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# **TECHNICAL BULLETIN INSTALLATION INSTRUCTIONS**

## **FOR SYSTEMS**

### **SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM (SINGARS)**

**AN/VRC-88F, AN/VRC-89F, AN/VRC-90F, AN/VRC-91F, AN/VRC-92F**

### **FORCE XXI BATTLE COMMAND, BRIGADE-AND-BELOW (FBCB2)**

**AN/UYK-128 (V)4**

### **PRECISION LIGHTWEIGHT GPS RECEIVER (PLGR)**

**AN/PSN-11**

### **ENHANCED POSITION LOCATION REPORTING SYSTEM (EPLRS)**

**AN/VSQ-2 (V)**

### **MOVEMENT TRACKING SYSTEM (MTS)**

**AN/UYQ-90 (V)2, AN/UYQ-90 (V)3**

### **DRIVER'S VISION ENHANCER (DVE)**

**AN/VAS-5A**

## **FOR VEHICLES**

**TRUCK, UTILITY, 4-DOOR: CARGO/TROOP CARRIER, 1-1/4 TON, 4X4,  
M998 (2320-01-107-7155) (EIC: BBD); M998A1 (2320-01-371-9577) (EIC: BBN);**

**TRUCK, UTILITY, 4-DOOR: CARGO/TROOP CARRIER, 1-1/4 TON, 4X4,  
M1038 (2320-01-107-7156) (EIC: BBE);**

**TRUCK, UTILITY, 4-DOOR: HEAVY VARIANT, 1-1/4 TON, 4X4,  
M1097 (2320-01-346-9317) (EIC: BBM); M1097A1 (2320-01-371-9583) (EIC: BBU);  
M1097A2 (2320-01-380-8604) (EIC: BB6).**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

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M1097A2 (2320-01-380-8604) (EIC: BB6).

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## TABLE OF CONTENTS

		<b>Page</b>
	LIST OF TABLES .....	iii
CHAPTER 1.	INTRODUCTION .....	1-1
Section I.	Scope .....	1-1
Section II.	Notes .....	1-1
Section III.	General Information .....	1-1
Section IV.	Maintenance Forms, Records, and Reports .....	1-1
Section V.	Consolidated Index of Army Publications .....	1-1
CHAPTER 2.	PURPOSE OF INSTALLATION .....	2-1
CHAPTER 3.	COMPLETION TIME FOR INSTALLATION .....	3-1
CHAPTER 4.	PREPARATION FOR INSTALLATION .....	4-1
Section I.	Preparation of Vehicle .....	4-1
Section II.	Items to be Removed .....	4-1
Section III.	List of Items to be Retained .....	4-1
Section IV.	Preparation of C4ISR Equipment .....	4-1
Section V.	Precautions During Handling .....	4-1
Section VI.	Unpack and Inspect Equipment .....	4-1
Section VII.	Inventory C4ISR Equipment .....	4-1
Section VIII.	Examine Each Item for Damage .....	4-2
Section IX.	C4ISR Equipment, Distribution, and Consumables .....	4-2
Section X.	Distribution and Issue Instructions .....	4-2
Section XI.	Parts List .....	4-2
CHAPTER 5.	INSTALLATION PROCEDURES .....	5-1
Section I.	Scope .....	5-1
Section II.	Installation of Terminal Boards .....	5-1
Section III.	Cab Enclosure Panel, Terminal Board, and Cover Modification .....	5-1
Section IV.	B-Beam Preparation .....	5-5
Section V.	Assembly of Cab Enclosure Panel .....	5-6
Section VI.	Final Assembly, Terminal Board Wiring, and Terminal Link .....	5-7
Section VII.	Integrated Rack Installation .....	5-12
Section VIII.	Installation of SINCGARS Mounting Tray and Amp Guard .....	5-15
Section IX.	Power Amplifier Installation .....	5-16
Section X.	FBCB2 Components Installation .....	5-18
Section XI.	Loudspeaker Installation .....	5-20
Section XII.	Antenna Installation .....	5-23
Section XIII.	Cables Installation .....	5-26
Section XIV.	PLGR Bracket Installation .....	5-32

**TABLE OF CONTENTS (Contd)**

		<b>Page</b>
Section XV.	PLGR Antenna and Cable Installation .....	5-33
Section XVI.	EPLRS Mounting Installation .....	5-39
Section XVII.	EPLRS Antenna Installation .....	5-41
Section XVIII.	EPLRS URO (User Readout) Installation .....	5-45
Section XIX.	EPLRS Cables Installation .....	5-46
Section XX.	MTS Mount and PLGR Bracket Installation .....	5-51
Section XXI.	MTS Control Box Installation .....	5-52
Section XXII.	MTS Antenna Installation .....	5-54
Section XXIII.	MTS Antenna Cable Installation .....	5-55
Section XXIV.	MTS Power Cable Installation .....	5-62
Section XXV.	MTS PLGR Power Cable Installation .....	5-64
Section XXVI.	MTS Display Cables Installation .....	5-66
Section XXVII.	Loudspeaker Installation with MTS .....	5-69
Section XXVIII.	Loudspeaker Cables Installation with MTS .....	5-73
Section XXIX.	PLGR Antenna and Cable Installation with MTS .....	5-74
Section XXX.	EPLRS URO (User Readout) Installation with MTS .....	5-80
Section XXXI.	DVE Hood Cable Guide Installation .....	5-81
Section XXXII.	DVE Pan and Tilt Module (PTM) Mount Assembly Preparation and Pillar Mount Installation .....	5-83
Section XXXIII.	DVE A-Frame Cable Guide and Pan and Tilt Module (PTM) Mount Assembly Installation .....	5-84
Section XXXIV.	DVE Display Control Module (DCM) Roof Mount Installation .....	5-87
Section XXXV.	Pan and Tilt Module (PTM) Control Mounting Bracket Installation ...	5-93
Section XXXVI.	Pan and Tilt Module (PTM) Control Assembly, Control Cable Assembly, and DCM/PTM Interconnect Cable Installation .....	5-94
Section XXXVII.	LCD Protective Assembly Installation .....	5-99
Section XXXVIII.	DVE Power Cable Installation .....	5-100

**LIST OF TABLES**

<b>Table</b>	<b>Title</b>	<b>Page</b>
4-1.	Kit Parts List for Installation of C4ISR Equipment .....	4-3
4-2.	Non-Kit Parts List for Installation of C4ISR Equipment .....	4-5





# CHAPTER 1

## INTRODUCTION

### Section I. SCOPE

- 1-1.** This technical bulletin provides installation instructions for Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) equipment. The C4ISR equipment shall be installed in the following vehicles:
- Truck, Utility, 4-Door: Cargo/Troop Carrier, 1-1/4 Ton, 4x4, M998, M998A1
  - Truck, Utility, 4-Door: Cargo/Troop Carrier, 1-1/4 Ton, 4x4, M1038
  - Truck, Utility, 4-Door: Heavy Variant, 1-1/4 Ton, 4x4, M1097, M1097A1, M1097A2
- 1-2.** The information contained in this technical bulletin is the official authorization to perform the installation of the C4ISR equipment at the direct support maintenance level through contract maintenance teams.

### Section II. NOTES

- 2-1.** This technical bulletin is not an authorization for requisition or turn-in of vehicles.
- 2-2.** This technical bulletin does not establish quantity or types of vehicles assigned to using units.

### Section III. GENERAL INFORMATION

- 3-1.** Included in the C4ISR equipment are:
- Single Channel Ground and Airborne Radio System (SINCGARS) (AN/VRC-88F, AN/VRC-89F, AN/VRC-90F, AN/VRC-91F, AN/VRC-92F)
  - Force XXI Battle Command, Brigade-and-Below (FBCB2) (AN/UYK-128 (V)4)
  - Precision Lightweight Global Positioning System Receiver (PLGR) (AN/PSN-11)
  - Enhanced Position Location Reporting System (EPLRS) (AN/VSQ-2(V))
  - Movement Tracking System (MTS) (AN/UYQ-90 (V)2, AN/UYQ-90 (V)3)
  - Driver's Vision Enhancer (DVE) (AN/VAS-5A)
  - Additional Terminal Boards
- 3-2.** The C4ISR equipment becomes operable when all the components are installed in the vehicle and correct power is supplied.

### Section IV. MAINTENANCE FORMS, RECORDS, AND REPORTS

Use the following to report any discrepancies:

- Reports of Maintenance and Unsatisfactory Equipment. See chapter 4, sections VI through VIII for information.
- Reports of Packaging and Handling Deficiencies. See chapter 4, sections VI through VIII for information.

### Section V. 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 C4ISR equipment.



## CHAPTER 2

### PURPOSE OF INSTALLATION

The purpose of installing the C4ISR equipment is to provide the primary means of integrating command and control systems.



## **CHAPTER 3**

### **COMPLETION TIME FOR INSTALLATION**

A total of 20 man-hours are required for two personnel to install the C4ISR equipment. Typical vehicle downtime is 12 hours.



## **CHAPTER 4**

### **PREPARATION FOR INSTALLATION**

#### **Section I. PREPARATION OF VEHICLE**

Ensure 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 the C4ISR equipment.

#### **Section II. ITEMS TO BE REMOVED**

- 2-1.** Remove batteries. (Refer to TM 9-2320-280-20.)
- 2-2.** Remove left- and right-hand rear cab enclosure panel, as applicable. (Refer to TM 9-2320-280-20.)
- 2-3.** Remove center tunnel insulation, as applicable. (Refer to TM 9-2320-280-20.)
- 2-4.** Remove standard radio rack. (Refer to TM 9-2320-280-20.)
- 2-5.** Remove cargo bulkhead. (Refer to TM 9-2320-280-20.)

#### **Section III. LIST OF ITEMS TO BE RETAINED**

- 3-1.** Batteries.
- 3-2.** Left- and right-hand rear cab enclosure panel (if applicable).

#### **Section IV. PREPARATION OF C4ISR EQUIPMENT**

Unpack, inspect, and check inventory.

#### **Section V. PRECAUTIONS DURING HANDLING**

Observe the following precautions to prevent equipment damage.

- a. Keep dust covers in place on connectors.
- b. Do not disassemble or modify parts in the C4ISR equipment unless authorized to do so.
- c. Keep mounting hardware covered and protected until needed.

#### **Section VI. UNPACK AND INSPECT EQUIPMENT**

- 6-1.** Unpack and inspect packaging for evidence of damage.
- 6-2.** Report any shipping damage on SF 364 Report of Discrepancy (ROD) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73A/AFR 400-64/MCO 4430.F.

#### **Section VII. INVENTORY C4ISR EQUIPMENT**

If any item is missing, fill out and forward Transportation Discrepancy Report (TDR) (SF 361) as described in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 450015.

### Section VIII. EXAMINE EACH ITEM FOR DAMAGE

If any item is damaged, fill out and forward SF 364 Report of Discrepancy (ROD) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73A/AFR 400-64/MCO 4430.F. All damages should be reported as prescribed by DA PAM 738-750, as contained in the Maintenance Management Update.

### Section IX. C4ISR EQUIPMENT, DISTRIBUTION, AND CONSUMABLES

- 9-1. Use table 4-1 to identify and inventory C4ISR equipment installation parts supplied in kits.
- 9-2. Use table 4-2 to identify and inventory C4ISR equipment installation parts not supplied in kits.

### Section X. DISTRIBUTION AND ISSUE INSTRUCTIONS

- 10-1. U.S. Forces: Do not requisition C4ISR equipment. It will be shipped automatically.
- 10-2. U.S. Army Depots: Requisition C4ISR equipment through supply channels.
- 10-3. Multiservice: Instructions shall be included for multiservice modifications.
- 10-4. MAP/MAS countries: Instructions shall be provided for MAP/MAS countries.

### Section XI. PARTS LIST

#### KITS REQUIRED FOR THIS INSTALLATION:

#### NOTE

- Not all material in kits is required for this installation. Material not used during installation will be returned to stock for disposition in accordance with AR 725-50.
- If maintenance is to be performed on a vehicle with an existing kit, do not order entire kit for necessary reinstallation.

#### SINGARS:

- (A): MK-2325
- (B): MK-2326
- (C): MK-2327 (dual)
- (D): MK-2328 (double kit)

#### PLGR:

- (E): 57K4400

#### EPLRS:

- (F): MK-2467A/VSQ-1
- (G): MK-2753/VSQ

#### MTS:

- (H): No kits available

#### FBCB2:

- (I): No kits available

#### DVE:

- (J): No kits available



## MATERIAL REQUIRED FROM KITS:

Table 4-1. Kit Parts List for Installation of C4ISR Equipment.

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	KIT	QTY.
1.	Bracket, Antenna Mounting	A3014546-1	N/A	(A),(B),(C),(D)	2
2.	Bracket, PLGR Mount	12480576	N/A	(E)	1
3.	Bracket, PLGR Mount	12480578	N/A	(E)	1
4.	Cable Assembly, Antenna	A3014031-17	5995-01-225-1660	(B),(C),(D)	1
5.	Cable Assembly, Antenna, EPLRS	SM-C-911480	5995-01-167-1269	(F),(G)	1
6.	Cable Assembly, Power, Electrical	A3014040-9	5995-01-300-9324	(B),(C),(D)	1
7.	Cable Assembly, Power, EPLRS	A3004939	5995-01-198-0538	(F),(G)	1
8.	Cable Assembly, Radio Frequency	A3014031-8	5995-01-219-7035	(A),(B),(C),(D)	1
9.	Cable Assembly, Radio Frequency	A3014032-3	5995-01-219-7025	(B),(C),(D)	1
10.	Clamp, Loop	MS21333-77	5340-00-922-6300	(A),(B),(C),(D)	8
11.	Clamp, Loop	MS21333-96	5340-00-088-1255	(E)	2
12.	Gasket	A3013655-1	5330-01-205-2864	(A),(B),(C),(D)	3
13.	Grommet, Nonmetallic	MS35489-143	5325-00-292-7558	(E)	2
14.	Insert	12446871-2	5310-01-411-3422	(E)	1
15.	Loudspeaker	A3014065-1	5965-01-222-1420	(A),(B),(C),(D)	2
16.	Mount, Resilient	MT-6146/VSQ-1	5340-01-167-8297	(F),(G)	1
17.	Mounting Base, Electrical Equipment	A3013367-1	5975-01-188-8873	(A),(B),(C),(D),(G)	1
18.	Mounting Base, Electrical Equipment	A3014053-1	5975-01-235-1962	(B),(C)	1
19.	Nut	MS35650-302	5310-00-934-9751	(A),(B),(C),(D),(F),(G)	1
20.	Nut	9419143	5310-01-148-0240	(E)	25
21.	Nut	9422771	5310-01-211-0691	(E)	5
22.	Nut Strip	A3014064-1	N/A	(B),(C),(D)	1
23.	Plate, Mounting	A3014550-1	N/A	(A),(B),(C),(D)	2
24.	Screw, Cap	B1821BH025C100N	5305-00-225-3843	(E)	6
25.	Screw, Cap	B1821BH025C125N	5305-00-068-0509	(E)	24
26.	Screw, Machine	MS35190-291	5305-00-958-5247	(B)	2
27.	Screw, Machine	MS35206-263	5305-00-984-6210	(E)	8
28.	Screw, Self-Tapping	9416639	5305-01-197-2320	(E)	3
29.	Screw, Self-Tapping	9421073	5305-01-162-8512	(E)	14
30.	Strap, Tiedown	MS3367-1-0	5975-00-984-6582	(E)	2
31.	Terminal Lug	7728777	5940-00-983-4067	(E)	1
32.	Terminal Lug	7728780	5940-01-035-4212	(E)	1

**MATERIAL REQUIRED FROM KITS (Contd):**

*Table 4-1. Kit Parts List for Installation of CAISR Equipment (Contd).*

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	KIT	QTY.
33.	Washer	2436161	5310-01-102-3270	(E)	44
34.	Washer, Lock	MS35338-43	5310-00-045-3296	(A),(B),(C),(D), (E),(F),(G)	5
35.	Washer, Lock	MS35338-44	5310-00-582-5965	(A),(B),(C), (D),(E),(G)	32
36.	Washer, Lock	MS45904-68	5310-00-889-2528	(A),(B),(C),(D)	5
37.	Washer, Lock	MS45904-72	5310-00-889-2527	(A),(B),(C), (D),(F),(G)	46
38.	Washer, Lock	MS45904-76	5310-00-061-1258	(A),(B),(C),(D),(G)	8
39.	Wellnut	12339397-3	5310-01-231-7455	(E)	1
40.	Wellnut	12339397-6	5310-01-388-6205	(E)	1

