CARGO HOOK SUSPENSION SYSTEM

With

TALON MC Keeperless Hook STC SR00713SE

Part Numbers

200-088-10 w/o Load Weigh
200-088-11 w/o Load Weigh, w/ Surefire
200-088-50 w/o Load Weigh
200-089-10 w/ Load Cell Only (No Indicator)
200-089-11 w/ Load Cell Only (No Indicator)
200-089-20 w/ Load Weigh, C-39 Indicator 28V Lights
200-089-21 w/ Load Weigh, C-39 Indicator 5V Lights
200-089-22 w/ Load Weigh, C-39 Indicator 28V Lights
200-089-23 w/ Load Weigh, C-39 Indicator 5V Lights
200-089-24 w/ Load Weigh, C-39 Indicator 28V Lights, Surefire
200-089-25 w/ Load Weigh, C-39 Indicator 5V Lights, Surefire
200-089-26 w/ Load Weigh, C-40 Indicator
200-089-27 w/ Load Weigh, C-40 Indicator, Surefire

Owner's Manual

Owner's Manual Number 120-084-00
Revision 36
12/07/23

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

Rev.	*Date*	*Page(s)*	*Reason for Revision*
26	03/18/13	1-3, Section 7	Removed suspension system maintenance information and replaced with reference to CMM 122-028-00.
27	09/22/15	1-3, 5-5	Added upgrade kit P/N 200-151-01 and associated installation instructions.
28	02/24/16	1-3, 1-4, Sections 3, 4, 6	Listed C-39 indicator P/N 210-095-04 and -05 as options. Removed C-39 operation instructions and replaced with reference to 120-039-00. Updated cargo hook load rigging figure (Figure 3-3).
29	07/19/16	1-4, 5-2, 5-3, 5-4	Added P/N 291-874-00 as an optional bumper which can be used in place of P/N 220-040-00. Updated load weigh system installation instructions.
30	02/23/17	1-3, 5-3	Listed Load Cell Assembly P/N 210-088-02 as optional under kit P/N 200-089-20. Corrected switch P/N on page 5-3.
31	06/02/17	Title page, 2-3, 2-4, 2-7	Removed model listing from title page (models are listed on AML in Section 8). Added Caution regarding load beam being closed and locked when adjusting release cable and updated Figure 2-3. Updated installation check-out.
32	03/08/18	Section 1, 2-7, 2-8, 3-1	Added kits 200-088-11, 200-089-24, and 200-089-25 which include Cargo Hook with Surefire (P/N 528-020-12).
33	06/24/21	2-1, 2-2	Added information regarding alternate orientation of slip-ring assembly.
34	12/07/21	All	Added kit P/Ns 200-089-26, 200-089-27, and 200-151-02 with C-40 Indicator
35	10/25/22	1-3, 1-4	Listed NVG compatible C-39 Indicator P/Ns 210-095-04 and 210-095-05 as optional. Removed reference to Bumper P/N 291-874-00.
36	12/07/23	9, 10, 11, 14, 27	Replaced C-40 Indicator P/N 210-293-00 with 210-293-01 in new production kits.

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

Section 1 **Suspension System General Information**
Introduction, 1-1
Safety Labels, 1-2
Bill of Materials, 1-3
Theory of Operation, 1-6

Section 2 **Suspension System Installation Instructions**
Suspension System Installation, 2-1
Suspension System Detail, 2-2
Suspension System Manual Release Arrangement, 2-3
Suspension System Manual Release Adjustment, 2-4
Suspension System Electrical Release Installation, 2-5
Ground Wire Installation, 2-5
Multi-Channel Slip-Ring Electrical Installation, 2-5
Suspension System Installation Check-Out, 2-7
Component Weights, 2-8
Paper Work, 2-8

Section 3 **Suspension System Operation Instructions**
Suspension System Operating Procedures, 3-1
Bumper Lubrication, 3-1
Cargo Hook Loading, 3-2

Section 4 **Load Weigh General Information**
Introduction, 4-1
Indicator Specifications, 4-1
Indicator Pin Out, 4-2
Load Cell Specifications, 4-2

Section 5 **Load Weigh Installation Instructions**
5.1 C-39 Load Weigh System Installation, 5-1
5.2 C-40 Load Weigh System Installation, 5-6
5.3 Load Cell Installation (Kit P/N 200-151-01/200-151-02), 5-8
5.4 Load Weigh Installation Check-Out, 5-8

Section 6 **Maintenance**
Instructions for Returning Equipment to the Factory, 6-1

Section 7 **Certification**
FAA STC, 7-1
Approved Model List, 7-2
Foreign Approvals, 7-4

This page intentionally left blank.

Section 1
Suspension System General Information
Introduction

The Suspension Systems are replacements for the Bell 204-072-915-103 Suspension System. The Suspension System is approved for loads up to 5,000 pounds (2,267 kgs). See the basic rotorcraft flight manual for the capacity of a specific helicopter. The system attaches to the existing Bell hard point and utilizes the Bell provisions kit. Before installation ensure that the appropriate Bell provisions kit is correctly installed and operational. The Suspension System hangs at approximately the center of gravity attached to a lateral beam. It extends through an opening in the bottom of the lower fuselage skin. The cargo hook unit is a keeperless type with provisions for both an electrical and a manual controlled release.

The Suspension System is equipped with an innovative Bumper Ring assembly. The bumper ring is molded from two different polymers. A tough polymer core eliminates the fracturing problem common with the original equipment bumper. A soft outer layer provides a cushion effect that protects the airframe.

The Suspension System is also equipped with a Multi-Channel Slip-Ring assembly that can be used to supply electrical power and control signals to accessory equipment suspended from the rotating cargo hook.

An optional feature for the Suspension System is a Load Weigh System. The Load Weigh System is a complement to the helicopter external load lifting system with its purpose being to display the weight of the load carried on the cargo hook. It includes the load cell assembly, a load weigh indicator, and an interconnecting wire harness.

Another optional feature for the Suspension System includes a short time delay circuit built into the cargo hook electrical release system (cargo hook P/N 528-020-12). This circuit (referred to as Surefire Release) is a safety enhancement to protect against inadvertent load release due to accidental contact with the release switch or mistaken actuation of the cargo hook switch when another is intended. Surefire Release makes the electrical release a more deliberate pilot command. See Theory of Operation section for additional description.

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.

Bill of Materials

The following items are included with each Suspension System kit, if shortages are found contact the distributor from whom the system was purchased. **Current production kits are listed in the table below; refer to CMM 122-028-00 for parts breakdown for earlier kits.**

Table 1-2 Bill of Materials

Part No.	Description		Quantity								
			200-088			200-089					
			-10	-11	-50 ***	-22 **	-23 **	-24 **	-25 **	-26	-27
232-130-00^	UH-1 Suspension Assembly	*	1	1	-	1	1	1	1	1	1
232-130-50	UH-1 Suspension Assembly	*	-	-	1	-	-	-	-	-	-
210-095-00^^	C-39 Indicator w/ 28V Lights		-	-	-	1	-	1	-	-	-
210-095-02^^	C-39 Indicator w/ 5V Lights		-	-	-	opt	1	opt	1	-	-
210-293-01	C-40 Indicator		-	-	-	-	-	-	-	1	1
270-044-01	C-39 Internal Harness		-	-	-	1	1	1	1	-	-
270-283-01	C-40 Internal Harness		-	-	-	-	-	-	-	1	1
528-020-00	Cargo Hook, Keeperless	*	opt	opt	opt	opt	opt	opt	opt	opt	opt
528-020-02	Cargo Hook, Keeperless	*	opt	opt	opt	opt	opt	opt	opt	opt	opt
528-020-04	Cargo Hook, Keeperless	*	opt	opt	opt	opt	opt	opt	opt	opt	opt
528-020-06	Cargo Hook, Keeperless	*	opt	opt	opt	opt	opt	opt	opt	opt	opt
528-020-10	Cargo Hook, Keeperless	*	1	1	1	1	1	-	-	1	-
528-020-12	Cargo Hook, Keeperless, Surefire	*	-	1	-	-	-	1	1	-	1
220-040-00	Bumper Ring	*	1	1	1	1	1	1	1	1	1
290-210-01	Small Spacer	*	4	4	4	4	4	4	4	4	4
510-104-00	Nut	*	2	2	2	2	2	2	2	2	2
510-314-00	Bolt, socket head	*	2	2	2	2	2	2	2	2	2
210-180-24	Analog Meter		-	-	-	opt	opt	opt	opt	-	-
232-010-00^	Clevis Assembly	*	1	1	1	1	1	1	1	1	1
232-011-00^	Load Bolt Assembly	*	2	2	2	2	2	2	2	2	2
232-009-01^	Load Link Assembly	*	1	1	1	-	-	-	-	-	-
210-088-01^	Load Cell Assembly	*	-	-	-	-	-	-	-	-	-
210-088-02^	Load Cell Assembly	*	-	-	-	1	1	1	1	1	1
510-097-00^	Washer	*	2	2	2	2	2	2	2	2	2
510-096-00^	Nut	*	2	2	2	2	2	2	2	2	2
510-098-00^	Cotter Pin	*	2	2	2	2	2	2	2	2	2
215-290-00	Data Tag	*	1	1	1	1	1	1	1	1	1
215-417-00	Load Weigh Decal		-	-	-	2	2	2	2	1	1
215-012-00	Placard		-	-	-	1	1	1	1	-	-
215-343-00	Cockpit Decal		-	1	-	-	-	1	1	-	1
270-059-00	Y-Harness		-	-	-	opt	opt	opt	opt	-	-
512-001-00	Ty-Wrap		-	-	-	10	10	10	10	10	10
512-002-00	Ty-Wrap		-	-	-	10	10	10	10	10	10
510-028-00	Screw		-	-	-	4	4	4	4	4	4

