

From: [REDACTED]
To: [REDACTED]
Cc: [REDACTED]
Subject: A21F0207 / CEN22FA053 (N59600) - Cyclic Stick Removal/Installation Questions
Date: Tuesday, January 11, 2022 12:29:23 PM
Attachments: [image001.png](#)
[206ASB206ASB8527.pdf](#)
[206LOS206LOS8409.pdf](#)

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Mike,

Answers from Bell Product Support below. Let me know if you have any additional questions.

The following answers are offered to the questions asked by NTSB.

1. Regarding the installation and removal of the cyclic stick – is that a task that the pilot is allowed to do, or only an A&P mechanic is allowed to do?

The task instructions to install and/or remove the copilot stick is in the MM (maintenance manual) **BUT** the ruling to consider a pilot or maintenance task is dependent on the governing aviation authority. One example in Canada, this could be considered an elementary task for pilots if incorporated in the company policy manual that oversees the pilot recurring training to uphold proficiency to effectively accomplish task at hand.

2. Is the person(s) who are authorized to perform that task, listed in the maintenance manual, the rotorcraft flight manual, or another document?

In this case, our instructions in the MM do not dictate specifically who can accomplish, this is left to the responsibility of the owner/operator dependent on the governing aviation authority for their region.

3. Is there a requirement to have someone else inspect it once it is either installed or removed?

Any time flight controls are disturbed, normally good industry practice asks for a second person to take a look to ensure proper installation. Again, this “good practice” is left to the responsibility of the owner/operator and governing aviation authority for their region it operates in as rules may differ from one country to the next or from one company policy manual to the next.

Attached is an OSN and ASB on a Bell design change made to the dual controls kit install to help ensure proper mounting and seating of Cyclic and collective dual sticks.

4. Is there a requirement to have either the installation or removal of the copilot cyclic stick annotated in the maintenance records, each time it is done?

Our manuals do not oversee this requirement, this is left to the responsibility of the owner/operator dependent on the governing aviation authority for their region. In this

case, the weight and balance is affected, the balance spring may need adjusting, the folks managing the on / off installed configuration are responsible for ensuring compliance with the requirements.

Regards,

GARY P HOWE

Air Safety Investigator | Bell

Office: [REDACTED]

Mobile: [REDACTED]

bellflight.com

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ALERT SERVICE BULLETIN

REVISION NOTICE

Bell Helicopter **TEXTRON**

A Subsidiary of Textron Inc.

Post Office Box 482 • Fort Worth, Texas 76101

DATE 3-15-85

TO: ALL MODEL 206A/B, 206B-JRIII, TH-57 OWNERS/OPERATORS

SUBJECT: REVISION "A" TO ALERT SERVICE BULLETIN NO.
206-85-27: QUICK DISCONNECT DUAL CONTROLS,
P/N 206-706-127-1, -101, -109, INSTALLATION
OF SPRING PIN ASSEMBLY

Alert Service Bulletin 206-85-27 dated 1-13-85 has been revised to eliminate part interference between the gas producer tube and a rivet attaching the spring pin assembly. This interference was encountered when the collective stick was reassembled following stick modification.

Any collective sticks that were satisfactorily modified in accordance with the original issue of Alert Service Bulletin 206-85-27 are acceptable as reworked. If it is desired to rework to this Revision "A" the MS20600MP4W2 rivet closest to the 206-001-218-101 pin assembly attachment must be removed and the hole remaining in the outer tube assembly must be filled with sealant, P/N 299-947-107, Type III, Class 7 (Proseal 890-B2).

The attached Revision "A" to Alert Service Bulletin 206-85-27 reflects the following changes:

- o Added note to HELICOPTERS AFFECTED section.
- o Reduced the required quantity of MS20600MP4W2 rivets listed in the MATERIAL section.
- o Revised procedures in ACCOMPLISHMENT INSTRUCTIONS section with respect to Collective Control Component Rework by adding information on reworking and installing pin assembly, P/N 206-001-218-101.
- o Revised Figure 1 and Figure 5.
- o Added Figure 7.

7851 60046

AN APPROPRIATE ENTRY SHOULD BE MADE IN THE AIRCRAFT LOG BOOK UPON ACCOMPLISHMENT
IF OWNERSHIP OF AIRCRAFT HAS CHANGED PLEASE FORWARD TO NEW OWNER

ALERT SERVICE BULLETIN

NO. 206-85-27

Bell Helicopter **TEXTRON**

DATE 2-13-85

A Subsidiary of Textron Inc.

DATE 3-15-85

Post Office Box 482 • Fort Worth, Texas 76101

PAGE NO. 1 of 12

REV. "A"

MODELS AFFECTED: 206A/B, 206B-JRIII, TH-57

SUBJECT: QUICK DISCONNECT DUAL CONTROLS, P/N
206-706-127-1, -101, -109, INSTALLA-
TION OF SPRING PIN ASSEMBLYHELICOPTERS AFFECTED: All Model 206A/B, and 206B-JRIII and
TH-57 helicopters equipped with quick
disconnect dual controls.[Helicopter Serial Numbers 3851 and
subsequent with dual controls installed
will have the intent of this bulletin
accomplished prior to delivery.][NOTE: Dual Controls Kit, P/N 206-706-
127-1, is inactive for future procure-
ment, use kit P/N 206-706-127-115. Kit
P/N 206-706-127-101 is inactive for
future procurement, use kit P/N
206-706-127-111. The intent of this
Alert Service Bulletin has been
incorporated in Dual Controls Kits, P/N
206-706-127-111, and -115.]

A

COMPLIANCE: As soon as practical, but no later than
May 1, 1985.**DESCRIPTION:**

The Model 206B-JRIII helicopter accident reported in OSN
206-84-12/OSN 206L-84-9 has been associated with loss of cyclic
control. The aircraft was equipped with quick disconnect dual
controls and was being flown from the left (copilot) seat.
Investigation has revealed that the quick disconnect cyclic
stick was improperly installed where it attaches to the lever
assembly under the copilot seat. This resulted in detachment
of the cyclic stick followed by loss of control.

