PLEASE CHECK WEB SITE AT WWW.ONBOARDSYSTEMS.COM FOR THE LATEST REVISION OF THIS MANUAL

Owner's Manual

For the

28V Cargo Hook Suspension System

on the

Robinson R44 Series Helicopter

Kit Part Numbers
200-288-00, Without Load Weigh
200-289-00, With Load Weigh

Owner's Manual Number 120-111-00
Revision 12
March 17, 2011

ONBOARD™ SYSTEMS INTERNATIONAL

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

This page intentionally left blank.

Record of Revisions

Revision	*Date*	*Page(s)*	*Reason for Revision*
6	03/15/06	2-11 Section 5	Added additional description for locating manual release cable T-handle (page 2-11). Removed maintenance information and replaced with reference to ICA 123-016-00 and to Cargo Hook Service Manual 122-005-00.
7	09/08/06	1-1, 2-8, 2-9	Update manual to allow installation of wire harness P/N 270-048-04.
8	03/22/07	1-1, 1-2, 2-8, 2-9, 2-10	Added modification kit p/n 200-318-00 to Table 1-1. Added screws and nuts (p/n's 510-028-00 and 510-029-00) to kit p/n 200-289-00 and reference to screws on page 2-8. Corrected instructions and wire color in Figure 2-8 and corrected instructions for connecting indicator internal back light.
9	06/01/07	4-1 Section 1, Section 2, 3-7 to 3-9, Section 4	Added warning of specific maintenance requirements when system used for operations with rotational loads. Updated Warnings, Cautions and Notes to new format. Added warning, cautions and notes explanation in introduction.
10	02/26/08	TOC, 1-2, 2-2 thru 2-7, & 2-13 thru 2-15	Updated to allow installation of switch assembly P/N 232-152-01.
11	3/10/10	TOC & 2-8 to 2-9	Updated manual to reflect new load weigh harness configuration.
12	03/17/11	1-1, 1-2, 2-8, 2-9, 2-11, 2-14, 2-15, 3-8, 3-9, 3-12, 4-1, 4-3 & 5-1	Added External Load Limit 800 Decal P/N 215-119-00 to Bill Of Materials. Replaced Warnings, Cautions and Notes section with Safety Labels section. Updated safety label format throughout document. Updated RMA information.

Register Your Products for Automatic Notifications

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

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

This page intentionally left blank.

CONTENTS

CONTENTS, continued

CONTENTS, ***continued***

Figures **continued**

Tables

This page intentionally left blank.

Section 1
General Information

Introduction

The 200-288-00 and 200-289-00 Cargo Hook Suspension System Kits are approved for the Robinson R44 series helicopters.

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.

Bill of Materials

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

Table 1-1 Suspension System Bill of Materials

Part No.	Description	200-288-00 w/out Load Weigh	200-289-00 with Load Weigh	200-318-00 Load Weigh System**
120-111-00	Owner's Manual	1	1	-
121-017-00	RFM Supplement	1	1	-
122-005-00	Cargo Hook Service Manual	1	1	-
123-016-00	ICA Maintenance Manual	1	1	-
210-181-00	Load Cell	-	1	1
210-095-00	C-39 Indicator	-	1	1
215-010-00	Placard	-	2	2
215-012-00	Placard	-	1	1
215-118-00	R22/44 Multiple Decal Sheet	1	1	-
215-119-00	External Load Limit 800 Decal	1	1	-
232-049-01	Gimbal Assembly	1	1	-
232-050-00	Link Assembly	1	-	-
232-152-01	Switch Housing Assembly	1	1	-
268-014-01	Release Cable Assembly	1	1	-
270-048-04	Harness Assembly	-	1	1
270-089-00	Wire Assy – Circuit Breaker	1	1	-
270-090-00	Wire Bundle	1	1	-
290-440-00	Roller Pin	1	1	-
290-478-01	Switch Guard	1	1	-
290-492-01	Pillow Block	1	1	-
290-505-00	Drilled Cap Head Screw	2	2	-
400-048-00	Power Switch	-	1	1
400-059-00	Switch	1	1	-
410-162-00	Ring Terminal	2	2	-
440-006-00	Circuit Breaker	1	1	-
445-003-00	Relay	1	1	-
500-065-00	Grommet	1	1	-
500-066-00	Spacer	1	1	-
505-011-00	Grommet	1	1	-
510-028-00	Screw	-	4	4
510-029-00	Nut	-	4	4
510-100-00	Washer	1	1	-
510-115-00	Cotter Pin	1	1	-
510-209-00	Washer	1	1	-
510-273-00	Nut	1	1	-
510-277-00	Screw	2	2	-

**** The 200-318-00 kit is a modification kit that can be purchased separately to convert the 200-288-00 kit to a 200-289-00 kit.**

Bill of Materials, continued

Table 1-1 Suspension System Bill of Materials continued

Part No.	Description	200-288-00 w/out Load Weigh	200-289-00 with Load Weigh	200-318-00 Load Weigh System**
510-278-00	Washer	2	2	-
510-279-00	Nut	2	2	-
510-286-00	Nut	1	1	-
510-297-00	Screw	1	1	-
510-528-00	Bolt	1	1	-
512-010-00	Clamp	2	2	-
512-018-00	Adel Clamp	2	2	-
528-023-01	3,500 Lb. Cargo Hook	1	1	-

** The 200-318-00 kit is a modification kit that can be purchased separately to convert the 200-288-00 kit to a 200-289-00 kit.

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 1-2 P/N 528-023-01 Cargo Hook Specifications

Design load	3,500 lb. (1,580 kg.)
Design ultimate strength	15,750 lb. (7,140 kg.)
Electrical release capacity	8,750 lb. (3,970 kg.)
Mechanical release capacity	8,750 lb. (3,970 kg.)
Force required for mechanical release at 3,500 lb.	8 lb. Max.(.600” travel)
Electrical requirements	12-32 VDC 6.9 – 10 amps
Minimum release load	0 pounds
Unit weight	3.0 pounds (1.35 kg.)
Mating electrical connector	PC06A8-2S SR

Table 1-3 Indicator Specifications

SPECIFICATIONS	210-095-00 INDICATOR
Size	Fits standard 2¼" clock hole
Weight	.43 lbs (.20 kg)
Operating Voltage	21 to 31 VDC
Current Consumption	< 25 mA
Accuracy Over Operating Temperature Range	0.1% ± 1 digit
Operating Temperature Range	+70°C to –45°C
Storage Temperature Range	+80°C to –50°C
Scaleable Analog Output	0 to 5VDC ± 0.5%

Indicator Pin Out

The connector located on the back of the Indicator has the following pin out.

Table 1-4 Indicator Pin Out

Pin Letter	***Function***
A	*+ 28 VDC In*
B	*- Load Cell Signal*
C	*+ Load Cell Signal*
D	*+ Load Cell Excitation*
E	*Load Cell Common*
F	*Analog Out Common*
G	*+ Analog Out*
H	*Hook Open*
J	*Data Recorder Clock*
K	*Data Recorder Data*
L	*Shield*
M	*Back Light Common*
N	*Back Light Source 28 VDC*
P	*Aircraft Ground*
R	*Not Used*

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. A secondary release button is also provided on the left seat lower outboard support. 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.

The R44 maintenance and parts manuals should be available throughout the installation as various R44 components will be referred to by name and part number. The part numbers for Robinson components are provided for reference and may be changed at a later time by Robinson.

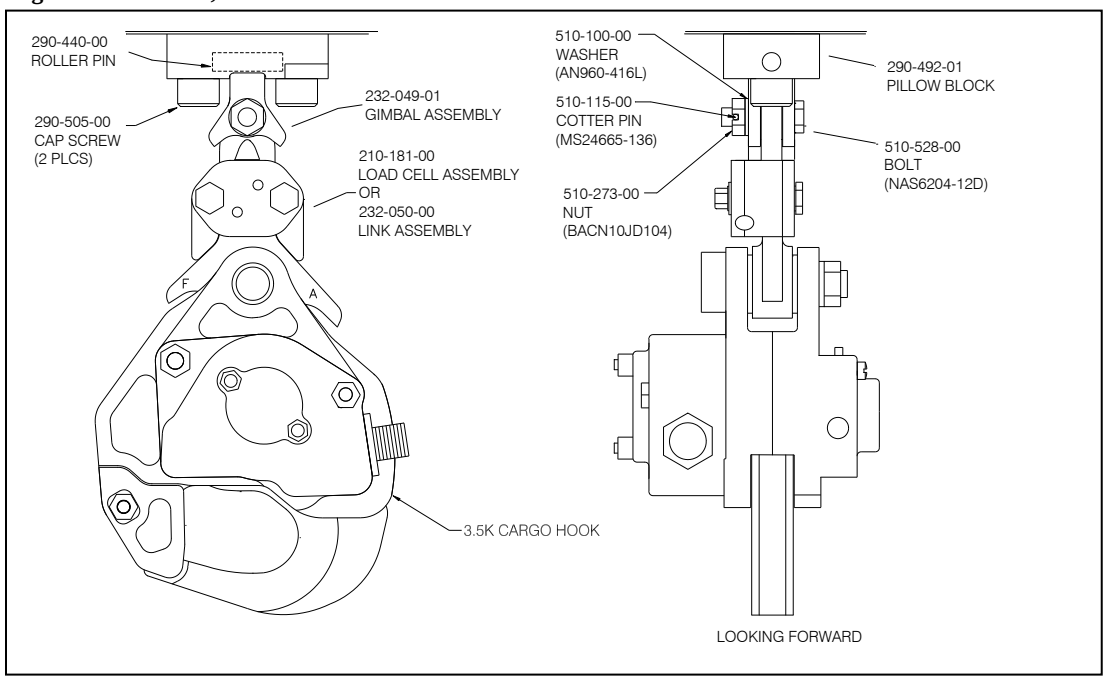
All equipment removed and replaced shall be done in accordance with the R44 maintenance manual. All installed hardware shall be torqued in accordance with standard torques of AC43.13 unless noted otherwise. Apply torque stripe where applicable.

