

ALERT SERVICE BULLETIN



A Textron Company

NO. 206-09-124

DATE May 18, 2009

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DATE
REV

MODEL AFFECTED: 206A/B

SUBJECT: HYDRAULIC SYSTEM OR CONTROL BOOST SWITCH – OFF CHECK, CHANGE OF.

HELICOPTERS AFFECTED: 206A Helicopters serial number 004 through 660 and 672 through 715.

206A Helicopters converted to 206B as per Service Instruction 206-80.

206B Helicopters serial number 661 through 671 and 716 through subsequent.

206B (TH-67) Helicopters serial number 5101 through subsequent.

COMPLIANCE: **PART I.** Within the next 7 days after receipt of this bulletin.

PART II. Before next, flight based on the result of Hydraulic System or Control Boost switch – Off check.

A one time ferry flight to the nearest maintenance facility is allowed for accomplishment of PART II.

DESCRIPTION:

Bell Helicopter has received a report of excessive cyclic control force with hydraulic boost off. The investigation revealed that at normal operating temperature the servo actuator piston friction may increase and require excessive force to be used on the cyclic or collective controls.

Part I of this bulletin introduces a change to the Hydraulic System or Control Boost switch – Off check described in the Normal Operations section of the Flight Manual. The change is the addition of a flight controls check for normal operation before engine shutdown.

-NOTE-

Until Maintenance Manual chapter 29 is revised refer to Part II of this bulletin for maintenance action.

Part II describes the maintenance actions required based on the result of the Hydraulic System or Control Boost switch – Off check described in the Normal Operation section of the Flight Manual. The maintenance actions described in this bulletin will be incorporated at the next Maintenance Manual revision.

APPROVAL:

The engineering design aspects of this bulletin are Transport Canada Civil Aviation (TCCA) approved.

MANPOWER:

Part II of this bulletin will take approximately 2 man-hours to complete. Man-hours are based on hands-on time, and may vary with personnel and facilities available.

WARRANTY:

There will be no warranty associated with this bulletin.

MATERIAL:

Not affected

Consumable Material:

Not affected

SPECIAL TOOLS:

0-50 lbs fish scale

Temperature measuring device (Infrared temperature device preferred)

Heat gun

WEIGHT AND BALANCE:

Not affected

ELECTRICAL LOAD DATA:

Not affected

REFERENCES:

BHT-206A/B-Series Maintenance Manual
BHT-206A Flight Manual revision D-45, dated July 02, 2009
BHT-206B Flight Manual revision B-51, dated July 02, 2009
BHT-206III Flight Manual revision 12, dated July 02, 2009

PUBLICATIONS AFFECTED:

BHT-206A/B-Series Maintenance Manual chapter 29
BHT-206A Flight Manual revision D-44, October 06, 2000
BHT-206B Flight Manual revision B-50, December 08, 2008
BHT-206III Flight Manual revision 11, December 08, 2008

ACCOMPLISHMENT INSTRUCTIONS:

PART I. Hydraulic System or Control Boost switch – Off check

1. Insert the new Flight Manual revision in the Normal Procedures section of the applicable Flight Manual.
2. Make an entry in the helicopter records to indicate that PART I of this bulletin has been accomplished.
3. If after accomplishment of the Hydraulic System or Control Boost switch – Off check no anomaly is reported by the pilot, no maintenance action is required.

-NOTE-

Until Maintenance Manual chapter 29 is revised refer to Part II of this bulletin for maintenance action.

4. If after accomplishment of the Hydraulic System or Control Boost switch – Off check an anomaly is reported by the pilot, maintenance action is required. Refer to Part II of this bulletin or to the Maintenance Manual chapter 29.

PART II. Maintenance actions (when an anomaly is reported by the pilot) after accomplishment of Hydraulic System or Control Boost switch – Off check.

1. Ensure the electrical power and hydraulic systems are turned off.
2. Disconnect control tube from each hydraulic actuator. Protect control tubes from damage. Refer to Figure 1.
3. Using the temperature measuring device, ensure actuators are at minimum room temperature of 60°F (16°C).
4. Make sure friction is removed from both the cyclic and the collective flight controls.

-NOTE-

In order to collect consistent data, it is important to measure loads on the cyclic and collective flight controls at the same position during travel for both cold and hot tests. Record results in Table 1.

-NOTE-

Table 1 is an example of a table that can be used to record the data.

5. Position the fish scale at the center of the cyclic grip. Move the cyclic from the left forward position towards the right aft position while measuring the force required moving the cyclic as it reaches its center position. Record reading in Table 1.
6. Position the fish scale at the center of the cyclic grip. Move the cyclic from the right aft position towards the left forward position while measuring the force required moving the cyclic as it reaches its center position. Record reading in Table 1.
7. Position the fish scale at the center of the cyclic grip. Move the cyclic from the right forward position towards the left aft position while measuring the force required moving the cyclic as it reaches its center position. Record reading in Table 1.
8. Position the fish scale at the center of the cyclic grip. Move the cyclic from the left aft position towards the right forward position while measuring the force required moving the cyclic as it reaches its center position. Record reading in Table 1.
9. Position the fish scale at the center of the throttle grip on the collective flight control. Move the collective from the full down position while measuring the force required to raise the collective as it reaches its center position. Do not constrain the cyclic stick from moving during this operation.
10. Position the fish scale at the center of the throttle grip on the collective flight control. Move the collective from the full up position while measuring the force required to lower the collective as it reaches its center position. Do not constrain the cyclic stick from moving during this operation.