continued

Bill of Materials continued

Table 1-2 Bill of Materials continued

Part No.	Description		Quantity								
			200-088			200-089					
			-10	-11	-50 ***	-22 **	-23 **	-24 **	-25 **	-26	-27
510-029-00	Nut		-	-	-	4	4	4	4	4	4
400-048-00	Power Switch		-	-	-	1	1	1	1	-	-
235-035-00	QD Bracket		-	-	-	1	1	1	1	1	1
511-211-00	Screw		-	-	-	-	-	-	-	4	4
120-039-00	Owner's Manual (C-39)		-	-	-	1	1	1	1	-	-
120-152-00	Owner's Manual (C-40)		-	-	-	-	-	-	-	1	1
120-084-00	Owner's Manual		1	1	1	1	1	1	1	1	1
121-021-00	RFM Supplement		1	1	1	1	1	1	1	1	1
122-004-00	CMM, Cargo Hook		1	1	1	1	1	1	1	1	1
122-028-00	CMM, Suspension System		1	1	1	1	1	1	1	1	1
123-052-00	ICA		1	1	1	1	1	1	1	1	1

* Items shipped assembled from factory

^These items were previously included in P/N 210-120-00 (w/o load cell) and P/N 210-120-01 (with load cell).

** The 200-089-22 and 200-089-23 kits and the 200-089-24 and 200-089-25 kits w/ Surefire are identical except for the C-39 indicator P/N.

*** Non-FAA-PMA approved version.

^^ C-39 Indicator P/N 210-095-04 (equipped with 28V NVG compatible lights) and C-39 Indicator P/N 210-095-05 (with 5V NVG compatible lights) are optional approved indicators that can be installed in place of C-39 Indicator P/Ns 210-095-00 and 210-095-02 respectively.

^^^ 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.

Bill of Materials continued

Kit P/Ns 200-151-01 and 200-151-02 are upgrade kits for an operator with P/N 200-088-10 or 200-088-11 installed. After installation of this kit, the installed configuration reflects a P/N 200-089 series (depending on cargo hook and indicator P/N).

Table 1-3 Bill of Materials – Load Weigh Upgrade Kit P/N 200-151-01, -02

Part No.	Description	Quantity	
		-01	-02
210-095-02*	C-39 Indicator w/ 5V Backlight	1	-
210-293-01	C-40 Indicator	-	1
270-044-01	C-39 Internal Harness	1	-
270-283-01	C-40 Internal Harness	-	1
210-088-02	Load Cell Assembly	1	1
215-012-00	Placard	1	-
215-417-00	Load Weigh Decal	2	1
512-001-00	Ty-Wrap	10	10
510-028-00	Screw	4	4
510-029-00	Nut	4	4
511-211-00	Screw	-	4
400-048-00	Power Switch	1	-
235-035-00	QD Bracket	1	1
510-098-00	Cotter Pin	2	2
120-039-00	Owner's Manual (C-39)	1	-
120-152-00	Owner's Manual (C-40)	-	1

*Note: The P/N 210-095-02 indicator may be replaced by P/N 210-095-00 indicator (28V backlight). These indicators are identical with the exception of the backlight.

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 and an external manual release cable provide the means for unlatching the load beam.

The load beam is normally held in the open position by a spring-loaded detent. The load is attached to the load beam by passing the load ring into the throat of the load beam and pushing the ring against the upper portion of the load beam throat, which will cause the hook to close. In the closed position, a latch automatically 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 load ring slides off the load beam. The load beam then remains in the open position awaiting the next load.

A load release can be initiated by three different methods. Normal release is achieved by pilot actuation of the push-button switch in the cockpit. When the push-button switch is pressed, it energizes the DC solenoid in the Cargo Hook, and the solenoid opens the latch in the internal mechanism. In an emergency, release can be achieved by operating a mechanical release pedal in the cockpit (not provided with these kits). The pedal operates the internal mechanism of the Cargo Hook to unlatch the load beam. The load can also be released by the manual actuation of the cable mechanism located above the cargo hook and for the P/N 528-020-10 cargo hook a manual release lever located on the cargo hook below the bumper.

The cargo hook configuration with Surefire Release can be identified by a gold color solenoid housing (see Figure 1-1) in addition to a placard on the underside of the solenoid housing. The time delay feature requires that the release switch be depressed and held for more than a 1/2 second to open the cargo hook. If the cargo hook must be released immediately, use the mechanical backup release.

NOTICE

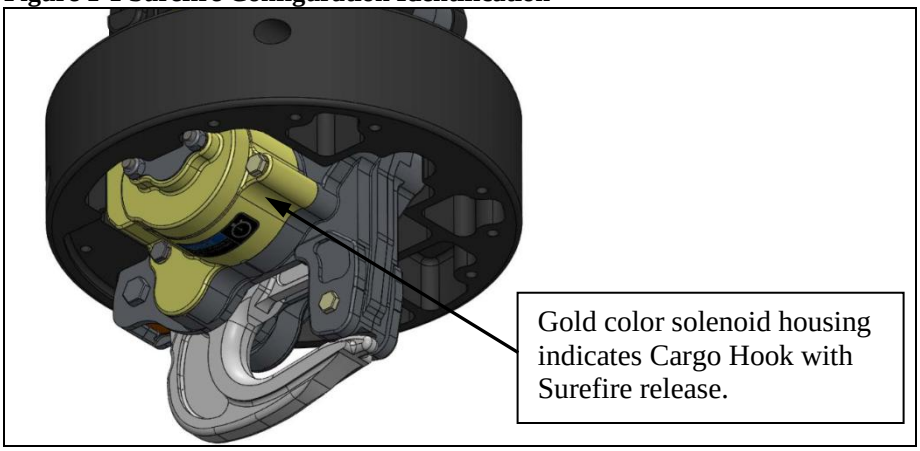
The 528-020-12 cargo hook includes an electronic delay of approximately ½ second. It is necessary to press and hold the cargo hook release button.

⚠ CAUTION

If a Surefire-equipped cargo hook must be released immediately without any delay, use the mechanical backup release.

In addition to the delay feature the circuit includes on-off cycling to limit the duty-cycle on the cargo hook solenoid. If the release switch is held down, the solenoid will cycle on and off repeatedly in a "machine gun" fashion.

Figure 1-1 Surefire Configuration Identification



Theory of Operation continued

The load weigh indicator included with the P/N 200-089-26 and P/N 200-089-27 systems is Onboard Systems next generation indicator, the C-40 model. The C-40 Indicator makes several improvements over its predecessor while preserving classical features and is generally backwards compatible. Among others, 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

For a detailed description and operation instructions refer to Owner's Manual No. 120-039-00 for the C-39 model load weigh indicator and Owner's Manual 120-152-00 for the C-40 model load weigh indicator.

Section 2
Suspension System Installation Instructions
Suspension System Installation

The Suspension System interfaces with several Bell components on the helicopter. Before installation, have available and be familiar with the Bell Service Instructions 204-3 or 212-5, or later bulletins.

Orient the Suspension System so that the manual release control cable exit point at the top is aft (on the left) and the clevis is aligned in the Bell hard point, 205-030-107 or 204-030-841, at WL 38.87, as shown in Figure 2-1.

An earlier approved configuration of the Suspension System positions the Slip-ring Assembly 180° from that shown in Figure 2-1 (i.e. - electrical wires exit on the forward side) and current configurations of the Suspension System's bell housing include a 2nd pair of holes to provide for rotating the Slip-ring assembly 180°.

For either orientation of the Slip-ring Assembly, verify clearance with adjacent equipment in the compartment in all possible positions of the Suspension System and that the electrical wires are not pulled tight in any position.

