



A Textron Company

ALERT SERVICE BULLETIN

430-22-61

6 November 2023

MODEL AFFECTED: 430

SUBJECT: MAIN ROTOR PITCH LINK ASSEMBLY
COMPONENTS - INSPECTION AND
AIRWORTHINESS LIFE REVISION OF

HELICOPTERS AFFECTED: Serial numbers 49001 through 49129.

COMPLIANCE: **PART I:** Within 50 flight hours or 60 days, whichever comes first, after the release date of this bulletin.

PART II: Within 50 flight hours or 60 days, whichever comes first after accomplishment of **PART I**, and every 50 flight hours or 60 days, whichever comes first thereafter.

PART III: Within 150 flight hours or 12 months, whichever comes first after accomplishment of **PART I**, and every 150 flight hours or 12 months, whichever comes first thereafter.

PART IV: If required by **PART II** of this bulletin.

DESCRIPTION:

This Alert Service Bulletin (ASB) supersedes and replaces ASB 430-21-60. Based on analysis and service history, Bell has elected to reduce the airworthiness life of the main rotor pitch link assembly clevises and the universal bearings due to possible damage and excessive bending loads on the clevis caused by a stiff and/or binding bearing. A stiff and/or binding bearing may be attributed to a lack of lubrication.

Rather than having an airworthiness life assigned to the main rotor pitch link assembly; the clevis, the tube assembly, the universal bearing, the clevis-to-universal bearing bolt, and the rod end assembly will all have individually assigned retirement lives as shown in **Table 1** of the **ACCOMPLISHMENT INSTRUCTIONS**.

PART I of this bulletin introduces new main rotor pitch link assemblies 430-010-411-109 and 430-010-411-111 replacing the 430-010-411-105 and 430-010-411-107 respectively, as well as instructions to inspect the detail parts of the pitch link assemblies. **PART I** also introduces new airworthiness life limits to the clevis and the universal bearing in **Table 1**.

PART II mandates a recurring 50 flight hour or 60 days, whichever occurs first, 10X visual inspection of the installed clevis.

PART III mandates a recurring 150 flight hour or 12 months, whichever occurs first, inspection of the universal bearing.

PART IV has the procedures to perform a Magnetic Particle Inspection of the clevis 430-010-432-101, if required following accomplishment of **PART II**.

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 Transport Canada Civil Aviation (TCCA) approved.

CONTACT INFO:

For any questions regarding this bulletin, please contact:

Bell Product Support Engineering
Tel: 1-450-437-2862 / 1-800-363-8023 / productsupport@bellflight.com

MANPOWER:

Approximately 2.0 man-hours are required to complete **PART I** this bulletin.
Approximately 1.0 man-hours are required to complete **PART II** this bulletin.
Approximately 2.0 man-hours are required to complete **PART III** this bulletin.
Approximately 4.0 man-hours are required to complete **PART IV** 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>
430-010-432-101	Clevis	A/R (1)
212-010-412-103	Universal Bearing	A/R (1)(2)
430-010-431-109	Tube Assembly	A/R (3)
430-010-431-111	Tube Assembly	A/R (3)
430-010-433-101	Rod End Assembly	A/R (3)
50-047C6-28	Universal to Pitch Link Bolt	A/R (3)

NOTES:

1. Only required if the new assigned airworthiness life limit has been exceeded or the component does not meet the inspection criteria as described in the **ACCOMPLISHMENT INSTRUCTIONS**.
2. Universal bearing 212-010-412-103 replaces the universal bearing 212-010-412-001.
3. Only required if found unserviceable after accomplishment of **PART I**.

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>
2100-00044-00	CPC Grade 1	1 PT (1)	C-101
2100-09016-02	CPC Grade 2	1 PT (1)	C-104
1650-03297-00	Safety Wire 0.032 inch	1 LB (1, 2)	C-405

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

NOTES:

1. 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.
2. Sold as a 1 pound roll; replaces the 5 pound roll part number 1650-03296-00.

