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Cargo Hook Kit

For The
Bell 206L Series Helicopter
Bell 407 Series Helicopters

Part Number 200-215-00

Owner's Manual

Owner's Manual Number 120-046-00
Revision 13
September 15, 2009

ONBOARD™ SYSTEMS
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RECORD OF REVISIONS

Revision	*Date*	*Page(s)*	*Reason for Revision*
6	10-31-00	1-1 2-2	Added Talon LC Service Manual to BOM and New STC dated July 27, 2000 Revised instructions of manual release cable installation and Figure 2-2.
7	5-30-01	2-1 3-5 RFMS Pg. 2	Replaced hook picture to show new cover and S/N plate. Replaced hook picture to show new cover and S/N plate. Replaced hook picture to show new cover and S/N plate
8	12-10-02	Title, 4-3	Address Change
9	07-19-05	Section 4	Removed maintenance information and replaced with reference to Service Manual 122-001-00.
10	08-18-06	1-1, 2-4, Section 5	Removed RFMS from manual. A separate document, 121-036-00, has been created for it.
11	11/20/06	1-1 & 2-4	Changed Cargo Hook P/N 528-010-00 to 528-010-04 per service bulletin 159-017-00. Added paragraph to address Release Fitting (290-331-00) in Maintenance section.
12	10/01/07	TOC, Section 1, 2-3 & Section 3	Added explanation or warnings, cautions and notes to general information section. Updated warnings, cautions and notes throughout document.
13	09/15/09	1-2,1-3,2-2	Added Release Cable Assembly (P/N 268-004-01) to kit.

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.

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CONTENTS

CONTENTS, continued

Figures

Tables

Section 1
General Information

Introduction

The 200-215-00 Cargo Hook Kit is approved for installation on the following Bell helicopters:

Model	Serial Numbers
206L	45001-45153
206L-1	45154 and on
206L-3	51001 and on
206L-4	52001 and on
407	all

Equipped with one of the following Bell Helicopter Cargo Hook Suspension Systems:

206-706-341-109
206-706-341-5
206-706-341-101

The 528-010-04 Cargo Hook is suitable as a replacement for the following cargo hooks when used on one of the applicable Bell Helicopter Cargo Hook Suspension Systems listed above.

Breeze-Eastern Cargo Hook P/N
17149-6
17149-2

Warnings, Cautions and Notes

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

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

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

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

Bill of Materials

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

Part Number	Description	Quantity
120-046-00	Owner's Manual	1
121-036-00	RFMS	1
122-001-00	Talon LC Cargo Hook Service Manual	1
290-331-00	Release Fitting	1
528-010-04	Cargo Hook	1
268-004-01	Release Cable Assembly	1

Kits manufactured after 9/15/09 include Release Cable Assembly P/N 268-004-01.

Inspection

Inspect the cargo hook for evidence of damage, corrosion and security of lock wire and fasteners. If damage is evident, do not use the unit until it has been repaired.

Specifications

Table 1-1 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.(.400" travel)
Electrical requirements	22-28 VDC 9 amps
Minimum release load	7 pounds
Unit weight	3 pounds (1.35 kg.)
Mating electrical connector	PC06A8-2S SR

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 returned to its closed position after release of the load by a spring in the internal mechanism. In the closed position, a latch engages the load beam and latches it in this position. The load is attached to the load beam by passing the cargo sling ring into the throat of the load beam past a spring-loaded keeper, which secures the load.

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. A spring in the internal mechanism then drives the load beam back to its closed and latched position.

A load release can be initiated electrically or mechanically. 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 lever. A manual release cable attached to the lever operates the internal mechanism of the cargo hook to unlatch the load beam.

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Section 2
Installation Instructions

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

Cargo Hook Removal

To remove the existing cargo hook from the suspension system disconnect the electrical and manual release cables from the cargo hook. Remove the cargo hook retaining bolt and separate the cargo hook from the suspension system.

