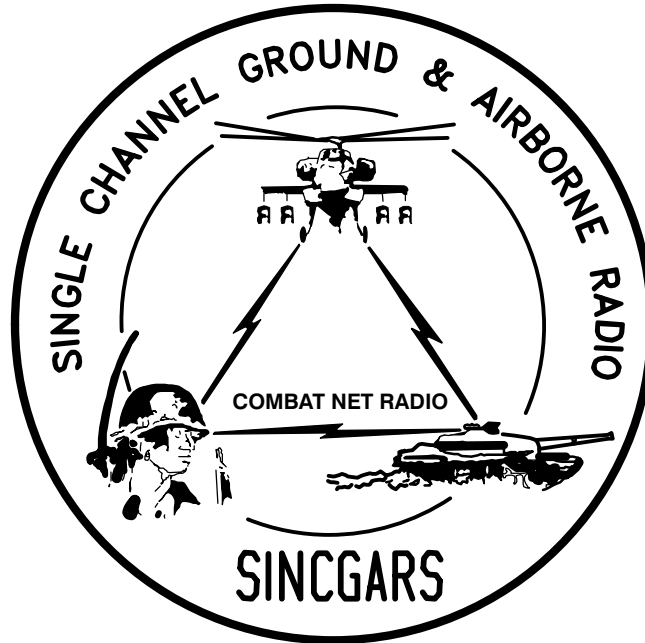


TECHNICAL BULLETIN



**INSTALLATION INSTRUCTIONS FOR
INSTALLATION KIT,
ELECTRONIC EQUIPMENT MK-2325/VRC
(NSN 5895-01-225-0510) (EIC: N/A)
TO PERMIT INSTALLATION OF RADIO SET
AN/VRC-87/88/90 SERIES
IN A
TRUCK, UTILITY: 1 1/4 TON, 4x4, M998 SERIES**

Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

1 SEPTEMBER 1999

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 MK-2325/VRC (NSN 5895-01-225-0510) (EIC: N/A)
 TO PERMIT INSTALLATION OF
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 IN A
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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 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronics Command Fort Monmouth, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, New Jersey 07703-5000. The Fax number is 732-532-1413, DSN 992-1413. You may also e-mail your recommendation to AMSEL-LC-LEO-PUBS-CHG@ce-com3.monmouth.army.mil.

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

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*This manual supersedes TB 11-5820-890-20-27, dated 1 September 1993

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0.1 SCOPE

This technical bulletin provides Installation Instructions for Electronic Equipment MK-2325/VRC, commonly referred to as the Mounting Kit (MK). The MK shall be installed into the following type of vehicle(s):

Truck, Utility: 1 1/4 Ton, 4x4, M998 Series

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 vehicles.

This technical bulletin does not establish quantity or types of vehicles 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 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 vehicle and correct power is supplied. Refer to TM 11-5820-890-20-1 or TM 11-5820-890-20-2 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 AN/VRC-87/88/90 Series is:

Radio Set AN/VRC-87/88/90 Series (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 Packaging 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 Electronic Equipment MK–2325/VRC (MK) contains the items needed to mount Radio Set AN/VRC– 87/88/90 Series in a Truck, Utility: 1 1/4 Ton, 4 x 4, M998 Series (vehicle).

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 3.0 work hours is required. Typical vehicle 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 times will not reflect the typical vehicle downtime.

ITEM	SECTION	TIME
Antenna AS–3900/VRC	5.1	1.0
Mounting Base, Electrical Equipment MT–6352/VRC	5.3	1.5
Cables	5.4	1.0

4. PREPARATION FOR INSTALLATION.

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

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

4.1.1 Items to be Removed. Remove existing AN/VRC–12 radio family installation kit/harness. See TM 11–5820–401–20–2 for removing items used with intercom systems, or TM 11–5820–401–20–1 (used without intercom systems), and TM 9–2320–280–20.

4.1.2 List of Items to be Retained. Not applicable.

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 covers 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 by 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 supplied to install Radio Set AN/VRC–87/88/90 series. Refer to Table 4–2 and Figure 4–2 to identify additional items required to install for “D” and “F” Radio Sets.

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 87/88/90 Series

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
5985-01-297-2971	Antenna AS-3900/VRC (A3017899-1)	1	PAOOF A	4-1, 2
5305-00-847-1159	Screw, Cap, Hexagon (3/8-16 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, Internal/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	
5965-00-876-2375	Loudspeaker, Permanent Magnet LS-454/U	1	PAOZZA	4-1, 4
5975-01-188-8873	Mounting Base, Electrical Equipment MT-6352/VRC (A3013367-1)	1	PAOOF A	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	
5995-01-219-5084	Cable Assembly, Power, Electrical CX-13302/VRC (6 FT, 0 IN) (A3014039-5)	1	PAOZZA	4-1, 9
5995-01-219-7035	Cable Assembly, Radio Frequency CG-3855/VRC (18 FT, 0 IN) (A3014031-8)	1	PAOZZA	4-1, 10
5995-01-466-0693	Lead, Electrical (0 FT, 5 IN) (A3013552-10)	1	XBOZZA	4-1 6
	Bracket, Mounting - Antenna (A3014546-1)	1	XBOZZA	4-1, 5
5340-00-057-2906	Clamp, Loop (5/8-13/64 in) MS21333-73	2	PAOZZA	
5340-00-079-7837	Clamp, Loop (1/4-13/64 in) MS21333-67	8	PAOZZA	
5340-00-050-2740	Clamp, Loop (3/4-13/64 in) MS21333-75	3	PAOZZA	
5340-00-922-6300	Clamp, Loop (1-13/64 in) MS21333-77	2	PAOZZA	
5340-00-809-1490	Clamp, Loop (1/4-1/4 in) MS21333-98	4	PAOZZA	
5340-00-067-3868	Clamp, Loop (1/4-5/16 in) MS21333-109	2	PAOZZA	
5340-00-050-9077	Clamp, Loop (1/4-3/8 in) MS21333-119	1	PAOZZA	
4020-01-341-8795	Fiber Rope Assembly, Single Leg (A3167672-1)	1	PAOZZA	4-1, 8
5325-01-240-7325	Grommet, Nonmetallic (1/4 in) (A3013068-2)	1	XBOZZA	
5965-00-043-3463	Handset H-250/U	1	PAOZZA	4-1, 3
	Lead, Electrical - Ground Strap (A3013552-7)	1	XBOZZA	4-1, 6
5310-00-880-7746	Nut, Hexagon (5/16-24 in) MS51968-5	3	PAOZZA	
5310-00-761-6882	Nut, Hexagon (1/4 -20 in) MS51967-2	9	PAOZZA	
5310-00-934-9751	Nut, Hexagon (No. 10-32 in) MS35650-302	4	PAOZZA	

Table 4-1. MK Parts List for Installation of Radio Set AN/VRC-87/88/90 Series Continued

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
5305-00-958-5246	Screw, Machine, Flat-Head (1/4-20 x 3/4 in) MS35190-289	3	PAOZZA	
5305-00-225-3839	Screw, Cap Hexagon (1/4-20 X 1 IN) MS90725-8	1	PAOZZA	
5305-00-225-9091	Screw, Cap, Hexagon (5/16-24 x 1 1/4 in) MS90726-36	3	PAOZZA	
5305-00-071-2237	Screw, Cap, Hexagon (1/4-20 x 2 in) MS90725-14	2	PAOZZA	
5305-01-259-6322	Screw, Machine, Tapping, Hex-Head (No.10-32 x 1/2 in) 12342499-1	9	PAOZZA	
5305-01-006-2052	Screw, Machine, Hex-Head (No.10-32 x 5/8 in) MS51849-65	3	PAOZZA	
5305-00-432-4251	Screw, Tapping, Pan-Head (1/4-14 x 1/2 in) MS51861-65	3	PAOZZA	
5305-00-068-0502	Screw, Cap, Hexagon (1/4 - 20 x 3/4 in) MS90725-6	4	PAOZZA	
5305-00-984-7341	Screw, Machine, Flat-Head (No. 10-32 x 5/8 in) MS35191-273	1	PAOZZA	
5975-00-111-3208	Shelf, Electrical Equipment (A3050664-1) Strap, Tiedown, Electrical Components MS3367-5-9	1 10	XBOZZA PAOZZA	4-1, 7
5310-00-045-3296	Washer, Lock (No. 10) MS35338-43	13	PAOZZA	
5310-00-582-5965	Washer, Lock (1/4 in) MS35338-44	8	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal/External-Toothed (5/16 in) MS45904-72	5	PAOZZA	
5310-00-889-2528	Washer, Lock, Internal/External-Toothed (1/4 in) MS45904-68	6	PAOZZA	

