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3,500 Pound Keeperless Cargo Hook Kit

For The

Airbus Helicopters AS350 Series and EC130B4

Part Number 200-261-00

Owner's Manual

Owner's Manual Number 120-094-00
Revision 10
November 28, 2016

ONBOARD™ SYSTEMS
INTERNATIONAL

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RECORD OF REVISIONS

Revision	*Date*	*Page(s)*	*Reason for Revision*
1	11/15/00		Original issue.
2	7/23/02	1-1, 2-2, 2-4, and 2-5	Added 290-744-00 Adapter to BOM and installation instruction, fig 2.4 and 2.5 graphic change.
3	9/17/02	Title, 4-3	Factory address change.
4	10/23/02	1-1	Added Model B3 to list.
5	10/10/03	1-1, 1-2, 2-1, and 4-1	528-023-01 cargo hook configuration change Reference Service Bulletin 159-011-00
6	2/12/04	1-1	Added EC130B4 to applicability
7	09/05/06	Section 4 & 3-1 TOC, Section 1, 2-2, 2-5, & Section 3	Updated cargo hook kit maintenance information. Added Warnings, Cautions and Notes section. Updated warnings, cautions and notes format.
8	08/11/09	Section 2, Page 2-3	Added caution notes and revised Figure 2-2.
9	03/08/10	Section 2	Clarified manual release cable installation instructions. Added notes allowing bumper P/N 290-773-00 and manual release cable P/N 268-024-02 to be used with this kit.
10	11/28/16	All	Revised manual release cable installation instructions, added reference to Service Bulletin 159-039-00 and Bumper Kit 232-155-00, general updates throughout.

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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Figures

Tables

Section 1
General Information

Introduction

The 200-261-00 Cargo Hook Kit is approved as a replacement for the following Cargo Hooks on the AS350B, AS350B1, AS350B2, AS350B3, AS350BA, AS350D and EC130B4 Series. This applies to either the swing or sling type systems for all models except the AS350B3 for which it applies to the sling system only and the EC130B4 for which it applies to the swing system only.

P/N	Manufacturer
17149-1	Breeze-Eastern
14027-4	Breeze-Eastern
S1609-3	Siren
S1609-5	Siren
S1609-6	Siren

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 the Cargo Hook Kit, if shortages are found contact the company from whom the system was purchased.

Part Number	Description	Quantity
120-094-00	Owner's Manual	1
121-005-00	RFMS	1
122-005-00	CMM, Cargo Hook	1
123-002-00	ICA Maintenance Manual	1
290-403-00	Hook to Manual Release Adapter	1
290-744-00	HK Manual Release Adapter	1
410-131-00	Electrical Connector	1
510-042-00	Washer	2
510-252-00	Jam Nut	1
510-257-00	Bolt	2
512-010-00	Cushioned Loop Clamp	2
528-023-01	3,500 Lb. Keeperless Cargo Hook	1

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 (528-023-01 Cargo Hook)

Design load	3,500 lb. (1,580 kg.)
Design ultimate strength	15,750 lb. (7,140 kg.)
Electrical release capacity	8,750 lb. (3,970 kg.)
Mechanical release capacity	8,750 lb. (3,970 kg.)
Force required for mechanical release at 3,500 lb.	8 lb. Max.(.600" travel)
Electrical requirements	22-32 VDC 6.9 - 10 amps
Minimum release load	0 pounds
Unit weight	3.0 pounds (1.35 kg.)
Mating electrical connector	PC06A8-2S SR

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 is attached to the load beam by passing the cargo sling ring into the throat of the load beam and pushing the ring against the upper portion of the load beam throat, which will initiate the hook to close. In the closed position, a latch engages the load beam and latches it in this position.

To release the load, the latch is disengaged from the load beam. With the latch disengaged, the weight of the load causes the load beam to swing to its open position, and the cargo sling slides off the load beam. The load beam then remains in the open position awaiting the next load.

A load release can be initiated by three different methods. Normal release is achieved by pilot actuation of the push-button switch in the cockpit. When the push-button switch is pressed, it energizes the DC solenoid in the Cargo Hook, and the solenoid opens the latch in the internal mechanism. In an emergency, release can be achieved by operating a mechanical release cable. The release cable operates the internal mechanism of the Cargo Hook to unlatch the load beam. The load can also be released by the actuation of a lever located on the side of the Cargo Hook.

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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

Remove the old Cargo Hook from the aircraft by disconnecting the hook from the load link (gauge shackle) and the manual and electrical release cables.

