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Owner's Manual

For the

Talon LC
Hydraulic Cargo Hook Kit

On the

Airbus Helicopters AS350 Series

System Part Numbers
200-297-00, 200-297-10, 200-298-00, 200-298-10

Owner's Manual Number 120-115-00
Revision 8
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Record of Revisions

Revision	*Date*	*Page(s)*	*Reason for Revision*
0	04/25/05	All	Initial Release
1	09/26/08	5-2	Changed hook bumper P/N 290-839-00 to 290-839-01.
2	10/22/08	TOC, 5-4	Replaced 232-167-00 systems part number figure with 232-165-00 figure.
3	02/10/09	TOC, 5-5	Updated illustrated parts list to show P/N 232-170-01 used on P/N 232-168-00. Deleted 232-170-00 systems part number figure.
4	08/03/10	Section 1 thru 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.
5	12/19/11	5-6	Replaced Cup Seal (P/N 556-038-00) with Quad Ring(P/N 556-097-00) inside Slave Cylinder
6	06/06/13	5-2	Replaced bumper P/N 290-839-01 with 290-839-02.
7	05/03/17	All	Added kit P/N 200-297-10 which includes cargo hook P/N 528-028-02 with Surefire release. Incorporated kit P/N 200-298-00 from manual no. 120-117-00 and added kit P/N 200-298-10.
8	09/11/17	2-15 thru 2-21	Changed supplied bleed kit to P/N 212-014-02, includes MIL-PRF-87257 hydraulic fluid.

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Section 1
General Information

Introduction

The P/N 200-297-00, 200-297-10, 200-298-00, and 200-298-10 cargo hook kits, which feature the Talon LC Hydraulic Cargo Hook, are approved for installation on Airbus Helicopters' models AS350B, AS350B1, AS350B2, AS350BA, and AS350D that are equipped with a swing suspension that is supported by the aircraft's fuel tank supports. The 200-297 series kits do not include a load weigh system but require that an Onboard Systems E-69 Load Weigh System (P/N 200-058-00 or P/N 200-295-00) be installed on the helicopter. The 200-298 series kits include an E-69 load weigh system. This system includes a load cell, cockpit indicator, and interconnecting wire harness.

Kit P/Ns 200-297-10 and 200-298-10 includes a cargo hook with Surefire release as part of the electrical release system. Surefire release is a safety enhancement to protect against inadvertent load release due to accidental contact with the release switch or mistaken actuation of the release switch when another is intended. See Theory of Operation section for complete description of the Surefire release.

Safety Labels

The following definitions apply to safety labels used in this manual.

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Draws the reader's attention to important or unusual information not directly related to safety.

Used to address practices not related to personal injury.

Specifications

Table 1.1 P/N 528-028-00, -02 Cargo Hook Specifications

Design load	3,500 lbs. (1,580 kg.)
Design ultimate strength	13,125 lbs. (5,593 kg.)
Electrical release capacity	8,750 lbs. (3,970 kg.)
Mechanical release capacity	8,750 lbs. (3,970 kg.)
Force required for mechanical release at 3,500 lb.	12 lbs max. @ Master Cylinder
Electrical requirements	22-32 VDC 6.9 – 10 amps
Minimum release load	0 pounds
Unit weight	3.0 pounds (1.35 kg.)
Mating electrical connector	PC05A8-2S

Load capacities given are for the cargo hook only. Loading limits for the particular helicopter still apply. Consult your flight manual.

Bill of Materials

The following items are included with the 200-297-00 and 200-297-10 Cargo Hook Kits.

Table 1.2 Onboard Systems Bill of Materials (200-297 series)

Part No.	Description	Qty	
		-00	-10
120-115-00	Owner's Manual	1	1
121-026-00	RFMS	1	1
122-015-00	Cargo Hook CMM	1	1
123-019-00	ICA	1	1
212-014-02	Bleed Kit	1	1
215-343-00	Cockpit Decal	-	1
232-165-00	Master Cylinder Assembly	1	1
232-191-00	Hook/Bumper Assembly	1	-
232-191-10	Hook/Bumper Assembly (w/ Surefire)	-	1
290-884-00	Connector Bracket	1	1
410-191-00	Connector	1	1
410-192-00	Backshell	1	1
410-199-00	Shield Termination	1	1
500-065-00	Grommet Edging	1	1
505-014-00	Grommet	1	1
510-029-00	Nut	8	8
510-042-00	Washer	3	3
510-062-00	Washer	8	8
510-102-00	Nut	3	3
510-453-00	Bolt	3	3
510-481-00	Screw	8	8
510-486-00	Rivet	3	3
512-005-00	Cushioned Loop Clamp	4	4
512-021-00	Cushioned Loop Clamp	2	2

Bill of Materials continued

The following items are included with the 200-298-00 and 200-298-10 Cargo Hook Kits.

Table 1.3 Onboard Systems Bill of Materials (200-298 series)

Part No.	Description	Qty	
		-00	-10
120-039-00	Owner's Manual, C-39 Indicator	1	1
120-115-00	Owner's Manual	1	1
121-026-00	RFMS	1	1
122-015-00	Cargo Hook CMM	1	1
123-019-00	ICA	1	1
210-095-00	C-39 Indicator	1	1
212-014-02	Bleed Kit	1	1
215-343-00	Cockpit Decal	-	1
232-165-00	Master Cylinder Assembly	1	1
232-192-00	Hook/Load Cell Assembly	1	-
232-192-10	Hook/Load Cell Assembly (w/ Surefire)	-	1
270-048-03	Load Weigh Internal Harness	1	1
290-884-00	Connector Bracket	1	1
410-191-00	Connector	1	1
410-192-00	Backshell	1	1
410-199-00	Shield Termination	1	1
500-065-00	Grommet Edging	1	1
505-014-00	Grommet	1	1
510-029-00	Nut	8	8
510-042-00	Washer	3	3
510-062-00	Washer	8	8
510-102-00	Nut	3	3
510-453-00	Bolt	3	3
510-481-00	Screw	8	8
510-486-00	Rivet	3	3
512-005-00	Cushioned Loop Clamp	4	4
512-021-00	Cushioned Loop Clamp	2	2

Theory of Operation

The Cargo Hook Kits are designed for use on the Airbus Helicopters AS350 swing suspension frame with fuel tank support mounts. It interfaces with the helicopter's existing electrical release wiring to provide means for release of a cargo hook load by pilot actuation of the push-button switch in the cockpit. When the push-button switch is pressed, it energizes the DC solenoid in the cargo hook, and the solenoid opens the latch in the internal mechanism. An alternative means of releasing a cargo hook load is provided by a hydraulic release system. When the release lever mounted to the collective is actuated, a piston integrated into the hook extends and releases the internal mechanism causing the load beam to open. Ground personnel may also release a load by the actuation of a lever located on the side of the cargo hook.

A load is attached to the cargo hook by passing a cargo sling ring into the throat of the load beam and pushing the ring against the upper portion of the load beam throat, which will cause the hook to close. In the closed position, a latch engages the load beam and latches it in this position.

To release the load, the latch is disengaged from the load beam. With the latch disengaged, the weight of the load causes the load beam to swing to its open position, and the cargo sling ring slides off the load beam. The load beam then remains in the open position awaiting the next load.

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

The optional cargo hook with Surefire includes a short time delay circuit built into the cargo hook's electrical release system (cargo hook P/N 528-028-02). This feature is a safety enhancement to protect against inadvertent load release due to accidental contact with the release switch or mistaken actuation of the cargo hook switch when another is intended. The time delay feature requires that the release switch be depressed and held for more than a 1/2 second to open the cargo hook. Surefire makes the electrical release a more deliberate pilot command. If the cargo hook must be released immediately, use the mechanical backup release.

In addition to its P/N, a cargo hook with Surefire can be identified by a gold color solenoid housing (see Figure 1.1). Also a placard on the underside of the solenoid housing indicates that the electrical release is delayed by ½ second.

NOTICE

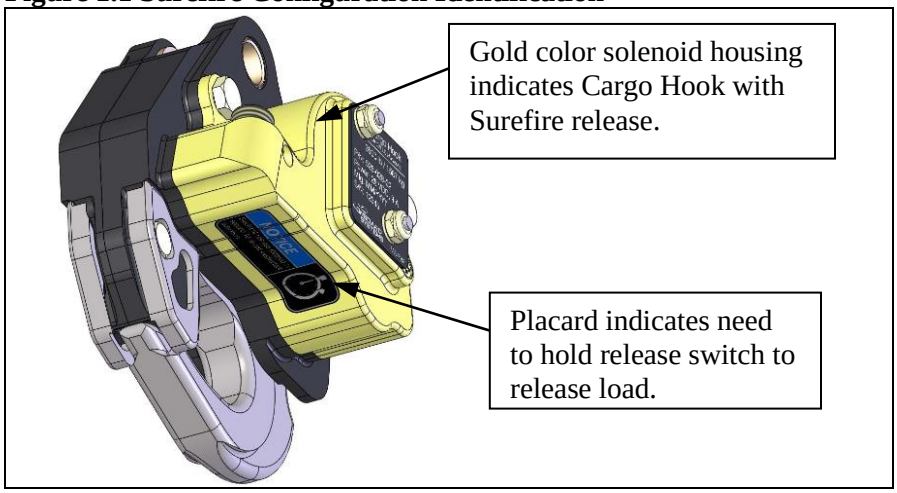
The 528-028-02 cargo hook includes an electronic delay of approximately ½ second. It is necessary to press and hold the cargo hook release button.

⚠ CAUTION

If a Surefire-equipped cargo hook must be released immediately without any delay (such as the case of engine failure or snagged load), use the mechanical backup release.

In addition to the delay feature the circuit includes on-off cycling to limit the duty-cycle on the solenoid. If the release switch is held down, the solenoid will cycle on and off repeatedly in a "machine gun" fashion.

Figure 1.1 Surefire Configuration Identification



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Section 2

Installation Instructions

These procedures are provided for the benefit of experienced aircraft maintenance facilities capable of carrying out the procedures. Those lacking the necessary expertise must not attempt them.

2.1 Electrical Wiring Installation

2.1.1 Load Weigh System Wiring Installation

If installing kit P/Ns 200-297-00 or 200-297-10 (load weigh system is not included) skip this section and proceed to section 2.1.2.

The C-39 Load Weigh Indicator should be mounted in a position that is convenient, accessible and visible to the pilot. It can be mounted in a standard 2¼" instrument hole. Additionally, P/N 290-772-00 is available from Onboard Systems which provides a convenient indicator mount on the inside right front side post of the aircraft.

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

NOTICE

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

Table 2.1.1 Optional Equipment Connectors

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

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

*Optional

2.1.1 Load Weigh System Wiring Installation continued

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

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

Route the harness wires to the electrical bus and to the Indicator mounting location. Refer to Figure 2.1.2 for electrical schematic.

Figure 2.1.1 Electrical Wiring Routing Overview

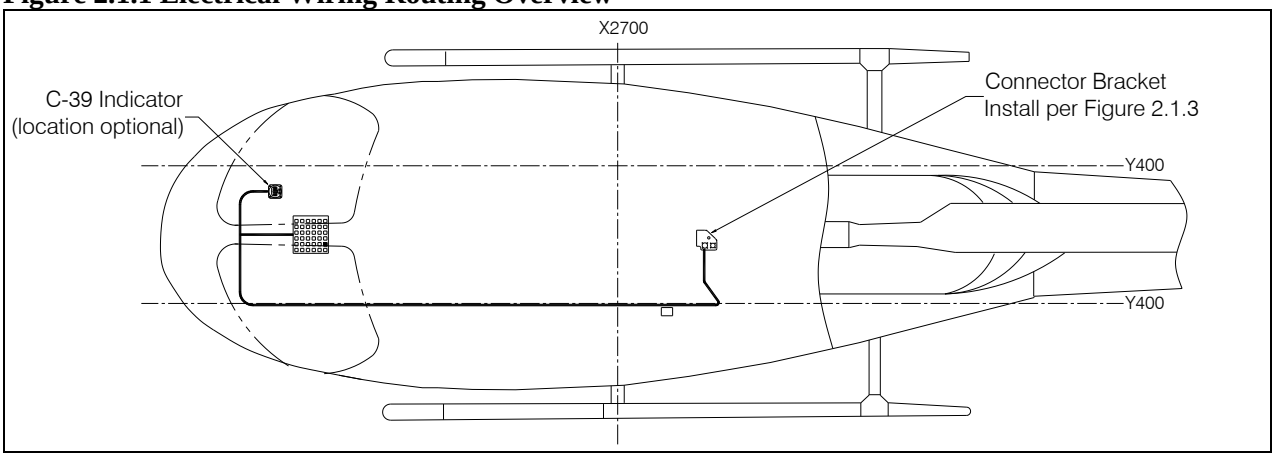
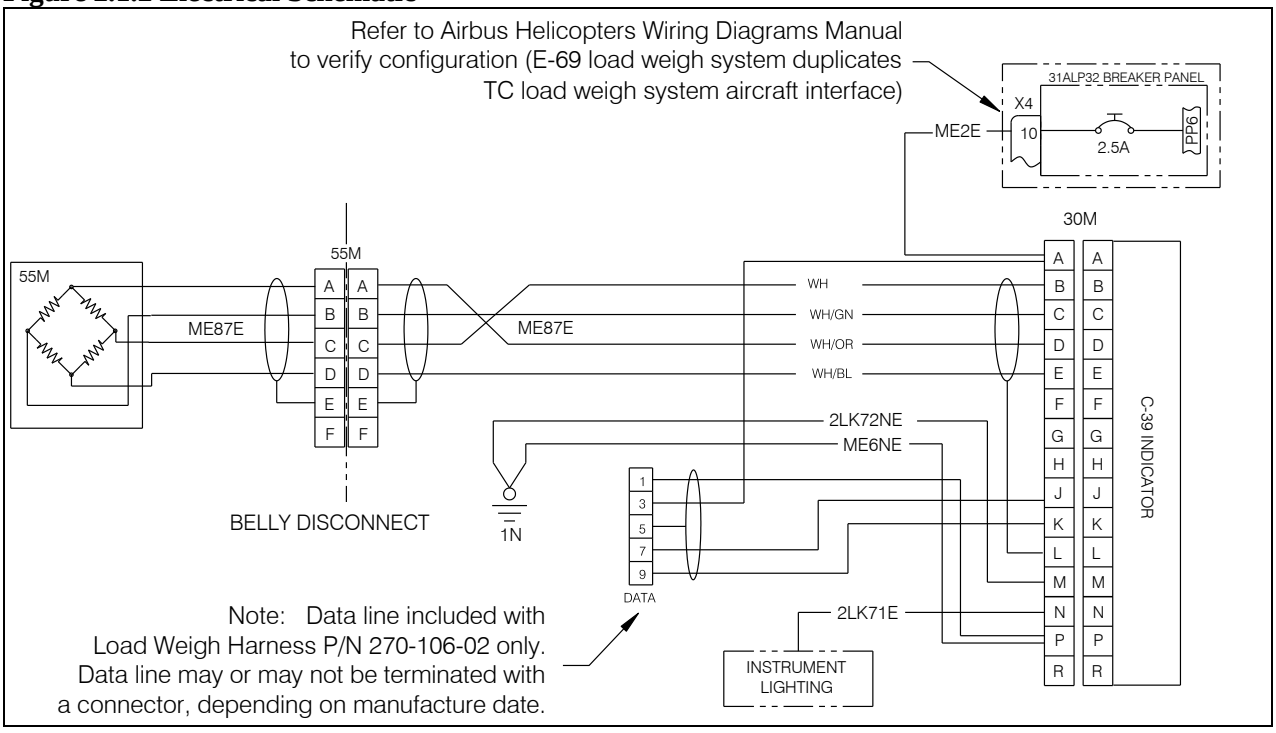


