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Operation & Maintenance Manual/ Illustrated Parts List

INLET BARRIER FILTER SYSTEM
for the
MD Helicopters Inc. (MDHI)
MD500 Series Helicopters
FAA STC No. SR01394LA

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SIGNATURES

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	Approved By:	Michael Scimone	Original Signed By	02-08-02
A	Prepared By:	Thomas Newman	Original Signed By	06-28-02
	Reviewed By:	Daniel Flesher	Original Signed By	06-28-02
	Approved By:	Michael Scimone	Original Signed By	06-28-02
B	Prepared By:	Gary Heyne		23 Mar 07
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N/C	Initial Submittal	M. Scimone	02-08-02
A	Corrected all references to "McDonnell Douglas Helicopter Incorporated" to read "MD Helicopters Inc." and change references to "Westar" to new name "AFS"; Title pg - add new logo & FAA project no.; Pg i - add revision block page; Para 2.6 – add new paragraph for Optional Ground Support Equipment providing supplier information for the procurement of filter assembly covers;	M. Scimone	06-28-02
B	Added Filter Maintenance Aid (FMA) information to include Section 4.5 and Figures 4 and 5. Increased IBF Inspection interval to 500 Hours. Removed Westar information from the cover page and header. Added Signature Page (i).	G. Heyne	23 Mar 07

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Instructions for Continued Airworthiness

"This document serves to meet the intent of the Federal Aviation Requirements (FAR) to provide Instructions for Continued Airworthiness. Modification of an aircraft by this Supplemental Type Certificate (STC) obligates the aircraft operator to include the maintenance information provided by this document in the operator's Aircraft Maintenance Manual and the operator's Aircraft Scheduled Maintenance Program. The Airworthiness Limitations & Maintenance Requirements section is FAA approved and specifies inspections and other maintenance required. The STC kit installation information is contained in the Installation Procedures manual, AFS-MD500-IBF-KIT-IP, and should also be placed into the appropriate operator's Aircraft Maintenance Manual."

AFS MD500 Inlet Barrier Filter (IBF) System
Operation & Maintenance Manual

1.0 OPERATIONAL REQUIREMENTS

1.1 SYSTEM DESCRIPTION

The Aerospace Filtration Systems (AFS) IBF system design includes an all-new aircraft upper aft engine inlet fairing assembly. For the purpose of this manual, this component will be referred to as the "aft fairing." The aft fairing conforms to the inlet duct and upper section of the engine inlet plenum chamber. The IBF system (Figure 1) is an integral aircraft component with subsystem components incorporated into the aft fairing. It is comprised of an aerodynamic structural fairing, integral structural frame and deflector, integral bypass system, two barrier filter assemblies (forward and upper), integral seals, plumbing for the existing differential pressure switch, two forward floor plates and a control rod fairing that interfaces with the existing flexible boot and tail rotor control rod to seal the inlet plenum.

The forward and upper barrier filter assemblies are comprised of the filtration media and mounting frames with captive fasteners. The current interface with the MDHI forward split fairings is maintained, and the tail rotor control rod interface is improved over its current configuration.

The IBF fairing employs a mechanically operated inlet bypass system to permit unfiltered air to enter the engine inlet plenum chamber should the IBF filter media become obstructed. Once the bypass system is rigged during the IBF system installation, no recurring maintenance is required. A standard MDHI MD500 aircraft inlet differential pressure sensor is used and for most installations the existing sensor can be reused. The sensor provides an indication to the pilot of debris accumulation on the filter elements, glossing over due to ice or snow, and when to activate the bypass system prior to the pressure drop across the filters exceeding operational limits.

On the ground, an optional Filter Maintenance Aid (FMA), may be mounted in the compartment aft of the left hand passenger seat, the FMA displays the maximum differential pressure across the filter reached during the last flight. It is accessible only on the ground, providing the mechanic the ability to visually gauge the current condition of the filter. This gives the mechanic the ability to forecast the timing of the next service cycle. The Filter Maintenance Aid can be reset by depressing the yellow button marked "PUSH TO RESET" located on the end of the Filter Maintenance Aid (See Picture 1 & 2).

The Filter Maintenance Aid is designed to hold the highest differential pressure across the filter assembly reached during the last flight, and should be reset after servicing of the filter assembly.

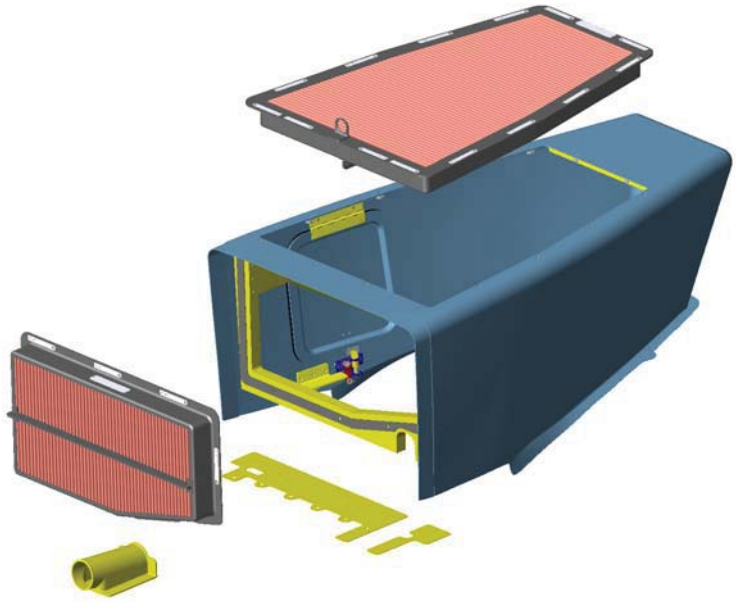


Figure 1: AFS MD500 Inlet Barrier Filter System

1.2 PRE-FLIGHT INSPECTION

Pre-flight inspection shall be made by the pilot to inspect the filters (forward and upper) for damage, excessive accumulation of debris (straw, leaves, insects, etc.) or snow/ice, missing or damaged fasteners, or the need for servicing or repair of the filters. After extended operation in precipitation (i.e., rain, or a combination of rain and sleet/snow), the sand and dust collected on the external side of the filter media (dirty side) may coagulate in the corners of the filter media pleats. If visual inspection indicates existence of any of the above conditions, the decision whether to service the filter assemblies will reside with the flight crew. Damaged or missing fasteners should be replaced to maintain maximum seal integrity. The filter assemblies use captive fasteners and should not need replacement during normal service. If the fastener should become damaged, perform fastener replacement per manufacturer's recommendations (see paragraph 4.3). Operation with either missing fasteners and/or filter damage can severely degrade IBF system separation efficiency and result in possible performance loss, wear, and/or damage to the engine. Damaged filter elements should be either repaired as described in paragraph 4.0 below or replaced.

1.3 CAUTIONS-WARNINGS-ADVISORIES/EMERGENCY PROCEDURES

The "AIR FILTER CLOGGED" advisory light illuminates when the pressure drop across the IBF elements reaches the aircraft inlet differential pressure switch setting. This light serves as a caution to the pilot that the Turbine Outlet Temperature (TOT) has increased compared to a clean filter element, resulting in decreased turbine temperature margin. The pilot must be aware that under normal operation, TOT gradually increases as pressure drop increases thereby reducing power available when temperature limited. The pilot must therefore closely monitor TOT; continued operations in an environment causing the pressure drop and TOT to continue to increase will eventually result in a reduction in power available. Therefore, upon illumination of the advisory light, the pilot must evaluate current conditions, closely monitor TOT, and assess mission requirements to determine whether to continue the flight, open the bypass door or return to place of origin or nearest airfield. The bypass door is mechanically opened by the pilot from the cockpit by pulling a lever mounted above and behind the left crew seat. This lever is connected through a control cable to the bypass door located on the right side of the upper aft fairing assembly. Prior to opening the bypass door however, the pilot must to the extent possible take action to avoid operations in any environment that would be harmful to the unprotected engine. Emergency conditions, requiring immediate opening of the bypass door, could result while operating in extended brown out conditions, inadvertent icing conditions, or upon accumulation of foreign object(s) (e.g. shedding a sheet of ice or multiple small objects including bird/insect strikes). Such emergency conditions would be evident to the pilot by the illumination of the "AIR FILTER CLOGGED" advisory light followed by an immediate increase in TOT.