**MATERIAL REQUIRED BUT NOT INCLUDED IN KITS:***Table 4-2. Non-Kit Parts List for Installation of C4ISR Equipment.*

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	QTY.
1.	Antenna	A3005031	5820-01-183-9462	1
2.	Antenna AS-3900/VRC	A3017889-2	5985-01-308-8988	2
3.	Antenna, Element (lower)	A3018230-1	5985-01-201-1498	2
4.	Antenna, Element (upper)	A3017901-2	5985-01-306-4622	2
5.	Antenna, PLGR	AT575-030	5985-01-375-4660	1
6.	Assembly, Display Lock	872843-1	N/A	1
7.	Bolt	MS35751-18	5306-00-108-9988	4
8.	Bolt, Carriage	90185A540	N/A	4
9.	Bracket, Antenna Base Reinforcement	A3046241	5340-01-262-9560	1
10.	Bracket, Antenna Mounting	A3046238	5975-01-277-7854	1
11.	Bracket, DCM B-Pillar Roof	3236682-1	N/A	1
12.	Bracket, DCM Roof Mount	3245782-1	N/A	1
13.	Bracket, MTS Antenna	7110-0302	N/A	1
14.	Bracket, MTS Mounting Base	RCSK-19648	N/A	1
15.	Bracket, PLGR	986-0645-001	5975-01-375-1302	1
16.	Bracket, PTM Control	3236630-1	N/A	1
17.	Bracket, User Readout (URO)	A3006206	5340-01-386-7841	1
18.	Cable Assembly, Antenna, PLGR	426-0141-050	6150-01-375-8662	1
19.	Cable Assembly, Ground	12480567-1	N/A	1
20.	Cable Assembly, Power	12480567-2	N/A	1
21.	Cable Assembly, Power, PLGR	9728558-10	6150-01-375-8661	1
22.	Cable Assembly, User Readout (URO)	A3005328	5995-01-375-2439	1
23.	Cable, Azimuth Lock	3221015-1	N/A	1
24.	Cable, Control	A3014037-4	5995-01-335-7863	1
25.	Cable, DCM/PTM Interconnect	3220915-1	N/A	1
26.	Cable, DVE Power	3256881-3	6150-01-482-4740	1
27.	Cable, MTS Antenna	506B338-01	N/A	1
28.	Cable, MTS Antenna	506B339-01	N/A	1
29.	Cable, MTS Data	506B408-04	N/A	1
30.	Cable, MTS Display Power	506B407-04	N/A	1
31.	Cable, MTS Power	506B340-01	N/A	1
32.	Cable, PLGR Data	506B409-04	N/A	1
33.	Cable, Speaker	A3014038-3	5995-01-219-4704	2
34.	Cable Assembly, INC-EPUU	A3279383-3	5995-01-453-9171	1
35.	Clamp, Loop	MS21333-65	5340-00-905-0790	3
36.	Clamp, Loop	MS21333-67	5340-00-079-7837	1
37.	Clamp, Loop	MS21333-69	5340-00-764-7051	7
38.	Clamp, Loop	MS21333-71	5340-00-057-2904	9
39.	Clamp, Loop	MS21333-76	5340-00-724-7038	1
40.	Clamp, Loop	MS21333-98	5340-00-809-1490	1

**MATERIAL REQUIRED BUT NOT INCLUDED IN KITS (Contd):***Table 4-2. Non-Kit Parts List for Installation of C4ISR Equipment (Contd).*

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	QTY.
41.	Clamp, Loop	MS21333-102	5340-00-984-8540	6
42.	Clamp, Loop	MS21333-104	5340-00-088-1254	4
43.	Clamp, Loop	MS21333-107	5340-00-809-1500	1
44.	Clamp, Loop	MS21333-123	5340-00-989-1771	1
45.	Clamp, Loop	MS21333-112	5340-00-057-3043	1
46.	Clamp, Loop	MS21333-121	5340-00-954-6014	1
47.	Connector	MS3119E14-19	5305-01-162-8512	1
48.	Control Cable Seal Assembly	3220908	2990-00-365-1898	1
49.	Control Unit, MTS	7110-0315	N/A	1
50.	CPU (Central Processing Unit)	881292-1	7021-01-474-3793	1
51.	Decal	12339060	7690-01-265-1135	1
52.	Decal	861868-2	N/A	1
53.	Display	881293-1	7025-01-475-0229	1
54.	Grommet, Nonmetallic	12338098	5325-01-308-5424	2
55.	Grommet, Nonmetallic	2400	5325-01-289-7859	1
56.	Grommet, Nonmetallic	MS21266-1N	5325-00-960-2410	A/R
57.	Guard, Amp	872842-1	5935-01-487-2172	1
58.	Guide, A-Frame Cable	3220964-1	5820-01-183-9462	1
59.	Guide, Hood Cable	3220912-1	N/A	1
60.	Insert	12446871-2	5310-01-411-3422	19
61.	Isolation Kit, CPU	872826-2	5340-01-481-5741	1
62.	Isolation Kit, Display	872870-1	5340-01-481-5757	1
63.	Lanyard	8925T5-7X19	4010-01-497-2675	1
64.	Mount, DCM	3221839-1	N/A	1
65.	Mount, Lower Ball	D254	N/A	1
66.	Mount, PTM A-Pillar	3221002-1	N/A	1
67.	Mount, Ramball	RAM-D-111U	5975-01-485-3615	1
68.	Mounting Plate, EPLRS	A3046204	5340-01-237-8094	1
69.	Nut	116002	5310-01-125-1216	8
70.	Nut	MS35649-2252	5310-00-997-1888	3
71.	Nut	M45913/3-5CG8	N/A	3
72.	Nut	13218E0320-293	5310-00-913-8881	15
73.	Nut	9418892	5310-01-157-9819	8
74.	Nut	MS35649-63	5310-00-804-3859	5
75.	Nut	9417954	5310-00-931-8167	8
76.	Nut	9419143	5310-01-148-0240	1
77.	Nut	MS35649-2382	5310-00-056-3395	2
78.	Nut	271169	5310-00-124-9265	5
79.	Nut, Lock	MS51943-31	5310-00-061-4650	4
80.	Nut, Lock	M45913/4-4CG8Z	N/A	9

**MATERIAL REQUIRED BUT NOT INCLUDED IN KITS (Contd):***Table 4-2. Non-Kit Parts List for Installation of C4ISR Equipment (Contd).*

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	QTY.
81.	Nut, Lock	271175	5310-01-333-5245	6
82.	Panel, Enclosure	12447141	2510-01-413-5993	1
83.	Plate, Antenna	A3104004	5340-01-374-7164	1
84.	Plate, Antenna	A3157619	9515-01-374-7165	1
85.	PTM Control Assembly	3220905-1	5340-01-511-2705	1
86.	PTM Mount Assembly	3220952-1	5855-01-511-2699	1
87.	Rack, Integrated	A3276903	N/A	1
88.	Rivet	SSLQ-68	5320-01-255-6608	3
89.	Rivet Nut	3221003-14	N/A	17
90.	Rivet Nut	3221003-20	N/A	2
91.	Rivet, Blind	12339355-1	5320-01-271-6357	2
92.	Screw	MS35206-265	5305-00-984-6212	1
93.	Screw	9417875	N/A	8
94.	Screw	MS35224-65	5310-00-543-5743	1
95.	Screw, Cap	B1821BH025C075N	5305-00-068-0508	15
96.	Screw, Cap	B1821BH025C100N	5305-00-225-3843	24
97.	Screw, Cap	B1821BH025C113N	5305-00-225-3842	8
98.	Screw, Cap	B1821BH025C125N	5305-00-068-0509	6
99.	Screw, Cap	B1821BH025C150N	5305-00-071-2509	1
100.	Screw, Cap	B1821BH031F075N	5306-00-050-1238	2
101.	Screw, Cap	B1821BH031F100N	5305-00-051-4076	2
102.	Screw, Cap	B1821BH031F125N	5305-00-051-4078	10
103.	Screw, Cap	B1821BH031C100N	5306-00-226-4827	8
104.	Screw, Cap	B1821BH025C300N	5305-00-071-2515	6
105.	Screw, Cap	B1821BH038C150N	5305-00-725-2317	6
106.	Screw, Cap	B1821BH038C175N	5305-00-821-3869	1
107.	Screw, Cap	B1821AH038C225N	5305-01-434-2947	2
108.	Screw, Cap	MS35307-365	5305-00-847-1159	8
109.	Screw, Machine	160035	5305-00-016-0035	1
110.	Screw, Machine	MS35206-230	5305-00-889-3000	5
111.	Screw, Self-Tapping	9416639	5305-01-197-2320	4
112.	Screw, Self-Tapping	12342499-2	5305-01-264-5809	7
113.	Screw, Self-Tapping	9418944	5305-01-149-7356	1
114.	Screw, Self-Tapping	9421073	5305-01-162-8512	2
115.	Screw, Self-Tapping	9426241	5305-01-206-7219	9
116.	Screw, Self-Tapping	9426634	4320-00-570-6117	4
117.	Sleeve, Heat Shield	N/A	N/A	1
118.	Spacer	12340849	5365-01-194-0761	3
119.	Spacer	A3046313	5820-01-237-8096	4
120.	Spacer	92510A318	N/A	4

**MATERIAL REQUIRED BUT NOT INCLUDED IN KITS (Contd):***Table 4-2. Non-Kit Parts List for Installation of C4ISR Equipment (Contd).*

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	QTY.
121.	Spacer	10705AL315C	5365-01-487-3145	4
122.	Splice	NAS1387-4	5940-00-113-9420	4
123.	Terminal Board	12480570	N/A	1
124.	Terminal Board	MS27212-3-8	5940-00-950-7782	1
125.	Terminal Board Cover	12480569-1	N/A	1
126.	Terminal Board Cover	12480569-2	N/A	2
127.	Terminal Board Cover	MS18029-3S-2	5940-01-280-9304	2
128.	Terminal Link	MS25266-6N-2	6150-01-167-9267	1
129.	Terminal Lug	7728777	5940-00-983-4067	2
130.	Terminal Lug	7728780	5940-01-035-4212	2
131.	Terminal Lug	MS20659-107	5940-00-113-9824	2
132.	Terminal Lug	MS20659-108	5940-00-115-2674	3
133.	Terminal Lug	MS20659-141	5940-00-113-9825	6
134.	Terminal Lug	MS25036-103	5940-00-283-5280	1
135.	Terminal Lug	MS25036-108	5940-00-143-4780	1
136.	Terminal Lug	MS25036-150	5940-00-113-8184	2
137.	Terminal Lug	MS25036-154	5940-00-230-0515	1
138.	Terminal Lug	MS20659-129	5940-00-114-1314	2
139.	Tiedown Strap	MS3367-1-0	5975-00-984-6582	A/R
140.	Tie, Stainless Steel Cable	69855K72	N/A	A/R
141.	Tube, Closeout	3236685-1	N/A	1
142.	Tubing, Shrink	MS23053/4-302-0	5970-01-161-6796	A/R
143.	Washer	120391	5310-00-012-0391	1
144.	Washer	12338095	5310-01-208-7576	6
145.	Washer	9414920	5310-01-476-8589	2
146.	Washer	9417373	5310-01-361-1163	1
147.	Washer	MS27183-10	5310-00-809-4058	4
148.	Washer	MS27183-12	5310-00-081-4219	6
149.	Washer	MS45904-68	5310-00-889-2528	4
150.	Washer	MS45904-71	5310-00-947-6980	5
151.	Washer	MS51412-23	5310-01-333-0060	2
152.	Washer	3221003-9	N/A	5
153.	Washer	2436161	5310-01-102-3270	58
154.	Washer	2436163	5310-01-412-4013	8
155.	Washer, Lock	120380	5310-00-543-2705	1
156.	Washer, Lock	120382	5310-00-012-0382	3
157.	Washer, Lock	MS35338-46	5310-00-637-9541	2
158.	Washer, Lock	MS35338-48	5310-00-584-5272	3
159.	Washer, Lock	MS35338-41	5310-00-045-4007	5
160.	Washer, Lock	MS35338-43	5310-00-045-3296	4

**MATERIAL REQUIRED BUT NOT INCLUDED IN KITS (Contd):***Table 4-2. Non-Kit Parts List for Installation of C4ISR Equipment (Contd).*

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	QTY.
161.	Washer, Lock	MS35338-44	5310-00-582-5965	40
162.	Washer, Lock	MS45904-68	5310-00-889-2528	1
163.	Washer, Lock	MS45904-72	5310-00-889-2527	4
164.	Washer, Lock	131043	5310-00-013-1043	4
165.	Wingnut	MS51553-102	5310-01-396-8002	1
166.	Wingnut	MS51553-420	5310-01-384-2546	4
167.	Wire Assembly, Fuse (12V)	12480568-2	N/A	1
168.	Wire Assembly, Fuse (24V)	12480568-1	N/A	3
169.	Wire, Braided	AA59569F30T0375	6145-00-191-8402	A/R
170.	Wire, Lock	MS20995C32	9505-00-293-4208	A/R





## CHAPTER 5 INSTALLATION PROCEDURES

### Section I. SCOPE

This chapter provides instructions for installation of the following C4ISR equipment:

- Single Channel Ground and Airborne Radio System (SINCGARS)
- Force XXI Battle Command, Brigade-and-Below (FBCB2)
- Precision Lightweight Global Positioning System Receiver (PLGR)
- Enhanced Position Location Reporting System (EPLRS)
- Movement Tracking System (MTS)
- Driver's Vision Enhancer (DVE)
- Additional terminal boards in the vehicle

When installing C4ISR equipment, be sure to read and follow instructions and illustrations carefully.

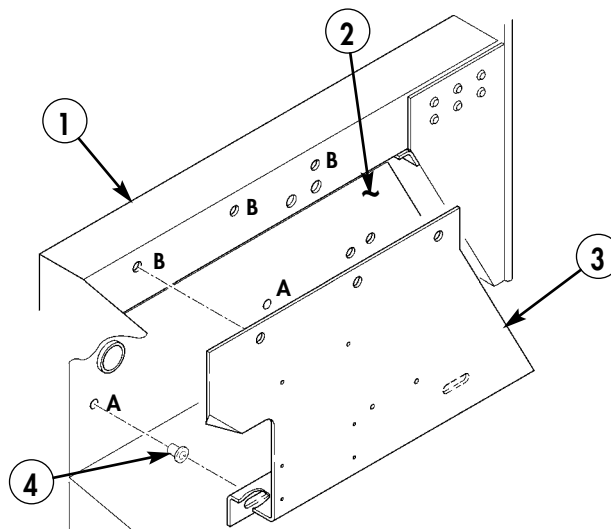
### Section II. INSTALLATION OF TERMINAL BOARDS

Use the following procedure to install additional terminal boards to provide adequate power connections. Vehicles must have dual-voltage alternators installed in order to have both 12V and 24V terminal boards installed.

### Section III. CAB ENCLOSURE PANEL, TERMINAL BOARD, AND COVER MODIFICATION

#### NOTE

- For vehicles without cab enclosure panel, begin with step 3-1 and use cab enclosure panel NSN 2510-01-413-5993.
  - For vehicles with cab enclosure panel, begin with step 3-3.
  - All dimensions are in inches.
- 3-1.** Place cab enclosure panel (3) in position. Locate, mark, and drill five 0.159-in. diameter holes marked A and B in B-beam (1) and battery box (2).
- 3-2.** Enlarge two lower mounting holes marked A to 0.390-in. diameter, and install two inserts (4) in battery box (2).



- 3. CAB ENCLOSURE PANEL – 12447141 – QTY. 1**  
**4. INSERT – 12446871-2 – QTY. 2**

*Figure 5-1.*

**NOTE**

- Do not install cab enclosure panel.
- Use figures 5-2 and 5-3 to identify cab enclosure panel that is being modified.

- 3-3.** Locate, mark, and drill three 0.156-in. diameter holes marked A in cab enclosure panel (3) as shown in figure 5-2 or 5-3.
- 3-4.** Locate, mark, and drill two 0.156-in. diameter holes marked C in cab enclosure panel (3) as shown in figure 5-2 or 5-3.

