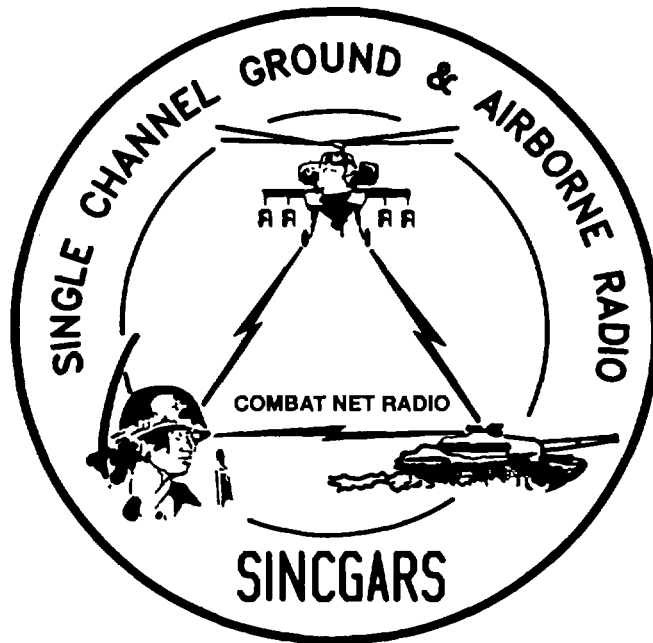


TECHNICAL BULLETIN



INSTALLATION INSTRUCTIONS FOR
INSTALLATION KIT,
ELECTRONIC EQUIPMENT, MK-2493/VRC
(NSN 5895-01-216-9745) (EIC: N/A)
TO PERMIT INSTALLATION OF RADIO SET
AN/VRC-87/88/89/90/91&92 SERIES
INTO
TRUCK, UTILITY, TACTICAL, 3/4 TON, 4X4,
M1009

Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY
1 SEPTEMBER 1993

TECHNICAL

BULLETIN HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, DC 1 SEPTEMBER 1993

NO. 11-5820-890-20-77

**INSTALLATION INSTRUCTIONS FOR
INSTALLATION KIT,
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(NSN 5895-01-216-9745) (EIC: N/A)
TO PERMIT INSTALLATION OF RADIO SET
AN/NRC-87/88/90 SERIES AND AN/VRC-89/91/92 SERIES
INTO
TRUCK, UTILITY, TACTICAL, 3/4 TON, 4x4, M1009**

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 directly: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-ME-PS, Fort Monmouth, New Jersey 07703-5007.

In either case, a reply will be furnished directly to you.

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0.1 SCOPE

This technical bulletin provides Installation Instructions for Installation Kit, Electronic Equipment, MK-2493/VRC, commonly referred to as the Mounting Kit (MK). The MK shall be installed into the following type of vehicle(s):

- Truck, Utility, Tactical, 3/4 Ton, 4x4, M1009

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 11-5820-89-20-4 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 11-5821-5820-89 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-1439/VRC)
- Radio Set AN/VRC-87A/88A90A (for RT-1523(C)/U)
- Radio Set AN/VRC-89/91/92 (for RT-1439/VRC)
- Radio Set AN/VRC-8991A92 (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 Installation Kit, Electronic Equipment, MK-2493/VRC (MK) contains the items needed to mount Radio Set: AN/VRC-87A/88A/90A and AN/VRC-89A/91A/92A in a Truck, Utility, Tactical, 3/4 Ton, 4x4, M1009 (vehicle). If Radio Set: AN/VRC-87/88/90 and AN/VRC-89/91/92 are to be installed, communications security equipment (TSEC/KY-57) will need to be installed also; see section 5.8 for information. If Radio Set AN/VRC-92 or AN/VRC-92A is authorized, see section 5.9 for instructions 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 two people, 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 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	*5.4	*0.5
Cables	*5.6	*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 vehicles 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 9-2320-289-20.

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 saltwater, 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 and AN/VRC-89/91/92 series. Refer to Table 4-2 and figure 4-2 to identify additional items required to install Radio Set AN/VRC-92 Series. Refer to Table 4-3 and figure 4-3 to identify additional items required to install when using RT-1439/VRC.

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. MK 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, 2
5305-00-847-1159	Screw, Cap, Hexagon (3/8-16 x 1 3/4 in) MS35307-365	12	PAOZZA	
5310-00-913-8881	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	6	PAOZZA	
5306-00-225-9086	Bolt, Machine (5/16-24 c 5/8 in) MS90726-31 (Not Used)	3	PAOZZA	
5330-01-205-2864	Gasket (A3013655-1)	3	PAOZZA	
5895-01-151-9914	Control-Monitor C-11291/VRC (A3148258-1)	1	PAOFDA	
5306-00-225-9089	Bolt, Machine (5/16-24x1in) MS90726-34	2	PAOZZA	
5310-00-407-9566	Washer, Lock (5/16in) MS35338-45	2	PAOZZA	
5310-00-081-4219	Washer, Flat (5/16in) MS27183-12	4	PAOZZA	
5310-00-880-7746	Nut, Hexagon (5/16-24in) MS51968-5	2	PAOZZA	
5305-00-068-0506	Screw, Cap, Hexagon (1/4-28 x 3/4in) MS90726-6 (Not Used)	2	PAOZZA	
5310-00-582-5965	Washer, Lock (1/4in) MS35338-44 (Not Used)	2	PAOZZA	
5310-00-809-4058	Washer, Flat (1/4in) MS27183-102 (Not Used)	2	PAOZZA	
5965-01-222-1420	Loudspeaker, Control Unit LS-671/VRC (A3014065-1)	2	PAOFFA	4-1, 4
5965-00-876-2375	Loudspeaker, Permanent Magnet tLS-454/U	1	PAOOF A	4-1, 1
5975-01-188-8873	Mounting Base, Electrical Equipment MT-6352/VRC (A3013367-1)	2	PAOZZA	4-1, 27
5306-00-225-9089	Bolt, Machine (5/16-24x1in) MS90726-34 (1 Not Used)	10	PAOZZA	
5310-00-889-2527	Washer, Lock ,Internal/External-Toothed (5/16in) MS45904-72 (7NotUsed)	20	PAOZZA	
5310-00-880-7746	Nut, Hexagon (5/16- 24in) MS51968-5 (6NotUsed)	10	PAOZZA	
5995-01-219-4696	Cable Assembly, Power, Electrical CX-13303/VRC (15FT, 0IN) (A3014040-2)	1	PAOZZA	4-1, 24
5995-01-219-1843	Cable Assembly, Power, Electrical CX-13302/VRC (13FT, 0IN) (A3014039-2)	1	PAOZZA	
5995-01-219-9528	Cable Assembly, Radio Frequency CG-3855/VRC (3FT, 0IN) (A3014031-1)	1	PAOZZA	4-1, 23
5995-01-219-7031	Cable Assembly, Radio Frequency CG-3855/VRC (9FT, 0IN) (A3014031-4)	1	PAOZZA	4-1, 23
5995-01-219-7035	Cable Assembly, Radio Frequency CG-3855/VRC (18FT, 0IN) (A3014031-8)	1	PAOZZA	4-1, 23

Table 4-1. MK Parts List for Installation of Radio Set: AN/VRC-87/88/90 Series and ANVRC-891/9/92 Series
Continued

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
5995-01-219-4703	Cable Assembly, Special Purpose, Electrical CX-13292/VRC (4FT , 0 IN) (A3014038-2)	1	PAOZZA	4-1, 26
5995-01-219-4705	Cable Assembly, Special Purpose, Electrical CX-13292/VRC (14 FT, 0 IN) (A3014038-4)	1	PAOZZA	4-1, 26
5995-01-218-6464	Cable Assembly, Special Purpose, Electrical CX-13290/VRC (15 FT, 0 IN) (A3014035-2)	2	PAOZZA	4-1, 25
5306-00-225-9086	Bolt, Machine (5/16-24 x 5/8in) MS90726-31	2	PAOZZA	
5306-00-225-9089	Bolt, Machine (5/16-24 x 1in) MS90726-34	4	PAOZZA	
5306-00-225-9094	Bolt, Machine (5/16-24 x 13/4in) MS90726-39	2	PAOZZA	
	Bracket, Mounting (A3014069-1)	1	XBOZZA	4-1, 5
	Bracket, Mounting - Antenna (A3014549-1)	3	XBOZZA	4-1, 6
	Bracket, Mounting - Antenna (A3050668-1)	1	XBOZZA	4-1, 7
	Bracket, Angle - Short (A3050663-2)	1	XBOZZA	4-1, 20
	Bracket, Angle - Long (A3050663-1)	1	XBOZZA	4-1, 16
	Bracket, Angle - Lower (A3050661-1)	1	XBOZZA	4-1, 15
	Bracket, Angle - Upper (A3050662-1)	1	XBOZZA	4-1, 21
5340-00-809-1494	Clamp, Loop (3/4-1/4in) MS21333-105	6	PAOZZA	
5340-00-809-1490	Clamp, Loop (1/4-1/4in) MS21333-98	2	PAOZZA	
5340-00-809-1500	Clamp, Loop (1-1/4in) MS21333-107	5	PAOZZA	
5340-00-400-0002	Clamp, Loop (11/4-1/4in) MS9350-19	2	PAOZZA	
5340-00-067-3868	Clamp, Loop (1/4-5/16in) MS21333-109	10	PAOZZA	
5340-00-057-3052	Clamp, Loop (3/4-5/16in) MS21333-114	14	PAOZZA	
5340-01-278-2109	Clamp, Loop (11/2-3/8in) (A3013069-4)	3	PAOZZA	
5340-00-151-9651	Clamp, Loop (11/4-3/8in) MS21333-129	2	PAOZZA	
4020-01-341-8795	Fiber Rope Assembly, Single Leg (A3167672-1)	3	PAOZZA	4-1, 10
5325-00-174-9008	Grommet, Nonmetallic (1/2in) MS35489-15	1	PAOZZA	
	Grommet, Nonmetallic (A3013060-1)	3	XBOZZA	
5965-00-043-3463	Handset H-250/U	3	PAOZZA	4-1, 3
5310-00-880-7746		3	PAOZZA	
5310-00-761-6882	Nut, Hexagon (5/16-24in) MS51968-5	31	PAOZZA	
5310-00-913-8881	Nut, Hexagon (1/4-20in) MS51967-2	8	PAOZZA	
	Nut, Hexagon (3/8-16in) MS51971-3	1	XBOZZA	4-1, 13
	Nut Strip (A3014064-1)	1	XBOZZA	4-1, 19
	Plate, Mounting, Flat-Upper (A3050665-1)	1	XBOZZA	4-1,17
	Plate, Mounting, Flat-Lower (A3050667-1)	1	XBOZZA	4-1,14
	Plate, Mounting -Speaker (A3014550-1)	4		
	Screw, Externally-Relieved Body (A3018701-2)			
		2	XBOZZA	4-1,12
	Protector, Electrical Cable Assembly (A3050654-1)			

Table4-1. MK Parts List for Installation of Radio Set: ANVRC-87/88 Series and ANVRC-89/91/92 Series Continued

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
5305-00-071-2238	Screw, Cap, Hexagon (1/4-20 x 13/4in) MS90725-13	2	PAOZZA	
5305-00-068-0502	Screw, Cap, Hexagon (1/4-20 x 3/4in) MS90725-6	27	PAOZZA	
5305-00-225-3839	Screw, Cap, Hexagon (1/4-20 x 1in) MS90725-8	1	PAOZZA	
5305-00-57-5417	Screw, Cap, Hexagon (3/8-16 x 1 in) MS35307-360	8	PAOZZA	
5305-00-432-4253	Screw, Tapping, Pan-Head (1/4-14 x 3/4in) MS51861-67	9	PAOZZA	
	Shelf, Electrical Equipment (A3014545-1)	1	XBOZZA	4-1, 11
	Spacer, Plate (A3014054-1)	2	XBOZZA	4-1, 18
	Spacer, Plate (A3014548-1)	2	XBOZZA	4-1, 22
5975-00-111-3208	Strap, Tiedown, Electrical Components MS3367-5-9	10	PAOZZA	
5310-00-407-9566	Washer, Lock (5/16 in) MS35338-45	4	PAOZZA	
5310-00-582-5965	Washer, Lock(1/4 in) MS35338-44	40	PAOZZA	
5310-00-637-9541	Washer, Lock(3/8 in) MS35338-46	8	PAOZZA	
5310-00-8094058	Washer, Flat (1/4 in) MS27183-10	26	PAOZZA	
5310-00-081-4219	Washer, Flat (5/16 in) MS27183-12	2	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal-Toothed (5/16in) MS45904-72	4	PAOZZA	