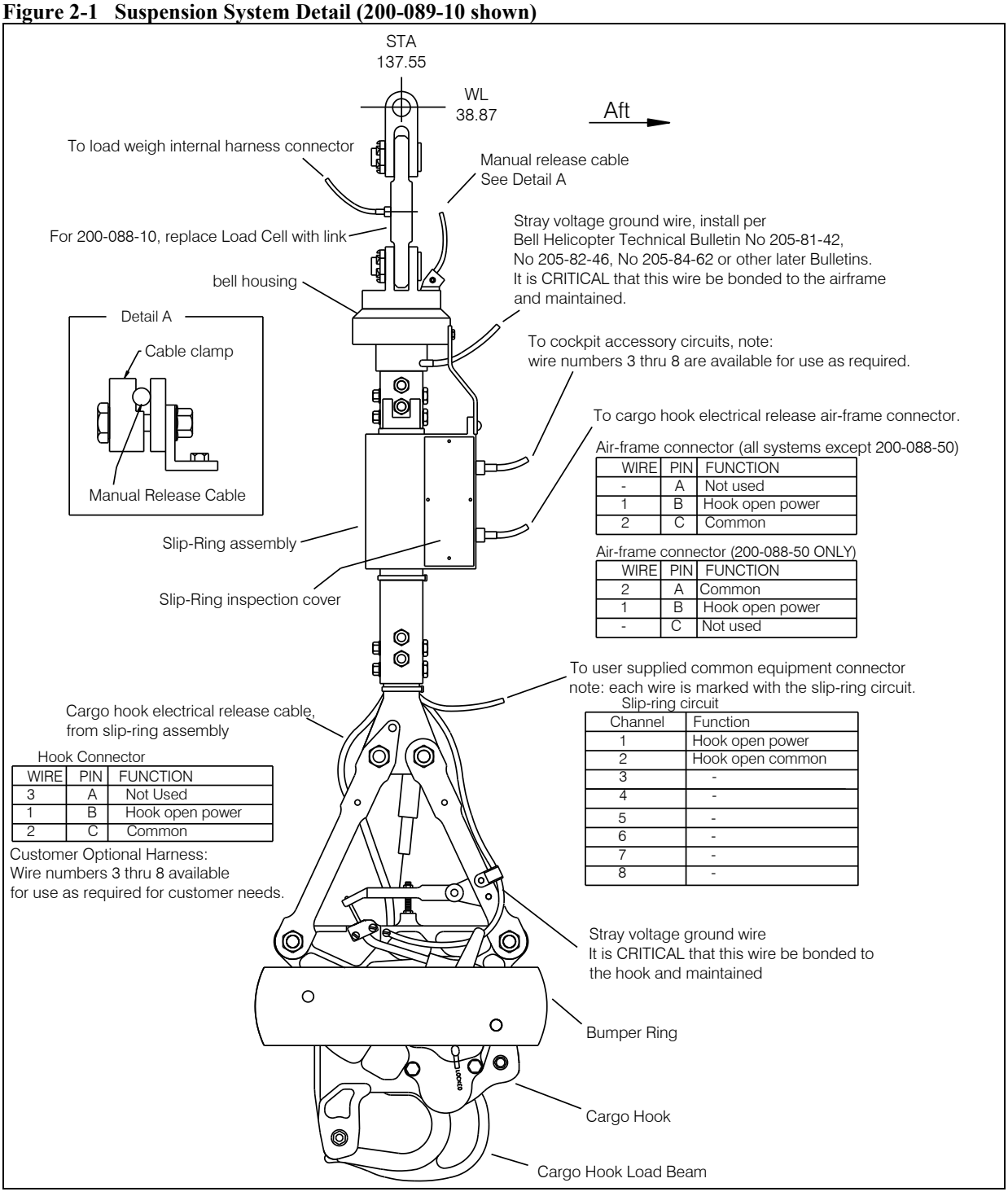
Install the bolt, washer and nut provided with the Bell provisions kit. These fasteners are not part of the Suspension System supplied items. See the appropriate Bell service instructions for the correct installation, torque values and maintenance.

The attaching bolt supplied by Bell is a high strength bolt. No substitution of this bolt is allowed. Refer to the Bell Service Instructions for the bolt inspection requirements.

Route the free end of the manual release cable, P/N 268-003-00, aft and to the right (looking forward) of the hard point fitting. See the *Suspension System Manual Release Arrangement*, Figure 2-2. Engage ball terminal into the cable connector, 204-070-995, and secure with the cotter pin, MS24665-155. Place outer housing (conduit) of control cable assembly, 268-003-00, into clamp, 204-070-996-1, and secure with screw AN520-1 or 12, and washer, AN960PD10L, into nut plate in existing structure. The conduit end should measure approximately 0.42 inch from clamp, 204-070-996-1.

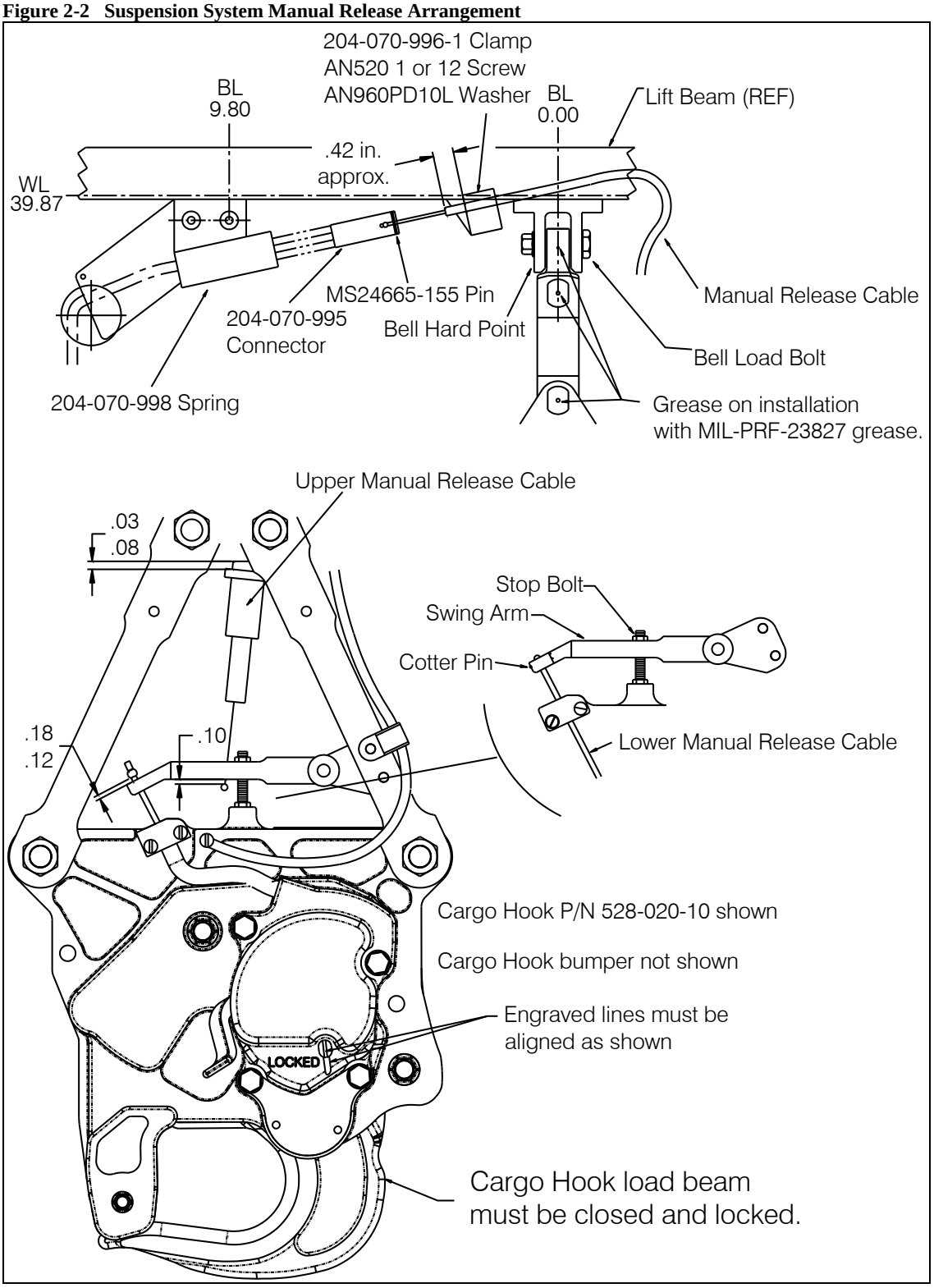
Suspension System Detail

Figure 2-1 Suspension System Detail (200-089-10 shown)



Suspension System Manual Release Arrangement

Figure 2-2 Suspension System Manual Release Arrangement



Suspension System Manual Release Adjustment

CAUTION

The cargo hook load beam must be closed and locked when performing the manual release cable adjustment.

Adjust the conduit of the manual release cable assembly, 268-003-00, to obtain 0.03 to 0.08 inch dimension shown in Figure 2-2 and secure clamp shown in detail A of Figure 2-1. Adjust connector, 204-070-995, shown in Figure 2-2 to obtain 0.10 inch free play in the control cable as shown in Figure 2-2. Alternatively, the 0.10 clearance may be measured at the 204-070-995 connector with the cable ball terminal pulled against the swing arm.

The stop bolt of the swing arm should be in contact with the top of the cargo hook case and the swing arm should be parallel to the plane of the main hook attachment bolts when the 0.10 inch measurement is taken.

By grasping the top of the lower control cable, apply tension until all the backlash is taken out. Measure the clearance of the lower control cable ball terminal to the swing arm as shown in Figure 2-2. This measurement shall be 0.12 to 0.18 inches when system is rigged and load beam is latched. If adjustment is made to the stop bolt in order to obtain proper clearance, recheck adjustment of control cable and conduit.

With the cargo hook release pedal against the FORWARD stop, check for the following conditions:

- Ensure that the spring assembly 204-070-998, does not bottom. If the spring assembly should bottom, return the cargo hook pedal to the aft stop and check control cable tension. Cable tension should be 20 to 24 pounds.
- Check the operation of the mechanical release.
- Ensure the swing arm is full up. Ensure lever is not stopped by the bottom end of the control cable outer housing.
- Ensure cargo hook load beam unlocks.
- Release the cargo hook pedal and ensure that both the upper and lower manual release cables return to the locking position.
- See the Bell Helicopter service instructions that cover the original cargo hook suspension system for additional instructions.

