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**Owner's Manual
3,600 Pound Keeperless
Cargo Hook Kit
on the
Eurocopter AS350B3**

Part Number 200-281-03

Owner's Manual Number 120-106-02
Revision 0
October 20, 2009



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RECORD OF REVISIONS

<i>Revision</i>	<i>Date</i>	<i>Page(s)</i>	<i>Reason for Revision</i>
0	10/20/09	All	Initial Release

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CONTENTS

***Section 1* General Information**

Introduction, 1-1
Warnings, Cautions and Notes, 1-1
Specifications, 1-2
Inspection, 1-2
Bill of Materials, 1-2
Theory of Operation, 1-2

***Section 2* Installation Instructions**

Cargo Hook Removal, 2-1
Cargo Hook Installation, 2-1
Installation Check-Out, 2-6
Component Weights, 2-6
Cargo Hook Location, 2-6
Paper Work, 2-6

***Section 3* Operation Instructions**

Operating Procedures, 3-1
Cargo Hook Rigging, 3-2
Cargo Hook Loading, 3-4

***Section 4* Maintenance**

Instructions for Returning a System to the Factory, 4-1

***Section 5* System Part Numbers**

200-281-03 AS 350 Hook Replacement Kit, 5-1
232-146-00 Link Assembly, 5-2
232-148-00 Link Bumper Assembly, 5-3

***Section 6* Certification**

STC, 6-1
Canadian Approval, 6-3
EASA Approval, 6-4

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Section 1

General Information

Introduction

The 200-281-03 Cargo Hook Kit is approved as a replacement for the following cargo hook on Eurocopter AS350 Series helicopters, equipped with a B3 type swing system. The B3 type swing systems are installed on AS350 B3s and can be retrofitted to earlier models via Eurocopter Service Bulletin 25.00.62.

P/N	Manufacturer
AS 21-5-7	Siren
528-023-01	Onboard Systems
528-023-51	Onboard Systems

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.

Specifications

Table 1-2 P/N 528-029-00 Cargo Hook Specifications

Design load	3,600 lb. (1,633 kg.)
Design ultimate strength	13,500 lb. (6,123 kg.)
Electrical release capacity	9,000 lb. (4,082 kg.)
Mechanical release capacity	9,000 lb. (4,082 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



Load capacities given are for the equipment described only. Loading limits for your particular helicopter model still apply. Consult your flight manual.

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.

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.

Table 1-2 200-281-03 Bill of Materials

Part Number	Description	Quantity
120-106-02	Cargo Hook Kit Owners Manual	1
121-014-02	Flight Manual Supplement	1
122-017-00	Cargo Hook Service Manual	1
123-013-02	ICA Maintenance Manual	1
268-024-02	Manual Release Cable Assembly	1
232-149-00	Link Bumper Assembly	1
230-077-00	Connector Assembly	1
528-029-00	Cargo Hook	1
215-169-00	AS350 Light Indicator Placard	2

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.

A 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

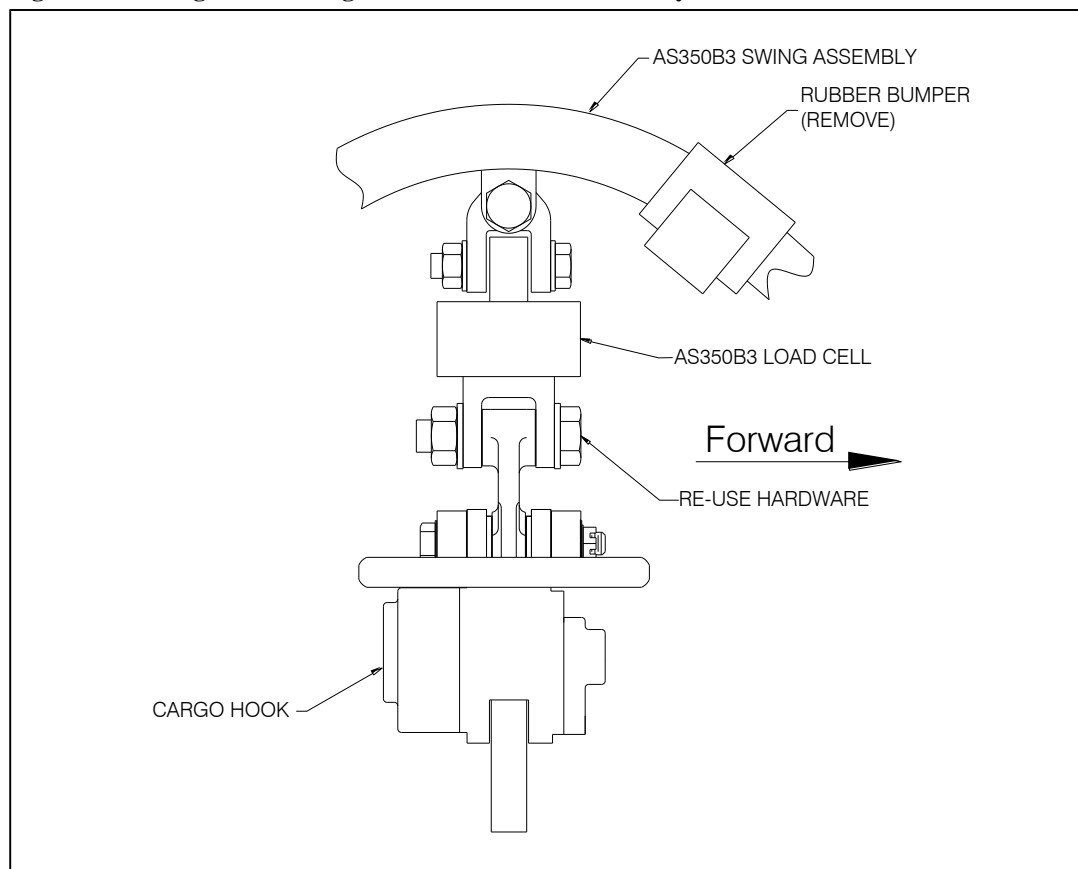
Remove the existing cargo hook and manual release cable from the helicopter by disconnecting the hook from the load cell on the swing suspension and the manual release cable at the fitting on the belly of the aircraft. Disconnect the electrical release cable at the hook. Remove rubber bumpers from the swing assembly.