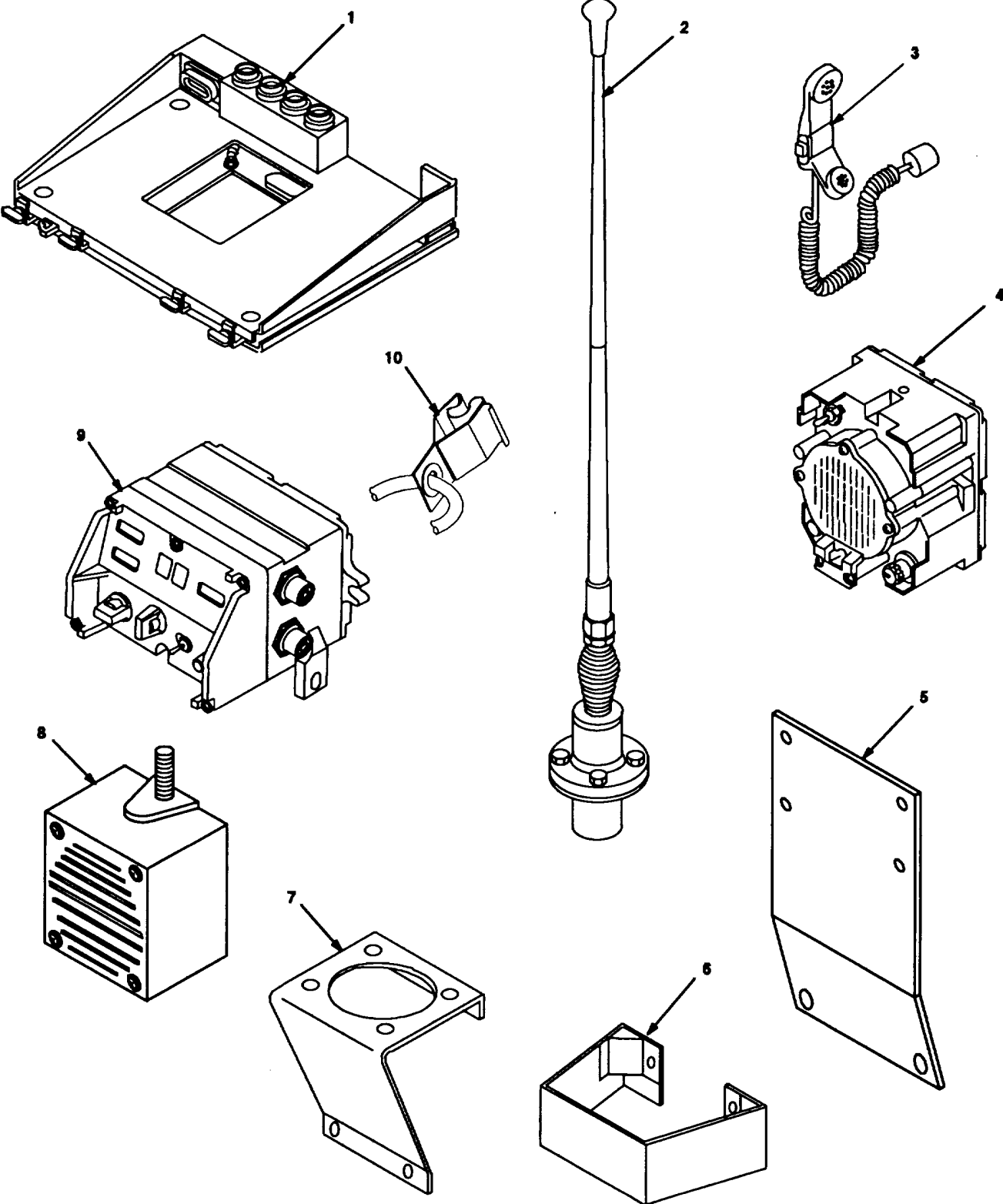


Figure 4-1. (1). MK Illustrated Parts List

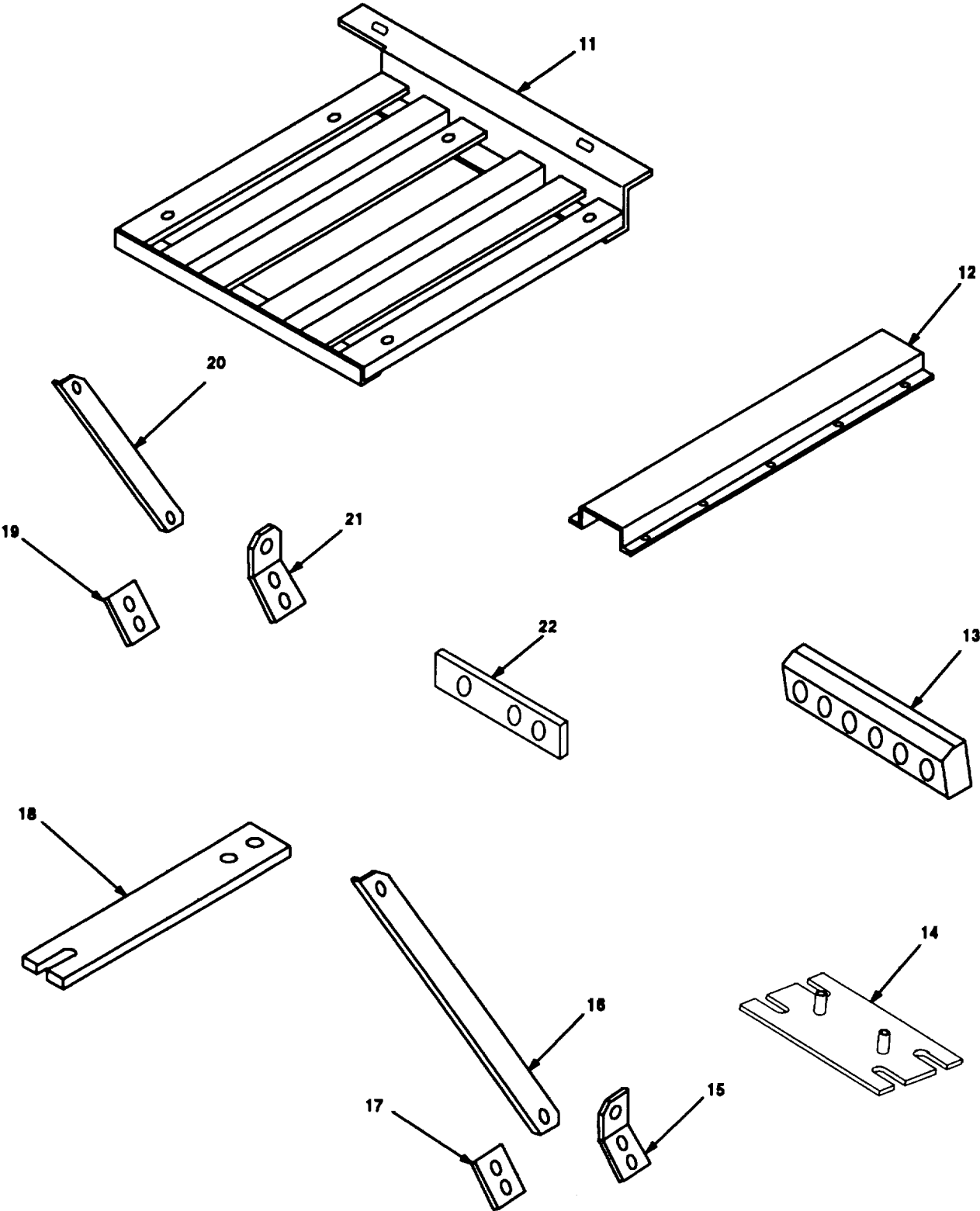


Figure 4-1(2). MK Illustrated Parts List

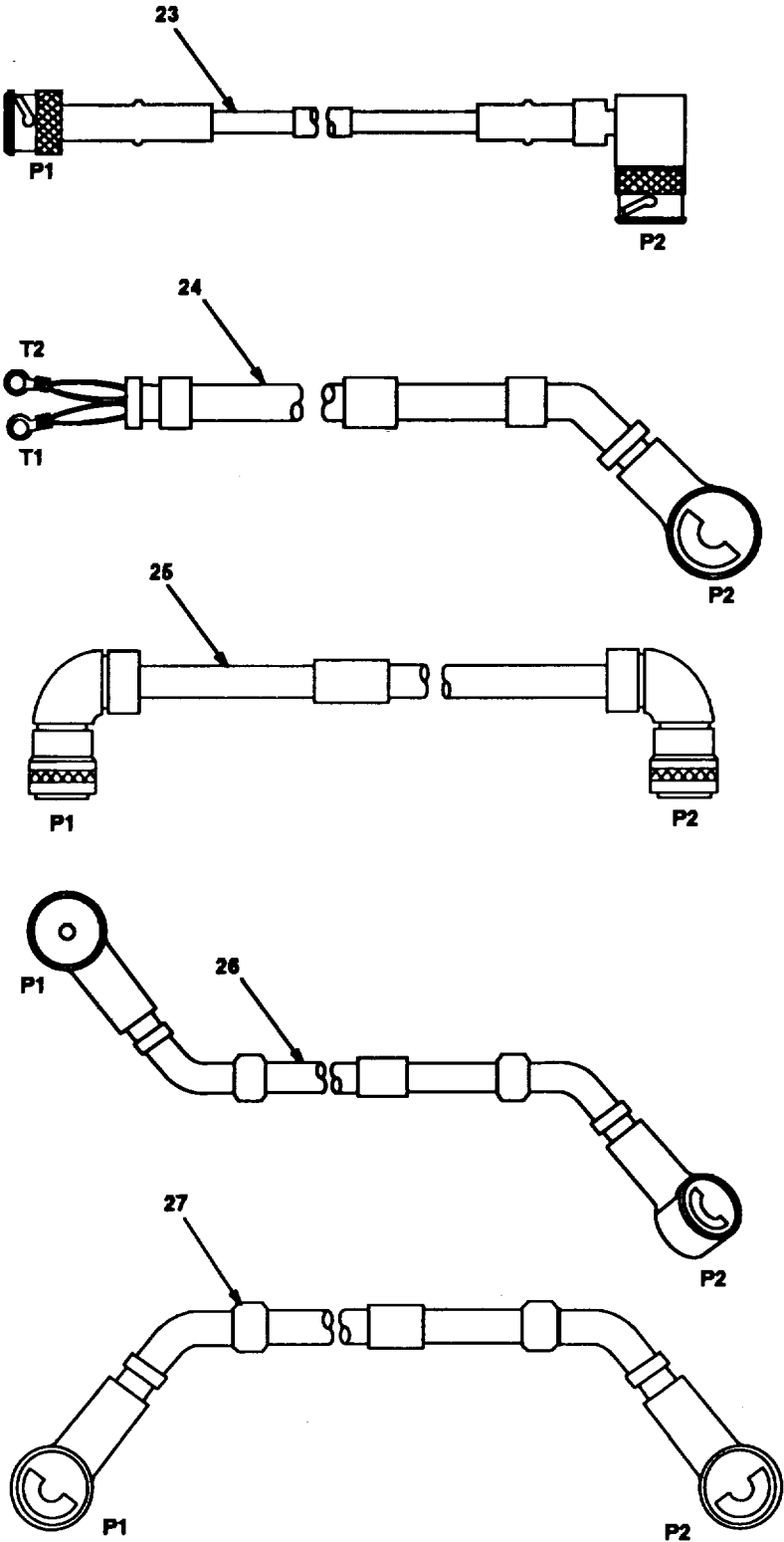


Figure 4-1(3). MK Illustrated Parts List

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

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY	SMR CODE	FIGURE, ITEM NO.
5975-01-235-1962	Mounting Base, Electrical Equipment MT-6353/VRC (A3014053-1)	1	PAOOHA	4-2, 1
5306-00-225-9089	Bolt, Machine (5/16-24 x 1 in) MS 90726-34	4	PAOZZA	
5310-00-880-7746	Nut, Hexagon (5/16-24 in) MS 51968-5	2	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal/External-Toothed (5/16 in) MS45904-72	6	PAOZZA	
5310-00-081-4219	Washer, Flat (5/16 in) MS27183-12 (Not Used)	2	PAOZZA	
5975-00-111-3208	Nut Strip (A3014064-1)	1	XBOZZA	4-2, 5
	Strap, Tiedown, Electrical Components MS3367-5-9	4	PAOZZA	
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) (A3014032-3)	1	PAOZZA	4-2, 3

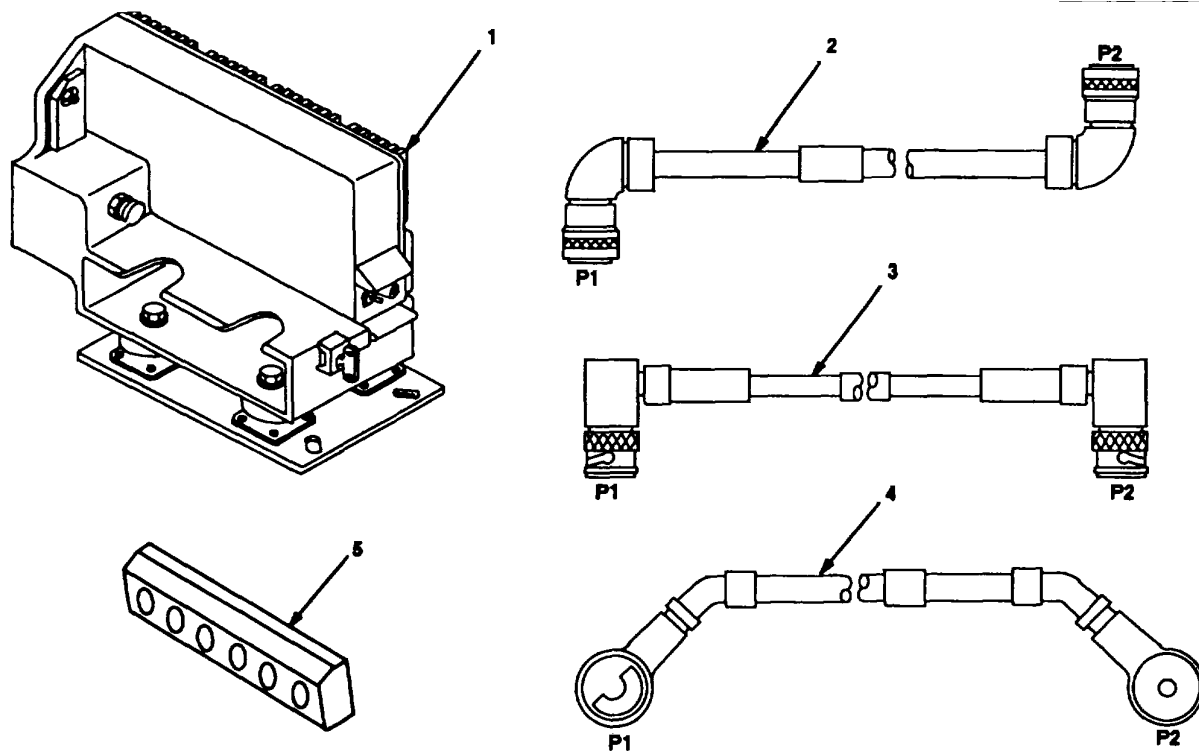


Figure 4-2. Illustrated Parts List for Table 4-2

Table 4-3. Additional Items Required for Installation When Using RT-1439/VRC

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY	SMR CODE	FIGURE, ITEM NO.
5995-01-222-4210	Cable Assembly, Special Purpose, Electrical CX-13293/VRC (4FT,0IN) (A3014034-1)	3	PAOZZA	4-3,6
5995-01-225-1655	Cable Assembly, Power, Electrical CX-13303/VRC (1FT,6IN) (A3014040-6)	1	PAOZZA	4-3,5
5995-01-226-5482	Cable Assembly, Power, Electrical CX-13303/VRC (2FT,6IN) (A3014040-5)	2	PAOZZA	4-3,4
5306-00-225-9088	Bolt, Machine (5/16-24x7/8in) MS90726-33	10	PAOZZA	4-3,1 4-3,2
	Bracket, Mounting-Top (A3050660-1)	1	XBOZZA	
	Bracket, Multiple Angle-Right Side (A3050659-1)	1	XBOZZA	
	Bracket, Multiple Angle-Left Side (A3050658-1)	1	XBOZZA	
5310-00-880-7746	Nut, Hexagon (5/16-24in) MS51968-5	10	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal/External-Toothed (5/16in) MS45904-72	20	PAOZZA	

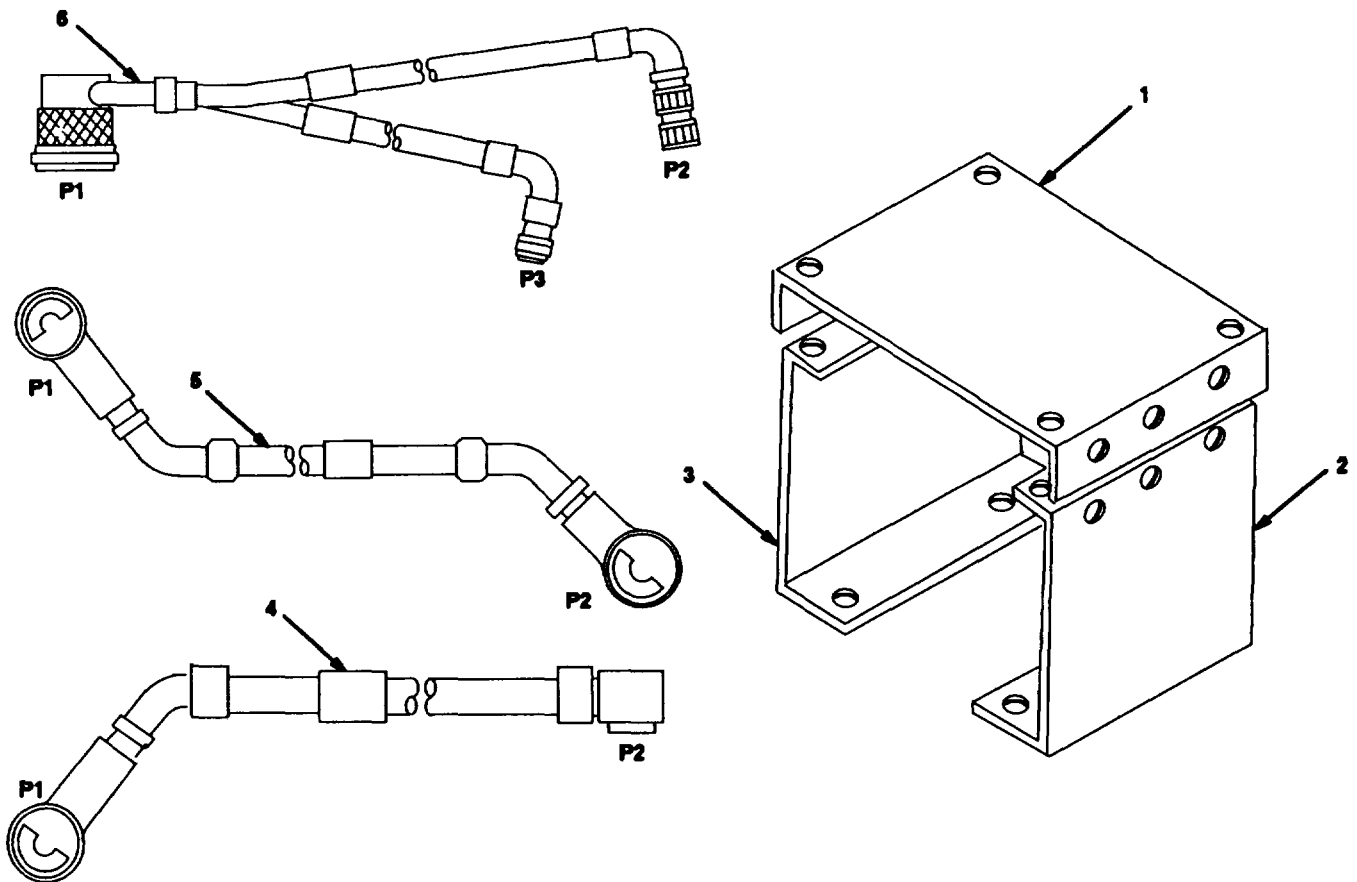


Figure 4-3. TSEC/KY-57 Illustrated Parts List

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-8660

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, 4in	5120-00-222-8852	1
Pliers, Round Nose	5110-00-240-6172	1
Pliers, Diagonal Cutting	5110-00-965-0974	1
Wrench, Open/Box: 7/16 in	5120-00-228-9505	1
1/2 in	5120-00-228-9506	1
9/16 in	5120-00-228-9507	1
Handle, Socket Wrench	5120-00-240-5364	1
Socket: 7/16 in	5120-00-227-6703	1
1/2 in	5120-00-237-0977	1
9/16 in	5120-00-227-6704	1
Electric Drill	5130-00-889-8994	1
Drill Bits: 11/32 in	5133-00-227-9664	1
9/32 in	5133-00-222-9374	1
13/64 in	5133-00-243-9612	1
13/32 in	5133-00-227-9668	1
1 1/4 in		
5/16 in	5133-00-227-9662	1

Use radio issued with your vehicle if available.

5. INSTALLATION PROCEDURES.

This section describes where and how to install MK items in the vehicle. See figure 5-1 for an over all view of where 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. If Radio Set: AN/VRC-87/88/90 and AN/VRC-89/91/92 are to be installed, communications security equipment (TSEC/KY-57) will need to be installed also; see section 5.8 for information. If Radio Set AN/VRC-92 or AN/VRC-92A authorized, see section 5.9 for instructions to install MT-6353/VRC mounting base.

