

CHAPTER 12 — SERVICING

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SERVICING

12-1. SERVICING — GENERAL

This chapter contains the data required to service the helicopter.

Table 12-1 through Table 12-6 contain the list of the recommended servicing intervals for fuel, oil, filter, grease lubrication and miscellaneous servicing.

For data on the consumable materials, refer to the BHT-ALL-SPM.



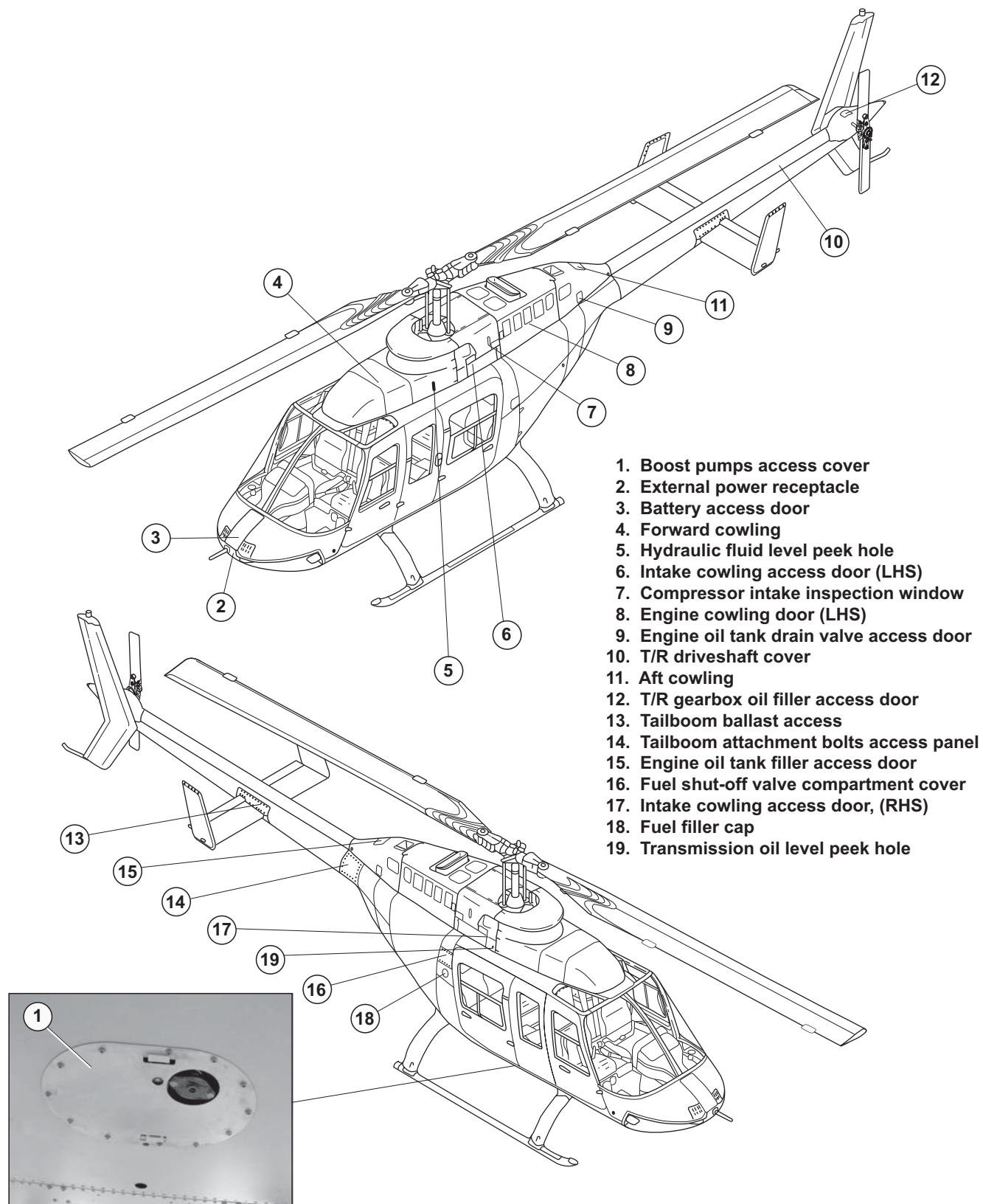
THE SERVICING INTERVALS PROVIDED
IN THIS CHAPTER ARE THE MAXIMUM
PERMITTED INTERVALS UNDER
NORMAL OPERATION OF THE

HELICOPTER. DO NOT EXCEED THESE
INTERVALS. IT MAY BE NECESSARY TO
DECREASE THESE INTERVALS IF THE
HELICOPTER OPERATES IN EXTREME
ENVIRONMENTAL CONDITIONS.

For specific information on fuels, oils, and fluids, refer as required, to the BHT-206L3-FM-1 (BHT-206L4-FM-1 for 206L3+ IGW Upgrade).

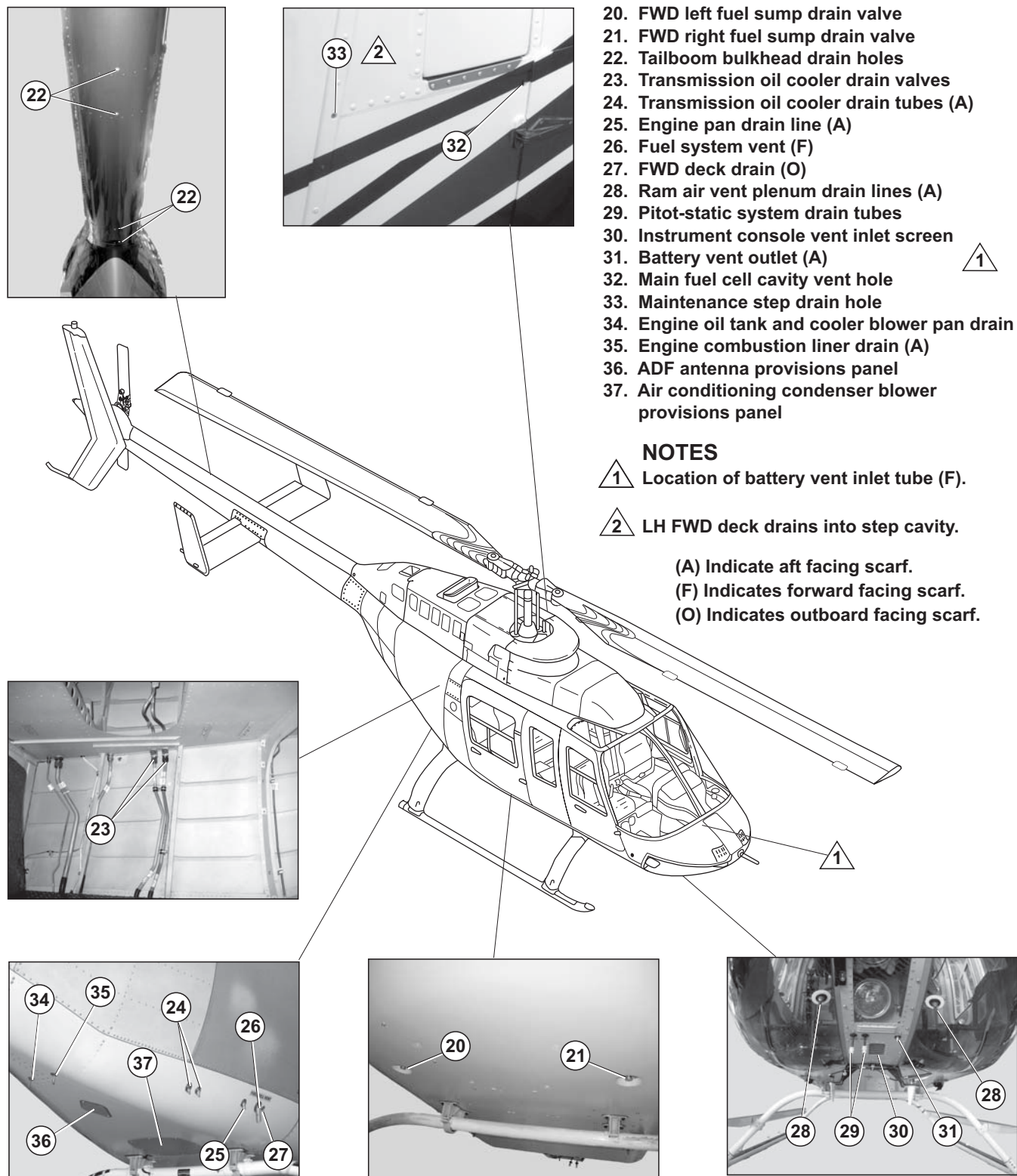
12-2. ACCESS PANELS, DRAINS, AND VENTS

Figure 12-1 shows the location of all the access panels, drains and vents required for servicing the helicopter. For the location of other panels required for maintenance access, refer to Chapter 53. For the location of sight and level gauges, refer to specific system Figure 12-3 or Figure 12-4 as required.



206L_MM_12_0017

Figure 12-1. Access Panels, Drains and Vents (Sheet 1 of 2)



206L_MM_12_0015

Figure 12-1. Access Panels, Drains and Vents (Sheet 2 of 2)

FUEL SYSTEM SERVICING

12-3. FUEL SYSTEM — SERVICING

The fuel system contains three interconnected fuel cells. The system is serviced through a single filler port installed on the right hand side on the helicopter. A ground jack is also installed on the right hand side of the helicopter near the filler port. An electrically operated sump drain valve is installed in the bottom of the main fuel cell. Some helicopters are also equipped with a low fuel level switch. Two boost pumps are interconnected and supply fuel through a single hose assembly to the fuel shut-off valve through a manifold containing check valves with thermal relief provisions. Boost pumps incorporate pressure switches in discharge ports and drain plugs in the pump drain port. From the manifold, fuel is directed to the fuel shut-off valve and then to an airframe fuel filter installed on the aft face of the right hand side of the forward firewall. The airframe fuel filter has a manual drain valve, bypass capability, and an impending bypass switch. The switch is connected to the caution/warning and advisory panel in the flight compartment. Access to boost pumps and main fuel cell drain valve is gained from the bottom of the fuselage. Access to the upper tank fuel quantity probe and transmitter assembly is gained from a cover plate on the hat bin shelf. Access to the lower fuel quantity probe is gained from the aft passenger seat structure. The forward tanks fuel quantity probe is accessible from the forward left passenger seat panel. Access to fuel shut-off valve compartment and vent line is gained from an access panel located on right side above filler cap.

12-4. FUELING/DEFUELING — PREPARATION

The following paragraphs will provide general servicing as well as defueling and fueling information.

12-5. FUEL SYSTEM — GENERAL SERVICING INSTRUCTIONS



TAKE CARE NOT TO CONTAMINATE THE FUEL SYSTEM THROUGH THE AFT FUSELAGE VENT OUTLET WHEN WASHING THE HELICOPTER. DO NOT USE HIGH PRESSURE SPRAY

EQUIPMENT TO WASH THE HELICOPTER.

WARNING

BE VERY CAREFUL WHEN YOU FUEL OR DEFUEL THE HELICOPTER. ALWAYS ENSURE THE HELICOPTER IS GROUNDED. AVIATION FUELS ARE EXTREMELY FLAMMABLE. THE FUEL FUMES AND GASES CAN IGNITE WITH STATIC ELECTRICITY, FRICTION SPARKS, HOT EXHAUST PIPES, LIGHTED CIGARETTES, ELECTRICAL DEVICES, OR SIMILAR IGNITION SOURCES. DO NOT SMOKE AROUND THE HELICOPTER.

MAKE SURE THAT ONLY QUALIFIED PERSONNEL ARE IN THE AREA WHEN YOU FUEL OR DEFUEL THE HELICOPTER.

