DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CONTACT MEMORY BUTTON (CMB) INFORMATION FOR AH-64A/D

Headquarters, Department of the Army, Washington, D.C.
1 June 2005

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our fax number is: DSN 788-6546 or Commercial 256-842-6546. Our e-mail address: 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of this manual. For the World Wide Web use: https//amcom2028.redstone.army.mil.

NOTE

The aircraft components requiring maintenance management and historical data reports in this document are taken from TB 1-1500-341-01.

All CMB-selected assemblies and subassemblies are in Table 1 of this document.

SECTION I. DOWNLOADING CMB INFORMATION

1. GENERAL INFORMATION.

1.1. DOWNLOADING CMB INFORMATION.

Description: This task covers downloading stored maintenance information from the CMB.

1.2. General Information: A contact memory button (CMB) is a battery-free, read/write electronic data storage device attached to selected components tracked by the DA Form 2410. The CMB enhances configuration management, asset tracking, inspection and maintenance for the life of the component to which it is attached.

Aviation Maintenance Automated Tracking System (AMATS) is an automated system that uses CMBs to input part data into an existing maintenance management information system (MMIS). Data stored on the CMB is retrieved either by the handheld PC using the Mini Fingertip Probe attachment or by a laptop using a ButtonLink (Figure 1). Information is viewable and updateable on site. The retrieved information is then inputted into the MMIS. Together, CMBs and an MMIS create an automated maintenance environment. After maintenance is performed on an aircraft component and the maintenance data is entered into the MMIS, the handheld PC or laptop is used to read all of the component's new historical data and to then download the data to a new or reusable CMB.

1.3. Initial Setup

Tools:

Handheld PC (Item 2, Figure 1)

Handheld PC Charging Cradle (Item 1, Figure 1)

ButtonLink, Serial (Item 3, Figure 1)

ButtonLink, USB (Item 4, Figure 1)

Mini Fingertip Probe (Item 5, Figure 1)

Laptop (Item 7, Figure 1) or other computer

CAUTION

Handheld PCs contain rechargeable battery packs. These units must be pre-charged in accordance with the device's operating instructions.

Handle the AMATS equipment with care, as the electronic circuitry can be damaged from improper handling. Use surge protectors whenever possible.

NOTE

When reading/writing a CMB, make sure the probe is vertical to the CMB, and press down firmly. Hold the probe in this position, until the writing device shows that the reading of the CMB is complete.

The part numbers given below for items in Figure 1 represent some, not all, of the currently available hardware. Additional part numbers may be suitable, especially as new hardware products become available from manufacturers.

1.4 Downloading the CMB

1.4.1 Read the CMB: Read the CMB using the CMB read/write device to determine the reason for the component removal from service.

1.4.2 Download the CMB: Download the read information into the AMATS computer for future transfer to the maintenance facility's maintenance information database.

1.4.3 Notify database management personnel: Notify the applicable database management personnel that maintenance information from the CMB is ready for transfer to the facility's maintenance information database.

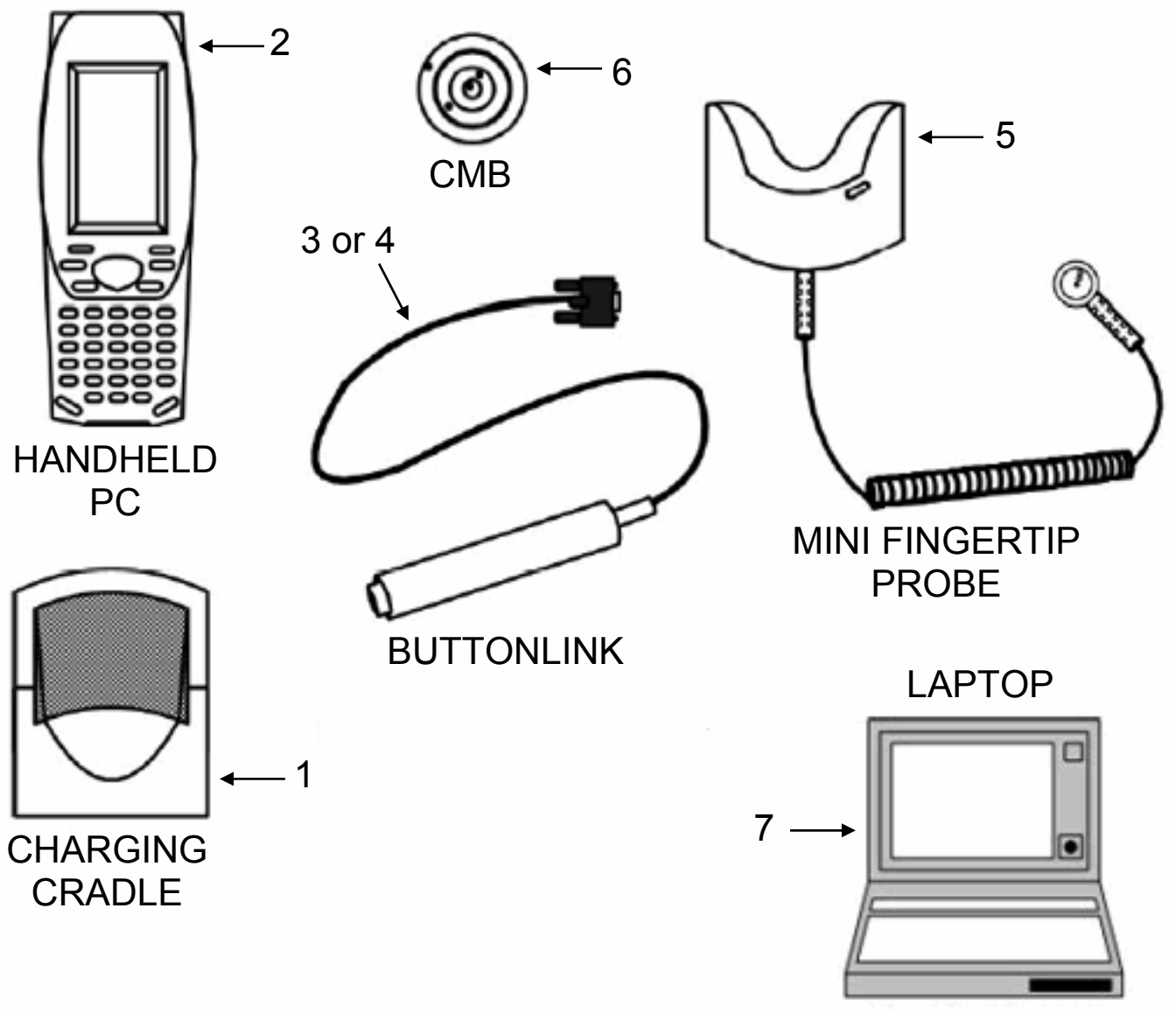

Figure 1. CMB and Associated Read/Write Devices

Item Number	Item Name	Part Number (CAGEC)
1	SPT 8100 Handheld PC Serial Charging Cradle	CRD8100-1000S (64928)
2	PDT 8146 Handheld PC	3001YM (64928)
3	Serial ButtonLink	RL200M (03BF3)
4	USB ButtonLink	RL250M (03BF3)
5	C Class Mini Fingertip Probe	25-43146-01 (03BF3)
6	Contact Memory Button (CMB)	BMEWK32 (03BF3)
7	Laptop Computer	CF-48

SECTION II. REMOVING A CMB

2. REMOVING A CMB

2.1. Description: This task covers removing a CMB from an assembly or subassembly.

2.2. General Information: A CMB is removed in one of two ways. Either it must be forcibly removed from a permanently affixed position on the component, or the identification tag it is taped to must be cut off from the component. Either way, the CMB must be read and removed prior to starting repairs to the component.

2.3. Initial Setup

Materials:	**Tools:**
Dry Ice (Item 1, Table 2)	Phenolic Wedge
Corrosion Preventive Compound (CPC) (Item 10, Table 2)	

WARNING

Dry ice is solid carbon dioxide that has a temperature below -112° F (-80° C). Contact with skin will cause serious low temperature burns. Temperature resistant gloves/apron required. Carbon dioxide displaces oxygen, which can cause asphyxiation. Use only in a well ventilated area.

CAUTION

When removing a CMB, care should be taken not to damage the surface of the component.

NOTE

If a component is being cannibalized, each component that requires a CMB (See Table 1) must have its own CMB tag tied to it with all applicable maintenance data uploaded to the CMB for that component prior to shipping.

A CMB either permanently affixed to the component or attached by an identification tag must be read prior to removing. Refer to Section I of this document on downloading the CMB.

All CMB tags must be removed from a component prior to component assembly or installation.

2.4 Removing a CMB permanently affixed to a component

2.4.1 Crystallize the Hysol® EA 9394 that holds the CMB to the component by using dry ice. This can be accomplished by applying dry ice to the CMB area for 4-5 minutes. The adhesive should become brittle.

2.4.2 Place an authorized blunt object, preferably a phenolic wedge, at the lip of the CMB.

2.4.3 Gently tap the blunt object to loosen the CMB, and eventually tap it free from the adhesive.

2.4.4 Discard the CMB.

2.4.5 Any metallic surface that is exposed due to the CMB removal should be treated with the appropriate corrosion preventative compound.

2.5 Removing a CMB tag tied to a component

2.5.1 If a new component has a CMB tag and is to be installed, transfer all information from its CMB to the CMB attached to its next higher assembly.

2.5.2 Cut the CMB tag strap and discard the tag.

SECTION III. INSTALLING A CMB

3. INSTALLING A CMB

3.1 Description: This task covers installing a CMB onto a component.

3.2 General Information: The CMB is attached to an assembly or subassembly by one of two methods. These methods are not interchangeable. The assembly or subassembly will receive only one of the two methods. The CMB is either permanently affixed to the component by Hysol® EA 9394 adhesive, or a CMB tag is strapped to it. See Table 1 to determine which method is required for a given assembly/subassembly.

3.3 Initial Setup

Materials:

Acetone (Item 6, Table 2)

Latex Gloves (Item 7, Table 2)

Contact Memory Button (Item 8, Table 2)

CMB Mount Adhesive Tape (Item 8, Table 2)

Emery Paper, 220 Grit (Item 4, Table 2)

Lint-Free Cloth (Item 10, Table 2)

Identification Tag (Item 5, Table 2)

Adhesive, Hysol® EA 9394 (Item 2, Table 2)

Scotch-Brite™ (Item 3, Table 2)

CMB Tag Tie (local standard means)

WARNING

Use all chemicals in a well-ventilated area. Refer to the Material Safety Data Sheet (MSDS) documents for the chemicals for specific safe handling procedures.

Heat buildup during or after mixing Hysol® EA 9394 is normal. However, do not mix quantities greater than 450 grams, as dangerous heat buildup can take place, causing uncontrolled decomposition of the mixed adhesive. As a result, toxic fumes are formed.

Use latex gloves when handling Hysol® EA 9394.

CAUTION

Always use latex gloves during installation of CMBs to prevent contamination from oils and dirt on hands.

Hysol® EA 9394 must be mixed well in order for the adhesive to bond correctly. Mix the adhesive for several minutes until the color and consistency are uniform.

The ambient conditions during installation can affect the cure times for the adhesive. Do not install CMBs at ambient temperatures below 50°F, or the adhesive will not properly cure.

Do not apply paint or corrosion preventive compound over the top of the CMB. Doing so can prevent proper CMB read/write operation. If paint or CPC does get on the CMB, use acetone to clean the CMB, and then try reading the CMB. If the CMB cannot be read in its entirety, remove and install a new CMB in its place.

Care should be taken not to damage the metal surface of the component when preparing a component for CMB installation.

NOTE

Procure all necessary tools and materials from supply before starting the CMB installation (See Figure 1 and Table 2).

The new CMB should be installed only after all major repairs to the component have been completed and painting is completed.

Refer to Figures 3 thru 211 for proper placement of CMBs on components.

If a component is being cannibalized, each component that requires a CMB (See Table 1) must have its own CMB tag tied to it with all applicable maintenance data uploaded to the CMB for that component prior to shipping.

3.4 Installing a CMB on a component with any coated surface (paint, primer, clear coating, Pro-seal, etc.). Reference paragraph 3.5 for installation of CMBs to bare metal surfaces.

CAUTION

Care should be taken not to expose any bare metal.

NOTE

Use of power tools is not permitted unless approved by RDECOM Aviation Engineering Directorate (AED).

The adhesive must form a complete bead around the outside circumference of the CMB.

3.4.1 Clean the selected location using acetone and a lint-free cloth. Remove all oils and solids from area.

3.4.2 Lightly scuff a ½ inch diameter area using a Scotch-Brite pad or 220 grit emery paper. If during scuffing, any bare metal is exposed, prime and paint the area. After the appropriate drying time, re-scuff the area.

3.4.3 Clean the scuffed area with acetone. Dry wipe the area with a lint-free cloth before the solvent evaporates to remove any drying residue.

3.4.4 Allow the area to dry completely (about 5 minutes), and inspect for proper surface preparation.

3.4.5 Lightly sand the black side of the CMB for a few seconds with 220 grit emery paper and wipe clean with a lint-free cloth to prepare the back surface for bonding.

3.4.6 Mix the Hysol® EA 9394 adhesive according to manufacturer's directions.

3.4.7 Place a small amount of Hysol® EA 9394 on the back surface of the CMB.

3.4.8 Firmly press the CMB onto the component surface, ensuring a small bead forms entirely around the CMB.

CAUTION

Make sure the CMB is safe from loading or jarring until proper handling strength of the adhesive has been reached. Handling strength for Hysol® EA 9394 will occur after 8 hours at 77° F. Only if the cure inspection test is passed (see 3.4.11 below), it is safe to fly the aircraft 24 hours after button installation without risk of stressing the bonded joint to the point of breaking during flight. Full cure time (7 days at 77° F or 25° C) is determined to be the time after which the adhesive has developed maximum bond strength, maximum environmental resistance, and ultimate performance properties.

3.4.9 Hold the CMB with your thumb until it remains where placed.

3.4.10. Remove excess adhesive from the work area before it hardens. Use acetone for removing any unnecessary, uncured adhesive. Do not disturb the adhesive bead.

3.4.11 To ensure proper curing of the adhesive, wait 24 hours, and test for hardness. Randomly inspect 5 CMBs or 10% of CMBs, whichever is greater. Inspect this quantity/percentage for each mixed batch of adhesive used. The test involves using your fingernail or other object of similar hardness and applying pressure to the bead of the adhesive.

3.4.11.1 If this test leaves a visible mark on the adhesive, then the adhesive is not adequately cured, and operation of the component would introduce a possible FOD (foreign object damage) risk. The adhesive might be bad, or it could just be a little cool and thus needs more time to cure. Either remove and reinstall the CMBs (restarting at step 3.4.1) or wait and re-inspect later. If the adhesive never passes this test, then the CMBs must be removed and reinstalled (restarting at step 3.4.1). Either remove all CMBs installed using this mixed batch of adhesive, or remove only those for which the cure test fails (after testing 100% of the CMBs installed with this mixed batch).

3.4.11.2 If no mark is left, then the adhesive has passed the cure inspection test.

3.4.12 Mask the CMB if touch-up paint is needed.

3.4.13 Apply touch-up paint around the CMB as needed.

3.4.14 When the paint has dried, remove the masking from the CMB.

3.5 Installing a CMB on a bare metal surfaced component.

3.5.1 Clean the selected location using acetone and a lint-free cloth. Remove all oils and solids from area. Do not scuff bare metal parts.

3.5.2 Follow procedures 3.4.5 to 3.4.11.2

NOTE

Refer to Table 2 for a material listing and Figure 2 for an example of a CMB tag.

Straps for CMB tags are to be suitable for component handling and shipping. Use local standard type strapping for shipping.

3.6 Installing a CMB tag on a component

3.6.1 Procure a CMB, an identification tag, a tie strap, and an adhesive tape dot from supply.

3.6.2 Engrave or print the part number and serial number of the component on one side of the identification tag.

3.6.3 Turn the identification tag over, and at the opposite end from the strapping hole, attach the CMB to the tag using the adhesive tape dot.

3.6.4 Strap the identification tag to the component at the component's mounting hole or other non-sensitive location on the component.

SECTION IV. POPULATING A CMB

4. POPULATING A CMB

4.1. Description: This task covers the process of populating a CMB.

4.2. General Information: A CMB is populated with historical maintenance information for the component to which it is attached. A CMB attached to an assembly with DA Form 2410 tracked subcomponents will usually contain all subcomponent historical maintenance information as well. The CMB is populated after all maintenance and testing on the component is finished and all maintenance records have been updated in the facility's existing maintenance information database. The same tools used to read and download the CMB (refer to Section I) are used to populate the CMB. CMB population is critical prior to shipping a component, so the location later receiving the component can take advantage of the accurate, up-to-date electronic data on the CMB rather than being forced to enter data by hand using the attached paperwork.

4.3. Initial Setup

Tools:

Handheld PC (Item 2, Figure 1)

Handheld PC Charging Cradle (Item 1, Figure 1)

ButtonLink, Serial (Item 3, Figure 1)

ButtonLink, USB (Item 4, Figure 1)

Mini Fingertip Probe (Item 5, Figure 1)

Laptop (Item 7, Figure 1) or other computer

CAUTION

Handheld PCs contain rechargeable battery packs. These units must be pre-charged in accordance with the device's operating instructions.

Handle the AMATS equipment with care, as the electronic circuitry can be damaged from improper handling. Use surge protectors whenever possible.

NOTE

When populating a CMB, make sure the probe is vertical to the CMB, and press down firmly. Hold the probe in this position, until the writing device shows that the population of the CMB is complete.

4.4. Populating the CMB

4.4.1 Notify database management personnel: Notify the applicable database management personnel that the CMB is ready to receive maintenance information from the facility's maintenance information database.

4.4.2 Upload component maintenance information: Upload the component's maintenance information to either the AMATS computer or the handheld PC from the facility's existing maintenance information database

4.4.3 Populate the CMB: Populate the CMB from either the AMATS computer using the ButtonLink or from the handheld PC using the mini fingertip probe (See Figure 1).

SECTION V. CMB LOCATIONS

5. CMB LOCATIONS

5.1 Description: This task identifies the individual components to which CMBs are to be permanently attached and the location of the CMB on each such component.

5.2 General Information: The U.S. Army has designated the individual components to which CMBs are to be permanently attached. All such components are DA Form 2410 items, although not all DA Form 2410 items receive permanently attached CMBs. Use the figures in this section to locate the position of the CMB on each component.

CAUTION

Whenever possible, place the CMB at its designated location. Failure to do so could result in interference with the full motion of the component once installed on the helicopter.

If for some reason there is not enough space to install a CMB at the designated location, place the CMB in the adequately sized location nearest the designated location that will not interfere with moving parts and that is accessible to read/write once installed on the helicopter.

NOTE

All components and their variations in the following figures and in Table 1 receive a CMB (either permanently attached or on a CMB tag, as noted in Table 1) as long as the component is still on the Army's active parts list. A figure within this section may only show one of several variations of the same component due to their different part numbers.

A footnote at the bottom of each CMB component page reminds the reader to check for the presence of an assembly or subassembly that must receive a CMB tag if either permanently removed from its next higher assembly or stored for long periods of time. Refer to Table 1 to determine which assemblies and subassemblies require CMB tags.

Figure 2. CMB Tag

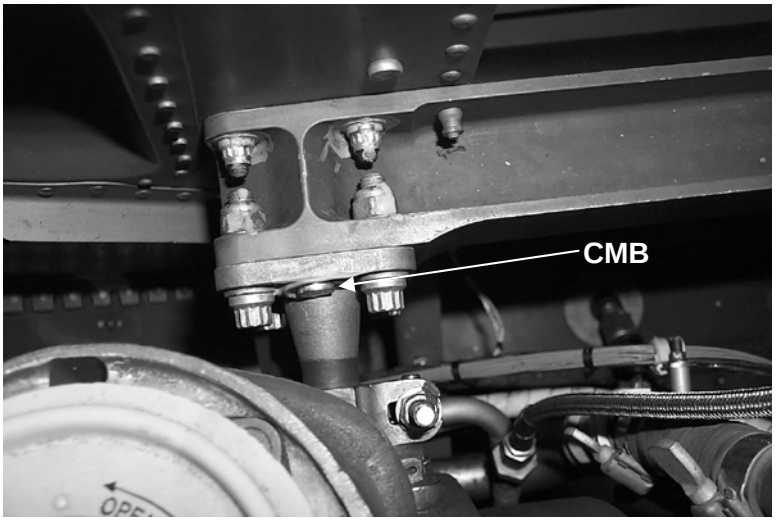

Figure 3. Forward Inboard Engine Mount (AH-64A/D) with CMB Installed

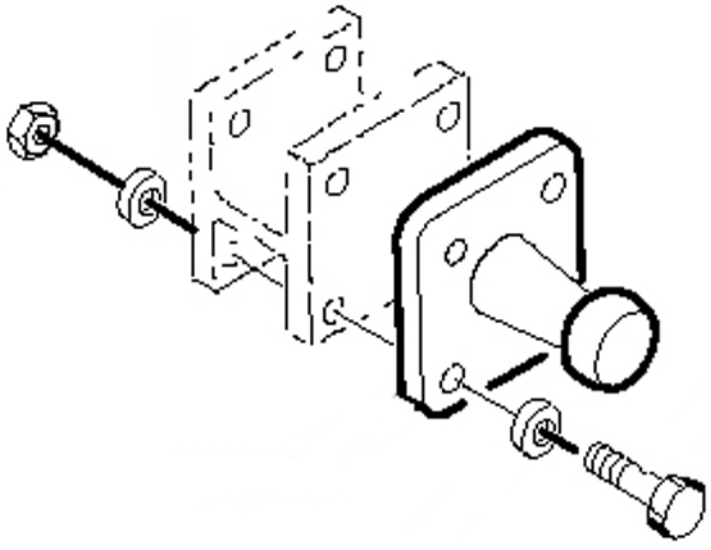

Figure 4. Forward Inboard Engine Mount (AH-64A/D)

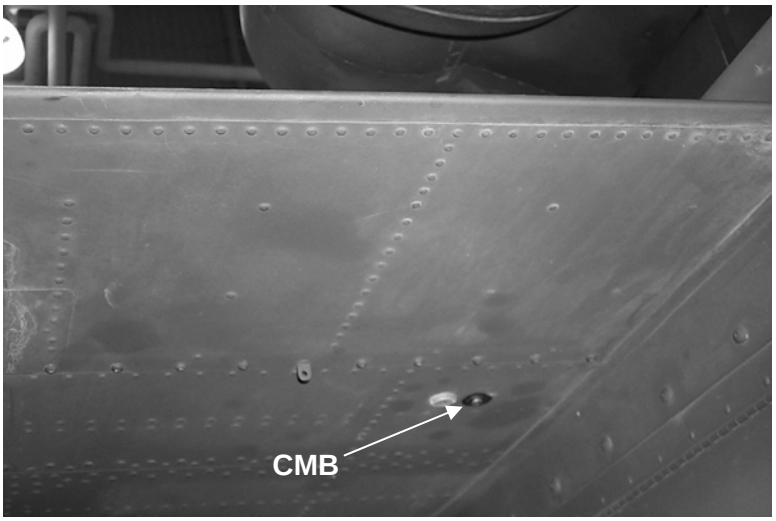

Figure 5. Wing Assembly (AH-64A/D) with CMB Installed

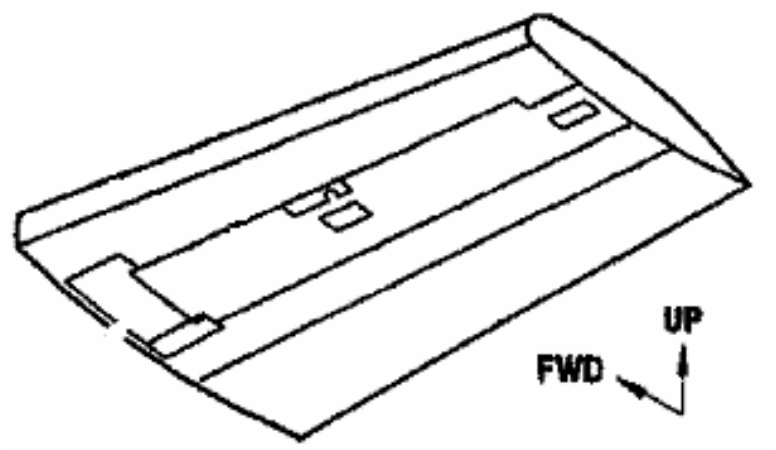

Figure 6. Wing Assembly (AH-64A/D)

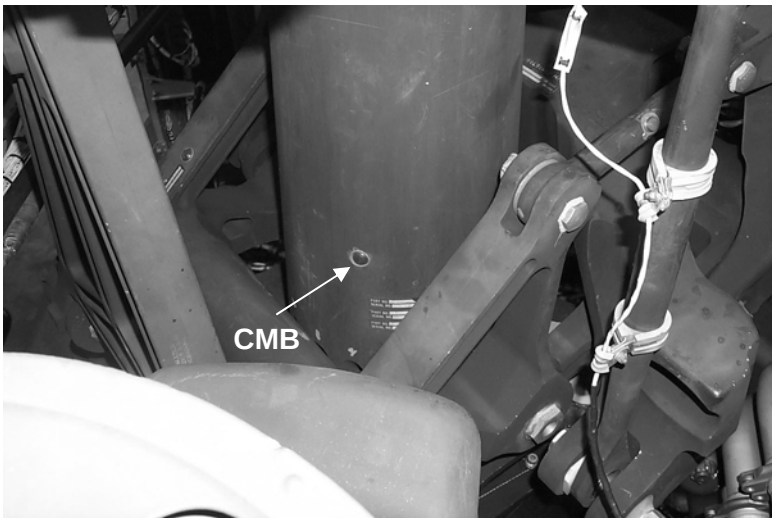

Figure 7. Main Rotor Support Mast (AH-64A/D) with CMB Installed

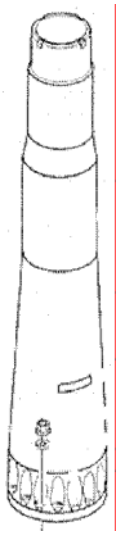

Figure 8. Main Rotor Support Mast (AH-64A/D)

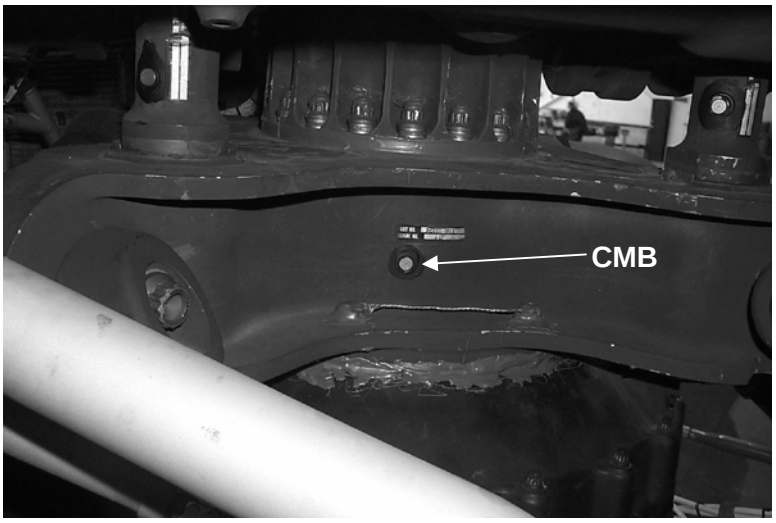

Figure 9. Mast Support Base (AH-64A/D) with CMB Installed

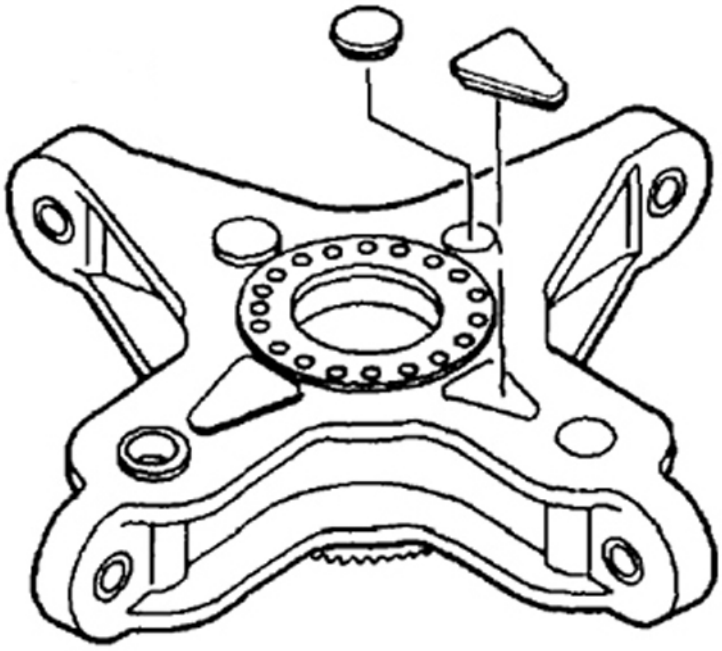

Figure 10. Mast Support Base (AH-64A/D)

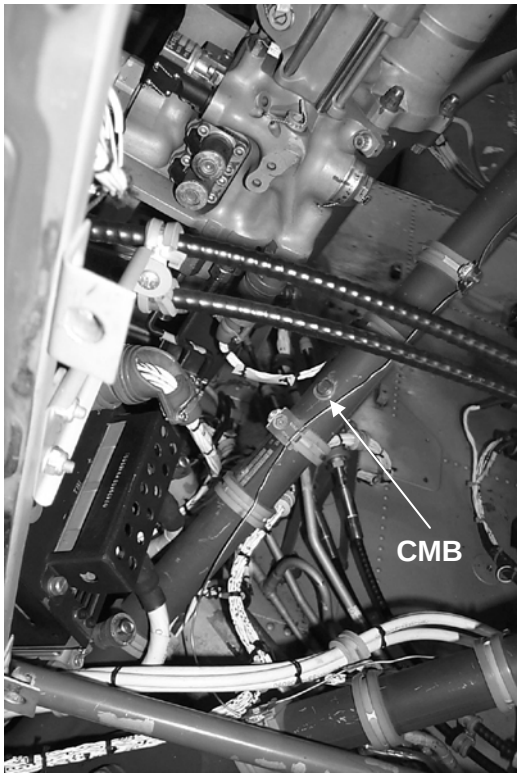

Figure 11. Center Strut (AH-64A/D) with CMB Installed

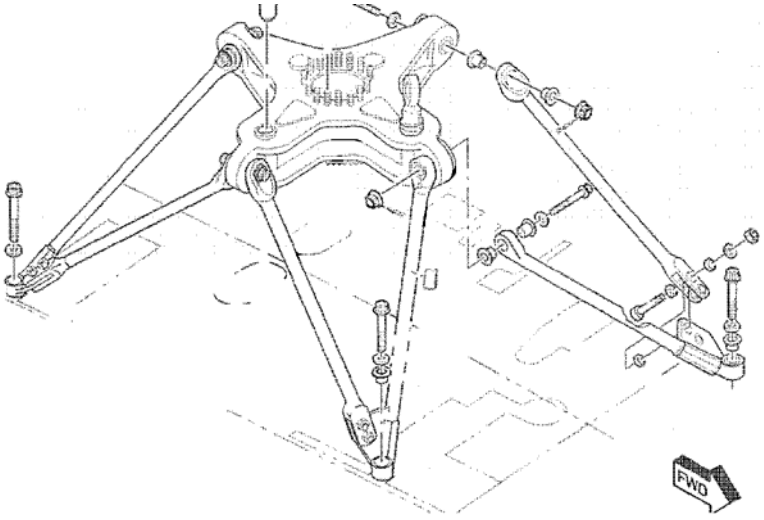

Figure 12. Forward and Aft Center Struts (AH-64A/D)

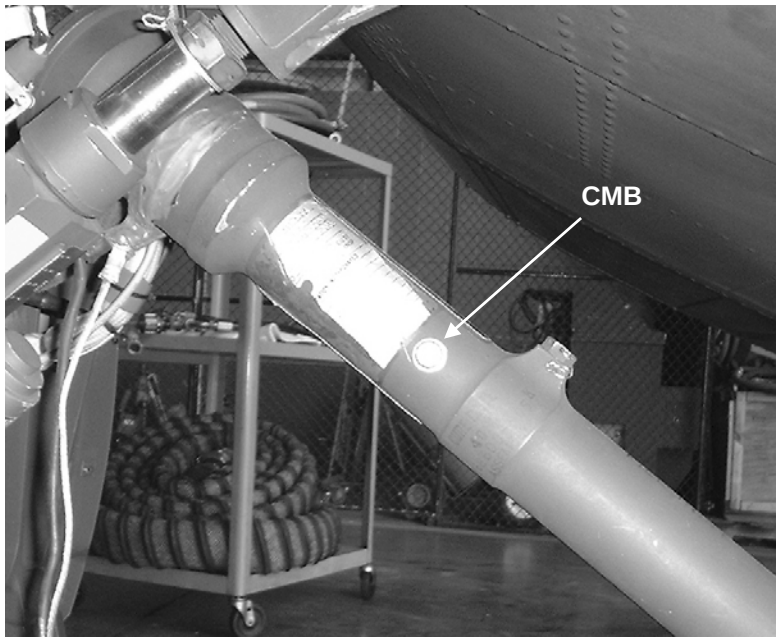

Figure 13. Tail Landing Gear Shock Strut (AH-64A/D) with CMB Installed

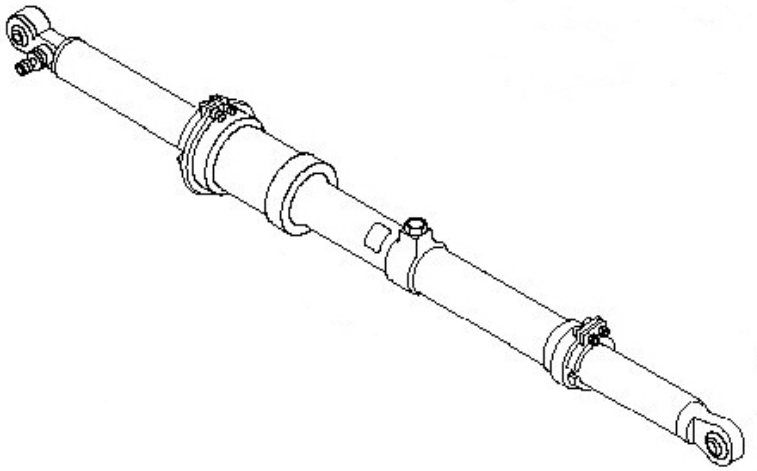

Figure 14. Tail Landing Gear Shock Strut (AH-64A/D)

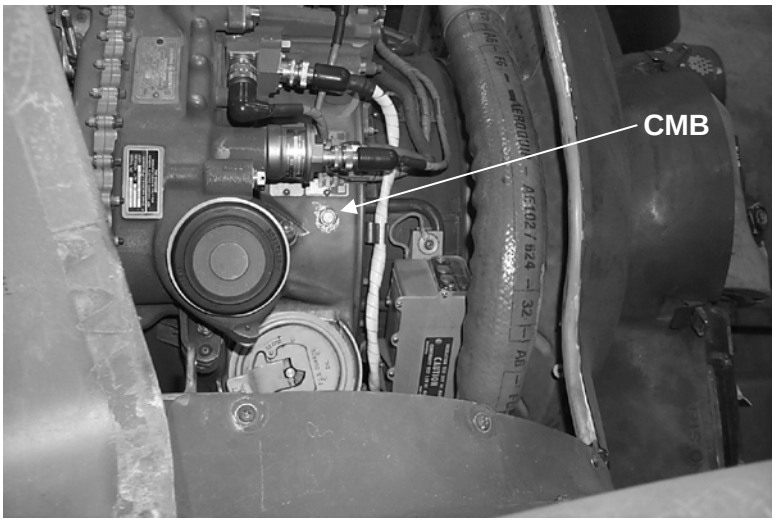

Figure 15. Engine Assembly (AH-64A/D) with CMB Installed

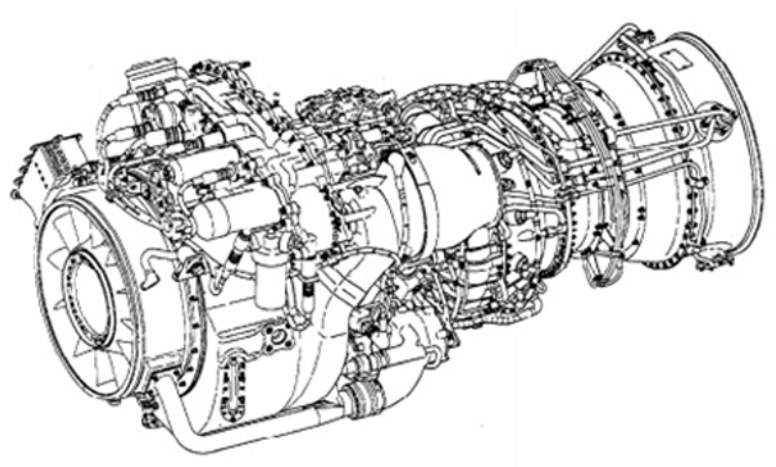

Figure 16. Engine Assembly (AH-64A/D)

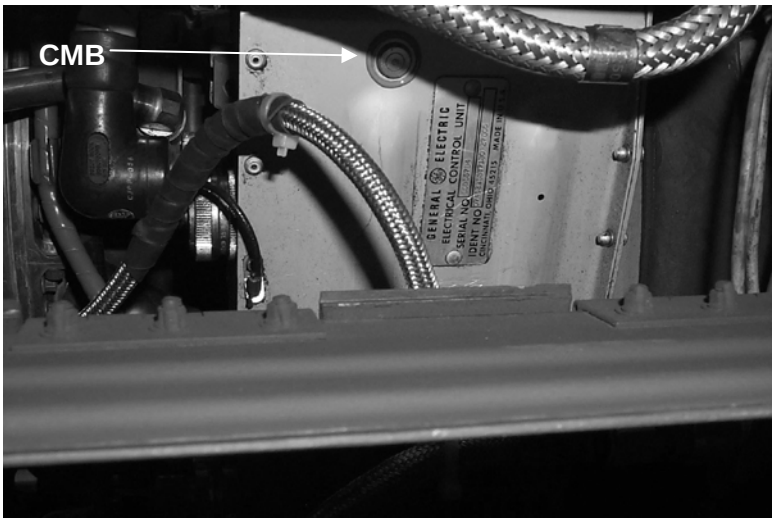

Figure 17. (Digital) Electrical Control Unit, (D)ECU (AH-64A/D) with CMB Installed