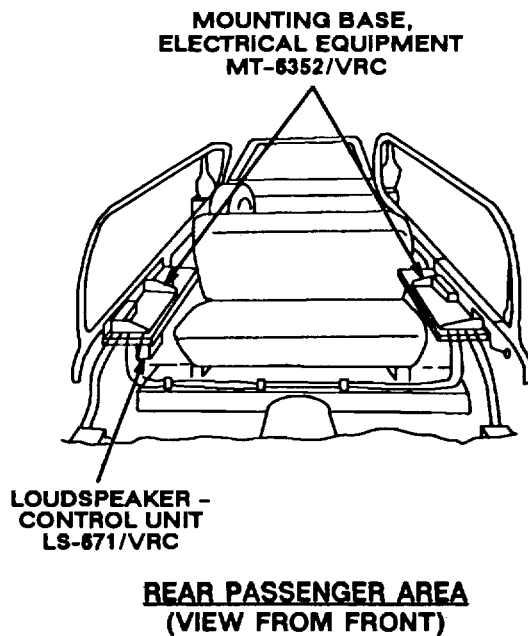
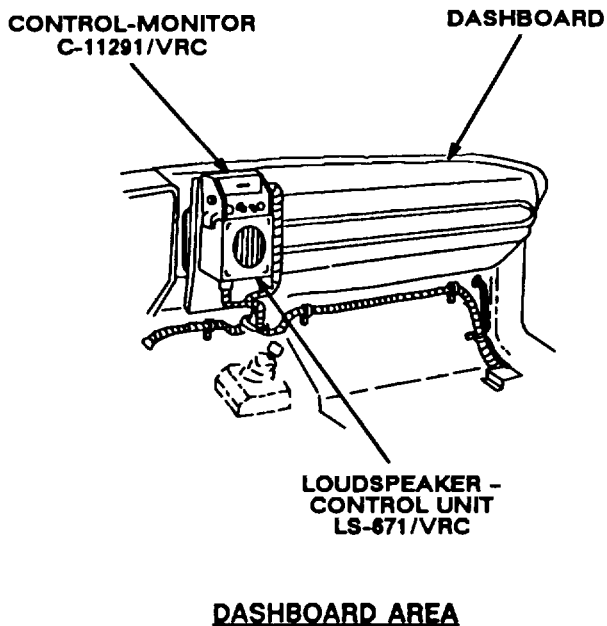
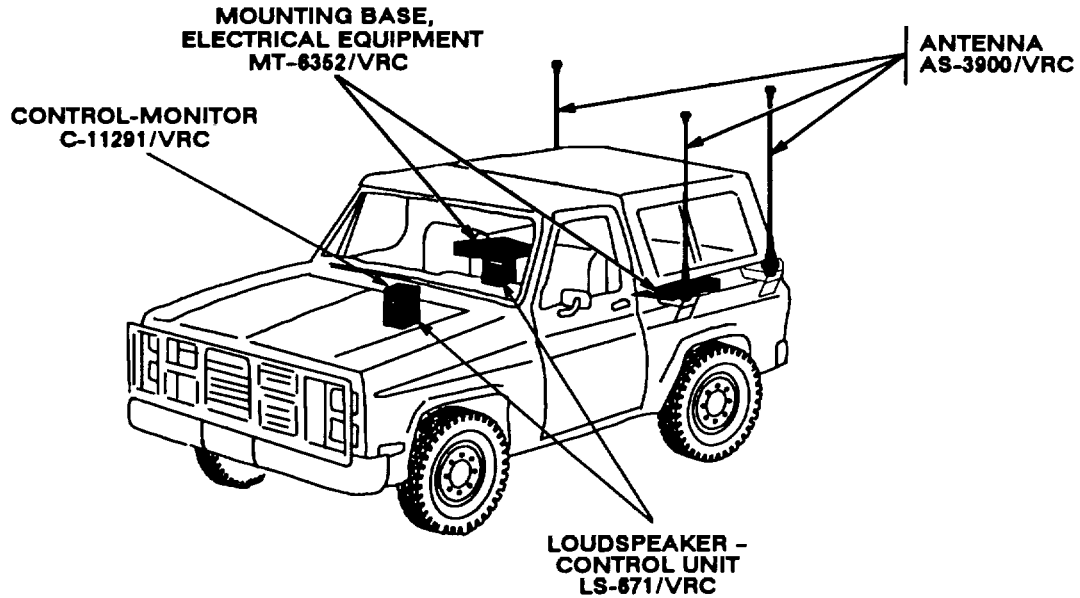


Figure 5-1. (1). MK and Radio Installation: MK Equipment Locations

5. INSTALLATION PROCEDURES. Continued.

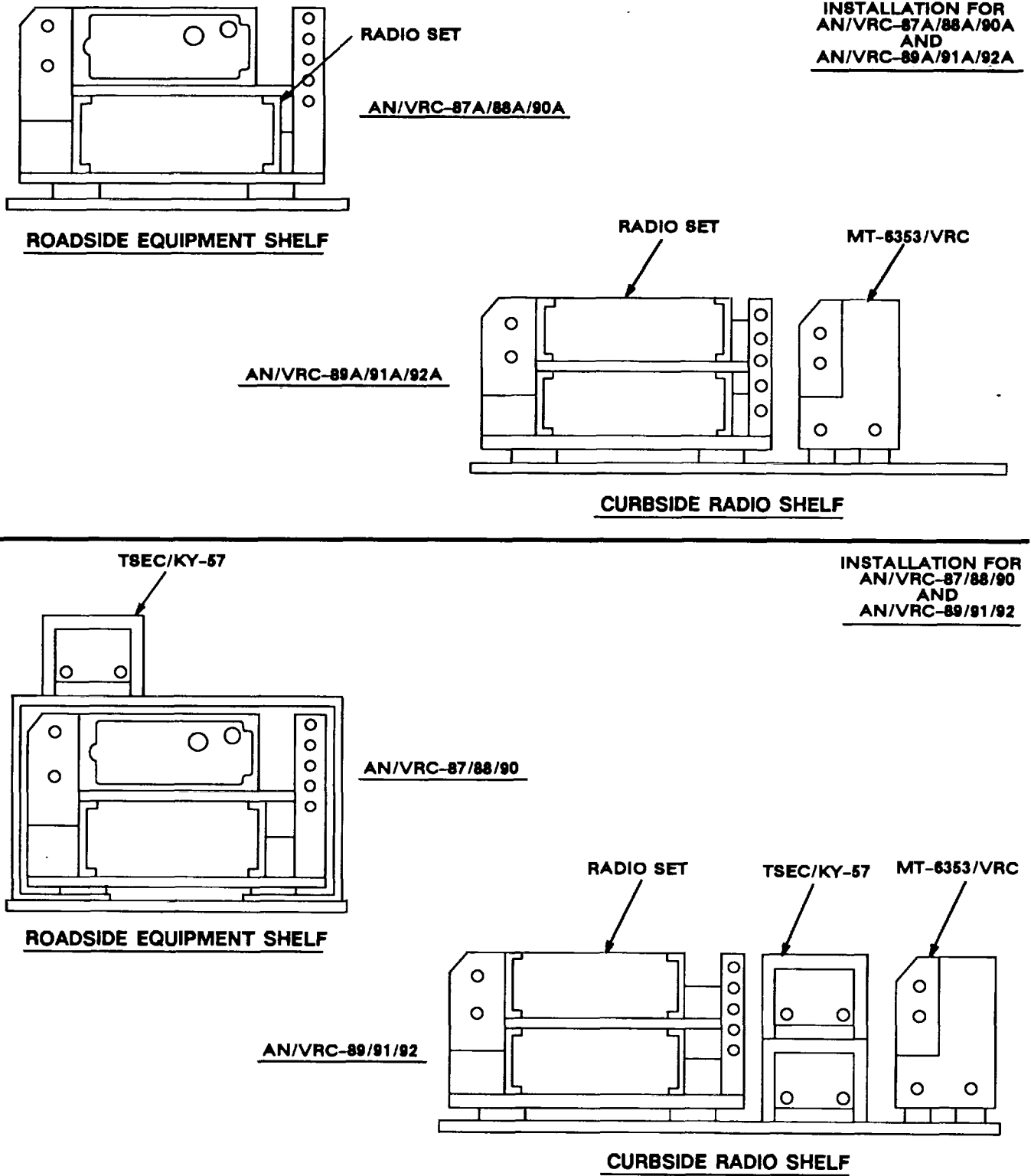


Figure 5-1(2). MK and Radio Installation: Radio Equipment Locations

5.1 Installation of Antenna AS-3900/VRC (antenna). Use the following procedure to install rear and forward antenna(s). See figure 5-1 (1) for locations.

5.1.1 Installation of Antenna Base. Perform steps a thru h to install forward antenna bracket and loop clamps; i thru m to install two rear mounting brackets; and n thru r to install forward and rear antenna bases.

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. Hole for grommet (12).	Using dimensions shown, drill a 1 1/4 in diameter hole through fiberglass top. See figure 5-2 (1).	Tools: Electric drill and 1 1/4 in drill bit.
b. Mounting holes for antenna bracket (10) and mounting bracket (11).	Using dimensions shown and antenna bracket as template, drill four 11/32 in diameter holes through forward road-side wall.	Drill two top holes through outer and inner walls and two bottom holes through outer wall only. Tools: Electric drill and 11/32 in drill bit.

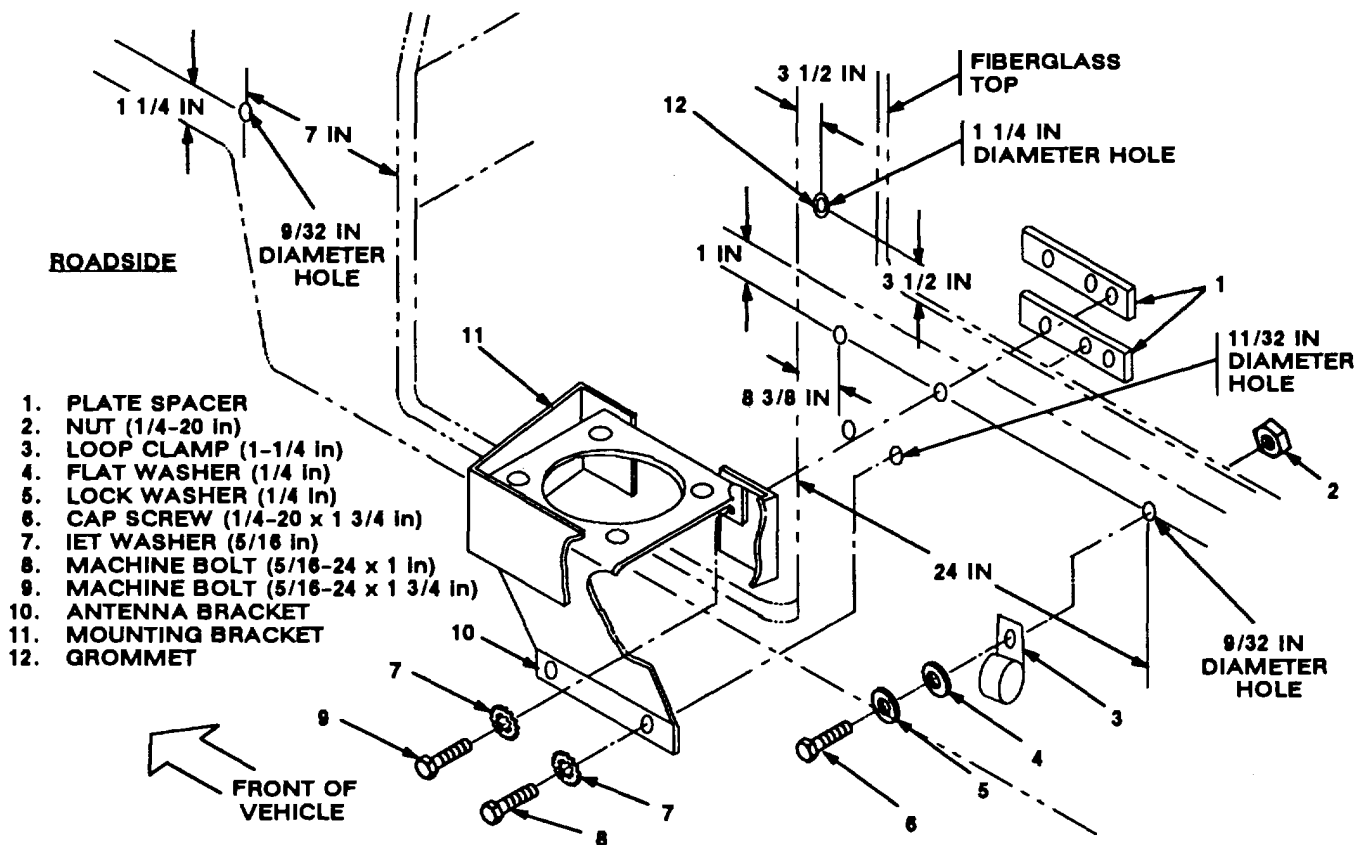


Figure 5-2. (1). Antenna Base Installation: Installing Forward Antenna Bracket and Loop Clamps

5.1.1 Installation of Antenna Base. Continued

ITEM	ACTION	REMARKS
c. Mounting holes for loop clamps (3).	Using dimensions shown, drill four 9/32 in diameter holes (two on each side) through roadside and curbside fenders. See figures 5-2 (1) for dimensions and 5-2 (2) for loop clamp location(s).	Clamps will be used to tie down antennas. Tools: Electric drill and 9/32 in drill bit.
d. Grommet (12).	Install to hole drilled in step a. See figure 5-2 (1).	
e. Mounting bracket (11).	Align with two holes of antenna bracket (10); then place over holes drilled in step b.	
f. Machine bolt (9), IET washers (7) and plate spacer (1).	Install and secure to top right hole in antenna bracket (10), mounting bracket (11) and vehicle wall.	Tools: 1/2 in socket.
g. Two machine bolts (8), two IET washers (7) and place spacer (1).	Install and secure to bottom holes in antenna bracket (5) and vehicle wall.	Tools: 1/2 in socket.
h. Four loop clamps (3), four cap screws (6), four lock washers (5), four flat washers (4) and four nuts (2).	Install to holes drilled in step c.	Tools: 7/16 in socket and 7/16 in open/box wrench.

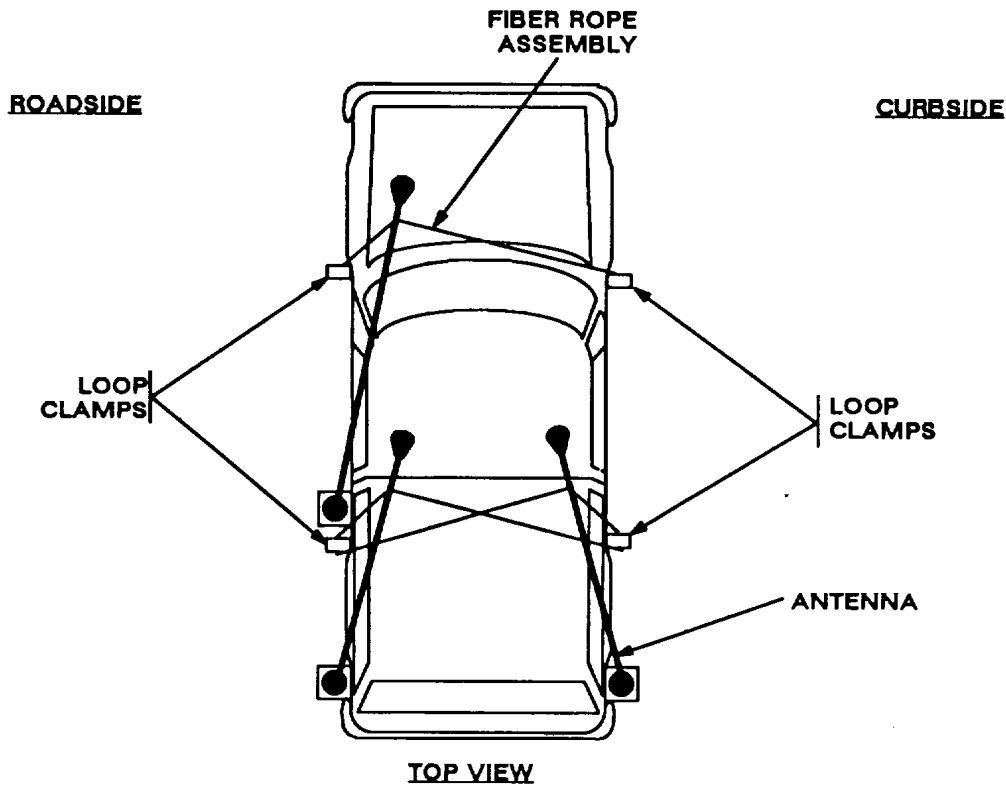


Figure 5-2(2). Antenna Base Installation: Installing Loop Clamps for Tying Down Antennas

5.1.1 Installation of Antenna Base. Continued

ITEM	ACTION	REMARKS
i. Existing antenna bracket and mounting hardware.	Temporarily remove from rear fender. See figure 5-2 (3).	
j. Mounting bracket (2).	Align with two top holes of antenna bracket; then place over existing mounting holes in rear fender.	
k. Existing mounting hardware removed in step i.	Install and secure to top right hole in existing antenna bracket and mounting bracket (2); and bottom two holes in antenna bracket.	
l. Existing grommet.	Remove and discard from cable hole.	Existing grommet not shown.
m. Grommet (1).	Install to existing cable hole.	

