

**REPORT NO. AFM-505-208**

**INSTRUCTIONS FOR CONTINUED AIRWORTHINESS  
AIRFILM CAMERA SYSTEMS  
AFM-505 UTILITY MOUNT ON BELL 505 MODEL  
HELICOPTERS**



**FAA Project No. ST17642LA-R**

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## RECORD OF REVISIONS

*When updated, this document is revised in its entirety.*

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N/C	09/14/2021	Original Issue	C. BROUCEK	J. MUELLER
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## 1.0 GENERAL

### 1.1 Introduction

This manual presents the Instructions for Continued Airworthiness (ICA) for the installation of Airfilm Camera Systems AFM-505 Utility Mount. This utility mount is to be installed on Bell 505 model rotorcraft.

The Airfilm AFM-505 Utility Mounts allow for the attachment of utility equipment such as cameras, lights, and sensor instruments to be mounted on the Bell Helicopter Model 505 Helicopter. The Utility Beam Mount and Utility Downpost Mount configuration can be installed on the left-hand side of the aircraft only. The AFM-505 Utility Mounts can be installed on both low and high skid models of the Bell 505.

The AFM-505-1 Utility Beam Mount System consists of a multiple part support beam that spans forward to aft. The mount attaches to the forward fuselage belly panel (using the Utility Downpost Mount AFM-505-3) and forward landing gear cross tube. The Nose Utility Mount allows for the installation of a left-hand nose mounted payload.

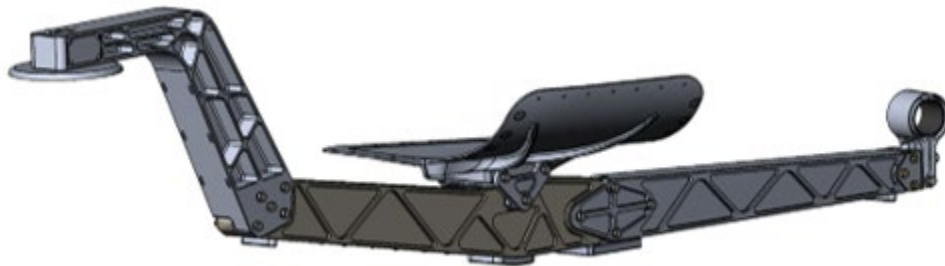


Figure 1 – AFM-505-1 LH Utility Beam Mount Configuration Assembly.

The AFM-505-3 Downpost Mount System consists of a hardpoint mounted to the forward fuselage belly panel. The mount attaches to the fuselage using existing fuselage belly panel fasteners. The Downpost Mount allows for the installation of a payload directly under the hardpoint and can be installed on the left-hand side of the forward fuselage belly panel.



Figure 2 – AFM-505-3 Utility Downpost Mount Assembly.

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## 1.2 Scope

The scope of this document is limited to information, procedures, requirements, and limitations for this Supplemental Type Certificate. When a requirement specified in the appendix to the regulations is not applicable to this Supplemental Type Certificate the requirement will not be included in the Maintenance Instructions.

## 1.3 Applicability

These Instructions for Continued Airworthiness are applicable to Airfilm Camera Systems AFM-505-1 Utility Beam Mount or AFM-505-3 Utility Downpost Mount installed on Bell 505 rotorcraft.

## 1.4 Document Change Control

Changes to this document will be available to registered owners of the AFM-505 Utility Mount within 10 days of revision approval online at <https://meekeraviation.com/product/bell-505-heavy-camera-mount/> . Changes to this document will be indicated by a revision number in the header, vertical lines adjacent to the specified change, and listed in the Record of Revisions table.

## 1.5 Special Tools

No special tools are needed for the maintenance of the AFM-505 Utility Mount.

## 2.0 AIRWORTHINESS LIMITATIONS

### **NONE.**

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

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### 3.0 INSPECTION REQUIREMENTS

#### 3.1 Scheduled Inspections

The schedule inspections required by this ICA are contained in the following checklists. These checklists, when completed, are to become a permanent part of the AFM-505 Utility Mount records. All ICA inspections and maintenance, when complied with shall be documented in the aircraft permanent records/logbook in accordance with CFR 43.9.

##### 3.1.1 100-Hour Inspection Intervals

The 100-hour time in service inspections consist of visually inspecting the critical areas of the AFM-505 Utility Mount installation.

