



Eagle Copters Ltd.  
823 McTavish Road NE  
Calgary, AB T2E 7G9  
Canada

# FLIGHT MANUAL SUPPLEMENT

1003-FM-001

## *Inlet Barrier Filter Installation*

EAGLE 407HP MODELS

SH16-9

Sections 1-4 of this document comprise the approved Flight Manual Supplement. Compliance with Section 1, Limitations is mandatory. Section 0 is Unapproved and is provided for information only.

This supplement must be attached to the approved Flight Manual when the Inlet Barrier Filter is installed per 1003-MI-001. The information contained herein supplements the information in Flight Manual Supplement FMS-E407-789-1. For limitations, procedures and performance not contained in this document, consult Flight Manual Supplement FMS-E407-789-1.



Prepared By: [Signature]  
V. Seib  
Mechanical Designer

Checked By: [Signature]  
H. Siemens  
Mechanical Designer

Released By: [Signature]  
D. Shepherd  
Chief Engineer

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### LOG OF AMENDMENTS

Rev. No.	Pages Revised	Revised By and Date	Approved By and Date	Inserted By	Date Inserted
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## SECTION 0 – INTRODUCTION

Eagle Copters has developed a Supplemental Type Certificate (STC) for the Eagle 407HP to install an inlet barrier filter. The Inlet Barrier Filter (IBF) assembly is installed inside the inlet cowl assembly as shown in Figure 1. The IBF is held into place via the modified engine inlet floor and the top cowl. All air flow into the engine will pass through the IBF thereby providing the engine with air that is free from possibly harmful particulates.

A pressure differential sensor is installed as part of the system and will alert the pilot via an annunciator in the cockpit (see Figure 2) should the filter become blocked. With the INSTR LT rotary switch in the OFF position, the IBF annunciator is set to bright. When the INSTR LT is in any position other than the OFF position, the brightness of the IBF annunciator is controlled by the position of the BRT/DIM switch. To determine the blockage of the filter, the pressure difference between the upstream and the downstream side of the filter is measured. The pressure differential switch is set to a predetermined value.

Once the annunciator illuminates, the pilot can activate the T-handle on the LH side of the center pedestal (see Figure 3) to open the mechanical bypass door (see Figure 4) allowing the airflow to bypass the filter thus permitting unfiltered air to enter the engine. Unfiltered air is drawn through the space around the transmission / main rotor mast primarily through the vertical opening towards the main rotor. The bypass door will remain open until the helicopter lands and a maintenance action is carried out to remove and clean the inlet barrier filter and close the bypass door.

A filter maintenance aid (see Figure 5) inside the air inlet cowl can be viewed by opening the lower LH access door pre/post flight to establish the condition of IBF.