Cargo Hook Installation

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

Attach the new Cargo Hook (P/N 528-029-00) with Link Bumper Assembly (P/N 232-149-00) to the load cell, re-using the Eurocopter hardware (see below). The cargo hook load beam should point to the left side of the aircraft.

Figure 2.1 Swing Mount Cargo Hook Installation Assembly

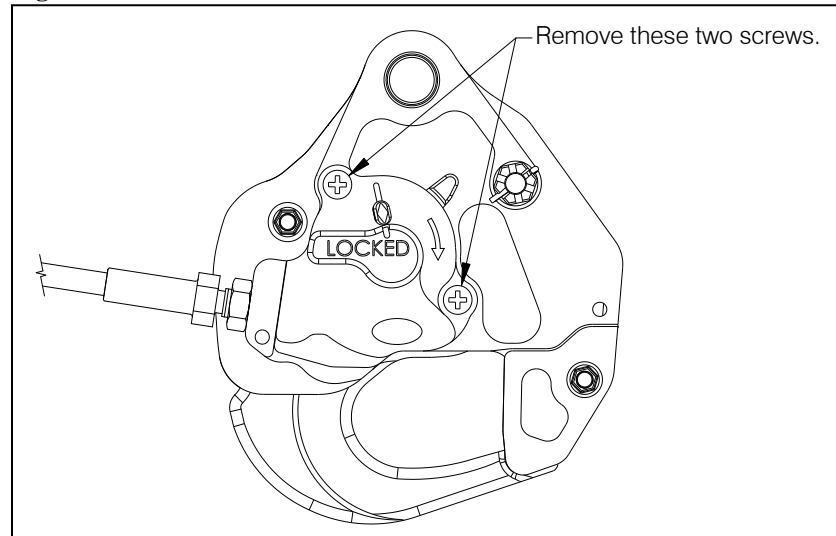


Cargo Hook Installation, continued

Connect the manual release cable (P/N 268-024-02) to the cargo hook per the following instructions:

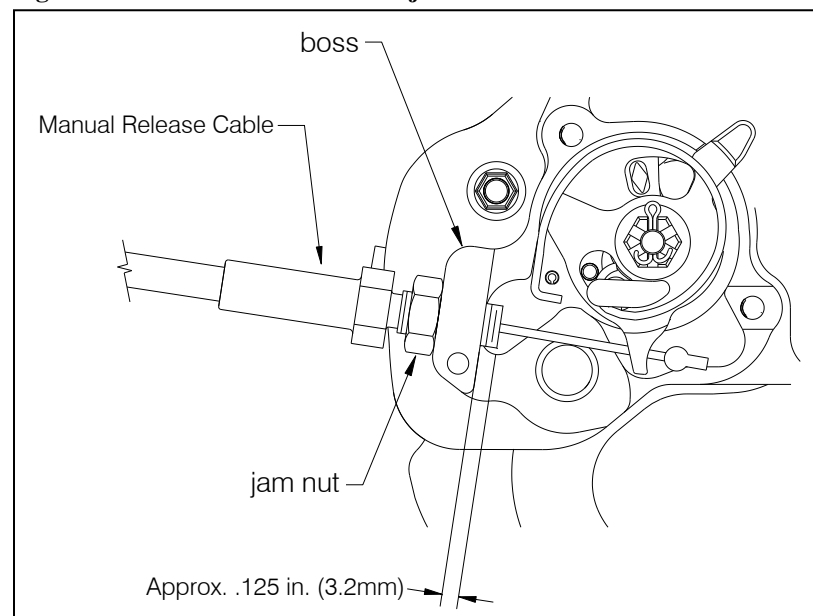
- Remove the manual release cover from the cargo hook by removing two screws (see below).

Figure 2.2 Manual Release Cover Removal



- Thread the fitting at the end of the manual release cable into the manual release boss on the cargo hook side plate until the threads protrude approximately .125 inches beyond the boss and secure with jam nut (as shown in Figure 2.3). Leave the manual release cover off of the cargo hook until the other end of the release cable is connected, in order to verify proper setting.

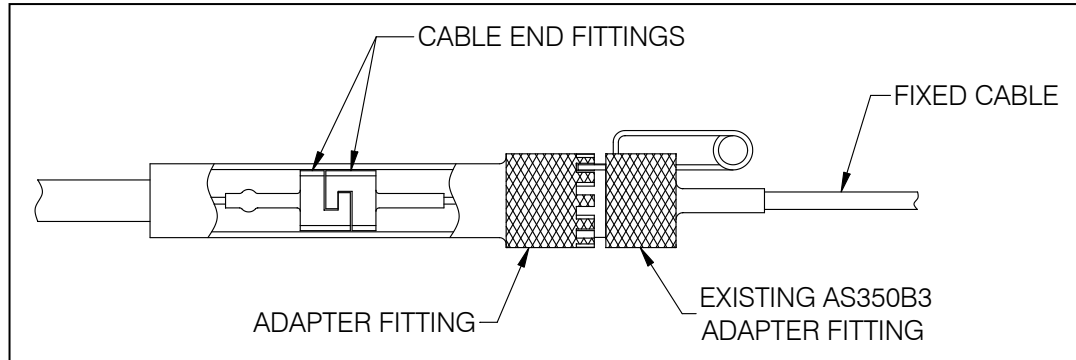
Figure 2.3 Initial Release Cable Adjustment



Cargo Hook Installation, continued

- Connect the other end of the release cable to the fixed section of the existing AS350 manual release cable by mating the cable end fittings together as shown below (slide back the Adapter Fitting to access fitting on removable cable). Slide the Adapter Fitting forward and thread it onto the AS350B3 fitting, and engage a castellation on the Adapter Fitting with the retaining pin and lock it in place.
- Snap the Adapter Fitting into the existing clip mounted to the belly of the helicopter.

Figure 2.4 Manual Release Cable Connection



- At the cargo hook, ensure the manual release cable is between the two prongs of the release lever fork as illustrated in Figure 2.5.

