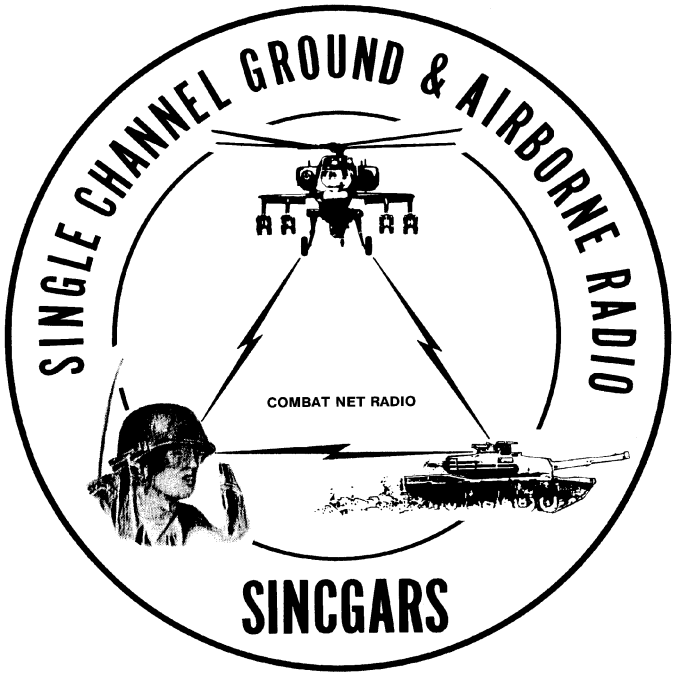
TECHNICAL BULLETIN



INSTALLATION INSTRUCTIONS FOR INSTALLATION KIT, ELECTRONIC EQUIPMENT, MK-2837/VRC (NSN 5895-01-421-0811) (EIC: N/A) TO PERMIT INSTALLATION OF RADIO SET AN/VRC-87/88/90 SERIES IN A M1031 CONTACT MAINTENANCE VEHICLE (CMV) (NON-EOD)

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HEADQUARTERS, DEPARTMENT OF THE ARMY

1 SEPTEMBER 1999

TECHNICAL BULLETIN
NO. 11-5820-890-20-98

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 1 SEPTEMBER 1999

INSTALLATION INSTRUCTIONS FOR INSTALLATION KIT ELECTRONIC EQUIPMENT MK-2837/VRC (NSN 5895-01-421-0811) (EIC: N/A) TO PERMIT INSTALLATION OF RADIO SETS AN/VRC-87/88/90 SERIES IN A M1031 CONTACT MAINTENANCE VEHICLE (CMV) (NON-EOD)

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 Fort Monmouth, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, NJ 07703-5000. The Fax number is 732-532-1413, DSN 992-1413. You may also e-mail your recommendation to AMSEL-LC-LEO-PUBS-CHG@cecom3.monmouth.army.mil.

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

TABLE OF CONTENTS

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*This manual supersedes TB 11-5820-890-20-98, 1 July 1997

LIST OF ILLUSTRATIONS

LIST OF TABLES

0.1 SCOPE.

This technical bulletin provides installation instructions for Installation Kit, Electronic Equipment MK-2837/VRC, commonly referred to as the Mounting Kit (MK). The MK shall be installed into the following type of vehicle(s):

- M1031 Contact Maintenance Vehicle (CMV) (Non-EOD)

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 is:

- Radio Set AN/VRC-87/88/90 Series (for RT-1523(C)/U)

0.3 MAINTENANCE FORMS, RECORDS, AND REPORTS.

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

0.3.2 Report of 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-2837/VRC (MK) contains the items needed to mount Radio Set AN/VRC-87/88/90 Series in a M1031 Contact Maintenance Vehicle (CMV) (Non-EOD)

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 4.0 work hours is required. Typical vehicle downtime is 4.5 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 AS-3900/VRC	5.1	1.0
Mounting Base, Electrical Equipment MT-6352/VRC	5.2	1.5
Cables	5.4	1.0

4. PREPARATION FOR INSTALLATION.

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

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

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

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 modify parts in MK unless authorized to do so.

c. Keep mounting hardware covered and protected until needed.

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

4.2.2 Unpack and Inspect Equipment.

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

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

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

4.3 MK, Distribution and Consumables.

4.3.1 Items Supplied in MK and/or Required for Installation. Use Table 4-1 and Figure 4-1 to identify and inventory MK parts supplied to install Radio Set AN/VRC-87/88/90 Series.

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

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
5895-01-297-2971	Antenna, Vehicular AS-3900/VRC (A3017899-1)	1	PAOOFA	4-1, 2
5305-00-847-1159	Screw, Cap, Hexagon (3/8-16 x 1-3/4 in) MS35307-365	4	PAOZZA	
5310-00-913-8881	Nut, Hexagon (3/8-16 in) MS51971-3	4	PAOZZA	
5310-00-061-1258	Washer, Lock, Internal/External-Toothed (3/8 in) MS45904-76	8	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal/External-Toothed (5/16 in) MS45904-72	2	PAOZZA	
5306-00-225-9086	Bolt, Machine (5/16-24 x 5/8 in) MS90726-31	1	PAOZZA	
5330-01-205-9086	Gasket (A3013655-1)	1	PAOZZA	
5975-01-188-8873	Mounting Base, Electrical Equipment MT-6352/VRC(A3013367-1)	1	PAOOFA	4-1, 1
5306-00-225-9089	Bolt, Machine (5/16-24 x 1 in) MS90726-34 (Not Used)	5	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal/External-Toothed (5/16 in) MS45904-72	10	PAOZZA	
5310-00-880-7746	Nut, Hexagon (5/16-24 in) MS51968-5 (1 Not Used)	5	PAOZZA	
5995-01-225-1662	Cable Assembly, Radio Frequency, CG-3855/VRC (12 FT, 0 IN) (A3014031-12)	1	PAOZZA	4-1, 9
5995-01-225-1657	Cable Assembly, Special Purpose, Electrical, CX-13292/VRC (11 FT, 0 IN) (A3014038-8)	1	PAOZZA	4-1, 8
5995-01-219-1843	Cable Assembly, Power, Electrical CX-13302/VRC (13 FT, 0 IN) (A3014039-2)	1	PAOZZA	4-1, 7
5965-01-222-1420	Loudspeaker, Control Unit, LS-671/VRC (A3014065-1)	1	PAOFFA	4-1, 6
4020-01-341-8795	Fiber Rope Assembly, Single Leg (A3167672-1)	1	PAOZZA	4-1, 5
5965-00-043-3463	Handset, H-250/U	1	PAOZZA	4-1, 3
	Speaker, Bracket (A3014550-1)	1	XBOZZA	4-1, 4
	Plate, Mounting (A3210581-1)	1	XBOZZA	4-1, 10
	Bar, Spacer (A3210574-1)	1	XBOZZA	4-1, 11
	Support, Antenna (A3253193-1)	1	XBOZZA	4-1, 12
	Plate, Metal (A3253194-1)	2	XBOZZA	4-1, 13
	Bracket, Mounting Antenna (A3050655-1)	1	XBOZZA	4-1, 14
5325-00-087-0580	Grommet, Nonmetallic MS35489-121	2	PAOZZA	
5325-00-174-9008	Grommet, Nonmetallic, 1/2 in, MS35489-15	1	PAOZZA	
	Grommet, Nonmetallic, (A3013060-1)	1	XBOZZA	
5975-00-111-3208	Strap, Tiedown, Electrical Components MS3367-5-9	10	PAOZZA	
5340-00-809-1490	Clamp, Loop (1/4-1/4 in) MS21333-98	2	PAOZZA	
5340-00-809-1500	Clamp, Loop (1-1/4 in) MS21333-107	2	PAOZZA	
5340-00-984-8540	Clamp, Loop (1/2-1/4 in) MS21333-102	1	PAOZZA	

Table 4.1. Parts list for Installation of Radio Set AN/VRC-87/88/90 Series. Continued

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
5340-00-809-1444	Clamp, Loop (3/4-1/4 in) MS21333-105	1	PAOZZA	
5305-00-984-7350	Screw, Machine FH (5/16-24 x 1 in) MS35191-308	2	PAOZZA	
5305-00-225-9099	Screw, Cap, Hexagon (5/16-24 x 3 in) MS90726-44	2	PAOZZA	
5305-00-071-2241	Screw, Cap, Hexagon (1/4-20 x 1-1/4 in) MS90725-10	10	PAOZZA	
5305-00-432-4255	Screw, Tapping, Thread Forming (1/4-14 x 1-1/4 in) MS51861-70	2	PAOZZA	
5305-00-432-4253	Screw, Tapping, Thread Forming (1/4-14 x 3/4 in) MS51861-67	6	PAOZZA	
5310-00-809-4058	Washer, Lock (1/4 in) MS35338-44	6	PAOZZA	
5310-00-889-2528	Washer, Lock IET (1/4 in) MS45904-68	21	PAOZZA	
5310-00-761-6882	Nut, Plain, Hexagon (1/4-20 in) MS51967-2	10	PAOZZA	
5310-00-880-7744	Nut, Plain, Hexagon (5/16-18 in) MS51967-5	4	PAOZZA	

