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Owner's Manual

For the

Cargo Hook Suspension Systems

with

Talon LC Hydraulic Cargo Hook

On the

Airbus Helicopters EC130B4

System Part Numbers

200-321-00

200-322-00

Owner's Manual Number 120-131-00
Revision 19
04/26/22

ONBOARD™ SYSTEMS INTERNATIONAL

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

Revision	*Date*	*Page(s)*	*Reason for Revision*
10	03/06/09	1-4 & 1-5	Changed spiral wrap P/N 590-013-00 to P/N 590-017-00. Updated spiral wrap length for kit P/N 210-227-00 to 24”
11	04/27/09	6-15	Updated system part numbers, P/N 232-312-00, Cargo Hook Gimbal Assembly to include Ty-wraps, P/N 512-011-00.
12	07/30/10	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 through out document.
13	09/21/10	6-18	Replaced Load Cell P/N 210-199-02 with P/N 210-249-01.
14	03/21/11	6-16 & 6-18	Added Fuel Drain Warning Placard to System Parts Numbers section under Swing Frame/Cargo Hook Assembly.
15	05/05/11	6-7	Updated Master Cylinder Assembly figure. Changed screw P/N 510-390-00 to P/N 510-987-00 and P/N 510-157-00 to P/N 510-902-00.
16	02/04/13	4-3, 4-4, 5-1, 6-14, & 6-15	Changed Load Cell P/N 210-203-01 to 210-203-03. Changed Cup Seal P/N 556-038-00 to Quad Ring P/N 556-097-00 on Slave Cylinder Assembly P/N 232-169-01. Updated RMA info to reflect current procedures. Updated caution flags to warning flags in operational procedures.
17	10/11/13	6-13	Replaced Slave Cylinder Plumbing P/N 232-305-01 with P/N 232-305-02.
18	05/27/14	1-1, 1-3, 1-4, 1-6, Section 2, 4-4, 6-1, 6-18	Updated Eurocopter to Airbus Helicopters. Replaced load cell P/N 210-249-01 with P/N 210-249-04. Replaced fuel drain guard P/N 290-889-00 with 290-889-01. Updated note regarding EMI test at installation check-out. Updated cargo hook load rigging figure.
19	04/26/22	2-32, 2-36, 6-7	Changed screws for securing reservoir lid from P/N 510-902-00 to shoulder screws P/N 511-124-00 and added safety wire instructions. Updated bleed kit P/N to 212-014-02.

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Section 1
General Information

Introduction

This Owner's Manual contains installation and operation instructions for the cargo hook "swing" suspension kit part number 200-321-00 and cargo hook "sling" suspension kit part number 200-322-00. These kits are approved for installation on the Airbus Helicopters EC130B4 helicopter. The 200-321-00 swing suspension installation requires that the helicopter fuel tank supports be modified per Airbus Helicopters mod no. OP3630 (reference Airbus Helicopters Service Bulletin 25-032).

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 Swing Suspension System Specifications

Design load	2,557 lbs. (1,160 kgs.)
Design ultimate strength	11,574 lbs. (5,250 kgs.)
Unit weight - Fixed Provisions	6.5 lbs. (2.95 kgs.)
Unit weight - Removable Provisions	28.5 lbs. (12.9 kgs.)

Table 1.2 Sling Suspension System Specifications

Design load	1,660 lb. (750 kgs.)
Design ultimate strength	6,225 lb. (2,823 kgs.)
Unit weight, Fixed Provisions	5.5 lbs (2.5 kgs.)
Unit weight, Removable Provisions	6.5 lbs. (2.95 kgs.)

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

Design load	3,500 lbs. (1,580 kgs.)
Design ultimate strength	13,125 lbs. (5,952 kgs.)
Electrical release capacity	8,750 lbs. (3,970 kgs.)
Mechanical release capacity	8,750 lbs. (3,970 kgs.)
Force required for mechanical release at 3,500 lb.	12 lbs max. @ Master Cylinder
Hydraulic release system – operating temperature rating	-49°F to 158°F (-45°C to 70°C)
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

CAUTION

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 200-321-00 Swing Suspension System. This system includes a removable provisions kit (P/N 210-224-00) and a fixed provisions kit (P/N 210-223-00). If shortages are found contact the company from whom the system was purchased.

Table 1.4 Bill of Materials – Swing Suspension Kit P/N 200-321-00

Part No.	Description	200-321-00 Qty	210-223-00 Qty	210-224-00 Qty
120-131-00	Owners Manual	1	1	-
121-046-00	RFMS	1	1	-
122-015-00	Service Manual	1	-	1
123-029-00	ICA	1	1	-
210-095-00	C-39 Indicator	1	1	-
215-168-00	Label, External Load Limit 2557 Lbs.	1	-	1
215-204-00	Electrical Label Set	1	1	-
232-293-00	Upper Shackle Assembly	4	4	-
232-294-00	Shock Cord Assembly	2	-	2
232-300-00	Master Cylinder Assembly W/ Plumbing	1	1	-
232-304-00	Cover Assembly	1	1	-
232-311-00	C-39 Mount Bracket Assembly	1	1	-
232-313-00	Swing Frame Cargo Hook Assembly	1	-	1
235-144-00	Doubler	1	1	-
235-145-00	Doubler	1	1	-
235-152-00	Bungee Bracket	2	2	-
270-125-01	Ground Strap	1	1	-
270-147-00	Internal Harness, Electrical Release	1	1	-
270-148-00	Internal Harness, Load Weigh	1	1	-
290-783-00	Relay Bracket	1	1	-
290-884-00	Connector Bracket	1	1	-
290-893-00	Bracket	1	1	-
290-888-00	Retainer	1	1	-
290-889-01*	Guard	1	1	-
410-250-00	Ring Terminal	1	1	-
440-008-00	Circuit Breaker 15A	1	1	-
440-009-00	Circuit Breaker 2.5A	1	1	-
445-005-00	Relay	1	1	-
510-029-00	Nut	9	9	-
510-062-00	Washer	9	9	-
510-277-00	Screws	2	2	-
510-278-00	Washer	2	2	-
510-279-00	Nut	2	2	-
510-481-00	Screw	9	9	-
510-486-00	Rivet	25	25	-
510-526-00	Cotter Pin	2	2	-
510-637-00	Screw	4	4	-
510-639-00	Instrument Mounting Nut	4	4	-
510-640-00	Screw	3	3	-
510-673-00	Rivet	4	4	-
510-688-00	Rivet	14	14	-
512-011-00	Ty-Wrap	20	20	-
512-031-00	Ty-Wrap Holder	4	4	-

Bill of Materials continued

Table 1.4 Bill of Materials – Swing Suspension Kit P/N 200-321-00 continued

Part No.	Description	200-321-00 Qty	210-223-00 Qty	210-224-00 Qty
590-017-00	Spiral Wrap	24”	24”	-
610-024-00	Fuel Valve Seal	1	1	-
610-030-00	Grommet	1	1	-
610-031-00	Grommet	2	2	-
610-032-00	Cargo Hook Sling Switch	1	1	-

*Fuel drain guard P/N 290-889-01 supersedes fuel drain guard P/N 290-889-00.

Bill of Materials continued

The following items are included with the 200-322-00 Sling Suspension System. This system includes a removable provisions kit (P/N 210-228-00) and a fixed provisions kit (P/N 210-227-00). If shortages are found contact the company from whom the system was purchased.

Table 1.5 Bill of Materials – Sling Suspension Kit P/N 200-322-00

Part No.	Description	200-322-00 Qty	210-227-00 Qty	210-228-00 Qty
120-131-00	Owners Manual	1	1	-
121-049-00	RFMS	1	1	-
122-015-00	Service Manual	1	-	1
123-031-00	ICA	1	1	-
210-095-00	C-39 Indicator	1	1	-
215-167-00	Label, External Load Limit, 1660 Lbs	1	-	1
215-204-00	Electrical Label Set	1	1	-
232-300-00	Master Cylinder Assy W/ Plumbing	1	1	-
232-304-00	Cover Assembly	1	1	-
232-311-00	C-39 Mount Bracket Assembly	1	1	-
232-312-00	Cargo Hook Gimbal Assembly	1	-	1
235-144-00	Doubler	1	1	-
235-145-00	Doubler	1	1	-
270-125-01	Ground Strap	1	1	-
270-147-00	Internal Harness, Electrical Release	1	1	-
270-148-00	Internal Harness, Load Weigh	1	1	-
290-783-00	Relay Bracket	1	1	-
290-844-00	Connector Bracket	1	1	-
410-250-00	Ring Terminal	1	1	-
440-008-00	Circuit Breaker 15A	1	1	-
440-009-00	Circuit Breaker 2.5A	1	1	-
445-005-00	Relay	1	1	-
510-029-00	Nut	9	9	-
510-062-00	Washer	9	9	-
510-277-00	Screws	2	2	-
510-278-00	Washer	2	2	-
510-279-00	Nut	2	2	-
510-481-00	Screw	9	9	-
510-486-00	Rivet	8	8	-
510-637-00	Screw	4	4	-
510-639-00	Nut Plate	4	4	-
510-640-00	Screws	3	3	-
510-673-00	Rivet	4	4	-
510-688-00	Rivet	14	14	-
512-011-00	Ty-Wraps	20	20	-
512-031-00	Tie Wrap Holder	4	4	-
590-017-00	Spiral Wrap	24”	24”	-
610-030-00	Grommet	1	1	-
610-031-00	Grommet	2	2	-
610-032-00	Cargo Hook Sling Switch	1	1	-

To complete the cargo hook installation the following Airbus Helicopters parts may be necessary to obtain. These parts are frequently found to be on the aircraft from the factory or are standard Airbus Helicopters parts.

These items may or may not be installed with a standard aircraft, therefore verification is recommended before purchasing them.

Table 1.6 Airbus Helicopters Part Numbers

Airbus Helicopters P/N	Description	Qty
22731BC120046M*	Bolt	4
23111AG100LE*	Washer	4
22453BC100L*	Nut	4
23310AA020025L*	Cotter Pin	4

** This hardware is used to attach the shackle assemblies to the fuel tank support hard points (reference Figure 2.5.1).*

The cargo hook electrical system interfaces with the aircraft's electrical panel. The 200-321-00 and 200-322-00 kits include a pushbutton switch and circuit breakers to interface with newer versions of the EC130B4. Earlier versions (pre-mod. #3245) of the EC130B4 utilize a fuse type switch panel. If installing the kit on this version, the following electrical panel components may be necessary to obtain.

Table 1.7 Airbus Helicopters Electrical Parts – Pre-mod. #3245

Airbus Helicopters P/N	Description	Qty
DHS775-160.42	Pushbutton	1
DHS775-240.22	Indicator Light	1
EN2240-6839	Lamp	4
350A61-1726-51	Label	1
350A61-1726-91	Label	1
HA23-16U	Fuse 16A	1
HA21-2U5	Fuse 2.5A	1

Theory of Operation

The Cargo Hook Suspension Systems are comprised of:

- The cargo hook and suspension system.
- An electrical release system that provides means for release 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.
- A hydraulic release system, which provides a means of releasing a cargo hook load in the event of an electrical release system failure. A lever mounted to the collective actuates it.
- Ground personnel may also release a load by the actuation of a lever located on the side of the cargo hook.
- A load weigh system, which is comprised of an indicator mounted to the RH door pillar within the cockpit connected 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 sling 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.

The Cargo Hook Swing Suspension System kit includes a fuel drain guard kit. The fuel drain guard kit protects the fuel drain valve on the helicopter from accidentally being opened or damaged by the cargo swing. The fuel drain valve is located on the bottom of the fuel tank and extends below the belly skin of the helicopter. In this position it is vulnerable to damage or uncommanded opening. The most common occurrence of the cargo hook swing suspension striking the fuel drain valve happens when the helicopter lands on snow or on uneven terrain. The swing has limited ground clearance and when the skid gear sinks into the snow, the swing suspension is pushed upward into the fuel drain valve, opening it and causing fuel to drain. The fuel drain valve can also be opened in flight by the swing suspension flying vertically due to aerodynamics when ferrying with no load or from recoil effects from releasing large cargo hook loads.

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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 Load Weigh Indicator and Harness Installation

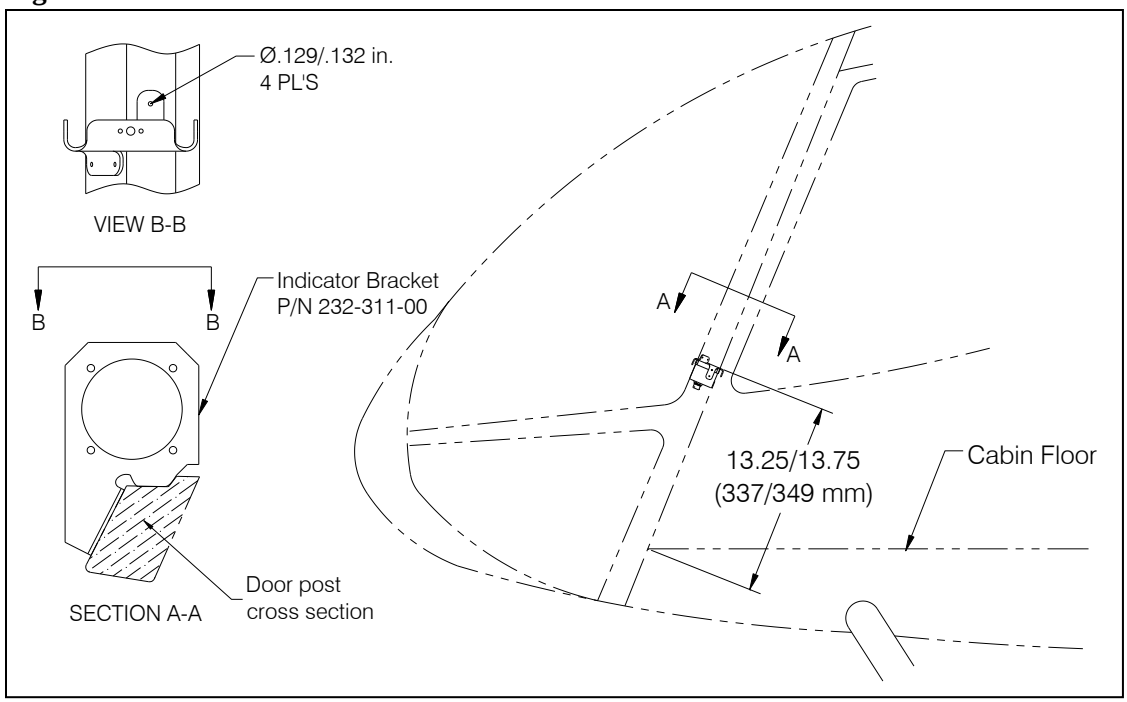
This part of the installation consists of installing the load weigh indicator and the load weigh electrical harness.

A bracket is provided to mount the load weigh indicator on the LH forward door pillar or if the OEM indicator is installed here it can be removed from its enclosure and replaced with the Onboard Systems load weigh indicator.

Install the load weigh indicator per the following:

- Hold the Indicator Bracket (P/N 232-311-00) at a location as shown below.
- Drill out the 4 holes in the bracket to .129/.132 in. (#30 drill, 3.3mm) and match drill the door post.
- Secure the bracket with four rivets (P/N 510-673-00).

Figure 2.1.1 Indicator Bracket Installation

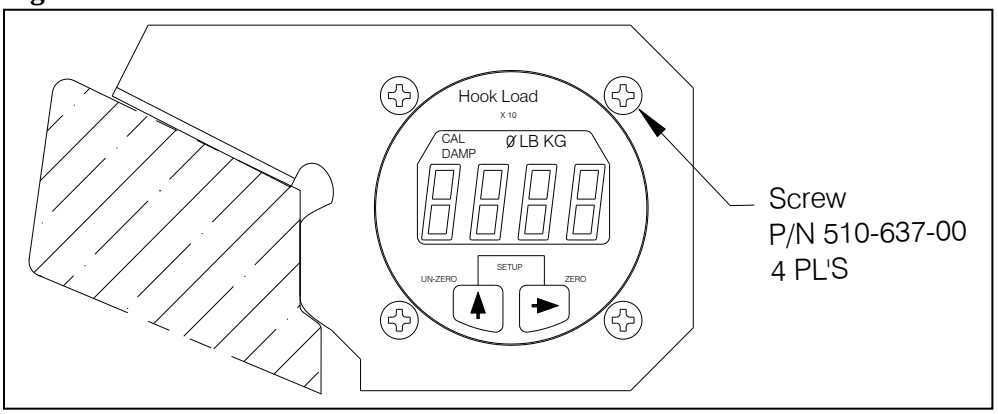


- Install the four instrument mounting nuts (P/N 510-639-00) into the four mounting holes in the C-39 Indicator.

2.1 Load Weigh Indicator and Harness Installation continued

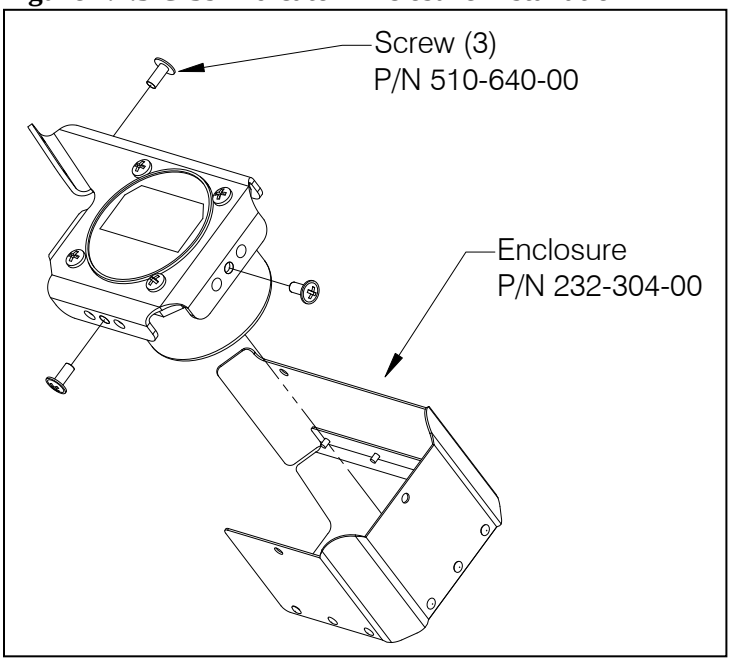
- Install C-39 Indicator (P/N 210-095-00 or P/N 210-095-04) onto bracket with four screws (P/N 510-637-00) as illustrated below.

Figure 2.1.2 C-39 Indicator Installation



- Install C-39 Enclosure (P/N 232-304-00) over the bracket with three screws (P/N 510-640-00) as illustrated below.

Figure 2.1.3 C-39 Indicator Enclosure Installation



2.1 Load Weigh Indicator and Harness Installation continued

To route the load weigh electrical harness (P/N 270-148-00) a hole needs to be created and doubler installed in the airframe underneath the cabin floor per the following instructions.

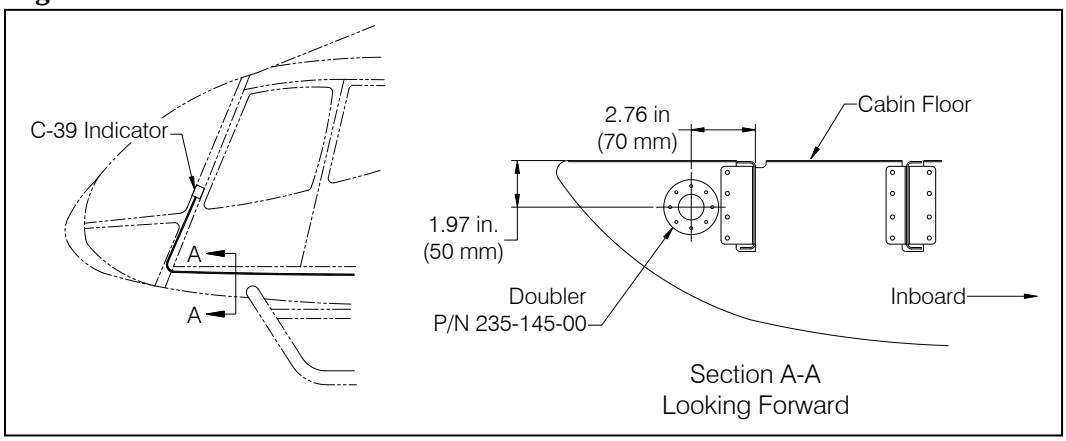
- ❑ Create a 1.10 inch (28 mm) hole in the structure below the cabin floor at a location shown in Figure 2.1.2.

NOTICE

Before creating the hole at this location, ensure the Doubler (P/N 235-145-00) will be clear of surrounding structure. If necessary move just enough to clear existing flange.

- ❑ Locate the Doubler over the hole and drill the structure to match the hole pattern of the Doubler (P/N 235-145-00).
- ❑ Secure the Doubler with Rivets (P/N 510-688-00).

Figure 2.1.4 Doubler Installation



- ❑ Connect the electrical connector (30M) from the wire harness (P/N 270-148-00) to the back of the indicator and feed the wires down through the reinforced hole created in previous step.
- ❑ Secure the harness along the canopy door post with the supplied Ty-wrap Holders (P/N 512-031-00) and ty-wraps (P/N 512-011-00).
- ❑ After routing the connector and wires through the hole slit the center webbing and flange of the Grommet (P/N 610-031-00) as necessary to install in the hole.

2.1 Load Weigh Indicator and Harness Installation continued

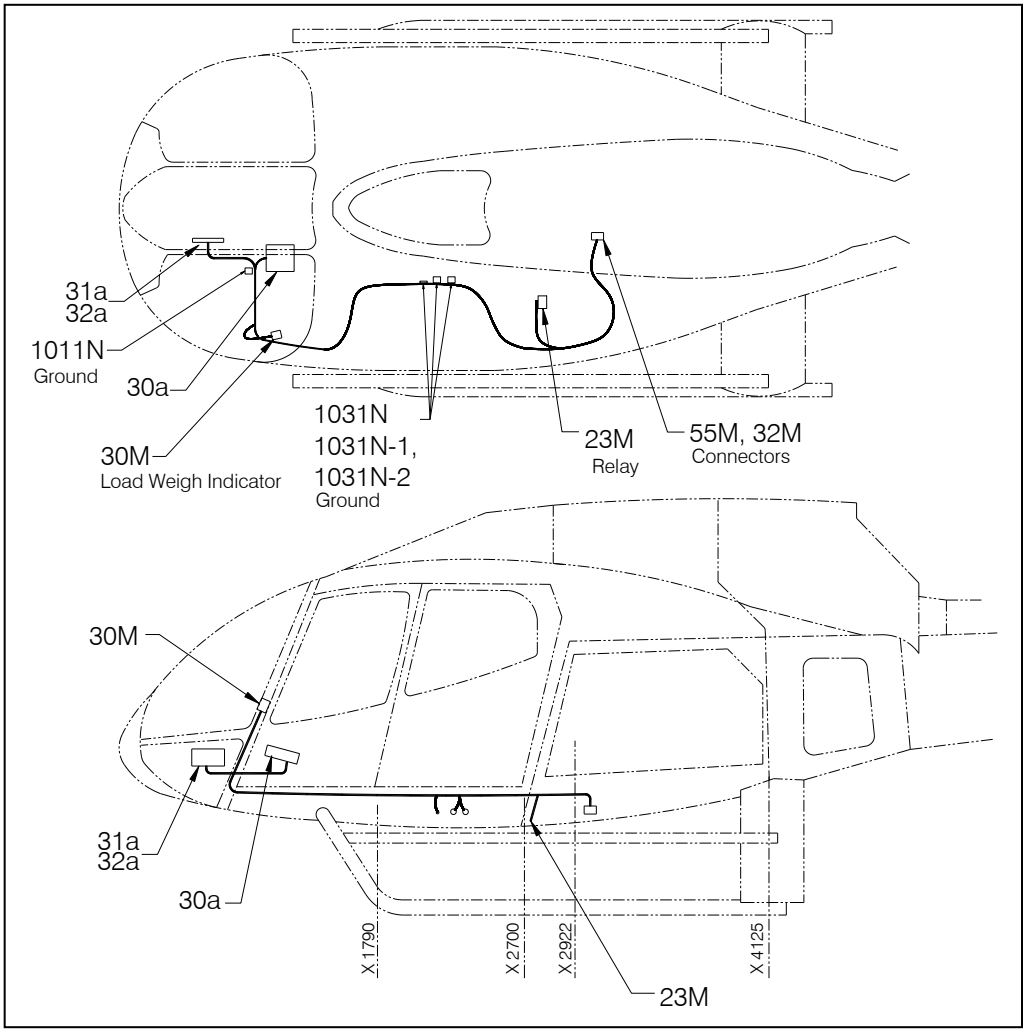
- Aft of the reinforced hole route the wires along the existing wire harnesses (refer to Figure 2.1.5).

  Route wires 1ME90NE and 1ME91NE to 1011N for ground.
  Route wire 1ME87E to 31α32 to pick up power.
  Route wire 1ME40E to 140L to pick up lighting.
  Route wire 1ME91E back to the connector bracket location on the aft side of the forward fuel tank support.