SPECIAL TOOLS:

None required.

WEIGHT AND BALANCE:

Not affected.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

BHT-430-IPB Illustrated Parts Breakdown, Chapter 62
BHT-430-MM Maintenance Manual, Chapter 62
BHT-430-CR&O Component Repair and Overhaul Manual, Chapter 62
BHT-ALL-SPM Standard Practices Manual, Chapter 6
ASB 430-21-60 MAIN ROTOR PITCH LINK ASSEMBLY CLEVIS AND UNIVERSAL BEARING, INSPECTION OF.

PUBLICATIONS AFFECTED:

BHT-430-MM Maintenance Manual, Chapters 4 and 62
BHT-430-IPB Illustrated Parts Breakdown, Chapter 62

ACCOMPLISHMENT INSTRUCTIONS:**PART I: Main rotor pitch link assembly inspection, part number re-identification and new airworthiness life limits**

1. Prepare the helicopter for maintenance.

-NOTE-

Record the length of the pitch link assembly and the condition of the color coding prior to disassembly. This will reduce the track and balance efforts after re-assembly of the pitch link assembly. At disassembly, omit removal of the inserts.

2. Remove the pitch link assemblies from the helicopter (BHT-430-MM, Chapter 62).
3. Disassemble the pitch link assemblies (BHT-430-CR&O, Chapter 62).

4. Review the helicopter logbook and the component information on the Historical Service Records (HSR) for the removed main rotor pitch link assemblies 430-010-411-105 and 430-010-411-107.
 - a. Replace any component that has exceeded the new assigned airworthiness life limit as defined in Table 1.
 - b. Replace the clevis 430-010-432-101 if the newly assigned 2500 flight hour airworthiness life limit, as defined in Table 1, has been exceeded.
 - c. Replace the universal bearing 212-010-412-001 with a 212-010-412-103 bearing if it has exceeded 1250 flight hours, as defined in **Table 1**.

-NOTE-

Universal bearing 212-010-412-103 is the direct replacement for the 212-010-412-001. Universal bearings 212-010-412-103 and 212-010-412-103FM are considered alternates to each other and interchangeable. The airworthiness life for part numbers listed applies to all successive dash numbers (or suffixes) for that component unless otherwise specified. Suffixes (letters following the dash numbers) are for reference only and are not intended to alter the part number.

- d. If the airworthiness life of the 212-010-412-001 universal bearing has not exceeded 1250 flight hours, re-identify by crossing out the (-001) and replacing it with (-103FM) by dot-peening or vibro-etching to a maximum depth of 0.005 inch (0.127 mm) and no closer than 0.01 inch (0.254 mm) from the edge of the part. The total time in service shall not be reset.
5. Perform a detailed visual inspection of the pitch link tube assembly, the rod end assembly, and bolt attaching the clevis to the universal bearing (BHT-430-MM, Chapter 62). Replace any part that does not meet the published inspection criteria.
6. Perform a detailed visual inspection of the clevis in accordance with **PART II** and the universal bearing in accordance with **PART III** of this bulletin. Replace any part that does not meet the inspection criteria described.

-NOTE-

Blank Historical Service Record (HSR) cards can be downloaded from the Technical Publications website at www.mybell.com (in the GENERAL INFO drop down menu under [RECORD CARDS](#)).

7. Prepare four new Historical Service Records for the re-identified pitch link assemblies 430-010-411-109FM and 430-010-411-111FM and their sub-components as follows:

-NOTE-

Pitch link assembly 430-010-411-109 is the direct replacement for the 430-010-411-105. Pitch link assemblies 430-010-411-109 and 430-010-411-109FM are considered alternates to each other and interchangeable.