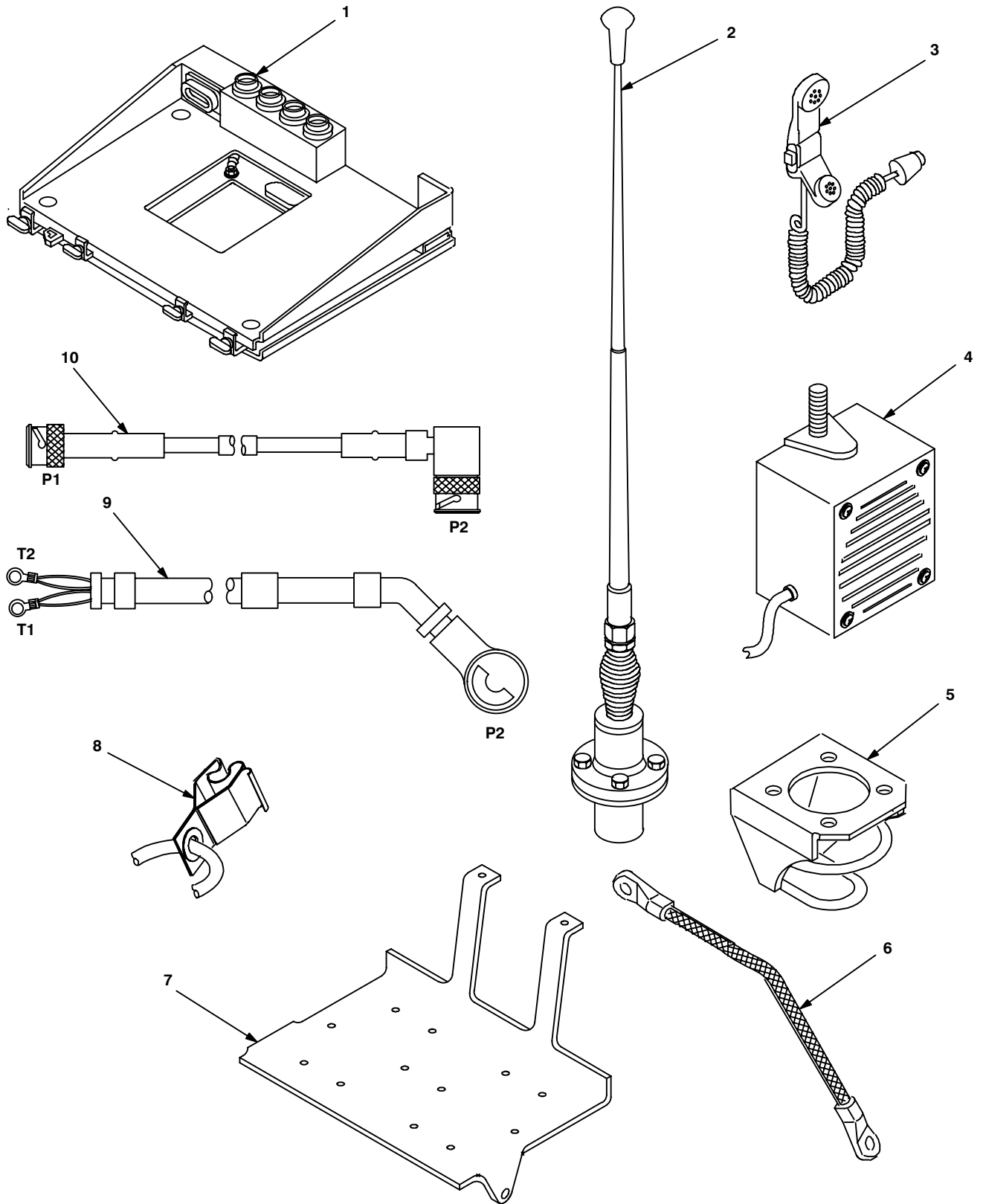


Figure 4-1. MK Illustrated Parts List

Table 4-2. Additional Items Required for Installation of "D" and "F" Series Radio Sets

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY	SMR CODE	FIGURE, ITEM NO.
5995-01-222-1420	Loudspeaker, Control-Unit LS-671/VRC (A3014065-1)	1	PAOFFA	4-2, 1
5995-01-219-4704	Cable Assembly, Special Purpose, Electrical CX-13292/VRC (6 FT, 0 IN) (A3014038-3)	1	PAOZZA	4-2, 2
	Plate, Mounting (A3014550-1)	1	XBOZZA	4-2, 3

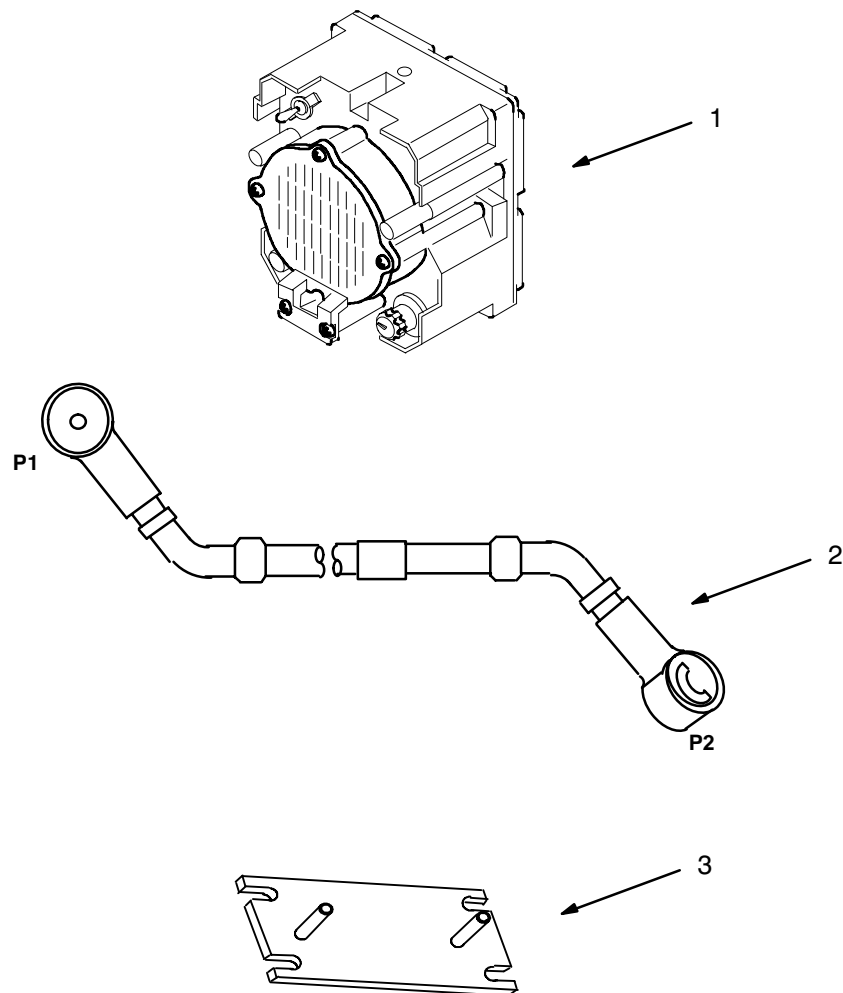


Figure 4-2. Illustrated Parts List for Table 4-2

4.3.3 Consumable Materials. The table below lists materials 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
8030-00-292-1102	Conductive Anti-seize Compound

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
Electric Grinder or Equivalent		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
5/16 in	5120-00-228-9503	1
3/8 in	5120-00-228-9504	1
Socket: 7/16 in	5120-00-240-5364	1
1/2 in	5120-00-227-6703	1
9/16 in	5120-00-237-0977	1
5/16 in	5120-00-227-6704	1
3/8 in	5120-00-235-5878	1
Nutdriver: 1/4 in	5120-00-227-6702	1
5/16 in	5120-00-241-3188	1
Electric Drill	5130-00-889-8994	1
Drill Bits: 11/32 in	5133-00-227-9664	1
7/32 in	5133-00-227-9656	1
No. 4 (.209 in)	5133-00-189-9249	1
5/16 in	5133-00-227-9662	1
1 3/8 in		1
13/32 in	5133-00-227-9668	1

5. INSTALLATION PROCEDURES.

This section describes where and how to install MK items in the vehicle. See figure 5-1 for an overall view of where vehicular MK equipment, as well as radio components, typically will be installed. When installing MK equipment, be sure to read and follow instructions and illustrations carefully.

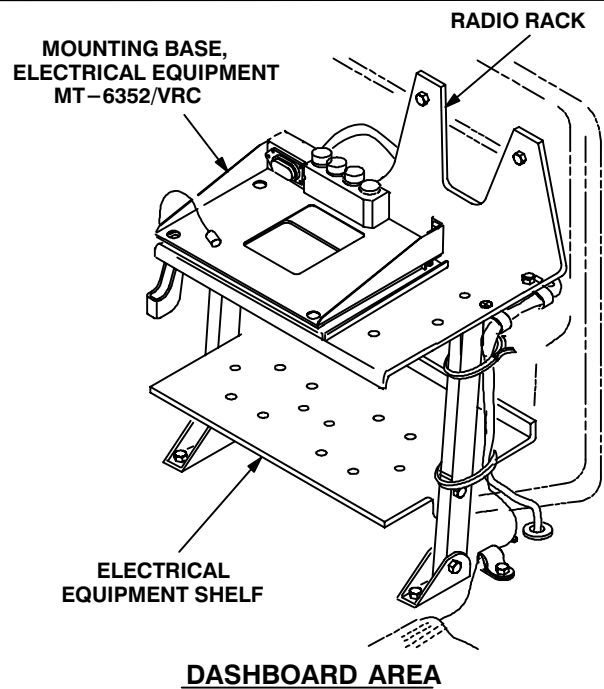
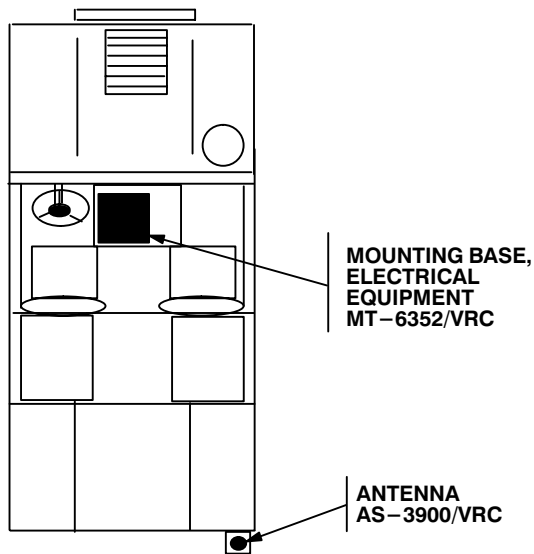
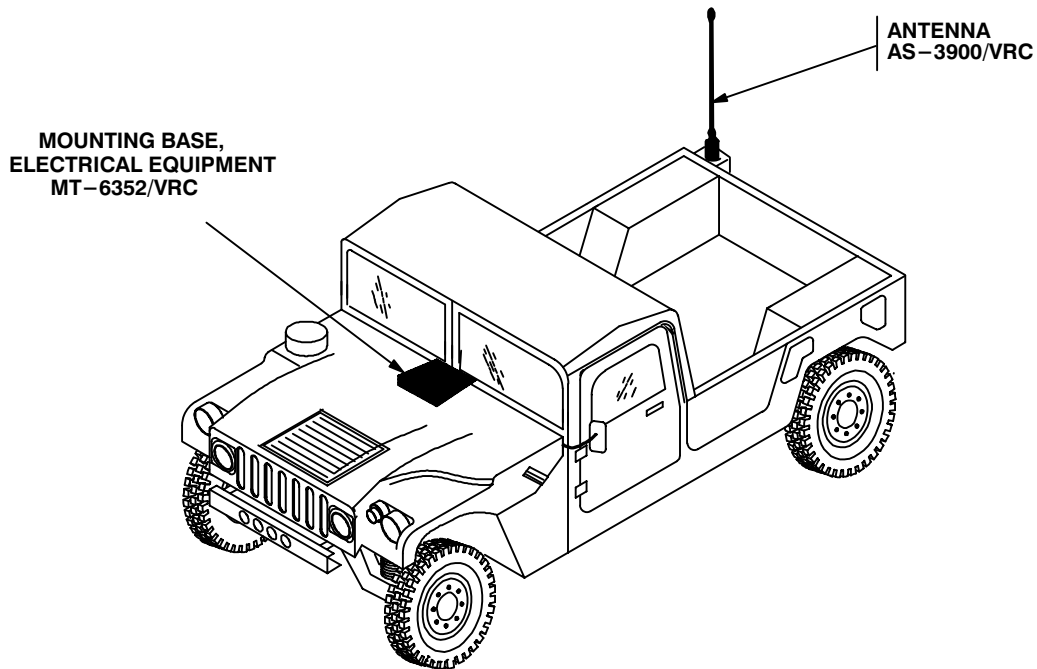