Suspension System Electrical Release Installation

Refer to Figure 2-1 for suspension system connector pin-out to verify compatibility with the aircraft side wiring. Connect the electrical release cable to the connector located on the right underside of the lift beam and safety-wire it into place. Refer to Figure 2-1 for connector pin-outs.

Check the manual release cable assembly and the electrical release cable to ensure enough slack is present to allow full swing of the suspension assembly without straining or damaging the cables.

Ground Wire Installation

Bell troubleshooting information from the field has revealed the possibility of stray voltage from static discharge existing on the contacts of the cargo release relay. To preclude the inadvertent actuation of the cargo hook due to the possible existence of this stray voltage, it is required that a ground path from the airframe to the Suspension System be provided.

The Suspension System ground wire is shown in Figure 2-1. The free end of this wire must be connected to the airframe per Bell Helicopter technical bulletin no. 205-81-42, 205-82-46 and 205-84-62 or other later bulletins. It is essential that the ground path circuit be properly maintained by ensuring tight corrosion-free connections; see the section, *Suspension System Parts List*.

Multi-Channel Slip-Ring Electrical Installation

The Multi-Channel Slip-Ring assembly is a means of supplying electrical power and control signals to the cargo hook and to accessory equipment suspended from the rotating cargo hook suspension system. Two channels of the Slip-Ring assembly are dedicated to the operation of the cargo hook electrical release mechanism. Six other channels are available to operate suspended equipment such as fire-fighting buckets, agricultural and forest application equipment, logging equipment, construction equipment, long-line hooks or an optional hook open warning light.

The Slip-Ring could be wired so that each piece of individual equipment could have its own switch in the cockpit, connecting through a separate Slip-Ring channel to a common accessory connector (designed by the installer to meet his specific needs) at the hook. Once the Slip-Ring and its control wires are installed, an equipment change would involve simply attaching the equipment to the cargo hook and plugging its control wires into the installer's common equipment connector.

Multi-Channel Slip-Ring Electrical Installation, continued

The Onboard Systems Multi-Channel Slip-Ring is offered as a means of passing electrical current across the rotating junction between the helicopter cargo hook suspension system and the suspended load. This assembly must be considered as an electrical part only, and not as a completed electrical system. Onboard Systems has not evaluated any end-to-end use of this part other than the cargo hook electrical release mechanism defined herein.

Accordingly, it is the responsibility of the installer and their Authorized Inspector (AI) to verify that each electrical system incorporating this Slip-Ring kit meets the applicable electrical requirements of the Federal Aviation Regulations. All electrical considerations such as electrical load determinations, voltage drops, electrical interference, electrical bus and circuit protections etc. are the responsibility of the end user and may require further FAA approval.

Onboard Systems has accomplished satisfactory electrical load testing of the Slip-Ring assembly only, and has demonstrated maximum load ratings of 10 amps (continuous) and 30 amps (intermittent for 30 seconds) in the standard 28VDC electrical system. Electrical loading above these currents or time limits may harm the assembly performance.

Suspension System Installation Check-Out

After installation of the Suspension System, perform the following functional checks. Follow the Bell instructions for the specific helicopter.

1. 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.
2. Move the Suspension System throughout its full range of motion and ensure clearance with aircraft systems and equipment within the compartment.

For steps 3 through 5 direct an assistant to observe the Cargo Hook and reset the cargo hook load beam to the closed position as required.

3. Electrical release system operation depends on the cargo hook P/N installed. The following instructions are applicable to cargo hook P/N 528-020-12 which is equipped with Surefire Release. With no load on the cargo hook perform the following.
   - *Very* briefly press the Cargo Release switch, the cargo hook should not actuate and the load beam should remain closed.
   - Press and hold the Cargo Release switch for a few seconds, the load beam should fall to the open position and the cargo hook solenoid should continue to cycle repeatedly.
   - Push up on the load beam and verify that it latches and the lock indicator is aligned with the engraved line on the manual release cover.

   The following instructions are applicable to cargo hook P/N 528-020-10.
   - Press and release the Cargo Release switch on the cyclic, the load beam should fall to the open position.
   - Push up on the load beam and verify that it latches and the hook lock indicator is aligned with the engraved line on the manual release cover.
4. Rotate the suspension system 90 degrees, close the cargo hook and repeat step 3. Rotate the suspension system another 90 degrees, close the cargo hook and repeat step 3. Repeat this procedure until the suspension system is back at its original position. For cargo hooks without Surefire Release, to prevent burning out the solenoid do not hold the switch for more than 5 seconds in any 30 second period. At this time also cycle the Slip-Ring accessories (if present) several times to ensure proper operation.
5. With the cargo hook load beam closed, depress the foot operated cargo hook mechanical release, the Cargo Hook should release.
6. See the Bell Helicopter service instructions that cover the original cargo hook suspension system for additional instructions.

Component Weights

Table 2-1 Component Weights

System Part Number and Description		Weight
200-088-10	Suspension System without Load Weigh	29 lbs (13 kgs)
200-088-11	Suspension System without Load Weigh with Surefire	29 lbs (13 kgs)
200-088-50	Suspension System without Load Weigh	29 lbs (13 kgs)
200-089-10	Suspension System with Load Cell	29 lbs (13 kgs)
200-089-11	Suspension System with Load Cell	29 lbs (13 kgs)
200-089-20	Suspension System with Load Weigh, C-39 Indicator w/ 28V Lights	32 lbs (14.5 kgs)
200-089-21	Suspension System with Load Weigh, C-39 Indicator w/ 5V Lights	32 lbs (14.5 kgs)
200-089-22	Suspension System with Load Weigh, C-39 Indicator w/ 28V Lights	32 lbs (14.5 kgs)
200-089-23	Suspension System with Load Weigh, C-39 Indicator w/ 5V Lights	32 lbs (14.5 kgs)
200-089-24	Suspension System with Surefire and Load Weigh, C-39 Indicator w/ 28V Lights	32 lbs (14.5 kgs)
200-089-25	Suspension System with Surefire and Load Weigh, C-39 Indicator w/ 5V Lights	32 lbs (14.5 kgs)
200-089-26	Suspension System with Surefire and Load Weigh, C-40 Indicator	32 lbs (14.5 kgs)
200-089-27	Suspension System with Surefire and Load Weigh, C-40 Indicator	32 lbs (14.5 kgs)

Paper Work

Place the Rotorcraft Flight Manual Supplement, document no. 121-021-00, into 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.

Section 3
Suspension System Operation Instructions

Suspension System Operating Procedures

Refer to Owner's Manual 120-039-00 for operation instructions for the C-39 load weigh indicator or Owner's Manual 120-152-00 for operations instructions for the C-40 load weigh indicator. Refer to the RFMS 121-021-00 for pre-flight operational checks and guidance for attaching a load to the cargo hook.

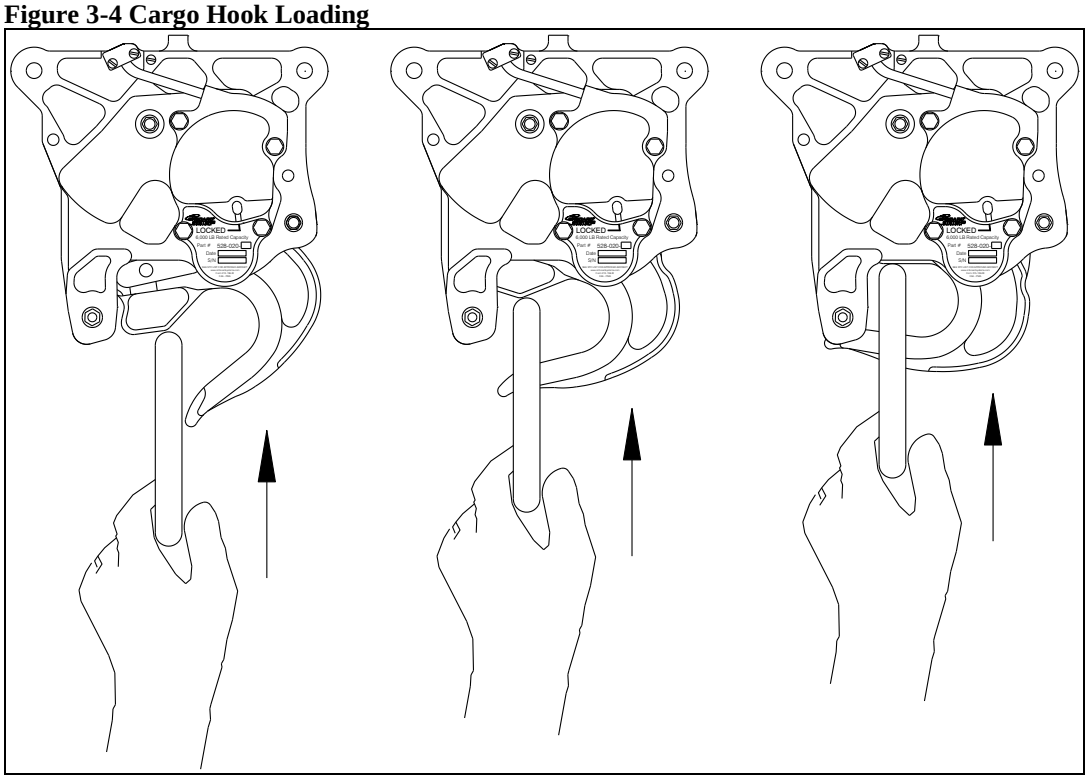
Bumper Lubrication

Some combinations of load weight and airspeed may cause the bumper to bind against the inside of the airframe hell-hole and the sling load to rotate independently of the suspension system. This situation can lead to inadvertent loss of load. The outside surface of the bumper ring should be lubricated frequently with grease such as AeroShell 7 or Mobilgrease 28 to prevent seizure from occurring.

