EC120 HELICOPTER SIDE UTILITY MOUNT AIRFILM MODEL NO. AF120



LOG OF REVISIONS

REVISIO N	REVISIO N DATE	PAGES EFFECTED	COMMENTS
N/C	1/2/02	ALL	Original 1 THRU 10
Α	3/17/03	1, 4, 5, 6, 16, 17	Added Alternate AF120-50 Combo Fitting

A. INTRODUCTION

1) **GENERAL**:

THIS INSTALLATION MANUAL CONTAINS INFORMATION DESCRIBING THE INTIAL INSTALLATION OF THE MOUNT STRUCTURE AIRFILM PART NUMBER: A120-1L, ASSEMBLY AND MODIFICATION TO THE AIRCRAFT

2) DESCRIPTION OF USE:

THIS MOUNT IS DESIGNED TO PROVIDE STURDY ATTACHMENT FOR CAMERA GIMBAL, SEARCHLIGHT OR OTHER QUALIFYING PAYLOAD ON THE LEFT SIDE OF THE EC-120B COLIBRI. THE MOUNT IS LOCATED AT APPRPOXIAMATLEY FUSELAGE STATION X4740. THE MOUNT DOES NOT INTERFERE WITH STANDARD OPERATION OF SLIDING DOOR, FUEL CAP, OR ACCESS STEP. MOUNT IS ATTACHED, TOP AND BOTTOM, UTILIZING EXISTING HARD POINTS. ADDITIONAL DRAG BRACE ATTACHMENT IS INSTALLED AT FUSELAGE STATIONS X5110 AND Z-2005. QUALIFYING PAYLOADS CAN BE ATTACHED DIRECTLY TO MOUNT, THROUGH THE USE OF UPPER / LOWER DOVETAIL BLOCKS OR MANUFACTURER AUTHORIZED ADAPTORS. THE MOUNT CAN BE FLOWN WITH / WITHOUT QUALIFIED PAYLOADS INSTALLED, AS PER THE RESTRICTIONS OF THE FLIGHT MANUAL SUPPLEMENT. IN ADDITION AN OPTIONAL LOWER COMBO FITTING AF-120-50 IS AVAILABLE TO ACCOMMODATE THE USE OF THE MOUNT AND CARGO SWING SIMULTANEOUSLY

3) MAXIMUM RATINGS

MAXIMUM ALLOWABLE PAYLOAD: 125 LBS
MAXIMUM CYLINDRICAL AND SPHERICAL AREA: 2.52 SQUARE FEET
MAXIMUM OPERATIONAL SPEED (VNE): 130 KNOTS

4) APPLICABILITY:

THIS INSTALLATION IS APPLICABLE TO THE EUROCOPTER MODEL: EC-120B

5) EXPLANATION OF ABBREVATIONS:

P/N= PART NUMBER # = NUMBER (AS IN NUMBER 10 DRILL..#10) EC = EUROCOPTER DWG= DRAWING

6) MEASUREMENTS:

ALL MEASUREMENTS ARE IN INCHES ("), POUNDS U.S. (LBS), INCH POUNDS (IN-LBS), OR DEGREES (DEG)

7) INSTALLATION TIME

ESTIMATED INSTALL TIME: 4 HRS

8) TOOLS REQUIRED FOR INSTALLATION:

- 1) AIR DRILL AND OR DRILL PRESS
- 2) STANDARD SOCKET SET
- 3) METRIC SOCKET SET
- 4) METRIC WRENCH SET
- 5) DRILL BITS: # 30 , # 10, $3/8^{TH}$
- 6) 1/8th CLECOS AN 3/16TH SCREW CLECOS OR EQUIVILANT
- 7) SOFT FACED MALLET
- 8) SMALL SPIRIT LEVEL
- 9) 6" C-CLAMP OR EQUIVILANT

