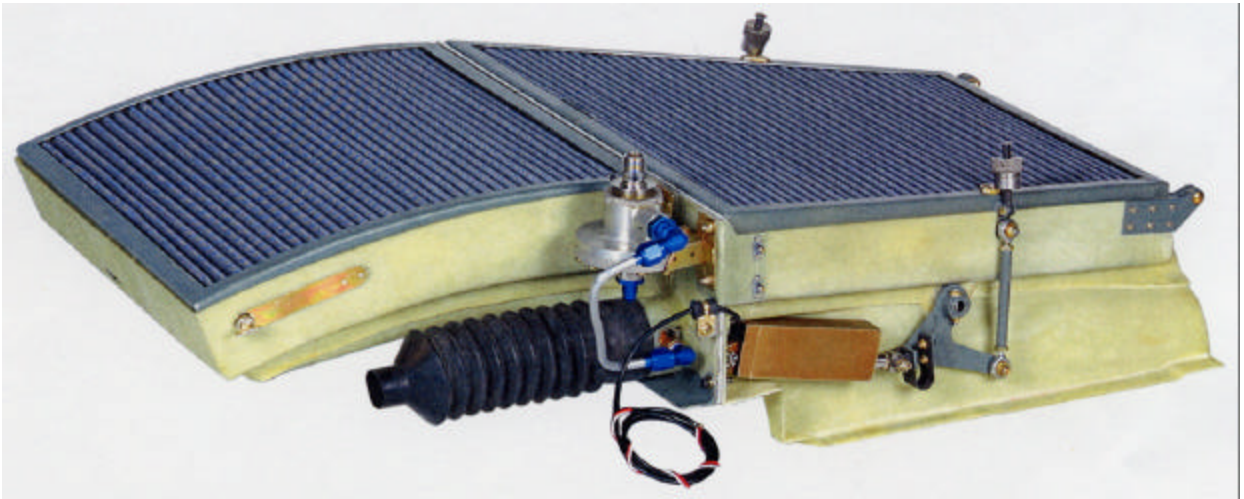


# INTEC Aerofilter

## INSTRUCTIONS FOR CONTINUED AIRWORTHINESS STC SR00877SE



### ENGINE INLET AIR FILTER SYSTEM MD 369 SERIES HELICOPTERS

This supplement must be attached to the applicable MD369 series helicopters, FAA Approved Maintenance Manual when the Engine Filter System, P/N 1369IN1-1 is installed in accordance with STC SR00877SE. The information in this manual supplements or supersedes the basic manual only in those areas listed.

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## SECTION 1

# Introduction

### 1.1 General Product Information

The engine filter system is designed to protect the turbine engine from foreign object damage and micro erosion when operating in normal and severe environmental conditions. The Model 1369 Engine Filter Systems consists of a duct assembly, forward and aft filter elements, a low inlet pressure annunciator system, and a pilot actuated alternate air system.

The filter elements are comprised of a specially formulated polymerized oil suspended by a pleated wire cloth and cotton fabric matrix, for the purpose of attracting and holding airborne dust particles. The filter element is serviced by cleaning and re-oiling at regular intervals, or as required, based on engine performance loss or by visual determination that engine performance could be adversely affected prior to the next scheduled servicing.

The pilot actuated alternate air system is provided to bypass the filter element in the event that engine performance is degraded due to filter blockage. The alternate air system should be inspected at regular intervals or prior to flight into environmental conditions that may require its use.

### 1.2 Scope of ICA

This manual describes the airworthiness limitations, service instructions, inspection procedures, and testing of the engine filter systems and its individual components. Strict adherence to the information given herein will assure maximum filtration benefit and increased component life.

### 1.3 Precautions

The following precautions are used throughout this manual and are defined as follows:

**WARNING:** Maintenance procedure, practice, condition, etc. which if ignored could result in personal injury or loss of life.

**CAUTION:** Maintenance procedure, practice, condition, etc. which if ignored could result in damage or destruction of equipment.

**NOTE:** Maintenance procedure, practice, condition, etc. or a statement which needs to be highlighted.

## SECTION 1 Continued

### 1.4 Definitions, Abbreviations, Acronyms, and Symbols

The following are used throughout the manual

fl. oz.	Fluid Ounce
in. lb.	Inch Pound (torque)
?P	Differential Pressure
EFS	Engine Filter System
STC	Supplemental Type Certificate
FAR	Federal Aviation Regulation
ICA	Instructions for Continued Airworthiness

### 1.5 Distribution

From time to time it may be necessary to revise or update information contained in this ICA. When revised pages are received, insertions should be logged on the *Record of Revisions* page and the *List of Effective Pages* log updated.