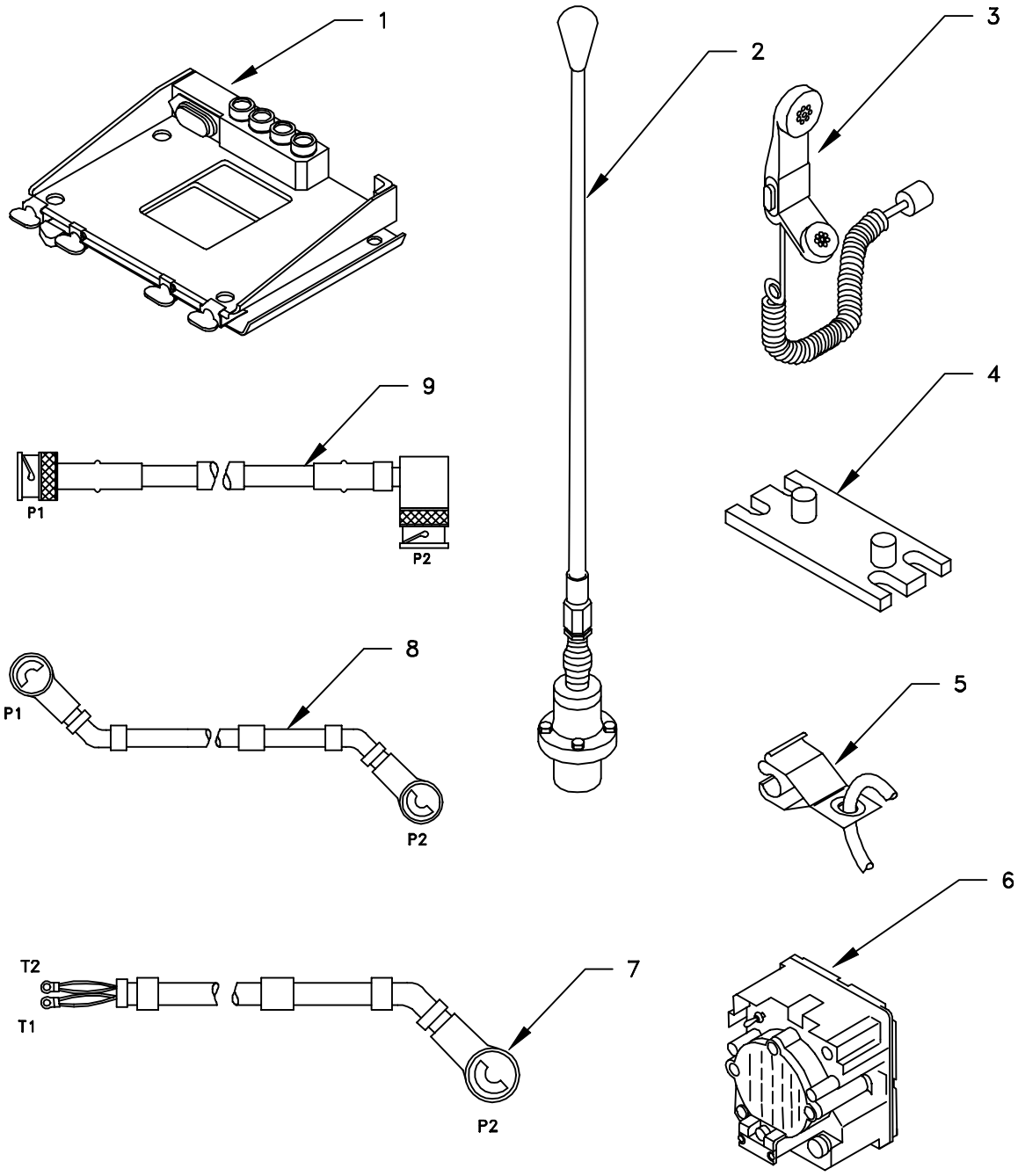


Figure 4-1(1). MK Illustrated Parts List

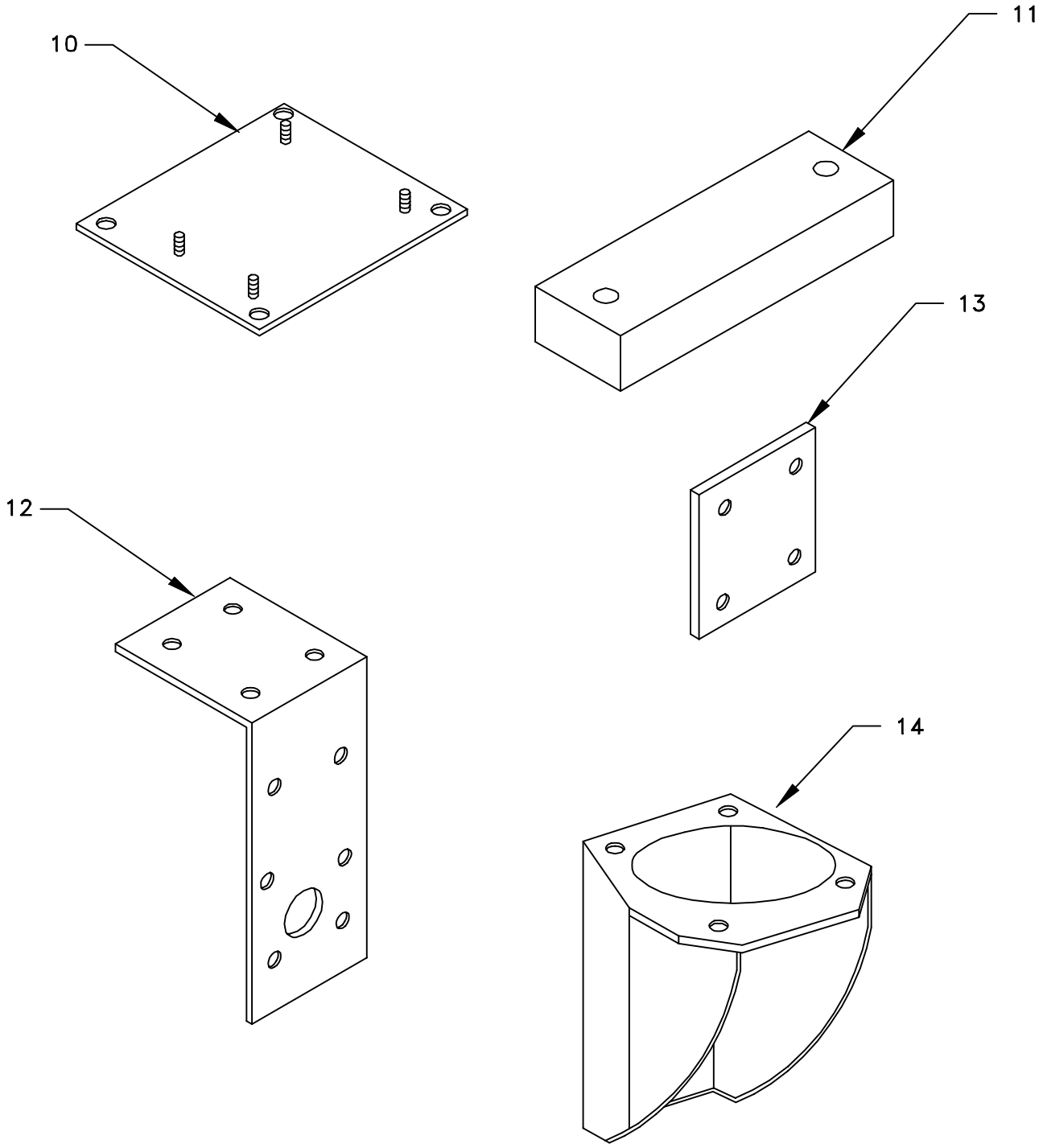


Figure 4-1(2). MK Illustrated Parts List

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
8030-00-292-1102	Conductive Anti-seize Compound

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

NOMENCLATURE		NSN	QUANTITY
Radio Set*			1
Electric Grinder or equivalent			1
Pocket Knife, Electrician's		5110-00-240-5943	1
Screwdriver, No. 2 Point Phillips, 4 in		5120-00-234-8913	1
Screwdriver, 1/4 in Flatblade, 4 in		5120-00-222-8852	1
Pliers, Round Nose		5120-00-240-6172	1
Pliers, Diagonal Cutting		5110-00-965-0974	1
Wrench, Open/Box:	7/16 in	5120-00-228-9506	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
	7/16 in	5120-00-227-6703	1
	1/2 in	5120-00-227-0977	1
	9/16 in	5120-00-227-6704	1
Electric.Drill		5130-00-889-8994	1
Drill Bit:	1/8 in	5133-00-227-9650	1
	11/32 in	5133-00-227-9644	1
	9/32 in	5133-00-227-9658	1
Hole Saw	1-1/4 in		
	1 5/8 in		

* 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 overall view of where vehicular and MK equipment, as well as radio components, typically will be installed. When installing MK equipment, be sure to read and follow instructions and illustrations carefully.

