

**TECHNICAL BULLETIN**  
**Bell Helicopter** **TEXTRON**

A Subsidiary of Textron Inc.

No. 206L-03-211

Date May 21, 2003

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DATE
REV

**MODEL AFFECTED:** 206L Series

**SUBJECT:** TACH-GENERATOR 206-375-202-101 AND  
ADAPTER 407-340-108-101, INTRODUCTION OF.

**HELICOPTERS AFFECTED:** 206L Helicopters: S/N 45001 through 45153 and  
46601 through 46617.

206L-1 Helicopters: S/N 45154 through 45790.

206L-3 Helicopters: S/N 51001 through 51612.

206L-4 Helicopters: S/N 52001 through 52263

(Helicopters Serial Number 52264 and subsequent  
will have the intent of this bulletin completed before  
delivery.)

**COMPLIANCE:** Part I and II: At the option of the operator.

Part III: Inspect tach-generator 206-375-202-101  
and adapter 407-340-108-101 splines 300 flight  
hours after initial installation and inspect again every  
300 hours thereafter.

**DESCRIPTION:**

Bell Helicopter has received reports that wear on the splines of the tach-generator 206-076-373-001 contributes to the rejection of the transmission oil pump splines. This bulletin introduces a new and improved tach-generator 206-375-202-101 and an interconnect adapter 407-340-108-101. The interconnect adapter 407-340-108-101 is made of synthetic material and will reduce the wear on transmission oil pump shaft splines.

PART I gives instructions to install the new tach-generator 206-375-202-101 with adapter 407-340-108-101 on 206L, L-1, and L-3.

PART II gives instructions to install the new tach-generator 206-375-202-101 with adapter 407-340-108-101 on 206L-4 and assigns a new part number to hydraulic pump 206-076-030-111.

PART III gives the new inspection requirements applicable to the new tach-generator and interconnect adapter.

PART IV gives instruction to remove and install the hydraulic pump input shaft.

**APPROVAL:**

The engineering design aspects of this bulletin are Transport Canada approved.

**MANPOWER:**

Approximately 1.0 man-hour is necessary to do this bulletin if completed during the hydraulic oil pump shaft servicing. Man-hours are based on hands-on time, and may vary with personnel and facilities available.

**MATERIALS:**

**Required Material:**

The following material is required to accomplish this bulletin and may be obtained through your Bell Helicopter Textron Supply Center.

**PART I**

Order hardware kit **CT-206L-03-211-1** that consists of the parts that follow:

<u>PART NUMBER</u>	<u>NOMENCLATURE</u>	<u>QUANTITY</u>
MS9134-01	GASKET	1
206-076-377-001	GASKET	1
206-375-202-101	TACH-GENERATOR	1
407-340-108-101	ADAPTER	1
407-340-109-101	RETAINING RING	1

**PART IV**

The following kit is required to accomplish Part IV of this bulletin on 206L, L-1, and L-3.

Order hardware kit **CT-206L-03-211-2** that consists of the parts that follow:

<u>PART NUMBER</u>	<u>NOMENCLATURE</u>	<u>QUANTITY</u>
67588	SPRING	1
25399	RETAINER RING	1
67541	SHAFT	1

The following kit is required to accomplish Part IV of this bulletin on 206L-4.

Order hardware kit **CT-206L-03-211-3** that consists of the parts that follow:

<u>PART NUMBER</u>	<u>NOMENCLATURE</u>	<u>QUANTITY</u>
67588	SPRING	1
25399	RETAINER RING	1
20546	SHAFT	1

**Consumable Material:**

The following material is required to accomplish this bulletin, however this material is considered consumable (bench stock) material and may not require ordering depending on the operators consumable material stock levels. This material may be obtained through your Bell Helicopter Textron Supply Center.

<u>PART NUMBER</u>	<u>NOMENCLATURE</u>	<u>REFERENCE NO.</u>
Royco 22MS	SPLINE LUBRICANT (GREASE) MIL-G-81827	C-525
	ALTERNATE:	
Areroshell 23C	SPLINE LUBRICANT (GREASE) MIL-G-81827	C-525

- NOTE -

The C REF. NO. above is a cross-reference to the consumables list found in the Standard Practices Manual.

