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3,500 Pound Keeperless Cargo Hook Kit

For The

McDonnell Douglas (Hughes) MD 369 Series and 500N Helicopters

System Part Number 200-264-00

Owner's Manual

Owner's Manual Number 120-096-00
Revision 5
August 13, 2009

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Record of Revisions

Revision	*Date*	*Page(s)*	*Reason for Revision*
1	9/17/02	Title, 4-3	Factory address change.
2	10/10/03	1-1, 1-2, and 4-1	528-023-01 cargo hook configuration change Reference Service Bulletin 159-011-00
3	9/22/05	2-3, 3-2, Section 4.	Added additional explanation/clarification to manual release cable rigging (page 2-3). Added CAUTION statement for cargo hook electrical connection on page 2-3. Added Cargo Hook Loading section. Added reference to service manual and ICA in section 4 and removed duplicate information from this manual.
4	09/17/07	TOC, Section 1, 2-3 to 2-6, & Section 3	Added warnings cautions and notes explanation to general information section. Updated warnings, cautions and notes format throughout.
5	08/13/09	2-3	Added caution note and revised Figure 2-4.

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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Section 1
General Information

Introduction

The 200-264-00 MD 369 Cargo Hook Kit is approved for installation on the following McDonnell Douglas (Hughes) helicopters:

369D	369HS
369E	369HM
369F	369HE
369FF	500N

The 528-023-01 Cargo Hook and the 270-073-00 Electrical Release Cable are suitable as a replacement for the Breeze Eastern (ERC) 2A20B cargo hook P/N 17149-4 in the MDCHC 369H92105-501 cargo hook assembly.

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

Number	Description	200-264-00 Quantity
528-023-01	3,500 Lb. Cargo Hook	1
270-073-00	Electrical Release Cable	1
268-005-01	Manual Release Cable	1
290-360-01	Travel Limit Bumper	1
290-361-00	Bumper Pads	2
120-096-00	Cargo Hook Kit Owners Manual	1
121-006-00	RFM Supplement	1
122-005-00	Cargo Hook Service Manual	1
123-003-00	ICA Maintenance Manual	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 P/N 528-023-01 Cargo Hook 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.(.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 MDHC supplied Cargo Hook from the aircraft by disconnecting the electrical release cable from the belly mounted bulk-head type connector. Disconnect the manual release cable from the cyclic stick release lever assembly and attaching clamps. Remove the single bolt used to attach the Cargo Hook to the airframe mounting bracket and separate the Cargo Hook from the aircraft.

Cargo Hook Installation

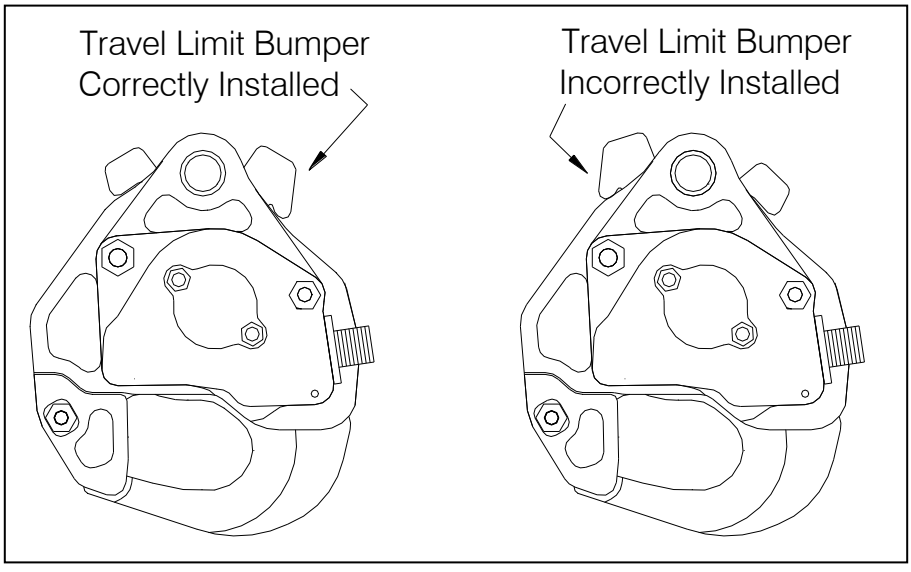
Verify that the part number of the cargo hook removed is a Breeze-Eastern 2A20B P/N 17149-4. If it is not, do not attempt to use the new cargo hook unless compatibility is determined.

