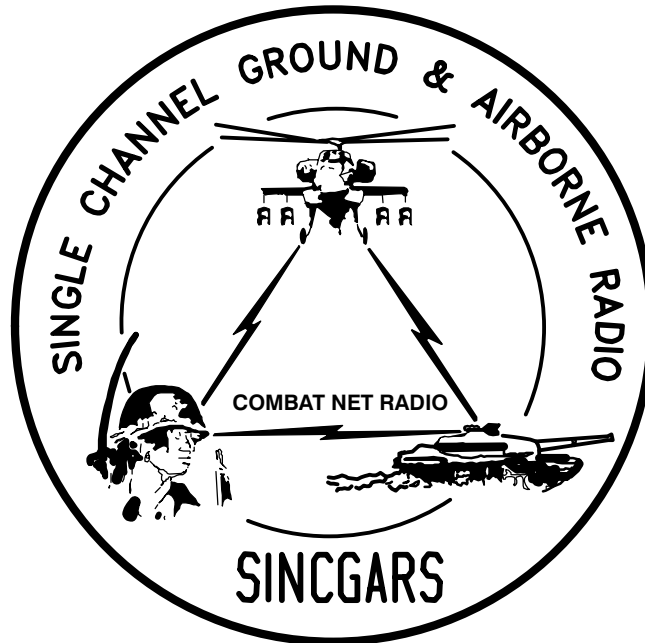


TECHNICAL BULLETIN



**INSTALLATION INSTRUCTIONS FOR
INSTALLATION KIT, ELECTRONIC EQUIPMENT,
MK-2531/VRC (NSN 5895-01-227-5841) (EIC: N/A)
TO PERMIT INSTALLATION OF
RADIO SET AN/VRC-87/88/90 SERIES
IN A
TRUCK, VAN, 2 1/2 TON, 6x6, SHOP:
M109 AND M109A1/A2/A3
AND
TRUCK, VAN, 5 TON, 6x6, EXPANSIBLE:
M820 AND M820A1/A2/A3**

Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY

1 JULY 2000

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 AND
 TRUCK, VAN, 5 TON, 6x6, EXPANSIBLE;
 M820 AND M820A1/A2/A3**

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronics Command Fort Monmouth, ATTN: AMSEL-LC-LEO-D-CS-CFO, Fort Monmouth, New Jersey 07703-5000. The Fax number is 732-532-1413, DSN 992-1413. You may also e-mail your recommendation to AMSEL-LC-LEO-PUBS-CHG@cecom3.monmouth.army.mil.

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

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*This manual supersedes TB 11-5820-890-20-80, dated 1 September 1993.

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0.1 SCOPE.

This technical bulletin provides Installation Instructions for Installation Kit, Electronic Equipment, MK–2531/VRC, commonly referred to as the Mounting Kit (MK). The MK shall be installed into the following type of vehicle(s):

- Truck, Van, Shop, 2 1/2 Ton, 6x6, M109
- Truck, Van, Shop, 2 1/2 Ton, 6x6, M109A1
- Truck, Van, Shop, 2 1/2 Ton, 6x6, M109A2
- Truck, Van, Shop, 2 1/2 Ton, 6x6, M109A3

- Truck, Van, Expansibile, 5 Ton, 6x6, M820
- Truck, Van, Expansibile, 5 Ton, 6x6, M820A1
- Truck, Van, Expansibile, 5 Ton, 6x6, M820A2
- Truck, Van, Expansibile, 5 Ton, 6x6, M820A3

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

NOTES

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

- This technical bulletin does not establish quantity or types of vehicles assigned to using units.

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

0.2 GENERAL INFORMATION.

The MK becomes operable when all the radio set components are installed in the vehicle and correct power is supplied. Refer to TM 11–5820–890–20–1 or TM 11–5820–890–20–4 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 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–2531/VRC(MK) contains the items needed to mount Radio Set AN/VRC– 87/88/90 Series in a Van, Truck, 2 1/2 Ton, 6x6, Shop: M109 and M109A1/A2/A3, and Van, Truck, 5 Ton, 6x6, Expansibile: M820 and M820A1/A2/A3 (vehicle).

2. END ITEM OR SYSTEM TO BE MODIFIED.

Not applicable.

3. APPLICATION TIMES.

3.1 Time for Completion of Installation. Using two people, a total of 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 times will not reflect the typical vehicle downtime.

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

4. PREPARATION FOR INSTALLATION.

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

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

4.1.1 Items to be Removed. Remove existing AN/VRC–12 radio family installation kit/harness. See TM 11–5820–401–20–2 for removing items used with intercom systems, or TM 11–5820–401–20–1 (used without intercom systems), TM 9 2320–209–20 and TM 9–2320–260–20.

4.1.2 List of Items to be Retained. Not applicable.

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

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

- a. Keep dust covers in place on connectors.
- b. Do not disassemble or modify parts in MK unless authorized to do so.
- c. Keep mounting hardware covered and protected until needed.
- d. When exposed to moisture, rain or salt water, keep all parts dry to prevent corrosion.

4.2.2 Unpack and Inspect Equipment.

4.2.2.1 Inspect Packaging for Evidence of Damage. Any shipping damage should be reported on SF364 Report of Discrepancy (ROD) as prescribed in AR 735–11–2/DLAR 4140.55/SECNAVINST 4355.18/AFR 400–54/MCO 4430.3J.

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/SECNAVINST 4355.18/AFR 400–54/MCO 4430.3J. All damages should be reported as prescribed by DA Pam 738–750, as contained in Maintenance Management Update.

4.3 MK, Distribution and Consumables.

4.3.1 Items Supplied in MK and/or Required for Installation. Use Table 4–1 and figure 4–1 to identify and inventory MK parts supplied to install Radio Set AN/VRC–87/88/90 Series. Refer to Table 4–2 and Figure 4–2 to identify additional items required to install for “D” and “F” Radio Sets.

4.3.2 Distribution and Issue Instructions.

- a. US Forces: Do not requisition MK. They will be shipped automatically.
- b. US Army Depots: Requisition MK through supply channels.
- c. Multiservice: Instructions shall be included for multiservice modifications.
- d. MAP/MAS Countries: Instructions shall be provided for MAP/MAS countries.

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

NSN	ITEM DESCRIPTION AND PART NUMBER	QUANTITY IN MK	SMR CODE	FIGURE, ITEM NO.
5985-01-297-2971	Antenna AS-3900/VRC (A3017899-1)	1	PAOOF A	4-1, 2
5305-00-847-1159	Screw, Cap, Hexagon (3/8-16 x 1 3/4 in) MS35307-365	4	PAOZZA	
5310-00-913-8881	Nut, Hexagon (3/8-16 in) MS51971-3	4	PAOZZA	
5310-00-061-1258	Washer, Lock, Internal/External-Toothed (3/8 in) MS45904-76	8	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal/External-Toothed (5/16 in) MS45904-72	2	PAOZZA	
5306-00-225-9086	Bolt, Machine (5/16-24 x 5/8 in) MS90726-31 (Not Used)	1	PAOZZA	
5330-01-205-2864	Gasket (A3013655-1)	1	PAOZZA	
5965-00-876-2375	Loudspeaker, Permanent Magnet LS-454/U	1	PAOZZA	4-1, 5
5975-01-188-8873	Mounting Base, Electrical Equipment MT-6352/VRC (A3013367-1)	1	PAOOF A	4-1, 1
5306-00-225-9089	Bolt, Machine (5/16-24 x 1 in) MS90726-34	5	PAOZZA	
5310-00-889-2527	Washer, Lock, Internal/External-Toothed (5/16 in) MS45904-72	10	PAOZZA	
5310-00-880-7746	Nut, Hexagon (5/16-24 in) MS51968-5 (Not Used)	5	PAOZZA	
5995-01-219-1843	Cable Assembly, Power, Electrical CX-13302/VRC (13 FT, 0 IN) (A3014039-2)	1	PAOZZA	4-1,15
5995-01-219-7034	Cable Assembly, Radio Frequency CG-3855/VRC (15 FT, 0 IN) (A3014031-7)	1	PAOZZA	4-1,16
5985-01-306-3828	Adapter, Antenna - OE-254 (A3018320-1)	1	PAOZZA	4-1, 6
5306-00-225-9089	Bolt, Machine (5/16-24 x 1 in) MS90726-34	12	PAOZZA	
5306-00-225-9097	Bolt, Machine (5/16-24 x 2 1/2 in) MS90726-42	2	PAOZZA	
	Bracket, Mounting - Antenna (A3050655-1)	1	XBOZZA	4-1, 7
	Bracket, Mounting - Reinforcement (A3014121-1)	1	XBOZZA	4-1, 9
	Bracket, Multiple Angle (A3014541-1)	3	XBOZZA	4-1, 8
	Bracket, Multiple Angle (A3014540-1)	2	XBOZZA	4-1,13
	Bracket, Multiple Angle (A3014547-1)	1	XBOZZA	4-1,12
	Channel, Structural (A3014123-1)	4	XBOZZA	4-1,10
5340-00-809-1490	Clamp, Loop (1/4-1/4 in) MS21333-98	7	PAOZZA	
5340-00-088-1254	Clamp, Loop (5/8-1/4 in) MS21333-104	9	PAOZZA	
5340-00-809-1494	Clamp, Loop (3/4-1/4 in) MS21333-105	4	PAOZZA	
4020-01-341-8795	Fiber Rope Assembly, Single Leg (A3167672-1)	1	PAOZZA	4-1, 4
	Grommet, Nonmetallic (A3046173)	2	XBOZZA	
5325-00-682-1854	Grommet, Nonmetallic (1/4 in) MS35489-65	1	PAOZZA	
5325-00-174-5315	Grommet, Nonmetallic (1/4 in) MS35489-7	1	PAOZZA	
	Grommet, Retainer (A3140057-1)	2	XBOZZA	

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.
5965-00-043-3463	Handset H-250/U	1	PAOZZA	4-1, 3
5310-00-761-6882	Nut, Hexagon (1/4-20 in) MS51967-2	3	PAOZZA	
5310-00-880-7746	Nut, Hexagon (5/16-24 in) MS51968-5	4	PAOZZA	
	Nut, Plain, Plate (A3014122-1)	8	XBOZZA	4-1,11
5305-00-068-0502	Screw, Cap, Hexagon (1/4-20 x 3/4 in) MS90725-6	13	PAOZZA	
5305-00-225-9099	Screw, Cap, Hexagon (5/16-24 x 3 in) MS90726-44	4	PAOZZA	
5305-01-313-3976	Screw, Tapping, Thread Forming, Pan-Head (5/16-12 x 1 in) MS51850-108	8	PAOZZA	
5305-00-432-4253	Screw, Tapping, Thread Forming, Hex-Head (1/4-14 x 3/4 in) MS51861-67	20	PAOZZA	
	Shelf, Electrical Equipment (A3014542-1)	1	XBOZZA	4-1,14
5975-00-111-3208	Strap, Tiedown, Electrical Components MS3367-5-9	10	PAOZZA	
5310-00-809-4058	Washer, Flat (1/4 in) MS27183-10	2	PAOZZA	
5310-00-081-4219	Washer, Flat (5/16 in) MS27183-12	21	PAOZZA	
5310-00-582-5965	Washer, Lock (1/4 in) MS35338-44	24	PAOZZA	
5310-00-407-9566	Washer, Lock (5/16 in) MS35338-45	17	PAOZZA	
5310-00-889-2528	Washer, Lock, Internal/External-Toothed (1/4 in) MS45904-68	5	PAOZZA	

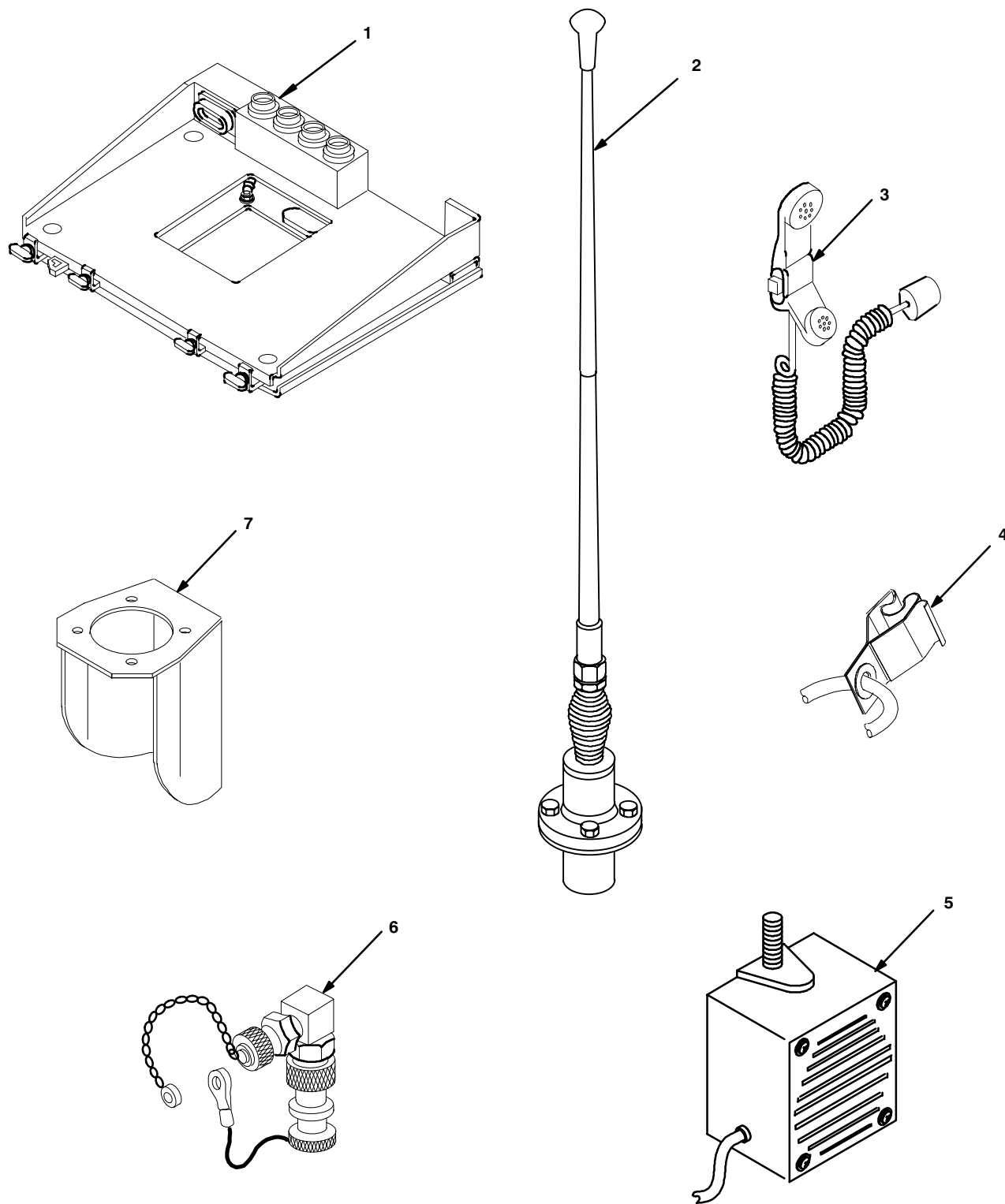


Figure 4-1 (1). MK Illustrated Parts List

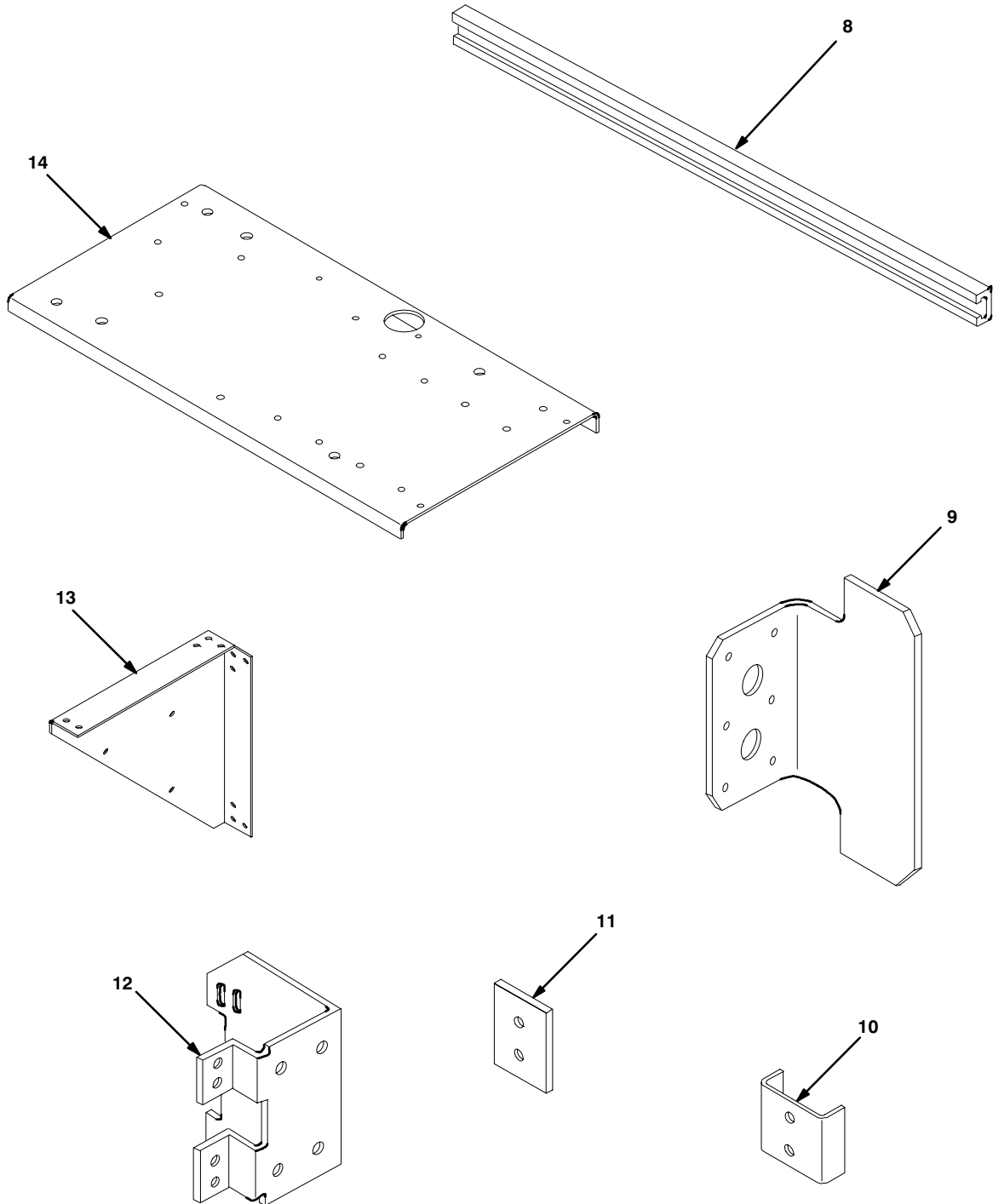


Figure 4-1 (2). MK Illustrated Parts List

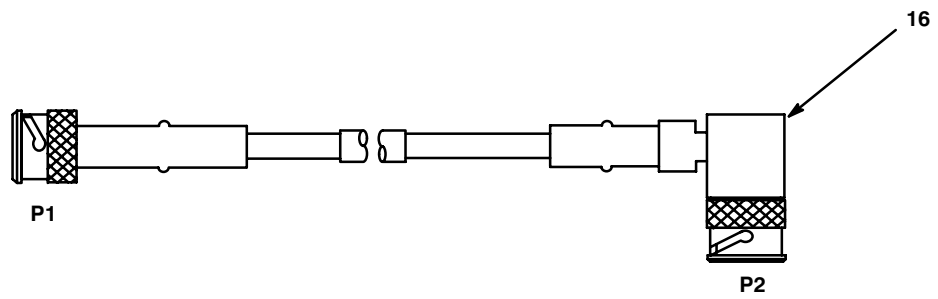
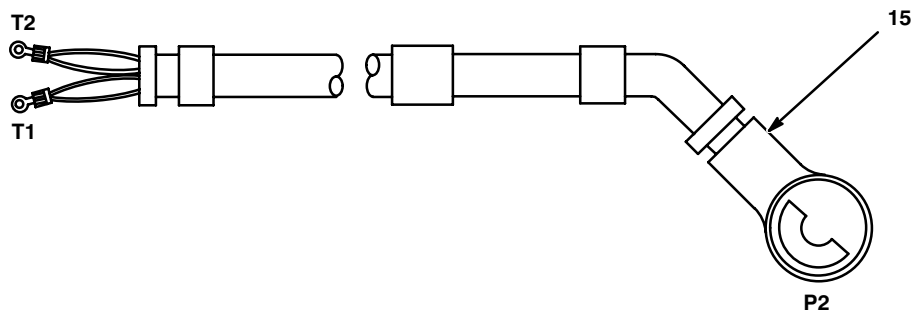


