

ALERT SERVICE BULLETIN

Bell Helicopter **TEXTRON**

A Subsidiary of Textron Inc.

NO. 430-99-13

DATE 12-13-99

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DATE

REV

MODEL AFFECTED: 430

SUBJECT: FUEL QUANTITY INDICATING SYSTEM
CALIBRATION

HELICOPTERS AFFECTED: MODEL 430, Helicopters S/N 49001 through 49059.

[MODEL 430, Helicopters S/N 49060 and subsequent will have the intent of this bulletin accomplished prior to delivery.]

COMPLIANCE: At the next fuel system calibration, but no later than the next scheduled 600 hour / annual inspection.

DESCRIPTION:

Bell Helicopter has received a field report concerning the model 430 fuel quantity indicating system accuracy.

The subsequent investigation has revealed the potential for an error margin in the fuel quantity indication system.

This bulletin introduces a new fuel quantity indicating system calibration procedure in order to provide increased accuracy for the fuel indication system.

APPROVAL:

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

MANPOWER:

Approximately 2 man-hours are required to accomplish this bulletin. Man-hours are based on hands-on time and may vary with personnel and facilities available.

7051 50192 REV 1199

MATERIAL:

Required Material:

None Required

Consumable Material:

None Required

SPECIAL TOOLS:

Maintenance harness assembly P/N 430-275-001-101 or -103 (supplied as loose equipment with every aircraft).

WEIGHT AND BALANCE:

Not Affected

ELECTRICAL LOAD DATA:

Not Affected

REFERENCES:

OSN 430-99-2
BHT-430-FM-1,
BHT-430-FMS-1, Section 1 and 2
BHT-430-MD, Section 2
BHT-430-MM-2, chapter 12-6
BHT-430-MM-4
BHT-430-MM-10

PUBLICATIONS AFFECTED:

BHT-430-MM-10
BHT-430-FM-1

ACCOMPLISHMENT INSTRUCTIONS:

WARNING

Defuel the helicopter in an area that decreases the risk of fire.

1. Place the helicopter on a level surface and defuel the helicopter in accordance with BHT-430-MM-2, chapter 12. Use the drain valves to remove the unusable fuel.
2. Position helicopter at 1.3 degrees nose up and 0 degrees lateral. Use the pilot seat rail as a reference surface.

- NOTE -

Use external power during ground maintenance procedure to prevent battery depletion.

3. Energize the 28Vdc busses.
4. Open the interconnect valve.
5. Add 110 lbs. (49.9 Kg) of fuel into the tank (Table 1 gives the equivalent quantity in US gallons / Liters as a function of fuel temperature and type if preferred).
6. Allow 20 minutes for the fuel level in the L/H and R/H tanks to equalize.
7. Note the fuel temperature on start page of IIDS.
8. Connect the maintenance harness assembly P/N 430-275-001-101 or -103 to connector (4J71), on the side of the center pedestal.
9. **Left Hand side IIDS screen empty calibration.**

- NOTE -

Calibration of the L/H fuel probes can only be carried out on the L/H IIDS screen and the calibration of the R/H fuel probes can only be carried out on the R/H IIDS screen.

- NOTE -

Although the display can be selected in Kg, the calibration is only available in Lbs.

- a) Press the SEL switch and the C/C switch, below the IIDS secondary screen, together and hold for 5 seconds to enter the L/H maintenance screen.
- b) On the IIDS MAINTENANCE FUNCTIONS screen (Ref. Fig. 1), select 8 FUEL CALIBRATION using the DN switch.
- c) Press SEL switch.
- d) On the FUEL CALIBRATION screen (Ref. Fig. 2) select L/H TANK FUEL QUANTITY ZERO ADJUST using the UP or DN switch.
- e) Press SEL switch.
- f) Using the UP or DN switch, adjust to 25 Lbs indication.
- g) Press ACCEPT switch.

10. Right Hand side IIDS screen empty calibration.

- a) Press the SEL switch and TST switch, below the IIDS primary screen, together and hold for 5 seconds, to enter the R/H maintenance screen.
- b) On the IIDS MAINTENANCE FUNCTION screen (Ref. Fig. 1) select 8 FUEL CALIBRATION using the DN switch.
- c) Press SEL switch.
- d) On the FUEL CALIBRATION screen (Ref. Fig. 3) select R/H TANK FUEL QUANTITY ZERO ADJUST using UP or DN switch.
- e) Press SEL switch.
- f) Using the UP or DN switch, adjust to 25 Lbs indication.
- g) Press ACCEPT switch.

- NOTE -

When fueling the tanks allow 10 minutes for the fuel to stabilize before noting the fuel quantity.

11. Fill up the helicopter fuel tanks to the maximum level and note the total quantity of fuel required.

12. The total quantity of fuel required should be the following (excluding the 110 Lbs, [49.9 Kg] added in step 5) depending on the helicopter configuration:

Wheel gear: 173 +/- 3 US Gallons or 655 +/- 12 Liters.
Skid gear: 233 +/- 4 US Gallons or 882 +/- 15 Liters.