Due to the simplicity of the mount structure, and the common parts shared by both the Utility Beam Mount and the Utility Downpost Mount, the scheduled 100 hour inspections will be identical for both the AFM-505-1 Utility Beam Mount and AFM-505-3 Utility Downpost Mount.

The inspections listed in Table 1 are required while the AFM-505-1 Utility Beam Mount or AFM-505-3 Utility Downpost Mount is installed on the rotorcraft at the time in service interval as specified. The inspection is to be performed by maintenance personnel.

Table 1 – 100-Hour Time in Service Mount Inspections on Rotorcraft

Inspection Interval Hours	Inspection	Maintenance Personnel Initial
100	Visually inspect aluminum brackets for cracks, nicks, or deep scratches.	
100	Visually inspect hardware for cracks, dents, deep scratches, or damage.	
100	Visually inspect hardware for security and tightness.	
100	Check hardware for correct torques.	

##### 3.1.2 1,200-Hour Inspection Intervals

The 1,200-hour time in service inspection is to be performed for every 1,200 hours of time in service. The Utility Mount must be removed from the rotorcraft and disassembled as described in Section 4 through 11.

Due to the simplicity of the mount structure, and the common parts shared by both the Utility Beam Mount and the Utility Downpost Mount, the scheduled 100 hour inspections will be identical for both the AFM-505-1 Utility Beam Mount and AFM-505-3 Utility Downpost Mount.

The inspections listed in Table 2 are required after the AFM-505-1 Utility Beam Mount or AFM-505-3 Utility Downpost Mount is removed from the rotorcraft at the time in service interval as specified. The inspection is to be performed by maintenance personnel.

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Table 2 – 1,200-Hour Time in Service Mount Inspections

Inspection Interval Hours	Inspection	Maintenance Personnel Initial
1,200	Visually inspect bolt holes for damage.	
1,200	Visually inspect brackets for cracks, nicks, or deep scratches	
1,200	Visually inspect aircraft skin local to the Utility Mount for cracks, nicks, or deep scratches.	
1,200	Visually inspect aircraft fasteners local to the Utility Mount for security or any signs of failure.	
1,200	Visually inspect aircraft surrounding structure (including the aircraft landing gear cross tube) for cracks, nicks, or deep scratches.	

### 3.2 Inspection Limits

If the following inspection limits are exceeded, the AFM-505 Utility Mount is to be removed from service and repaired in accordance with FAA acceptable means prior to flight. For further support with mount damage beyond the limits below, record all damage criteria and contact to Airfilm Camera Systems .

Cracks:	Any indication (See Note 1)
Bolt hole elongation:	Any indication (See Note 1)
Dents, scratches, nicks or corrosion:	Greater than 0.10 inches in depth, and/or surface area of 1.0 in <sup>2</sup> . Measurements taken after damage cleanup (See Note 2)

Note 1: The mount structure designed is driven by stiffness rather than structural strength. Indication of crack damage or bolt hole elongation in the mount, would likely indicate a structural exceedance that warrants further investigation into the adjacent airframe structure. Refer to basic aircraft inspection and repair procedures for aircraft inspection. Contact Airfilm Engineering for additional support.

Note 2: Process any damage by dishing out surface using sanding disk, grinder (or equivalent). Remove the minimum amount of material required to eliminate the damage. Minimum dish-out taper 5:1. Polish processed surface using Scotchbrite (or equivalent). Minimum surface finish 125 RHR ("mill finish"). Corrosion protect processed surface using chemical conversion coating "Alodine" (Bondrite M-CR 871 Aero "Touch-n-prep pen" or equivalent).

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#### 4.0 AFM-505-1 UTILITY BEAM MOUNT INSTALLATION

Refer to the Airfilm Camera Systems Installation Instructions, AFM-505-206 for detailed removal, disassembly, reassembly, and installation instructions.

##### NOTES:

- a) The payload package for the installation is limited to a maximum allowable frontal area for 2.2 sq. ft and a weight of 125 lbs.
- b) When Airfilm payload Disconnect Devices (QDD-1-1 or DT-1-1) are installed, the payload can be removed and installed by crew.
- c) If camera/sensor installations require additional power or system requirements beyond the placarded OEM auxiliary power outlet, additional certification(s) may be required.
- d) Installation compatible with standard and high landing gear configurations and entry steps on the Bell 505 Helicopter. Ground Clearance when a payload is installed is not to be less than 6 inches from the ground when the aircraft is on a level surface.

