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INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

1003-CA-001

Inlet Barrier Filter Installation

EAGLE 407HP MODELS

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CHAPTER 1 – INTRODUCTION (01-00-00)

1.1 SCOPE

This manual provides the requirements set forth in Appendix A of AWM Part 527/FAR Part 27 for the Instructions for Continued Airworthiness of the Eagle Inlet Barrier Filter (IBF) (P/N 1003-01-100) when installed on the Eagle 407HP, which is a Bell 407 helicopter modified with an HTS900-2-1D engine per TCCA STC SH14-47 (FAA STC SR03496NY). These Instructions for Continued Airworthiness are to be referred to for inspection and maintenance when the IBF is installed on, removed from, or in service on the rotorcraft.

1.2 ARRANGEMENT

The manual is arranged in ATA-100 format. This manual is only applicable to Eagle 407HP rotorcraft modified with the Eagle Inlet Barrier Filter (P/N 1003-01-001).

There are no abbreviations, acronyms, or symbolization which are not common to the aviation industry in this manual.

Units of measurement are expressed in Imperial and metric values and all torque values are standard values for the specified fastener combinations as defined in FAA AC 43.13, unless otherwise specified in this document.

No other Instructions for Continued Airworthiness for any product or appliance is inferred or addressed herein.

1.3 DISTRIBUTION

Any changes in the content or revision level of this document will be made available to any owner/operator at www.dartaero.com.

Additionally, any changes will be sent to Transport Canada. All changes will be recorded in the Record of Revisions page at the front of this manual.

1.4 COMPATIBILITY

Compatibility of this installation with the aircraft is the **responsibility of the installer.** Ensure that this installation does not conflict with a previous modification.

1.5 DESCRIPTION

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 1-1. 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 1-2) 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 1-3) to open the mechanical bypass door (see Figure 1-4) 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 though 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 1-5) inside the air inlet cowl can be viewed by opening the lower LH access door pre/post flight to establish the condition of IBF.

The **Eagle 1003-01-001 Inlet Barrier Filter** kit is the complete Inlet Barrier Filter installation.

The **Eagle 1003-01-003 Inlet Barrier Provisions** kit is the same as the 1003-01-001 Inlet Barrier Filter Kit except without the 1003-02-100-1 Inlet Barrier Filter Assembly and the associated hardware, which allows the operator to fly without the filter installed when required.

The components in the Inlet Barrier Filter Installation are as defined in the table in Section 71.13 of this document. For convenience, only the last three digits of the part number are listed on the top row of each table. The quantity of each component, which is included in the 1003-01-001 Inlet Barrier Filter Installation, for example, is as defined in the column labeled -001.

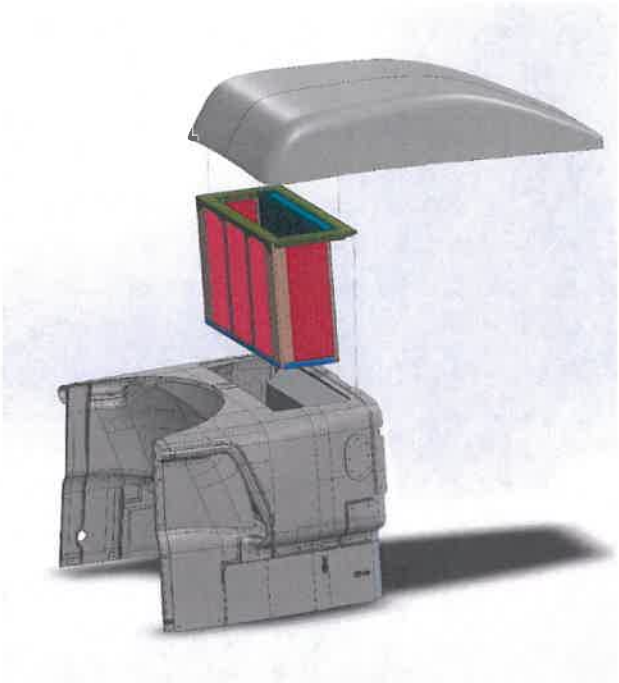


Figure 1-1 - Filter Installation, Inlet Cowl

Figure 1-2 – IBF Annunciator

Figure 1-3 – Bypass Door T-Handle

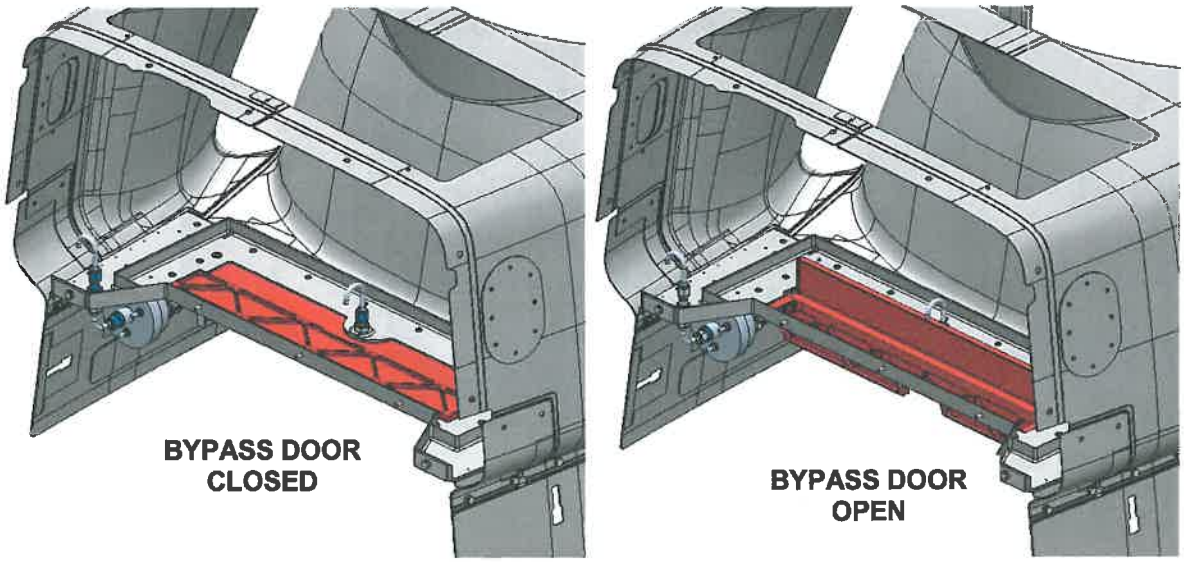


Figure 1-4 – Inlet Cowl with Bypass Door

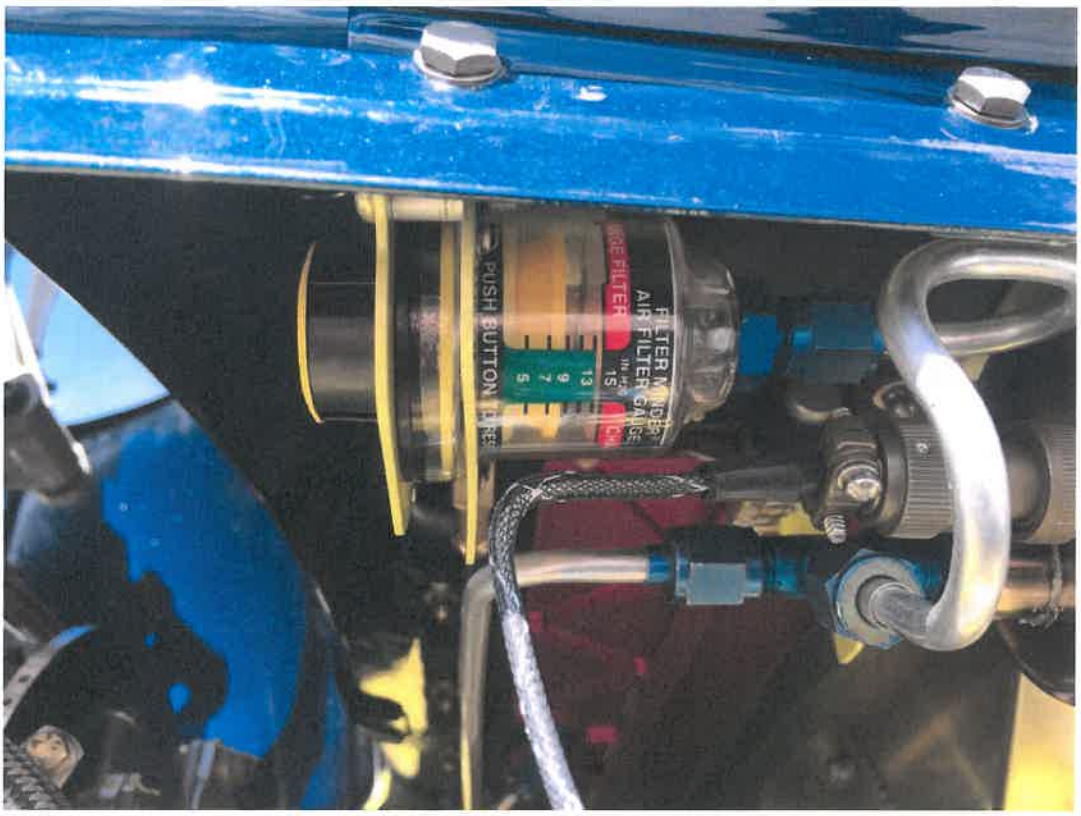


Figure 1-5 - Filter Maintenance Aid

CHAPTER 4 – AIRWORTHINESS LIMITATIONS (04-00-00)

The Airworthiness Limitations section is approved by the Minister and specifies maintenance required by any applicable airworthiness or operating rule unless an alternative program has been approved by the Minister.

No airworthiness limitations associated with this type design change.

CHAPTER 4 – AIRWORTHINESS LIMITATIONS (04-00-00)
FOR FAA CUSTOMERS

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

No airworthiness limitations associated with this type design change.

CHAPTER 5 — INSPECTION REQUIREMENTS (05-00-00)

5.1 150 HOUR / 12 MONTH INSPECTION

(To be conducted every 150 Hours/12 Months to coincide with airframe inspection or if damage found on Daily Inspection)

NOTE: For the convenience of scheduling maintenance, the tolerance for scheduled inspection intervals is ±10% (±15 hours / ± 1 month). In each case, the subsequent interval will be adjusted to re-establish the original schedule. When an inspection is done more than 10% early, subsequent inspections will be advanced as required not to exceed the maximum tolerance. Concurrence and final approval of inspection interval tolerance by the governing civil aviation authority is the responsibility of the owner/operator.

NOTE: In severe conditions, it may be necessary to clean and re-inspect the filter more frequently than what is described. Filters used in such conditions should be replaced if the filter media or fine mesh screen is severely degraded. Regardless of the actual time in service, the physical condition of the filter, when exposed to these harsh conditions, must remain the most important factor used to determine the serviceability of the filter.

5.1.1 Remove the 1003-02-100-1 Filter Assy per Section 71.1.

5.1.2 Visually inspect the coarse mesh on the downstream surface of the filter. Any evidence of mesh wire wear or general signs of mesh breakage or deterioration are cause for filter rejection.

5.1.3 Visually inspect the pleats containing the filter media. Excessive deformation of pleats can reduce smooth and consistent airflow into the engine and is cause for filter rejection. The filter pleat shape should be maintained as close to the original manufactured state as possible to ensure optimum airflow. Filter performance is not appreciably affected by a few warped pleats. However, it is advised to repair warped pleats to prevent cumulative deformation. In general, if the bottoms of the inside troughs of the pleats cannot be seen when sighting the length of each pleat from above, or into the depth of the pleat, then straightening is needed. If necessary, refer to section 12.4.1 for straightening procedure.

