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Hydraulic Cargo Hook Kit with Load Weigh

For The

MD Helicopters' 369 Series and 500N Helicopters

System Part Number 200-301-00

Owner's Manual

Owner's Manual Number 120-121-00
Revision 7
July 30, 2019

ONBOARD™ SYSTEMS INTERNATIONAL

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Record of Revisions

Revision	*Date*	*Page(s)*	*Reason for Revision*
0	01/09/06	All	Initial Release
1	07/13/07	1-1, 1-2 2-3, 2-5, 2-7, 2-12, 2-13, 2-15,	Added Warnings, Cautions, and Notes section and updated format of these throughout. Clarified instructions and improved routing of hose and harnesses at the cargo hook. Changed screw p/n from 510-390-00 to 510-624-00 (ref Figure 2.5.1).
2	05/29/08	1-2	Added cotter pin P/N 510-178-00 to parts list.
3	12/15/08	1-2, 2-1, 2-3, 3-7 to 3-9 & 3-12	Changed P/N 210-031-00 to 210-031-01. Updated Section 3 warnings, cautions and notes format.
4	02/06/09	1-2 & 2-6	Updated P/N 510-144-00 to P/N 510-183-00 through out manual.
5	3/2/10	2-1 to 2-4 & 2-16	Updated manual to reflect new load weigh harness configuration. Updated EMI note in Installation Check-out section.
7	07/30/19	All	Listed the C-40 indicator as an optional Indicator. Removed C-39 operation instructions (replaced with reference to 120-039-00). Updated formatting throughout.

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CONTENTS

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Section 1
General Information
Introduction

The P/N 200-301-00 Cargo Hook Kit with Load Weigh is approved for installation on the following MD Helicopter models:

Table 1.1 Approved Models

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

The 200-301-00 kit is suitable for installation on helicopters equipped with an MD Helicopter 369H90072 series cargo hook kit (with cargo hook assembly P/N 369H92105-501), or Onboard Systems Cargo Hook Kits 200-187-00 or 200-264-00.

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

Table 1.2 Bill of Materials

Part No.	Description	Quantity
120-121-00	Owner's Manual	1
121-028-00**	RFM Supplement	1
122-015-00	Cargo Hook CMM	1
123-021-00	ICA Maintenance Manual	1
210-031-01	Load Cell Assembly	1
210-095-00*	C-39 Indicator	1
215-010-00	Electric LW placard	2
215-012-00	Electric LW placard	1
232-203-00	Cargo Hook/Slave Cylinder Assy	1
232-197-00	Master Cylinder Assembly	1
270-047-01	Internal Harness Assembly	1
270-132-00	Electrical Release Cable Harness	1
270-133-00	Load Cell Extension Cable	1
290-332-00	Attach Bolt	1
290-909-00	Modified Adel Clamp	1
400-048-00	Power Switch	1
505-014-00	Grommet	1
505-015-00	Grommet	1
510-036-00	Nut	1
510-028-00	Screw	4
510-029-00	Nut	4
510-062-00	Washer	8
510-068-00	Bolt	1
510-067-00	Cotter Pin	1
510-183-00	Washer	2
510-170-00	Nut	1
510-174-00	Washer	1
510-178-00	Cotter Pin	1
512-001-00	Ty-Wrap	10
512-026-00	Adel Clamp	2
590-013-00	Spiral Hose Wrap	18"

*The C-39 Indicator can be directly replaced by the C-40 Indicator (P/N 210-293-00) in the field.

** RFMS 121-028-01 supersedes 121-028-00.

Specifications

Table 1.3 P/N 528-028-00 Cargo Hook Specifications

Design load	3,500 lbs. (1,580 kg.)
Design ultimate strength	15,750 lbs. (7,140 kg.)
Electrical release capacity	8,750 lbs. (3,970 kg.)
Mechanical release capacity	8,750 lbs. (3,970 kg.)
Force required for mechanical release at 3,500 lb.	12 lbs max. @ Master Cylinder
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	PC05A8-2S

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 hydraulic release system 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 hydraulic release lever. The hydraulic release lever 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.

2.1 Cargo Hook Removal

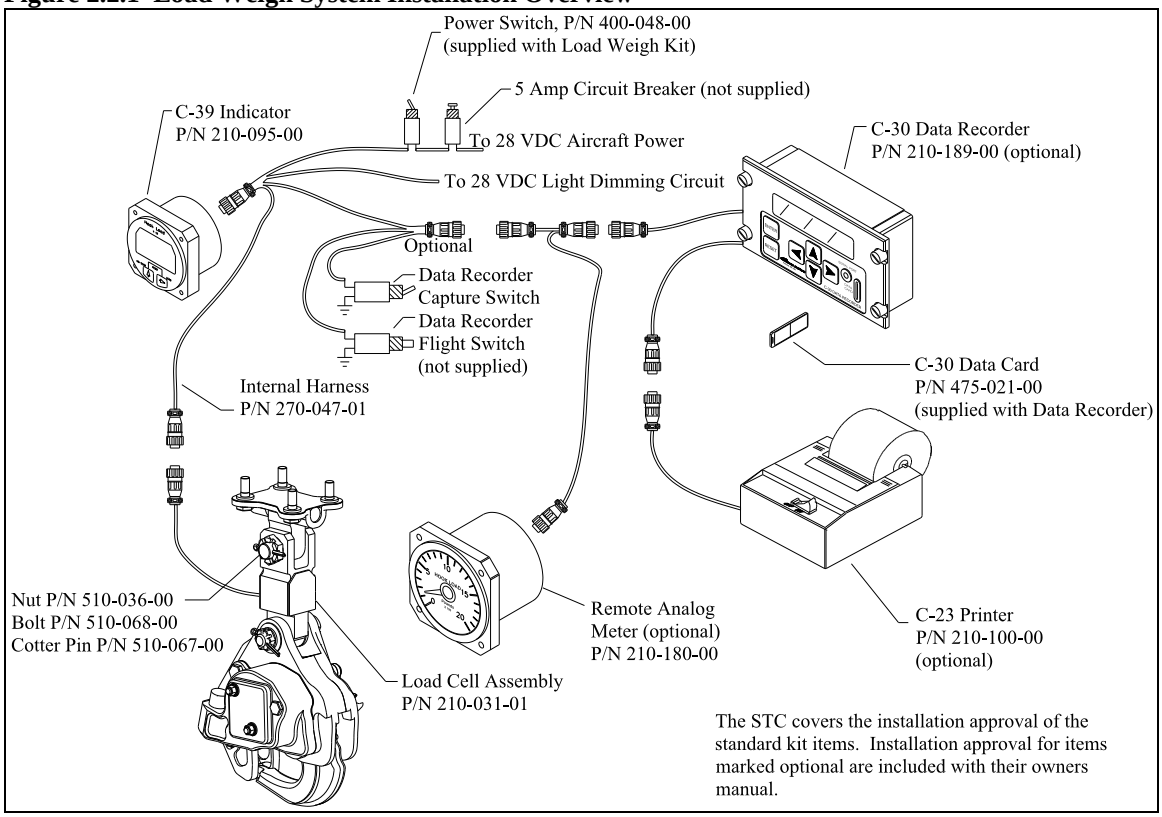
Remove the existing Cargo Hook from the aircraft by disconnecting the electrical release cable from the belly mounted bulkhead connector. Disconnect the manual release cable from the cargo hook and remove the entire cable and manual release lever from the aircraft by disconnecting it from the cyclic stick and attaching clamps. Remove the bolt used to attach the Cargo Hook to the airframe-mounting bracket or load cell (if installed) and separate the Cargo Hook from the aircraft.

2.2 Load Weigh System Installation

This section describes how to install the components of the Load Weigh System that are included with the P/N 200-301-00 kit.

Figure 2.2.1 is an overview of the Load Weigh System installation with the C-39 Indicator. The optional items are not compatible with the next generation C-40 indicator.

Figure 2.2.1 Load Weigh System Installation Overview



2.2 Load Weigh System Installation continued

2.2.1 Internal Harness Installation

The Internal Harness (P/N 270-047-01) is made up of four cables terminated to one connector. The connector is plugged into the back of the Indicator. One of the cables is marked "LOAD CELL" and is fitted with a bulkhead connector. This cable is connected to the load cell. Another cable is marked "POWER" and is connected to the aircraft electrical power. Another cable is marked "LIGHT", refer to section 2.2.2 for installation instructions. The last cable is marked "DATA" and can be connected to the optional Data Recorder or Analog Slave Meter. These optional items are not included under this STC.

