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Cargo Hook Suspension System

For the

Bell 206 A/B Series With Talon LC Keeperless Cargo Hook

Kit Part Numbers
200-268-01, Without Load Weigh
200-269-03, With Load Weigh

Owner's Manual

Owner's Manual Number 120-099-01
Revision 3
September 8, 2015

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Record of Revisions

Revision	*Date*	*Page(s)*	*Reason for Revision*
0	07/19/11	All	Initial Release.
1	05/20/13	1-3, 2-7, 5-2, 5-9, 5-10	Added load indicator P/N 210-095-02, changed P/N 210-095-00 to optional. Updated definition of external load operations.
2	11/18/13	5-12 & 5-13	Added suspension re-assembly instructions including caution for tightening nut on pin load cell.
3	09/08/15	1-3, 1-4, 5-4 thru 5-11	Added pin load cell P/N 210-301-01 and link assembly P/N 232-061-01.

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Section 1
General Information

Introduction

The 200-268-01 and 200-269-03 Suspension System Kits are approved for installation on the Bell Model 206 A & B series helicopters. These kits replace the Bell 206-072-900-1, -101 or -103 Auxiliary Equipment Kit-Cargo Hook. It must be installed with the Bell part number 206-706-335-3, -5, -105 or -109 Auxiliary Equipment Kit- Cargo Hook Provisions.

The 200-269-03 suspension system kit is the same as the 200-268-01 suspension system kit except it includes a load weigh system.

Safety Labels

The following definitions apply to the symbols used throughout this manual to draw the reader's attention to safety instructions as well as other important messages.

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.

Specifications

Table 1-1 Suspension System Specifications

Design load	1,500 lb. (680 kg.)
Design ultimate strength	5,625 lb. (2,550 kg.)
Unit Weight P/N 200-268-01	17.5 lb. (7.9 kg.)
Unit Weight P/N 200-269-03	18.6 lb. (8.4 kg.)

Table 1-2 P/N 528-029-00 Cargo Hook Specifications

Design load	3,600 lb. (1,580 kg.)
Design ultimate strength	13,500 lb. (6,123 kg.)
Electrical release capacity	9,000 lb. (4,082 kg.)
Mechanical release capacity	9,000 lb. (4,082 kg.)
Force required for mechanical release at 3,600 lb.	8 lb. Max.(.600” travel)
Electrical requirements	22-32 VDC 6.9 – 10 amps
Minimum release load	0 pounds
Unit weight	3.0 pounds (1.35 kg.)
Mating electrical connector	PC06A8-2S SR

Bill of Materials

The following items are included with the Cargo Hook Kits. If shortages are found contact the company from whom the system was purchased.

Table 1-3 Kit Bill of Materials

Part No.	Description	200-268-01 W/out Load Weigh	200-269-03 With Load Weigh
210-301-01***	Pin Load Cell Assembly	-	1
210-095-00**	C-39 Indicator, 28V Lights	-	opt
210-095-02**	C-39 Indicator, 5V Lights		1
215-010-00	Placard	-	2
215-012-00	Placard	-	1
235-035-00	QD Bracket	-	1
270-048-04	Load Weigh Internal Harness	-	1
512-001-00	Ty-Wrap	-	10
400-048-00	Power Switch	-	1
510-028-00	Screw	-	6
510-029-00	Nut	-	6
510-062-00	Washer	-	8
215-117-00*	Decal-Limit Load	2	2
232-047-00*	Frame Assembly	1	1
232-061-01*	Link Assembly	1	1
232-062-00*	Bungee Cord Assembly	1	1
268-015-00*	Manual Release Cable	1	1
270-074-01*	Electrical Release Cable	1	1
290-331-00*	Release Fitting	1	1
290-332-00*	Attach Bolt	2	1
290-431-00*	Fitting Tube End	2	2
290-489-00*	Bumper Bushing	2	2
510-042-00*	Washer	6	6
510-102-00*	Nut	2	2
511-073-00*	Bolt	2	2
510-170-00*	Nut	2	2
510-174-00*	Washer	2	2
510-178-00*	Cotter Pin	2	2
510-183-00*	Washer	3	2
510-223-00*	Bolt	2	2
510-227-00*	Nut	2	2
510-257-00*	Bolt	2	2
510-261-00*	Washer	2	2
510-295-00*	Quick Release Pin	2	2
512-010-00*	Adel Clamp	2	2

Bill of Materials continued

Table 1-3 Kit Bill of Materials continued

Part No.	Description	200-268-01 W/out Load Weigh	200-269-03 With Load Weigh
531-016-00*	Nicopress Sleeve	4	4
528-029-00*	Cargo Hook	1	1
531-010-00*	Lanyard Cable, 7.5" lg.	2	2
600-006-00*	Quick Disconnect	1	1
120-099-01	Owner's Manual	1	1
121-009-01	RFM Supplement	1	1
122-017-00	CMM, Cargo Hook	1	1
600-006-00	Release Cable Disconnect	1	1

* These items are shipped assembled together as the cargo hook suspension system. If necessary, refer to Section 5 for part identification.

** Indicators 210-095-00 and 210-095-02 are both compatible with kit 200-269-03. Verify Indicator voltage matches aircraft lighting system voltage.

*** Supersedes P/N 210-226-01.

Theory of Operation

The primary elements of the Cargo Hook are the load beam, the internal mechanism, and a DC solenoid. The load beam supports the load and is latched through the internal mechanism. The DC solenoid, an external manual release cable, and a manual release lever provide the means for unlatching the load beam.

The load is attached to the load beam by passing the 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.

To release the load, the latch is disengaged from the load beam. With the latch disengaged, the weight of the load causes the load beam to swing to its open position, and the cargo sling slides off the load beam. The load beam then remains in the open position awaiting the next load.

A load release can be initiated by three different methods. Normal release is achieved by pilot actuation of the push-button switch in the cockpit. When the push-button switch is pressed, it energizes the DC solenoid in the Cargo Hook, and the solenoid opens the latch in the internal mechanism. In an emergency, release can be achieved by operating a mechanical release cable. The release cable operates the internal mechanism of the Cargo Hook to unlatch the load beam. The load can also be released by the actuation of a lever located on the side of the Cargo Hook.

Section 2

Installation Instructions

These procedures are provided for the benefit of experienced aircraft maintenance facilities capable of carrying out the procedures. They must not be attempted by those lacking the necessary expertise.

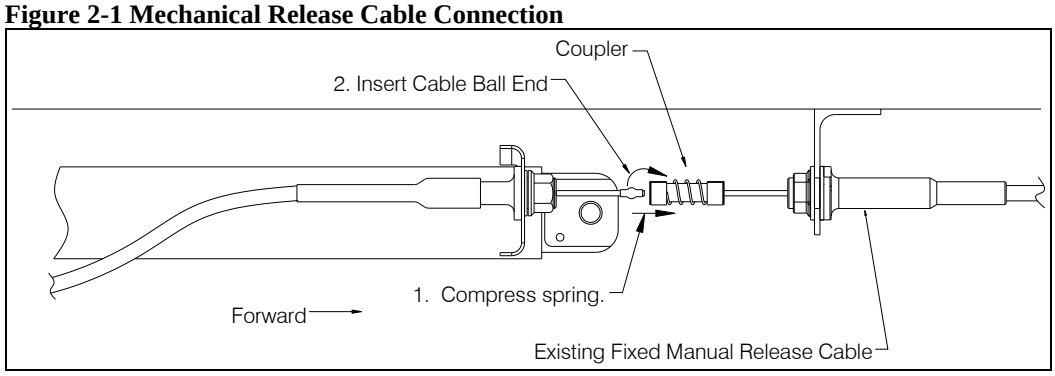
Cargo Hook Suspension System Removal

If the aircraft is equipped with an Auxiliary Equipment Kit- Cargo Hook supplied by Bell Helicopters, remove it.

Cargo Hook Suspension System Installation

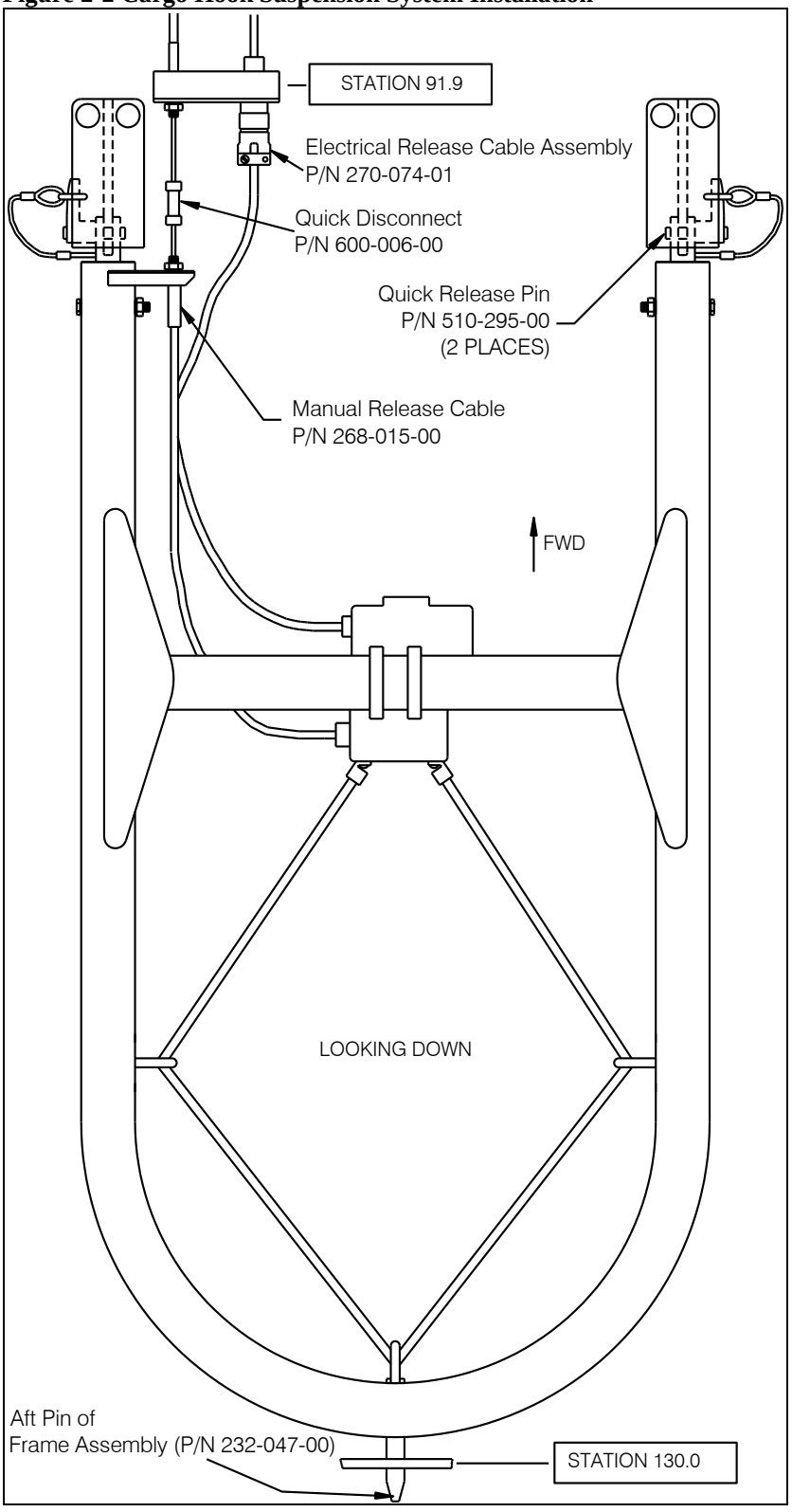
1. Open the cargo hook release circuit breaker and position the battery switch to the off position.
2. If a Bell provisions kit is not already installed, install the Bell Helicopter provisions kit (206-706-335-3, -5, -105, or –109) as outlined in the Bell kit instructions.
3. Place the aft pin of the 232-047-00 Frame Assembly into the aft hard point at Station 130.0. Align the forward attach fittings with the forward airframe hard points and insert the 510-295-00 Quick Release Pins. See Figure 2-2.
4. Attach the 268-015-00 mechanical release cable end ball to the 600-006-00 coupler (see Figure 2-1). Attach the coupler to the cable end ball on the Bell Provisions Installation.

Figure 2-1 Mechanical Release Cable Connection



Cargo Hook Suspension System Installation, continued

Figure 2-2 Cargo Hook Suspension System Installation



5. To check the manual release cable rigging at the cargo hook, remove the manual release cover from the new cargo hook.
6. Move the manual release lever in the clockwise direction to remove free play, free play is removed when the hook lock indicator begins to move (this is felt as the lever moves relatively easily for several degrees before hitting the internal cam stop). Measure the cable ball end free play with the manual release handle in the cockpit in the non-release position. There must be a minimum gap of .125 inches (3.2 mm) of free play at the fork fitting as shown in Figure 2-3.
7. Re-install the manual release cover.

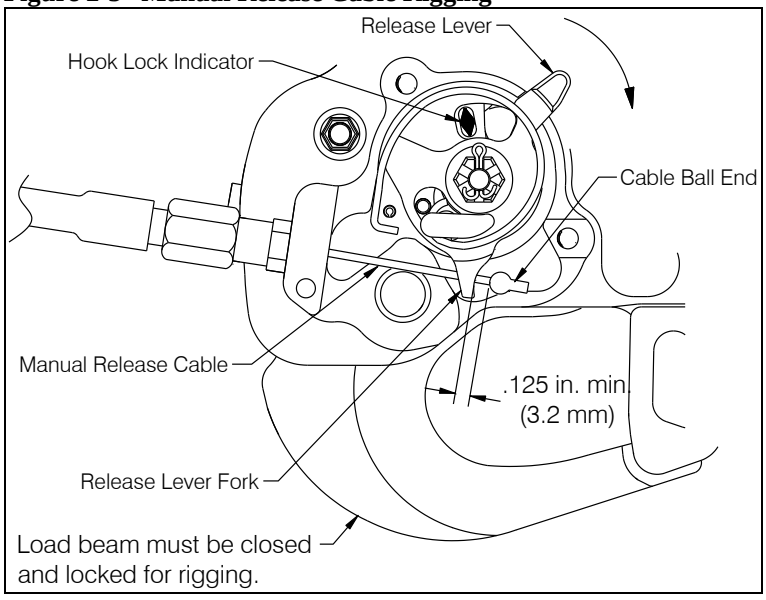
CAUTION

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

WARNING

Mis-rigging of the manual release cable will result in inadvertent release of load.