2.0 AIRWORTHINESS LIMITATIONS & MAINTENANCE REQUIREMENTS

2.1 NORMAL SERVICE LIMITS

The actual service interval must be based on a combination of tracking engine Power Check data (Refer to Section V of the applicable MD500 Series Rotorcraft Flight Manual), cumulative operating hours, "AIR FILTER CLOGGED" indication and visual inspections. Any steady illumination of the "AIR FILTER CLOGGED" light, where the pressure sensor and indicating system are shown to be working properly, requires servicing of the filter elements at the earliest opportunity. The gradual increase in pressure drop across the IBF elements causes a reduction in temperature margin as measured by the Power Check. When possible, in order to minimize unnecessary filter changes, the servicing of the IBF should only be performed after standard troubleshooting methods are exhausted and the only remaining suspect performance driven anomaly is inlet pressure loss. The recommended service interval is 500 hours or annually, which can be coupled with other aircraft/engine inspections, this may be preempted by an air filter indication light or an FMA indication. The decision whether to service the filter based on the results of a visual inspection will reside with the pilot. If physical evidence is present that a fungus is growing over a substantial portion of the filter media assembly (30% per assembly), it will require servicing. Maximum number of service cycles (i.e., cleaning/oiling) is limited to 15 for each filter assembly. The forward and upper filter assemblies include a data plate that must be scribed to track filter service cycles (see paragraph 3.9). If installed, the FMA should periodically be checked during scheduled maintenance intervals or on condition for condition and security. It is recommended that the function check be performed annually per Section 4.5.

2.2 STANDARD ENVIRONMENT REQUIREMENTS

During normal conditions and typical operations in and out of prepared airfields and landing sites, the IBF filter elements will not require frequent servicing. A Power Check should be performed every 25 aircraft operating hours to gage the rate of engine performance degradation due to changes in engine inlet pressure drop as the filters accumulate dirt. This is recommended after the first installation and operation of an IBF system with an operator with no prior experience or following relocation to an unknown environment. After establishment of a trend and experience with the IBF system, the Power Check interval may be increased as deemed reasonable. It is recommended, however, that a Power Check be performed at a minimum every 100 operating hours.

2.3 DESERT ENVIRONMENT REQUIREMENTS

When operating in an environment of high airborne sand and dust levels, frequent servicing of the filter elements may be required based on the time exposure to the environment. Any operations in this type environment that can result in "brown out" (i.e. severe dust) type conditions should therefore be minimized or avoided to the maximum extent possible. If extended time is being accumulated operating in "brown out" conditions, a Power Check could be required at as low as 10-hour intervals. This reduced interval will be based on the judgment of the pilot. It is recommended that for normal operations in a desert environment that Power Checks be conducted every 25 hours. Servicing requirements for engines operating in this type of environment will be primarily based on the indicated degradation of the engine performance as determined by the Power Check results. Regular operation in a fine sand and dust environment can cause oil loss from the element thus reducing the filter's separation efficiency. Under such circumstances occasional re-oiling of the element's clean side may be necessary based on the coloration of the element.

NOTE:

Visual inspection for loss of oil should be done on the clean side or down stream side of the filter assembly.

2.4 ENGINE WATER WASH/RINSE

Do not deviate from the published OEM (Rolls-Royce) procedures.

2.5 UNCOVERED STORAGE

If an IBF equipped aircraft is stored uncovered and exposed to the environment (rain, snow, etc.) or direct sunlight, the upper filter assembly must be protected and the forward filter assembly inlet duct should be protected from snow accumulation (see paragraph 2.6 below). In particular, the cover must be used to protect the upper filter assembly since long-term exposure to sunlight may degrade the filtration characteristics of the media and generate a service cycle.

2.6 OPTIONAL GROUND SUPPORT EQUIPMENT

The IBF kit does not include an environmental protection cover, as required in paragraph 2.5 above. This cover is required if the aircraft is not kept in covered storage, e.g. a hanger. The cover must be capable of protecting both the forward and upper filter assemblies and the static ports at the aft end of the fairing. One such cover is available from a company called Bruce's Custom Covers in Sunnyvale, California. This cover or any equivalent cover must be procured separately. If using the cover manufactured by Bruce's Custom Covers, aircraft model 369D uses the P/N 500D-100 cover and models 369E, 369F, and 369FF all use the P/N 500E-100 cover, both of which are designated as an "Intake/Doghouse Cover". The complete supplier information is as follows:

Bruce's Custom Covers
989 E. California Ave.
Sunnyvale, CA 94085

Phone: 408.738.3959
Toll Free (U.S.): 800.777.6405
Fax: 408.738.2729

www.aircraftcovers.com

E-mail: bruce@aircraftcovers.com

3.0 SERVICING INSTRUCTIONS

3.1 AUTHORIZED MATERIALS

Service AFS filters elements with only K&N Air Filter Oil (P/N 99-0551 or 99-0555), AFS Air Filter Oil (P/N 100100-101 or 100101-101), K&N Air Filter Cleaner (P/N 99-0635 or 99-0640), AFS Air Filter Cleaner (P/N 100200-101 or 100201-101), or an AFS authorized substitute. See paragraph 3.6 for cleaning procedure and paragraph 3.11 for oiling quantities/procedure.

3.2 TOOLS REQUIRED

5/16-inch Slotted Screwdriver

#2 Phillips Screwdriver

Hand Seamer – 1 1/4 inch maximum jaw depth

NOTE:

Hand seamers are available through many commercial aircraft supply stores (local or on-line) and also through commercial heating and air conditioning supply stores. Recommend the following: Malco Tools "Hand Seamer with Forged Steel Jaw", Catalog # S2, S3 and S6, see www.malcotools.com. The S3 model is also available through Wicks Aircraft Supply, Part Number TP44-0, "Offset Hand Seamer", see www.wicksaircraft.com.

3.3 FILTER REMOVAL/INSTALLATION

The IBF system uses two barrier filter assemblies that can be easily removed for cleaning and/or replacement. The system is designed for easy access and removal of the filter assemblies with the aircraft shutdown on the ground.

Upper Filter Removal

CAUTION

After removal of the filter assemblies, inspect the filter seals on the aircraft for visible damage and security.

CAUTION

After removal of the filter assemblies, cover the engine inlet to ensure it is protected from FOD, if the assemblies are not reinstalled immediately.

Removal of the top filter requires the disengagement of (14) captive Dzus type fasteners. A ¼ turn (counterclockwise) with a slotted screwdriver is all that is required to remove the Dzus stud (screw head) from the receptacle. Once all the fasteners are loose, filter element must be carefully removed so as not to damage the seals. The upper filter has the seal attached to the underside of the filter assembly.

Upper Filter Installation

WARNING

Prior to installation of the filter assemblies, remove any FOD protection from the engine bellmouth.

Prior to installation of serviced filter assembly, the seal shall be visually inspected for security and damage. Insert the upper filter assembly into the upper aft fairing cutout; insure the assembly is seated properly in the upper opening. Engage the (14) captive Dzus type fasteners by rotating ¼ turn clockwise and ensure the seal is uniformly compressed. Do not over rotate the fasteners, over rotation will result in damage to the stud and/or the receptacle.

Forward Filter Removal

CAUTION

After removal of the filter assemblies, inspect the filter seals on the aircraft for visible damage and security.

CAUTION

After removal of the filter assemblies, cover the engine inlet to ensure it is protected from FOD, if the assemblies are not reinstalled immediately.

