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Cargo Hook Suspension System

for the

Bell 206 A/B Series

Kit Part Numbers
200-233-00,Talon LC Without Load Weigh
200-234-00, Talon LC With Load Weigh
200-234-01, Talon LC With Load Weigh
200-235-00, Big Mouth Hook, Without Load Weigh
200-236-00, Big Mouth Hook, With Load Weigh
200-236-01, Big Mouth Hook, With Load Weigh

Owner's Manual

Owner's Manual Number 120-076-00
Revision 11
March 2, 2010

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RECORD OF REVISIONS

Revision	*Date*	*Page(s)*	*Reason for Revision*
5	09/07/06	1-2, 2-7, 2-8, 5-1, 5-2, 5-10	Updated manual to allow installation of wire harness P/N 270-048-04. Changed daily inspection to daily check in section 5.
6	02/14/07	Section 1, 2-8, Section 4	Changed Cargo Hook P/N 528-010-00 to 528-010-04 (ref service bulletin 159-017-00). Updated maintenance information including adding references to service manuals 122-001-00 and 122-002-00. Changed overhaul frequency to match service manual.
7	03/09/07	Section 1, 2-6, 2-9, 2-10, 5-1, 5-9 Section 3, 4-8, 4-9, 4-12	Updated Manual to allow use of 210-034-02 Load Cell assembly. Updated Warning, Cautions and notes to current format. Added Warnings, cautions and notes explanation to section 1. Removed RFMS from Manual. RFMS section replaced by document 121-042-00.
8	10/24/07	5-9, 5-10	Added optional P/N 290-431-01.
9	05/16/08	1-2, 1-3, 5-9 & 5-10	Added bolt, P/N 510-276-00, to parts list. Increase quantity of washer, P/N 510-042-00, to 6. Changed Bolt, P/N 510-111-00, to Bolt, P/N 510-627-00.
10	02/17/09	1-3 & 5-9	Changed crimp sleeve P/N 512-013-00 to 531-016-00.
11	3/2/10	TOC, Section 2 & 5-8	Updated manual to reflect new load weigh harness configuration.

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Section 1
General Information

Introduction

The P/N 200-233-00, P/N 200-234-00, P/N 200-234-01, P/N 200-235-00, P/N 200-236-00 & P/N 200-236-01 Cargo Hook Suspension Systems are approved for installation on the 206 A and B series helicopters. The system replaces the Bell 206-706-335-1, -101 or -103 Auxiliary Equipment Kit- Cargo Hook. It must be installed with the Bell part number 206-706-335-3, -5 or -105 Auxiliary Equipment Kit- Cargo Hook Provisions. The various part numbers are for different options for the hook and load weigh. The following chart illustrates the various possibilities.

Table 1-1 Kit Part Numbers

Kit Part Number	Hook Part Number	Load Weigh
200-233-00	528-010-04 (Talon LC)	No
200-234-00	528-010-04 (Talon LC)	Yes
200-234-01	528-010-04 (Talon LC)	Yes
200-235-00	528-017-00 (Talon Big Mouth)	No
200-236-00	528-017-00 (Talon Big Mouth)	Yes
200-236-01	528-017-00 (Talon Big Mouth)	Yes

Warnings, Cautions & Notes

The following definitions apply to Warnings, Cautions & Notes used in this manual.

Means that if this information is not observed, serious injury, death or immediate loss of flight safety could occur.

Means that there is a risk of injury or degradation in performance of equipment if this information is not observed.

Draws the reader's attention to information which may not be directly related to safety, but which is important or unusual.

Bill of Materials

The following items are included with the Cargo Hook Kit, if shortages are found contact the company from whom the system was purchased.

Table 1-2 Bill of Materials

Number	Description	200-233-00 Quantity	200-234-00 Quantity	200-234-01 Quantity	200-235-00 Quantity	200-236-00 Quantity	200-236-01 Quantity
120-076-00	Owner's Manual	1	1	1	1	1	1
122-001-00	Talon LC Service Manual	1	1	1	-	-	-
122-002-00	Big Mouth Service Manual	-	-	-	1	1	1
210-034-01	E-72 Load Cell Assembly	-	1	-	-	1	-
210-034-02	E-72 Load Cell Assembly	-	-	1	-	-	1
210-095-00	C-39 Indicator	-	1	1	-	1	1
215-010-00	Placard	-	2	2	-	2	2
215-012-00	Placard	-	1	1	-	1	1
235-035-00	QD Bracket	-	1	1	-	1	1
290-360-01	Travel Limit Bumper	-	1	1	-	1	1
400-048-00	Power Switch	-	1	1	-	1	1
510-028-00	Screw	-	6	6	-	6	6
510-029-00	Nut	-	6	6	-	6	6
510-062-00	Washer	-	8	8	-	8	8
512-001-00	Ty-Wrap	-	10	10	-	10	10
215-117-00	Decal-Limit Load	2	2	2	2	2	2
232-047-00	Frame Assembly	1	1	1	1	1	1
232-061-00	Link Assembly	1	1	1	1	1	1
232-062-00	Bungee Cord Assembly	1	1	1	1	1	1
268-015-00	Manual Release Cable	1	1	1	1	1	1
270-048-04	Harness Assembly	-	1	1	-	1	1
270-074-00	Electrical Release Cable	1	1	1	1	1	1
290-331-00	Release Fitting	1	1	1	1	1	1
290-332-00	Load Bolt	1	1	1	1	1	1
290-431-00	Fitting – Tube End	2	2	2	2	2	2
290-489-00	Bumper Bushing	2	2	2	2	2	2
290-506-00	Frame Bumper-Big Mouth Hook	-	-	-	1	-	-
290-507-00	Frame Bumper-3.5K Hook	1	-	-	-	-	-
290-508-00	Frame Bumper	-	1	1	-	1	1
510-042-00	Washer	4	4	4	6	6	6
510-102-00	3/16 Nut	2	2	2	2	2	2
510-627-00	Bolt	2	2	2	2	2	2
510-170-00	Nut	1	1	1	1	1	1
510-174-00	Washer	1	1	1	1	1	1
510-178-00	Cotter Pin	1	1	1	1	1	1
510-223-00	Bolt	2	2	2	2	2	2
510-227-00	Nut	2	2	2	2	2	2
510-261-00	Washer	2	2	2	2	2	2

Bill of Materials, continued

Table 1-2 Bill of Materials, continued

Number	Description	200-233-00 Quantity	200-234-00 Quantity	200-234-01 Quantity	200-235-00 Quantity	200-236-00 Quantity	200-236-01 Quantity
510-276-00	Bolt	-	-	-	2	2	2
510-295-00	Pin – Quick Release	2	2	2	2	2	2
510-068-00	Bolt	-	1	1	-	1	1
510-183-00	Washer	-	1	1	-	1	1
510-145-00	Nut	-	1	1	-	1	1
510-067-00	Cotter Pin	-	1	1	-	1	1
512-010-00	Adel Clamp	2	2	2	2	2	2
531-016-00	Nicopress Sleeve	4	4	4	4	4	4
528-010-04	3,500 Lb. Cargo Hook	1	1	1	-	-	-
528-017-00	3,500 Lb Big Mouth Hook	-	-	-	1	1	1
531-010-00	Lanyard Cable	2	2	2	2	2	2
600-006-00	Release Cable Disconnect	1	1	1	1	1	1

Inspection

Inspect the kit items for evidence of damage, corrosion and security of lock wire and fasteners. If damage is evident, do not use the items until they are repaired.

Specifications

Table 1-3 System Specifications

Design load	1,500 lb. (680 kg.)
Design ultimate strength	5625 lb. (2,550 kg.)
Unit weight P/N 200-233-00	17.5 lb. (7.9 kg.)
Unit weight P/N 200-234-00	19.3 lb. (8.8 kg.)
Unit weight P/N 200-234-01	19.3 lb. (8.8 kg.)
Unit weight P/N 200-235-00	20.1 lb. (9.1 kg.)
Unit weight P/N 200-236-00	21.9 lb (9.9 kg.)
Unit weight P/N 200-236-01	21.9 lb (9.9 kg.)

Table 1-4 P/N 528-010-04 Cargo Hook Specifications

Design load	3,500 lb. (1,587 kg.)
Design ultimate strength	15,750 lb. (7,142 kg.)
Electrical release capacity	8,750 lb. (3,968 kg.)
Mechanical release capacity	8,750 lb. (3,968 kg.)
Force required for mechanical release at 3,500 lb.	8 lb. Max.(.400” travel)
Electrical requirements	22-28 VDC 9 amps
Minimum release load	7 pounds
Unit weight	3 pounds (1.36 kg.)
Mating electrical connector	PC06A8-2S SR

Specifications, continued

Table 1-5 P/N 528-017-00 Big Mouth Hook Specifications

Design load	3,500 lb. (1,587 kg.)
Design ultimate strength	15,750 lb. (7,142 kg.)
Electrical release capacity	8,750 lb. (3,968 kg.)
Mechanical release capacity	8,750 lb. (3,968 kg.)
Force required for mechanical release at 3,500 lb.	10 lb. Max.(.600” travel)
Electrical requirements	22-28 VDC 9.8 - 12.5 amps
Minimum release load	10 pounds
Unit weight	5.75 pounds (2.6 kg.)
Mating electrical connector	PC06A8-2S SR

Section 2
Installation

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

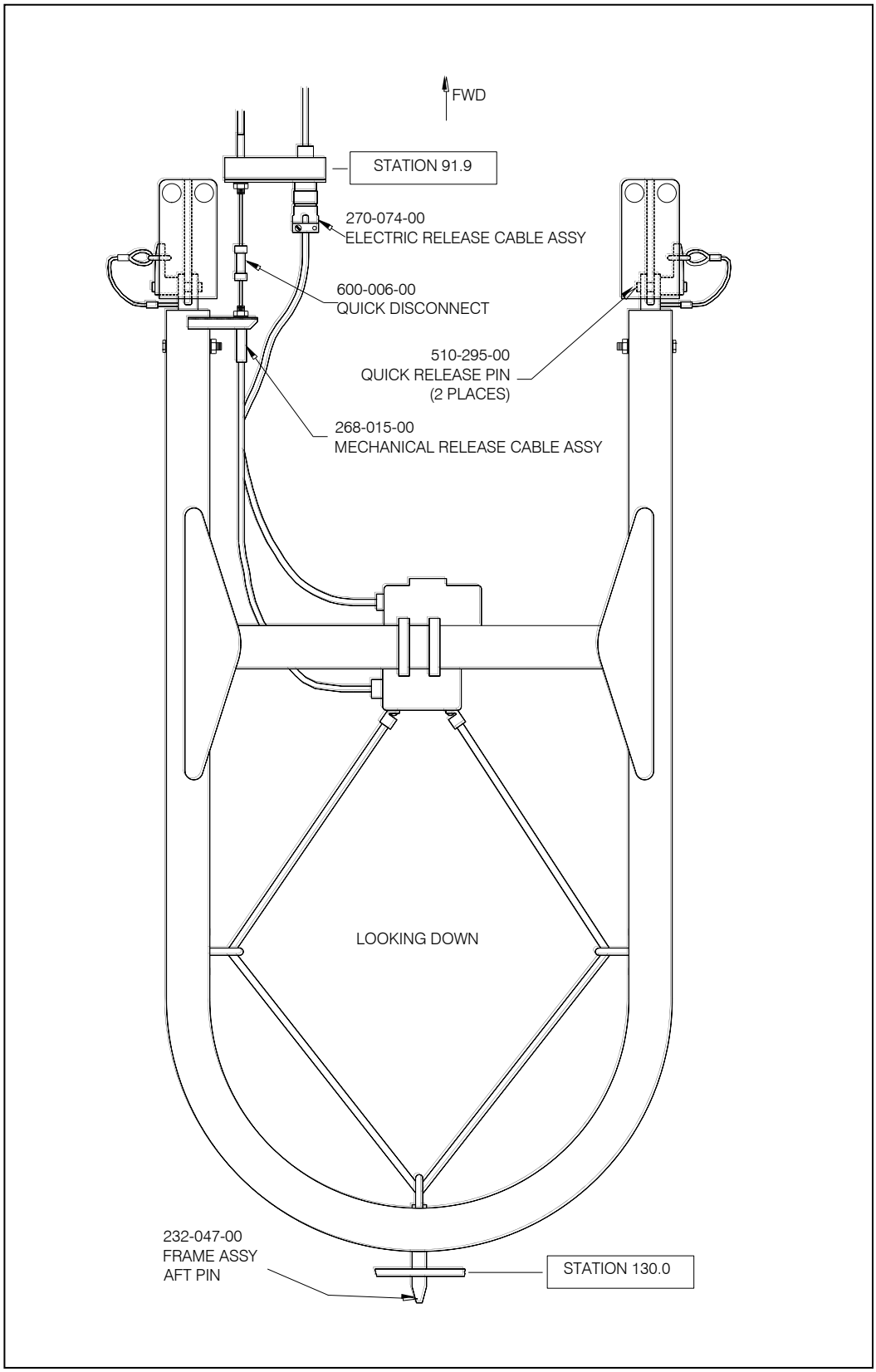
1. If the aircraft is equipped with an Auxiliary Equipment Kit- Cargo Hook supplied by Bell Helicopters, remove it.

