Supplement No. AFS-BH205-IBF-FMS

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FAA APPROVED
ROTORCRAFT FLIGHT MANUAL SUPPLEMENT
TO THE

BELL HELICOPTER TEXTRON INC.
BELL MODEL 205, UH-1H SERIES AND EAGLE SINGLE (SINGLE ENGINE 212)
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 or Flight Manual Supplement, when the rotorcraft is modified by the installation of the AFS Inlet Barrier Filter (IBF) System in accordance with STC No. SR02358CH

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

FAA Approved for

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Revision: C

LOG OF REVISIONS

Revision No.	Revision Description	Pages Effected	FAA Approved:	Date:
IR	Initial Release	All		
A	Added HIT and TEAC check for UH-1H, removed -101 configuration	4, 5, 8, 9	Joseph Meiss	16 Nov 06
B	Added paragraph to Limitations and Emergency/Malfunction Sections	5 & 8	Joseph Meiss	8 May 07
C	Changed Logo and Address	All	Joseph Meiss	7/18/2011

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

TABLE OF CONTENT

GENERAL INFORMATION

It is responsibility of the flight crew to be familiar with the contents of this Flight Manual Supplement (FMS) including all revisions and any temporary revision which is applicable at the time of flight.

TERMINOLOGY

WARNINGS, CAUTIONS AND NOTES

Warnings, Cautions and Notes are used throughout this manual to emphasize important and critical instructions and are used as follows:

WARNING

An operating procedure, practice, etc., which, if not correctly followed, could result in personal injury or loss of life.

CAUTION

An operating procedure, practice, etc., which, if not strictly observed, could result in damage to, or destruction of, equipment.

NOTE

An operating procedure, condition, etc., which is essential to highlight.

USE OF PROCEDURAL WORDS

The concept of procedural word usage and intended meaning which has been adhered to in preparing this RFM is as follows:

"**Shall**" or "**Must**" are used to indicate a mandatory requirement.

"**Should**" is used to indicate a non-mandatory but preferred method of accomplishment.

"**May**" is used to indicate an acceptable method of accomplishment.

ABBREVIATIONS

AFS – Aerospace Filtration Systems, Inc.
EAPS – Engine Air Particle Separator
EGT – Exhaust Gas Temperature
FAA – Federal Aviation Administration
FMS – Flight Manual Supplement
HIT – Health Indicator Test
IBF – Inlet Barrier Filter
ICA – Instructions for Continued Airworthiness
IMC – Instrument Meteorological Conditions
N1 – Gas Producer RPM
N2 – Engine Power Turbine RPM
OEM – Original Equipment Manufacturer
PAC – Power Assurance Check
RFM – Rotorcraft Flight Manual
STC – Supplemental Type Certificate
TEAC – Turbine Engine Analysis Check

SYSTEM DESCRIPTION

The Inlet Barrier Filter (IBF) installation (111001-103) consists of an upper plenum, a drive shaft cover, and a lower plenum. The upper plenum consists of a composite and aluminum cowling, four filter assemblies, two bypass doors, actuator, and integral seals. The lower plenum consists of aluminum and stainless steel structure, differential pressure switch, filter maintenance aid and an engine wash nozzle/supply assembly. The installation, depending on the configuration also includes a combination switch/indicator, circuit breaker, installation hardware and wiring.

Installation of the IBF STC requires that the engine bleed air or scavenge air used by the Engine Air Particle Separator, be capped. There is a 3 amp circuit breaker and switch that controls the bypass doors and an indicator light in the instrument panel that illuminates when the differential pressure has reached a preset value.

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

PRE-REQUISITES

None.

Section 1

LIMITATIONS

TYPE OF OPERATION

The installation of the IBF system does not change the existing operational/environmental restrictions, (specifically the aircraft icing restrictions) outlined in the appropriate RFM (Rotorcraft Flight Manual) or FMS (Flight Manual Supplements).

INSTRUMENT MARKINGS AND PLACARDS

IBF

Placards are located near the 3 amp circuit breaker and the switch / indicator.

NOTE

"IBF" may be engraved or silk-screened in lieu of the placards

The indicator/switch (shown above) is a push-button switch used to open/close the filter bypass and two indicator segments used to alert the pilot any time the filters are restricted or the bypass doors are open.

The upper segment of the indicator is labeled "FILTER" and will illuminate yellow/amber when the pressure differential across the engine inlet filters are above a preset value.

The lower segment of the indicator is labeled "BYPASS" and will illuminate yellow/amber whenever the bypass doors are in the full open position.

NOTE:

"FILTER" segment should extinguish when "BYPASS" segment illuminates indicating differential pressure is again within normal operating range.