To remove the forward filter assembly, remove the right detachable forward upper inlet fairing. Remove the (10) Phillips head screws that secure the oil cooler FOD screen, remove the FOD screen. Disengage the (8) captive Dzus type fasteners that fasten the forward filter assembly to the forward frame. A ¼ turn (counterclockwise) with a slotted screwdriver is all that is required to remove the Dzus stud (screw head) from the receptacle. The forward filter assembly seal is attached to the forward frame.

Forward Filter Installation

WARNING

Prior to installation of the filter assemblies, remove any FOD protection from the engine bellmouth.

Prior to installation of serviced filter assembly, the seal shall be visually inspected for security and damage. Insure that the forward filter assembly is seated properly in the forward frame. Engage the (8) captive Dzus type fasteners by rotating ¼ turn clockwise and ensure the seal is uniformly compressed. Do not over rotate the fasteners, over rotation will result in damage to the stud and/or the receptacle. Reinstall the oil cooler FOD screen and secure with (10) Phillips head screws.

3.4 INSPECTION AND PRE-CLEANING

Remove the filter elements and inspect the serviceability tag. If all the blocks have been marked through, the assembly should be discarded and replaced with a new or other serviceable assembly. If there are service cycles left on the assembly, proceed with pre-cleaning. Carefully remove any large debris by hand or with tweezers then gently brush the dirty side of the filter with a soft bristle brush similar to a soft paintbrush to remove any heavy deposits.

3.5 CLEANING PRECAUTIONS

CAUTION

Do not clean AFS elements with gasoline, solvents, parts cleaners, strong detergents, or caustic cleaning solutions.

CAUTION

Do not steam clean or use high-pressure washers to clean the AFS element.

Use only K&N Filter Cleaner, AFS Air Filter Cleaner, or an AFS approved substitute. The K&N Filter Cleaner is commercially available (see paragraph 3.1). Use of any product other than those approved by AFS **will** cause damage the filter media and/or frame assembly. The use of any other cleaning material is strictly prohibited and voids any manufacturer warranty.

3.6 APPLYING CLEANER

Spray cleaner liberally onto the entire element (both sides) until the filter media is thoroughly soaked. If procured in bulk, transfer a smaller quantity to a spray bottle. A spray bottle provides a more uniform distribution of the cleaning agent. With the filter element lying flat (dirty side down), let the cleaner soak into the filter media for 15 minutes.

3.7 RINSE PROCEDURE

After the cleaner has soaked for 15 minutes, rinse the filter with low-pressure water. Use water out of a standard faucet or hose (without nozzle). Start flushing in the opposite direction of airflow, i.e., from the clean side to the dirty side. Arrange the filter so the pleats are vertical, and begin to rinse in a gradual side-to-side motion starting at the top and working downward. Adjust the pace to correspond with the cleanliness of the water runoff. As long as the runoff is filled with debris and oil, do not proceed downward. Upon completion, rotate the filter to clean from the dirty side to the clean side, pleats still vertical. Using very low water pressure to avoid driving the debris deeper into the media, repeat the rinsing procedure until there is no visible debris on the surface and the runoff water is clean. When finished, flip the filter once again and repeat the rinse from clean side to dirty side. Finally, rotate the filter from top to bottom, and perform the final rinse until the runoff water is free of all debris and oil. After the final rinse, inspect filter by viewing through the filter to a direct light source. If debris still remains a repeat cleaning may be necessary.

3.8 DRYING PROCEDURE

CAUTION

Do not use compressed air since it will damage the filter media.

CAUTION

Do not use heat from any source to dry the AFS element. Heat will shrink the filter media and may damage the coring material within the filter frames.

After rinsing, shake off the excess water and let the element dry at room or outside air temperature (above freezing).

NOTE

After cleaning and before oiling of the dry filter element, the pleats should be inspected and, if required, straightened or crimped per the procedure at paragraph 4.1 below.

3.9 MARKING PROCEDURE

After the filter assembly has dried take a sharp instrument (scribe or center punch) or a vibro-peen and scratch an "X" through one of the unmarked boxes on the serviceability tag. Use caution not to slip and injure yourself or damage the filter element. When the last unmarked box is crossed through the filter assembly will have to be replaced when servicing is required again.

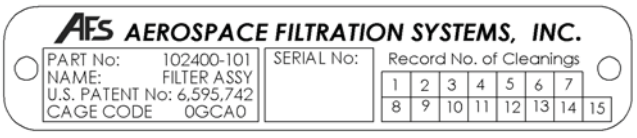


Figure 2: Example of Filter Assembly Data Plate

3.10 OILING PRECAUTIONS

WARNING

Never put an AFS Filter Assembly in service without oiling it.

CAUTION

Use only K&N Air Filter Oil, AFS Air Filter Oil, or an AFS approved substitute.

The filter will not function properly if other types of oil are used. Both K&N Air Filter Oil and AFS Oil are a unique blend of oil base stocks and special polymers that form a very efficient "tack barrier." Dye is added to show areas of oil application. Do not use transmission fluid, any kind of motor oil, or diesel fuel to oil the AFS filter. Do not use "WD-40," "LPS," or any other type of lightweight spray lubricants to oil the AFS filter. Use of any product other than those approved by AFS **will** cause damage the filter media and/or frame assembly. The use of any other oiling material is strictly prohibited and voids any manufacturer warranty.

3.11 SQUEEZE BOTTLE

CAUTION

Use caution not to over oil.

A squeeze bottle allows for the controlled application of a specific amount of oil per filter. Seven fluid ounces (7 fl. oz., 102465-101) is the quantity to be applied to the forward filter assembly (P/N 102450-101) and fourteen fluid ounces (14 fl. oz., 102425-101) should be applied to the upper filter assembly (P/N 102400-101). Lay filter flat, gently squeeze a small stream of oil along the entire length of each pleat peak, then flip the filter over and repeat this on the backside. Apply sparingly to ensure coverage of the entire filter. **Use caution not to over oil**. Let the filter sit for 30 minutes as the oil "wicks" into the surrounding filter media. The oil wicks most effectively when the filter is laying flat. Apply remaining filter oil (not to exceed the quantities above) to any areas that are still white or not yet uniform in color. **Use caution not to over oil**.

4.0 FILTER ELEMENT REPAIR

4.2 PLEAT STRAIGHTENING

CAUTION

Hand seamer must be limited to a maximum jaw depth of 1 1/4 inch. A deeper jaw depth can result in deformation or damage to the adjoining pleats.

CAUTION

Do not over crimp and crush pleat, care must be taken to squeeze the pleats without deforming or damaging the pleated screen.

After servicing of the filters, the pleats may require straightening or crimping. When looking down on the filter from either side, you must be able to see the bottom of the pleat. If you cannot see the bottom of the pleat, the airflow will be restricted and/or the pleats will stick together when dust loaded. Any restriction to the flow through the pleats will result in increased pressure drop and reduction in sand loading capacity. In order to insure ideal flow characteristics through the filter media, the pleats must be straightened or crimped with a standard sheet metal tool (hand seamer). Once one side is crimped, flip the filter over and crimp the other side as required following the guidance above.

4.2 PUNCTURE DAMAGE

In the event of damage to the filter system, ruptures in the filter can be repaired without risk of structural deformation of the filter element. Small ruptures defined as smaller than a dime can be sealed shut without degradation of performance. Larger ruptures exceeding a dime in size require the assembly to be returned to AFS for evaluation. Details of these repair procedures are defined below. Prior to performing any of these repairs, the filter material must be cleaned and void of contamination and oil.

4.2.1 Small Rupture

Ruptures or voids in the material up to a dime in size can be trimmed clean to remove loose material (wire or cotton gauze) and encased in a sealing material. The sealing material shall be a two-part sealant, such as AMS 3276, for standard use on aircraft. Allow the sealant to bleed into the filter material and cure before operating to ensure it will not dislodge into the engine inlet plenum.

4.2.2 Large Rupture

Ruptures in the material exceeding a dime in size are not repairable in the field, and the element shall be returned to AFS for evaluation and disposition.

4.3 MAINTENANCE DAMAGE

The repair procedures defined above are valid for handling damage resulting in ruptures as described above. Any unrepairable damage to the filter frames that impair the integrity of the structural security or sealing surfaces shall require the element to be returned to AFS for evaluation and disposition.