1. Do not fuel or defuel the helicopter in high wind conditions or when an electrical storm is within a 3 mile (4.8 km) radius of the fueling area.
2. Ground the helicopter before initiating fueling or defueling operations. Do not wear static producing clothes such as nylon, rayon or wool. Make sure all personnel around the helicopter dissipate static electricity potential by gripping the static ground line with their bare hands.
3. Do not fuel or defuel the helicopter in areas where fumes and gases can accumulate.
4. Do not fuel or defuel the helicopter in a hangar or in other closed places. Make sure the helicopter is a minimum of 50 feet (15.2 m) away from any building.
5. Make sure no other aircraft or motorized vehicle operates under its own power within 50 feet (15.2 m) of the helicopter.
6. Position the service unit no closer than 20 feet (6.1 m) and as far away as the hose will permit. Make sure all the vent doors are open.

7. Connect the service unit to an approved ground rod. Connect the helicopter to the service unit or to an approved ground rod.
8. Make sure the service unit hose nozzle is grounded to the helicopter electrical ground receptacle (2, [Figure 12-2](#)) before the dust cap is removed from the nozzle and before the fuel cell filler cap (1) is removed from the helicopter.
9. Make sure the area around the helicopter is clear to permit rapid evacuation of the personnel and vehicles in the case of an emergency.



IF POWER IS REQUIRED TO FUEL OR DEFUEL THE HELICOPTER, TURN THE BATTERY SWITCH AND REQUIRED SYSTEM SWITCHES **ON** BEFORE YOU START THE OPERATION. DO NOT OPERATE ANY SWITCHES UNTIL THE OPERATION IS COMPLETE.

10. Make sure all the helicopter power is off.
11. Make sure no personnel are aboard the helicopter when you fuel or defuel the helicopter.

12-6. FUEL SYSTEM — SUMP DRAINING

1. Make sure the FUEL BOOST circuit breakers are out.
2. Set the BATT switch to the ON position.
3. Make sure the FUEL VALVE switch is OFF.
4. On the right side of the aft fuselage, push in the FUEL SUMP drain switch (7, [Figure 12-2](#)) to drain the aft fuel cell sump.
5. Each of the forward fuel cell sumps can be drained by opening the manually operated drain valves (8).
6. In clean container, inspect samples of drained fuel for water or contamination. Take corrective measures as required.

12-7. FUEL SYSTEM — FUELING

SPECIAL TOOLS REQUIRED

NUMBER	NOMENCLATURE
Commercial	Carbon Dioxide Fire Extinguisher, 50 pounds (23 kg) with Extension Assembly

MATERIALS REQUIRED

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-003	Turbine Fuel 
	Refer to BHT-206L3-FM-1 (BHT-206L4-FM-1 for 206L3+ IGW Upgrade) for approved fuels.

1. Prepare the helicopter for fueling ([paragraph 12-4](#)). Ground the helicopter before initiating the fueling operation.



IF POWER IS REQUIRED, TURN THE BATTERY AND REQUIRED SWITCHES **ON** BEFORE THE START OF THE FUELING OPERATION. DO NOT OPERATE ANY SWITCHES UNTIL THE OPERATION IS COMPLETED, EXCEPT AS REQUIRED BY AN EMERGENCY SITUATION.

2. Make sure the helicopter electrical power is off.
3. Make sure the fuel system vent (26, [Figure 12-1](#)) is free of obstruction.
4. Make sure the fuel in the service unit is the correct type. Refer to [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade).

5. Position the service unit and secure it with the hand brake and wheel chocks.
6. Make sure the fire extinguisher is operational and accessible.
7. Connect the service unit to the ground rod. Connect the helicopter to the service unit or to the ground rod.
8. Connect the hose nozzle ground to the helicopter electrical ground receptacle (2, [Figure 12-2](#)) and remove the dust cap on the fueling hose.

WARNING

DO NOT LEAVE NOZZLE UNATTENDED AT ANY TIME DURING REFUELING OPERATION.

9. Open the fuel cell filler cap (1) and service the helicopter fuel cells slowly with the required quantity of turbine fuel ([C-003](#)).
10. Replace the fuel cell filler cap (1) on the helicopter and install the dust cap on the fueling hose.
11. Remove the hose nozzle ground connection from the helicopter.
12. Remove the helicopter ground from the service unit. Remove the service unit ground from the ground rod.
13. In the event of a fire emergency, accomplish the following as expeditiously as possible:
 - a. Stop fuel flow.
 - b. Separate helicopter and service unit.
 - c. Sound alarm.
 - d. Attempt rescue.

- e. Contain fire.

12-8. FUEL SYSTEM — DEFUELING

SPECIAL TOOLS REQUIRED

NUMBER	NOMENCLATURE
Commercial	Carbon Dioxide Fire Extinguisher, 50 pounds (23 kg) with Extension Assembly

CAUTION

IF THE CONDITION OF THE FUEL REMOVED FROM THE HELICOPTER IS QUESTIONABLE, TEST THE FUEL TO MAKE SURE IT IS CLEAN BEFORE IT IS USED AGAIN IN ANOTHER HELICOPTER. IF YOU USE CONTAMINATED FUEL, IT COULD CAUSE AN ENGINE FAILURE.

1. Prepare the helicopter for defueling ([paragraph 12-4](#)). Ground the helicopter before initiating the defueling operation.

NOTE

If helicopter is being defueled with external service unit, accomplish step 1 through step 7.

If helicopter is being defueled with helicopter boost pumps, accomplish step 8.

2. Notify the fire department of the defueling location and of the times you plan to start and stop the operation.
3. Make sure no personnel are inside the helicopter during the defueling operation.

CAUTION

IF POWER IS REQUIRED, TURN THE BATTERY AND REQUIRED SYSTEM SWITCHES **ON** BEFORE THE START OF THE DEFUELING OPERATION. DO NOT OPERATE ANY SWITCHES UNTIL THE OPERATION IS COMPLETE, UNLESS SPECIFIED OTHERWISE.

4. Make sure the helicopter electrical power is off.
5. Make sure the fire extinguisher is operational and accessible.
6. Make sure the fuel system vent (26, [Figure 12-1](#)) is free of obstruction.
7. Defuel using external service unit as follows:
 - a. Position the service unit and secure it with the hand brake and wheel chocks.
 - b. Connect the service unit to the ground rod. Connect the helicopter to the service unit or to the ground rod.
 - c. Connect the defueling hose ground to the helicopter electrical ground receptacle (2, [Figure 12-2](#)).
 - d. Open the fuel cell filler cap (1).
 - e. Install the defueling hose in the main fuel cell.

CAUTION

DO NOT LET THE BOOST PUMPS RUN DRY FOR EXTENDED PERIODS.

- f. Position the FUEL BOOST circuit breakers IN. Make sure all the fuel in the forward fuel cells is transferred to the main (aft) fuel cell.

- g. Defuel the helicopter.

CAUTION

DO NOT LEAVE DEFUELING OPERATION UNATTENDED.

- h. Make sure all the fuel has been removed from the main fuel cell.
- i. Remove the defueling hose from the helicopter.
- j. Install the fuel cell filler cap (1).
- k. Remove the defueling hose ground connection from the helicopter electrical ground receptacle (2).
- l. Remove the helicopter ground from the service unit. Remove the service unit ground from the ground rod.
- m. Drain any remaining fuel from the three fuel cell sumps ([paragraph 12-6](#)).
- n. If the helicopter is to be stored with an empty fuel cell for more than a few days, purge the fuel system ([paragraph 12-9](#)).
8. Defuel with helicopter boost pumps as follows:
 - a. Accomplish step 1 through step 6.
 - b. Position helicopter 1.5° nose down.
 - c. Disconnect engine fuel pressure hose from the outlet port of the airframe fuel filter.
 - d. Connect a suitable hose to fuel pressure hose that will transfer fuel to a suitable container. Ensure the container is grounded.
 - e. Actuate boost pumps to pump fuel out of helicopter.

CAUTION

DO NOT LEAVE DEFUELING OPERATION UNATTENDED.

CAUTION

DO NOT LET THE BOOST PUMPS RUN DRY FOR EXTENDED PERIODS.

- f. Shut off boost pumps as soon as fuel flow becomes unsteady.
- g. Continue draining sumps by act uating drain valves (7 and 8, [Figure 12-2](#)) on fuel cells ([paragraph 12-6](#)).
- h. Reconnect fuel pressure hose disconnected in step c.
- i. Disconnect grounding cables.
- j. If the helicopter is to be stored with an empty fuel cell for more than a few days, purge the fuel system ([paragraph 12-9](#)).

12-9. FUEL CELL — PURGING

SPECIAL TOOLS REQUIRED

NUMBER	NOMENCLATURE
Commercial	Explosimeter (Combustible Gas Indicator Calibrated for Fuel Vapors)

MATERIALS REQUIRED

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
Commercial	Carbon Dioxide Gas
C-009	Lubricating Oil
C-315	Nitrogen (Gas)
C-426	Masking Tape

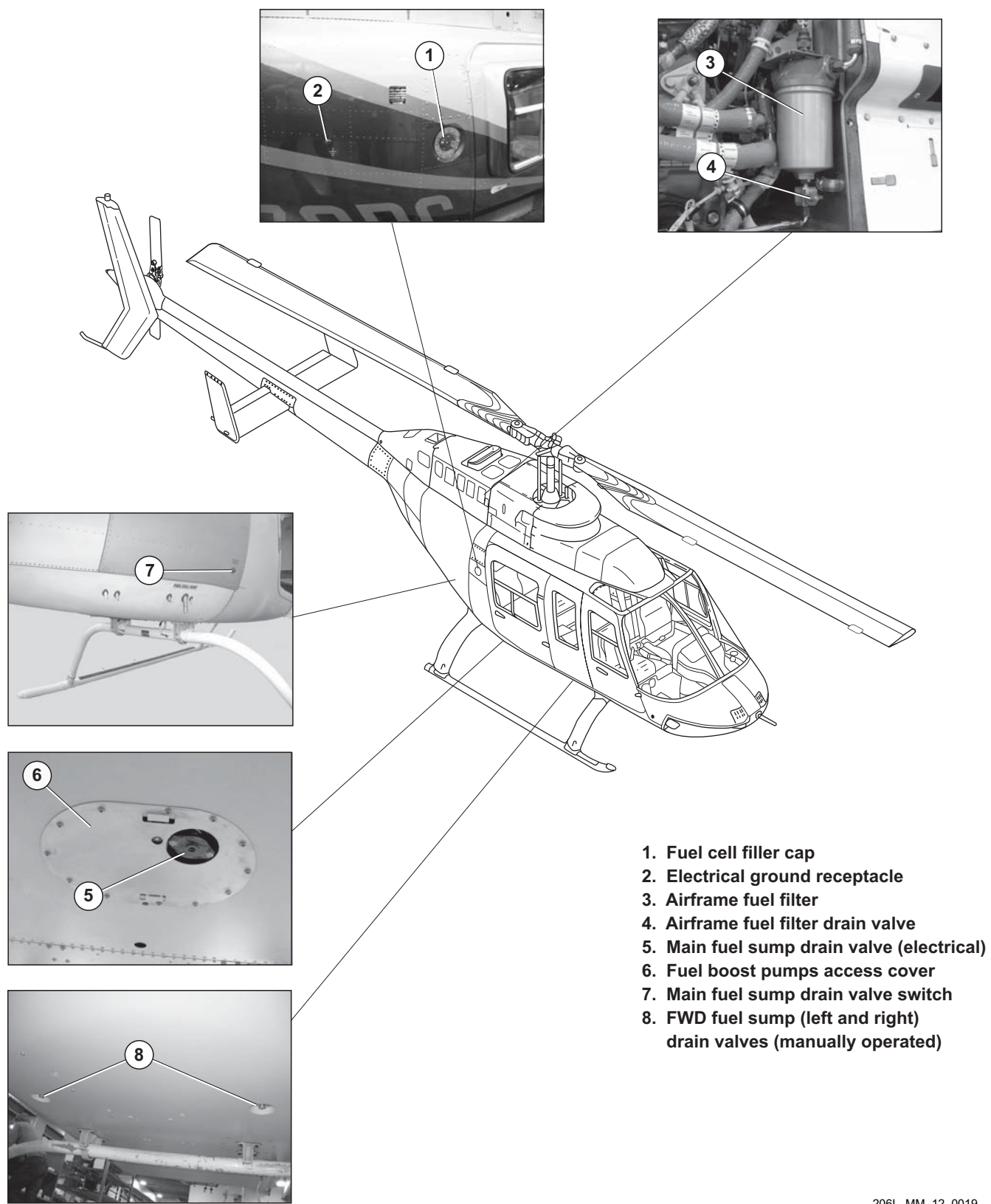
The fuel system is purged to remove explosive fumes and gases from the fuel system before you store the helicopter in a hangar. When the helicopter is ready to be returned to service after it has been purged, fuel the helicopter.