This bulletin provides instructions for installing a spring pin
assembly on the copilot cyclic stick as well as the copilot
collective stick to assure that positive engagement of both
control sticks is achieved.

7851 55192 REV. 1273

AN APPROPRIATE ENTRY SHOULD BE MADE IN THE AIRCRAFT LOG BOOK UPON ACCOMPLISHMENT

IF OWNERSHIP OF AIRCRAFT HAS CHANGED PLEASE FORWARD TO NEW OWNER

FAA APPROVAL:

The engineering design aspects of this bulletin are FAA approved.

MANPOWER:

Approximately four (4) manhours will be required to accomplish the intent of this bulletin. Manhours are based on "hands-on" time. The actual elapsed time to accomplish this bulletin may vary due to manpower and facilities available to the operator.

MATERIAL:

The following material required to accomplish this bulletin may be procured locally and from your Bell Helicopter Textron, Inc. Spare Parts Facility.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Quantity</u>
206-001-218-101	Pin Assembly	1
206-001-218-103	Pin Assembly	1
A MS20600MP4W2	Rivet	1
MS20600MP4W4	Rivet	2
MILP23377C	Polyamide Epoxy Primer (or equivalent)	A/R
299-947-107TY3CL7 80Z	Sealant	A/R

SPECIAL TOOLS:

None required.

WEIGHT AND BALANCE:

Not affected.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

None

PUBLICATIONS AFFECTED:

Service Instruction No. 206-67

ACCOMPLISHMENT INSTRUCTIONS:

Preparation

1. Open left crew door to gain access to copilot cyclic and collective control sticks.
2. Disconnect cyclic stick electrical cable plug from connector at forward seat support bulkhead.
3. Remove the cyclic stick and the collective stick boots.
4. Refer to [Figure 1](#) . Remove cyclic stick and collective stick from lever assembly and elbow assembly respectively.

Cyclic Control Component Rework

CAUTION

LEVER ASSEMBLY MUST BE CAREFULLY DRILLED IN ACCORDANCE WITH STEP 1 AND FIGURE 2. FAILURE TO COMPLY WILL RESULT IN LOSS OF INTERCHANGEABILITY AMONG OTHER CYCLIC STICK ASSEMBLIES OR FUTURE SPARES.

1. Refer to [Figure 2](#) . Locate and drill a 0.090/0.085 inch diameter hole through one wall only of the cyclic stick lever assembly. Hole shall be 0.846/0.840 inches in from the end of the threaded portion of the lever, on the top side, and perpendicular to the centerline of the two notches as shown.
2. Install copilot cyclic stick in lever assembly. Ensure that stick fully bottoms in lever assembly.
3. Using hole prepared in step 1 as a drill guide, drill a 0.090/0.085 inch diameter hole through one wall only of the cyclic stick.
4. Remove cyclic stick from lever assembly.
5. Open hole drilled in cyclic stick to 0.097/0.092 inch diameter as shown in [Figure 3](#) .
6. Deburr holes in lever and cyclic stick and prime with epoxy primer, MIL-P-23377C.
7. Refer to [Figure 3](#) , View C. Remove existing bottom and outboard rivets located in collar just above knurled nut.
8. Position clip portion of pin assembly, P/N 206-001-218-103, against collar on stick, and secure in place with two rivets, P/N MS20600MP4W4.

Collective Control Component Rework

CAUTION

ELBOW ASSEMBLY MUST BE CAREFULLY DRILLED IN ACCORDANCE WITH STEP 1 AND FIGURE 4. FAILURE TO COMPLY WILL RESULT IN LOSS OF INTERCHANGEABILITY AMONG OTHER COLLECTIVE STICK ASSEMBLIES OR FUTURE SPARES.

1. Refer to [Figure 4](#) . Locate and drill a 0.090/0.085 inch diameter hole through one wall only of the collective stick elbow assembly. Hole shall be 0.753/0.747 inches in from the end of the threaded portion of the elbow, on the top side, and on centerline parallel with the two tabs as shown.
2. Refer to [Figure 6](#) and partially disassemble collective stick. Remove sealant (1) and screw (2) from grip assembly (3). Slide grip assembly (3) off the end of outer tube assembly (5). Remove inner tube assembly (4) from outer tube assembly (5).
3. Install outer tube assembly (5) in elbow assembly (8) with slot in the end of the tube facing upward. Ensure that tube fully engages tabs on elbow assembly.

