



A Textron Company

TECHNICAL BULLETIN

212-12-213  
3 January 2013

**MODEL AFFECTED:** 212

**SUBJECT:** HYDRAULIC FLUID CONVERSION FROM MIL-PRF-5606 TO MIL-PRF-87257

**HELICOPTERS AFFECTED:** All helicopter serial numbers 30501 through 30999, 31101 through 31311, 32101 through 32142 and 35001 through 35103

[Serial number 35104 and subsequent will have the intent of this bulletin accomplished prior to delivery.]

**COMPLIANCE:** At customer's option.

**DESCRIPTION:**

Bell Helicopter has determined that MIL-PRF-87257 (C-072) hydraulic fluid is acceptable for use as an alternate for the current MIL-PRF-5606 (C-002) hydraulic fluid used in the Model 212 helicopters. **Part I** of this bulletin provides a procedure to retrofit helicopter with the appropriate decals. **Part II** of this bulletin provides recommended procedures for introducing the new hydraulic fluid into the systems.

**APPROVAL:**

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

**CONTACT INFO:**

For any questions regarding this bulletin, please contact:

Bell Helicopter Product Support Engineering - Medium Helicopters  
Tel: 450-437-6201 / 1-800-363-8028 / psemedium@bh.com

**MANPOWER:**

Approximately 1.0 man-hour is required to accomplish Part 1 of this bulletin.

Accomplishment of Part 2 of this bulletin using attrition method during normal maintenance will not require additional man-hours. The mixing of fluids per the attached procedure will require a total of approximately 9.0 man-hours.

**WARRANTY:**

There is no warranty credit applicable for parts or 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>Qty</u>
205-076-142-105	Decal	See note
205-076-060-105	Decal	See note
205-076-224-101	Decal	2

**Note:** For aircraft equipped with hydraulic reservoir P/N 205-076-135-007/-109 (magnesium alloy) use decal P/N 205-076-142-105. For aircraft equipped with hydraulic reservoir P/N 205-076-058-101(PEEK plastic) use decal P/N 205-076-060-105.

**Consumable Material:**

The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator's consumable material stock levels. This material may be obtained through your Bell Helicopter Textron Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty</u>	<u>Reference *</u>
MIL-PRF-87257	Hydraulic Fluid	A/R	C-072
3950 Scotchcal	Edge Sealer	A/R	C-349
Commercial	Aliphatic Naphtha	A/R	C-305

\* C-XXX numbers refer to the consumables list in BHT-ALL-SPM Standard Practices Manual.

**SPECIAL TOOLS:**

None required.

## **WEIGHT AND BALANCE:**

Not affected.

## **ELECTRICAL LOAD DATA:**

Not affected.

## **REFERENCES:**

BHT-212-IPB Illustrated Parts Breakdown  
BHT-212-MM Maintenance Manual

## **PUBLICATIONS AFFECTED:**

BHT-212-IPB Illustrated Parts Breakdown  
BHT-212-MM Maintenance Manual  
BHT-212-FM-1 Flight Manual  
BHT-212-MD-1 Manufacturer's Data  
BHT-ALL-SPM Standard Practice Manual

## **ACCOMPLISHMENT INSTRUCTIONS:**

### **PART I. Decal Replacement**

1. Prepare helicopter for maintenance.
2. Gain access to both hydraulic reservoirs by removing forward pylon fairing.
3. Remove existing decals P/N 205-076-142-103 from magnesium alloy hydraulic reservoirs P/N 205-076-135-007/-109 or decals P/N 205-076-060-103 from PEEK plastic hydraulic fluid reservoirs P/N 205-076-058-101. Thoroughly wipe surfaces with a clean cloth dampened with Aliphatic Naphtha (C-305) prior to receiving the new decals.
4. Install new decals P/N 205-076-142-105 on magnesium alloy hydraulic reservoirs P/N 205-076-135-007/-109 or decals P/N 205-076-060-105 on PEEK plastic hydraulic fluid reservoirs P/N 205-076-058-101.
5. Remove existing decals P/N 205-076-224-001 from No.1 and No.2 hydraulic ground test fitting area. Thoroughly wipe surfaces with a clean cloth dampened with Aliphatic Naphtha (C-305) prior to receiving the new decals.
6. Install new decals P/N 205-076-224-101 on No.1 and No.2 hydraulic ground test fitting area.