1. Defuel the helicopter ([paragraph 12-8](#)).
2. Open all the sum p drains (7 and 8). Ensure the fuel system vent line (26, [Figure 12-1](#)) is not blocked.
3. Install an air hose inside the fuel cell through the fuel filler. Seal the opening with masking tape ([C-426](#)) or equivalent.

WARNING

USE ONLY DRY FILTERED AIR, NITROGEN (GAS) ([C-315](#)) OR CARBON DIOXIDE GAS.

4. Blow low pressure dry filtered air into the fue l cells for a period of 8 hours. Then blow low pressure nitrogen (gas) ([C-315](#)) or carbon dioxide gas into the fuel cells for 2 minutes.
5. Remove the hose from the fuel cell filler (1, [Figure 12-2](#)) and let the helicopter stand for 1 hour.



206L_MM_12_0019

Figure 12-2. Fuel System — Servicing

WARNING

MAKE SURE THAT THE EXPLOSIMETER READS LESS THAN 20%. IF THE EXPLOSIMETER READS MORE THAN 20%, REPEAT STEP 3 THROUGH STEP 5 UNTIL YOU OBTAIN A READING OF LESS THAN 20%.

6. Check the interior atmosphere of the fuel cells with an explosimeter and make sure the reading is within the allowable limits.

7. Spray the interior of the fuel cells with lubricating oil (C-009).

NOTE

Do not block the fuel system vent line.

8. Close the drains and install the filler cap.
9. Install a tag that reads "FUEL SYSTEM PURGED" on or adjacent to the fuel filler cap.

Table 12-1. Fuel System — Servicing

INDEX NO. FIGURE 12-2	INTERVALS	COMPONENT	TYPE OF FUEL	CAPACITY	USABLE QTY
1	N/A	Fuel system	Turbine fuel (C-003) (see BHT-206L3-FM-1 (BHT-206L4-FM-1 for 206L3+ IGW Upgrade) for approved fuels).	112 US gallons (424 L)	110.7 US gallons (419 L)
3	300 hours	Airframe fuel filter	N/A	N/A	N/A
	Refer to applicable Rolls-Royce 250 Series Operation and Maintenance Manual	Engine fuel filter	N/A	N/A	N/A

OIL SYSTEM SERVICING

12-10. OIL LEVEL — CHECK

The sight gauges in the transmission and the tail rotor gearbox permit personnel to ensure the oil level in these components is within the specified limits. Refer to [Figure 12-3](#) for the location of the sight gauges. [Table 12-2](#) shows the recommended servicing intervals.

Stained or discolored sight gauges could give a false indication of oil/fluid quantity. Clean or replace stained or discolored sight gauges.

12-11. CHANGING OIL BRANDS OR SPECIFICATIONS



DO NOT MIX OILS OF DIFFERENT SPECIFICATIONS. IF OILS BECOME MIXED, SYSTEM SHALL BE DRAINED, FLUSHED, AND REFILLED WITH PROPER SPECIFICATION OIL.

Use only the oil brands or specifications approved by the manufacturer of the helicopter or of the engine. Refer to [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade) and Manufacturer's Data Section. Record the specification and brand of oil used in the helicopter logbook. Prior to adding oil, refer to the logbook to make sure the appropriate brand and specification of oil will be used.

When adding oil to the engine, main transmission, or tail rotor gearbox, the identical brand and specification of oil already in the engine or each gearbox shall be used. However, in circumstances where emergency top-off or inadvertent mixing may occur, it is acceptable to use oil with a different brand name within the same specification. No further action will be required until the next scheduled oil change, provided there is no indication of foggy or hazy oil appearance in the sight gauge. If oil appears foggy or hazy, do the following step 5.

If oils of different specifications have been mixed or a different oil specification is being introduced, do the following:

NOTE

Only perform the following steps as they pertain to the specific component(s) affected.

NOTE

Refer to the applicable Rolls-Royce 250 Series Operation and Maintenance Manual for specific engine requirements.

1. Drain the engine oil system ([paragraph 12-14](#)), flush the engine oil system ([Chapter 79](#)), and service the engine oil system with clean oil ([paragraph 12-13](#)).
2. Drain the transmission oil system ([paragraph 12-17](#)), flush the transmission oil lines and hoses ([Chapter 63](#)), replace the transmission oil filter ([Chapter 63](#)), drain the freewheel ([paragraph 12-21](#)), and service the transmission oil system with clean oil ([paragraph 12-16](#)).
3. Drain the tail rotor gearbox ([paragraph 12-27](#)) and service the tail rotor gearbox with clean oil ([paragraph 12-26](#)).
4. Operate helicopter for not less than 30 minutes nor longer than 5 hours.
5. Drain the engine, transmission, freewheeling unit, and tail rotor gearbox. Service the engine, transmission, and tail rotor gearbox with proper amount of approved oil. Refer to previous step 1, through step 3.
6. During first 100 hours of operation with new oil, check oil sight glasses closely for indications of foggy or hazy appearance. If these indications occur, repeat step 5 until eliminated.

12-12. ENGINE OIL SYSTEM

[Table 12-2](#) shows the recommended servicing intervals. The engine oil system is serviced by removing the oil filler cap installed on the engine oil tank. The oil tank is installed aft of the rear engine firewall on the roof of the helicopter and closed by the aft cowling ([Chapter 53](#)). Access to the oil tank is gained through an access door (15, [Figure 12-1](#)) on the top of the aft cowling (11).

12-13. ENGINE OIL SYSTEM — SERVICING

MATERIALS REQUIRED

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-010	Lubricating Oil
C-011	Lubricating Oil

Refer to [Table 12-2](#) and [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade) and Manufacturer's Data Section.

NOTE

If the helicopter engine has been shut down for more than 15 minutes, scavenge oil could have drained into the gearbox. Dry motor the engine for 30 seconds before you check the oil level. If you do not do this, a false high engine oil consumption rate indication or overfilling of the oil tank could result.

Make sure the helicopter is level when servicing. If not level, underfill or overfill of the engine oil system may result.

1. Check the quantity of oil in the engine oil tank within 15 minutes of the engine shutdown.

NOTE

If the oil pressure fluctuates and/or the oil foams, drain the engine oil system ([paragraph 12-14](#)) and replace the oil with new oil.

If you use oil stored in small containers, shake the container to mix the additives before you pour the oil in the engine oil tank.

If different oils are used in the engine and in the transmission, refer to [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade) and Manufacturer's Data section.

Different oils may be used in the engine and in the transmission.

2. Open the access door (15, [Figure 12-1](#)) on the aft cowling and remove the oil filler cap (1, [Figure 12-3](#)) from the engine oil tank.

3. Fill the engine oil tank to the correct range on the dipstick. The line marks on the dipstick indicate the approximate amount of oil missing from the tank's full capacity. The 206 series engine oil tank is full when the oil level is touching the inside edge of the cap adapter (or rim) bonded on the tank. Use only approved lubricating oil. Refer to [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade) and to the applicable Rolls Royce 250 series Operation and Maintenance Manual.

4. Install the filler cap (1, [Figure 12-3](#)) on the engine oil tank.

5. Close the access door (15, [Figure 12-1](#)) on the aft cowling (11).

12-14. ENGINE OIL SYSTEM — DRAINING

1. Position a container under the helicopter below the drain tube.

2. Open the access door on top (15, [Figure 12-1](#)) of aft cowling (11) and remove the oil filler cap (1, [Figure 12-3](#)).

3. Open the access door (9, [Figure 12-1](#)) on the left side of the aft cowling, open the manual drain valve (13, [Figure 12-3](#)), and let the oil drain from the engine oil tank.

4. Close the manual drain valve (13) and the aft cowling access door (9).

5. Install the filler cap (1, [Figure 12-3](#)) on the engine oil tank and close the access door (9, [Figure 12-1](#)) on the aft cowling.

6. Drain the engine gearbox in accordance with the applicable Rolls-Royce 250 Series Operation and Maintenance Manual.

12-15. TRANSMISSION OIL SYSTEM

Transmissions P/N 206-040-004-107 and subsequent have a non-vented filler cap and a separate breather line installed in the top case. A sight glass is located on the lower right side of the transmission case and indicates the oil level. The transmission oil filter assembly is mounted on the aft right side of the main case. The filter head contains a bypass valve, a differential pressure bypass indicator button, a temperature-warning switch and a temperature bulb. Transmission oil is ducted to the oil cooler which it shares in separate circuits with engine oil. The transmission has one electric chip detector in the main case and one electric chip detector in the top case, to monitor mast bearing. Lubrication to the freewheeling unit is provided by the transmission oil system.

The transmission oil system is serviced through the oil filler cap installed on the transmission ([paragraph 12-16](#)).

12-16. TRANSMISSION OIL SYSTEM — SERVICING

MATERIALS REQUIRED

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-010	Lubricating Oil
C-011	Lubricating Oil
C-030	Lubricating Oil

Refer to [Table 12-2](#) and [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade) and Manufacturer's Data Section.

NOTE

If the oil pressure fluctuates and oil foams, drain ([paragraph 12-18](#)) and replace the oil with new lubricating oil.

If you use oil stored in small containers, shake the container to mix the additives before you pour the oil in the transmission.

If different oils are used in the engine and in the transmission, refer to [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade) and Manufacturer's Data section. Different oils may be used in the engine and in the transmission.

Make sure the helicopter is level when servicing. If not level, underfill or overfill of the transmission oil system may result.

1. (Optional) Remove the transmission cowling ([Chapter 53](#)).
2. Make sure the oil cooler and drain lines manual shut-off drain valves (23, [Figure 12-1](#)) located on the baggage compartment wall are closed.
3. Remove the filler cap (4, [Figure 12-3](#)) on the transmission.



DO NOT FILL ABOVE THE LEVEL RANGE ON THE SIGHT GAUGE. OVERFILLING MAY CAUSE FOAMING AND LOSS OF OIL FROM TRANSMISSION.

4. Fill the transmission with lubricating oil (refer to [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade) and Manufacturer's Data section) to the correct level on the sight gauge (1).
5. Install the filler cap (4, [Figure 12-3](#)) on the transmission.
6. Install the transmission cowling ([Chapter 53](#)).

12-17. TRANSMISSION OIL SYSTEM — DRAINING

NOTE

Inspect drained oil for metal particles. If any particles are found, identify in accordance with [Chapter 63](#) and perform corrective action as required.

The transmission oil system can be drained in the following ways:

- with the special drain fitting and hose assembly (only the transmission is drained) ([paragraph 12-18](#))
- or
- without the special drain fitting and hose assembly (only the transmission is drained) ([paragraph 12-19](#))
- and
- by draining the residual oil from the oil cooler and the oil lines (only the oil cooler and the oil lines are drained) ([paragraph 12-20](#))

12-18. Transmission Oil System — Draining (With Special Drain Fitting and Hose Assembly)

NOTE

Refer to [Table 12-3](#) Oil Servicing Drain Hose Usage.

1. Remove the transmission cowling ([Chapter 53](#)).
2. Remove the oil filler cap (4, [Figure 12-3](#)) from the transmission.
3. Remove the transmission chip detector (6). Inspect for accumulated debris ([Chapter 63](#)).
4. Install the drain fitting and hose assembly in the lower chip detector port.
5. Drain the oil from the transmission oil system into a suitable clean container. Inspect oil for condition ([Chapter 63](#)).

