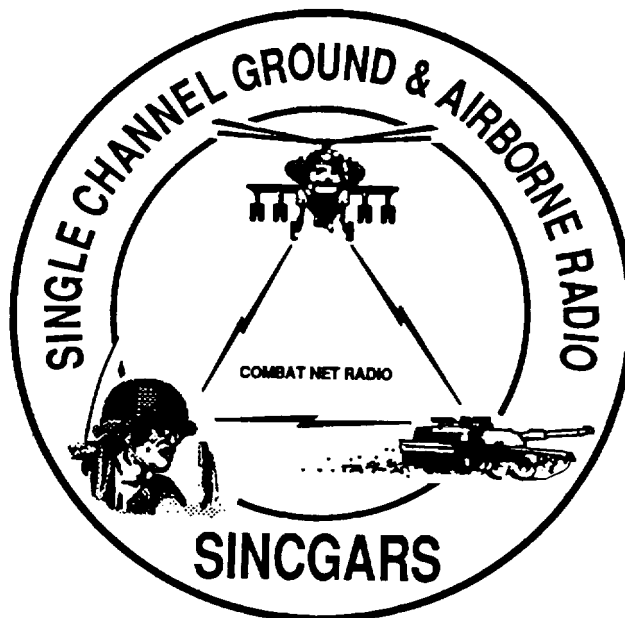**TECHNICAL BULLETIN**

**INSTALLATION INSTRUCTIONS FOR
INSTALLATION KIT
ELECTRONIC EQUIPMENT MK-2297/VRC
(NSN 5895-01-274-5065) (EIC: N/A)
TO PERMIT INSTALLATION OF RADIO SETS
ANNRC-87/88/90 SERIES
IN A
REPEATER SET RADIO AN/TRC-113 (S-250 Shelter)**

Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

1 SEPTEMBER 1993

TECHNICAL BULLETIN

NO. 11-5820-890-20-15

TB 11-5820-890-20-15
HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 1 SEPTEMBER 1993

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REPORTING OF 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, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LM-LT, Fort Monmouth, New Jersey 07703-5007.

In either case a reply will be furnished direct to you.

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0.1 SCOPE.

This technical bulletin provides installation instructions for Installation Kit, Electronic Equipment MK-2297NRC, commonly referred to as the Mounting Kit (MK). The MK shall be Installed into the following type of shelter(s):

• Repeater Set Radio AN/TRC-113 (S-250 Shelter)

The MK is used for installation of radio set components at field locations. The information contained in this technical bulletin is the official authorization to perform the installation at the unit maintenance level.

NOTES

• This technical bulletin is not an authorization for requisition or turn-in of shelters.

• This technical bulletin does not establish quantity or types of shelters assigned to using units.

This technical bulletin does not contain information on the maintenance or replacement of the MKs. This information is contained in the MAC of TM 11-5820-890-20-2, TM 11-5820-890-20-4 and RPSTL of TM 11-5820-890-20P.

0.2 GENERAL INFORMATION.

The MK becomes operable when all the radio set components are installed in the shelter and correct power is supplied. Refer to TM 11-5820-890-20-1 or TM 11-5820-890-20-4 for installation, Operational (OP) Check instructions, and required maintenance procedures. Refer to TM 11-5820-890-20P for repair parts.

Included in the radio set ANNRC-87/88/90 Series are:

• Radio Set ANNRC-87/88/90 (for RT-1439NRC)
• Radio Set ANNRC-87A/88A/90A (for RT-1523(C)/U)

0.3 MAINTENANCE FORMS, RECORDS, AND REPORTS.

0.3.1 Reports of Maintenance and Unsatisfactory Equipment. See Section 4.2.2.3 for information.

0.3.2 Report of Packing and Handling Deficiencies. See Section 4.2.2.1 for information.

0.3.3 Discrepancy In Transportation Deficiency Report (TDR) (SF361). See Section 4.2.2.2 for information.

0.4 CONSOLIDATED INDEX OF ARMY PUBLICATIONS.

Refer to the latest issue of DA Pam 25-30 to determine whether there are new changes, or additional publications pertaining to the equipment.

1. PURPOSE OF INSTALLATION.

The Installation Kit Electronic Equipment MK-2297NRC (MK) contains the items needed to mount Radio Set ANNRC-87A/88A/90A in a Repeater Set Radio AN/TRC-113 (Shelter). If Radio Set ANNRC-87/88/90 is to be Installed, communications security equipment (TSEC/KY-57) will need to be installed also. See Section 5.7 for information.

2. END ITEM OR SYSTEM TO BE MODIFIED.

Not applicable.

3. APPLICATION TIMES.

3.1 Time for Completion of Installation. Using two people, a total of 3.5 work hours is required. Typical shelter downtime is 3.5 hours.

3.2 Time for Installation of One Assembly or Component. The following table lists the time required to install one component. All times have been rounded off to the nearest half hour. The sum of these items will not reflect the typical shelter downtime.

ITEM	SECTION	TIME
Antenna AS-3900NRC	5.1	0.5
Mounting Base, Electrical Equipment MT-6352NRC	5.2	0.5
Cables	5.3	1.0

4. PREPARATION FOR INSTALLATION.

This section explains how to prepare the shelter and MK for installation.

4.1 Preparation of Shelter. To prepare the shelter for installation, insure that the site includes adequate lighting and a power source when drilling is required. Inspect the shelter for damage that could affect installation. Have any such damage repaired before installing MK.

4.1.1 Items to be Removed. Remove existing ANNRC-12 radio family installation kit/harness. See TM 11-5820401-20-2 for removing items used with intercom systems, or TM 11-5820-401-20-1 (used without intercom systems), and TM 9-2320-289-20.

4.1.2 Other Items to be Removed. Items to be removed and reinstalled, or removed and discarded are as follows:
(Maintain a temporary list of hardware removed so that bolts to be used may be reinserted in their original location.)

  a. Remove heater and retain mounting hardware with this assembly. Remove existing rifle rack base assembly and retain. Remove existing clothes hangers and rifle rack top and retain hardware. Remove existing hanger assembly and retain hardware with these assemblies.

  b. Remove existing heater support assembly and discard. Remove rifle rack base sub-assembly and mounting hardware and discard.

4.2 Preparation of MK.. To prepare MK, unpack, inspect and check inventory.

4.2.1 Precautions During Handling. Observe these steps to prevent equipment damage.

  a. Keep dust cover in place on connectors.

  b. Do not disassemble or modify parts in MK unless authorized to do so.

  c. Keep mounting hardware covered and protected until needed.

  d. When exposed to moisture, rain or salt water, keep all parts dry to prevent corrosion.

4.2.2 Unpack and Inspect Equipment.

4.2.2.1 Inspect Packaging for Evidence of Damage. Any shipping damage should be reported on SF364 Report of Discrepancy (ROD) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73A'AFR 400-64/MCO 4430.3F.

4.2.2.2 Unpack and Inventory MK. If any item is missing, fill out and forward Transportation Deficiency Report (TDR) (SF361) as described in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

4.2.2.3 Examine Each Item for Damage. If any item is damaged, fill out and forward SF364 Report of Discrepancy (ROD) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73A/AFR-400-64/MCO 4430.3F. All damages should be reported as prescribed in DA Pam 738-750, as contained in Maintenance Management Update.

4.3 MK, Distribution and Consumables.

4.3.1 Items Supplied In MK and/or Required for Installation. Use Table 4-1 and Figure 4-1 to identify and inventory MK parts.

4.3.2 Distribution and Issue Instructions.

  a. US Forces: Do not requisition MK. They will be shipped automatically.

  b. US Army Depots: Requisition MK through supply channels.

  c. Multiservice: Instructions shall be included for multiservice modifications.

  d. MAP/MAS Countries: Instructions shall be provided for MAP/MAS countries.

Table 4-1. Parts List for Installation of Radio Set ANNRC-87/88/90 Series

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE ITEM NO.
5985-01-297-2971	Antenna, Vehicular AS-3900NRC (A3017899-1)	1	PAOOFA	4-1, 2
5305-00-847-1159	Screw, Cap, Hexagon (318-16 x 1 3/4 in) MS35307-365	4	PAOZZA	
5310-00-913-8881	Nut, Hexagon (3/8-16 in) MS51971-3	4	PAOZZA	
5310-00-061-1258	Washer, Lock, Interna1/External Toothed (3/8 in) MS45904-76	8	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal/External Toothed (5/16 in) MS45904-72	2	PAOZZA	
5306-00-225-9086	Bolt, Machine (5/16-24 x 5/8 in) MS90726-31 (Not Used)	1	PAOZZA	
5330-01-205-2864	Gasket (A3013655-1)	1	PAOZZA	
5975-01-188-8873	Mounting Base, Electrical Equipment MT-6352NRC (A3013367-1)	1	PAOOFA	4-1, 1
5306-00-225-9089	Bolt, Machine (5/16-24 x 1 in) MS90726-34	5	PAOZZA	
5310-00-889-2527	Washer Lock, Internal/External Toothed (5/16 in) MS45904-72	10	PAOZZA	
5310-00-880-7746	Nut, Hexagon (5/16-24 in) MS51968-5	5	PAOZZA	
5995-01-259-9245	Cable Assembly, Power, Electrical, CX-13302/VRC (20 FT, 0 IN) (A3014039-6)	1	PAOZZA	4-1, 8
5995-01-219-7031	Cable Assembly, Radio Frequency CG-3855NRC (9 FT, 0 IN) (A3014031-4)	1	PAOZZA	4-1, 9
4020-01-341-8795	Fiber Rope Assembly, Single Leg (A3167672-1)	1	PAOZZA	4-1, 4
5965-00-043-3463	Handset, H-250/U	1	PAOZZA	4-1, 3
5965-00-876-2375	Loudspeaker, Permanent Magnet, LS-454/U	1	PAOZZA	4-1, 5
	Bracket, Assembly SC-C-189025	1	XBOZZA	4-1, 6
	Bracket, Mounting (A3050655-1)	1	XBOZZA	4-1, 7
	Plate, Mounting (A3014577-1)	1	XBOZZA	4-1, 10
	Speaker, Hanger Bracket (A3103917-1)	1	XBOZZA	4-1, 11
5975-00-111-3208	Strap, Tiedown, Electrical Components MS3367-5-9	5	PAOZZA	
5340-00-809-1490	Clamp, Loop (1/4-1/4) MS21333-98	3	PAOZZA	
5325-00-174-9312	Grommet, Nonmetallic, 1/4 MS35489-36	1	PAOZZA	
5325-00-174-5315	Grommet, Nonmetallic, 1/4 MS35489-7	2	PAOZZA	
5310-00-952-3634	Nut, Blind Rivet, (5/16-18) SS31B125	6	PAOZZA	
5310-00-009-7693	Nut, Blind Rivet, (1/4-20) SS25380	2	PAOZZA	
5310-00-952-3680	Nut, Blind Rivet, (5/16-18) SS31B425	6	PAOZZA	
5306-00-225-9089	Bolt, Machine (5/16-24 x 1 in) MS90726-34	1	PAOZZA	
5306-00-225-8497	Bolt, Machine (5/16-18 x 3/4 in) MS90725-32	6	PAOZZA	

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Table 4-1. Parts List for Installation of Radio Set ANNRC-87/88/90 Series (Cont.)