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 206-706-335-3, -5, -105 provisions kit as outlined in the 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. Inspect for security of pin in forward hard point. See Figure 2-1.
4. Attach the 270-074-00 electrical release cable to the Bell Provisions at Station 91.9.
5. Attach the 268-004-00 mechanical release cable end ball to the 600-006-00 quick disconnect. Attach the quick disconnect to the cable end ball on the Bell Provisions Installation. Inspect for security of the quick disconnect joint.

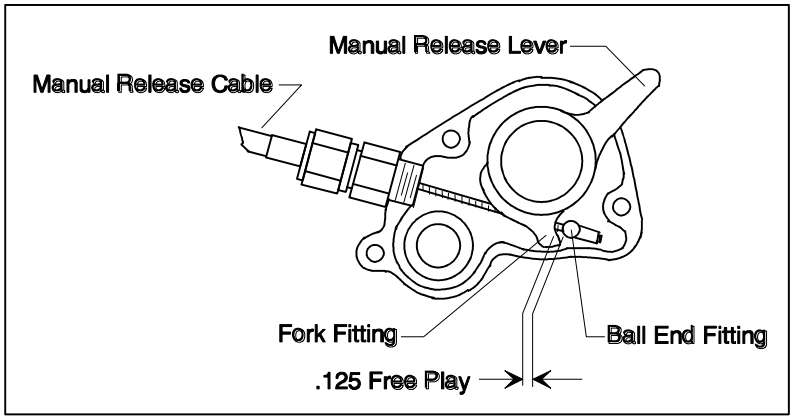
Cargo Hook Suspension System Installation, continued

Figure 2-1 Cargo Hook Suspension System Installation



6. Remove the cargo hook manual release cover and connect the manual release cable. Place the cable ball end fitting into the hook manual release fork fitting as illustrated in Figure 2-2. Check that there is a minimum of .125" of freeplay at the fork fitting as shown in Figure 2-2.

Figure 2-2 Manual Release Cable Installation

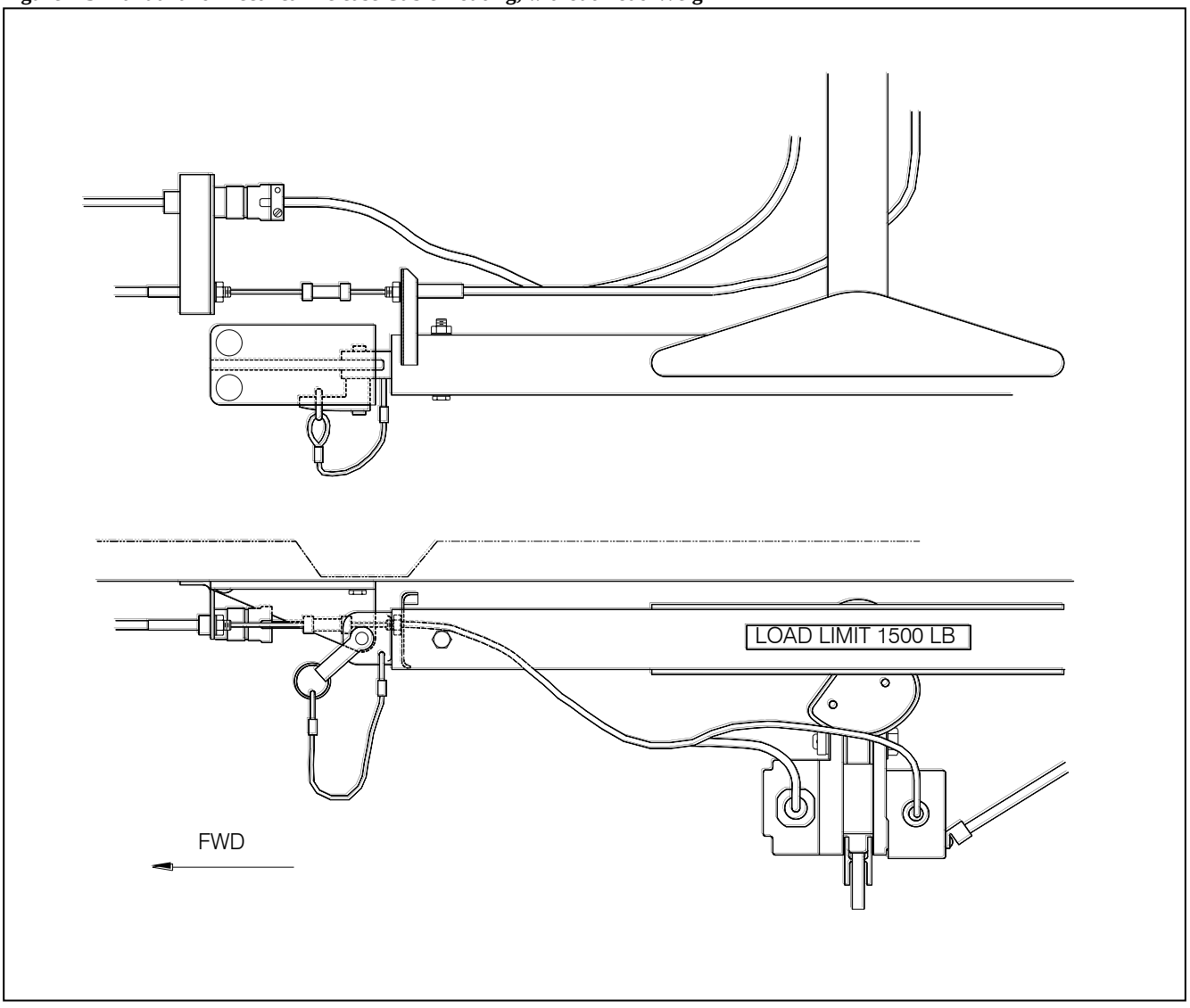


7. Connect the 270-074-00 cargo hook electrical release cable connector to the Bell provisions kit connector mounted on the bottom of the helicopter.

Route the Manual and the Electrical Release cables as illustrated in Figures 2-3 and 2-4.

Cargo Hook Suspension System Installation, continued

Figure 2-3 Manual and Electrical Release Cable Routing, without Load Weigh



Cargo Hook Suspension System Installation, continued

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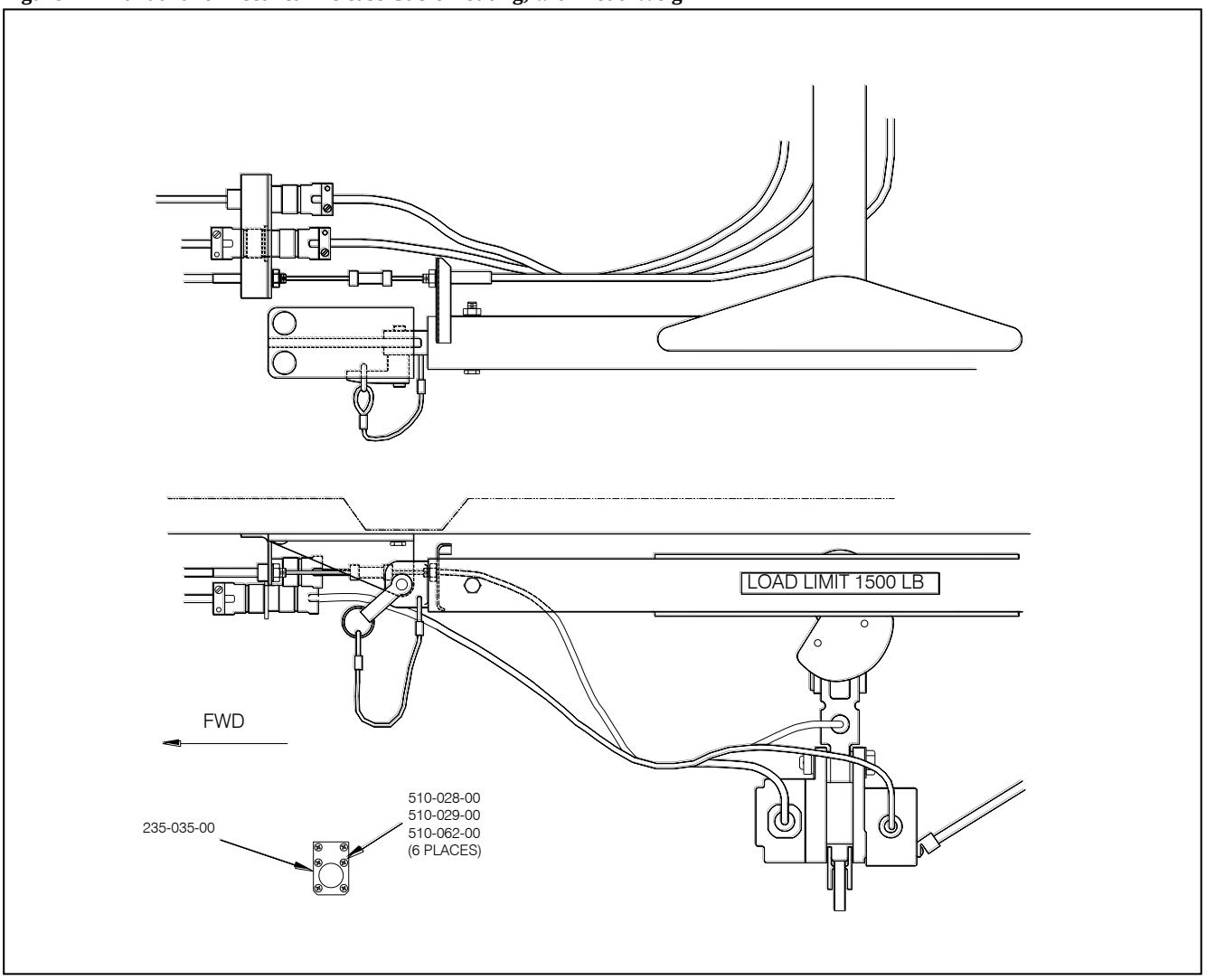
Figure 2-4 Manual and Electrical Release Cable Routing, with Load Weigh

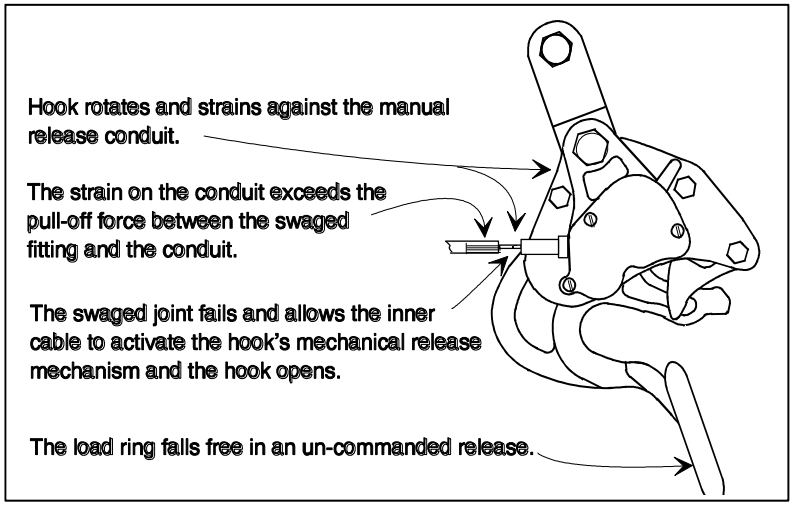


Cargo Hook Suspension System Installation, continued

WARNING

Un-commanded cargo hook release will happen if the manual and electrical release cables are improperly restrained. The cables 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 or electrical release cables.

