Instructions for Continued Airworthiness

Dual Cargo Hook System

For the

Bell 206L, 206L-1, 206L-3, 206L-4, and 407

STC SR02724LA

System Part Number(s)

200-456-00
200-456-01
200-465-00
200-458-XX

13915 NW 3rd Court Vancouver, Washington 98685 USA
Phone: 360-546-3072 Fax: 360-546-3073 Toll Free: 800-275-0883
www.OnboardSystems.com

THIS PAGE INTENTIONALLY LEFT BLANK

Record of Revisions

Revision	*Date*	*Page(s)*	*Reason for Revision*
0	12/09/19	All	First Issue
1	05/06/25	Section 5, pages 6 thru 8 and 10 thru 19	Corrected pillow block P/Ns in Table 5.2.1, added bulkhead fitting P/Ns to account for intermediate configuration and new configuration. Added wear limit for bolt P/N 510-142-00. Added re-assembly instructions after inspection.

THIS PAGE INTENTIONALLY LEFT BLANK

List of Effective Pages

Title	Pages	Revision	Date
Cover	i, ii Blank	1	05/06/25
Record of Revisions	iii, iv Blank	1	05/06/25
List of Effective Pages	v, vi Blank	1	05/06/25
Table of Contents	vii, viii, ix, x	1	05/06/25
Section 0 Introduction	1, 2	0	12/09/19
Section 4 Airworthiness Limitations	1, 2 Blank	0	12/09/19
Section 5 Inspection and Overhaul Schedule	1 thru 18	0	12/09/19
Section 5 Inspection and Overhaul Schedule	6 thru 8	1	05/06/25
Section 5 Inspection and Overhaul Schedule	9	0	12/09/19
Section 5 Inspection and Overhaul Schedule	10 thru 19	1	05/06/25
Section 11 Placards and Markings	1, 2 Blank	0	12/09/19
Section 12 Servicing	1 thru 12	0	12/09/19
Section 25 Equipment and Furnishings	1 thru 33	0	12/09/19

THIS PAGE INTENTIONALLY LEFT BLANK

CONTENTS

Identification **Title, Page**

Section 0 **Introduction**
0.4 Scope, 1
0.5 Purpose, 1
0.6 Arrangement, 1
0.7 Applicability, 1
0.9 Abbreviations, 1
0.12 Precautions, 2
0.19 Distribution of Instructions for Continued Airworthiness, 2

Section 4 **Airworthiness Limitations**

Section 5 **Inspection and Overhaul Schedule**
5.1 Annual/100 Hour Inspection, 1
5.2 5 Year/1000 Hour Inspection, 4
5.3 Long Line Kit Inspection, 12
5.4 Cargo Hook Overhaul Schedule, 19

Section 11 **Placards and Markings**
11.1 Placards, 1

Section 12 **Servicing**
12.1 Maintenance of the Hydraulic Release System, 1
12.2 Bleeding Hydraulic System, 5
12.3 Lubrication Information, 10

Section 25 **Equipment and Furnishings**
25.2 Description, 1
25.5 Component Weights, 4
25.12 Storage Instructions, 5
25.15 Troubleshooting, 6
25.16 Component Removal, 12
25.17 Component Re-installation, 19

Figures

5.1.1 Hook Lock Indicator, Section 5 Page 2
5.2.1 Primary Cargo Hook Installation Parts, Section 5 Page 5
5.2.2 Secondary Cargo Hook Installation Parts, Section 5 Page 7
5.3.1 Long Line Kit Components, Section 5 Page 12
5.3.2 Rigging Plate Inspection Criteria, Section 5 Page 18
12.1.1 Checking Hydraulic Fluid Level, Section 12 Page 1
12.1.2 Master Cylinder Lever Disconnect, Section 12 Page 2
12.1.3 Master Cylinder Piston Removal, Section 12 Page 3
12.1.4 Master Cylinder Piston Seal Orientation, Section 12 Page 3
12.1.5 Slave Cylinder Piston Removal, Section 12 Page 4
12.2.1 Hydraulic Hook Bleed Kit Section 12 Page 5
12.2.2 Hose Arrangement, Section 12 Page 6
12.2.3 Reservoir Disassembly, Section 12 Page 6
12.2.4 Screw and Stat-o-seal Removal, Section 12 Page 7
12.2.5 Injecting Hydraulic Fluid, Section 12 Page 7
12.2.6 Screw Re-installation, Section 12 Page 8
12.2.7 Checking System for Air, Section 12 Page 9
12.3.1 Lubrication Points, Section 12 Page 10
25.2.1 Dual Cargo Hook Configuration, Section 25 Page 1
25.2.2 Cargo Hook PQRS and BQRS Controls, Section 25 Page 2
25.2.3 Secondary Hardpoint Fittings, Section 25 Page 3
25.15.1 Wire Harness Routing, Section 25 Page 8
25.15.2 Electrical Schematic – Primary Cargo Hook, Section 25 Page 9
25.15.3 Electrical Schematic – Secondary Cargo Hook, Section 25 Page 9
25.15.4 CAL Code on the C-39, Section 25 Page 9
25.15.5 C-40 Settings Screen, Section 25 Page 10
25.15.6 Changing Dampening Level, Section 25 Page 11
25.16.1 Slave Cylinder Assembly Removal, Section 25 Page 12
25.16.2 Beam Attachment Hardware, Section 25 Page 13
25.16.3 Secondary Hardpoint Fittings, Section 25 Page 14
25.16.4 Master Cylinder Removal, Section 25 Page 16
25.16.5 Secondary Cargo Hook Relay, Section 25 Page 17
25.16.6 Release Switch Removal, Section 25 Page 18
25.17.1 Pillow Block Re-installation, Section 25 Page 19
25.17.2 Beam Assembly Re-installation, Section 25 Page 20
25.17.3 Secondary Attach Point Re-installation, Section 25 Page 21
25.17.4 Primary Cargo Hook Attachment, Section 25 Page 22
25.17.5 Cargo Hook Attachment Hardware w/ LC, Section 25 Page 23
25.17.6 Secondary Cargo hook Attachment Hardware, Section 25 Page 24
25.17.7 Secondary Cargo Hook Orientation, Section 25 Page 25
25.17.8 Slave Cylinder Assembly Installation, Section 25 Page 26
25.17.9 Hose & Electrical Harness Routing, Section 25 Page 27
25.17.10 Hose and Harness Routing from Secondary Hook, Section 25 Page 28
25.17.11 Dual Master Cylinder & Hose Installation, Section 25 Page 30
25.17.12 Hose Routing Along Belly, Section 25 Page 31
25.17.13 Lever Adjustment, Section 25 Page 32

Tables

5.2.1 Primary Cargo Hook Installation Parts, Section 5 Page 6
5.2.2 Secondary Cargo Hook Installation Parts, Section 5 Page 8
5.2.3 Dual Cargo Hook System Inspection Criteria, Section 5 Page 9
5.3.1 Long Line Kit Parts, Section 5 Page 13
5.3.2 Long Line Kit Inspection Criteria, Section 5 Page 17
11.1 Dual Cargo Hook System Placards, Section 11 Page 1
25.5.1 Weights and CGs – 407 Model, Section 25 Page 4
25.5.2 Weights and CGs – 206L Series Models, Section 25 Page 4
25.5.3 Long Line Kit Weights and CGs, Section 25 Page 4
25.15.1 Troubleshooting, Section 25 Page 6

THIS PAGE INTENTIONALLY LEFT BLANK

Section 0
Introduction

0.4 Scope

The following information is necessary to carry out the service, maintenance, and inspection of the Dual Cargo Hook System P/Ns 200-456-00, 200-456-01, and 200-465-00 and Long Line Kit P/N 200-458-XX. See Section 25.2 for a detailed description of these P/Ns.

0.5 Purpose

The purpose of this Instructions for Continued Airworthiness (ICA) manual is to provide the information necessary to inspect, service, and maintain the dual cargo hook system and long line kit in an airworthy condition.

0.6 Arrangement

This manual contains instructions for the service, maintenance, inspection and operation of the part numbers listed above and as installed on Bell 206L, 206L-1, 206L-3, 206L-4 and 407 model helicopters. The manual is arranged in the general order that maintenance personnel would use to maintain the Dual Cargo Hook System and Long Line Kit in service.
The arrangement is:

Section 0 Introduction.
Section 4 Airworthiness Limitations
Section 5 Inspection and Overhaul Schedule
Section 11 Placards and Markings
Section 12 Servicing
Section 25 Equipment and Furnishings

0.7 Applicability

These Instructions for Continued Airworthiness are applicable to Dual Cargo Hook System P/N's 200-456-00, 200-456-01, and 200-465-00 and Long Line Kit P/N 200-458-XX for the Bell 206L, 206L-1, 206L-3, 206L-4 and 407 model helicopters. Refer to the appropriate Bell maintenance documentation for instructions regarding parts of the aircraft that interface with these parts.

0.9 Abbreviations

FAA Federal Aviation Administration
FAR Federal Aviation Regulation
ICA Instructions for Continued Airworthiness
CMM Component Maintenance Manual

0.12 Precautions

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.

0.19 Distribution of Instructions for Continued Airworthiness

Before performing maintenance ensure that the Instructions for Continued Airworthiness (ICA) in your possession is the most recent revision. Current revision levels of all manuals are posted on Onboard Systems Int'l web site at www.onboardsystems.com.

Onboard Systems offers a free notification service via fax or e-mail for product alerts and documentation updates. By registering Onboard Systems products on the web site, we will be able to contact you if a service bulletin is issued, or if the documentation is updated.

Notices can be chosen to be received on an immediate, weekly, or monthly schedule via fax, email or both methods. There is no charge for this service. Please visit the Onboard Systems web site at https://www.onboardsystems.com/document/notify to get started.

Section 4
Airworthiness Limitations

The Airworthiness Limitations section is FAA approved and specifies inspections and other maintenance required under Secs. 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

The following items of the Long Line Kit are life-limited. Captured metal parts (load rings, snap hooks, etc.) of the assemblies are also scrapped at retirement.

Part Number	Description	Maximum Service Life**
490-019-00	Y-Rope	4 years
490-015-XX*	Long Line	4 years
490-018-00	Lanyard	4 years

*The XX represents length of the long line in feet divided by 10, e.g. - a 100 foot long line has a part number 490-015-10, a 150 foot long line has a part number 490-015-15, etc.

** Service life begins when the item is placed into service. This date must be marked by the operator in the reserved location on the component ID tag or using another method such as recording in a log book.

FAA Approved: This page constitutes the Airworthiness Limitations Section in its entirety, is considered segregated from the rest of the document, and sets forth the FAA approved mandatory replacement times for the life-limited parts listed above.

Approved By: Maureen Marshall Date: 3/16/2020
Acting Manager, Los Angeles Certification Office

THIS PAGE INTENTIONALLY LEFT BLANK

Section 5
Inspection and Overhaul Schedule

The scheduled inspection intervals are maximum and are not to be exceeded. If the cargo hook system is subjected to unusual circumstances, extreme environmental conditions, etc., it is the responsibility of the operator to perform the inspections more frequently to ensure proper operation.

There is no maintenance to be performed on the Load Weigh Indicator instrument of the load weigh system (if installed). Do not open the enclosure, if repair is needed return it to the factory.

5.1 Annual/100 Hour Inspection

Annually or 100 hours of external load operations, whichever comes first, inspect the cargo hook system per the following. Refer also to the Cargo Hook's Component Maintenance Manual (manual no. 122-015-00) for additional inspection.

NOTICE

*Hours of external load operations should be interpreted to be **(1)** anything is attached to the cargo hook (whether or not a useful load is being transported) and **(2)** the aircraft is flying. If these conditions are **NOT** met, time does **NOT** need to be tracked.*

1. Activate the helicopter's electrical system and press the pushbutton switch for the primary cargo hook (this switch is the original Bell switch on the cyclic labeled "CARGO RELEASE") to ensure the primary cargo hook's electrical release system is operating correctly. The cargo hook must open. Reset the hook by hand after release.

   Repeat for the secondary cargo hook using the pushbutton switch integrated into the release lever installed on the cyclic labeled "SECONDARY HOOK RELEASE".

CAUTION

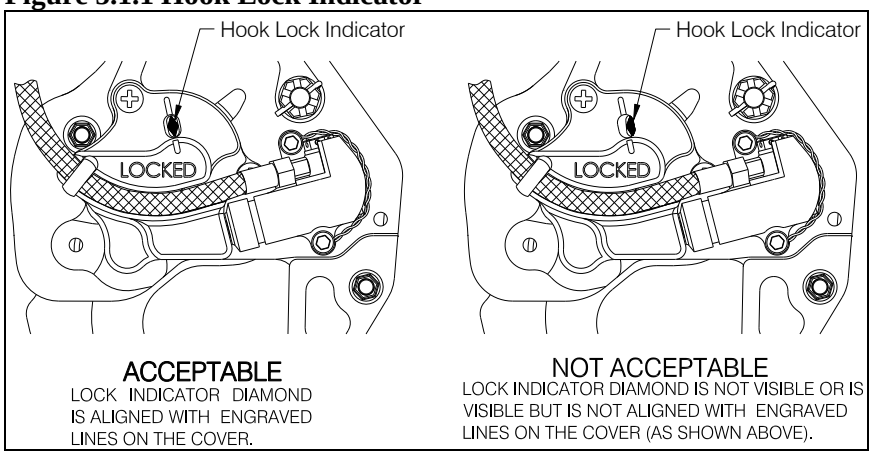
Depressing the cargo release button continuously in excess of 20 seconds will cause the cargo hook solenoid to overheat, possibly causing permanent damage.

5.1 Annual/100 Hour Inspection continued

2. Check the function of the primary cargo hook's hydraulic release system by pulling the inboard release lever of the Dual Master Cylinder on the cyclic. The lever should operate smoothly and the primary (aft) cargo hook must release. Return the load beam to its closed and locked position by hand after release. Verify that the hook lock indicator on the side of the hook returns to the fully locked position. In the fully locked position the hook lock indicator must align with the lines on the cover (see Figure 5.1.1).

   Repeat using the outboard lever of the Dual Master Cylinder on the cyclic for the secondary (forward) cargo hook.

Figure 5.1.1 Hook Lock Indicator



3. Move each cargo hook throughout its full range of motion and observe the hydraulic hose and electrical harnesses to ensure that they have enough slack. The hose or harness must not be the stops that prevent each cargo hook from moving freely in all directions.
4. Rotate pivoting joints at each cargo hook attachment to ensure that they rotate freely throughout their range of motion.
5. Visually inspect for presence and security of fasteners at each cargo hook and its attachment means to the belly of the helicopter.
6. Visually inspect the external electrical harnesses and their connectors at the cargo hooks and at the belly bracket for damage and security.
7. Visually inspect each external hydraulic hose and the connections to the cargo hooks and the fixed fittings on the belly connector bracket for damage and security.
8. Visually inspect the hoses and harnesses along their routing forward of the connector bracket for damage and security.
9. Visually inspect for cracks and damage in the Pillow Block and Pivot Link of the secondary cargo hook attach point assembly. If damage is observed refer to Table 5.2.2 for inspection criteria.
10. Visually inspect for cracks and damage in the Beam and the Pillow Blocks supporting the primary cargo hook. Refer to Table 5.2.2 for inspection criteria.
11. Visually inspect the internal secondary hardpoint fittings and surrounding aircraft structure for cracks and damage.

5.1 Annual/100 Hour Inspection continued

12. Inspect for security of the Dual Master Cylinder on the cyclic.

13. Visually check for fluid leaks in the hydraulic release system. Any leakage of fluid is unacceptable. See the troubleshooting section to determine the course of action.

14. Check the fluid level in the master cylinder on the cyclic. The master cylinder features a transparent lid through which the fluid level can be checked. Hydraulic fluid level must be within the "MIN-MAX" circle on the baffle plate (reference Figure 12.1.1).

15. Check one of the hydraulic release systems for air by pulling one of the levers firmly until it bottoms out. Check the push rod position (reference Figure 12.2.7). If some of the green ring on the push rod is visible, the system is adequately bled. If some of the green on the push rod is NOT visible with the lever completely pulled, the system has too much air in it and must be bled, see Section 12.2 for bleeding instructions.

    Repeat with the other lever to check the other cargo hook's hydraulic release system.

16. Remove the seat and panel underneath it on the side which the Dual Master Cylinder is installed and visually inspect the hose routing for chafing along entire route from the cyclic to the hole in the panel. Inspect hoses for security (ensure it remains secured clear of moving parts).

17. Visually inspect the load weigh indicator (if optional load weigh system is installed) for damage and security.

5.2 5 Year/1000 Hour Inspection

Every 5 years or 1000 hours of external load operations, whichever comes first, remove the external load bearing components of the dual cargo hook system from the helicopter, disassemble, and inspect the parts per the instructions in this section.

For numbers in ( ) refer to Figure 5.2.1 and Figure 5.2.2. Bushings do not need to be removed unless they are being replaced.

At the primary cargo hook:

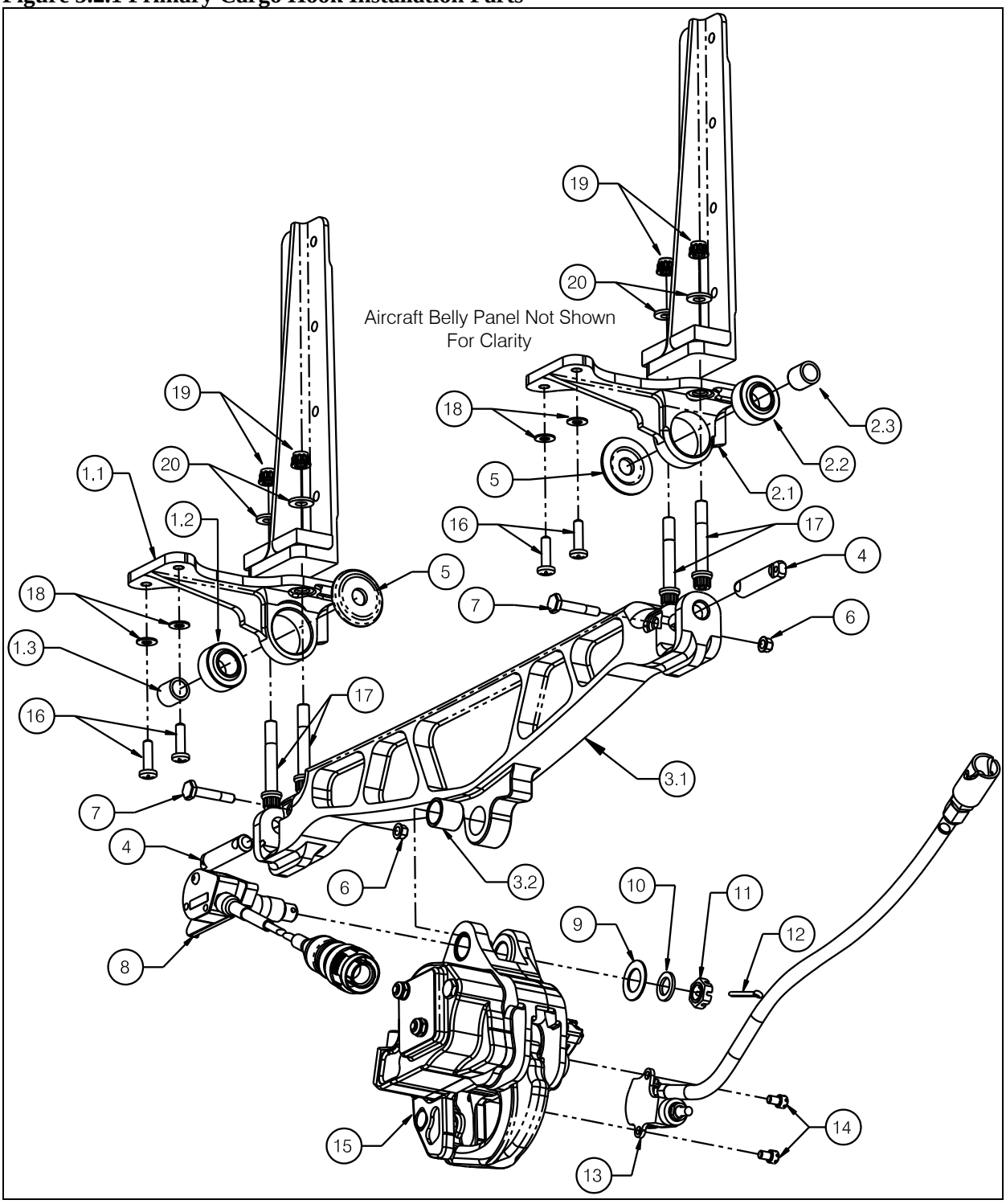
1. Disconnect the electrical release harness connector, load cell connector (if installed), and the slave cylinder/plumbing assembly connector at the connections on the bracket on the belly.
2. Remove the Beam Assembly (3.1, 3.2) from the Pillow Blocks (1 and 2) by removing the nuts (6) and bolts (7) at each end that retain the Trunnion Pins (4).
3. Remove the Trunnion Pins and separate the Beam Assembly and Cargo Hook from the Pillow Blocks. Removing the Trunnion Pins also separates the thrust washers (5) from the assembly.
4. Separate the Cargo Hook (15) from the Beam Assembly by removing the cotter pin (12), nut (11), washers (9, 10) from the end of the Pin Load Cell Assembly (8) or Attach Bolt (30) if the load weigh system is not installed.
5. The Slave Cylinder w/ Plumbing (13) can be removed by cutting the cable tie at the manual release cover and cutting the safety wire between the two screws (14) and removing the screws.

