

**FAA APPROVED
ROTORCRAFT FLIGHT MANUAL SUPPLEMENT
for the
BELL 407
EQUIPPED WITH FDC/aerofilter ENGINE BARRIER FILTER SYSTEM**

REG. NO. _____
SERIAL NO. _____

This supplement must be attached to the FAA Approved Rotorcraft Flight Manual (RFM) appropriate to the specific model, when the FDC/aerofilter Engine Filter System is installed in accordance with STC SR00180SE.

The information contained herein supplements information of the basic Flight Manual. For limitations, Procedures, and Performance Data not contained in this supplement, consult the basic Flight Manual.

FAA APPROVED:

FOIR


Manager
Seattle Aircraft Certification Office

DATE:

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LOG OF PAGES

Pages	Rev.	Revision	FAA Approval
ALL	IR	Initial Release	03/09/04
ALL	A	Updated format and added clarifying text	(Internal Release Only)
ALL	B	<ul style="list-style-type: none">• Section 2: Deleted 'General' sub-section• Section 2: Relocated 'Alternate Air System and Caution Light' sub-section before 'Exterior Check'• Section 3: Revised annunciator terminology	03/14/11

INTRODUCTION

This supplement provides the changes in the normal operating procedures unique to the Bell 407 rotorcraft with the FDC/aerofilter P/N 1407IN1-4600 Engine Filter System installed. The Engine Filter System consists of a filter element, duct, alternate air door, low inlet pressure warning system, and hardware required to complete the installation.

For applicable performance with the filter system installed refer to the applicable Bell Rotorcraft Flight Manual Supplement (RFMS) for the Bell Particle Separator and to Section 4 of this Supplement.

Model	Particle Separator RFMS
407	Bell Kit No. 206-706-212 Refer to Bell RFMS No. BHT-407-FMS-3

SECTION 1 – OPERATING LIMITATIONS

OPTIONAL EQUIPMENT

Operation with the Engine Snow Deflector Kit (Bell Kit No. 206-706-208 / Bell RFMS No. BHT-407-FMS-4) in conjunction with the FDC/aerofilter Engine Filter System (FDC/aerofilter P/N 1407IN1-4600) is not approved.

TYPE OF OPERATION

For operation in falling or blowing snow with the FDC/aerofilter Filter System installed, the following limits apply:

Flight in falling and/or blowing snow is limited to 10 minutes duration after which the helicopter shall be landed and checked for snow and/or ice accumulation on the filter and bypass door.

Flight operations are prohibited when visibility in falling or blowing snow is less than one-half (1/2) statute mile.

TAKEOFF

Takeoff with
LOW INLET PRESSURE
annunciator light illuminated..... **PROHIBITED**

POWER ASSURANCE CHECK

Power Assurance Check to be conducted in level flight only. Refer to Particle Separator Flight Manual Supplement Model 407 Power Assurance Check chart.

SECTION 2 - NORMAL PROCEDURES

ALTERNATE AIR SYSTEM AND CAUTION LIGHT

Cockpit control for the barrier filter bypass system is a two-position light/switch. In normal operation the switch is not illuminated. When the pressure drop across the filter reaches a preset value, the “LOW INLET PRESSURE” light will illuminate



Pressing the switch opens the bypass door. When the door is open, the lower half of the switch will illuminate with “Bypass Door Open”.



EXTERIOR CHECK

Thoroughly check the air plenum chamber and filter system through the inlet. The area must be free of accumulated debris, snow, ice, slush, etc., before each flight. Verify filter material is in good condition. Verify filter bypass door is closed.

INTERIOR AND ENGINE PRE-START CHECK

Engine Alternate Air switch in the **CLOSED** position (lights OFF).
Verify Engine Alternate Air circuit breaker **SET**.

ENGINE RUN-UP

During engine run-up, assure **LOW INLET PRESSURE** light does not illuminate.

SECTION 3 - EMERGENCY PROCEDURES**LOW INLET PRESSURE ANNUNCIATOR (AMBER)**

Symptom: LOW INLET PRESSURE annunciator **ILLUMINATED** and/or unexplained increase in engine TOT.



Fault: Filter dirty/blocked.

Action: Engine Alternate Air Pushbutton Switch- **ACTUATE**
(BYPASS DOOR OPEN annunciator will illuminate)



- a. a. If LOW INLET PRESSURE annunciator extinguishes, continue mission and service filter prior to next flight. Likely fault is a partially blocked filter element(s).
- b. If LOW INLET PRESSURE annunciator remains **ILLUMINATED**, monitor engine instruments to assure full power can be attained within engine limits (red lines). If power can be achieved within the red lines and level flight can be maintained, land as soon as practicable and inspect filter element for blockage. If filter is not blocked, mission can be continued. Service filter elements as required and conduct a power assurance check on the next flight.
- c. If LOW INLET PRESSURE annunciator remains **ILLUMINATED**, monitor engine instruments and if power cannot be maintained within the red lines, land as soon as possible. Service the filter and conduct a power assurance check on the next flight. If LOW INLET PRESSURE annunciator still illuminates or if engine performance is less than minimum specification, refer to engine maintenance manual for corrective action.

SECTION 4 – PERFORMANCE INFORMATION

Helicopter performance is slightly reduced with the FDC/aerofilter Engine Filter System installed. This reduction in performance increases as the filter becomes contaminated even if engine condition remains constant. In all cases the performance is equal-to-or-better than that with the Particle Separator installed and purge system OFF.

POWER ASSURANCE CHECK

Refer to Power Assurance Check chart from Model 407 Particle Separator RFMS (Bell RFMS No. BHT-407-FMS-3). Conduct Power Assurance Check in level flight at an Airspeed of 85 to 105 KIAS or V_{NE} , which ever is lower. If the Measured Gas Temperature exceeds the value obtained from the above procedure, clean the filter element and repeat the procedure.

NOTE

Conduct power assurance check in level flight only.

NOTE

If power assurance torque cannot be achieved with a clean filter, refer to appropriate rotorcraft maintenance manual to determine cause of low power.

HOVER CEILING

Hover Ceiling charts (In and Out of Ground Effect):

- Use the applicable charts from the appropriate RFMS noted above (Purge OFF) to determine ceiling with the Engine Filter System installed.

CLIMB

Rate of Climb charts:

- Use the applicable charts from the appropriate RFMS noted above (Purge OFF) to determine Rate of Climb with the Engine Filter System installed.