Figure 5-1 (1). MK and Radio Installation: MK Equipment Locations

5. INSTALLATION PROCEDURES. Continued.

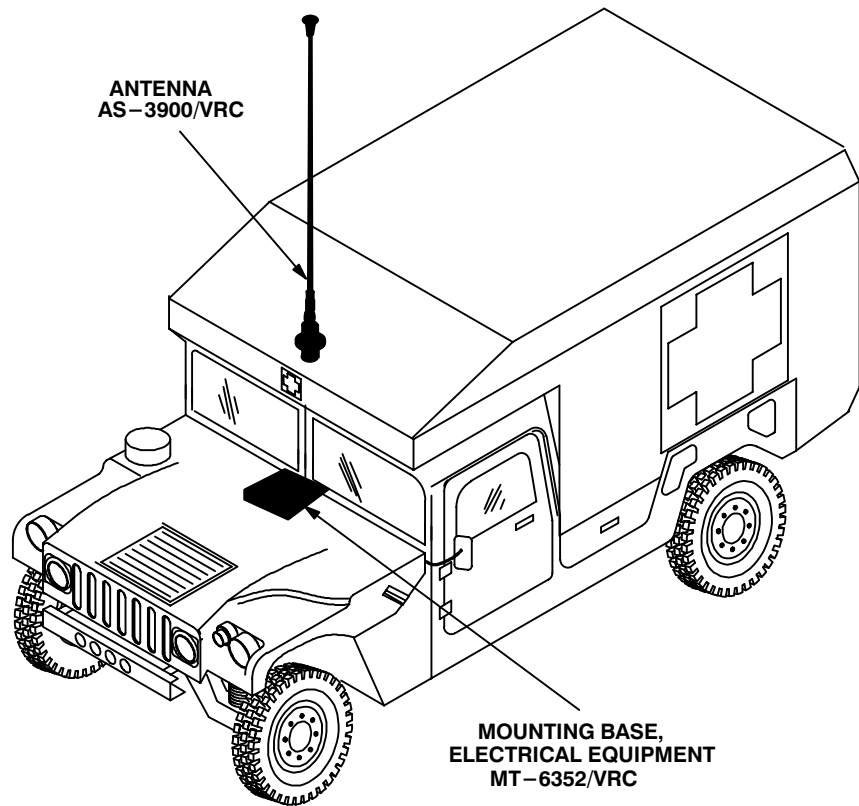


Figure 5-1 (2). MK and Radio Installation: MK Equipment Locations

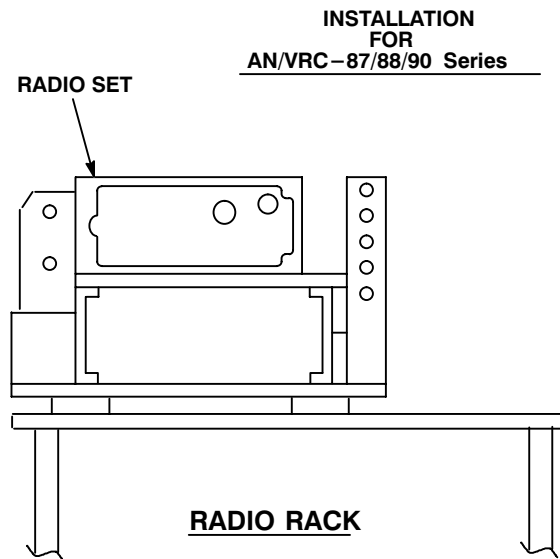


Figure 5-1 (3). MK and Radio Installation: Radio Equipment Locations

5.1 Installation of Antenna AS-3900/VRC (antenna). Refer to section 5.1.2 for installing an antenna in the M997 Ambulance. See figures 5-1 (1) and 5-1 (2) for location(s).

5.1.1 Installation of Antenna Base.

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.

- | | | |
|---|---|---|
| <p>a. Mounting holes for antenna bracket (3) and grommet.</p> | <p>If mounting holes exist, disregard this step and go to step b.</p> | <p>Tools: Electric drill, 11/32 in and 1 3/8 in drill bits.</p> |
|---|---|---|

Using antenna bracket (3) as a template and dimensions shown, drill three 11/32 in diameter holes and one 1 3/8 in diameter hole through rear wall of vehicle. See figure 5-2 (1).

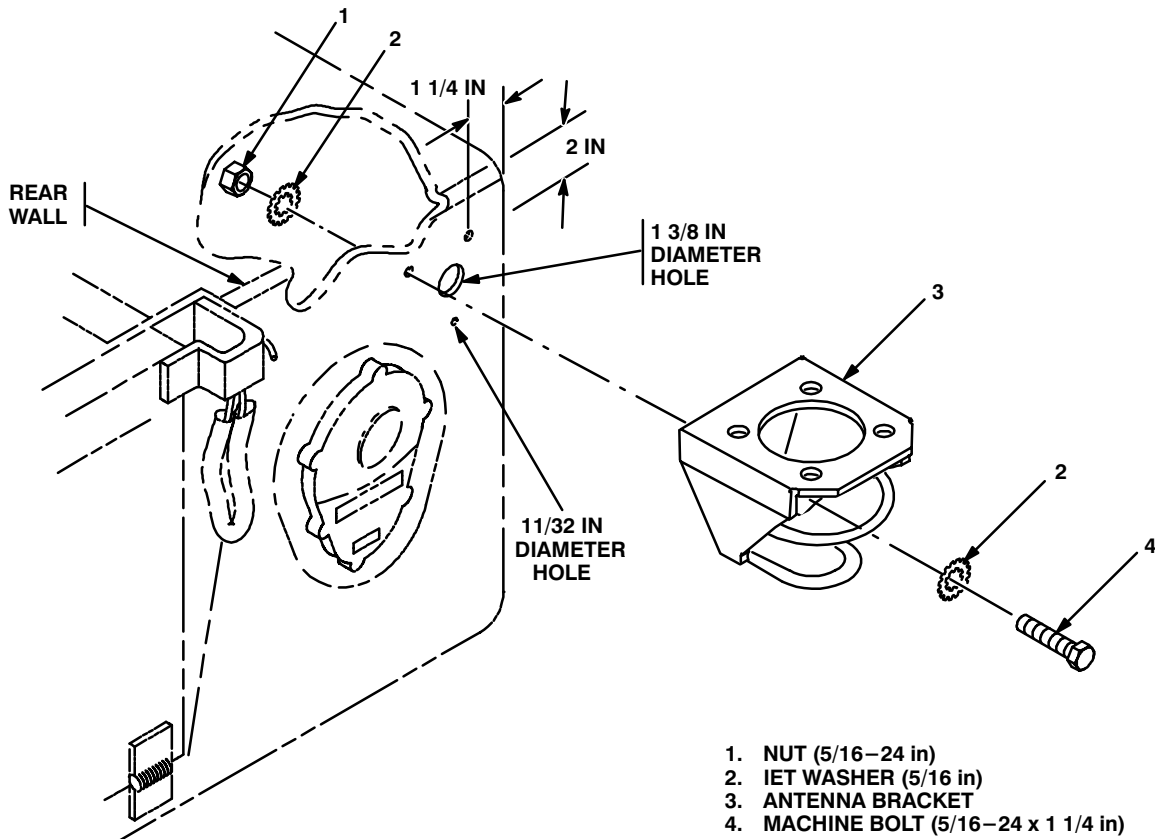
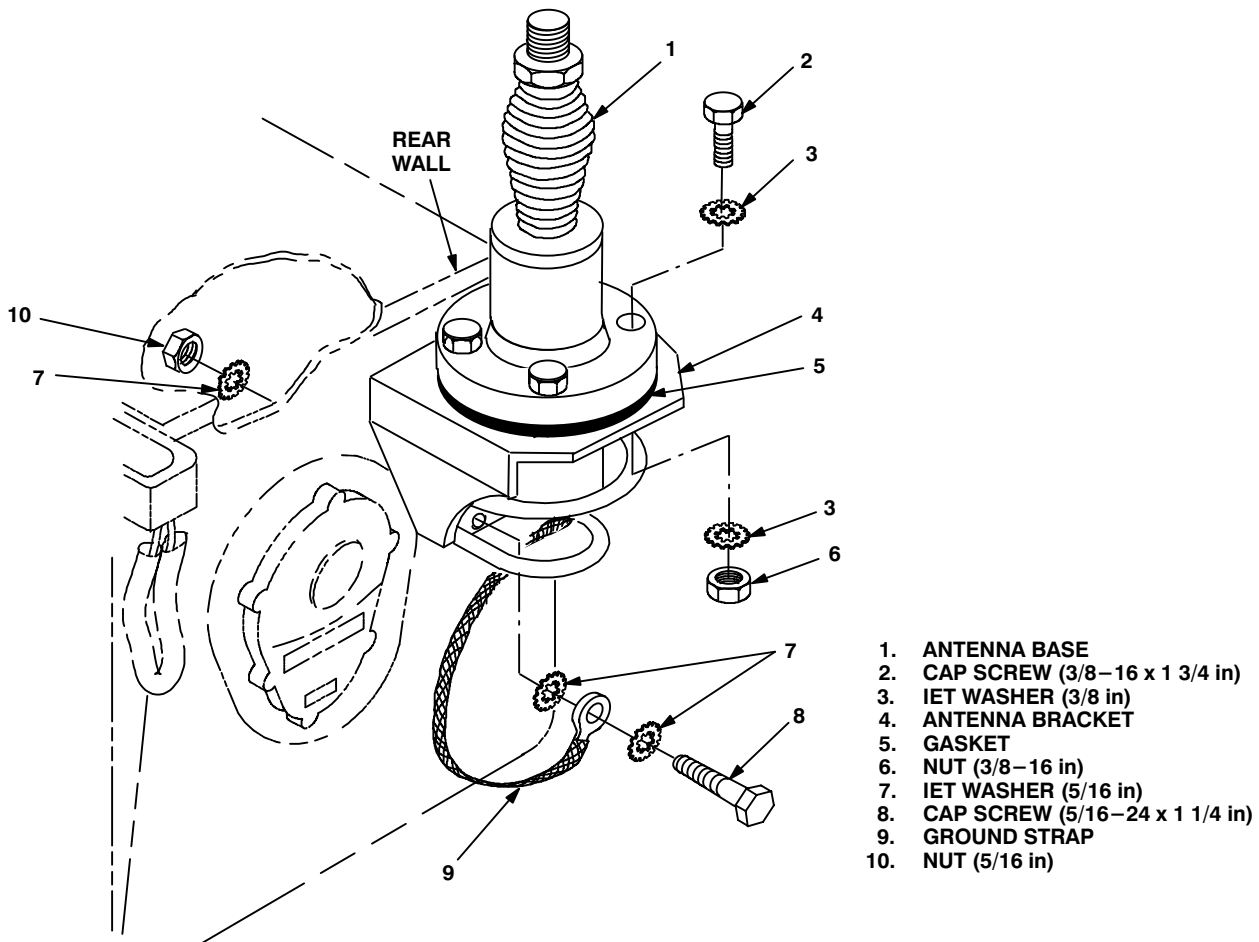


