



A Textron Company

ALERT SERVICE BULLETIN

412-23-196

PSL # 1712

28 November 2023

MODEL AFFECTED: 412EP

SUBJECT: MAIN INPUT QUILL ASSEMBLY 412-040-263-103
AND TAIL ROTOR DRIVE PINION QUILL
ASSEMBLY 212-040-365-133, REPLACEMENT OF.

HELICOPTERS AFFECTED: PART I: Serial numbers 39106, 39109 and 39111.

PART II: Serial number 39111.

COMPLIANCE: PART I: Within the next 600 flight hours/12 months
after the release date of this bulletin.

PART II: Within the next 3000 flight hours/5 years after
the release date of this bulletin.

DESCRIPTION:

Bell found that the pinions installed in the subject quill assemblies may have a material anomaly that may reduce the service life of the part. This bulletin mandates the replacement of the suspect quill assemblies.

PART I of this bulletin mandates the replacement of the 412-040-263-103 main input quill assembly and **PART II** mandates the replacement of the 212-040-365-133 tail rotor drive pinion quill assembly.

APPROVAL:

The engineering design aspects of this bulletin are FAA 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 10.0 man-hours are required to accomplish **PART I** of this bulletin and 40.0 man-hours to accomplish **PART II**. This estimate is based on hands-on time and may vary with personnel and facilities available.

WARRANTY:

Owners / Operators of Bell Helicopters who comply with the instructions in this bulletin will be eligible to receive replacement parts as applicable, listed in the bulletin. The www.mybell.com portal allocates specific warranty entitlement for an aircraft by serial number. The Product Service Letter (PSL) number will be listed below the bulletin number on the introduction page. This is going to be a required field when submitting a claim on the Bulletins Tab for replacement parts, labor, and/or freight. If you receive an ASB or TB that does not have a PSL number, then there is no warranty entitlement for that bulletin.

Labor entitlement: PART I \$1100.0 USD
PART II \$8800.0 USD

To receive parts, labor, under warranty:

- Comply with the instructions contained in this Bulletin no later than the applicable date in the “compliance section”.
- If there is a PSL number identified in the bulletin you will be required to enter this PSL number which will validate warranty entitlement for the selected aircraft. Please ensure that you use the Bulletin tab on the warranty section on www.mybell.com portal to file your claim.

NOTE: You will receive an RMA (Return Material Authorization) form Warranty instructing you to return the removed Main Input Quill Assembly and the Tail Rotor Drive Pinion Quill Assembly (if applicable) back to Bell. Please ensure the component log card accompany the item.

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>
412-040-263-103	Main input quill assembly	1 (1)
212-040-365-133	Tail rotor drive pinion quill assembly	1(2)
AS3209-260	Packing	2 (1)
204-040-164-001	Gasket	1 (2)

NOTES:

1. Required for PART I.
2. Required for PART II.

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>
AMS-S-8802 6OZ	Sealant	6 OZ	C-308
AS100028	Lockwire	Roll (5 LB)	C-405
MIL-A907 ANTISEIZE	Anti-seize	16 OZ	C-452

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

SPECIAL TOOLS:

212-040-001-3 GIF-1
Jackscrew Set T101338

WEIGHT AND BALANCE:

Not affected.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

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

PUBLICATIONS AFFECTED:

None affected.

ACCOMPLISHMENT INSTRUCTIONS:

PART I: Replacement of the main input quill assembly.

1. Prepare the helicopter for maintenance and gain access to transmission main input quill. If PART II requires accomplishment, remove transmission ([DMC-412-A-63-21-02-00A-520A-A](#)).
2. Remove main input quill ([DMC-412-A-63-21-02-17A-520A-A](#)).
3. Install new 412-040-263-103 quill assembly ([DMC-412-A-63-21-02-01A-720A-A](#)).
4. Check quill for freedom of rotation and for existence of gear backlash.
5. Make an entry in the helicopter logbook and historical service records indicating compliance with PART I of this Alert Service Bulletin.

PART II: Replacement of the tail rotor drive pinion quill assembly.

