

Bell MODEL **206B3**

ROTORCRAFT FLIGHT MANUAL



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NOTICE PAGE

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BAT switch — On for battery start; On for GPU start; OFF for battery cart start. Observe TRANS OIL PRESS, ENG OUT, and ROTOR LOW RPM caution/warning light segments illuminated and applicable audio signal(s) operative.

WRN HORN MUTE button (if installed) — Press to mute.

NOTE

Engine out audio may be deactivated.

CAUTION LT TEST button — Press to test illumination of each segment utilized.

Turbine outlet temperature (TOT LT TEST) button (if installed) — Press, check TOT light illuminates.

ROTOR LOW RPM system — Check as follows: (if WRN HORN MUTE button is installed, the following does not apply.)

Collective pitch — Increase; check ROTOR LOW RPM light and audio On.

Collective pitch — Full down; check ROTOR LOW RPM light On and audio Off.

Flight controls — Neutral/flat pitch position, apply friction (if needed).

FUEL BOOST AFT and FWD circuit breakers — In; check fuel pressure within limits and FUEL PUMP caution light off.

ANTI COLL LT switch — On (if required).

ENGINE STARTING

Collective pitch — Full down.

Throttle — Full closed.

Rotors — Clear.

Starter — Engage (observe Engine Starter Limitations, Section 1).

Engine oil pressure — Indication of increase.

Throttle — Open to flight idle at 15% gas producer RPM with Turbine Outlet Temperature (TOT) at or below 150°C.



A START SHOULD NOT BE ATTEMPTED AT N1 SPEEDS BELOW 12%.

Use the following guide for desired N1 starting speed versus outside air temperature:

N1 RPM	TEMP °C (°F)
15%	Above 7° (45°)
13%	-18 to +7° (0 to 45°)
12%	Below -18° (0°)



DURING THE FIRST FEW SECONDS OF THE START THE TOT WILL ACCELERATE AT A FAIRLY RAPID RATE AND SHALL BE CLOSELY MONITORED.

Turbine outlet temperature (TOT) — Monitor to avoid hot start. Abort start if either the 927°C maximum or the 810 to 927°C MAXIMUM 10 SECONDS transient limitation is about to be exceeded by depressing the engine IDLE REL button, CLOSE THROTTLE and continue to motor the starter until TOT decreases to less than 810°C. Some helicopters are equipped with a red warning light on the TOT gage. If limits are exceeded or light illuminates, consult Allison Engine Operation and Maintenance Manual.

CAUTION

IF THE MAIN ROTOR IS NOT ROTATING BY 25% GAS PRODUCER SPEED (N1), ABORT THE START.

Starter — Release at 58% gas producer RPM (N1).

Engine and transmission oil — Check pressures increasing.

CAUTION

IF THE ENGINE HAS BEEN SHUT DOWN FOR MORE THAN 15 MINUTES, STABILIZE AT IDLE SPEED FOR 1 MINUTE BEFORE INCREASING POWER.

NOTE

During cold temperature operations, stabilize engine at idle speed of 60 to 62% gas producer RPM (N1) until oil temperature reaches a minimum of 0°C.

Gas producer RPM (N1) — Check for 60 to 62%.

External power — Disconnect; BAT On.

Throttle — Open to 70% gas producer RPM.

GEN switch — On.

Throttle — Idle.

WARNING

AVOID CONTINUOUS OPERATION WHEN BETWEEN 75 AND 88% N2 AND ENGINE TORQUE GREATER THAN 33%.

Radio equipment — On.

ELT (if installed) — Check for inadvertent transmission.

POS LT switch — On.

PRELIMINARY HYDRAULICS CHECK

NOTE

Uncommanded control movement or motoring with hydraulic system off may indicate hydraulic system malfunction.

HYDRAULIC SYSTEM or CONTROL BOOST switch — OFF, then ON.

ENGINE RUN-UP CHECK

Smoothly and firmly advance throttle at a continuous rate to full open position, maintaining collective pitch down and cyclic control in neutral.

Power turbine (N2) governor — Check range 97 to 100% RPM.

NOTE

If temperature is 4.4°C (40°F) or below and visible moisture is present, the engine anti-icing system shall be ON.

ENGINE DEICING or ENGINE ANTI-ICING switch — ON and observe TOT rise (if conditions warrant).

PITOT HEAT switch (if installed) — ON in visible moisture with temperature below 4.4°C (40°F).

HYDRAULICS CHECK

NOTE

The Hydraulics Systems Check is to determine proper operation of hydraulic actuators for each flight control system. If abnormal forces, unequal forces, control binding, or

motoring are encountered, maintenance action is required.

Collective — Full down, friction removed.

Rotor RPM (N_R) — Set to 100%.

HYDRAULIC SYSTEM or CONTROL BOOST switch — OFF.

Cyclic — Centered, friction removed.

Check normal operation of cyclic control by moving cyclic in an “X” pattern right forward to left aft, then left forward to right aft (approximately 1 inch). Center cyclic.

Collective — Check for normal operations by increasing collective control slightly (1 to 2 inches). Repeat two to three times as required. Return to full down position.