Figure 4-1 (3). MK Illustrated Parts List

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

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

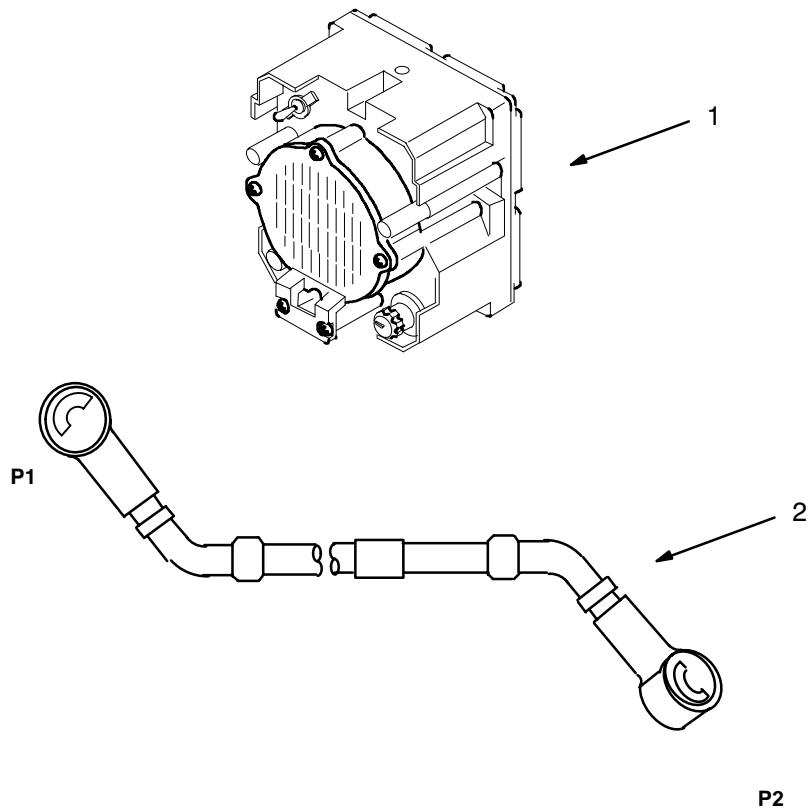


Figure 4-2. Illustrated Parts List for Table 4-2

4.3.3 Consumable Materials. The table below lists materials required for installation but not supplied with MK.

NSN	NOMENCLATURE
8040–00–117–8510	Adhesive–Sealant, Clear, RTV
6850–00–880–7616	Silicone Compound, MIL–S–8660
8030–00–292–1102	Conductive Anti–seize Compound

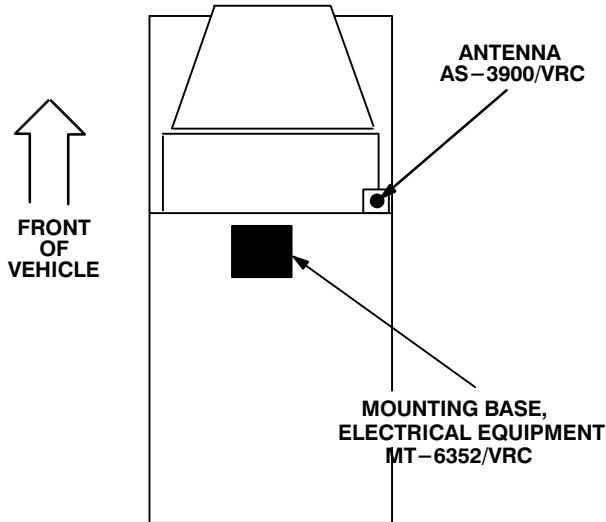
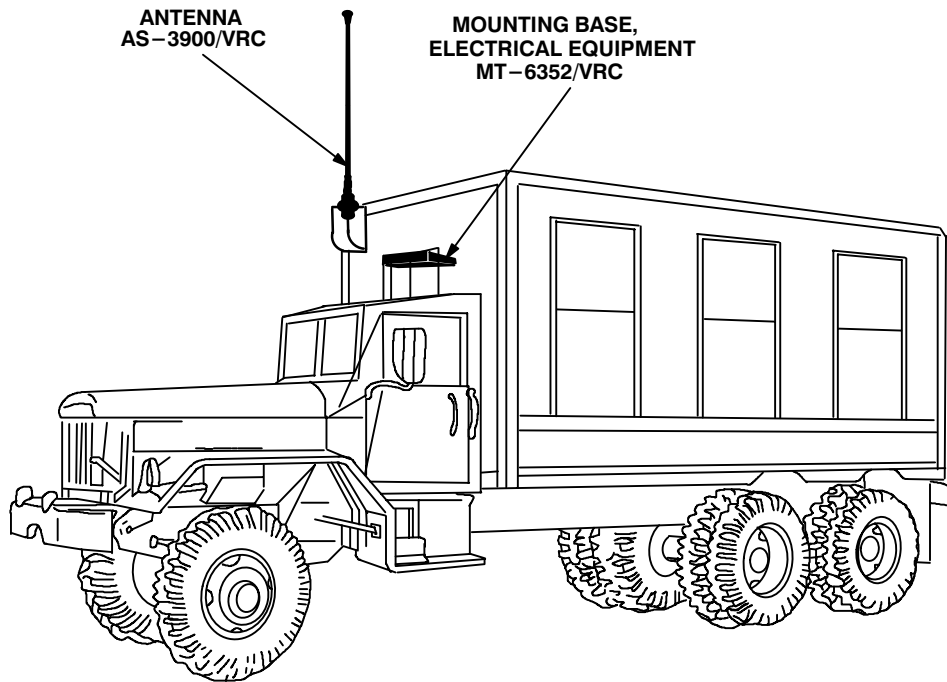
4.4 Tools and Test, Measurement and Diagnostic Equipment (TMDE) Required. The following tools and TMDE are needed for installation.

NOMENCLATURE	NSN	QUANTITY
Radio Set*		1
Electric Grinder or Equivalent		1
Pocket Knife, Electrician’s	5110–00–240–5943	1
Screwdriver, No. 2 Point Phillips, 4 in	5120–00–234–8913	1
Screwdriver, 1/4 in Flatblade, 4 in	5120–00–222–8852	1
Pliers, Round Nose	5120–00–240–6172	1
Pliers, Diagonal Cutting	5110–00–965–0974	1
Wrench, Open/Box: 7/16 in	5120–00–228–9505	1
1/2 in	5120–00–228–9506	1
9/16 in	5120–00–228–9507	1
5/16 in	5120–00–228–9503	1
3/4 in	5120–00–228–9510	1
Handle, Socket Wrench	5120–00–240–5364	1
Socket: 7/16 in	5120–00–227–6703	1
1/2 in	5120–00–237–0977	1
9/16 in	5120–00–227–6704	1
Electric Drill	5130–00–889–8994	1
Drill Bits: 3/16 in	5133–00–227–9654	1
1/4 in	5133–00–227–9658	1
9/32 in	5133–00–222–9374	1
11/32 in	5133–00–227–9664	1
3/4 in		1
1 1/4 in		1
5/16 in	5133–00–227–9662	1
13/32 in	5133–00–227–9668	1

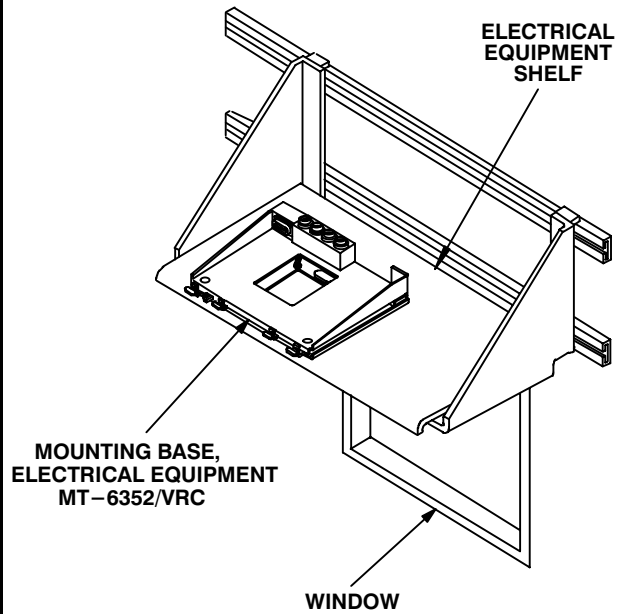
* Use radio issued with your vehicle if available.

5. INSTALLATION PROCEDURES.

This section describes where and how to install MK items in the vehicles. See figure 5-1 for an overall view of where the 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.



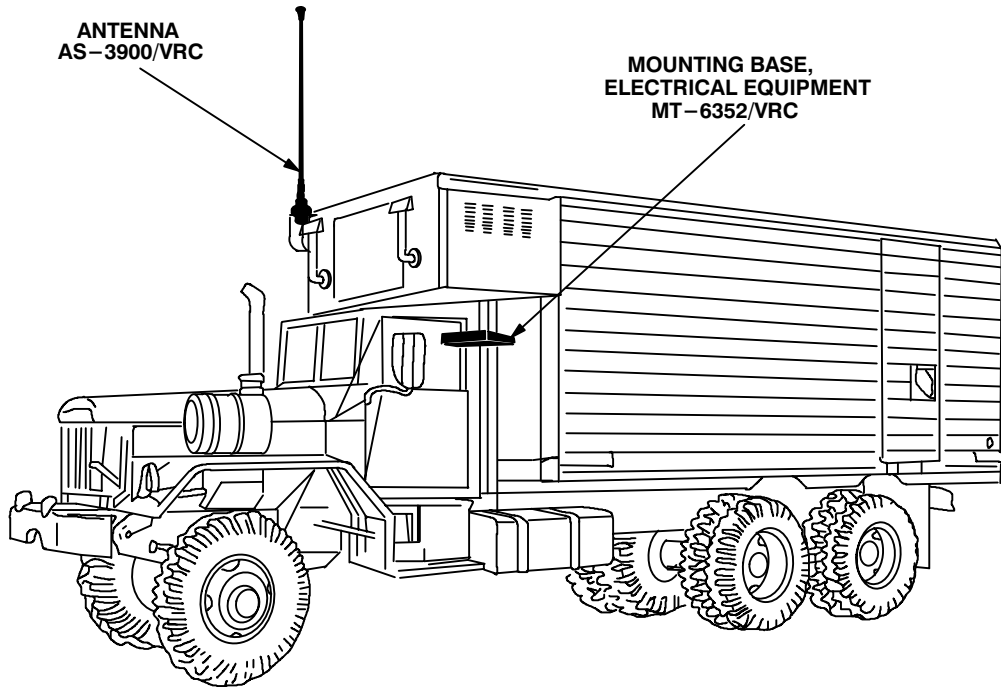
TOP VIEW



INTERIOR FRONT WALL

Figure 5-1 (1). MK and Radio Installation: MK Equipment Locations - M109 Series

5. INSTALLATION PROCEDURES. Continued.



M820 SERIES

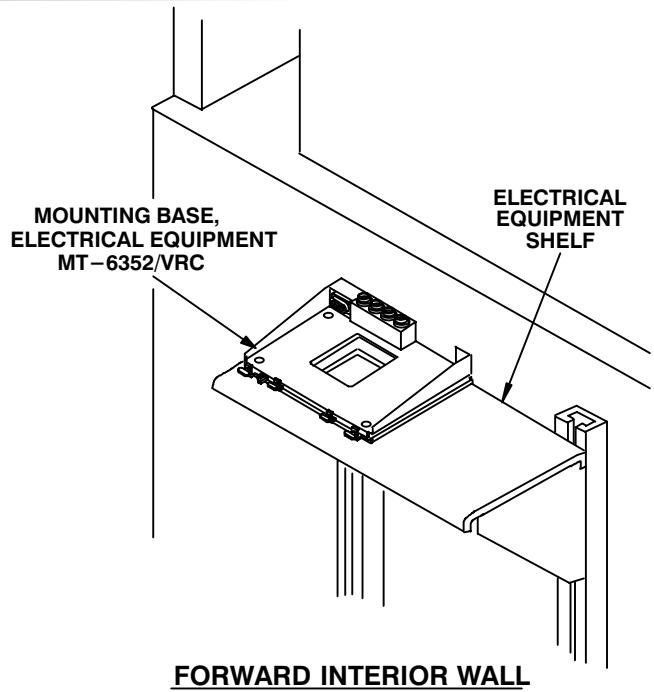
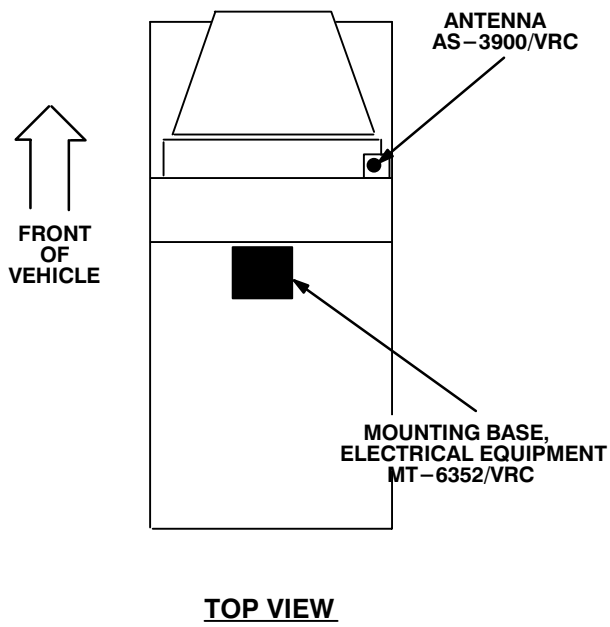


Figure 5-1 (2). MK and Radio Installation: MK Equipment Locations - M820 Series

5. INSTALLATION PROCEDURES. Continued.

INSTALLATION
FOR
AN/VRC-87/88/90 Series

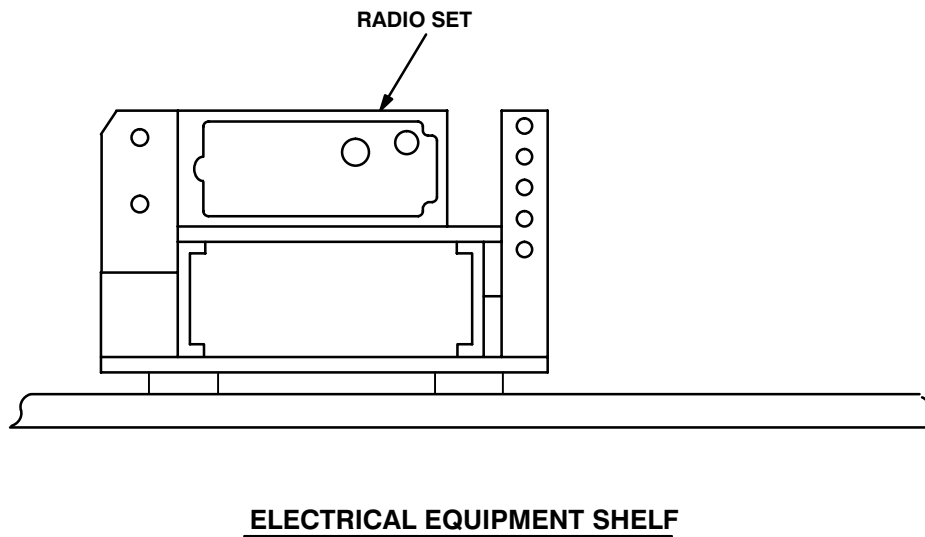


Figure 5-1 (3). MK and Radio Installation: Radio Equipment Locations - M109/M820 Series

5.1 Installation of Antenna AS-3900/VRC (antenna). Use the following procedures to install an antenna on the required vehicle. See figure 5-1 (1) or 5-1 (2) for location.

5.1.1 Installation of Antenna Base (M109 Series).

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. Two existing screws on upper curbside corner of vehicle. Remove from existing tapped holes. See figure 5-2 (1), detail A.