- 4.1. Confirm that the mount will not interfere with any exterior kits, antennas, and other exterior mounted assemblies.

##### **AFM-505-10-1 BEAM ASSEMBLY INSTRUCTIONS:**

- 4.2. Attach the AFM-505-10-001 Fwd Main Beam to the AFM-505-10-003 Aft Main Beam and Aft Attachment Assembly using 4X AN6-34A Hex Bolts, 8X AN960-616 Washers, and 4X AN365-624 Locking Nuts.

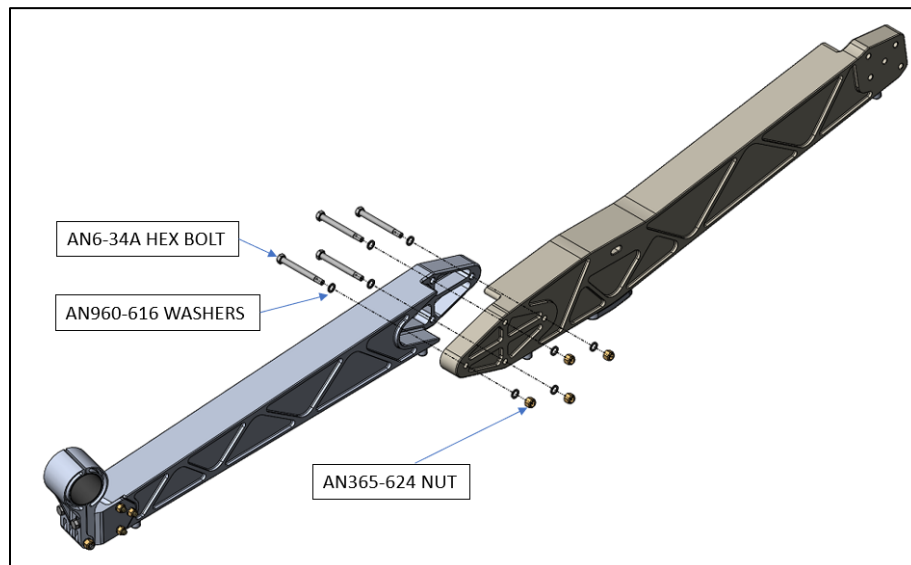


Figure 3. Assembly of the AFM-505-10-001 Fwd Main Beam to the AFM-505-10-003 Aft Main Beam.



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- 4.3. Attach the assembled Beam to the AFM-505-30-1 Aft Attachment Assembly using 3X AN5-34A Bolts, 6X AN960-516 Washers, and 3X AN365-524 Locking Nuts.

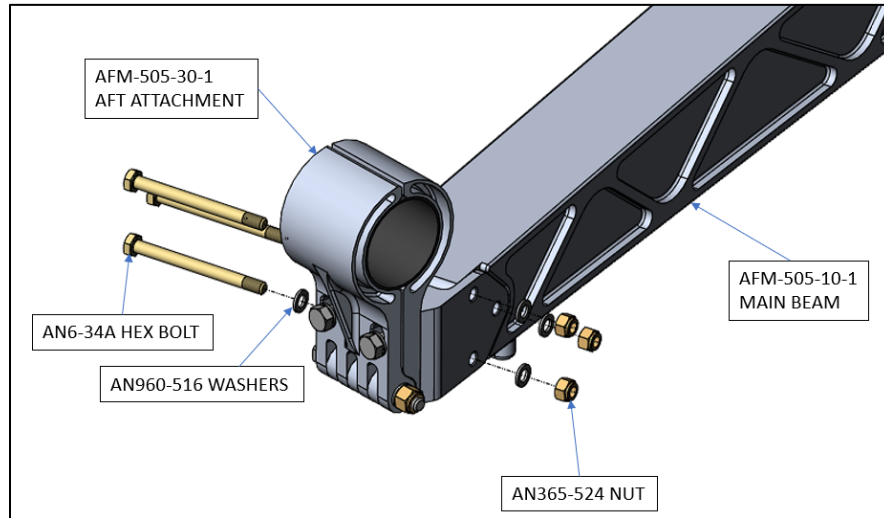


Figure 4. Assembly of the AFM-505-30-1 Aft Attachment Assembly onto the AFM-505-10-1 Main Beam

- 4.4. Attach the assembled beam to the AFM-505-005 Forward Arm and assembled components using 5X AN6-34A Hex Bolts, 10X AN960-616 Washers, and 5X AN365-624 Locking Nuts.