**SPECIAL TOOLS:**

None required.

**WEIGHT AND BALANCE:**

Not affected.

**ELECTRICAL LOAD DATA:**

Not affected.

**REFERENCES:**

BHT-206L-MM, Rev.18, 30 June 1984  
Chapter 29, Hydraulic.

BHT-206L1-MM, Rev.7, 15 September 1981  
Chapter 29, Hydraulic.

BHT-206L3-MM-4, Rev.7, 21 July 1993  
Chapter 29, Hydraulic.

BHT-206L4-MM-4, Reissue, 2 December 1994  
Chapter 29, Hydraulic.

BHT-206L-MM, Rev.20, 01 June 1987  
Chapter 66, Power Train.

BHT-206L1-MM, Rev.15, 01 June 1987  
Chapter 66, Power Train.

BHT-206L3-MM-6, Rev.1, 21 July 1993  
Chapter 63, Main Rotor Drive.

BHT-206L4-MM-6, Rev.1, 21 April 1998  
Chapter 63, Main Rotor Drive.

BHT-206L-CR&O, Reissue, 18 June 1993  
Chapter 63, Main Rotor Drive System.

**PUBLICATIONS AFFECTED:**

BHT-206L-MM, Rev.20, 01 June 1987  
Chapter 12, Servicing.

BHT-206L1-MM, Rev.15, 01 June 1987  
Chapter 12, Servicing.

BHT-206L3-MM-2, Rev.1, 21 July 1993  
Chapter 12, Servicing.

BHT-206L4-MM-2, Reissue, 2 December 1994  
Chapter 12, Servicing.

BHT-206L-MM, Rev.20, 01 June 1987  
Chapter 66, Power Train.

BHT-206L1-MM, Rev.15, 01 June 1987  
Chapter 66, Power Train.

BHT-206L3-MM-6, Rev.1, 21 July 1993  
Chapter 63, Main Rotor Drive.

BHT-206L4-MM-6, Rev.1, 21 April 1998  
Chapter 63, Main Rotor Drive.

BHT-206L-MM, Rev.18, 30 June 1984  
Chapter 29, Hydraulic.

BHT-206L1-MM, Rev.7, 15 September 1981  
Chapter 29, Hydraulic.

BHT-206L3-MM-4, Rev.7, 21 July 1993  
Chapter 29, Hydraulic.

BHT-206L4-MM-4, Reissue, 2 December 1994  
Chapter 29, Hydraulic.

BHT-206L-SERIES-IPB  
Chapter 29, Hydraulic System.

**ACCOMPLISHMENT INSTRUCTIONS:**

**Part I – 206L, 206L-1, and 206L-3 installation procedures for the tach-generator 206-375-202-101 and the adapter 407-340-108-101.**

1. Remove the hydraulic pump (1, Figure 1) (BHT-206L-MM, Chapter 29) (BHT-206L1-MM, Chapter 29) (BHT-206L3-MM, Chapter 29)
2. Remove the tach-generator (2) (BHT-206L-MM, Chapter 66) (BHT-206L1-MM, Chapter 66) (BHT-206L3-MM, Chapter 63).
3. Make sure that the splines of the transmission oil pump driveshaft and hydraulic pump input shaft are within the specified wear limits (refer to BHT-206L-CR & O, Chapter 63 and Figure 5 of this bulletin).

**-NOTE-**

Do not use grease lubricant (C-525) to the splines of the adapter (6, Figure 2). The use of grease lubricant can result in deterioration of the adapter.