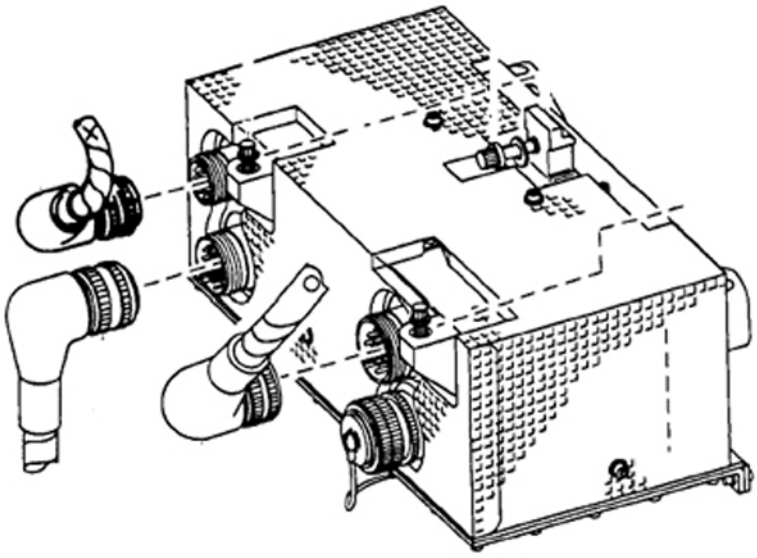

Figure 18. (Digital) Electrical Control Unit, (D)ECU (AH-64A/D)

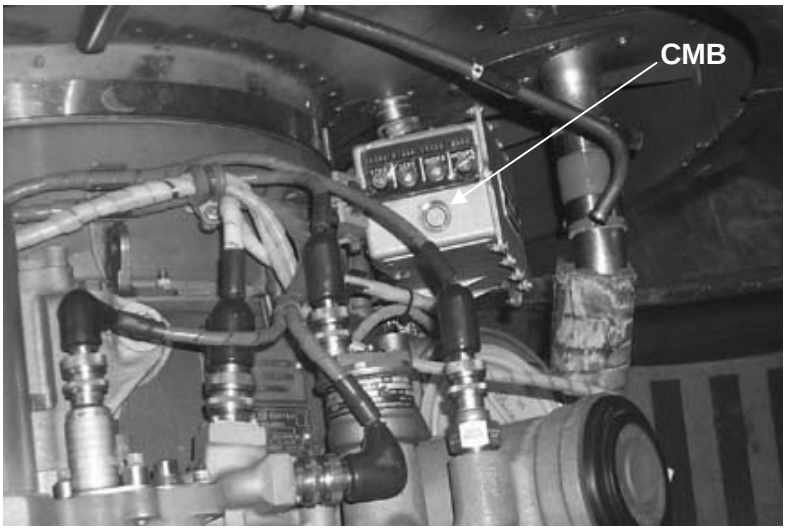

Figure 19. Engine History Recorder (AH-64A/D) with CMB Installed

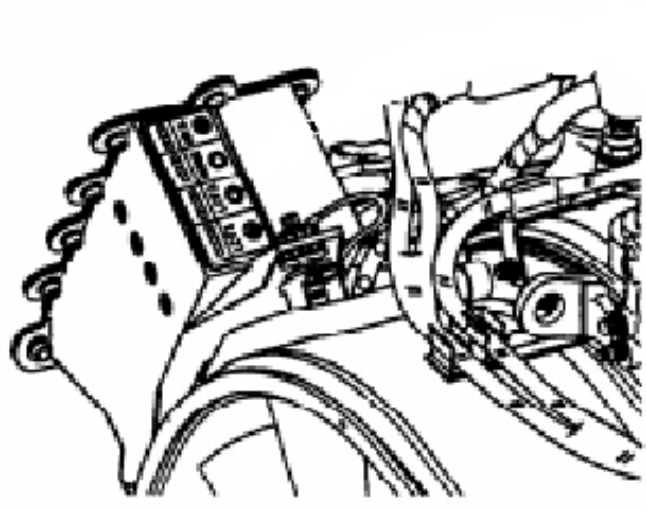

Figure 20. Engine History Recorder (AH-64A/D)

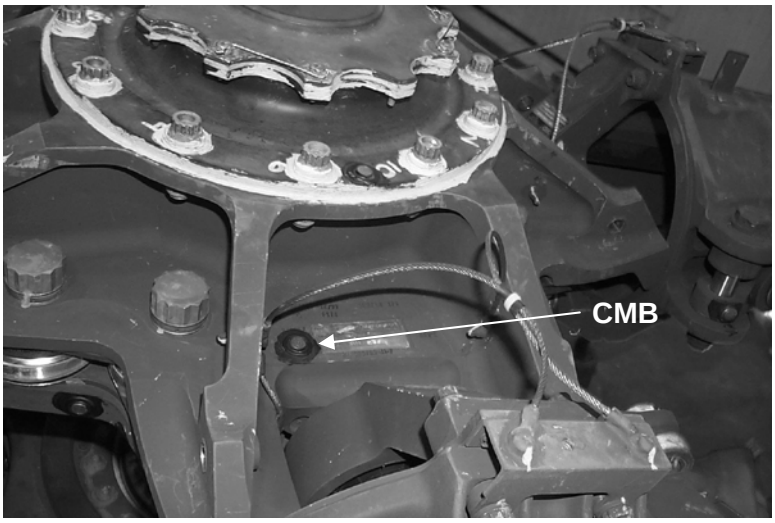

Figure 21. Main Rotor Head Assembly (AH-64A/D) with CMB Installed

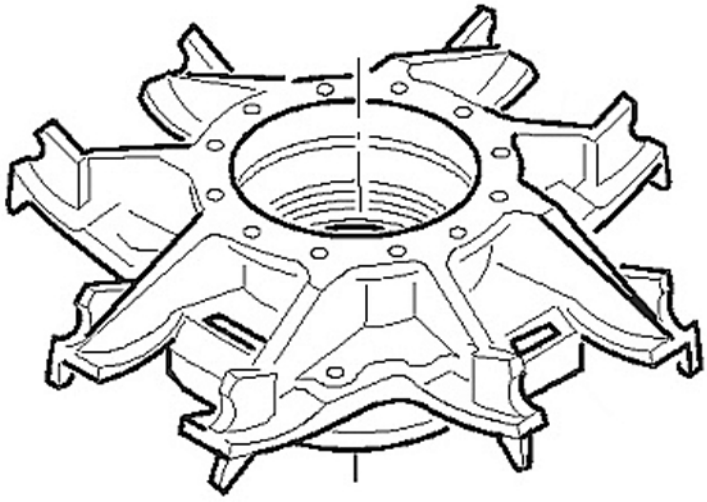

Figure 22. Main Rotor Head Assembly (AH-64A/D)

Figure 23. Pitch Housing (AH-64A/D) with CMB Installed

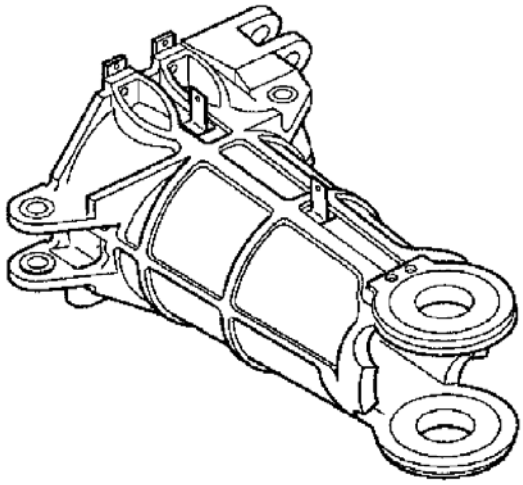

Figure 24. Pitch Housing (AH-64A/D)

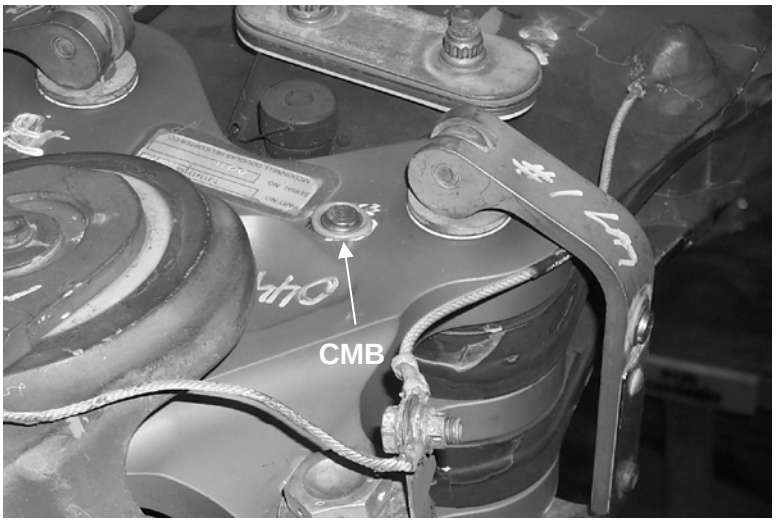

Figure 25. Lead-Lag Link (AH-64A/D) with CMB Installed

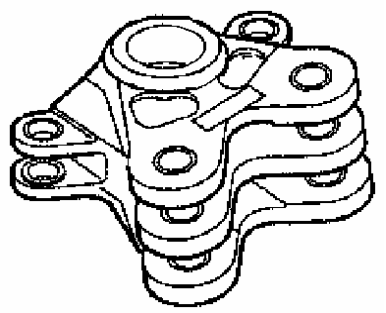

Figure 26. Lead-Lag Link (AH-64A/D)

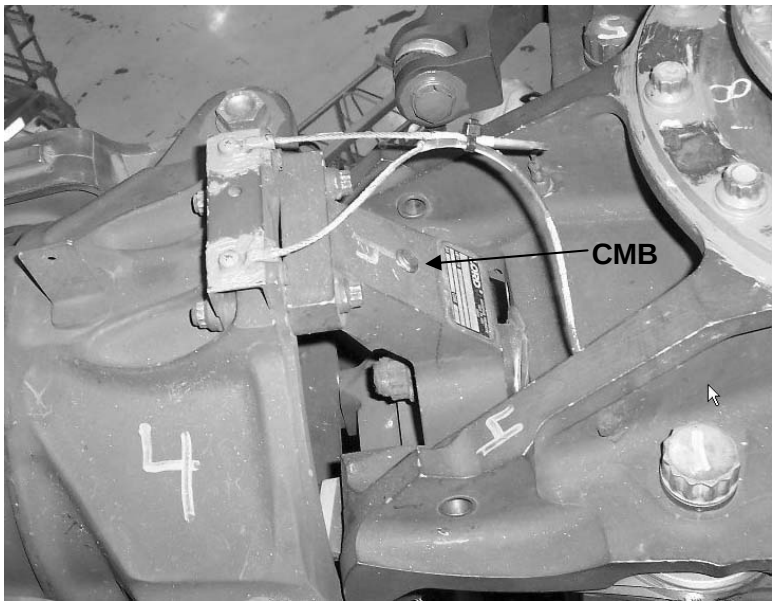

Figure 27. Feathering Bearing (AH-64A/D) with CMB Installed

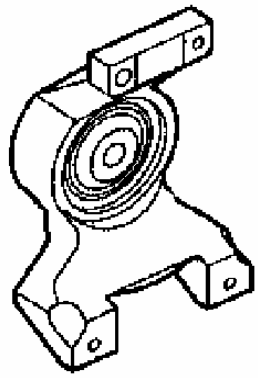

Figure 28. Feathering Bearing (AH-64A/D)

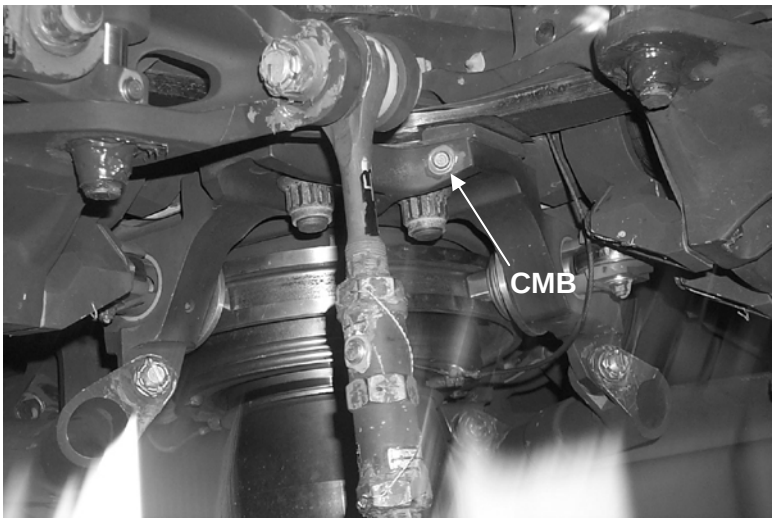

Figure 29. Lower Shoe Assembly (AH-64A/D) with CMB Installed

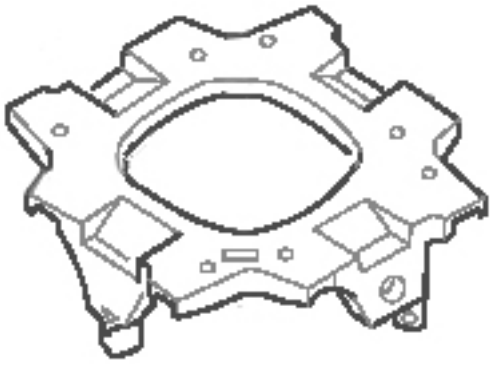

Figure 30. Lower Shoe Assembly (AH-64A/D)

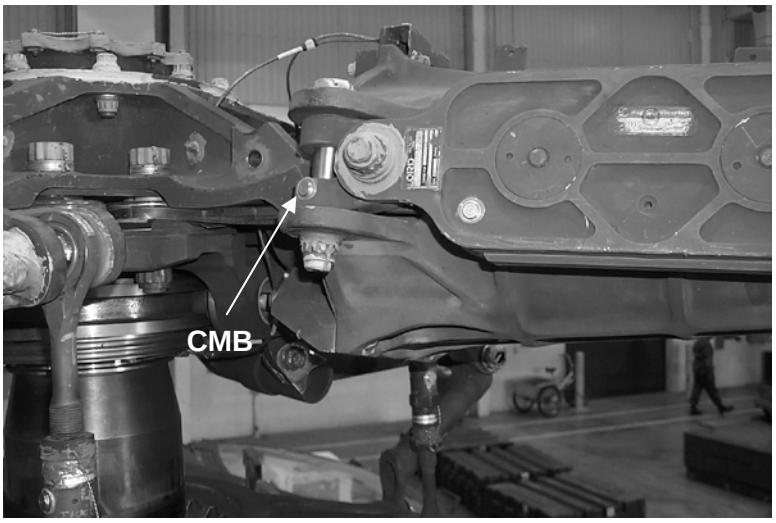

Figure 31. Damper Trunnion (AH-64A/D) with CMB Installed

Figure 32. Damper Trunnion (AH-64A/D)

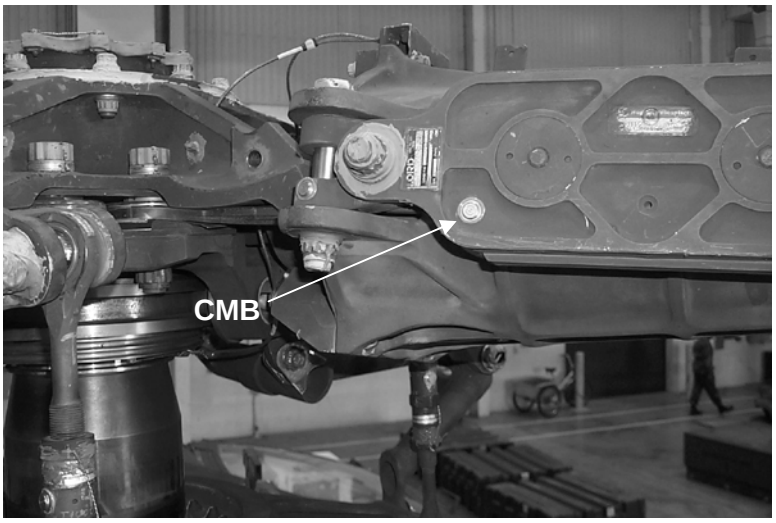

Figure 33. Lead-Lag Damper (AH-64A/D) with CMB Installed

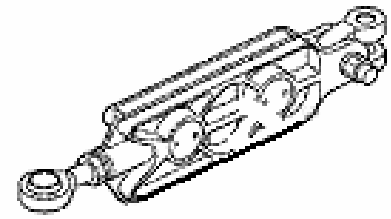

Figure 34. Lead-Lag Damper (AH-64A/D)

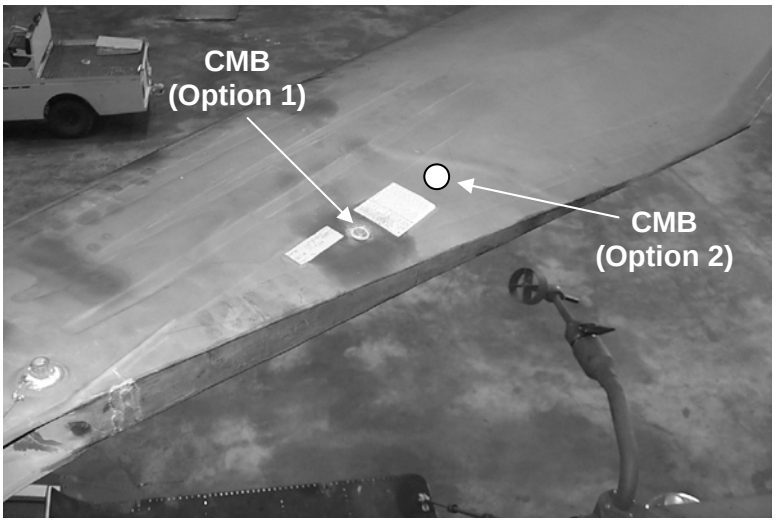

Figure 35. Main Rotor Blade (AH-64A/D) with CMB Installed

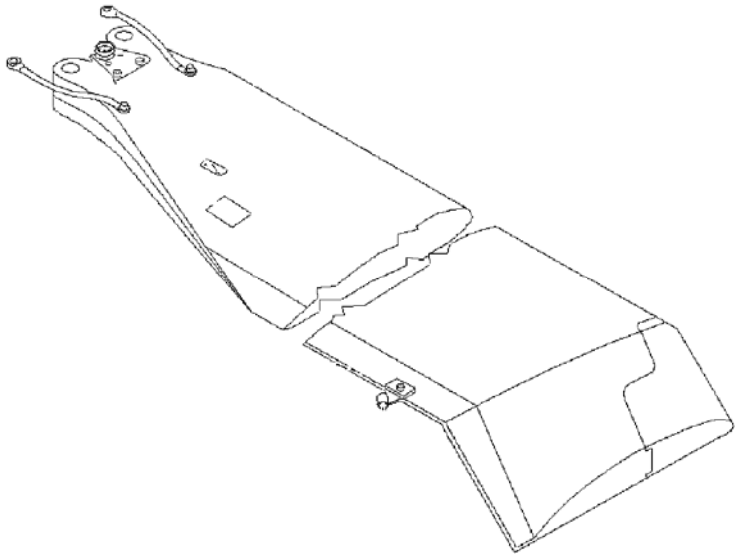

Figure 36. Main Rotor Blade (AH-64A/D)

Note: “Option 1” shown above is the preferred location. “Option 2” is an allowable location, if the two data plates are too close to one another to place the CMB in the “Option 1” location.

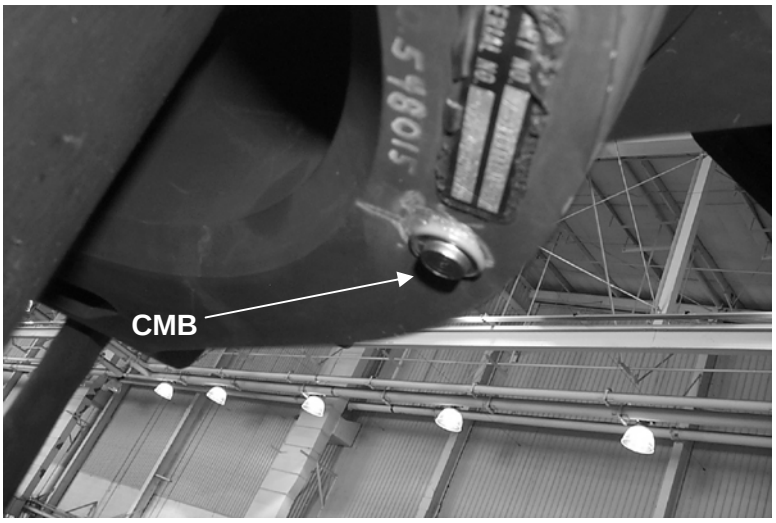

Figure 37. Main Rotor Swashplate Assembly (AH-64A/D) with CMB Installed

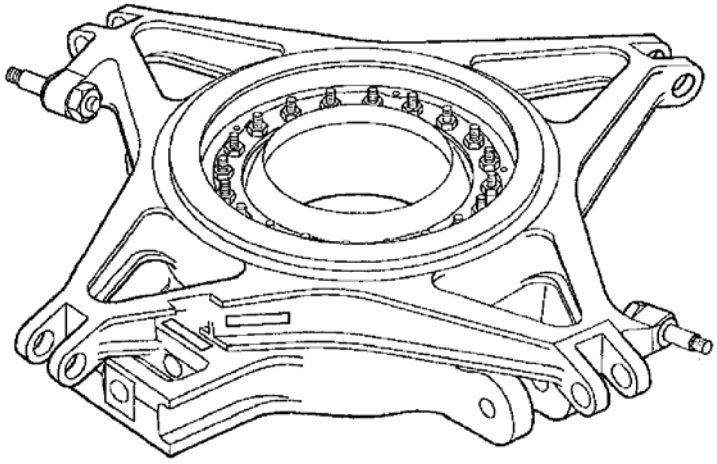

Figure 38. Main Rotor Swashplate Assembly (AH-64A/D)

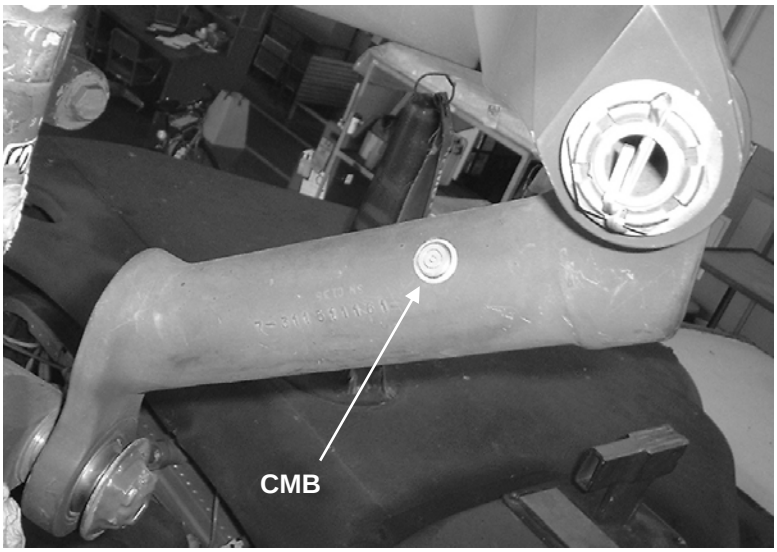

Figure 39. Flight Control Arm Assembly (AH-64A/D) with CMB Installed

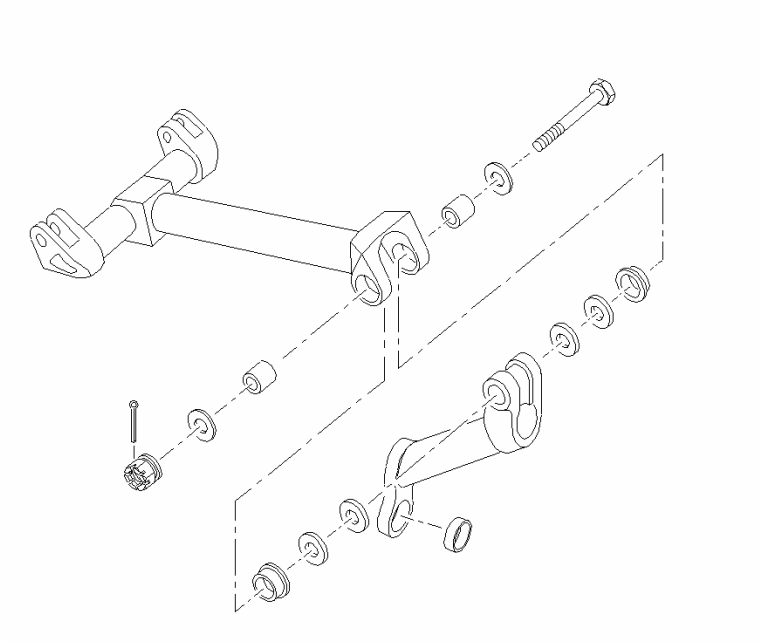

Figure 40. Flight Control Arm Assembly (AH-64A/D)

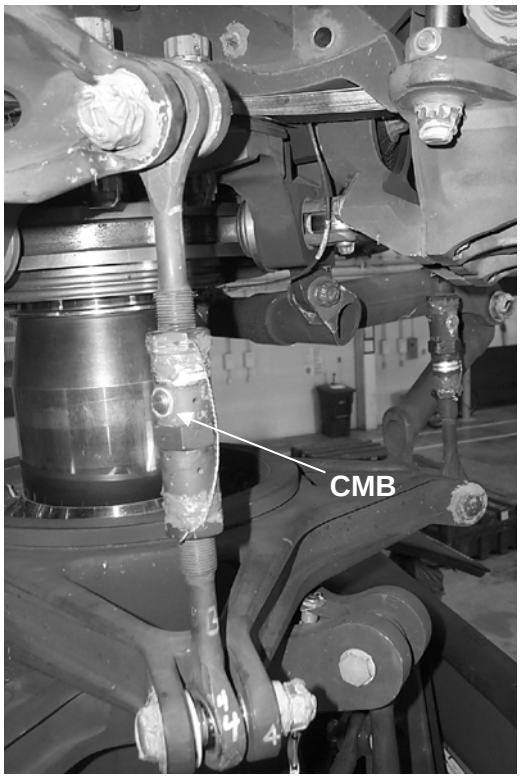

Figure 41. Main Rotor Pitch Link Assembly (AH-64A/D) with CMB Installed

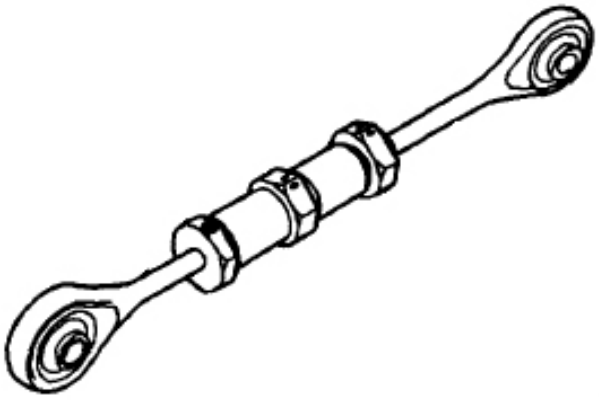

Figure 42. Main Rotor Pitch Link Assembly (AH-64A/D)

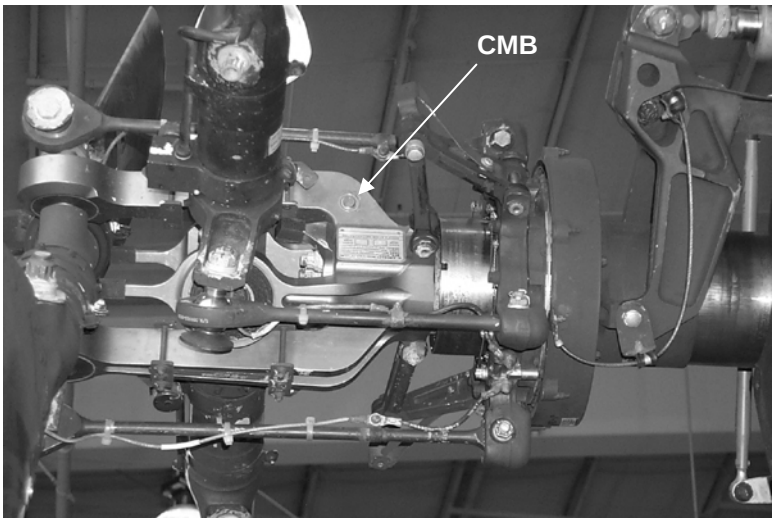

Figure 43. Tail Rotor Head Assembly (AH-64A/D) with CMB Installed

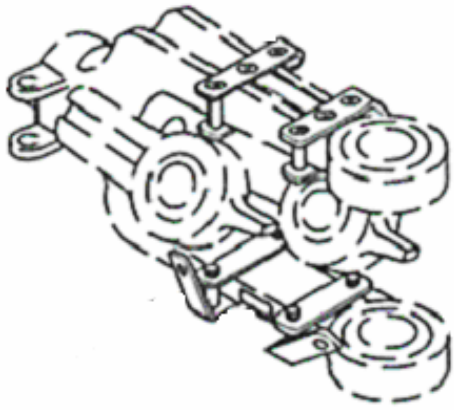

Figure 44. Tail Rotor Head Assembly (AH-64A/D)

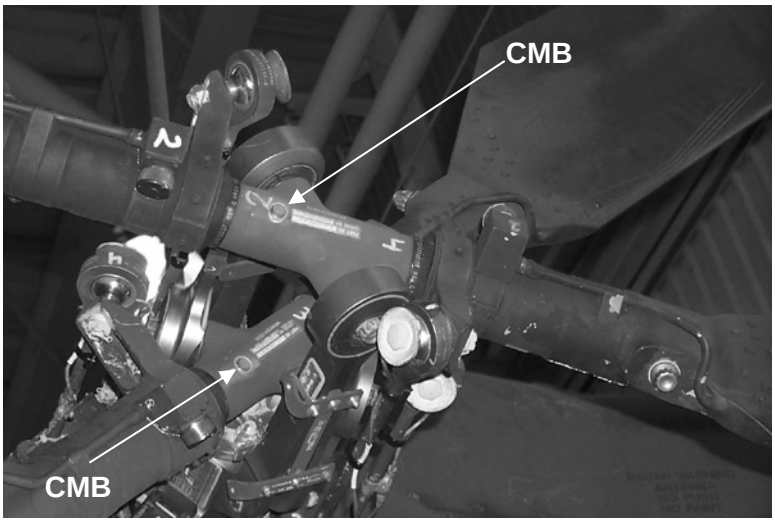

Figure 45. Tail Rotor Hub Assemblies (AH-64A/D) with CMBs Installed

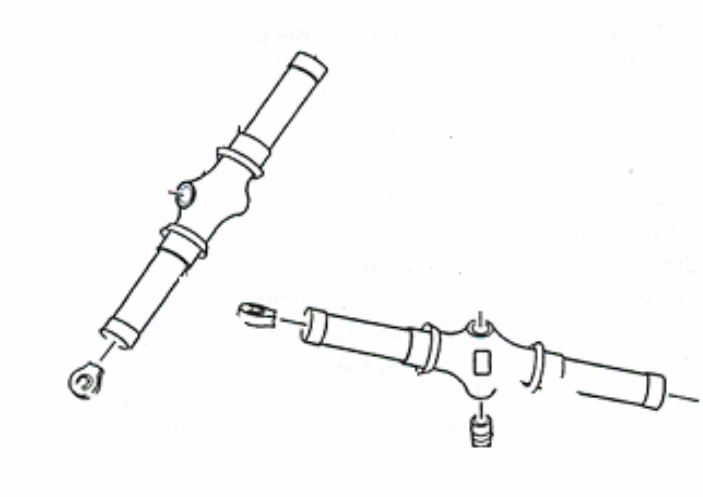

Figure 46. Tail Rotor Hub Assemblies (AH-64A/D)

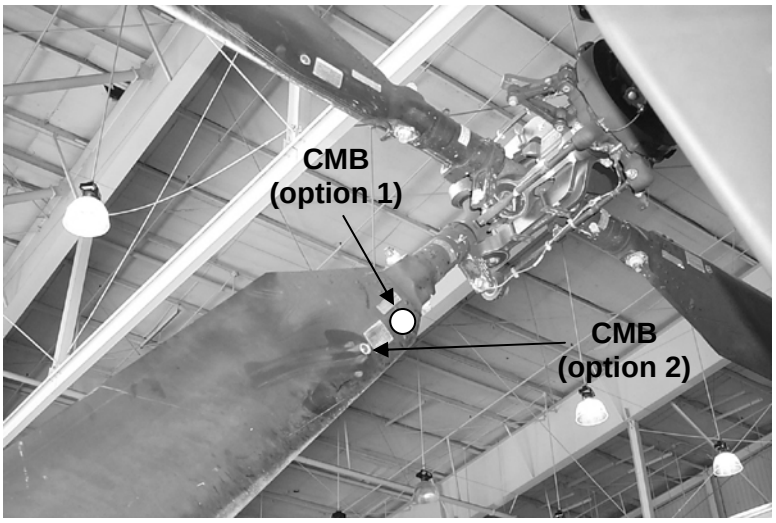

Figure 47. Tail Rotor Blade (AH-64A/D) with CMB Installed

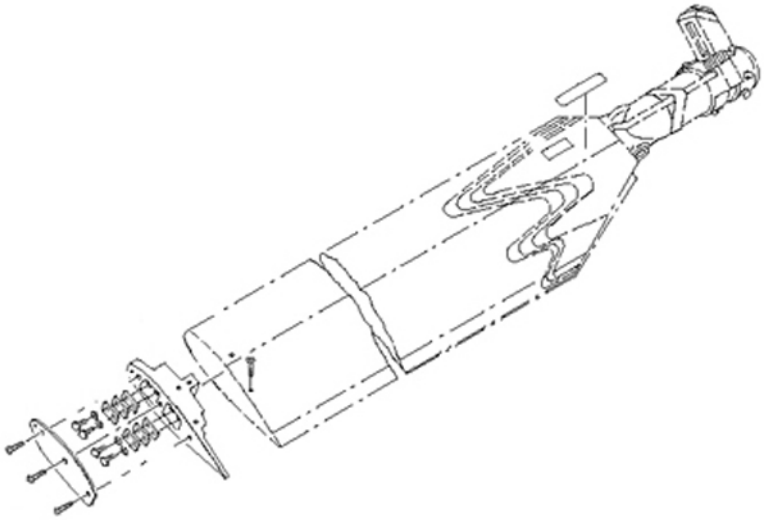

Figure 48. Tail Rotor Blade (AH-64A/D)

Note: “Option 1” shown above is the current preferred location. “Option 2” is an allowable location (and was previously the preferred location) but has been found to interfere with the leading edge erosion guard currently being installed on AH-64 tail rotor blades.

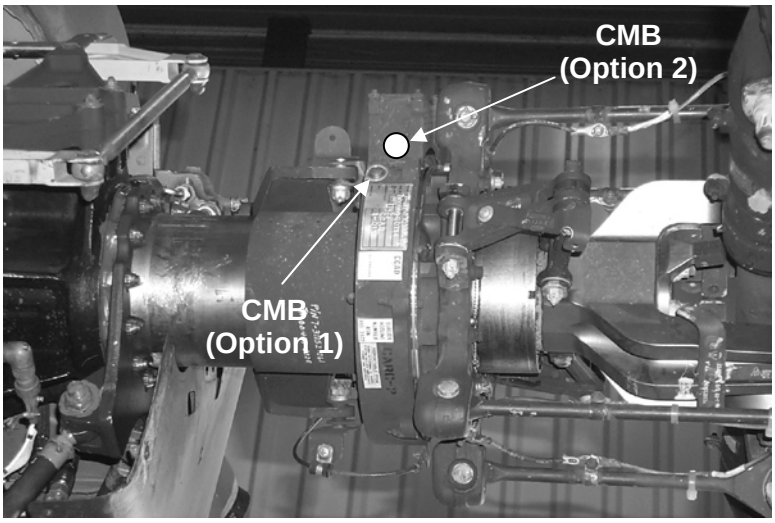

Figure 49. Tail Rotor Swashplate (AH-64A/D) with CMB Installed

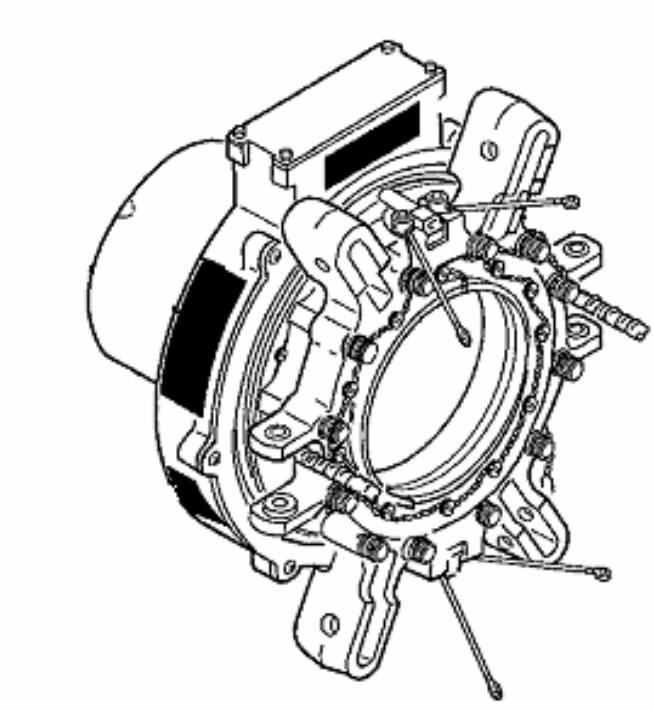

Figure 50. Tail Rotor Swashplate (AH-64A/D)

Note: “Option 1” shown above is the preferred location. “Option 2” is an allowable location, if there is not enough room to install the CMB in the “Option 1” location.