CAUTION

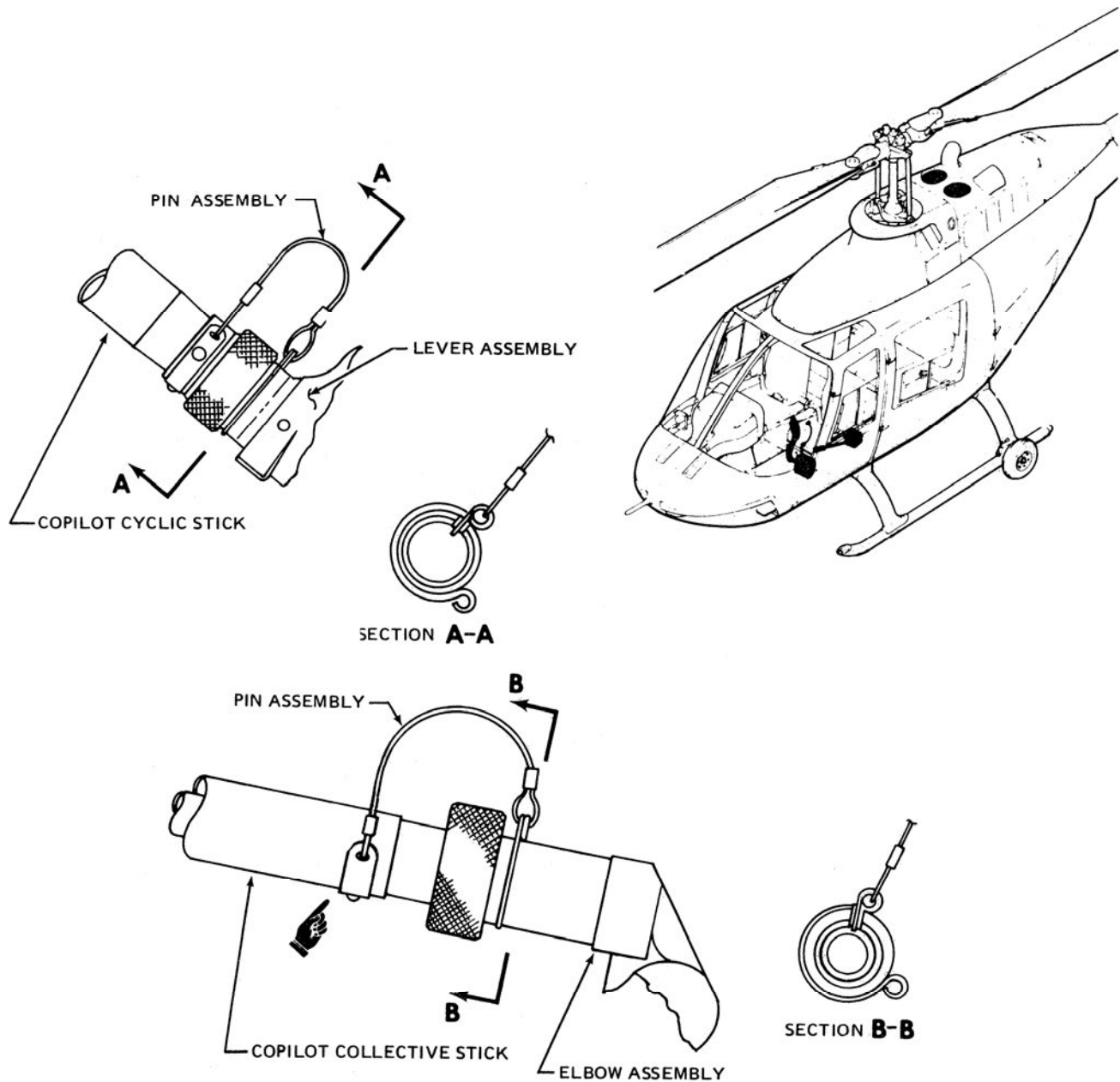
SLOT IN END OF OUTER TUBE ASSEMBLY MUST FACE UPWARD WHEN TUBE IS INSTALLED IN ELBOW ASSEMBLY DURING DRILLING OPERATION. FAILURE TO COMPLY WILL RESULT IN THE GRIP ASSEMBLY (3) BEING POSITIONED UPSIDE DOWN WHEN THE COLLECTIVE STICK IS INSTALLED IN THE HELICOPTER.

4. Using hole prepared in step 1 as a drill guide, drill a 0.090/0.085 inch diameter hole through one wall only of the tube assembly (5).
5. Remove tube assembly (5) from elbow assembly (8).
6. Open hole drilled in tube assembly to 0.097/0.092 inch diameter as shown in [Figure 5](#) .
7. Deburr holes in tube assembly and elbow assembly.
8. Prime hole in elbow assembly with epoxy primer, MIL-P-23377C.

9. Refer to **Figure 5** . Remove existing rivet located on bottom of collective stick nearest knurled nut as shown in Section F-F.
10. Refer to **Figure 7** , and rework clip portion of pin assembly, P/N 206-001-218-101. Cut off clip 0.5 inches from extreme end as shown. Break all sharp edges. (NOTE: after rework, pin assembly, P/N 206-001-218-101, meets the configuration of pin assembly, P/N 206-001-218-107.)
11. Refer to **Figure 5** . Position clip portion of pin assembly, P/N 206-001-218-101, against outer tube of collective stick and secure in place by installing a single rivet, P/N MS20600MP4W2, as shown. A
12. Refer to **Figure 6** and reassemble collective stick. Insert inner tube (4) into outer tube (5) aligning screw hole in tube (4) with slot in tube (5). While holding these parts in position, install grip assembly (3) over the end of the tubes, aligning hole in grip with slot and hole in the tubes. Install screw (12) to secure assembly. Cover head of screw (2) with sealant, P/N 299-947-107TY3CL7.

Restoration

1. Refer to **Figure 1** . Install copilot cyclic stick and collective stick in lever assembly and elbow assembly respectively. Install pin assemblies in control sticks as shown.
2. Install cyclic stick and collective stick boots.
3. Install cyclic stick electrical cable plug to connector and lock.



SPRING PIN INSTALLATIONS
COPILOT QUICK DISCONNECT CYCLIC AND COLLECTIVE STICKS

ASB206-10-1

FIGURE 1.