Figure 2-5 Un-commanded Release From Incorrectly Secured Cable



Load Weigh System Internal Harness Installation

The Internal Harness is made up of four cables terminated to one large connector. The connector is plugged into the back of the Indicator. One of the cables is marked "LOAD CELL" and is fitted with a bulkhead fitting. Hardware is provided to attach the bulkhead fitting 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. See Figure 2-4.

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 an optional Data Recorder or Analog Slave Meter. These optional items are not included under this STC.

NOTE

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, P/N 210-095-00, 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 28 VDC light 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

The 528-010-04 and 528-017-00 Cargo Hooks supplied with this kit do not have a hook open switch. The following information is provided for reference only.

The Indicator is equipped with a Hook-Open Warning feature that can be 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

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**.

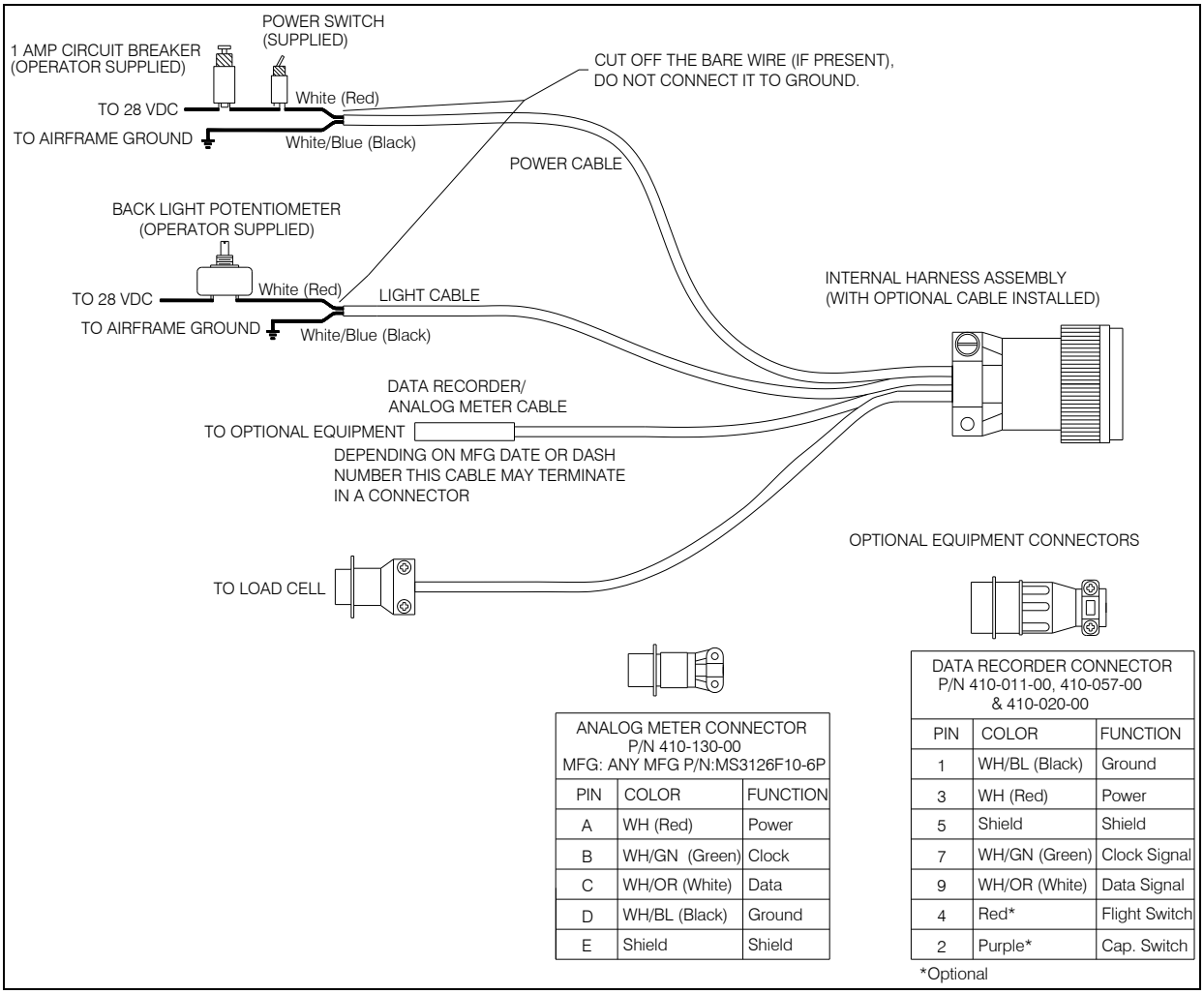
The 210-095-00 Indicator can also be connected to Onboard Systems' Analog Slave Meter, P/N 210-180-00, through the data line. This meter gives solid weight indications without needle bounce. The Analog Slave Meter mounts into a standard 3" instrument hole. Attach connector, P/N 410-130-00, to data line 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 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 if wire harness P/N 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 if wire harness P/N 270-048-00 is installed) wire to the ground bus. The bare wire (present on 270-048-00 only) should be cut off as it is not needed at this end of the cable.

Electrical Connections, continued

Figure 2-6 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

Electrical Connections, continued

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.

NOTE

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

Installation Check-Out

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

1. Swing the installed Cargo Hook to ensure that the manual release cable assembly and the electrical release cable have enough slack to allow full swing of the suspension assembly without straining or damaging the cables. The cables must not be the stops that prevent the Cargo Hook from swinging freely in all directions.

2. Apply 10-20 pounds to the cargo hook load beam and pull the handle operated cargo hook mechanical release, the Cargo Hook should release.

3. Close the cargo hook release circuit breaker and position the battery switch to the ON position. Apply 10-20 pounds to the cargo hook load beam and depress the cargo hook electrical release button, the Cargo Hook should release.

NOTE

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

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

Installation Check-Out, continued

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.

NOTE

The load cell is 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-2001-02.

Component Weights

The weight of the Cargo Hook Suspension System components are listed below.

Table 2-1 Component Weights

Item	Description	Weight
200-233-00	Suspension System W/ hook, W/O Load Weigh	17.5 pounds
200-234-00	Suspension System W/ hook, W/ Load Weigh	19.3 pounds
200-234-01	Suspension System W/ hook, W/ Load Weigh	19.3 pounds
200-235-00	Suspension System W/ Big Mouth hook, W/O Load Weigh	20.1 pounds
200-236-00	Suspension System W/ Big Mouth hook, W/ Load Weigh	21.9 pounds
200-236-01	Suspension System W/ Big Mouth hook, W/ Load Weigh	21.9 pounds

Paper Work

Remove the Flight Manual Supplement from the back of this manual and place it into the Rotorcraft Flight Manual. Update the equipment list and weight and balance data in the Rotorcraft Flight Manual. 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.

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Section 3
Cargo Hook Suspension System Operation Instructions

Operating Procedures

Prior to each job perform the following:

1. Ensure that the Cargo Hook Suspension System has been properly installed and that the manual and electrical release cables do not limit the movement of the hook.

2. Be completely familiar with this manual, particularly the section covering the Cargo Hook rigging.

3. Be completely familiar with all Bell Helicopter Cargo Hook operating instructions.

4. 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 and relatch after release. If the hook does not release or relatch do not use the unit until the difficulty is resolved.

NOTE

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.

5. Activate the mechanical release handle to test the cargo hook manual release mechanism. The mechanism should operate smoothly and the Cargo Hook must re-latch after release. If the hook does not re-latch do not use the unit until the difficulty is resolved.

See the trouble shooting table in Section 5 of this installation manual and the Bell Helicopter service instructions that cover the original Cargo Hook installation for additional instructions.

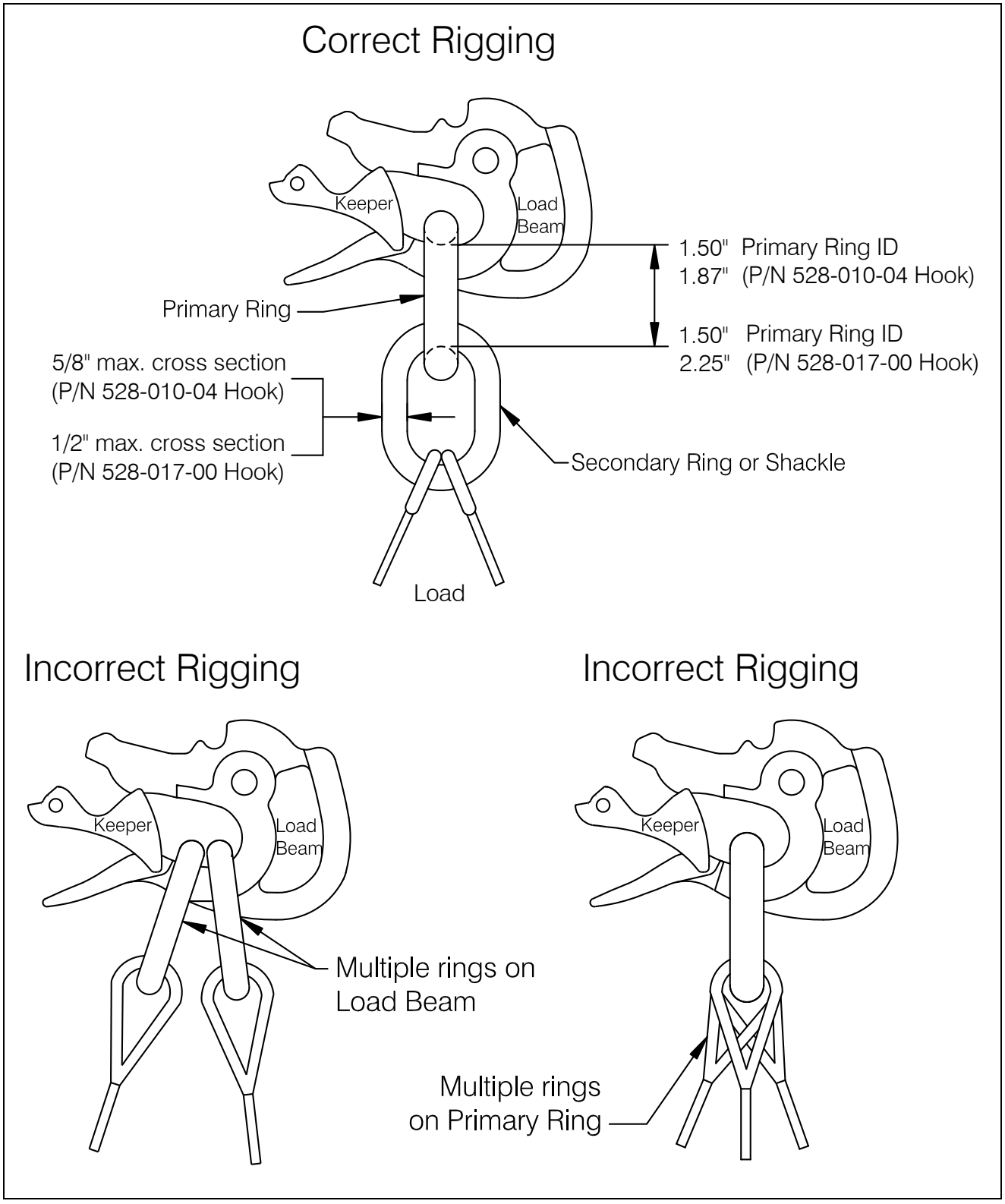
Cargo Hook Rigging

Extreme care must be exercised when rigging a load to the Cargo Hook. If the load ring is too big it may work its way around the end of the load beam and be supported for a time on the keeper and then fall free. If the load ring is too small it may jam itself against the load beam during an attempted release. The following illustrations show recommended configurations and potential difficulties that must be avoided.

