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FILTRATION SOLUTIONS
AFS | LE BOZEC | WESTERN FILTER

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**FAA APPROVED
ROTORCRAFT FLIGHT MANUAL SUPPLEMENT
TO THE**

**BELL HELICOPTER
MODELS 230 and 430
ROTORCRAFT FLIGHT MANUAL
FOR THE
INLET BARRIER FILTER SYSTEM
INSTALLATION**

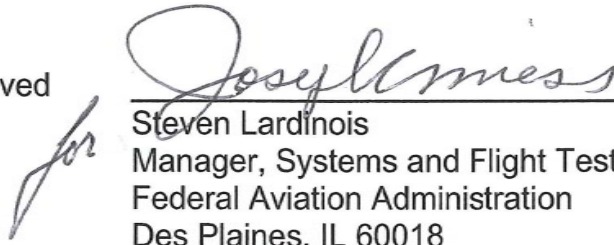
Aircraft S/N _____

Aircraft Reg. No. _____

This supplement must be attached to applicable FAA Approved Rotorcraft Flight Manual, when the rotorcraft is modified by the installation of the AFS Inlet Barrier Filter (IBF) System in accordance with STC No. SR02794CH

The information contained herein supplements or supersedes the basic manual only in those areas listed herein. For limitations, procedures, and performance information not contained in this supplement, consult the basic Rotorcraft Flight Manual.

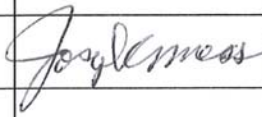
FAA Approved



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LOG OF REVISIONS

Revision No.	Revision Description	Pages Effected	FAA Approved:	Date:
IR	Initial Release	All	Joseph Miess	22 Dec 09
A	Removed "IMC" restriction	8	Joseph Miess	8 Mar 10
B	Changed Logo on Cover Sheet, Changed Address all Sheets. Added Bell Model 230	All	 Joseph Miess	SEP 20 2011

NOTE

Revised text from previous revision is indicated by a black vertical line in the right border.

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GENERAL INFORMATION

The Inlet Barrier Filter (IBF) STC kit consists of a left hand and right hand structural assembly, two filter assemblies per side, two cockpit indicator/switches, and bypass system for each engine/system which includes the bypass door, actuator, differential pressure switch, and filter maintenance aid.

The IBF system provides a means of monitoring the condition of the filters for each engine, both in-flight and on the ground, and bypass capabilities for each engine should flow through any of the filters become restricted. In-flight, the differential pressure switch continuously measures the drop in pressure across the filters, and triggers the cockpit indicator/switch(s) for affected engine, cautioning the pilot if the differential pressure reaches or exceeds a preset value.

The electromechanically actuated bypass door permits unfiltered air to enter the engine inlet chamber, should the filter media become obstructed, and can be opened or closed as required, via a cockpit indicator/switch on the instrument panel. The bypass system also includes a three amp circuit breaker located in the circuit breaker panel, installation hardware and wiring.

The cockpit indicator/switch is used to energize the actuator by pressing the switch to open the bypass door and depressing it to close the bypass door. When the filter has accumulated enough dirt/debris to cause the differential pressure to reach or exceed the preset value, the FILTER segment of the indicator will illuminate. The cockpit indicator/switch may be pressed to open the bypass door. When the bypass is fully opened, the BYPASS segment of the indicator will illuminate, and the differential pressure will decrease causing the FILTER light to go out.

On the ground, a Filter Maintenance Aid, mounted to the L/H and R/H Plenum Assemblies on the outboard side, displays the maximum differential pressure across the filter reached during the last flight. It is accessible only on the ground by viewing inside the inspection door, providing the pilot or mechanic the ability to visually gauge the current condition of the filter.

Operation of the aircraft with the IBF system installed requires use of the same OEM performance information and/or charts (basic or EAPS) as required in the Rotorcraft Flight Manual (RFM) for all operations as defined in Section 4 of this supplement. Therefore no new performance charts are required for installation and operation of the IBF system.