Figure 2.1.2 Electrical Schematic



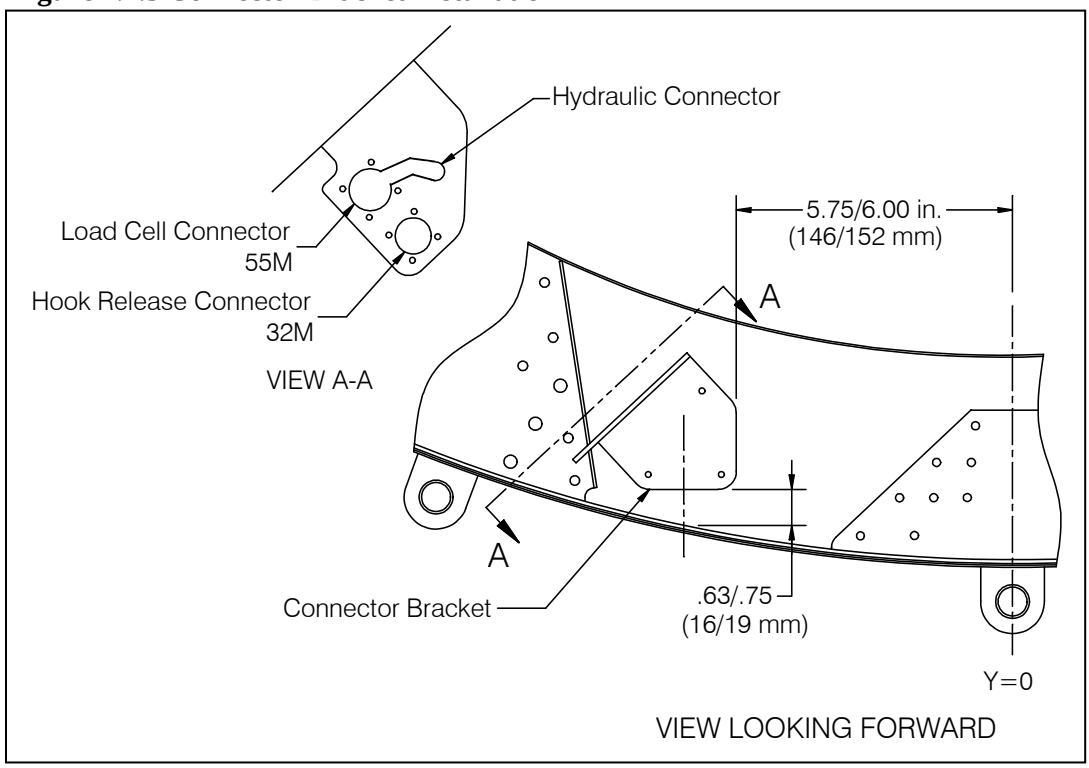
2.1 Electrical Wiring Installation continued

2.1.2 Cargo Release Wiring Installation

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

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

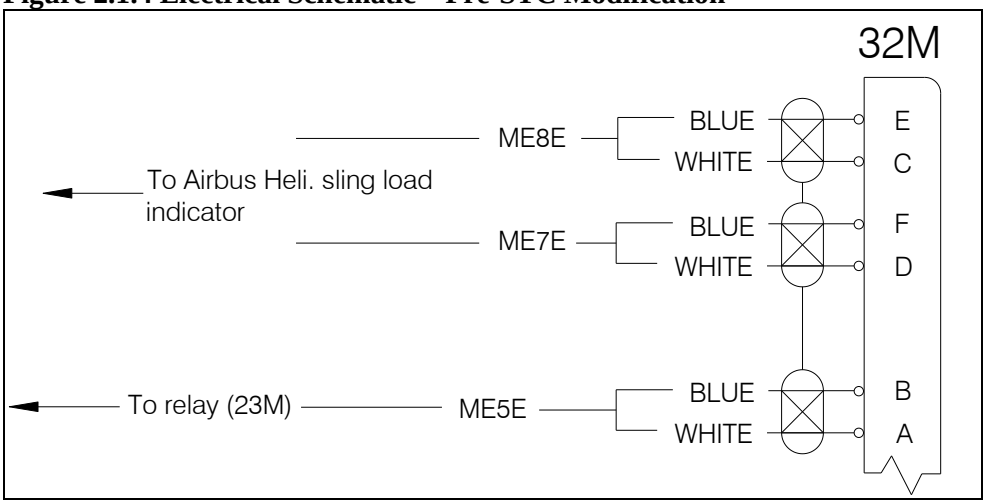
Figure 2.1.3 Connector Bracket Installation



2.1.2 Cargo Release Wiring Installation continued

The cargo hook kits utilize Airbus Helicopters' existing fixed electrical release wiring harness with the exception of the connector at the belly of the helicopter (connector number 32M). The wiring schematic for this end of the harness is shown in Figure 2.1.4. Refer to Airbus Helicopters' Wiring Diagrams Manual for additional information.

Figure 2.1.4 Electrical Schematic – Pre-STC Modification



The cargo hook kits include a connector (P/N 410-191-00) and backshell (P/N 410-192-00) to splice onto the end of Airbus Helicopters' fixed harness.

Retrofit the electrical harness per the following instructions.

- Cut the 32M connector off of the fixed electrical harness as close to the connector as possible.
- Slide the backshell (P/N 410-192-00) over the ME5E wire.
- Install shield termination (P/N 410-199-00) over ME5E. Install per Figure 2.1.6.
- Crimp pins (supplied with connector P/N 410-191-00) onto the blue and white wires of ME5E and the shield termination lead. Insert these wires into connector per Figure 2.1.3. Using Airbus Helicopters' schematic, Table 2.1 and Figure 2.1.5, verify that power is being applied to the correct pin.
- Secure backshell onto connector.
- Cap and stow remaining wires (ME7E and ME8E) or optionally remove these wires from the helicopter.

2.1.2 Cargo Release Wiring Installation continued

Table 2.1 Cargo Hook Connector

Pin	Function
A	Ground
B	Power

CAUTION

Early versions of the cargo hook were equipped with a suppression diode that will be damaged if the cargo hook electrical connection is reversed.

Figure 2.1.5 Electrical Schematic – Post STC Modification

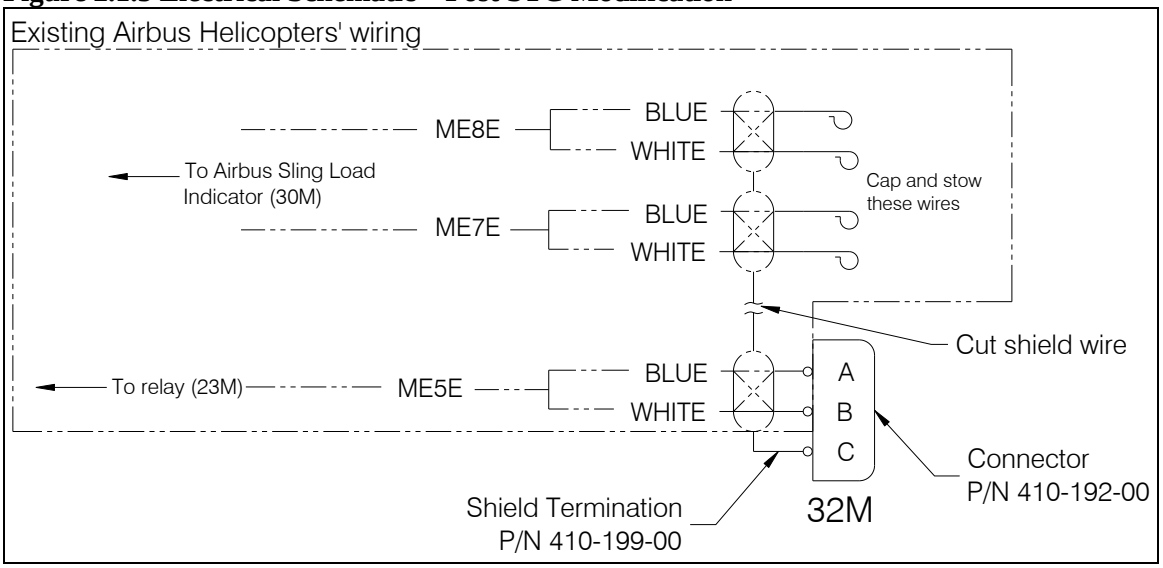
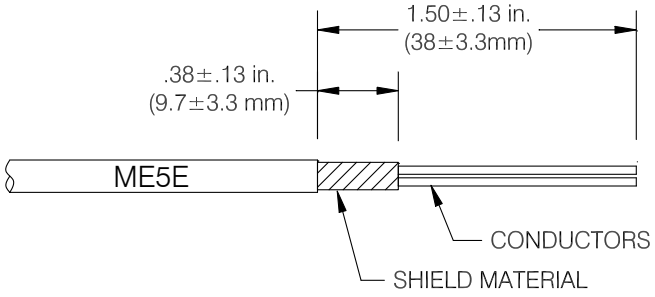


Figure 2.1.6 – Shield Termination Installation



Install shield termination per the following:
1. Prepare conductor as shown above.
2. Install shield termination over center of exposed shield material.
3. Apply heat from heat gun to termination until solder ring melts and the termination has sealed the cable. Inspect that continuity exists from the drain to the shield.