Figure 2-3 Manual Release Cable Rigging



8. Connect the 270-074-01 cargo hook electrical release cable connector to the Bell provisions kit connector mounted on the bottom of the helicopter. Listed below is the pin out for the cargo hook connector.

Table 2-1 Cargo Hook Connector

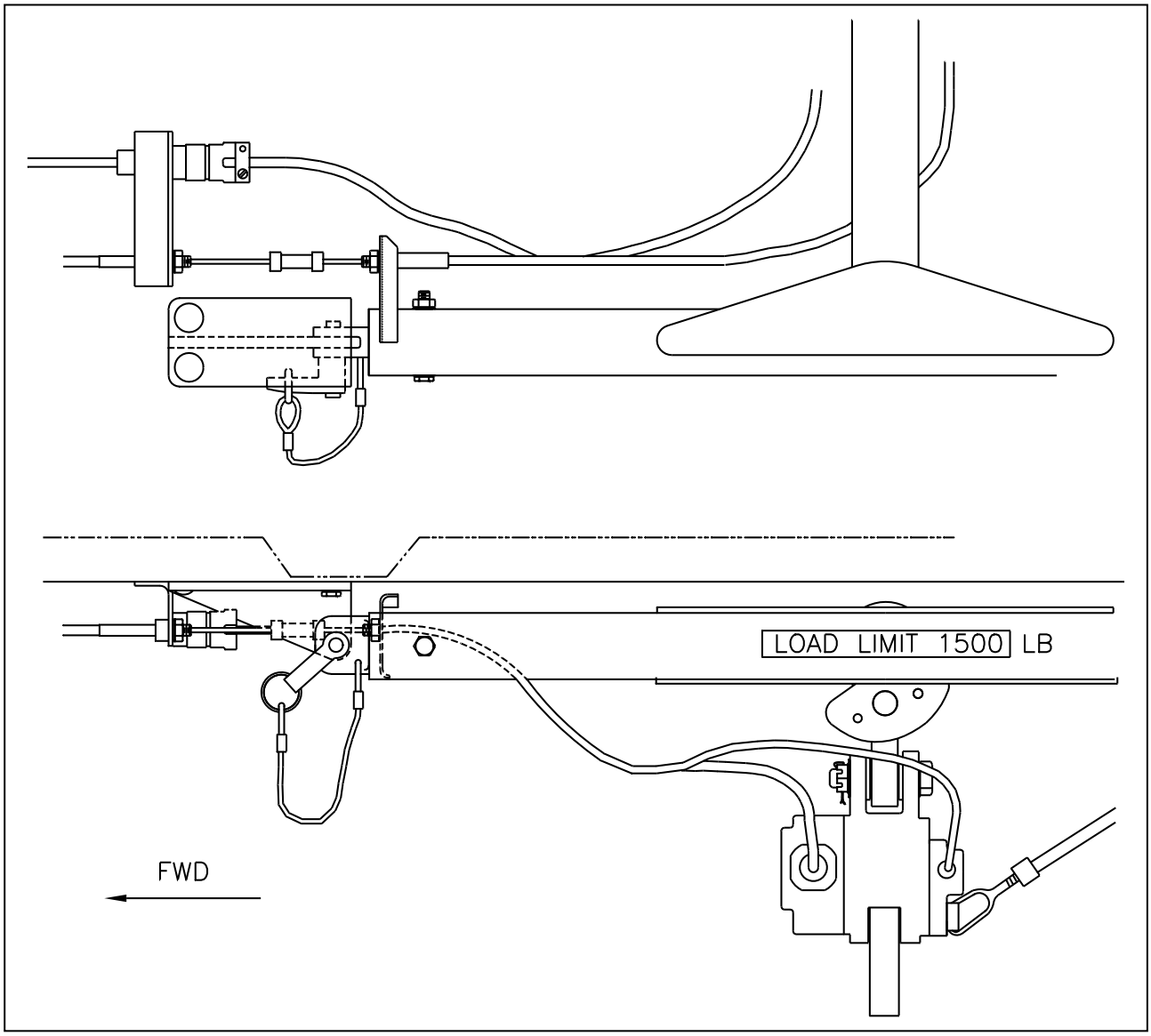
Pin	*Function*
A	Ground
B	Positive

CAUTION

Early versions of the Cargo Hook were equipped with a suppression diode that will be damaged if the Cargo Hook electrical connections are reversed. Do not attach the electrical connector until the polarity of the aircraft connector is determined to be compatible with the connector listed in Table 2-1.

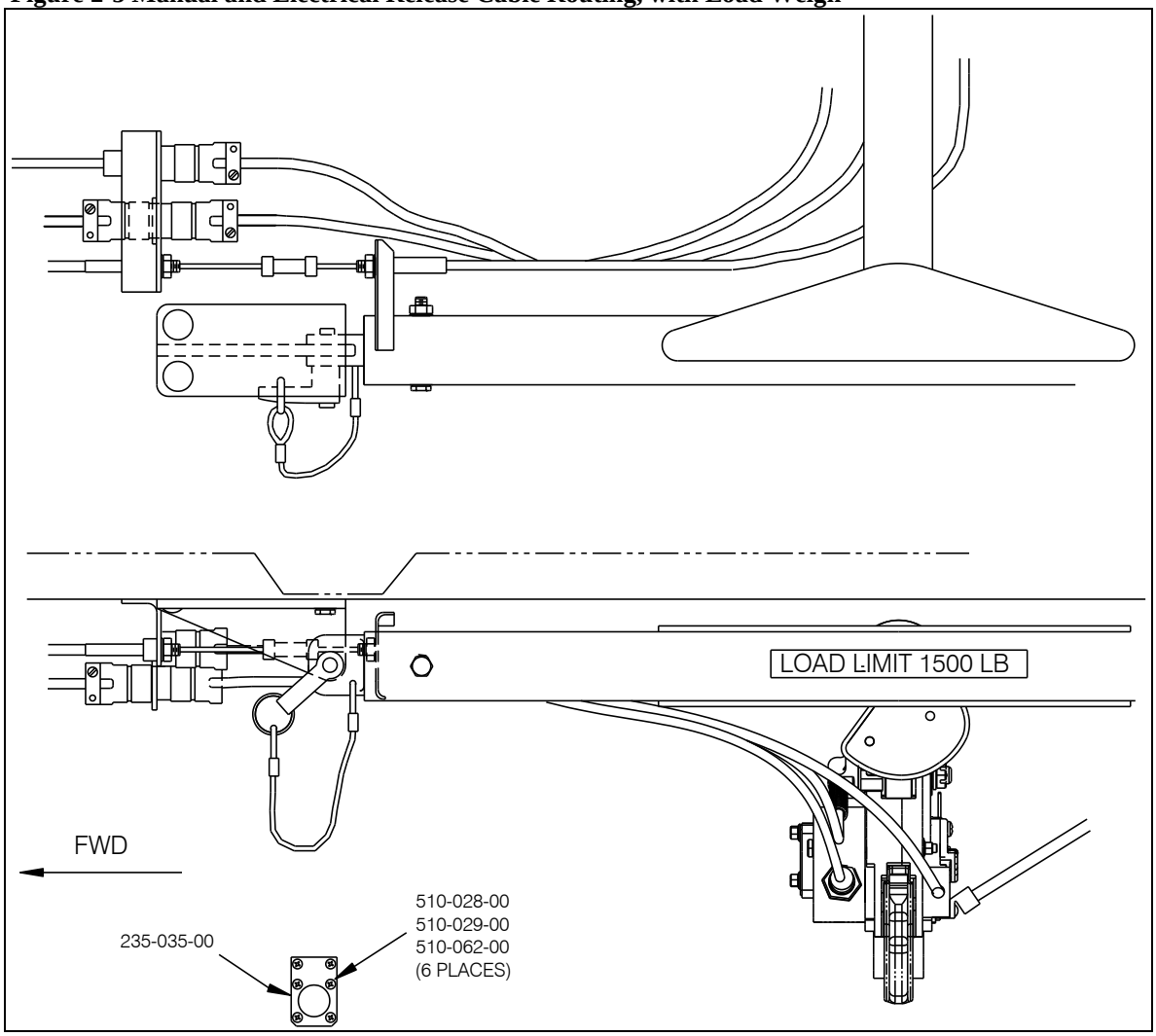
Route the Manual and the Electrical Release cables as illustrated in Figures 2-4 and 2-5.

Figure 2-4 Manual and Electrical Release Cable Routing, without Load Weigh



Cargo Hook Suspension System Installation, continued

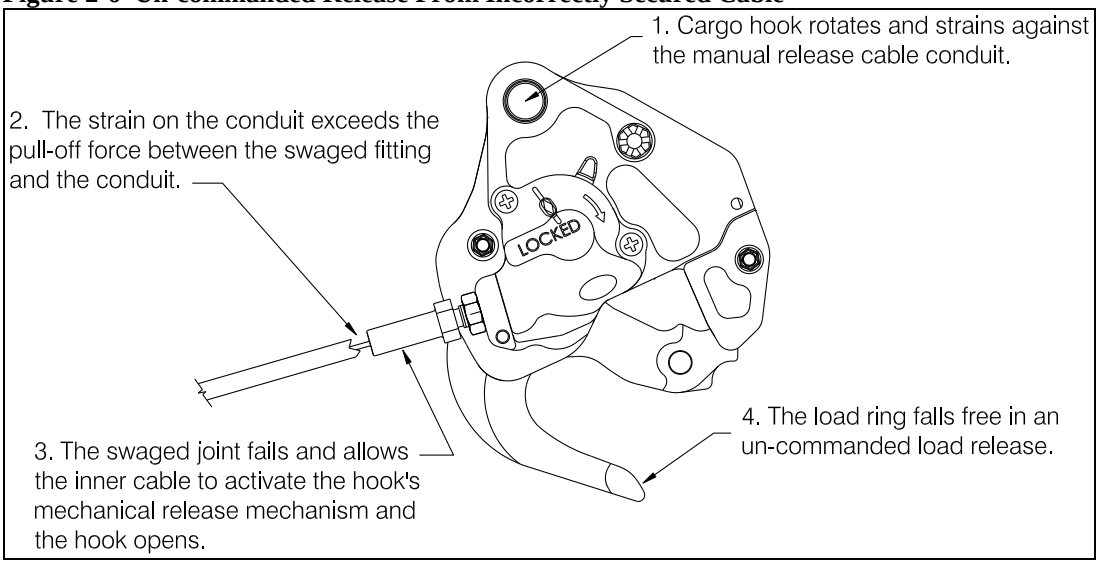
Figure 2-5 Manual and Electrical Release Cable Routing, with Load Weigh



WARNING

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 2-6 Un-commanded Release From Incorrectly Secured Cable



Load Weigh System Internal Harness Installation

The Internal Harness (P/N 270-048-04) is made up of four cables terminated to one large connector. The large connector is plugged into the back of the Indicator. One of the cables is marked "LOAD CELL" and is fitted with a bulkhead connector. Hardware is provided to attach the bulkhead connector to the Quick Disconnect Bracket, P/N 235-035-00. Attach the Quick Disconnect Bracket to the bracket that holds the manual and electrical release fittings on the skin of the aircraft at the cargo hook area.

Another cable is marked "POWER" and is connected to the aircraft electrical power. Another cable is marked "LIGHT", refer to the *Indicator Internal Back Light* section for installation instructions. The last cable is marked "DATA" and can be connected to the optional Data Recorder or Analog Slave Meter. These optional items are not included under this STC.

The data cable may or may not be terminated with a connector depending on manufacture date.

Route the cables in the most convenient manner. Secure the cables to the existing wiring bundles with the Ty-wraps. Secure the cables clear of flight control rods.

C-39 Cockpit Indicator Installation

The Indicator, should be mounted in a position that is convenient, accessible and visible to the pilot. It can be mounted in a standard 2¼" instrument hole. Connect the Indicator to its Internal Harness, refer to *Internal Harness Installation*.

Indicator Internal Back Light

The Indicator is equipped with an Internal Back Lighting System that can be connected to the aircraft light dimming circuit. Indicator 210-095-02 is compatible with a 5VDC dimming circuit, while 210-095-00 is compatible with a 28VDC dimming circuit. Use a 22 gauge, twisted pair, shielded cable to connect the aircraft dimming circuit to the Internal Harness. Connect the cable shield wire to airframe ground at the light dimmer end of the cable **ONLY**.

Indicator Hook-Open Warning Installation

The Indicator is equipped with a Hook-Open Warning feature that can be connected to a cargo hook equipped with a hook open switch. Depending on the capabilities of the cargo hook switch, the Indicator will flash "HOOK OPEN" when the cargo hook load beam is open. The cargo hook switch must be normally open when the cargo hook load beam is in the closed position. When the load beam is open, one side of the switch must be grounded and the other side of the switch is to be connected to the Indicator. Use a 22 gauge, shielded wire to connect the cargo hook switch to the Indicator. Disassemble the Indicator mating connector and carefully solder the wire, from the cargo hook switch, to pin H. Connect the cable shield wire to airframe ground as close to the cargo hook as possible, at the cargo hook end of the cable ONLY.

Remote Analog Meter Installation

The Indicator is equipped with an Analog drive circuit that can be connected to a remote analog meter. Use a 22 gauge, twisted pair, shielded cable to connect the Remote Analog Meter to the Indicator. Disassemble the Indicator mating connector and carefully solder the positive wire, from the analog meter, to pin G and the common wire to pin F. Connect the cable shield wire to airframe ground as close to the Analog Meter as possible, at the Analog Meter end of the cable **ONLY**.

The indicator can be connected to Onboard System's Analog Meter, P/N 210-180-00, through the "DATA" cable. This meter gives solid weight indications without needle bounce. The Analog Meter may be mounted in any convenient location in a standard 3" instrument hole. Attach connector, P/N 410-130-00, to data line per pin out in Figure 2-6 to connect the Analog Slave Meter to the Internal Harness "DATA" cable. If a data connector is present on the data line use cable, P/N 270-059-00, to connect to Analog Slave Meter.