Figure 51. Main Transmission Assembly (AH-64A/D) with CMB Installed

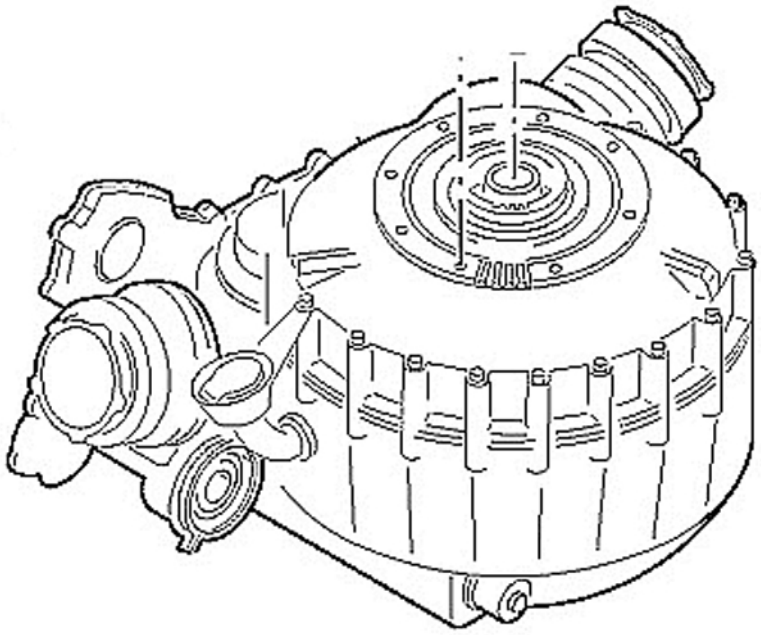

Figure 52. Main Transmission Assembly (AH-64A/D)

Figure 53. Main Rotor Drive Plate Assembly (AH-64A/D) with CMB Installed

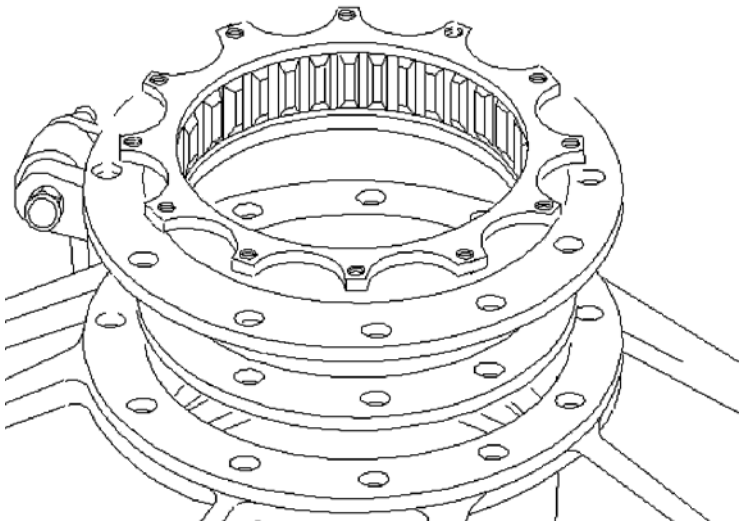

Figure 54. Main Rotor Drive Plate Assembly (AH-64A/D)

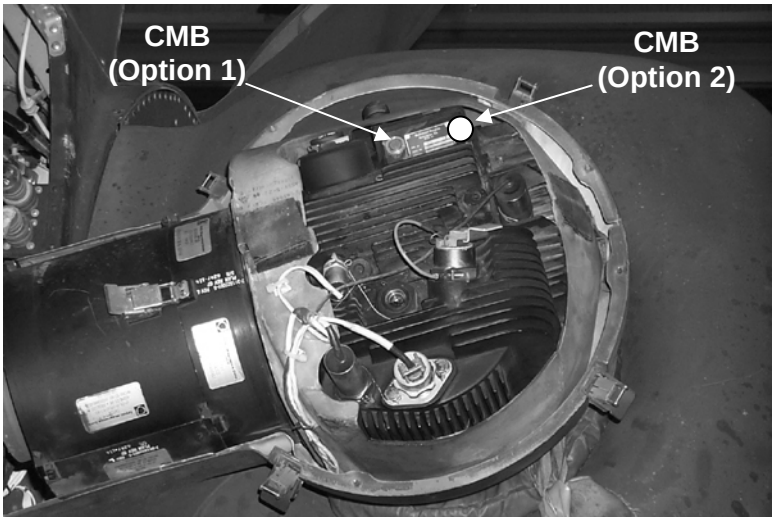

Figure 55. Nose Gearbox Assembly, Left (AH-64A/D) with CMB Installed

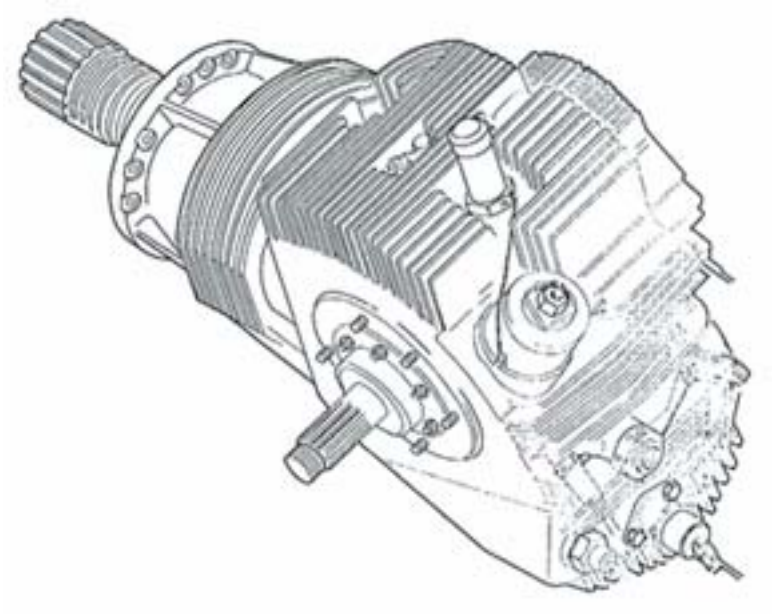

Figure 56. Nose Gearbox Assembly, Left (AH-64A/D)

Note: “Option 1” and “Option 2” shown above are equally preferred locations. Place the CMB beside the data plate on the side with the most available space.

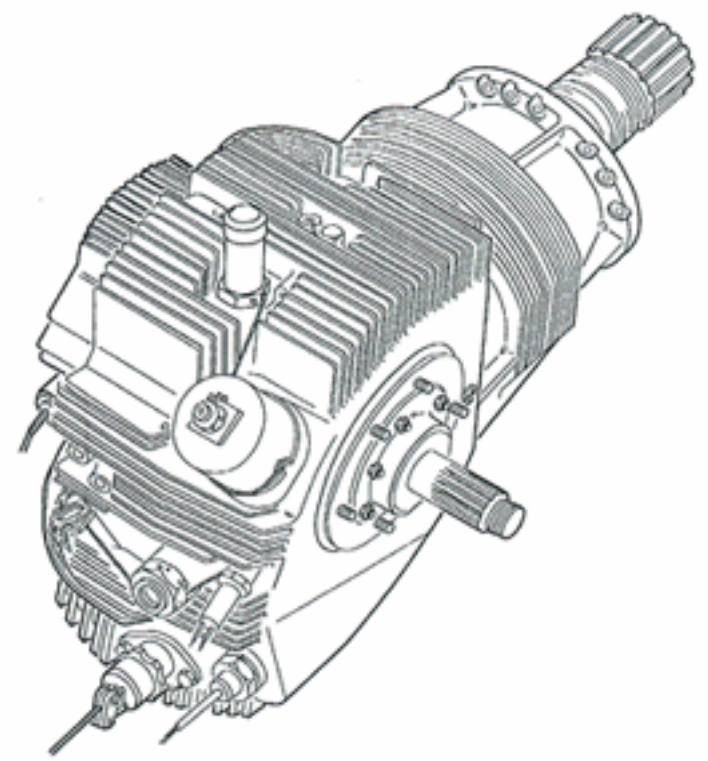

Figure 57. Nose Gearbox Assembly, Right (AH-64A/D)

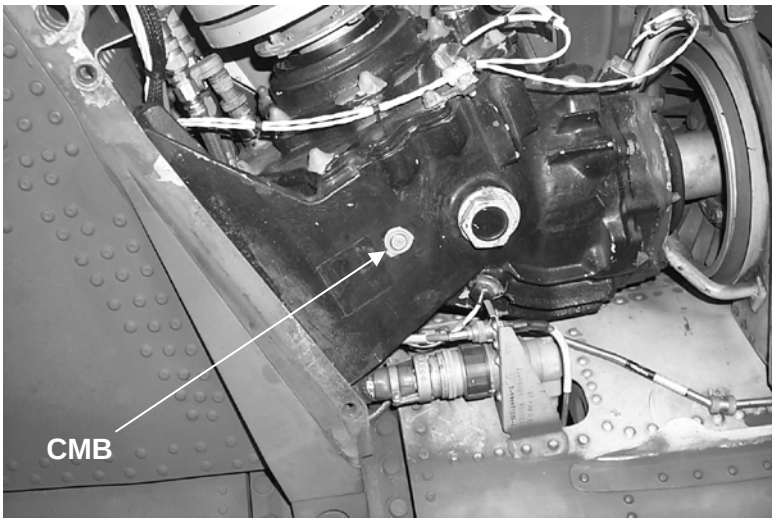

Figure 58. Intermediate Gearbox Assembly (AH-64A/D) with CMB Installed

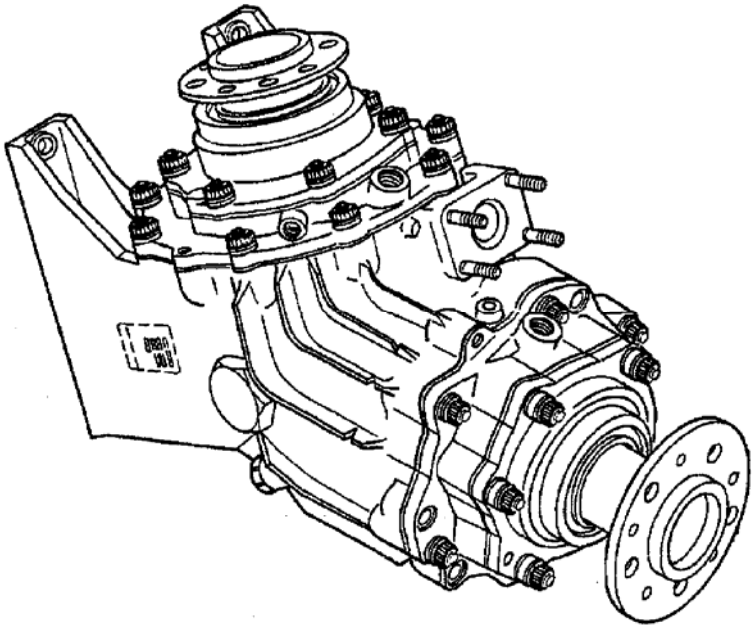

Figure 59. Intermediate Gearbox Assembly (AH-64A/D)

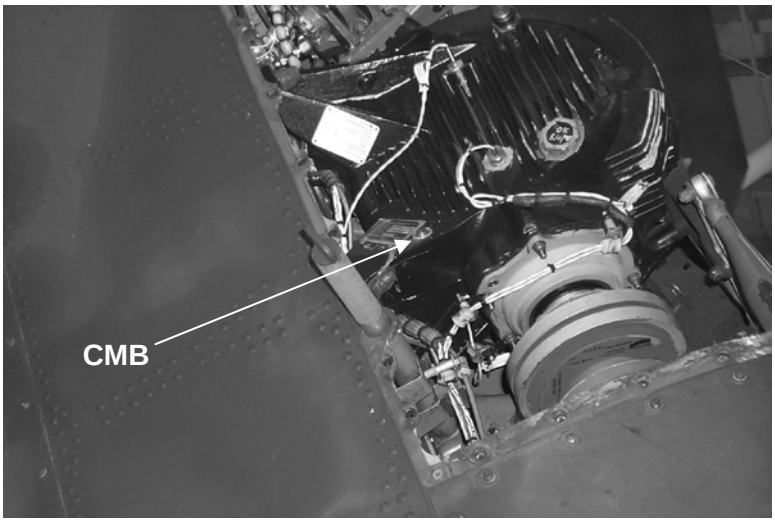

Figure 60. Tail Rotor Gearbox (AH-64A/D) with CMB Installed

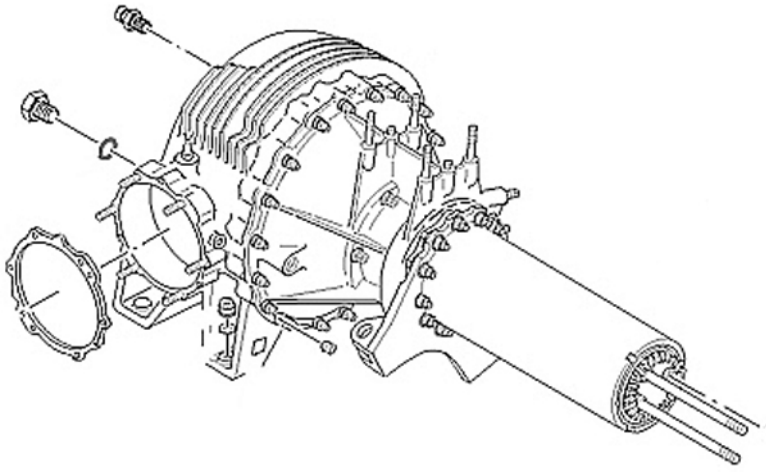

Figure 61. Tail Rotor Gearbox (AH-64A/D)

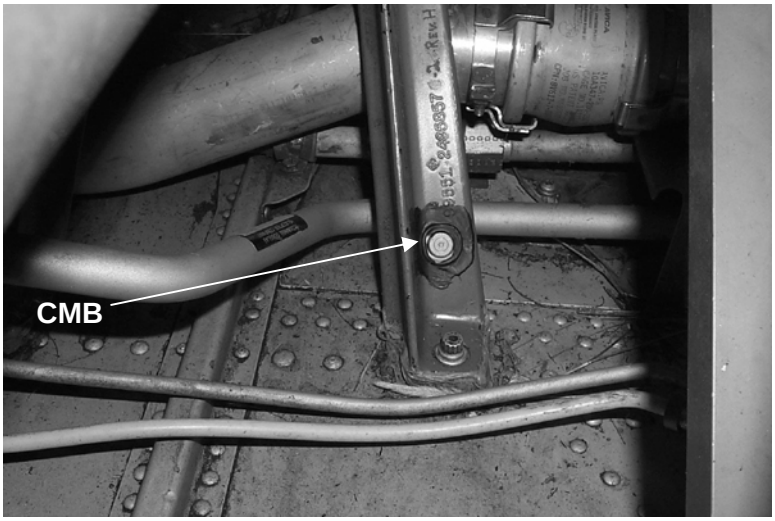

Figure 62. Forward Hanger Bearing (AH-64A/D) with CMB Installed

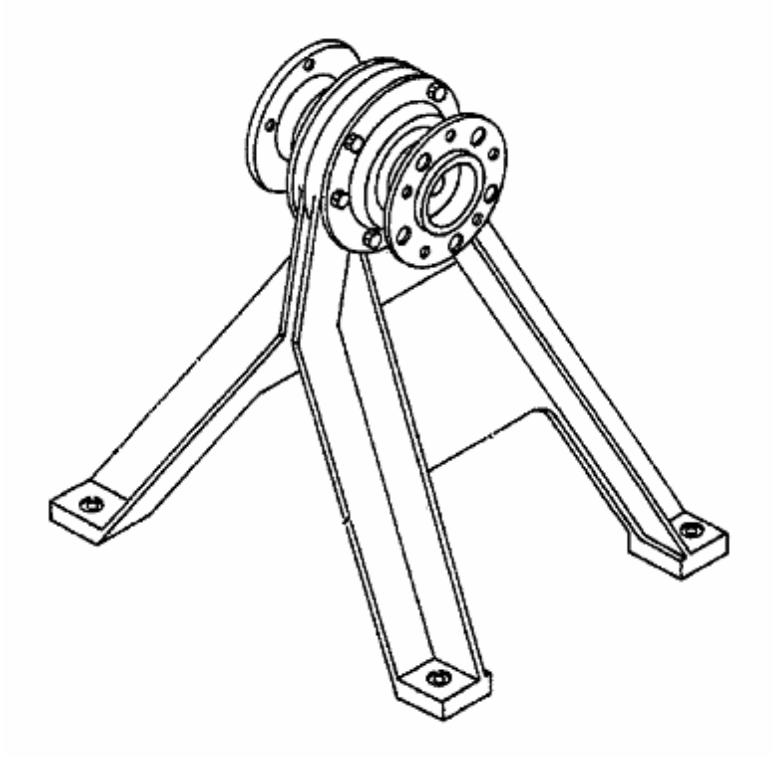

Figure 63. Forward Hanger Bearing (AH-64A/D)

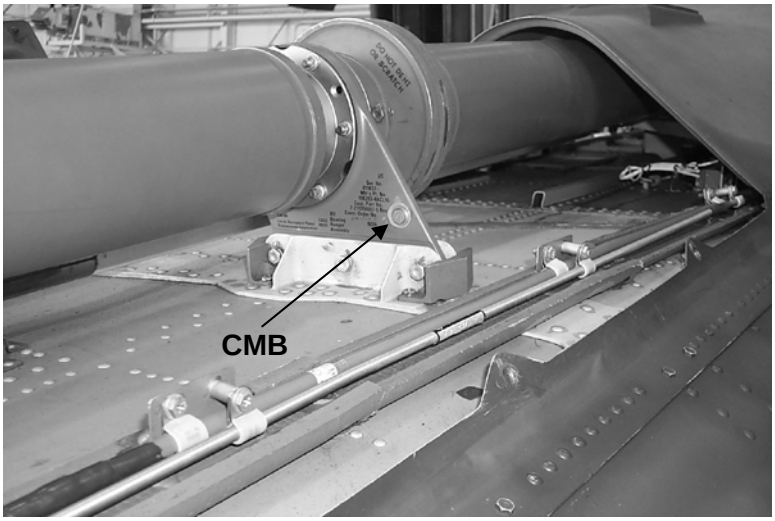

Figure 64. Aft Hanger Bearing Assembly (AH-64A/D) with CMB Installed

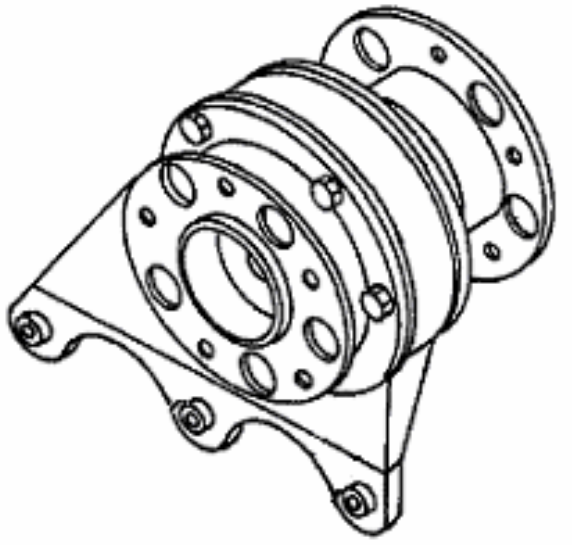

Figure 65. Aft Hanger Bearing Assembly (AH-64A/D)

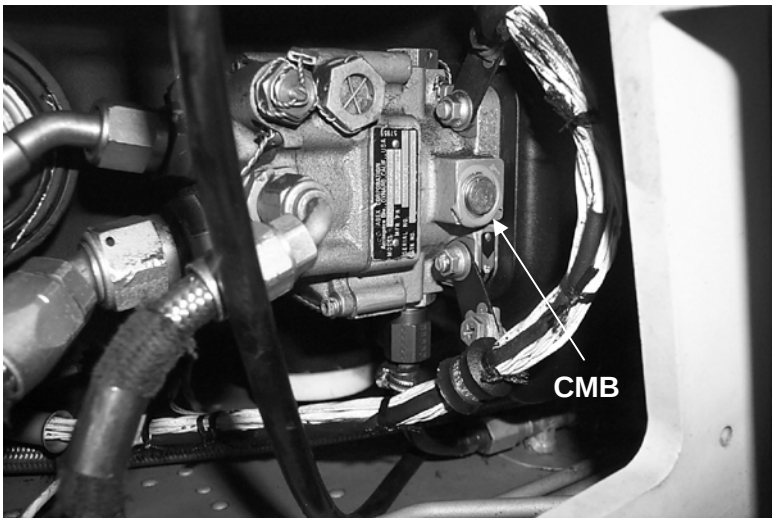

Figure 66. Hydraulic Pump, Primary/Utility (AH-64A/D) with CMB Installed

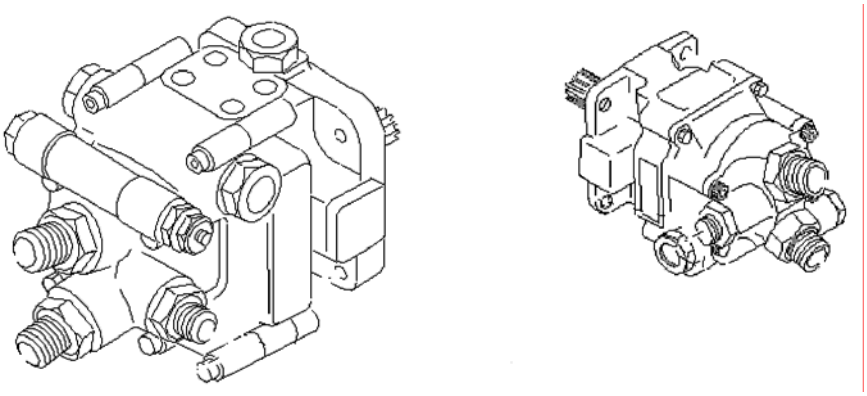

Figure 67. Hydraulic Pump, Primary and Utility (AH-64A/D)

Figure 68. Hydraulic Manifold, Utility (AH-64A/D) with CMB Installed

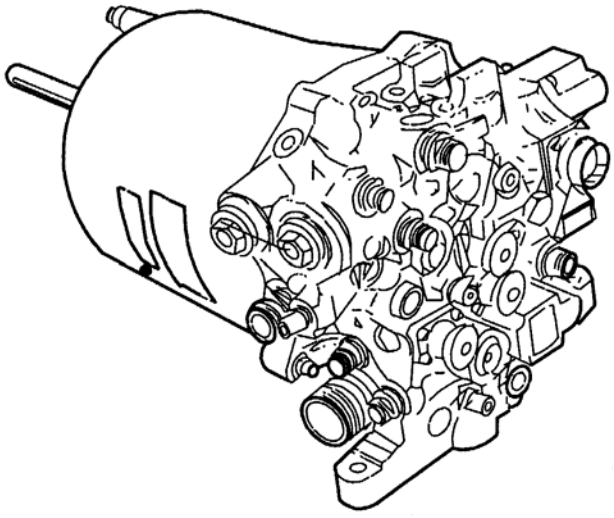

Figure 69. Hydraulic Manifold, Utility (AH-64A/D)

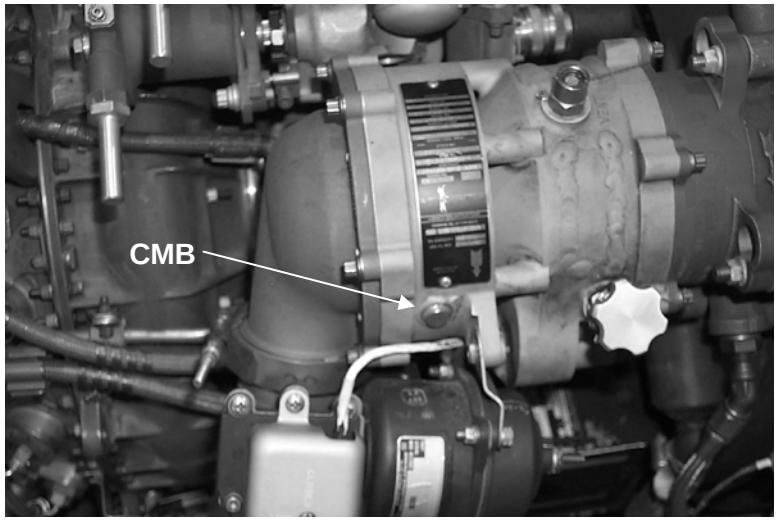

Figure 70. Engine Starter (AH-64A/D) with CMB Installed

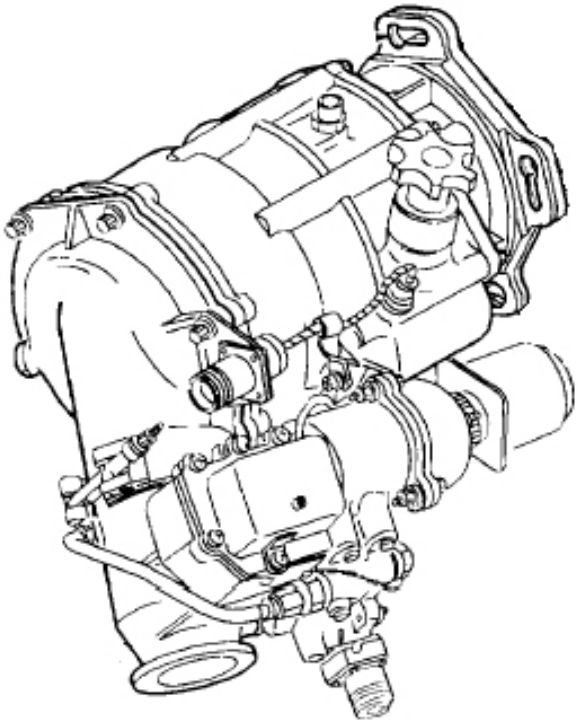

Figure 71. Engine Starter (AH-64A/D)

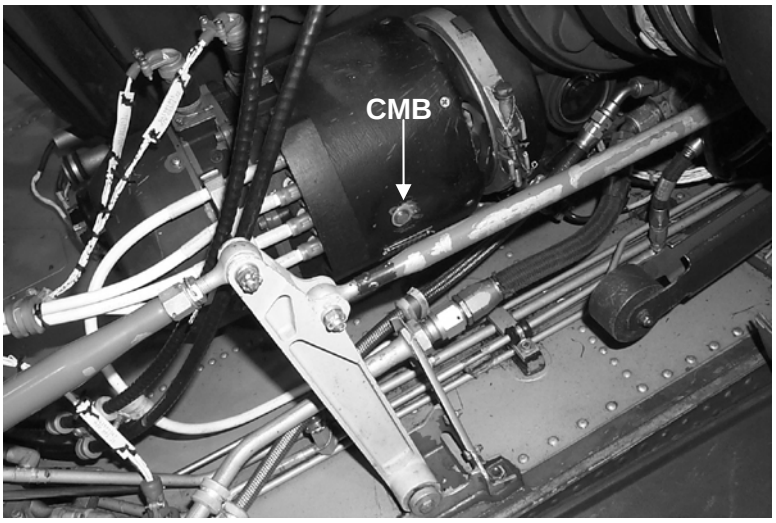

Figure 72. Generator Assembly (AH-64A/D) with CMB Installed

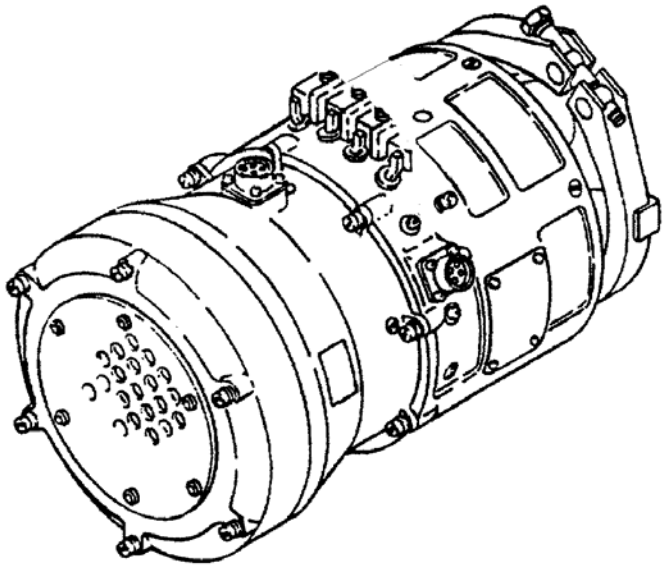

Figure 73. Generator Assembly (AH-64A/D)

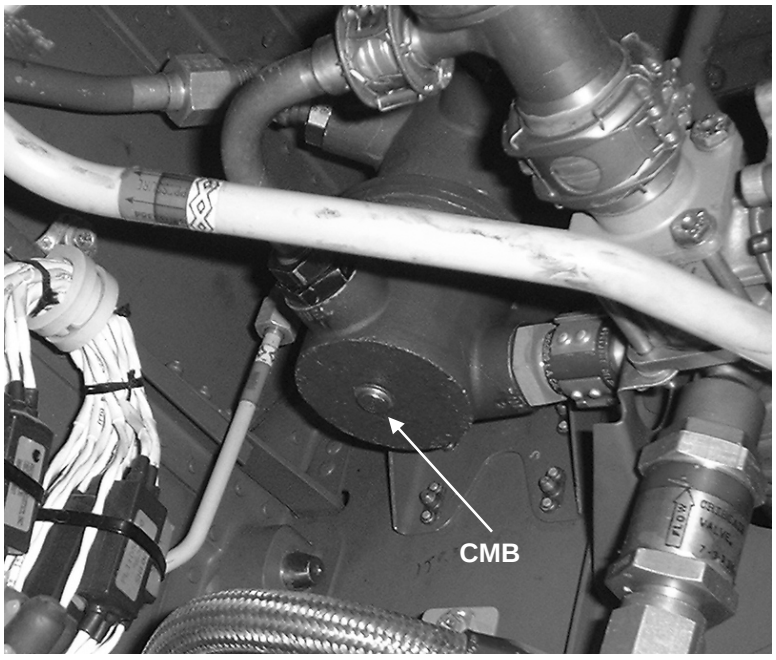

Figure 74. Fuel Transfer Pump (AH-64A/D) with CMB Installed

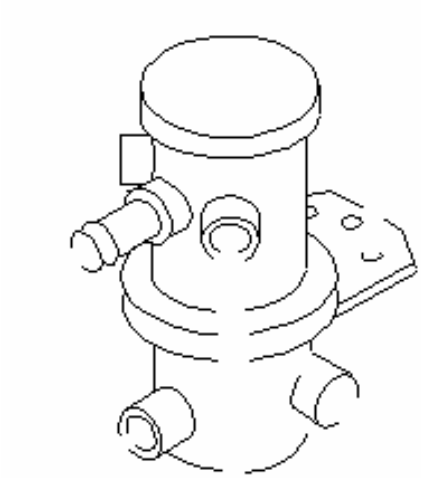

Figure 75. Fuel Transfer Pump (AH-64A/D)

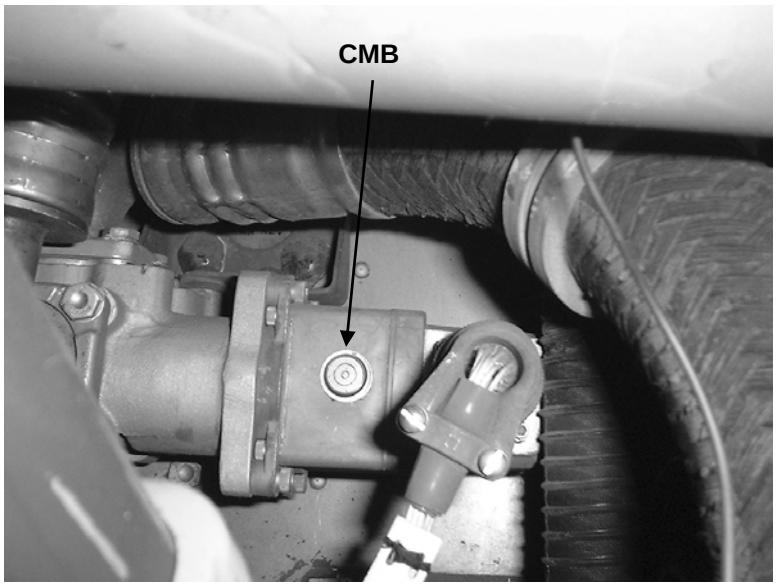

Figure 76. Fuel Crossfeed Valve (AH-64A/D) with CMB Installed

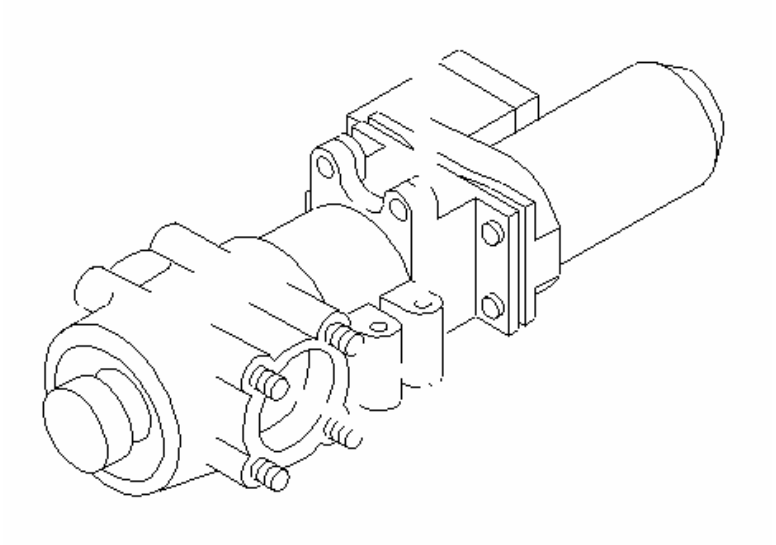

Figure 77. Fuel Crossfeed Valve (AH-64A/D)

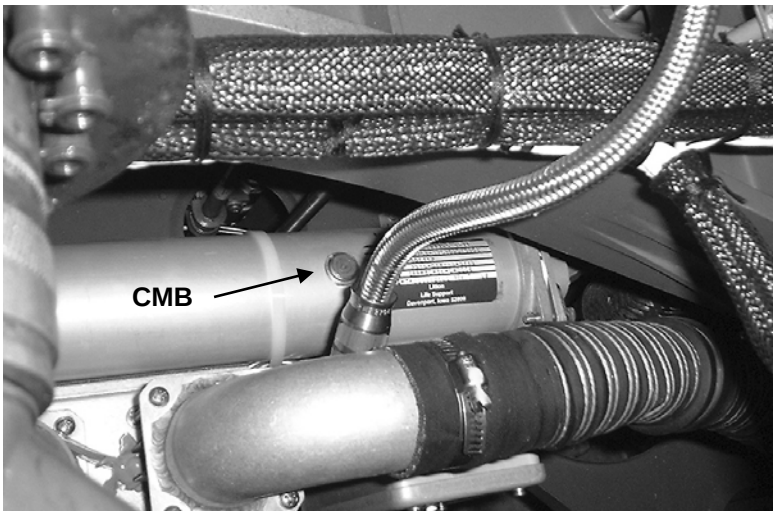

Figure 78. Nitrogen Inerting Unit (AH-64A/D) with CMB Installed

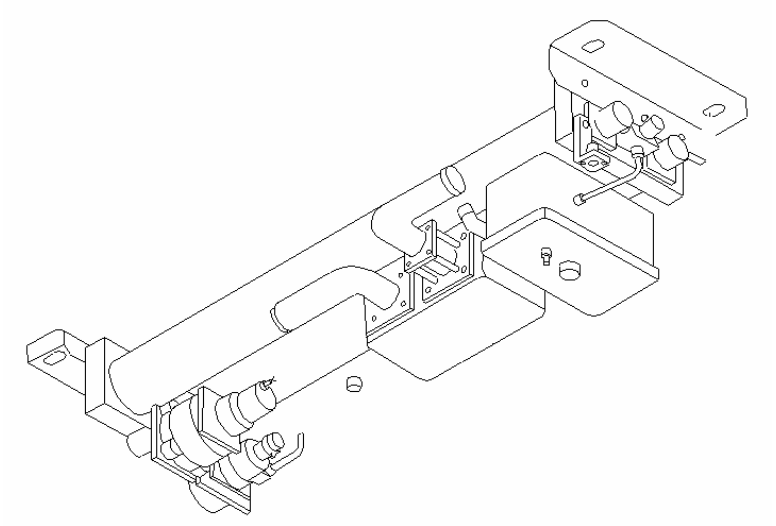

Figure 79. Nitrogen Inerting Unit (AH-64A/D)

Figure 80. Collective Servo Support (AH-64A/D) with CMB Installed

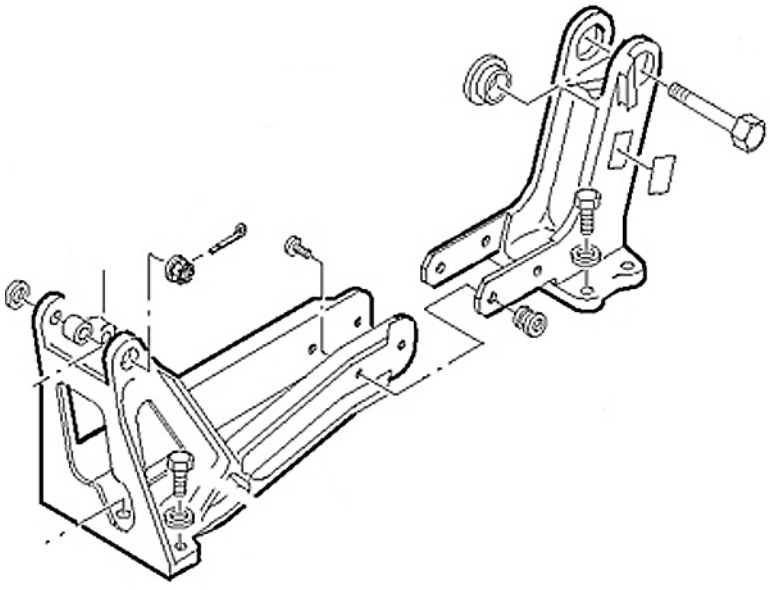

Figure 81. Collective Servo Support (AH-64A/D)

