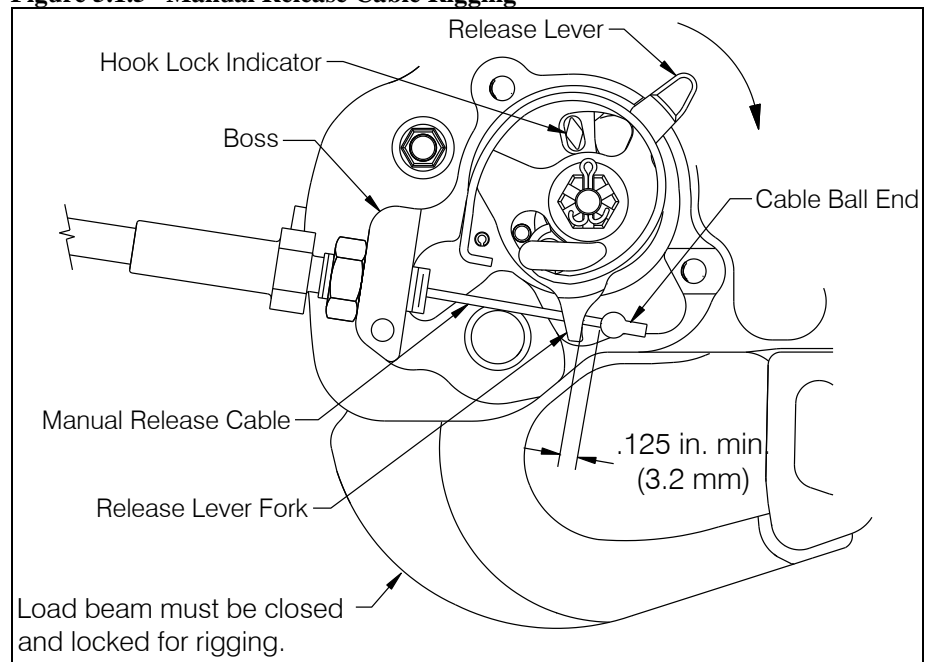
**Figure 5.1.4 Manual Release Cable Conditions**



## 5.1 Cargo Hook Suspension System Inspection continued

11. Check the manual release cable rigging per the following. With the cargo hook in the closed and locked position, rotate the release lever in the clockwise direction to remove free play (the free play is taken up when the hook lock indicator begins to move) and measure the gap between the cable ball end and the release lever fork with the manual release handle in the cockpit in the non-release position. There must be a minimum of .125 inches (3.2 mm) between the cable ball end and fork fitting as shown in Figure 5.1.5. The maximum amount of free play is limited by the manual release cover, i.e. – the ball end must fit inside the manual release cover when it is installed.
12. If necessary adjust the manual release cable system to obtain a minimum of .125 inches (3.2 mm). Some adjustment can be made at the cargo hook by loosening the jam nut and turning the manual release cable or cargo hook in the required direction and re-tightening the jam nut. Ensure the manual release cable fitting threads maintain full thread engagement with the cargo hook side plate boss (i.e.- the end of the threads should not be recessed within the boss). Tighten jam nut.
13. Re-install the manual release cover with the two screws.

**Figure 5.1.5 Manual Release Cable Rigging**





## 5.1 Cargo Hook Suspension System Inspection continued

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Every 5 years or 1000 hours of external load operations, whichever comes first, remove the suspension system from the helicopter per section 25.16, and disassemble per the following instructions and inspect. Refer to section 5.2 for the overhaul schedule for the cargo hook. Refer to Figure 5.1.6 for part identification.

---

1. With the Cargo Hook Suspension System removed from the aircraft separate the Cargo Hook from the Beam Assembly at the Carriage (21).
2. Separate the two Beam Halves (6) by removing the fasteners (16, 17, and 18).
3. Remove the Carriage from the Beam and separate the bearings (22), shafts (19), and the thrust buttons (23) from the Carriage (21).
4. Remove the bearings (7) from the pillow block (9) by conventional means.

**If the load weigh system is installed return the Load Cell Assembly (25) 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.**

## 5.1 Cargo Hook Suspension System Inspection continued

Figure 5.1.6 Cargo Hook Suspension System Parts

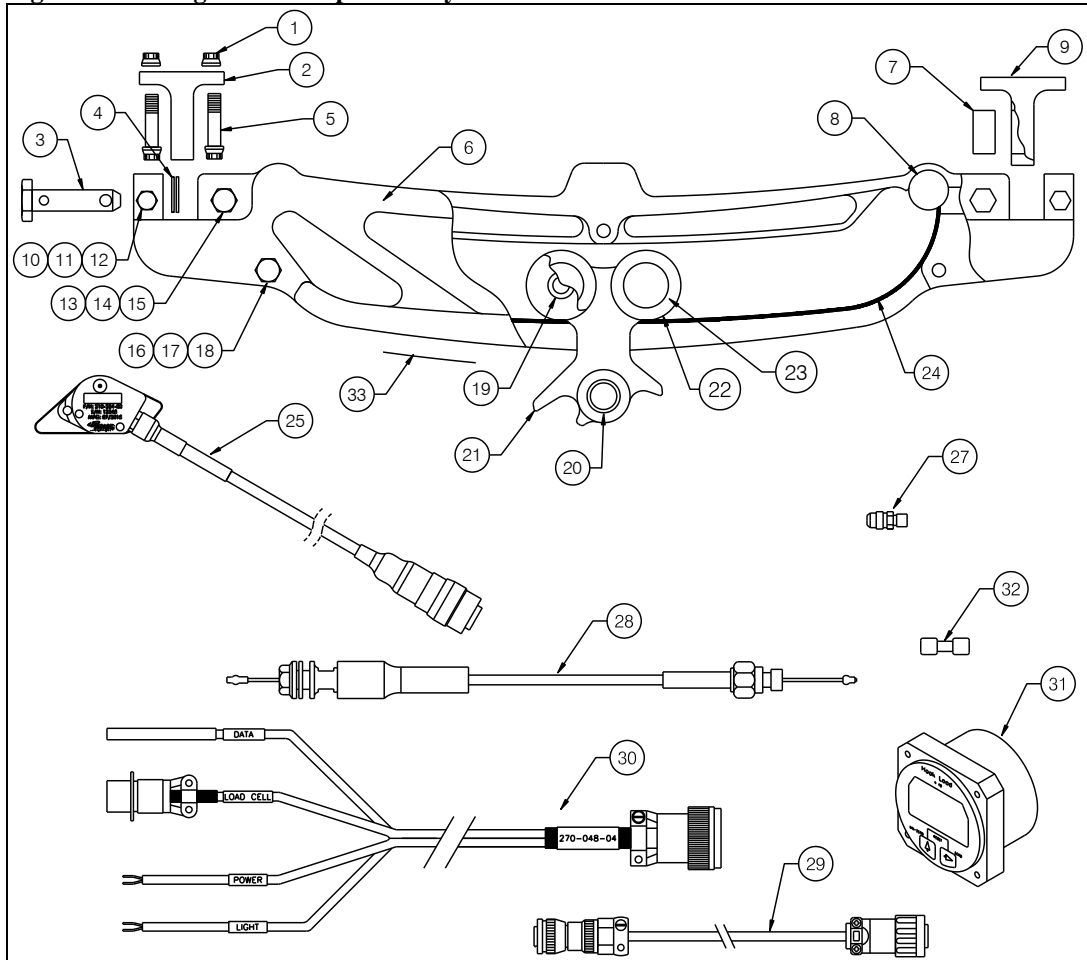


Table 5.1.1 Cargo Hook Suspension System Parts

ITEM	PART NO.	DESCRIPTION	QTY
1	510-234-00	Nut	4
2	232-030-02	Pillow Block Assembly, with bearing	2
3	290-370-00	Trunnion Pin	2
4	290-374-00	Thrust Spacers	10
5	510-235-00	Bolt	4
6	290-368-01	Beam Half	2
7	517-012-00	Bearing	2
8	290-372-00	Bumper	4
9	290-371-02	Pillow Block, W/O bearing	2
10	510-229-00	Bolt	2
11	510-095-00	Washer	2
12	510-102-00	Nut	2
13	510-114-00	Nut	2
14	510-100-00	Washer	2
15	510-230-00	Bolt	2

