Bell Helicopter
A Textron Company

ALERT SERVICE BULLETIN 214ST-12-89
25 May 2012

MODEL AFFECTED: **214ST**

SUBJECT: **MAIN ROTOR HUB ASSEMBLY SPINDLE ASSEMBLY, P/N 214-010-103, MANDATORY REVISION OF INSPECTION AND OVERHAUL REQUIREMENTS.**

HELICOPTERS AFFECTED: **Serial number 28101 through 28200.**

COMPLIANCE:

PART I: At the next A Inspection (25 Hour/7 Days) and at each subsequent A Inspection.

PART II: At P/N 214-010-103 Spindle Assembly Overhaul (2500 hours)

DESCRIPTION:

THIS ASB CANCELS AND SUPERSEDES TECHNICAL BULLETIN 214ST-02-169 DATED 8-30-2002.

As the result of the investigation of a cracked spindle assembly, BHTI has determined that additional inspection and overhaul tasks are necessary and should be considered mandatory.

The “A” Inspection (25 hour/7 days) requirement is expanded (PART I of this bulletin) to include a specific visual inspection of the spindle for cracks and bushing wear at the four spindle to yoke attachment holes.

In addition, the spindle to yoke attachment hole bushings must be removed at spindle assembly overhaul (2500 hours), the spindle hole bores inspected for condition/wear, and new bushings reinstalled (PART II of this bulletin). Because this is a critical task involving specialized tooling and processes, bushing removal/installation and hole bore inspection will be accomplished only by Bell Helicopter.

The maintenance and component repair and overhaul manuals will be revised to incorporate the intent of this Alert service Bulletin.

PART III of this bulletin provides information for returning spindles to Bell Helicopter for the 2500 hour overhaul bushing replacement.

APPROVAL:

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

CONTACT INFO:

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MANPOWER:

Approximately 1.0 man-hour is required to complete 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:

None Required

SPECIAL TOOLS:

None required.

WEIGHT AND BALANCE:

Not affected

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

BHT-214ST-IPB Illustrated Parts Breakdown, Chapter 62
BHT-214ST-MM Maintenance Manual, Chapters 5 and 62
BHT-214ST-CR&O Component Repair and Overhaul Manual, Chapter 62
Information Letter 214ST-12-23
Information Letter GEN-04-98 Rev C

PUBLICATIONS AFFECTED:

BHT-214ST-MM Maintenance Manual, Chapters 5 and 62
BHT-214ST-CR&O Component Repair and Overhaul Manual, Chapter 62

ACCOMPLISHMENT INSTRUCTIONS:

PART I - REVISION TO MAINTENANCE MANUAL

-NOTE-

The maintenance manual will be revised to include the intent of the following changes.

1. Chapter 5, Paragraph 5-7, A-Inspection (25 hours/7 Days), Main Rotor section -

   The paragraph 1 requirements are revised as noted below. <u>The spindle lug and bushing requirement is a mandatory inspection</u>:

   1. Main rotor hub assembly and installation with particular attention to the spindle to yoke attachment lugs for cracks and bushing condition. Refer to Chapter 62.

2. Chapter 62, Paragraph 62-29, Inspection -

   Insert the note and replace existing sub-paragraph 2 as shown below. Existing sub-paragraph 2 becomes sub-paragraph 3.

NOTE

Required by the A Inspection (25 hours/7 days, Chapter 5)

2. Visually inspect the visible areas of the main rotor spindles (Refer to BHT-214ST-CR&O for damage limits) for:

   a. Cracks in the spindle lugs at the four spindle to yoke attachment holes. Cracked spindles are non-airworthy and must be replaced.

   b. Evidence of looseness/movement of the spindle to yoke attachment hole bushings, extruded blue coat, fretting, or corrosion. If any of these conditions are verified or suspected, remove spindle for overhaul inspection/repair.

PART II - REVISION TO COMPONENT REPAIR AND OVERHAUL MANUAL, CHAPTER 62.

-NOTE-

The component repair and overhaul manual will be revised to include the intent of the following changes.

1. Table 62-1, sheet 5 (FIG. 62-14, index no. 34)

   See page 6 of this bulletin.

2. Table 62-1, sheet 6 (FIG. 62-16, index no. 4)

   See page 7 of this bulletin.

3. Table 62-1, sheet 7 (FIG. 62-17, index no. 6)

   See page 8 of this bulletin.

4. Table 62-1, sheet 15.

   Add the following NOTES:

   14 No cracks allowed.

   15 At each 2500 hour overhaul remove yoke to spindle attachment bushings, inspect spindle bores for damage, and install new bushings. Bushing removal/installation and bore inspection may only be accomplished by Bell Helicopter.