1. Prepare the helicopter for maintenance and remove transmission ([DMC-412-A-63-21-02-00A-520A-A](#)).
2. Remove the accessory and tail rotor drive and sump assembly (7, Figure 1) as follows:
 - a. Remove the nut (8), thin steel washer (9), and bracket (10).
 - b. Remove the twelve nuts (6) and the washers (4 and 5).
 - c. Remove the accessory and tail rotor drive and sump assembly (7) from the support case (1). Use a plastic or a rawhide mallet to tap the sump assembly and separate it from the support case.
 - d. Remove and discard the gasket (3).

3. Remove the tail rotor drive pinion quill (10, Figure 2) as follows:
 - a. Cut and remove the lockwire.
 - b. Remove the six nuts (11) and steel washers (12).
 - c. Install the Jackscrew Set (T101338) in the tail rotor drive pinion quill (10). Equally turn the jackscrews clockwise to pull the quill from accessory and tail rotor drive case (22).
 - d. Remove the retaining ring (9).
 - e. Remove the oil pump shaft (14) and the retaining ring (13).
4. Install the new tail rotor drive pinion quill (10, Figure 2) as follows:
 - a. Install the retaining ring (13) in the tail rotor drive pinion quill (10).
 - b. Put the oil pump shaft (14) in the quill and install the retaining ring (9).
 - c. Heat the accessory and tail rotor drive case (22) at the port for the tail rotor drive pinion quill (10) with a heat lamp.
 - d. Coat the mating surfaces of the quill with the same oil used in the transmission. Put the quill in the case and install the six steel washers (12) and the nuts (11). Torque the nuts 50 to 70 inch-pounds (5.65 to 7.91 Nm). Secure the nuts in pairs with Lockwire (C-405).
5. Check the backlash of the sump and accessory drive assembly quills as follows:

CAUTION

DO NOT ALTER SHIM PLATES ON CASE OR QUILL SLEEVE TO OBTAIN BACKLASH. IF BACKLASH IS NOT WITHIN LIMITS, CONTACT PRODUCT SUPPORT ENGINEERING.

- a. Install the Backlash Tool (212-040-001-3 GIF-1) on top of the accessory drive sump (22, Figure 1) and attach with three bolts. Tighten the clamp on the backlash tool to secure the pinion in the tail rotor drive pinion quill (10).
- b. Install the Backlash Tool (212-040-001-3 GIF-1) (Detail 3) on the tail rotor drive quill (16). Tighten the backlash tool to the clamp on the inner coupling of the tail rotor drive quill. Install the dial indicator support on one of the tail rotor drive quill studs. Install the dial indicator on the support and position it to contact the dowel pin in the backlash tool, Detail 3. Take the backlash reading at three places approximately 120° apart around the gear and record. Backlash on the tail rotor drive quill must be within 0.006 to 0.014 inch (0.15 to 0.36 mm). Measured

backlash shall not vary more than 0.002 inch (0.05 mm) when verified at three (3) equally spaced points.

- c. Remove the backlash tools from the tail rotor drive quill but leave the backlash tool, Detail 2, on the tail rotor drive pinion quill.

-NOTE-

If the Backlash Tool (212-040-001-3 GIF-1) (Detail 3) is unavailable, the backlash may be determined by an alternate method. Take backlash readings at three places approximately 120° apart around the gear and at a distance (radius) of 1.227 inches (31.17 mm) from the gear center. The backlash must be within the limits noted in Step 5.b.

- d. Install the Backlash Tool (212-040-001-3 GIF-1) (Detail 4) on the pinion shaft of the hydraulic drive quill (46). Install the dial indicator support on one of the hydraulic pump and tachometer drive quill studs. Install the dial indicator on the support and position it to contact the dowel pin in the backlash tool Detail 4. Take the backlash reading at three places approximately 120° apart around the gear and record. The backlash must be within 0.006 to 0.022 inch (0.15 to 0.56 mm). Measured backlash shall not vary more than 0.002 inch (0.05 mm) when verified at three (3) equally spaced points.
- e. Remove the backlash tools from the hydraulic pump and tachometer drive quill. Remove the backlash tool from the tail rotor drive pinion quill at the top of the accessory drive sump.