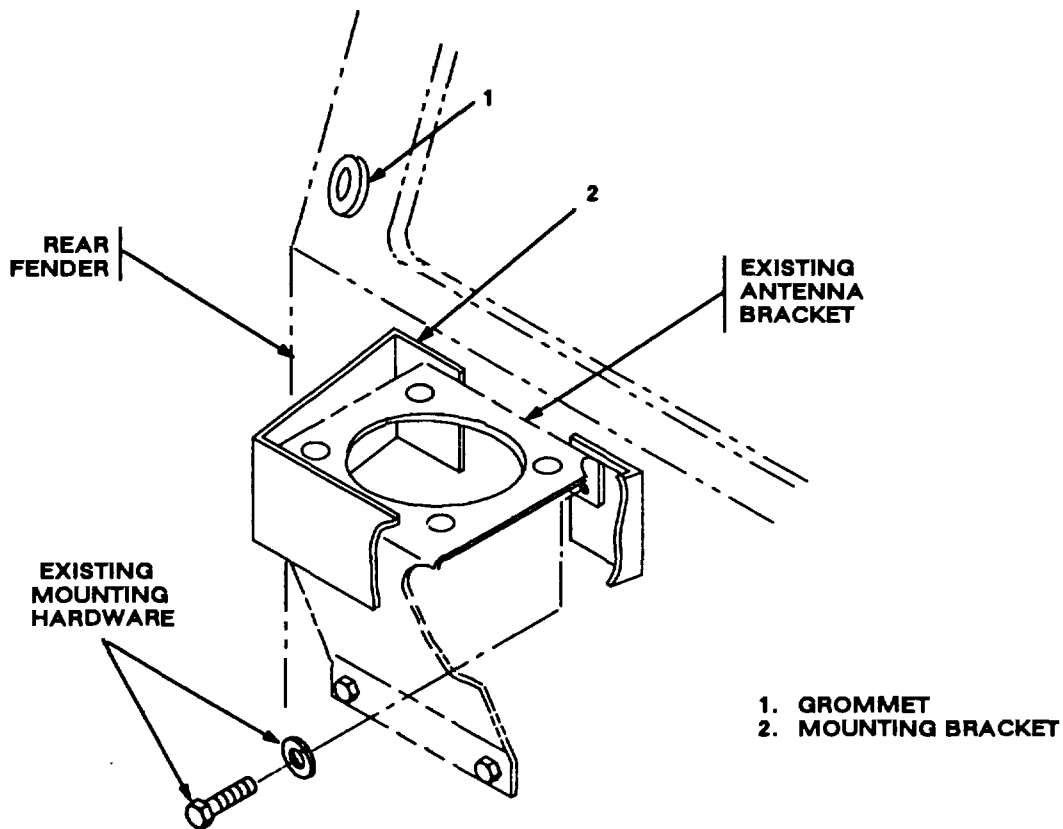


Figure 5-2(3). Antenna Base Installation: Installing Rear Mounting Brackets

5.1.1 Installation of Antenna Base. Continued

ITEM	ACTION	REMARKS
n. Gasket (4).	Place on antenna bracket and align mounting holes. See figure 5-2 (4)	
o. Antenna base (1).	Place on top of gasket (4) and antenna bracket: then align mounting holes.	
p. Four cap screws (2), eight IET washers (3) and four nuts (5).	Install and secure to antenna base (1) and antenna bracket.	Tools: 9/16 in socket and 9/16 in open/box wrench.
q. Rear antenna bases: Groud strap (8), loop clamp (6), two IET washers (7) and existing bolt (removed in step l).	Install (without securing) to top left hole in antenna bracket and mounting bracket (9).	Tools: 1/2 in socket.
r. Forward antenna base: Ground strap (8), loop clamp (6), two IET washers (7) and machine bolt (5/16-24 x 1 3/4).	Install (without securing) to top left hole in antenna bracket and mounting bracket (9).	Tools: 1/2 in socket.

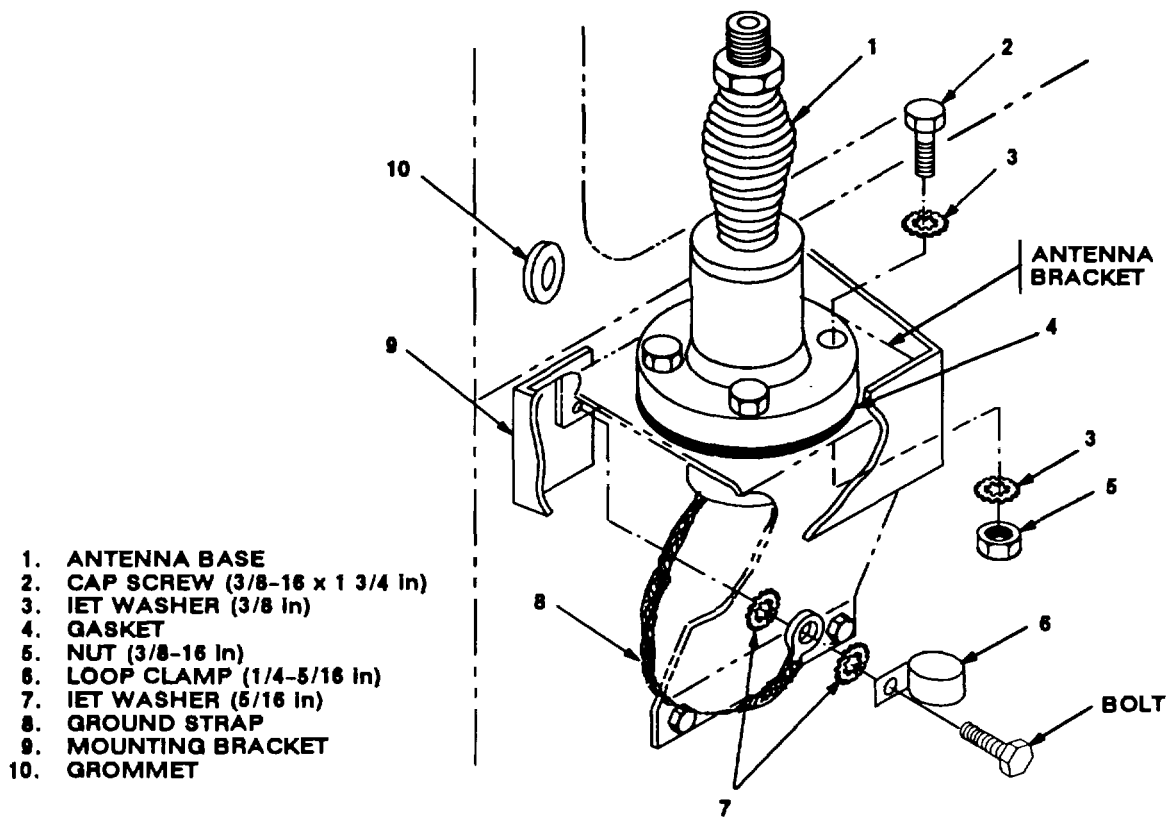
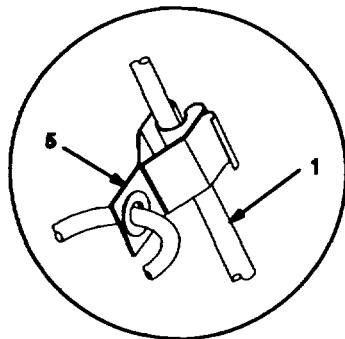


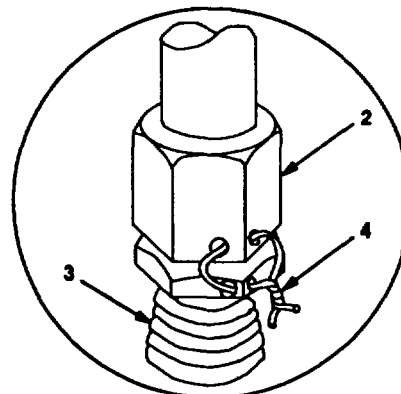
Figure 5-2(4). Antenna Base Installation: Installing Forward and Rear Antenna Bases

5.1.2 Installaton of Top Antenna Assembly. The top potion of the antenna includes a lower element and an upper eement (with installed cap). Use the following procedure to assemble, install and tie down all antennas.

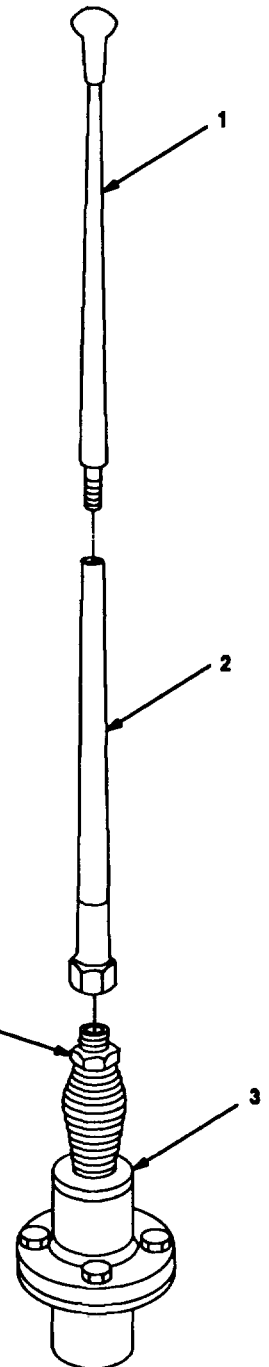
ITEM	ACTION	REMARKS
a. Antenna elements (1, 2).	Apply silicone compound to element threads and assemble. See figure 5-3.	
b. Antenna element (2).	Install and hand-tighten to antenna base (3).	
c. Lock wire (4).	Install to antenna element (2) and antenna base (3). See figure 5-3, detail A.	
	Cut and remove excess wire with diagonal cutting pliers.	
d. Fiber rope assembly (5).	Attach clip to antenna element (1). See figure 5-3, detail B. Tie rope to loop clamps on vehicle (previously ininstalled in section 5.1.1, step h) to position antenna in desired location. See figure 5-2 (2).	



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. Angle brackets (3, 10), two cap screws (2), two lock washers (6) and two nuts (7).	Install and secure to electrical equipment shelf (1). See figure 5-4.	Tools: 9/16 in socket and 9/16 in open/box wrench.
b. Angle bracket (4), cap screw (2), lock washer (6) and nut (7).	Install and secure to angle bracket (3).	Tools: 9/16 in socket and 9/16 in open/box wrench.
c. Angle bracket (8), cap screw (2), lock washer (6) and nut (7).	Install and secure to angle bracket (10).	Tools: 9/16 in socket and 9/16 in open/box wrench.
d. Existing mounting hardware in forward edge of window frame.	Temporarily remove.	

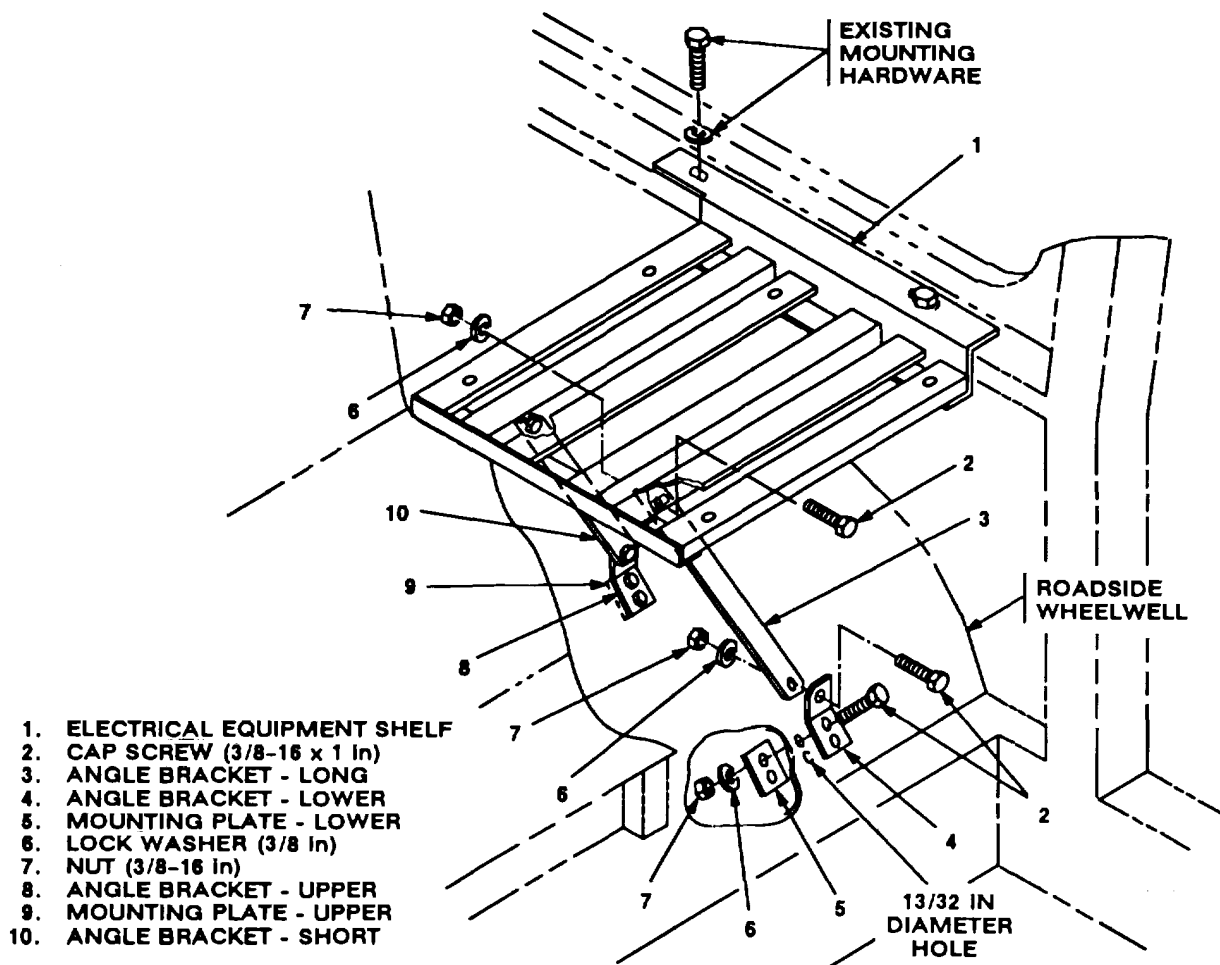


Figure 5-4. Electrical Equipment Shelf Installation: Rear Roadside

5.2 Installation of Electrical Equipment Shelf. Continued

ITEM	ACTION	REMARKS
e. Mounting holes for angle brackets (4,8).	Temporarily secure electrical equipment shelf (1) to window frame with existing mounting hardware; then place angle brackets on wheelwell and mark four points to drill. See figure 5-4.	
f. Electrical equipment shelf (1) and existing mounting hardware.	Temporarily remove.	
g. Marked hole pattern on wheelwell.	Drill four 13/32 in diameter holes.	Tools: Electric drill and 13/32 in drill bit.
h. Electrical equipment shelf (1).	Place on window frame and aline holes in angle brackets (4, 8) with holes drilled in step g.	
i. Existing mounting hardware.	Install and secure to electrical equipment shelf (1) and window frame.	
j. Four cap screws (2).	Insert through holes in angle brackets (4, 8) and holes drilled in step g.	
k. Mounting plate (5), two washers (6) and two nuts (7).	lock From under wheelwell, install and secure to two cap screws (2) in angle bracket (4).	Tools: 9/16 in socket and 9/16 in open/box wrench.
l. Mounting plate (9), two washers (6) and two nuts (7).	lock From under wheelwell, install and secure to two cap screws (2) in angle bracket (8).	Tools: 9/16 in socket and 9/16 in open/box wrench.

5.3 Installation of Rear Loudspeaker - Control Unit LS-671VRC (speaker).

ITEM	ACTION	REMARKS
a. Existing radio shelf.	Using dimensions shown, drill a 11/32 in diameter hole through bottom of front angle support. See figure 5-5.	Tools: Electric drill and 11/32 in drill bit.
b. Speaker (4).	Position top under hole drilled in step a.	
c. Machine bolt (1), lock washer (2) and flat washer (3).	Install and secure to speaker (4) and radio shelf.	Tools: 1/2 in socket.
d. Handset (5).	Connect and secure to speaker (4) connector J2.	