The examples shown are not intended to represent all problem possibilities. It is the responsibility of the operator to assure the hook will function properly with the rigging.

Cargo Hook Rigging, continued

Figure 3-1 Examples of Correct and Incorrect Cargo Hook Rigging

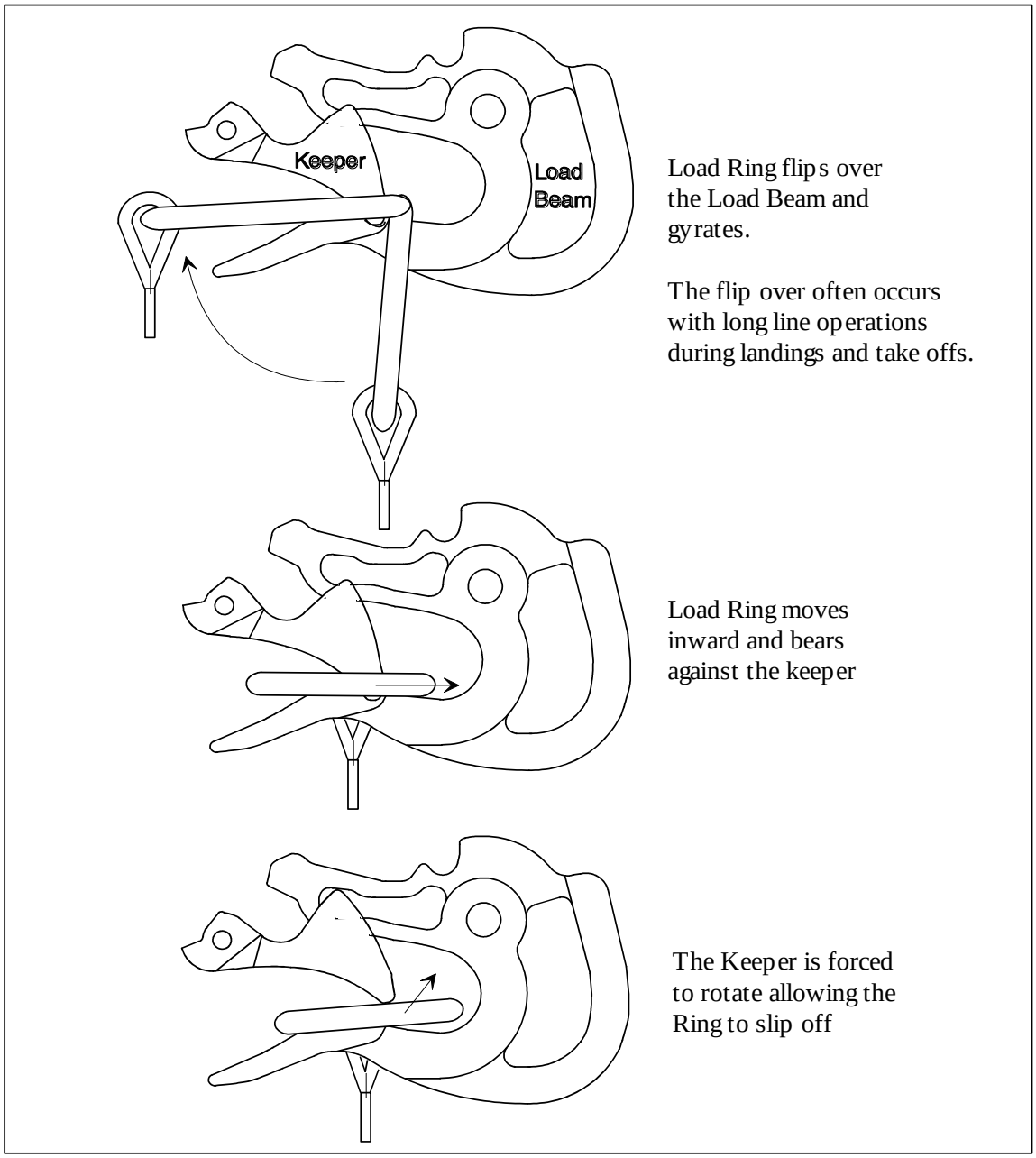


Un-Commanded Release Due to Too Large of a Load Ring

WARNING

Load rings that are too large will cause an un-commanded release. The ring will flip over the end of the load beam and flip the keeper up and then fall free. Only correctly sized load rings must be used. See examples below.

Figure 3-2 Un-Commanded Release Due to Too Large of a Load Ring

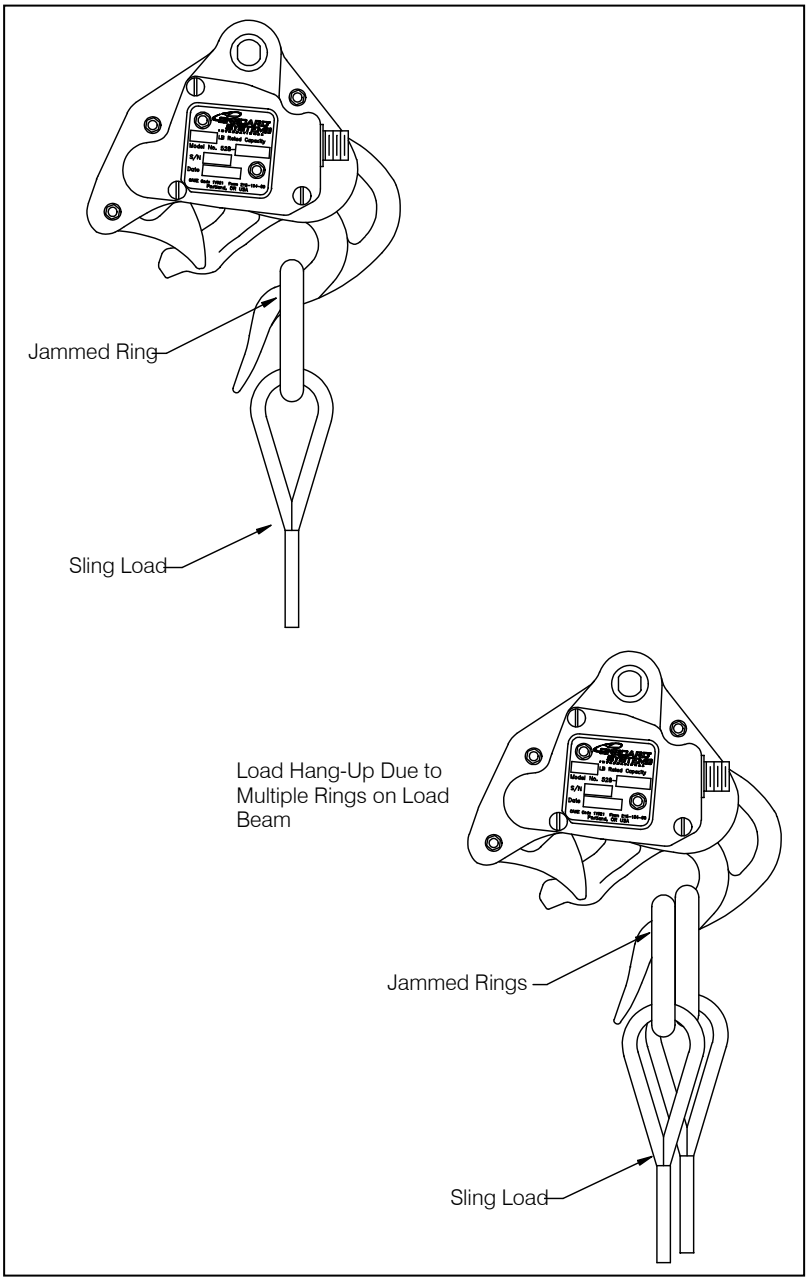


Load Hang-Up Due to Too Small of a Load Ring or Multiple Load Rings

WARNING

Load rings that are too small or multiple load rings will hang on the load beam when the load is released. Only correctly sized load rings must be used. See examples below.

Figure 3-3 Load Hang-Up Due to Too Small of a Load Ring or Multiple Load Rings

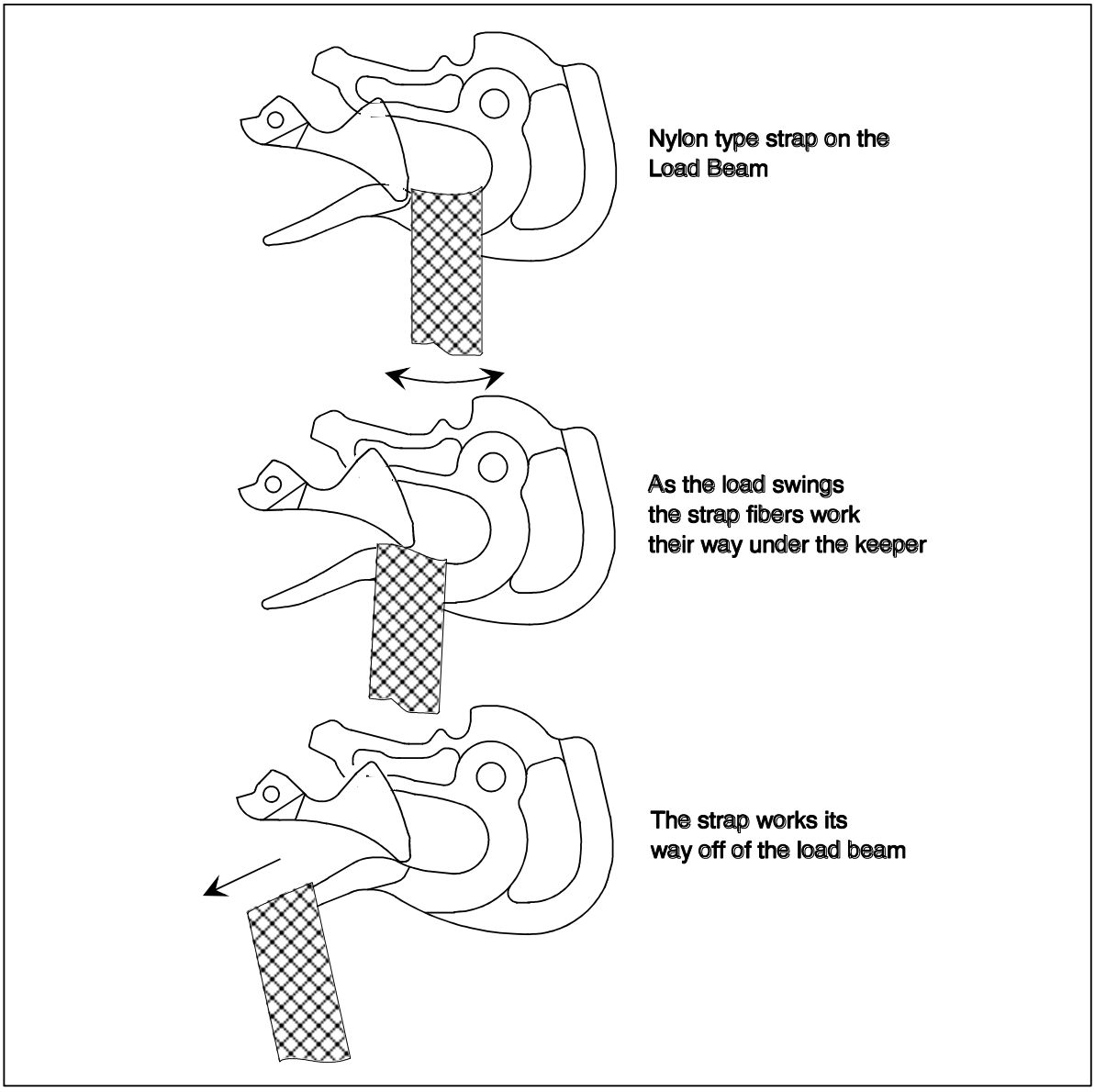


Un-Commanded Release Due to Nylon Type Straps

WARNING

Nylon type straps (or similar material) must not be used directly on the cargo hook load beam as they have a tendency to creep under the keeper and fall free. If nylon straps must be used they should be first attached to a correctly sized primary ring. Only the primary ring should be in contact with the cargo hook load beam. See examples below.