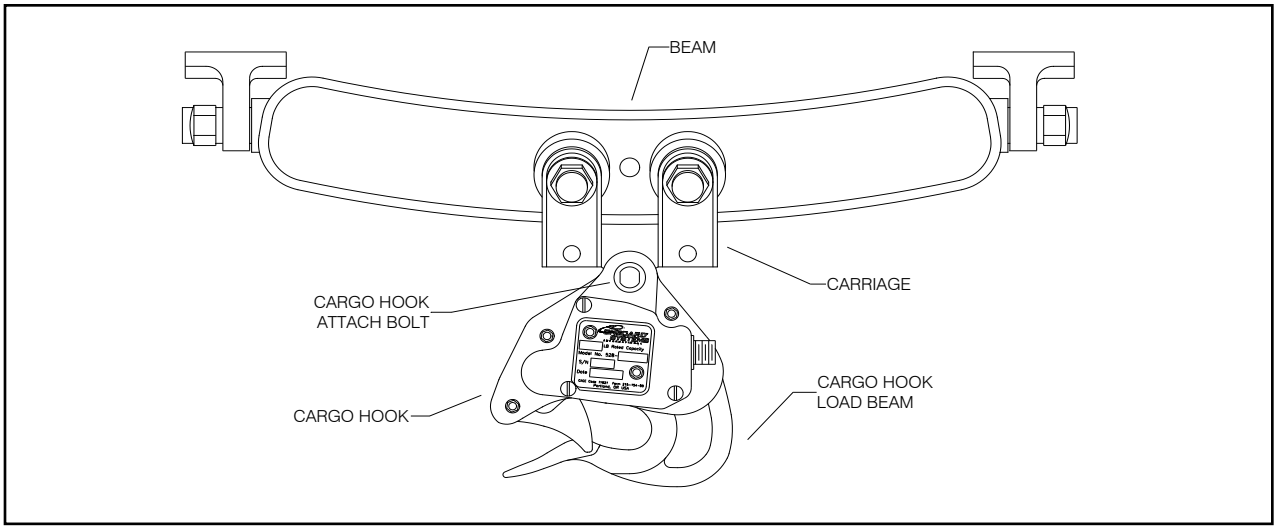
Cargo Hook Installation

Verify that the part number of the cargo hook removed matches one of the numbers on the list in section 1 of this manual. If it does not, do not attempt to use the new cargo hook, contact the factory for clarification.

Inspect the suspension system to ensure that all components are in serviceable condition before assembling the new cargo hook to the suspension system and returning the system to service.

Install the new cargo hook to the suspension system, in the same manner as the old hook was installed. (The cargo hook load beam should point to the right side of the helicopter). Torque cargo hook attach bolt and nut to 50 in-lbs, then rotate nut to next castellation, not to exceed 110 in-lbs. Insert and secure cotter pin.

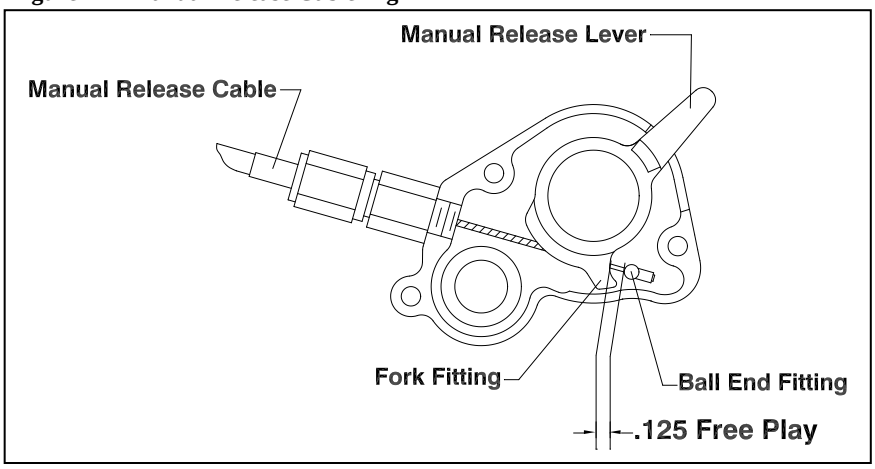
Figure 2-1 Suspension System Overview



Cargo Hook Installation, continued

Remove the cargo hook manual release cover and connect the manual release cable, P/N 268-004-01. Place the cable ball end fitting into the hook manual release fork fitting as illustrated in Figure 2-1. Check that there is a minimum of .125 inch free play at the fork fitting as shown in Figure 2-2 with the manual release handle in the cockpit in the full down position.