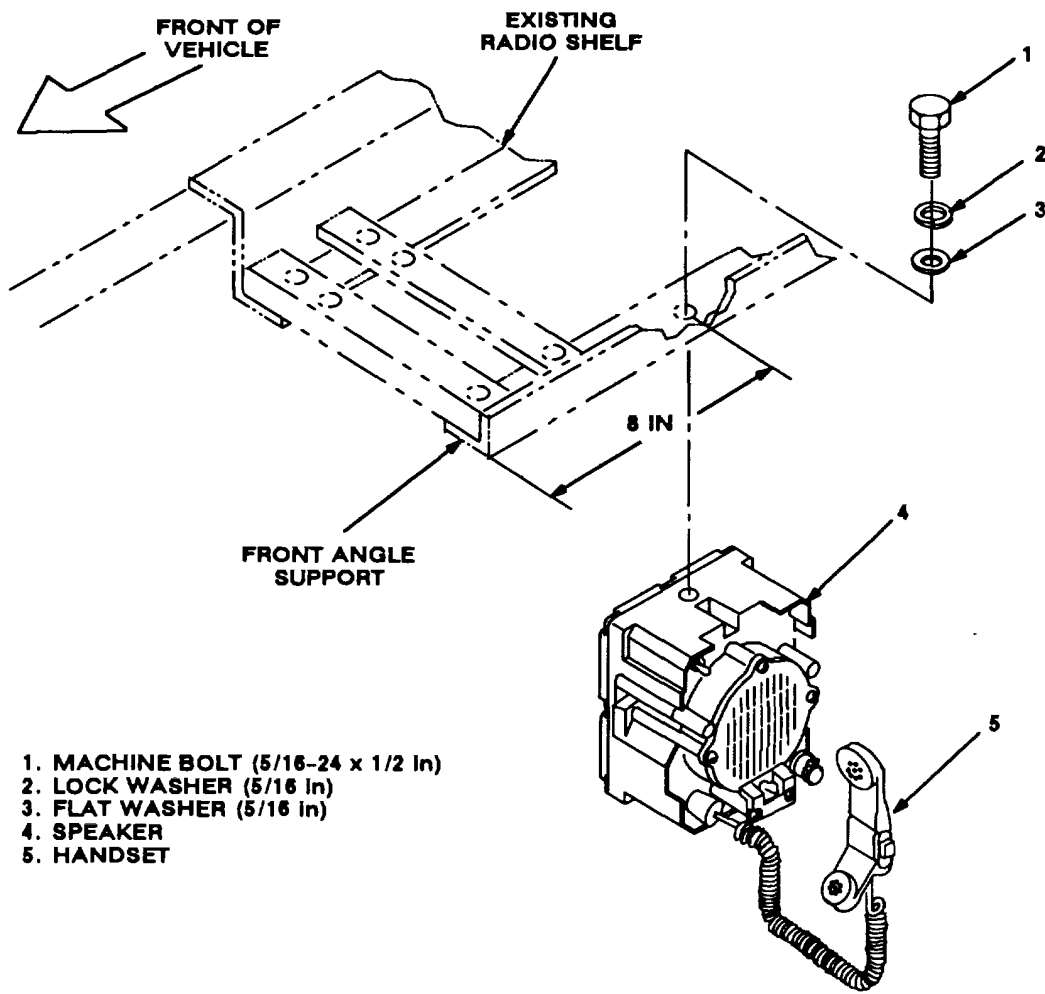


Figure 5-5. Rear Speaker Installation: Rear Curbside

5.4 Installation of Mounting Base, Electrical Equipment MT-352/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 shelves should be removed before installing mounting bases. See figure 5-6 and perform the following steps to install both curbside and roadside mounting bases.

1. MOUNTING BASE
2. NUT (5/16-24 in)
3. IET WASHER (5/16 in)
4. PLATE SPACER
5. THUMBSCREW
6. RIM CLENCHING CLAMP
7. MACHINE BOLT (5/16-24 x 1 in)

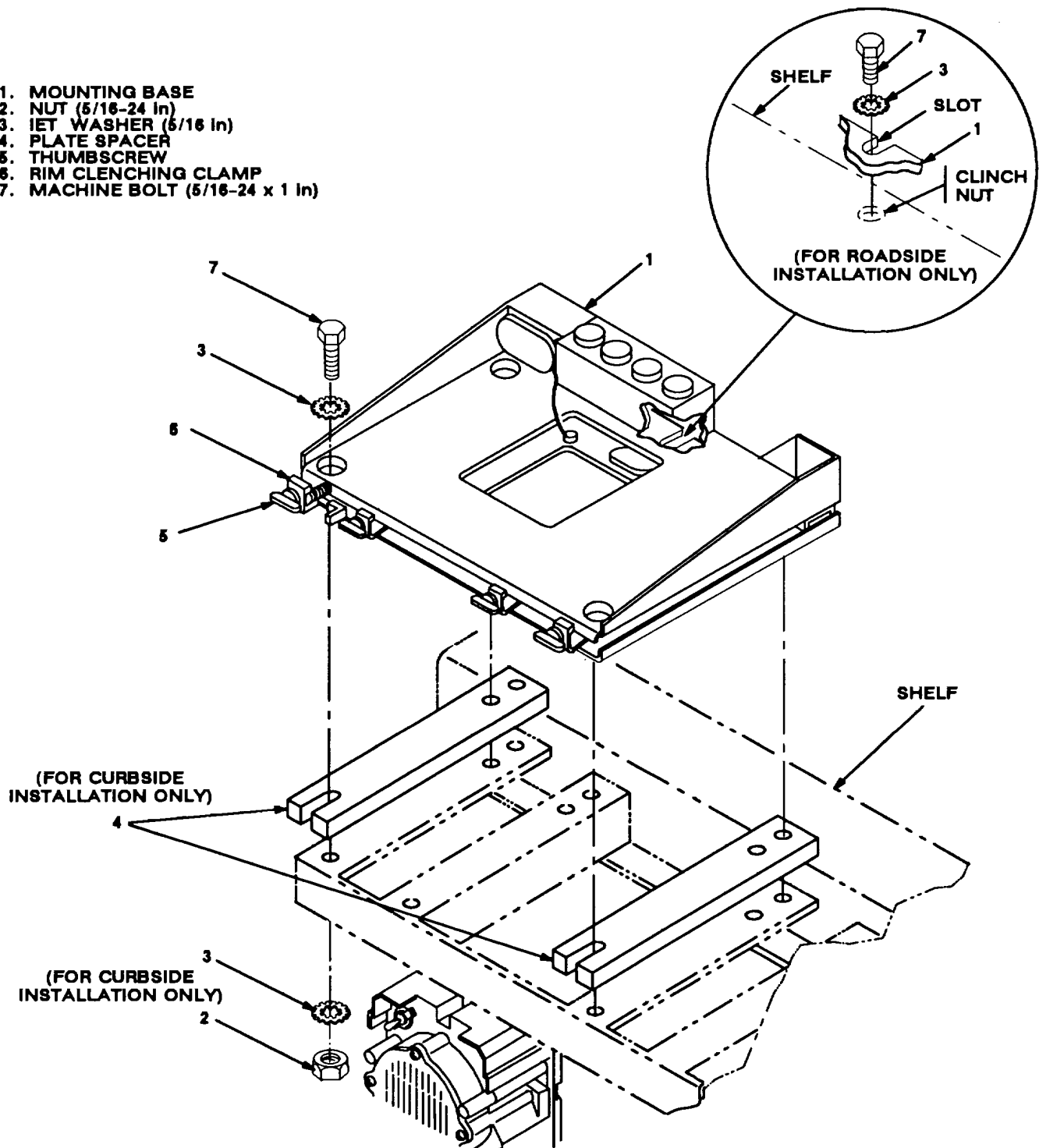


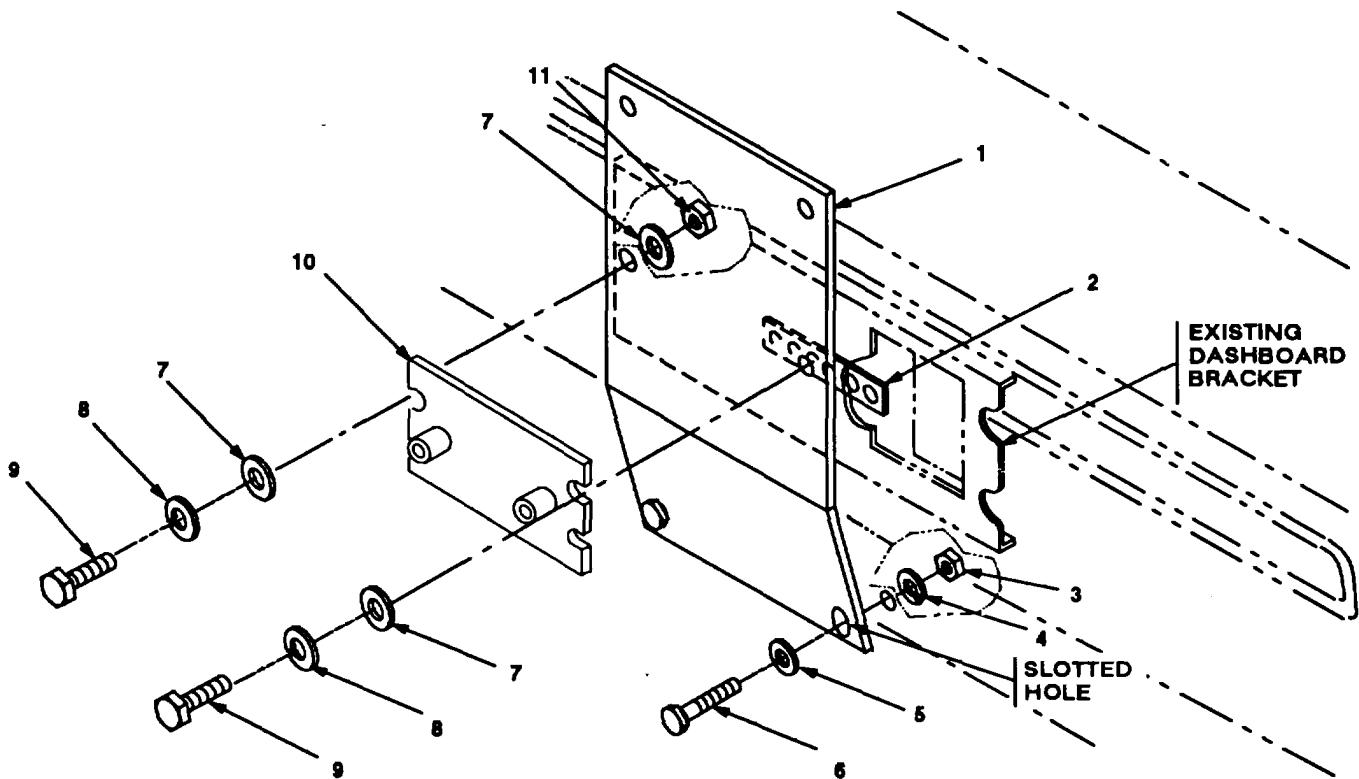
Figure 5-6. Mounting Base Installation: Curbside and Roadside

5.4 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 (ET) washer during installation, and to the area of contact where IET washer is to be placed.		
a. Curbside mounting base (1).	Perform steps b thru f.	
b. Two plate spacers (4).	Place on existing radio shelf; then aline rear holes and front slots with matching hole pattern in shelf. See figure 5-6.	
c. Two outer thumbscrews (5).	Turn ccw until both sets of threads have cleared center of holes.	
d. Mounting base (1).	Place on top of two place spacers (4); then aline holes with rear holes and front slots in plate spacers.	
e. Four machine bolts (7), eight IET washers (3) and four nuts (2).	Install and secure to mounting base (1) and shelf.	Tools: 1/2 in socket and 1/2 in open/box wrench.
f. Two outer thumbscrews (5).	Tighten and secure to rim clenching clamp (6) and mounting base (1).	
g. Roadside mounting base (1).	Place on electrical equipment shelf; then perform steps h thru k.	
h. Two outer thumbscrews (5).	Turn ccw until both sets of threads have cleared center of holes. See figure 5-6.	
i. Mounting base (1).	Aline four holes and rear slot with matching holes in shelf.	
j. Five machine bolts (7) and five IET washers (3).	Install and secure to mounting base (1) and shelf.	Tools: 1/2 in socket and 1/2 in open/box wrench.
k. Two outer thumbscrews (5).	Tighten and secure to rim clenching clamp (6) and mounting base (1).	

5.5 Installation of Control Monitor C-112911VRC (control-monitor) and Front Speaker.

ITEM	ACTION	REMARKS
a. Mounting bracket (1).	Place against dashboard bracket and aline holes to locate two existing screws in lower dashboard; then temporarily set mounting bracket aside. See figure 5-7 (1).	Screws should be visible through two slotted holes.
b. Two existing screws (located in step a.)	Remove and discard.	
c. Two existing holes in lower dashboard.	If required, enlarge to 9/32 in diameter.	Tools: Electric drill and 9/32 in drill bit.
d. Mounting bracket (1).	Reset against dashboard bracket and aline holes.	



- 1. MOUNTING BRACKET
- 2. NUT STRIP
- 3. NUT 1/4-20 In
- 4. LOCK WASHER (1/4 IN)
- 5. FLAT WASHER (1/4 In)
- 6. CAP CREW (114-20 x 3/4 In)

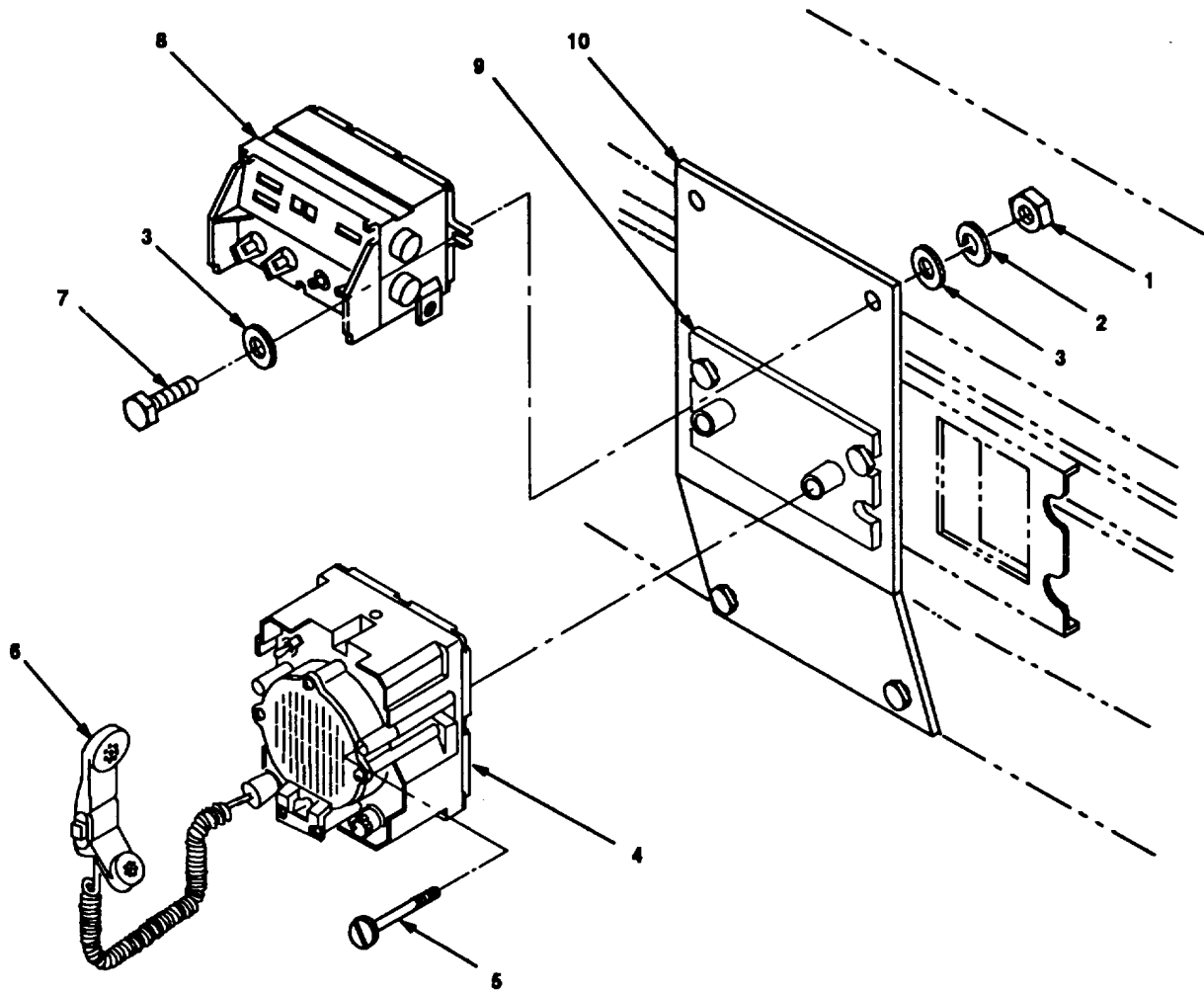
- 7. FLAT WASHER (5/16 In)
- 8. LOCK WASHER (5/16 in)
- 9. MACHINE BOLTS (5/16-24 x 1 In)
- 10. MOUNTING PLATE
- 11. NUT (5/16-24 In)

Figure 5-7. (1). Control-Monitor and Front Speaker Installation: Installing Bracket and Plate

5.5 Installation of Control Monitor C-11291/VRC (control-monitor) and Front Speaker. Continued.

ITEM	ACTION	REMARKS
e. Two cap screws (6), two flat washers (5), two lock washers (4) and two nuts (3).	Temporarily hand tighten to slotted holes in mounting bracket (1) and lower dashboard. See figure 5-7 (1).	Helps hold mounting bracket in place while installing upper portion to dashboard bracket.
f. Two middle holes in mounting bracket (1).	Aline with matching holes in dashboard bracket.	
g. Mounting plate (10).	Aline top slots with middle mounting holes in mounting bracket (1).	
h. Machine bolt (9), lock washer (8), two flat washers (7) and nut (11).	Install and secure top left slot of mounting plate (10) to mounting bracket (1) and dashboard bracket.	Tools: 1/2 in socket and 1/2 in open/box wrench.
i. Nut strip (2).	Insert through square opening in dashboard bracket; then aline with two center holes in dashboard bracket and right hole in mounting bracket (1).	
j. Machine bolt (9), lock washer (8) and flat washer (7).	Install and secure top right slot of mounting plate (10) to mounting bracket (1), dashboard bracket and nut strip (2).	Tools: 1/2 in socket.
k. Mounting hardware installed in step e.	Securely tighten.	Tools: 7/16 in socket and 7/16 in open/box wrench.
l. Speaker (4).	Place on mounting plate (9). See figure 5-7 (2).	
m. Two externally-relieved body screws (5).	Thread through speaker (4) and secure to mounting plate (9).	Tools: Flatblade screw-driver.
n. Handset (6).	Connect and secure to speaker (4) connector J2.	
o. Control-monitor (8).	Aline slots with top mounting holes in mounting bracket (10).	
p. Two machine bolts (7), four flat washers (3), two lock washers (2) and two nuts (1).	Install and secure to control-monitor (8) and mounting bracket (10).	Tools: 1/2 in socket and 1/2 in open/box wrench.

