Supplement No. AFS-AS350B-IBF-FMS

17891 Chesterfield Airport Road
Chesterfield, MO 63005

FAA APPROVED
ROTORCRAFT FLIGHT MANUAL SUPPLEMENT
FOR

EUROCOPTER FRANCE
MODELS AS350B, AS350B1, AS350BA, AS350B2 and AS350B3
ROTORCRAFT FLIGHT MANUAL
WITH 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 DCI Inlet Barrier Filter (IBF) System in accordance with STC No. SR02393CH.

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
for Monica Merritt

ROBERT KLASE Digitally signed by ROBERT KLASE
Date: 2022.02.24 12:59:14 -06'00'

Manager, Southwest Flight Test Section, AIR-713
Federal Aviation Administration
Ft. Worth, TX

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LOG OF REVISIONS

Revision No.	Revision Description	Pages Effected	FAA Approved:	Date:
IR	Initial Release	All	Joseph Meiss	12 Mar. 2007
A	Added paragraph to clarify limitations and ability to use sand filter charts	5 & 9	Joseph Meiss	26 Nov. 2007
B	Added caution to Normal Procedures	7	Joseph Meiss	8 Sep 2008
C	Changed Address and Logo	All	E.M. Ward	5 Aug 2011
D	Changed Performance section to add Arriel 2D engine requirements	9	Joseph Meiss	20 Sep 2011
E	Revised title page, replaced all instances of Aerospace Filtration Systems and AFS with Donaldson Company and DCI, changed justification in Section 2, revised Caution segment in Section 3, added dotted box to Caution segment in Section 4, added Before Flight When Helicopter Is Uncovered And Exposed To Rain segment to Section 4, changed Figure 2-1 to Figure 4-1, changed justification of Note in Section 5, revised AS350B3 with Arriel 2D Engines Only segment in Section 5, revised For All Aircraft segment in Section 5, revised Caution in Section 5	All	Robert Klase	5 Mar 2020
F	Added NORMAL PROCEDURES cont. title to page 8 and PERFORMANCE cont. title to page 10. Revised AS350B3 with Arriel 2D Engine Only segment in Section 5 to include VEMD Power Increase “H125 Power” (MOD EC07.5102).	8 - 10	ROBERT KLASE	Digitally signed by ROBERT KLASE Date: 2022.02.24 12:59:56 -06'00'

NOTE

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

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Section 1

GENERAL INFORMATION

The Inlet Barrier Filter (IBF) STC kit (112005-101) consists of a fairing, an engine interface kit and an electrical kit. The fairing consists of a composite and aluminum structure, a filter assembly, a bypass door, differential pressure switch, filter maintenance aid, and integral seals. The engine interface consists of an aluminum channel structure. There is also a cockpit indicator/switch, circuit breaker, installation hardware and wiring.

The IBF system provides a means of monitoring the condition of the filter both in-flight and on the ground, and a bypass capability allowing inlet airflow to bypass the filter should the filter become restricted. In-flight, the differential pressure switch measures the drop in pressure across the filter, and triggers the cockpit indicator/ switch alerting the pilot any time the differential pressure across the filter 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. The bypass system employs a cockpit indicator/switch on the instrument panel. The bypass system also includes a three amp circuit breaker located in the overhead panel, installation hardware and wiring.

The cockpit indicator/switch is used to energize the actuator by depressing the switch to open the bypass door and depressing again to close the bypass door. When the filter has enough dirt/debris that causes the differential pressure to reach or exceed a 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 inner frame of the IBF, displays the maximum differential pressure across the filter reached during the last flight. It is accessible only on the ground, 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 performance information and/or charts as required in the Rotorcraft Flight Manual (RFM) for all operations as defined in Section 5 of this supplement. Therefore no new performance charts are required for installation and operation of the IBF system.

Section 2

LIMITATIONS

The limitations specified in the basic flight manual and in the flight manual supplements remain applicable and are completed or modified by the following:

- Flight under falling snow is permitted.

INSTRUMENT MARKINGS AND PLACARDS

IBF

Placard is located near the 3 amp circuit breaker and the indicator/ switch

The indicator/switch (shown illuminated) is to open/close the filter bypass and warn the pilot of filter restriction in the inlet. The switch is segmented with two lights. The FILTER segment will illuminate when the differential pressure is above a preset value. The BYPASS segment will illuminate whenever the bypass doors are open.