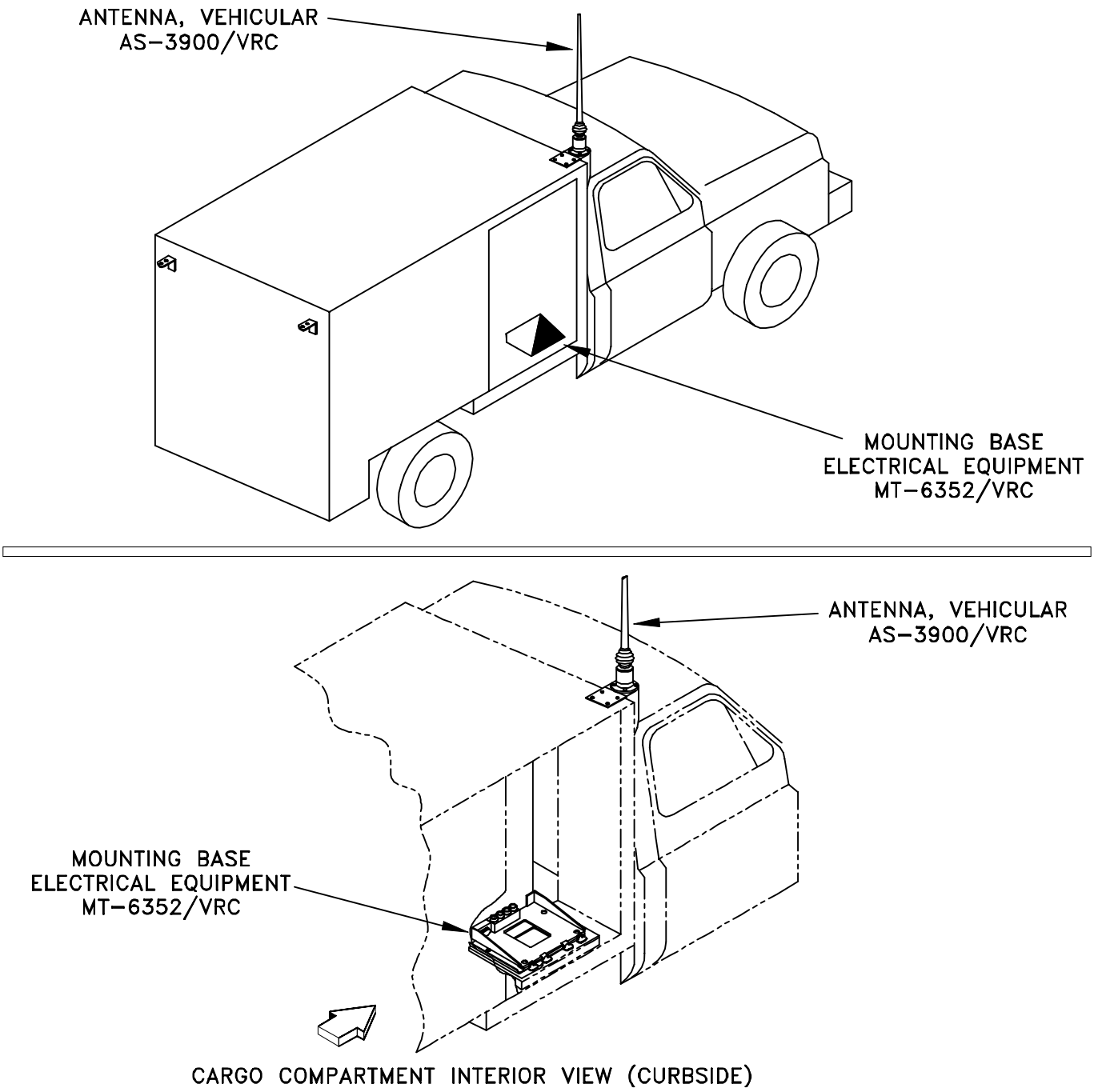


Figure 5-1(1). MK and Radio Installation: MK Equipment Locations

5. INSTALLATION PROCEDURES. Continued.

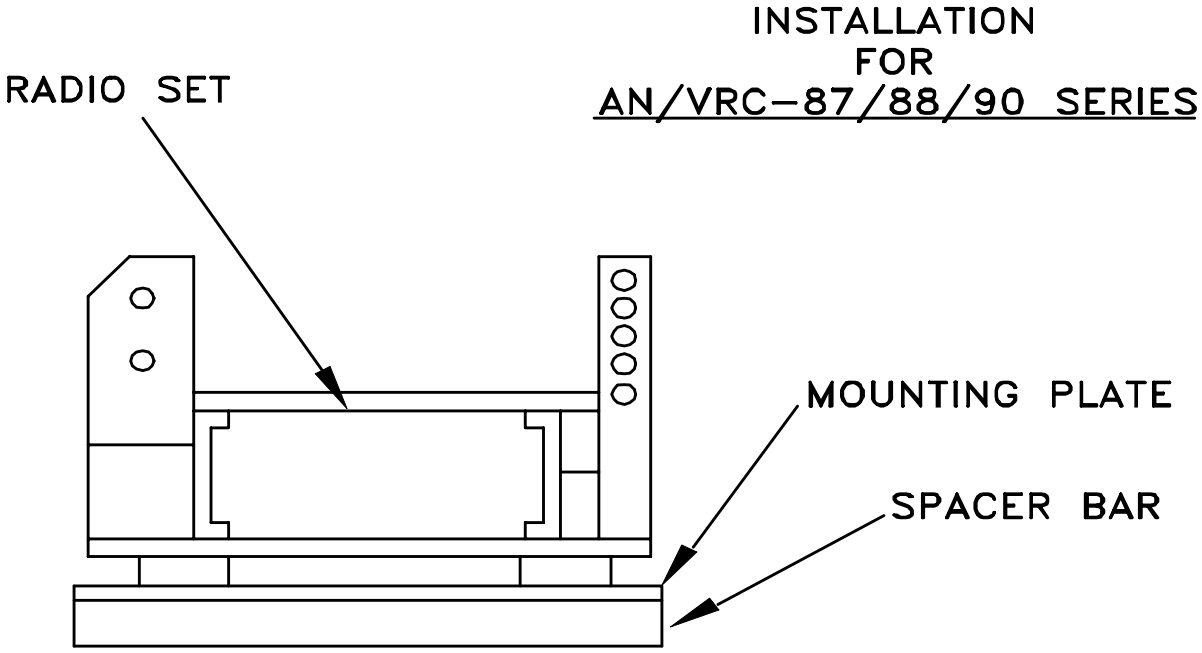


Figure 5-1(2). MK and Radio Installation: Radio Equipment Location

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

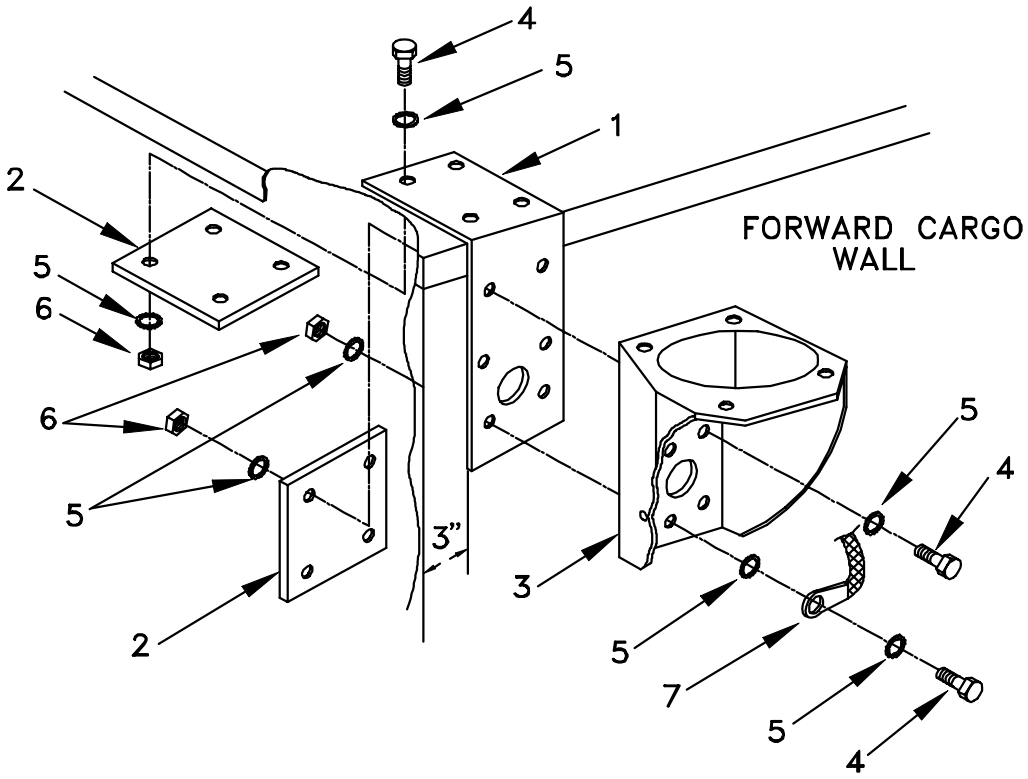
5.1.1 Installation of Antenna Base. Use the following procedures to install the antenna base. See Figure 5-1(1) for location.