Pillow Block, Gimbal and Link Installation

1. Insert the P/N 290-505-00 cap screws into the two holes in the Robinson hardpoint block and screw in to ensure thread integrity. Some re-work of access holes in skin may be required to allow bolt installation.
2. Remove the two cap screws.
3. Place the P/N 290-492-01 pillow block against the lower skin and install one of the cap screws as shown in Figure 2-1.
4. Grease the P/N 290-440-00 roller pin with Aeroshell 7, MIL-G-23827 or equivalent before assembly. Partially insert the roller pin into the pillow block. Hold the P/N 232-049-01 Gimbal Assembly in position and slide the roller pin through the Gimbal Assembly and into the other side of the pillow block.
5. Install the second cap screw and torque both screws to 26 ft-lbs.
6. Safety wire the cap screws to the safety wire ears on the pillow block.
7. Grease the bushings with Aeroshell 7, MIL-G-23827, or equivalent before assembly. Install the P/N 210-181-00 Load Cell Assembly or the P/N 232-050-00 Link Assembly (depending on kit being installed) to the 232-049-01 Gimbal Assembly using the hardware shown in Figure 2-1. Install the load cell or link so that the travel limiter identified with the F is facing forward and the travel limiter identified with the A is facing aft. Tighten nut finger tight and then tighten to next available slot for cotter pin. Install new cotter pin.

Pillow Block, Gimbal and Link Installation, continued

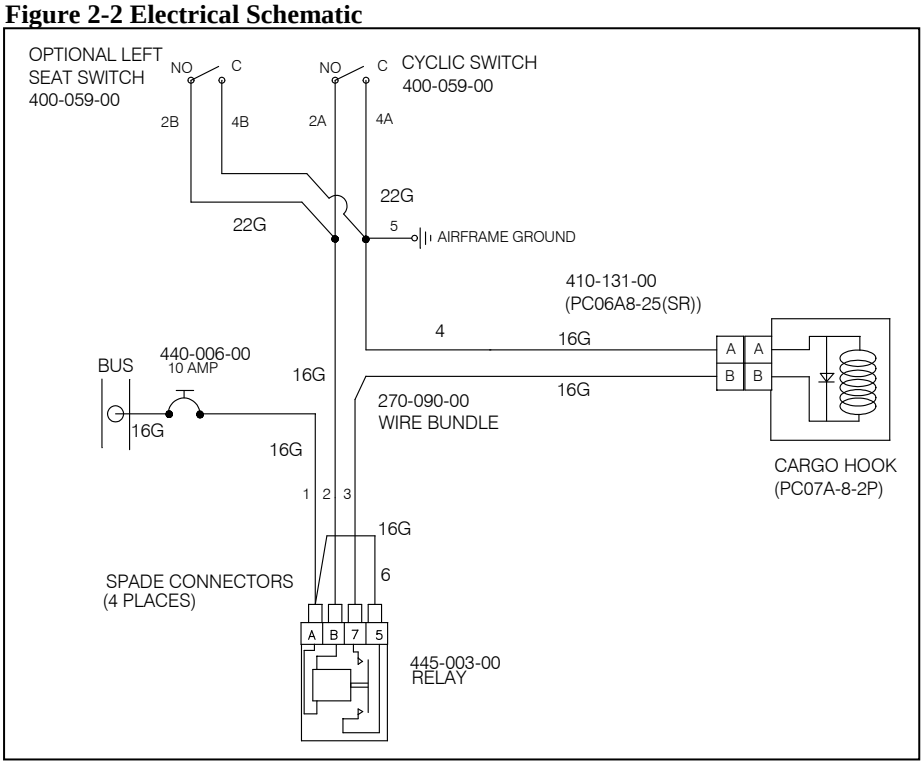
Figure 2-1 Gimbal, Load Cell and Hook Hardware



Electrical Schematic

The electrical release system is powered from the bus through a 10 amp circuit breaker to a relay in the center tunnel. Switches on the cyclic and co-pilots seat support control the relay and energize the DC solenoid in the Cargo Hook, opening the hook and releasing the cargo. A schematic for the electrical system is shown below in Figure 2-2.

Figure 2-2 Electrical Schematic

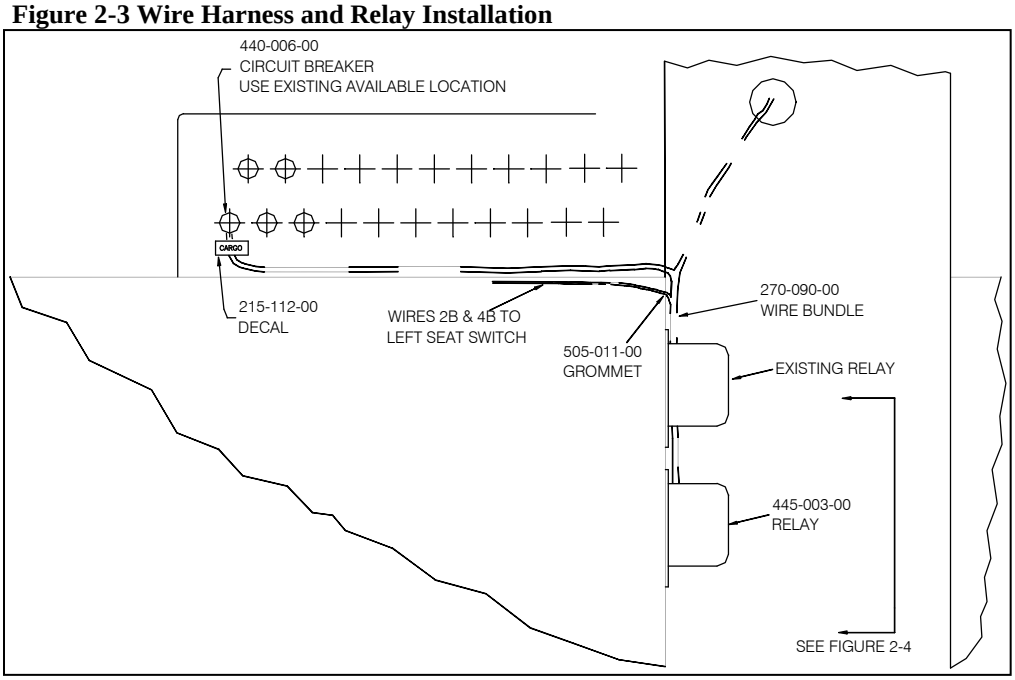


Wire Harness and Relay Installation

Install the P/N 445-003-00 relay on the keel panel below the existing relay installation (ref Figure 2-3) using the hardware as shown in Figure 2-4.

Place the P/N 270-090-00 main wire bundle into the tunnel on top of the existing wire bundle.

Figure 2-3 Wire Harness and Relay Installation

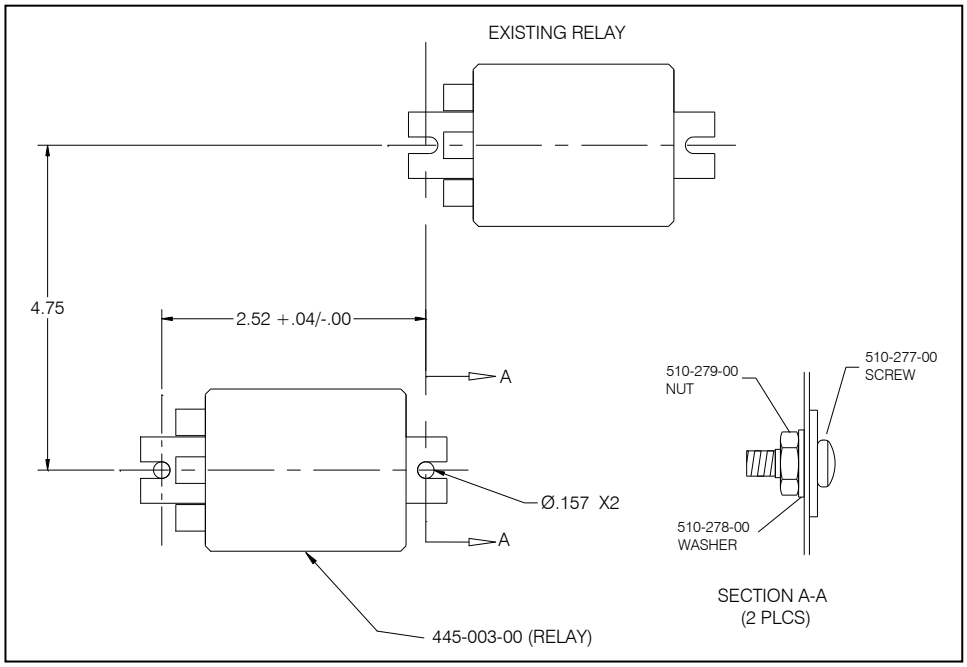


Connect wire numbers 1, 2 and 3 from the main bundle to the relay terminals A, B and 7 as shown in the Figure 2-2 electrical system schematic. Connect jumper wire 6 to relay terminal 5.

Connect the ground lead of wire number 5 to any convenient existing ground location in the tunnel.

Secure the wire bundle with wire ties as required.

Figure 2-4 Relay Installation



Wiring to Circuit Breaker Panel and Circuit Breaker Installation

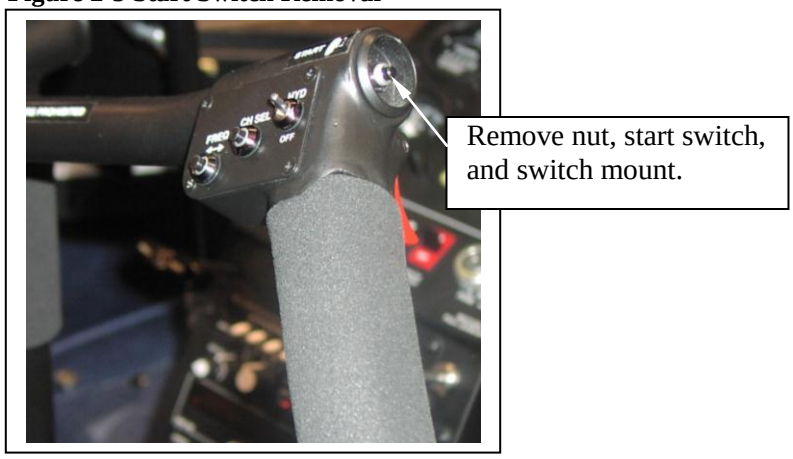
1. Remove the circuit breaker cover panel and install the P/N 440-006-00 10 amp circuit breaker in an available location. On some early models, it may be necessary to remove the panel and make a hole for the additional circuit breaker.
2. Open the circuit breaker to disarm the cargo hook release circuit.
3. Use the P/N 270-089-00 wire assembly and a P/N 410-162-00 ring terminal as a jumper to power the input side of the circuit breaker in compliance with AC 43.13.
4. Feed the number 1 wire of the main wire bundle from the tunnel into the circuit breaker bay using the existing wire bundle access hole. Connect the wire to the output side of the P/N 440-006-00 circuit breaker using the other P/N 410-162-00 ring terminal provided. Secure the power wire to the existing wire bundles with tie wraps.