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE ITEM NO.
5305-00-068-0502	Screw, Machine, Hexagon (1/4-20 x 3/4 in) MS90725-6	2	PAOZZA	
5305-00-984-7350	Screw, Machine (5/16-24 x 1 in) Flathead MS35191-308	2	PAOZZA	
5306-00-075-8519	Screw, Machine, Hexagon (5/16-18 x 1 1/4 in) MS90725-36	2	PAOZZA	
5305-00-071-2241	Screw, Machine (1/4-20 x 1 1/4 in) MS90725-10	1	PAOZZA	
5305-00-781-5655	Screw, Machine (1/4-20 x 1 in) Flathead MS24693-598	1	PAOZZA	
5305-00-067-9848	Screw, Machine (5/16-18 x 1 in) Flathead MS24693-51 20	4	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal/External-Toothed (5/16 in) MS45904-72	12	PAOZZA	
5310-00-081-4219	Washer, Flat (5/16 in) MS27183-12	2	PAOZZA	
5310-00-407-9566	Washer, Lock (5/16 in) MS35338-45	2	PAOZZA	
5310-00-582-5965	Washer, Lock (1/4 in) MS35338-44	3	PAOZZA	
5310-00-809-4058	Washer, Flat (1/4 in) MS27183-10	1	PAOZZA	
5310-00-829-9981	Nut, Plain, Hexagon (5/16-18 in) MS35649-2312	5	PAOZZA	
5310-00-880-7746	Nut, Plain, Hexagon (5/16-24 in) MS51968-5	1	PAOZZA	

5
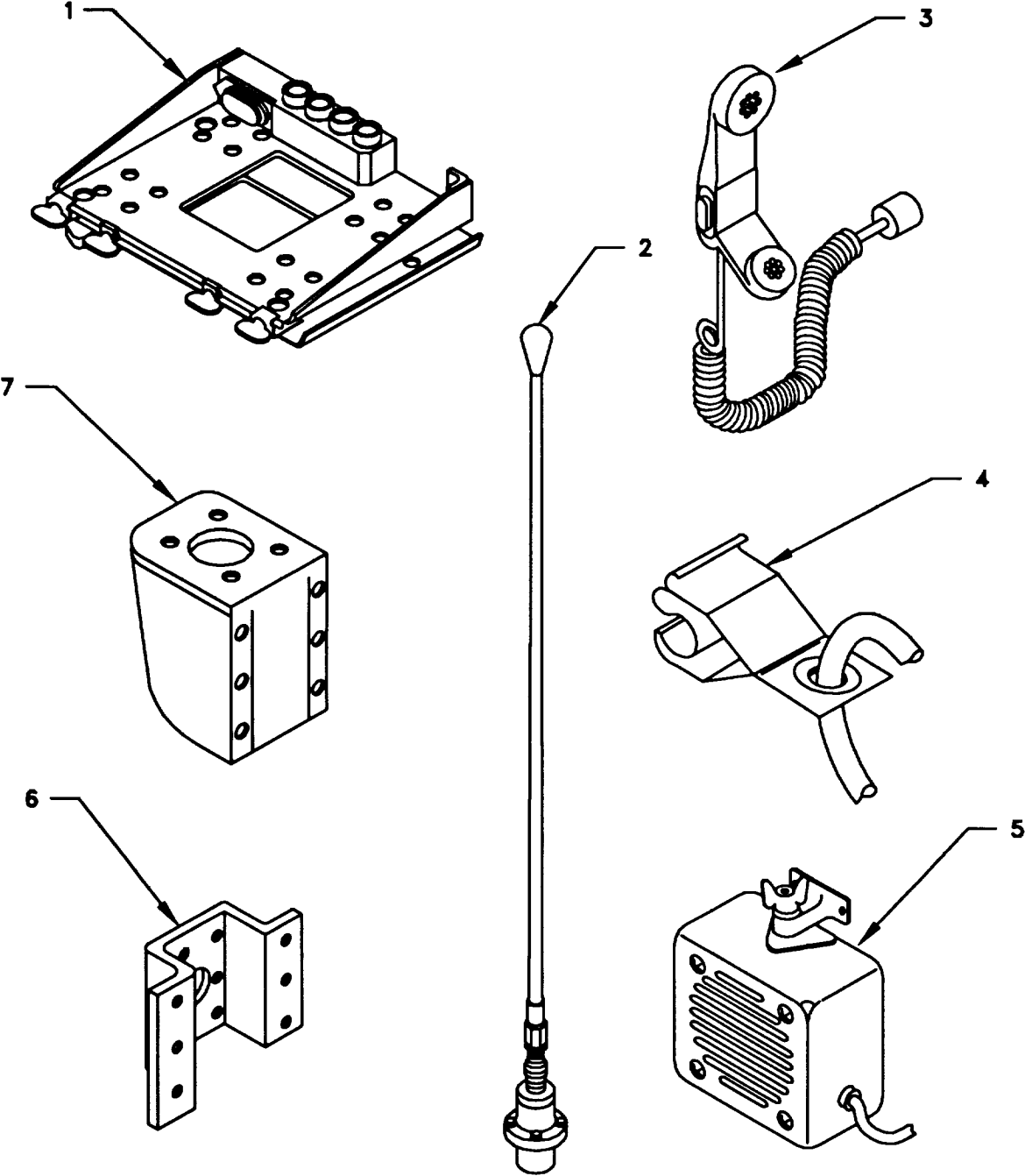
Figure 4-1(1). MK Illustrated Parts List

P1

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P2

P1

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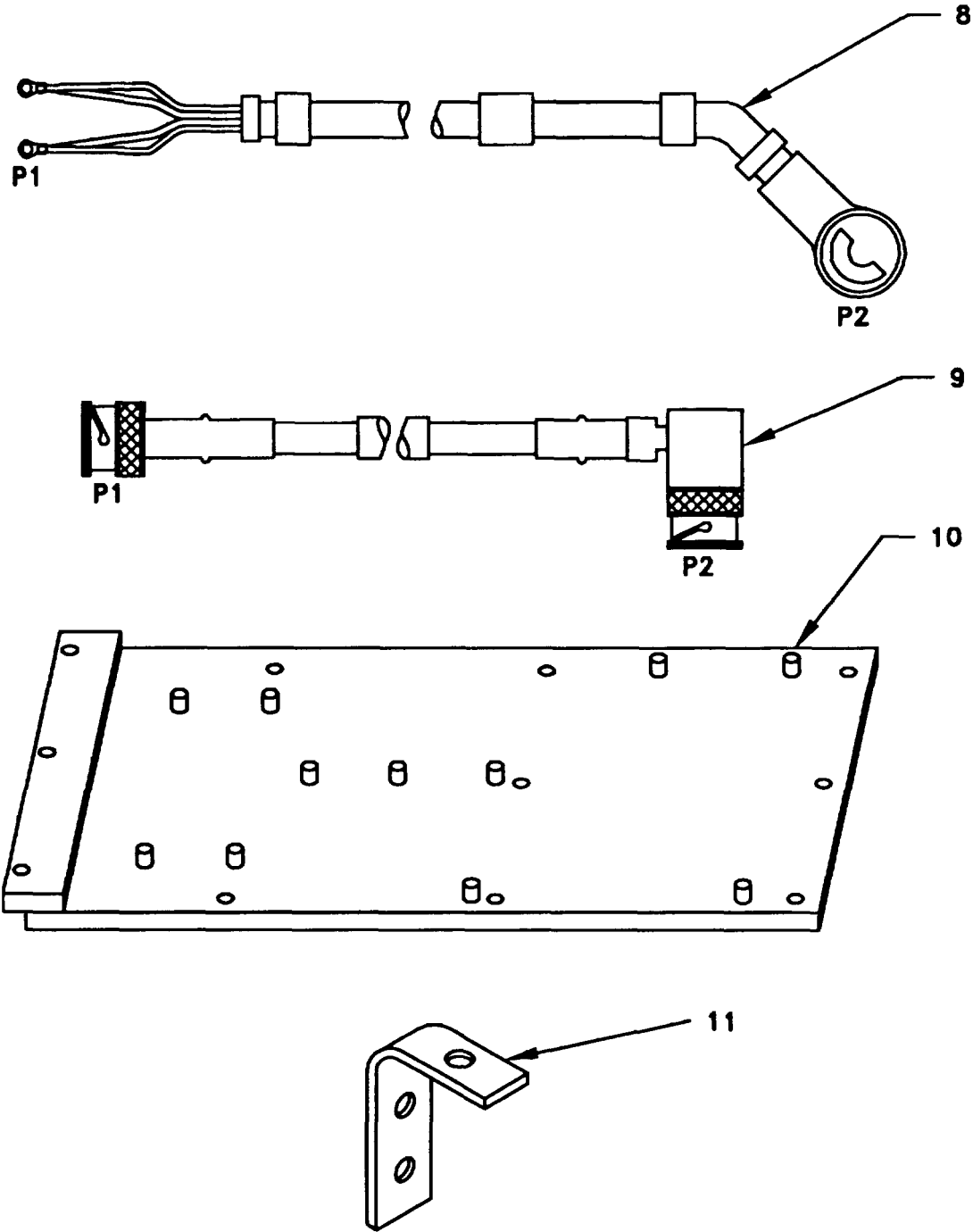
Figure 4-1(2). MK Illustrated Parts List

Table 4-2. Additional Items Required for Installation when using RT-1439/VRC

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE ITEM NO.
	Plate, Mounting (A3050676-1)	1	XBOZZA	4-2, 1
5995-01-222-4210	Cable Assembly, Special Purpose, Electrical CX-13293NRC (4 FT, 0 IN) (A3014034-1)	1	PAOZZA	4-2,2
5995-01-226-5482	Cable Assembly, Power, Electrical CX-13303NRC (2 FT, 6 IN) (A3014040-5)	1	PAOZZA	4-2, 3
5305-00-984-7353	Screw, Machine, Flat-Head (5/16-24 x 3/4 in) MS35191-306	4	PAOZZA	

Figure 4-2. TSEC/KY-57 Illustrated Parts List

4.3.3 Consumable Materiels. The table below lists materiels required for installation but not supplied with MK.

NSN	NOMENCLATURE
8040-00-117-8510	Adhesive-Sealant, Clear, RTV
6850-00-880-7616	Silicone Compound, MIL-S-8660
5970-00-816-6056	Insulation Tape, Electrical

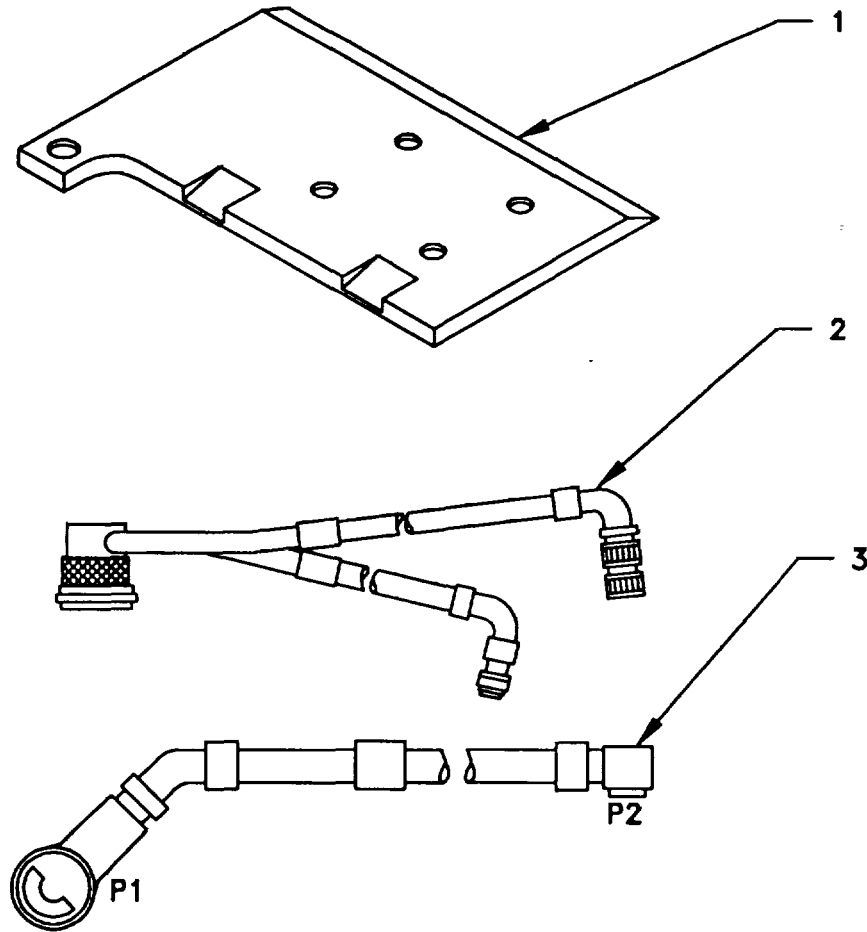**4.4 Tools and Test, Measurement, and Diagnostic Equipment (TMDE) Required.** The following tools and TMDE are needed for installation.