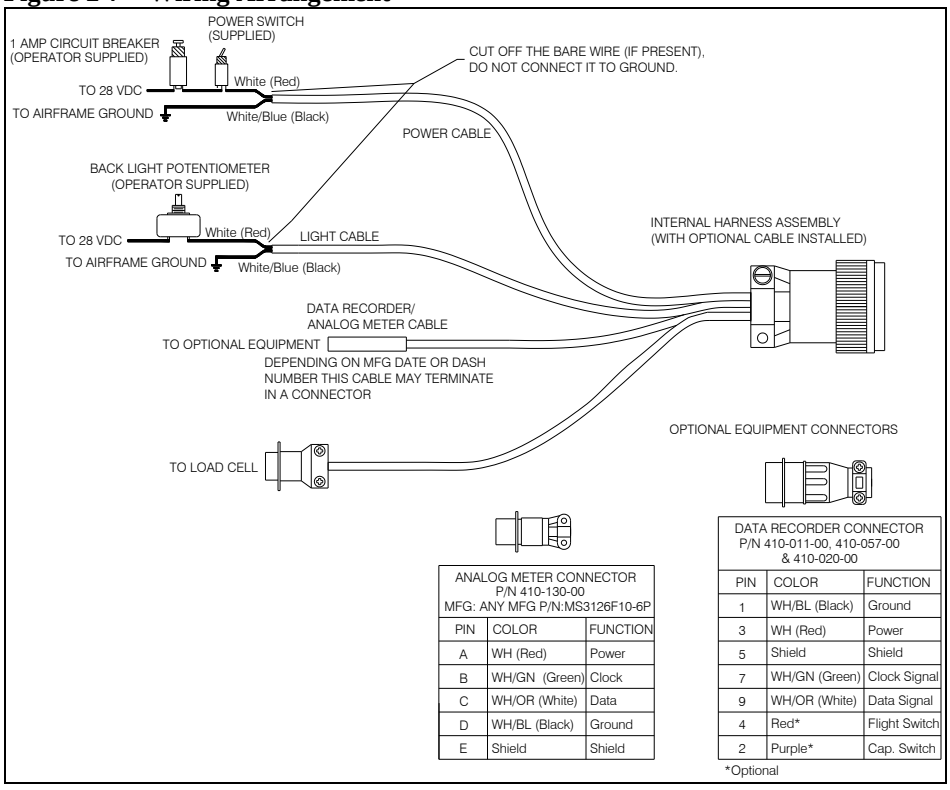
Electrical Connections

Connect the Internal Harness (P/N 270-048-04) to the Indicator and route the other end to a convenient location for the Indicator power switch part number 400-048-00. The cable is supplied extra long, cut off the excess cable and use as needed to connect the switch and circuit breaker. Connect the white (red wire, if wire harness 270-048-00 is installed) wire in the power cable to one side of the power switch, connect another piece of suitable wire to the other side of the switch and then to an available 1 or 2 amp circuit breaker. Connect the white/blue (black wire, if wire harness 270-048-00 is installed) wire to the ground bus. The bare wire (present on harness P/N 270-048-00 only) should be cut off as it is not needed at this end of the wire. Install the placard 215-010-00 "ELECTRONIC WEIGHING SYSTEM" next to the power switch and circuit breaker. Install the placard 215-012-00 "TURN THE WEIGHING SYSTEM OFF WHEN NAVIGATION EQUIPMENT IN USE" "NO AIRCRAFT OPERATION SHOULD BE PREDICATED ON THE READING OF THE ONBOARD WEIGHING SYSTEM" next to the Indicator.

NOTICE

If the C-23 Printer is being utilized with the C-20 or C-30 Data Recorder, a 5 amp circuit breaker should be used.

Figure 2-7 Wiring Arrangement



ANALOG METER CONNECTOR
P/N 410-130-00
MFG: ANY MFG P/N:MS3126F10-6P

PIN	COLOR	FUNCTION
A	WH (Red)	Power
B	WH/GN (Green)	Clock
C	WH/OR (White)	Data
D	WH/BL (Black)	Ground
E	Shield	Shield

DATA RECORDER CONNECTOR
P/N 410-011-00, 410-057-00
& 410-020-00

PIN	COLOR	FUNCTION
1	WH/BL (Black)	Ground
3	WH (Red)	Power
5	Shield	Shield
7	WH/GN (Green)	Clock Signal
9	WH/OR (White)	Data Signal
4	Red*	Flight Switch
2	Purple*	Cap. Switch

*Optional

Installation Check-Out

After installation of the Cargo Hook Suspension System, perform the following functional checks.

1. Swing the installed Cargo Hook 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 located in the cockpit, 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 electrical release button, the Cargo Hook should release. Reset the cargo hook load beam

4. See the Bell Helicopter service instructions for your specific helicopter model for additional installation instructions.

5. Perform an EMI ground test per AC 43.13-lb section 11-107. For equipment that can only be checked in flight an EMI flight test may be required.

The cargo hook and load cell are of a class of equipment not known to have a high potential for interference. This class of equipment does not require special EMI installation testing (i.e. FADEC) as required in paragraphs 7 and 8 of FAA policy memorandum ASW-2001-01.

6. Power on the Indicator and allow to warm up for 5 minutes (with no load on the hook). Press both Indicator buttons at the same time to go to the Setup Mode. Scroll through the menu until the symbol “0 in” is displayed, then press the right button. Remove any weight that is not to be zeroed out and press either button to complete the procedure.

Component Weights

The weights of the Cargo Hook Suspension System kits are listed below.

Table 2-2 Component Weights

Item	Description	Weight
200-268-01	Suspension System w/o Load Weigh	17.5 lbs (7.94 kgs)
200-269-03	Suspension System w/ Load Weigh	18.6 lbs (8.44 kgs)

Cargo Hook Location

Table 2-3 Cargo Hook Location

Fuselage Station	108.5

Paper Work

In the US, fill in FAA form 337 for the initial installation. This procedure may vary in different countries. Make the appropriate aircraft log book entry. Insert the Rotorcraft Flight Manual Supplement P/N 121-009-01 into the rotorcraft flight manual.

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Section 3

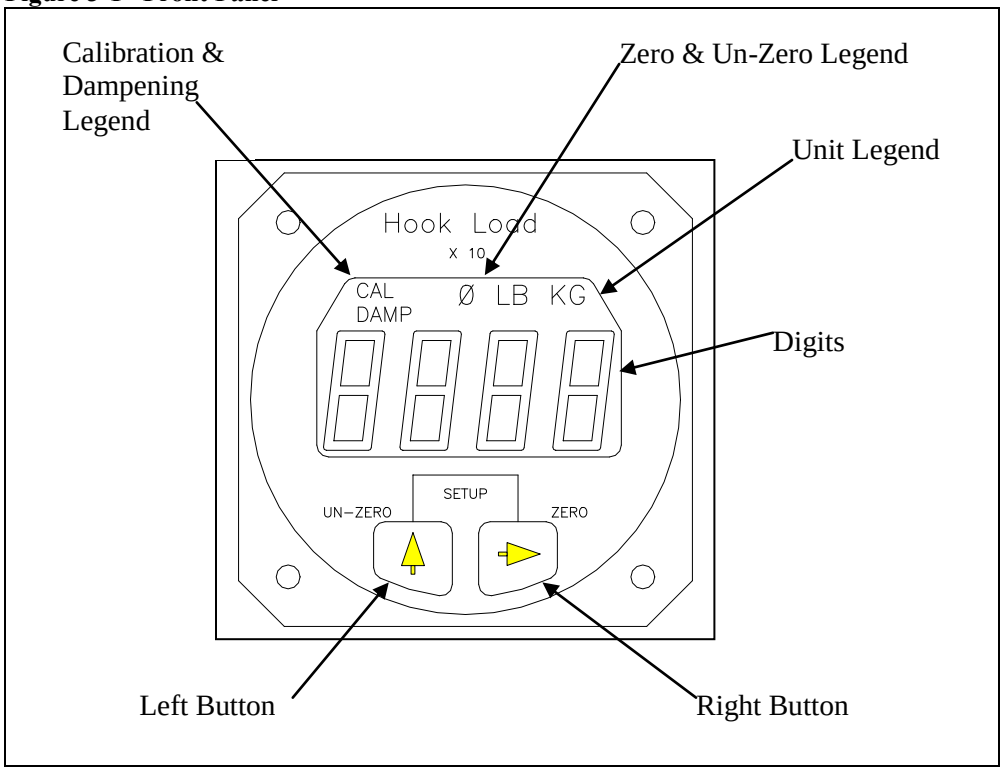
Load Weigh System Operation Instructions

Indicator Front Panel

The C-39 Indicator front panel includes the following features.

- The four 7 segment LCD digits show the weight on the Cargo Hook and displays various Setup information.
- The Legends clarify the digital display. i.e. when the LB Legend is turned on, the display will be pounds, etc.
- The Right button is used to Zero the display in the Run Mode and select the digit to be changed in the Setup Mode.
- The Left button is used to Un-Zero the display in the Run Mode and scroll the selected digit in the Setup Mode.

Figure 3-1 Front Panel

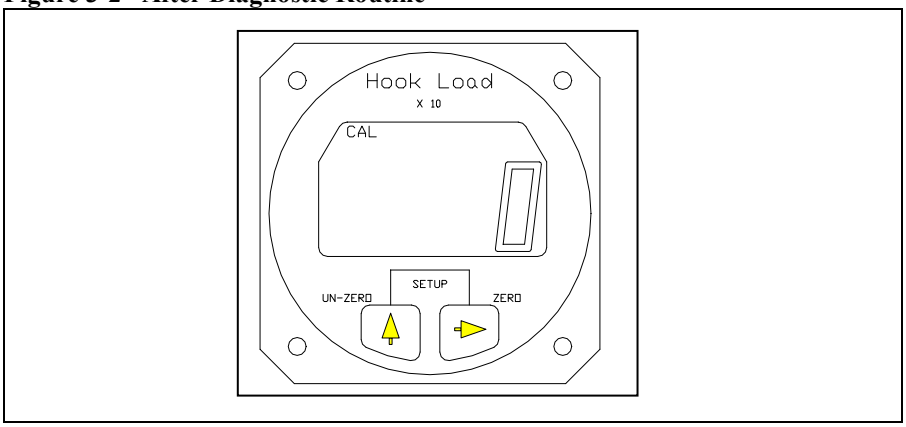


The Run Mode

The C-39 Indicator has two operating modes, Run and Setup. The Run Mode is used to display the cargo hook weight and the Setup Mode is used to setup or configure the Indicator to the helicopter and to the Load Cell. When powered up, the Indicator always comes to life in the Run Mode.

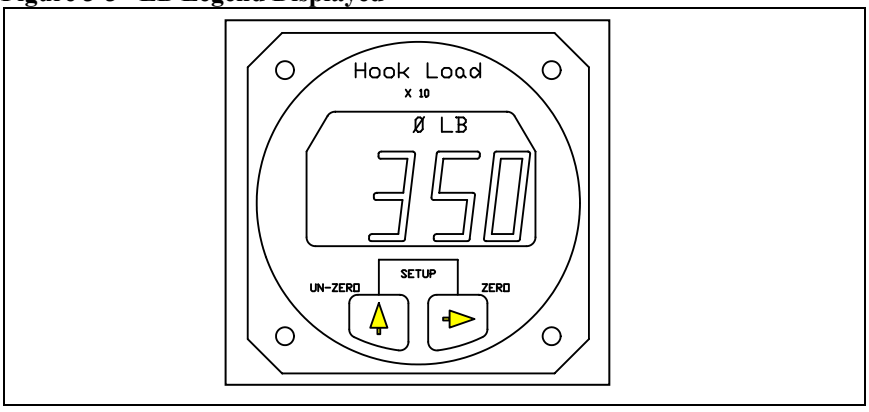
After the Indicator has been correctly installed, power it up by activating the Load Weigh Circuit Breaker. The Indicator will go through a self diagnostic routine. During this routine the display will display all of the digits and legends. If a problem is found during the routine an Error Code will be displayed. For an explanation of Error Codes see the section *Error Codes*. After the diagnostic routine the display should look like this:

Figure 3-2 After Diagnostic Routine



The illustration is of the Indicator in the Run Mode with no load on the hook. Note the LB legend displayed.

Figure 3-3 LB Legend Displayed

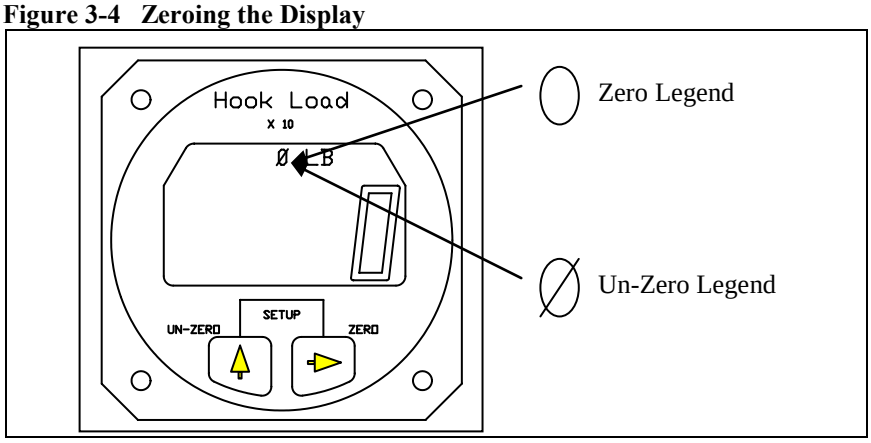


The illustration is a typical hook load reading. The display is 3,500 pounds, note the last digit is not displayed.

To Zero or Tare the Display

The zero feature is used to zero or tare the weight on the Cargo Hook that is not wanted, such as the weight of a cargo net or long line. The Right button is used to zero the Indicator reading. When the Right button is pressed the display is zeroed. The zero legend is turned on and the zeroed number is stored in memory. If the Right button is pressed again, before the Un-zero button is pressed, the display blinks in response to the button closure. Zero is only available in the Run Mode.

