



A Textron Company

ALERT SERVICE BULLETIN

412-14-160

2 September 2014

Revision A, 13 December 2017

Revision B, 30 April 2019

MODEL AFFECTED: 412/412EP

SUBJECT: MAIN ROTOR DRIVE, ENGINE-TO-TRANSMISSION DRIVE SHAFT RETAINING NUTS INSPECTION/REPLACEMENT OF.

HELICOPTERS AFFECTED: Part I: Serial numbers 33001 through 33213, 34001 through 34036, 36001 through 36019.

Part II: Serial numbers 36020 through 36999, 37002 through 37045 and helicopters serial numbers 33001 through 33213, 34001 through 34036, 36001 through 36019 with upgrade kit 412-704-052 installed per BHT-412-SI-74 or modified in accordance with drawing 412-570-001 or 412-706-100 (412SP to HP upgrade).

[Serial number 37046 and subsequent will have the intent of this bulletin accomplished prior to delivery.]

COMPLIANCE: Part I: Provided the installed MS21042 main drive shaft retaining nuts are from a Bell Helicopter approved supplier, no later than 600 flight hours or 12 months whichever occurs first after the release date of revision A of this bulletin.

If the installed MS21042 main drive shaft retaining nuts are not from a Bell Helicopter approved supplier, no later than 25 flight hours or 30 days whichever occurs first after the release date of revision A of this bulletin.

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Export Classification C, ECCN EAR99

Approved for public release.

Part II: Within the next 600 flight hours or 12 months whichever occurs first after the release date of revision B of this bulletin.

DESCRIPTION:

An occurrence reported to the European Aviation Safety Agency (EASA) indicating that two nuts (P/N MS21042) attaching the flexible coupling to the coupling drive adapter of the main driveshaft were found cracked during a scheduled inspection.

If left undetected, this condition could lead to an unsecure loss of attachment between the drive shaft coupling and the drive adapter. In an extreme case; if all attaching nuts were found cracked, a loss of transmission drive from the engine and reduced ability to control the helicopter could occur. As a result of this reported occurrence, EASA released the Emergency Airworthiness Directive 2014-0118-E.

The original release of this Alert Service Bulletin (ASB) mandated a one-time inspection of the MS21042 nuts for condition and, if required, replacement with MS21042 nuts from a Bell approved supplier. The installation of MS21042 nuts from a Bell approved supplier was considered as an acceptable short-term corrective action to address the issue. Although the risk of MS21042 nuts cracking is reduced by having a better source control, it was established that the possibility of cracking due to hydrogen embrittlement still existed.

Revision A of this bulletin was released to clarify the requirement for the main drive shaft and main drive shaft attaching nuts. For helicopters listed in the “**Helicopters Affected**” block **Part I**, the Revision A of this bulletin mandated the replacement of main drive shaft attaching nuts MS21042L5 with nuts NAS9926-5L. Currently, the Illustrated Parts Breakdown (IPB) shows the MS21042L5 as being replaced by the NAS9926-5L. The NAS9926 (cadmium plated) corrosion resistant 12-point nuts with solid film lubricant are not susceptible to hydrogen embrittlement.

For helicopters listed in the “**Helicopters Affected**” block **Part II**, the NAS9926 nut cannot be used due to insufficient clearance between the drive shaft flexible coupling and the nut. For this reason, the original release and the Revision A of this bulletin stated that only MS21042 nuts procured from a Bell approved supplier were authorized. When the general Illustrated Parts Breakdown (IPB) supersession took place, the IPB incorrectly showed the MS21042L4 as being replaced by the NAS9926-4L. Revision A also indicated that Bell would introduce in another revision of this bulletin, a new Bell standard nut as a direct replacement to the MS21042 for the main drive shaft and main drive shaft installation.

Revision B of this bulletin only affects the helicopters listed in the “**Helicopters Affected**” block **Part II**. The new Bell standard nut discussed in the Revision A of this bulletin is now available as P/N 90-132L4. Due to the general supersession that took place in the Illustrated Parts Breakdown (IPB), it is possible that some operators

installed NAS9926-4L nuts as a replacement to the MS21042L4 nuts on the main drive shaft or at the drive coupling to main drive shaft attachment. This bulletin Revision B mandates the replacement of all MS21042 or NAS9926 nuts used in the main drive shaft assembly and main drive shaft installation with the new Bell standard 6 flat nut P/N 90-132L4. The Bell standard 90-132 nut is physically similar to the MS21042 nut except that the 90-132 part number is marked at the base of the nut.