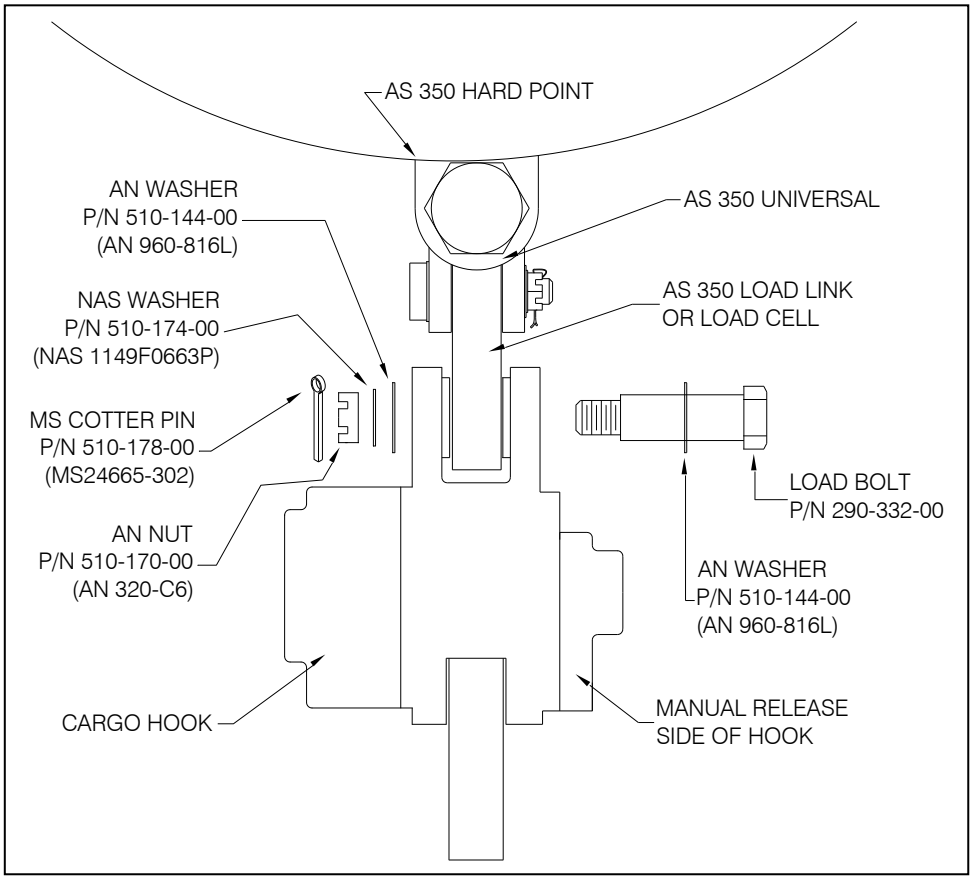
Cargo Hook Installation

Cargo Sling Installation

Inspect the load link, universal joint and attaching hardware to insure that they are in serviceable condition.

Attach the new Cargo Hook to the load link using the hardware supplied, as illustrated below. The cargo hook load beam should point forward.

Figure 2-1 Sling Mount Cargo Hook Installation Assembly



Cargo Sling Installation continued

Remove the manual release cover from the Cargo Hook.

⚠ CAUTION

It is NOT recommended to use an OEM release cable with a barrel-style end fitting with this Cargo Hook (see Service Bulletin 159-039-00).

If an acceptable OEM release cable is present (reference service bulletin 159-039-00) it may be used with the supplied adapter fitting P/N 290-403-00 or P/N 290-744-00 to connect to the cargo hook, otherwise obtain Onboard Systems Manual Release Cable P/N 268-024-02 for this installation.

