

***Illustrated Parts List
and
Maintenance Instructions
with Initial Installation Instructions***

FOR

PUBLIC ADDRESS AND SIREN SYSTEM INSTALLATION

Part No. 369H90143

USED ON HUGHES 500D AND 500MD (MODEL 369D) HELICOPTERS



Hughes Helicopters division of summa corporation / culver city, california

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Opt Eqpt Manual

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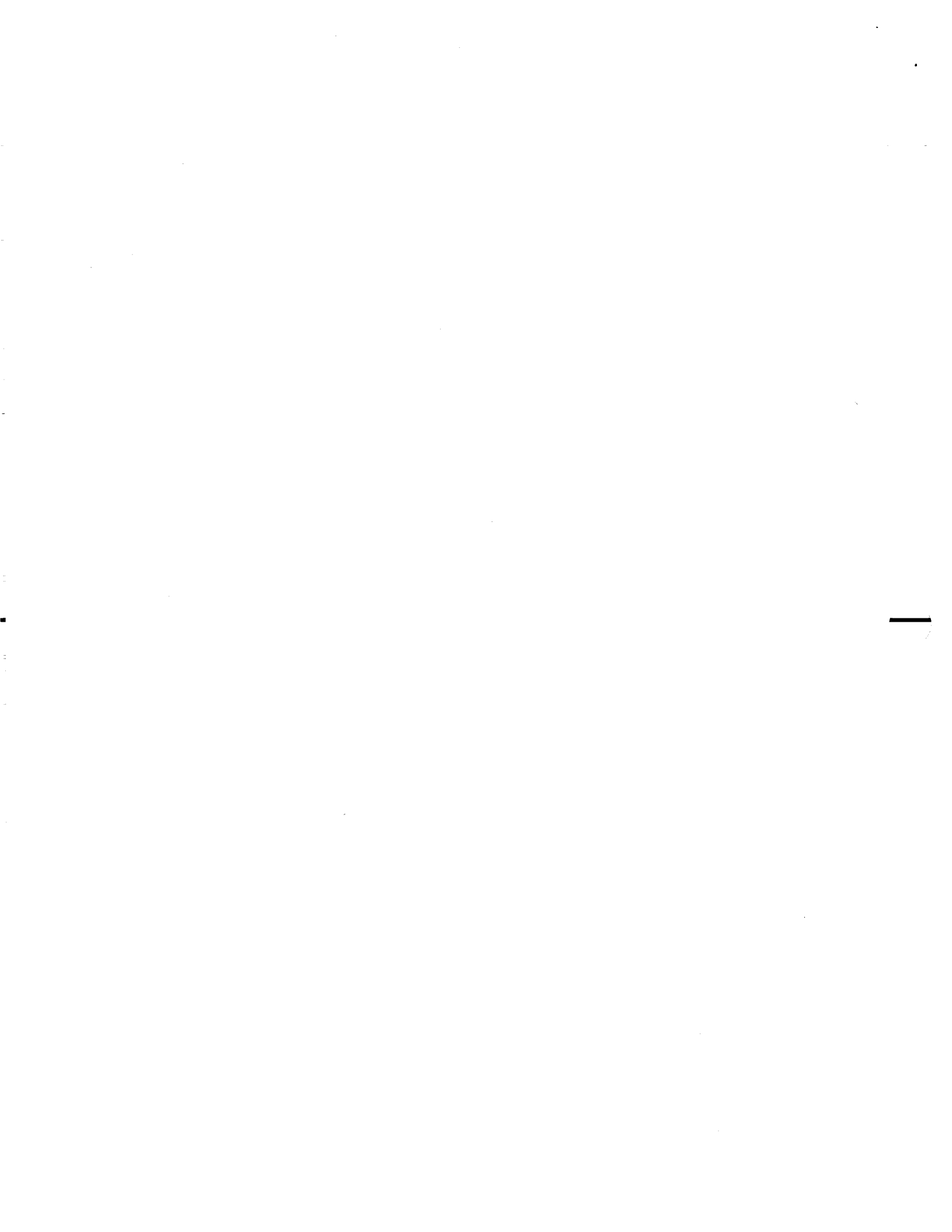


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FOREWORD

F-1. PURPOSE AND CONTENT OF THIS MANUAL.

F-2. This manual supplements information contained in HMI - Vol 1 and 369D - IPC, and contains instructions for initial installation and continuing maintenance of the public address and siren system. Weight and balance data is included. This manual also contains parts lists for procuring replacement parts for the system equipment.

F-3. APPLICABILITY.

F-4. The public address and siren system is applicable for use on any Hughes 500D and 500MD (Model 369D) helicopter.

F-5. COMPATIBILITY OF COMBINED OPTIONAL EQUIPMENT.

F-6. For compatibility information on which optional equipment may or may not be used in combination at the same time, refer to section 21, HMI - Vol 1.

F-7. ORGANIZATION OF CONTENTS.

F-8. The contents of this manual are grouped into sections as outlined in the Table of Contents.

Each section is organized to provide comprehensive coverage of entire systems, major equipment groupings, and major components that are similar or associated. Procedures for each of these are presented in sequence as defined in section 1, HMI - Vol 1.

F-9. USE OF THIS MANUAL.

F-10. This manual is for use by operators of the Model 369D helicopter equipped with the public address and siren system. Although this manual is a separate publication, it should be kept with HMI - Vol 1, HMI - Vol 2, 369D - IPC, and other handbooks listed in section 1, HMI - Vol 1 that form the primary information file for the helicopter.

F-11. RELATED PUBLICATIONS.

F-12. Reference is made to applicable portions of HMI - Vol 1, 369D - IPC, and applicable Opt Eqpt Manuals as required to accomplish instructions contained herein.

F-13. LITERATURE CHANGES AND REVISIONS.

F-14. Changes and revisions to contents of this manual are made as defined in section 1, HMI - Vol 1.



SECTION 1

ILLUSTRATED PARTS LIST

1-1. SCOPE AND CONTENTS.

1-2. This illustrated parts list provides, by means of text (parts lists) and companion illustrations, a complete parts definition of the public address and siren system manufactured by Hughes Helicopters, Culver City, California.

NOTE: The illustrated parts list is organized and presented on the same manner as the 369D Series Illustrated Parts List (369D - IPC).
(For information on use, refer to 369D - IPC.)

1-3. GROUP ASSEMBLY PARTS LIST.

1-4. The parts lists furnish information for procuring replacement parts for the public address and siren system, and shall not be used for any other purpose. For information or procurement of other replacement parts, refer to 369D - IPC.