At the secondary cargo hook:

6. Disconnect the electrical release harness connector and the slave cylinder/plumbing assembly connector at the connections on the bracket on the belly.
7. Remove the cotter pin (44), nut (43), washers (41 and 42) from the end of the attach bolt (30).
8. Remove the attach bolt, separating it, washer (41) and the cargo hook (31) from the secondary Pivot Link Assembly (28).
9. Separate the Pivot Link Assembly from the Pillow Block (26) by removing cotter pin (40), nut (39), washer (38), and bolt (37).
10. To remove the Pillow Block (26) the Load Plate (25) must be removed in order to access the bolt heads. Remove the Load Plate by removing the four nuts (36) and washers (35) from the bolts (33), the bolt heads are accessed from inside the aircraft.
11. The Pillow Block can now be separated from the Load Plate by removing the four nuts (36), washers (35) from the end of the bolts (34).
12. The Slave Cylinder w/ Plumbing (32) can be removed from the Cargo Hook by cutting the cable tie at the manual release cover and cutting the safety wire between the two screws (45) and removing the screws.

5.2 5 Year/1000 Hour Inspection

Figure 5.2.1 Primary Cargo Hook Installation Parts



5.2 5 Year/1000 Hour Inspection

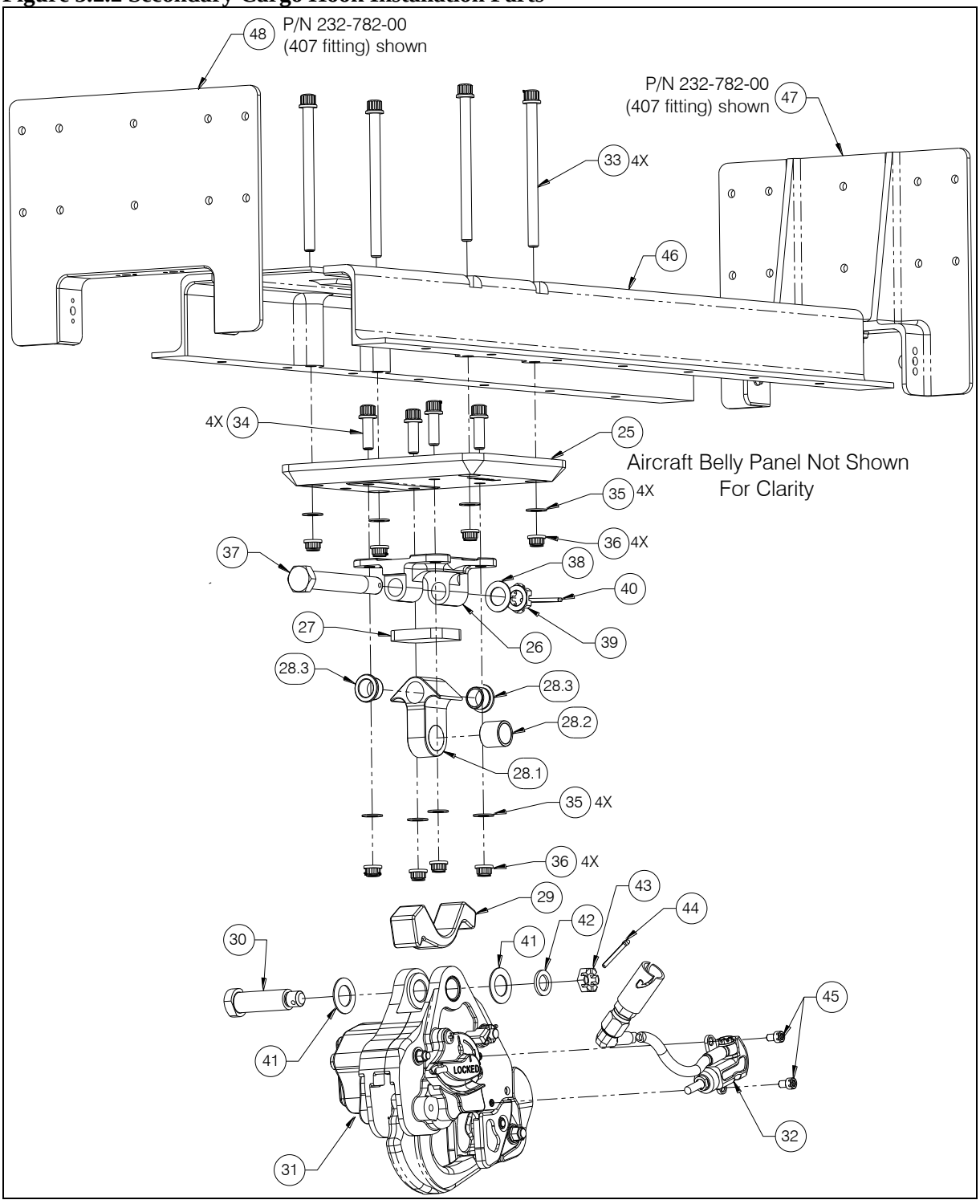
Table 5.2.1 Primary Cargo Hook Installation Parts

Item	Part No.	Description	Qty
1*	232-189-01	Pillow Block Assembly, Right	1
1.1	290-883-01	Pillow Block, Right	1
1.2	517-012-00	Spherical Bearing	1
1.3	290-882-00	Bushing	1
2*	232-188-01	Pillow Block Assembly, Left	1
2.1	290-853-01	Pillow Block, Left	1
2.2	517-012-00	Spherical Bearing	1
2.3	290-882-00	Bushing	1
3.1	290-852-01	Main Beam	1
3.2	290-364-00	Bushing	1
4	290-854-00	Trunnion Pin	2
5	290-881-00	Thrust Washer	2
6	510-500-00	Nut	2
7	510-523-00	Bolt	2
8	210-282-01	Pin Load Cell	1
9	510-183-00	Washer	2
10	510-174-00	Washer	1
11	510-170-00	Nut	1
12	510-178-00	Cotter Pin	1
13	232-823-00	Slave Cylinder Assembly w/ Plumbing	1
14	510-531-00	Screw	2
15	528-028-00	Cargo Hook	1
16	510-624-00	Screw	4
17	510-725-00	Screw	4
18	510-419-00	Washer	4
19	510-234-00	Nut	4
20	510-648-00	Washer	4

*Not shown assembled.

5.2 5 Year/1000 Hour Inspection

Figure 5.2.2 Secondary Cargo Hook Installation Parts



5.2 5 Year/1000 Hour Inspection continued

Table 5.2.2 Secondary Cargo Hook Installation Parts

Item	Part No.	Description	Qty
25	291-997-01	Load Plate	1
26	292-019-00	Pillow Block	1
27	220-047-00	Bumper	1
28.1	292-020-00	Secondary Pivot Link	1
28.2	290-364-00	Bushing	1
28.3	291-486-00	Flanged Bushing	2
29	290-360-01	Bumper	1
30	290-332-00	Attach Bolt	1
31	528-028-03	Cargo Hook	1
32	232-823-00	Slave Cylinder with Plumbing	1
33	511-178-00	Bolt, 12 point	4
34	511-177-00	Bolt, 12 point	4
35	510-100-00	Washer	8
36	511-179-00	Nut	8
37	510-142-00	Bolt	1
38	510-109-00	Washer	1
39	510-108-00	Nut	1
40	510-222-00	Cotter Pin	1
41	510-183-00	Washer	2
42	510-174-00	Washer	1
43	510-170-00	Nut	1
44	510-178-00	Cotter Pin	1
45	510-531-00	Screw	2
46	291-996-00	Reinforced Tunnel, 407	1
	291-993-00	Reinforced Tunnel, 206L	1
47	232-782-00 or 232-782-02	Bulkhead Fitting Assembly, 407	1
	232-784-00	Aft Bulkhead Fitting Assembly, 206L	1
48	232-782-00 or 232-782-01* or 232-782-03**	Bulkhead Fitting Assembly, 407	1
	232-783-00	Fwd Bulkhead Fitting Assembly, 206L	1

*Differs from -00 configuration in that nut plates were replaced with threaded inserts at horizontal flange.

**Used with shims (P/N 235-297-00 and P/N 235-298-00), quantity 1 each, to account for the several overlapping layers (flange and doubler) on the forward bulkhead of the 407.

5.2 5 Year/1000 Hour Inspection continued

- If the load weigh system is installed, return the Pin Load Cell Assembly (P/N 210-282-01) to the factory for inspection and calibration. The factory will inspect the condition of the pin load cell and perform acceptance test procedures including calibration and zero balance, repairing as necessary.
- Carefully inspect detail parts in accordance with the instructions in Table 5.2.3. Inspect the parts in a clean, well-lit room using standard dimensional measuring tools and visual methods. Repair parts found within inspection limits. Replace any part found beyond limits.
- In addition, remove the bleed screw (refer to Figure 12.2.4) at each cargo hook slave cylinder to drain the hydraulic release system**. Re-fill and bleed per the instructions in Section 12.2.

  **Calendar time alone can be used for replacing hydraulic fluid.

Table 5.2.3 Dual Cargo Hook System Inspection Criteria

Seq.	Component	Inspection Criteria and Limit	Repair Action	Finish
1.	Pillow Block (1.1, 2.1) Main Beam (3.1)	Dents, nicks, cracks, gouges, scratches and corrosion – 0.030 in. (0.76 mm) deep	Blend at 10:1 ratio as required to provide smooth transitions. Glass bead blast at less than 30 PSI (2.11 KGF/CM^2) to remove corrosion.	Passivate per AMS-QQ-P-35 or ASTM A967. Protect affected surfaces with MIL-PRF-23377 Type 1 primer or equivalent and MIL-PRF-85285 Type 1 polyurethane coating or equivalent.
		Any indication of cracks.	None.	N/A
2.	Shaft Bushing (1.3, 2.3)	Wear on ID – 0.393 in. (9.98 mm)	None.	N/A
3.	Bushing (3.2, 28.2)	Wear on inside diameter (ID) – 0.520 in. (13.21 mm)	None.	N/A
4.	Trunnion Pin (4)	Wear on outside diameter (OD) - .363 in. (9.22 mm)	None.	N/A
5.	Thrust Washer (5)	Wear on ends of washer, thickness less than .125 in. (3.18 mm)	None.	N/A
6.	Load Plate (25)	Dents, nicks, cracks, gouges, scratches and corrosion – 0.020 in. (0.50 mm) deep	Blend at 10:1 ratio as required to provide smooth transitions.	Apply Alodine (MIL-DTL-5541) and zinc chromate primer (MIL-PRF-23377 or similar) to affected surfaces.

Seq.	Component	Inspection Criteria and Limit	Repair Action	Finish
7.	Pillow Block (26)	Nicks, dents, scratches, corrosion – 0.010 in. (0.254 mm) deep	Blend at 10:1 ratio as required to provide smooth transitions. Glass bead blast at less than 30 PSI to remove corrosion.	Passivate per AMS-QQ-P-35 or ASTM A967. Protect affected surfaces with MIL-PRF-23377 Type 1 primer or equivalent and MIL-PRF-85285 Type 1 polyurethane coating or equivalent.
		Any indication of cracks.	None.	N/A
8.	Pivot Link (28.1)	Nicks, dents, scratches, corrosion – 0.010 in. (0.254 mm) deep	Blend at 10:1 ratio as required to provide smooth transitions. Glass bead blast at less than 30 PSI to remove corrosion.	Passivate per AMS-QQ-P-35 or ASTM A967.
		Any indication of cracks.	None.	N/A
9.	Flanged Bushing (28.3)	Wear on ID – 0.450 in. (11.43 mm)	None.	N/A
10.	Bumper (27, 29)	Denting, cuts or abrasions – 0.060 in. (1.27 mm) deep	None.	N/A
11.	Attach Bolt (30)	Wear on OD – 0.495 in. (12.57 mm)	None.	N/A
12.	Cargo Hook (15, 31)	Refer to CMM 122-015-00 for inspection and overhaul instructions for the cargo hook.		
13.	Reinforced Tunnel (46)	Dents, nicks, cracks, gouges, scratches and corrosion – 0.020 in. (0.50 mm) deep	Blend at 10:1 ratio as required to provide smooth transitions.	Apply Alodine (MIL-DTL-5541) and zinc chromate primer (MIL-PRF-23377 or similar) to affected surfaces.
		Any indication of cracks.	None.	N/A
14.	Bulkhead Fitting Assembly (47, 48)	Dents, nicks, cracks, gouges, scratches and corrosion – 0.020 in. (0.50 mm) deep	Blend at 10:1 ratio as required to provide smooth transitions.	Apply Alodine (MIL-DTL-5541) and zinc chromate primer (MIL-PRF-23377 or similar) to affected surfaces.
		Any indication of cracks.	None.	N/A
15.	Bolt (37)	Wear on OD – 0.423 in. (10.74 mm)	None.	N/A
16.	Remaining bolts, nuts, washers, cotter pins.	Wear, corrosion, or deterioration.	None.	N/A

5.2 5 Year/1000 Hour Inspection continued

Re-assembly after Inspection

1. If removed, press in bushings using conventional means (e.g. – arbor press) and with wet zinc chromate primer (TTP1757B or equivalent).
2. Re-install the Pillow Block Assemblies (1, 2) to the aircraft belly per Section 25.17.
3. Assemble the Main Beam (3) to the Pillow Block Assemblies per Section 25.17.
4. Assemble the Slave Cylinder w/ Plumbing (13) to the cargo hook (15) per Section 25.17.
5. Assemble the cargo hook to the Main Beam per Section 25.17.
6. Ensure Bumper (27) is present and assemble the Pivot Link Assembly (28) to the Pillow Block (26) by inserting the bolt (37) through (bolt head must be forward) and securing with washer (38), nut (39), and cotter pin (40). Tighten nut to finger tight and rotate to nearest castellation to insert cotter pin.
7. Assemble Pillow Block to Load Plate (25) with four screws (34), washers (35) and nuts (36). Tighten nuts to 50-70 in-lbs. Torque stripe the nuts.
8. Install the Load Plate to the belly of the aircraft (observe engraved FWD arrow) with the four bolts (33), washers (35) and nuts (36). Tighten nuts to 50-70 in-lbs. Torque stripe the nuts.
9. Assemble the Slave Cylinder w/ Plumbing (32) to the secondary cargo hook (31) per Section 25.17.
10. Assemble the cargo hook to the Secondary Attach Point Assembly (26, 28) per Section 25.17.
11. If the Reinforced Tunnel (46) was removed, do not substitute screw lengths at any position into the Bulkhead Fittings due to proximity of fuel lines underneath. As needed measure thickness of Reinforced Tunnel and Bulkhead Fitting flanges and length of screws before installing.

⚠ CAUTION

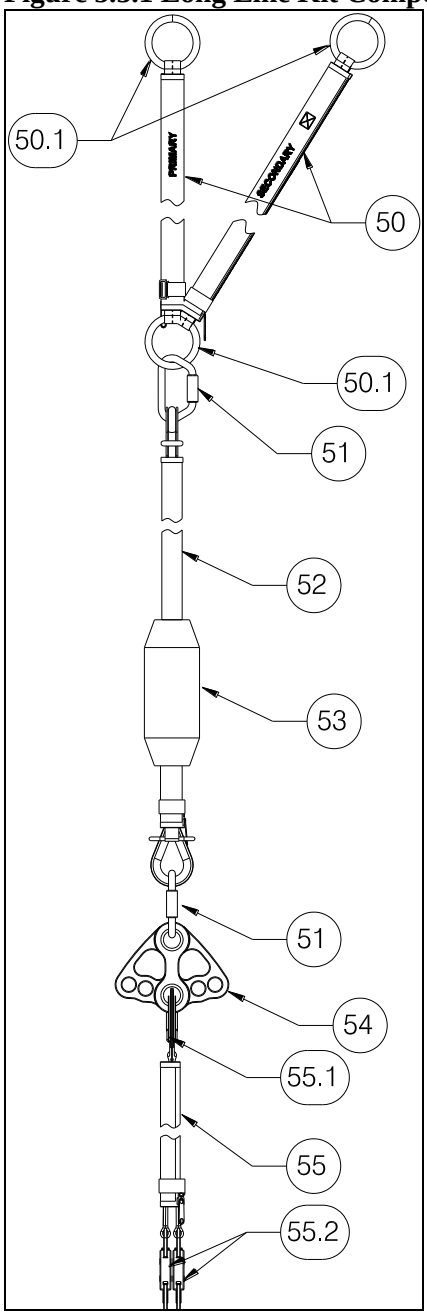
Do not substitute screws that secure the Reinforced Tunnel to the Bulkhead Fittings. Longer screws may contact the fuel line and/or fuel line fittings.

5.3 Long Line Kit Inspection

Inspection of the long line kit includes a check before each use (not a maintenance activity) and an annual inspection. Refer also to the manufacturer's Long Line User Manual. All of the manufacturer's inspection requirements must be observed.

The following figure shows the components of the long line kit P/N 200-458-XX. The Y-rope Assembly (item 50, 50.1) interfaces with the dual cargo hooks and is the only required component. For items connected below the Y-rope, locally approved alternate configurations may be used. If an alternate configuration is used refer to its maintenance documentation.

Figure 5.3.1 Long Line Kit Components



5.3 Long Line Kit Inspection continued

Table 5.3.1 Long Line Kit Parts

Item	Part No.	Description	Qty
50	490-019-00	Y-rope Assembly	1
50.1	N/A**	Load Ring	3
51	530-031-00	Carabiner	2
52	490-015-XX*	Long Line	1
53	490-017-00	Weight Bag	1
54	292-017-00	Rigging Plate	1
55	490-018-00	Lanyard	1
55.1	N/A**	Carabiner	1
55.2	N/A**	Snap Hook	2

*Long Line P/N is completed by replacing the “XX” with the length divided by 10, for example a 100 foot long line is P/N 490-015-10 and a 150 foot long line is P/N 490-015-15, etc.

** The Load Rings (50.1), Carabiner (55.1) and Snap Hooks (55.2) are integral to the Y-rope Assembly and Lanyard respectively.

5.3 Long Line Kit Inspection continued

Prior to a flight involving external load operations that includes use of the long line kit check the condition of the equipment and check the condition of the equipment after each use.

Use the criteria defined in the annual inspection as a guide for the check. Also, consult the Long Line User's Manual provided by the rope manufacturer.

Annually inspect the long line kit components per the following.

Inspection of the Y-rope, Long Line Assembly, and Lanyard Assembly must be conducted by a qualified person. In addition to the instructions below, consult the Long Line User's Manual provided by the rope manufacturer.

Inspect the Y-rope Assembly (50) per the following.

1. Open the covers and inspect them on the inside and outside per the following.
   - Loose, cut or pulled zipper stitching.
   - Loose, cut or pulled stitching of cover to webbing.
   - Torn, cut or otherwise damaged cover material.
   - Legibility of "PRIMARY" and "SECONDARY" markings.
   - Condition and function of zipper.
   - Condition and function of hook and loop closure strap.
2. Inspect the internal webbing material of the Y-rope Assembly per the following.
   - Legibility and security of ID tag.
   - Acid or caustic burns.
   - Holes, tears, cuts or snags.
   - Broken or worn stitching in the load bearing splices.
   - Excessive abrasive wear.
   - Knots in any part of the sling.
   - Discoloration and brittle or stiff areas on any part of the sling.
   - Wear on Load Ring, inspect per criteria in Table 5.3.2.

5.3 Long Line Kit Inspection continued

Inspect the Long Line Assembly (52) per the following.

Lay out the long line on a clean surface as it should be thoroughly inspected both visually and by feel over its entire length.

1. Unzip the cover and inspect it inside and outside per the following.
    - Loose, cut or pulled zipper stitching
    - Torn, cut or otherwise damaged loops (attaching each end of cover to thimbles).
    - Torn, cut or otherwise damaged cover material.
    - Condition and function of zipper.
    - Condition and function of hook and loop closure strap.
2. Inspect the rope and end terminations of the Long Line Assembly for the following.
    - Security of thimble, verify it is securely captured by the eye splice.
    - Condition of thimbles, inspect for signs of damage including corrosion, cracks, distortion, nicks, or rough surfaces.
    - Condition of the rope's lockstitch thread and whipping thread at each eye splice, inspect for broken, cut or frayed threads.
    - Legibility and security of ID tag.

    Along the entire length of the rope, inspect for the following.

    - Externally observed abrasion, cut strands or areas of extensive fiber breakage.
    - Fiber breakage, fused or melted fibers observed internally (observed by prying or twisting to open the strands). Remove from service if an estimated 10% of fiber in any strand or the rope as a whole is damaged.
    - Uniform fiber breakage along the length of rope such that the entire rope appears covered with fuzz or whiskers.
    - Consistent diameter of the rope. Measure the rope diameter in several locations and inspect for flat areas, bumps, or lumps. Remove from service if the diameter has been reduced by more than 10% in any area.
    - Discoloration, brittle fibers and hard or stiff areas that may indicate chemical, ultraviolet or heat damage.
    - Melted, hard or charred areas which may be evidence of excessive heat. Remove from service if areas in this condition affect more than 10% of the rope diameter or affect several adjacent strands along the length that affect more than 10% of strand diameters.
    - Cleanliness of the rope, stiffness of the rope may indicate dirt or grit embedded within its fibers.

5.3 Long Line Kit Inspection continued

Inspect the Lanyard Assembly (55) per the following.

1. Unzip the cover and inspect the inside and outside per the following.
   - Loose, cut or pulled zipper stitching
   - Loose, cut or pulled stitching of cover to webbing.
   - Torn, cut or otherwise damaged cover material.
   - Condition and function of zipper.
   - Condition and function of hook and loop closure strap.
2. Inspect the load carrying webbing material of the Lanyard Assembly for the following.
   - Legibility and security of ID tag.
   - Acid or caustic burns.
   - Holes, tears, cuts or snags.
   - Broken or worn stitching in the load bearing splices.
   - Excessive abrasive wear.
   - Knots in any part of the sling.
   - Discoloration and brittle or stiff areas on any part of the sling.
3. Inspect the captive carabiner and the two snap hooks of the Lanyard Assembly per Table 5.3.2.

