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Owner's Manual

E-86 Load Weigh System

for the

Airbus Helicopters AS350


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Applicable Equipment Part Numbers

200-310-01

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RECORD OF REVISIONS

Revision	Date	Page(s)	Reason for Revision
0	11/12/18	All	Initial Release
1	12/08/23	6, 7	Replaced C-40 Indicator P/N 210-293-00 with 210-293-01 in new production kits.

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1.0 Introduction

1.1 Scope

This owner's manual contains instructions for installation and operation of the E-86 Load Weigh System (P/N 200-310-01) on the Airbus Helicopters AS350 series aircraft.

1.2 Capability

The instructions contained in this document are provided for the benefit of experienced aircraft maintenance personnel and facilities that are capable of carrying out the procedures.

1.3 Safety labels

The following definitions apply to safety labels used in this manual.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.




Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



Draws the reader's attention to important or unusual information not directly related to safety.



Used to address practices not related to personal injury.

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2.0 Referenced Documents

- 120-152-00 Owner's Manual, C-40 Indicator
- 121-032-00 Rotorcraft Flight Manual Supplement
- 123-026-00 Instructions for Continued Airworthiness (ICA)

3.0 System Overview

3.1 Introduction


The P/N 200-310-01 Load Weigh System is approved as a replacement for the type certificated load weigh system on Airbus Helicopters AS350 series helicopters, equipped with a swing suspension system attached to the fore and aft cross tubes of landing gear. These swing systems are factory installed on AS350B3s and can be retrofitted to earlier models via Airbus Helicopters Service Bulletin 25.00.62.

The Load Weigh System is a compliment to the helicopter external load lifting system. Its purpose is to display the weight of the load carried on the cargo hook. It consists of three components: the cockpit mounted load weigh indicator, the load cell, and the interconnecting electrical harness between them.

The load weigh indicator included with the P/N 200-310-01 Load Weigh System is Onboard Systems next generation indicator, the C-40 model. The C-40 Indicator makes several improvements over its predecessor (the C-39 model) while preserving classical features and is generally backwards compatible. The C-40 Indicator offers these improvements:

- Full color display
- Load measurement displayed in full, not X 10 (C-39 is X 10)
- Addition of Analog Bar and Maximum Load features
- Simplified user interface
- Addition of Cargo Hook hour meter
- Selectable backlight control voltage, 5 or 28 VDC
- Improved moisture resistance
- Expanded signal input range
- Field-upgradable firmware

Refer to the Owner's Manual 120-152-00 for additional information and detailed operating instructions for the C-40 Indicator.

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3.2 Specifications

Table 3.2.1 C-40 Indicator Pin-out


Pin	Function
A	+28 VDC
B	- Load Cell Signal Return
C	+ Load Cell Signal
D	+ Load Cell Excitation
E	- Load Cell Excitation Return
F	Analog Out Common
G	+ Analog Out
H	Hook Open (In)
J	RS232 TX
K	TEDS Data (In)
L	Shield
M	Backlight Common
N	Backlight Signal 0-28 VDC (In)
P	Aircraft Ground Bonding/EMI Ground
R	Load on Hook (Out)

3.3 Bill of Materials

The following items are included with the Load Weigh System P/N 200-310-01. If shortages are found contact the company from whom the system was purchased.

Table 3.3.1 Bill of Materials – Load Weigh System (P/N 200-310-01)

Part No.	Description	Qty
210-221-00	Load Cell Assembly	1
270-106-03	Load Weigh Internal Harness	1
210-293-01*	C-40 Indicator	1
235-259-00	C-40 Mount	1
500-014-00	Spacer	1
510-923-00	Screw	1
511-046-00	Screw	2
235-136-00	Connector Bracket	1
510-475-00	Button Head Screw, Black	3
510-095-00	Washer	3
510-029-00	Nut	4
510-062-00	Washer	4
510-481-00	Screw	4
512-011-00	Cable Tie	1
120-126-01	Owner's Manual	1
120-152-00	Owner's Manual	1
123-026-00	ICA	1
121-032-00	RFMS	1

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*The C-40 Indicator (P/N 210-293-00 or -01) can directly replace the previous generation C-39 Indicator (P/N 210-095-00) without wire harness replacement. Replacing the existing wire harness with P/N 270-106-03 will allow the C-40 Indicator to use future features to be added.