Figure 3-4 Zeroing the Display



To Un-Zero the Display

The Left button is used to add the zeroed value back into the current Indicator reading or Un-zero the display. When the Left button is pressed, the number previously zeroed is added to the current display and the Un-zero legend is turned on. If the Left button is again pressed before the zero button is pressed, the display blinks in response to the button closure. Un-Zero is only available in the Run Mode.

The Run Mode continued

Error Codes

Error Codes are the result of difficulties discovered during the Indicator diagnostic tests. Diagnostic tests occur at power up and during the execution of certain routines. Listed below is a matrix of the Error Code displays, their meaning and possible corrective action. Pressing either button will usually bypass the error code, however, the displayed information may be suspect.

Table 3-1 Indicator Error Codes

DISPLAY	CAUSE	POSSIBLE CORRECTIVE ACTION
Err 1	A/D or D/A circuit failure	Potential short in the optional analog meter cable. Clear short and power cycle the Indicator by turning the power to the Indicator off for a few moments. If Error Code continues, return the Indicator to the factory.
Err 2	NV Ram failure	Power cycle the Indicator; if Error Code continues, return the Indicator to the factory.
Err 3	NV Ram write failure	Re-enter data, if Error Code continues, return the Indicator to the factory.
Err 4	NV Ram busy failure	Power cycle the Indicator, if Error Code continues return the Indicator to the factory.

The Setup Mode

The C-39 Indicator can be used with a wide range of helicopters and load cells. The Setup Mode on the Indicator matches the Indicator to the Load Cell and to the helicopter. This is done by entering data into the Indicator. Entered data includes the load cell Calibration Code, the units that the Indicator should read-out (pounds or kilograms), and several other items.

The Indicator has a group of Setup routines, arranged in menu form, that are used to configure the Indicator. Shown on the next page is a matrix of the Setup routines and a brief discussion of their function and how they are programmed. A complete discussion of each setup item is presented later in this section.

To enter the Setup Mode press both the Right and Left buttons at the same time while the Indicator is powered up and in the Run Mode. To exit the Setup Mode and return to the Run Mode, press both the buttons at the same time. If you are in a Setup routine and have started to change an entry, but you change your mind before completing the procedure, power cycle the Indicator to exit the Setup Mode and then go to the Run Mode without changing the item. The Indicator is power cycled by turning the Indicator power off for a few moments.

The Setup Mode, continued

Table 3-2 Indicator Setup Routines

MENU	FUNCTION	DISPLAY
Press the Left button to scroll through the menu	Press the Right button to view or change the menu item.	To return to the Run Mode press both the Right and Left buttons at the same time.
DAMP	Dampening Level, sets the pilots preference for display dampening.	Blinking display is previously entered Dampening Level. Select the desired dampening level by pressing the Left button.
CODE	Calibration Code, matches the Indicator to the Load Cell.	Display is previously entered CAL Code. The Code is changed by selecting the digit to be changed with the Right button. The selected digit will blink. Change the blinking digit by pressing the Left button.
0 in	Installation ZERO, matches the Indicator to the installed Load Cell and to the helicopter. After this procedure the display will be zero when no load is on the Cargo Hook.	Display is a combination of load on the Load Cell, and normal load cell zero offset. Remove all weight from the installed Load Cell except the Cargo Hook, and press any button to complete the procedure and return to the Run Mode.
LOAD	Load, is used to calibrate the system by lifting a known load.	No previous display is shown. Enter the known load using the Right button to select the digit to be changed and Left button to enter the number. Known load is entered "X 10" i.e.; 5000 kilograms is entered as 500. After the known load is entered, press both buttons at the same time and lift the known load. When the load is stabilized press either button. A new Calibration Code will be calculated and the known load will be displayed. This completes the procedure.
Scale	Scale, matches the analog output of the Indicator to an optional remote analog meter.	Display is previously entered number. To change the number use the Right button to select a digit, use the Left button to scroll the digit to the desired number. Entry is times 10.
LB KG	Units, selects the Indicator units (pounds or kilograms).	Display is previously selected unit. To change the unit, use the Left button.
XX - V	Version, is the revision level of the Indicator hardware and software.	Version is for information only, it cannot be changed.

The Setup Mode, continued

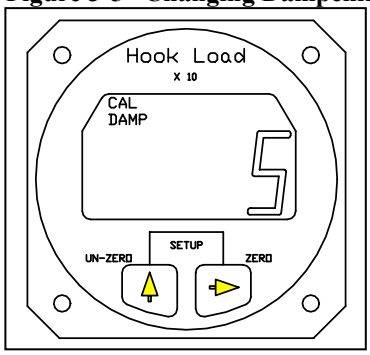
Indicator Dampening

The Damp or dampening routine allows the pilot to adjust the Indicator dampening level to his preference. The dampening routine is a program that stabilizes the Indicator reading. It offers a trade-off between Indicator responsiveness and stability. 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.

To Look at or Change the 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 3-5 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. After the selection has been made press both the Right and Left buttons at the same time to return to Run.

Indicator Calibration

The Calibration Code, or CAL code, is a mandatory input. The Indicator will not accurately display the load without the correct Calibration Code. The Calibration Code scales the signal from the Load Cell.

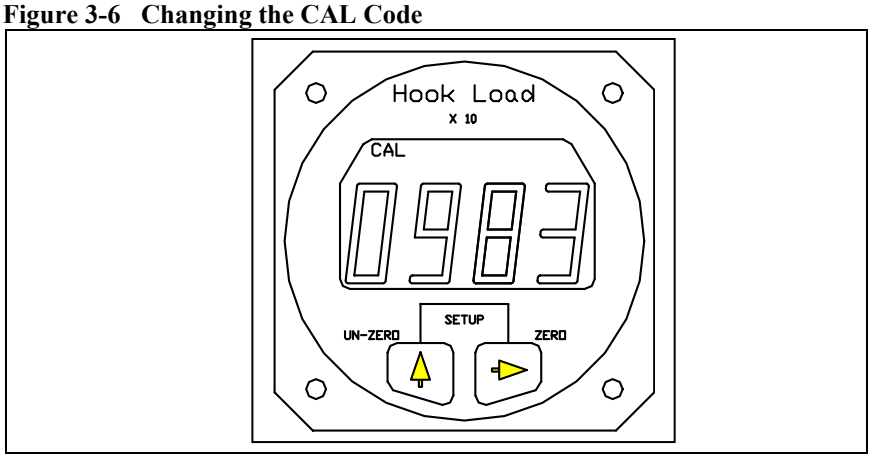
If the C-39 Indicator was supplied as part of a Load Weigh System, the Calibration Code will have been entered into the Indicator by the factory, however, it should be confirmed. If the Indicator is to be mated to a different Load Cell, it must be calibrated before use. Calibration can be done by entering a known Calibration Code or by lifting a known load and having the Indicator calibrate itself. Both options are discussed below.

The Setup Mode, continued

To Look at or Change the 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 3-6 Changing the CAL Code



The CAL legend is turned on and the previously entered or computed Calibration Code is displayed. To return to Run without changing the CAL Code, press both the Right and Left buttons at the same time. To change the Calibration Code, use the Right button to select the digit to be changed, then use the Left button to scroll the blinking digit to the desired number. When the Calibration Code has been entered, press both the Right and Left button at the same time to return to Run.

NOTICE

Depending on the type of Load Cell, the Calibration code could be a 3 or 4 digit number. If the Calibration Code is a 3 digit number a leading zero (0) must be used. For example if a Load Cell had a CAL Code of 395 it would be entered as 0395.

If the load cell Calibration Code is not known or as a cross check, the Indicator can generate the Calibration Code. This is done by entering the weight of a known load into the Indicator LOAD routine and then lifting the load. See the section *Calibration by Lifting a Known Load*.

Installation Zero

Installation zero is a routine that matches the Indicator to the ***INSTALLED*** Load Cell. It adjusts the Indicator reading to compensate for the weight of the Cargo Hook on the Load Cell and whatever zero offset is built into the Load Cell. The Installation Zero procedure is not mandatory. If done the Indicator will read zero when the Un-Zero button is pressed and there is no weight on the Cargo Hook. If the Installation Zero is not done, the Indicator will show the weight of the Cargo Hook plus the value of the Load Cell zero offset.

To Run the Installation Zero Routine

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 symbol "0 in" is displayed, then press the Right button. The CAL legend will be turned on and the current weight on the Cargo Hook will be displayed and blinking. Remove any weight that is not to be zeroed out and press either button to complete the procedure and return to the Run Mode.

Calibration by Lifting a Known Weight

Calibration by lifting a known weight is a Setup routine that calculates the Calibration Code for the Load Cell attached to the Indicator. It is useful if the load cell Calibration Code is not known or as a cross check to the accuracy of a known Calibration Code. The procedure is done by entering the known weight into the Indicator and then lifting the weight. This procedure can be done in the shop or on the helicopter. The accuracy of the procedure is directly related to the weight of the known load. If for example the procedure was done with a 1,000 pound load that was assumed to weigh only 900 pounds, all subsequent lifts would be displayed 10% light.

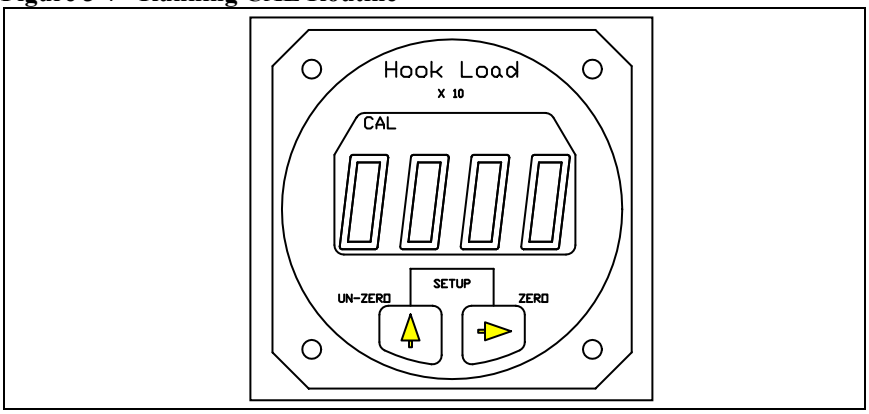
Be sure to include the weight of everything between the Cargo Hook and the load, i.e. the cable, net, dirt, etc.

The closer the known load approaches the lifting capacity of the helicopter, the more accurate the calculated Calibration Code will be.

To Run the Calibration by Lifting a Known Weight Routine

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 LOAD is displayed, then press the Right button. The display should look like this:

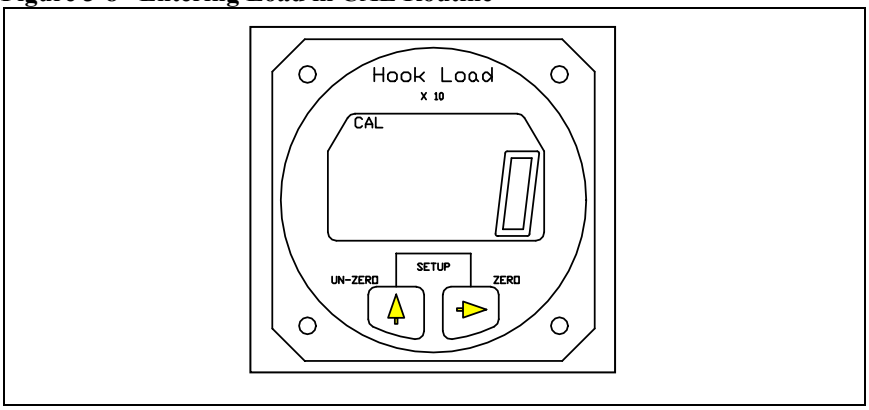
Figure 3-7 Running CAL Routine



The CAL legend is turned on and the first digit is blinking. The previous load is not displayed. At this point if you wish to return to the Run Mode without changing the Calibration Code, power cycle the Indicator. At this point it is not possible to return to the Run Mode without changing the Calibration Code by using the buttons on the Indicator front panel.

To proceed with the procedure, use the Right button to select the digit to be changed, then use the Left button to scroll the blinking digit to the desired number. Note that the known weight is entered "X 10"; a 1000 pound load is entered as 100. When the known load has been entered, press both the Right and Left button at the same time. The display will look like this:

Figure 3-8 Entering Load in CAL Routine



Calibration by Lifting a Known Weight, continued

The CAL legend and the digits will be blinking. Again, at this point if you wish to return to the Run Mode without changing the Calibration Code, power cycle the Indicator. It is not possible to return to the Run Mode by using the buttons on the Indicator front panel without changing the Calibration Code. If you wish to proceed, lift the known load and when it is stabilized, press either button to complete the procedure. The Indicator will display the load. This ends the procedure. The Indicator is now calibrated to the Load Cell. It is a good practice to go to the Code routine and record the new Calibration code for later reference.

Setting the Scale for a remote analog meter

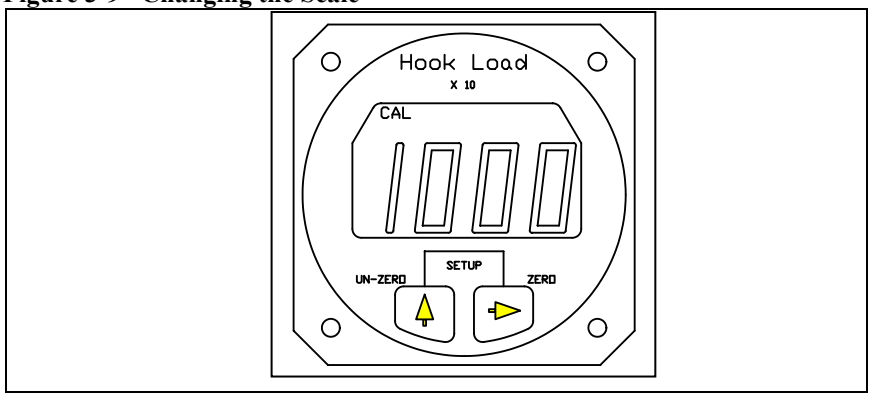
The Scale routine is used when a user supplied analog meter is connected to the Indicator. It is used to match or calibrate the analog meter to the Indicator. The Indicator outputs a 0 to 5 VDC analog signal which is proportional to the Load Cell load. The Scale number tells the Indicator at what point in pounds or kilograms it should reach the 5 VDC output. If for example a 5 volt analog meter is used and its full scale reading is 10,000 pounds, the number entered into the Indicator Scale routine would be 1000 (the number is entered X 10). This number tells the Indicator that it should output the proportional 0 to 5 VDC signal between zero pounds and 10,000 pounds.