Section 3

EMERGENCY/MALFUNCTION PROCEDURES

Caution Lights (amber)

PANEL WORDING	FAULT CONDITION	CORRECTIVE ACTION
IBF FILTER	Illumination of IBF FILTER light indicates the preset value for the pressure differential has been reached. **NOTE** As the filter assembly becomes contaminated, certain flight conditions may cause the indicator to flicker intermittently. Corrective action should be taken only when the indicator illumination is continuous.	Monitor engine conditions for any indications of engine degradation or compressor stall, i.e. T_4 fluctuations, and decreasing or fluctuating N_g rpm. If rise in T_4 or engine performance is unacceptable: ▪ Open bypass door by pressing illuminated FILTER indicator/switch. ▪ BYPASS segment of the indicator/switch should illuminate and the FILTER segment should turn off indicating the bypass door is open and the pressure differential is back within the normal range. Service filter prior to next flight. **NOTE** If IBF FILTER light illuminates during take-off, recommend servicing the filter before continuing flight. **CAUTION** To prevent compressor erosion, avoid operation in a dirty or dusty environment with the filter bypass door open.

Section 4

NORMAL PROCEDURES

FUSELAGE – CENTER

1. Ensure IBF environmental protective cover is removed.

2. Check 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-AS350B-IBF-ICA.

3. Perform a visual check to verify that the bypass doors are in the closed position.

CAUTION

Operation with missing quarter turn filter fasteners may result in damage to engine. Missing quarter turn fasteners should be replaced.

BEFORE FLIGHT WHEN OPERATING IN SNOW CONDITIONS

1. Thoroughly check cabin roof, intake cowling, and filter areas. All areas checked shall be clean and free of accumulated snow, slush, and ice before each flight.

2. Ensure that the filter, by-pass door, and intake cowling are thoroughly clear of snow, slush, or ice before each flight.

BEFORE FLIGHT WHEN HELICOPTER IS UNCOVERED AND EXPOSED TO RAIN

1. Check filter for standing water in between the pleats of the media. If standing water is observed, remove the filter, flip upside down, shake until water is removed and then reinstall filter.

NORMAL PROCEDURES (cont.)

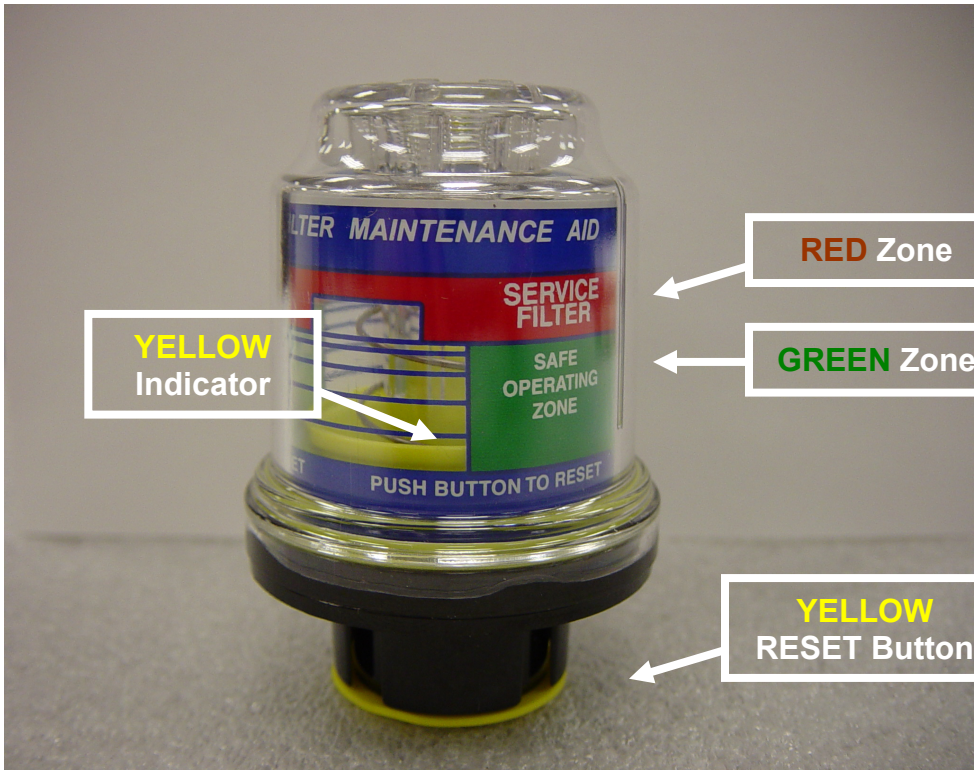
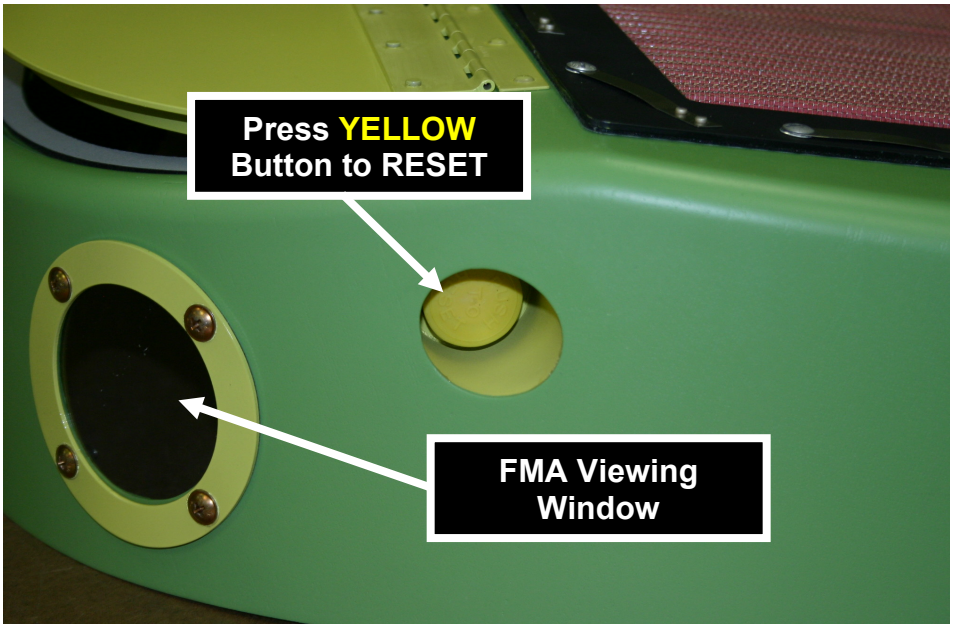