  Refer to Figure 2.1.6 for electrical schematic. Observe the following precautions when routing the electrical harnesses:

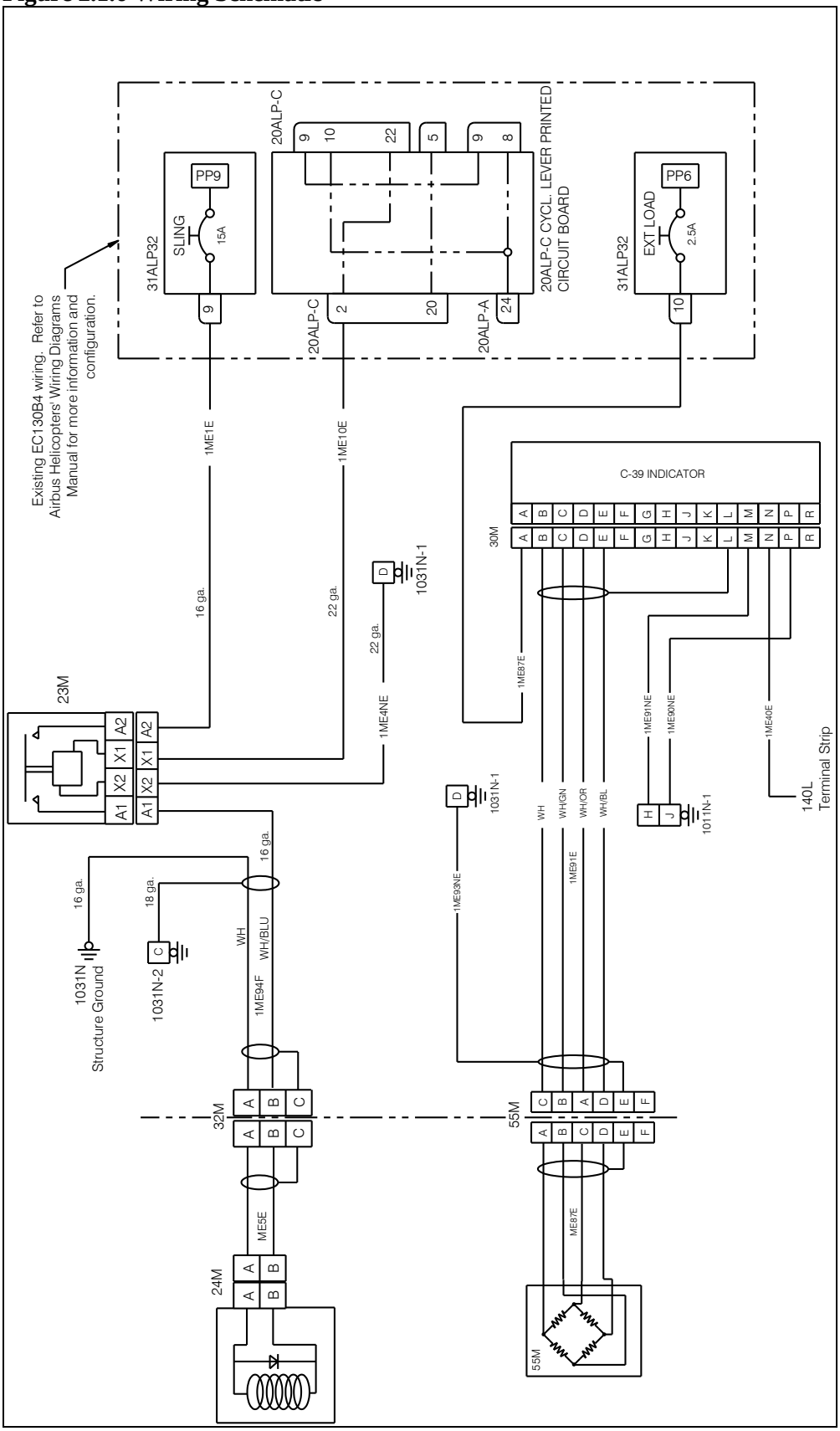
  - Pick up existing wire runs by opening existing cable clamps. Nylon ties alone may not be used for primary support.
  - The distance between supports should not exceed 21 inches.
  - Bend radius of wire or harness must not be less than 10 times the wire or harness diameter.
  - Inspect and verify that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

Figure 2.1.5 Electrical Wiring Routing Overview



2.1 Load Weigh Indicator and Harness Installation continued

Figure 2.1.6 Wiring Schematic

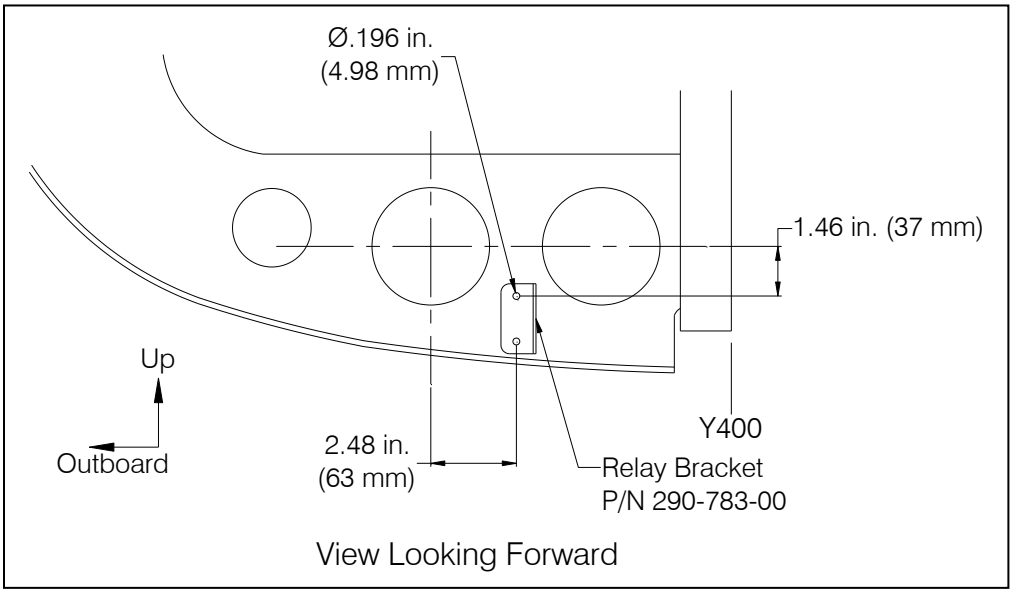


2.2 Electrical Release Wiring Installation

This section of the installation consists of installing the internal electrical release wiring including the wire harness, relay, circuit breakers, switch and connector bracket.

- Install the 15A circuit breaker (P/N 440-008-00) and the 2.5A circuit breaker (P/N 440-009-00), refer to electrical schematic (Figure 2.1.6) and Figure 2.1.5 for location identification.
- Install the cargo hook sling switch (P/N 610-032-00) at 30α.
- In preparation for installing the Relay Bracket (P/N 290-783-00) create two holes in the aircraft structure just aft of X2700 as illustrated in Figure 2.2.1.

Figure 2.2.1 Relay Bracket Installation

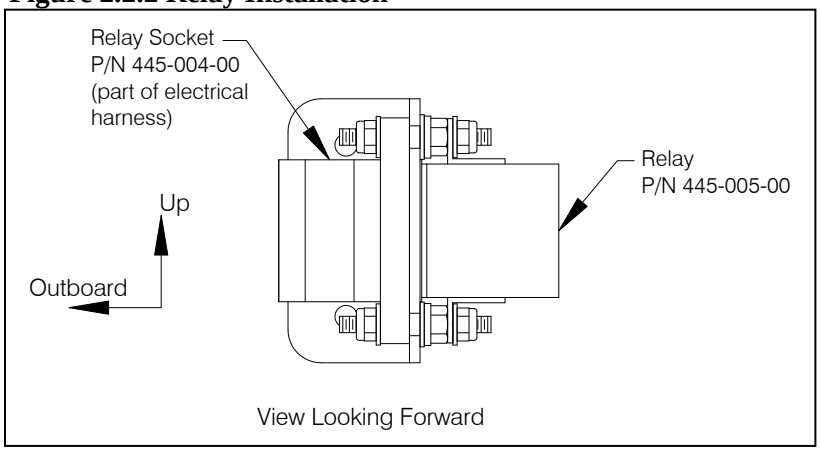


- Secure Relay Bracket with two screws (P/N 510-277-00), two washers (P/N 510-278-00), and two nuts (P/N 510-279-00).

2.2 Electrical Release Wiring Installation continued

- Place relay socket (part of 270-147-00 electrical harness) into relay bracket mounting holes and secure to relay and relay bracket with hardware provided with relay (as illustrated below).

Figure 2.2.2 Relay Installation

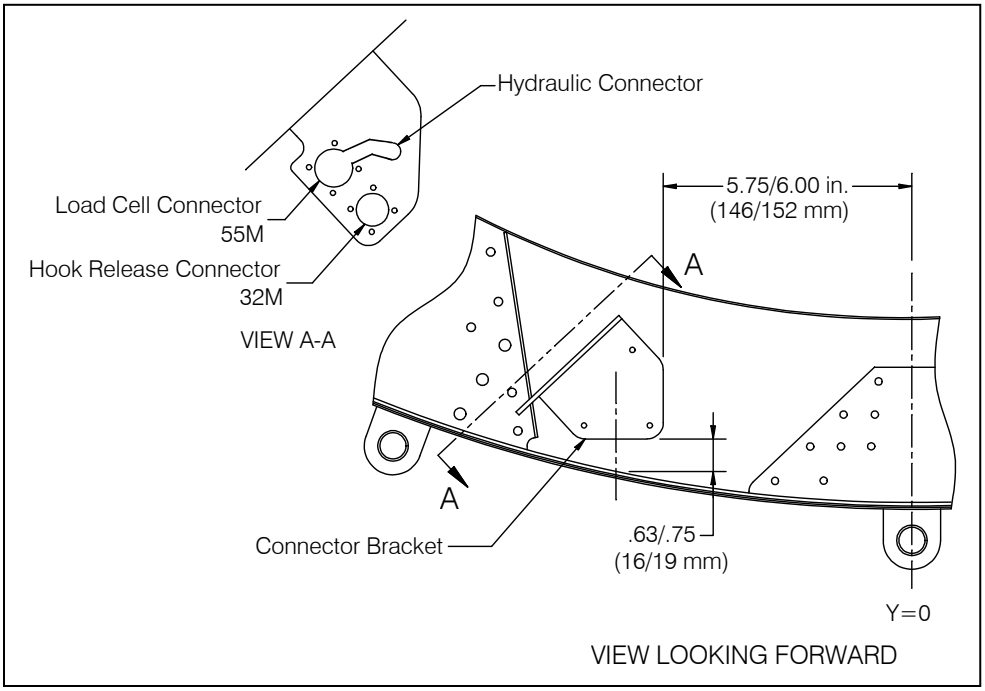


- From the relay, route the wires along the existing wire harnesses.
  - Route wires 1ME4NE, 1ME132NE, and 1ME94NG to ground points 1031N-1, 1031N-2, and 1031N which are located just forward of the relay. Create ground point 1031N per Figure 2.2.4.
  - Route wire 1ME1E forward to 31α32 to pick up power.
  - Route wire 1ME10E forward to 20α to pick up the signal from the cyclic switch.
  - Route wire 1ME94F back to the connector bracket location on the aft side of the forward fuel tank support.

2.2 Electrical Release Wiring Installation continued

- Locate Connector Bracket (P/N 290-884-00) on aft side of forward fuel tank support frame 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 with three rivets (P/N 510-486-00).
- The hook release connector and load cell connector will be installed on the Connector Bracket later in the installation. The hydraulic connector must be installed prior to installing the electrical connectors.

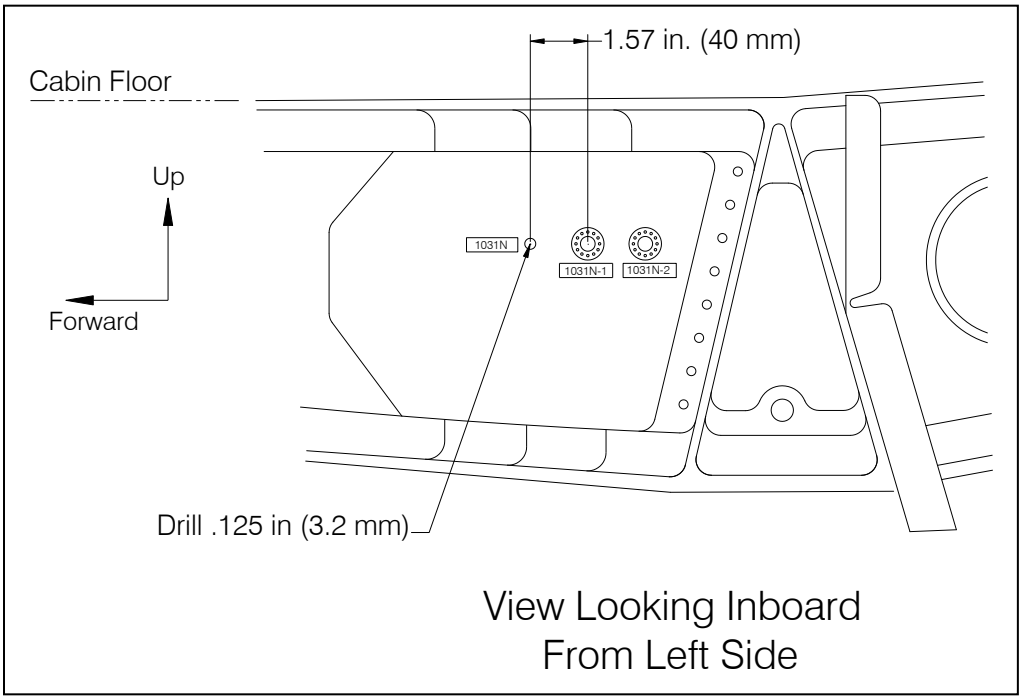
Figure 2.2.3 Connector Bracket Installation



2.2 Electrical Release Wiring Installation continued

- For attachment of the electrical release harness (P/N 270-147-00) ground, drill a .125 inch (3.2 mm) hole 1.57 inches (40 mm) to the left of the 1031N-1 ground connector as shown below. Prepare surface for electrical bonding per standard procedure.
- Cut ground wire (1ME94NG) to length if necessary, crimp on ring terminal (P/N 410-250-00).
- Attach the ring terminal with screw (P/N 510-481-00), washer (P/N 510-062-00), and nut (P/N 510-029-00).
- Install the "1031N" label from the Electrical Label Set (P/N 215-204-00) next to this location.

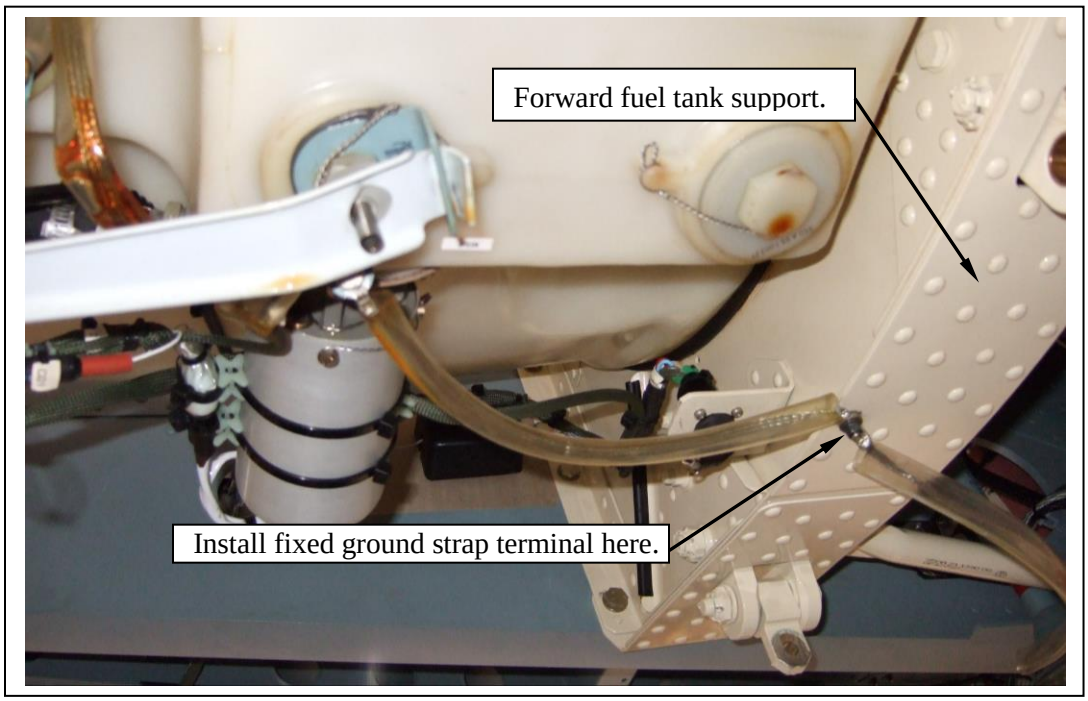
Figure 2.2.4 1031N Ground Installation



2.3 Ground Strap Installation

- Install the Fixed Ground Strap (P/N 270-125-01) ring terminal at the ground point on the forward fuel tank support frame (see below). Re-use existing hardware.

Figure 2.3.1 Ground Strap Installation Location



- At re-installation of the helicopter's lower fairing, route the Ground Strap through the hole in the fairing for the electrical connectors and hose.

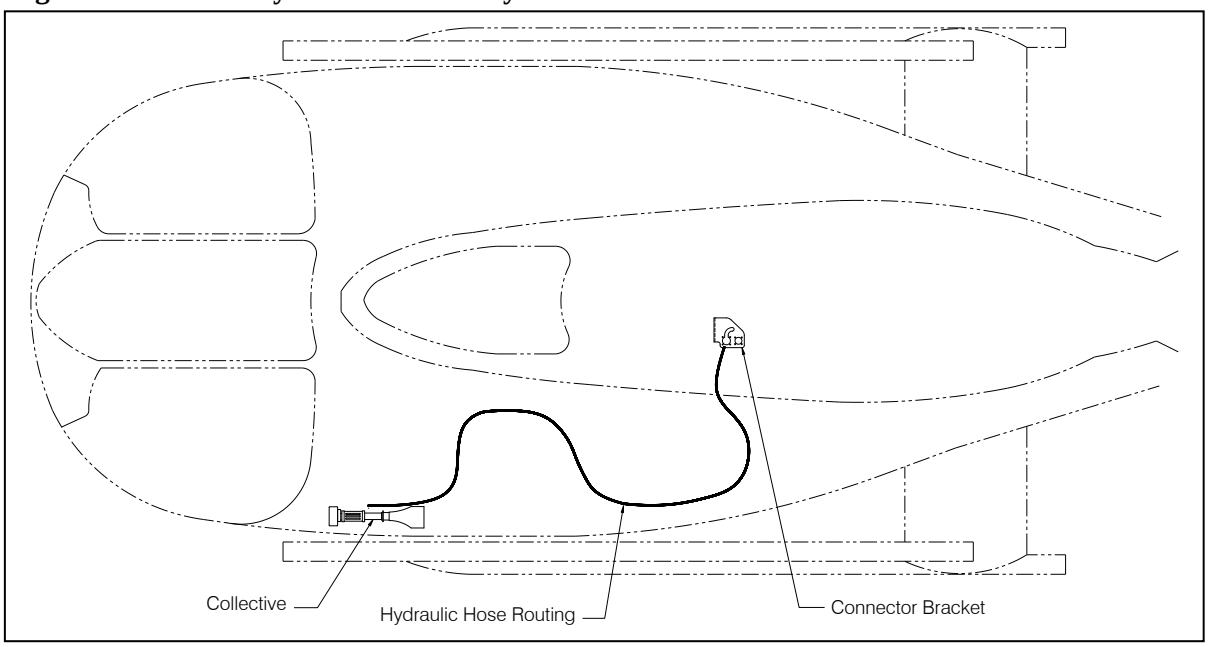
2.4 Fixed Hydraulic Release System Installation

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 2.10 for filling and bleeding instructions.

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, underneath the cabin floor where it is routed with the existing electrical harness aft to the connector bracket mounted on the aft side of the forward fuel tank support frame. Figure 2.4.1 is an overview of the hose routing and the figures following detail the support installations at various points.

Figure 2.4.1 Fixed Hydraulic Release System Installation Overview



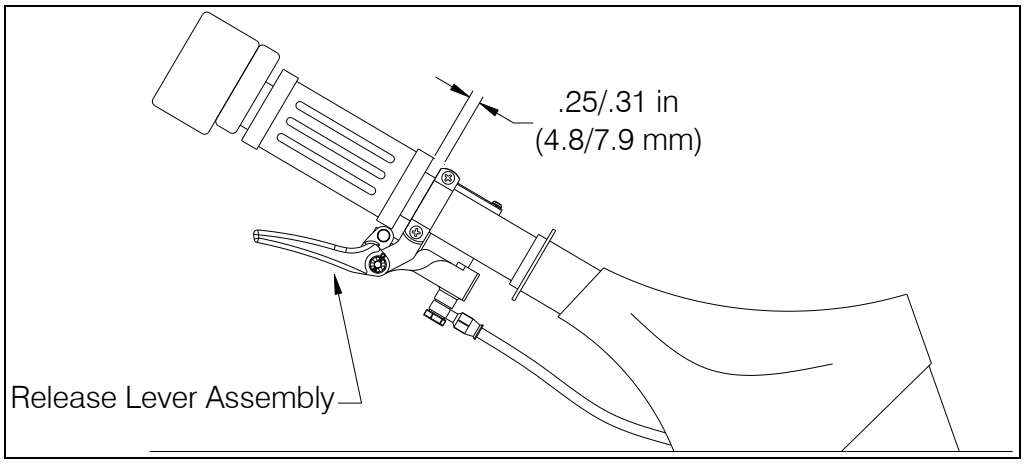
2.4 Fixed Hydraulic Release System Installation continued

- Mount the Release Lever Assembly (P/N 232-300-00) to the collective shaft as shown below with the two screws provided pre-assembled.
- Tighten the Release Lever Assembly clamp until contact with the collective shaft is made, then tighten each screw approximately half a turn. Check that the Release Lever Assembly does not rotate on the shaft and that the collective pitch lever twist grip operates correctly.

⚠ CAUTION

Do not over-tighten the two screws that secure the release lever assembly to the collective shaft. The shaft can be deformed and interfere with twist grip operation.

Figure 2.4.2 Hydraulic Release Lever Installation



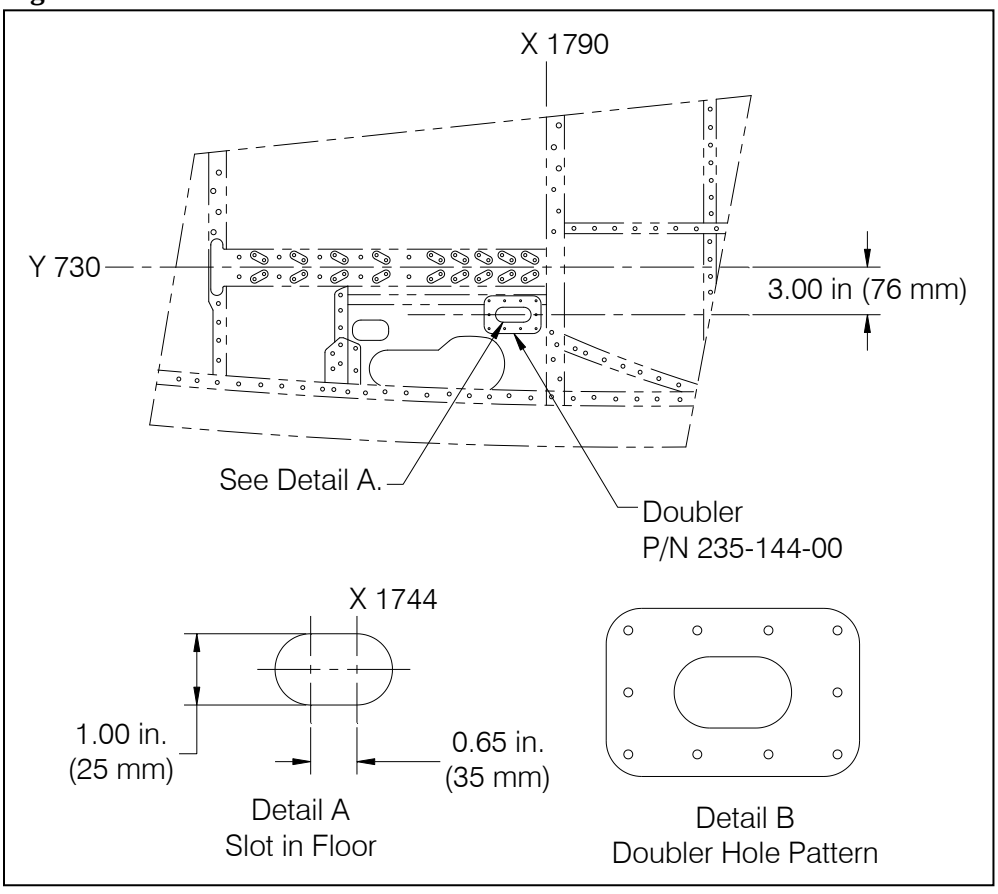
2.4 Fixed Hydraulic Release System Installation continued

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

If the slot in the floor does not exist, create one per the following.

- ❑ Make cutout per Detail A of Figure 2.4.3 in the cabin floor to the right and just aft of the collective pitch lever base.
- ❑ Locate Doubler (P/N 235-144-00) over slot and layout holes to be drilled. Where the Doubler is over existing rivets in the floor, drill out these rivets and match drill the Doubler at these locations.
- ❑ Drill remaining holes through the Doubler and cabin floor for a total of 10. Refer to Airbus Helicopters Standard Practices Manual (MTC.20.02.04.401) for rivet pitch and edge distance requirements.
- ❑ Secure Doubler with rivets (P/N 510-486-00 or P/N 510-688-00 depending on grip length required).
- ❑ Install grommet (P/N 610-030-00) and slit grommet webbing enough to allow hydraulic hose fitting to fit through.