Inspect the airframe to cargo hook mounting bracket and attaching hardware to ensure that all components are in serviceable condition.

Install the P/N 290-360-01 travel limit bumper to the Cargo Hook as illustrated in Figure 2-1. The Travel Limit Bumper helps protect the aircraft skin and the release cables from excessive hook movement.

Do not use the hook without the travel limit bumper in place.

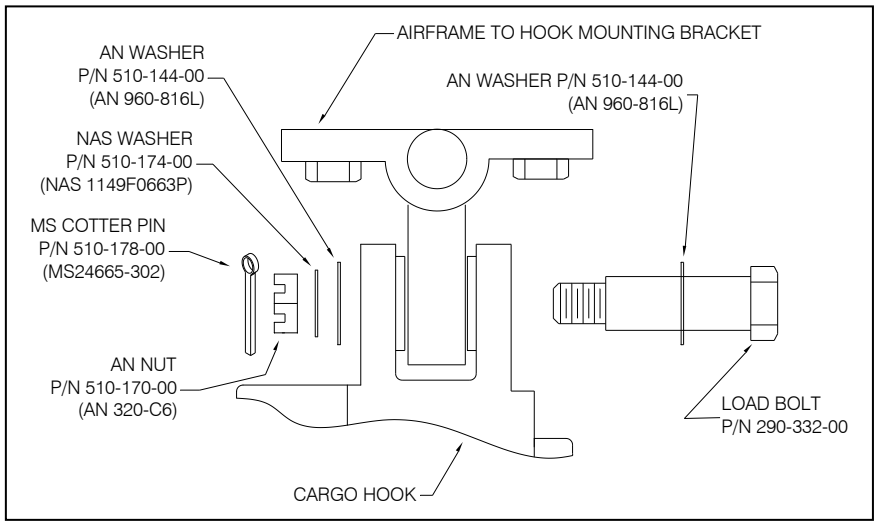
Figure 2-1 Travel Limit Bumper Installation



Cargo Hook Installation, continued

Install the new Cargo Hook to the existing MDHC airframe mounting bracket using the load bolt, nut and cotter pin supplied with the new hook, as illustrated in Figure 2-2. The cargo hook load beam is to point aft.

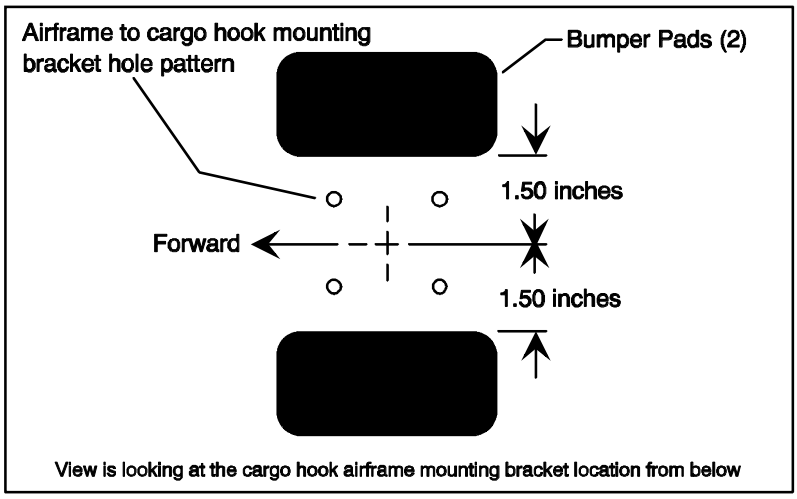
Figure 2-2 Attach Hardware Installation



Torque nut 510-170-00 on bolt 290-332-00 to 50 in-lb., then rotate nut to next castellation, not to exceed 110 in-lbs. Install and secure cotter pin 510-178-00.