6. Remove the drain fitting from the chip detector port.

7. Clean transmission chip detector (6) and replace packings.

8. Install the transmission chip detector (6).

9. Install the transmission oil filler cap (4) in the transmission.

10. Install the transmission cowling ([Chapter 53](#)).

11. Drain the oil cooler and drain lines ([paragraph 12-20](#)).

12-19. Transmission Oil System — Draining (Without Special Drain Fitting and Hose Assembly)

1. (Optional) Remove the transmission cowling ([Chapter 53](#)).

2. Remove the transmission oil filler cap (4, [Figure 12-3](#)) from the transmission.

3. Position a clean container in the engine pan.

4. Disconnect the freewheel to transmission return line at the forward firewall.

5. Drain the oil from the transmission. Inspect oil for condition ([Chapter 63](#)).

6. Connect the freewheel to transmission return line at the forward firewall.

7. Install the transmission oil filler cap (4) on the transmission.

8. Install the transmission cowling ([Chapter 53](#)).

9. Drain the oil cooler and oil lines ([paragraph 12-20](#)).

12-20. Transmission Oil Cooler and Oil Lines — Draining

1. Position a clean container under the helicopter drain tubes.

2. Open the two transmission oil cooler drain valves (23, [Figure 12-1](#)) located on the baggage compartment right wall.
3. Drain the oil from the transmission oil cooler and oil lines. Inspect oil for condition ([Chapter 63](#)).
4. Close the drain valves (4).

12-21. FREEWHEEL OIL SYSTEM

The freewheel oil system shares lubrication oil with the transmission oil system. The freewheel oil system is serviced through the transmission oil filler cap ([paragraph 12-26](#)).

12-22. FREEWHEEL OIL SYSTEM — DRAINING

NOTE

Inspect drained oil for metal particles. If any particles are found, identify in accordance with [Chapter 63](#) and perform corrective action as required.

NOTE

Draining the freewheel oil system will also drain part of the transmission oil system. The amount of oil drained may be more than the amount of oil contained only by the freewheel assembly.

The freewheel oil system can be drained in the two ways that follow:

- with a special drain fitting and hose assembly ([paragraph 12-23](#))
- without the special drain fitting and hose assembly ([paragraph 12-24](#)).

12-23. Freewheel Oil System — Draining (With Special Drain Fitting and Hose Assembly)

NOTE

Refer to [Table 12-3](#) Oil Servicing Drain Hose Usage.

1. Open the left-hand side engine cowling door ([Chapter 53](#)).

2. Remove the freewheel chip detector. Inspect for foreign particles ([Chapter 63](#)).
3. Install the drain hose assembly in the port of the freewheel chip detector.
4. Position a clean container under the drain tube.
5. Drain the oil from the freewheel oil system. Inspect oil for condition ([Chapter 63](#)).
6. Remove the drain hose assembly from the freewheel chip detector port.
7. Clean chip detector and replace packings.
8. Install the freewheel chip detector ([Chapter 63](#)).
9. Close the left-hand side engine cowling door ([Chapter 53](#)).

12-24. Freewheel Oil System — Draining (Without Special Drain Fitting and Hose Assembly)

1. Open the right engine cowling door ([Chapter 53](#)).
2. Position a container under the fuselage drain tube.
3. Remove the chip detector and the chip detector housing. Inspect chip detector for condition ([Chapter 63](#)).

NOTE

As an alternate method of draining the oil, a small diameter rod made of soft material may be used to hold the self-closing valve depressed inside the chip detector housing. This will allow the oil to drain out of the component.

4. Clean chip detector and housing.
5. Replace chip detector packings.
6. Drain the oil from the freewheel oil system.
7. Install the chip detector housing and the chip detector ([Chapter 63](#)). Lockwire housing to freewheel unit housing.

8. Close the right engine cowling door ([Chapter 53](#)).

12-25. TAIL ROTOR GEARBOX OIL SYSTEM

The tail rotor gearbox oil system is serviced through a vented oil filler cap (8, [Figure 12-3](#)) installed on the tail rotor gearbox. The tail rotor gearbox is covered by a fairing. An access door on the top of the fairing provides access to the oil filler cap.

12-26. TAIL ROTOR GEARBOX OIL SYSTEM — SERVICING

MATERIALS REQUIRED

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-010	Lubricating Oil
C-011	Lubricating Oil
C-030	Lubricating Oil

Refer to [Table 12-2](#) and [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade) and Manufacturer's Data Section.

NOTE

Make sure the helicopter is level when servicing. If not level, overfill or underfill may result.

1. Open the access door on the top of the tail rotor gearbox fairing ([Chapter 53](#)).
2. Remove the tail rotor gearbox oil filler cap (8, [Figure 12-3](#)).

NOTE

Use only approved oil. Refer to [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade) and Manufacturer's Data section.

NOTE

In the absence of a known oil level reference, it may be necessary to completely drain the oil out of the gearbox

in order to refill with the required quantity of 0.38 US pint (180 cc).

3. Fill the tail rotor gearbox with 0.38 US pint (180 cc) of approved lubricating oil. Verify actual presence of oil in sight gauge (9, [Figure 12-3](#)). Level in sight gauge should only be used as a reference. Overfilling may cause leakage of oil through the tail rotor pitch control mechanism.

4. Install the oil filler cap (8) on the tail rotor gearbox.

5. Close the access door on the top of the tail rotor gearbox fairing ([Chapter 53](#)).

12-27. TAIL ROTOR GEARBOX OIL SYSTEM — DRAINING

NOTE

Inspect drained oil for metal particles. If any particles are found, identify in accordance with [Chapter 63](#) and perform corrective action as required.

The tail rotor gearbox oil system can be drained in the two ways that follow:

- With a special drain fitting and hose assembly
- Without the special drain fitting and hose assembly

12-28. Tail Rotor Gearbox Oil System — Draining (With Special Drain Fitting and Hose Assembly)

NOTE

Refer to [Table 12-3](#) Oil Servicing Drain Hose Usage.

1. Remove the tail rotor gearbox upper fairing.
2. Remove the oil filler cap (8, [Figure 12-3](#)) on the tail rotor gearbox. This prevents a vacuum.
3. Remove the electrical connector from the chip detector (10).
4. Remove the chip detector (10). Inspect chip detector for foreign particles ([Chapter 63](#)).

5. Position a clean container under the drain tube.
6. Install the drain hose assembly in the chip detector self-closing housing fitting.

NOTE

The tail rotor gearbox must be completely drained of any residual fluid oil. Residual oil remaining in the gearbox may contribute to overfilling and subsequent leakage out the pitch change shaft.

7. Drain the oil from the tail rotor gearbox.
8. Remove the drain hose assembly from the chip detector self-closing valve housing.
9. Clean chip detector (10).
10. Install new packings on the chip detector (10).
11. Install the chip detector (10) in the chip detector housing in the tail rotor gearbox.
12. Install the electrical connector on the chip detector (10), if previously removed.
13. Install the oil filler cap (8) on the tail rotor gearbox.
14. Install the upper gearbox fairing.

12-29. Tail Rotor Gearbox — Draining (Without Special Drain Fitting and Hose Assembly)

1. Position a container under the tail rotor gearbox.
2. Remove the tail rotor gearbox fairings ([Chapter 53](#)).
3. Remove the oil filler cap (8, [Figure 12-3](#)) on the tail rotor gearbox. This prevents a vacuum.

4. Remove the electrical connector from the tail rotor chip detector (10).

NOTE

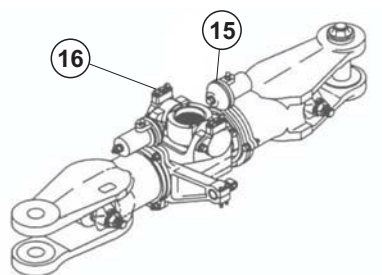
As an alternate method of draining the oil, a small diameter rod made of soft material may be used to hold the self-closing valve depressed inside the chip detector housing. This will allow the oil to drain out of the component.

5. Remove the tail rotor gearbox chip detector (10), the two packings, and the self-closing valve fitting from the tail rotor chip detector port. Discard the two packings.
6. Inspect chip detector for foreign material ([Chapter 63](#)).

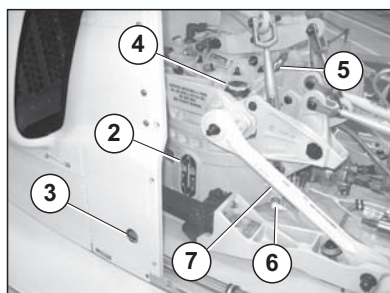
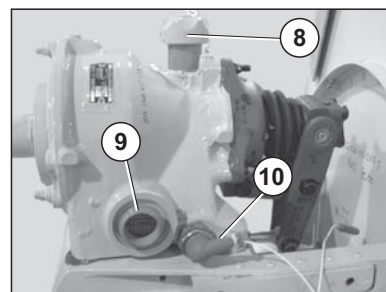
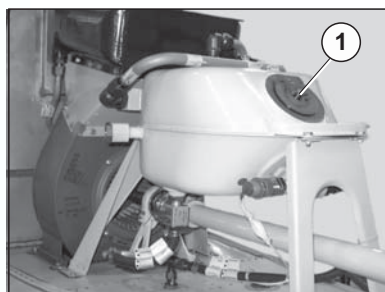
NOTE

The tail rotor gearbox must be completely drained of any residual fluid oil. Residual oil remaining in the gearbox may contribute to overfilling and subsequent leakage out the pitch change shaft.

7. Drain all the oil from the tail rotor gearbox.
8. Install the self-closing valve with new packings in the port of tail rotor gearbox. Lockwire the valve housing to the gearbox.
9. Install two new packings on the chip detector (10).
10. Install the chip detector (10).
11. Install the electrical connector on the tail rotor gearbox chip detector (10).
12. Install the oil filler cap (8) on the tail rotor gearbox.
13. Install tail rotor gearbox fairing ([Chapter 53](#)).



**OIL LUBRICATED M/R HUB
(OPTIONAL CONFIGURATION)**



1. Engine oil tank filler cap and dipstick
2. Transmission oil level sight gauge
3. Sight gauge peek hole
4. Transmission oil filler cap
5. Mast bearing chip detector
6. Transmission chip detector
7. Oil pump inlet screen
8. T/R gearbox oil filler cap
9. T/R gearbox oil level sight gauge
10. T/R gearbox chip detector
11. Transmission oil filter housing
12. Transmission oil pressure bypass indicator
13. Engine oil tank drain valve
14. Engine scavenge oil filter assembly (optional kit)
15. Grip reservoir (2 places)
16. Pillow block reservoir (2 places)

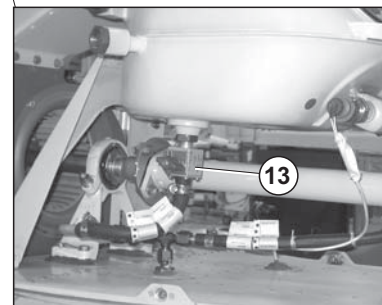
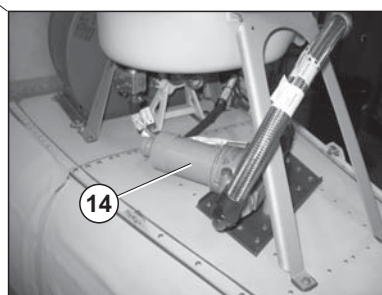
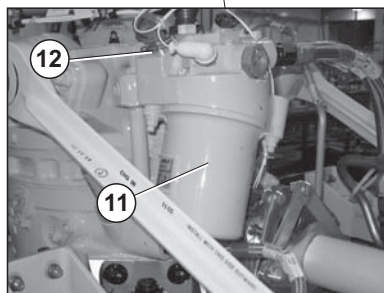


Figure 12-3. Oil Systems — Servicing

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Table 12-2. Oil Systems — Servicing