Figure 2-2 Manual Release Cable Rig



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

Table 2-1 Cargo Hook Connector

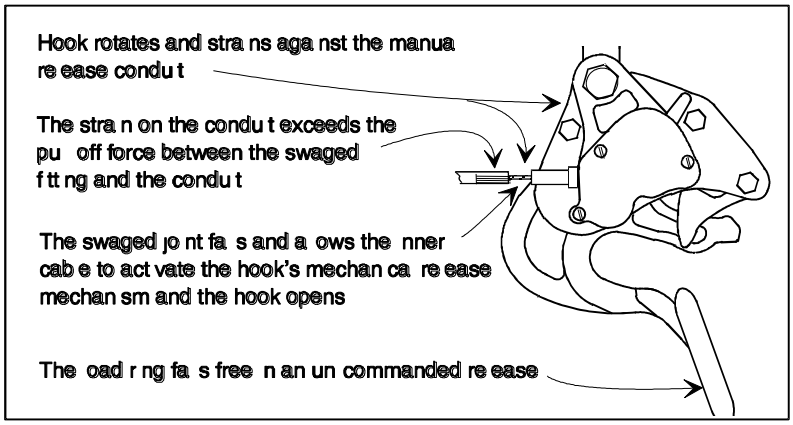
Pin	*Function*
A	Ground
B	Power

Cargo Hook Installation, continued

WARNING

Un-commanded cargo hook release will happen if the manual and electrical release cables are improperly restrained. The cables must not be the stops that prevent the Cargo Hook from swinging freely in all directions. If the Cargo Hook loads cause the hook to strain against the manual release cable the swaged end of the cable may separate allowing the inner cable to activate the cargo hook manual release mechanism. The result is an un-commanded release. Ensure that no combination of cyclic stick or Cargo Hook position is restrained by the manual or electrical release cables.

Figure 2-3 Un-commanded Release From Incorrectly Secured Cable



Suspension System Installation Check-Out

After installation of the Cargo Hook, perform the following functional checks. Follow any Bell Helicopter 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. Apply 10 - 20 pounds to the cargo hook load beam and pull the cargo hook mechanical release, the cargo hook should release.
3. Close the cargo hook release circuit breaker and position the battery switch to the ON position. Apply 10 - 20 pounds to the cargo hook load beam and depress the cargo hook electrical release button, the cargo hook should release.
4. See the Bell Helicopter service instructions that cover the original cargo hook suspension system for additional instructions.

Component Weights

The weight of the 528-010-04 Cargo Hook is 3 pounds (1.36 kgs). This is approximately 1 pound lighter than the cargo hook it replaced.

Cargo Hook Location

Table 2-2 Cargo Hook Location

Fuselage Station	121.0

Paper Work

Insert the Rotorcraft Flight Manual Supplement 121-036-00 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
Operation Instructions

Operating Procedures

Prior to each job perform the following:

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

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

3. Be completely familiar with all Bell Helicopter cargo hook operating instructions.

4. Activate the electrical system and press the release button to ensure the cargo hook electrical release is operating correctly. The mechanism should operate smoothly and the Cargo Hook must re-latch after release. If the hook does not re-latch do not use the unit until the difficulty is resolved.

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

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

See the Bell service instructions that cover the original Cargo Hook installation for additional instructions.