5. Figure 62-26 (sheet 2)

   See page 9 of this bulletin.

5. Figure 62-26 (sheet 3)

   See page 10 of this bulletin. Add new sheet 3. Renumber existing sheets 3 thru 8 as 4 thru 9 consecutively.

6. Figure 62-29 (sheet 1)

   Revise as noted on page 11 of this bulletin.

7. Paragraph 62-37 Repair

Add the following sub-paragraph:

1A. Spindle Repair

a. Refer to preceding paragraph 1 for general repair.

b. Worn or loose spindle to yoke attachment bushings must be replaced and the spindle bores inspected for damage. Removal/installation of bushings and spindle bore inspection may only be accomplished by Bell Helicopter.

PART III – PARTS RETURN TO BELL HELICOPTER TEXTRON

1. Spindles being returned to Bell Helicopter for the 2500 hour overhaul bushing replacement/inspection are to be returned with an RMA. Refer to Information Letter GEN-04-98 Rev C for return procedures.

Table 62-1. Inspection Requirements (Sheet 5 of 15) (Cont)

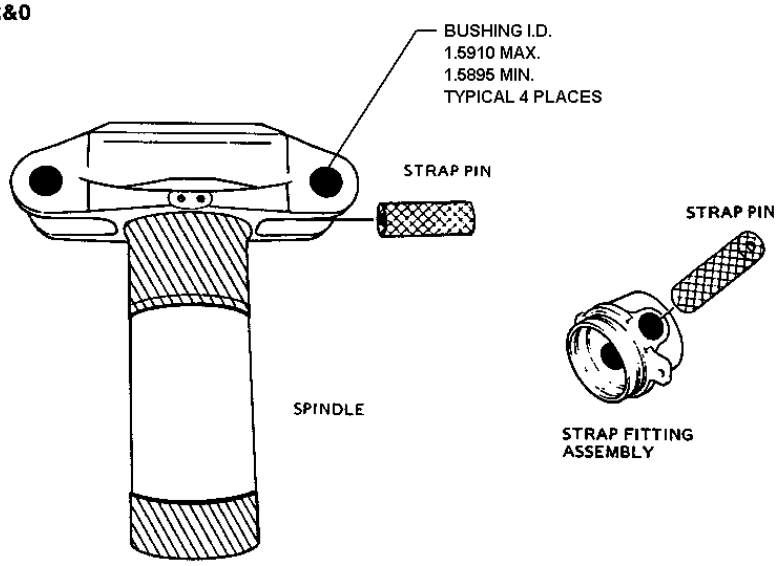
FIG. 62-14 INDEX NO.	NOMENCLATURE	METHOD OF INSPECTION			REPLACE AT OVER-HAUL	TYPICAL DEFECTS	REMARKS AND REFERENCES
		VISUAL	MAGNETIC PARTICLE	PENE-TRANT			
19	Washer				X		
20	Shim				X		
21	Packing				X		
22	Pin Retainer	X				See item 14.	
23	Packing				X		
24	Washer				X		
25	Packing				X		
26	Bolt				X		
27	Sealing Washer				X		
28	Magnetic Plug	X				Damaged threads.	
29	Bolt	X	X (1)			Cracks, corrosion, thread damage, scoring and deformation. (11)	
30	Washer				X		
31	Pitch Horn	X		X		Cracks, corrosion, worn bushing, damaged threaded inserts, worn seals and bearings and malfunction inflight tracking housing assembly. (11)	Remove paint and primer.
32	Barrel Nut				X		
33	Retainer				X		
34	Spindle Assembly	X	X (7)			Cracks, corrosion, bearing journal wear, yoke attach bushing fretting/looseness, and thread damage. (14) (15)	Remove paint and primer.

Table 62-1. Inspection Requirements (Sheet 6 of 15) (Cont)

FIG. 62-14 INDEX NO.	NOMENCLATURE	METHOD OF INSPECTION			REPLACE AT OVER-HAUL	TYPICAL DEFECTS	REMARKS AND REFERENCES
		VISUAL	MAGNETIC PARTICLE	PENE-TRANT			
35	Bolt	X	X △1			Same as item 29.	
36	Weight	X				Same as item 3.	
37	Washer				X		
38	Retainer				X		
39	Barrel Nut				X		
40	Pitch Horn Assembly	X		X		Cracks, corrosion and worn bearings and bushings. △11	Remove paint and primer. Worn or damaged bushings requires replacement of pitch horn.
FIG. 62-16 INDEX NO.							
1	Lock	X				Cracks. △11	Remove paint and primer.
2	Washer				X		
3	Bolt				X		
4	Spindle	X	X △7			Cracks, corrosion, bearing journal wear, yoke attach bushing fretting/looseness, and thread damage. △14 △15	
5	Bolt				X		
6	Washer				X		
7	Seal — Outboard	X				Damaged element, broken bond between elastomer element and metal housing and sleeve, damaged packing groove.	