ITEM	ACTION	REMARKS
	NOTE Apply a thin coat of adhesive-sealant to both sides of each internal/external-toothed (IET) washer during installation, and to the area of contact where IET washer is to be placed.	
a. Mounting holes for antenna support (1) and grommet.	Using antenna support (1) as a template and dimension shown, drill ten 9/32 in diameter holes and one 1-1/4 in diameter hole through the roof and forward wall of the cargo compartment of the vehicle. See Figure 5-2(1). Remove a 1" diameter area of paint around the exterior and interior surfaces of the ten drilled holes. Clean the paint removed areas and apply a thin coat of conductive anti-seize compound.	Tools: Electric drill, 9/32 in drill bit and 1-1/4 in hole saw. Electric grinder or equivalent.
b. Antenna support (1).	Remove a 1" diameter of paint around all ten 9/32 in diameter holes on both sides of the antenna support (1). Clean the paint removed areas and apply a thin coat of conductive anti-seize compound.	Tools: Electric grinder or equivalent.
c. Antenna support (1).	Align mounting holes over four 9/32 in diameter holes in the roof of the vehicle drilled in step a. See Figure 5-2(1).	
d. Metal plate (2).	Remove a 1" diameter of paint around all holes on both sides of both metal plates (2). Clean the paint removed areas and apply a thin coat of conductive anti-seize compound.	Tools: Electric grinder or equivalent.
e. Metal plate (2), four cap screws (4), eight IET washers (5) and four nuts (6).	Install and secure to four mounting holes in antenna support (1) and roof of vehicle. Do not fully tighten.	Tools: 7/16 in socket and 7/16 in open/box wrench.
f. Antenna mounting bracket (3).	Remove a 1" diameter of paint around the six holes on both sides of the antenna mounting bracket (3) that mate with antenna support (1). Clean the paint removed areas and apply a thin coat of conductive anti-seize compound.	Tools: Electric grinder or equivalent.
g. Antenna mounting bracket (3).	Align mounting holes over mounting holes in antenna support and 9/32 in diameter holes in the forward wall of the cargo compartment of the vehicle drilled in step a. See Figure 5-2(1).	

5.1.1 Installation of Antenna Base. Continued

ITEM	ACTION	REMARKS
h. Metal plate (2), four cap screws (4), eight IET washers (5) and four nuts (6).	Install and secure to the upper four holes in antenna mounting bracket (3), antenna support (1) and forward cargo compartment wall. Do not fully tighten.	Tools: 7/16 in socket and 7/16 in open/box wrench.
i. One cap screw (4), two IET washers (5) and one nut (6).	Install and secure to lower right mounting hole in antenna mounting bracket (3) and forward cargo compartment wall. Do not fully tighten.	Tools: 7/16 in socket and 7/16 in open/box wrench.
j. Ground strap (7).	Remove from antenna base and retain mounting hardware.	Tools: Phillips screwdriver.
k. Ground strap (7), one cap screw (4), three IET washers (5) and one nut (6).	Install and secure to lower left mounting hole in antenna mounting bracket (3) and forward cargo compartment wall. See Figure 5-2(1). Fully tighten all installed hardware.	Tools: 7/16 in socket and 7/16 in open/box wrench.
l. Gasket (4).	Place on installed antenna mounting bracket and align mounting holes. See Figure 5-2(2).	
m. Antenna base (1).	Place on top of gasket (4) and installed antenna mounting bracket and align mounting holes.	
n. Four cap screws (2), eight IET washers (3) and four nuts (5).	Install and secure to antenna base (1) and existing antenna bracket.	Tools: 9/16 in socket and 9/16 in open/box wrench.
l. Ground strap (6).	Install to antenna base (1).	Tools: Phillips screwdriver.

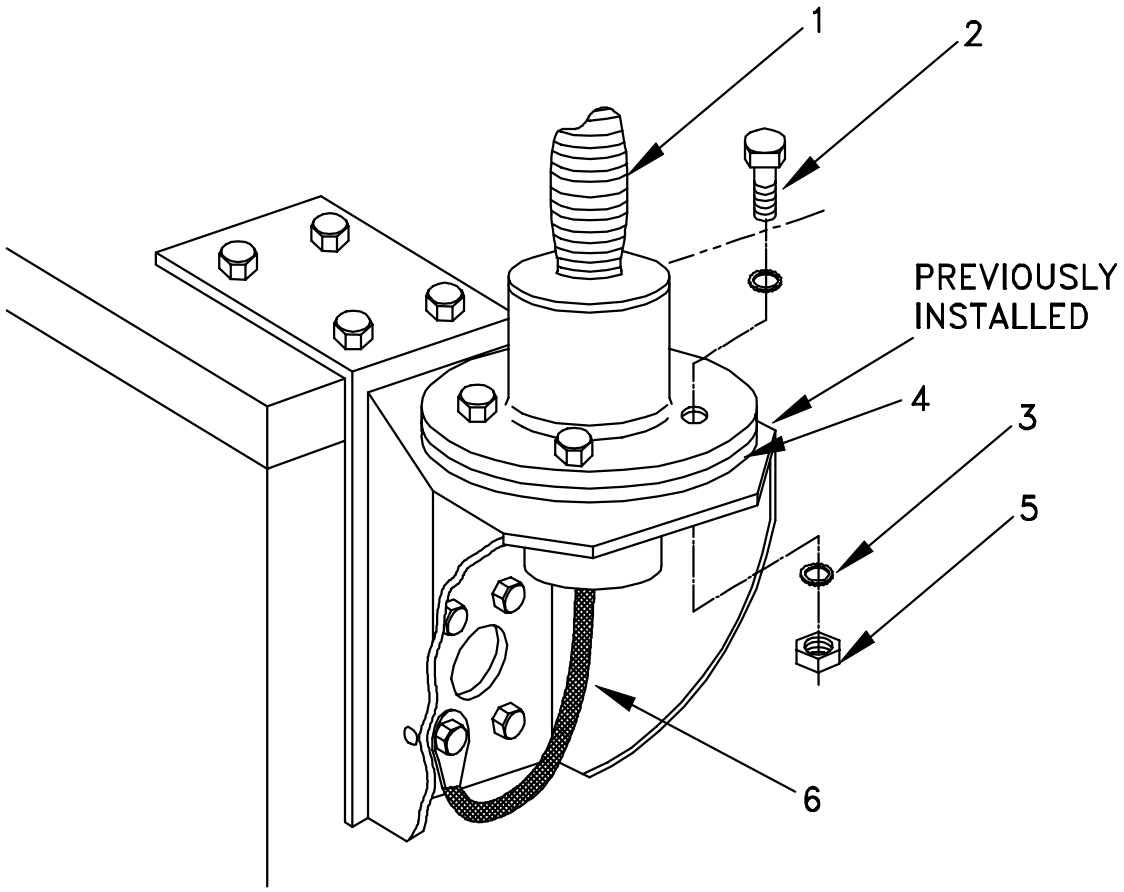
5.1.1 Installation of Antenna Base. Continued



1. **ANTENNA SUPPORT**
2. **METAL PLATE**
3. **ANTENNA MOUNTING BRACKET**
4. **CAP SCREW (1/4-20 X 1-1/4 IN)**
5. **IET WASHER (1/4 IN)**
6. **NUT (1/4-20 IN)**
7. **GROUND STRAP (P/O ANTENNA BASE)**