5.1.4 Check the condition of the mating surface between the filter media and the housing assembly:
- Check the frame for chafing, cracks and fretting (smoking rivets)
- Chafing or surface finish damage may be repaired in accordance with AC 43.13.
- Cracks on the frame are cause for filter rejection.
- Fretting (smoking rivets) or loose rivets are cause for filter rejection.
- Gouges and scratches less than 0.005" (0.13 mm) may be repaired per AC 43.13. Consult Eagle Copters technical support for deeper gouges and scratches.

5.1.5 Check the integrity and adhesion of all seals. Replace and/or re-install as required.

5.1.6 Defects found are to be rectified. Consult Eagle Copters technical support in the event any repair cannot be performed using standard practices.

5.1.7 Re-install the 1003-02-100-1 Filter Assy per Section 71.2.

5.1.8 With power applied to the rotorcraft, pull the bypass door handle and verify bypass door opens with approximately 20lb force.

5.1.9 Verify that the IBF Annunciator shows "DOOR OPEN".

5.1.10 Access the bypass door area as required and visually verify that the bypass door has been opened. Reset the door in the closed position and verify that the OPEN DOOR annunciator is extinguished. Close up all access doors if required.

5.2 300 HOUR INSPECTION (Or when IBF Annunciator illuminates)

(To be conducted every 300 hours to coincide with airframe inspection or when IBF Annunciator illuminates or when Filter Minder reads 7 or higher)

NOTE: For the convenience of scheduling maintenance, the tolerance for scheduled inspection intervals is ±10% (±30 hours). In each case, the subsequent interval will be adjusted to re-establish the original schedule. When an inspection is done more than 10% early, subsequent inspections will be advanced as required not to exceed the maximum tolerance. Concurrence and final approval of inspection interval tolerance by the governing civil aviation authority is the responsibility of the owner/operator.

NOTE: In severe conditions, it may be necessary to clean and re-inspect the filter more frequently than what is described. Filters used in such conditions should be replaced if the filter media or fine mesh screen is severely degraded. Regardless of the actual time in service, the physical condition of the filter, when exposed to these harsh conditions, must remain the most important factor used to determine the serviceability of the filter.

5.2.1 Remove the 1003-02-100-1 Inlet Barrier Filter from the cowling per Section 71.1.

5.2.2 Perform the 150 Hour Inspection per Section 5.1.

5.2.3 Clean the Filter per Section 12.1.

5.2.4 Hold the filter up to a light and check for holes in the filter material greater than 0.020" (0.50 mm). Hole size can be visually checked using 0.020" (0.50 mm) safety wire as a check tool. 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. Holes larger than 0.020" (0.50 mm) but smaller than 0.032" (0.81mm) (using safety wire as a guide) do not need to be repaired. For holes larger than 0.032" (0.81 mm) see section 12.4.2 for repair procedures. Numerous holes in the media greater than 0.030" (0.75 mm) may be cause for filter rejection.

NOTE: When operating in the most severe conditions, it is highly recommended that an additional serviceable, pre-oiled filter is available. This will allow continued service while the dirty filter is being cleaned, inspected and re-oiled.

5.2.5 Large gaps in filter media may occur if the filter has been subjected to PROHIBITED actions such as the use of compressed air or pressure washers during servicing. Numerous holes in the media greater than 0.030" (0.75 mm) will reduce the filtration efficiency and may lead to engine performance degradation. Refer to section 12.4.2 for repair procedure.

5.2.6 Multiple ruptures can be repaired up to 5% of the total filter area or ~20 in^2 (129 cm^2). If more than 10 holes exist greater than 0.032" (0.81 mm) in a 50 in^2 (322 cm^2) area, the filter assembly needs replaced and constitute a failure of the visual inspection.

5.2.7 Check the condition of the lines and their attachments on the 1003-02-001-1 Bypass Assembly. Check for possible rubbing on the cowling.

5.2.8 Inspect the P-seal on the 1003-02-100-1 Inlet Filter Assembly for cracks or tears. Ensure adequate sealing ability.

5.2.9 Inspect the 1003-03-224-1 Manual Release Cable for kinks. Routing is shown in Figure 71-9 to 71-13.

5.2.10 Ensure all damage is within the allowable limits per Table 5.1.

5.2.11 Check the condition of hardware for suitability for continued service. Check torques on all hardware per Table 5.2.

5.2.12 Oil the filter per Section 12.3.

5.2.13 Reinstall the 1003-02-100-1 Inlet Barrier Filter Assembly per Section 71.2.

Table 5.1 – Damage Limits

Part		Type of Damage	Max Allowable	Repair
1003-02-100-1 Inlet Barrier Filter Assembly	Filter Media	Corrosion	None	None, replace Assembly
		Rips/tears	Holes larger than 0.032"	Repair per Section 12.4.2
	All remaining	Corrosion	0.010" deep	Blend up to 0.010" deep with scotchbrite
		Scratches/nicks	0.010" deep x 0.5" long	Blend up to 0.010" deep with scotchbrite
		Cracks/Dents/ Bending/Yielding	None	None, replace part
		Hole Elongation	0.025" across hole diameter	None, replace part
1003-02-001-1 Bypass Assembly	All	Corrosion	0.025" deep	Blend up to 0.025" deep with scotchbrite
		Scratches/nicks	0.025" deep x 0.5" long	Blend up to 0.025" deep with scotchbrite
		Cracks/Dents/ Bending/Yielding	None	None, replace part
		Hole Elongation	0.025" across hole diameter	None, replace part

Table 5.2 – Fastener Torque

Fastener Type	Torque (in-lb)	Torque (N-m)
#8	12-15	1.4-1.7
#10	20-25	2.3-2.8
¼"	50-70	5.6-7.9

5.3 24 MONTH INSPECTION

(To coincide with 24 month pitot/static test)

NOTE: For the convenience of scheduling maintenance, the tolerance for scheduled inspection intervals is ±10% (±2 months). In each case, the subsequent interval will be adjusted to re-establish the original schedule. When an inspection is done more than 10% early, subsequent inspections will be advanced as required not to exceed the maximum tolerance. Concurrence and final approval of inspection interval tolerance by the governing civil aviation authority is the responsibility of the owner/operator.

5.3.1 Gain access to the high pressure port of the 1003-03-025-1 differential pressure switch.

5.3.2 Connect a pitot static test set to the high pressure port of the 1003-03-025-1 differential pressure switch per Figure 5-1.

5.3.3 Slowly increase the airspeed until 90.0±1.0 knots is reached.

5.3.4 Ensure that the "IBF" annunciator in the cockpit illuminates.

5.3.5 At this point, slowly decrease the airspeed until 87.0±2.0 knots is reached.

5.3.6 Ensure that the "IBF" annunciator in the cockpit extinguishes.

5.3.7 Continue to slowly decrease the airspeed until back to 0 knots. Disconnect the pitot static test set and close up all access doors if required.

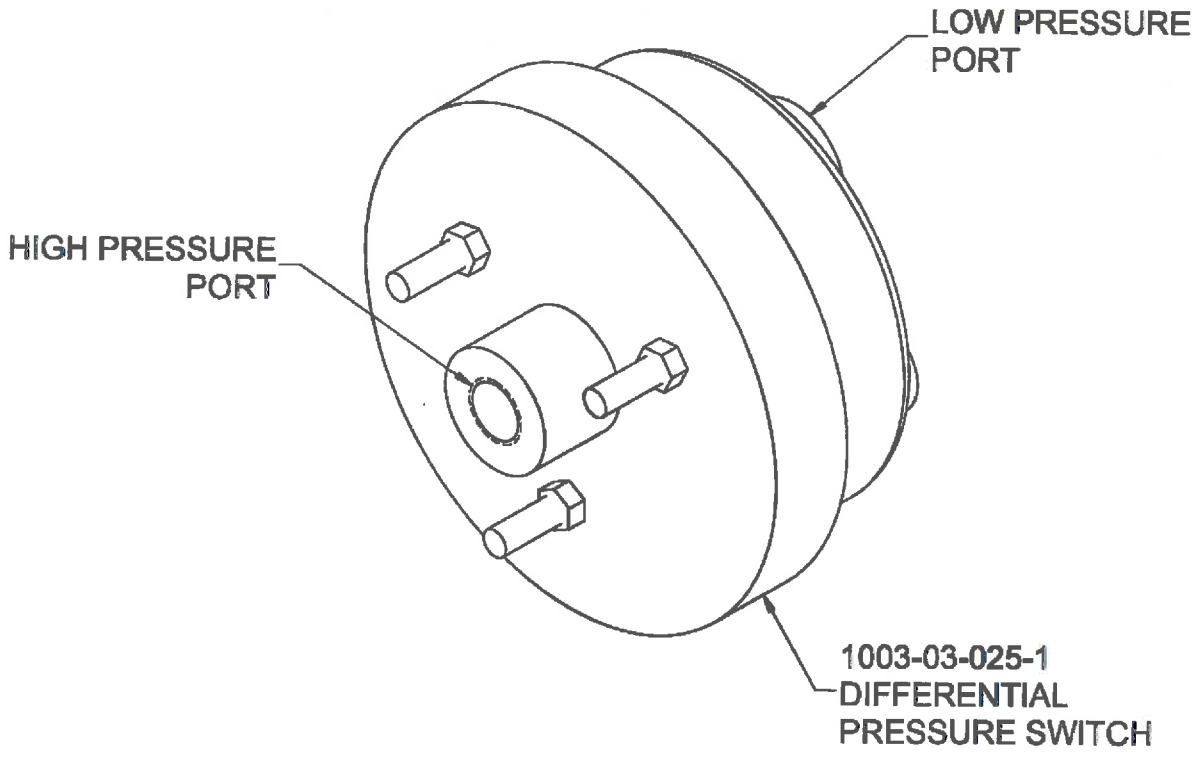


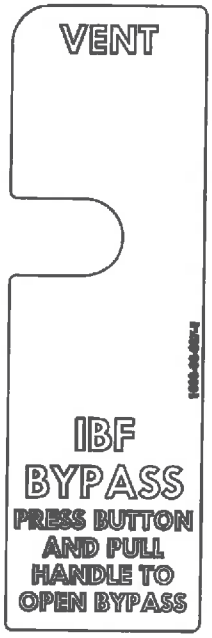
Figure 5-1 – 1003-03-025-1 Differential Pressure Switch

CHAPTER 8 – WEIGHT AND BALANCE (08-00-00)

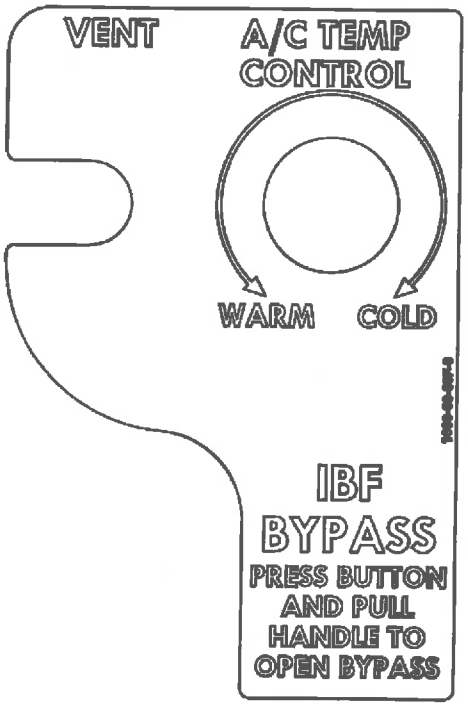
Installation	Weight	LATERAL		LONGITUDINAL	
		Arm	Moment	Arm	Moment
1003-01-001 *Inlet Barrier Filter Installation*	21.64 lb 9.84 kg	0 in 0 m	0 lb-in 0 m-kg	141.10 in 3.58 m	3053 in-lb 34.2 m-kg
1003-01-003 *Inlet Barrier Provisions*	5.64 lb 2.54 kg	0 in 0 m	0 lb-in 0 m-kg	141.10 in 3.58 m	796 in-lb 9.1 m-kg

CHAPTER 11 – PLACARDS AND MARKINGS (11-00-00)

For aircraft without air conditioning, the 1003-03-037-1 Placard must be installed on the 1003-03-033-1 Bracket.