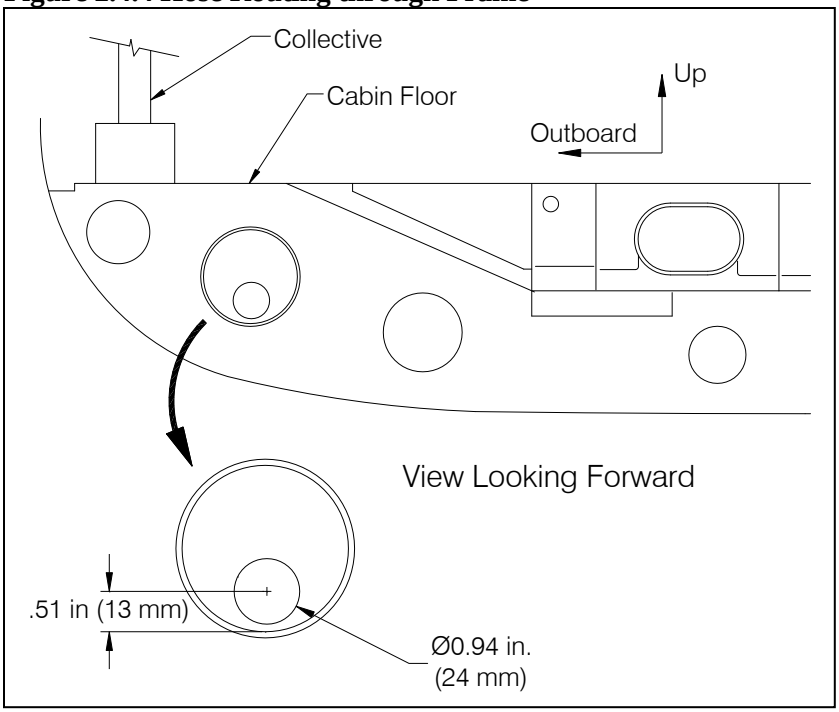
Figure 2.4.3 Cabin Floor Hole Detail



2.4 Fixed Hydraulic Release System Installation continued

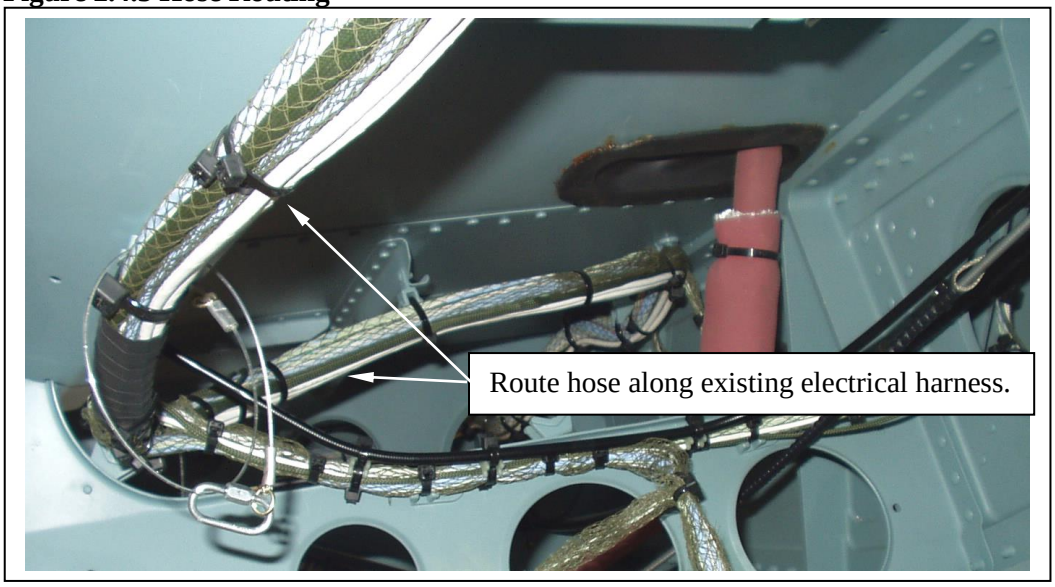
- Underneath the floor, at the frame immediately aft of the collective, create a .94 inch diameter hole as shown below and install grommet (P/N 610-031-00) and slit grommet web to route hydraulic hose through.

Figure 2.4.4 Hose Routing through Frame



- Aft of the hole in shown in Figure 2.4.4, route the hose to the existing electrical harness and route with the harness all the way back to the connector bracket.
- Secure the hose to the electrical harness with ty-wraps.

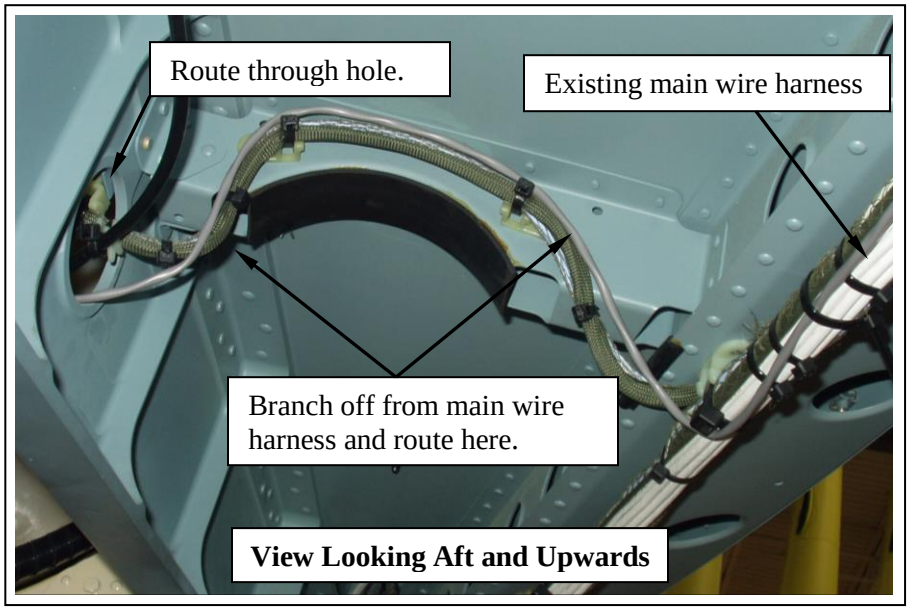
Figure 2.4.5 Hose Routing



2.4 Fixed Hydraulic Release System Installation continued

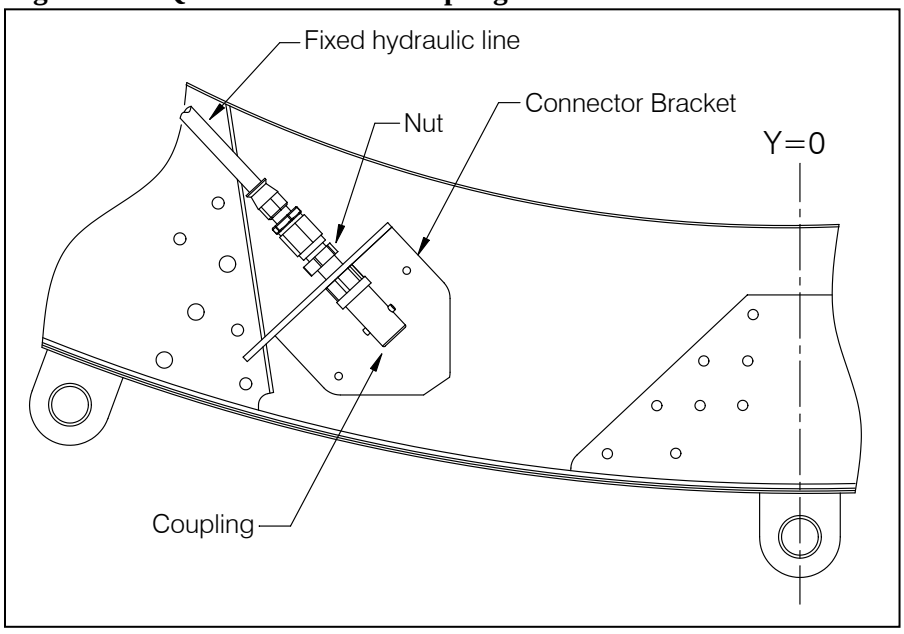
At a point just aft of the forward fuel tank support, route the hose inboard along the existing harness through an existing hole in the aircraft structure as shown below.

Figure 2.4.6 Hose Routing - Aft



- Pass the hydraulic quick disconnect coupling through the load cell electrical connector hole. Slide the fitting to the end of the slot and thread the jam nut until contact with the Connector Bracket is made and tighten with wrench (not to exceed ¼ turn).

Figure 2.4.7 Quick Disconnect Coupling Installation



2.4 Fixed Hydraulic Release System Installation continued

- Install the hook release connector and load cell connector with screws (P/N 510-481-00), washers (P/N 510-062-00), and nuts (P/N 510-029-00).

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). See Figure 2.4.1 for location of each connector.

- Install appropriate electrical label (P/N 215-204-00) on the Connector Bracket.
- Re-install lower fairings if both the hydraulic and electric systems have been installed.

2.5 Fuel Drain Guard Installation

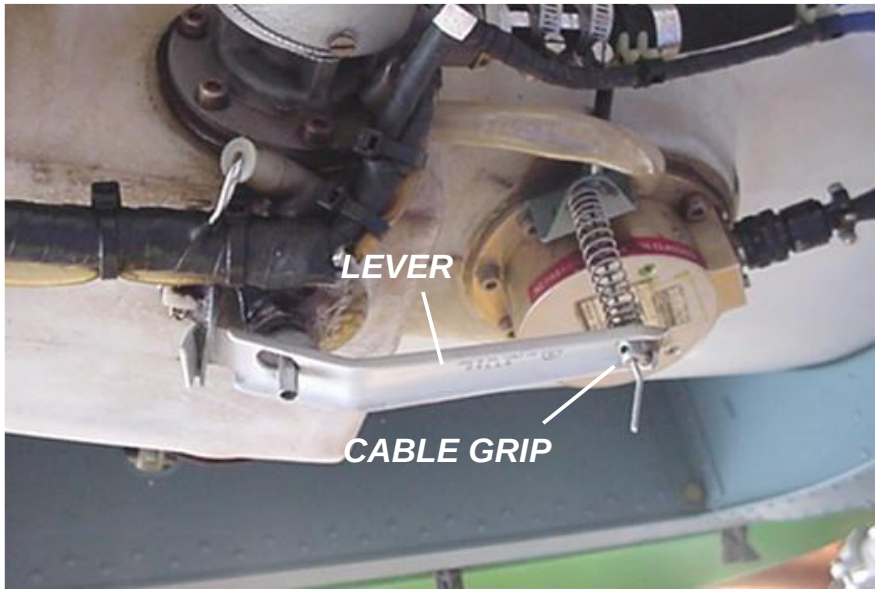
NOTICE

The fuel drain guard is included with the P/N 200-321-00 kit only. If installing kit P/N 200-322-00 (sling suspension) skip to section 2.8.

In preparation for installing the fuel drain guard:

- Obtain the materials given in Table 1-2.
- Verify that the fuel drain lever has been modified per AD 2005-03-05 requirements.
- Completely drain the fuel from the fuel tank.
- Remove the aft lower cowling from the helicopter to access the fuel tank.
- Begin disassembly of the fuel drain assembly by disconnecting the fuel drain control cable from the Lever (Airbus Helicopters P/N 350A55-1043-20). To free the control cable, remove the Sleeve (Airbus Helicopters P/N N1-5ALU) and Cable Grip (Airbus Helicopters P/N 58-2-009). See Figure 2.5.1.

Figure 2.5.1 Removing Control Cable



2.5 Fuel Drain Guard Installation continued

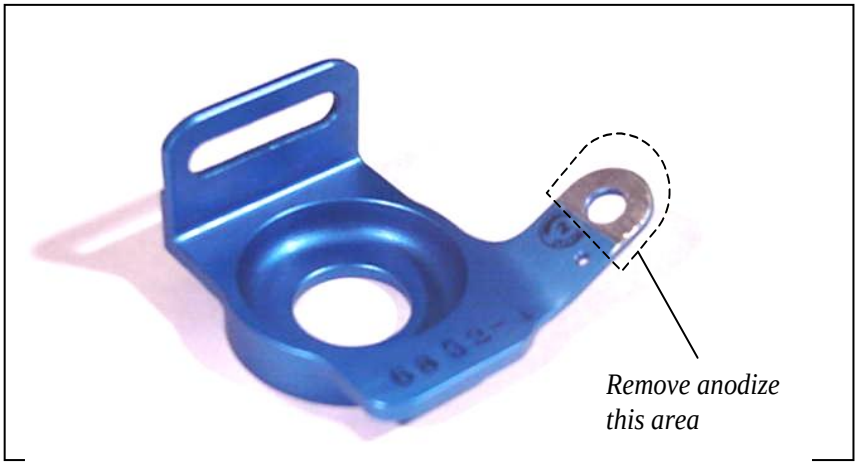
- Remove and retain spring (Airbus Helicopters P/N 350A55-1044-21) and Lever.
- Remove the cable support bracket. Retain the two attachment screws.
- Remove the connections from the common ground point on the lever retainer.
- Remove the safety wire securing the Fuel Drain Valve (Airbus Helicopters P/N A1282Z3). Remove the Fuel Drain Valve and the Retainer from the tank. Discard used Fuel Valve Seal (Airbus Helicopters P/N SD16X-21P).
- Remove the residual sealant from the tank, taking care to not mar the sealing surface. Prepare the area for sealing per Airbus Helicopters Standard Practices Manual.

Figure 2.5.2 Fuel Drain Disassembly Complete

2.5 Fuel Drain Guard Installation continued

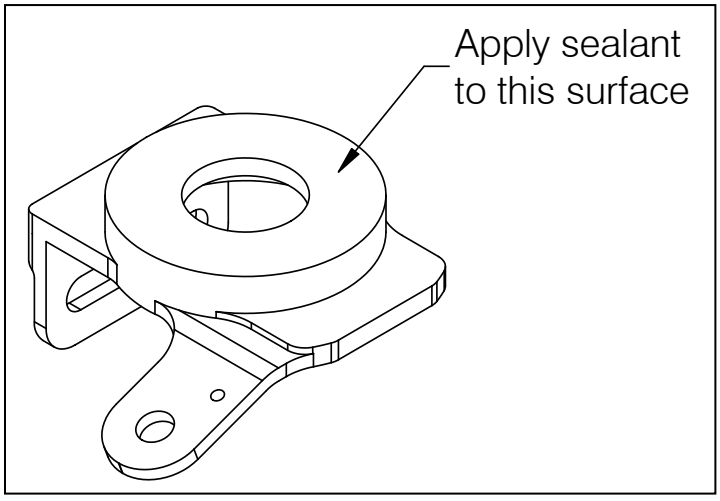
- Prepare the Retainer (P/N 290-888-00) for electrical bonding by removing the anodize from the area shown in Figure 2.5.3.

Figure 2.5.3 Prepare Retainer



- Prepare PR1422-B or equivalent fuel tank sealant per Airbus Helicopters Standard Practices Manual. Apply sealant to Retainer as shown in Figure 2.5.4. Retain unused sealant to ensure proper cure.

Figure 2.5.4 Apply Sealant



2.5 Fuel Drain Guard Installation continued

- Position and hold the Guard (P/N 290-889-01) on the fuel tank by aligning the notch in the Guard with key in the fuel tank. See Figure 2.5.5.

Figure 2.5.5 Position Guard

NOTICE

On some aircraft, the guard may have to be modified to fit the key on the fuel tank. In these cases, the sides of the clearance slot on the guard should be widened the minimum amount necessary in order to fit over the key. See figures 2.5.6 and 2.5.7.

Figure 2.5.6 Fuel Tank Key

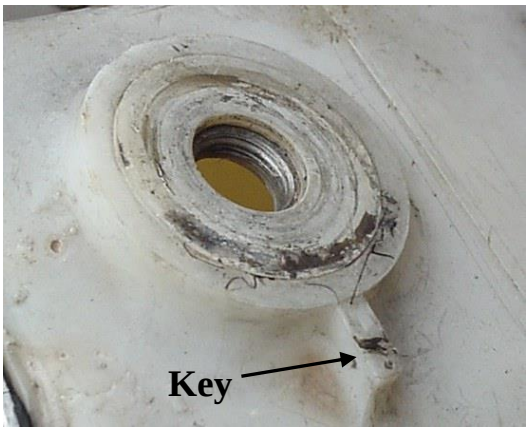
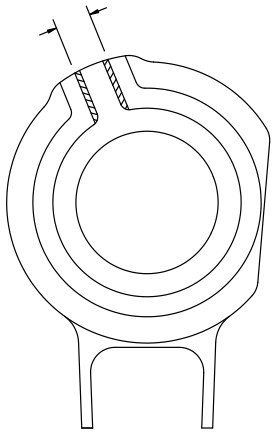


Figure 2.5.7 Modification of Guard Slot



2.5 Fuel Drain Guard Installation continued

- Carefully place the Retainer inside the Guard by inserting the tab through the slot in the Guard. Press the retainer to the tank firmly and center it about the drain hole. See Figure 2.5.8.

Figure 2.5.8 Retainer/Guard Assembly

- Secure the Guard and Retainer by re-installing the Fuel Drain Valve with Fuel Valve Seal, P/N 610-024-00 (Airbus Helicopters P/N SD16X-21P). Use a flat-blade screwdriver to prevent the Retainer from twisting when tightening the Fuel Drain Valve. Torque per Airbus Helicopters specifications.

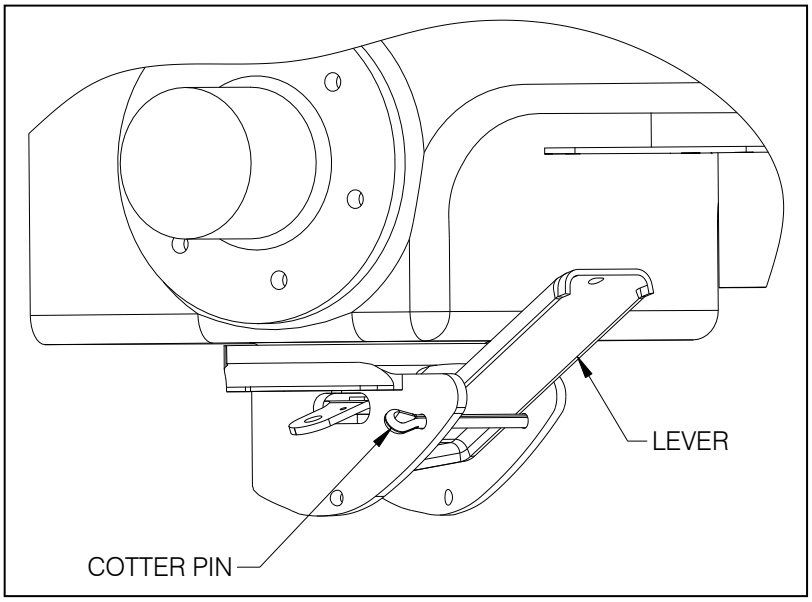
NOTICE

The guard is not intended to fit tightly with the fuel tank. When properly installed, the guard should have freedom to move slightly.

- Secure the Fuel Drain Valve with safety wire using the small hole in the retainer tab.
- Re-install the electrical connections to the new Retainer tab per Airbus Helicopters Electrical Bonding Procedure. Refer to Airbus Helicopters Standard Practices Manual, 20.02.07.
- Install the Lever by placing it in Retainer slot and rotating upwards. Secure with cotter pin (P/N 510-526-00). See figure 2.5.9.

2.5 Fuel Drain Guard Installation continued

Figure 2.5.9 Install Lever



- Install a second cotter pin through the other holes in the Guard (this cotter pin is for valve protection only and is not used for rigging purposes).
- Prepare to install Bracket (P/N 290-893-00) by threading the control cable through the Bracket hole. Install Bracket using the two screws removed previously.
- Pass the cable through the spring and then the Lever. Install the Sleeve and Cable Grip.

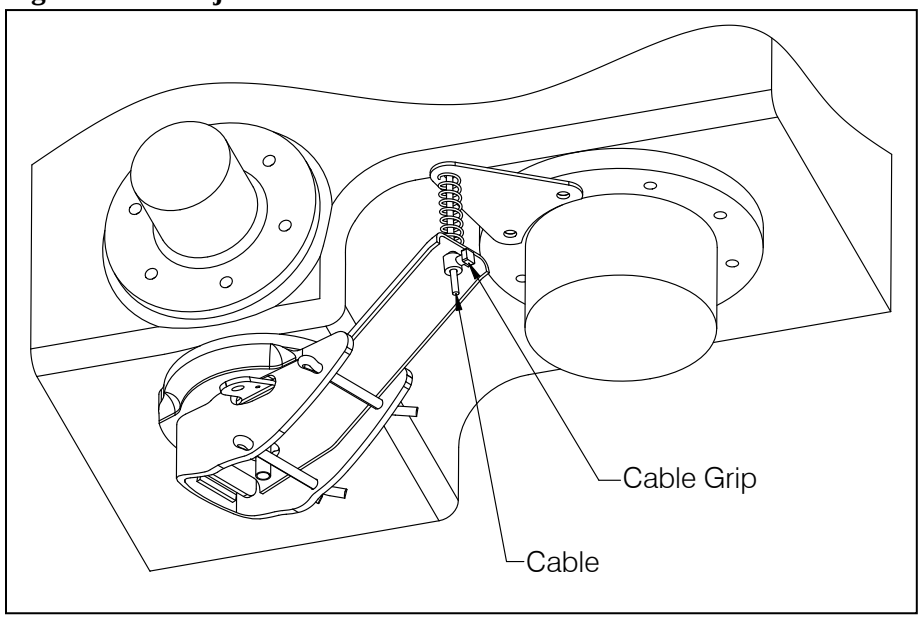
CAUTION

To avoid inadvertent fuel loss, Airbus Helicopters P/N 58-2-009 Cable Grip must be used with this installation.

2.5 Fuel Drain Guard Installation continued

- Adjust the cable travel by doing the following: allow the lever to rest against the cotter pin stop. Slide the Cable Grip up to the bottom of the lever and secure. See Figure 2.5.10.

Figure 2.5.10 Adjust Cable Travel



- Check the cable adjustment with the release handle on the side of the aircraft. There should be a minimum of .25 inch (6mm) cable travel before valve opens. Adjust the Cable Grip as required.

- Allow the sealant to cure per Airbus Helicopters Standard Practices Manual before adding fuel. Verify proper cure of unused sealant.

- Add fuel to the tank and check for leakage.

- Reinstall aft lower cowling. Check for clearance between Guard and cowling. If required trim cowling cutout to provide a min of .125 inch (3.5mm) clearance between the cowling and guard. See Figure 2.5.11 for completed installation.

2.5 Fuel Drain Guard Installation continued

Figure 2.5.11 Installation Complete

2.6 Swing Suspension Installation

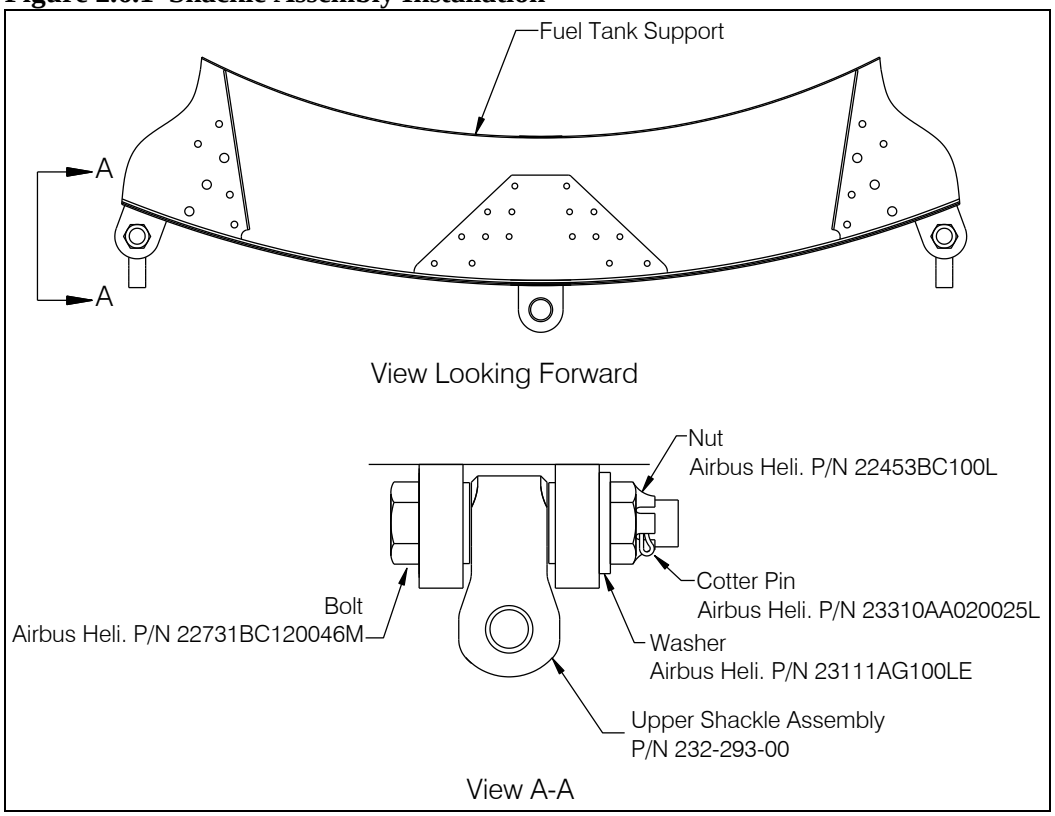
NOTICE

The swing suspension is included with the P/N 200-321-00 kit. If installing kit P/N 200-322-00 (sling suspension) skip to section 2.8.