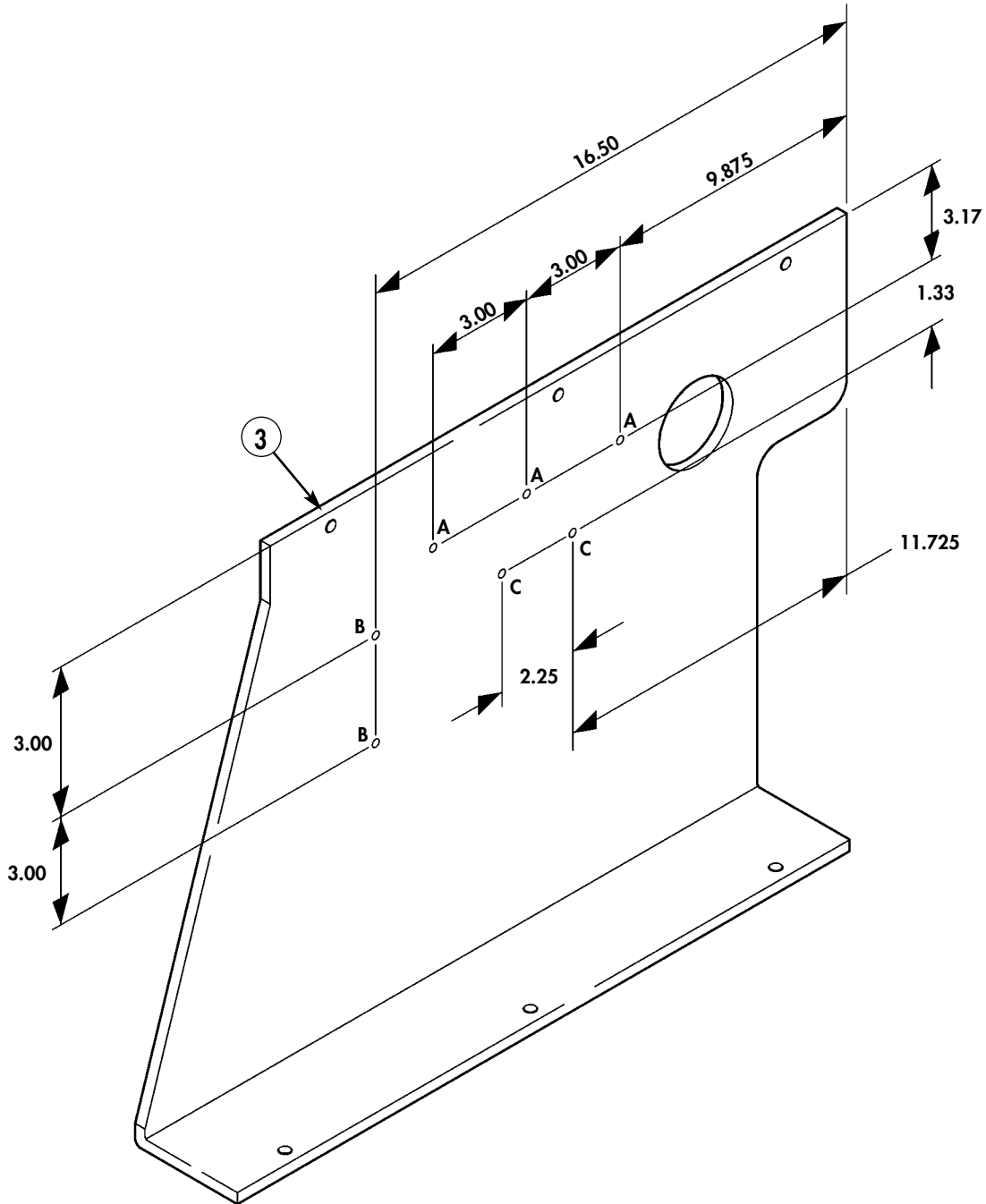


Figure 5-2.

3-5. Locate, mark, and drill two 0.196-in. diameter holes marked B in cab enclosure panel (3) as shown in figure 5-2 or 5-3.

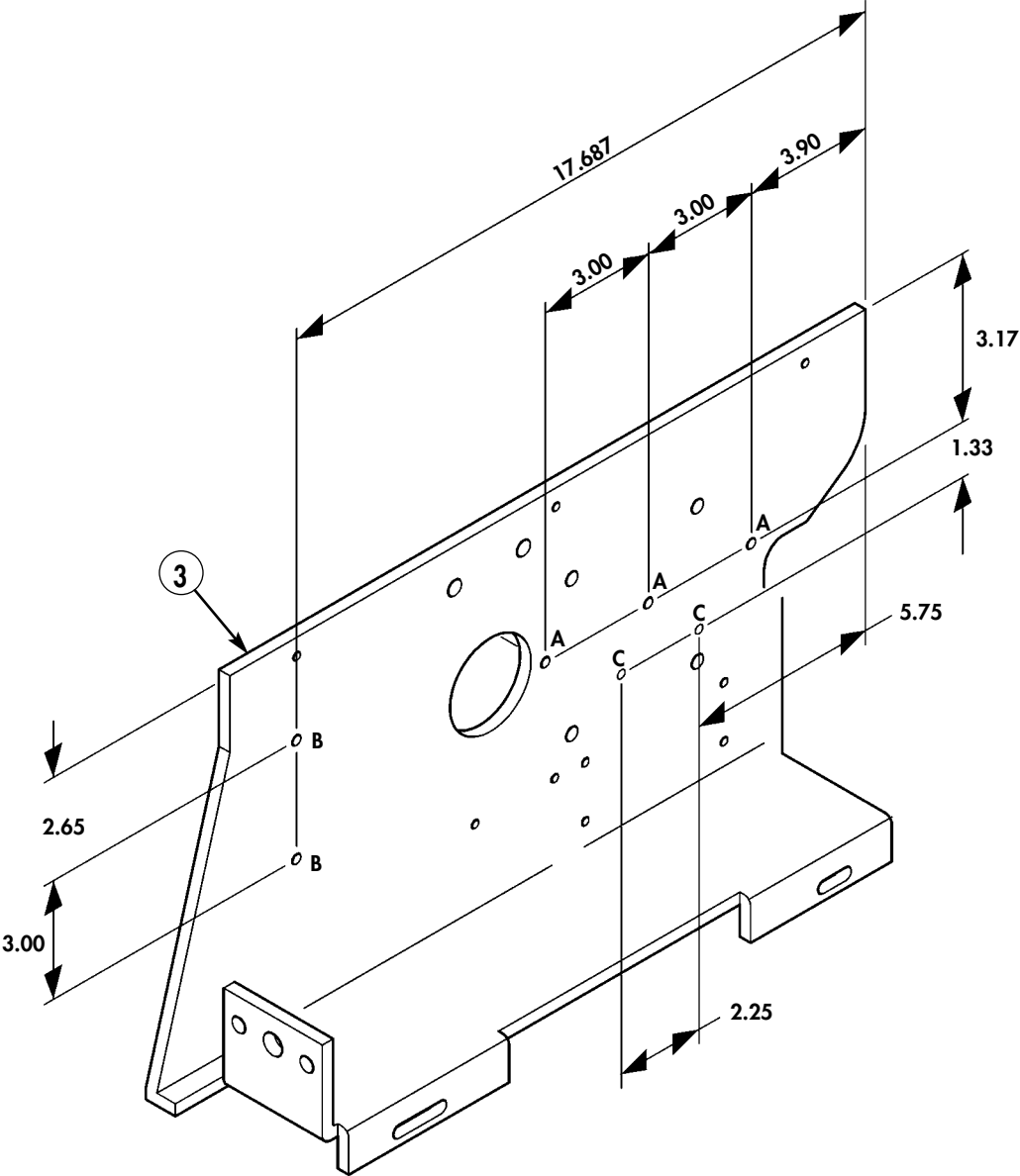


Figure 5-3.

**CAUTION**

Do not cut raised sections of terminal board. Terminal board is not usable if cut on raised section.

- 3-6. Measure and cut terminal board (5) in two places (6). Remove burrs and sharp edges.
- 3-7. Install five nut sleeves (9) in terminal board covers (7), (8), and (10), and secure with five snaprings (11).

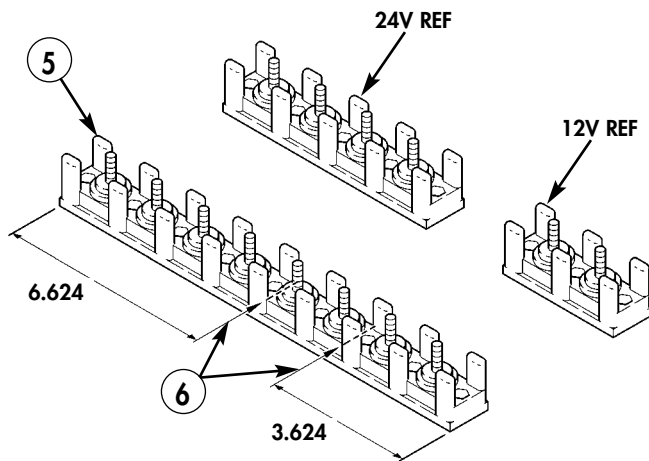


Figure 5-4.

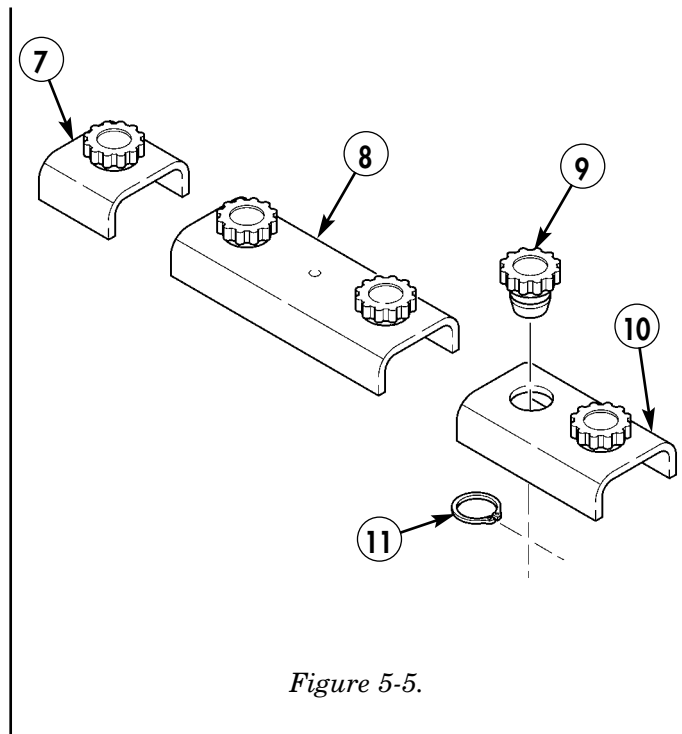


Figure 5-5.

- 5. TERMINAL BOARD – MS27212-3-8 – QTY. 1
- 7. TERMINAL BOARD COVER – 12480569-1 – QTY. 1
- 8. TERMINAL BOARD COVER – 12480569-2 – QTY. 1
- 10. TERMINAL BOARD COVER – MS18029-3S-2 – QTY. 1

### Section IV. B-BEAM PREPARATION

Locate, mark, and drill four 0.159-in. diameter holes (2) in B-beam (1).

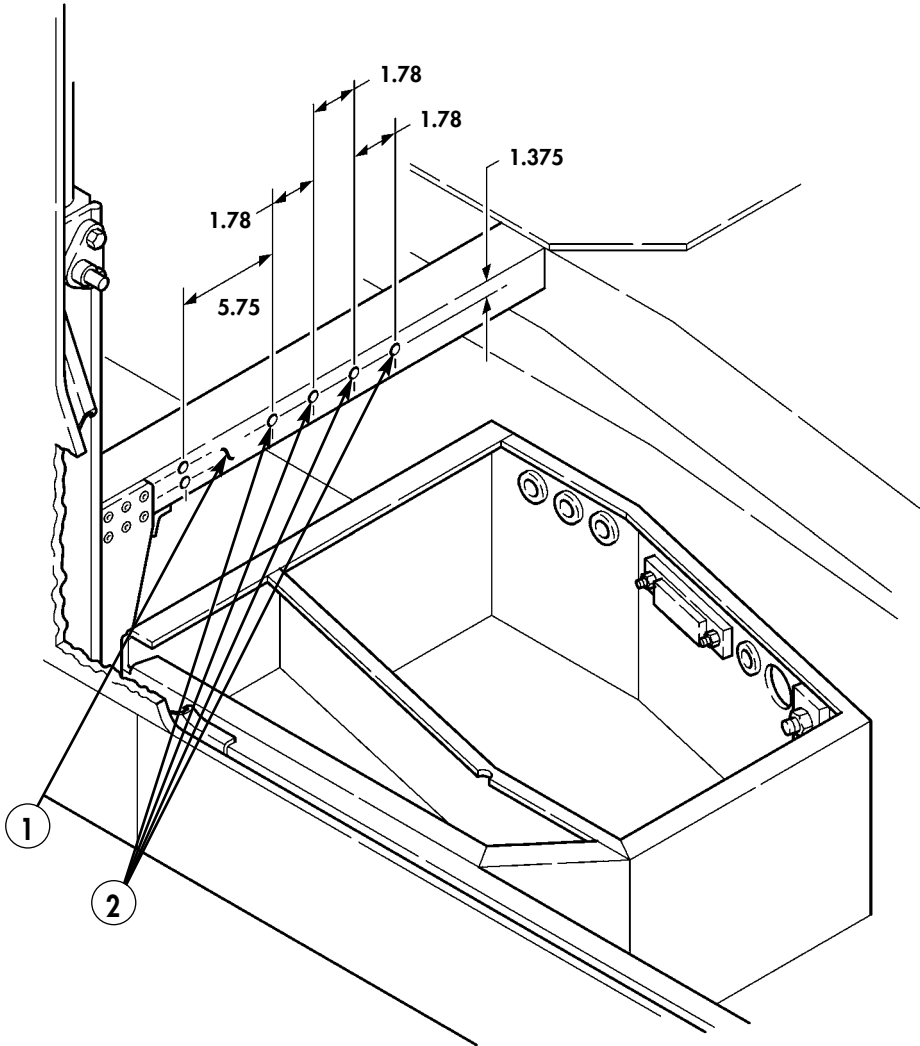
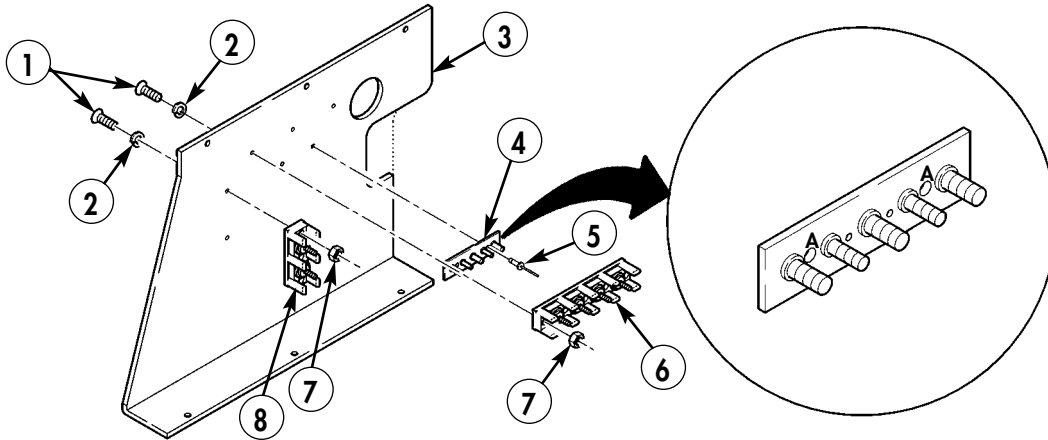


Figure 5-6.

### Section V. ASSEMBLY OF CAB ENCLOSURE PANEL

- 5-1. Install 12V terminal board (8) on cab enclosure panel (3) with two screws (1), lockwashers (2), and nuts (7).
- 5-2. Install 24V terminal board (6) on cab enclosure panel (3) with three screws (1), lockwashers (2), and nuts (7).
- 5-3. Enlarge two holes marked A in terminal board (4) to 0.196 in., and secure terminal board (4) to cab enclosure panel (3) with two rivets (5).



- 1. SCREW – MS35206-230 – QTY. 5
- 2. LOCKWASHER – MS35338-41 – QTY. 5
- 4. TERMINAL BOARD – 12480570 – QTY. 1
- 5. BLIND RIVET – 12339355-1 – QTY. 2
- 7. NUT – MS35649-63 – QTY. 5

Figure 5-7.

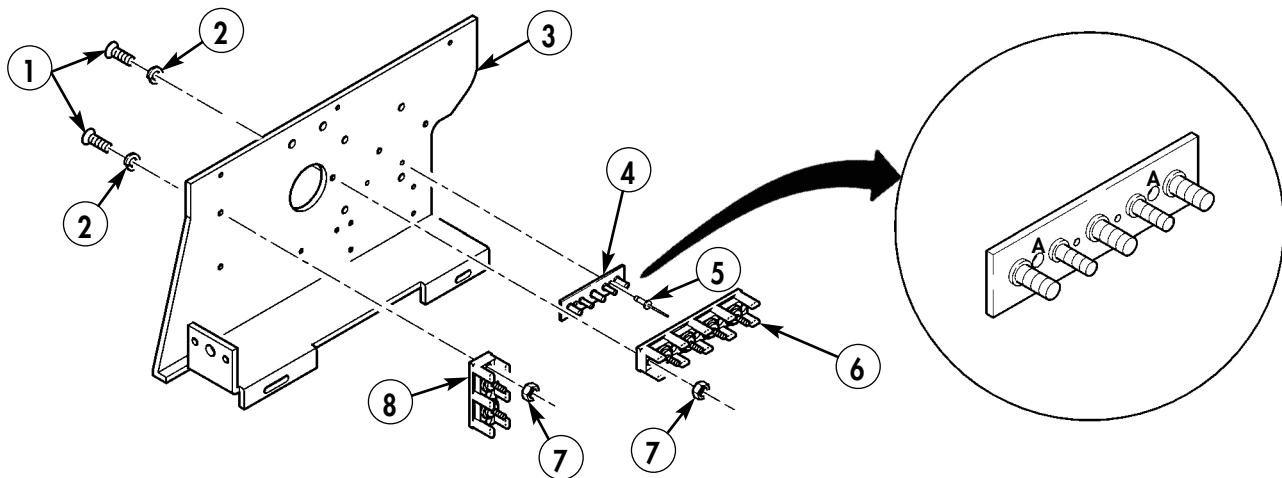


Figure 5-8.