For aircraft with air conditioning, the 1003-03-037-3 Placard must be installed on the 1003-03-033-3 Bracket.



CHAPTER 12 – SERVICING (12-00-00)

12.1 FILTER CLEANING

NOTE: The 1003-02-100-1 Inlet Barrier Filter Assembly should be cleaned with every 300 Hour Inspection or when filter minder indication is greater than 7 per Section 5.2. In severe conditions, it may be necessary to clean and re-inspect the filter more frequently than what is described. Filters used in such conditions should be replaced if the filter media or fine mesh screen is severely degraded. Regardless of the actual time in service, the physical condition of the filter, when exposed to these harsh conditions, must remain the most important factor used to determine the serviceability of the filter.

12.1.1 Hold the filter clean side up and gently tap the edges to dislodge any large embedded debris and dirt.

NOTE: Clean with K&N Air Filter Cleaner (P/N 99-0606, 32oz squirt bottle – K&N P/N 99-0621, gallon container – K&N P/N 99-0635) or Eagle Copters authorized substitutes.

CAUTION: DO NOT USE ANY OTHER SOLVENTS OR MATERIALS TO CLEAN THE FILTER, NO OTHER SUBSTITUTES ARE AUTHORIZED. DO NOT USE PRESSURE OR STEAM CLEANERS. DO NOT USE HIGH PRESSURE HOSE NOZZLES. FAILURE TO SERVICE THE FILTER CORRECTLY WILL HARM THE FILTER MEDIA BY REDUCING ITS FILTRATION EFFICIENCY, RESTRICTING AIRFLOW AND/OR CREATING A REDUCTION IN SERVICE LIFE.

12.1.2 Lay the filter on a flat, clean surface, dirty side down.

12.1.3 Spray the K&N cleaner liberally onto the entire filter and allow the cleaner to permeate for 10 minutes. Do not use any powered device to spray the filter.

12.1.4 Alternatively, soak the filter, clean side up, in a shallow pan of filter cleaner and allow cleaner to permeate for 10 minutes.

12.1.5 Rinse per Section 12.2.

12.1.6 If stubborn deposits are not removed during step 12.1.1 - 12.1.5, perform the procedure outlined in steps 12.1.7 to 12.1.11.

12.1.7 Soak the filter dirty side down in a pan of the K&N Air Filter Cleaner to a depth to allow complete coverage of the filter.

12.1.8 Allow cleaner 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 filter.

12.1.9 Remove the filter and shake thoroughly to remove dirty cleaner.

12.1.10 Re-soak for 5 minutes in clean K&N Air Filter Cleaner.

12.1.11 Rinse per Section 12.2.

12.2 RINSING AND DRYING THE FILTER

12.2.1 Rinse the filter with low pressure water from a garden hose. Always flush from the clean side to the dirty side to avoid driving particles further into the filter media. The dirt and debris leaving the filter assembly should be evident in the water running off (if contaminated). If any large contamination still exists in the dirty side of the pleats, it can be removed manually with a soft plastic or wood tooth pick. Debris that is stuck to the media such as hooked seeds (Cocklebурs), insect parts with tangs, etc., can be left in the media, air will flow around the debris. It is not worth damaging the filter material for a small area of potential blockage.

12.2.2 When the water running out of the filter is clear as the water being flushed through, the process is complete. After rinsing, gently shake off the excess water and set the filter aside. If the process does not result in a visually clean filter, the process can be repeated.

12.2.3 Allow the filter to dry naturally. It is permissible to set the filter in direct sunlight to aid drying. A low-pressure fan can be used to help accelerate the drying period. The drying period is a function of the ambient conditions, temperature and humidity. The cooler the temperature or higher the humidity, the longer the drying period will take.

CAUTION: DO NOT USE COMPRESSED AIR, OPEN FLAME, HAIR DRYERS OR HEAT GUNS TO DRY THE FILTER. EXCESS HEAT WILL CAUSE THE FILTER MEDIA TO SHRINK AND HIGH PRESSURE AIR WILL OPEN SMALL HOLES THAT ALLOW DIRT TO PASS THROUGH.

12.2.4 Inspect the filter per section 5.1 as appropriate before oiling.

12.3 OILING THE FILTER

NOTE: The filter must be completely dry before oiling. Oil will not be absorbed by the filter media where excess moisture is present and therefore will not achieve maximum protection it was designed to provide.

CAUTION: Oil with only K&N Air Filter Oil, (squeeze bottle – K&N P/N 99-0533, gallon container – K&N P/N 99-0551).

NOTE: K&N Air Filter Oil is a compounded mineral based blend, formulated with special polymers to form the tack barrier. A red dye has been added to show where the oil has been applied. Eventually the red color will fade but the oils will remain.

CAUTION: NEVER USE THE FILTER WITHOUT THE K&N AIR FILTER OIL.

12.3.1 Apply 15 ounces of K&N Air Filter oil onto the entire filter media (both sides), until the filter media is fully absorbed with oil. For best results, oil the filter from a small bottle with a nozzle adapter, applying 1 ounce per side per pleat pack. Add a small amount of oil (stream of oil) onto the peak of each pleat on one side, then do the same from the other side.

12.3.2 Let the oil thoroughly wick through the media. If time permits, at least 30 minutes is recommended. The cooler the temperature, the longer the term for wicking should be.

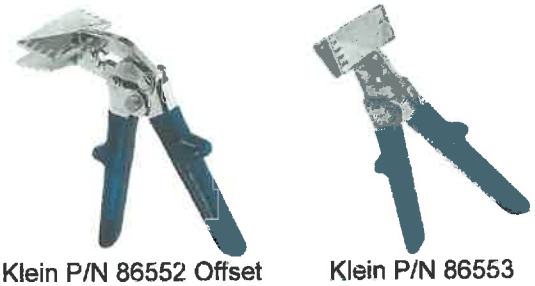
12.3.3 When complete, if any areas look lighter than others, the remaining oil from the recommended amount can be applied. If no lighter areas are evident, apply the remaining 5 ounces of oil evenly over the surface using 1 ounce per pleat pack on the upstream side. Some oil will wick through the media in line with the airflow.

NOTE: Do not use more than the specified **15-ounce** amount of oil, extra filter oil will negatively impact performance. Each filter media pack requires 3 ounces of oil, to be applied as 1.5 ounce evenly per side as evenly as possible. Proper absorption is achieved when the filter media is completely wicked and any surplus oil has been allowed to drip from the filter. This process may take 12 to 24 hours.

12.4 FILTER SERVICING – REPAIR AND REWORK

12.4.1 Filter Pleat Straightening

NOTE: The filter should be cleaned and completely dry before straightening deformed pleats. Do not apply filter oil before straightening pleats. Figure 12-1 shows examples of tools that may be used to straighten pleats. It is strongly recommended to place duct tape, electrical tape or similar cushioning material on the jaws of the hand seamers or equivalent tools to prevent damage to the filter media fine mesh when working the pleats.



Klein P/N 86552 Offset Hand Seamer

Klein P/N 86553 Straight Hand Seamer

Figure 12-1: Klein Hand Seamer Tools

12.4.1.1 For pleats bowed or expanded, **gently** crimp the pleat using a hand seamer or equivalent tool. Do not over-crimp, crease or crush the pleat in the jaws of the seamer. Maintain the original radius at the crest and bottom trough of the pleat as much as possible when crimping.

12.4.1.2 For pleats to be straightened, **gently** grip the pleat with the hand seamer and rotate the seamer to restore the pleat to its correct position. Multiple adjustments may be required for each few inches of pleat until the final result is straight.

12.4.1.3 When working with the pleats, do not push the hand seamer into the pleats to their maximum depth. Ensure that the radius at the bottom of each pleat remains when finished. Check the opposite side of the pleats to visualize how the pleats appear, the pleats must stay open to flow properly.

12.4.2 **Repairing Holes or Gaps in the Filter Element Media**

In normal practice, small pinholes will occur in the filter media, particularly at the pleat folds. These pinholes will not allow dirt through the filter once oiled. Holes less than 0.020" (0.50 mm) can be closed as follows:

NOTE: Repairs should not be made that would result in uneven airflow to the engine.

12.4.2.1 Insert the end of a clean, fine pick into the epoxy coated mesh, penetrating the filter media. **Gently** reposition the filter media a small amount at the time to close the hole. Manipulate the pick carefully to avoid damaging the fine mesh covering the media.

12.4.2.2 Loose wire on the engine side of the filter or loose sealant is a threat to the engine just as much as the debris the filter is removing from the airstream. Small ruptures (between 0.033" (0.84 mm) and 0.5" (12.7 mm)) can be repaired and sealed with two-part sealant, AMS 3276 or MIL-S-8802. Multiple ruptures can be repaired up to 5% of the total filter area or ~20 in^2 (129 cm^2).

12.4.2.3 Repeat step 12.4.2.1 from each direction around the hole to avoid creating new holes.

12.5 STORAGE

The filter assembly can be stored short-term term if it has been oiled, but if stored for over 6 months it is recommended it be stored unoiled. Long-term storage needs to be within a sealed bag with a desiccant eliminating moisture build up. Filters should be stored in a cool, dry location with no UV exposure. After removal from storage, the filters should be visually inspected and re-oiled for use. If filters were stored oiled for long periods (over 12 months), they should be cleaned to remove old aged oil.

CHAPTER 71 — POWERPLANT (71-00-00)

NOTE: To ensure proper function and to maintain a high level of filtration efficiency, great care should be taken when handling the filter. The filter is more likely to be damaged during servicing than in operation. Special care should be taken when removing and reinstalling the filter. The pleated material's fragile wire mesh is easily damaged or deformed when allowed to scrape against other objects. Careful attention to the following section will ensure full service from the filter.

NOTE: When operating in the most severe conditions, it is highly recommended that an additional, serviceable and oiled filter is available. This will allow continued serviced while the previously installed filter is being cleaned, inspected and re-oiled.

71.1 REMOVAL OF FILTER ASSEMBLY

71.1.1 Remove top cowl assembly by undoing 12x ¼ turn fasteners.

71.1.2 Remove 1003-02-100-1 Filter Assy by removing 4 bolts and 3 screws as shown in Figure 71-3.

71.1.3 If Filter Assy is being removed for flight, install 0789-02-053-1 Inlet Cowl Filler and 0789-02-065-1/-2 and 0789-02-068-1 Cowl Bracket Assemblies per ICA-E407-789.

71.2 RE-INSTALLATION OF FILTER ASSY

71.2.1 If installed, remove 0789-02-053-1 Inlet Cowl Filler and 0789-02-065-1/-2 and 0789-02-068-1 Cowl Bracket Assemblies per ICA-E407-789.

71.2.2 Re-install 1003-02-100-1 Filter Assy by installing 4 bolts and 3 screws as shown in Figure 71-3.

71.2.3 Re-install top cowl assembly by engaging 12 x ¼ turn fasteners.

71.3 REMOVAL OF AIR INLET COWL WITH INLET BARRIER FILTER

71.3.1 Open the side door of the Air Inlet cowl and remove the 1003-03-224-1 Manual Release Cable from the 1003-02-001-1 Bypass Assembly by removing the MS24665-132 Cotter Pin per Figure 71-1.

71.3.2 Detach the 1003-02-001-1 Bypass Assembly from the FWD firewall by removing 5 fasteners per Figure 71-2.

71.3.3 Remove the Air Inlet Cowl per the Aircraft Maintenance Manual.

71.4 INSTALLATION OF AIR INLET COWL WITH INLET BARRIER FILTER

71.4.1 Re-install the Air Inlet Cowl per the Aircraft Maintenance Manual.

71.4.2 Attach the 1003-02-001-1 Bypass Assembly to the FWD firewall using 5 fasteners per Figure 71-2. Torque fasteners per Table 5-2.

