

# ***AirFilm Camera Systems***



(SHOWN MOUNTED ON OUTSIDE OF GEAR CLAMP)

## **G3 LIGHT SYSTEM INSTALLATION INSTRUCTIONS REPORT NO. AF-G3-006 DATE ISSUED: 05/31/16**

**Airfilm Camera Systems  
6245 Aerodrome Way, Hangar No. 2  
PO Box 1352  
Georgetown, Ca 95634**

### **LOG OF REVISIONS**

<b>REVISION</b>	<b>REVISION DATE</b>	<b>PAGES EFFECTED</b>	<b>COMMENTS</b>
N/C	4/14/2004	ALL	ORIGINAL SUBMITTAL
A	5/4/2005	7	REVISED W&B
B	6/6/2005	3	ADDED 407 SECTION
C	10/20/2006	ALL	ADDED G3-10
D	2/1/2012	ALL	ADDED LED SECTION
E	7/15/2105	ALL	CHANGE FROM G3-1 TO G3-1-1 CHANGE FROM G3-1A TO G3-1-1A
F	5/31/2016	ALL	ADDED G1-V2 SECTION AND ADDED INSTALLATION PARTS LIST TABLES

## **1.0 INTRODUCTION AND GENERAL DESCRIPTION:**

The Airfilm **G3-1-1** and **G3-1-1A** Light system provides for the attachment of exterior mounted landing lights. The G3-1-1 is attached to the forward cross tube and the G3-1-1A is attached to the G-1 or G1-V2 nose mount (required for G3-1-1A). The lamp housing is a **Whelen model 90195** or **Airfilm G3-10** which contain a G.E. PAR35 model 4587 250 watt lamp. The original landing lamps are disconnected and the Airfilm G3 landing light assembly is reconnected to the aircraft landing light relay. The standard on/off switch is used. There is no change to the pilot operation, placards, or use of the landing light on / off switches.

## G3-1-1 INSTALLATION DETAIL



### G3-1-1

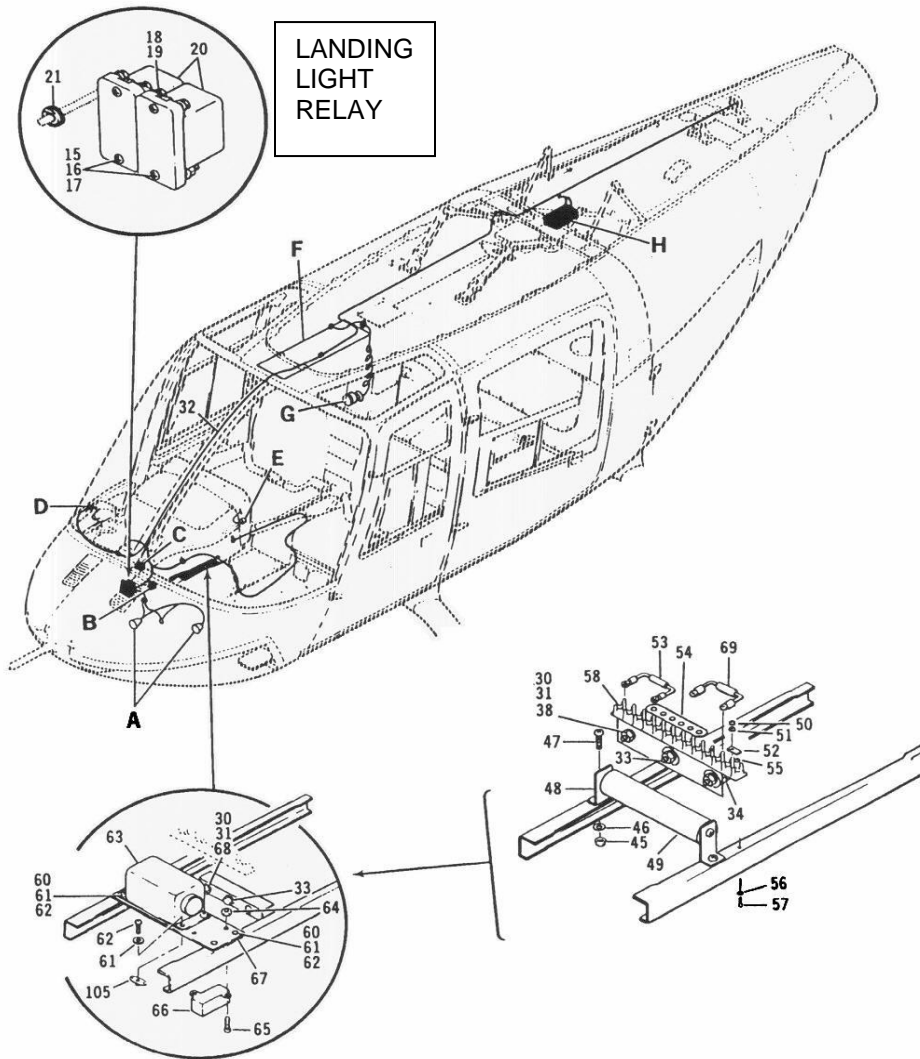
The Airfilm G3-1-1 light kit allows for the attachment of landing lights on the forward cross tube of Bell Aircraft 206 A, B, & L and 407 Series helicopters.