C-40 Indicator P/N 210-293-01 replaces P/N 210-293-00 in new productions kits as of November 2023, these are interchangeable with the exception of software compatibility. Refer to C-40 Owner's Manual 120-152-00 for specific software versions.

To upgrade from the C-39 Indicator to the C-40 Indicator a Mount Kit (P/N 200-432-00) is required to accommodate the different mounting style of the C-40 model.

Table 3.3.2 Bill of Materials – C-40 Mount Kit (P/N 200-432-00)

Part No.	Description	Qty
235-259-00	C-40 Mount	1
500-014-00	Spacer	1
510-923-00	Screw	1
511-046-00	Screw	2

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4.0 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.

If Onboard Systems Load Weigh System P/N 200-310-00 is installed per this STC, the C-40 Indicator can be used as a replacement for the C-39 Indicator using the existing wire harness and load cell. With this configuration, skip to Section 4.3.

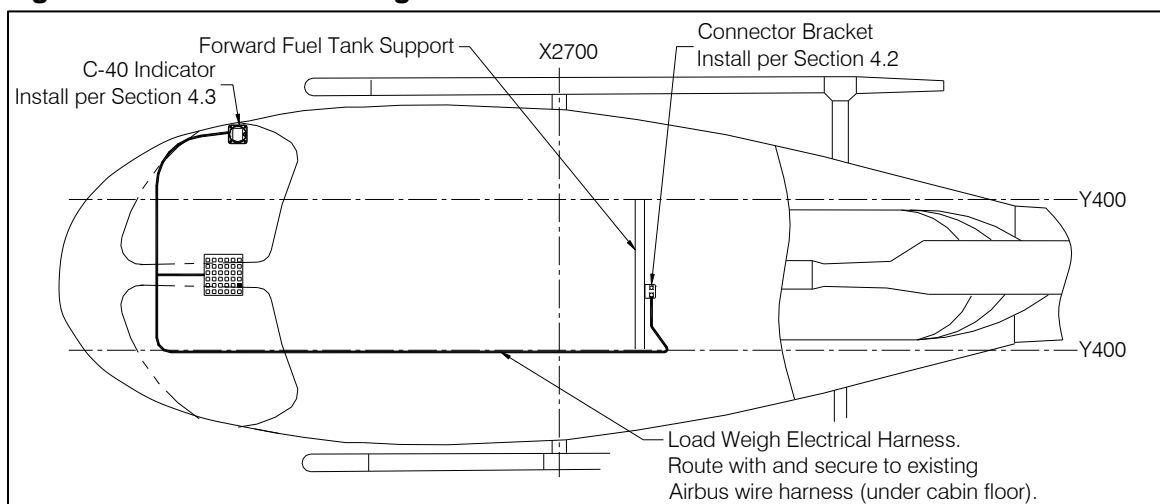
4.1 Load Weigh Harness Installation

This section provides the instructions for installing the internal load weigh harness (P/N 270-106-03). Figure 4.1.1 provides an overview of where the harness is routed. This routing duplicates the Airbus Helicopters load weigh harness routing and this harness is to pick up the same circuit breaker, instrument light source and ground point as the Airbus load weigh harness. Refer to Figure 4.1.2 for electrical schematic. Refer to section 4.2 and section 4.3 for installation of the Connector Bracket and C-40 Indicator respectively.

Route the harness from the C-40 Indicator (30M connector) along the existing harnesses while observing the following precautions.