INDEX NO. Figure 12-3	INTERVALS 	COMPONENT	TYPE OF OIL 	CAPACITY	NOTES S
15-16	Preflight (level check only)	Oil reservoirs, main rotor head (if installed)	10W30 (C-013)	A/R	
4	200 hours or 12 months	Transmission oil (drain and replace)	Refer to BHT-206L3-FM-1 (BHT-206L4-FM-1 for 206L3+ IGW Upgrade) for the approved oil.	5.0 quarts (4.7 L)	 
11	Concurrent with transmission oil change	Transmission oil filter element (replacement)	N/A	N/A	 
7	Concurrent with transmission oil change	Transmission oil pump inlet screen (clean and inspect)	N/A	N/A	
8	200 hours or 12 months	Tail rotor gearbox oil (drain and replace)	Refer to BHT-206L3-FM-1 (BHT-206L4-FM-1 for 206L3+ IGW Upgrade) for the approved oil.	6.08 ounces or 0.38 pint (180 cc or 0.18 L)	 
14	Concurrent with engine oil change	Engine scavenge oil filter (if installed) (replace)	N/A	N/A	
1	Refer to applicable Rolls-Royce 250 Series Operation and Maintenance Manual	Engine oil (drain and replace)	Refer to applicable Rolls-Royce 250 Series Operation and Maintenance Manual	6.0 quarts (5.7 L)	

NOTES:

-  Do the servicing when the hour interval or the calendar time interval is completed, whichever comes first.
-  Refer to BHT-206L3-FM-1 (BHT-206L4-FM-1 for 206L3+ IGW Upgrade) for the approved oil.
-  Oil per DOD-PRF-85734 is recommended for its superior load bearing capabilities. Prefer this oil to the maximum extent permitted by temperature limitations. Refer to BHT-206L3-FM-1 (BHT-206L4-FM-1 for 206L3+ IGW Upgrade) and Manufacturer's Data section.
-  Due to the possibility of cross-contamination of engine and transmission oil, use oil from the same specification in the engine and the transmission within the recommendations of BHT-206L3-FM-1 (BHT-206L4-FM-1 for 206L3+ IGW Upgrade). If DOD-PRF-85734 is used or required in the transmission, it is recommended to use third generation turbine oil per MIL-PRF-23699 in the engine gearbox, such as AeroShell Turbine Oil 560, Royco Turbine Oil 560, or Mobil Jet Oil 254.

Table 12-2. Oil Systems — Servicing (Cont)

NOTES (CONT):

- △₅ Ensure all the fluid oil has been removed from the gearbox before replenishing. Servicing in excess of specified amount may result in oil leakage out of the pitch change mechanism.
- △₆ Cut open and spread out paper element of filter. Inspect for condition (Chapter 63).
- △₇ For removal, inspection and installation, refer to Chapter 63.
- △₈ Refer to paragraph 12-30.

Table 12-3. Oil Servicing Drain Hose Usage

ELECTRIC CHIP DETECTOR P/N	COMPONENT	DRAIN HOSE P/N △ ₁ △ ₂
B3188B	Transmission	DB3188L
B4713-1	Freewheeling Unit	H4713
B3225C	T/R Gearbox 206-040-402-ALL	DB3225L

NOTES:

- △₁ Hoses are 24 inches (60.96 cm) long.
- △₂ Available from BHT supply centers.

12-30. MAIN ROTOR HEAD RESERVOIRS — 206-011-100-009 AND -019 (OPTIONAL CONFIGURATION)

MATERIALS REQUIRED

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-013	Lubricating Oil

There are four reservoirs: two pillow block reservoirs (16, [Figure 12-3](#)) and two grip reservoirs (15). A sight glass is provided for each reservoir.

NOTE

Procedures for servicing reservoirs are similar, therefore, only one procedure is given.

1. Remove lockwire, plug, and packing. Discard packing.

NOTE

On initial servicing it will be necessary to work out all air before final service.

2. Fill reservoir to 1/2 full level with 10W30 lubricating oil ([C-013](#)).
3. Lubricate new packing and install on plug.
4. Install plug and secure with lockwire.

HYDRAULIC SYSTEM SERVICING

12-31. HYDRAULIC SYSTEM SERVICING

The hydraulic system is serviced through the fluid reservoir cap (3, [Figure 12-4](#)) on the hydraulic fluid reservoir (1). The hydraulic fluid reservoir, separate from the hydraulic pump, is installed on the roof of the helicopter and is covered by the forward fairing.

12-32. HYDRAULIC SYSTEM — SERVICING

MATERIALS REQUIRED

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-002	Hydraulic Fluid

NOTE

Make sure the helicopter is level when servicing. If not level, underfill or overfill of the hydraulic system may result.

1. Open the forward fairing ([Chapter 53](#)).
2. Remove the cover latch safety pin (6, [Figure 12-4](#)) from the cover latch (5) on hydraulic fluid reservoir (1).
3. Open the hydraulic fluid reservoir cap (3, [Figure 12-4](#)) on the hydraulic fluid reservoir (1).

NOTE

Use only approved hydraulic fluid. Refer to the [BHT-206L3-FM-1](#) ([BHT-206L4-FM-1](#) for 206L3+ IGW Upgrade).

4. Fill the hydraulic reservoir with hydraulic fluid to approximately 0.5 inch (12.7 mm) above bottom of strainer. Sight glass (2) must be full.

5. Close the hydraulic fluid reservoir cap (3) on the hydraulic reservoir. Install the cover latch safety pin (6) on the reservoir cover latch (5).

6. Close and latch the forward fairing ([Chapter 53](#)).

12-33. HYDRAULIC SYSTEM — DRAINING

1. Open the forward fairing ([Chapter 53](#)).
2. Prepare a container to receive drained fluid.
3. Remove the cover latch safety pin (6, [Figure 12-4](#)) from the cover latch on hydraulic reservoir.
4. Open the hydraulic fluid reservoir cap (3) of the hydraulic reservoir.
5. Drain hydraulic reservoir as follows:
 - a. Remove the drain plug (4) and the packing from the bottom of the hydraulic reservoir. Discard the packing.
 - b. Drain the hydraulic fluid from the hydraulic reservoir. Inspect fluid for condition ([Chapter 29](#)).
 - c. Install new packing on the drain plug (4) and install the drain plug in the drain port on the bottom of the hydraulic reservoir.
6. Service hydraulic fluid reservoir (1) as required ([paragraph 12-32](#)).
7. Close the hydraulic fluid reservoir cap (3) on the hydraulic reservoir.
8. Install the cover latch safety pin (6) on the filler cover latch (5).
9. Close and latch the forward fairing ([Chapter 53](#)).

12-34. ROTOR BRAKE MASTER CYLINDER — SERVICING

2. Remove master cylinder filler cap (10, [Figure 12-4](#)) located on right hand side of forward cabin roof.

MATERIALS REQUIRED

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-002	Hydraulic Fluid

1. Open forward fairing ([Chapter 53](#)).

NOTE

Master cylinder handle must be in stowed position while filling reservoir.

3. Fill master cylinder to bottom of filler neck with MIL-PRF-5606 hydraulic fluid ([C-002](#)).

4. Reinstall master cylinder filler cap (10).

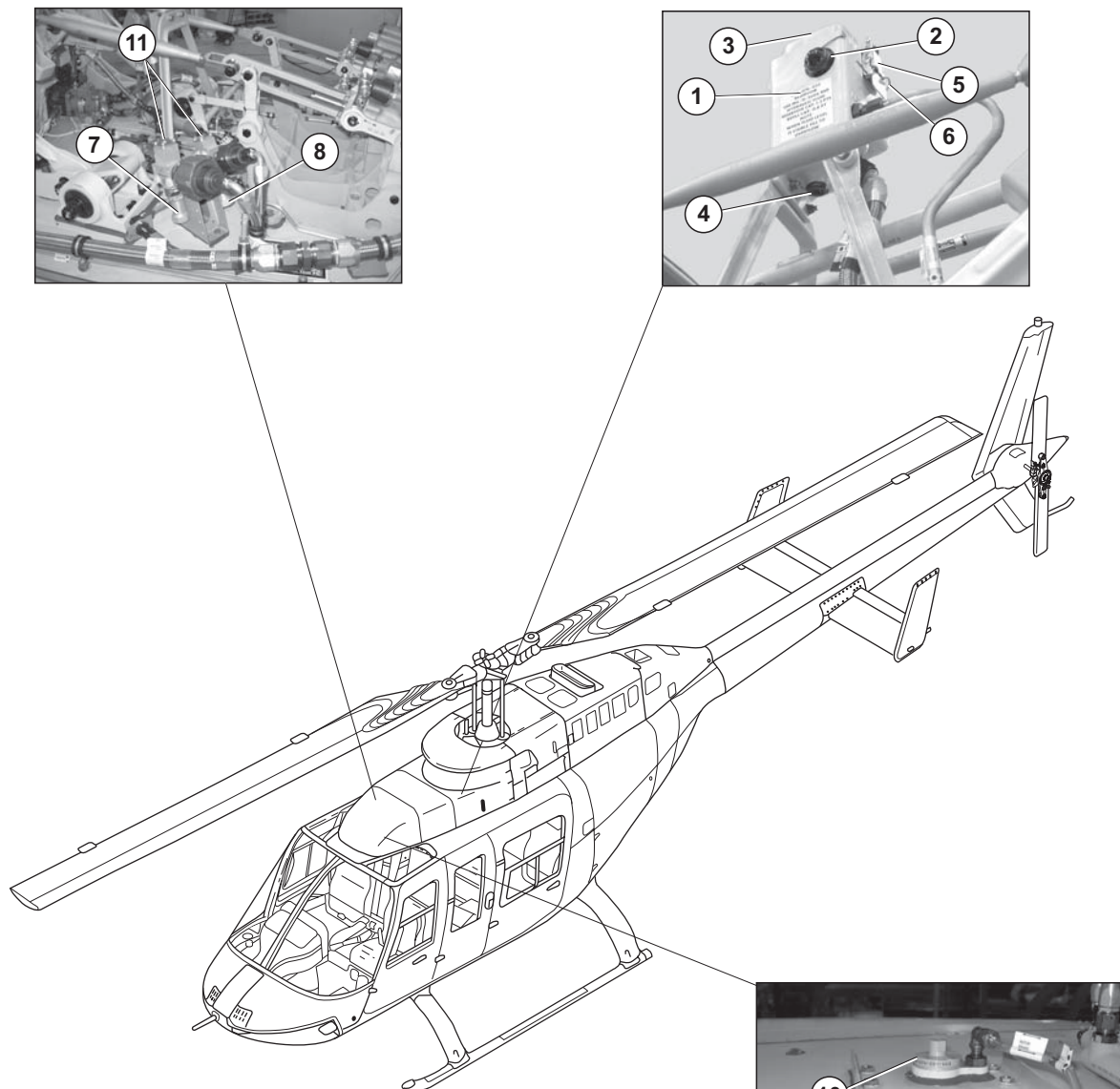
5. Close and latch forward fairing ([Chapter 53](#)).

Table 12-4. Hydraulic Systems — Servicing

INDEX NO. Figure 12-4	INTERVAL 	COMPONENT	SERVICING DATA	CAPACITY	NOTES
1	600 hours or 12 months	Hydraulic system (flight controls)	Fluid per MIL-PRF-5606 (C-002)	1.0 pint (0.47 L)	
7, 8	300 hours	Hydraulic filters	N/A	N/A	 
10	As required	Reservoir, rotor brake master cylinder	MIL-PRF-5606 (C-002)	5 US ounces (150 cc) total in system (approx.)	 

NOTES:

-  Do the servicing when the hour interval or the calendar time interval is completed, whichever comes first.
-  Drain hydraulic reservoir ([paragraph 12-33](#)) and service ([paragraph 12-32](#)).
-  Inspect red indicator button (11) after installation of filter elements (7 and 8), system bleeding, and during ground run-up. If element was not adequately cleaned, red indicator buttons (11) will pop up.
-  Filter element may be cleaned only three times. Refer to [Chapter 29](#).
-  Refer to Service Instruction [BHT-206-SI-2002](#) for 206L3 helicopters.
-  Refer to Service Instruction [BHT-206-SI-2044](#) for 206L3+ IGW Upgrade helicopters.