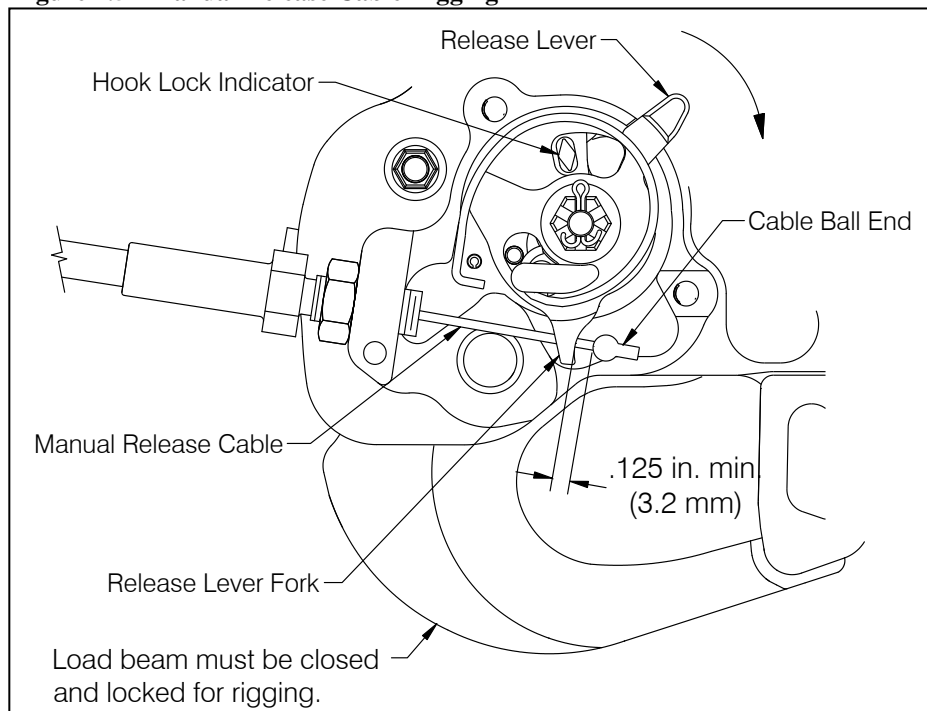


Manual release cable rigging must be done with the cargo hook in the closed and locked position.

Cargo Hook Installation, continued

- With the cargo hook closed and locked, rotate the release lever in the clockwise direction to remove free play (the free play is taken up when the hook lock indicator begins to move, this is also felt as the lever rotates relatively easily for several degrees as the free play is taken up) and measure the gap between the cable ball end and the release lever fork with the manual release lever in the cockpit in the non-release position. This gap should be a minimum of .125 inches (3.2 mm) as shown in Figure 2.5.

Figure 2.5 Manual Release Cable Rigging



- If necessary adjust the manual release cable system to obtain the minimum gap of .125 inches at the release lever fork as shown in Figure 2.5 (the maximum gap is limited by the manual release cover, i.e.- the release cable must fit within the cover when it is installed). The system can be adjusted at the manual release lever on the collective or minor adjustments can be made at the cargo hook by loosening the jam nut and turning the manual release cable in the required direction (this requires that the manual release cable be disconnected from the fixed release cable and the quick release clamps on the belly). Be sure to maintain full thread engagement between the manual release cable fitting and cargo hook.
- Re-install the manual release cover with the two screws and ensure the manual release cable jam nut is tightened securely against the cargo hook.

Cargo Hook Installation, continued

Connect the electrical harness to the Cargo Hook per the following instructions.

Cut the hook end connector off of the existing Eurocopter release harness as close to the connector as possible. Install the supplied connector and backshell assembly P/N 230-077-00 (at 24M) onto the existing harness using the schematic below.

Figure 2.6 Wiring Diagram

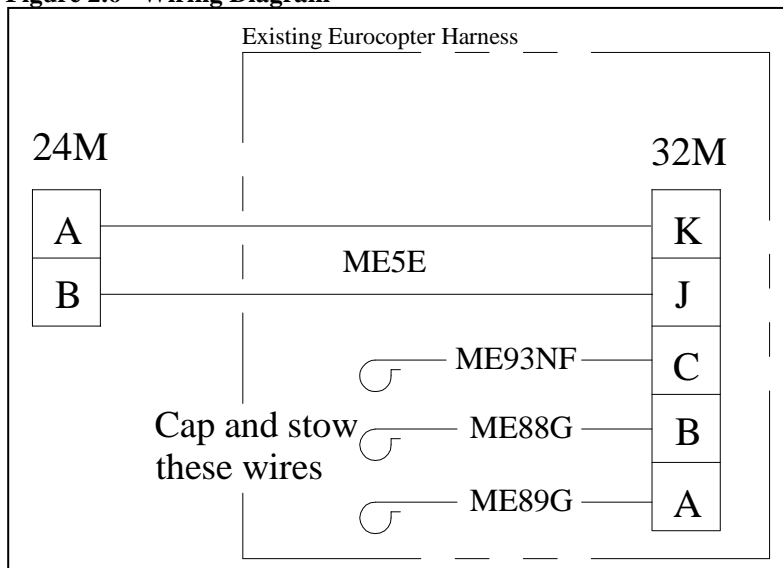


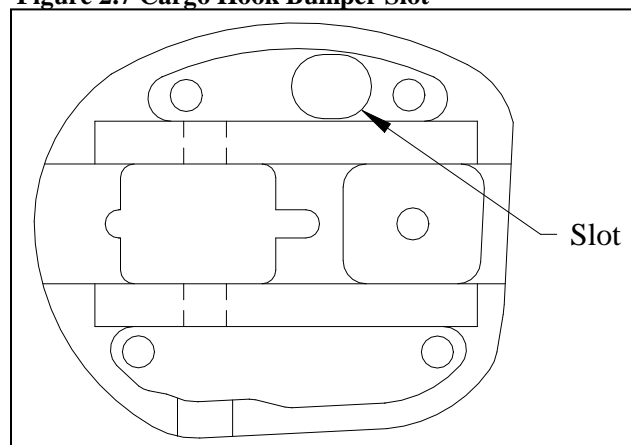
Table 2.1 Cargo Hook Connector

<i>Pin</i>	<i>Function</i>
A	Ground
B	Power

Cap and stow the remaining wires (for the load indicator lights) from 32M and install “INOP” placards (P/N 215-169-00) over the load indicator lights (74M and 75M) in the cockpit.