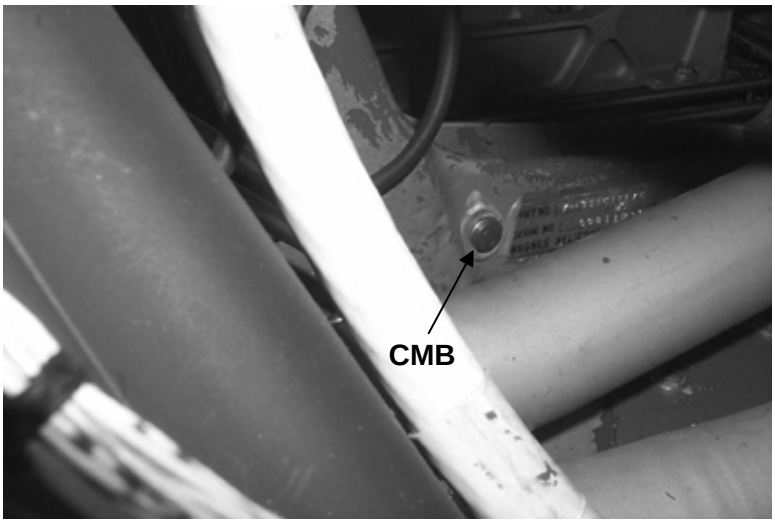

Figure 82. Longitudinal Servo Support (AH-64A/D) with CMB Installed

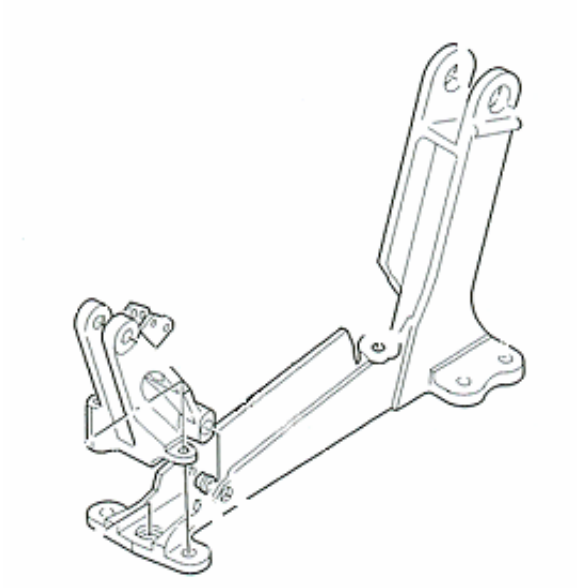

Figure 83. Longitudinal Servo Support (AH-64A/D)

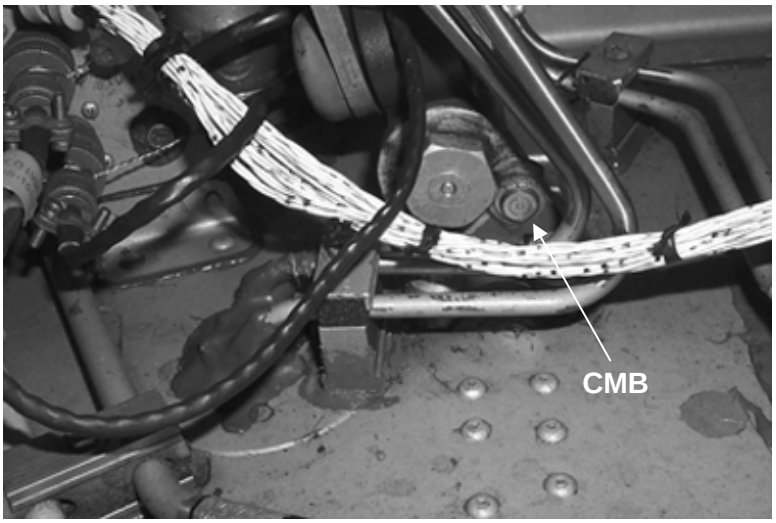

Figure 84. Lateral Servo Support (AH-64A/D) with CMB Installed

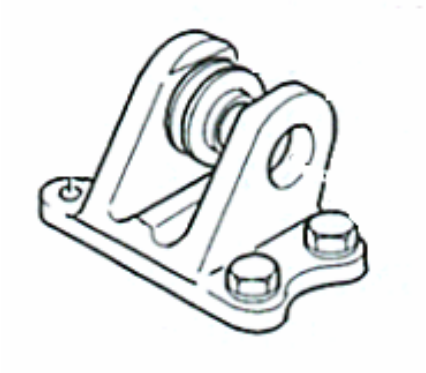

Figure 85. Lateral Servo Support (AH-64A/D)

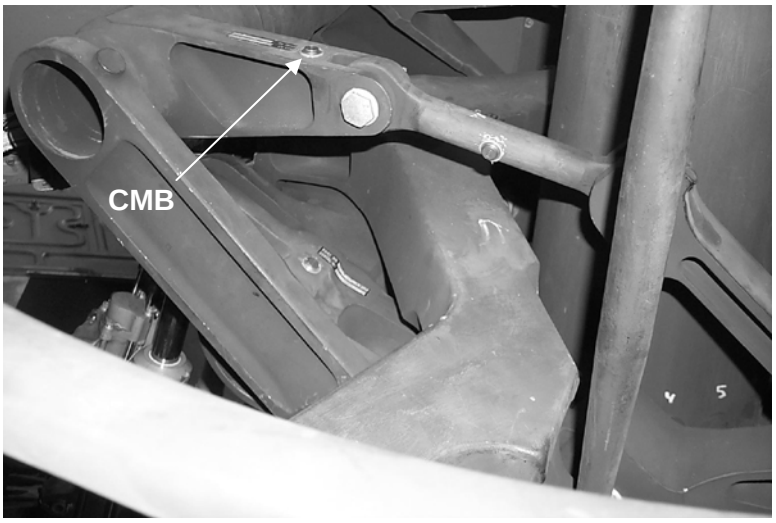

Figure 86. Forward Longitudinal Bellcrank Assembly (AH-64A/D) with CMB Installed

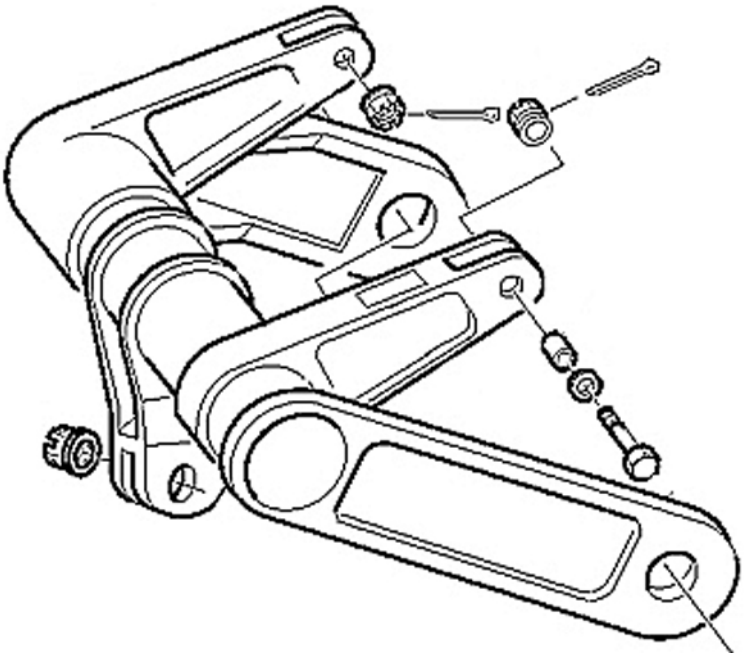

Figure 87. Forward Longitudinal Bellcrank Assembly (AH-64A/D)

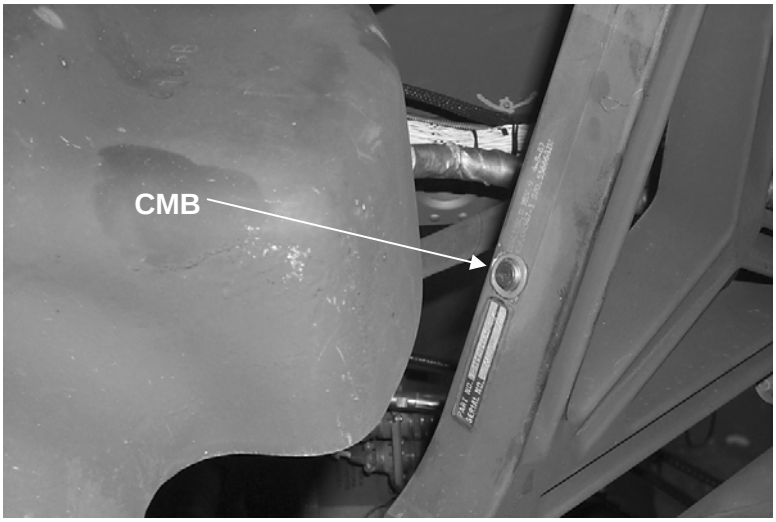

Figure 88. Longitudinal Torque Link Assembly (AH-64A/D) with CMB Installed

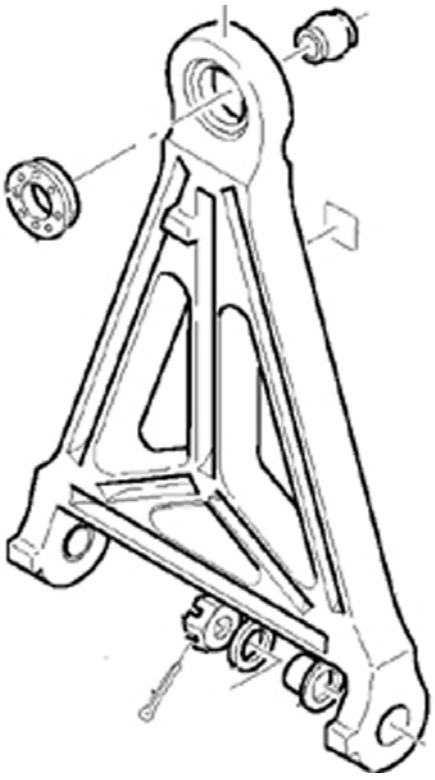

Figure 89. Longitudinal Torque Link Assembly (AH-64A/D)

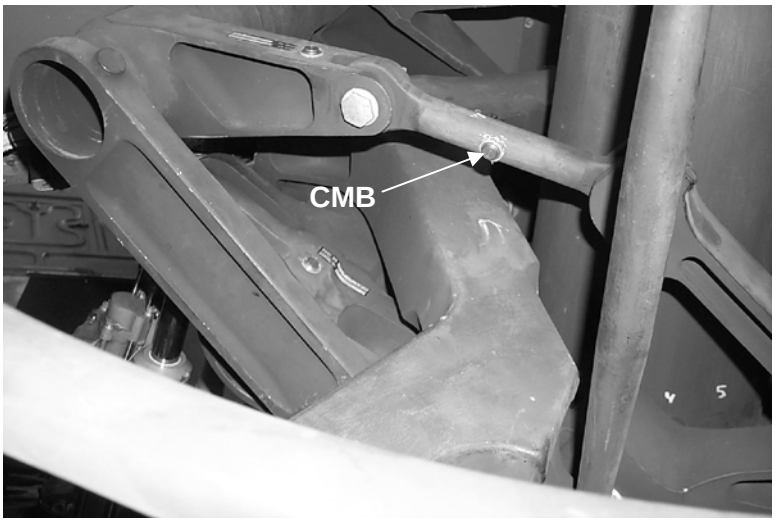

Figure 90. Longitudinal Link (AH-64A/D) with CMB Installed

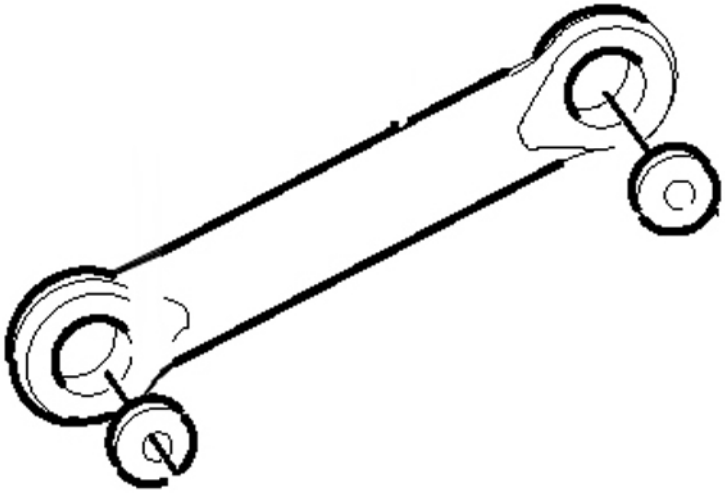

Figure 91. Longitudinal Link (AH-64A/D)

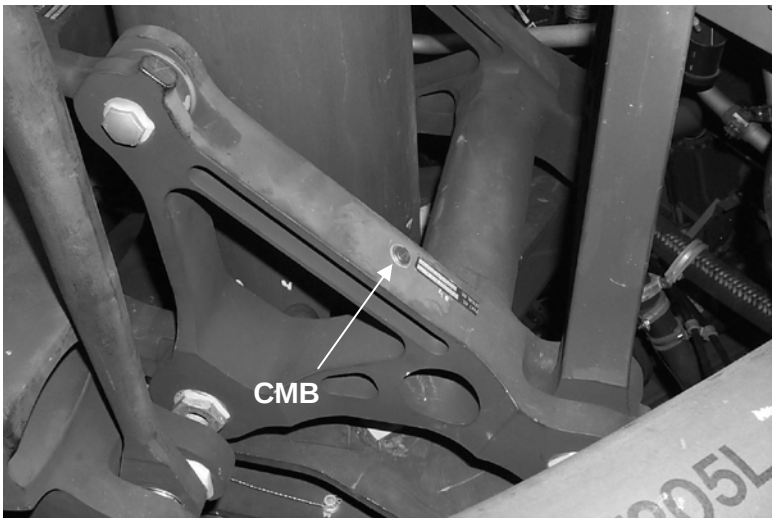

Figure 92. Aft Longitudinal Bellcrank Assembly (AH-64A/D) with CMB Installed

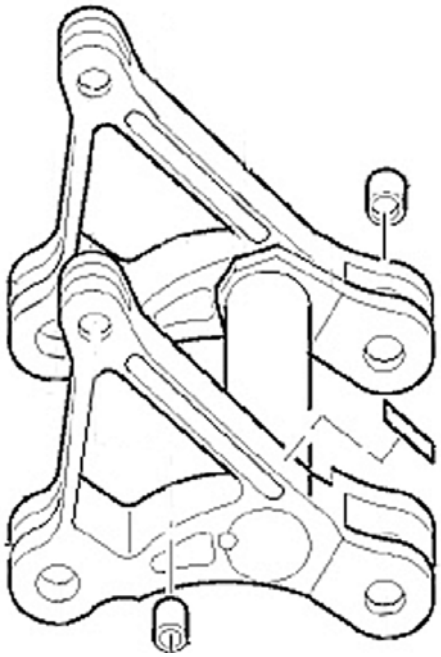

Figure 93. Aft Longitudinal Bellcrank Assembly (AH-64A/D)

Figure 94. Collective Bellcrank (AH-64A/D) with CMB Installed

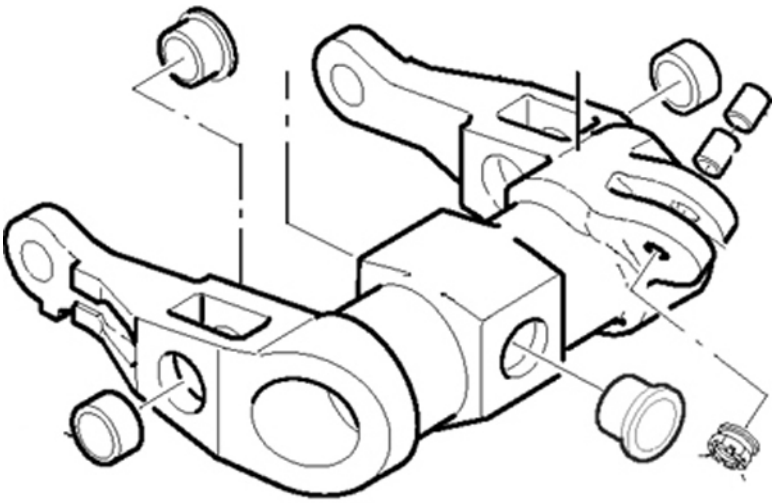

Figure 95. Collective Bellcrank (AH-64A/D)

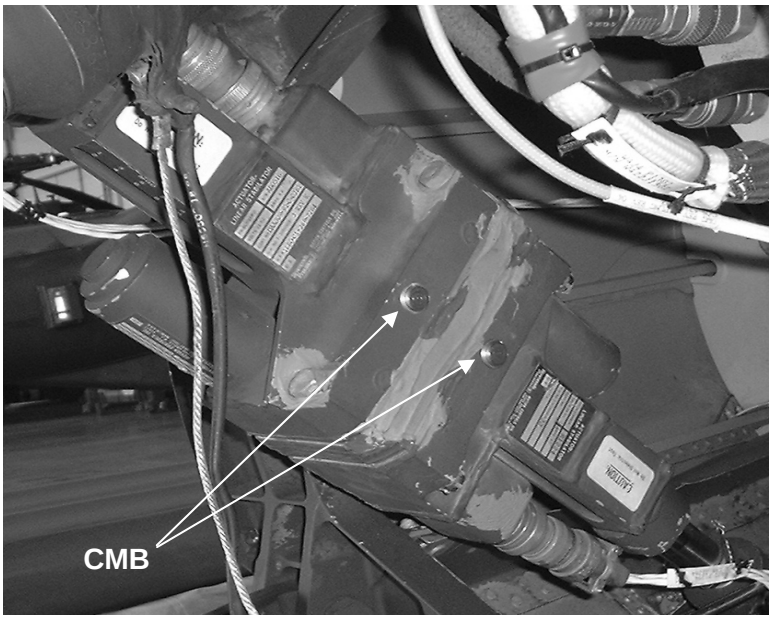

Figure 96. Actuators, Electro-Mech (AH-64A/D) with CMBs Installed

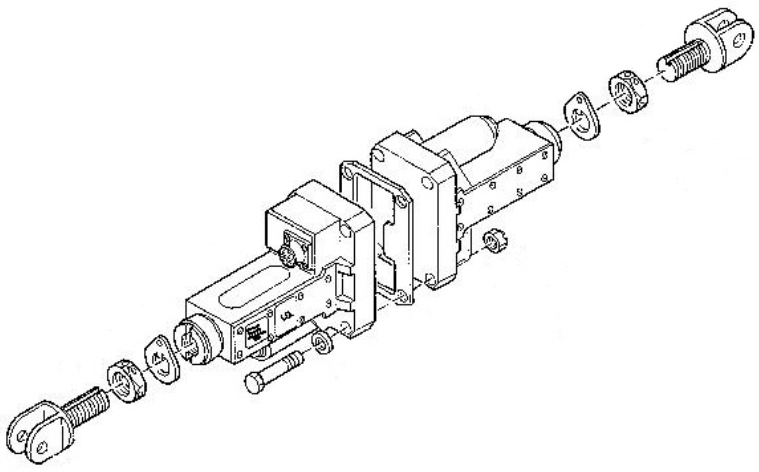

Figure 97. Actuators, Electro-Mech (AH-64A/D)

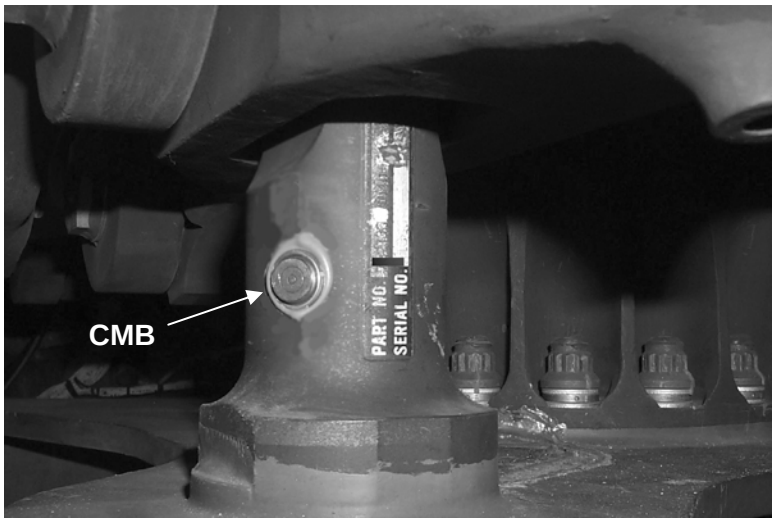

Figure 98. Mixer Support Assembly (AH-64A/D) with CMB Installed

Figure 99. Mixer Support Assembly (AH-64A/D)

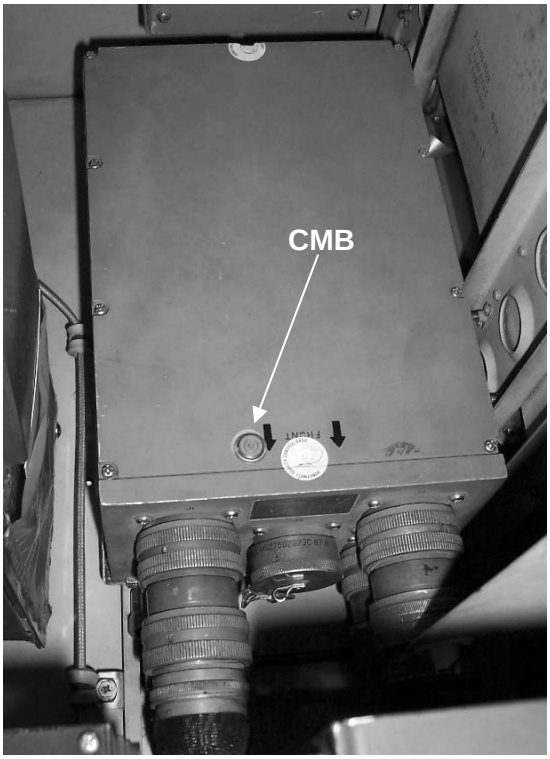

Figure 100. DASE Computer (AH-64A) with CMB Installed

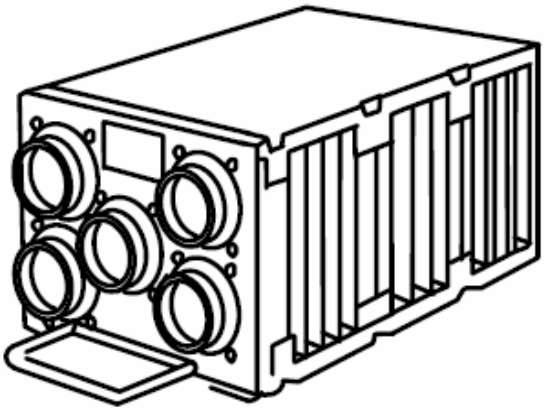

Figure 101. DASE Computer (AH-64A)

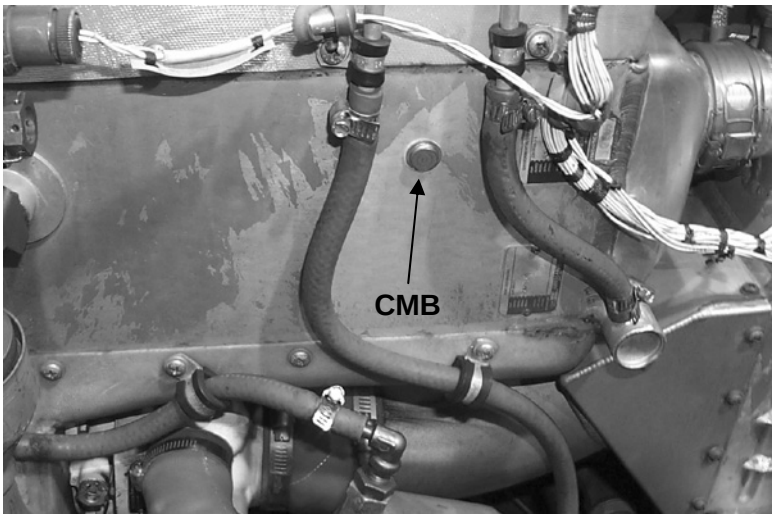

Figure 102. Environmental Control Unit (AH-64A/D) with CMB Installed

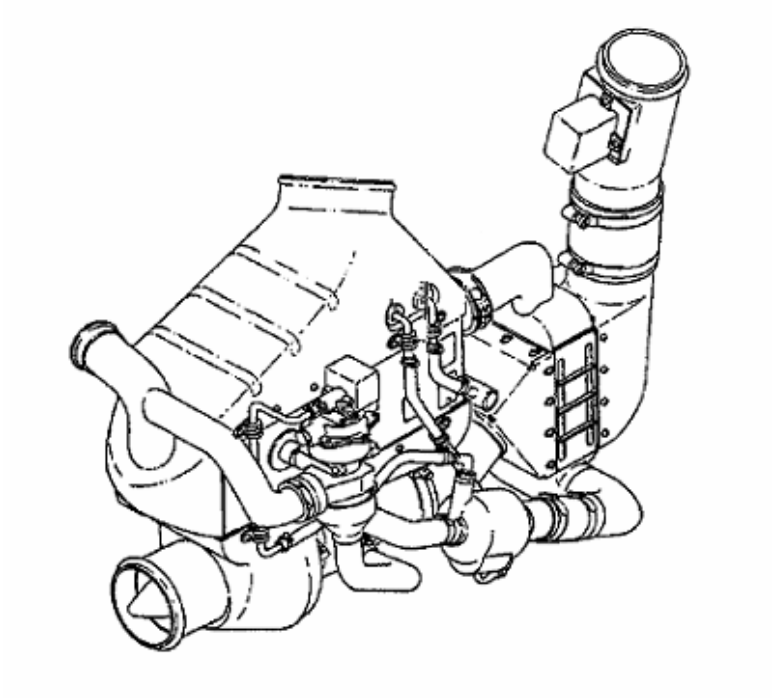

Figure 103. Environmental Control Unit (AH-64A/D)

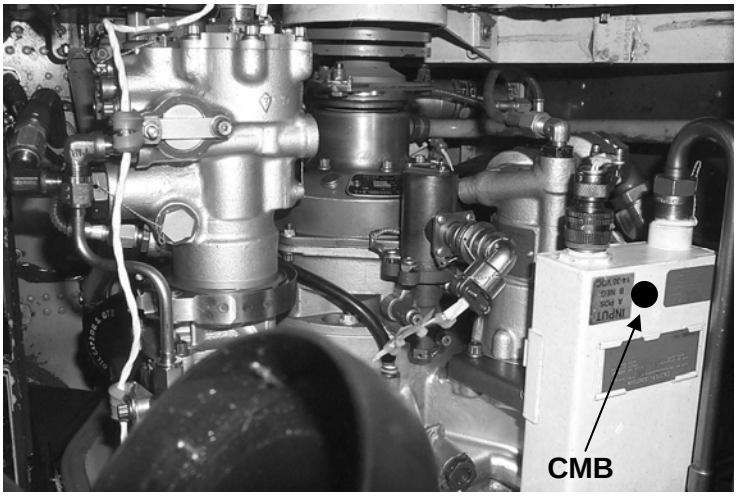

Figure 104. Auxiliary Power Unit (AH-64A) CMB Location

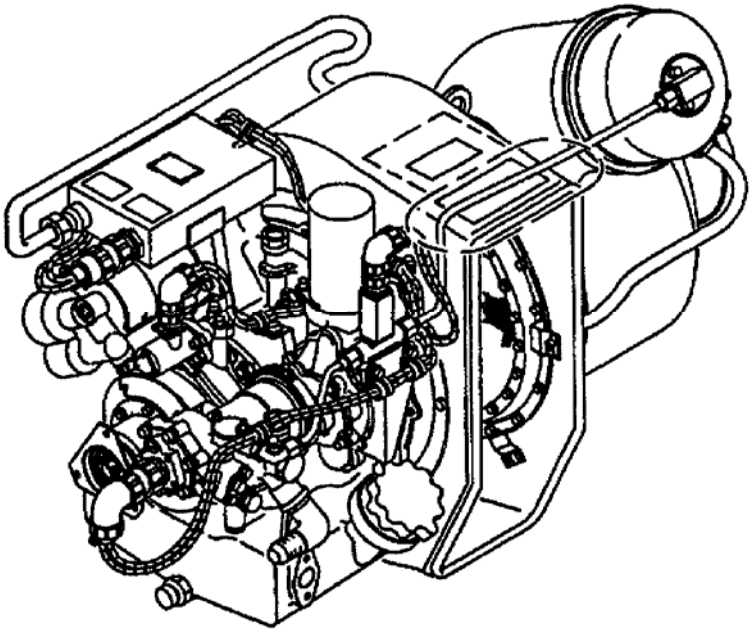

Figure 105. Auxiliary Power Unit (AH-64A)

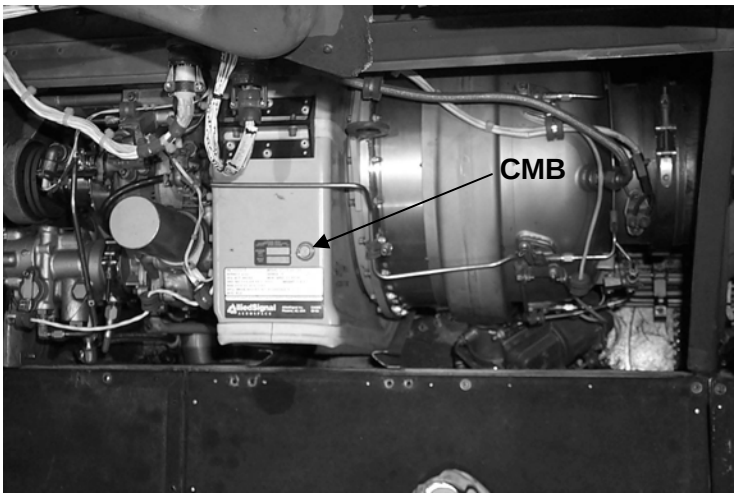

Figure 106. Auxiliary Power Unit (AH-64D) with CMB Installed

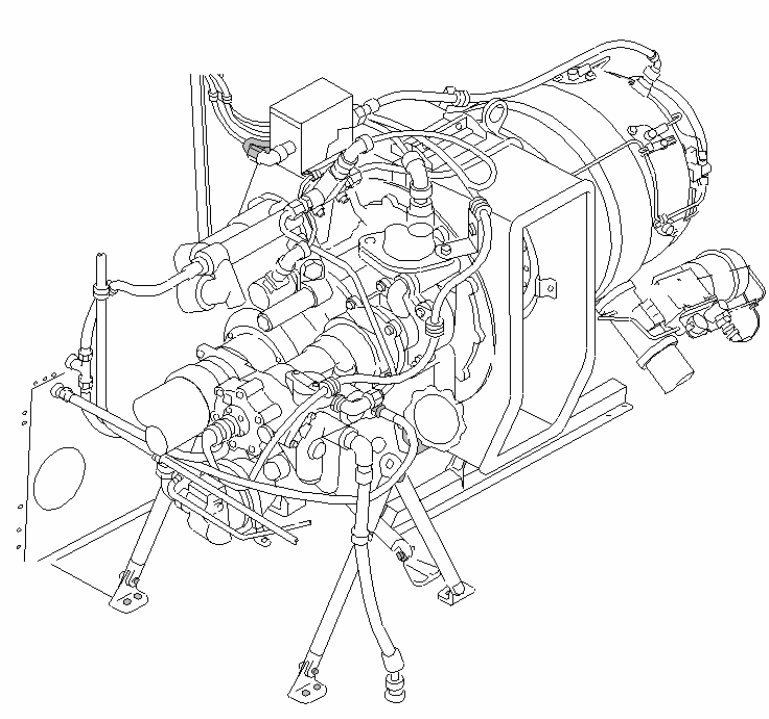

Figure 107. Auxiliary Power Unit (AH-64D)

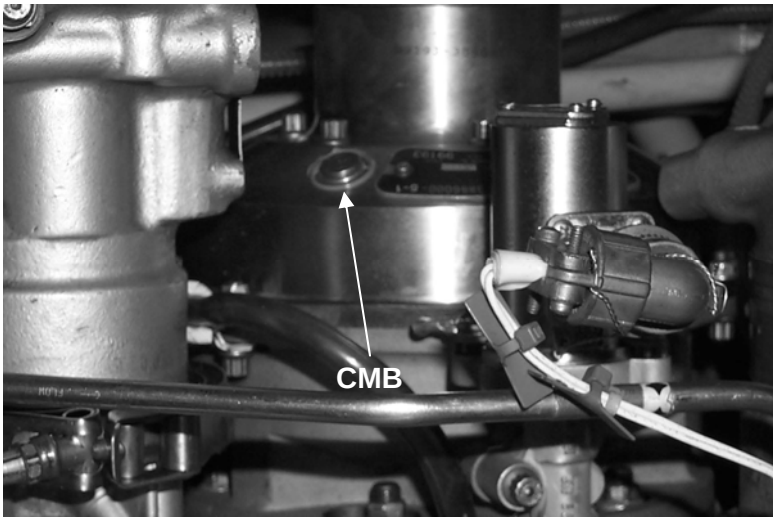

Figure 108. APU PTO Clutch (AH-64A/D) with CMB Installed

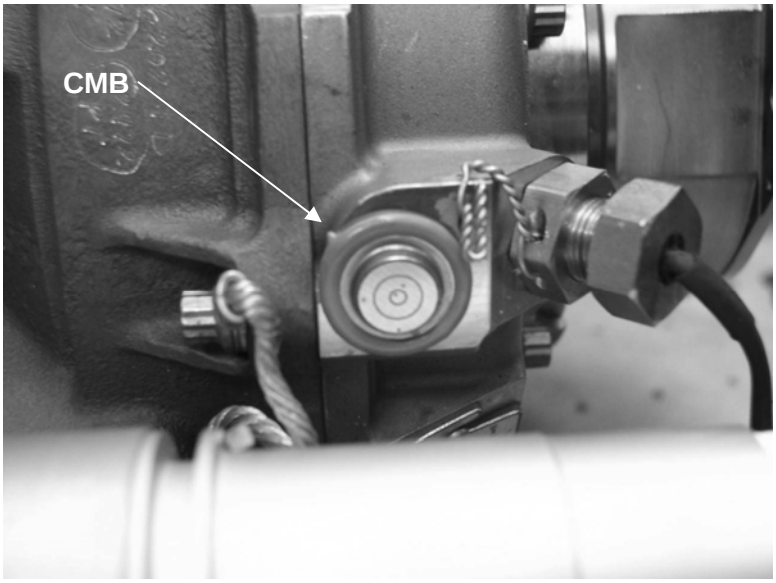

Figure 109. APU PTO Clutch, COSSI (AH-64A/D) with CMB Installed

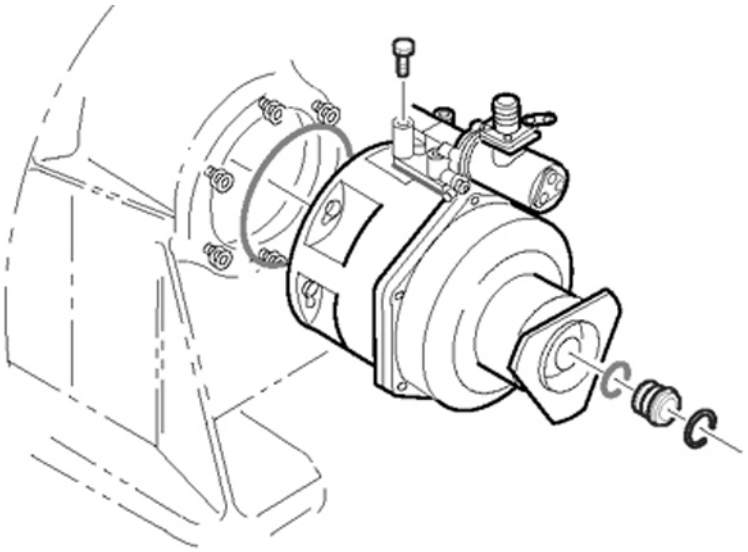

Figure 110. APU PTO Clutch (AH-64A/D)

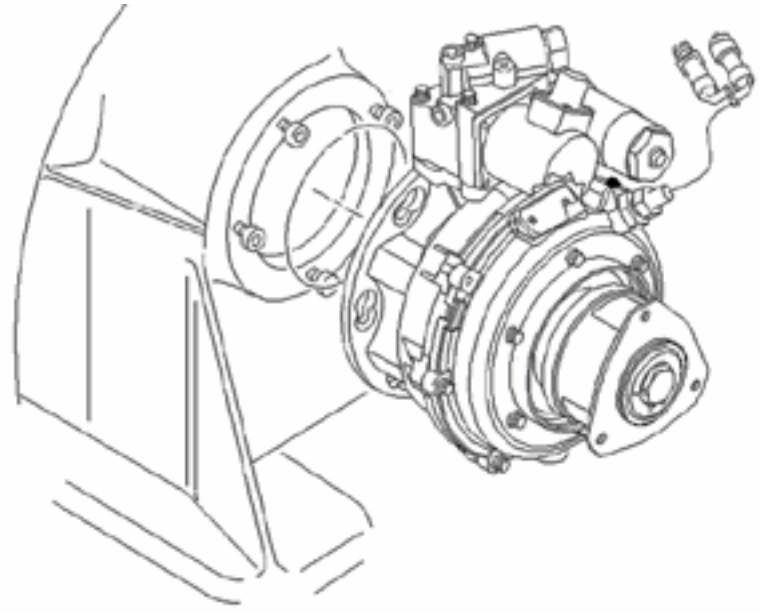

Figure 111. APU PTO Clutch, COSSI (AH-64A/D)

