

ALERT SERVICE BULLETIN



A Textron Company

NO. 214ST-10-88

DATE Dec10, 2010

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MODEL AFFECTED: 214ST

SUBJECT: ELEVATOR AND DIRECTIONAL FLIGHT CONTROL BEARINGS, P/N MS27643-4, INSPECTION AND REPLACEMENT OF

HELICOPTERS AFFECTED: All 214ST helicopters serial number 28101 through 28200

COMPLIANCE: **Part I :** Immediately upon receipt of this ASB.

Part II: Inspection for suspect bearings within the next 100 flight hours following receipt of this bulletin with recurring serviceability inspection of serviceable suspect bearings every additional 100 flight hours until replaced at the next 250 hour inspection (B Check), or one year after receipt of this ASB, whichever occurs first.

DESCRIPTION:

Certain bearing lot numbers manufactured by Schatz Bearing Corp. from October 2006 through January 2009 may contain balls that were manufactured improperly which could lead to bearing degradation. Bearing degradation is detectable in non-boosted flight controls, but difficult to detect in the hydraulically boosted flight controls. Bell Helicopter has identified specific locations in the boosted controls of the 214ST which may contain bearings with improperly manufactured balls. They are limited to several SUBJECT bearings in the elevator and directional flight control systems.

An inspection is required to determine if a SUBJECT bearing manufactured by Schatz Bearing Corp. is installed in one of the specific locations in the elevator or directional controls. If a suspect Schatz bearing is found it must be replaced in accordance with the Compliance and Accomplishment Instructions sections of this ASB. Bearings manufactured by Schatz in installations other than those specifically noted in this ASB are acceptable for continued operation per normal serviceability requirements.

SUBJECT uninstalled bearings manufactured by BHT suppliers other than Schatz do not require inspection or replacement as part of this ASB. All SUBJECT spare Schatz bearings delivered by Bell Helicopter, either as detail parts or in assembled components, after January 31, 2009, have been inspected and determined to be serviceable.

Customers who purchased bearings and/or assembled components after September 2006 from sources other than Bell Helicopter should contact those sources to determine if the bearings are part of the suspect lots.

APPROVAL:

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

MANPOWER:

Approximately 4.0 man-hours are required to complete the inspection portion of Parts I and II of this bulletin. Time to accomplish replacement of suspect bearings in Part II, if required, will vary upon the quantity of SCHATZ bearings installed. Man-hours are 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 a credit for bearings that meet the replacement criteria in this bulletin.

To receive this credit:

- Comply with the instructions contained in this Bulletin no later than the applicable hours or calendar date in the "compliance section" of this ASB.
- Purchase replacement bearing and sleeve as required in the materials section of this bulletin from a Bell approved source.
- Submit an MMIR to the Bell Warranty Department.

Customers who fail to comply with the instructions in this Bulletin within the applicable hours or calendar date are not eligible for the special warranty credit listed above. There is no labor associated with this bulletin.

MATERIAL:**Required Material:**

The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Helicopter Textron Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Quantity</u>
MS27643-4	Bearing	As Required
120-013-4A	Sleeve	As Required

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>Quantity</u>	<u>Reference</u>
AS100026	Safety Wire (.020)	A/R	C-508
DAPCO 2100	Sealant (AMS3374, TY I)	A/R	C-353
MIL-PRF-23377TI,CLC	Primer Kit	A/R	C-204
MIL-PRF-81322	Grease	A/R	C-001*
PD680	Solvent	A/R	C-304
-----	Cheesecloth, Cotton	A/R	C-486

* MIL-G-23827 may be used as an alternate

SPECIAL TOOLS:

T101873-13 Ring Staking Tool

WEIGHT AND BALANCE:

Not required

ELECTRICAL LOAD DATA:

Not affected

REFERENCES:

BHT-ALL-SPM, Chapter 9

BHT-214ST-MM, Chapter 67
BHT-214ST-CR&O, Chapter 67
BHT-214ST-IPB, Chapter 67
OSN GEN-09-38

PUBLICATIONS AFFECTED:

None affected

ACCOMPLISHMENT INSTRUCTIONS:

Component and Bearing Identification:

1. On the Model 214ST, Bell has identified 3 applications in the boosted controls where a degraded MS27643-4 bearing can affect proper control operation.

- a. Elevator Controls:

- The Elevator Actuator Assembly P/N 214-001-970-107/-111 (two per helicopter) has 1 P/N MS27643-4 Bearing installed (Figure 1).

- b. Directional Controls:

- The Bellcrank Assembly P/N 214-001-708-001 has 2 P/N MS27643-4 Bearings installed (Figure 3).