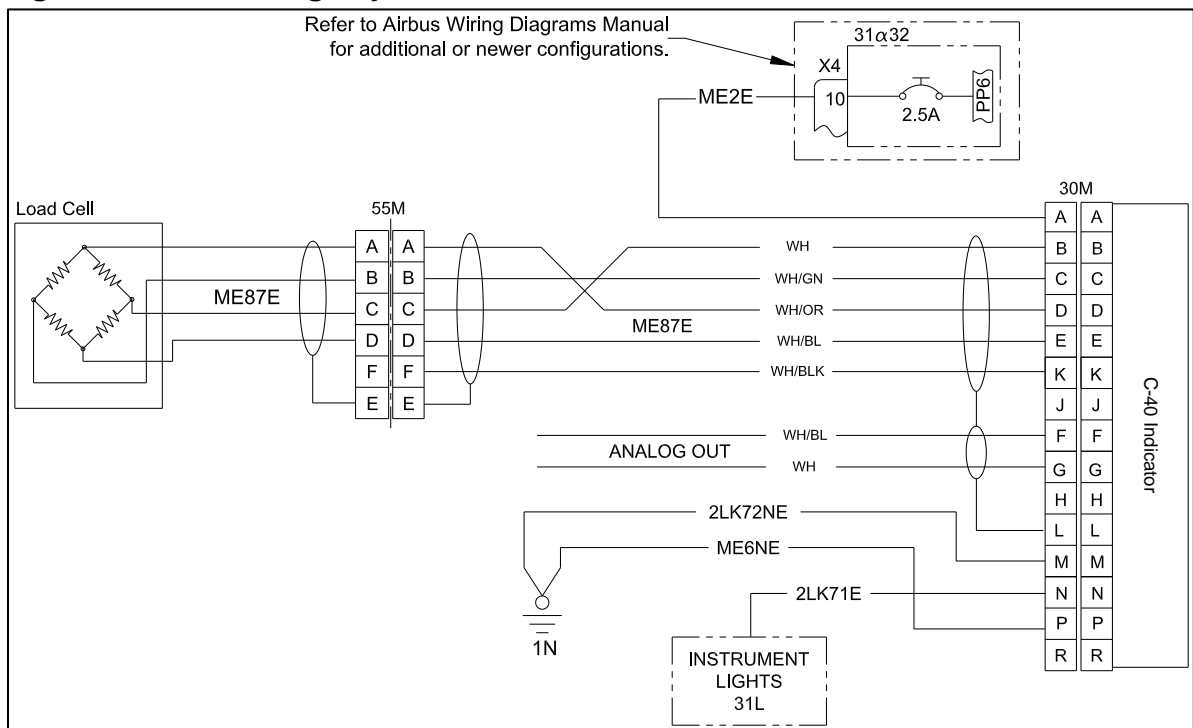
- Pick up existing wire runs by opening existing cable clamps. Nylon ties alone may not be used for primary support.
- The distance between supports should not exceed 21 inches (53 cm).
- Bend radius of wire or harness must not be less than 10 times the wire or harness diameter.
- Inspect and verify that the wire harness may not be manually deflected into a structure with a bend radius of less than 0.13 inches (3.3 mm).

Figure 4.1.1 Harness Routing Overview



The Analog Out leg of the wire harness provides the means for using the C-40 Indicator's 0.5 - 10 VDC analog signal (this signal is proportional to the applied load; refer to manual 120-152-00 for additional information). This signal may be used to drive a separate display or device; connection to a separate display or device is not approved under this STC thus a separate approval is required (this signal is intended to be included in future certification updates). Cap and stow this wire if it is not to be used.

