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Owner's Manual
For the
Talon LC
Hydraulic Cargo Hook Kit
with Load Weigh
On the
Eurocopter AS350 Series

System Part Number
200-298-00

Owner's Manual Number 120-117-00
Revision 7
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13915 NW 3rd Court Vancouver, Washington 98685 USA
Phone: 360-546-3072 Fax: 360-546-3073 Toll Free: 800-275-0883
www.OnboardSystems.com

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Record of Revisions

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0	04/25/05	All	Initial Release
1	09/26/08	6-3	Changed hook bumper P/N 290-839-00 to 290-839-01.
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4	03/10/10	Section 2 & 6-1	Updated manual to reflect new load weigh harness configuration. Clarified Figure 2.2.2. Updated note regarding EMI at installation check-out.
5	08/03/10	Section 1 through 4	Replaced P/N 212-014-00 with 212-014-01 and updated hydraulic fluid filling instructions to use new kit. Updated warnings, cautions and notes section to safety label section. Updated safety label format throughout document.
6	01/20/11	6-2	Replaced Load Cell P/N 210-046-01 with P/N 210-046-02.
7	12/19/11	6-6	Replaced Cup Seal (P/N 556-038-00) with Quad Ring (P/N 556-097-00) inside Slave Cylinder assembly

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Section 1

General Information

Introduction

The P/N 200-298-00 cargo hook kit, which features the Talon LC Hydraulic Cargo Hook, is approved for installation on Eurocopter helicopter models AS350B, AS350B1, AS350B2, AS350BA, and AS350D equipped with a swing suspension that is supported by the helicopter's fuel tank supports. This kit includes an E-69 Load Weigh System. The E-69 Load Weigh System includes a load cell, cockpit indicator, and wiring harness.

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.

Specifications

Table 1.1 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

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 kit items for evidence of damage, corrosion and security of lock wire and fasteners. If damage is evident, do not use the items until they are repaired.

Bill of Materials

The following items are included with the 200-298-00 Cargo Hook Kit. If shortages are found contact the company from whom the system was purchased.

Table 1.2 Bill of Materials

Part No.	Description	Quantity
120-117-00	Owner's Manual	1
121-026-00	RFMS	1
122-015-00	Cargo Hook Service Manual	1
123-019-00	ICA	1
210-095-00	C-39 Indicator	1
232-165-00	Master Cylinder Assembly	1
232-192-00	Hook/Load Cell Assembly	1
270-048-03	Load Weigh Internal Harness	1
290-884-00	Connector Bracket	1
410-191-00	Connector	1
410-192-00	Backshell	1
410-199-00	Shield Termination	1
500-065-00	Grommet Edging	1
505-014-00	Grommet	1
510-029-00	Nut	8
510-042-00	Washer	3
510-062-00	Washer	8
510-102-00	Nut	3
510-453-00	Bolt	3
510-481-00	Screw	8
510-486-00	Rivet	3
512-005-00	Adel Clamp	4
512-021-00	Adel Clamp	2

Theory of Operation

The 200-298-00 Cargo Hook Kit is designed for use with a Eurocopter AS350 swing suspension frame with fuel tank support mounting. It interfaces with the helicopter's existing electrical release wiring to provide means for release of a cargo hook load 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. An alternative means of releasing a cargo hook load is provided by a hydraulic release system. When the release lever mounted to the collective is actuated, a piston integrated into the hook extends and releases the internal mechanism causing the load beam to open. Ground personnel may also release a load by the actuation of a lever located on the side of the cargo hook.

The 200-298-00 kit includes a load weigh system, which is comprised of an indicator mounted within the cockpit connected by a wiring harness to a load cell between the cargo hook and frame.

A load is attached to the cargo hook by passing a 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 cause 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 ring slides off the load beam. The load beam then remains in the open position awaiting the next load.

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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. Those lacking the necessary expertise must not attempt them.

2.1 Electrical Wiring Installation

The C-39 Load Weigh 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. Additionally, part number 290-772-00 is available from Onboard Systems which provides a convenient indicator mount on the inside right front side post of the aircraft.

The Load Weigh Internal Harness is made up of four wires terminated to one connector. The connector is plugged into the back of the Indicator. One of the wires is marked "LOAD CELL" and is fitted with a bulkhead fitting. This wire is connected to the load cell. Another wire is marked "POWER" and is connected to the aircraft electrical power. Another wire is marked "LIGHT" and is connected to the aircraft instrument panel lighting circuit. The last wire is marked "DATA" and can be connected to an optional Data Recorder or Analog Slave Meter. These optional items are not included under this STC (see Table 2.1.1 for connector part numbers and pin outs).



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

Table 2.1.1 Optional Equipment Connectors

Analog Meter Connector P/N 410-130-00 Mfg P/N: MS3126F10-6P		
Pin	Color	Function
A	WH	Power
B	WH/GN	Clock
C	WH/OR	Data
D	WH/BL	Ground
E	Shield	Shield

Data Recorder Connector P/N 410-011-00, 410-057-00 & 410-020-00		
Pin	Color	Function
1	WH/BL	Ground
3	WH	Power
5	Shield	Shield
7	WH/GN	Clock Signal
9	WH/OR	Data Signal
4	Red*	Flight Switch
2	Purple*	Cap. Switch

*Optional

2.1 Electrical Wiring Installation continued

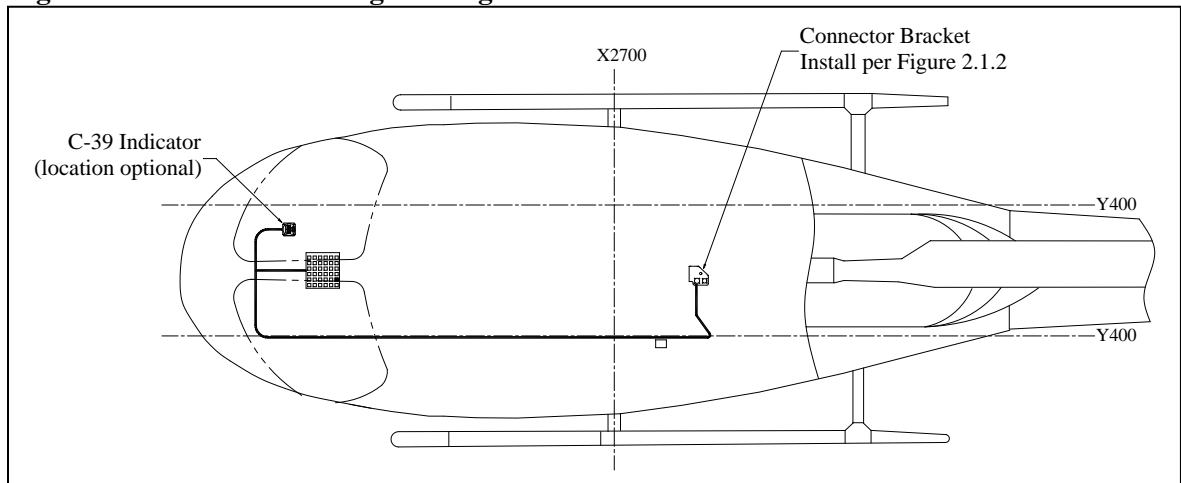
Route the load cell wire along the existing harnesses (reference Figure 2.1.1) while observing the following precautions:

- Pick up existing wire runs by opening existing cable clamps. Nylon ties alone may not be used for primary support.
- The distance between supports should not exceed 21 inches.
- Bend radius of wire or harness must not be less than 10 times the wire or harness diameter.
- Inspect and verify that the wire harness may not be manually deflected into a structure with a bend radius of less than 0.13”.

Route the harness to the electrical bus and to the Indicator mounting location.

Refer to Figure 2.1.3 for electrical schematic.

Figure 2.1.1 Electrical Wiring Routing Overview

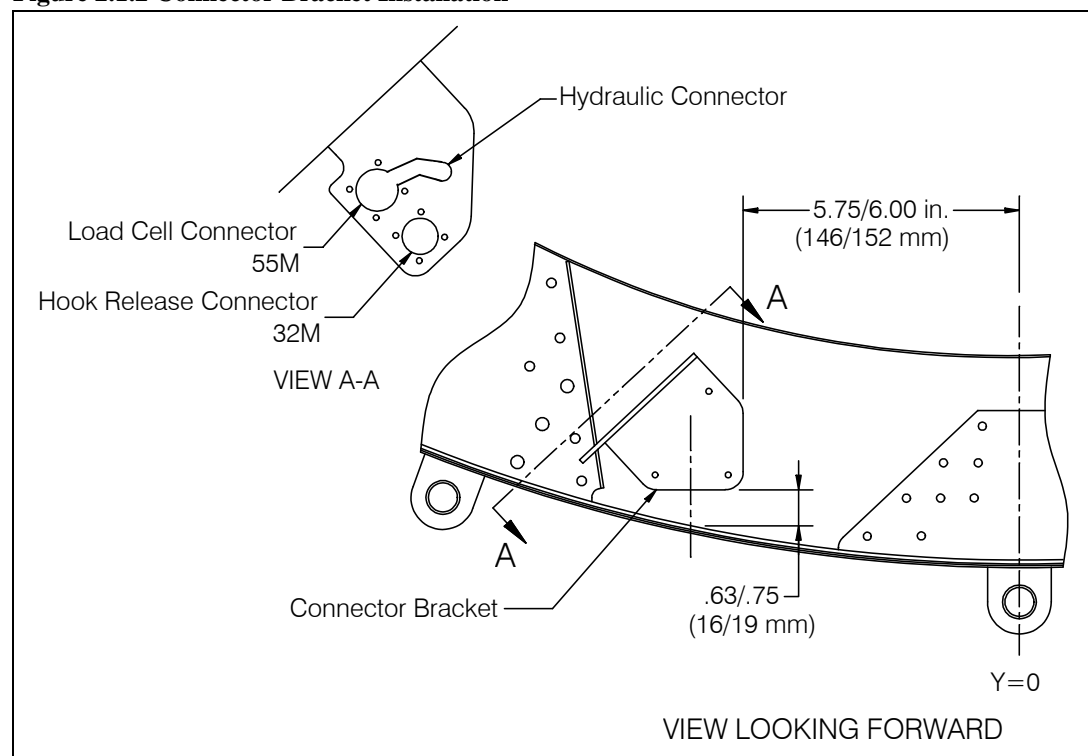


2.1 Electrical Wiring Installation continued

Install the Connector Bracket (P/N 290-884-00) on the aft side of the forward fuel tank support. This bracket will support the new electrical release connector, the existing load cell connector, and the hydraulic release connector.

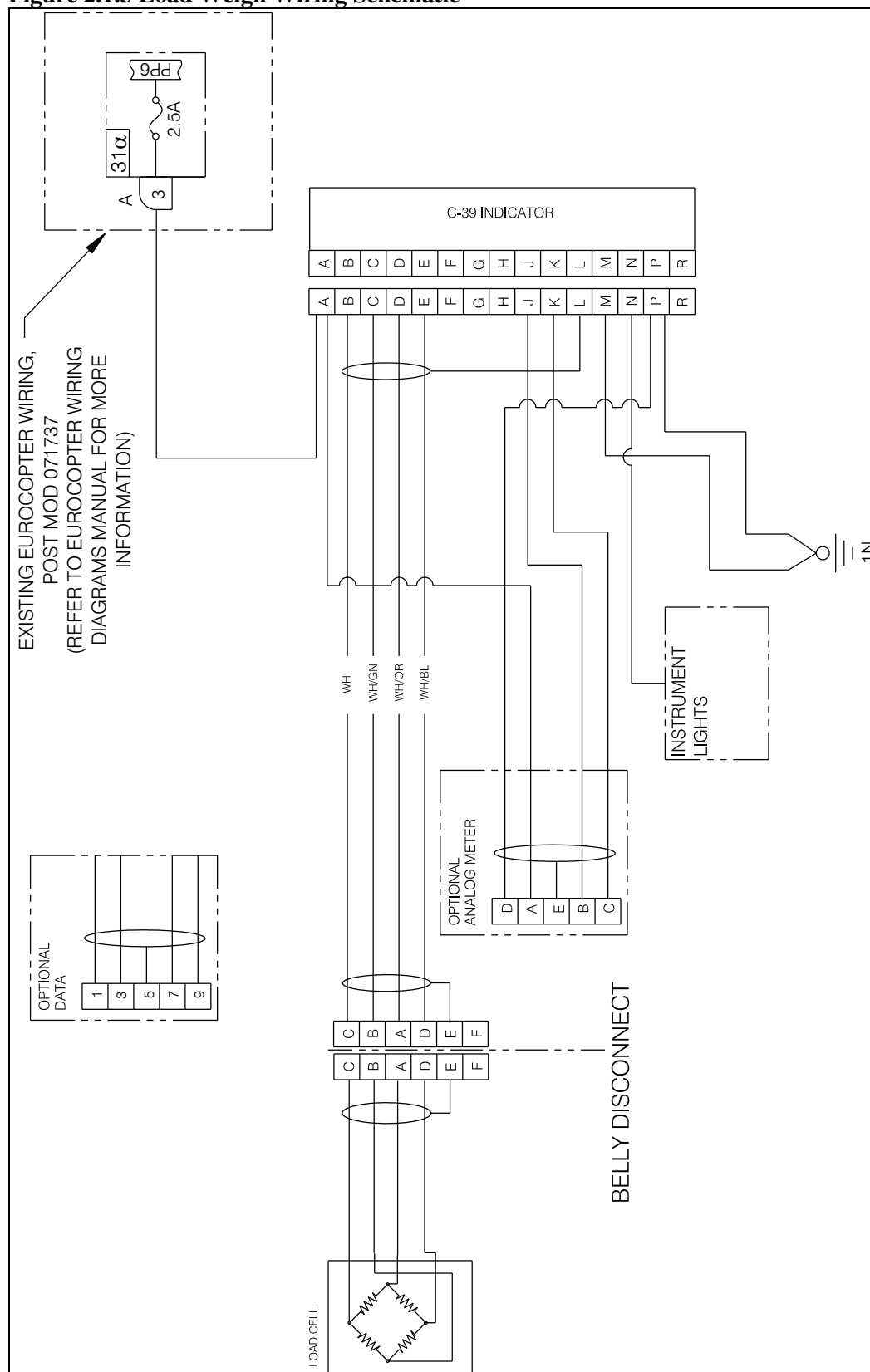
- ❑ Remove lower aft fairing from helicopter to obtain access to forward fuel tank support frame.
- ❑ As applicable, remove bracket(s) that support existing load cell and cargo hook electrical release connectors.
- ❑ Locate Connector Bracket (P/N 290-884-00) as illustrated below.
- ❑ Drill out pilot holes in bracket to 0.129/0.132" (3.2/3.4 mm) diameter and drill fuel tank support to match.
- ❑ Secure Connector Bracket to fuel tank support with three rivets (P/N 510-486-00).
- ❑ The hook release connector, 32M, and load cell connector, 55M, will be installed on the Connector Bracket later in the installation. The hydraulic connector must be installed prior to installing the 55M connector.