4.4 FASTENER REPLACEMENT

In the event a fastener becomes damaged and is no longer functional, replacement fasteners are identified in the section ***5.0 Illustrated Parts List***. Cut the retaining grommet with a pair of diagonal cutters and remove stud from hole. Insert new stud through ejector blade hole and place new grommet over the end of the stud. Flatten grommet with suitable tool to make the stud captive. If the receptacle is damaged, drill out rivets that secure receptacle. The receptacles used on the IBF are floating receptacles, Dzus Type RF35. When replacing a receptacle be sure to install the spacers, Dzus Type RF35-5L in the receptacle holes prior to riveting the receptacle back in place. Ensure receptacle floats after assembly.

4.5 FILTER MAINTENANCE AID INDICATOR (FMA) - OPTIONAL

The Filter Maintenance Aid provides an indication to maintenance personnel as to the trend of the differential pressure across the Filter Assembly. The construction details of the component do not warrant field maintenance. Repair of this component requires it to be sent back to AFS for disposition, or replacement. The FMA is an aid to help maintenance personnel to ascertain the current condition or trend in accumulation of dirt on the Filter Assembly.

4.5.1 Removal

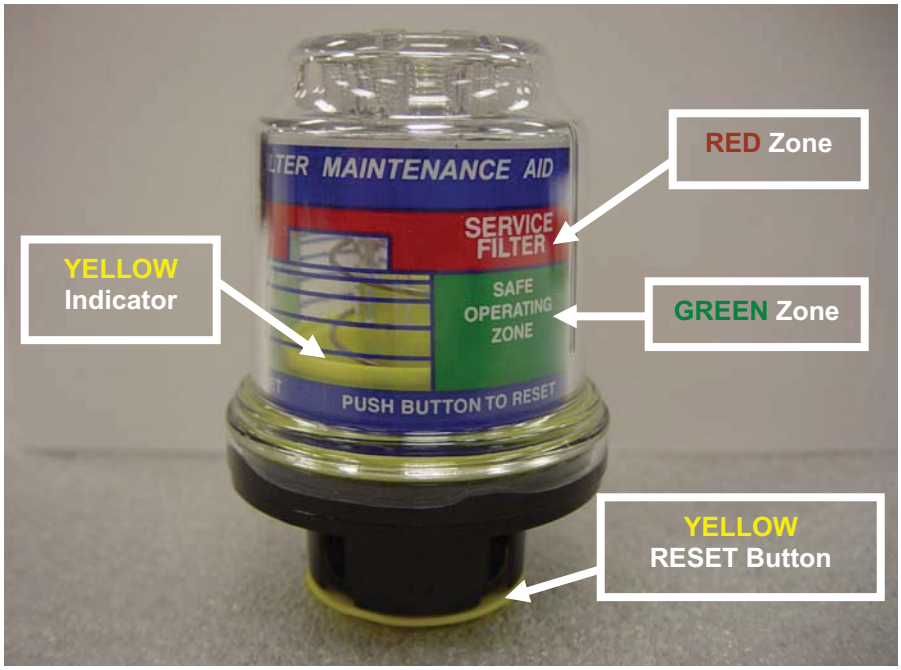
Access the aft compartment behind the left hand passenger seat. Disconnect the hose from the AN842-4D nipple. Then remove the hardware and FMA Retaining Ring from Filter Maintenance Aid Mount. Remove Filter Maintenance Aid.

4.5.2 Inspection

Inspect the Filter Maintenance Aid and associated mounting for discoloration affecting readability, cracks, deformation, missing or damaged components, and serviceability. Inspect the Filter Maintenance Aid Tube Assembly for debris and insure that the tube is clear and unobstructed. Inspect the associated components, such as the Mount Assembly and hardware for missing components, cracks, distortion or deformation, scratches or gouges, or missing protective coatings. If Filter Maintenance Aid Bracket assembly is cracked or nut-plates are unserviceable, drill out the attaching rivets that secure the component and obtain new component and re-attach using same type rivets (MS20470AD4 for bracket) or (MS1097AD3 for nut-plates).

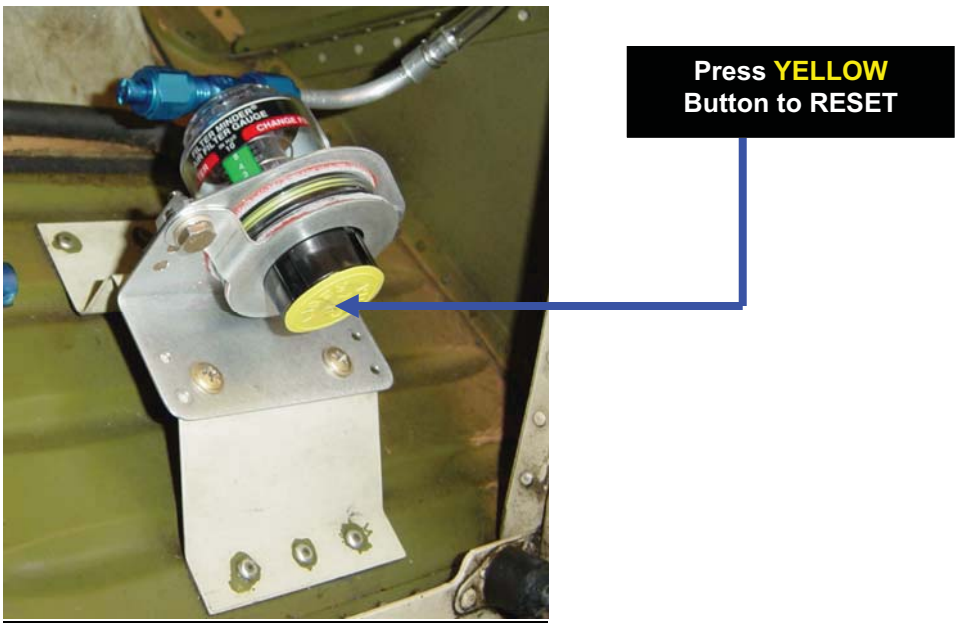
4.5.3 Adjustment

The Filter Maintenance Aid is designed to hold the highest differential pressure across the filter assembly reached during the last flight, and can be reset by depressing the yellow button marked “PUSH TO RESET” located on the end of the filter maintenance aid (See Pictures 1 & 2).



Picture 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 the scavenge valve bracket assembly behind the left hand passenger compartment quarter panel assy.



Picture 2: FILTER MAINTENANCE AID RESET

4.5.4 Repair

The construction details of the component do not warrant field maintenance. There is no repair for this component, contact AFS to obtain a new component. If the Filter Maintenance Aid fails the function check, disconnect the hose assembly and inspect for damage or blockage of the tube assembly. Inspect the opening on the Filter Maintenance Aid for obstructions. Remove obstructions if present. Reattach hose assembly and perform function check (Refer to Section 4.5.5). If it fails function check, replace FMA. Replace damaged sheet metal components of the Mount Assembly and missing or damaged hardware if required. Re-apply corrosion protection to mount as required.

4.5.5 Function Check

CAUTION

IMPROPER USE OF THE ALTIMETER TEST SET COULD RESULT IN DAMAGE TO THE FILTER MAINTENANCE AID.

CAUTION

IMPROPER USE OF THE ALTIMETER TEST SET SUCH AS PULLING AN ALTITUDE OF GREATER THAN 1880 FEET ABOVE FIELD ELEVATION WILL DAMAGE THE FILTER MAINTENANCE AID.

Connect the Barfield (or equivalent) altimeter test set vacuum system to the end of the fitting inside the plenum area. Ensure that the fit between the test set and fitting is tight, i.e., no leakage. Reset the Filter Maintenance Aid by depressing the yellow button marked "PUSH TO RESET" located on the end of the filter maintenance aid (See Picture 2). The maintenance aid should indicate in the red zone within the following range:

	Test Station Elevation (ft)					
Test Method	**0**	**2000**	**4000**	**6000**	**8000**	**10000**
Low Pressure Calibrator (inches of H_2O)	10.5 ± 1.1					
Altimeter Test Set (ft above test station elevation)	720 ±70	770 ±80	810 ±80	870 ±90	920 ±90	980 ±100

* Note: See Figure 5 for an alternate function check method.