**2.0 INSTALLATION**

The following figure shows the location of the landing light relay in the 206 model (ref. Bell Document BHT-206A/B-Series-IPB)

**FIGURE 2.0.1 Ref. Bell Document BHT-206A/B Series-IPB**

**BHT-206A/B-SERIES-IPB**

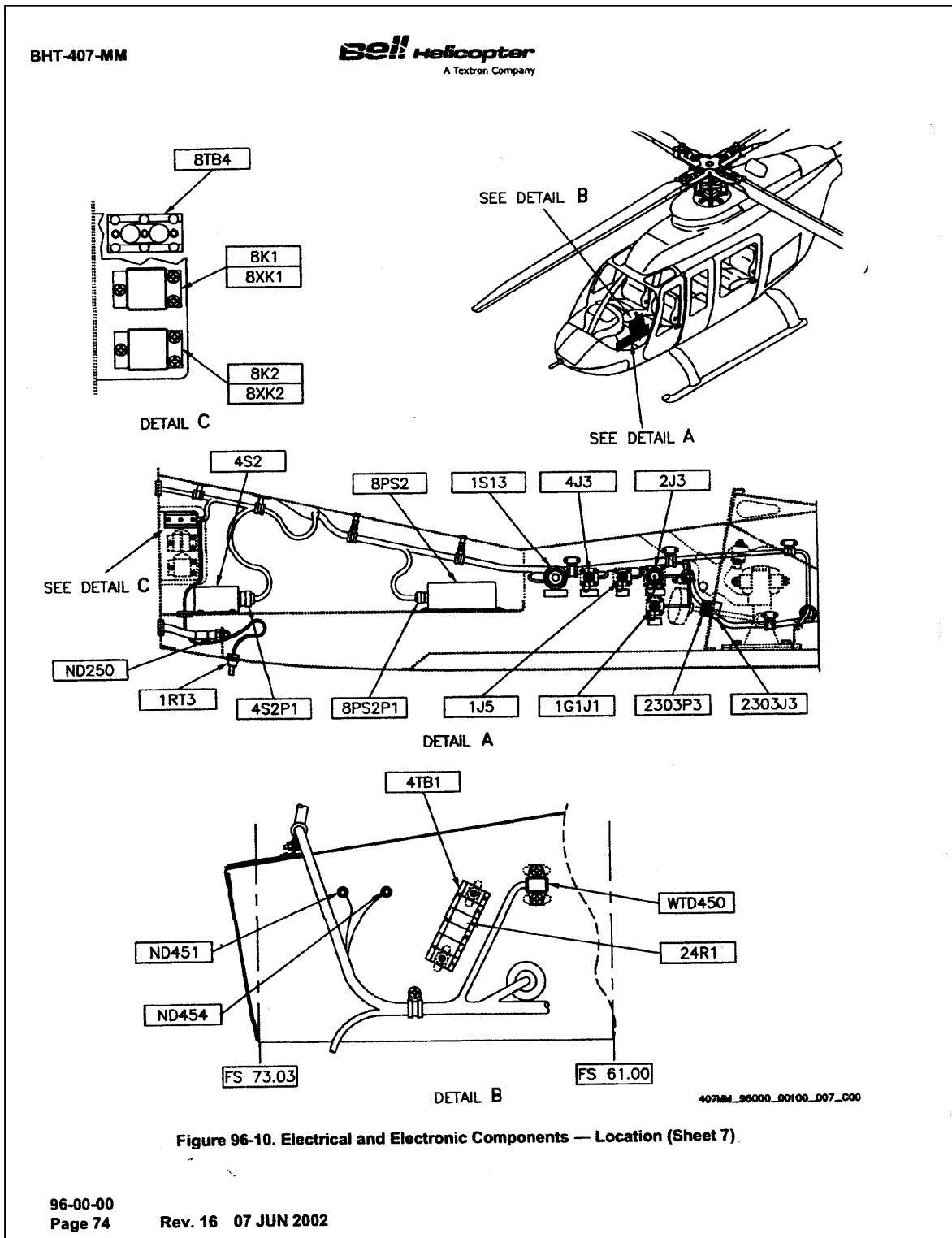


206A/B/B3-99-1038-1  
 C0000

**Figure 99-38. Electrical installation, night flying (Sheet 1 of 2)**

The following figure shows the location of the landing light relay in the 407 model (ref. Bell Document BHT-407-MM).

**FIGURE 2.0.2 Ref. Bell Document BHT-407-MM**



## 2.0 INSTALLATION

# CAUTION

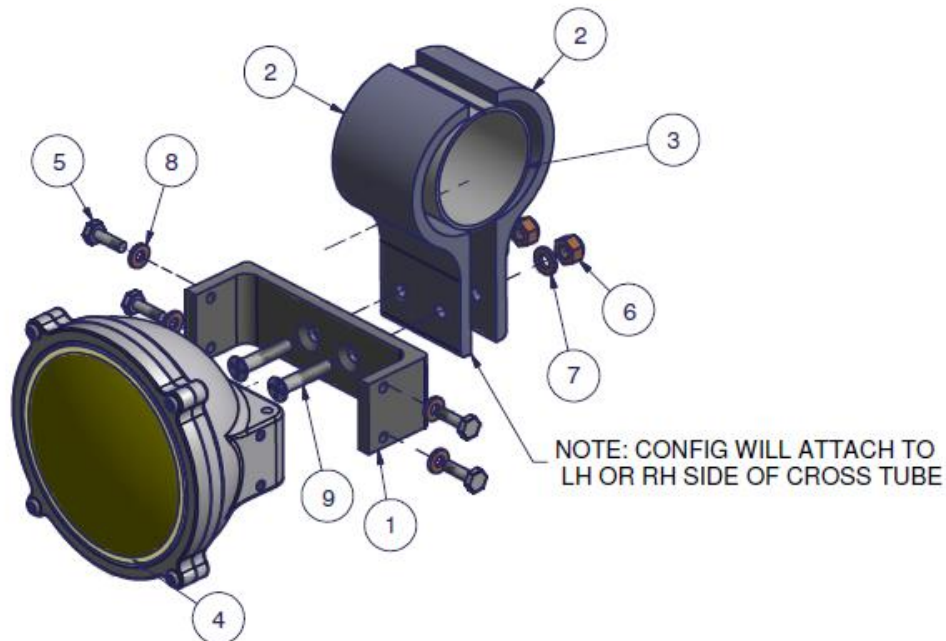
**DO NOT CONNECT STANDARD GE PAR 36 BULB  
TO ORIGINALLY LED FURNISHED AIRCRAFT**

### INSTALLATION ON BELL 206 A, B, L AND 407 SERIES WITH GE PAR 36 BULB:

2.1 Insure that electrical power is OFF and any external power is DISCONNECTED.

2.2 **BELL 206 A, B AND L SERIES:** Disable the existing landing lights by disconnecting the existing landing light wires from terminal numbers CR30 and CR31 on the landing light relays (see Figure 2.0.1 for location of relay). Stow wires for future re-connection.

