

**TRIDAIR  
HELICOPTERS, INC.**

*based at CENTERPORT*

# **ROTORCRAFT FLIGHT MANUAL**

## **SUPPLEMENT**

# **SINGLE ENGINE OPERATION OF THE TRIDAIR GEMINI 206L-1**

This supplement will be attached to the Tridair BELL 206L-1 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 and the Tridair Rotorcraft Flight Manual Supplement. For Limitations, Procedures, and Performance Data not contained in this supplement, consult applicable documents.



**LOG OF REVISIONS**

Original ..... 0 ..... 25 JUL 94      Revision..... 2 ..... 21 APR 08  
 Revision ..... 1 ..... 12 JAN 95      Revision..... 3 ..... 13 JAN 09

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**NOTE**

Revised text is indicated by a black vertical line. Insert latest revision pages; dispose of superseded pages.



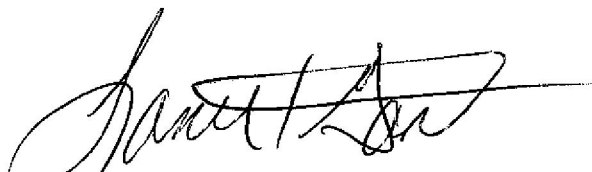
### LOG OF FAA APPROVED REVISIONS

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MANAGER

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**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****WARNING**

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% $N_2$ 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  $N_2$  speed avoidance range and for the transient overspeed limits.

**1-20 TURBINE OUTLET TEMPERATURE (TOT)**

Continuous Operation	100 - 752 °C
Maximum Continuous	752 °C
5 Minute Take-off Range	752 - 810 °C
Maximum for Take-off	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° for one second (power transient), or above 927° C for one second (during start sequence).

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

**EMERGENCY SINGLE ENGINE OPERATION TOT LIMITS (above normal operational limits):**

Maximum Continuous	810 °C
Transient (6 sec.)	810 - 899 °C

**NOTE**

Refer to Allison Operation and Maintenance Manual for action required if T.O.T. exceeds 810-899 °C for 6 seconds.

**1-21 TRANSMISSION TORQUE LIMITS**

**WARNING**

***DO NOT EXCEED TORQUE LIMITS. REFER TO ALLISON OPERATION AND MAINTENANCE MANUAL FOR ENGINE TORQUE LIMITS.***

**TRANSMISSION TORQUE LIMITS WITH ONE ENGINE INOPERATIVE**

Continuous Operation	0-85%
Maximum Continuous	85%
5 Minute Maximum	100%

**1-22 FUEL PRESSURE**

Minimum	4 PSI
Continuous Operation	4 to 25 PSI
Maximum	25 PSI

7. Throttle – selected engine — To START position at desired gas producer ( $N_1$ ) RPM.

**NOTE**

Desired  $N_1$  starting speed versus OAT:

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

**NOTE**

For information on optimized starts and operation characteristics, refer to Rolls-Royce 250-C20R CSL4031 and CSL4050.

8. TOT — Monitor (Do not exceed 10 seconds between 810 and 927°C).



IF THE MAIN ROTOR IS NOT ROTATING BY 25% GAS PRODUCER RPM ( $N_1$ ), ABORT THE START. A SECOND OR THIRD ATTEMPT MAY BE MADE; IF THE CONDITION STILL EXISTS, REFER TO ROLLS-ROYCE OPERATION AND MAINTENANCE MANUAL.

**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 STARTING 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.