The Scale number does not affect Onboard Slave Meters, P/N 210-106-00 or 210-180-00. This number only affects user supplied instruments connected to the analog out signal.

To Look at or Change the Scale

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 SCALE is displayed, then press the Right button. The display should look like this:

Figure 3-9 Changing the Scale



The Setup Mode, continued

To Look at or Change the Scale, continued

The CAL legend is turned on and the previously set Scale number is displayed. To return to Run without changing the Scale, press both the Right and Left button at the same time. To change the Scale number, use the Right button to select a digit to be changed, then use the Left button to scroll the blinking digit to the desired number. When the complete Scale number has been entered, press both the Right and Left button at the same time to return to Run.

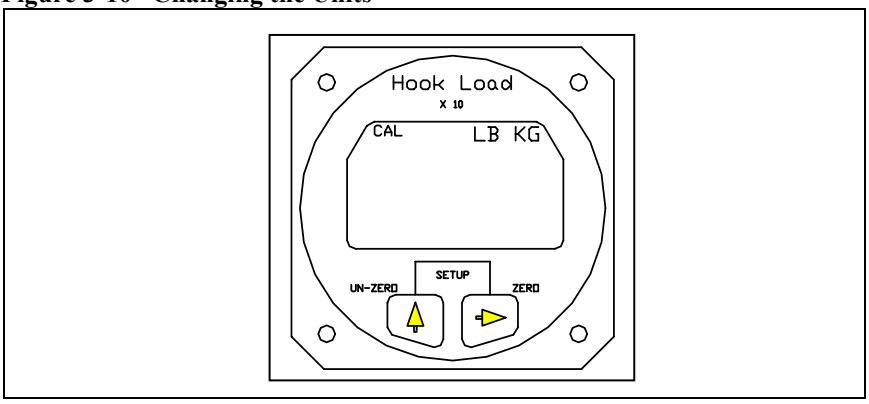
Select KG or LB Units

The units routine sets the display to read in pounds (LB) or kilograms (KG).

To look at or change the Units

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 LB or KG is displayed, then press the Right button. The display should look like this:

Figure 3-10 Changing the Units



The CAL legend is turned on and the previously set unit is displayed. To return to Run without changing the units, press both the Right and Left button at the same time. To change the units press the Left button. When the selection has been made, press both the Right and Left button at the same time to return to Run.

NOTICE

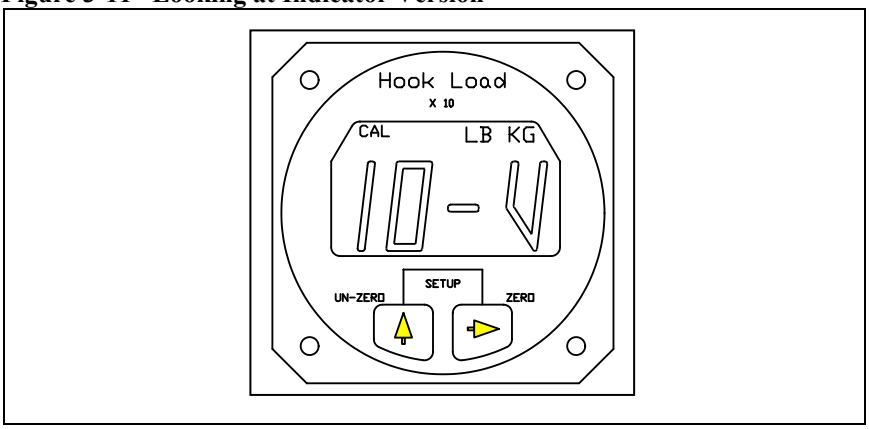
The selected units are displayed when in the Run Mode.

The Setup Mode, continued

Indicator Version

The Version routine displays the Indicator's hardware and software revision levels. Version is set at the factory and cannot be changed.

Figure 3-11 Looking at Indicator Version



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Section 4

Cargo Hook Operation Instructions

Operating Procedures

Prior to a flight involving external load operations 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

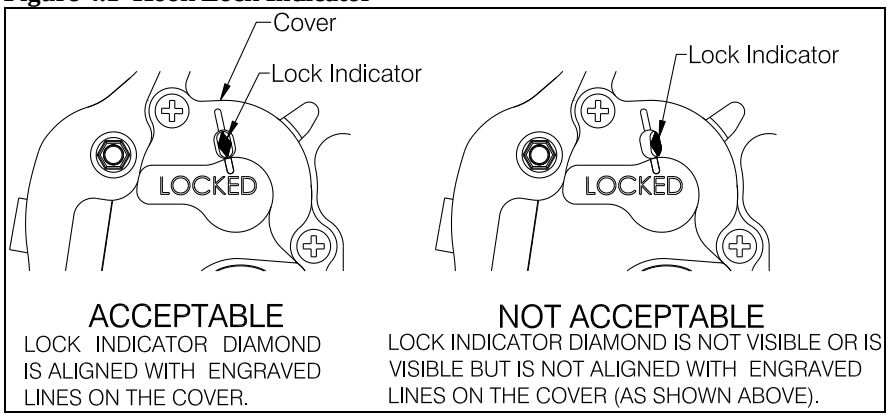
The cargo hook release solenoid is intended to be energized only intermittently. Depressing the electrical release button continuously in excess of 20 seconds will cause the release solenoid to overheat, possibly causing permanent damage.

2. Activate the manual release lever to test the cargo hook manual release mechanism. The mechanism should operate smoothly and the Cargo Hook must release. Reset the load beam 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 must align with the lines on the manual release cover (see Figure 4.1). If the hook does not release or re-latch, do not use the unit until the problem is resolved.

⚠ CAUTION

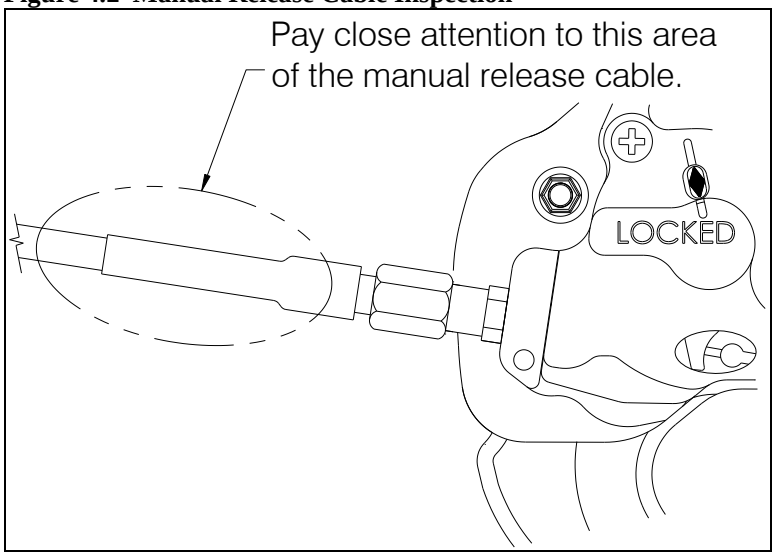
In the fully locked position the hook lock indicator must align with the lines on the manual release cover (see Figure 4.1).

Figure 4.1 Hook Lock Indicator



3. 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 4.2). Inspect for splitting of the outer black conduit in this area and separation of the conduit from the steel end fitting.

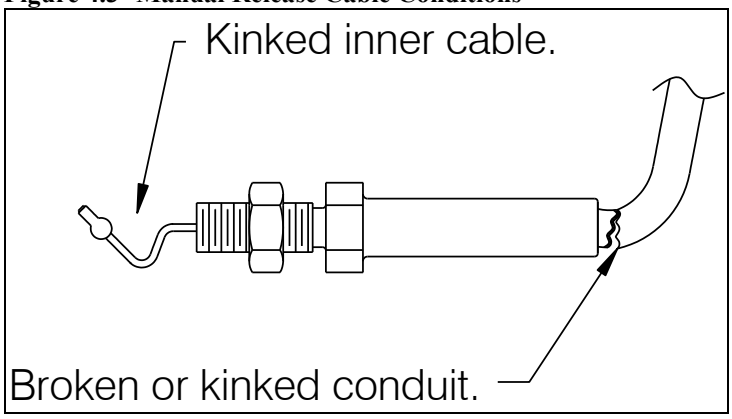
Figure 4.2 Manual Release Cable Inspection



WARNING

Manual release cables are wearable items and must be replaced as condition requires. Broken or kinked conduit, inner cable kinks (ref Figure 4.3), frays, or sticky operation are each cause for immediate replacement.

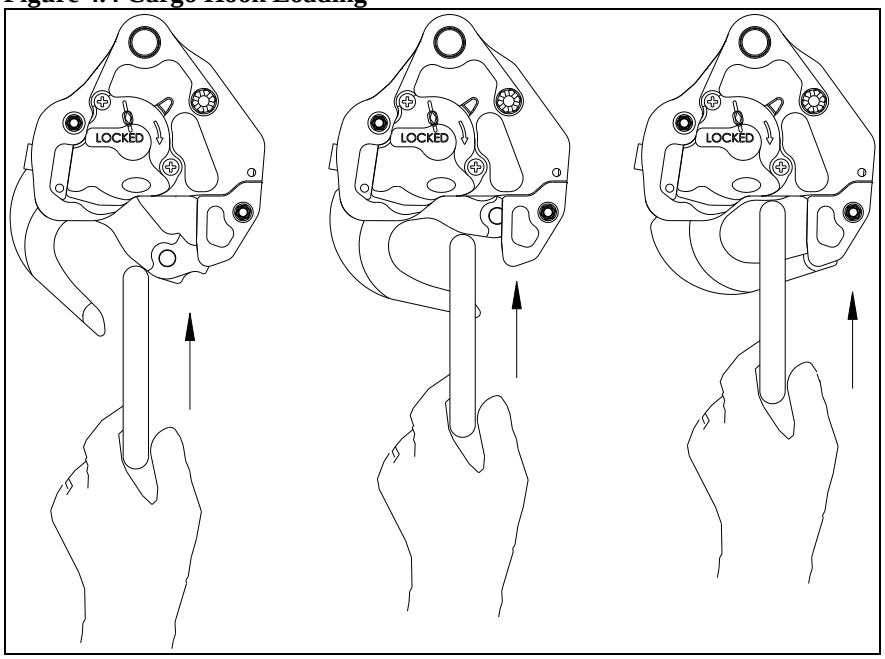
Figure 4.3 Manual Release Cable Conditions



Cargo Hook Loading

The cargo hook can easily be loaded with one hand. A load is attached to the hook by pushing the ring upward against the upper portion of the load beam throat, as illustrated in Figure 4.4, until an internal latch engages the load beam and latches it in the closed position.

Figure 4.4 Cargo Hook Loading



Cargo Hook Rigging

Extreme care must be exercised when rigging a load to the Cargo Hook. Steel load rings are recommended to provide consistent release performance and resistance to fouling. The following illustration shows the recommended rigging and rigging to avoid, but is not intended to represent all rigging possibilities. Some combinations of small primary rings and large secondary rings could cause fouling during release.

It is the responsibility of the operator to assure the cargo hook will function properly with each rigging.

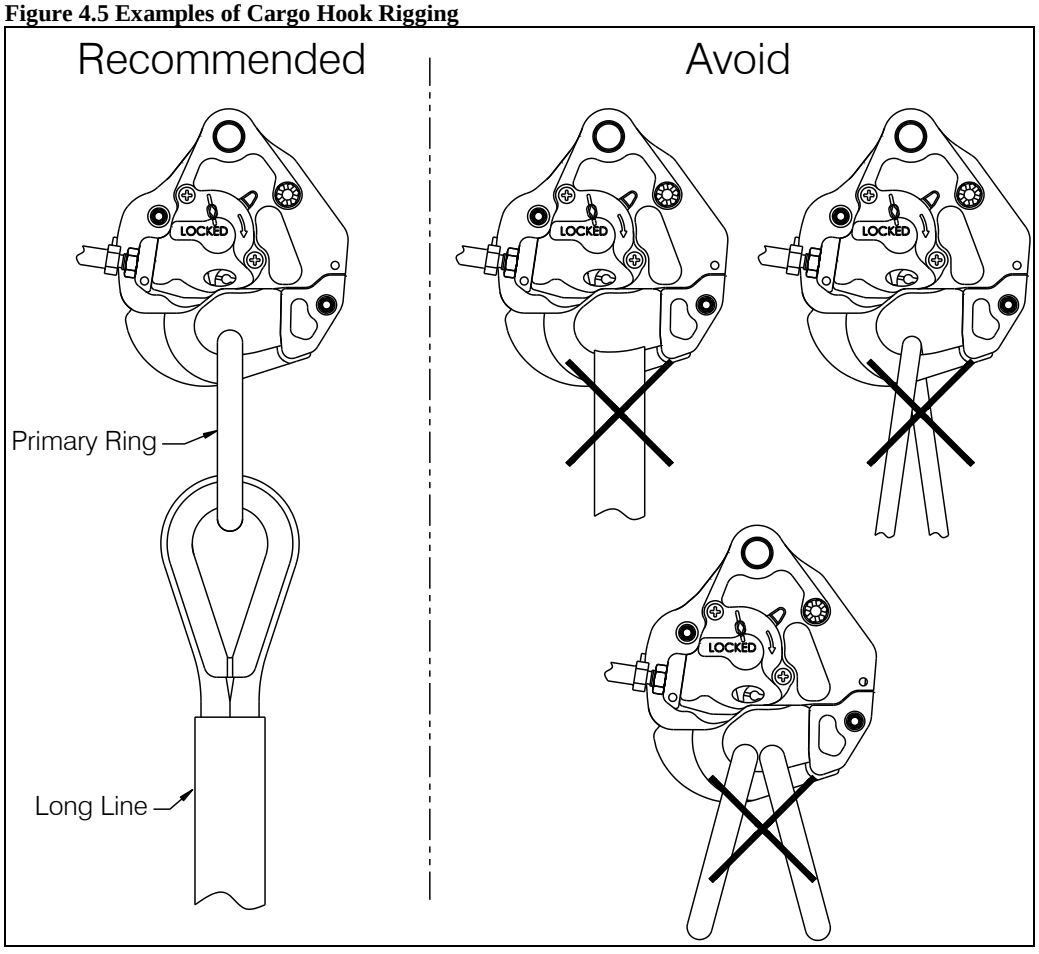
Cargo Hook Rigging, continued

Nylon Type Straps and Rope

WARNING

Nylon type straps (or similar material) or rope must not be used directly on the cargo hook load beam. If nylon straps or rope must be used they should be first attached to a steel primary ring. Verify that the ring will freely slide off the load beam when it is opened. Only the primary ring should be in contact with the cargo hook load beam.