The swing suspension attaches to the hard points on the forward and aft fuel tank support frames.

- ❑ Install a Shackle Assembly (P/N 232-293-00) at each of the four outboard hard points, re-using the Airbus Helicopters hardware as noted below.

Figure 2.6.1 Shackle Assembly Installation



2.6 Swing Suspension Installation continued

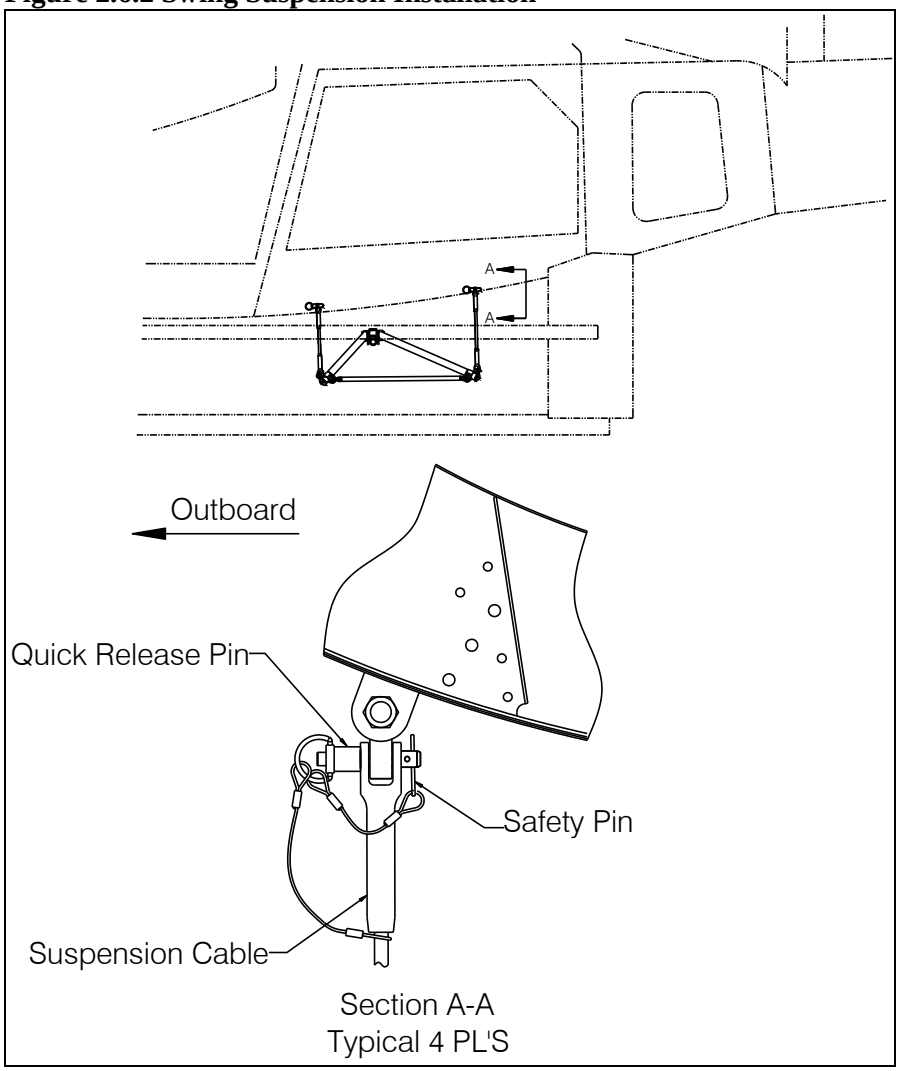
- Orient the swing suspension assembly as shown below, with the shorter suspension cables forward.
- Attach each suspension cable to the shackle assemblies with the attached quick release pins. The handle of the quick release pins must be outboard as shown below.

CAUTION

Rotate the shackle assemblies about their respective hard point pivots and ensure that the quick release pin handles do not interfere with the belly panel. If necessary enlarge the belly panel cutouts to obtain clearance.

- Secure the quick release pins with the safety pins.

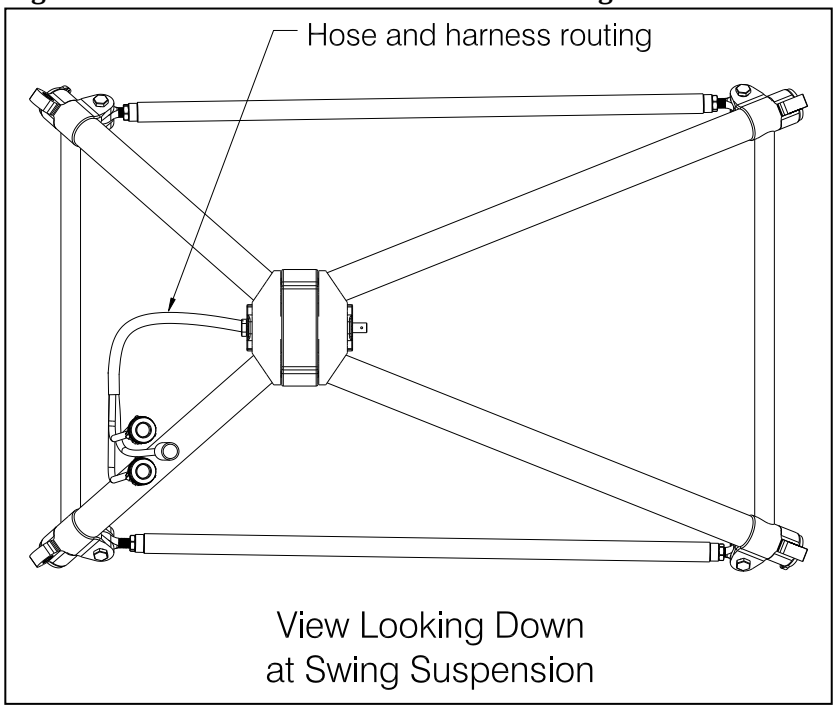
Figure 2.6.2 Swing Suspension Installation



2.6 Swing Suspension Installation continued

- Route the electrical harnesses, ground strap, and hydraulic hose bundle through the forward tubes of the swing frame and then up to the connector bracket (see below).

Figure 2.6.3 External Harness and Hose Routing



- Connect the end of the cargo hook electrical release cable to the fixed electrical release connector installed per Section 2.2. See Table 2.1 for pin out information.

Table 2.1 Cargo Hook Connector

Pin	Function
A	Ground
B	Power

CAUTION

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

- Connect the end of the load cell cable to the fixed load weigh harness connector installed per Section 2.2.
- Connect the hydraulic hose from the hook to the fitting installed at the belly of the helicopter.

2.7 Swing Suspension Retraction System Installation

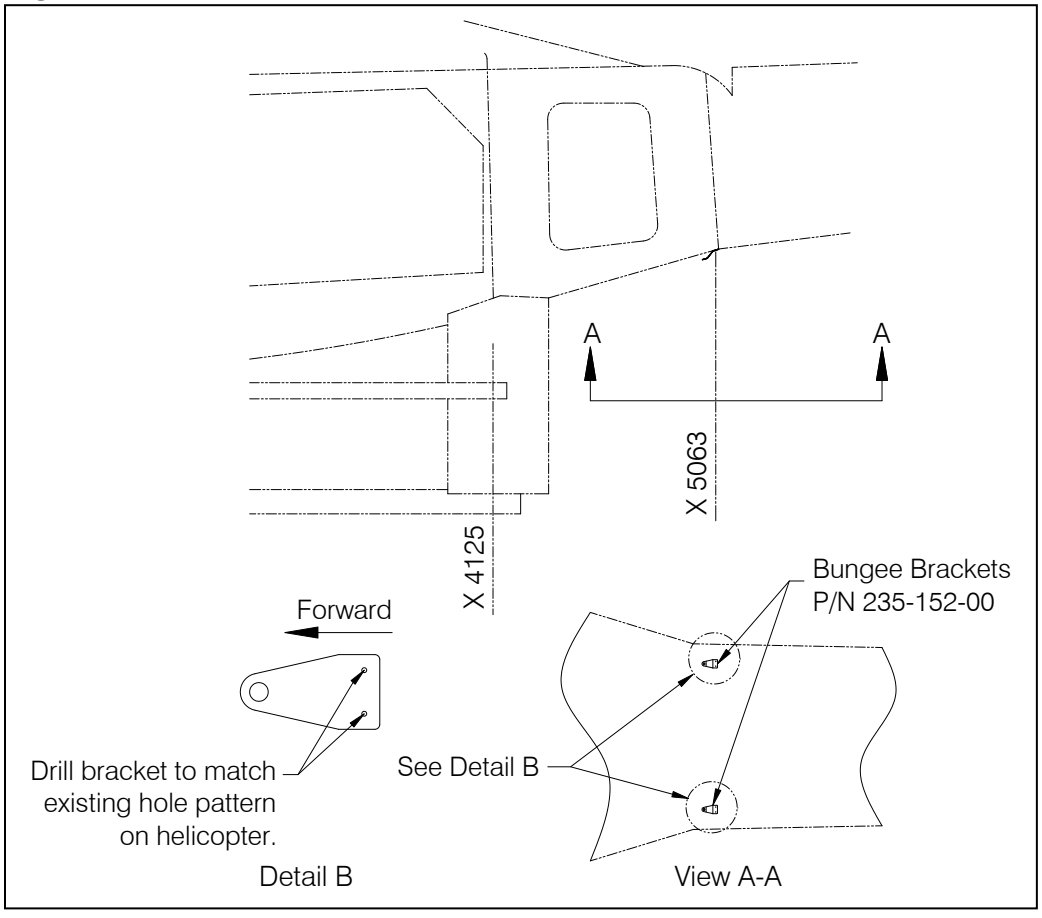
NOTICE

The retraction system is applicable only to the installation of the swing suspension kit (P/N 200-321-00 kit).

Brackets are installed aft of the swing suspension and provide fixed points to attach the shock cords (P/N 232-294-00) which are used to pull the swing suspension aft and upwards for increased ground clearance.

- ❑ Install the two brackets using the existing two pairs of holes at frame X5063, drilling the shock cord brackets to match. Install with rivets P/N 510-486-00.

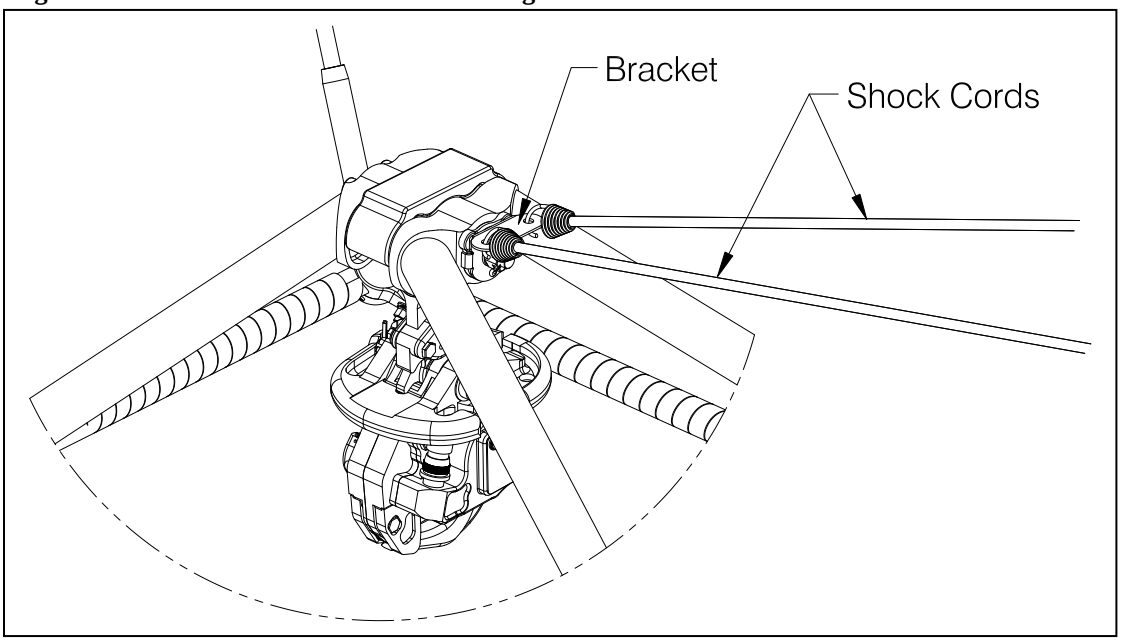
Figure 2.7.1 Shock Cord Bracket Installation



2.7 Swing Suspension Retraction System Installation continued

Connect a hook from each of the two shock cords to the brackets and connect the other end to the shock cords to the bracket on the aft side of the swing frame.

Figure 2.7.2 Shock Cord Attachment to Swing Frame



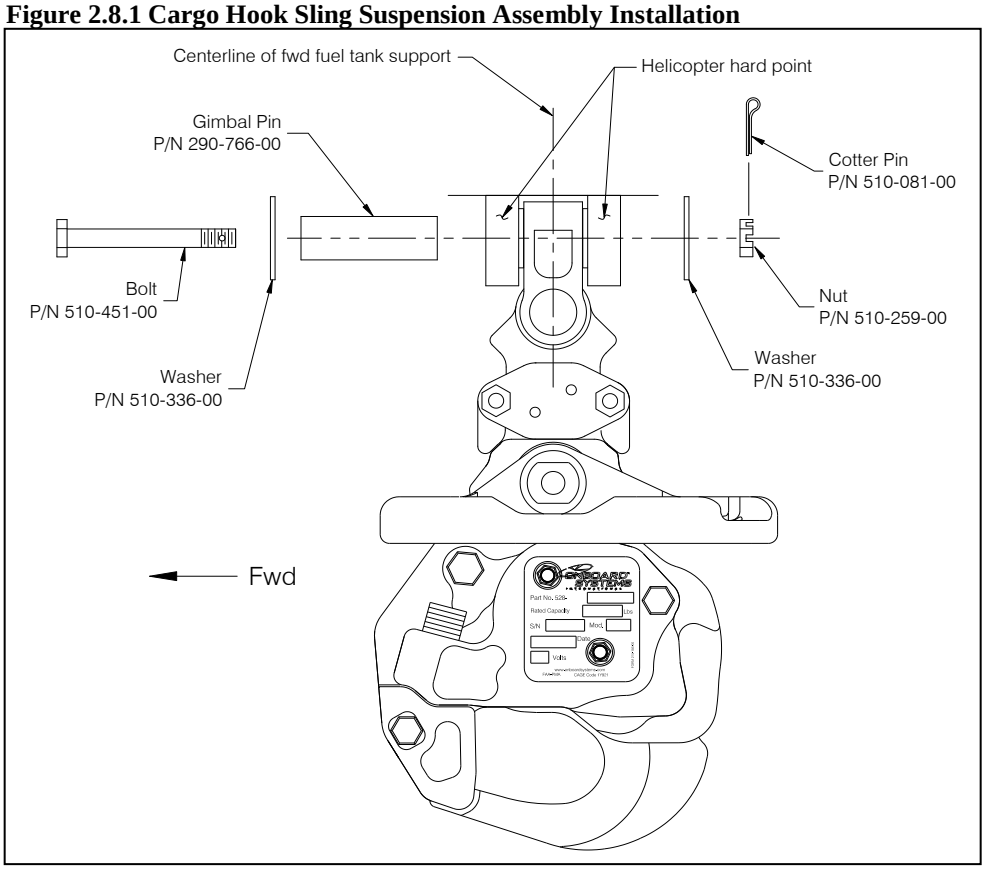
2.8 Sling Suspension Installation

NOTICE

The sling suspension is included with the P/N 200-322-00 kit. If installing kit P/N 200-321-00 (swing suspension) refer to section 2.6 for suspension installation.

Attach the Sling Suspension with Cargo Hook onto the hard point at the helicopter centerline using the hardware supplied, as illustrated below. Orient the cargo hook such that its load beam points forward (as shown below).

Figure 2.8.1 Cargo Hook Sling Suspension Assembly Installation



2.8 Sling Suspension Installation continued

- Connect the end of the cargo hook electrical release harness to the fixed electrical release connector installed per Section 2.1. See Table 2.1 for pin out information.

Table 2.1 Cargo Hook Connector

Pin	Function
A	Ground
B	Power

CAUTION

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

- Connect the end of the load cell harness 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.

2.9 Placard Installation

Install the load limitation placard P/N 215-168-00 (2557 lbs, 1160 kgs) for the swing suspension installation or load limitation placard P/N 215-167-00 (1660 lbs, 750 kgs) for the sling suspension installation. Locate the placard on the belly of the helicopter, visible to the ground operator and near the hook.

NOTICE

The provided load limitation placards P/N 215-166-00 and P/N 215-168-00 feature black letters on a transparent background. If being installed on a dark-colored helicopter the lettering may not be readily visible. In this instance new placards of the same size and with the same text may be fabricated with a different background to provide visibility. The lettering must contrast with the background.

2.10 Filling Hydraulic Release System

Each hydraulic system is typically shipped dry. A label affixed to the Master Cylinder and Slave Cylinder assemblies will state if each hydraulic assembly has been filled and bled. Proper bleeding is critical to the operation of the hydraulic release system. An improperly bled system will not release the cargo hook mechanism.

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.

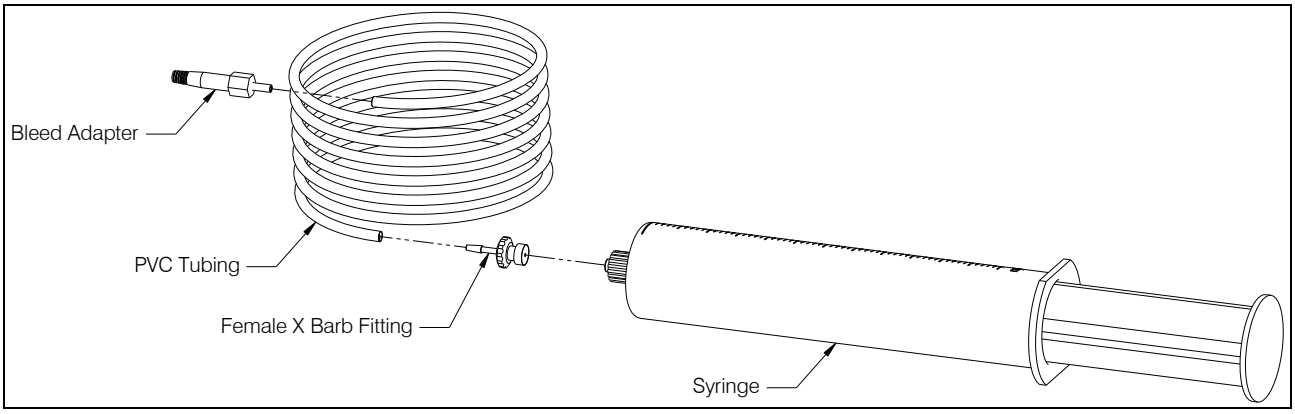
If there is a need to fill and/or bleed the system, follow the procedures listed below. If you need to remove and repair any items in the hydraulic system, refer to 123-029-00 or 123-031-00, Instruction for Continued Airworthiness.

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.

Bleeding procedure:

1. Obtain the hydraulic hook bleed kit, 212-014-02. This kit consists of 2 ounces of MIL-PRF-87257 fluid, a syringe, a female barb fitting, a length of PVC tubing, and a bleed adapter fitting. The bleed kit is included in new cargo hook kits. Assemble the bleed kit by press fitting each component as shown.

Figure 2.10.1 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.

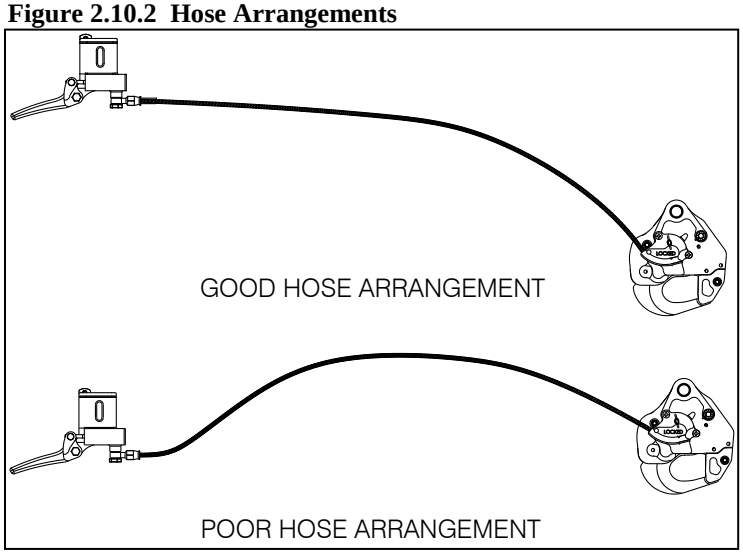
2.10 Filling Hydraulic Release System continued

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.

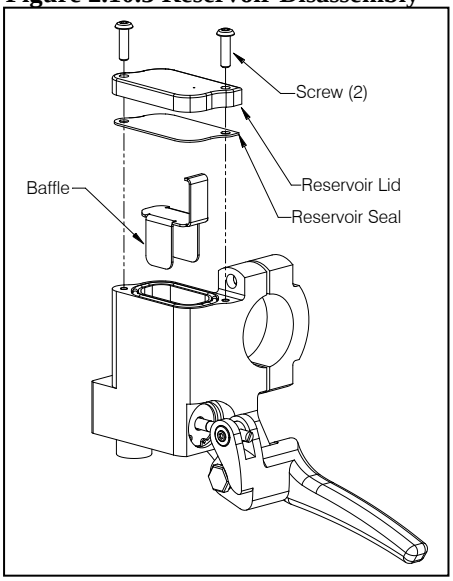
3. Connect the master cylinder assembly to the slave cylinder assembly if not already done. If filling or bleeding on the bench, as much as possible, arrange the hoses uncoiled, straight and running uphill. See Figure 2.10.2.

Figure 2.10.2 Hose Arrangements



4. Remove screws, reservoir lid, reservoir seal, and baffle from the master cylinder reservoir as shown in Figure 2.10.3. (The reservoir seal is supplied for shipping purposes only, after removal discard reservoir seal).

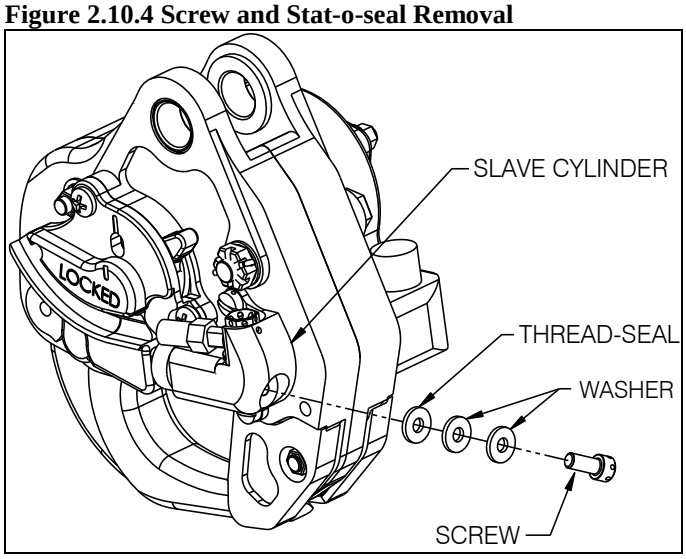
Figure 2.10.3 Reservoir Disassembly



2.10 Filling Hydraulic Release System continued

5. Remove the safety wire, screw, washers and thread-seal on the slave cylinder, see Figure 2.10.4.

Figure 2.10.4 Screw and Stat-o-seal Removal



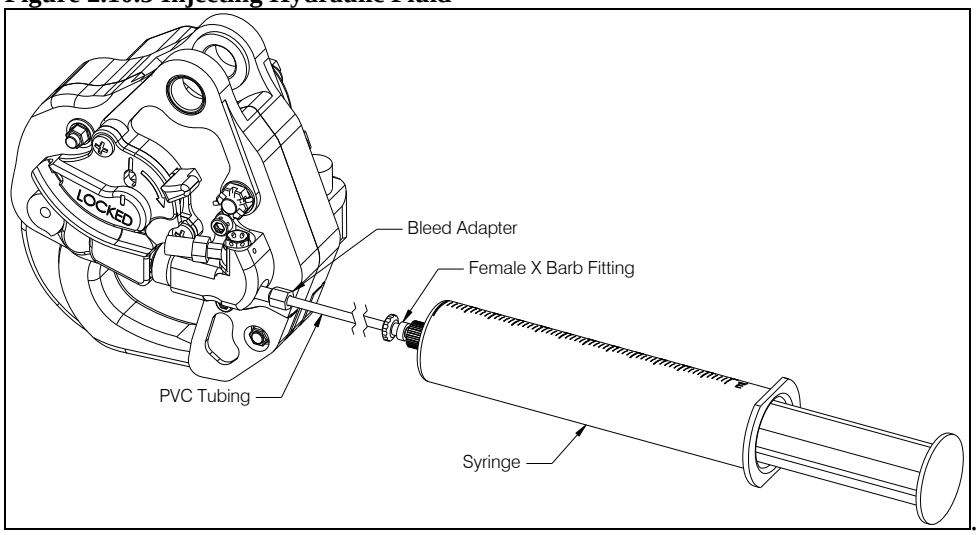
6. Fill the syringe with approximately 35 cc of MIL-PRF-5606 fluid and purge any remaining air in the syringe and tubing. Screw the end of the bleed adapter into the screw hole on the slave cylinder to create a tight seal. See figure 2.10.5.