4.5.6 Installation

Position the Filter Maintenance Aid into the Mount Assembly. Install hardware and connect hose assembly. Perform Function Check of Filter Maintenance Aid (Refer to Section 4.5.5).

5.0 ILLUSTRATED PARTS LIST

Parts can be ordered by calling Aerospace Filtration Systems (AFS), at (636) 300-5200.

Item **No.**	**Part No.**	**Description**	**Qty**	**Ref. Fig. 3**
1.	102450-101	Filter Assembly – Forward	1	Sheet 1
2.	102315-201	Seal – Filter, Upper	1	Sheet 1
3.	102400-101	Filter Assembly – Upper	1	Sheet 1
4.	102413-203	Grip – Finger	1	Sheet 1
5.	102323-201	Shim – Hinge	1	Sheet 2
6.	102309-201	Hinge Half – Fairing	1	Sheet 2
7.	102317-201	Seal – Bypass Door	1	Sheet 2
8.	102324-201	Stop – Latch	1	Sheet 2
9.	102321-201	Shim – Latch	1	Sheet 2
10.	MS21219WG3	Clamp	5	Sheet 2 & 6
11.	102301-201	Fairing	1	Sheet 2
12.	102311-201	Deflector	1	Sheet 2
13.	102307-201	Frame – Structural, Forward	1	Sheet 2
14.	102313-201	Seal – Filter, Forward	1	Sheet 2
15.	102319-201	Fairing – Control Rod	1	Sheet 2
16.	102303-201	Floor Plate	1	Sheet 2
17.	102303-203	Floor Plate – L/H	1	Sheet 2
18.	102305-201	Attach Plate – Sides	2	Sheet 2
19.	102306-201	Attach Plate – Aft	1	Sheet 2
20.	102370-101	Latch Assembly	1	Sheet 3
21.	MS24665-132	Cotter Pin	1	Sheet 3
22.	102375-201	Plunger – Latch	1	Sheet 3
23.	C0360-035-0560-M	Spring	1	Sheet 3
24.	102371-201	Body – Latch	1	Sheet 3
25.	102373-201	Lever – Latch	1	Sheet 3
26.	AN960PD-10	Washer	4	Sheet 3
27.	MS20392-2C11	Clevis Pin	1	Sheet 3
28.	102377-201	Pin – Latch	1	Sheet 3
29.	AN310-3	Nut	1	Sheet 3
30.	FF303-01	Bushing	1	Sheet 3
31.	102350-101	Door Assembly – Bypass	1	Sheet 4
32.	102359-201	Hinge Pin – Door	1	Sheet 4
33.	102357-201	Hinge Half – Door	1	Sheet 4
34.	102351-201	Door – Bypass	1	Sheet 4
35.	102353-201	Handle – Door	1	Sheet 4
36.	102355-201	Strike Plate – Door	1	Sheet 4
37.	X-1031	Ejecting Blade	22	Sheet 5
38.	RF35	Receptacle	22	Sheet 5
39.	RF35-5L	Spacer	44	Sheet 5
40.	GH35	Grommet	22	Sheet 5
41.	A35T33	Stud (Upper filter assy. – front)	10	Sheet 5
42.	A35T36	Stud (Upper filter assy. – side/aft)	4	Sheet 5
43.	A35T27	Stud (Forward filter assy.)	8	Sheet 5
44.	102325-201	Cable	1	Sheet 6

Table 1: AFS MD500 Inlet Barrier Filter System Parts List

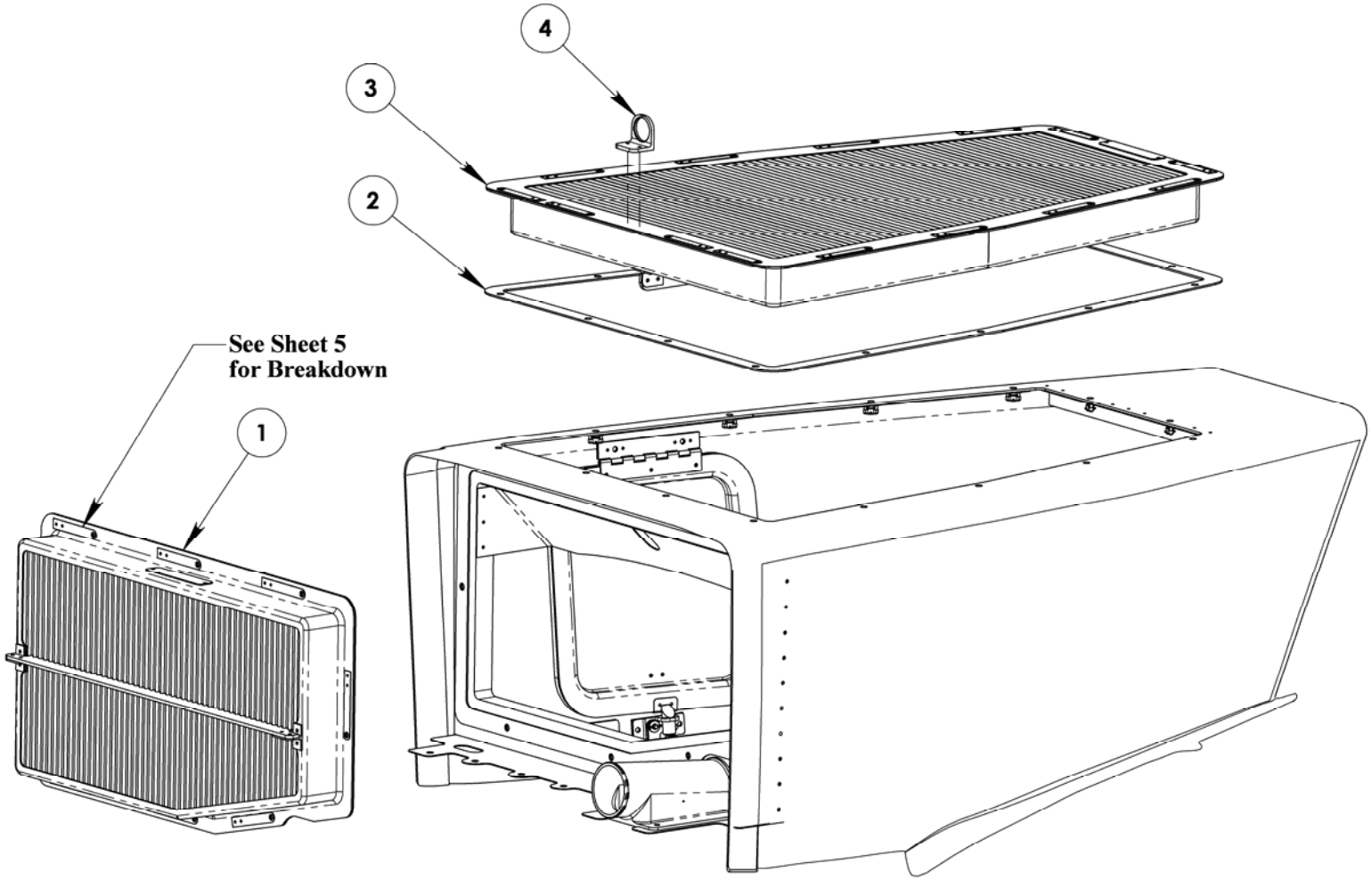


Figure 3: MD500 IBF Illustrated Parts Breakdown (Sheet 1 of 6)