Figure 5-2 (1). Antenna Base Installation: Installing Antenna Bracket

5.1.1 Installation of Antenna Base. Continued

ITEM	ACTION	REMARKS
NOTE		
<p>To insure good electrical grounding, remove 1 in diameter of paint around mounting holes in vehicle before installing antenna bracket. Clean the paint removed areas and apply a thin coat of conductive anti-seize compound.</p>		
b. Antenna bracket (3).	<p>Remove a 1" diameter area of paint around both sides of mounting holes in antenna bracket (3). Clean the paint removed areas and apply a thin coat of conductive anti-seize compound</p>	<p>Tools: Electric grinder or equivalent.</p>
c. Antenna bracket (3).	<p>Align mounting holes over three 1 1/32 in diameter holes drilled in step a. See figure 5-2 (1).</p>	
d. Two cap screws (4), four internal-toothed (IET) washers (2) and two nuts (1).	<p>Install and secure to two upper mounting holes in antenna bracket (3) and rear wall.</p>	<p>Tools: 1/2 in socket and 1/2 in open/box wrench.</p>
e. Gasket (5).	<p>Place on antenna bracket (4) and aline mounting holes. See figure 5-2 (2).</p>	



5.1.1 Installation of Antenna Base. Continued

ITEM	ACTION	REMARKS
f. Antenna base (1).	Place on top of gasket (5) and antenna bracket (4); then align mounting holes.	
g. Four cap screws (2), eight IET washers (3) and four nuts (6).	Install and secure to antenna base (1) and antenna bracket (4).	Tools: 9/16 in wrench and 9/16 in open/box wrench.
h. Ground strap (9), cap screw (8), three IET washers (7) and nut (10).	Install and secure to bottom hole in antenna bracket (4) and rear wall.	Tools: 1/2 in socket and 1/2 in open/box wrench.

5.1.2 Installation of Antenna Base (M997 Only).

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.

a. Existing port cover and gasket.	Remove. See figure 5–1 (2) for location.	
b. Gasket (4).	Apply a thin coat of silicone compound to both sides. Place on port and align with mounting holes. See figure 5–2 (3).	
c. Existing ground strap and mounting hardware.	Remove from bottom of antenna base (1). Retain mounting hardware.	Tools: Phillips screwdriver.
d. Ground strap (5) and existing mounting hardware (retained in step c).	Install and secure to bottom of antenna base (1).	Tools: Phillips screwdriver.
e. Antenna base (1).	Place on top of gasket (4) and port; then align with mounting holes.	

5.1.2 Installation of Antenna Base (M997 Only). Continued

ITEM	ACTION	REMARKS
f. Four cap screws (2) and four IET washers (3).	Install and secure to antenna (1) and port. See figure 5-2 (3).	Tools: 9/16 in socket.
g. Ground strap (5).	Temporarily set aside until RF cable is installed in section 5.4.1.	

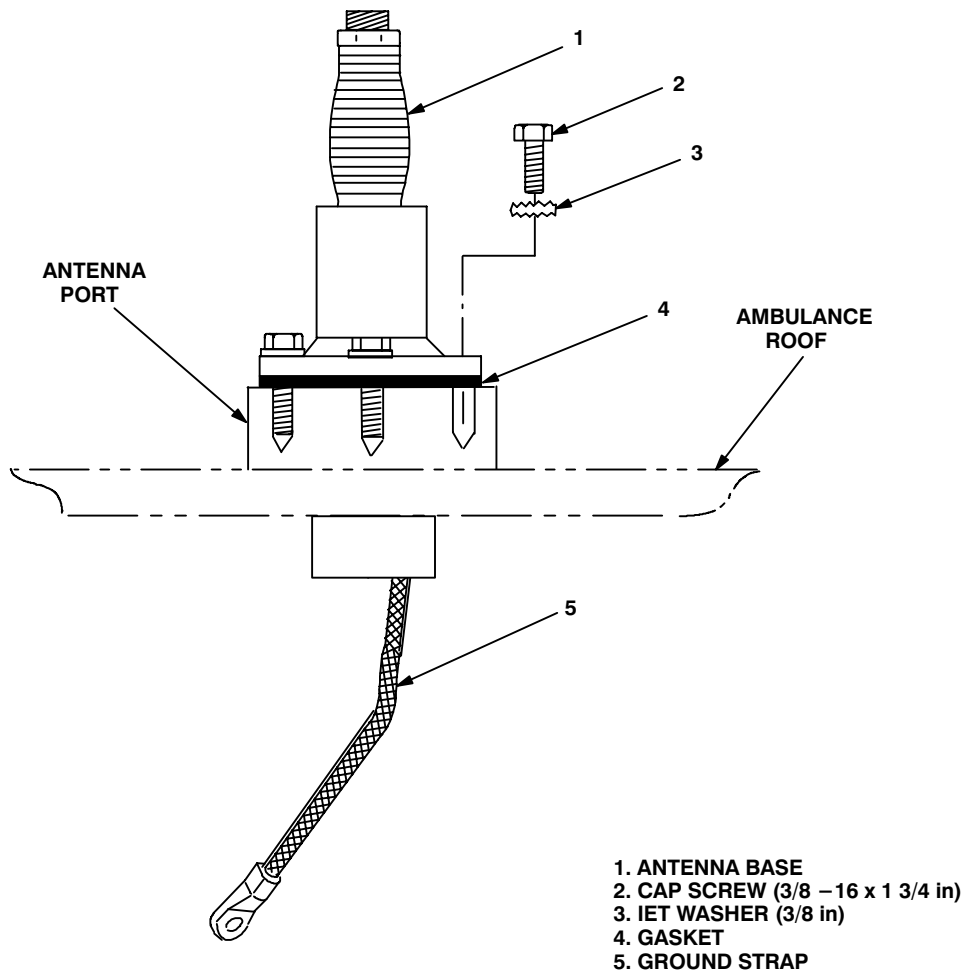
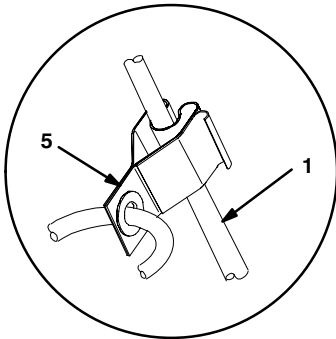


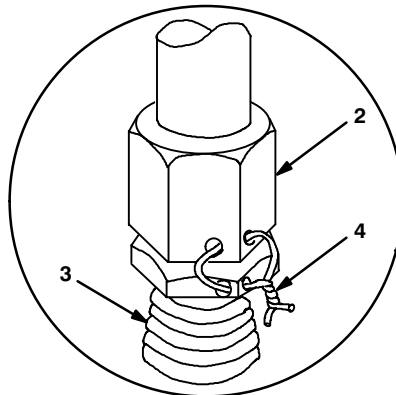
Figure 5-2 (3). Antenna Base Installation: M997 Ambulance

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 tie down all antennas.