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.

⚠ 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 2.10.5 Injecting Hydraulic Fluid



2.10 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 bleed adapter from the screw hole. Re-install the Thread-Seal (P/N 510-740-00), washers (P/N 510-209-00) and screw (P/N 510-694-00), see Figure 2.10.3.

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

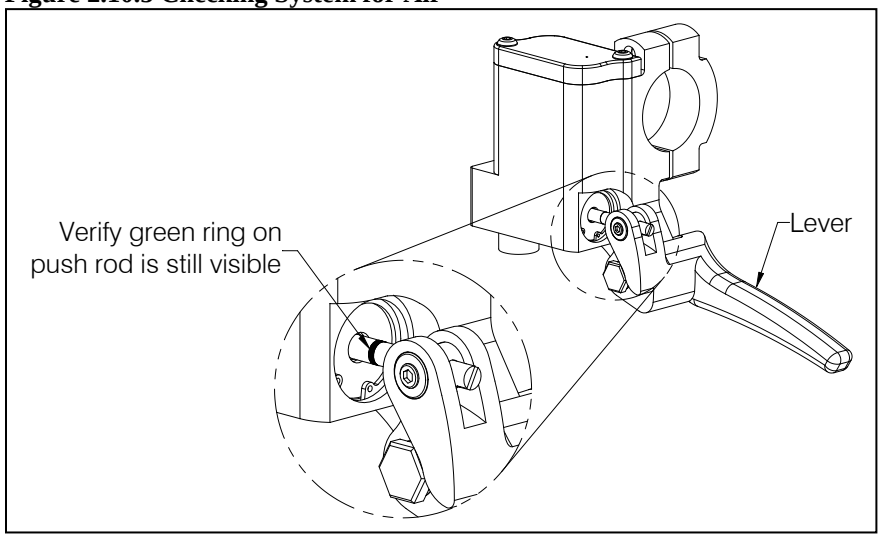
11. Very slowly pull the release lever on the master cylinder and watch for bubbles. If bubbles are observed rising within the reservoir, continue to slowly cycle the lever until there are no more. Actuating the lever releases air trapped within the master cylinder.

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.

12. Check the system for air by actuating the lever firmly until it bottoms out. Check the push rod position (see Figure 2.10.5). 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.

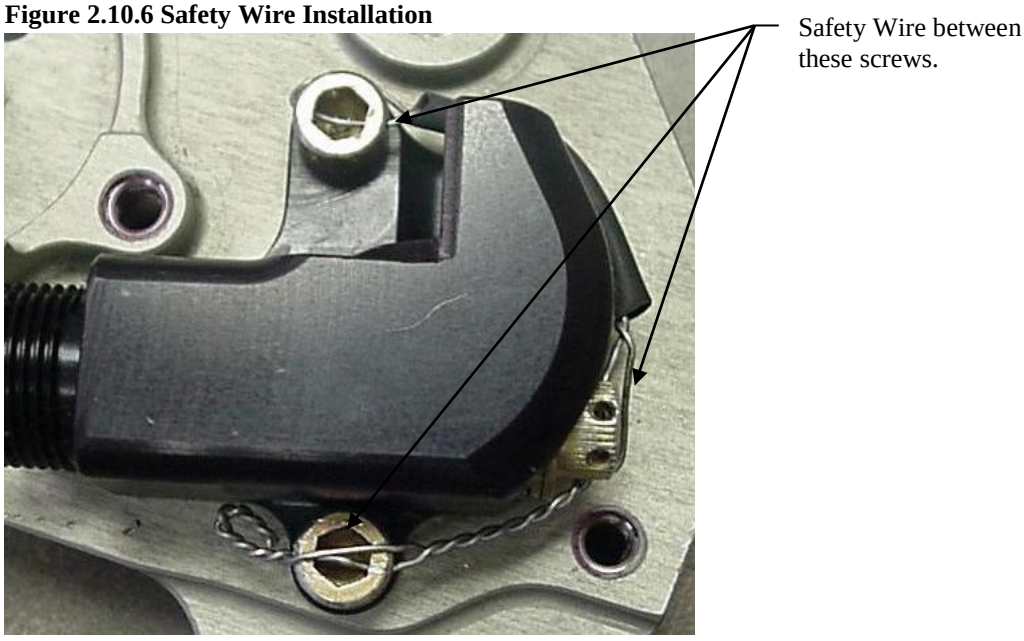
Figure 2.10.5 Checking System for Air



2.10 Filling Hydraulic Release System continued

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. Depending on the configuration of the lid screws - if the heads on the two screws are drilled, install safety wire between them.
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. Safety wire the three drilled head screws together using .025 safety wire per MS20995C025, see Figure 2.10.6.

Figure 2.10.6 Safety Wire Installation



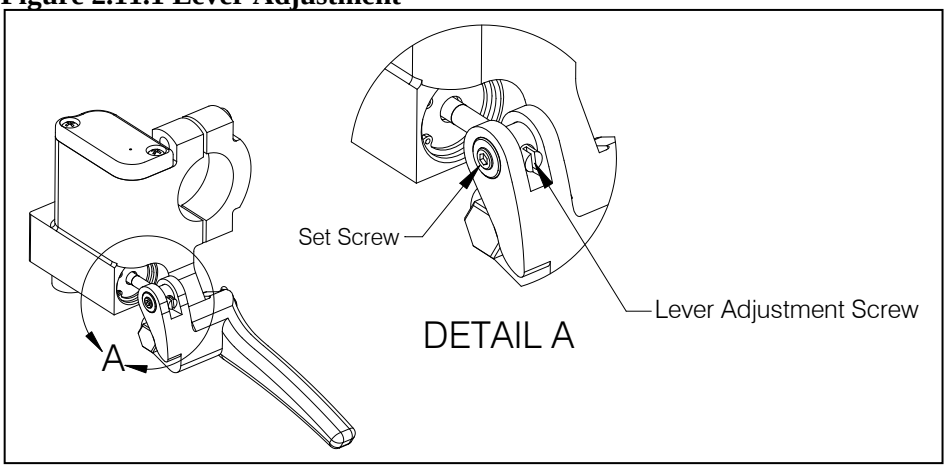
17. Disassemble and thoroughly clean the syringe with isopropyl alcohol. Allow it to dry. Not cleaning the syringe will render it unusable. Reassemble and store for next use.

2.11 Installation Check-Out

After installation of the system, 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 lever on the collective, the Cargo Hook should release. Ensure that the lever is reachable and that it does not "bottom out" on the collective twist grip. If necessary adjust the lever position by loosening the set-screw and turning the lever adjustment screw (ref. Figure 2.11.1) in the required direction. Re-tighten set-screw.

Figure 2.11.1 Lever Adjustment



- 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 43.13-1b section 11-107. For equipment that can only be checked in flight an EMI flight test may be required.

NOTICE

The cargo hook is 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.

2.12 Component Weights

The weights and cgs of the Cargo Hook Suspension System components are listed below.

Table 2.12.1 Weight & CG – Swing Suspension Installation (Kit P/N 200-321-00)

Item	Weight	Station
Removable Provisions*	28.5 lbs (12.9 kg)	134 in (3410 mm)
Fixed Provisions**	6.5 lbs (2.9 kg)	67 in (1700 mm)
Total	35.0 lbs (16.1 kg)	121.6 in (3068 mm)

Table 2.12.2 Weight & CG – Sling Suspension Installation (Kit P/N 200-322-00)

Item	Weight	Station
Removable Provisions*	6.0 lbs (2.7 kg)	124.4 in (3160 mm)
Fixed Provisions**	5.5 lbs (2.5 kg)	67 in (1700 mm)
Total	11.5 lbs (5.2 kg)	96.9 in (2461 mm)

***** The removable provisions include the swing suspension w/ hook, external manual release cable, and external electrical release cable. 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. These include the fixed manual release cable, internal electrical wire harnesses, the load weigh indicator, and the miscellaneous brackets that support these items.

2.13 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 document number 121-046-00 (swing kit) or 121-049-00 (sling kit) in the aircraft Flight Manual.

Section 3

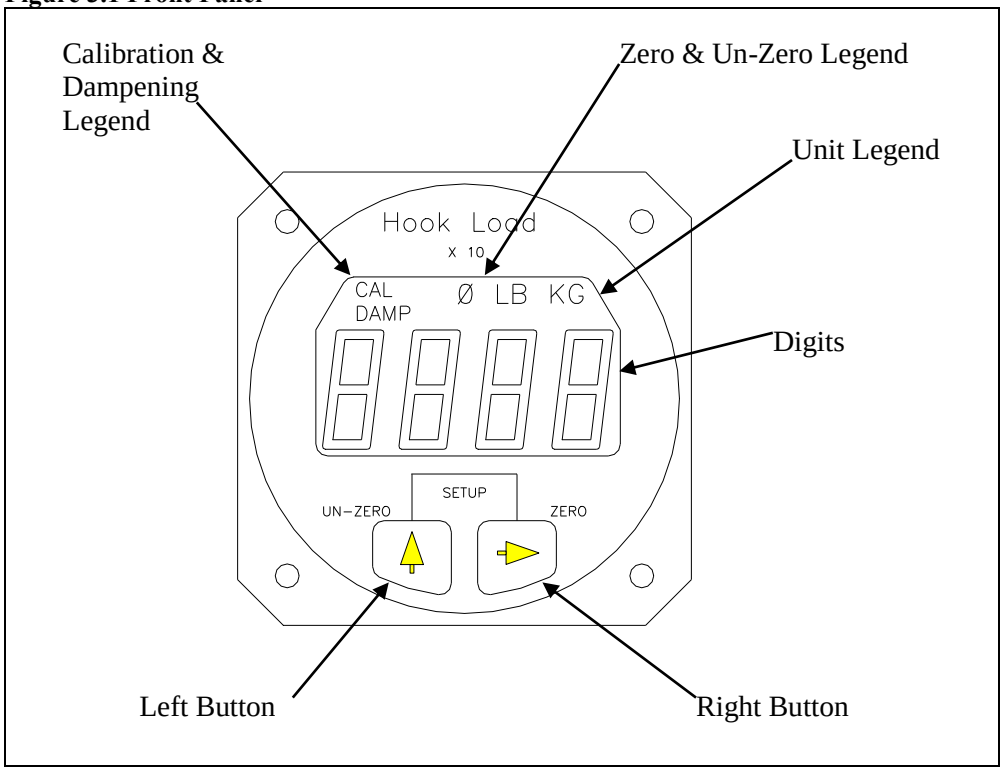
Load Weigh System Operation Instructions

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

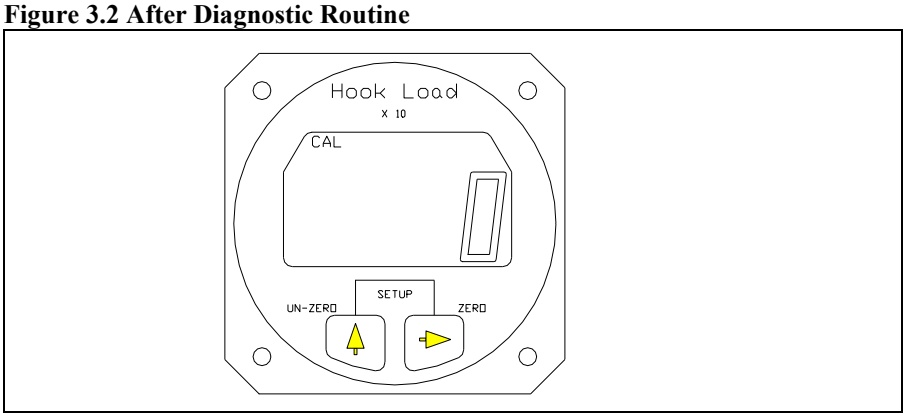


The Run Mode

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.

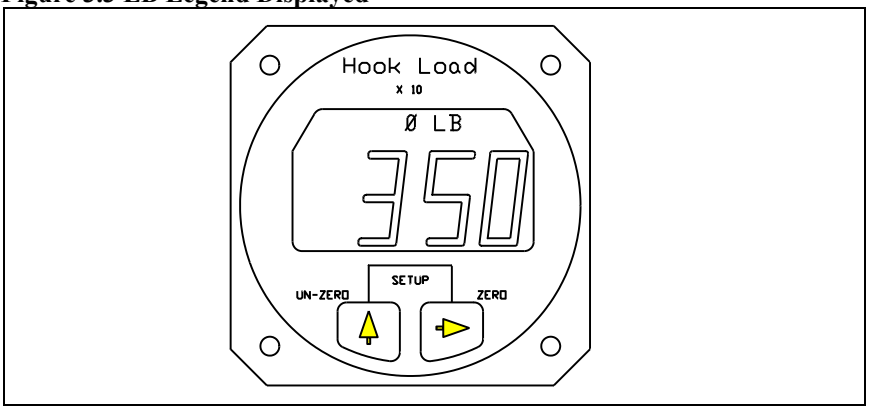
After the Indicator has been correctly installed, power it up by activating the aircraft electrical system. The Indicator will go through a self-diagnostic routine. During this routine the display will display all of the digits and legends. If a problem is found during the routine an Error Code will 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



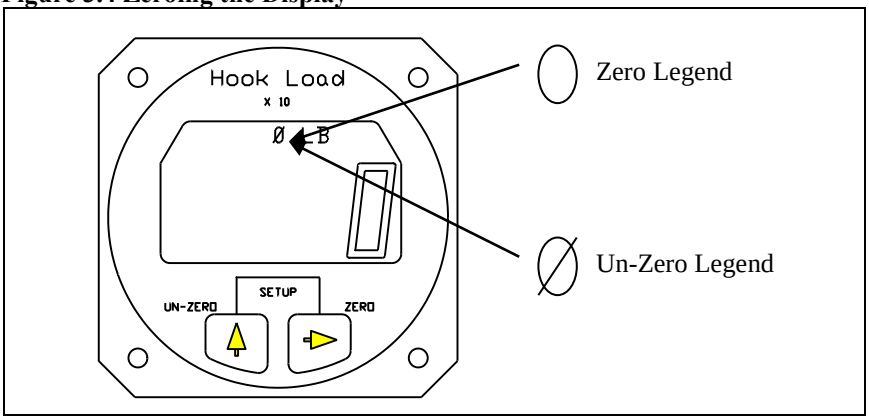
The illustration is a typical hook load reading. The display is 3,500 pounds, note the last digit is not displayed.

The Run Mode continued

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	Dampening Level, 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	Calibration Code, 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	Installation ZERO, 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	Load, 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	Scale, 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	Units, selects the Indicator units (pounds or kilograms).	Display is previously selected unit. To change the unit, use the Left button.
XX - V	Version, is the revision level of the Indicator hardware and software.	Version is for information only, it cannot be changed.

The Setup Mode, continued

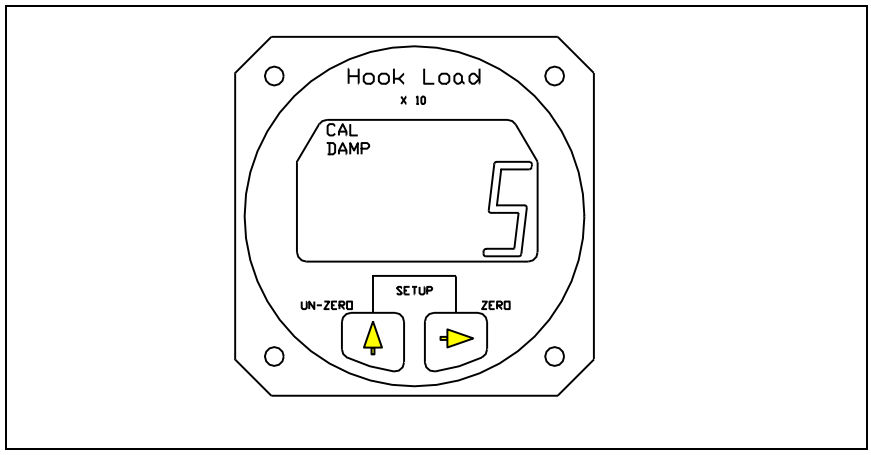
Indicator Dampening

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

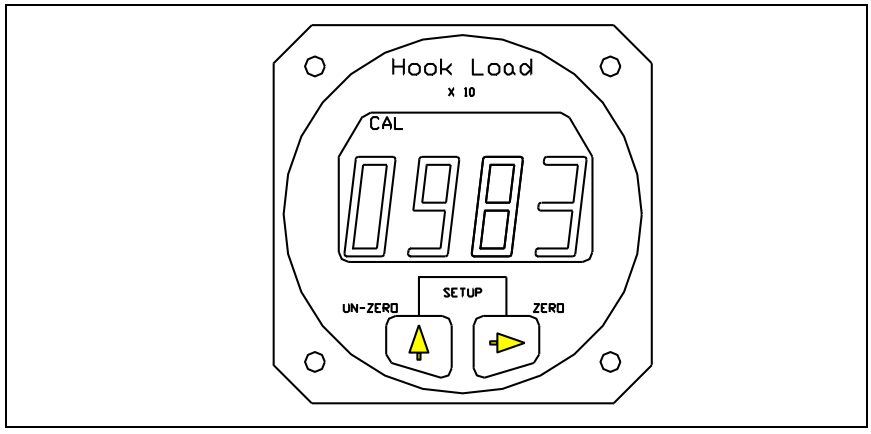
The Calibration Code, or CAL code, is a mandatory input. The Indicator will not accurately display the load without the correct Calibration Code. The Calibration Code scales the signal from the Load Cell.

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.

The Setup Mode, continued

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*.

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.

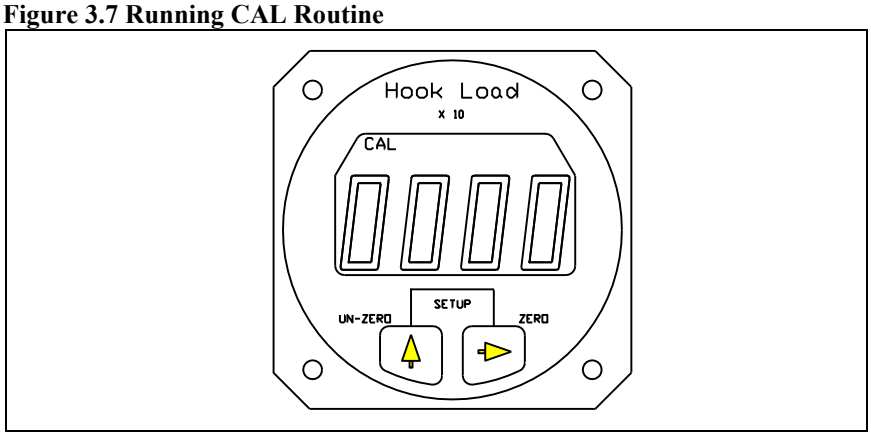
The closer the known load approaches the lifting capacity of the helicopter, the more accurate the calculated Calibration Code will be.

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:

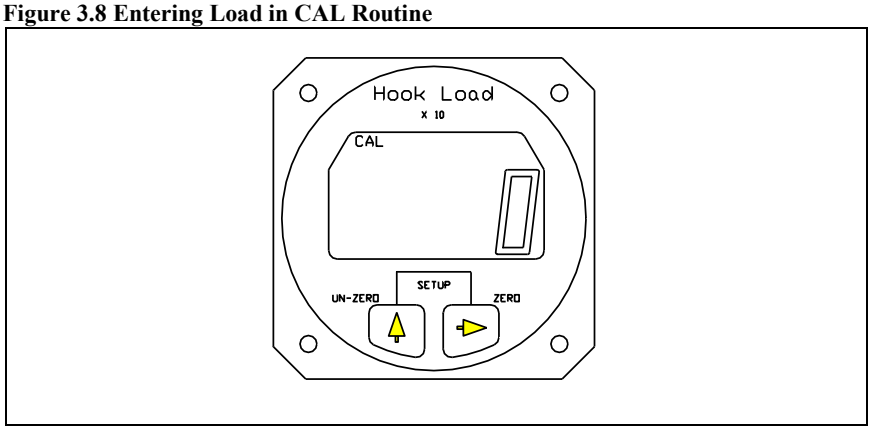
Figure 3.7 Running CAL Routine



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

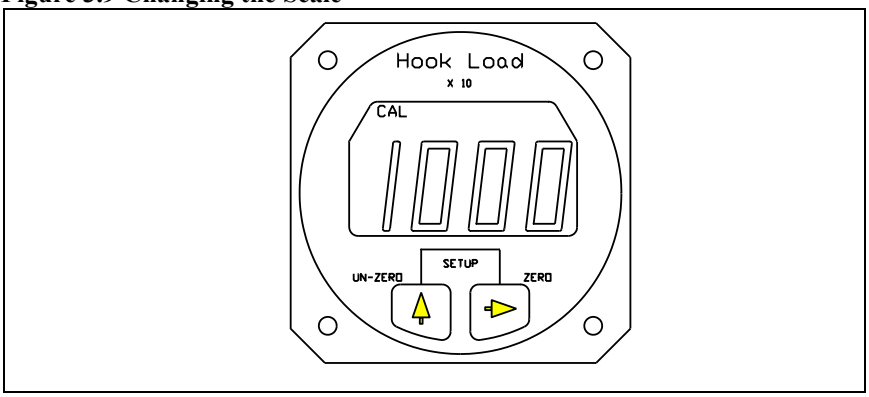
The Scale routine is used when a user supplied analog meter is connected to the Indicator. It is used to match or calibrate the analog meter to the Indicator. The Indicator outputs a 0 to 5 VDC analog signal, which is proportional to the Load Cell load. The Scale number tells the Indicator at what point 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.

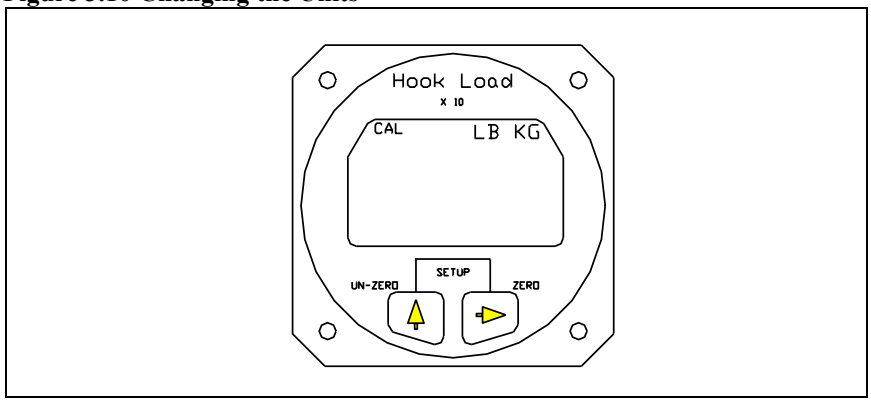
Select KG or LB Units

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

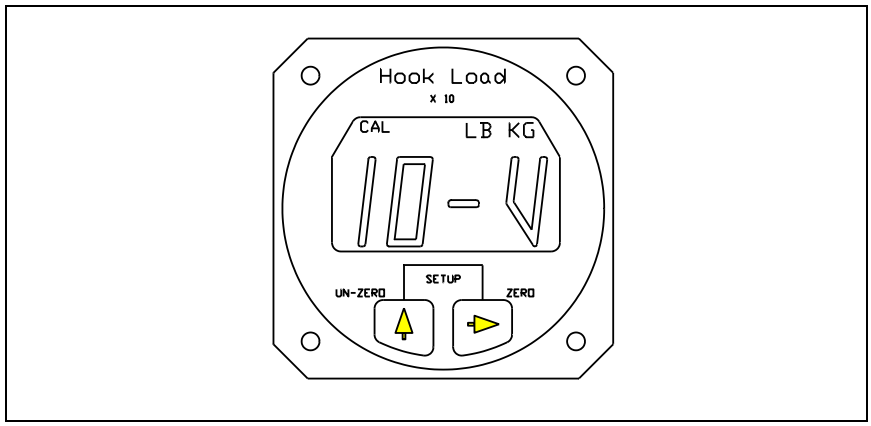
The selected units are displayed when in the Run Mode.

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 a flight involving external load operations perform the following:

1. Be completely familiar with this Owner's Manual, Cargo Hook Service Manual 122-015-00 and the ICA Manual 123-029-00 (Swing) or ICA Manual 123-031-00 (Sling).
2. Activate the electrical system and press the Cargo Hook release button to ensure the cargo hook electrical release is operating correctly. The Cargo Hook must release. Reset the hook by hand after the release. If the hook does not release or re-latch, do not use the unit until the difficulty is resolved.

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

3. Activate the release lever on the collective to test the cargo hook manual release mechanism. 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.
4. Swing the installed Cargo Hook and the suspension to ensure that the hydraulic hose, electrical harnesses and ground strap have enough slack to allow full swing of each component without straining or damaging the harnesses and hose. The hose and/or harnesses must not be the stops that prevent the Cargo Hook or the suspension from swinging freely in all directions.
5. Visually check for presence and security of fasteners, and condition of cables. Swing the Cargo Hook and the suspension in fore and aft and side to side directions to check for freedom of rotation at all joints.

Disconnecting Removable Provisions

For helicopter missions in which the cargo hook swing suspension system is not needed, its removable provisions may be removed per the following instructions.