7. Apply clear edge sealer (C-349) allowing 1/8 inch overlap on all sides of newly installed decals in steps 4 and 6.
8. Reinstall forward pylon fairing.
9. Make an entry in the helicopter logbook and historical records indicating compliance with Part I of this Technical Bulletin.

## **PART II. Fluid Conversion**

**Method 1:** Introduction of fluid by attrition.

-NOTE-

This method will not permit taking advantage of the improved characteristics of hydraulic fluid C-072 until full conversion has been accomplished.

1. This method is accomplished simply by adding C-072 hydraulic fluid during normal servicing of the aircraft (topping off).
2. Make an entry in the helicopter logbook and historical service records indicating compliance with Part II Method 1 (intermixed fluids) of this Technical Bulletin.

**Method 2:** Complete fluid replacement of all hydraulic systems to C-072 hydraulic fluid.

### **Phase 1**

1. Hydraulic test stand.
  - a. Provide a hydraulic test stand conforming to requirements stated in BHT-212-MM Chapter 29.

-NOTE-

If hydraulic test stand does not have dual hoses, perform the following procedure on each system in turn.

- b. Drain fluid from hydraulic test stand until 50% of the total capacity of C-002 hydraulic fluid remains. Discard excess hydraulic fluid per applicable shop practice.
- c. Replace drained hydraulic test stand fluid with C-072.

## 2. Aircraft Procedures.

### a. Flight controls.

- (1) Remove hydraulic test coupling access doors for hydraulic system No.1 and No.2 below left cargo door opening.
- (2) Connect hydraulic test stand to hydraulic systems No.1 and No.2 quick disconnect fittings.
- (3) Apply electrical power to the aircraft.
- (4) Using hydraulic test stand apply 1000 psi to aircraft hydraulic pressure systems No.1 and No.2.
- (5) Let hydraulic test stand run for 30 minutes.
- (6) Stroke flight control actuators (collective, both cyclic, tail rotor) by moving the cyclic control, collective control and operating the pedals through 5 complete cycles.
- (7) Cycle HYDR SYS No.1 and HYDR SYS No.2 switches, located on the pedestal miscellaneous control panel, to the ON and OFF position 5 times in approximately 2 second intervals.
- (8) Turn off hydraulic test stand.
- (9) Turn off electrical power.

### b. Rotor brake.

- (1) Remove doors/panels to gain access to rotor brake bleed valve.
- (2) Slip rubber hose on the end of valve extension and run it to a suitable container or place rags and container under bleed valves to catch fluid during bleeding.
- (3) Fully loosen bleed valve on brake assembly.
- (4) Slowly pull master cylinder lever down and hold. Do not allow lever to pass center into the park position.
- (5) Close bleed valve and replenish master cylinder with C-072.
- (6) Repeat (3) through (5).

- (7) Repeat (1) through (6) for the other bleed valve.
- (8) Bleed each bleed valve per BHT-212-MM Chapter 63.
- (9) Reinstall doors and panels.

## **Phase 2 – After 3 flight hours or two weeks following Phase 1**

-NOTE-

If hydraulic test stand does not have dual hoses, perform the following procedure on each system in turn.

1. Hydraulic test stand.
  - a. Drain hydraulic test stand of hydraulic fluid mix and discard per applicable shop practice.
  - b. Add 75% of the total cart capacity of hydraulic fluid C-072 and 25% of the total cart capacity of hydraulic fluid C-002.
2. Aircraft Procedures.
  - a. Flight controls.
    - (1) Remove hydraulic test coupling access doors for hydraulic system No.1 and No.2 below left cargo door opening.
    - (2) Connect hydraulic test stand to hydraulic system No.1 and No.2 quick disconnect fittings.
    - (3) Apply electrical power to the aircraft.
    - (4) Using hydraulic test stand apply 1000 psi to aircraft hydraulic pressure systems No.1 and No.2.
    - (5) Let ground cart run for 30 minutes.
    - (6) Stroke flight control actuators (collective, both cyclic, tail rotor) by moving the cyclic control, collective control and operating the pedals through 5 complete cycles.
    - (7) Cycle HYDR SYS No.1 and HYDR SYS No.2 switches, located on the pedestal miscellaneous control panel, to the ON and OFF position 5 times in approximately 2 second intervals.

(8) Turn off hydraulic test stand.