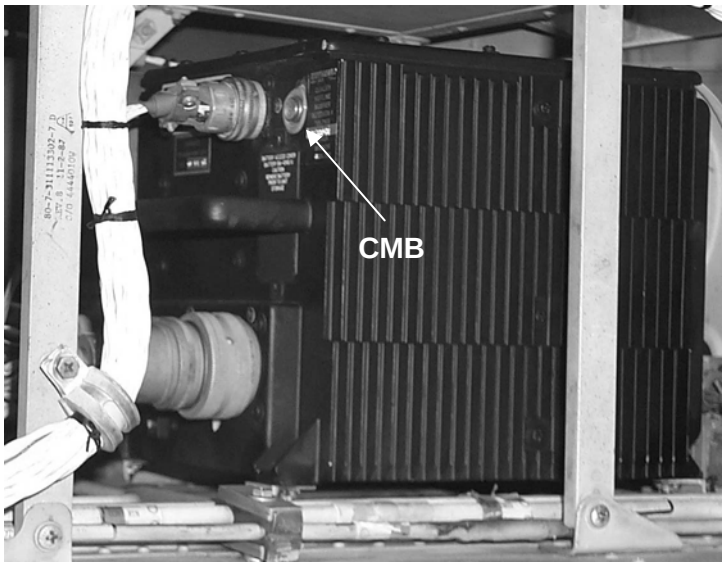

Figure 112. Signal Data Converter (AH-64A/D) with CMB Installed

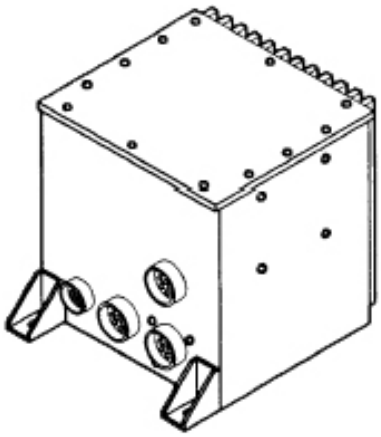

Figure 113. Signal Data Converter (AH-64A/D)

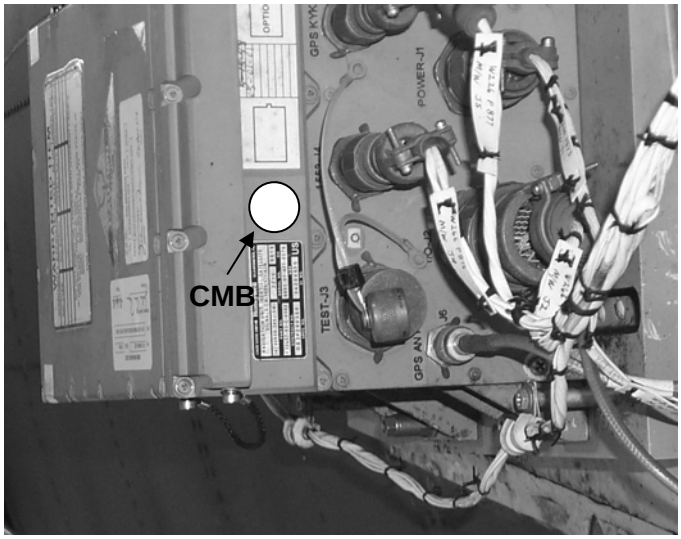

Figure 114. Inertial Navigation System (AH-64A) CMB Location

Figure 115. Inertial Navigation System (AH-64D) with CMB Installed

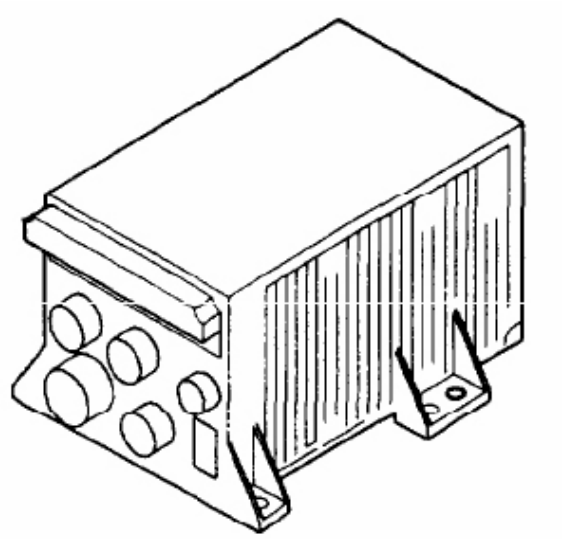

Figure 116. Inertial Navigation System (AH-64A/D)

Figure 117. Improved Data Modem (AH-64A/D) with CMB Installed

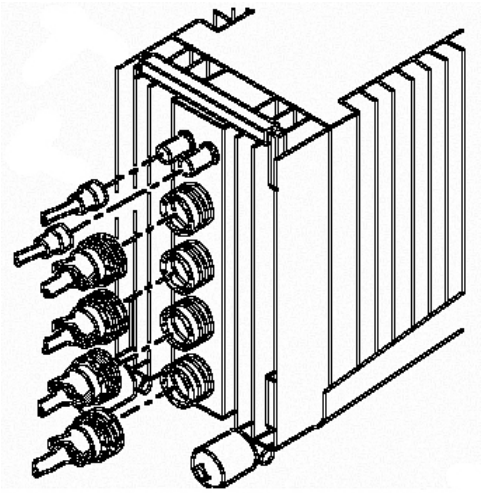

Figure 118. Improved Data Modem (AH-64A/D)

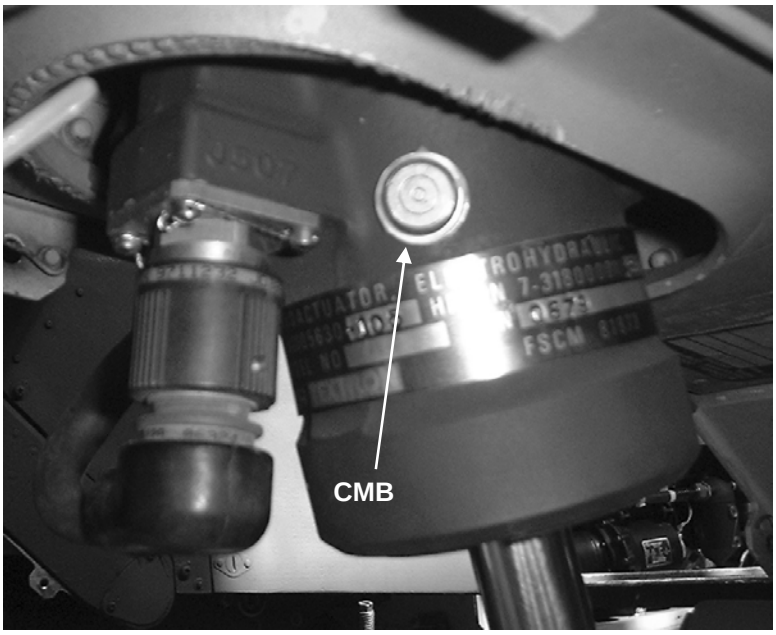

Figure 119. Wing Pylon Actuator (AH-64A/D) with CMB Installed

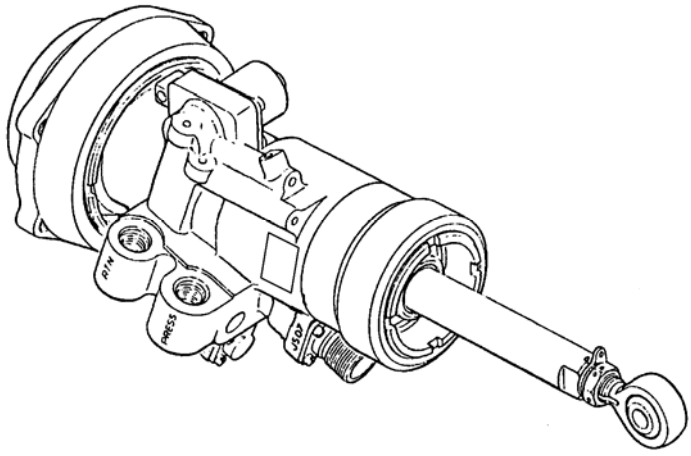

Figure 120. Wing Pylon Actuator (AH-64A/D)

Figure 121. Fire Control Computer (AH-64A) with CMB Installed

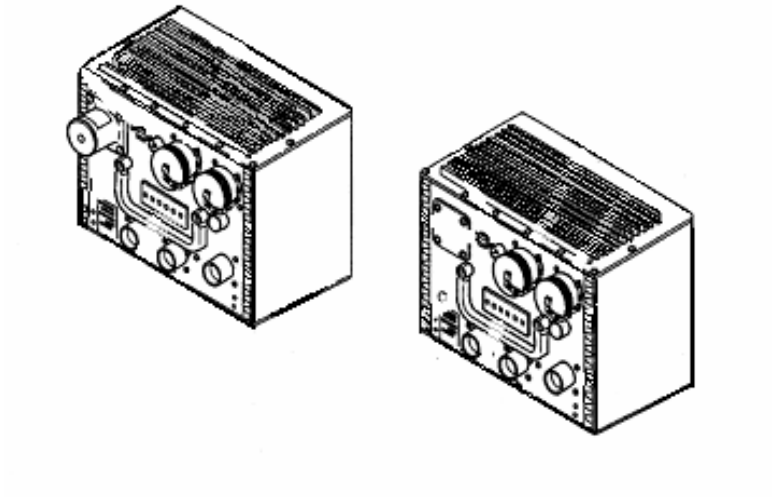

Figure 122. Fire Control Computer (AH-64A; ACY on left, ACZ on right)

Note: The CMB location is identical on the ACY and ACZ versions. Therefore a photo of only one version is given.

Figure 123. Omnidirectional Airspeed Sensor (AH-64A) with CMB Installed

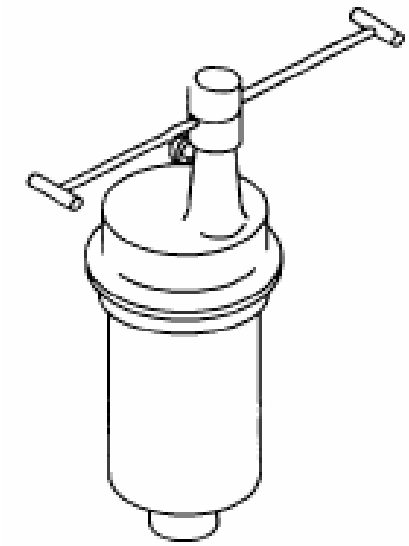

Figure 124. Omnidirectional Airspeed Sensor (AH-64A)

Figure 125. Air Data Processor (AH-64A) with CMB Installed

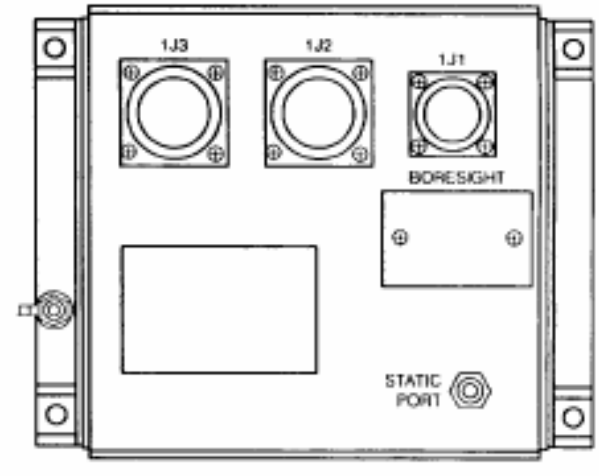

Figure 126. Air Data Processor (AH-64A)

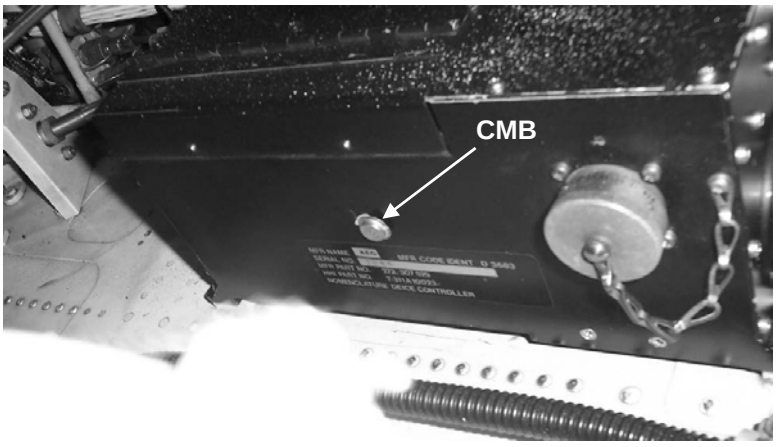

Figure 127. Power Dist M/R De-Icer (AH-64A) with CMB Installed

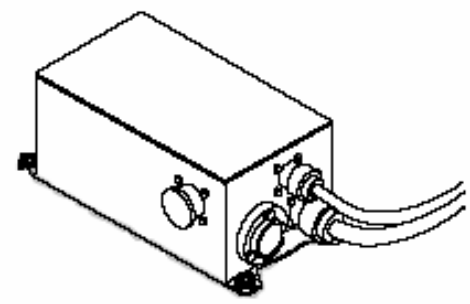

Figure 128. Power Dist M/R De-Icer (AH-64A)

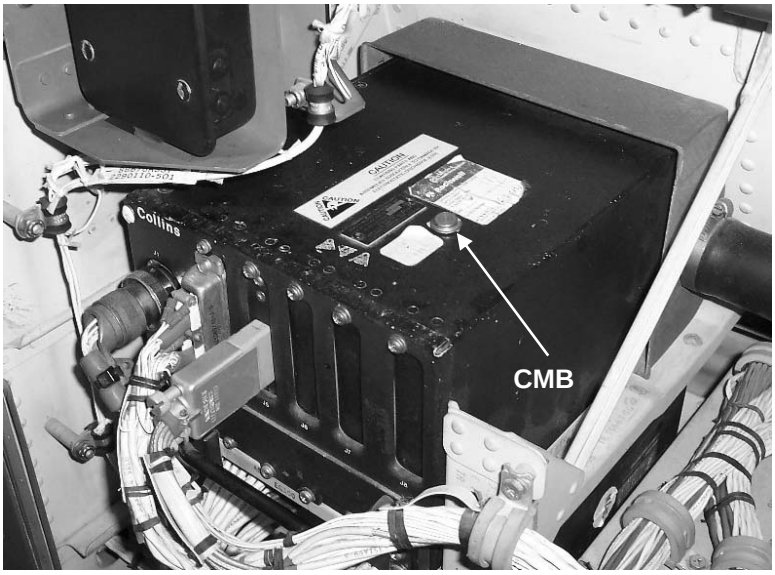

Figure 129. Remote Hellfire Electronics (RHE) Unit (AH-64A) with CMB Installed

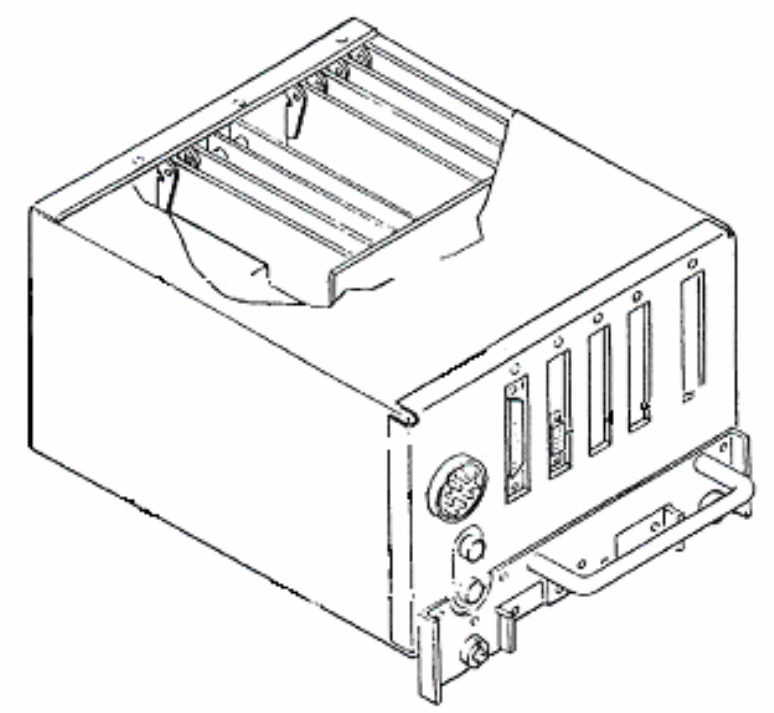

Figure 130. Remote Hellfire Electronics (RHE) Unit (AH-64A)

Figure 131. TADS Electronic Unit (AH-64A/D) CMB Location

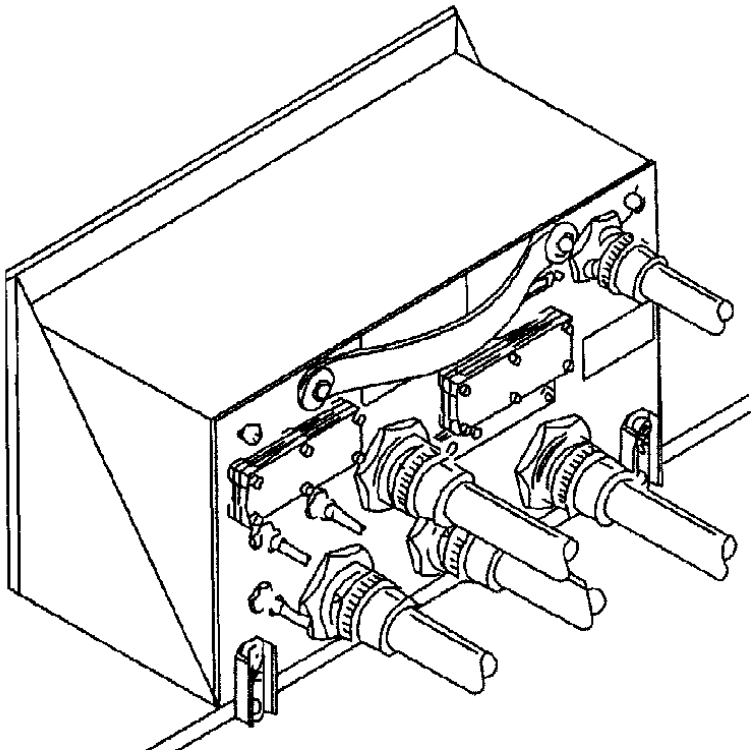

Figure 132. TADS Electronic Unit (AH-64A/D)

Figure 133. Laser Electronic Unit (AH-64A/D) CMB Location

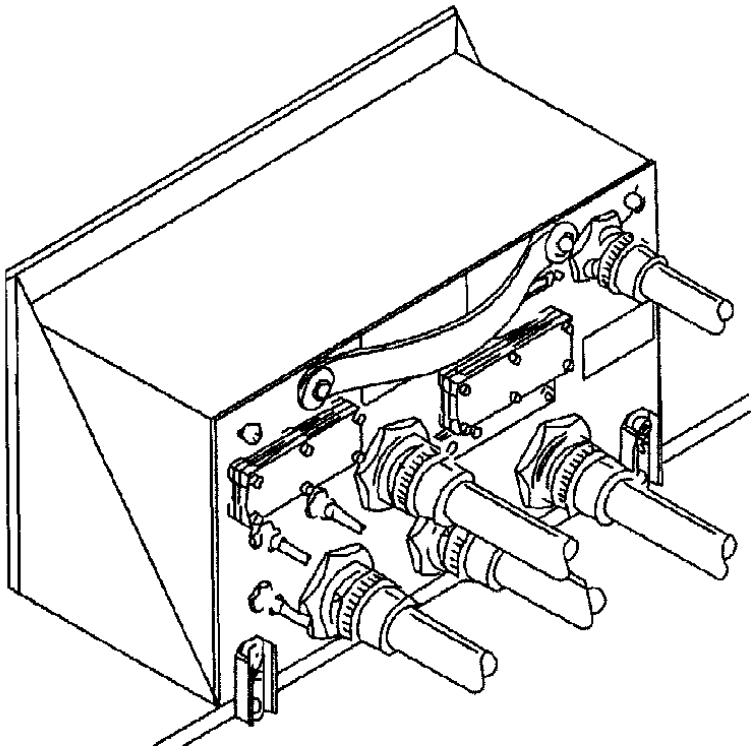

Figure 134. Laser Electronic Unit (AH-64A/D)

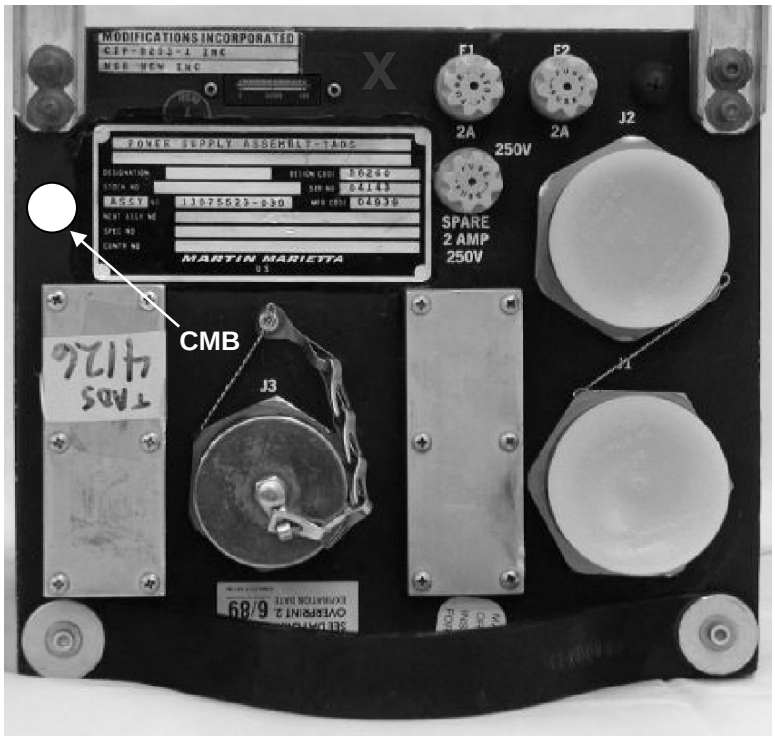

Figure 135. TADS Power Supply (AH-64A/D) CMB Location

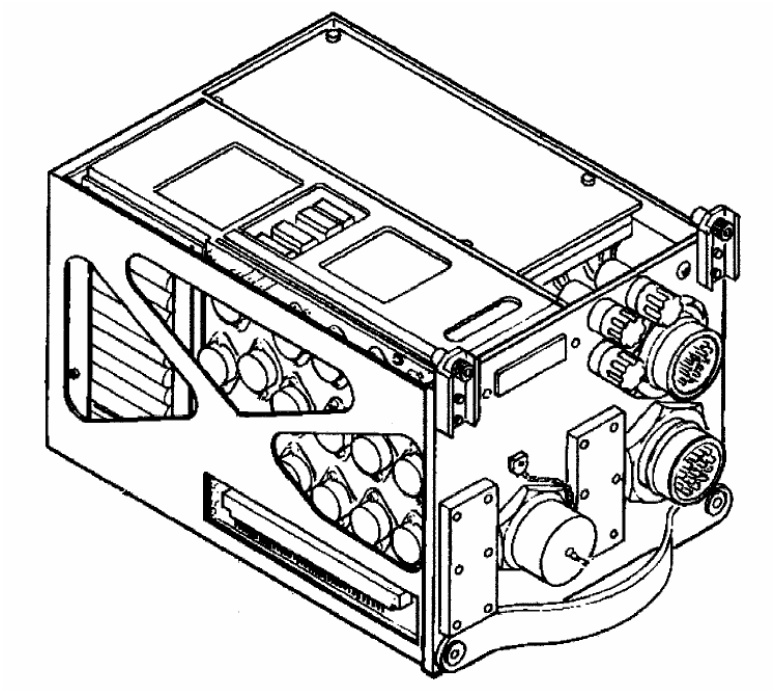

Figure 136. TADS Power Supply (AH-64A/D)

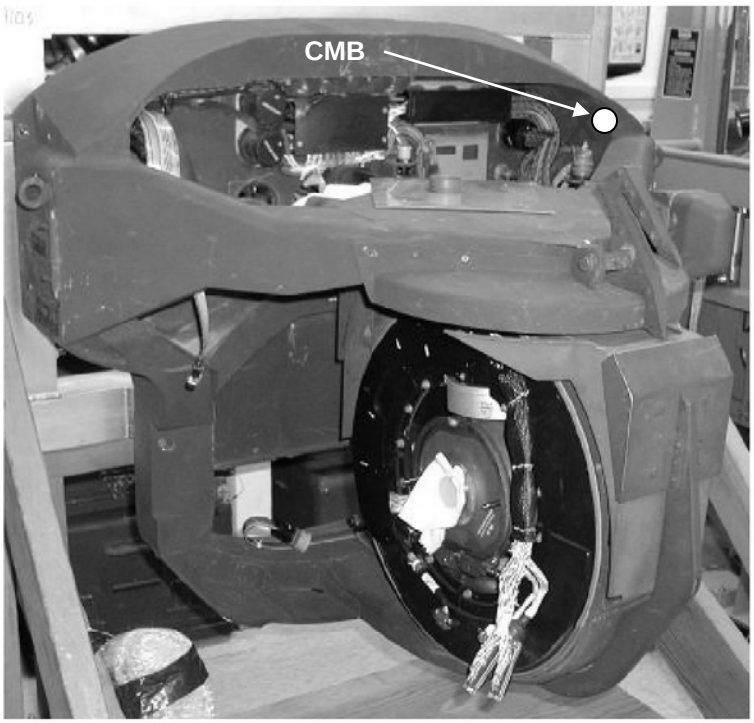

Figure 137. TADS Turret (AH-64A/D) CMB Location

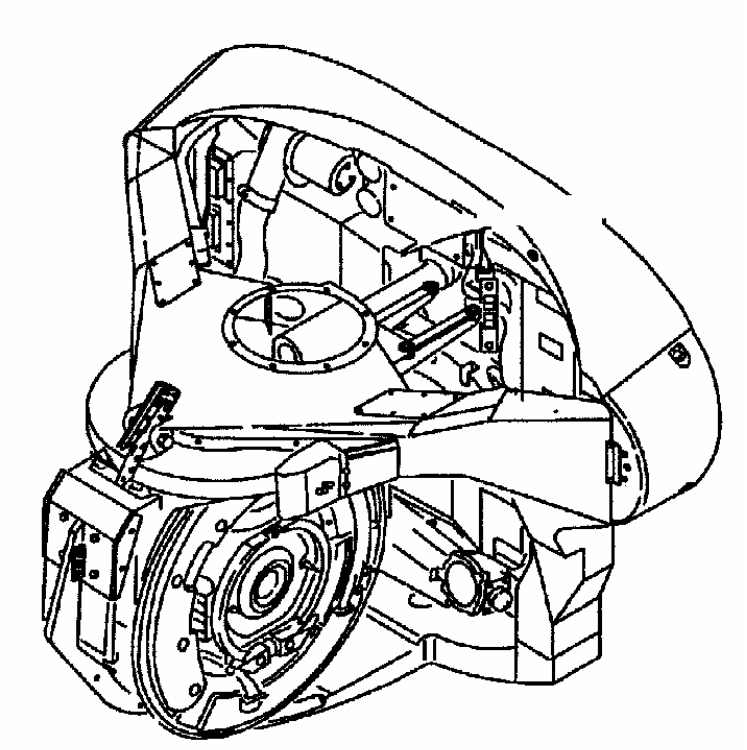

Figure 138. TADS Turret (AH-64A/D)

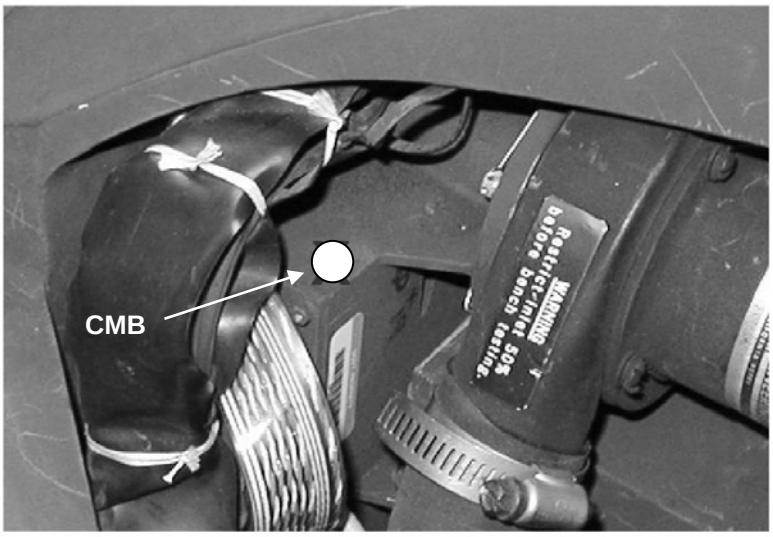

Figure 139. Environmental Control System (AH-64A/D) CMB Location

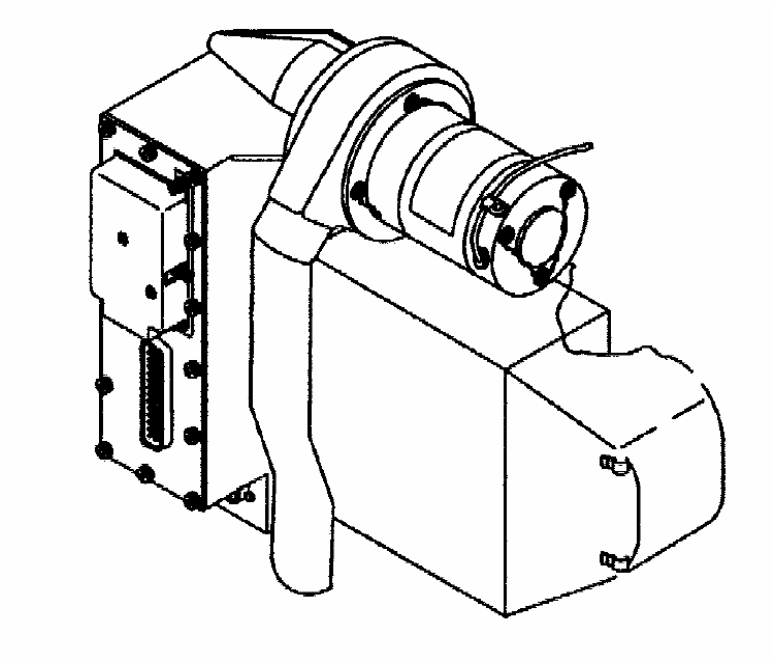

Figure 140. Environmental Control System (AH-64A/D)

Figure 141. TADS Servo Electronic Torque Amplifier (AH-64A/D) with CMB Installed

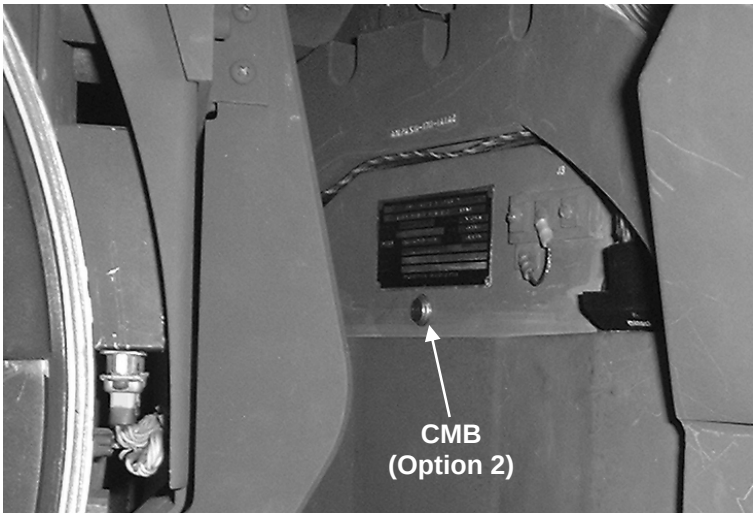

Figure 142. TADS Servo Electronic Torque Amplifier (AH-64A/D) with CMB Installed

Note: “Option 1” shown above is the current preferred location. “Option 2” is an allowable location (and was previously the preferred location) but has been found to interfere with a label on some parts (as shown in the top photo).

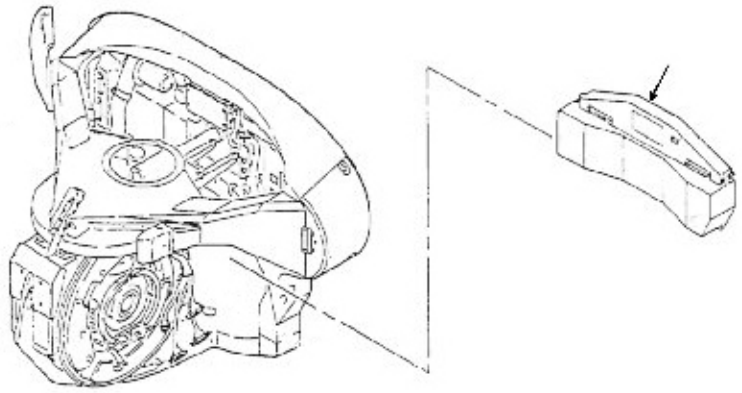

Figure 143. TADS Servo Electronic Torque Amplifier (AH-64A/D)

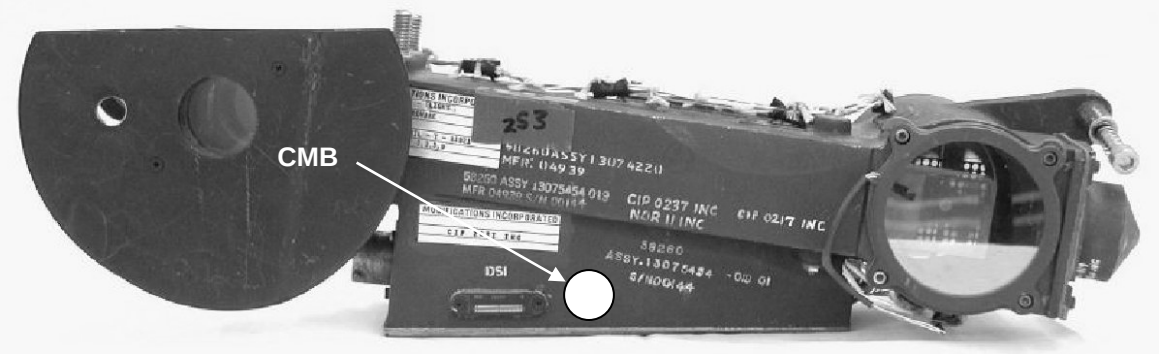

Figure 144. Boresight Assembly (AH-64A/D) CMB Location

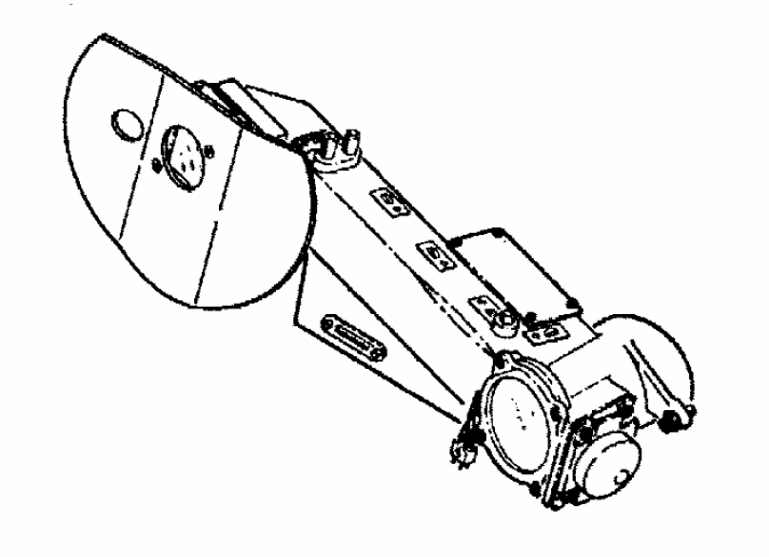

Figure 145. Boresight Assembly (AH-64A/D)

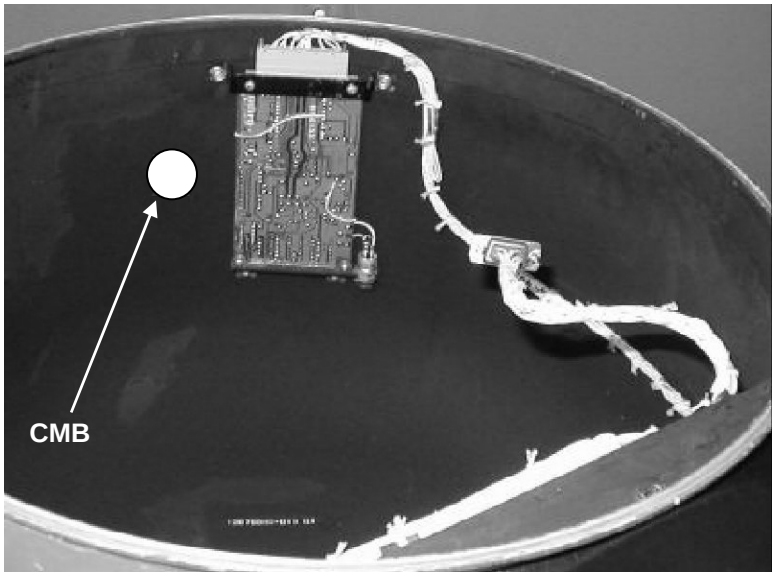

Figure 146. Night Shroud Assembly (AH-64A/D) CMB Location

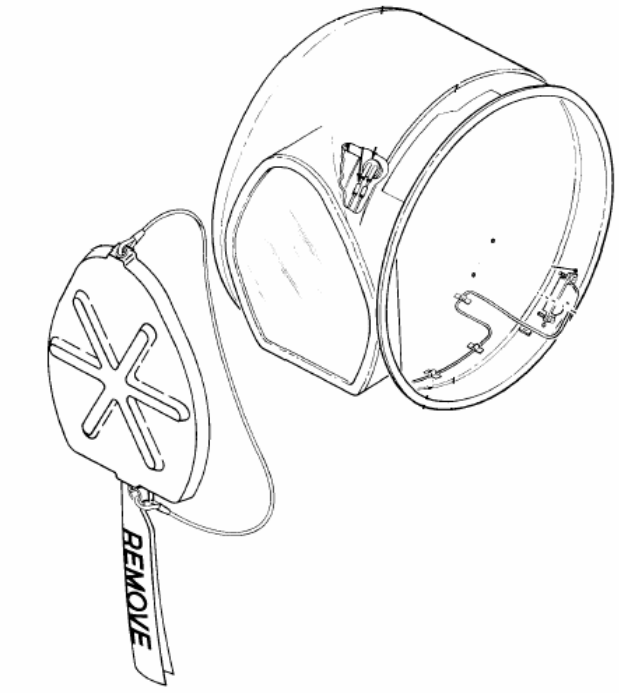

Figure 147. Night Shroud Assembly (AH-64A/D)