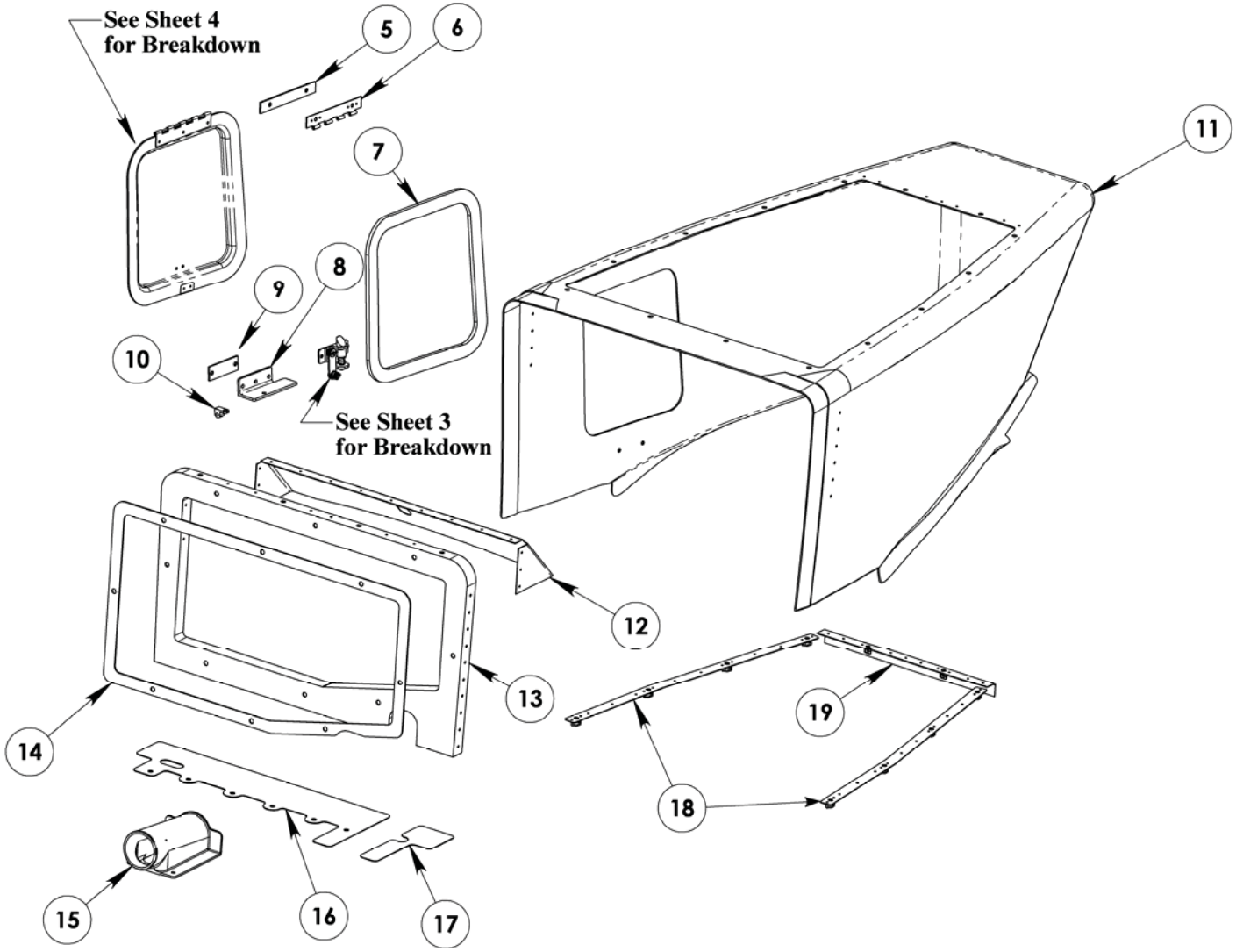


Figure 3: MD500 IBF Illustrated Parts Breakdown (Sheet 2 of 6)

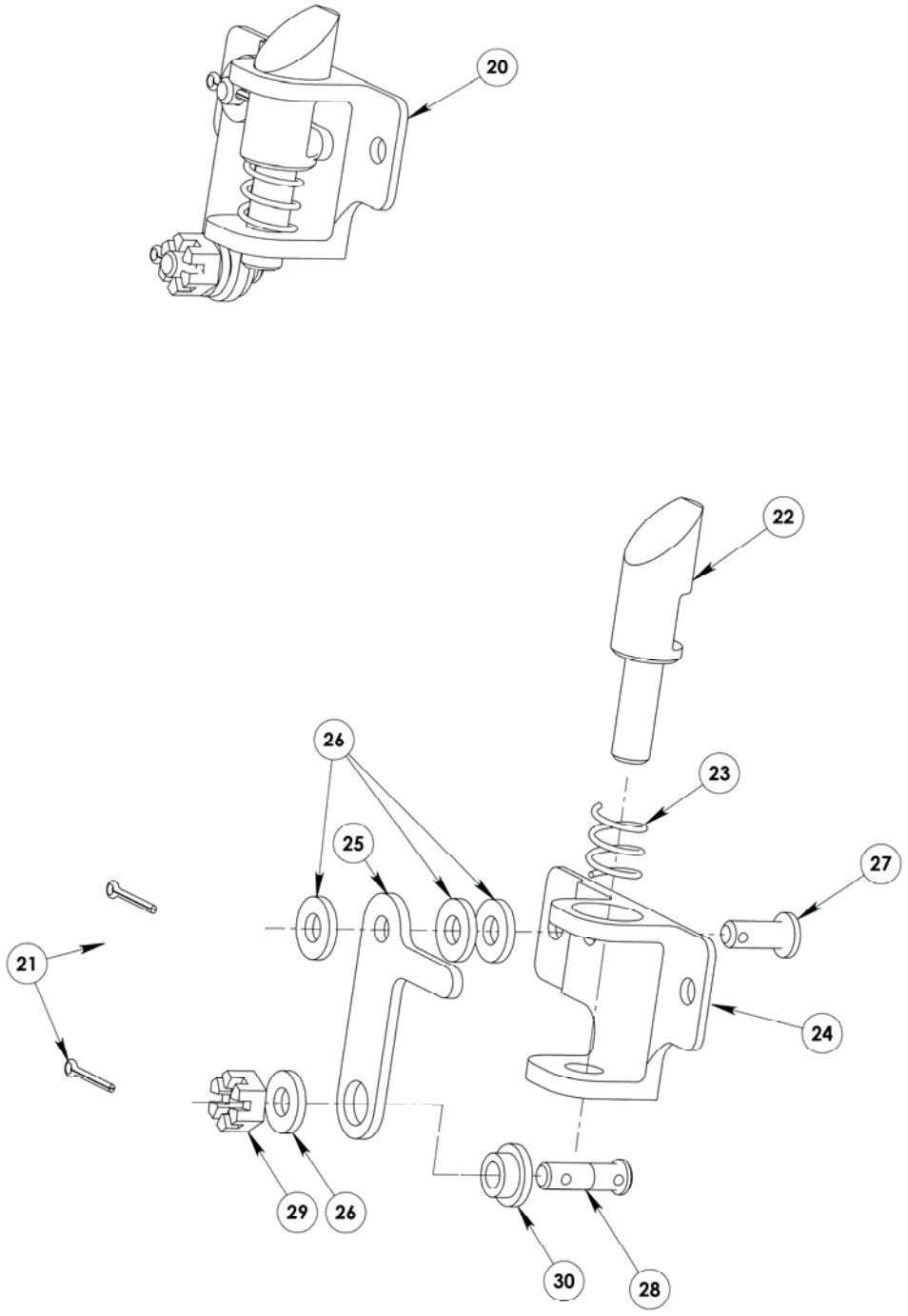


Figure 3: MD500 IBF Illustrated Parts Breakdown (Sheet 3 of 6)