Figure 2.1.2 Connector Bracket Installation



2.1 Electrical Wiring Installation continued

Figure 2.1.3 Load Weigh Wiring Schematic

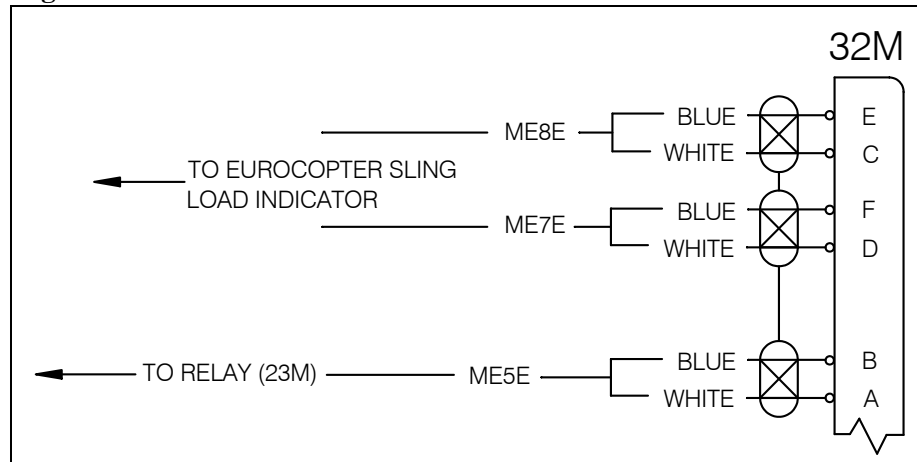


2.1 Electrical Wiring Installation *continued*

The 200-298-00 kit utilizes Eurocopter's existing fixed electrical release wiring harness with the exception of the connector at the belly of the helicopter (Eurocopter connector number 32M). This kit includes a connector (P/N 410-191-00) and backshell (P/N 410-192-00) to splice onto the end of the harness.

The wiring schematic for this end of the harness is shown in Figure 2.1.4. Refer to Eurocopter Wiring Diagrams Manual for additional information.

Figure 2.1.4 Electrical Schematic – Pre-STC Modification



Retrofit the electrical harness per the following instructions.

- ❑ Cut the 32M connector off of the fixed electrical harness as close to the connector as possible.
- ❑ Slide the backshell (P/N 410-192-00) over the ME5E wire.
- ❑ Install shield termination (P/N 410-199-00) over ME5E. Install per Figure 2.1.6.
- ❑ Crimp pins (supplied with connector P/N 410-191-00) onto the blue and white wires of ME5E and the shield termination lead. Insert these wires into connector per Figure 2.1.5. Using Eurocopter schematic, Table 2.1.2 and Figure 2.1.5, verify that power is being applied to the correct pin.
- ❑ Secure backshell onto connector.
- ❑ Cap and stow remaining wires (ME7E and ME8E) or optionally remove these wires from the helicopter.
- ❑ Install the connectors on the Connector Bracket with screws (P/N 510-481-00), washers (P/N 510-062-00), and nuts (P/N 510-029-00). **Important:** Install screws with their heads on the bottom side of bracket flange (if nuts are installed on bottom side they will interfere with mating connector).

2.1 Electrical Wiring Installation continued

Table 2.1.2 Cargo Hook Connector

Pin	Function
A	Ground
B	Power

CAUTION

The cargo hook is equipped with a suppression diode that will be damaged if the cargo hook electrical connection is reversed.

Figure 2.1.5 Electrical Schematic – Post STC Modification

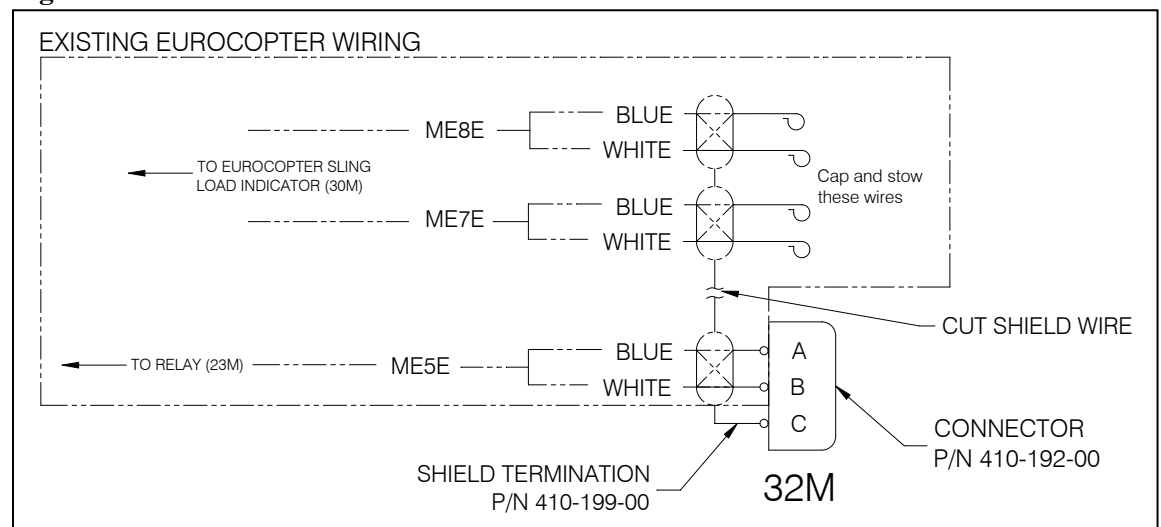
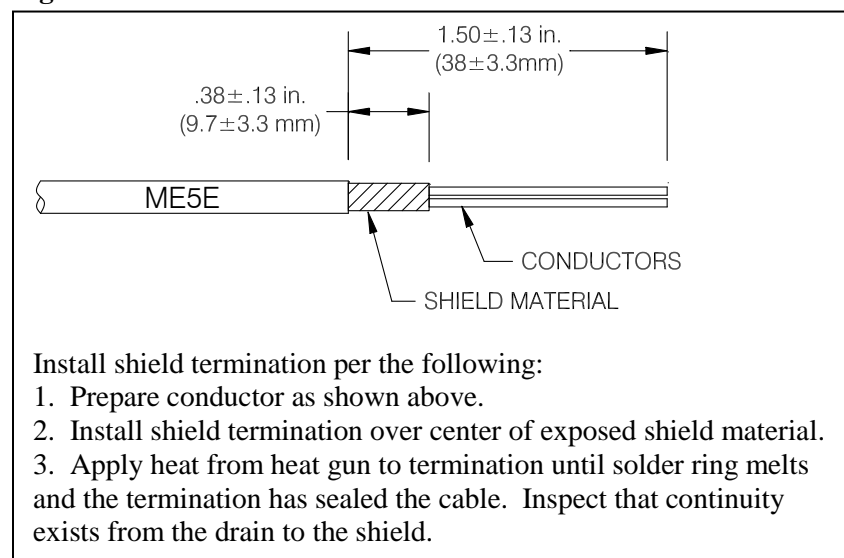


Figure 2.1.6 – Shield Termination Installation

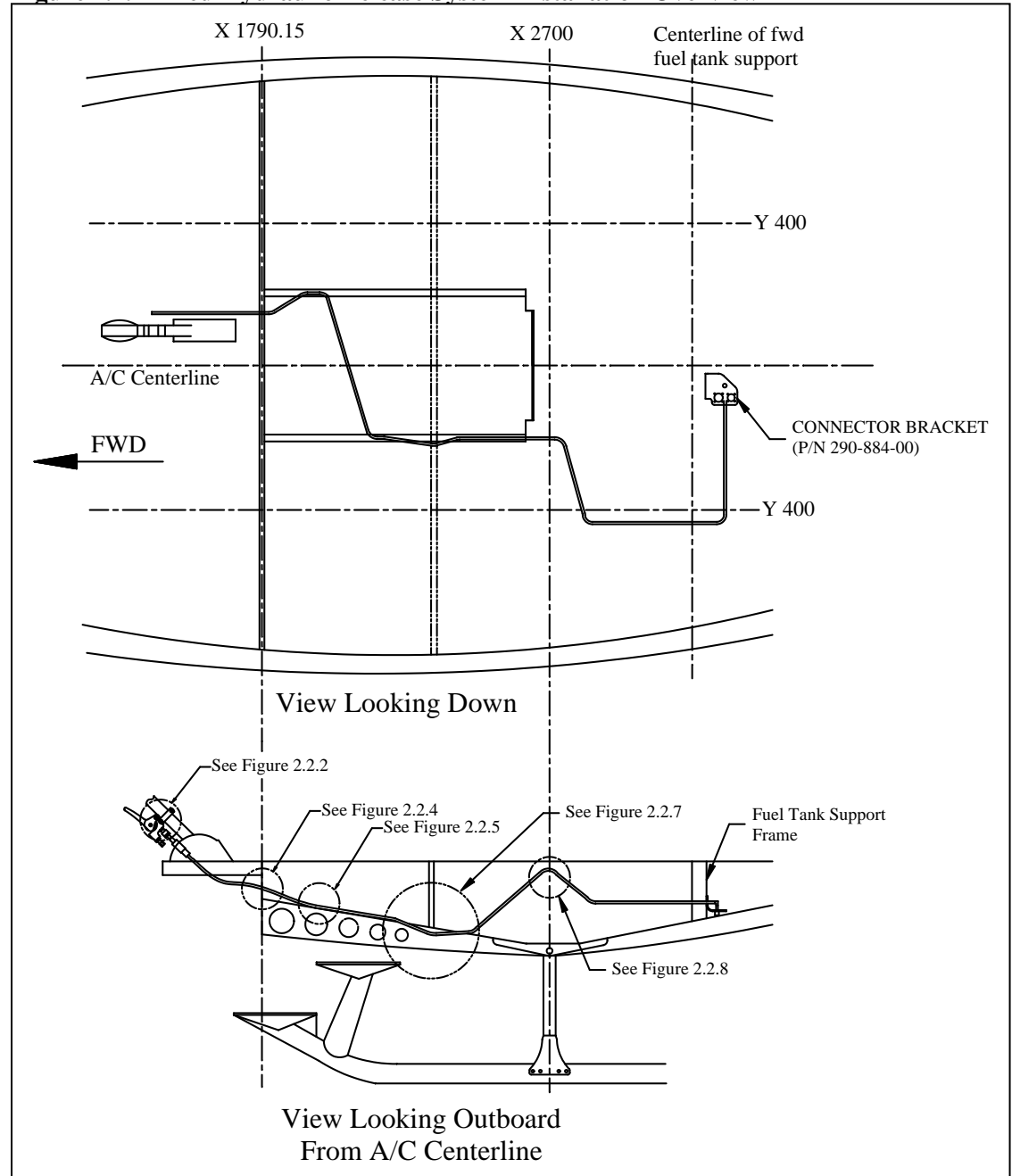


2.2 Fixed Hydraulic Release System Installation

Remove the lower fairings on the helicopter in order to obtain access to hydraulic hose routing areas.

The hydraulic release system installation consists of a fixed section and a removable section. The fixed section is routed from the release lever at the collective, aft to meet up with the load weigh harness (as shown in Figure 2.2.1). Figure 2.2.1 is an overview of the hose routing and the figures following detail the cable support installations at various points.

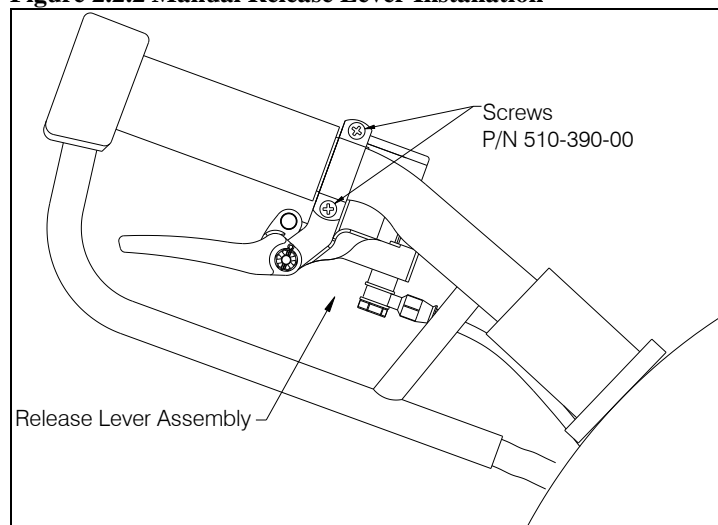
Figure 2.2.1 Fixed Hydraulic Release System Installation Overview



2.2 Fixed Hydraulic Release System Installation continued

- Fasten the Master Cylinder Assembly (assembly P/N 232-165-00) to the collective stick with the Clamp Half (P/N 290-753-00) and two screws (P/N 510-390-00) provided pre-assembled on the assembly, as illustrated below.

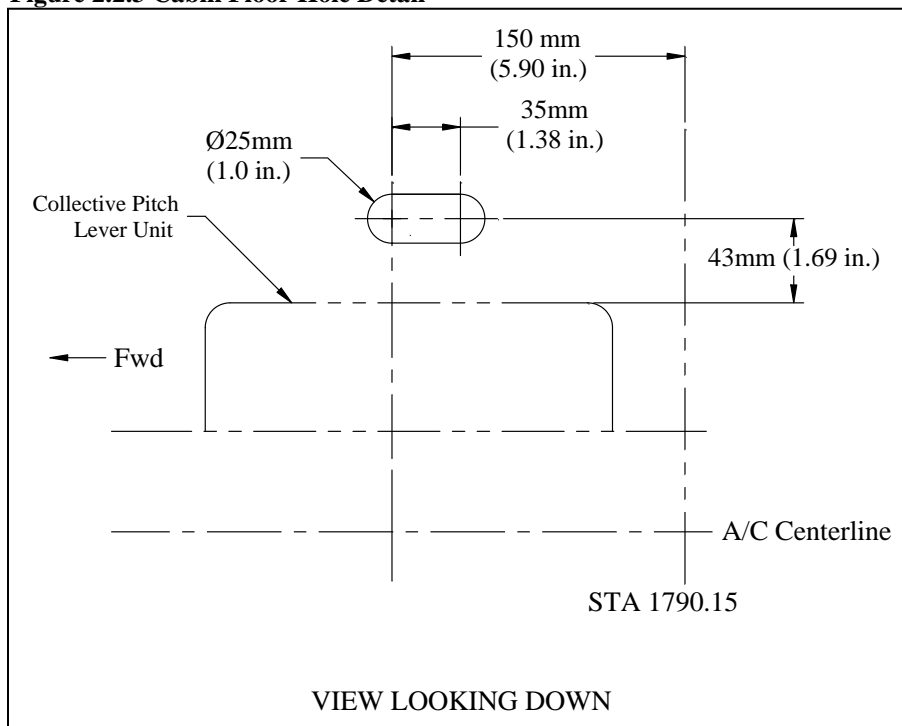
Figure 2.2.2 Manual Release Lever Installation



- Route the hose to underneath the cabin floor through the existing slot.

If the slot in floor does not exist, create one with dimensions as shown below in the cabin floor 43 mm from the collective pitch lever unit and 150 mm forward of STA 1790.15 (see below) and install the grommet (Eurocopter P/N DG-38).