Route the electrical release cable connector through the slot in the Cargo Hook Bumper (see below) and connect the new cargo hook electrical release cable connector to the Cargo Hook and secure with safety wire. See table 2.1 for connector pin out information.

Figure 2.7 Cargo Hook Bumper Slot



Cargo Hook Installation, continued

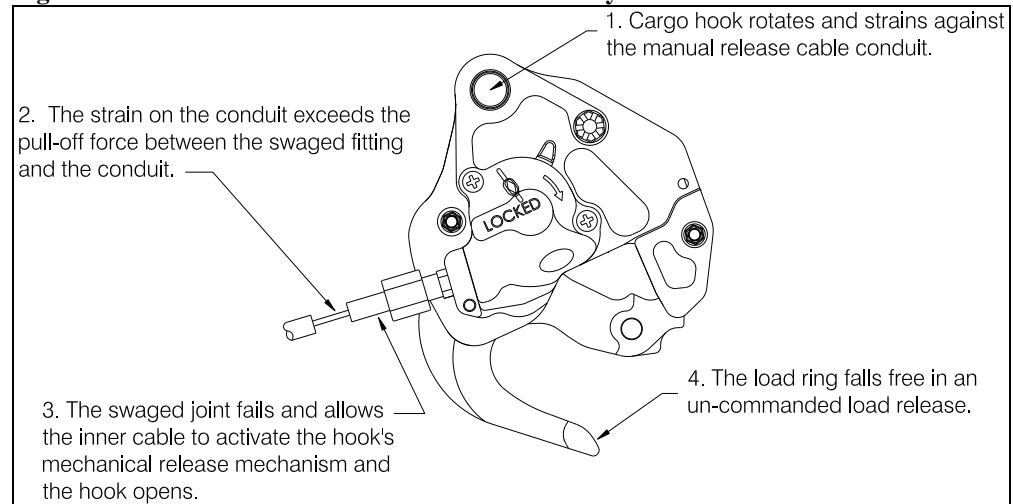


The cargo hook is equipped with a suppression diode that will be damaged if the cargo hook electrical connection is reversed. Do not attach the electrical connector until the polarity of the aircraft connector is determined to be compatible with the cargo hook connector listed in table 2-1.



Un-commanded cargo hook release will happen if the manual release cable is improperly restrained. The cable 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 2.8 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.
2. With no load on the cargo hook load beam, pull the manual release lever on the collective and verify the cargo hook releases. Reset the cargo hook load beam.
3. 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.

Component Weights

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

Table 2-2 Component Weights

Item	Weight
Cargo Hook Kit (includes Cargo Hook Link Assembly and Manual Release Cable)	4.7 pounds (2.2 kgs)

Cargo Hook Location

See the Eurocopter 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 121-014-02 in the Rotorcraft Flight Manual.

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Section 3

Operation Instructions

Operating Procedures

Daily, prior to the first cargo hook use of the day, perform the following. Refer to the Eurocopter manuals for additional instructions.

1. 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 must release. Reset the hook by hand after the release. If the hook does not release or re-latch, do not use the unit until the difficulty is resolved.



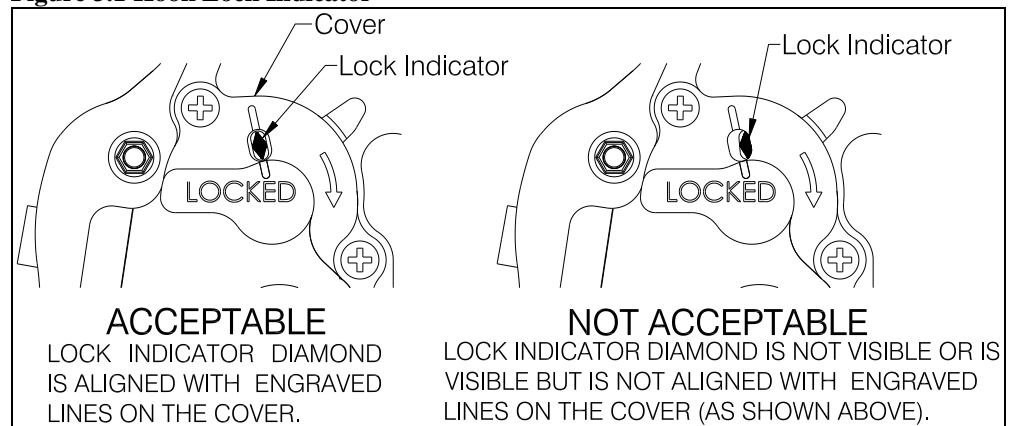
The cargo hook release solenoid is intended to be energized only intermittently. Depressing the electrical release button continuously in excess of 20 seconds will cause the release solenoid to overheat, possibly causing permanent damage.

2. Activate the manual release lever to test the cargo hook manual release mechanism. The mechanism should operate smoothly and the Cargo Hook must release. Reset the load beam by hand after release. Verify that the hook lock indicator on the side of the hook returns to the fully locked position. If the hook does not release or re-latch, do not use the unit until the problem is resolved.



In the fully locked position the hook lock indicator must align with the lines on the manual release cover (see Figure 3.1).

Figure 3.1 Hook Lock Indicator



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 3.2 shows the recommended rigging, but is not intended to represent all rigging possibilities.