Remove any existing hook bumper pads that may be attached to the A/C skin. Install the P/N 290-361-00 Bumper Pads to the airframe skin in the location illustrated in Figure 2-3 with 3M trim cement.

Figure 2-3 Bumper Pads

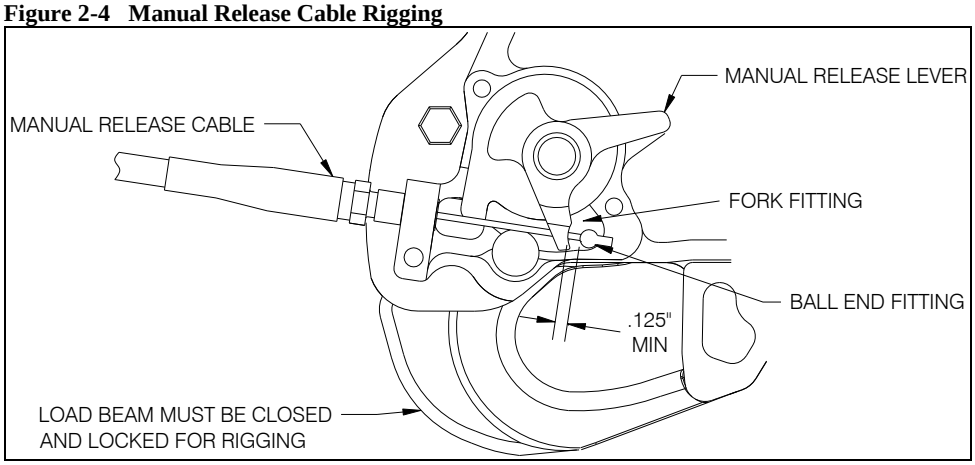


Remove the manual release cover from the new cargo hook. Thread the swaged end of the manual release cable into the cargo hook manual release boss on the hook side plate and tighten against the hook. Place the cable ball end fitting into the hook manual release lever fork as illustrated in Figure 2-4. Rotate the manual release lever in the clockwise direction until the boss on its underside contacts the cam stop and hold in this position. Measure the cable ball end free play with the manual release handle in the cockpit in the non-release position. Adjust the manual release cable system for a minimum of .125 inches of free play at the fork as shown in Figure 2-4.

CAUTION

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

Figure 2-4 Manual Release Cable Rigging



Route the manual release cable and rig the cyclic stick release lever assembly following the MDHC Installation and Maintenance Instructions, Publication No CSP-005 or later approved source. Replace the cargo hook manual release cover and safety wire.

Connect the cargo hook electrical release cable connector to the Cargo Hook and belly mounted bulk-head receptacle and safety wire the connector. Listed below is the pin out for the cargo hook connector and bulkhead receptacle.

The Cargo Hook is equipped with a suppression diode that will be damaged if the Cargo Hook electrical connections are 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.