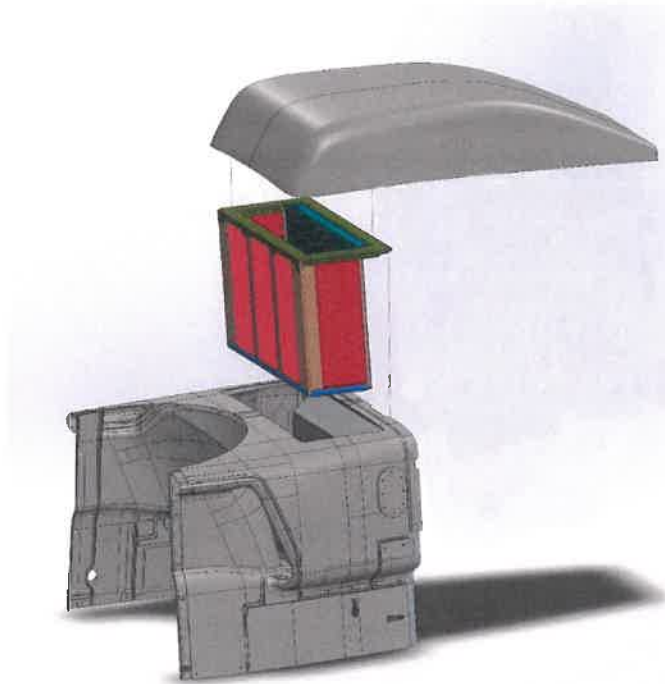


FIGURE 1 – INLET BARRIER FILTER INSTALLATION IN INLET COWL



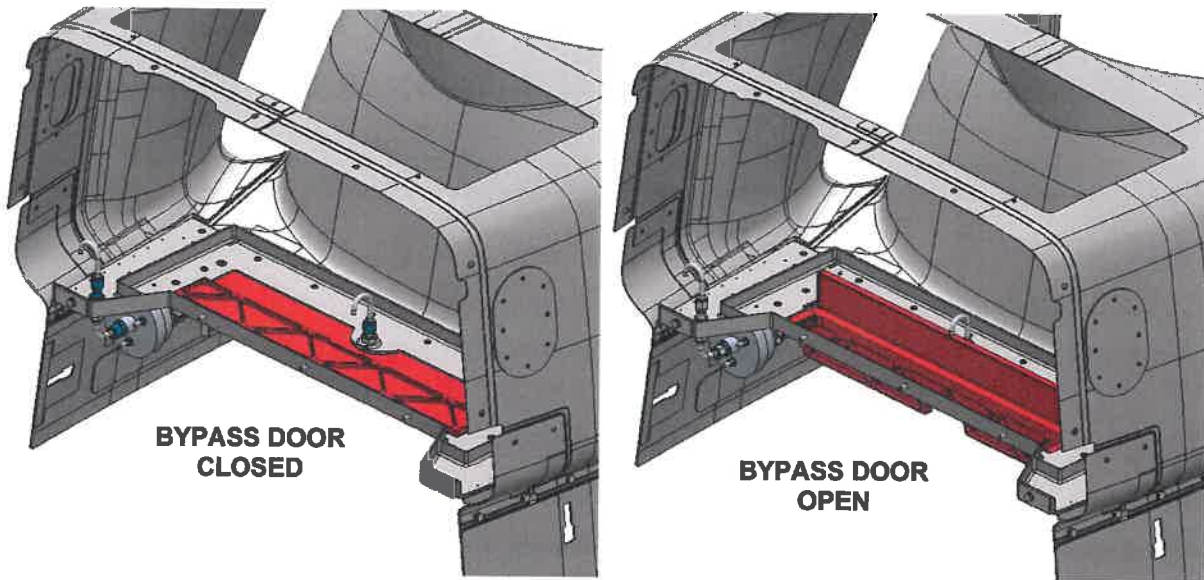
FIGURE 2 – IBF ANNUNCIATOR



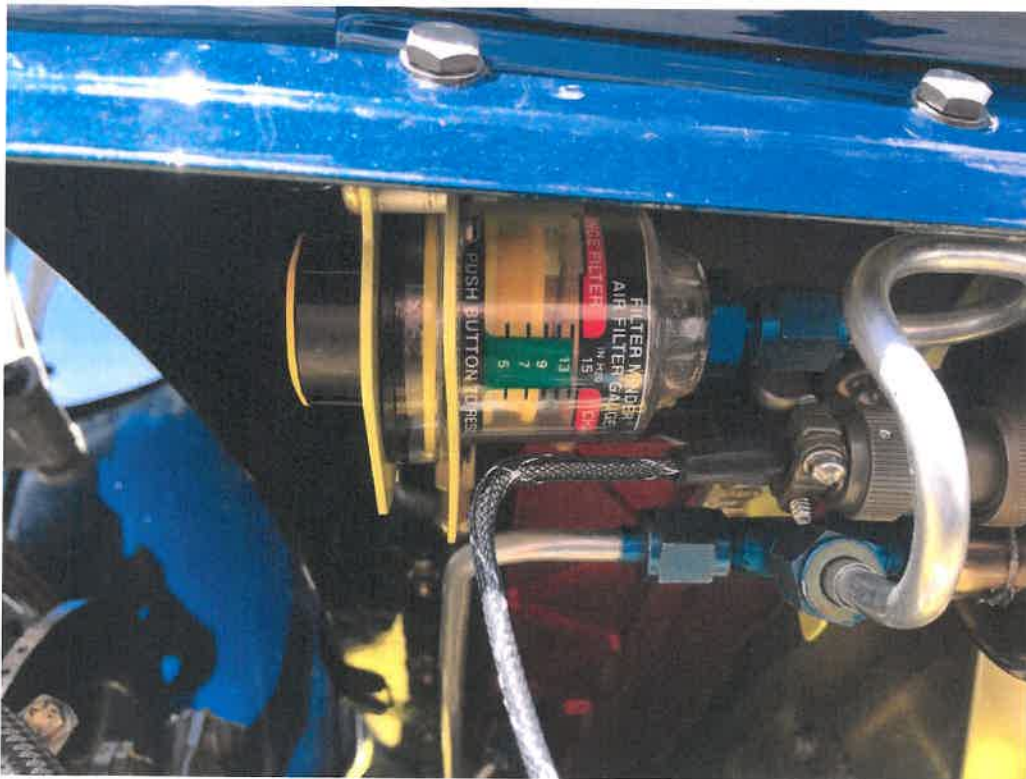
FIGURE 3 – BYPASS DOOR T-HANDLE

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**FIGURE 4 – INLET COWL WITH BYPASS DOOR**



**FIGURE 5 – FILTER MAINTENANCE AID**

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# SECTION 1 - LIMITATIONS

## 1.3 TYPES OF OPERATION

The snow deflector kit (206-708-208) shall be installed when conducting flight operation in falling and/or blowing snow with the IBF installed.