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

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

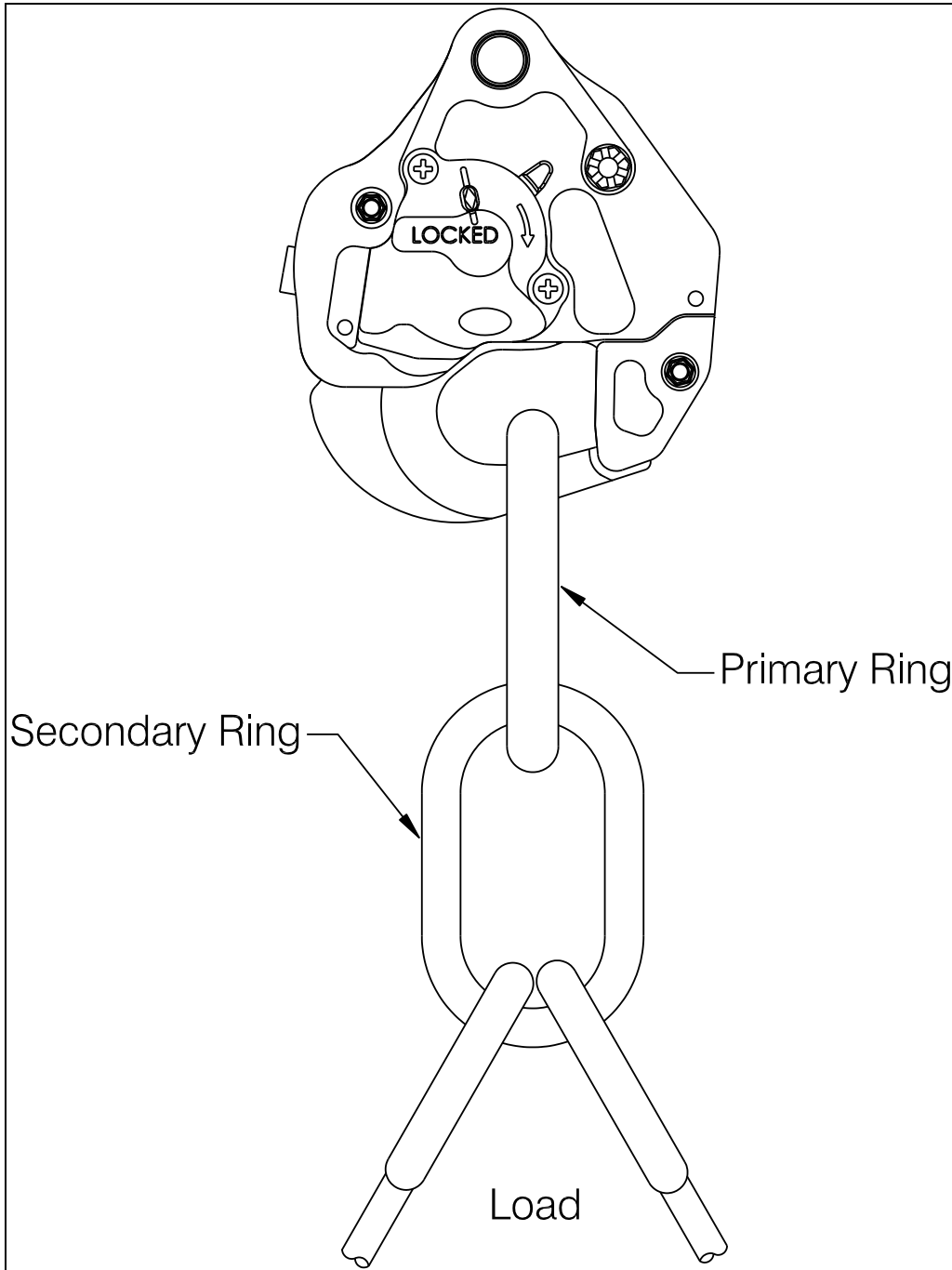
Nylon Type Straps and Rope



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

Cargo Hook Rigging, continued

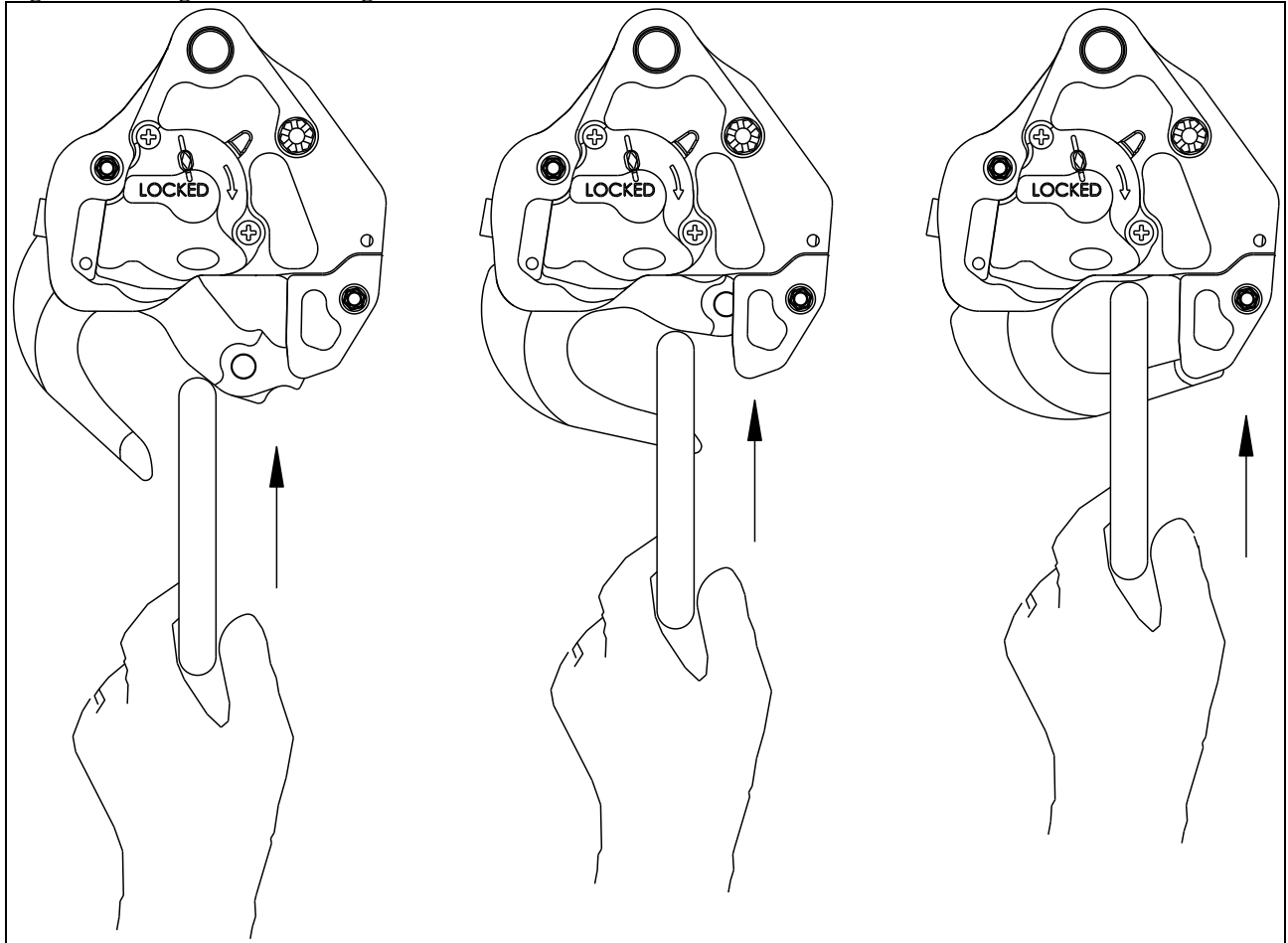
Figure 3.2 Example of Recommended Cargo Hook Rigging