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

5.2 Installation of Electrical Equipment Shelf.

ITEM	ACTION	REMARKS
a. Existing radio rack assembly.	Deinstall all parts except roadside mounting bracket. Discard existing mounting hardware removed from front hole in curbside mounting bracket.	
b. Curbside floor padding.	Cut away floor padding around curbside mounting bracket mounting holes in vehicle floor.	Tools: pocketknife.
c. Existing curbside mounting bracket and mounting holes.	Remove a 1" diameter area of paint around mounting holes in vehicle floor. Remove a 1" diameter area of paint around both sides of mounting holes in curbside mounting bracket. Clean the paint removed areas and apply a thin coat of conductive anti-seize compound.	Tools: Electric grinder or equivalent.
d. Existing mounting hardware removed in step a.	Reinstall to rear hole in existing mounting bracket. See Figure 5–4, Detail A.	
e. Ground strap (6), cap screw (7) and two IET washers (8).	Install and secure one end of ground strap to front hole of existing mounting bracket. See Figure 5–4, Detail A.	Tools: 7/16 in socket.
f. Existing radio rack assembly curbside supporting leg.	Remove a 1" diameter area of paint around both sides of mounting hole in curbside support leg. Clean the paint removed area and apply a thin coat of conductive anti-seize compound.	Tools: Electric grinder or equivalent.
g. Existing radio rack assembly.	Reinstall to vehicle.	
h. Electrical equipment shelf (5).	Remove a 1" diameter area of paint around both sides of mounting holes that mate with mounting holes in radio rack support legs. Remove a 1" diameter area of paint around both sides of mounting holes in top arms of electrical equipment shelf (5) and around both sides of mating mounting holes in radio rack. Clean the paint removed areas and apply a thin coat of conductive anti-seize compound.	Tools: Electric grinder or equivalent.
i. Electrical equipment shelf (5).	Position between two support legs under radio rack; then align mounting holes. See Figure 5–4.	
j. Cap screw (4), lock washer (2) and nut (3).	Install and secure to electrical equipment shelf and roadside support leg.	Tools: 7/16 in socket and 7/16 in open/box wrench.
k. Ground strap (6), (not shown) cap screw (7), two IET washers (8) and nut (3).	Install and secure loose end of ground strap (installed in step e) to electrical equipment shelf (5) and curbside support leg.	Tools: 7/16 in socket and 7/16 in open/box wrench.
l. Two flat-head machine screws (1), two lock washers(2) and two nuts (3).	Install and secure top arms of electrical equipment shelf (5) to bottom of radio rack.	Tools: Phillips screwdriver and 7/16 in open/box wrench

5.2 Installation of Electrical Equipment Shelf. Continued.

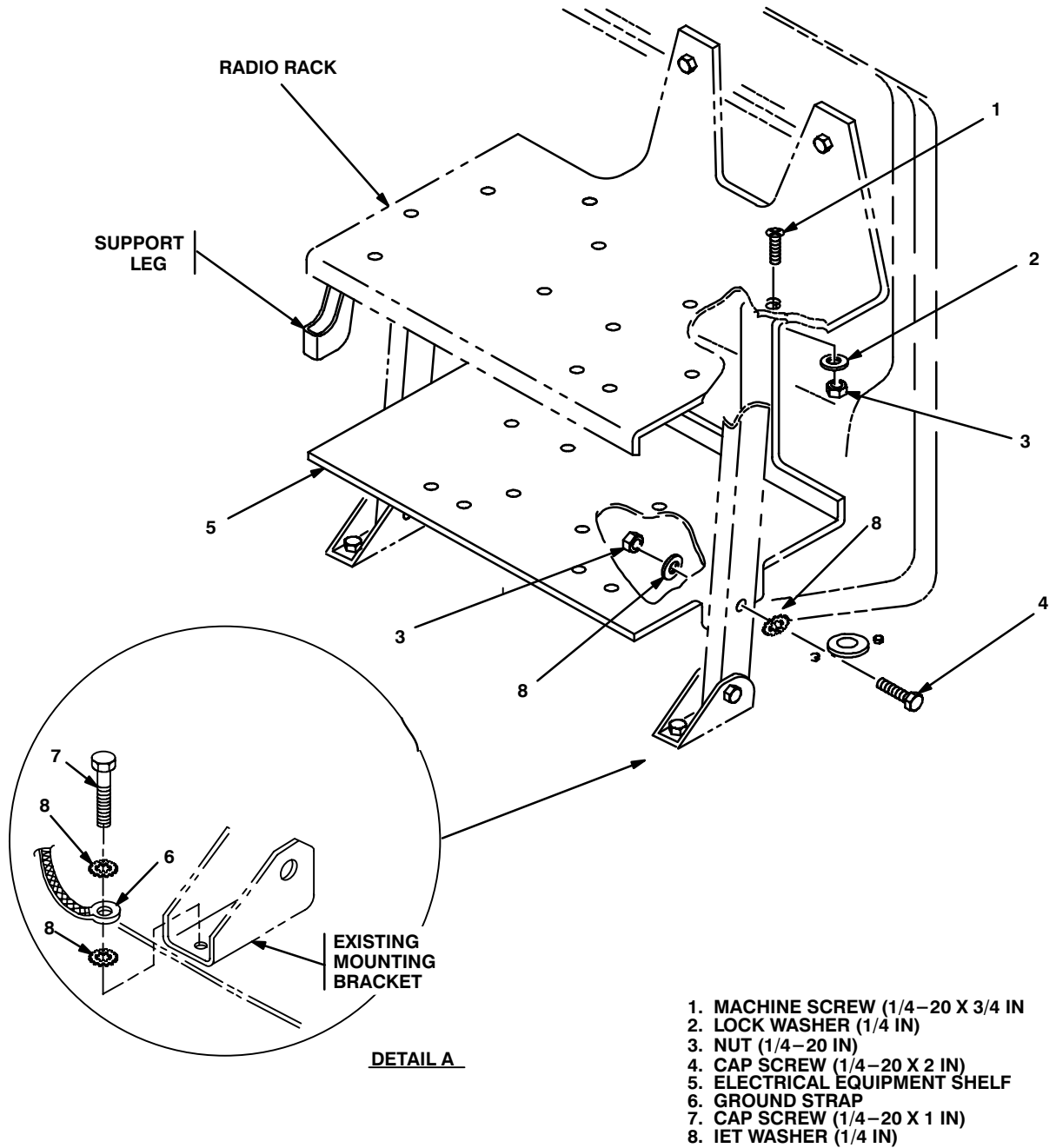


Figure 5-4. Electrical Equipment Shelf Installation

5.3 Installation of Mounting Base, Electrical Equipment MT-6352/VRC (mounting base). Remove and retain attaching bag of 5/16 in mounting hardware for installation. To insure good electrical grounding, any rust, corrosion or paint around mounting holes in radio shelf should be removed before installing the mounting base. See figure 5-5 and perform the following steps.

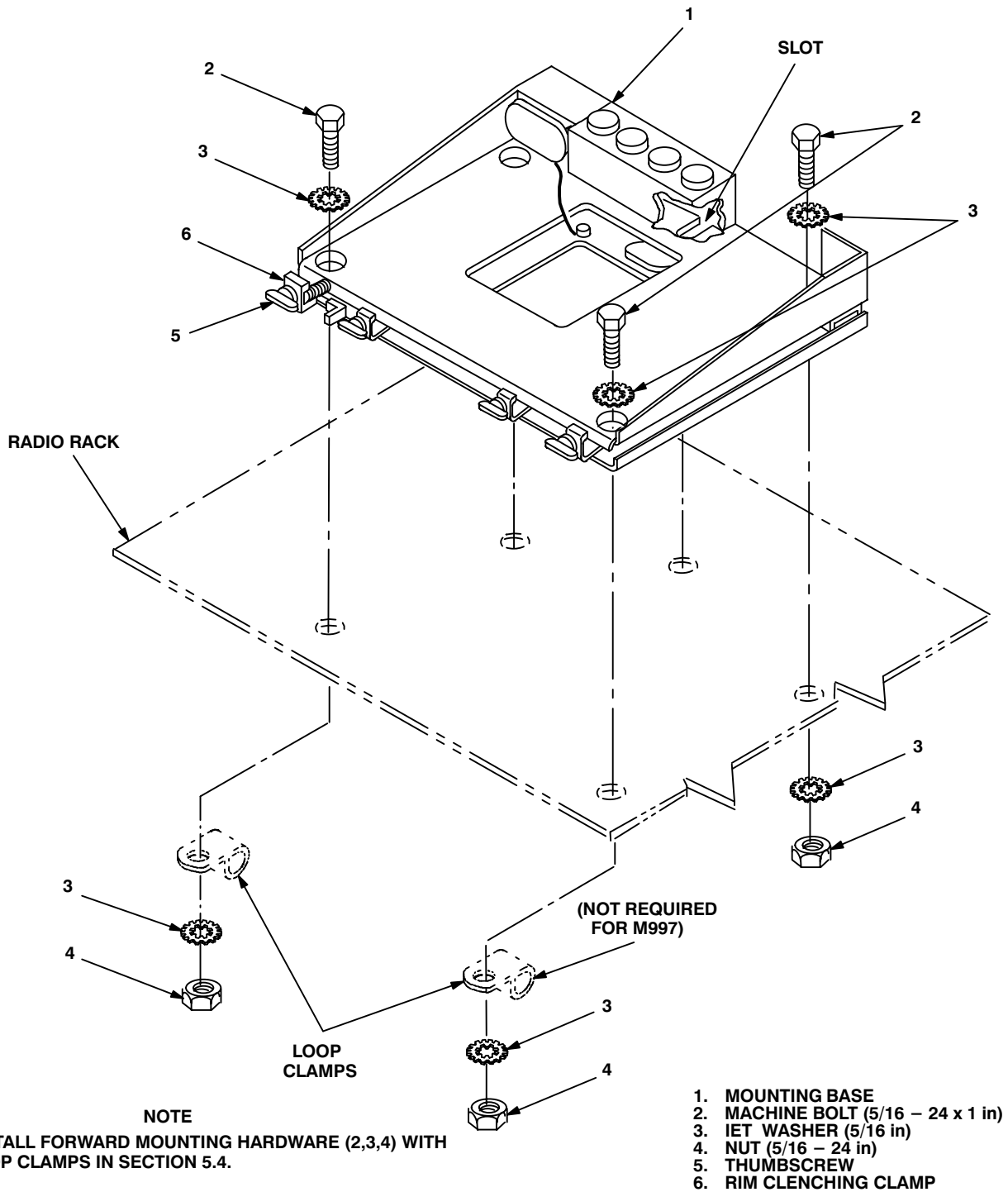


Figure 5-5. Mounting Base Installation

5.3 Installation of Mounting Base, Electrical Equipment MT–6352/VRC (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.		
a. Mounting base (1) and radio rack.	Remove a 2” square area of paint on the underside of the mounting base (1) around left front and rear mounting holes. Remove a 2” square area of paint on the radio rack around the existing mounting holes that mate with left front and rear mounting holes of mounting base (1). Clean the paint removed areas and apply a thin coat of conductive anti–seize compound.	Tools: Electric grinder or equivalent.
b. Mounting base (1).	Place on radio rack over existing holes. See Figure 5–5.	
c. Two outer thumbscrews (5).	Turn ccw until both sets of threads have cleared center of holes.	
d. Mounting base (1).	Align four holes and rear slot with matching hole pattern in radio rack.	
e. For M997 Ambulance only: Four machine bolts (2), eight IET washers (3) and four nuts (4).	Install and secure to two rear holes, slot and left front hole in mounting base (1) and radio rack.	Tools: 1/2 in socket and 1/2 in open/box wrench.
f. For remaining M998 Series: Three machine bolts (2), six IET washers (3) and three nuts (4).	Install and secure to two rear holes and slot in mounting base (1) and radio rack.	Tools: 1/2 in socket and 1/2 in open/box wrench.