Table 2-1 Cargo Hook Connector

Pin	*Function*
A	Ground
B	Positive

Table 2-2 Bulkhead Receptacle

Pin	*Function*
A	Power
B	Ground
C	Shield

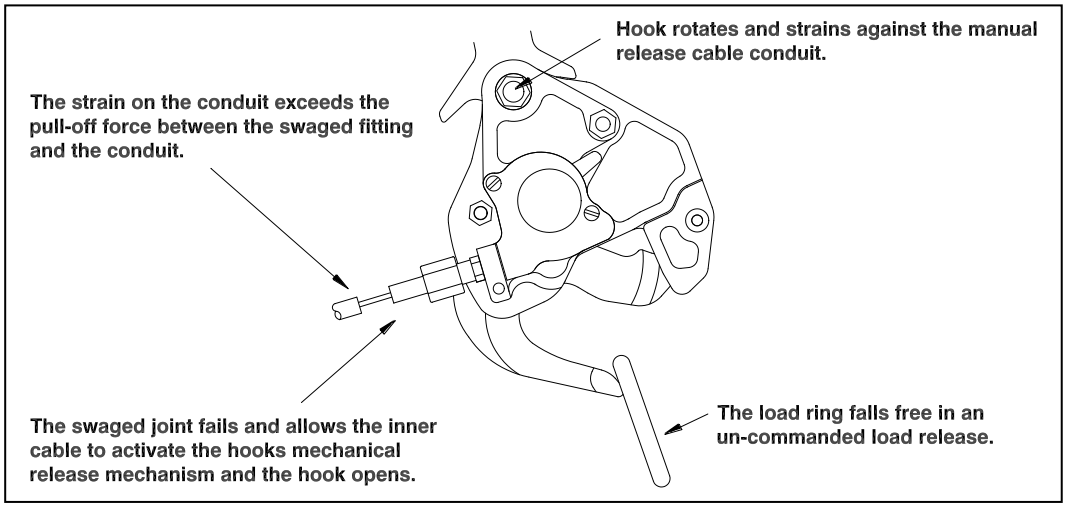
Secure the Release Cable

Secure the cargo hook manual and electrical release cables following the MDHC Installation and Maintenance Instructions, Publication No. CSP-005 or later approved source. The first clamp used to secure the manual release to the A/C skin **should not be less than 23 inches** from the hook.

CAUTION

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 2-5 Un-commanded Release From Incorrectly Secured Cable



Installation Check-Out

After installation of the Cargo Hook Kit, 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 handle operated cargo hook mechanical release, the Cargo Hook should 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 should release. Reset the cargo hook load beam

4. See the MDHC 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 2-3 Component Weights

Item	Weight lbs (kgs)
Cargo Hook	3.0 (1.36)
Manual Release Cable	1.0 (.45)
Electrical Release Cable	0.5 (.23)
Bumper Pads	0.2 (.09)
Travel Limit Bumper	0.1 (.05)

Cargo Hook Location

Table 2-4 Cargo Hook Location

Fuselage Station	99.3

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 121-006-00 in the Rotorcraft Flight Manual.

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 MDHC 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. Reset the cargo hook load beam by hand after release. If the load beam 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

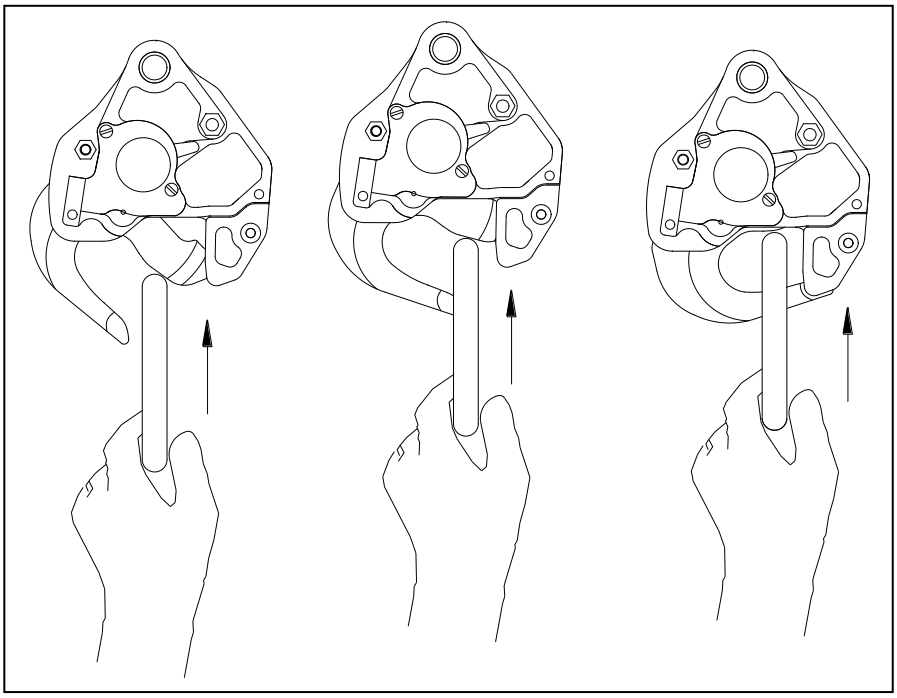
5. Activate the release lever assembly located on the cyclic stick to test the cargo hook manual release mechanism. Reset the cargo hook load beam by hand after release. If the load beam does not re-latch do not use the unit until the difficulty is resolved.