9) CONSUMABLE PRODUCTS

1) MASTINOX 6856K (MIL-P-8116B) OR EQUIVILANT

10) REFERENCE MATERIAL

1) EUROCOPTER AIRCRAFT MAINTENANCE MANUAL EC-120 2) FAA AC43.13-1A&2 ACCEPTABLE METHODS, TECHNIQUES AND PRACTICES AIRCRAFT INSPECTION AND REPAIR

11) CAUTIONS AND NOTES

CERTAIN PROCEDURES THAT MAY CAUSE UNNECESSARY DAMAGE TO THE HELICOPTER, THE MOUNT OR THE INSTALLER ARE PREFACED WITH THE WORD **CAUTION** AND IN BOLD. GENERAL INFORMATIVE NOTES, WHICH ARE CONSIDERED RECOMMENDATIONS, WILL BE PREFACED WITH THE WORD *NOTE* AND IN ITALICS.

B. INSTALLATION

REFERENCE DRAWINGS:

1) AF120-100

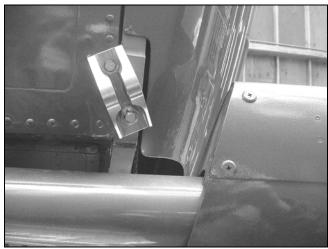
1) <u>STEP 1 THRU STEP 6</u> <u>TUBE / ATTACH FITTING ASSEMBLY</u> 1) REMOVE EC P/N: C259A1201051, CARGO SWING REMOVABLE PARTS, IF

2) REMOVE EC P/N: C259A1103201, BRACKET, AFT, LEFT HAND SIDE IF INSTALLED, RETAIN HARDWARE. (SEE PICTURE)

3) IF C259A1103201 AFT BRACKET IS NOT INSTALLED, OBTAIN THE FOLLOWING HARDWARE FROM EC. REFERENCE EC ILLUSTRATED PARTS CATALOG, 25-91-01 PAGES 0-1.

80	22125BC060024L	SCREW
90	23111AG060LE	WASHER, FLAT
100	DHS411-101-3038	SCREW
110	2313AG100LE	WASHER
120	23112AG100LE	WASHER
130	ASNA0045-100BCL	NUT
140	EN2367-23018	PIN, COTTER





2) STEP 2

CAUTION: P/N: A120-50 COMBINATION FITTING MAY BE INSTALLED IN PLACE OF P/N: A120-10-11 LOWER FITTING. SEE STEP 4A FOR PROCEDURES UNIQUE TO P/N: A120-50 COMBINATION FITTING

COAT INSIDE OF TOP CAP BRACKET P/N: A120-10-10, WITH MASTINOX. SLIDE CAP BRACKET ONTO TUBE P/N: A120-05. COAT INSIDE FACE OF LOWER ATTACHMENT BRACKET P/N: A120-10-11 WITH MASTINOX, INSTALL LOWER ATTACH BRACKET ONTO AIRFRAME AT LOWER AFT LEFT CARGO SWING AFT BRACKET LOCATION, USE HARDWARE AS NOTED IN **STEP 1.** NOTE: SCREWS DO NOT NEED TO BE TORQUED, NOR DOES THE COTTER PIN NEED TO BE INSTALLED AT THIS TIME, THIS STEP IS FOR POSISTIONING PURPOSES ONLY.



2) STEP 3

INSERT TUBE ASSEMBLY P/N: A120-05 INTO LOWER ATTACH BRACKET. POSISTION TUBE SUCH THAT TOP CAP BRACKET P/N: A120-10-10, ENGAGES EC P/N: C533C7342203 FITTING, JACK.