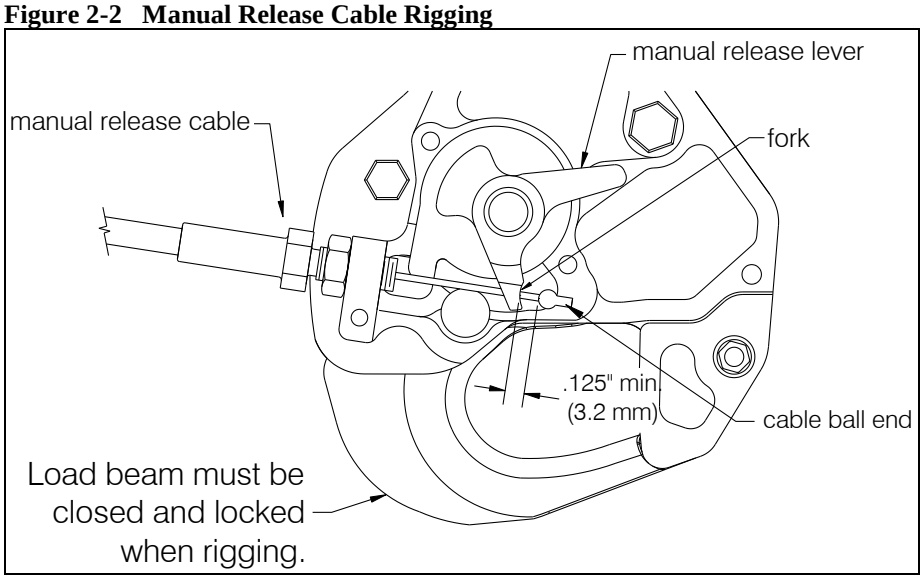
Thread the Manual Release Cable P/N 268-024-02 directly into the Cargo Hook and place the cable ball end fitting into the hook fork fitting as illustrated in Figure 2-2. Attach the other end of the manual release cable to the OEM fixed release cable.

Move the manual release lever in the clockwise direction until it is against the cam stop (this is readily felt as the lever moves relatively easily for several degrees before encountering greater resistance). Measure the cable ball end free play with the manual release lever in the cockpit in the non-release position. Adjust the manual release cable system to provide a minimum of .125" (3.2 mm) of freeplay at the fork fitting as shown in Figure 2-2.

⚠ CAUTION

Manual release cable rigging must be done with the cargo hook in the closed and locked position.

Figure 2-2 Manual Release Cable Rigging



Re-install the manual release cover and torque the cover screws to 12-15 in-lbs. Safety wire the cover screws.

Reconnect the 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

CAUTION

The cargo hook is equipped with a suppression diode that will be damaged if the cargo hook electrical connection is reversed. Do not attach the electrical connector until the polarity of the aircraft connector is determined to be compatible with the cargo hook connector listed in table 2-1.

Cargo Hook Installation, continued

Cargo Swing Installation

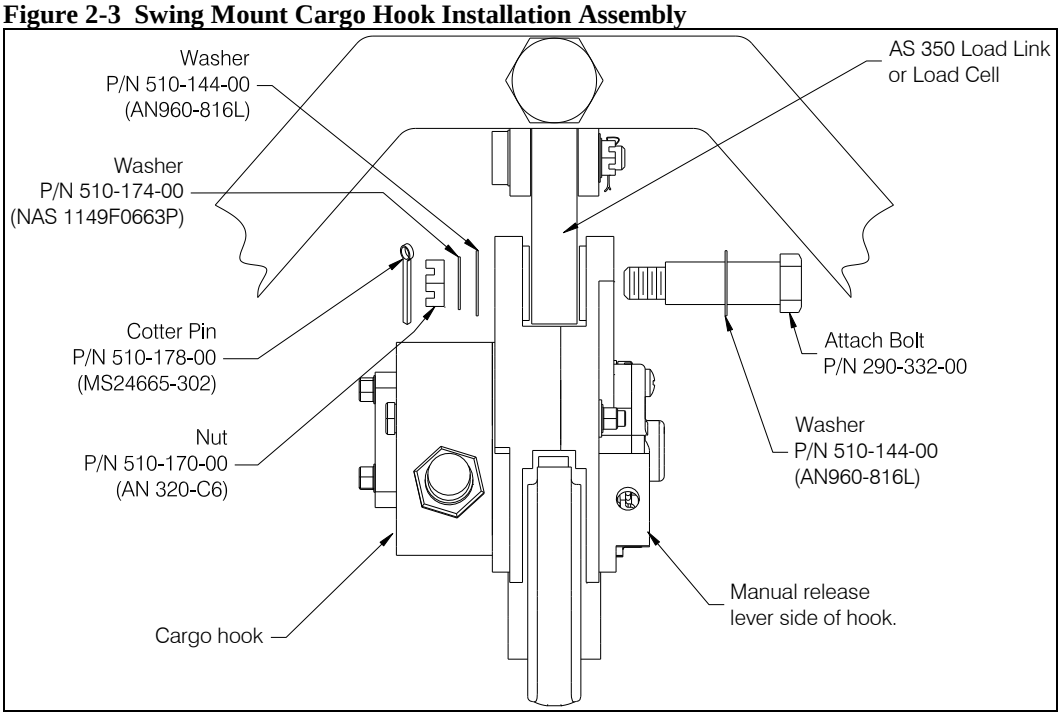
Inspect the swing assembly components to ensure that they are in serviceable condition.

