

ALERT SERVICE BULLETIN



NO. 412-09-137

DATE Nov 23, 2009

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DATE
REV

MODEL AFFECTED: 412, 412EP

SUBJECT: MAIN ROTOR BLADE EXPANDABLE BOLT P/N
412-010-137-103

HELICOPTERS AFFECTED: Model 412 helicopters serial number 33001 through 33213, S/N 34001 through 34036 and S/N 36001 and subsequent.

Model 412EP helicopters serial numbers 36523, 36525 and subsequent will have the intent of Part A of this bulletin accomplished prior to delivery.

COMPLIANCE: **Part A:** Within 100 hours but no later than Jan 30, 2010.

Part B: Within 100 hours but no later than Jan 30, 2010 and every 300 hours or 6 months thereafter, whichever occurs first.

Part C: 25 hours after accomplishment of Part B. Refer to Accomplishment Instructions in this Bulletin for additional information.

All installed or spare Expandable Blade Bolt P/N 412-010-137-103.

DESCRIPTION:

Bell Helicopter has recently investigated an in-flight fracture of the Expandable Blade Bolt P/N 412-010-137-103. Investigation has revealed that the fracture originated from fretting damage of the Expandable Bolt core pin. Low handle tension, improper handling, unapproved disassembly and re-assembly of the expandable bolt were contributing factors resulting in fretting damage of the core pin and broken ring segments. The loss of dry film lube from the fretting damage consequently results in corrosion of the expandable ring segments and the core pin.

This Bulletin addresses these issues by incorporating a one-time inspection of the expandable bolt spacer (Part A) as well as a recurring inspection of the expandable bolt (Part B), damage criteria, lubrication instructions and a handle force check (Part C).

Please note that operators also have the option to replace the expandable blade bolts P/N 412-010-137-103 with solid bolts P/N 412-010-124-109 at their discretion. Refer to Technical Bulletin 412-92-103.

APPROVAL:

The engineering design aspects of this bulletin are FAA/ODA approved.

MANPOWER:

PART A: Approximately 1.0 man-hour.

PART B: Approximately 4.0 man-hours are required to complete this bulletin. Man-hours are based on hands-on time, and may vary with personnel and facilities available.

PART C: Approximately 1.0 man-hour.

WARRANTY:

Owners / Operators of Bell Helicopters who comply with the instructions in this Bulletin will be eligible to receive a credit for blade bolts found to have a two-piece spacer as per PART A of this bulletin.

To receive this credit:

- Comply with the instructions contained in this Bulletin no later than the applicable hours in the “compliance section” of this ASB, or before March 31st 2010.
- Purchase replacement blade bolts as required in the materials section of this bulletin from a Bell approved source.
- Submit an MMIR to the Bell Warranty Department.

Customers who fail to comply with the instructions in this Bulletin after the 31st March 2010 are not eligible for the special warranty credit listed above. There is no 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 Helicopter Textron Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Quantity</u>
412-010-137-103	Bolt Assembly, Expandable	(If Required)
412-010-124-109	Bolt Assembly	(If Required)

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 Helicopter Textron Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Quantity</u>	<u>Reference</u>
THIXOGREASE	Grease, High Pressure	As required	C-561
TT-N-95, TY II	Aliphatic Naphtha	As required	C-305
TT-I735 Isopropyl 99%	Alcohol	As required	C-385
TIO-LUBE 70	Dry Film Lubricant	As required	C-021

SPECIAL TOOLS:

Expandable Blade Bolt Segment Removal/Installation Work Aid

Operators may, at their discretion, manufacture an Expandable Blade Bolt Segment Removal/Installation work aid similar to the one shown in Figure 4 of this Bulletin.

Tool Length: 12.0 inches (304.8 mm)

Tool Diameter: 0.625 inch (6.35 mm)

Thread size: .4375-20 UNJF-3A. Thread per MIL-S-8879.

