

INSTALLATION INSTRUCTIONS FOR  
INSTALLATION KIT  
ELECTRONIC EQUIPMENT MK-2328/VRC  
(NSN 5895-01-297-8000) (EIC: N/A)  
TO PERMIT INSTALLATION OF RADIO SETS  
AN/VRC-87/88/90 SERIES AND AN/VRC-89/91/92 SERIES  
IN A  
TRUCK, UTILITY, 1 ¼ TON, 4S4, CARGO/TROOP CARRIER  
M998.M1038

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HEADQUARTERS, DEPARTMENT OF THE ARMY  
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-2328/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, 4 x 4, Cargo/Troop Carrier M998/M1038

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, 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 vehicle 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 AN/VRC-87/88/90 Series and AN/VRC-89/91/92 Series are:

- Radio Set AN/VRC-87/88/90 (for RT-1439IRC)
- Radio Set AN/VRC-87A/88A/90A and AN/VRC-89A/91 92A (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-2329/VRC (MK) contains the Items needed to mount Radio Sets AN/VRC-89/91/92 Series and AN/VRC-87/88/90 Series in a Truck, Utility, 1 1/4 Ton, 4 x 4 Cargo/Troop Carrier M998/M1038 (vehicle). If communications security equipment (TSEC/KY-57) is to be installed also, see Section 5.7 for instructions. See Section 5.6 for instructions on how to install MT-6353/VRC mounting base.

**2. END ITEM OR SYSTEM TO BE MODIFIED.**

Not applicable.

**3. APPLICATION TIMES.**

**3.1. Time for Completion of Installation.** Using one person, a total of 3.5 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 items will not reflect the typical vehicle downtime.

ITEM	SECTION	TIME
Antenna, Vehicular AS-3900/VRC	5.1	1.0
Mounting Base, Electrical Equipment MT-6352/VRC	5.3	0.5
Cables	5.5	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 11-5820-401-1 (used without intercom systems), and TM 9-2320-289-20.

**4.1.2. 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 cover in place on connectors.
- b. Do not disassemble or rmodify 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 AN/VRC-87/88/90 Series  
and AN/VRC-89/91/92 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	3	PAOOF A	4-1, 5
5305-00-847-1159	Screw, Cap, Hexagon (3/8-16 x 1 3/4 in) MS35307-365	12	PAOZZA	
5310-00-913881	Nut, Hexagon (3/8-16 in) MS51971-3	12	PAOZZA	4-1, 9
5310-00-061-1258	Washer, Lock, Internal/External-Toothed (3/8 in) MS45904-76	24	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal/External-Toothed (5/16 in) MS45904-72 (2 Not Used)	6	PAOZZA	4-1, 1
5306-00-225-9086	Bolt, Machine (5/16-24 x 5/8 in) MS90726-31 (Not Used)	3	PAOZZA	
5330-01-205-2864	Gasket (A3013655-1)	3	PAOZZA	4-1, 6
5965-01-222-1420	Loudspeaker-Control Unit LS-671/VRC (A3014065-1)	2	PAOOF A	
5965-00-876-2375	Loudspeaker, Permanent Magnet LS-454/U	1	PAOZZA	4-1, 16
5975-01-188-8873	Mounting Base, Electrical Equipment MT-6352/VRC (A3013367-1)	2	PAOOF A	
5306-00-225-9089	Bolt, Machine (5/16-24 x 1 in) MS90726-34	10	PAOZZA	4-1, 17
5310-00-889-2527	Washer, Lock, Internal/External-Toothed (5/16 in) MS45904-72	20	PAOZZA	
5310-00-880-7746	Nut, Hexagon, (5/16-24 in) MS51968-5	10	PAOZZA	4-1, 17
5995-01-274-5084	Cable Assembly, Power Electrical CX-13302/VRC (6 FT, 0 IN) (A3014039-5)	2	PAOZZA	
5995-01-225-1660	Cable Assembly, Radio Frequency CG-3855/VRC (21 FT, 0 IN) (A3014031-17)	1	PAOZZA	4-1, 18
5995-01-219-7035	Cable Assembly, Radio Frequency CG-3855/VRC (18 FT, 0 IN) (A3014031-8)	2	PAOZZA	
5995-01-259-9283	Cable Assembly, Special Purpose, Electrical CX-13292/VRC (8 FT, 0 IN) (A3014038-12)	2	PAOZZA	4-1, 3
5965-00-043-3463	Handset H-250/U Holder, Handset (A3050666-1)	3 2	PAOZZA XBOZZA	
4020-01-341-8795	Fiber Rope Assembly, Single Leg (A3167672-1)	3	PAOZZA	4-1, 11
	Bracket, Mounting-Antenna (A3014546-1)	2	XBOZZA	
	Bracket, Multiple Angle (Left) (A3018371-1)	1	XBOZZA	4-1, 4
	Bracket, Double Angle (A3014097-1)	4	XBOZZA	4-1, 8
	Plate, Mounting (A3014550-1)	2	XBOZZA	4-1, 13
	Plate, Mounting (A3142304-1)	1	XBOZZA	4-1, 19
	Plate, Mounting (A3018977-1)	1	XBOZZA	4-1, 14
	Bracket, Multiple Angle (Left) (A3018372-1)	1	XBOZZA	4-1, 10
	Shelf, Electrical Equipment (A3018374-1)	1	XBOZZA	4-1, 7
		1	XBOZZA	4-1, 15

**Table 4-1. Parts List for Installation of Radio Sets AN/VRC/87/8890 Series  
and AN/VRC-89/91/92 Series (Cont.)**

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
	Bracket, Shelf (A3018373-1)	2	XBOZZA	4-1, 12
	Lead, Electrical (A3013552-5)	2	XBOZZA	
5975-00-074-2072	Strap, Tiedown, Electrical Components MS3367-1-9	20	PAOZZA	
5306-00-225-9086	Bolt, Machine (5/16-24 x 5/8 in) MS90726-31 /	8	PAOZZA PAOZZA	
5340-00-079-7837	Clamp, Loop (1/4-13/64 in) MS21333-67	3	PAOZZA	
5340-00-809-1490	Clamp, Loop (1/4-1/4 in) MS21333-98	3	PAOZZA	
5340-00-057-2904	Clamp, Loop (1/2-13/64 in) MS21333-71	6	PAOZZA	
5340-00-057-3043	Clamp, Loop (1/2-5/16 in) MS21333-112	2	PAOZZA	
5340-00-050-2740	Clamp, Loop (3/4-13/64 in) MS21333-75	9	PAOZZA	
5340-00-922-6300	Clamp, Loop (1-13/64 in) MS21333-77	3	PAOZZA	
5325-01-240-7325	Grommet, Nonmetallic (1/4 in) (A3013068-2)	2	XBOZZA	
5325-01-174-9332	Grommet, Nonmetallic (11/16 in) MS35489-48	1	PAOZZA	
5325-01-923-9512	Grommet, Nonmetallic, Plastic Edging MS21266-N	2	PAOZZA	
5310-00-761-6882	Nut, Hexagon (1/4-20 in) Ms51967-2	29	PAOZZA	
5310-00-880-7746	Nut, Hexagon (5/16-24 in) MS51968-5	6	PAOZZA	
5310-00-913-8881	Nut, Hexagon (3/8-16 in) MS51971-3	6	PAOZZA	
5310-00-934-9751	Nut, Hexagon (No. 10-32) MS35650-302	2	PAOZZA	
5305-00-225-3839	Screw, Cap, Hexagon (1/4-20 x 1 in) MS90725-8	25	PAOZZA	
5305-00-225-9091	Screw, Cap, Hexagon (5/16-24 x 1 1/4 in) MS90726-36	6	PAOZZA	
5305-00-269-3217	Screw, Cap, Hexagon (3/8-16 x 2 1/4 in) MS90725-6	6	PAOZZA	
5305-00-071-1774	Screw, Cap, Hexagon (1/2-13 x 3 1/2 in) MS90725-117	2	PAOZZA	
5305-00-958-5246	Screw, Machine, Flat-Head (1/4-20 x 3/4 in) MS35190-289	10	PAOZZA	
5305-01-006-2052	Screw, Machine, Hex-Head (No. 10-32 x 5/8 in)	3	PAOZZA	
5305-00-432-4253	Screw, Tapping, Thread Forming (1/4-14 x 3/4 in) Pan Head MS51861-67	1	PAOZZA	
5305-01-259-6322	Screw, Machine (No. 10-32 x 1/2 in) 12342499-1	16	PAOZZA	
5305-00-191-3641	Screw, Tapping, Thread Cutting, Hex-Head (No. 10-24 x 5/8 in) MS51851-65	3	PAOZZA	
5310-00-809-5998	Washer, Flat (1/2 in) MS27183-18	2	PAOZZA	
5310-00-809-4058	Washer, Flat (1/4 in) MS27183-10	8	PAOZZA	
5310-00-582-5965	Washer, Lock (1/4 in) MS35338-44	26	PAOZZA	
5310-00-889-2528	Washer, Lock Internal/External-Toothed (1/4 in) MS45904-68	22	PAOZZA	
5310-00-407-9566	Washer, Lock (5/16 in) MS35338-45	4	PAOZZA	



**Table 4-1. Parts List for Installation of Radio Sets AN/VRC/87/88/90 Series  
and AN/VRC-89/91/92 Series (Cont.)**

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
5310-00-889-2527	Washer, Lock Internal/External-Toothed (5/16 in) MS45904-72	10	PAOZZA	
5310-00-637-9541	Washer, Lock (3/8 in) MS35338-46	6	PAOZZA	
5310-00-584-5272	Washer, Lock (1/2 in) MS35338-46	2	PAOZZA	
5310-00-045-3296	Washer, Lock (No. 10) MS35338-43	21	PAOZZA	
5310-00-081-4219	Washer, Flat (5/16 in) MS27183-12	4	PAOZZA	