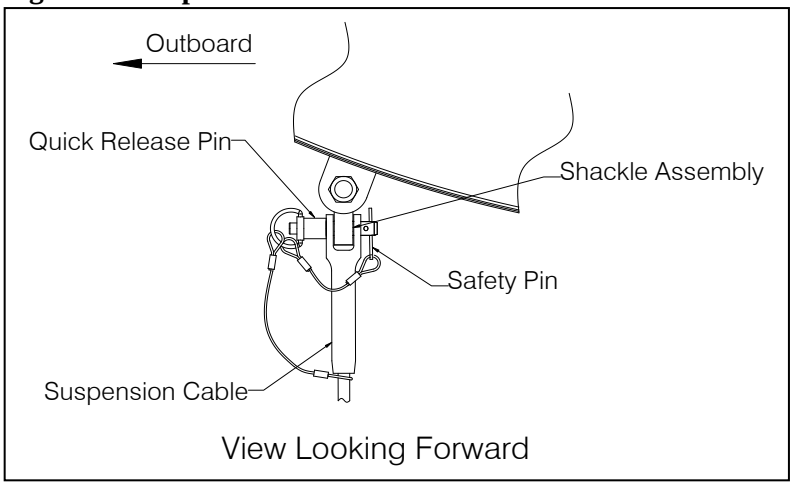
1. Disconnect the electrical harnesses, the ground strap, and the hydraulic release hose at the belly of the helicopter.
2. Remove the Swing Suspension by removing the safety pins and then the quick release pins that secure the cables to each Shackle Assemblies at the aircraft hard points.

   Remove the Sling Suspension by removing the cotter pin, nut, washers, gimbal pin and bolt at the center hard point of the forward fuel tank support.

NOTICE

If converting from the swing configuration to the sling configuration, the fuel drain guard may be left in place (i.e. - it is acceptable to operate the sling configuration with the fuel drain guard installed).

Figure 4.1 Suspension Removal



Re-installing Removable Provisions

Re-install the removable provisions per the following instructions:

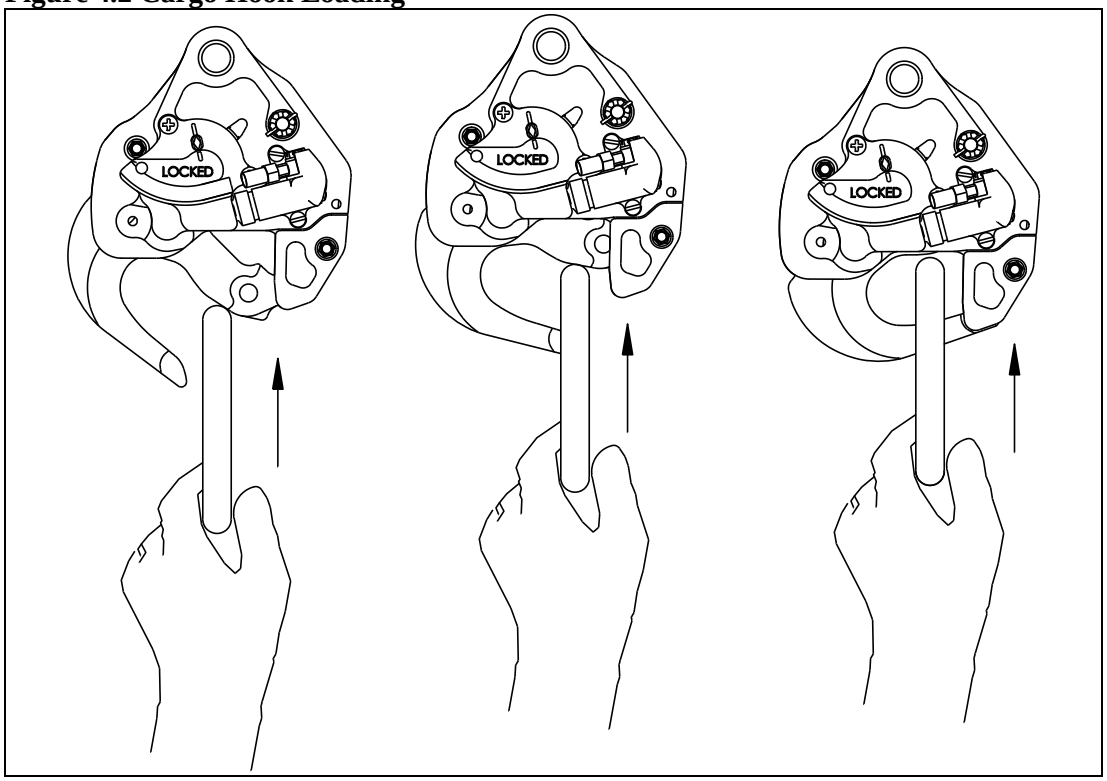
1. Re-install the Swing Suspension by inserting the quick release pins through the cables end fittings and Shackle Assemblies at the aircraft hard points.

   If re-installing the Sling Suspension, re-install with gimbal pin, washers (2), bolt, nut, and cotter pin (as shown in Figure 2.8.1).
2. Connect the electrical connectors, ground strap, and the hydraulic quick disconnect fitting to the mating connectors at the connector bracket.

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

Figure 4.2 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 assure the cargo hook will function properly with each rigging.

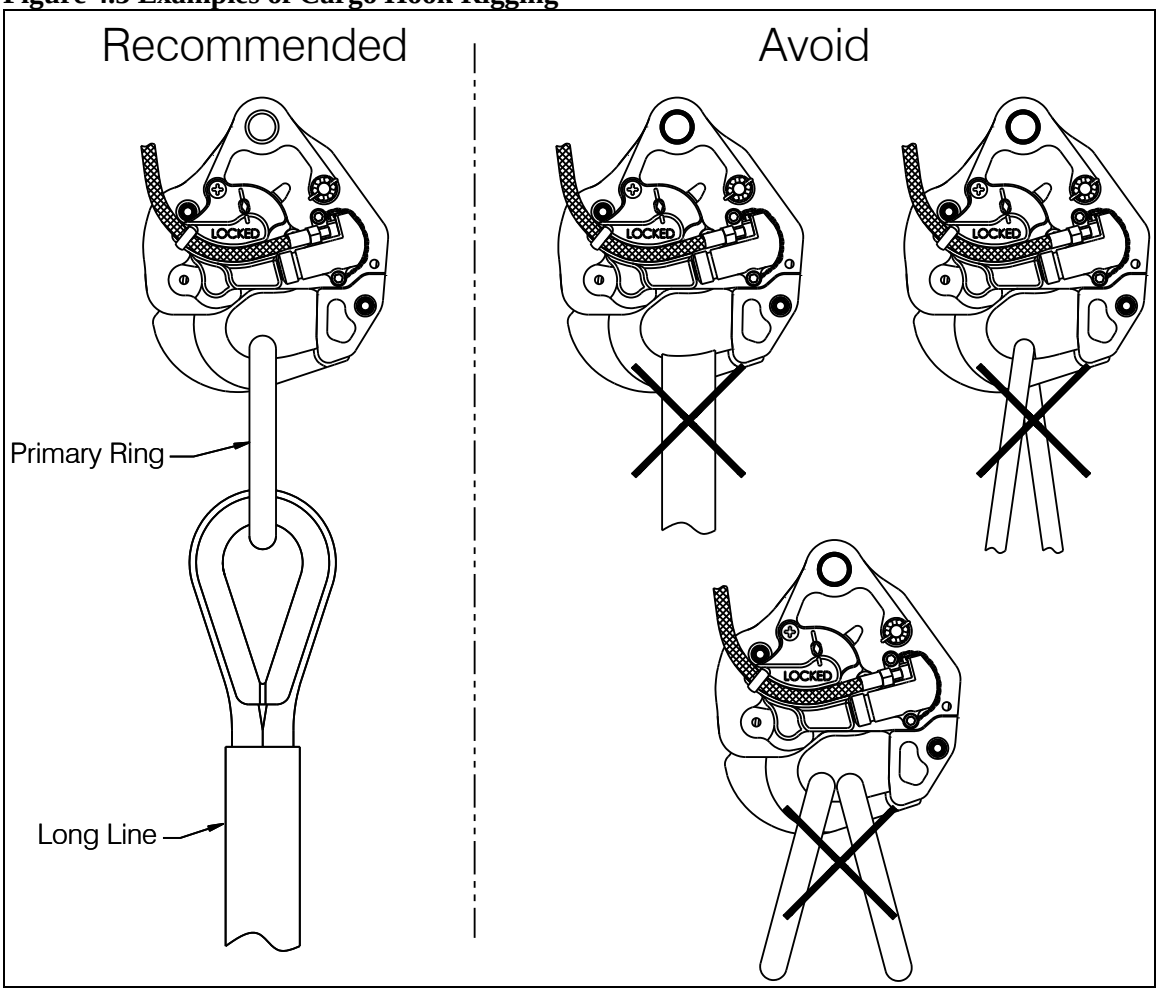
Cargo Hook Rigging, continued

Nylon Type Straps and Rope

WARNING

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

Figure 4.3 Examples of Cargo Hook Rigging



Section 5
Maintenance

Refer to the Instructions for Continued Airworthiness (ICA) manual 123-029-00 for maintenance of the cargo hook swing suspension kit (P/N 200-321-00). Refer to ICA 123-031-00 for maintenance of the cargo hook sling suspension kit (P/N 200-322-00). 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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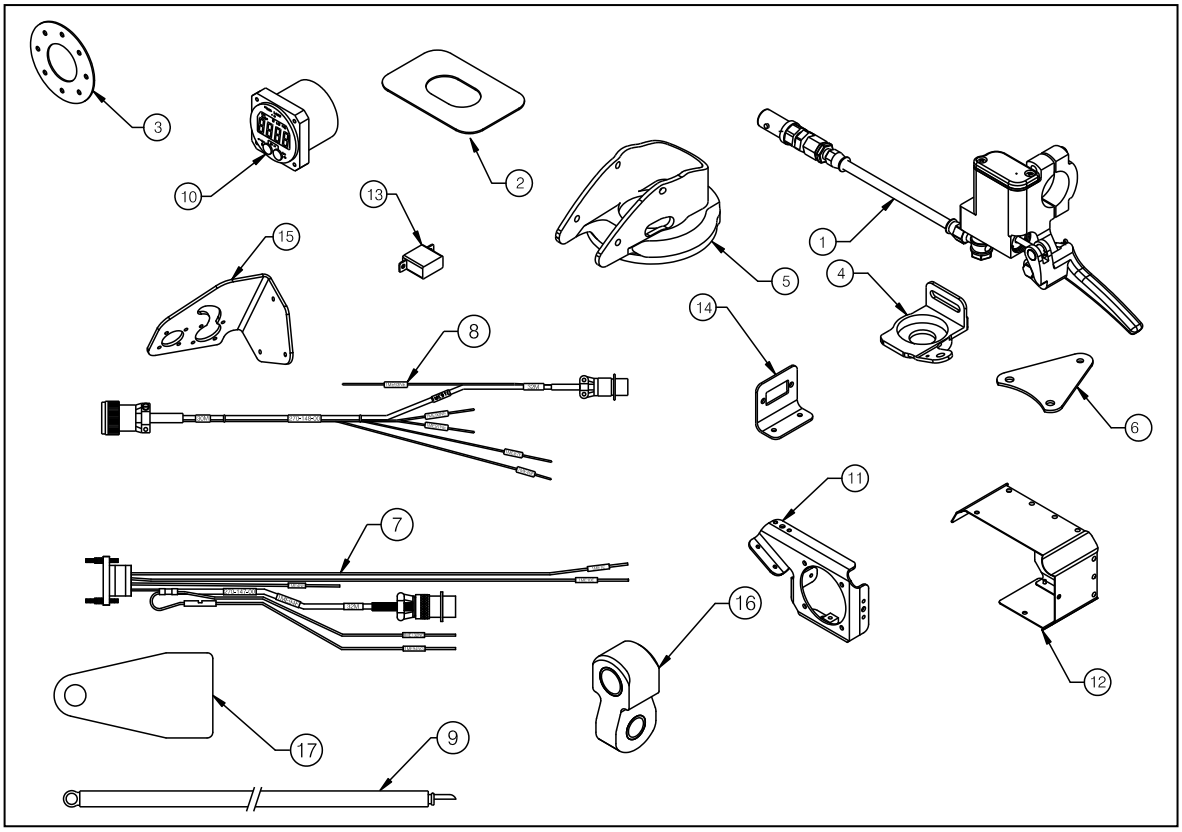
Section 6
System Part Numbers

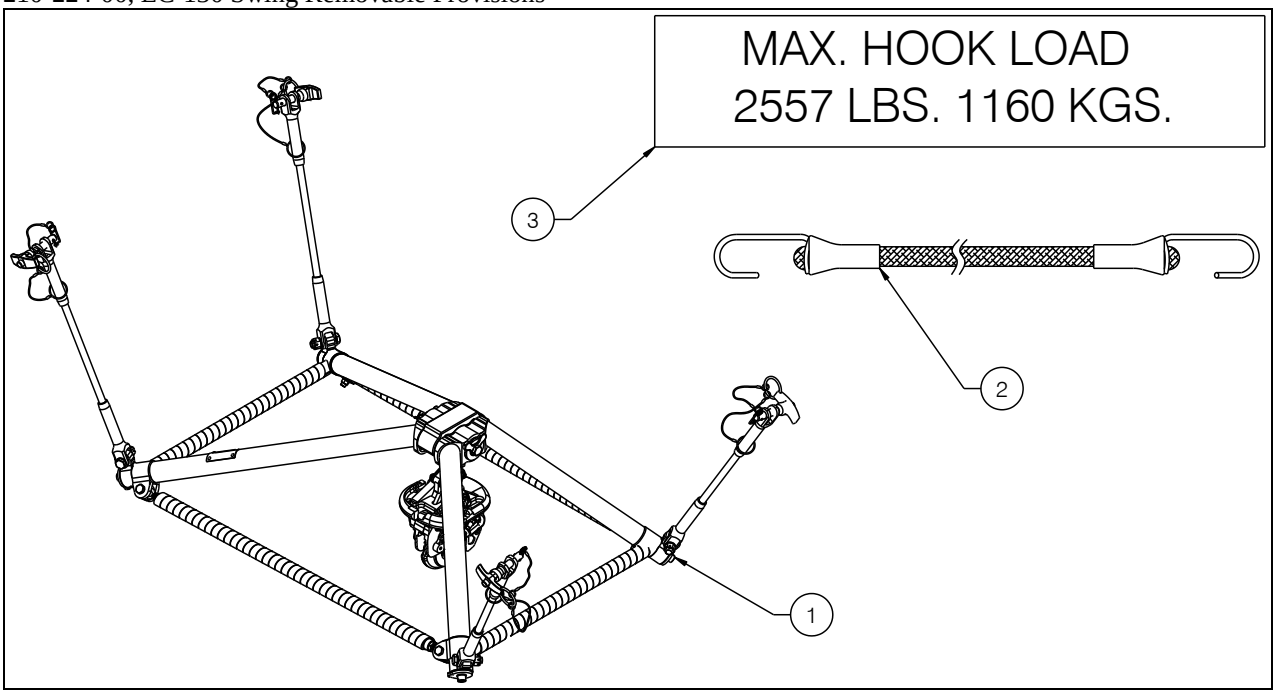
210-223-00, EC-130 Swing Fixed Provisions



ITEM	P/N	DESCRIPTION	QTY
1	232-300-00	Master Cylinder Assy W/ Plumbing	1
2	235-144-00	Doubler	1
3	235-145-00	Doubler	1
4	290-888-00	Retainer	1
5	290-889-01	Guard	1
6	290-893-00	Bracket	1
7	270-147-00	Internal Harness, Electrical Release	1
8	270-148-00	Internal Harness, Load Weigh	1
9	270-125-01	Ground Strap	1
10	210-095-00	C-39 Indicator	1
11	232-311-00	C-39 Mount Bracket Assembly	1
12	232-304-00	Cover Assembly	1
13	445-005-00	Relay	1
14	290-783-00	Relay Bracket	1
15	290-884-00	Connector Bracket	1
16	232-293-00	Upper Shackle Assembly	4
17	235-152-00	Bungee Bracket	2

System Part Numbers continued

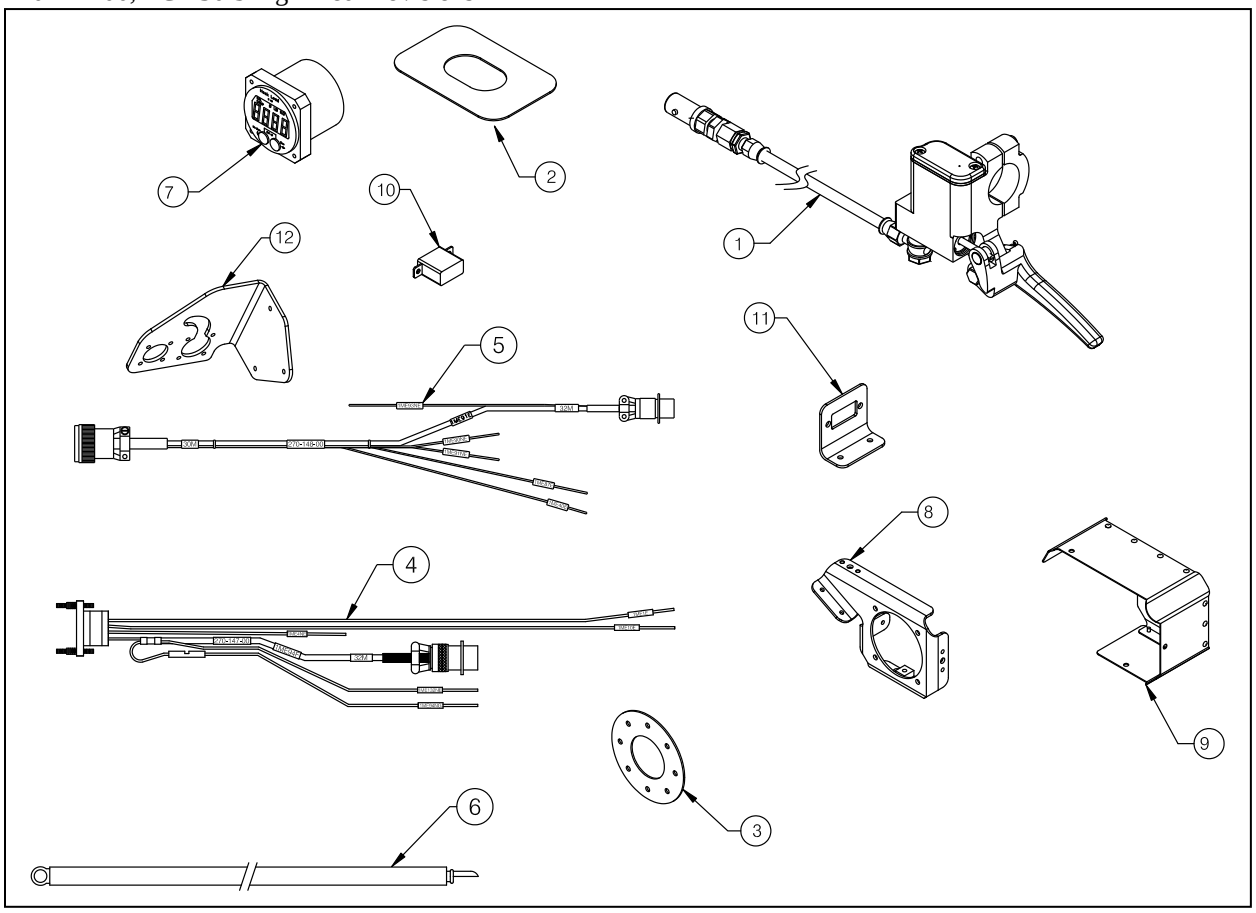
210-224-00, EC-130 Swing Removable Provisions



ITEM	P/N	DESCRIPTION	QTY
1	232-313-00	Swing Frame Cargo Hook Assembly	1
2	232-294-00	Shock Cord Assembly	2
3	215-168-00	Label, External Load Limit 2557 Lbs.	1

System Part Numbers continued

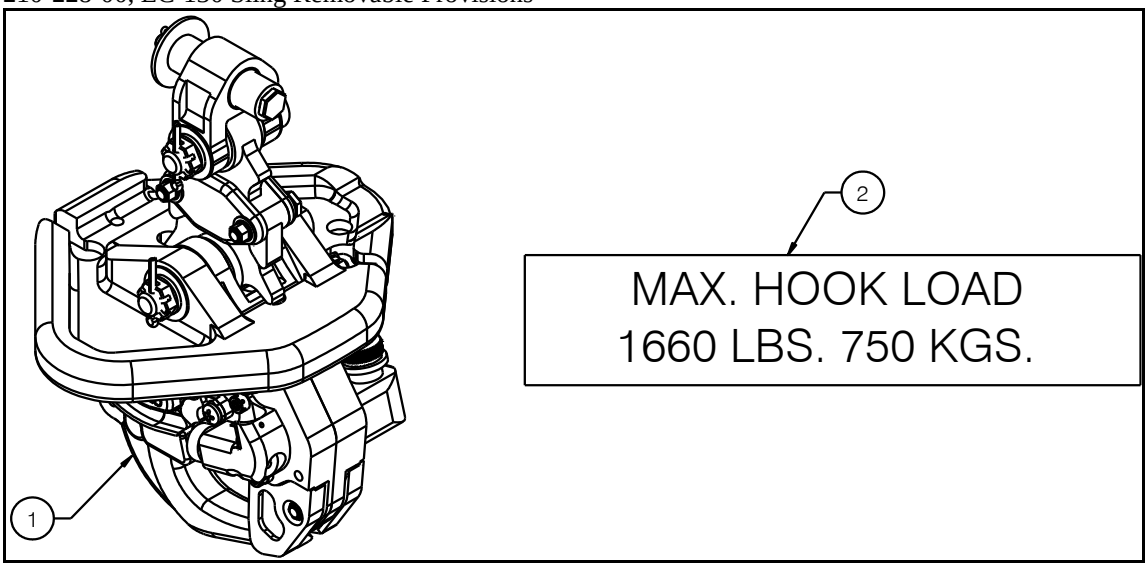
210-227-00, EC-130 Sling Fixed Provisions



ITEM	P/N	DESCRIPTION	QTY
1	232-300-00	Master Cylinder Assy W/ Plumbing	1
2	235-144-00	Doubler	1
3	235-145-00	Doubler	1
4	270-147-00	Internal Harness, Electrical Release	1
5	270-148-00	Internal Harness, Load Weigh	1
6	270-125-01	Ground Strap	1
7	210-095-00	C-39 Indicator	1
8	232-311-00	C-39 Mount Bracket Assembly	1
9	232-304-00	Cover Assembly	1
10	445-005-00	Relay	1
11	290-783-00	Relay Bracket	1
12	290-884-00	Connector Bracket	1

System Part Numbers continued

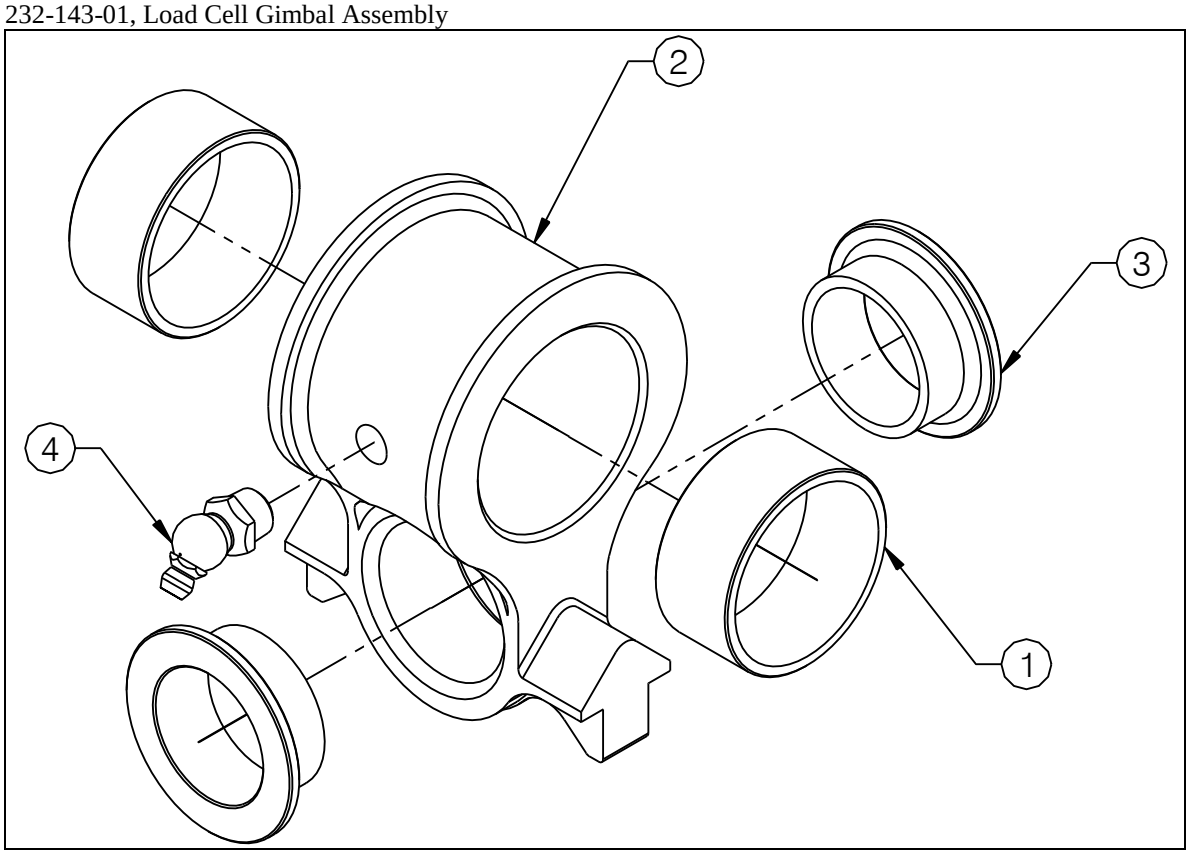
210-228-00, EC-130 Sling Removable Provisions