It is possible that some helicopters, 37002 through 37045, could have been delivered with nuts 90-132L4 nuts installed on the main drive shaft. In this case, those nuts marked with the part number 90-132 can remain installed. The IPB will be revised to show the 90-132L4 nut as a replacement to the MS21042 for the helicopters affected at the main drive shaft assembly and main drive shaft installation locations.

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 Helicopter Engineering approved.

CONTACT INFO:

For any questions regarding this bulletin, please contact:

Bell Product Support Engineering
MEDIUM Tel: 450-437-6201 / 1-800-363-8028 / productsupport@bellflight.com

MANPOWER:

No additional man hours are required to accomplish the Revision B of this bulletin if accomplished during scheduled main drive shaft removal.

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 Helicopter Textron Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty (Note)</u>
NAS9926-5L	Nut	12 (1)

NOTES:

1. Required only for helicopters listed in the “**Helicopters Affected**” block for **Part I**.
2. Required only for helicopters listed in the “**Helicopters Affected**” block for **Part II**.

Consumable Material:

None required.

SPECIAL TOOLS:

None required.

WEIGHT AND BALANCE:

Not affected.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

BHT-412-MM Maintenance Manual

PUBLICATIONS AFFECTED:

BHT-412-IPB Illustrated Parts Breakdown, Chapter 63
BHT-412-MM Maintenance Manual, Chapter 63

ACCOMPLISHMENT INSTRUCTIONS:

-NOTE-

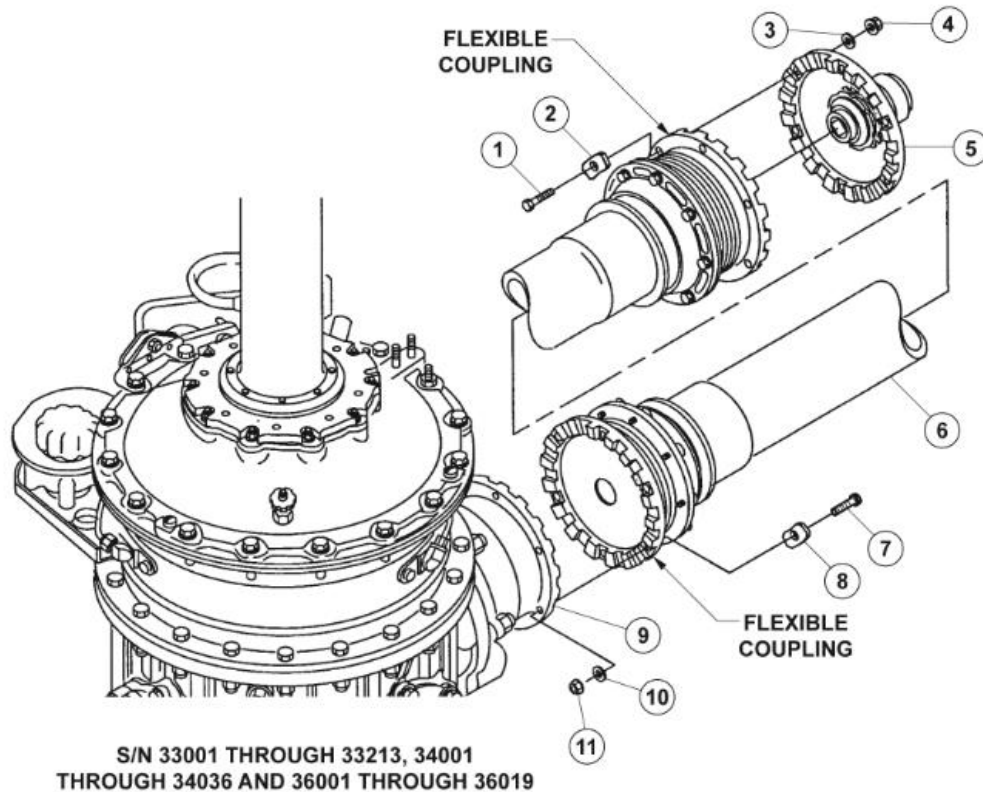
Revision B of this bulletin is not applicable to Part I.

Part I: Replacement of the MS21042 nuts with the NAS9926 nuts.