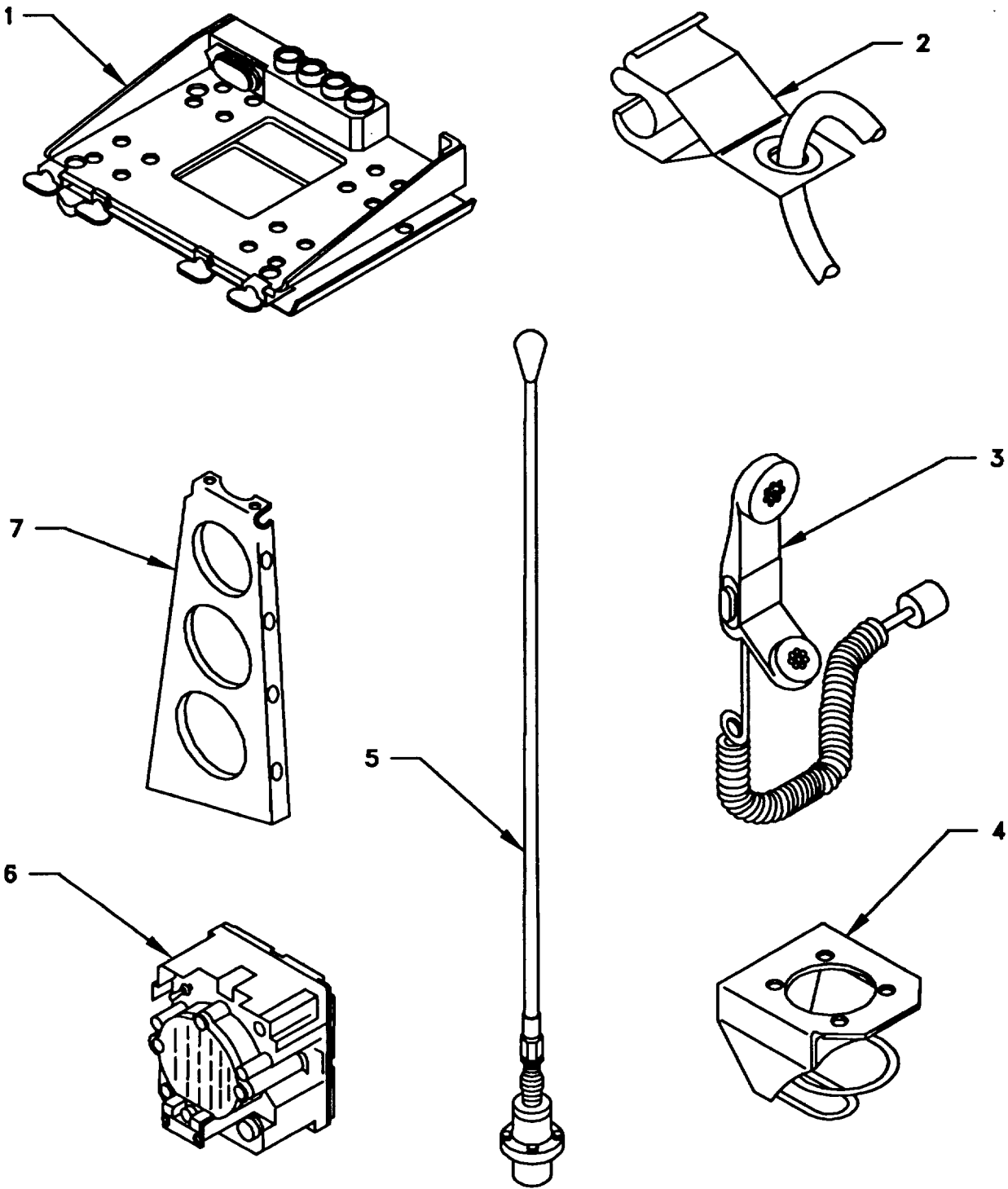


Figure 4-1(1). MK Illustrated Parts List

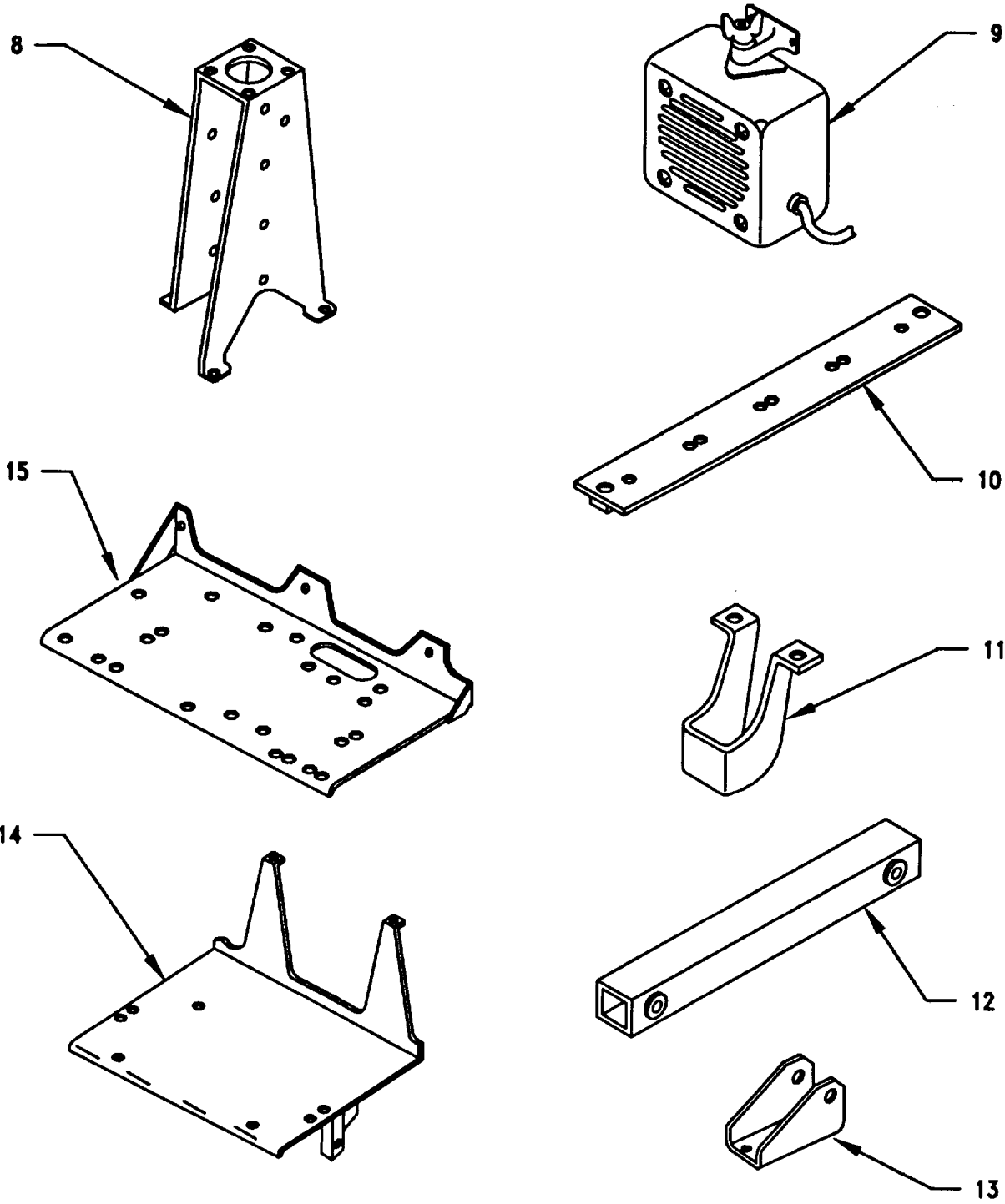


Figure 4-1(2). MK Illustrated Parts List

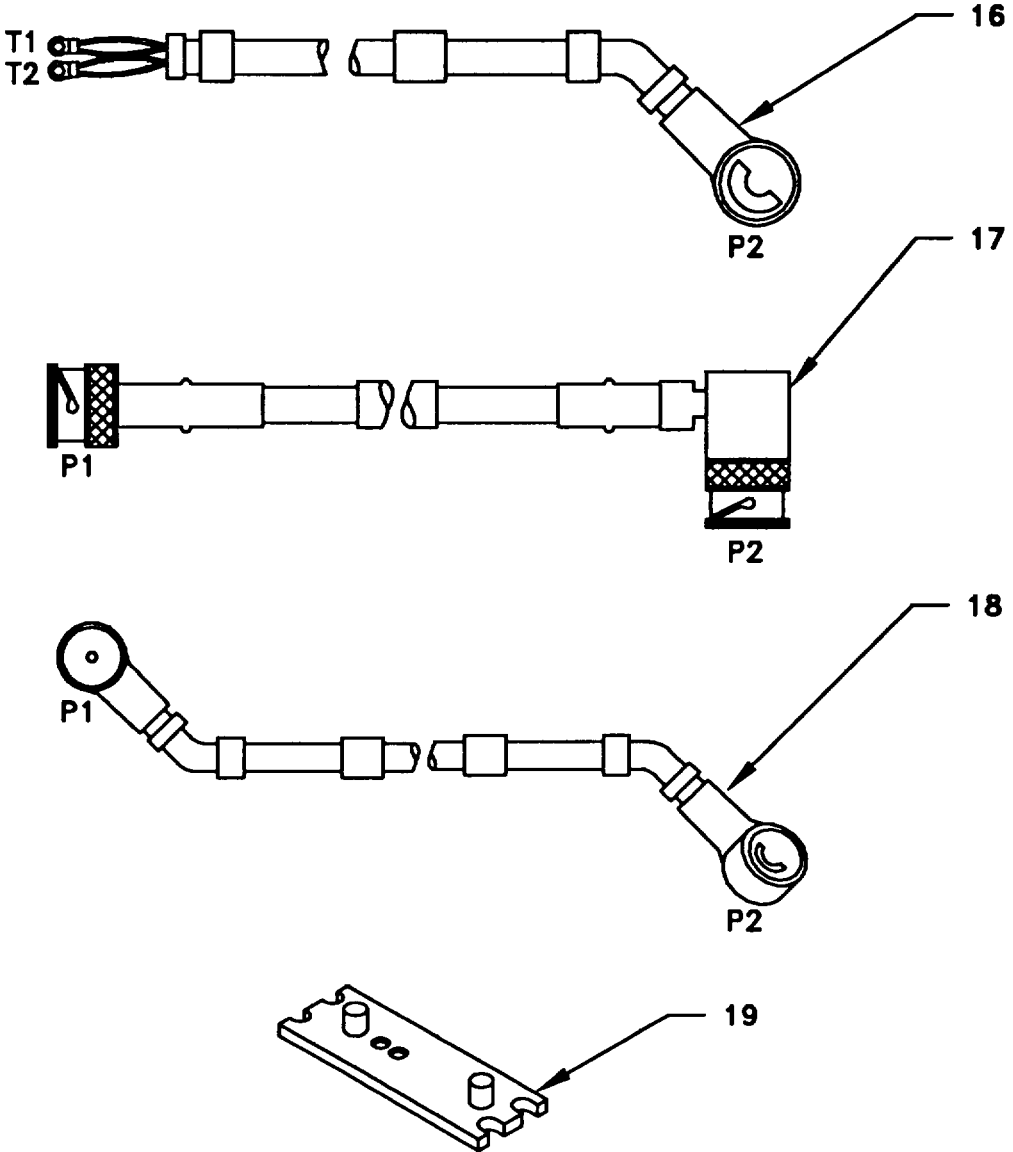
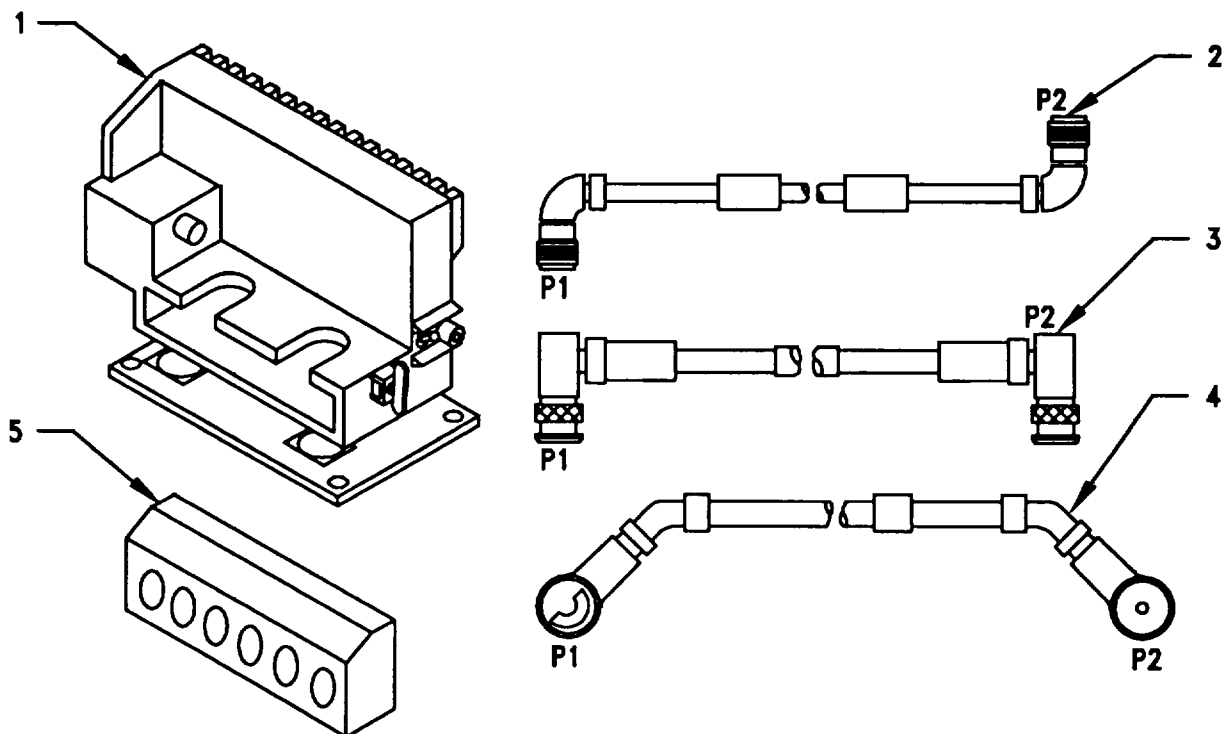


Figure 4-1(3). MK Illustrated Parts List

**Table 4-2. Additional Items Required for Installation of Radio Set(s) AN/VRC-92 Series**

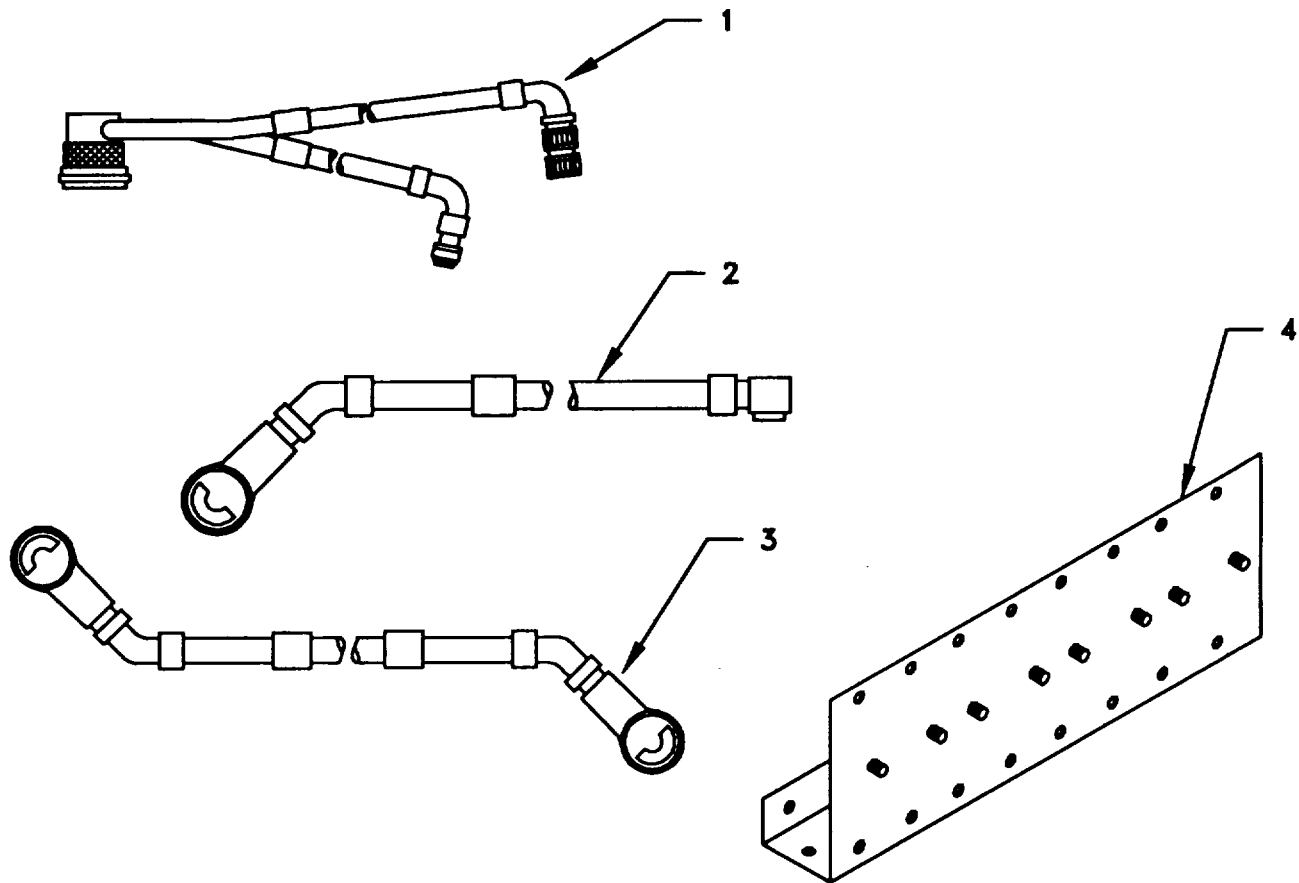
NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
5975-01-2351962	Mounting Base, Electrical Equipment MT-6353/VRC	1	PAOFHA	4-2, 1
5306-00-225-9089 (	(A3014053-1)	4	PAOZZA	
5310-00-880-7746	Bolt, Machine (5/16-24 x 1 in) MS90726-34	4	PAOZZA	
5310-00-889-2527	Nut, Hexagon (5/16-24 in) MS51968-5	6	PAOZZA	
5310-00-081-4219	Washer, Lock, Internal/External-Toothed (5/16 in) MS45904-72	2	PAOZZA	
5975-00-111-3208	Washer, Flat (5/16 in) MS27183-12	1	XBOZZA	4-2, 5
	Nut Strip (A3014064-1)	4	PAOZZA	
	Strap, Tiedown, Electrical Components MS3367-5-9			
5995-01-300-9324	Cable Assembly, Power Electrical CX-13303/VRC (4 FT, 6 IN) (A3014040-9)	1	PAOZZA	4-2, 4
5995-01-222-4209	Cable Assembly, Special Purpose, Electrical CX-13291/VRC (3 FT, 0 IN) (A3014037-1)	1	PAOZZA	4-2, 2
5995-01-219-7025	Cable Assembly, Radio Frequency CG-3856/VRC (5 FT, 0 IN) (A3014032-2)	1	PAOZZA	4-2, 3



**Figure 4-2. 10**

**Table 4-3. Additional Items Required for Installation when using RT-1439/VRC**

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
5995-01-300-9292	Cable Assembly, Special Purpose, Electrical CX-13292/VRC (8 FT, 0 IN) (A3014034-4)	3	PAOZZA	4-3, 1
5995-01-225-1655	Cable Assembly, Power, Electrical CX-13303/VRC (1 FT, 6 IN) (A3014040-6)	1	PAOZZA	4-3, 3
5995-01-291-1130	Cable Assembly, Power, Electrical CX-13303/VRC (7 FT, 0 IN) (A3014040-11)	2	PAOZZA	4-3, 2
	Plate, Mounting (A3018978-1)	1	XBOZZA	4-3, 4
5310-00-407-9566	Washer, Lock (5/16 in) MS35338-45	8	PAOZZA	



*Figure 4-3. TSEC/KY-57 Illustrated Parts List*

**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-88660

**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
5/16 in	5120-00-228-9503	1
1/4 in	5120-00-228-9997	1
3/8 in	5120-00-228-9504	1
3/4 in	5120-00-228-9510	1
Handle, Socket Wrench	5120-00-240-5364	1
Socket:		
7/16 in	5120-00-227-6703	1
1/2 in	5120-00-237-0977	1
9/16 in	5120-00-227-6704	1
5/16 in	5120-00-235-5878	1
1/4 in	5120-00-236-2264	1
3/8 in	5120-00-227-6702	1
3/4 in	5120-00-227-6705	1
Electrical Drill	5130-00-889-8994	1
Drill Bits		
5/32 in	5133-00-227-9652	1
13/64 in	5133-00-243-9612	1
15/16 in	5133-00-236-3405	1
11/32 in	5133-00-227-9664	1
1 3/8 in	5133-00-228-1373	1
9/32 in	5133-00-189-9246	1

\* Use radio issued with your vehicle if available.

5. INSTALLATION PROCEDURES.

This section describes where and how to install all MK items in the vehicle. 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. To install MT-6353/VRC Mounting Base, see Section 5.6 for instructions. If Radio Set AN/VRC-87/88/90 and Radio Set AN/VRC-89/91/02 are to be installed, communications security equipment (TSEC/KY-57) will need to be installed also, see Section 5.7 for information.

