

SERVICE BULLETIN

Subject: Cyclic Balance Adjustment with Single or Dual Controls Configuration

Helicopters Affected: Bell 407 with an Onboard Systems Dual Cargo Hook System installed per STC SR02724LA.

Parts Affected: P/Ns listed in Table 1.

Table 1 Affected Part Numbers

OSI P/N	Description
200-456-00	Dual Cargo Hook System, Left Hand
200-456-01	Dual Cargo Hook System, Right Hand

Compliance: Recommended (See **Recommended Action** section)

Ownership: Please review this information and determine if the equipment is still in your possession. If the equipment is no longer in your possession, please forward this service bulletin to the current owner, or to your customer, as applicable.

Description: Installation of the Dual Master Cylinder (P/N 232-821-00) as part of the Dual Cargo Hook System (P/N 200-456-00 and P/N 200-456-01) for all Bell 407 aircraft may result in a cyclic balance condition requiring adjustment when dual controls are utilized. The cyclic control balance should also be evaluated with the aircraft configured for single control operation in accordance with AC 27.161.

During trim control verification per AC 27.161, forward movement in the cyclic control position may be observed upon release of the controls, with the magnitude of movement dependent on the level of cyclic friction applied. AC 27.161 states that the control shall not move when released.

The installation of the Dual Master Cylinder (P/N 232-821-00) affects the cyclic balance in conjunction with internal cyclic friction. The current Owner's Manual, Doc No. 120-155-00, does not include instructions to check and re-balance the cyclic after its installation. Accordingly, this Service Bulletin establishes the inspection and adjustment procedures required to verify proper trim control system operation in accordance with AC 27.161.

Recommended Action: To comply with this service bulletin, perform the inspection and potential alteration as detailed in the **Accomplishment Instructions** within the next 30 hours of flight with the Dual Cargo Hook System (P/N 200-456-00 or P/N 200-456-01) installed. Until the **Accomplishment Instructions** are completed, the pilot in command shall maintain continuous hand control of the cyclic stick unless autopilot (AFCS) is engaged.

Manpower: Approximately 0.5 man-hours to 2.0 man-hours are required to complete this bulletin, depending on the "Recommended Actions" findings. This estimate is based on hands-on time and may vary with personnel and facilities available.

Required Materials/Parts: Kit P/N 200-516-00 (see Table 2) includes all the parts required to comply with this Service Bulletin. The kit (supplied) is required if alteration is deemed necessary IAW AC 27.161.

Table 2 – Parts List for Kit P/N 200-516-00

Part No.	Description	Quantity
514-145-00	Spring	1
511-417-00	Insert	2
510-644-00	Screw	1
510-785-00	Washer	1

Please submit all requests for Kit P/N 200-516-00 to the following contact:

sales@onboardsystems.com
[360 546 3072](tel:3605463072)

The following material (not supplied) is required if alteration is deemed necessary IAW AC 27.161.

Table 3 – Material List

Part No.	Description	Quantity
299-947-100 TYPE II CL 2	Adhesive Magnobond 6398 Or Hysol Ea9392 (Ref C-317)	A/R

Special Tools: No special tools required

Weight and Balance: Negligible effect

Electrical Load Data: Not affected

References:

BHT-407-MM, Maintenance Manual, Chapter 67

DMC-407-A-67-12-02-00A-280A-A

DMC-407-A-67-12-00-00A-271A-A

DMC-407-A-67-14-00-00A-271A-A

DMC-407-A-67-12-04-00A-520A-A

Publications Affected: The following publications can be downloaded from the company web site: www.onboardsystems.com

Owner's Manual 120-155-00

Contact Information: Technical support question regarding this bulletin can be addressed through the following contact methods:

Phone: 360-546-3072

E-mail: techhelp@onboardsystems.com

Web: <https://www.onboardsystems.com/support/technical>

Disposition of Parts Removed: Removed parts should be preserved, labeled, and stored for future use should the Dual Cargo Hook System be removed from the aircraft.

Material/Part Availability: Contact Onboard Systems for availability of replacement parts.