5.5 Installation of Control Monitor C-11291/VRC (control-monitor) and Front Speaker. Continued.



- 1. NUT (5/16-24 in)
- 2. LOCK WASHER (5/16 in)
- 3. FLAT WASHER (5/16 in)
- 4. SPEAKER
- 5. BODY SCREW
- 6. HANDSET
- 7. MACHINE BOLT (5/16 - 24 x 1 in)
- 8. CONTROL-MONITOR
- 9. MOUNTING PLATE
- 10. MOUNTING BRACKET

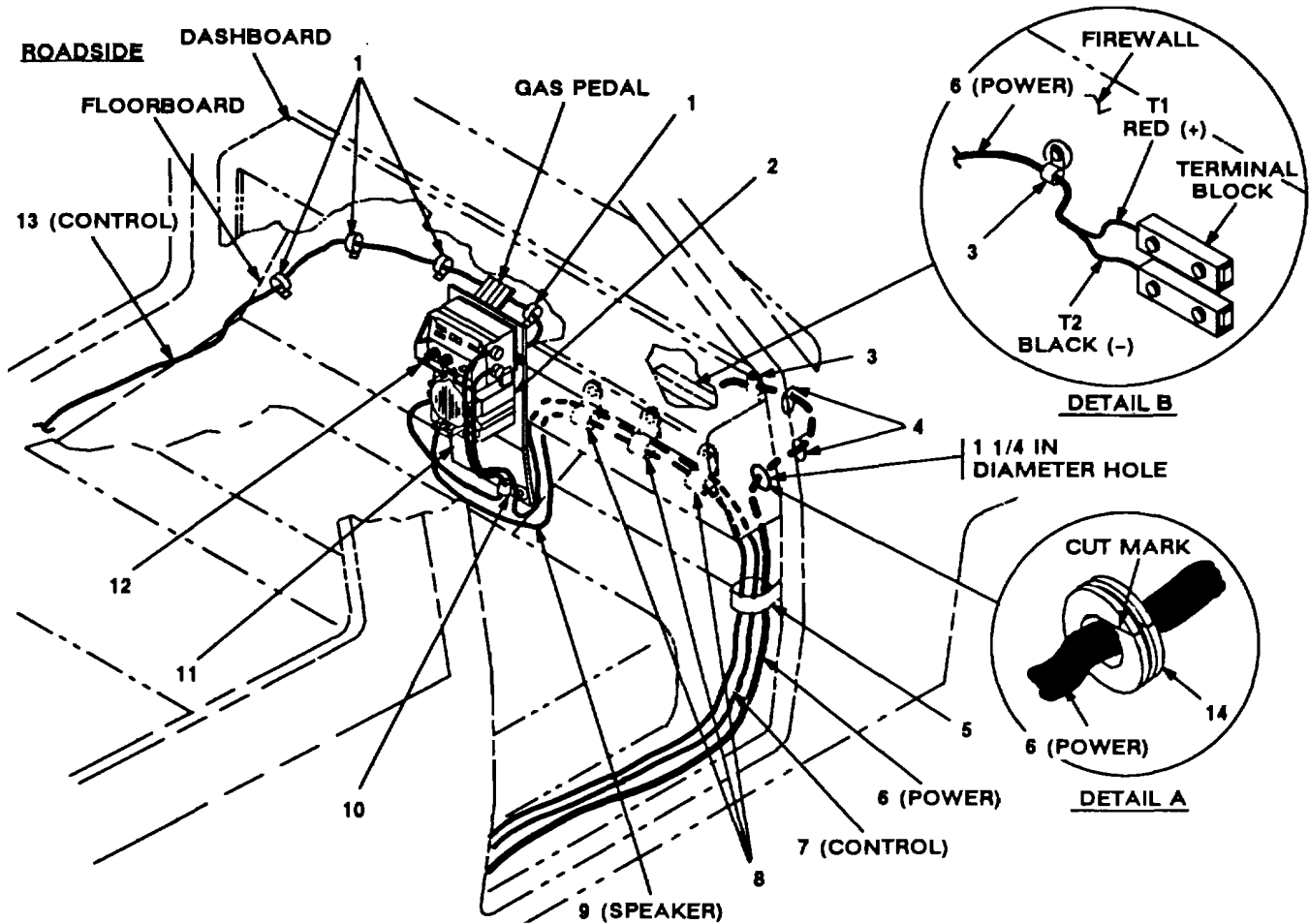
Figure 5-7(2). Control-Monitor and Front Speaker Installation: Installing Speaker and Control-Monitor

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

WARNING

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

ITEM	ACTION	REMARKS
a. Existing grommet and grommet holes in upper right floorboard.	Remove grommet and enlarge hole to 1 1/4 in diameter. See figure 5-8 (1) for location.	Electric drill and 1 1/4 in drill bit.



- | | |
|---|---|
| 1. LOOP CLAMP (3/4-5/15 In)
TAPPING SCREW 1/4-14 X 3/4 In)
LOCK WASHER (1/4 in) | 8. LOOP CLAMP (3/4-14 In)
TAPPING SCREW (14-14 x 3/4 In)
LOCK WASHER (1/4 in) |
| 2. SPEAKER | 9. SPEAKER CABLE, CX-13292/VRC (14 FT, 0 IN) |
| 3. LOOP CLAMP (1 1/4-1/4 in) | 10. LOOP CLAMP (3/4-5/16 In) |
| 4. TIEDOWN STRAP | 11. MOUNTING BRACKET |
| 5. LOOP CLAMP (1-1/4 in)
TAPPING SCREW (1/4-14 x 3/4 in)
LOCK WASHER (1/4 in) | 12. CONTROL-MONITOR |
| 6. POWER CABLE, CX-13302/VRC (13 FT, 0 IN) | 13. CONTROL CABLE, CX-13290/VRC (15 F, 0 IN) |
| 7. CONTROL CABLE, CX-13290/VRC (15 FT, 0 IN) | 14. GROMMET (1/2 In) |

Figure 5-8. (1). Cable Installation: Front Passenger and Driver Area

5.6 Installation of Cables. Continued

ITEM	ACTION	REMARKS
b. Power cable (6) terminal leads: T1 (red) and T2 (black).	Insert through hole enlarged in step a. See figure 5-8 (1).	
c. Grommet (14).	Cut through on mark shown; then wrap around power cable (6) and install to hole drilled in step a. See figure 5-8 (1), detail A.	Tools: Pocket Knife.
d. Power cable (6) terminal leads: T1 (red) and T2 (black).	Connect and secure to proper terminal lugs on terminal block. See figure 5-8 (1), detail B.	Red (+) lead connects to top terminal lugs. Black (-) lead connects to bottom terminal lugs.
e. Loop clamp (3) and existing mounting hardware.	Wrap clamp around power cable (6) and existing wiring harness; then install to existing mounting hole in firewall. See figure 5-8 (1), detail B, for location(s).	
f. Two tiedown straps (4).	Wrap around power cable (6), then install loosely to existing wiring harness. See figure 5-8 (1) for location(s).	
g. Control cable (7) connector P1.	Connect and secure to control-monitor (12) connector J1. See figure 5-8 (1).	
h. Control cable (13) connector P1.	Connect and secure to control-monitor (12) connector J2.	
i. Loop clamp (10) and mounting hardware previously installed in section 5.4, step e.	Wrap clamp around control cable (13); then reinstall to bottom right slotted hole in mounting bracket.	Tools: 7/16 in socket and 7/16 in open/box wrench.
j. Speaker cable (9) connector Pi connector J1.	Connect and secure to speaker (2) connector J1.	
k. Control cable (7) and speaker cable (9).	Route across upper floorboard to curbside doorway.	
l. Mounting holes for loop clamps (5, 8).	Drill four 13/64 in diameter holes (three in upper right floorboard and one near curbside doorway). See figure 5-8 (1) for location(s).	Tools: Electric drill and 13/64 in drill bit.
m. Three loop clamps (8), three pan-head tapping screws (1/4-14 x 3/4 in) and three lock washers (1/4 in).	Wrap clamps around control cable (7) and speaker cable (9); then install to three holes drilled in step l.	Tools: Phillips screwdriver.
n. Power cable (6), speaker cable (9) and control cable (7).	Route along inner edge of curbside doorway to rear passenger area. See figure 5-8 (1).	

5.6 Installation of Cables. Continued

ITEM	ACTION	REMARKS
o. Loop clamp (5), pan-head tapping screw (1/4-14 x 3/4 in) and lock washer (1/4 in).	Wrap clamp around control cable (7), speaker cable (9) and power cable (6); then install to one hole drilled in step l (near curbside doorway). See figure 5-8 (1) for location(s).	Tools: Phillips screwdriver.
p. Mounting holes for loop clamps (1).	Drill four 13/64 in diameter holes in upper left floorboard.	Tools: Electric drill and 13/64 in drill bit.
q. Control cable (13).	Route under gas pedal and across upper left floorboard to inner edge of roadside doorway. See figure 5-8 (1).	
r. Four loop clamps (1), four pan-head tapping screws (1/4-14 x 3/4 in) and four lock washers (1/4 in).	Wrap clamps around control cable (13); install to holes drilled in step p. See figure 5-8 (1) for location(s).	
s. Control cable (13).	Route along floorboard of roadside doorway to electrical equipment shelf (17). See figure 5-8 (2).	
t. Control cable (13) connector P2.	Position on top of mounting base (18).	
u. Mounting holes for cable protector (14).	Place cable protector over control cable (13); then drill ten 9/32 in diameter holes through floorboard of roadside doorway using cable protector as a template.	Tools: Electric drill and 9/32 in drill bit.
v. Ten cap screws (10), ten lock washers (11), ten flat washers (12) and ten nuts (15).	Install and secure to cable protector (14) and floorboard.	Tools: 7/16 in socket and 7/16 in open/box wrench.
w. Loop clamp (5) and existing mounting hardware.	Wrap clamp around control cable (13); then install to existing hole near rear edge of roadside doorway. See figure 5-8 (2) for location(s).	
x. RF cable (3) connector P1, figure 5-8 (2).	Insert through grommet (10) and loop clamp (6), figure 5-2 (4); then connect and secure to antenna base (1) connector J1.	
y. RF cable (3).	Route along window seal and rear wheelwell to roadside doorway. See figure 5-8 (2).	
z. Three loop clamps (2) and existing mounting hardware.	Wrap clamps around RF cable (3); then install to existing holes below window seal. See figure 5-8 (2) for location(s).	

5.6 Installation Of Cables. Continued

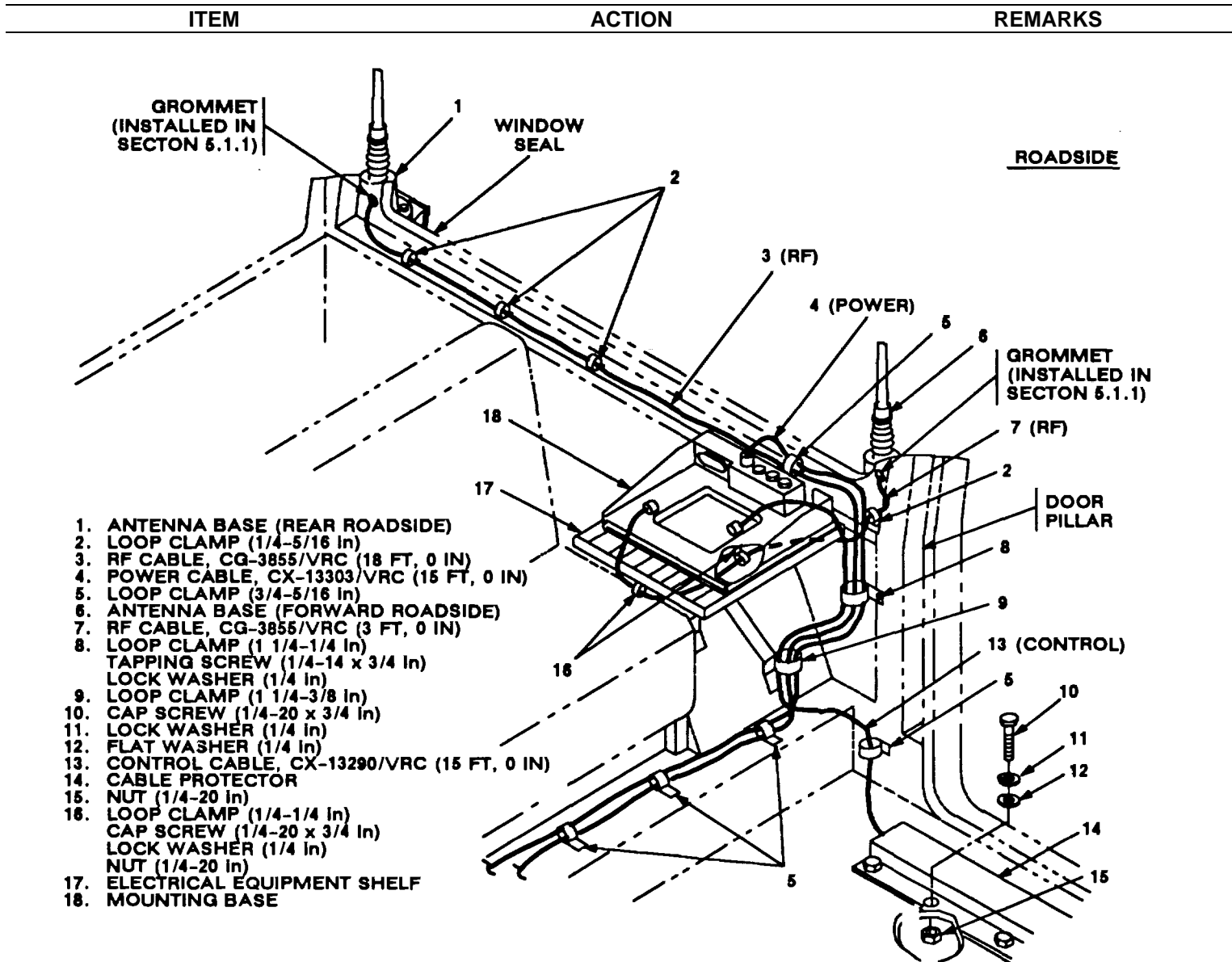


Figure 5-8(2). Cable Installation: Rear Roadside Passenger Area

- aa. Power cable (4) connector P2.
- ab. RF cable (3) and power cable (4).
- ac. Loop clamp (5) and existing mounting hardware.