NOMENCLATURE	NSN	QUANTITY
Radio Set* 1		
Pocket Knife, Electrician's	5110-00-240-5943	1
Screwdriver, No. 2 Point Phillips, 4 in	5120-00-234-8913	1
Screwdriver, 1/4 in Flatblade, 4 in	5120-00-222-8852	1
Pliers, Round Nose	5120-00-240-6172	1
Pliers, Diagonal Cutting	5110-00-965-0974	1
Wrench, Open/Box:		
7/16 in	5120-00-228-9505	1
1/2 in	5120-00-228-9506	1
9/16 in	5120-00-228-9507	1
Handle, Socket Wrench:	5120-00-240-5364	1
Socket: 7/16 in	5120-00-277-6703	1
1/2 in	5120-00-237-0977	1
9/16 in	5120-00-227-6704	1
Rivnut Installation Tool 1/4 in C845 Wrench Type Header	5120-00-102-6847	1
Rivnut Installation Tool 5/16 in C722 Wrench Type Header	5120-01-020-7814	1
Electric Drill	5130-00-889-8994	1
Drill Bit: 11/32 in	5133-00-227-9664	1
1/2 in	5133-00-227-9672	1
3/16 in	5133-00-189-9258	1
1/4 in	5133-00-227-9658	1
.336 in, Q	5133-00-262-2165	1
.413 in, Z	5133-00-262-2174	1
3/4 in	5133-00-266-9471	1
*Use radio issued with your shelter if available.		

5. INSTALLATION PROCEDURES.

This section describes where and how to install MK items in the shelter. See Figure 5-1 for an overall view of where the MK equipment, as well as radio components, will be installed. When installing MK equipment, be sure to read and follow instructions and illustrations carefully. If Radio Set AN/VRC-87/88/90 is to be installed, communications security equipment (TSEC/KY-57) will also need to be installed. See Section 5.7 for information.
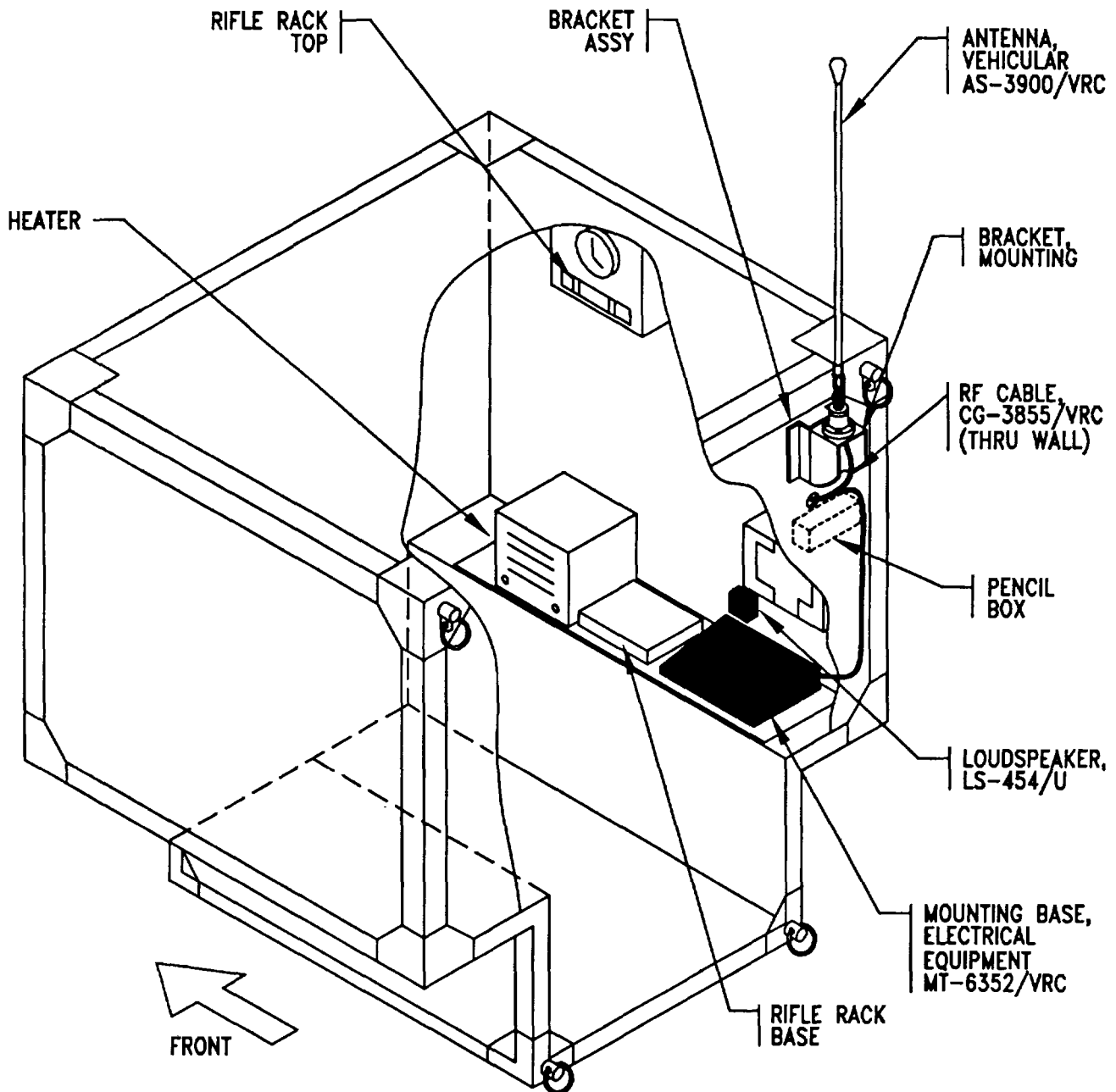
Figure 5-1(1). MK and Radio Installation: MK Equipment Locations
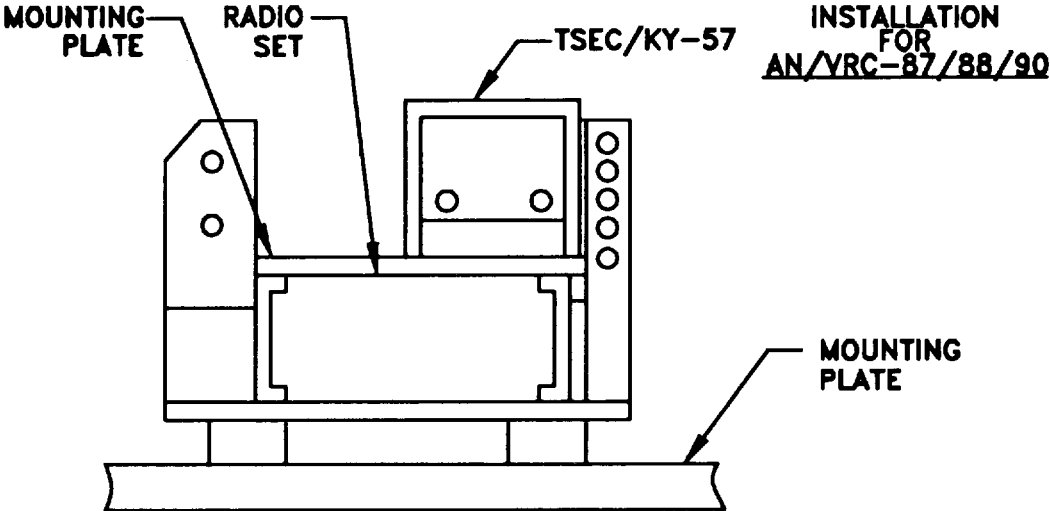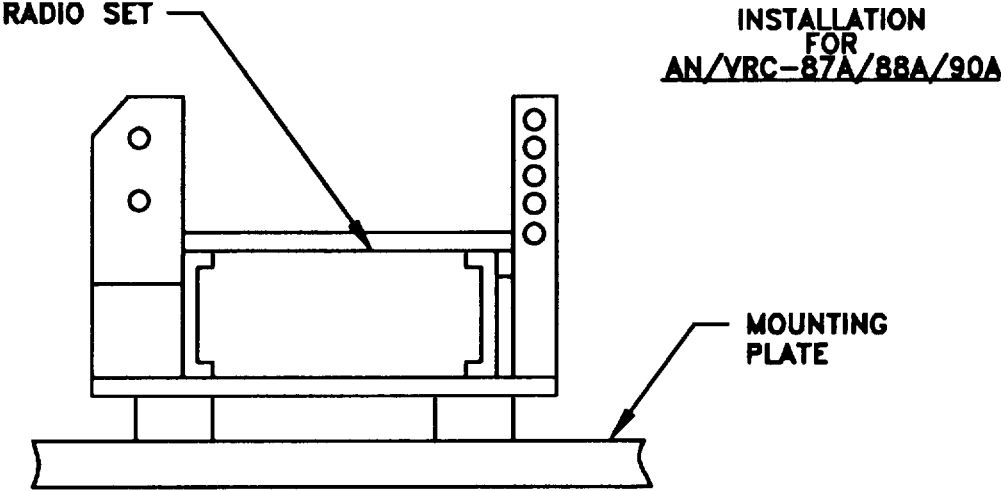
10

5. INSTALLATION PROCEDURES. Continued.

Figure 5-1(2). MK and Radio Installation: Radio Equipment Locations

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5.1 Installation of Antenna, Vehicular, AS-3900/VRC (Antenna).

5.1.1 Installation of Antenna Mounting Bracket and Support Bracket. Use the following procedures to install the antenna mounting bracket and support bracket. See Figure 5-1(1) for location.

ITEM	ACTION	REMARKS
a. Existing common items panel (1).	Temporarily reinstall the common items panel to the rear shelter wall with the two upper existing bolts. See Figure 5-2(1).	
b. Hole for RF cable in common items panel.	Using the dimensions shown, mark the location of the hole to be drilled. Remove the common items panel and drill a 1/4 in diameter pilot hole through the common items panel; then enlarge hole to 3/4 in diameter. See Figure 5-2(1).	Tools: Electric drill, 1/4 and 3/4 in drill bit.
c. Hole for RF cable in rear shelter wall.	Temporarily reinstall the common items panel to the rear shelter wall with the two upper existing bolts. Use as a template and mark the location of the center of the RF cable "pass thru hole" on the rear wall of shelter. Remove the common items panel and drill a 1/4 in diameter pilot hole through the shelter wall; then from the outside enlarge hole to 3/4 in diameter. See Figure 5-2(1).	Tools: Electric drill, 1/4 and 3/4 in drill bit.
d. Support bracket (1).	Using the support bracket as a template drill six size Z (.413 in) diameter holes 1-1/4 inch deep at locations marked "A" on the rear outside wall. See Figure 5-2(2).	Tools: Electric drill and size Z drill bit.
e. Six rivet nuts (2).	Install in rear shelter wall in holes drilled in step d. See Figure 5-2(2).	Tool: Rivet nut installation tool 5/16 in.