1 inch (25.4 mm) min. full thread depth

WEIGHT AND BALANCE:

Not affected

ELECTRICAL LOAD DATA:

Not affected

REFERENCES:

BHT-412-IPB Illustrated Parts Breakdown
BHT-412-MM Maintenance Manual
BHT-412-CR&O Component Repair and Overhaul Manual
BHT-ALL-SPM Standard Practices Manual

PUBLICATIONS AFFECTED:

None affected

ACCOMPLISHMENT INSTRUCTIONS:

CAUTION

Expandable blade bolt handle shall not be closed when the bolt is not installed. Failure to follow this caution could result in damaging the bolt ring segments.

PART A

1. Gain access to the Expandable Blade Bolt (1) and remove from the M/R Hub. (Figure 1).
2. A one-time inspection of the spacer (Figure 2) in the center of the expandable ring segments. The two-piece spacer configuration is unapproved; therefore, the discrepant bolt must be removed from service and returned through the (CPR) Process (Information Letter GEN-04-98).

PART B

1. Gain access to the Expandable Blade Bolt (1) and remove from M/R Hub. (Figure 1)
2. Clean the expandable blade bolt with a cloth dampened with aliphatic naphtha (C-305) or isopropyl alcohol (C-385) and wipe dry with a clean rag.
3. Prior to disassembly of the bolt, ensure the nut (4) is facing up.

4. With the expandable blade bolt handle (2) in the open (as removed) position, remove nut (4) from the core pin (6).
5. Attach the expandable blade bolt segment removal/installation work aid (5) to the threaded end of the core pin (6) until firmly seated (finger-tight only).
6. Hold or secure the handle (2) and, while holding the segments (3), invert expandable bolt assembly to allow the segments (3) to slide freely from the core pin (6) to the bolt segment removal/installation work aid (5).
7. Using naphtha (C-305) or alcohol (C-385) to clean the segments (3) and the core pin (6) without removing them from the bolt segment removal/installation work aid (5). Separate the segments (3) to remove all dirt and debris.
8. Thoroughly dry the segments (3) and the core pin (6) with clean compressed air. Visually inspect the segments (3) and the expandable blade bolt (1) for cracks, fretting, corrosion, or mechanical damage as per Figure 3 of this bulletin.

-NOTE-

Repairable damage of the expandable blade bolt is limited to blending/polishing with abrasive cloth or paper 240-grit followed by 320 and 400-grit abrasive cloth or paper (C-423). Apply brush dry film lube (C-021) to repaired areas and areas of burnished or missing dry film lube.

-NOTE-

Any core pin (6) missing dry film lube from more than 50% of its surface area is not repairable.

-NOTE-

Any bolts with damage beyond the limits of Figure 3 must be removed from service.

9. Apply a thin continuous layer of Thixogrease (C-561) to the core pin (6) and the segments (3) both internally and externally on all surfaces.
10. To begin reassembly, hold the end of the bolt segment removal/installation work aid (5) and handle (2). Invert the expandable bolt assembly to allow segments (3) to slide freely from the bolt segment removal/installation work aid (5) back onto the core pin (6). Ensure the segments seat correctly against each other.
11. Remove the expandable bolt segment removal/installation work aid (5) and install nut (4) on the core pin (6).

12. Install and adjust expandable blade bolt as per BHT-412-MM, Chapter 62.

13. Annotate records to indicate compliance with this bulletin.

PART C

1. Verify expandable blade bolt handle (2) force at initial installation and again 25 hours after installation as follows:

A. Remove safety lock pin from lower end of expandable bolt (1).

B. Raise bolt handle (2) to reduce the diameter of the bolt ring segments.

C. Push down on bolt handle (2). Verify that force required to push handle down is between 50 and 75 pounds (222 to 334 N) and has not changed more than 5 pounds (22 N) since last handle force inspection. Refer to BHT-412-MM, Chapter 62 to adjust expandable blade bolt handle tension.

-NOTE-

If adjustment is required, carry out an additional handle force check in 25 hours. Refer to BHT-412-MM, Chapter 62 to adjust expandable blade bolt handle force. Notify Bell Helicopter Product Support immediately if the handle force of an individual bolt is out of limits or has changed more than 5 pounds (22 N) in two consecutive inspections.