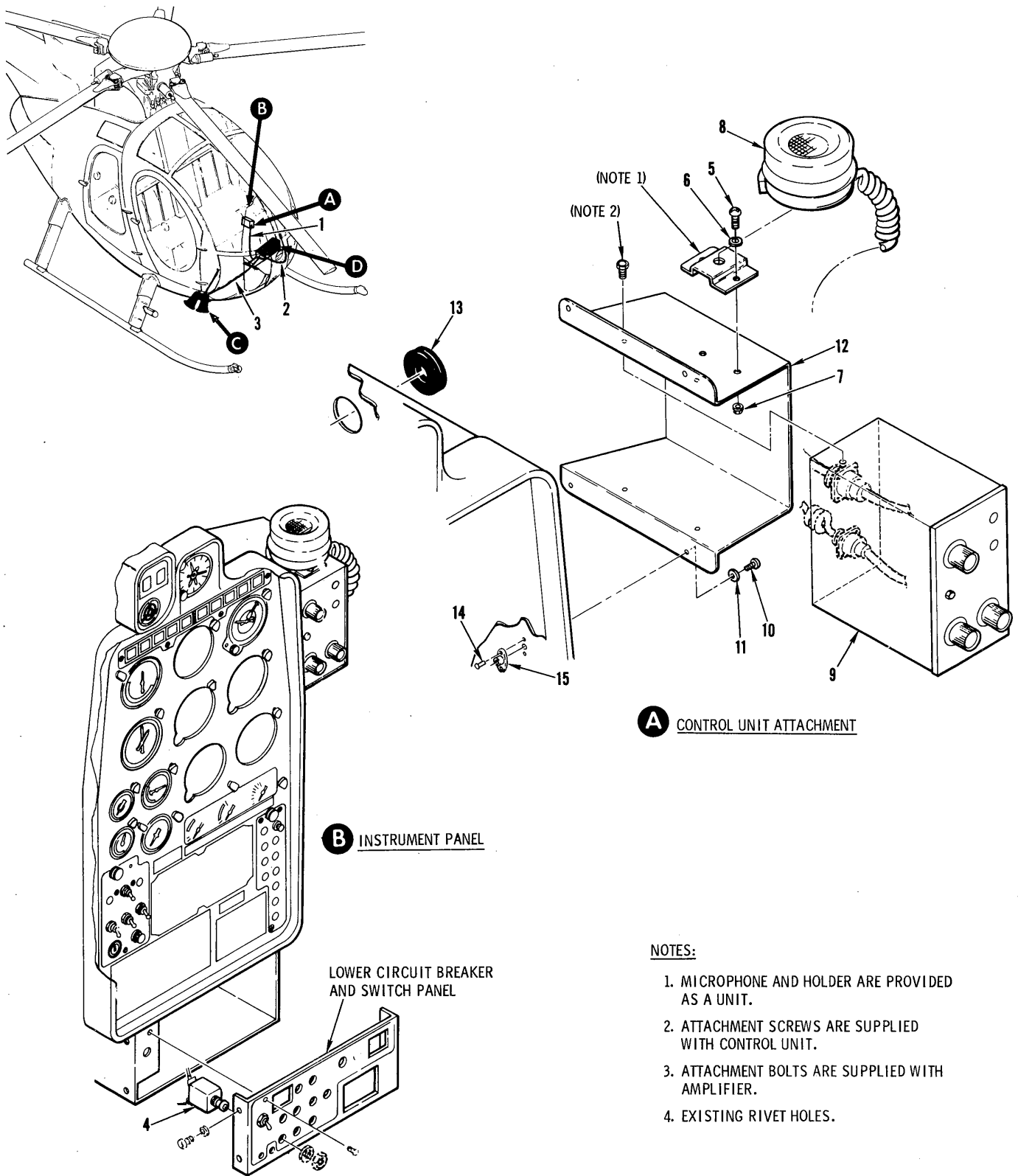
1-5. ILLUSTRATIONS.

1-6. Isometric illustrations are provided for each group assembly parts list. Each illustration is exposed to the extent necessary to show parts relationship for the public address and siren system installation.

1-7. USABLE ON CODE.

1-8. The USABLE ON CODE column located at the right-hand side of the Group Assembly Parts List pages indicates the effectivity of parts by aircraft serial number. In many cases two different parts are listed, one representing the original installation and another representing an improved replacement item. Alphabetic codes are used to indicate the aircraft serial number applications of a given part. When no USABLE ON CODE is listed, items are understood to have full effectivity.

FIG. & INDEX NO.	PART NO.	DESCRIPTION	UNITS PER ASSY	USABLE ON CODE
1-1-	369H90143-501	PUBLIC ADDRESS AND SIREN SYSTEM INSTALLATION KIT	REF	
-1	369H90143-17	. WIRE HARNESS ASSEMBLY	1	
-2	369H90143-15	. WIRE HARNESS ASSEMBLY	1	
-3	369H90143-19	. WIRE HARNESS ASSEMBLY	1	
-4	MS25244-25	. CIRCUIT BREAKER (CB 129)	1	
-5	NAS603-6	. SCREW	2	
-6	AN960-8L	. WASHER	2	
-7	MS21042-08	. NUT	2	
-8	CM88B	. MICROPHONE AND HOLDER	1	
-9	RMC-1S-A	. CONTROL UNIT	1	
-10	NAS1218-06-2	. SCREW	4	
-11	AN960P06L	. WASHER	4	
-12	369H90143-23	. SUPPORT	1	
-13	MS35489-15S	. GROMMET	1	
-14	MS20470B3	. RIVET	8	
-15	NAS697C06LM	. NUTPLATE	4	
-16	NAS623-3-3	. SCREW	4	
-17	AN960PD10	. WASHER	4	
-18	MS21042-3	. NUT	2	
-19	MS20470AD4	. RIVET	8	
-20	369H90143-31	. BRACKET ASSEMBLY	1	
-21	369H90143-41	. BRACKET ASSEMBLY	1	
-22	MS25171-1S	. NIPPLE	4	
-23	369H90143-21	. LOUDSPEAKER ASSEMBLY	1	
-24	MS35489-16	. GROMMET	1	
-25	MS20470AD3-3	. RIVET	6	
-26	369H90143-27	. DOUBLER	1	
-27	AN935-416L	. WASHER	8	
-28	MA-500	. AMPLIFIER	1	
-29	NAS1403-3	. SCREW	4	
-30	NAS960PD10	. WASHER	4	
-31	369H90143-3	. SUPPORT	4	
-32	NAS1403-3	. SCREW	8	
-33	AN960PD10	. WASHER	8	
-34	MS21042-3	. NUT	8	
-35	369H90143-11	. CHANNEL ASSEMBLY	1	
-36	NAS1403-3	. SCREW	4	
-37	AN960PD10	. WASHER	4	
-38	369H90137-3	. FORWARD SUPPORT	1	
-39	369H90137-4	. AFT SUPPORT	1	
-40	MS20470AD3	. RIVET	44	
-41	369A2515-27	. SUPPORT CHANNEL	1	
-42	MS20426AD3	. RIVET	4	
-43	NAS686A3K	. NUTPLATE	2	
-44	NAS1329C3-8	. RIVNUT	2	



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Figure 1-1. Public address and siren system installation kit (sheet 1 of 2)