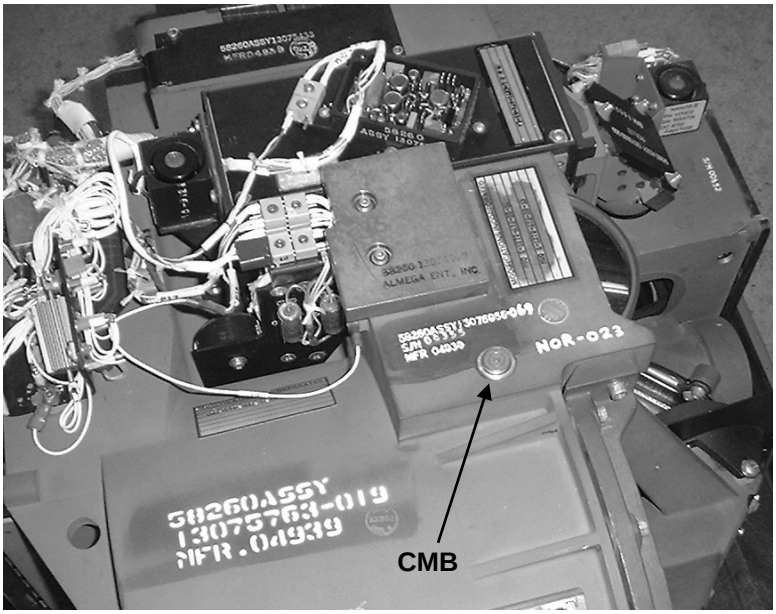

Figure 148. Night Sensor (AH-64A/D) with CMB Installed

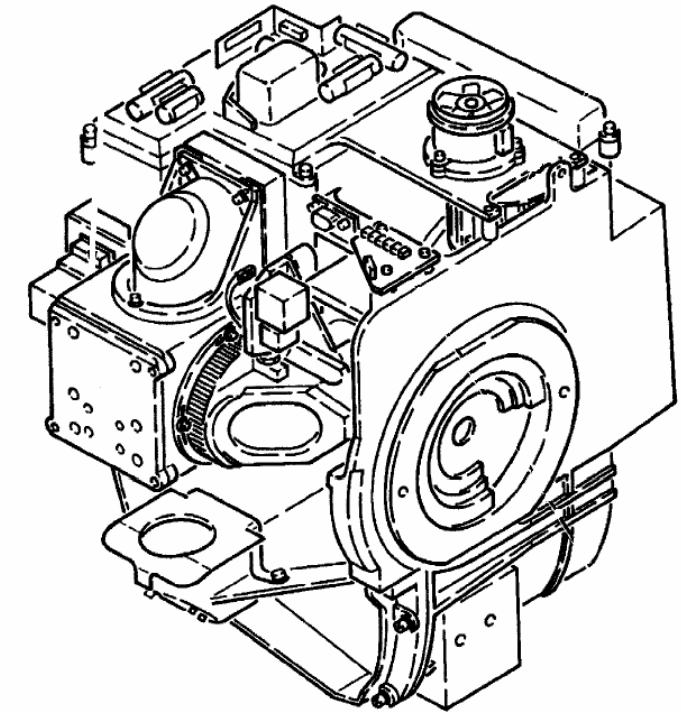

Figure 149. Night Sensor (AH-64A/D)

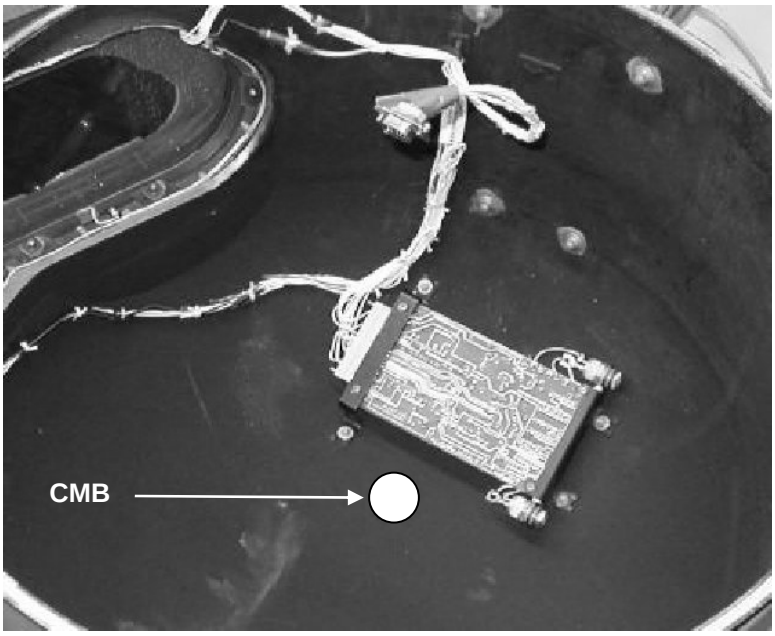

Figure 150. Day Shroud Assembly (AH-64A/D) CMB Location

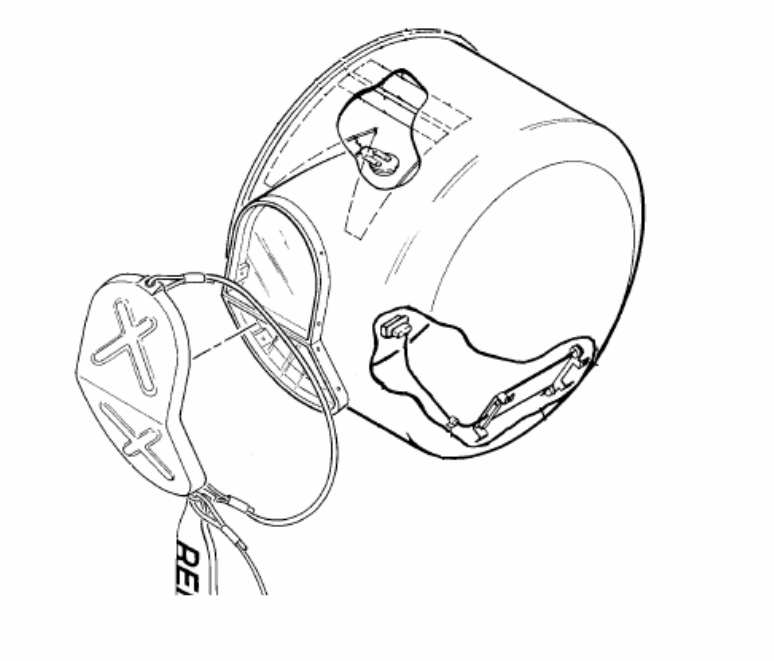

Figure 151. Day Shroud Assembly (AH-64A/D)

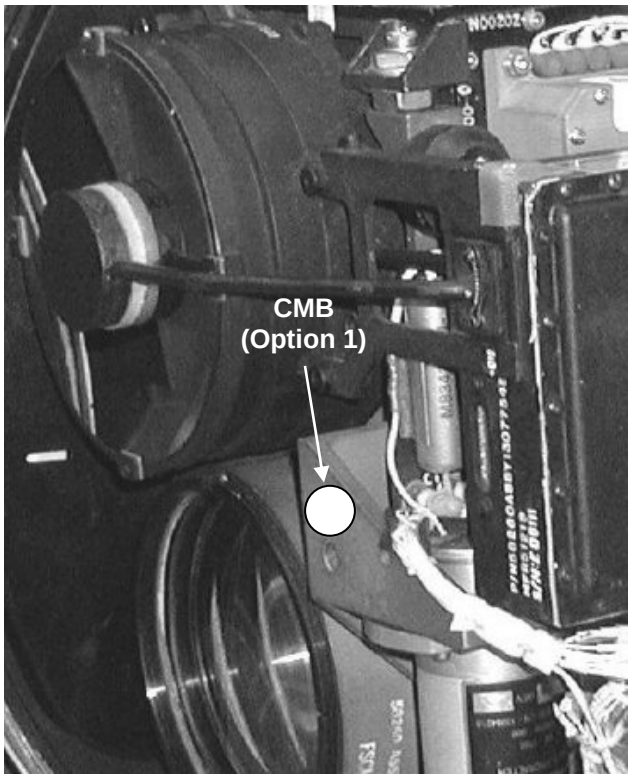

Figure 152. Day Sensor Sub-Assembly (AH-64A/D) CMB Location

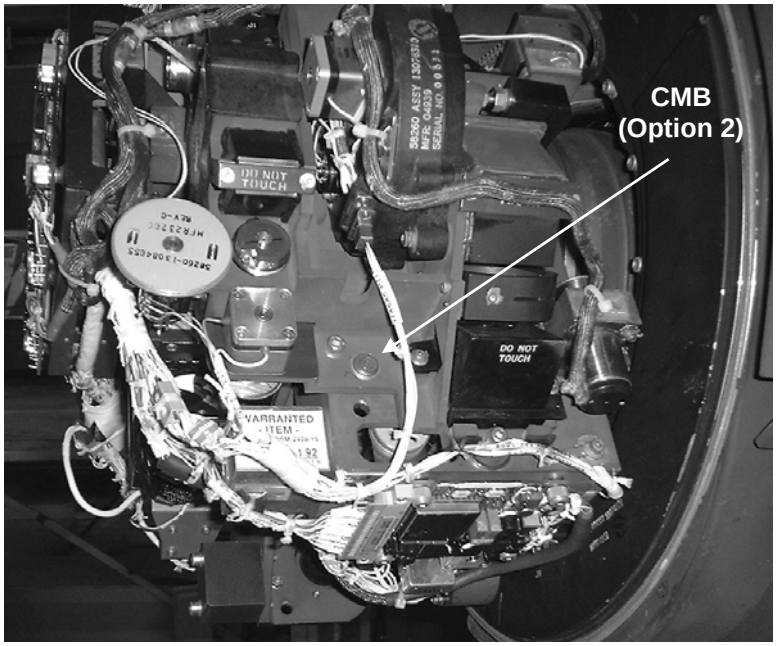

Figure 153. Day Sensor Sub-Assembly (AH-64A/D) with CMB Installed

Note: “Option 1” shown above is the current preferred location. “Option 2” is an allowable location (and was previously the preferred location) but is on a part that may be replaced during component repair.

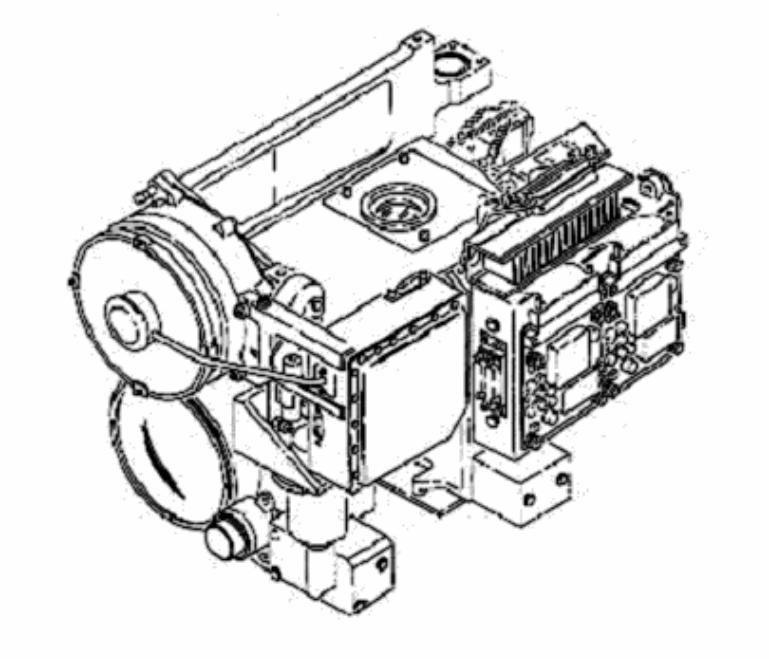

Figure 154. Day Sensor Sub-Assembly (AH-64A/D)

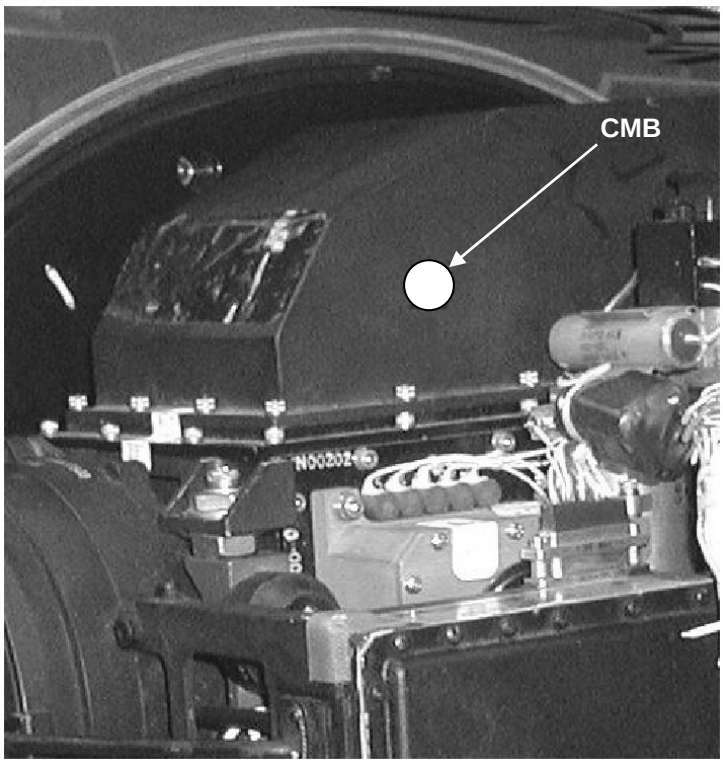

Figure 155. Laser Transceiver (AH-64A/D) CMB Location

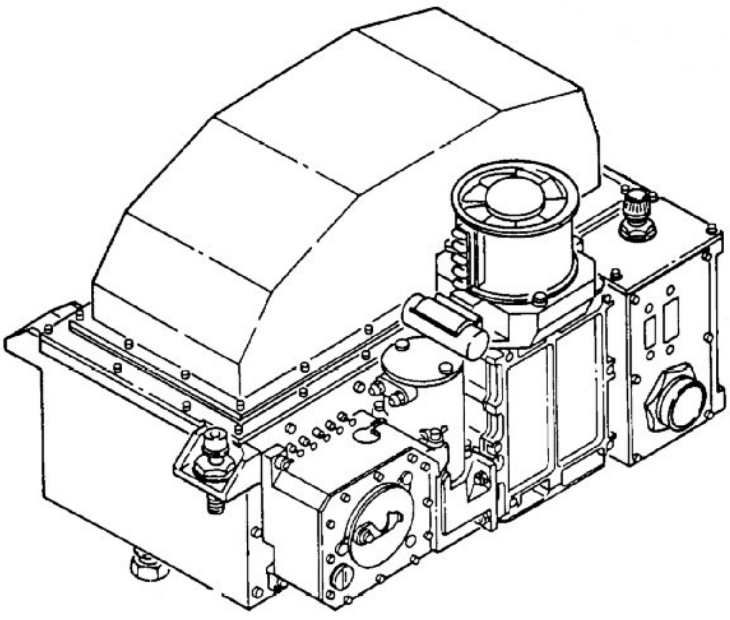

Figure 156. Laser Transceiver (AH-64A/D)

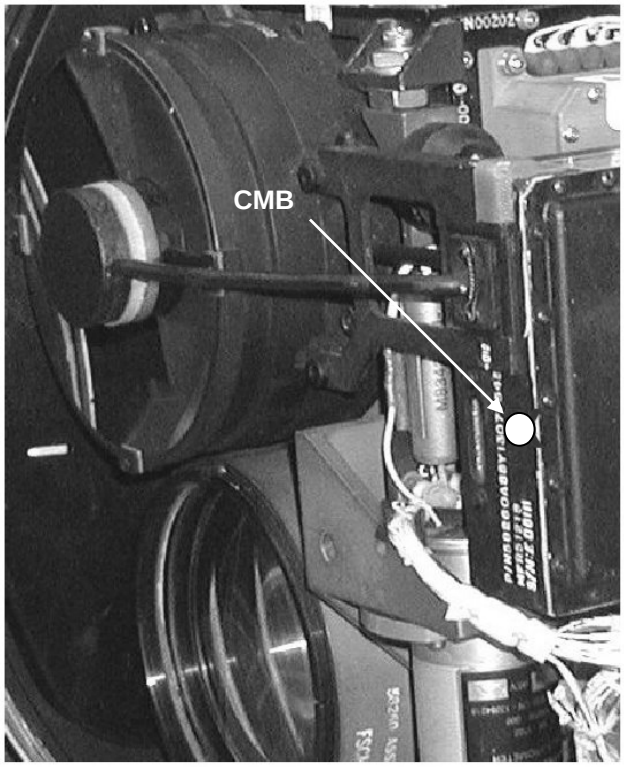

Figure 157. Laser Tracker/Receiver (AH-64A/D) CMB Location

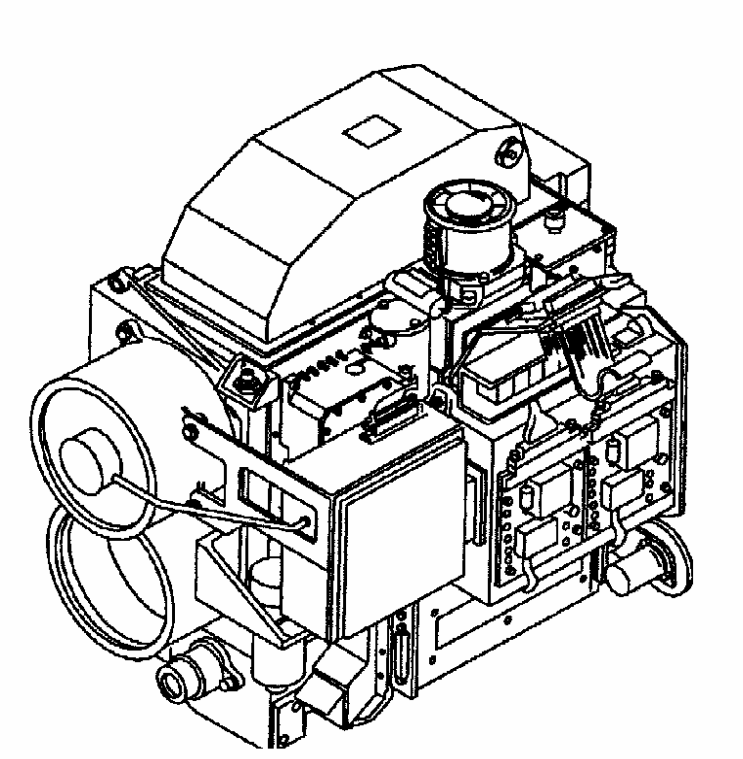

Figure 158. Laser Tracker/Receiver (AH-64A/D)

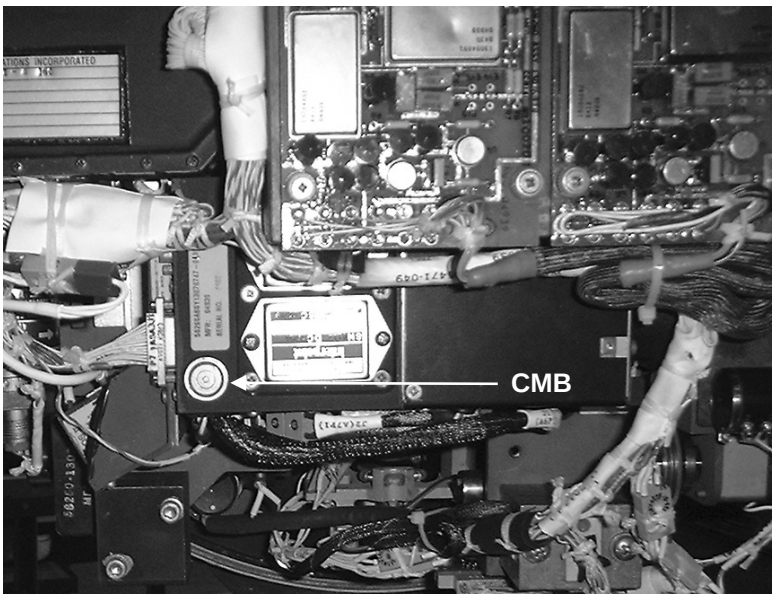

Figure 159. TV Sensor (AH-64A/D) with CMB Installed

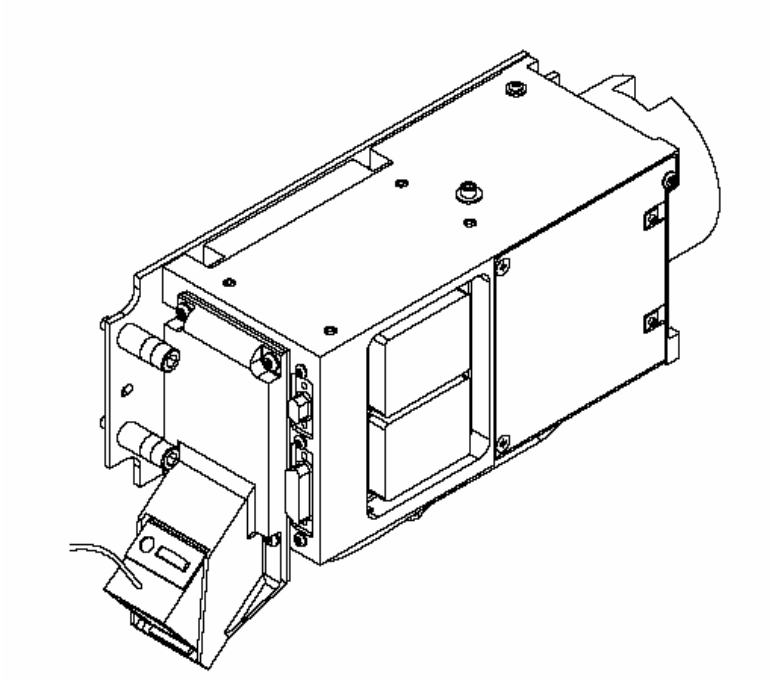

Figure 160. TV Sensor (AH-64A/D)

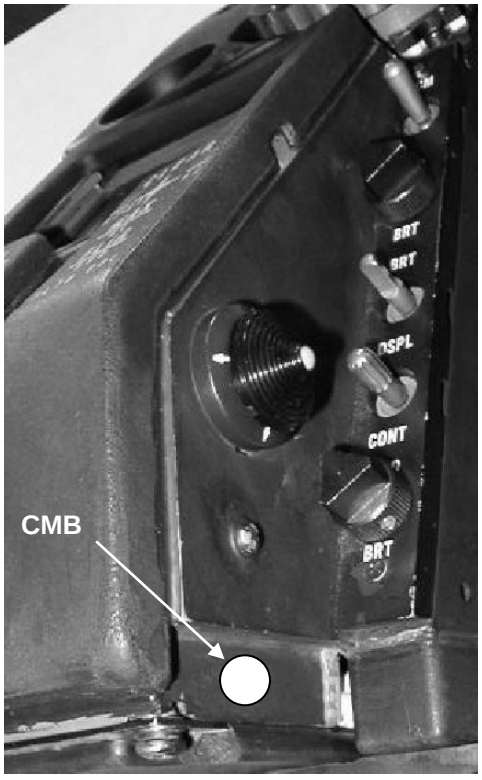

Figure 161. Control Panel (AH-64A/D) CMB Location

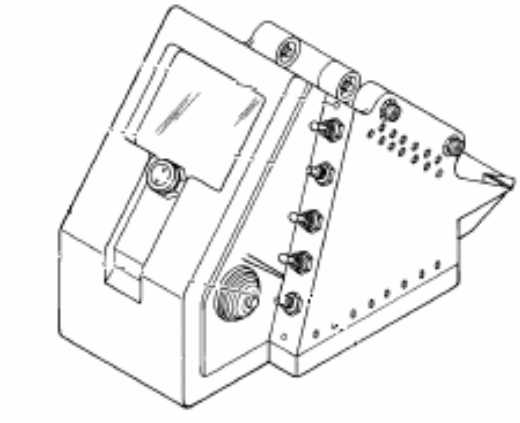

Figure 162. Control Panel (AH-64A/D)

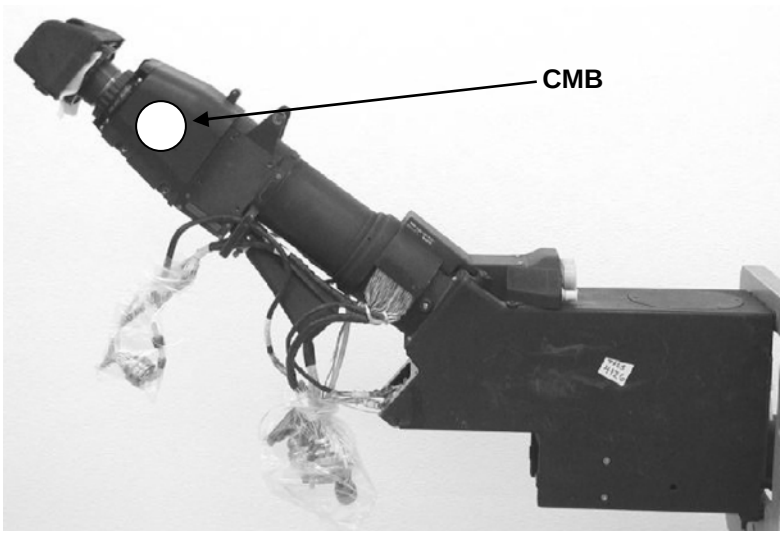

Figure 163. Optical Relay Column (AH-64A/D) CMB Location

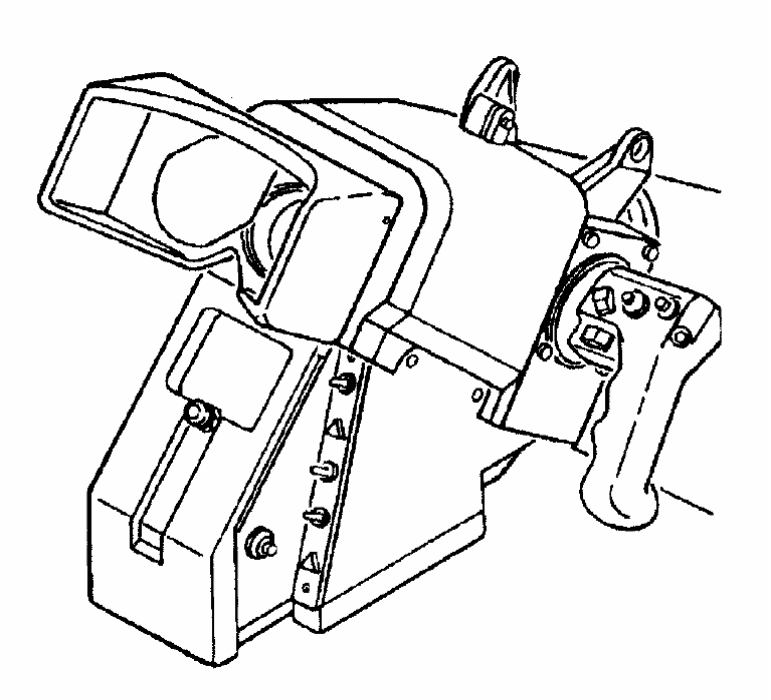

Figure 164. Optical Relay Column (AH-64A/D)

Figure 165. IVD HDD (AH-64A/D) CMB Location

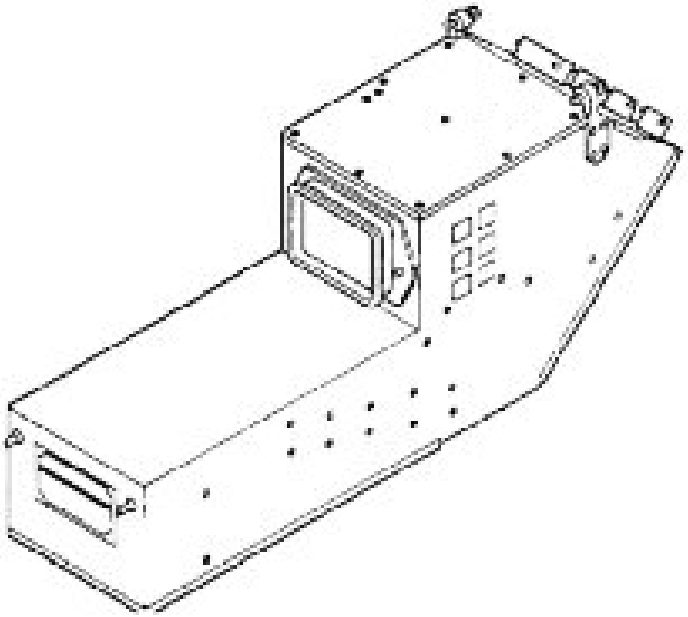

Figure 166. IVD HDD (AH-64A/D)

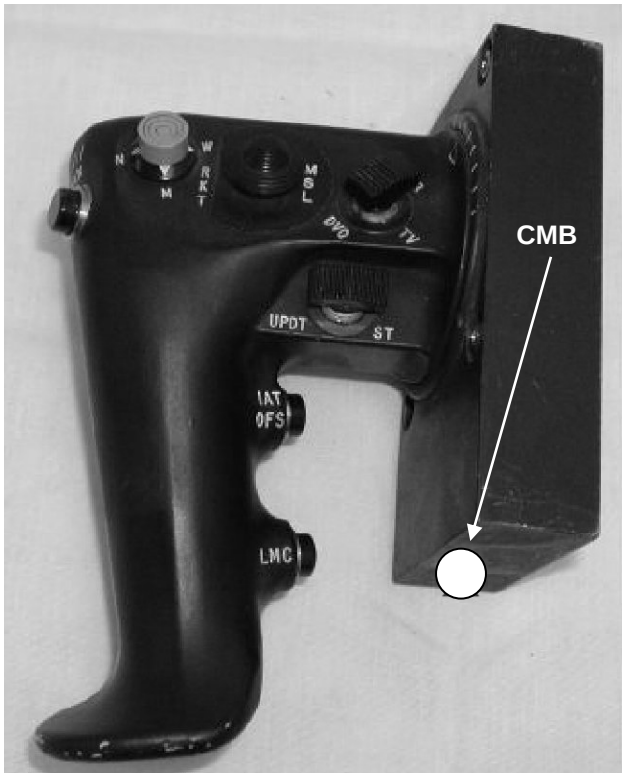

Figure 167. Left Hand Grip (AH-64A/D) CMB Location

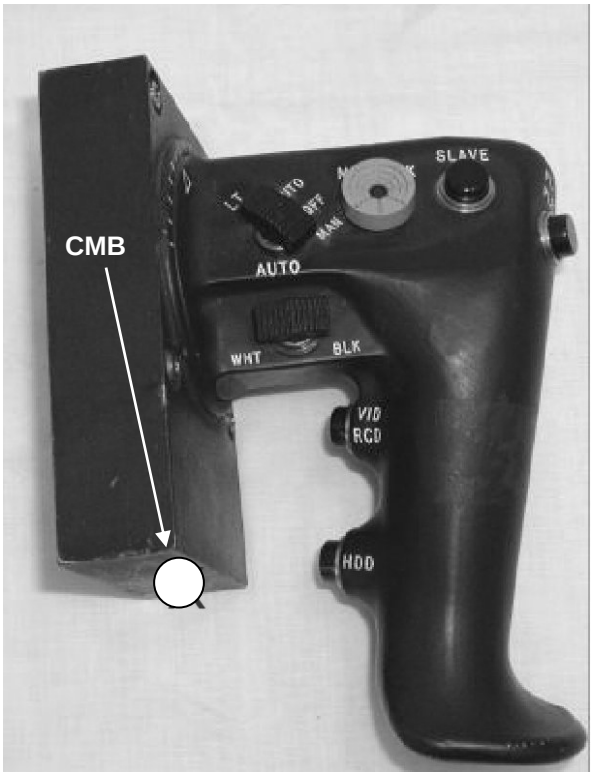

Figure 168. Right Hand Grip (AH-64A/D) CMB Location

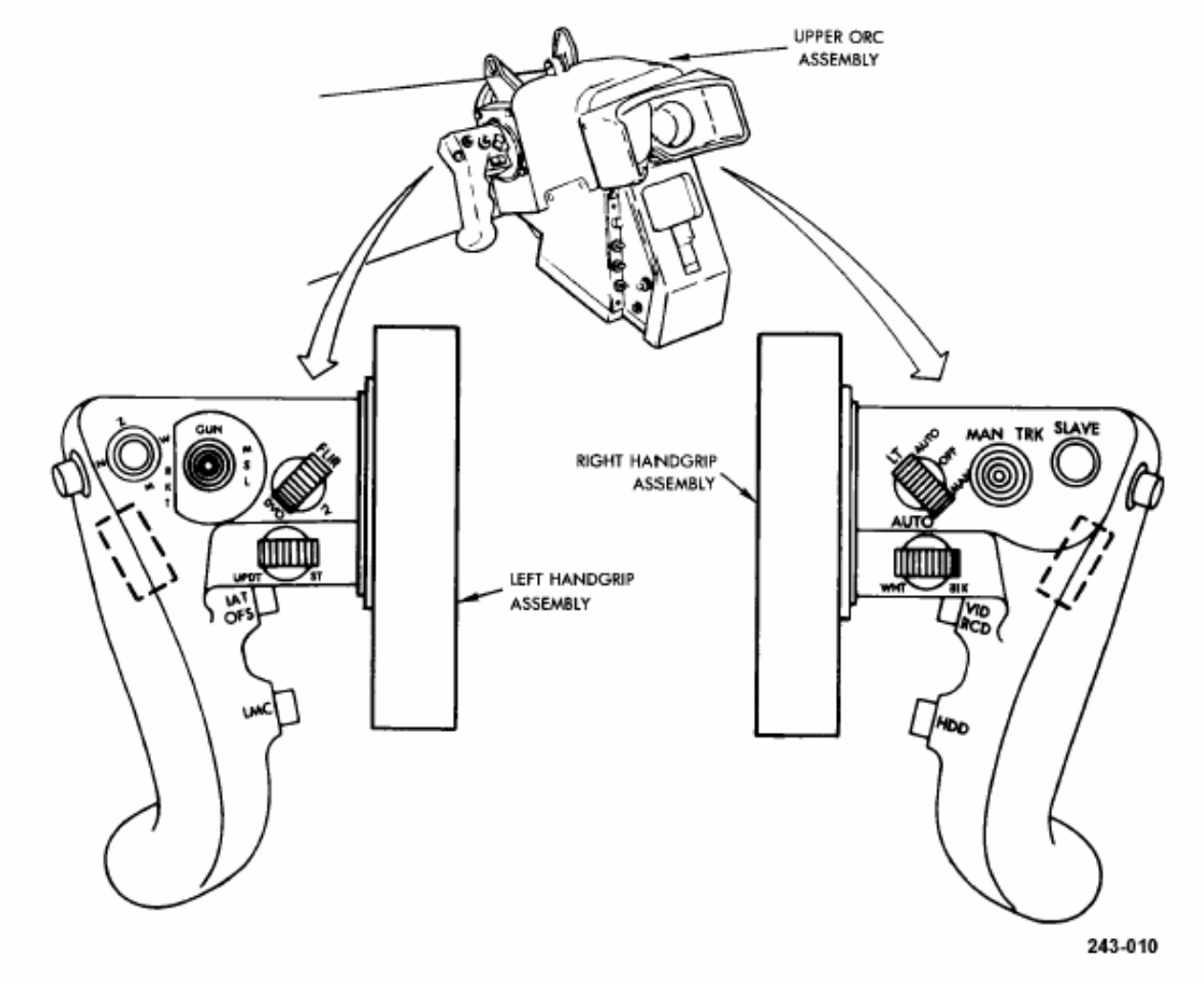

Figure 169. Left Hand & Right Hand Grips (AH-64A/D)

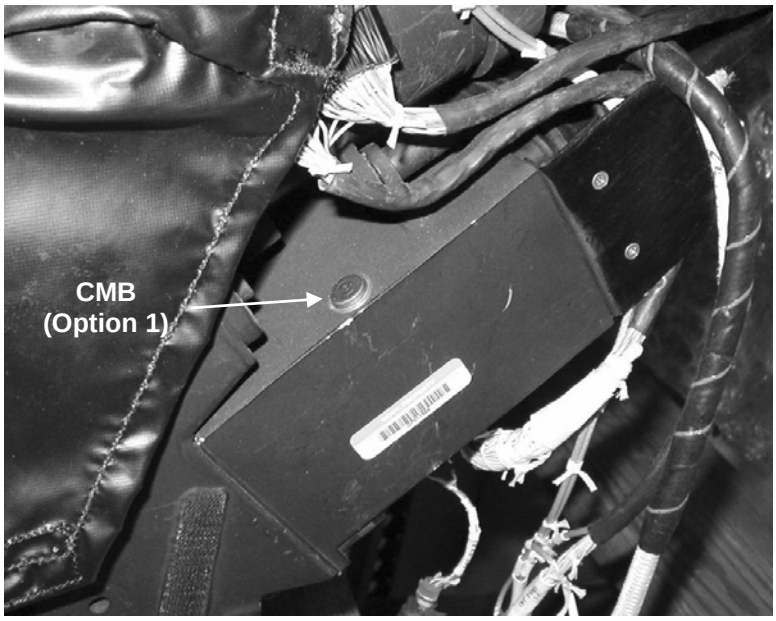

Figure 170. Alphanumeric Display (AH-64A/D) with CMB Installed

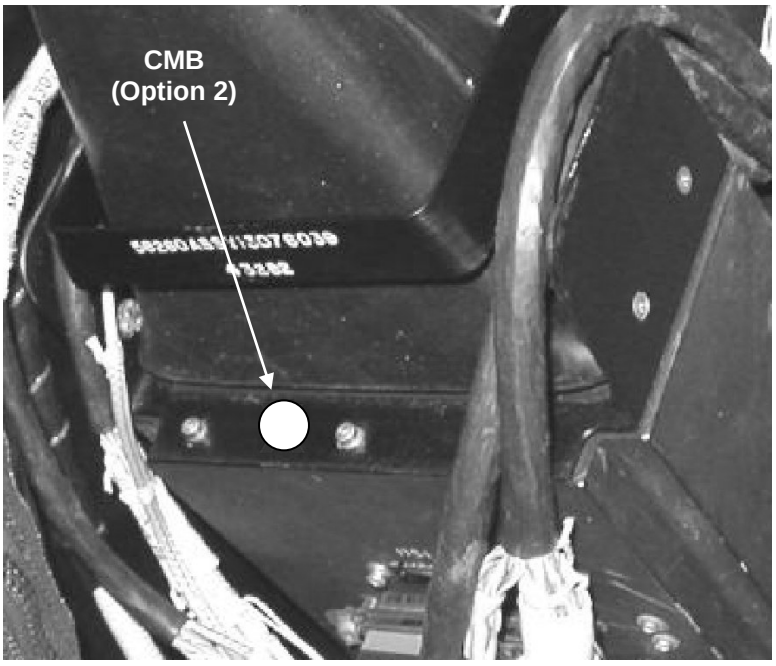

Figure 171. Alphanumeric Display (AH-64A/D) CMB Location

Note: “Option 1” shown above is the current preferred location. “Option 2” is an allowable location (and was previously the preferred location) but is on a bracket that may be replaced during component repair.