Release Switches Installation

Cyclic Grip Switch Installation (for use with Robinson Grip Assembly C058)

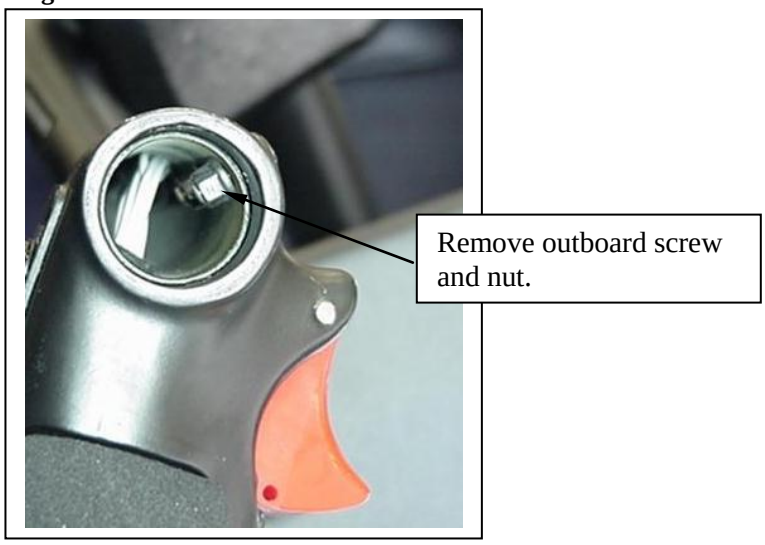
1. Remove nut (P/N B227-4) from start switch (P/N B227-2) and remove switch Mount (P/N D443-2) from end of grip assembly.

Figure 2-5 Start Switch Removal



2. Remove outboard screw (MS27039C0806) and nut (MS21042L08) as shown in Figure 2-6. The nut will not be re-used for this installation and can be discarded.

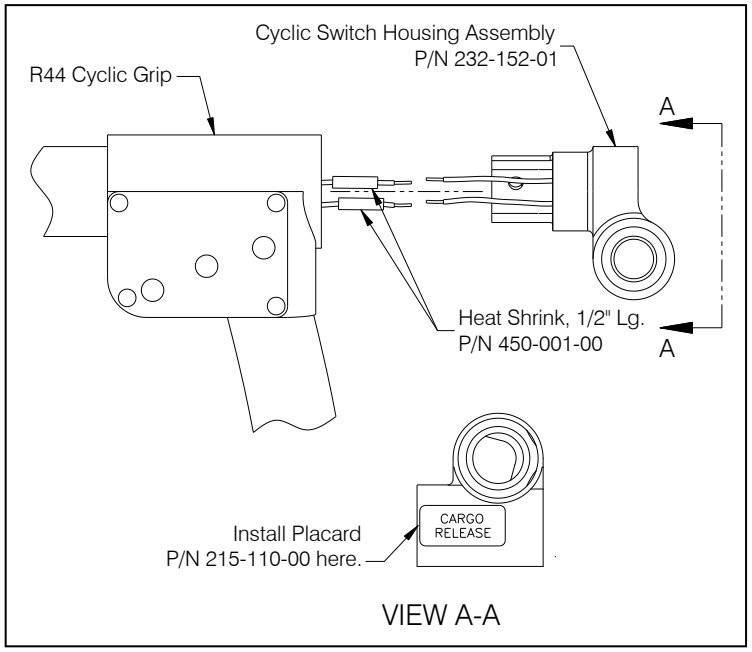
Figure 2-6 Screw and Nut Removal



3. Using a lead wire, pull the number 2A and 4A wires up through the horizontal tube and out the end of the grip assembly.
4. Slide a piece of heat shrink (P/N 450-001-00) over the 2A and 4A wires.
5. Prep and solder, using a lap splice, the 2A wire from up through the cyclic to one of the wires from the switch and the 4A wire from the cyclic to the other wire from the switch.
6. Slide the heat shrink over the respective solder joints and shrink in place using a heat gun.

Release Switches Installation continued

Figure 2-7 Release Switch Installation



7. Insert the Switch Housing Assembly into the end of the C058 cyclic grip while pulling the Robinson start switch through it. Re-install the Robinson start switch into the Switch Mount (P/N D443-2) with the nut and secure the Switch Mount by tightening the pre-installed set screw in the Switch Housing.
8. If necessary, while inserting the Switch Housing Assembly into the cyclic grip, pull excess wire back down the cyclic grip. Secure the Switch Housing Assembly into the end of the grip assembly with the MS27039C0806 screw removed earlier.

Figure 2-8 Switch Housing Assembly Installed

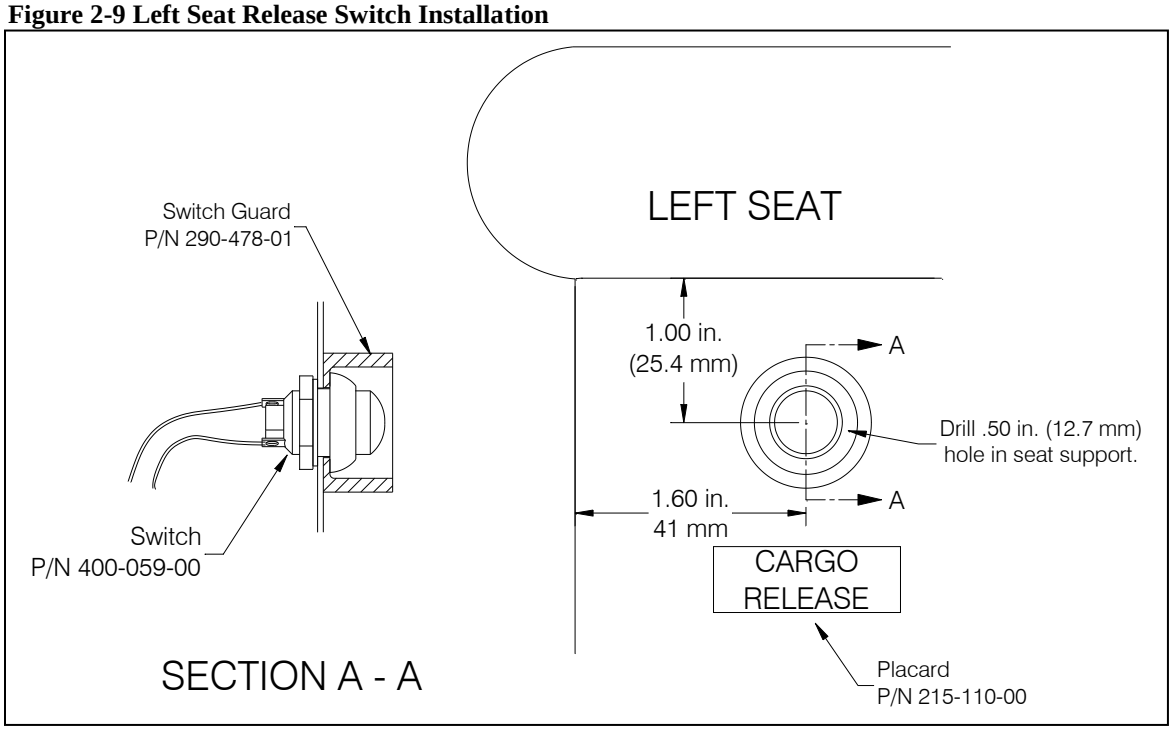
9. Install placard P/N 215-110-00 as shown in Figure 2-7.
10. Check the cyclic for freedom of motion throughout its complete travel range and ensure the wires are not chafing on any components.

Optional Left Seat Release Switch Installation

If the left seat release switch installation is not desired, cap and stow wires 2B and 4B per AC 43.13 and skip this section.

1. Drill a .250 inch hole in the left side of the tunnel wall above the main wire bundle in a convenient location or use an existing unused hole in the tunnel wall. Install Grommet (P/N 505-011-00).
2. Drill a .50 inch hole in the outboard side of the left seat support as shown in Figure 2-9.
3. Route the number 2B and 4B wires through the grommeted hole and through the left baggage area to the .50 inch hole on the outboard seat support. Secure the wires to the forward seat hinge fasteners with two clamps (P/N 512-018-00).
4. Slide the nut (provided with the switch P/N 400-059-00) over the wires from inside the seat support and feed the wires through the .50 inch hole and through the switch guard (P/N 290-478-01).
5. Place a .50 inch length of heat shrink over each wire to the switch. Solder the wires to the switch as shown in the Figure 2-2 wiring schematic. Use a heat gun and shrink the covering material to final size. Place the switch (P/N 400-059-00) into the switch guard and through the seat as shown in Figure 2-9 and secure with nut.

Figure 2-9 Left Seat Release Switch Installation



Load Weigh System Installation

Kit P/N 200-289-00 features a load weigh system, which includes the load cell, an electrical wiring internal harness and a C-39 load weigh indicator.

Load Weigh Internal Harness Installation

The Load Weigh Harness is made up of four cables terminated to one 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. This cable is connected to the load cell. 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.

NOTICE

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

The load cell cable can be routed with the hook electrical release harness to the cargo hook area. The load cell connector should be mounted in a location close enough to the load cell to ensure the load cell cable is not strained when the cargo hook is moved to its furthermost point, but far enough away to minimize excess cable which may be snagged. Secure the connector with the screws (P/N 510-028-00) and nuts (P/N 510-029-00) provided.