The data cable may or may not be terminated with a connector depending on manufacture date.

Locate a convenient position directly aft of the existing hole in the aircraft skin that allowed the manual release cable to pass through (under the pilot's seat) to install the load cell bulkhead connector. Layout the connector hole pattern and drill the required holes. Install the bulkhead connector with the supplied hardware.

Secure the cables to the existing wiring bundles with the Ty-wraps provided. If it is necessary to remove the load cell bulkhead connector to ease cable routing, connect using the color code below.

Table 2.2.1 Load Cell Bulkhead Connections

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

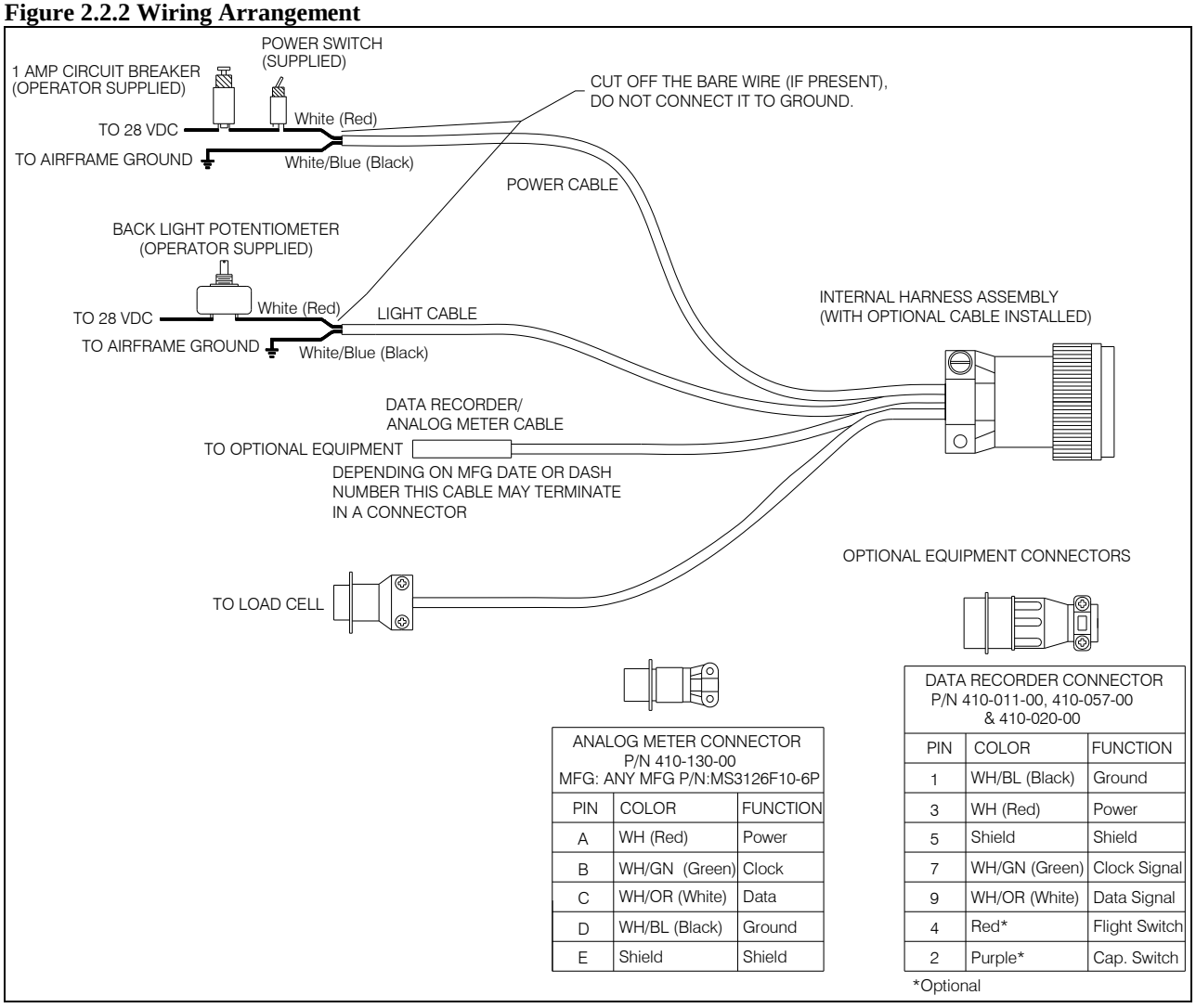
Secure the cables clear of flight control rods.

2.2 Load Weigh System Installation continued

2.2.1 Internal Harness Installation continued

Install the supplied power switch, P/N 400-048-00. The "POWER" cable on the Internal Harness is supplied extra long, cut off the excess cable and use as needed to connect the switch and circuit breaker. Connect the "POWER" white wire to one side of the power switch, connect another piece of suitable white wire to the other side of the switch and then to an available 1 or 2 amp circuit breaker as illustrated in Figure 2.2.2. Connect the circuit breaker to the 28 VDC bus. Connect the white/blue wire to the ground bus. The bare wire should be cut off (if present), as it is not needed at this end of the cable. Use a minimum of 22 gauge wire to make all connections. Secure the connections and protect from corrosion.

Figure 2.2.2 Wiring Arrangement



ANALOG METER CONNECTOR
P/N 410-130-00
MFG: ANY MFG P/N:MS3126F10-6P

PIN	COLOR	FUNCTION
A	WH (Red)	Power
B	WH/GN (Green)	Clock
C	WH/OR (White)	Data
D	WH/BL (Black)	Ground
E	Shield	Shield

DATA RECORDER CONNECTOR
P/N 410-011-00, 410-057-00
& 410-020-00

PIN	COLOR	FUNCTION
1	WH/BL (Black)	Ground
3	WH (Red)	Power
5	Shield	Shield
7	WH/GN (Green)	Clock Signal
9	WH/OR (White)	Data Signal
4	Red*	Flight Switch
2	Purple*	Cap. Switch

*Optional

2.2 Load Weigh System Installation continued

2.2.1 Internal Harness Installation continued

NOTICE

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

2.2.2 Indicator Installation

The Indicator should be mounted in a position that is convenient, accessible and visible to the pilot. It can be mounted in a standard 2¼" instrument hole.

Connect the Internal Harness to the Indicator connector. Install the placard 215-010-00 "ELECTRONIC WEIGHING SYSTEM" next to the power switch and circuit breaker. Install the placard 215-012-00 "TURN THE WEIGHING SYSTEM OFF WHEN NAVIGATION EQUIPMENT IN USE" "NO AIRCRAFT OPERATION SHOULD BE PREDICATED ON THE READING OF THE ONBOARD WEIGHING SYSTEM" next to the Indicator.

The 210-095-00 Indicator is equipped with an Internal Back Lighting System that can be connected to the aircraft 28 VDC light dimming circuit. Use a 22 gauge, twisted pair, shielded cable to connect the aircraft dimming circuit to the Internal Harness. Connect the cable shield wire to airframe ground at the light dimmer end of the cable **ONLY**.

The C-40 Indicator (P/N 210-293-00) can be installed under this STC and is directly interchangeable with the C-39 Indicator except it does not support the optional components (Analog Meter, C-30 Data Recorder) shown in Figure 2.2.1. The functions performed by the C-30 data recorder will be integrated into the C-40 Indicator with a future software update.

If installing the C-40 Indicator, remove the 215-012-00 placard.

NOTICE

If installing the C-40 indicator as a replacement for the C-39 indicator, the internal harness does not need to be replaced.

2.3 Cargo Hook and Load Cell Installation

Before installing the cargo hook and load cell connect the external electrical release harness (P/N 270-132-00) to the cargo hook. Listed below is the pin out for the cargo hook and the bulkhead connector.