ITEM	P/N	DESCRIPTION	QTY
1	232-312-00	Cargo Hook Gimbal Assembly	1
2	215-167-00	Label, External Load Limit 1660 Lbs.	1

System Part Numbers continued

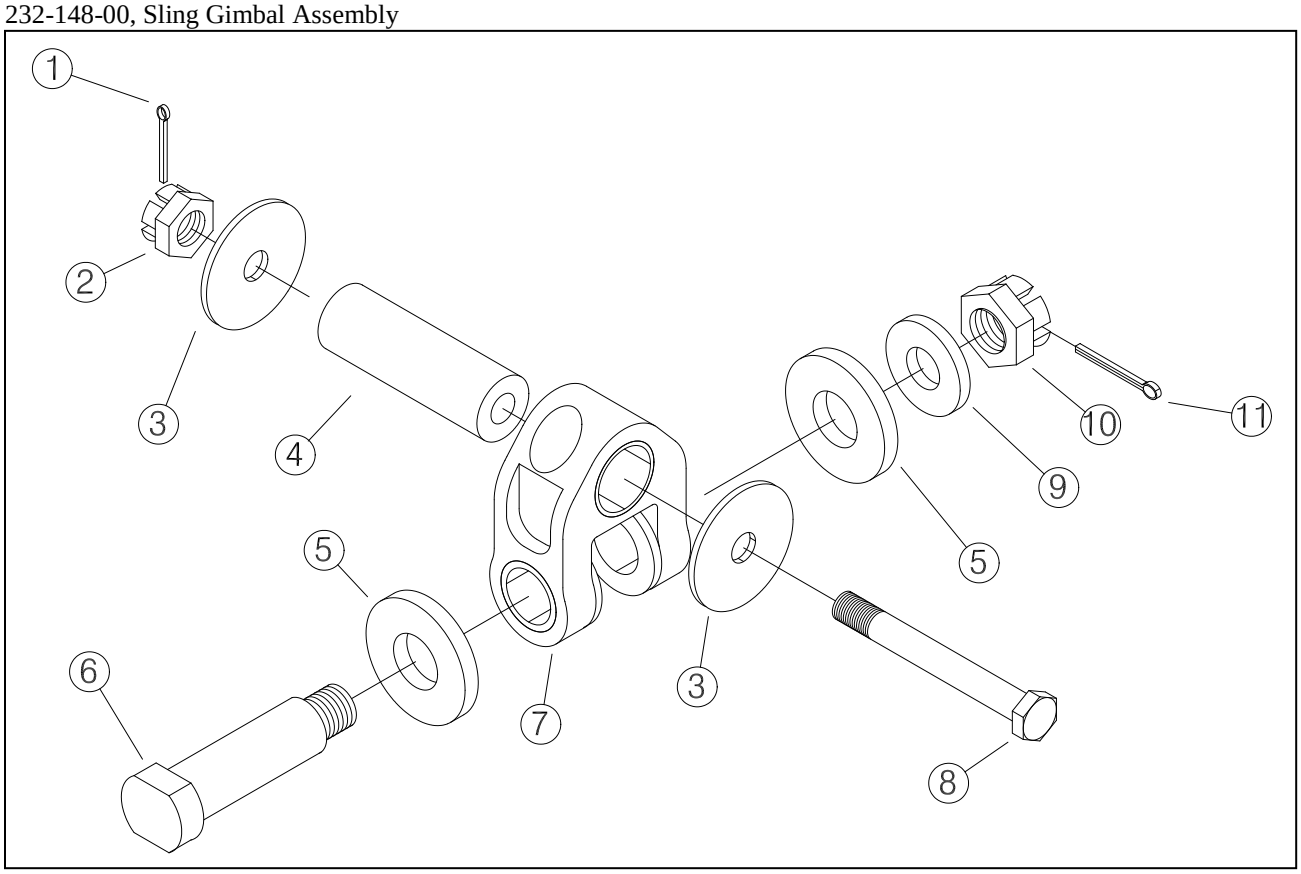
232-143-01, Load Cell Gimbal Assembly



ITEM	P/N	DESCRIPTION	QTY
1	517-056-00	Bushing Upper Hook Gimbal	2
2	290-841-00	Gimbal Link	1
3	517-046-00	Bushing Lower Hook Gimbal	2
4	518-003-00	Grease Fitting	1

System Part Numbers continued

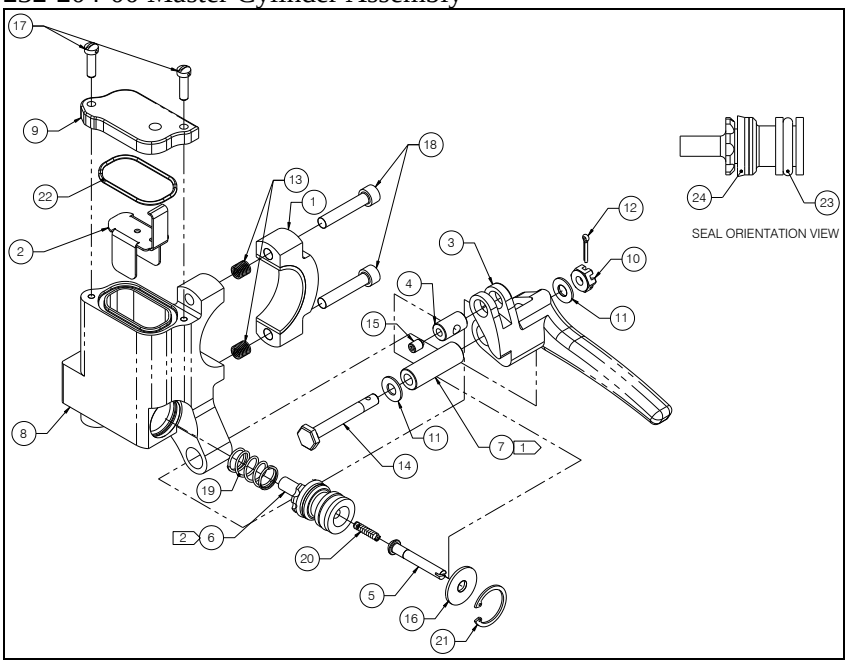
232-148-00, Sling Gimbal Assembly



ITEM	P/N	DESCRIPTION	QTY
1	510-081-00	Cotter pin	1
2	510-259-00	Nut	1
3	510-336-00	Washer	2
4	290-766-00	Gimbal Pin	1
5	510-183-00	Washer	2
6	290-332-00	Attach Bolt	1
7	232-144-00	Swing Gimbal Sub Assembly	1
8	510-451-00	Bolt	1
9	510-174-00	Washer	1
10	510-170-00	Nut	1
11	510-178-00	Cotter pin	1

System Part Numbers continued

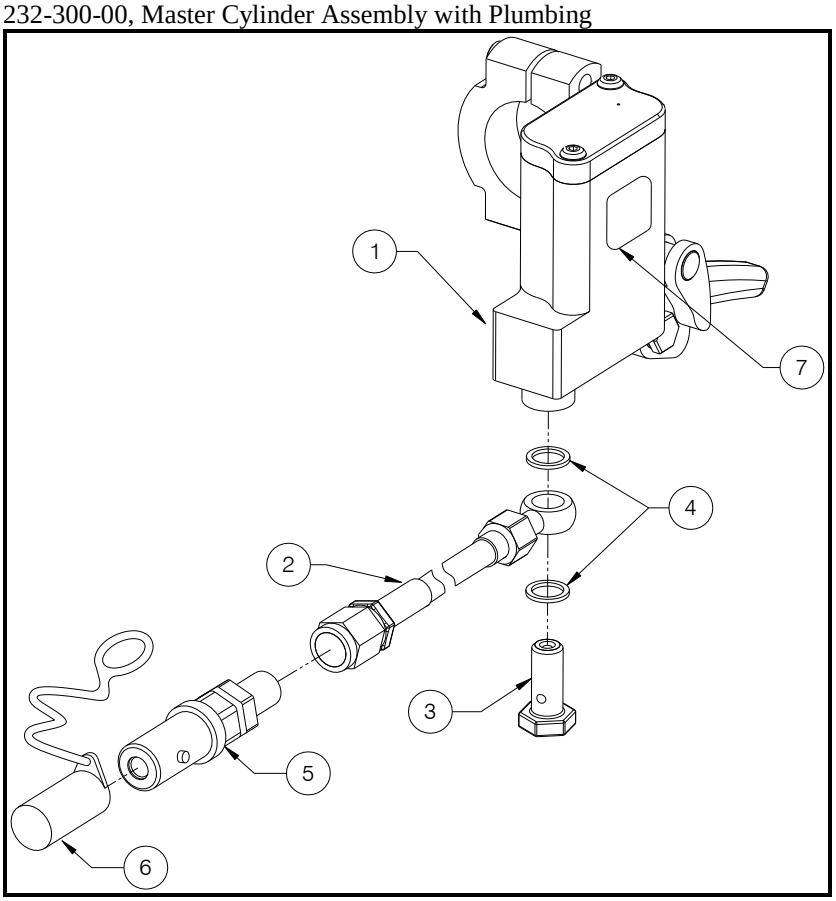
232-204-00 Master Cylinder Assembly



ITEM	P/N	DESCRIPTION	QTY
1	232-307-00	Clamp Half	1
2	235-118-00	Master Cylinder Baffle	1
3	290-811-00	Lever	1
4	290-812-00	Barrel Nut	1
5	290-813-00	Push Rod	1
6	290-814-01	Piston	1
7	290-816-00	Shaft	1
8	290-911-00	Master Cylinder	1
9	290-921-00**	Reservoir Lid	1
10	510-082-00	Nut	1
11	510-095-00*	Washer	1
12	510-125-00	Cotter Pin	1
13	510-248-00	Helicoil	2
14	510-487-00	Bolt	1
15	510-530-00	#8-32 x 3/16” Nylon Tip Set Screw	1
16	510-532-00	Washer – Piston Stop	1
17	511-124-00**	Shoulder Screw	2
18	510-987-00	Screw	2
19	514-055-00	Compression Spring	1
20	514-060-00	Compression Spring	1
21	515-008-00	Snap Ring	1
22	556-044-00	O-Ring	1
23	556-047-00	O-Ring	1
24	556-048-00	Cup Seal	1

*Optionally use thick washer, P/N 510-042-00, MFG. P/N NAS1149F 0363P, in place of either instance of item 11.
** For improved performance, use shoulder screw P/N 511-124-00 with Reservoir Lid P/N 290-921-00. P/N 511-124-00 supersedes 510-424-00.

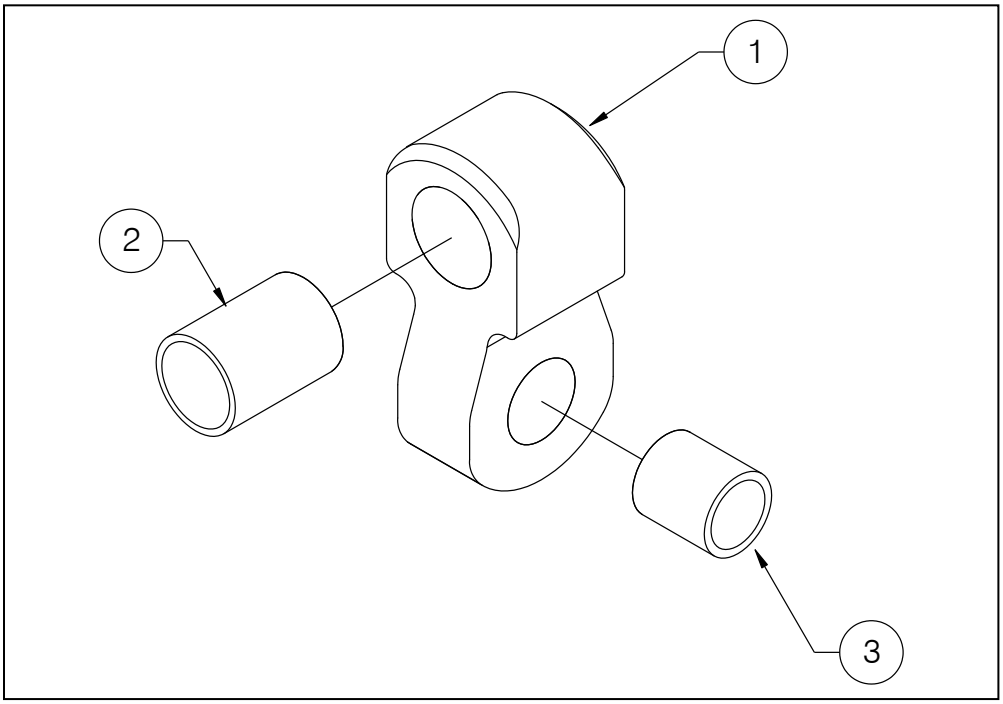
232-300-00, Master Cylinder Assembly with Plumbing



ITEM	P/N	DESCRIPTION	QTY
1	232-204-00	Master Cylinder Assembly	1
2	232-291-01	Master Cylinder Plumbing Assembly	1
3	558-021-00	Banjo Bolt	1
4	556-040-00	Crush Washer	2
5	560-005-00	Quick Disconnect	1
6	560-007-00	Cap	1
7	215-217-00	P/N Decal	1

System Part Numbers continued

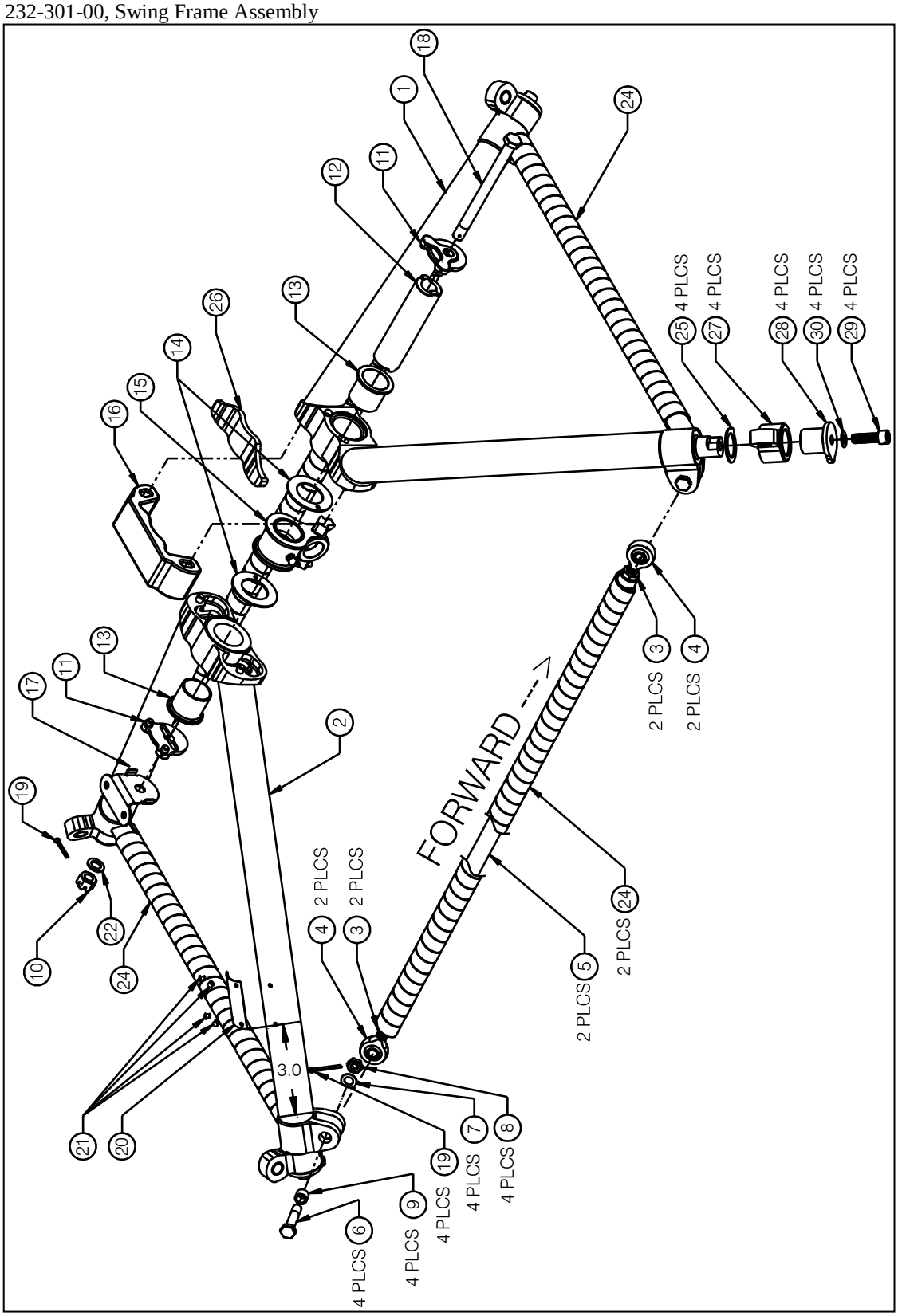
232-293-00, Upper Shackle Assembly



ITEM	P/N	DESCRIPTION	QTY
1	291-135-00	Upper Shackle	1
2	291-117-00	Bushing	1
3	517-016-00	Bushing	1

System Part Numbers continued

232-301-00, Swing Frame Assembly



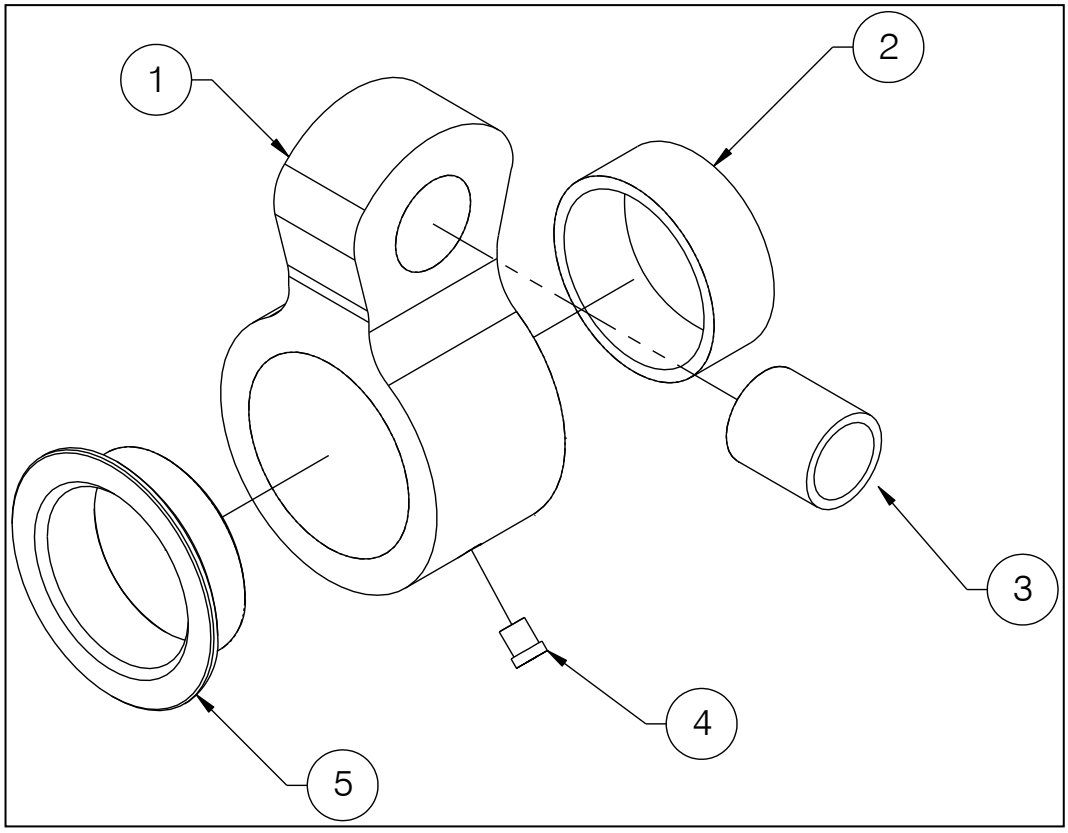
System Part Numbers continued

232-301-00, Swing Frame Assembly, continued

ITEM	P/N	DESCRIPTION	QTY
1	235-150-00	Forward Weldment	1
2	235-149-00	Aft Weldment	1
3	510-510-00	Jam Nut	4
4	517-055-00	Spherical Rod End Bearing	4
5	235-148-00	Longitudinal Strut Weldment	2
6	510-636-00	Bolt	4
7	510-173-00	Washer	4
8	510-104-00	Nut	4
9	291-131-00	Clamp Bushing	4
10	510-718-00	Nut	1
11	290-843-00	Shaft Cap	2
12	290-842-00	Pivot Shaft	1
13	517-057-00	Bearing	2
14	517-058-00	Bearing	2
15	232-143-01	Gimbal Assembly	1
16	290-862-00	Bumper	1
17	235-170-00	Bracket	1
18	510-676-00	Bolt	1
19	510-178-00	Cotter Pin	1
20	215-183-00	Serial Number Plate	1
21	510-486-00	Rivet	4
22	510-174-00	Washer	1
23	520-087-00	Leading Edge Tape	15”
24	590-011-00	Spiral Wrap	129”
25	235-155-00	Inner Thrust Washer	4
26	291-159-00	Bumper	1
27	232-302-00	Paddle Assembly	4
28	291-130-00	Hat Bushing	4
29	510-635-00	Socket Head Cap Screw	4
30	510-239-00	Washer	4
31	510-115-00	Cotter Pin	4

System Part Numbers continued

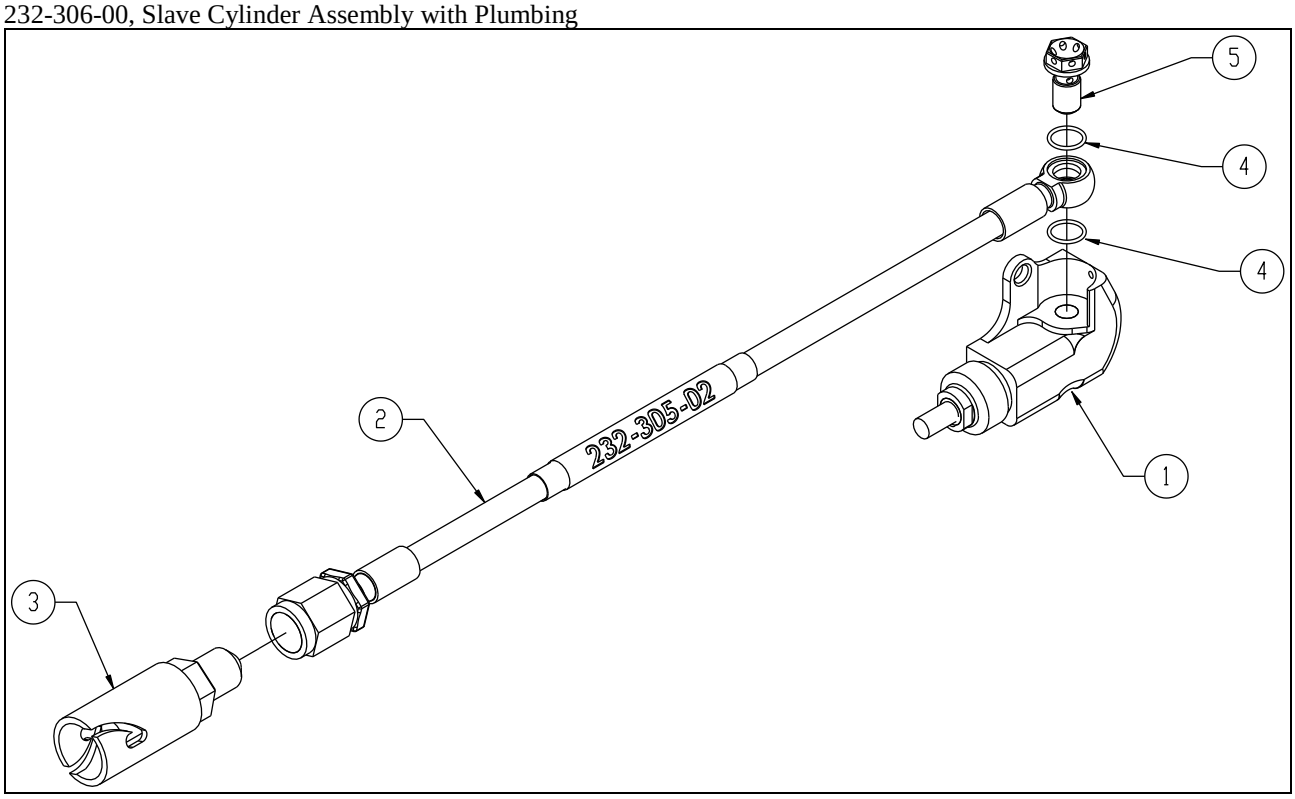
232-302-00, Paddle Assembly



ITEM	P/N	DESCRIPTION	QTY
1	291-128-00	Paddle	1
2	291-134-00	Bushing	1
3	517-016-00	Bushing	1
4	518-001-00	Grease Fitting	1
5	291-250-00	Flanged Bushing	1

System Part Numbers continued

232-306-00, Slave Cylinder Assembly with Plumbing

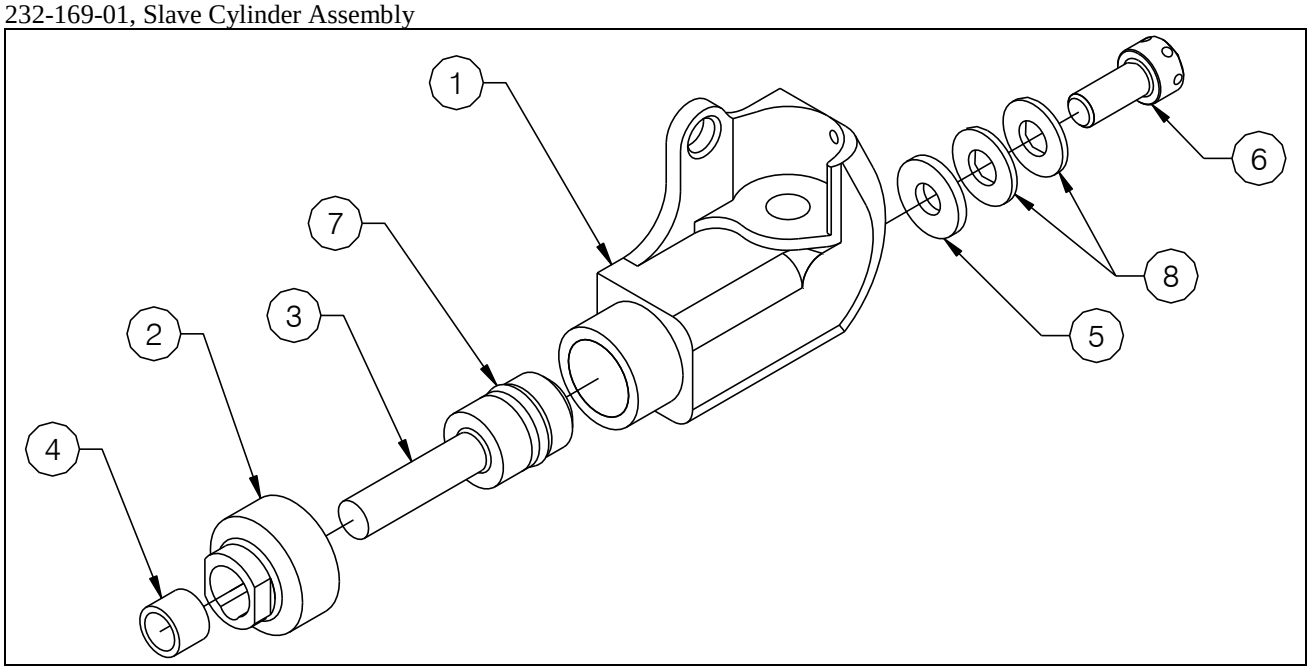


ITEM	P/N	DESCRIPTION	QTY
1	232-169-01	Slave Cylinder Assembly	1
2	232-305-02[1]	Slave Cylinder Plumbing Assembly	1
3	560-006-00	Quick Disconnect	1
4	556-041-00	O-Ring	2
5	558-031-00	Banjo Bolt	1
6	420-033-00	Safety Wire (not shown)	AR

[1] This P/N supersedes P/N 232-305-00 and P/N 232-305-01. These assemblies are interchangeable.