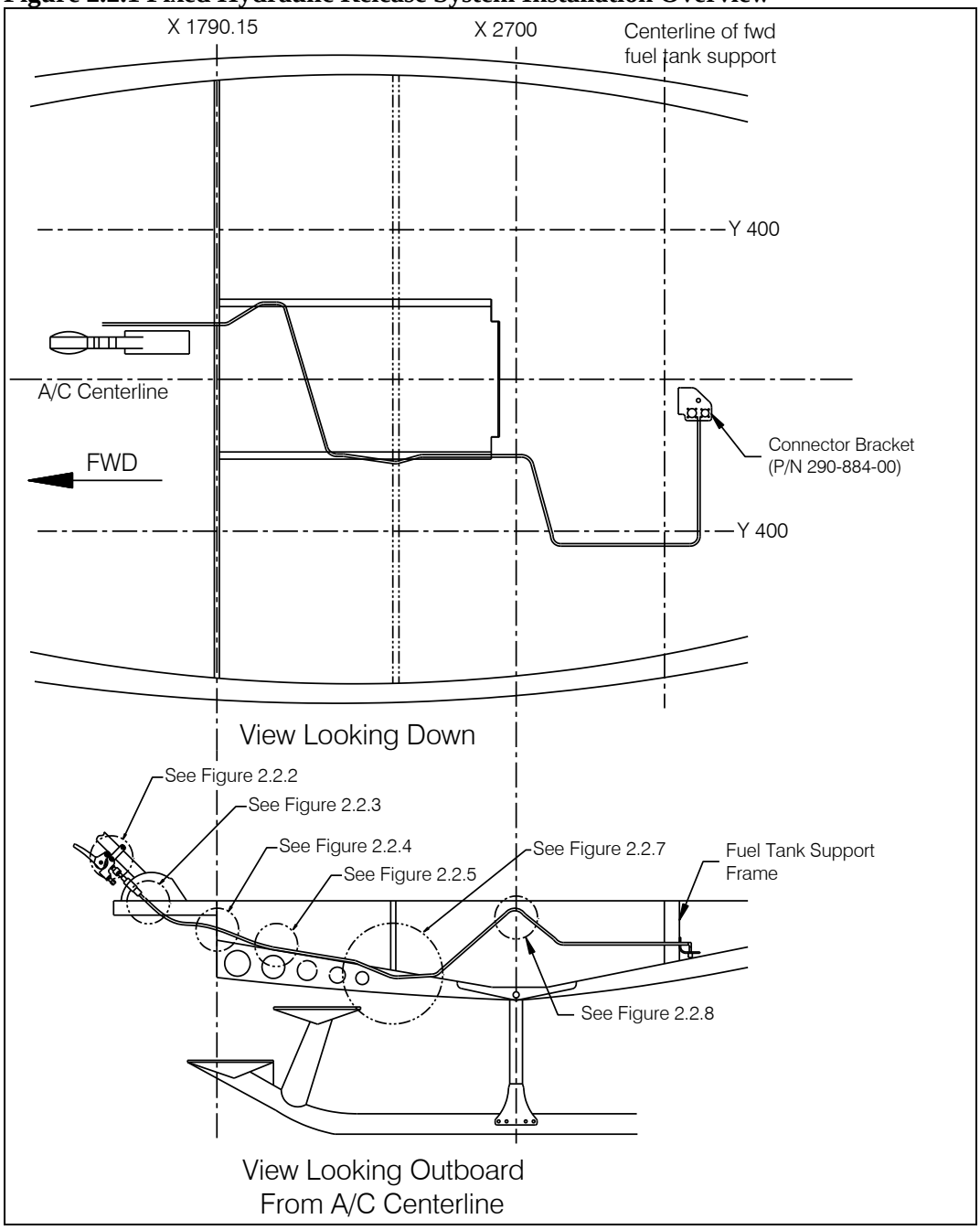
2.2 Fixed Hydraulic Release System Installation

Remove additional lower fairings from the helicopter as necessary in order to obtain access to hydraulic hose routing areas.

Remove existing manual release cable from the helicopter.

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

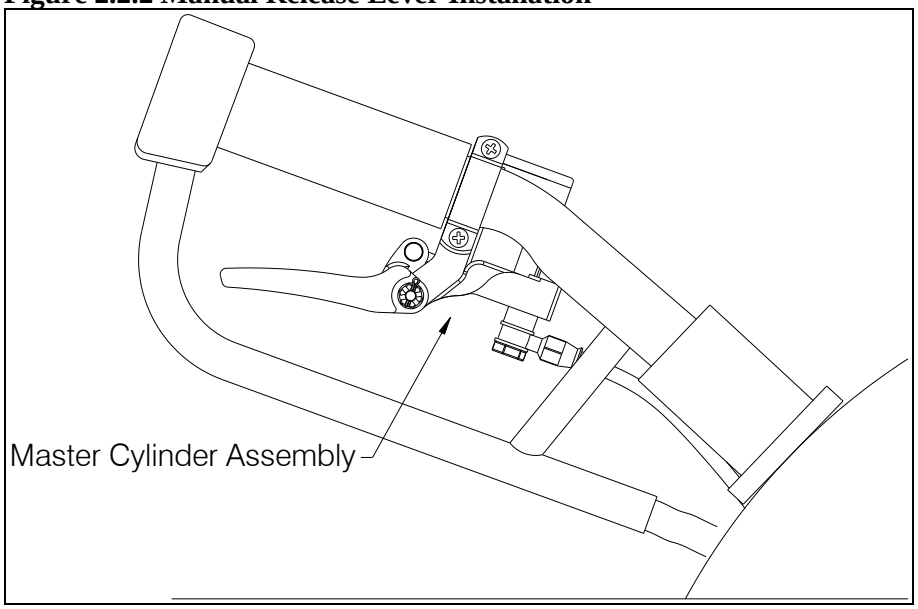
Figure 2.2.1 Fixed Hydraulic Release System Installation Overview



2.2 Fixed Hydraulic Release System Installation continued

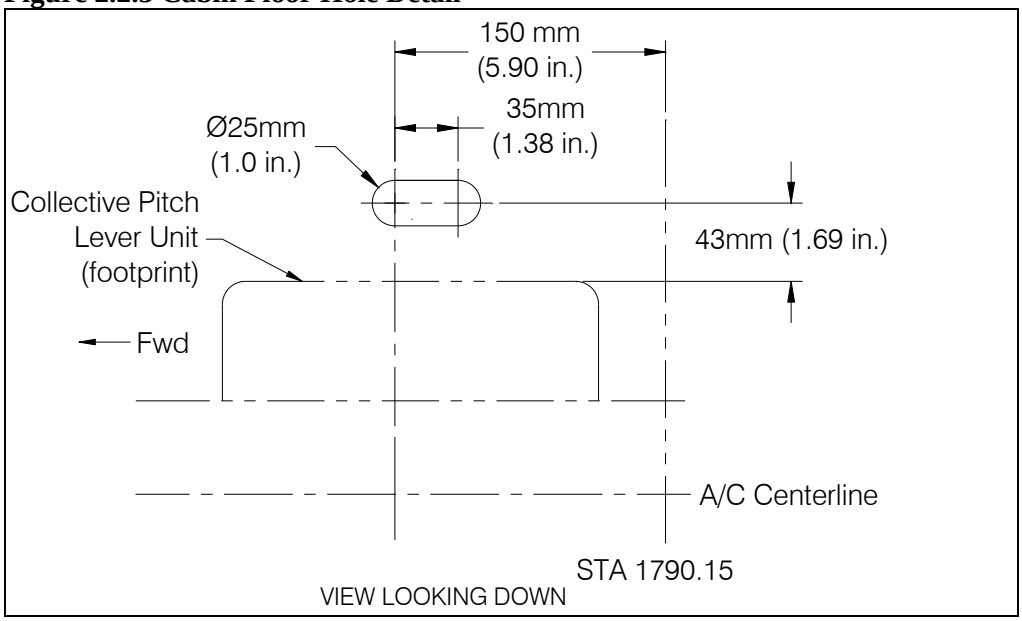
- Fasten the Release Lever Assembly (P/N 232-165-00) to the collective with the Clamp Half (P/N 290-753-00) and two screws (P/N 510-390-00) provided pre-assembled on the assembly, as illustrated below.

Figure 2.2.2 Manual Release Lever Installation



- Route the hose to underneath the cabin floor through the existing slot.
  If the slot in floor does not exist, create one with dimensions as shown below in the cabin floor 43 mm from the collective pitch lever unit and 150 mm forward of X1790.15 (see below) and install the grommet (Airbus Helicopters P/N DG-38).

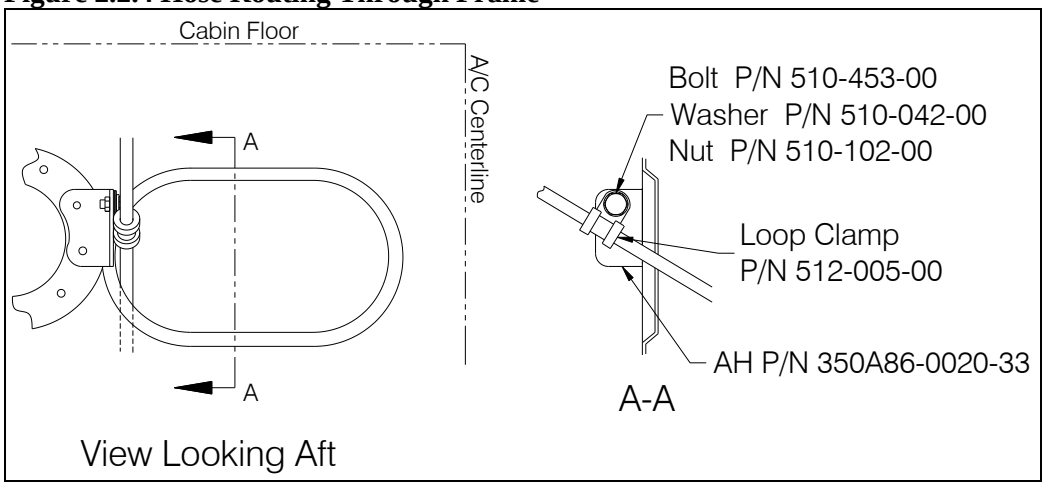
Figure 2.2.3 Cabin Floor Hole Detail



2.2 Fixed Hydraulic Release System Installation continued

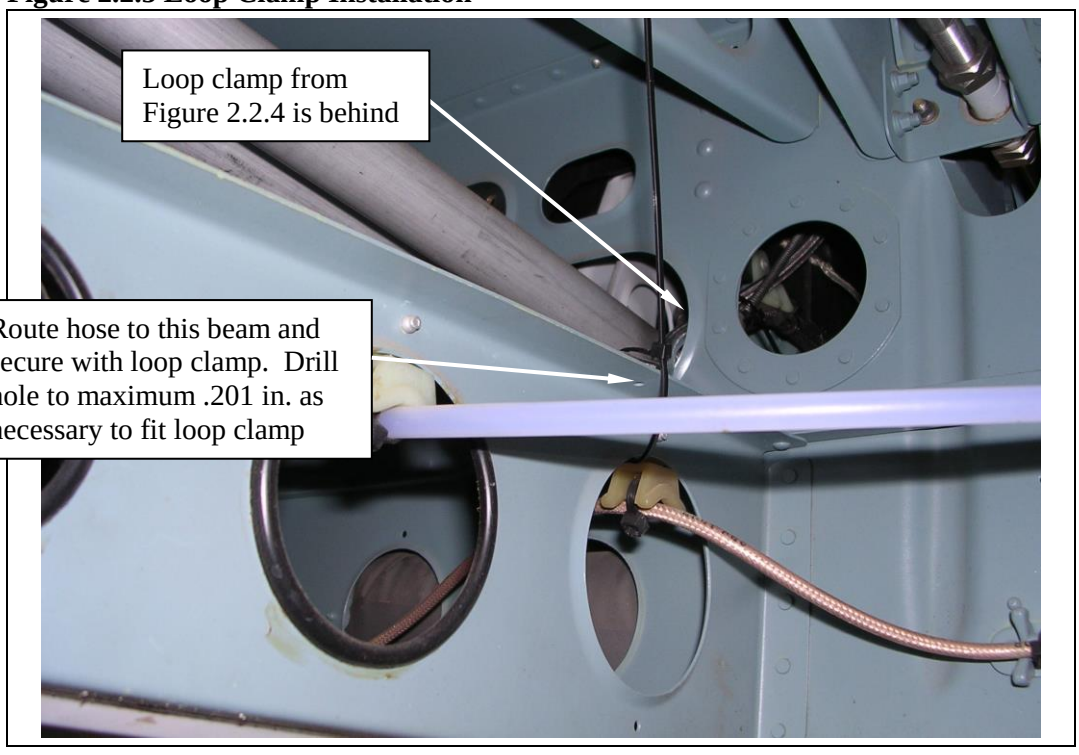
- Underneath the floor, route the hydraulic hose through an existing hole in the frame immediately aft of the collective. Secure the hose at this point with a loop clamp (P/N 512-005-00). Fasten the loop clamp to the existing bracket (Airbus Helicopters' P/N 350A86-0020-33) with hardware as illustrated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

