

Use the following guide for desired N_1 starting speed versus outside air temperature.

N_1 RPM	TEMP °C (°F)
15%	Above 7° (45°)
13%	-18 to 7° (0 to 44°)
12%	Below -18° (-1°)

NOTE

During the first few seconds of the start, the TOT will accelerate at a fairly rapid rate and must be pilot monitored.

TOT — Monitor to avoid hot start. Abort start when temperature is about to exceed 793 to 927°C — **MAXIMUM 10 SECONDS**, by depressing flight idle stop and **CLOSE THROTTLE**. Some helicopters may be equipped with a red warning light on the TOT gauge. If limits are exceeded or light illuminates, consult Rolls Royce Engine Operation and Maintenance manual.



IF THE MAIN ROTOR IS NOT ROTATING BY 25% GAS PRODUCER SPEED (N_1), ABORT THE START.

Starter — Release at 58% gas producer RPM.

Engine and transmission oil — Check pressures.



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

Auxiliary power — Remove — Battery ON.

Throttle — Open to 70% gas producer RPM.

Generator switch — ON.

Throttle — Idle.

ENGINE STARTING (Cont)

WARNING

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

Smoothly open throttle to full open position, maintaining collective pitch down and cyclic control in neutral.

Power turbine (N₂) governor — Check range 95 to 100% RPM.

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 95 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.

Engine RPM — 95 to 100%.

NOTE

Decreasing the collective pitch into the low power realm may result in an 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% N_1 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 N_1 DECELERATES TO ZERO AND TOT IS STABILIZING. DO NOT TURN BAT SWITCH OFF UNTIL N_1 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 N_1 is zero and TOT stabilized.

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

AFTER EXITING HELICOPTER

If any of the following conditions exist:

Thunderstorms are in the local area or forecasted.

Winds in excess of 20 knots or a gust spread of 15 knots exists or is forecasted.

Helicopter is parked within 150 feet of hovering or taxiing aircraft that are in excess of basic gross weight of helicopter.

Helicopter to be parked overnight.

Perform the following:

Install main rotor tie-down and secure blade to tailboom.

Install tail rotor tie-down and secure blade to tailboom.

Install protective covers and plugs.