Section 1

LIMITATIONS

TYPE OF OPERATION

Operation of the aircraft with the IBF system installed is restricted to Category B operations only.

The installation of the IBF system does not change any of the other existing operational restrictions listed in the basic Rotorcraft Flight Manual (RFM) or existing flight manual supplements. Refer to the Limitations Section of the RFM and or supplements for Types of Operation.

The installation of the IBF system does not lift the requirement for installation of the snow baffle kit when conducting flight operations in falling and blowing snow conditions.

INSTRUMENT MARKINGS AND PLACARDS

IBF 1

* Placard is located near the #1 engine 3 amp circuit breaker in the overhead C/B panel and near the #1 engine IBF indicator/switch

IBF 2

* Placard is located near the #2 engine 3 amp circuit breaker in the overhead C/B panel and near the #2 engine IBF indicator/switch

* - "IBF 1" and "IBF 2" may be engraved or silk-screened in lieu of the placards



Amber



Amber

The indicator/switch (both conditions shown) is used to open/close the filter bypass and alert the pilot of filter restriction in the affected inlet and when the affected bypass door is open. The switch is segmented to indicate two conditions:

The "FILTER" segment of the switch will illuminate when the pressure differential (in the respective engine) pressure is above the preset value.

The "BYPASS" segment of the switch will illuminate whenever the bypass door is fully open.

NOTE:

The "FILTER" segment should be extinguished when the "BYPASS" segment is illuminated.

Section 2

NORMAL PROCEDURES

FUSELAGE – CENTER

1. Ensure engine inlet protection is removed (If installed).
2. Check each IBF Filter Maintenance Aid to determine condition of the filters. When indicator enters RED zone (See Figure 2-1 of this FMS), it is recommended the filter be serviced IAW IBF Instructions for Continued Airworthiness, AFS-BH430-IBF-ICA.
3. Verify that the bypass door is in the closed position.

BEFORE FLIGHT WHEN OPERATING IN SNOW CONDITIONS

1. Thoroughly check cabin roof, intake cowl, and filter areas. All areas checked shall be clean and free of accumulated snow, slush, and ice before each flight. (Do not use a broom to brush snow off filter)
2. Ensure that the filter, by-pass door, and intake cowl are thoroughly clear of snow, slush, or ice before each flight.