Table 62-1. Inspection Requirements (Sheet 7 of 15) (Cont)

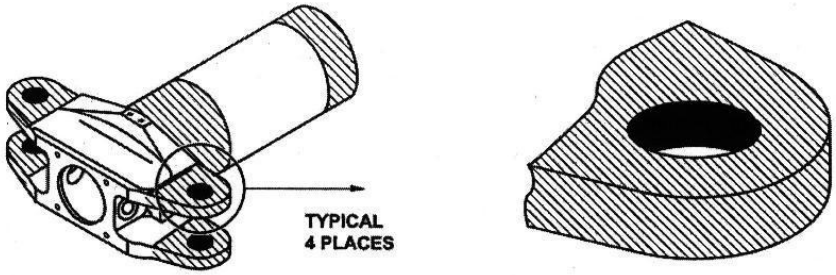
FIG. 62-16 INDEX NO.	NOMENCLATURE	METHOD OF INSPECTION			REPLACE AT OVER-HAUL	TYPICAL DEFECTS	REMARKS AND REFERENCES
		VISUAL	MAGNETIC PARTICLE	PENE-TRANT			
8	Shim				X		
9	Packing				X		
10	Bearing	X				Roughness, damaged roller, races or retainers.	
11	Spacer — Inner Race	X				Cracks and distortion. (11)	
12	Spacer — Outer Race	X				Cracks and distortion. (11)	
13	Spacer — Inner Race	X				Cracks and distortion. (11)	
14	Packing				X		
15	Seal — Inboard	X				Same as item 7.	
FIG. 62-17 INDEX NO.							
1	Bolt				X		
2	Washer				X		
3	Packing				X		
4	Retainer	X				Cracks, corrosion and damaged packing groove. (11)	
5	Packing				X		
6	Spindle	X	X (7)			Cracks, corrosion, bearing journal wear, yoke attach bushing fretting/looseness, and thread damage. (14) (15)	Remove paint and primer.



DAMAGE AREA REPAIR SYMBOLS

TYPE OF DAMAGE	MAXIMUM DEPTHS AND REPAIR AREAS		
MECHANICAL DAMAGE	0.001 in. (0.0254 mm)	0.010 in. (0.254 mm)	0.004 in. (0.1016 mm)
CORROSION DAMAGE	0.001 in. (0.0254 mm)	0.010 in. (0.254 mm)	0.004 in. (0.1016 mm)
MAXIMUM AREA PER FULL DEPTH REPAIR	0.50 in. sq. (322.58 mm sq.)	Not Critical	0.50 in. sq. (322.58 mm sq.)
NUMBER OF REPAIRS	Two	Not Critical	Two Per Shaded Area
EDGE CHAMFER	0.010 in. (0.254 mm)	0.040 in. (1.016 mm)	0.010 in. (0.254 mm)
MOUNT BOLT BORE ● DAMAGE:	0.001 in. (0.0254 mm) for 1/4 circumference, size limits apply.		
CRACKS:	No cracks allowed.		

Figure 62-26. Main rotor hub mechanical and corrosion damage limits (sheet 2)



