

TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

FOR

**ELECTRONIC EQUIPMENT
CONFIGURATIONS
ARMY MODEL AH-1G
HELICOPTER**

This copy is a reprint which includes current
pages from Changes 1 - 4

Change

No. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 23 April 1982

Organizational Maintenance Manual

ELECTRONIC EQUIPMENT CONFIGURATIONS ARMY MODELS

AH-1G (NSN 1520-00-999-9821), AH-1Q (NSN 1520-00-009-3488),

ANDAH-1S (NSN 1520-00-504-9112) (MOD) HELICOPTERS

TM 11-1520-221-20, 22 February 1971, is changed as follows:

1. Title of manual is changed as above.
2. New or changed material is indicated by a vertical bar in the margin of the page.
3. Added or revised illustrations are indicated by a vertical bar in front of the figure caption.
4. Remove pages and insert pages as indicated below.

<i>Remove</i>	<i>Insert</i>
Warning page	Warning pages A, B, and C
i/(ii blank)	i/(ii blank)
1-1 through 1-4.1/(1-4.2 blank).....	1-1 through 1-4.2
1-7 and 1-8	1-7 and 1-8
1-13 and 1-14	1-13 and 1-14
1-17/(1-18 blank)	1-17/(1-18 blank)
2-1 through 2-6	2-1 through 2-6
2-9 and 2-10	2-9 and 2-10
2-17 through 2-20	2-17 through 2-20
2-23 through 2-26	2-23 through 2-26
None	2-40.1/(2-40.2 blank)
2-47 through 2-48.2	2-47 through 2-48.2
A-1 and A-2	A-1 and A-2

5. On figure 9.1, at the splice above C-7197/ARC-134, reverse the numbers of the ARC134-29A22 and ARC134-29A22 wires.
6. File this change sheet in front of the publication for reference purposes.

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Official:

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Distribution:

To be distributed in accordance with DA Form 12-31, Organizational Maintenance requirements for AH-1G aircraft, AH-1S (MOD).

Technical Manual

No. 11-1520-221-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 22 February 1971

Organizational Maintenance Manual

ELECTRONIC EQUIPMENT CONFIGURATIONS

ARMY MODELS AH-1G (NSN 1520-00-999-9821),

AH-1Q (NSN 1520-00-009-3488) And

AH-1S (NSN 1520-00-504-9112)

(MOD) HELICOPTERS

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*This manual supersedes TM 1 1-1520-221-20, 30 March 1967, including all changes.

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual covers organizational maintenance (AVUM) of the electronic equipment configurations for Army Model AH-1G, AH-1Q, and AH-1S (mod) helicopters, serial numbers 66-15249 through 66-15357, 67-15450 through 67-15869, 68-15000 through 68-15213, 68-17020 through 68-17113, 69-16410 through 69-16447, 70-15936 through 70-16105 and 71-19001 and subsequent helicopters that have been retrofitted in accordance with MWO's

55-1520-221-20/5,	55-1520-221-20/5,
55-1520-221-20/7,	55-1520-221-20/9,
55-1520-221-30/1,	55-1520-221-30/12,
55-1520-221-30/13,	55-1520-221-30/17,
55-1520-221-20/26,	55-1520-221-30/36,
55-1520-221-30-49, and 11-1520-1520-221-50-1.	

b. This manual also includes instructions for organizational maintenance personnel to perform periodic preventive maintenance and troubleshooting procedures for electronic communications and navigational equipment when the equipment is installed in the helicopter. This manual also list tools and test equipment required by organizational maintenance personnel to maintain the configuration. TM 11-1520-221-20P contains the repair parts and special tools lists.

c. Operating instructions are contained in TM 55-1520-221-10 and TM 55-1520-234-10. This manual supplements TM 55-1520-221-10, TM 55-1520-221-23-1, TM 55-1520-221-23-2, TM 55-1520-221-CL, TM 55-1520-234-10, TM 55-1520-234-23-1, TM 55-1520-234-23-2, and TM 55-1520-234-CL to provide organizational maintenance (AVUM) instructions. Some of the electronic equipment used in this configuration are covered in detail in other manuals; the pertinent manuals are listed in appendix A. When servicing these components independent of the helicopter, refer to the applicable manual for detailed troubleshooting procedures and for replacing and repairing maintenance parts.

d. Equipment nomenclature containing an asterisk is used to indicate all models of an equipment item covered in this manual; thus, Control, Intercommunication Set C-1611(*)/AIC represents Control, Intercommunication Sets C-1611A/AIC, C-1611B/AIC, C-1611C/AIC, and C-1611D/AIC; Receiver-