5.3 Long Line Kit Inspection continued

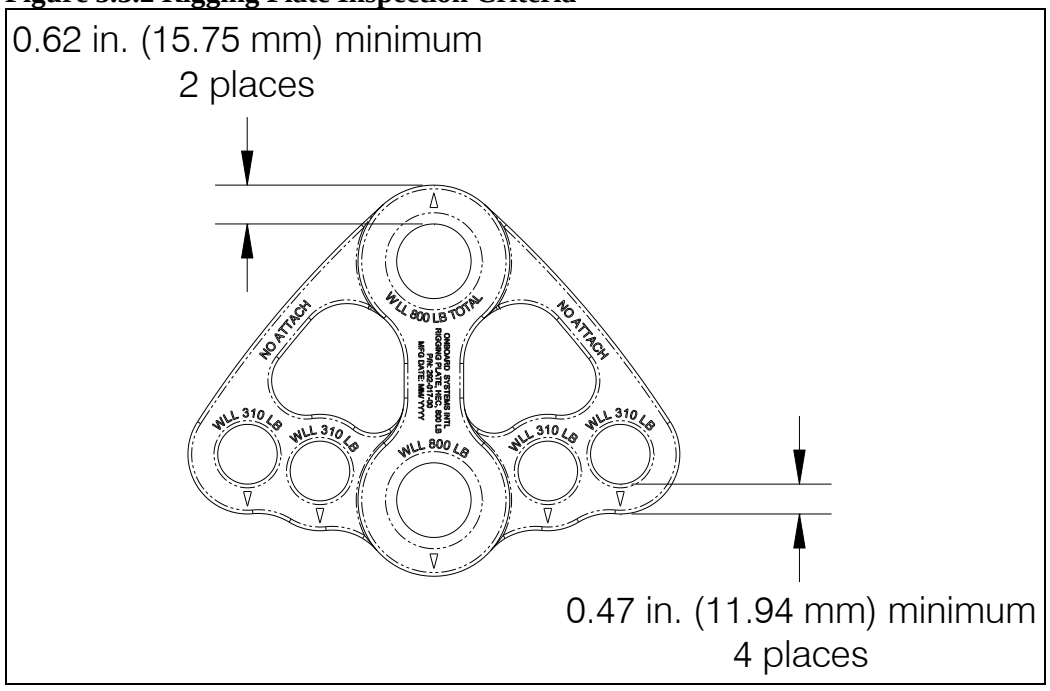
Carefully inspect detail parts in accordance with the instructions in Table 5.3.2. Inspect the parts in a clean, well-lighted room using standard dimensional measuring tools and visual methods. Repair parts found within inspection limits. Replace any part found beyond limits.

Table 5.3.2 Long Line Kit Inspection Criteria – Metallic Components

Seq.	Component	Inspection Criteria and Limit	Repair Action	Finish
1.	Load Ring (50.1, integral to Y-rope Assembly)	Wear on inside of ring – minimum thickness of cross section of ring - 0.50 in. (12.7 mm)	Blend at 10:1 ratio as required to provide smooth transitions.	N/A
2.	Carabiner (51)	Nicks, dents, scratches, corrosion – 0.020 in. (0.127 mm) deep	Blend at 10:1 ratio as required to provide smooth transitions.	N/A
		Proper engagement of latching mechanism, 3-stage opening action should be free of any binding that may be an indication of deformation.	None.	N/A
3.	Rigging Plate (54)	Nicks, dents, scratches, corrosion – 0.020 in. (0.127 mm) deep	Glass bead blast at less than 30 PSI (2.11 KGF/CM^2) to remove corrosion.	Passivate per AMS-QQ-P-35 or ASTM A967
		Wear on inside diameter of holes for attachment to long line and loads. – See Figure 5.3.2	None.	N/A
4.	Carabiner (55.1, integral to Lanyard)	Nicks, dents, scratches, corrosion – 0.020 in. (0.127 mm) deep	Blend at 10:1 ratio as required to provide smooth transitions.	N/A
		Proper engagement and operation of latching mechanism, 3-stage opening action should be free of any binding that may be an indication of deformation.	None.	N/A
5.	Snap Hook (55.2, integral to Lanyard)	Nicks, dents, scratches, corrosion – 0.020 in. (0.127 mm) deep	Blend at 10:1 ratio as required to provide smooth transitions.	N/A
		Proper engagement and operation of gate mechanism, 2-stage opening action should be free of any binding that may be an indication of deformation.	None.	N/A

5.3 Long Line Kit Inspection continued

Figure 5.3.2 Rigging Plate Inspection Criteria



5.4 Cargo Hook Overhaul Schedule

Time Between Overhaul (TBO): 1000 hours of external load operations or 5 years, whichever comes first.

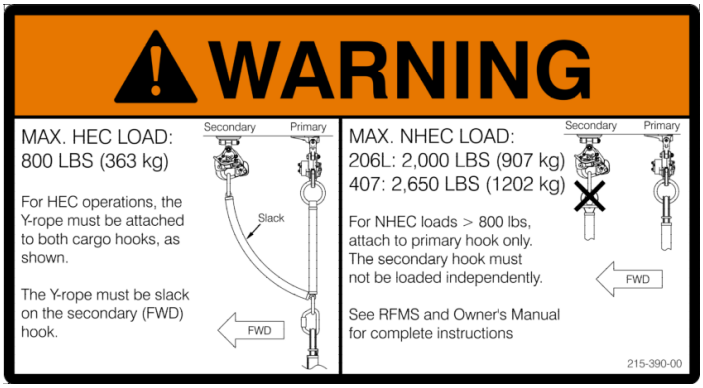
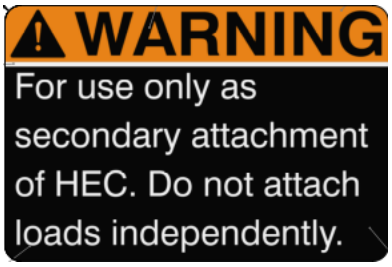
*Hours of external load operations should be interpreted to be **(1)** anything is attached to the cargo hook (whether or not a useful load is being transported) and **(2)** the aircraft is flying. If these conditions are **NOT** met, time does **NOT** need to be tracked.*

Overhaul the cargo hooks per CMM 122-015-00. Contact Onboard Systems for guidance to locate authorized overhaul facilities.

Section 11
Placards and Markings
11.1 Placards

The Dual Cargo Hook System includes the following placards shown in Table 11.1.

Table 11.1 Dual Cargo Hook System Placards

Placard part number and appearance	Location
Placard P/N 215-390-00 	Installed on the belly of the helicopter, adjacent to the cargo hooks.
Placard P/N 215-393-00 	Installed on the underside of the secondary cargo hook (P/N 528-028-03).
	Installed on the release lever on the cyclic for the primary cargo hook.
	Installed on the release lever on the cyclic for the secondary cargo hook.
	Installed adjacent to the pushbutton switch integrated into the release lever on the cyclic for the secondary cargo hook.

continued

Table 11.1 Dual Cargo Hook System Placards continued

Placard part number and appearance	Location
	Installed adjacent to the circuit breaker (located in circuit breaker panel between pilot and co-pilot seats) for the secondary cargo hook.
	Located on the belly of the helicopter adjacent to the hydraulic hose connection for the primary cargo hook.
	Located on the belly of the helicopter adjacent to the hydraulic hose connection for the secondary cargo hook.

Section 12
Servicing

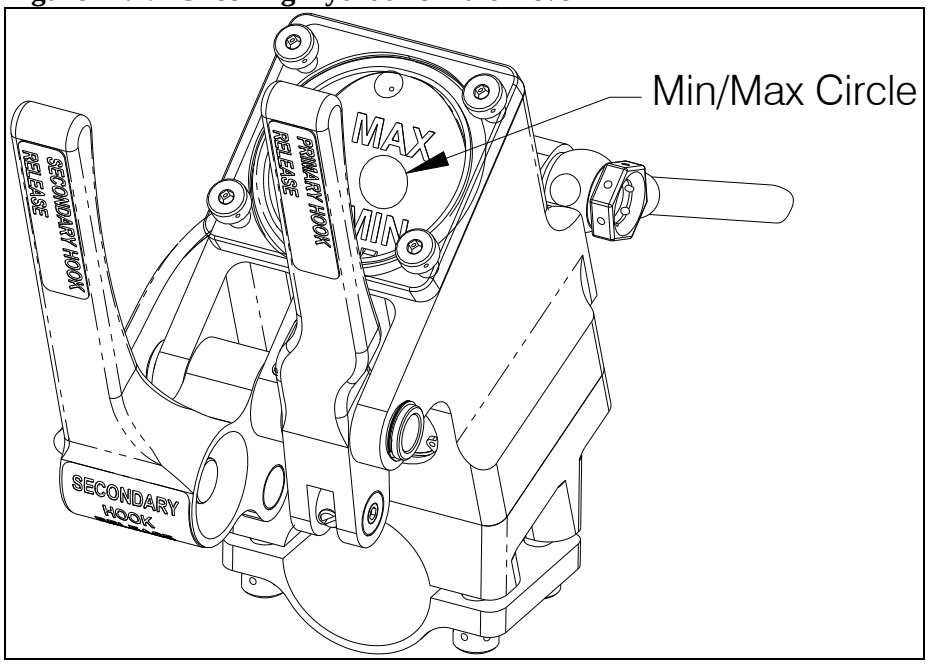
12.1 Maintenance of the Hydraulic Release System

The system is filled with fluid at installation and does not consume fluid unless it leaks out. If any leakage is detected, the fluid level should be immediately checked.

To check the fluid level:

1. Position the cyclic such that the reservoir is level.
2. The Dual Master Cylinder features a transparent lid through which the fluid level can be checked. Hydraulic fluid level must be within the MIN/MAX circle on the baffle surface (see Figure 12.1).
3. If necessary, remove lid and add hydraulic fluid as required (MIL-PRF-87257 hydraulic fluid is supplied with the system and is recommended, MIL-PRF-5606 fluid is also compatible). When re-installing lid do not over-tighten screws.

Figure 12.1.1 Checking Hydraulic Fluid Level



If leakage is noted around any plumbing fittings, the fittings may be tightened until the leakage quits. If leakage is noted around the pistons in either the master or slave cylinders the leaking cylinder must be repaired. See the instructions for repair in this section.

12.1 Maintenance of the Hydraulic Release System, continued

Master Cylinder Repair

If fluid is leaking around the piston, the only repair is to remove and replace the cup seal and O-ring. The master cylinder must be disassembled, inspected and then re-assembled with new seals.

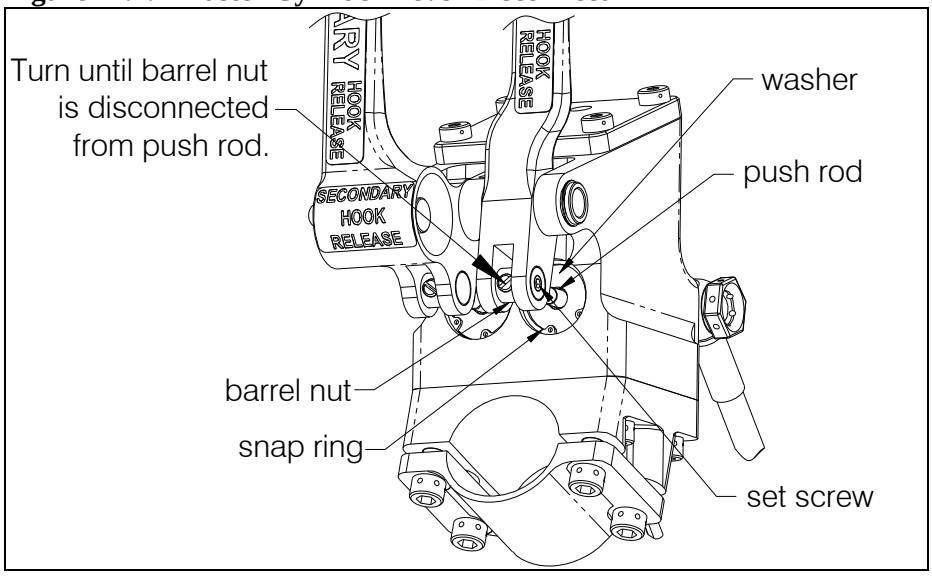
Disassembly:

1. Remove snap ring. Use caution when removing snap ring since the piston is spring loaded against the washer and snap ring. The piston will pop out of the housing when the snap ring is removed. Use the lever to put pressure on the piston while removing snap ring.
2. Loosen the set screw and disconnect barrel nut on lever. See Figure 12.1.2.
3. Remove the piston and spring. See Figure 12.1.3 for parts breakdown.
4. Inspect the master cylinder bore for scratches. If any scratches or gouges are visible in the bore, the master cylinder must be replaced.

Re-assembly

1. If the bore condition is acceptable, replace the cup seal and O-ring on the piston assembly. Orient the cup seal as shown in Figure 12.1.4. Stretch seals over piston into grooves.
2. Lubricate the piston seals and cylinder bore generously with hydraulic fluid.
3. Place the spring in the cylinder bore.
4. Pass the push rod through the washer.
5. Thread the push rod into the barrel nut until approximately 1/16" of thread is visible through the opposite side of the barrel nut.
6. Insert the small spring into the piston assembly and insert the piston assembly into the master cylinder bore using a firm rocking motion.
7. Use the lever to compress the spring and hold the piston in place.
8. Use snap ring pliers to install the snap ring.
9. Secure push rod threads by tightening set screw.

Figure 12.1.2 Master Cylinder Lever Disconnect



12.1 Maintenance of the Hydraulic Release System, continued

Master Cylinder Repair continued

Figure 12.1.3 Master Cylinder Piston Removal

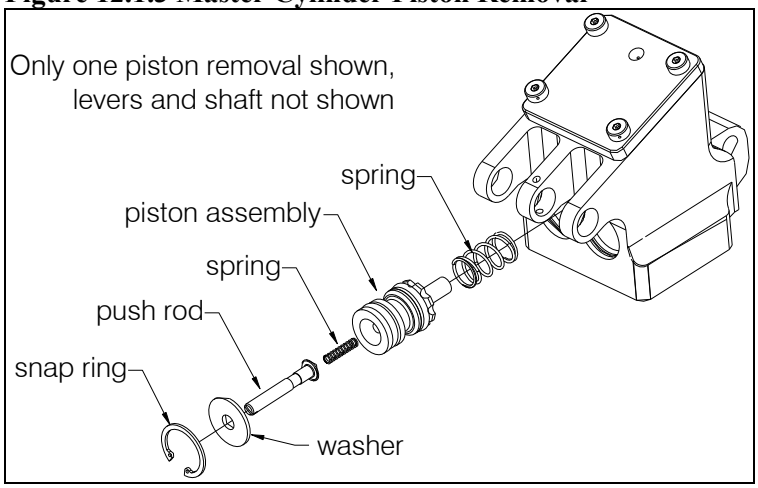
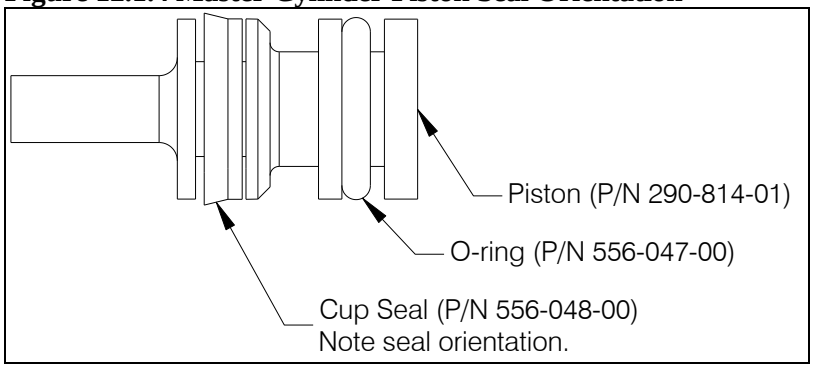


Figure 12.1.4 Master Cylinder Piston Seal Orientation



Slave Cylinder Repair

If the slave cylinder is leaking fluid around the piston rod, the only repair possible is to remove and replace the quad ring.

Disassembly:

1. Remove cap, piston, and seal (see Figure 12.1.5).
2. Inspect bore of slave cylinder for scratches or gouges. If any are present the assembly must be replaced.
3. Remove bushing in cap by pressing it out.
4. Remove quad ring by stretching it over the piston.

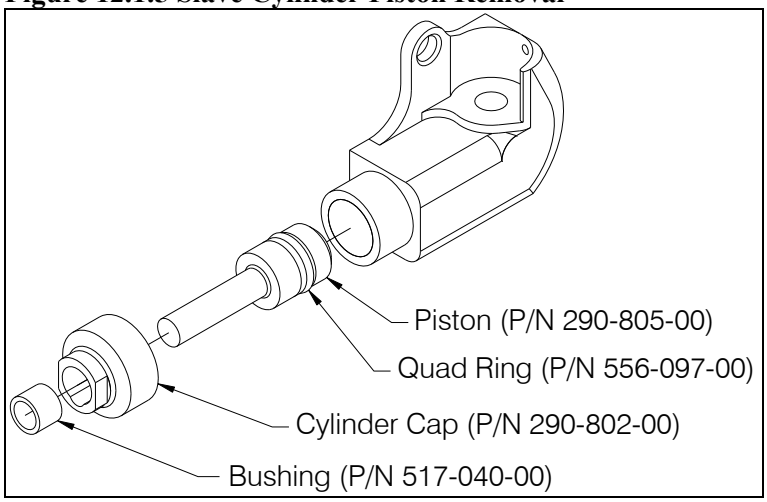
Re-assembly:

1. Press new bushing into cap.
2. Stretch new quad ring over piston into groove.
3. Clean and lubricate cylinder bore and piston seal with hydraulic fluid.
4. Insert piston into cylinder taking care not to damage edges of quad ring.
5. Screw on cap and torque to 50-60 in-lbs.

12.1 Maintenance of the Hydraulic Release System, continued

Slave Cylinder Repair continued

Figure 12.1.5 Slave Cylinder Piston Removal



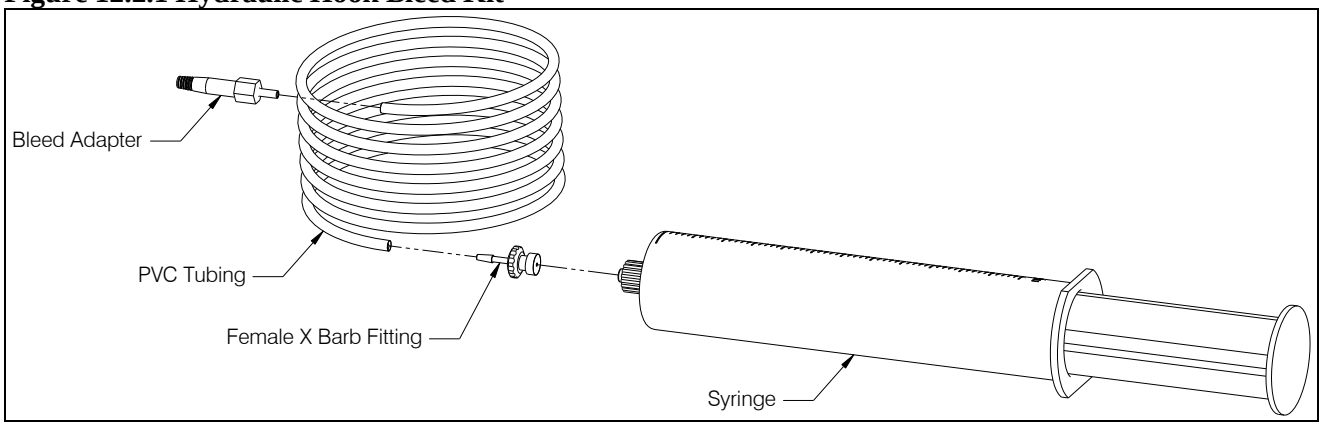
12.2 Bleeding Hydraulic System

Filling and bleeding requires two persons, one to inject hydraulic fluid through the system and the other to observe the reservoir. Following is the procedure.

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 hook kits. Assemble the bleed kit by press fitting each component as shown.

Figure 12.2.1 Hydraulic Hook Bleed Kit



2. Place an absorbent towel under the master cylinder.

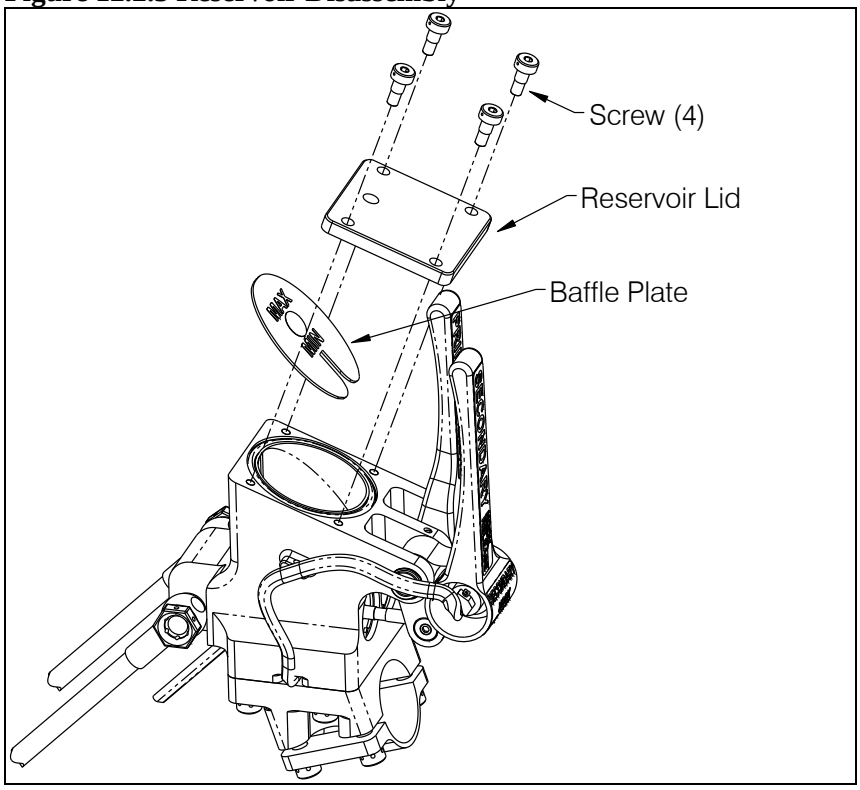
NOTICE

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

12.2 Bleeding Hydraulic System, continued

3. Connect each slave cylinder assembly plumbing to the respective master cylinder assembly plumbing if not already done.
4. Remove screws, reservoir lid, and baffle from the master cylinder reservoir as shown in Figure 12.2.3.