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 3-4, until an internal latch engages the load beam and latches it in the closed position.

Figure 3-4 Cargo Hook Loading



Section 4
Load Weigh General Information
Introduction

The Load Weigh System is an optional feature to the Suspension System. The Load Weigh System consists of three components, the cockpit mounted Indicator (C-39 or C-40 model), the Internal Harness and the Load Cell. When the Load Weigh option is specified, the Suspension Systems Load Link, P/N 232-009-01, is replaced by the Load Cell Assembly P/N 210-088-01 or P/N 210-088-02.

Refer to Owner's Manual 120-039-00 for operation instructions for the C-39 model Indicator or Owner's Manual 120-152-00 for the C-40 model Indicator.

Indicator Specifications

Refer to Owner's Manual 120-039-00 for specifications for the C-39 Indicator and Owner's Manual 120-152-00 for specifications for the C-40 Indicator.

Indicator Pin Out

The connector located on the back of the C-39 and C-40 Indicator has the following pin outs.

Table 4-1 Indicator Pin Out

Pin	C-39 Function	C-40 Function
A	+28 VDC	+28 VDC
B	- Load Cell Signal Return	- Load Cell Signal Return
C	+ Load Cell Signal	+ Load Cell Signal
D	+ Load Cell Excitation	+ Load Cell Excitation
E	- Load Cell Excitation Return	- Load Cell Excitation Return
F	Analog Out Common	Analog Out Common
G	+ Analog Out	+ Analog Out
H	Hook Open	Hook Open
J	Data Recorder Clock	RS232 TX
K	Data Recorder Data	TEDS Data
L	Shield	Shield
M	Back Light Common	Back Light Common
N	Back Light Signal	Back Light Signal 0-28 VDC
P	Aircraft Ground	Aircraft Ground
R	Not Used	Load on Hook (Out)

Load Cell Specifications

Table 4-2 Load Cell Specifications

Specifications	Load Cell
Weight	2.0 lbs (.91 kgs)
Accuracy Over Operating Temperature Range	0.5% ± 1 digit
Operating Temperature Range	+70°C to –45°C
Storage Temperature Range	+80°C to –50°C

Section 5
Load Weigh Installation Instructions

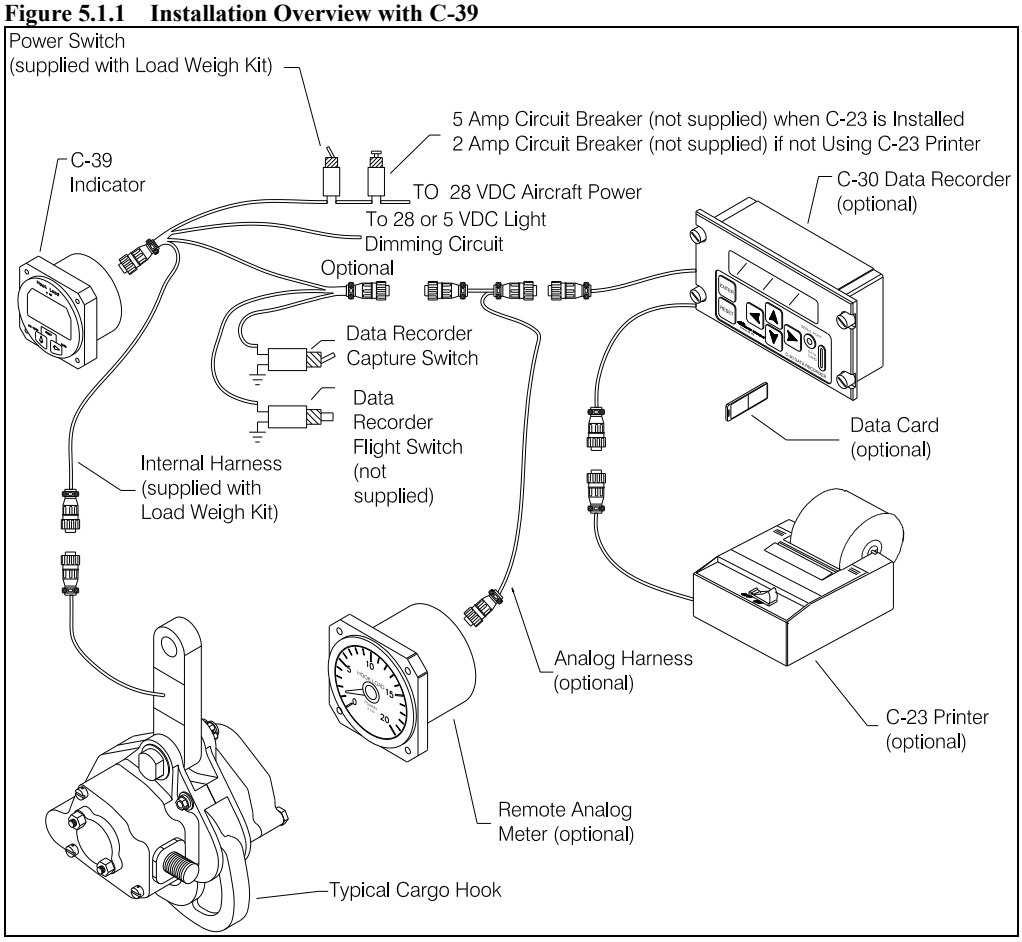
This section describes how to install the components of the Load Weigh System. These procedures are provided for the benefit of experienced aircraft maintenance facilities capable of carrying out the procedures. They must not be attempted by those lacking the necessary expertise.

5.1 C-39 Load Weigh System Installation

This section describes how to install the components of the C-39 Load Weigh System, the C-39 load weigh indicator is identified by P/N 210-095-00. If installing the next generation C-40 indicator (P/N 210-293-00 or -01) load weigh system skip to section 5.2.

Figure 5.1.1 is an overview of the Load Weigh System installation with the C-39 Indicator. The optional items shown are not compatible with the C-40 indicator.

Figure 5.1.1 Installation Overview with C-39



5.1 C-39 Load Weigh System Installation continued

5.1.1 Internal Harness Installation

The Internal Harness (P/N 270-044-01) is made up of four cables terminated to a connector. This connector is plugged into the back of the Indicator. One of the cables is marked "LOAD CELL" and is fitted with a connector. This cable is connected to the load cell. Another cable is marked "POWER" and is connected to aircraft power. Another cable is marked "LIGHT", refer to section 2.1.3. 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 cargo hook electrical release wire to the cargo hook area. The load cell cable connector can be attached using the furnished 235-035-00 bracket and hardware. The bracket location should be close enough to the load cell to ensure the load cell cable is not stressed when the cargo hook is moved to its furthermost point, but far enough away to minimize excess cable which may be snagged.

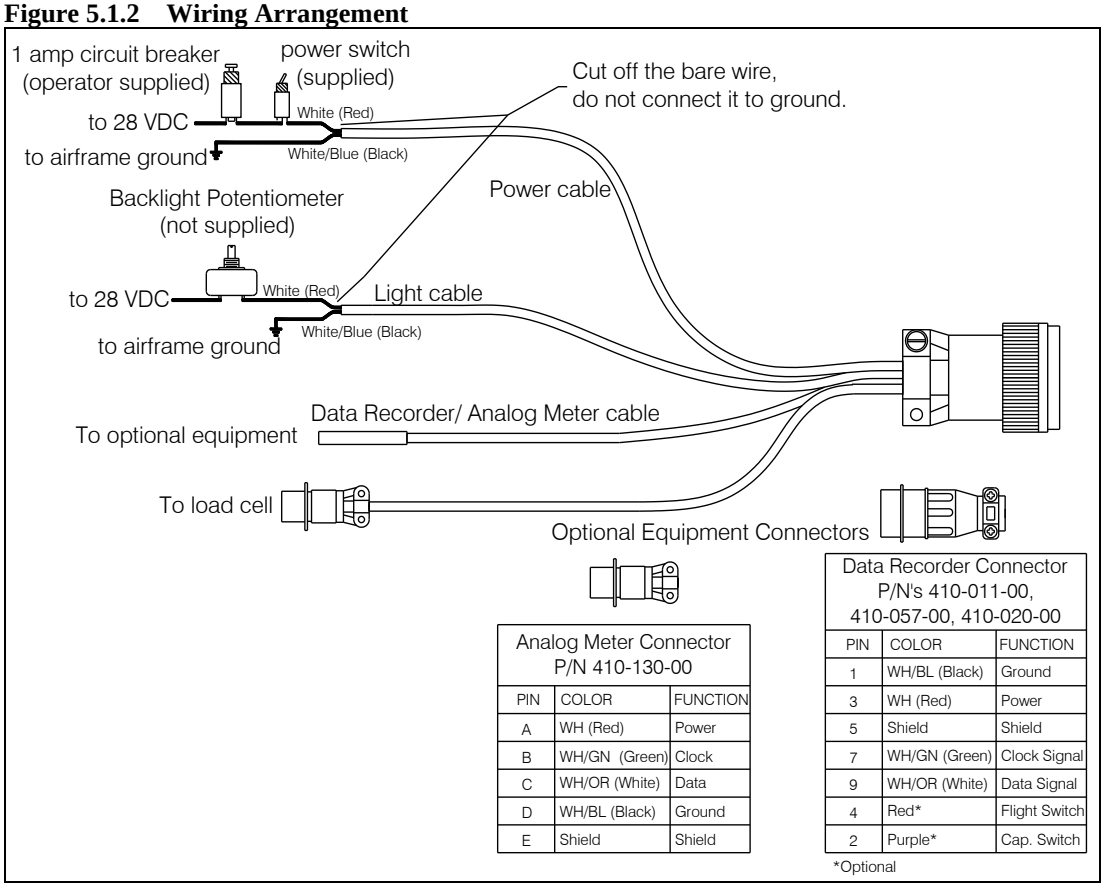
If it is necessary to remove the load cell bulkhead connector to ease cable routing, reconnect using the color code below.