Figure 4.5 Examples of Cargo Hook Rigging



Section 5
Maintenance

The following procedures are provided for the benefit of experienced aircraft maintenance facilities capable of carrying out the procedures. They must not be attempted by those lacking the necessary expertise. It is recommended that only minor repairs be attempted by anyone other than the factory.

Refer to Component Maintenance Manual 122-017-00 for detailed maintenance information for the Cargo Hook.

Lubrication

Lubrication of the Suspension System is recommended 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 pivot points every 200 hours. Recommended lubricants are AeroShell 17, MIL-G-21164 or Mobilgrease 28, MIL-G-81322.

Inspection

The scheduled inspection/overhaul 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.

Annually or 100 hours of external load operations, whichever comes first, inspect the suspension system per the following instructions (see Figures 5.2 through 5.4 for part identification and Table 5.2 for inspection criteria).

NOTICE

*Hours of external load operations should be interpreted to be (1) anything is attached to the 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. Move the cargo hook throughout its full range of motion to ensure the electrical harness and manual release cable have enough slack. The harness and cable must not be the stops that prevent the cargo hook from swinging freely in all directions.
2. Visually inspect the electrical harness strain relief at the load cell (if installed) for damage.
3. Visually inspect the external electrical harnesses for damage, chafing and security.
4. Visually inspect the electrical connections of the cargo hook and load cell (if installed) at the belly of the helicopter for damage and security.
5. Visually inspect the load cell cover for corrosion, damage and security (if kit 200-269-03 is installed).
6. Visually inspect the load link for corrosion, damage and cracks (refer to Table 5.2 for inspection criteria).
7. Visually inspect suspension frame assembly for cracks, wear and corrosion. If worn excessively or cracked, replace parts (refer to Table 5.2 for inspection criteria). Remove corrosion and treat with zinc chromate primer.

Inspection continued

8. 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

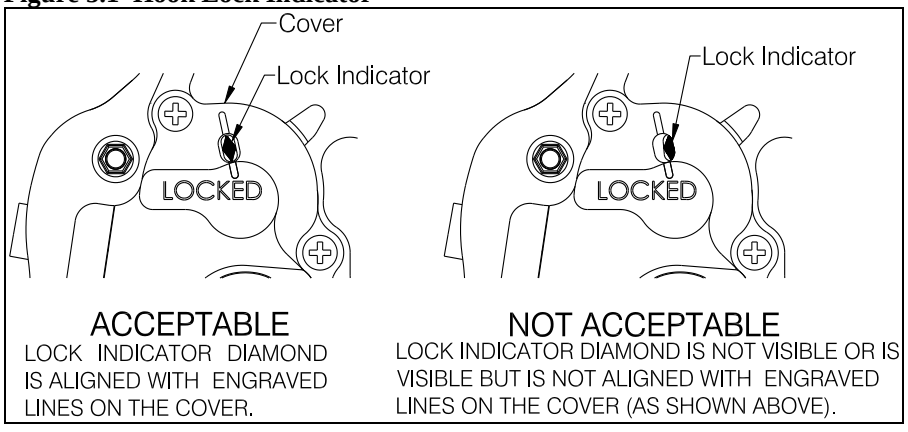
The cargo hook release solenoid is intended to be energized only intermittently. Depressing the electrical release button continuously in excess of 20 seconds will cause the release solenoid to overheat, possibly causing permanent damage.

9. Activate the manual release lever to test the cargo hook manual release mechanism. The mechanism should operate smoothly and the Cargo Hook must release. Reset the load beam 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 must 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.

⚠ CAUTION

In the fully locked position the hook lock indicator must align with the lines on the manual release cover (see Figure 5.1).

Figure 5.1 Hook Lock Indicator



10. Verify calibration of the load cell (if installed) by lifting a load of known weight (see Section 3 for instructions).

Inspection continued

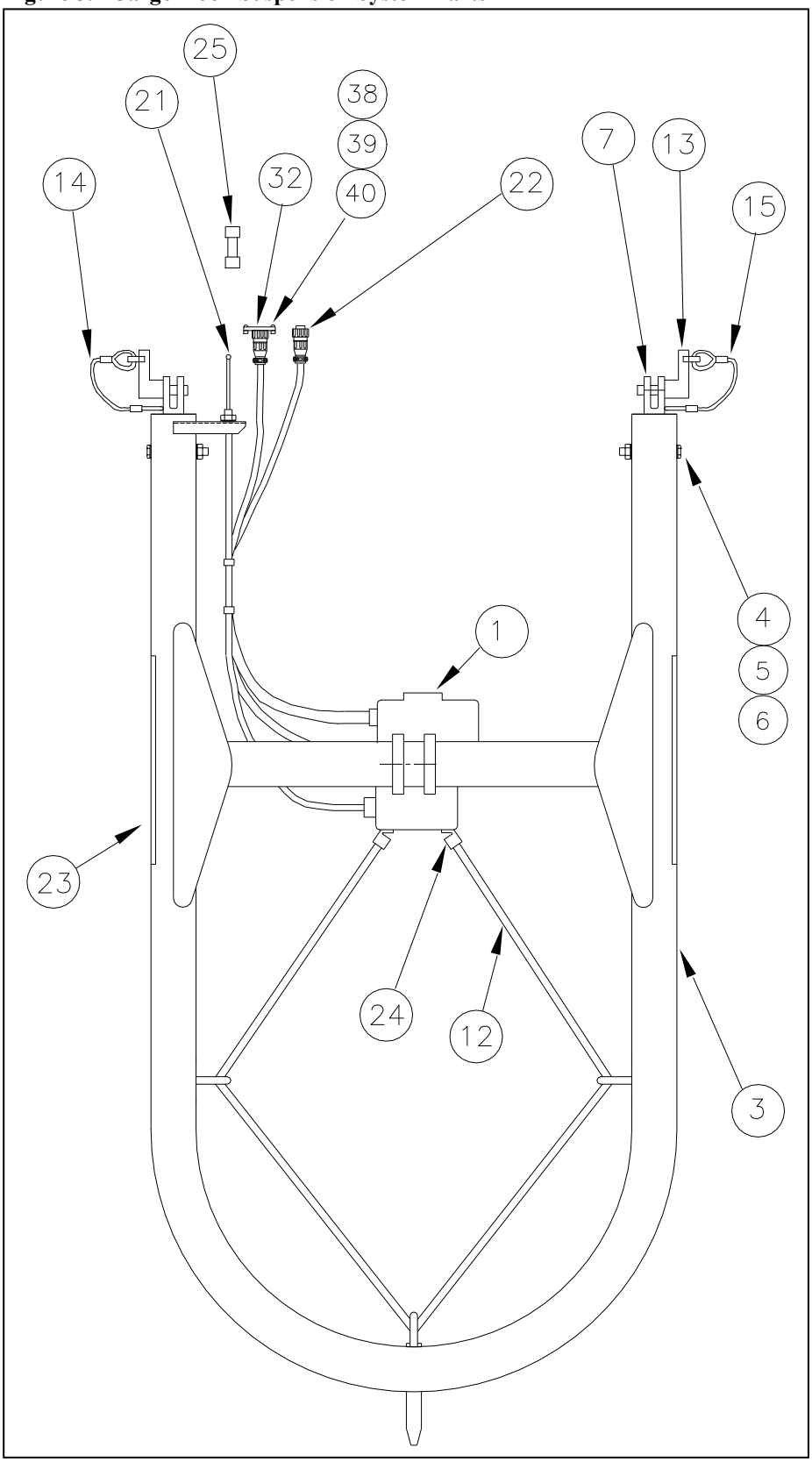
The overhaul interval for the suspension system shall be 5 years or 1000 hours of external load operations, whichever comes first. See Component Maintenance Manual 122-017-00 for cargo hook overhaul.

At the overhaul interval, in addition to the items listed for the annual/100 hour inspection, perform the following:

1. Disassemble and inspect the suspension system components to the requirements outlined in Table 5.2. Carefully inspect the detail parts in a clean, well-lit room. Inspect bushings, bearing surfaces and the pivot bolts for wear and corrosion. Pitting, corrosion or excessive wear on pivot bolts is cause for rejection. Maximum permissible bushing clearances are .015 inches on diameter.
2. Magnetic particle inspect in accordance with ASTM-E1444 and MIL-STD-1907, Grade A, the following part(s). No cracks are permitted.
    - Link Assembly (P/N 232-061-00 or P/N 232-061-01) or Pin Load Cell Assembly (P/N 210-226-01 or P/N 210-301-01) if kit P/N 200-269-03 is installed. For the Pin Load Cell Assembly, inspect shoulder of pin and do not remove cover.
    - Frame Assembly (P/N 232-047-00)
3. Inspect internal electrical harness from the load weigh indicator to the load cell for general condition, security of attachment, and chafing along the length of wire runs.

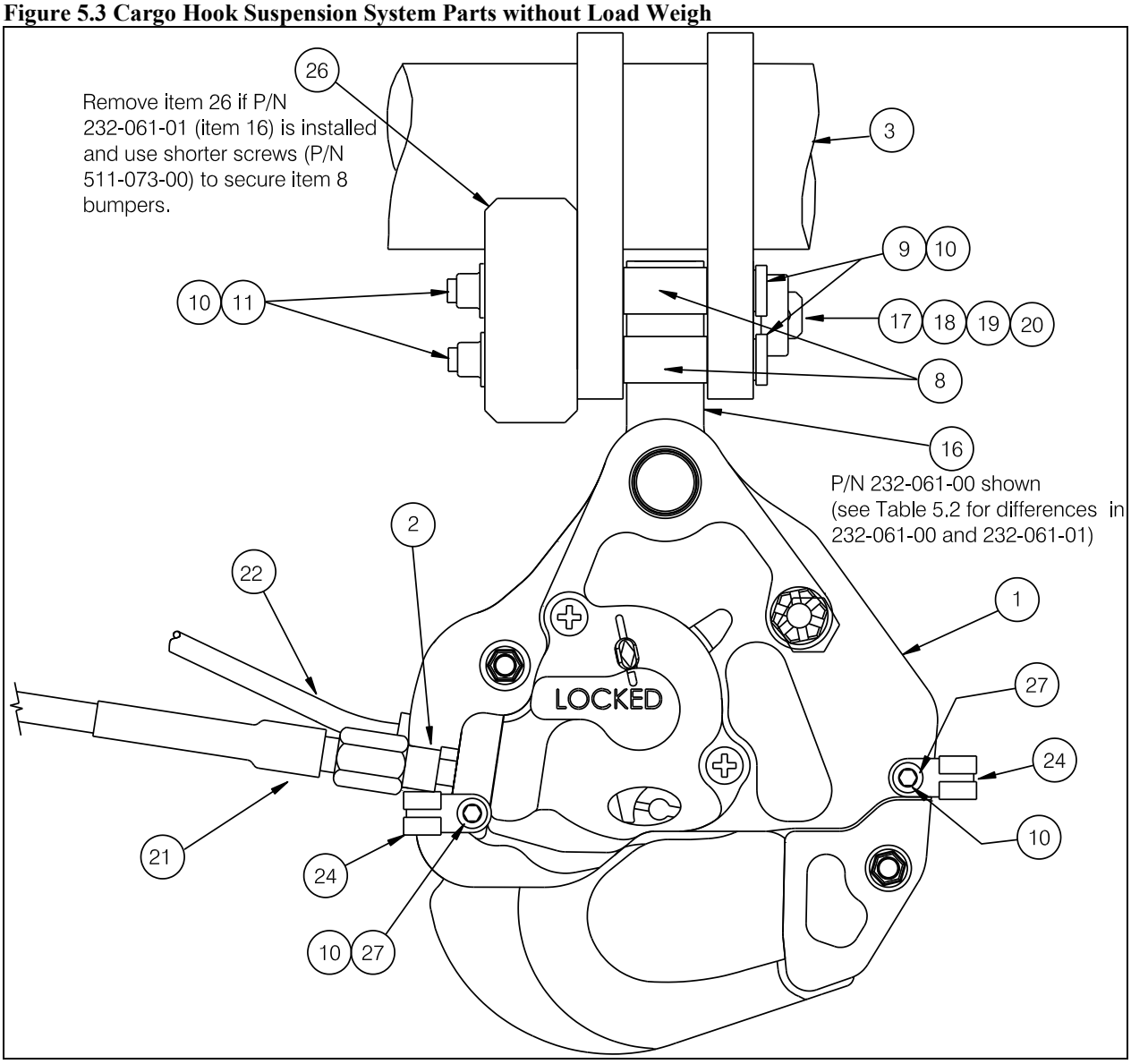
Cargo Hook Suspension System Parts

Figure 5.2 Cargo Hook Suspension System Parts



Cargo Hook Suspension System Parts, continued

Figure 5.3 Cargo Hook Suspension System Parts without Load Weigh



Cargo Hook Suspension System Parts, continued

Figure 5.4 below shows the suspension system with load weigh (P/N 200-269-03) with pin load cell P/N 210-226-01. Pin load cell P/N 210-226-01 has been superseded by P/N 210-301-01, the configuration is the same with P/N 210-301-01 except with changes as shown in Figure 5.5.