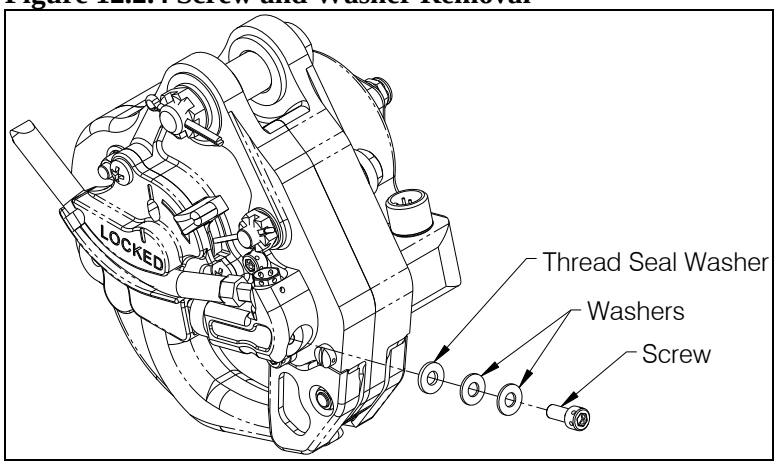
Figure 12.2.3 Reservoir Disassembly



12.2 Bleeding Hydraulic System, continued

5. Remove the screw, two washers, and thread seal washer from either cargo hook slave cylinder, see Figure 12.2.4.

Figure 12.2.4 Screw and Washer Removal



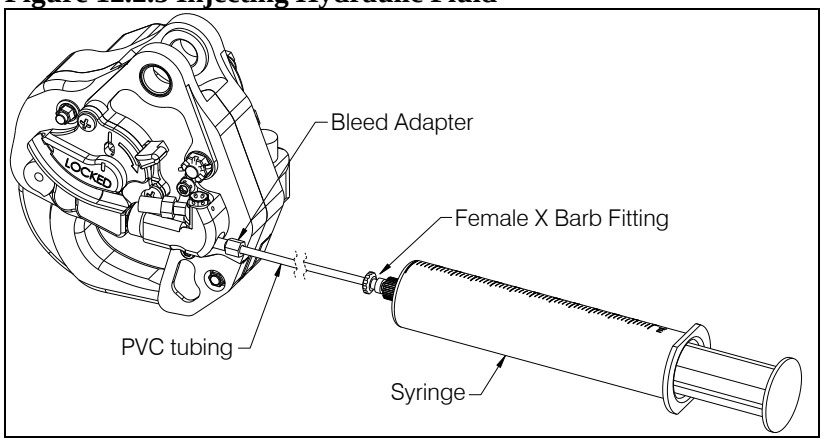
6. Fill the syringe with approximately 35 cc of hydraulic fluid and purge any remaining air in the syringe and tubing. Screw the end of the bleed adapter into the screw hole on the slave cylinder to create a tight seal. See Figure 12.2.5.

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 12.2.5 Injecting Hydraulic Fluid



12.2 Bleeding Hydraulic System, continued

8. Continue to force fluid into the master cylinder reservoir until the reservoir is about to the top of the divider.

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. Have the washers, thread seal washer, and screw ready to install as fluid will drain from the screw hole when the bleed adapter is removed.
10. Remove the bleed adapter from the screw hole and promptly re-install the washers, thread seal washer, and screw, see Figure 12.2.4.
11. Allow the system to rest for several minutes. This will allow any air to rise through the system.
12. 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

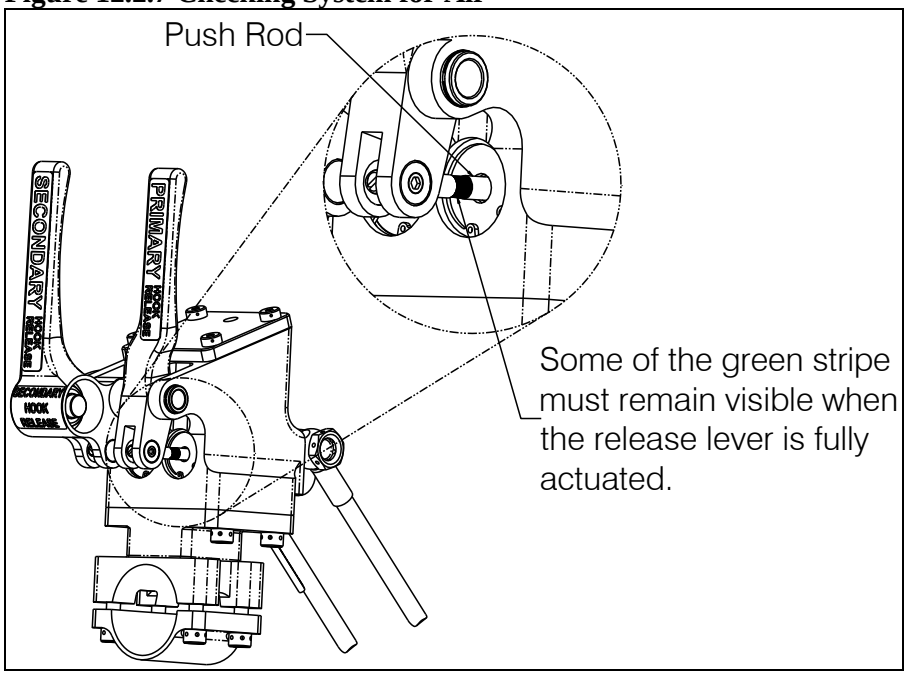
Pull the lever very slowly! When the reservoir is not baffled and capped, a hard pull will cause fluid to erupt over the edge of the reservoir.

13. Repeat steps 5 – 12 for the other cargo hook.

12.2 Bleeding Hydraulic System, continued

14. Check the system for air by actuating the lever firmly until it bottoms out. Check the push rod position (see Figure 12.2.7). If some of the green ring on the push rod is visible, proceed to step 13. If some of 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 – 12.
15. After the system is properly bled, verify that the reservoir is approximately half full of hydraulic fluid. Fluid should be visible above the baffle.
16. Re-install the baffle plate and the reservoir lid.
17. Check the system for proper operation. Fully actuate the secondary release lever (left lever), the secondary (aft) cargo hook must open and the lever must have a firm feel. Fully actuate the primary release lever (on the right), the primary (forward) cargo hook must open and the lever must have a firm feel.
18. 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.

Figure 12.2.7 Checking System for Air



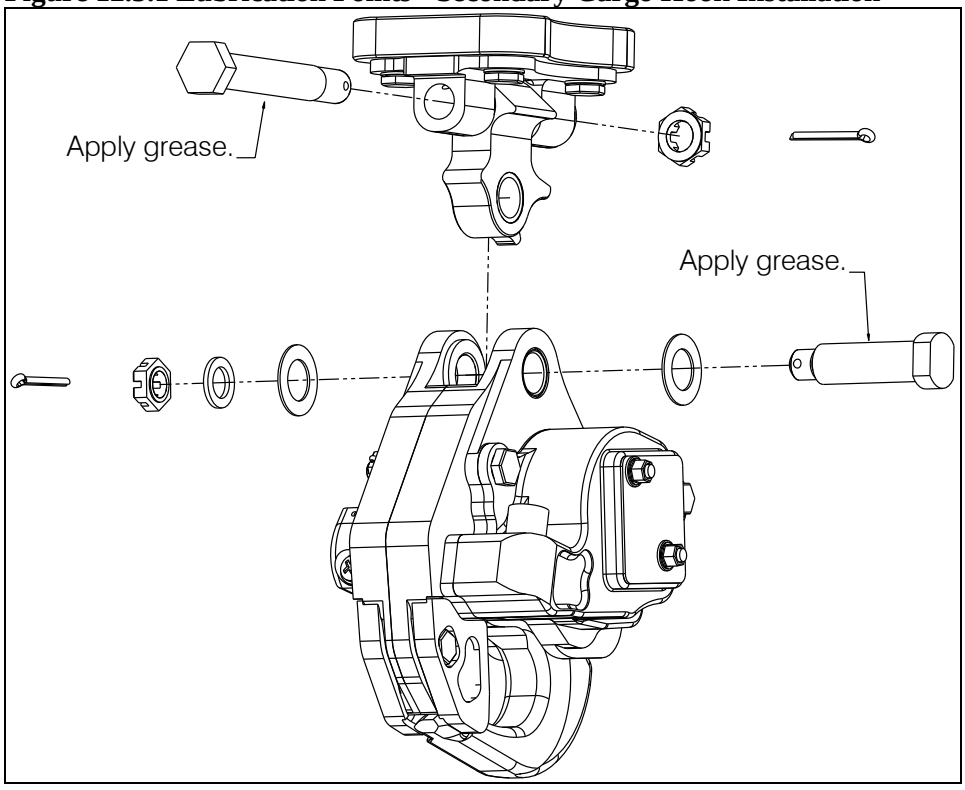
12.3 Lubrication Information

Lubrication of Cargo Hook and linkage pivot points is recommended every 500 hours of external load operations.

Lubricate the pivot points illustrated in Figure 12.3.1, Figure 12.3.2 and Figure 12.3.3. Recommended lubricants are AeroShell 7 (MIL-PRF-23827) or Mobilgrease 28 (MIL-PRF-81322).

For re-assembly after lubrication, tighten castellated nuts to finger tight until fully seated then rotate to previous castellation if necessary to install cotter pin.

Figure 12.3.1 Lubrication Points - Secondary Cargo Hook Installation



12.3 Lubrication Information continued

Lubricate the primary cargo hook suspension assembly at points noted in Figure 12.3.1 and Figure 12.3.2. Refer to Sections 25.16 and 25.17 for removal and re-installation instructions for the cargo hook and suspension assembly. .

Figure 12.3.2 Primary Cargo Hook Pivot Point Lubrication

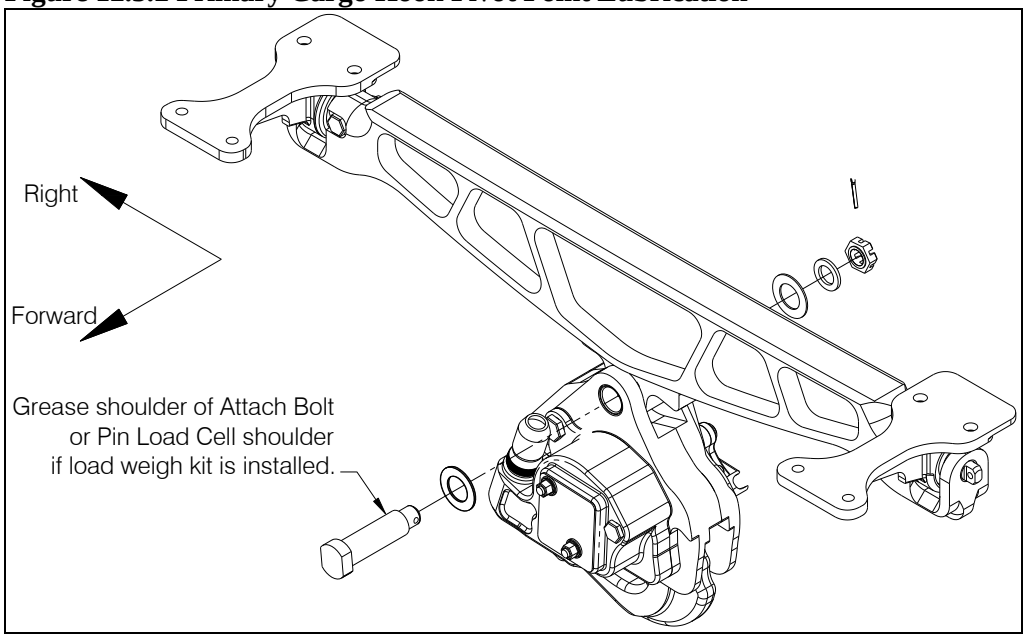
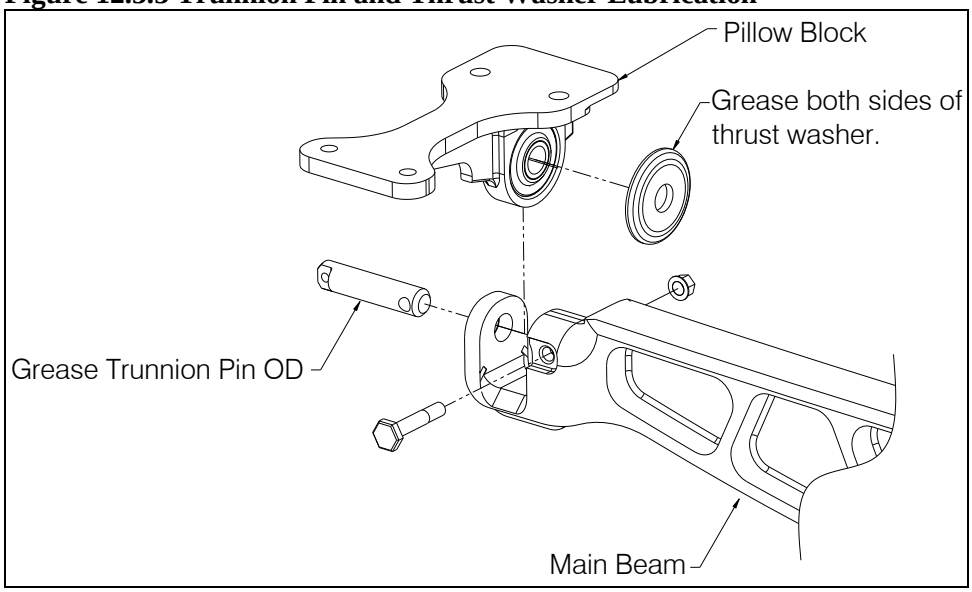


Figure 12.3.3 Trunnion Pin and Thrust Washer Lubrication



12.3 Lubrication Information, continued

Hook Corrosion Prevention

In marine or other corrosive environments the life of the cargo hook can be increased by periodically treating with a corrosion preventative compound such as ACF-50. Spray exterior of hook with corrosion preventative compound and wipe off excess with a rag.

The amount and frequency of application will vary depending on climate. In dry dusty environments it is not recommended to treat corrosion since the oily residue on the inside of the cargo hook that cannot be wiped off could attract and retain dust and sand. In addition, corrosion is not likely to be a problem in these conditions. For offshore or coastal operations, treatment could be done every two weeks.

Section 25
Equipment and Furnishings

25.2 Description

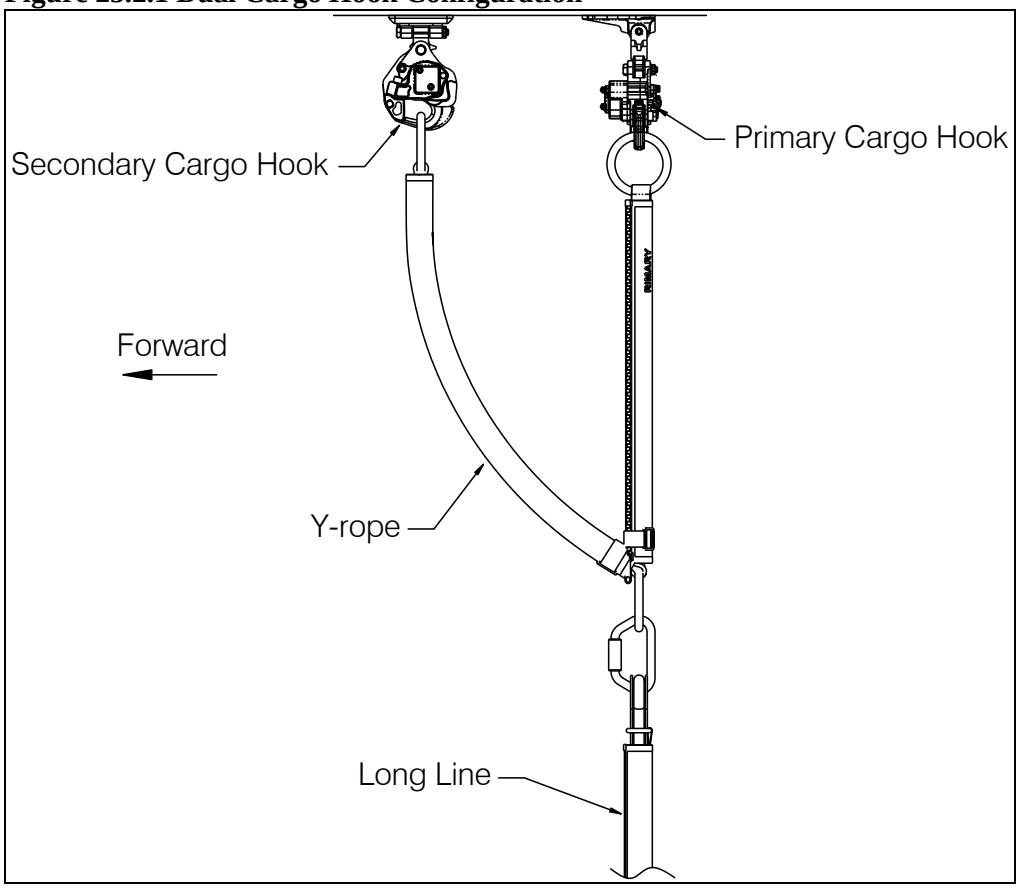
The dual cargo hook system is comprised of:

1. Dual cargo hooks to which the supplied Y-rope is attached for carrying of HEC. These cargo hooks are referred to as the primary cargo hook and secondary cargo hook. The Y-rope loads the primary cargo hook with a slack leg attaching to the secondary cargo hook. In the event of an inadvertent release from the primary cargo hook, the secondary cargo hook acts as a reserve means of retaining the HEC.

   The primary cargo hook attaches to the original Bell type certified location on the aircraft and this installation is rated for 2650 lbs and the secondary cargo hook attaches to the secondary hardpoint approved under this STC. The secondary cargo hook is approximately 12 inches forward of the primary cargo hook and is rated for 800 lbs HEC.

   Each cargo hook is attached to the respective hardpoint through a structural linkage referred to as an Attach Point Assembly.

Figure 25.2.1 Dual Cargo Hook Configuration

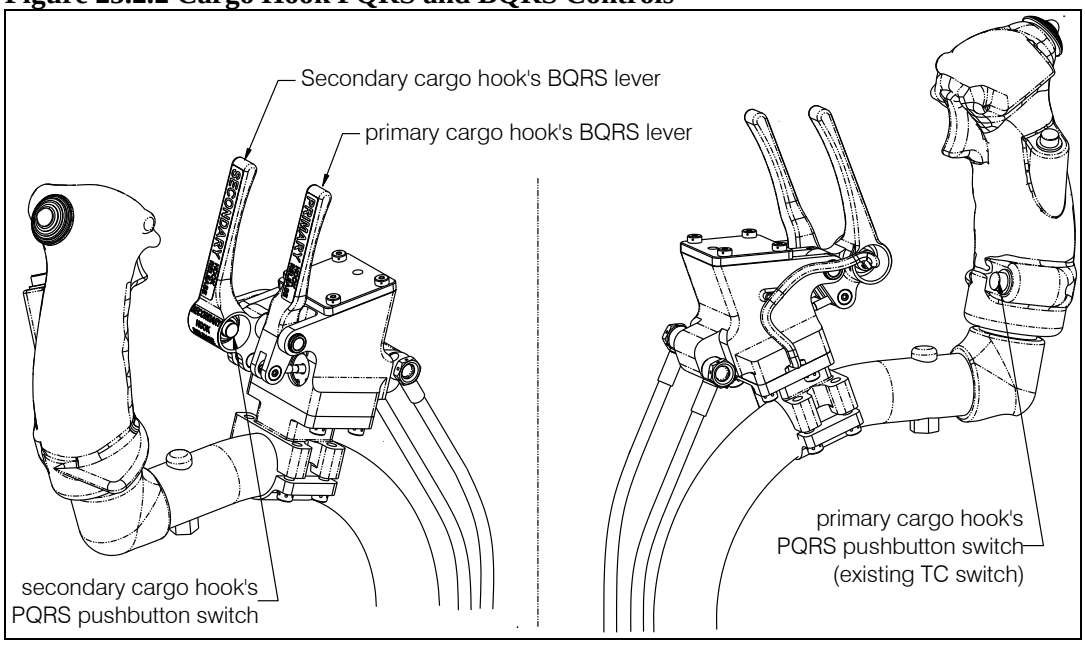


25.2 Description continued

2. A primary backup quick release sub-system (PQRS) and a backup quick release sub-system (BQRS) for each cargo hook with the controls for each sub-system located on the cyclic (see Figure 25.2.2). The BQRS release levers are part of the hydraulic release system's Dual Master Cylinder Assembly which is shown in the figure below. The Dual Master Cylinder Assembly is connected to the cargo hooks through independent hose assemblies with disconnects on the belly of the aircraft. Actuating a lever results in fluid forced through the hose to a slave cylinder assembly on the cargo hook which extends a piston to unlatch the cargo hook mechanism and release the load.