Figure 3-4 Un-Commanded Release Due to Nylon Type Straps

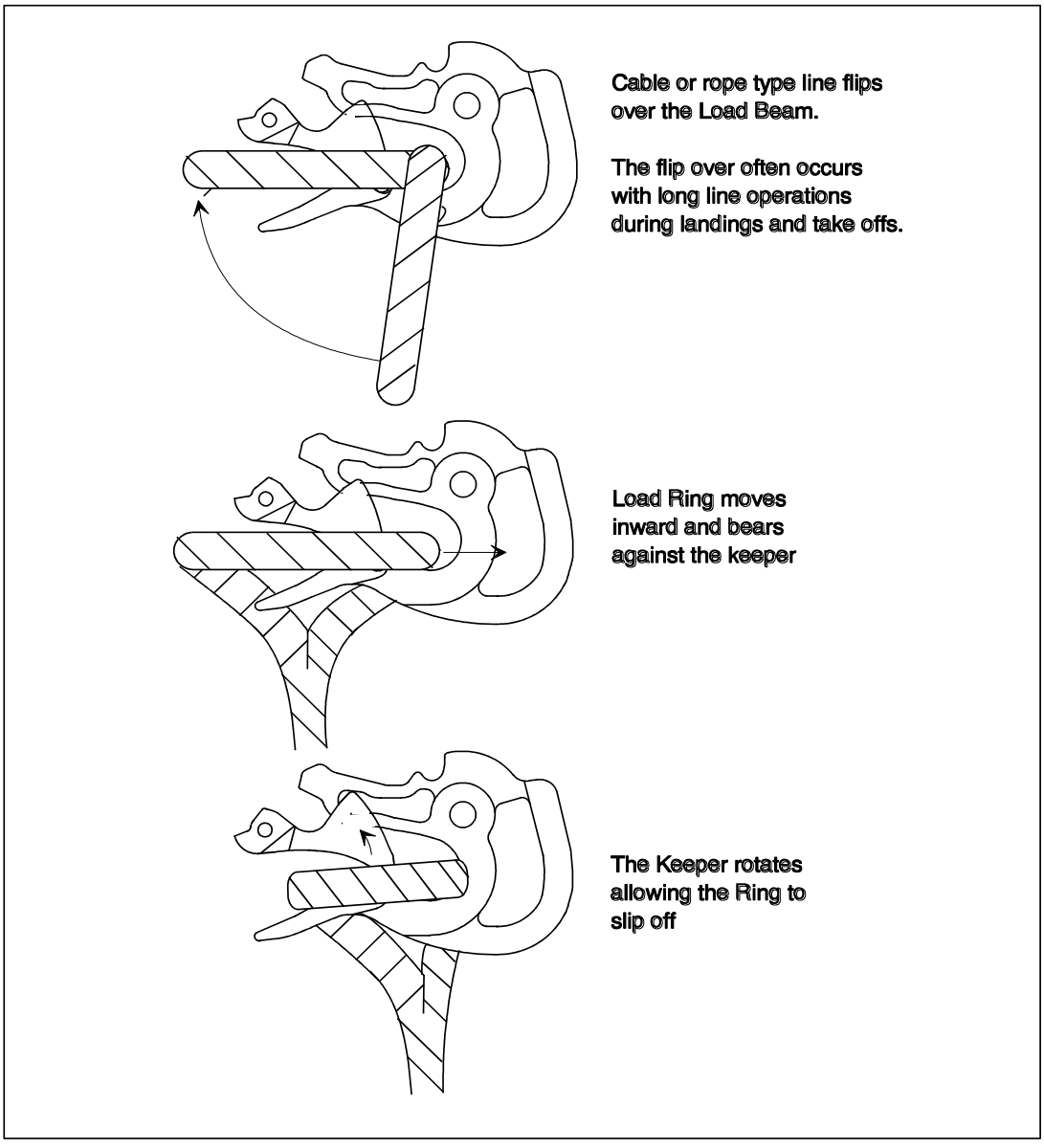


Un-Commanded Release Due to Cable or Rope Type Straps

WARNING

Cable or rope type straps must not be used directly on the cargo hook load beam. Their braided eyes will work around the end of the load beam and fall free. If cable or rope is used they should be first attached to a correctly sized primary ring. Only the primary ring should be in contact with the cargo hook load beam. See examples below.

Figure 3-5 Un-Commanded Release Due to Cable or Rope Type Straps



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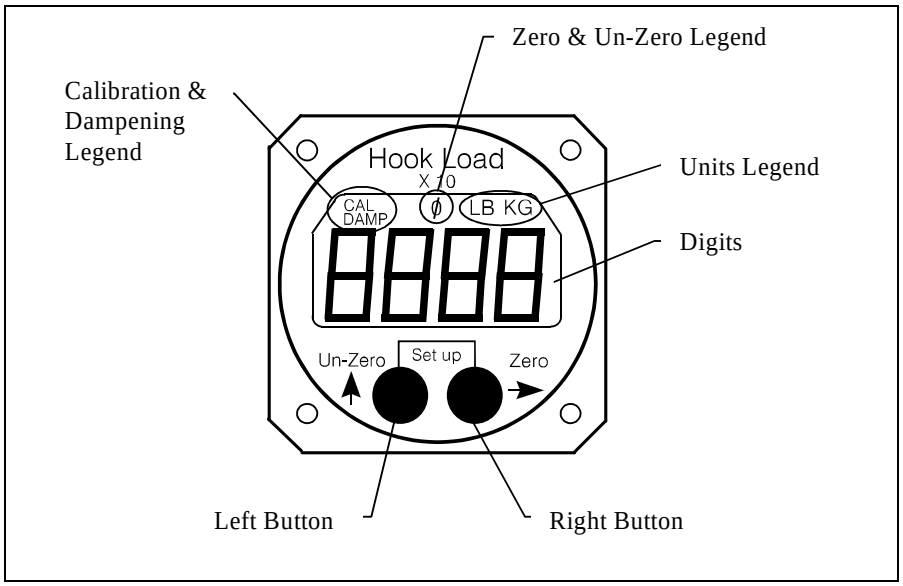
Section 4
Load Weigh System Operation Instructions

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 4-1 Front Panel

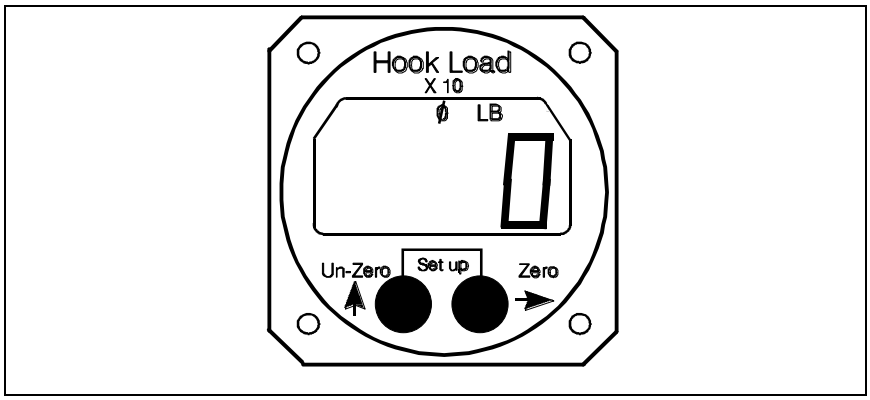


The Run Mode

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.

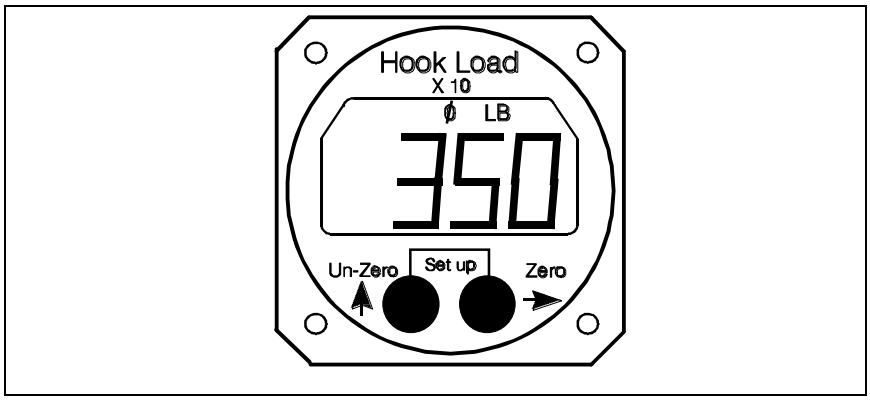
After the Indicator has been correctly installed, power it up by activating the Load Weigh Circuit Breaker. The Indicator will go through a self diagnostic routine. During this routine the display will display all of the digits and legends. If a problem is found during the routine an Error Code will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

Figure 4-2 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 4-3 LB Legend Displayed

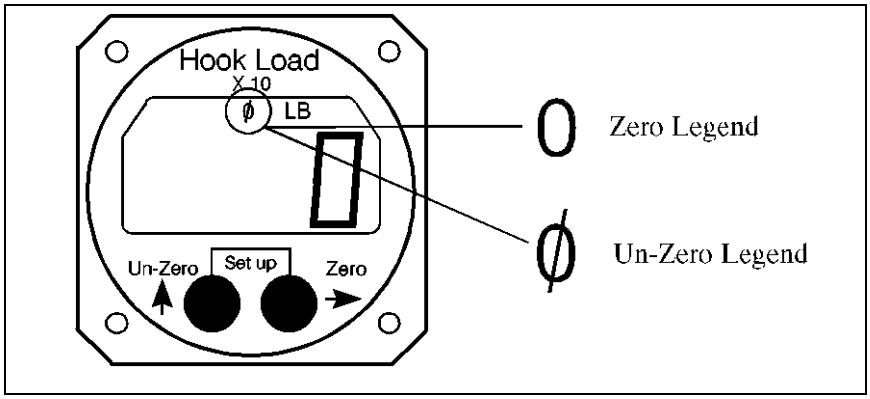


The illustration is a typical hook load reading. The display is 3,500 pounds, note the last digit is not displayed.

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 4-4 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.

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 4-1 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 4-2 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.

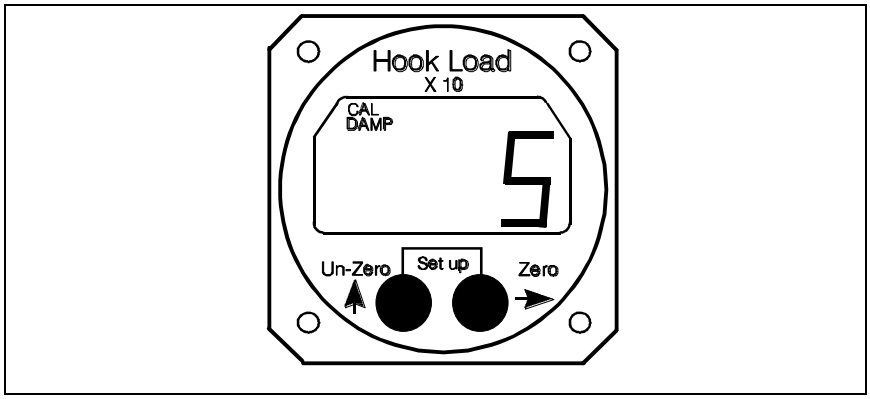
Indicator Dampening

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 4-5 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

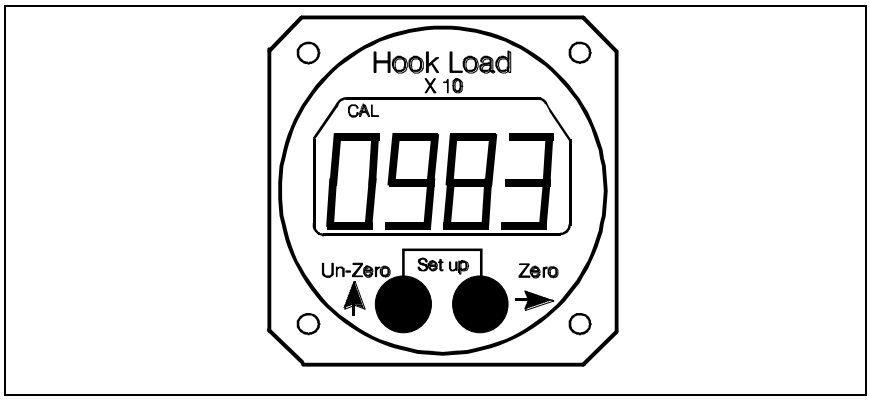
The Calibration Code, or CAL code, is a mandatory input. The Indicator will not accurately display the load without the correct calibration code. The calibration code scales the signal from the load cell.