5.6 Installation of Cables. Continued

ITEM	ACTION	REMARKS
ad. Mounting hole for loop clamp (8).	Drill a 13/64 in diameter hole in roadside door pillar. See figure 5-8 (2) for location (s).	Tools: Electric drill and 13/64 in drill bit.
ae. Loop clamp (8), pan-head tapping screws (1/4-14 x 3/4 in) and lock washer (1/4 in).	Wrap clamp around RF cable (3), power cable (4) and control cable (13); then install to hole drilled in step ad.	Tools: 7/16 in socket.
af. Loop clamp (9) and mounting hardware previously installed in section. 5.2, step b.	Wrap clamp around control cable (13), power cable (4) and RF cable (3); then install to electrical equipment shelf.	Tools: 9/16 in socket and 9/16 open/box wrench.
ag. RF cable (7) connector P1, figure 5-8 (2).	Insert through grommet (10) and loop clamp (6), figure 5-2 (4); then connect and secure to antenna base (1) connector J1.	
ah. RF cable (7).	Route below electrical equipment shelf (17) and position P2 connector on top of mounting base (18). See figure 5-8 (2).	
ai. Loop clamp (2) and existing mounting hardware.	Wrap clamp around RF cable (7); then install to existing hole in forward edge of electrical equipment shelf (17). See figure 5-8 (2) for location(s).	
aj. Two loop clamps (16), two cap screws (1/4-20 x 3/4 in), two lock washers (1/4 in) and two nuts (1/4-20 in).	Wrap clamps around RF cable (7); then install to existing holes in electrical equipment shelf (17).	Tools: 7/16 in socket and 7/16 in open/box wrench.
ak. Six loop clamps (5, 8) and existing mounting hardware.	Wrap clamps around RF cable (3) and power cable (4); then install to existing holes in rear floorboard. See figures 5-8 (2) and 5-8 (3) for location(s).	
al. Cable protector (12).	Place over power cable (6), speaker cable (9) and control cable (7); then align with existing holes. See figure 5-8 (3).	
am. Ten cap screws (16), ten lock washers (15), ten flat washers (14) and ten nuts (13).	Install and secure to cable protector (14) and curbside floorboard.	Tools: 7/16 in socket and 7/16 in open/box wrench.
an. Power cables (4, 6), RF cable (3), speaker cable (9) and control cable (7).	Route up curbside door pillar to radio shelf; then position on top of mounting base (2).	

5.6 Installation Cables. Continued

ITEM	ACTION	REMARKS
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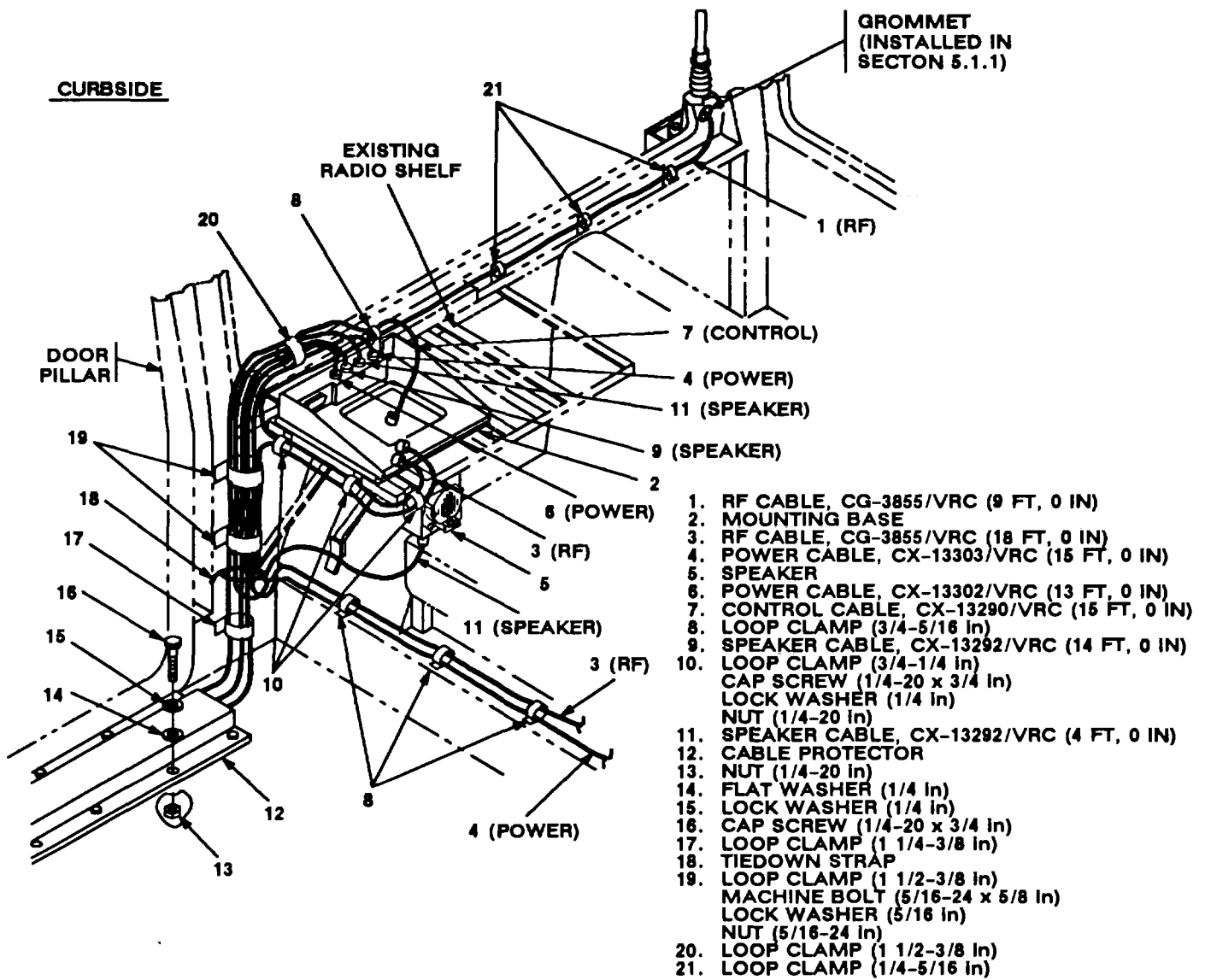


Figure 5-8(3). Cable Installation: Rear Curbside Passenger Area

- | | | |
|-----|---|--|
| ao. | Speaker cable connector P1. | (11) Connect and secure to speaker (5) connector J1. See figure 5-8 (3). |
| ap. | Speaker cable (11). | Route under left side of radio shelf and up curbside door pillar to top of mounting base (2). |
| aq. | Loop clamp (17) and existing mounting hardware. | Wrap clamp around power cable (6), speaker cable (9) and control cable (7); then install to existing mounting hole in door pillar. See figure 5-8 (3) for location(s). |

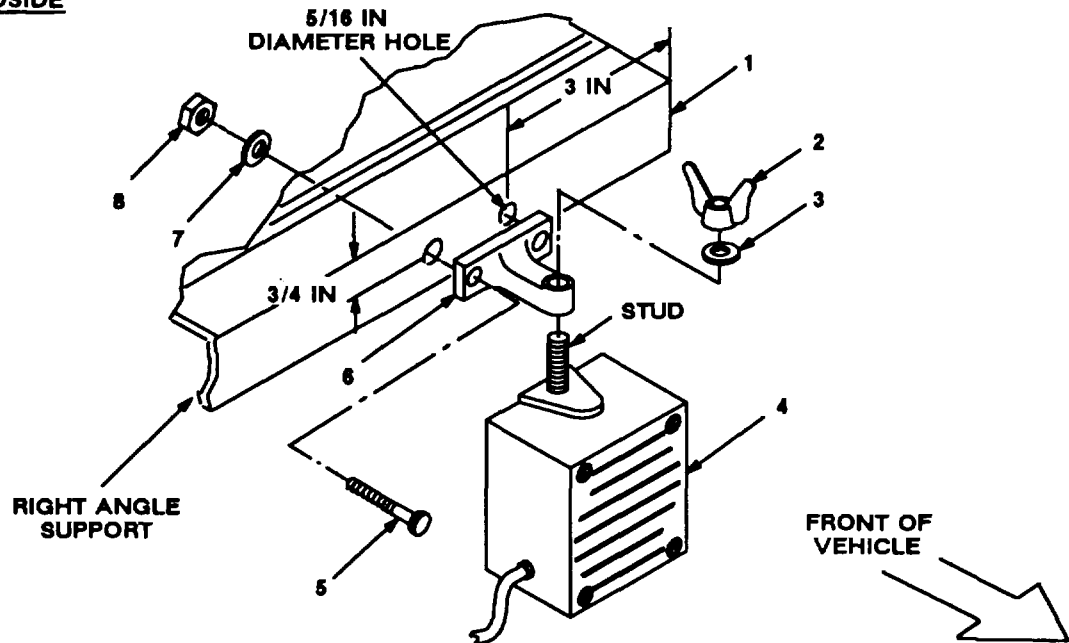
5.6 Installation of Cables. Continued

ITEM	ACTION	REMARKS
ar. Mounting holes for loop clamps (19).	Drill two 11/32 in diameter holes in curbside door pillar. See figure 5-8 (3).	Tools: Electric drill and 11/32 in drill bit.
as. Two loop clamps (19), two machine bolts (5/16-24 x 5/8 in), two lock washers (5/16 in) and two nuts (5/16-24 in).	Wrap clamps around power cable (4, 6), speaker cables (9,11), control cable (7) and RF cable (3); then install to holes drilled in step ar.	Tools: 1/2 in socket and 1/2 in open/box wrench.
at. Speaker cable (9) connector P2.	Connect and secure to mounting base (2) connector J3.	
au. Speaker cable (11) connector P2.	Connect and secure to mounting base (2) connector J4.	
av. Loop clamp (20) and existing mounting hardware.	Wrap clamp around power cable (6) and control cable (7) and speaker cables (9,11); then install to existing hole in window frame.	
aw. RF cable (1) connector P1, figure 5-8 (3).	Insert through grommet (10) and loop clamp (6), figure 5-2 (4); then connect and secure to antenna base (1) connector J1.	
ax. RF cable (1).	Route along window seal to radio shelf; then position P2 connector on top of mounting base (2). See figure 5-8 (3).	
ay. Three loop clamps (21) and existing mounting hardware.	Wrap clamps around RF cable (1); then install to existing hos window fame. See figure 5-8 (3) for location(s).	
az. Loop clamp (8) and existing mounting hardware.	Wrap clamp around RF cable (1) and control cable (7); then install to window frame behind radio shelf.	
ba. Mounting holes for loop clamps (10).	Drill three 9/32 in diameter holes in radio shelf.	Tools: Electric drill and 9/32 in drill bit.
bb. Three loop clamps (10), three cap screws (1/4-20 x 3/4 in), three lock washers (1/4 in) and three nuts (1/4-20 in).	Wrap clamps around RF cables (1, 3); then install to holes drilled n step ba.	Tools: 7/16 in socket and 7/16 in open/box wrench.
bc. Sealant.	Apply to and around previously installed grommets and drilled holes.	
bd. Power cable (6) connector P2.	Connect and secure to mounting base (2) connector J1. See figure 5-8 (3).	

5.7 Installation of Loudspeaker, Permanent Magnet LS-454/U (LS-454U speaker).

ITEM	ACTION NOTE	REMARKS
Items (5), (7) and (8) are not supplied in kit.		
a. Mounting holes for speaker back (6).	Using dimensions shown, drill two 5/16 in diameter holes through right angle support port of electrical equipment shelf (1). See figure 5-9.	Tools: Electrical drill and 5/16 in drill bit.
b. Speaker bracket (6).	Place against angle supposed and align with holes drilled in step a.	
c. Cap screw (5), lock washer (7) and nut (8).	Install and secure to speaker bracket (6) and electrical equipment shelf (1).	Tools: 7/16 in socket and 7/16 in wrench.
d. LS-454/U speaker (4).	Insert stud through speaker bracket (6) hole.	
e. Wing nut (2) and lock washer (3).	Install and secure to LS-454/U speaker (4) stud and speaker bracket (6).	

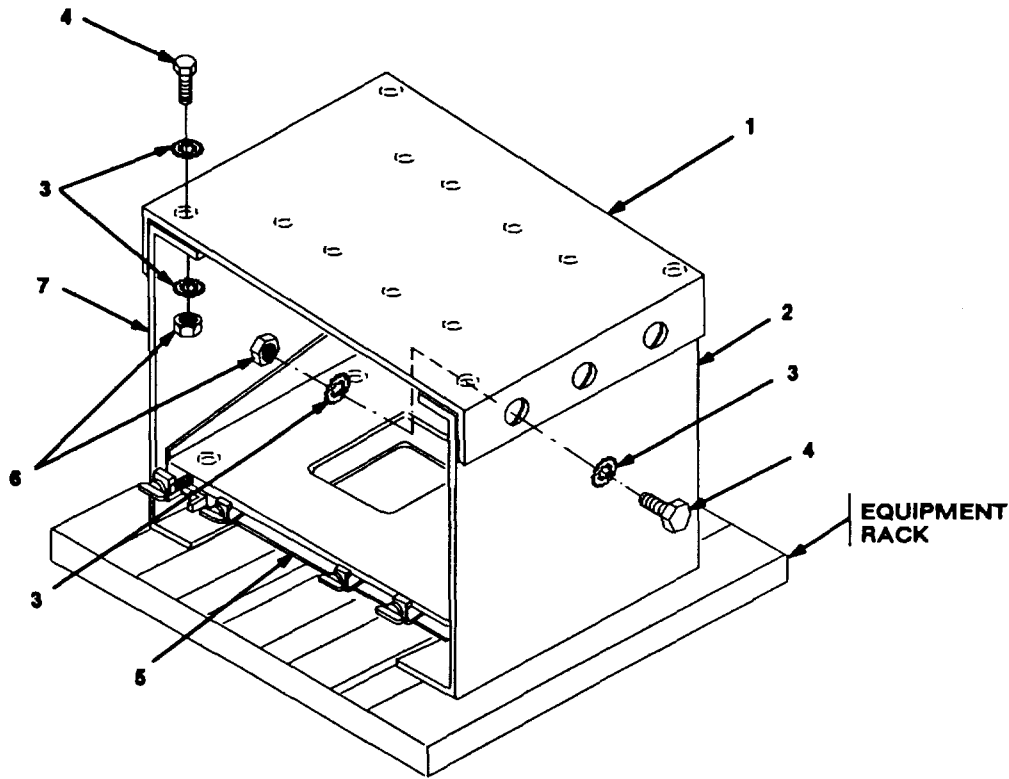
ROADSIDE



- 1. ELECTRICAL EQUIPMENT SHELF
- 2. WING NUT (3/8-24 in)
- 3. LOCK WASHER (3/8 in)
- 4. LS-454/U SPEAKER
- 5. CAP SCREW (1/4-20 x1 in)
- 6. SPEAKER BRACKET
- 7. LOCK WASHER (1/4 in)
- 8. NUT (1/4-20 in)

Figure 5-9. LS-454/U Speaker Installation

5.8 Installation of 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) in the location shown in figure 5-1 (2). Use mounting bracket, two multiple angle brackets and mounting hardware shown in figure 5-10 for roadside installation. Refer to section 5.10 for connection of cables.



- 1. MOUNTING BRACKET (TOP)
- 2. MULTIPLE ANGLE BRACKET (RIGHT)
- 3. IET WASHER (5/16 In)
- 4. MACHINE BOLT (5/16-24 x 7/8 In)
- 5. MOUNTING BASE
- 6. NUT (5/16-24 In)
- 7. MULTIPLE ANGLE BRACKET (LEFT)

Figure 5-10. MK-2499/VRC Installation

5.9 Installation of Mounting Base, Electrical Equipment MT-6353/VRC. If Radio Set AN/VRC-92 or AN/VRC-92A is authorized, use the following instructions to install MT-6353/VRC mounting base in the location shown in figure 5-1 (2). Refer to section 5.10 for connection of cables.

ITEM	ACTION NOTE	REMARKS
Apply a thin coat of adhere-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 radio shelf over existing holes. See figure 5-11..	

5.9 Installation of Mountng Base, Electrical Equipment MT-6353VRC. Continued

ITEM	ACTION NOTE	REMARKS
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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 5.10, step b.)

- b. MT-6353/VRC mounting base (1). Align front holes and rear slots with matching hole pattern in radio shelf. See figure 5-10.