   A complete independent primary quick release sub-system (PQRS) is included for each cargo hook for the Bell 407 model (the installation on the 206L series requires that the Bell fixed provisions wiring be installed). This system is an electrical system with the release switch mounted within the dual master cylinder assembly on the cyclic (see Figure 25.2.2). Each system also includes the circuit breaker, an internal wire harness and an external wire harness with connectors located on the belly of the aircraft. The secondary cargo hook's PQRS includes a relay located under the pilot's seat.

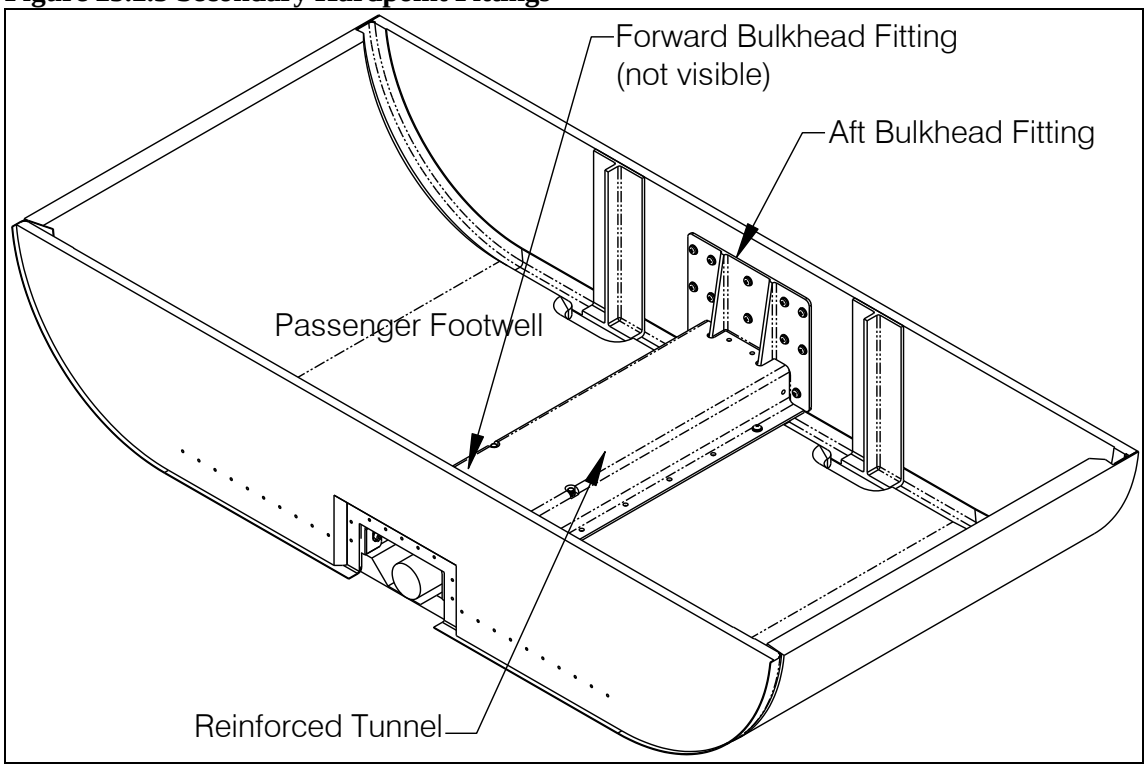
Figure 25.2.2 Cargo Hook PQRS and BQRS Controls



25.2 Description continued

3. Structural secondary hardpoint parts installed in the center of the passenger foot well. These hardpoint parts provide the mounting holes for the secondary cargo hook attach point assembly and transfer the external loads to the airframe.

Figure 25.2.3 Secondary Hardpoint Fittings



4. The optional load weigh system provides the pilot with the weight of the external load being carried on the cargo hook. It includes a pin load cell, internal electrical harness, and load weigh indicator in the cockpit. When this kit is installed the pin load cell assembly replaces the cargo hook attach bolt at the primary cargo hook.

25.5 Component Weights

The weight and cg of the systems and select components are listed in Table 25.5.1 and Table 25.5.2.

Table 25.5.1 Dual Cargo Hook System Weights and CGs – 407 model

Item	Weight (Lbs.)	Long. Arm (in.)	Lat. Arm (in.)
Primary Cargo Hook Installation*	11.6	120.0	0.0
Secondary Cargo Hook Installation (kit P/N 200-460-00)	3.8	107.0	0.0
Secondary Hardpoint Fittings	9.0	107.4	0.0
Dual Master Cylinder w/ Plumbing	1.9	54.0	14.0**
Miscellaneous kit components (slave cylinder plumbing, electrical harnesses, hardware, connector bracket, etc.)	1.5	87.0***	-5.0***
Total	**27.8 lbs (12.6 kg)**	**107.8**	**0.7**

*Includes cargo hook, beam, pillow blocks, internal fittings and hardware.

**Depends on RH or LH controls installation, RH installation is shown.

***Estimated.

Table 25.5.2 Dual Cargo Hook System Weights and CGs – 206L series model

Item	Weight (Lbs.)	Long. Arm (in.)	Lat. Arm (in.)
Primary Cargo Hook Installation*	9.3	120.0	0.0
Secondary Cargo Hook Installation (kit P/N 200-460-00)	3.8	108.0	0.0
Secondary Hardpoint Fittings	9.0	109.5	0.0
Dual Master Cylinder w/ Plumbing	1.9	54.0	14.0
Miscellaneous kit components (slave cylinder plumbing, electrical harnesses, clips, connector bracket, etc.)	1.5	87.0**	-5.0**
Total	**25.5 lbs (11.6 kg)**	**107.6**	**0.8**

*Includes cargo hook, beam, pillow blocks and hardware (does not include internal fittings, these are provided by Bell).

**Estimated.

The weights of the long line kit components with a 100 foot long line are included in Table 25.5.3. The long line is attached to the primary cargo hook at station 120.0.

Table 25.5.3 Long Line Kit Weights and CGs

Item	Weight Lbs. (kg)
Y-rope (P/N 490-019-00)	3.6 (1.63)
Carabiner (P/N 530-031-00) Qty 2	0.7 (0.32)
Rigging Plate (P/N 292-017-00)	1.8 (0.82)
Long Line, 100 ft (P/N 490-015-10)	16.1 (7.28)
Weight Bag (P/N 490-017-00)	27.1 (12.30)
Lanyard (P/N 490-018-00)	3.3 (1.47)
Total Kit Weight	**52.5 (23.8)**

25.12 Storage Instructions

For temporary storage the master cylinder must be stored with the reservoir lid up. The lid contains an air vent that will allow hydraulic fluid to drain out if left inverted. If long term storage or shipping must be done where the orientation of the master cylinder cannot be controlled, either drain the reservoir or place a piece of tape or similar over the air vent to prevent leakage. If draining before storage, remove the hose attached to the master cylinder and drain it as well. Seal the hydraulic parts in a plastic bag for shipping or storage to prevent dirt contamination. The slave cylinder end needs no special handling.

Clean the exterior components of the cargo hook system thoroughly of excess dirt and grease with a rag before packaging. Refer to CMM 122-015-00 for storage instructions for the Cargo Hook. Package the components in a suitable fiberboard box and cushion the unit to prevent shifting. Seal the fiberboard box with tape and mark the box with the contents and date of packaging.

Clean and dry the long line kit components (Y-rope, longline, and lanyard assemblies) thoroughly before storage. To clean the rope and web slings use mild soap and water and a sponge, a hard bristle brush may damage the webbing. Alternatively soak the lines in mild soap and water for a short period. After cleaning, rinse thoroughly and allow to completely dry before storing.

Store the Y-rope, long line, and lanyard assemblies in their bags in a cool, dry storage area.

25.15 Troubleshooting

Table 25.15.1 is provided with the intention of isolating the cause of malfunctions within the system. Sections 25.16 and 25.17 include instructions for removing and replacing defective components. Refer to the appropriate Bell maintenance instructions for guidance on procedures relating to parts that interface with these kits.

Table 25.15.1 Troubleshooting

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
Cargo hook does not operate electrically or manually.	Defective internal mechanism.	Remove and replace cargo hook (see sections 25.16 and 25.17) or repair per CMM 122-015-00.
Cargo hook does not operate electrically, hydraulic release operates normally.	Open electrical circuit, faulty wiring, circuit breaker, relay, switch or solenoid.	Disconnect harness from electrical connector on cargo hook. Using multi-meter, check for 3.0 to 4.0 ohms between pins A and B of electrical connector. If open indication is obtained, remove and replace cargo hook (see sections 25.16 and 25.17) or repair per CMM 122-015-00.
Cargo hook operates electrically, but not manually.	Leaks in hydraulic hose system. Air in hydraulic hose system. Jammed slave cylinder.	Check for leaks in hydraulic hose system and correct defects if found. Bleed hydraulic system per this manual. Remove slave cylinder from cargo hook and check that the piston extends when the release lever on the cyclic is actuated. Repair cargo hook per CMM 122-015-00.
Load beam fails to re-latch after being reset.	Defective latch mechanism.	Remove and replace cargo hook (see sections 25.16 and 25.17) or repair per CMM 122-015-00.
Force required to release a cargo hook with lever on the cyclic exceeds 14 lbs.	Friction in internal mechanism or defective hydraulic system.	Remove slave cylinder from hook and manually operate master cylinder. If operation feels free and force is less than 5 lbs. remove and replace cargo hook (see Section 25.16 and 25.17) or repair per CMM 122-015-00.
Hydraulic fluid leaks at hose fittings.	Loose fittings.	Tighten fittings. Check fluid level in reservoir. Bleed hydraulic system per Section 12.2.
Hydraulic fluid leaks around master or slave cylinder pistons.	Leaking seals	Replace master or slave cylinder assembly or repair per Section 12.
Cargo hook fails to open or re-lock properly.	Friction in internal mechanism.	Remove and replace cargo hook (see Sections 25.16 and 25.17) or repair per CMM 122-015-00.
Circuit breaker opens when cargo hook is energized.	Short in the system, faulty wiring, circuit breaker or solenoid.	Check for shorts to ground along length of wire harness runs (see note 1). Check solenoid resistance (refer to CMM 122-015-00), repair or replace defective parts.
Load Weigh Indicator does not power up.	Faulty wiring or circuit breaker.	Check the circuit breaker and wiring. If this doesn't help, remove and replace indicator per sections 25.16 and 25.17.

Table 25.15.1 Troubleshooting continued

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
The displayed load on the Load Weigh Indicator is incorrect.	Incorrect calibration code.	Ensure the correct calibration code has been entered (see Note 2).
C-39 model indicator only: Displayed load is not stable.	Dampening level is too low.	Adjust the dampening level to a higher number (see Note 3).
C-39 model indicator only: Indicator displayed load takes too long to change the reading when the load is changed.	Dampening level is too high.	Adjust the dampening level to a lower number (see Note 3).
Indicator does not change with changing hook loads.	Defective load cell, indicator failure or damaged wire harness.	Check for damaged wire harness (see note 1), remove and replace wire harness assembly or load cell (see sections 25.16 and 25.17).

Table 25.3 Notes:

1. Checking Wire Harnesses.

For the primary cargo hook's electrical release system on the 206L series the Bell type certificate installed cargo hook wiring is used, refer to the Bell maintenance documentation for this wiring. On the 407 model, the configuration may be the original Bell provided wiring or installed under this STC or STC SR01943SE. These wiring configurations are identical.

As appropriate, before working on a circuit, e.g. - inspection, removal-installation of components, check that the aircraft system is not energized:

- External power connector is not supplied
- Further precaution: remove the circuit breaker(s) from the corresponding circuits.

The wire harnesses are routed with and secured to existing wire bundles and are located approximately as shown below. Inspect for general condition and chafing along length of wire runs. See Figure 25.15.2 and Figure 25.15.3 for electrical schematics.

Figure 25.15.1 Wire Harness Routing

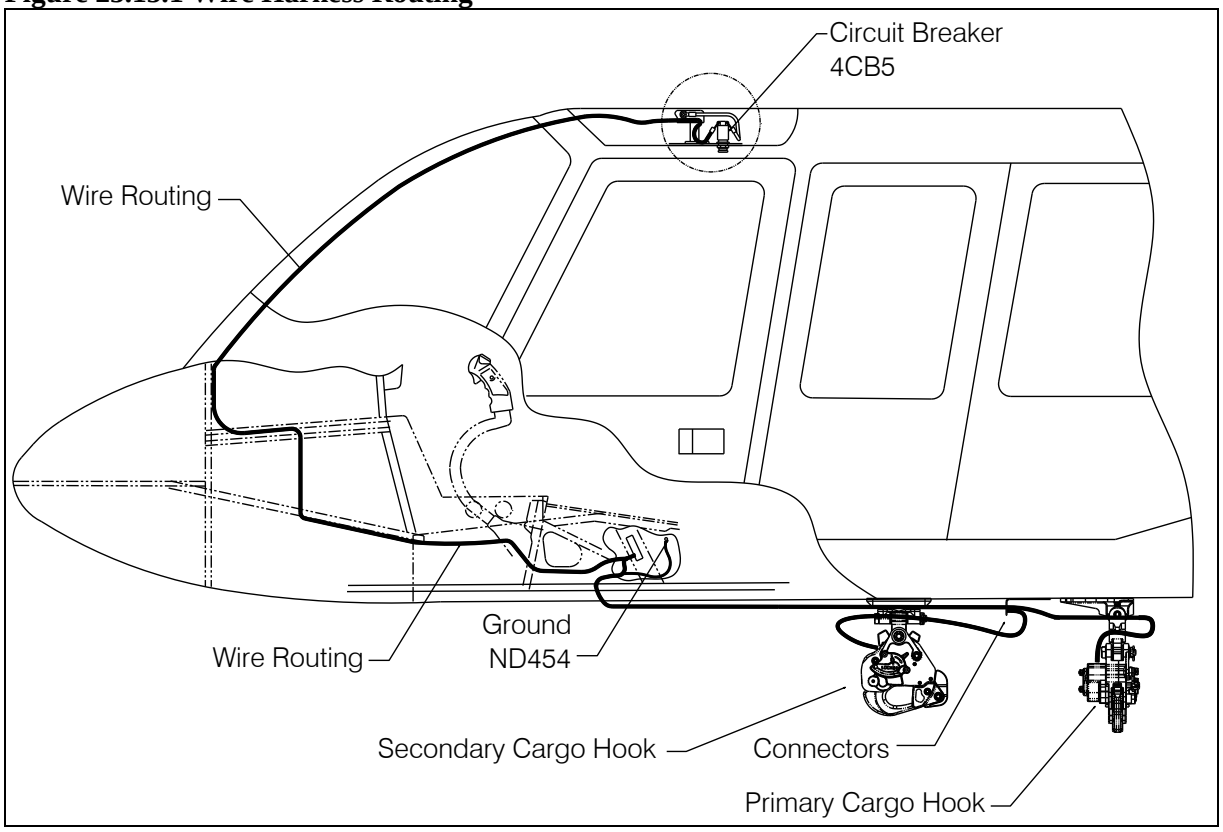


Figure 25.15.2 Electrical Schematic – Primary Cargo Hook

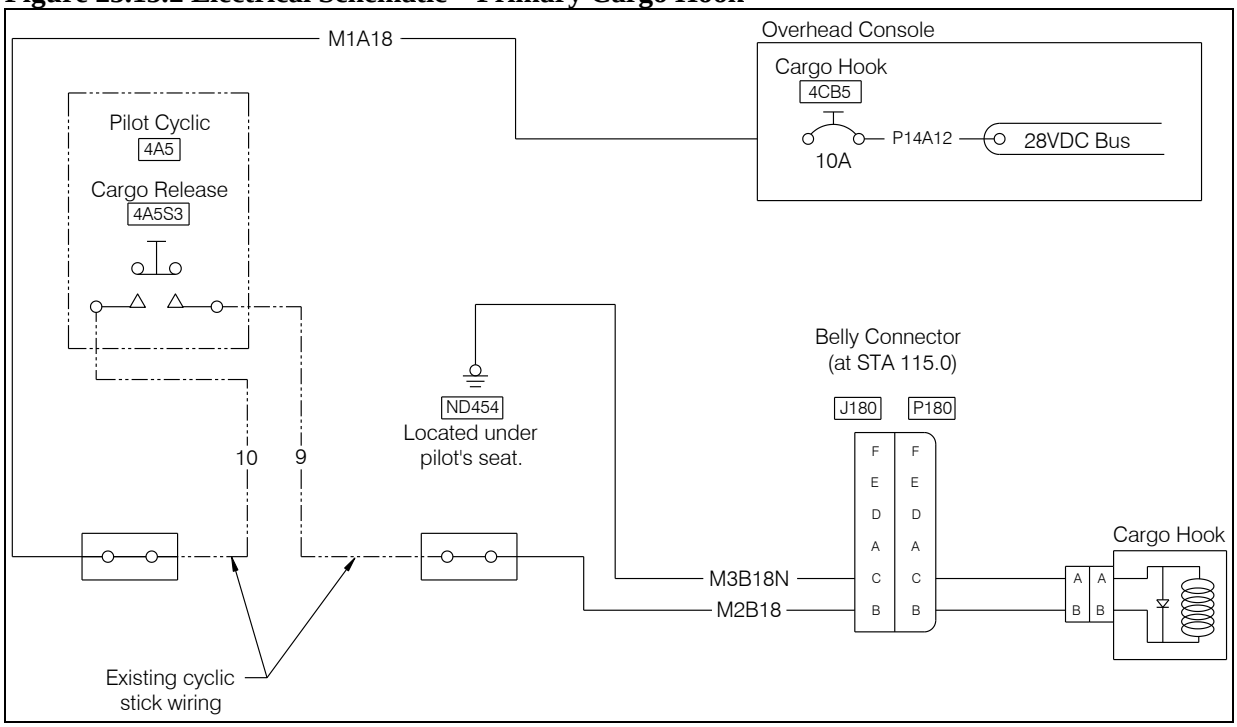


Figure 25.15.3 Electrical Schematic - Secondary Cargo Hook

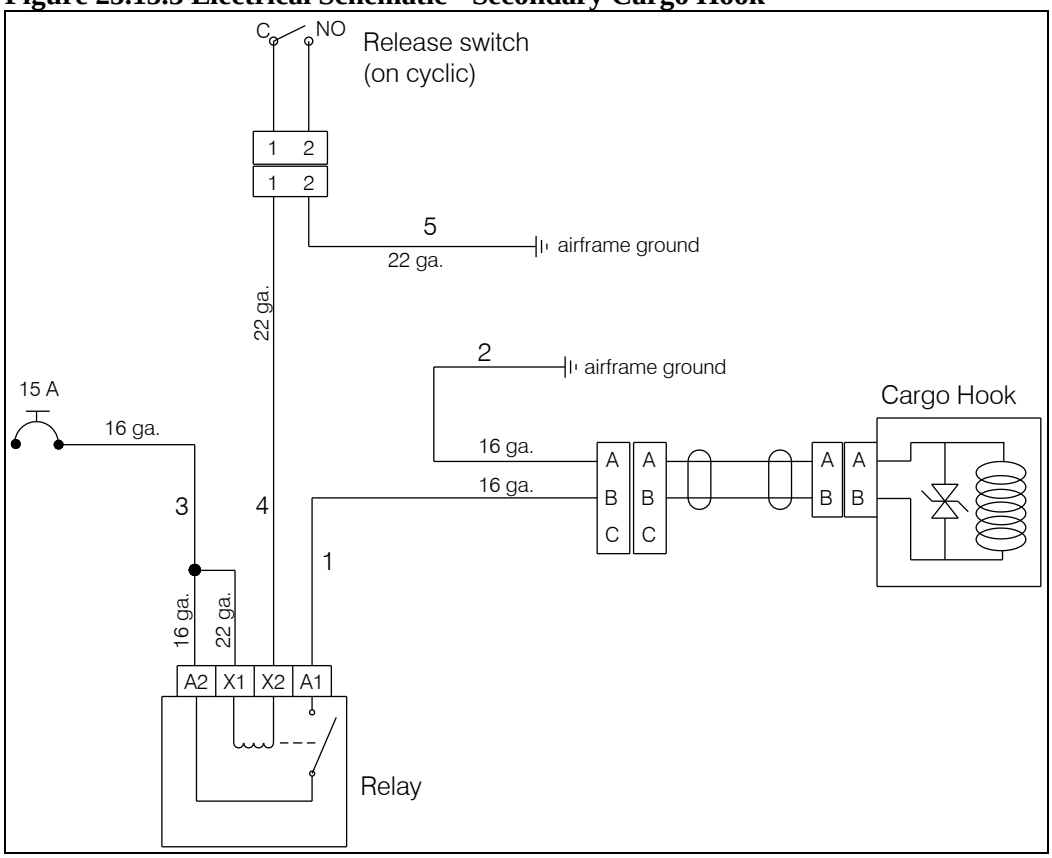


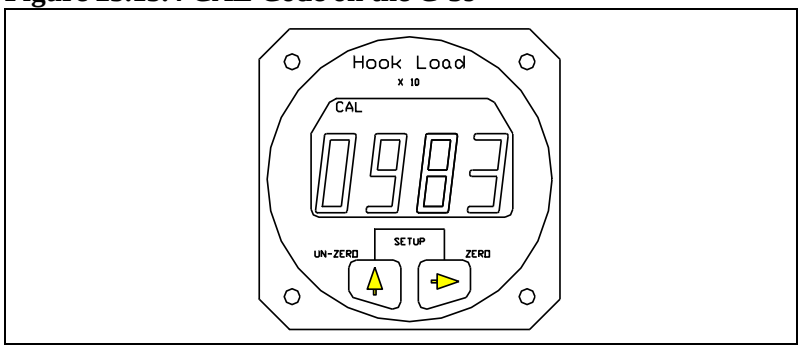
Table 25.3 Notes continued:

2. Checking the calibration code

For the C-39 model indicator (P/N 210-095-00 or 210-095-02):

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 25.15.4 CAL Code on the C-39



This code should match the code printed on the tag attached to the load cell cable. If this code does not match, contact Onboard Systems for further guidance.