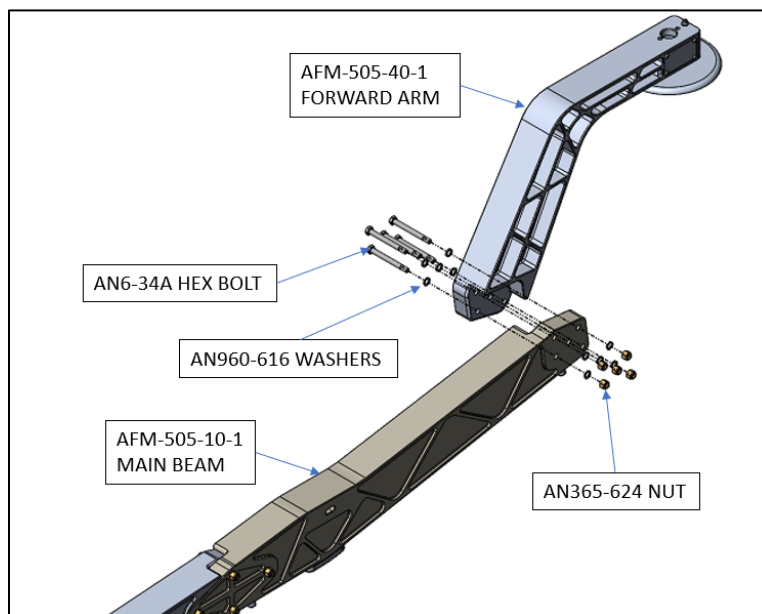


Figure 5. Installation of the Beam Assembly onto the AFM-505-40-1 Forward Arm Assembly.

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### **FORWARD ATTACHMENT INSTALLATION:**

- 4.5. Remove the fasteners in the installation area of the forward attachment assembly. Refer to figure below for installation location and removed fasteners.



Figure 6 - View Looking at Left-Hand Nose Section of the Bell 505 Fuselage, removed fasteners shown highlighted.

- 4.6. Use the supplied MS27039-0812 Screws and NAS1149FN0832P Washers to attach the Forward Attachment Assembly to the Aircraft Fuselage where shown. Ensure rubber gasket is installed on the faying surfaces between the Forward Attachment Assembly and Fuselage. Fasten all screws hand tight.

### **AFT ATTACHMENT AND MAIN BEAM INSTALLATION:**

- 4.7. Place the assembled Partially Assembled AFM-505-1 Beam under the fuselage. Identify the location on the forward landing gear cross tube where the aft clamping section of the Main Beam Assembly will attach. See the figure below for Aft Attachment location.

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Figure 7. AFM-505-1 Aft Installation location on the Bell 505 Forward Landing Gear Cross Tube.

- 4.8. Detach the AFM-505-30-001 and AFM-505-30-003 Aft Half Clamps from the Beam Assembly for installation onto the forward landing gear cross tube. Remove the 2X AN6-14A Hex Bolts and 2X AN960-616 Washers to remove the Half Clamps.
- 4.9. Use the supplied AFM-505-RBKIT-1 Aft Rubber Shim Kit to provide a mounting surface for the Aft Half Clamps in the approximate installation area on the Landing Gear Cross Tube as shown in the figure above. Use the different shim thicknesses supplied in the Kit to obtain a proper clamp on the forward landing gear cross tube. Proper clamping force is obtained when the clamp is unable to shift or rotate when the AN6-14A Hex Bolts are attached to the Main Beam Assembly and fully torqued. Trim supplied shims as needed.
- 4.10. Clamp the AFM-505-30-001 and AFM-505-30-003 Aft Half Clamps over the Landing Gear Cross Tubes and installed rubber shims. Position the clamps approximately 5 inches from the inside face of the fuselage cross tube bracket. See figure 7 for installation details.