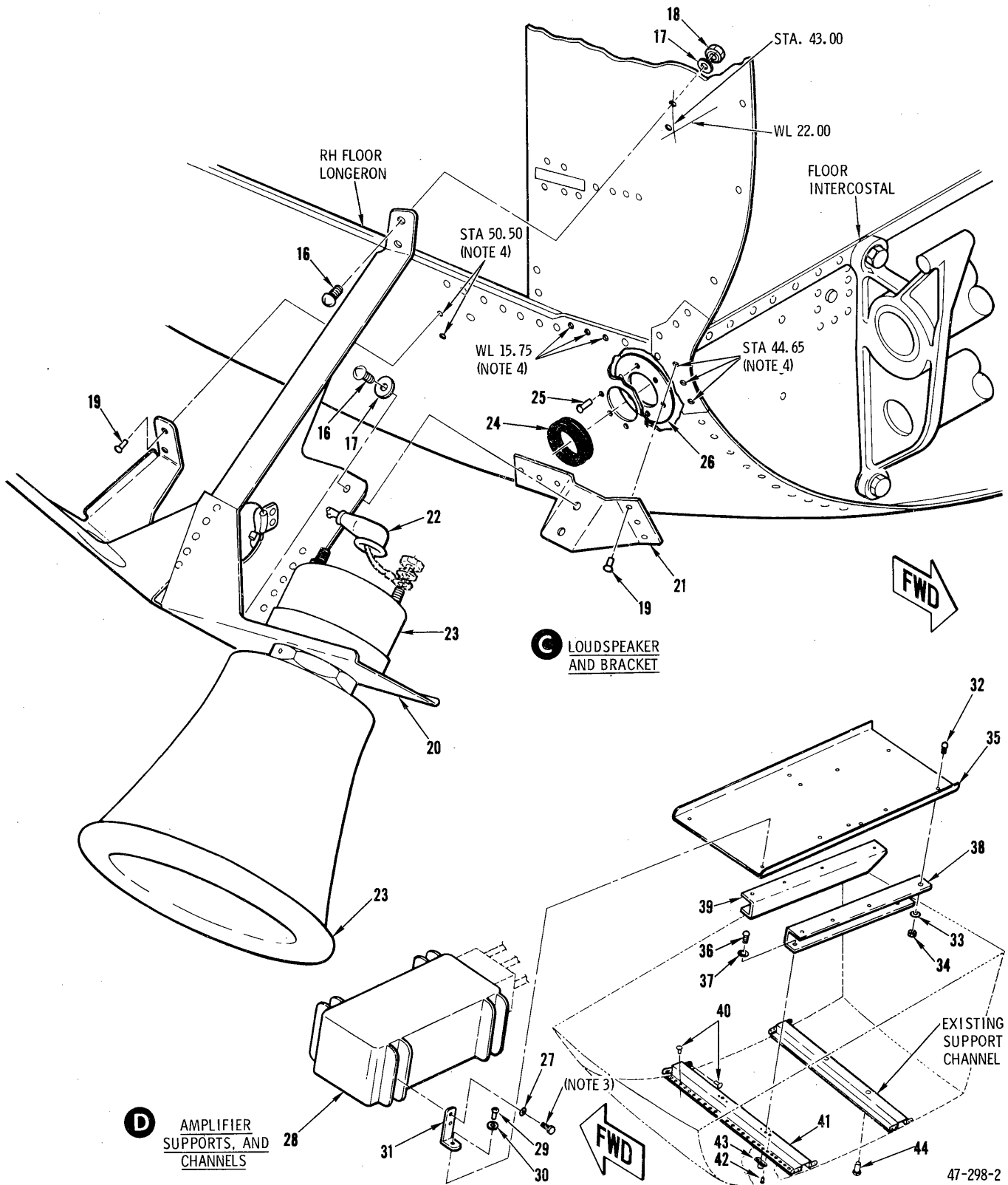


Figure 1-1. Public address and siren system installation kit (sheet 2 of 2)

SECTION 2

MAINTENANCE INSTRUCTIONS

2-1. GENERAL INFORMATION.

2-2. **DESCRIPTION.** The public address and siren system provides the helicopter with an integral airborne installation consisting of an audio amplifier, two loudspeakers, a remote control unit, microphone, system circuit breaker, three interconnecting wire harness assemblies, miscellaneous electrical wiring, and brackets and attachment hardware (fig. 1-1). All three wire harness assemblies are attached to the audio amplifier; one assembly provides dc power to the amplifier, and the remaining two assemblies provide dc power from the amplifier to the control unit and loudspeakers. The amplifier is installed in the lower electronics compartment under the pilot's compartment floor. The loudspeakers are attached to a bracket on the exterior of the fuselage, just forward and below the door on the right side of the pilot's compartment. The remote control unit is mounted on the upper right side of the instrument panel for access by both the pilot and copilot. The microphone is attached to a holder on top of the remote control unit support.

2-3. **REFERENCE DATA.** Information pertaining to helicopter structural components which interface with the public address and siren system installation is in the Structural Repair Manual (369D - SRM). Information pertaining to standard helicopter equipment is in HMI - Vol 1 and 369D - IPC.

2-4. TROUBLESHOOTING.

2-5. Use information provided in table 2-1 for troubleshooting the public address and siren system installation.

2-6. OPERATIONAL CHECK.

2-7. With helicopter on ground, perform operational check of public address and siren system as follows:

a. Place BATTERY-OFF-EXT PWR switch at BATTERY position. Verify PA SYS circuit breaker on lower circuit breaker and switch panel is engaged.

b. On control unit panel, place selector knob for public address system at on position.

c. Using microphone removed from top of control unit, check operation of public address system. Position selector knob as required for desired audio control.

d. Verify that both loudspeakers are in operation.

e. Place siren selector knob in on position, check siren operation in yelp or curdler positions on adjacent selector knob; then place siren selector knob in off position.

f. Place selector knob for public address system at off position. Stow microphone on top of control unit.

g. Place BATTERY-OFF-EXT PWR switch at OFF position.

2-8. REPLACEMENT OF SYSTEM COMPONENTS.

2-9. AMPLIFIER.

a. Verify BATTERY-OFF-EXT PWR switch at OFF position.

b. Open floor access door on left side of pilot's compartment for access to electronics compartment and amplifier, as specified in section 2, HMI - Vol 1.

c. Disconnect wire harness assemblies (1, 2, 3, fig. 1-1) from amplifier at connectors P558, P559, and P560 (para 2-18).

d. Loosen and remove four screws (29) and washers (30) from amplifier support (31). Remove amplifier (28) and attached supports (31) from channel assembly (35) in compartment.

e. Prepare replacement amplifier as follows:

NOTE: A good structural electrical bond (ground) must exist between amplifier (28) and channel assembly (35) mounted in electronics compartment (refer to section 19, HMI - Vol 1).

(1) Remove bolts and washers (27) securing supports (31) on removed amplifier (28). Discard bolts and washers (27) but retain supports (31) for installation.

(2) Remove and discard supports provided on replacement amplifier. Retain bolts and washers (27) for installation.

Table 2-1. Troubleshooting public address and siren system

Symptom	Probable Trouble	Corrective Action
Electrical dc power not available when system turned on.	No dc power on helicopter main bus.	Refer to section 19, HMI - Vol 1.
	Disconnected or defective system circuit breaker.	Connect or replace circuit breaker, as required.
	Fuse blown at amplifier.	Replace fuse at amplifier.
	Disconnected or defective wire harness between circuit breaker and amplifier.	Connect or replace wire harness between circuit breaker and amplifier.
Circuit breaker trips.	Amplifier defective.	Replace amplifier.
	Overload or short circuit in system equipment.	In turn, check loudspeakers, control unit, and amplifier for short circuits; also check electrical bond connections (ground) at control unit and amplifier.
No audio when public address position is selected on control unit.	Microphone disconnected or defective.	Connect or replace microphone.
	Defective circuits in control unit.	Replace control unit.
	Disconnected or defective wire harness between amplifier and control unit.	Connect or replace wire harness between amplifier and control unit.
No audio when siren position is selected on control unit.	Defective siren circuits in amplifier.	Replace amplifier.
	Defective circuits in control unit.	Replace control unit.
	Disconnected or defective wire harness between amplifier and control unit.	Connect or replace wire harness between amplifier and control unit.
No audio at loudspeaker(s).	Disconnected terminals at loudspeaker(s).	Connect terminals at loudspeaker(s).
	Damaged loudspeaker(s).	Repair or replace loudspeaker(s).

(3) Install supports (31) retained from removed amplifier and secure to replacement amplifier (28) with new bolts and washers (27).

(4) Check and make certain that 15-ampere fuse is installed in amplifier (28).

f. Install amplifier (28) in electronics compartment and secure amplifier (28) and attached supports (31) to channel assembly (35) with washers (30) and screws (29).

g. Connect wire harness assemblies (1, 2, 3) to amplifier at connectors P558, P559, and P560 (para 2-18).

h. Perform operational check of system (para 2-6).

i. Close and secure floor access door on left side of pilot's compartment.

2-10. LOUDSPEAKERS.

a. Verify BATTERY-OFF-EXT PWR switch at OFF position.

b. Disconnect wire harness assembly (3) from loudspeaker at drive unit (fig. 2-1 and para 2-18).