-NOTE-

If the Backlash Tool (212-040-001-3 GIF-1) (Detail 4) is unavailable, backlash may be determined by an alternate method. Take backlash readings at three places approximately 120° apart around the gear and at a distance (radius) of 1.227 inches (31.17 mm) from the gear center. The backlash must be within the limits noted in Step 5. d.

6. Install the accessory and tail rotor drive and sump assembly (7, Figure 1) as follows:
 - a. If previously removed, put the tail rotor drive quill adapter (2) in the accessory drive quill in the support case (1).
 - b. Put the new gasket (3) on the support case (1).
 - c. Put the accessory and tail rotor drive and sump assembly (7) on the support case (1) with the tail rotor drive quill on the aft side of the case. Secure the sump with aluminum washers (4) next to the sump, thin steel washers (5), and nuts (6) on each of the 13 studs with one exception; omit the aluminum washer and install the bracket (10), thin steel washer (9), and nut (8), on the stud directly above the magnetic chip detector in the sump. Torque the nuts (6 and 8) 50 to 70 inch-pounds (5.65 to 7.91 Nm).
7. Apply sealant (C-308).
8. Install transmission [\(DMC-412-A-63-21-02-00A-720B-A\)](#).
9. Make an entry in the helicopter logbook and historical service records indicating compliance with PART II of this Alert Service Bulletin.