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

5.1.1 Installation of Antenna Base. Continued.

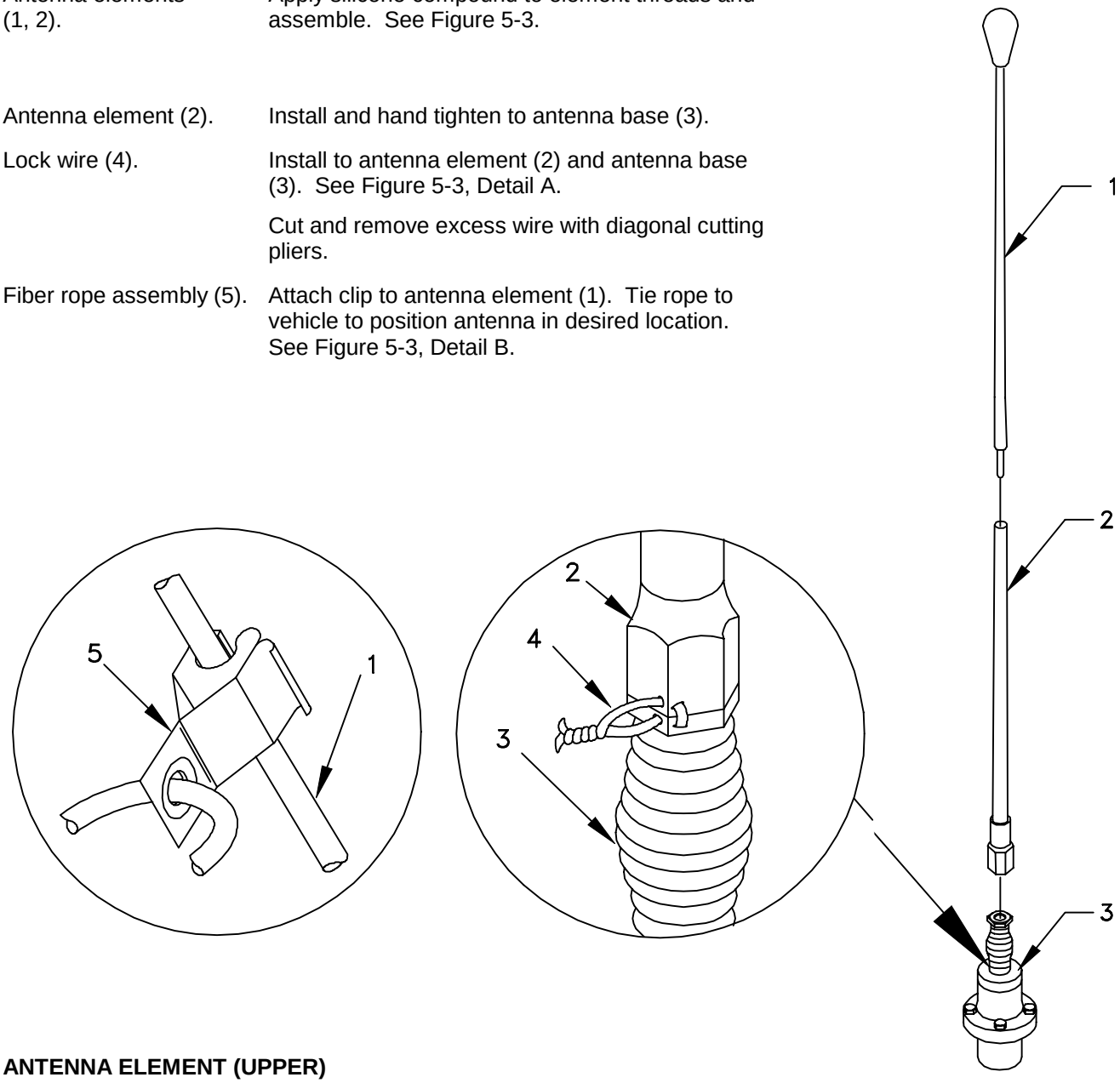


1. **ANTENNA BASE**
2. **CAP SCREW (3/8-16 X 1-3/4 IN)**
3. **IET WASHER (3/8 IN)**
4. **GASKET**
5. **NUT (3/8-16 IN)**
6. **GROUND STRAP(P/O ANTENNA BASE)**

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

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

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



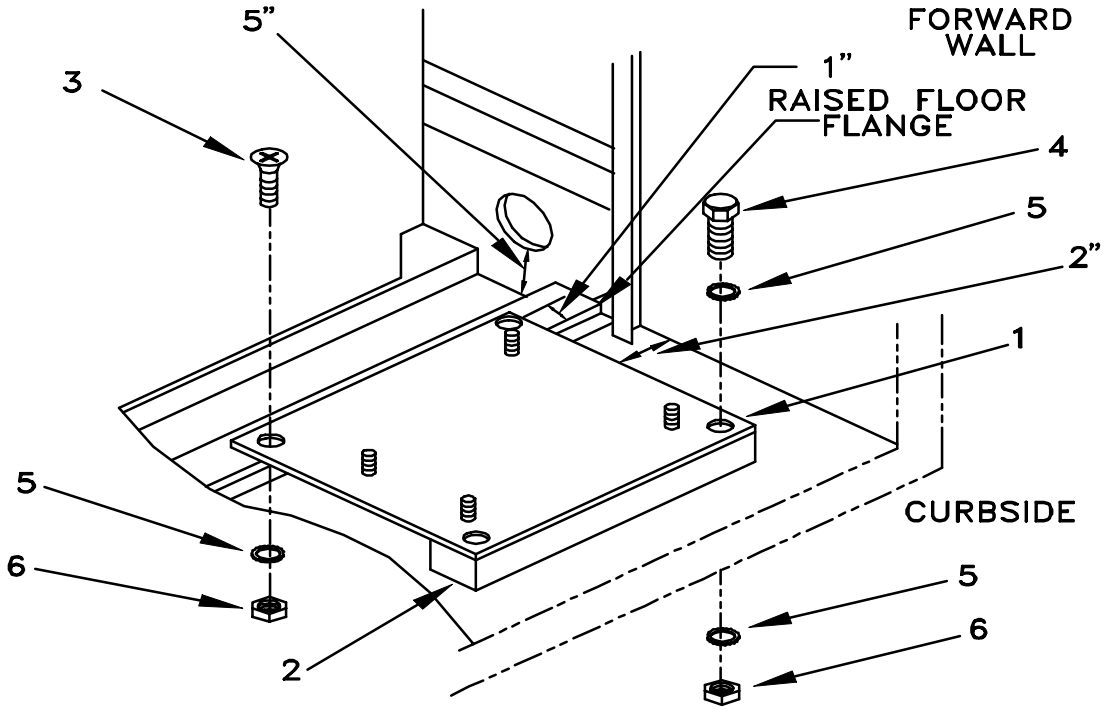
1. **ANTENNA ELEMENT (UPPER)**
2. **ANTENNA ELEMENT (LOWER)**
3. **ANTENNA BASE**
4. **LOCK WIRE**
5. **FIBER ROPE ASSEMBLY**

Figure 5-3. Top Antenna Assembly Installation

5.2 Installation of Mounting Plate. Remove the attached bag of 5/16 in mounting hardware from the Mounting Base, Electrical Equipment MT-6352/VRC. Most of this hardware will be used in installing the remaining MK equipment.

ITEM	ACTION	REMARKS
	NOTE Apply a thin coat of adhesive-sealant to both sides of each internal/external-toothed (IET) washer during installation, and to the area of contact where IET washer is to be placed.	
a. Mounting holes for mounting plate (1) and space bar (2).	Place mounting plate (1) so that the two countersunk holes are aligned with the dimensions as shown and the spacer bar (2) is aligned under the mounting plate (1). Using mounting plate (1) and spacer bar (2) as a template, drill four 11/32 in diameter holes. See Figure 5-4. Remove a 1" diameter of paint around the interior and exterior surfaces of the four drilled holes. Clean the paint removed areas and apply a thin coat of conductive anti-seize compound.	Tools: Electric drill and 11/32 in drill bit. Electric grinder or equivalent.
b. Mounting holes for grommets.	Drill one 1-5/8 in diameter hole in the forward wall of the compartment as per the dimensions shown. See Figure 5-4. Drill one 1-5/8 in diameter hole in the back of the cab directly opposite of the drilled hole in the forward wall of the cargo department.	Tools: Electric drill and 1-5/8 in hole saw.
c. Mounting plate (1).	Remove a 1" diameter of paint around the under side of the two countersunk holes and around both sides of the two forward mounting holes. Clean paint removed areas and apply a thin coat of conductive anti-seize compound.	Tools: Electric grinder or equivalent.
d. Mounting plate (1).	Align two countersunk holes over the two 11/32 in diameter holes drilled in step a in the raised floor flange. See Figure 5-4.	
e. Spacer bar (2).	Remove a 1" diameter of paint around both sides of the mounting holes. Clean paint removed areas and apply a thin coat of conductive anti-seize compound.	Tools: Electric grinder or equivalent.
f. Spacer bar (2).	Align the spacer bar (2) under the two drilled holes in mounting plate (1) and over the two 11/32 in diameter holes drilled in step a in the floor of the compartment. See Figure 5-4.	
g. Two flat head machine screws (3), two cap screws (4), six internal/ external-toothed washers (5) and four nuts (6).	Install and secure to mounting plate (1), spacer bar (2) and the floor of the compartment. See Figure 5-4.	Tools: 1/2 in socket, 1/2 in open/box wrench and Phillips screwdriver.

5.2 Installation of Mounting Plate. Continued.



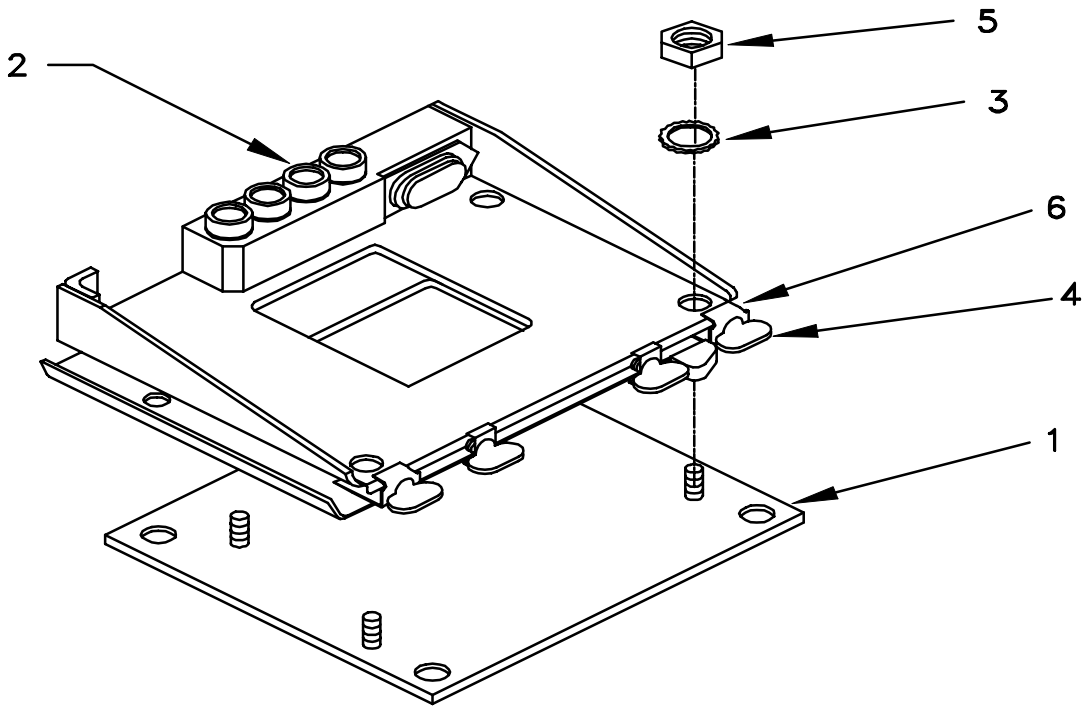
1. **MOUNTING PLATE**
2. **SPACER BAR**
3. **MACHINE SCREW FH (5/16-24 X 1 IN)**
4. **CAP SCREW (5/16-24 X 3 IN)**
5. **IET WASHER (5/16 IN)**
6. **NUT (5/16-24 IN)**

Figure 5-4. Mounting Plate Installation

5.3 Installation of Mounting Base, Electrical Equipment MT-6352/VRC (mounting base). To insure good electrical grounding, any rust, corrosion or paint around mounting holes in radio shelf should be removed before installing the mounting base. See Figure 5-1(1) for mounting base location. See Figure 5-4 and perform the following steps to install mounting base.