For the C-40 model indicator (P/N 210-293-00 or 210-293-01):

Enter the C-40 Settings menu: from the Load screen rotate the knob and the Settings introduction screen will appear (shown below).

Figure 25.15.5 C-40 Settings Screen

Press the knob again to enter the Settings menu. To scroll through the Settings menu, rotate the knob right to advance to “Cal Code” and press the knob to view or change this setting.

To change the calibration code, rotate the knob to the left to decrease the value or to the right to increase the value. If changing the value by a significant amount, spinning the knob rapidly will increase the rate of change.

Press to select when the correct value is displayed and press and hold the knob to exit the Settings menu. Refer to the Owner’s Manual (manual no. 120-152-00) for the C-40 Indicator for additional information on settings.

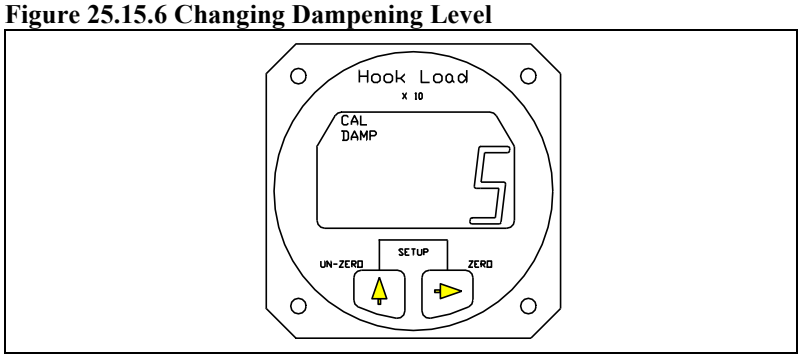
Table 25.3 Notes continued:

3. Adjusting dampening level on the C-39 model indicator:

The C-40 Indicator is designed to provide a stable display thus does not include a dampening function.

On the C-39 with the unit 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 25.15.6 Changing Dampening Level



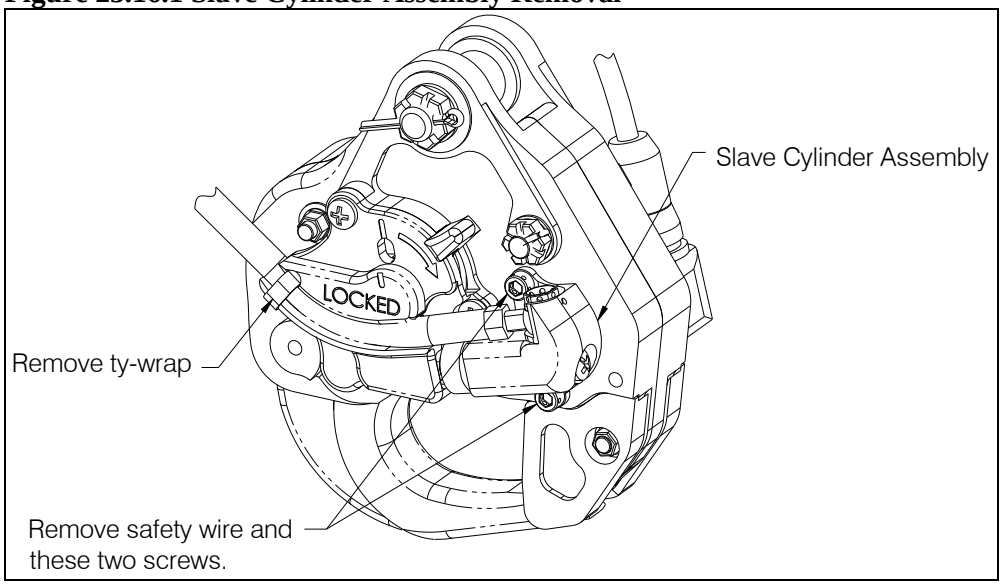
The CAL and the DAMP legend is turned on and the previously set dampening level is displayed. To return to Run without changing the current dampening level press both the Right and Left buttons at the same time. To change the dampening number, use the Left button to scroll the blinking digit to the desired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

25.16 Component Removal

Cargo Hook Removal

1. Cut and remove safety-wire at the slave cylinder assembly.
2. Remove the slave cylinder assembly by removing two screws (refer to Figure 25.16.1) and associated ty-wrap securing the hose into the groove of the manual release cover.

Figure 25.16.1 Slave Cylinder Assembly Removal



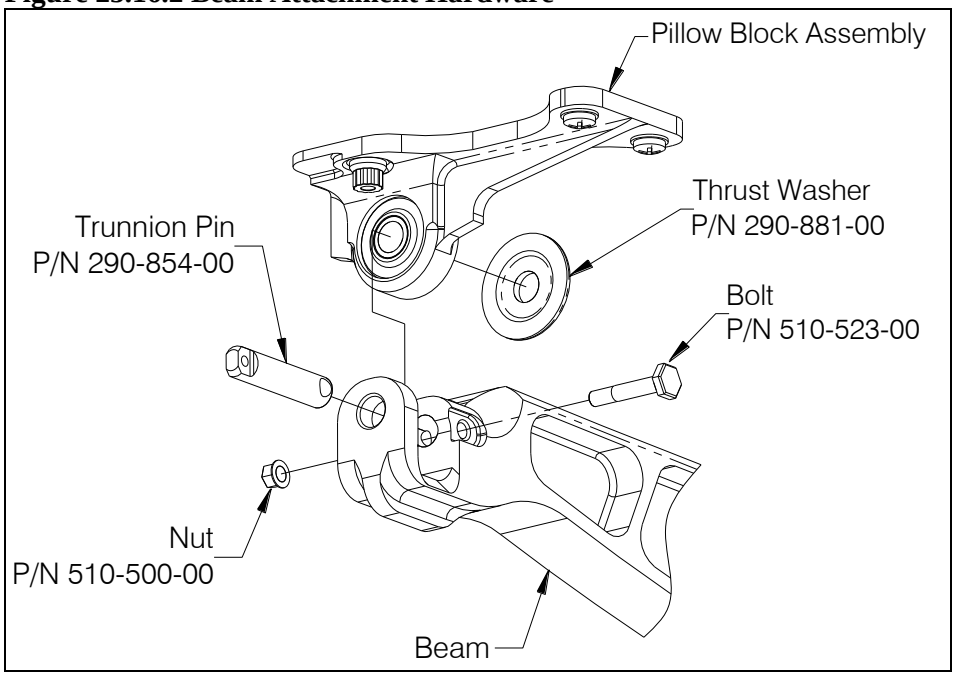
3. Disconnect the electrical release harness connector at the Cargo Hook.
4. Remove the cotter pin (P/N 510-178-00) from the Attach Bolt (P/N 290-332-00) or Pin Load Cell Assembly (eligible for installation at the primary cargo hook).
5. Remove the castellated nut (P/N 510-170-00) from the Attach Bolt.
6. Remove Attach Bolt and washers.
7. Remove the Cargo Hook.

25.16 Component Removal continued

Beam Assembly Removal

1. If cargo hook is installed: disconnect the load cell harness connector (if load cell is installed), electrical release harness connector, and slave cylinder plumbing at their respective connections at the bracket on the belly of the helicopter.
2. At each end of the Beam remove the nut and bolt that retain the Trunnion Pins (refer to Figure 25.16.2).
3. Remove the Trunnion Pins and separate the Beam and Thrust Washers from the Pillow Blocks.

Figure 25.16.2 Beam Attachment Hardware



Pillow Block Assembly Removal

1. Remove the four screws that secure the Pillow Block Assemblies to the aircraft. The aft pairs of screws are secured with nuts that must be accessed from inside the helicopter.

25.16 Component Removal continued

Secondary Cargo Hook Attach Point Assembly Removal

To remove the attach point assembly for the secondary cargo hook the Load Plate must be removed. The bolts securing the Load Plate are accessed from inside the aircraft.

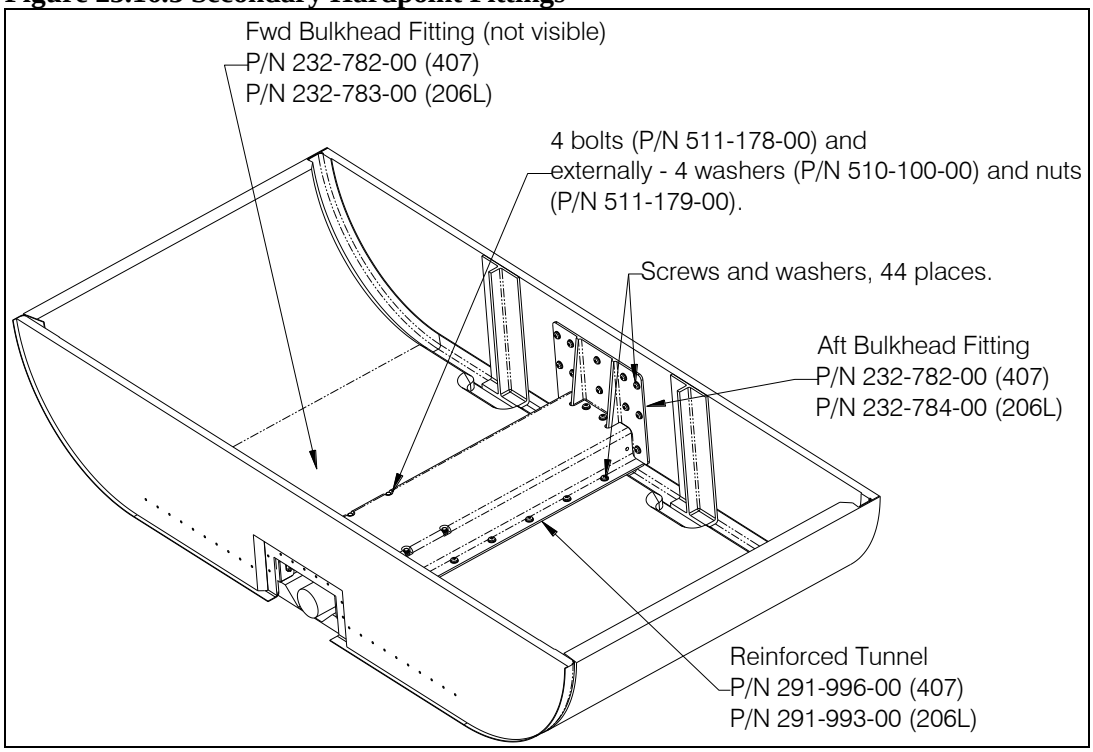
1. Remove cargo hook per the above instructions.
2. Remove the four nuts and washers from the bolts securing the Load Plate to the belly of the aircraft. Refer to Figure 25.17.3.
3. Separate the attach point assembly from the Load Plate by removing the four nuts and washers from the bolts.

Secondary Hardpoint Fittings Removal

The secondary hardpoint fittings support the secondary cargo hook and are installed in the passenger foot well. To remove the secondary hardpoint fittings:

1. Remove the four bolts that go through the Reinforced Tunnel and the belly panel of the aircraft by removing the nuts and washers on the outside of the aircraft, refer to Figure 25.17.3. This will also separate the Load Plate and the secondary Cargo Hook from the aircraft.
2. Remove the screws and washers securing the Reinforced Tunnel to the belly panel and the bulkhead fittings.
3. Remove the screws and washers securing the bulkhead fittings to the bulkheads.

Figure 25.16.3 Secondary Hardpoint Fittings



25.16 Component Removal continued

Slave Cylinder and Plumbing Assembly Removal

1. Disconnect the hose at the quick disconnect fitting at the bracket on the belly of the aircraft.
2. At the secondary cargo hook's Load Plate remove the loop clamp around the hose and harness.
3. Remove the spiral wrap from around the hose and harness.
4. Cut safety wire and remove the two screws that attach the slave cylinder assembly to the cargo hook (ref. Figure 25.16.1).
5. Remove the cable tie that secures the hydraulic hose to the manual release cover of the cargo hook.

25.16 Component Removal continued

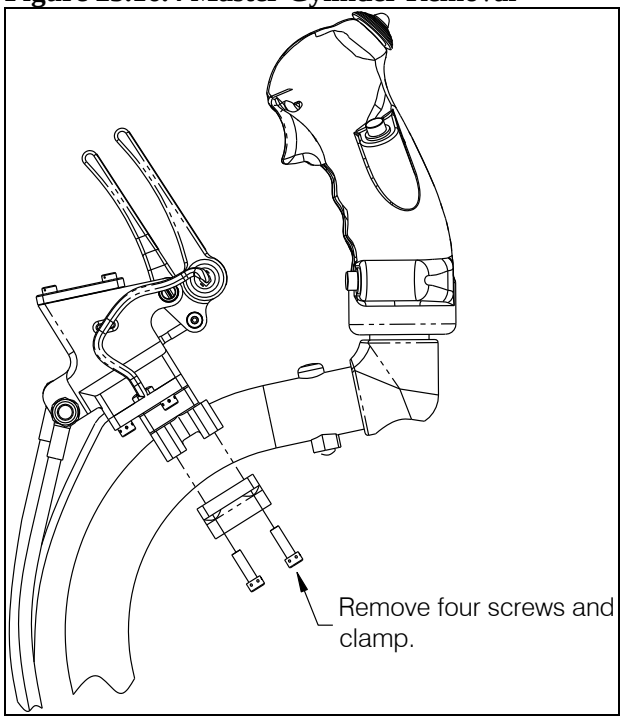
Fixed Hydraulic Release System Removal

The fixed components of the hydraulic release system include the dual master cylinder assembly clamped to the cyclic tube just forward of the grip and the hoses routed to underneath the seats and out through a hole in the belly where they are routed aft and mated via quick disconnect fittings with the hoses from the cargo hooks.

Remove the fixed hydraulic release system components per the following.

1. Disconnect the master cylinder plumbing from each slave cylinder plumbing by separating the quick disconnect fittings at the bracket underneath the aircraft.
2. Loosen the nuts at each bracket mounted disconnect fitting and slide the fittings to the center of the keyhole slot to remove them.
3. Working from the bracket forward to the hole in the belly, remove the screws securing the loop clamps around the hoses and to the inserts in the belly of the helicopter.
4. Inside the aircraft, remove the hoses and the electrical harness for the release switch from the clamps on the cyclic tube. Disconnect the connector for the electrical harness.
5. Remove the seat and the panel underneath it and remove the screws securing the loop clamps around the hoses.
6. Remove any sealant in the hole in the belly which the hoses are routed through and pull the hoses up through the hole.
7. Remove the dual master cylinder from the cyclic by cutting safety wire between the two pairs of screws and removing the screws (see below).

Figure 25.16.4 Master Cylinder Removal



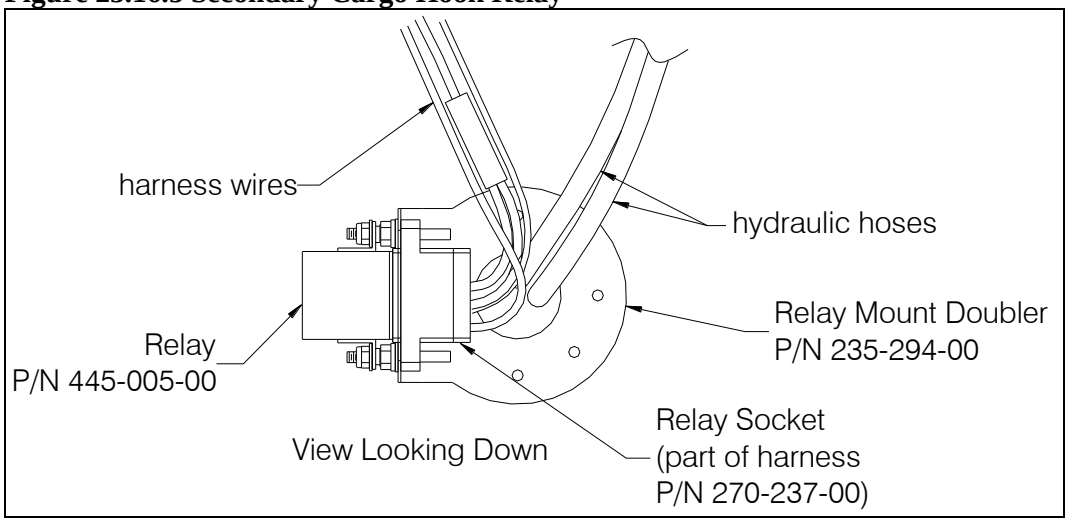
25.16 Component Removal continued

Relay Removal

The relay (P/N 445-005-00) for the secondary cargo hook is located under the seat on a mounting flange that is integrated into the Doubler for the hole in the belly panel for the hydraulic hoses. Remove the seat and the panel underneath it to access the relay.

1. Remove the nut and washer from each of the two studs that secure the relay to the bracket.
2. Unplug the replay from the relay socket of the internal electrical harness.

Figure 25.16.5 Secondary Cargo Hook Relay



Pin Load Cell Removal

The pin load cell is present at the primary cargo hook if the optional load weigh system is installed.

1. Disconnect the electrical connector at the bracket on the belly of the helicopter.
2. Separate pin load cell harness from the harness/hose bundle by removing the spiral wrap from around the bundle.
3. Remove the cotter pin (P/N 510-178-00), nut (P/N 510-170-00), washer (P/N 510-174-00), and washer (P/N 510-183-00) from the load cell and remove the load cell from the cargo hook.

Load Weigh Indicator Removal

The load weigh indicator location is optional within the cockpit. It is designed to fit within a standard 2 ¼" instrument panel hole.

1. Remove the four screws that secure the indicator to its mounting location.

2. Disconnect the electrical connector from the back of the indicator.

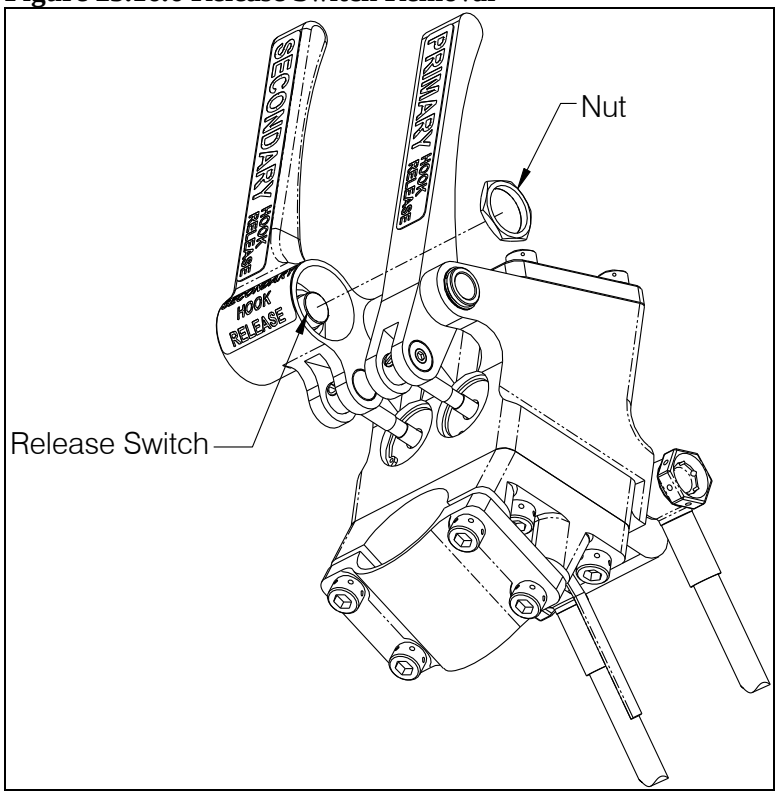
25.16 Component Removal continued

Release Switch Removal

The release switch for the secondary cargo hook is housed within the secondary cargo hook release lever on the dual master cylinder assembly.

1. Remove the nut from the button side of the switch.

Figure 25.16.6 Release Switch Removal



2. Slide the switch out of its housing, remove the shrink boot by cutting it, and unsolder the wires from each of its contacts.

NOTICE

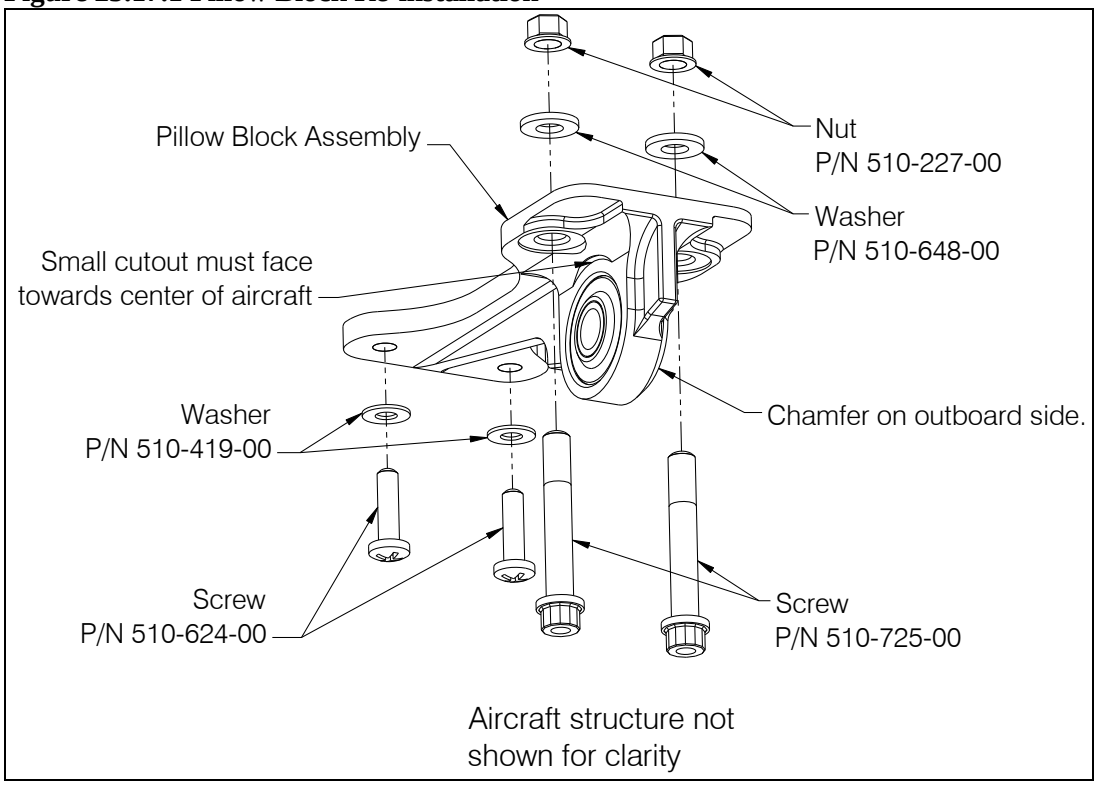
The primary cargo hook uses the original Bell installed cargo release switch in the cyclic grip. Refer to Bell documentation for this switch.