Takeoff with "IBF" annunciator illuminated is PROHIBITED.

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## SECTION 2 – NORMAL PROCEDURES

### 2.3 PREFLIGHT CHECK

#### 2.3B EXTERIOR CHECK

1. AIR INLET – Free of accumulated debris, snow, ice, slush, etc.
2. IBF – Free of accumulated debris, snow, ice, slush, etc.
3. IBF – Filter material in good condition
4. BYPASS DOOR – Closed
5. FILTER MAINTENANCE AID – Reads lower than 7.

#### NOTE

During flight operators with snow deflector kit installed the Filter Maintenance Aid (FMA) will not provide accurate readings and should not be used. Upon removal of the snow deflectors, reset the FMA.

### 2.4 INTERIOR AND PRESTART CHECK

1. IBF ANNUNCIATOR – Not illuminated
2. BYPASS DOOR T-HANDLE – Closed

### 2.7 BEFORE TAKEOFF

1. IBF ANNUNCIATOR – Not illuminated

### 2.8 TAKEOFF

1. IBF ANNUNCIATOR – Not illuminated

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## SECTION 3 – EMERGENCY/MALFUNCTION PROCEDURES

### INLET BARRIER FILTER WARNING

- INDICATIONS:
  1. IBF annunciator illuminates and/or unexplained increase in engine TGT/N<sub>1</sub>
- PROCEDURE:
  1. Reduce power and speed.
  2. IBF ANNUNCIATOR - Extinguishes,
  3. Continue flight at reduced power/speed.

If the IBF annunciator does not extinguish,

4. BYPASS DOOR T-HANDLE - Pull

#### NOTE

Button on T-Handle must continue to be depressed as handle is pulled outwards.

5. DOOR OPEN ANNUNCIATOR – Illuminated
6. IBF ANNUNCIATOR – Extinguishes
7. Continue flight
8. Service filter prior to next flight.

If the IBF annunciator does not extinguish and/or DOOR OPEN annunciator fails to illuminate,

9. Monitor engine instruments
10. Engine parameters within limits – Land as soon as practical
11. Engine parameters out of limits – Land as soon as possible
12. Service filter prior to next flight

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**Table 3-1. CAUTION (YELLOW) ANNUNCIATOR LIGHTS**

<b>CAUTION ADVISORY SYSTEM MESSAGE</b>	<b>FAULT CONDITION</b>	<b>CORRECTIVE ACTION</b>
IBF	The Inlet Barrier Filter has become dirty / blocked with debris.	<ol style="list-style-type: none"> <li>1. Reduce power and speed</li> <li>2. Activate the Bypass Door handle to open the Bypass Door.</li> <li>3. The IBF annunciator should extinguish and the DOOR OPEN annunciator should illuminate.</li> </ol>

**Table 3-2. ADVISORY (BLUE) ANNUNCIATOR LIGHTS**

<b>CAUTION ADVISORY SYSTEM MESSAGE</b>	<b>FAULT CONDITION</b>	<b>CORRECTIVE ACTION</b>
DOOR OPEN	The Bypass Door handle has been activated (pulled).	<ol style="list-style-type: none"> <li>1. No Pilot corrective action required</li> </ol>

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## SECTION 4 – PERFORMANCE

### 4.5 HOVER CEILING

1. Up to 12,000ft PA, no change to Hover Ceiling Charts presented in FMS-E407-789-1
2. Above 12,000ft PA, no change to Hover Ceiling Charts presented in FMS-E407-789-1 as long as aircraft shows +15°C margin on the Power Assurance Check within the last 24 hours. Otherwise, add 287 lbs to the aircraft weight to obtain Hover Ceiling.
3. If snow deflector kit (206-708-208) is installed, add 350 lbs to aircraft weight to obtain Hover Ceiling at any altitude in addition to the penalties described in items 1 and 2 above

### 4.7 CLIMB AND DESCENT

#### 4.7A CLIMB

1. Up to 12,000ft PA, no change to Rate of Climb Charts presented in FMS-E407-789-1
2. Above 12,000ft PA, no change to Rate of Climb Charts presented in FMS-E407-789-1 as long as aircraft shows +15°C margin on the Power Assurance Check within the last 24 hours. Otherwise, add 287 lbs to the aircraft weight to obtain Rate of Climb.
3. If snow deflector kit (206-708-208) is installed, add 350 lbs to aircraft weight to obtain Rate of Climb at any altitude in addition to the penalties described in items 1 and 2 above.

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