ITEM	ACTION	REMARKS
	NOTE Apply a thin coat of adhesive-sealant to both sides of each internal/external-toothed (IET) washer during installation, and to the area of contact where IET washer is to be placed.	
a. Mounting base (2).	Place on mounting plate (1) studs. See Figure 5-5.	
b. Two outer thumbscrews (4).	Turn ccw until both sets of threads have cleared center of holes.	
c. Four internal/external-toothed (IET) washers (3) and four nuts (5).	Install and secure to mounting base and mounting plate. See Figure 5-5.	Tools: 1/2 in socket.
d. Two outer thumbscrews (4).	Tighten and secure to rim clenching clamps (6) and mounting base (1).	

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



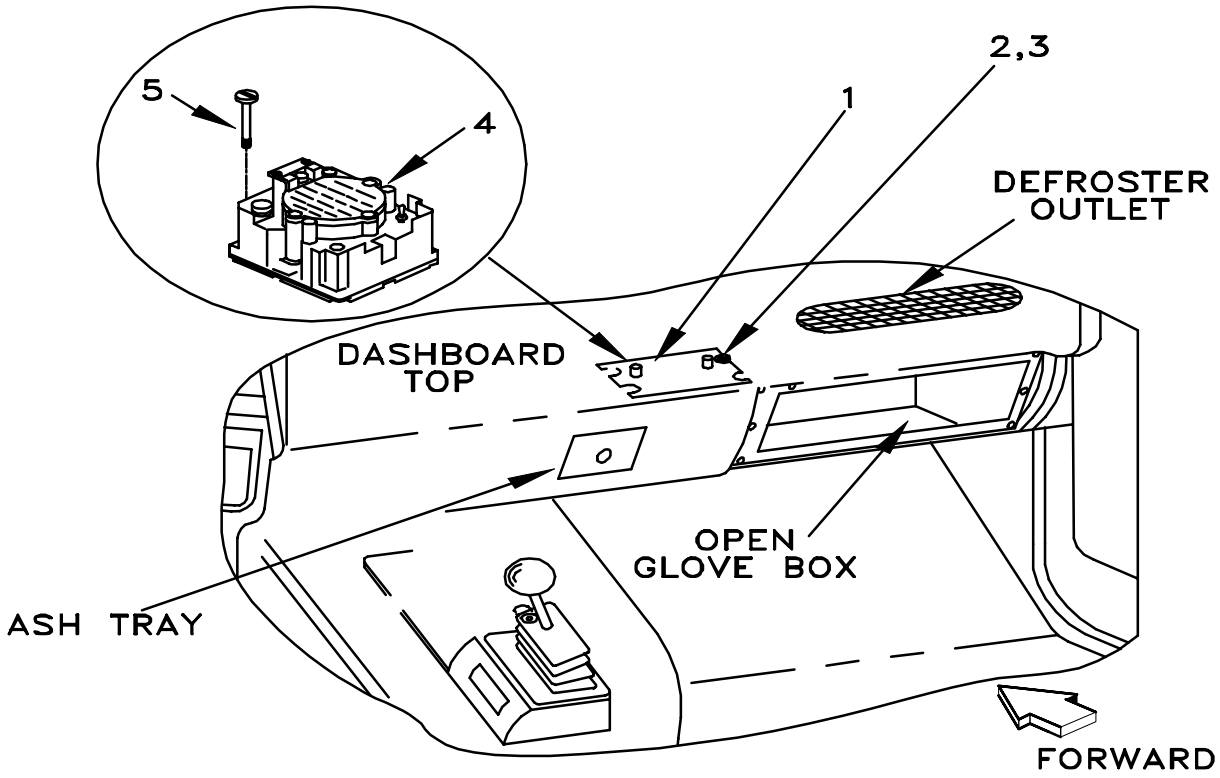
1. **MOUNTING PLATE**
2. **MOUNTING BASE**
3. **IET WASHER (5/16 IN)**
4. **THUMBSCREW**
5. **NUT (5/16-18 IN)**
6. **RIM CLENCHING CLAMP**

Figure 5-5. Mounting Base Installation

5.4 Installation of Loudspeaker, Control-Unit, LS-671/VRC (speaker). Use the following procedures to install the speaker.

ITEM	ACTION	REMARKS
a. Mounting holes for speaker bracket (1).	Using speaker bracket (1) as a template, drill two 1/8 in diameter holes approximately as shown in top of the dashboard. Use the speaker bracket mounting slots closest to the windshield. See Figure 5-6.	Tools: Electric drill and 1/8 in drill bit.
b. Speaker bracket (1).	Align speaker bracket mounting slots closest to the windshield over the two 1/8 in diameter holes drilled in step a.	
c. Two tapping screws (2) and two lock washers (3).	Install and secure the speaker bracket (1) to the dashboard.	Tools: Phillips screwdriver.
d. Speaker (4).	Place on speaker bracket (1).	
e. Two externally-relieved body screws (5).	Thread through and secure to speaker (4) and speaker bracket (1).	Tools: Flatblade screwdriver.

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



1. **SPEAKER BRACKET**
2. **TAPPING SCREW (1-1/4-14 X 1-1/4 IN)**
3. **LOCK WASHER (1/4 IN)**
4. **SPEAKER**
5. **BODY SCREW (P/O SPEAKER BRACKET)**

Figure 5-6. LS-671/VRC Speaker Installation

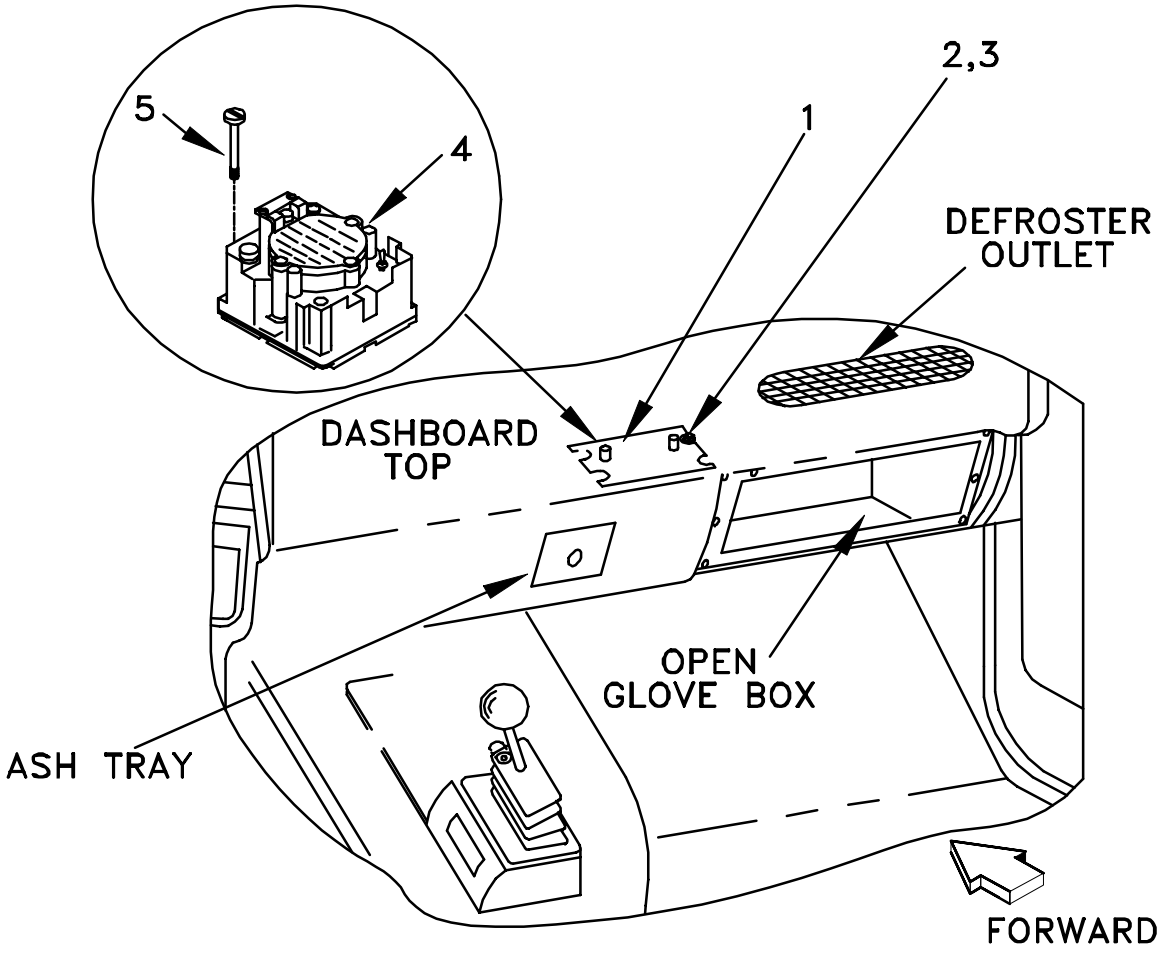
5.5 Installation of Cables. To accomplish the installation, leave loop clamps and tiedown straps loose enough to adjust cable slack and allow easy adjustment of equipment. When installation is complete, tighten and secure all clamps, clips and tiedown straps.