Pedals (if hydraulically boosted) — Displace slightly left and right. Note an increase in force required to move pedal in each direction.

HYDRAULIC SYSTEM or CONTROL BOOST switch — ON.

Cyclic and collective friction — Set as desired.

BEFORE TAKEOFF

Electrical equipment — Check; reset as required.

Lighting — As desired.

INST LT switch (rheostat) — As desired.

Radio — Check as required.

Throttle — Full open.

Power and flight instruments — Normal operating range.

Generator load — Below 70% (Note: normal load is 10 - 20%).

Power turbine N2 — Set for 100% in flat pitch.

TAKEOFF

Collective pitch — Increase to hover.

Directional control — As required to maintain desired heading.

Cyclic control — Apply as required to accelerate smoothly.

Collective — Apply as required to obtain desired rate of climb and airspeed. Monitor engine limits and adjust collective, as necessary.

IN-FLIGHT OPERATIONS

Airspeed — As desired (not to exceed V_{NE} at flight altitude).

PITOT HEAT switch (if installed) — ON in visible moisture with temperature below 4.4°C (40°F).

NOTE

TOT will increase when ENGINE ANTI-ICING is switched ON.

ENGINE DEICING or ENGINE ANTI-ICING switch — ON, in visible moisture when temperature is below 4.4°C (40°F).

Maximum pressure altitude is 20,000 feet.

NOTE

It is recommended that approved oxygen equipment be used when operating at altitudes above 10,000 feet.

DESCENT AND LANDING

DURING SLOPE LANDINGS, CONDITIONS INCLUDING, BUT NOT LIMITED TO, WIND DIRECTION AND VELOCITY, CENTER OF GRAVITY, AND THE CONDITION OF THE SLOPE (LOOSE ROCK, SOFT MUD, SNOW, WET GRASS, ETC.) MAY LIMIT THE MAXIMUM SLOPE THE HELICOPTER CAN BE SAFELY LANDED ON.

Flight Controls — Adjust friction as desired.

Throttle — Full open.

Power turbine RPM (N₂) — 97 to 100%.

NOTE

Decreasing the collective pitch into the low power realm may result in a RPM overspeed condition. For prolonged low power approaches, the RPM can be controlled by a small amount of collective pitch increase (no significant torque increase) and/or by beeping down the N₂ governor speed controller to 100% RPM. This will maintain governing within limits during low power descents, however, the GOV RPM switch should be beeped to INCR as collective is applied. (See N₂ Transient Overspeed Limits in Section 1.)

Flight path — As required for type of approach being made.

LDG LTS switch — On as required.

POSTFLIGHT HYDRAULICS CHECK**NOTE**

The Hydraulics Systems Check is to determine proper operation of hydraulic actuators for each flight control system. If abnormal forces, unequal forces, control binding, or motoring are encountered, maintenance action is required.

Collective — Full down, friction removed.

Rotor RPM (N_R) — Set to 100%.

HYDRAULIC SYSTEM or CONTROL BOOST switch — OFF.

Cyclic — Centered, friction removed.

Check normal operation of cyclic control by moving cyclic in an “X” pattern right forward to left aft, then left forward to right aft (approximately 1 inch). Center cyclic.

Collective — Check for normal operations by increasing collective control slightly (1 to 2 inches). Repeat two to three times as required. Return to full down position.

Pedals (if hydraulically boosted) — Displace slightly left and right. Note an increase in force required to move pedal in each direction.

HYDRAULIC SYSTEM or CONTROL BOOST switch — ON.

Cyclic and collective friction — Set as desired.

ENGINE SHUTDOWN

Full RPM to 65% N₁ should take 3 to 5 seconds. Consult Rolls Royce Engine Operation and Maintenance Manual if these times are exceeded.

Throttle — Flight idle. Check engine deceleration time.

WRN HORN MUTE button (if installed) — Press to mute.

Flight controls — Position for shutdown; apply friction.

ENGINE DEICING or ENGINE ANTI-ICING switch — OFF.

TOT — Stabilized at flight idle speed for 2 minutes.

ELT (if installed) — Check for inadvertent transmission.

IDLE REL button — Depress and roll throttle firmly to full closed position.



TO ENSURE ENGINE CUTOFF, HOLD THROTTLE IN CLOSED POSITION UNTIL N1 DECELERATES TO ZERO AND TOT IS STABILIZING. DO NOT TURN BAT SWITCH OFF UNTIL N1 IS ZERO AND TOT IS STABILIZED.

TOT — Check decreasing.

During rotor coastdown, apply cyclic to minimize static stop contact.

Radio equipment — OFF.

FUEL VALVE switch — OFF.

GEN switch — OFF.

All switches (except BAT) — OFF.

BAT switch — OFF after N1 is zero and TOT stabilized.

Pilot should remain at flight controls until rotor has come to complete stop.

AFTER EXITING HELICOPTER

Install main and tail rotor tie-down if any of the following conditions exist:

High or gusty winds are predicted.

Other helicopters are operating or expected to be operating in the immediate area.

Anytime the helicopter is to be left unattended.

Install protective covers (engine inlet, exhaust, and pitot tube).