5.4 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 clamps and tiedown straps.

WARNING

Make sure vehicle power source is positioned OFF or disconnected before installing cables.

ITEM	ACTION	REMARKS
a. RF cable (2) connector P1.	Insert through grommet hole in rear wall and antenna bracket; then connect and secure to antenna base (8) connector J1. See figure 5–6 (1).	
b. Grommet (7).	Cut through on mark shown; then wrap around RF cable (2) and install to grommet hole in rear wall. See figure 5–6 (1), detail A.	Tools: Pocket Knife.
c. RF cable (2).	Route forward along bottom of frame to existing grommet and retainer. See figure 5–6 (1).	
d. Loop clamp (4) and existing mounting hardware.	Wrap around RF cable (2); then install to rear reflector (on inside corner of rear curbside wall).	
e. Tiedown strap (5).	Wrap around RF cable (2), then install loosely to taillight wiring harness. See figure 5–6 (1) for location(s).	
f. Loop clamp (6), hex-head machine screw (no. 10–32 x 5/8 in), lock washer (no. 10) and nut (no. 10–32 in).	Wrap clamp around RF cable (2) and existing harness; then install to bottom edge of rear wall.	Tools: 5/16 in socket and 5/16 in open/box wrench.
g. Two loop clamps (9), three loop clamps (3), five hex-head tapping screws (no. 10–32 x 1/2 in) and five lock washers (no. 10).	Wrap clamps around RF cable (2) and existing cable harness; then install to mounting holes on bottom of rear curbside frame.	Tools: 5/16 in socket.
h. Existing retainer and grommet.	Temporarily remove from grommet hole in rear curbside wheelwell. Discard old mounting hardware. See figure 5–6 (1), detail B.	
i. RF cable (2).	Insert connector P1 through grommet hole; then route cable through rear curbside seat or utility compartment area to radio rack. See figure 5–6 (1).	
j. Existing grommet (removed in step h).	Wrap around RF cable (2); then insert in grommet hole. See figure 5–6 (1), detail B.	

5.4 Installation of Cables. Continued

ITEM	ACTION	REMARKS
k. Existing retainer, two cap screws (10), two lock washers (11) and two nuts (12).	Install and secure grommet and wheel–well. See figure 5–6 (1), detail B.	Tools: 7/16 in wrench.
l. Four loop clamps (3), four hex–head tapping screws (no. 10 – 32 x 1/2 in) and four lock washers (no. 10).	Wrap clamps around RF cable (2); then install to existing holes in rear curbside seat or utility compartment area. See figure 5–6 (1) for location(s).	Tools: 5/16 in socket.
m. Front curbside floor padding.	Secure over RF cable (2).	
n. Loop clamp (5), hex–head machine screw (no. 10–32 x 5/8 in) and lock washer (no. 10).	Wrap clamp around RF cable (2); then install to floor behind curbside leg support. See figure 5–6 (2) for location(s).	Tools: 5/16 in socket.
o. Loop clamp (7), flat–head machine screw (1/4 – 20 x 3/4 in), lock washer (1/4 in) and nut (1/4 – 20 in).	Wrap clamp around RF cable (2); then install to forward curbside hole in radio rack.	Tools: Phillips screwdriver and 7/16 in open/box wrench.
p. Two loop clamps (8), two machine bolts (5/16 – 24 x 1 in), four lock washers (5/16 in) and two nuts (5/16 – 24 in).	Wrap clamps around RF cable (2); then install to front mounting holes in mounting base (9) and radio rack. See figure 5–6 (2) for clamp location(s) and figure 5–5 for mounting hardware stackup.	Tools: 1/2 in socket and 1/2 in open/box wrench.
q. Two outer thumbscrews (5) on mounting base (1), figure 5–5.	Tighten and secure to rim clenching clamps (6) and mounting base.	
r. Power cable (1) connector P2.	Position on top of mounting base (9). See figure 5–6 (2).	
s. Power cable (1).	Route under radio rack to existing grommet location behind loop clamp (5).	
t. Existing retainer and grommet.	Temporarily remove from grommet hole. Discard old mounting hardware. See figure 5–6 (2), detail A.	
u. Power cable (1).	Insert through grommet hole to under body of vehicle; then position T1 and T2 terminal leads near terminal lugs. See figure 5–6 (2), detail B.	
v. Power cable (1) terminal leads: T1 (red) and T2 (black).	Connect and secure to proper terminal lugs with existing mounting hardware.	Positive (+) lug is insulated and negative (–) lug is not.

5.4 Installation of Cables. Continued

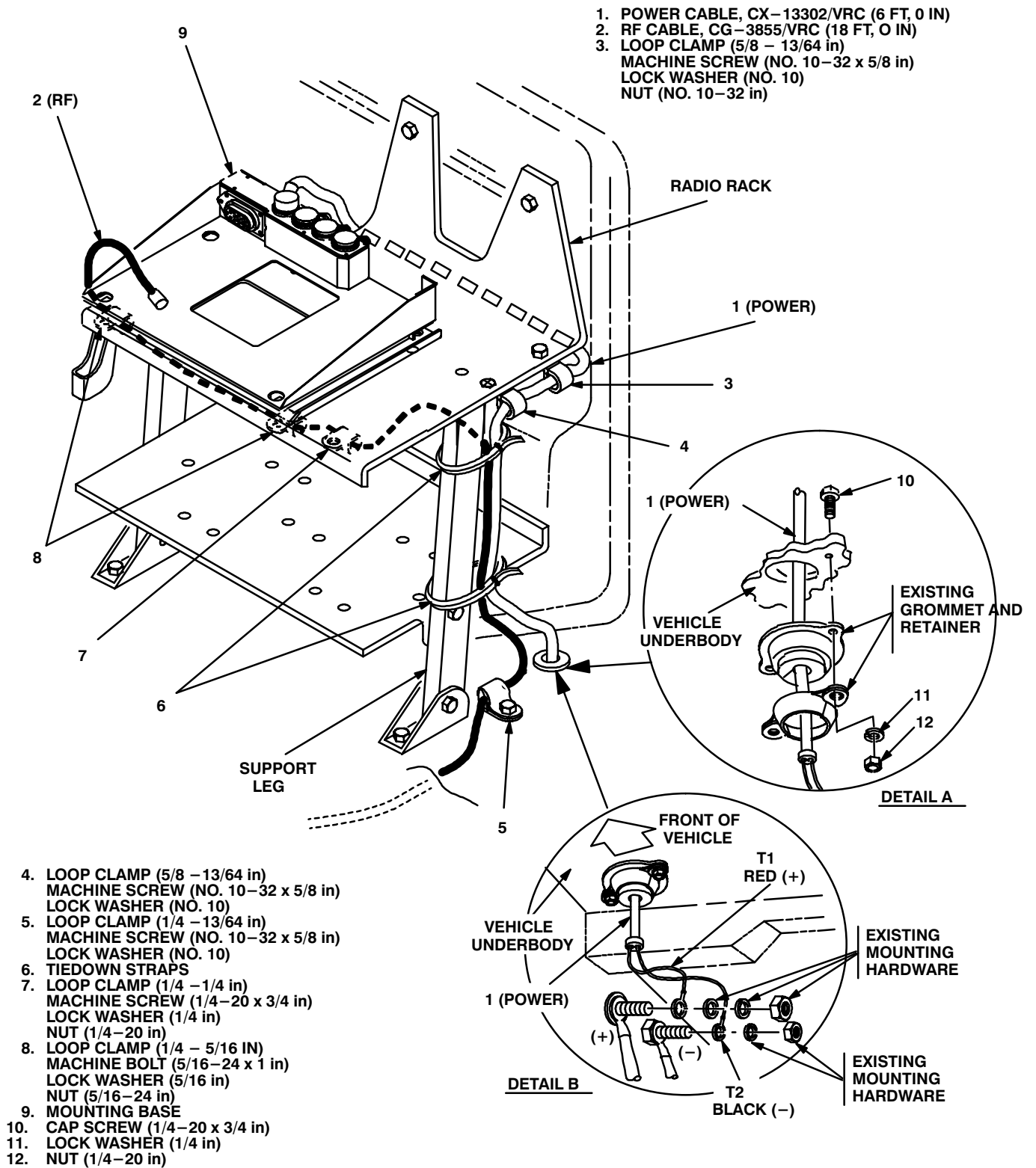


Figure 5-6 (2). Cable Installation: RF and Power Cabling

5.4 Installation of Cables. Continued

ITEM	ACTION	REMARKS
w. Existing grommet (removed in step t).	Wrap around power cable (1), then insert in grommet hole. See figure 5–6 (2), detail A.	
x. Existing retainer, two cap screws (10), two lock washers (11) and two nuts (12).	Install and secure to grommet and underbody.	Tools: 7/16 in socket and 7/16 in open/box wrench.
y. Loop clamp (3), hex–head machine screw (no. 10–32 x 5/8 in), lock washer (no. 10) and nut (no. 10–32 in).	Wrap clamp around power cable (1), then install to hole near curbside edge of radio rack. See figure 5–6 (2) for location(s).	Tools: 5/16 in socket and 5/16 in open/box wrench.
z. Loop clamp (4), flat–head machine screw (no. 10–32 x 5/8 in), lock washer (no. 10) and nut (no. 10–32 in).	Wrap clamp around power cable (1), then install to hole near curbside edge of radio rack.	Tools: Phillips screwdriver and 5/16 in open/box wrench.
aa. Two tiedown straps (6).	Wrap around power cable (1) and RF cable (2), then secure loosely to curbside leg support.	
ab. Sealant.	Apply to and around previously installed grommets and drilled holes.	
ac. Power cable (1) connector P2.	Connect and secure to mounting base (9) connector J1.	

5.4.1 Installation of RF Cable (M997 Only).

WARNING

Make sure vehicle power source is positioned OFF or disconnected before installing cables.