Wire Color	Connector Pin
White	A
WH/GN	B
WH/OR	C
WH/BLU	D
Shield	E

2.1 C-39 Load Weigh System Installation continued

5.1.1 Internal Harness Installation continued

Figure 5.1.2 Wiring Arrangement



Analog Meter Connector
P/N 410-130-00

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's 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

5.1 C-39 Load Weigh System Installation continued

5.1.2 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 the Internal Harness, refer to *Internal Harness Installation*.

5.1.3 Indicator Internal Back Light

The P/N 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 AWG, 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**.

5.1.4 Indicator Hook-Open Warning

The Indicator (P/N 210-095-00) 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**.

5.1.5 Remote Analog Meter

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

The Indicator can be connected to Onboard Systems' Analog Slave Meter, P/N 210-180-00, through the "DATA" cable. This meter gives solid weight indications without needle bounce. The Analog Slave Meter may be mounted in any convenient location in a standard 3" instrument hole. Attach connector, P/N 410-130-00, to data line per pin out in Figure 5.1.2 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.

5.1.6 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 (red, if harness 270-045-00 is installed) wire 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 5.1.2. Connect the circuit breaker to the 24 VDC bus. Connect the White/Blue (black, if harness 270-048-02 is installed) wire to the ground bus. The bare wire should be cut off as it is not needed at this end of the cable. Use a minimum of 22 AWG wire to make all connections. Secure the connections and protect from corrosion.

Install the placard 215-417-00 "LOAD WEIGH" next to the power switch and circuit breaker. Install the placard 215-012-00 "TURN THE WEIGHING SYSTEM OFF WHEN NAVIGATION EQUIPMENT IN USE. NO AIRCRAFT OPERATION SHOULD BE PREDICATED ON THE READING OF THE ONBOARD WEIGHING SYSTEM" next to the Indicator.

NOTICE

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

5.2 C-40 Load Weigh System Installation

The C-40 Indicator is directly interchangeable with the C-39 Indicator (without changing the internal harness) except it does **not** support the optional components (Analog Meter, C-30 Data Recorder) shown in Figure 5.1.1.

The internal harness provided with new C-40 Indicator kits is the same as the C-39 internal harness except it does not include the data line but does include an additional wire for TEDS data which will provide for future capability to automatically recognize the load cell's calibration code.

5.2.1 C-40 Indicator Installation

The C-40 Indicator is designed to be mounted in a standard 2¼" instrument hole and should be located in a position that is convenient, accessible and visible to the pilot. Another consideration for its mounting location is access to the USB port on the back, this USB port is intended for the firmware updates. Secure the C-40 Indicator in its mounting location with the four 6-32 MS35214-26 screws (P/N 511-211-00) provided. As needed use a different length of MS35214 screw to accommodate the thickness of the mounting panel/bracket.

5.2.2 C-40 Internal Harness Installation

Route all wires using the following general guidance.

- Pick up existing wire runs by opening existing cable clamps nylon ties alone may not be used for primary support.
- New wire runs should be supported with MS21919WDG loop clamps.
- The distance between supports should not exceed 21 inches.
- The minimum radius of bends in wire groups or bundles must not be less than 10 times the outside diameter of the largest wire or cable.
- Inspect and verify that the wire harness may not be manually deflected into a structure with a bend radius less than .125".

Connect the larger of the connectors on the load weigh harness (P/N 270-283-01) to the back of the C-40 indicator.

The load cell cable can be routed with the cargo hook electrical release wire to the cargo hook area. The load cell cable connector can be attached using the furnished P/N 235-035-00 bracket and hardware. The bracket location should be close enough to the load cell to ensure the load cell cable is not stressed when the cargo hook is moved to its furthermost point, but far enough away to minimize excess cable which may be snagged.

5.2 C-40 Load Weigh System Installation continued

5.2.2 C-40 Internal Harness Installation continued

If it is necessary to remove the load cell connector to facilitate routing, re-connect the wires referring to the schematic in Figure 5.2.1.

Route wire labeled POWER of the harness to the circuit breaker panel and install a 1 or 2-amp circuit breaker (not supplied) and connect this wire to it. Apply the supplied placard P/N 215-417-00 adjacent to the circuit breaker.

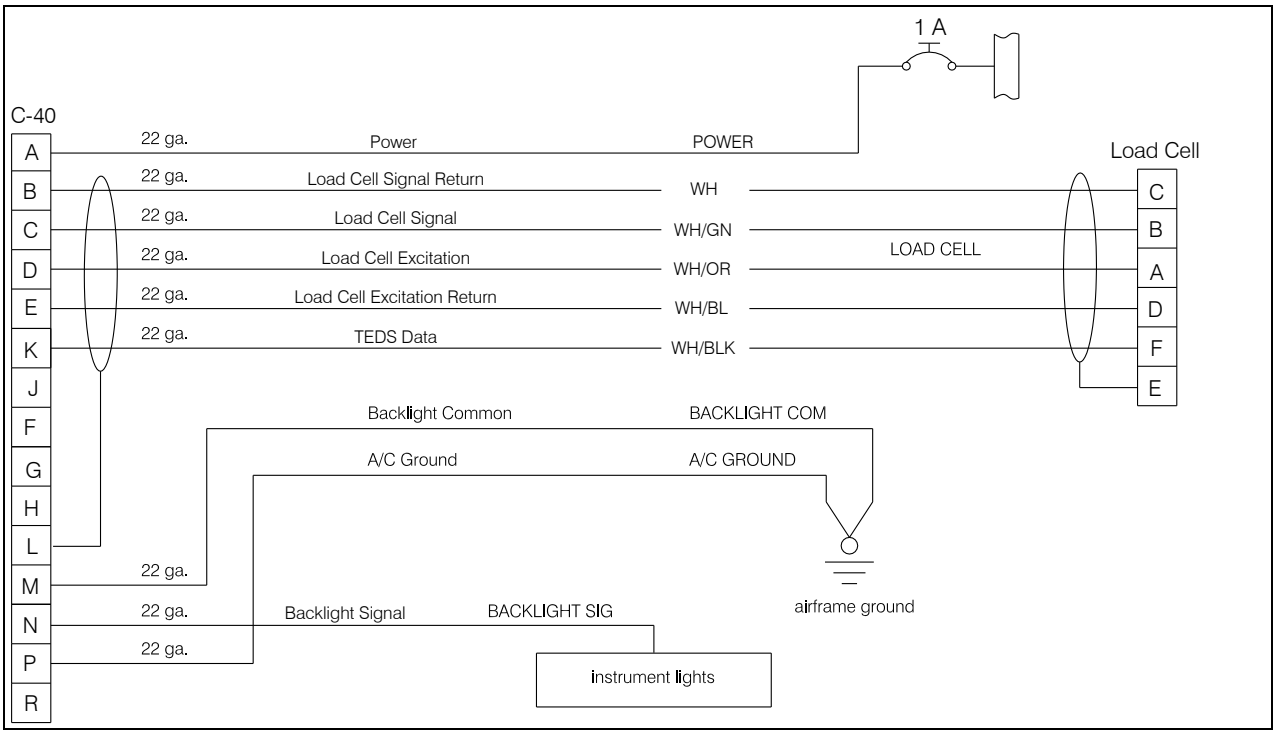
Wires BACKLIGHT SIG and BACKLIGHT COM are for the C-40 Indicator's backlight control voltage. Connect wire BACKLIGHT SIG to the instrument panel lighting circuit and wire BACKLIGHT COM to aircraft ground.

NOTICE

The Indicator does function normally without the Backlight Control Voltage wired, but will not dim with other instruments. Full brightness of the Indicator is overridden by the aircraft dimming control voltage (if connected).

Wire A/C GROUND is to be connected to a suitable aircraft ground per AC43.13.

Figure 5.2.1 C-40 Internal Harness Schematic



5.3 Load Cell Installation (Kit P/N 200-151-01/200-151-02)

Load Weigh Kit P/Ns 200-151-01 and 200-151-02 are upgrade kits for an operator with kit P/Ns 200-088-10 or 200-088-11 installed.