4. Install the adapter (6, Figure 2) and the retaining ring (7) in the new tach-generator shaft splines (2).
5. Apply grease (C-525) to the outboard female splines of the tach-generator (2).
6. Install the tach-generator (2) (BHT-206L-MM, Chapter 66) (BHT-206L1-MM, Chapter 66) (BHT-206L3-MM, Chapter 63).
7. Apply grease (C-525) to the exposed splines of the hydraulic pump (1).
8. Install the hydraulic pump (1) (BHT-206L-MM, Chapter 29) (BHT-206L1-MM, Chapter 29) (BHT-206L3-MM, Chapter 29).
9. Make an entry in the technical records to show that you have completed this bulletin.

**Part II – 206L-4 installation procedures for the tach-generator 206-375-202-101 and the adapter 407-340-108-101.**

1. Remove the hydraulic pump (1, Figure 1) (BHT-206L-MM, Chapter 29) (BHT-206L1-MM, Chapter 29) (BHT-206L4-MM, Chapter 29)
2. Remove the tach-generator (2) (BHT-206L-MM, Chapter 66) (BHT-206L1-MM, Chapter 66) (BHT-206L4-MM, Chapter 63).

3. Make sure that the splines of the transmission oil pump driveshaft and hydraulic pump input shaft are within the specified wear limits (BHT-206L-CR & O, Chapter 63)(Figure 5).

-NOTE-

Do not use grease lubricant (C-525) to the splines of the adapter (6, Figure 2). The use of grease lubricant can result in deterioration of the adapter.

4. Install the adapter (6, Figure 2) and the retaining ring (7) in the new tach-generator shaft splines (2).
5. Apply grease (C-525) to the outboard female splines of the tach-generator (2).
6. Installed the tach-generator (2) (BHT-206L-MM, Chapter 66) (BHT-206L1-MM, Chapter 66) (BHT-206L3-MM, Chapter 63).
7. Use a vibrating stylus and mark the hydraulic pump data plate as follows:  

206-076-030-444-117FM
8. Apply grease (C-525) to the visible splines of the hydraulic pump (1).
9. Install the hydraulic pump (1) (BHT-206L4-MM, Chapter 29).
10. Make an entry in the technical records to show that you have completed this bulletin.

### **Part III –300 Hour Inspection/Lubrication**

#### **Inspection**

1. Do this inspection 300 flight hours after initial installation and every 300 hours thereafter.
2. Remove the hydraulic pump (1, Figure 2) and the tach-generator (2).
3. Remove the adapter (6).
4. Inspect the adapter (6). For damage limits, refer to Figure 3.
5. Inspect the tach-generator (2). For damage limits, refer to Figure 4.
6. Inspect the transmission oil pump shaft splines. For damage limits, refer to BHT-206L-CR&O, Chapter 63.

7. Remove hydraulic pump input shaft (1, Figure 6). Refer to Part IV of this bulletin.
8. Inspect the hydraulic pump splines. For damage limits refer to Figure 5.
9. Replace parts that have exceeded the damage limits.