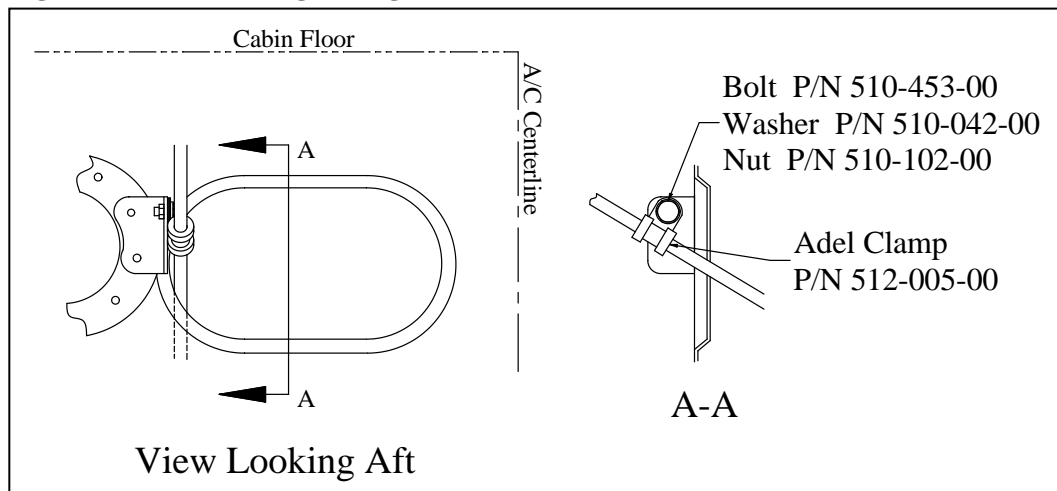
Figure 2.2.3 Cabin Floor Hole Detail



2.2 Fixed Hydraulic Release System Installation continued

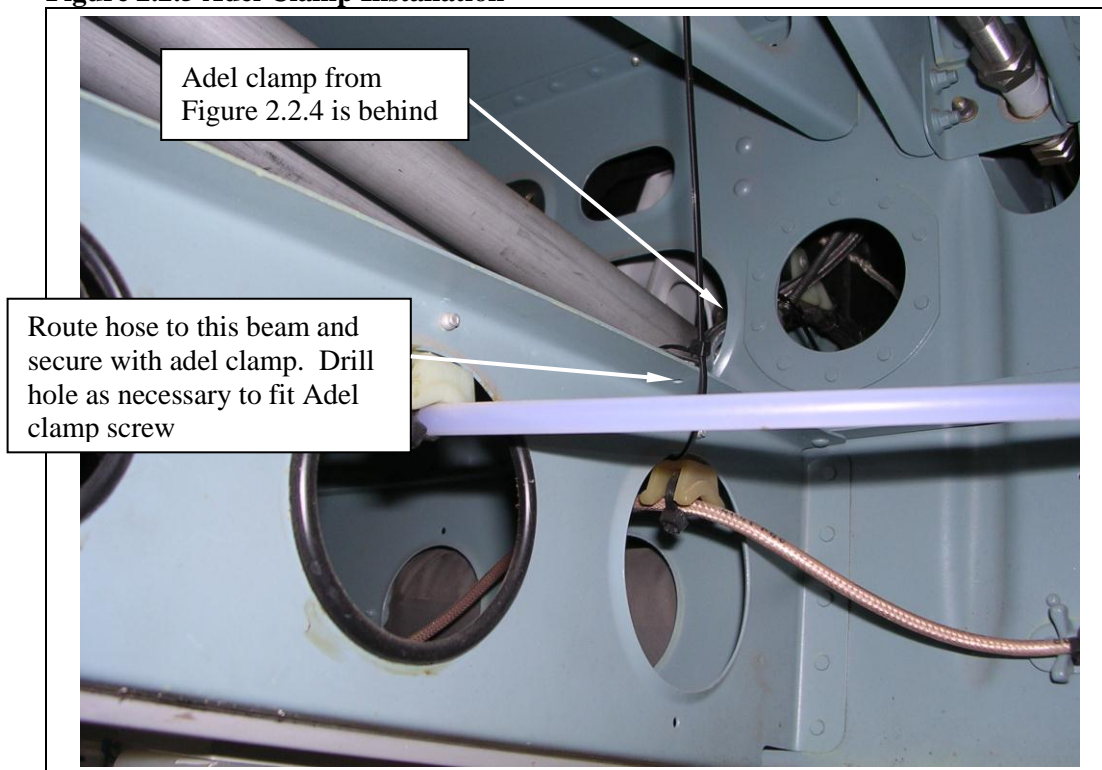
- Underneath the floor, route the hydraulic hose through an existing hole in the frame immediately aft of the collective. Secure the hose at this point with an adel clamp (P/N 512-005-00). Fasten the adel clamp to the existing bracket (Eurocopter P/N 350A86-0020-33) with hardware as illustrated below.

Figure 2.2.4 Hose Routing Through Frame



- Aft of the frame, route the hose along the top of the structural member (shown below) and secure with adel clamp (P/N 512-005-00) at location shown.

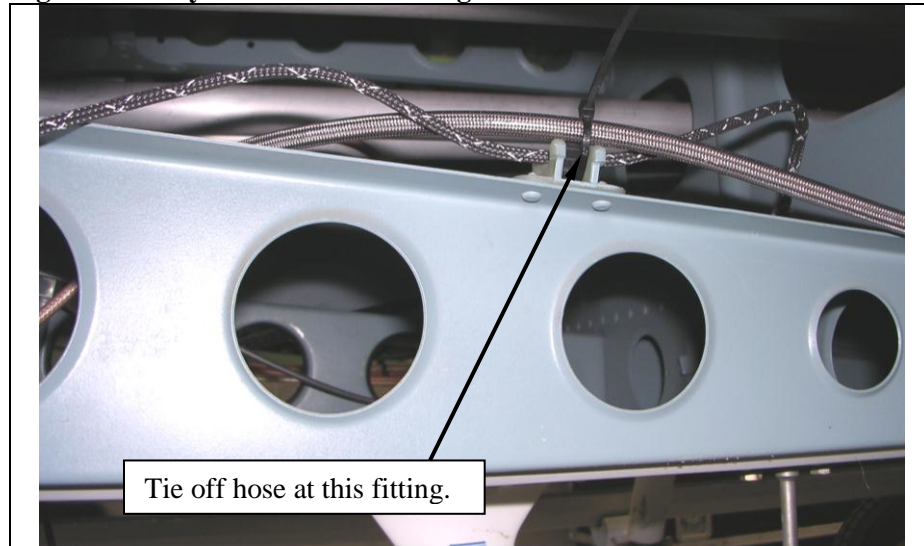
Figure 2.2.5 Adel Clamp Installation



2.2 Fixed Hydraulic Release System Installation continued

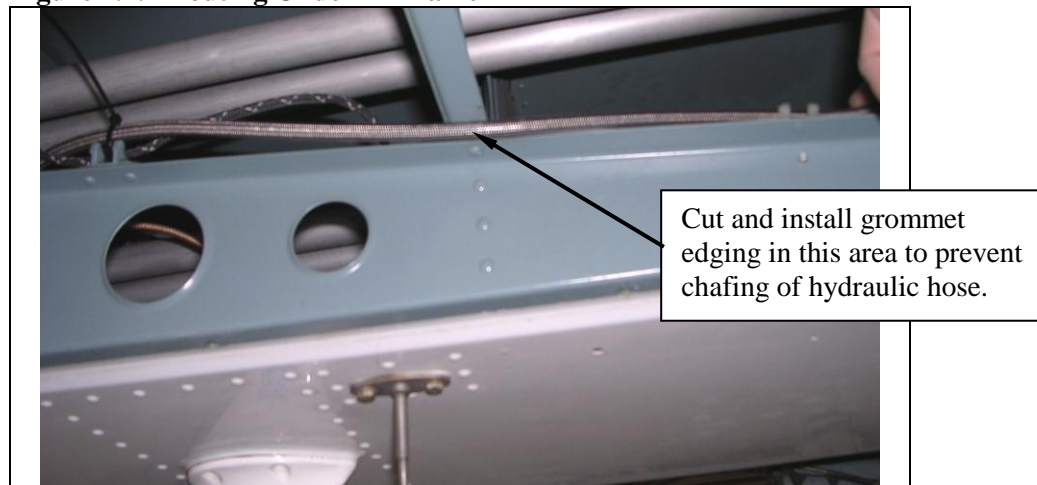
- ❑ Aft of the clamp installed in Figure 2.2.5, route the hose inboard and aft across the airframe centerline to the identical structural member on the left side of the airframe. Secure hose to fitting on top of structural member with ty-wrap as shown below. Ensure the hose is secured so that it does not interfere with the control rods.

Figure 2.2.6 Hydraulic Hose Routing



- ❑ Route the hose under the airframe support (as shown below) and secure the hose to the fitting on top of the structural member aft of the airframe support. Install grommet edging (P/N 500-065-00) as necessary to protect hydraulic hose from chafing.

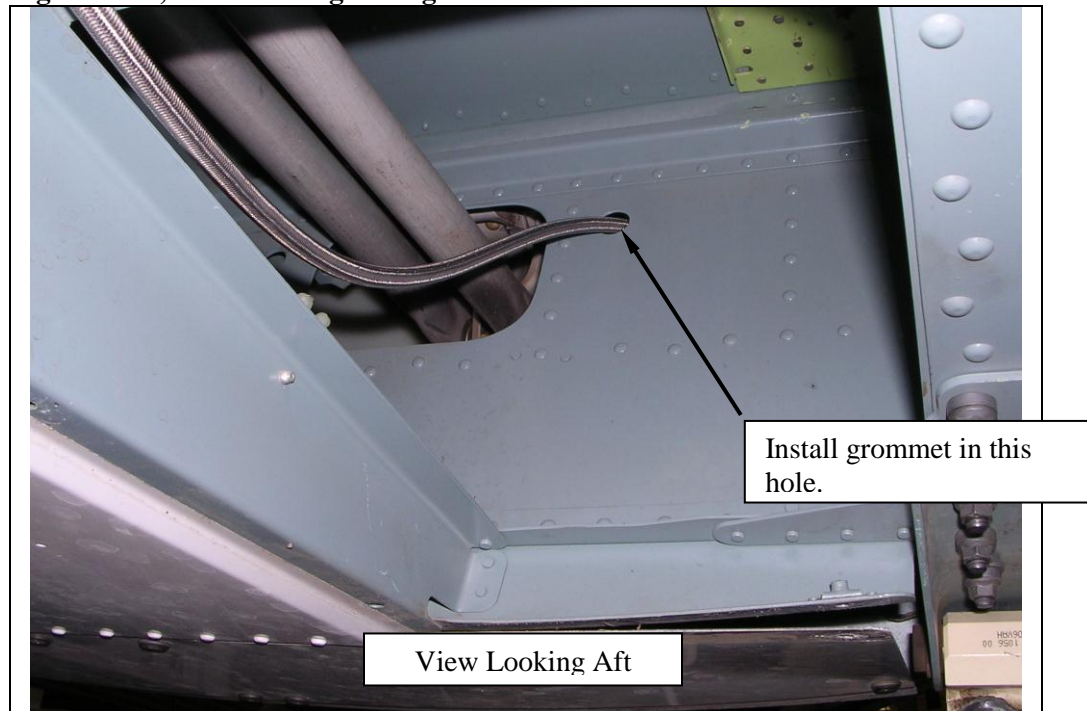
Figure 2.2.7 Routing Under Airframe



2.2 Fixed Hydraulic Release System Installation continued

- ❑ Route the hose up through the rear cabin bulkhead as shown in Figure 2.2.8. Split and install grommet (P/N 505-014-00) in hole after hose is routed through.

Figure 2.2.8, Hose Routing through Rear Cabin Bulkhead

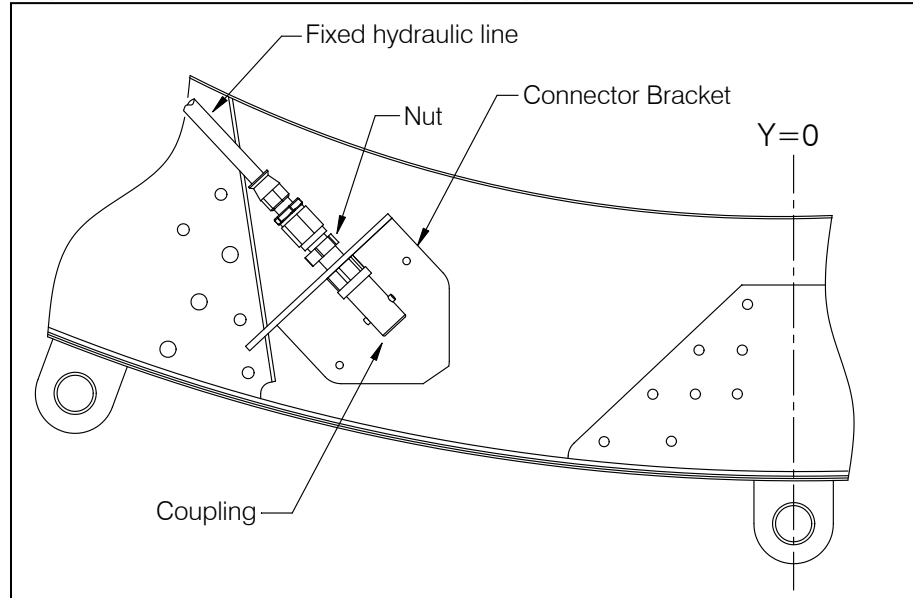


- ❑ Aft of the rear cabin bulkhead pick up existing electrical harness runs and secure hydraulic hose using ty-wraps. The hose will route outboard of Y400 and follow the electrical release harness (installed previously) to the connector bracket.

2.2 Fixed Hydraulic Release System Installation continued

- ❑ Pass the hydraulic quick disconnect coupling through the load cell electrical connector hole. Slide the fitting to the end of the slot and tighten the jamb nut securely against the Connector Bracket.

Figure 2.2.10 Quick Disconnect Coupling Installation

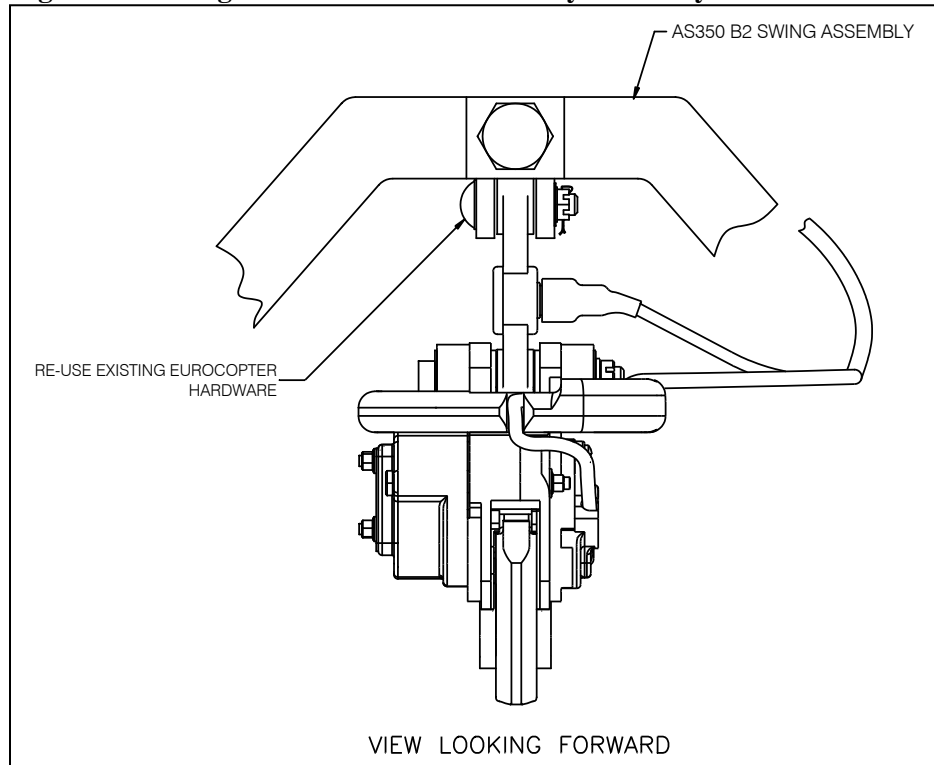


- ❑ Install the hook release connector 32M and load cell connector 55M with screws (P/N 510-481-00), washers (P/N 510-062-00), and nuts (P/N 510-029-00). **Important:** Install screws with their heads on the bottom side of bracket flange (if nuts are installed on bottom side they will interfere with mating connector).
- ❑ Install electrical markers (P/N 215-165-00) on the Connector Bracket adjacent to the corresponding connectors.
- ❑ Re-install lower fairings if both the hydraulic and electric systems have been installed.