**BELL 407:** Disable the existing landing lights by disconnecting and removing the existing landing light wires connections from the terminal numbers 8K1 and 8K2 on the buss 8TB4, Terminal 1 landing light relays (see Figure 2.0.2 for location of relay). Stow wires for future re-connection.



2.3 Install the G3-1-1 landing light around the forward cross tube:

Installation Parts List: G3-1-1 Installed on Forward Cross tube

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	G3-2	LAMP BRACKET
2	2	G3-4	CLAMP BRACKET
3	1	G3-6	RUBBER SHIM (OPTIONAL)
4	1	G3-10	LAMP HOUSING ASSEMBLY
5	4	AN3-4A	HEX BOLT
6	2	AN365-428A	STOP NUT
7	4	AN960-10	WASHER
8	2	AN960-416	WASHER
9	2	MS24694-S106	MACHINE SCREW

2.3A Locate and attach the G3-4 clamp brackets to the forward cross tube approximately 1 – 2 inches inside or outside of cross tube gear clamps. Depending on paint thickness, use Neoprene or Silicon rubber shim from .0625 to .125 thickness to insure the clamps have a secure tight fit around cross tube. Attach with the supplied hardware.

***Torque MS24694 Screws to 50-70 inch lbs. (AC 43.13-1B/2A Table 7-1, Page 7-9)***

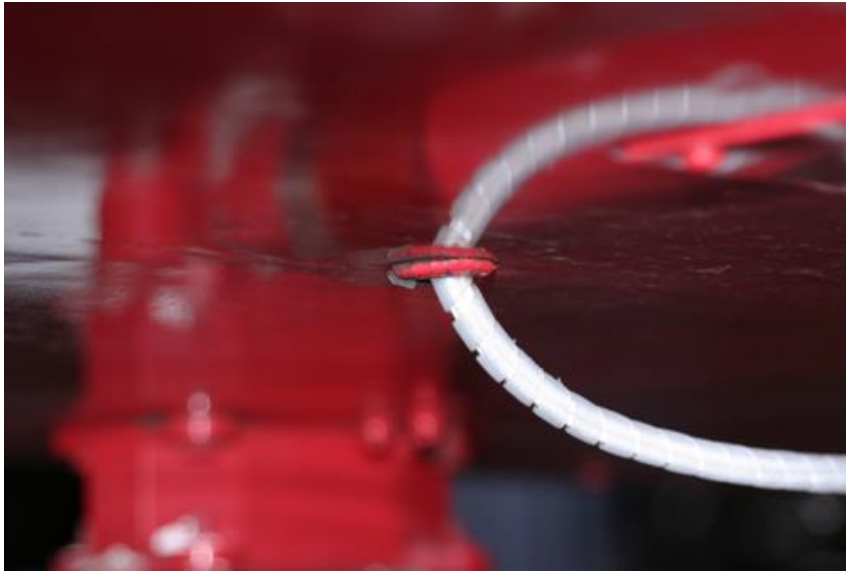
2.3B Attach the G3-2 lamp bracket to the G3-4 clamps using the supplied hardware:

***Torque AN3 Bolts to 20-26 inch lbs. (AC 43.13-1B/2A Table 7-1, Page 7-9)***



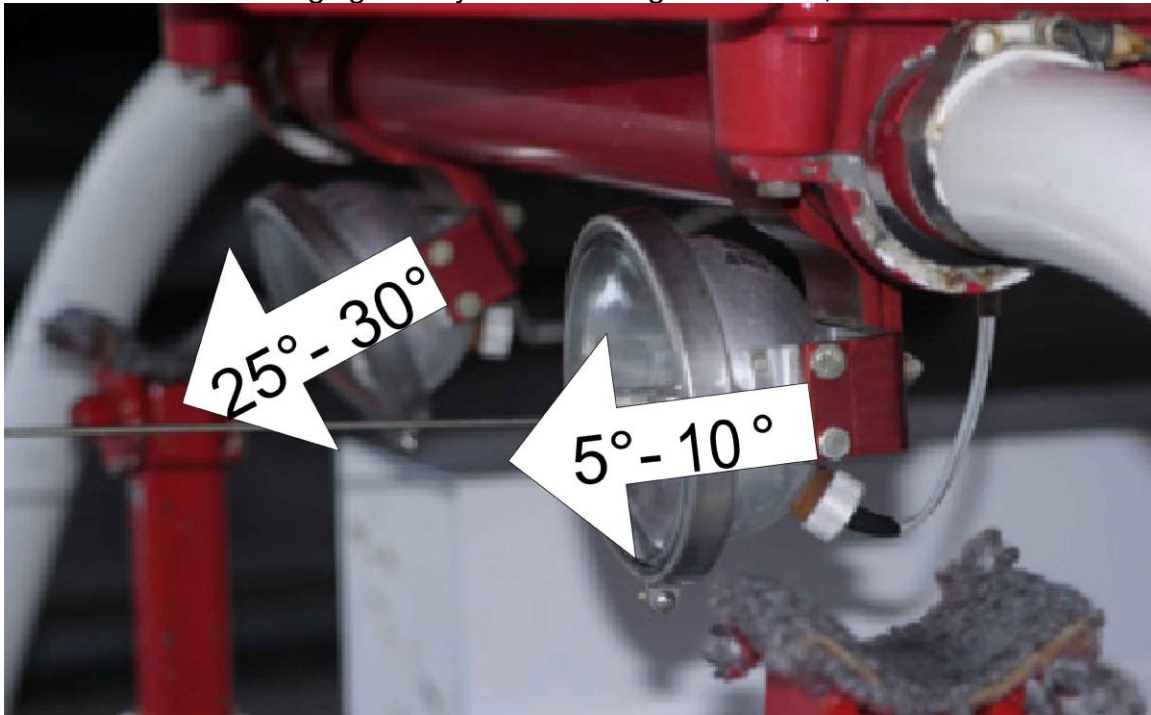
2.4 Secure the wire using MS21919-DG6 line clamp or equivalent. (Shown above)





- 2.5 Route the wire into the aircraft through the existing hole located on the aircraft belly at approximately Station 62.
- 2.6 **BELL 206 A, B AND L SERIES:** Attach the wires from the Airfilm G3-1-1 landing lights to the aircraft CR30 and CR31 landing light relays and to the ground buss.