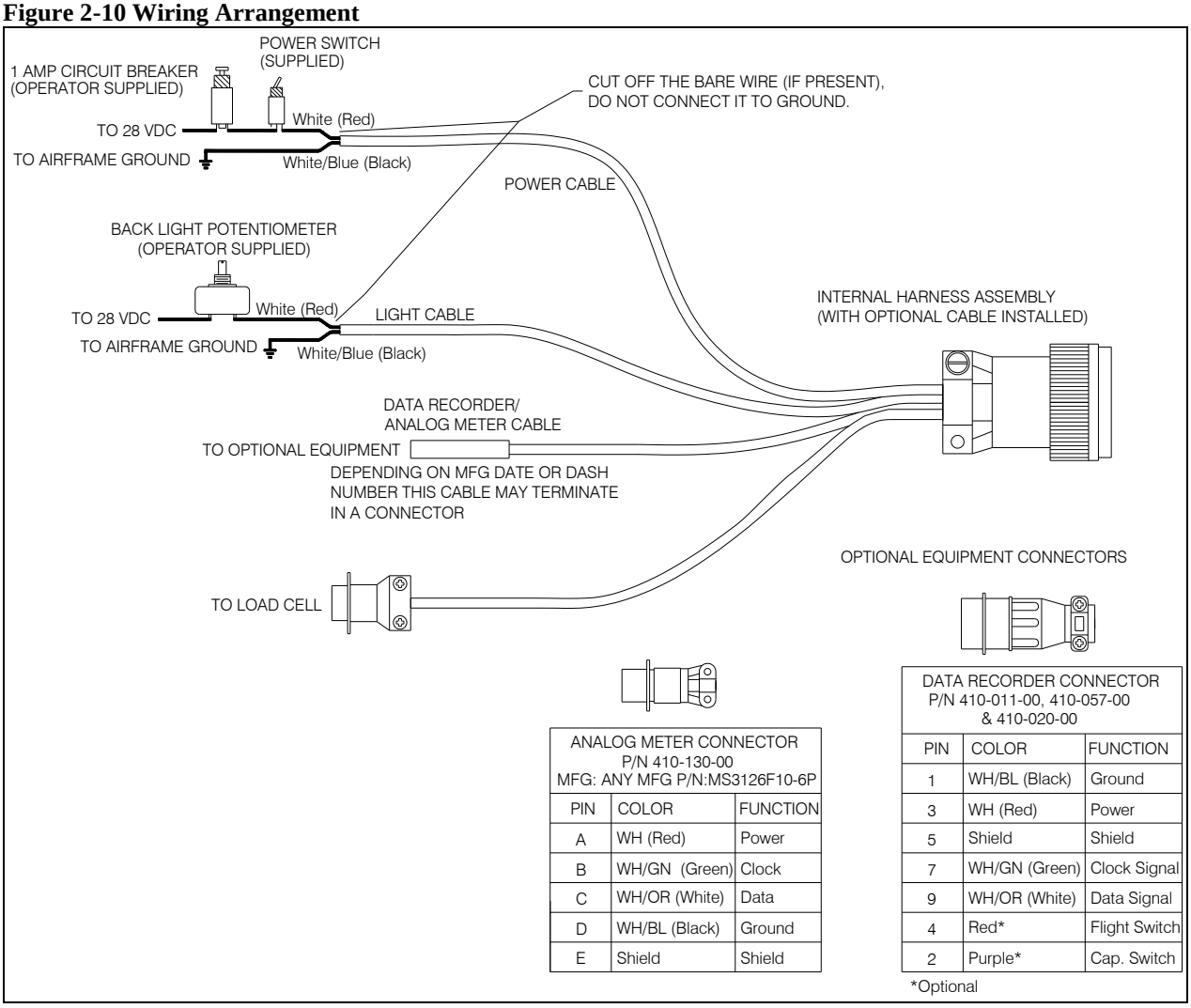
Route the harness to the electrical bus and to the Indicator mounting location. Secure the cables to the existing wiring bundles with the ty-wraps. Secure the cables clear of flight control rods.

Electrical Connections

Install the supplied power switch, P/N 400-048-00. The "POWER" cable on the Internal Harness is supplied extra long, cut off the excess cable and use as needed to connect the switch and circuit breaker. Connect the "POWER" white wire (red if wire harness P/N 270-048-00 is installed) 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 as illustrated in Figure 2-10. Connect the circuit breaker to the 28 VDC bus. Connect the white/blue wire (black if wire harness P/N 270-048-00 is installed) to the ground bus. The cable shield wire (present on P/N 270-048-00 harness only) is not grounded at this end of the cable and may be cut off. Use a minimum of 22 gauge wire to make all connections. Secure the connections and protect from corrosion.

Load Weigh System Installation continued

Figure 2-10 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

NOTICE

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

Load Weigh System Installation continued

C-39 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 210-095-00 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. The cable shield wire is not grounded at this end of the cable and may be cut off.

Indicator Hook-Open Warning

The 210-095-00 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.

Mechanical Release Cable Installation

NOTICE

Install the manual release T-handle on the cyclic control cover in the location shown in Figure 2-11. If, due to configuration changes by Robinson Helicopters, this location is not available, locate it as near as possible, or locate on opposite side (in lower right corner) of cyclic control cover. ***IMPORTANT:*** *Before proceeding with drilling hole for T-handle, verify there is clearance beneath the cyclic control cover for the release cable to extend down.*

1. Drill a .38 inch diameter hole through the left aft corner of the cyclic control cover and box assembly as shown in Figure 2-11. Locate and drill the hole for the cable clamp in the tunnel keel panel as shown.
2. Place the 268-014-01 manual release cable inside the tunnel and route the output end of the cable out the bottom of the helicopter. Insert the forward end of the cable into the cyclic control cover plate and install the face nut and T-handle as shown in Figure 2-11. Install the adel clamp as shown (install on same side as T-handle) and secure the release cable to it.

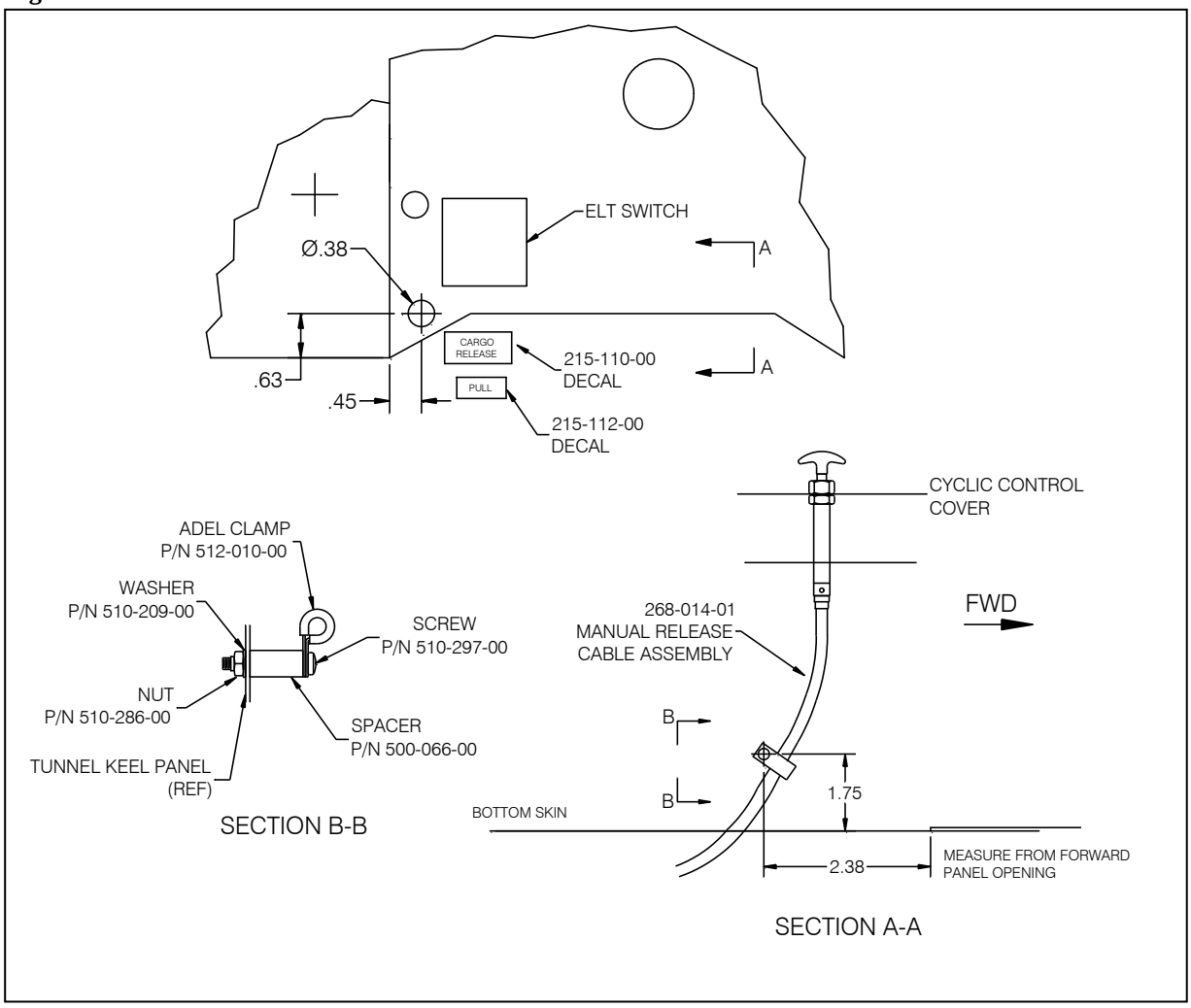
⚠ CAUTION

Verify that the release cable does not interfere with push/pull control rods and electrical components in the tunnel and that there is sufficient clearance between these items to allow for motion and account for any slack.

3. Make a cutout in the forward belly panel as shown in Figure 2-12 and install the 500-065-00 edge grommet.
4. Route the manual release cable as shown in Figure 2-12 and secure.