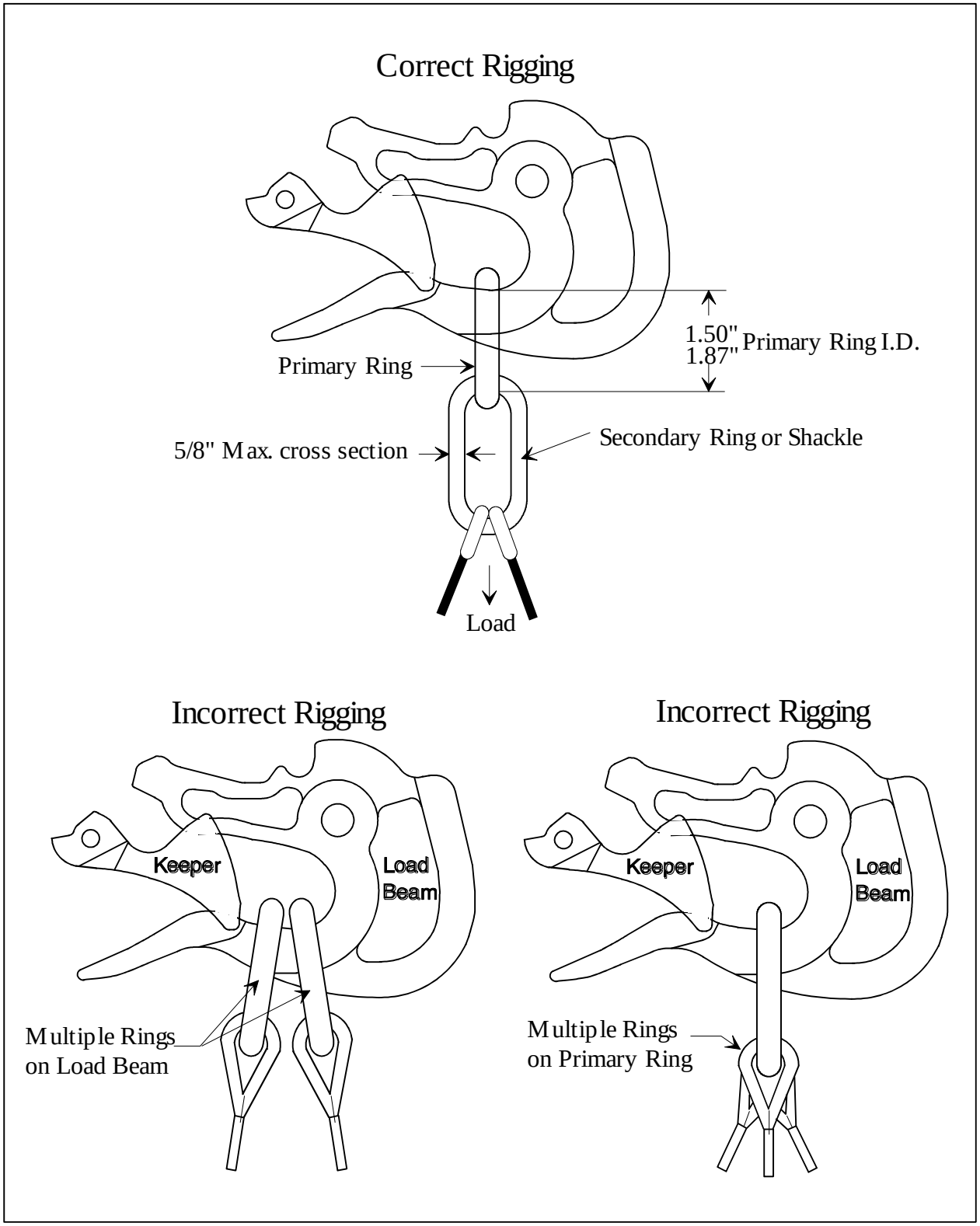
Cargo Hook Rigging

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

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

Cargo Hook Rigging, continued

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

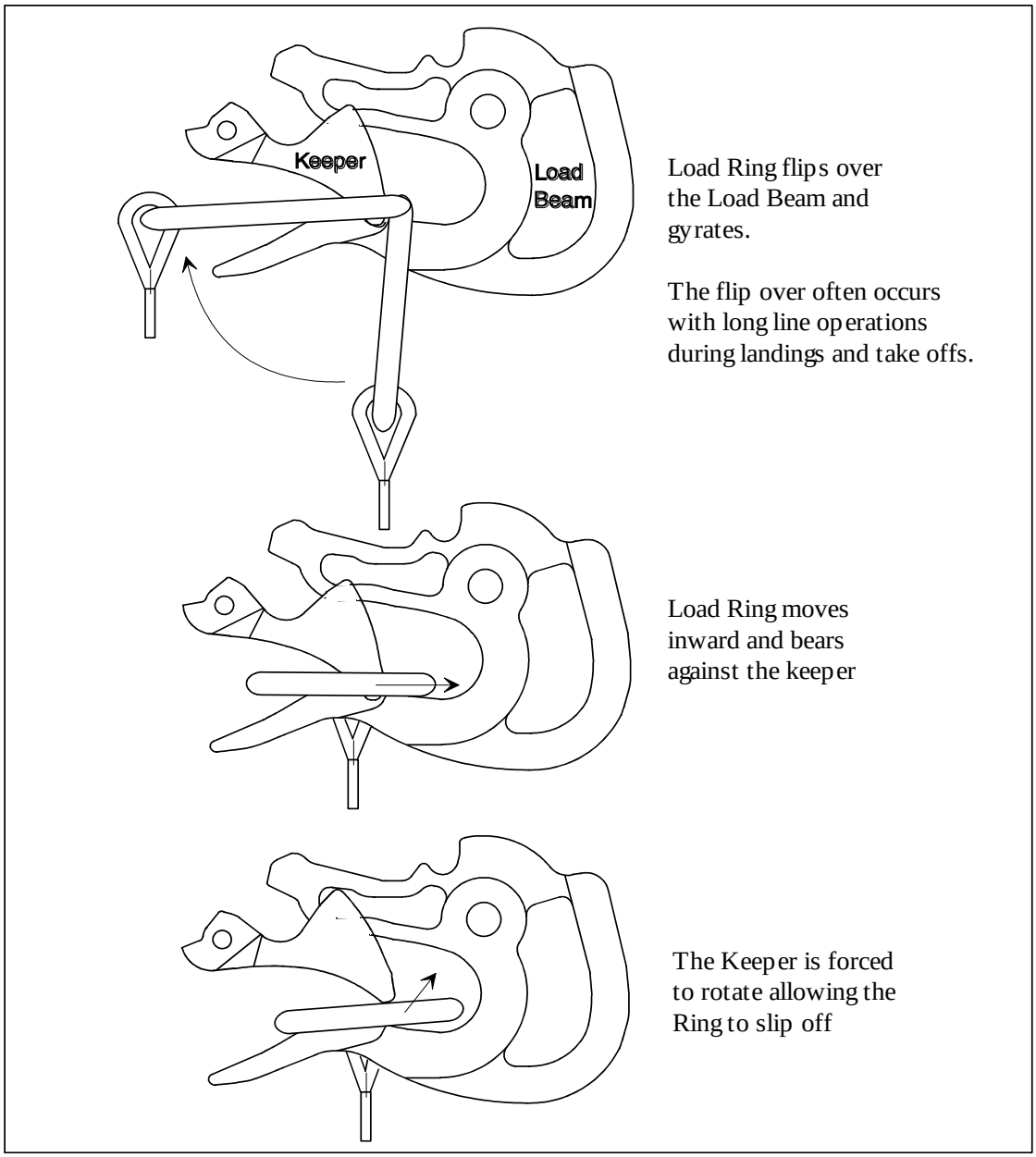


Un-Commanded Release Due to Too Large of a Load Ring

WARNING

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

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

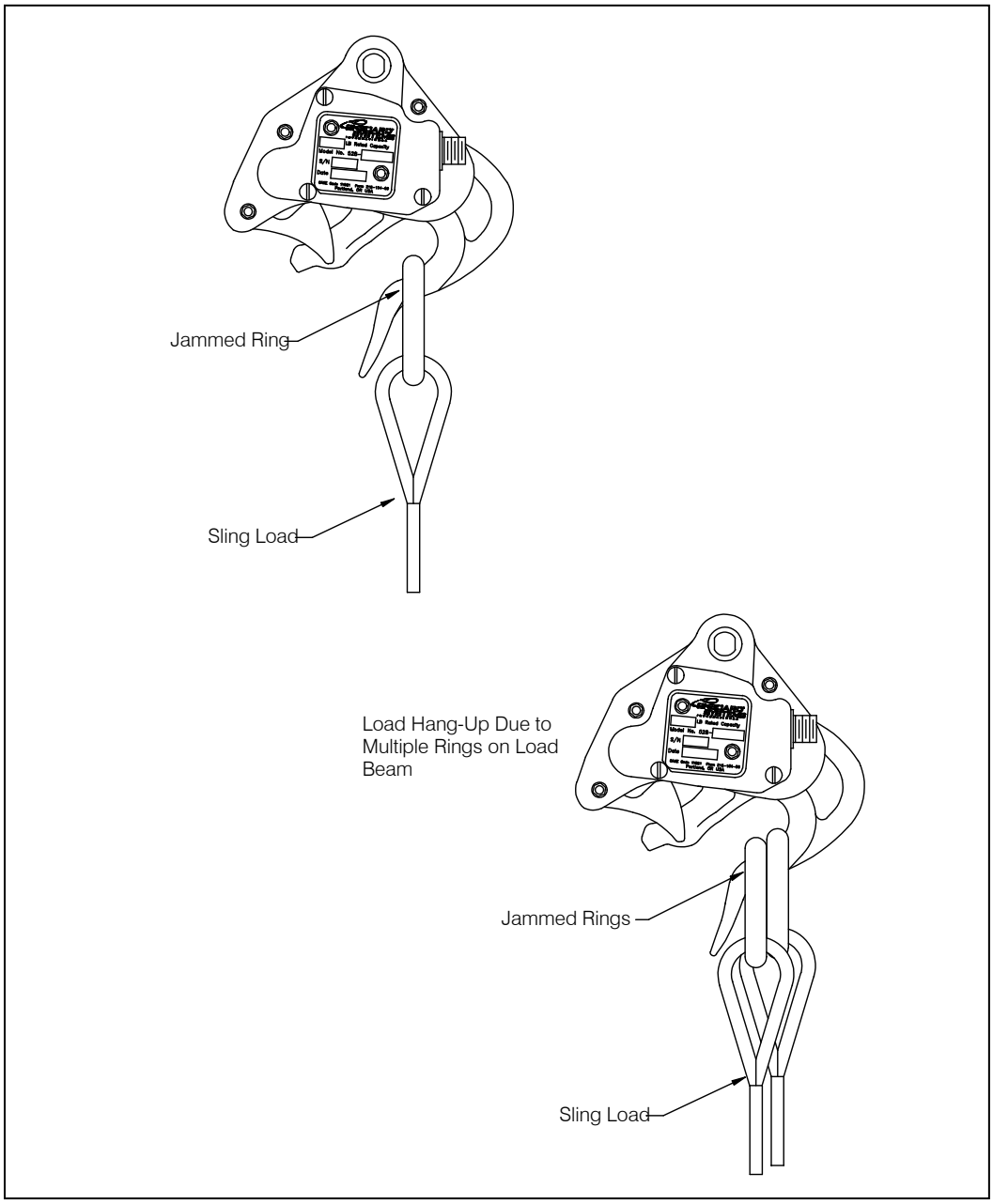


Load Hang-Up Due to Too Small of a Load Ring or Multiple Load Rings

WARNING

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

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