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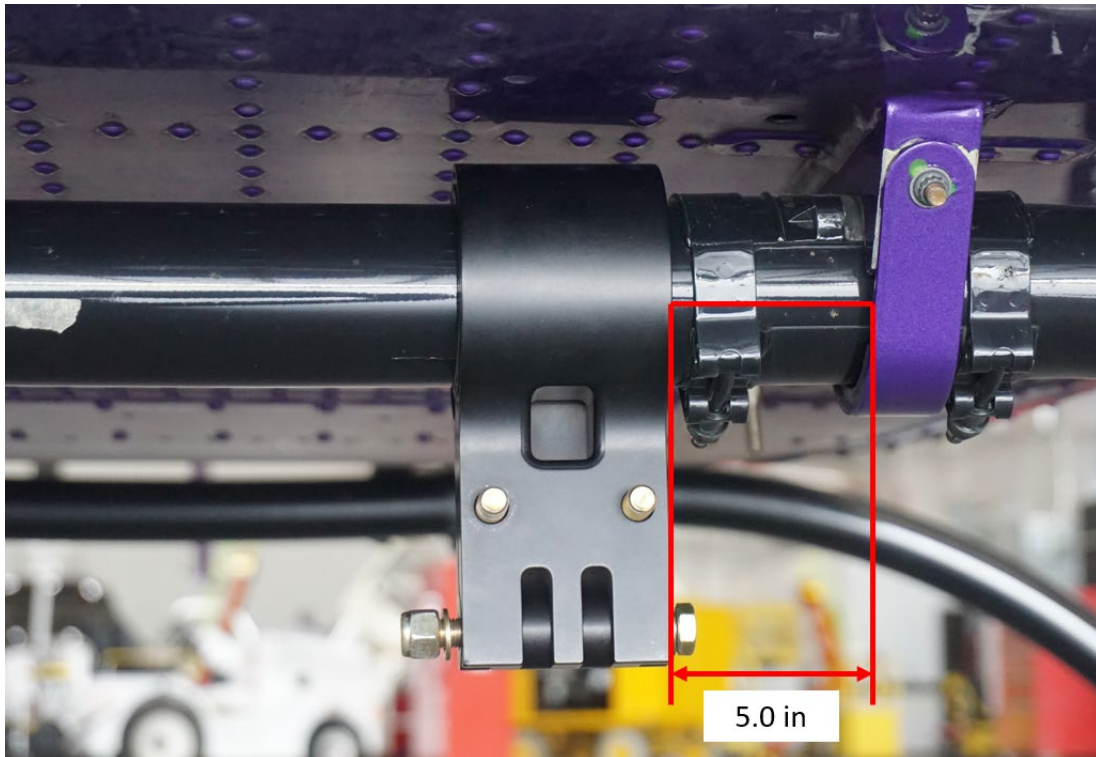


Figure 8 - Clamp Location of the AFM-505-1 Aft Installation, Measured from the inside of the Cross Tube Bracket

- 4.11. Lift the aft end of the assembled main beam and attach it to the half clamps using the red anodized Aft Locking Hook (AFM-505-30-007) on the end of the beam. Once attached, secure the half clamps to the beam assembly using the two (2) supplied AN6-14A Hex Bolts and AN960-616 Washers. Secure bolts hand tight.
- 4.12. With the Aft Attachment clamps secure and hand tight, lift the forward portion of the beam assembly up to the AFM-505-20-007 Saddle plate on the installed Forward Attachment Assembly. Attach the Main Beam to the Saddle Plate using the supplied AN6-60A Hex Bolt, 2X AN960-616 Washers, and AN365-624 Locking Nut. Ensure the AFSP-2-21 Mount shims are captured between the AFM-505-20-007 Saddle Plate and the AFM-505-10-1 Main Beam Assembly.
- 4.13. Ensure no binding is present within the beam assembly. Check that all hardware is fully secured.

Torque all mount fasteners according to the table below. Torque values referenced per Bell Helicopter Technical Document BHT-ALL-SPM.

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Table 3 – Torque Values – AFM-505-1 Nose Mount Installation.

Fastener Size/Type	Location	Torque Value
AN6 Hex Bolt	Beam Assembly and Mounting Hardware	95 to 110 in-lb
MS27039 Screw	Forward Aircraft Attachment Hardware	7 to 9 in-lb
NAS1351-3 SHCS	Forward Attach Grid Plate Hardware	20 to 25 in-lb
NAS1351-4 SHCS	Forward Attach Grid Plate Hardware	50 to 70 in-lb

- 4.14. Ensure Aft Main Beam clamping attachment is secure and free of any movement between the clamp and cross tube. If movement exists, add thickness to the shims placed on the cross tube, torque hardware, and re-evaluate.



Figure 9 - Installed View of the AFM-505-1 LH Nose Utility Mount

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**WEIGHT AND BALANCE:**

4.15. Revise weight and balance per table shown below based on configuration.

The following table presents the location of the weight/center of gravity of the mount and payload sensor/camera for adjustment of the aircraft weight and center of gravity with the mount installed.