Figure 4.1.2 Load Weigh System Electrical Schematic



NOTICE

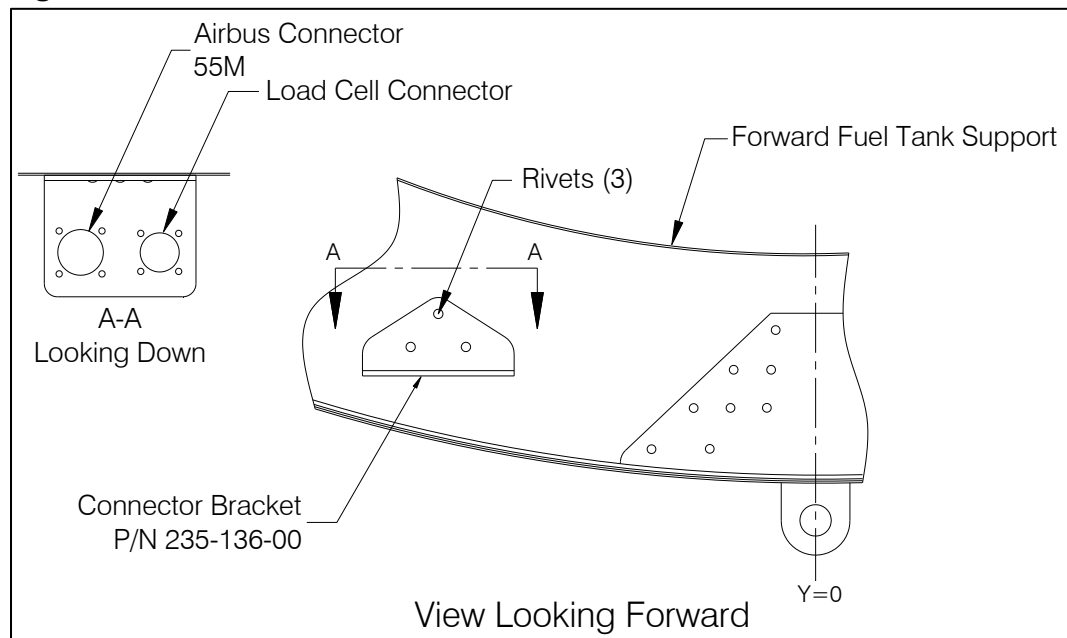
The C-40 Indicator is not compatible with the Onboard Systems Analog Meter or C-30 model Data Recorder. These accessory items are only compatible with the predecessor C-39 model.

4.2 Connector Bracket Installation


1. Remove Airbus Helicopters connector 55M from the existing connector bracket on the aft side of the forward fuel tank support frame.
2. Remove the existing connector bracket by drilling out the three rivets that secure it.
3. Install the supplied Connector Bracket (P/N 235-136-00) using the same holes and using the same rivet P/N as was used for the removed connector bracket (see Figure 4.2.1).

The existing opening in the fiberglass belly panel may need to be widened to accommodate the second connector.

Figure 4.2.1 Connector Bracket Installation



4. Re-install the Airbus Helicopters connector onto the new Connector Bracket re-using the fasteners that were removed previously.
5. Fasten the P/N 270-106-03 load weigh harness connector to the Connector Bracket with four screws (P/N 510-481-00), washers (P/N 510-062-00), and nuts (P/N 510-029-00).