INSTALL HARDWARE: TOP CAP BRACKET ATTACH CLEVIS TO AIRFRAME JACK FITTING;

- 1) AN6-12A
- 2) AN960-616L
- 3) AN960-616
- 4) AN365-624A

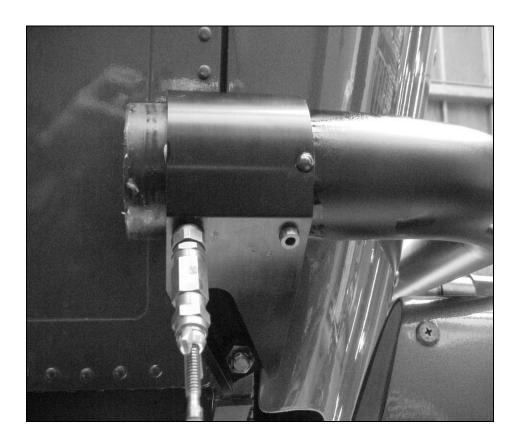
NOTE: HARDWARE NEEDS ONLY TO BE INSTALLED FIRMLY, NOT TORQUED. CAUTION: TUBE ASSEMBLY P/N: A120-05, TOP CAP P/N: A120-10-10 AND LOWER ATTACH FITTING P/N: A120-10-11 OR P/N: AF120-50 COMBINATION FITTING, SHOULD NOW BE FIRMLY ATTACHED TO AIRFRAME. CLEARANCE BETWEEN TUBE ASSEMBLY AND AIRFRAME MUST BE A MINIMUM OF 0.250" ALONG THE ENTIRE LENGTH OF TUBE ASSEMBLY.

4) STEP 4 A DRILL BUSHING METHOD (SUGGESTED METHOD)

THE PROCEDURES FOR FITTING EITHER P/N: A120-10-11 LOWER ATTACH FITTING OR A120-50 COMBINATION FITTING ARE IDENTICAL, EXCEPT WHEN USING P/N: AF120-50 COMBINATION FITTING, THE EXPOSED TUBE P/N: A120-05 MUST BE TRIMMED FLUSH WITH INBOARD EDGE OF P/N: A120-50 COMBINATION FITTING SUCH THAT THERE IS NO EXPOSED TUBE MATERIAL CONTACTING OR PREVENTING THE FREE MOVEMENT OF THE CARGO SWING CABLE ASSEMBLY P/N: C120ARG901

PLACE DRILL BUSHING GUIDE # 1 (PROVIDED IN KIT) INTO 3/8TH BOLT HOLES OF THE LOWER ATTACH BRACKET, P/N: A120-10-11 OR P/N: AF120-50 NOTE: ONLY THE AFT TWO HOLES OF THE LOWER ATTACH BRACKET ARE ACCESSIBLE AT THIS TIME, THE FORWARD HOLES ARE TO BE DRILLED ON THE BENCH OR WITH A DRILL PRESS. USING # 10 DRILL BIT, DRILL PILOT HOLE INTO TUBE ASSEMBLY A120-05, INSTALL 3/ 16 SCREW CLECOS. REPEAT THIS PROCEDURE ON THE 3/8TH HOLES OF THE TOP CAP BRACKET P/N: A120-10-10

NOTE: FORE, AFT AND OUTSIDE LATERAL HOLE OF TOP CAP BRACKET CAN BE DRILLED AT THIS TIME. REMOVE TUBE AND BRACKETS AS ONE UNIT. PILOT DRILL REMAINING HOLES ON BENCH.



STEP 4 B MARKING METHOD

PROCEDURE STEP 4 CAN BE ACCOMPLISHED BY CAREFULLY MARKING THE ACCESSIBLE HOLES, REMOVING MOUNT AND BRACKETS, REASSEMBLING THE UNIT ON BENCH, THEN USING DRILL BUSHING GUIDES TO OPEN HOLES.

5) STEP 5

CAUTION: TO PREVENT MISALIGNMENT OR IMPROPER HOLE PLACEMENT, ENSURE THAT THE TUBE AND BRACKETS REMAIN IN ALIGNMENT AS THEY WERE WHEN INSTALLED ON THE AIRCRAFT. REMOVE SCREW CLECOS, ONE HOLE LOCATION PER DRILLING PROCESS, USING 3/8TH DRILL, OPEN HOLES TO FULL SIZE. INSTALL HARDWARE AS CALLED OUT IN DWG NO. A120-1