**NOTE:** Ground Clearance when a payload is installed is not to be less than 6 inches from the ground when the aircraft is on a level surface.

Table 4. Weight and Balance Information for AFM-505-1 Utility Mount (Beam Configuration)

<b>BELL 505 WEIGHT AND STATIONS - RH BEAM INSTALLATION</b>			
<b>FOR CAMERA / SENSOR SYSTEMS</b>			
<i>BELL MODEL 505</i>			
	WEIGHT	LONGITUDINAL	LATERAL
ITEM DESCRIPTION	LBS	ARM INCHES	ARM INCHES
<b>PAYLOAD LOCATION --USE CAMERA WEIGHT (125 lb max)*</b>			
<b>AFM-505-1 - MOUNT ASSEMBLY</b>	<b>55.00</b>	<b>80.90</b>	<b>29.50</b>
<b>QUICK DISCONNECT DEVICE (SELECT ONE OF THE FOLLOWING)</b>			
DT-1-1	2.40	80.90	29.50
TAPER FITTING ASSEMBLY (CF-10)	1.80	80.90	29.50
<b>*USE ACTUAL WEIGHT OF INSTALLED EQUIPMENT</b>			
Use proper weight and balance WHEN multiple configurations installed.			

Table 5. Example Calculation of Longitudinal and Lateral Moment using Weight and Balance Chart

<b>BELL 505 WEIGHT AND STATIONS - RH BEAM INSTALLATION</b>					
<b>FOR CAMERA / SENSOR SYSTEMS</b>					
<i>BELL MODEL 505</i>					
<b>EXAMPLE CALCULATION</b>					
	WEIGHT	LONGITUDINAL	LATERAL	Longitudinal	Lateral
ITEM DESCRIPTION	LBS	ARM INCHES	ARM INCHES	Moment In-Lbs	Moment In-Lbs
<b>125 lb payload, installed with a Dovetail, on the right side of the helicopter</b>					
<b>PAYLOAD LOCATION --USE CAMERA WEIGHT (125 lb max)*</b>	<b>125.00</b>	<b>45.24</b>	<b>-29.5</b>	<b>5655</b>	<b>-3687.5</b>
<b>AFM-505-1 - MOUNT ASSEMBLY</b>	<b>55.00</b>	<b>80.90</b>	<b>-20.3</b>	<b>4449.5</b>	<b>-1116.5</b>
<b>QUICK DISCONNECT DEVICE (SELECT ONE OF THE FOLLOWING)</b>					
DT-1-1	2.40	80.90	-29.5	194.16	-70.8
TAPER FITTING ASSEMBLY (CF-10)	N/A	80.90	-29.5	-	-
<b>Total</b>				<b>10298.66</b>	<b>-4874.8</b>

4.16. Install appropriate Placards in full view of pilot.

**Reduce published V<sub>NE</sub> by 13 KIAS with a payload installed**

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4.17. Make appropriate log book entry for installation.

4.18. Return to Service.

## 5.0 REMOVING THE AFM-505-1 UTILITY BEAM MOUNT

5.1. Remove entire AFM-505-1 Utility Beam Mount Assembly and all associated hardware.

5.2. Install original hardware into the existing belly panel. Torque all hardware as required.

5.3. Calculate weight and balance.

5.4. Make appropriate log-book entry.

5.5. Return aircraft to service.

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## 6.0 AFM-505-3 DOWN POST MOUNT INSTALLATION

### NOTES:

- a) The payload package for the installation is limited to a maximum allowable frontal area for 1.0 sq. ft and a weight of 50 lbs.
  - b) When Airfilm payload Disconnect Devices (QDD-1-1 or DT-1-1) are installed, the payload can be removed and installed by crew.
  - c) If camera/sensor installations require additional power or system requirements beyond the placarded OEM auxiliary power outlet, additional certification(s) may be required.
  - d) Installation compatible with standard and high landing gear configurations and entry steps on the Bell 505 Helicopter. Ground Clearance when a payload is installed is not to be less than 6 inches from the ground when the aircraft is on a level surface.
- 6.1. Confirm that the mount will not interfere with any exterior kits, antennas, and other exterior mounted assemblies.
  - 6.2. Remove the fasteners in the installation area of the forward attachment assembly. Refer to figure below for installation location and removed fasteners.



Figure 10. View Looking at Left-Hand Nose Section of the Bell 505 Fuselage, removed fasteners shown highlighted.