Cargo Hook Connector

Pin	Function
A	Ground
B	Power

Bulkhead Connector

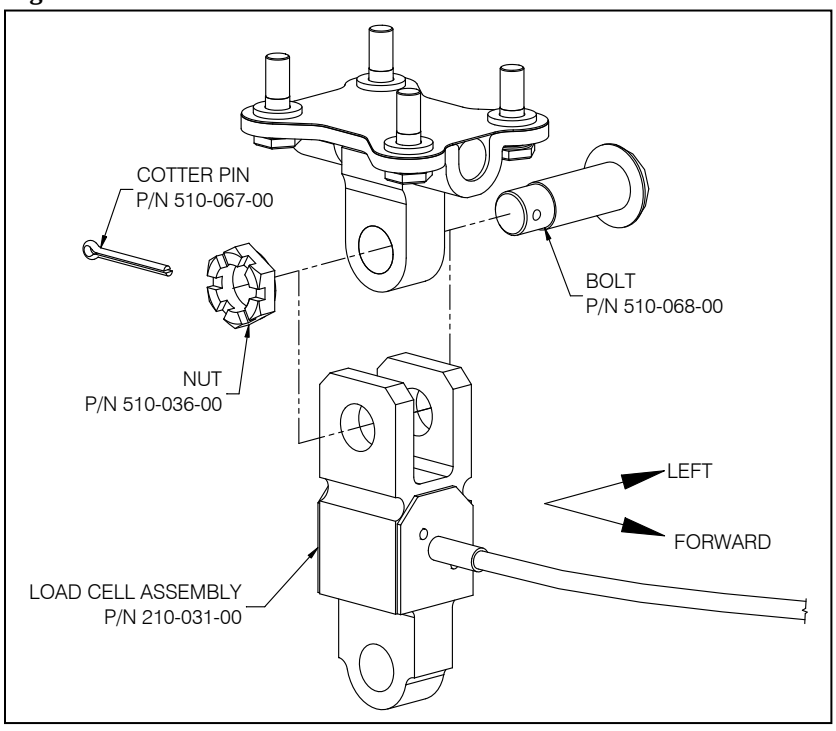
Pin	Function
A	Power
B	Ground
C	Shield

CAUTION

Earlier versions of the Cargo Hook were 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.

Install the load cell onto the existing pivot link as shown in Figure 2.3.1. Tighten the nut, P/N 510-036-00, finger tight then back off to the first available castellation and install the cotter pin, P/N 510-067-00.

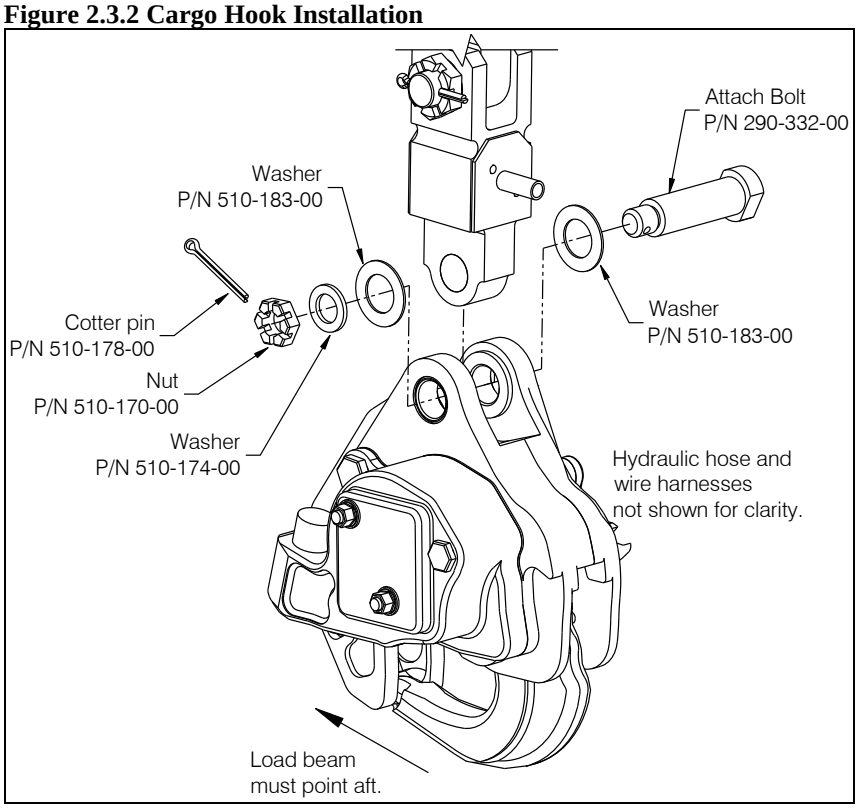
Figure 2.3.1 Load Cell Installation



2.3 Cargo Hook and Load Cell Installation continued

Install the Cargo Hook onto the load cell, using the supplied hardware as illustrated in Figure 2.3.2. The cargo hook load beam must point aft.

Figure 2.3.2 Cargo Hook Installation

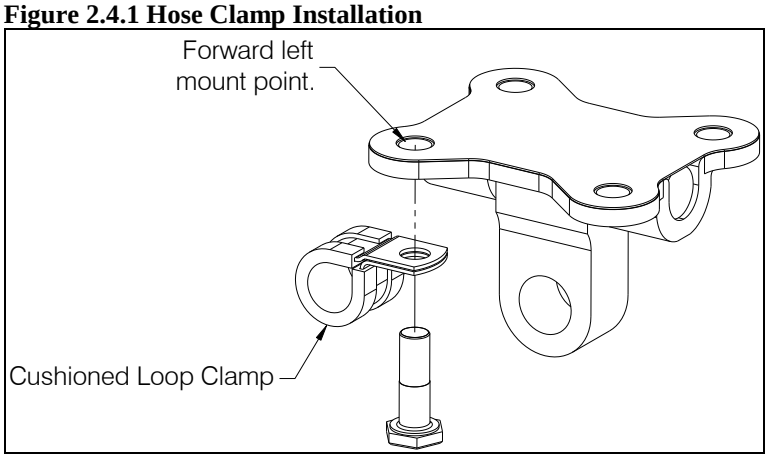


Tighten the nut on the bolt until it seats against the shoulder of the bolt and then install and secure cotter pin. The nut may have to be backed off one castellation to allow the cotter pin to pass through the bolt.

Place the supplied loop clamp (P/N 290-909-00) over the electrical release and load cell wire harnesses and the hydraulic hose.

Remove the existing forward left attach bolt and washer and install the loop clamp re-using the bolt as shown in Figure 2.4.1. Do not fully tighten the bolt at this point.

Figure 2.4.1 Hose Clamp Installation



2.4 Hydraulic Hose and Electrical Harness Routing

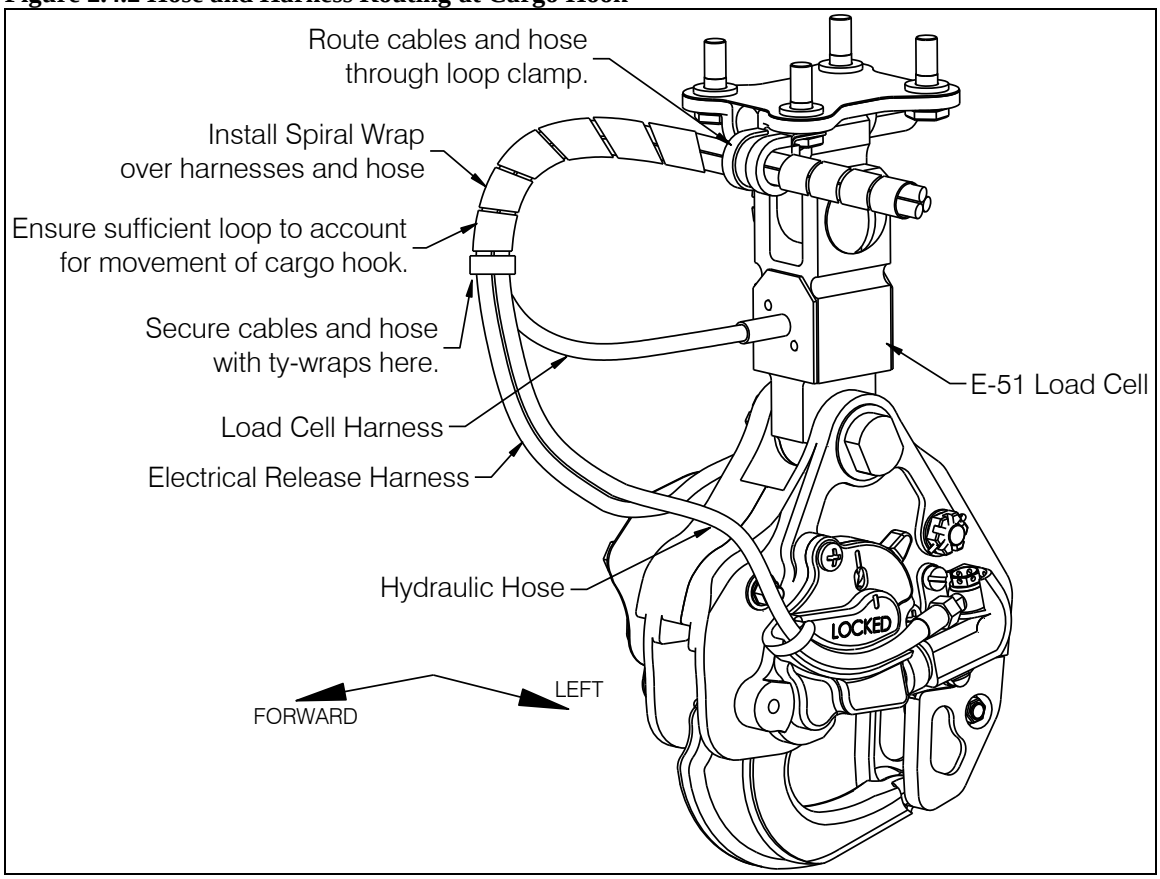
Route the harness and hose approximately as shown and install the supplied spiral wrap (P/N 590-013-00) over them as shown in Figure 2.4.2.