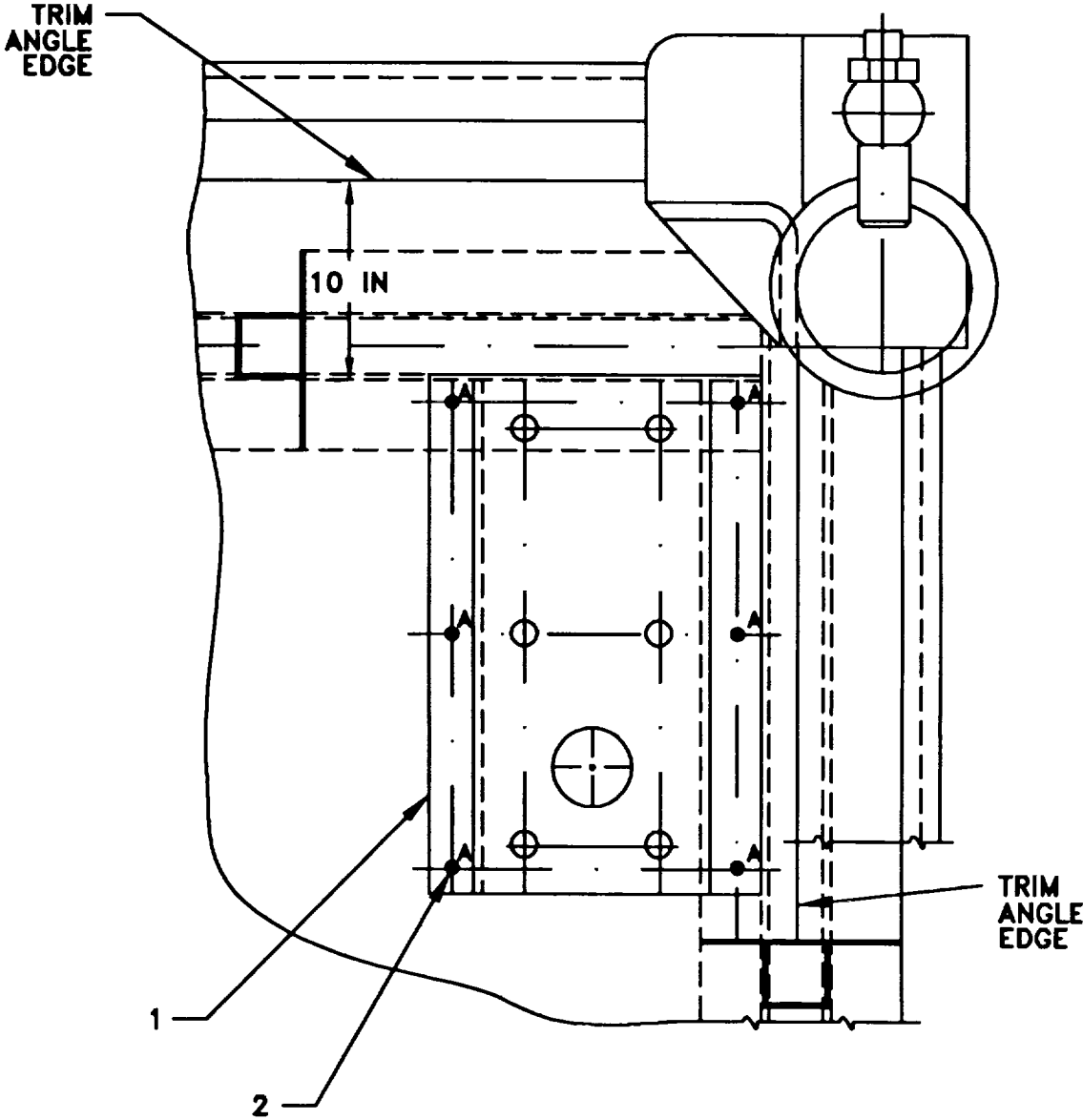**5.1.1 Installation of Antenna Mounting Bracket and Support Bracket.** Continued.
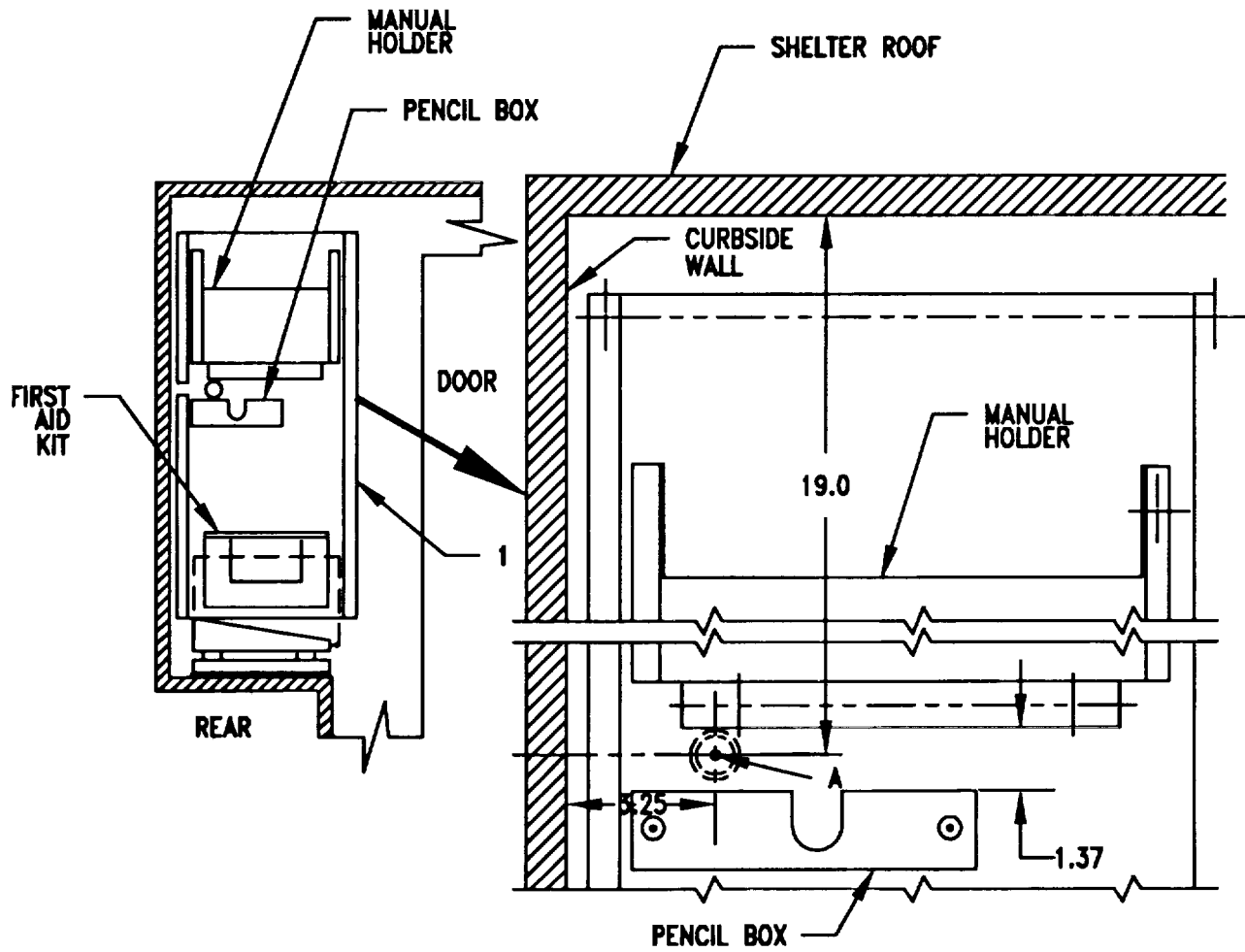
1. EXISTING COMMON ITEMS PANEL

Figure 5-2(1). Common Items Panel

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5.1.1 Installation of Antenna Mounting Bracket and Support Bracket. Continued.

1. SUPPORT BRACKET
2. BLIND RIVET (5/16-18 IN)

Figure 5-2(2). Location of Support Bracket on Rear Outside Wall

5.1.1 Installation of Antenna Mounting Bracket and Support Bracket. Continued.

ITEM	ACTION	REMARKS

NOTE

Apply a thin coat of adhesive-sealant to both sides of each internal/external toothed (IET) washer during installation, and to the area of contact where IET washer is to be placed.

ITEM	ACTION	REMARKS
f. Ground strap (7) (P/O antenna base).	Deinstall from antenna base.	Tools: No. 2 Phillips screwdriver.
g. Six machine bolts (1), thirteen IET washers (2), six nuts (3), bracket, mounting (4), support bracket (5) and ground strap (7).	Attach bracket, mounting (4) to support bracket (5) with indicated hardware. See Figure 5-2(3)	Tools: 1/2 in socket and 1/2 in open/box wrench.
h. Six machine bolts (6), six IET washers (2), bracket, mounting (4) and support bracket (5).	Install bracket mounting (4) and support bracket (5) to the rear outer shelter wall. See Figure 5-2(3).	Tools: 1/2 in socket.

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5.1.1 Installation of Antenna Mounting Bracket and Support Bracket. Continued.
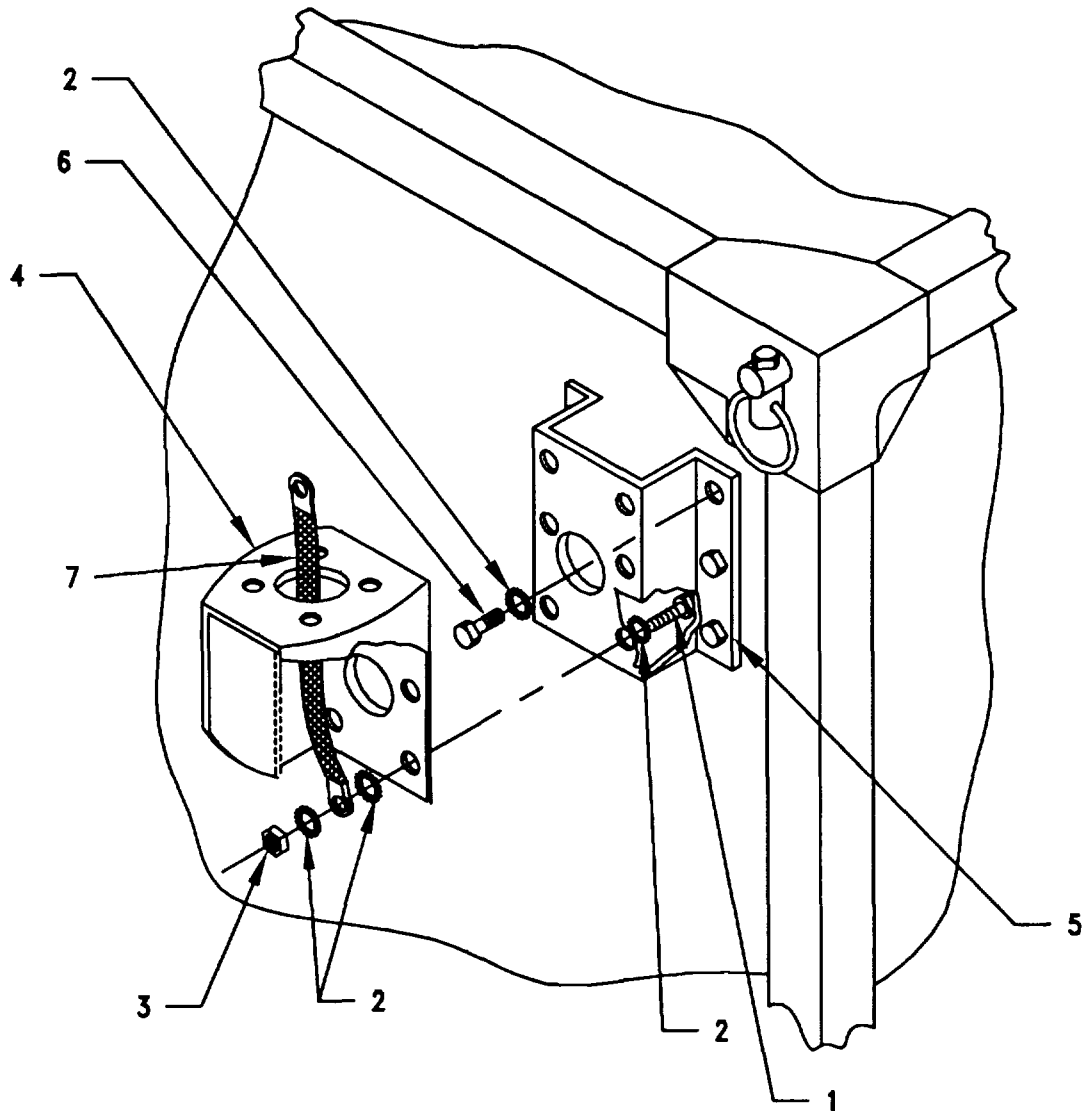
1. **MACHINE BOLT (5/16-24 X 1 IN)**
2. **IET WASHER (5/16 IN)**
3. **NUT (5/16-24 IN)**
4. **MOUNTING BRACKET**
5. **SUPPORT BRACKET**
6. **MACHINE BOLT (5/16-18 X 3/4 IN)**
7. **GROUND STRAP (P/O ANTENNA)**

Figure 5-2(3). Antenna Mounting Bracket and Support Bracket Installation

5.1.2 **Installation of Antenna Base.** Use this procedure to install the antenna base at location shown in Figure 5-1(1).