71.4.3 Re-install the 1003-03-224-1 Manual Release Cable on the 1003-02-001-1 Bypass Assembly with an MS24665-132 Cotter Pin per Figure 71-1.

71.5 REMOVAL OF BYPASS ASSEMBLY

71.5.1 Remove the Air Inlet Cowl per Section 71.1.

71.5.2 Remove the 1003-02-001-1 Bypass Assembly from the Air Inlet Cowl by removing 16 screws per Figure 71-4 and 71-5.

71.6 INSTALLATION OF BYPASS ASSEMBLY

71.6.1 Re-install the 1003-02-001-1 Bypass Assembly on the Air Inlet Cowl by installing 16 screws per Figure 71-4 and 71-5. Torque per Table 5-2.

71.6.2 Re-install the Air Inlet Cowl per Section 71.2

71.7 REMOVAL OF DIFFERENTIAL PRESSURE SWITCH

71.7.1 Ensure all helicopter electrical power is OFF.

71.7.2 Gain access to the 1003-03-025-1 Differential Pressure switch, FS 147 LHS, per Figure 71-6. Disconnect the electrical connector and install protective covers over the connectors on the harness.

71.7.3 Disconnect both the high and low pressure lines.

71.7.4 Remove the three (3) nuts holding the switch in position.

71.8 RE-INSTALLATION OF DIFFERENTIAL PRESSURE SWITCH

71.8.1 Ensure all helicopter electrical power is OFF.

71.8.2 Install the 1003-03-025-1 Differential Pressure switch using the three (3) nuts and washers.

71.8.3 Remove the protective cover from the harness and connect the electrical connector.

71.8.4 Connect both the high and low pressure lines per Figure 5-1.

71.8.5 Ensure Differential Pressure switch is working correctly in accordance with 24 Month Inspection, section 5.4.

71.8.6 Close up all open panels.

71.9 REMOVAL OF IBF DOOR SWITCH

71.9.1 Ensure all helicopter electrical power is OFF.

71.9.2 Gain access to the 1003-03-026-1 IBF Door Switch, FS 147 RHS, per Figure 71-7. Remove the two (2) screws holding the switch in position and disconnect the harness. Install protective covers over the connectors on the harness.

71.10 RE-INSTALLATION OF IBF DOOR SWITCH

71.10.1 Ensure all helicopter electrical power is OFF.

71.10.2 Remove the protective cover from the harness and connect.

71.10.3 Ensure 1003-03-026-1 IBF door switch is working correctly in accordance with 150 hour/ 12 Month Inspection, section 5.2 steps 5.2.5 through 5.2.7.

71.10.4 Install the 1003-03-026-1 IBF door switch using the two (2) screws.

71.10.5 Close up all open panels.

71.11 REMOVAL OF IBF ANNUNCIATOR

71.11.1 Ensure all helicopter electrical power is OFF.

71.11.2 The IBF Annunciator, 7220-AN1, is installed in the lower right hand corner of the instrument panel per Figure 71-8. Pull pushbutton cap to disengage annunciator assembly

71.11.3 Loose pawl screws until pawls retract. Slide annunciator assembly out of panel.

71.11.4 Disconnect electrical connector from the annunciator assembly.

71.12 RE-INSTALLATION OF IBF ANNUNCIATOR

71.12.1 Connect electrical connector to the annunciator assembly.

71.12.2 Slide annunciator assembly into panel. Tighten pawl screws until pawls engage and secure unit assembly

71.12.3 Insert pushbutton cap onto annunciator assembly

71.12.4 Ensure IBF annunciator is working correctly in accordance with 24 Month Inspection, section 5.4 and 150 hour/ 12 Month Inspection, section 5.2 steps 5.2.5 through 5.2.7.

71.12.5 Remove all tools, equipment, and unwanted materials from the work area.

71.12.6 Restore electrical power to the helicopter.

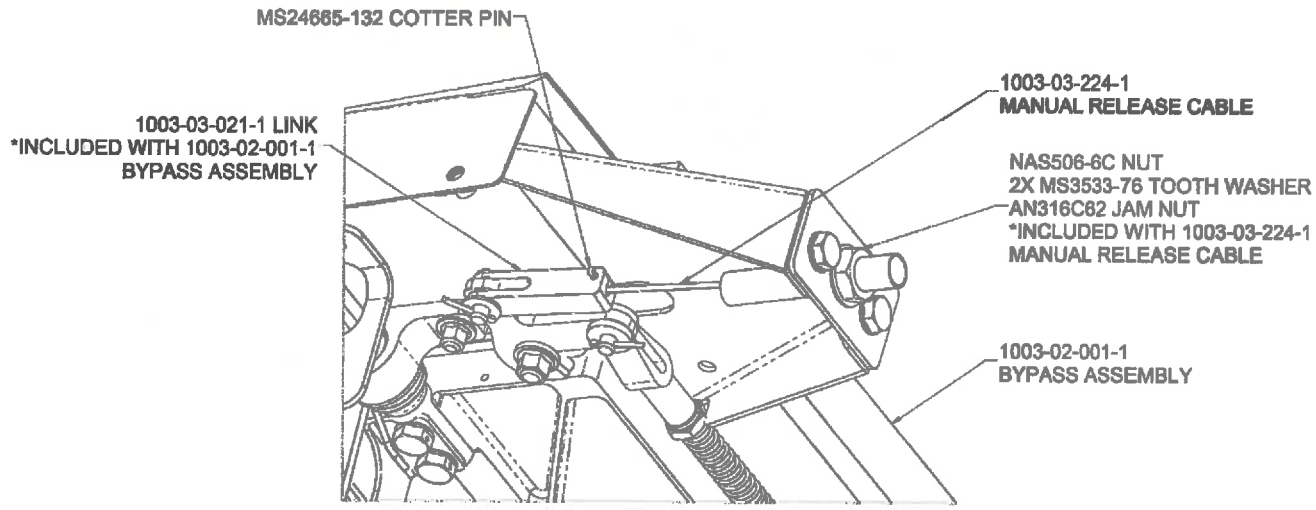


Figure 71-1 – 1003-03-224-1 Manual Release Cable Installed on 1003-02-001-1 Bypass Assembly

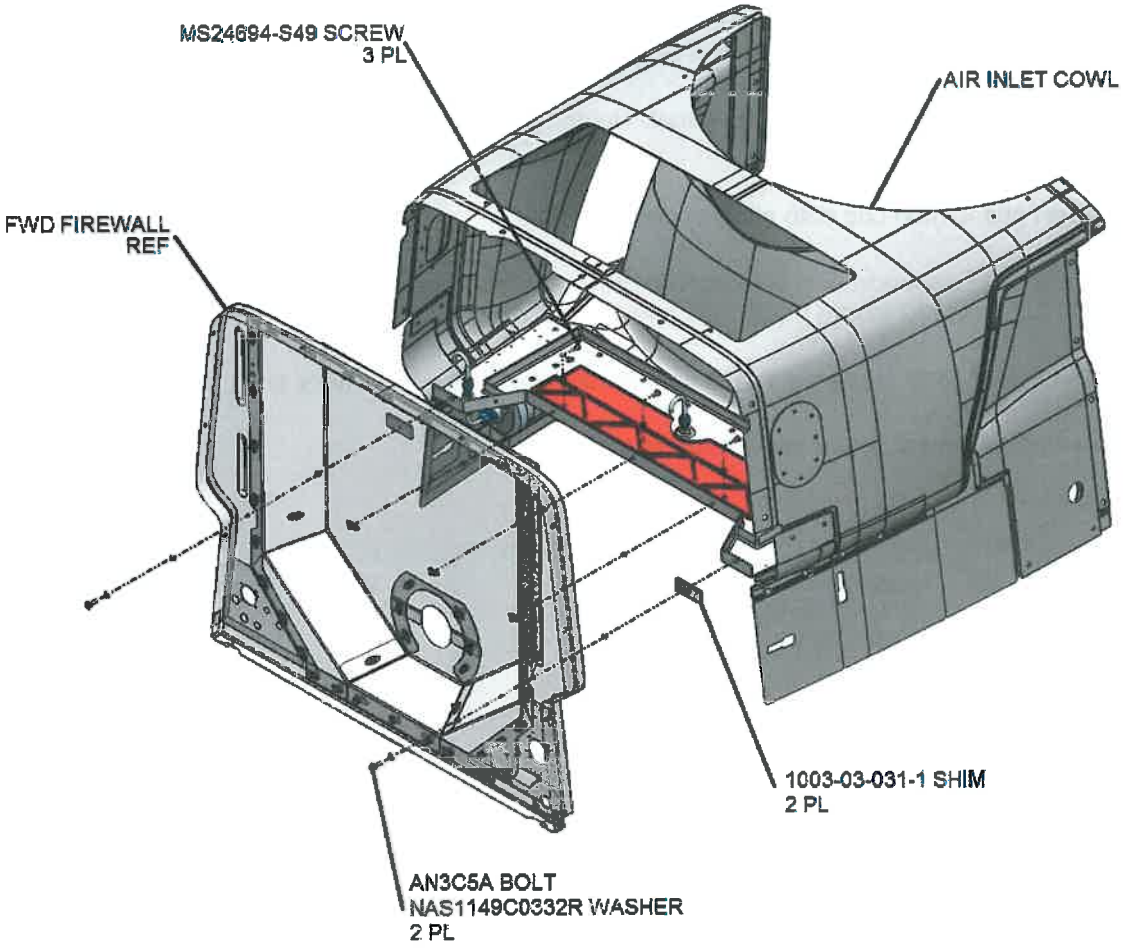


Figure 71-2 – 1003-02-001-1 Bypass Assembly Removal/Installation

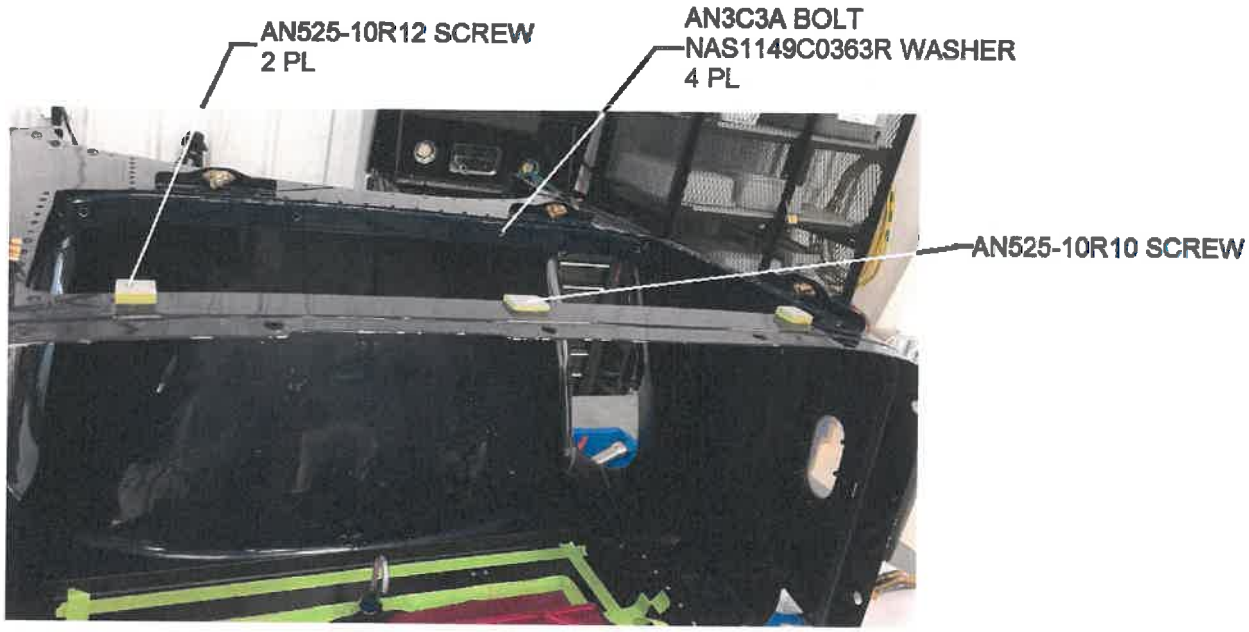


Figure 71-3 – 1003-02-100-1 Inlet Barrier Filter Assembly Installation
(Filter not shown for clarity)