## 5.1 Cargo Hook Suspension System Inspection continued

**Table 5.1.1 Cargo Hook Suspension System Parts** continued

ITEM	PART NO.	DESCRIPTION	QTY
16	510-231-00	Bolt	3
17	510-100-00	Washer	3
18	510-114-00	Nut	3
19	290-366-00	Shaft	2
20	290-364-00	Carriage Bushing	1
21	290-369-00	Carriage	1
22	517-011-00	Bearing	4
23	290-367-00	Thrust Button	4
24	290-373-00	Wear Plate	2
25	210-301-01 <sup>2,3</sup>	Pin Load Cell Assembly	1
26 <sup>4</sup>	528-029-00	Cargo Hook	1
27	290-331-00	Release Fitting	1
28	268-004-01	Manual Release Cable	1
29	270-074-00	Electrical Release Cable	1
30	270-048-04	Load Weigh Harness Assembly	1
31 <sup>1</sup>	210-095-02	C-39 Indicator (with 5V Backlight)	1
	210-095-00	C-39 Indicator (with 28V Backlight)	1
32	600-006-00	Release Cable Disconnect	1
33	215-105-00	External Load Limit Placard	1

<sup>1</sup>P/N 210-095-02 is optional, it is identical to P/N 210-095-00 except it has 5V backlight.

<sup>2</sup>If load weigh system is NOT installed, the Pin Load Cell Assembly is replaced by Attach Bolt (P/N 290-332-00). Pin Load Cell Assembly P/N 210-301-01 (shown) supersedes P/N 210-226-01; these P/Ns are interchangeable. Ref Figure 25.17.5 for cargo hook attachment hardware with the pin load cell.

<sup>3</sup>A link-style Load Cell Assembly (P/N 210-179-00 or P/N 210-179-01) is also eligible for installation in the load weigh system (in lieu of the pin load cell). It replaces the Carriage (21) in Figure 5.1.6 (ref Figure 25.17.4 for cargo hook attachment hardware with the link style load cell). This Load Cell Assembly can be installed on a P/N 200-258-01 configuration using load weigh system upgrade kit P/N 200-245-00.

<sup>4</sup>Cargo Hook and its attach hardware not shown, reference figures 25.17.4 and 25.17.5 for hardware.

## 5.1 Cargo Hook Suspension System Inspection continued

Carefully inspect the detail parts in accordance with the instructions in Table 5.1.2. Inspect the parts in a clean, well-lighted room. Inspect bearings and the shafts they run on for wear and corrosion.

**Table 5.1.2 Cargo Hook Suspension System Inspection**

<b>Part</b>	<b>Visually inspect for</b>	<b>Remedy</b>
Pillow Blocks (2)	Dents, nicks, cracks, gouges, corrosion or scratches	Repair dents, gouges, nicks, scratches and corrosion if less than .030" deep, blend out at a ratio of 50:1, length to depth, and apply Alodine and zinc chromate primer. Replace if otherwise damaged.
Beam Half (6)	Dents, nicks, cracks, gouges, corrosion or scratches	Repair dents, gouges, nicks, scratches and corrosion if less than .030" deep, blend out at a ratio of 50:1, length to depth, replace if otherwise damaged
Wear Plate (24)	Dents, nicks, cracks, gouges, corrosion or scratches	Repair dents, gouges, nicks, scratches and corrosion if less than .030" deep, blend out at a ratio of 50:1, length to depth, replace if otherwise damaged
Trunnion Pin (3)	Dents, nicks, cracks, gouges, corrosion or scratches	Dents, nicks, cracks, gouges, corrosion or scratches are cause for rejection. Max permissible bushing clearances are .015" on diameter.
Carriage (21)	Dents, nicks, cracks, gouges corrosion or scratches	Repair dents, gouges, nicks, scratches and corrosion if less than .030" deep, blend out at a ratio of 50:1, length to depth, replace if otherwise damaged
Carriage Shafts (19)	Dents, nicks, cracks, gouges corrosion or scratches	Dents, nicks, cracks, gouges, corrosion or scratches are cause for rejection.
Thrust Buttons (23)	Nicks, cracks, scratches or wear	Replace if flange thickness is less than .050".
Pin Load Cell or Attach Bolt (25)	Wear on outside diameter.	Replace if outside diameter is less than .495".
Thrust Spacers (4)	Nicks, cracks, scratches or wear	Replace.
Manual Release Cable (28)	Roughness, binding, looseness, or corrosion	Replace.
Electrical Cable (29)	Damaged cable. Connectors for loose, missing, or mutilated contact pins, cracked case, or worn insulator.	Replace.
Bearings (7) (22)	Roughness, binding, looseness, or corrosion	Replace.
Bushings (20)	Roughness, binding, looseness, or corrosion	Replace.
Electrical wiring (30)	Deterioration	Replace.

Upon completion of the inspection, re-assemble the suspension system per the following:

1. Assemble the two shafts (19), bearings (22) and the thrust buttons (21) to the carriage (21).
2. Install the wear plate (24) and the two bumpers (8) within the beam half (6).
3. Place beam halves together and secure with fasteners, use standard AC43.13 torque values.

Re-install the suspension system on the helicopter per section 25.17.

## 5.2 Cargo Hook Overhaul Schedule

Time Between Overhaul (TBO): 5 years or 1000 hours of external load operations (\*), 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 the cargo hook per Component Maintenance Manual 122-017-00. Contact Onboard Systems for guidance to locate authorized overhaul facilities.