### **Lubrication**

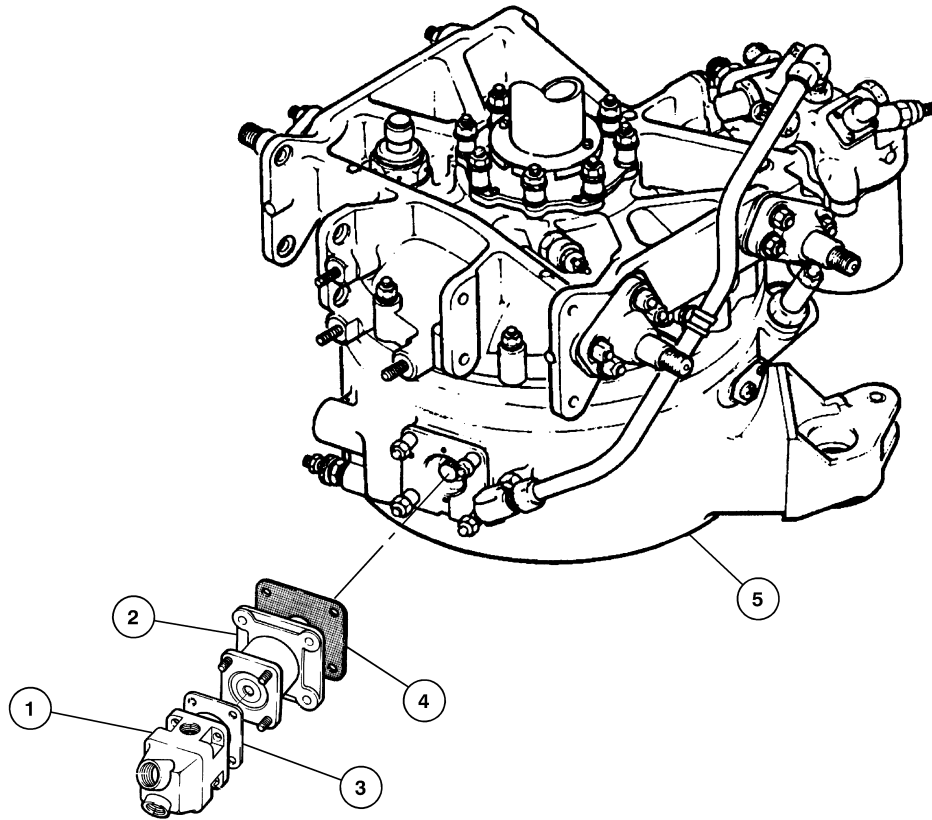
1. Lubricate the outboard female splines of the tach-generator (2, Figure 2) and hydraulic pump input shaft (1, Figure 6) 300 flight hours after initial installation and every 300 hours thereafter.
2. Apply grease (C-525) to the outboard female splines of the tach-generator (2, Figure 2) and hydraulic pump input shaft (1, Figure 6).
3. Reinstall the tach-generator (2) and the reassembled hydraulic pump (1). Refer to Part I and Part II of this bulletin.

### **Part IV –Removal and installation of hydraulic pump input shaft.**

-NOTE-

Force needed to remove external shaft can vary due to differences in retainer ring spring load.

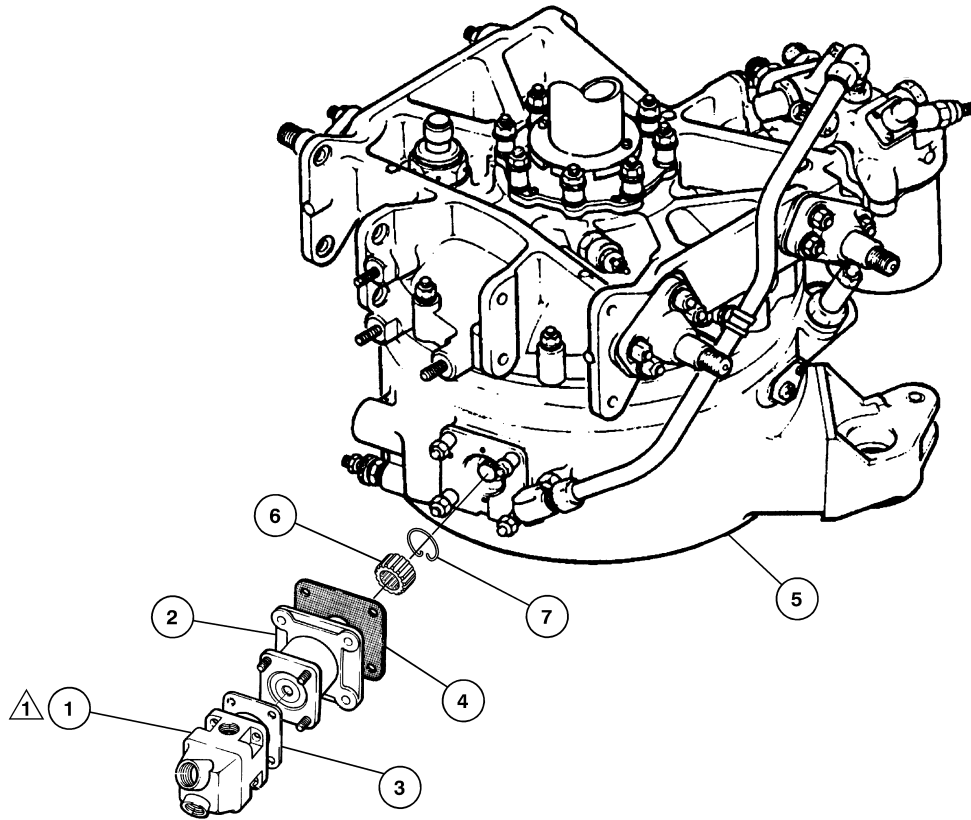
1. Remove hydraulic input shaft (1, Figure 6) from the hydraulic pump (2) as follows:
  - a. Clamp input shaft (1) in vise with soft jaws and tap housing lightly with a small mallet (plastic type) to separate input shaft from hydraulic pump (2).
  - b. Discard the retainer ring (3) and the spring (4).
2. Inspect the hydraulic pump internal driveshaft to make sure it has no flat spots, chipped or uneven wear of splines. If internal driveshaft is damaged send pump for overhaul.
3. Install the input shaft (1) in the hydraulic pump (2) as follows:
  - b. Install retainer ring (3) on input shaft (1).
  - c. Apply a light coating of grease (C-525) to input shaft splines and use a small amount of grease (C-525) to hold spring (4) in the input shaft end.
  - d. Invert pump (2) and insert input shaft (1) with assembled retainer ring (3) and spring (4) into internal driveshaft and press in until retainer ring (3) snaps into groove of internal driveshaft.