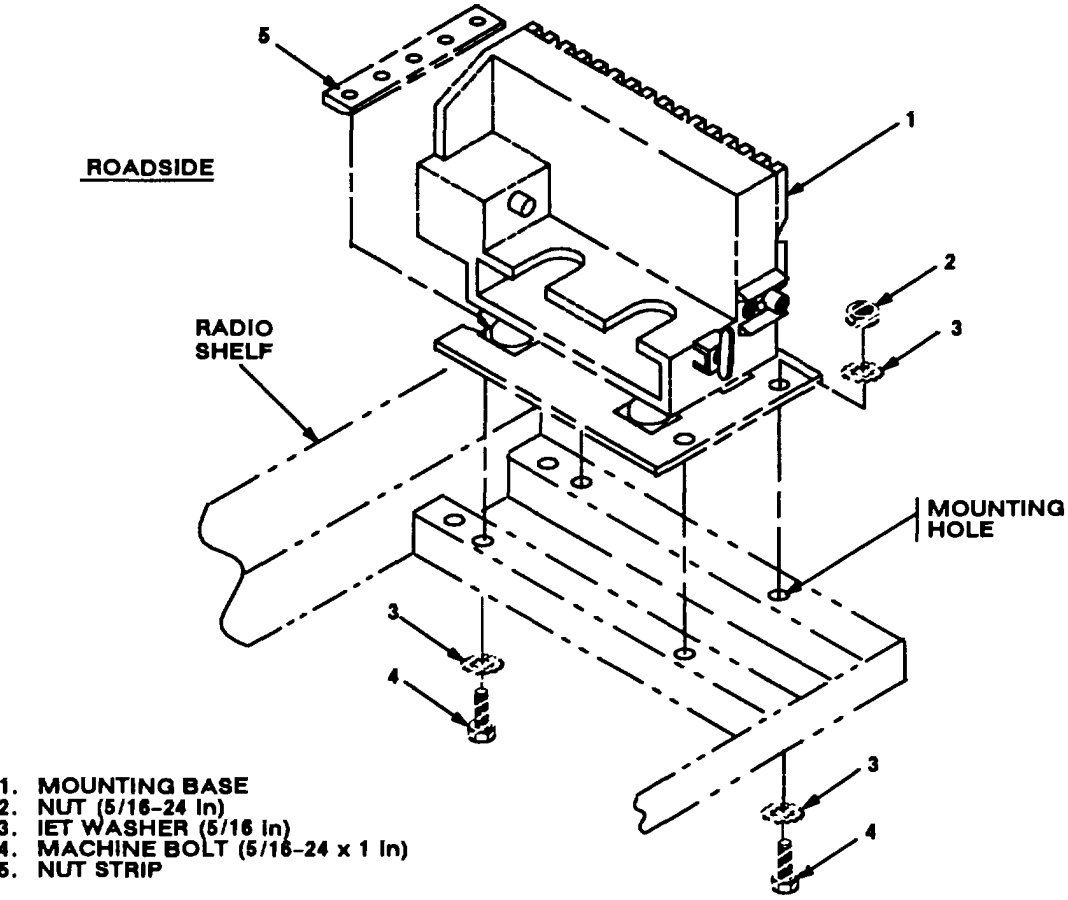


Figure 5-11. MT-6353/VRC Mounting Base Installation

- c. Two machine bots (4), two IET washers (3) and nut strip (5). Install and secure to rear slots in MT-6353/VRC mounting base (1) and shelf. Tools: 1/2 in socket.
- d. Two machine bots (4), four IET washers (3) and two nuts (2). Install and secure to front holes in MT-6353/VRC mounting base (1) and shelf. Tools: 1/2 in socket and 1/2 in open/box wrench.

5.10 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 5-12 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 Operational (OP) Check instructions.	
f. MK line replacement units.	See TM 11-5820-890-20P for Repair Parts and Special Tools List (RPSTL) information.	

5.10 Post-installation and Checkout. Continue

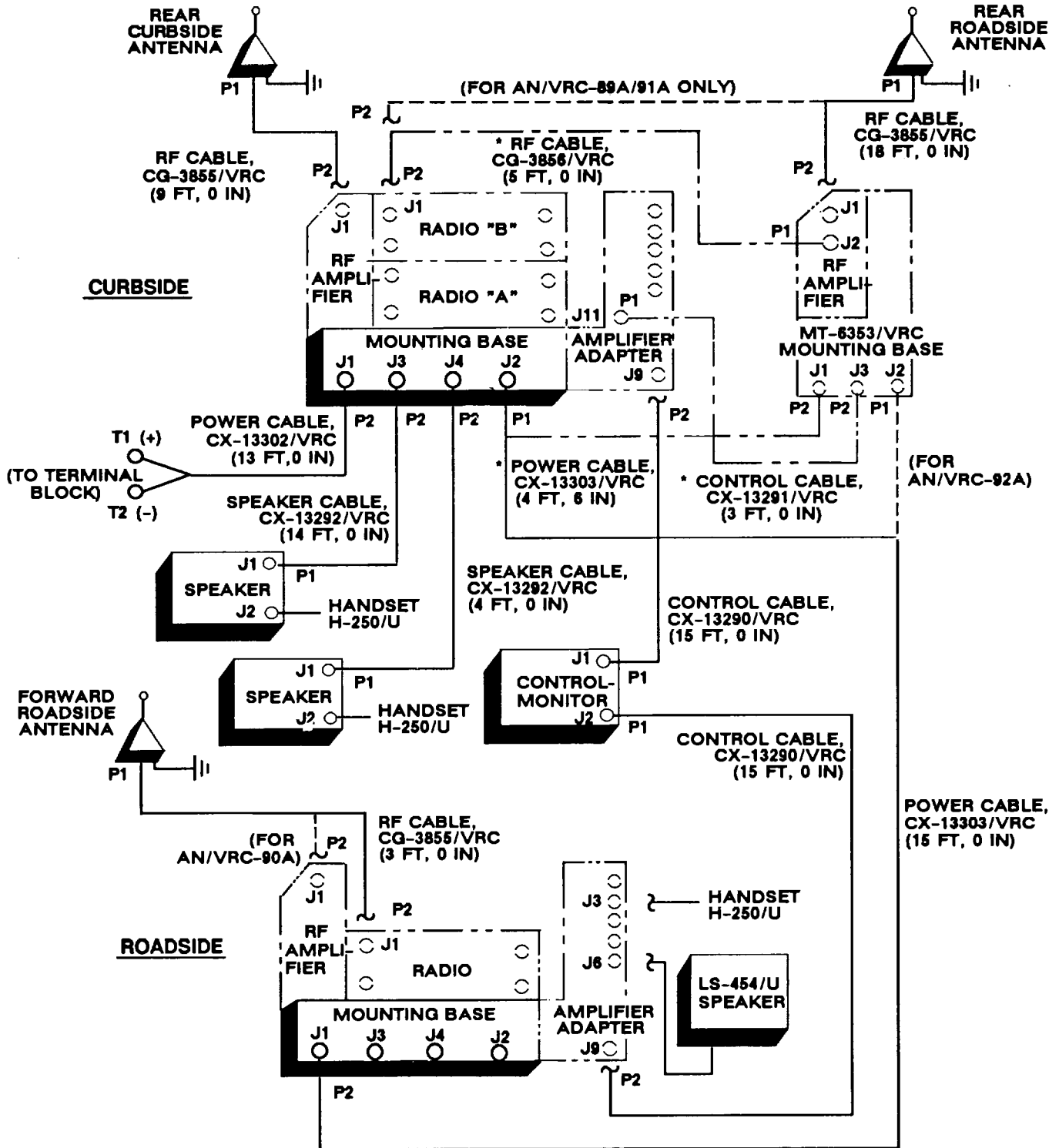


Figure 5-12. (1). Cable Diagram: For AN/VRC-87A/88A/90A and AN/VRC-89A/91A/92A

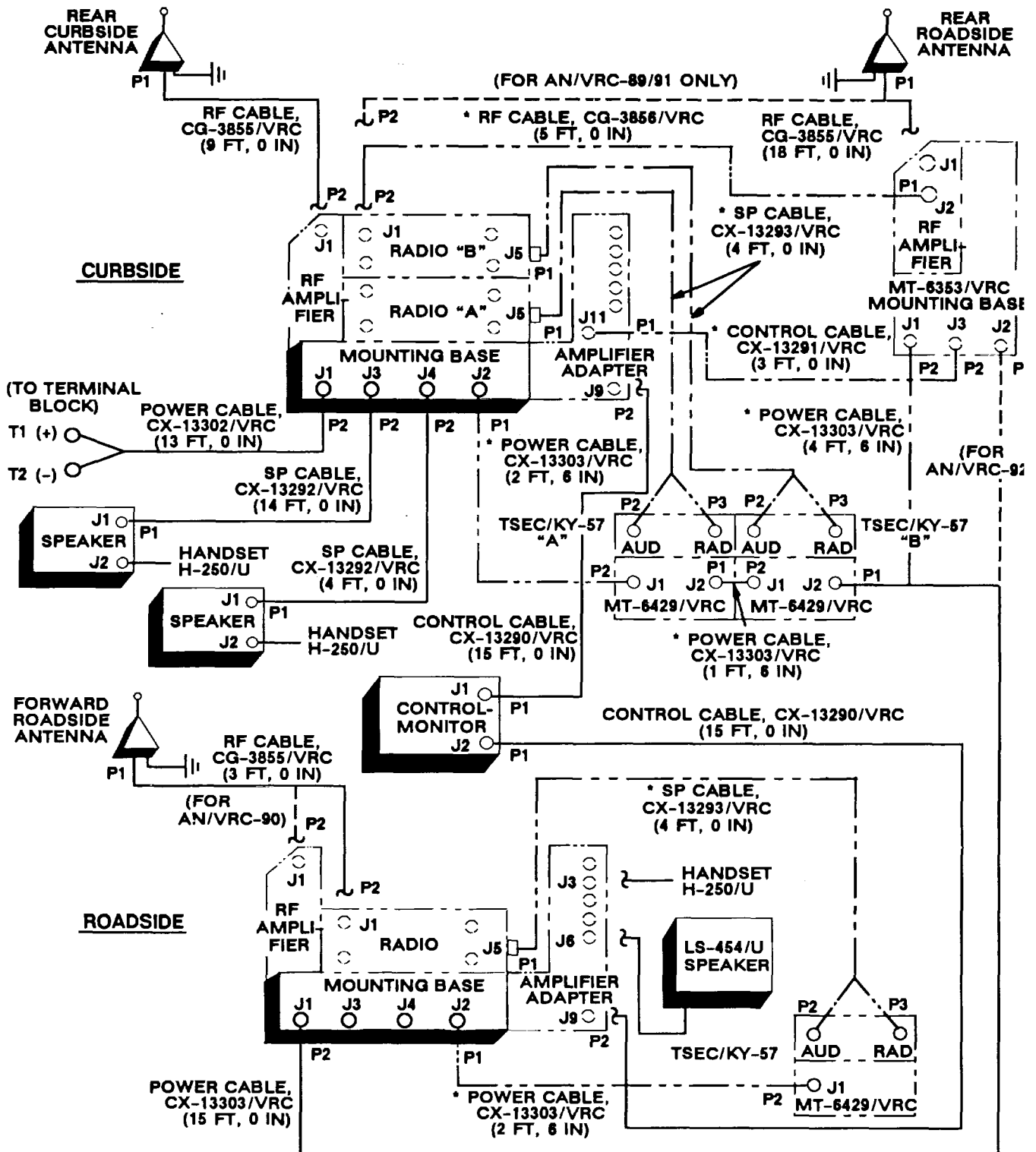
5.10 Post-Installation and Checkout. Continued

CABLE ASSEMBLY	FROM			TO		
	CABLE CONN.	UNIT	UNIT CONN.	CABLE CONN.	UNIT	UNIT CONN.
CX-13302/VRC (13 FT, 0 IN)	P2	Mounting base (curbside)	J1	T1: Red (+) T2: Black (-)	Terminal block	(+) lug (-) lug
CX-13303/VRC (15 FT, 0 IN)	P2	Mounting base (roadside)	J1	P1	Mounting base (curbside) or MT-6353/VRC	J2
CX-13292/VRC (14 FT, 0 IN)	P2	Mounting base (curbside)	J3	P1	Speaker (front)	J1
CX-13292/VRC (4FT, 0 IN)	P2	Mounting base (curbside)	J4	P1	Speaker (rear)	J1
CG-3855/VRC (3 FT, 0 IN)	P2	Radio or RF amplifier (roadside)	J1	P1	Forward roadside antenna base	J1
CG-3855/VRC (9 FT, 0 IN)	P2	RF amplifier (curbside)	J1	P1	Rear curbside antenna base	J1
CG-3855/VRC (18 FT, 0 IN)	P2	Radio "B" or RF amplifier (MT-6353/VRC)	J1	P1	Rear roadside antenna base	J1
LS-454/U speaker cable	P2	LS-454/U speaker cable			Amplifier-adapter (roadside)	J6
CX-13290/VRC (15 FT, 0 IN)	P1	Control-monitor	J1	P2	Amplifier-adapter (curbside)	J9
CX-13290/VRC (15 FT, 0 IN)	P1	Control-monitor	J2	P2	Amplifier-adapter (roadside)	J9
CX-13291/VRC (3 FT, 0 IN)	P1	Amplifier-adapter (roadside)	J11	P2	MT-6353/VRC mounting base	J3
CG-3856/VRC (5 FT, 0 IN)	P2	Radio "B" (curbside)	J1	P1	RF amplifier (MT-6353/VRC)	J2
CX-13303/VRC (4 FT, 6 IN)	P1	Mounting base (curbside)	J2	P2	MT-6353/VRC mounting base	J1

*Not supplied in this MK.

Figure 5-12(1). Cable Diagram: For ANIVRC-87A/88A/90A and AN/VRC-89A/91A/92A Continued

5.10 Post-installation and Checkout. Continued



* NOT SUPPLIED IN THIS MK.

Figure 5-12(2). Cable Diagram: For AN/VRC-87188/90 and AN/VRC-89191/92

5.10 Post-Installation and Checkout. Continued

CABLE ASSEMBLY	FROM			TO		
	CABLE CONN.	UNIT	UNIT CONN.	CABLE CONN.	UNIT	UNIT CONN.
CX-13302/VRC (13 FT, 0 IN)	P2	Mounting base (curbside)	J1	T1: Red (+) T2: Black (-)	Terminal block	(+) lug (-) lug
CX-13303/VRC (15 FT, 0 IN)	P2	Mounting base (roadside)	J1	P1	MT-6429/VRC or MT-6353/VRC mounting base	J2
CX-13292/VRC (14 FT, 0 IN)	P2	Mounting base (curbside)	J3	P1	Speaker (front)	J1
CX-13292/VRC (4FT, 0 IN)	P2	Mounting base (curbside)	J4	P1	Speaker (rear)	J1
CG-3855/VRC (3 FT, 0 IN)	P2	Radio or RF amplifier (roadside)	J1	P1	Forward roadside antenna base	J1
CG-3855/VRC (9 FT, 0 IN)	P2	RF amplifier (curbside)	J1	P1	Rear curbside antenna base	J1
CG-3855/VRC (18 FT, 0 IN)	P2	Radio "B" or RF amplifier (MT-6353/VRC)	J1	P1	Rear roadside antenna base	J1
LS-454/U speaker cable		LS-454/U speaker cable			Amplifier-adapter (roadside)	J6
CX-13290/VRC (15 FT, 0 IN)	P1	Control-monitor	J1	P2	Amplifier-adapter (curbside)	J9
CX-13290/VRC (15 FT, 0 IN)	P1	Control-monitor	J2	P2	Amplifier-adapter (roadside)	J9
CX-13291/VRC (3 FT, 0 IN)	P1	Amplifier-adapter (curbside)	J11	P2	MT-6353/VRC mounting base	J3
CG-3865/VRC (5 FT, 0 IN)	P2	Radio "B" (curbside)	J1	P1	RF amplifier (MT-6353/VRC)	J2
CX-13303/VRC (4 FT, 6 IN)	P2	MT-6353/VRC mounting base	J1	P2	MT-6429/VRC "B"	J2
CX-13303/VRC (1 FT, 6 IN)	P1	MT-6429/VRC "A"	J2	P2	MT-6429/VRC "B"	J1
CX-13303/VRC (2 FT, 6 IN)	P1	Mounting base (curbside)	J2	P2	MT-6429/VRC "A"	J1

*Not supplied in this MK.

Figure 5-12 (1). Cable Diagram: For AN/VRC-87/88/90 and AN/VRC-89/91/92 Continued

5.10 Post-installation and Checkout. Continued

CABLE ASSEMBLY	FROM			TO		
	CABLE CONN.	UNIT	UNIT CONN.	CABLE CONN.	UNIT	UNIT CONN.
CX-1293/VRC (4 FT, 0 IN)	P1	Radio "B"	J5	P2 P3	TSEC/KY-57 "B"	AUD RAD
CX-13293/VRC (4 FT, 0 IN)	P1	Radio "A"	J5	P2 P3	TSEC/KY-57 "A"	AUD RAD
CX-13292/VRC (4 FT, 0 IN)	P1	Radio	J5	P2 P3	TSEC/KY-57	AUD RAD
CX-13303/VRC (2 FT, 6 IN)	P1	Mounting base (roadside)	J2	P2	MT-6429/VRC	J1

*Not supplied in this MK.

Figure 5-12(1). Cable Diagram: For ANIVRC-87/88/90 and AN/VRC-89/91/92 Continued

APPENDIX A**REFERENCES**

AMDF	Army Master Data File (Microfiche)
AR 710-2	Supply Policy Below the Wholesale Level as Contained in Unit Supply UPDATE
AR 725-50	Requisitioning, Receipt and Issuing System in UPDATE
DA Pam 25-30	Consolidated Index of Army Publications (Microfiche)
DA Pam 710-2-1	Using Unit Supply System Manual Procedures as Contained in Unit Supply UPDATE
SB 11-131-2	Vehicular Radio Sets and Authorized Installations (SINCGARS)
TM 11-5820-890-1 0-1	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, Vol. 1)
TM 11-5820-890-20-2	Unit Maintenance Manual (ICOM Radio Sets, Vol. 2)
TM 11-582890-20-3	Unit Maintenance Manual handbook (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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