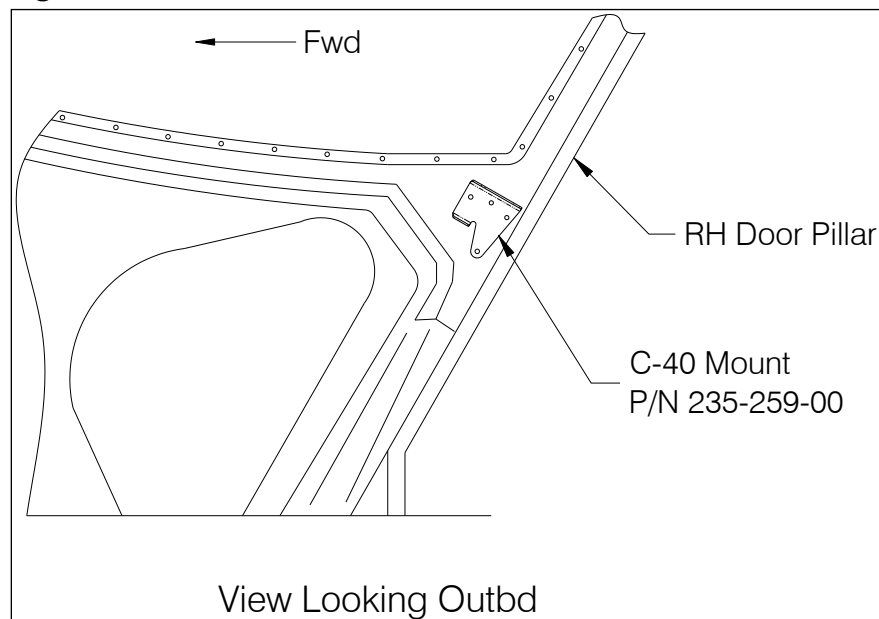
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4.3 C-40 Indicator Installation

The C-40 Indicator is to be mounted on the right-hand forward door pillar, in the same location as the Airbus Helicopters' Indicator or C-39 Indicator it replaces.

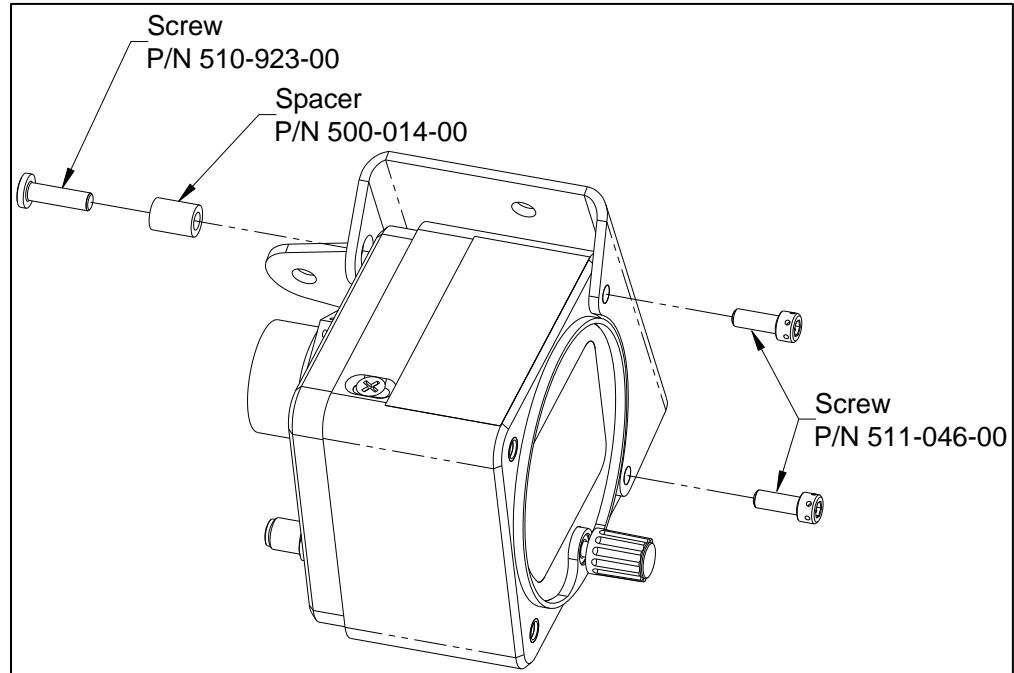
1. If present, remove the Airbus Helicopters' Indicator and its mounting bracket or the C-39 Indicator and its mounting bracket (P/N 290-772-00).
2. Position the C-40 Mount (P/N 235-259-00) on the door pillar and secure it with the three screws (P/N 510-475-00) and washers (P/N 510-095-00) provided.