ITEM	ACTION	REMARKS
a. Gasket (3)	Place on mounting bracket (7) and aline mounting holes. See Figure 5-2(4).	
b. Antenna base (6).	Place on top of gasket (3) and mounting bracket (7); then aline mounting holes.	
c. Four cap screws (1), eight IET washers (2) and four nuts (4).	Install and secure.	Tools: 9/16 in socket and 9/16 in open/box wrench.
d. Ground strap (5).	Reinstall to antenna base (6).	Tools: No. 2 Phillips screwdriver.
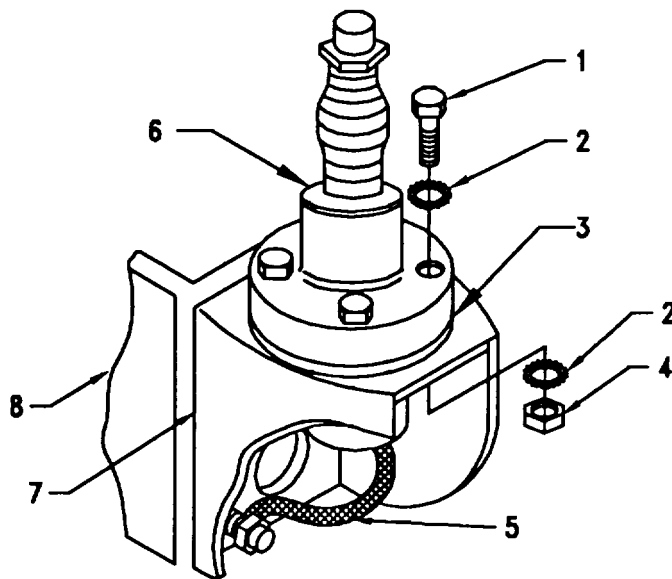
1.   CAP SCREW
       (3/8-16 X 1-3/4 IN)
2.   IET WASHER (3/8 IN)
3.   GASKET
4.   NUT (3/8-16 IN)
5.   GROUND STRAP
6.   ANTENNA BASE
7.   MOUNTING BRACKET
8.   SUPPORT BRACKET

Figure 5-2(4). Antenna Base Installation

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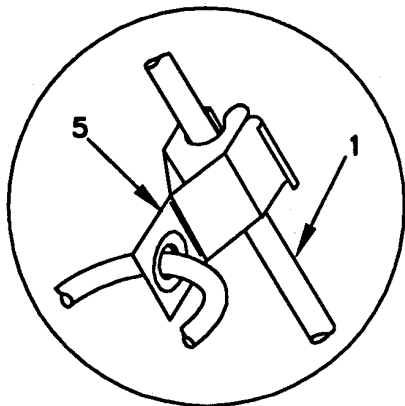**5.1.3   Installation of Top Antenna Assembly.** The top portion of the antenna includes a lower element and an upper element (with installed cap). Use the following procedure to assemble, install and tiedown all antennas.

ITEM	ACTION	REMARKS
a. Antenna elements (1,2).	Apply silicone compound to element threads and assemble. See Figure 5-2(5).	
b. Antenna element (2). base	Install and hand-tighten to antenna (3).	
c. Lock wire (4).	Install to antenna element (2) and antenna base (3). See Figure 5-2(5), Detail A. Cut and remove excess with diagonal cutting pliers.	
d. Fiber rope assembly (5).	Attach clip to antenna element (1). Tie rope to shelter to position antenna in desired location. See Figure 5-2(5), Detail B.	
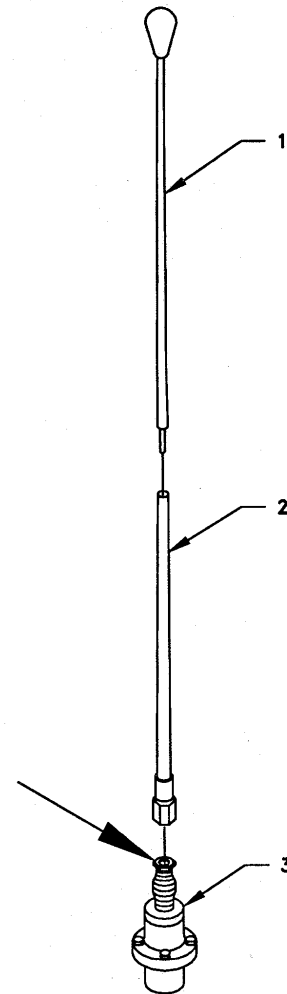
DETAIL B
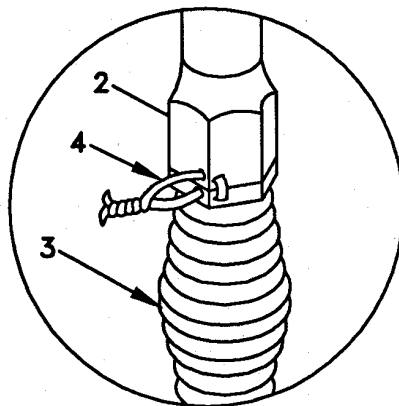
DETAIL A

1.   ANTENNA ELEMENT (UPPER)
2.   ANTENNA ELEMENT (LOWER)
3.   ANTENNA BASE
4.   LOCK WIRE
5.   FIBER ROPE ASSEMBLY

Figure 5-2(5). Top Antenna Assembly Installation

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5.2 **Installation of Mounting Plate**. After removing items as instructed in Paragraph 4.1.2, perform the following steps.

ITEM	ACTION	REMARKS
a. Aline existing holes with rivet nuts on knee plate assembly.	Using dimensions shown and mounting plate (1) as template, mark holes to be drilled. Aline holes at "D" and "E" with 1/4 inch rivet nuts on existing knee plate assembly. Aline holes at "F" with existing holes on existing plate assembly. See Figure 5-3(1).	
b. Mounting holes for mounting plate (1).	Drill six size Z (.413 in) diameter holes 1-1/4 inch deep at locations marked "B" and "C" on knee plate assembly. See Figure 5-3(1).	Tools: Electric drill and size Z drill bit.

TOP VIEW OF CURBSIDE KNEE
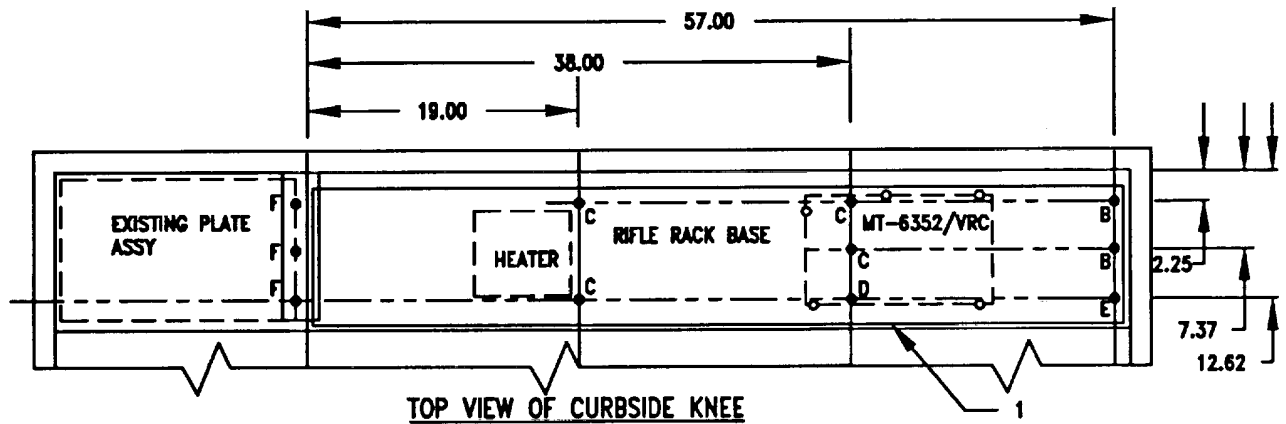
1.   PLATE, MOUNTING

Figure 5-3(1). Mounting Plate Installation

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5.2 Installation of Mounting Plate. Continued.

ITEM	ACTION	REMARKS
c. Six rivet nuts (9).	Install in existing knee plate assembly holes "B" and "C". See Figure 5-3(1) and 5-3(2)	Tools: Rivet nut installation tool, 5/16 in.
d. Plate, mounting (7).	Place on existing knee plate assembly so all holes are positioned over the rivet nuts. See Figure 5-3(2).	

<div align="center">NOTE</div>

<div align="center">Do not tighten securely until told to do so.</div>

ITEM	ACTION	REMARKS
e. Two flat washers (6), two lock washers (5) and two screws (4).	Fasten mounting plate (7) to rivet nuts in shelter knee hole location "B". See Figure 5-3(2)	Tools: 1/2 in socket.
f. Four screws (1).	Fasten mounting plate (7) to rivet nuts in shelter knee hole location "C". See Figure 5-3(2)	Tools: Screwdriver, flat tip.
g. One screw (12).	Fasten mounting plate (7) to rivet nut in shelter knee hole location "D". See Figure 5-3(2)	Tools: Screwdriver, flat tip.
h. One screw (8), one flat washer (10) and one lock washer (11).	Fasten mounting plate (7) to rivet nut in shelter knee hole location "E". See Figure 5-3(2)	Tools: 7/16 in socket.
i. Three existing bolts (3).	Fasten mounting plate lip to existing plate assembly hole location "F".	Tools: 7/16 in socket.
j. Mounting plate (7).	Permanently tighten all screws and bolts affixing the mounting plate to the shelter knee.	Tools: 1/2 in socket, 7/16 in socket and screwdriver, flat tip.
k. Existing heater.	Reinstall heater using existing mounting hardware at location shown in Figures 5-1(1) and 5-3(1).	
l. Existing rifle rack base.	Reinstall rifle rack base using existing hardware at location shown in Figures 5-1(1) and 5-3(1).	