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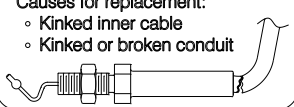
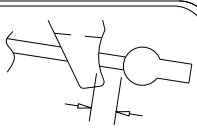
# Section 11

## Placards and Markings

### 11.1 Placards

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

Table 11.1 Cargo Hook Suspension System Placards

Placard part number and appearance	Location
<p>P/N 215-010-00</p> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 10px auto;"> <p>ELECTRONIC WEIGHING SYSTEM</p> </div>	<p>Located next to the power switch and circuit breaker.</p> <p><b>Note:</b> This placard is included only with the 200-259-02 kit.</p>
<p>P/N 215-012-00</p> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 10px auto;"> <p>TURN THE WEIGHING SYSTEM OFF WHEN NAVIGATION EQUIPMENT IN USE. NO AIRCRAFT OPERATION SHOULD BE PREDICATED ON THE READING OF THE ONBOARD WEIGHING SYSTEM</p> </div>	<p>Located next to the load weigh indicator.</p> <p><b>Note:</b> This placard is included only with the 200-259-02 kit.</p>
<p>P/N 215-105-00</p> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 10px auto;"> <p>EXTERNAL LOAD LIMIT    407 2650 LBS    206L 2000 LBS</p> </div>	<p>Located on underside of the cargo hook suspension beam.</p>
<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p><b>⚠ WARNING</b></p> <ul style="list-style-type: none"> <li>◦ Route to avoid strain</li> <li>◦ Rig with proper free play</li> <li>◦ Replace as condition requires (See reverse)</li> <li>◦ See manual for complete instructions</li> </ul> <p style="text-align: center;">One Side</p> </div> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p><b>⚠ WARNING</b></p> <p>Causes for replacement:</p> <ul style="list-style-type: none"> <li>◦ Kinked inner cable</li> <li>◦ Kinked or broken conduit</li> </ul>  <p style="text-align: center;">Opposite Side</p> </div> </div>	<p>Located on the manual release cable, near the cargo hook.</p>
<div style="border: 1px solid black; padding: 10px;"> <div style="display: flex; align-items: flex-start;"> <div style="flex: 1;"> <p><b>⚠ WARNING</b></p> <p>Inadvertent loss of load can result from improper cable adjustment. See manual for complete instructions.</p> </div> <div style="flex: 1; text-align: center;">  <p>.13 in / 3.2 mm min</p> </div> </div> </div>	<p>Located on the underside of the cargo hook.</p>

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# Section 12

## Servicing

### 12.2 Lubrication Information

Lubrication of cargo hook suspension system is required every 500 hours of external load operations. To obtain maximum life under severe duty conditions such as logging or seismic work, it is recommended to lubricate the suspension system more frequently as described below in Table 12.1.

Figure 12.1 Overview of Lubrication Points

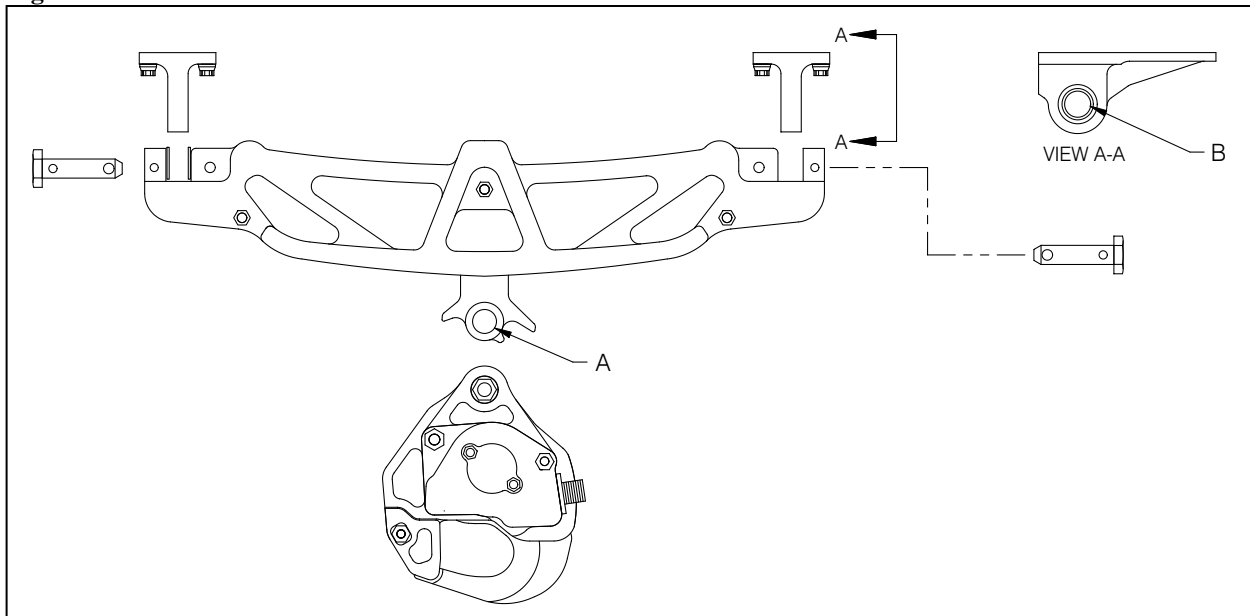


Table 12.1 Lubrication Location and Frequency

Location – Refer to Fig. 12.1	Description	Frequency	Types of Lubricant
A	Lubricate ID of bushing.	250 hours	AeroShell 17, MIL-G-21164 or Mobilgrease 28, MIL-G-81322
B	Lubricate ID of spherical bearings, 2 places.	250 hours	

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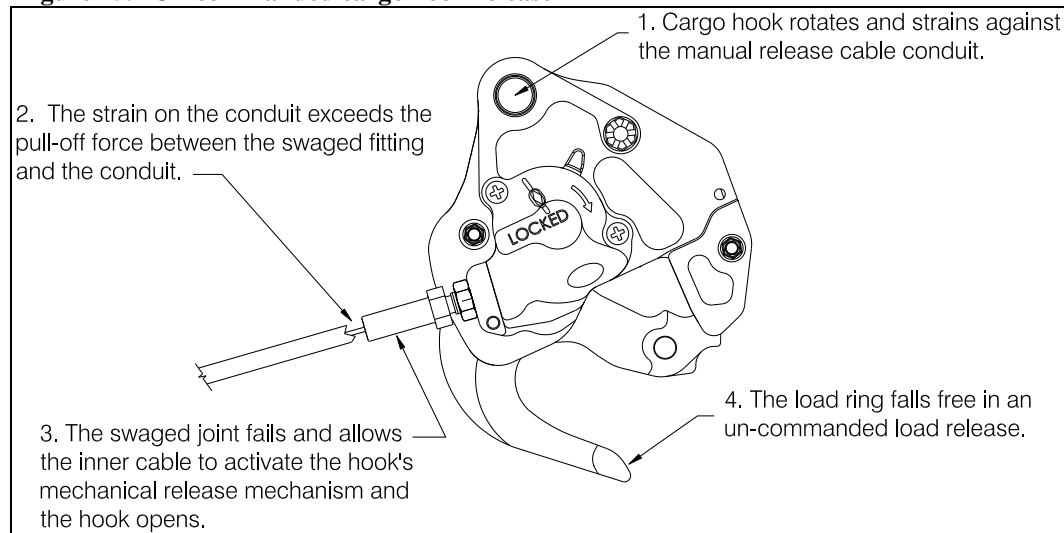
## Section 25