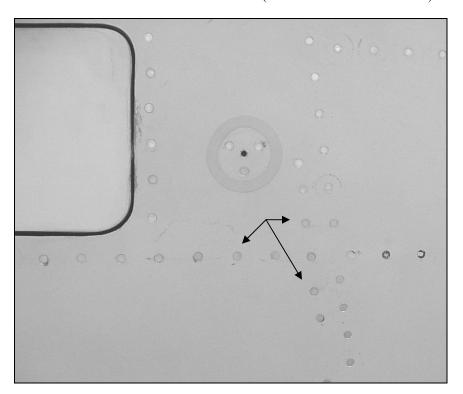
NOTE: HARDWARE NEEDS ONLY TO BE INSTALLED TO ENSURE MOUNT AND BRACKETS REMAIN IN ALIGNMENT, FINAL TORQUE IS NOT NECESSARY AT THIS STEP

REMOVE ALL HARDWARE FROM TOP AND BOTTOM ATTACH BRACKETS, REMOVE BRACKET. DEBURR AND CLEAN ALL REMAINING SWARF. LOOSELY RE-ASSEMBLE UPPER AND LOWER ATTACH BRACKETS TO TUBE. MASTINOX MAY NEED TO BE RE-APPLIED

6) STEP 6

RE-INSTALL MOUNT ASSEMBLY A120-5 TO AIRFRAME, INSTALL HARDWARE TO ENSURE MOUNT REMAINS FIRMLY IN PLACE.

7) STEP 7-10 AFT DRAG BRACE ATTACH BRACKET INSTALLATION
GAIN ACCESS TO THE JUNCTION OF LEFT HAND STATIONS:
X5110 AND Z-2005, THRU AFT DORSAL CARGO DOOR. AT THIS JUNCTION
LOCATE THREE FASTNERS AS SHOWN. (CONTINUED NEXT PAGE)



VIEW 1: TOP OF AVIONICS TRAY LOOKING AFT / OUTBOARD LEFT HAND SIDE. REMOVE RIVET AS SHOWN

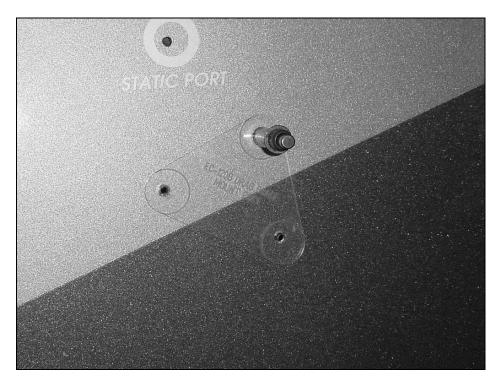


VIEW 2: BOTTOM AVIONICS TRAY LOOKING UP, OUTBOARD LEFT HAND. REMOVE RIVETS AS SHOWN.



8) STEP 8

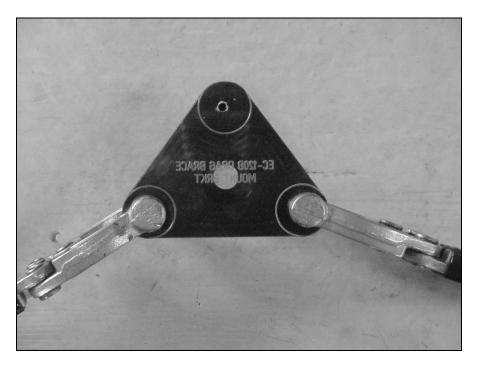
USING # 30 DRILL, REMOVE THREE FASTNERS AS SHOWN IN STEP 7. PLACE AFT ATTACH PAD PLASTIC TEMPLATE (PROVIDED IN KIT) ON OUTSIDE OF AIRFRAME, OVER THE THREE REMOVED FASTNERS. ORIENTATE SO THAT THE CIRCULAR PADS ON THE ARE CENTERED OVER THE EXSISTING HOLES.