WARNING

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

ITEM	ACTION	REMARKS
a. RF cable (8) connector P1.	Connect and secure to antenna base(2) connector J1.	
b. RF cable (8) and grommet (3).	Locate the hole in the forward cargo compartment wall drilled in step a of paragraph 5.1.1. Feed RF cable (8) through the hole. Cut through the grommet (3) on mark as shown; then wrap around the RF cable and insert grommet in the hole. Leave a drip loop in the RF cable. Seal the RF cable and grommet with RTV sealant. See Figure 5-7(1), Detail A.	Tools: Pocket knife.
c. Mounting holes for loop clamps (4).	Drill two 1/8 in diameter holes in the forward cargo compartment wall. See Figure 5-7(1) for approximate locations.	Tools: Electric drill and 1/8 in drill bit.
d. Two loop clamps (4), two self-tapping screws (5) and two lock washers (6).	Wrap loop clamps around RF cable then install with indicated hardware to holes drilled in step c.	Tools: No. 2 Phillips screwdriver.
e. RF cable (8).	Route the RF cable around behind the mounting base (1) and dress the RF cable to the left side of the mounting base. See Figure 5-7(1).	
f. Power cable (10) and speaker cable (9).	Locate the hole for the cables drilled in step b of paragraph 5.2. Feed connector P1 of power cable (10) and speaker cable (9) through the hole in the forward cargo compartment wall and rear cab wall.	
g. Speaker cable (9) connector P2.	Connect and secure to mounting base (1) connector J3. See Figure 5-7(1).	
h. Power cable (8).	Route to the front of the passenger side of the cab under the floor mat; then route toward the curbside of the foot well to just before the floor mat rubber snap grommet in the firewall. See Figure 5-7(2).	
i. Hole for power cable (9) and grommet (10).	Drill one 1-1/4 in diameter hole in the firewall just to the right of the floor mat rubber snap grommet.	Tools: Electric drill and 1-1/4 in hole saw

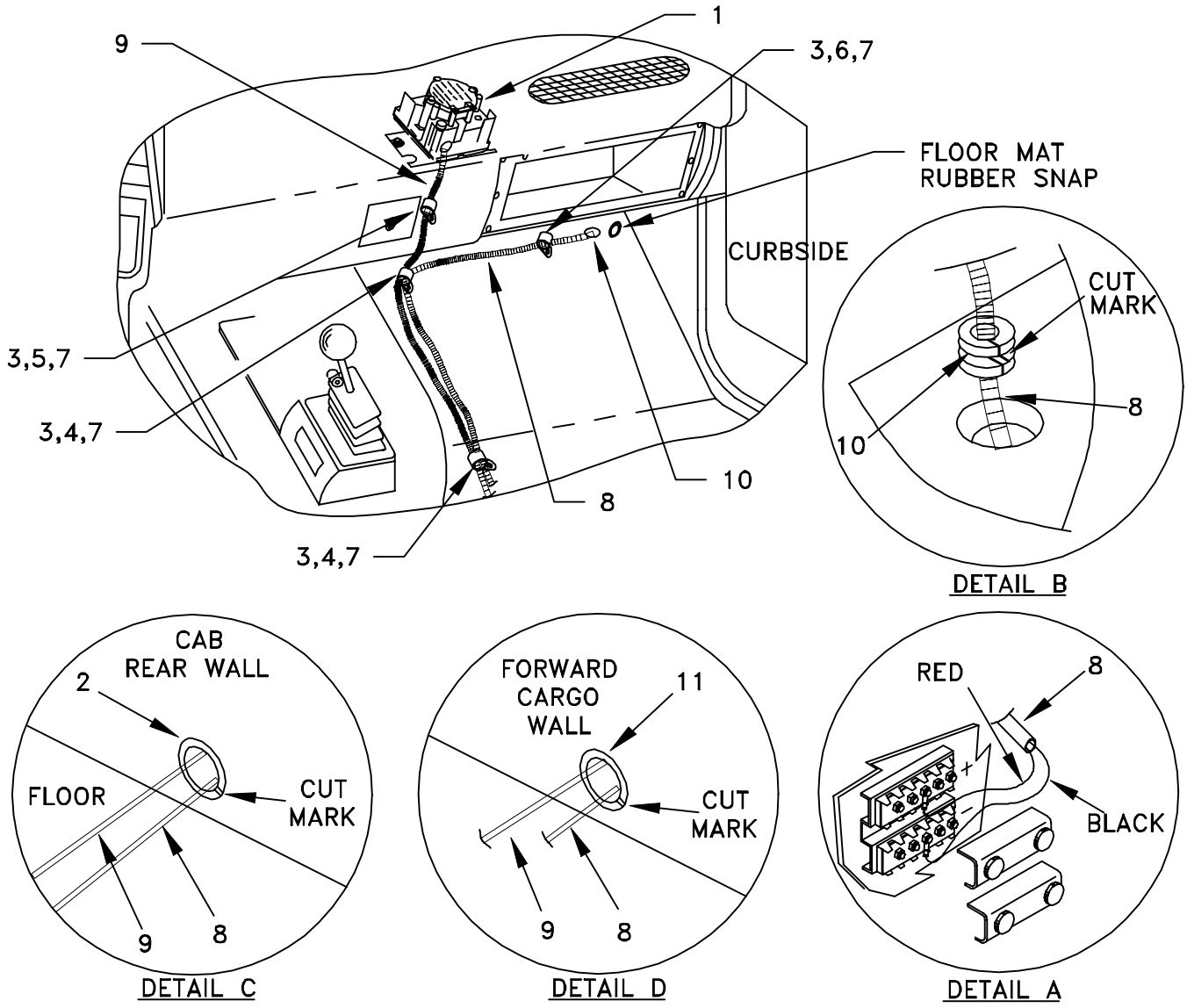
5.5 Installation of Cables. Continued.



1. MOUNTING BASE
2. ANTENNA BASE
3. GROMMET
4. LOOP CLAMP
5. TAPPING SCREW (1/4-14 X 3/4 IN)
6. LOCK WASHER (1/4 IN)
7. GROMMET
8. RF CABLE, CG-3855/VRC (12 FT, 0 IN)
9. SPEAKER CABLE, CX-13292/VRC (11 FT, 0 IN)
10. POWER CABLE, CX-13302/VRC (13 FT, 0 IN)
11. TIEDOWN STRAP

Figure 5-7(1). Cable Installation: Cargo Compartment

5.5 Installation of Cables. Continued.



1. SPEAKER
2. GROMMET
3. LOCK WASHER (1/4 IN)
4. LOOP CLAMP (1-1/4 IN)
5. LOOP CLAMP (1/2-1/4 IN)
6. LOOP CLAMP (3/4-1/4 IN)
7. TAPPING SCREW (1/4-14 X 3/4 IN)
8. POWER CABLE, CX-13320/VRC (13 FT, 0 IN)
9. SPEAKER CABLE, CX-13292/VRC (11 FT, 0 IN)
10. GROMMET
11. GROMMET

Figure 5-7(2). Cable Installation: Cab

5.5 Installation of Cables. Continued.

ITEM	ACTION	REMARKS
j. Power cable (8) and grommet (10).	Feed connector P1 of power cable (8) through the hole. Connect and secure connector P1 to the vehicle terminal block. See Figure 5-7(2), Detail A. Cut through grommet (10) on mark shown; then wrap around power cable (8) and install to hole in firewall. See Figure 5-7(2), Detail B for grommet cut mark. Seal the hole with RTV sealant.	Tools: Pocket knife.
k. Mounting hole for loop clamp.	Drill one 1/8 in diameter hole in the firewall approximately three inches to the left of the grommet just installed. See Figure 5-7(2).	Tools: Electric drill and 1/8 in drill bit.
l. Power cable (8), loop clamp (6), tapping screw (7) and lock washer (3).	Wrap loop clamp around power cable and install with indicated hardware to hole drilled in step k.	Tools: No. 2 Phillips screwdriver.
m. Speaker cable (9).	Route forward to the firewall along with the power cable (8); then route up the dash and connect and secure connector P1 to speaker (1) connector J1. See Figure 5-7(2).	
n. Mounting hole for loop clamp.	Drill one 1/8 in diameter hole in the dash panel between the ash tray and the glove box. See Figure 5-(2).	Tools: Electric drill and 1/8 in drill bit.
o. Speaker cable (9), loop clamp (5), tapping screw (7) and lock washer (3).	Wrap loop clamp around speaker cable and install with indicated hardware to hole drilled in step n.	Tools: No. 2 Phillips screwdriver.
p. Mounting hole for loop clamp.	Drill one 1/8 in diameter hole in firewall approximately as shown to secure the speaker and power cable. See Figure 5-7(2).	Tools: Electric drill and 1/8 in drill bit.
q. Speaker cable (9), power cable (8), loop clamp (4), tapping screw (7) and lock washer (3).	Wrap loop clamp around speaker and power cable and install with indicated hardware to hole drilled in step p.	Tools: No. 2 Phillips screwdriver.
r. Mounting hole for loop clamp.	Drill one 1/8 in diameter hole in the cab floor approximately six inches forward of the hole in the rear cab wall.	Tools: Electric drill and 1/8 in drill bit.
s. Speaker cable (9), power cable (8), loop clamp (4), tapping screw (7) and lock washer (3).	Wrap loop clamp around speaker and power cable and install with indicated hardware to hole drilled in step r.	Tools: No. 2 Phillips screwdriver.
t. Grommet (2).	Cut through grommet (2) on mark shown; then wrap around speaker and power cable and install to hole in cab rear wall. See Figure 5-7(2), Detail C.	Tools: Pocket knife.