**Section VI. FINAL ASSEMBLY, TERMINAL BOARD WIRING, AND TERMINAL LINK**

**NOTE**

- Refer to figure 5-9 for wiring overview.
- Perform steps 6-1 and 6-2 if hole and grommet do not exist in battery box.

- 6-1.** Locate, mark, and drill 2.00-in. diameter hole (6) in upper right corner of rear wall of battery box.
- 6-2.** Install grommet (7) in hole (6).
- 6-3.** Secure terminal link (2) and fuse wire (3) to 12V terminal board (1) with two locknuts (4), and install cover (5).
- 6-4.** Route wire (8) through battery box hole (6).

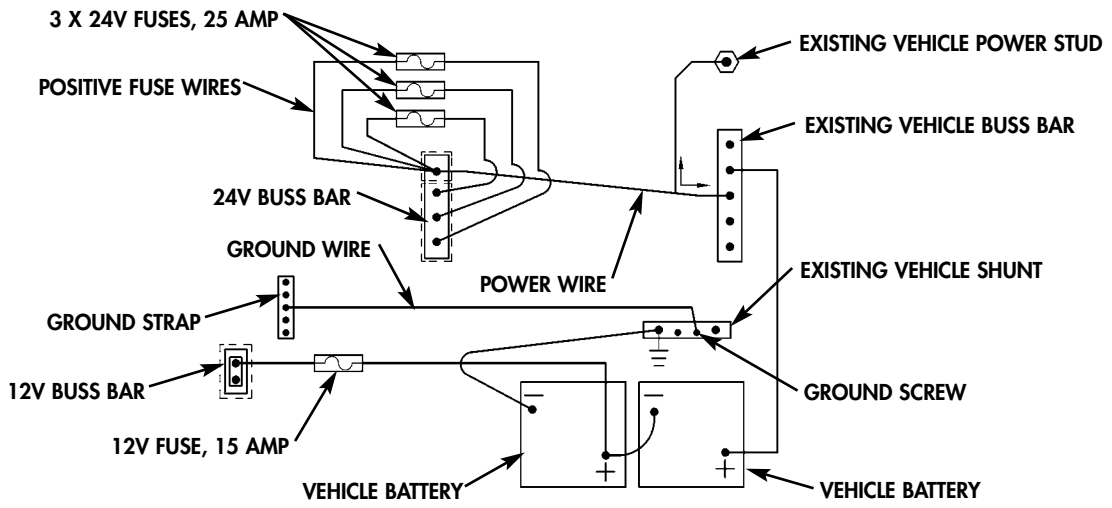
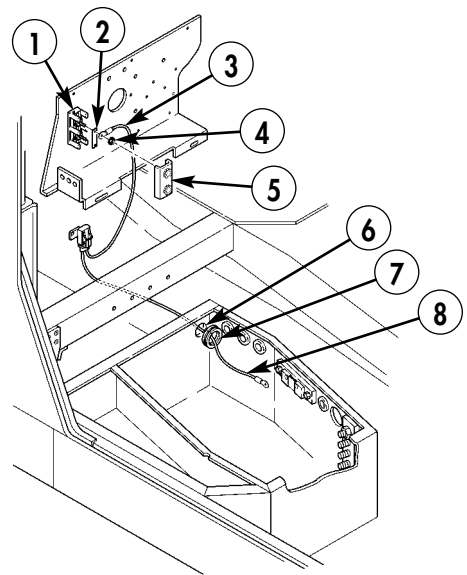


Figure 5-9.



- 2. TERMINAL LINK – MS25226-6N-2 – QTY. 1**
- 3. FUSE WIRE ASSEMBLY (12V) – 12480568-2 – QTY. 1**
- 4. LOCKNUT – 271175 – QTY. 2**
- 5. TERMINAL BOARD COVER – MS18029-3S-2 – QTY. 1**
- 7. GROMMET – 2400 – QTY. 1**

Figure 5-10.

- 6-5. Connect wire (8) to existing positive 12V battery terminal end (10) with existing screw (9) and nut (11).

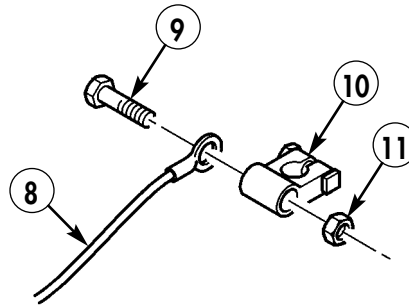
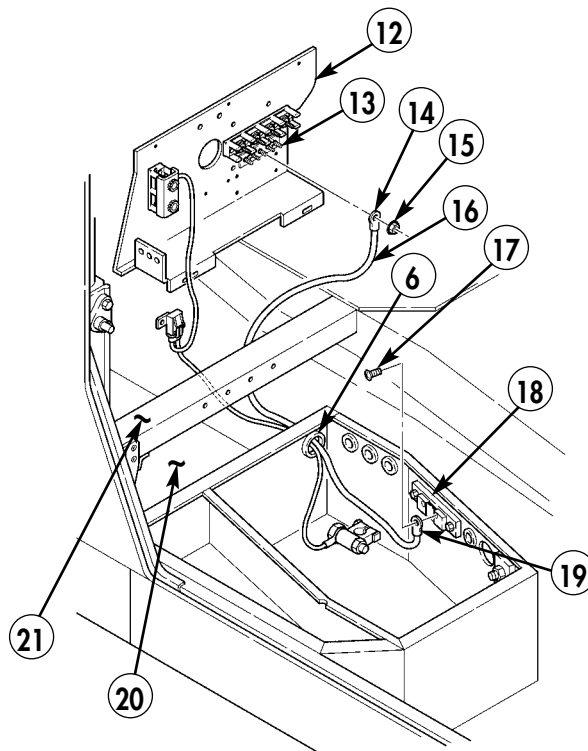


Figure 5-11.

- 6-6. Position cab enclosure panel (12) in rear floor pan (20) and rear of B-beam (21). Do not secure cab enclosure panel (12) at this time.
- 6-7. Route ground cable (16) through battery box hole (6).
- 6-8. Secure terminal lug (14) on center terminal of terminal board (13) with nut (15), and secure terminal lug (19) on shunt (18) with existing screw (17).
- 6-9. Install four additional nuts (15) on terminal board (13).

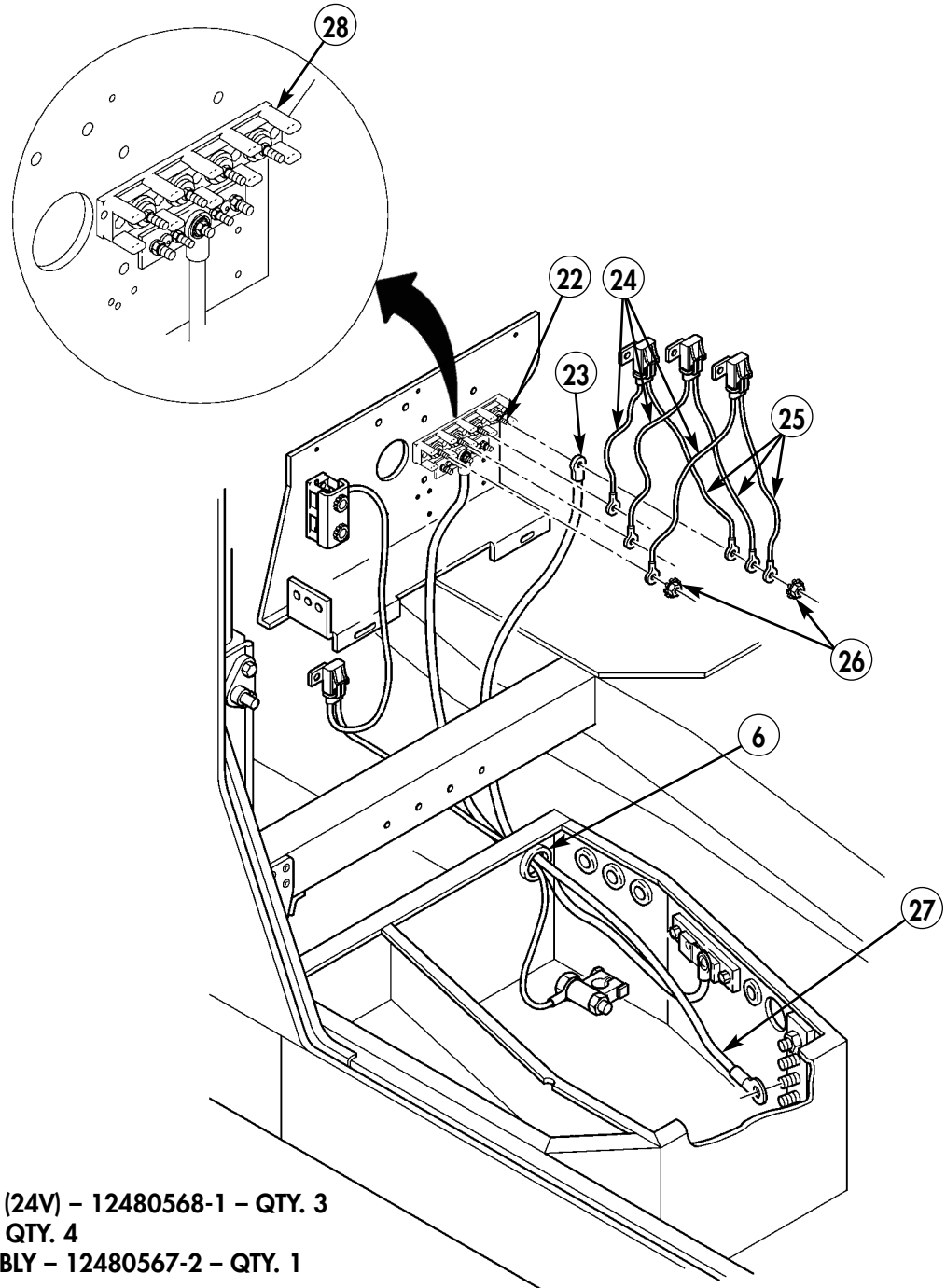


- 15. PLAIN-ASSEMBLED NUT – 271169 – QTY. 5
- 16. GROUND CABLE ASSEMBLY – 12480567-1 – QTY. 1

Figure 5-12.



- 6-10.** Route 24V power cable (27) through hole (6) and install 24V power cable terminal lug (23) on inboard stud (22) of terminal board (28). Do not secure 24V power cable terminal lug (23) at this time.
- 6-11.** Secure three fuse wires (25) and 24V power cable terminal lug (23) to inboard terminal board stud (22) with locknut (26).
- 6-12.** Secure three remaining fuse wires (24) to corresponding studs on 24V terminal board (28) with three locknuts (26).



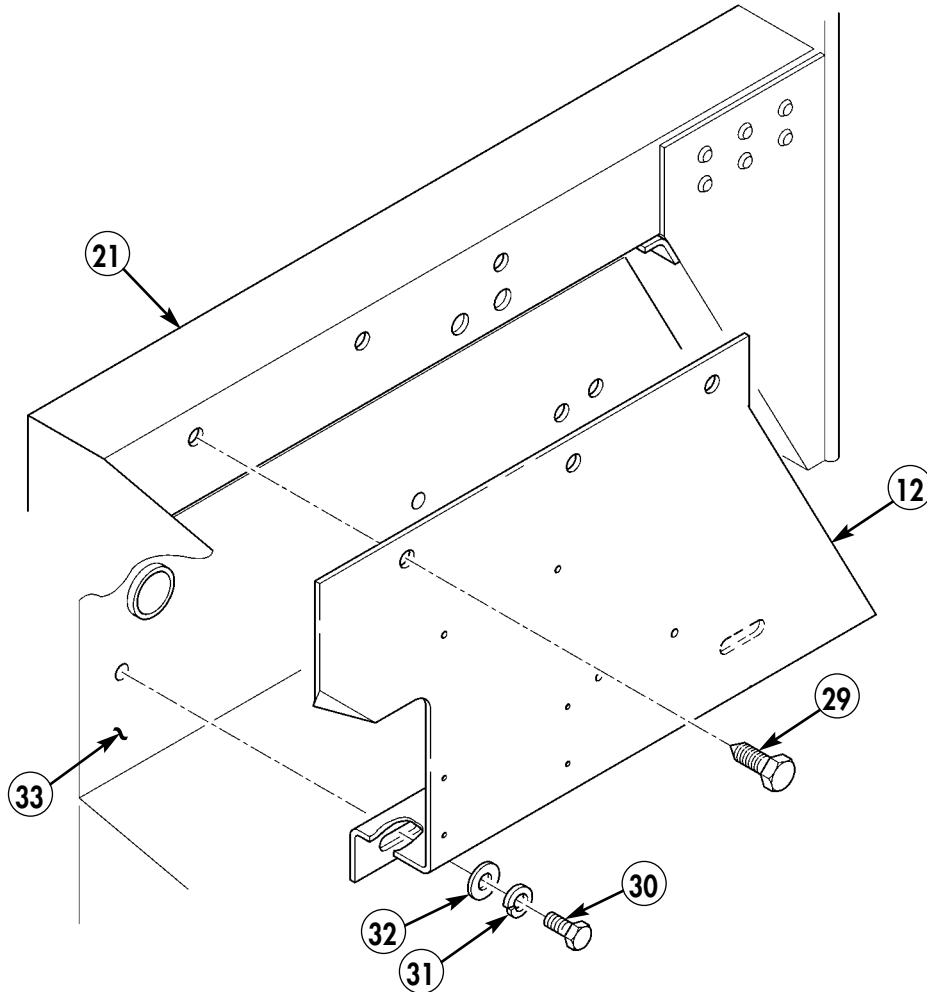
- 24. FUSE WIRE ASSEMBLY (24V) - 12480568-1 - QTY. 3**
- 26. LOCKNUT - 271175 - QTY. 4**
- 27. POWER CABLE ASSEMBLY - 12480567-2 - QTY. 1**

*Figure 5-13.*

**NOTE**

For vehicles with new cab enclosure panel, begin with step 6-14.

- 6-13. Install cab enclosure panel (12). (Refer to TM 9-2320-280-20.)
- 6-14. Secure cab enclosure panel (12) to B-beam (21) with three self-tapping screws (29).
- 6-15. Secure cab enclosure panel (12) to battery box (33) with two capscrews (30), lockwashers (31), and washers (32).



- 29. SELF-TAPPING SCREW – 12342499-2 – QTY. 3
- 30. CAPSCREW – B1821BH025C075N – QTY. 2
- 31. LOCKWASHER – MS35338-48 – QTY. 2
- 32. FLAT WASHER – MS51412-23 – QTY. 2

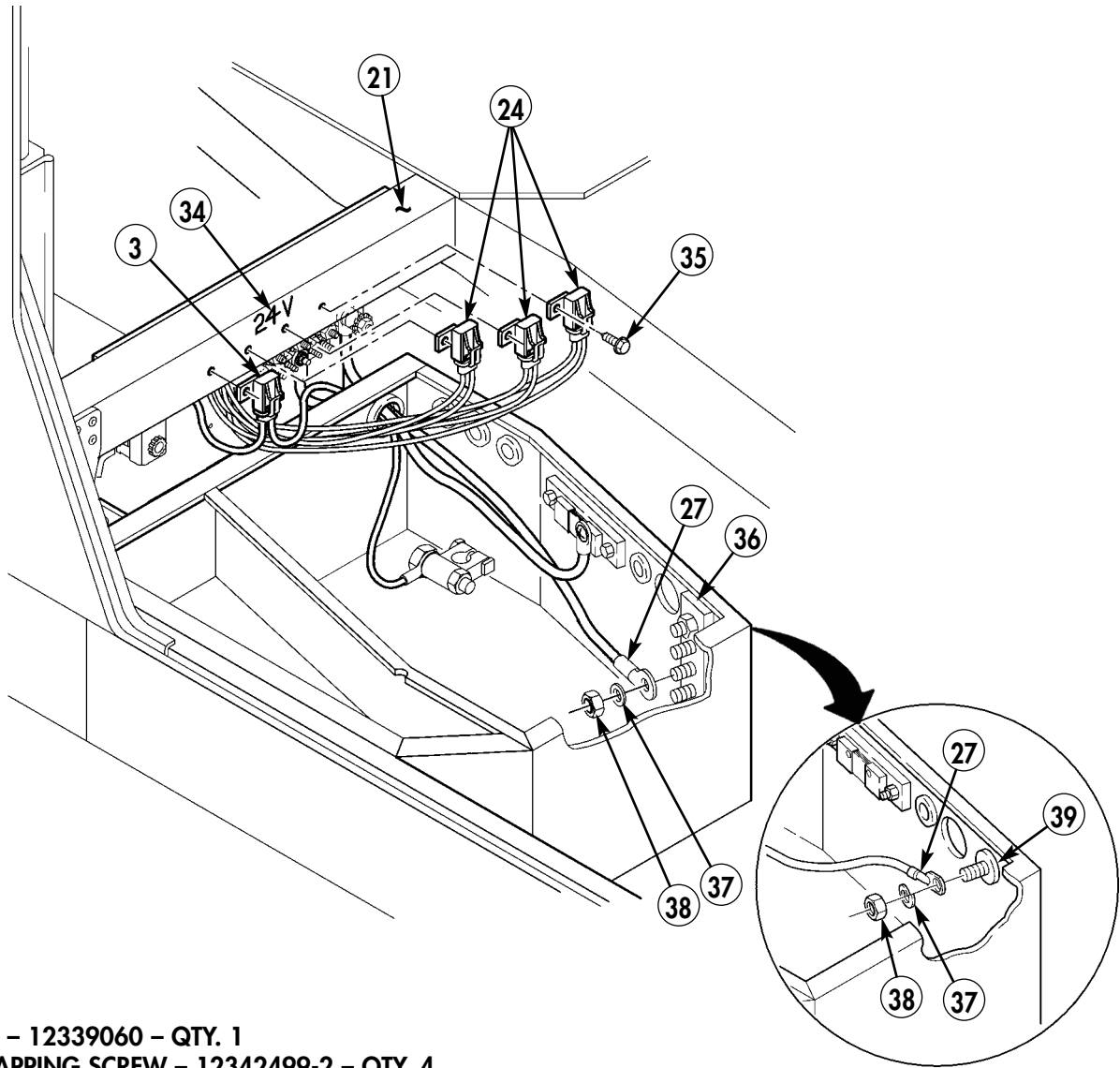
Figure 5-14.