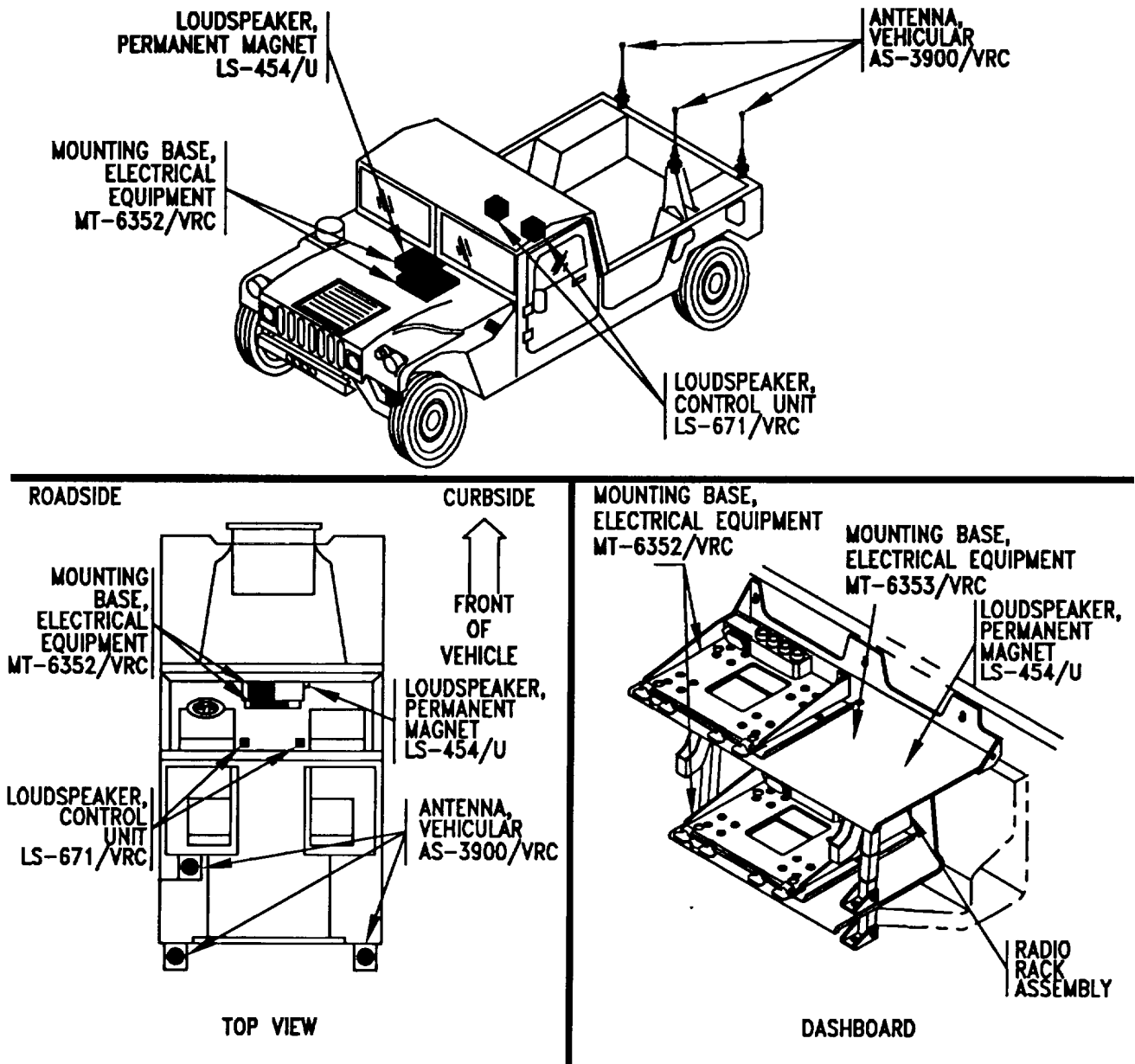


Figure 5-1(1). MK and Radio Installation: MK Equipment Locations



5. INSTALLATION PROCEDURES. Continued

RADIO SETS: AN/VRC-89/91/92 SERIES

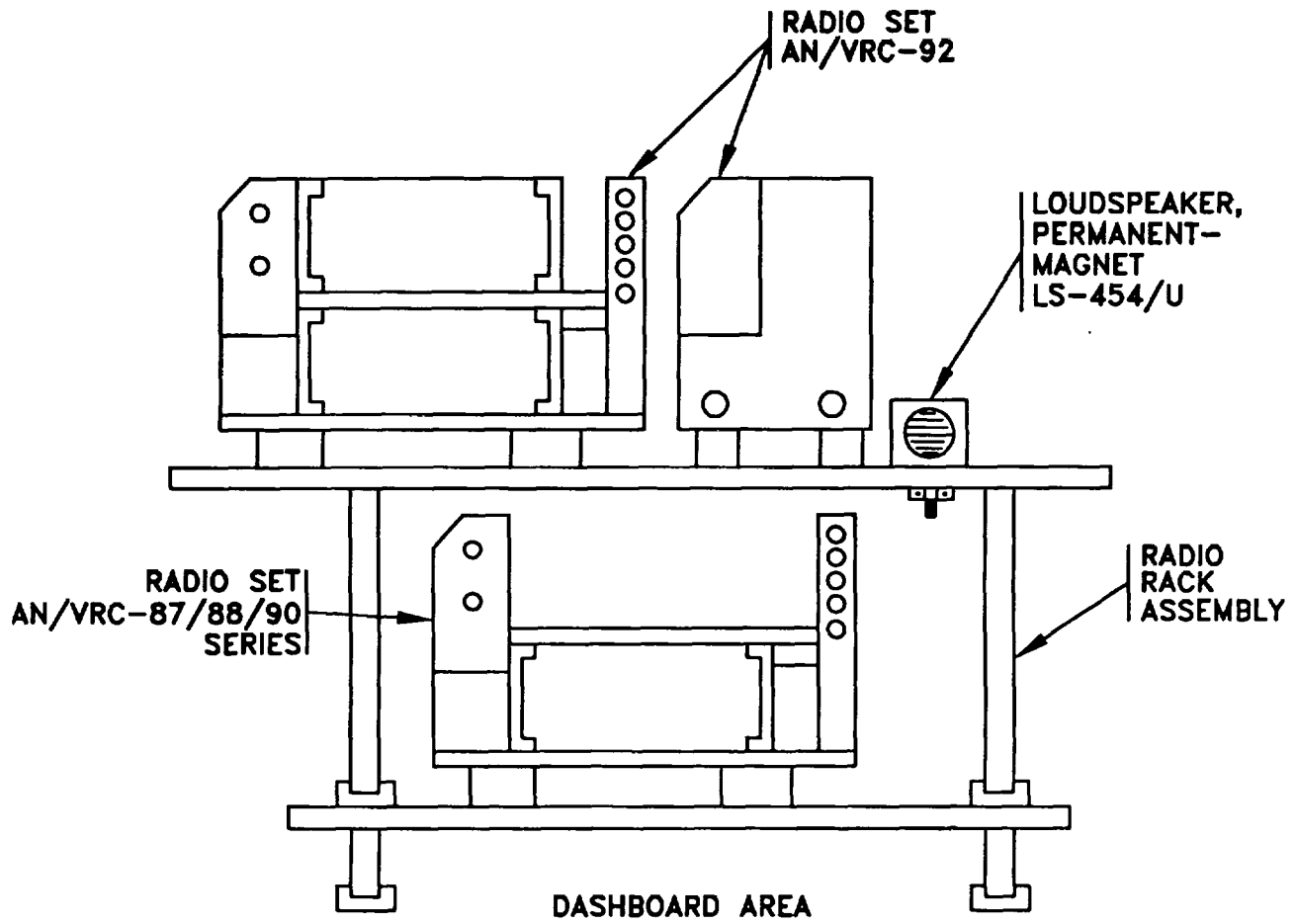


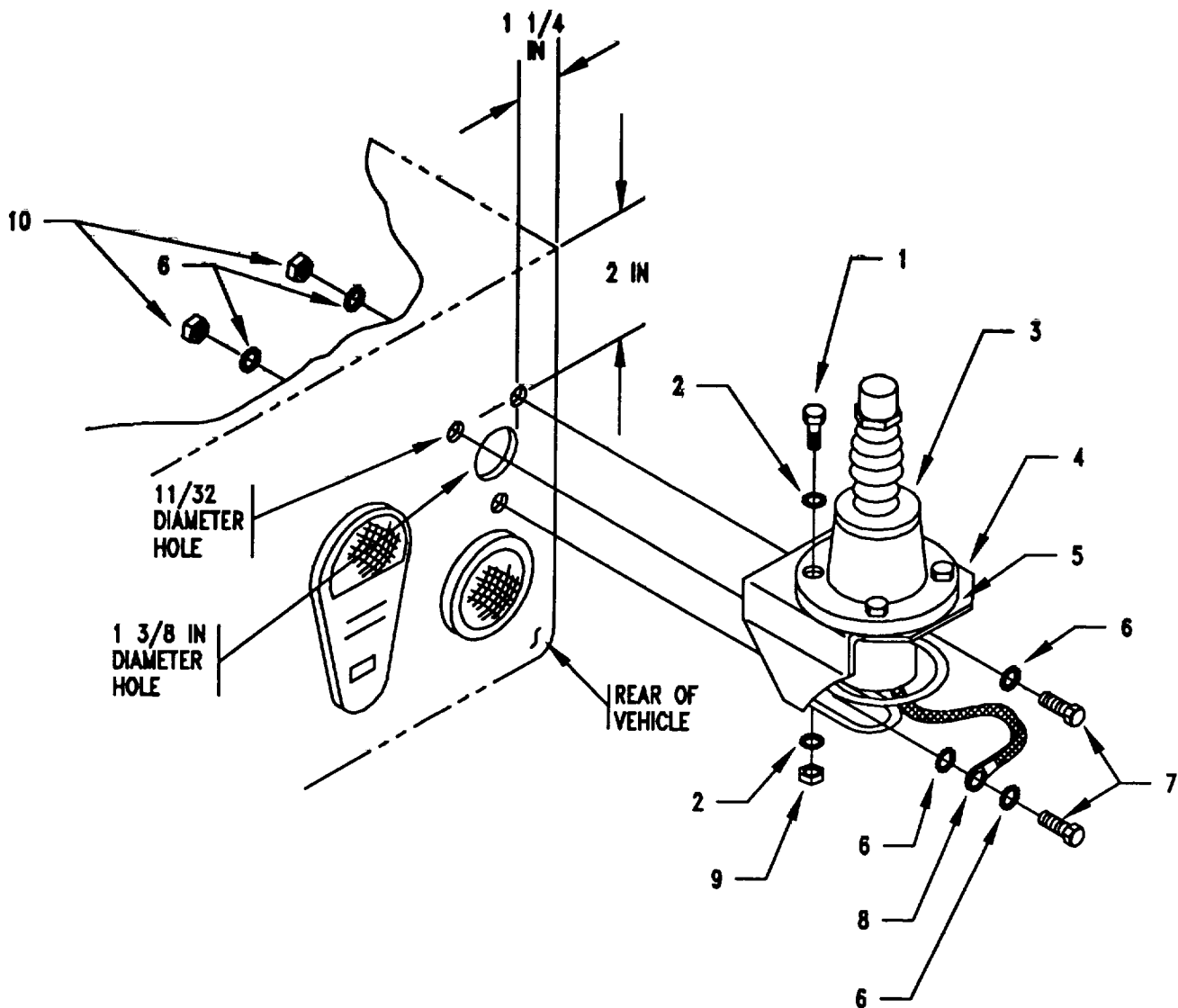
Figure 5-1(2). MK and Radio Installation: Radio Equipment Locations

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

**5.1.1. Installation of Rear Antenna Base.** Use the following procedures to install two rear antenna bases. See Figure 5-1(1) for antenna base location.

ITEM	ACTION	REMARKS
<b>NOTE</b>		
Apply a thin coat of adhesive-sealant to both sides of each internal/external toothed (IET) washer as it is installed, and to the area of contact where IET washer is to be placed.		
a. Mounting holes for antenna bracket assembly (4).it	If mounting holes exist, disregard this step and go to step b.  Using dimensions shown and antenna bracket assembly as a temple, 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)	Tools: Electrical drill, 11/32 in drill bit and 1 3/8 in drill bit.
b. Antenna bracket assembly (4).	Place against rear of vehicle and aline mounting holes.	
c. Two cap screws (7), four internal/external-toothed (IET) washers (6) and two nuts (10).	Install and secure to two upper mounting holes of antenna bracket assembly (4) and rear of vehicle.	Tools: 1/2 in socket and 1i in open/box wrench.
d. Gasket (5).	Place on antenna bracket assembly (4) and aline with mounting holes.	
e. Antenna base (3).	Place on top of gasket (5) and antenna bracket assembly (4); then aline mounting holes.	
f. Four cap screws (1), eight IET washers (2) and four nuts (9).	Install and secure.	Tools: 9/16 in socket and 9/16 in open/box wrench.
g. Ground strap (8), cap screw (7), three IET washers (6) and nut (10).	Install and secure to bottom mounting hole of antenna bracket assembly (4) and rear of vehicle.	Tools: 1/2 in socket and 1/2 in open/box wrench.
h. Steps a through g.	Repeat for second antenna base (3) on rear of vehicle.	

## 5.1.1. Installation of Rear Antenna Base. Continued.



- 1- CAP SCREW (3/8-16 X 1 3/4 IN)
- 2- IET WASHER (3/8 IN)
- 3- ANTENNA BASE
- 4- ANTENNA BRACKET ASSEMBLY
- 5- GASKET
- 6- IET WASHER (5/16 IN)
- 7- CAP SCREW (5/16-24 X 1/4 IN)
- 8- GROUND STRAP
- 9- NUT (3/8-16 IN)
- 10- NUT (5/16-24 IN)

Figure 5-2. Antenna Base Installation: Rear Antenna Bases

**5.1.2. Installation of Forward Antenna Base Support and Antenna Base** Use the following procedures to install the forward antenna base support and antenna base See Figure 5-1(1) for location.

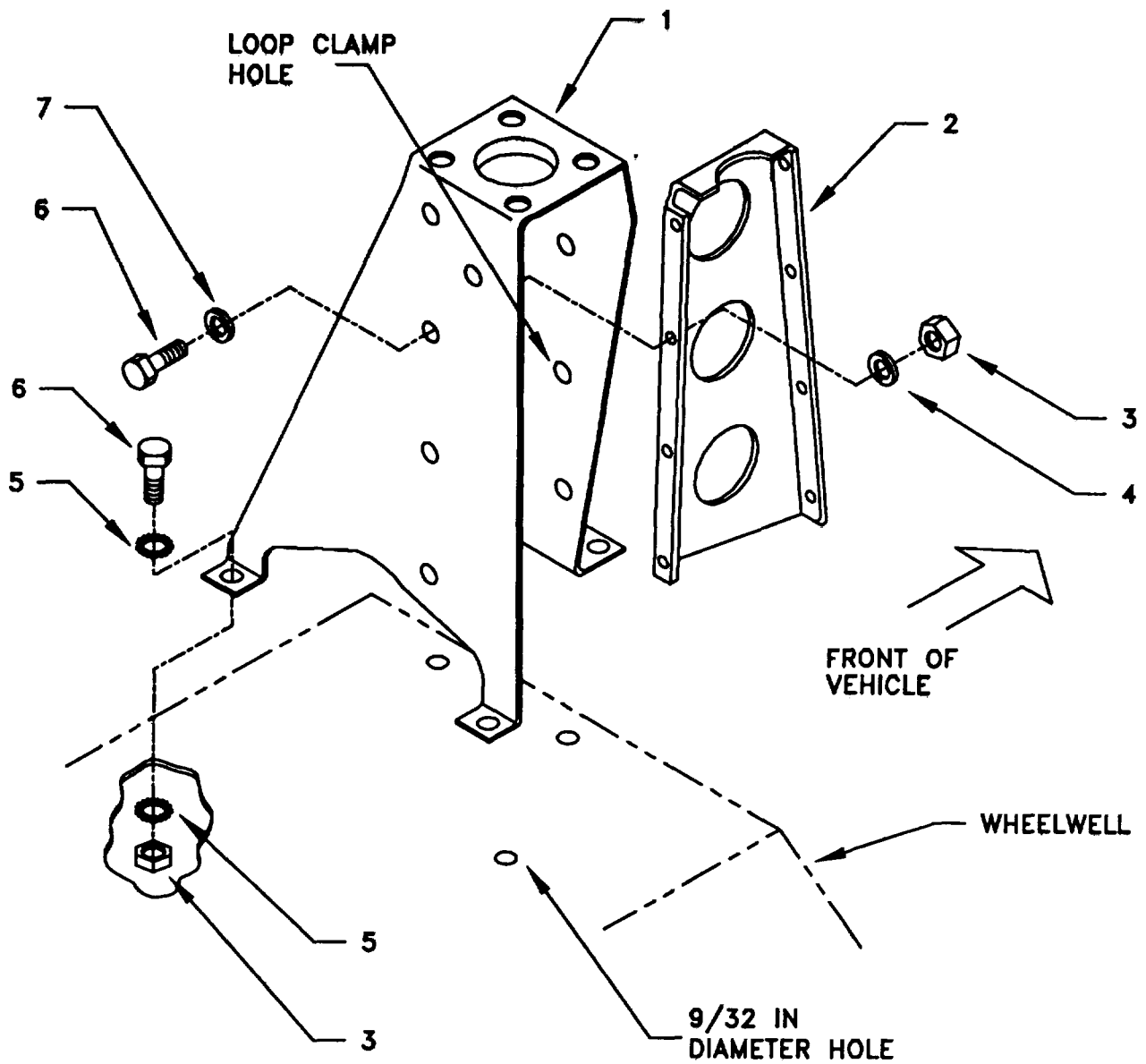
ITEM	ACTION	REMARKS
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**NOTE**

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

a. Reinforcement bracket (2).	Position in antenna mount bracket (1) and align holes See Figure 5-3(1).	
b. Four cap screws (6), four flat washers (7), four lock washers (4) and four nuts (3).	Install and secure to rear holes in antenna mount bracket (1) and reinforcement bracket (2).	Tools: 7/16 in socket and 7/16 in open/box wrench.
c. Three cap screws (6), three flat washers (7), three lock washers (4) and three nuts (3).	Install and secure to front holes in antenna mount bracket (1) and reinforcement bracket (2), except loop clamp hole. See Figure 5-3(1)	Tools: 7/16 in socket and 7/16 in open/box wrench.
d. Mounting holes for antenna mount bracket (1).	Using antenna mount bracket as a template, drill four 9/32 in diameter holes through rear wheelhouse in approximate location shown.	Tools: Electric drill and 9/32 in drill bit.
e. Antenna mount bracket (1).	Place on rear wheelhouse and align mounting holes with holes drilled in step d.	
f. Four cap screws (6), eight IET washers (5) and four nuts (3).	Install and secure to antenna mount bracket (3) and rear wheelhouses.	Tools: 7/16 in socket and 7/16 in open/box wrench.

5.1.2. Installation of Forward Antenna Base Support and Antenna Base Continued.



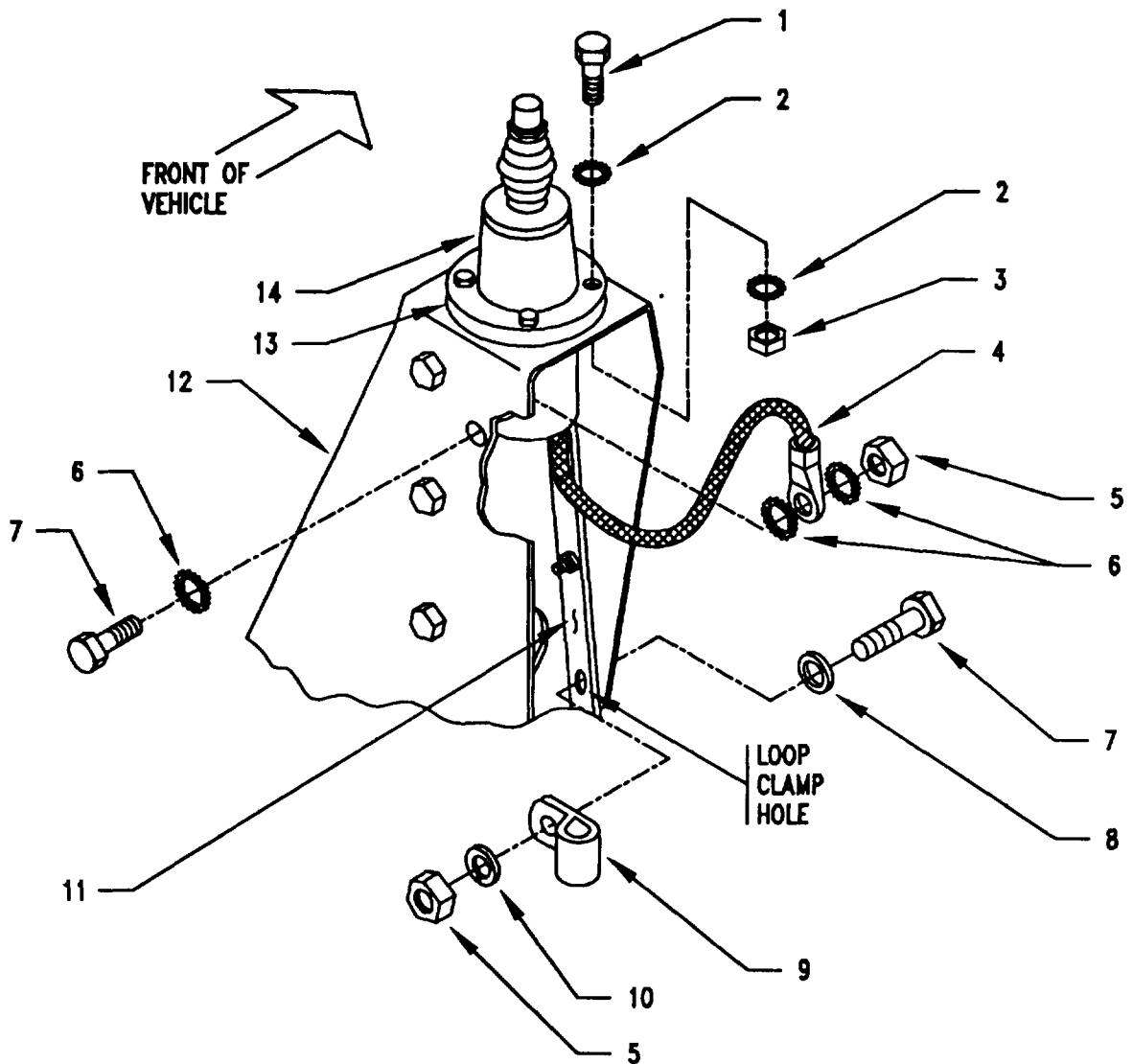
- 1- ANTENNA MOUNT BRACKET
- 2- REINFORCEMENT BRACKET
- 3- NUT(1/4-20 IN)
- 4- LOCK WASHER (1/4 IN)
- 5- IET WASHER (1/4 IN)
- 6- CAP SCREW (1/4-20 X 1 IN)
- 7- FLAT WASHER (1/4 IN)

Figure 5-3(1). Antenna Base Installation: Forward Antenna Base Support

**5.1.2. Installation of Forward Antenna Base Support and Antenna Base.** Continued.

ITEM	ACTION	REMARKS
g. Gasket (13).	Place on antenna mount bracket (12) and align with mounting holes. See Figure 5-3(2)	
h. Antenna base (14).	Place on top of gasket (13) and antenna mount bracket (12). Align mounting holes.	
i. Four cap screws (1), eight IET washers (2) and four nuts (3).	Install and secure.	Tools: 9/16 in socket and 9/16 in open/box wrench.
j. Ground strap (4), cap screw (7), three IET washers (6) and nut (5).	Install and secure to antenna mount bracket (12)	Tools: 7/16 in socket and 7/16 in open/box wrench.
k. Loop clamp (9), cap screw (7), flat washer (8), lock washer (10) and nut (5).	Install (without securing) to loop clamp hole in antenna mount bracket (12) and reinforcement bracket (11). See Figure 5-3(2) for location(s).	Tools: 7/16 in socket and 7/16 in open/box wrench.