Attach the new cargo hook to the load link using the hardware supplied, as illustrated below. The cargo hook load beam must point forward.

NOTICE

A cargo hook bumper (P/N 290-773-00) is available which provides protection for the electrical connector and manual release cable in the swing installation. It must be installed with Attach Bolt P/N 290-775-00 (replacing P/N 290-332-00 in Figure 2-3). These components and the washers, nut and cotter pin (shown below) are available as Bumper Kit P/N 232-155-00. Refer also to Service Bulletin 159-039-00.

Figure 2-3 Swing Mount Cargo Hook Installation Assembly



Cargo Hook Installation continued

Cargo Swing Installation continued

Remove the manual release cover from the Cargo Hook.

⚠ CAUTION

It is NOT recommended to use an OEM manual release cable with a barrel-style end fitting with this Cargo Hook (see Service Bulletin 159-039-00).

If an acceptable OEM release cable is present (reference service bulletin 159-039-00) it may be used with the supplied adapter fitting P/N 290-403-00 or P/N 290-744-00 to connect to the cargo hook, otherwise obtain Onboard Systems Manual Release Cable P/N 268-024-02 for this installation.

Thread the Manual Release Cable P/N 268-024-02 directly into the Cargo Hook and place the cable ball end fitting into the hook fork fitting as illustrated in Figure 2-2. Attach the other end of the manual release cable to the OEM fixed manual release cable (in the same manner as the OEM manual release cable was installed).

Move the manual release lever in the clockwise direction until it is against the cam stop (this is readily felt as the lever moves relatively easily for several degrees before encountering greater resistance). Measure the cable ball end free play with the manual release lever in the cockpit in the non-release position. Adjust the manual release cable system to provide a minimum of .125” (3.2 mm) of freeplay at the fork fitting as shown in Figure 2-2.

Tighten the jam nut against the hook and secure with safety wire. Reinstall the manual release cover and torque the cover screws to 12-15 in-lbs. Safety wire the cover screws.

Cargo Hook Installation continued

Cargo Swing Installation continued

Electrical Connection

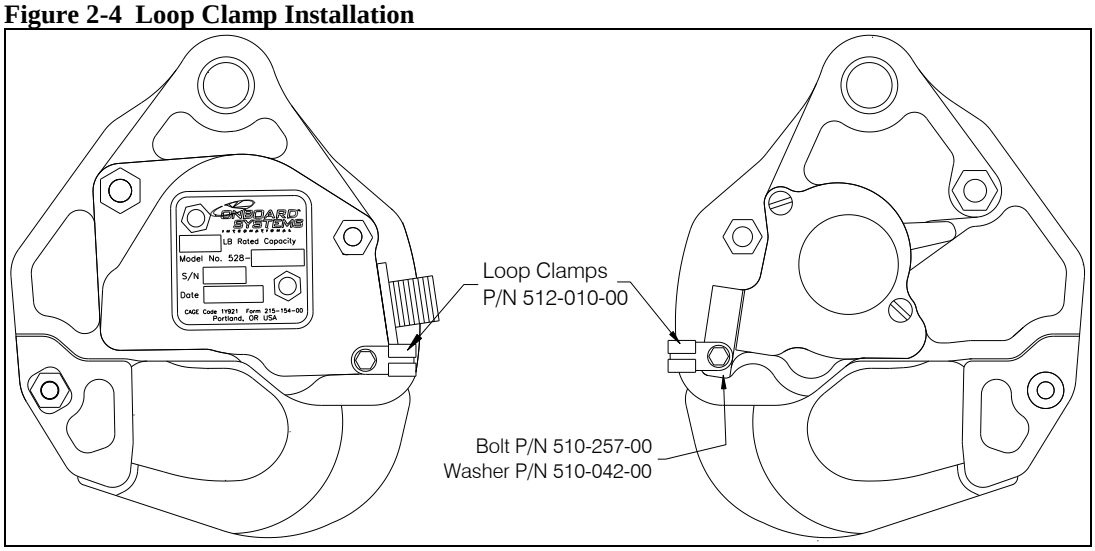
If the hook removed was manufactured by Siren or if it was a Breeze-Eastern 14027-4 it will be necessary to replace the connector on the electrical release cable with the one supplied with the Cargo Hook Kit. If preferred a short adapter cable can be fabricated to connect the electrical release cable to the hook. Connect the cargo hook electrical release cable connector to the Cargo Hook and secure with safety wire.