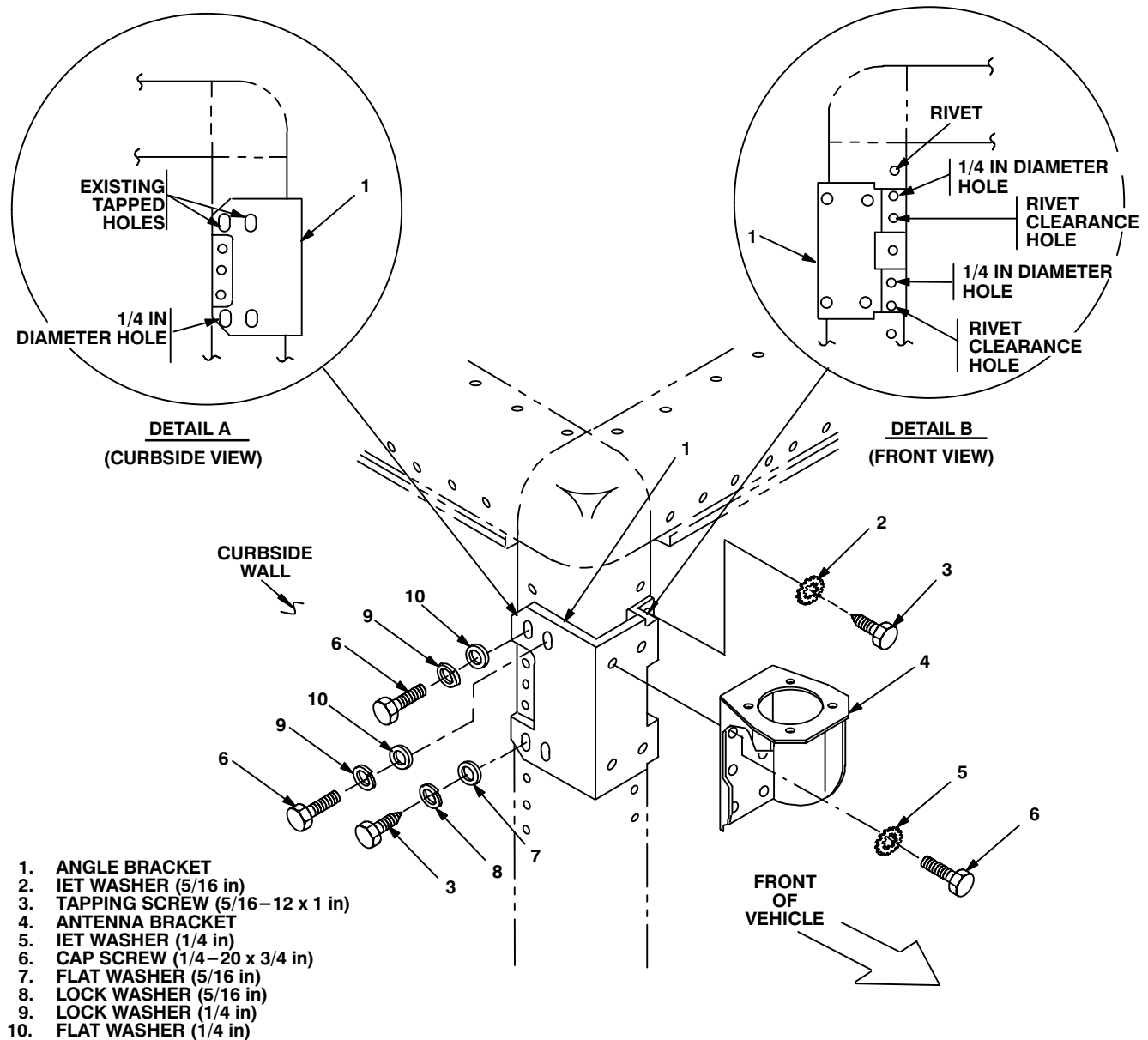


Figure 5-2 (1). Antenna Base Installation - M109 Series: Installing Brackets

5.1.1 Installation of Antenna Base (M109 Series). Continued

ITEM	ACTION	REMARKS
b. Angle bracket (1), antenna bracket (4) and four existing mounting holes in vehicle front wall.	Remove a 1" diameter area of paint around four existing mounting holes in vehicle front wall. Remove a 1" diameter area of paint around both sides of mounting holes in angle bracket (4) that mate with mounting holes in vehicle front wall. Clean the paint removed areas and apply a thin coat of conductive anti-seize compound.	Tools: Electric grinder or equivalent.
c. Angle bracket (1).	Position on upper curbside corner of vehicle; then align holes with two existing tapped holes on side and rivets on front. See Figure 5-2(1), Details A and B.	
d. Two cap screws (6), two lock washers (9) and two flat washers (10).	Install and secure to angle bracket (1) and curbside corner. See Figure 5-2(1).	Tools: 7/16 in socket.
e. Mounting holes for hex-head tapping screws (3).	Install and secure to angle bracket (1) and front wall. See Figure 5-2 (1).	Tools: Electric drill and 1/4 in drill bit.
f. Two hex-head tapping screws (3) and two IET washers (2).	Install and secure to angle bracket (1) and curbside corner.	Tools: 1/2 in socket.
g. Hex-head tapping screw (3), lock washer (7).	Position against angle bracket (1) and align mounting holes.	Tools: 1/2 in socket.
h. Antenna bracket (4).	Install and secure to antenna bracket (4), angle bracket (1) and front wall (except right bottom hole).	
i. Three cap screws (6) and three IET washers (5).	Place on antenna bracket (5) and align mounting holes. See Figure 5-2 (2).	Tools: 7/16 in socket.
j. Gasket (4).	Place on top of gasket (4) and antenna bracket (5); then align mounting holes.	
k. Antenna base (1).	Install and secure to antenna base (1) and antenna bracket (5).	
l. Four cap screws (2), eight IET washers (3) and four nuts (6).	Install and secure to right bottom hole in antenna bracket (5), angle bracket (10) and front wall.	Tools: 9/16 in socket and 9/16 in open/box wrench.
m. Grout strap (9), two IET washers (7) and cap screw (8).	Install and secure to mounting holes in antenna bracket (5). See Figure 5-2 (2), Detail A.	Tools: 1/2 in socket.
n. OE-254 antenna adapter (14), nut (13), two electrical covers (12), pan-head machine screw (11), lock washer (15) and nut (16).	Install and secure to mounting holes in antenna bracket (5). See Figure 5-2 (2), Detail A.	Tools: 3/4 in open/box wrench, 5/16 in open/box wrench and Phillips screw-driver.

5.1.1 Installation of Antenna Base (M109 Series). Continued

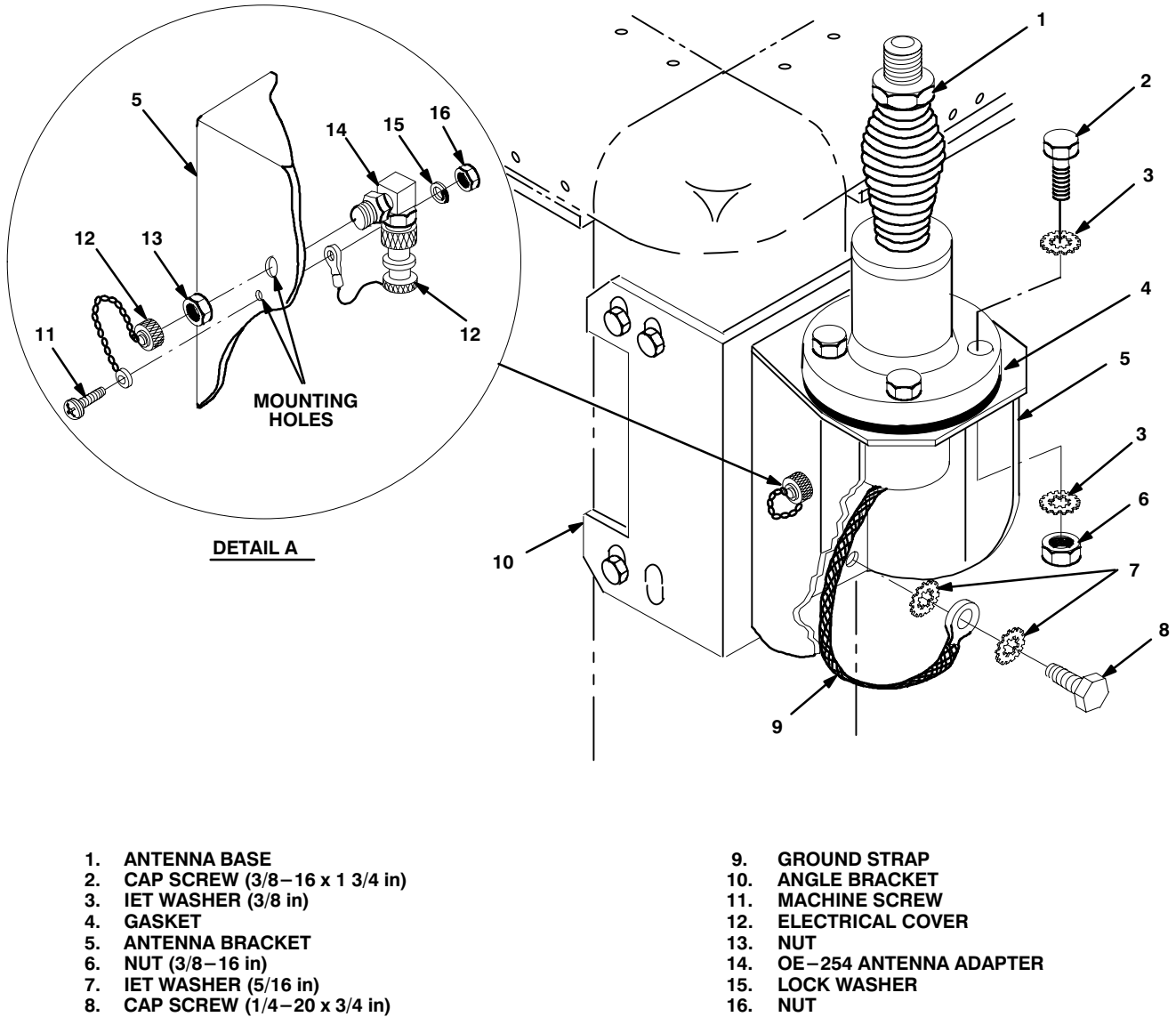


Figure 5-2 (2). Antenna Base Installation – M109 Series: Installing Antenna Base and OE-254 Adapter

5.1.2 Installation of Antenna Base (M820 Series).

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. Holes for reinforcement bracket (1) and antenna bracket (2).	Using dimensions shown and antenna bracket as a template, drill six 1/4 in diameter holes (through outer panel) and a 3/4 in diameter hole (through outer and inner panels). See Figure 5–3 (1). Remove a 1” diameter area of paint around the exterior and interior surfaces of the six drilled holes. Clean the paint removed areas and apply a thin coat of conductive anti–seize compound.	Tools: Electric grinder or equivalent, electric drill, 1/4 in drill bit and 3/4 in drill bit.
b. Reinforcement bracket (1).	Remove a 1” diameter area of paint around all six mounting holes on both sides of the reinforcement bracket (1), Clean the paint removed areas and apply a thin coat of conductive anti seize compound.	Tools: Electric grinder or equivalent.
c. Antenna bracket (2).	Enlarge six existing mounting holes to 11/32 in diameter. Remove a 1” diameter area of paint around all six mounting holes on both sides of the antenna bracket (2). Clean the paint removed areas and apply a thin coat of conductive anti–seize compound.	Tools: Electric drill 11/32 in drill bit and electric grinder or equivalent.
d. Reinforcement bracket (1), antenna bracket (2), five hex–head tapping screws (3) and five internal/external-toothed (IET) washers (4).	With exhaust shield of reinforcement bracket facing exhaust pipe, install and secure to holes drilled in step a (except bottom right hole).	Tools: 1/2 in socket.

5.1.2 Installation of Antenna Base (M820 Series). Continued

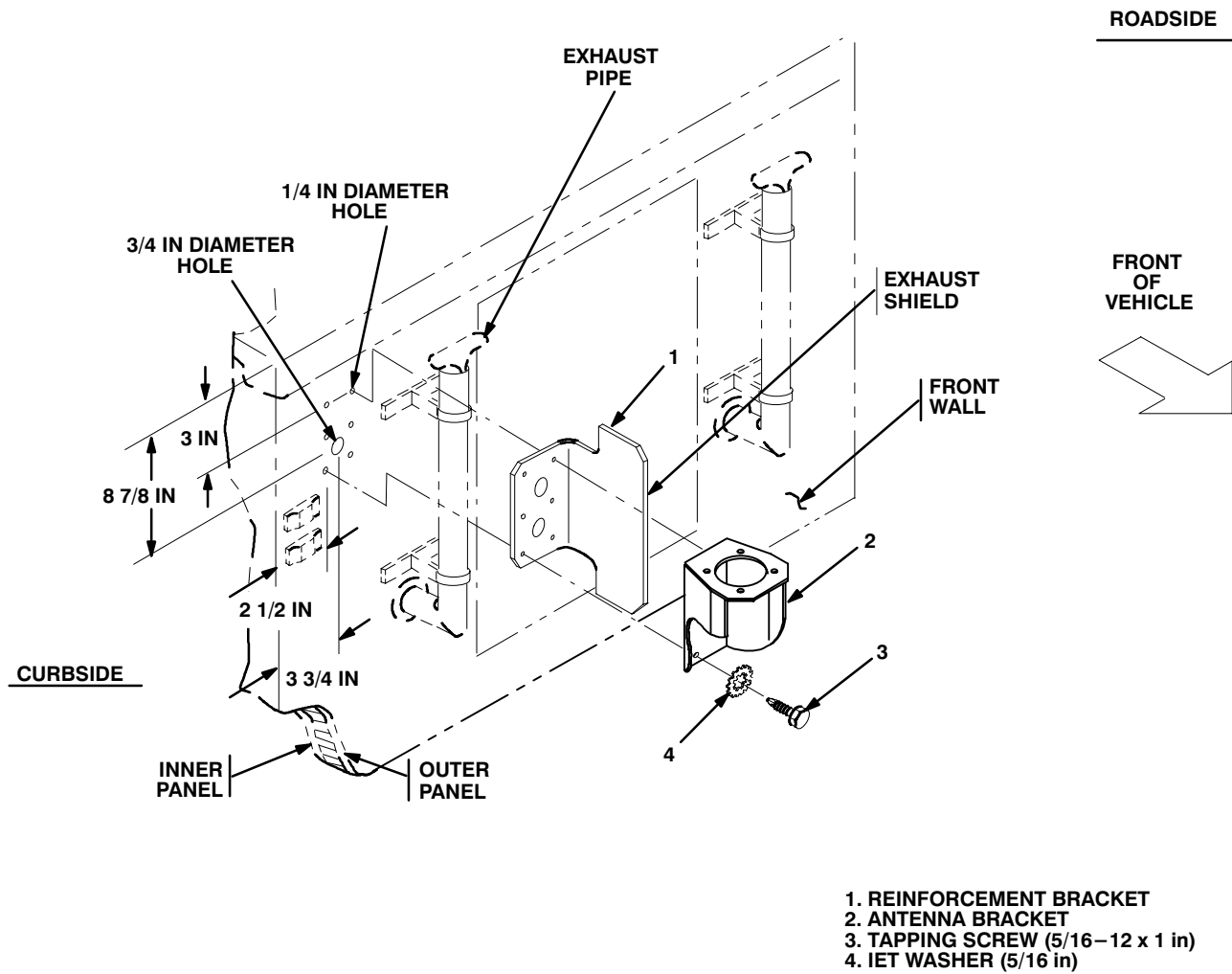


Figure 5-3 (1). Antenna Base Installation - M820 Series: Installing Brackets

5.1.2 Installation of Antenna Base (M820 Series). Continued

ITEM	ACTION	REMARKS
d. Gasket (4).	Place on antenna bracket (5) and aline with mounting holes. See figure 5-3 (2).	
e. Antenna base (1).	Place on top of gasket (4) and antenna bracket (5); then aline mounting holes.	
f. Four cap screws (2), eight IET washers (3) and four nuts (7).	Install and secure to antenna base (1) and antenna bracket (5).	Tools: 9/16 in socket and 9/16 in open/box wrench.
g. Ground strap (10), two IET washers (8) and hex-head tapping screw (9).	Install and secure to right bottom hole in antenna bracket (5), reinforcement bracket (6) and front wall.	Tools: 1/2 in socket.
h. OE-254 antenna adapter (14), nut (13), two electrical covers (12), pan-head machine screw (11), lock washer (15) and nut (16).	Install and secure to mounting holes in antenna bracket (5). See figure 5-3 (2), detail A.	Tools: 3/4 in open/box wrench, 5/16 in open/box wrench and Phillips screwdriver.