⚠ CAUTION

The routing must provide adequate slack in the harness and hose so that any range or direction of cargo hook travel does not create tension in any of these. Swing the cargo hook in all directions and ensure that the harness and hose are not pulled tight or adversely kinked in any position.

Tighten the bolt where the loop clamp is installed to 50-70 in-lbs. and ensure that the hose and wire harnesses are not loose in the clamp.

Figure 2.4.2 Hose and Harness Routing at Cargo Hook

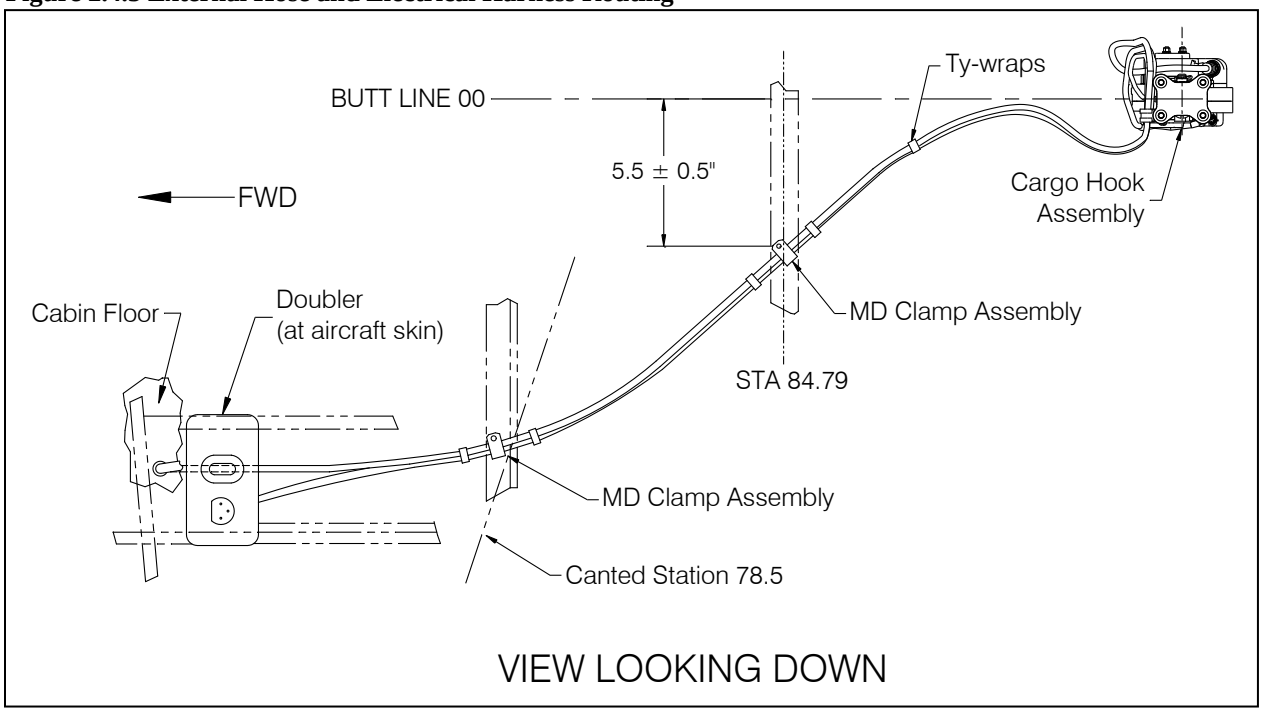


2.4 Hydraulic Hose and Electrical Harness Routing continued

From the loop clamp, route the hose and wire harnesses forward through the existing MD clamp assemblies located at Station 84.79 and forward of Canted Station 78.5 as shown in Figure 2.4.3.

Secure them to the clamp assemblies (*MD P/N 369H90017-29)* using the loop clamp provided (P/N 512-026-00). Re-use the bolt and nut that came off the clamp assemblies to secure the loop clamps.

Figure 2.4.3 External Hose and Electrical Harness Routing



After securing them at the clamp assemblies, route the harness and hydraulic hose forward to the doubler (as shown in Figure 2.4.3).

Connect the cargo hook electrical release connector to the existing bulkhead connector at the doubler on the aircraft skin and safety wire the connector onto the bulkhead mount point.

Connect the load cell harness connector to the fixed internal harness connector installed per section 2.2.

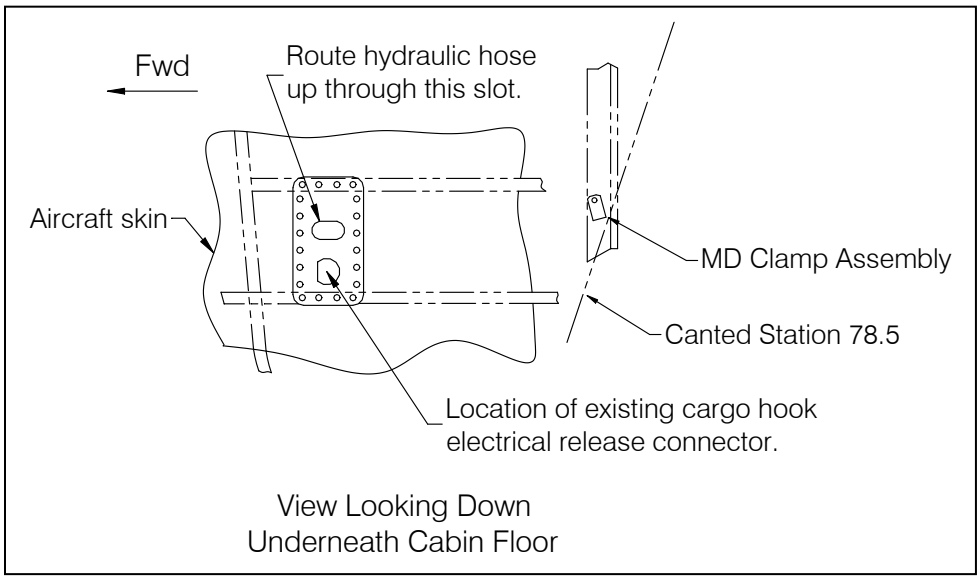
2.4 Hydraulic Hose and Electrical Harness Routing continued

Remove existing grommet (if present) from the slot in the doubler at the lower skin (refer to Figure 2.4.4) that previously housed the manual release cable.

Route the quick disconnect end of the external hydraulic hose through the new grommet (P/N 505-015-00) provided and then through the slot.

Install the grommet in the slot (if necessary split the grommet).