Figure 4.3.1 C-40 Mount Installation



3. Position the C-40 Indicator within the C-40 Mount and secure with hardware shown in Figure 4.3.2. Secure the P/N 511-046-00 screws with lock wire.
4. Connect the load weigh harness connector (30M) to the C-40 Indicator's connector.

Figure 4.3.2 C-40 Indicator Installation

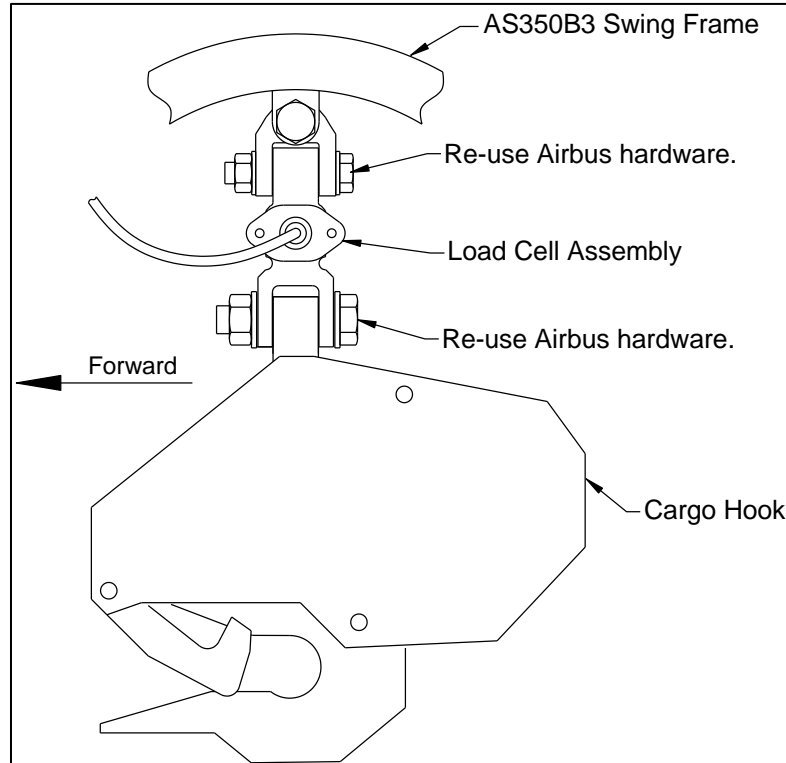


4.4 Load Cell Installation

Install the Load Cell Assembly (P/N 210-221-00) per the following (refer to Figure 4.4.1)

1. Remove the cargo hook and the existing load cell from the Airbus swing suspension system and disassemble the load cell from the cargo hook. Retain hardware.
2. Re-assemble the Load Cell Assembly (P/N 210-221-00) onto the cargo hook re-using the Airbus Helicopters hardware.
3. Attach the cargo hook and load cell onto the swing suspension system re-using the Airbus Helicopters hardware. The load cell must be oriented such that the load cell harness strain relief is to the left side (when looking forward) of the helicopter.

Figure 4.4.1 Load Cell Assembly Installation



4. Route the load cell harness from the load cell to the connector bracket as shown in Figure 4.4.2 and connect it to the fixed load cell connector on the bracket.

NOTICE

The leg of the Airbus Helicopters Y harness that was routed to the Airbus Helicopters load cell is no longer used. Either stow it or cut it off just outside the Y junction.