D. Annotate records to indicate compliance with this bulletin.

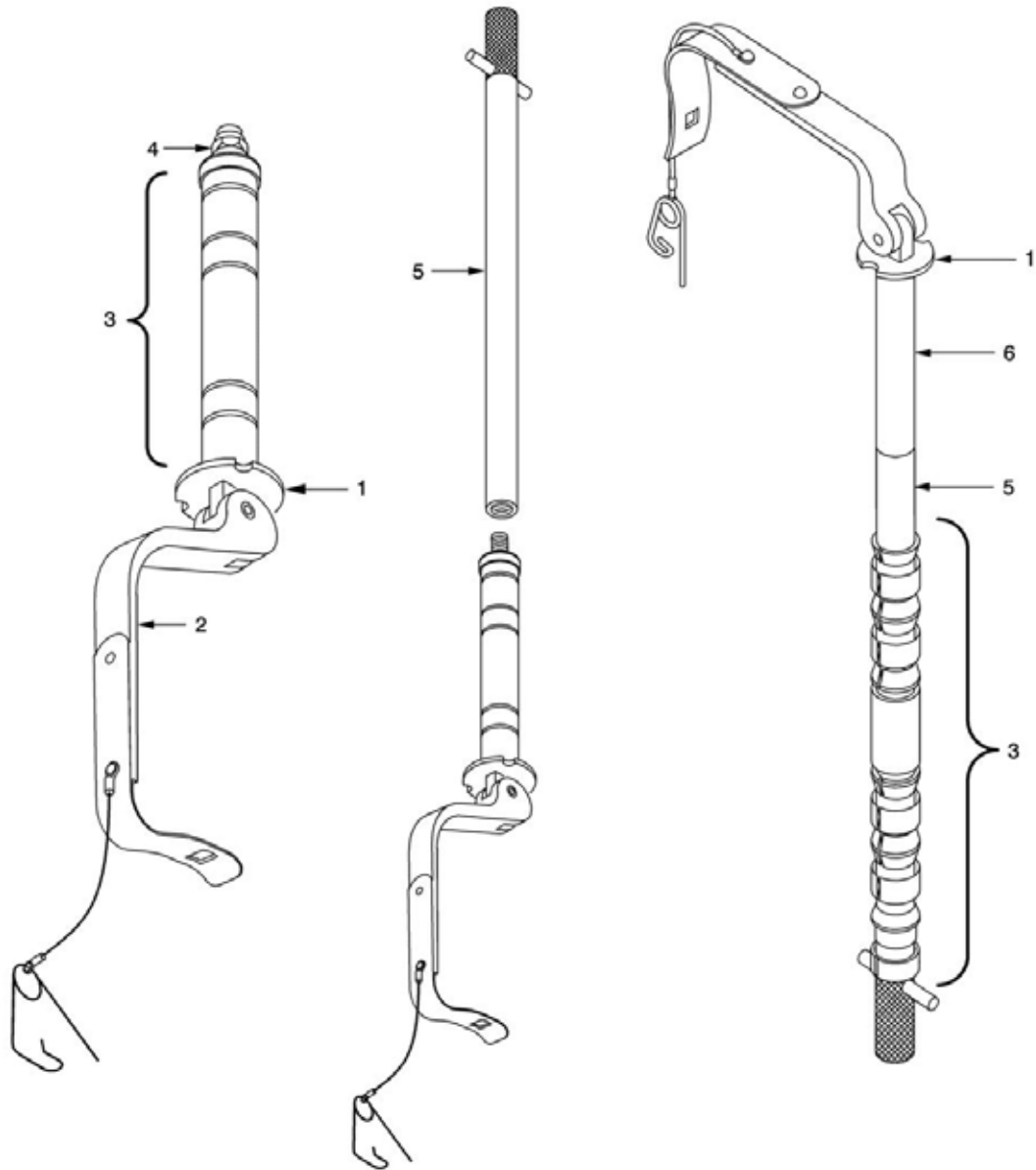


Figure 1 – Main Rotor Blade Bolt Assembly