**BELL 407:** Attach the wires from the Airfilm G3-1-1 landing lights to the aircraft 8K1 and 8K2 landing light relays and to the ground buss, 8BT4 terminal 1.





- 2.7 Using a level and protractor, adjust the tilt angle of the landing and taxi light as shown the above figure. The “Landing light” has more down angle than the “Taxi Light”.
- 2.8 Check entire G3-1-1 assembly for flight integrity. System should be secure and not have free play movement.
- 2.9 Check landing lights for operation.
- 2.10 Revise weight and balance:

The following table presents the location of the weight center of gravity of the G3 Landing Lights for adjustment of the aircraft weight and center of gravity with the mount installed.

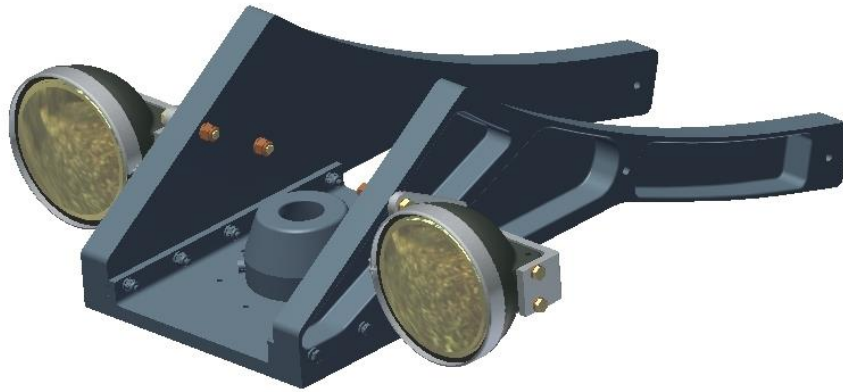
<b>HELICOPTER MODEL</b>	<b>INSTALLATION</b>	<b>WEIGHT (lbs)</b>	<b>STATION (in)</b>	<b>BL (in)</b>
Bell 206 A & B	G3-1-1 Assy Wire Assy	4.7 0.5	72.2 36.6	0.0 0.0
Bell 206 L	G3-1-1 Assy Wire Assy	4.7 0.5	72.2 36.6	0.0 0.0
Bell 407 Model:	G3-1-1 Assy Wire Assy	4.7 0.5	67 36.6	0.0 0.0

- 2.11 Make appropriate log book entry.
- 2.12 Return to service.

**3.0 REMOVAL**

- 3.1 Remove entire G3-1-1 Assembly and wires and reconnect standard landing lights.

## G3-1-1A INSTALLATION DETAIL



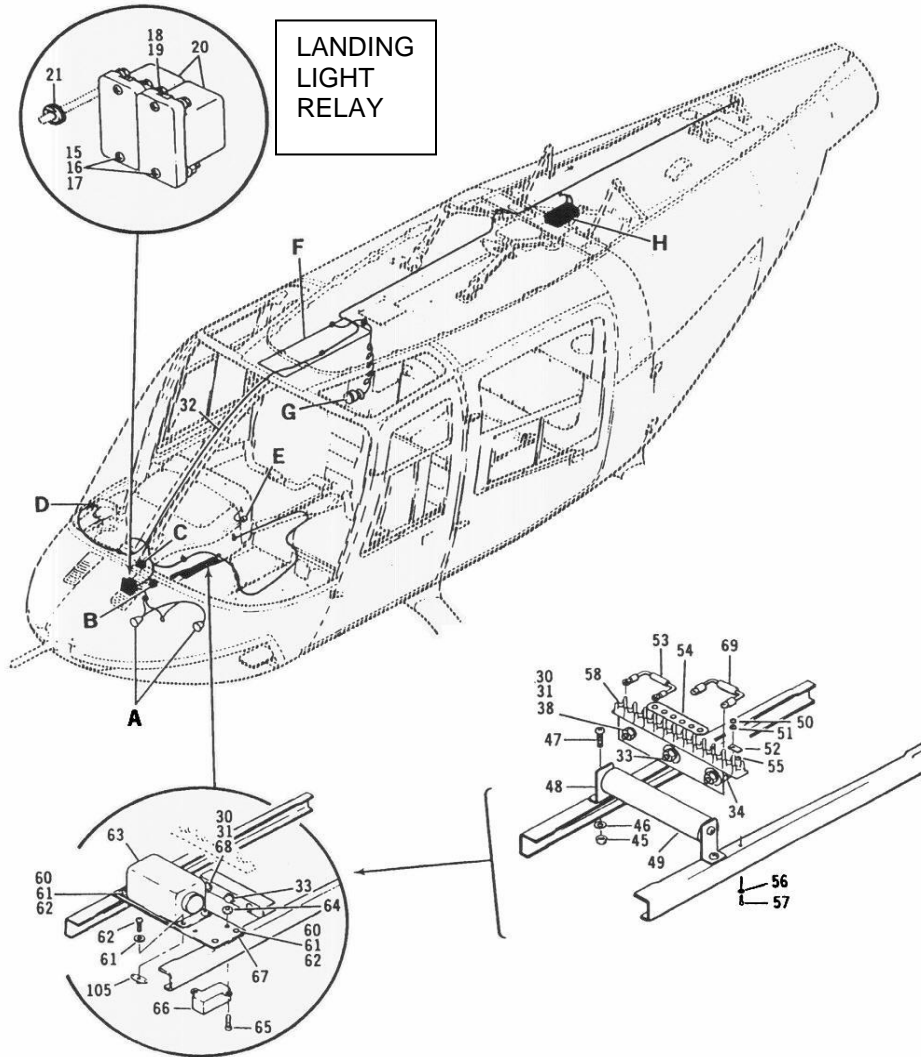
## G3-1-1A LIGHT KIT INSTALLATION

The Airfilm **G3-1-1A** light kit allows for the attachment of landing lights to the G-1 or G1-V2 nose mount. The brackets are slotted to provide adjustment in the lamp angle. Either the G-1 or G1-V2 nose mount must be installed to use the G3-1-1A lamp system.