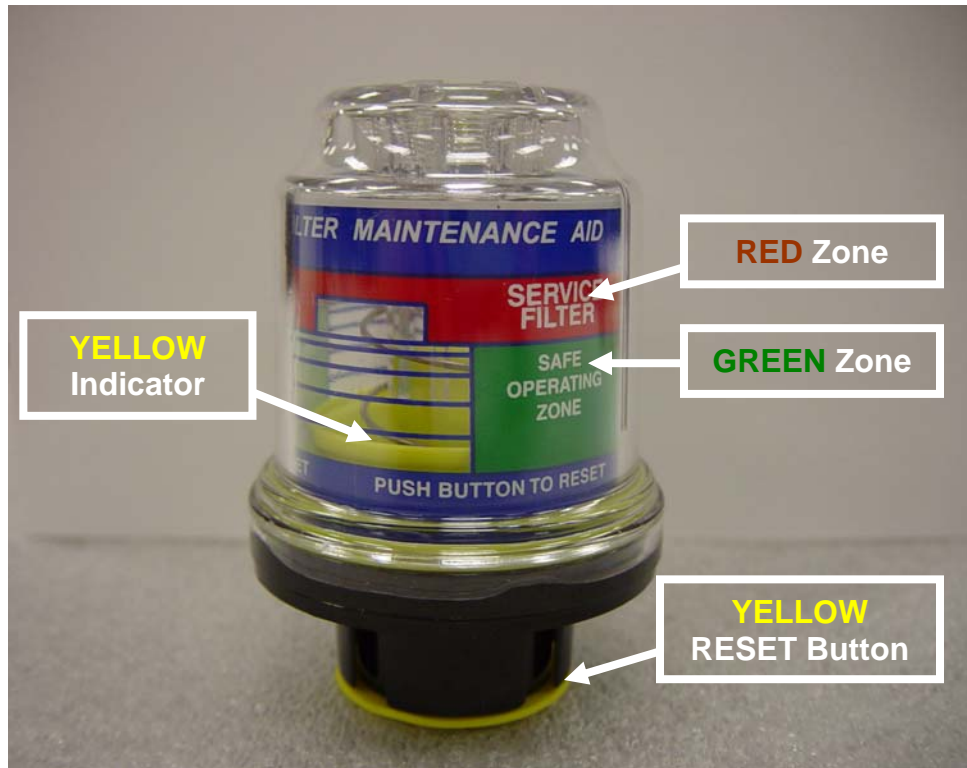
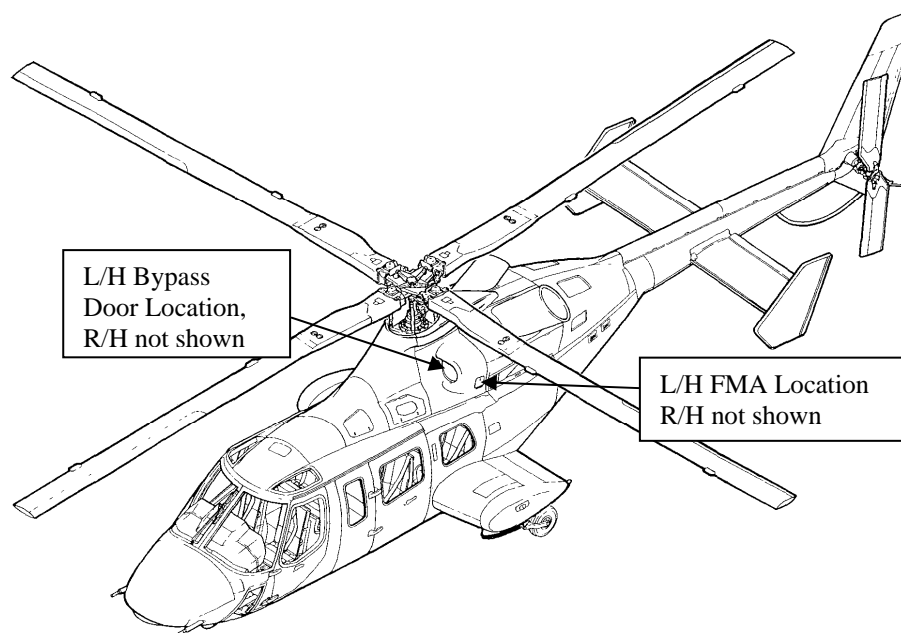


Figure 2-1. FILTER MAINTENANCE AID – (ABOVE) “YELLOW Indicator” position relative to SAFE OPERATING ZONE (“GREEN Zone”) or SERVICE FILTER (“RED Zone”) markings defines current filter condition and pushing “YELLOW RESET Button” resets indicator. (BELOW) FMA unit is mounted on the outside of the inlet cowling and can be viewed by opening the inspection door.



Section 3

EMERGENCY/MALFUNCTION PROCEDURES

Caution Lights (amber)