Figure 2.2.4 Hose Routing Through Frame



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

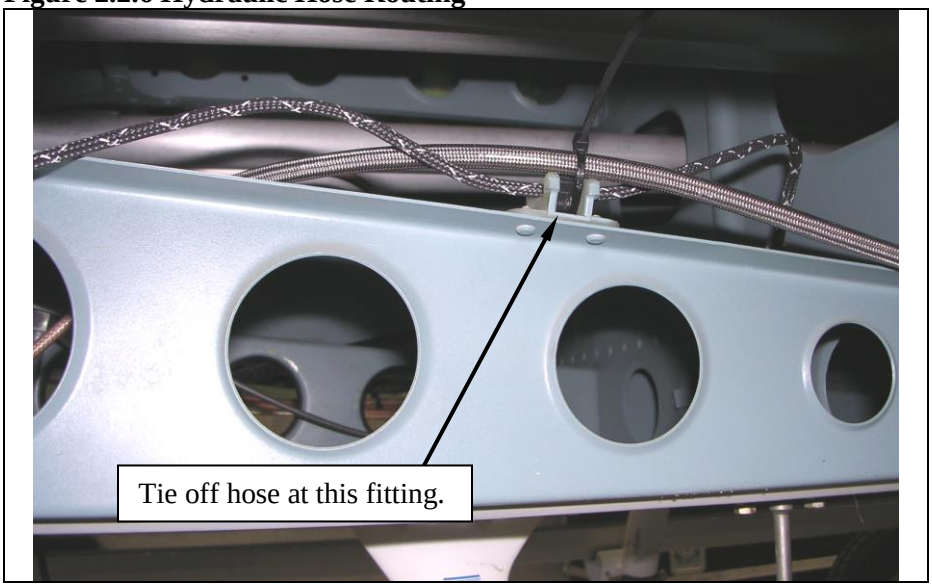
Figure 2.2.5 Loop Clamp Installation



2.2 Fixed Hydraulic Release System Installation continued

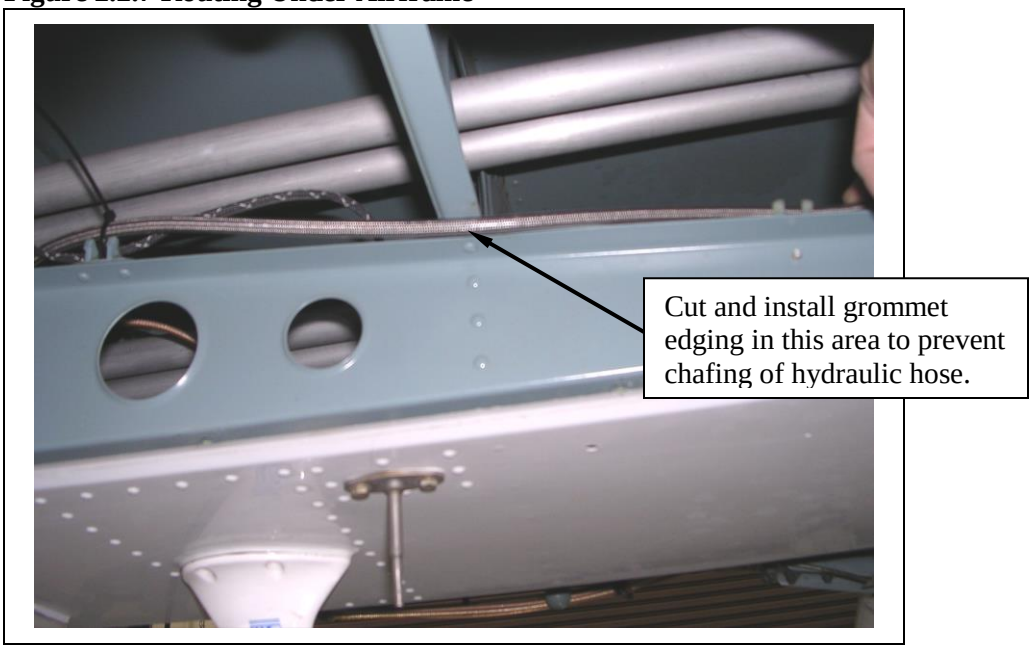
- Aft of the clamp installed in Figure 2.2.5, route the hose inboard and aft across the airframe centerline to the identical structural member on the left side of the airframe. Secure hose to fitting on top of structural member with ty-wrap as shown below. Ensure the hose is secured so that it does not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

Figure 2.2.6 Hydraulic Hose Routing



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

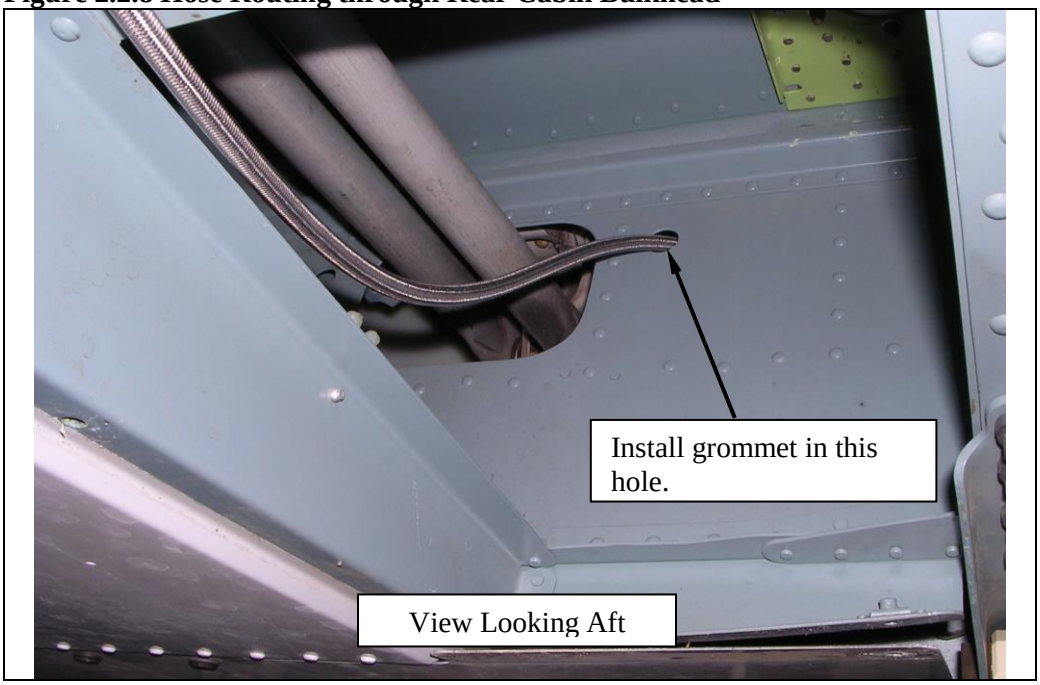
Figure 2.2.7 Routing Under Airframe



2.2 Fixed Hydraulic Release System Installation continued

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

Figure 2.2.8 Hose Routing through Rear Cabin Bulkhead

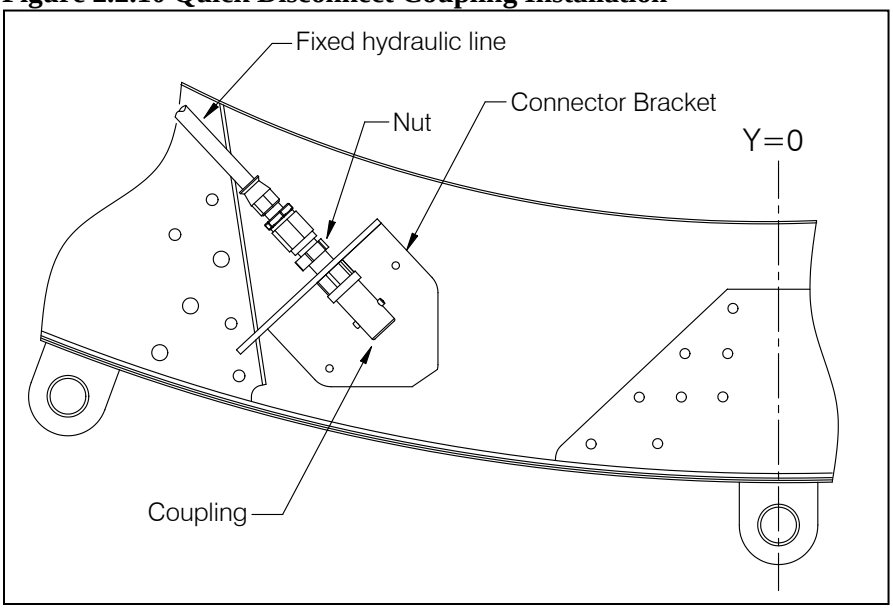


- Aft of the rear cabin bulkhead pick up existing electrical harness runs and secure hydraulic hose using ty-wraps. The hose will route outboard of Y400 and follow the electrical release harness (installed previously) to the connector bracket.

2.2 Fixed Hydraulic Release System Installation continued

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

Figure 2.2.10 Quick Disconnect Coupling Installation



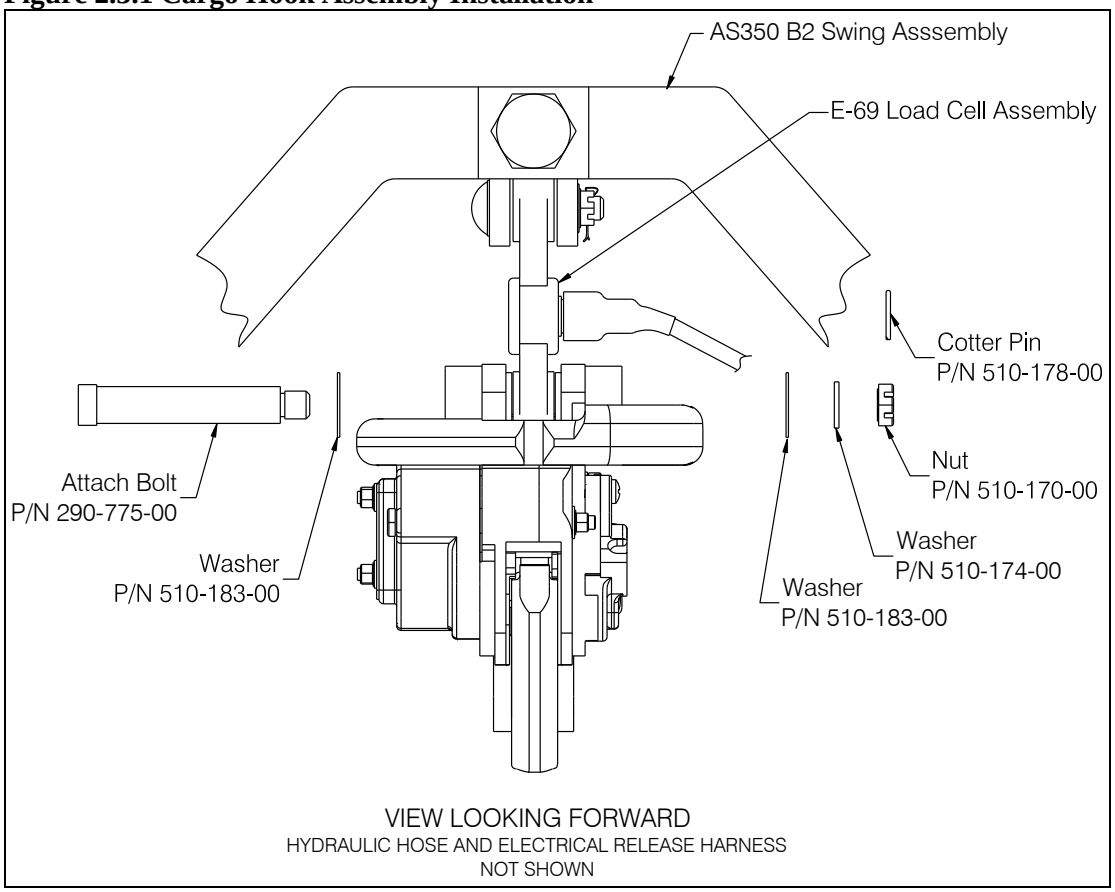
- Install the hook release connector 32M and load cell connector 55M with screws (P/N 510-481-00), washers (P/N 510-062-00), and nuts (P/N 510-029-00). **Important:** Install screws with their heads on the bottom side of bracket flange (if nuts are installed on bottom side they will interfere with mating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

2.3 Cargo Hook and Load Cell Installation

If installing kit P/N 200-297-00 or 200-297-10 remove the hardware that is provided pre-assembled onto the cargo hook assembly and re-assemble through the cargo hook assembly and load cell as shown below. The cargo hook load beam must point forward. Torque castellated nut on cargo hook pivot bolt to finger tight, then rotate nut to next castellation to install and secure cotter pin.

If installing kit P/N 200-298-00 or 200-298-10 the cargo hook and load cell are provided pre-assembled (assembly P/N 232-192-00 or 232-192-10). Attach this assembly to the AS350B2 Swing Assembly at the upper load cell pivot point (see figure below) using the existing Airbus Helicopters' hardware. Do not overtighten the nut and bind the load cell, ensure the pivot point rotates freely after installation.

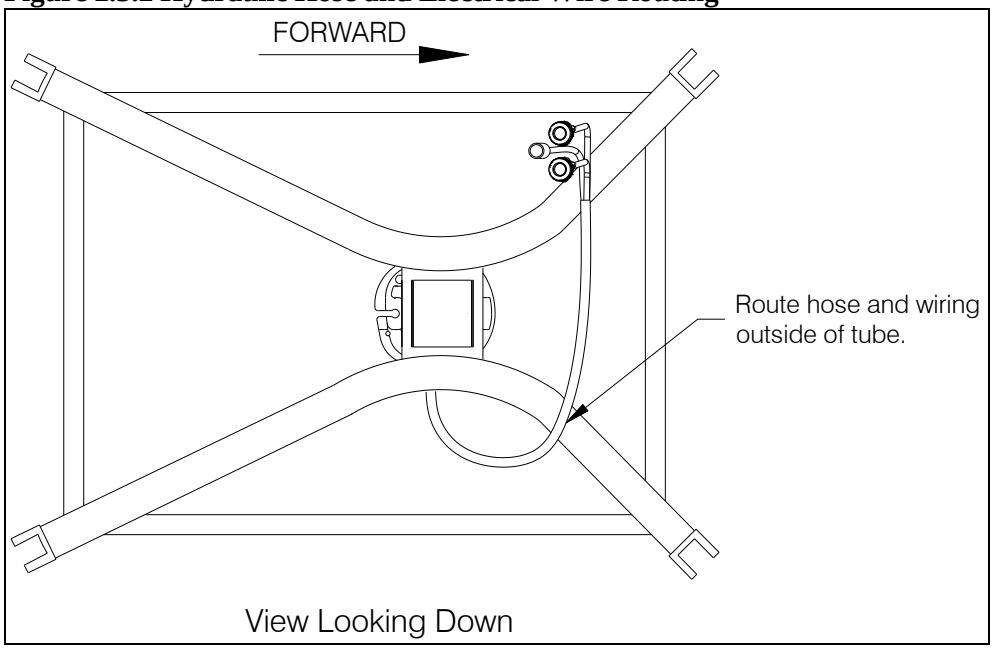
Figure 2.3.1 Cargo Hook Assembly Installation