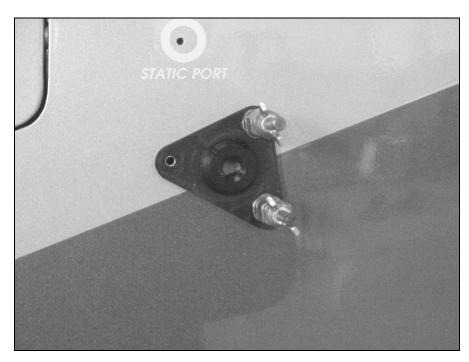
NOTE: DUE TO AIRFRAME MANUFACTURING ANOMALIES, THE THREE FASTNER HOLES MAY NOT ALIGN EXACTLY IN THE CENTER OF THE CIRCULAR TARGETS OF THE PLASTIC TEMPLATE, IN THIS CASE ALIGN THE TEMPLATE SUCH THAT THERE IS EQUAL EDGE DISTANCE FOR THE EXSISTING HOLES. CAREFULLY DRILL THROUGH THE PLASTIC TEMPLATE, INSTALL I/8 CLECOS, OPEN ALL THREE HOLES INTO PLASTIC TEMPLATE.

9) STEP 9

REMOVE PLASTIC TEMPLATE, CLAMP TEMPLATE TO ATTACH PAD P/N: A120-20-5. TRANSFER HOLES FROM TEMPLATE INTO ATTACH PAD WITH # 30 DRILL.



PLACE ATTACH PAD P/N: A120-20-5 ONTO AIRFRAME WITH $1/8^{th}$ CLECOS, OPEN BOTH ATTACH PAD AND AIRFRAME HOLES WITH # 10 DRILL. INSTALLING $3/16^{TH}$ SCREW CLECOS.



10) STEP 10

REMOVE ATTACH PAD P/N: A120-20-5, DEBURR AND REMOVE SWARF, ON ATTACH PAD AND FROM AIRCRAFT. INSTALL PAD WITH HARDWARE:

1) MS1303-6 BOLT 3EA 2) AN 96010L WASHER 6EA 3) MS21042L3 NUT 3 EA

11) STEP 11 INSTALLATION OF END FITTING / SUPPORT COLLAR

1) COAT INSIDE FACE OF SUPPORT COLLAR P/N: A120-20-6 WITH MASTINOX, SLIDE COLLAR OVER ATTACHMENT TUBE P/N: A120-10-3 WITH AIRCRAFT LEVEL PLACE SPIRIT LEVEL ON THE FLAT SURFACE OF SUPPORT COLLAR. ROTATE SUPPORT COLLAR UNTIL FLAT SURFACE FACE IS LEVEL. THE EYEBOLT IS 90 DEGREES TO THE FLAT SURFACE OF THE END FITTING. THE EYEBOLT WILL BE FACING TOWARDS THE AFT OF THE AIRFRAME.



2) COAT DOVETAIL END FITTING P/N: A120-10-12 WITH MASTINOX AND SLIDE INTO ATTACHMENT TUBE UNTIL FLUSH WITH A120-20-6 SUPPORT COLLAR OUTSIDE FACE. WITH AIRCRAFT LEVEL PLACE SPIRIT LEVEL ON THE FLAT SURFACE OF END FITTING. NOTE: END FITTING FLAT SURFACES ARE IDENTICAL. ROTATE END FITTING UNTIL FLAT SURFACE FACE IS LEVEL

4) AS DESCRIBED IN STEPS 4 THRU STEP 5, PILOT DRILL $3/16^{TH}$ HOLES IN SUPPORT COLLAR USING DRILL BUSHING GUIDE # 1 . INSTALL $3/16^{TH}$ SCREW CLECO AS EACH PILOT HOLE IS DRILLED.



CAUTION: WHEN DRILLING THESE HOLES, BE AWARE THAT THE TUBE AND END FITTING ARE BOTH BEING DRILLED. EXTREME CARE MUST BE TAKEN TO ENSURE ALIGNMENT AND HOLE ACCURACY. SCREW CLECOS MUST BE USED FOR ALL PILOT HOLES. INSTALL HARDWARE AS PER DWG A120-1 AS EACH HOLE IS DRILLED FULL SIZE 3/8TH. NOTE: INSTALLER MAY ELECT TO REMOVE MOUNT AS A UNIT TO EITHER BENCH DRILL OR USE DRILL PRESS TO OPEN HOLES THROUGH FITTINGS AND TUBE TO 3/8TH.