The following figure shows the location of the landing light relay in the 206 model.

**FIGURE 4.0.1**      **Ref. Bell Document BHT-206A/B Series-IPB**

**BHT-206A/B-SERIES-IPB**

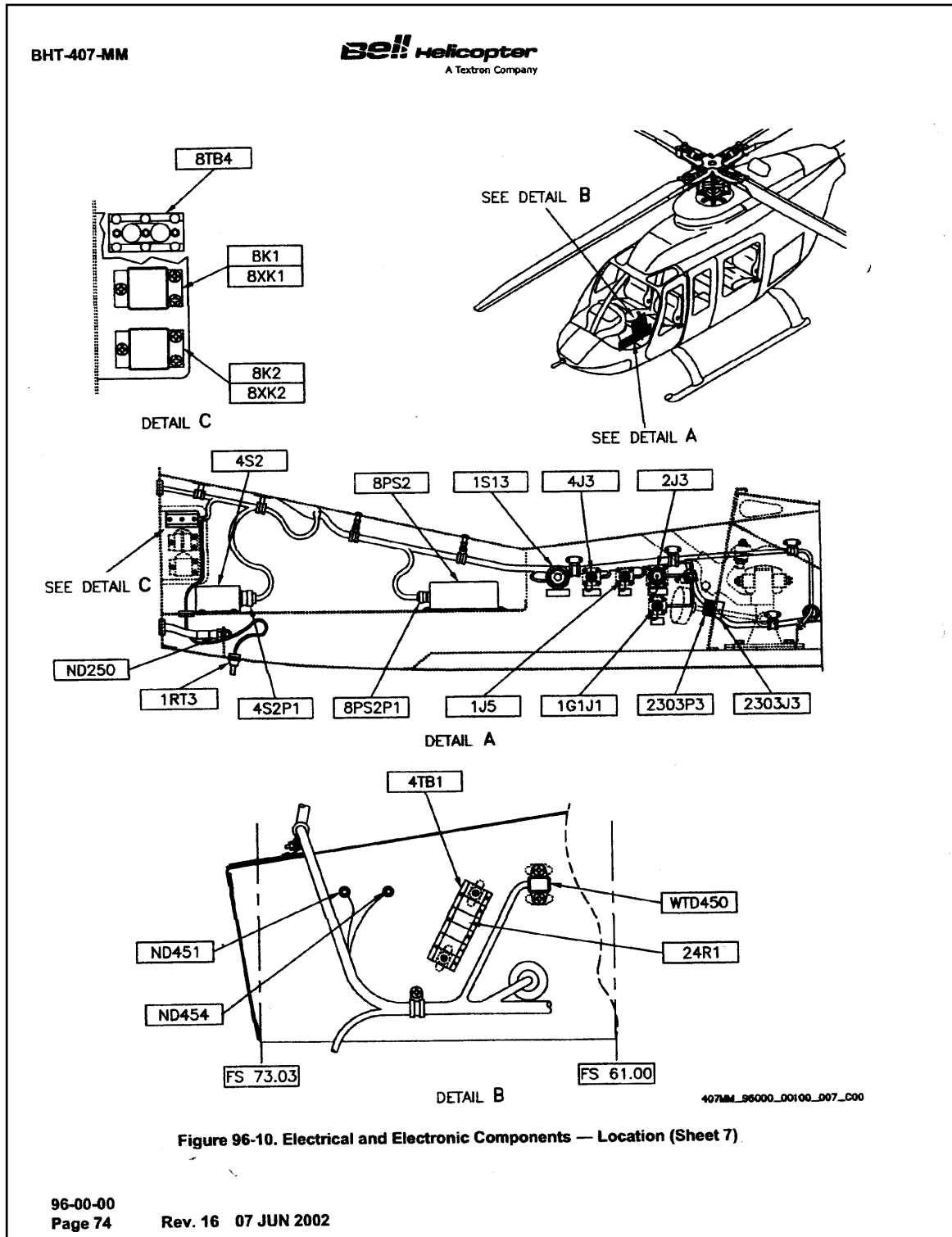


206A/B/B3-99-1038-1  
C0000

**Figure 99-38. Electrical Installation, night flying (Sheet 1 of 2)**

The following figure shows the location of the landing light relay in the 407 model (ref. Bell Document BHT-407-MM).