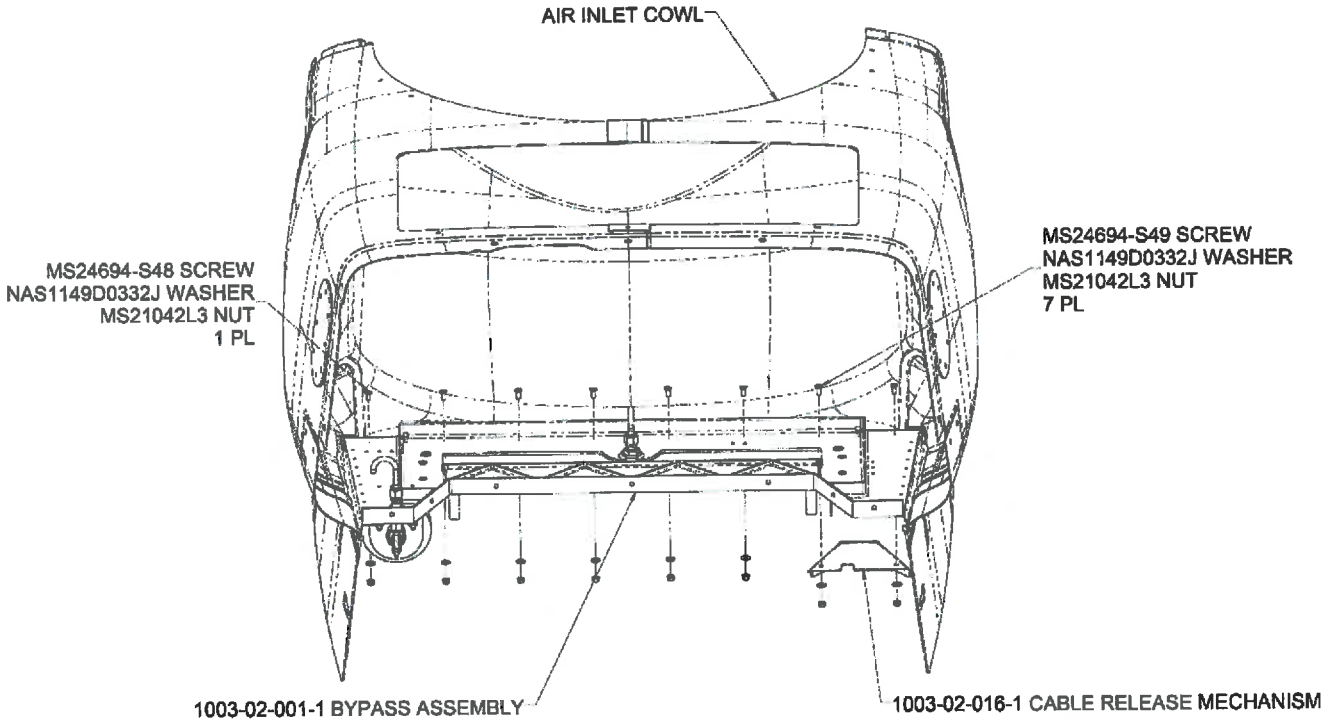


Figure 71-4 – 1003-02-001-1 Bypass Assembly Removal/Installation

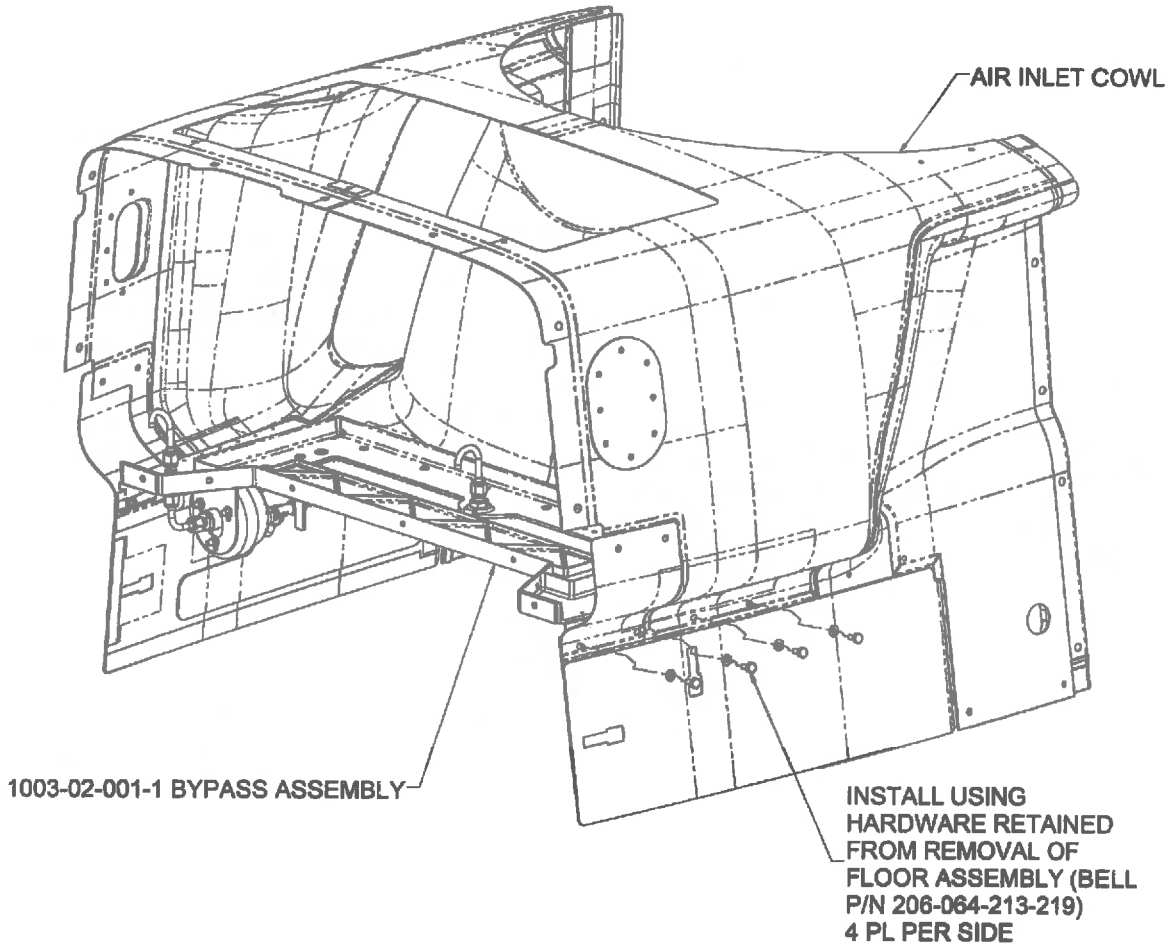


Figure 71-5 – 1003-02-001-1 Bypass Assembly Removal/Installation

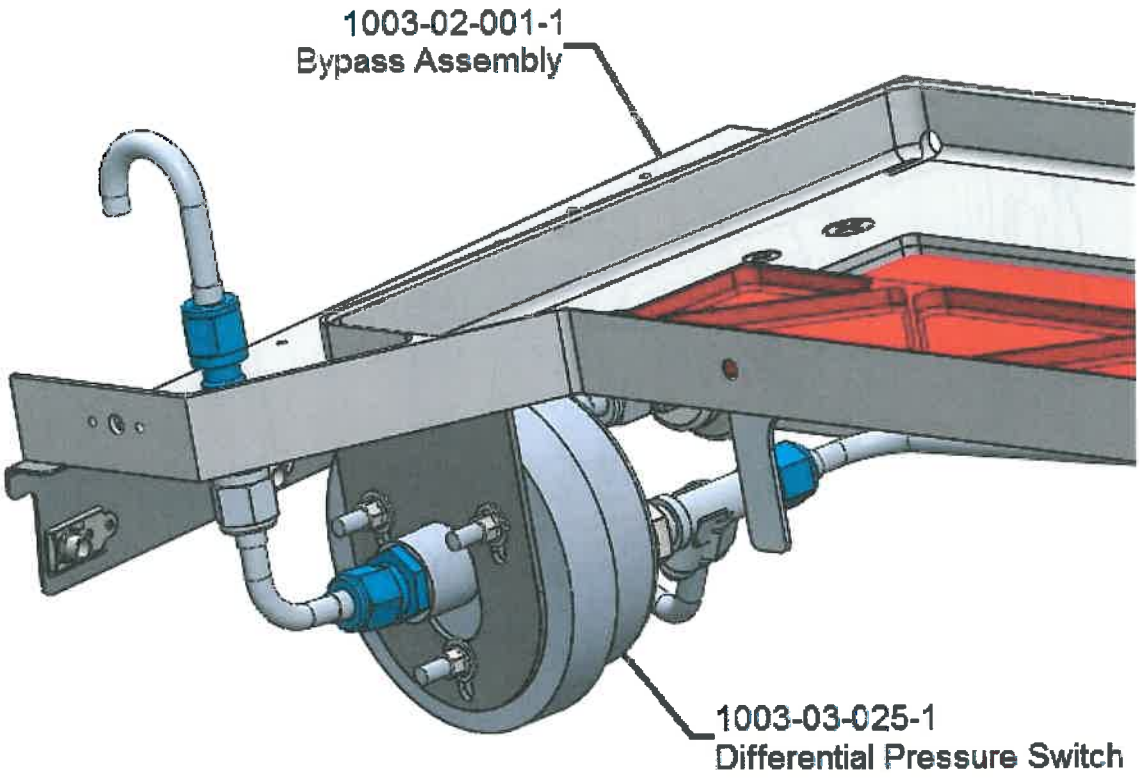


Figure 71-6 – 1003-03-025-1 Differential Pressure Switch

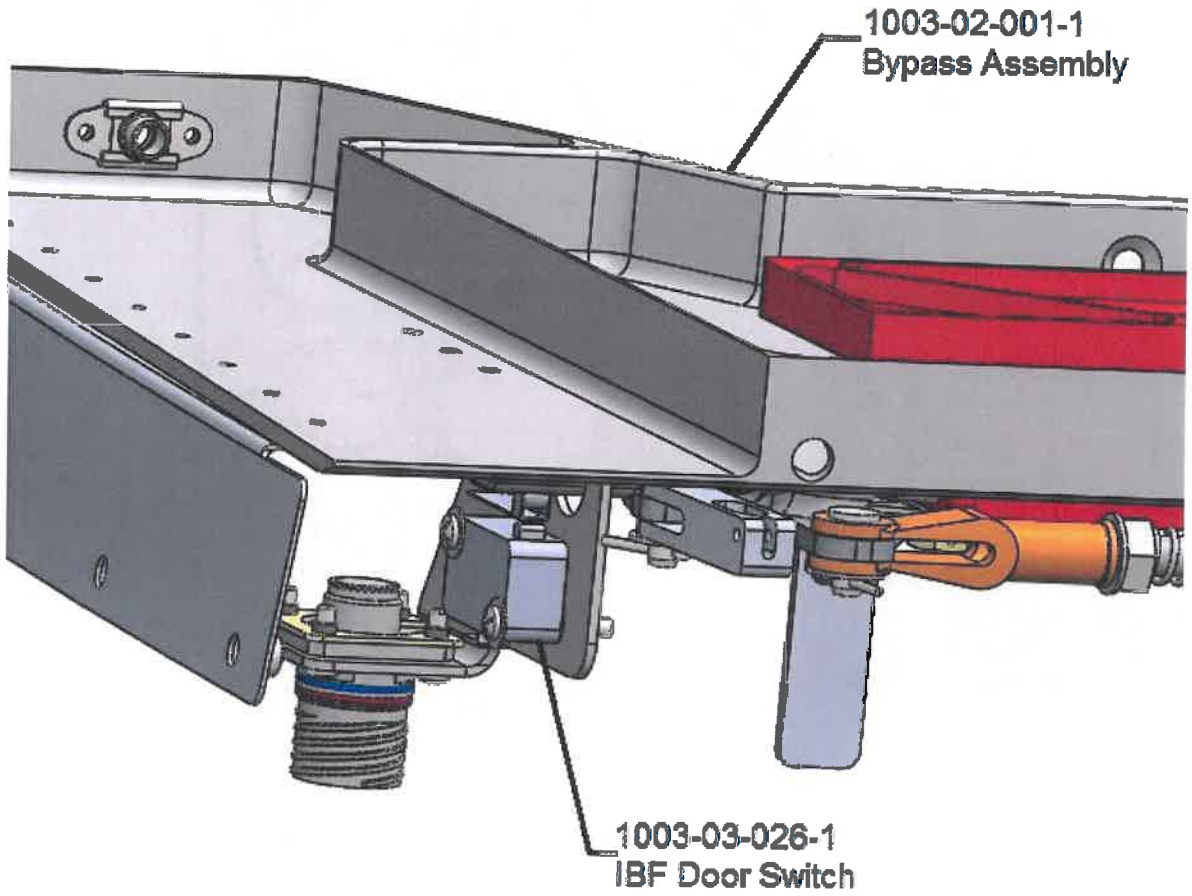


Figure 71-7 – 1003-03-026-1 IBF Door Switch
(Wire Harness not shown for clarity)