1. Gain access to the main drive shaft assembly and replace the main drive shaft attaching nuts (Figure 1) MS21042L5 with NAS9926-5L nuts (BHT-412-MM).
2. Make an entry in the helicopter logbook and historical service records indicating compliance with this Alert Service Bulletin.

Part II: Installation of 90-132L4 nuts.

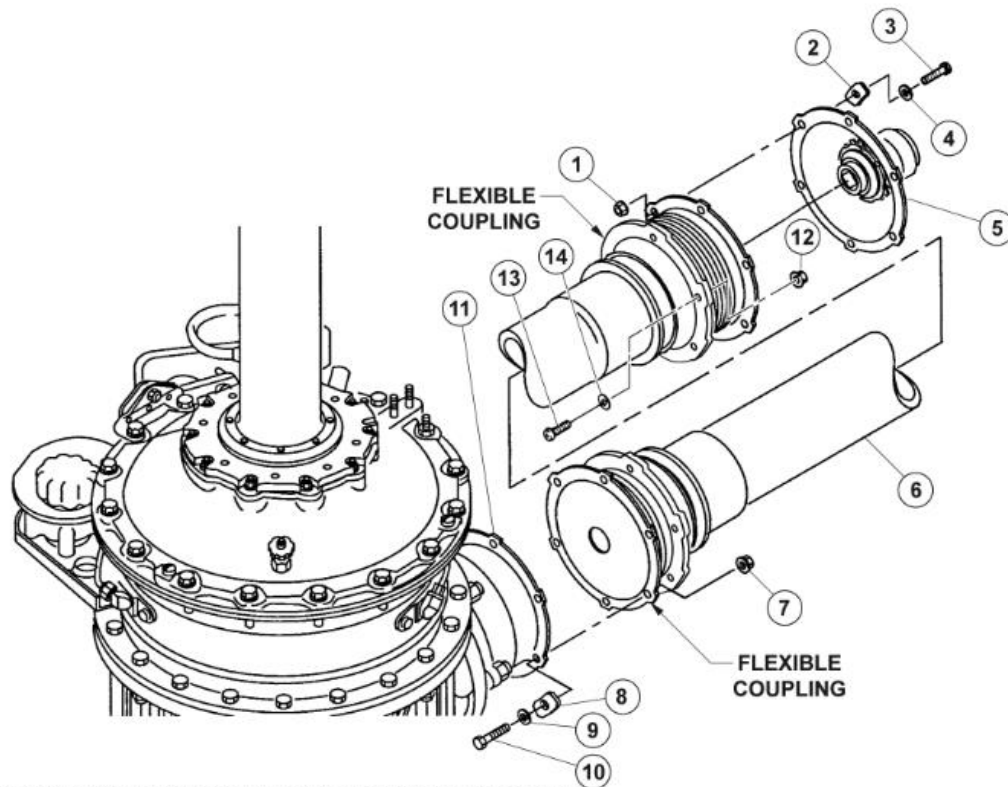
1. Gain access to the main drive shaft and replace the currently installed main drive shaft and main drive shaft attaching MS21042L4 or NAS9926-4L nuts (Figure 2, items 1, 7 and 12) with nuts P/N 90-132L4 (BHT-412-MM).
2. Make an entry in the helicopter logbook and historical service records indicating compliance with this Alert Service Bulletin Revision B.



1. Bolt
2. Balancing weight
3. Washer
4. Nut
5. Engine-to-driveshaft curvic coupling adapter
6. Driveshaft
7. Bolt
8. Balancing weight
9. Main input quill curvic coupling adapter
10. Washer
11. Nut

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Figure 1. Main drive shaft attaching nuts (Part I).



S/N 36020 THROUGH 36999, 37002 THROUGH SUBSEQUENT
 AND HELICOPTERS HAVING THE UPGRADE KIT 412-704-052
 INSTALLED PER BHT-412-SI-74 OR,
 MODIFIED PER DRAWING 412-570-001 OR 412-706-100

- 1. Nut
- 2. Balancing weight
- 3. Bolt
- 4. Washer
- 5. Engine-to-driveshaft curvic coupling adapter
- 6. Driveshaft
- 7. Nut
- 8. Balancing weight
- 9. Washer
- 10. Bolt
- 11. Main input quill curvic coupling adapter
- 12. Nut
- 13. Bolt
- 14. Washer



NOTE



Items 12, 13, and 14 not shown at transmission end for clarity.

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Figure 2. Main drive shaft attaching nuts (Part II).