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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 Joseph Lardinois*  
\_\_\_\_\_  
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**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	<i>Joseph Meiss</i>	<i>7/18/2011</i>

**NOTE**

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

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## 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

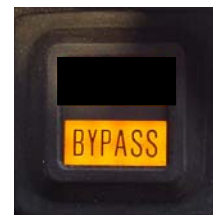
“IBF” may be engraved or silk-screened in lieu of the placards



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)**

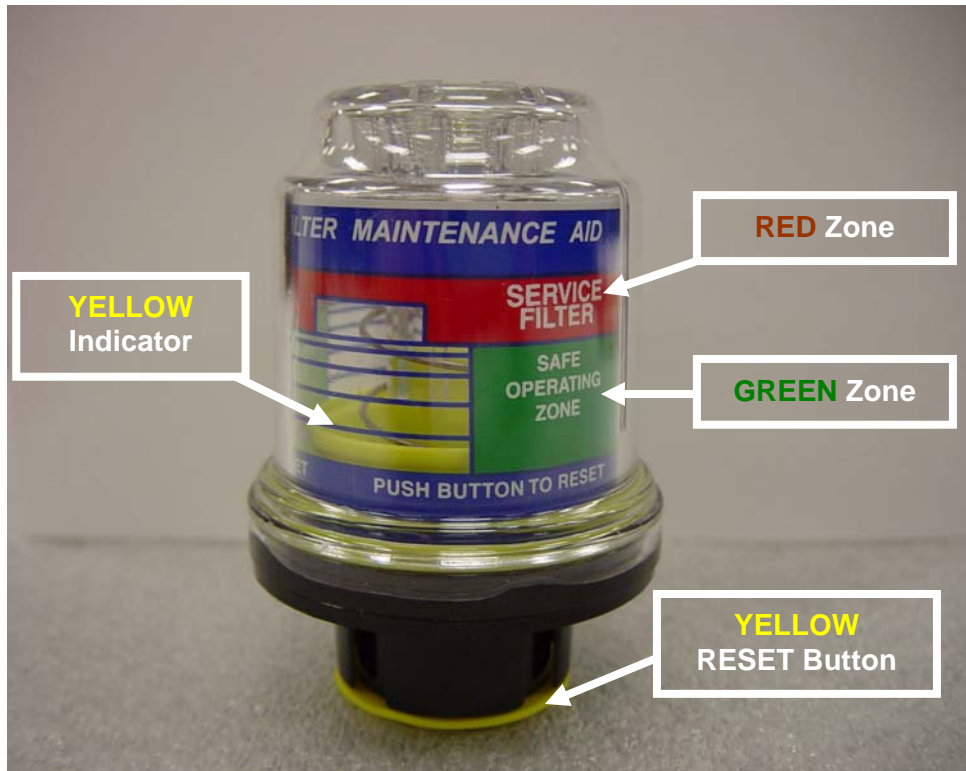
1. Ensure IVF environmental protective covers are removed.
2. Check IBF Filter Maintenance Aid to determine condition of the filters. If the Filter Maintenance Aid indicator has entered the RED zone (See Figure 2-1 of this FMS), it is recommended that the filters are serviced per IBF Instructions for 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**

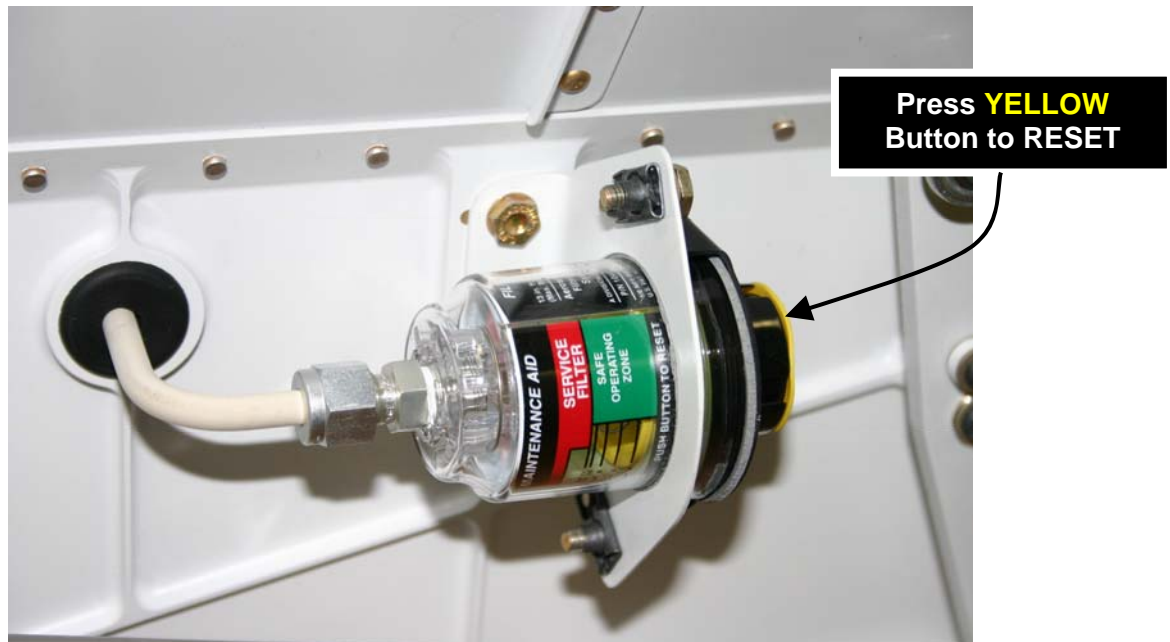
Holes or tears in the filter element media, may result in reduced filtering capability and reduced engine protection from dirt and debris

#### **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
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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.



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 contaminants) 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