



A Textron Company

ALERT SERVICE BULLETIN

412-21-187

26 January 2022

Revision A, 23 February 2022

MODEL AFFECTED: 412/412EP

SUBJECT: TAILBOOM ATTACHMENT HARDWARE,
INSPECTION AND REPLACEMENT OF

HELICOPTERS AFFECTED: Serial numbers 33001 through 33213, 34001 through 34036, 36001 through 36687, 36689 through 36999, 37002 through 37018, 37021 through 37051, 38001 and 39101 through 39103. Serial number 37052 is affected by Part II and Part III only.

[Serial number 36688, 37019, 37020, 37053 through 37999, 38002 through 38999 and 39104 through 39999 will have the intent of Part I and Part II of this bulletin accomplished prior to delivery. Serial number 37052 will have the intent of Part I accomplished prior to delivery].

COMPLIANCE:

Part I: Within the next 300 flight hours or 90 days after the release date of revision A of this bulletin.

Part II: Within 1 to 5 flight hours after accomplishment of Part I.

Part III: Within the next 600 flight hours or 12 months, whichever comes first after accomplishment of Part II and every 600 flight hours or 12 months thereafter.

DESCRIPTION:

Revision A of this bulletin is being released to correct minor grammatical errors and to change the existing 100 Hours After Installation Of Tailboom Special Inspection, currently published in the Maintenance Manual. This change is introduced in Part II to improve the effectiveness of the torque check and minimize the risk of bolt fatigue due to possible loss of torque after tailboom or bolt installation. For helicopters that have Part I of the original release of this bulletin accomplished, it is acceptable to accomplish Part II of this bulletin revision A within the next 25 flight hours / 30 days whichever comes first after the release date of revision A. For helicopters that do not have Part I of this bulletin accomplished and had the tailboom installed within the last 100 flight hours, it is acceptable to accomplish the torque check of the tailboom attachment bolts in accordance with the currently published 100 Hours After Installation Of Tailboom Special Inspection.

Part III has been created in this revision to clarify the requirements of the new 600 hours / 12 months Special Inspection introduced as Part II in the original release of the bulletin.

Bell receives occasional reports of tailboom attachment barrel nuts found cracked. The root cause for cracking can vary from corrosion damage, high time in service or hydrogen embrittlement. In a recent case, the upper left-hand barrel nut was found cracked with less than 1000 hours in service. The investigation revealed that cracking was due to hydrogen embrittlement.

Part I of this bulletin mandates the replacement of the four current steel alloy barrel nuts NAS577BxA with nickel alloy barrel nuts NAS577CxA that offer better corrosion resistance and are not susceptible to hydrogen embrittlement. This will mitigate the risk of barrel nut cracking that can lead to loss of attachment bolt torque and subsequent fracture. Bell investigated two recent reports of in-flight upper left hand tailboom attachment bolt fracture. The root cause of the fracture has been attributed to fatigue and low torque is suspected as being a contributing factor. In both cases, a loud bang was heard followed by a yaw.

Due to the criticality of the tailboom attachment points and, since the upper left attachment is the most critical, **Part I** of this bulletin also mandates the replacement of the upper left tailboom attachment bolt as well as a detailed visual inspection of the three other bolts. Any bolt that requires replacement must be replaced with a new bolt. For the helicopters that have been in service for less than 5000 flight hours or 5 years and have not had a 5000 Hour / 5 Year inspection accomplished, the upper left-hand bolt will not require replacement as part of this bulletin. The replacement can be accomplished at the next scheduled tailboom removal.

The Maintenance Manual (MM) will be revised to include the replacement of the upper left-hand bolt when the tailboom is removed/installed during the scheduled 5000 Hour / 5-Year Inspection while the remaining three bolts will require a detailed visual inspection.

Part II of this bulletin changes the existing 100 Hours After Installation of Tailboom Special Inspection requirement. The torque check is now to be accomplished between 1 and 5 flight hours after tailboom installation or bolt replacement and repeated until torque has stabilized (three times maximum). Until incorporation to the Maintenance Manual Chapter 5, Part II will require accomplishment anytime the tailboom is installed or a tailboom attachment bolt is replaced.