The 430-010-411-111 is the direct replacement for the 430-010-411-107. Pitch link assemblies 430-010-411-111 and 430-010-411-111FM are considered alternates to each other and interchangeable. The airworthiness life for part numbers listed applies to all successive dash numbers (or suffixes) for that component unless otherwise specified. Suffixes (letters following the dash numbers) are for reference only and are not intended to alter the part number.

- a. Enter the new pitch link assembly part number 430-010-411-109FM and 430-010-411-111FM, as applicable, and serial number on the first page of the HSR. Use the same serial number as on the previous pitch link assembly 430-010-411-105 and 430-010-411-107.

-NOTE-

If the time in service of a sub-component of the pitch link assembly cannot be identified using the existing helicopter records, the affected component shall be replaced.

- b. With reference to **Table 1**, enter the part numbers and serial numbers of all sub-components on the second page of the HSR. The time in service shall not be reset.
 - c. Retain the old Historical Service Records with the newly created records.
8. Re-identify the pitch link assembly data plate part number 430-010-411-105 by crossing out the (-105) and changing it to (-109FM). This may be accomplished by dot-peening or vibro-etching to a maximum depth of 0.005 inch (0.127 mm). Re-identify pitch link assembly 430-010-411-107 to 430-010-411-111FM in the same manner. The "FM" suffix indicates the part was Field Modified.
 9. Assemble the pitch link assemblies (BHT-430-CR&O, Chapter 62).
 10. Install the pitch link assemblies (BHT-430-MM, Chapter 62).

11. Perform main rotor track and balance adjustments (BHT-430-MM, Chapter 18).
12. Make an entry in the helicopter logbook and historical service records indicating compliance with **PART I** of this Alert Service Bulletin.

PART II: Main rotor pitch link assembly clevis 10X visual recurring inspection.

1. Prepare helicopter for maintenance.
2. Clean the clevis (BHT-430-MM, Chapter 62). Remove all contaminants from the clevises. Utilize a stiff bristle brush to clean the threaded area. Verify thread roots are clean using up to 10X magnifying glass.

-NOTE-

Any suspected defects found during the 10X inspection must be investigated further by performing a magnetic particle inspection (MPI) of the clevis in accordance with **PART IV** of the ACCOMPLISHMENT INSTRUCTIONS of this bulletin.

3. Perform a detailed visual inspection of the neck and threaded area of the installed pitch link clevises using a 10X magnifying glass (Figure 1). Inspect for corrosion and mechanical damage (BHT-430-CR&O, Chapter 62).
 - a. If no cracks are found, go to step 5.
 - b. If cracks are found, replace the pitch link clevis (BHT-430-CR&O, Chapter 62).
4. Replace any clevises that are beyond allowable damage limits (BHT-430-CR&O, Chapter 62) and report findings to Bell Product Support Engineering at productsupport@bellflight.com.
5. Make an entry in the helicopter logbook and historical service records indicating findings and compliance with **PART II** of this Alert Service Bulletin.

PART III: Main rotor pitch link assembly universal bearing recurring inspection.

1. Prepare the helicopter for maintenance.
2. Remove the pitch links assemblies (BHT-430-MM, Chapter 62).

CAUTION

A worn, stiff or damaged universal bearing may cause an increase in vibrations that may lead to accelerated wear or damage to other components. In extreme cases and over time, the clevis can be subjected to excessive bending loads resulting from a stiff or degraded universal bearing due to insufficient lubrication.

It is critical that the purge greasing requirements of the universal bearing be adhered to. (BHT-430-MM, Chapter 12).

The following purge greasing intervals shall not be exceeded.

The 25 flight hour purge greasing interval specified in BHT-430-MM, Chapter 12, is the **maximum** interval permitted under normal operation. It is necessary to decrease the interval of servicing when the operating conditions are more severe. A salt-laden environment would be considered as a severe operating condition. Refer to the Corrosion Control Guide CSSD-PSE-87-001 Para 10-2 with regards to the Frequency of Cleaning.

Purge-greasing of the universal bearings **shall** be carried out after each day of operation in rain, snow, or after washing the helicopter to remove any trapped moisture.