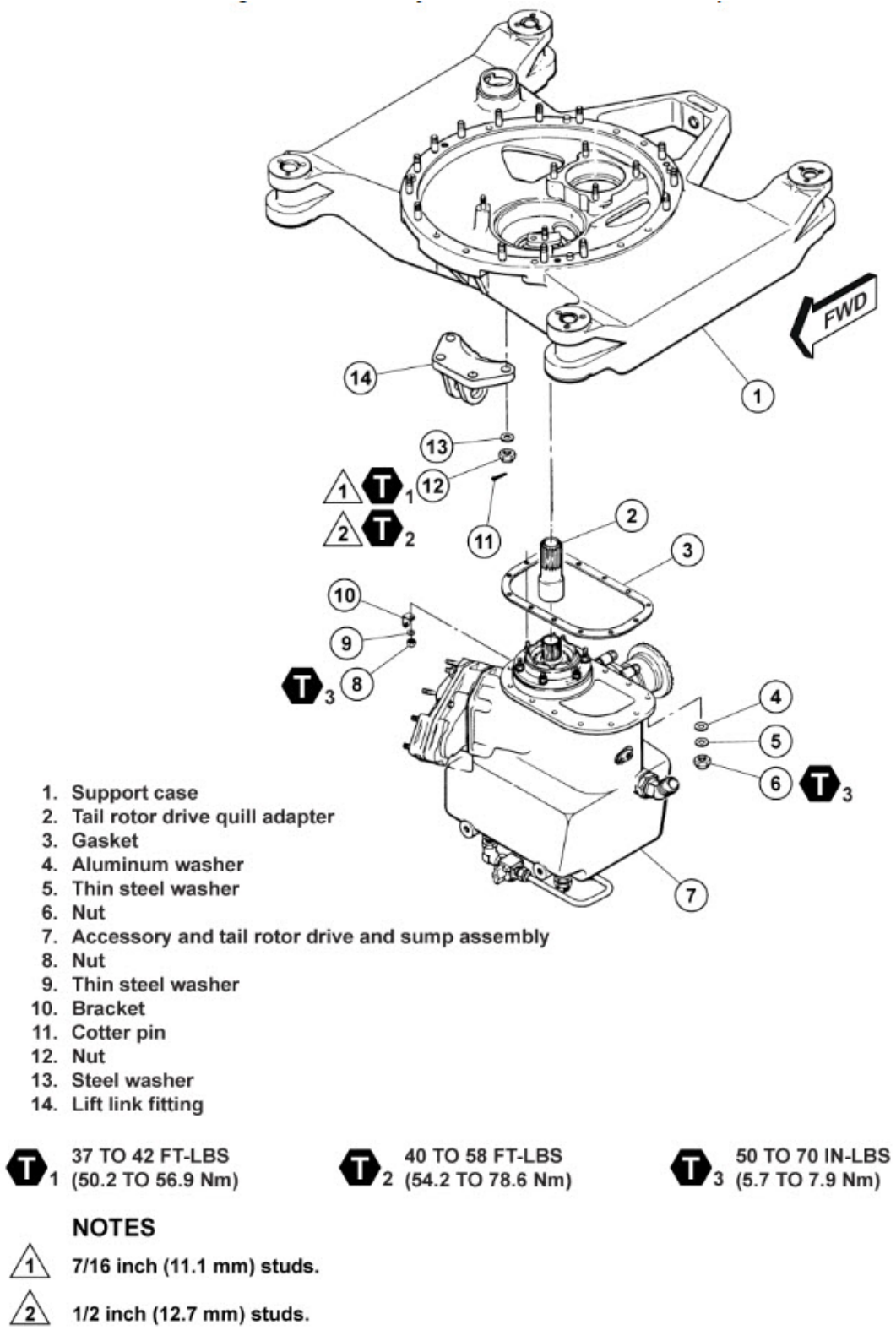


Figure 1. Accessory and tail rotor drive and sump assembly.

