

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

A Subsidiary of Textron Inc.

No. 214ST-02-169

Date 08-30-02

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**MODEL AFFECTED:** 214ST

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

**HELICOPTERS AFFECTED:** All Model 214ST Helicopters.

**COMPLIANCE:** Effective upon receipt of this Technical Bulletin.

**DESCRIPTION:**

As the result of the investigation of a fractured spindle assembly, BHTI has determined that additional inspection and overhaul tasks are necessary.

The "A" Inspection (25 hour) 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 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.

PART III of this bulletin provides specific details about how to return spindles to Bell Helicopter for the 2500 hour overhaul bushing replacement.

**APPROVAL:**

Not required.

**MANPOWER:**

Approximately 1.0 man-hours are required to complete this bulletin. Man-hours are based on hands-on time, and may vary with personnel and facilities available.

**MATERIALS:**

Not required.

**SPECIAL TOOLS:**

Not 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

**PUBLICATIONS AFFECTED:**

BHT-214ST-MM Maintenance Manual, Chapter 5

BHT-214ST-CR&O Component Repair and Overhaul Manual, Chapter 62

**ACCOMPLISHMENT INSTRUCTIONS:**

**PART I - REVISION TO MAINTENANCE MANUAL, CHAPTER 62, PARAGRAPH  
62-20, INSPECTION**

Change by adding the second note as shown below and revising the sub-paragraph 1 requirements as noted; all other existing inspection requirements under this paragraph

remain unchanged:

**NOTE**

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

Inspect the visible areas of the main rotor spindles for general condition (Refer to BHT-214ST-CR&O for damage limits) and:

1. Cracks at the four spindle to yoke attachment holes. Cracked spindles are non-airworthy and must be replaced.
2. Evidence of looseness/movement of the spindle to yoke attachment hole bushings. If bushing looseness/movement is verified or suspected, remove spindle for overhaul inspection/repair.

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

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

Revise as noted on page 5 of this bulletin.

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

Revise as noted on page 6 of this bulletin.

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

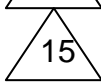
Revise as noted on page 7 of this bulletin.

4. Table 62-1, sheet 15.

Add the following NOTES:



No cracks allowed.



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)

Revise as noted on page 8 of this bulletin.

6. Figure 62-29 (sheet 1)

Revise as noted on page 9 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 (Return Material Authorization). Contact your Customer Support Specialist for an RMA form (telephone 817-280-2919, facsimile 817-280-4745/3224).
2. Parts are to be returned to Bell Helicopter Textron Inc., 3000 S. Norwood Drive, Hurst Texas, 76053. Attn: Customer Property Return Monitor.
  - a. This process will be accomplished expeditiously, and with your assistance, the spindle will be ready for return shipment within 5-7 workdays. However, it should be noted that spindles will be inspected on a first-come, first-serve basis.
  - b. Please insure that returned spindles are accompanied by their HISTORICAL RECORD CARDS (hard card) and the RMA. Please write on the outside of the box the words, "214 Spindle Assembly Inspection/Overhaul".
  - c. The estimated cost is \$ 4,775.00 (2002).

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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 			Cracks, corrosion, thread damage, scoring and deformation.	
30	Washer				X		
31	Pitch Horn	X		X		Cracks, corrosion, worn bushing, damaged threaded inserts, worn seals and bearings and malfunction inlight tracking housing assembly.	
32	Barrel Nut				X		
33	Retainer				X		
34	Spindle Assembly	X	X 			Cracks, corrosion, bearing journal wear, yoke attach bushing fretting/looseness, and thread damage.	  

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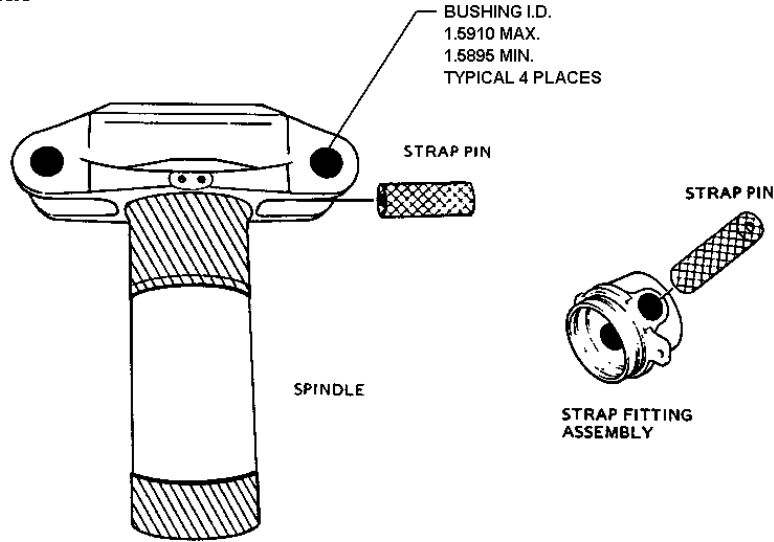
Table 62-1. Inspection Requirements (Sheet 6 of 15) (Cont)