13. If fuel quantity is within or greater than tolerances, proceed to step 15 of this bulletin. If fuel quantity is below the required tolerance proceed to step 14.

- NOTE -

Probable causes for not meeting the specifications in step 12 are a collapsed fuel bladder, faulty breakaway valve or blocked vent.

14. Defuel helicopter and inspect fuel system for possible obstruction or faulty installation as follows:

- a) Remove fuel tank cavity access panels P/N 222-031-426-103 and -104 located behind passenger seat back. Remove the wing fuel tank cavity access panels P/N 222-031-878-105 and -106 for the skid gear (-103 & -104 for the wheel gear) configuration located on top of the L/H and R/H wing.
- b) Visually inspect the fuel tank for condition and confirm the bladder is not collapsed (Ref. BHT-430-MM-5, chapter 28). Correct any discrepancy as required.
- c) Re-install panels removed in step a.
- d) Inspect fuel vent tubes P/N 222-066-605-101 on the fuel sump assembly and confirm that the scarf cut is facing forward (Ref. BHT-430-MM-5, chapter 28 and OSN 430-99-2) and check for possible obstructions.
- e) Remove the L/H & R/H breakaway valves. Inspect for condition and confirm valve is not closed (Ref. BHT-430-MM-5, chapter 28). If the breakaway valve is closed, replace it with a serviceable unit. If valve is serviceable re-install it.
- f) Repeat step 2 to 13.

15. **Left hand side IIDS screen full calibration.**

- NOTE -

Although the display can be selected in Kg, the calibration is only available in Lbs.

- a) On the L/H FUEL CALIBRATION screen (Ref. Fig. 2) select L/H TANK FUEL QUANTITY FULL ADJUST using the UP or DN switch.
- b) Press SEL switch.
- c) Using Table 2, determine the "full adjust value" based on the fuel system configuration (skid gear or wheel gear), type of fuel being used, and the fuel temperature noted in step 7.
- d) Using the UP or DN switch, adjust fuel quantity readout to the "full adjust value" determined in step c.
- e) Press ACCEPT switch.
- f) Press RTN switch to exit the L/H maintenance screen.

16. Right Hand side IIDS screen full calibration.

- NOTE -

Although the display can be selected in Kg, the calibration is only available in Lbs.

- a) On the R/H FUEL CALIBRATION screen (Ref. Fig. 3) select the R/H TANK FUEL QUANTITY FULL ADJUST using the UP or DN switch.
 - b) Press SEL switch.
 - c) Using Table 2, determine the "full adjust value" based on the fuel system configuration (skid gear or wheel gear), type of fuel being used, and the fuel temperature noted in step 7.
 - d) Using the UP or DN switch adjust fuel quantity readout to the "full adjust value" determined in step c.
 - e) Press ACCEPT switch.
 - f) Press RTN switch to exit the R/H maintenance screen.
17. Remove the maintenance harness assembly from connector (4J71).
 18. Close the interconnect valve.
 19. De-energize the 28 Vdc busses.
 20. Re-position helicopter at normal ground attitude.
 21. Annotate the helicopter records to reflect compliance with this bulletin.

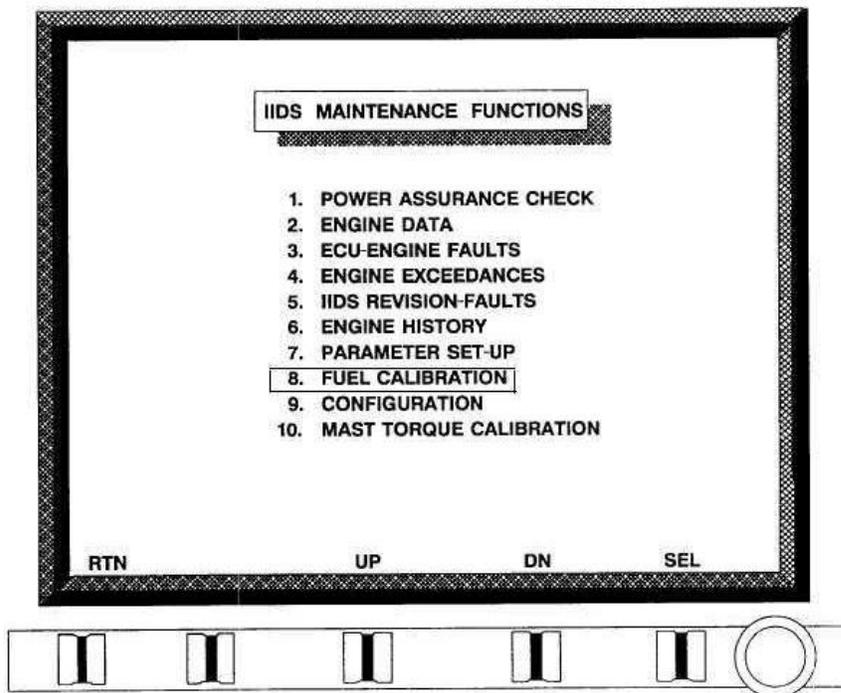
22. Insert BHT-430-FM-1 Temporary Revision dated 07 December 1999 in the rotorcraft Flight Manual.
23. Insert BHT-430-MM-10, Ch. 95, Revision 2, dated 10 December 1999 in the Maintenance Manual.