**LEGEND**

- 1. Hydraulic pump
- 2. Tach-generator (206-076-373-001)
- 3. Gasket (MS9134-01)
- 4. Gasket (206-076-377-001)
- 5. Transmission

**Figure 1. Tach-generator- Removal**



**LEGEND**

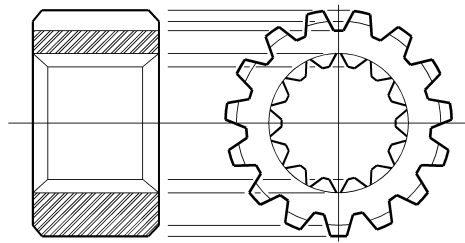
- 1. Hydraulic pump (206-076-030-003/-101/-117)
- 2. Tach-generator (206-375-202-101)
- 3. Gasket (MS9134-01)
- 4. Gasket (206-076-377-001)
- 5. Transmission
- 6. Adapter (407-340-108-101)
- 7. Retaining ring (407-340-109-101)

**NOTE**

-  Lubricate hydraulic pump exposed shaft splines with grease C-525.

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**Figure 2. Tach-generator - Installation**

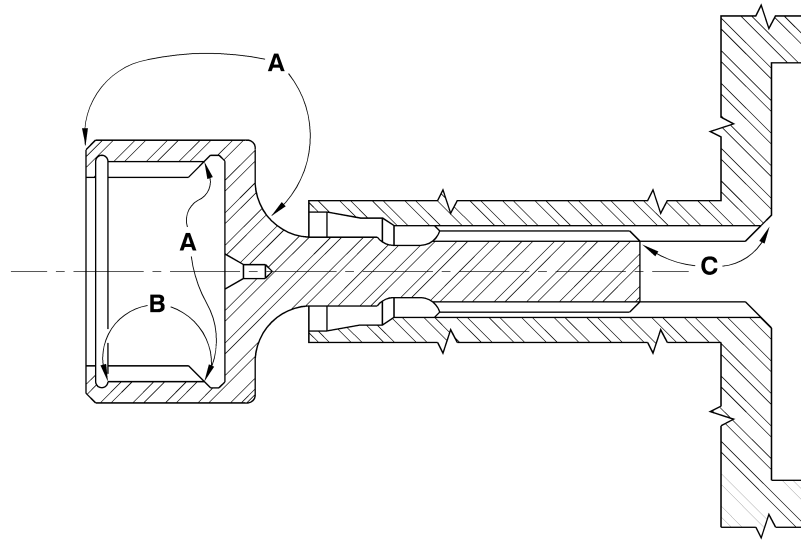


**INTERCONNECT ADAPTER 407-340-108-101**



<b>NO.</b>	<b>CHARACTERISTIC</b>	<b>INSPECTION PROCEDURE</b>	<b>LIMIT</b>
1	Spline wear and mechanical	Visual/measure	Permitted if damage or wear cannot be felt with a 0.020 inch (0.508 mm) spherical radius probe.