See the Service Manual 122-005-00 and the MDHC service instructions that cover the original Cargo Hook installation for additional instructions.

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 3-1, until an internal latch engages the load beam and latches it in the closed position.

Figure 3-1 Cargo Hook Loading



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. The following illustration 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.

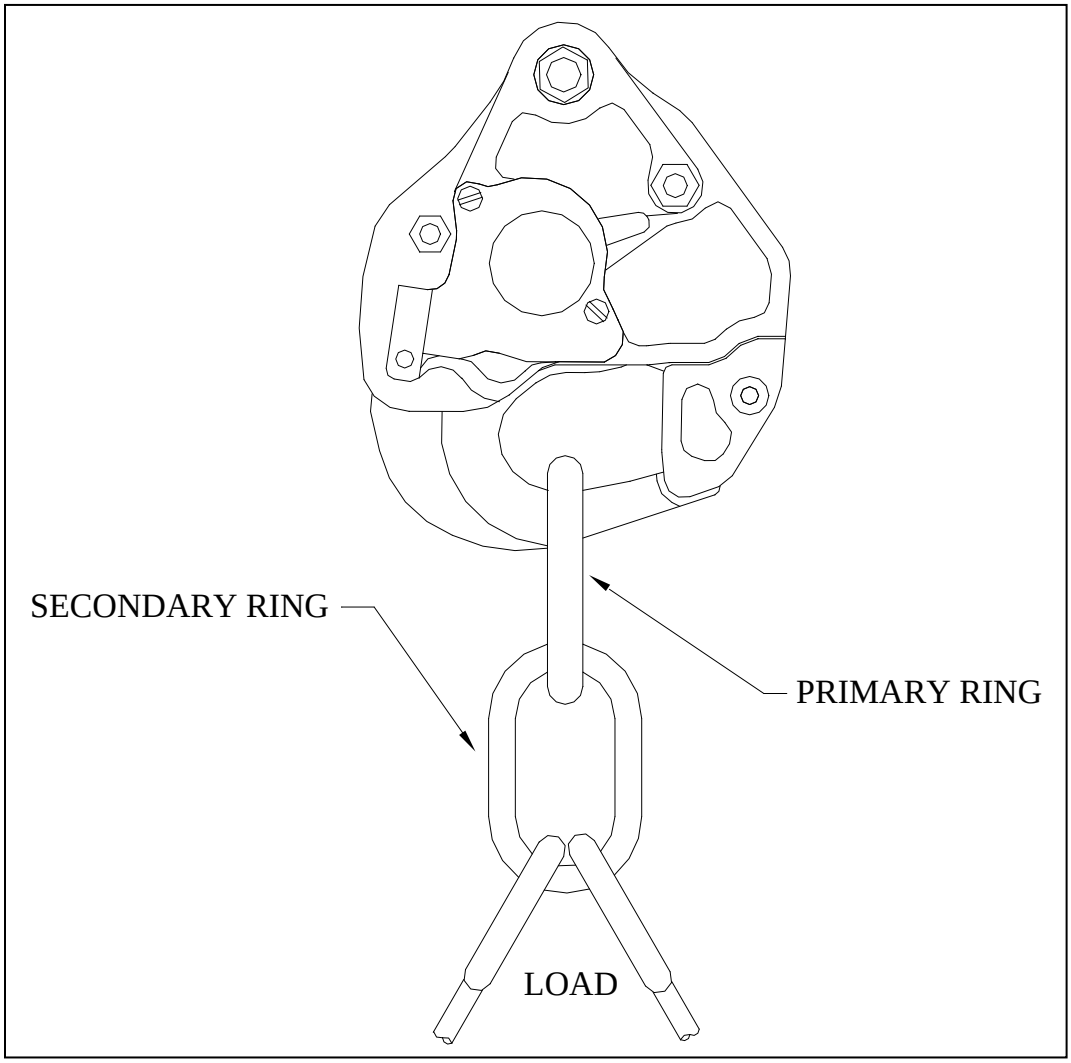
Cargo Hook Rigging, continued

Nylon Type Straps and Rope

CAUTION

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

Figure 3-2 Examples of Recommended Cargo Hook Rigging



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Section 4
Maintenance

Refer to Cargo Hook Service Manual 122-005-00 and Instructions for Continued Airworthiness 123-003-00 for detailed maintenance information.