See table 2-1 for connector pin out information

Loop Clamp Installation

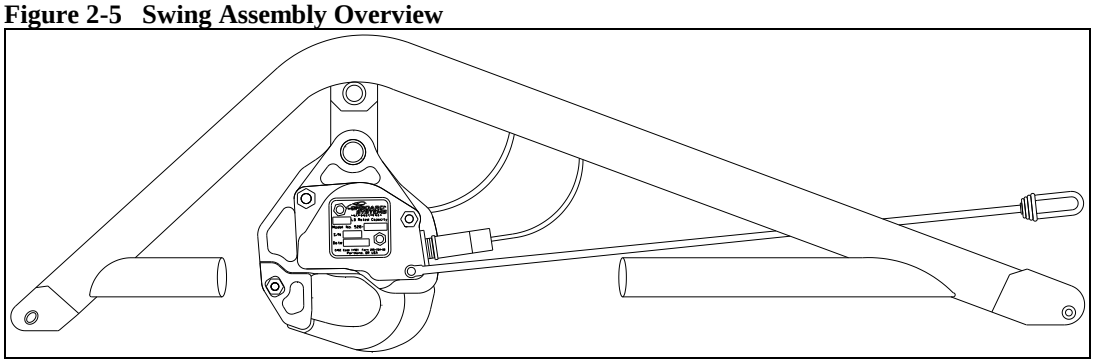
Secure the cushioned loop clamps using the threaded holes, bolts and washers provided as illustrated in Figure 2-4. Safety wire the bolts.

Figure 2-4 Loop Clamp Installation



Attach the two elastic cords that were previously removed to the loop clamps that are supplied with the Cargo Hook Kit. Refer to the illustration below.

Figure 2-5 Swing Assembly Overview

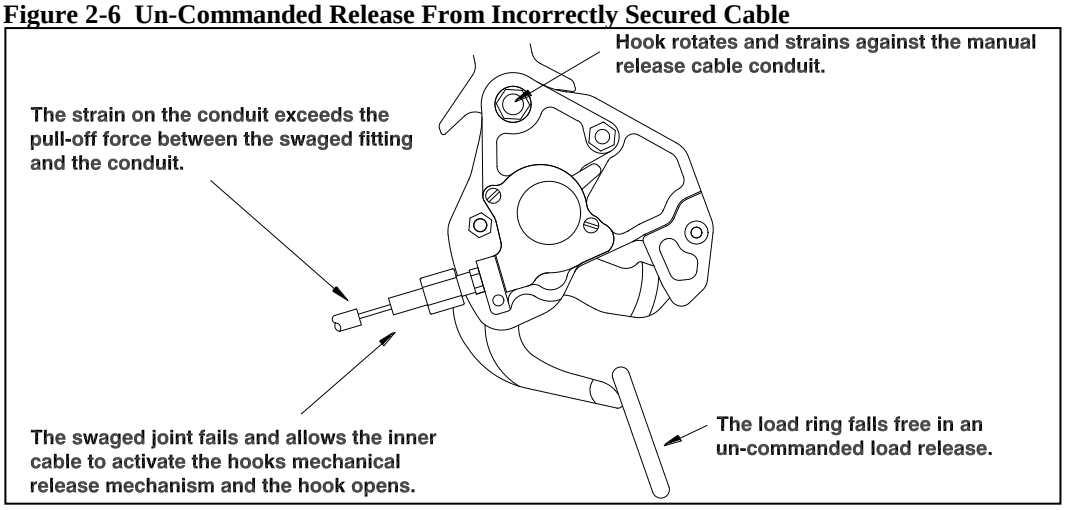


Cargo Hook Installation, continued

WARNING

Un-commanded cargo hook release will happen if the manual release cable is 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 release cable.

Figure 2-6 Un-Commanded Release From Incorrectly Secured Cable



Installation Check-Out

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

1. Swing the installed Cargo Hook to ensure that the manual release cable assembly and the electrical release cable have enough slack to allow full swing of the suspension assembly without straining or damaging the cables. The cables must not be the stops that prevent the Cargo Hook from swinging freely in all directions. It may be necessary to install bumper pads on the Swing to prevent the release cables from being damaged.
2. With no load on the cargo hook load beam and pull the release lever in the cockpit, the Cargo Hook must release. Reset the cargo hook load beam.
3. Close the cargo hook release circuit breaker and position the battery switch to the ON position. With no load on the cargo hook load beam, depress the cargo hook electrical release button, the Cargo Hook must release. Reset the cargo hook load beam.
4. See the Airbus Helicopters service instructions for your specific helicopter model for additional installation instructions.