Figure 71-8 - IBF Annunciator, 7220-AN1, Mounting Location

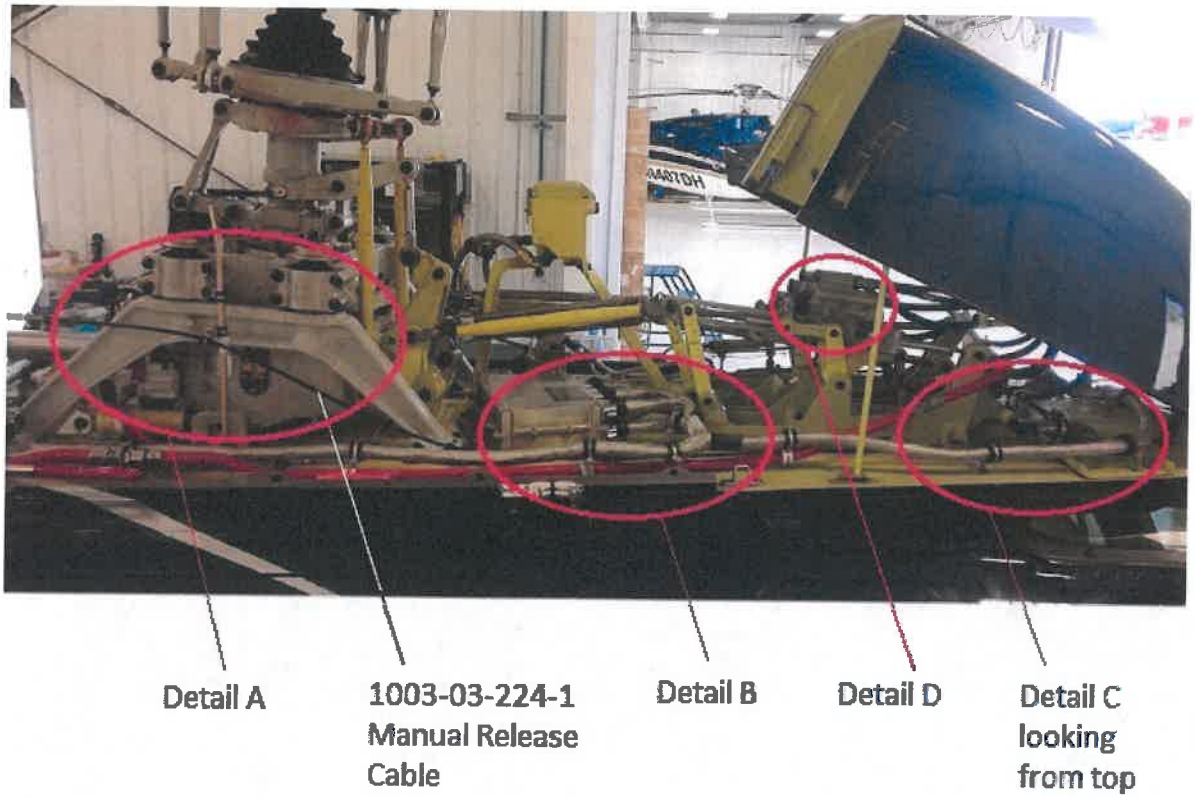


Figure 71-9A – 1003-03-224-1 Manual Release Cable Installation-Top

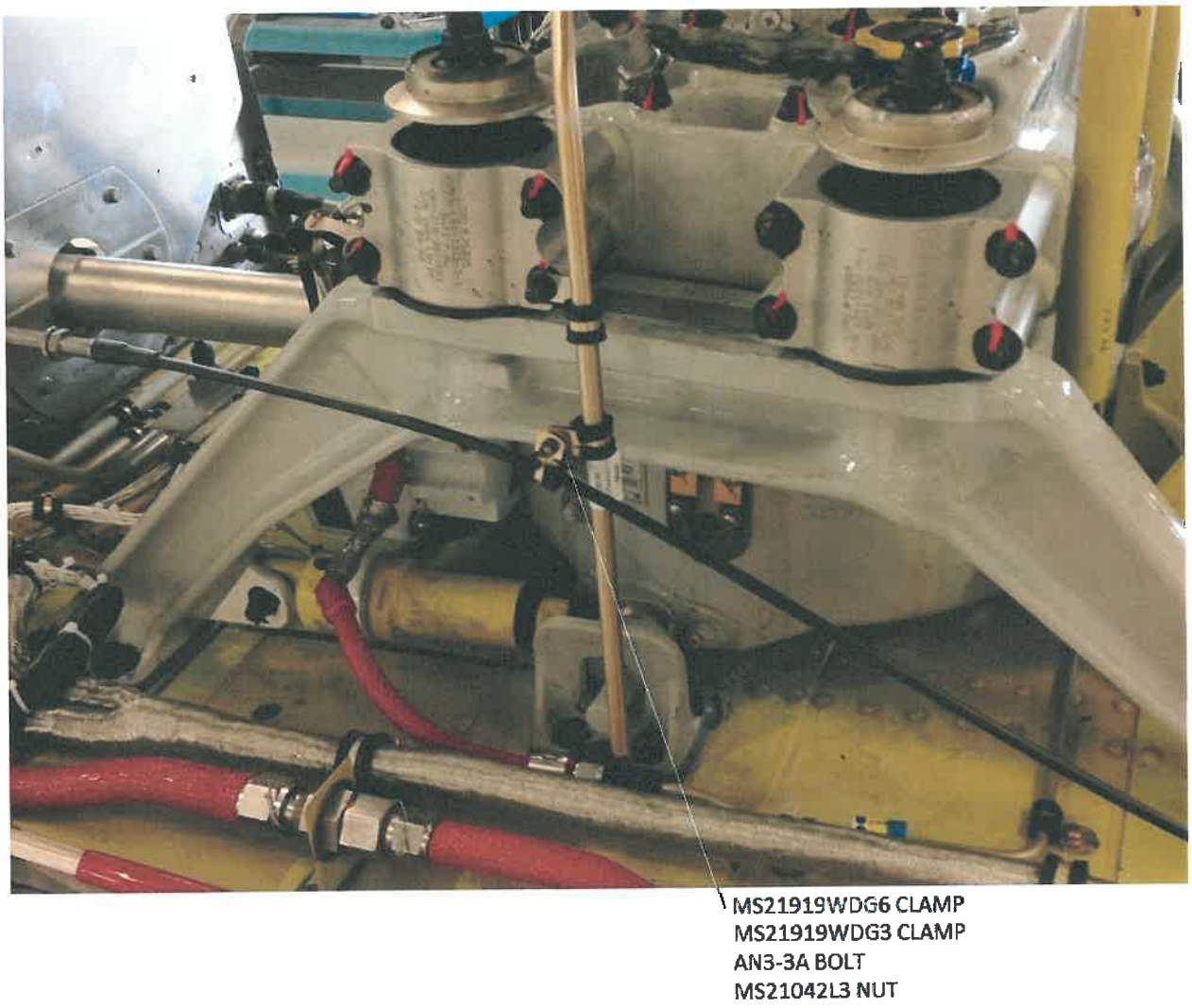


Figure 71-9B – 1003-03-224-1 Manual Release Cable Installation-Detail A

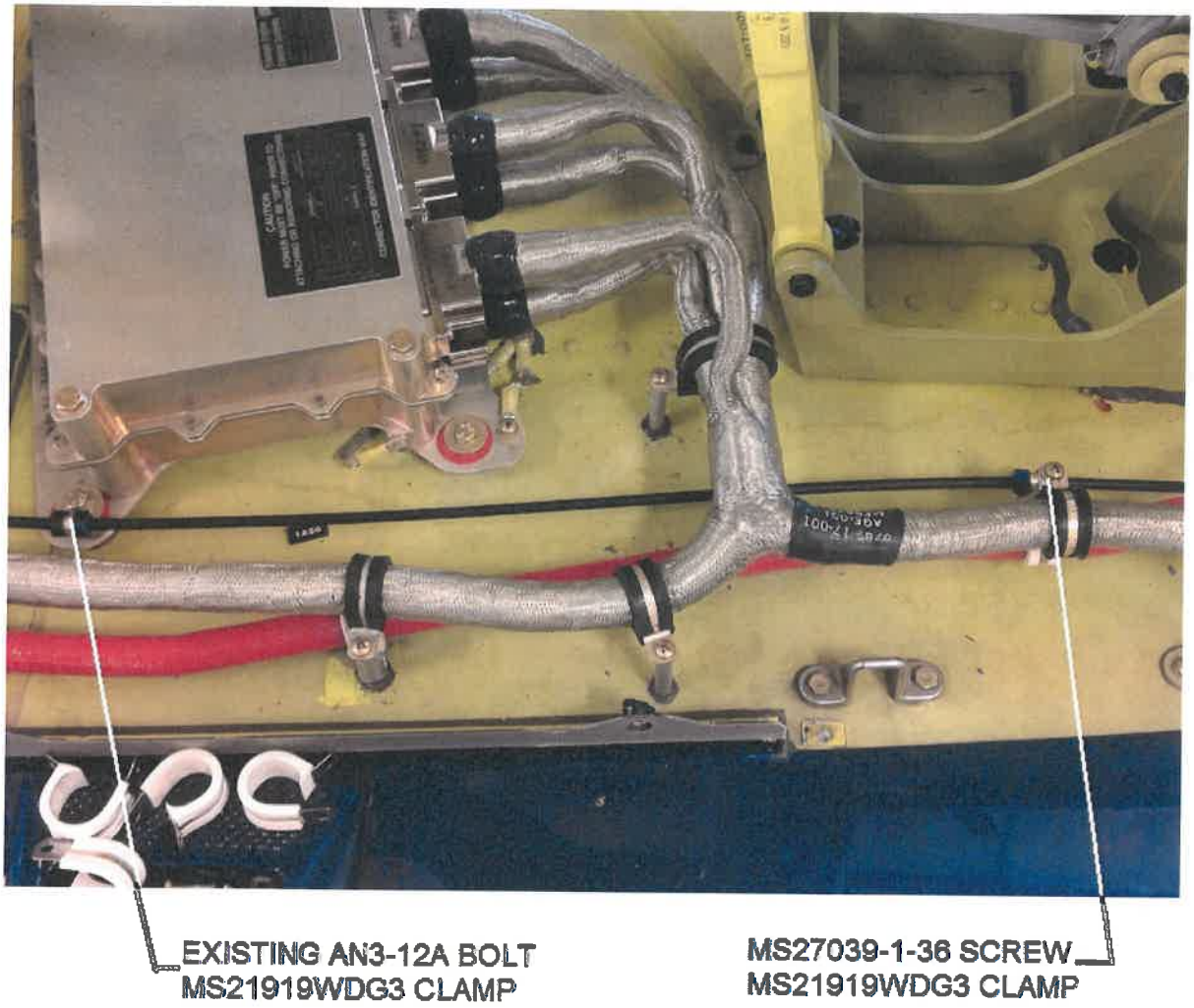


Figure 71-9C – 1003-03-224-1 Manual Release Cable Installation-Detail B

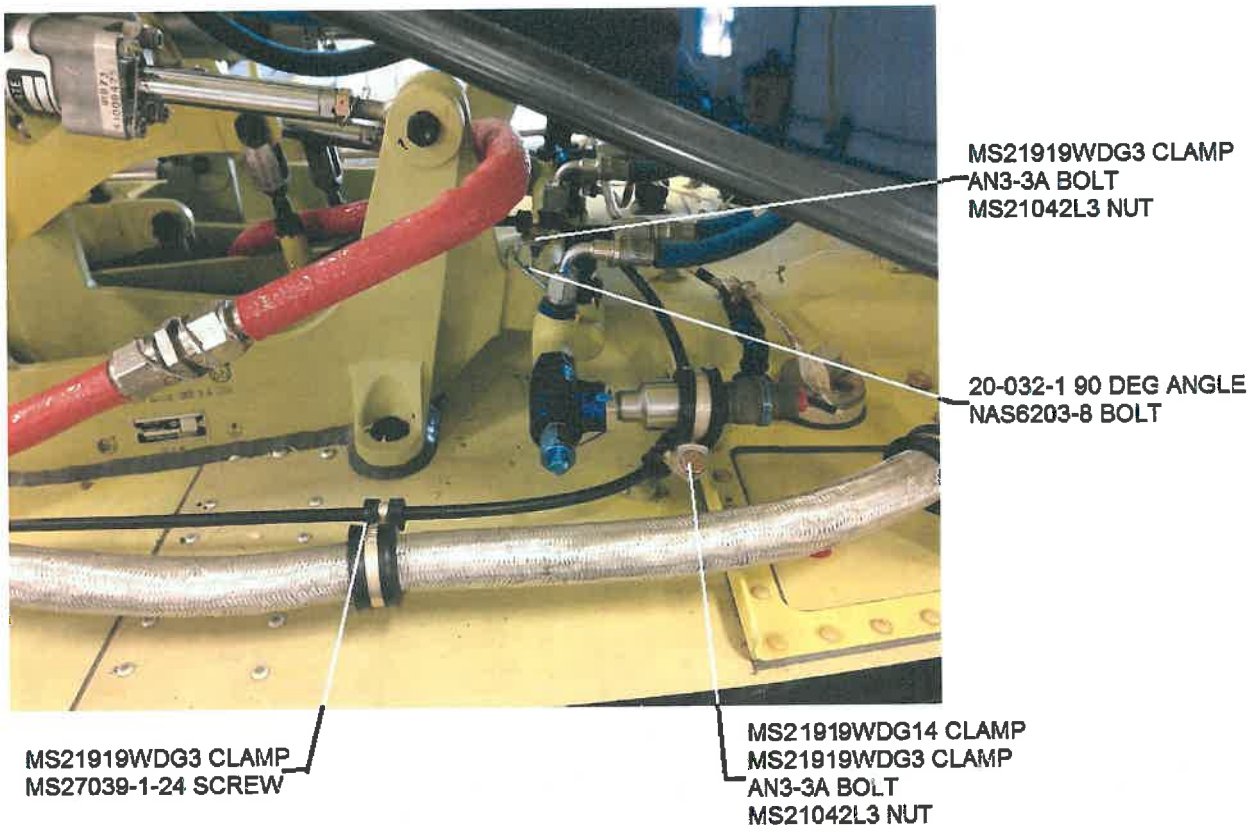
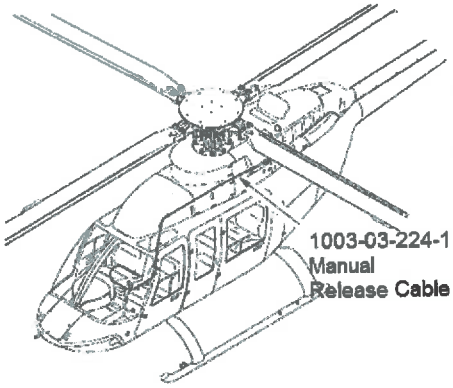


Figure 71-9D – 1003-03-224-1 Manual Release Cable Installation-Detail C

Figure 71-9E – 1003-03-224-1 Manual Release Cable Installation-Detail D



Install the Manual Release Cable down the vertical column in place of the throttle cable that was removed as part of the Eagle 407HP modification.