- 5) REMOVE BOTH FITTINGS, DEBURR AND REMOVE ALL SWARF. MASTINOX MAY HAVE TO BE RE-APPLIED BEFORE RE-ASSEMBLY.
- 6) RE-ASSEMBLE FITTINGS ONTO TUBE. FIRMLY INSTALL WITH HARDWARE AS SHOWN ON DWG A120-1. DO NOT FINAL TORQUE.

12) <u>STEP 12</u> <u>FINAL ASSEMBLY</u>

- 1) IF MOUNT AND FITTINGS WERE REMOVED AS DESCRIBED IN STEP 11, RE-INSTALL MOUNT AND FITTINGS.
- 2) INSTALL DRAG BRACE TUBE ASSEMBLY P/N: A120-40, ONTO SUPPORT COLLAR P/N: A120-20-6. NOTE: ALIGN EYEBOLT TO ACCEPT CLEVIS END OF DRAG BRACE TUBE.
- 3) FIRMLY INSTALL HARDWARE AS PER DWG A120-100, DO NOT FINAL TORQUE.
- 4) ALIGN DRAG BRACE CLEVIS AND AFT ATTACH PAD P/N: A120-20-5 EYEBOLT. IT MAY BE NECESSARY TO ADJUST DRAG BRACE LENGTH BY LOOSENING AN316-6 JAM NUTS, MOVING FORKENDS EQUALLY IN OR OUT AND RE-TIGHTENING JAM NUTS. INSTALL HARDWARE
- 1. TORQUE JAM NUTS TO: 100-110 INCH POUNDS.



- 5) RE-INSTALL ALL HARDWARE AND TORQUE TO THE FOLLOWING
 - A) EC HARDWARD: PER TORQUE VALUES AS RECOMMENDED BY EC MAINTENANCE MANUAL
 - B) STANDARD KIT HARDWARE:

-MS1303-6 BOLTS 20-25 INCH POUNDS - AN6-X BOLTS 160-190 INCH POUNDS

C. MOUNT REMOVAL PROCEDURES

- 1) REMOVE AND RETAIN FORE AND AFT DRAG BRACE BOLTS. REMOVE DRAG BRACE A120-20
- 2) REMOVE AND RETAIN EUROCOPTER HARDWARE FROM LOWER ATTACHMENT BRACKET A120-10-11
- 3) SUPPORTING MOUNT, CAREFULLY REMOVE AND RETAIN TOP CAP BRACKET A120-10-10 TO AIRFRAME FITTING JACK P/N: C533C7342203 HARDWARE.
- 4) CAREFULLY REMOVE MOUNT

NOTE: ATTACH PAD P/N: A120-5 CAN REMAIN INSTALLED ON THE AIRCRAFT WHEN MOUNT IS REMOVED TO FACILITATE EASY RE-INSTALLATION.

D. PAYLOAD MOUNTING INSTRUCTIONS.

- 1) PAYLOAD **MOUNTING**PAYLOADS MAY BE MOUNTED EITHER DIRECTLY TO END FITTING P/N:
 A120-12 OR THROUGH THE USE OF DOVETAIL MOUNTING PLATES. THE
 DOVETAILS ARE PROVIDED IN KIT A120-1
- 2) DIRECT MOUNTING
 CAUTION: THE ACCESSORY OR PAYLOAD EQUIPMENT
 MANUFACTURER HANDBOOK OR MAINTENANCE INSTRUCTIONS
 CONTAINS INFORMATION CONCERNING INSTALLATION AND REMOVAL
 OF ACCESSORIES AND FASTNER TORQUE. IF THIS INFORMATION IS
 NOT PROVIDED REFER TO AC43.13-1A & 2 FOR ACCEPTABLE AIRCRAFT
 PRACTICES.
- 3) DOVETAIL MOUNTING
 - 1) DOVETAIL MOUNTING UPPER AND LOWER PLATES P/N: AP001UM01B, P/N: AP001UM02-01, AND SIDE CLAMP P/N: AP001UM02-02 ARE PROVIDED WITH THE KIT. THE UPPER MOUNTING PLATE IS INSTALLED DIRECTLY TO THE END FITTING P/N: A120-10-12 WITH THE FOLLOWING HARDWARE