(9) Turn off electrical power.

b. Rotor brake.

(1) Remove doors/panels to provide access to rotor brake bleed valve.

(2) Slip rubber hose on the end of valve extension and run to a suitable container or place rags and container under bleed valves to catch fluid during bleeding.

(3) Fully loosen bleed valve on brake assembly.

(4) Slowly pull master cylinder lever down and hold. Do not allow lever to pass center into the park position.

(5) Close bleed valve and replenish master cylinder with C-072.

(6) Repeat (3) through (5).

(7) Repeat (1) through (6) for the other bleed valve.

(8) Bleed each bleed valve per BHT-212-MM Chapter 63.

(9) Reinstall doors and panels.

**Phase 3 – After 3 flight hours or two weeks following Phase 2**

-NOTE-

During Phase 3, the oil from the return line is directed into a suitable container. To avoid wasting fluid, perform all steps reported below in tight sequence without leaving system pressurized unnecessarily. If stops are required to prepare the next step, turn off hydraulic test stand.

1. Hydraulic test stand.

a. Drain hydraulic test stand of fluid mix, discard per applicable shop practice.

b. Completely fill with C-072 (100% of the total hydraulic test stand capacity).

2. Aircraft Procedures.

a. Remove forward pylon fairing, giving access to reservoirs.

- b. Completely drain fluid from No.1 and No. 2 hydraulic reservoirs into a suitable container by disconnecting hose from suction outlet fitting.
- c. Refill both No.1 and No.2 hydraulic reservoirs with C-072 to correct level.
- d. Flight controls.
  - (1) Remove hydraulic test coupling access doors for hydraulic system No.1 and No.2 below left cargo door opening.
  - (2) Connect hydraulic test stand hoses to both aircraft hydraulic quick disconnect fittings. Disconnect the return hoses from the hydraulic test stand and direct them into an appropriate container to collect the discarded fluid.
  - (3) Apply electrical power to the aircraft.
  - (4) Turn on hydraulic test stand in order to supply 1000 psi of pressure and 3 GPM flow to System 1 only. System 2 must remain unpressurized.
  - (5) Stroke flight control actuators (collective, both cyclic, tail rotor) by moving the cyclic control, collective control and operating the pedals through 5 complete cycles.
  - (6) Cycle HYDR SYS No.1 switch, located on the pedestal miscellaneous control panel, to the ON and OFF position 5 times in approximately 2 second intervals.
  - (7) Let the hydraulic test stand run for 1 minute.
  - (8) Turn off hydraulic test stand.
  - (9) Turn on hydraulic test stand in order to supply 1000 psi of pressure and 3 GPM flow to System 2 only. System 1 must remain unpressurized.
  - (10) Stroke flight control actuators (collective, both cyclic, tail rotor) by moving the cyclic control, collective control and operating the pedals through 5 complete cycles.
  - (11) Cycle HYDR SYS No.2 switch, located on the pedestal miscellaneous control panel, to the ON and OFF position 5 times in approximately 2 second intervals.
  - (12) Let the hydraulic test stand run for 1 minute.
  - (13) Turn off hydraulic test stand.



- (14) Hook up both return lines to manifold cart and turn on both hydraulic systems to 1000 psi and 5 GPM.
- (15) Leave ground cart running for 5 minutes.
- (16) Turn off hydraulic test stand.
- (17) Turn off electrical power.
- (18) Replenish each reservoir level to proper levels if required.
- (19) Replace all 4 hydraulic filters.

e. Rotor brake.

- (1) Remove doors/panels to provide access to rotor brake bleed valve.
- (2) Slip rubber hose on the end of valve extension and run to a suitable container or place rags and container under bleed valves to catch fluid during bleeding.
- (3) Fully loosen bleed valve on brake assembly.
- (4) Slowly pull master cylinder handle down and hold. Do not allow handle to pass center into the park position.
- (5) Close bleed valve and replenish master cylinder with C-072.
- (6) Repeat (3) through (5).
- (7) Repeat (1) through (6) for the other bleed valve.
- (8) Bleed each bleed valve per BHT-212-MM Chapter 63.
- (9) Reinstall fairings, doors and panels, make helicopter ready for flight.

3. Make an entry in the helicopter logbook and historical service records indicating compliance with Part II Method 2 (complete fluid conversion) of this Technical Bulletin.