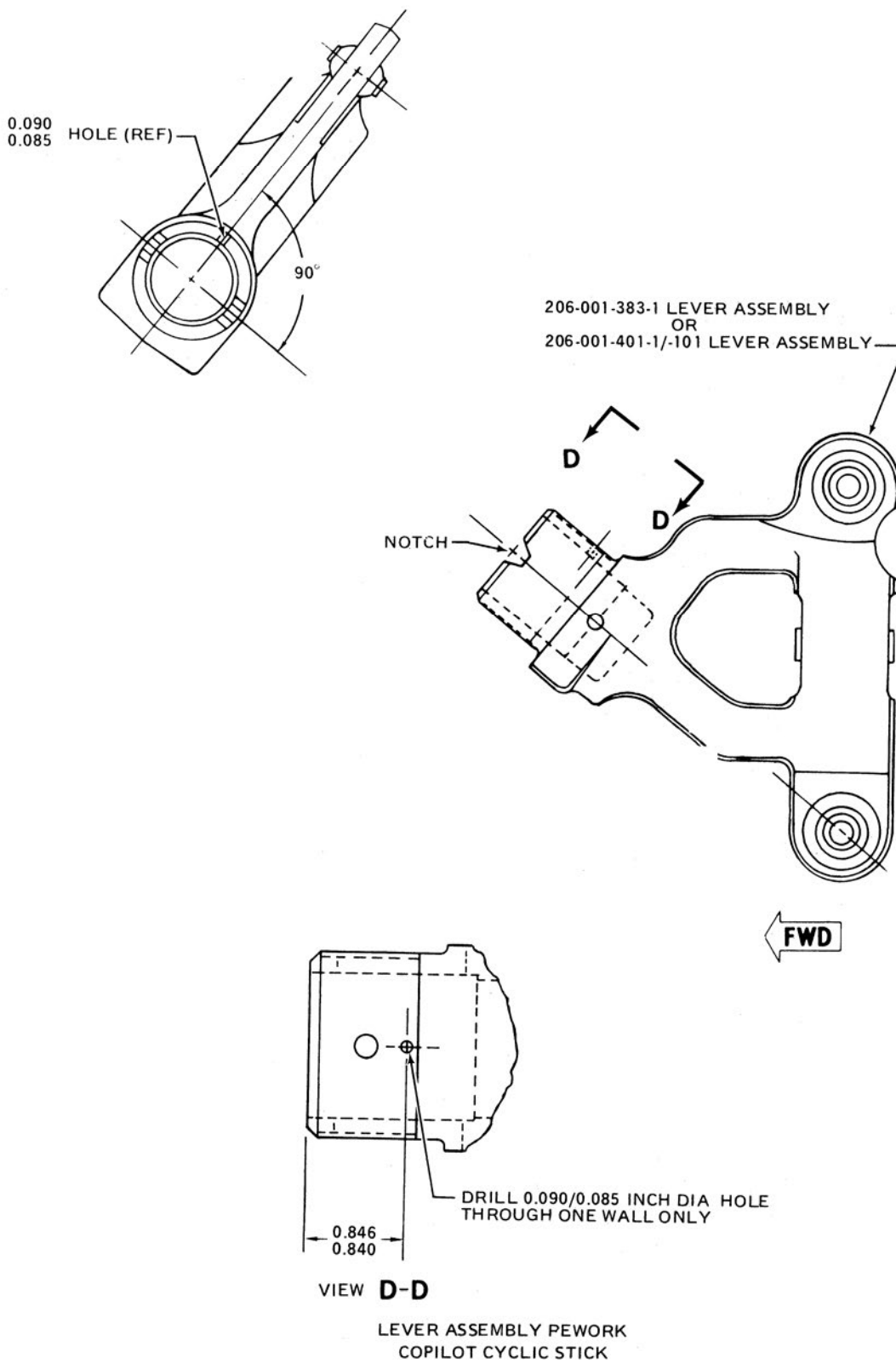
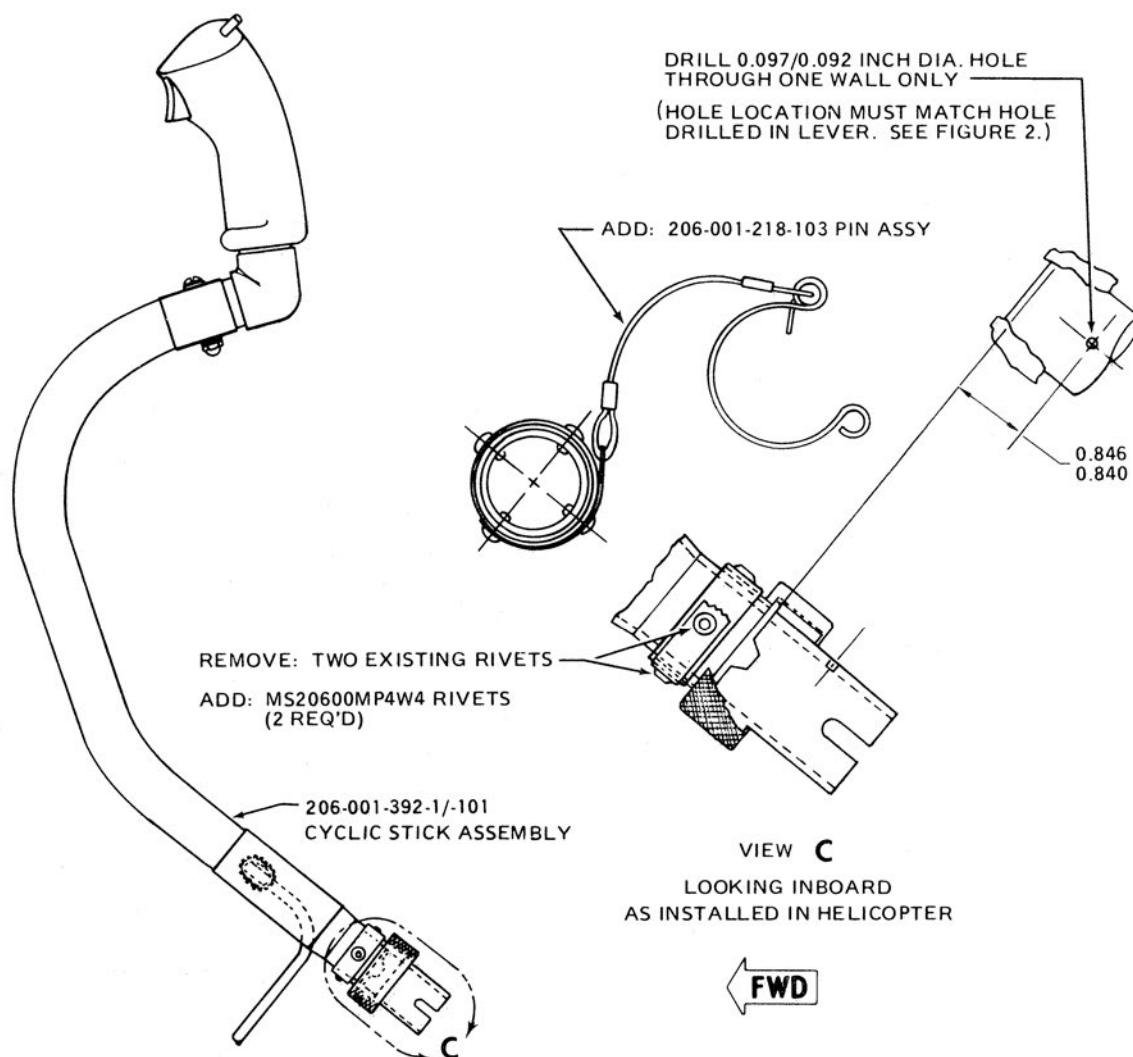