ITEM	ACTION	REMARKS
a. RF cable (5) connector P1.	Connect and secure to antenna base (2). See figure 5–7.	
b. Existing antenna base (1) ground strap.	Remove. Retain mounting hardware.	Tools: Phillips screwdriver.
c. Ground strap (3) and mounting hardware (retained in step b).	Install and secure to bottom of antenna base (2).	Tools: Phillips screwdriver.
d. Rf cable (5) and ground strap (3).	Route down windshield frame to radio rack.	
e. Loop clamp (1) and existing mounting hardware.	Wrap clamp around RF cable (5) and ground strap (3); then install to roof overhang. See figure 5–7 for location(s).	Tools: 9/16 in wrench.

5.4.1 Installation of RF Cable (M997 Only). Continued

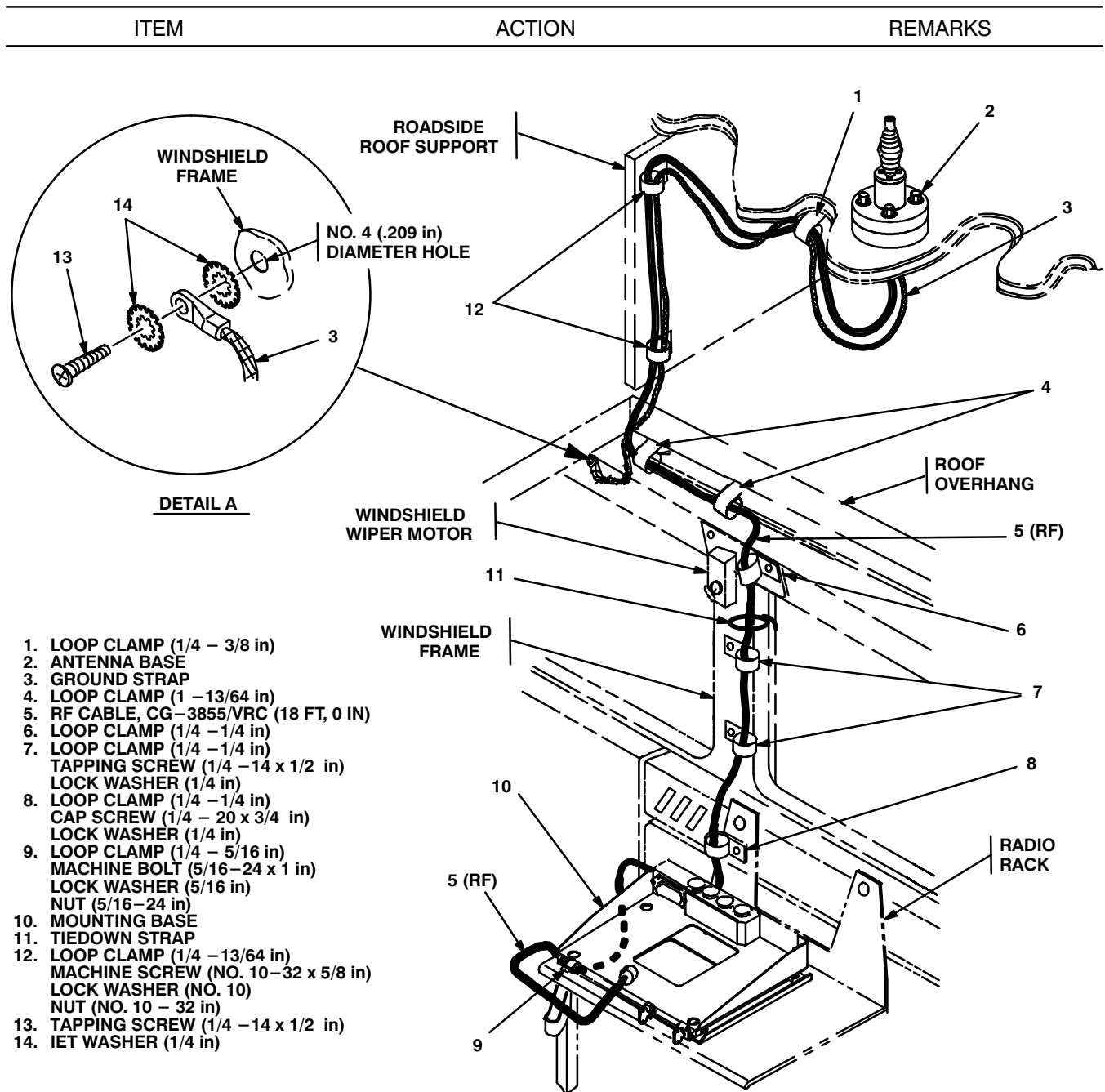


Figure 5-7. RF Cable Installation: M997 Ambulance

- | | | | |
|----|--|---|--|
| f. | Roadside roof support. | Drill two 7/32 in diameter holes through support for mounting loop clamps (12). See figure 5-7 for location(s). | Tools: Electric drill and 7/32 in drill bit. |
| g. | Mounting holes for loop clamps (7) and ground strap (3). | Drill three No. 4 (.209 in) diameter holes in windshield frame. | Tools: Electric drill and No. 4 drill bit. |

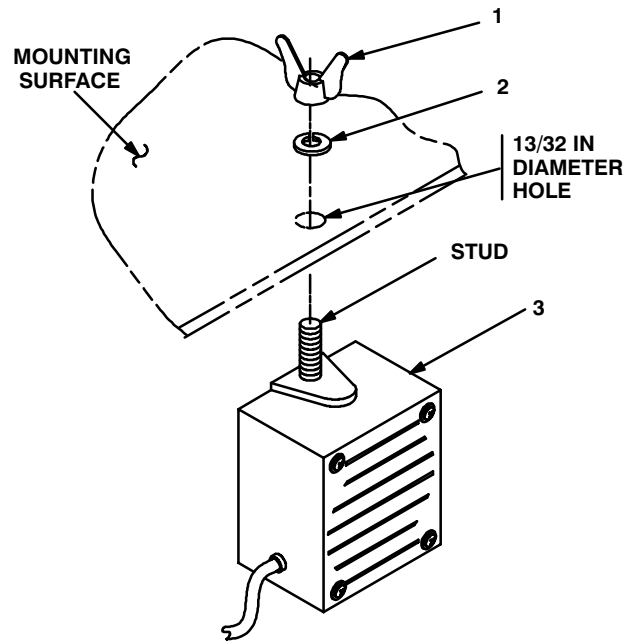
5.4.1 Installation of Cables (M997 Only). Continued

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.		
h. Ground strap (3), pan–head screw (13) and two IET washers (14).	Install and secure to top hole drilled in step g (in windshield frame). See figure 5–7, detail A.	Tools: Phillips screwdriver.
i. Two loop clamps (4) and existing mounting hardware.	Wrap clamps around existing cable harness; then install to two existing holes below edge of roof overhang. See figure 5–7 for location(s).	
j. Loop clamp (6) and existing mounting hardware.	Wrap clamp around RF cable (5); then install to bracket securing windshield wiper motor.	
k. Two loop clamps (7), two pan–head tapping screws (1/4 –14 x1/2 in) and two lock washers (1/4 in).	Wrap clamp around RF cable (5); then install to lower holes drilled in step g.	Tools: Phillips screwdriver.
l. Loop clamp (8), cap screw (1/4 –14 x 3/4 in), lock washer (1/4 in) and nut (1/4 –20 in).	Wrap clamp around RF cable (5); then install to left arm of radio rack.	Tools: 7/16 in socket and 7/16 in open/box wrench.
m. RF cable (5).	Route below left side of radio rack; then position connector P2 on top of mounting base (10). See figure 5–7.	
n. Loop clamp (9), machine bolt (5/16–24 x 1 in), two IET washers (5/16 in) and nut (5/16–24 in).	Wrap clamp around RF cable (5); then install and secure to radio rack and mounting base (10). See figure 5–7 for location(s).	Tools: 5/16 in socket and 5/16 in open/box wrench.
o. Tiedown strap (11).	Wrap around RF cable (5) and secure to existing windshield wiper wiring harness.	
p. Two outer thumbscrews (5) and two rim clenching clamps (6).	Tighten and secure to mounting base (1). See figure 5–5 .	

5.5 Installation of Loudspeaker LS-454/U (speaker). Mounting location for speaker may be determined by the vehicle commander. Typical methods used for mounting the speaker are as follows:

Method A. See figure 5-8 (1).

- a. Determine speaker (3) location.
- b. Drill $13/32$ in diameter hole through mounting surface.
- c. Insert speaker (3) stud through drilled hole; then secure with lock washer (2) and wing nut (1).



1. WING NUT ($3/8-24$ in)
2. LOCK WASHER ($3/8$ in)
3. SPEAKER
4. CAP SCREW ($1/4-20 \times 1$ in)
5. SPEAKER BRACKET
6. LOCK WASHER ($1/4$ in)
7. NUT ($1/4-20$ in)

Figure 5-8 (1). Speaker Installation - A

Method B. See figure 5-8 (2).

NOTE

Items (4), (6) and (7) are not supplied in kit.

- a. Determine speaker (3) location.
- b. Drill two $5/16$ in diameter holes through mounting surface.
- c. Install and secure two cap screws (4), two lock washers (6) and two nuts (7) to speaker bracket (5) and mounting surface.
- d. Insert speaker (3) stud through speaker bracket (5) hole; then secure with lock washer (2) and wing nut (1).