Figure 4-1. FILTER MAINTENANCE AID – (ABOVE) "YELLOW Indicator" position relative to SAFE OPERATING ZONE ("GREEN Zone") or SERVICE FILTER ("RED Zone") markings defines current filter condition and pushing "YELLOW RESET Button" resets indicator. (BELOW) FMA unit is mounted to inner frame of IBF assembly and can be viewed through access window in the upper fairing.



Section 5

PERFORMANCE

For All Aircraft Except AS350B3 with Arriel 2D Engine

When the Inlet Barrier Filter (IBF) system STC is installed, use the basic inlet Engine Power Check (EPC) chart to determine engine health. If the EPC is satisfactory then basic performance can be obtained and the basic performance data charts are applicable. If the engine health check is not satisfactory then either clean the filter and recheck the engine health using the basic Engine Power Check chart or recheck the engine health using the Sand Filter Engine Power Check chart located in the Sand Filter supplement. If engine health is satisfactory Sand Filter performance can be obtained and the Sand Filter performance data charts are applicable. If the engine health is not satisfactory then either clean the filter or contact maintenance for troubleshooting.

NOTE

For aircraft equipped with Vehicle Engine Management Display (VEMD), the VEMD is programmed for a Basic Inlet. If engine health check is unsatisfactory for Basic Inlet EPC, Sand Filter Performance data (located in the Sand Filter Supplement) is required. The performance requirements must then be determined manually.

For AS350B3 with Arriel 2D Engine Only – Including Aircraft with VEMD Power Increase "H125 Power" (MOD EC07.5102)

When the Inlet Barrier Filter (IBF) system STC is installed, the VEMD is programmed for Basic Inlet.

After performing an EPC, correct the results on VEMD:

- Add 3% on TRQ MARGIN / N1 displayed: Engine Health / N1 = TRQ MARGIN / N1 + 3
- Remove 3% of TRQ MARGIN / TOT displayed: Engine Health / TOT = TRQ MARGIN / TOT - 3

If the Engine Health obtained are satisfactory (>=0), then:

- The engine health is ensured.
- The Hover basic performances are ensured and the basic Hover performance data charts are applicable.
- The Basic Rate of Climb performance is decreased. Remove 140 ft/mn to the Basic Rate of Climb performance charts result.

If one of the Engine Health is not satisfactory (<0), then clean the filter and recheck the engine health following the above procedure.

PERFORMANCE (cont.)

If the cleaning of the filter is not possible, and Engine Health is not satisfactory, then check the maintenance aid indicator:

- If indicator >= 6 then:
  - Add 4% on TRQ MARGIN / N1 displayed: Engine Health / N1 = TRQ MARGIN / N1 + 4
  - No correction of TRQ MARGIN / TOT displayed: Engine Health / TOT = TRQ MARGIN / TOT
- If indicator >= 10 then:
  - Add 5% on TRQ MARGIN / N1 displayed: Engine Health / N1 = TRQ MARGIN / N1 + 5
  - Add 2% on TRQ MARGIN / TOT displayed: Engine Health / TOT = TRQ MARGIN / TOT + 2

If the Engine Health is still not satisfactory then contact maintenance for troubleshooting.

For All Aircraft

The frequency at which the EPC is 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 trouble shooting procedures as outlined in applicable Instructions for Continued Airworthiness or Maintenance Manuals. Ensure that the IBF FILTER caution lights are not illuminated during performance of the EPC.

CAUTION

Helicopter performance is reduced as the IBF becomes contaminated with dirt, dust and debris. The pilot/operator is responsible to utilize the Engine Power Check (EPC) procedure to determine if the engine can produce installed power. If engine health check is not satisfactory, published performance cannot be achieved.

Section 6

WEIGHT AND BALANCE

No Change