Figure 2.4.4 Hydraulic Hose Routing at Aircraft Skin



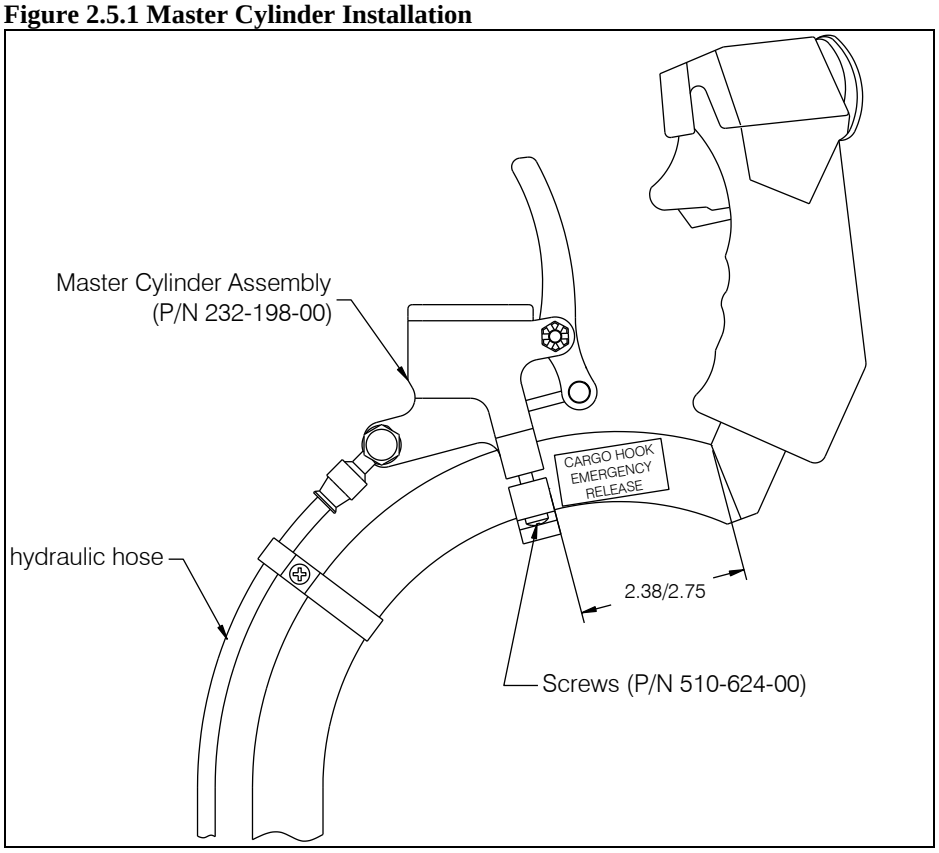
2.5 Master Cylinder Installation

The hydraulic release system is supplied dry. It is recommended that the system be filled and bled on the bench before installing on the helicopter. Refer to section 2.6 for filling and bleeding instructions.

Position the Master Cylinder Assembly (P/N 232-198-00) on the pilot's cyclic stick as shown below. Adjust the location if necessary so that the lever is accessible and comfortably reached by hand from the cyclic stick grip but not be able to contact or interfere with operation of any cyclic grip control when it is fully actuated. This will be verified at installation check out (when the release system is operational).

Secure the Master Cylinder Assembly using the Clamp Half (P/N 290-907-00) and screws (P/N 510-390-00) as shown in Figure 2.5.1.

Figure 2.5.1 Master Cylinder Installation



2.5 Master Cylinder Installation continued

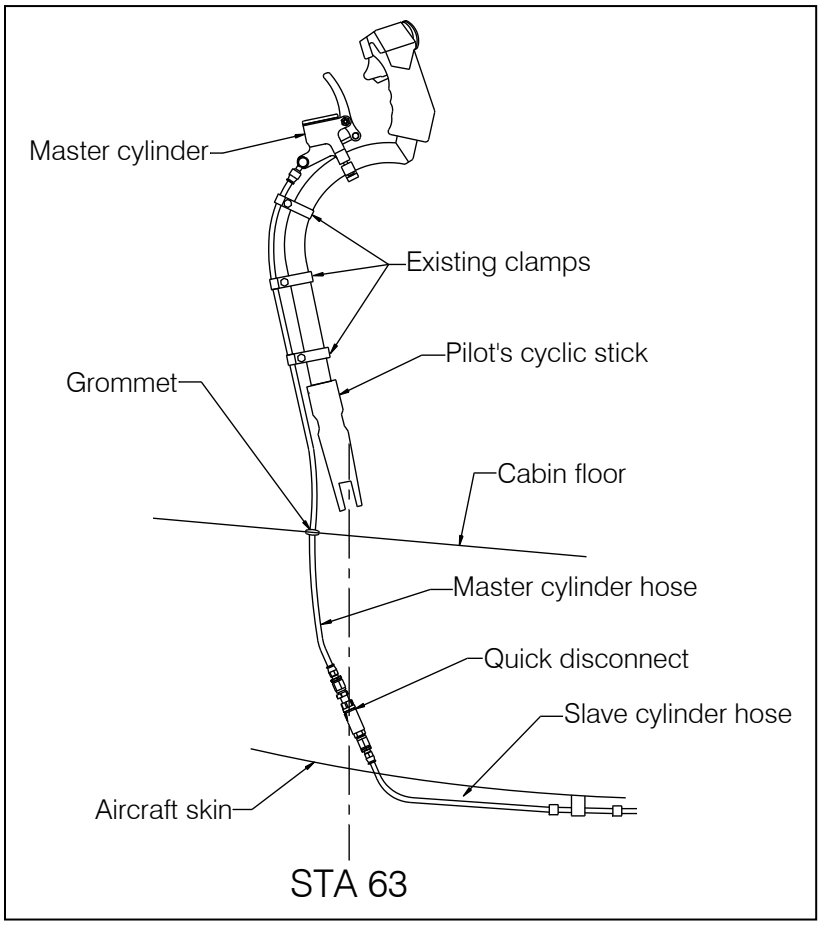
The hydraulic release hose should follow the same path as the manual release cable that is shown in MDHC Publication CSP-005.

Secure the hydraulic hose to the cyclic using the same clamps that were used with the manual release cable.

The quick disconnect end of the hose is to be routed to underneath the cabin floor using the same hole that the manual release cable used. Open up the hole to .69 inches to accommodate the quick disconnect and grommet P/N 505-014-00. If necessary, split the grommet to facilitate installation.

Connect the hose at the quick disconnect to the hose routed from the slave cylinder at the Cargo Hook.

Figure 2.5.2 Master Cylinder Hose Routing



2.6 Hydraulic System Bleed Procedure

If there is a need to fill and/or bleed the system, follow the procedures listed below. Proper bleeding is critical to the operation of the hydraulic release system. An improperly bled system will not release the cargo hook mechanism. To remove or repair any items in the hydraulic system, refer to 123-021-00, Instruction for Continued Airworthiness

Filling and bleeding the hydraulic release system is most easily accomplished on the bench, prior to installation on the aircraft. This process may also be accomplished after the system is installed. Filling and bleeding requires two persons, one to inject hydraulic fluid through the system and the other to observe the reservoir.

Following is the procedure:

1. Obtain bleed kit, 212-014-02. This item consists of 2 ounces of MIL-PRF-87257 fluid (MIL-PRF-5606 is also eligible), 30cc syringe, PVC tubing and adapters. The bleed kit is included in new kits.

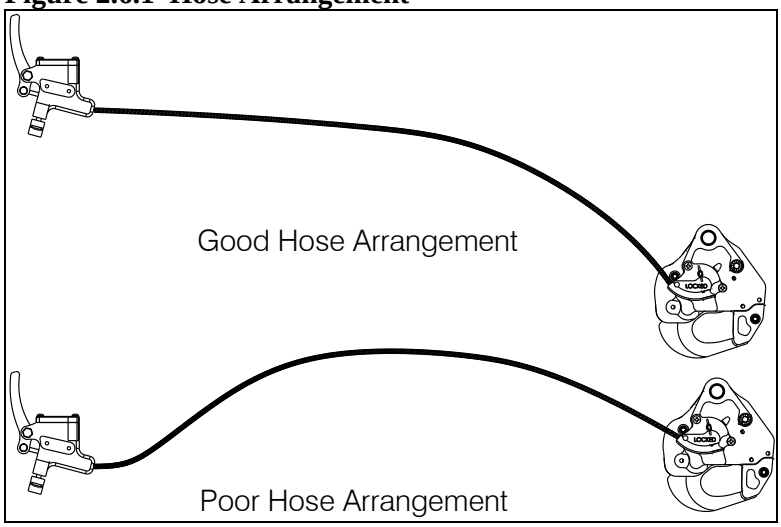
2. If the system is already installed on the aircraft, place an absorbent towel under the master cylinder. If the master cylinder is not installed on the aircraft, lightly clamp the master cylinder in a vise to hold it in a vertical position and position the slave cylinder so that its level is below that of the master cylinder.