2.3 Cargo Hook and Load Cell Installation continued

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

Figure 2.3.2 Hydraulic Hose and Electrical Wire Routing



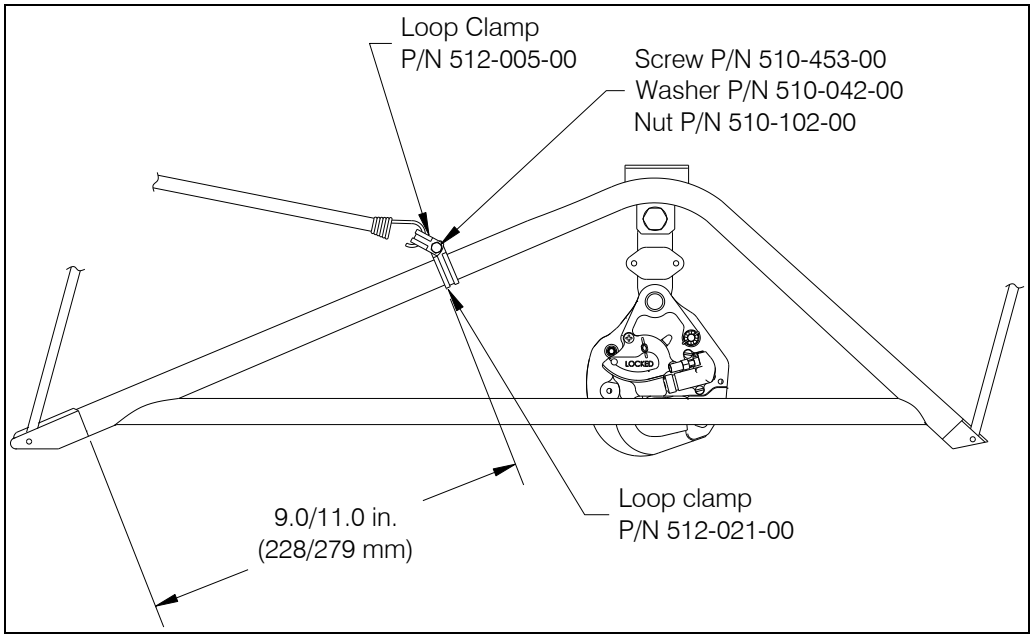
- Connect the end of the cargo hook electrical release cable to the fixed electrical release connector installed per Section 2.1. Reference Table 2.1 for cargo hook pin out information.
- Connect the hydraulic hose from the hook to the fitting installed at the belly of the helicopter and fill the system per Section 2.5.
- Connect the end of the load cell cable to the fixed load weigh harness connector installed per Section 2.1 (if applicable).

2.4 Loop Clamp Installation

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

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

Figure 2.4.1 Loop Clamp Installation



2.5 Filling Hydraulic Release System

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

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

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

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

CAUTION

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

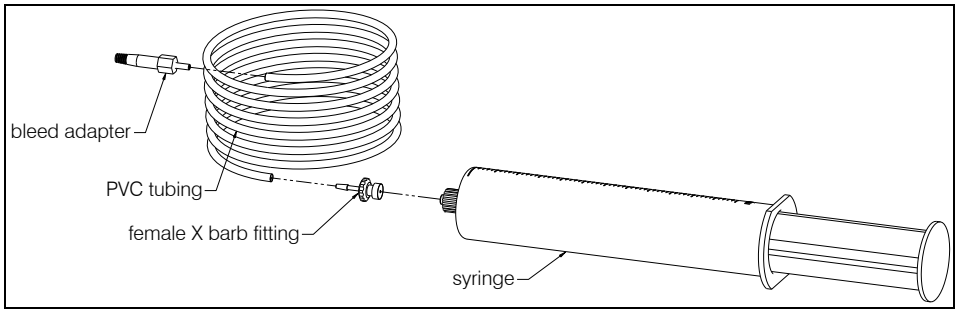
Bleeding procedure:

1. Assemble the supplied bleed kit P/N 212-014-02 (or optional P/N 212-014-01) by press fitting each of the kit's components together as shown in Figure 2.5.1. This kit also includes 2 ounces of MIL-PRF-87257 fluid (kit P/N 212-014-01 includes MIL-PRF-5606 fluid).

NOTICE

MIL-PRF-5606 and MIL-PRF-87257 fluids are both compatible with the hydraulic system. These fluids are interchangeable and miscible.

Figure 2.5.1 Hydraulic Hook Bleed Kit



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

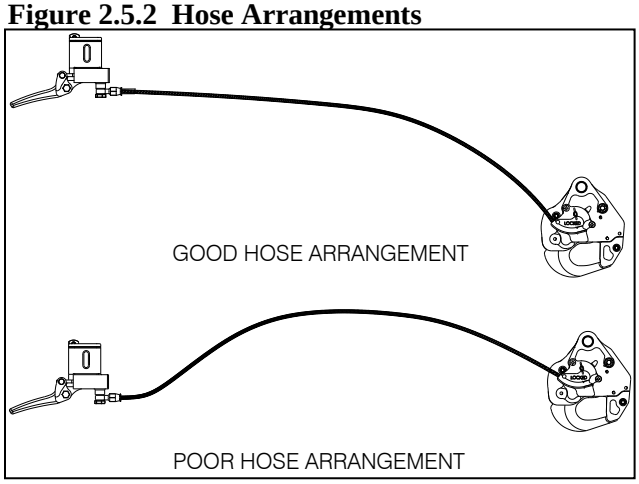
2.5 Filling Hydraulic Release System continued

NOTICE

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

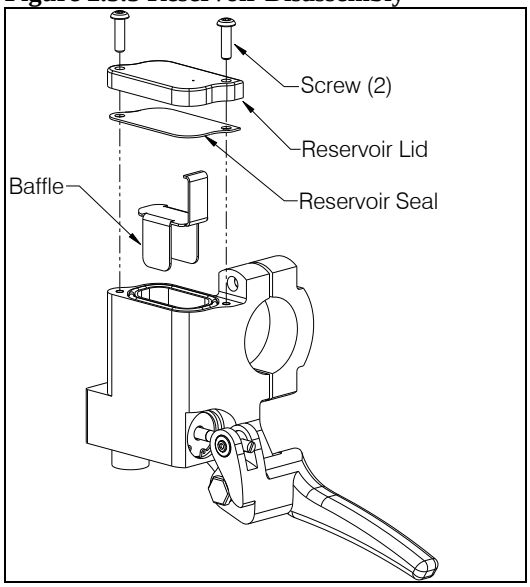
3. Connect the master cylinder assembly to the slave cylinder assembly if not already done. If filling or bleeding on the bench, as much as possible, arrange the hoses uncoiled, straight and running uphill. See Figure 2.5.2.

Figure 2.5.2 Hose Arrangements



4. Remove screws, reservoir lid, reservoir seal, and baffle from the master cylinder reservoir.

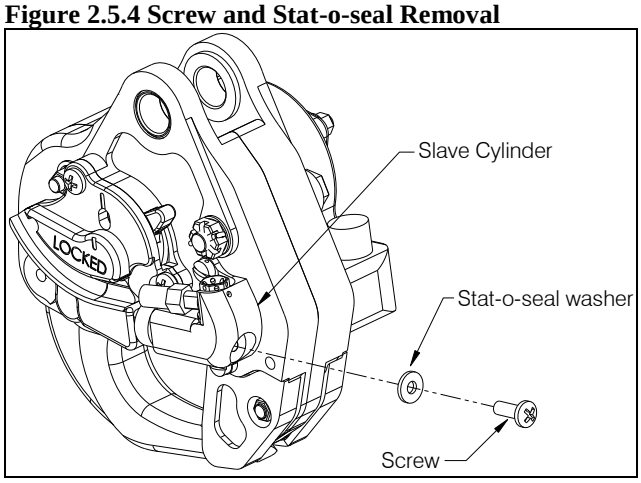
Figure 2.5.3 Reservoir Disassembly



2.5 Filling Hydraulic Release System continued

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

Figure 2.5.4 Screw and Stat-o-seal Removal



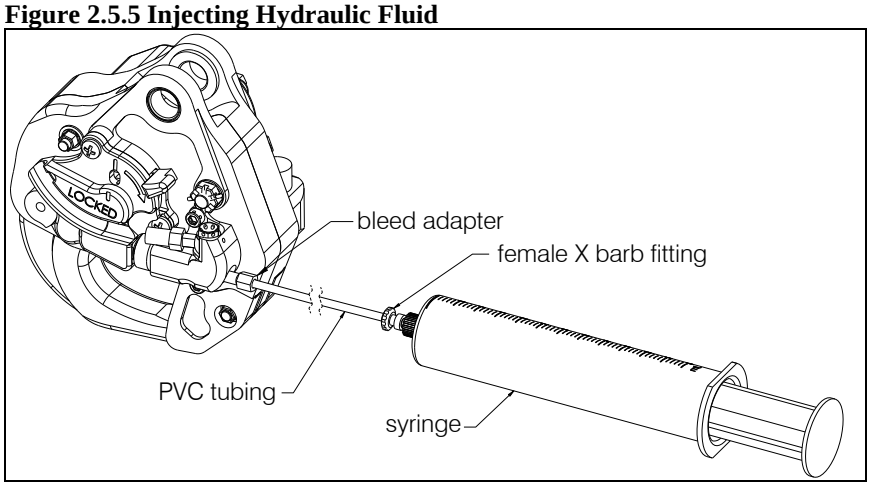
6. Fill the syringe with approximately 35 cc of MIL-PRF-5606 or MIL-PRF-87257 hydraulic fluid and purge any remaining air in the syringe and tubing. Screw the end of the bleed adapter into the screw hole on the slave cylinder to create a tight seal. See Figure 2.5.5.

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

⚠ 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 2.5.5 Injecting Hydraulic Fluid



2.5 Filling Hydraulic Release System continued

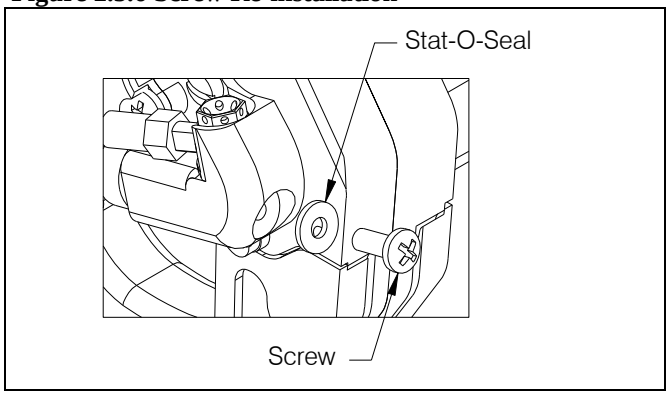
8. Continue to force fluid into the master cylinder reservoir until the reservoir is approximately half full.

NOTICE

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

9. Remove the syringe from the screw hole. Re-install the Stat-O-Seal (P/N 510-496-00) and screw (P/N 510-493-00), see Figure 2.5.6.

Figure 2.5.6 Screw Re-installation



10. Allow the system to rest for several minutes. This will allow any air to rise through the system.
11. Very **slowly** pull the release lever on the master cylinder and watch for bubbles. If bubbles are observed rising within the reservoir, continue to slowly cycle the lever until there are no more. Actuating the lever releases air trapped within the master cylinder.

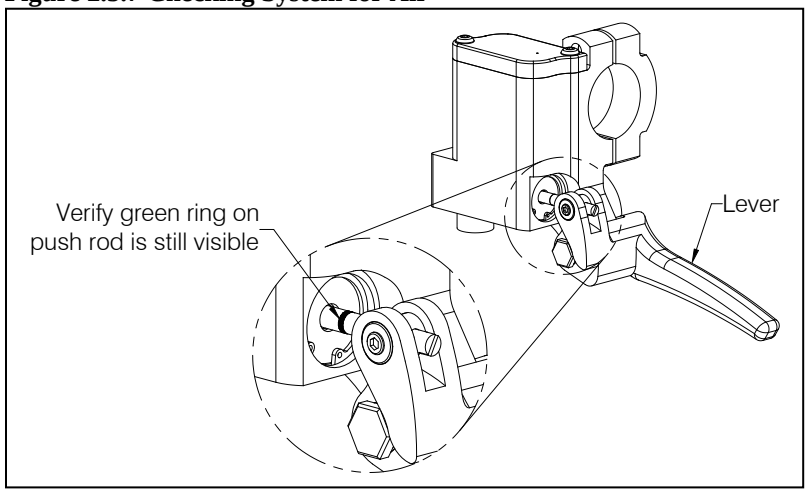
CAUTION

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

2.5 Filling Hydraulic Release System continued

12. Check the system for air by actuating the lever firmly until it bottoms out. Check the push rod position (see Figure 2.5.7). If the green area on the push rod is visible, proceed to step 13. If the green on the push rod is not visible with the lever completely pulled, the system has too much air in it and needs further bleeding. To do this, repeat steps 5 – 11.

Figure 2.5.7 Checking System for Air



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

2.6 Placard Installation

If installing kit P/N 200-297-10 or P/N 200-298-10, install the Cockpit Decal (P/N 215-343-00) near the Cargo Release switch on the cyclic in view of the pilot.

2.7 Installation Check-Out

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

- Swing the installed cargo hook and suspension to their extremes to ensure that the hydraulic hose and the electrical cables have enough slack to allow full swing without straining or damaging them. The hose and 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 release lever on the collective, the Cargo Hook should release. Reset the load beam by hand.
- Provide power to the electrical release system. Electrical release system operation depends on the cargo hook P/N installed. The following instructions are applicable to cargo hook P/N 528-028-02 which is equipped with Surefire electrical release. With no load on the cargo hook perform the following.
    - *Very* briefly press the Cargo Release switch, the cargo hook should not actuate and the load beam should remain closed.
    - Press and hold the Cargo Release switch for a few seconds, the load beam should fall to the open position and the cargo hook solenoid should continue to cycle repeatedly.
    - Push up on the load beam and verify that it latches and the hook lock indicator is aligned with the engraved line on the manual release cover.