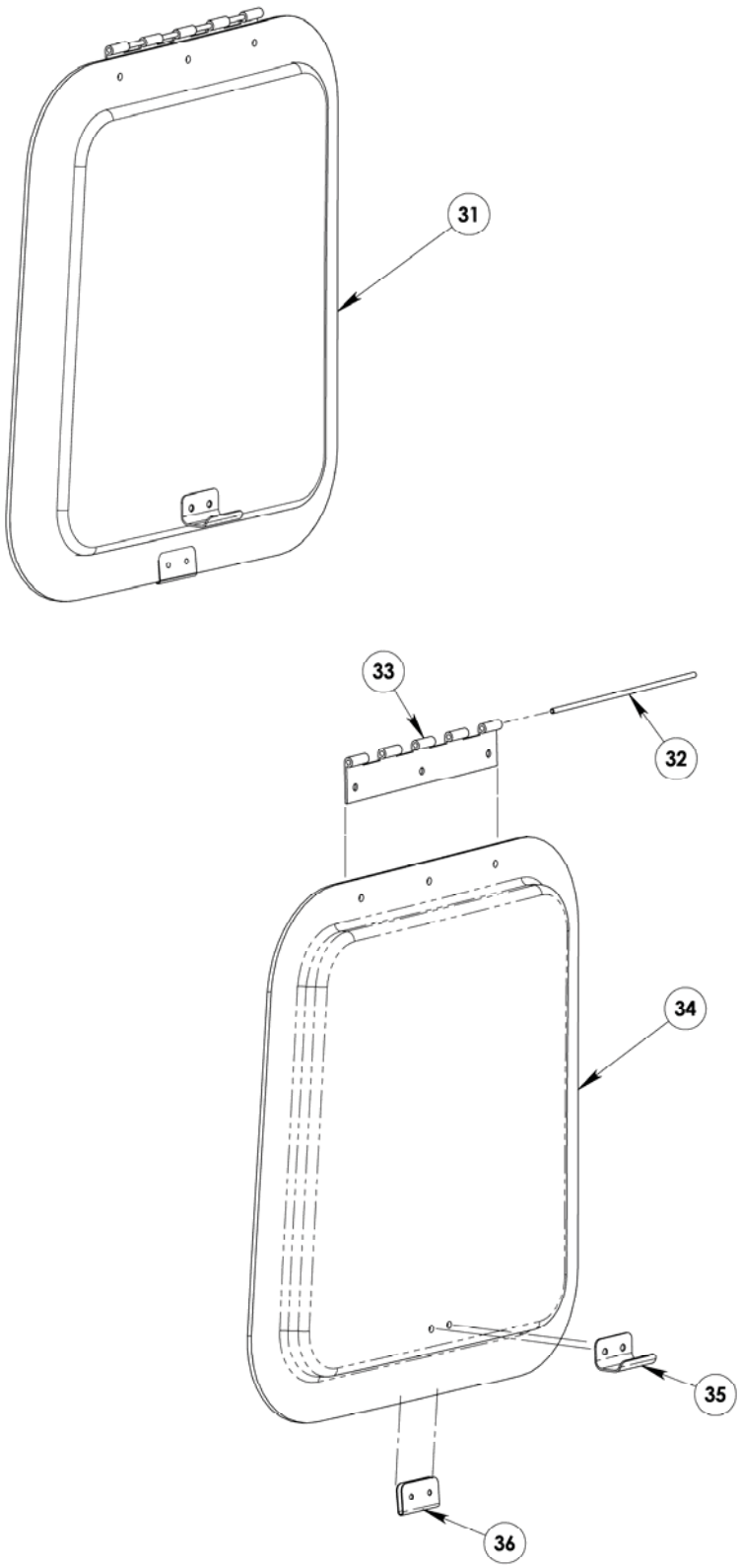


Figure 3: MD500 IBF Illustrated Parts Breakdown (Sheet 4 of 6)

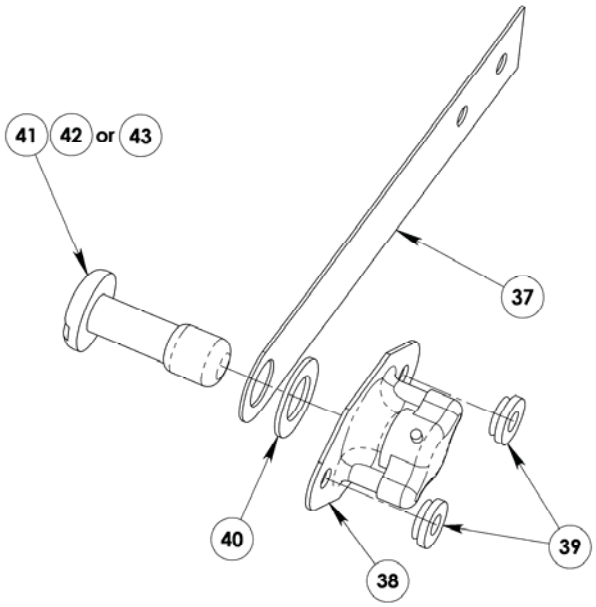


Figure 3: MD500 IBF Illustrated Parts Breakdown (Sheet 5 of 6)

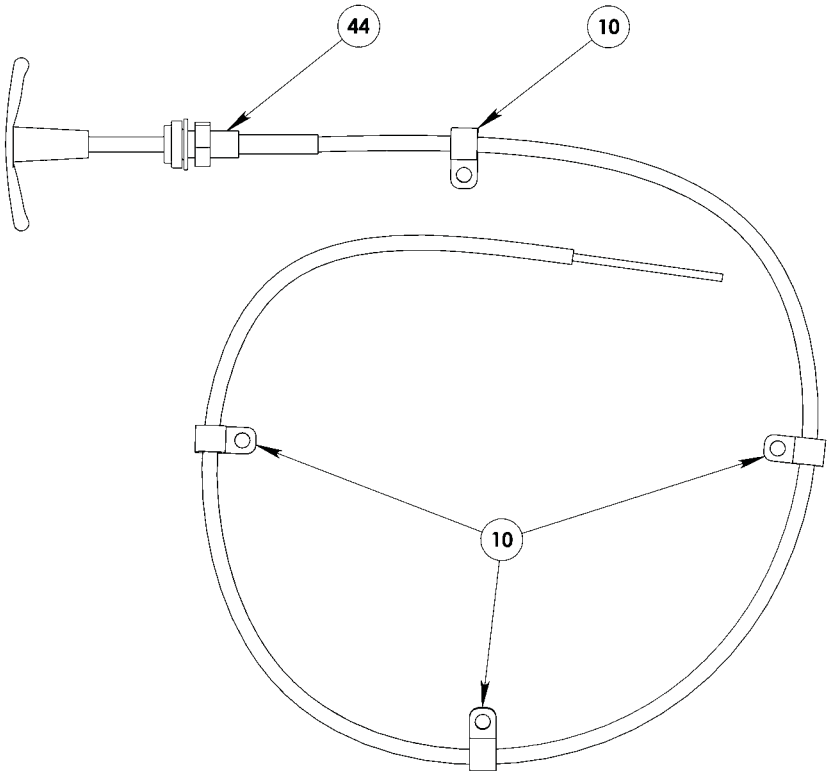


Figure 3: MD500 IBF Illustrated Parts Breakdown (Sheet 6 of 6)

The Filter Maintenance Aid Indicator assembly is optional. If installed, these parts can also be ordered by calling Aerospace Filtration Systems (AFS), at (636) 300-5200.