Accomplishment Instructions:

1. With the Dual Master Cylinder installed, perform the cyclic control stick longitudinal balance spring adjustment using the applicable specification, as follows:
 - a. DMC-407-A-67-12-00-00A-271A-A, *Cyclic Control Stick Longitudinal Balance Spring* for Model 407 and Model 407GX without the AFCS Provisions Kit installed.
 - b. DMC-407-A-67-14-00-00A-271A-A, *Cyclic Control Stick Longitudinal Balance Spring* for Model 407GX with the AFCS Provisions Kit installed and all Model 407GX rotorcraft.
2. Perform the cyclic friction adjustment per DMC-407-A-67-12-02-00A-280A-A. Per section 1.6, the cyclic friction shall be maintained at 0.5 lbs to 1.5 lbs.
3. Perform steps 1 and 2 iteratively, as required, to satisfy the control balance requirements in accordance with AC 27.161.
4. If, after completion of Step 1 through Step 3, the flight trim control does not meet the requirements of AC 27.161, as evidenced by forward cyclic drift when the cyclic control is released from a forward position, then accomplish the following corrective actions.

5. Corrective Action Procedure:

- a. Remove the existing trim control spring (P/N E0750-063-3000-M for 407GX and 407GX with AFCS Provisions Kit or P/N 206-001-402-001 for 407 and 407GX without the AFCS Provisions Kit) from the Eyebolt (P/N 206-001-745-003). See Figure 1.
- b. Remove and retain the Bracket Assembly (P/N 206-001-379-001) and the Eyebolt (P/N 206-001-745-003). See Figure 1.
- c. Temporarily relocate the electrical bracket and P-clamp attached on the aft screw. Retain screws and washers (QTY 2).
- d. **For Model 407GX with the AFCS Provisions Kit installed and Model 407GX:**

Install QTY 2 new inserts (P/N 511-417-00) at STA 65.08 and 67.58. The new inserts shall be 1.00" aft of the current inserts at STA 64.08 and 66.58. Drill .562/.565" holes through the inner skin and core. Add adhesive (P/N 299-947-100 Type II CL 2) to retain the inserts. See Figure 2.

e. For Model 407 and Model 407GX without the AFCS Provisions Kit installed:

Install QTY 2 new inserts (P/N 511-417-00) at STA 65.08 and 67.58. The new inserts shall be 1.50" forward of current inserts at STA 66.58 and STA 69.08. Drill .562/.565" holes through the inner skin and core. Apply adhesive (P/N 299-947-100, Type II, Class 2) to retain the inserts.

- f. Plug the visible insert located at STA 64.08 (407GX with AFCS Provisions Kit or 407GX) or STA 69.08 (407 or 407GX without AFCS Provisions Kit) with a screw (P/N 510-644-00) and washer (P/N 510-785-00) as seen in Figure 2.
 - g. Re-install Bracket Assy (P/N 206-001-379-001) with Eyebolt (P/N 206-001-745-003) using the new inserts. See Figure 3.
 - h. Relocate the electrical bracket and P-clamp and ensure that electrical harnesses are free from chafing and sagging and that minimum bend radii are respected. See Figure 3.
 - i. Connect the new Balance Spring (P/N 514-145-00) to the Eyebolt (P/N 206-001-745-003) and the Cyclic Torque Tube Bracket (P/N 20-032-3C) as shown in Figure 3.
 - j. Perform the cyclic friction adjustment per DMC-407-A-67-12-02-00A-280A-A except adjust the tension on the balance spring (P/N 514-145-00) by adjusting the eyebolt position to achieve a spring length of 4.30" for single pilot control or 5.91" for dual controls as shown in Figure 3. The cyclic stick shall be in full aft position during adjustment.
 - k. Apply hydraulic power and ensure the cyclic stick remains stationary when either cyclic stick is moved from the central position in any direction.
6. The pilot cyclic stick balance check should be performed each time the co-pilot control cyclic stick is installed or removed. Cyclic balance shall be achieved in single or dual control configuration by adjusting the eyebolt (P/N 206-001-745-003) after the modifications detailed in this service bulletin are complete.

Figure 1 – Existing Installation for 407GX and 407GX with AFCS Provisions Kit Configuration