  The following instructions are applicable to cargo hook P/N 528-028-00.

    - Press and release the Cargo Release switch on the cyclic, the load beam should fall to the open position.
    - Push up on the load beam and verify that it latches and the hook lock indicator is aligned with the engraved line on the manual release cover.

  CAUTION

  The release solenoid is intended to be energized only intermittently. Depressing the release switch continuously in excess of 20 seconds will cause the solenoid to overheat, possibly causing permanent damage.
- If load weigh system was installed, 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.

2.8 Component Weights

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

Table 2.7.1 Weights and CGs

Item	Weight	Station
200-297-00, 200-297-10 Removable Provisions*	3.5 lbs (1.6 kg)	133 in (3375 mm)
200-297-00, 200-297-10 Fixed Provisions**	1.4 lbs (0.6 kg)	110 in (2794 mm)
200-297-00, 200-297-10 Total	**4.9 lbs (2.2 kg)**	**126.4 in (3211 mm)**
200-298-00, 200-298-10 Removable Provisions*	4.6 lbs (2.1 kg)	133 in (3375 mm)
200-298-00, 200-298-10 Fixed Provisions**	2.6 lbs (1.2 kg)	110 in (2794 mm)
200-298-00, 200-298-10 Total	**7.2 lbs (3.3 kg)**	**124.7 in (3167 mm)**

***** The removable provisions include the hook, external hydraulic release hose, 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. Examples of these items include the Master Cylinder with hydraulic hose, internal load weigh harness, the load weigh indicator, and brackets that support these items.

2.9 Paper Work

In the US, fill in FAA form 337 for the initial installation. This procedure may vary in different countries. Make the appropriate aircraft log book entry. Place the Rotorcraft Flight Manual Supplement P/N 121-026-00 in the rotorcraft flight manual.

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Section 3

Operation Instructions

Operating Procedures

Refer to Owner's Manual 120-039-00 for operation instructions for the C-39 indicator.

Prior to a flight involving external load operations perform the following:

1. Provide power to the electrical release system. Electrical release system operation depends on the cargo hook P/N installed. The following instructions are applicable to cargo hook P/N 528-028-02 which is equipped with Surefire electrical release. With no load on the cargo hook perform the following.
   - *Very* briefly press the Cargo Release switch, the cargo hook should not actuate and the load beam should remain closed.
   - Press and hold the Cargo Release switch for a few seconds, the load beam should fall to the open position and the cargo hook solenoid should continue to cycle repeatedly.
   - Push up on the load beam and verify that it latches and the hook lock indicator is aligned with the engraved line on the manual release cover.

   The following instructions are applicable to cargo hook P/N 528-028-00.
   - Press and release the Cargo Release switch on the cyclic, the load beam should fall to the open position.
   - Push up on the load beam and verify that it latches and the hook lock indicator is aligned with the engraved line on the manual release cover.

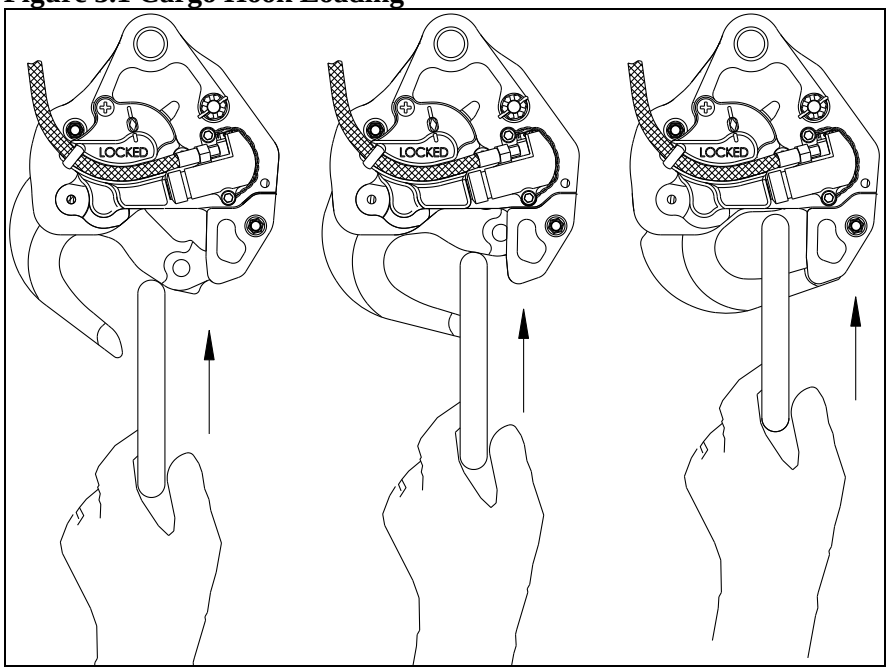
   CAUTION

   The release solenoid is intended to be energized only intermittently. Depressing the release switch continuously in excess of 20 seconds will cause the release solenoid to overheat, possibly causing permanent damage.
2. Activate the manual release lever to test the cargo hook manual release mechanism. The 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.
3. Swing the Cargo Hook and the suspension to ensure that the hydraulic hose and electrical harnesses have enough slack to allow full swing of each component without straining or damaging the hose and cables. The hose and harnesses must not be the stops that prevent the Cargo Hook or the suspension from swinging freely in all directions.

Cargo Hook Loading

The cargo hook can easily be loaded with one hand. A load is attached to the hook by pushing the ring upward against the upper portion of the load beam throat, as illustrated in Figure 3.1, until an internal latch engages the load beam and latches it in the closed position.

Figure 3.1 Cargo Hook Loading



Cargo Hook Rigging

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

WARNING

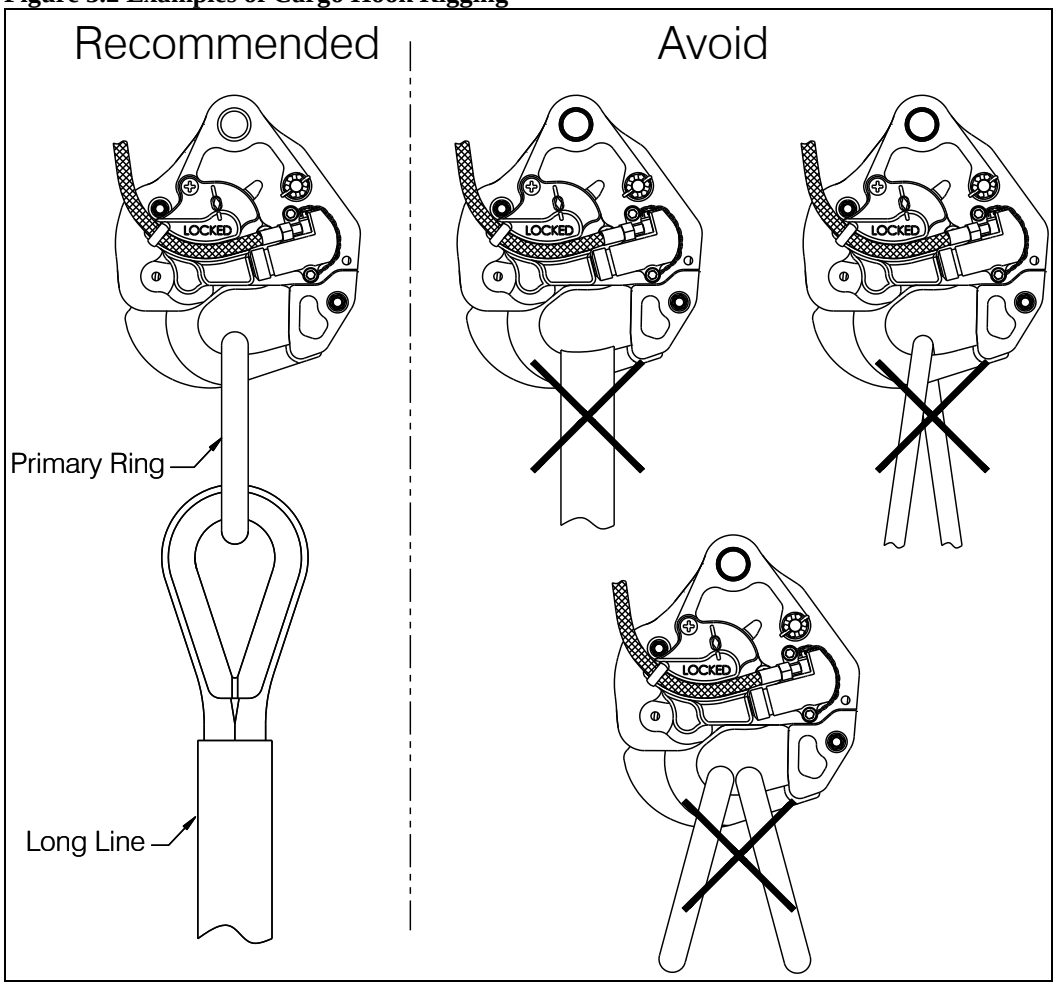
It is the responsibility of the operator to ensure the cargo hook will function properly with each rigging.

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 load beam.

Cargo Hook Rigging, continued

Figure 3.2 Examples of Cargo Hook Rigging



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Section 4
Maintenance

Refer to the Instructions for Continued Airworthiness (ICA) manual 123-019-00 for maintenance of the cargo hook kits. For maintenance of the cargo hook refer to Cargo Hook Component Maintenance 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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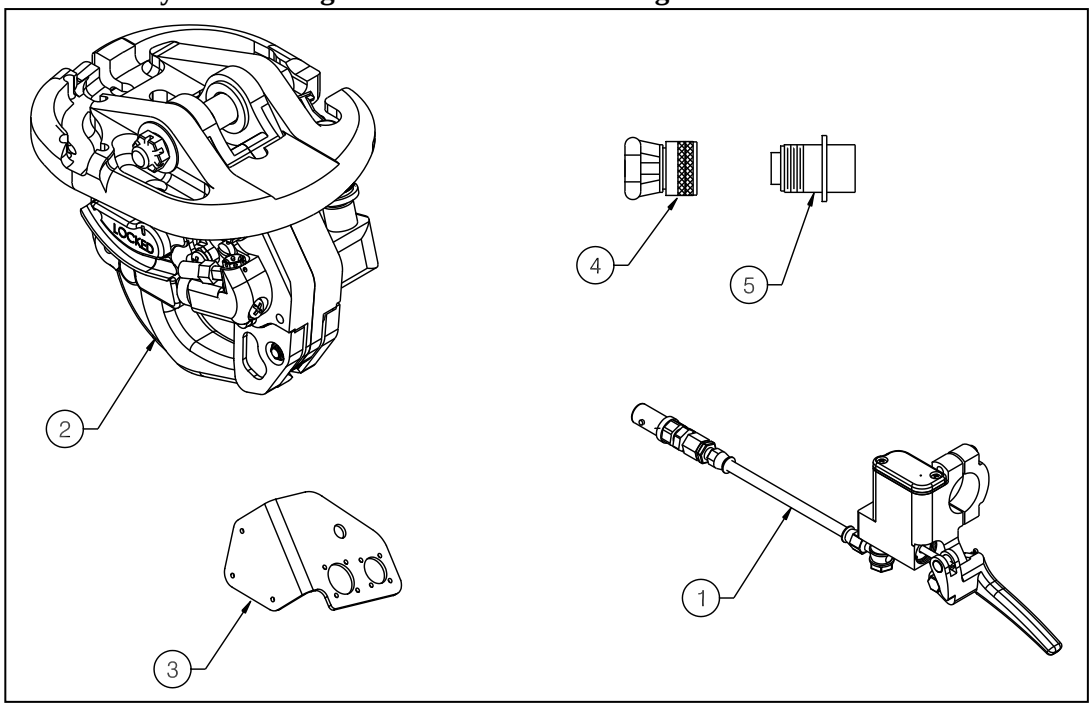
Section 5