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.

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 4-6 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.

NOTE

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.

Indicator Calibration, continued

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.

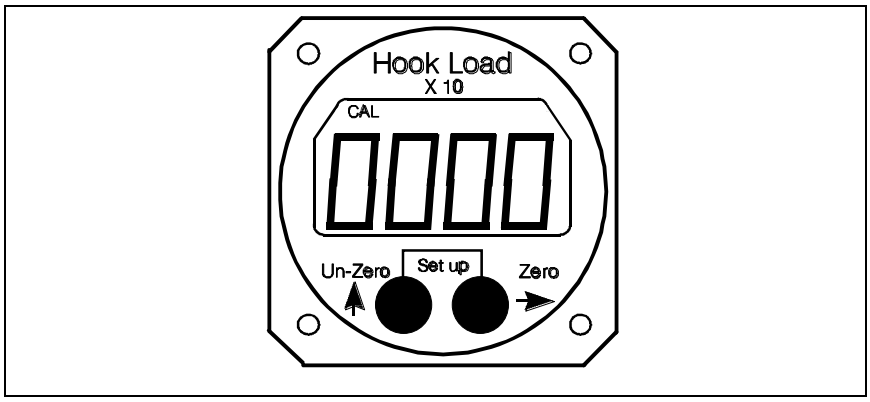
The closer the known load approaches the lifting capacity of the helicopter, the more accurate the calculated Calibration Code will be.

Calibration by Lifting a Known Weight, continued

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:

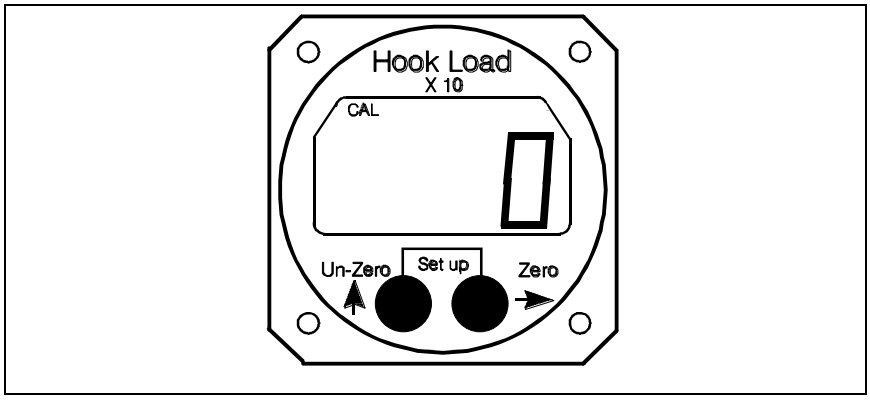
Figure 4-7 Running CAL Routine



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 4-8 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

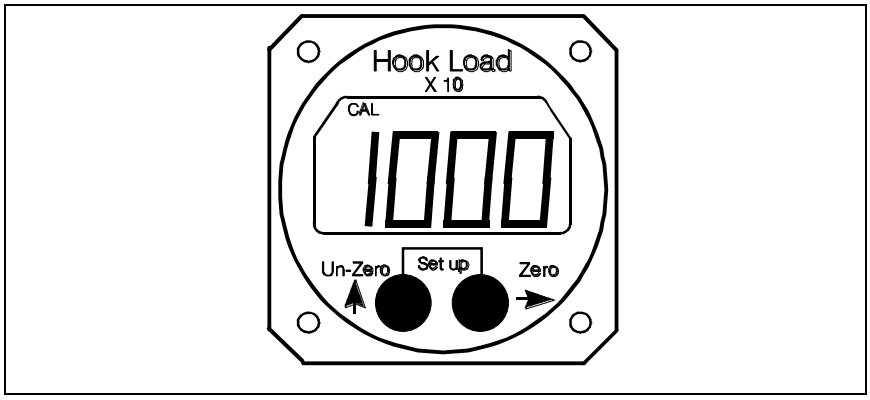
The Scale routine is used when a user supplied analog meter is connected to the Indicator. It is used to match or calibrate the analog meter to the Indicator. The Indicator outputs a 0 to 5 VDC analog signal which is proportional to the load cell load. The Scale number tells the Indicator at what point 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 Systems' Analog Slave Meters P/N 210-106-00 or 210-180-00. This number only affects instruments connected to the analog out signal. Refer to Section 2, Remote Analog Meter.

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 4-9 Changing the Scale



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.

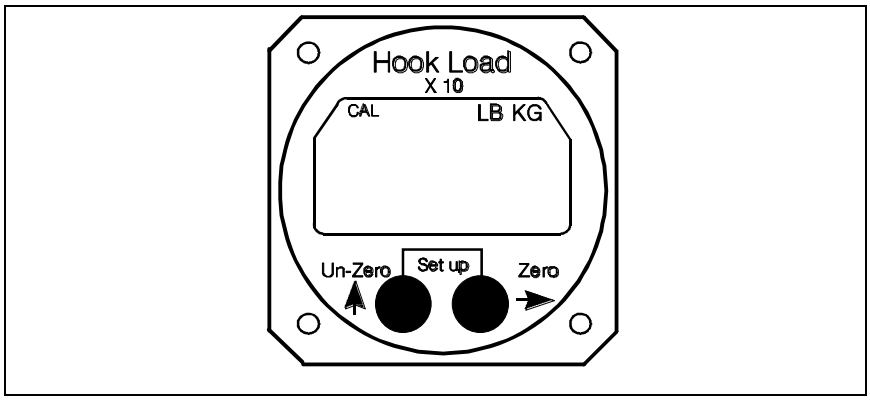
Select KG or LB Units

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 4-10 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.

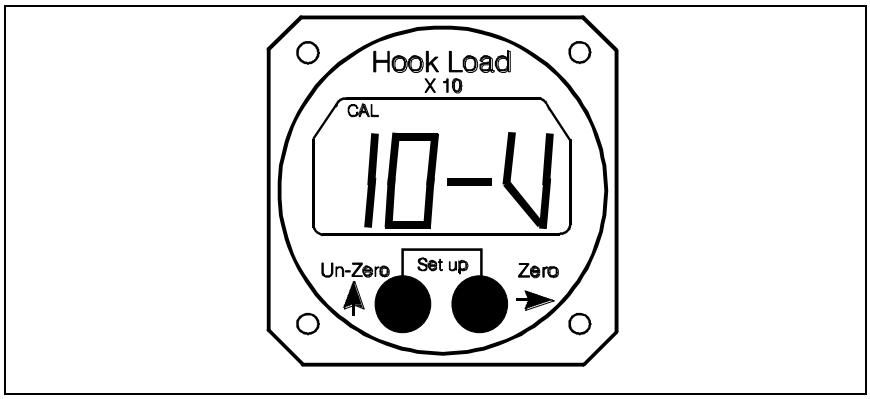
NOTE

The selected units are displayed when in the Run Mode.

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 4-11 Looking at Indicator Version



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Section 5
Maintenance

Refer to Cargo Hook Service Manual 122-002-00 for detailed maintenance and overhaul information for cargo hook P/N 528-017-00 and Cargo Hook Service Manual 122-001-00 for detailed maintenance and overhaul information for cargo hook P/N 528-010-04.

Storage Instructions

Clean the Cargo Hook Suspension System components thoroughly 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 relevant MIL specifications. After the Cargo Hook has been repaired or stored for an extended period of time it must be subjected to the Acceptance Test Procedure per applicable service manual.

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.

Preventive Maintenance

Remove caked-on dirt from the Cargo Hook Suspension System components with a brush and clean exposed surfaces with a mild solvent. Thoroughly dry all surfaces.

Inspection

The scheduled inspection intervals noted below are maximums and are not to be exceeded. If the cargo hook is subjected to unusual circumstances, extreme environmental conditions, etc., it is the responsibility of the operator to perform the inspections more frequently to ensure proper operation.

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

* "Hours of external load operations" is defined as the time in which a helicopter is engaged in external load operations. This includes time between loads on the hook.

1. Visually inspect for corrosion on the exterior of cargo hook. 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.
2. Move the cargo hook throughout its full range of motion and observe the manual release cable and electrical harnesses to ensure that they have enough slack. The release cable or harnesses must not be the stops that prevent the cargo hook from moving freely in all directions.
3. Visually inspect for presence and security of fasteners.
4. Visually inspect the electrical connections for damage and security.
5. 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. Inspect for splitting of the outer black conduit in this area and separation of the conduit from the steel end fitting.
6. Visually inspect the welded frame for cracks, corrosion and damage. Remove corrosion and treat with zinc chromate primer.
7. Cycle the electrical and manual release mechanisms to ensure proper cargo hook operation.
8. Operate the cargo hook keeper manually and check that it snaps back to its normal position on the load beam.
9. Visually inspect the cargo hook load beam for gouges and cracks. Reference applicable cargo hook service manual for damage limits.
10. Visually inspect the cargo hook case and covers for gouges and cracks.
11. Visually inspect for security of C-39 indicator mounting (if load weigh system is installed).
12. Calibrate the load weigh system (if installed) by lifting a known weight (see section 4).

Overhaul

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

See service manual 122-001-00 for overhaul of the P/N 528-010-04 cargo hook and service manual 122-002-00 for overhaul of the P/N 528-017-00 cargo hook.

It is recommended that only minor repairs be attempted by anyone other than the factory. It is recommended that the Cargo Hook Suspension System be returned to the factory for overhaul or when any of the components are in need of major repair.

The instructions in this manual 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 Overhaul Inspection

Carefully inspect the detail parts in accordance with the instructions in Table 5-1. Inspect the parts in a clean, well lighted 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 .010" on diameter.

Perform magnetic particle inspection in accordance with ASTM E1444 and MIL-STD-1907, Grade A on the parts listed below. No cracks are permitted in any of these parts.