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
"FILTER"	<p>Illumination of the "FILTER" segment of the respective indicator/switch indicates the preset value for the pressure differential for the affected engine has been reached.</p> <p>NOTE</p> <p>As the filter becomes more contaminated, certain flight conditions may cause the "FILTER" segment to flicker intermittently. Corrective action should be taken only when the "FILTER" segment illumination is continuous.</p> <p>NOTE</p> <p>Extended hovering in maximum tailwind conditions may cause filter light to illuminate and/or FMA service filter reading.</p>	<p>Monitor MGT for any significant rise, i.e. > 20°C. Monitor engine conditions for any indications of engine degradation or compressor stall, i.e. MGT fluctuations, and decreasing or fluctuating N_G rpm.</p> <p>If rise in MGT or engine performance is unacceptable:</p> <ul style="list-style-type: none"> Open affected bypass door by pressing illuminated "FILTER" indicator/switch. "BYPASS" segment of indicator/switch should illuminate and the "FILTER" segment of indicator/switch should extinguish indicating the bypass door is open and the pressure differential is back within the normal range. <p>Service filters prior to next flight.</p> <p>NOTE</p> <p>If either or both of the "FILTER" lights illuminate during take-off, recommend servicing filters before continuing flight.</p> <div style="text-align: center;"> <p>CAUTION</p> </div> <p>TO PREVENT COMPRESSOR EROSION AVOID (IF POSSIBLE) OPERATION IN DIRTY OR DUSTY ENVIRONMENT WITH THE BYPASS DOOR OPEN.</p>
"BYPASS"	<p>The bypass door is open and the filter is being bypassed with unfiltered air entering the engine</p>	<p>If the flight or landing environment has significant dirt or debris, it is recommended that the bypass door be closed, provided no rotorcraft or engine limits will be exceeded. With the bypass closed, the "BYPASS" segment will extinguish and the "FILTER" segment will potentially re-appear under high engine power settings until the filter has been cleaned</p>
	<p>Inadvertent encounters with icing</p>	<p>Exit condition as soon as practical.</p>

Section 4

PERFORMANCE

For Bell 430 Rotorcraft Only

When the Inlet Barrier Filter (IBF) system STC is installed, use the basic Power Assurance Check (PAC) chart to determine engines can produce the installed specification power. If the PAC is satisfactory (i.e. the actual MGT value is equal to or less than the chart MGT) then basic performance can be obtained and the basic performance data charts are applicable.

If the basic PAC is not satisfactory (i.e. the actual MGT value are greater than the chart MGT) then published performance may not be achieved. If this is the case, either clean the filters and recheck the engine health using the basic Power Assurance Check chart or compare the recorded Power Assurance Check values against the Particle Separator chart located in the Particle Separator supplement.

If engine health is found to be satisfactory using the Particle Separator Hover Power Chart (i.e. the actual MGT value equal to or less than the Particle Separator chart MGT), then the Particle Separator performance can be obtained and the Particle Separator performance data charts are applicable. If the engine health is not satisfactory then clean the filters and conduct another Power Assurance Check, and compare the results to the basic Power Assurance Check chart or the Particle Separator Power Assurance Check chart.

If the recorded PAC results after cleaning the filters are still not satisfactory (i.e. the recorded MGT value are greater than the maximum allowable basic or Particle Separator values), then contact maintenance for troubleshooting.

For Bell 230 Rotorcraft Only

When the Inlet Barrier Filter (IBF) system STC is installed, use the Particle Separator Power Assurance Check (PAC) chart to determine engines can produce the installed specification power. If the PAC is satisfactory (i.e. the actual MGT value is equal to or less than the chart MGT) then Particle Separator performance can be obtained and the Particle Separator performance data charts are applicable.

If the basic PAC is not satisfactory (i.e. the actual MGT value are greater than the chart MGT) then published performance may not be achieved. If this is the case, clean the filters and recheck the engine health using the Particle Separator Power Assurance Check chart supplement.

If the recorded PAC results after cleaning the filters are still not satisfactory (i.e. the recorded MGT value are greater than the maximum allowable Particle Separator values), then contact maintenance for troubleshooting.

For All Rotorcraft



Helicopter performance is reduced as the IBF becomes contaminated with dirt, dust and debris. The pilot/operator is responsible to utilize the PAC to determine if the engine can produce installed power.

Ensure that the IBF FILTER caution lights are not illuminated during performance of the PAC.

If the engine does not pass PAC, published performance may not be achieved. The frequency at which PACs are conducted is up to the discretion of the operator based on the operating environment, (i.e. temperature, altitude, airborne contaminate) and the requirements of the Flight Manual or applicable Flight Manual Supplement. Contact maintenance for appropriate troubleshooting procedures as outlined in applicable Instructions for Continued Airworthiness or Maintenance Manuals.

Section 5

WEIGHT AND BALANCE

No Change