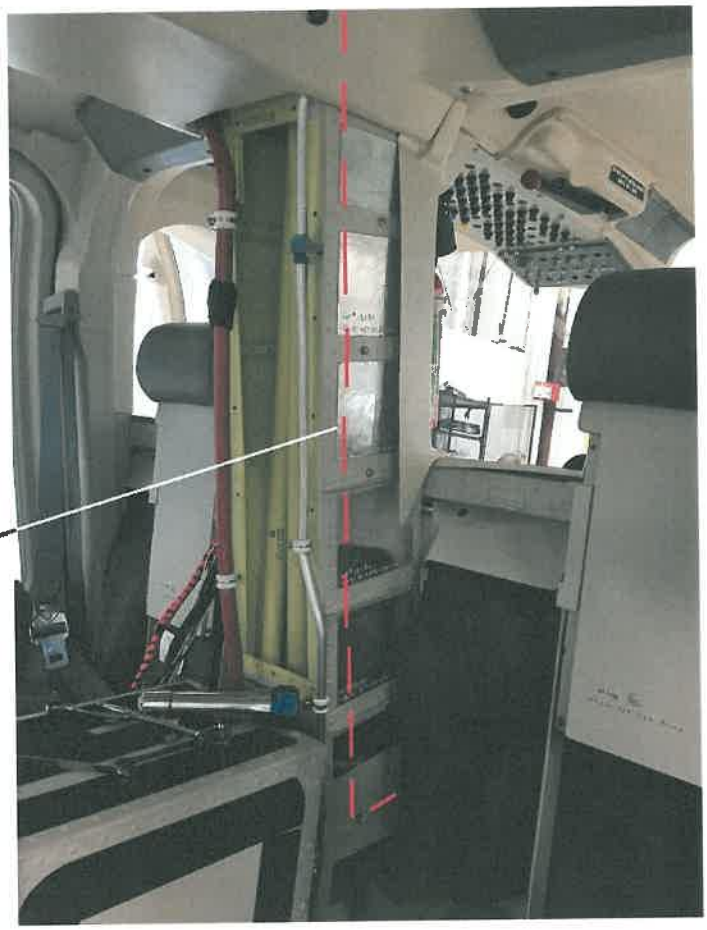


Figure 71-10 – 1003-03-224-1 Manual Release Cable Installation

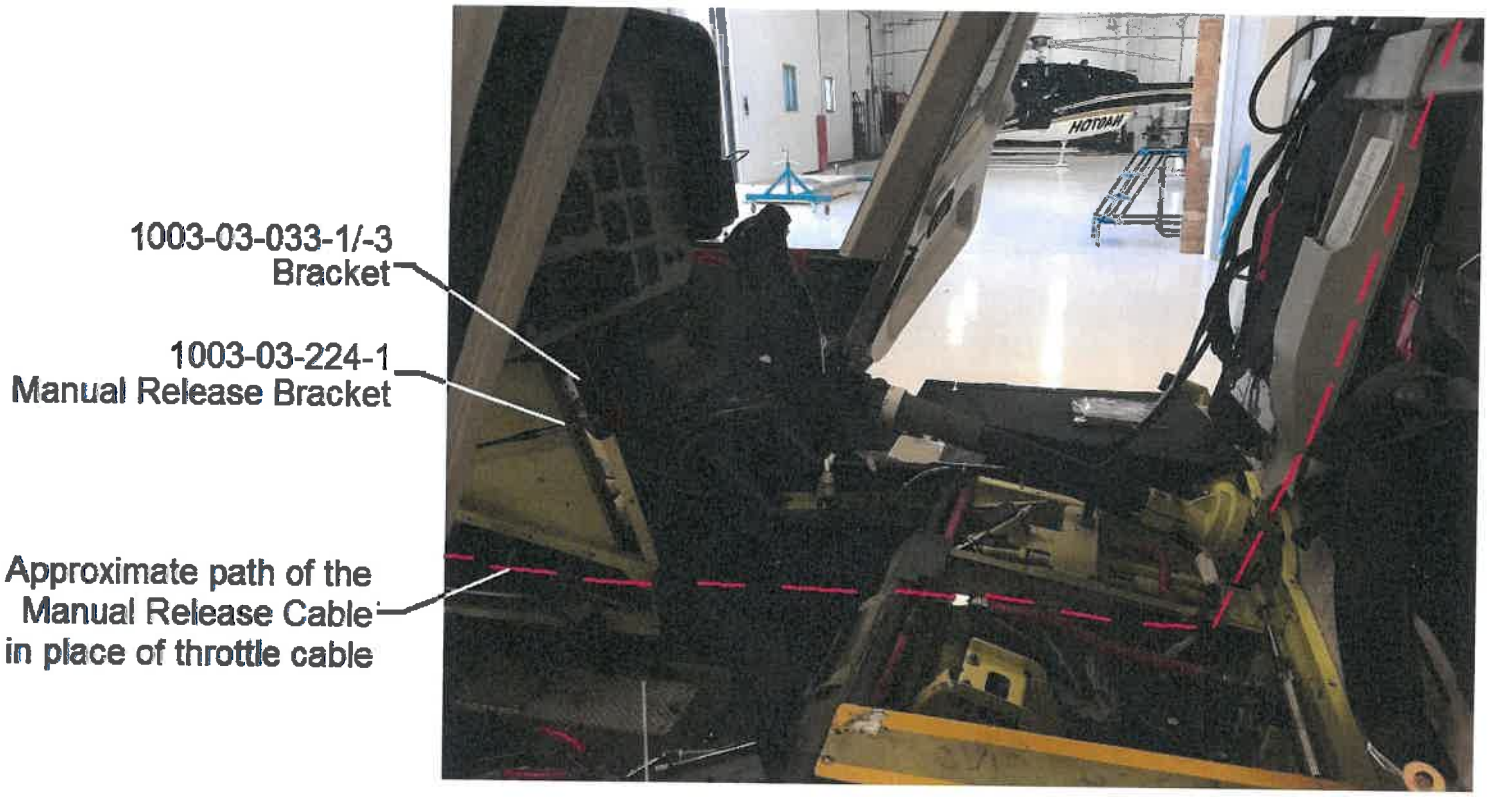


Figure 71-11 – 1003-03-224-1 Manual Release Cable Installation

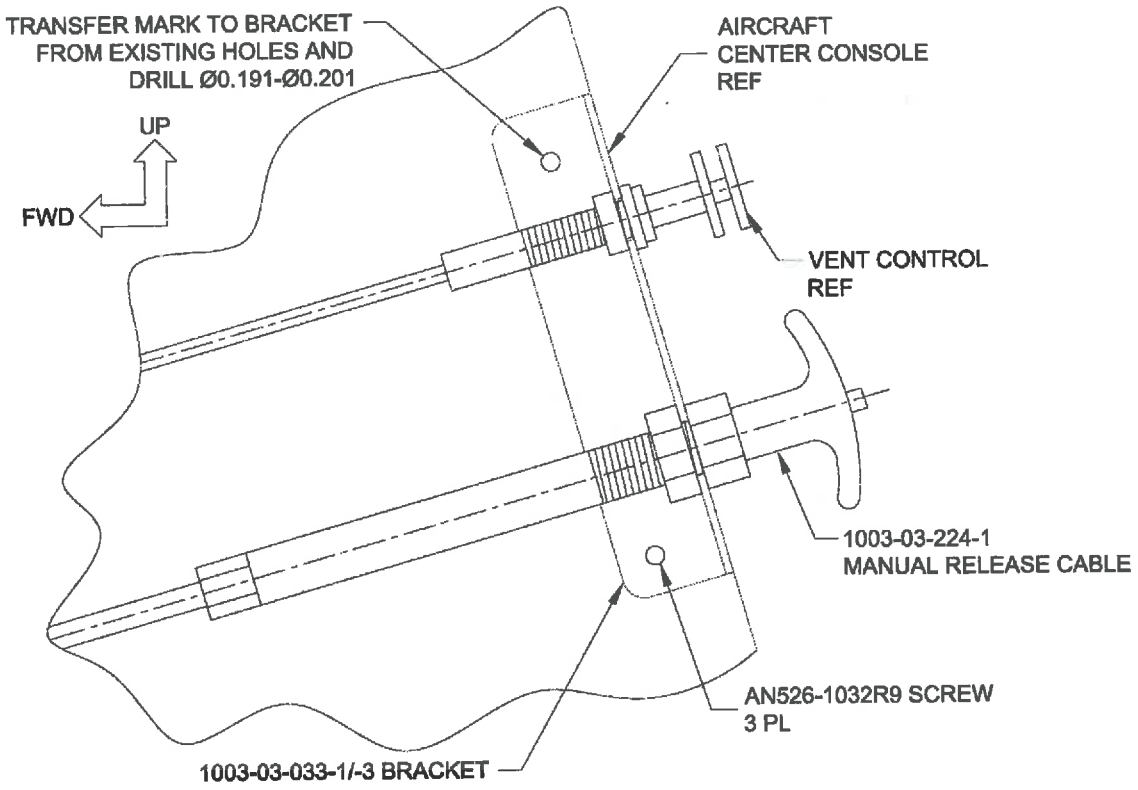


Figure 71-12 – 1003-03-224-1 Manual Release Cable Installation

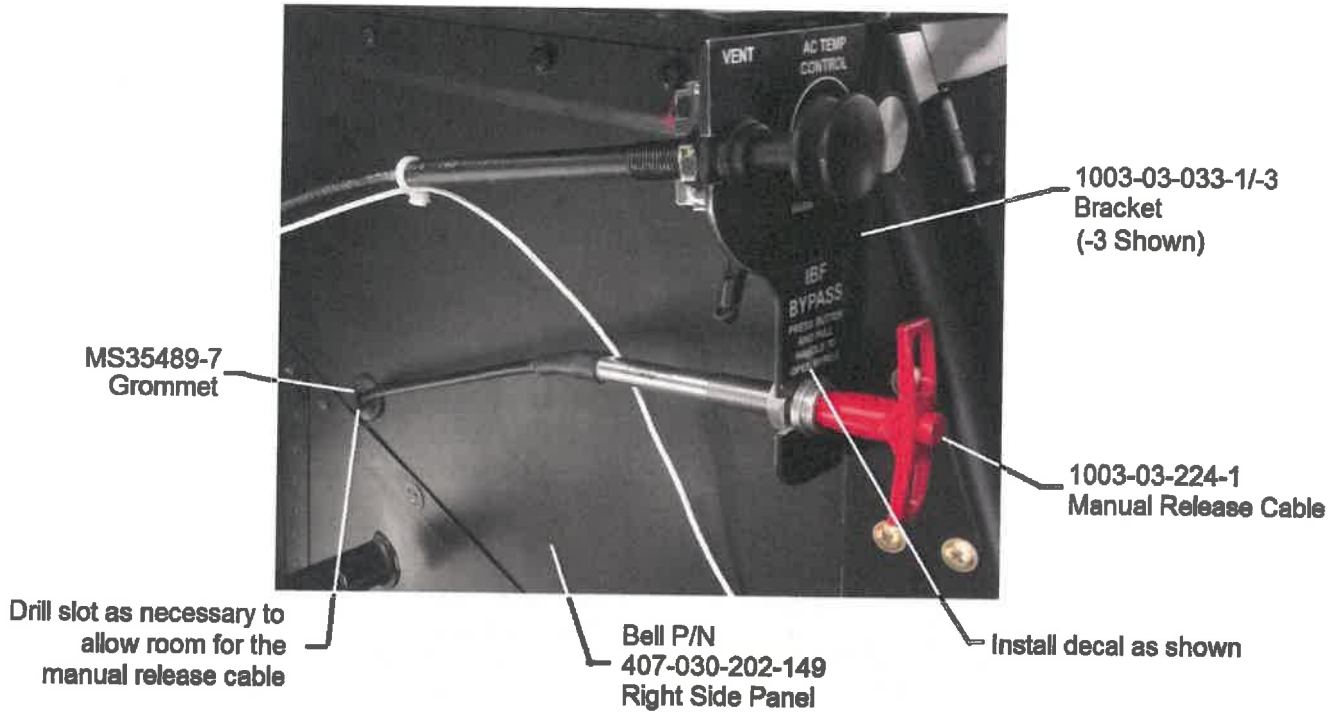


Figure 71-13 – 1003-03-224-1 Manual Release Cable Installation

71.13 PARTS LIST

QTY -001	QTY -003	PART NUMBER	DESCRIPTION
X		1003-01-001	INLET BARRIER FILTER INSTALLATION
	X	1003-01-003	INLET BARRIER PROVISIONS
1	1	1003-02-001-1	Bypass Assembly
1		1003-02-100-1	Inlet Barrier Filter Assembly
1	1	1003-02-016-1	Cable Release Mechanism
2	2	1003-03-031-1	Shim
1	1	1003-03-033-1	Bracket
1	1	1003-03-033-3	Bracket
1	1	1003-03-036-1	IBF Seal Retainer
1	1	1003-03-037-1	Decal
1	1	1003-03-037-3	Decal
1	1	1003-03-224-1	Manual Release Cable
1	1	1003-17-001-1	Harness Assembly
1	1	1003-17-002-1	Harness Assembly
1	1	1003-17-003-1	Harness Assembly
1	1	1003-17-004-1	Harness Assembly
56"	56"	110-004-11	P-Seal – Bell Helicopters
1	1	20-032-1	90 Degree Angle
4		AN3C3A	Bolt
4	4	AN3-3A	Bolt
2	2	AN3C5A	Bolt
1		AN525-10R10	Screw
2		AN525-10R12	Screw
3	3	AN526-1032R9	Screw
1	1	LED-40-17-BB-E1K-68	Annunciator - Vivisun
2	2	MS25036-103	Terminal Lug, Red #10
2	2	MS25036-148	Terminal Lug, Red #4
2	2	M39029/56-351	Contact, Socket, 20 Gauge
5	5	M39029/22-191	Contact, Socket, 22 Gauge
2	2	M39029/57-354	Contact, Socket, 22D Gauge
2	2	M39029/58-363	Contact, Pin, 20 Gauge
2	2	20-108-1	Band
60"	60"	XPF-1/8	Expando 1/8 Inch
17	17	MS21919WDG3	Clamp
1	1	MS21919WDG6	Clamp
1	1	MS21919WDG14	Clamp
10	10	MS21042L3	Nut
1	1	MS24665-132	Cotter Pin
8	8	MS24694-S49	Screw
1	1	MS24694-S48	Screw
1	1	MS27039-1-24	Screw
1	1	MS27039-1-36	Screw
2	2	NAS1149C0332R	Washer
4		NAS1149C0363R	Washer
12	12	NAS1149D0332J	Washer
1	1	NAS1712D8-14N	Clamp
1	1	NAS6203-8	Bolt

CHAPTER 96— ELECTRICAL (96-00-00)

96.1 ELECTRICAL COMPONENTS AND ASSEMBLIES – REFERENCE DESIGNATOR ASSIGNMENT

Each electrical component and assembly is assigned an alphanumeric code on the wiring diagrams and schematics called a reference designator. The reference designator consists of a system number as shown in Table 96-1. Item numbers are also used at the end of the reference designator to identify an item such as a connector that connects to the particular reference designator. Components are identified by their reference designator on the electrical schematics, and by a decal or label adjacent to their installation location in the helicopter.