Item No.	Part No.	Description	Qty	Ref. Fig. 4
45.	102380-103	Indicator Assembly	1	Sheet 1
46.	102381-101	Tube Assembly	1	Sheet 1
47.	102383-201	Hose	1	Sheet 1
48.	102384-101	Mount Kit Assembly	1	Sheet 1
49.	102390-201	Maintenance Indicator	1	Sheet 1
50.	3604	Clamp	2	Sheet 1
51.	AN842-4D	Nipple	1	Sheet 1
52.	AN894D6-4	Adapter	1	Sheet 1
53.	AN525-10R6	Bolt	2	Sheet 1

Table 2: AFS MD500 Inlet Barrier Filter System Optional Parts List

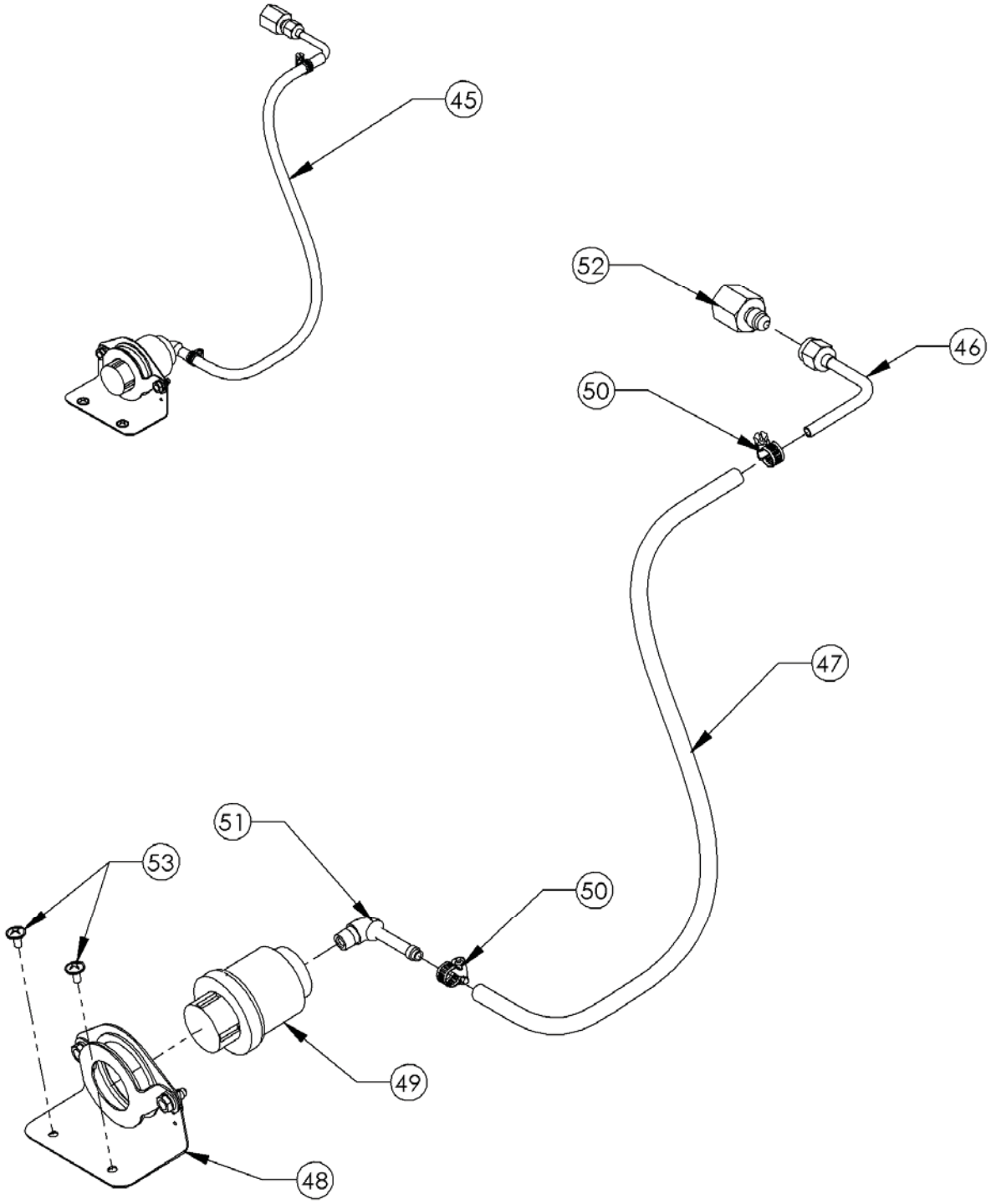
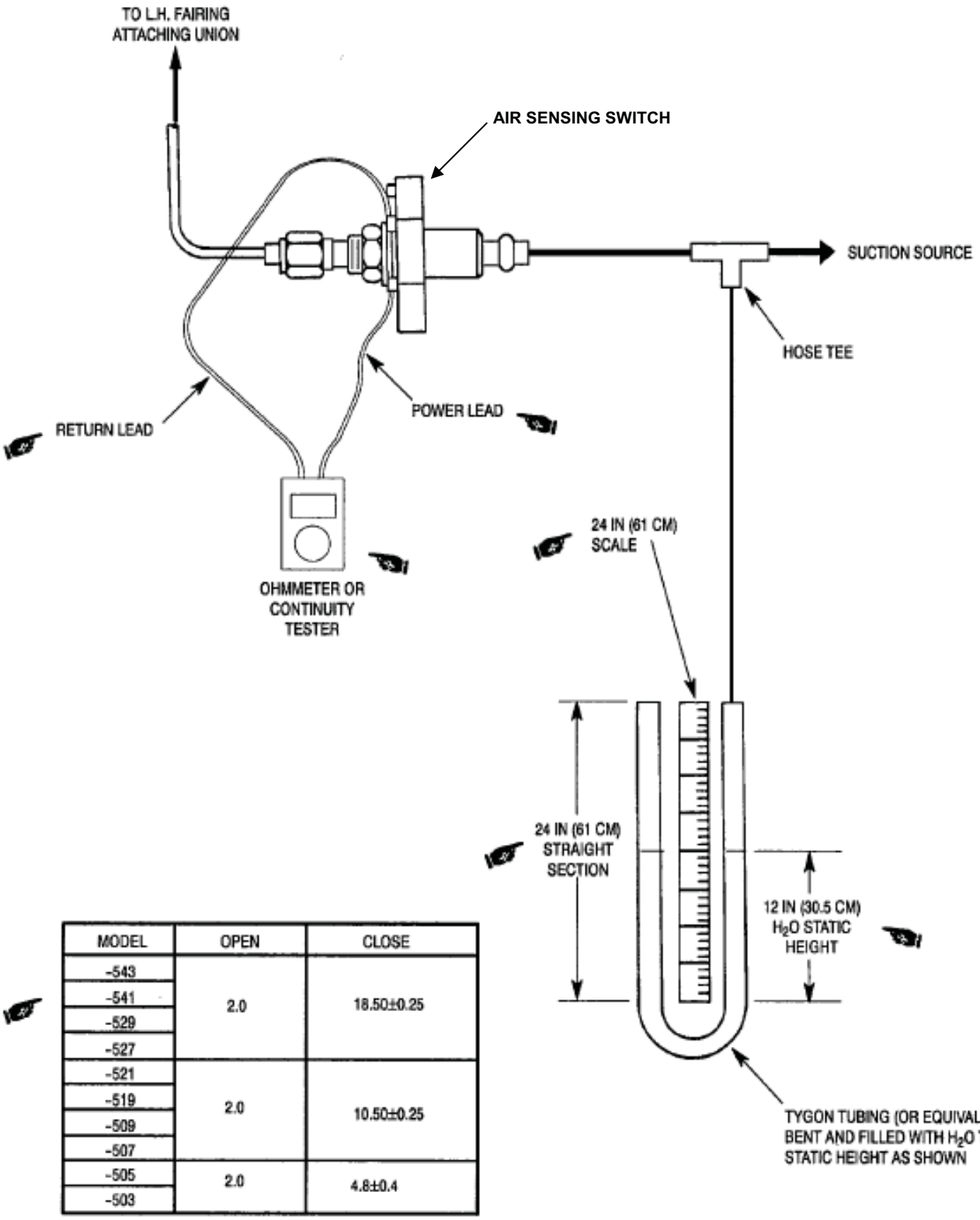


Figure 4: MD500 IBF Optional Equipment Illustrated Parts Breakdown (Sheet 1 of 1)



MODEL	OPEN	CLOSE
-543	2.0	18.50±0.25
-541		
-529		
-527		
-521	2.0	10.50±0.25
-519		
-509		
-507		
-505	2.0	4.8±0.4
-503		

Figure 5: MD500 IBF Alternative Function Check Method

(Extract from CSP-HMI-2, Section 71-10-10, Figure 601)
The FMA replaces the Air Sensing switch