Section 2

NORMAL PROCEDURES

PRE-FLIGHT CHECK

WARNING

Failure to remove the environmental protective cover could result in a failure of the engine to start, damage to equipment or injury to personnel

FUSELAGE – (COWLING, UPPER LH)

1. Ensure IVF environmental protective covers are removed.

2. Check IBF Filter Maintenance Aid to determine condition of the filters. If the Filter Maintenance Aid indicator has entered the RED zone (See Figure 2-1 of this FMS), it is recommended that the filters are serviced per IBF Instructions for Continued Airworthiness, AFS-BH210-IBF-ICA.

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

4. Check filter element media for security and condition. If any element is torn, has a hole, or the pleats are flat, contact maintenance for disposition per the ICA.

NOTE

Holes or tears in the filter element media, may result in reduced filtering capability and reduced engine protection from dirt and debris

BEFORE FLIGHT WHEN OPERATING IN SNOW CONDITIONS

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

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

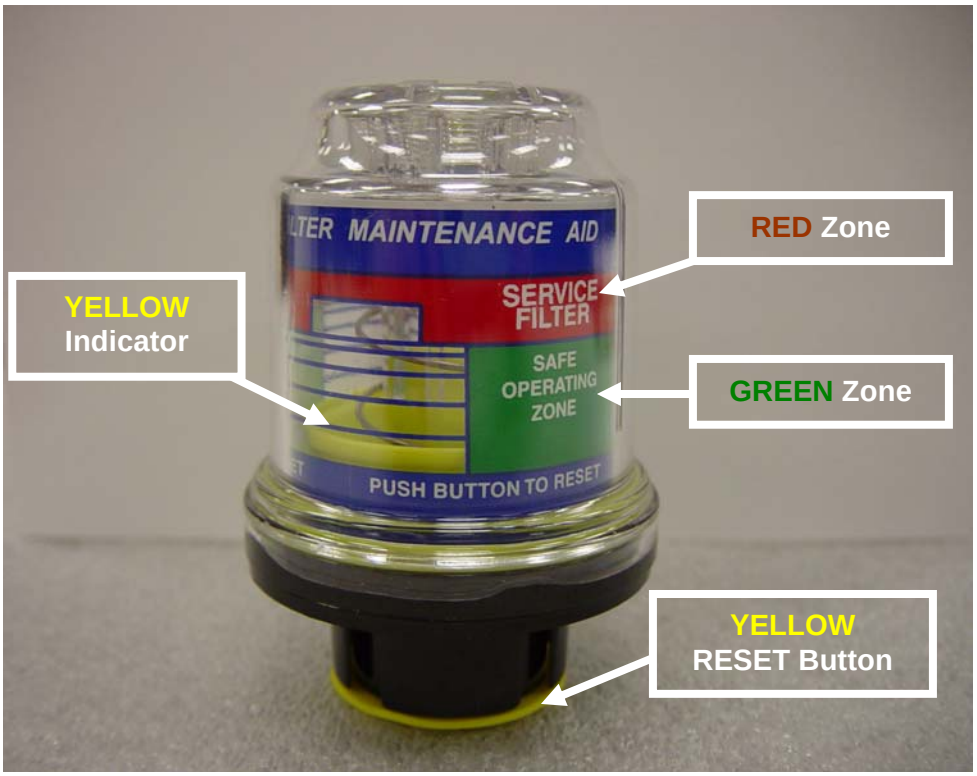
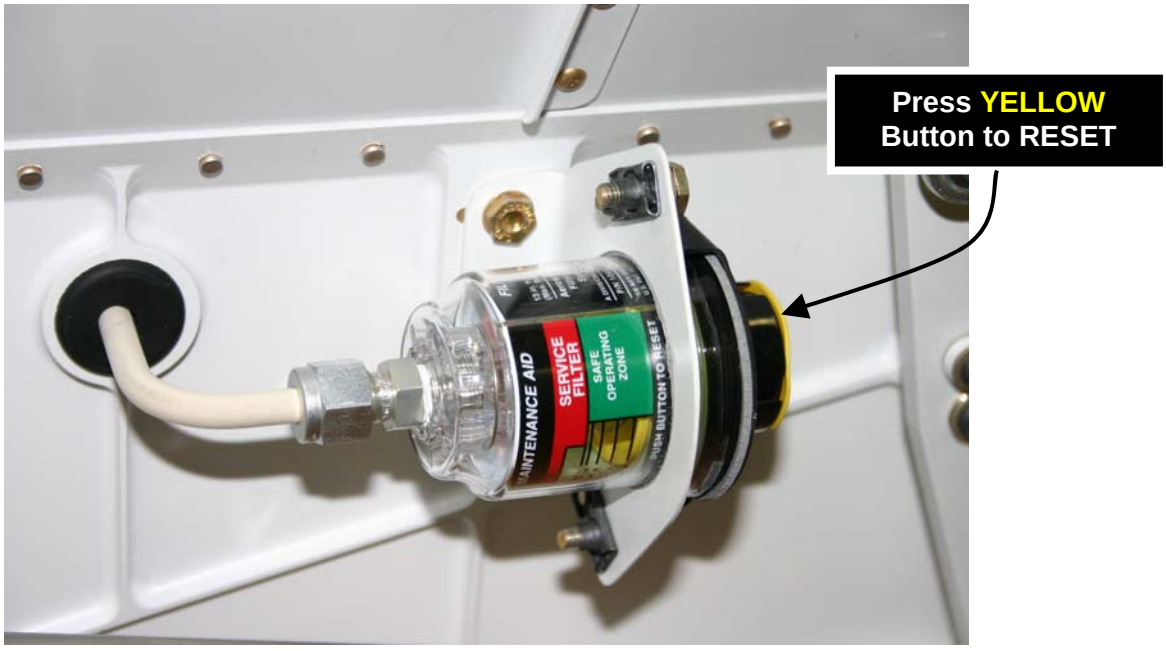