# 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.

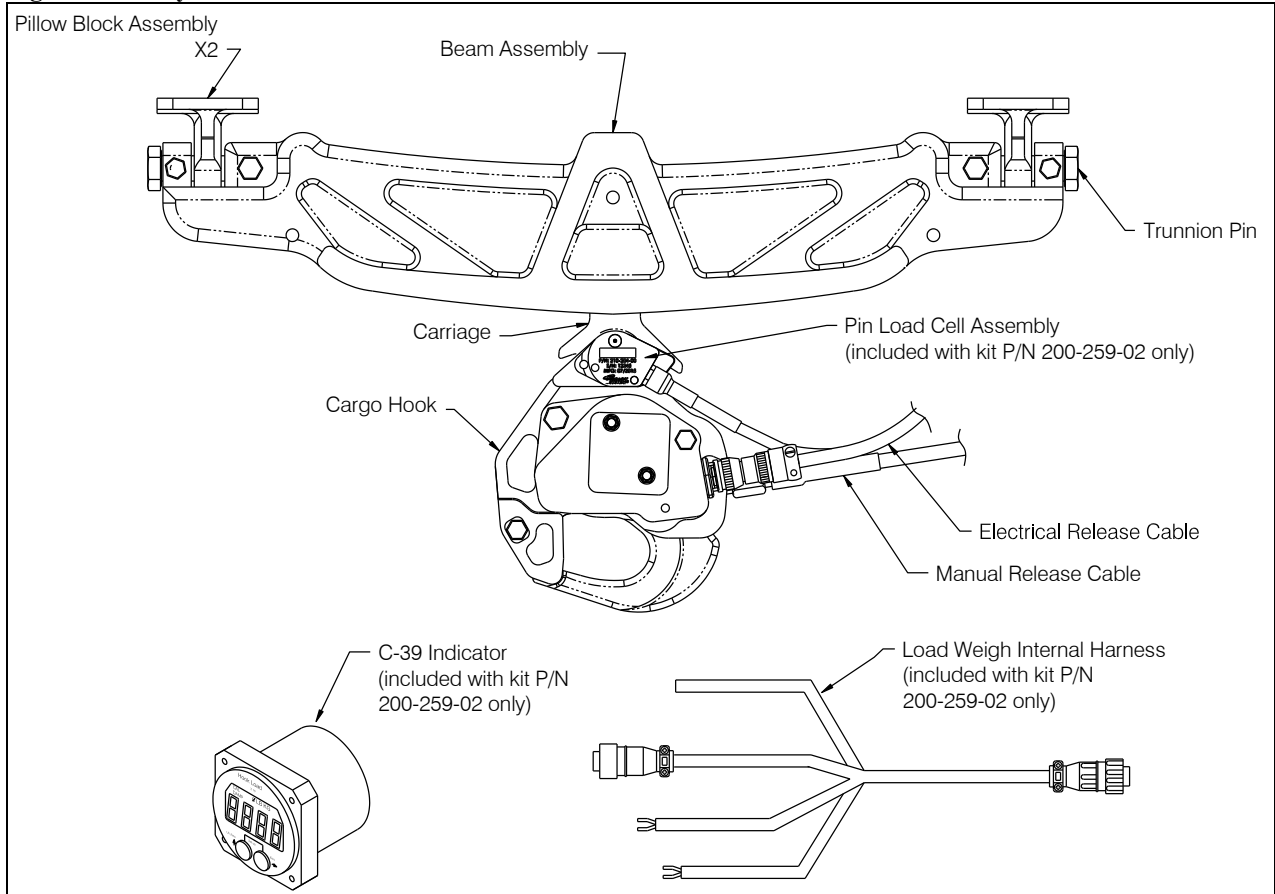
**Table 25.1.1 Cargo Hook Connector**

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

## 25.2 Description

Cargo hook suspension system kit P/N 200-258-01 and P/N 200-259-02 consist of the installation of the following primary elements.

Figure 25.2.1 System Overview

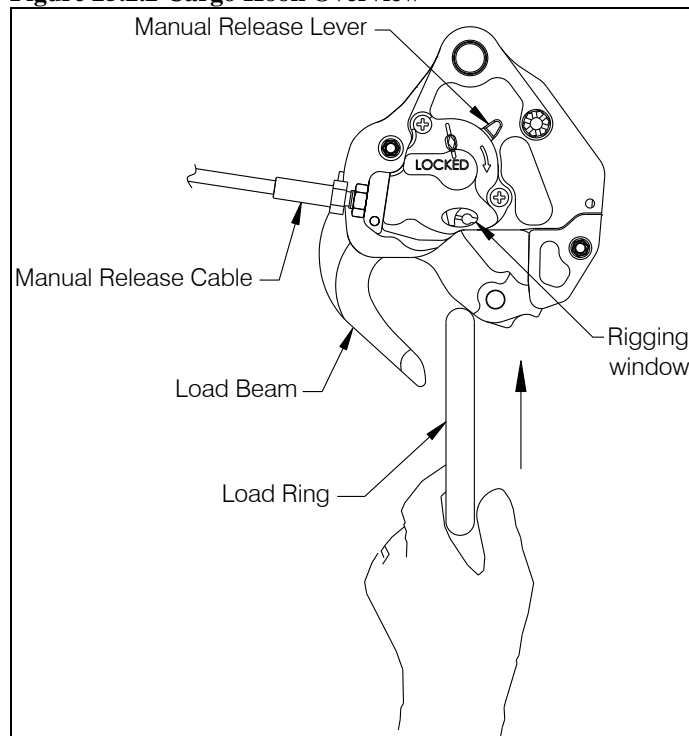


## 25.2 Description continued

The suspension system consists of the beam assembly, pillow block assemblies, and associated hardware. The pillow block assemblies are bolted to hard points at the belly of the helicopter and support and provide a pivot point for the beam assembly. The beam assembly supports the cargo hook and load cell and provides a carriage to allow them to move in the side to side direction in response to a swinging load.

The cargo hook is attached to the beam assembly and interfaces with the existing fixed provisions on the helicopter through an electrical harness and a manual release cable. A load is attached to the cargo hook by passing a cargo sling ring into the throat of the load beam and pushing the ring against the upper portion of the load beam throat, which will initiate the hook to close. In the closed position, a latch engages the load beam and latches it in this position. A load release can be initiated by three different methods. Normal release is achieved by pilot actuation of a push-button switch in the cockpit. When the push-button switch is pressed, it energizes a solenoid in the cargo hook, and the solenoid opens the latch in the internal mechanism. In the event of an electrical failure, load release can be achieved by operating the manual release cable. The release cable actuates the internal mechanism of the cargo hook to unlatch the load beam. Ground personnel can also release the load by actuating a lever located on the side of the cargo hook.

**Figure 25.2.2 Cargo Hook Overview**



The load weigh system is comprised of a C-39 Indicator mounted within the cockpit connected by an electrical harness (item 12 in Figure 25-2) to the pin load cell at the cargo hook. The C-39 Indicator provides the pilot with an indication of the magnitude of the load being lifted.

## 25.5 Component Weights

The weights and locations of the Cargo Hook Kit components are listed below.