- The Bellcrank Assembly P/N 214-001-789-101 has 2 P/N MS27643-4 Bearings installed (Figure 3).

2. Installed MS27643-4 bearings manufactured by Schatz Bearing Corporation can be identified by the word **SCHATZ** and **DSP4** imprinted on the bearing seal retainer on at least one side of the bearing (Figure 4). Uninstalled MS27643-4 bearings will have a Schatz manufacturing lot number marked on the outer race (Figure 4) with MS27643-4 and DSP4-H or L identified on the packaging.

PART I:

Inspection of Assemblies and Bearings in spares stock.

1. Inspect all MS27643-4 bearings installed in the assemblies identified in Component and Bearing Identification section of this ASB.
 - a. Any suspect SCHATZ bearings found must be removed and replaced. Refer to

BHT-ALL-SPM for bearing replacement information and procedures.

-NOTE-

Installed bearings with manufacturer identification other than Schatz Bearing Corporation are acceptable for continued operation subject to normal serviceability requirements.

-NOTE-

Schatz bearings installed on components prior to October 2006 are acceptable for continued operation subject to normal serviceability requirements.

- b. If the assemblies do not have SCHATZ bearings installed, or Schatz bearings were installed prior to October 2006, attach a serviceable tag to the assembly and indicate compliance with this Alert Service Bulletin.
2. Spare, uninstalled, Schatz P/N DSP4-H or L bearings with the lot numbers noted in Table 1 are suspect and should not be installed. Please note that not all lots listed were procurable from Bell Helicopter. For bearings that were procured from Bell helicopter, refer to the WARRANTY section of this bulletin. For bearings procured from other sources, refer to the following paragraph.
3. Operators who purchased Schatz bearings and/or assembled components with Schatz bearings installed from sources other than Bell Helicopter after September 2006 should contact those sources to determine if the bearings are, or may be, part of the suspect lots.

PART II:

Inspection of Assemblies installed on Helicopter

1. Prepare helicopter for maintenance (disconnect battery)
2. Gain access to the Elevator Actuator Assemblies P/N 214-001-970-107/-111 (Figure 1). Refer to BHT-214ST-MM as necessary.
 - a. Disconnect and/or remove the elevator actuator assemblies for inspection; refer to BHT-214ST-MM. Specific bearings to be inspected are identified on Figure 1. Ensure that the actuator rod end adjustment is not disturbed.
 - b. Inspect the MS27643-4 bearing in each actuator to determine if it is a Schatz manufactured bearing per Figure 4.

- c. Inspect each MS27643-4 bearing, regardless of manufacturer, for serviceability paying particular attention to smooth rotation.
 - 1) Bearings found to be rough, ratchety, or otherwise not meeting serviceability criteria must be replaced immediately as follows:
 - a) Remove the actuator assembly to a suitable workspace and secure in a vertical position with the motor assembly at the top.

CAUTION

IN THE FOLLOWING STEPS, REMOVE ONLY THAT HARDWARE NECESSARY TO SEPARATE THE MOTOR FROM THE ACTUATOR. DO NOT REMOVE THE P/N 214-001-971 COVER ASSEMBLY. DO NOT DISTURB THE ROD END BEARING.

- b) Refer to Figure 2. Disconnect the motor assembly (7) by removing two nuts (1), four washers (2), one clamp (3), and two screws (4) securing the outboard side of the motor assembly to the actuator, and remove the lockwire and two screws (6) and two washers (5) securing the inboard side of the motor assembly.
- c) Referring to Figure 2, scrape sealant away from the split line between the motor and the P/N 214-001-971 Cover Assembly (8); and, using a suitable marker, locate an index line across the split line so that the motor may be reinstalled in its same relative position at reassembly.
- d) Carefully lift the motor up to disengage it from the actuator's internal gearing. Remove any remaining sealant from the motor casing and lightly wipe (do not use solvent) excess grease from the motor gear. Set aside for reassembly.
- e) Carefully remove remaining sealant from the cover assembly (8) using care to not contaminate the actuator gear case cavity. Secure a suitable material over the gear case cavity to prevent contamination during bearing removal and installation.
- f) Refer to BHT-ALL-SPM for actuator assembly cover (P/N 214-001-971) MS27643-4 bearing removal and installation procedures except do not use zinc chromate or water borne (Mil-P-85582) primer, use Mil-P-23377 primer (C-204) only when installing the sleeve and bearing.
- g) After bearing replacement, secure the actuator assembly vertically as

noted in step a) above. Lightly hand lubricate the motor assembly (7) gear using grease (C-001).