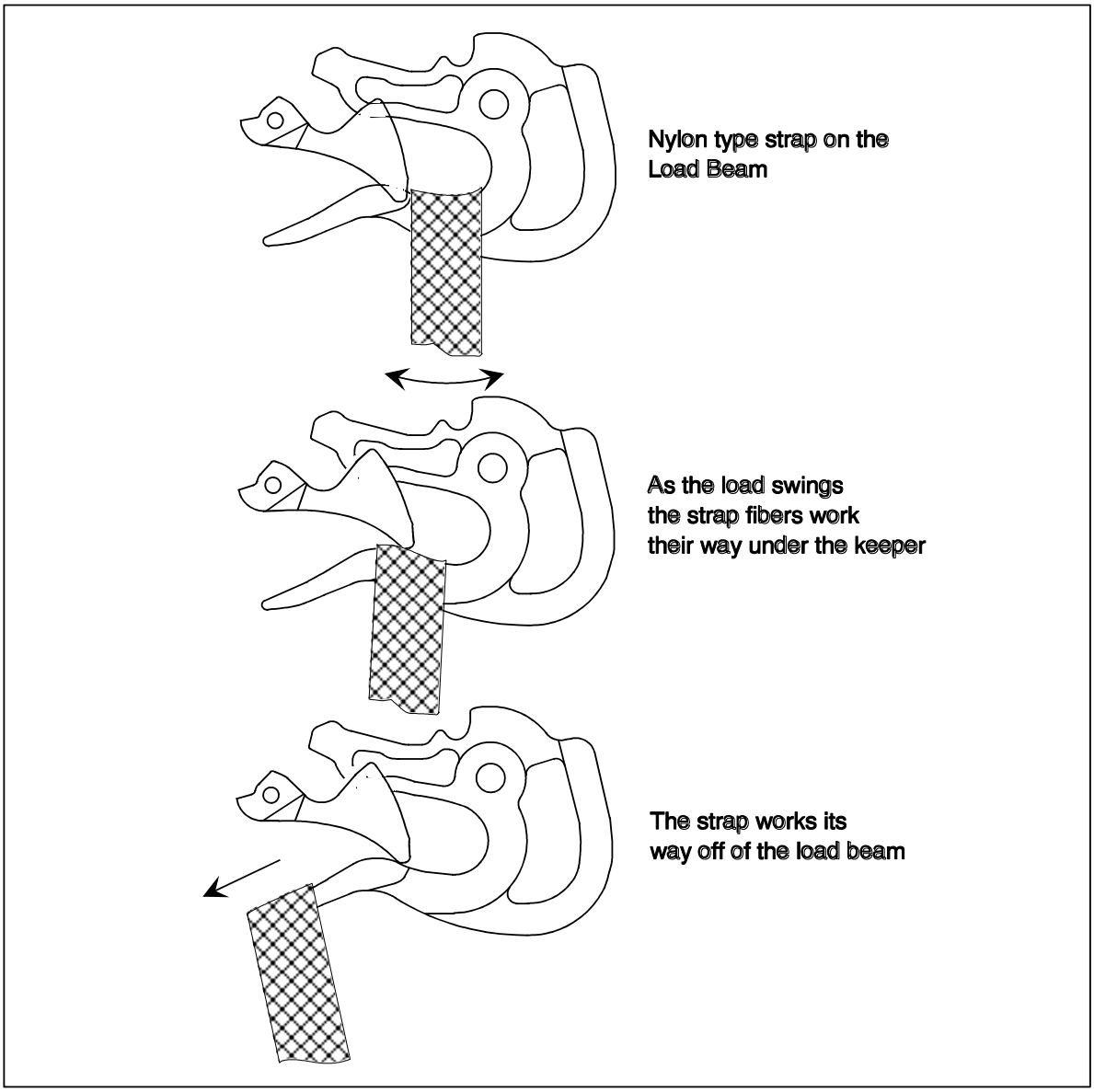


Un-Commanded Release Due to Nylon Type Straps

WARNING

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

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

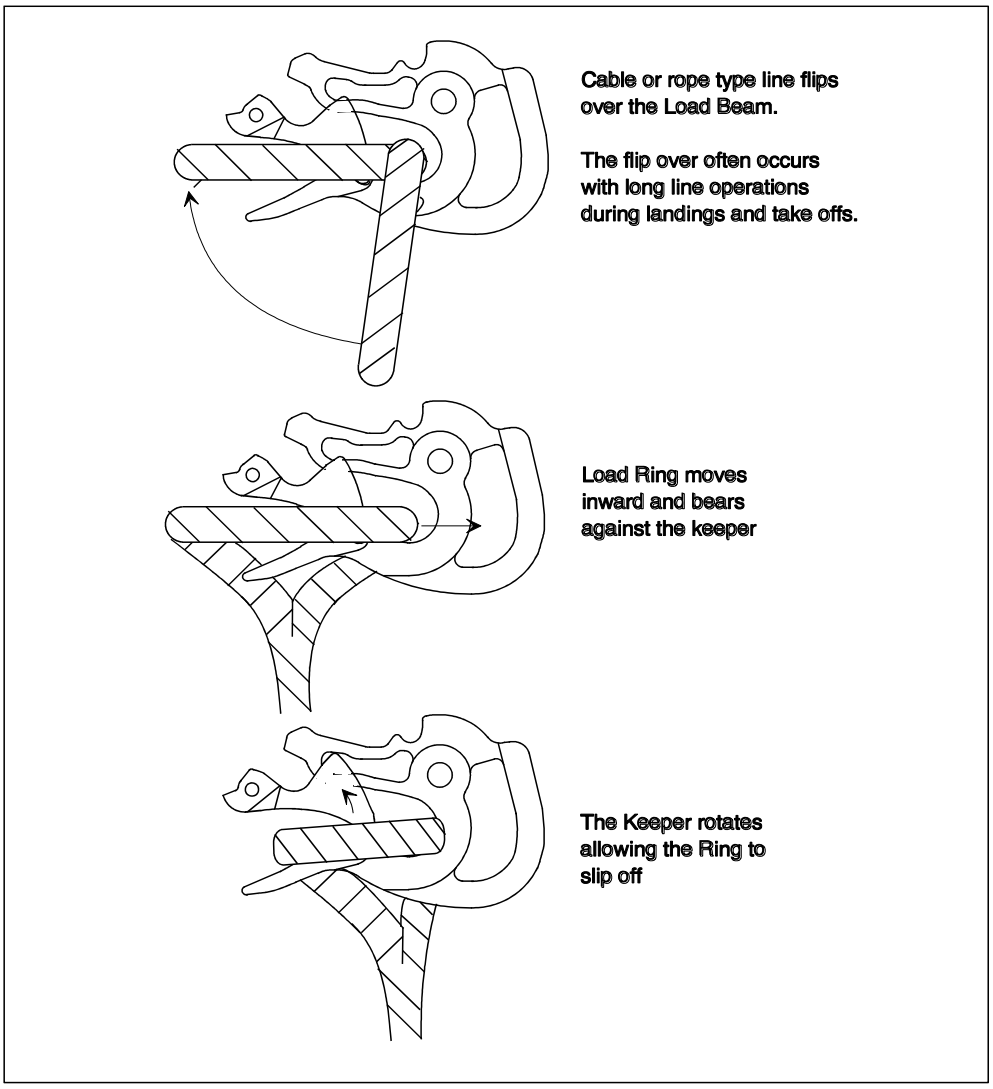


Un-Commanded Release Due to Cable or Rope Type Straps

WARNING

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

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



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Section 4
Maintenance

Cargo Hook Kit P/N 200-215-00 includes the Cargo Hook and the Release Fitting (P/N 290-331-00). The Release Fitting threads into the cargo hook manual release side and interfaces with the helicopter's existing manual release cable. It requires no maintenance other than a check, prior to external load operations, for damage and security.

For detailed maintenance of the Cargo Hook refer to Cargo Hook Service Manual 122-001-00.

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.

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

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Section 5
Certification

STC

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number **SR00369SE**

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

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

Original Product—Type Certificate Number: H2SW
Make: Bell
Model: 206L, 206L-1, 206L-3, 206L-4 and 407

Description of the Type Design Change: Fabrication of Onboard Systems Model 200-215-00 Cargo Hook Kit in accordance with FAA Approved Onboard Systems Master Drawing List No. 155-029-00, Revision 14, dated November 30, 2006 or later FAA approved revision; and, Installation of the 200-215-00 Cargo Hook Kit in accordance with FAA approved Onboard Systems Owner's Manual 120-046-00, Revision 11, dated November 20, 2006 or later FAA approved revision. Inspect Cargo Hook Kit in accordance with Onboard Systems Owner's Manual 120-046-00, Revison 11, dated November 20, 2006 or later FAA approved revision.