CAUTION

Do not exceed 200°F (93°C) at any location on the actuator.

11. Using a heat gun, heat the boost actuator cylinder end gland nuts uniformly and all around the circumference to 160°F to 180°F (71.11 to 82.22°C). Repeat step 5 through 10 and record results in Table 1. (Refer to figure 2).

	FORCE					
	CYCLIC				COLLECTIVE	
TEST	Step 5 From Left FWD	Step 6 From Right AFT	Step 7 From Right FWD	Step 8 From Left AFT	Step 9 From Full Down	Step 10 From Full Up
Room temperature actuators						
Heated actuators						

Table 1

12. Compare cyclic forces recorded at room temperature prior to heating the actuators to the forces recorded after heating both cyclic actuators.

- a. If the cyclic stick force recorded with heated actuators minus the forces recorded at room temperature is greater than 10 pounds (4.54 kilograms) then the respective cyclic boost actuator is defective and should be replaced.
- b. If the cyclic stick forces recorded with heated actuators minus the forces recorded at room temperature is less than 10 pounds (4.54 kilograms) and the force recorded at room temperature is greater than 15 pounds (6.80 kilograms) the actuator is serviceable. Investigation should be conducted to identify the cause of the cyclic control force anomaly reported by the pilot.

-NOTE-

Swashplate friction being too high is a possible cause for high cyclic control force.

- c. If the cyclic stick forces recorded with heated actuators minus the forces recorded at room temperature is less than 10 pounds (4.54 kilograms) and the force recorded at room temperature is less than 15 pounds (6.80 kilograms) the actuator and control system are serviceable and no further maintenance action is required.

13. Compare collective forces recorded at room temperature to the forces recorded after heating the collective actuator.

- a. If the collective stick forces recorded with heated actuator minus the forces recorded at room temperature are greater than 25 pounds (11.34 kilograms) then the collective boost actuator is defective and should be replaced.
- b. If the collective stick forces recorded with heated actuator minus the forces recorded at room temperature is less than 25 pounds (11.34 kilograms) and the force recorded at room temperature is greater than 20 pounds (9.07 kilograms) the actuator is serviceable. Investigation should be conducted to identify the cause of the collective control force anomaly reported by the pilot.

-NOTE-

Swashplate sleeve bearings being contaminated or sticky is a possible cause for high collective control force.

- c. If the collective stick forces recorded with heated actuator minus the forces recorded at room temperature is less than 25 pounds (11.34 kilograms) and the force recorded at room temperature is less than 20 pounds (9.07 kilograms) then there is no defect in the actuator or control system, therefore no further maintenance action is required.
14. Install control tube to each hydraulic actuator. Refer to the BHT-206A/B-Series Maintenance Manual.

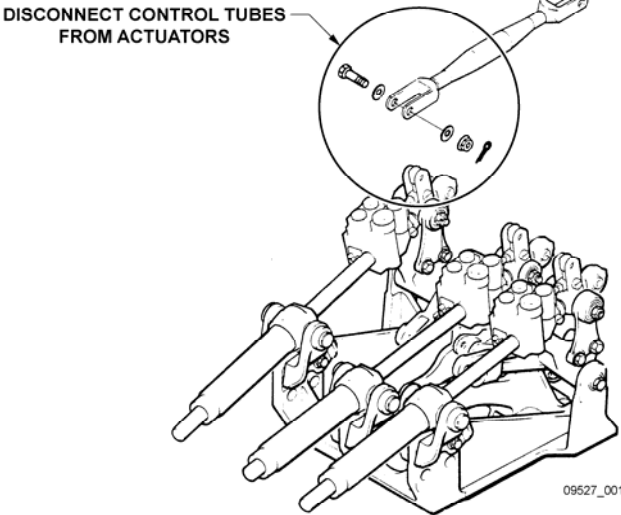


Figure 1

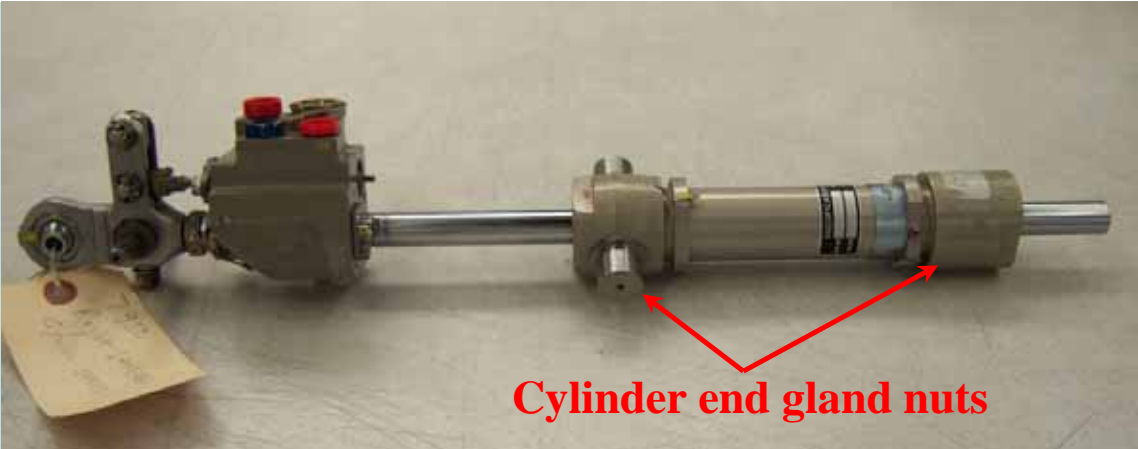


Figure 2