- 6-16. Secure three 24V fusewire assemblies (24) and one 12V fusewire assembly (3) to B-beam (21) with four self-tapping screws (35).

**NOTE**

For models equipped with power stud, perform step 6-17.  
Otherwise, proceed to step 6-18.

- 6-17. Secure 24V terminal board power wire terminal lug (27) to power stud (39) with lockwasher (37) and existing nut (38).
- 6-18. Secure 24V terminal board power wire terminal lug (27) to terminal board (36) with lockwasher (37) and existing nut (38).
- 6-19. Install decal (34) on B-beam (21).
- 6-20. If previously removed, install right-hand rear fixed door. (Refer to TM 9-2320-280-20.)
- 6-21. Install batteries. (Refer to TM 9-2320-280-20.)



- 34. DECAL - 12339060 - QTY. 1
- 35. SELF-TAPPING SCREW - 12342499-2 - QTY. 4
- 37. LOCKWASHER - MS35338-48 - QTY. 1

Figure 5-15.

## Section VII. INTEGRATED RACK INSTALLATION

### NOTE

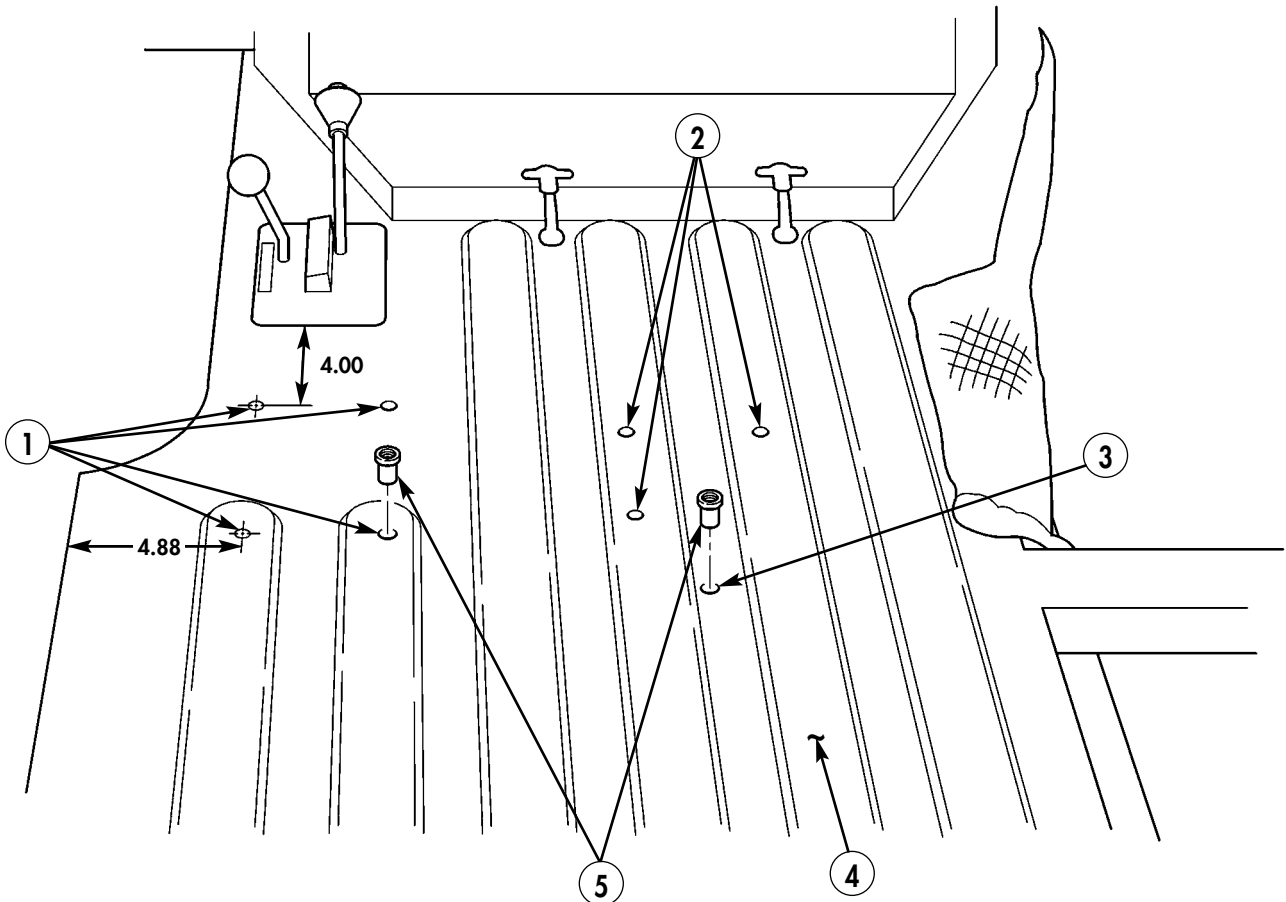
- It is necessary to drill all holes for mounting MTS to tunnel before installing integrated rack.
- Perform steps 7-1 through 7-5 only when installing MTS.
- Remove left-side tunnel insulation. (Refer to TM 9-2320-280-20.)

7-1. Drill out rivet from floor (4), enlarge hole (3) to 0.390-in. diameter, and install screw thread insert (5) in floor (4).

### NOTE

Ensure all holes are located on flat surface of tunnel ribs.

- 7-2. Using MTS mounting base bracket as template, locate, mark, and drill three 0.390-in. diameter holes (2) in floor (4).
- 7-3. Using control box as template, locate, mark, and drill four 0.390-in. diameter holes (1) in floor (4).
- 7-4. Install seven screw thread inserts (5) in floor (4).
- 7-5. Install left-side tunnel insulation. (Refer to TM 9-2320-280-20.)



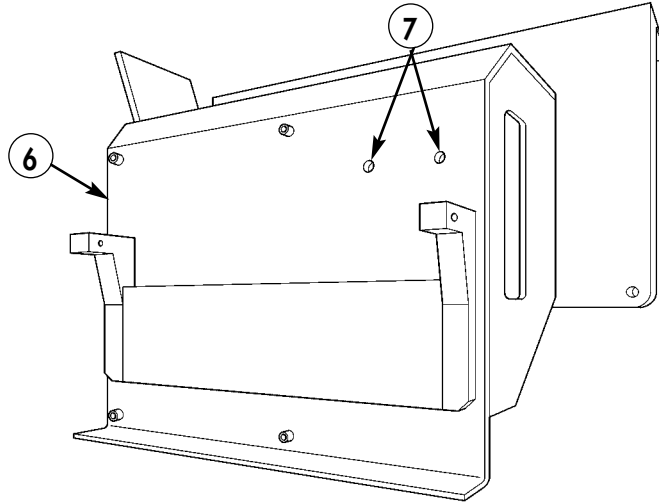
5. INSERT - 12446871-2 - QTY. 8

Figure 5-16.

**NOTE**

Perform step 7-6 only if MT-6353/VRC mounting base is to be installed.

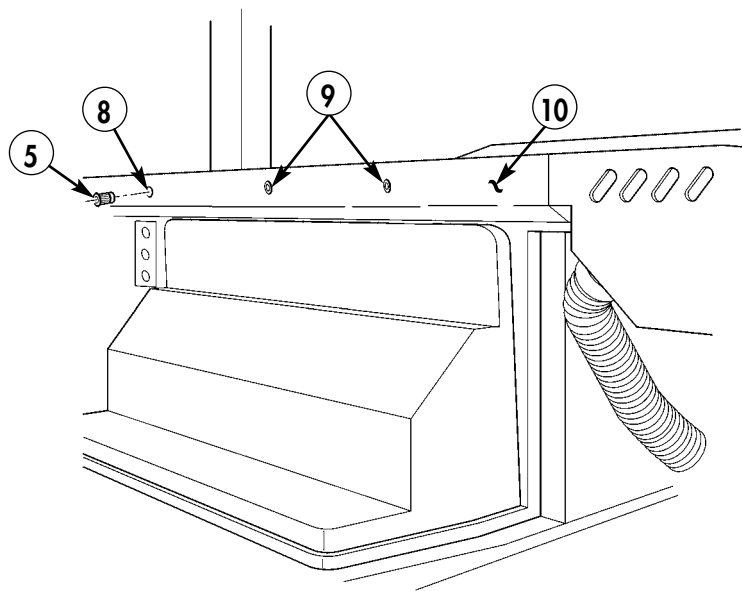
- 7-6. Remove two inserts (7) from bottom of integrated rack (6).



**6. INTEGRATED RACK – A3276903 – QTY. 1**

*Figure 5-17.*

- 7-7. Using integrated rack (6) as template, locate, mark, and drill one 0.390-in. diameter hole (8) in dash (10).
- 7-8. Remove paint from vicinity of hole (8) and two existing inserts (9).
- 7-9. Install insert (5) in hole (8).
- 7-10. Apply anti-seize compound to inserts (5) and (9) as required.



**5. INSERT – 12446871-2 – QTY. 1**

*Figure 5-18.*

- 7-11. Remove paint from vicinity of three mounting slots (11) on integrated rack (6).
- 7-12. Apply anti-seize compound to vicinity of three mounting slots (11) on integrated rack (6) as required.

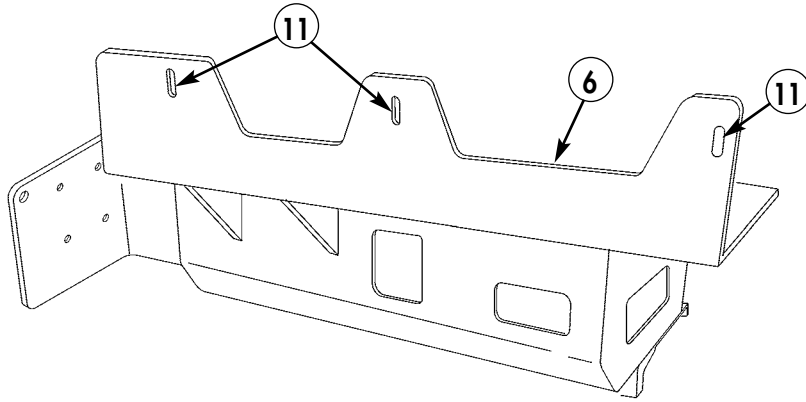
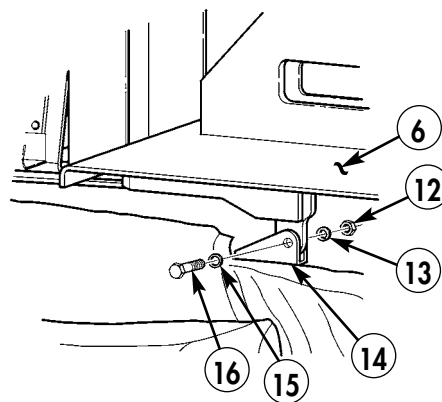


Figure 5-19.

**NOTE**

Do not install mounting hardware on top of integrated rack at this time. Not installing this hardware leaves the integrated rack free to pivot to assist in routing cabling. Secure rack only after all cabling has been routed.

- 7-13. Mount integrated rack (6) to existing radio rack mount (14) using screw (16), washer (15), lockwasher (13), and nut (12). Repeat for opposite side. Do not tighten screws.



- 12. NUT – MS35649-2382 – QTY. 2
- 13. LOCKWASHER – MS35338-46 – QTY. 2
- 15. WASHER – 2436163 – QTY. 2
- 16. CAPSCREW – B1821AH038C225N – QTY. 2

Figure 5-20.

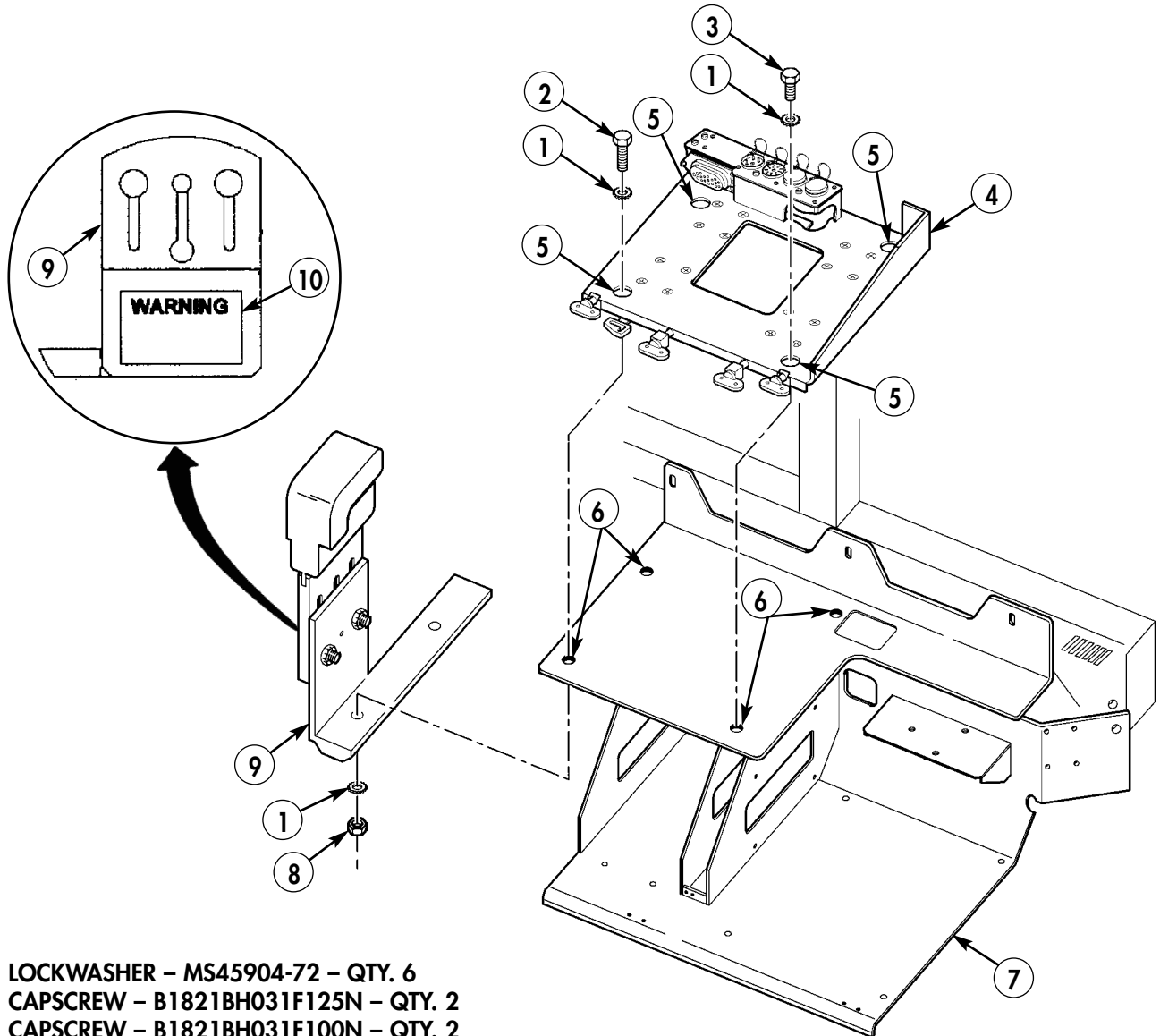
**Section VIII. INSTALLATION OF SINGARS MOUNTING TRAY AND AMP GUARD**

- 8-1. Remove paint from vicinity of four mounting holes (6) on integrated rack (7) and vicinity of four mounting holes (5) on bottom of mounting base (4).
- 8-2. Apply anti-seize compound to vicinity of four mounting holes (6) on integrated rack (7) and four mounting holes (5) on bottom of mounting base (4) as required.

