

**TRIDAIR  
HELICOPTERS, INC.**

*based at CENTERPORT*

# **ROTORCRAFT FLIGHT MANUAL**

## **SUPPLEMENT**

# **SINGLE ENGINE OPERATION OF THE TRIDAIR GEMINI 206L-3**

This supplement will be attached to the Tridair BELL 206L-3 RFMS-TH-1 on helicopters modified in accordance with STC SR00036SE when used in single engine operations.

Information contained herein supplements information in the basic Flight Manual Supplement. For Limitations, Procedures, and Performance Data not contained in this supplement, consult applicable documents.



**LOG OF REVISIONS**

Original ..... 0 ..... 28 JUL 94      Revision..... 2 ..... 13 JAN 09  
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**NOTE**

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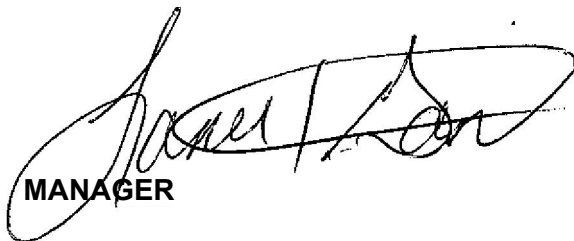
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**1-8. CENTER OF GRAVITY —  
LONGITUDINAL**

For gross weight and longitudinal center of gravity limits, refer to Figure 1-1. The pilot may use the selective loading placard or compute weight and balance for each flight.

**NOTE**

Ballast as required to maintain most forward or most aft CG within CG flight limits (Figure 1-1).

For standard passenger and fuel loadings, applicable Weight Empty Center of Gravity Chart in Section 8 of TH1-206L3-MM-1 may be used to determine required ballast.

**NOTE**

Station 0 (reference datum) is located 55.16 inches (1401 mm) forward of forward jackpoint centerlines.

**1-9. CENTER OF GRAVITY —  
LATERAL**

4.0 inches left of helicopter center line.

3.5 inches right of helicopter center line.

**1-10. DOOR(S) OFF**

Actual weight change shall be determined after doors have been removed and ballast readjusted, if necessary, to return CG to within allowable limits.

**1-11. AIRSPEED**

Basic  $V_{NE}$  is 130 KIAS (150 MPH) sea level to 3000 feet  $H_D$ . Decrease  $V_{NE}$  for ambient conditions in accordance with AIRSPEED LIMITATIONS placard.

$V_{NE}$  is 84 KIAS (97 MPH) at 85 to 100% TORQUE takeoff power.

$V_{NE}$  is 90 KIAS (104 MPH) with any door(s) off, not to exceed placarded  $V_{NE}$ .

$V_{NE}$  is 100 KIAS (115 MPH) for autorotation or placarded  $V_{NE}$ , whichever is less.

**1-12. ALTITUDE**

Maximum operating pressure altitude 10,000 feet  $H_p$ .

**1-13. AMBIENT AIR  
TEMPERATURE**

The maximum sea level ambient air temperature for operation is 46°C (115°F) and decreases with  $H_p$  at standard lapse rate of 2°C (3.5°F)/1000 feet to 10,000 feet.

**1-14. MANEUVERING**

Aerobatic maneuvers are prohibited.

**1-15. ELECTRICAL**

**1-16. GENERATOR**

Continuous operation	0 to 150 amps
Maximum	150 amps

**1-17. POWER PLANT**

Two Rolls-Royce Model 250-C20R turboshaft engines.

**1-18. GAS PRODUCER RPM**

Continuous operation	62 to 105%
Maximum	105%
Maximum transient (Do not exceed 15 seconds above 105%)	106%
Idle operation	62 to 64%

1-19. POWER TURBINE RPM



**USE OF THROTTLE TO CONTROL RPM IS NOT AUTHORIZED. REFER TO SECTION 3, EMERGENCY PROCEDURES — ENGINE OVERSPEED FOR EXCEPTION.**

Steady-state operation	75 to 88% N <sub>2</sub> and engine torque greater than 20% is prohibited. Transient operation through the range is permissible.
Minimum	99%
Continuous operation	99 to 101%
Maximum continuous	101%
Transient overspeed range (5 minutes maximum)	101 to 104%

**NOTE**

Refer to Rolls-Royce Operations and Maintenance Manual No. GTP 5232-2 for operation in the N<sub>2</sub> speed avoidance range and for the transient overspeed limits.

1-20. TURBINE OUTLET TEMPERATURE (TOT)

Continuous operation	100 to 752°C
Maximum continuous	752°C
5 minute takeoff range	752 to 810°C
Maximum for takeoff	810°C
Maximum transient (Do not exceed 6 seconds above 810°C)	843°C
Maximum starting or shutdown (Do not exceed 10 seconds above 810°C)	927°C

**NOTE**

Intentional use of power transient area (810 to 843°C) is prohibited. Each TOT module is equipped with a red warning light that will illuminate when either of the following conditions occur:

Above 810°C for 1 second (power transient), or above 927°C for 1 second (during start sequence).