2.3 Cargo Hook and Load Cell Installation

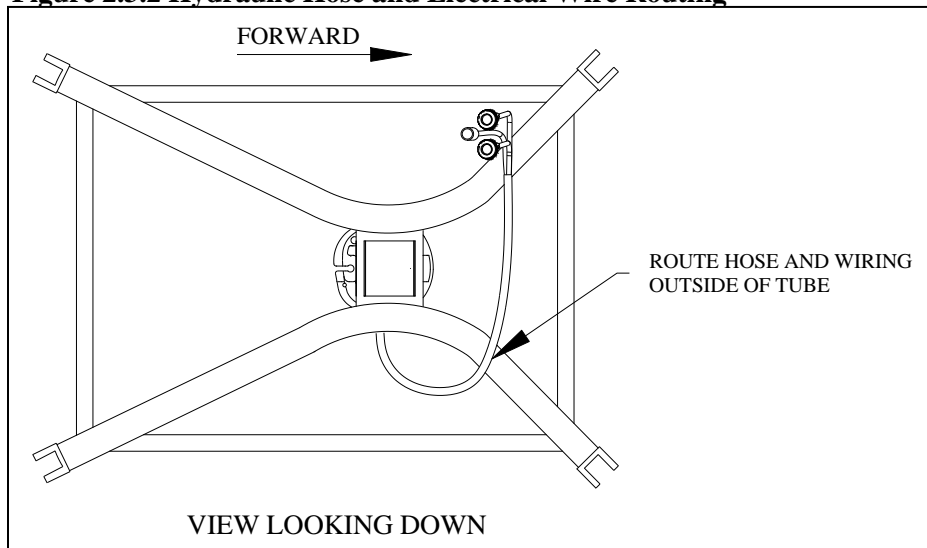
To install Cargo Hook/Load Cell Assembly (P/N 232-192-00) remove the existing hardware from the swing suspension gimbal and re-insert the bolt through the gimbal and the Onboard Systems load cell lug and re-use nut and washer. The cargo hook load beam must point forward.

Figure 2.3.1 Cargo Hook/Load Cell Assembly Assembly Installation



Route the hose and electrical wiring bundle to the connector bracket as shown below.

Figure 2.3.2 Hydraulic Hose and Electrical Wire Routing



2.3 Cargo Hook and Load Cell Installation continued

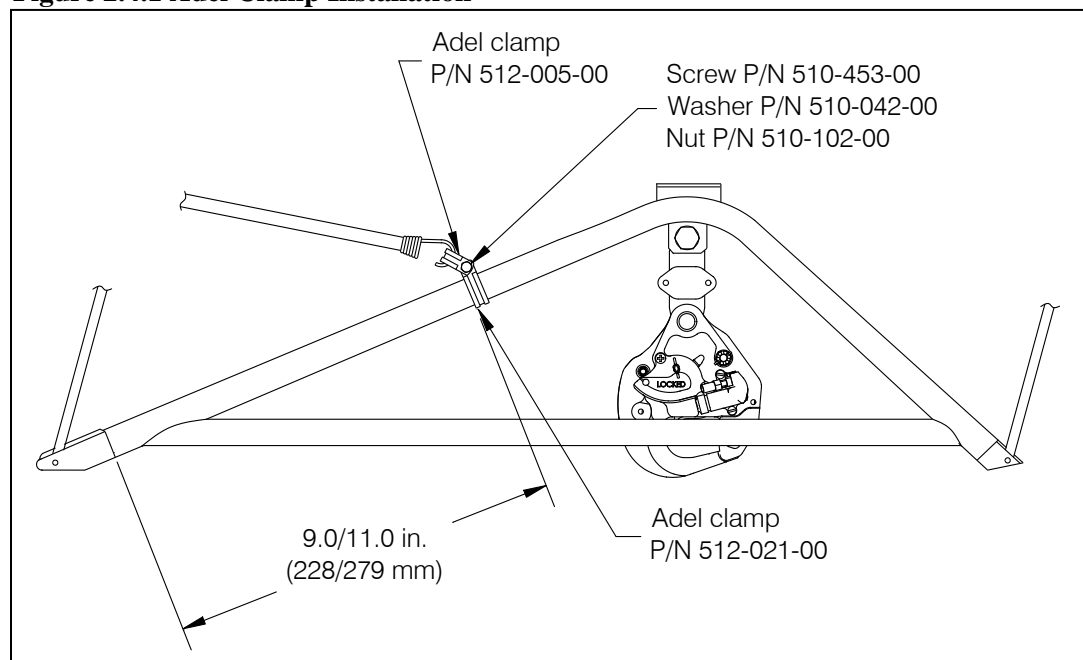
- ❑ Connect the end of the cargo hook electrical release cable to the fixed electrical release connector installed per Section 2.1.
- ❑ Connect the end of the load cell cable to the fixed load weigh harness connector installed per Section 2.1.
- ❑ Connect the hydraulic hose from the hook to the fitting installed at the belly of the helicopter and fill the system per section 2.5.

2.4 Adel Clamp Installation

Depending on the configuration of the Eurocopter swing frame, a bracket may or may not be installed on it to provide for attaching the existing bungee cords, which are used for retracting the swing suspension for ground clearance. If the bracket was installed on the cargo hook that was removed, use the provided hardware for attaching the bungee cords to the swing frame.

Attach an adel clamp (P/N 512-021-00) to each side of the swing frame at an approximate location shown below and attach a smaller adel clamp (P/N 512-005-00) to each large adel clamp. The small adel clamps provide attach points for the bungee cords.

Figure 2.4.1 Adel Clamp Installation



2.5 Filling Hydraulic Release System

Each hydraulic system is typically shipped dry. Proper bleeding is critical to the operation of the hydraulic release system. An improperly bled system will not release the cargo hook mechanism.

If there is a need to fill and/or bleed the system, follow the procedures listed below. If you need to remove and repair any items in the hydraulic system, refer to the Instruction for Continued Airworthiness manual.

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.

A reservoir seal is installed beneath the reservoir lid. This seal serves to prevent hydraulic fluid left over from the testing process from leaking during shipping.

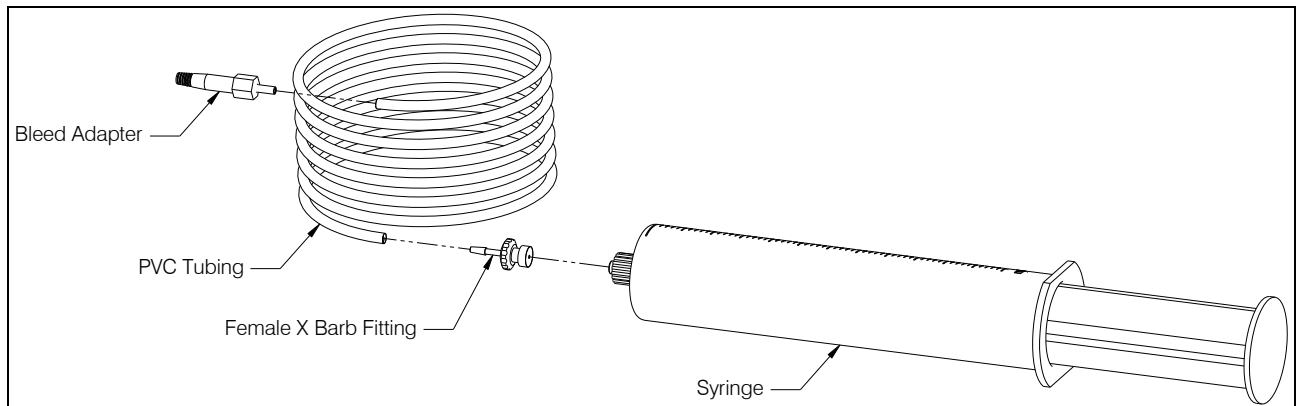
CAUTION

The reservoir seal is for shipping purposes only and must be removed and discarded before bleeding or installation of the hydraulic release system.

Bleeding procedure:

1. Obtain the hydraulic hook bleed kit, 212-014-01. This kit consists of 2 ounces of MIL-PRF-5606 fluid, a syringe, a female barb fitting, a length of PVC tubing, and a bleed adapter fitting. The bleed kit is included in new Hydraulic Hook kits. Assemble the bleed kit by press fitting each component as shown.

Figure 2.5.1 Hydraulic Hook Bleed Kit



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 the level of the master cylinder.

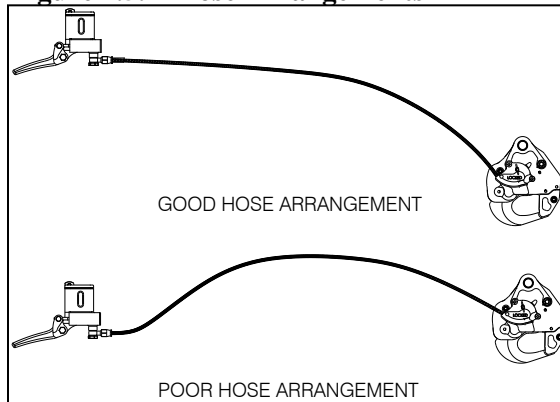
2.5 Filling Hydraulic Release System continued

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.

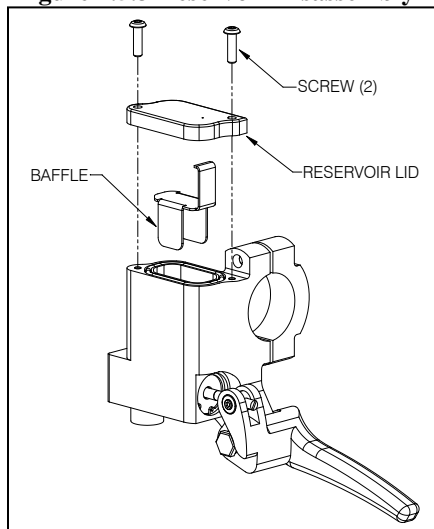
3. Connect the master cylinder assembly to the slave cylinder assembly if not already done. If filling or bleeding on the bench, as much as possible, arrange the hoses uncoiled, straight and running uphill. See Figure 2.5.2.

Figure 2.5.2 Hose Arrangements



4. Remove screws, reservoir lid, and baffle from the master cylinder reservoir as shown in Figure 2.5.3.

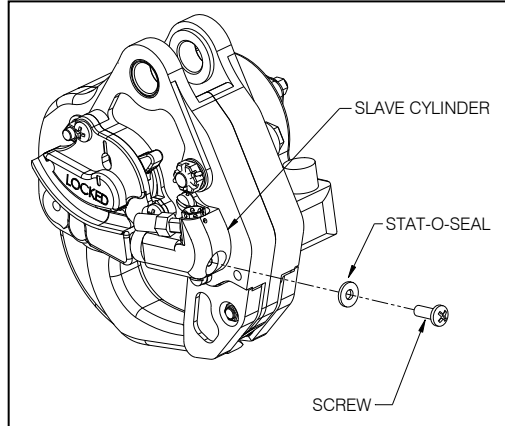
Figure 2.5.3 Reservoir Disassembly



2.5 Filling Hydraulic Release System continued

5. Remove the screw and stat-o-seal on the slave cylinder, see Figure 2.5.4.

Figure 2.5.4 Screw and Stat-o-seal Removal

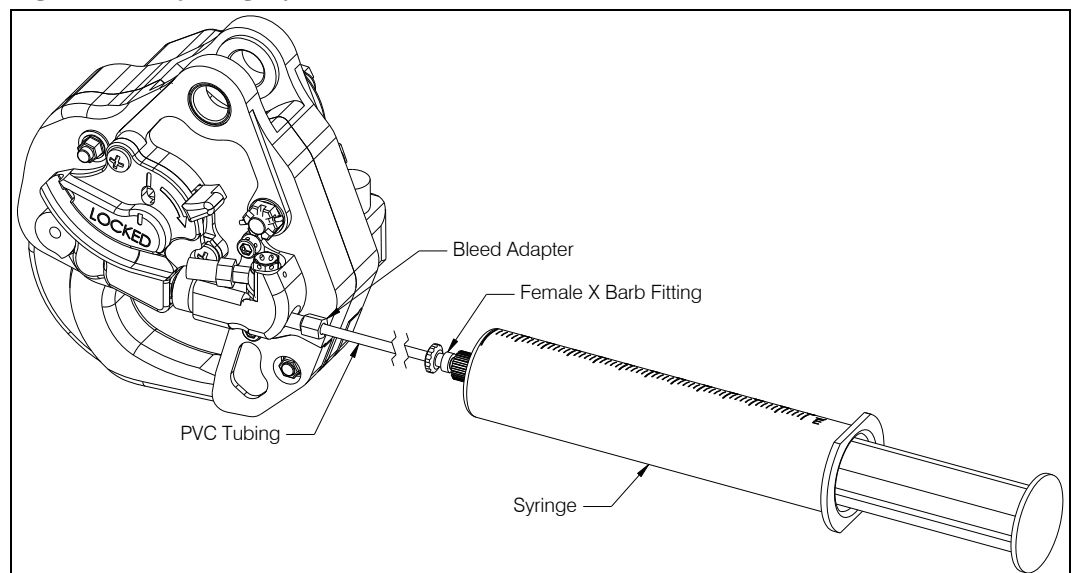


6. Fill the syringe with approximately 35 cc of MIL-PRF-5606 fluid and purge any remaining air in the syringe and tubing. Screw the end of the bleed adapter into the screw hole on the slave cylinder to create a tight seal. See Figure 2.5.5.
7. While observing the reservoir, **slowly** push on the syringe 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.



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 2.5.5 Injecting Hydraulic Fluid



2.5 Filling Hydraulic Release System continued

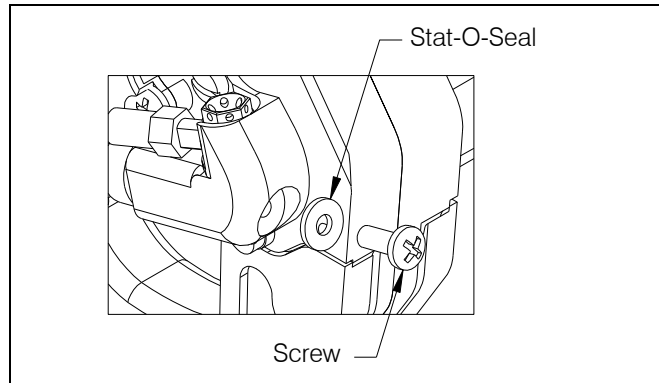
8. Continue to force fluid into the master cylinder reservoir until the reservoir is approximately half full.

NOTICE

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

9. Remove the syringe from the screw hole. Re-install the Stat-O-Seal (P/N 510-496-00) and screw (P/N 510-493-00), see Figure 2.5.5.

Figure 2.5.5 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.

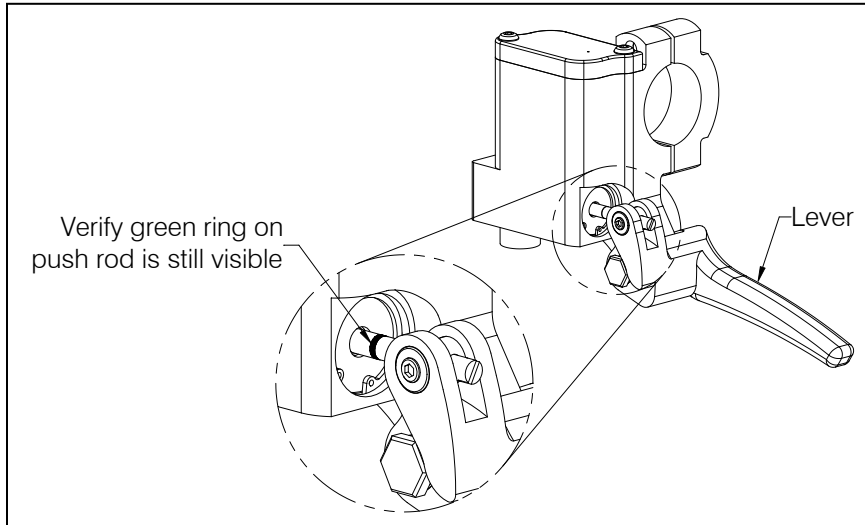
CAUTION

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.

2.5 Filling Hydraulic Release System continued

12. Check the system for air by actuating the lever firmly until it bottoms out. Check the push rod position (see Figure 2.5.6). If the green area on the push rod is visible, proceed to step 13. If the green on the push rod is not 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 2.5.6 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.