Limitations and Conditions: Approval of this change in type design applies to only those Bell model rotorcraft listed above, which were previously equipped with an FAA approved installation of Bell cargo hook suspension systems 206-706-341-5, 206-706-341-101, 206-706-341-109; and either Breeze-Eastern cargo hooks 17149-2 or 17149-6.

(See "Continuation Sheet", Page 3)

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

Date of application: May 31, 1996
Date of issuance: August 26, 1996
Date reissued:
Date amended: 7/11/1997; 5/10/2000; 7/27/2000; 1/13/2003; 9/8/2006; 2/6/2007

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

STC continued

United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number **SR00369SE**

Onboard Systems
Amended: February 6, 2007

Limitations and Conditions Continued:

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.

Modified rotorcraft must be operated in accordance with a copy of the FAA approved of Onboard Rotorcraft Flight Manual Supplement (RFMS) No. 121-036-00, dated September 7, 2006, or later FAA approved revision. A copy of this Certificate and the FAA approved RFMS must be maintained as part of the permanent records of the modified rotorcraft.

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

-END-

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

This certificate may be transferred in accordance with FAR 21.47.

FAA FORM 8110-2(10-68

Canadian STC

Transport Canada Transports Canada

Department of Transport

Supplemental Type Certificate

This approval is issued to:

Onboard Systems
13915 North West 3rd Court
Vancouver, Washington
United States of America 98685

Number: SH97-21
Issue No.: 3
Approval Date: May 01, 1997
Issue Date: June 07, 2007

Responsible Office: Pacific

Aircraft/Engine Type or Model: BELL 206L, 206L-1, 206L-3, 206L-4, 407

Canadian Type Certificate or Equivalent: H-92

Description of Type Design Change: Installation of Onboard Systems Model 200-215-00 Cargo Hook Kit in accordance FAA STC No. SR00369SE

Installation/Operating Data, Required Equipment and Limitations:

Installation of Onboard Systems Model 200-215-00 Cargo Hook Kit is to be carried out in accordance with FAA approved Onboard Systems Owner's Manual No. 120-046-00, Revision 11, dated November 20, 2006*.

Fabrication of Onboard Systems Model 200-215-00 Cargo Hook Kit is to be in accordance with FAA approved Onboard Systems Master Drawing List No. 155-029-00, Revision 14, dated November 30, 2006*.

Inspection of this cargo hook must be in accordance with Onboard Systems Owner's Manual No. 120-046-00, Revision 11, dated November 20, 2006*.

Modified rotorcraft must be operated in accordance with an FAA approved copy of Onboard Rotorcraft Flight Manual Supplement (RFMS) No. 121-036-00, dated September 7, 2006*.

Limitations :

Approval of this change in type design applies to only those Bell model rotorcraft listed above, which were previously equipped with an FAA approved installation of Bell Cargo Hook Suspension Systems 206-706-341-5, 206-706-341-101, 206-706-341-109; and either Breeze-Eastern cargo hooks 17149-2 or 17149-6.

(* 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.

Paul Arnell

For Minister of Transport

Canada

European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.01166

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

Onboard Systems International
13915 NW 3rd Court
Vancouver
WA 98685
United States

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 No. H2SW*
Manufacturer: *Bell Helicopter Textron Canada Ltd.*
Model: *206L, 206L-1, 206L-3, 206L-4 and 407*
Original STC Number: *FAA STC SR00369SE*

Description of Design Change:

Cargo hook installation n. 200-215-00

EASA STC continued

Associated Technical Documentation:

- FAA approved Onboard Systems Master Drawing List n. 155-029-00 dated June 26, 2000 or later FAA approved revision,
- FAA approved Onboard Systems Owner's manual n. 120-046-00 dated June 26, 2000, or later FAA approved revision,
- FAA approved Onboard Systems Service Manual n. 122-001-00 dated June 13, 2000 or later FAA approved revision
- FAA approved Onboard Systems Rotorcraft Flight Manual Supplement n. 121-036-00 dated September 7, 2006 or later FAA approved revision

Limitations and Conditions:

1. Approval of this change in type design applies to only those Bell model rotorcraft listed above, which were previously equipped with an FAA approved installation of Bell cargo hook suspension systems 206-706-341-5, 206-706-341-101; 206-706-341-109 and either Breeze-Eastern cargo hooks 17149-2 or 17146-6.
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: 27th September 2006

Massimo Mazzoletti
Certification Manager
Rotorcraft, Balloons & Airships

STC- EASA.IM.R.S.01166 - Onboard Systems International 2