Purge-greasing of the universal bearings shall be carried out every 7 days for helicopters parked outside in a heavy dew environment to remove any trapped moisture.

-NOTE-

The universal bearing should rotate smoothly and be free of binding. Some slight ratcheting may be felt when turning the bearing. This slight ratcheting felt throughout the whole rotation is considered normal; however, an elevated force (or no force) felt in a specific zone during the full rotation of the bearing is cause for rejection. Replace any universal bearing that exceeds the axial and radial play limits or displays signs of binding.

3. Remove the universal bearings from the pitch link assemblies and perform a detailed visual inspection for wear, damage, binding, stiffness, and looseness (BHT-430-CR&O, Chapter 62).

4. Inspect the hardware for signs of wear and damage; replace as necessary (BHT-430-MM, Chapter 62).
5. Replace any universal bearings that exceed the axial and radial play limits as well as those that display signs of stiffness, binding and looseness (BHT-430-CR&O).
6. Purge-grease the bearings of each universal bearing ensuring all four grease fittings allow for grease purging.
7. Assemble the pitch link assemblies (BHT-430-CR&O, Chapter 62).
8. Install the pitch link assemblies (BHT-430-MM, Chapter 62).
9. Make an entry in the helicopter logbook and historical service records indicating findings and compliance with **PART III** of this Alert Service Bulletin.

PART IV: Main rotor pitch link clevis Magnetic Particle Inspection.

1. Perform a Magnetic Particle Inspection (MPI) of the pitch link clevis as follows:
 - a. Use a gauss meter to verify that the residual magnetization of the part is three gauss or less. Demagnetize as needed (BHT-ALL-SPM, Chapter 6).
 - b. Clean the part (BHT-ALL-SPM, Chapter 5). Remove all contaminants from the clevises. Utilize a stiff bristle brush to clean the threaded area. Verify thread roots are clean using up to 10X magnifying glass.
 - c. Perform a Magnetic Particle Inspection (MPI) of the clevises as shown in Figures 2 and 3. Perform a demagnetization between Shot #1 and Shot #2, and again upon completion of the inspection. Refer to BHT-ALL-SPM, Chapter 6, for additional information about the magnetic particle inspection procedures.
 - d. Use a 10X magnifying glass under ultraviolet (UV) lighting to inspect the neck and thread root areas. When inspecting threads, only check the root areas after Shot #2. Top of threads may have fluorescence. If excessive fluorescence is observed on the threads that have been in contact with the coil, rotate the part 180 degrees and perform Shot #2 again.
 - e. Replace any clevises that have signs of cracking and report findings to Bell Product Support Engineering at productsupport@bellflight.com.
2. If no anomalies are found during the magnetic particle inspection, perform selective brush cadmium plating to replace any missing cadmium plating. Following the brush cadmium plating, apply the chromate conversion coating (BHT-ALL-SPM, Chapter 3).
3. Assemble the main rotor pitch link assemblies (BHT-430-CR&O, Chapter 62).

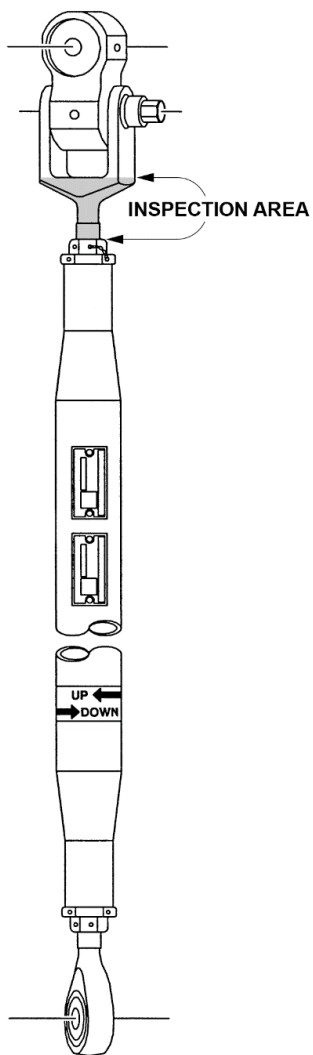
4. Install the pitch link assemblies (BHT-430-MM, Chapter 62).
5. Carry out main rotor track and balance adjustments (BHT-430-MM, Chapter 18).
6. Make an entry in the helicopter logbook and historical service record indicating compliance with **PART IV** of this Alert Service Bulletin.