5.1.2. Installation of Forward Antenna Base Support and Antenna Base. Continued.

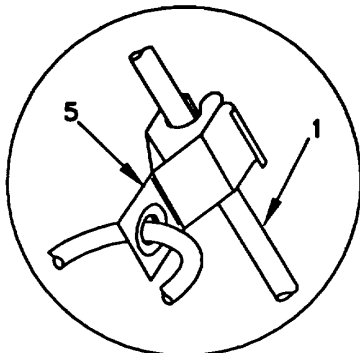


- |                                  |                              |                           |
|----------------------------------|------------------------------|---------------------------|
| 1. CAP SCREW (3/8-16 X 1 3/4 IN) | 6. IET WASHER (1/4 IN)       | 11. REINFORCEMENT BRACKET |
| 2. IET WASHER (3/8 IN)           | 7. CAP SCREW (1/4-20 X 1 IN) | 12. ANTENNA MOUNT BRACKET |
| 3. NUT (3/8-16 IN)               | 8. FLAT WASHER (1/4 IN)      | 13. GASKET                |
| 4. GROUND STRAP                  | 9. LOOP CLAMP (1/4-1/4 IN)   | 14. ANTENNA BASE          |
| 5. NUT (1/4-20 IN)               | 10. LOCK WASHER (1/4 IN)     |                           |

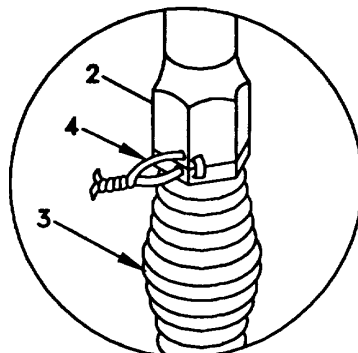
Figure 5-3(2). Antenna Base Installation: Forward Antenna Base

**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.

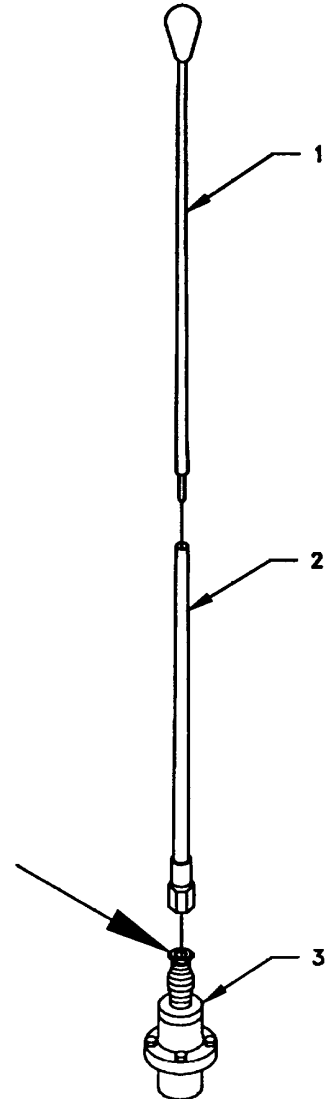
ITEM	ACTION	REMARKS
a. Antenna elements (1,2).	Apply silicone compound to element threads and assemble. See Figure 5-4.	
b. Antenna element (2).	Install and hand-tighten to antenna base (3).	
c. Lock wire (4).	Install to antenna element (2) and antenna base (3). See Figure 5-4, Detail A.	
	Cut and remove excess 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 5-4, 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 5-4. Top Antenna Assembly Installation



**5.2. Installation of Radio Rack Assembly.** Use the following procedures to install the radio rack assembly. See Figure 5-1(1) for location.

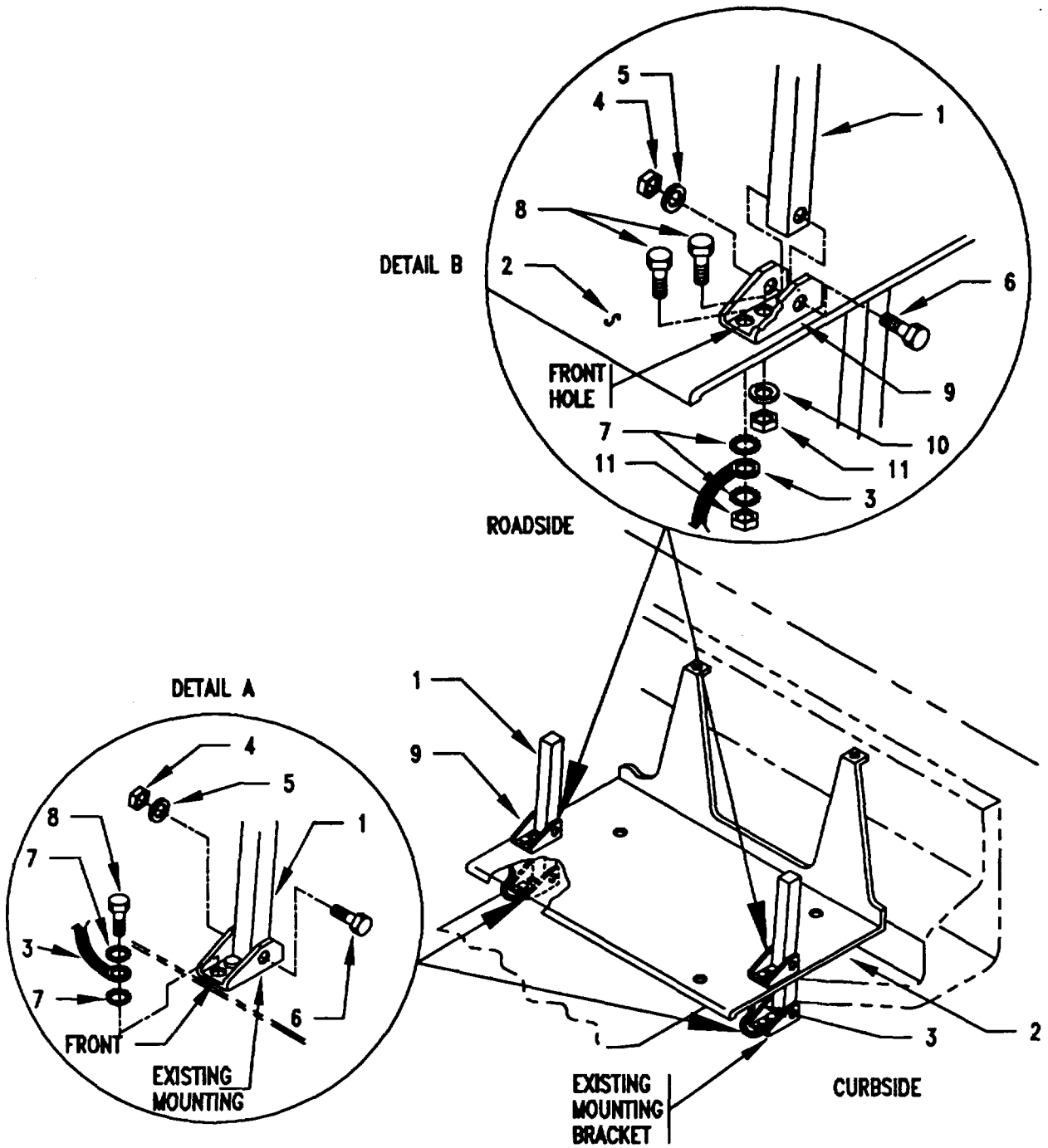
ITEM	ACTION	REMARKS
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**NOTE**

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 radio rack assembly.	Remove all parts except two existing mounting brackets. See Figure 5-5(1)	
b.	Existing mounting hardware in front holes in two existing mounting brackets.	Remove. See Figure 5-5(1), Detail A.	Existing mounting hardware not shown.
c.	Two ground straps (3), two cap screws (8) and four IET washers (7).	Install and secure one end of each ground strap to front hole in existing mounting brackets.	Tools: 7/16 in socket.
d.	Two base plate (2) legs.	Position in existing mounting brackets and align mounting holes.	
e.	Two cap screws (6) two lock washers (5) and two nuts (4).	Install and secure to base plate (2) legs and existing mounting brackets.	Insert each cap screw from outside of base plate leg.  Tools: 9/16 in socket and 9/16 in open/box wrench.
f.	Two double angle brackets (9).	Place on either side of the base plate (2) near edges and align mounting holes. See Figure 5-5(1)	
g.	Two cap screws (8), two lock washers (10) and two nuts (11).	Install and secure to rear holes in double angle brackets (9) and base plate (2). See Figure 5-5(1), Detail B.	Tools: 7/16 in socket and 7/16 in open/box wrench.
h.	Two ground straps (3), two cap screws (8), four IET washers (7) and two nuts (11).	Install and secure loose end of each ground strap (installed in step c) to front hole in double angle brackets (9) and base plate (2).	Tools: 7/16 in socket and 7/16 in open/box wrench.
i.	Two shelf supports (1).	Place one in each double angle bracket (9) and align mounting holes.	Install in upright position.

5.2 Installation of Radio Rack Assembly. Continued.



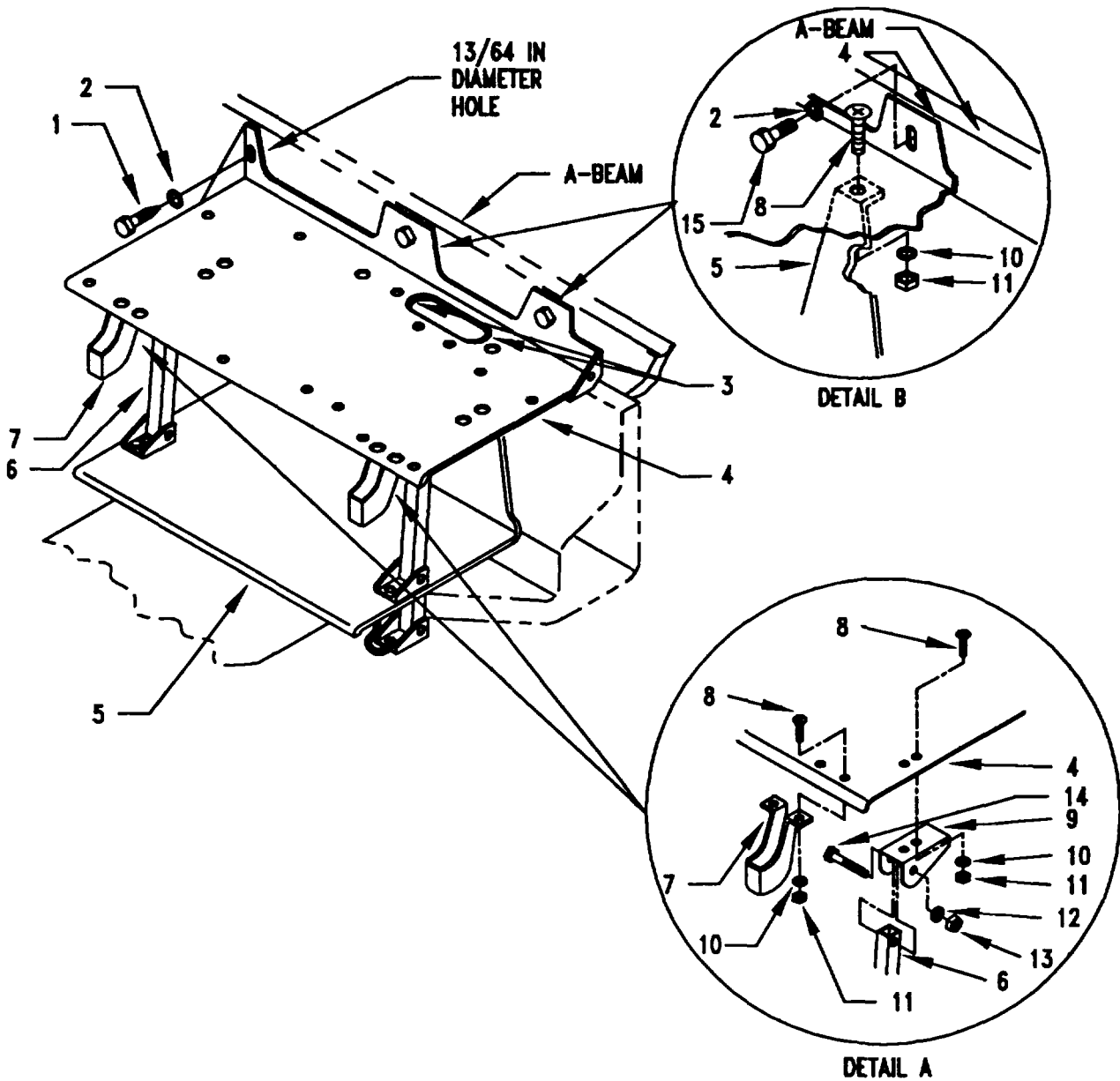
- |                         |                                  |
|-------------------------|----------------------------------|
| 1. SHELF SUPPORT        | 6. CAP SCREW (3/8-16 X 2 1/4 IN) |
| 2. BASE PLATE           | 7. IET WASHER (1/4 IN)           |
| 3. GROUND STRAP         | 8. CAP SCREW (1/4-20 X 1 IN)     |
| 4. NUT (3/8-16 IN)      | 9. DOUBLE ANGLE BRACKET          |
| 5. LOCK WASHER (3/8 IN) | 10. LOCK WASHER (1/4 IN)         |
|                         | 11. NUT (1/4-20 IN)              |

Figure 5-5(1). Installation of Radio Rack Assembly: Base Plate

## 5.2 Installation of Radio Rack Assembly. Continued.

	ITEM REMARKS		ACTION
j.	Two cap screws (6), two lock washers (5) and two nuts (4).	Install (without securing) to two shelf supports (1) and two double angle brackets (9). See Figure 5-5(1), Detail B.	Insert each cap screw from outside of shelf support.  Tools: 9/16 in socket and 9/16 in open/box wrench.
k.	Two handset holders (7), four flat-head machine screws (8), four lock washers (10) and four nuts (11).	Install and secure to electrical equipment shelf (4). See Figure 5-5(2), Detail A.	Tools: Phillips screwdriver and 7/16 in socket.
l.	Two double angle brackets (9), four flat-head machine screws (8), four lock washers (10) and four nuts (11).	Install and secure to electrical equipment shelf.	Tools: Phillips screwdriver and 7/16 in socket.
m.	Electrical equipment shelf (4).	Place on top of base plate (5) and shelf supports (6). See Figure 5-5(2)	
n.	Two flat-head machine screws (8), two lock washers (10) and two (2) nuts (11).	Install and secure to electrical equipment shelf (4) and base plate (5). See Figure 5-5(2), Detail B.	Tools: Phillips screwdriver and 7/16 in socket.
o.	Two shelf supports (6).	Position upper ends in double angle brackets (9) and aline mounting holes. See Figure 5-5(2), Detail A.	
p.	Two cap screws (14), two lock washers (12) and two nuts (13).	Install and secure to two shelf supports (6) and two double angle brackets (9).	Install each cap screw from inside of shelf support.  Tools: 9/16 in socket and 9/16 in open/box wrench.
q.	Two cap screws (6), two lock washer (5) and two nuts (4), installed in step j.	Secure. See Figure 5-5(1), Detail B.	Tools: 9/16 in socket and 9/16 in open/box wrench.
r.	Two cap screws (15) and two IET washers (2).	Install and secure to electrical equipment shelf (4) and A-beam. See Figure 5-5(2), Detail B.	Tools: 7/16 in socket.