System Part Numbers

Talon LC Hydraulic Cargo Hook Kit w/o Load Weigh

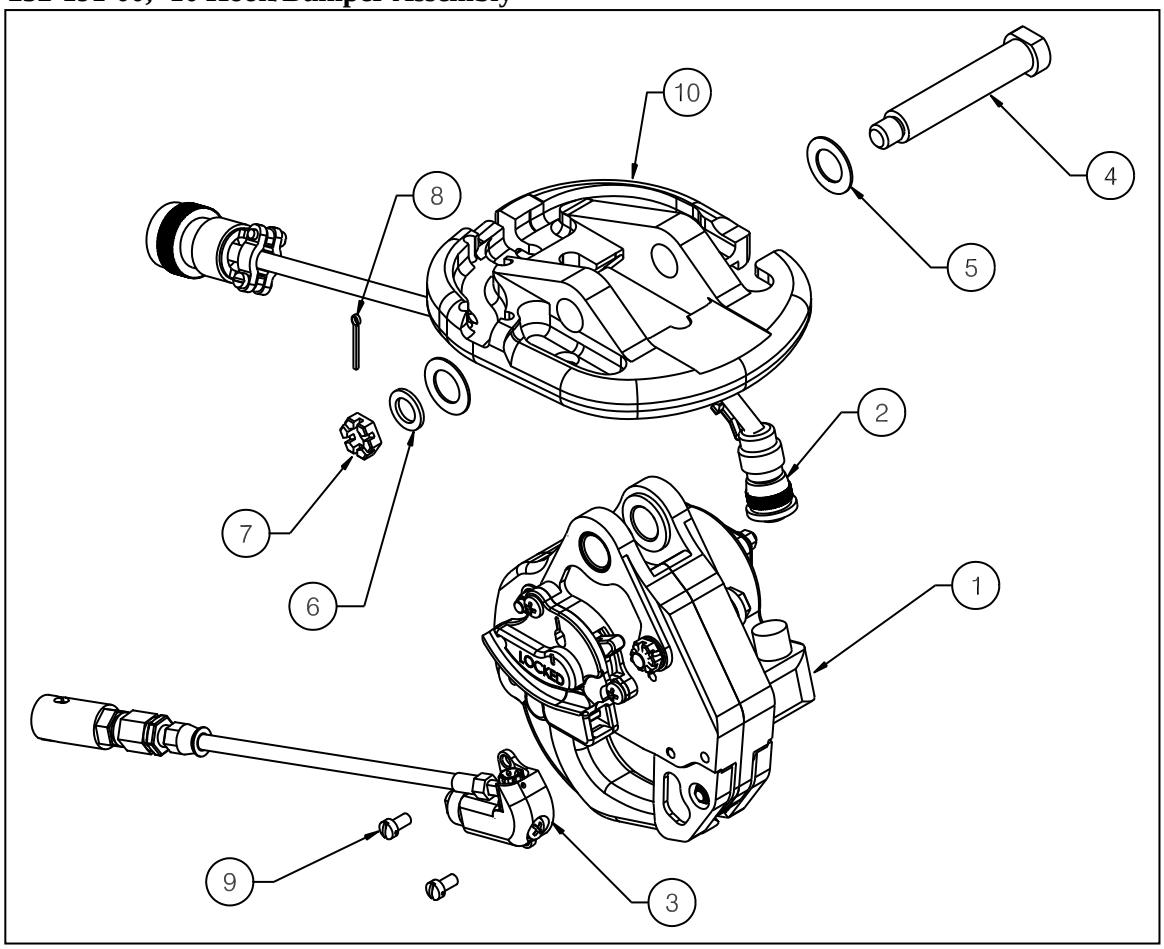


ITEM	PART NO.	DESCRIPTION	QTY 200-297		QTY 200-298	
			-00	-10	-00	-10
1	232-165-00	Master Cylinder Assembly	1	1	1	1
2	232-191-00	Hook/Bumper Assembly	1	-	-	-
	232-191-10	Hook/Bumper Assembly w/ Surefire	-	1	-	-
	232-192-00	Hook/Bumper /Load Cell Assembly	-	-	1	-
	232-192-10	Hook/Bumper/Load Cell Assembly w/ Surefire	-	-	-	1
3	290-884-00	Connector Bracket	1	1	1	1
4	410-191-00	Connector	1	1	1	1
5	410-192-00	Backshell	1	1	1	1
6*	210-095-00	C-39 Load Indicator	-	-	1	1
7*	270-048-03	Load Weigh Internal Harness	-	-	1	1
8*	215-343-00	Cockpit Decal	-	1	-	1
9*	510-453-00	Bolt, 10-32	3	3	3	3
10*	510-042-00	Washer, #10	3	3	3	3
11*	510-102-00	Nut, 10-32	3	3	3	3
12*	512-005-00	Loop Clamp	4	4	4	4
13*	500-065-00	Grommet Edging	1	1	1	1
14*	505-014-00	Grommet	1	1	1	1
15*	510-481-00	Screw	8	8	8	8
16*	510-029-00	Nut	8	8	8	8
17*	510-062-00	Washer	8	8	8	8
18*	410-199-00	Shield Termination	1	1	1	1
19*	510-486-00	CherryMax Rivet	3	3	3	3
20*	512-021-00	Loop Clamp	2	2	2	2

* Item not shown in figure.

System Part Numbers continued

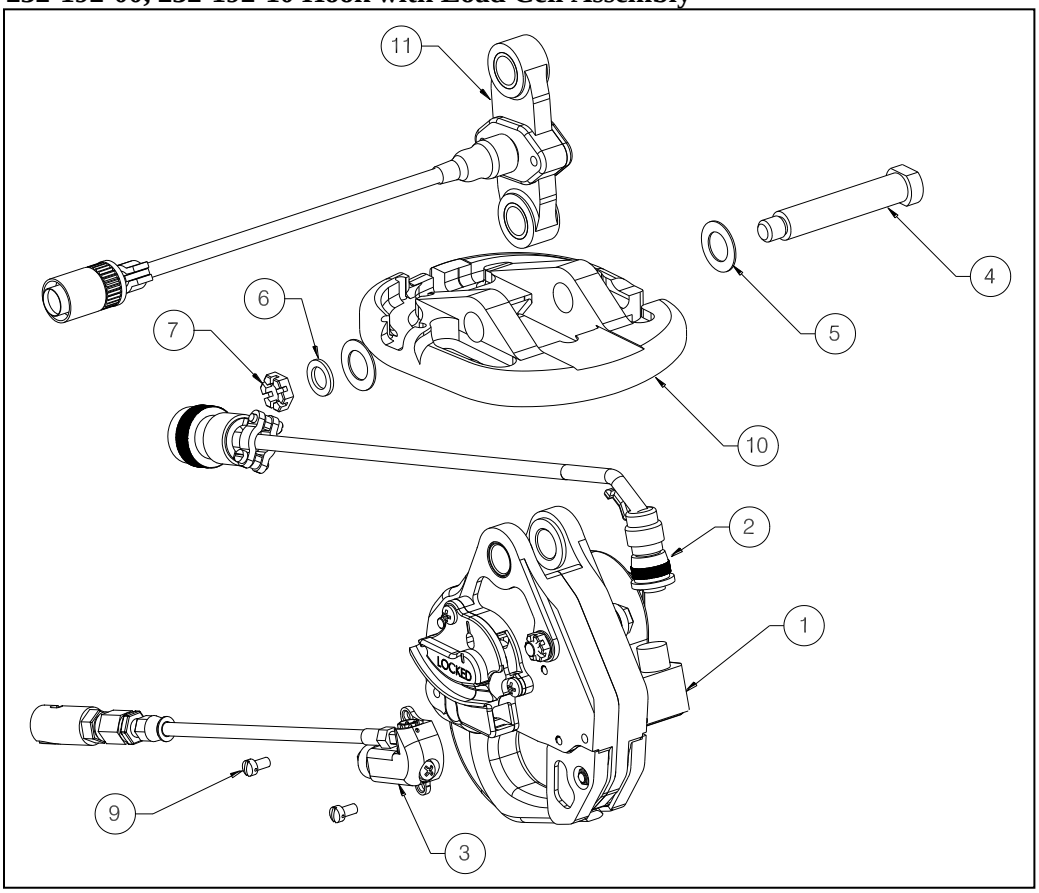
232-191-00, -10 Hook/Bumper Assembly



ITEM	PART NO.	DESCRIPTION	QTY	
			-00	-10
1	528-028-00	Talon LC Hydraulic Cargo Hook	1	-
	528-028-10	Talon LC Hydraulic Cargo Hook w/ Surefire	-	1
2	270-129-00	Electrical Release Harness	1	1
3	232-168-00	Slave Cylinder Assembly	1	1
4	290-775-00	Attach Bolt	1	1
5	510-183-00	Washer	2	2
6	510-174-00	Washer	1	1
7	510-170-00	Nut	1	1
8	510-178-00	Cotter Pin	1	1
9	510-531-00	Screw, 8-32	2	2
10	290-839-02	Hook Bumper	1	1

System Part Numbers continued

232-192-00, 232-192-10 Hook with Load Cell Assembly



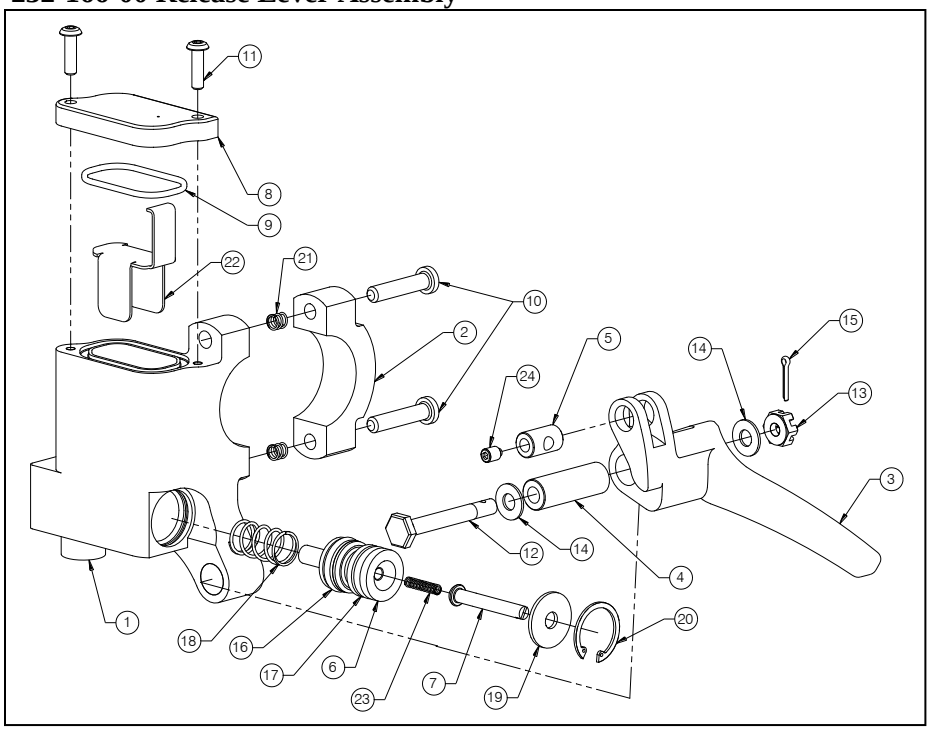
ITEM	P/N	DESCRIPTION	QTY.	
			-00	-10
1	528-028-00	Talon LC Hydraulic Cargo Hook	1	-
	528-028-02	Talon LC Hydraulic Cargo Hook w/ Surefire	-	1
2	270-129-00	Electrical Release Harness	1	1
3	232-168-00	Slave Cylinder Assembly	1	1
4	290-775-00	Attach Bolt	1	1
5	510-183-00	Washer	2	2
6	510-174-00	Washer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

*Not shown in assembly.

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

System Part Numbers continued

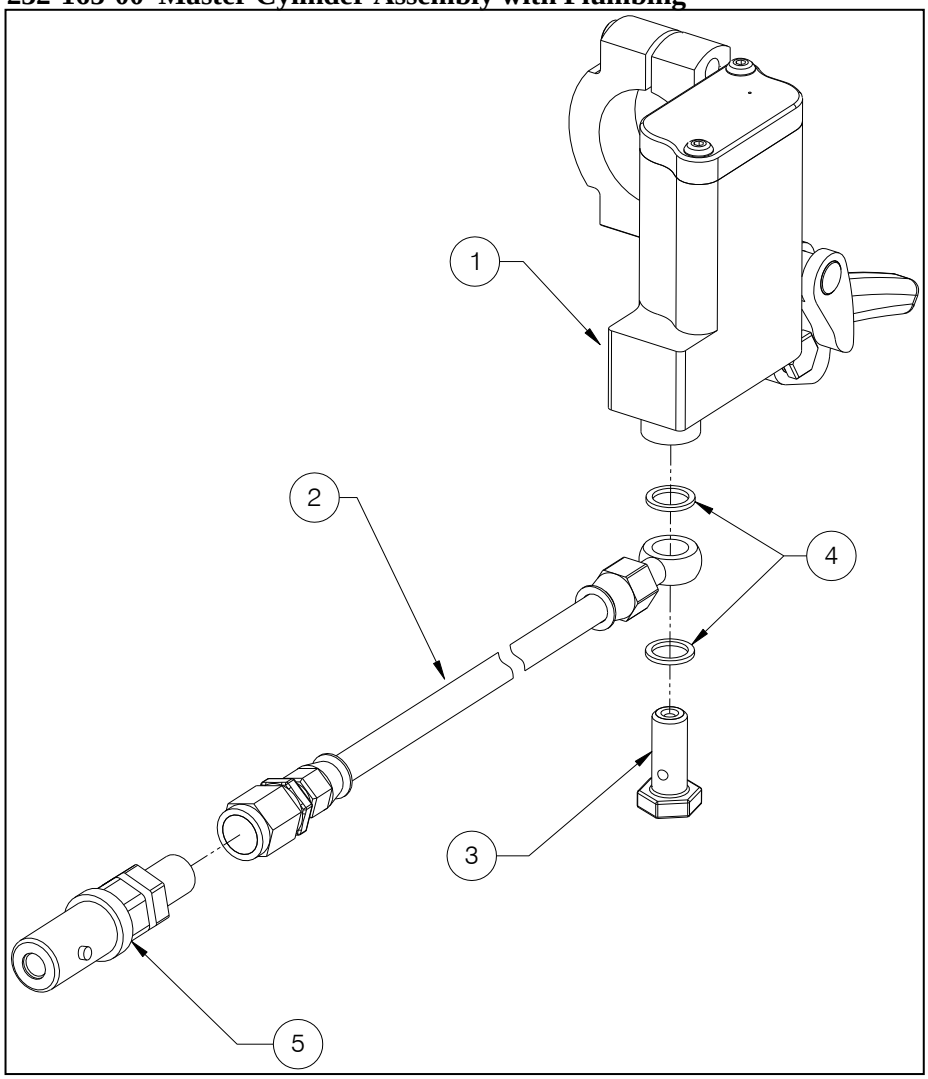
232-166-00 Release Lever Assembly



ITEM	PART NO.	DESCRIPTION	QTY
1	290-810-01	Master Cylinder	1
2	290-753-00	Clamp Half	1
3	290-811-00	Lever	1
4	290-816-00	Shaft	1
5	290-812-00	Barrel Nut	1
6	290-814-01	Piston	1
7	290-813-00	Push Rod	1
8	290-921-00	Reservoir Lid	1
9	556-044-00	O-Ring	1
10	510-390-00	Screw	2
11	510-157-00	#6-32 x ½" Button Head Cap Screw	2
12	510-487-00	Bolt	1
13	510-082-00	Nut	1
14	510-095-00	Washer	2
15	510-125-00	Cotter Pin	1
16	556-048-00	Cup Seal	1
17	556-047-00	O-Ring	1
18	514-055-00	Compression Spring	1
19	510-532-00	Washer – Piston Stop	1
20	515-008-00	Snap Ring	1
21	510-248-00	Helicoil	2
22	235-118-00	Master Cylinder Baffle	1
23	514-060-00	Compression Spring	1
24	510-530-00	#8-32 x 3/16" Nylon Tip Set Screw	1