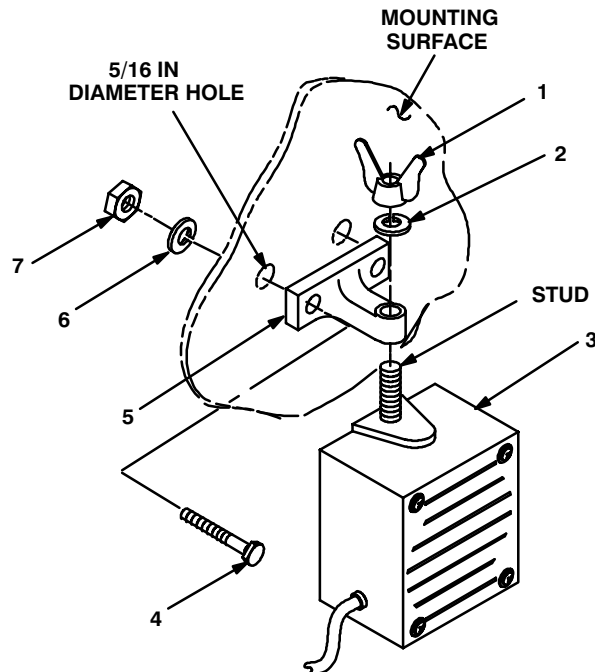
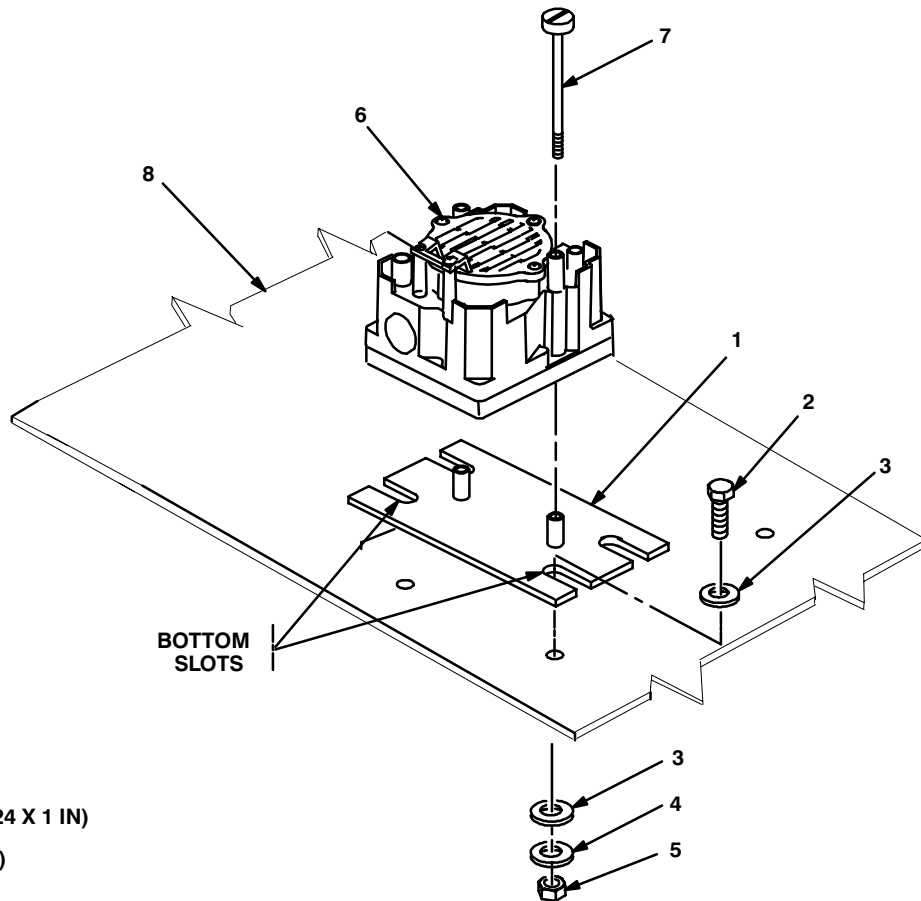


Figure 5-8 (2). Speaker Installation - B

5.6 Installation of Loudspeaker, Control-Unit, LS-671/VRC (speaker). Use the following procedures to install the speaker for "D" and "F" series radio sets.

ITEM	ACTION	REMARKS
a. Plate mounting (1).	Align bottom slots over two forward mounting holes in electrical equipment shelf. See Figure 5-9.	
b. Two machine bolts (2), four flat washers (3), two lock washers (4) and two nuts (5).	Install and secure to plate, mounting (1) and electrical equipment shelf (8).	Tools: 1/2 socket and 1/2 in open/box wrench.
c. Speaker (6).	Place on plate, mounting (1).	
d. Two externally-relieved body screws (7).	Thread through and secure to speaker (6) and plate, mounting (1).	Tools: Flatblade screw-driver.
e. Handset.	Connect and secure to speaker (6) connector J2.	



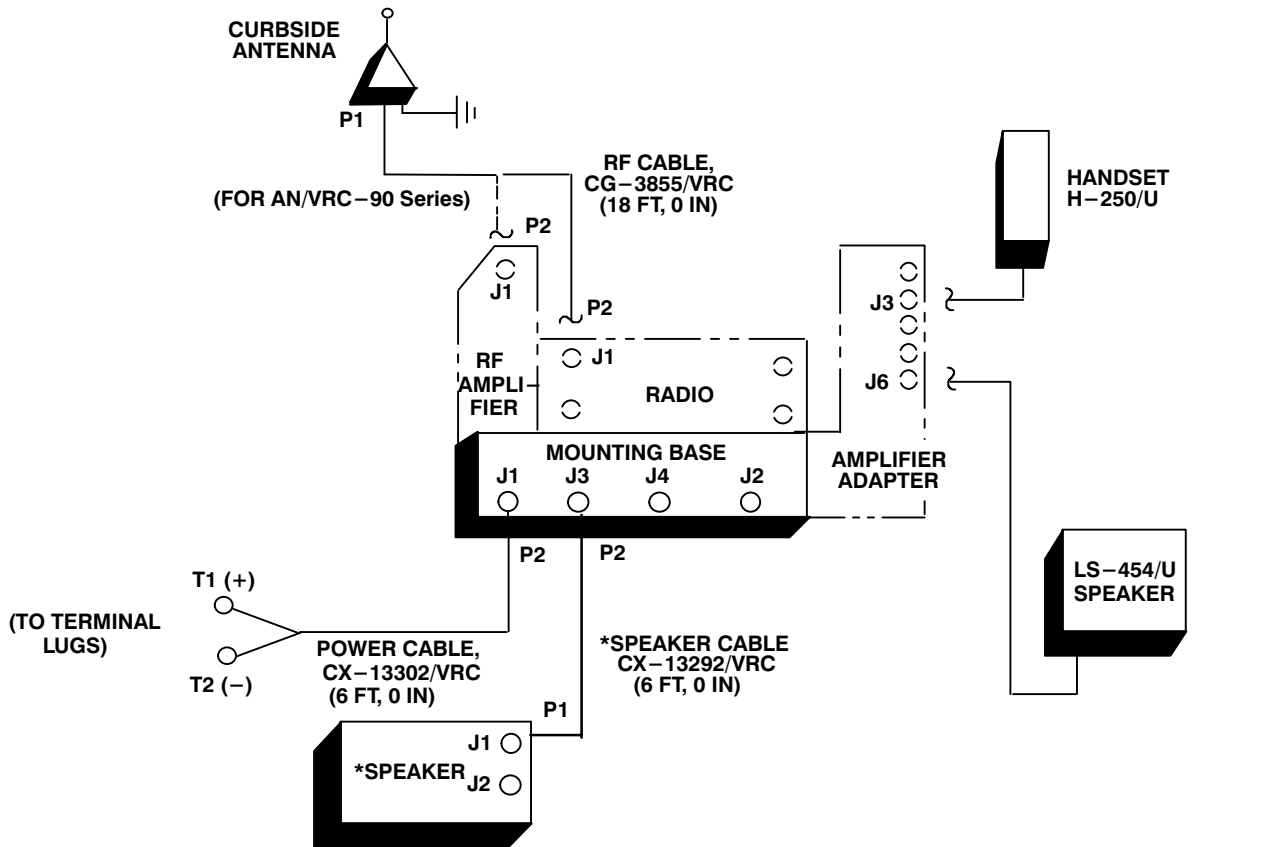
- 1. PLATE, MOUNTING
- 2. MACHINE BOLT (5/16-24 X 1 IN)
- 3. FLAT WASHER (5/16 IN)
- 4. LOCK WASHER (5/16 IN)
- 5. NUT (5/16-24 IN)
- 6. SPEAKER
- 7. BODY SCREW (P/O PLATE, MOUNTING)
- 8. ELECTRICAL EQUIPMENT SHELF

Figure 5-9. Speaker Installation

5.7 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 5-9 for cable connections. Unused cables should be stowed in appropriate place inside the vehicle.	
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 vehicle.	Install and connect cables. See TM 11-5820-890-20-1 or TM 11-5820-890-20-2 for installation and Operational (OP) Check instructions.	
f. MK line replaceable units.	See TM 11-5820-890-20P for Repair Parts and Special Tools List (RPSTL) information.	

5.7 Post-Installation and Checkout. Continued



*NOT SUPPLIED IN THIS MK

CABLE ASSEMBLY	FROM			TO		
	CABLE CONN.	UNIT	UNIT CONN.	CABLE CONN.	UNIT	UNIT CONN.
CX-13302/VRC (6 FT, 0 IN)	P2	Mounting base	J1	T1: Red (+) T2: Black (-)	Terminal lugs	(+) Post (-) Post
CG-3855/VRC (18 FT, 0 IN)	P1	Curbside antenna base	J1	P2	RF amplifier or radio	J1
Handset cable		Handset			Amplifier-adapter	J3
Speaker cable		LS-454/U speaker			Amplifier-adapter	J6
CX-13292/VRC (6 FT, 0 IN)	P2	Mounting Base	J3	P1	Speaker	J1

Figure 5-10. Cable Diagram: For AN/VRC-87/88/90 Series

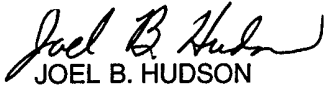
APPENDIX A

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	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 (Non-ICOM Radio Sets)
TM 11-5820-890-20P	Repair Parts and Special Tools List

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3-10	3-3		3-1
5-6	5-8		
		FO-3	

Recommend that the installation antenna alignment procedure be changed throughout to specify a 20 IFF antenna lag rather than 10

REASON: Experience has shown that with only a 10 lag, the antenna servo system is too sensitive to gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 20 without degradation of operation.

Item 5, Functional column. Change 2 dB" to 3 dB".

REASON: The adjustment procedure for the TRANS POWER FAULT indicator call for a 3 dB (500 watts) adjustment to light the TRANS POWER FAULT indicator.

Add new step f.1 to read, Replace cover plate removed in step d above."

REASON: To replace the cover plate.

ZONE C 3. On J1-2, change +24 VDC" to +5 VDC".

REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

SAMPLE

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