Fuel temp. [°C]	Quantity equivalent to 110 lbs in USG (liters)			
	Jet A/JP-8/JP-5		JetB/JP-4	
-40	14.0	(53.0)	14.9	(56.4)
-30	14.2	(53.7)	15.0	(56.8)
-20	14.3	(54.1)	15.1	(57.2)
-10	14.4	(54.5)	15.3	(57.9)
0	14.6	(55.3)	15.4	(58.3)
10	14.7	(55.6)	15.6	(59.0)
20	14.8	(56.0)	15.8	(59.8)
30	15.0	(56.8)	15.9	(60.2)
40	15.1	(57.2)	16.1	(60.9)
50	15.2	(57.5)	16.2	(61.3)
60	15.4	(58.3)	16.4	(62.1)

Table 1 – Quantity Equivalent to 110lb

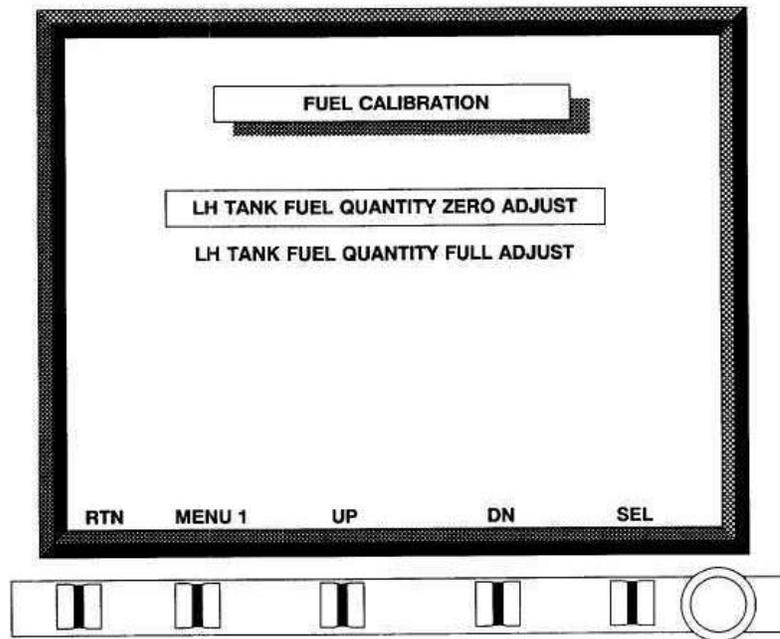
Fuel temp. [°C]	Full adjustment per side [lbs]			
	Skid gear		Wheel gear	
	Jet A/JP-8/JP-5	JetB/JP-4	Jet A/JP-8/JP-5	JetB/JP-4
-40	853	807	647	612
-30	845	799	641	606
-20	838	792	636	601
-10	831	784	631	595
0	824	776	625	589
10	816	767	620	583
20	809	761	614	577
30	802	753	608	571
40	795	745	603	566
50	787	738	598	560
60	778	730	592	554

Table 2 full adjustment values



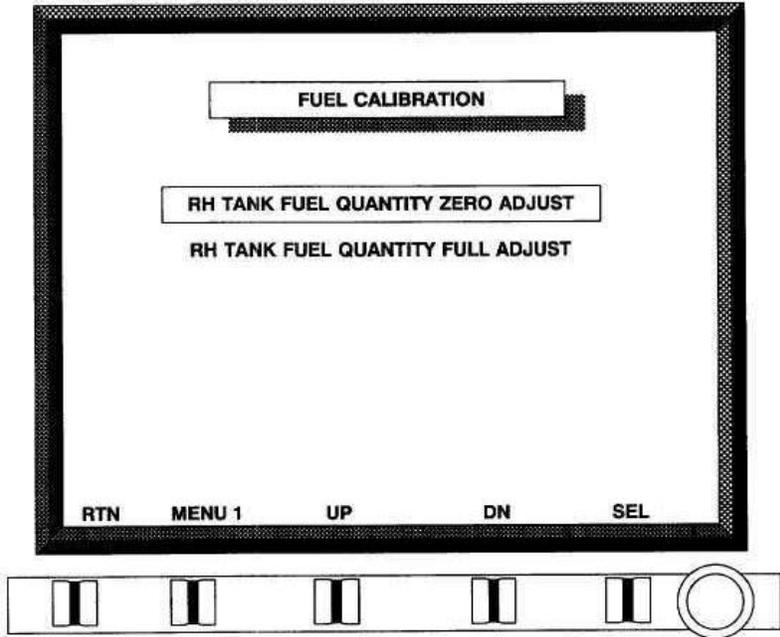
IIDS MAINTENANCE FUNCTION

FIGURE 1



L/H TANK FUEL QUANTITY ZERO ADJUST

FIGURE 2



R/H TANK FUEL QUANTITY ZERO ADJUST

FIGURE 3