System Part Numbers continued

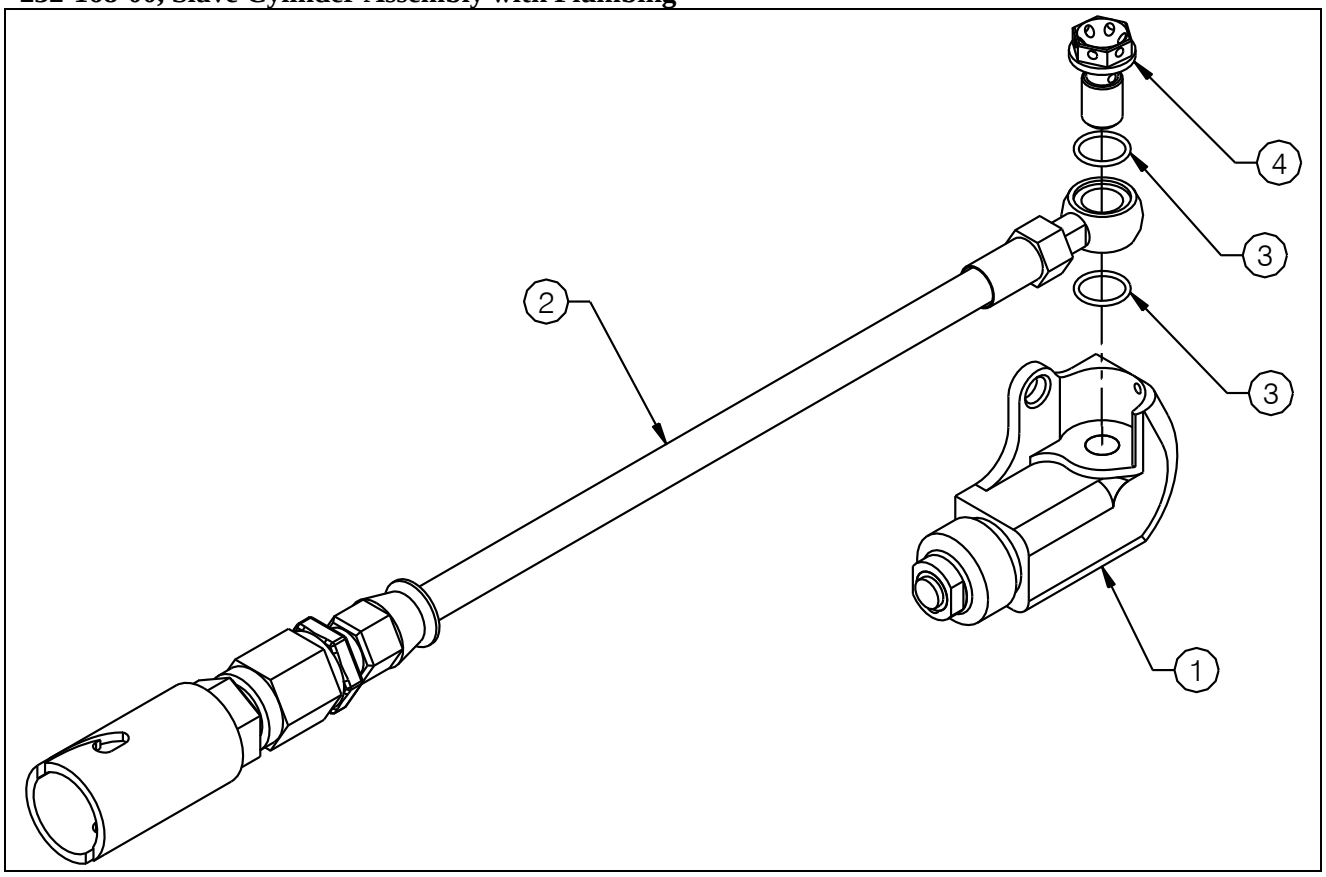
232-165-00 Master Cylinder Assembly with Plumbing



ITEM	PART NO.	DESCRIPTION	QTY
1	232-166-00	Master Cylinder Assembly	1
2	232-167-01	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

System Part Numbers continued

232-168-00, Slave Cylinder Assembly with Plumbing

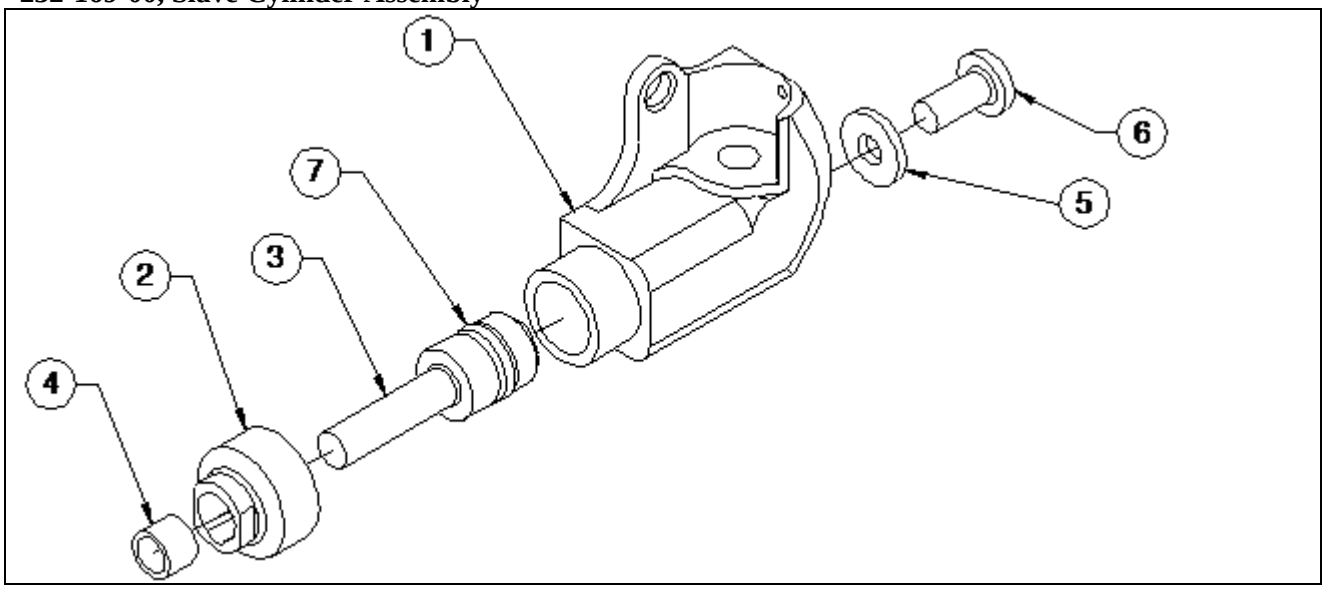


ITEM	PART NO.	DESCRIPTION	QTY
1	232-169-00	Slave Cylinder Assembly	1
2	232-170-01*	Slave Cylinder Plumbing Assy	1
3	556-041-00	O-Ring	2
4	558-025-00	Banjo Bolt	1

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

System Part Numbers continued

232-169-00, Slave Cylinder Assembly



ITEM	PART NO.	DESCRIPTION	QTY
1	290-803-00	Slave Cylinder	1
2	290-802-00	Cylinder Cap	1
3	290-805-00	Piston	1
4	517-040-00	Bushing	1
5	510-496-00	Stat-O-Seal	1
6	510-493-00	Screw	1
7	556-097-00	Quad Ring	1

Section 6
Certification
FAA STC

United States of America
Department of Transportation - Federal Aviation Administration

Supplemental Type Certificate

Number **SR01812SE**

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

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

Original Product—Type Certificate Number: H9EU
Make: Airbus Helicopters
Model: AS350B, AS350BA, AS350B1, AS350B2, & AS350D

Description of the Type Design Change: Installation of Onboard Systems International Talon LC Hydraulic Cargo Hook Kit, with or without Load Weigh in accordance with Master Drawing List, Document No. 155-110-00, Revision 10, dated May 3, 2017, or later FAA-approved revision. Maintained in accordance with FAA-accepted Instructions for Continued Airworthiness (ICA), Document No. 123-019-00, Revision 9, dated April 25, 2017, or later FAA-accepted revision.

Limitations and Conditions: Approval of this change in type design applies to only those Eurocopter model rotorcraft listed above which are equipped with a fuel tank support mounted swing type suspension. Additionally, to use Cargo Hook Kit P/N 200-297-00 or 200-297-10, a rotorcraft must be equipped with an Onboard Systems 200-058-00 or 200-295-00 Load Weigh Kit. This approval should not be extended to other rotorcraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that helicopter.

(See Continuation Sheet Page 3 of 3 Pages)

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: March 2, 2005 *Date reissued:*
Date of issuance: February 4, 2008 *Date amended:* July 24, 2017

By direction of the Administrator

(Signature)

for Manager, Seattle Aircraft Certification Office
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA Form 8110-2 (10-68) PAGE 1 OF 3 PAGES

FAA STC continued

United States of America
Department of Transportation - Federal Aviation Administration

Supplemental Type Certificate
(Continuation Sheet)

Number **SR01812SE**

Onboard Systems International

Issued: February 4, 2008
Reissued:
Amended: July 24, 2017

Limitations and Conditions continued:

Rotorcraft modified in accordance with this STC must be operated in accordance with the FAA-approved Onboard Systems Rotorcraft Flight Manual Supplement (RFMS) 121-026-00, Revision 1, dated July 13, 2017, or later FAA-approved revision.

A copy of this certificate, the RFMS, the ICA, and the applicable Onboard Systems Owner's Manual (as identified on the MDL), must be maintained as part of the permanent records of the modified rotorcraft.

If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

- END -

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA Form 8110-2-1 (10-69) PAGE 3 OF 3 PAGES

Canadian Approval

Transport Canada
Civil Aviation

Transports Canada
Aviation Civile

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

Your file *Votre référence*

Our file *Notre référence*
5009-2-1
RDIMS #4232424

July 10, 2008

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

Dear Sir / Madam:

Subject: Acceptance of FAA STC No. SR01812SE

This is in response to the FAA Seattle ACO letter dated June 25, 2008, requesting Transport Canada approval of the subject STC.

In accordance with our current policy associated with the review of foreign STCs, some STCs applicable to certain categories of aircraft may be accepted solely on the basis of their foreign certification, and do not require the issue of a corresponding certificate by Transport Canada. The subject STC falls within these criteria.

This STC will be entered in the national index of STCs that have been reviewed and accepted by Transport Canada for installation on Canadian registered aeronautical products.

This letter confirms formal acceptance of the referenced STC by Transport Canada.

Yours truly,

J.H. Nehera
Regional Manager
Aircraft Certification

RK

Canada

EASA STC

European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.IM.R.S.01446

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

Onboard Systems International

13915 NW 3rd Court
WA
98685
Vancouver
United States

and certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable Type Certification Basis and environmental protection requirements when operated within the conditions and limitations specified below:

Original Product Type Certificate Number:	EASA TC EASA.R.008
Type Certificate Holder:	Eurocopter
Model:	AS350B, AS350B1, AS350B2, AS350BA, AS350D
Original STC Number:	FAA STC SR01812SE

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

Associated Technical Documentation:
Definition and installation:

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

Inspection and maintenance:

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

Operation:

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

EASA STC continued

European Aviation Safety Agency

Limitations and Conditions:

1. Prior to installation of this modification the installer must determine that the interrelationship between this modification and any other previously installed modification will introduce no adverse effect upon the airworthiness of the product.
2. The installation of this modification by third persons is subject to written permission of the approval holder and holding and disposal of the approved appropriate documentation.
3. The systems covered by this STC can be installed on AS 350 helicopters that are equipped with Eurocopter swing suspension systems P/N 350A86-1030-00 or 350A86-1030-01
4. EASA approved AS350 Flight Manual and appropriate <External Load Transport "Cargo Swing"> RFM Supplement are required
5. To use Cargo Hook Kit P/N 200-297-00 a rotorcraft must be equipped with an Onboard Systems 200-295-00 Load Weigh Kit approved under EASA.IM.R.S.01122

This Certificate shall remain valid unless otherwise surrendered or revoked.

For the European Aviation Safety Agency,

Date of issue: 21 November 2008

Massimo MAZZOLETTI
Certification Manager

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