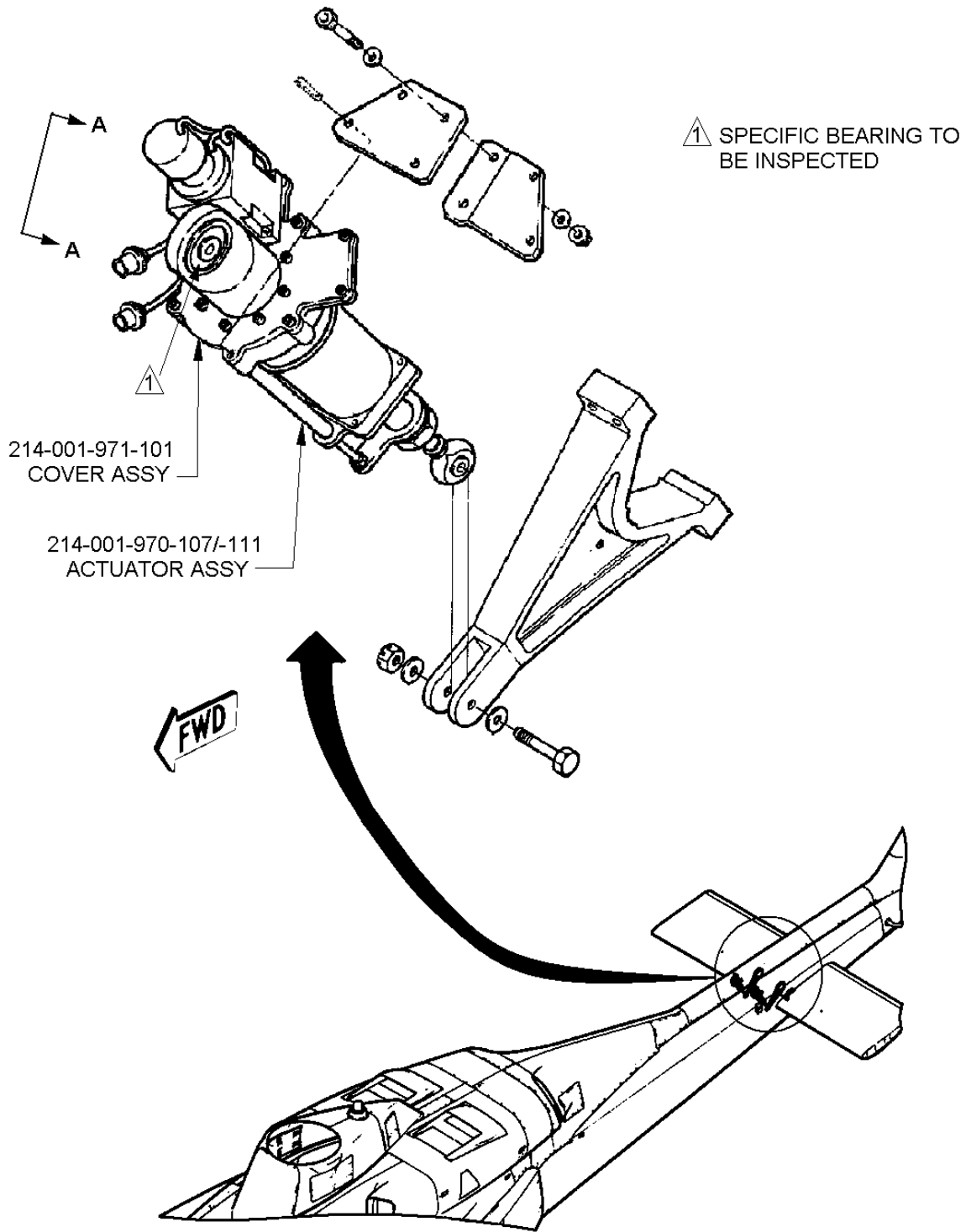
- h) Align the index lines of step c) above and carefully install the motor (7) into the actuator's gear case cavity while engaging the internal gearing.
 - i) Secure the outboard side of the motor assembly (7) to the actuator cover (8) by installing two screws (4), four washers (2), one clamp (3), and two nuts (1), and secure the outboard side of the motor assembly to the actuator by installing two screws (6) and two washers (5).
 - j) Apply a small bead of sealant (C-353) to the base of the motor at the cover assembly (8) and allow to cure. Lockwire (C-508) two screws (6) together.
 - k) Reinstall the actuator/s and perform a functional check of the elevator system per BHT-214ST-MM.
- 2) Schatz manufactured bearings installed after September 2006 and found serviceable remain susceptible to degradation and therefore must be subject to a recurring serviceability inspection every **100 flight hours until replaced at the next 250 hour inspection (B Check), or one year after receipt of this ASB, which ever occurs first.**
3. Gain access to the directional control system P/N 214-001-708-001 and P/N 214-001-789-001 Bellcrank Assemblies (Figure 3). Refer to BHT-214ST-MM as necessary.
- a. Disconnect control tubes at each bellcrank location to be inspected; refer to BHT-214ST-MM. Specific bearings to be inspected are identified on Figure 3.
 - b. Inspect each MS27643-4 bearing to determine if it is a Schatz manufactured bearing per Figure 4.
 - c. Inspect each MS27643-4 bearing, regardless of manufacturer, for serviceability paying particular attention to smooth rotation.
 - 1) Bearings found to be rough, ratchety, or otherwise not meeting serviceability criteria must be replaced immediately. Refer to BHT-214ST-MM and BHT-ALL-SPM, as applicable, for bellcrank removal and installation and bearing replacement procedures except do not use zinc chromate or water borne (Mil-P-85582) primer, use Mil-P-23377 primer (C-204) only when installing the sleeve and bearing.