Transmitter, Radio RT-742(*)ARC-51BX represents Receiver-Transmitters, Radio RT-742/ARC-51BX, RT-742B/ARC-51BX, and RT-742C/ARC-51BX.

e. Maintenance of Army aircraft is transitioning to three categories of maintenance. These maintenance categories are Aviation Unit Maintenance (AVUM); Aviation Intermediate Maintenance (AVIM); and Depot Maintenance. AVUM and AVIM will replace organizational, direct support, and general support maintenance. In the interim, as maintenance units are reorganized into three categories of maintenance activities, this publication will be used by AVUM or organizational maintenance personnel for the maintenance of the electronic equipment configuration. The maintenance allocation chart (MAC) in appendix B is configured to the three category maintenance concept where the code 0 represents AVUM; the code F represents AVIM and D represents depot maintenance. Those organizations not yet assigned complete AVUM responsibilities should use caution in utilization of this publication. Whatever maintenance is performed must consider available skills, tools, test equipment, and time required to perform the maintenance.

f. Throughout this manual, the following terms are used:

(1) Configuration includes all basic electronic equipment and electronic installation items.

(2) Basic electronic denotes government-furnished equipment for which there are Department of the Army publications covering detailed maintenance instructions.

(3) Electronic installation items denote items furnished by the airframe manufacturer for which there are no official publications covering detailed maintenance instructions.

(4) System denotes a major subdivision of the configuration; for example, communications system.

(5) Facility denotes a group of components that are interrelated to perform a function or service; for example, ultra high frequency (uhf) amplitude modulation

(am) facility.

(6) Component denotes an individual item of a facility; for example, uhf receiver-transmitter.

g. Block diagram discussions of the configuration, basic electronic equipment, and installation items are covered in chapter 3.

1-2. Index of Technical Publications

Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports

a. *Reports of Maintenance and Unsatisfactory Equipment.* Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750. The Army Maintenance Management System (Army).

b. *Report of Packaging and Handling Deficiencies.* Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 43655.73/AFR 400-54/MCO 4430.3E.

c. *Discrepancy in Shipment Report (DISREP) (SF 361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 665-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C/DLAR 4500.16.

1-3.1. 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) direct to: Commander, US Army Communications-Electronics Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. In either case, a reply will be furnished direct to you.

1-3.2. Administrative Storage

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness.

1-3.3. Reporting Equipment Improvement Recommendations (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications. Electronics Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

1-3.4. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

Section II. DESCRIPTION OF CONFIGURATION AND ELECTRONIC EQUIPMENT

1-4. Configuration and Serial Numbers

<i>Configuration</i>	<i>Army model</i>	<i>Helicopter serial number</i>
A	AH-1G	66-15249 through 66-15257
B	AH-1G	66-15258 through 66-15357
C	AH-1G	67-15450 through 67-15869
D	AH-1G	68-15000 through 68-17113
		69-16410 through 69-16447
E	AH-1G	70-15936 through 70-16105
F	AH-1Q	68-15146
		68-15127
		68-15052
		68-15096
		68-15209
		70-15942
		68-17048
		68-15091
		68-17077
		68-15203

<i>Configuration</i>	<i>Army model</i>	<i>Helicopter serial number</i>
		68-15053
		70-16090
		70-16072
		68-15130
		68-15088
		68-15126
		70-16106
		70-15977
		68-15036
		68-15210
F	AH-1S (MOD)	68-15049
		68-17066
		68-15013
		68-15029
		71-20999
		68-15179
		68-15144
		68-15156
		68-15014
		71-21048
		71-21041
		68-15051
		68-17054
		71-21052
		68-15139
		70-15973
		68-15189
		68-17024
		70-15976
		68-15178
		68-15067
		68-17071

NOTE

AH-1Q configurations are the same as configurations A, B, C, D or E except for component locations and the main inverter. See paragraph 1-7e, and figure 1-3.1.

1-5. Facilities and Electronic Equipment

The charts in a, b, c, d, e, and f below list each operational facility provided in the different configurations of Helicopters, Army Model AH-1G and AH-1Q and AH-1S (mod) (para 1-4). The charts list all electronic equipment components used for each facility indicated in

the *Equipment or component column*. A letter X in the *Configuration column* indicates that the particular component is installed in the helicopter. A letter Y in the *Configuration column* indicates that complete facilities for the component are provided but the component is not installed. These facilities provide easy installation of the component when required for a special geographical location or mission application. A letter Z in the *Configuration column* indicates that only adequate space, weight, and power for a specific component are provided. Therefore, a retrofit or modification program will be required to add this component.

a. Communication (figs. 1-1, fig 1-2, fig 1-3, and fig 1-7).