Component Weights

The weight of the Cargo Hook Kit components are listed below.

Table 2-2 Component Weights

Item	Weight
Cargo Hook	3.0 pounds (1.4 kgs)

Cargo Hook Location

See the Airbus Helicopters provided Flight Manual Supplement for external load weight and balance data.

Paper Work

In the US, fill in FAA form 337 for the initial installation. This procedure may vary in different countries. Make the appropriate aircraft log book entry. Insert the Rotorcraft Flight Manual Supplement P/N 121-005-00 into the Rotorcraft Flight Manual.

Section 3
Operation Instructions
Operating Procedures

Prior to a flight involving external load operations 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. Activate the electrical system and press the cargo hook release button to ensure the cargo hook electrical release is operating correctly. The mechanism should operate smoothly and the Cargo Hook should after release. Return the load beam to its closed position by hand, 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.

3. Activate the manual release lever in the cockpit to test the cargo hook manual release mechanism. The mechanism should operate smoothly and the Cargo Hook must release. Return the load beam to its closed position by hand, if the hook does not re-latch do not use the unit until the difficulty is resolved.

See the Component Maintenance Manual 122-005-00 and the Airbus Helicopters service instructions that cover the original Cargo Hook installation for additional instructions.

Cargo Hook Rigging

Extreme care must be exercised when rigging a load to the Cargo Hook. Steel load rings are recommended to provide consistent release performance and resistance to fouling. Figure 3-1 shows the recommended rigging and rigging to avoid, but is not intended to represent all rigging possibilities.

⚠ WARNING

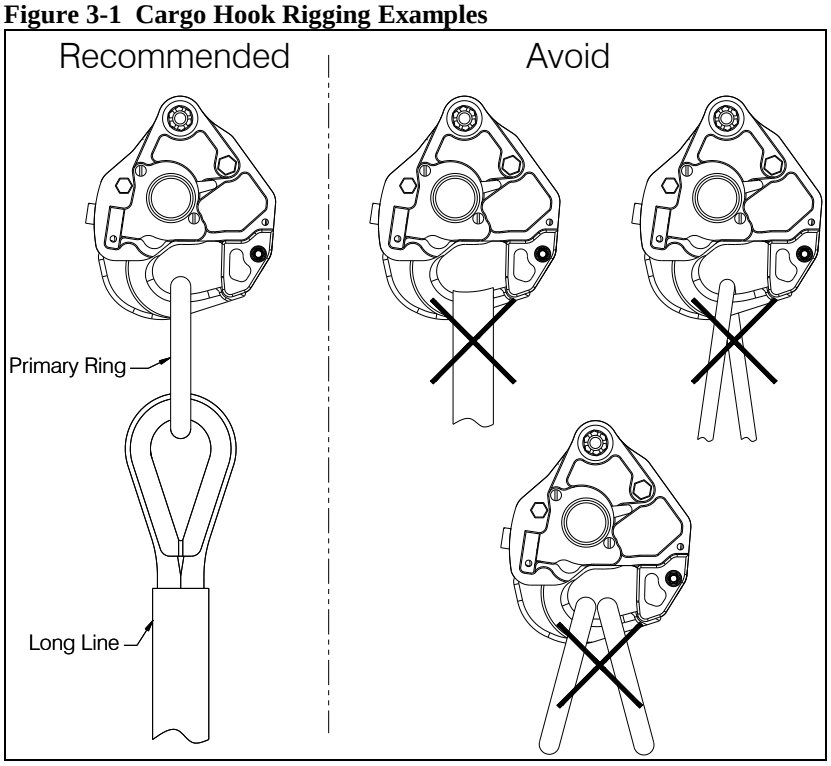
Some combinations of small primary rings and large secondary rings could cause fouling during release.

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

⚠ WARNING

Nylon type straps (or similar material) or rope must not be used directly on the cargo hook load beam. If nylon straps or rope must be used they should be first attached to a steel primary ring. Verify that the ring will freely slide off the load beam when it is opened. Only the primary ring should be in contact with the load beam.