5.2 Installation of Radio Rack Assembly. Continued.



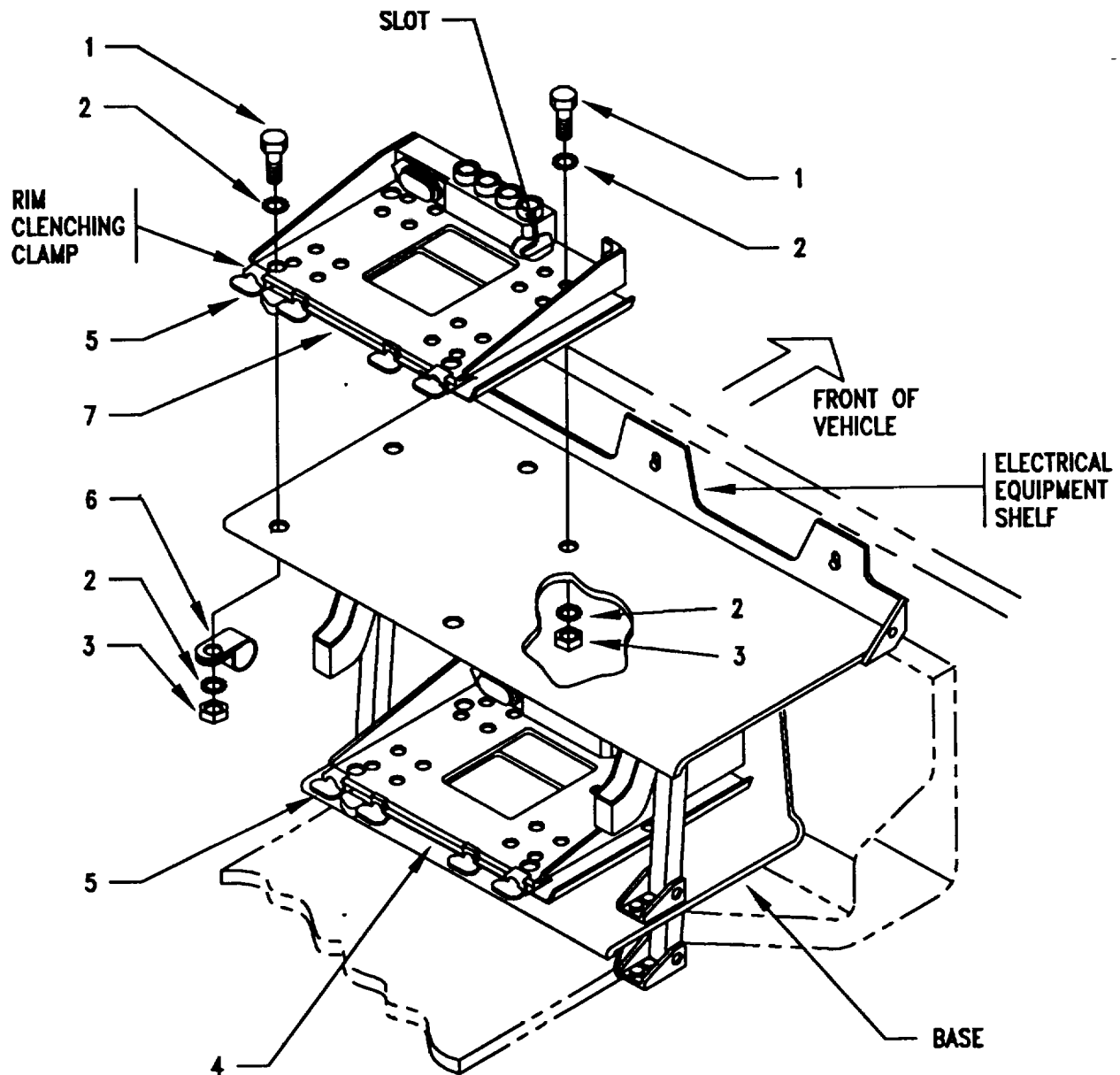
- |     |                                 |     |                                 |
|-----|---------------------------------|-----|---------------------------------|
| 1.  | TAPPING SCREW (1/4-14 X 3/4 IN) | 8.  | MACHINE SCREW (1/4-20 X 3/4 IN) |
| 2.  | IET WASHER (1/4 IN)             | 9.  | DOUBLE ANGLE BRACKET            |
| 3.  | GROMMET (PLASTIC EDGING)        | 10. | LOCK WASHER (1/4 IN)            |
| 4.  | ELECTRICAL EQUIPMENT SHELF      | 11. | NUT (1/4-20 IN)                 |
| 5.  | BASE PLATE                      | 12. | LOCK WASHER (3/8 IN)            |
| 6.  | SHELF SUPPORT                   | 13. | NUT (3/8-16 IN)                 |
| 7.  | HANDSET HOLDER                  | 14. | CAP SCREW (3/8-16 X 2 1/4 IN)   |
| 15. | CAP SCREW (1/4-20 X 1 IN)       |     |                                 |

Figure 5-5(2). Installation of Radio Rack Assembly: Electrical Equipment Shelf

**5.2 Installation of Radio Rack Assembly.** Continued.

ITEM	ACTION	REMARKS	
s.	Left mounting hole for electrical equipment shelf (4).	Using electrical equipment shelf as a template, drill 13/64 in diameter hole in A-beam. See Figure 5-5(2)	Tools: Electric drill and 13/64 in drill bit.
t.	Hex-head tapping screw (1) and IET washer (2).	Install and secure to electrical equipment shelf (4) and A-beam.	Tools: 7/16 in socket.
u.	Two grommets (3).	Cut to length and install to cable hole in electrical equipment shelf (4).	Tools: Pocket knife.

**5.3. Installation of Mounting Base, Electrical Equipment MT-6352/VRC (mounting base).** Remove and retain attaching bag of 5/16 mounting hardware for installation. To insure good electrical grounding, any rust, corrosion or paint around mounting holes in base plate and electrical equipment shelf should be removed before installing the mounting bases. See Figure 5-6 and perform the following steps.



1. MACHINE BOLT (5/16-24 X 1 IN)
2. IET WASHER (5/16 IN)
3. NUT (5/16-24 IN)
4. MOUNTING BASE (LOWER)
5. THUMBSCREW
6. LOOP CLAMP (1/2-5/16 IN)
7. MOUNTING BASE (UPPER)

Figure 5-6. Mounting Base Installation

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

ITEM	ACTION	REMARKS	
<b>NOTE</b>			
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.	Lower mounting base (4).	Place on base plate. See Figure 5-6	
b.	Two outer thumbscrews (5).	Turn ccw until both sets of threads have cleared center of holes.	
c.	Lower mounting base (4).	Aline four holes and rear slot with matching hole pattern in base plate.	
d.	Five machine bolts (1), ten IET washers (2) and five nuts (3).	Install and secure to lower mounting base (4) and base plate.	Tools: 1/2 in socket and 1/2 in open/box wrench.
e.	Two outer thumbscrews (5).	Tighten and secure.	
f.	Upper mounting base (7).	Place on electrical equipment shelf.	
g.	Two outer thumbscrews (5).	Turn ccw until both sets of threads have cleared center of holes.	
h.	Upper mounting base (7).	Aline four holes and rear slot with matching hole pattern in electrical equipment shelf.	
i.	Three machine bolts (1), six IET washers (2) and three nuts (3).	Install and secure to electrical equipment shelf and two rear holes and rear slot in upper mounting base (7).	Tools: 1/2 in socket and 1/2 in open/box wrench.
j.	Two loop clamps (6), two machine bolts (1), four IET washers (2) and two nuts (3).	Install (without securing) to electrical equipment shelf and two front holes in upper mounting base (7).	Tools: 1/2 in socket and 1/2 in open/box wrench.
k.	Two outer thumbscrews (5).	Tighten and secure.	

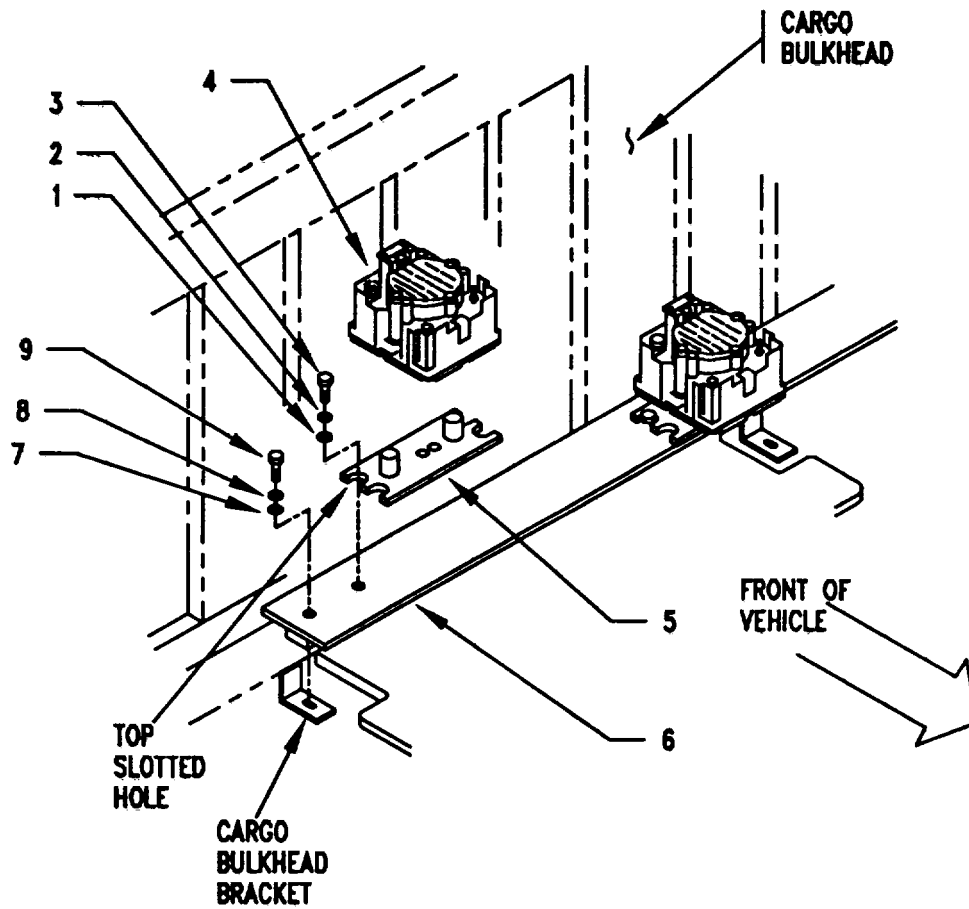
#### 5.4. Installation of Loudspeakers.

**5.4.1. Installation of Loudspeaker - Control Unit LS-671/VRC (speaker).** Use this procedure to install two LS-671/VRC speakers See Figure 5-1(1) for location.

ITEM	ACTION	REMARKS
a. Existing mounting hardware in two cargo bulkhead bracket	Remove. See Figure 5-7(1)	Existing mounting hardware not shown.
b. Mounting plate (6). aline mounting holes.	Place on cargo bulkhead brackets and	
c. Two cap screws (9), two lock washers (8) and two flat washers (7).	Install and secure to mounting plate (6) and cargo bulkhead brackets.	Tools: 3/4 in socket or 3/4 in open/box wrench.
d. Mounting plate (5).	Place on mounting plate (6) and aline top slotted holes with mounting holes See Figure 5-7(1)	
e. Two machine bolts (3), two lock washers (3) and two flat washers (1).	Install and secure to mounting plate (5) and mounting plate (6).	Tools: 1/2 in socket.
f. Speaker (4).	Install and secure to mounting plate (5).	
g. Handset. connector J2.	Connect and secure to speaker (4)	
h. Steps d through g.	Repeat to install remaining speaker.	



5.4.1 Installation of Loudspeaker - Control Unit LS-671/VRC (speaker). Continued.

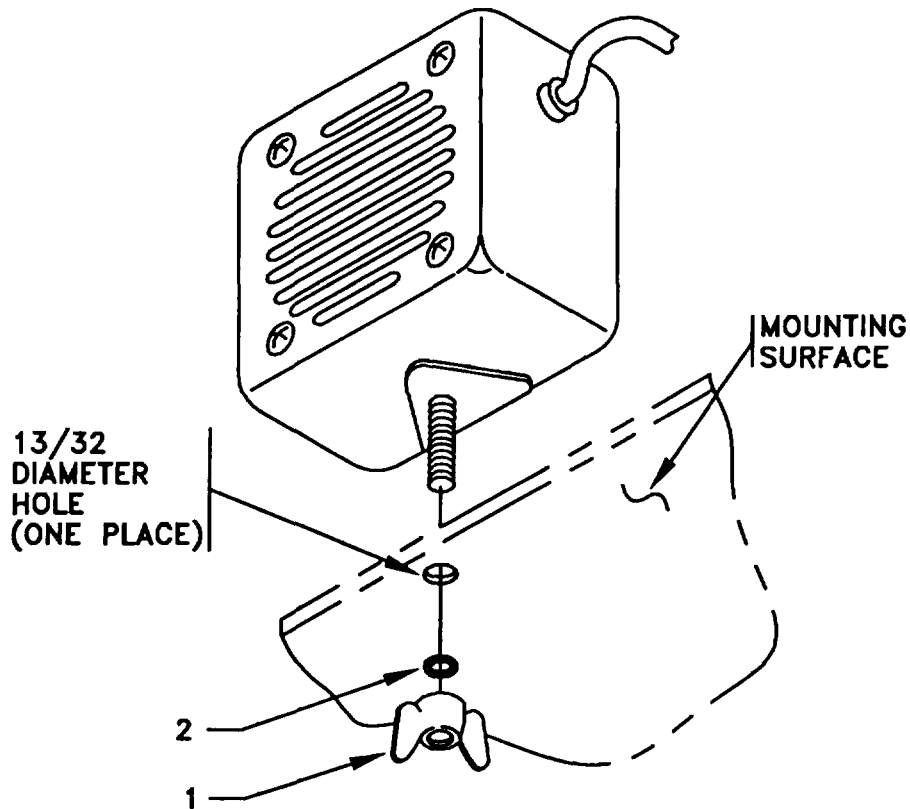


- 1. FLAT WASHER (5/16 IN)
- 2. LOCK WASHER (5/16 IN)
- 3. MACHINE BOLT (5/16-24 X 5/8 IN)
- 4. SPEAKER
- 5. MOUNTING PLATE
- 6. MOUNTING PLATE
- 7. FLAT WASHER (1/2 IN)
- 8. LOCK WASHER (1/2 IN)
- 9. CAP SCREW (1/2-13 X 3 1/2 IN)

Figure 5-7(1). Speaker Installation: LS-671/VRC

**5.4.2. Installation of Loudspeaker, Permanent Magnet LS-454/U (speaker).** Install LS-454/U speaker on right side of top shelf upside down. The details below show typical methods of mounting the LS-454/U.

ITEM	ACTION	REMARKS
a. Determine speaker (3) location on right side of top shelf.	Drill 13/32 in diameter hole through mounting surface. See Figure 5-7(2)	Tools: Electric Drill and 13/32 in drill bit.
b. Speaker (3).	Mount speaker (3) upside down on mounting shelf. Insert stud on speaker (3) through drilled hole; then secure with lock washer (2) and wing nut (1).	



- 1. WING NUT (P/O 3)
- 2. LOCK WASHER (P/O 3)
- 3. LS-454/ U LOUDSPEAKER

Figure 5-7(2). Speaker Installation: LS-454/U

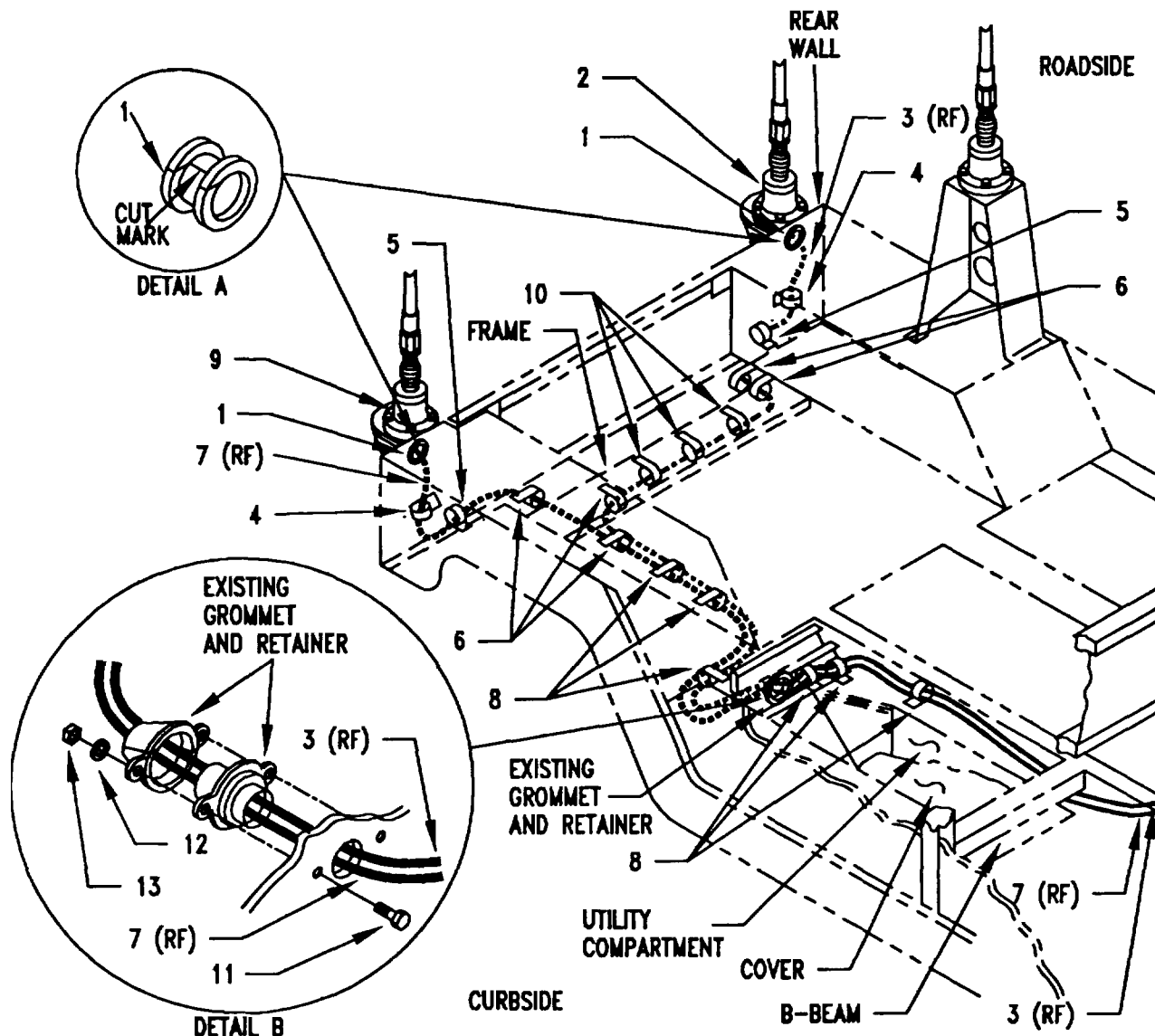
**5.5. Installation of Cables.** To accomplish the installation, leave loop clamps and tiedown straps loose enough to adjust cable slack and allow easy adjustment of equipment. When installation is complete, tighten and secure all clamps and tiedown straps.