2.6 Installation Check-Out

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

- ❑ Swing the installed cargo hook and suspension to their full extremes to ensure that the hydraulic hose and the electrical cables have enough slack to allow full swing without straining or damaging the cables. The cables must not be the stops that prevent the cargo hook and suspension from swinging freely in all directions.
- ❑ With no load on the cargo hook load beam, pull the handle operated cargo hook hydraulic release, the Cargo Hook should release. Reset the cargo hook load beam.
- ❑ 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.
- ❑ 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.



The cargo hook and load cell 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-2001-02.

- ❑ Power on the Indicator and allow it to warm up for 5 minutes (with no load on the hook). Press both Indicator buttons at the same time to go to the Setup Mode. Scroll through the menu until the symbol “0 in” is displayed, then press the right button. Remove any weight that is not to be zeroed out and press either button to complete the procedure.

Component Weights

The weights and cgs of the Cargo Hook kit components are listed below. When performing weight and balance calculations remember to deduct equipment removed, such as manual release cable, etc.

Table 2.2 Weights and CGs

Item	Weight	Station
Removable Provisions*	4.6 lbs (2.1 kg)	133 in (3375 mm)
Fixed Provisions**	2.6 lbs (1.2 kg)	110 in (2794 mm)
Total	7.2 lbs (3.3 kg)	124.7 in (3167 mm)

* The removable provisions include the hook, external hydraulic release hose, external electrical release cable, and load cell. These items are easily removed if they are not needed on the helicopter's mission.

** The fixed provisions are those items of the kit that remain on the aircraft. Examples of these items include the Master Cylinder with hydraulic hose, internal load weigh harness, the load weigh indicator, and brackets that support these items.

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. Place the Rotorcraft Flight Manual Supplement P/N 121-026-00 in the rotorcraft flight manual.

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Section 3

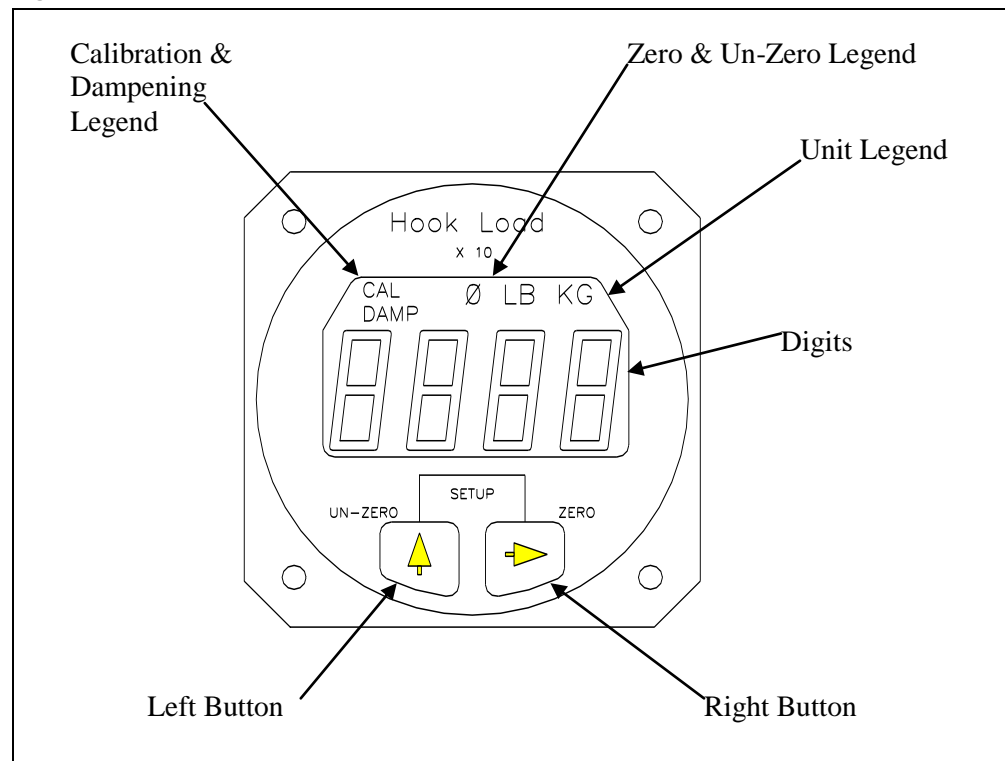
Load Weigh System Operation Instructions

Indicator Front Panel

The C-39 Indicator front panel includes the following features.

- The four 7 segment LCD digits show the weight on the Cargo Hook and display various setup information.
- The Legends clarify the digital display, i.e. - when the LB Legend is turned on, the display will be pounds, etc.
- The right button is used to Zero the display in the Run Mode and select the digit to be changed in the Setup Mode.
- The left button is used to Un-Zero the display in the Run Mode and scroll the selected digit in the Setup Mode.

Figure 3.1 Front Panel

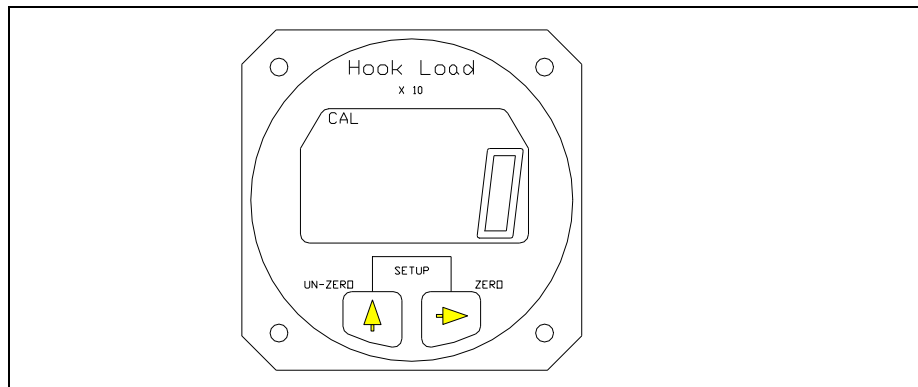


The Run Mode

The C-39 Indicator has two operating modes, Run and Setup. The Run Mode is used to display the cargo hook weight and the Setup Mode is used to setup or configure the Indicator to the helicopter and to the Load Cell. When powered up, the Indicator always comes on in the Run Mode.

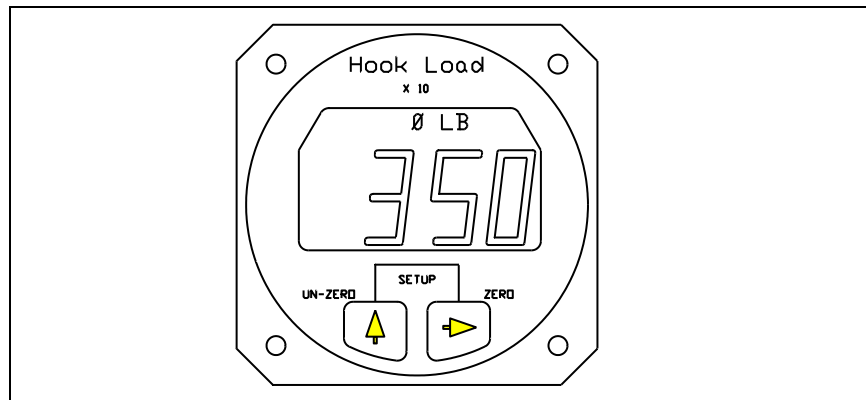
After the Indicator has been correctly installed, power it up by activating the aircraft electrical system. The Indicator will go through a self-diagnostic routine. During this routine the display will display all of the digits and legends. If a problem is found during the routine an Error Code will be displayed. For an explanation of Error Codes see the section *Error Codes*. After the diagnostic routine the display should look like this:

Figure 3.2 After Diagnostic Routine



The illustration is of the Indicator in the Run Mode with no load on the hook. Note the LB legend displayed.

Figure 3.3 LB Legend Displayed

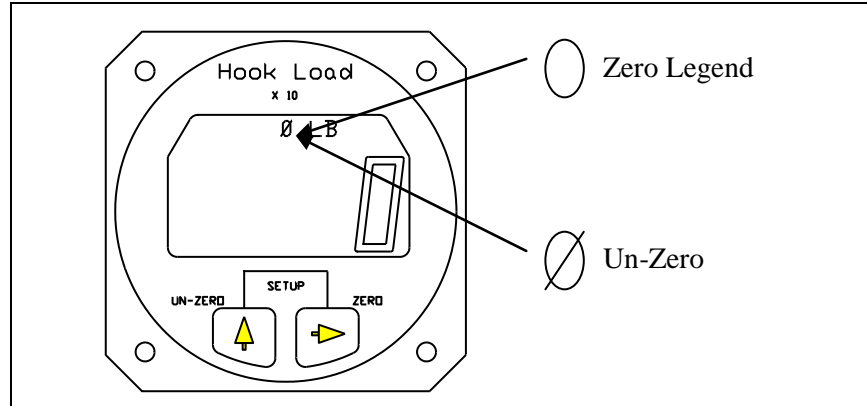


The illustration is a typical hook load reading. The display is 3,500 pounds, note the last digit is not displayed.

To Zero or Tare the Display

The zero feature is used to zero or tare the weight on the Cargo Hook that is not wanted, such as the weight of a cargo net or long line. The Right button is used to zero the Indicator reading. When the Right button is pressed the display is zeroed. The zero legend is turned on and the zeroed number is stored in memory. If the Right button is pressed again, before the Un-zero button is pressed, the display blinks in response to the button closure. Zero is only available in the Run Mode.

Figure 3.4 Zeroing the Display



To Un-Zero the Display

The Left button is used to add the zeroed value back into the current Indicator reading or Un-zero the display. When the Left button is pressed, the number previously zeroed is added to the current display and the Un-zero legend is turned on. If the Left button is again pressed before the zero button is pressed, the display blinks in response to the button closure. Un-Zero is only available in the Run Mode.

The Run Mode continued

Error Codes

Error Codes are the result of difficulties discovered during the Indicator diagnostic tests. Diagnostic tests occur at power up and during the execution of certain routines. Listed below is a matrix of the Error Code displays, their meaning and possible corrective action. Pressing either button will usually bypass the error code, however, the displayed information may be suspect.

Table 3.1 Indicator Error Codes

DISPLAY	CAUSE	POSSIBLE CORRECTIVE ACTION
Err 1	A/D or D/A circuit failure	Potential short in the optional analog meter cable. Clear short and power cycle the Indicator by turning the power to the Indicator off for a few moments. If Error Code continues, return the Indicator to the factory.
Err 2	NV Ram failure	Power cycle the Indicator; if Error Code continues, return the Indicator to the factory.
Err 3	NV Ram write failure	Re-enter data, if Error Code continues, return the Indicator to the factory.
Err 4	NV Ram busy failure	Power cycle the Indicator, if Error Code continues return the Indicator to the factory.

The Setup Mode

The C-39 Indicator can be used with a wide range of helicopters and load cells. The Setup Mode on the Indicator matches the Indicator to the Load Cell and to the helicopter. This is done by entering data into the Indicator. Entered data includes the load cell Calibration Code, the units that the Indicator should read-out (pounds or kilograms), and several other items.

The Indicator has a group of Setup routines, arranged in menu form, that are used to configure the Indicator. Shown on the next page is a matrix of the Setup routines and a brief discussion of their function and how they are programmed. A complete discussion of each setup item is presented later in this section.

To enter the Setup Mode press both the Right and Left buttons at the same time while the Indicator is powered up and in the Run Mode. To exit the Setup Mode and return to the Run Mode, press both the buttons at the same time. If you are in a Setup routine and have started to change an entry, but you change your mind before completing the procedure, power cycle the Indicator to exit the Setup Mode and then go to the Run Mode without changing the item. The Indicator is power cycled by turning the Indicator power off for a few moments.

The Setup Mode, continued

Table 3.2 Indicator Setup Routines

MENU	FUNCTION	DISPLAY
Press the Left button to scroll through the menu	Press the Right button to view or change the menu item.	To return to the Run Mode press both the Right and Left buttons at the same time.
DAMP	<u>Dampening Level</u> , sets the pilots preference for display dampening.	Blinking display is previously entered Dampening Level. Select the desired dampening level by pressing the Left button.
CODE	<u>Calibration Code</u> , matches the Indicator to the Load Cell.	Display is previously entered CAL Code. The Code is changed by selecting the digit to be changed with the Right button. The selected digit will blink. Change the blinking digit by pressing the Left button.
0 in	<u>Installation ZERO</u> , matches the Indicator to the installed Load Cell and to the helicopter. After this procedure the display will be zero when no load is on the Cargo Hook.	Display is a combination of load on the Load Cell, and normal load cell zero offset. Remove all weight from the installed Load Cell except the Cargo Hook, and press any button to complete the procedure and return to the Run Mode.
LOAD	<u>Load</u> , is used to calibrate the system by lifting a known load.	No previous display is shown. Enter the known load using the Right button to select the digit to be changed and Left button to enter the number. Known load is entered "X 10" i.e.; 5000 kilograms is entered as 500. After the known load is entered, press both buttons at the same time and lift the known load. When the load is stabilized press either button. A new Calibration Code will be calculated and the known load will be displayed. This completes the procedure.
Scale	<u>Scale</u> , matches the analog output of the Indicator to an optional remote analog meter.	Display is previously entered number. To change the number use the Right button to select a digit, use the Left button to scroll the digit to the desired number. Entry is times 10.
LB KG	<u>Units</u> , selects the Indicator units (pounds or kilograms).	Display is previously selected unit. To change the unit, use the Left button.
XX - V	<u>Version</u> , is the revision level of the Indicator hardware and software.	Version is for information only, it cannot be changed.

The Setup Mode, continued

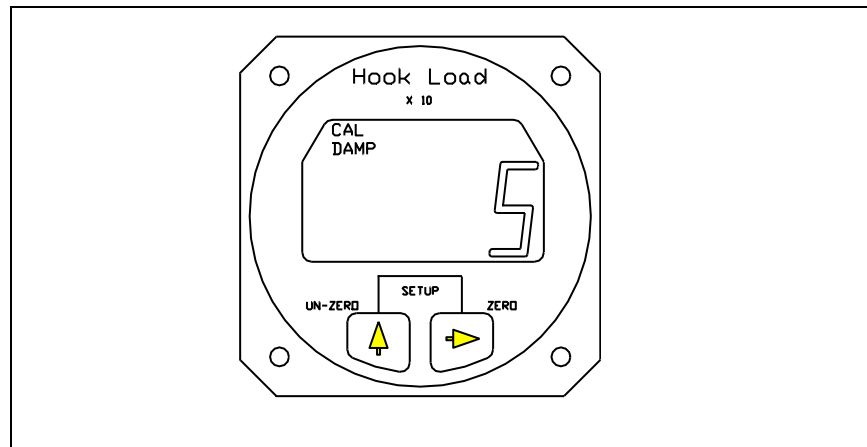
Indicator Dampening

The Damp or dampening routine allows the pilot to adjust the Indicator dampening level to his preference. The dampening routine is a program that stabilizes the Indicator reading. It offers a trade-off between Indicator responsiveness and stability. Ten dampening levels are available, from 0 through 9. At level 0 the display responds to the slightest change in weight. However, if the load bounced even slightly, the display digits would respond instantly, making the display look unstable. With a dampening level of 9, the display would be stable under the most turbulent conditions, however, it would take several seconds for the display to respond to a change in weight. The ideal dampening level will depend on the flying conditions. A mid range setting of 5 or 6 is usually adequate.

To Look at or Change the Dampening Level

With the Indicator powered up and in the Run Mode, press both buttons at the same time to go to Setup. Scroll through the menu, using the Left button, until the word DAMP is displayed. To look at or change the Dampening Level press the Right button. The display should look like this:

Figure 3.5 Changing Dampening Level



The CAL and the DAMP legend is turned on and the previously set dampening level is displayed. To return to Run without changing the current dampening level press both the Right and Left buttons at the same time. To change the dampening number, use the Left button to scroll the blinking digit to the desired number. After the selection has been made press both the Right and Left buttons at the same time to return to Run.