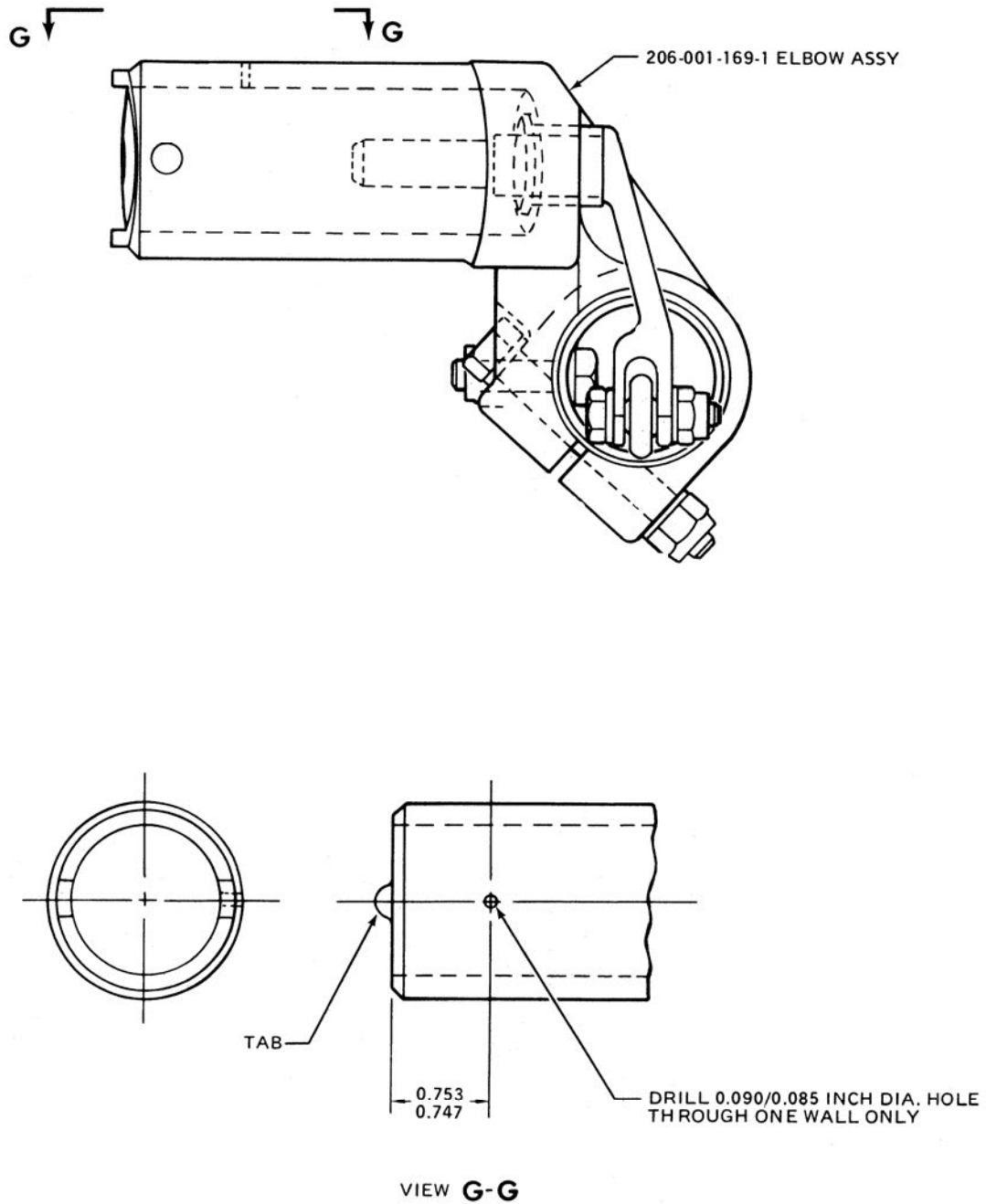
FIGURE 2.



COPILOT CYCLIC STICK REWORK

ASB206-10-3

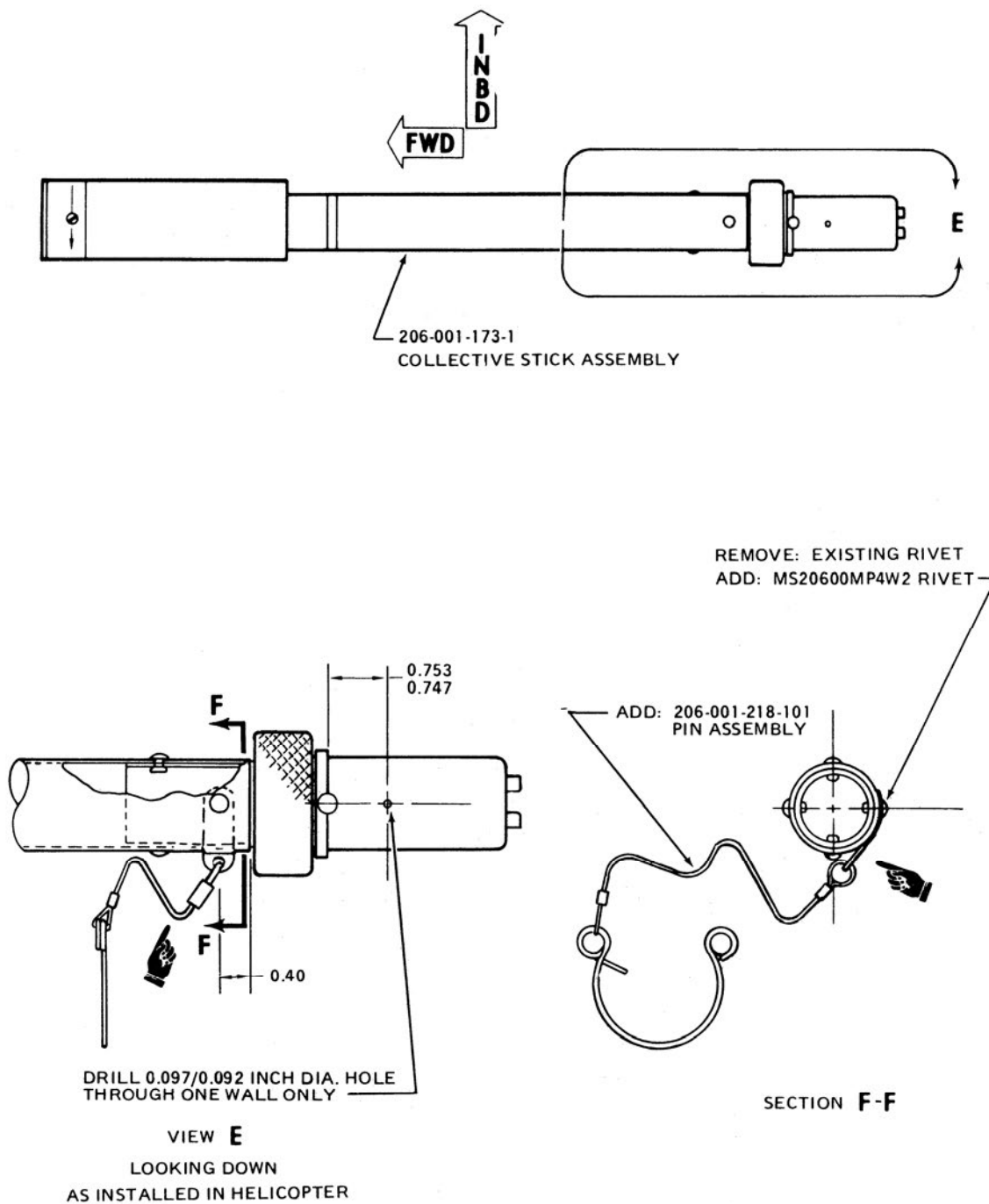
FIGURE 3.