System Part Numbers continued

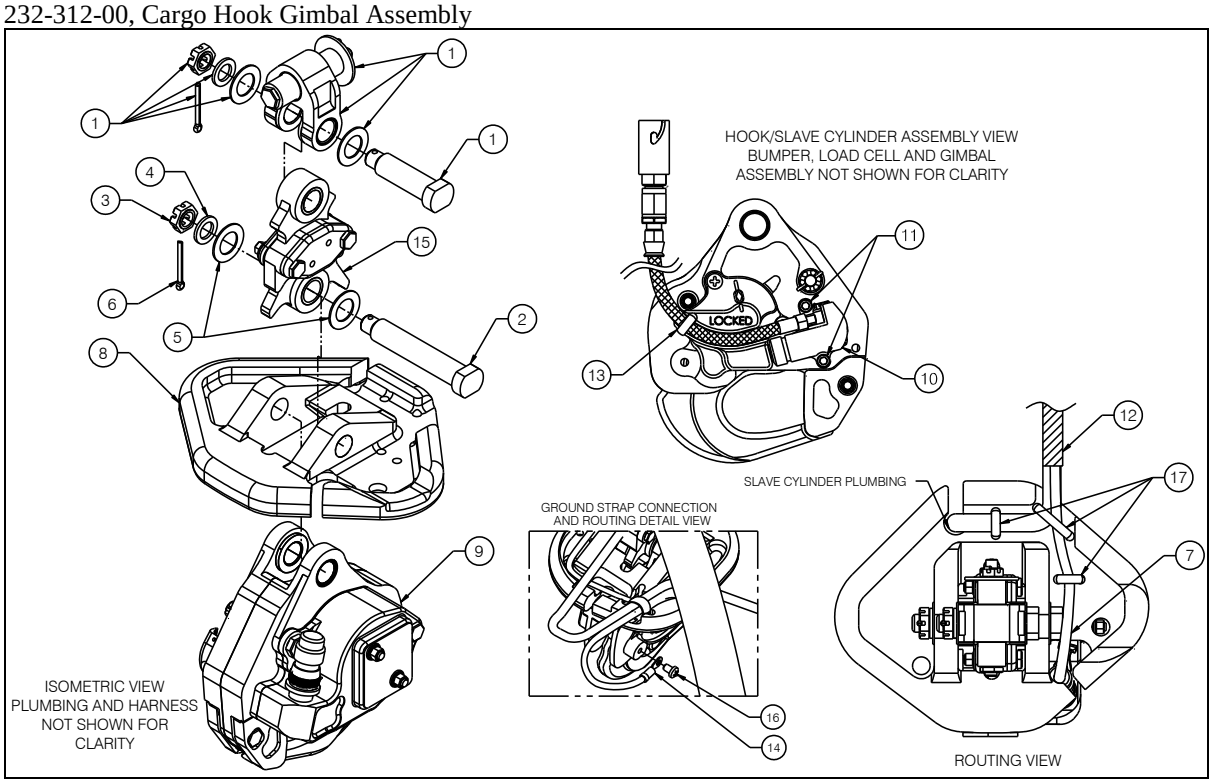
232-169-01, Slave Cylinder Assembly



ITEM	P/N	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	510-740-00	Thread-Seal	1
6	510-694-00	Screw	1
7	556-097-00	Quad Ring	1
8	510-209-00	Washer	2

System Part Numbers continued

232-312-00, Cargo Hook Gimbal Assembly

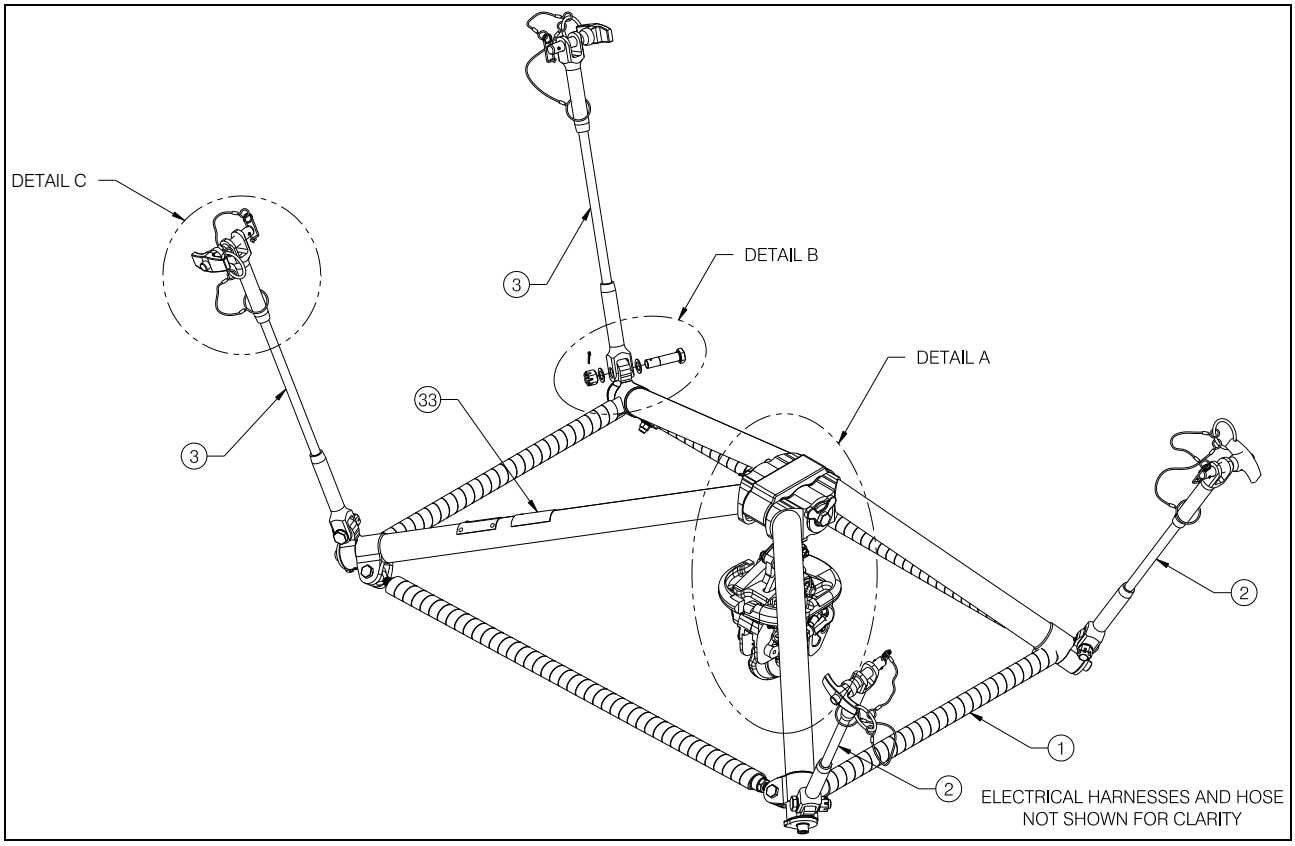


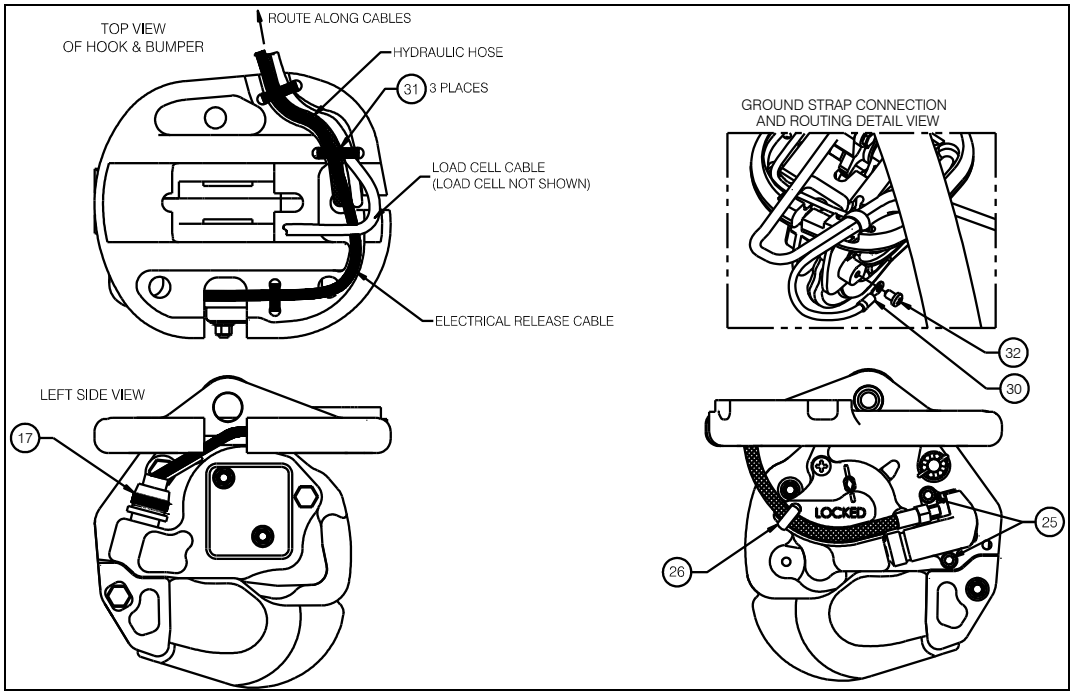
ITEM	P/N	DESCRIPTION	QTY
1	232-148-00	Sling Gimbal Assembly	1
2	290-775-00	Long Hook Attach Bolt	1
3	510-170-00	Nut	1
4	510-174-00	Washer	1
5	510-183-00	Washer	2
6	510-178-00	Cotter Pin	1
7	270-150-00	Electrical Release Harness	1
8	291-138-00	Hook Bumper	1
9	528-028-00	Hydraulic Cargo Hook	1
10	232-368-00	Slave Cylinder Assembly W/ Plumbing	1
11	510-531-00	Screw	2
12	590-013-00	Spiral Wrap	AR
13	512-003-00	Ty-Wrap	1
14	270-126-02	Ground Strap	1
15	210-203-03*	Load Cell Assembly	1
16	510-391-00	Screw	1
17	512-011-00	Ty-Wrap	3

* Supersedes P/N 210-203-01, these part numbers are interchangeable.

System Part Numbers continued

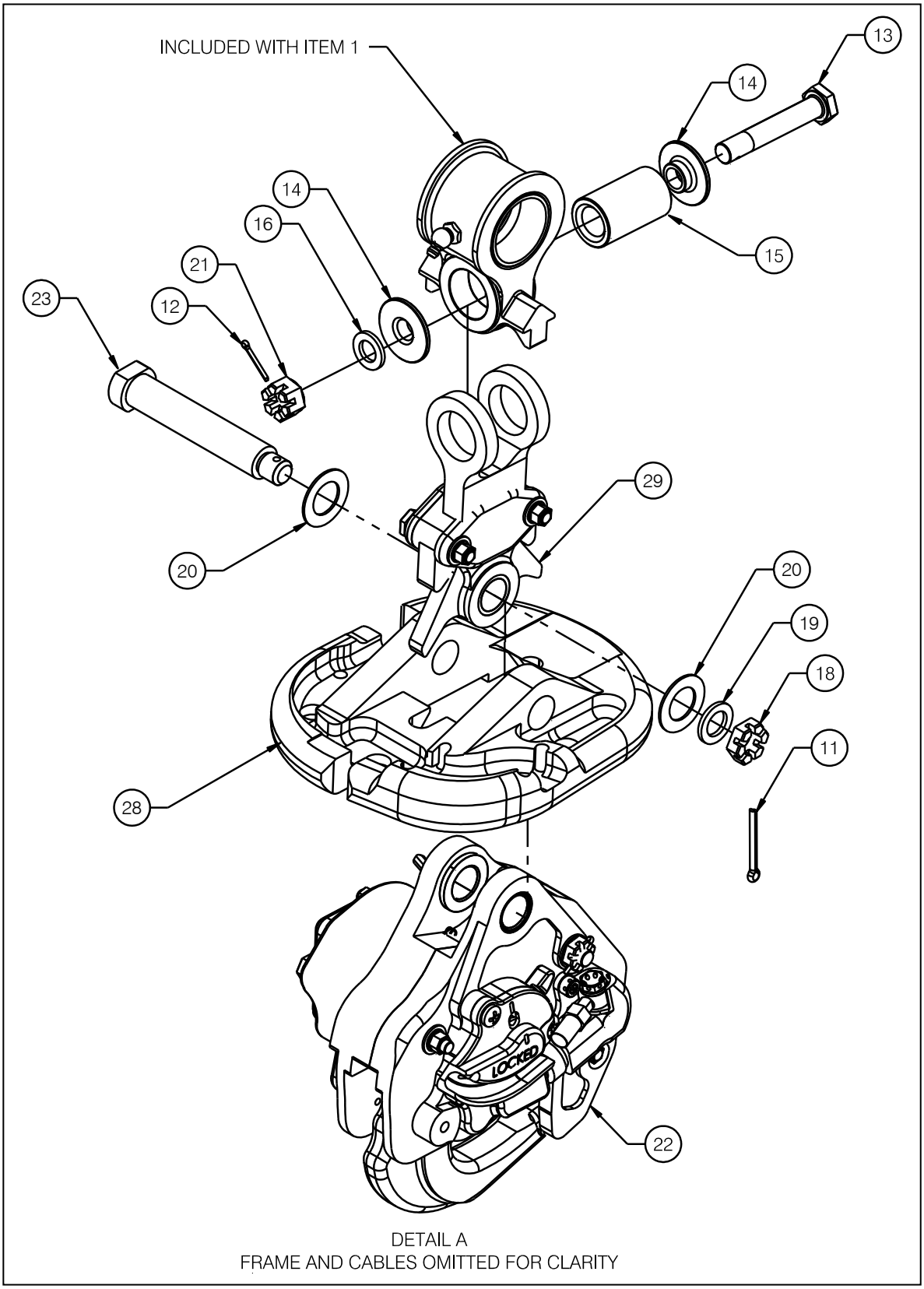
232-313-00, Swing Frame and Cargo Hook Assembly





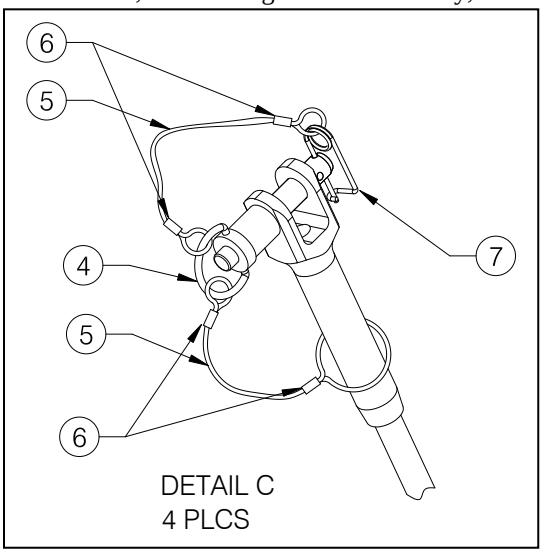
System Part Numbers continued

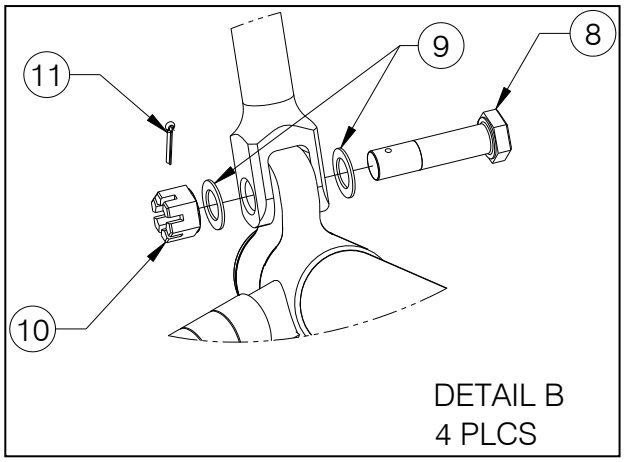
232-313-00, Swing Frame and Cargo Hook Assembly, continued



System Part Numbers continued

232-313-00, Frame Cargo Hook Assembly, continued





ITEM	P/N	DESCRIPTION	QTY
1	232-301-00	Swing Frame Assembly	1
2	232-296-00	Forward Attach Cable	2
3	232-298-00	Aft Attach Cable	2
4	291-156-00	Quick Release Pin, Modified	4
5	531-015-00	Lanyard Cable	8
6	531-016-00	Crimp Sleeve	16
7	510-464-00	Hitch Pin	4
8	510-438-00	Bolt	4
9	510-238-00	Washer	8
10	510-718-00	Nut	4
11	510-178-00	Cotter Pin	5
12	510-115-00	Cotter pIn	1
13	510-443-00	Bolt	1
14	290-740-00	Shaft Retaining Bushing	2
15	290-739-00	Shaft	1
16	510-220-00	Washer	1
17	270-129-01	Lower Electrical Release Cable	1
18	510-170-00	Nut	1
19	510-174-00	Washer	1
20	510-183-00	Washer	2
21	510-719-00	Nut	1
22	528-028-00	Cargo Hook	1
23	290-775-00	Attach Bolt	1
24	232-306-00	Slave Cylinder Assembly W/ Plumbing	1
25	510-531-00	Screw	2
26	512-003-00	Ty-Wrap	1
27	590-017-00	Spiral Wrap (Not shown)	20”
28	290-839-01	Hook Bumper	1
29	210-249-04*	Load Cell Assembly	1
30	270-126-01	Ground Strap	1
31	512-011-00	Ty-Wrap	3
32	510-391-00	Screw	1
33	215-271-00	Fuel Drain Warning Placard	1

* P/N 210-249-04 supersedes P/Ns 210-249-01 & 210-199-02. These parts are interchangeable.

Section 7
Certification
FAA STC

United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number **SR01815SE**

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

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

Original Product—Type Certificate Number: H9EU
Make: Eurocopter France
Model: EC130B4

Description of the Type Design Change: Fabrication of Onboard Systems Model 200-321-00 Cargo Hook Swing Suspension Kit and 200-322-00 Cargo Hook Sling Suspension Kit in accordance with FAA approved Onboard Systems Master Drawing List No. 155-121-00, Revision 1, dated February 6, 2008, or later FAA approved revision; and installation of the 200-321-00 Cargo Hook Swing Suspension Kit or 200-322-00 Cargo Hook Sling Suspension Kit in accordance with FAA approved Onboard Systems Owner's Manual No. 120-131-00, Revision 1, dated February 4, 2008, or later FAA approved revision. This modification must be inspected and maintained in accordance with Section ATA 5 of the FAA approved Onboard Systems Instructions for Continued Airworthiness (ICA) Document No. 123-029-00, Revision 0, dated September 12, 2007, or later FAA approved revision, for the 200-321-00 swing kit,

(continued on page 3)

Limitations and Conditions: Approval of this change in type design applies only to those Eurocopter model rotorcraft listed above equipped with reinforced fuel tank supports installed per Eurocopter Service Bulletin 25-032, OP3630. This approval should not be extended to other rotorcraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that rotorcraft. Rotorcraft modified in accordance with this STC must be operated in accordance with an FAA approved copy of Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) No. 121-046-00, revision 0, dated February 19, 2008, or later FAA approved revision, for the 200-321-00 Cargo Hook Swing Suspension Kit, or RFMS No. 121-049-00, dated February 19, 2008, or later FAA approved revision,

(continued on page 3)

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: May 18, 2007
Date of issuance: February 20, 2008
Date reissued:
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)

FAA STC continued

Description of the Type Design Change: or Section ATA 5 of the FAA approved Onboard Systems ICA Document No. 123-031-00, Revision 0, dated September 12, 2007, or later FAA approved revision, for the 200-322-00 sling kit, 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: for the 200-322-00 Cargo Hook Sling Suspension Kit. A copy of this Certificate, FAA approved RFMS, ICA document, and Maintenance 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.

EASA STC

European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.01444

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:	EC130B4
Original STC Number:	FAA STC SR01815SE

Description of Design Change:
Installation of Model 200-321-00 Cargo Hook Swing Suspension Kit and Model 200-322-00 Cargo Hook Sling Suspension Kit.

Associated Technical Documentation:

- Definition and installation:
  - Onboard Systems Master Drawing List No. 155-121-00, Rev. 1 dated February 6, 2008 or later EASA approved revisions
  - Onboard Systems Owner's Manual No. 120-131-00 Rev. 1 dated February 4, 2008 or later EASA approved revisions
- Inspection and maintenance:
  - Onboard Systems Instructions for Continued Airworthiness No. 123 029-00 (for 200-321-00 swing suspension system), Rev. 0 dated September 12, 2007 or later EASA approved revisions
    or
  - Onboard Systems Instructions for Continued Airworthiness No. 123 031-00 (for 200-322-00 sling suspension system), Rev. 0 dated September 12, 2007 or later EASA approved revisions
    and
  - Onboard Systems Service Manual No. 122 015-00 (for Talon LC hydraulic cargo hook), Rev. 4 dated July 6, 2006 or later EASA approved revisions
- Operation:
  - Onboard Systems RFMS No. 121-046-00 (for 200-321-00 swing suspension system), Rev. 0 dated February 19, 2008, or later EASA approved revisions

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or

- Onboard Systems RFMS No. 121-049-00 (for 200-322-00 sling suspension system), Rev. 0 dated February 19, 2008, or later EASA approved revisions

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. EASA approved EC130B4 RFM and <External Load Transport: Cargo Sling 750kg> or <External Load Transport: Cargo Swing 1160kg>, as appropriate, RFM supplement are required.

This Certificate shall remain valid unless otherwise surrendered or revoked.

For the European Aviation Safety Agency,

Date of issue: 27 March 2009

Massimo MAZZOLETTI
Certification Manager

STC – EASA.IM.R.S.01444 – Onboard Systems International

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Transport Canada Approval

Transport Canada / Transports Canada
Civil Aviation / Aviation Civile

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

Your file *Votre référence*

Our file *Notre référence*
130S-08-127
RDMIS 4199119
NAPA P-08-0136

June 24, 2008

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

Attention: Mr. Mark Hanson

Subject: Acceptance of Foreign STC SR01815SE

Dear Sir:

This is in response to FAA letter dated March 13, 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. Should you require additional information with regards to this matter or clarification please do not hesitate to contact the undersigned at (604) 666-5597.

Yours truly,

H. W. Wong
Senior Engineer, Aircraft Certification

for
Minister of Transport

c.c. Mr. Philip L. Forde
Acting Manager, Seattle ACO

Canada

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