**Table 25.5.1 Component Weights**

Item	Weight	Location (applicable to all models)
Suspension system with hook, without Load Cell	12.0 lbs (5.4 kgs)	FS 121.0 (3073 mm)
Suspension system with hook, with Load Cell	12.5 lbs (5.7 kgs)	FS 121.0 (3073 mm)
C-39 Indicator	0.43 lbs (0.2 kgs)	FS 44.0 (1118 mm)
Wiring Harness	1.10 lbs (0.5 kgs)	FS 82.0 (2083 mm)

## 25.12 Storage Instructions

Refer to the Component Maintenance Manual (CMM) 122-017-00 for storage instructions for the cargo hook. Clean the exterior suspension 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 Trouble Shooting

**Table 25.15.1 Trouble Shooting**

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
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 does not operate electrically or manually.	Defective internal mechanism	Remove and replace with serviceable unit.
Load beam fails to relatch after being reset.	Defective latch mechanism	Remove hook and replace with serviceable unit.
Cargo hook manual release cable pull-off force exceeds 8 Lbs. (at the hook).	Friction in internal mechanism.	Remove hook and replace with serviceable unit.
Failure to open or re-lock properly	Defective internal mechanism	Remove hook and replace with serviceable unit.
Circuit breaker opens when Cargo Hook is energized.	Short in the system, faulty wiring, circuit breaker or solenoid	Check for shorts to ground. Check solenoid resistance, repair or replace defective parts.
The cargo hook will not roll back and forth on the beam.	Obstructions in the beam, bad bearings in the beam	Remove beam assembly and replace with serviceable unit.
The beam will not pivot on pillow block bearings	Obstructions or bad bearings in the beam	Remove pillow block assembly and replace with serviceable unit.
Circuit breaker opens when the circuit to Load Weigh System is energized.	Short in the system, faulty wiring, circuit breaker or switch.	Repair or replace defective wiring, circuit breaker or switch.
Load Weigh Indicator does not light up.	Faulty wiring, circuit breaker or switch.	Check the power switch, circuit breaker and wiring. If this doesn't help, remove and replace C-39 indicator

*continued*

## 25.15 Trouble Shooting continued

Table 25-4 Troubleshooting continued

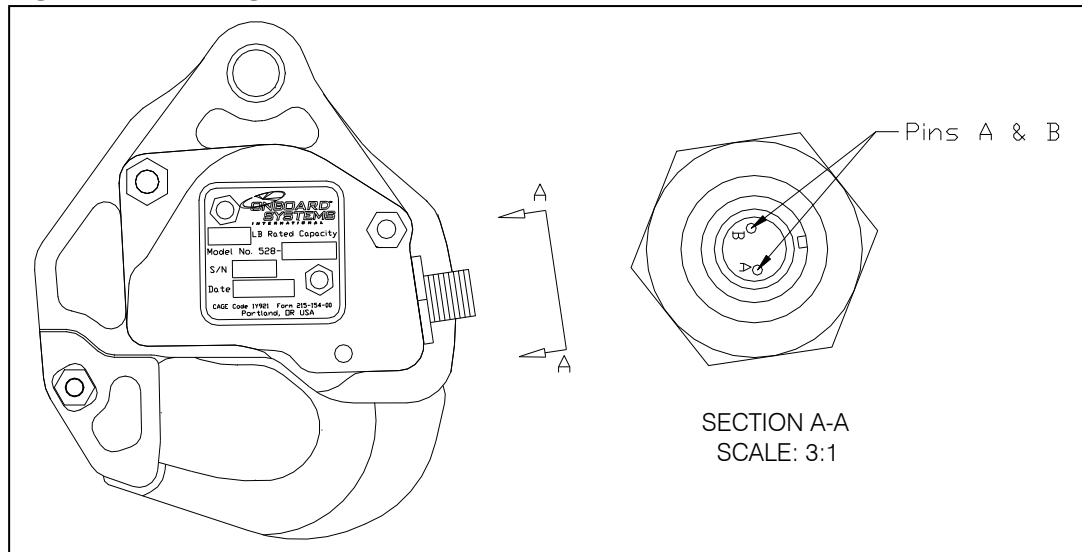
DIFFICULTY	PROBABLE CAUSE	CORRECTIVE ACTION
Indicator displayed load is incorrect.	Incorrect Calibration Code.	Ensure the correct Calibration Code has been entered (see Note 2).
Indicator displayed load is not stable.	Dampening level is too low.	Adjust the dampening level to a higher number (see Note 3).
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 3).
Indicator does not change with changing hook loads.	Defective load cell, indicator failure or damaged internal harness.	Check for damaged internal wire harness, remove and replace harness assembly or load cell.

**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 25.15.1 Cargo Hook Electrical Connector**





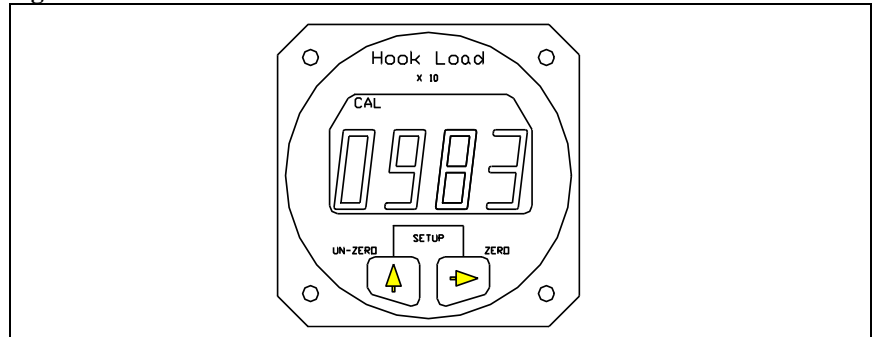
## 25.15 Trouble Shooting continued

### Table 25-4 Notes continued:

#### 2. 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 25.15.2 CAL Code**

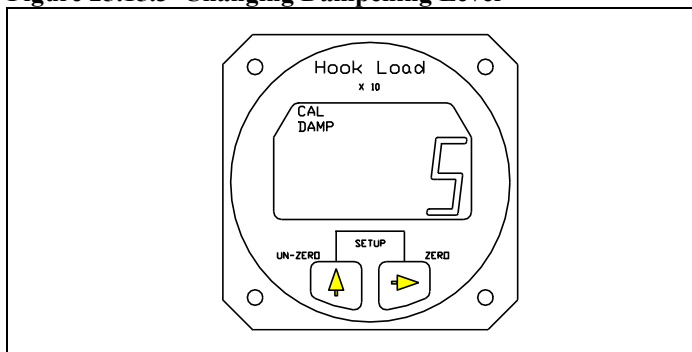


This code should match the code printed on the tag attached to the load cell cable. If this code does not match, contact Onboard Systems for further guidance.