Facility	Equipment or component	Common name	Configuration					
			A	B	C	D	E	F
Interphone and audio	Control, Intercommunications Set C-1611(*)AIC (2 installed).	Interphone control	X	X	X	X	X	X
	Microphone Switch (cyclic) (2 installed) .....	.....	X	X	X	X	X	X
	Microphone Switch SA-47A/AIC.....	Foot switch	X	X	X	X	X	X
	Impedance Matching Network P/N 209-075-235.	.....	X	X	X	X	X	X
	Printed circuit board P/N 209-075-246.	.....	X	X	X	X	X	X
Fm liaison.....	Control, Intercommunications Set C6533/AIC (2).	Ics control panel.....	Z	Z	Z	Z	Z	Z
	Discriminator, Discrete Signal MD-736/A	.....	-	-	-	X	X	X
	Radio Set AN/ARC-54 or AN/ARC-131	Fm command radio	X	X	X	X	X	X
	Receiver-Transmitter, Radio RT-348/ARC-54 or RT-828/ARC-131.	.....						
	Mounting MT-1535/ARC-54 or MT/ARC-131.	Radio set mount.....	X	X	X	X	X	X
Uhf command.....	Control, Radio Set C-3835/ARC-54 or C-7088/ARC-131.	Fm control panel.....	X	X	X	X	X	X
	Kit, Connector 5935-695-4914	Connector kit.....	X	X	X	X	X	X
	Indicator ID-48/ARN.....	Course indicator.....	X	X	X	X	X	X
	Antenna, Communication AS-2285/ARC.	Fm communication antenna.....	X	X	X	X	X	X
	Antenna homing (lead foil) or antenna P/N 209-075-292.	Homing antenna	X	X	X	X	X	X
Vhf command.....	Communications Security Equipment TSEC/KY-28.	Voice security equipment.....	Y	Y	Y	Y	Y	Y
	Radio Set AN/ARC-114.....	Vhf-fm radio set	Z	Z	Z	Z	Z	Z
	Control Indicator C-8157/ARC.....	Voice security control panel	-	-	-	Y	Y	Y
	Radio Set AN/ARC-51BX.....	.....	X	X	X	X	X	X
	Receiver-Transmitter, Radio RT-742(*)51BX.	Uhf command radio	X	X	X	X	X	X
	Mounting MT-2653/ARC .....	.....	X	X	X	X	X	X
	Control, Radio Set C-6287/ARC-51BX.....	Uhf control panel.....	X	X	X	X	X	X
	Cooler, Air, Electronic Equipment HD-615/ARC-51X.	External blower.....	X	X	X	X	X	X
	Indicator, Standing Wave Ratio ID-1003/ARC.	Reflectometer	X	X	X	X	X	X
	Antenna AT-1108/ARC	Uhf-vhf antenna	X	X	X	X	X	X
	Radio Set AN/ARC-116.....	Uhf command radio	Z	Z	Z	Z	Z	Z
	Radio Set AN/ARC-134.....	Vhf radio	X	X	X	X	X	X
	Receiver-Transmitter Radio RT-857/ARC-134.	Vhf command radio.....	X	X	X	X	X	X
	Mounting MT-3791/ARC-134 .....	.....	X	X	X	X	X	X
	Control, Radio Set C-7197/ARC-134.....	Vhf radio control.....	X	X	X	X	X	X
	Antenna AT-1108/ARC	Uhf-vhf antenna	X	X	X	X	X	X
	Radio Set AN/ARC-115.....	Vhf command radio.....	Z	Z	Z	Z	Z	Z

b. Navigation (fig. 1-4 through 1-7).

Facility	Equipment or component	Common name	Configuration					
			A	B	C	D	E	F
Automatic direction finding (adf).	Direction Finder Set AN/ARN-83.....	Adf set	X	X	X	X	X	X
	Radio Receiver R-1391/ARN-83	Adf receiver.....	X	X	X	X	X	X
	Mounting MT-3605/ARN-83 .....	.....	X	X	X	X	X	X
	Direction Finder Control C-6899/ARC-83.	ADf control	X	X	X	X	X	X
	Antenna, Loop Type 137A-7	Loop antenna.....	X	X	X	X	X	X
Gyromagnetic compass system	Antenna, Sense P/N 209-030-133 .....	.....	X	X	X	X	X	X
	Direction Finder Set AN/ARN-89.....	Adf set	Z	Z	Z	Z	Z	Z
	Gyromagnetic Compass Set AN/ASN-43	Compass set.....	X	X	X	X	X	X
	Transmitter, Induction Compass T-611/ASN.	Flux valve.....	Z	Z	Z	Z	Z	Z
	Compensator, Magnetic Flux CN406/ASN.	.....	X	X	X	X	X	X
	Directional Gyroscope CN-998/ASN-43 .....	.....	X	X	X	X	X	X