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

Figure 3.3 Cargo Hook Loading



Section 4

Maintenance

Refer to the Instructions for Continued Airworthiness (ICA) manual 123-013-02 for maintenance of the cargo hook kit. For maintenance specific to the cargo hook refer to Cargo Hook Service Manual 122-017-00.

Instructions for Returning Equipment to the Factory

If an Onboard Systems product must be returned to the factory for any reason (including returns, service, repairs, overhaul, etc) obtain an RMA number before shipping your return.



An RMA number is required for all equipment returns.

- To obtain an RMA, please use one of the listed methods.
 - Contact Technical Support by phone or e-mail (Techhelp@OnboardSystems.com).
 - Generate an RMA number at our website: <http://www.onboardsystems.com/rma.php>
- After you have obtained the RMA number, please be sure to:
 - Package the component carefully to ensure safe transit.
 - Write the RMA number on the outside of the box or on the mailing label.
 - Include the RMA number and reason for the return on your purchase or work order.
 - Include your name, address, phone and fax number and email (as applicable).
 - Return the components freight, cartage, insurance and customs prepaid to:

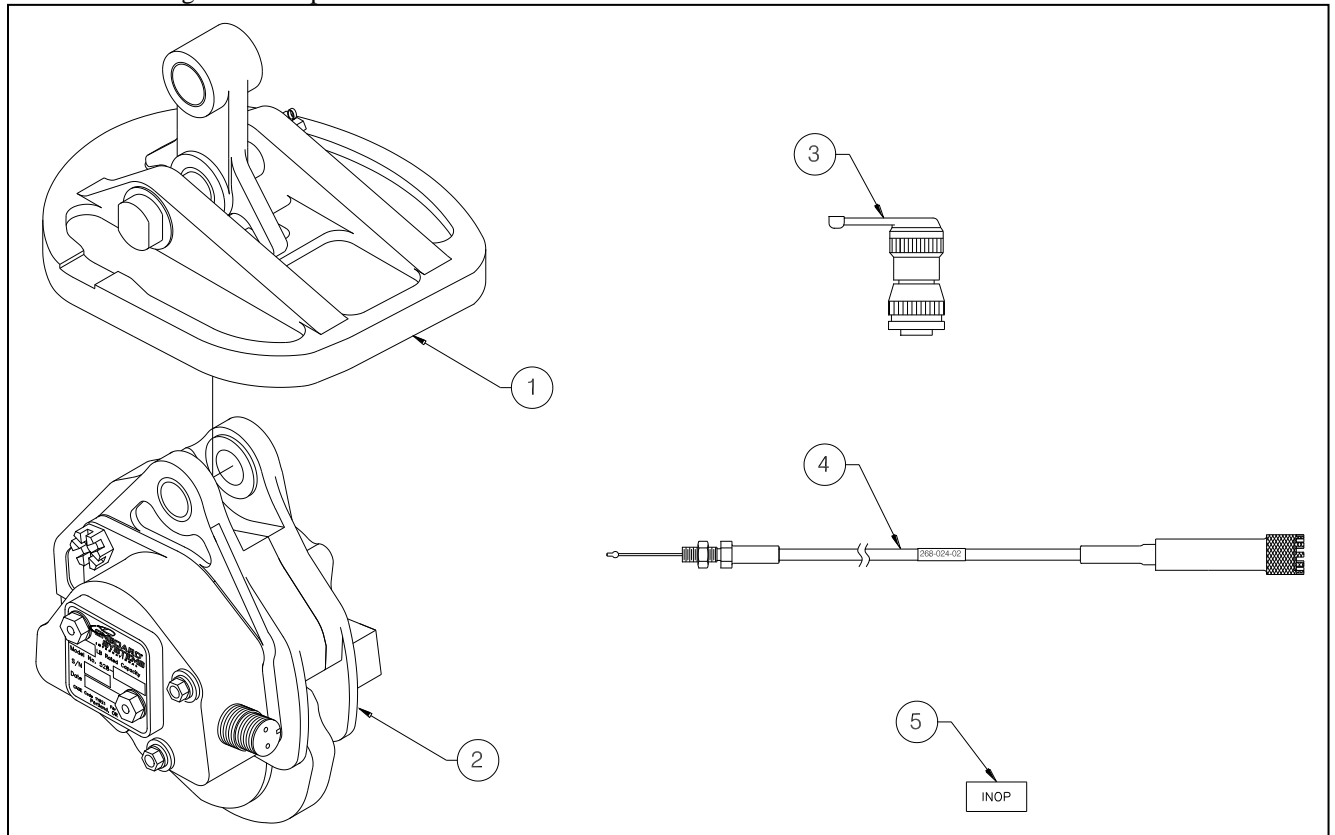
Onboard Systems
13915 NW 3rd Court
Vancouver, Washington 98685
USA
Phone: 360-546-3072