#### 3. 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 25.15.3 Changing Dampening Level**



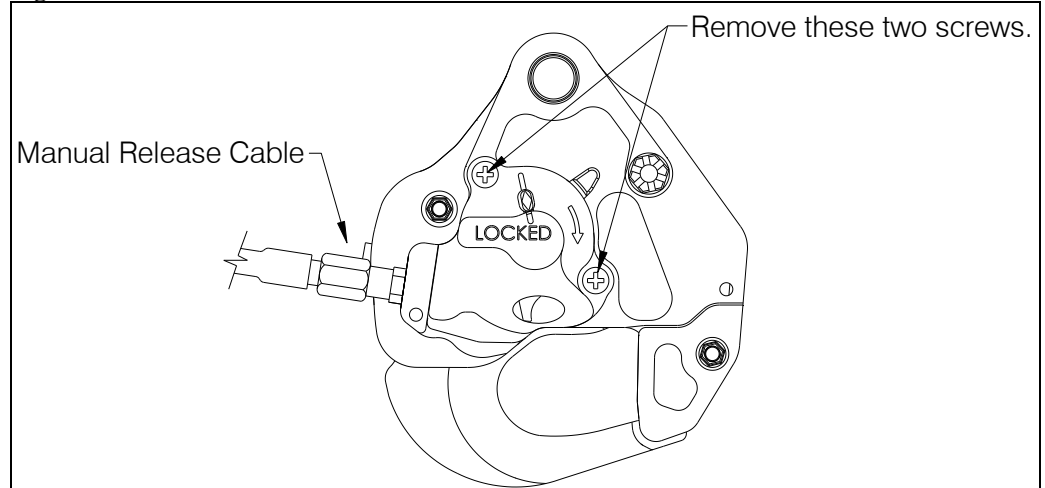
The CAL and the DAMP legend is turned on and the previously set dampening level is displayed. To return to Run without changing the current dampening level press both the Right and Left buttons at the same time. To change the dampening number, use the Left button to scroll the blinking digit to the desired 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. Remove manual release cover by removing the two screws.

**Figure 25.16.1 Manual Release Cover Removal**



2. Remove the manual release cable from the Cargo Hook.
3. Disconnect the electrical connector at 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.

### Beam Removal

1. Note the number and position of the thrust spacers.
2. Disconnect the load cell harness connector (if load weigh system is installed) from the connector on the bracket on the belly of helicopter.
3. Remove the beam attach bolts.
4. Remove the trunnion pins.
5. Remove the system from the aircraft.

### Pillow Block Removal

1. Remove the pillow block assembly attach bolts.
2. Remove the pillow blocks from the aircraft.

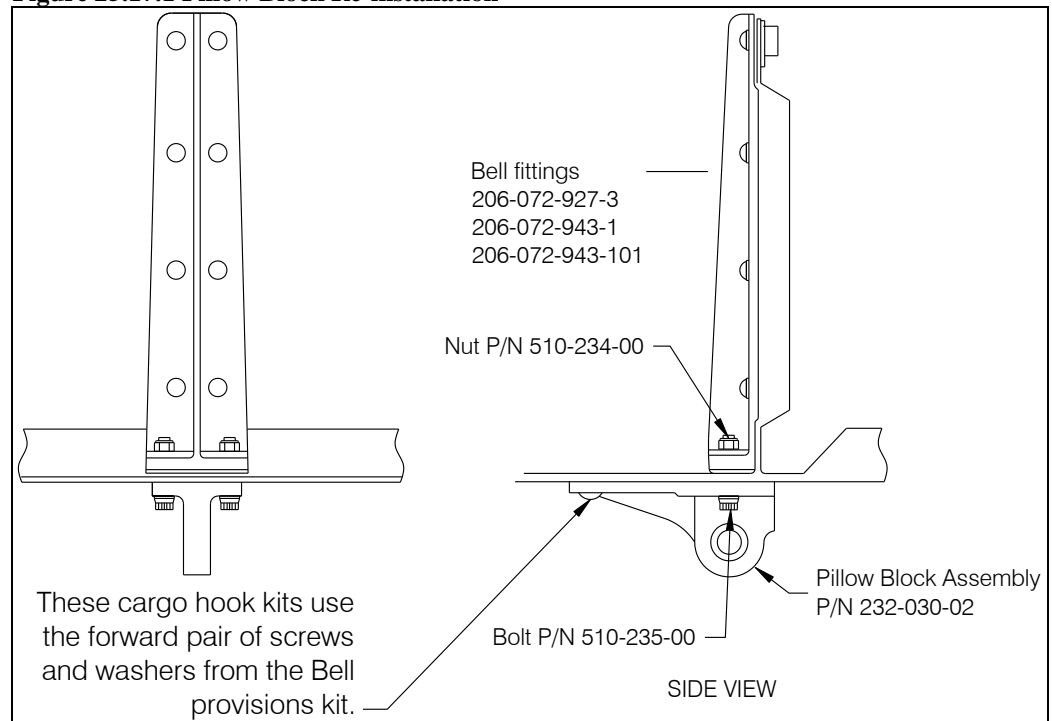
## 25.17 Component Re-installation

### Pillow Block Re-installation

Attach the two P/N 232-030-02 Pillow Block Assemblies as illustrated below. Torque the 510-234-00 nuts and 510-235-00 bolts to 100-130 in-lbs. Note that the 232-030-02 Pillow Blocks install exactly as the Bell Helicopter pillow blocks with the exception of the P/N 510-235-00 bolts. These bolts have a shorter grip length than those used with the Bell pillow blocks and they are installed with the heads down to give clearance for the beam when it rotates. Use sealant on the faying surfaces.

At the forward pair of holes at each pillow block, the screws and washers are re-used from the Bell Helicopter provisions kit.

**Figure 25.17.1 Pillow Block Re-installation**



## 25.17 Component Re-installation continued

### Beam Re-installation

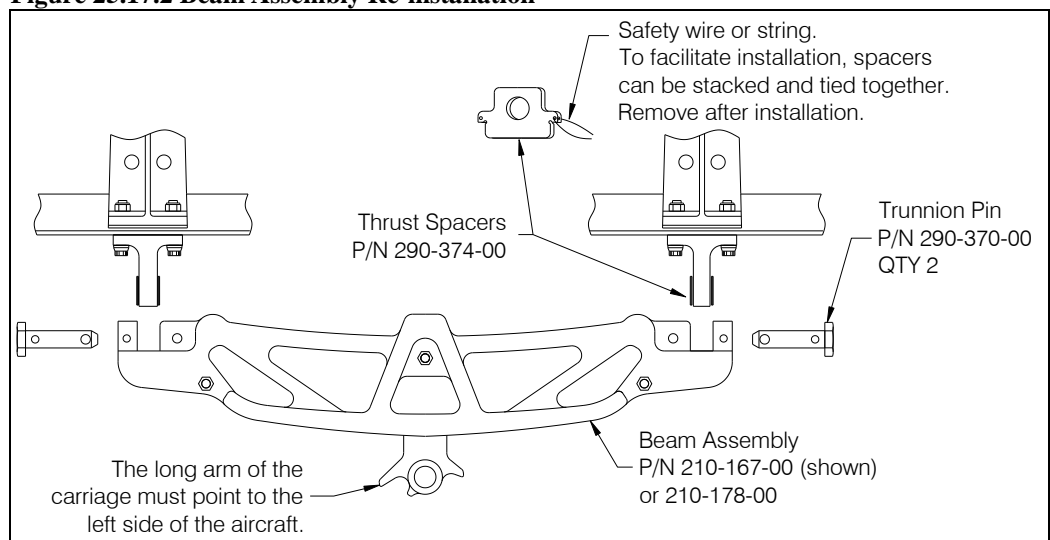
1. Attach the Beam Assembly, P/N 210-167-00, to the Pillow Blocks as illustrated.



