

Bell Helicopter **TEXTRON**

A Subsidiary of Textron, Inc.

August 4, 2000

TO: All Owners/Operators of Bell 222/222B Helicopters

SUBJECT: REVISION "B" TO TECHNICAL BULLETIN 222-89-120 MAIN ROTOR HUB ASSEMBLY, P/N 222-011-101-103, -105, -107, -109 AND P/N 222-012-101-103 AND -107 CONFIGURATION CHANGE AND UPGRADE

Revision "B" to this bulletin is issued to include an additional configuration.

Hub assembly P/N 222-012-101-107 includes the latest flapping spring 222-310-117-105.

TECHNICAL BULLETIN
Bell Helicopter **TEXTRON**

A Subsidiary of Textron Inc.

No. 222-89-120

Date 05-15-89

Page 1 of 8

DATE 08-04-00

REV B

MODEL AFFECTED: 222

SUBJECT: MAIN ROTOR HUB ASSEMBLY, P/N 222-011-101-103, -105, -107, -109 AND P/N 222-012-101-103 AND -107 CONFIGURATION CHANGE AND UPGRADE | B

HELICOPTERS AFFECTED: Model 222 Helicopters S/N 47006 through 47089.
Model 222B Helicopters S/N 47131 through 47156.

COMPLIANCE: At Customer's Option

DESCRIPTION:

This bulletin provides information to operators that have a requirement to upgrade the main rotor hub assembly to the latest configuration. Table 1 lists the components that comprise the major differences for hub dash number configurations.

Certified design configuration of the helicopters at time of delivery were as follows:

<u>Helicopter Serial No</u>	<u>Main Rotor Hub Assembly Part Number</u>
47006 through 47089	222-011-101-103
47131 through 47154	222-011-101-105
47155 through 47156	222-011-101-107

Main rotor hub assembly P/N 222-012-101-107 is the current spare replacement. | B

The use of a later dash numbered hub assembly on an earlier helicopter serial number is approved. The use of an earlier dash number hub assembly on a later helicopter serial number is not authorized. To do so places the helicopter out of the certified design configuration.

A dash number identification change in the hub assembly records is required. Historical records must be annotated with the new part numbers and retirement lives as applicable.

APPROVAL:

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

MANPOWER:

No man-hour requirements are stated, as the length of time for upgrades will vary on the upgrade required. Upgrades at time of maintenance should result in no addition to man-hour requirements normally incurred.

MATERIALS:

Reference ACCOMPLISHMENT INSTRUCTIONS, standard replacement parts for overhaul are not included. Material will be available through your Bell Helicopter Supply Center.

SPECIAL TOOLS:

Reference Model 222 Series Component Repair and Overhaul Manual, Volume 2, Chapter 62.

For the assembly of main rotor hub P/N 222-012-101-103 and -107, the following tools are required:

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T102045-109	Grip spacing lower plate
T102045-111	Grip spacing upper plate

WEIGHT AND BALANCE:

Installation of M/R hub assembly P/N 222-012-101-103 and -107 has the following effect on weight and balance:

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Weight Change	Moment Arm	Moment Change
Longitudinal + 18.3 lbs	247.7	4532.91

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

BHT-222/222B-MM-1, Chapter 4, 5 and 65
BHT-222-IPB, Chapter 62
BHT-222B-IPB, Chapter 62
BHT-222-CR&O-2, Chapter 62, Component Repair and Overhaul
Alert Service Bulletin 222-86-39 "A" Flapping Bearing Rework
Alert Service Bulletin 222-88-46 Main Rotor Yoke Inspection
Alert Service Bulletin 222-88-51 Main Rotor Yoke Modification
Alert Service Bulletin 222-92-60 Flapping Bearing Inspection
Alert Service Bulletin 222-93-65 Flapping Bearing Replacement
Alert Service Bulletin 222-94-73 Flapping Spring Inspection
Alert Service Bulletin 222-95-78 Grip bolts inspection and retorque
Alert Service Bulletin 222-98-81 Grip and Flapping bearing bolts retorque
Alert Service Bulletin 222-98-83 Flapping bearing attach bolts inspection
Technical Bulletin 222-86-88 Dynamic Stop Removal
Technical Bulletin 222-87-111 M/R trunnion bolts installation and retorque
Technical Bulletin 222-89-125 Pendulum damper modification
Technical Bulletin 222-94-148 Hub and blades chordwise balance increase
Technical Bulletin 222-95-152 Flapping spring 222-310-117-105 introduction
Operation safety Notice 222-92-14 Flapping bearing inspection

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PUBLICATIONS AFFECTED:

BHT-222/222B-MM-1, Chapter 4, 5 and 65
BHT-222-IPB, Chapter 62
BHT-222B-IPB, Chapter 62
BHT-222-CR&O-2, Chapter 62, Component Repair and Overhaul

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ACCOMPLISHMENT INSTRUCTIONS:

Upgrading of main rotor hub assembly will require incorporation of ASB 222-88-46, ASB 222-88-51 and ASB 222-93-65 if not previously accomplished.