5.5 Installation of Cables. Continued.

ITEM	ACTION	REMARKS
u. Grommet (11).	Cut through grommet (3) on mark shown; then wrap around speaker and power cable and install to hole in forward cargo compartment wall. Ensure that cable portion between cab and cargo compartment has drip loop. See Figure 5-7(2), Detail D.	Tools: Pocket knife.
v. Grommets installed in steps t and u.	Seal the holes with RTV sealant.	
w. Power cable (10) connector P2.	Connect and secure to mounting base (1) connector J1.	

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

ITEM	ACTION	REMARKS
a. Equipment.	Check for secure mounting. Check for loose parts, connectors, and mounting hardware.	
b. Cables.	Check for proper installation and connection of cables. See Figure 5-8 for cable connections. Unused cables should be stowed in appropriate place inside the 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) checks and instructions.	
f. MK line replaceable units.	See TM 11-5820-890-20P for Repair Parts and Special Tools List (RPSTL) information.	

5.6 Post-Installation and Checkout. Continued.

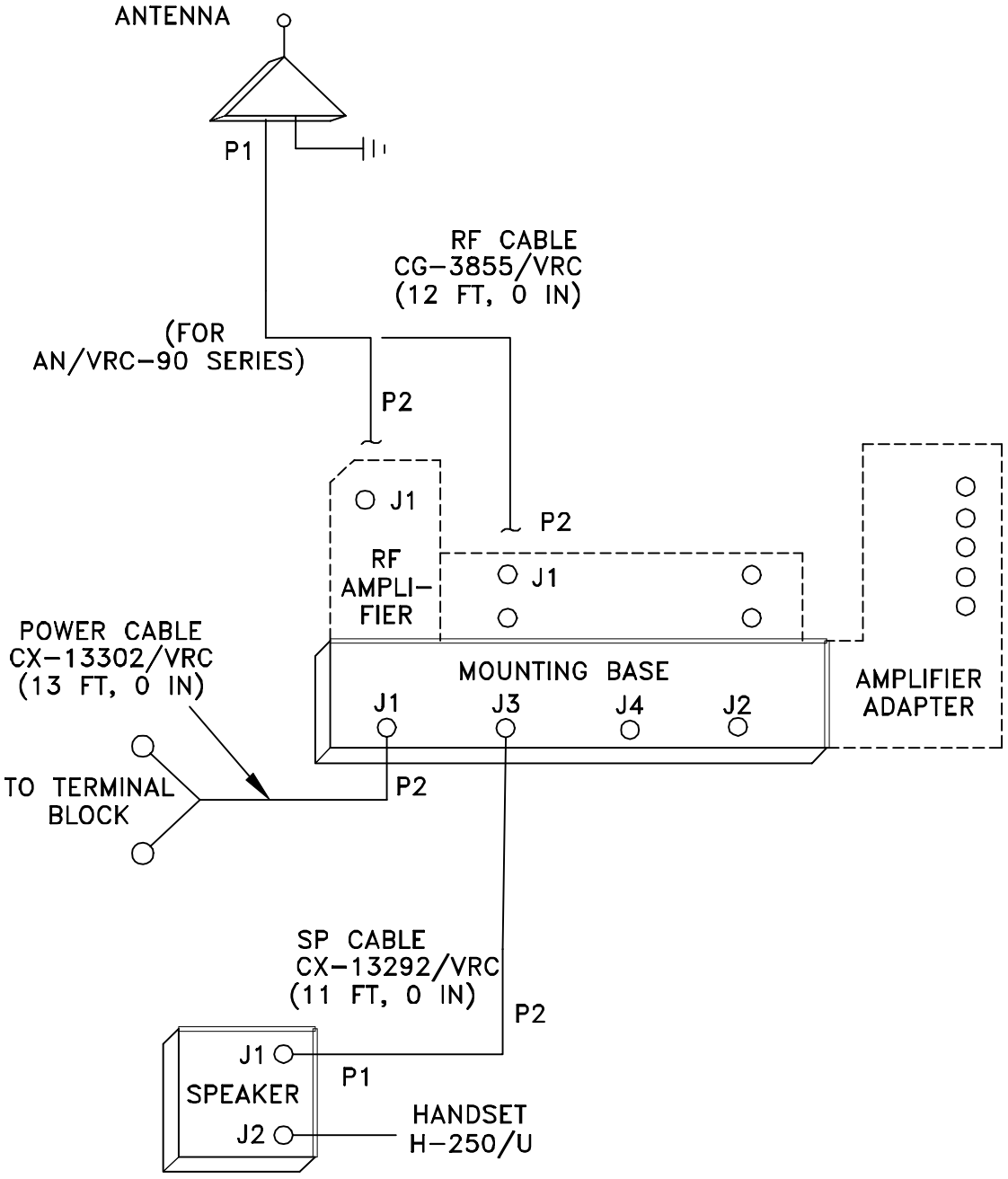


Figure 5-8. Cable Diagram: For AN/VRC-87/88/90 Series

5.6 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	J1	P1	Terminal block	
CG-3855/VRC (12 FT, 0 IN)	P1	Antenna base	J1	P2	RF amplifier or RT A	J1
CX-13292/VRC (11 FT, 0 IN)	P2	Mounting base	J3	P1	Speaker	J1

Figure 5-8. Cable Diagram: For AN/VRC-87/88/90 Series 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 Sets and Authorized Installations, Volume II, SINCGARS and EPLRS
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, Vol. 1)
TM 11-5820-890-20-2	Unit Maintenance Manual (ICOM Radio Sets, Vol. 2)
TM 11-5820-890-20-3	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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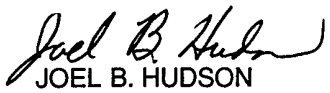

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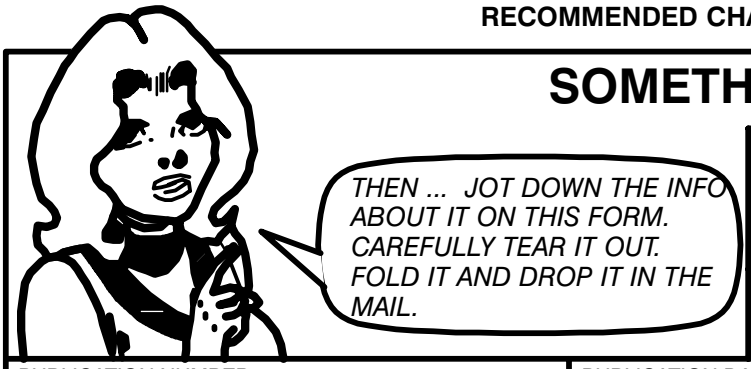

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3–10	3–3		3–1
5–6	5–8		
		FO–3	

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

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

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

Item 5, Fu[illegible]ctional co[illegible]n. Change ☐ 2 dB" to ☐ 3 dB".

REA[illegible] adjustment procedure for the TRANS POWER FAULT [illegible]r call for a 3 dB (500 watts) adjustment to light the TRA[illegible] POWER FAULT indicator.

A[illegible]d new step f.1 to read, ☐ Replace cover plate removed in step d above."

REASON: To replace the cover plate.

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

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

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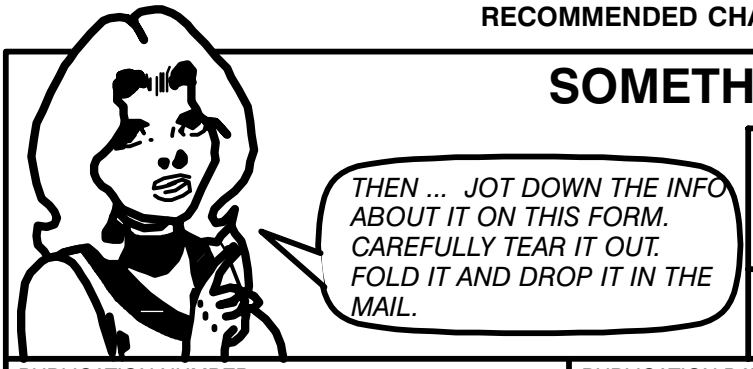

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