- 2) Schatz manufactured bearings installed after September 2006 and found serviceable remain susceptible to degradation and therefore must be subject to a recurring serviceability inspection every **100 flight hours until replaced at the next 250 hour inspection (B Check), or one year after receipt of this ASB, which ever occurs first.**

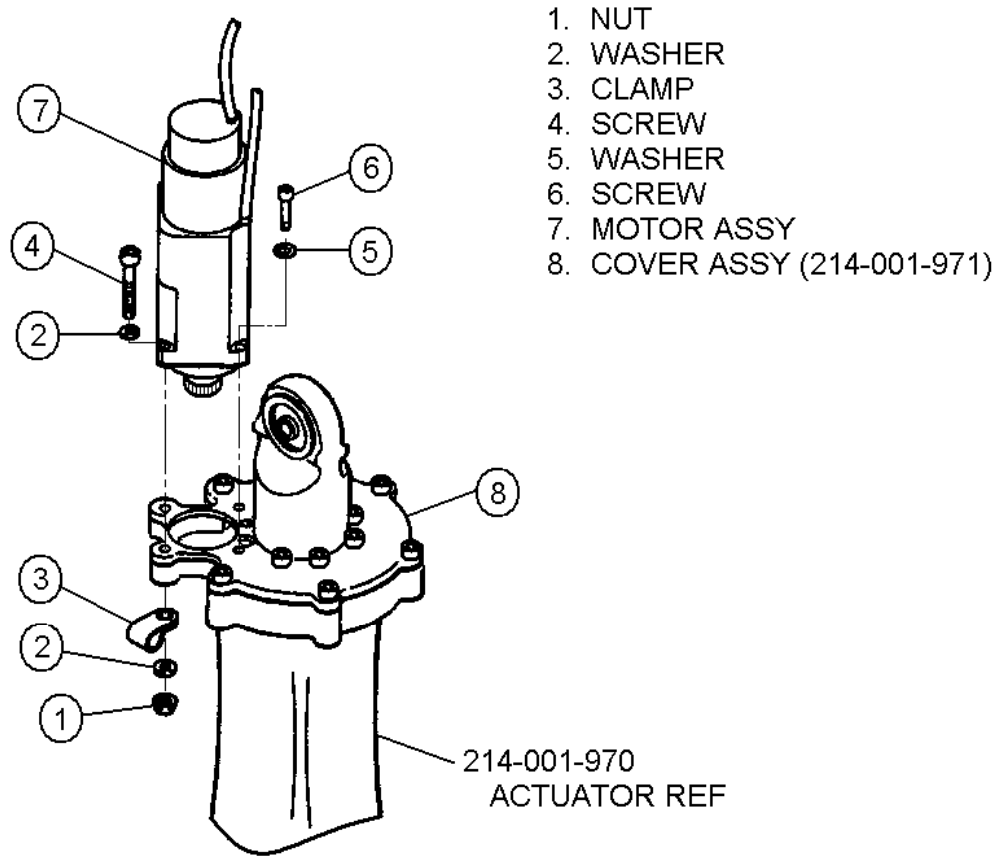
**Suspect Schatz Bearing Corporation
P/N DSP4-H or L (MS27643-4) Bearing Lots**