**WARNING**

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

ITEM	ACTION	REMARKS	
a.	RF cable (3) connector P1.	Insert through grommet hole below rear roadside antenna base (2); then connect and secure to antenna base connector J1. See Figure 5-8(1)	
b.	Grommet (1).	Cut through on mark shown, Figure 5-8(1), Deter A; then wrap around RF cable (3) and Install to rear roadside wall. See Figure 5-8(1)	Tools: Pocket knife.
c.	RF cable (3).	Route from roadside to curbside of vehicle along bottom of frame.	
d.	Loop clamp (4) and existing upper mounting hardware of roadside reflector.	Wrap clamp around RF cable (3); then install to inside rear wall. See Figure 5-8(1) for location(s).	
e.	Loop clamp (5), hex-head machine screw (No.10-32 x 5/8 in), lock washer (No 1) and nut (No 10-32 in).	Wrap clamp around RF cable (3) and existing harness; then install to existing mounting hole on bottom edge of rear roadside wall.	Tools: 5/16 in socket or 5/16 in open/box wrench and 3/8 in socket or 3/8 in open/box wrench.
f.	Two loop clamps (6), two hex-head machine screws (No. 10-32 x 5/8 in) and two lock washers (No. 10).	Wrap clamps around RF cable (3) and existing harness; then install to bottom of rear roadside frame.	Tools: 5/16 in socket.
g.	Three loop clamps (10), one loop clamp (6), four hex-head machine screws (no. 10-32 x 5/8 in) and four lock washer (no. 10).	Wrap clamps around RF cable (3) and existing harness; then install across bottom surface of frame.	Tools: 5/16 in socket.

5.5 Installation of Cables. Continued.



- 1 GROMMET
- 2. ANTENNA BASE (REAR ROADSIDE)
- 3. RF CABLE CG-3855/VRC (21 FT, 0 IN)
- 4. LOOP CLAMP (1/4-1/4 IN)
- 5. LOOP CLAMP (3/4-13/64 IN), MACHINE SCREW (NO. 10-32 X 5/8 IN), LOCK WASHER (NO. 10), NUT (NO. 10-32 IN)
- 6. LOOP CLAMP (3/4-13/64 IN), MACHINE SCREW (NO. 10-32 X 5/8 IN), LOCK WASHER (NO. 10)
- 7. RF CABLE CG-3855/VRC (18 FT, 0 IN)
- 8. LOOP CLAMP (1/2-13/64 IN), MACHINE SCREW (NO. 10-32 X 1/2 IN), LOCK WASHER (NO. 10)
- 9. ANTENNA BASE (REAR CURBSIDE)
- 10. LOOP CLAMP (1-13/64 IN), MACHINE SCREW (NO. 10-32 X 1/2 IN), LOCK WASHER (NO. 10)
- 11. CAP SCREW (1/4-20 X 1 IN)
- 12. LOCK WASHER (1/4 IN)
- 13. NUT (1/4-20 IN)

Figure 5-8(1). Cable Installation: RF Cabling (Rear Antenna Bases)

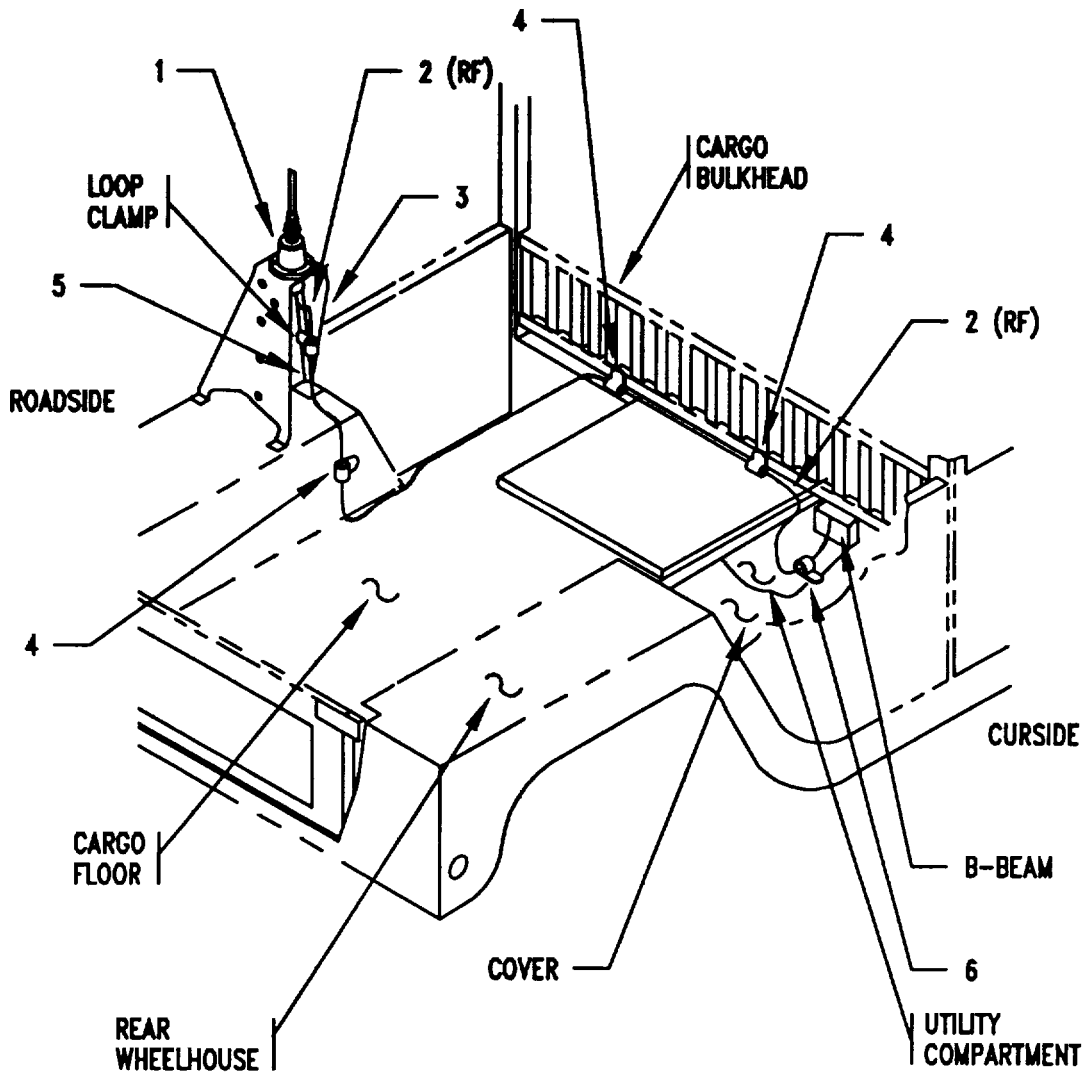
## 5.5 Installation of Cables. Continued.

	ITEM	ACTION	REMARKS
h.	RF cable connector P1.	Insert through grommet hole below rear curbside antenna base (9); then connect and secure to antenna base connector J1. See Figure 5-8(1)	
i.	Grommet (1).	Cut through on mark shown, Figure 5-8(1), Detail A; then wrap around RF cable (7) and install to rear curbside wall. See Figure 5-8(1)	Tools: Pocket knife.
j.	Loop clamp (4) and existing upper mounting hardware of curbside reflector.	Wrap clamp around RF cable (7); then install to inside rear wall. See Figure 5-8(1) for location(s).	
k.	Loop clamp (5), 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 (7) and existing harness; then install to existing mounting hole on bottom edge of rear curbside wall.	Tools: 5/16 in socket and 3/8 in socket.
l.	Loop clamp (6), hex-head machine screw (No 10-32 x 5/8 in) and lock washer (No. 10)	Wrap clamp around RF cable (7) and existing harness; then install to bottom of rear curbside frame.	Tools: 5/16 in socket.
m.	RF cables (3,7).	Route forward along bottom of frame to area near existing grommet and retainer. See Figure 5-8(1)	
n.	Loop clamp (6), three loop clamps (8), four hex-head machine screws (No. 10-32 x 5/8 in) and four lock washers (No. 10).	Wrap clamp around RF cables (3, 7); then install to bottom surface of curbside frame. See Figure 5-8(1) for location(s).	Tools: 5/16 in socket.
o.	Utility compartment cover.	Remove. See Figure 5-8(1)	
p.	Existing grommet, retainer and mounting hardware.	Remove. Retain grommet and retainer. See Figure 5-8(1), Detail B.	Existing mounting hardware not shown.

**5.5 Installation of Cables.** Continued.

ITEM	ACTION	REMARKS	
q.	Connector P2 of RF cables (3, 7).	Insert through existing retainer, grommet and grommet hole.	
r.	Existing grommet and retainer, two cap screws (11), two lock washers (12) and two nuts (13).	Install grommet and retainer to existing grommet hole and secure.	Tools: 7/16 in socket and 7/16 in open/box wrench.
s.	RF cables (3, 7).	Route forward through utility compartment and under B-beam to passenger seat area. See Figure 5-8(1)	
t.	Three loop clamps (8), three hex-head machine screws (No. 10-32 x 5/8 in) and three lock washers (No. 1i).	Wrap clamps around RF cables (3, 7); then install to existing holes in utility compartment. See Figure 5-8(1) for location(s).	Tools: 5/16 in socket.
u.	RF cable (2) connector P1.	Connect and secure to forward roadside antenna base (1) connector J1. See Figure 5-8(2)	
v.	RF cable (2).	Route down to cargo floor and forward to cargo bulkhead; then route across to utility compartment and under B-beam to passenger seat area.	
w.	Loop clamp (installed in section 511, step r).	Remove and wrap around RF cable (2); then reinstall to roadside antenna mount bracket (3) and reinforcement bracket (5). See Figure 5-8(2) for location.	Tools: 7/16 in socket and 7/16 in open/box wrench.
x.	Mounting holes for loop clamps (4).	Drill three 5/32 in diameter holes: one in roadside rear wheelhouse, and two in cargo bulkhead. See Figure 5-8(2) for location(s).	Tools: Electric drill and 5/32 in drill bit.

## 5.5 Installation of Cables. Continued.



- |  |  |
|--|--|
| 1. ANTENNA BASE (FORWARD ROADSIDE)   | 5. REINFORCEMENT BRACKET   |
| 2. RF CABLE, CG-3855/VRC<br>(18 FT, 0 IN)  | 6. LOOP CLAMP (3/4-13/64 IN)<br>MACHINE SCREW (NO. 10-32 X 5/8 IN)<br>LOCK WASHER (NO. 10) |
| 3. ANTENNA MOUNT BRACKET   |  |
| 4. LOOP CLAMP (1/4-13/64 IN)<br>TAPPING SCREW (NO. 10-24 X 5/6 IN)<br>LOCK WASHER (NO. 10) |  |

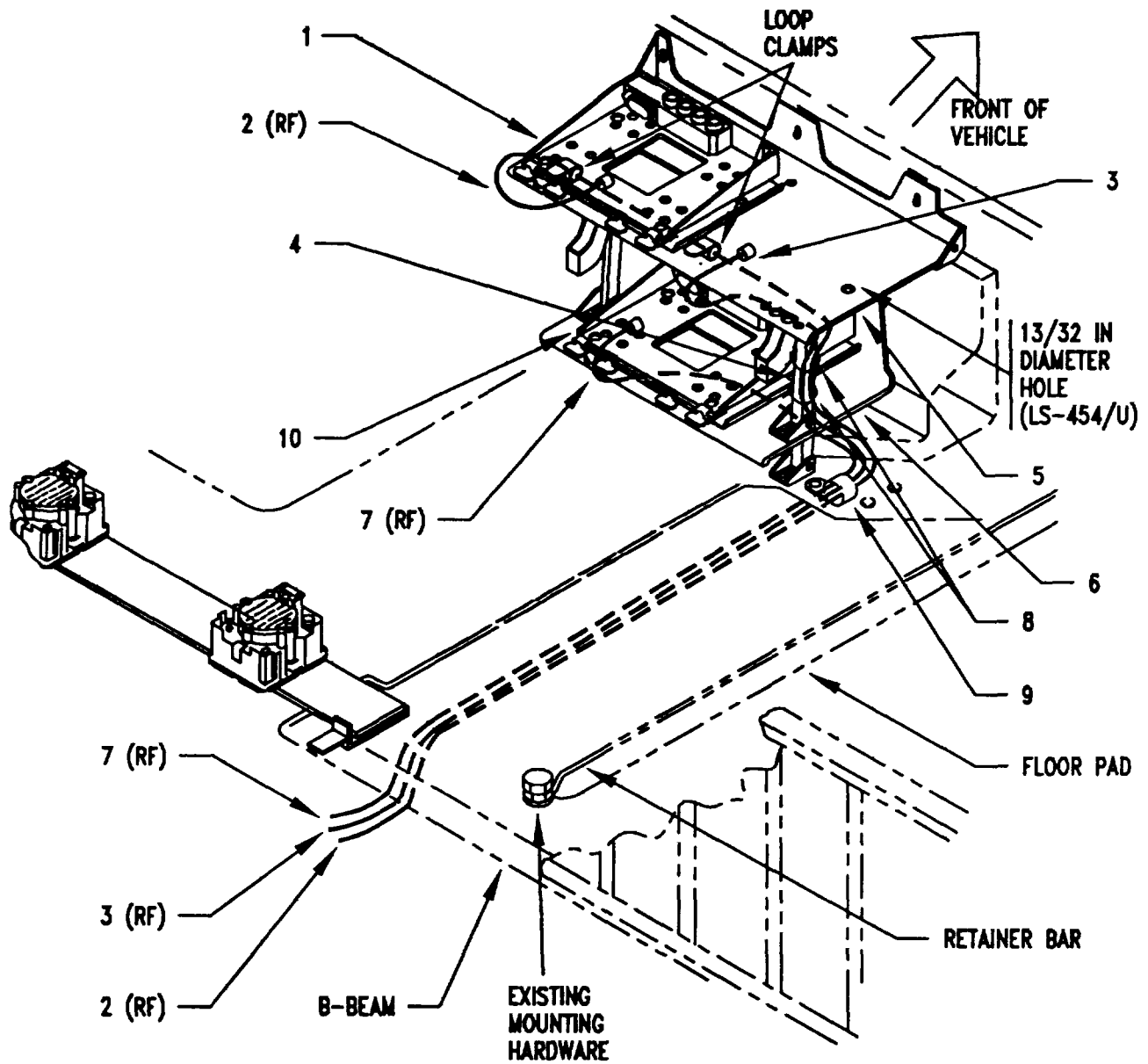
Figure 5-8(2). Cable Installation: RF Cabling (Forward Antenna Bases)

**5.5 Installation of Cables.** Continued.

ITEM	ACTION	REMARKS	
y.	Three loop clamps (4), three hex-head tapping screws (No. 10-24 x 5/8 in) and three washers (No. 10).	Wrap clamps around RF cables (2); then install to holes drilled in step x.	Tools: 5/16 in socket.
z.	Loop clamp (6), hex-head machine screw (No. 10-32 x 5/8 in) and lock washer (No. 10).	Wrap clamp around RF cables (3, 7) Figure 5-8(1), and RF cables (2); then install to existing hole in utility compartment.	Tools: 5/16 in socket.
aa.	Retainer bar.	Remove and retain existing mounting hardware; then move retainer bar off floor pad. See Figure 5-8(3).	
ab.	RF cable (2, 3, 7).	Route forward under floor pad to base plate (6).	
ac.	RF cables (7).	Route under base plate (6) to front of lower mounting base (10).	
ad.	Connector P2 of RF cable (7).	Position on top of lower mounting base (10).	
ae.	Two tiedown straps (8).	Wrap around RF cables (2, 3); then secure to shelf support (4).	
af.	RF cables (2, 3).	Route under electrical equipment shelf (5).	
ag.	Two loop clamps (installed in Section 5.3, step j).	Remove and wrap around RF cable (2); then reinstall to underside of electrical equipment shelf (5). See Figure 5-8(3) for location(s).	Tools: 1/2 in socket and 1/2 in open/box wrench.
ah.	Loop clamp (9), hex-head machine screw (No. 10-32 x 5/8 in) and lock washer (No. 10).	Wrap clamp around RF cables (2, 3, 7); then install to cargo floor. See Figure 5-8(3) for location(s).	Tools: 5/16 in socket.