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Section 5

System Part Numbers

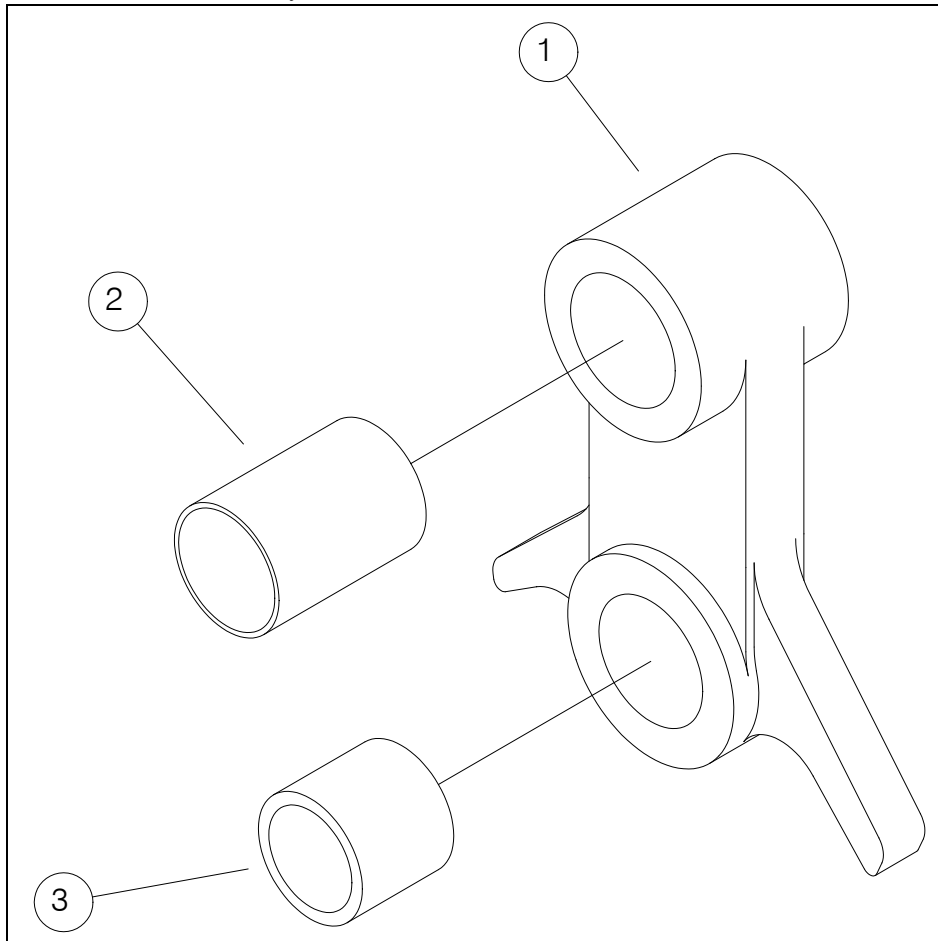
200-281-03 Cargo Hook Replacement Kit



ITEM	Part Number	DESCRIPTION	QTY
1	232-149-00	Link Bumper Assembly	1
2	528-029-00	3.5K Keeperless Cargo Hook	1
3	230-077-00	Connector Assembly	1
4	268-024-02	Manual Release Cable Assembly	1
5	215-169-00	AS350 Light Indicator Placard	2

System Part Numbers continued

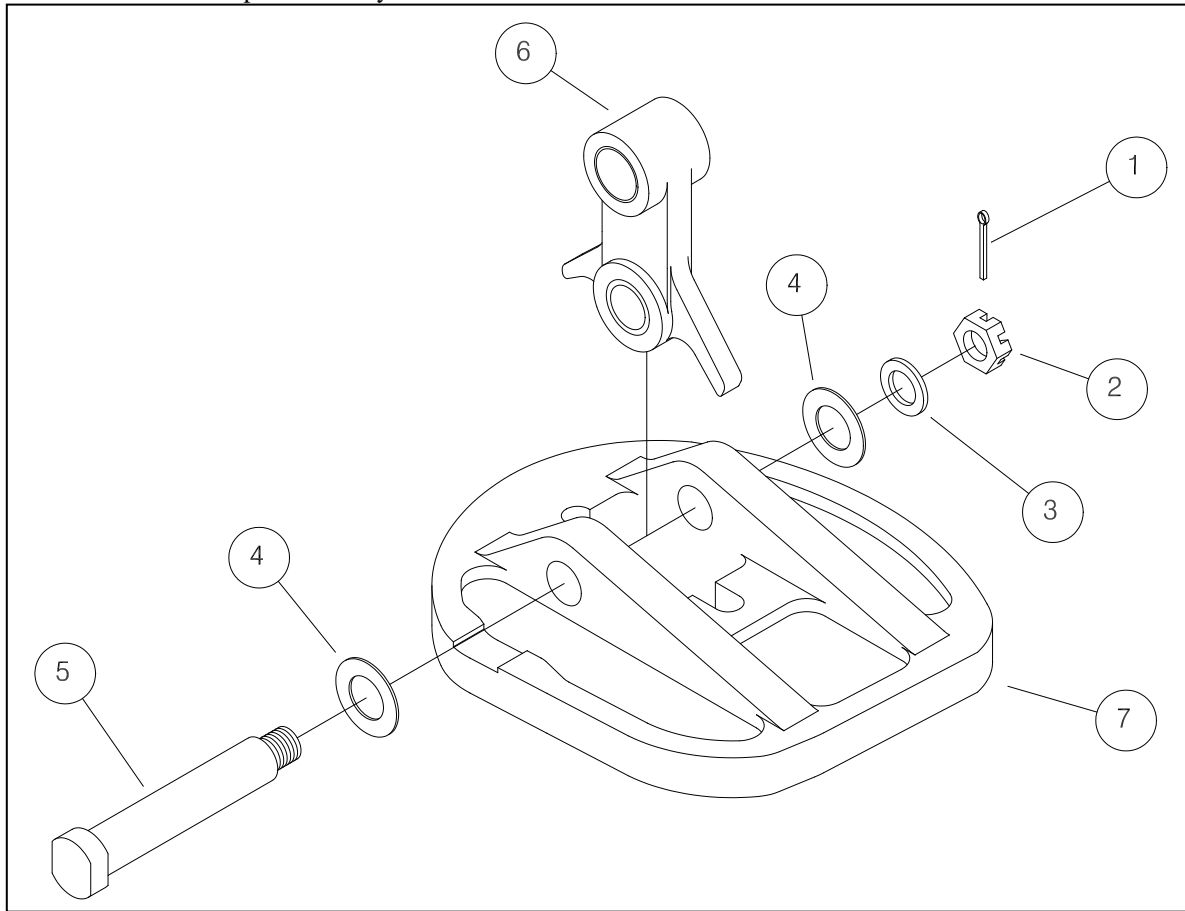
232-146-00 Link Assembly



Item	Part Number	Description	Qty
1	290-771-00	Adapter Link	1
2	517-052-00	Bushing	1
3	290-364-00	Bushing	1