Figure 5.4 Cargo Hook Suspension System Parts With Load Weigh

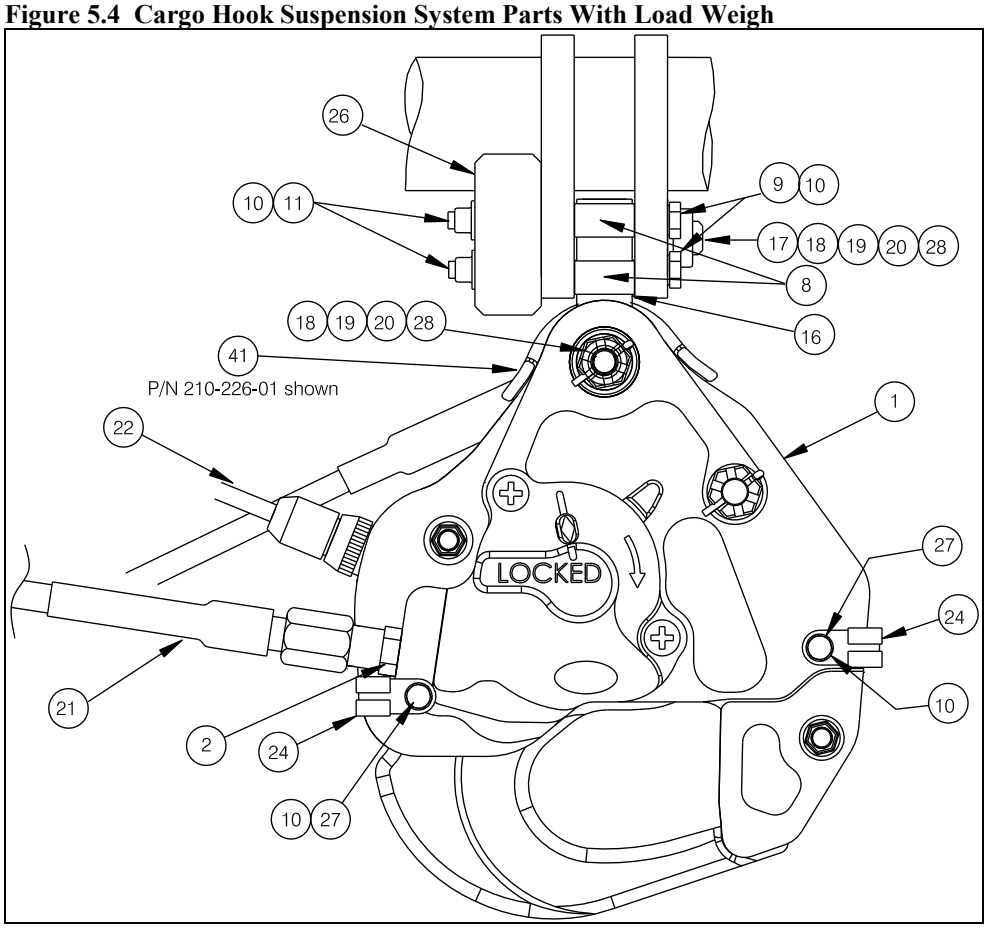
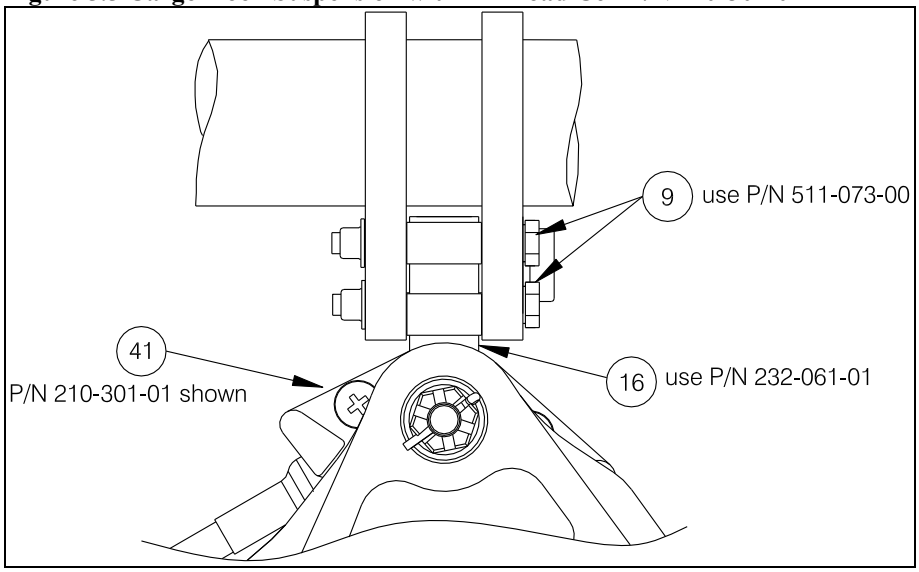
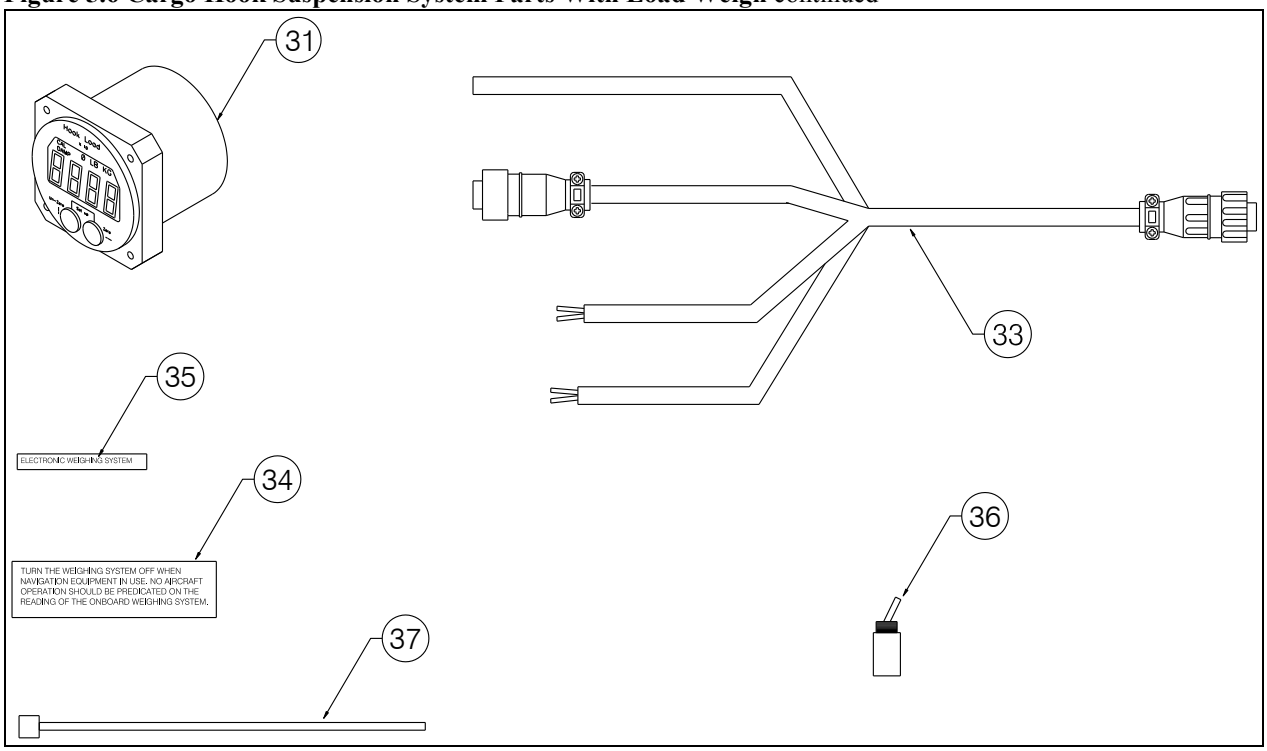


Figure 5.5 Cargo Hook Suspension with Pin Load Cell P/N 210-301-01



Cargo Hook Suspension System Parts, continued

Figure 5.6 Cargo Hook Suspension System Parts With Load Weigh continued



Cargo Hook Suspension System Parts, continued

Table 5.1 Cargo Hook Suspension System Parts

Item	Part No.	Description	200-268-01	200-269-03
1	528-029-00	Cargo Hook	1	1
2	290-331-00	Release Fitting	1	1
3	232-047-00	Frame Assembly	1	1
4	510-223-00	Bolt	2	2
5	510-261-00	Washer	2	2
6	510-227-00	Nut	2	2
7[1]	290-431-00	Fitting - Tube End	2	2
8	290-489-00	Bumper Bushing	2	2
9	510-627-00	Bolt	2	2
10	510-042-00	Washer	6	6
11	510-102-00	Nut	2	2
12	232-062-00	Bungee Cord Assembly	1	1
13	510-295-00	Pin - Quick Release	2	2
14	531-010-00	Lanyard Cable	2	2
15	531-016-00	Nicopress Sleeve	4	4
16[3]	232-061-00	Link Assembly	opt	opt
	232-061-01	Link Assembly	1	1
17	290-332-00	Attach Bolt	2	1
18	510-174-00	Washer	2	2
19	510-170-00	Nut	2	2
20	510-178-00	Cotter Pin	2	2
21	268-015-00	Manual Release Cable	1	1
22	270-074-01	Electrical Release Cable	1	1
23	215-117-00	Decal - Limit Load	2	2
24	512-010-00	Cushioned Loop Clamp	2	2
25	600-006-00	Quick Disconnect	1	1
26	290-507-00	Frame Bumper	See note 4	See note 4
27	510-257-00	Bolt	2	2
28	510-183-00	Washer	3	2
29	510-145-00	Nut	-	1
30	510-067-00	Cotter Pin	-	1
31	210-095-00[2]	C-39 Indicator Assy, 28V	-	opt
31	210-095-02[2]	C-39 Indicator Assy, 5V	-	1
32	235-035-00	QD Bracket	-	1
33	270-048-04	Load Weigh Internal Harness	-	1
34	215-012-00	Placard	-	1
35	215-010-00	Placard	-	2
36	400-048-00	Power Switch	-	1
37	512-001-00	Ty-Wrap	-	10
38	510-028-00	Screw	-	6
39	510-029-00	Nut	-	6
40	510-062-00	Washer	-	8

Cargo Hook Suspension System Parts, continued

Table 5.1 Cargo Hook Suspension System Parts

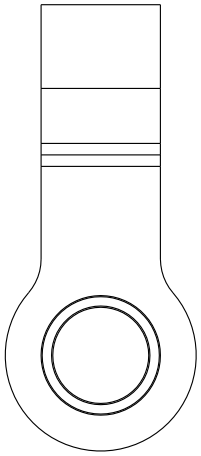
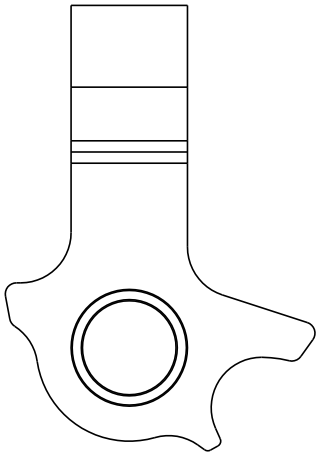
Item	Part No.	Description	200-268-01	200-269-03
41	210-226-01[3]	Pin Load Cell Assembly	-	1
42	510-068-00	Bolt	-	1
43	510-183-00	Washer	2	3

[1] Optionally use P/N 290-431-01, consult the factory for additional guidance.

[2] Indicator P/Ns 210-095-00 and 210-095-02 are both compatible with kit 200-269-03. Verify Indicator voltage matches aircraft lighting system voltage.

[3] Pin Load Cell Assembly P/N 210-226-01 is superseded by P/N 210-301-01. If using Pin Load Cell Assembly P/N 210-301-01 it must be installed with Link Assembly P/N 232-061-01 rather than Link Assembly P/N 232-061-00 (see Table 5.2 below for identification of Link Assemblies) and must not be used with the Frame Bumper P/N 290-507-00. Replace item 9 bolts with P/N 511-073-00 bolts.

Table 5.2 Link Assembly Identification

Link Assembly P/N 232-061-00 (shown below) for use with Pin Load Cell Assembly P/N 210-226-01 and Frame Bumper P/N 290-507-00.	Link Assembly P/N 232-061-01 (shown below) for use with Pin Load Cell Assembly P/N 210-301-01 and without Frame Bumper P/N 290-507-00.
	

[4] Use Frame Bumper Assembly only with Link Assembly P/N 232-061-00 (see Table 5.2 above for identification of Link Assembly P/N).

Cargo Hook Suspension System Inspection

Table 5.3 Cargo Hook Suspension Inspection Criteria

Item	Part	Inspect for:	Repair
1	Frame Assembly P/N 232-047-00 (item 3)	Dents, nicks, cracks, gouges, corrosion or scratches in the welded frame structure.	Repair dents, gouges, nicks, scratches and corrosion if less than .030" deep, blend out at a ratio of 20:1, length to depth, replace assembly if otherwise damaged. Touch up with zinc chromate primer.
2	Link Assembly P/N 232-061-00 or P/N 232-061-01 (item 16)	Dents, nicks, cracks, gouges, corrosion or scratches in structural link.	Repair dents, gouges, nicks, scratches and corrosion if less than .030" deep, blend out at a ratio of 20:1, length to depth, replace link if otherwise damaged. Touch up with zinc chromate primer.
		Wear on inside diameter of upper bushing.	If copper is visible over more than 50% of the bushing wear area, remove and replace the bushing.
		Wear on inside diameter of lower bushing.	Replace bushing if inside diameter exceeds 0.520 in. (13.21 mm).
3	Attach Bolt P/N 290-332-00 (item 17) Qty 2	Wear on outside diameter.	Replace bolt if outside diameter is less than 0.485 in. (12.32 mm).
4	Pin Load Cell Assembly P/N 210-226-01 or P/N 210-301-01 (item 41) Qty 1	Wear on outside diameter of shoulder.	Replace if outside diameter is less than .487 in. (12.37 mm).