The Setup Mode, continued

Indicator Calibration

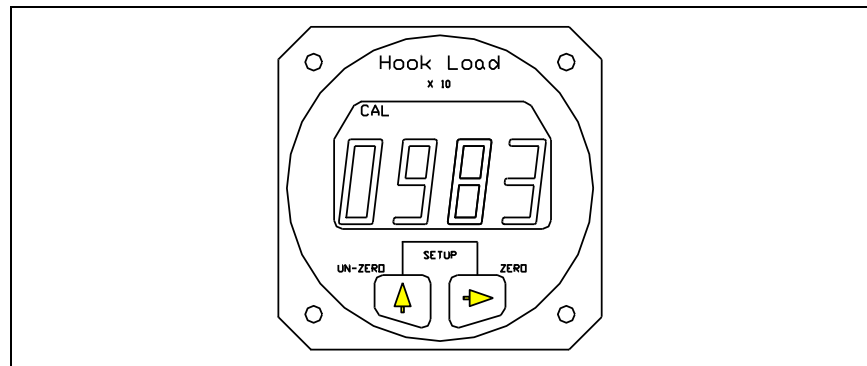
The Calibration Code, or CAL code, is a mandatory input. The Indicator will not accurately display the load without the correct Calibration Code. The Calibration Code scales the signal from the Load Cell.

If the C-39 Indicator was supplied as part of a Load Weigh System, the Calibration Code will have been entered into the Indicator by the factory, however, it should be confirmed. If the Indicator is to be mated to a different Load Cell, it must be calibrated before use. Calibration can be done by entering a known Calibration Code or by lifting a known load and having the Indicator calibrate itself. Both options are discussed below.

To Look at or Change the Calibration Code

With the Indicator powered up and in the Run Mode, press both buttons at the same time to go to Setup. Scroll through the menu until the word CODE is displayed, then press the Right button. The display should look like this:

Figure 3.6 Changing the CAL Code



The CAL legend is turned on and the previously entered or computed Calibration Code is displayed. To return to Run without changing the CAL Code, press both the Right and Left buttons at the same time. To change the Calibration Code, use the Right button to select the digit to be changed, then use the Left button to scroll the blinking digit to the desired number. When the Calibration Code has been entered, press both the Right and Left button at the same time to return to Run.

NOTICE

Depending on the type of Load Cell, the Calibration code could be a 3 or 4 digit number. If the Calibration Code is a 3 digit number a leading zero (0) must be used. For example if a Load Cell had a CAL Code of 395 it would be entered as 0395.

If the load cell Calibration Code is not known or as a cross check, the Indicator can generate the Calibration Code. This is done by entering the weight of a known load into the Indicator LOAD routine and then lifting the load. See the section *Calibration by Lifting a Known Load*.

The Setup Mode, continued

Installation Zero

Installation zero is a routine that matches the Indicator to the **INSTALLED** Load Cell. It adjusts the Indicator reading to compensate for the weight of the Cargo Hook on the Load Cell and whatever zero offset is built into the Load Cell. The Installation Zero procedure is not mandatory. If done the Indicator will read zero when the Un-Zero button is pressed and there is no weight on the Cargo Hook. If the Installation Zero is not done, the Indicator will show the weight of the Cargo Hook plus the value of the Load Cell zero offset.

To Run the Installation Zero Routine

With the Indicator powered up and in the Run Mode, press both buttons at the same time to go to Setup. Scroll through the menu until the symbol "0 in" is displayed, then press the Right button. The CAL legend will be turned on and the current weight on the Cargo Hook will be displayed and blinking. Remove any weight that is not to be zeroed out and press either button to complete the procedure and return to the Run Mode.

Calibration by Lifting a Known Weight

Calibration by lifting a known weight is a Setup routine that calculates the Calibration Code for the Load Cell attached to the Indicator. It is useful if the load cell Calibration Code is not known or as a cross check to the accuracy of a known Calibration Code. The procedure is done by entering the known weight into the Indicator and then lifting the weight. This procedure can be done in the shop or on the helicopter. The accuracy of the procedure is directly related to the weight of the known load. If for example the procedure was done with a 1,000 pound load that was assumed to weigh only 900 pounds, all subsequent lifts would be displayed 10% light.



Be sure to include the weight of everything between the Cargo Hook and the load, i.e. the cable, net, dirt, etc.

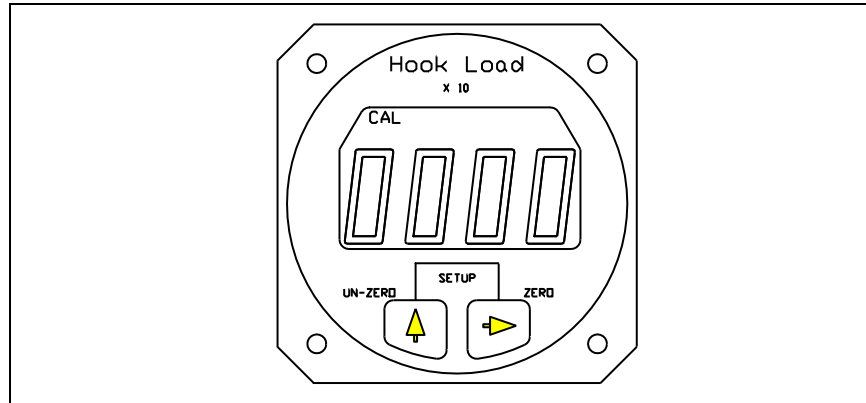
The closer the known load approaches the lifting capacity of the helicopter, the more accurate the calculated Calibration Code will be.

The Setup Mode, continued

To Run the Calibration by Lifting a Known Weight Routine

With the Indicator powered up and in the Run Mode, press both buttons at the same time to go to Setup. Scroll through the menu until the word LOAD is displayed, then press the Right button. The display should look like this:

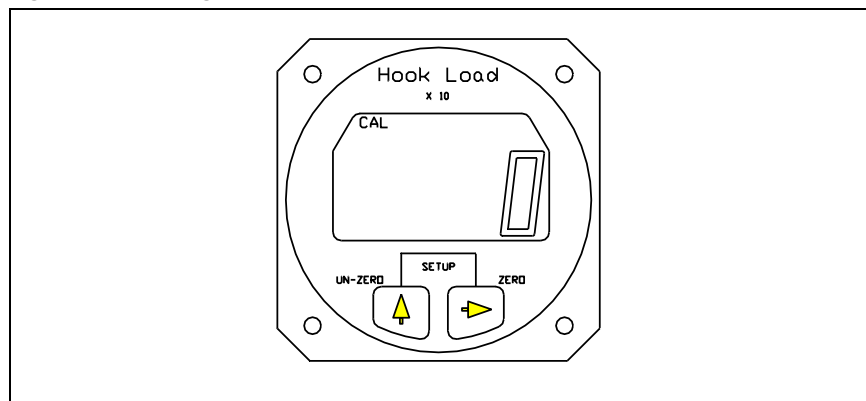
Figure 3.7 Running CAL Routine



The CAL legend is turned on and the first digit is blinking. The previous load is not displayed. At this point if you wish to return to the Run Mode without changing the Calibration Code, power cycle the Indicator. At this point it is not possible to return to the Run Mode without changing the Calibration Code by using the buttons on the Indicator front panel.

To proceed with the procedure, use the Right button to select the digit to be changed, then use the Left button to scroll the blinking digit to the desired number. Note that the known weight is entered "X 10"; a 1000 pound load is entered as 100. When the known load has been entered, press both the Right and Left button at the same time. The display will look like this:

Figure 3.8 Entering Load in CAL Routine



The Setup Mode, continued

Calibration by Lifting a Known Weight, continued

The CAL legend and the digits will be blinking. Again, at this point if you wish to return to the Run Mode without changing the Calibration Code, power cycle the Indicator. It is not possible to return to the Run Mode by using the buttons on the Indicator front panel without changing the Calibration Code. If you wish to proceed, lift the known load and when it is stabilized, press either button to complete the procedure. The Indicator will display the load. This ends the procedure. The Indicator is now calibrated to the Load Cell. It is a good practice to go to the Code routine and record the new Calibration code for later reference.

Setting the Scale for a remote analog meter

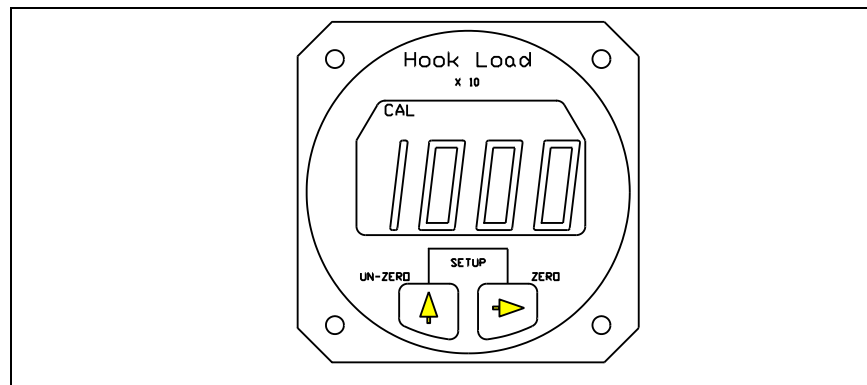
The Scale routine is used when a user supplied analog meter is connected to the Indicator. It is used to match or calibrate the analog meter to the Indicator. The Indicator outputs a 0 to 5 VDC analog signal, which is proportional to the Load Cell load. The Scale number tells the Indicator at what point in pounds or kilograms it should reach the 5 VDC output. If for example a 5 volt analog meter is used and its full scale reading is 10,000 pounds, the number entered into the Indicator Scale routine would be 1000 (the number is entered X 10). This number tells the Indicator that it should output the proportional 0 to 5 VDC signal between zero pounds and 10,000 pounds.

The Scale number does not affect Onboard Slave Meters, P/N 210-106-00 or 210-180-00. This number only affects user supplied instruments connected to the analog out signal.

To Look at or Change the Scale

With the Indicator powered up and in the Run Mode, press both buttons at the same time to go to Setup. Scroll through the menu until the word SCALE is displayed, then press the Right button. The display should look like this:

Figure 3.9, Changing the Scale



The Setup Mode, continued

To Look at or Change the Scale, continued

The CAL legend is turned on and the previously set Scale number is displayed. To return to Run without changing the Scale, press both the Right and Left button at the same time. To change the Scale number, use the Right button to select a digit to be changed, then use the Left button to scroll the blinking digit to the desired number. When the complete Scale number has been entered, press both the Right and Left button at the same time to return to Run.

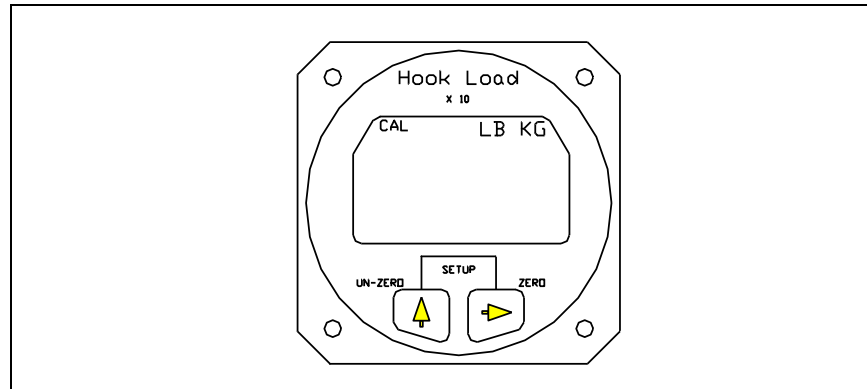
Select KG or LB Units

The units routine sets the display to read in pounds (LB) or kilograms (KG).

To look at or change the Units

With the Indicator powered up and in the Run Mode, press both buttons at the same time to go to Setup. Scroll through the menu until the word LB or KG is displayed, then press the Right button. The display should look like this:

Figure 3.10 Changing the Units



The CAL legend is turned on and the previously set unit is displayed. To return to Run without changing the units, press both the Right and Left button at the same time. To change the units press the Left button. When the selection has been made, press both the Right and Left button at the same time to return to Run.

NOTICE

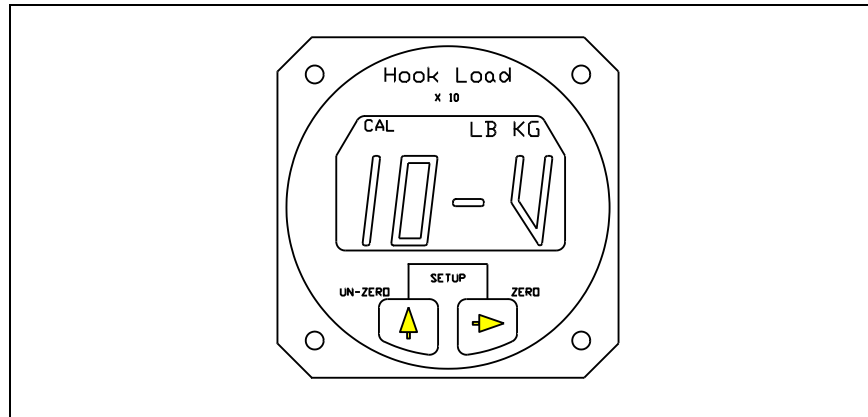
The selected units are displayed when in the Run Mode.

The Setup Mode, continued

Indicator Version

The Version routine displays the Indicator's hardware and software revision levels. Version is set at the factory and cannot be changed.

Figure 3.11 Looking at Indicator Version



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Section 4

Operation Instructions

Operating Procedures

Prior to each cargo hook use perform the following:

1. Ensure that the Cargo Hook Kit has been properly installed and that the hydraulic hose and electrical harnesses do not limit the movement of the hook or suspension.
2. Be completely familiar with this Owner's Manual, Cargo Hook Service Manual 122-015-00 and the ICA Manual 123-019-00.
3. 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.

CAUTION

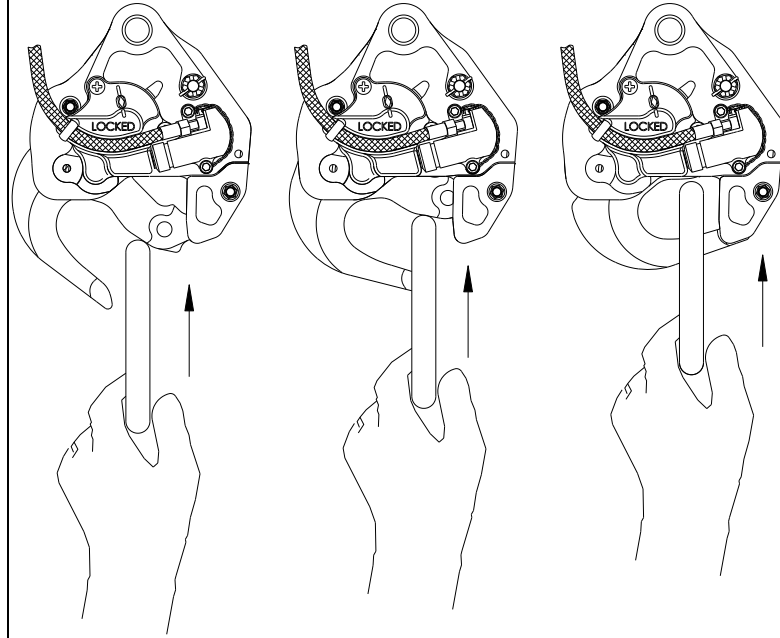
The release solenoid is intended to be energized only intermittently. Depressing the electrical release button continuously in excess of 20 sec. will cause the release solenoid to overheat, possibly causing permanent damage.

4. 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 hook by hand after release. If the hook does not release or re-latch, do not use the unit until the difficulty is resolved.
5. Swing the installed Cargo Hook and the suspension to ensure that the hydraulic hose and electrical harnesses have enough slack to allow full swing of each component without straining or damaging the hose and cables. The hoses and cables must not be the stops that prevent the Cargo Hook or the suspension from swinging freely in all directions.