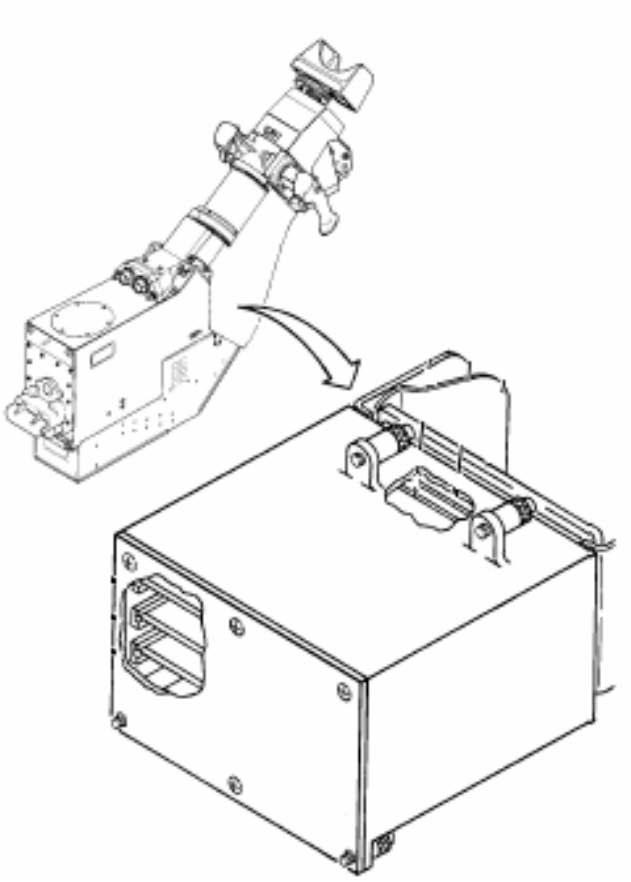

Figure 172. Alphanumeric Display (AH-64A/D)

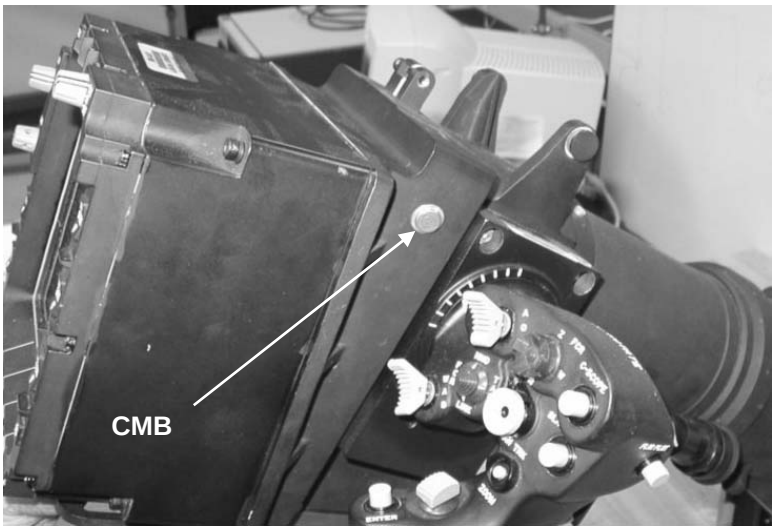

Figure 173. TEDAC Sub-Assembly (AH-64A/D) with CMB Installed

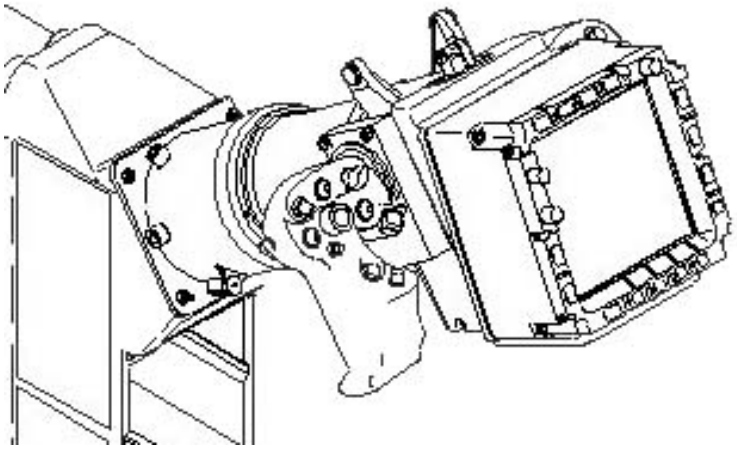

Figure 174. TEDAC Sub-Assembly (AH-64A/D)

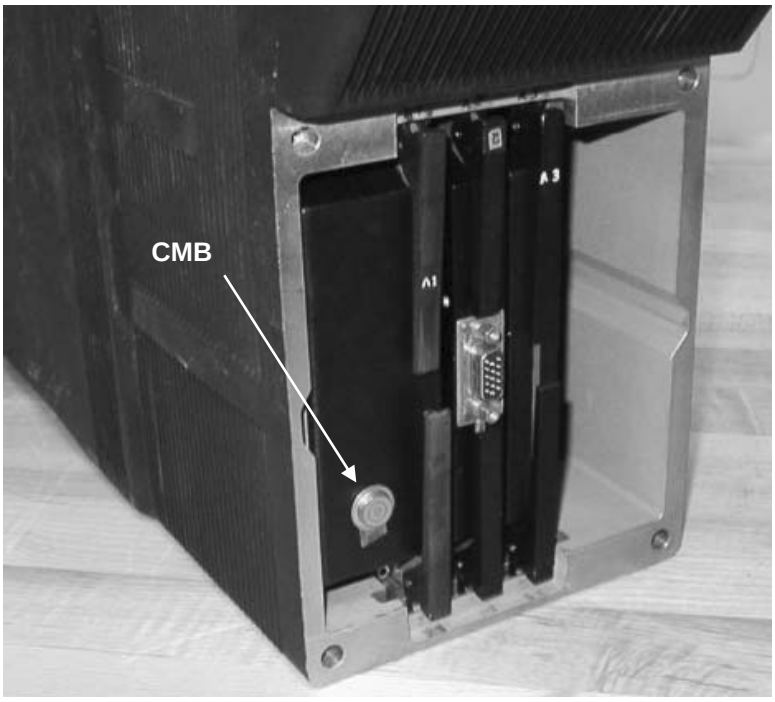

Figure 175. TEDAC Power Supply Module (AH-64A/D) with CMB Installed

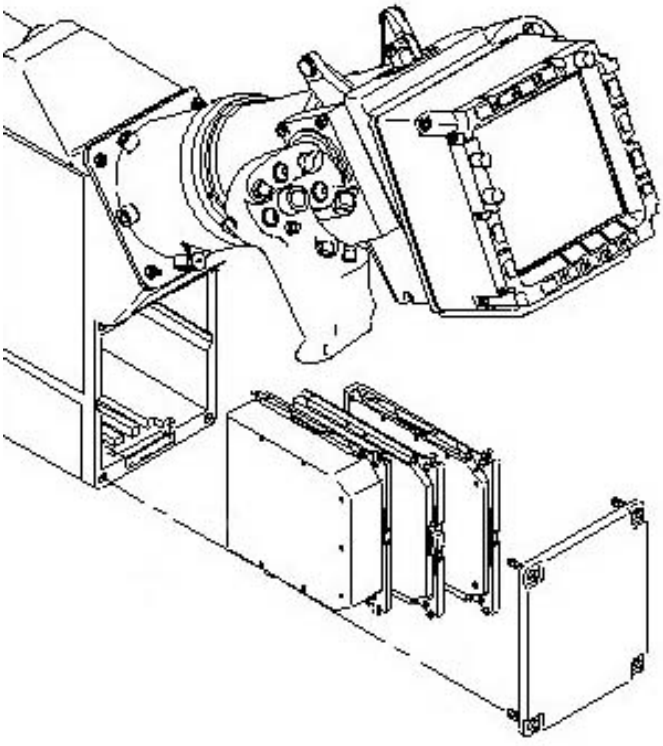

Figure 176. TEDAC Power Supply Module (AH-64A/D)

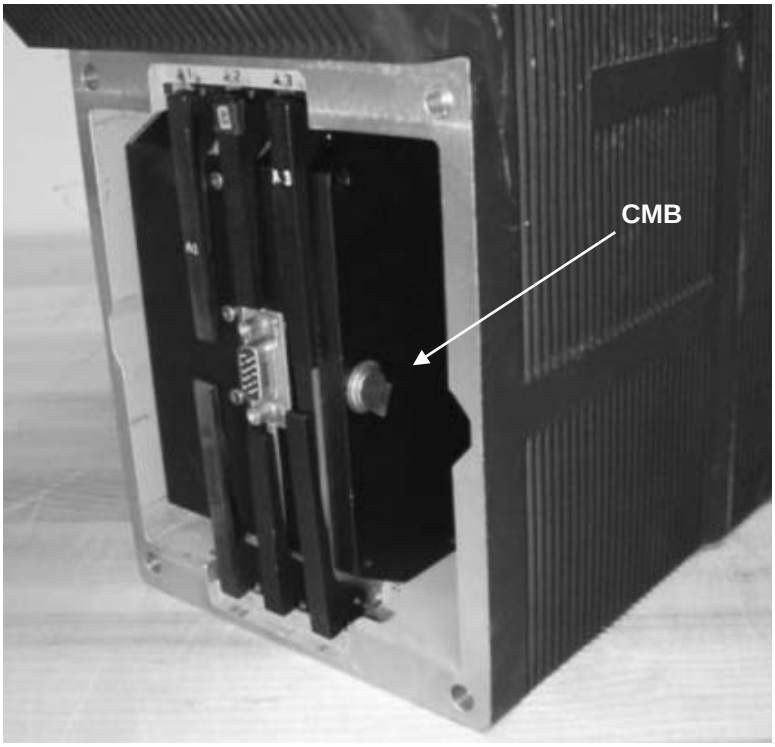

Figure 177. TEDAC Video Electronics Module (AH-64A/D) with CMB Installed

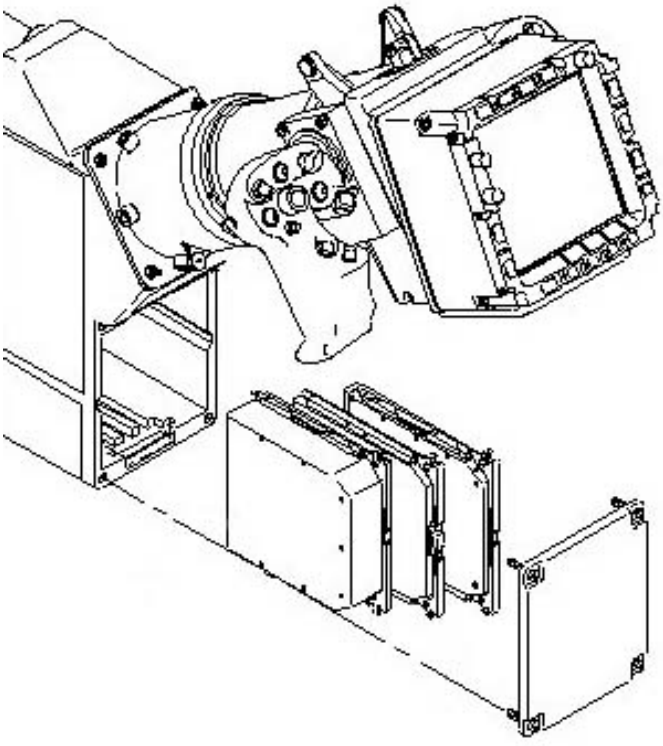

Figure 178. TEDAC Video Electronics Module (AH-64A/D)

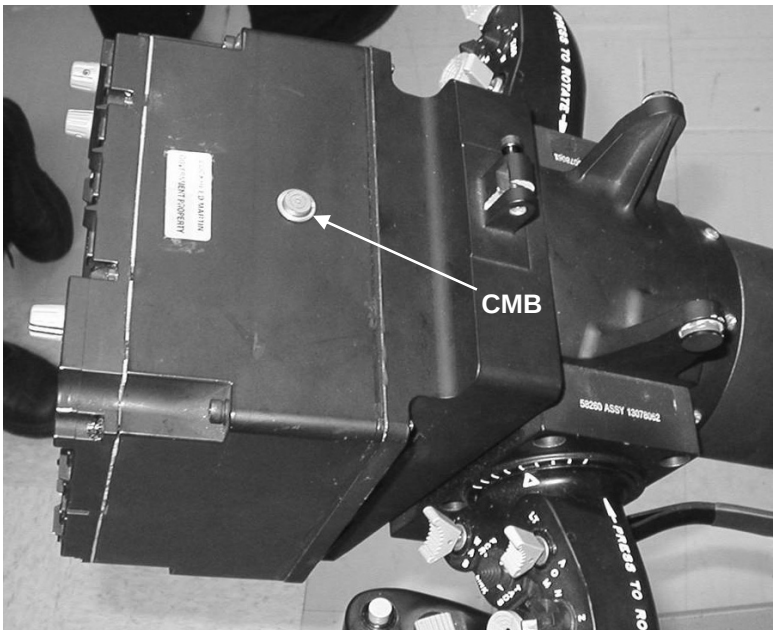

Figure 179. TEDAC Display Unit (AH-64A/D) with CMB Installed

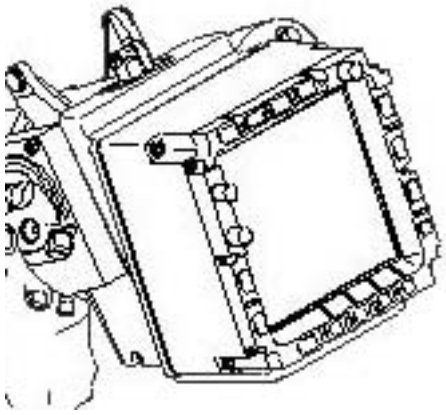

Figure 180. TEDAC Display Unit (AH-64A/D)

Figure 181. PNVS Turret (AH-64A/D) with CMB Installed

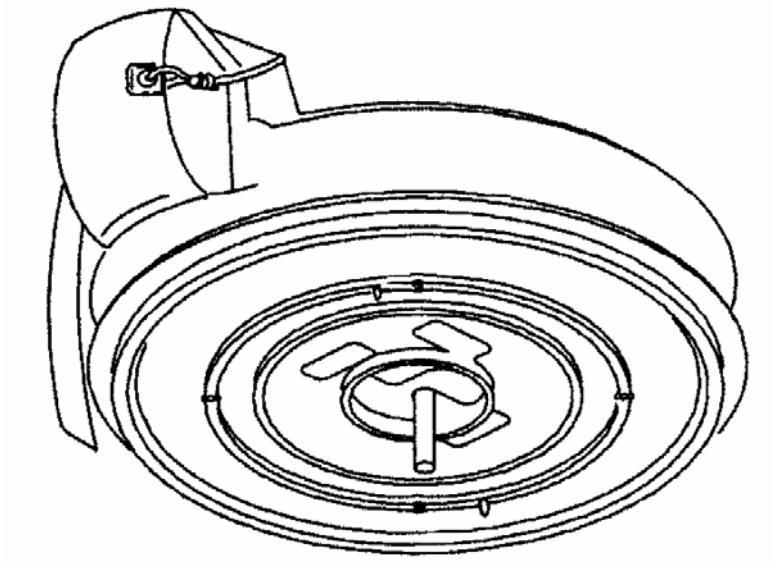

Figure 182. PNVS Turret (AH-64A/D)

Figure 183. Azimuth Gimbal Assembly (AH-64A/D) CMB Location

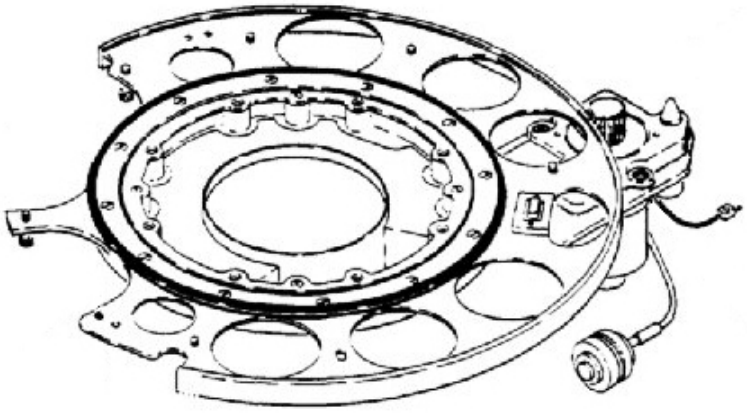

Figure 184. Azimuth Gimbal Assembly (AH-64A/D)

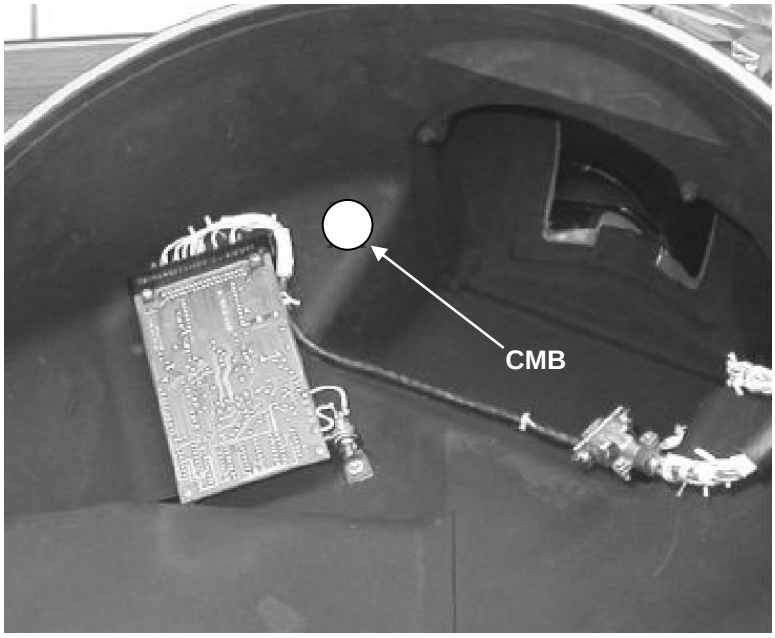

Figure 185. PNVS Shroud Assembly (AH-64A/D) CMB Location

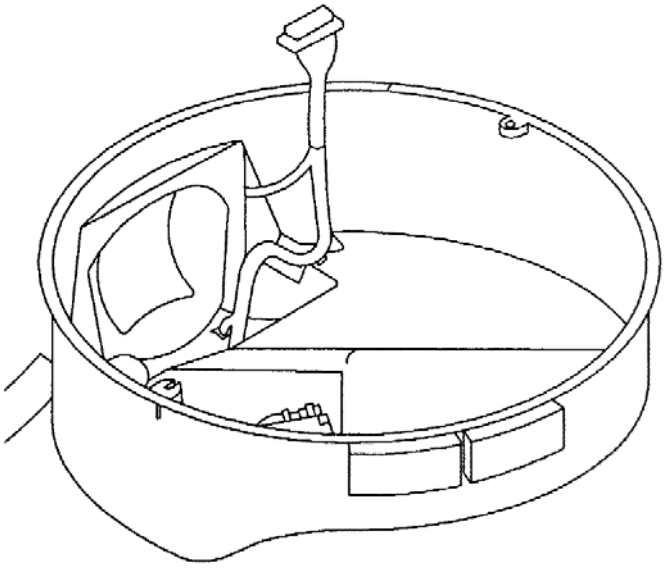

Figure 186. PNVS Shroud Assembly (AH-64A/D)

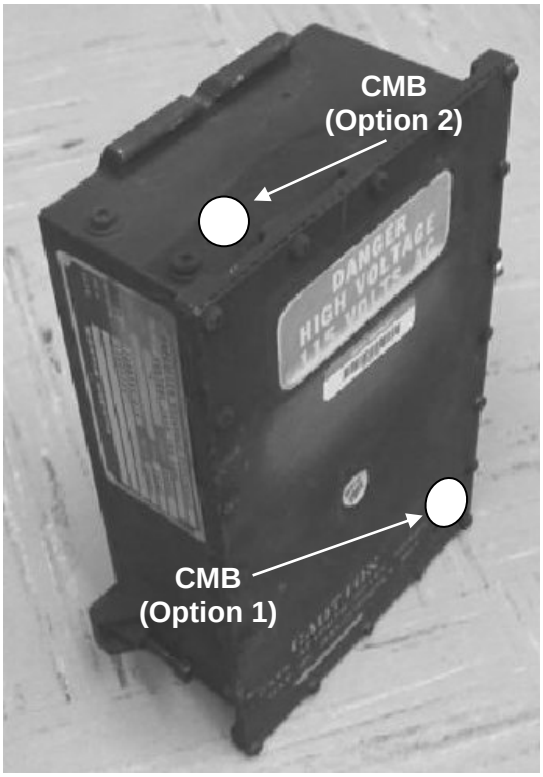

Figure 187. PNVS Electronic Control Amp Assembly (AH-64A/D) CMB Location

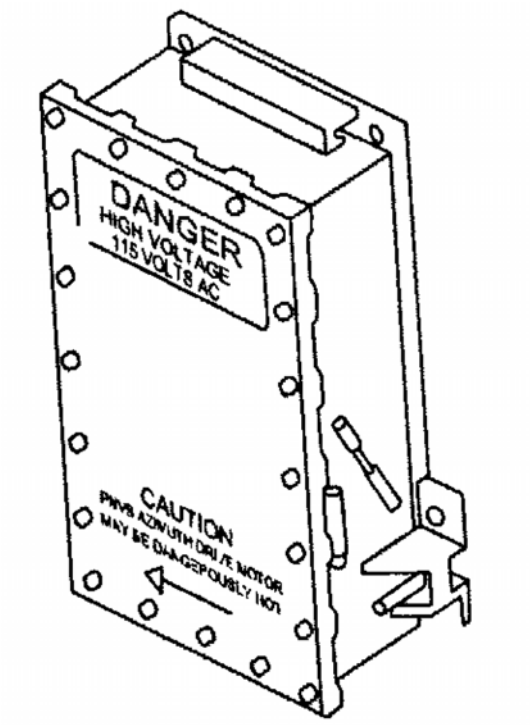

Figure 188. PNVS Electronic Control Amp Assembly (AH-64A/D)

Note: “Option 1” shown above is the preferred location. “Option 2” is an allowable location (and was previously the preferred location) but is less easily accessed with a CMB read/write device when the component is installed.

Figure 189. PNVS Electronic Unit (AH-64A/D) CMB Location

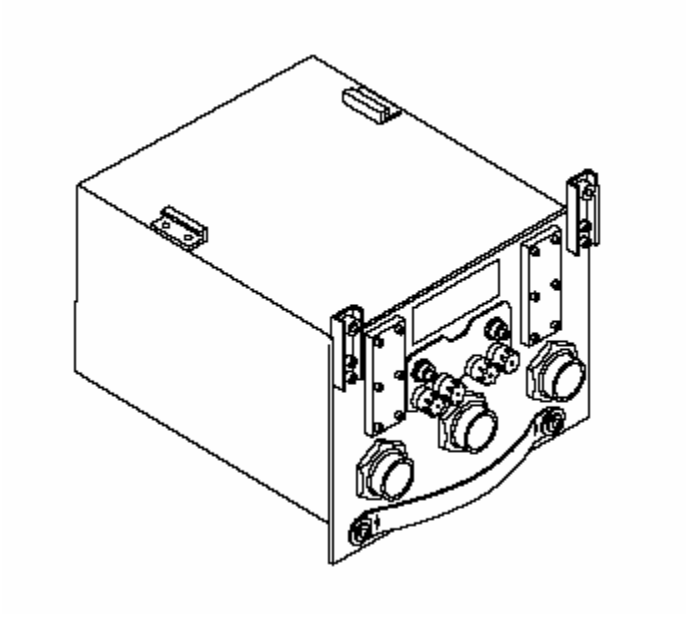

Figure 190. PNVS Electronic Unit (AH-64A/D)

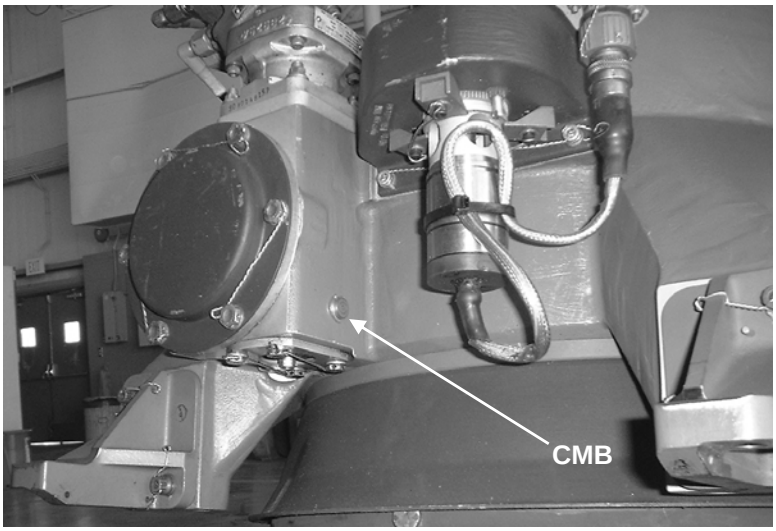

Figure 191. Azimuth Drive Assembly (AH-64A/D) with CMB Installed

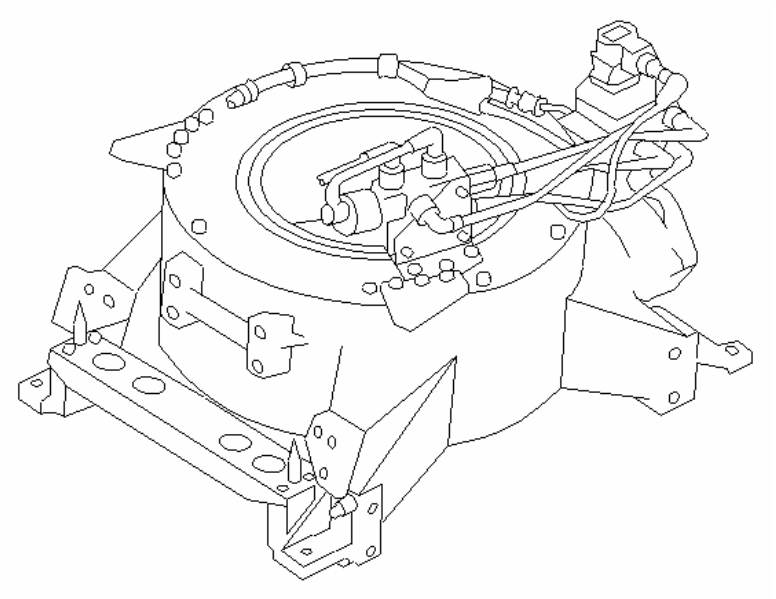

Figure 192. Azimuth Drive Assembly (AH-64A/D)

Note: This component's 2410 reporting requirement was dropped in April 2004. Therefore, CMB installations on this component have ceased. There is, however, no requirement to remove a previously installed CMB.

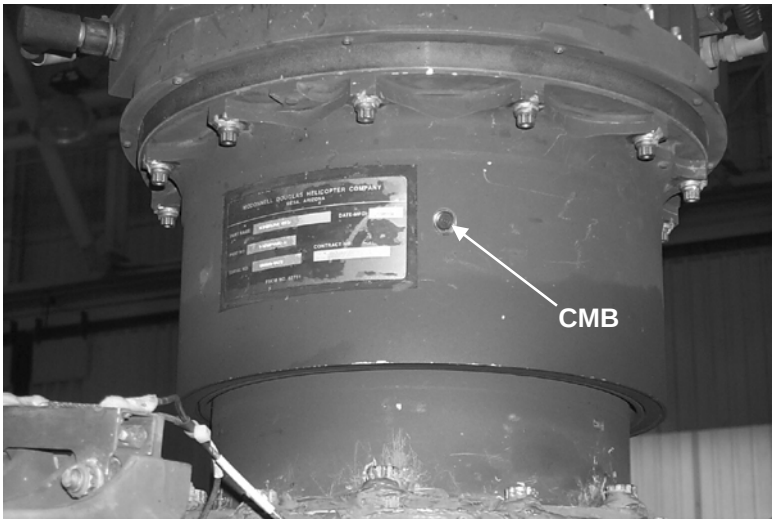

Figure 193. Derotation Unit Assembly (AH-64D) with CMB Installed

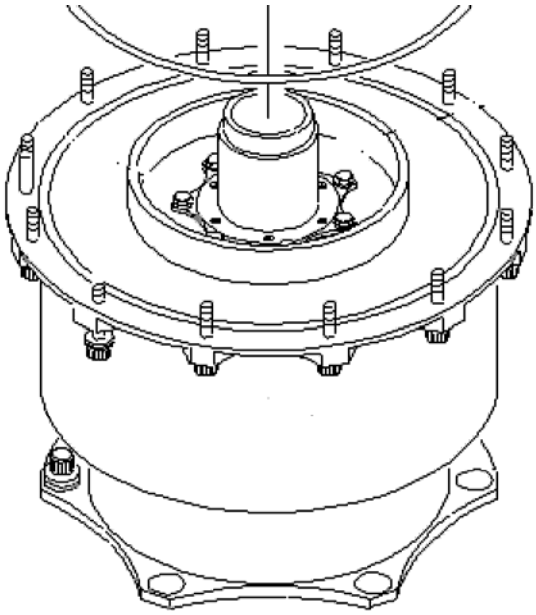

Figure 194. Derotation Unit Assembly (AH-64D)

Figure 195. Symbol Generator (AH-64A) with CMB Installed

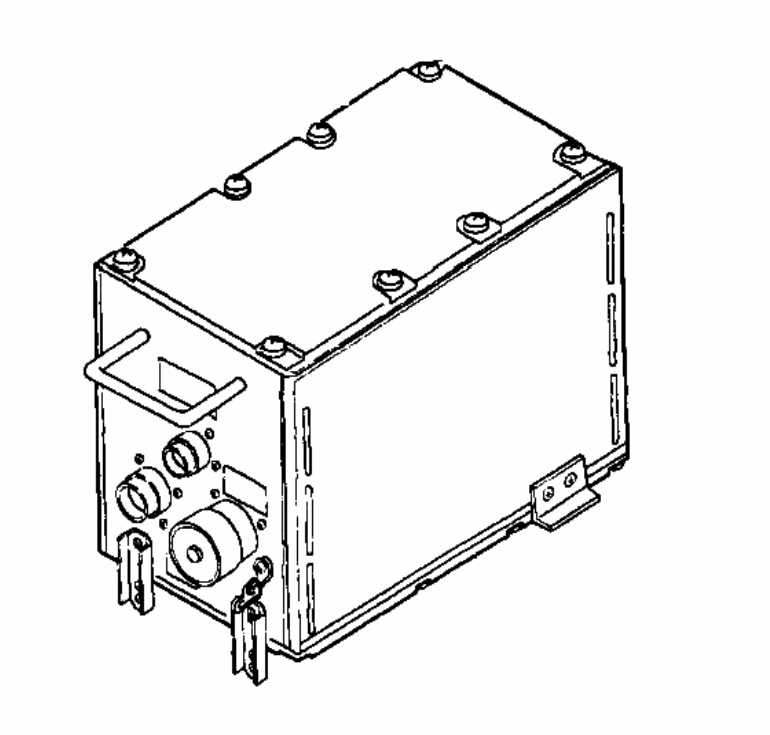

Figure 196. Symbol Generator (AH-64A)

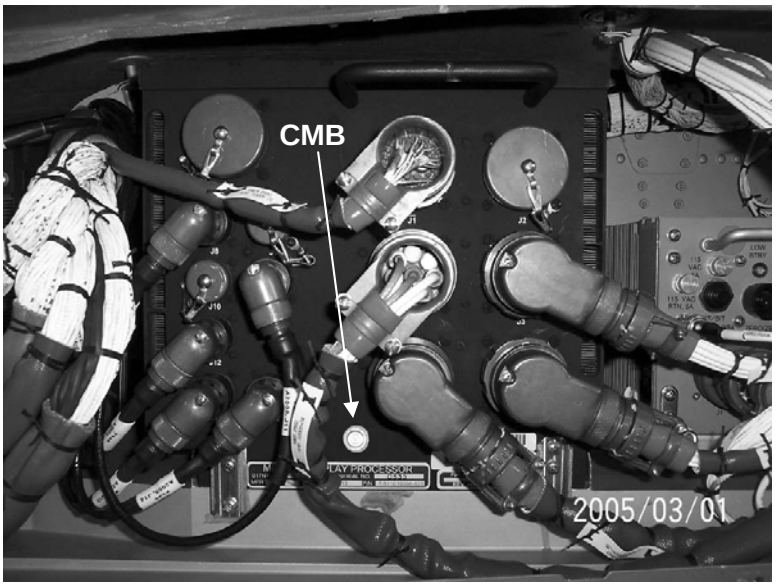

Figure 197. Display Processor, Left (AH-64D) with CMB Installed

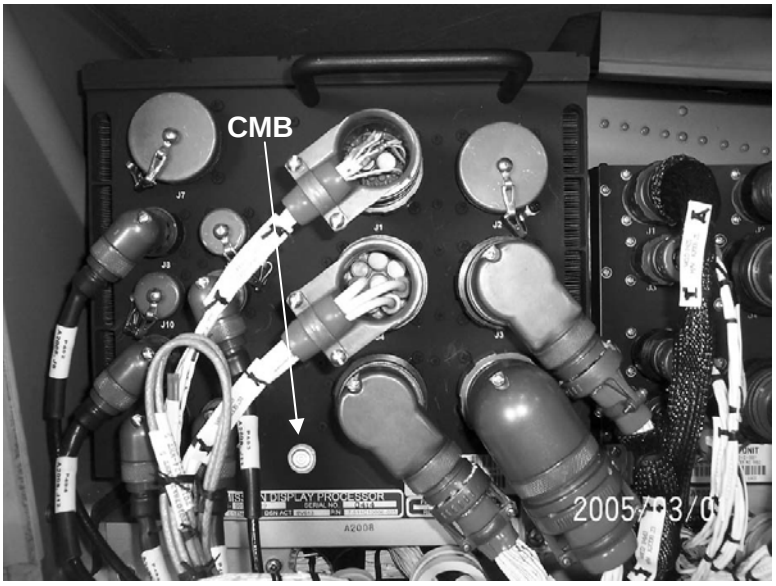

Figure 198. Display Processor, Right (AH-64D) with CMB Installed

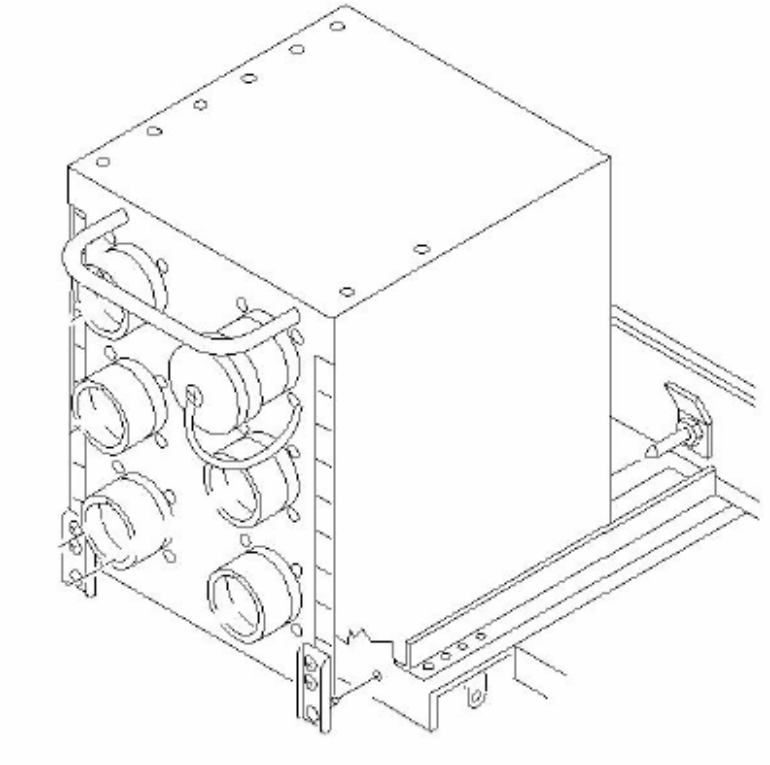

Figure 199. Display Processor (AH-64D)