5.2   Installation of Mounting Plate. Continued.
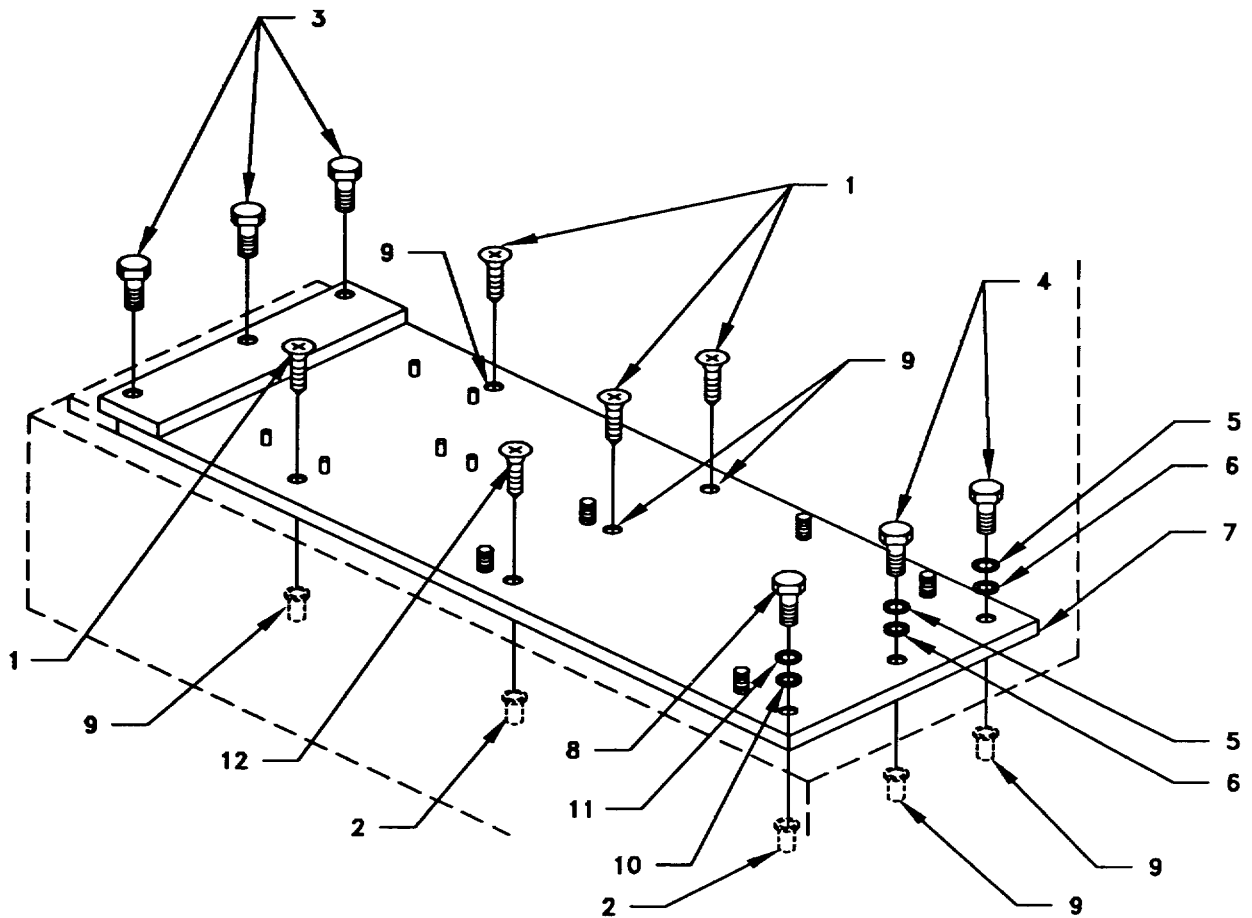
1.	SCREW (5/16-18 X 1 IN)
2.	EXISTING BLIND RIVET
3.	EXISTING BOLTS
4.	SCREW (5/16-18 X 1-1/4 IN)
5.	LOCK, WASHER (5/16 IN)
6.	FLAT, WASHER (5/16 IN)
7.	MOUNTING PLATE
8.	SCREW (1/4-20 X 1-1/4 IN)
9.	BLIND RIVET (5/16-18 IN)
10.	FLAT, WASHER (1/4 IN)
11.	LOCK, WASHER (1/4 IN)
12.	SCREW (1/4-20 X 1 IN)

Figure 5-3(2). Mounting Plate Installation

5.3   Installation of Mounting Base, Electrical Equipment MT-6352NRC (mounting base). Remove and retain attaching bag of 5/16 in mounting hardware for installation. To insure good electrical grounding, all rust, corrosion or paint around mounting holes in radio shelf should be removed before installing the mounting base. See Figure 5-4 and perform the following steps.
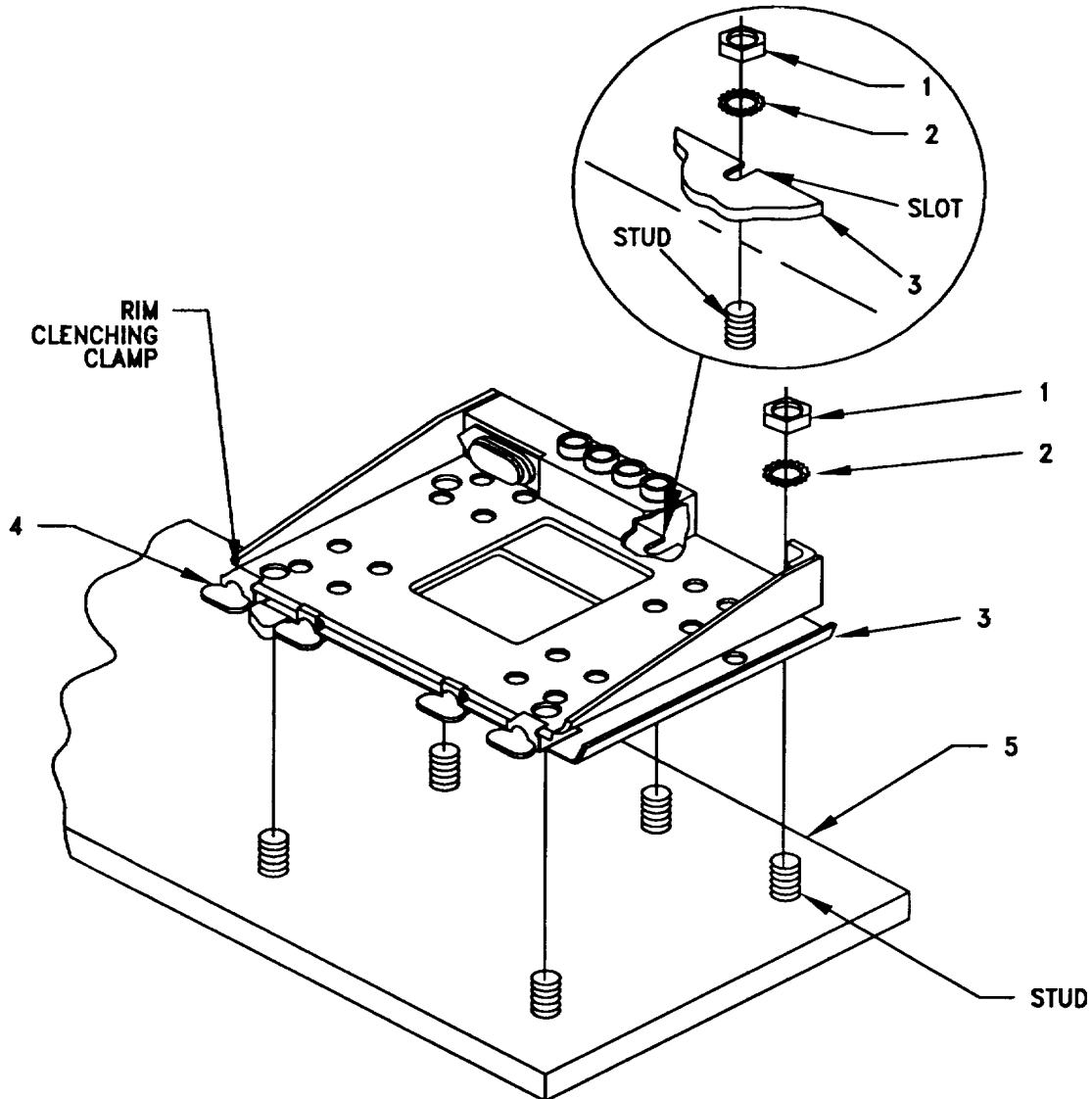
1.   NUT (5/16-18 IN)
2.   IET WASHER (5/16 IN)
3.   MOUNTING BASE
4.   THUMBSCREW
5.   MOUNTING PLATE

Figure 5-4. Mounting Base Installation

5.3   Installation of Mounting Base, Electrical Equipment MT-6352NRC (mounting base). Continued.

ITEM	ACTION	REMARKS

NOTE

Apply a thin coat of adhesive-sealant to both sides of each internal/external-toothed (IET) washer during installation, and to the area of contact where IET washer is to be placed.

ITEM	ACTION	REMARKS
a. Mounting base (3).	Place on mounting plate over existing studs. See Figure 5-4.	
b. Two outer thumbscrews (4).	Turn ccw until both sets of threads have cleared center of studs.	
c. Five nuts (1) and five Internal/external-toothed (IET) washers (2).	Install and secure to mounting base (3).	Tools: 1/2 in socket.
d. Two outer thumbscrews (4).	Tighten and secure.	

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5.4. Reinstallation of Existing Hanger Bracket Assembly and Rifle Rack Top. The rifle rack base has been relocated from its original position. The rifle rack top and clothes hanger bracket will also be relocated using the following procedures.

ITEM	ACTION	REMARKS
a. Existing clothes hangers and rifle rack top.	Using dimensions shown and existing clothes hanger bracket and rifle rack top as templates, mark holes to be drilled at location "H" in the hanger bracket, assembly. See Figure 5-5.	
b. Mounting holes for clothes hangers and rifle rack top.	Drill eight .185 in diameter holes at locations marked "H" in the clothes hanger bracket. See Figure 5-5.	Tools: Electric drill and 3/16 in drill bit.
c. Existing clothes hangers and rifle rack top.	Reinstall existing clothes hangers and rifle rack top in the new locations using existing hardware removed and retained from these assemblies in Paragraph 4-1.	Tools: 7/16 in socket and 7/16 in open/box wrench.
d. Existing hanger bracket assembly.	Reinstall existing hanger bracket assembly using existing hardware removed and retained in paragraph 4.1.2.	