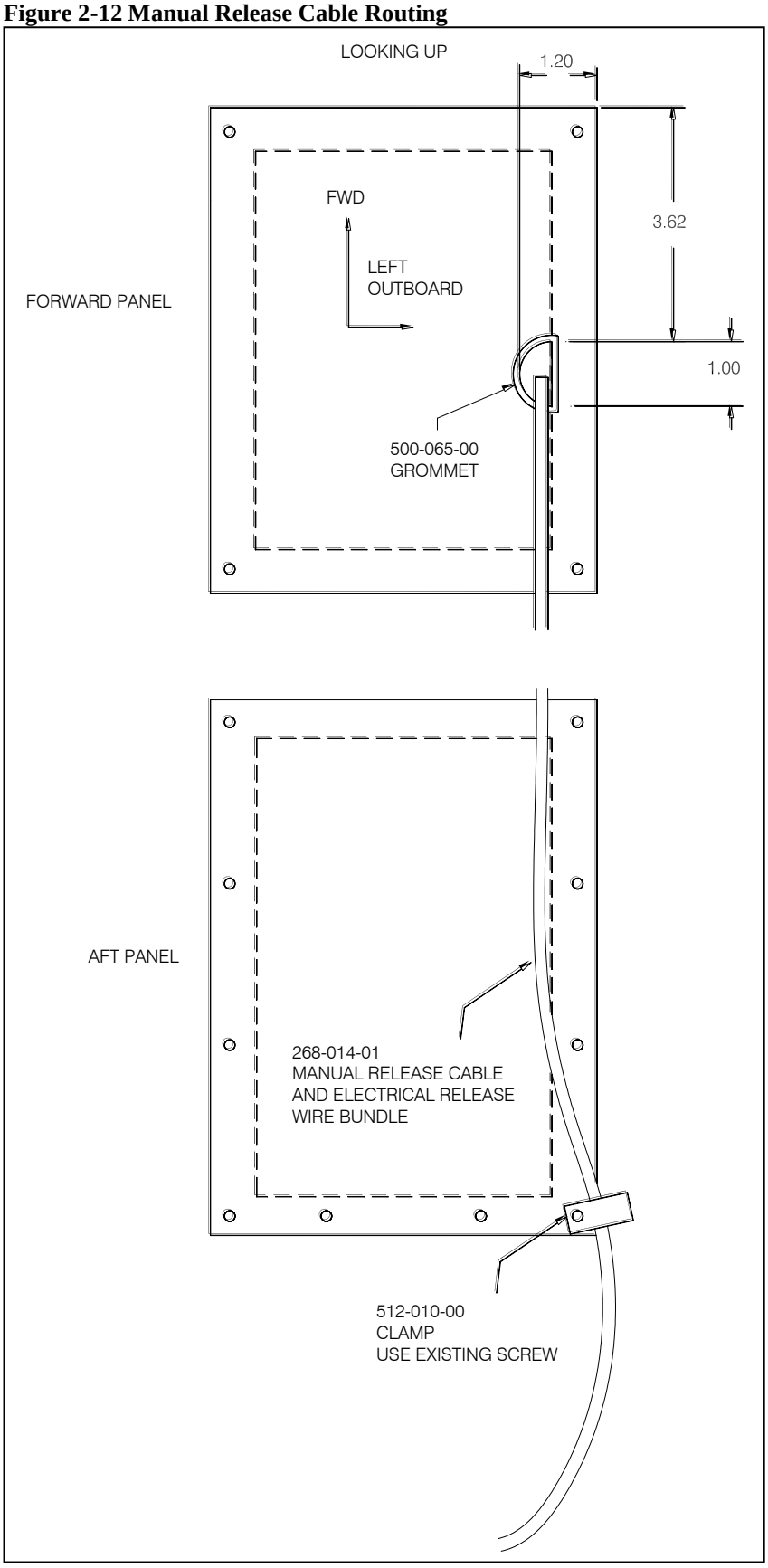
Mechanical Release Cable Installation, continued

Figure 2-11 Manual Release Cable Installation



Mechanical Release Cable Installation, continued

Figure 2-12 Manual Release Cable Routing



Electrical Release Wire Routing to the Hook

1. Route the #3 and #4 electrical release wires out the same hole in the forward panel as the mechanical release cable as shown in Figure 2-12. Secure the two release wires to the mechanical release cable with wire ties as necessary and route as shown in Figure 2-12.

Attaching the Mechanical Release Cable to the Cargo Hook

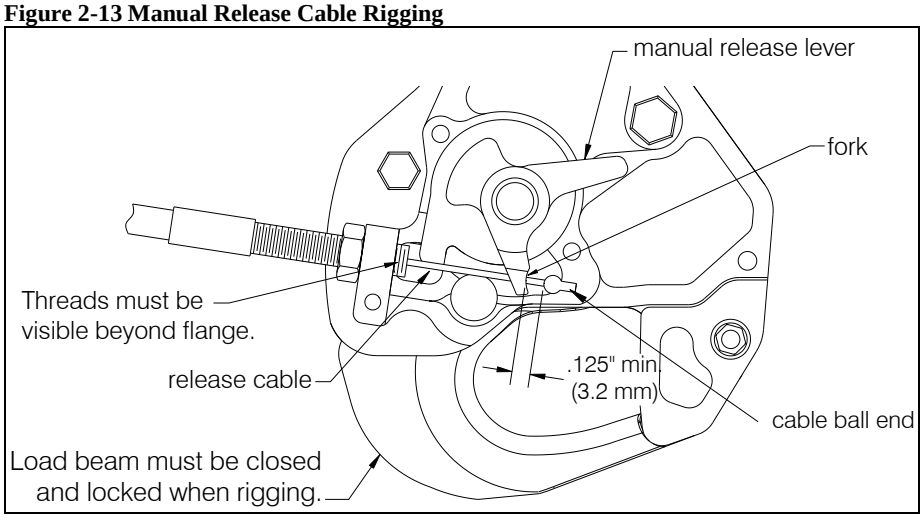
1. Remove the manual release cover from the cargo hook.
2. Screw the manual release cable into the hook by holding the cable and turning the hook assembly.
3. Place the cable ball end fitting into the hook manual release fork fitting as illustrated in Figure 2-13. Move the manual release lever in the clockwise direction until it is against the cam stop. Measure the cable ball end free play with the manual release handle in the cockpit in the non-release position. Adjust the manual release cable system to obtain a minimum of .125" (3.2 mm) of free play at the fork fitting as shown in Figure 2-13.

CAUTION

Load beam must be closed and locked when rigging the manual release cable.

4. Replace the manual release cover. Tighten the jam nut against the hook and safety wire the jam nut to the nearest cover screw. Safety wire the remaining cover screws.

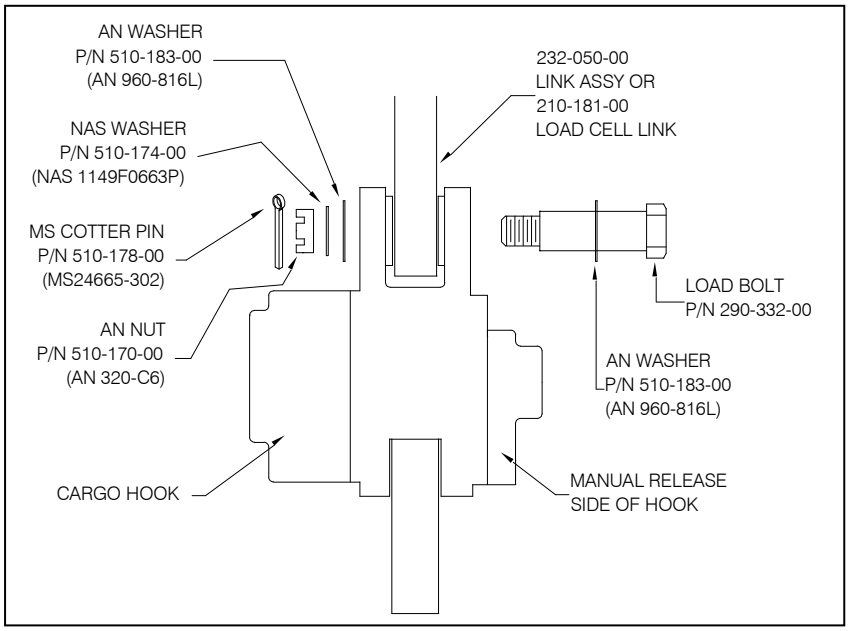
Figure 2-13 Manual Release Cable Rigging



Cargo Hook Installation

Install the P/N 528-023-01 Cargo Hook assembly to the link using the hardware as shown in Figure 2-14. The cargo hook load beam should point forward.

Figure 2-14 Cargo Hook Installation



Tighten nut on bolt finger tight then rotate to next castellation to install and secure cotter pin.

Wiring Connector

Connect the cargo hook electrical release cable connector to the Cargo Hook. Listed below is the pin out for the cargo hook connector. Safety wire the connector.

Table 2-1 Cargo Hook Connector

Pin	*Function*
A	Ground
B	Power

CAUTION

The Cargo Hook is equipped with a suppression diode that will be damaged if the Cargo Hook electrical connections are reversed.

Placards

Install the following placards. Placard P/N's 215-010-00 and 215-012-00 are included only with kit P/N 200-289-00.

Table 2-2 Placards

DECAL NUMBER (DECAL DESCRIPTION)	LOCATION
P/N 215-010-00 (ELECTRONIC WEIGHING SYSTEM)	Mount adjacent to the power switch.
P/N 215-010-00 (ELECTRONIC WEIGHING SYSTEM)	Mount adjacent to the circuit breaker
P/N 215-012-00 (TURN THE WEIGHING SYSTEM OFF WHEN…..)	Mount adjacent to the C-39 Indicator.
P/N 215-110-00 (CARGO RELEASE)	Mount adjacent to the cyclic release switch in clear view of the pilot.
P/N 215-110-00 (CARGO RELEASE)	Mount adjacent to the left seat release switch in clear view of the pilot. (See Figure 2-7)
P/N 215-110-00 (CARGO RELEASE)	Mount adjacent to the mechanical release in clear view of the pilot. (See Figure 2-9)
P/N 215-111-00 (PULL)	Mount adjacent to the mechanical release in clear view of the pilot. (See Figure 2-9)
P/N 215-112-00 (CARGO)	Mount adjacent to the cargo hook circuit breaker in clear view of the pilot.
P/N 215-114-00 (CLASS B ROTORCRAFT..)	Mount on the instrument panel in clear view of the pilot.
P/N 215-115-00 (FAR PART 133.35(A) OPERATIONS ...)	Mount on the instrument panel in clear view of the pilot.
P/N 215-119-00 (EXTERNAL LOAD LIMIT = 800 LBS (363 KGS))	Mount on the belly of the aircraft adjacent to the cargo hook attachment point in clear view of the ground support personnel.

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. With no load on the cargo hook load beam, pull the handle operated cargo hook mechanical release, the Cargo Hook should release. Reset the cargo hook load beam.