Inspection

The inspection of the Cargo Hook Kit shall be in accordance with the table 4-1 shown below.

Table 4-1 Inspection

Part Number	Daily Check	At Overhaul Interval*
528-023-01 Cargo Hook	Refer to Service Manual 122-005-00.	Refer to Service Manual 122-005-00.
268-005-01 Manual Release Cable	Visually check the end fittings for damage and security. Visually check the cable for damage. Cycle the manual release system to ensure proper cargo hook operation.**	Same as daily check.
270-073-00 Electrical Release Cable	Visually check the electrical connectors for damage and security. Visually check the cable for damage and chafing. Cycle the electrical release system to ensure proper cargo hook operation.**	Same as daily check.
290-360-01 Travel Limit Bumper	Visually check for damage, cracks, and security of attachment.	Same as daily check.
290-361-00 Bumper Pad	Visually check for damage, cracks, and security of attachment.	Same as daily check.

* Refer to Service Manual 122-005-00 for overhaul interval for the Cargo Hook.

** Refer to MDHC maintenance documentation that covers the original Cargo Hook installation for additional instructions.

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

Section 5
Certification

STC

United States of America
Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number **SR00892SE**

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 therefor as specified hereon meets the airworthiness requirements of Part **27** *of the* **Federal Aviation Regulations**

Original Product—Type Certificate Number: H3WE
Make: MD Helicopters, Inc.
Model: 369D, 369E, 369F, 369FF, 369HE, 369HM, 369HS, 500N, and 600N

Description of the Type Design Change: Fabrication of Onboard Systems International Model 200-264-00, 200-264-01, and 200-264-02 Cargo Hook Kits in accordance with FAA Approved Onboard Systems International Master Drawing List No. 155-061-00, Revision 8, dated August 27, 2008, or later FAA approved revision. Installation of the 200-264-00 kit in accordance with FAA approved Onboard Systems International Owner's Manual No. 120-096-00, Revision 4, dated September 17, 2007, or later FAA approved revision, and installation of the 200-264-01 and 200-264-02 kits in accordance with FAA approved Onboard Systems International Owner's Manual No. 120-096-01, Revision 0, dated August 4, 2008, or later FAA approved revision. This modification must be inspected and maintained in accordance with Section ATA 5 of the FAA approved Onboard Systems International Instructions for Continued Airworthiness, Document No. 123-003-00, Revision 3, dated October 10, 2006, or later FAA approved revision, and Onboard Systems (See Continuation Sheet – Page 3)

Limitations and Conditions: Approval of this change in type design applies to only those MD Helicopter model rotorcraft listed above, which were previously equipped with an FAA approved installation of MD Helicopter cargo hook kits and cargo hooks shown on the table on Page 3 of 3. 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. Rotorcraft modified in accordance with this STC must be operated in (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 20, 2001
Date reissued:
Date amended: January 13, 2003, November 3, 2008

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)

PAGE 1 OF 3 PAGES

United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

(Continuation Sheet)

Number **SR00892SE**

Onboard Systems
Reissued:
Amended: January 13, 2003, November 3, 2008

Description of the Type Design Change continued: International Cargo Hook Service Manual No. 122-005-00, Revision 12, dated July 18, 2008, or later FAA approved revision, for the 200-264-00 Cargo Hook Kit or section ATA 5 of the FAA approved Onboard Systems international Instructions for Continued Airworthiness, Document No. 123-003-01, Revision 0, dated August 4, 2008, or later FAA approved revision, and Onboard Systems international Cargo Hook Service Manual No. 122-017-00, Revision 2, dated June 4, 2008, or later FAA approved revision, for the 200-264-01 or 200-264-02 Cargo Hook Kits.