Trouble Shooting

Table 5.3 Trouble Shooting

DIFFICULTY	PROBABLE CAUSE	CORRECTIVE ACTION
Circuit breaker opens when the circuit to Load Weigh System is energized.	Short in the system, faulty circuit breaker or switch.	Repair or replace defective wiring, circuit breaker and 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, return th unit to the factory.
Where Am I?		Turn the Indicator power off for a few moments. When it comes to life it will b in the Run mode.
Displayed load is incorrect.	Incorrect Calibration Code.	Insure the correct Calibration Code has been entered.
Displayed load is not stable.	Dampening level is too small.	Adjust the Dampening level to a larger number.
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.
Do not recognize the displayed numbers on the Indicator.	NV Ram failure, A/D or D/A circuit failure.	Refer to *Error Codes* in section 3.
Load Weigh Indicator does not change with changing hook loads.	Defective load cell or damaged internal harness.	Check for damaged internal harness, replace load cell.

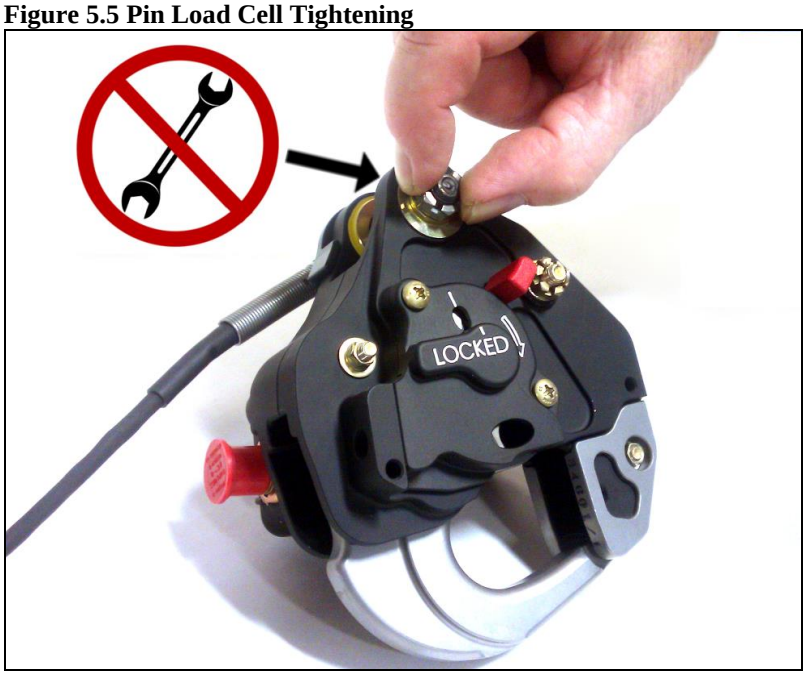
Cargo Hook Suspension System Reassembly

1. Assemble the Cargo Hook onto the Link Assembly (16) with the Attach Bolt (17), two washers (28, one on each side of the cargo hook), washer (18), nut (19) and cotter pin (20). If using the load weigh system, the pin load cell replaces the Attach Bolt and one of the washers (28) is omitted (do not install one on the pin load cell cover side of the cargo hook).
2. Tighten the nut on the pin load cell or attach bolt until fully seated, finger tight only. Back off nut to previous castellation, if needed, to insert cotter pin. Install and secure cotter pin.

CAUTION

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

Figure 5.5 Pin Load Cell Tightening



3. Install Link Assembly to frame using Attach Bolt (17), washer (18), and nut (19).
4. Tighten nut (19) finger tight and back off to previous castellation, if needed, to insert cotter pin (20).

Cargo Hook Suspension System Reassembly continued

5. Install the two Bumper Bushings (8) and Frame Bumper (26) using two bolts (9), four washers (10) and two nuts (11).

CAUTION

If using Link Assembly P/N 232-061-01 (see Table 5.2 for identification), do not install the Frame Bumper and use the shorter bolts (P/N 511-073-00) to secure the Bumper Bushings (8).

6. Attach release fitting (2) to cargo hook.
7. Secure Manual Release Cable (21) to Frame Assembly (3) bracket and to cargo hook.
8. Verify manual release cable rigging per Section 2.

Instructions for Returning Equipment to the Factory

If an Onboard Systems product must be returned to the factory for any reason (including returns, service, repairs, overhaul, etc) obtain an RMA number before shipping your return.

An RMA number is required for all equipment returns.

- To obtain an RMA, please use one of the listed methods.
    - Contact Technical Support by phone or e-mail (Techhelp@OnboardSystems.com).
    - Generate an RMA number at our website: http://www.onboardsystems.com/rma.php
- After you have obtained the RMA number, please be sure to:
    - Package the component carefully to ensure safe transit.
    - Write the RMA number on the outside of the box or on the mailing label.
    - Include the RMA number and reason for the return on your purchase or work order.
    - Include your name, address, phone and fax number and email (as applicable).
    - Return the components freight, cartage, insurance and customs prepaid to:

      Onboard Systems
      13915 NW 3rd Court
      Vancouver, Washington 98685
      USA
      Phone: 360-546-3072

Section 6
Certification
FAA STC

United States of America
Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number **SR00895SE**

This certificate, issued to: **Onboard Systems**
13915 NW 3rd Court
Vancouver, WA 98685

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part **6** *of the* **Civil Air** *Regulations.*

Original Product—Type Certificate Number H2SW
Make: Bell
Model: 206A and 206B

Description of the Type Design Change: Fabrication of Onboard Systems Model 200-268-00, 200-268-01, 200-269-00, 200-269-02, or 200-269-03 Cargo Hook Kits in accordance with Federal Aviation Administration (FAA) approved Onboard Systems Master Drawing List No. 155-064-00, Revision 11, dated August 15, 2011, or later FAA-approved revision.

(See Continuation Sheet Page 3)

Limitations and Conditions: Approval of this change in type design applies to only those Bell model rotorcraft listed above which are equipped with Bell part number 206-706-335-3, -5, -105, or -109 Auxiliary Equipment Kit – Cargo Hook Provisions. This approval should not be extended to other rotorcraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that rotorcraft.

(See Continuation Sheet Page 3)

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: September 22, 2000 *Date reissued:*
Date of issuance March 26, 2001 *Date amended:* 1/13/03; 10/1/07; 4/23/08; 1/20/12

By direction of the Administrator

(Signature)
Acting Manager, Seattle Aircraft Certification Office
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA Form 8110-2(10-68) PAGE 1 OF 3 PAGES

FAA STC continued

United States of America
Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number **SR00895SE**

Onboard Systems

Issued: March 26, 2001
Amended: 1/13/03; 10/1/07; 4/23/08; 1/20/12
Reissued:

Description of the Type Design Change Continued: Installation of these Onboard Systems kits in accordance with FAA-approved Onboard Systems Owner's Manual listed in the table below, or later FAA-approved revision. This modification must be inspected and maintained in accordance with FAA-approved Onboard Systems Owner's Manual and Component Maintenance Manual listed in the table below, or later FAA-approved revision.

System Part No.	Owner's Manual No.	Component Maintenance Manual No.
200-268-00	120-099-00, Revision 9, dated March 2, 2010	122-005-00, Revision 21, dated April 7, 2011
200-268-01	120-099-01, Revision 0, dated July 19, 2011	122-017-00, Revision 14, dated September 2, 2011
200-269-00	120-099-00, Revision 9, dated March 2, 2010	122-005-00, Revision 21, dated April 7, 2011
200-269-02	120-099-00, Revision 9, dated March 2, 2010	122-005-00, Revision 21, dated April 7, 2011
200-269-03	120-099-01, Revision 0, dated July 19, 2011	122-017-00, Revision 14, dated September 2, 2011

Limitations and Conditions Continued: Rotorcraft modified in accordance with this STC must be operated in accordance with FAA-approved Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) No. 121-009-00, Revision 2, dated September 27, 2007, or later FAA-approved revision, for the 200-268-00, 200-269-00, 200-269-02 cargo hook kits or Onboard Systems RFMS 121-009-01, Revision 0, dated November 30, 2011, or later FAA-approved revision, for the 200-268-01 or 200-269-03 cargo hook kits. A copy of this certificate, a copy of the FAA-approved RFMS, Owner's Manual, and Component Maintenance Manual must be maintained as part of the permanent records for the modified rotorcraft.

If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

- END -

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA Form 8110-2(10-68)

PAGE 3 OF 3 PAGES

Transport Canada STC

Transport Canada Transports Canada

Department of Transport

Supplemental Type Certificate

This approval is issued to:

Onboard Systems
11212 NW St. Helens Road
Portland, Oregon
United States of America 97231

Number: SH01-39
Issue No.: 2
Approval Date: June 18, 2001
Issue Date: April 19, 2012

Responsible Office: Pacific

Aircraft/Engine Type or Model: Bell 206A, 206B

Canadian Type Certificate or Equivalent: H-92

Description of Type Design Change: Installation of Onboard Systems Model 200-268 (without load weigh) or Model 200-269 (with load weigh) Cargo Hook System per FAA STC SR00895SE

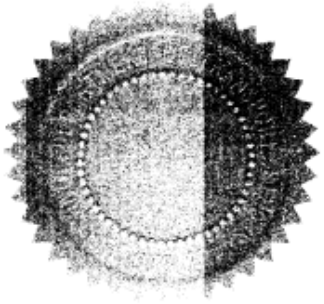
Installation/Operating Data, Required Equipment and Limitations:

Installation, Inspection and Maintenance of Onboard Systems Model 200-268-00, -01 (without load weigh) or Model 200-269-00, -02, -03 (with load weigh) Cargo Hook System in accordance with the following FAA approved Onboard Systems documentation:

1. **Owner's Manual** No. 120-099-00, Revision 9, dated March 2, 2010 * for Onboard Systems Model 200-268-00, 200-269-00 and 200-269-02; or 120-099-01, Revision 0, dated July 19, 2011 * for Onboard Systems Model 200-268-01 and 200-269-03;
2. **Component Maintenance Manual** No. 122-005-00, Revision 21, dated April 7, 2011 * for Onboard Systems Model 200-268-00, 200-269-00 and 200-269-02; or 122-017-00, Revision 14, dated September 2, 2011 * for Onboard Systems Model 200-268-01 and 200-269-03.

Onboard Systems, Cargo Hook Systems Model 200-268 (without load weigh) or Model 200-269 (with load weigh) are to be fabricated in accordance with FAA approved Onboard Systems **Master Drawing List** No. 155-064-00, Revision 11, dated August 15, 2011*.

Modified rotorcraft must be operated in accordance with FAA approved Onboard Systems **Rotorcraft Flight Manual Supplement** (RFMS) No. 121-009-00, Revision 2, dated September 27, 2007 * for …



Conditions: This approval is only applicable to the type/model of aeronautical product specified therein. Prior to incorporating this modification, the installer shall establish that the interrelationship between this change and any other modification(s) incorporated **will not** adversely affect the airworthiness of the modified product.

Henry Wong
For Minister of Transport

Canada

Transport Canada STC continued

(Continuation Sheet)

Number: SH01-39 Issue: 2

NOTE: THIS ADDENDUM SHALL REMAIN PART OF THE CERTIFICATE REFERRED TO THEREIN.

Onboard Systems Model 200-268-00, 200-269-00 and 200-269-02; or 121-009-01, Revision 0, dated November 30, 2011 * for Onboard Systems Model 200-268-01 and 200-269-03.

Required Equipment:
Bell part number 206-706-335-3, -5, -105, or -109 Auxiliary Equipment Kit – Cargo Hook Provisions.

* (or later FAA approved revision)

— End —

Page 2 of 2

EASA STC

EASA
European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

10053571 REV. 1

This Supplemental Type Certificate is issued by EASA, acting in accordance with Regulation (EC) No. 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation and in accordance with Commission Regulation (EU) No. 748/2012 to:

ONBOARD SYSTEMS INTERNATIONAL

13915 NW 3RD COURT
VANCOUVER WA 98685
USA

and certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable Type Certification Basis and environmental protection requirements when operated within the conditions and limitations specified below:

Original Type Certificate Number: EASA.IM.R.512

Type Certificate Holder: BELL HELICOPTER TEXTRON CANADA

Type: 206/407

Model: 206A, 206B

Original STC Number: FAA STC SR00895SE

Description of Design Change:
Onboard Cargo Hook system Part Numbers 200-268-00, 200-268-01, 200-269-00, 200-269-02, or 200-269-03 in accordance with Onboard Master Drawing List No. 155-064-00.

The purpose of Revision 1 to EASA approval IM.R.S.00594/10053571 is to include Part Numbers 200-268-01 200-269-02, or 200-269-03.

EASA Certification Basis:
The Certification Basis (CB) for the original product remains applicable to this certificate/ approval.

See Continuation Sheet(s)

For the European Aviation Safety Agency

Date of Issue: 22 February 2017

Pier Giorgio COLOMBO
Medium Rotorcraft Section Manager

An Agency of the European Union

EASA STC continued

The requirements for environmental protection and the associated certified noise and/ or emissions levels of the original product are unchanged and remain applicable to this certificate/ approval.

Associated Technical Documentation:
Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) No. 121-009-00,Revision 2, dated September 27, 2007, for the 200-268-00, 200-269-00,200-269-02 cargo hook kits.

Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) No. 121-009-01, Revision 0, dated November 30, 201, for the 200-268-01 or 200-269-03 cargo hook kits.

or later revisions of the above listed documents approved by EASA in accordance with EASA ED Decision 2004/04/CF (or subsequent revisions of this decision)" and/ or the Technical Implementation Procedures of EU/ USA Bilateral Agreement.

Onboard Systems Master Drawing List No. 155-064-00, Revision 11, dated August 15, 2011.

For System Part No. 200-268-00, 200-269-00, 200-269-02:
- Owner's Manual No. 120-099-00, Revision 9, dated March 2, 2010.
- Component Maintenance Manual No. 122-005-00, Revision 21, dated April 7, 2011.

For System Part No. 200-268-01, 200-269-03:
- Owner's Manual No. 120-099-01, Revision 0, dated July 19, 2011.
- Component Maintenance Manual No. 122-017-00, Revision 14, dated September 2, 2011.

Limitations/Conditions:
This approval applies to helicopters Bell 206A and 206B equipped with Bell Cargo Hook Kit Provisions part number 206-706-335-3/ -5/ -105/ -109.

Prior to installation of this design change it must be determined that the interrelationship between this design change and any other previously installed design change and/ or repair will introduce no adverse effect upon the airworthiness of the product.

- End -