Part III of this bulletin introduces a new recurring torque check of all four attachment bolts. This new torque check requirement will also be incorporated in the Maintenance Manual as a Special Inspection every 600 flight hours / 12 months. Any bolt found below the minimum specified torque will require replacement and an inspection of the associated barrel nut for condition will be required. Part III will require accomplishment until this new 600 hours / 12 months Special Inspection is incorporated in the Maintenance Manual Chapter 5.

Applicability of this bulletin to any spare part shall be determined prior to its installation on an affected helicopter.

APPROVAL:

The engineering design aspects of this bulletin are FAA approved for FAA certified helicopters as listed in the applicable Type Certificate Data Sheet. For non FAA certified helicopters, the engineering design aspects of this bulletin are Bell Engineering approved.

CONTACT INFO:

For any questions regarding this bulletin, please contact:

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MANPOWER:

Approximately 2.0 man-hours are required to complete this bulletin. This estimate is based on hands-on time and may vary with personnel and facilities available.

WARRANTY:

There is no warranty credit applicable for parts or labor associated with this bulletin.

MATERIAL:

Required Material:

The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty (Note)</u>
NAS577C9A	Barrel nut	1
NAS577C8A	Barrel nut	1
NAS577C6A	Barrel nut	2
NAS578C9A	Retainer	1
NAS578C8A	Retainer	1
NAS578C6A	Retainer	2
NAS629-26	Bolt	1 (1)
NAS628-26	Bolt	1 (2)
NAS626-26	Bolt	2 (2,3)

Notes:

1. NAS629-24 bolt can be used provided proper thread engagement can be achieved.
2. Only required if the bolt does not meet the inspection criteria provided in this bulletin.
3. NAS626-24 bolt can be used provided proper thread engagement can be achieved.

Consumable Material:

The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator's consumable material stock levels. This material may be obtained through your Bell Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty (Note)</u>	<u>Reference *</u>
2400-00259-00	Aeriol Thixo No 2 Aviation Grease	14.4 Oz (1)	C-561
2010-00088-00	Sealant	2 Oz	C-308
2230-10536-00	Torque seal lacquer	1 Oz (2,3,4)	C-049

* C-XXX numbers refer to the consumables list in the BHT-ALL-SPM, Standard Practices Manual

NOTES:

1. High Pressure grease (C-172) can be used as an alternate.
2. Quantity indicated is the format that the product is delivered in. Actual quantity required to accomplish the instructions in this bulletin may be less than what has been delivered.

3. 2230-10536-00 torque seal lacquer (C-049) is color yellow, however other colors are available, at customer's option, as shown in BHT-ALL-SPM Standard Practice Manual, in Chapter 13 under C-049.
4. Polyurethane paint (C-245) or 2230-10547-00 (Vibra-TITE Viz-Torque® 202) are acceptable alternates to C-049.

SPECIAL TOOLS:

None required.

WEIGHT AND BALANCE:

Not affected.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

BHT-412-IPB Illustrated Parts Breakdown Chapter 53
BHT-412-MM Maintenance Manual Chapter 53

PUBLICATIONS AFFECTED:

BHT-412-IPB Illustrated Parts Breakdown Chapter 53
BHT-412-MM Maintenance Manual Chapter 5 and Chapter 53

ACCOMPLISHMENT INSTRUCTIONS:

Part I. Tailboom attachment hardware inspection and replacement.

1. Prepare the helicopter for maintenance.
2. At the forward end of the tailboom, remove the four plug buttons covering the tailboom attachment barrel nuts.
3. Using adequate tailboom support equipment, support tailboom to remove the load at the tailboom attachment points.

-NOTE-

If the helicopter has been in service for less than 5000 hours or 5 years, it is not necessary to replace the upper left-hand tailboom attachment bolt as part of this bulletin. The bolt can be replaced at the next scheduled tailboom removal. However, all four bolts shall be inspected and all four barrel nuts replaced in accordance with Part I of this bulletin, regardless of aircraft time in service. If a barrel nut is found cracked, its associated bolt shall be replaced with a new one

4. Gain access to the tailboom attachment bolts and remove the upper left-hand bolt. Discard bolt and retain countersunk washer and plain washers. (BHT-412-MM, Chapter 53). With reference to the note above, if the bolt is not replaced at this time, visually inspect bolt for mechanical or corrosion damage. Any corrosion including surface corrosion is cause for rejection.
5. Remove barrel nut and install new barrel nut NAS577C9A with new retainer NAS578C9A.