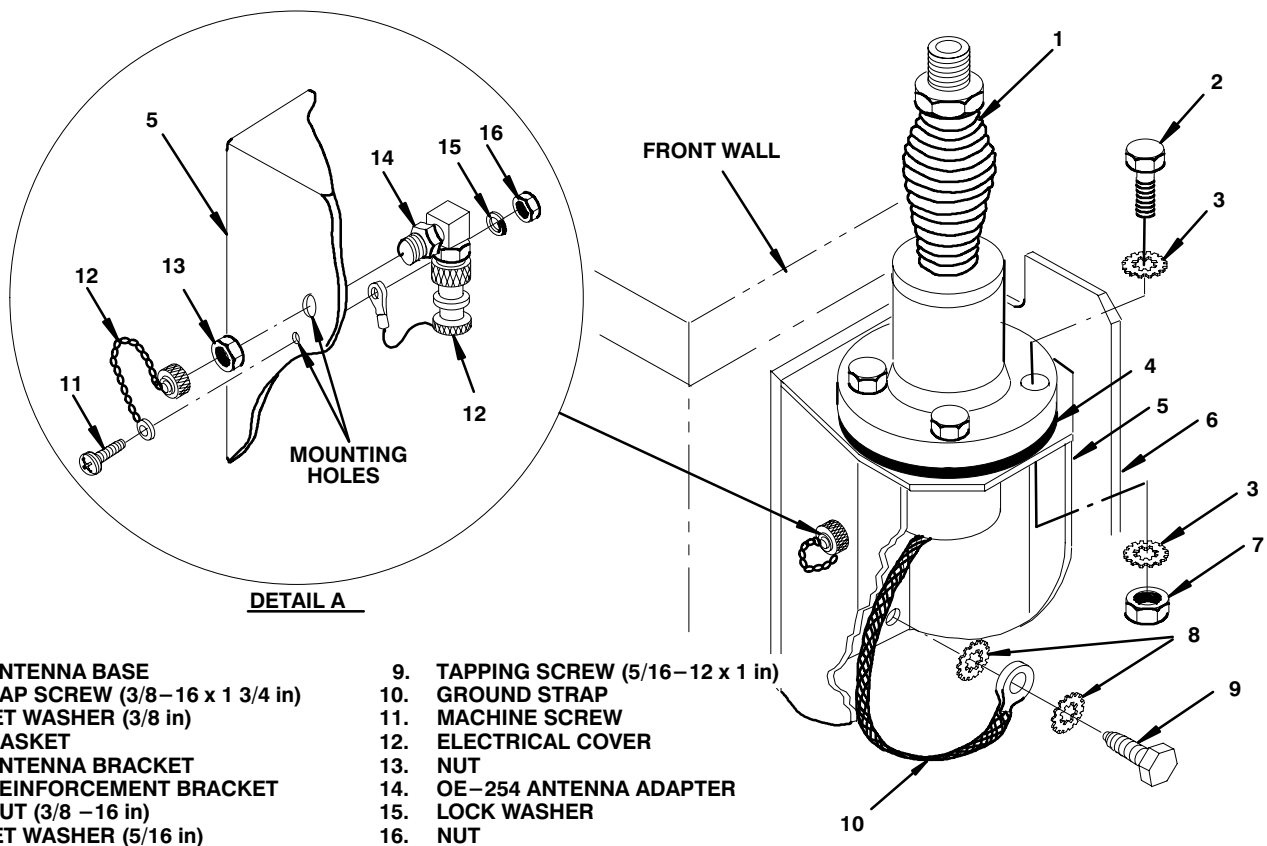
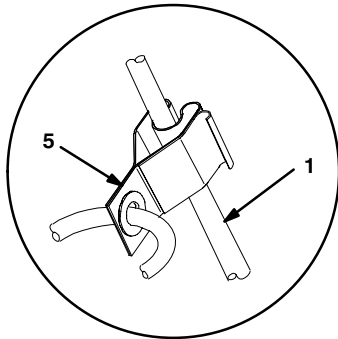


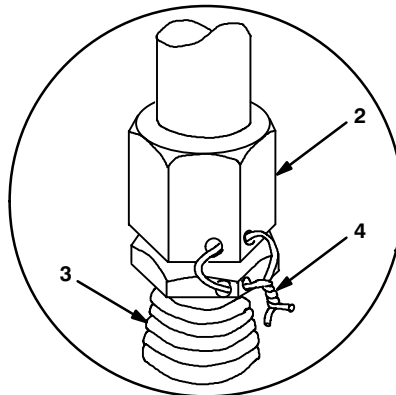
Figure 5-3 (2). Antenna Base Installation - M820 Series: Installing Antenna Base and OE-254 Adapter

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

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



DETAIL B



DETAIL A

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

Figure 5-4. Top Antenna Assembly Installation

5.2 Installation of Electrical Equipment Shelf (radio shelf). Use the following procedures for typical installations of radio shelf. If an alternate installation is desired, drilling dimensions and shelf assembly may be determined by the vehicle commander.

5.2.1 Installation of Radio Shelf (M109 Series). Use steps a thru n for typical shelf installation. Refer to step o for alternate installations.

ITEM	ACTION	REMARKS
a. Inside panel of front wall.	Using dimensions shown, mark locations A, B, C and D for radio mounting holes. Mark location E for RF cable hole. See figure 5-5 (1).	
b. Mounting hole location A and RF cable hole location E.	Drill two 11/32 in diameter holes through inside and outside panels of front wall.	Tools: Electric drill and 11/32 in drill bit.
c. Mounting hole locations B, C and D.	Drill 11/32 in diameter holes through inside panel of front wall only.	Tools: Electric drill and 11/32 in drill bit
d. RF cable hole E (drilled in step b).	Enlarge to 3/4 in diameter.	Tools: Electric drill and 3/4 in drill bit.

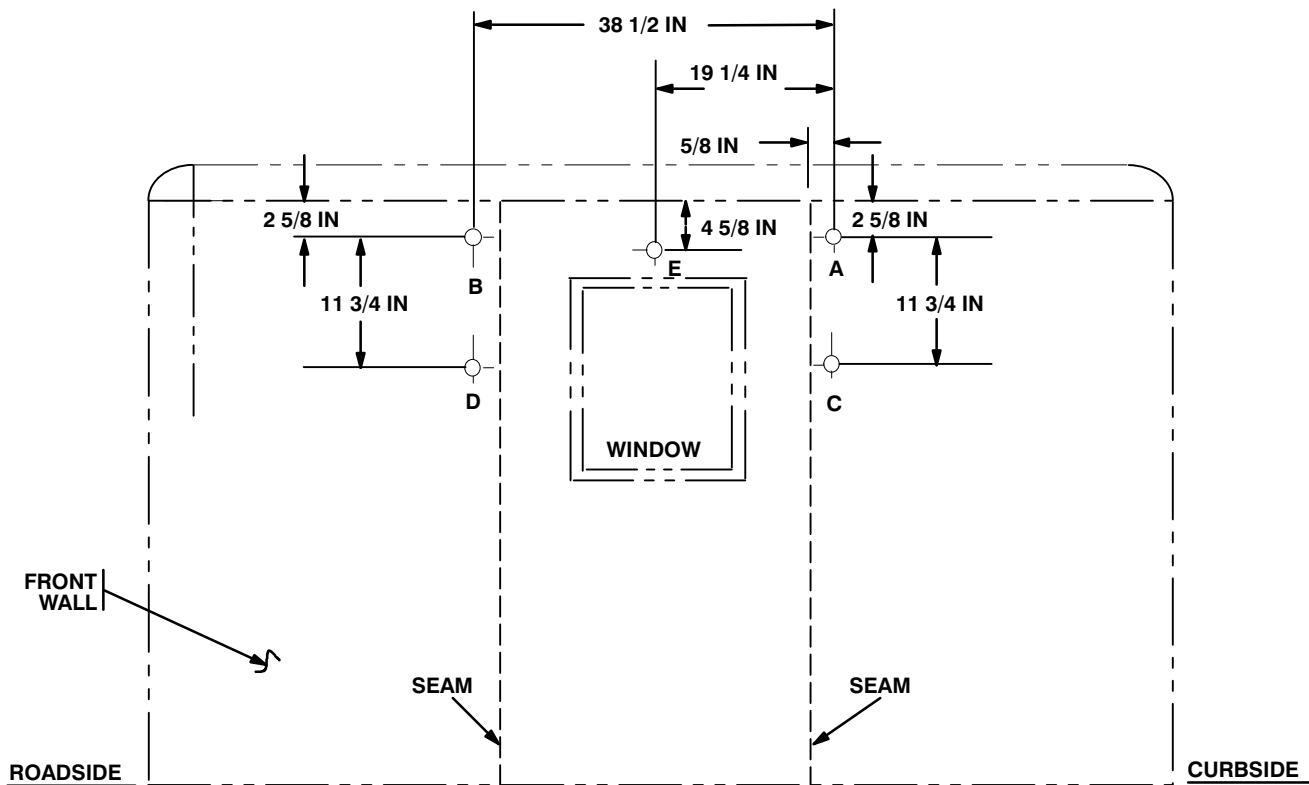


Figure 5-5 (1). Typical Radio Shelf Installation - M109 Series: Drilling Pattern (Inside)

5.2.1 Installation of Radio Shelf (M109 Series). Continued

ITEM	ACTION	REMARKS
e. Outside panel of front wall.	Using mounting hole A as a reference and dimensions shown, measure distances D1 and D2; then mark mounting hole locations B, C and D. See figure 5-5 (2).	
f. Mounting hole locations B, C and D.	Drill a 11/32 in diameter hole through outside panel of front wall.	Tools: Electric drill and 11/32 in drill bit.

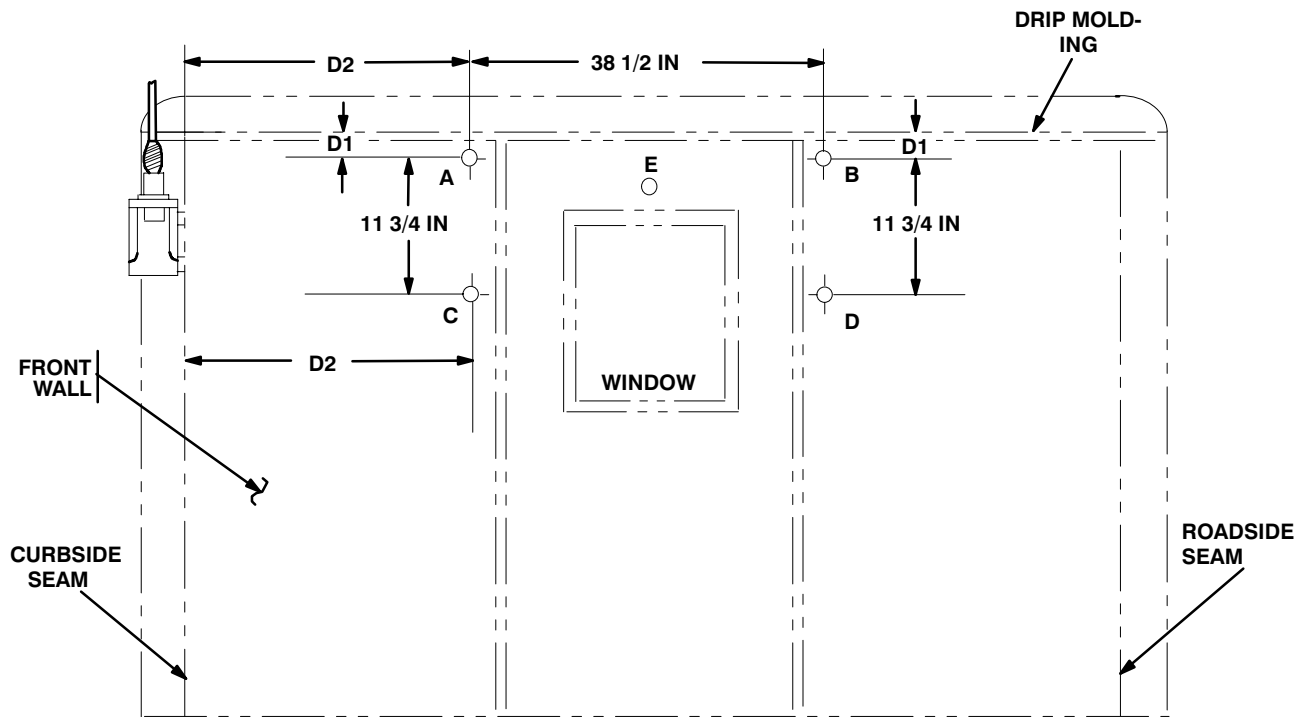
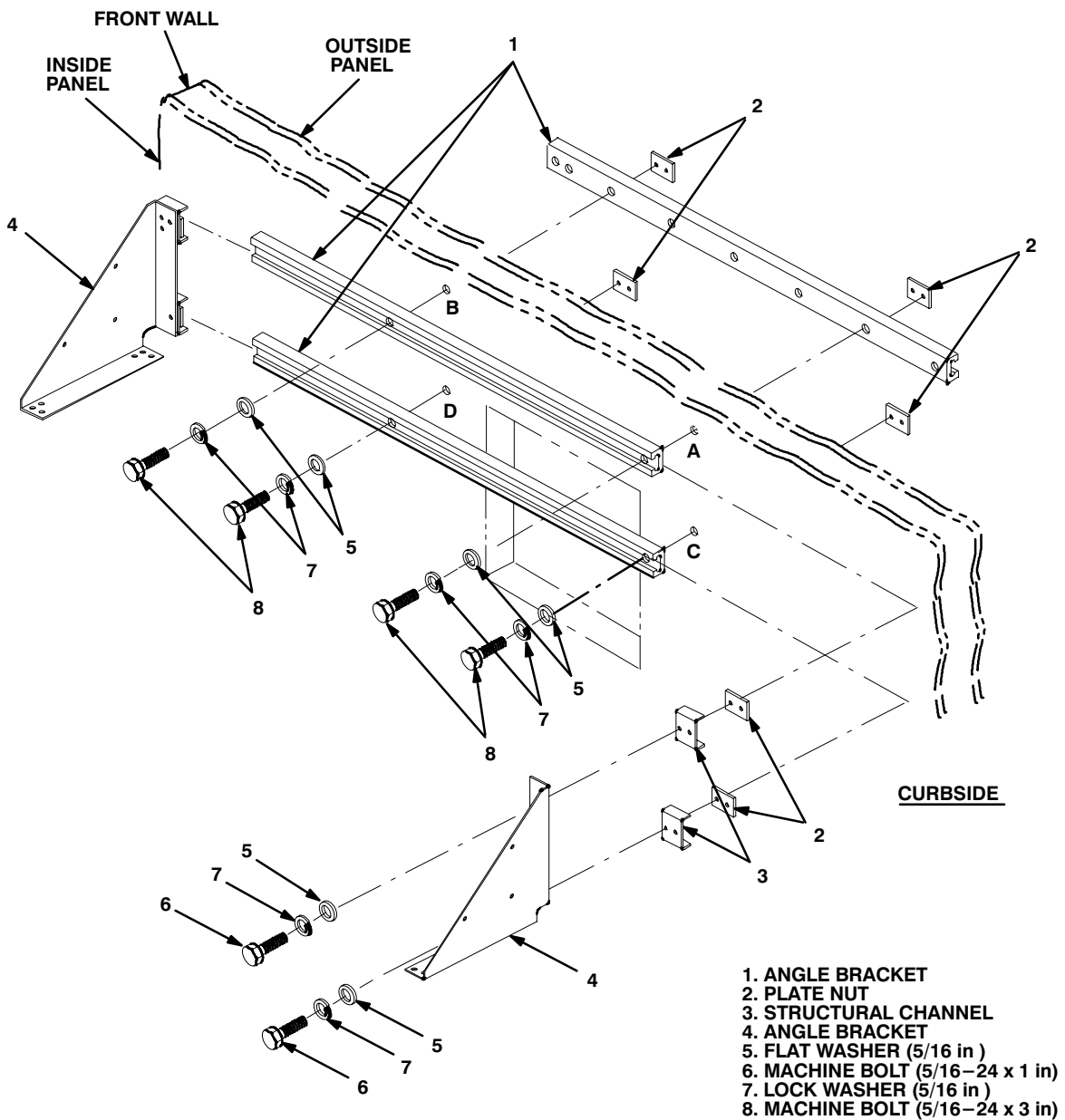


Figure 5-5 (2). Typical Radio Shelf Installation - M109 Series: Drilling Pattern (Outside)

g. Upper angle bracket (1), two machine bolts (8), two lock washers (7) and two flat washers (5).	Inside the vehicle, install to mounting holes A and B. See figure 5-5 (3).	Tools: 1/2 in socket.
h. Angle bracket (1) and two plate nuts (2).	Outside vehicle, install and secure to threads of two machine bolts (8) in mounting holes A and B.	Tools: 1/2 in socket.
i. Lower angle bracket (1), two machine bolts (8), two lock washers (7) and two flat washers (5).	Inside vehicle, install to mounting holes C and D.	Tools: 1/2 in socket.
j. Two plate nuts (2).	Outside vehicle, install and secure to threads of two machine bolts (8) in mounting holes C and D.	Tools: 1/2 in socket.

5.2.1 Installation of Radio Shelf (M109 Series). Continued

ITEM	ACTION	REMARKS
k. Two angle brackets (4), four structural channels (3), four plate nuts (2), eight machine bolts (6), eight flat washers (5), eight lock washers (7) and eight lock washers (7).	Assemble loosely; then slide onto angle brackets (1). See figure 5-5 (3).	Tools: 1/2 in socket.



- 1. ANGLE BRACKET
- 2. PLATE NUT
- 3. STRUCTURAL CHANNEL
- 4. ANGLE BRACKET
- 5. FLAT WASHER (5/16 in)
- 6. MACHINE BOLT (5/16-24 x 1 in)
- 7. LOCK WASHER (5/16 in)
- 8. MACHINE BOLT (5/16-24 x 3 in)

Figure 5-5 (3). Typical Radio Shelf Installation - M109 Series: Installing Channels and Angle Brackets

5.2.1 Installation of Radio Shelf (M109 Series). Continued

ITEM	ACTION	REMARKS
l. Radio shelf (1) and two angle brackets (2).	Remove a 1" diameter area of paint around both sides of four mounting holes in radio shelf (1). Remove a 1" diameter area of paint around top side of mounting holes in angle brackets (2) that mate with mounting holes in radio shelf (1). Clean the paint removed areas and apply a thin coat of conductive anti-seize compound.	
m. Radio shelf (1).	Place over two angle brackets (2), then align mounting holes. See Figure 5-5 (4).	
n. Four machine bolts (6), eight flat washers (5), four lock washers (4) and four nuts (7).	Install (without securing) to radio shelf (1) and two angle brackets (2).	Tools: 1/2 in socket and 1/2 in open/box wrench.
o. Mounting hardware installed in steps k and n.	Tighten securely.	Tools: 1/2 in socket and 1/2 in open/box wrench.
p. Alternate radio shelf installations.	See figures 5-6 (1) and 5-6 (2).	Tools: Insure grinding and bonding procedures are performed during installation.