**NOTE**

Two lockwashers and one nut are used on driver-side screws only.

- 8-3. Install MT-6352/VRC mounting base (4) and amp guard (9) on integrated rack (7) with two capscrews (2), four lockwashers (1), and two nuts (8). Secure MT-6352/VRC mounting base (4) on integrated rack (7) with two capscrews (3) and two lockwashers (1).
- 8-4. Place warning decal (10) on amp guard (9).



- 1. LOCKWASHER – MS45904-72 – QTY. 6
- 2. CAPSCREW – B1821BH031F125N – QTY. 2
- 3. CAPSCREW – B1821BH031F100N – QTY. 2
- 4. MOUNTING BASE, MT-6352/VRC – A3013367-1 – QTY. 1
- 8. NUT – 9418892 – QTY. 2
- 9. AMP GUARD – 872842-1 – QTY. 1
- 10. DECAL – 861868-2 – QTY. 1

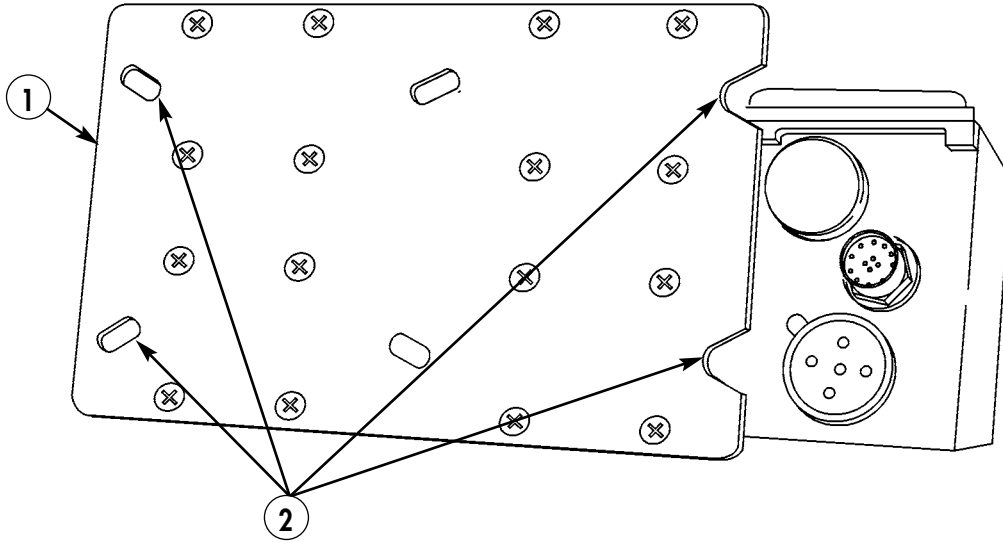
Figure 5-21.

### Section IX. POWER AMPLIFIER INSTALLATION

#### NOTE

Perform this procedure only if SINGARS model AN/VRC-92F is to be installed.

- 9-1. Remove paint from vicinity of four mounting areas (2) on MT-6353/VRC mounting base (1) and apply anti-seize compound as required.



1. MOUNTING BASE, MT-6353/VRC – A3014053-1 – QTY. 1

Figure 5-22.

- 9-2. Remove paint from vicinity of four mounting holes (4) on integrated rack (3) and apply anti-seize compound as required.

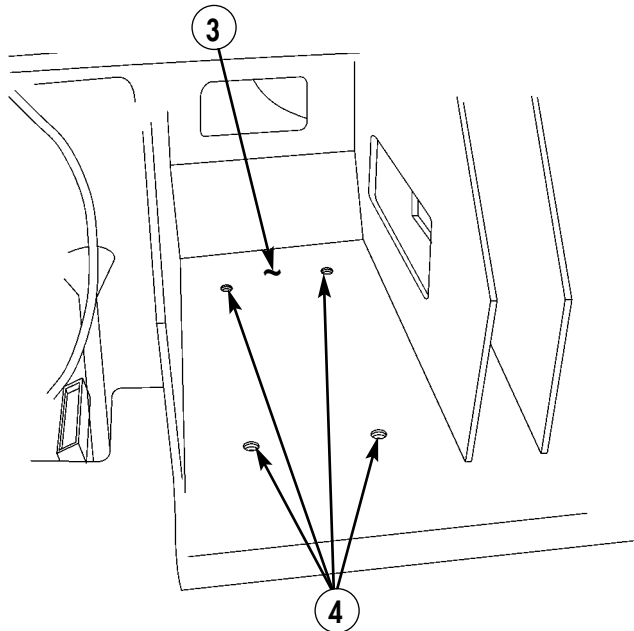
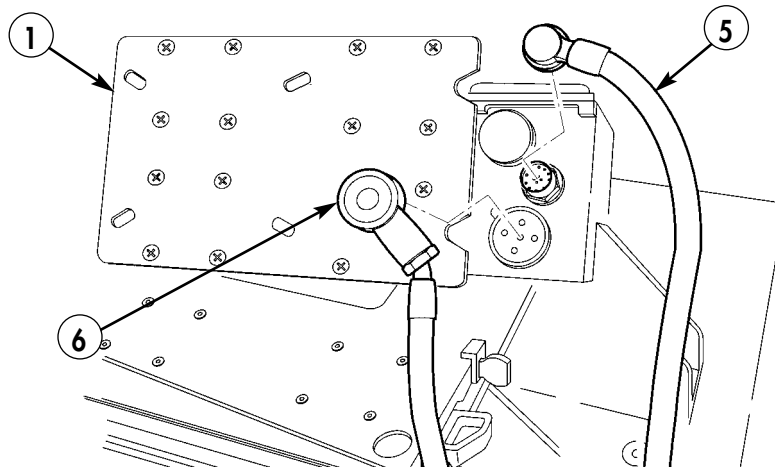


Figure 5-23.



- 9-3. Attach control cable (5) to MT-6353/VRC mounting base (1).
- 9-4. Attach power cable (6) to MT-6353/VRC mounting base (1).



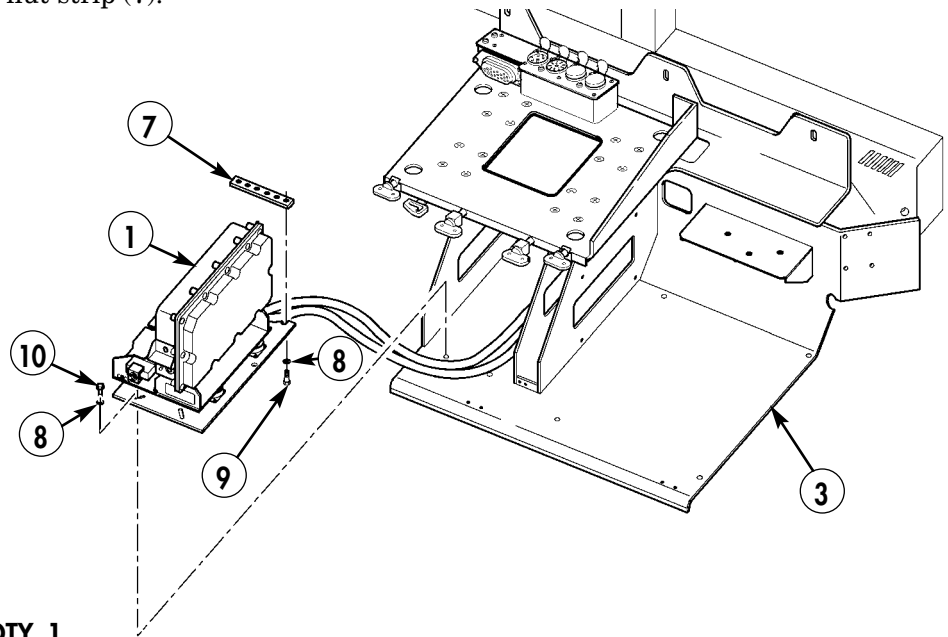
- 5. CONTROL CABLE – A3014037-4 – QTY. 1
- 6. POWER CABLE – A3014040-9 – QTY. 1

Figure 5-24.

**NOTE**

Ensure control cable and power cable are routed through hole in back of integrated rack before installing MT-6353/VRC mounting base. Refer to chapter 5, section XIII.

- 9-5. Attach MT-6353/VRC mounting base (1) to integrated rack (3) with two capscrews (9) and (10), six lockwashers (8), and nut strip (7).



- 7. NUT STRIP – A3014064-1 – QTY. 1
- 8. LOCKWASHER – MS45904-72 – QTY. 6
- 9. CAPSCREW – B1821BH031F125N – QTY. 2
- 10. CAPSCREW – B1821BH031F075N – QTY. 2

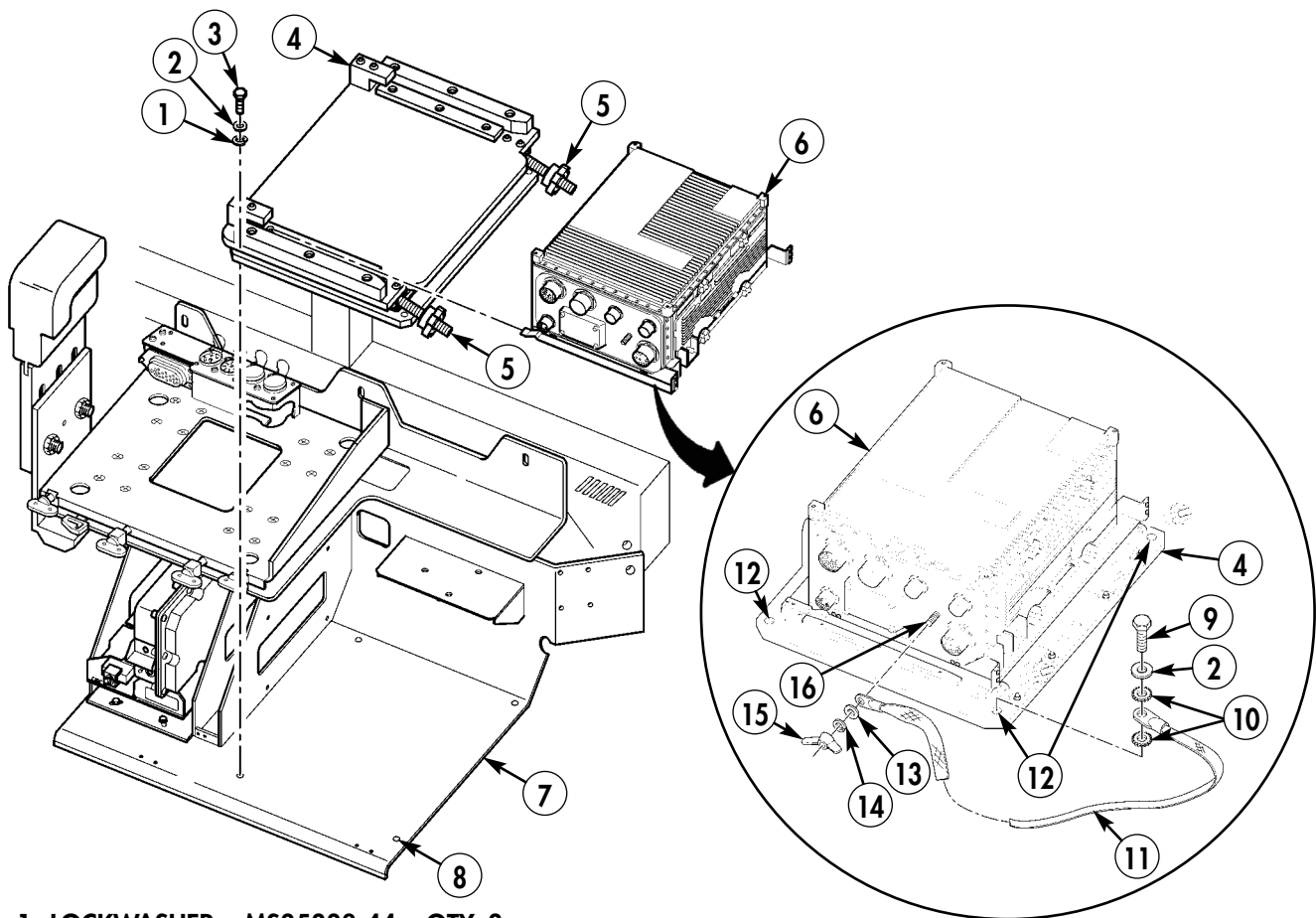
Figure 5-25.

## Section X. FBCB2 COMPONENTS INSTALLATION

### NOTE

SINCGARS model AN/VRC-92F shown.

- 10-1. Remove paint from vicinity of four holes (8) on integrated rack (7) and on both sides from vicinity of four holes (12) on CPU isolation kit (4). Apply anti-seize compound as required.
- 10-2. Install CPU isolation kit (4) on integrated rack (7) with three capscrews (3), washers (2), and lockwashers (1), leaving open holes (8) and (12).
- 10-3. Install CPU (6) on CPU isolation kit (4) with two existing fastener guards (5).
- 10-4. Fabricate ground strap (11) from 8.00-in. length of braided wire and two terminal lugs.
- 10-5. Install ground strap (11) on CPU ground stud (16) with existing washer (13), lockwasher (14), and wingnut (15).
- 10-6. Install ground strap (11) on CPU isolation kit (4) and integrated rack (7), with capscREW (9), washer (2), and two lockwashers (10).



1. LOCKWASHER – MS35338-44 – QTY. 3
2. WASHER – 2436161 – QTY. 4
3. CAPSCREW – B1821BH025C100N – QTY. 3
4. CPU ISOLATION KIT – 872826-2 – QTY. 1
6. CPU – 881292-1 – QTY. 1
9. CAPSCREW – B1821BH025C125N – QTY. 1
10. LOCKWASHER – MS45904-68 – QTY. 2
11. CPU GROUND STRAP
  - BRAIDED WIRE – AA59569F30T0375 – QTY. A/R
  - TERMINAL LUG – MS20659-141 – QTY. 2

Figure 5-26.

**NOTE**

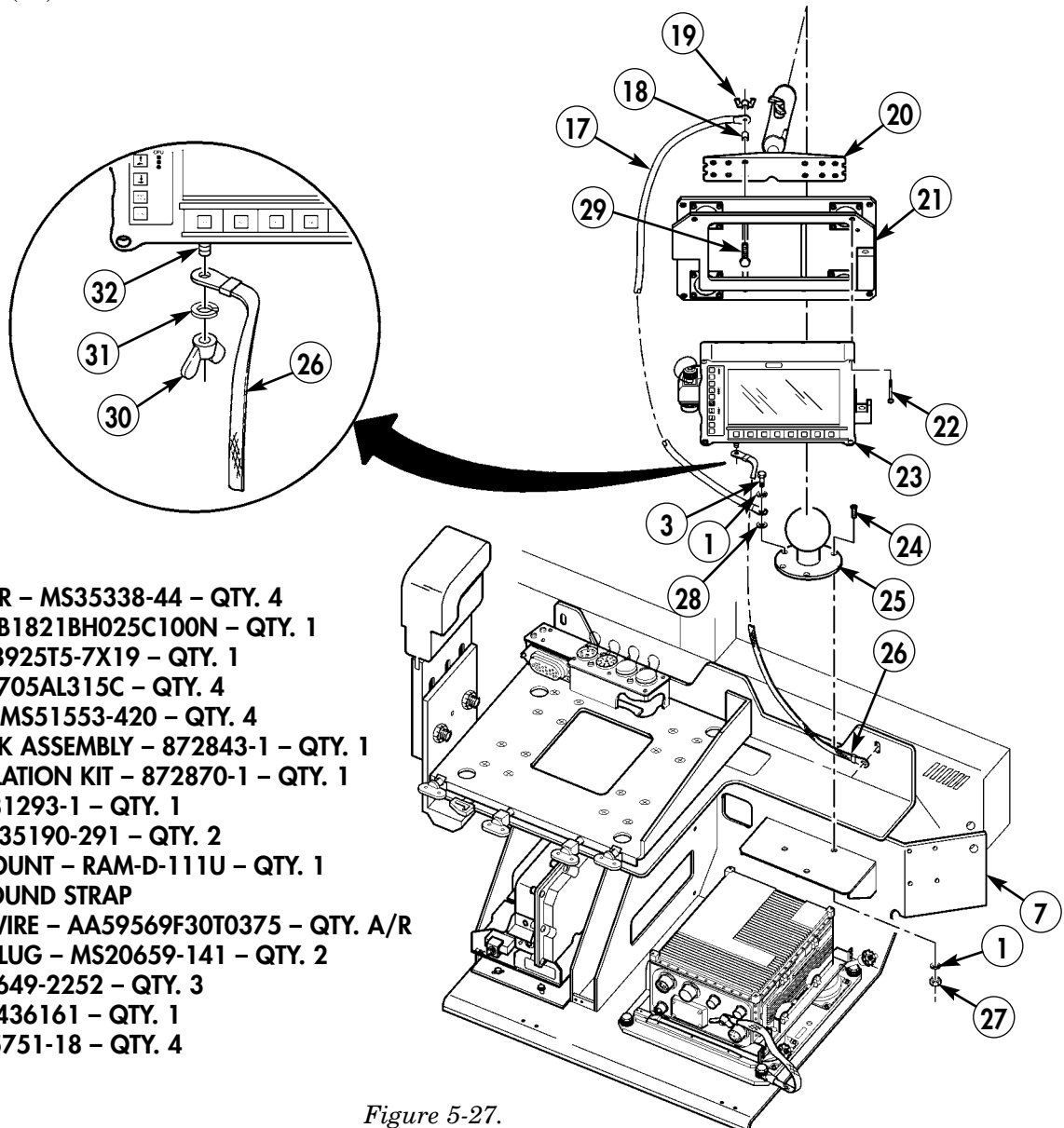
SINGARS model AN/VRC-92F shown.