SECTION 2

## **Airworthiness Limitations**

The Airworthiness Limitations section is FAA approved and specifies inspections and other maintenance required under §43.16 and §91.403 of the Federal Aviation Regulations unless an alternate program has been approved.

There are no airworthiness limitations associated with this installation.

## SECTION 3

## Inspection/Test Requirements

### 3.1 General

These sections cover the basic maintenance and service requirements necessary for safe operation and continued airworthiness of the Model 1369 Engine Filter System. The service and inspection intervals designated herein are the maximum allowable and should not be exceeded.

### 3.2 Service Intervals

***When severe or unusual environmental conditions exist or as flight requirements dictate, it is the responsibility of the operator to increase the frequency and scope of inspections necessary to ensure safe operation.*** Due to the operational nature of a "barrier" type filter, an important criteria for safe and successful operation is an unobstructed inlet/filter system. This can be accomplished by visual inspection of the filter through the inlet fairing prior to each flight. Where as small suspended particles on the outside of the filter element do not cause an appreciable airflow restriction, large, obvious debris such as leaves, brush, litter, etc., should be removed prior to flight. Good judgement and practice will ensure safe operation as well as long filter life.

Inspections, scheduled and conditional, shall be performed by qualified personnel and in accordance with standard aircraft practice. Compliance with all applicable Service Bulletins and Airworthiness Directives is mandatory.

Refer to paragraphs 4.3.1 and 4.3.2 for post cleaning inspections.

## Service/Inspection/Test Intervals

ITEM	INSPECTION REQUIREMENT	EACH FLIGHT	100 HOUR INTERVAL	300 HOUR INTERVAL	ANNUAL INTERVAL
a	Visual inspection of filter element (installed).	•			
b	Inspect, clean and re-oil elements. *Ref. 4.3.1 & 4.3.2.		*		
c	Inspect lift mechanism and cycle alternate air doors.		•		•
d	Inspect and cycle differential pressure switch/warning annunciator.		•		•
e	Inspect element attachment hardware.		•		•
f	Inspect electrical connections.		•		•
h	Inspect filter housing structure and associated hardware for cracks and general security.			•	•
i	Leak and pressure test differential pressure switch/annunciator system.				•

## SECTION 4

**Filter Element Servicing****4.1 General**

To insure proper function and maintain a high level of filtration efficiency great care should be taken when handling the element. The element is most likely to be damaged during servicing than in operation. Special care should be taken when removing and reinstalling the inlet cowling, as well as when removing and replacing the element from the duct. The pleated materials fragile wire mesh is easily damaged or deformed when allowed to scrape against other components. Careful attention to the following section will assure full service from the filter element.

**4.2 Removal and reinstallation of elements.**

- a) Remove inlet fairings.
- b) Loosen the side 1/4 turn fasteners securing the forward filter element, lift the front edge of the element and remove forward.
- c) Loosen the hold down latches securing the rear element, by lifting the knurled nut and turning counter-clockwise until it can be swung out board. Lift the front edge of the element and remove forward.
- d) Inspect housing seal for condition and security. Reinstallation is reverse of above.

**4.3 Filter element cleaning**

- a) Holding the element clean side up, gently tap the element to dislodge any large imbedded debris and dirt.
- b) Use only INTEC filter cleaner, PN 40- 15

**Severe conditions:** Soak element, dirt side down, in a shallow pan and allow to permeate for 20 to 60 minutes, depending on condition. Use caution to ensure that dirt is not transferred to the clean side of the element. Remove element and shake thoroughly to remove dirty cleaner. Resoak for five minutes in clean filter cleaner.

**Normal conditions:** Spray on clean side INTEC filter cleaner liberally onto the element surface and allow to permeate for ten minutes. Alternatively, soak element in a shallow pan of filter cleaner and allow to permeate for ten minutes.

**DO NOT use Gasoline**  
**DO NOT use Jet A or Kerosene**  
**DO NOT use Caustic Cleaning Solution**  
**DO NOT use Detergents**  
**DO NOT use Parts Cleaning Solvents**  
**DO NOT use Pressure or Steam Cleaners**  
**DO NOT use High Pressure Hose Nozzles**

**CAUTION:** Failure to service the element correctly will harm the filter media by reducing its filtration efficiency, restricting airflow, and/or a reduction in service life.

- c) Rinse the element with low-pressure water from a garden hose. Always flush from the inside to the outside to avoid driving particles further into the filter media.
- d) After rinsing, gently shake off the excess water and set filter aside. Allow the element to dry naturally.