*The long end of the Carriage must point to the left side of the aircraft as illustrated below.*

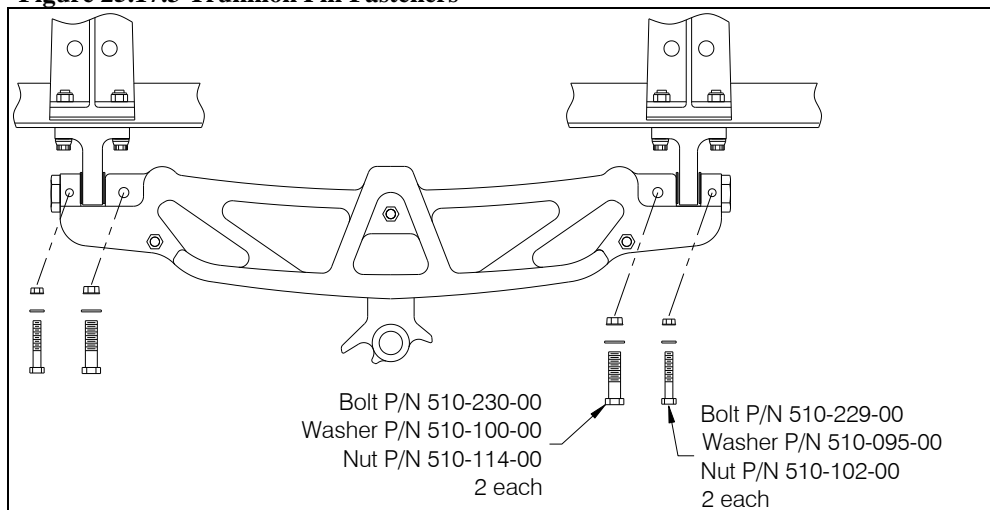
2. Position the Thrust Spacers, P/N 290-374-00, on both sides of the Pillow Blocks in the same position as they were when removed.

**Figure 25.17.2 Beam Assembly Re-installation**



3. Secure the two Trunnion Pins, P/N 290-370-00, with fasteners as illustrated. Torque the 510-230-00 bolts and 510-114-00 nuts to 56-79 in-lbs. Torque the 510-229-00 bolts and 510-102-00 nuts to 20-25 in-lbs.

**Figure 25.17.3 Trunnion Pin Fasteners**



## 25.17 Component Re-installation continued

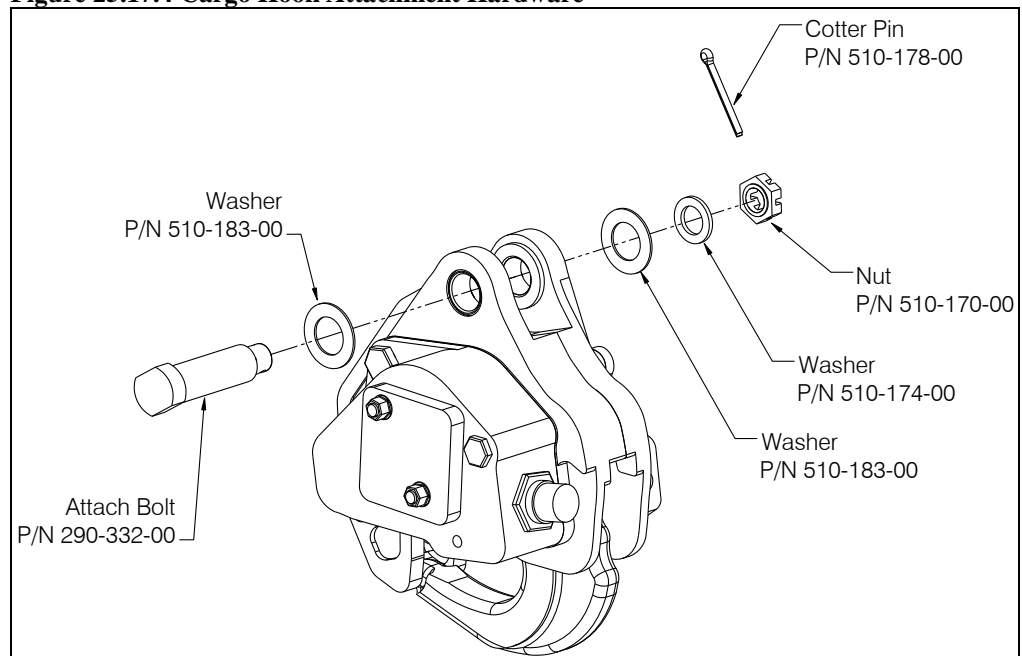
### Cargo Hook Re-installation

1. Attach the Cargo Hook to the suspension system by installing attach bolt P/N 290-332-00 through the suspension carriage (not shown) with a washer P/N 510-183-00 under the bolt head (as illustrated in Figure 25.17.4). If the load weigh system is installed refer to Figure 25.17.5 for pin load cell installation orientation and hardware.
2. Install washers (P/N 510-183-00 and P/N 510-174-00) over bolt threads (or pin load cell threads)
3. Tighten nut on attach bolt (or pin load cell) until fully seated, finger tight only. Back off nut to previous castellation, if needed, when aligning cotter pin for installation. Install and secure cotter pin (P/N 510-178-00).

**CAUTION**

*Do not tighten nut on pin load cell more than finger tight. Over-tightening will damage load cell.*

Figure 25.17.4 Cargo Hook Attachment Hardware



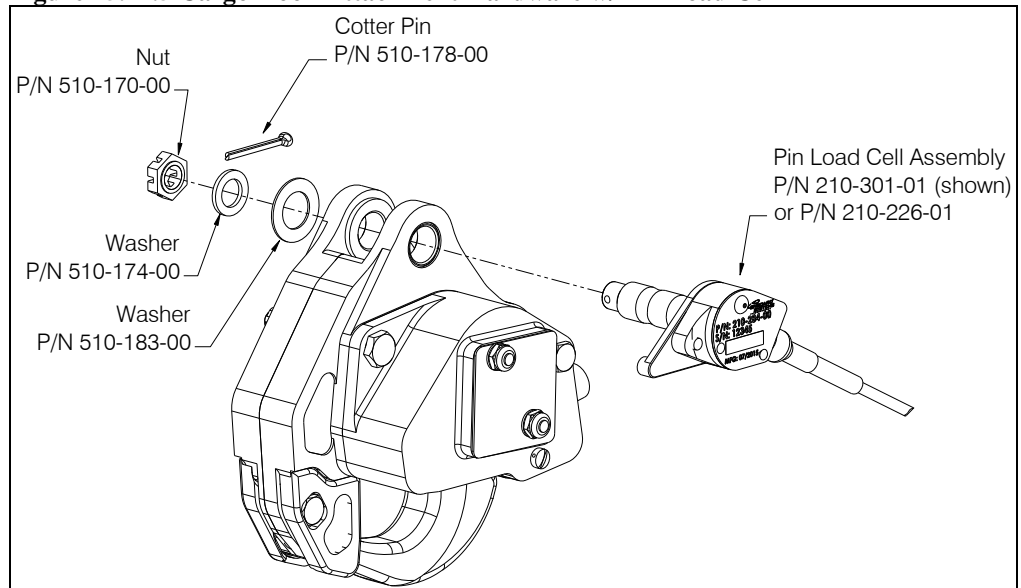
**NOTICE**

*The Cargo Hook load beam must point to the right side of the helicopter when looking from the rear.*