25.17 Component Re-installation

Pillow Block Assembly Re-installation

1. Position the Pillow Block Assemblies (P/N 232-188-01 and P/N 232-189-01) at their respective hard points on the belly of the helicopter. P/N 232-189-01 is installed on the right side (see figure below for identifying features).
2. Secure the Pillow Blocks to the aircraft with hardware as shown in Figure 25.17.1. Torque nuts (P/N 510-227-00) to 84 to 107 in-lbs. (9.5 to 12.1 Nm) plus drag torque.

Figure 25.17.1 Pillow Block Re-installation

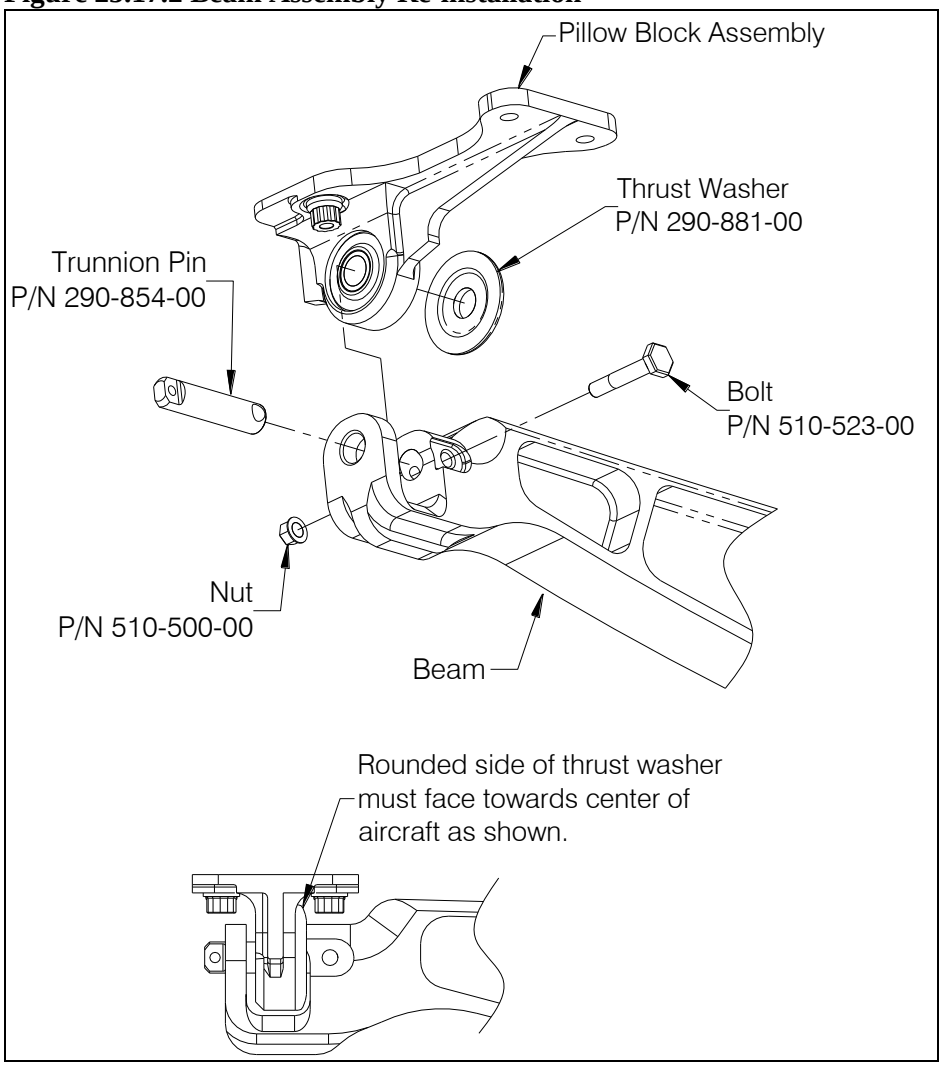


25.17 Component Re-installation continued

Beam Assembly Re-installation

1. Orient the Thrust Washers (P/N 290-881-00) as shown in Detail A of Figure 25.17.2 and align them with the holes at each end of the Main Beam and hold in place by hand.
2. Position the Beam over the Pillow Blocks and align the holes at each end with the Pillow Block bearings and Thrust Washers and insert the Trunnion Pins through.
3. Rotate the Trunnion Pins as required to insert the bolt (P/N 510-523-00) through.
4. Install nut (P/N 510-500-00) over bolt and torque to 30-40 in-lbs.

Figure 25.17.2 Beam Assembly Re-installation

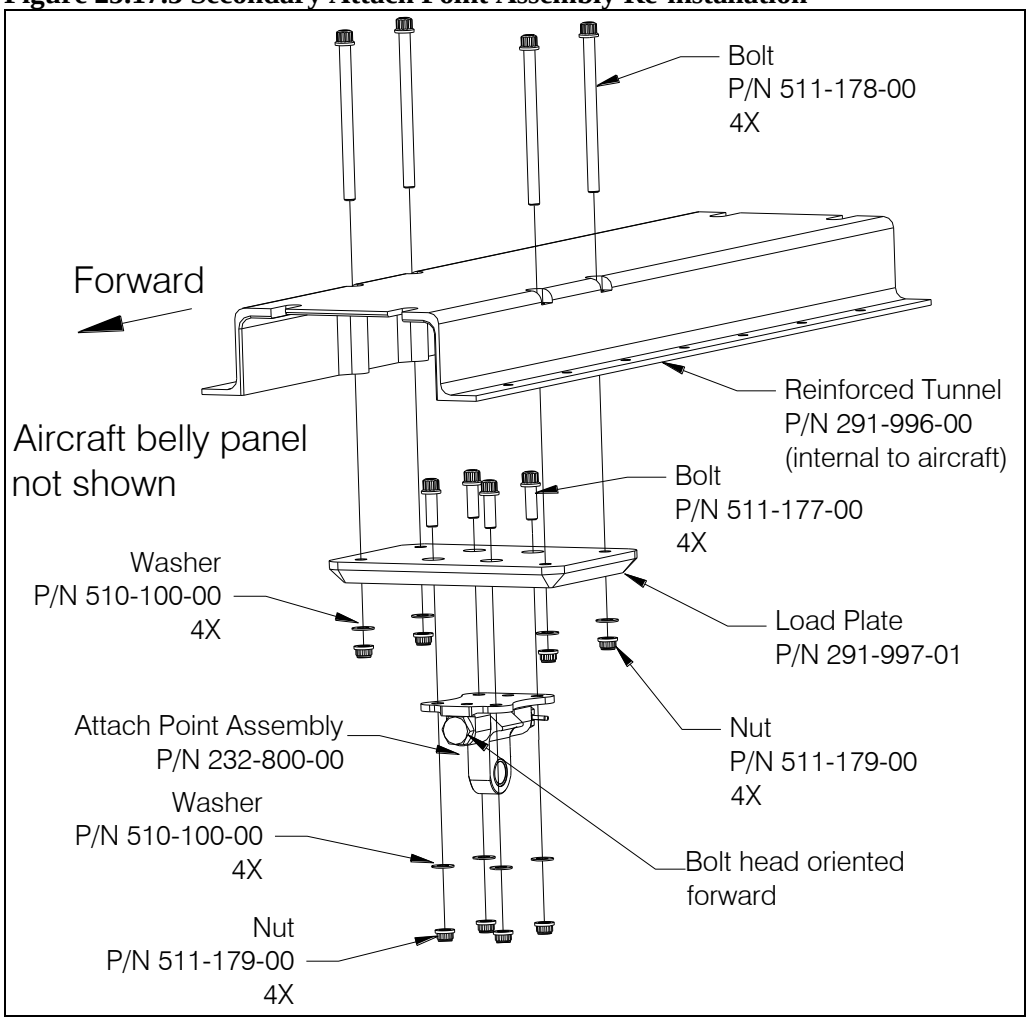


25.17 Component Re-installation continued

Secondary Attach Point Assembly Re-installation

1. Attach the secondary cargo hook's Attach Point Assembly to the Load Plate with the four bolts, washers, and nuts illustrated below. Note the FWD engraving on the Load Plate and orient the bolt head on the Attach Point Assembly forward. Torque the nuts to 50-70 in-lbs.
2. Insert the four long bolts from inside the aircraft down through the Reinforced Tunnel and secure the Load Plate to the belly of the helicopter using the washers and nuts (as illustrated below). Torque the nuts to 50-70 in-lbs.
3. Torque stripe the nuts.

Figure 25.17.3 Secondary Attach Point Assembly Re-installation

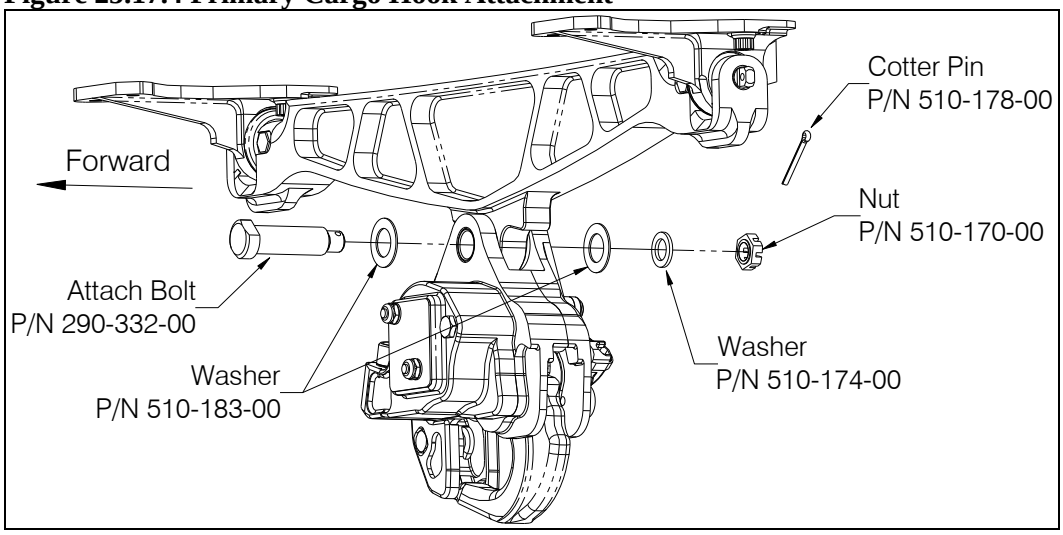


25.17 Component Re-installation continued

Primary Cargo Hook Re-installation

1. Assemble Slave Cylinder with Plumbing assembly (P/N 232-523-00) onto the primary Cargo Hook (P/N 528-028-00) per the instructions in this section.
2. Connect the electrical release harness (P/N 270-197-00) connector onto mating Cargo Hook connector.
3. Attach Cargo Hook to the beam with the hardware shown in the figures below (Figure 25.17.5 shows installation with the pin load cell if the load weigh system is installed).
4. Tighten nut on Attach Bolt (or pin load cell) until fully seated, finger tight only. Back off nut to previous castellation, if needed, when aligning cotter pin for installation. Install and secure cotter pin.
5. Route electrical harnesses and hydraulic hoses per this section.

Figure 25.17.4 Primary Cargo Hook Attachment



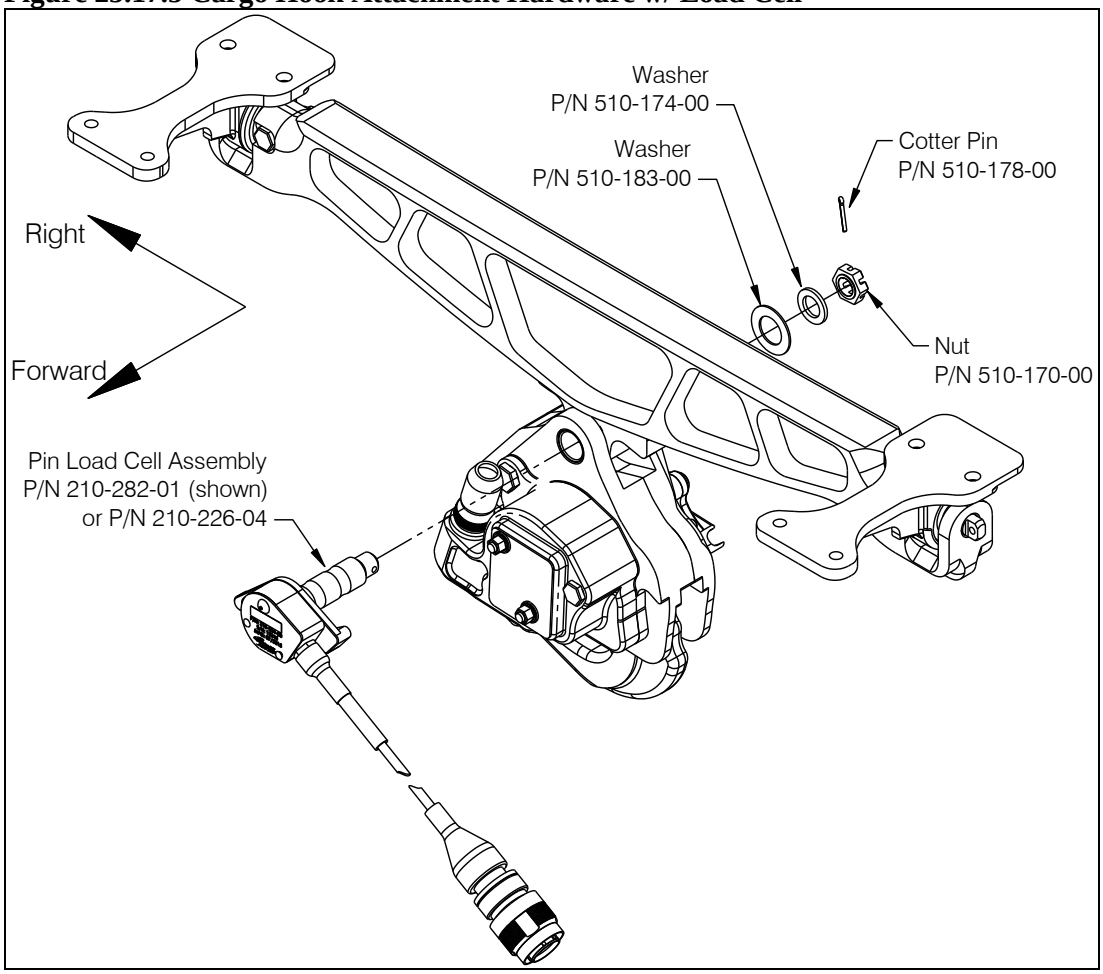
NOTICE

The Cargo Hook load beam must point to the right side of the helicopter when looking from the rear.

25.17 Component Re-installation continued

Primary Cargo Hook Re-installation continued

Figure 25.17.5 Cargo Hook Attachment Hardware w/ Load Cell

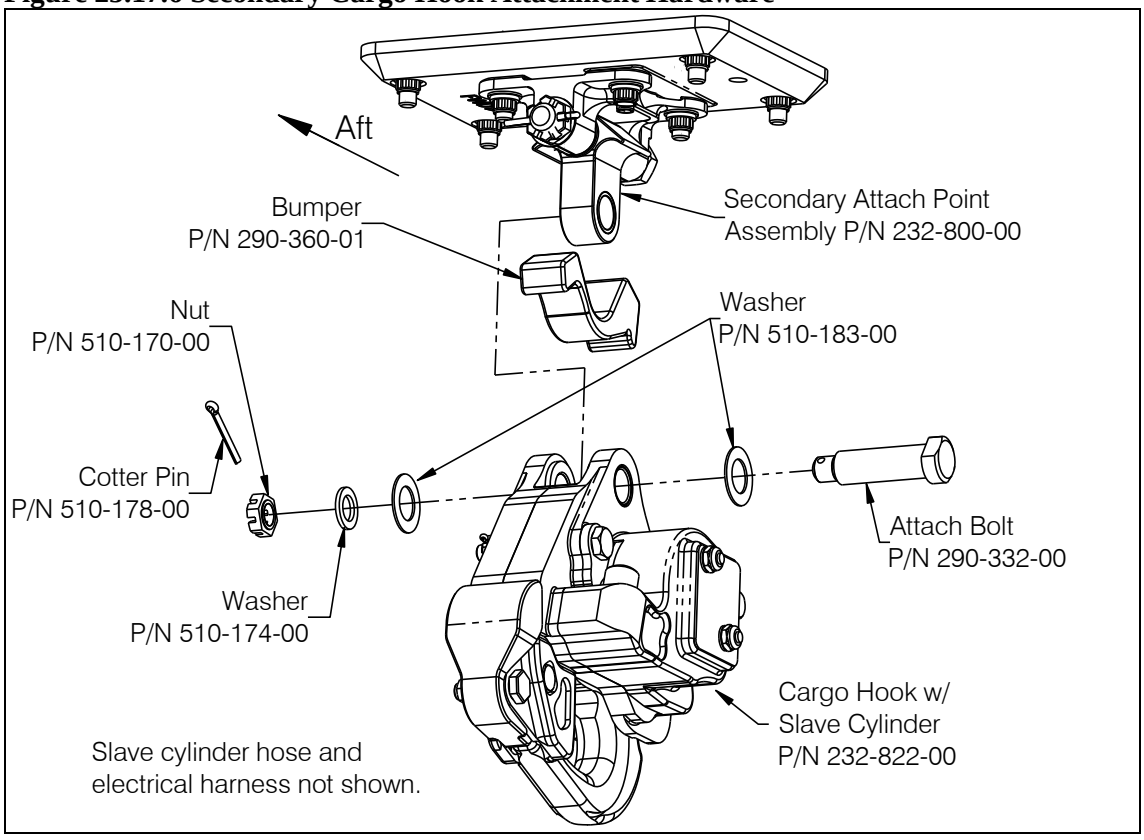


25.17 Component Re-installation continued

Secondary Cargo Hook Re-installation

1. Assemble Slave Cylinder with Plumbing assembly (P/N 232-823-00) onto the secondary Cargo Hook (P/N 528-028-03) per the instructions in this section.
2. Connect electrical release harness connector of P/N 270-239-00 onto mating Cargo Hook connector.
3. Insert the Bumper (P/N 290-360-01) into the clevis of the cargo hook, reference Figure 25.17.6. Reference Figure 25.17.7 for orientation, the larger lobe should be forward.
4. Attach Cargo Hook to the secondary attach point assembly with hardware as shown below. Reference Figure 25.17.7 for orientation. The Bumper is a tight fit within the clevis thus the Cargo Hook will need to be forced into position to slightly compress the Bumper and align the holes.
5. Tighten nut on Attach Bolt until fully seated, finger tight only. Back off nut to previous castellation, if needed, when aligning cotter pin for installation. Install and secure cotter pin (P/N 510-178-00).