Momentary peak temperature of 927°C is permitted for no more than 1 second.

**EMERGENCY SINGLE ENGINE OPERATION TOT LIMITS (above normal operations limits);**

Maximum continuous	810°C
Transient (6 seconds)	810 to 899°C

**NOTE**

Refer to Rolls-Royce Operation and Maintenance Manual for action required if TOT exceeds 810 to 899°C for 6 seconds.

1-21. TRANSMISSION TORQUE LIMITS



**DO NOT EXCEED TORQUE LIMITS. REFER TO ROLLS-ROYCE OPERATION AND MAINTENANCE MANUAL FOR ENGINE TORQUE LIMITS.**

**TRANSMISSION TORQUE LIMITS WITH ONE ENGINE INOPERATIVE**

Continuous operation	0 to 85%
Maximum continuous	85%
5 minute maximum	100%

**NOTE**

ENG OUT light extinguished at 52 +1% gas producer RPM ( $N_1$ ).

9. Starter — Release at 58% gas producer RPM ( $N_1$ ).
10. ENG OIL, XSMN OIL, and COBOX OIL PRESSURE — Check.

**NOTE**

During cold temperature operations, stabilize at idle until ENG OIL temperature reaches 0°C.

11. IDLE RELEASE switch — operating engine — Activate.

**NOTE**

Excessive throttle pressure against idle release stop will prevent plunger release and throttle advancement.

12. Throttle – operating engine — Open to approximately 70% gas producer RPM ( $N_1$ ). Hold for 4 seconds to allow idle release solenoid to complete cycle.
13. Throttle — Close to idle position. Check  $N_1$  idle RPM, then open to 70%  $N_1$ .
14. APU — Disconnect (as required).
15. Generator switch – operating engine — On (as required), check amp meter.

**WARNING**

**AVOID CONTINUOUS OPERATION WHEN BETWEEN 75 TO 88%  $N_2$  AND ENGINE TORQUE GREATER THAN 20%.**

**NOTE**

During initial charge of a low battery red light may illuminate and volt ammeter display will flash.

16. Volt/Ammeter — Check Left, Right, Left + Right and Red LEDs out for flight.
17. Throttle – selected engine — Idle. Check 62 to 64% gas producer RPM ( $N_1$ ) after amperage is stabilized.

**CAUTION**

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

**2-18A. DRY MOTORING RUN**

The following procedure is used to reduce residual TOT to recommended levels for engine start.

1. Throttle — Closed position.
2. STARTER button — Press to engage for 15 seconds, then release.

Follow ENGINE START procedure paragraph 2-18, once 0%  $N_1$  is indicated.

**2-19. PRELIMINARY HYDRAULIC SYSTEMS CHECK****NOTE**

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

HYDRAULIC SYSTEM switch - OFF, then ON.

**2-20 ENGINE RUNUP**

1. Attitude gyro - Pull and hold knob to cage.
2. Directional gyro and attitude switch - ON. Release attitude knob smoothly.
3. Pitot heat - As required.

**CAUTION**

**ALL FUEL PUMP CIRCUIT BREAKERS MUST BE IN, AND BOTH FUEL VALVE SWITCHES MUST BE OPEN DURING FLIGHT.**

4. Fuel boost pumps - Check as follows:
  - a. Crossfeed switch - CROSSFEED OVERRIDE. Check CROSSFEED OVERRIDE light on. Indication of fuel pressure on gage confirms respective forward fuel transfer pump operation.
  - b. Crossfeed switch - NORMAL. Check CROSSFEED OVERRIDE light out.
  - c. NO. 1 aft pump circuit breaker - Pull OFF. AFT PRESS light remains off. This confirms NO. 2 aft boost pump operation.

- d. NO. 2 aft pump circuit breaker - Pull OFF. AFT PRESS light comes on to confirm pressure sensor operation.
- e. NO. 1 aft pump circuit breaker - Push IN. AFT PRESS light goes out confirming NO. 1 aft boost pump operation.
- f. NO. 2 aft pump circuit breaker - Push IN.

5. CAUTION and WARNING lights - Check.
6. Caution light disable switch - Press to disable nonoperating engine caution and warning lights.
7. Radios and radio master switch - ON. Set as required.
8. Tune radio to 121.5 to assure ELT (if installed) not broadcasting, then set as required.
9. Throttle - selected engine - Increase smoothly to full open position. Check LOW ROTOR RPM caution light out at 90% N<sub>R</sub>.
10. Governor RPM switch - selected engine - Check power turbine governor actuator range 99 to 101% RPM, set at 100% RPM.
11. Flight controls - Friction OFF. Check freedom of movement.