Frame Assembly (P/N 232-047-00)

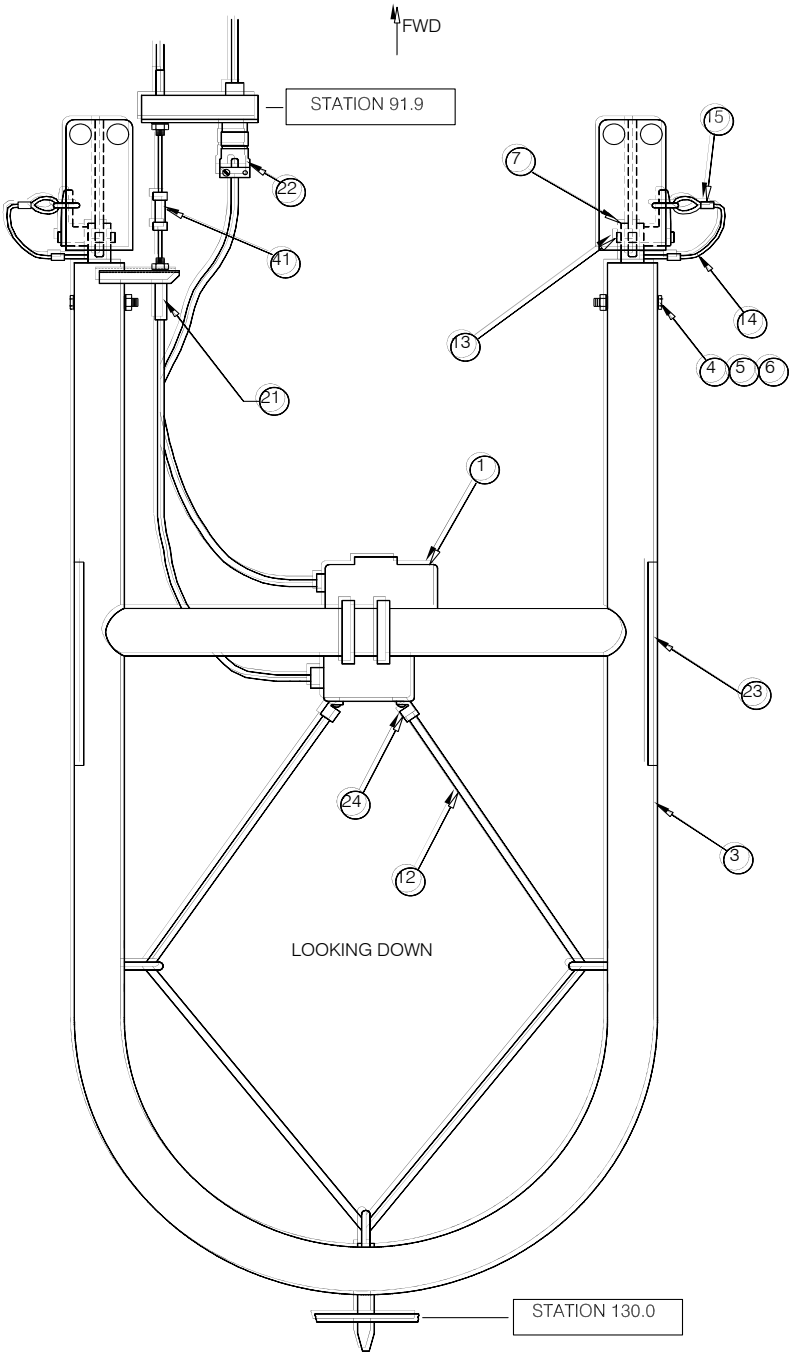
Link Assembly (P/N 232-061-00)

Table 5-1 Cargo Hook Suspension System Inspection

Part	Visually Inspect for	Remedy
Threaded parts	Replace all threaded parts at overhaul.	Replace
Manual Release Cable	Roughness, binding, looseness, or corrosion	Replace
Electrical Release Cable	Damaged cable and connectors	Replace
Bearings	Roughness, binding, looseness, or corrosion	Replace
Bushings	Cracks, deformation, wear & corrosion	Replace
Electrical wiring	Deterioration	Replace
Electrical connector	Loose, missing, or mutilated contact pins, cracked case, or worn insulator	Replace

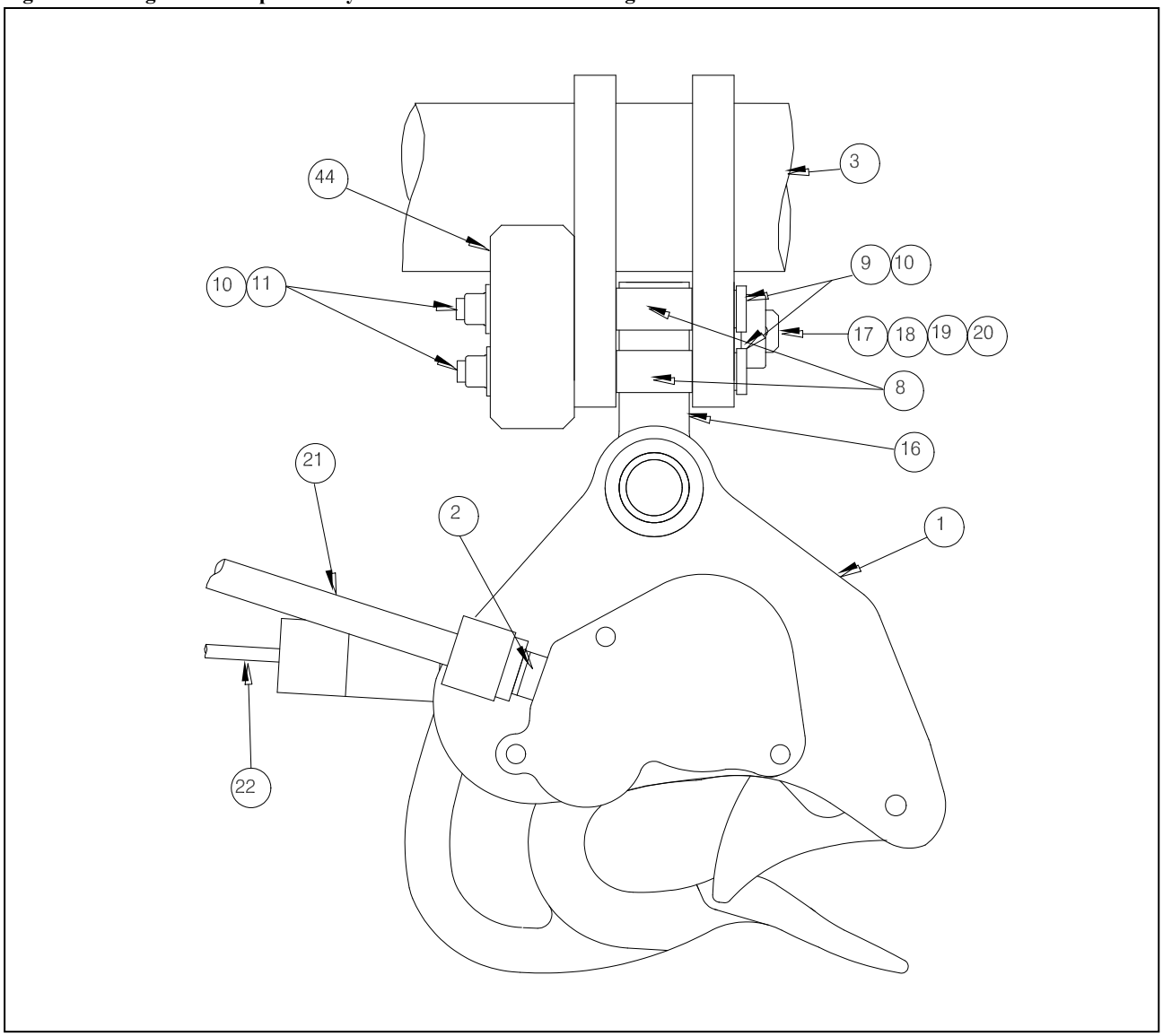
Cargo Hook Suspension System Parts

Figure 5-1 Cargo Hook Suspension System Parts



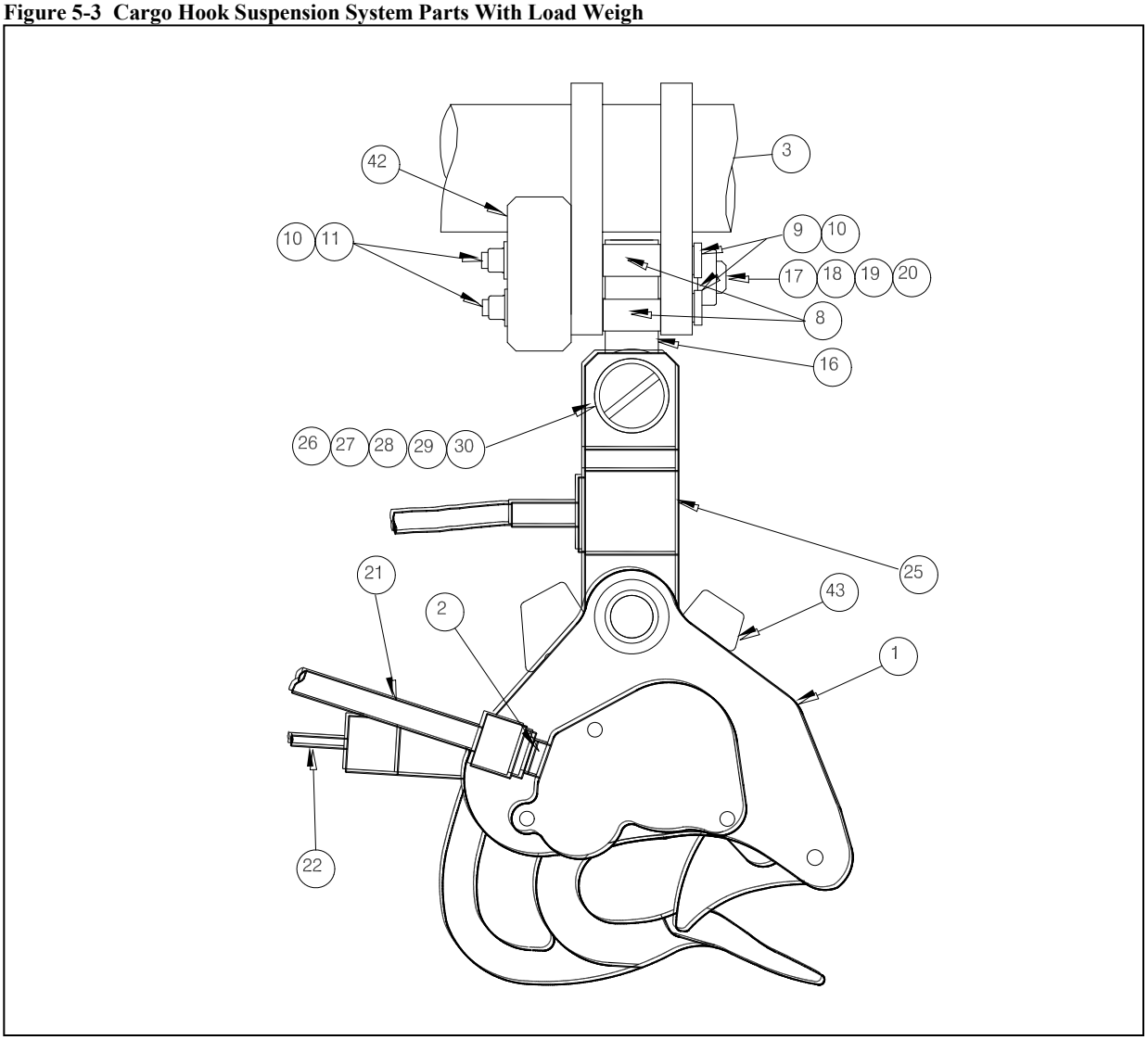
Cargo Hook Suspension System Parts, continued