- 10-7. Install Ramball mount (25) on integrated rack (7) with two screws (24), screw (3), lockwasher (1), lanyard (17), washer (28), three lockwashers (1), and nuts (27).
- 10-8. Install display isolation kit (21) on display lock assembly (20) with four bolts (29), spacers (18), lanyard (17), and four wingnuts (19).
- 10-9. Install display unit (23) on display isolation kit (21) with four screws (22).
- 10-10. Install display lock assembly (20) on Ramball mount (25).
- 10-11. Fabricate display ground strap (26) from 8-in. length of braided wire and two terminal lugs.

**NOTE**

Remove paint from vicinity of integrated rack mounting hole before performing step 10-12. Apply anti-seize compound as required.  
Ground strap will be installed on integrated rack only when integrated rack is fully secured in vehicle.

- 10-12. Install display ground strap (26) on display ground stud (32) with existing lockwasher (31) and wingnut (30).



- 1. LOCKWASHER – MS35338-44 – QTY. 4
- 3. CAPSCREW B1821BH025C100N – QTY. 1
- 17. LANYARD – 8925T5-7X19 – QTY. 1
- 18. SPACER – 10705AL315C – QTY. 4
- 19. WINGNUT – MS51553-420 – QTY. 4
- 20. DISPLAY LOCK ASSEMBLY – 872843-1 – QTY. 1
- 21. DISPLAY ISOLATION KIT – 872870-1 – QTY. 1
- 23. DISPLAY – 881293-1 – QTY. 1
- 24. SCREW – MS35190-291 – QTY. 2
- 25. RAMBALL MOUNT – RAM-D-111U – QTY. 1
- 26. DISPLAY GROUND STRAP
  - BRAIDED WIRE – AA59569F30T0375 – QTY. A/R
  - TERMINAL LUG – MS20659-141 – QTY. 2
- 27. NUT – MS35649-2252 – QTY. 3
- 28. WASHER – 2436161 – QTY. 1
- 29. BOLT – MS35751-18 – QTY. 4

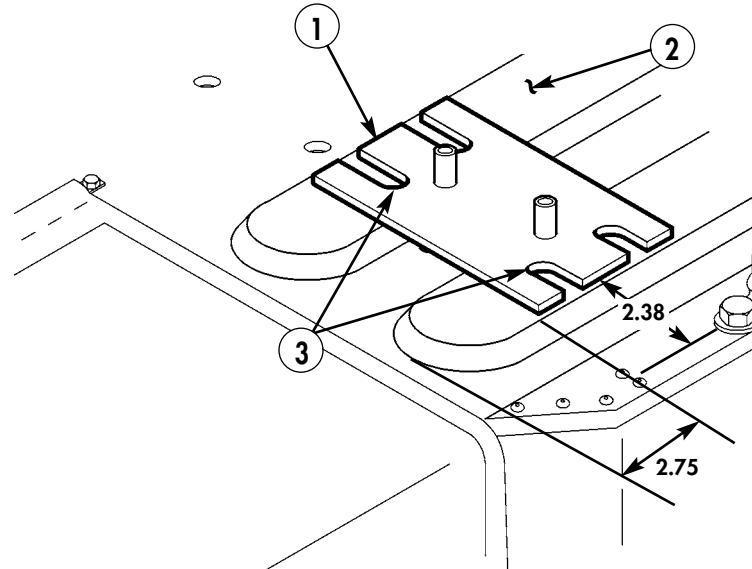
Figure 5-27.

## Section XI. LOUDSPEAKER INSTALLATION

### NOTE

- This procedure covers loudspeaker installation when not installing MTS. For loudspeaker installation when installing MTS, refer to chapter 5, section XXVII.
- Ensure all mounting holes are on the flat surface of cargo floor raised ribs.
- Perform steps 11-1 through 11-3 for left-side speaker installation.

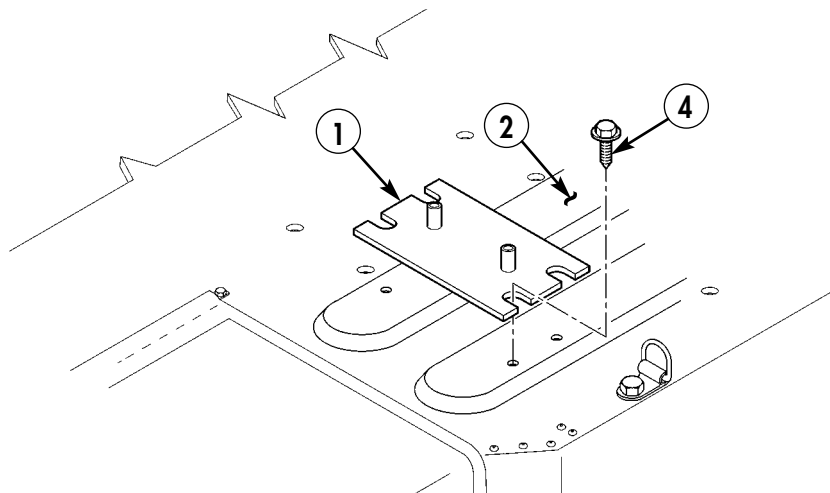
11-1. Using speaker mounting plate (1) as template, locate, mark, and drill four 0.201-in. diameter holes (3) in cargo floor (2).



1. MOUNTING PLATE – A3014550-1 – QTY. 1

Figure 5-28.

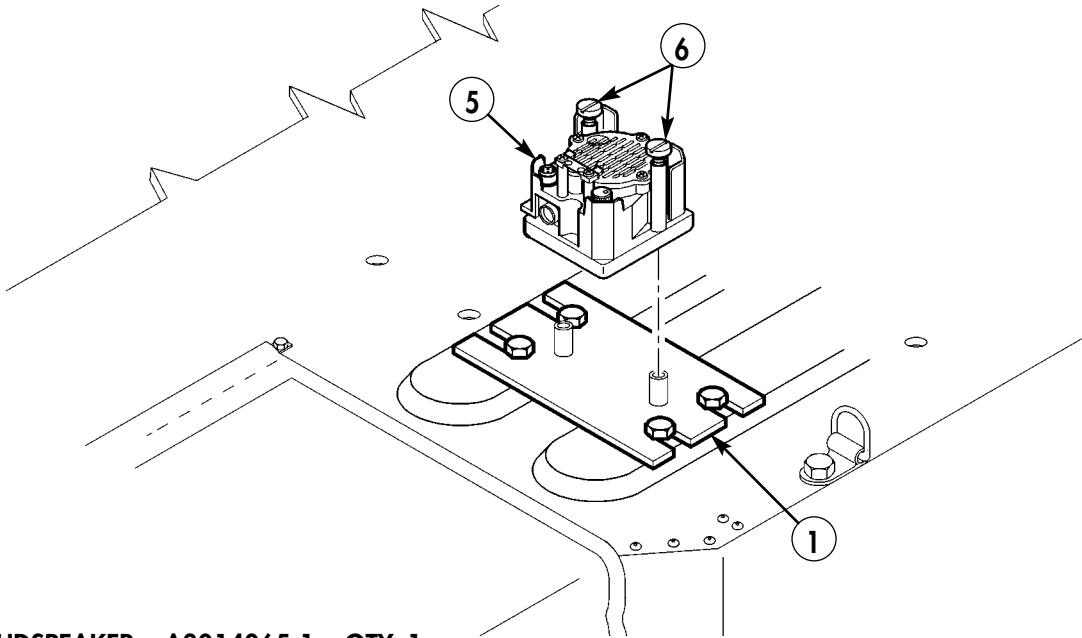
11-2. Attach speaker mounting plate (1) to cargo floor (2) with four self-tapping screws (4).



4. SELF-TAPPING SCREW – 9426241 – QTY. 4

Figure 5-29.

11-3. Attach loudspeaker (5) to speaker mounting plate (1) with two externally-relieved body screws (6).



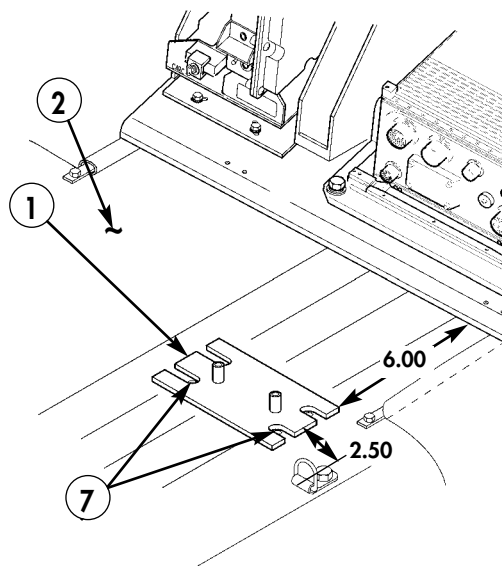
5. LOUDSPEAKER – A3014065-1 – QTY. 1

Figure 5-30.

**NOTE**

Perform steps 11-4 through 11-6 for right side speaker installation.

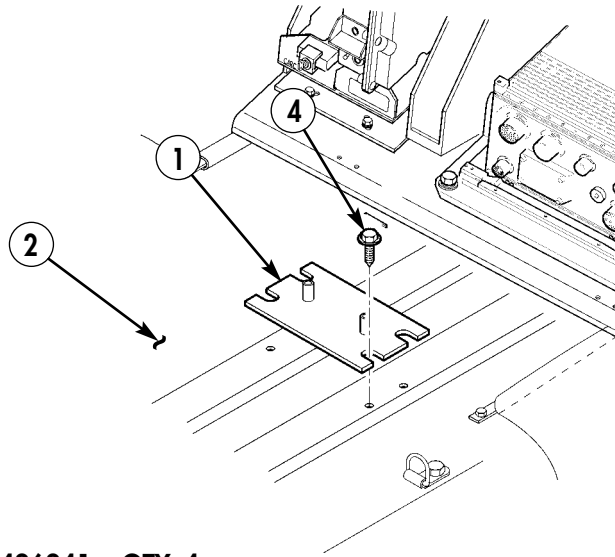
11-4. Using speaker mounting plate (1) as template, locate, mark, and drill four 0.201-in. diameter holes (7) in cargo floor (2).



1. MOUNTING PLATE – A3014550-1 – QTY. 1

Figure 5-31.

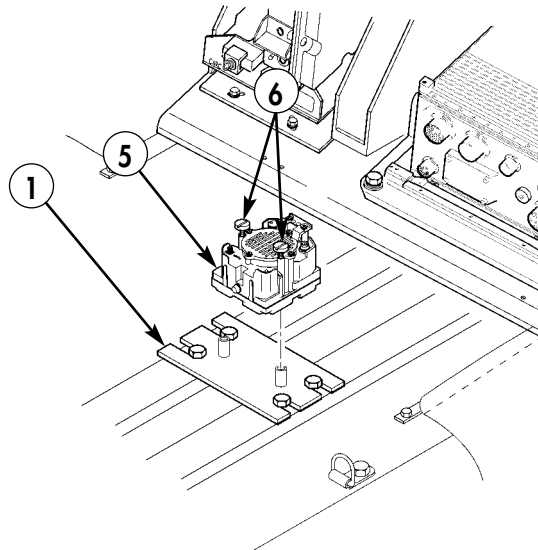
11-5. Attach speaker mounting plate (1) to cargo floor (2) with four self-tapping screws (4).



4. SELF-TAPPING SCREW – 9426241 – QTY. 4

Figure 5-32.

11-6. Attach loudspeaker (5) to speaker mounting plate (1) with two externally-relieved body screws (6).



5. LOUDSPEAKER – A3014065-1 – QTY. 1

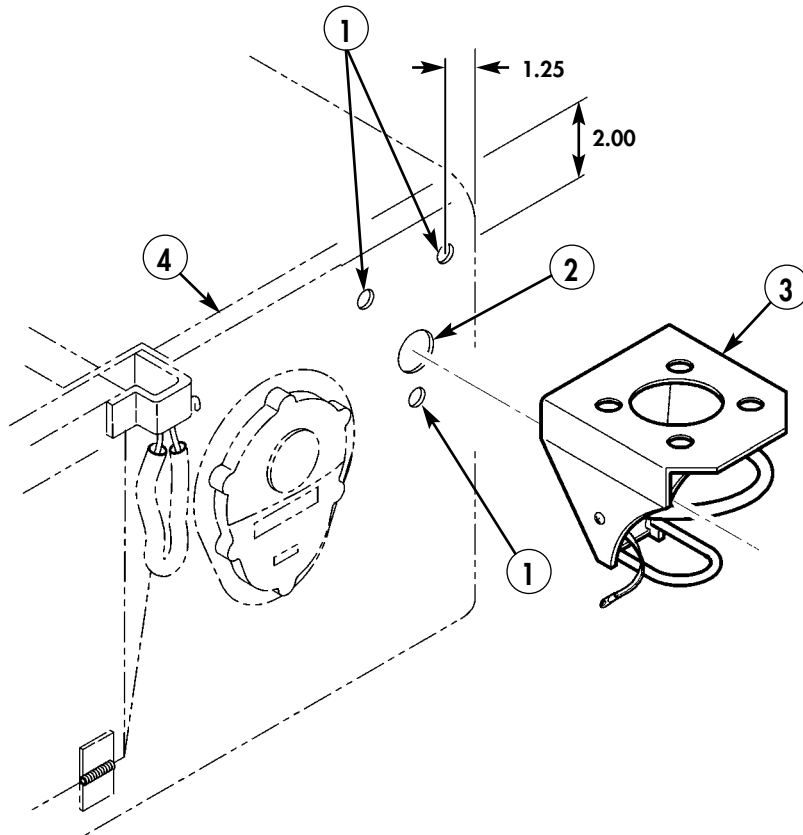
Figure 5-33.

**Section XII. ANTENNA INSTALLATION**

**NOTE**

This procedure applies to vehicles without existing antennas, and to either left or right side of vehicle.