To install the load cell, remove the suspension system from the helicopter and remove the load link assembly near the top of the suspension system. Place the Load Cell Assembly (P/N 210-088-02) within the clevis of the bell housing, and re-install bolt, washer and nut. Tighten nut to finger tight and rotate to next castellation to insert cotter pin (P/N 510-098-00). Ensure the load cell assembly pivots freely within the clevis.

Re-install the clevis assembly onto the top pivot point of the load cell assembly with the bolt, washer and nut remove previously. Tighten nut to finger tight and rotate to next castellation to insert cotter pin (P/N 510-098-00). Ensure the clevis assembly pivots freely on the load cell assembly.

Re-install the suspension onto the helicopter per Section 2. Install the remaining components of the load weigh kit per this section.

5.4 Load Weigh Installation Check-Out

Swing the cargo hook suspension assembly to the full extremes to verify that the cargo hook does not self-trip and that there is no interference with any adjacent aircraft equipment, hoses, lines, cables, etc. within the compartment.

Ensure that all electrical cables are secured clear of flight control rods and hydraulic lines.

For the C-39 Indicator:

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

NOTICE

Refer to Owner’s Manual 120-039-00 for setup instructions including changing the units, zeroing the display, changing the dampening level, etc. and operation instructions.

5.4 Load Weigh Installation Check-Out continued

For the C-40 Indicator:

- 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.
- 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). With the C-40 Indicator 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).

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

The 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-2001-01.

This page intentionally left blank.

Section 6
Maintenance

For inspection, maintenance, overhaul procedures, and trouble shooting for the cargo hook suspension system refer to ICA 123-052-00 and Component Maintenance Manual (CMM) 122-028-00.

For inspection, maintenance, and overhaul procedures for the cargo hook (P/N 528-020 series) refer to Cargo Hook CMM 122-004-00.

Current revision levels of all manuals are posted on Onboard Systems Int'l web site at www.onboardsystems.com. Hard copies of current revision levels of all manuals are also available from the factory.

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.

NOTICE

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 International
  13915 NW 3rd Court
  Vancouver, Washington 98685 USA

This page intentionally left blank.

Section 7
Certification
FAA STC

United States of America
Department of Transportation - Federal Aviation Administration

Supplemental Type Certificate

Number **SR00713SE**

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

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

Original Product—Type Certificate Number: * See attached Federal Aviation Administration (FAA)
Make: Approved Model List (AML) SR00713SE for approved
Model: rotorcraft models and applicable airworthiness regulations

Description of the Type Design Change: Installation of Onboard Systems International Cargo Hook Kit in accordance with the master drawing list as listed on AML SR00713SE. Maintained in accordance with FAA-approved Component Maintenance Manual (CMM) Document No. 122-028-00, Revision 4, dated July 30, 2015, or later FAA-approved revision or Instructions for Continued Airworthiness (ICA) Document No. 123-039-00, Revision 2, dated March 30, 2017, or later FAA-accepted revision, as applicable. Operated in accordance with the applicable FAA-approved Rotorcraft Flight Manual Supplement as listed on AML SR00713SE.

Limitations and Conditions: Approval of this change in type design applies to only those model rotorcraft listed on AML SR00713SE which were previously equipped with an FAA-approved installation of Bell cargo hook suspension assembly Part Number 204-072-915-25 or Part Number 204-072-915-103 or U.S. Army cargo suspension Part Number 204-072-024-1. 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. A copy of this certificate, the Owner's Manual identified in the MDL, the applicable FAA-approved RFMS, and the applicable CMM or ICA, 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.

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: May 11, 1999
Date of issuance: July 6, 1999
Date reissued:
Date amended: 1/13/03; 3/15/05; 6/2/06, 9/27/07; 10/31/07; 5/21/10; 8/15/14; 11/4/15; 5/4/17

By direction of the Administrator

(Signature)

for Manager, Seattle Aircraft Certification Office
(Title)

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

This certificate may be transferred in accordance with FAR 21.47.

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

Approved Model List (AML)

Page 1 of AML

FEDERAL AVIATION ADMINISTRATION (FAA) APPROVED MODEL LIST (AML) SR00713SE
FOR
CARGO HOOK SUSPENSION SYSTEM

ISSUE DATE: July, 6, 1999

ITEM	ROTORCRAFT MAKE	ROTORCRAFT MODEL	ORIGINAL TC NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA APPROVED ROTORCRAFT FLIGHT MANUAL SUPPLEMENT		FAA APPROVED MASTER DRAWING LIST		AML REV DATE
					Number **	Revision*	Drawing	Revision*	
1.	Bell	204B, 205A, 205A-1, 205B (S/N 30297 only), 210	H1SW	FAR Part 29	121-021-00 121-060-00	Revision 6, 9/14/2018 Revision 1, 3/30/2017	155-048-00	Revision 28, 3/9/18	6/26/2019
2.	Bell	212, 412, 412EP, 412CF	H4SW	FAR Part 29	121-021-00 121-060-00	Revision 6, 9/14/2018 Revision 1, 3/30/2017	155-048-00	Revision 28, 3/9/18	6/26/2019
3.	Rotorcraft Development Corporation	UH-1H	H13WE	FAR Part 29	121-021-00 121-060-00	Revision 6, 9/14/2018 Revision 1, 3/30/2017	155-048-00	Revision 28, 3/9/18	6/26/2019
4.	Northwest Rotorcraft, LLC	UH-1H	R00005SE	FAR Part 29	121-021-00 121-060-00	Revision 6, 9/14/2018 Revision 1, 3/30/2017	155-048-00	Revision 28, 3/9/18	6/26/2019

Approved Model List (AML) continued

Page 2 of AML

FEDERAL AVIATION ADMINISTRATION (FAA) APPROVED MODEL LIST (AML) SR00713SE
FOR
CARGO HOOK SUSPENSION SYSTEM

ISSUE DATE: July, 6, 1999

ITEM	ROTORCRAFT MAKE	ROTORCRAFT MODEL	ORIGINAL TC NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA APPROVED ROTORCRAFT FLIGHT MANUAL SUPPLEMENT		FAA APPROVED MASTER DRAWING LIST		AML REV DATE
					Number **	Revision*	Drawing	Revision*	
5.	Agusta	AB412, AB412EP (S/N 25801 AND SUBS)	H79EU	FAR Part 29	121-021-00 121-060-00	Revision 6, 9/14/2018 Revision 1, 3/30/2017	155-048-00	Revision 28, 3/9/18	6/26/2019
6.	OAS Parts LLC	UH-1H	H7SO	FAR Part 29	121-021-00 121-060-00	Revision 6, 9/14/2018 Revision 1, 3/30/2017	155-048-00	Revision 28, 3/9/18	6/26/2019
7.	Tamarack Helicopters, Inc.	UH-1F	H7NE	FAR Part 29	121-021-00 121-060-00	Revision 6, 9/14/2018 Revision 1, 3/30/2017	155-048-00	Revision 28, 3/9/18	6/26/2019
8.	Tamarack Helicopters, Inc.	UH-1H	R00010SE	FAR Part 29	121-021-00 121-060-00	Revision 6, 9/14/2018 Revision 1, 3/30/2017	155-048-00	Revision 28, 3/9/18	6/26/2019

Page 3 of AML

FEDERAL AVIATION ADMINISTRATION (FAA) APPROVED MODEL LIST (AML) SR00713SE
FOR
CARGO HOOK SUSPENSION SYSTEM

ISSUE DATE: July, 6, 1999

ITEM	ROTORCRAFT MAKE	ROTORCRAFT MODEL	ORIGINAL TC NUMBER	CERTIFICATION BASIS FOR ALTERATION	FAA APPROVED ROTORCRAFT FLIGHT MANUAL SUPPLEMENT		FAA APPROVED MASTER DRAWING LIST		AML REV DATE
					Number **	Revision*	Drawing	Revision*	
9.	Richards Heavylift Helo, Inc.	UH-1H	H3SO	FAR Part 29	121-021-00	Revision 6, 9/14/2018	155-048-00	Revision 28, 3/9/18	6/26/2019

* Or later FAA Approved Revision
** As applicable

FAA Approved: Nelson Smith
for Acting Manager, Seattle ACO Branch

AMENDED: 6/2/2006; 5/21/2010; 8/24/2012; 11/4/2015; 5/4/17; 6/26/2019
REISSUED:

Transport Canada Approval

Transport Canada Transports Canada

Department of Transport

Supplemental Type Certificate

This approval is issued to:

Onboard Systems
11212 NW St. Helens Road
Portland, OREGON
97231 UNITED STATES OF AMERICA

Number: SH99-215
Issue No.: 1
Approval Date: September 14, 1999
Issue Date: September 14, 1999

Responsible Office: Pacific

Aircraft/Engine Type or Model: Bell 204B, 205A, 205A-1, 212, 412, and 412EP

Canadian Type Certificate or Equivalent: FAA Type Certificate H1SW (Bell 204B, 205A, 205A -1)
Canadian Type Certificate H-86 (Bell 212, 412, 412EP)

Description of Type Design Change: Installation of Onboard Systems Cargo Hook Suspension System per FAA STC SR00713SE

Installation/Operating Data, Required Equipment and Limitations:

Installation of Onboard Systems Model 200-088-10 (without load weight) or 200-089-10, -20 or -21 (with load weight) cargo hook suspension system is to be carried out in accordance with FAA approved Onboard Systems Owner's Manual No. 120-084-00, dated May 1, 1999 *. This cargo hook suspension system is to be fabricated in accordance with FAA approved Onboard Systems Master Drawing List No. 155-048-00, dated May 20, 1999 *. Inspect this cargo hook suspension system in accordance with Sections 7 and 8 of Onboard Systems Owner's Manual No. 120-084-00, dated May 1, 1999 *.