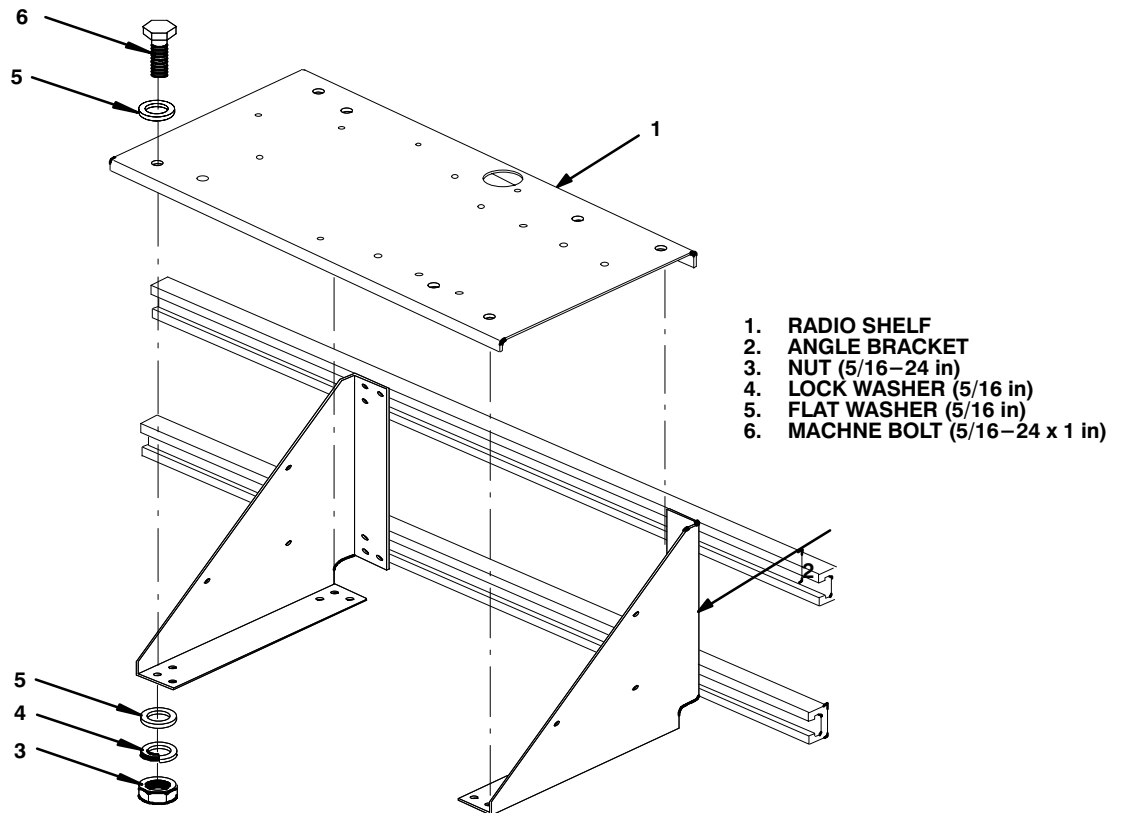


Figure 5-5 (4). Typical Radio Shelf Installation - M109 Series: Installing Radio Shelf

5.2.1 Installation of Radio Shelf (M109 Series). Continued

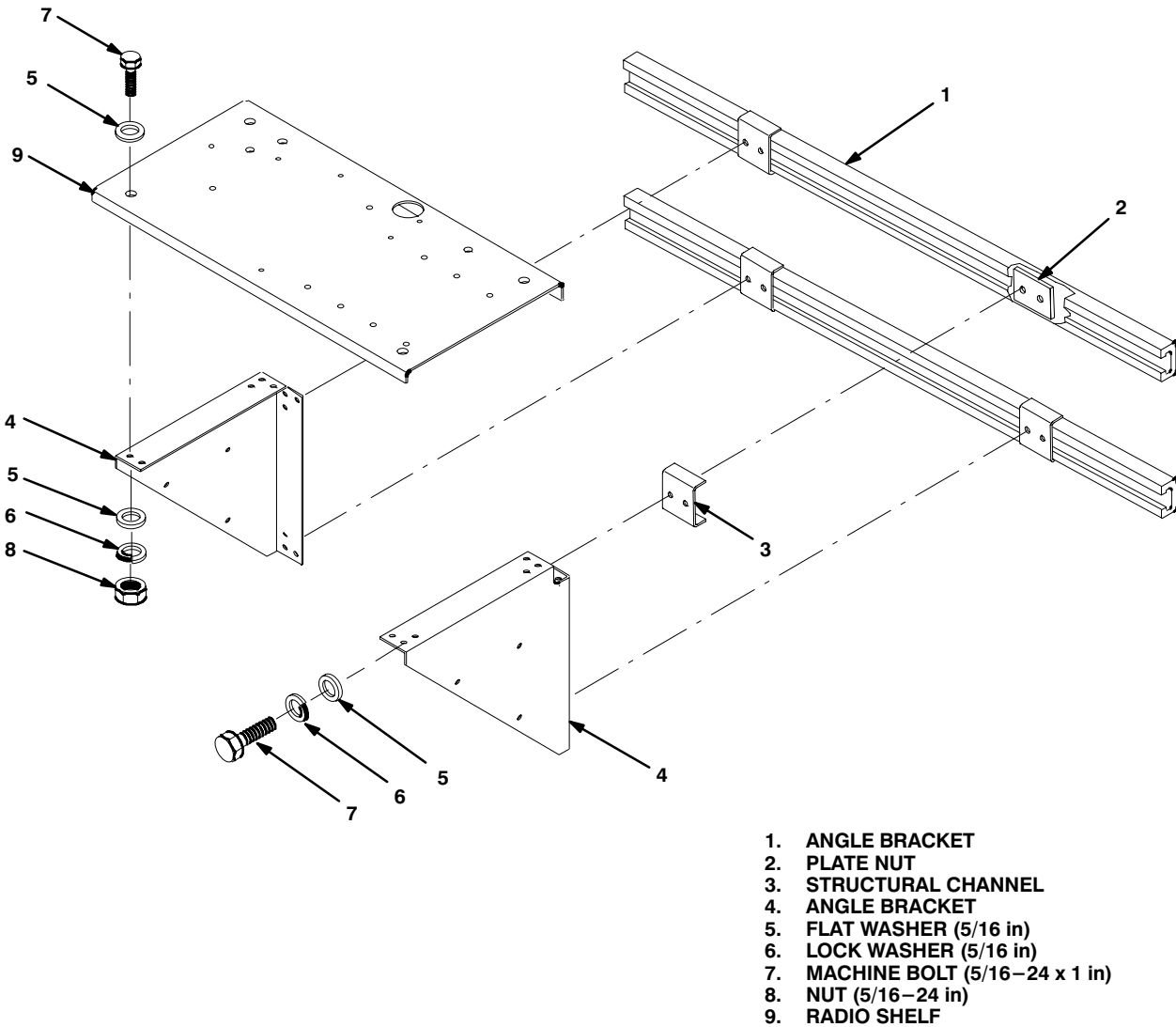
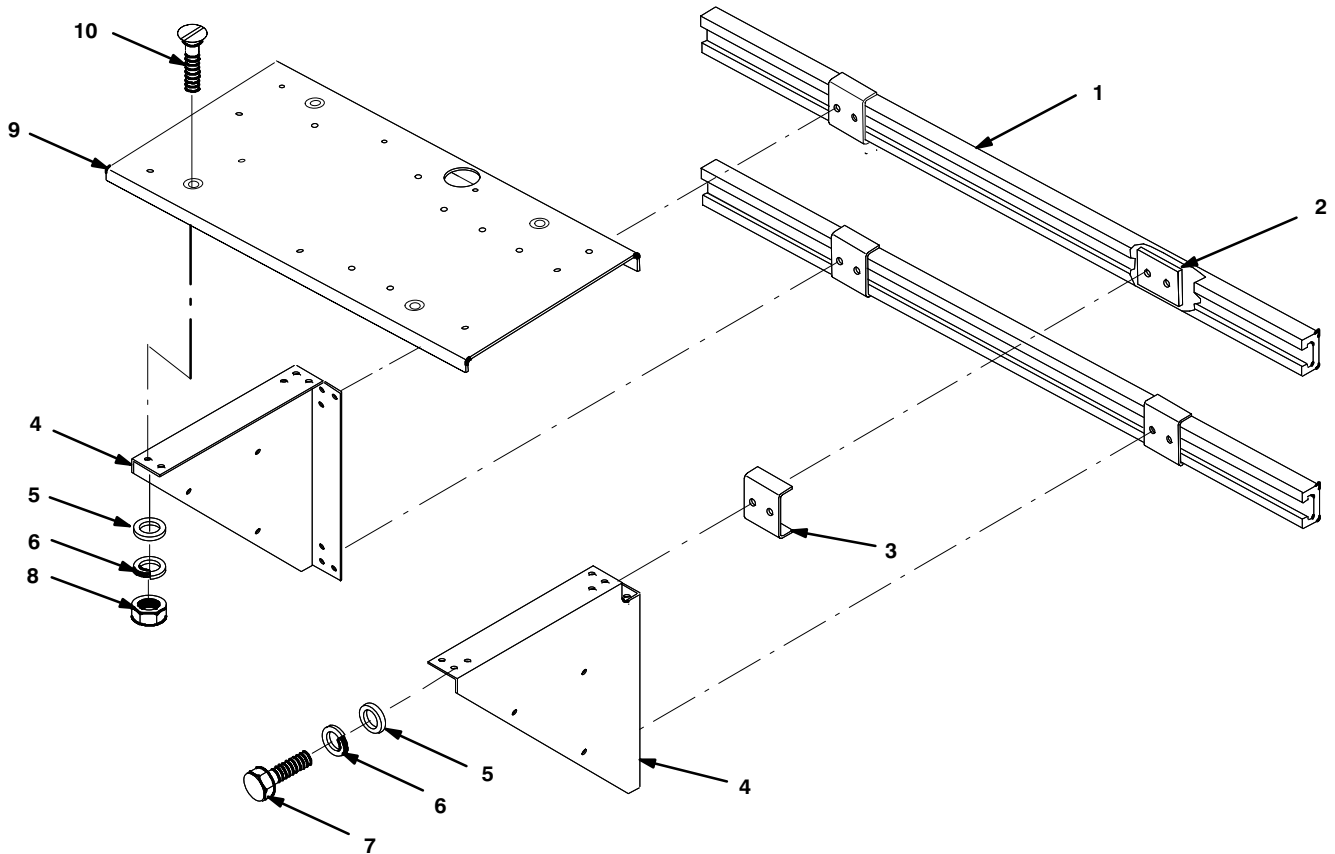


Figure 5-6 (1). Alternate Radio Shelf Installations - M109 Series

5.2.1 Installation of Radio Shelf (M109 Series). Continued

NOTE
ANGLE BRACKETS (4) CAN BE
MOUNTED OFFSET FROM EITHER
OR BOTH ENDS.



- 1. ANGLE BRACKET
- 2. PLATE NUT
- 3. STRUCTURAL CHANNEL
- 4. ANGLE BRACKET
- 5. FLAT WASHER (5/16 in)
- 6. LOCK WASHER (5/16 in)
- 7. MACHINE BOLT (5/16-24 x 1 in)
- 8. NUT (5/16-24 in)
- 9. RADIO SHELF
- 10. MACHINE SCREW (5/16-24 x 3/4 in)
(NOT SUPPLIED IN KIT)

Figure 5-6 (2). Alternate Radio Shelf Installation - M109 Series

5.2.2 Installation of Radio Shelf (M820 Series). Use steps a thru m for typical shelf installation. Refer to step o for alternate installations.

ITEM	ACTION	REMARKS
a. Inside panel of front wall.	Mark desired shelf mounting center line down length of wall. See figure 5-7 (1).	
b. Angle bracket.	Position vertically 15 1/2 in to left or right of center line with two hole end on floor.	
c. Mounting holes for angle bracket.	Using angle bracket as a template, drill 1/4 in diameter hole (through bottom hole) and 11/32 in diameter hole (through second hole from top).	Tools: Electric drill, 1/4 in drill bit and 11/32 in drill bit.

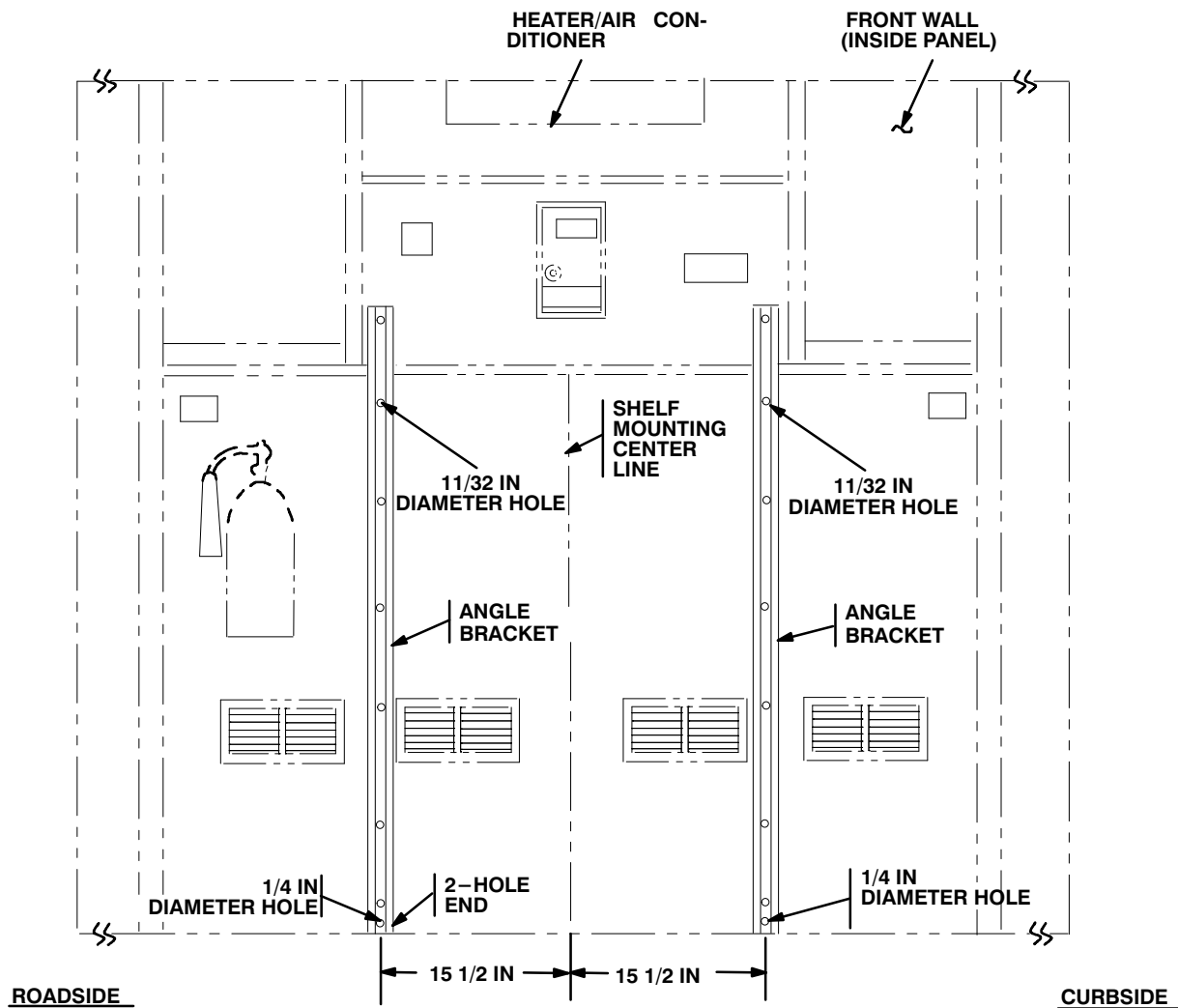


Figure 5-7 (1). Typical Radio Shelf Installation - M820 Series: Drilling Pattern

5.2.2 Installation of Radio Shelf (M820 Series). Continued

ITEM	ACTION	REMARKS
d. Angle bracket (1), hex-head tapping screw (5), lock washer (4) and flat washer (3).	Install (without securing) to bottom holes drilled in step c. See figure 5-7 (2).	Tools: 1/2 in socket.

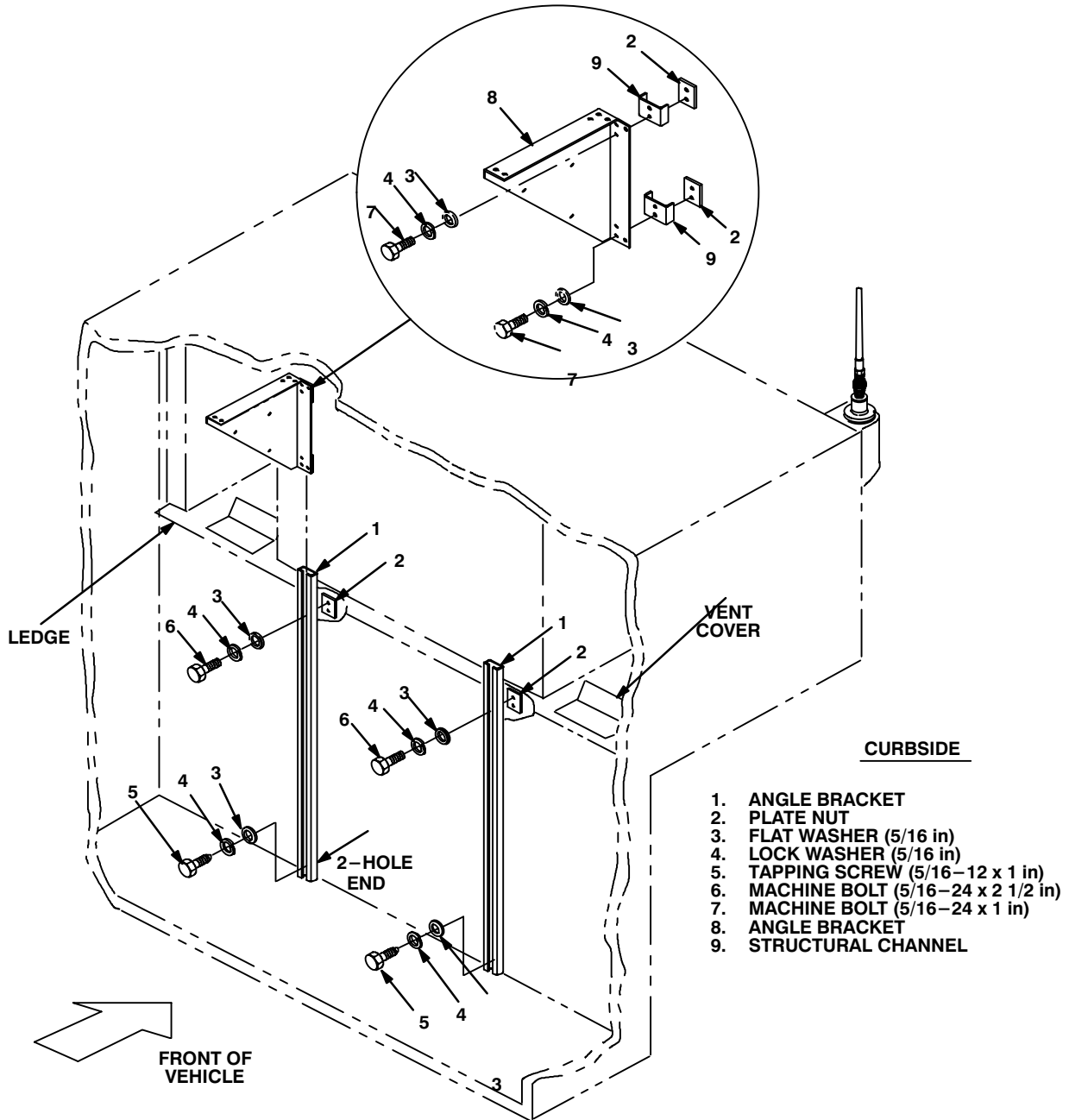


Figure 5-7 (2). Typical Radio Shelf Installation - M820 Series: Installing Angle Brackets

5.2.2 Installation of Radio Shelf (M820 Series). Continued

ITEM	ACTION	REMARKS
e. Vent cover.	Lift open and secure. See figure 5–7 (2).	
f. Plate nut (2).	Insert down through vent cover opening; then aline with upper hole drilled in step c.	
g. Machine bolt (6), lock washer (4) and flat washer (3).	Install and secure to angle bracket (1), front wall and plate nut (2).	Tools: 1/2 in socket.
h. Second angle bracket (1).	Repeat steps b thru g.	
i. Two angle brackets (8), four structural channels (9), eight machine bolts (7), eight flat washers (3), eight lock washers (4) and four plate nuts (2).	Assemble loosely and slide down onto two angle brackets (1) to desired height; then tighten machine bolt in each assembly to hold bracket in place.	Tools: 1/2 in socket.
j. Radio shelf (1) and two angle brackets (2).	Remove a 1” diameter area of paint around both sides of four mounting holes in radio shelf (1). Remove a 1” diameter area of paint around top side of mounting holes in angle brackets (2) that mate with mounting holes in radio shelf (1). Clean the paint removed areas and apply a thin coat of conductive anti seize compound.	Tools: Electric grinder or equivalent.
k. Radio shelf (1).	Place over two angle brackets (2), then align mounting holes. See Figure 5–7(3).	
l. Four machine bolts (6), eight flat washers (5), four lock washers (4) and four nuts (7).	Install (without securing) to radio shelf (1) and two angle brackets (2).	Tools: 1/2 in socket and 1/2 in open/box wrench.
m. Mounting hardware installed in steps d, i and l.	Tighten securely.	Tools: 1/2 in socket and 1/2 in open/box wrench.
n. Vent covers.	Close.	
o. Alternate radio shelf	See Figures 5–8(1) and 5–8(2).	Note: Insure grinding and bonding procedures are performed during installation.