System Part Numbers continued

232-149-00 Link Bumper Assembly



ITEM	P/N	DESCRIPTION	QTY
1	510-178-00	Cotter Pin	1
2	510-170-00	Nut	1
3	510-174-00	Washer	1
4	510-183-00	Washer	2
5	290-775-00	Attach Bolt	1
6	232-146-00	Link Assembly	1
7	290-773-00	Replacement Bumper	1

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Section 6 Certification STC

United States of America
Department of Transportation Federal Aviation Administration
Supplemental Type Certificate

Number SR01166SE

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 27 of the Federal Aviation Regulations.

Original Product—Type Certificate Number: H9EU

Make: Eurocopter France

Model: AS350B, AS350B1, AS350B2, AS350B3, AS350BA, and AS350D

Description of the Type Design Change: Fabrication of Onboard Systems Model 200-281-00, 200-281-01, 200-281-02, and 200-281-03, Cargo Hook Kits in accordance with FAA-approved Onboard Systems Master Drawing List No. 155-088-00, Revision 13, dated October 30, 2009, or later FAA-approved revision.

Installation of the systems in accordance with FAA-approved Onboard Systems Owner's Manual No. listed in the table below, or later FAA-approved revision. This modification must be inspected and maintained in accordance with Section 5 of the FAA-approved Onboard Systems Instructions for Continued Airworthiness (ICA) and Onboard Systems Cargo Hook Service Manual listed in the table below, or later FAA-approved revision. (See Continuation Sheet on Page 3)

Limitations and Conditions: Approval of this change in type design applies to the Eurocopter AS350 model rotorcraft listed above that are equipped with the Eurocopter 1400kg Cargo Swing System as installed per Eurocopter Service Bulletin 25.00.62. 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. Rotorcraft modified in accordance with this STC must be operated in accordance with a copy of an FAA-approved Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) listed in the table below, or later FAA-approved revisions. (See Continuation Sheet on 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: August 15, 2002

Date reissued:

Date of issuance: January 22, 2003

Date amended: December 21, 2007; April 15, 2010



By direction of the Administrator

A handwritten signature in black ink, appearing to be "R. J. ...", written over a horizontal line.

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.

United States of America
 Department of Transportation—Federal Aviation Administration
Supplemental Type Certificate
 (Continuation Sheet)

Number SR01166SE

Onboard Systems International

Issued: January 22, 2003
Reissued: [January ##, 2001] AND/OR
Amended: December 21, 2007; April 15, 2010

Description of the Type Design Change continued:

SYSTEM PART NUMBER	OWNER'S MANUAL No.	INSTRUCTIONS FOR CONTINUED AIRWORTHINESS AND CARGO HOOK SERVICE MANUAL:
200-281-00	120-106-00 Revision 8, dated January 11, 2008	123-013-00 Revision 3, dated July 01, 2005 122-005-00 Revision 15, dated April 23, 2009
200-281-01	120-106-01 Revision 3, dated September 29, 2009	123-013-01 Revision 1, dated October 25, 2007 122-015-00 Revision 7, dated January 30, 2009
200-281-02	120-106-01 Revision 3, dated September 29, 2009	123-013-01 Revision 1, dated October 25, 2007 122-015-00 Revision 7, dated January 30, 2009
200-281-03	120-106-02 Revision 0, dated October 20, 2009	123-013-02 Revision 0, dated March 05, 2010 122-017-00 Revision 5, dated July 27, 2009

Limitations and Conditions continued:

SYSTEM PART NUMBER	ROTORCRAFT FLIGHT MANUAL SUPPLEMENT
200-281-00	121-014-00 Revision 1, dated July 23, 2004
200-281-01	121-014-01 Revision 0, dated December 13, 2007
200-281-02	121-014-01 Revision 0, dated December 13, 2007
200-281-03	121-014-02 Revision 0, dated March 04, 2010

A copy of this certificate, FAA-approved RFMS, ICA, and Service Manual 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.

Canadian Approval



Transport
Canada

Aviation

Transports
Canada

Aviation

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

Your file Votre référence
190S-03-169
Our file Notre référence

March 24, 2003

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

Attention: Mr. Ron Pirtle

Subject: Acceptance of Foreign STCs SR01164SE, SR01165SE, and SR01166SE

Dear Sir:

This is in response to your letters dated February 25, 2003 making application for Canadian approvals of the subject STCs.

In accordance with our current policy associated with the review of foreign STCs, some STCs applicable to certain categories of rotorcraft 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 STCs fall within these criteria.

These STCs 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 STCs by Transport Canada. Should you require additional information with regards to this matter or clarification please do not hesitate to contact the undersigned at (604) 666-5597.

Yours truly,

H. W. Wong
Senior Engineer, Aircraft Certification

for
Minister of Transport

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

Canada

1/1

EASA Approval



European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.00623

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: *DGAC TC No. 84*
Manufacturer: *Eurocopter France*
Model: *Eurocopter AS 350 B3 Helicopter*

Description of Design Change:

Cargo Hook Kit installation, in accordance with FAA STC No. SR1166SE issued January 22, 2003.



European Aviation Safety Agency

Associated Technical Documentation:

- AS 350 B3 Flight Manual and RFM Supplement Onboard No. 121-014-00 dated January 15, 2003, and revised on July 23, 2004 or later approved revisions.

Limitations and Conditions:

1. 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: 15th March 2005

M. Mazzoletti
Certification Manager
Rotorcraft, Ballons and Airships



STC- EASA.IM.R.S.00623 - Onboard Systems