1. Hydraulic fluid reservoir
2. Hydraulic fluid level sight glass
3. Hydraulic fluid reservoir cap
4. Hydraulic fluid reservoir drain plug
5. Hydraulic reservoir cover latch
6. Cover latch safety pin
7. Hydraulic fluid return filter
8. Hydraulic fluid pressure filter
9. Hydraulic fluid level peek hole
10. Rotor brake kit master cylinder filler cap (optional)
11. Filter bypass indicators

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Figure 12-4. Hydraulic Systems — Servicing

GREASE LUBRICATION

12-35. GREASE LUBRICATION — SERVICING

Table 12-5 shows the recommended intervals for grease lubrication. These intervals are the maximum permitted under normal operation. Do not exceed these intervals. It may be necessary to decrease the interval of servicing when the operating conditions are more severe.

NOTE

Do not purge lubricate the oil cooler blower or tail rotor driveshaft hanger bearings. Lubricate in accordance with Table 12-5 and pertinent notes.

If the helicopter is stored longer than 45 days without operating, purge lubricate the bearings before returning it to service. Purge lubricate means that fresh grease is injected in the bearing to remove all of the old grease.

If flying in rain or if the helicopter is stored outside during a rain storm, lubricate the exposed components before flight.



DO NOT USE THE HIGH CAPACITY/HIGH VELOCITY GREASE GUNS ON THE COMPONENTS. THE USE OF HIGH CAPACITY/HIGH VELOCITY GREASE GUNS CAN RESULT IN DAMAGE.

If it becomes necessary to change the brand of grease, remove the old grease by purging until only new grease is present, except as otherwise specified.

NOTE

Prior to and following grease lubrication, visually examine grease fittings for presence of the spring loaded steel ball. If the steel ball is not visible, does not spring

back to closed position, the grease fitting indicates excessive leakage, or it is difficult to inject grease during lubrication, replace the grease fitting (BHT-ALL-SPM, Chapter 8). If the grease fitting is removed due to the spring loaded steel ball not being visible, insert a small steel probe into the back of the grease fitting to confirm the presence of the steel ball. If it is identified that the steel ball is not present in the grease fitting, further investigation is required to ensure that the steel ball has not migrated into the component and caused damage. Discard grease fittings that have been removed.

Figure 12-5 shows the grease lubrication areas.

12-36. GENERAL LUBRICATION PRINCIPLES

With reference to Table 12-5, observe the following general lubrication principles.

1. Protect grease lubricants from excessive temperature and humidity, and from contamination. Observe posted shelf life, if applicable.
2. Prior to using a supply of grease, whether in its original container or in dispensing equipment, ensure no oil separation has occurred.
3. If separation occurred without loss (leakage) of oil, thoroughly remix the oil component with the thickening agent to restore the original load bearing capabilities. Use only clean tools for mixing.
4. Discard any grease supply that has lost some of its oil component further to separation, whether in its original container or in grease dispensing equipment. Oil-depleted lubricants may be detrimental to bearings.
5. Comply with special lubrication requirements per Note 4 of Table 12-5.

12-37. HYDRAULIC PUMP DRIVESHAFT — GREASE

MATERIALS REQUIRED

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-304	Drycleaning Solvent
C-525	Grease 
C-561	Grease 

NOTE:

 See [Table 12-5](#) for specific instructions on servicing.

12-38. Helicopters S/N 51001 through 51612 (Post [TB 206L-03-211](#)) — Removal/Inspection

1. Remove the hydraulic pump and the rotor tachometer-generator. Refer to [Chapter 63](#) and [Chapter 29](#).
2. Remove the tachometer-generator to transmission oil pump adapter ([Chapter 63](#)).
3. Inspect the adapter. Refer to [Chapter 63](#) for damage limits.
4. Inspect the tachometer-generator and the female splines for damage. Refer to [Chapter 63](#) for damage limits.
5. Inspect the transmission oil pump shaft splines. For damage limits, refer to [BHT-206L-CR&O](#), [Chapter 63](#).
6. Remove hydraulic pump input shaft, lock-ring and spring. Refer to [Chapter 29](#) for removal, inspection and damage limits.

7. Replace parts that have exceeded the damage limits.

12-39. Helicopters S/N 51001 through 51612 (Post [TB 206L-03-211](#)) — Lubrication

NOTE

Do not use grease ([C-525](#)) or grease ([C-561](#)) on the splines of the adapter. The use of lubricant may result in the deterioration of the adapter.

1. Apply grease ([C-525](#)) or grease ([C-561](#)) to the outboard female splines of the tachometer-generator shaft and to both spline sets of the hydraulic pump input shaft.

2. Reinstall the input shaft, lock-ring and spring in the hydraulic pump. Refer to [Chapter 29](#).

12-40. Helicopters S/N 51001 through 51612 (Post [TB 206L-03-211](#)) — Installation

1. Reinstall the tachometer-generator and the hydraulic pump. Refer to [Chapter 63](#) and [Chapter 29](#).

12-41. Helicopters S/N 51001 through 51612 (Pre [TB 206L-03-211](#)) — Removal/Inspection

1. Remove the hydraulic pump and the rotor tachometer-generator. Refer to [Chapter 63](#) and [Chapter 29](#).
2. Inspect the tachometer-generator and the female splines for damage.
3. Inspect the transmission oil pump shaft external splines. For damage limits refer to [BHT-206L-CR&O](#), [Chapter 63](#).
4. Inspect hydraulic pump input shaft external splines. Refer to [Chapter 29](#) for damage limits.
5. Replace parts that have exceeded the damage limits.

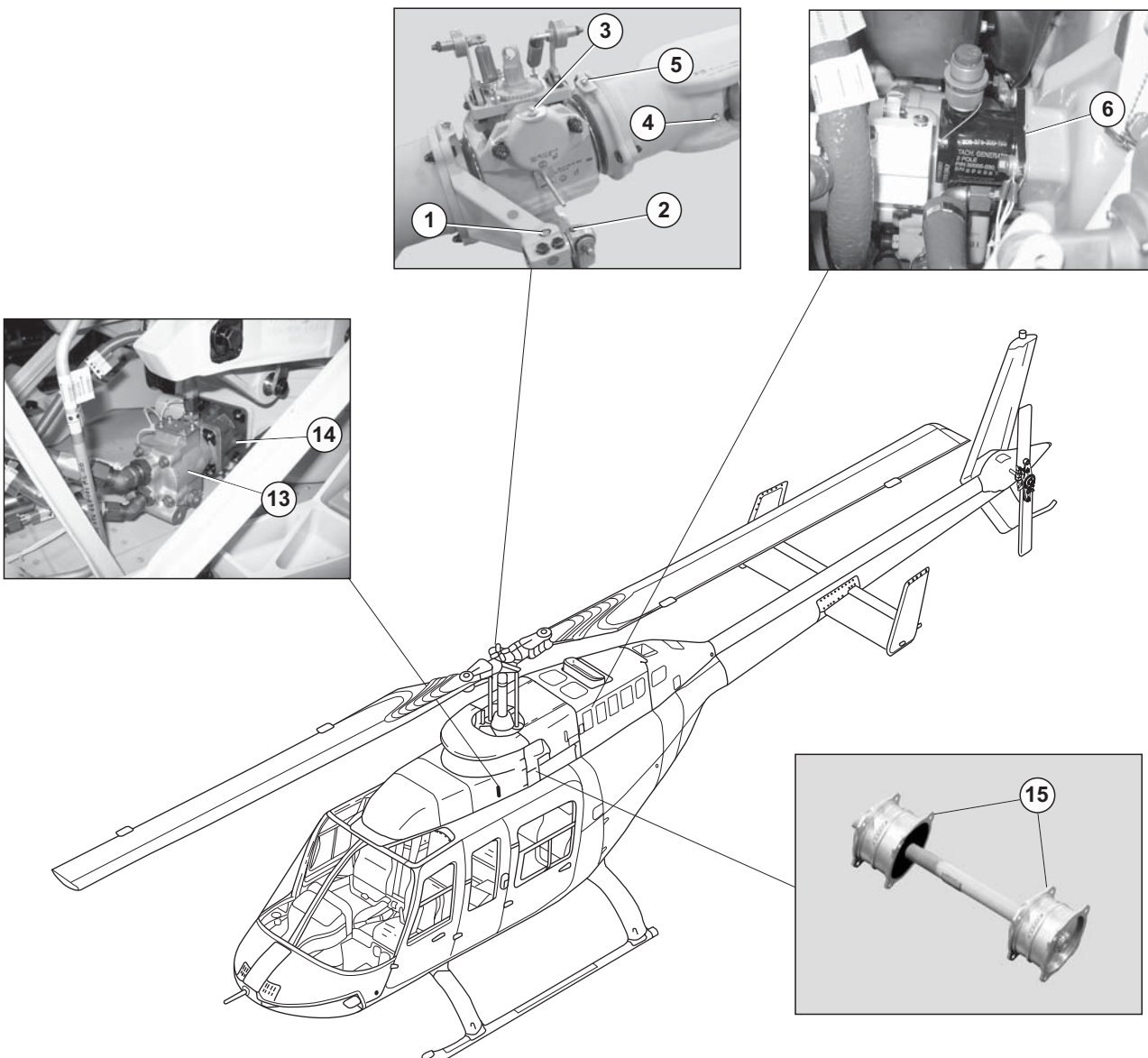
12-42. Helicopters S/N 51001 through 51612 (Pre TB 206L-03-211) — Lubrication

1. Apply grease (C-525) or grease (C-561) to the outboard female splines of the tachometer-generator shaft and to the exposed splines of the hydraulic pump input shaft.

2. Apply grease (C-525) or grease (C-561) to the inboard female splines of the tachometer-generator shaft and to the exposed splines of the transmission oil pump shaft.

12-43. Helicopters S/N 51001 through 51612 (Pre TB 206L-03-211) — Installation

1. Reinstall the tachometer-generator and the hydraulic pump. Refer to Chapter 63 and Chapter 29.



1. M/R grip pitch horn trunnion (2 places)
2. M/R grip pitch horn trunnion bearing (2 places)
3. M/R hub pillow block (2 places)
4. M/R grip (2 places)
5. M/R grip grease relief valve (2 places)
6. N1 and N2 tach generator drives (N2 shown, N1 opposite side)
7. Swash plate grease fitting
8. T/R trunnion bearing housings (2 places)