Figure 2 – Expandable Bolt Spacer Configuration

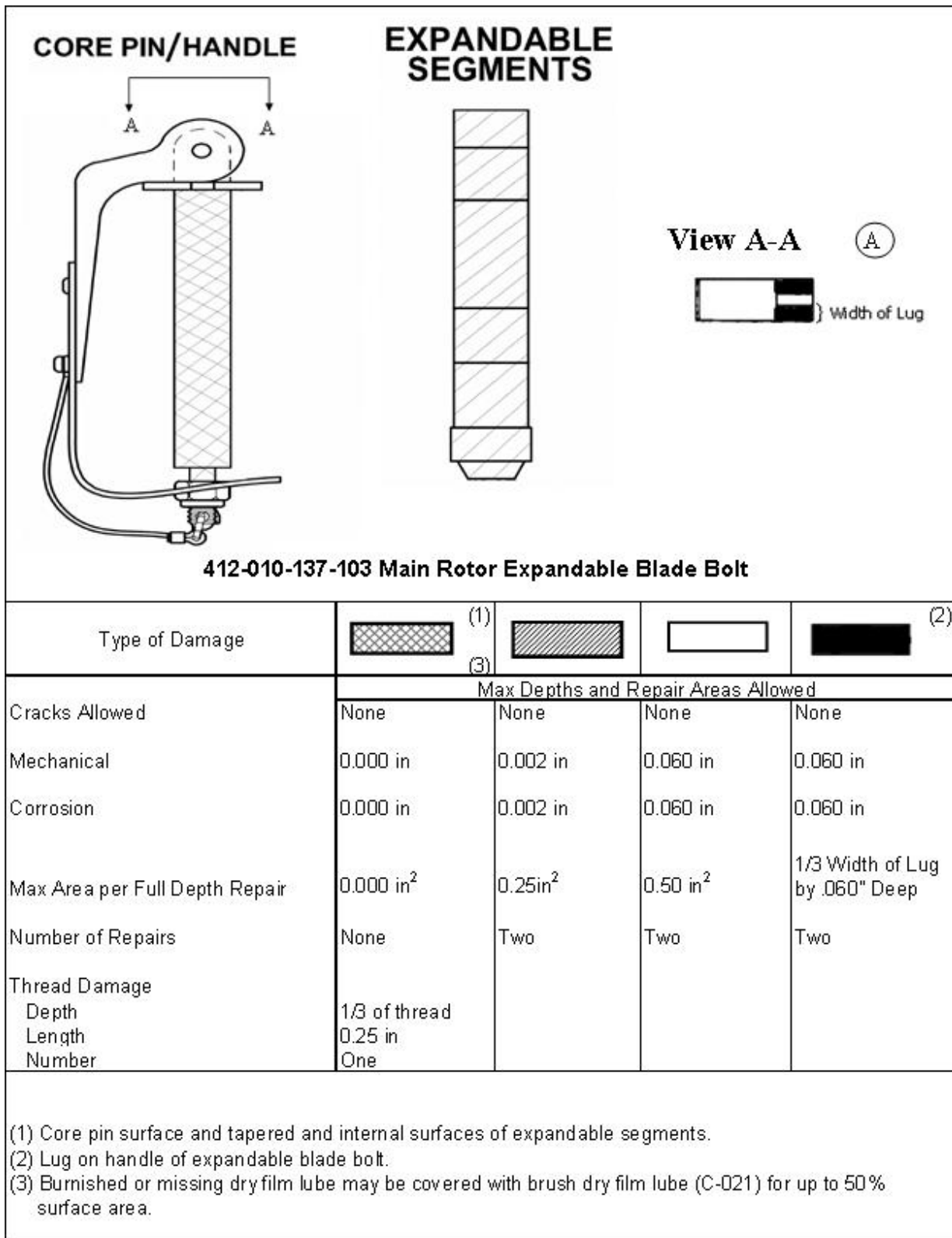


Figure 3 - Main Expandable