



**INSTRUCTIONS FOR
CONTINUED AIRWORTHINESS
1600-SERIES-ICA-1**



**ENGINE INLET AIR FILTER SYSTEM
MD 600N SERIES HELICOPTERS
STC SR00877SE**

This supplement must be attached to the applicable MD600 series helicopters, FAA Approved Maintenance Manual when the INTEC Engine Filter System, P/N 1600IN1-1 is installed in accordance with STC SR00877SE. The information in this manual supplements or supersedes the basic manual only in those areas concerned.

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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 1600 engine filter system consists of left and right side elements and a top element assembly. When installed they occupy the exact position of the filter portion of the factory particle separator assembly. The existing bypass air door and control system are retained along with the low pressure sensing system

The filter elements are comprised of specially formulated polymerized oil, suspended in a pleated wire cloth and cotton fabric matrix, which attracts and holds airborne dust particles. The filter element is serviced 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. Servicing consists of cleaning, inspecting and reoiling the elements.

The existing pilot actuated alternate air system remains 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. Ref. MDH maintenance manual, section 71-10-60, page 601.

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)
ΔP	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 1600 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 criterion for safe and successful operation is an unobstructed inlet/filter system. This can be accomplished by visual inspection of the filter elements 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 judgment 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

INSPECTION REQUIREMENT		EACH FLIGHT	100 HOUR	300 HOUR	Annual
a	Visual inspection of filter element (installed).	✓			
b	Inspect, clean and re-oil elements. *Ref. 4.3.1 & 4.3.2.		*		
c	Inspect by-pass air door.**		✓		
d	Inspect air pressure sensing switch/warning annunciator.**				
e	Inspect element attachment hardware.		✓		✓
f	Inspect electrical connections.**				✓
h	Inspect filter frame structure and associated hardware for cracks and general security.			✓	✓
	** Refer to relevant section of MDH maintenance manual				

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 elements from the engine inlet frame. 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. Extra care should be taken when working on the main rotor assembly. A supportive cover should be placed over the top element to small objects falling into the filter and to prevent possible damage from tools etc.

4.2 Removal and Reinstallation of Elements.

- a) Remove screws attaching left and right side elements to the top element panel and to the helicopter structure and remove the side elements.
- b) Remove the screws attaching the top element panel to the helicopter and remove the top element panel.
- c) Replace elements in reverse order of above.

ELEMENTS MUST BE REPLACED AFTER 25 CLEANING/ REOILING CYCLES.

4.3 Filter Element Cleaning.

- a) Holding the element clean side up and gently tap the element to dislodge 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 INTEC filter cleaner liberally on the clean side of 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.

SECTION 4 Continued

- 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 of Element - 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. **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
 - Seal strips for deterioration and evidence of gaps between joint surfaces.
 - All nutplates 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.

SECTION 4 Continued

4.3.2 Inspection of Element –Normal Conditions.

At each 150 hours of operation or upon activation of the “Air Filter Clogged” warning light, Remove the element and inspect in accordance with paragraphs 4.3.1a, b, c and d.

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 complete passes parallel to pleats.
- Repeat 90 degrees to pleats.
- Wait 30 minutes for proper wicking (pleats on engine side turn pink but do not drip oil) 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 Air Pressure Sensing Switch Calibration Check.

Refer to MD Helicopters, Inc. Maintenance Manual, section 71-10-60, page 601, para 4.