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- 6.3. Use the supplied MS27039-0812 Screws and NAS1149FN0832P Washers to attach the Forward Attachment Assembly to the Aircraft Fuselage where shown. Ensure rubber gasket is installed on the faying surfaces between the Forward Attachment Assembly and Fuselage. Fasten all screws hand tight.
- 6.4. Reinstall the side belly panel along with the AFM-505-3 Down Post Mount Assembly. Install the supplied AFM-505-RBKIT-3 Rubber Shim between the Forward Attachment Assembly and aircraft skin and trim as needed. Use the supplied MS27039-0812 Screws and NAS1149FN0832P Washers to attach the Interface Plates and belly panel onto the aircraft. Reinstall original fasteners into the belly panel in holes not occupied by the Interface Plates. Fasten all screws hand tight.
- 6.5. Torque all mount fasteners according to the table below. Torque values referenced per Bell Helicopter Technical Document BHT-ALL-SPM.

Table 6. Torque Values – AFM-505-3 Down Post Installation

Fastener Size/Type	Location	Torque Value
MS27039 Screw	Forward Aircraft Attachment Hardware	7 to 9 in-lb
NAS1351-3 SHCS	Forward Attach Grid Plate Hardware	20 to 25 in-lb
NAS1351-4 SHCS	Forward Attach Grid Plate Hardware	50 to 70 in-lb

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Figure 9. Installed AFM-505-3 Down Post Utility Mount, with Dummy Sensor for Reference.

6.6. Revise weight and balance per the tables shown below.

The following tables present the location of the weight/center of gravity of the mount and payload sensor/camera for adjustment of the aircraft weight and center of gravity with the mount installed.

**NOTE:** Ground Clearance when a payload is installed is not to be less than 6 inches from the ground when the aircraft is on a level surface.

Table 7. Weight and Balance Information for AFM-505-5 Utility Mount (LH Down Post Configuration)

<b>BELL 505 WEIGHT AND STATIONS - LH DOWN POST</b>			
<b>FOR CAMERA / SENSOR SYSTEMS</b>			
<b>BELL MODEL 505</b>			
	WEIGHT	LONGITUDINAL	LATERAL
ITEM DESCRIPTION	LBS	ARM INCHES	ARM INCHES
<b>AFM-505-3 PAYLOAD LOCATION -USE CAMERA WEIGHT (50 lb max)*</b>		<b>85.90</b>	<b>-18.00</b>
<b>AFM-505-3 - LH DOWN POST ASSEMBLY</b>	<b>10.50</b>	<b>85.90</b>	<b>-18.00</b>
<b>OPTIONAL QUICK DISCONNECT DEVICE (SELECT ONE OF THE FOLLOWIN</b>			
DT-1-1	<b>2.40</b>	<b>85.90</b>	<b>-18.00</b>
<b>*USE ACTUAL WEIGHT OF INSTALLED EQUIPMENT</b>			

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6.7. Install appropriate Placards in full view of pilot.

**Reduce published  $V_{NE}$  by 13 KIAS with a payload installed**

6.8. Make appropriate log book entry for installation.

6.9. Return to service.

## 7.0 REMOVING THE AFM-505-3 DOWNPOST MOUNT

7.1. Remove entire AFM-505-7 Downpost Mount Assembly and all associated hardware.

7.2. Install original hardware into the existing belly panel. Torque all hardware as required.

7.3. Calculate weight and balance.

7.4. Make appropriate log-book entry.

7.5. Return aircraft to service.

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## 8.0 AFM-505-50-1 DOVETAIL ADAPTER INSTALLATION (OPTIONAL)

1. Locate the Dovetail Adapter mounting holes at the connection of the two AFM-505 Beam Halves. Remove the existing NAS1351 Screws from the forward and aft mounting points, along with the Skid Pads fastened by the screws. Refer to the figure below for the mounting location.