Figure 5-2 Cargo Hook Suspension System Parts without Load Weigh



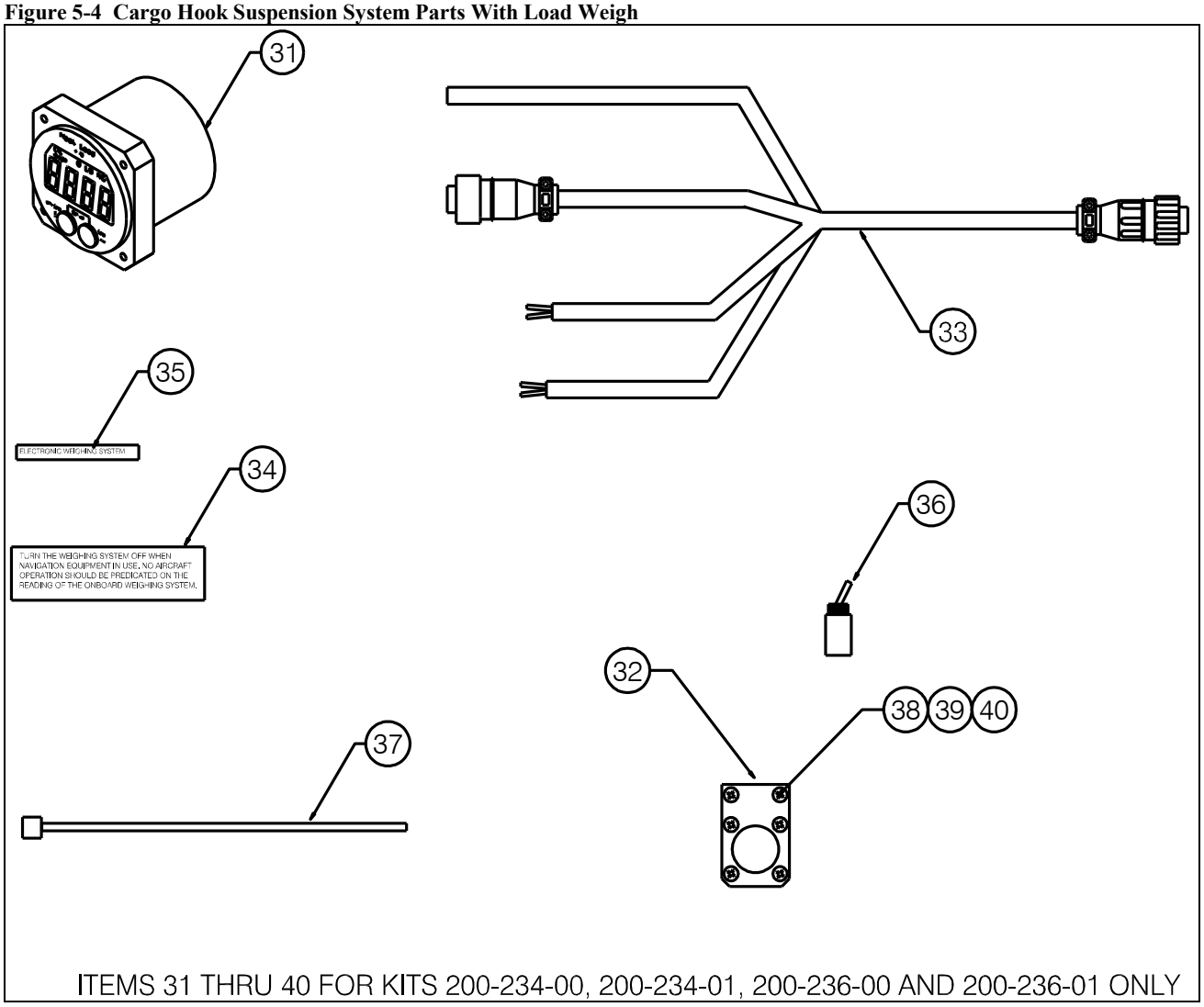
Cargo Hook Suspension System Parts, continued

Figure 5-3 Cargo Hook Suspension System Parts With Load Weigh



Cargo Hook Suspension System Parts, continued

Figure 5-4 Cargo Hook Suspension System Parts With Load Weigh



Cargo Hook Suspension System Parts, continued

Table 5-4 Cargo Hook Suspension System Parts

Figure	Number	Description	200-233-00 Quantity	200-234-00 Quantity	200-234-01 Quantity	200-235-00 Quantity	200-236-00 Quantity	200-236-01 Quantity
1	528-010-04 or 528-017-00	Cargo Hook	1	1	1	1	1	1
2	290-331-00	Release Fitting	1	1	1	1	1	1
3	232-047-00	Frame Assembly	1	1	1	1	1	1
4	510-223-00	AN4-17A Bolt	2	2	2	2	2	2
5	510-261-00	AN960-416 Washer	2	2	2	2	2	2
6	510-227-00	MS21042L4 Nut	2	2	2	2	2	2
7	290-431-00**	Fitting – Tube End	2	2	2	2	2	2
8	290-489-00	Bumper Bushing	2	2	2	2	2	2
9	510-627-00	AN3-24A Bolt	2	2	2	2	2	2
10	510-042-00	AN960-10 Washer	4	4	4	6	6	6
11	510-102-00	MS21042-3 Nut	2	2	2	2	2	2
12	232-062-00	Bungee Cord Assembly	1	1	1	1	1	1
13	510-295-00	NAS1335A5508D Pin	2	2	2	2	2	2
14	531-010-00	MIL-C-5524 Lanyard Cable, 7.5”	2	2	2	2	2	2
15	531-016-00	Nicopress Sleeve	4	4	4	4	4	4
16	232-061-00	Link Assembly	1	1	1	1	1	1
17	290-332-00	Load Bolt	1	1	1	1	1	1
18	510-174-00	NAS1149F0663P Washer	1	1	1	1	1	1
19	510-170-00	AN320-66 Nut	1	1	1	1	1	1
20	510-178-00	MS24665-302 Cotter Pin	1	1	1	1	1	1
21	268-015-00	Manual Release Cable	1	1	1	1	1	1
22	270-074-00	Wire Bundle	1	1	1	1	1	1
23	215-117-00	Decal – Limit Load	2	2	2	2	2	2
24	512-010-00	MS21919-DG4 Adel Clamp	2	2	2	2	2	2
25	210-034-01 or 210-034-02	E-72 Load Cell Assembly	-	1	1	-	1	1
26	510-068-00	AN28-24 Bolt	-	1	1	-	1	1
27	510-183-00	AN960-816L Washer	-	1	1	-	1	1
28	510-182-00	AN960-816 Washer	-	1	1	-	1	1
29	510-036-00	AN320-8 Nut	-	1	1	-	1	1
30	510-067-00	AN380-3-4 Cotter Pin	-	1	1	-	1	1
31	210-095-00	C-39 Indicator Assembly	-	1	1	-	1	1
32	235-035-00	QD Bracket	-	1	1	-	1	1
33	270-048-04	Load Weigh Internal Harness	-	1	1	-	1	1
34	215-012-00	Placard	-	1	1	-	1	1
35	215-010-00	Placard	-	2	2	-	2	2
36	400-048-00	Power Switch	-	1	1	-	1	1
37	512-001-00	Ty-Wrap	-	10	10	-	10	10
38	510-028-00	AN515-4R10 Screw	-	6	6	-	6	6
39	510-029-00	AN365-440A Nut	-	6	6	-	6	6

Cargo Hook Suspension System Parts, continued

Table 5-4 Cargo Hook Suspension System Parts, continued

Figure	Number	Description	200-233-00 Quantity	200-234-00 Quantity	200-234-01 Quantity	200-235-00 Quantity	200-236-00 Quantity	200-236-01 Quantity
40	510-062-00	AN960-4 Washer	1	8	8	1	8	8
41	600-006-00	Quick Disconnect	-	1	1	-	1	1
42	290-508-00	Frame Bumper	-	1	1	-	1	1
43	290-360-01	Travel Limit Bumper	1	1	1	1	1	1
44	290-507-00 or 290-506-00	Frame Bumper for 200-233-00 kit Frame Bumper for 200-235-00 kit	1	-	-	1	-	-
46	510-276-00	Bolt	-	-	-	2	2	2

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

Trouble Shooting

Table 5-2 Trouble Shooting

DIFFICULTY	PROBABLE CAUSE	CORRECTIVE ACTION
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 per 122-001-00 or 122-002-00 Service Manual. Repair or replace defective parts.
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 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 the unit to the factory.
Where Am I? (Lost when programming the Indicator)		Turn the Indicator power off for a few moments. When it comes to life it will be in the Run mode.
Indicator displayed load is incorrect.	Incorrect Calibration Code.	Insure the correct Calibration Code has been entered.
Indicator displayed load is not stable.	Dampening level is too small.	Adjust the Dampening level to a larger number.
Indicator displayed load takes too long to change the reading when the load is changed.	Dampening level is too large.	Adjust the Dampening level to a smaller number.
Do not recognize the Indicator displayed numbers.	NV Ram failure, A/D or D/A circuit failure.	Refer to *Error Codes* in Section 4.
Indicator does not change with changing hook loads.	Defective load cell or damaged internal harness.	Check for damaged internal harness, replace load cell.

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 **SR00649SE**

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 or 206B

Description of the Type Design Change: Fabrication of Onboard Systems Model 200-233-00 and 200-235-00 (without load weigh) and 200-234-00, 200-234-01, 200-236-00, and 200-236-01 (with load weigh) cargo hook suspension system in accordance with FAA approved Onboard Systems Master Drawing List No. 155-041-00, Revision 10, dated March 9, 2007, or later FAA approved revision; and installation of these cargo hook suspension systems in accordance with FAA approved Onboard Systems Owner's Manual No. 120-076-00, Revision 7, dated March 9, 2007, or later FAA approved revision. This modification must be inspected and maintained in accordance with Section 5 of the FAA approved Onboard Systems Owner's Manual No. 120-076-00, Revision 7, dated March 9, 2007, or later FAA approved revision.

Limitations and Conditions: Approval of this change in type design applies only to those Bell Models listed above. 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. Rotorcraft modified in accordance with this STC must be operated in accordance with an FAA approved copy of Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) No. 121-042-00, dated September 27, 2007, or later FAA approved revision. A copy of this Certificate, FAA approved RFMS, and Maintenance Manual must be maintained as part of the permanent records of 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.

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 15, 1998
Date of issuance: December 4, 1998
Date reissued:
Date amended: 1/13/03, 10/1/07

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)

Canadian STC

Transport Canada Transports Canada

Department of Transport

Supplemental Type Certificate

This approval is issued to:

Onboard Systems
11212 NW St. Helens Road
Portland, OR
USA 97231

Number: SH99-021
Issue No.: 1
Approval Date: March 21, 1999
Issue Date: March 21, 1999

Responsible Office: Pacific

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

Canadian Type Certificate or Equivalent: H-92

Description of Type Design Change: **Installation of Onboard Systems Cargo Hook Suspension System per FAA STC SR00649SE**

Installation/Operating Data, Required Equipment and Limitations:

Fabrication of Onboard Systems Model 200-233-00 or 200-235-00 (without load weigh) or 200-234-00 or 200-236-00 (with load weigh) cargo hook suspension system in accordance with FAA approved Onboard Systems Master Drawing List No. 155-041-00, Revision 1, dated November 20, 1998 * ; and, **Installation** of these cargo hook suspension systems in accordance with FAA approved Onboard Systems Owner's Manual No. 120-076-00, Revision 1, dated November 20, 1998 * . **Inspect** these cargo hook suspension systems in accordance with Section 5 of Onboard Systems Owner's Manual No. 120-076-00, Revision 1, dated November 20, 1998 *.

Basis of Certification as defined in the applicable Type Certificate Data Sheets.

Required Equipment :
FAA approved Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) No. 120-076-00, dated December 4, 1998 *.

(* or later FAA approved revisions)

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.

J. H. Nehera
Regional Manager - Aircraft Certification
For Minister of Transport

Canada

EASA STC

European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.01245

This certificate, established in accordance with Regulations (EC) No 1592/2002 and (EC) No 1702/2003 and issued to:

Onboard Systems International
13915 NW 3rd Court
Vancouver WA 98685
USA

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 Product Type Certificate number: *Transport Canada TC H92*
Manufacturer: *Bell Helicopter Textron Canada Ltd*
Model: *206A, 206B*
Original STC Number: *TCCA STC SR00649SE*

Description of Design Change:

Cargo Hook Suspension Kit for Bell 206A and 206B.

EASA STC

European Aviation Safety Agency

Associated Technical Documentation:

- 200-233-00 or 200-235-00 (without load weigh).
- 200-234-00 or 200-236-00 (with load weigh).
- MDL 155-041-00 rev 1 dated November 20, 1998 or later approved revision.
- Owners Manual 120-076-00 revision 1 dated November 20, 1998 or later approved revision.
- Flight Manual Supplement 120-076-00 dated December 4, 1998 or later approved revision.

Limitations and Conditions:

This STC is approved only for the product configuration as defined in the approved design data referred to in the paragraph "Description". Compatibility with other aircraft/engine configurations shall be determined by the installer.

This certificate shall remain valid unless otherwise surrendered or revoked.

For the European Aviation Safety Agency,
Date of Issue: 21st December 2006

Massimo Mazzoletti
Certification Manager
Rotorcraft, Balloons & Airships

STC- EASA.IM.R.S.01245 - Onboard Systems International 2