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**Figure 3. Interconnect Adapter – Inspection**



TACH-GENERATOR 206-375-202-101

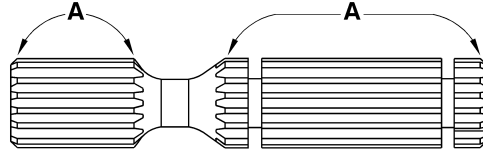
NO.	REF. LTR	CHARACTERISTIC	INSPECTION PROCEDURE	LIMIT
1	A	Corrosion/mechanical	Visual/measure	0.005 IN. (0.1 mm) maximum depth.
2	B	Corrosion/mechanical	Visual/measure	0.002 IN. (0.05 mm) maximum depth.
3	B	Spline wear	Visual/measure	Permitted if damage or wear cannot be felt with a 0.020 IN. (0.508 mm) spherical radius probe. 
4	C	Corrosion/mechanical	Visual/measure	0.002 IN. (0.05 mm) maximum depth.
5	C	Corrosion/mechanical	Visual/measure	Permitted if damage or wear cannot be felt with a 0.020 IN. (0.508 mm) spherical radius probe. 

**NOTE**




Nicks on ends of the splines not exceeding 0.010 IN. (0.2 mm) deep may be polished smooth with a fine India stone.

**Figure 4. Tach-generator - Inspection**



INPUT SHAFT 20546

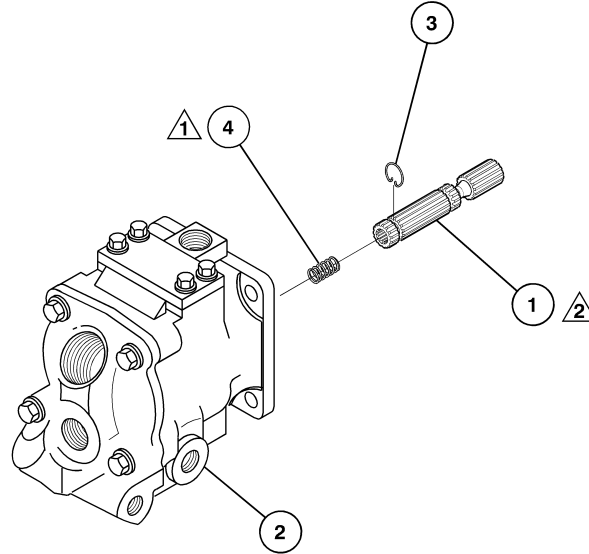
NO.	REF. LTR	CHARACTERISTIC	INSPECTION PROCEDURE	LIMIT
1	A	Corrosion/mechanical	Visual/measure	0.002 IN. (0.05 mm) maximum depth.
2	A	Spline wear	Visual/measure	Permitted if damage or wear cannot be felt with a 0.020 IN. (0.508 mm) spherical radius probe. 

**NOTE**



Nicks on ends of the splines not exceeding 0.010 IN. (0.2 mm) deep may be polished smooth with a fine India stone.



**Figure 5. Hydraulic pump input shaft – Inspection**



**LEGEND**

ITEM	DESCRIPTION	206L, L-1, L-3	206L-4
1	Input shaft	67541	20546
2	Hydraulic pump	206-076-030-003/-101	206-076-030-117
3	Retainer ring	25399	25399
4	Spring	67588	67588

**NOTES**

-  Use grease C-525 to hold spring.
-  Apply a light coating of grease C-525.

**Figure 6. Hydraulic pump input shaft – Removal and installation**