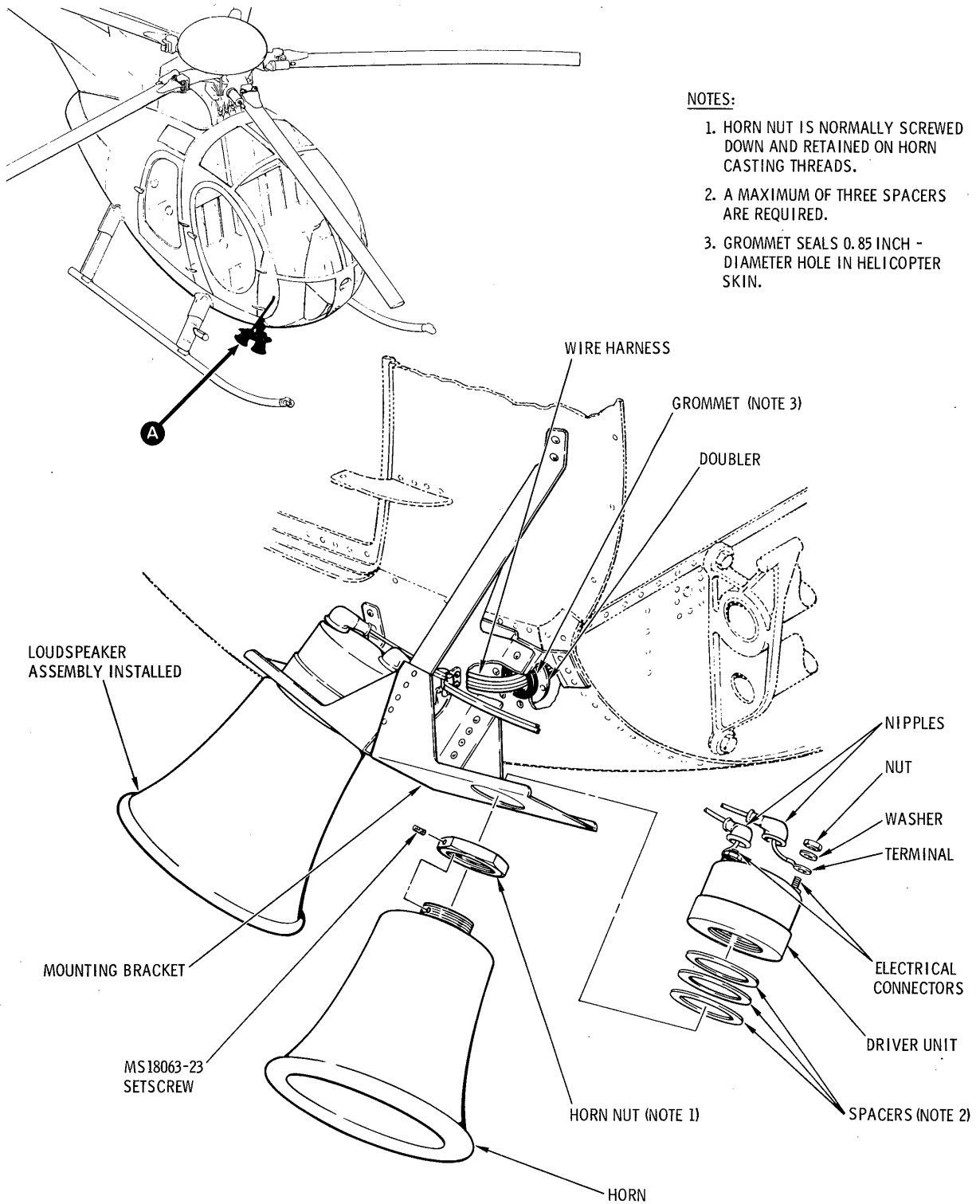
c. Loosen and remove setscrew securing horn nut to threaded end of horn (fig. 2-1).

d. Loosen horn nut, and remove driver unit, horn, and spacers from mounting bracket.

e. Repeat steps b through d for removal of remaining loudspeaker assembly.

f. Install threaded end of horn through attachment hole in mounting bracket; then attach driver unit and spacers to threaded end of horn.

g. Position driver unit as required and secure to mounting bracket with horn nut.



NOTES:

1. HORN NUT IS NORMALLY SCREWED DOWN AND RETAINED ON HORN CASTING THREADS.
2. A MAXIMUM OF THREE SPACERS ARE REQUIRED.
3. GROMMET SEALS 0.85 INCH - DIAMETER HOLE IN HELICOPTER SKIN.

A LOUDSPEAKERS (LOOKING INBOARD)

Figure 2-1. Loudspeaker installation

h. If required, use drill motor and appropriate drill bit to provide hole for setscrew in threaded end of horn as follows:

- (1) Use horn nut as template.
- (2) Drill 0.1405-inch diameter hole in horn casting.
- (3) Tap hole for setscrew (fig. 2-1).

i. Secure horn nut in place with setscrew. Using 0-50 inch-pound torque wrench, tighten setscrew to torque of 6 inch-pounds.

j. Connect wire harness assembly (3, fig. 1-1) to loudspeaker at drive unit (fig. 2-1 and para 2-18).

k. Perform operational check of system (para 2-6).

2-11. CONTROL UNIT AND MICROPHONE.

a. Verify BATTERY-OFF-EXT PWR switch at OFF position.

b. Remove microphone (8, fig. 1-1) from holder, and disconnect microphone cord from aft side of control unit at connector P562 (para 2-17). Retain microphone for installation.

c. Disconnect wire harness assembly (1) from aft side of control unit (9) at connector P561 (para 2-17).

d. Loosen and remove screws (10) and washers (11) from support (12). Remove support (12) and control unit (9) from right side fairing of instrument panel.

e. Prepare replacement control unit as follows:

NOTE: A good structural electrical bond (ground) must exist between control unit (9), support (12), and instrument console structure (refer to section 19, HMI - Vol 1).

(1) Remove screws securing support (12) on control unit (9). Discard screws.

NOTE: Detached control unit support (12) has attached microphone holder.

(2) Install support (12) on replacement control unit (9), using screws supplied with unit.

f. Using washers (11) and screws (10), secure control unit (9) and support (12) to right side fairing on instrument panel structure.

g. Connect wiring harness assembly (1) to aft side of control unit (9) at connector P561 (para 2-17).

h. Connect microphone cord to aft side of control unit (9) at connector P562 (para 2-17). Stow microphone (8) on holder.

i. Perform operational check of system (para 2-6).

2-12. CIRCUIT BREAKER.

a. Verify BATTERY-OFF-EXT PWR switch at OFF position.

b. Remove PA SYS circuit breaker (4) from lower switch and circuit breaker panel as follows:

(1) Remove screws and lower switch and circuit breaker panel from instrument panel for access to PA SYS circuit breaker (HMI - Vol 1).

(2) Tag and disconnect wiring from PA SYS circuit breaker at terminals CB129-1 and CB129-2; and remove circuit breaker from panel.

c. Install PA SYS circuit breaker (4) on lower switch and circuit breaker panel as follows:

(1) Install PA SYS circuit breaker on panel and connect wiring to circuit breaker terminals CB129-1 and CB129-2.

(2) Install and secure lower switch and circuit breaker panel to instrument panel with screws (HMI - Vol 1).

d. Perform operational check of system (para 2-6).

2-13. **ELECTRICAL WIRING.** The electrical wiring for the public address and siren system consists of a power input wire harness assembly (2), control unit input wire harness assembly (1), and loudspeaker output wire harness assembly (3). Refer to figure 2-2 for detailed wiring diagram, assembly connectors, and individual wire and connector data.

a. Verify BATTERY-OFF-EXT PWR switch at OFF position.

b. Disconnect power input wire harness assembly (2, fig. 1-1) from amplifier at connector P558, from PA SYS circuit breaker terminal CB129-2 (para 2-12), and from helicopter ground at TB6-4 (section 20, HMI - Vol 1) as shown in figure 2-2. Disconnect nylon tie straps (2, table 3-1) and remove wire harness assembly.

c. Disconnect control unit input wire harness assembly (1, fig. 1-1) from amplifier at connector P559, and from control unit at connector P561 as shown in figure 2-2. Disconnect nylon tie straps (2, table 3-1) and remove wire harness assembly.