Table 96-1: Reference Designator, System Number, and Description

SYSTEM NUMBER	SYSTEM DESCRIPTION
7220	Inlet Barrier Filter system

96.2 ELECTRICAL AND ELECTRONIC COMPONENTS, REFERENCE DESIGNATOR / DESCRIPTION / LOCATION — REFERENCE TABLE AND LOCATION FIGURE

All electrical reference designated components used on the Model 407 helicopter are listed in alphanumerical order in Table 96-2. To locate the installed location of a specific reference designated component, find the reference designator callout in the table. In addition to providing the reference designator, the listing provides the full name description. Refer to the figure number provided to view the installed location of the component.

Table 96-2: Electrical and Electronic Components, Reference Designator/Description

REFERENCE DESIGNATOR	COMPONENT DESCRIPTION	LOCATION	Part Number
7220-AN1	IBF/Door Open Annunciator	RH Side Center Console	LED-40-17-BB-E1K68
7220-CR1	Splice, diode	Close to 7220-AN1	TJSE20708
7220-SW1	Switch, Differential Pressure	STA 147.0 LHS	1003-03-025-1
7220-SW2	Switch, Door Open	STA 147.0 RHS	V3-129
7220-P1	Connector	Close to 7220-SW2	D38999/26WA98SN
7220-J1	Connector	Close to 7220-SW2	D38999/20WA98PN

96.3 INLET BARRIER FILTER SYSTEM COMPONENTS

The IBF/DOOR OPEN annunciator is installed on the right hand side of the instrument panel. Refer to Figure 96-1.

a) IBF Indication (Amber)
IBF is indicated to the pilot should the filter become blocked (the pressure differential across the filter reaches a preset value).

b) DOOR OPEN Indication (Blue)
DOOR OPEN is indicated to the pilot once the bypass door has been opened.

Figure 96-1 - IBF Annunciator

96.4 ELECTRICAL LOAD ANALYSIS

Amend the electrical loads analysis per Table 96-1 below.

Table 96-1 – Electrical Load Change Information

Installation		Warning/Emergency	IBF/Door Open Annunciator
AMPS			0.042
OP TIME	(min)		CONT
Start Up	5 sec		
	2 min		
	15 min		
Take Off	5 sec		
	2 min		
	15 min		
Cruise	5 sec		0.042
	2 min		0.042
	15 min		0.042
Landing	5 sec		0.042
	2 min		0.042
	15 min		0.042
Emergency	5 sec		0.042
	2 min		0.042
	15 min		0.042

96.5 REPAIR AND OVERHAUL REQUIREMENTS

Should any of the electrical components require maintenance, remove the component and have it repaired by an appropriately rated Service Center.

CHAPTER 98 – WIRING DIAGRAMS (98-00-00)

Refer to 1003-14-001, Wiring Diagram and 1003-15-001, Wire Routing Diagram.