3. Close the cargo hook release circuit breaker and position the battery switch to the ON position. With no load on the cargo hook load beam, depress the cargo hook electrical release buttons, the Cargo Hook should release using the cyclic and left seat electrical release switches. Reset the cargo hook load beam.

Component Weights

The weight of the system is listed in Table 2-3.

Table 2-3 Component Weights

Item	Weight lbs (kgs)
P/N 200-288-00	4.8 (2.2)
P/N 200-289-00	6.3 (2-9)

Cargo Hook Location

Table 2-4 Cargo Hook Location

Fuselage Station	92.2

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 121-017-00 in the Rotorcraft Flight Manual.

This page intentionally left blank.

Section 3

Operation Instructions

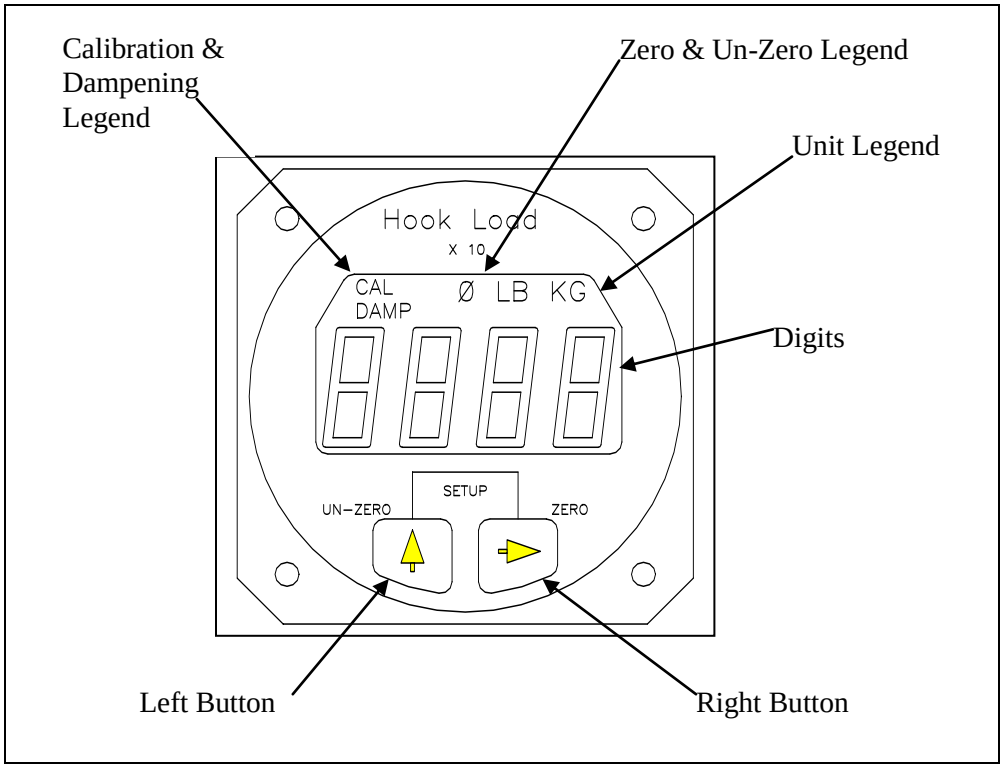
Load Weigh System

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

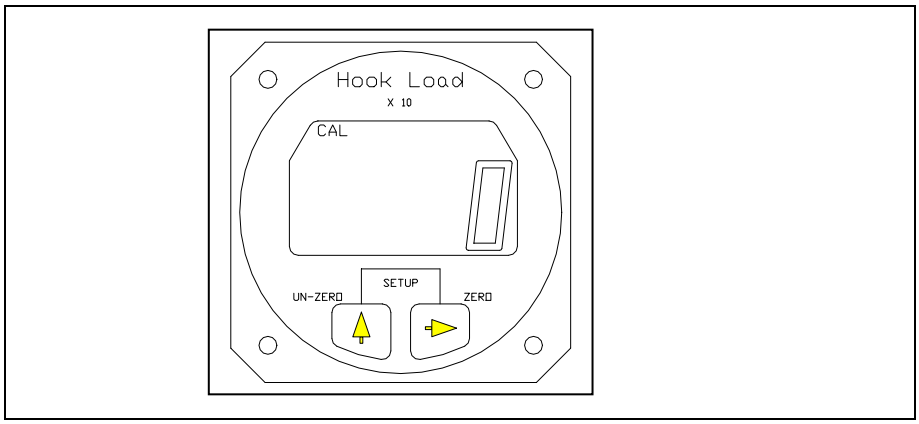


The Run Mode

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.

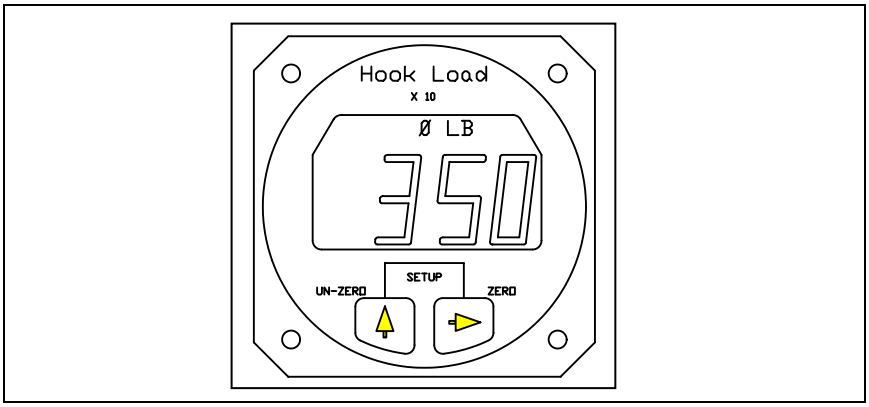
After the Indicator has been correctly installed, power it up by activating the Load Weigh Circuit Breaker. The Indicator will go through a self-diagnostic routine. During this routine the display will display all of the digits and legends. If a problem is found during the routine an Error Code will 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

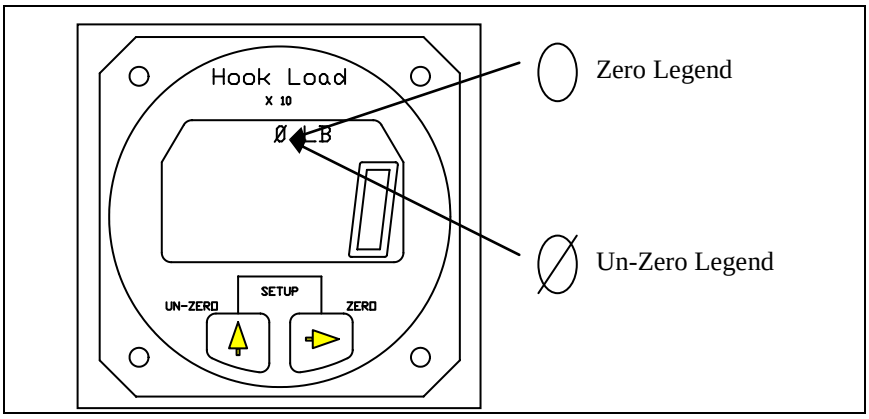


The illustration is a typical hook load reading. The display is 3,500 pounds, note the last digit is not displayed.

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.

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.

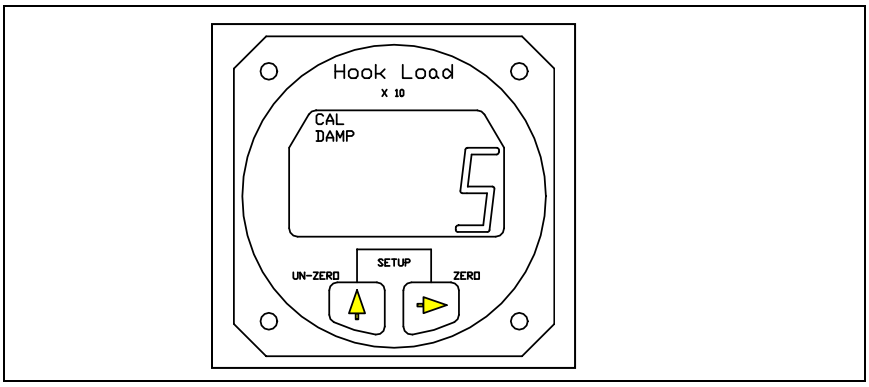
Indicator Dampening

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

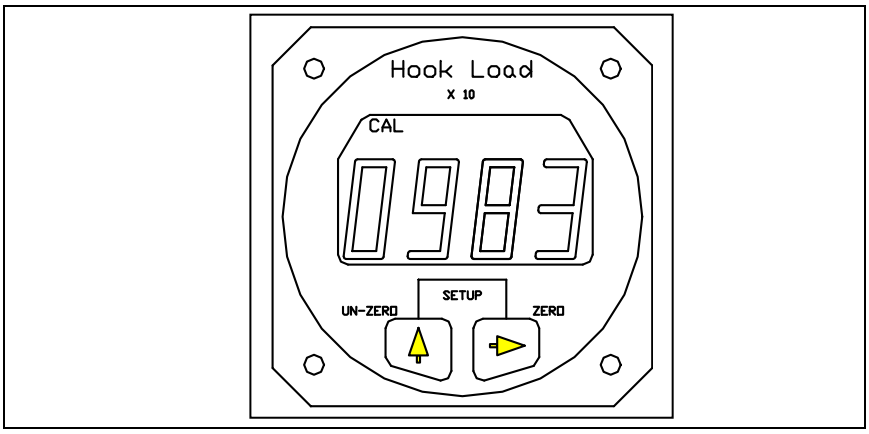
The Calibration Code, or CAL code, is a mandatory input. The Indicator will not accurately display the load without the correct Calibration Code. The Calibration Code scales the signal from the Load Cell.

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.

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.