CAUTION

Grease (C-561) or (C-172) shall be applied on bolt shank only.
Grease shall not be applied to bolt threads.

6. Apply a coating of grease (C-561) or (C-172) to bolt shank only.
7. Place countersunk washer on bolt with countersunk side facing bolt head. Install new bolt with previously removed plain washers between countersunk washer and fitting. Ensure not less than one thread or no more than two threads are showing. Adjust quantity of plain washers as required. Refer to the applicable Illustrated Parts Breakdown (IPB) for plain washer part number. Torque bolt 1300 to 1600 inch-pounds (147 to 181 Nm). (BHT-412-MM, Chapter 53).
8. Remove upper right-hand bolt with countersunk washer and plain washers. Retain washers for reuse.
9. Visually inspect bolt for mechanical or corrosion damage. Any corrosion including surface corrosion is cause for rejection. Damaged threads and detectable wear or mechanical damage on the bolt shank or bolt head radii are cause for rejection.

10. Remove the barrel nut and install new barrel nut NAS577C8A with new retainer NAS578C8A. If the removed barrel nut is found cracked, discard the bolt and install a new one.

CAUTION

Grease (C-561) or (C-172) shall be applied on bolt shank only.
Grease shall not be applied to bolt threads.

11. Apply a coating of grease (C-561) or (C-172) to the bolt shank only.
12. Place countersunk washer on bolt with countersunk side facing bolt head. Install serviceable bolt with previously removed plain washers between countersunk washer and fitting. Ensure that not less than one thread or no more than two threads are showing. Adjust quantity of plain washers as required. Refer to the applicable Illustrated Parts Breakdown (IPB) for plain washer part number. Torque bolt 1000 to 1200 inch-pounds (113 to 136 Nm). (BHT-412-MM, Chapter 53).

CAUTION

The lower tailboom attachment bolts and barrel nuts must be removed one at a time.

13. Remove one of the two lower bolts with countersunk washer and plain washers. Retain washers for reuse.
14. Visually inspect bolt for mechanical or corrosion damage. Any corrosion including surface corrosion is cause for rejection. Damaged threads and detectable wear or mechanical damage on the bolt shank or bolt head radii are cause for rejection.
15. Remove the barrel nut and install a new barrel nut NAS577C6A with a new retainer NAS578C6A. If the removed barrel nut is found cracked, discard the bolt and install a new one.

CAUTION

Grease (C-561) or (C-172) shall be applied on bolt shank only.
Grease shall not be applied to bolt threads.

16. Apply a coating of grease (C-561) or (C-172) to the bolt shank only.

17. Place countersunk washer on bolt with countersunk side facing bolt head. Install bolt with previously removed plain washers between countersunk washer and fitting. Ensure that not less than one thread or no more than two threads are showing. Adjust quantity of plain washers as required. Refer to the applicable Illustrated Parts Breakdown (IPB) for plain washer part number. Torque bolt 400 to 430 inch-pounds (45.2 to 48.6 Nm). (BHT-412-MM, Chapter 53).
18. Repeat steps 13 through 17 for the remaining lower bolt.
19. Apply sealant (C-308) to plug buttons and install.
20. Make an entry in the helicopter logbook and historical service records indicating compliance with **Part I** of this Alert Service Bulletin.

Part II. Between 1 and 5 flight hours after tailboom installation or attachment bolt replacement.

1. Carry out a torque check of the tailboom attachment bolts using the torque values specified in **Part I**. Torque check must be repeated every 1 to 5 flight hours until torque has stabilized (Three times maximum). If after three attempts the torque has not stabilized; inspect the bolt and replace barrel nut.
2. Once the torque is stabilized, apply torque seal (C-049) witness mark to all four bolt heads.

Part III. Recurring torque check of the tailboom attachment hardware.

1. Carry out a torque check of the tailboom attachment bolts 600 flight hours or 12 months, whichever comes first after accomplishment of **Part II**, and every 600 flight hours or 12 months thereafter. Re-apply torque seal (C-049) as required.
2. Any bolt found below the minimum torque specified in **Part I** must be replaced. Inspect the associated barrel nut for condition and for loss of tare torque; replace as necessary. Any bolt that requires replacement must be torque checked in accordance with **Part II**.
3. Make an entry in the helicopter logbook and historical service records indicating compliance with **Part III** of this Alert Service Bulletin.