5.2.2 Installation of Radio Shelf (M820 Series). Continued

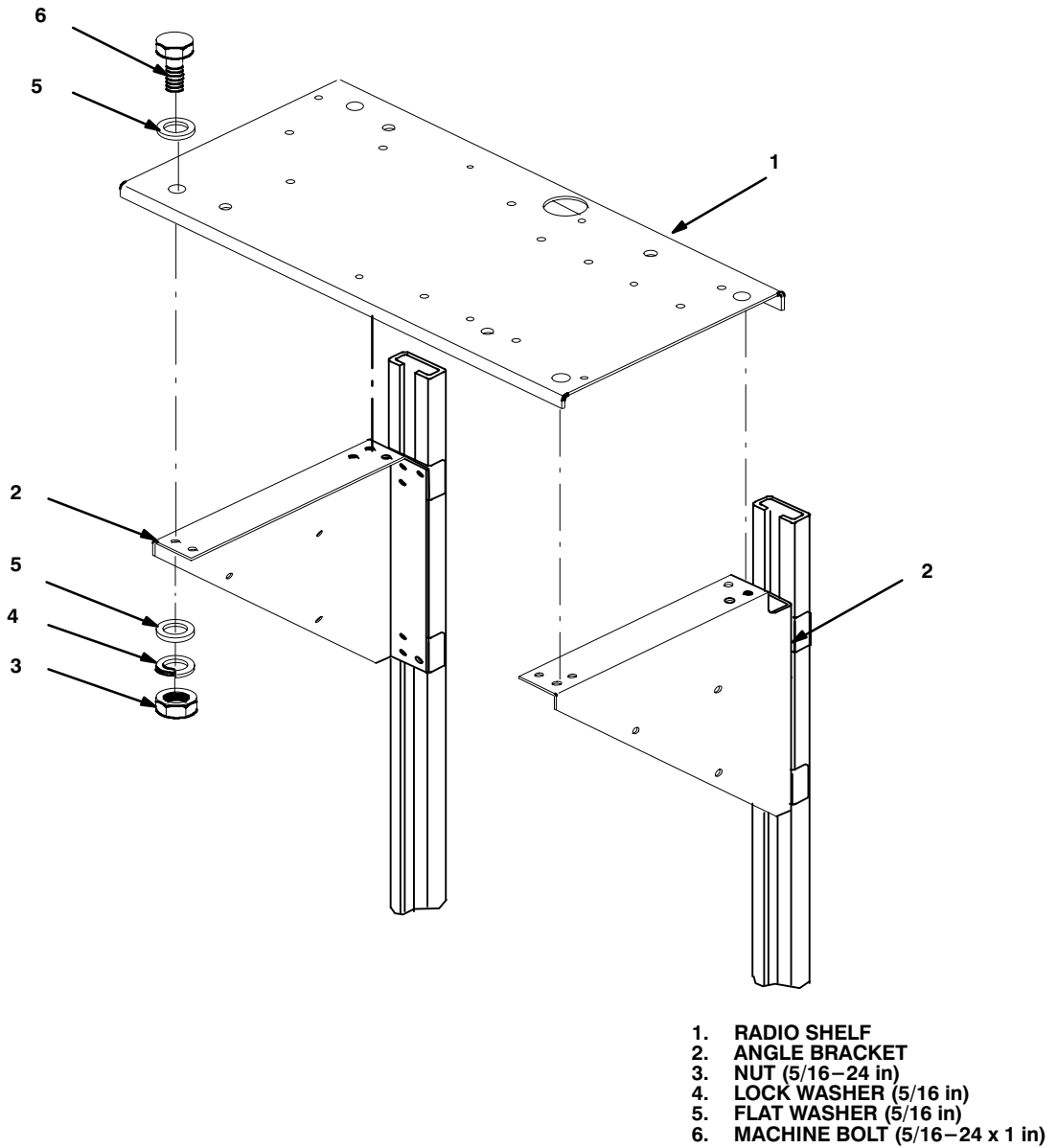


Figure 5-7 (3). Typical Radio Shelf Installation - M820 Series: Installing Radio Shelf

5.2.2 Installation of Radio Shelf (M820 Series). Continued

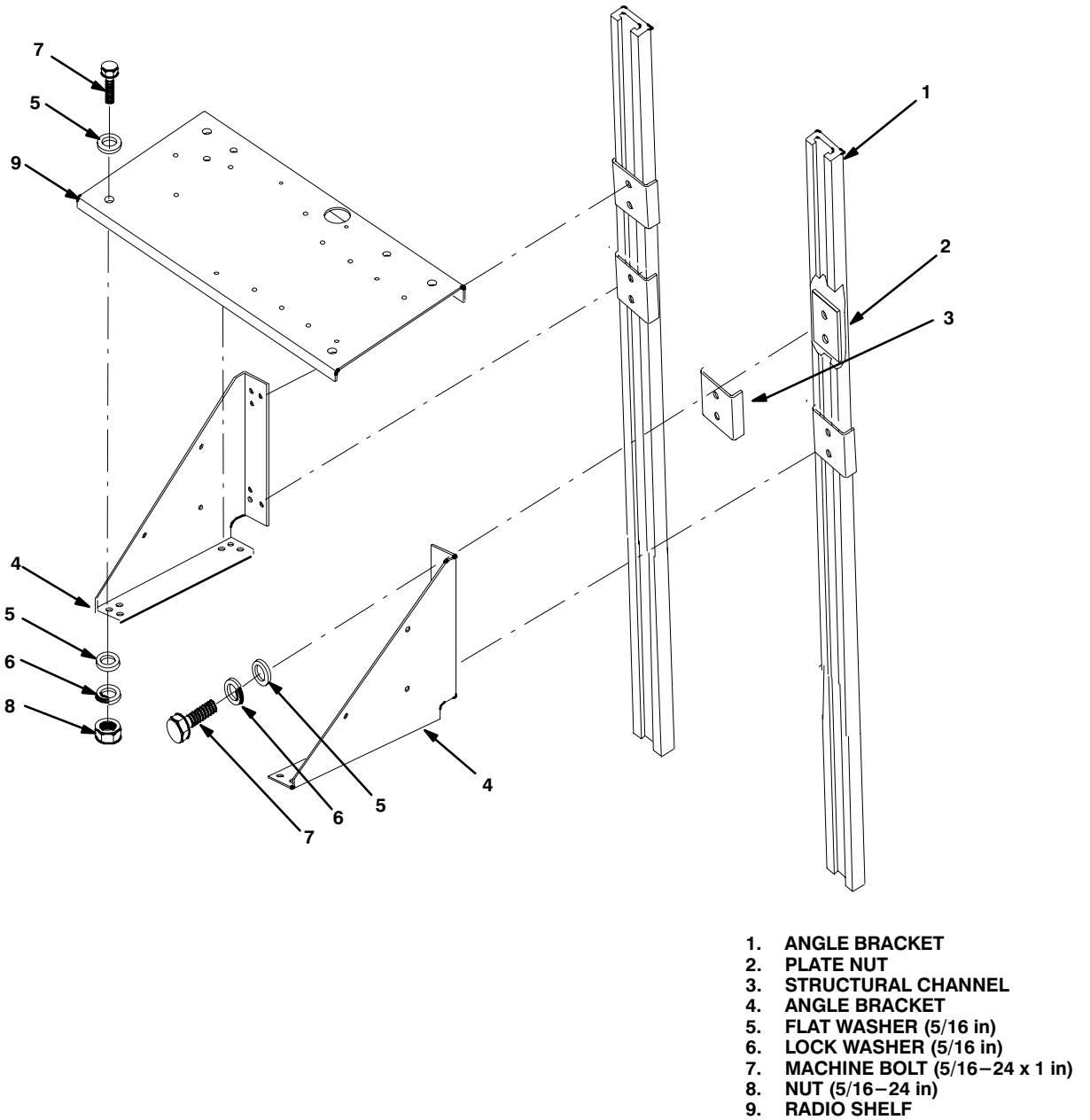


Figure 5-8 (1). Alternate Radio Shelf Installations - M820 Series

5.2.2 Installation of Radio Shelf (M820 Series). Continued

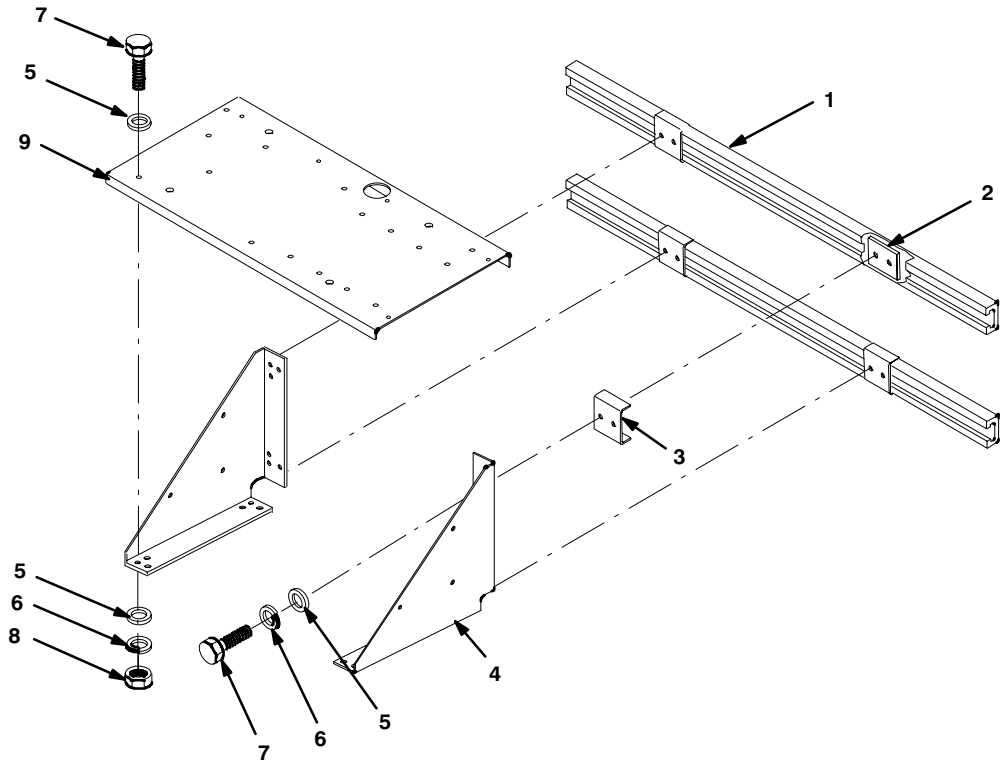
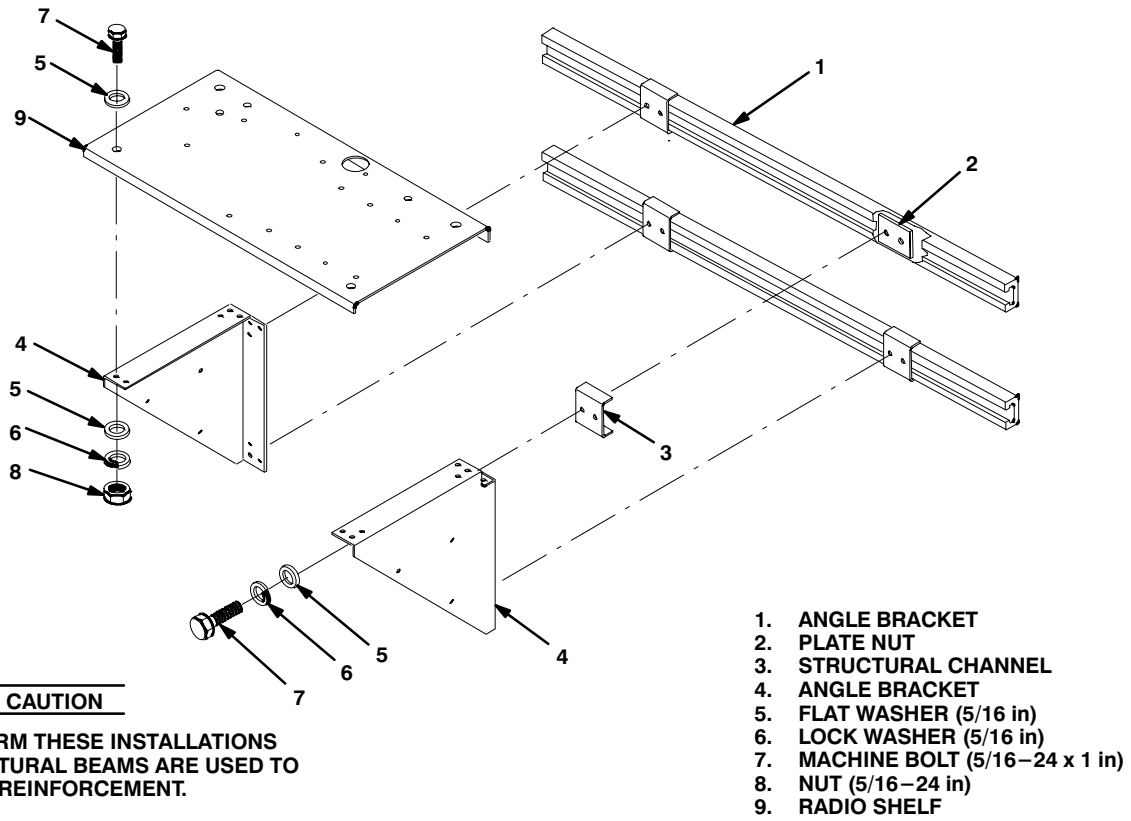


Figure 5-8 (2). Alternate Radio Shelf Installations - M820 Series

5.3 Installation of Mounting Base, Electrical Equipment MT-6352/VRC (mounting base). Remove and retain attaching bag of 5/16 in mounting hardware for installation. To insure good electrical grounding, any rust, corrosion or paint around mounting holes in radio shelf should be removed before installing the mounting base. See figure 5-9 and perform the following steps.