Blade Bolt – Damage Limits

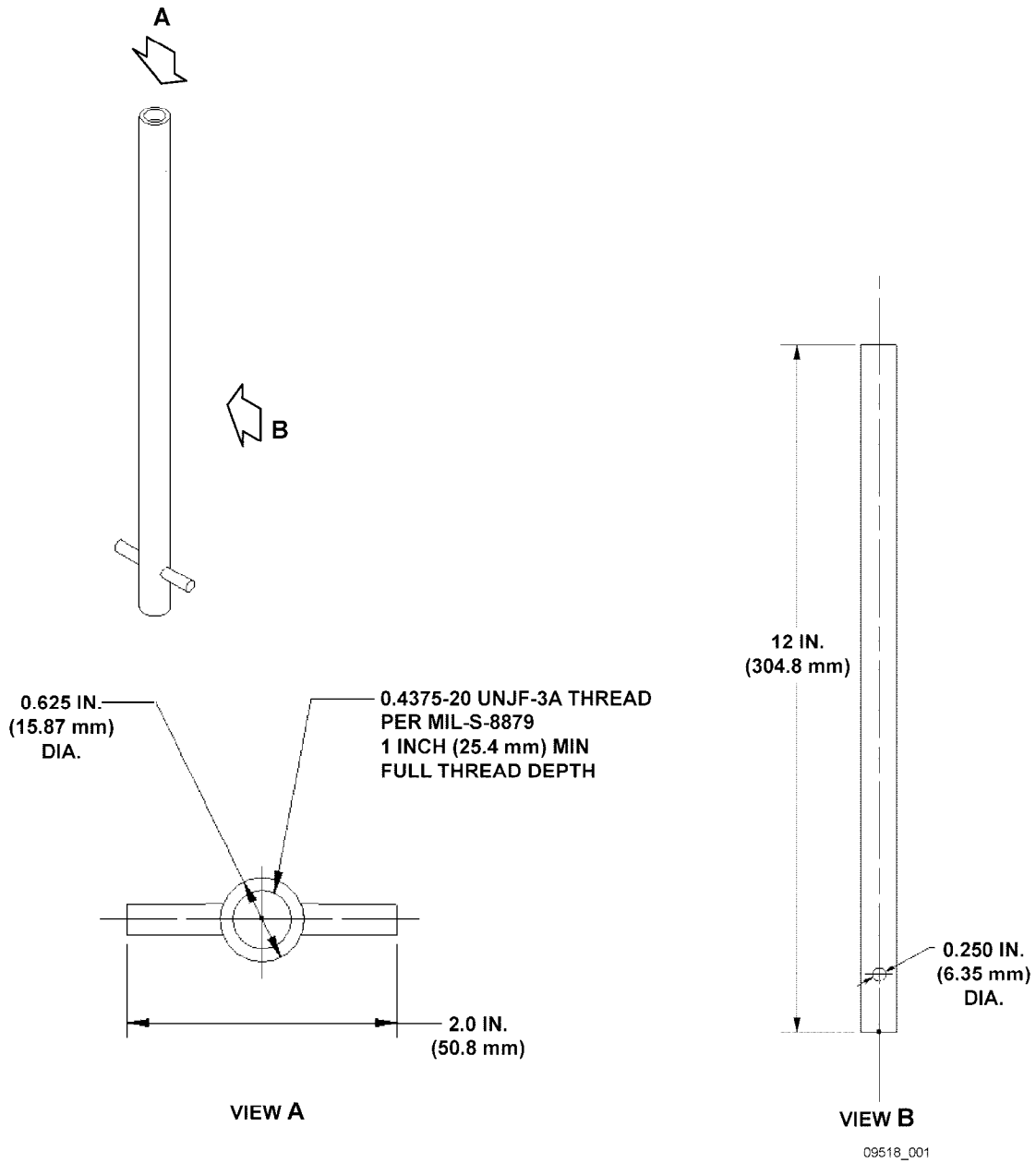


Figure 4 - Expandable Blade Segment - Removal / Installation Work Aid