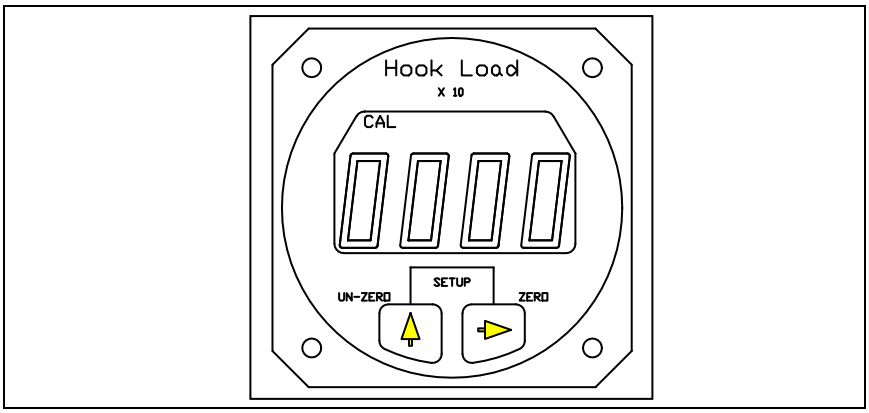
The closer the known load approaches the lifting capacity of the helicopter, the more accurate the calculated Calibration Code will be.

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:

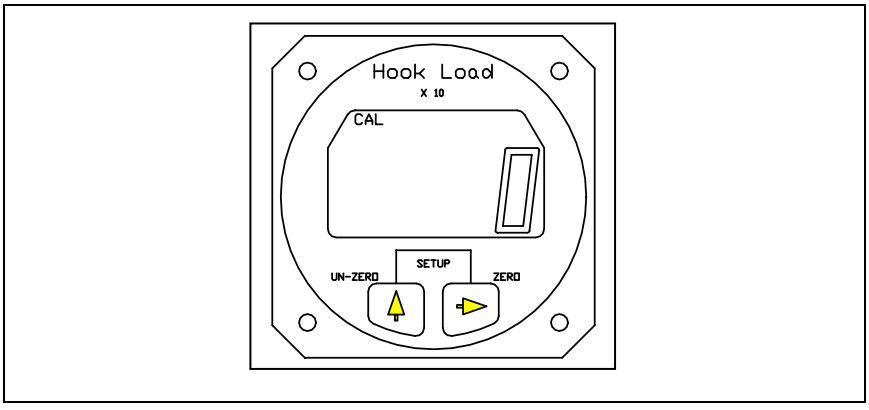
Figure 3-7 Running CAL Routine



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

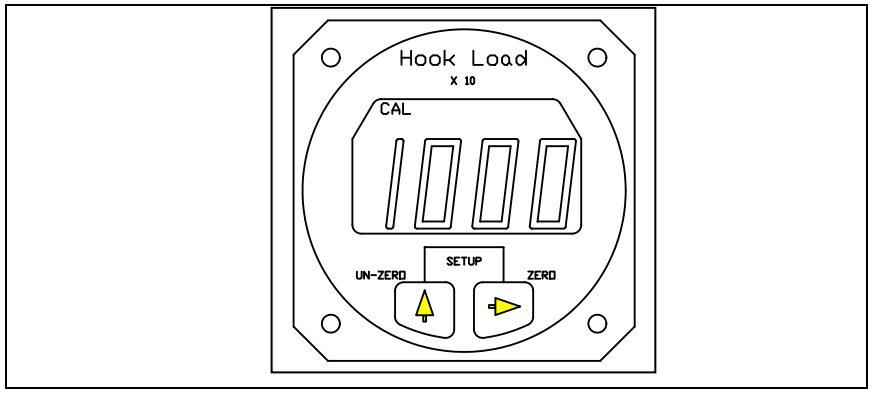
The Scale routine is used when a user supplied analog meter is connected to the Indicator. It is used to match or calibrate the analog meter to the Indicator. The Indicator outputs a 0 to 5 VDC analog signal which is proportional to the Load Cell load. The Scale number tells the Indicator at what point 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



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.

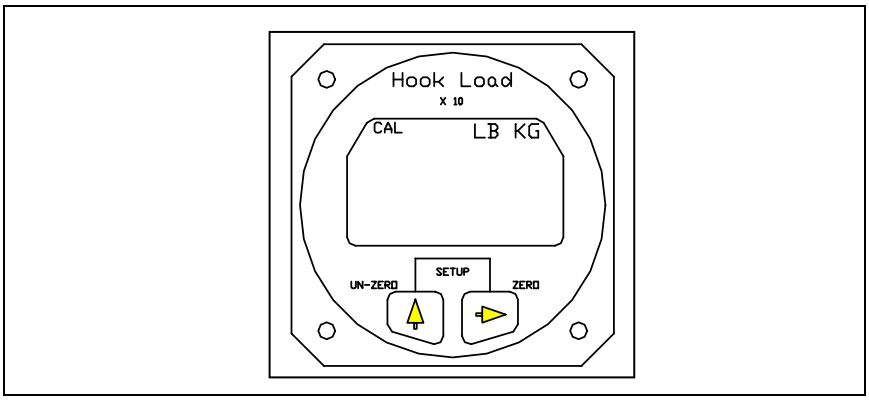
Select KG or LB Units

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.

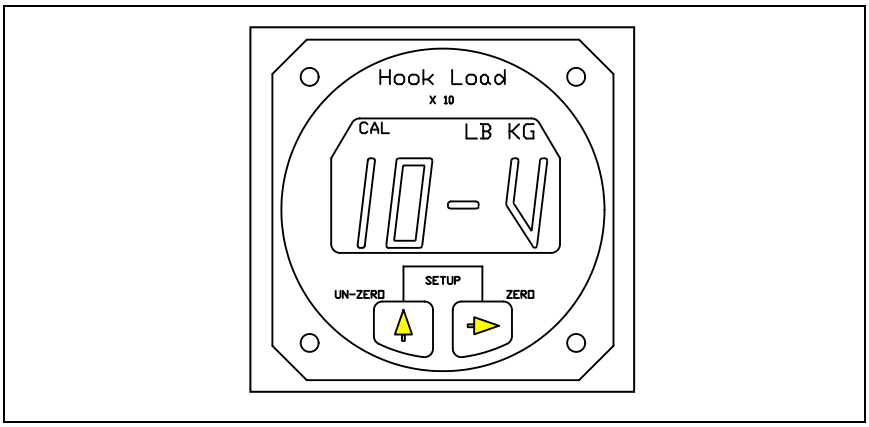
NOTICE

The selected units are displayed when in the Run Mode.

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



This page intentionally left blank.

Section 4

Operation Instructions

Specific maintenance restrictions apply to the Cargo Suspension System when used to transport fertilizer spreaders or loads with similar rotating tendency. See the Instructions for Continued Airworthiness (ICA) manual 123-016-00 maintenance section for specific time-between-overhaul requirements.

Operating Procedures

Prior to each cargo hook use perform the following:

1. Ensure that the Cargo Hook Kit 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 Owner's Manual, the ICA Maintenance Manual 123-016-00 and the RFM Supplement 121-017-00.

3. 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.

The release solenoid is not intended to be energized continuously. Depressing the electrical release button continuously in excess of 20 sec. will cause the release solenoid to overheat, possibly causing permanent damage.

4. Actuate the manual release lever to test the cargo hook manual release mechanism. The Cargo Hook must release. Reset the hook by hand after release. If the hook does not release or re-latch, do not use the unit until the difficulty is resolved.

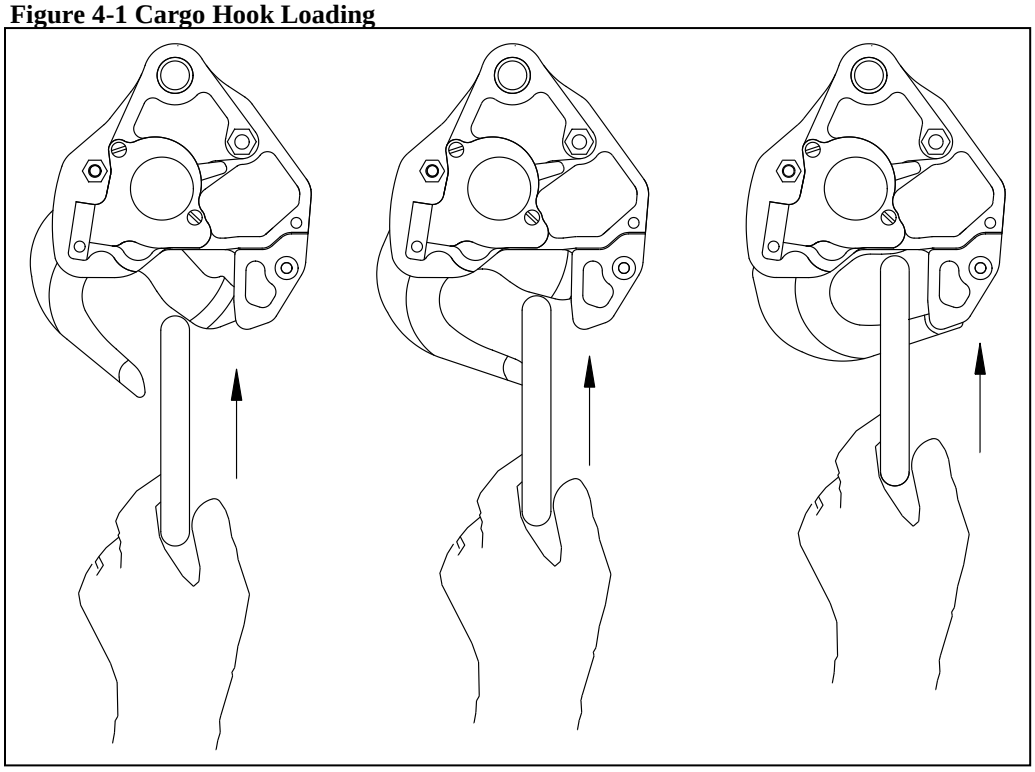
Optional Flight Configuration

The aircraft can be operated with the Cargo Hook and Gimbal Assembly removed. This may be accomplished by removing the Cargo Hook from the 210-181-00 Load Cell Assembly or 232-050-00 Link Assembly if no load weigh system is installed. Then remove the 232-049-01 Gimbal Assembly and 290-492-01 Pillow block together by removing the two Pillow Block mounting fasteners (290-505-00 See Figure 2-1). Secure the manual release cable and electrical wire bundle to any convenient location on the frame structure using tie wraps.

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 4-1, until an internal latch engages the load beam and latches it in the closed position.

Figure 4-1 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, but is not intended to represent all rigging possibilities.

Some combinations of small primary rings and large secondary rings could cause fouling during release.