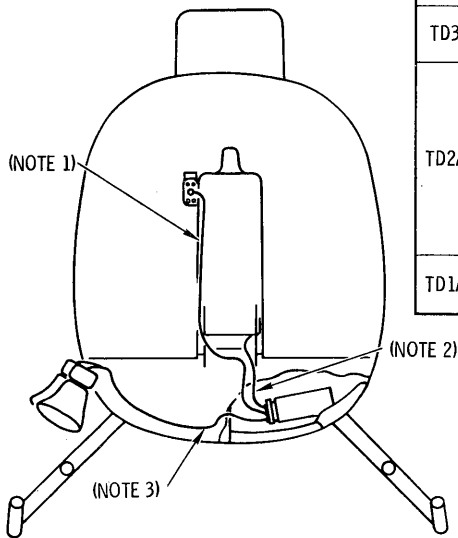
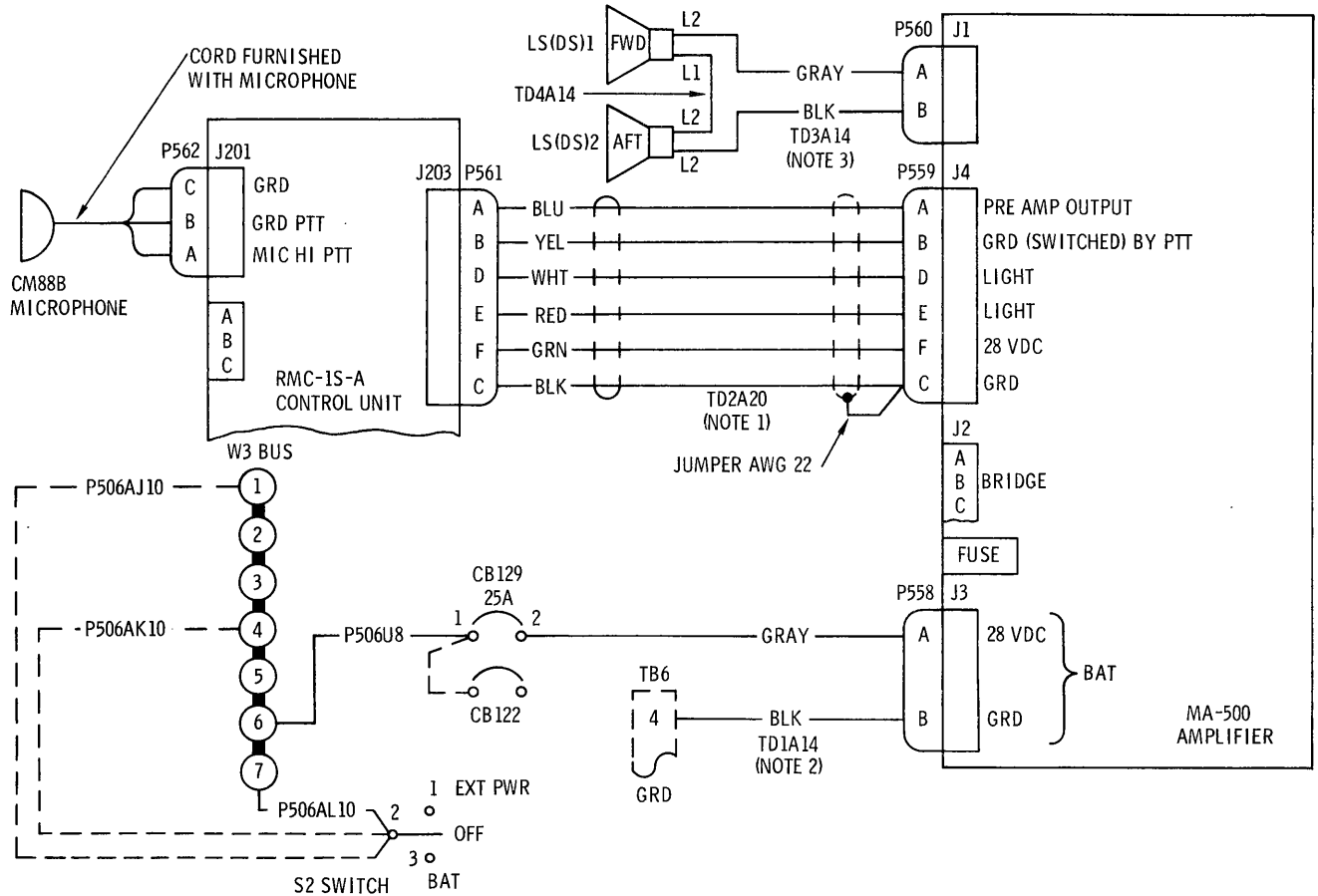
d. Disconnect loudspeaker output wire harness assembly (3, fig. 1-1) from amplifier at connector P560, and loudspeaker connectors LS(DS)1 and LS(DS)2 as shown in figure 2-2. Disconnect wire TD4A14 at loudspeaker connectors LS(DS)1-L1 and LS(DS)2-L2. Disconnect nylon tie straps (2, table 3-1) and remove wire harness assembly.

e. Install wire harness assemblies (1, 2, 3, fig. 1-1) in reverse order of removal, steps b through d, and secure as required with nylon tie straps (2, table 3-1).

f. Perform operational check of system (para 2-6).

2-14. INSPECTION.

2-15. Inspect components of public address and siren system in accordance with the following:



WIRE TABLE					
WIRE NO.	CUT LENGTH	FROM	TERMINATION	TO	TERMINATION
P506U8	24.00	W3-6	MS25036-115	CB129-1	MS25036-115
TD4A14	15.00	LS(DS)1-L1	MS25036-153	LS(DS)2-L2	MS25036-153
TD3A14	GRAY (NOTE 3)	LS(DS)2-L2	MS25036-153	P560-A	SOLDER
	BLK (NOTE 3)	LS(DS)2-L1	MS25036-153	P560-B	SOLDER
TD2A20	JUMPER (NOTE 1)	SHLD (TD2A-20)	D121	P559-C	SOLDER
	BLK (NOTE 1)	P561-C	SOLDER	P559-C	SOLDER
	YEL (NOTE 1)	P561-B	SOLDER	P559-B	SOLDER
	BLU (NOTE 1)	P561-A	SOLDER	P559-A	SOLDER
	WHT (NOTE 1)	P561-D	SOLDER	P559-D	SOLDER
	RED (NOTE 1)	P561-E	SOLDER	P559-E	SOLDER
TD1A14	GRN (NOTE 1)	P561-F	SOLDER	P559-F	SOLDER
	GRAY (NOTE 2)	P558-A	SOLDER	CB129-2	MS25036-153
	BLK (NOTE 2)	P558-B	SOLDER	TB6-4	MS25036-108

NOTES:

- CONTROL UNIT INPUT WIRE HARNESS ASSEMBLY.
- POWER INPUT WIRE HARNESS ASSEMBLY.
- LOUDSPEAKER OUTPUT WIRE HARNESS ASSEMBLY.
- W3 BUS AND ITEMS INDICATED BY DASHED (---) LINES ARE PART OF HELICOPTER ELECTRICAL SYSTEM.

Figure 2-2. System wiring diagram

a. Inspect condition of wire harness assemblies and wiring connectors at control unit (9, fig. 1-1), amplifier (28), and loudspeaker (23).

b. Inspect loudspeakers and external brackets for deformation and damage.

c. Inspect grommet (24) for deformation, damage, and proper installation.

2-16. REPAIR.

2-17. Repair of public address and siren system is limited to replacement of defective or damaged parts as follows:

a. Replace damaged or frayed wiring and connectors.

b. Replace damaged loudspeakers and external brackets.

c. Replace grommet (24). Check proper installation in doubler as shown in figure 2-1.