NOTICE

Use best shop practices to keep foreign material out of the hydraulic system. FOD will plug orifices, damage seals and/or scratch sealing surfaces necessitating system rebuild. Use only clean hydraulic fluid from sealed containers.

3. Connect the master cylinder assembly to the slave cylinder assembly if not already done. If filling or bleeding on the bench, as much as possible, arrange the hoses uncoiled, straight and running uphill. See Figure 2.6.1.

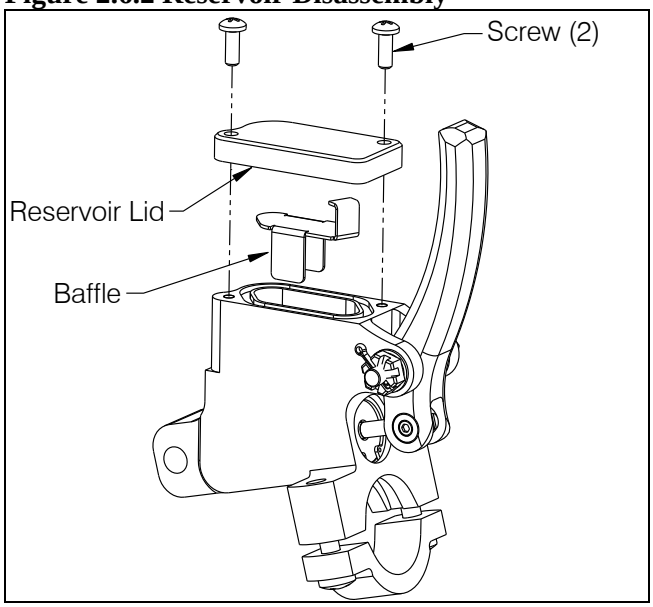
Figure 2.6.1 Hose Arrangement



2.6 Hydraulic System Bleed Procedure continued

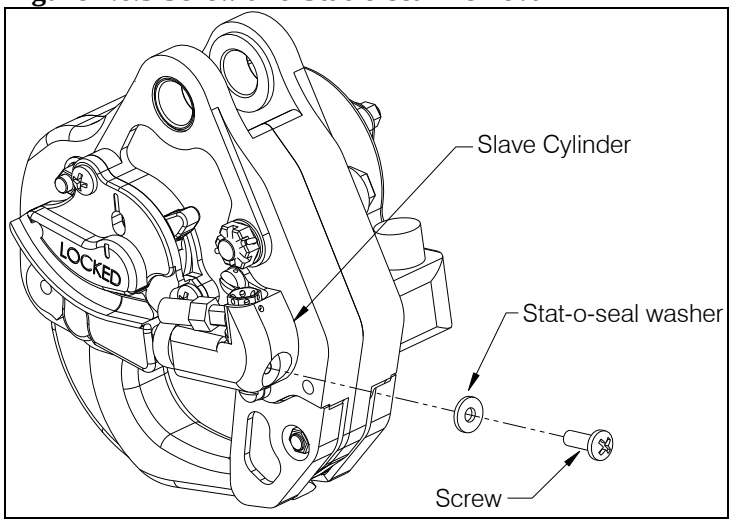
4. Remove screws, reservoir lid, and baffle from the master cylinder reservoir as shown in Figure 2.6.2.

Figure 2.6.2 Reservoir Disassembly



5. Remove the screw and stat-o-seal on the slave cylinder, see Figure 2.6.3.

Figure 2.6.3 Screw and Stat-o-seal Removal



6. Fill a syringe with approximately 25 cc of hydraulic fluid. Thread the bleed adapter into the screw hole on the slave cylinder to create a tight seal, see Figure 2.6.4.

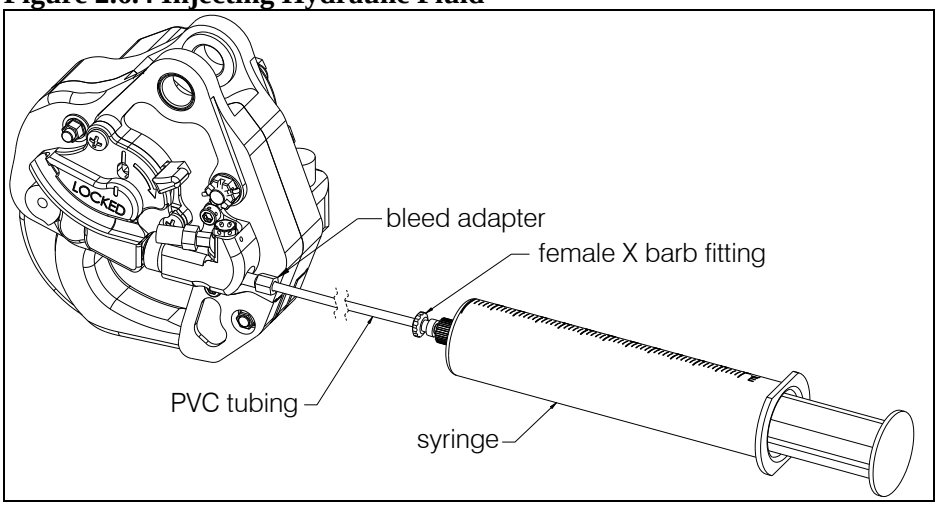
2.6 Hydraulic System Bleed Procedure continued

7. While observing the reservoir, **slowly** push on the syringe plunger to force fluid through the slave cylinder, hydraulic hose, and up to the master cylinder reservoir. There will be some resistance during filling—this is normal.

⚠ CAUTION

Injecting the fluid into the system too rapidly may cause the fluid to spray up and out of the master cylinder reservoir. Wear safety glasses when observing fluid reservoir while filling.

Figure 2.6.4 Injecting Hydraulic Fluid



8. Continue to force fluid into the master cylinder reservoir until the reservoir is approximately half full.

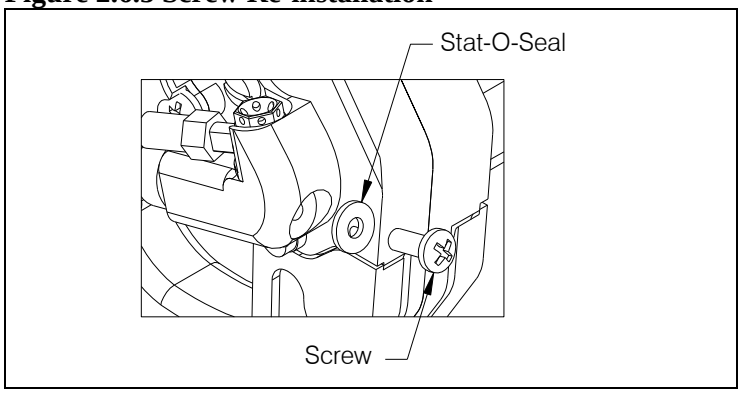
NOTICE

If bleeding an already filled system, you may need to draw fluid from the master cylinder reservoir during this step to prevent overflow.

2.6 Hydraulic System Bleed Procedure continued

9. Remove the bleed adapter from the screw hole. Re-install the stat-o-seal (P/N 510-496-00) and screw (P/N 510-493-00), see Figure 2.6.5.

Figure 2.6.5 Screw Re-installation



10. Allow the system to rest for several minutes. This will allow any air to rise through the system.

11. Very slowly pull the release lever on the master cylinder and watch for bubbles. If bubbles are observed rising within the reservoir, continue to slowly cycle the lever until there are no more. Actuating the lever releases air trapped within the master cylinder.