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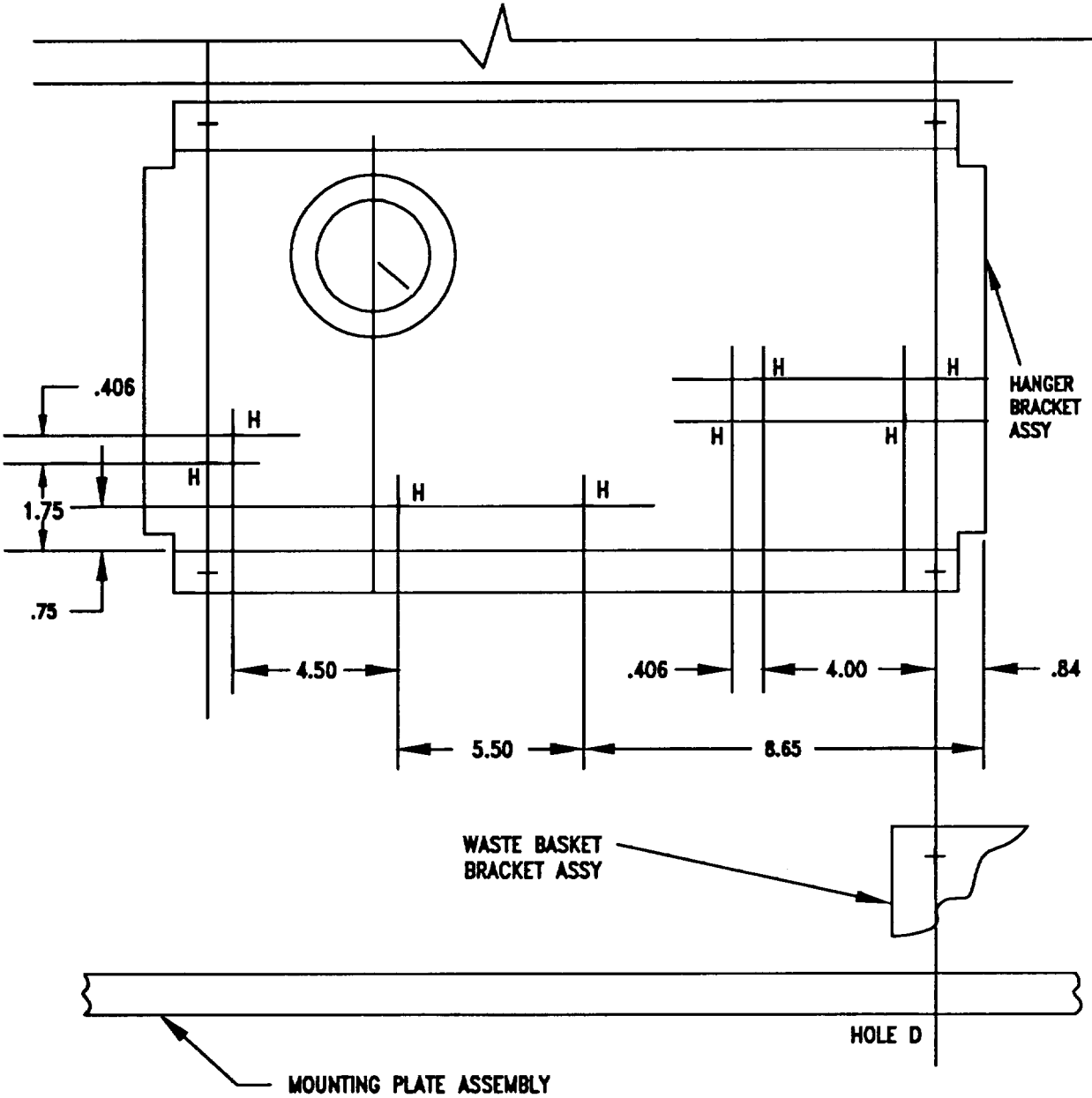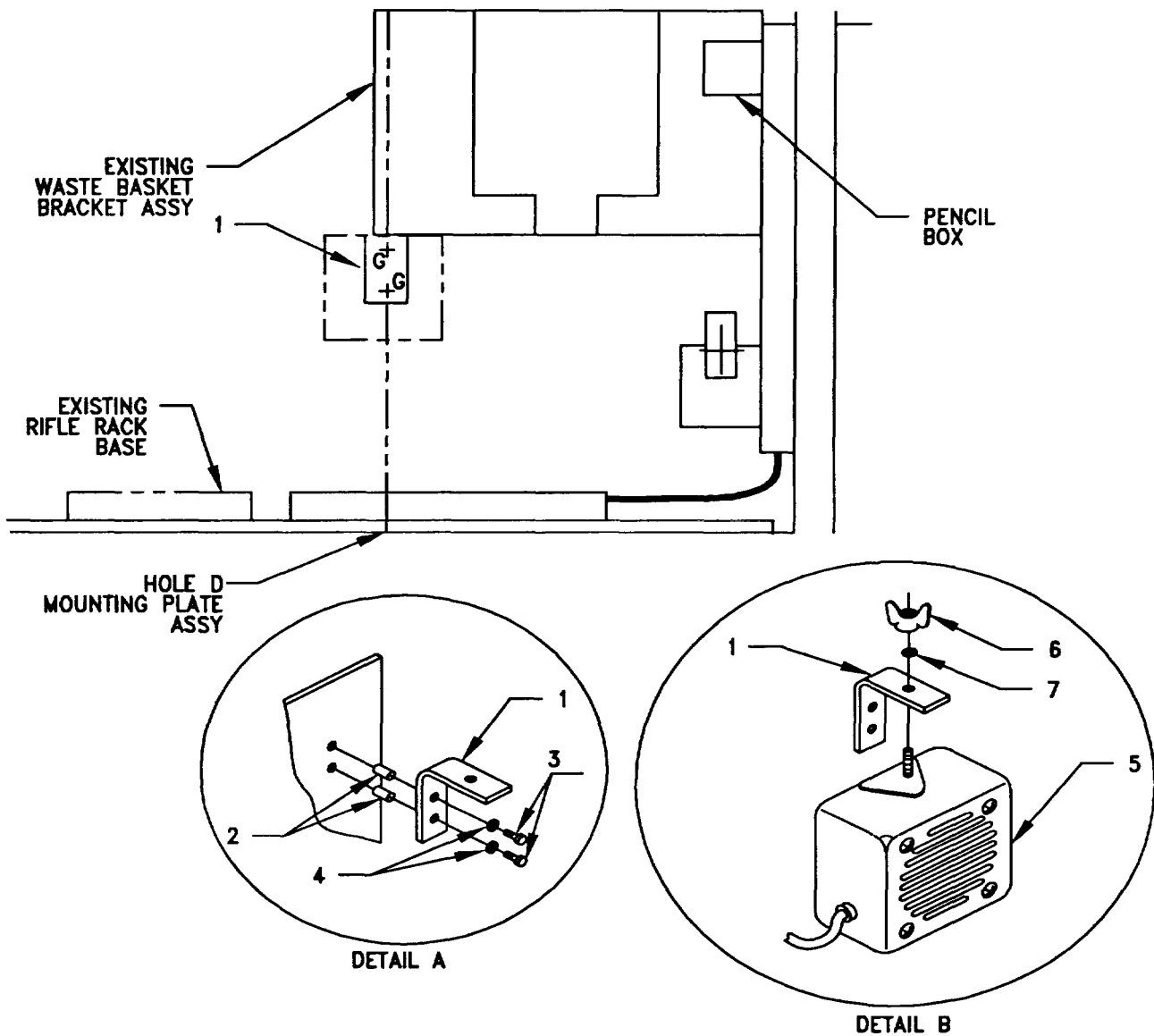5.4   Reinstallation of Existing Hanger Bracket Assembly and Rifle Rack Top. Continued.

Figure 5-5. Relocation of Hanger Bracket Assembly, Curbside Upper Wall Area

5.5   Installation of Speaker Hanger Bracket and Loudspeaker, LS-454/U. Use the following procedures to install the speaker hanger bracket and speaker at location shown in Figure 5-1(1) and 5-6.

ITEM	ACTION	REMARKS
a. Speaker hanger bracket (1).	Use bracket as template and drill two size Q (.336 in) holes at location "G" 1-1/4 in deep in the inner wall and upright stiffener of the shelter. See Figure 5-6.	Tools: Electric drill and size Q drill bit.
b. Two rivet nuts (2).	Install in holes drilled in step a.	Tools: Rivet nut installation tool 114 in.
c. Two screws (3), two lock washers (4) and speaker hanger bracket (1).	Install and secure to shelter wall. See Figure 5-6, Detail A.	Tools: 7/16 in socket.
d. Loudspeaker LS-454/U (5), wing nut (6) and lock washer (7).	Insert stud on speaker (5) through hole in speaker hanger bracket (1). Secure with wing nut (6) and lock washer (7). See Figure 5-6, Detail B.	

5.5   Installation of Speaker Hanger Bracket and Loudspeaker, LS-454/U. Continued.

EXISTING
WASTE BASKET
BRACKET ASSY

PENCIL
BOX

EXISTING
RIFLE RACK
BASE

HOLE D
MOUNTING PLATE
ASSY

DETAIL A

DETAIL B

1.   SPEAKER HANGER
2.   BLIND RIVET (1/4-20 IN)
3.   CAP SCREW (1/4-20 X 3/4 IN)
4.   LOCK WASHER (1/4 IN)
5.   LOUDSPEAKER, LS-454/U
6.   WING NUT (P/O 5)
7.   LOCK WASHER (P/O 5)

Figure 5-6. Speaker Hanger Bracket and Speaker Installation

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5.6   Installation of Cables. To accomplish the installation, leave loop clamps and tiedown straps loose enough to adjust cable slack and allow easy adjustment of equipment. When installation is complete, tighten and secure all clamps, clips and tiedown straps.

ITEM	ACTION	REMARKS
a. RF cable (1).	Feed RF cable (1) through the hole drilled in common items panel (unattached from rear shelter wall). Route RF cable through the hole drilled in rear shelter wall, support bracket (2) and mounting bracket (3). Calculate the length of cable required to make the final connection at antenna base. Note the place where cable goes through holes, remove from support bracket and wrap with electrician's tape to guard from chafing. See Figure 5-7.	
b. Two grommets (4).	Cut through on mark shown in Figure 5-7, Detail A. Force one grommet around RF cable and into the external shelter skin "pass thru" hole using a corkscrew motion. Allow enough slack in the cable to connect the antenna connector to the antenna base. Repeat this step for the hole in internal shelter wall.	
c. Existing common items panel.	Reinstall common items panel in its original position mounting hardware previously removed from the panel.	Tools: 7/16 in socket wrench. using the existing
d. Three loop clamps (5) and existing mounting hardware.	Wrap around RF cable (1); then install to existing mounting holes in common items panel. See Figure 5-7, Detail B for location.	Tools: 7/16 in socket wrench.
e. Grommet (6).	Cut through on mark shown in Figure 5-7, Detail A. Force around RF cable and into hole in common items panel.	
f. RF cable (1) connector P2.	Route along rear shelter wall and position on left side of mounting base.	
g. RF cable (1) connector P1.	Connect and secure to antenna base.	
h. Power cable connector P2.	Connect and secure to mounting base.	
i. Power cable connector P1.	Route to 28V power source.	