2-18. WIRING DIAGRAM.

2-19. See figure 2-2 for the public address and siren system wiring diagram.

SECTION 3 INSTALLATION INSTRUCTIONS

3-1. GENERAL INFORMATION.

3-2. **SCOPE.** Procedures in this section may be performed at operator's discretion and are applicable to all Model 369D helicopters. These instructions provide for the installation of the public address and siren system, and include a modification to the helicopter structure just forward and below the right door on the pilot's compartment.

3-3. **REFERENCE DATA.** Reference is made in the instructions to applicable data in HMI - Vol 1 required for the public address and siren system installation. Table 3-1 lists consumable materials

and expendable items as well as electrical components required for installation. Items listed are recommended items of a commercial nature which may be procured locally. Alternate, but equivalent, items are acceptable.

3-4. **PREPARATION FOR INSTALLATION.** Preparation for installation of the public address and siren system includes the following:

a. Check all electrical switches for OFF position, and ensure that BATTERY-OFF-EXT PWR switch is at OFF.

b. Identify all components, including attaching hardware, to be removed for access to work areas. Protect components from damage and foreign matter until reinstalled.

Table 3-1. Consumable materials and expendable items

Item No.	Material	Specification No. ⁽¹⁾	Commercial Product ⁽²⁾	
			Name/No.	Manufacturer
1	Primer, zinc chromate	MIL-P-8585	(3)	
2	Tie strap, nylon	MS17821-1-9	Ty-Rap	
3	Sleeving, tube, 1/4-inch, white	RNF-100		Transparent Products, Los Angeles, CA
4	Sleeving, tube, 1/4-inch, black	RNF-100		Transparent Products, Los Angeles, CA
5	Sleeving, tube, 1/2-inch black	RNF-100		Transparent Products, Los Angeles, CA
6	Sleeving, tube, 3/8-inch, black	RNF-100		Transparent Products, Los Angeles, CA

- NOTES: (1) Numbers are U.S.A. Specifications and Standards. The prefix symbols are defined as follows: AMS - American Material Standard; MS - Military Standard; MIL - Military Specification; Single, double, or triple alpha prefix of the same letter - Federal Specification; AN - Air Force-Navy Aeronautical Standard; NAS - National Aerospace Standard.
- (2) Primary selection. Any equivalent material may be used as an alternate selection.
- (3) Use the best comparable grade material when the conformity of available materials of the same type with the listed Specification No. cannot be determined.

3-5. REMOVAL OF HELICOPTER EQUIPMENT.

3-6. Prior to installing the public address and siren system, a limited number of items must be removed from the helicopter to accommodate the installation. Refer to HMI - Vol 1 and perform the following:

- a. Remove left and right access doors from pilot's floor compartment.
- b. If applicable, remove stowage box from pilot's right side floor compartment.
- c. Remove seats from crew compartment.
- d. Remove hood and right side fairing from instrument panel structure.

3-7. MODIFICATION OF HELICOPTER.

3-8. Modification of the helicopter (fig. 3-1) consists of providing an access port for the loudspeaker output wire harness assembly through the fuselage skin at the pilot's right side floor compartment as follows:

- a. Locate and mark hole center for cutout in fuselage skin. Center of cutout is located on right side of pilot's compartment 2.06 ±0.06 inches below longeron at WL 15.75 and 1.89 ±0.06 inches aft of station 44.65.
- b. Using chassis punch or equivalent, cut 0.85-inch diameter hole in fuselage skin as required.

NOTE: For installation of doubler on cutout in fuselage skin, refer to paragraph 3-12.

3-9. INSTALLATION OF SYSTEM COMPONENTS.

3-10. **GENERAL.** Installation of the public address and siren system includes procedures for installing the amplifier on channel supports in the electronics compartment, loudspeakers on brackets just forward and below the right door of the pilot's compartment, control unit and microphone with support on the upper right side of the instrument panel, circuit breaker on the lower circuit breaker and switch panel, and wire harness assemblies for the system. The general notes that apply to the subsequent procedures are as follows:

NOTES:

1. After drilling or cutting operations, remove burrs and metal particles. Apply a thin coat of zinc chromate primer (1, table 3-1) when installing rivets or to bare metal areas, except when hole is to be used for electrical ground or bonding purposes. Color matched paint may be applied over zinc chromate primed areas.

2. When providing ground for electrical components or for electrical bonding purposes, clean designated structure areas to bare metal surface as specified in section 19, HMI - Vol 1.
3. Do not tighten electrical clamps or secure electrical wiring to existing harnesses until all electrical wiring is installed.

3-11. **AMPLIFIER ASSEMBLY.** The following defines a procedure for reinforcing the electronics equipment floor structure, and for installing the amplifier assembly.

- a. Using drill motor and appropriate drill bit, remove rivets securing existing two nutplates to existing support channel (41, fig. 1-1) installed on electronics compartment floor.
- b. Drill and enlarge existing holes in support channel to 0.257-inch diameter holes. Install rivnuts (44) in support channel using rivnut header.
- c. Drill and enlarge two existing holes in new support channel (41) to 0.204-inch diameter holes for installation of nutplates (43). Using nutplates (43) as templates, drill four 0.098-inch diameter rivet attach holes in channel (41) and secure nutplates (43) to support channel (41) with rivets (42).
- d. Using support channel (41) as template, drill 0.098-inch diameter rivet attach holes in electronics compartment floor, frame structure at station 50.50, and canted station 64.365 as shown in figure 3-1. Attach support channel (41, fig. 1-1) to electronics compartment with rivets (40).

NOTE: When installing support hardware for amplifier, provide ground by cleaning contact surfaces of compartment floor, hardware, and amplifier to bare metal.

- e. Using screws (36) and washers (37), attach forward and aft supports (38, 39) to support channel (41) and existing channel.
- f. Using screws (32), washers (33), and nuts (34), attach channel assembly (35) to forward and aft supports (38, 39).
- g. Using screws (29) and washers (30), attach supports (31) to channel assembly (35).

NOTE: Nutplates are provided to secure screws (29) on channel assembly (35).

- h. Using washer (27) and existing amplifier bolts, attach amplifier (28) to supports (31) on channel assembly (35).

NOTE: Electrical wiring at amplifier (28) is not installed at this time (refer to paragraph 3-15).