A) AN4-22A BOLT 4EA B) AN960-10 WASHER 8EA C) AN365-416 NUT 4EA TORQUE TO 80" LBS

2) ATTACH LOWER PLATE TO PAYLOAD EQUIPMENT WITH HARDWARE PROVIDED.

A) ¼ HOLES AP407UM01-21 BOLT TORQUE TO: 85 INCH

POUNDS

B) 5/16TH HOLES AP407UM01-20. BOLT TORQUE TO: 125 INCH

POUNDS

CAUTION: SAFETY WIRE BOLT HEADS ATTACHING LOWER DOVETAIL PLATE TO PAYLOAD.

NOTE: THE LOWER DOVETAIL PLATES ARE SUPPLIED WITH (4) 0.250 DIAMETER HOLES. SOME PAYLOADS COME WITH 5/16THHOLES. THEREFORE THE LOWER DOVETAIL PLATE HOLES NEED TO BE ENLARGED TO 5/16TH. KITS ARE SHIPPED WITH AP407UM01-21 ¹/₄ BOLTS, PLEASE CONTACT SUPPLIER FOR ALTERNATIVE AP407UM01-20 5/16 BOLTS.

CAUTION: DRILL HOLES USING DRILL PRESS AND CLAMP LOWER DOVETAIL IN PLACE TO ENSURE ACCURATE HOLES

3) INSTALL PAYLOAD LOWER DOVETAIL TO MOUNT UPPER DOVETAIL BY ALIGNING PLATES AND INSTALLING SIDE CLAMP WITH HARDWARE SUPPLIED.

A) AN4CH10 BOLT 2 EA TORQUE TO 70 INCH POUNDS

B) AN960-10 WASHER 2EA

CAUTION: SAFETY WIRE BOLT HEADS.

4) ALTERNATIVE MOUNTING

ALTERNATIVE MOUNTING PLATES ARE AVAILABLE.

A) AP600UM01-17 ADAPTOR WESCAM B) AP600UM01-18 ADAPTOR FLIR, INC

C) AP600UM01-19 ADAPTOR PLATE WESCAM MODEL 12 TO 16

D) 200-2609-01 WESCAM QUICK MOUNT E) 200-4485-01 WESCAM QUICK MOUNT F) AP500UM03-12 POLYTECH ADAPTOR

THE ABOVE COMPONENTS ARE SUPPLIED SEPERATE FROM THE MOUNT KIT P/N A120-1 AND ARE AVAILABLE FROM MANUFACTURER

WEIGHT AND BALANCE

	WEIGHT	STATION	BUTT LINE (BL)
BARE MOUNT : COMPLETE	21.5 LBS	183.3 INCHES	-28.75 INCHES LEFT
MOUNTED EQUIPMENT LOCATION	MAX 125 LBS	183.3 INCHES	-38,90 INCHES LEFT

OPTIONAL EQUIPMENT WEIGHTS:

1) UPPER DOVETAIL	0.8 LBS
2) LOWER DOVETAIL	1.1 LBS
3) AP600UM01-17 WESCAM ADAPTOR	1.9 LBS
4) AP600UM01-18 FLIR ADAPTOR	1.9 LBS
5) AP600UM01-19 WESCAM ADAPTOR	3.4 LBS
6) AP600UM01-20 WESCAM M16 ADAPTOR	3.0 LBS
7) AP500M03-12 POLYTECH ADAPTOR	3.0 LBS

END OF DOCUMENT