**FIGURE 4.0.2 Ref. Bell Document BHT-407-MM**

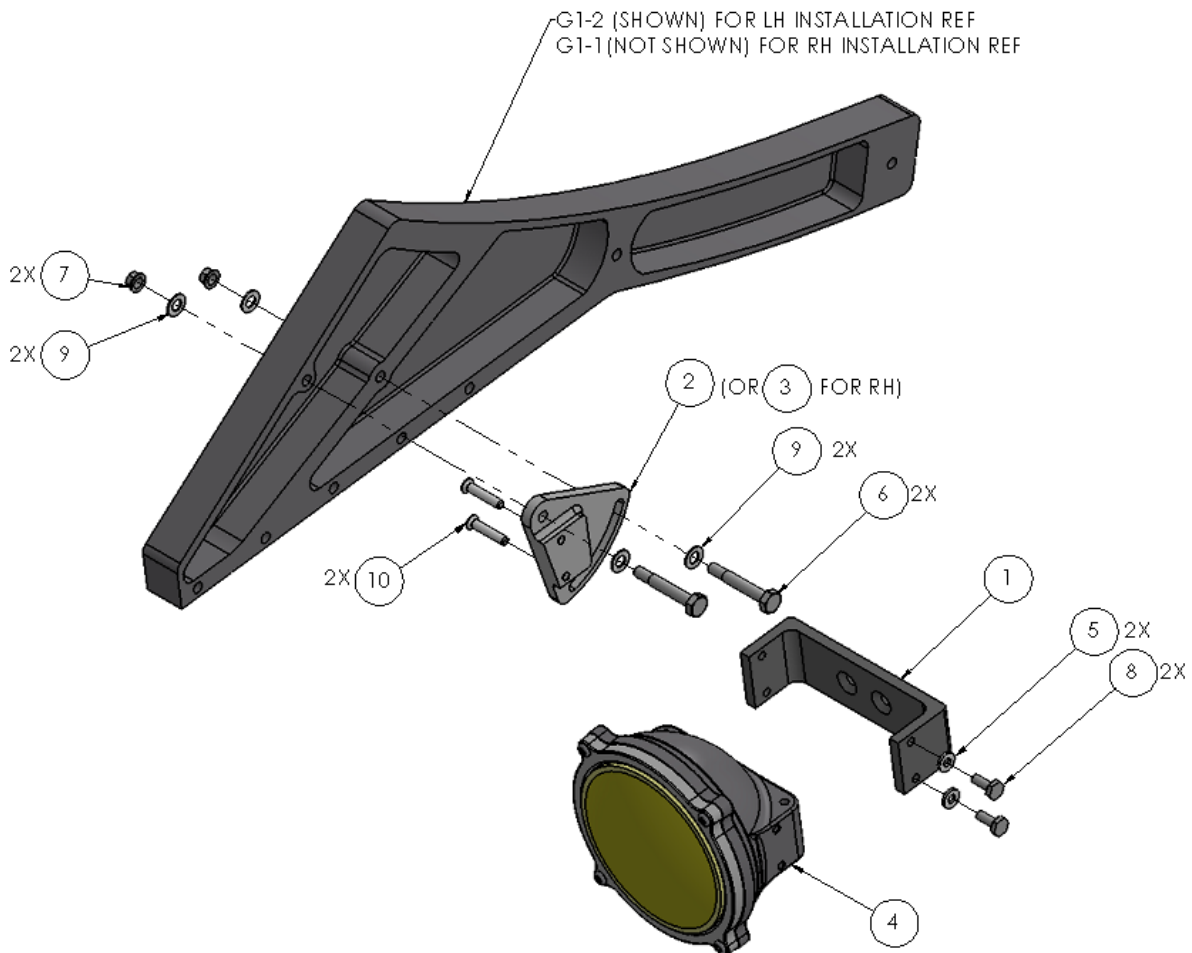


**4.0 INSTALLATION**

4.1 Ensure that electrical power is OFF and any external power is DISCONNECTED.

4.2 **BELL 206 A, B AND L SERIES:** Disable the existing landing lights by disconnecting the existing landing light wires from terminal numbers CR30 and CR31 on the landing light relays (see Figure 4.0.1 for location of relay). Stow wires for future re-connection.

**BELL 407:** Disable the existing landing lights by disconnecting and removing the existing landing light wires connections from the terminal numbers 8K1 and 8K2 on the buss 8TB4, Terminal 1 landing light relays (see Figure 4.0.2 for location of relay). Stow wires for future re-connection.

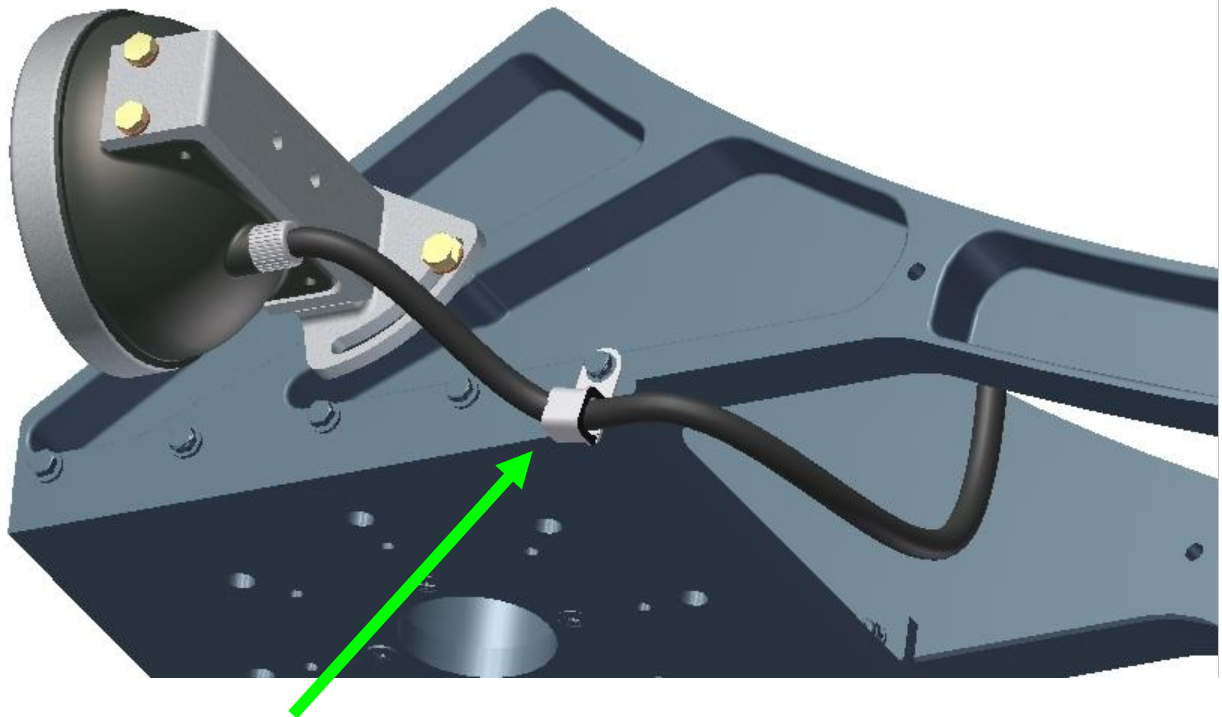


4.3 Attachment holes are provided in the side of the G1 nose mount. Install the G3-1-1A landing light to the side of the G1 nose mount bracket as shown above. (Left side shown – right hand is attached same as left hand). Adjust and locate the angle of the lamp as required and tighten. Attach each side with the supplied hardware in kit.