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

Figure 4.1 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.

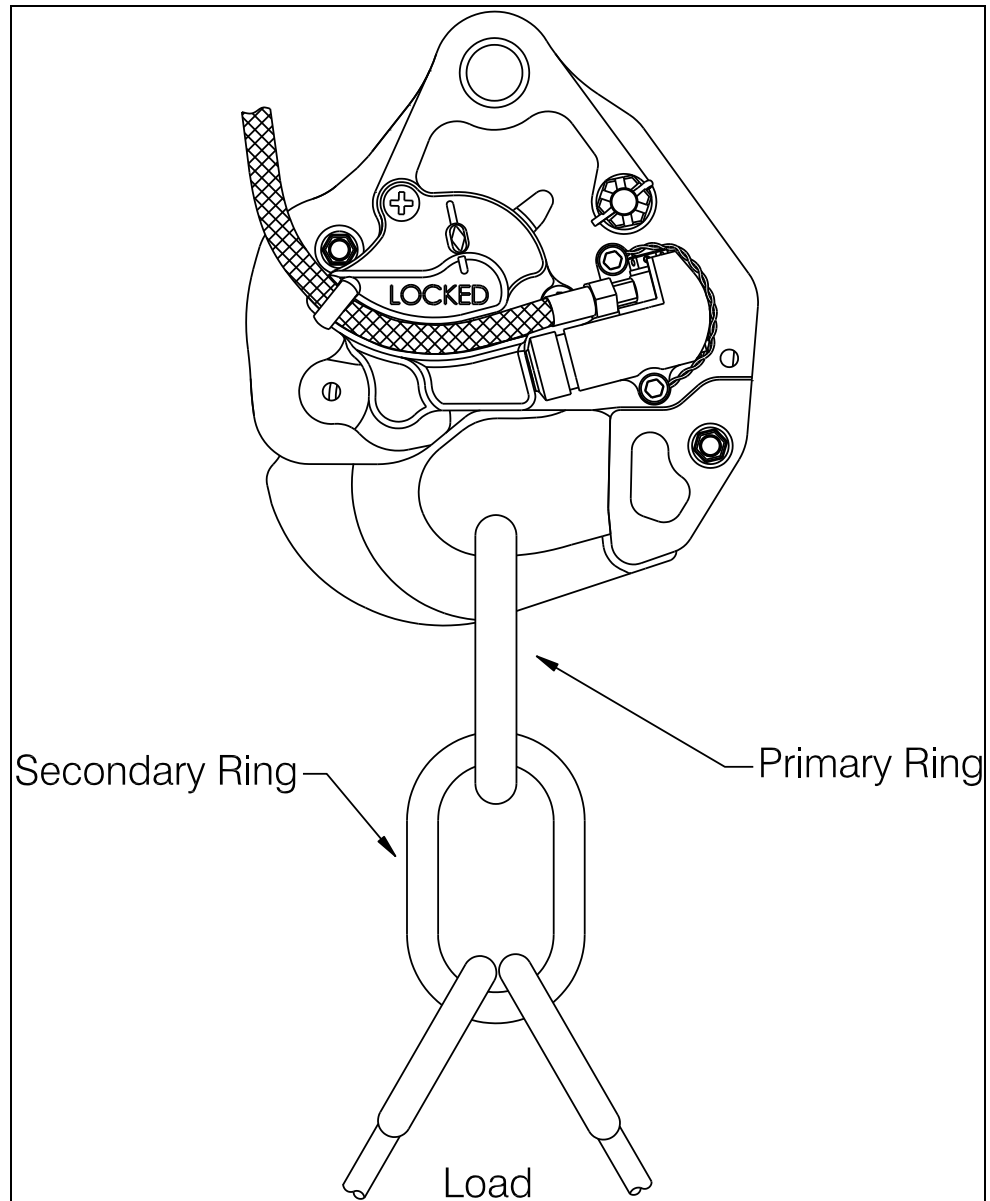
It is the responsibility of the operator to assure the cargo hook will function properly with each rigging.



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 4.2, Example of Recommended Cargo Hook Rigging



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Section 5

Maintenance

Refer to the Instructions for Continued Airworthiness (ICA) manual 123-019-00 for maintenance of the cargo hook suspension system. For maintenance of the cargo hook refer to Cargo Hook Service Manual 122-015-00.

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:

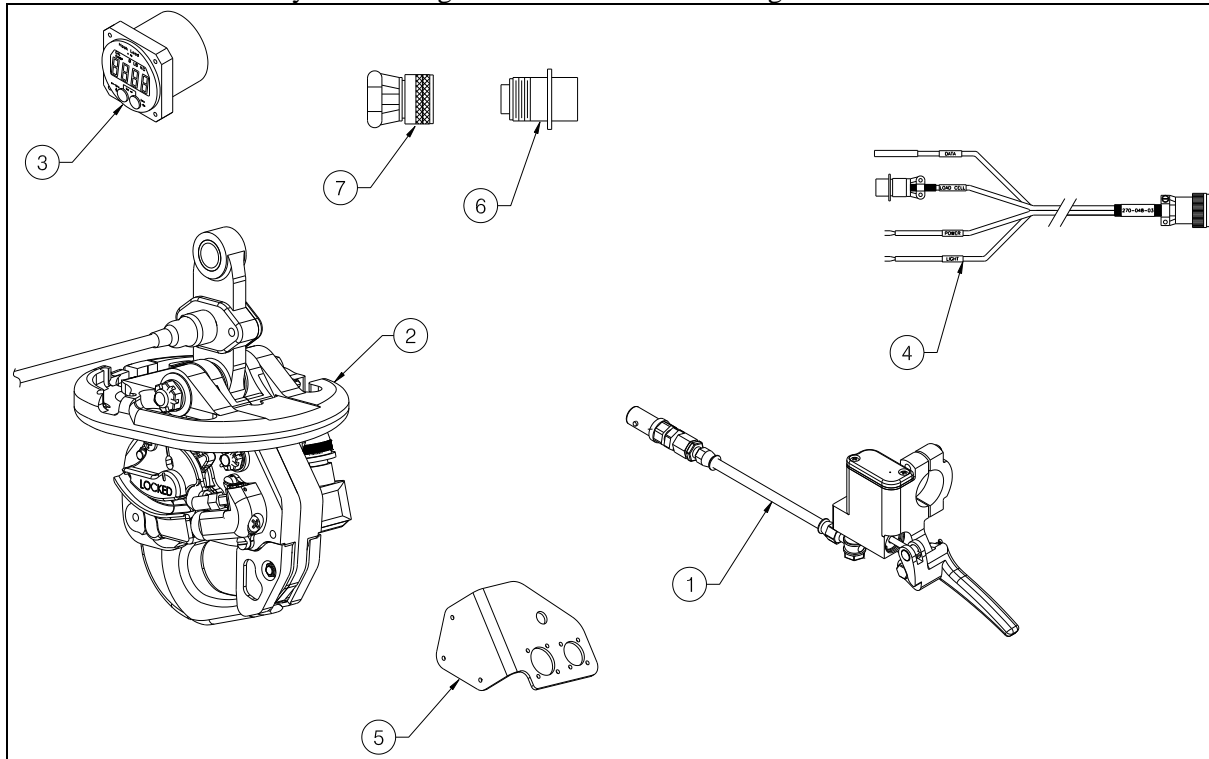
Onboard Systems
13915 NW 3rd Court
Vancouver, Washington 98685
USA
Phone: 360-546-3072

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Section 6

System Part Numbers

200-298-00 Talon LC Hydraulic Cargo Hook Kit with Load Weigh

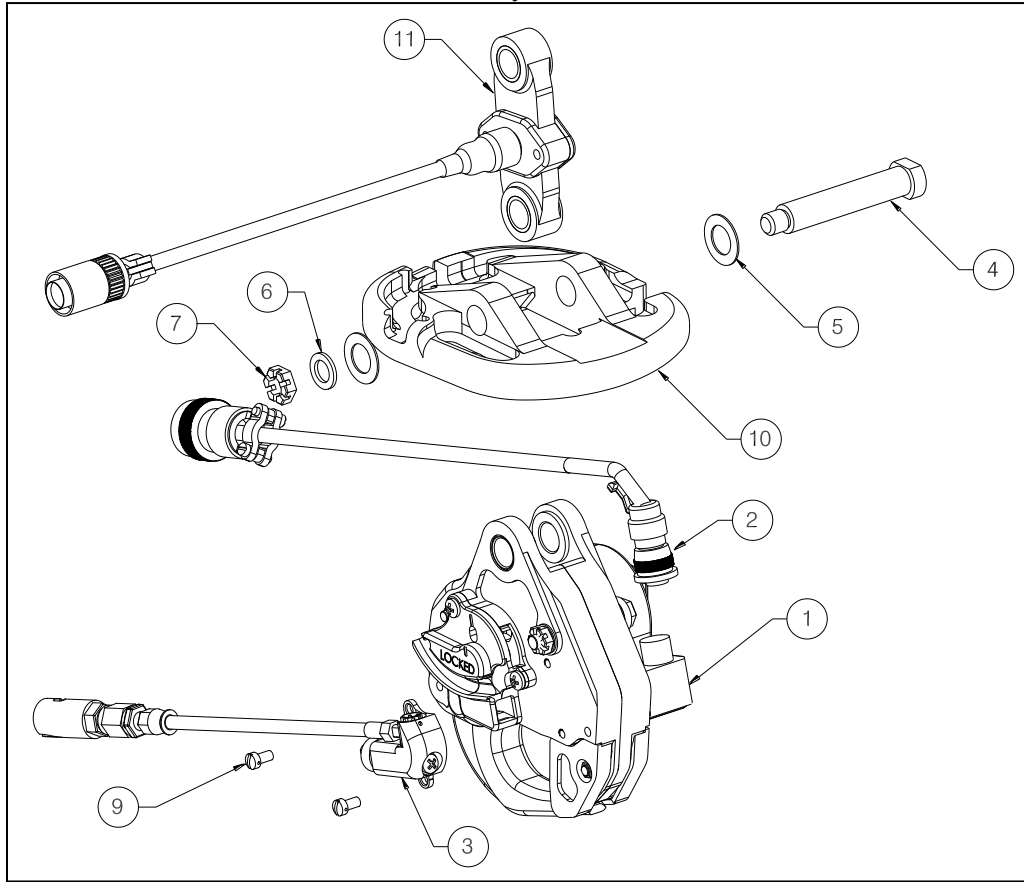


ITEM	P/N	DESCRIPTION	QTY.
1	232-165-00	Master Cylinder Assembly	1
2	232-192-00	Hook/Load Cell Assembly	1
3	210-095-00	C-39 Indicator Assembly	1
4	270-048-03	Load Weigh Internal Harness	1
5	290-884-00	Connector Bracket	1
6	410-191-00	Connector	1
7	410-192-00	Backshell	1
8*	510-453-00	Bolt, 10-32	1
9*	510-042-00	Washer, #10	1
10*	510-102-00	Nut, 10-32	1
11*	512-005-00	Adel Clamp	2
12*	500-065-00	Grommet Edging	1
13*	505-014-00	Grommet	1
14*	510-481-00	Screw	8
15*	510-029-00	Nut	8
16*	510-042-00	Washer	8

* Items not shown in figure.

System Part Numbers continued

232-192-00 Hook with Load Cell Assembly



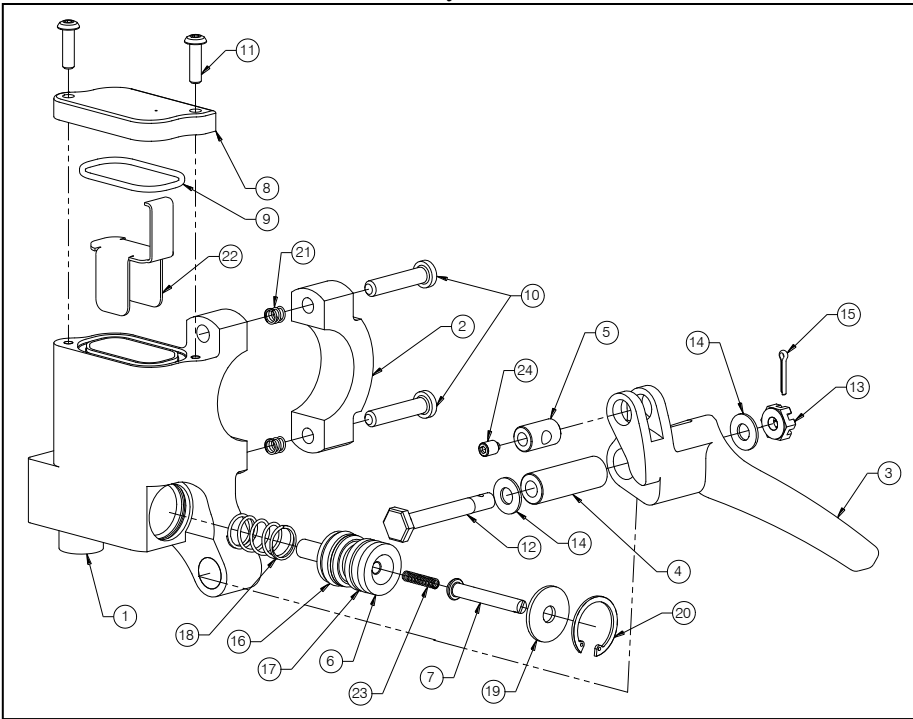
ITEM	P/N	DESCRIPTION	QTY.
1	528-028-00	Talon LC Hydraulic Cargo Hook	1
2	270-129-00	Electrical Release Harness	1
3	232-168-00	Slave Cylinder Assembly	1
4	290-775-00	Attach Bolt	1
5	510-183-00	Washer	2
6	510-174-00	Washer	1
7	510-170-00	Nut	1
8	510-178-00	Cotter Pin	1
9	510-251-00	Screw, 8-32	2
10	290-839-01	Hook Bumper	1
11**	210-046-02	E-69 Load Cell Assembly	1
12	512-011-00	Ty-Wrap	3
13	512-003-00	Ty-Wrap	1
14*	590-011-00	Plastic Tubing Wrap	36"

*Not shown in assembly.