5.5 Installation of Cables. Continued.



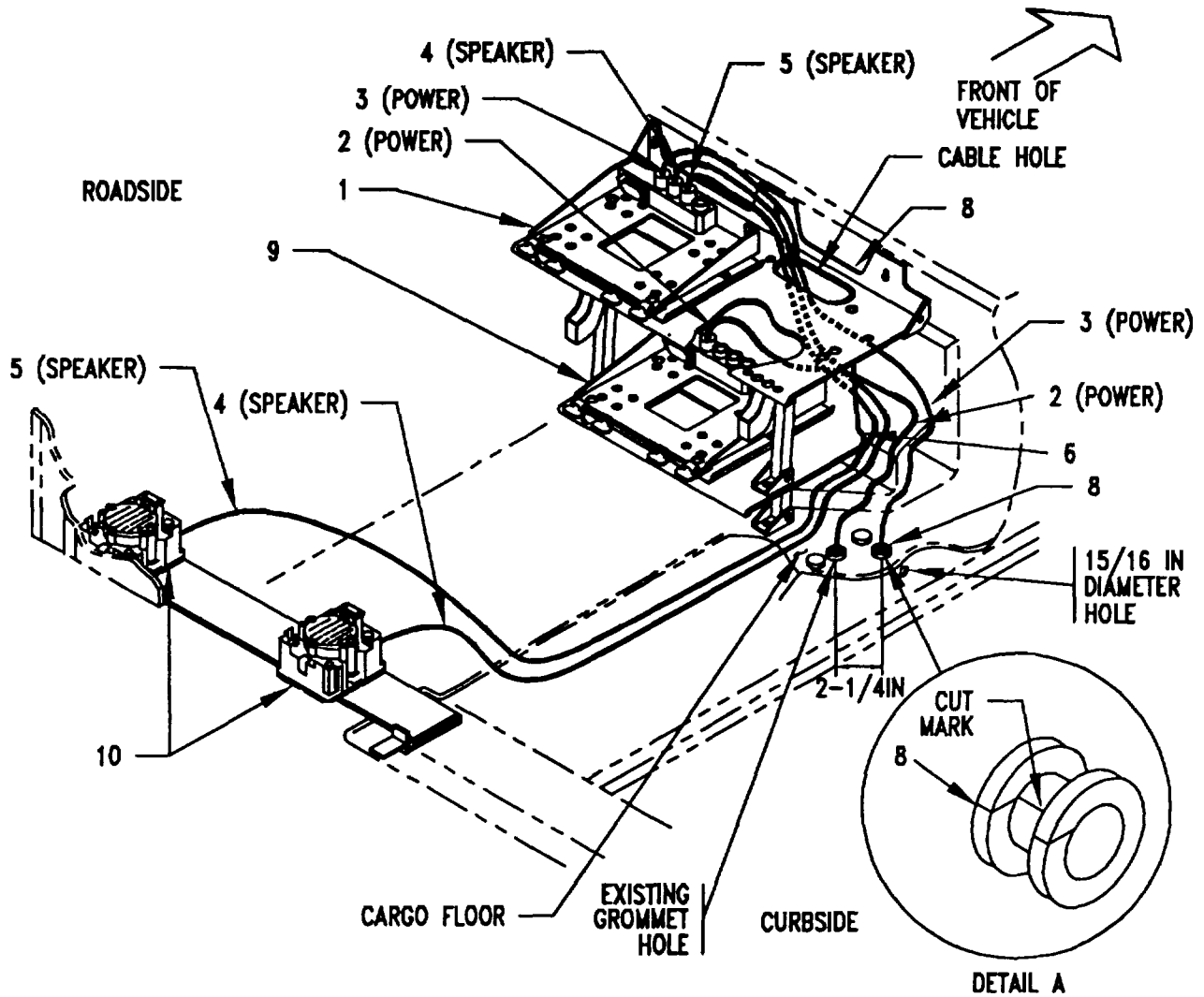
- |                                       |                                      |
|---------------------------------------|--------------------------------------|
| 1. MOUNTING BASE (UPPER)              | 7. RF CABLE CG-3855VRC (18 FT, 0 IN) |
| 2. RF CABLE CG3855/VRC (18 FT, 0 IN)  | 8. TIEDOWN STRAP                     |
| 3. RF CABLE CG-3855/VRC (21 FT, 0 IN) | 9. LOOP CLAMP (3/4-13/64 IN)         |
| 4. SHELF SUPPORT                      | MACHINE SCREW (NO. 10-32 X 5/8 IN)   |
| 5. ELECTRICAL EQUIPMENT SHELF         | LOCK WASHER (NO. 10)                 |
| 6. BASE PLATE                         | 10. MOUNTING BASE (LOWER)            |

Figure 5-8(3). Cable Installation: RF Cabling

**5.5 Installation of Cables.** Continued.

ITEM	ACTION	REMARKS	
ai.	Retainer bar.	Move back onto floor pad and secure with existing mounting hardware (retained in step aa). See Figure 5-8(3)	
aj.	Grommet hole for power cable (3).	Using dimension shown, drill 15/16 in diameter hole through cargo floor. See Figure 5-8(4)	Tool: Electric drill and 5/16 in drill bit.
ak.	Power cable (3) connector P2.	Position on top of upper mounting base (1).	
al.	Power cable(3).	Route down through cable hole in electrical equipment shelf (8) and behind base plate (9) to cargo floor.	
am.	Power cable (3) terminal leads: T1 (red) and T2 (black).	Insert down through hole drilled in step aj.	
an.	Grommet (8).	Cut through on mark shown, Figure 5-8(4), Detail A; then wrap around power cable (3) and install to hole drilled in step aj. See Figure 5-8(4)	Tools: Pocket knife.
ao.	Existing grommet, retainer and mounting hardware.	Remove. Retain grommet and retainer. See Figure 5-8(5)	Existing mounting hardware not shown.
ap.	Power cable (2) connector P2.	Position on top of lower mounting base (9). See Figure 5-8(4)	
aq.	Power cable (2).	Route behind base plate (7) to cargo floor.	
ar.	Power cable terminal leads: T1 (red) and T2 (black).	Insert down through existing grommet hole. See Figure 5-8(4)  Insert through existing grommet and retainer (retained in step ao). See Figure 5-8(5)	

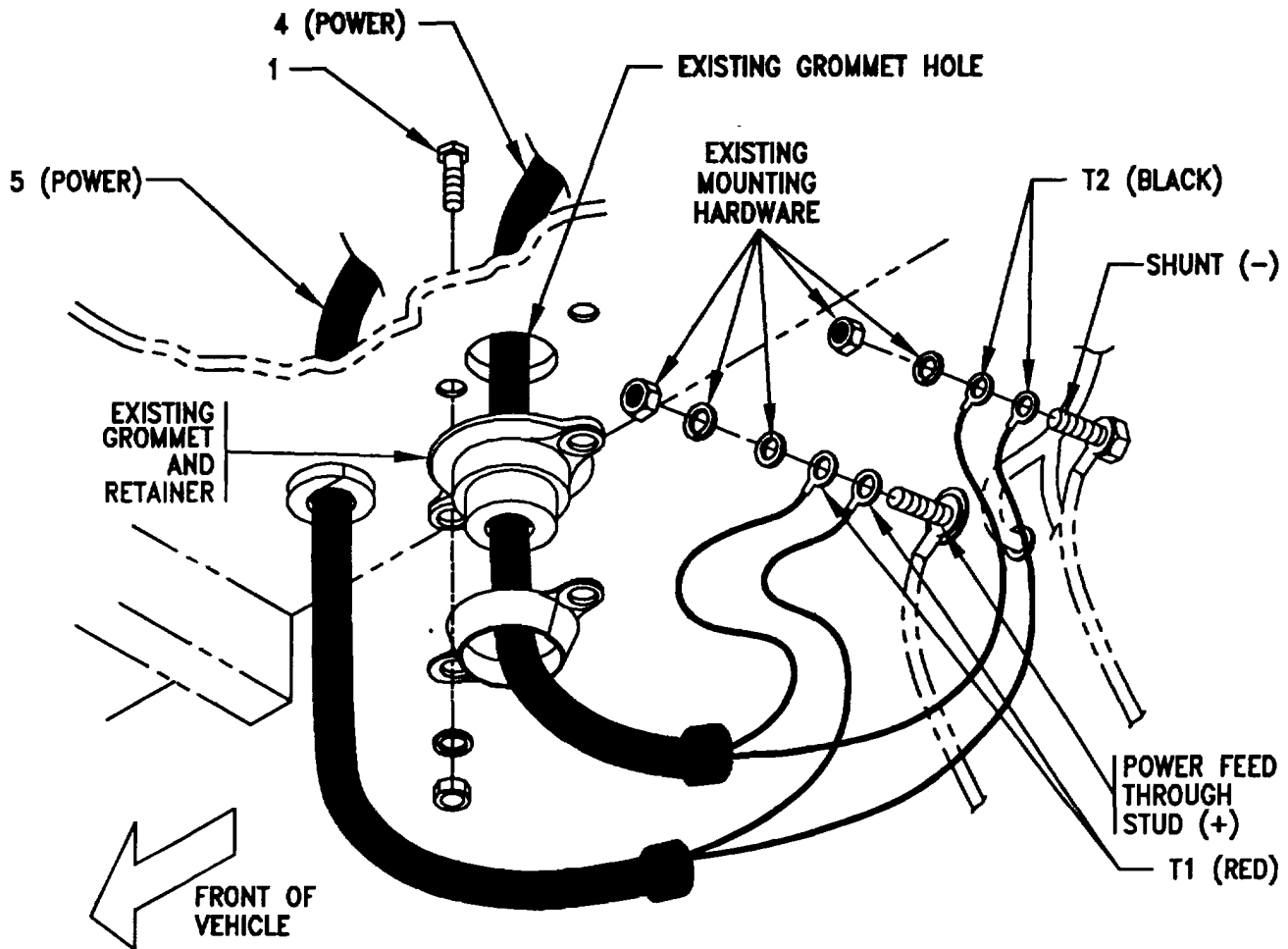
5.5 Installation of Cables. Continued.



- |  |                                |
|--|--------------------------------|
| 1. MOUNTING BASE                               | 5. SPEAKER CABLE, CX-13292/VRC |
| 2. POWER CABLE, CX-13302/VRC<br>(6 FT, 0 IN)   | 6. ELECTRICAL EQUIPMENT SHELF  |
| 3. POWER CABLE, CX-13302/VRC<br>(6 FT, 0 IN)   | 7. BASE PLATE                  |
| 4. SPEAKER CABLE, CX-13292/VRC<br>(8 FT, 0 IN) | 8. GROMMET                     |
|  | 9. MOUNTING BASE (LOWER)       |
|  | 10. SPEAKER                    |

Figure 5-8(4). Cable Installation: Speaker and Power Cabling

5.5 Installation of Cables. Continued.



1. CAP SCREW (1/4-20 X 1 IN)
2. NUT (1/4-20 IN)
3. LOCK WASHER (1/4 IN)
4. POWER CABLE, CX-13302/VRC (6 FT, 0 IN)
5. POWER CABLE, CX-13302/VRC (6 FT, 0 IN)

Figure 5-8(5). Cable Installation: Power Cabling

**5.5 Installation of Cables.** Continued.

ITEM	ACTION	REMARKS	
as.	Power cables (4, 5) terminal leads: T1 (red) and T2 (black).	Connect and secure to power feed through stud and shunt. See Figure 5-8(5)	Red (+) secures to power feed through stud. Black (-) secures to shunt.
at.	Existing grommet and retainer, two cap screws (1), two lock washers (3) and two nuts (2).	Install and secure to existing grommet hole.	Tools: 7/16 in socket and 7/16 in open/box wrench.
au.	Speaker cable (4) connector P2.	Connect and secure to upper mounting base (1) connector J3. See Figure 5-8(4)	
av.	Speaker cable (5) connector P2.	Connect and secure to upper mounting base (1) connector J4.	
aw.	Speaker cables (4, 5).	Route down through cable hole in electrical equipment shelf (6) and behind base plate (7); then route across cargo floor to two curbside speakers (10).	
ax.	Connector P1 of speaker cables (4, 5).	Connect and secure to connector J1 of two speakers (10).	
ay.	Power cable (3) connector P2.	Connect and secure to upper mounting base (1) connector J1. See Figure 5-8(4)	
az.	Power cable (2) connector P2.	Connect and secure to lower mounting base (9) connector J1. See Figure 5-8(4)	
ba.	Adhesive-sealant.	Apply to and around all previously installed grommets and drilled holes.	
bb.	Utility compartment cover.	Reinstall. See Figure 5-8(1)	

**5.6. Installation of Mounting Base, Electrical Equipment MTC-6353-/VRC.** If Radio Set AN/VRC-92 or AN/VRC-92A is authorized, use the following instructions to install MTC-6353-/VRC mounting base in the location shown in Figure 5-1(2). Refer to section 5.8 for connection of cables.

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.

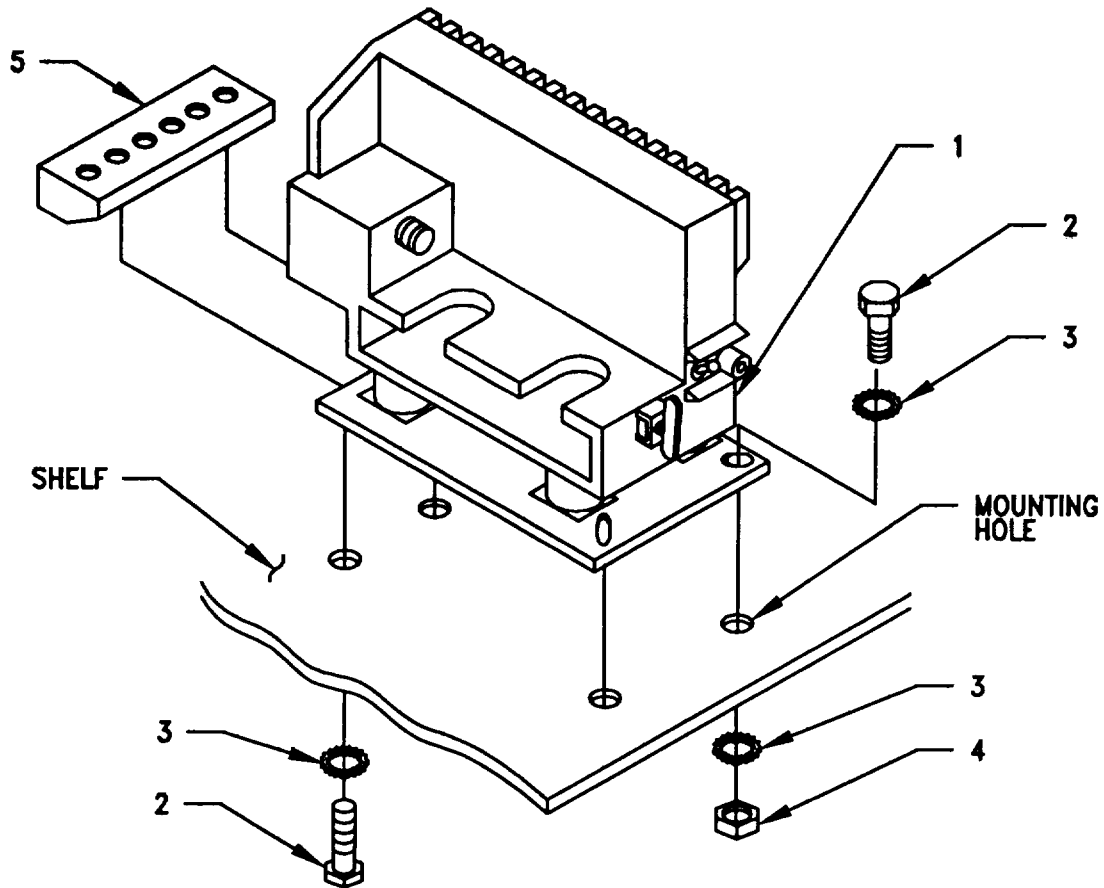
- |    |                                |   |  |
|----|--------------------------------|---|--|
| a. | MT-6353/VRC mounting base (1). | Place on electrical equipment shelf over existing holes. See Figure 5-9 |  |
|----|--------------------------------|---|--|

**NOTE**

Before proceeding, connect and secure CX-13291/VRC control cable and CX-13303/VRC power cable to MT-6353/VRC mounting base (Refer to Section 5.7, step b).

- |    |   |  |  |
|----|---|--|--|
| b. | MT-6353/VRC mounting base (1).  | Aline front holes and rear slots with matching hole pattern in electrical equipment shelf. (See Figure 5-9)  |  |
| c. | Two machine bolts (2), two IET washers (3) and nut strip (5).               | Install and secure to rear slots in MT-6353/VRC mounting base (1) and electrical equipment shelf.  | Tools: 1/2 in socket.  |
| d. | Machine bolt (2), two IET washers (3) and nut (4).                          | Install and secure to left front hole in MT-6353/VRC mounting base (1) and electrical equipment shelf.   | Tools: 1/2 in socket and 1/2 in open/box wrench.   |
| e. | Loop clamp (5/8-5/16 in) machine bolt (2), two IET washers (3) and nut (4). | Wrap around RF cables, Figure 5-8(3) and Figure 5-8(4); then install and secure to right front hole in MT-6353/VRC mounting base and electrical equipment shelf. | Tools: 1/2 in socket and 1/2 in open/box wrench.<br><br>Loop clamp not shown in Figure 5-9 |

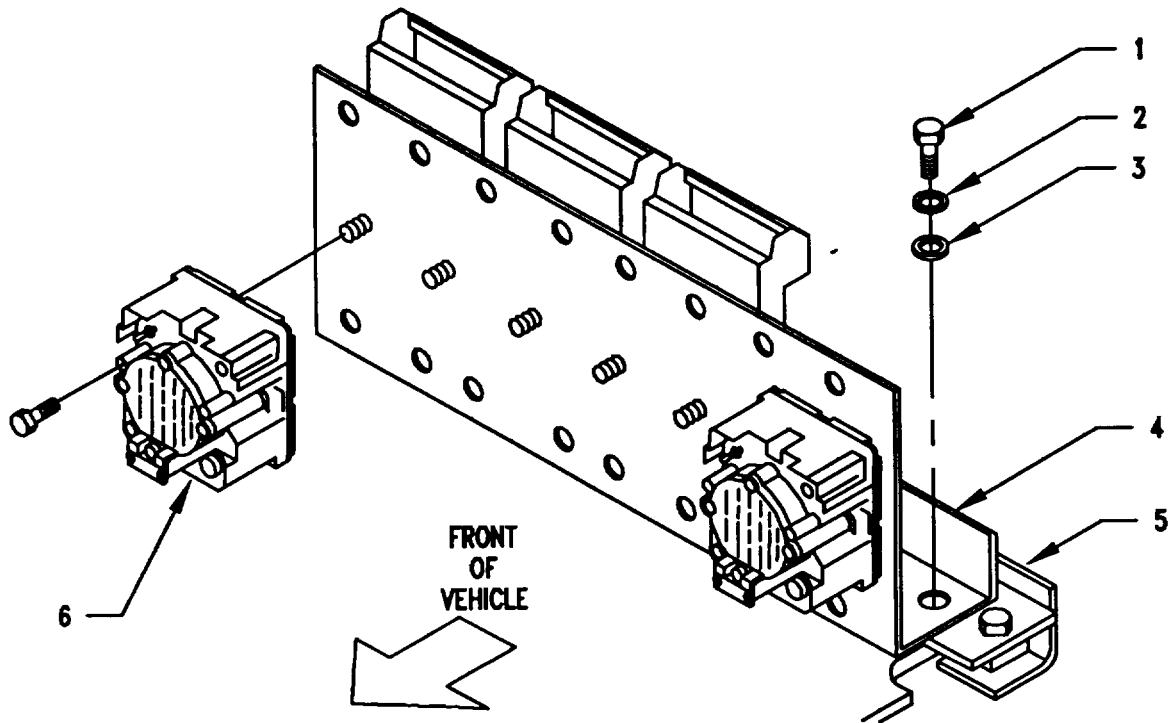
5.6 Installation of Mounting Base, Electrical Equipment MTC-6353-/VRC. Continued.