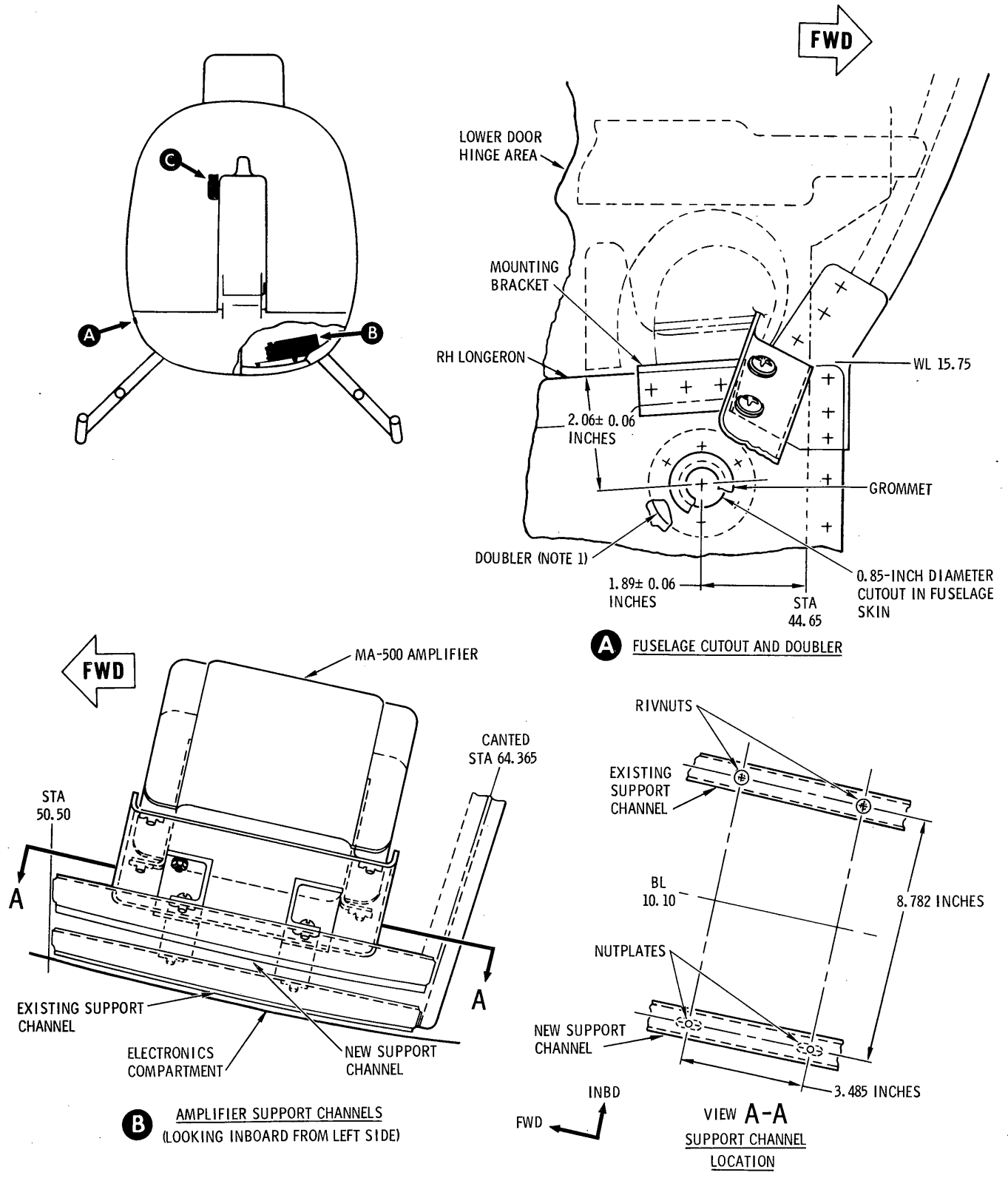
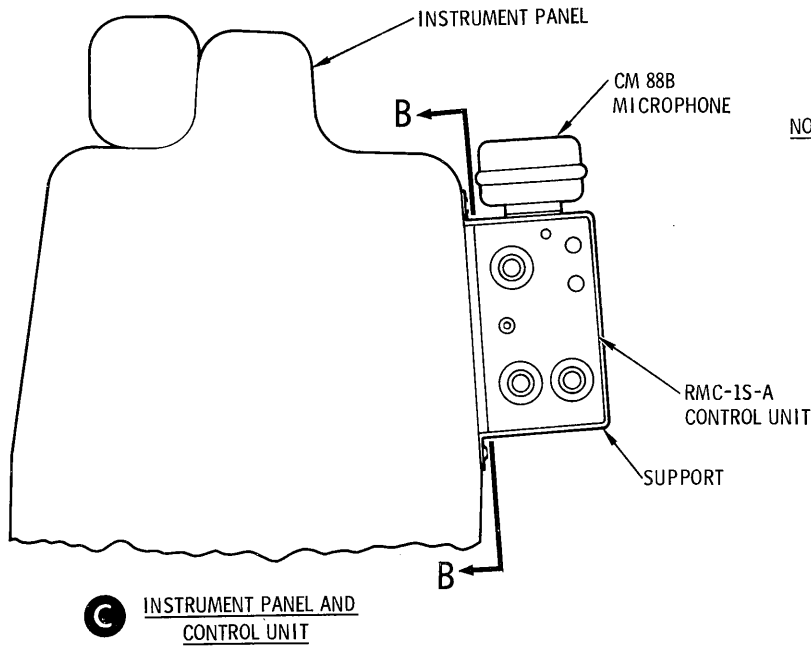
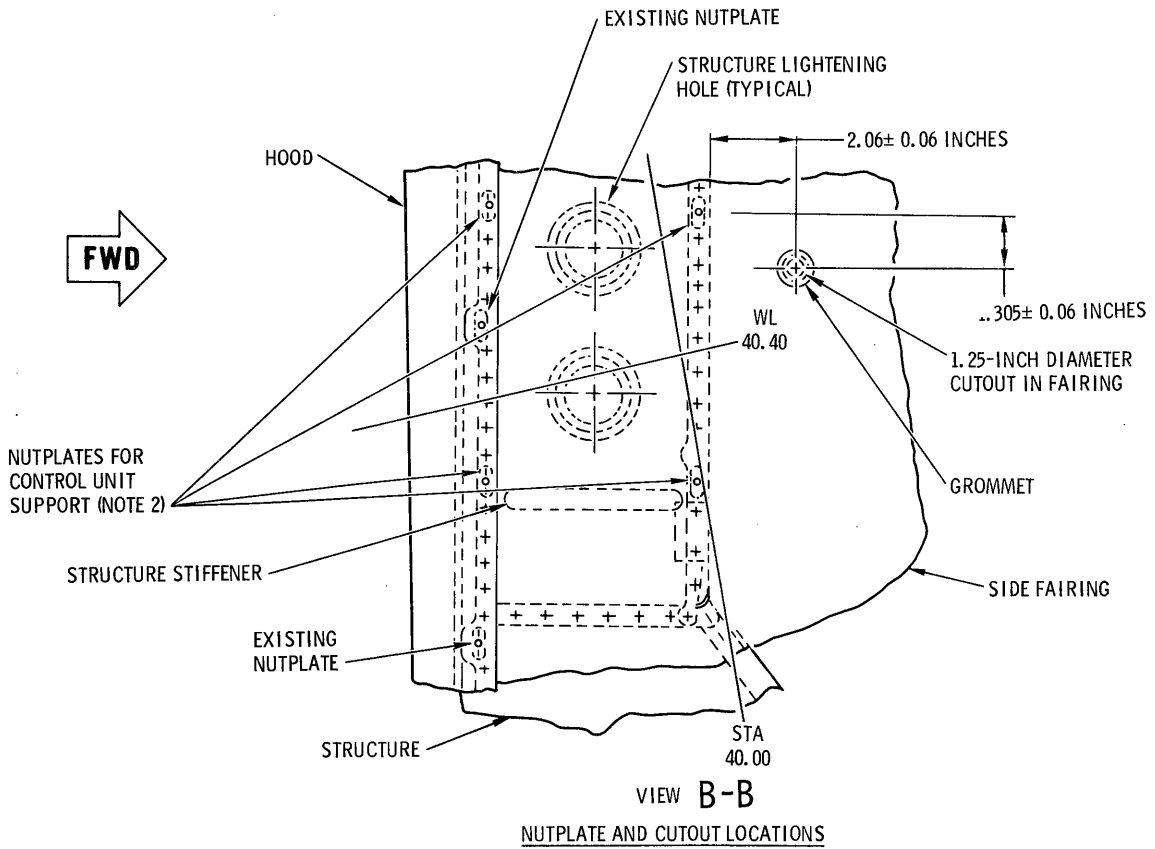


Figure 3-1. Modification and reinforcement dimensions (sheet 1 of 2)



NOTES:

1. DOUBLER ON FUSELAGE SKIN REQUIRES SIX EQUALLY SPACED RIVETS.
2. EXISTING RIVET HOLES ARE ENLARGED FOR NUTPLATE INSTALLATIONS. DETERMINE NUTPLATE LOCATIONS FROM EXISTING RIVETS ABOVE AND BELOW EXISTING NUTPLATES, STRUCTURE LIGHTENING HOLES, AND STRUCTURE STIFFENER AS SHOWN.