Table 1 – Main Rotor Pitch Link Assembly Configuration

<u>PART NUMBER</u>	<u>ITEM</u>	<u>CONFIGURATION</u>		<u>Airworthiness Life</u>	<u>NOTES</u>
430-010-411-XXX	Pitch Link Assembly	-109/-109FM	-111/-111FM	On Condition	(1, 2)
430-010-431-109	Tube Assembly	x		10,000	(6)
430-010-431-111	Tube Assembly		x	10,000	(6)
430-010-432-101	Clevis	x	x	2,500	(3,6)
212-010-412-103/-103FM	Universal Bearing	x	x	1,250	(4, 5, 6)
430-010-433-101	Rod End Assembly	x	x	10,000	(6)
50-047C6-28	Universal to Pitch Link Bolt	x	x	2,500	(3,6)

NOTES:

1. Pitch Link Assembly 430-010-411-109 replaces the 430-010-411-105 and the 430-010-411-111 replaces the 430-010-411-107.
2. The two jam nuts that are part of the pitch link assembly are standard hardware, not airworthiness life limited, and are not shown in the configuration table. Refer to the BHT-430-IPB for part numbers.
3. The clevis airworthiness life and the universal to pitch link bolt are reduced from 10,000 to 2,500 flight hours.
4. The universal bearing airworthiness life limit is reduced from 10,000 to 1,250 flight hours. Universal bearing 212-010-412-103 replaces the 212-010-412-001.
5. Universal bearings 212-010-412-001 that have not exceeded 1250 flight hours shall be re-identified as 212-010-412-103FM.
6. These components may require replacement based on their condition before reaching their respective assigned airworthiness life.



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Figure 1 – Main Rotor Pitch Link Assembly Clevis 10X Inspection Area.

Clevis part number 430-010-432-101	Material: CRES 15-5PH
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Shot #1	Shot #2
Central bar through clevis holes	Coil shot, bottom of 5-turn coil
600 Amps – Demagnetize before Shot #2	400 Amps