## 25.17 Component Re-installation continued

### Cargo Hook Re-installation continued

**Figure 25.17.5 Cargo Hook Attachment Hardware w/ Pin Load Cell**



## 25.17 Component Re-installation continued

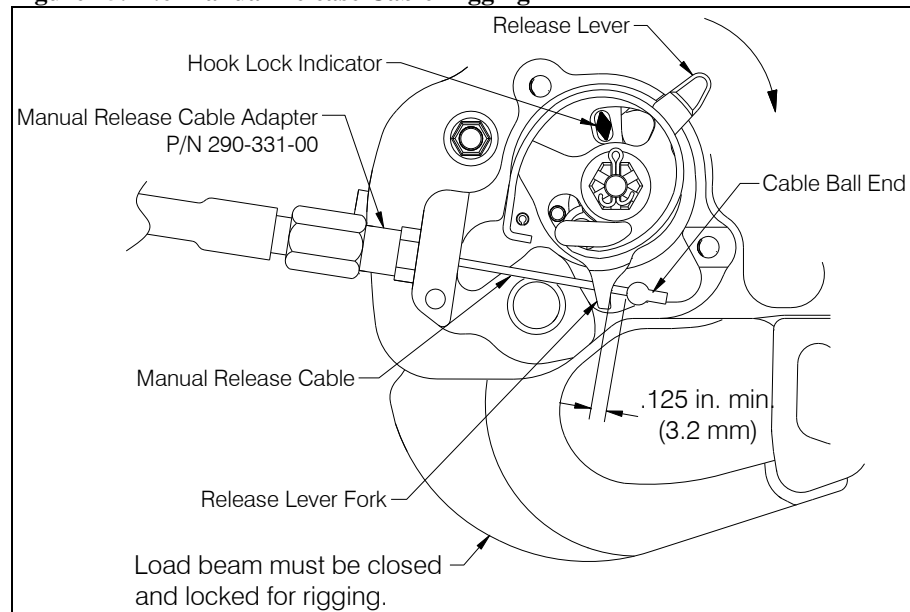
### Connection of manual release cable

1. Remove the manual release cover from the cargo hook.
2. Thread the manual release adapter, P/N 290-331-00, into the cargo hook manual release boss on the hook sideplate.
3. Insert the inner cable through the manual release adapter and thread the manual release cable nut onto the adapter.
4. Place the cable ball end fitting into the hook manual release lever fork fitting as illustrated in Figure 25.17.6.
5. With the cargo hook in the closed and locked position, rotate the release lever in the clockwise direction to remove free play (the free play is taken up when the hook lock indicator begins to move, this is also noticed as the release lever rotates relatively easily for several degrees until greater resistance is encountered).
6. Measure the cable ball end free play with the manual release handle in the cockpit in the non-release position and the cargo hook load beam in the closed position. Verify that the manual release cable system has a minimum of .125" of free play at the release lever fork as shown in Figure 25.17.6. Maximum free play is limited by the manual release cover.
7. Re-install the manual release cover with the two screws.



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

**Figure 25.17.6 Manual Release Cable Rigging**

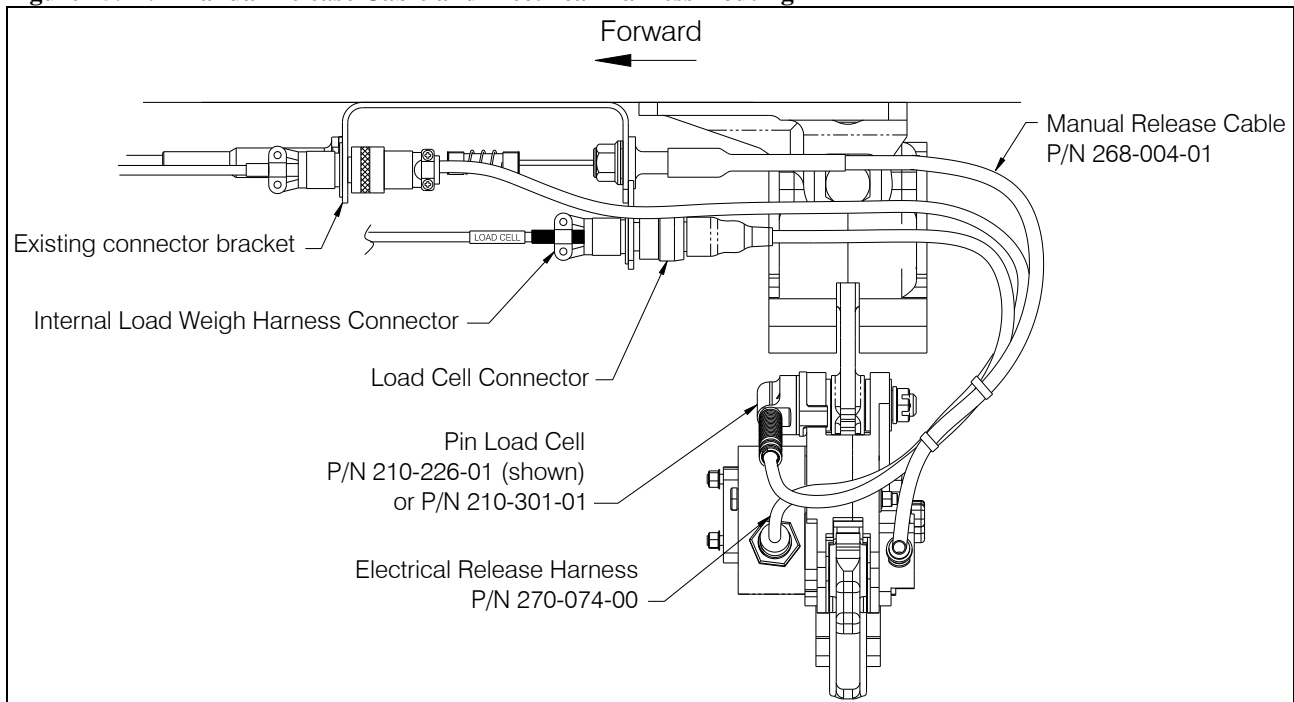


## 25.17 Component Re-installation, continued

### Routing of manual release cable and electrical harnesses

1. Route the manual release cable, the electrical release cable and pin load cell harness (if load weigh system is installed) as shown below. Secure them together in several places with ty-wraps or wrap with spiral wrap.
2. Slide the cargo hook back and forth on the beam and pivot the beam fore and aft about the pillow block pivot points and observe the manual release cable and the electrical harnesses. Ensure that no position of the cargo hook results in the manual release cable or electrical harnesses being pulled tight.

Figure 25.17.7 Manual Release Cable and Electrical Harness Routing



*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 (ref Figure 25.1). The result is an un-commanded release. Ensure that no Cargo Hook position is restrained by the manual release cable.*



## 25.18 General Procedural Instructions-Check

After re-installation of the cargo hook or manual release cable perform the following:

1. Swing the installed Cargo Hook on the beam to its full extremes 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.
2. With no load on the cargo hook load beam, pull the handle operated cargo hook mechanical release, the Cargo Hook should release. Reset the cargo hook load beam.
3. Close the cargo hook release circuit breaker and position the battery switch to the ON position. With no load on the cargo hook load beam, depress 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.



*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.*