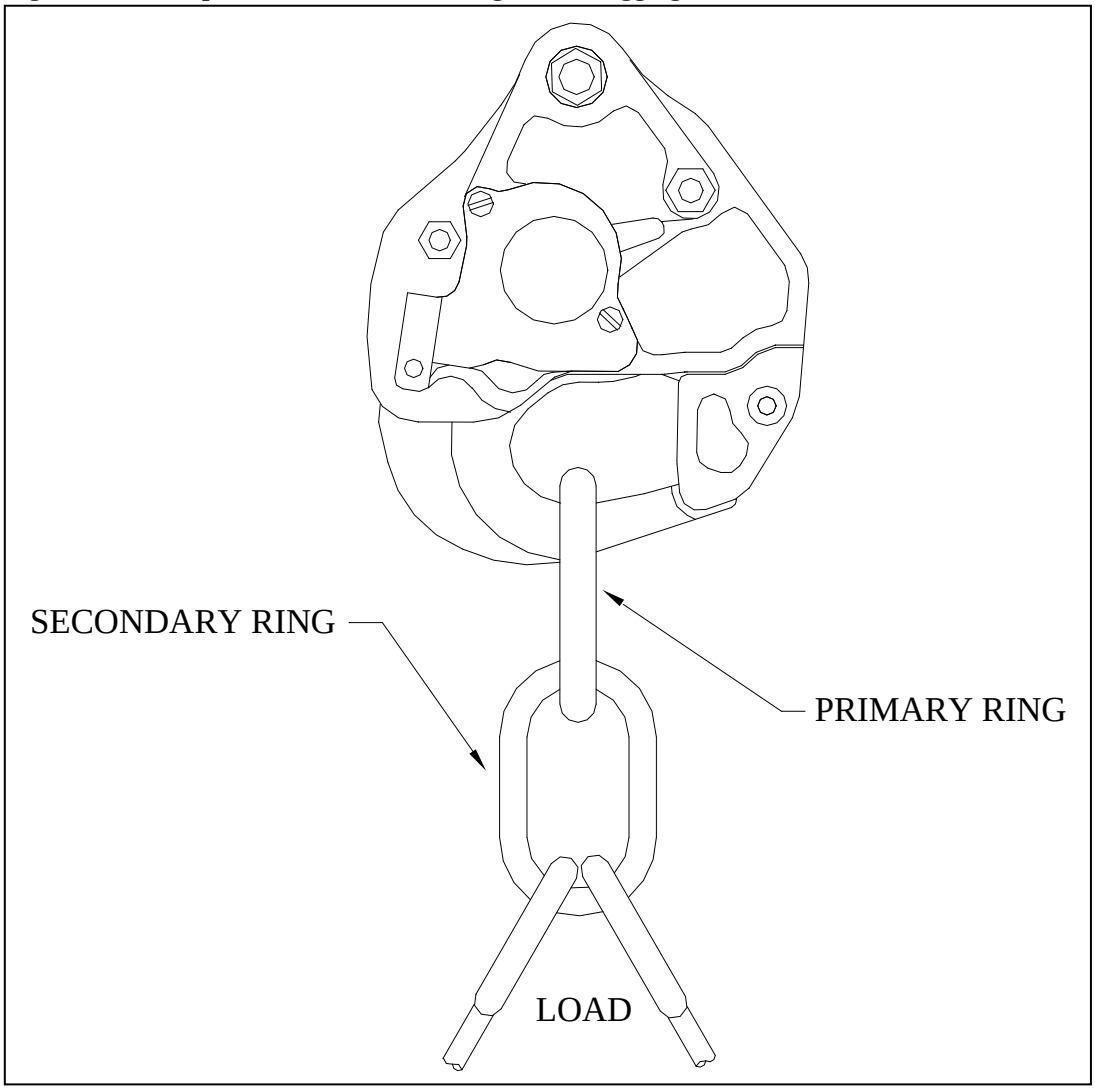
It is the responsibility of the operator to assure the cargo hook will function properly with each rigging.

Nylon Type Straps and Rope

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.

Cargo Hook Rigging, continued

Figure 4-2 Example of Recommended Cargo Hook Rigging



Section 5
Maintenance

Refer to the Instructions for Continued Airworthiness (ICA) manual 123-016-00 for maintenance of the cargo hook suspension system. For maintenance of the cargo hook refer to Cargo Hook Service Manual 122-005-00.

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

This page intentionally left blank.

Section 6

Certification

FAA STC

United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number **SR01064SE**

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 27 *of the* Federal Aviation Regulations

Original Product—Type Certificate Number: H11NM
Make: Robinson
Model: R44, R44 II

Description of the Type Design Change: Fabrication of Onboard Systems Model 200-265-00 12 Volt Talon LC Keeperless cargo hook kit without load weigh, Model 200-266-00 12 Volt Talon LC Keeperless Cargo hook kit with load weigh, Model 200-288-00 28 Volt Talon LC Keeperless cargo hook kit without load weigh, and 200-289-00 28 Volt Talon LC Keeperless cargo hook kit with load weigh, in accordance with FAA Approved Onboard Systems Master Drawing List No. 155-062-00, Revision 4, dated February 6, 2004, or later FAA approved revision.

Installation of the Onboard Systems cargo hook kit part numbers 200-265-00 or 200-266-00 in accordance with FAA approved Onboard Systems Owner's Manual 120-097-00, Revision 3, dated February 5, 2004, or later FAA approved revision. This modification must be inspected and maintained in accordance with section ATA 5 of FAA approved Onboard Systems Instructions for Continued Airworthiness Document 123-005-00, Revision 4, dated February 5, 2004, or later FAA approved revision, Suspension System Owner's Manual 120-097-00, Revision 3, dated February 5, 2004, or later FAA approved revision and Cargo Hook Service Manual, 122-012-00, Revision 1, dated February 5, 2004, or later FAA approved revision.

Installation of the Onboard Systems cargo hook kit part numbers 200-288-00 or 200-289-00 in accordance with FAA approved Onboard Systems Owners Manual 120-111-00, Revision 1, dated October 10, 2003, or later FAA approved revision. This modification must be inspected and maintained in accordance with section ATA 5 of FAA approved Onboard Systems Instructions for Continued Airworthiness Document 123-016-00, Revision 1, dated October 10, 2003, or later FAA approved revision, Suspension System Owner's Manual 120-111-00, Revision 1, dated October 10, 2003, or later FAA approved revision, and Cargo Hook Service Manual, 122-005-00, Revision 7, dated October 10, 2003, or later FAA approved revision.

(See Page 3 for Limitations and Conditions)

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 of issuance: March 13, 2002
Date reissued:
Date amended: October 17, 2003, August 10, 2004

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

United States of America
Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

(Continuation Sheet)

Number **SR01064SE**

Onboard Systems
Reissued:
Amended: October 17, 2003, August 10, 2004

Limitations and Conditions: Approval of this change in type design applies to only the Robinson R44 and R44 II rotorcraft equipped with Robinson hard point/tiedown block P/N D134-1. This approval should not be extended to 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. This modification has been approved by the FAA for Class B and C Rotorcraft-Load Combinations, Non-human External Cargo only. Modified rotorcraft must be operated in accordance with an FAA approved copy of Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) No. 120-007-00, Revision 1, dated August 10, 2004, or later FAA approved revision for the Robinson R44 rotorcraft and Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) No. 121-017-00, Revision 1, dated August 10, 2004, or later FAA approved revision, for the Robinson R44 II rotorcraft. A copy of this Certificate, Owner's Manual, Service Manual and the FAA approved RFMS must be maintained as a 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.

- END -

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

FAA FORM 8110-2-1 (10-69) *This certificate may be transferred in accordance with FAR 21.47.*

PAGE 3 OF 3 PAGES

Canadian Approval

Transport Canada / Transports Canada
Aviation / Aviation

Aircraft Certification Branch
620 - 800 Burrard Street
Vancouver, BC V6Z 2J8

Your file *Votre référence*
190S-03-500
Our file *Notre référence*

July 28, 2003

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

Attention: Mr. Ron Pirtle

Subject: Type design examination of FAA STC SR01064SE on Robinson R-44

~~Dear Sir:~~

This is in response to your letter, dated 2003/05/29, requesting Transport Canada approval of the subject STC.

In accordance with our current policy associated with the review of foreign STCs, FAA STCs applicable to Normal Category Rotorcraft which were type certified on the basis of FAR 27 or equivalent standards, for which the U.S. is the State of Design are exempt from a type design examination except where the FAA STC requires compliance with snow ingestion requirements set out in AWM 527.1093(b).

The subject STC is exempted from a type design examination in Canada. If you have any questions with regards to this matter please do not hesitate to contact the undersigned at 604-666-5597.

Yours truly,

H. W. Wong

for
Minister of Transport

c.c. Mr. Jeffrey E. Duven
Acting Manager, Seattle ACO

Canada

1/1

EASA Approval

European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.01171

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 Washington 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: *FAA TCDS H11NM*
Manufacturer: *Robinson*
Model: *R44, R44 II*
Original STC number: *FAA STC SR001064SE*

Description of Design Change:

Cargo hook suspension system i.a.w. US STC SR001064SE

Associated Technical Documentation:

- FAA approved Onboard Systems Rotorcraft Flight Manual Supplement No. 121-007-00, dated April 22, 2005 or later approved revision for the Robinson R44 rotorcraft

European Aviation Safety Agency

- FAA approved Onboard Systems Rotorcraft Flight Manual Supplement No. 121-017-00, dated April 22, 2005 or later approved revision for the Robinson R44 II rotorcraft
- FAA approved Onboard Systems Owner's Manual 120-097-00, dated October 10, 2003 or later approved revision for kit P/N 200-265-00 and 200-266-00
- FAA approved Onboard Systems Owner's Manual 120-111-00, dated October 10, 2003 or later approved revision for kit P/N 200-288-00 and 200-289-00
- FAA approved Onboard Systems Instructions for Continued Airworthiness 123-005-00, dated August 3, 2000 or later approved revision for kit P/N 200-265-00 and 200-266-00
- FAA approved Onboard Systems Instructions for Continued Airworthiness 123-016-00, dated April 17, 2003 or later approved revision for kit P/N 200-288-00 and 200-289-00
- Cargo Hook Service Manual 120-005-00, dated November 9, 2000 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: 4 January 2006

M. Mazzoletti
Certification Manager
Rotorcraft, Balloons, Airships

STC- EASA.IM.R.S.01171 - Onboard Systems International 2