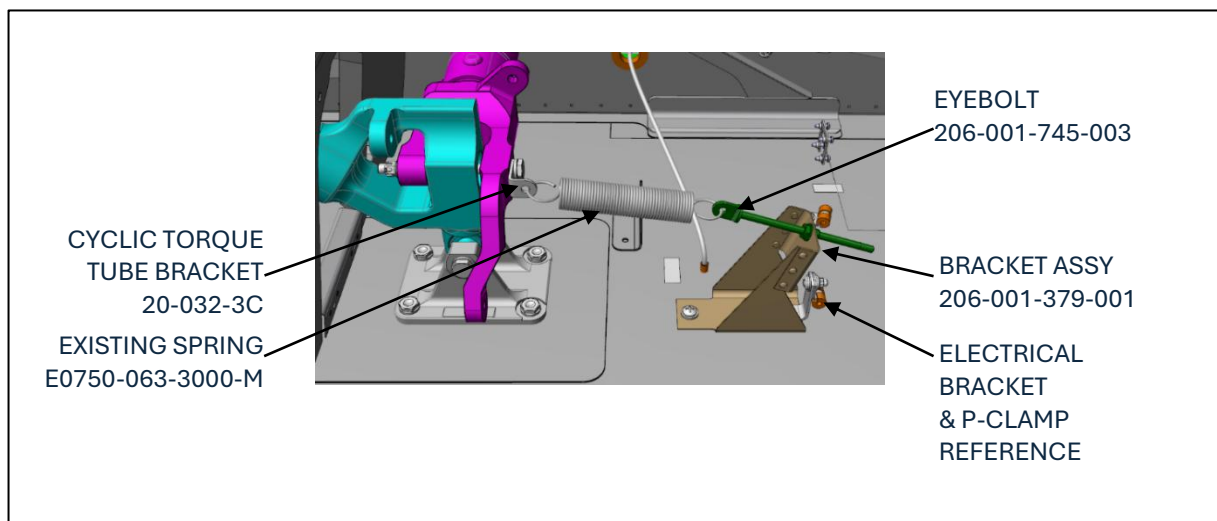
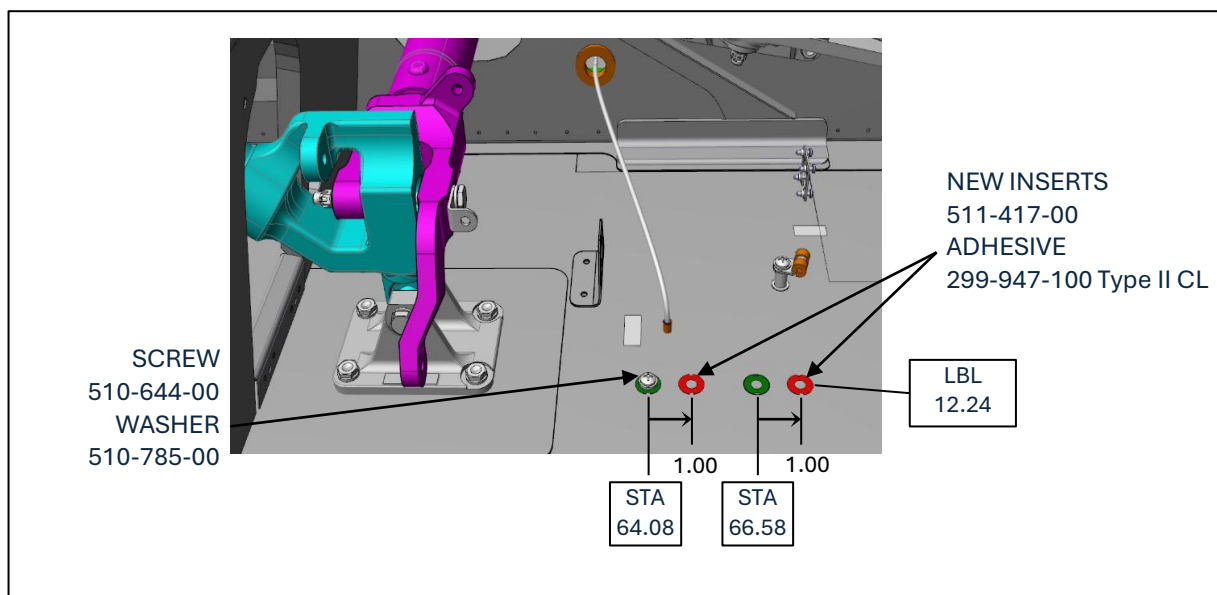


Figure 2 – Modifications for 407GX and 407GX with AFCS Provisions Kit Configuration



Please note: Model 407 and 407GX without AFCS Provisions Kit baseline inserts are not located at STA 64.08 and 66.58 as shown. The baseline inserts for Model 407 and 407GX without AFCS Provisions Kit are located at STA 66.58 and 69.08.

Figure 3 – Modified Installation for 407GX_i and 407GX with AFCS Provisions Kit Configuration