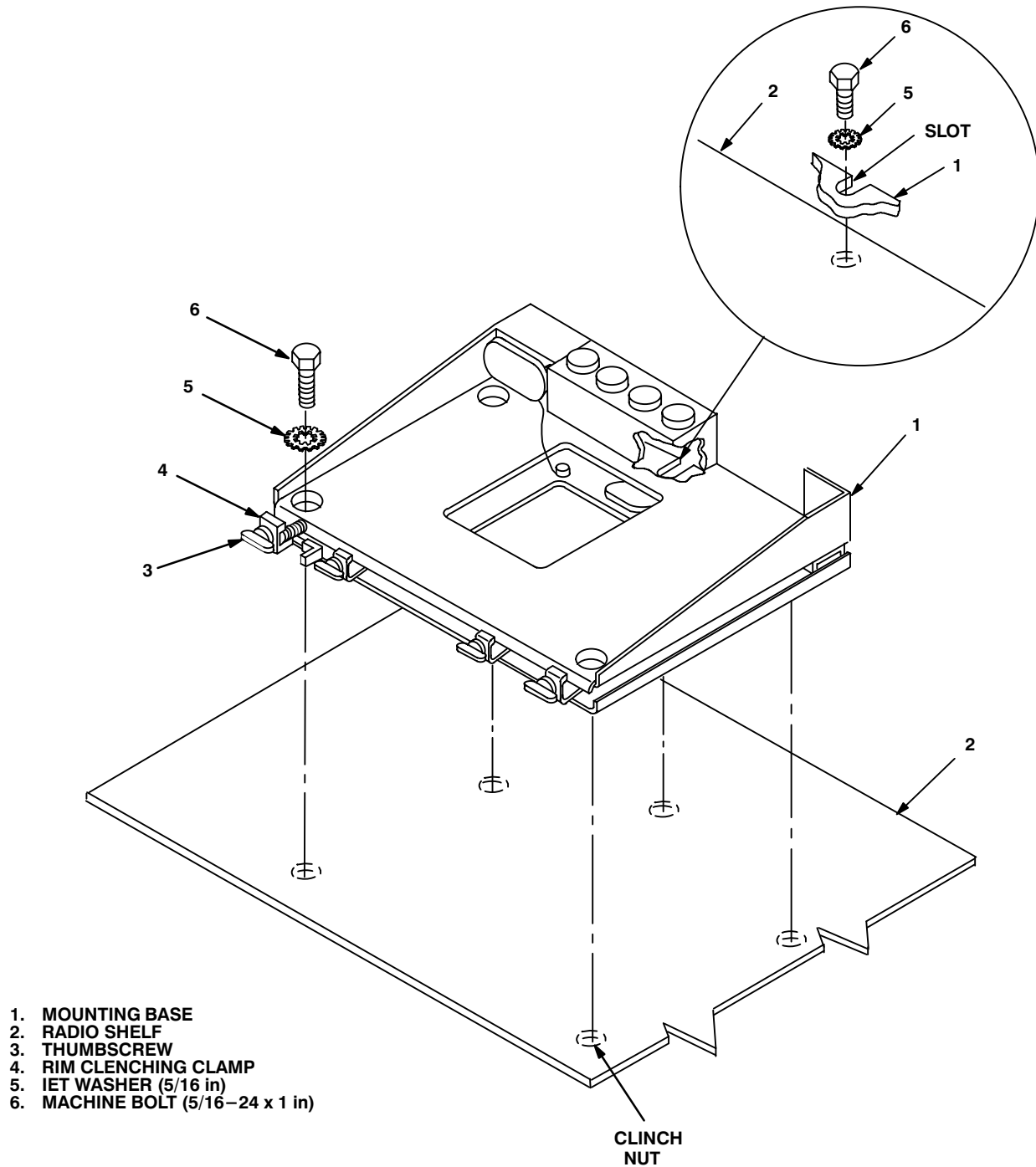


Figure 5-9. Mounting Base Installation

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

ITEM	ACTION	REMARKS
NOTE		
<p>Apply a thin coat of adhesive–sealant to both sides of each internal/external–toothed (IET) washer during installation, and to the area of contact where IET washer is to be placed.</p>		
a. Mounting base (1).	<p>Remove a 2” square area of paint on the underside of the mounting base (1) around left and front rear mounting holes. Remove a 2” square area of paint on the radio shelf (2) around the existing mounting holes that mate with left front and rear mounting holes of mounting base (2). Clean the paint removed areas and apply a thin coat of conductive anti–seize compound.</p>	<p>Tools: Electric grinder or equivalent.</p>
b. Mounting base (1).	<p>Place on radio shelf (2) over existing holes. See Figure 5–9.</p>	
c. Two outer thumbscrews (3).	<p>Turn ccw until both sets of threads have cleared center of holes.</p>	
d. Mounting base (1).	<p>Align four holes and rear slot with matching hole pattern in shelf (2).</p>	
e. Five machine bolts (6) and five IET washers (5).	<p>Install and secure to mounting base (1) and shelf (2).</p>	<p>Tools: 1/2 in socket and 1/2 in open/box wrench.</p>
f. Two outer thumbscrews (3).	<p>Tighten and secure to rim clenching clamps (4) and mounting base (1).</p>	

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

WARNING

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

5.4.1 Installation of Cables (M109 Series).

ITEM	ACTION	REMARKS
a. RF cable (3) connector P2.	Connect and secure to antenna base (6) connector J1. See figure 5-10 (1).	
b. Loop clamp (5), cap screw (1/4-20 x 3/4 in), lock washer (1/4 in) and nut (1/4-20 in).	Wrap clamp around RF cable (3); then install to antenna bracket (7).	Tools: 7/16 in socket and 7/16 in open/box wrench.

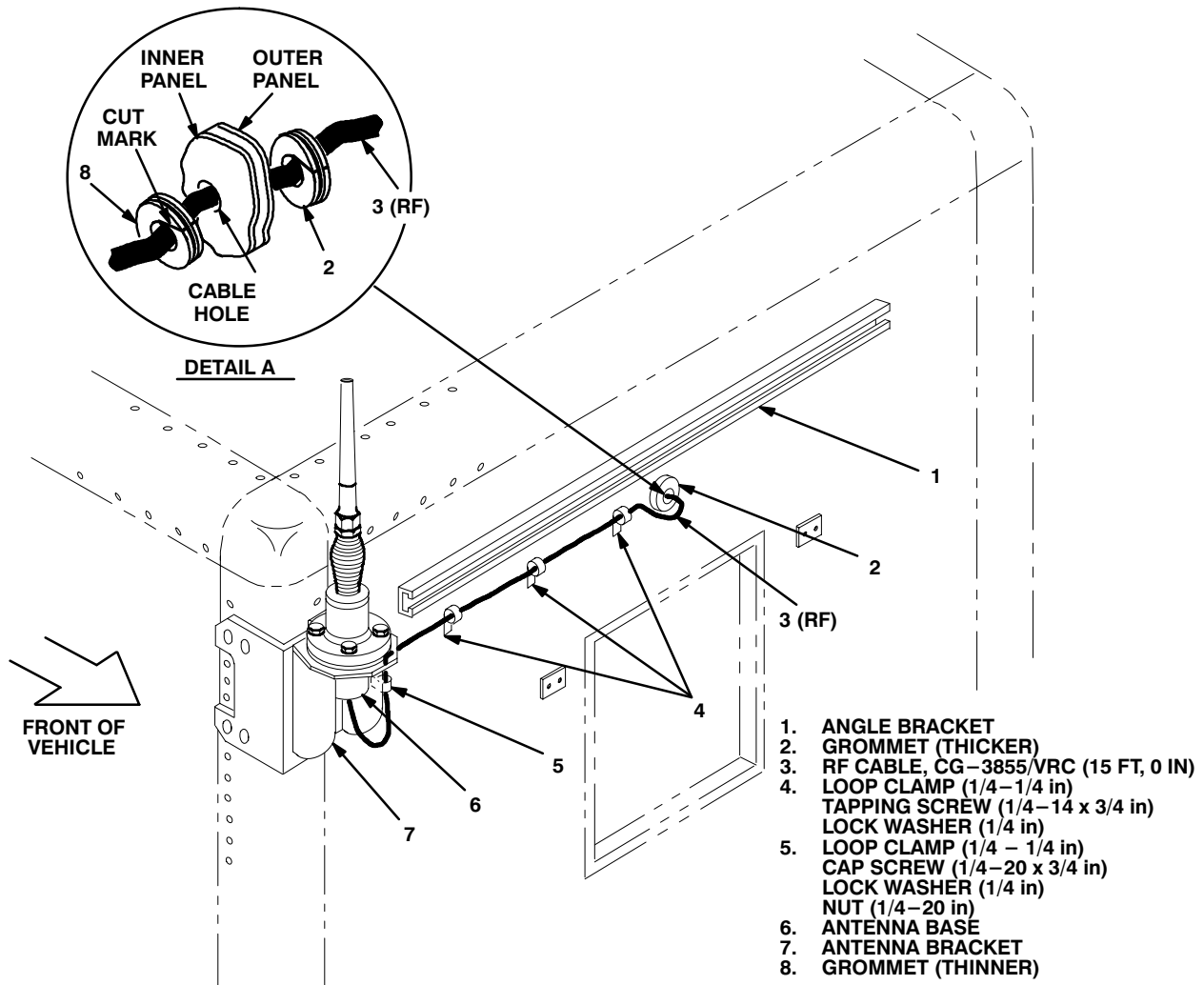
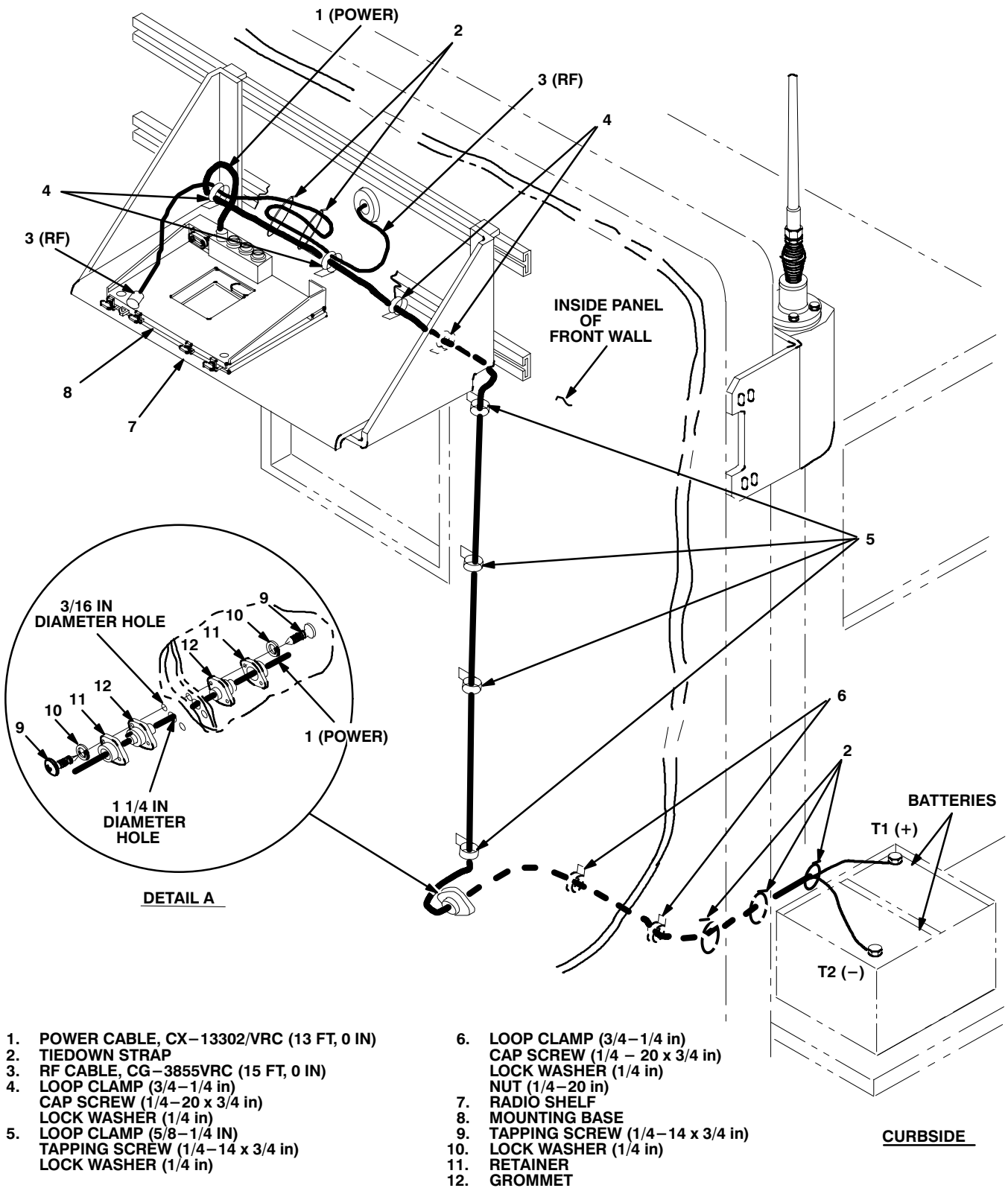


Figure 5-10 (1). Cable Installation - M109 Series: Exterior Cabling

5.4.1 Installation of Cables (M109 Series). Continued

ITEM	ACTION	REMARKS
c. Mounting holes for loop clamps (4).	Drill three 3/16 in diameter holes through outside panel of front wall, 2 in below angle bracket (1). See figure 5–10 (1) for location(s).	Tools: Electric drill and 3/16 in drill bit.
d. Three loop clamps (4), three pan–head tapping screws (1/4–14 x 3/4 in) and three lock washers (1/4 in).	Wrap clamps around RF cable (3); then install to holes drilled in step c.	Tools: Phillips screwdriver.
e. RF cable (3) connector P2.	Insert through cable hole to interior. See figure 5–10 (1), detail A.	
f. Two grommets (2, 8).	Cut through on mark shown; then wrap around RF cable (3) and insert in cable hole (in outer and inner panels of front wall).	Thicker grommet installs to outer panel. Tools: Pocket knife.
g. RF cable (3) connector P2.	Position on mounting base (8). See figure 5–10 (2).	
h. Power cable (1) connector P2.	Position on top of mounting base (8).	
i. Power cable (1).	Route across rear of radio shelf (7) and down front wall to floor.	
j. RF cable (3).	Fold excess cable, then secure to power cable (1) with two tiedown straps (2). See figure 5–10 (2) for location(s).	
k. Two loop clamps (4), two cap screws (1/4–20 x 3/4 in) and two lock washers (1/4 in).	Wrap clamps around RF cable (3) and power cable (1); then install to radio shelf (7).	Tools: 7/16 in socket.
l. Two loop clamps (4), two cap screws (1/4–20 x 3/4 in) and two lock washers (1/4 in).	Wrap clamps around power cable (1); then install to radio shelf (7).	Tools: 7/16 in socket.
m. Mounting holes for loop clamps (5).	Drill four 3/16 in diameter holes through inside panel of front wall.	Tools: Electric drill and 3/16 in drill bit.
n. Four loop clamps (5), four pan–head tapping screws (1/4–14 x 3/4 in) and four lock washers (1/4 in).	Wrap clamps around power cable (1); then install to holes drilled in step m.	Tools: Phillips screwdriver.
o. Mounting holes for retainer (11) and through–hole for two grommets (12).	Using retainer as a template, drill two 3/16 in diameter holes through inner panel of front wall; then drill one 1 1/4 in diameter hole through inner and outer panels. See figure 5–10 (2), detail A.	Tools: Electric drill, 3/16 in and 1 1/4 in drill bits.
p. Mounting holes for second retainer (11).	Using retainer as a template, drill two 3/16 in diameter holes through outer panel of front wall.	Middle hole of retainer should be alined with 1 1/4 in diameter hole (drilled in step o).

5.4.1 Installation of Cables (M109 Series). Continued



- 1. POWER CABLE, CX-13302/VRC (13 FT, 0 IN)
- 2. TIEDOWN STRAP
- 3. RF CABLE, CG-3855VRC (15 FT, 0 IN)
- 4. LOOP CLAMP (3/4-1/4 in)
CAP SCREW (1/4-20 x 3/4 in)
LOCK WASHER (1/4 in)
- 5. LOOP CLAMP (5/8-1/4 IN)
TAPPING SCREW (1/4-14 x 3/4 in)
LOCK WASHER (1/4 in)

- 6. LOOP CLAMP (3/4-1/4 in)
CAP SCREW (1/4-20 x 3/4 in)
LOCK WASHER (1/4 in)
NUT (1/4-20 in)
- 7. RADIO SHELF
- 8. MOUNTING BASE
- 9. TAPPING SCREW (1/4-14 x 3/4 in)
- 10. LOCK WASHER (1/4 in)
- 11. RETAINER
- 12. GROMMET

Figure 5-10 (2). Cable Installation - M109 Series: Interior Cabling

5.4.1 Installation of Cables (M109 Series). Continued

ITEM	ACTION	REMARKS
q. Power cable (1).	Route through 1 1/4 in diameter hole (drilled in step o) and under vehicle cab to batteries. See figure 5–10 (2).	
r. Two grommets (12).	Wrap around power cable (1); then insert in 1 1/4 in diameter hole (drilled in step o). See figure 5–10 (2), detail A.	
s. Two retainers (11), four pan-head tapping screws (9) and four lock washers (10).	Install and secure to grommets (12) and 3/16 in diameter holes drilled in steps o and p.	Tools: Phillips screwdriver.
t. Power cable (1) terminal leads: T1 (red) and T2 (black).	Connect and secure to proper posts on batteries. See figure 5–10 (2).	Red (+) secures to positive post. Black (–) secures to negative post.
u. Mounting holes for loop clamps (6).	Drill two 9/32 in diameter holes through rear cab wall. See figure 5–10 (2) for location(s).	Tools: Electric drill and 9/32 in drill bit.
v. Two loop clamps (6), 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 power cable (1); then install to holes drilled in step u.	Tools: 7/16 in socket.
w. Three tiedown straps (2).	Install loosely around power cable (1); then secure to angle brace on underside of cab.	
x. Power cable (1) connector P2.	Connect to mounting base (1) connector J1.	
y. Adhesive-sealant.	Apply to all previously installed grommets and drilled holes.	

5.4.2 Installation of Cables (M820 Series).

ITEM	ACTION	REMARKS
a. P2 connectors of power cable (9) and RF cable (6).	Position on top of mounting base (8). See figure 5–11 (1).	
b. RF cable (6) and power cable (9).	Route along rear edge of radio shelf (7) and forward wall to curbside area of heater/air conditioner compartment.	
c. Four loop clamps (5), four cap screws (1/4 – 20 x 3/4 in) and four lock washers (1/4 in).	Wrap clamps around RF cable (6) and power cable (9); then install to radio shelf (7). See figure 5–11 (1) for location(s).	Tools: 7/16 in socket.
d. RF cable (6).	Route through heater/air conditioner compartment to forward wall.	