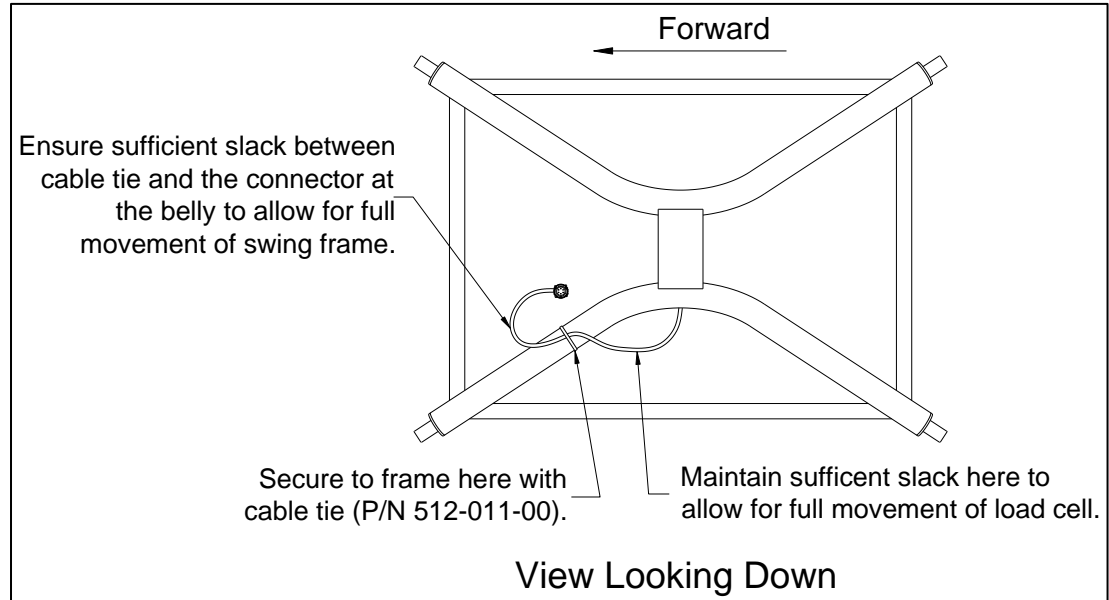

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Figure 4.4.2 External Load Cell Harness Routing



4.5 Installation Check-out

1. Swing the cargo hook, load cell and swing suspension throughout their ranges of motion to ensure that the load cell harness has enough slack to allow full swing of the suspension without being strained or damaged. The harness must not be the stops that prevent the cargo hook, load cell, and swing suspension from swinging freely in all directions.
2. Power on the Load Weigh System. On startup the C-40 Indicator will display an information screen while performing a brief self-diagnostic routine and then display the load screen. Set the Installation Zero for the installation per the instructions contained in C-40 Indicator's Owner's Manual 120-152-00.
3. In the Settings menu adjust units (lb or kg), brightness of the display, maximum load, and other settings as preferred (refer to the C-40 Indicator Owner's Manual 120-152-00 for detailed instructions). One setting that must be set properly to function is the backlight voltage. If the wire for the backlight was connected the backlight voltage must be set to the aircraft circuit voltage (5 VDC or 28 VDC).

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4.6 Component Weights

The weights of the Load Weigh System components are listed below. These components replace components of the Airbus Helicopters load weigh system and are in the same locations. When performing weight and balance calculations remember to deduct the weight of the components removed, such as load cell, etc.

Item	Weight
Load Cell Assembly	.80 lbs (.36 kgs)
C-40 Indicator	0.55 lbs (.25 kgs)
Internal Harness	0.95 lbs (.43 kgs)
Total	2.30 lbs (1.04 kgs)

4.7 Paperwork

In the US, fill in FAA form 337 for the initial installation. This procedure may vary in different countries. Make the appropriate aircraft log book entry. Insert the Rotorcraft Flight Manual Supplement P/N 121-032-00 into the Rotorcraft Flight Manual.

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5.0 Operation Instructions

Refer to the C-40 Indicator Owner's Manual 120-152-00 for operations instructions for the indicator.

6.0 Maintenance

Refer to the Instructions for Continued Airworthiness (ICA) manual 123-026-00 for maintenance of the load weigh system.

7.0 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:

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