Limitations and Conditions continued: accordance with FAA approved Onboard Systems International Rotorcraft Flight Manual Supplement (RFMS) No. 121-006-00, Revision 4, dated June 18, 2008, or later FAA approved revision, for the 200-264-00 cargo hook kit or Onboard Systems International RFMS No. 121-006-01, Revision 0, dated October 23, 2008, or later FAA approved revision, for the 200-264-01 or 200-264-02 Cargo Hook Kit. A copy of this Certificate, FAA approved RFMS, and Maintenance Manual, must be maintained as part of the permanent records of the modified rotorcraft.

Cargo Hook Kit	Helicopter Model	Cargo Hook
369H90072-501, -505, -507, -515, -519	369D	369H92105-501
369H90072-505, -517, -519	369E	369H92105-501
369H90072-505	369F	369H92105-501
369H90072-505, -511, -519	369FF	369H92105-501
369H90072-519, -523	500N	369H92105-501
369H90072-501	369HE	369H92105-501
369H90072-501	369HM	369H92105-501
369H90072-501	369HS	369H92105-501
369H90072-525, -529	600N	369H92105-503, -505

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 8110-2-1 (10-69)

STA

Transport Canada
Aviation

Transports Canada
Aviation

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

Your file *Votre référence*

Our file *Notre référence*
P-01-0149

April 20, 2001

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

Dear Mr. Pirtle

Subject: Acceptance of FAA STC SR00892SE

This is in response to the FAA Seattle ACO letter dated April 9, 2001, 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. Ms. Dorenda Baker, Acting Manager, Seattle Aircraft Certification Office

Canada

1/1

EASA STC

European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.01167

This Supplemental Type Certificate is issued by EASA, acting in accordance with Regulation (EC) No. 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation and in accordance with Commission Regulation (EC) No. 1702/2003 to

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

and 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 H3WE
Type Certificate Holder: MDHI
Model: MD 369D, E, FF, HE, HM, HS and 500N
Original STC Number: SR00892SE

Description of Design Change:
Installation of Onboard Systems Model 200-264-00 Cargo Hook kit.

Associated Technical Documentation:
1. Onboard Systems Master Drawing List n° 0155-061-00, revision 7th dated June 18th, 2008 or later approved revision;
2. Onboard Systems Owner's Manual n° 0120-096-00, revision 3 dated September 22nd , 2005 or later approved revision;
3. Onboard Systems Instruction for Continued Airworthiness n° 123-003-00, revision 2 dated October 10th , 2003 or later approved revision;
4. Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) n° 121-006-00, revision 4 dated June 18th 2008 or later approved revision.

Limitations and Conditions:
1. This cargo hook is not approved for human external load;
2. Approval of this installation applies to the above listed model rotorcraft only, which were previously equipped with an approved installation of McDonnell Douglas cargo hook suspension systems and cargo hooks shown in the table below, or Onboard Systems Cargo Hook Kit 200-187-00 (approved under STC n° EASA.IM.R.S.01396):

EASA Form 91, Issue 1

European Aviation Safety Agency

Cargo Hook Kit	Helicopter Model	Cargo Hook
36H90072-501,-505,-507, & -515	369 D	369H92105-501
369H90072-505 & -517	369 E	same
369H90072-505 & -511	369 FF	same
369H90072-519 & -523	500 N	same
369H90072-501	369 HE	same
369H90072-501	369 HM	same
369H90072-501	369 HS	same

3. Prior to installation of this modification the installer must determine that the interrelationship between this modification and any other previously installed modification will introduce no adverse effect upon the airworthiness of the product. The installation of this modification by third persons is subject to written permission of the approval holder.

This Certificate shall remain valid unless otherwise surrendered or revoked.

For the European Aviation Safety Agency,

Date of issue: 08 July 2008

pp **Massimo MAZZOLETTI**
Certification Manager

STC – EASA.IM.R.S.01167 – Onboard Systems International

EASA Form 91, Issue 1