ELBOW ASSEMBLY REWORK
COPILOT COLLECTIVE STICK

ASB206-10-4

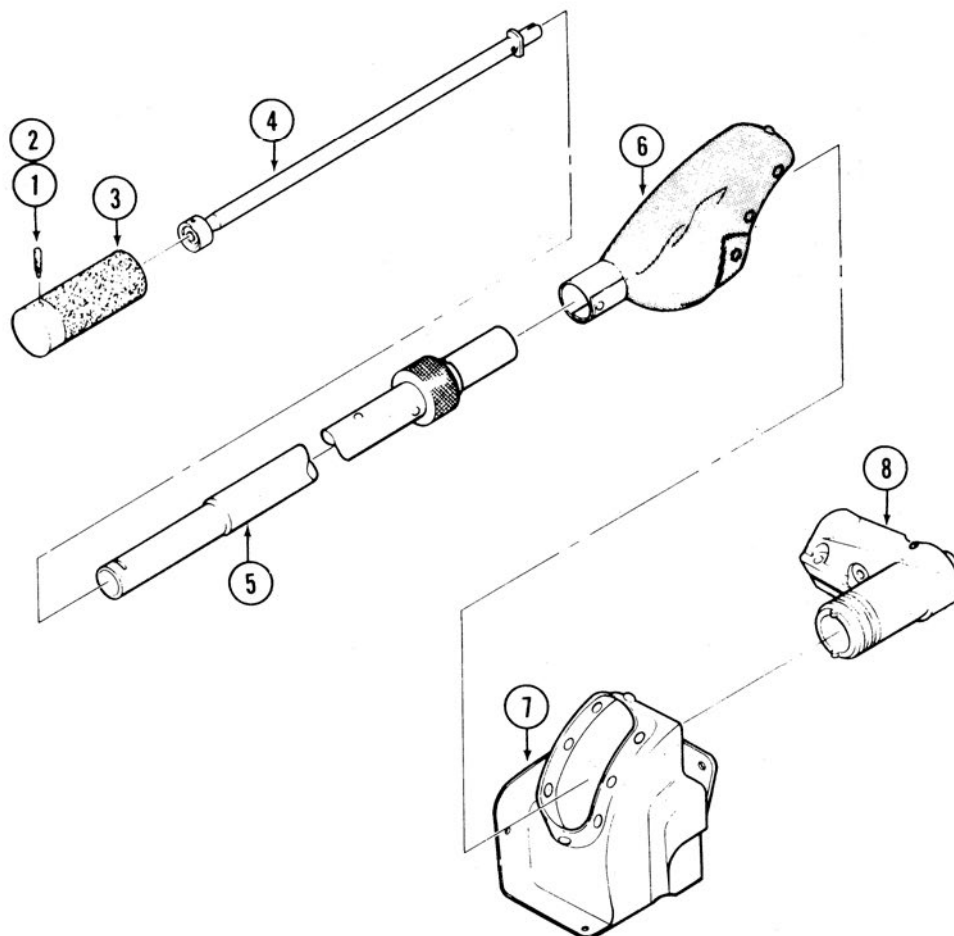
FIGURE 4.



COPILOT COLLECTIVE STICK REWORK

ASB206-10-5

FIGURE 5.