Table 1 lists the major components of dash numbered configurations, but does not contain parts and hardware common to all configurations. These items are contained in the Illustrated Parts Catalog.

Overhaul main rotor hub assembly in accordance with Model 222 Series Component Repair and Overhaul Manual and Technical Bulletin 222-95-152.

Procedure to assemble rotor hub assembly P/N 222-012-101-103 and/or -107 is similar to the hub assembly P/N 222-011-101 - all listed in Chapter 62 of BHT-222-CR&O-2, except for the following differences:

- 1) Use tool P/N T102045-111 upper plate and P/N T102045-109 lower plate in lieu of P/N T102045-001/-003 for grip spacing.
- 2) Total shim thickness (222-012-109-101) at the inboard feathering bearing to be .186 inch maximum.
- 3) Total shim thickness (222-012-110-103) at the outboard feathering bearing to be .240 inch maximum.
- 4) When installing bolts retaining the flapping springs and supports to the trunnion, if the shim thickness is greater than .032 inch, use bolts P/N NAS 626-10 (alt. MS21250-06010). If the shim thickness is less than .032 inch, use bolts P/N NAS 626-8 (alt. MS21250-06008).

-NOTE-

Apply primer (C-204, BHT-ALL-SPM) to mating surfaces of flapping bearings, flapping springs, shims, supports and bolts shank only prior to installation.

- 5) Install and shim flapping springs P/N 222-310-117-105 in accordance with procedure in Technical Bulletin 222-95-152.

The upgraded Main rotor hub assembly must have its data plate and Historical Record reidentified to new part number that the Main rotor hub assembly was upgraded to. The suffix "FM" will be added after the part dash number to indicate "Field Modified". The serial number of field modified part shall never be altered or changed.

Example: Upgrade the Main rotor hub assembly P/N 222-011-101-103 to 222-011-101-109 or 222-012-101-107 configuration. Reidentify Main rotor hub assembly data plate and Historical Service Record to new part number: 222-011-101-~~103~~-109FM or 222-012-101-107FM
Retain existing serial number.

TABLE 1
MAIN ROTOR HUB ASSEMBLY

PART NUMBER	NOMENCLATURE	CONFIGURATION						NOTE
		-103	-105	-107	-109	-103	-107	
222-011-101	Hub Assembly	-103	-105	-107	-109			
222-012-101	Hub Assembly					-103	-107	
AN960-10L	Washer	X						(2)
AN960-416L	Washer	X						(2)
NAS1223-4	Bolt	X						(2)
NAS 1224-2	Bolt	X						(2)
MS14144-L7	Nut					X	X	
MS17825-7	Nut	X	X	X	X			
MS21250-06010	Bolt	X	X	X	X	X	X	(19)
20-071-8-126	Bolt	X	X					(12) (14) (21)
42FLW-820	Nut	X	X					(12)
72991-8-126	Bolt			X	X			(12) (14) (21)
75943S820	Nut			X	X	X	X	(12)
140-007-33-28-3	Washer			X	X	X	X	(12)
222-010-104-105	Grip Assembly	X	X	X	X			
222-010-128-001	Shaft	X						(2)
222-010-130-001	Weight Assembly	X						(2)
222-010-131-001	Spring	X						(2)
222-010-142-103	Retainer	X	X					(3)
222-010-147-001	Bushing	X						(2)
222-010-154-101	Trunnion	X						(4)
222-010-154-111	Trunnion		X	X	X	X	X	
222-010-156-101	Stop	X						(2)
222-010-165-101	Retainer		X	X	X	X	X	
222-011-102-101	Yoke	X	X	X				(5) (9)
222-011-102-105	Yoke				X	X	X	
222-011-104-101	Pitch Horn	X	X	X	X			(13)
222-011-108-101	O/B Spindle Assembly	X	X	X	X			
222-011-108-105	O/B Spindle Assembly					X	X	(13)
222-011-109-101	Shim I/B	X	X	X	X			
222-011-110-101	Shim O/B	X	X	X	X			