SCHATZ PART NUMBER	LOT NUMBER
DSP4-H	07J30
	08A03
	08A04
	08A11
	08A16
	08A21
	08D09
	08D10
	08D14
	08D21
	08E06
	08E29
	08F05
	08F06
	08F12
	08F17
	08F23
	08F24
	08F25
	08I24
	08J15
	08J17
DSP4-L	08A02
	08A07
	08B05
	08D04
	08F13
	08I03

Table 1



ELEVATOR CONTROLS
FIGURE 1



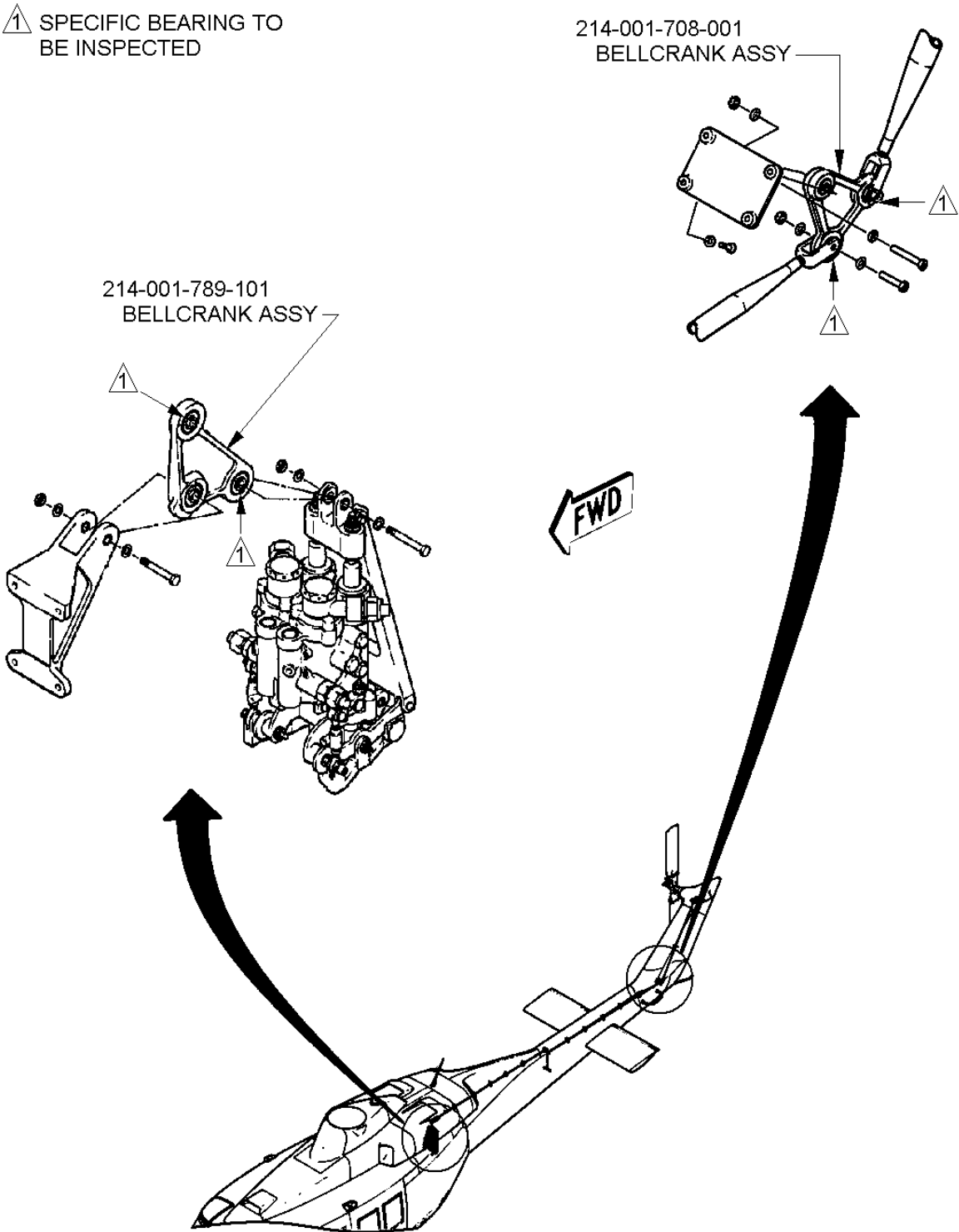
VIEW A - A

MOTOR ASSEMBLY REMOVAL
FIGURE 2

① SPECIFIC BEARING TO
BE INSPECTED

214-001-708-001
BELLCRANK ASSY

214-001-789-101
BELLCRANK ASSY



DIRECTIONAL CONTROLS
FIGURE 3

LOT NUMBER MARKED ON OUTER RACE



FIGURE 4