** Optional P/N is 210-046-01. P/N 210-046-02 supersedes P/N 210-046-01, these P/Ns are interchangeable

System Part Numbers continued

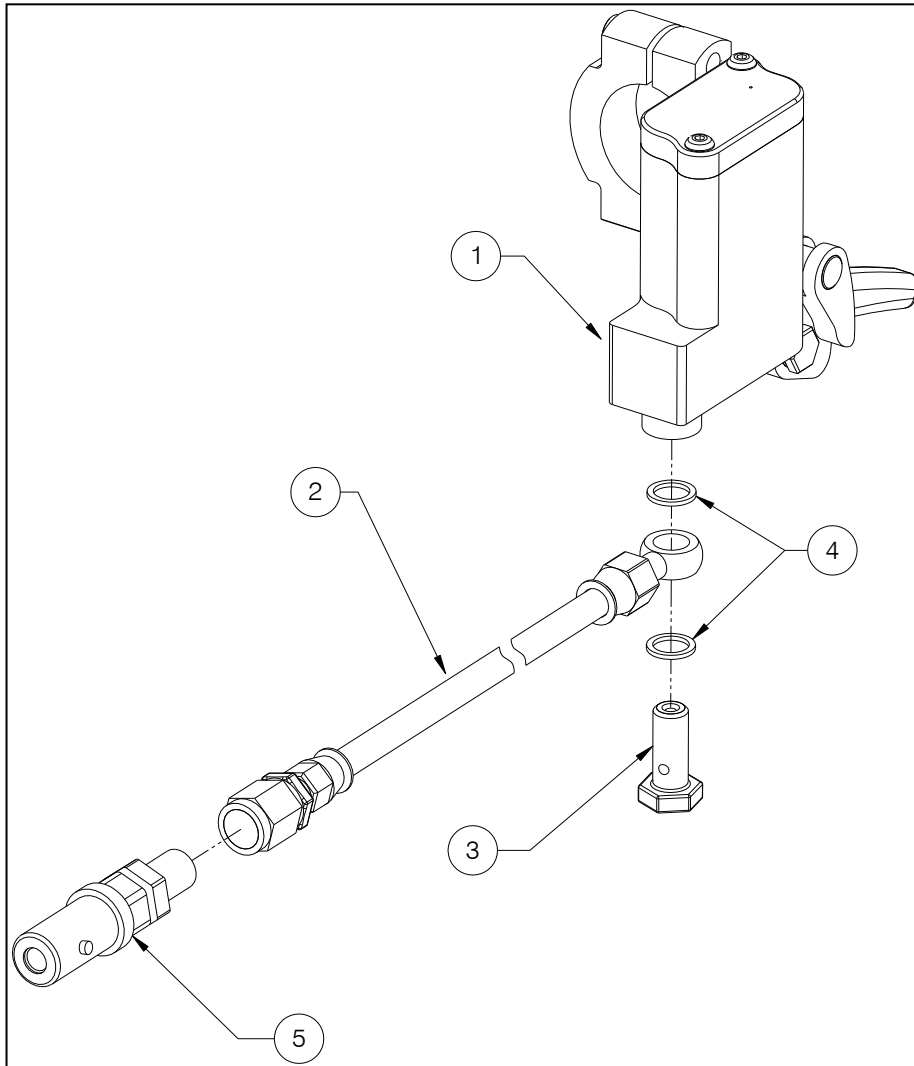
232-166-00 Release Handle Assembly



ITEM	P/N	DESCRIPTION	QTY
1	290-810-01	Master Cylinder	1
2	290-753-00	Clamp Half	1
3	290-811-00	Lever	1
4	290-816-00	Shaft	1
5	290-812-00	Barrel Nut	1
6	290-814-01	Piston	1
7	290-813-00	Push Rod	1
8	290-921-00	Reservoir Lid	1
9	556-044-00	O-Ring	1
10	510-390-00	Screw	2
11	510-157-00	#6-32 x 1/2" Button Head Cap Screw	2
12	510-487-00	Bolt	1
13	510-082-00	Nut	1
14	510-095-00	Washer	2
15	510-125-00	Cotter Pin	1
16	556-048-00	Cup Seal	1
17	556-047-00	O-Ring	1
18	514-055-00	Compression Spring	1
19	510-532-00	Washer – Piston Stop	1
20	515-008-00	Snap Ring	1
21	510-248-00	Helicoil	2
22	235-118-00	Master Cylinder Baffle	1
23	514-060-00	Compression Spring	1
24	510-530-00	#8-32 x 3/16" Nylon Tip Set Screw	1

System Part Numbers continued

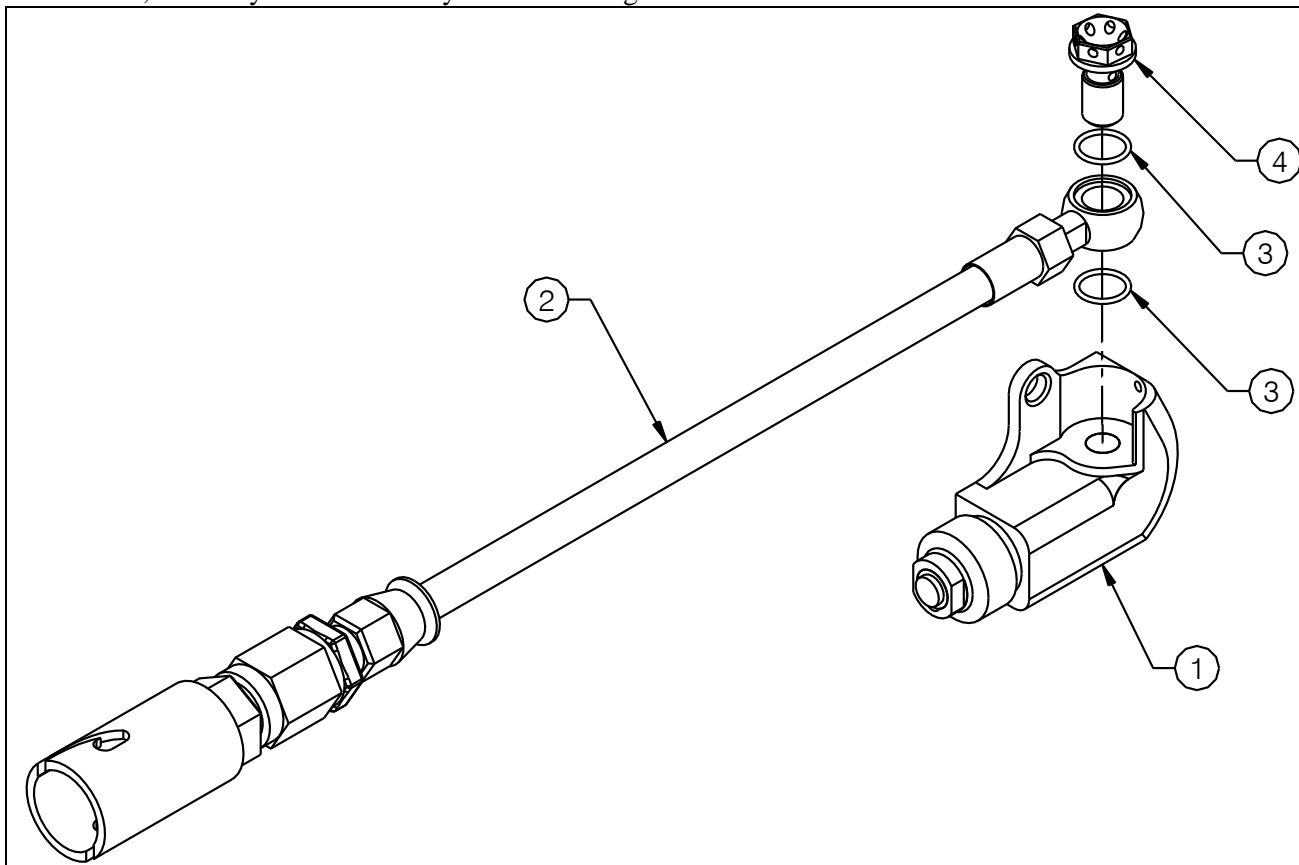
232-165-00 Master Cylinder Assembly with Plumbing



ITEM	P/N	DESCRIPTION	QTY
1	232-166-00	Master Cylinder Assembly	1
2	232-167-01	Master Cyl Plumbing Assembly	1
3	558-021-00	Banjo Bolt	1
4	556-040-00	Crush Washer	2
5	560-005-00	Quick Disconnect	1

System Part Numbers continued

232-168-00, Slave Cylinder Assembly with Plumbing

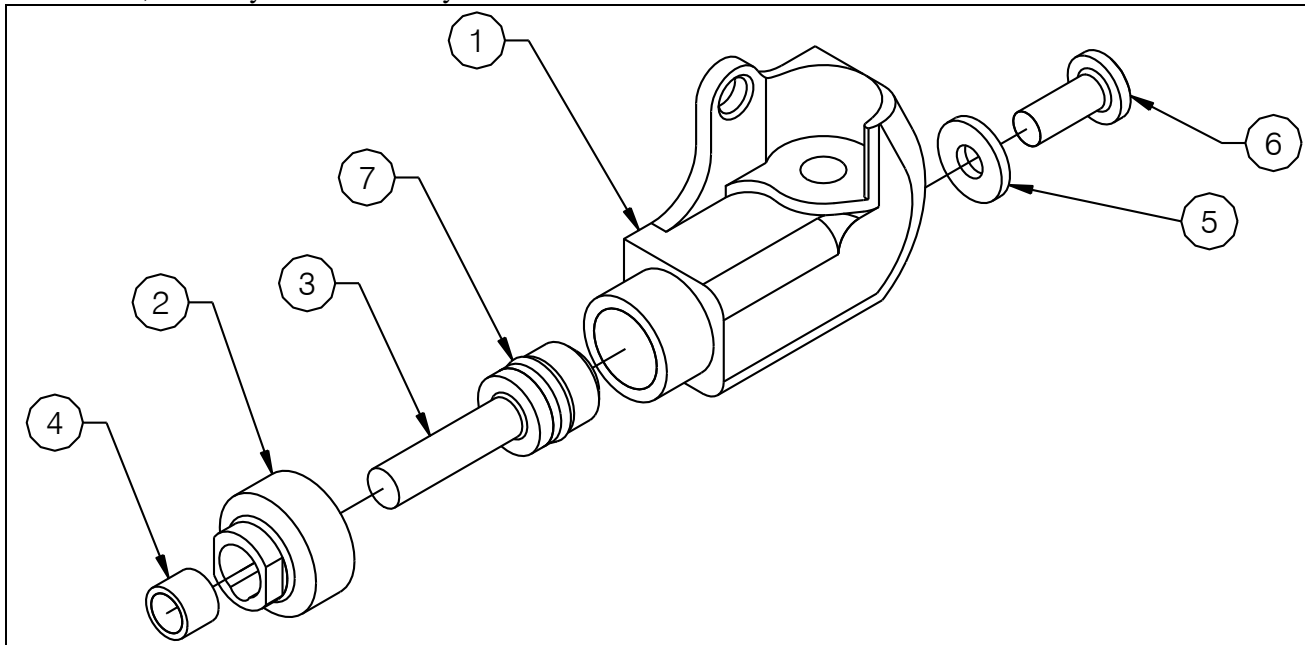


Item	Part Number	Description	Qty
1	232-169-00	Slave Cylinder Assembly	1
2	232-170-01*	Slave Cylinder Plumbing Assy	1
3	556-041-00	O-Ring	2
4	558-025-00	Banjo Bolt	1

*This item supersedes P/N 232-170-00. These parts are fully interchangeable.

System Part Numbers continued

232-169-00, Slave Cylinder Assembly





Item	Part Number	Description	Qty
1	290-803-00	Slave Cylinder	1
2	290-802-00	Cylinder Cap	1
3	290-805-00	Piston	1
4	517-040-00	Bushing	1
5	510-496-00	Stat-O-Seal	1
6	510-493-00	Screw	1
7	556-097-00	Quad Ring	1

Section 7

Certification

FAA STC

<small>United States of America</small>	
Department of Transportation—Federal Aviation Administration	
<h1>Supplemental Type Certificate</h1>	
<i>Number</i> SR01812SE	
<i>This certificate, issued to</i>	Onboard Systems International 13915 NW 3rd Court Vancouver, WA 98685
 <i>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.</i>	
<i>Original Product—Type Certificate Number:</i>	H9EU
<i>Make:</i>	Eurocopter France
<i>Model:</i>	AS350B, AS350BA, AS350B1, AS350B2, & AS350D
 <i>Description of the Type Design Change:</i> Fabrication of Onboard Systems Model 200-297-00 Talon LC Hydraulic Cargo Hook Kit without Load Weigh and Model 200-298-00 Talon LC Hydraulic Cargo Hook Kit with Load Weigh, in accordance with FAA-approved Onboard Systems Master Drawing List No. 155-110-00, Revision 1, dated September 27, 2006, or later FAA-approved revision; and installation of the 200-297-00 cargo hook kit in accordance with FAA-approved Onboard Systems Owner's Manual No. 120-115-00, Revision 0, dated April 25, 2005, or later FAA-approved revision and installation of the 200-298-00 cargo hook kit in accordance with FAA-approved Onboard Systems Owner's Manual No. 120-117-00, Revision 0, dated April 25, 2005, or later FAA-approved revision.	
(continued on page 3)	
 <i>Limitations and Conditions:</i> Approval of this change in type design applies to only those Eurocopter model rotorcraft listed above which are equipped with a fuel tank support mounted swing type suspension. Additionally, to use Cargo Hook Kit P/N 200-297-00, a rotorcraft must be equipped with an Onboard Systems 200-058-00 or 200-295-00 Load Weigh Kit. 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.	
(continued on page 3)	
 <i>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.</i>	
<i>Date of application:</i>	March 2, 2005
<i>Date of issuance:</i>	February 4, 2008
<i>Date reissued:</i>	
<i>Date amended:</i>	
	
 <i>By direction of the Administrator</i>  (Signature)	
Acting Manager, Seattle Aircraft Certification Office (Title)	
<hr/>	
<small>Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.</small>	
<small>This certificate may be transferred in accordance with FAR 21.47.</small>	
<small>FAA FORM 8110-2(10-68)</small>	

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

Number SR01812SE

Onboard Systems International

Issued: February 4, 2008

Reissued:

Amended:

Description of the Type Design Change: (cont'd)

This modification must be inspected and maintained in accordance with Section ATA 5 of the FAA-approved Onboard Systems Instructions for Continued Airworthiness (ICA) Document No. 123-019-00, Revision 1, dated September 26, 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: (cont'd)

Rotorcraft modified in accordance with this STC must be operated in accordance with a copy of the FAA-approved Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) 121-026-00, Revision 0, dated January 24, 2008, or later FAA approved revision. A copy of this certificate, FAA-approved RFMS, Onboard Systems Owner's Manual, 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.

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

This certificate may be transferred in accordance with FAR 21.47.

PAGE 3 OF 3 PAGES

Canadian Approval



Transport
Canada
Civil Aviation

Transports
Canada
Aviation Civile

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

Your file Votre référence

Our file Notre référence

5009-2-1
RDIMS #4232424

July 10, 2008

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

Dear Sir / Madam:

Subject: Acceptance of FAA STC No. SR01812SE

This is in response to the FAA Seattle ACO letter dated June 25, 2008, 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,

J.H. Nehera
Regional Manager
Aircraft Certification

RK

Canada 



European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.01446

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
WA
98685
Vancouver
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: EASA TC EASA.R.008

Type Certificate Holder: Eurocopter

Model: AS350B, AS350B1, AS350B2, AS350BA, AS350D

Original STC Number: FAA STC SR01812SE

Description of Design Change:

Installation of Cargo Hook Kit P/N 200-297-00 and installation of Cargo Hook Kit P/N 200-298-00.

Associated Technical Documentation:

Definition and installation:

- Onboard Systems Master Drawing List Doc. No. 155-110-00, Rev. 1, dated September 27, 2006, or later EASA approved revisions
- Onboard Systems Owner's Manual No. 120-115-00, Rev. 0 dated April 25, 2005, or later EASA approved revisions (for Cargo Hook Kit P/N 200-297-00).
- Onboard Systems Owner's Manual No. 120-117-00, Rev. 0 dated April 25, 2005, or later EASA approved revisions (for Cargo Hook Kit P/N 200-298-00).

Inspection and maintenance:

- Onboard Systems Instructions for Continued Airworthiness [including Airworthiness Limitations section] No. 123 019-00, Rev. 1 dated September 26, 2006, or later EASA approved revisions
- Onboard Systems Service Manual No. 122 015-00, Rev. 4 dated July 6, 2006, or later EASA approved revisions

Operation:

- Onboard Systems RFMS Doc. No. 121-026-00, Rev. 0 dated January 24, 2008, or later EASA approved revisions.



European Aviation Safety Agency

Limitations and Conditions:

1. 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.
2. The installation of this modification by third persons is subject to written permission of the approval holder and holding and disposal of the approved appropriate documentation.
3. The systems covered by this STC can be installed on AS 350 helicopters that are equipped with Eurocopter swing suspension systems P/N 350A86-1030-00 or 350A86-1030-01
4. EASA approved AS350 Flight Manual and appropriate <External Load Transport "Cargo Swing"> RFM Supplement are required
5. To use Cargo Hook Kit P/N 200-297-00 a rotorcraft must be equipped with an Onboard Systems 200-295-00 Load Weigh Kit approved under EASA.IM.R.S.01122

This Certificate shall remain valid unless otherwise surrendered or revoked.

For the European Aviation Safety Agency,

Date of issue: 21 November 2008

Massimo MAZZOLETTI
Certification Manager

STC – EASA.IM.R.S.01446 – Onboard Systems International