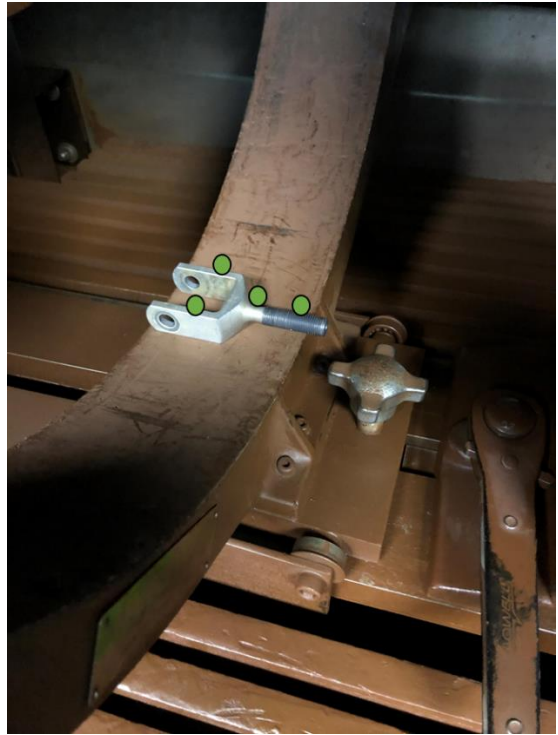


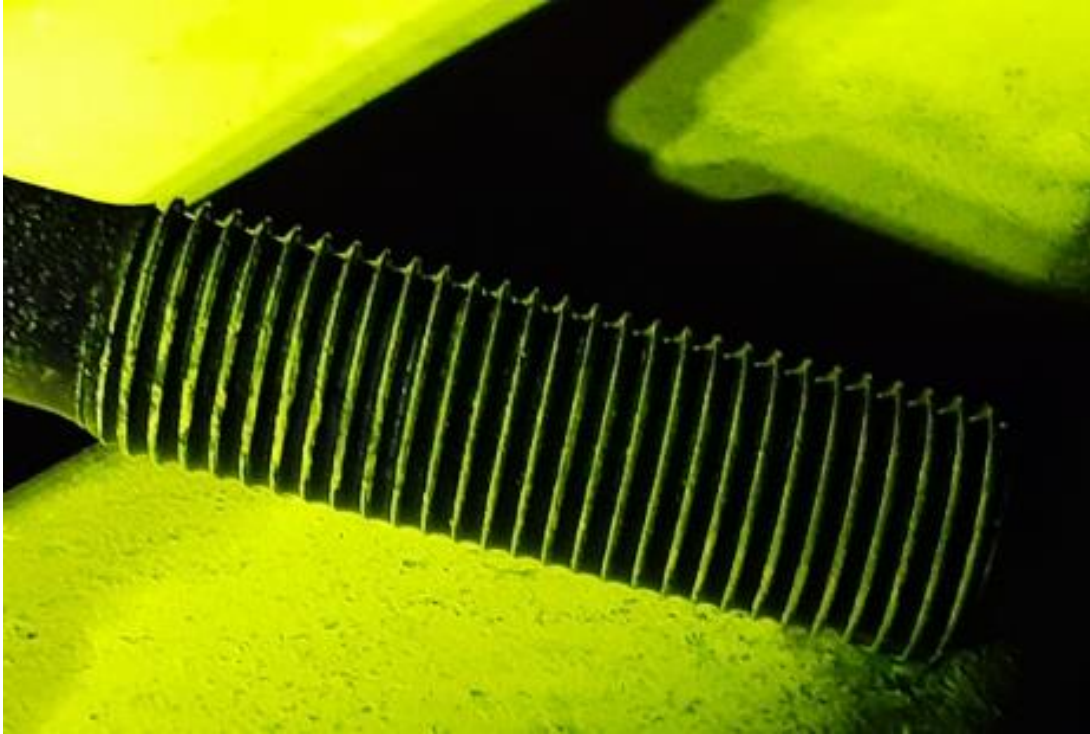
Figure 1 – Magnetic Particle Inspection (MPI)

● Hall effect probe locations, >30 gauss

NOTES:

1. Verify that the magnetization of the part is three gauss or less.
2. Preclean the part (BHT-ALL-SPM). Remove all contaminants from the clevis utilizing a stiff bristle brush to clean threaded areas. Ensure the thread roots are clean using up to 10X magnification.
3. Carry out the magnetic particle inspection as defined above. Demagnetize after Shot #1 inspection, and again after Shot #2 inspection.
4. Use up to 10X magnification under ultraviolet (UV) light to inspect neck and thread root areas. While inspecting threads, check only root areas after Shot #2; top of threads may have fluorescence. If excessive fluorescence is observed on the threads that have been in contact with the coil, flip the part 180 degrees and perform Shot #2 again.

Figure 2 – Magnetic Particle Inspection (MPI).



NOTES:

1. Top of threads may show fluorescence. Inspect root areas for indication of cracking.
2. Due to the fine threads on the clevis, it is recommended that the inspection of the root areas be accomplished using a 10X magnifying glass under UV lighting.

Figure 3 – Photo of Shot #2 of Magnetic Particle Inspection (MPI)