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Figure 3-1. Modification and reinforcement dimensions (sheet 2 of 2)

3-12. LOUDSPEAKER ASSEMBLY. The following defines a procedure for installing the loudspeaker and support brackets on the helicopter, including a doubler on the cutout in the fuselage skin just forward and below the right side pilot's compartment door.

a. Use doubler (26, fig. 1-1) as template, and determine six rivet hole locations required through fuselage skin. Using drill motor and appropriate bit, drill 0.098-inch diameter rivet attach holes around circumference of cutout. Attach doubler (26) to fuselage skin with rivets (25) as shown in figure 3-1.

b. Install grommet (24, fig. 1-1) in fuselage skin cutout, as required.

c. Verify that loudspeakers (23) are installed on bracket (20), and that bracket (21) is disconnected from bracket (20).

NOTES:

1. To facilitate installation of brackets (20, 21) make certain that bracket (21) is disconnected from bracket (20).

2. Nipples (22) used for protection of terminals at loudspeaker units may be stowed on wire harness or provided as loose equipment.

d. Position bracket (21) on outer fuselage skin, at right longeron (WL 15.75) and bulkhead (station 64.65), and determine rivet hole locations for bracket as shown. Drill 1.285-inch diameter rivet attach holes in bracket (21), and remove existing three rivets at right longeron and existing three rivets at bulkhead. Attach bracket (21) to fuselage skin with rivets (19).

e. Position bracket (20) on bracket (21) and determine rivet hole locations for upper and lower tabs on bracket (20) as shown. Drill two 0.204-inch diameter screw attach holes in bracket (20) to match nutplate attachment on bracket (21).

f. Remove two existing rivets from station 50.50, just below right longeron, corresponding to lower left tab on bracket (20); then drill two 1.285-inch diameter rivet attach holes in lower left tab to match rivet pattern.

g. Using screws (16) and washers (17), attach bracket (20) to nutplates on bracket (21).

h. Using rivets (19), attach lower left tab of bracket (20) to station 50.50, just below right longeron as shown.

i. Mark and drill two 0.169-inch diameter screw attach holes through upper tab of bracket (20) and fuselage skin at station 43.00, just above WL 22.00.

j. Using screws (16), washers (17), and nuts (18), attach upper tab of bracket (20) to fuselage skin as shown.

k. Verify loudspeakers are properly installed on bracket (20) and that horn nut is secured (para 2-10).

NOTE: Electrical wiring at loudspeakers is not installed at this time (refer to paragraph 3-15).

3-13. CONTROL UNIT AND MICROPHONE. The following defines a procedure for installing the control unit and microphone on the right side of the instrument panel.

a. Determine four hole locations on right side of instrument panel structure for nutplates (15) as shown in figure 3-1. Using drill motor and appropriate drill bit, remove applicable existing rivets in structure and enlarge to 0.177-inch diameter holes. Also, drill 0.098-inch diameter rivet attach holes at each nutplate (15, fig. 1-1) hole. Attach nutplates (15) to structure with rivets (14).

b. Position hood and side fairing on instrument panel structure, and determine access holes to nutplates (15) on structure; then remove hood and fairing. Drill two 0.177-inch diameter holes in fairing to match nutplates (15) as shown in figure 3-1.

c. Using upper forward access hole in side fairing as reference, determine location of cutout for electrical wiring as shown in figure 3-1. Using 1.25-inch diameter chassis punch or equivalent, cut hole in fairing as shown; then install grommet (13, fig. 1-1) in hole.

d. Position control unit support (12) over nutplate access holes on side fairing. Mark and drill four 0.177-inch diameter screw attach holes in support (12) for eventual attachment to nutplates (15).

e. Install side fairing and hood on instrument panel structure (HMI - Vol 1).

f. Using screws (10) and washers (11), attach support (12) to nutplates (15) on instrument panel.

g. Verify that microphone holder is attached to support (12) with screws (5), washers (6), and nuts (7); then attach control unit (9) in support (12) with screws supplied with unit. Stow microphone (8) in holder on control unit (9).

NOTE: Electrical wiring at control unit (9) is not installed at this time (refer to paragraph 3-15).

3-14. CIRCUIT BREAKER. For installation of circuit breaker (4), refer to paragraph 2-12.

3-15. ELECTRICAL WIRING. The following defines a procedure for installing the wire harness assemblies (1, 2, 3) in accordance with the wiring diagram and wiring table in figure 2-2 and the steps that follow.

a. Connect loudspeaker output wire harness assembly (3, fig. 1-1) to amplifier (28) and loudspeaker assembly (23) as follows:

- (1) Connect wire harness receptacle to amplifier (28) at connector P560.
- (2) Route wiring under pilot's compartment floor, and through grommet (24) in lower-forward right side of fuselage. Use nylon tie straps (2, table 3-1) to secure wiring as required.
- (3) Connect gray wire, with white sleeving (3), to forward loudspeaker connector LS(DS)1-L2.
- (4) Connect black wire, with black sleeving (4), to aft loudspeaker connector LS(DS)2-L1.
- (5) Connect wire No. TD4A14, with protective sleeving, to loudspeaker connectors LS(DS)1-L1 and LS(DS)2-L2.
- (6) Install nipples (22, fig. 1-1) to protect terminals at connectors.
- (7) Secure loudspeaker terminal wiring with cable tie attached to bracket assembly (20).

NOTE: Wire harness between amplifier and cable tie between loudspeakers is covered with black sleeving (6, table 3-1).

b. Connect power input wire harness assembly (2, fig. 1-1) to amplifier (28), circuit breaker (4), and helicopter ground as follows:

- (1) Connect wire harness receptacle to amplifier (28) at connector P558.
- (2) Route wiring from electronics compartment under pilot's compartment floor to aft side of lower circuit breaker and switch panel. Use nylon tie straps (2, table 3-1) to secure wiring as required.
- (3) Connect gray wire, with white sleeving (3, table 2-1), to circuit breaker terminal CB129-2.
- (4) Verify that wire No. P506U8 with terminals MS25036-115 at each end, and protective sleeving, is connected to circuit breaker (CB129) terminal (2) and bus (W3) terminal (6) (section 20, HMI - Vol 1).
- (5) Connect black wire, with black sleeving (4), to helicopter ground at TB6-4 (section 20, HMI - Vol 1).

NOTE: Wire harness between amplifier and cable tie aft of lower circuit breaker and switch panel is covered with black sleeving (6, table 3-1).

c. Connect control unit input wire harness assembly (1, fig. 1-1) to amplifier (28) and control unit (9) as follows:

- (1) Connect wire harness receptacle to amplifier (28) at connector P559.
- (2) Route wiring from electronics compartment under pilot's compartment floor to aft side of instrument panel, and through grommet (13) in upper right side fairing.
- (3) Connect wire harness receptacle to control unit (9) at connector P561.

NOTE: Wire harness between amplifier and control unit is covered with black sleeving (5, table 3-1).

- (4) Connect microphone receptacle to control unit (9) at connector P562.

d. Perform operational check of system (para 2-6).

3-16. INSTALLATION OF HELICOPTER EQUIPMENT.

3-17. After installation of public address and siren system, a limited number of items must be replaced in the helicopter. Refer to HMI - Vol 1 and perform the following:

- a. Install seats in crew compartment.
- b. If applicable, install stowage box in pilot's right side floor compartment.
- c. Install left and right access doors on pilot's floor compartment.

3-18. WEIGHT AND BALANCE DATA.

3-19. Weight and balance data resulting from installation of the public address and siren system is listed in table 3-2. After installation, incorporate changes in helicopter weight and balance records as instructed in HMI - Vol 2.

Table 3-2. Weight and balance data

Item	Weight (lb)	Arm (in.)	Moment (in.-lb/100)
-501 Kit (complete)			
Added	32.4	47.7	1545
Removed	0	0	0
Changed	32.4	47.7	1545