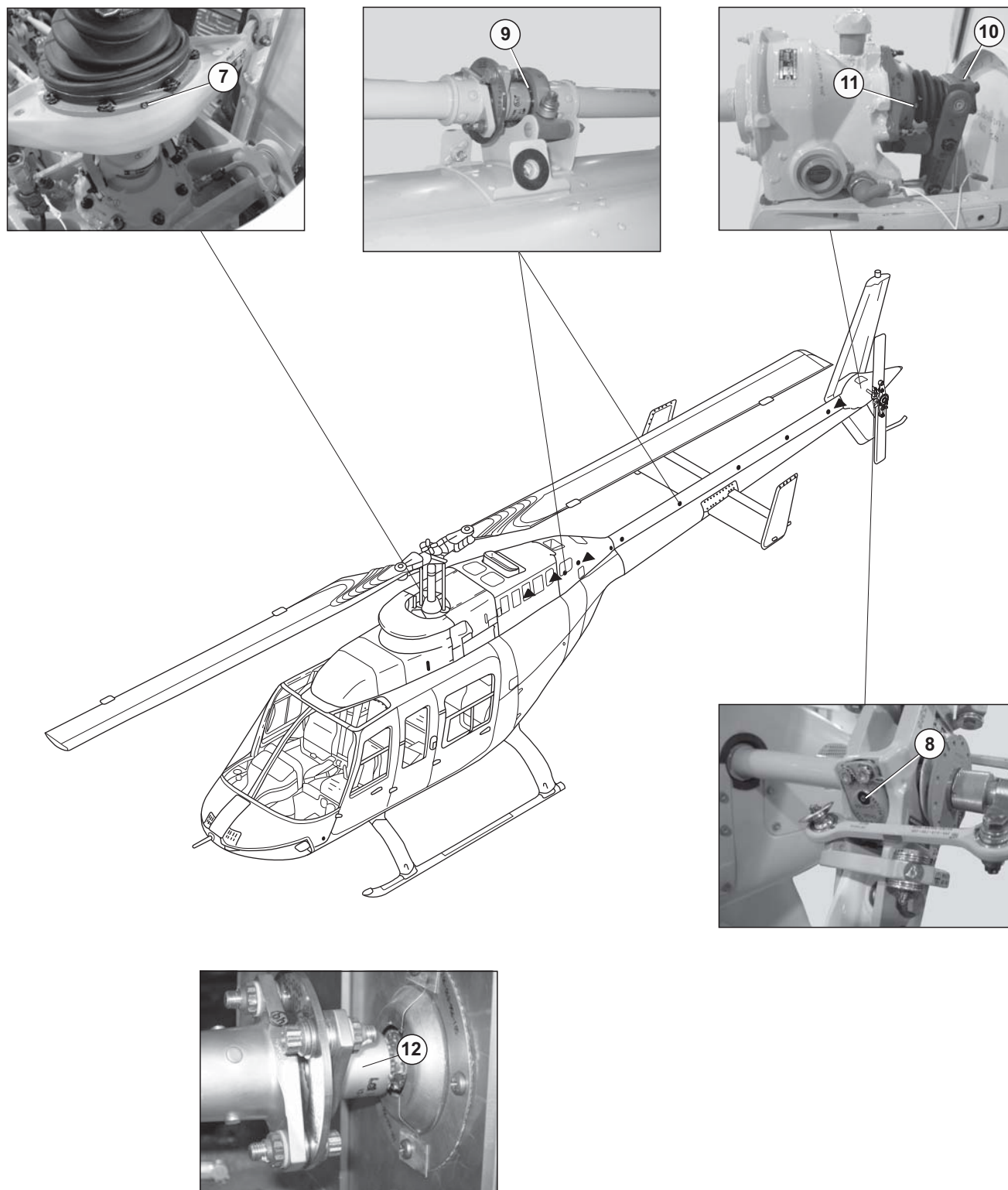
9. T/R drive shaft hanger bearing (7 places) 
10. T/R pitch change trunnion bearing
11. T/R pitch change shaft bearing
12. T/R driveshaft splined adapters (4 places)
13. Hydraulic pump drive
14. N/R tach generator drive
15. Main drive shaft coupling (2 places)

NOTE

-  Includes two oil cooler blower shaft hanger bearings.

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Figure 12-5. Grease Lubrication — Servicing (Sheet 1 of 2)



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Figure 12-5. Grease Lubrication — Servicing (Sheet 2 of 2)

Table 12-5. Grease Lubrication — Servicing

INDEX NO. FIGURE 12-5	LUBRICATION INTERVALS 	COMPONENT	TYPE OF GREASE	COMPLY WITH NOTE
1, 2	50 hours or 12 months	Pitch horn trunnion bearing, main rotor (four places)	MIL-PRF-81322 (C-001) (hand gun)	    
3	50 hours or 12 months	Pillow block/trunnion bearing, main rotor (two places)	MIL-PRF-81322 (C-001) (hand gun)	     
4	50 hours or 12 months	Grip bearings, main rotor (two places)	MIL-PRF-81322 (C-001) (hand gun)	      
7	50 hours or 12 months	Duplex bearing, swashplate	MIL-PRF-81322 (C-001) (hand gun)	    
8	50 hours or 12 months	Trunnion bearing, tail rotor (two places)	MIL-PRF-81322 (C-001) (hand gun)	   
10, 11	100 hours or 12 months	Pitch change mechanism, tail rotor (two places)	MIL-PRF-81322 (C-001) (hand gun)	   
9	300 hours or 12 months	Hanger bearings, tail rotor driveshaft (seven places)	Mobil 28 only per MIL-PRF-81322 (C-001) (18 ga. hypodermic needle)	  
12	300 hours or 12 months	Sliding adapter splines, tail rotor driveshaft (four places)	MIL-G-81827 (C-525) (brush application)	   
6	300 hours or 12 months	Drive, N ₁ and N ₂ tach-generator	MIL-G-81827 (C-525) (hand applied)	   
14	300 hours or 12 months	Drive, N _R tach-generator (output splines for hydraulic pump)	MIL-G-81827 (C-525) (hand applied)	   
14	600 hours or 12 months	Drive, N _R tach-generator (internal input drive splines and driveshaft from oil pump)	Grease (C-561) (hand applied)	   
13	300 hours or 12 months	Drive, hydraulic pump	MIL-G-81827 (C-525) (hand applied)	   
15	600 hours or 12 months	Couplings, main driveshaft 206-040-015 (two places)	204-040-755-005 (hand packed)	
	Special	Components exposed to severe environment	As specified above	

Table 12-5. Grease Lubrication — Servicing (Cont)**NOTES (CONT):**

- 1 Do the servicing when the hour interval or the calendar time interval is completed, whichever comes first.
- 2 Purge lubricate.
- 3 Service whenever a new component is installed.
- 4 Special lubrication requirements:
 - a. After each day of operation in rain showers or after washing main rotor hub, purge lubricate all exposed control bearings to remove trapped moisture and ensure a lube film is applied to susceptible surface.
 - b. Before each flight, when helicopter has been exposed to high ambient temperatures, purge lubricate main rotor grips and pillow blocks/trunnion to ensure that any grease that may have separated will be replaced by fresh grease. This practice will prevent premature brinelling of main rotor yoke bearing journals.
 - c. If helicopter is parked outside in a heavy dew environment, purge lubricate all exposed control bearings every 7 days. This practice will reduce risks of moisture being trapped in voids.
 - d. If helicopter has been, or will be parked or stored for a period exceeding 45 days without operation or service, purge lubricate all bearings. Same applies to spare components on shelf.
 - e. Do not use high pressure water, steam, or solvent wash when cleaning rotating control bearings. High pressure will force water, solvent and sometimes foreign particles into the bearing cavity. After each wash, all bearings exposed to the wash should be lubricated.
- 5 Service more frequently than recommended if conditions warrant.
- 6 Intermixing brands of grease in the same MIL spec is not permitted. When changing from one brand of grease to another, within the same MIL spec, purge until old grease is depleted.
- 7 Inject grease slowly. Excessively rapid injection could cause pressurization of grease cavities and may result in: forcing grease past grip excluder seal, popping or pushing out seals, damaging seals, or other undesirable effects.
- 8 Remove the grease relief valve (5, [Figure 12-5](#)) from the top of the pitch horn before lubricating main rotor grip bearings (4).
- 9 To prevent pumping grease into tail rotor gearbox, remove lockwire and boot around pitch change shaft trunnion before purging bearings with grease. Then, wipe all grease from inside of the boot; do not use solvent on boot. Reinstall boot using lockwire.
- 10 Lubricate tail rotor driveshaft bearings (9) as follows:

CAUTION

THE USE OF RIGID NEEDLE-TIPPED GREASE GUNS TO LUBRICATE TAIL ROTOR DRIVESHAFT BEARINGS (9) MAY CAUSE DEFORMATION OF THE BEARING SEAL RING AND POSSIBLE CONTACT WITH THE BALL CAGE. PREMATURE WEAR AND/OR OVERHEATING MAY RESULT.

Table 12-5. Grease Lubrication — Servicing (Cont)

NOTES (CONT):

- a. Wipe the exterior side surfaces of bearings to reveal the four .080 inch (2 mm) diameter holes. Use a clean dry cloth with caution to avoid forcing dirt and expelled lubricant under the seal and into bearing.
- b. Using a 6 cc medical syringe (or equivalent) with a 18-gauge hypodermic needle, inject 0.5 cc of grease into each bearing (one side only). If needle does not fully enter seal and bearing, remove needle and rotate bearing slightly to clear ball cage. Do not force needle in. Reinsert needle again and inject grease.
- c. Needle shall be purged prior to each use. External surfaces of needle shall be lubricated to prevent damaging the bearing seal. Wipe excess grease that is expelled from bearing.
- d. The maximum recommended bearing operating temperature is 185°F (85°C). In the first 15–20 hours after lubrication, it is normal for a bearing to run 90°F (32°C) hotter than the maximum recommended operating temperature.
- e. Use solvent as required to clean all driveshaft parts except bearings. Avoid contact of solvent with seal material.
- f. CAUTION shall be exercised to prevent Corrosion Preventative Compound from contacting the bearing grease seals.

 Lubricate swashplate duplex bearing as follows:

- a. Use only the intended lubrication fitting (7).
- b. Purge lubricate until only new grease is expelled.
- c. Rotate swashplate outer ring 90° and purge lubricate again as in step b. Repeat every 90° until full turn is made.
- d. To prevent contamination of Teflon lined spherical bearings, remove all purged grease from duplex bearing. Wipe grease from all external surfaces. Lift lower lip of swashplate boot and wipe off all visible grease from upper surfaces of swashplate and collective sleeve.
- e. If grease has transferred past the upper seal and onto the uniball, the upper seal may be damaged or may have been installed backward. Investigate and correct as required. Refer to [Chapter 67](#) of this manual.

 Every time main rotor hub is disassembled, hub shall be lubricated during reassembly, after first run-up and after first flight.

 Remove, clean, inspect and install splined adapters (12) in accordance with [Chapter 65](#). Use an acid brush or equivalent brush to apply a thick layer of grease to male splines of shaft and to female splines of adapters. After reassembling adapters to shaft, remove excess grease.

 Plastilube No. 3 ([C-012](#)) may be used as an alternate to grease MIL-G-81827 ([C-525](#)).

 Grease ([C-561](#)) may be used as an alternate to grease MIL-G-81827 ([C-525](#)).

 If grease type is changed, old grease must be wiped away from splines completely to avoid incompatibility resulting in poor performance.

 Plastilube No. 3 ([C-012](#)) and grease MIL-G-81827 ([C-525](#)) may be used as alternates.

Table 12-5. Grease Lubrication — Servicing (Cont)**NOTES (CONT):**

- 18 Remove driveshaft and clean, inspect, and lubricate internal input drive splines and driveshaft splines ([Chapter 63](#)).
- 19 Expiration date of the 204-040-755 grease used in this assembly can be determined by taking the manufacturing date marked on the grease tube and adding 4 years to it. If grease is used from two or more tubes that have different manufacturing dates, the expiration shall be calculated as above using the earliest manufacturing date. The expiration date shall be recorded prior to greasing. After completion of shaft assembly and any required qualification testing, a suitable tag shall be affixed to the assembly in an easily visible location with the following statement:

"Expiration date of grease 204-040-755 is XX-XX-XX (day/month/year). If this assembly is not put into service prior to the expiration date of the grease, this assembly must be re-greased prior to installation on a helicopter."

MISCELLANEOUS SERVICING

12-44. BATTERY — SERVICING

Access to the battery is through the battery door in the nose compartment. Service the battery in accordance with [Chapter 96](#), the Electrical Standard Practice Manual (BHT-ELEC-SPM) and the instructions from the battery manufacturer.

12-45. FIRE EXTINGUISHER

The portable fire extinguisher (10, [Figure 12-6](#)) is mounted on the front of the center post, between the seats of the pilot and the copilot.

12-46. FIRE EXTINGUISHER — SERVICING



IF THE FIRE EXTINGUISHER HAS BEEN TRIGGERED, DO NOT USE IT. REPLACE THE FIRE EXTINGUISHER WITH A FULLY CHARGED SERVICEABLE UNIT.

1. Make sure the fire extinguisher is not damaged, the nozzle is not obstructed, the pin is secure, and the seal is not damaged.
2. If the extinguisher has a pressure gauge, make sure the indicator needle is in the green arc. If the needle is not in the green arc, recharge or replace the fire extinguisher.
3. If the extinguisher has no pressure gauge, weigh the fire extinguisher. If the weight of the fire extinguisher is less than the acceptable minimum weight indicated on the fire extinguisher data tag, replace the fire extinguisher.