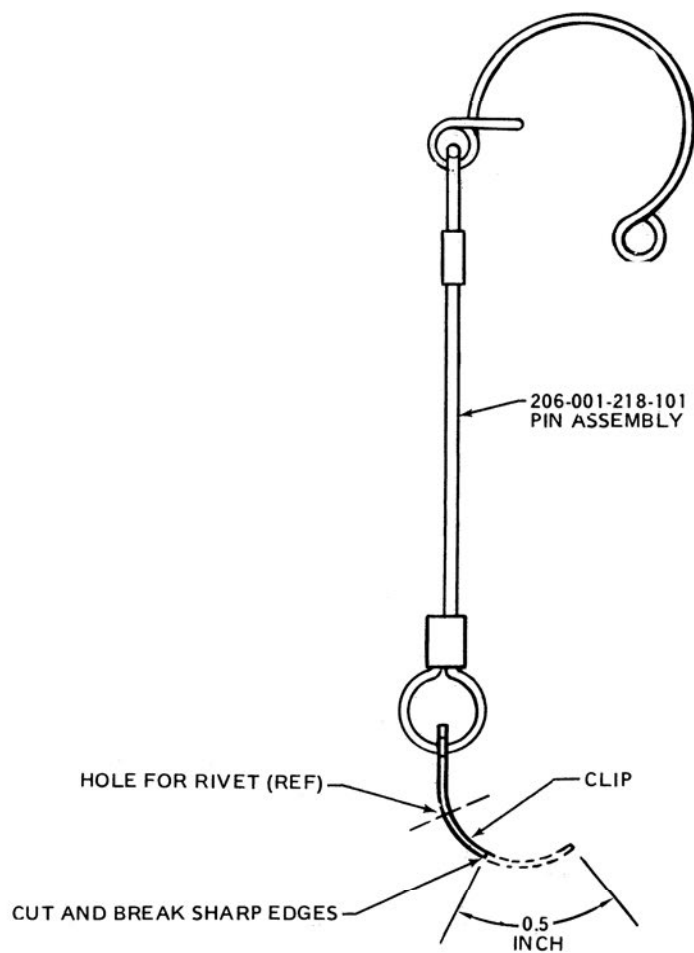


1. Sealant
2. Screw
3. Grip Assembly
4. Inner Tube Assembly
5. Outer Tube Assembly
6. Boot
7. Cover
8. Elbow Assembly

COPILLOT COLLECTIVE STICK

ASB206-10-6

FIGURE 6.



ASB206-10

PIN ASSEMBLY REV

FIGURE 7.

Bell Helicopter **TEXTRON**

Bell Helicopter Textron Inc.
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Fort Worth, Texas 76101
[REDACTED]

OPERATIONS SAFETY NOTICE

17 JULY 1984

OSN 206-84-12

OSN 206L-84-9

TO: ALL MODEL 206A/B, 206B-JRIII, 206B-1, 206L/L-1/L-3
AND TH-57A/B/C

SUBJECT: DUAL CONTROL-QUICK DISCONNECT KIT, P/N 206-706-127
(ALL DASH NUMBERS) SERVICE INSTRUCTIONS 206-67 AND
206-2024

INVESTIGATION OF A RECENT MODEL 206 HELICOPTER ACCIDENT, WHICH
RESULTED IN A FATALITY, REVEALED THAT LATERAL CYCLIC CONTROL
WAS LOST AS A RESULT OF AN IMPROPERLY INSTALLED COPILOT'S
QUICK-DISCONNECT CYCLIC STICK.

FLIGHT CREWS ARE CAUTIONED TO ASSURE QUICK REMOVAL FLIGHT
CONTROLS ARE PROPERLY INSTALLED PRIOR TO OPERATING THE
HELICOPTER.

THE INVESTIGATION IS CONTINUING. IF FURTHER PRECAUTIONS OR
MODIFICATIONS ARE CONSIDERED APPROPRIATE, YOU WILL BE ADVISED.

From: [REDACTED]
To: [REDACTED]
Cc: [REDACTED]
Subject: FW: CEN22FA053 (N59600, Bell 206B) - NTSB Questions
Date: Thursday, January 27, 2022 8:52:33 AM

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Hi Michael,
See Transport Canada's responses to your questions in Jody's email below.
Let me know if you have follow-up questions.
Best regards,

Nora Vallée

Enquêteur principal / Opérations internationales et enquêtes majeures / Aviation
Bureau de la sécurité des transports du Canada / Gouvernement du Canada
[REDACTED]

Senior Investigator / Intl Operations and Major Investigation / Air
Transportation Safety Board of Canada / Government of Canada
[REDACTED]

From: Bird, Jody [REDACTED]
Sent: Wednesday, January 26, 2022 1:21 PM
To: Sturgeon, Ian [REDACTED]
Subject: RE: CEN22FA053 (N59600, Bell 206B) - NTSB Questions

UNCLASSIFIED / NON CLASSIFIÉ

Hi Ian,

NAC has the following answers to the questions directed to TC from the NTSB:

1. Regarding the installation and removal of the cyclic stick in the Bell 206 series – is that a task that the pilot is allowed to do, or only an A&P mechanic is allowed to do?
[The task instructions to install and/or remove the copilot stick is in the Bell 206 maintenance manual. Provided that a person meets the personnel qualifications or training standards of the Canadian Aviation Regulations \(CARs\) Maintenance and Elementary Work Performance Rules a pilot could be permitted to perform the removal and replacement task of co-pilot control levers that are designed for rapid removal and replacement, on other than transport category aircraft.](#)
2. Regarding the answer to question #1, what document would one go to find out that answer (who is authorized to perform that task)?
[Standard 625 Appendix A: Elementary Work - Canadian Aviation Regulations \(CARs\) outlines the tasks eligible for elementary work and responsibilities of aircraft owners and](#)

operators.

3. Regarding the installation and removal of the cyclic stick in the Bell 206 series - is there a requirement to have someone else inspect it once it is either installed or removed?
No, it is not required to have someone else inspect since elementary work is a form of maintenance that is not subject to a maintenance release and this work does not disturb the flight controls. Reference the Types of Work table in Standard 571, section 571.10 Maintenance Release - CARs.
4. Regarding the installation and removal of the cyclic stick in the Bell 206 series - is there a requirement to have either the installation or removal of the copilot cyclic stick annotated in the maintenance records, each time it is done?
Yes, the performance of all tasks designated as elementary work are entered in the technical record for the aeronautical product. Reference section 571.03 of the CARs and in accordance with Subpart 605, Division IV – Technical Records.
5. Additional question: Regarding the installation and removal of the cyclic stick in the Bell 206 series - is there a requirement to document/adjust the helicopter's weight and balance records after either the installation or removal of the copilot cyclic stick, each time it is done?
Yes, following a change to the aircraft empty weight amendment to the weight and balance record is required. Aircraft likely to be operated in different configurations (Example; with or without the copilot collective/cyclic) can use a separate weight and balance report addendum, the current applicable addendum is to be identified in the aircraft journey log. Reference section 605.92(1)(c) of the CARs and in accordance with Standard 571 Appendix C – Aircraft Weight and Balance Control.