214-010-103-115 SPINDLE ASSEMBLY

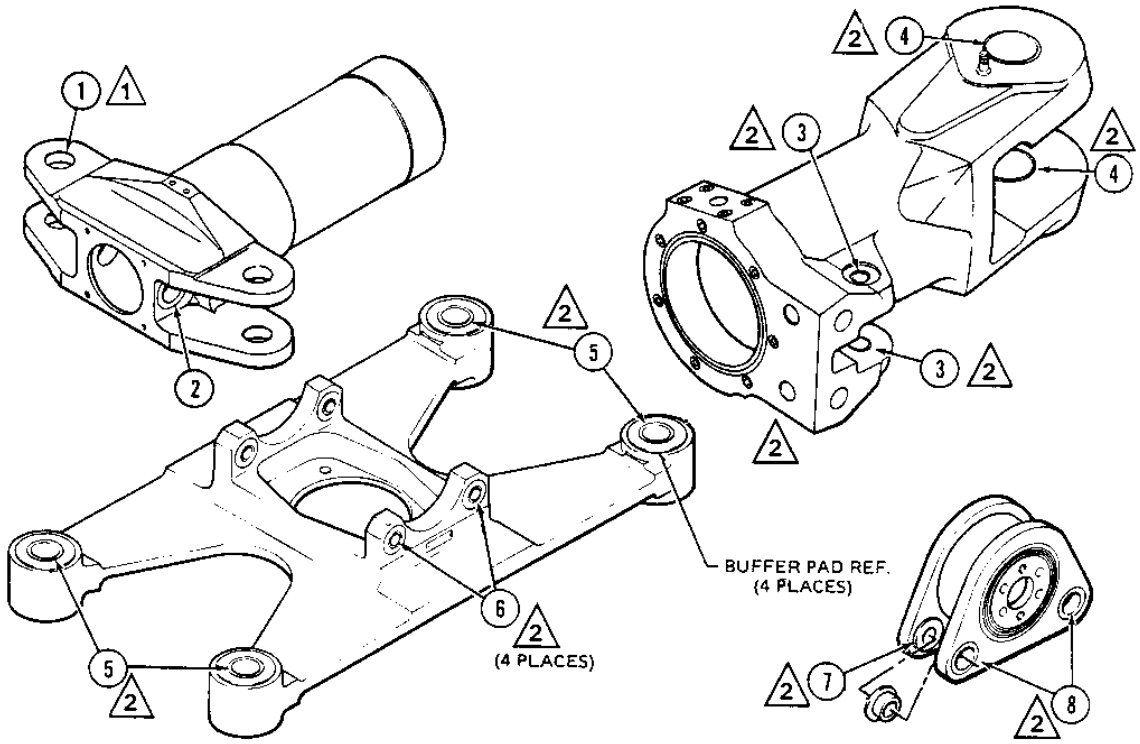
	DAMAGE AREA REPAIR SYMBOLS	
TYPE OF DAMAGE	MAXIMUM DEPTH AND REPAIR AREAS	
MECHANICAL DAMAGE	0.010 INCH (0.254 mm)	0.004 INCH (0.1016 mm)
CORROSION DAMAGE	0.010 INCH (0.254 mm)	0.004 INCH (0.1016 mm)
MAXIMUM AREA PER FULL DEPTH REPAIR	NOT CRITICAL	0.50 SQ. INCH (322.588 sq. mm)
NUMBER OF REPAIRS	NOT CRITICAL	TWO PER SHADED AREA
EDGE CHAMFER	0.040 INCH (1.016 mm)	0.010 INCH (0.254 mm)
BUSHING BORE DAMAGE: ● DAMAGE MAY BE WORKED TO DIMENSIONS SHOWN BELOW ONLY.		
BORE DIAMETER (BUSHING REMOVED) - STANDARD	1.7775 to 1.7780 INCH (45.149 to 45.161 mm)	(1)(2)
- OVERSIZE	1.7975 to 1.7980 INCH (45.657 to 45.659 mm)	
CRACKS:	NO CRACKS ALLOWED	

NOTES

(1) Measured twice (90° apart) at top and bottom of each hole.

(2) Typical 4 places.

Figure 62-26. Main Rotor Hub Mechanical and Corrosion Damage Limits (Sheet 3)



	HOLE NO.	NOMENCLATURE	HOLE DIAMETER MIN INCHES	HOLE DIAMETER MAX INCHES
1	1	Bushings, Spindle to Yoke	1.5895 (40.3733 mm)	1.5910 (40.4114 mm)
	2	Hole, Strap Pin	1.625 (41.275 mm)	1.6265 (41.3131 mm)
2	3	Bushings, Drag Brace Installation	1.000 (25.400 mm)	1.002 (25.4508 mm)
2	4	Bushings, Main Blade Bolt	2.875 (73.025 mm)	2.877 (73.0758 mm)
2	5	Bushings, Spindle Installation	1.5895 (40.3733 mm)	1.5905 (40.3987 mm)
2	6	Bushing, Bearing Installation	0.7495 (19.0373 mm)	0.7505 (19.0627 mm)
2	7	Bushing, Bearing to Yoke	0.7495 (19.0373 mm)	0.7510 (19.0754 mm)
2	8	Bushing, Slip Bushing Installation	1.0000 (25.400 mm)	1.0015 (25.4381 mm)

NOTE:
1. Any wear or damage to bushing exceeding these limits requires component be shipped to Bell Helicopter for repairs.
2. Any wear or damage to bushing exceeding these limits requires component be shipped to authorized repair station for repairs.

214ST-R-62-29-1

Figure 62-29. Hub components hole wear limits (Sheet 1 of 3)