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			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				Cracks, corrosion and worn bearings and bushings.	Remove paint and primer. Worn or damaged bushings requires replacement of pitch horn.
FIG. 62-16 INDEX NO.							
1	Lock	X				Cracks.	
2	Washer			X			
3	Bolt			X			
4	Spindle	X	X			Cracks, corrosion, bearing journal wear, yoke attach bushing fretting/looseness, and thread damage.	Remove paint and primer.
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. 	
12	Spacer — Outer Race	X				Cracks and distortion. 	
13	Spacer — Inner Race	X				Cracks and distortion. 	
14	Packing						
15	Seal — Inboard	X			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. 	
5	Packing				X		
6	Spindle	X	X			Cracks, corrosion, bearing journal wear, yoke attach bushing fretting/looseness, and thread damage.   	Remove paint and primer.

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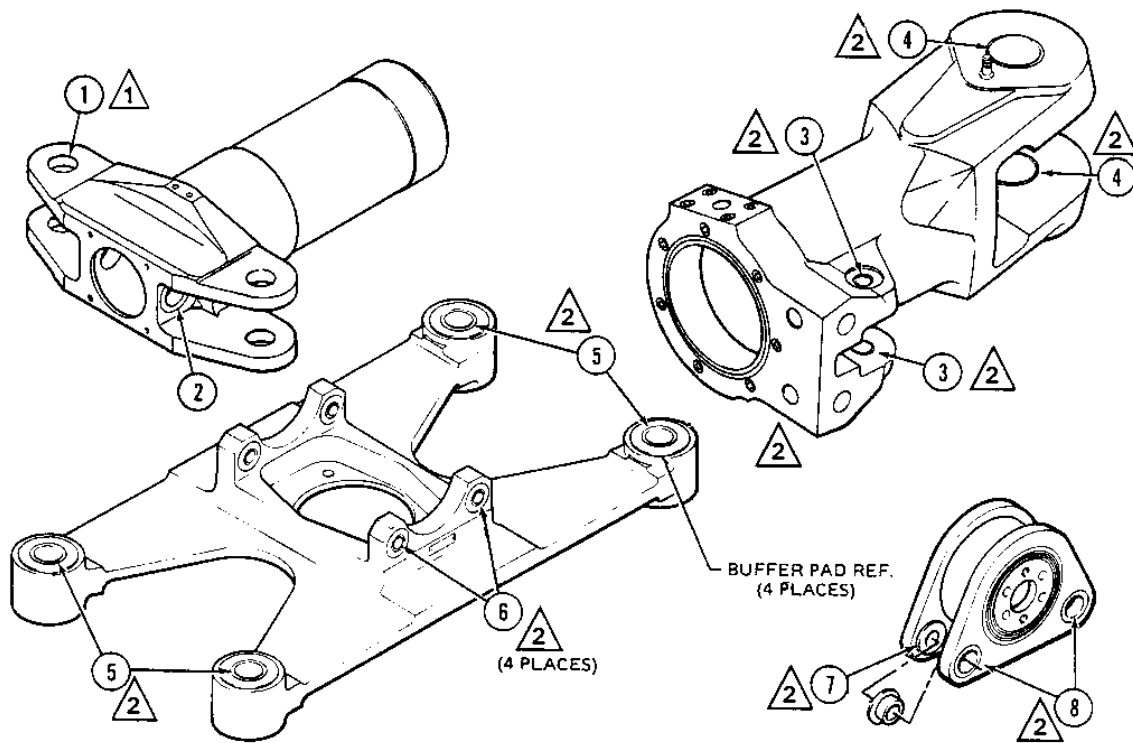
TYPE OF DAMAGE	DAMAGE AREA REPAIR SYMBOLS		
			
	MAXIMUM DEPTHS AND REPAIR AREAS		
MECHANICAL DAMAGE	0.001 in. (0.0254 mm)	0.010 in. (0.254 mm)	0.004 in. (0.1016 mm)
CORROSION DAMAGE	0.001 in. (0.0254 mm)	0.010 in. (0.254 mm)	0.004 in. (0.1016 mm)
MAXIMUM AREA PER FULL DEPTH REPAIR	0.50 in. sq. (322.58 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)

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HOLE NO.	NOMENCLATURE	HOLE DIAMETER	
		MIN	MAX
		INCHES	
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)
3	Bushings, Drag Brace Installation	1.000 (25.400 mm)	1.002 (25.4508 mm)
4	Bushings, Main Blade Bolt	2.875 (73.025 mm)	2.877 (73.0758 mm)
5	Bushings, Spindle Installation	1.5895 (40.3733 mm)	1.5905 (40.3987 mm)
6	Bushing, Bearing Installation	0.7495 (19.0373 mm)	0.7505 (19.0627 mm)
7	Bushing, Bearing to Yoke	0.7495 (19.0373 mm)	0.7510 (19.0754 mm)
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. 214ST-R-62-29-1
  - 2 Any wear or damage to bushing exceeding these limits requires component be shipped to authorized repair station for repairs.

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