5.4.2 Installation of Cables (M820 Series). Continued

- | | |
|--|--|
| 1. LOOP CLAMP (5/8-1/4 in) | 9. POWER CABLE, CX-13302/VRC (13 FT, 0 IN) |
| TAPPING SCREW (1/4-14 x 3/4 in) | 10. TIEDOWN STRAP |
| LOCK WASHER (1/4 in) | 11. GROMMET (THINNER) |
| 2. LOOP CLAMP (1/4-1/4 in) | 12. GROMMET (THICKER) |
| TAPPING SCREW (1/4-14 x 3/4 in) | 13. RETAINER |
| LOCK WASHER (1/4 in) | 14. GROMMET |
| 3. ANTENNA BASE | 15. TAPPING SCREW (1/4-14 x 3/4 in) |
| 4. ANTENNA BRACKET | 16. LOCK WASHER (1/4 in) |
| 5. LOOP CLAMP (3/4-1/4 in) | |
| CAP SCREW (1/4-20 x 3/4 in) | |
| LOCK WASHER (1/4 in) | |
| 6. RF CABLE, CG-3855/VRC (15 FT, 0 IN) | |
| 7. RADIO SHELF | |
| 8. MOUNTING BASE | |

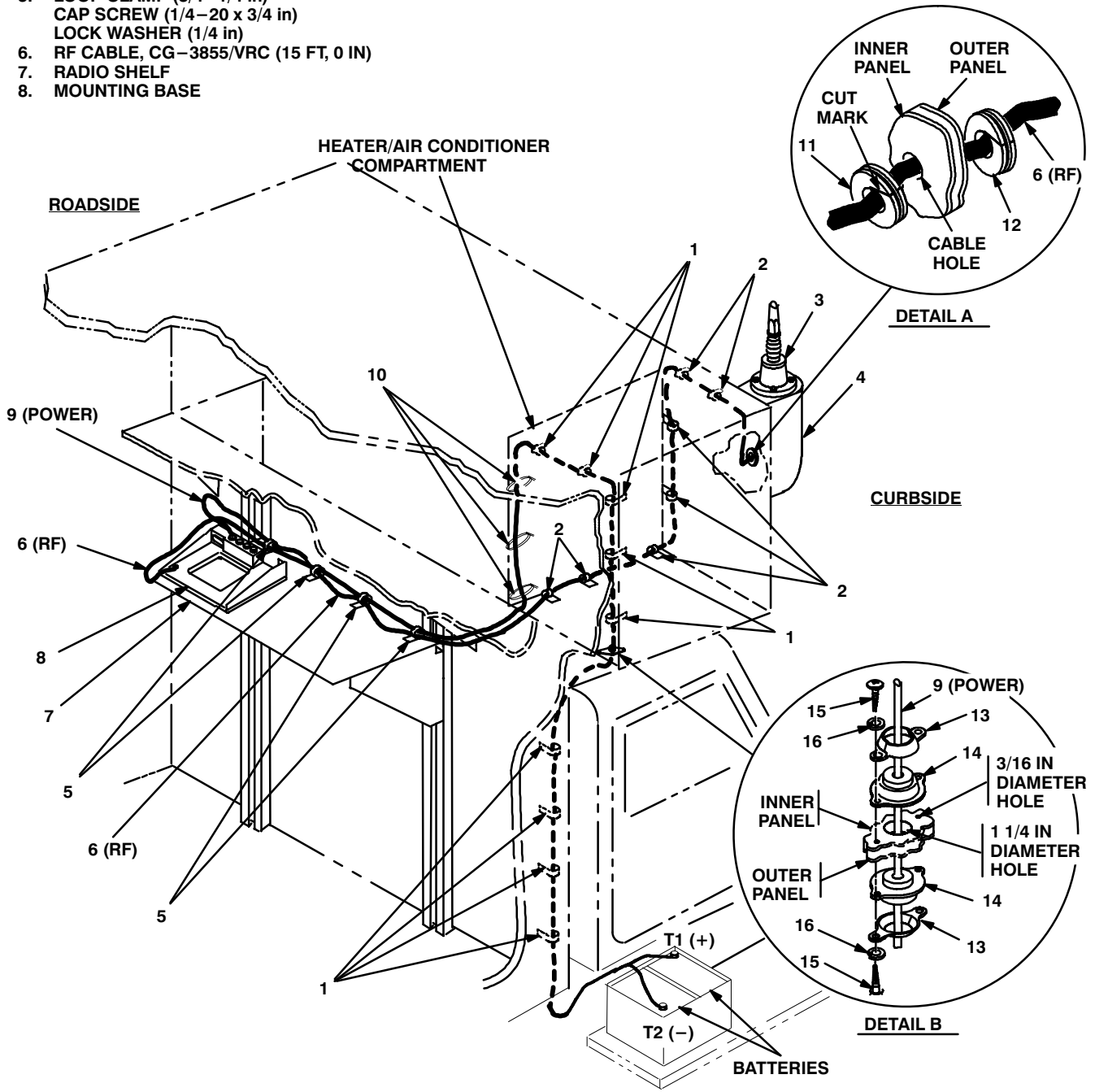


Figure 5-11 (1). Cable Installation - M820: RF and Power Cabling

5.4.2 Installation of Cables (M820 Series). Continued

ITEM	ACTION	REMARKS
e. RF cable (6) connector P1.	Insert through cable hole (in upper right corner of forward wall); then connect and secure to antenna base (3) connector J1. See figure 5–11 (1), detail A and figure 5–11 (1).	
f. Mounting holes for loop clamps (2).	Drill seven 3/16 in diameter holes in heater/air conditioner compartment. See figure 5–11 (1) for location(s).	Tools: Electric drill and 3/16 in drill bit.
g. Seven loop clamps (2), seven pan–head tapping screws (1/4–14 x 3/4 in) and seven lock washers (1/4 in).	Wrap clamps around RF cable (6); then install to holes drilled in step f.	Tools: Phillips screwdriver.
h. Power cable (9).	Route over heater/air conditioner unit to curbside wall. See figure 5–11 (1).	Heater/air conditioner unit not shown.
i. Mounting holes for loop clamps (1).	Drill five 3/16 in diameter holes in heater/air conditioner compartment. See figure for location(s).	Tools: Electric drill and 3/16 in drill bit.
j. Five 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 power cable (9); then install to holes drilled in step i.	Tools: Phillips screwdriver.
k. Mounting holes for retainer (13) and through–hole for two grommets (14).	Using retainer as a template, drill two 3/16 in diameter holes through inner panel of heater/air conditioner compartment; then drill one 1 1/4 in diameter hole through inner and outer panels. See figure 5–11 (1), detail B.	Tools: Electric drill, 3/16 in and 1 1/4 in drill bits.
l. Mounting holes for second retainer (13).	Using retainer as a template, drill two 3/16 in diameter holes through outer panel of heater/air conditioner compartment.	Middle hole of retainer should be alined with 1 1/4 in diameter hole (drilled in step k). Tools: Electric drill and 3/16 in drill bit.
m. Power cable (9).	Insert terminal leads (T1, T2) through 1 1/4 in diameter hole (drilled in step k); then route cable down outer front wall to battery box. See figure 5–11 (1).	
n. Two grommets (14).	Wrap around power cable (9); then insert in 1 1/4 hole (drilled in step k).	
o. Two retainers (13), four pan–head tapping screws (15) and four lock washers (16).	Install and secure to grommet (14) and 3/16 in diameter holes drilled in steps k and l.	Tools: Phillips screwdriver.
p. Three tiedown straps (10).	Install loosely around power cable (9) and existing cable wiring. See figure 5–11 (1) for location(s).	
q. Mounting holes for loop clamps (1).	Drill four 3/16 in diameter holes through outer panel of front wall.	Tools: Electric drill and 3/16 in drill bit.

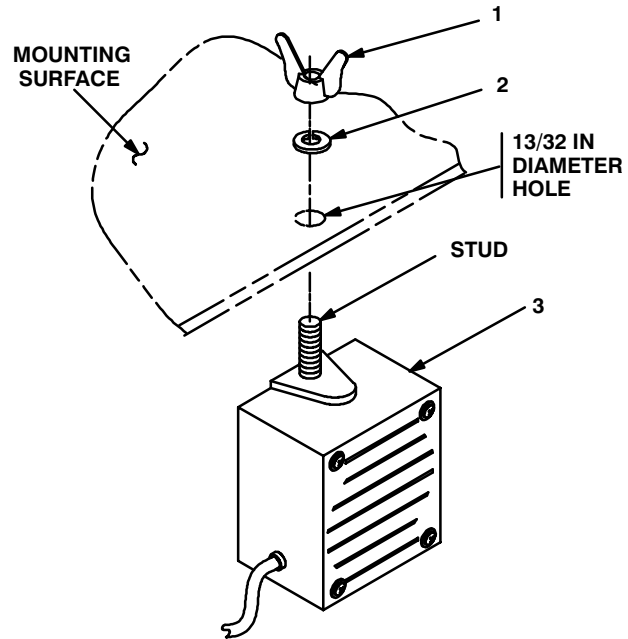
5.4.2 Installation of Cables (M820 Series). Continued

ITEM	ACTION	REMARKS
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 clamp around power cable (9); then install to holes drilled in step q. See figure 5–11 (1) for location(s).	Tools: Phillips screwdriver.
s. Power cable (9) terminal leads: T1 (red) and T2 (black).	Connect and secure to batteries. See figure 5–11 (1).	Red (+) secures to positive post. Black (–) secures to negative post.
t. Power cable (9) connector P2.	Connect and secure to mounting base (7) connector J1.	
u. Adhesive–sealant.	Apply to all previously installed grommets and drilled holes.	

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

Method A. See figure 5-12 (1).

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



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

Figure 5-12 (1). Speaker Installation - A

Method B. See figure 5-12 (2).

NOTE

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

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

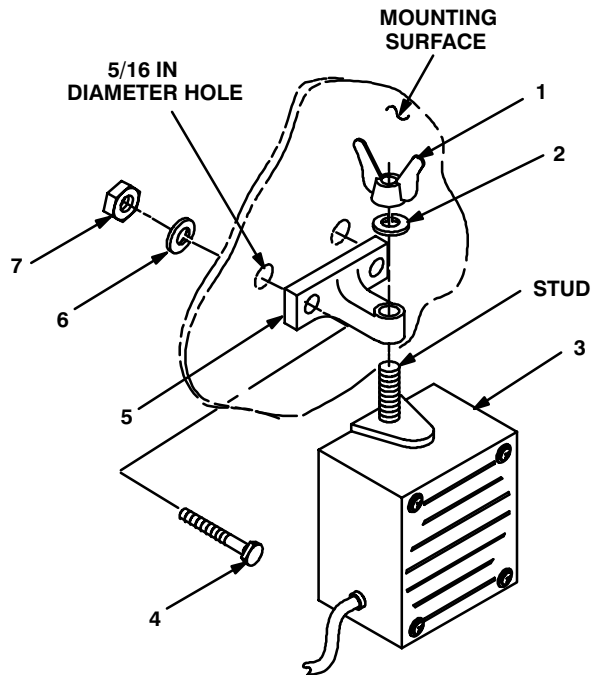


Figure 5-12 (2). Speaker Installation - B

5.6 Installation of Loudspeaker, Control-Unit, LS-671/vrc (speaker). Use the following procedures to install the speaker for "D" and "F" series radio sets. See Figure 5-13 for location. NOTE: Install speaker prior to installing mounting base.

ITEM	ACTION	REMARKS
a. Speaker (5).	Position top mounting hole under hole in radio shelf (4). See Figure 5-13.	
b. Machine bolt (1), lock washer (2) and flat washer (3).	Install and secure to speaker (5) and radio shelf (4).	
c. Handset (6). washer (2) and flat washer (3).	Connect and secure to speaker (5) connector J2.	

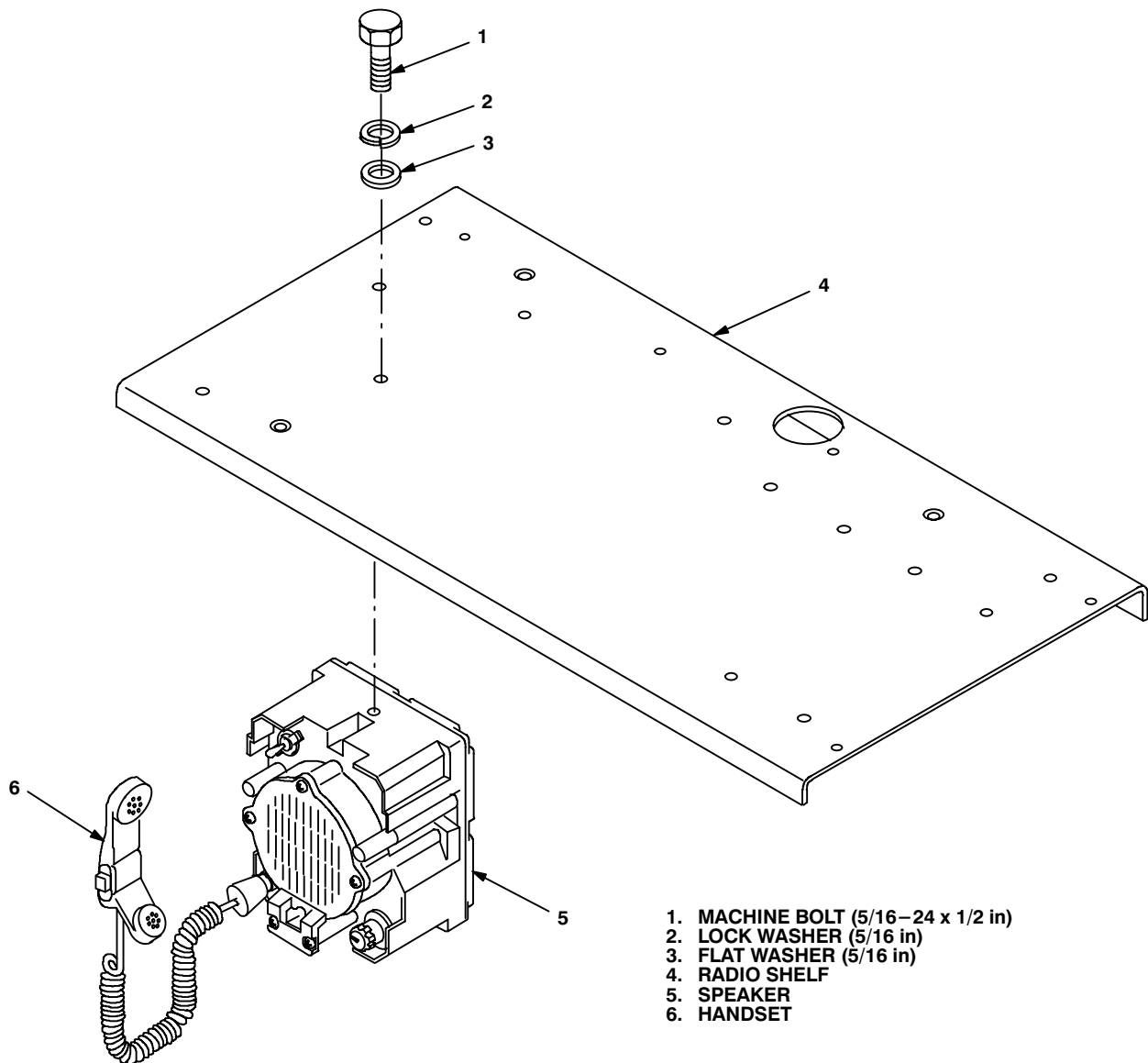
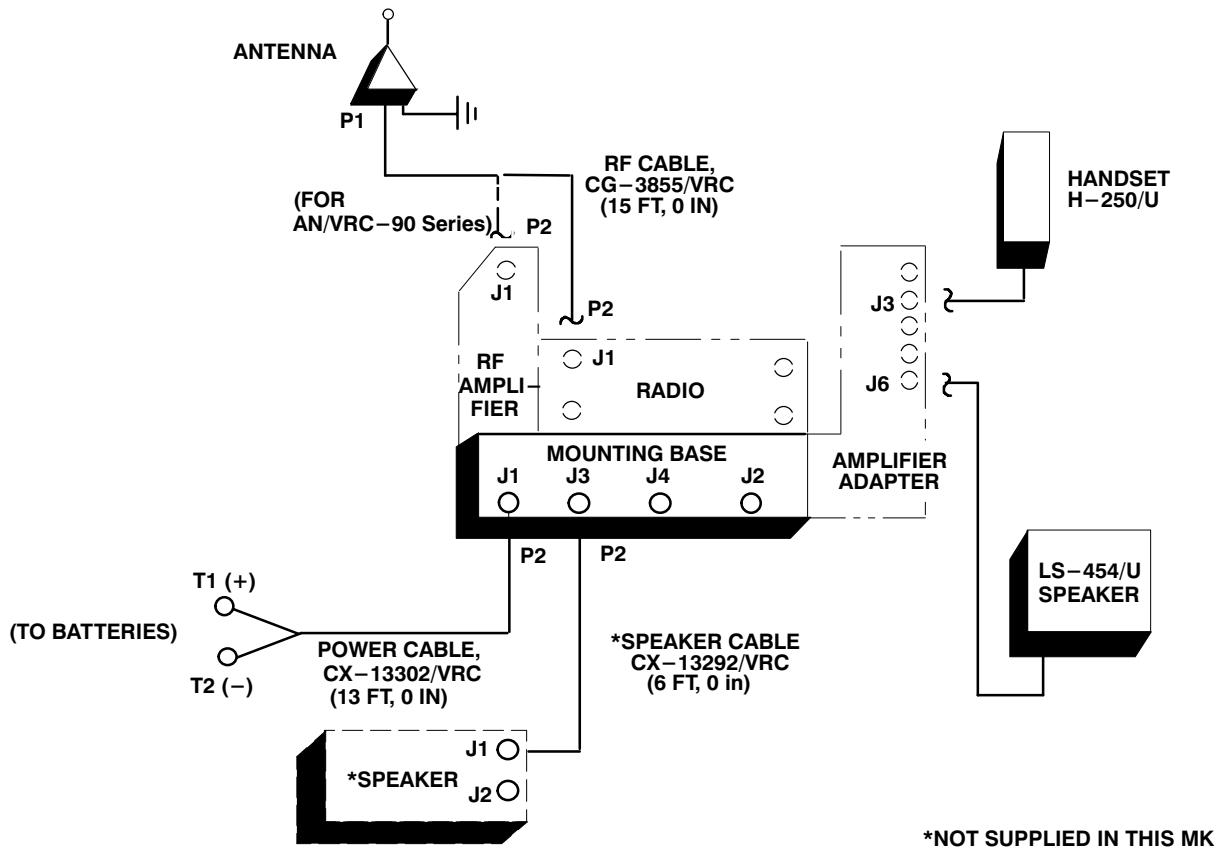


Figure 5-13. Speaker Installation

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

ITEM	ACTION	REMARKS
a. Equipment.	Check for secure mounting. Check for loose parts, connectors and mounting hardware.	
b. Cables.	Check for proper installation and connection of cables. See Figure 5–14 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 replaceable units.	See TM 11–5820–890–20P for Repair Parts and Special Tools List (RPSTL) information.	

5.7 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	T1: Red (+) T2: Black (-)	Batteries	(+) Lug (-) Lug
CG-3855/VRC (15 FT, 0 IN)	P1	Antenna base	J1	P2	RF amplifier or radio	J1
Handset cable		Handset			Amplifier-adapter	J3
Speaker cable		LS-454/U speaker			Amplifier-adapter	J6
CX-13292/VRC (6 FT, 0 IN)	P2	Mounting Base	J3	P1	Speaker	J1

Figure 5-14. Cable Diagram: For AN/VRC-87/88/90 Series


APPENDIX A

REFERENCES

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

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PUBLICATION DATE
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PUBLICATION TITLE
 Radar Set AN/PRC-76

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PAGE NO	PARA GRAPH	FIGURE NO	TABLE NO
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2-25

2-28

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

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

3-10

3-3

3-1

Item 5, Functional Test Plan. Change \square 2 dB" to \square 3 dB".

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

5-6

5-8

new step f.1 to read, \square Replace cover plate removed in step above."

REASON: To replace the cover plate.

FO-3

Zone C 3. On J1-2, change \square +24 VDC" to \square +5 VDC".

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

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TEAR ALONG DOTTED LINE

THE METRIC SYSTEM AND EQUIVALENTS

WEIGHT MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
 1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
 1 Kilogram = 1000 Grams = 2.2 lb.
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
its	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



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