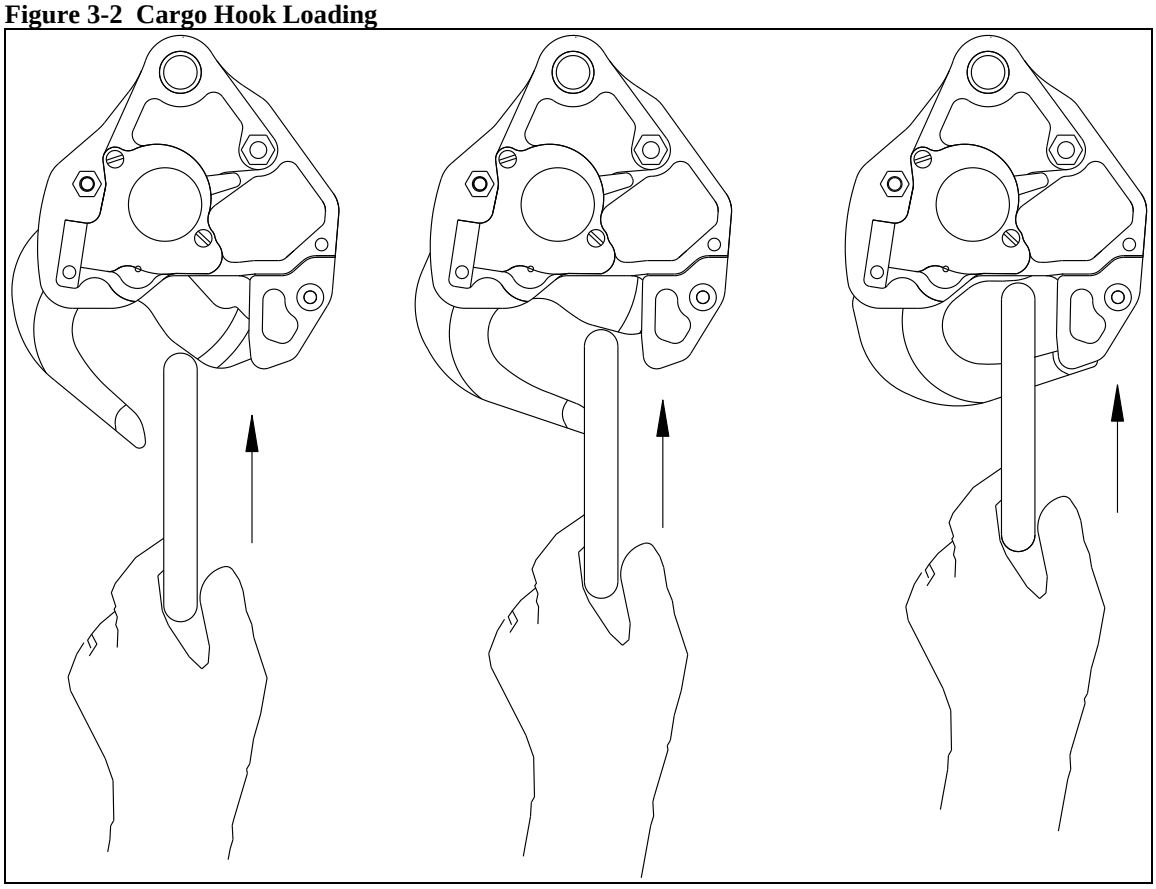
Figure 3-1 Cargo Hook Rigging Examples



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 3-2, until an internal latch engages the load beam and latches it in the closed position.

Figure 3-2 Cargo Hook Loading



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Section 4
Maintenance

Refer to Component Maintenance Manual 122-005-00 for detailed maintenance information specific to the Cargo Hook and ICA 123-002-00 for general maintenance of the cargo hook kit.

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 **SR00886SE**

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

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 27 *of the* Federal Aviation Regulations.

Original Product—Type Certificate Number: H9EU
Make: Eurocopter France
Model: AS350B, AS350B1, AS350B2, AS350B3, AS350BA, AS350D and EC 130 B4

Description of the Type Design Change: Fabrication of Onboard Systems Model 200-261-00 Cargo Hook Kit in accordance with FAA Approved Onboard Systems Master Drawing List No. 155-060-00, Revision 5, dated February 12, 2004, or later FAA approved revision; and installation of these systems in accordance with FAA approved Onboard Systems Owner's Manual No. 120-094-00, Revision 6, dated February 12, 2004, or later FAA approved revision. This modification must be maintained in accordance with FAA approved Instructions for Continued Airworthiness, Document No. 123-002-00, Revision 3, dated February 12, 2004, or later FAA approved revision.

Limitations and Conditions: Approval of this change in type design applies to the AS350B, AS350B1, AS350B2, AS350BA, and AS350D equipped with either a swing or sling type system, and AS350B3 equipped with the sling type system only, or the EC130 B4 equipped with the swing type system only, which are equipped with an FAA approved installation of Breeze Eastern P/N 17149-1 or 14027-4, or Siren P/N S1609-3, -5, and -6, or Onboard Systems 528-010-00 cargo hooks, or those modified by installation of an Onboard Systems load weight system per STC SH1262NW. 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.