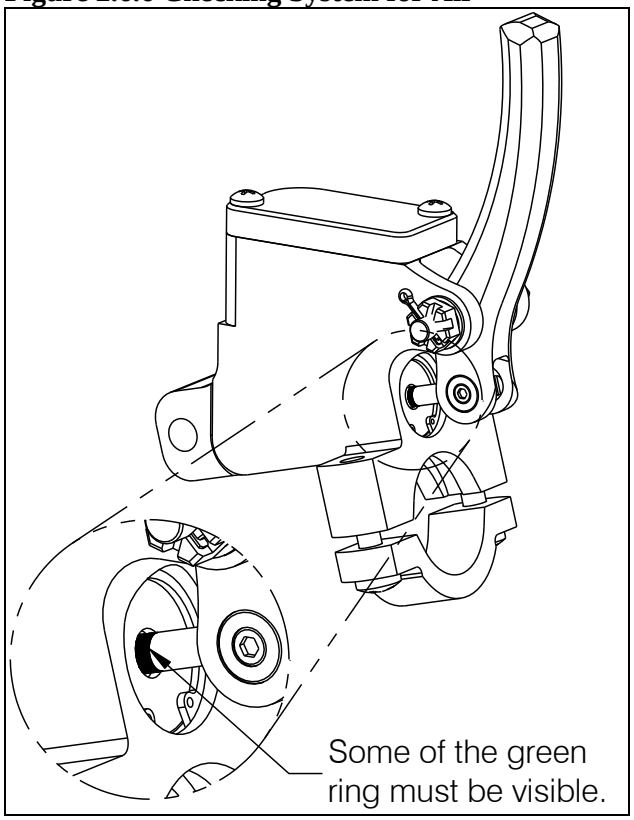
⚠ CAUTION

Pull the lever very slowly! When the reservoir is not baffled and capped, a hard pull will cause fluid to erupt over the edge of the reservoir.

2.6 Hydraulic System Bleed Procedure continued

12. Check the system for air by actuating the lever firmly until it bottoms out. Check the push rod position (see Figure 2.6.6). If some of the green ring on the push rod is visible, proceed to step 13. If none of the green ring on the push rod is visible with the lever completely pulled, the system has too much air in it and needs further bleeding. To do this, repeat steps 5 – 11.

Figure 2.6.6 Checking System for Air



13. After the system is properly bled, verify that the reservoir is approximately half full of hydraulic fluid. Fluid should be visible above the baffle.
14. Re-install the baffle, and the reservoir lid.
15. Check the system for proper operation. Fully actuate the release lever. The hook must open and the lever must have a firm feel.
16. Disassemble and thoroughly clean the syringe with isopropyl alcohol. Allow it to dry. Not cleaning the syringe will render it unusable. Reassemble and store for next use.

2.7 Installation Check-Out

After installation of the Cargo Hook Kit, activate the circuit breaker to turn the system on. Refer to *Operation Instructions*. Perform the following functional checks.

1. Swing the installed Cargo Hook to ensure that the hydraulic release hose, the load cell harness and the electrical release harness have enough slack to allow full swing of the cargo hook. The hydraulic hose and electrical wire harness must not be the stops that prevent the Cargo Hook from swinging freely in all directions.
2. Pull and fully actuate the hydraulic release lever on the pilot's cyclic stick and verify it does not contact or interfere with operation of any cyclic stick control.
3. With no load on the cargo hook load beam, pull the lever-operated cargo hook hydraulic release. The Cargo Hook should release. Reset the cargo hook load beam. Check the hydraulic system for any signs of leaking hydraulic fluid. If leakage is found, do not use the system until the leak has been fixed.
4. 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.
5. Ensure that all tubing and harnesses are secured clear of flight control rods and hydraulic lines.
6. Perform an EMI ground test per AC 43.13-lb section 11-107. For equipment that can only be checked in flight an EMI flight test may be required.

NOTICE

The load cell and cargo hook are of a class of equipment not known to have a high potential for interference. This class of equipment does not require special EMI installation testing (i.e. FADEC) as required in paragraphs 7 and 8 of FAA policy memorandum ASW-2001-01.

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 (listed in Table 1.2) in the Rotorcraft Flight Manual.

2.8 Component Weights

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

Table 2.9.1 Kit P/N 200-301-00 Component Weights

Item	Weight lbs (kgs)
Cargo Hook	3.0 (1.36)
Load Cell Assembly w/ mounting hardware	1.0 (0.45)
Load Cell Indicator Assembly	0.43 (0.20)
Load Weigh Internal Harness	0.63 (0.29)
Master Cylinder Assembly	0.5 (0.23)
Hydraulic Release Hose	1.0 (0.45)
Electrical Release Cable	0.5 (0.23)
Total	**7.1 (3.2)**

2.9 Cargo Hook Location

Table 2.10.1 Cargo Hook Location

Station	99.3

Section 3
Operation Instructions

Operating Procedures

Refer to Owner's Manual No. 120-039-00 for detailed setup and operation instructions for the C-39 Load Weigh Indicator.

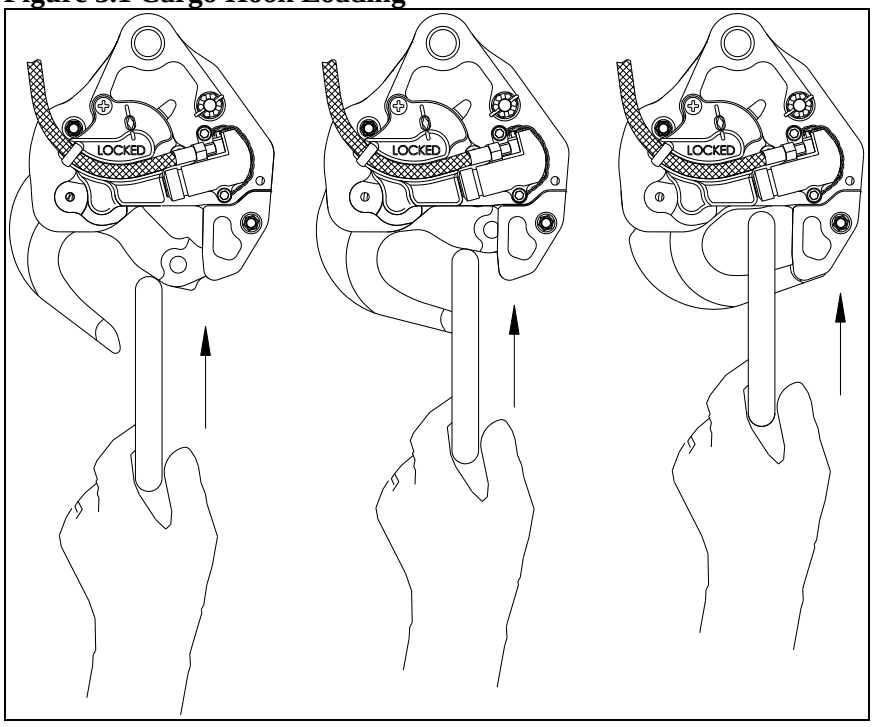
Refer to Owner's Manual No. 120-152-00 for detailed setup and operation instructions for the C-40 Load Weigh Indicator.

Refer to the applicable RFMS for pre-flight checks and pilot operating procedures.