- 1. MOUNTING BASE
- 2. MACHINE BOLT (5/16-24 X 1 IN)
- 3. IET WASHER (5/16 IN)
- 4. NUT (5/16-24 IN)
- 5. NUT STRIP

Figure 5-9. MT-6353/VRC Mounting Base Installation

**5.7. Installation MK-2499/VRC.** For Radio Set AN/VRC-87/88/90 and AN/VRC-89/91/92, install MK-2499/VRC (TSEC/KY-57 security equipment) and speakers to speaker mounting plate in the location shown in Figure 5-1(1) using eight machine bolts (5/16-24 x 5/8 in), eight lock washers (5/16 in), eight flat washers (5/16 in) and mounting plate A3018978-1. Refer to section 5.8 for connection of cables.



1. MACHINE BOLT (5/16-24 X 5/8 IN)
2. LOCK WASHER (5/16 IN)
3. FLAT WASHER (5/16 IN)
4. MOUNTING PLATE A3018978-1
5. MOUNTING PLATE
6. SPEAKER (LS-671/VRC)

Figure 5-10. MK-2499/VRC Installation



**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 5-11 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 11-5820-890-20-4 for installation and operations (OP) check instructions.	

5.8 Post-Installation and Checkout. Continued.

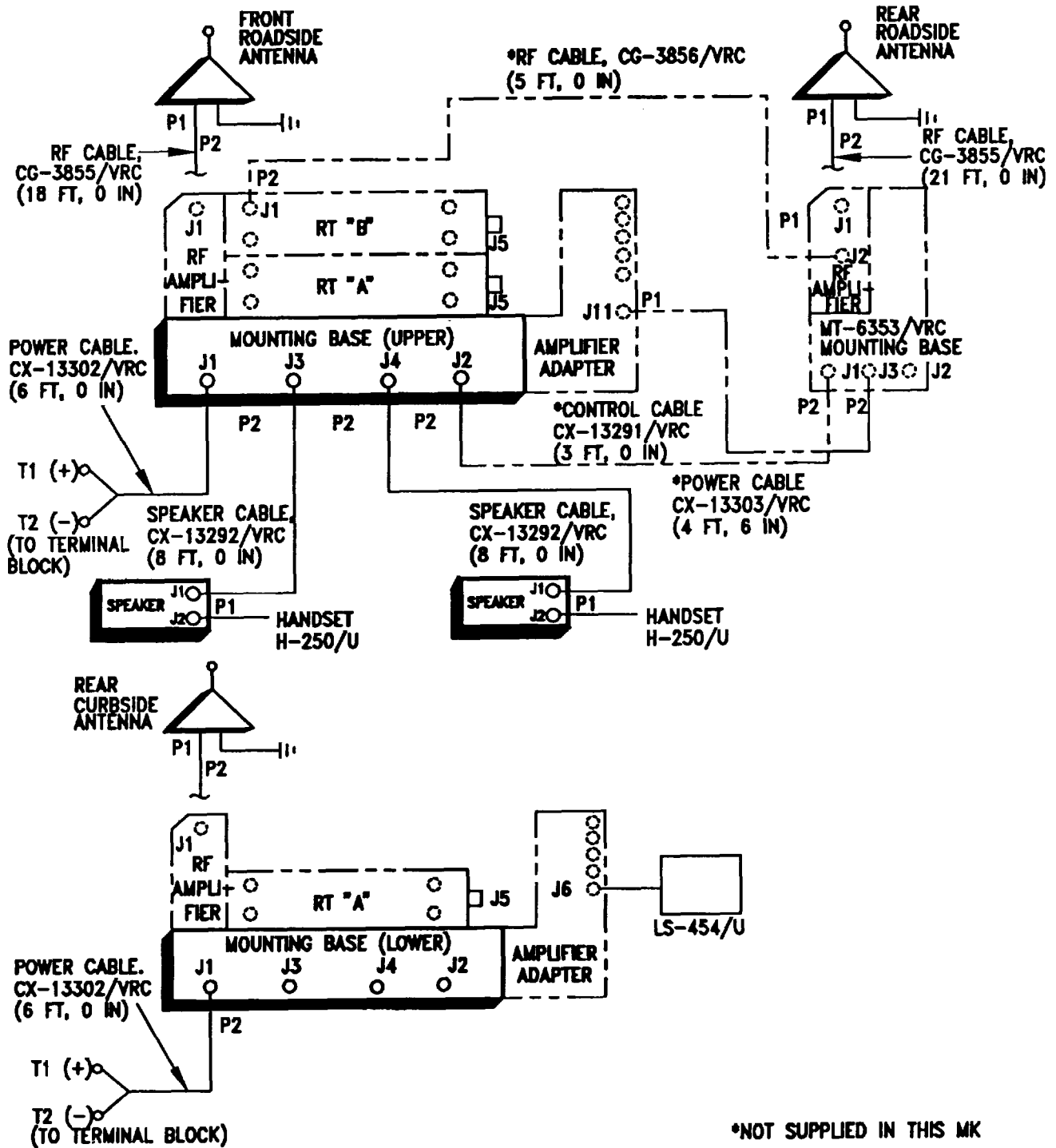


Figure 5-11(1). Cable Diagram: AN/VRC-89A/91A/92A and AN/VRC-87A/88A/90A Radio Sets

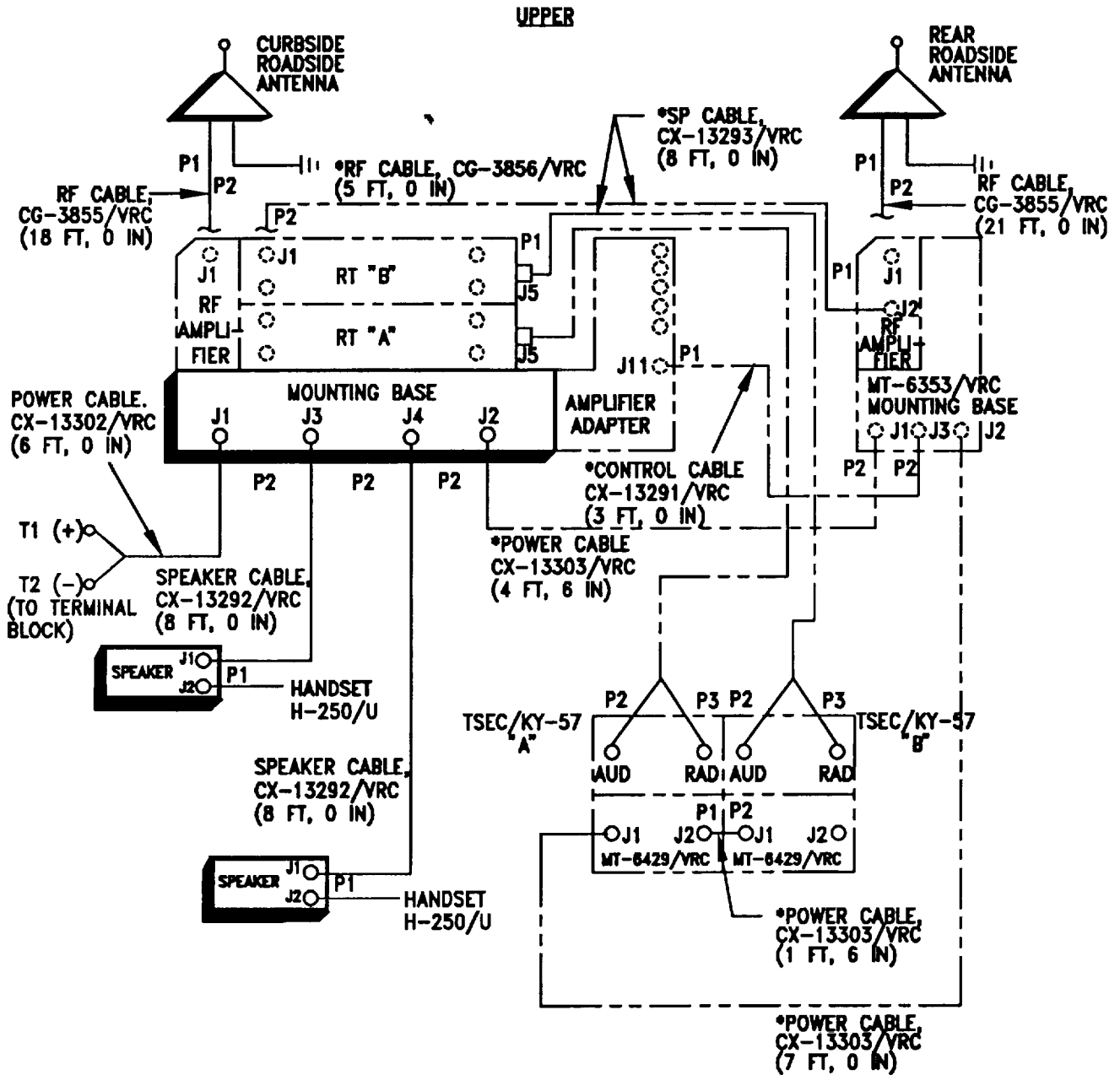
## 5.8 Post-Installation and Checkout. Continued.

CABLE ASSEMBLY	FROM			TO		
	CABLE CONN.	UNIT	UNIT CONN.	CABLE CONN.	UNIT	UNIT CONN.
CX-13302/VRC (6 FT, 0 IN)	P2	Mounting base (upper)	J1	T1 (red) T2 (black)	Terminal block	Stud (+) Shunt (-)
CX-13302/VRC (6 FT, 0 IN)	P2	Mounting base (lower)	J1	T1 (red) T2 (black)	Terminal block	Stud (+) Shunt (-)
CG-3855/VRC (18 FT, 0 IN)	P1	Antenna base (front roadside)	J1	P2	RF Amplifier (upper)	J1
CG-3855/VRC (21 FT, 0 IN)	P1	Antenna base (rear roadside)	J1	P2	RF Amplifier (upper right)	J1
CG-3855/VRC (18 FT, 0 IN)	P1	Antenna base (rear curbside)	J1	P2	RF Amplifier (lower)	J1
CX-13292/VRC (8 FT, 0 IN)	P2	Mounting base (upper)	J3	P1	Speaker	J1
CX-13292/VRC (8 FT, 0 IN)	P2	Mounting base (upper)	J4	P1	Speaker	J1
Speaker Cable (PO Speaker)		Amplifier Adapter (lower)	J6		Speaker (LS-454/U)	
*CX-13303/VRC (4 FT, 6 IN)	P1	Mount base (upper)	J2	P2	MT-6353/VRC mounting base	J1
*CG-3856/VRC (5 FT, 0 IN)	P1	RF amplifier (upper right)	J2	P2	Radio "B"	J1
*CX-13291/VRC (3 FT, 0 IN)	P2	MT-6353/VRC mounting base (upper right)	J3	P1	Amplifier adapter	J11

\*Not supplied in this MK.

Figure 5-11(1). Cable Diagram: AN/VRC-89A/91A/92A and AN/VRC-87A/88A/90A Radio Sets (Cont.)

5.8 Post-Installation and Checkout. Continued



\*NOT SUPPLIED IN THIS MK

Figure 5-11(2). Cable Diagram: For AN/VRC -89/91/92 and AN/VRC -87/88/89 Radio Sets

5.8 Post-installation and Checkout. Continued.

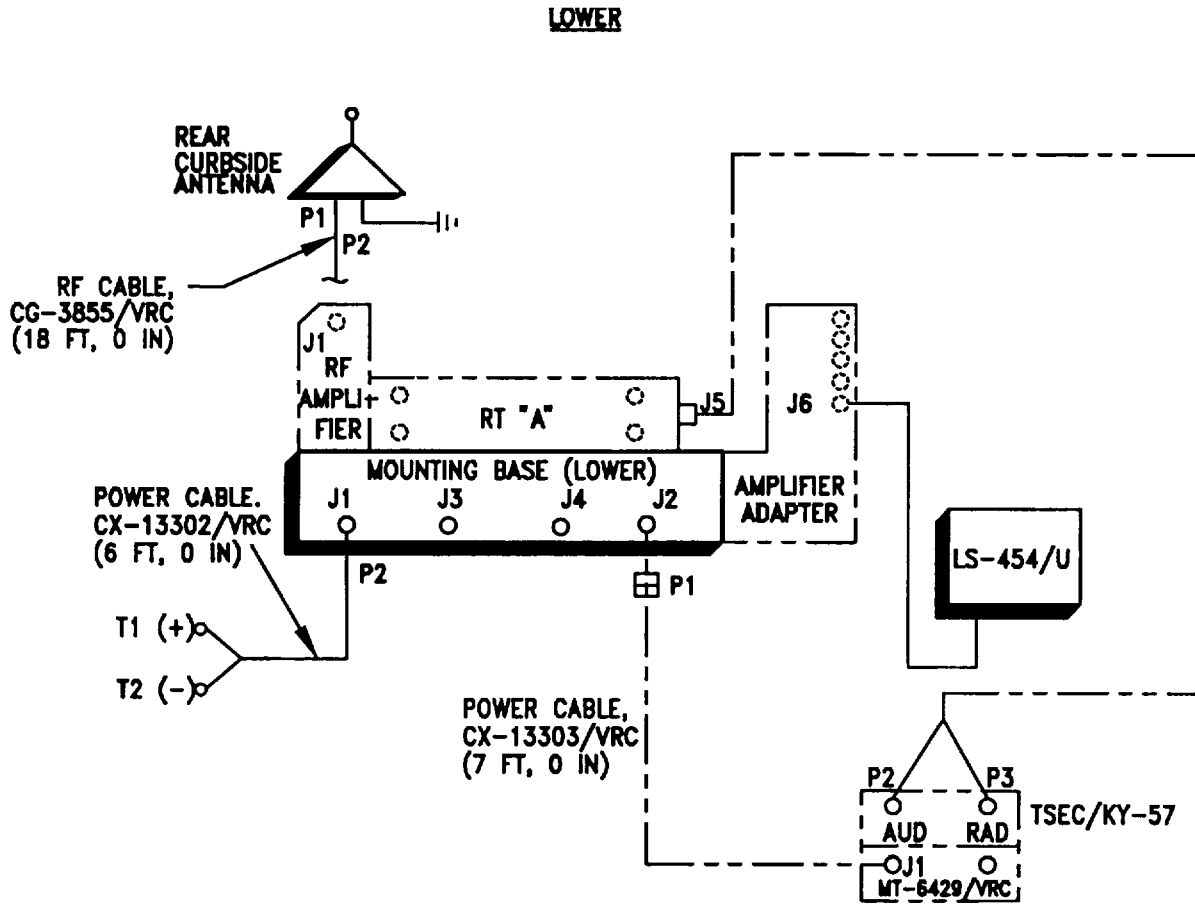


Figure 5-11(2). Cable Diagram: AN/VRC-89/91/92 and AN/VRC-8788/90 Radio Sets (Cont.)

5.8 Post-installation and Checkout. Continued.

CABLE ASSEMBLY	FROM			TO		
	CABLE CONN.	UNIT	UNIT CONN.	CABLE CONN.	UNIT	UNIT CONN.
CX-13302/VRC (6 FT, 0 IN)	P2	Mounting base (upper)	J1	T1 (red) T2 (black)	Terminal block	Stud (+) Shunt (-)
CX-13302/VRC (6 FT, 0 IN)	P2	Mounting base (lower)	J1	T1 (red) T2 (black)	Terminal block	Stud (+) Shunt (-)
CG-3855/VRC (18 FT, 0 IN)	P1	Antenna base (front roadside)	J1	P2	RF amplifier (upper)	J1
CG-3855/VRC (21 FT, 0 IN)	P1	Antenna base (rear roadside)	J1	P2	RF amplifier (upper right)	J1
CG-3855/VRC (18 FT, 0 IN)	P1	Antenna base (rear curbside)	J1	P2	RF amplifier (lower)-	J1
CX-13292/VRC (8 FT, 0 IN)	P2	Mounting base (upper)	J3	P1	Speaker	J1
CX-13292/VRC (8 FT, 0 IN)		Mounting base (lower)	J4	P1	Speaker	J1
Speaker Cable (PO Speaker)		Amplifier adapter (lower)	J6		Speaker (LS-454/U)	
*CX-13303/VRC (4 FT, 6 IN)	P1	Mounting base (upper)	J2	P2	MT-6353/VRC mounting base	J1
*CG-3856/VRC (5 FT, 0 IN)	P1	RF amplifier (upper right)	J2	P2	Radio "B"	J1
*CX-13291/VRC (3 FT, 0 IN)	P2	MT-6353/VRC mounting base	J3	P1	Amplifier adapter	J11
*CX-13303/VRC (7 FT, 0 IN)	P2	MT-6353/VRC mounting base	J2	P2	MT-6429/VRC "A"	J1
*CX-13303/VRC (1 FT, 6 IN)	P2	MT-6429/VRC "B"	J1	P1	MT-6429/VRC "A"	J2
*CX-13303/VRC (7 FT, 0 IN)	P1	Mounting base (lower)	J2	P2	MT-6429/VRC "A"	J1
*CX-13293/VRC (8 FT, 0 IN)	P1	Radio "B" (upper)	J5	P2 P3	TSEC/KY-57 "B"	AUD RAD
*CX-13293/VRC (8 FT, 0 IN)	P1	Radio "A" (upper)	J5	P2 P3	TSEC/KY-57 "A"	AUD RAD
*CX-13293/VRC (8 FT, 0 IN)	P1	Radio "A" (lower)	J5	P2 P3	TSEC/KY-57 "A"	AUD RAD

\*Not Supplied in this MK.

Figure 5-11(2). Cable Diagram: AN/VRC-89/91/92 and AN/VRC-87/88/90 Radio Sets (Cont.)

**APPENDIX A****REFERENCES**

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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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