Regards,

Jody Bird

Corrective Action Technical Inspector, Continuing Airworthiness
Action Corrective Inspecteur Technique, Maintien de la navigabilité

[REDACTED]
[REDACTED]

Transport Canada / Transports Canada (AARDG)
159 Cleopatra Drive, Ottawa, Ontario, K1A 0N8



ACCID- A21F0207 / CEN22FA053 N59600

Safety Improvement Proposal from the NTSB

NTSB Comments on Bell MM Guidance

2

I have attached the two responses I received from both Bell and Transport Canada on the topic of flight controls installation/removal with the Bell 206 series. With the most recent response from Transport Canada, they cite reference to the Canadian Aviation Regulations (CARs), which my understanding, does not apply to operators in the U.S. Bell referred to the governing aviation authority (which would be Transport Canada for the Bell 206 series) and Transport Canada referred to the CARs.

I think for operators in the U.S. for example, this puts people in a bind, where the guidance from Bell isn't that clear and the guidance from Transport Canada applies to Canada with the CARs.

To help clear up confusion on this topic – *can Bell work with the FAA ACO and Transport Canada to put out guidance for operators in the U.S. on this topic (that particularly addresses who is allowed to perform the task, weight and balance changes/documentation, maintenance logbook entry requirements, etc.)?*

- **With Part 135 operators, the FAA can approve pilots being a trained by the company maintenance department to perform various tasks that include the removal/installation of the co-pilot cyclic stick.**
- **With Part 91 operators, there is no guidance covered in the “CFR Appendix A to Part 43 - Major Alterations, Major Repairs, and Preventive Maintenance,” to address this type of work.**
- **Standard 625 Appendix A: Elementary Work - Canadian Aviation Regulations (CARs) allows the following: (20) removal and replacement of co-pilot control levers, wheels, pedals and pedal guard plates that are designed for rapid removal and replacement, on other than transport category aircraft.**

- To include who can perform the action withing the Bell MMs would be problematic since regulation concerning minor tasks differ from State to State based on regulation.
- Bell suggests that this recommendation be made to both the FAA and Bell to address amending the appropriate CFRs to provide guidance on who is allowed to perform tasks, weight and balance changes/documentation, maintenance logbook entry requirements, etc. Similar to the TCCA Elementary Work guidance

Expanded Guidance on Balance Spring

5

67-44. COPILOT CYCLIC STICK QUICK-DISCONNECT

67-45. COPILOT CYCLIC STICK QUICK-DISCONNECT — REMOVAL

1. Disconnect electrical connector (5, Figure 67-13).
2. To gain access, remove screws (3) and washers (4). Loosen boot assembly (2) and slide forward and upward.
3. Disengage pin assembly (7, Detail A).
4. Grasp and turn nut (8) to disengage threads.
5. Remove copilot cyclic stick (1, Detail B) from lever assembly (9, Detail C).
6. For helicopters with SCAS installed, to keep SCAS operational, install adapter (10, Detail D) on electrical connector (6).

67-46. COPILOT CYCLIC STICK QUICK-DISCONNECT — INSTALLATION

1. If installed, remove adapter (10, Detail D, Figure 67-13) from electrical connector (6).
2. Insert copilot cyclic stick (1, Detail B) into lever assembly (9, Detail C). Ensure tabs on copilot cyclic stick (1) engage with notches on lever assembly (9).
3. Grasp and turn nut (8) to engage threads on lever assembly (9). Tighten nut fingertight.
4. Engage pin assembly (7, Detail A).
5. Slide boot assembly (2) down and aft into position. Install screws (3) and washers (4). Tighten boot assembly around copilot cyclic stick (1).
6. Connect electrical connector (5) to electrical connector (6).

67-38. CYCLIC STICK CONTROL BALANCE SPRING CLIP (OR EYEBOLT) AND CONNECTING HARDWARE INSTALLATION AND ADJUSTMENT

4. Ground run helicopter (refer to appropriate Flight Manual); release all friction from pilot cyclic friction adjuster. DO NOT release minimum friction. Increase or decrease tension of balance spring as required to eliminate any tendency for cyclic controls to move fore or aft when cyclic controls are released by pilot.



After Step 6 on 67-45/46, Add the follow: ***“Verify cyclic stick control balance (paragraph 67-38, step 4)”***

Bell Product Support - Case Number 00163308

Subject: Mark up required following installation and removal of copilot cyclic 206 A_B MM

No timeframe for incorporation but listed as a high priority.

Request from NTSB

7

To provide guidance in 206B RFM:

D. I have an aviation safety improvement proposal for Transport Canada and Bell please. I have attached section 2 of the Bell 206B flight manual, which has the emergency procedures listed. Since we are looking at a possible flight control malfunction with the accident, I did not see anything listed about what describes a flight control malfunction and how to address it in the flight manual. I did find an example from **U.S. Army TM 55-1520-228-10** (Operator's Manual, Army Model OH-58 A/C Helicopter) and it states:

9-41. FLIGHT CONTROL MALFUNCTIONS. Failure of components within the flight control system may be indicated through varying degrees of feedback, binding, resistance, or sloppiness. These conditions should not be mistaken for hydraulic power failure. In the event of a flight control malfunction:

1. LAND AS SOON AS POSSIBLE.
2. EMER SHUTDOWN after landing.



Would Bell consider putting out guidance on describing a flight control malfunction and how to address it for pilots of the Bell 206 series?

Current Status of Bell RFMs

8

No Bell Civil RFM has guidance concerning general Flight Control Malfunctions

Below are the Bell RFMs that were reviewed:

- **204B**
- **205A1/205B**
- **206B/206B3**
- **206L/206L4**
- **212**
- **222**
- **407**
- **430**
- **505**

Sample of Competitor RFMs

9

The following competitor RFMs were reviewed and no guidance on general Flight Control Malfunctions were included:

- **Enstrom 280FX**
- **Robinson R44**
- **Robinson R66**
- **Airbus EC120B**
- **Airbus H125 (AS350B3)**
- **MD500E (Model 369E)**
- **MD530F (Model 369FF)**

Current FAA accepted RFM content is consistent across products and typically does not include generic piloting skills or actions. Bell plans no further action with respect to RFM guidance in this matter.