5.6   Installation of Cables. Continued.

Figure 5-7. Installation of RF Cable
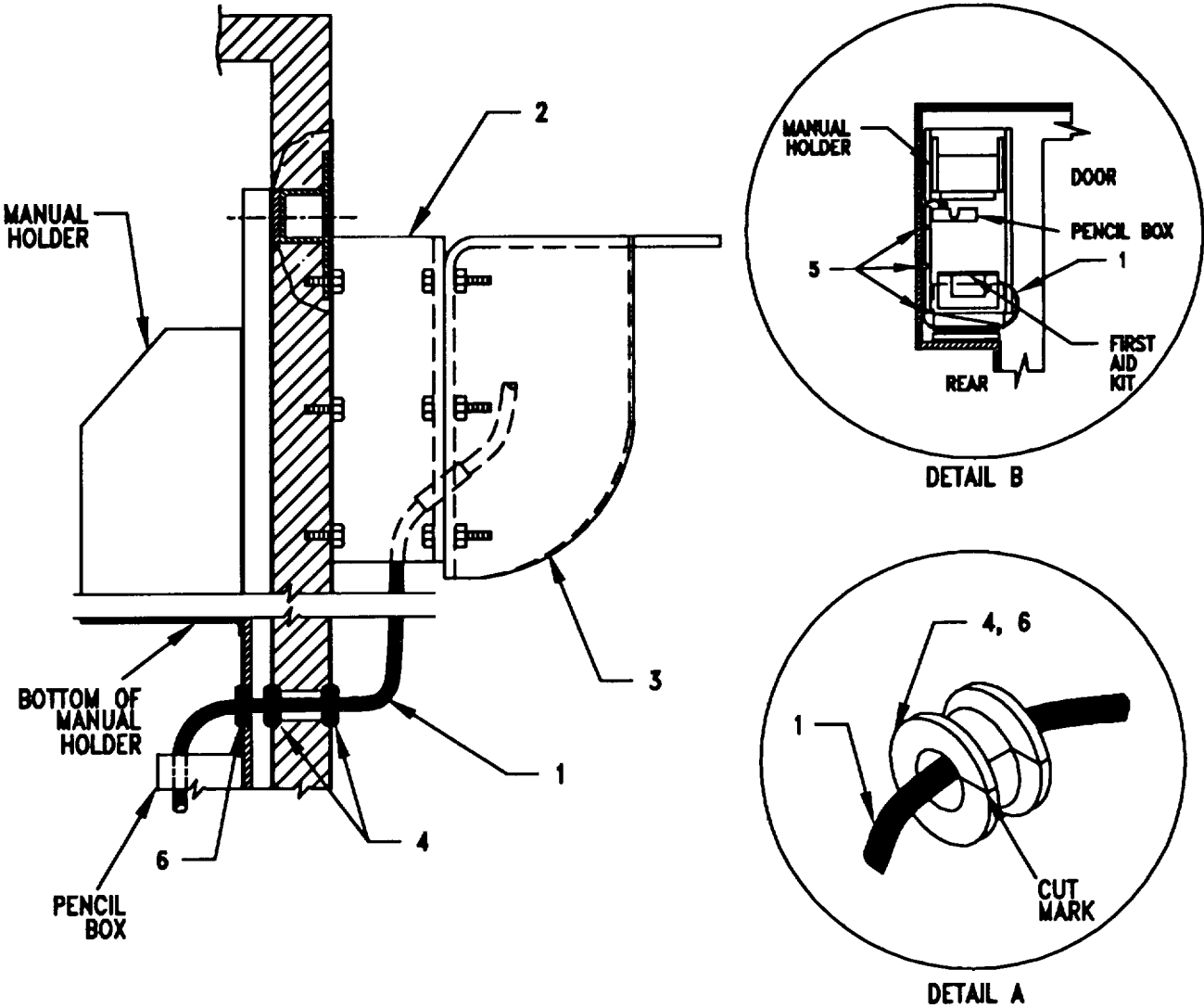
1.   RF CABLE
2.   SUPPORT BRACKET
3.   MOUNTING BRACKET
4.   GROMMET, NONMETALLIC
5.   LOOP CLAMPS (1/4-1/4 IN)
6.   GROMMET, NONMETALLIC

5.7   Installation of MK-2499/VRC. For Radio Set ANNRC-87/88/90, install MK-2499NRC (TSEC/KY-57 security equipment) in the location shown in Figure 5-1(2) with four (4) each screws and mounting plate. Refer to section 5.8 for connection of cables.

5.8   Post-Installation and Checkout. After equipment is installed and cables are connected, perform the following steps.

| ITEM	ACTION	REMARKS
a. Equipment.	Check for secure mounting. Check for loose parts, connectors, and mounting hardware.	
b. Cables.	Check for proper installation and connection of cables. See Figure 5-8 for cable connections. Unused cables should be stowed in appropriate place inside the shelter.	
c. Loop clamps.	Check that all have been properly installed and tightened.	
d. Protective covers.	Insure that all installed cables are covered when not in use or connected.	
e. Radio issued with shelter.	Install and connect cables. See TM 11-5820-890-20-1 or TM 11-5820-890-20-4 for installation and operational (OP) checks and instructions.	
f. MK line replaceable units.	See TM 11-5820-890-20P for Repair Parts and Special Tools List (RPSTL) information.	
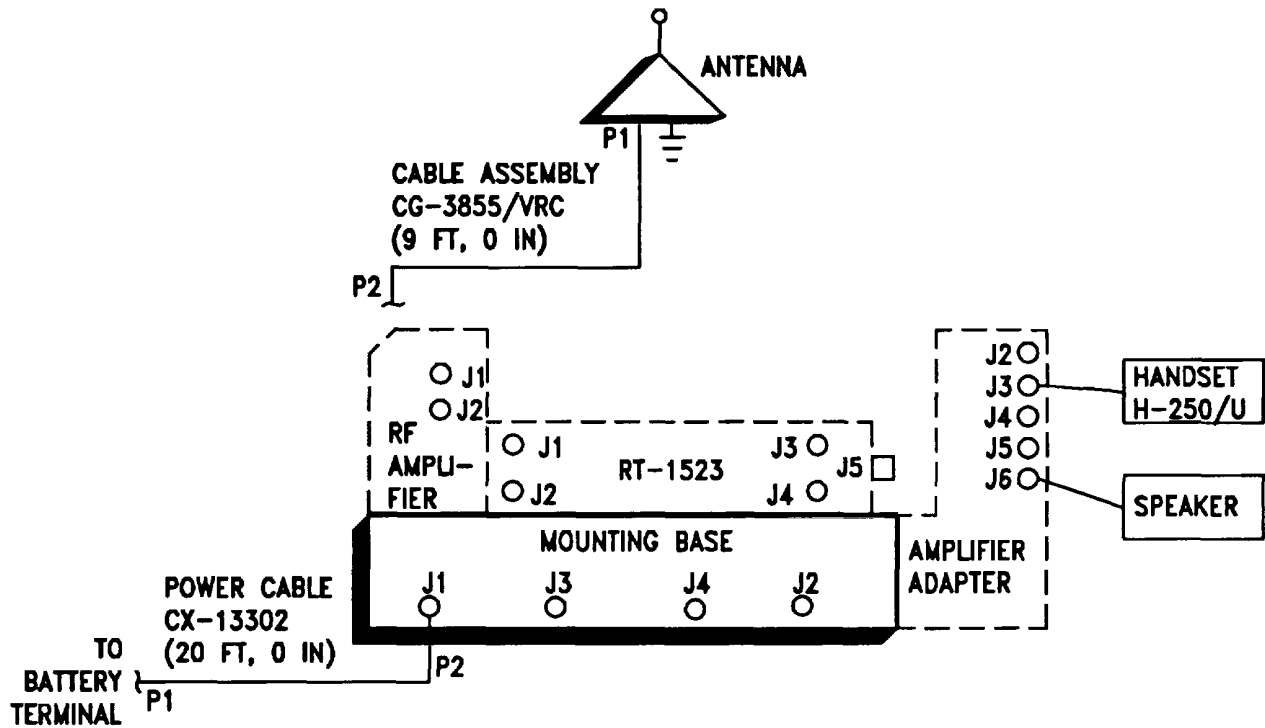
30

5.8   Post-Installation and Checkout. Continued.

CABLE ASSEMBLY	FROM			TO		
	CABLE CONN.	UNIT	UNIT CONN.	CABLE CONN.	UNIT	UNIT CONN.
CG-3855NRC (9 FT, 0 IN)	P2	RF amplifier or RT-1523	J1	P1	Antenna base	J1
CX-13302NRC (20 FT, 0 IN)	P2	Mounting base	J1	P1	Vehicle batteries	Red (+) Black (-)
Speaker Cable		Amplifier adapter	J6		Speaker	
Handset Cable		Amplifier adapter	J3		Handset	

Figure 5-8(1). Cable Diagram: For ANIVRC-87A/88A/90A

5.8   Post-Installation and Checkout. Continued.
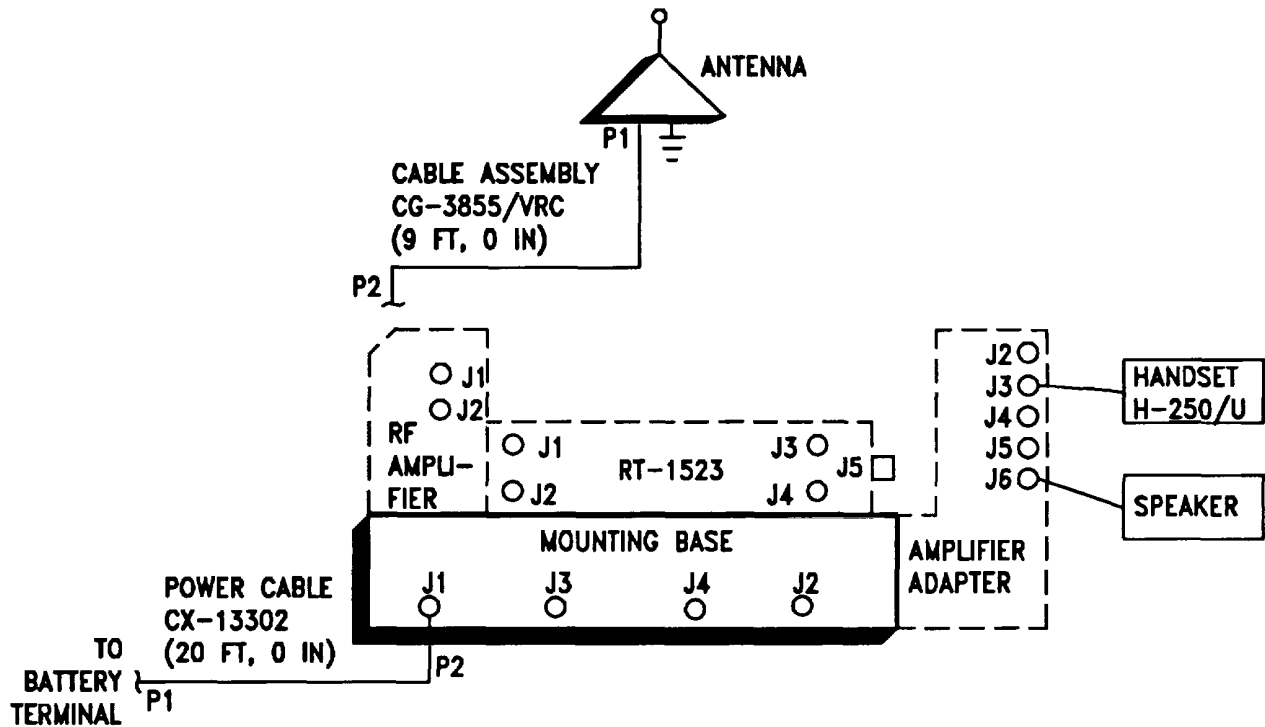
CABLE ASSEMBLY	FROM			TO		
	CABLE CONN.	UNIT	UNIT CONN.	CABLE CONN.	UNIT	UNIT CONN.
CG-3855NRC (9 FT, 0 IN)	P2	RF amplifier or RT-1439	J1	P1	Antenna base	J1
CX-13302NRC (20 FT, 0 IN)	P2	Mounting base	J1	P1	Vehicle batteries	Red (+) Black (-)
Speaker Cable		Amplifier adapter	J6		Speaker	
Handset Cable		Amplifier adapter	J3		Handset	
*CX-13303NRC (2 FT, 6 IN)	P1	Mounting base	J2	P2	MT-6429NRC	J1
*CX-13293NRC (4 FT, 0 IN)	P1	RT-1439	J5	P2 P3	TSEC/KY-57	AUD RAD

Figure 5-8(2). Cable Diagram: For ANN/RC-87188/90

APPENDIX A

REFERENCES

AMDF	Army Master Data File (Microfiche)
AR 710-2	Supply Policy Below the Wholesale Level as Contained in Unit Supply UPDATE
AR 725-50	Requisitioning, Receipt and Issuing System in UPDATE
DA Pam 25-30	Consolidated Index of Army Publications (Microfiche)
DA Pam 710-2-1	Using Unit Supply System Manual Procedures as Contained in Unit Supply UPDATE
SB 11-131-2	Vehicular Radio Sets and Authorized Installations (SINCGARS)
TM 11-5820-890-10-1	Operator's Manual (ICOM Radio Sets)
TM 11-5820-890-10-3	Operator's Manual (Non-ICOM Radio Sets)
TM 11-5820-890-20-1	Unit Maintenance Manual (ICOM Radio Sets)
TM 11-5820-890-20-2	Unit Maintenance Manual (ICOM Radio Sets)
TM 11-5820-890-20-4	Unit Maintenance Manual (Non-ICOM Radio Sets)
TM 11-5820-890-20P	Repair Parts and Special Tools List

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