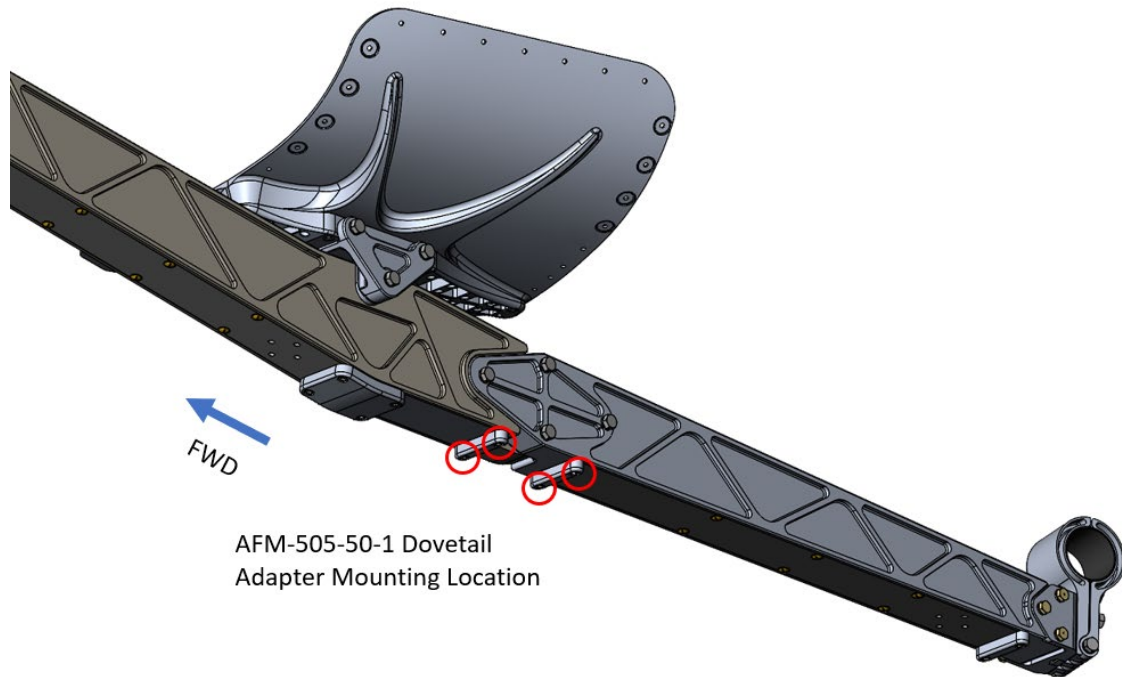


Figure 11. Mounting Location of the AFM-505-50-1 Dovetail Adapter

2. Mount the AFM-505-50-1 Dovetail Adapter to the Main Beam using 4X AN4-6A hex bolts and AN960 Washers (Alt: 4X MS20004-4 Screws may be substituted).

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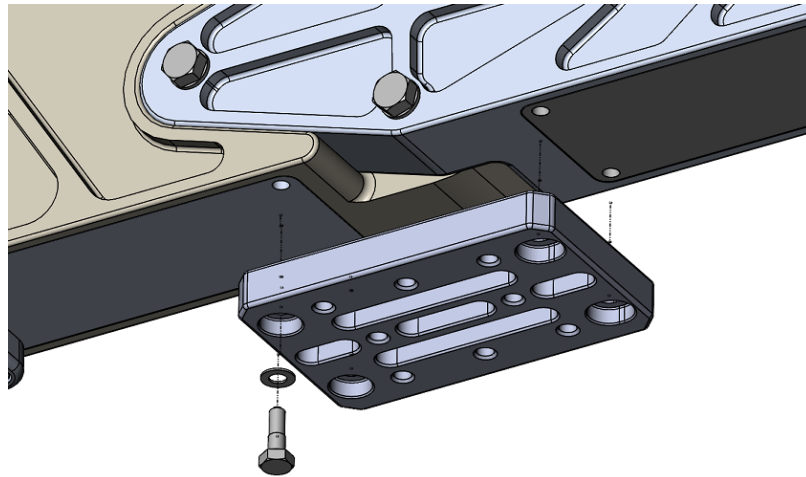


Figure 12. Mounting of the AFM-505-50-1 Dovetail Adapter to the Main Beam

1. Torque all adapter fasteners per Table 2 and Bell Helicopter Technical Document BHT-ALL-SPM. Check that all hardware is fully secured.

## 9.0 AFM-505-50-1 DOVETAIL ADAPTER REMOVAL (OPTIONAL)

2. Remove the fasteners securing the Dovetail Adapter to the Main Beam (AN4-6A or MS20004-4) and set aside.
3. Reattach the Small Skid Pads and NAS1351 Socket Head Cap Screws provided with the Main Beam Assembly.
4. Torque all adapter fasteners per Table 2 and Bell Helicopter Technical Document BHT-ALL-SPM. Check that all hardware is fully secured.