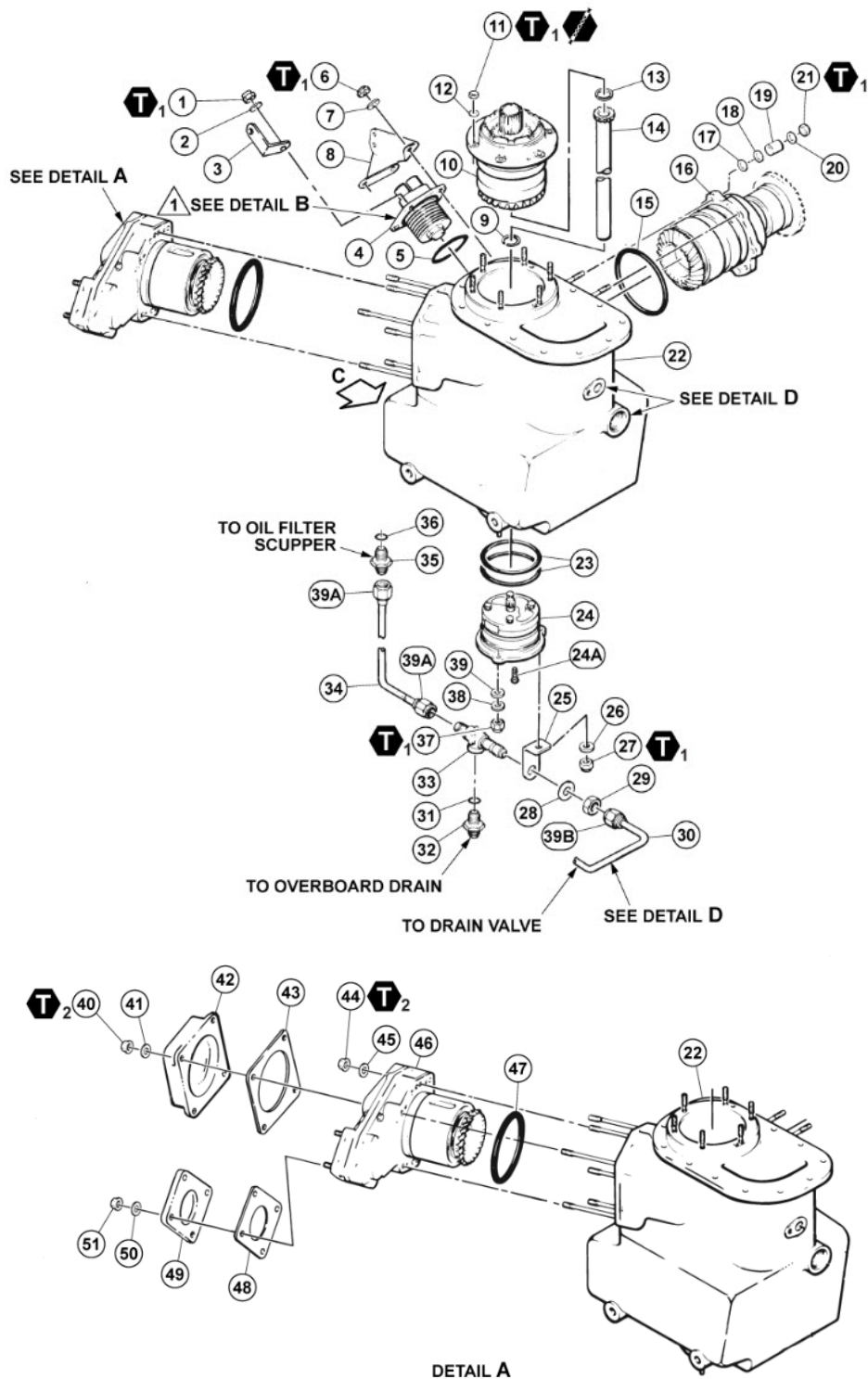


Figure 2. Accessory and Tail Rotor Drive and Sump Assembly. (Sheet 1)

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|--|---|
| 1. Nut | 45. Aluminum washer (AN960PD516) |
| 2. Thin steel washer | 46. Hydraulic drive quill |
| 3. Bracket | 47. Packing |
| 4. Oil filter | 48. Gasket |
| 4A. Full flow debris monitor | 49. Cover |
| 5. Packing | 50. Washer (AN960C416) |
| 6. Nut | 51. Nut |
| 7. Thin steel washer | 52. Packing |
| 8. Bracket | 53. Packing |
| 9. Retaining ring | 54. Jet No. 4 |
| 10. Accessory and tail rotor drive quill | 55. Seal (NAS1598-3Y) |
| 11. Nut | 56. Thin steel washer |
| 12. Steel washer | 57. Screw |
| 13. Retaining ring | 58. Screw |
| 14. Oil pump shaft | 59. Elbow |
| 15. Packing | 60. Nut |
| 16. Tail rotor drive quill | 61. Packing |
| 17. Aluminum washer (AN960PD416) | 62. Tube assembly |
| 18. Thin steel washer | 63. Drain valve |
| 19. Spacer | 64. Nut |
| 20. Thin steel washer | 65. Packing |
| 21. Nut | 66. Elbow |
| 22. Accessory and tail rotor drive case | 67. Packing |
| 23. Packing | 68. Nut |
| 24. Rotary Oil pump | 69. Union |
| 24A. Set screw | 70. Packing |
| 25. Bracket | 71. Electrical chip detector element |
| 26. Thin steel washer | 72. Packing |
| 27. Nut | 73. Packing |
| 28. Aluminum washer (AN960PD916) | 74. Electrical chip detector self-closing valve |
| 29. Nut | 75. Gasket |
| 30. Tube assembly | 76. Retaining ring |
| 31. Packing | 77. Packing |
| 32. Union | 78. Glass |
| 33. Tee | 79. Oil level indicator (low) |
| 34. Tube assembly | 80. Retaining ring |
| 35. Union | 81. Packing |
| 36. Packing | 82. Glass |
| 37. Nut | 83. Oil level indicator (full) |
| 38. Thin steel washer | 84. Oil filter scupper |
| 39. Thin aluminum washer (AN960PD416L) | 85. Packing |
| 39A. Nut | 86. Plug |
| 39B. Nut | 87. Gasket |
| 40. Nut | 88. Pump screen |
| 41. Washer (AN960C516) | |
| 42. Cover | |
| 43. Gasket | |
| 44. Nut | |



LOCKWIRE (C-405)



50 TO 70 IN-LBS
(5.6 TO 7.9 Nm)



100 TO 140 IN-LBS
(11 TO 16 Nm)



300 TO 400 IN-LBS
(34 TO 45 Nm)

Figure 2. Accessory and Tail Rotor Drive and Sump Assembly. (Sheet 2)