Figure 2-1. FILTER MAINTENANCE AID – (ABOVE) "YELLOW Indicator" position relative to SAFE OPERATING ZONE ("GREEN Zone") or SERVICE FILTER ("RED Zone") markings defines current filter condition and pushing "YELLOW RESET Button" resets indicator. (BELOW) FMA unit is mounted to front of the upper plenum of IBF assembly and is accessed through access hole in the cover plate.



Section 3

EMERGENCY/MALFUNCTION PROCEDURES

Caution Lights (YELLOW/AMBER)

Panel wording	Fault condition	Corrective action
	Illumination of "FILTER" segment of the cockpit indicator / switch indicates the pressure differential preset value for the engine has been reached or exceeded. NOTE As the filters becomes more contaminated, certain flight conditions may cause "FILTER" segment to flicker intermittently. Corrective action should be taken only if or when the "FILTER" segment illumination is continuous.	Monitor EGT for any significant rise, i.e. > 20°C. Monitor engine conditions for any indications of engine degradation or compressor stall, i.e. EGT fluctuations, and decreasing or fluctuating N1 rpm. If rise in EGT or engine performance is unacceptable: ▪ Open bypass doors 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 doors are open and the pressure differential is back within the normal range. Service filters prior to next flight. NOTE If the "FILTER" lights illuminate during take-off, recommend servicing filters before continuing flight. CAUTION TO PREVENT COMPRESSOR EROSION AVOID (IF POSSIBLE) OPERATION IN DIRTY OR DUSTY ENVIRONMENT WITH THE BYPASS DOOR OPEN.
	Illumination of "BYPASS" segment of the cockpit indicator / switch indicates the bypass doors are open and the filters are being bypassed and are allowing unfiltered air to enter the engine.	If the flight or landing environment has significant dirt or debris, it is recommended that the bypass doors be closed, provided no rotorcraft or engine limits will be exceeded. With the bypass doors closed, the "BYPASS' segment will extinguish and the "FILTER" segment will potentially re-appear under high engine power settings until the filters has been cleaned.
	Inadvertent encounters with icing conditions	Exit condition as soon as practical.

Section 4

PERFORMANCE

Basic helicopter performance is only slightly reduced when the Inlet Barrier Filter (IBF) is installed clean.

CAUTION

Helicopter performance is reduced as the IBF becomes contaminated with dirt, dust and debris. The pilot/operator is responsible to utilize the PAC/HIT/TEAC* (Engine Health Checks) to determine if the engine can produce installed power. If engine does not pass Engine Health Checks, published performance cannot be achieved. The frequency at which Engine Health Checks are conducted is up to the discretion of the operator based on the operating environment, (i.e. temperature, altitude, airborne contaminates) and the requirements of the RFM or FMS. 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 Engine Health Check.

* 205A-1 operators will utilize the Power Assurance Check procedure in the RFM to determine engine health.

* UH-1H operators will utilize the HIT procedure in the Operators Manual or TEAC procedure in the Maintenance Manual to determine the engine health.

* Eagle Single operators will utilize the Power Assurance Check procedure in the FMS (FMS-D212-725-1) to determine engine health

To determine the minimum torque available when the IBF is installed, refer to the applicable Engine Health Check chart in the applicable RFM or FMS.

If the results of the PAC/HIT/TEAC* indicate adequate power then use the applicable charts in the applicable RFM or FMS for performance planning.

If the results from PAC/HIT/TEAC* indicate inadequate power follow the following procedure:

1. Clean filters in accordance with AFS-BH210-IBF-ICA.

2. Re-check engine power using Basic PAC/HIT/TEAC*.

If actual torque indication is still less than the required chart torque, engine has inadequate power and published performance cannot be achieved. Contact maintenance for appropriate trouble shooting procedures as outlined in applicable Instructions for Continued Airworthiness or Maintenance Manuals

Section 5

WEIGHT AND BALANCE

NO CHANGE