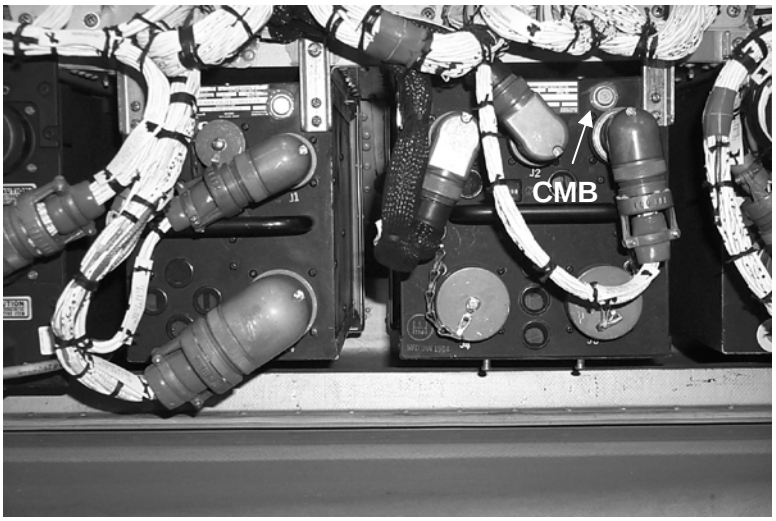

Figure 200. IHADSS Sight Electronic Unit (AH-64A/D) with CMB Installed

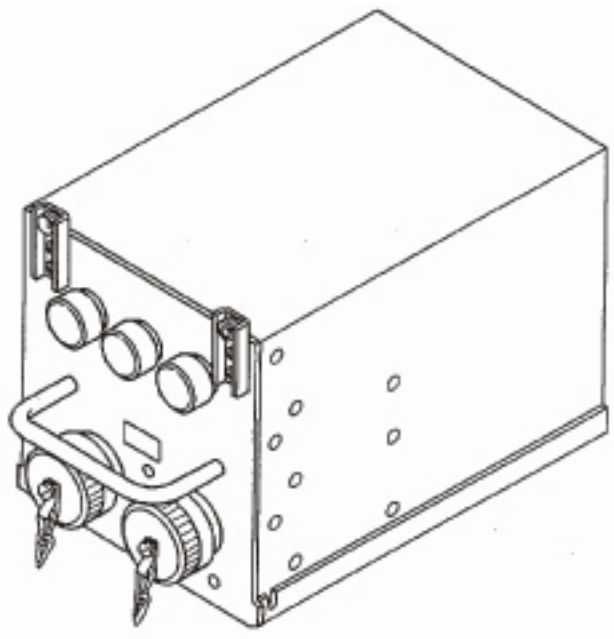

Figure 201. IHADSS Sight Electronic Unit (AH-64A/D)

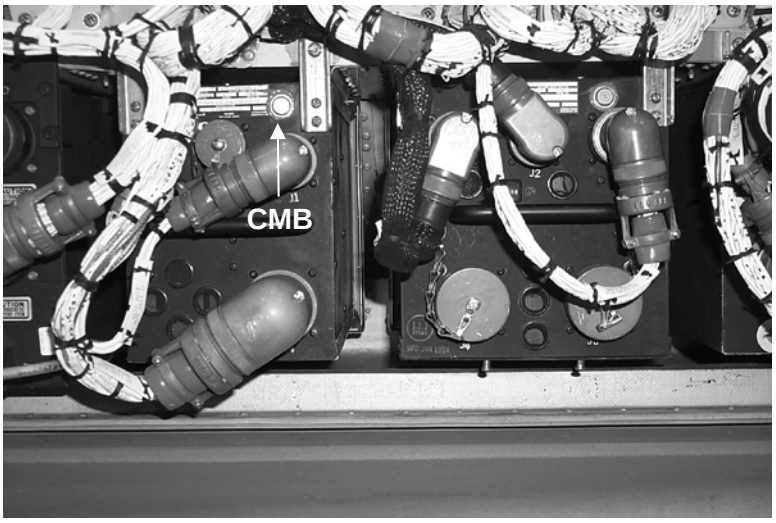

Figure 202. IHADSS Display Electronic Unit (AH-64A/D) with CMB Installed

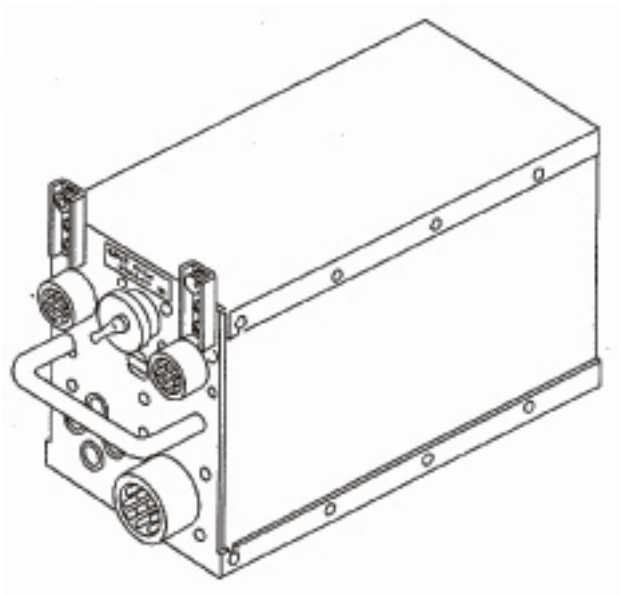

Figure 203. IHADSS Display Electronic Unit (AH-64A/D)

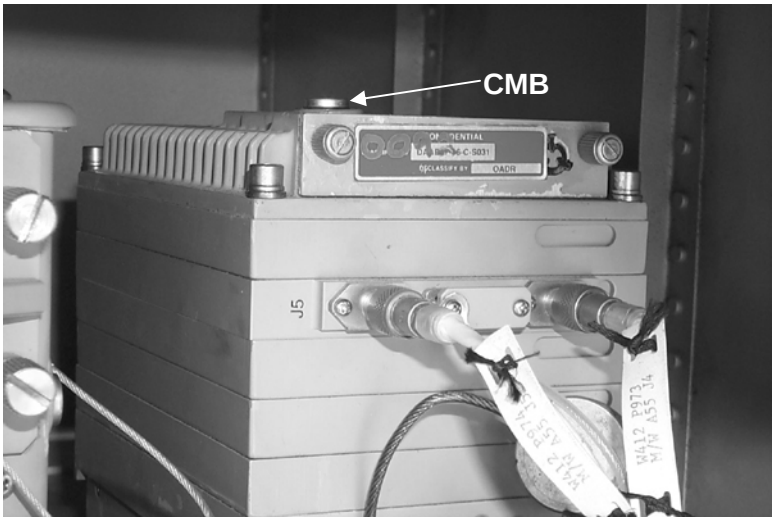

Figure 204. Comparator/Processor (AH-64A/D) with CMB Installed

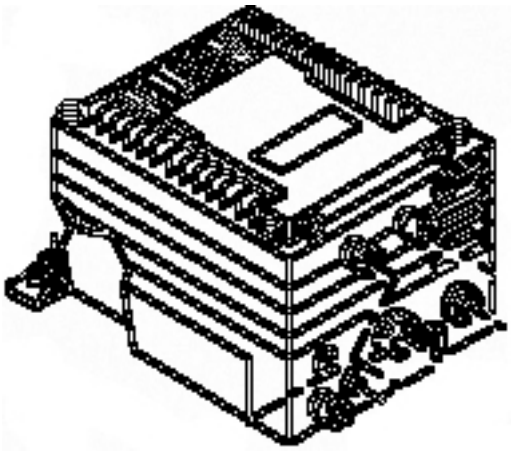

Figure 205. Comparator/Processor (AH-64A/D)

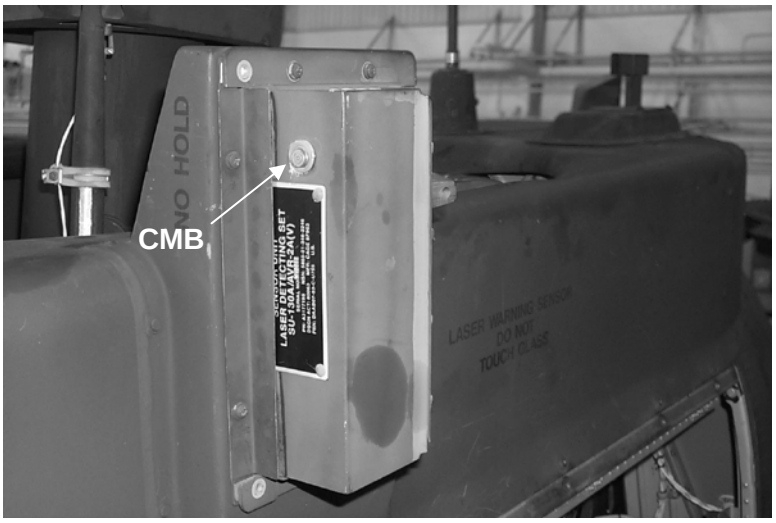

Figure 206. Laser Sensor Unit (AH-64A/D) with CMB Installed

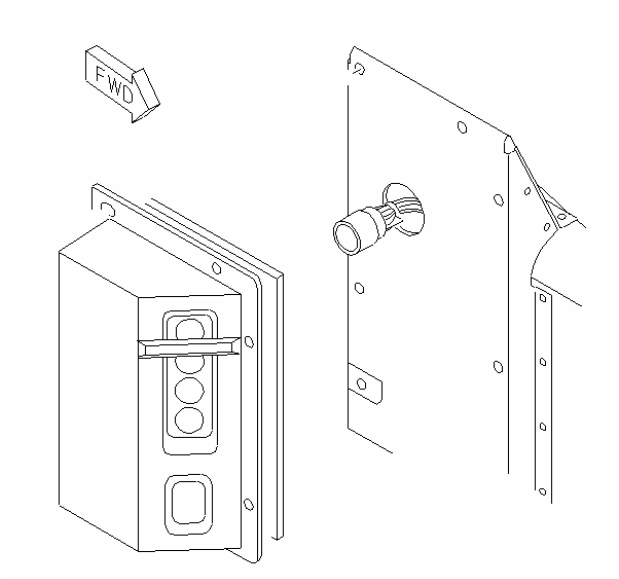

Figure 207. Laser Sensor Unit (AH-64A/D)

Figure 208. Comparator (AH-64A/D) with CMB Installed

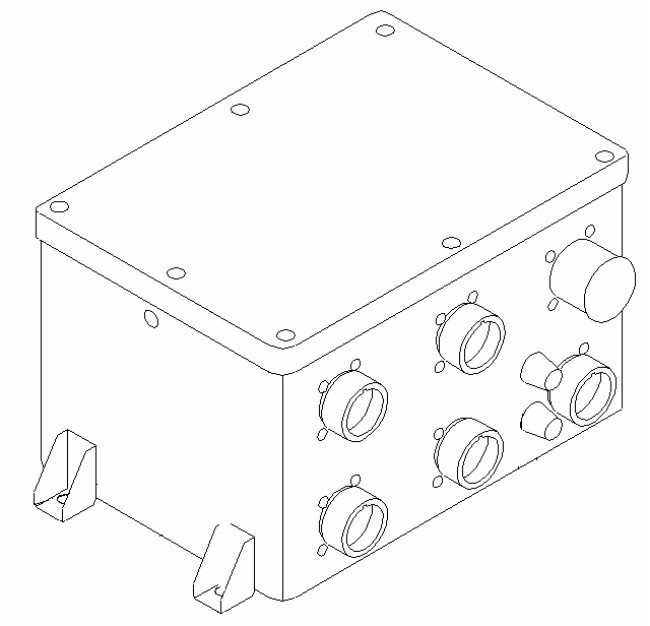

Figure 209. Comparator (AH-64A/D)

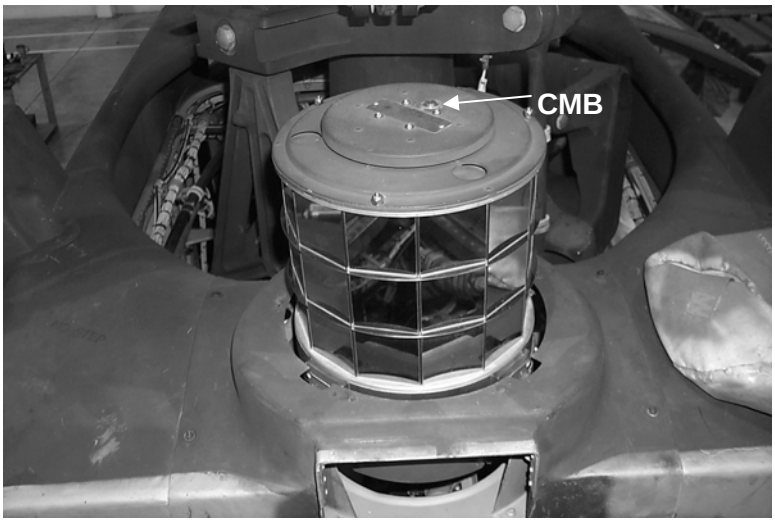

Figure 210. Countermeasure Transmitter (AH-64A/D) with CMB Installed

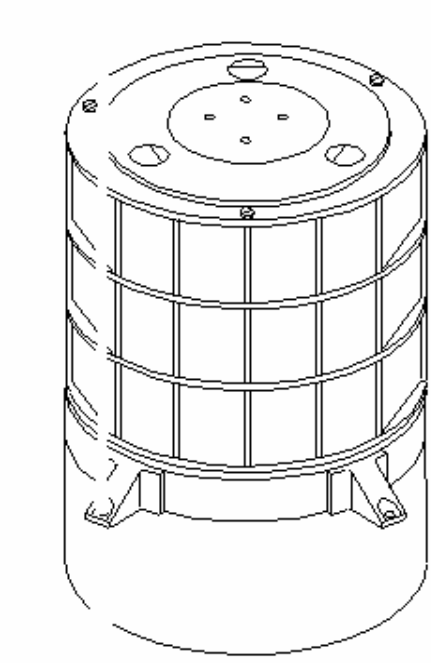

Figure 211. Countermeasure Transmitter (AH-64A/D)

SECTION VI. CMB TABLES

6. CMB TABLES

6.1 Description: This task includes tables that identify the individual assemblies and their subassemblies to which CMBs are to be attached and the expendable supplies used in installing CMBs.

6.2 General Information: The U.S. Army has designated the individual components to which CMBs are to be attached. All such components are DA Form 2410 items. Table 1 contains all AH-64 components that require a CMB. Use this table to identify whether each assembly or subassembly receives a permanent CMB or a CMB tag. Also, use Table 2 to identify the expendable supplies used in installing CMBs.

NOTE

The aircraft components requiring maintenance management and historical data reports in this section are taken from TB 1-1500-341-01.

TABLE 1. CMB 2410 Component Listing

ITEM[1]	WUC[2]	CMB[3]	CMB TAG[4]	FIGURE(S)
ENG MOUNT SPT FWD INBD	02B10N	**YES**	no	3, 4
WING ASSEMBLY LH	02B18A	**YES**	no	5, 6
WING ASSEMBLY RH	02B18B	**YES**	no	5, 6
MAST, M/R SUPPORT	02B27	**YES**	no	7, 8
BASE ASSEMBLY MAST SUPPORT	02B28	**YES**	no	9, 10
STRUT FWD CENTER LH	02B29A	**YES**	no	11, 12
STRUT FWD CENTER RH	02B29B	**YES**	no	11, 12
STRUT AFT CENTER LH	02B31A	**YES**	no	11, 12
STRUT AFT CENTER RH	02B31B	**YES**	no	11, 12
SPAR BOX ASSEMBLY VERT STAB	02C15D	no	**YES**	
ELASTOMERIC MOUNT	02C15K01	no	**YES**	
ELASTOMERIC MOUNT	02C15K02	no	**YES**	
ELASTOMERIC MOUNT	02C15K03	no	**YES**	
ELASTOMERIC MOUNT	02C15K04	no	**YES**	
SHOCK STRUT ASSEMBLY (Tail)	03B01	**YES**	no	13, 14
T700-GE-701C ENGINE ASSEMBLY	04A	**YES**	no	15, 16
T700-GE-701 ENGINE ASSEMBLY	04A	**YES**	no	15, 16
COLD SECTION MODULE	04A01	no	no	
POWER TAKEOFF DRIVE	04A01B	no	**YES**	
COMPRESSOR ROTOR ASSEMBLY	04A01C	no	**YES**	
GAS GEN TURBINE SHAFT	04A01C01	no	**YES**	

TABLE 1. CMB 2410 Component Listing

ITEM[1]	WUC[2]	CMB[3]	CMB TAG[4]	FIGURE(S)
INNER BALANCE PISTON SE	04A01C02	no	**YES**	
COMPRESSOR DISCHARGE SE	04A01C03	no	**YES**	
COMPRESSOR REAR SHAFT	04A01C04	no	**YES**	
NO 3 LABYRINTH SEAL	04A01C05	no	**YES**	
VORTEX SPOILER	04A01C06	no	**YES**	
TIE ROD, COMPRESSOR	04A01C07	no	**YES**	
RING, SPACER COMPRESSOR	04A01C08	no	**YES**	
COMPRESSOR IMPELLER	04A01D	no	**YES**	
OUTPUT SHAFT ASSEMBLY	04A01G	no	**YES**	
NO 1 BALL BEARING	04A01G01	no	**YES**	
NO 2 ROLLER BEARING	04A01G02	no	**YES**	
STAGE 1 BLISK	04A01H	no	**YES**	
STAGE 2 BLISK	04A01J	no	**YES**	
STAGE 3 & 4 BLISK	04A01K	no	**YES**	
STAGE 5 BLISK	04A01L	no	**YES**	
NO 3 BALL BEARING	04A01M	no	**YES**	
NO 4 ROLLER BEARING	04A01N	no	**YES**	
COMBUSTION LINER	04A02A	no	**YES**	
MATCHED ROTOR/STATOR ASSEMBLY	04A02B	no	**YES**	
STAGE 1 TURBINE DISK	04A02B01	no	**YES**	
STAGE 1 BLADE SET	04A02B02	no	**YES**	
STATOR GAS GENERATOR	04A02B03	no	**YES**	
STAGE 2 TURBINE DISK	04A02B04	no	**YES**	
STG 1 FWD COOLING PLATE	04A02B05	no	**YES**	
STG 1 FWD COOLING PLATE	04A02B06	no	**YES**	
STG 1 AFT COOLING PLATE	04A02B06	no	**YES**	
STAGE 2 BLADE SET	04A02B07	no	**YES**	
STG 2 FWD COOLING PLATE	04A02B08	no	**YES**	
STG 2 FWD COOLING PLATE	04A02B09	no	**YES**	
STG 2 AFT COOLING PLATE	04A02B09	no	**YES**	
BOLT, SHOULDER STG 1	04A02B10	no	**YES**	
WEIGHT, COUNTERBALANCE	04A02B11	no	**YES**	
ROTOR GAS GENERATOR	04A02B14	no	**YES**	
STAGE 1 NOZZLE ASSEMBLY	04A02C	no	**YES**	
POWER TURBINE MODULE	04A03	no	**YES**	
POWER TURBINE ROTOR	04A03E	no	**YES**	
STAGE 3 TURBINE DISK	04A03E01	no	**YES**	
STAGE 3 BLADE SET	04A03E01A	no	**YES**	
STAGE 4 TURBINE DISK	04A03E02	no	**YES**	
STAGE 4 BLADE SET	04A03E02A	no	**YES**	
POWER TURBINE SHAFT	04A03F	no	**YES**	

TABLE 1. CMB 2410 Component Listing

ITEM[1]	WUC[2]	CMB[3]	CMB TAG[4]	FIGURE(S)
NO 5 BALL BEARING	04A03H	no	**YES**	
NO 5 ROLLER BEARING	04A03H	no	**YES**	
NO 6 BALL BEARING	04A03J	no	**YES**	
ACCESSORY MODULE	04A04	no	**YES**	
PARTICLE SEPARATOR BLOWER	04A04C	no	**YES**	
FUEL CONTROL (HMU)	04A05A	no	**YES**	
O/S DRAIN VALVE ASSEMBLY	04A05N	no	**YES**	
ELECTRICAL CONTROL UNIT	04A06A	**YES**	no	17, 18
HISTORY RECORDER	04A06B	**YES**	no	19, 20
COOLER, OIL	04A08B	no	**YES**	
ANTI-ICE VALVE	04A09A	no	**YES**	
MAIN ROTOR HEAD ASSEMBLY	05A01	**YES**	no	21, 22
HUB SUB ASSEMBLY	05A01A	no	no	
M/R HUB RETENTION NUT	05A01G	no	**YES**	
STRETCHED STRAP	05A01H	no	**YES**	
PITCH HOUSING	05A01I	**YES**	no	23, 24
LEAD LAG LINK ASSEMBLY	05A01I01	**YES**	no	25, 26
FEATHERING BEARING	05A01I02	**YES**	no	27, 28
PLATE, UPPER	05A01J	no	**YES**	
PLATE, LOWER	05A01K	no	**YES**	
LOWER SHOE ASSEMBLY	05A01V	**YES**	no	29, 30
TRUNNION, DAMPER	05A01W	**YES**	no	31, 32
BEARING, UPPER	05A01X	no	**YES**	
BEARING, LOWER	05A01Y	no	**YES**	
LEAD LAG DAMPER	05A01Z	**YES**	no	33, 34
ROD END ASSEMBLY (DAMPER)	05A01Z01	no	**YES**	
MAIN ROTOR BLADE	05A02	**YES**	no	35, 36
SWEPT TIP CAP	05A02E	no	**YES**	
M/R BLADE ATTACH PIN	05A02H	no	**YES**	
M/R SWASHPLATE ASSEMBLY	05A03A	**YES**	no	37, 38
NON ROTATING SWASHPLATE	05A03A01	no	**YES**	
M/R ROTATING SWASHPLATE	05A03A02	no	**YES**	
M/R SWASHPLATE BALL BRN	05A03A04	no	**YES**	
ARM ASSEMBLY, FLIGHT CONT	05A03B01	**YES**	no	39, 40
M/R PITCH LINK ASSEMBLY	05A03C	**YES**	no	41, 42
PITCH ROD END	05A03C01	no	**YES**	
TAIL ROTOR HEAD ASSEMBLY	05B01	**YES**	no	43, 44
TAIL ROTOR FORK ASSEMBLY	05B01N	no	no	
TAIL ROTOR HUB ASSEMBLY	05B01P	**YES**	no	45, 46
TAIL ROTOR STRAP ASSEMBLY	05B01S	no	**YES**	
TAIL ROTOR BLADE ASSEMBLY	05B02	**YES**	no	47, 48

TABLE 1. CMB 2410 Component Listing

ITEM[1]	WUC[2]	CMB[3]	CMB TAG[4]	FIGURE(S)
T/R SWASHPLATE ASSEMBLY	05B03A	**YES**	no	49, 50
BEARING, T/R SWASHPLATE	05B03A02	no	**YES**	
MAIN TRANSMISSION ASSEMBLY	06A	**YES**	no	51, 52
CLUTCH ASSEMBLY	06A07	no	**YES**	
ACC MOD CLUTCH, PRIMARY	06A11A	no	**YES**	
ACC MOD CLUTCH, SECOND	06A11B	no	**YES**	
MAIN ROTOR DRIVE PLATE	06A08	**YES**	no	53, 54
GEARSHAFT, SPUR	06A18	no	**YES**	
NOSE GEARBOX ASSEMBLY RH and LH	06E	**YES**	no	55, 56, 57
QUILL SHAFT ASSEMBLY	06E02	no	**YES**	
INTERMEDIATE GEARBOX ASSEMBLY	06F	**YES**	no	58, 59
DRIVE FLANGE(IG)	06F02	no	**YES**	
TAIL ROTOR GEARBOX ASSEMBLY	06G01	**YES**	no	60, 61
DRIVE FLANGE(TRG)	06G01A	no	**YES**	
T/R STATIC SUPPORT	06G01H01	no	**YES**	
SHAFT APU	06H16	no	**YES**	
HANGER BEARING FWD	06H18C	**YES**	no	62, 63
HANGER BEARING AFT	06H18D	**YES**	no	64, 65
HYDRAULIC PUMP (PRIMARY)	07A01	**YES**	no	66, 67
HYDRAULIC PUMP (UTILITY)	07B01	**YES**	no	66, 67
MANIFOLD, HYDRAULIC (Utility)	07B05	**YES**	no	68, 69
ENGINE STARTER	07D01	**YES**	no	70, 71
SHAFT DRIVEN COMPRESSOR	07D02	no	**YES**	
GENERATOR	09A01	**YES**	no	72, 73
PUMP, SUBMERGED FUEL	10C	**YES**	no	74, 75
VALVE ASSEMBLY, CROSSFEED FUEL	10M01	**YES**	no	76, 77
NITROGEN INERTING UNIT	10P	**YES**	no	78, 79
TAIL ROTOR ACTUATOR	11C25	no	**YES**	
ROD END BEARING(T/R)	11C25C	no	**YES**	
MAIN ROTOR ACTUATOR (COL)	11D01C	no	**YES**	
ROD END BEARING(COLL ACT)	11D01C02	no	**YES**	
COLL ACTUATOR SPT ASSEMBLY	11D01C01	**YES**	no	80, 81
MAIN ROTOR ACTUATOR (F&A)	11D01D	no	**YES**	
ROD END BEARING(LONG ACT)	11D01D02	no	**YES**	
LONG ACTUATOR SUPPORT	11D01D01	**YES**	no	82, 83
MAIN ROTOR ACTUATOR (LAT)	11D01E	no	**YES**	
ROD END BEARING(LAT ACT)	11D01E02	no	**YES**	
LATERAL ACTUATOR SPT ASSEMBLY	11D01E01	**YES**	no	84, 85
BOLT, LATERAL BELLCRANK	11D10	no	**YES**	
FWD LONGITUDE BELLCRANK	11D15	**YES**	no	86, 87
BOLT, SELF LOCKING, RTR CTN	11D15A	no	**YES**	

TABLE 1. CMB 2410 Component Listing

ITEM[1]	WUC[2]	CMB[3]	CMB TAG[4]	FIGURE(S)
LONG TORQUE LINK ASSEMBLY	11D18	**YES**	no	88, 89
BOLT, TORQUE LINK SUPPORT	11D19	no	**YES**	
LONGITUDINAL LINK	11D20	**YES**	no	90, 91
AFT LONGITUDE BELLCRANK	11D21	**YES**	no	92, 93
BOLT, AFT LONG BELLCRANK	11D22	no	**YES**	
COLLECTIVE BELLCRANK	11D24	**YES**	no	94, 95
ACTUATOR, ELECTRO-MECH (Stabilator)	11D25	**YES**	no	96, 97
SUPPORT ASSEMBLY, MIXER	11D27	**YES**	no	98, 99
DASE COMPUTER	11H01	**YES**	no	100, 101
ENVIRONMENTAL CONTROL UNIT	13A	**YES**	no	102, 103
AUXILIARY POWER UNIT	15B	**YES**	no	104, 105, 106, 107
APU PTO CLUTCH	15B05	**YES**	no	108, 109, 110, 111
SIGNAL DATA CONVERTER	19E04B	**YES**	no	112, 113
INS	19E04E	**YES**	no	114, 115, 116
IMPROVED DATA MODEM	19V01	**YES**	no	117, 118
WING PYLON ACTUATOR	30A01A02	**YES**	no	119, 120
FIRE CONTROL COMPUTER	31A	**YES**	no	121, 122
OMNI-DIRECTIONAL SENSOR	31B01	**YES**	no	123, 124
AIR DATA PROCESSOR	31B02	**YES**	no	125, 126
DRIVE PLATE COVER	31B03	no	**YES**	
DRIVE PLATE COVER (FCR)	31B03	no	**YES**	
DRIVE PLATE COVER (NO FCR)	31B03	no	**YES**	
BEARING HOUSING	31B05	no	**YES**	
BEARING	31B06	no	**YES**	
ADAPTER	31B08	no	**YES**	
SOFT MOUNT	31B09	no	**YES**	
SHAFT ASSEMBLY	31B10	no	**YES**	
POWER DIST M/R DE-ICER	31B11	**YES**	no	127, 128
R H E UNIT	32A	**YES**	no	129, 130
TADS SYSTEM	33		**YES**	
TADS ELECTRONIC UNIT	33A	**YES**	no	131, 132
LASER ELECTRONIC UNIT	33B	**YES**	no	133, 134
TADS POWER SUPPLY	33C	**YES**	no	135, 136
TADS TURRET	33D	**YES**	no	137, 138
ENVIRONMENTAL CONTROL SYS	33D02	**YES**	no	139, 140
TADS SERVO ELEC/TORQ AMP	33D03	**YES**	no	141, 142, 143
BORESIGHT ASSEMBLY	33D04	**YES**	no	144, 145
NIGHT SHROUD ASSEMBLY	33D05	**YES**	no	146, 147
NIGHT SENSOR	33D06	**YES**	no	148, 149
DAY SHROUD ASSEMBLY	33D08	**YES**	no	150, 151
DAY SENSOR SUB-ASSEMBLY	33D09	**YES**	no	152, 153, 154

TABLE 1. CMB 2410 Component Listing

ITEM[1]	WUC[2]	CMB[3]	CMB TAG[4]	FIGURE(S)
LASER XCVR	33D09A	**YES**	no	155, 156
LASER TRACKER RCVR	33D09C	**YES**	no	157, 158
T.V. SENSOR	33D09D	**YES**	no	159, 160
RATE GYRO CCA	33D09E01	no	**YES**	
CONTROL PANEL	33E01	**YES**	no	161, 162
OPTICAL RELAY COLUMN	33E02	**YES**	no	163, 164
IVD HDD	33E03	**YES**	no	165, 166
LEFT HAND GRIP	33E04	**YES**	no	167, 169
RIGHT HAND GRIP	33E05	**YES**	no	168, 169
ALPHANUMERIC DISPLAY	33E06	**YES**	no	170, 171, 172
TEDAC	33F			
TEDAC SUB-ASSEMBLY	33F01	**YES**	no	173, 174
TEDAC POWER SUPPLY MODULE	33F02	**YES**	no	175, 176
TEDAC ELEC COMP MODULE	33F03	no	**YES**	
TEDAC VIDEO ELEC MODULE	33F04	**YES**	no	177, 178
TEDAC DISPLAY UNIT	33F05	**YES**	no	179, 180
PNVS SYSTEM	34		**YES**	
PNVS TURRET	34A	**YES**	no	181, 182
AZ GIMBAL ASSEMBLY	34A02	**YES**	no	183, 184
PNVS SHROUD ASSEMBLY	34A03	**YES**	no	185, 186
PNVS ELEC CTRL AMP ASSEMBLY	34B	**YES**	no	187, 188
PNVS ELECTRONIC UNIT	34C	**YES**	no	189, 190
AZIMUTH DRIVE ASSEMBLY	35B02C	no	no	191, 192
DEROTATION UNIT	37A11	**YES**	no	193, 194
SYMBOL GENERATOR	38A	**YES**	no	195, 196
DISPLAY PROCESSOR	38A	**YES**	no	197, 198, 199
IHADSS SIGHT ELECT UNIT	39B	**YES**	no	200, 201
IHADSS DISPLAY ELECT UNIT	39C	**YES**	no	202, 203
COMPARATOR/PROCESSOR	76A03	**YES**	no	204, 205
LASER SENSOR UNIT	76E01	**YES**	no	206, 207
COMPARATOR ASSEMBLY	76E02	**YES**	no	208, 209
COUNTERMEASURE XMTR	76F01	**YES**	no	210, 211

[1]ITEM: The nomenclature of the DA Form 2410 item. Subassemblies are identified by indention under the next higher assembly. For DA Form 2410 item part numbers and national stock numbers associated with each item, refer to TB 1-1500-341-01.

[2]WUC: Table 1 is sorted by item Work Unit Code (WUC). The WUC identifies a component without regard to possible part numbers or NSNs.

WUC

02 Airframe
03 Landing Gear
04 Power Plant
05 Rotor System
06 Drive System
07 Hydraulics/Pneudraulics
08 Instrument System
09 Electrical Installation
10 Fuel System
11 Flight Control System
12 Utility System
13 Environmental Control
14 Hoists and Winches
15 Auxiliary Power Unit
16 Mission Equipment
17 Emergency Equipment
19 Avionics
30 Armament Sub System
31 Fire Control Sub Sys
32 Hellfire Sub System
33 TADS Assembly
34 PNVS Assembly
35 Area Weapons Sys
36 Other Weapons Sys
37 Fire Control/Radar
38 Symbol Generation
39 IHADSS
52 Auto Pilot System
76 Electronics Countermeasures
80 Special Tools
82 Flyaway Items
83 Ground Support Sys

[3]CMB: Items receiving a permanently affixed CMB are identified in this column by the word “YES”.

[4]CMB TAG: Items receiving a CMB tag are identified in this column by the word “YES”.

TABLE 2. CMB Expendable Supplies and Materials

Item Number	NSN/ CAGEC (optional)	Description	U/M
1	6830-00-247-0619	Dry Ice	LB
2	8040-01-169-5304	Adhesive, Hysol® EA 9394	KT
2.1	8040-01-288-5856	Alternate Adhesive, Hysol® EA 9394	Qt. KT
3	5330-01-197-7789	Scotch-Brite™	EA
4	5350-00-224-7209	Paper, abrasive, 220 grit	SH
5	8465-01-337-6792	Identification Tag (Dog Tag)	EA
6	6810-00-223-2739	Acetone	1 Qt. Can
7	6515-01-149-8841	Latex Gloves	PR
8	None/ 64928	CMB KIT 3009DD (Symbol Technologies) Contains Contact Memory Buttons P/N BMEWK32 (5 packets of CMBs of 100 each) and CMB Mount Adhesive Tape P/N DS9096P (1 roll of 500 each)	EA
9	None/ 33591	Lint-Free Towels 75260 (Kimberly-Clark Corp) Contains 200 one-ply towels 10" x 13" per box	BX
10	8030-00-244-1297	Compound, Corrosion Preventive, MIL-C-16173, Gr 2	1 Qt. Can

SECTION VII. ACRONYMS AND ABBREVIATIONS

7. Acronyms and Abbreviations

7.1 Description: This task identifies the acronyms and abbreviations used within this document.

7.2 General Information: The U.S. Army has designated the acronyms used in this document.

AMATS	Aviation Maintenance Automated Tracking System
APU	Auxiliary Power Unit
AZ	Azimuth
BPS	Business Process Server
BUCS	Backup Control System
CCA	Circuit Card Assembly
CMB	Contact Memory Button
COLL	Collective
COSSI	Commercial Operations and Support Savings Initiative
CTN	Controls
CPC	Corrosion Preventive Compound
DASE	Digital Automated Stabilization Equipment
DECU	Digital Electrical Control Unit
DIST	Distribution
ECS	Environmental Control System
ELEC	Electronic
ENG	Engine
ENVR CONT	Environmental Control
FCR	Fire Control Radar
FLIR	Forward Looking Infrared
FSCAP	Flight Safety Critical Aircraft Parts
FWD	Forward
Gr.	Grade
HMU	Hydro-mechanical Unit
ID	Identification
IG	Intermediate Gearbox
IHADSS	Integrated Helmet and Display Sight System
INBD	Inboard
INS	Inertial Navigation System
I/O	Input/Output
IVD HDD	Indirect View Display Heads Down Display
LAT ACT	Lateral Actuator
LEU	Laser Electronic Unit
LH	Left Hand
LSU	Laser Sensor Unit
MOD	Module
M/R	Main Rotor
MSDS	Material Safety Data Sheet
NGB	Nose Gearbox
NSN	National Stock Number
ORC	Optical Relay Column

O/S	Overspeed
P/N	Part Number
PC	Personal Computer
PNVS	Pilot Night Vision Sensor
PTO	Power Take-Off
RAM	Random Access Memory
RCVR	Receiver
RH	Right Hand
RHE	Remote Hellfire Electronics
RTR	Rotor
SPT	Support
STAB	Stabilator
STG	Stage
Sys.	System
TADS	Target Acquisition Designation Sight
TEDAC	TADS Electronic Display and Control
TEU	TADS Electronic Unit
TMSN	Transmission
TPS	TADS Power Supply
T/R	Tail Rotor
TRG	Tail Rotor Gearbox
T.V.	Television
USB	Universal Serial Bus
VER	Vertical
WUC	Work Unit Code
XCVR	Transceiver
XMSN	Transmission
XMTR	Transmitter

8. SUPPLY PARTS AND DISPOSITION: THROUGH NORMAL SUPPLY CHANNELS.

9. SPECIAL TOOLS: N/A.

10. APPLICATION: AVUM.

11. REFERENCES.

TM 1-1520-238-23 Series

12. FORMS: N/A.

13. WEIGHT AND BALANCE: N/A.

14. POINTS OF CONTACT:

Technical: Tom Downey, AMSAM-MMC-AV-AB, DSN 876-1322 or commercial (256) 313-1322.
Logistics: Lloyd Hopkins, SFAE-AV-AAH-LF, DSN 876-4072 or commercial (256) 313-4072.

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:

SANDRA R. RILEY
Administrative Assistant to the
Secretary of the Army
0511902

Distribution:
To be distributed in accordance with initial distribution number (IDN) 314146, requirements for TB 1-1520-238-20-140.

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however, only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" whomever@avma27.army.mil
To: 2028@redstone.army.mil
Subject DA Form 2028

1. ***From:*** Joe Smith
2. *Unit:* home
3. ***Address:*** 4300 Park
4. ***City:*** Hometown
5. ***St:*** MO
6. ***Zip:*** 77777
7. ***Date Sent:*** 19-OCT-93
8. ***Pub no:*** 55-2840-229-23
9. ***Pub Title:*** TM
10. ***Publication Date:*** 04-JUL-85
11. *Change Number:* 7
12. *Submitter Rank:* MSG
13. ***Submitter FName:*** Joe
14. *Submitter MName:* T
15. ***Submitter LName:*** Smith
16. ***Submitter Phone:*** 123-123-1234
17. ***Problem:*** **1**
18. *Page:* 2
19. *Paragraph:* 3
20. *Line:* 4
21. *NSN:* 5
22. *Reference:* 6
23. *Figure:* 7
24. *Table:* 8
25. *Item:* 9
26. *Total:* 123
27. ***Text:***

This is the text for the problem below line 27.

PIN: 082467-000