(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: September 22, 2000
Date of issuance: March 6, 2001
Date reissued:
Date amended: January 2, 2003, December 10, 2004

FEDERAL AVIATION ADMINISTRATION

By direction of the Administrator
Angelos Vidia
(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

(Continuation Sheet)

Number **SR00886SE**

Onboard Systems
Reissued:
Amended: January 2, 2003, December 10, 2004

Limitations and Conditions: (cont'd)

Rotorcraft modified in accordance with this STC must be operated in accordance with an FAA approved copy of Onboard Rotorcraft Flight Manual Supplement (RFMS) No. 121-005-00, dated December 10, 2004, or later FAA approved revision. A copy of this Certificate, FAA approved RFMS, and FAA approved Instructions for Continued Airworthiness 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.

FAA FORM 8110-2-1 (10-69)

This certificate may be transferred in accordance with FAR 21.47.

PAGE 3 OF 3 PAGES

Canadian Approval

Transport Canada / Transports Canada
Aviation / Aviation

Suite 620
800 Burrard Street
Vancouver, B.C.
V6Z 2J8

Your file *Votre référence*

Our file *Notre référence*
01-1927

March 27, 2001

Mr. Ron Pirtle
Onboard Systems International
11212 NW St. Helens Road
Portland, OR
97231 USA

Dear Mr. Pirtle,

Subject: Acceptance of FAA STC SR00886SE

This is in response to the FAA Seattle ACO letter dated March 14, 2001 (reference 190S-01-157), requesting Transport Canada approval of the subject STC.

In accordance with our current policy associated with the review of foreign STC's, some STCs applicable to certain categories of aircraft may be accepted solely on the basis of their foreign certification, and do not require the issue of a corresponding certificate by Transport Canada. The subject STC falls within these criteria.

This STC will be entered in the national index of STCs that have been reviewed and accepted by Transport Canada for installation on Canadian registered aeronautical products.

This letter confirms formal acceptance of the referenced STC by Transport Canada.

Yours truly,

Henry Wong
for
Regional Manager
Aircraft Certification

c.c. Mr. Ali Bahrami, Manager Seattle Aircraft Certification Services

Canada

1/1

EASA STC

European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.01027

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: *EASA.R.008*
Manufacturer: *EUROCOPTER*
Model: *AS 350 B, BA, B1, B2, B3, D & EC 130 B4*
Original STC Number: *FAA STC SR00886SE*

Description of Design Change:

Onboard Systems Model 200-261-00 Cargo Hook Kit, in accordance with Onboard Systems Master Drawing List n° 155-060-00, revision 5 dated 12/02/04 approved by FAA, or later FAA approved revision.

European Aviation Safety Agency

Associated Technical Documentation:

- Installation Instructions: Onboard Systems Owners Manual n° 120-094-00, revision 6 dated 12/02/04 approved by FAA, or later FAA approved revision,
- Instructions for Continued Airworthiness: document n° 123-002-00, revision 3 dated 12/02/04 approved by FAA, or later FAA approved revision,
- Operation: Flight Manual Supplement reference 121-005-00, revision 3 dated 09/06/2006 approved by FAA, or later FAA approved revision.

Limitations and Conditions:

1. The present STC is the validation of the FAA STC n° SR00886SE, last amended on 10/12/06.
2. The system covered by this STC can be installed on AS 350 B, BA, B1, B2 and D helicopters equipped with Eurocopter swing or sling type systems, or on AS 350 B3 equipped with Eurocopter sling type system only, or on EC 130 B4 equipped with Eurocopter swing type system only, those sling or swing systems being equipped with the following cargo hooks:
   - Breeze Eastern p/n 17149-1 or 14027-4, or
   - Siren p/n S1609-3, -5, or -6, or
   - Onboard Systems p/n 528-010-00,
3. The system covered by this STC is compatible with the installation of an Onboard Systems E-69 Cargo Hook Load Cell System p/n 200-295-00, per STC EASA.IM.R.S.01122 (FAA SH1262NW).
4. This STC is approved only for the product configuration as defined in the approved design data referred to in the paragraphs "Description" and "Associated Technical Documentation". 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: 10th January 2007

Massimo Mazzoletti
Certification Manager
Rotorcraft, Balloons & Airships

STC- EASA.IM.R.S.01027 - Onboard Systems 2