PART NUMBER	NOMENCLATURE	CONFIGURATION						NOTE
		-103	-105	-107	-109	-103	-107	
222-011-101	Hub Assembly	-103	-105	-107	-109			
222-012-101	Hub Assembly					-103	-107	
222-011-113-101	Shaft Pendulum	X	X	X				(18)
222-011-113-103	Shaft Pendulum				X	X	X	
222-011-114-101	Support	X	X	X				(18)
222-011-114-103	Support				X	X	X	
222-012-102-101	Pitch Horn					X	X	(13)
222-012-104-101	Grip Assembly					X	X	(13)
222-012-109-101	Shim I/B					X	X	(13)
222-012-110-103	Shim O/B					X	X	(13)
222-310-114-003	Flapping Bearing	X	X					(1)
222-310-114-105	Flapping Bearing		X					(1)
222-310-114-107	Flapping Bearing		X	X				(1)
222-310-114-109	Flapping Bearing				X			(1)
222-310-114-111	Flapping Bearing					X	X	
222-310-115-103	Bearing, O/B	X						(7)
222-310-115-111	Bearing, O/B				X			(7)
222-310-115-113	Bearing, I/B	X						(8)
222-310-115-115	Bearing, I/B				X			(8)
222-310-115-117	Bearing, I/B		X	X				(8)
222-310-115-119	Bearing, O/B		X	X				(7)
222-310-116-001	Bolt, spindle I/B	X						(10) (15)
222-310-116-103	Bolt, spindle I/B		X	X	X			(11) (15)
222-310-117-101	Flapping Spring	X	X					(6) (20) (22)
222-310-117-103	Flapping Spring			X	X	X		(20) (22)
222-310-117-105	Flapping Spring						X	(22)
222-310-118-101	Bolt, spindle O/B	X						(10) (17)
222-310-118-103	Bolt, spindle O/B		X	X	X			(11) (17)
222-310-125-103	Bearing, I/B					X	X	(13)
222-310-126-101	Bearing O/B					X	X	(13)
222-310-127-101	Bolt					X	X	
222-310-128-103	Bolt, Spindle I/B					X	X	(16)
222-310-129-103	Bolt, Spindle O/B					X	X	(16)

NOTES

- (1) For spare parts replacement, use P/N 222-310-114-111.
- (2) These components may be removed in accordance with T.B. 222-86-88.
- (3) For spare parts replacement, use P/N 222-010-165-101.
- (4) Inactive for procurement, use P/N 222-011-154-111.
- (5) For spare parts replacement, use P/N 222-011-102-105.
- (6) Inactive for procurement, use P/N 222-310-117-103.
- (7) Inactive for procurement, use 222-310-115-119, (Barry outboard bearing) or use 222-310-115-111 (Lord outboard bearing) as an alternate.
- (8) Inactive for procurement, use 222-310-115-117, (Barry inboard bearing) or use 222-310-115-115 (Lord inboard bearing) as an alternate.
- (9) Compliance with ASB 222-88-51 upgrades yoke, P/N 222-011-102-101 to P/N 222-011-102-105.
- (10) 2500 hour airworthiness life limitation. Refer to BHT-222/222B-MM-1, Chapter 4.
- (11) 1200 hour airworthiness life limitation. Refer to BHT-222/222B-MM-1, Chapter 4.
- (12) 20-071-8-126 Bolt and 42FLW820 nut replaced by 72991-8-128 Bolt, 75943S820 nut and 140-007-33-28-3 washer under the nut as a unit. Refer to note (21).
- (13) Use in pairs only.
- (14) Replaced by 72991-8-128 Bolt. Refer to note (21).
- (15) For spare parts replacement, use 222-310-128-103 bolt. Refer to note (16).
- (16) 5000 hour airworthiness life limitation. Refer to BHT-222/222B-MM-1, Chapter 4.
- (17) For spare parts replacement, use 222-310-129-103 bolt. Refer to note (16).
- (18) Compliance with TB 222-89-125 upgrades shaft P/N 222-011-113-101 into -103 and support P/N 222-011-114-101 into -103.
- (19) When installing bolts retaining the flapping springs and supports to the trunnion, if the shim thickness is greater than .032 inch, use bolts P/N NAS 626-10 (alt. MS21250-06010). If the shim thickness is less than .032 inch, use bolts P/N NAS 626-8 (alt. MS21250-06008).

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- (20) For spare parts replacement, use flapping spring P/N 222-310-117-105. Refer to note (22).
- (21) For spare replacement of bolt P/N 20-071-8-126 or 72991-8-126, use bolt P/N 20-097-08-128.
- (22) Install flapping bearing P/N 222-310-117-105 in accordance with procedures in Technical Bulletin 222-95-152.

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