12-47. GROUND HANDLING WHEELS — SERVICING

The ground handling wheels are installed on the fittings on the landing gear skid tubes. Servicing the ground handling wheels includes greasing the axle supports (6, [Figure 12-6](#)), the wheel bearings (5) and inspecting the wheels (4).

12-48. GROUND HANDLING WHEELS HYDRAULIC PUMP CYLINDER — SERVICING

The hydraulic pump cylinder (7, [Figure 12-6](#)) is serviced with hydraulic oil from a filler screw at the center of the hydraulic pump cylinder.

12-49. Ground Handling Wheels Hydraulic Pump Cylinder — Servicing (Hydraulic Fluid)

MATERIALS REQUIRED

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-002	Hydraulic Fluid

1. Remove the screw and fill the hydraulic pump cylinder (7, [Figure 12-6](#)) with hydraulic fluid (C-002) to 3/8 inch (9.52 mm) below the filler hole.
2. Install the filler screw.
3. If air is present in the hydraulic pump cylinder (7), do the steps that follow:
 - a. Set the pump valve to the open position.
 - b. Hold the pump with the valve down.
 - c. Operate the handle through approximately 10 cycles to bleed the air from the hydraulic pump cylinder.
 - d. Close the valve.
 - e. Remove the filler screw and check the oil level. Service as required.
 - f. Install the filler screw.

12-50. GROUND HANDLING WHEEL AXLE SUPPORTS — SERVICING (GREASE)

1. Grease the wheel axle supports (6) and bearings (5) in accordance with [Table 12-5](#).

12-51. Ground Handling Wheel Tires — Servicing

1. Examine the condition of the side walls and the treads of the tires (4).
2. Examine the tires for the correct inflation pressure. Refer to the tire/tire manufacturers for correct pressure.

12-52. OIL COOLER BLOWER IMPELLER — CLEANING**MATERIALS REQUIRED**

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-304	Drycleaning Solvent

1. To clean the oil cooler blower impeller (1, [Figure 12-6](#)), do the steps that follow:

NOTE

Do not allow water intrusion into the oil cooler blower hanger bearings.

- a. Put protective covers on the forward and aft oil cooler hanger bearing assemblies.

- b. Put a container at the oil tank drain to collect the solvent and dirt.

NOTE

During the cleaning, do not permit the impeller to turn freely if the oil cooler blower shaft is disconnected from the forward and the aft short shaft.

- c. Use an atomizer and spray the drycleaning solvent ([C-304](#)) at the impeller, between the vanes while you slowly turn the tail rotor driveshaft by hand. Dirt is normally concentrated on the aft face of the drive plate and at the junction of the vanes and the aft face of the forward ring.

- d. Once you complete this phase of the cleaning, use the atomizer and spray a mixture of hot water and aircraft cleaning soap at the impeller, to rinse away solvent.

- e. To complete the cleaning, thoroughly rinse the impeller with water and dry with compressed air.

- f. Remove the forward and aft hanger bearing protective covers after the cleaning is complete.

- g. Purge grease in the forward and aft oil cooler blower bearings.

12-53. WINDSHIELD AND WINDOWS

The windshields, lower windows (chin bubbles) and cabin door windows are made from blue tinted acrylic plastic. The overhead crew skylights are made from blue tinted polycarbonate plastic.

12-54. WINDSHIELD AND WINDOWS — CLEANING**MATERIALS REQUIRED**

Refer to [BHT-ALL-SPM](#) for specifications.

NUMBER	NOMENCLATURE
C-305	Aliphatic Naphtha
C-355	Detergent
C-330	Cleaner, Antistatic

CAUTION

DO NOT USE COMPOUNDS CONTAINING ABRASIVES OR CHLORINATED HYDROCARBONS. AVOID EXCESSIVE SCRUBBING OR POLISHING OF PLASTIC TRANSPARENCIES. HEAT BUILDUP MAY BE DETRIMENTAL.

REMOVE RINGS AND WATCHES FROM HANDS AND WRISTS BEFORE CLEANING TRANSPARENCIES.

TYPE II ALIPHATIC NAPHTHA ([C-305](#)) MAY BE USED TO CLEAN TRANSPARENCIES. DO NOT USE ALIPHATIC NAPHTHA TYPE I FOR CLEANING TRANSPARENCIES.

CRAZING WILL OCCUR. DO NOT USE AROMATIC NAPHTHA.

NOTE

Use of a soft horsehair or hog's hair brush is recommended over a stiffer synthetic bristle brush.

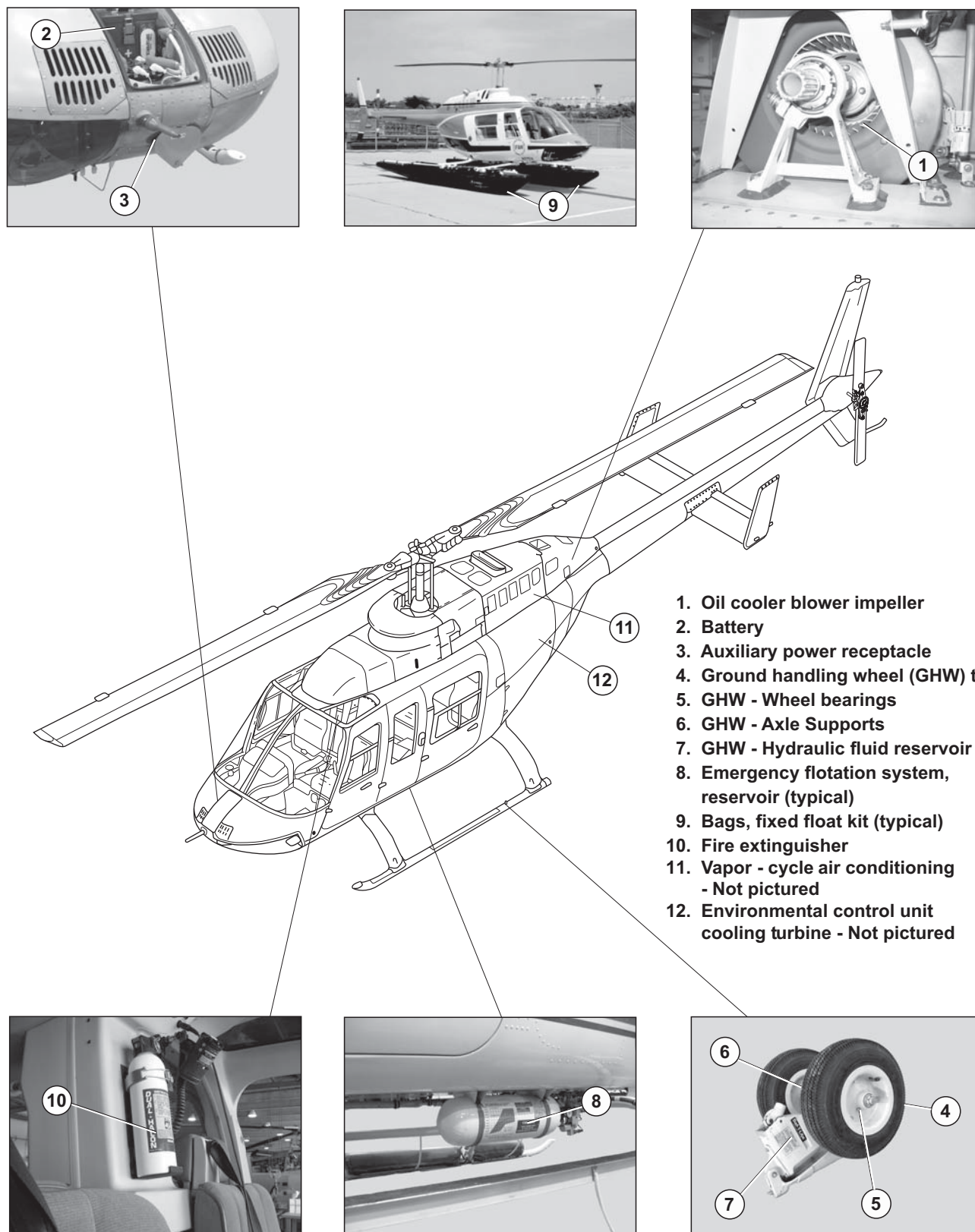
1. Clean windshields and windows with large quantities of a solution of warm clean water and mild detergent (C-355) (dishwashing soap or equivalent). Allow caked dust residues and dried smashed insects to soak the soapy water for 1 minute before attempting to remove. Then using a soft horsehair brush soaked

in soapy water, gently wash the dirt away from the transparencies. Avoid using sponges, coarse cloth or hard bristle brushes.

2. Rinse thoroughly with clean water.

3. Allow surfaces to air dry.

4. Minor scratches may be reduced or removed by using plastic cleaner (C-330) or equivalent. Apply cleaner with a clean soft cloth in a circular motion and with gentle pressure. Polish with another clean soft cotton cloth with gentle to medium pressure.



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Figure 12-6. Miscellaneous Servicing

Table 12-6. Miscellaneous Servicing

INDEX NO. Figure 12-6	REFERENCE	INTERVAL 	COMPONENT	SERVICING DATA	NOTES
1	MM paragraph 12-52	300 hours or 12 months	Oil Cooler Blower Impeller	Clean impeller vanes per paragraph 12-52.	
2	BHT-ELEC-SPM	300 hours or 12 months	Battery	Refer to BHT-ELEC-SPM or Manufactures Instructions	
10	MM paragraph 12-46	Monthly	Fire extinguisher	Comply with weight or pressure limitations on extinguisher data tag.	
9	S.I. 2014	Daily check	Fixed float bags	Inflate with hand pump or dry compressed air to a maximum of 1.5 PSI (10.35 kPa) at sea level.	
8		As required/ Preflight	Reservoir, emergency float	Nitrogen (C-315)	
11	Applic. STC	As required	Air conditioning refrigerant	Replenish refrigerant charge as directed by STC manufacturer's recommendation	
12	S.I. 2010	300 hours	Cooling turbine, Environmental Control Unit	Turbine oil, 50 cc (C-010, C-011)	
7	MM paragraph 12-49	12 months	Ground handling wheels pump (Bell)	Fluid per MIL-PRF-5606 (C-002) 11.2 ounces or 0.7 pint (331 cc)	
7	MM paragraph 12-49	12 months	Ground handling wheels pump (Brackett)	Fluid per MIL-PRF-5606	
5	MM paragraph 12-50	12 months	Ground handling wheel bearings	MIL-G-81322 (hand gun)	
6	MM paragraph 12-50	6 months	Pivot (axle) support, ground handling wheels (2 places)	MIL-PRF-81322 (C-001) (hand gun)	
4	MM paragraph 12-51	As required	Tire, ground handling wheel	Compressed air, inflate to manufacturer's recommended pressure indicated on sidewall	
	MM paragraph 12-54	As required	Windshield and windows	Detergent C-355 or Aliphatic Naphtha Type II (C-305)	
3		As required	External Power Receptacle	Use power unit capable of 28.5 VDC and 350-450 amps output	

Table 12-6. Miscellaneous Servicing (Cont)**NOTES:**

- △₁ Compensate as required for altitude changes and prolonged exposure to sun or heat. Refer to Service Instruction [BHT-206-SI-2014](#).
- △₂ Avoid directing high-pressure spray onto bearings and seals.
- △₃ Refer to applicable Emergency Flotation Service Instruction document.
- △₄ Replace extinguisher if weight or pressure is below specified minimum.
- △₅ Investigate leaks as soon as possible.
- △₆ Refer to Dee Howard Co. report number 4-324 for lubrication instructions. Excess oil must be drained after absorption. Technical support for ECU turbine per [BHT-SI-206-2010](#) is currently provided by Honeywell Corp. (602) 893-5994.
- △₇ Do the servicing when the hour interval or the calendar time interval is completed, whichever comes first.