Installation Parts List: G3-1-1A (or G3-1-1A-RH) Installed on G1 Nose Mount

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	G3-2	LAMP BRACKET
2	1	G3-7	LAMP BRACKET (LH)
3	1	G3-8	LAMP BRACKET (RH)
4	1	G3-10	LAMP HOUSING ASSEMBLY
5	2	AN3-4A	HEX BOLT
6	2	AN4-15A	HEX BOLT
7	2	AN365-428A	STOP NUT
8	2	AN960-10	WASHER
9	4	AN960-416	WASHER
10	2	MS24694-S58	MACHINE SCREW

Torque hardware per AC 43.13-1B/2A Table 7-1, Page 7-9.



- 4.4 Secure the wire using MS21919-DG6 line clamp or equivalent. (Shown above)
- 4.5 Route the wire into the Aircraft landing light area and attach the wires from the Airfilm G3-1-1A landing lights to the aircraft CR30 and CR31 landing light relays and to the ground buss. (As shown in step 2.2)

- 4.6 Check entire G3-1-1A assembly for flight integrity. System should be secure and not have free play movement.
- 4.7 Check landing lights for operation.
- 4.8 Revise weight and balance:

The following table presents the location of the weight center of gravity of the G3-1-1A Landing Lights for adjustment of the aircraft weight and center of gravity with the mount installed. ASSY CONSIST OF QTY 2 LAMP UNITS (1R/H AND 1 L/H)

<b>HELICOPTER MODEL</b>	<b>INSTALLATION</b>	<b>WEIGHT (lbs)</b>	<b>STATION (in)</b>	<b>BL (in)</b>
Bell 206 A & B	G3-1-1A Assy Wire Assy	4.7 0.2	1.5 36.6	0.0 0.0
Bell 206 L	G3-1-1A Assy Wire Assy	4.7 0.2	1.5 36.6	0.0 0.0
Bell 407 Model:	G3-1-1A Assy Wire Assy	4.7 0.2	1.5 36.6	0.0 0.0

- 4.9 Make appropriate log book entry

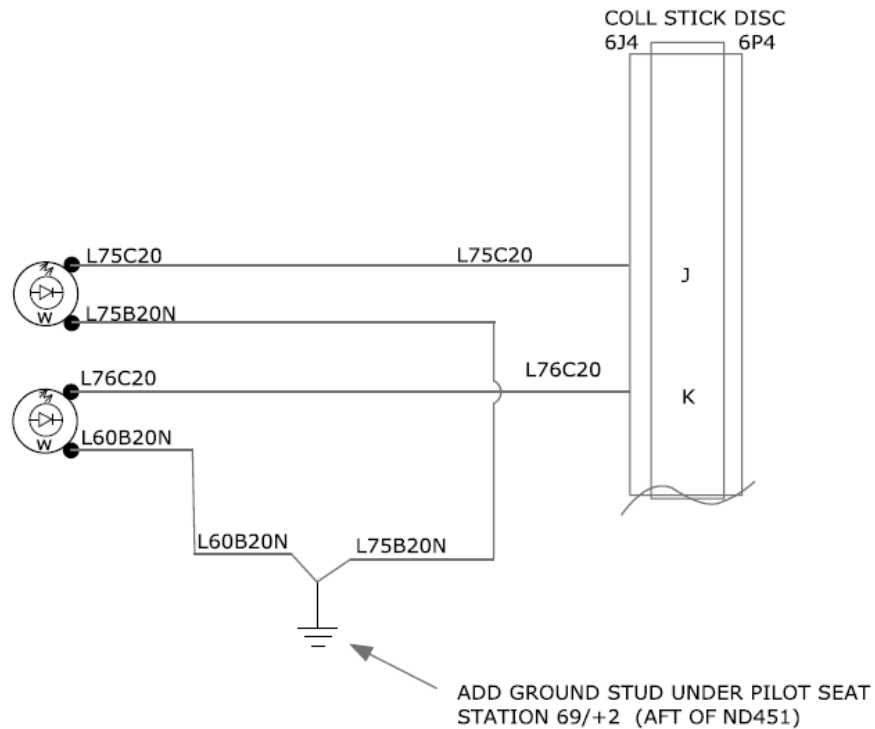
## **5.0 REMOVAL**

- 5.1 Remove entire G3-1-1A Assembly and wires and reconnect standard landing lights.



**6.0 INSTALLATION ORIGINALLY EQUIPED LED AIRCRAFT (BELL 407 SN 54300 AND SUBSEQUENT)**

**CAUTION**  
**DO NOT CONNECT STANDARD GE PAR 36 BULB TO ORIGINALLY LED FURNISHED AIRCRAFT**



NOTE: CAP AND STOW EXISTING WIRES  
L75B20  
L25A20N  
L76B20  
L60A20N

## **6.0 INSTALLATION**

- 6.1 Ensure electrical power is off and any external power is disconnected.
- 6.2 Disable the existing landing lights by de-pinning L75B20 (pin J) and L76B20 (pin K) From collective stick disc. 6J4. Cap and stow wires for future re-connection.
- 6.3 Cap and stow existing landing light wires L75B20, L25A20N, L76B20, and L60A20N in landing light panel area for future re-connection.
- 6.4 Mark new wires L74C20 and L76C20 to appropriate length to reach from pilot seat pan to landing lights. Terminate in collective stick disc. 6J4 in pins J and K. Route to landing lights.
- 6.5 Install ground stud at station 69/+2 in pilot seat pan aft of ND451. Mark new wires L25B20N and L60B20N. Terminate at ground stud and route to landing lights. Route to landing lights through existing hole in aircraft belly at approximately station 62.
- 6.6 Install the G3-1-1 landing light around the forward cross tube:
  - 6.6A:

Locate and attach the G3-4 clamp brackets to the forward cross tube approximately 1-2 inches inside or outside of cross tube gear clamps. Depending on paint thickness, use Neoprene or Silicon rubber shim from .0625 to .125 thickness to ensure the clamps have a secure fit around cross tube. Attach with the supplied hardware: MS-24694-S105 screws (qty 2), AN960-416 washers (qty 2), and AN365-428a stop nuts (qty 2). Torque 50-70 inch/lbs (Ac41.13-1B/ 2A table 7-1, page 7-9).
  - 6.6B:

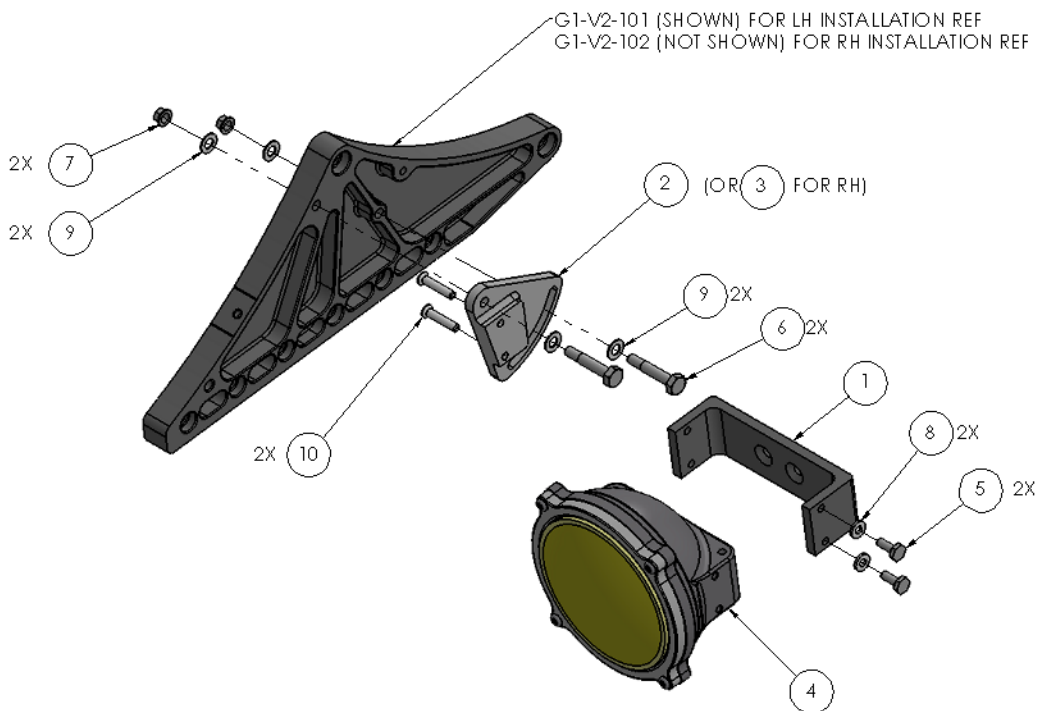
Attach the G3-2 lamp bracket to the G3-4 clamps using the following supplied hardware: AN3-5A bolts (qty 4), and AN960-10 washers. Torque 20-26 inch/lbs (AC 41.13-1B/ 2A table 7-1, page 7-9).
- 6.7 Route wires from existing hole in aircraft belly to G3-2 lamp brackets. Secure with MS21919-DG6 line clamp or equivalent. Terminate to G3-1-1 bulbs.
- 6.8 Using a level and protractor adjust the tilt angle of the landing and taxi lights. Adjust landing light to 25° to 30° down angle and taxi light to 5° to 10° down angle.
- 6.9 Check entire G3-1-1 assembly for flight integrity. System should be secure and not have free play movement.
- 6.10 Check landing lights for operation.

**7.0 G1-V2 INSTALLATION**

7.1 Ensure that electrical power is OFF and any external power is DISCONNECTED.

7.2 **BELL 206 A, B AND L SERIES:** Disable the existing landing lights by disconnecting the existing landing light wires from terminal numbers CR30 and CR31 on the landing light relays (see Figure 4.0.1 for location of relay). Stow wires for future re-connection.

**BELL 407:** Disable the existing landing lights by disconnecting and removing the existing landing light wires connections from the terminal numbers 8K1 and 8K2 on the buss 8TB4, Terminal 1 landing light relays (see Figure 4.0.2 for location of relay). Stow wires for future re-connection.



7.3 Attachment holes are provided in the side of the G1-V2 nose mount. Install the G3-1-1A landing light to the side of the G1-V2 nose mount bracket as shown above. (Left hand installation shown– right hand installation (G3-1-1A-RH) is attached the same as the left hand side). Adjust and locate the angle of the lamp as required and tighten all fasteners. Attach each side with the supplied hardware in kit.

Installation Parts List: G3-1-1A (or G3-1-1A-RH) on G1-V2 Nose Mount

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	G3-2	LAMP BRACKET
2	1	G3-7	LAMP BRACKET (LH)
3	1	G3-8	LAMP BRACKET (RH)
4	1	G3-10	LAMP HOUSING ASSEMBLY
5	2	AN3-4A	HEX BOLT
6	2	AN4-13A	HEX BOLT
7	2	AN365-428A	STOP NUT
8	2	AN960-10	WASHER
9	4	AN960-416	WASHER
10	2	MS24694-S58	MACHINE SCREW

Torque hardware per AC 43.13-1B/2A Table 7-1, Page 7-9.

- 7.4 Secure the wire using MS21919-DG6 line clamp or equivalent.
- 7.5 Route the wire into the Aircraft landing light area and attach the wires from the Airfilm G3-1-1A landing lights to the aircraft CR30 and CR31 landing light relays and to the ground buss. (As shown in step 2.2)
- 7.6 Check entire G3-1-1A assembly for flight integrity. System should be secure and not have free play movement.
- 7.7 Check landing lights for operation.
- 7.8 Revise weight and balance:

The following table presents the location of the weight center of gravity of the G3-1-1A Landing Lights for adjustment of the aircraft weight and center of gravity with the mount installed. ASSY CONSIST OF QTY 2 LAMP UNITS (1R/H AND 1 L/H)

HELICOPTER MODEL	INSTALLATION	WEIGHT (lbs)	STATION (in)	BL (in)
Bell 206 A & B	G3-1-1A Assy	4.7	1.5	0.0
	Wire Assy	0.2	36.6	0.0
Bell 206 L	G3-1-1A Assy	4.7	1.5	0.0
	Wire Assy	0.2	36.6	0.0
Bell 407 Model:	G3-1-1A Assy	4.7	1.5	0.0
	Wire Assy	0.2	36.6	0.0

7.9 Make appropriate log book entry

**8.0 REMOVAL**

8.1 Remove entire G3-1-1A Assembly and wires and reconnect standard landing lights.