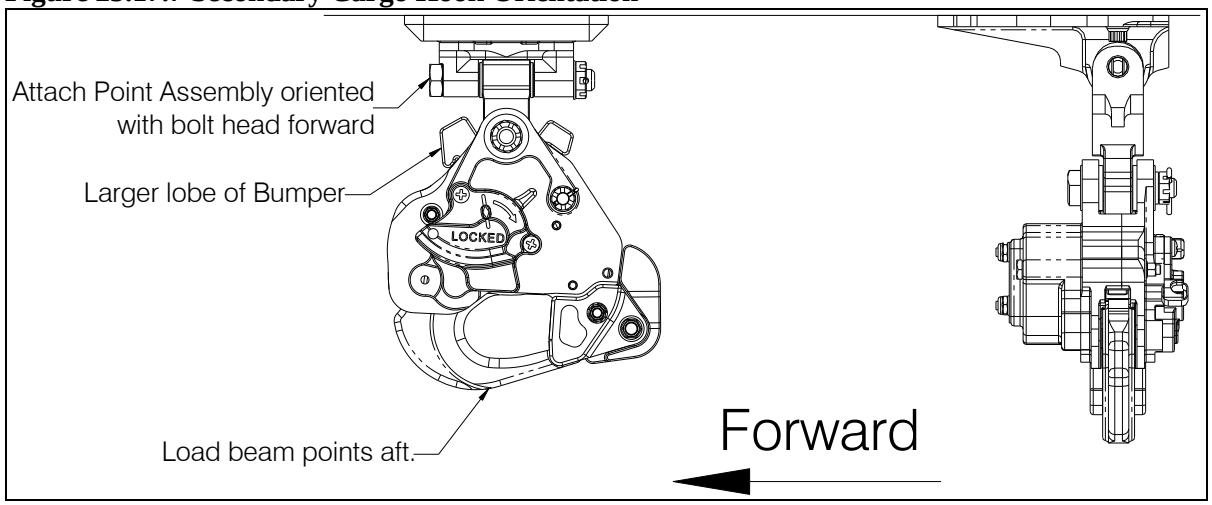
Figure 25.17.6 Secondary Cargo Hook Attachment Hardware



25.17 Component Re-installation continued

Secondary Cargo Hook Re-installation continued

Figure 25.17.7 Secondary Cargo Hook Orientation



25.17 Component Re-installation continued

Slave Cylinder Assembly Re-installation

Connect the slave cylinder assembly to the cargo hook per the following instructions:

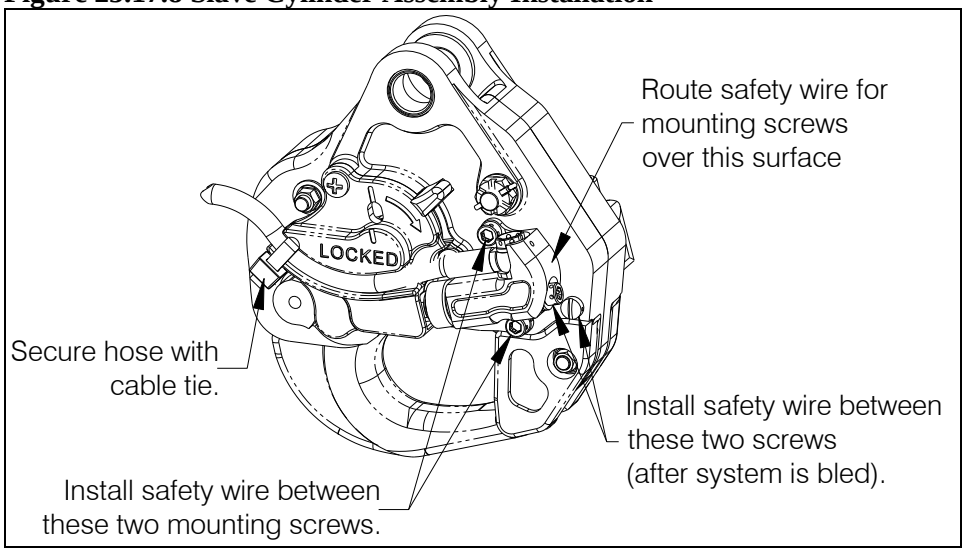
1. Ensure that the piston is in the retracted position. If the piston needs to be retracted connect the quick disconnect fitting and push the piston in.

NOTICE

The piston will not be able to be retracted if the hydraulic hose is not connected at the quick disconnect.

2. Insert the piston end of the slave cylinder assembly into the side of the cargo hook as shown and install the mounting screws (P/N 510-531-00). Torque screws to 12-15 in-lbs.
3. Install safety wire between these screws around the backside of the slave cylinder.
4. Route the hydraulic hose along the manual release cover and secure with a cable tie through the hole at the end of the groove in the manual release cover.

Figure 25.17.8 Slave Cylinder Assembly Installation

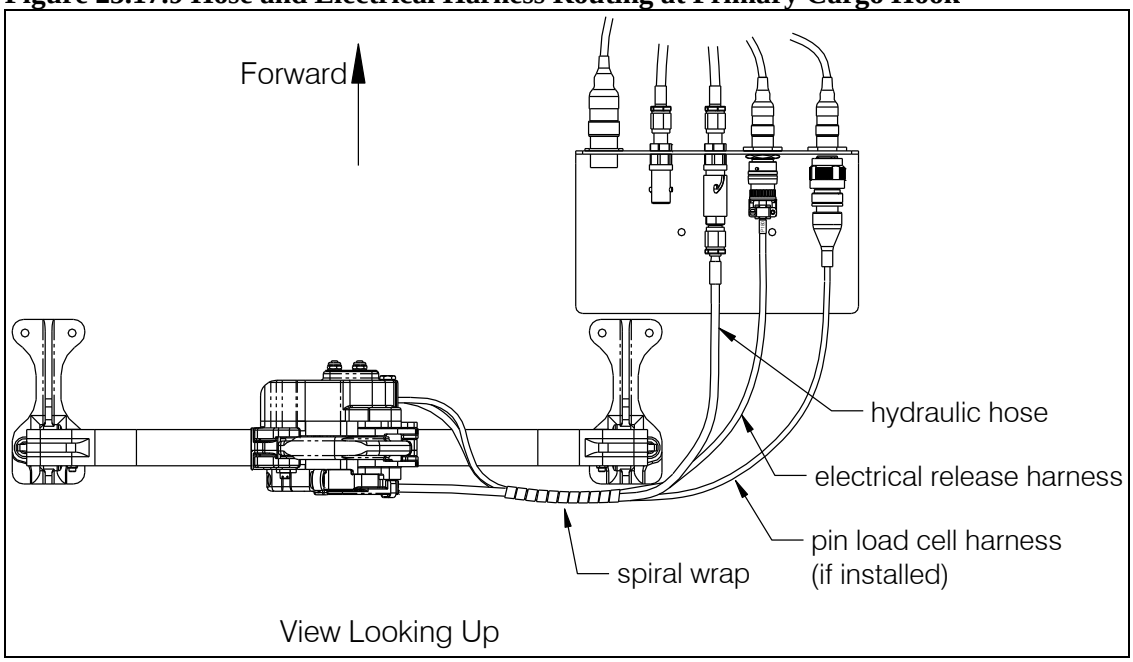


25.17 Component Re-installation continued

External Electrical Harness and Hose Routing

1. For the primary cargo hook route the electrical harnesses and hydraulic hose as shown in Figure 25.17.9 and connect the harness and hose connectors to the respective outboard connectors on the bracket.
2. Ensure that there is sufficient slack in the harness and hose bundle to allow for full movement of the cargo hook.
3. Re-install spiral wrap (P/N 590-046-00) over harness and hose.

Figure 25.17.9 Hose and Electrical Harness Routing at Primary Cargo Hook



25.17 Component Re-installation continued

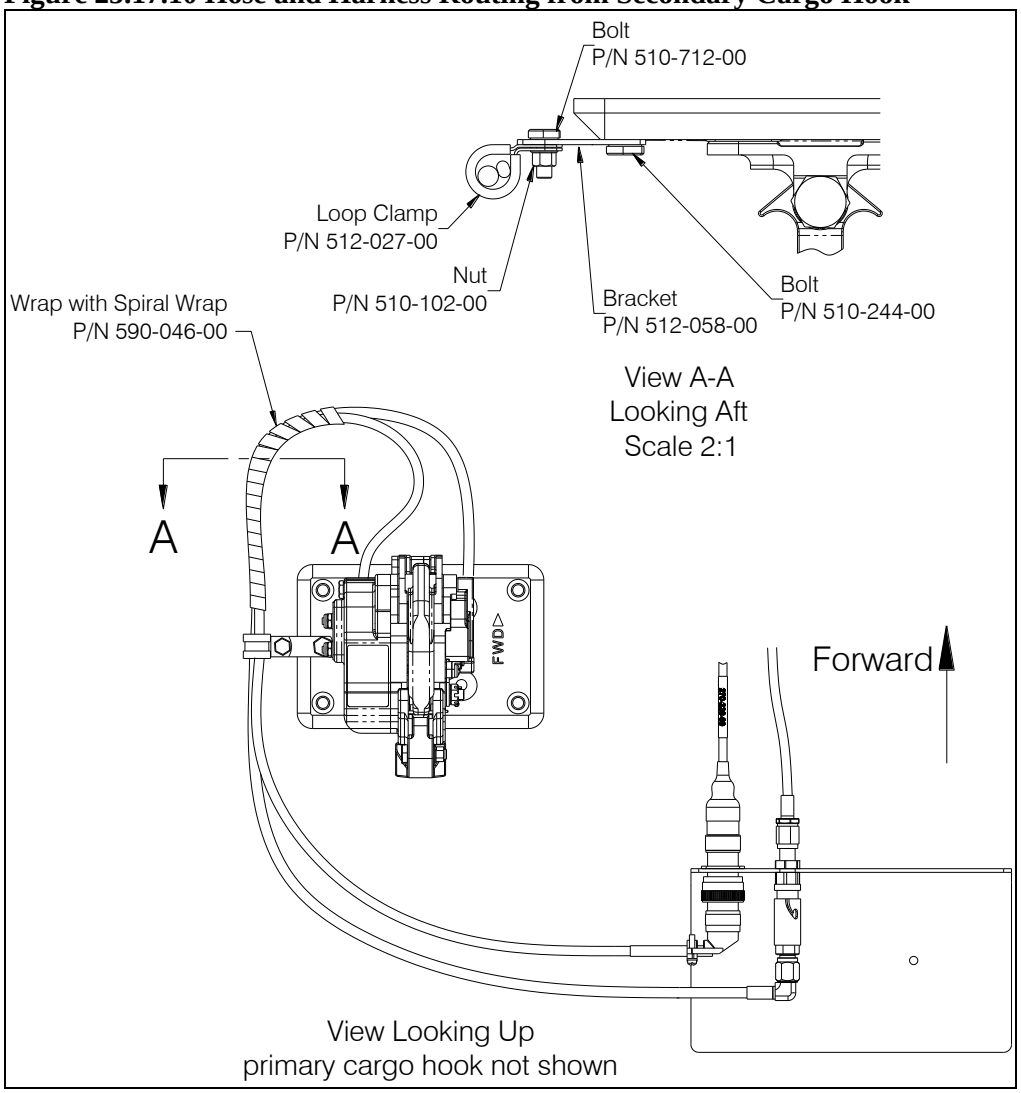
External Electrical Harness and Hose Routing continued

4. For the secondary cargo hook, route its electrical release harness and hydraulic hose in a loop forward and then back through a loop clamp P/N 512-027-00 attached at the Load Plate with hardware shown below. Leave nut loose until hose and harness are adjusted.

5. Connect the harness and hose connectors to the respective inboard connectors on the bracket.

6. Adjust the loop that is forward of the cargo hook to allow for full movement of the cargo hook and to minimize any pinching of the electrical harness and hose. Tighten nut to 12-15 in-lbs.

Figure 25.17.10 Hose and Harness Routing from Secondary Cargo Hook



25.17 Component Re-installation continued

Fixed Hydraulic Release System Re-installation

1. Install the Dual Master Cylinder onto the cyclic with the four screws (P/N 511-189-00). Adjust position for optimal reach, so it doesn't interfere with any cyclic control operations and doesn't contact the cyclic when fully actuated. Tighten screws to 20-25 in-lbs.

2. Route the hoses and the electrical harness along the pilot's cyclic tube (see Figure 25.17.11) and secure at the approximate midway point down with set of loop clamps and hardware as shown in the Figure 25.17.11.

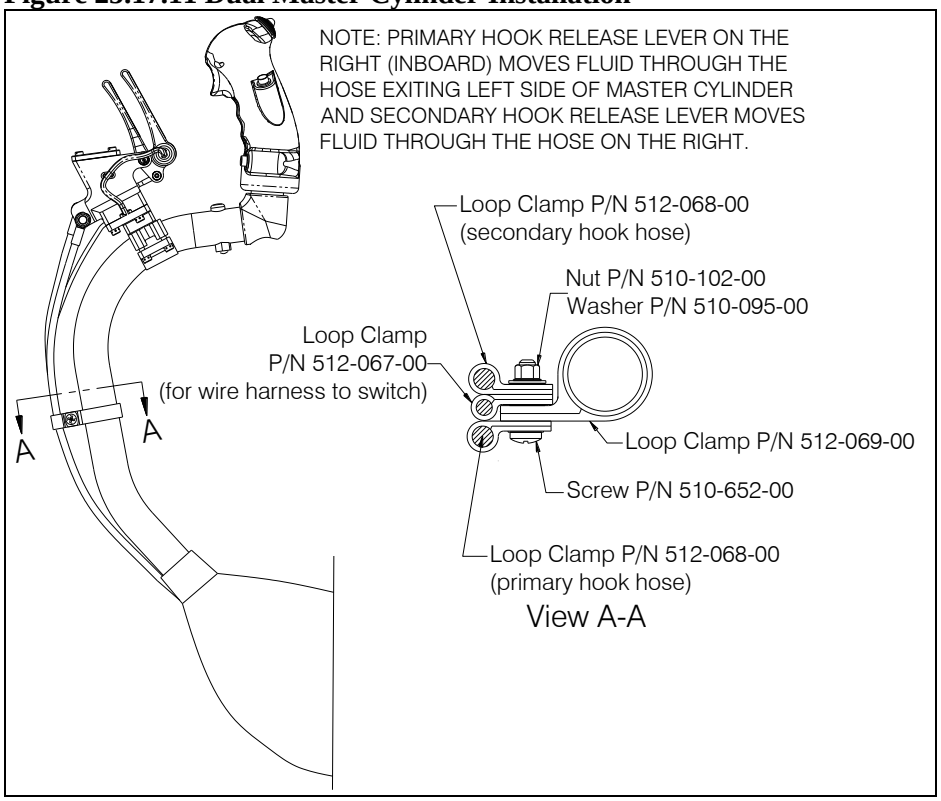
   The installation of the hydraulic release system controls on the left side cyclic includes an additional set of quick disconnect fittings near the top of the cyclic boot to facilitate quick removal of the cyclic and Dual Master Cylinder when an observer is flown. Otherwise, installation is the same as shown in Figure 25.17.11.

3. Feed the ends of the hydraulic hoses through the boot at the base of the cyclic.

NOTICE

The hydraulic hoses are crossed from the Dual Master Cylinder. The Primary Hook Release lever on the right (inboard) moves fluid through the hose exiting the left side of the master cylinder.

Figure 25.17.11 Dual Master Cylinder Installation



25.17 Component Re-installation continued

Fixed Hydraulic Release System Re-installation continued

4. Route the ends of the hoses through the hole in the belly and underneath the seat re-attach the hoses to the tie off points with cushioned loop clamps (P/N 512-037-00). When re-installing observe the following.

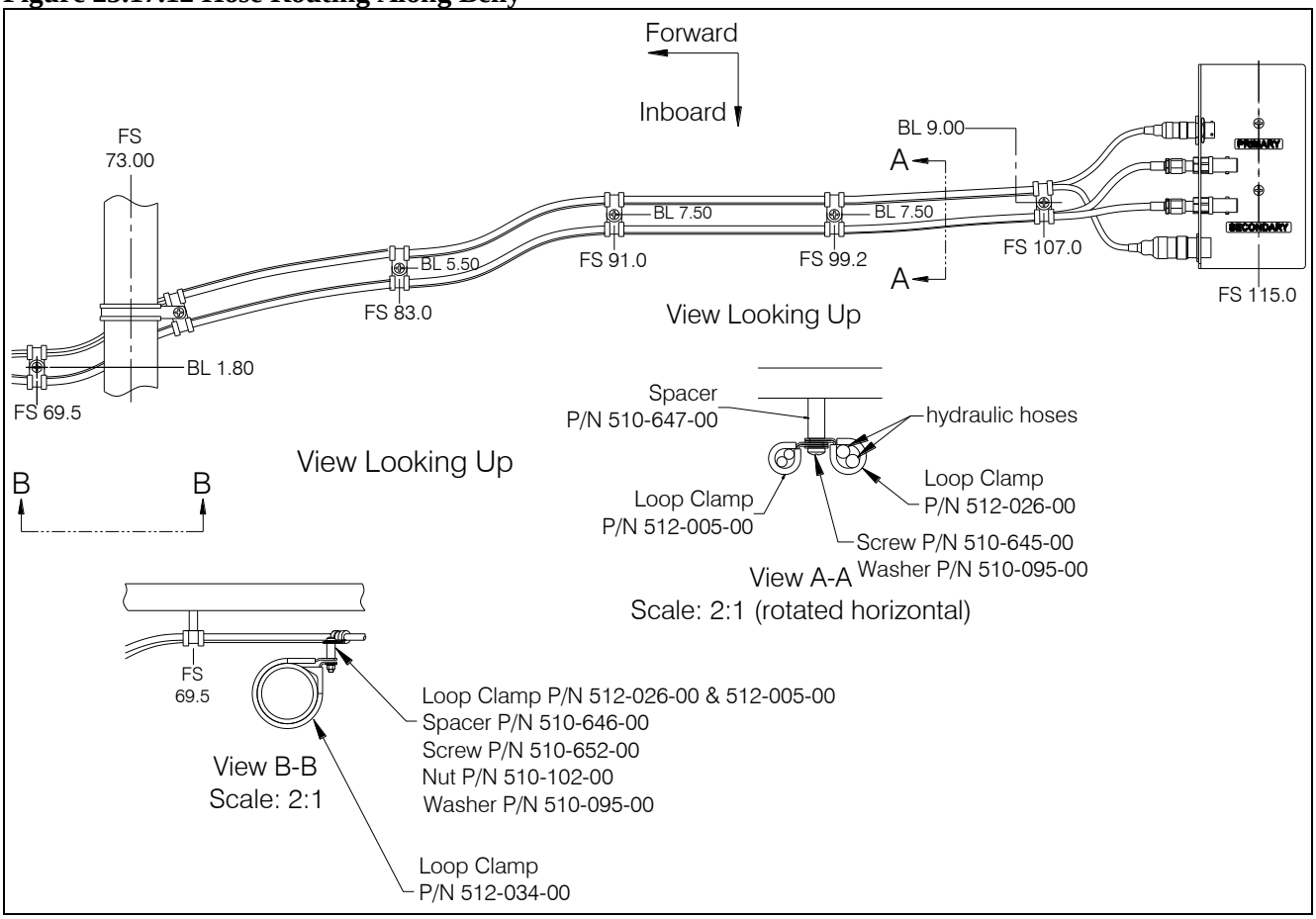
    - Ensure the hoses do not restrict the movement of the cyclic; provide enough slack between the first support point aft of the cyclic and the clamps securing the hoses to the cyclic.
    - Ensure the hoses are secured clear of flight controls and are protected from chafing on wires, structure, adjacent equipment, etc.
    - Ensure the hoses are supported with cushioned loop clamps every 12 to 16 inches.

25.17 Component Re-installation continued

Fixed Hydraulic Release System Re-installation continued

5. Underneath the aircraft re-attach the hoses (and harnesses) with cushioned loop clamps to the inserts in the belly along the path back to the connector bracket. Also attach to the landing gear skid tube using loop clamps.

Figure 25.17.12 Hose Routing Along Belly



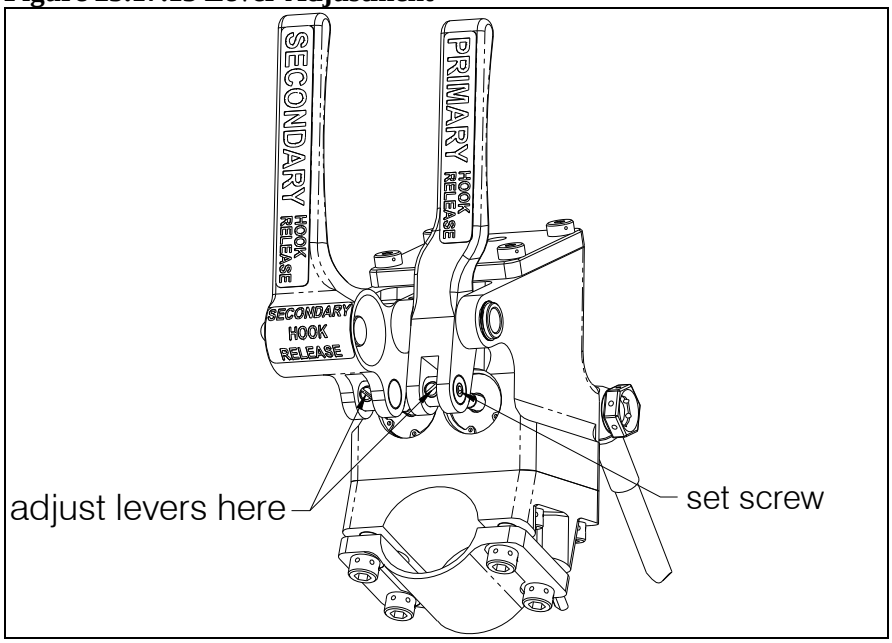
25.17 Component Re-installation continued

Fixed Hydraulic Release System Re-installation continued

6. After completing installation of the hydraulic system (both fixed and removable) bleed the system per section 12.2.

7. If desired, adjust the position of the release levers (see below). Loosen the set screw at the lever desired for adjustment and using a small screwdriver turn the push rod in the desired direction. Maintain minimum of one thread protruding past the barrel nut and ensure there is no interference with the cyclic in any combination of lever movements. Secure push rod threads with set screws.

Figure 25.17.13 Lever Adjustment



8. Install safety wire between the two pairs of mounting screws attaching the dual master cylinder to the cyclic.

9. Connect the electrical harness connector for the secondary cargo hook release switch to the internal harness connector.

25.17 Component Re-installation continued

Relay Re-installation

The relay is part of the secondary cargo hook's electrical release system and is located under the seat on the side which the Dual Master Cylinder is installed. It is mounted on the Relay Mount Doubler (P/N 235-294-00).

1. Plug the relay (P/N 445-005-00) into the relay socket of the internal electrical harness mounted to the Relay Bracket.
2. Secure the relay to each stud of the relay socket with washer and nut (this hardware is included with socket).

Release Switch Re-installation

The secondary cargo hook's release switch is integrated within the secondary cargo hook's release lever on the dual master cylinder.

1. Solder the two wires from the harness (that is routed up the cyclic) to the contacts on the back of the switch. Cover the individual wire terminals with heat shrink and shrink in place.
2. Insert the switch from the left side of the release lever into the housing and thread the nut on and tighten securely.

Load Weigh Indicator Re-installation

The load weigh indicator location is optional within the cockpit.

1. Place the Load Weigh Indicator into the mounting location and secure with four 6-32 screws (P/N 511-211-00 or other length of MS35214 screw).
2. Connect the electrical connector on the wiring harness to the connector on the back of the indicator.