**DO NOT use Compressed Air**  
**DO NOT use Open Flame**  
**DO NOT use Hair Dryers or Heat Guns**

**CAUTION:** Excess heat will cause the filter media to shrink and high pressure air will open small holes that allow dirt to pass.

#### 4.3.1 Inspection- Severe conditions

In these conditions it may be necessary clean and inspect the element more frequently than recommended in Section 3. Element used in such conditions should be replaced if element filter media or fine mesh screen is severely degraded. It may be cleaned and serviced as many times as required during the element life. Regardless of the actual time in service of the element, the physical condition of the element, when exposed to these harsh conditions must remain the most important factor used to determine the serviceability of the element.

At each cleaning carefully inspect the element as follows:

- a) Inspect the fine mesh on the forward surface of the element pleats. Complete erosion of more than .50 in. is cause for element rejection.
- b) Inspect the course mesh on the aft surface of the element. Any evidence of mesh wire wear or general signs of mesh deterioration are cause for element rejection.
- c) After cleaning and before reoiling, hold the element up to a light and check for holes in the element material greater than .010 ( it is normal to observe pinholes in the filter media particularly at the pleat folds. These pinholes will not allow the passage of dirt once the element is oiled). Close the holes if present using a fine pick to reposition the media material to cover the hole.
- d) Check the condition of the entire assembly including:
  - Element frames for security.
  - Aft element latch brackets for wear and loose rivets.
  - Forward element camloc receptacles for security and loose rivets.
  - Seal strips for deterioration and evidence of gaps between joint surfaces.
  - Fasteners for security, loose rivets.
  - Repair any defects as required.

When operating in the most severe conditions it is highly recommended that serviceable pre oiled elements are available. This will allow continued service while the previously installed element is being cleaned, inspected and reoiled.

#### 4.3.2 Inspection of element –Normal conditions.

At each 150 hours of operation or upon activation of the low inlet pressure warning light, Remove the element and inspect in accordance with paragraphs 4.3.1a, b, c and d. The element should be replaced after **1500** hours in service.

#### 4.4 Oiling the filter element

**CAUTION:** Use only Oil, PN 40 – 10

AeroFilter Oil is a compounded mineral and animal oil blend, formulated with special polymers to form the tack barrier. A dye has been added to show where the oil has been applied. Eventually the red color will fade but the oil will remain.

**CAUTION:** Never use the filter element without INTEC AeroFilter oil.

**DO NOT use Engine Oil**  
**DO NOT use Transmission Oil**  
**DO NOT use Hydraulic Fluid**  
**DO NOT use Lightweight Oils (WD 40, LPS, etc)**

- Fill sprayer not more than 2/3 full with 40-10 oil.
- Charge sprayer with compressed air (needs 100 to 130 psi for proper spray pattern).
- Apply oil to the filter element with smooth, complete passes parallel to pleats.
- Repeat 90 degrees to pleats.
- Wait 30 minutes for proper wicking and reoil any light areas.

#### NOTE

Do not over-oil the element. Proper absorption is achieved when the filter media is completely wicked and any surplus 40-10 oil has been allowed to drip from the element.

The filter element is now ready for installation. Ref. Par. 4.2.

#### 4.5 DPS and warning light test.

Remove the tube between the plenum port and the DPS and attach a hose to the DPS port. Connect the other end of the hose to a low pressure vacuum source. With the aircraft power on, slowly reduce the pressure in the line until the "Low inlet pressure" light comes on at 9 in. H<sub>2</sub>O ± 1in. H<sub>2</sub>O. Contact INTEC for further information if the system is out of adjustment. Remove test equipment and replace filter element. Replace the tube after completion of the test.

## SECTION 5

**Trouble shooting**

<b>SYMPTOM</b>	<b>PROBABLE CAUSE</b>	<b>ACTION</b>
Caution light on when engine is not running	DPS stuck in closed position	Replace DPS
Caution light "flickers" at high power settings.	Filter elements are partially clogged.	Monitor engine instruments. Do not select by-pass if TOT is in limits or if in harmful environment.
Caution light on at all power settings.	Filter elements dirty.	Select bypass only if TOT for power required exceeds limits while still in harmful environment. Select bypass when in clean air. Replace filter elements before next flight.
Caution light stays on when bypass selected.	Actuator failed in retracted position.	Replace actuator.
Caution light on at high power with known clean filter elements installed	Probable turbine section degradation. Out of limits DPS	Carry out engine power check. Conduct functional test of DPS.