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

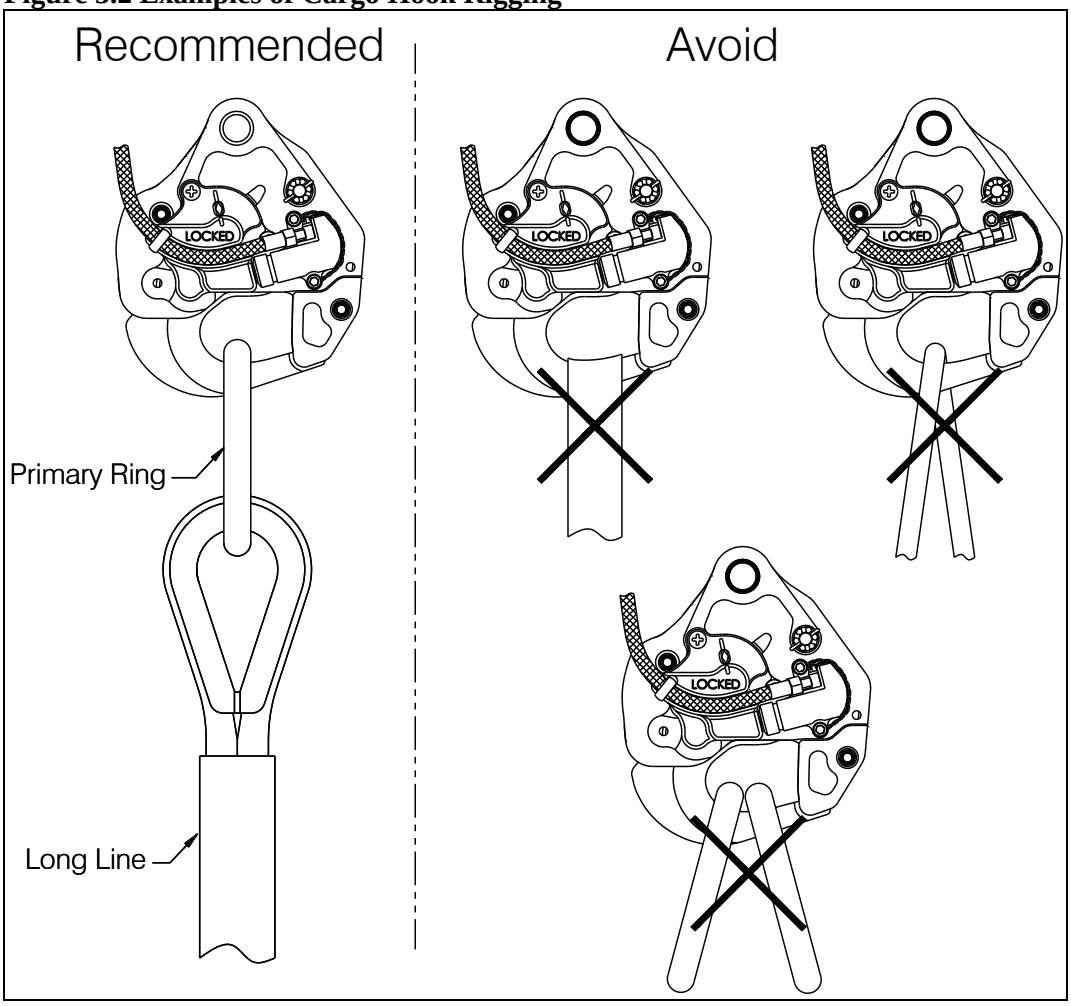
Extreme care must be exercised when rigging a load to the Cargo Hook. Steel load rings are recommended to provide consistent release performance and resistance to fouling. The following illustration shows the recommended rigging and rigging to avoid, but is not intended to represent all rigging possibilities.

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

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 Examples of Cargo Hook Rigging



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Section 4
Maintenance

Refer to Cargo Hook CMM 122-015-00 and Instructions for Continued Airworthiness 123-021-00 for detailed maintenance information.

Instructions for Returning Equipment to the Factory

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

NOTICE

An RMA number is required for all equipment returns.

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

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

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Section 5
Certification
STC

United States of America
Department of Transportation — Federal Aviation Administration

Supplemental Type Certificate

Number **SR01778SE**

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 therefore 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 and 500N

Description of the Type Design Change: Fabrication of Onboard Systems Model 200-300-00 Talon LC Hydraulic Cargo Hook Kit without Load Weigh, Model 200-301-00 Talon LC Hydraulic Cargo Hook Kit with Load Weigh in accordance with FAA approved Onboard Systems Master Drawing List No. 155-112-00, revision 1, dated July 13, 2007, or later FAA approved revision; and Installation of the 200-300-00 cargo hook kit in accordance with FAA approved Onboard Systems Owner's Manual No. 120-119-00, revision 1, dated July 13, 2007, or later FAA approved revision and installation of the 200-301-00 cargo hook kit in accordance with FAA approved Onboard Systems Owner's Manual No. 120-121-00, revision 1, dated July 13, 2007, or later FAA approved revision. This modification must be inspected and maintained in accordance with Section ATA 5 of the FAA approved Onboard Systems Instructions for Continued Airworthiness document no. 123-021-00, revision 0, dated January 6, 2006 or later FAA approved revision and Onboard Systems Cargo Hook Service Manual No. 122-015-00, revision 2, dated November 9, 2005 or later FAA approved revision.

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 a FAA approved installation of the MD Helicopter cargo hook suspension systems or Onboard Systems Model 200-187-00 or 200-264-00 cargo hook kits.

(See Continuation Page 3 of 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: January 06, 2006 *Date reissued:*
Date of issuance: August 3, 2007 *Date amended:*

FEDERAL AVIATION ADMINISTRATION

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

United States of America
Department of Transportation — Federal Aviation Administration

Supplemental Type Certificate
Continuation Sheet

Number **SR01778SE**

Onboard Systems
Date of Issuance: August 3, 2007

Limitations and Conditions continued:

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 helicopter. Rotorcraft modified in accordance with this STC must be operated in accordance with an FAA approved copy of Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) 121-028-00 dated July 24, 2007, or later FAA approved revision.

A copy of this Certificate, FAA approved RFMS, ICA and Cargo Hook 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.

FAA Form 8110-2(10-68) PAGE 3 OF 3

Canadian Approval

Transport Canada
Civil Aviation

Transports Canada
Aviation Civile

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

Your file *Votre référence*
130S-GA-07-99
Our file *Notre référence*
P-07-0520
RDIMS 3789419

December 20, 2007

Mr. Mark Hanson
Onboard Systems International
13915 NW 3rd Court
Vancouver, WA
98685 USA

Dear Mr. Hanson

Subject: Acceptance of FAA STC SR01778SE

This is in response to the FAA Seattle ACO letter dated October 4, 2007, requesting Transport Canada approval of the subject STC.

In accordance with our current policy associated with the review of foreign STCs, 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,

John Nehera
Regional Manager
Aircraft Certification

Encl. (1)

c.c. Mr. Jeffrey E. Duven, Manager Seattle Aircraft Certification Office

Canada

1/1

EASA STC

European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.01409

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:	369D, 369E, 369FF, 369HE, 369HM, 369HM, 369HS 500N
Original STC Number:	FAA STC SR01778SE

Description of Design Change:
Onboard Systems Model 200-300-00 talon LC Hydraulic Cargo Hook Kit without load weight, Model 200-301-00 talon LC Hydraulic Cargo Hook Kit with load weight on helicopters 369D, 369E, 369FF. 369HE, 369HM, 369HS, 500N.

Associated Technical Documentation:

1. Onboard Systems Master Drawing List No. 155-112-00, Revision 2, dated 4 March 2008, or later approved revision;
2. Onboard Systems Owner's Manual (for 200-300-00 Cargo Hook Kit) No. 120-119-00, Revision 1, dated 13 July 2007, or later approved revisions;
3. Onboard Systems Owner's Manual (for 200-301-00 Cargo Hook Kit) No. 120-121-00, Revision 1, dated 13 July 2007, or later approved revisions;
4. Instruction for Continued Airworthiness Onboard System document No. 123-121-00, Revision 0, dated 6 January 2006, or later approved revision;
5. Cargo Hook Service Manual No 122-015-00 rev 2, dated 9 November 2005, or later approved revision;
6. Onboard Rotorcraft Flight Manual Supplement (RFMS) No. 121-028-00, , dated July 24, 2007, or later approved revision.

Limitations and Conditions:

1. This cargo hook is not approved for human external load;
2. Approval of this change in type design applies to only those McDonnell Douglas model rotorcraft listed above, which were previously equipped with:

   - Onboard system model 200-187-00 cargo hook (approvals FAA STC SR00407SE and EASA.IM.R.S01396), or
   - Onboard system model 200-264-00 cargo hook (approvals FAA STC SR00892SE and EASA.IM.R.S.01167),or
   - an approved McDonnell Douglas cargo hook 369H92105-0501 and cargo hook kits shown in the following table:

EASA Form 91, Issue 1

European Aviation Safety Agency

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

3. Prior of 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

This Certificate shall remain valid unless otherwise surrendered or revoked.

For the European Aviation Safety Agency,

Date of issue: 08 July 2008

for **Massimo MAZZOLETTI**
Certification Manager

STC – EASA.IM.R.S.01409 – Onboard Systems International

EASA Form 91, Issue 1