Approval of this change in type design applies to Bell 204B, 205A, 205A-1, 212, 412, and 412EP rotorcraft which were previously equipped with an FAA approved installation of Bell cargo hook suspension assembly, P/N 204-072-915-103. Modified rotorcraft must be operated in accordance with an FAA approved copy of Onboard Rotorcraft Flight Manual Supplement No. 120-084-00, dated July 6, 1999 *.

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

(* or later FAA approved revisions)

-- End --

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.

H. W. Wong
Regional Engineer, Aircraft Certification
For Minister of Transport

Canada

EASA Approval

European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.00552 Revision 3

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

Onboard Systems
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: *1. FAA TC No H1SW, H4SW*
2. ENAC TC No. A157; FAA TC No. H79EU
Manufacturer: *1. Bell HelicopterTextron Inc.*
2. Agusta S.p.A.
Model: *1. 204B, 205A, 205A-1, 212, 412, 412EP*
2. AB412, AB412EP
Original STC number: *FAA STC SR00713SE*

Description of Design Change:

Installation of Onboard Systems Cargo Hook Suspension System

Note: This modification extends the existing STC under EASA.IM.A.S.00522 Revision 2 to include the AB412EP model.

European Aviation Safety Agency

Associated Technical Documentation:

- FAA STC SR00713SE
- RFM No 120-084-00
- Section 7 and 8 of Onboard Systems Owner's Manual No. 122-084-00.
- Rotorcraft Flight Manual Supplement No. 121-021-00 dated 24 September 2003 or later approved revision

Limitations and Conditions:

1. Approval of this change in type design applies only to Bell 204B, 205A, 205A-1, 212, 412, 412EP and AB412 rotorcraft which where previously equipped with Bell cargo hook suspension assembly P/N 204-072-915-103.

2. 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: 19th September 2006

Massimo Mazzoletti
Certification Manager
Rotorcraft, Balloons & Airships

STC- EASA.IM.R.S.00552 Revision 3 - Onboard Systems 2

ANAC Approval

ANAC

AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

CERTIFICADO SUPLEMENTAR DE TIPO

(Supplemental Type Certificate)

NÚMERO (Number) **2010S10-10**

Este certificado, emitido com base na Lei nº 7565 "Código Brasileiro de Aeronáutica", de 19 de dezembro de 1986,
(This certificate, issued in the basis of the Law No. 7565 "Código Brasileiro de Aeronáutica", dated 19 December 1986,

é conferido ao (à): (is granted to:) Onboard Systems International
13915 NW 3rd Court
Vancouver, WA 98685
USA

por ter a modificação ao projeto de tipo do produto abaixo citado, observadas as limitações e condições
(for having the change to the type design of the product mentioned below, with the limitations and conditions therefor as)

especificadas, satisfeito aos requisitos de aeronavegabilidade aplicáveis.
(specified hereon, met the applicable airworthiness requirements.)

Produto Original - Número do Certificado de Tipo: (Original Product – Type Certificate No:) * See attached ANAC Approved Model List (AML), Rev. IR, dated 06 Oct. 2010, or later approved revision.

Fabricante: (Manufacturer:) *.

Modelo(s): (Model(s):) *

DESCRIÇÃO DA MODIFICAÇÃO AO PROJETO DE TIPO:
(Description of Type Design Change:)

Fabrication of Onboard System Model 200-088-10 (without load weight) or 200-089-10, -11, -20, -21, -22, or -23 (with cargo weight) cargo hook suspension system in accordance with Onboard Systems Master Drawing List (MDL) No. 155-048-00, Rev. 15, dated 07 Apr. 2010 and installed and inspected in accordance with Onboard Systems Owner's Manual No. 120-084-00, Rev. 19, dated 06 Apr. 2010 or later approved revisions of these documents.

This CST validates in Brazil the STC # SR00713SE, issued by FAA (USA).

LIMITAÇÕES E CONDIÇÕES:
(Limitations and Conditions:)

See continuation sheet for applicable data.

DATAS:
(Dates of:)

Do Requerimento: (Application:) 24 Aug. 2010 **Da emissão:** (Issue:) 06 Oct. 2010 **Da reemissão:** (Reissue:)

HÉLIO TARQUINIO JÚNIOR
Gerente-Geral - Substituto, Certificação de Produto Aeronáutico
(Acting Manager, Aeronautical Product Certification)

DINO ISHIKURA
Superintendente de Aeronavegabilidade
(Airworthiness Superintendent)

F-400-01E (08.10)

Fl. (Sheet) 01 de (of) 02

H.02-3448-0

ANAC Approval continued

ANAC

AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

Folha de Continuação ao
(Continuation Sheet to)

CERTIFICADO SUPLEMENTAR DE TIPO
(Supplemental Type Certificate)

NÚMERO 2010S10-10
(Number)

LIMITAÇÕES E CONDIÇÕES:
(Limitations and Conditions:)

I. The approval of this type design change should not be extended to other rotorcraft of this model 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.

II. 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.

III. Operation must be performed in accordance with the applicable FAA approved Rotorcraft Flight Manual Supplement (RFMS), document No. 121-021-00, Rev. 3, dated 18 May 2010, or later approved revision.

IV. Approval of this change in type design applies only to those Bell models rotorcraft listed on Approved Model List (AML) which were previously equipped with a FAA approved installation of Bell Cargo Hook Suspension Assembly, P/N 204-072-915-103.

V. A copy of this Certificate and the Supplement referred on item III above shall be maintained as part of the permanent records of the modified rotorcraft.

----------END----------

F-400-01E (08.10) Fl. 02 de 02 (Sheet) (of) H.02-3448-0

ANAC Approval continued

ANAC

AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - ANAC

ANAC APPROVED MODEL LIST

FOR CHST 2010S10-10

Item	Aircraft Make	Aircraft Model	Type Certification Number	Certification Basis for Alteration
1	Bell Helicopter Textron,Inc.	204B, 205A and 205A-1	H1SW (FAA)	CAR 7
2	Bell Helicopter Textron,Inc.	212	H4SW (FAA)	14 CFR PART 29
3	Bell Helicopter Textron,Inc.	412 and 412EP	8103 (ANAC)	14 CFR PART 29

ANAC Approved: _____

Helio Tarquinio Junior
Gerente-Geral Substituto, Certificação de Produto Aeronáutico
(Acting General Manager, Aeronautical Product Certification)

ANAC Approved Date:06 Oct. 2010.

Revision: **IR.**

Fl. 01 de 01
(Sheet) (of)

H.02-2998-0

JCAB Approval

国　土　交　通　省

追加型式設計承認書

第 STC-463-TYO 号

1	航空機の種類	回転翼航空機
2	航空機の型式	ベル式４１２ＥＰ型
3	航空機の耐空類別	回転翼航空機　輸送ＴＡ級 又は 輸送ＴＢ級
4	追加型式設計の内容	Installation of Onboard Systems International Cargo Hook Kit
5	設計者氏名又は名称	Onboard Systems International
6	設　計　者　住　所	13915 NW 3rd Cout,Vancouver,WA 98685 USA

7　備　考

適用基準　：上記の航空機の型式に対する型式証明書No. 83により適用される基準

飛行規程　：121-021-00, Rev. 5: "Rotorcraft Flight Manual Supplement STC SR00713SE Cargo Hook Suspension Kit "

作業区分　：小改造

参考　：FAA STC No.SR00713SE（Amended 2017年5月4日付け）と同等である。

8　上記の追加型式設計は、航空法（昭和27年法律第231号）第10条第4項の基準に適合するものであることを承認する。

東京航空局長

東京航空局長之印

発行年月日　平成 30 年 9 月 18 日

注　備考には適用される航空法第10条第4項の基準等について記入することとする。

JCAB Approval continued

Ministry of Land, Infrastructure, Transport and Tourism

Supplemental Type Certificate

Number **STC - 463 - TYO**

1	**Kind of Aircraft**	Rotorcraft
2	**Model of Aircraft**	Bell Model 412EP
3	**Airworthiness Category**	Transport Category A and B
4	**Content of Supplemental Type Design**	Installation of Onboard Systems International Cargo Hook Kit
5	**Name or Title of Designer**	Onboard Systems International.
6	**Address of Designer**	13915 NW 3rd Court,Vancouver,WA 98685 USA

7 **Remarks**

Certification Basis : Certification Basis specified on the Japan Type Certificate Data Sheet No. 83 for the above model.

Classification of Work : Minor Alteration

Flight Manual Supplement : 121-021-00, Rev. 5; "Rotorcraft Flight Manual Supplement STC SR00713SE Cargo Hook Suspension Kit "

FAA STC No. : Equivalent to FAA STC No.SR00713SE Amended May 04, 2017

This is to certify that the above-mentioned Supplemental Type Design complies with the standards of Article 10 paragraph 4 of Civil Aeronautics Law of Japan.

Director-General of
East Japan Civil Aviation Bureau

Date of issuance : September 18, 2018