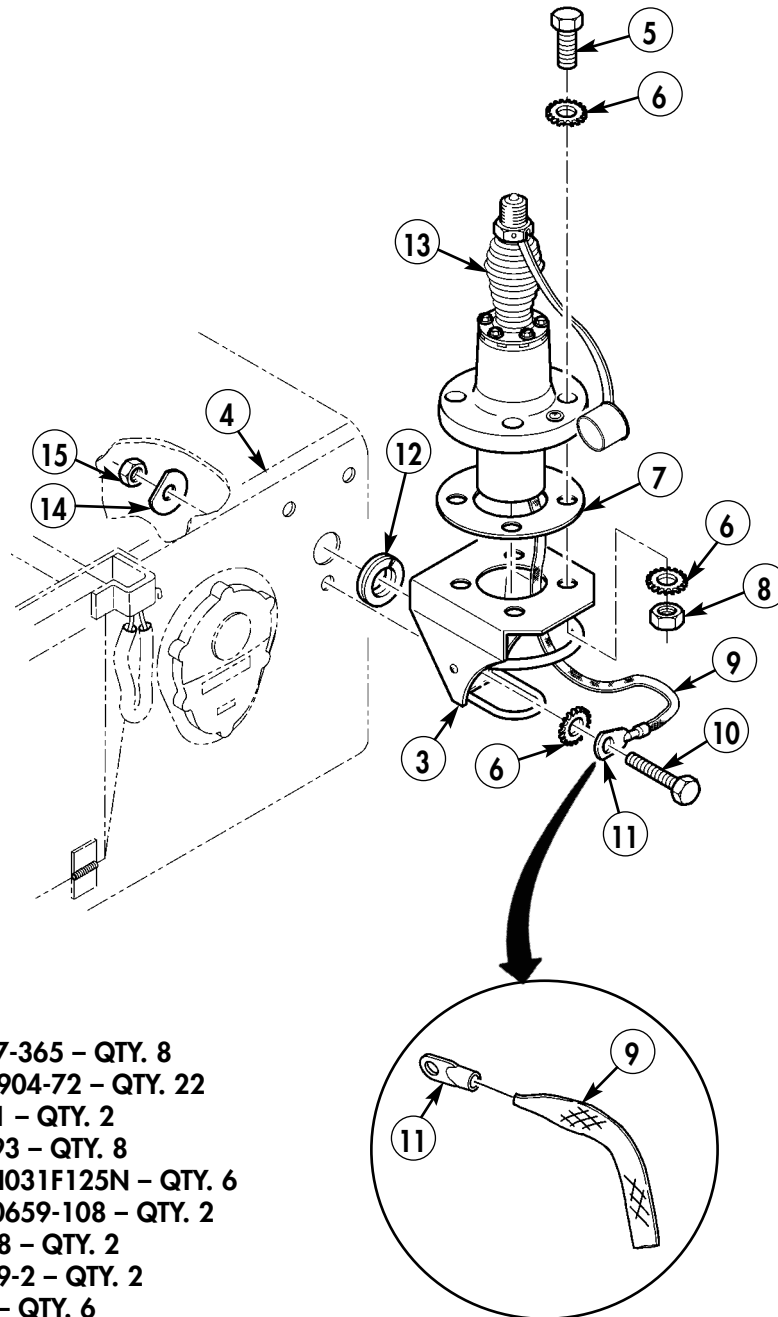
- 12-1. Using antenna bracket (3) as template, locate, mark, and drill one 1.375-in. diameter hole (2) in rear wall (4).
- 12-2. Locate, mark, and drill three 0.343-in. diameter holes (1) in rear wall (4).
- 12-3. Remove paint from vicinity of three holes (1) and three holes in antenna bracket (3).
- 12-4. Apply anti-seize compound to vicinity of three holes (1) and rear of antenna bracket (3).



3. ANTENNA MOUNTING BRACKET – A3014546-1 – QTY. 1

*Figure 5-34.*

- 12-5. Install grommet (12) in hole of rear wall (4).
- 12-6. Position antenna (13) and gasket (7) on antenna bracket (3) and route existing ground strap (9) through antenna bracket (3).
- 12-7. Install antenna (13) on antenna bracket (3) with four capscrews (5), eight lockwashers (6), and four nuts (8).
- 12-8. Install antenna bracket (3) on rear wall (4) with two capscrews (10), lockwashers (6), washers (14), and nuts (15).
- 12-9. Remove old terminal lug, and install new terminal lug (11) on ground strap (9). Install ground strap (9) and antenna bracket (3) on rear wall (4) with capscrew (10), lockwasher (6), washer (14), and nut (15).

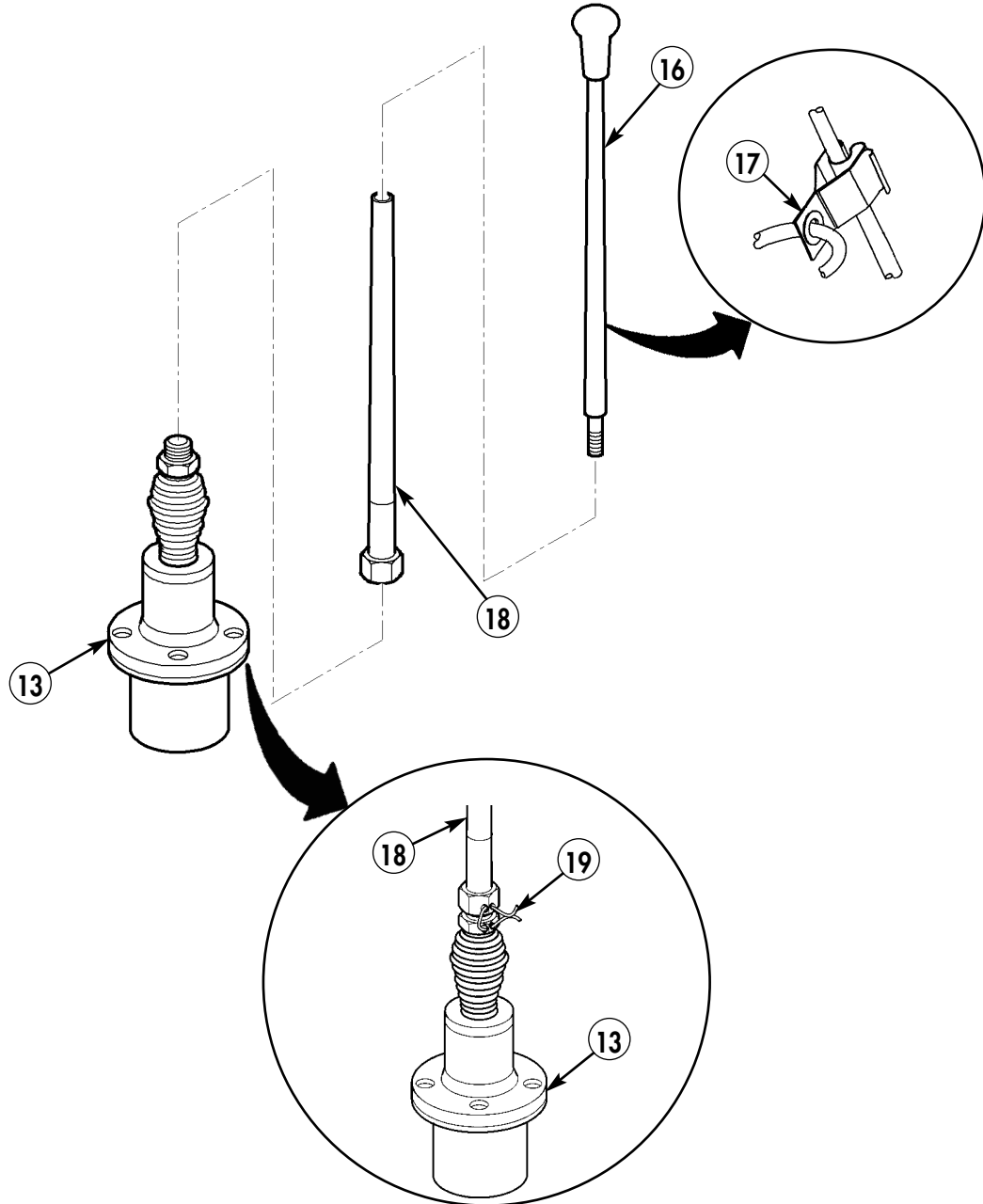


- 5. CAPSCREW – MS35307-365 – QTY. 8
- 6. LOCKWASHER – MS45904-72 – QTY. 22
- 7. GASKET – A3013655-1 – QTY. 2
- 8. NUT – 13218E0320-293 – QTY. 8
- 10. CAPSCREW – B1821BH031F125N – QTY. 6
- 11. TERMINAL LUG – MS20659-108 – QTY. 2
- 12. GROMMET – 12338098 – QTY. 2
- 13. ANTENNA – A3017899-2 – QTY. 2
- 14. WASHER – 12338095 – QTY. 6
- 15. NUT – 9418892 – QTY. 6

Figure 5-35.



- 12-10. Attach upper antenna element (16) to lower antenna element (18).
- 12-11. Attach antenna assembly to antenna base (13).
- 12-12. Attach fiber rope assembly (17) to upper antenna element (16).
- 12-13. Secure lower antenna element (18) to antenna base (13) with lockwire (19).
- 12-14. Repeat steps 12-1 through 12-13 for other side of vehicle, if applicable.



- 16. UPPER ANTENNA ELEMENT – A3017901-2 – QTY. 2
- 18. LOWER ANTENNA ELEMENT – A3018230-1 – QTY. 2
- 19. LOCKWIRE – MS20995C32 – QTY. A/R

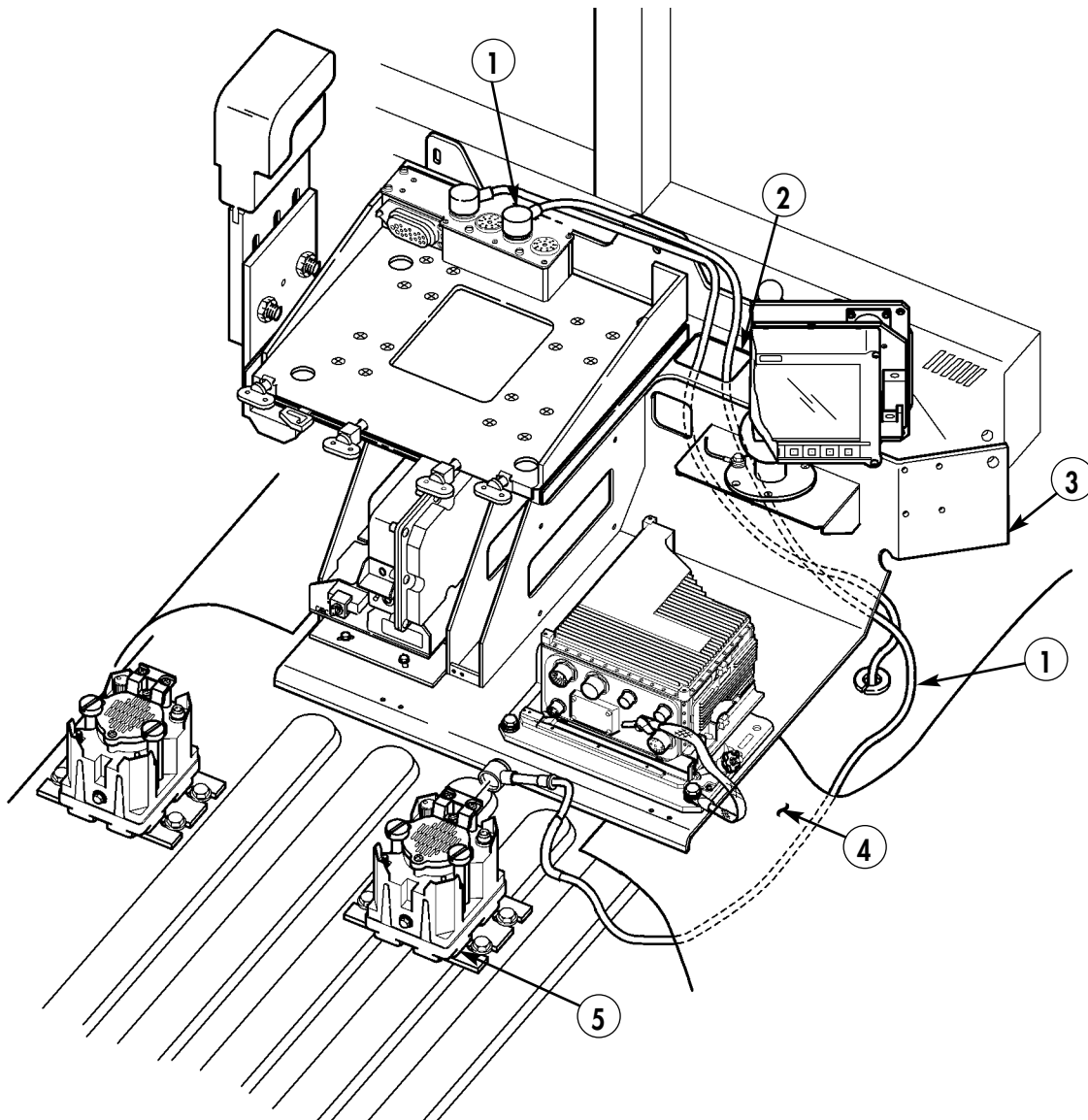
Figure 5-36.

### Section XIII. CABLES INSTALLATION

**NOTE**

- This procedure applies to vehicles without existing antennas. For vehicles with existing antennas, remove all control cables. (Refer to TM 9-2320-280-20.)
- Loosen left- and right-side tunnel insulation before performing steps 13-1, 13-3, 13-4, and 13-8. (Refer to TM 9-2320-280-20.)
- SINCGARS model AN/VRC-92F shown.

**13-1.** Route right loudspeaker cable (1) down through center access hole (2), under integrated rack (3), and under right-side tunnel insulation (4) towards right speaker (5). Connect loudspeaker cable (1) to right speaker (5). Coil excess loudspeaker cable (1) and store under integrated rack (3).



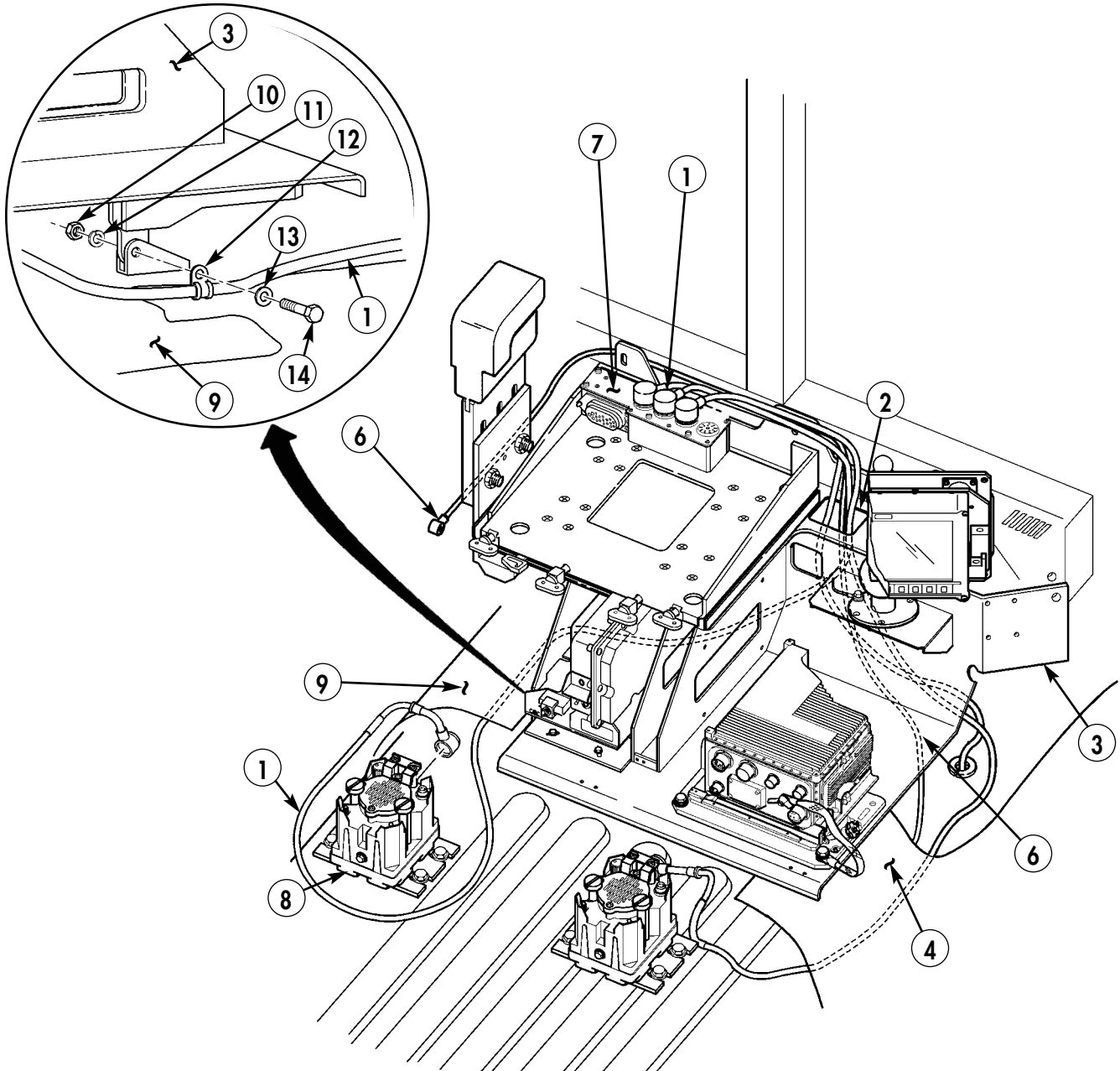
**1. LOUDSPEAKER CABLE — A3014038-3 — QTY. 1**

*Figure 5-37.*

**NOTE**

SINGARS model AN/VRC-92F shown.

- 13-2. Route left loudspeaker cable (1) down through center access hole (2), under integrated rack (3), and under left-side tunnel insulation (9) towards left speaker (8). Connect loudspeaker cable (1) to left speaker (8).
- 13-3. Secure loudspeaker cable (1) to integrated rack (3) with loop clamp (12) and existing screw (14), washer (13), lockwasher (11), and nut (10). Do not tighten nut at this time. Coil excess loudspeaker cable (1) and store under integrated rack (3).
- 13-4. Route antenna cable (6) from left side of mounting base (7), down through center access hole (2), under integrated rack (3), and under right-side tunnel insulation (4) towards rear of vehicle.



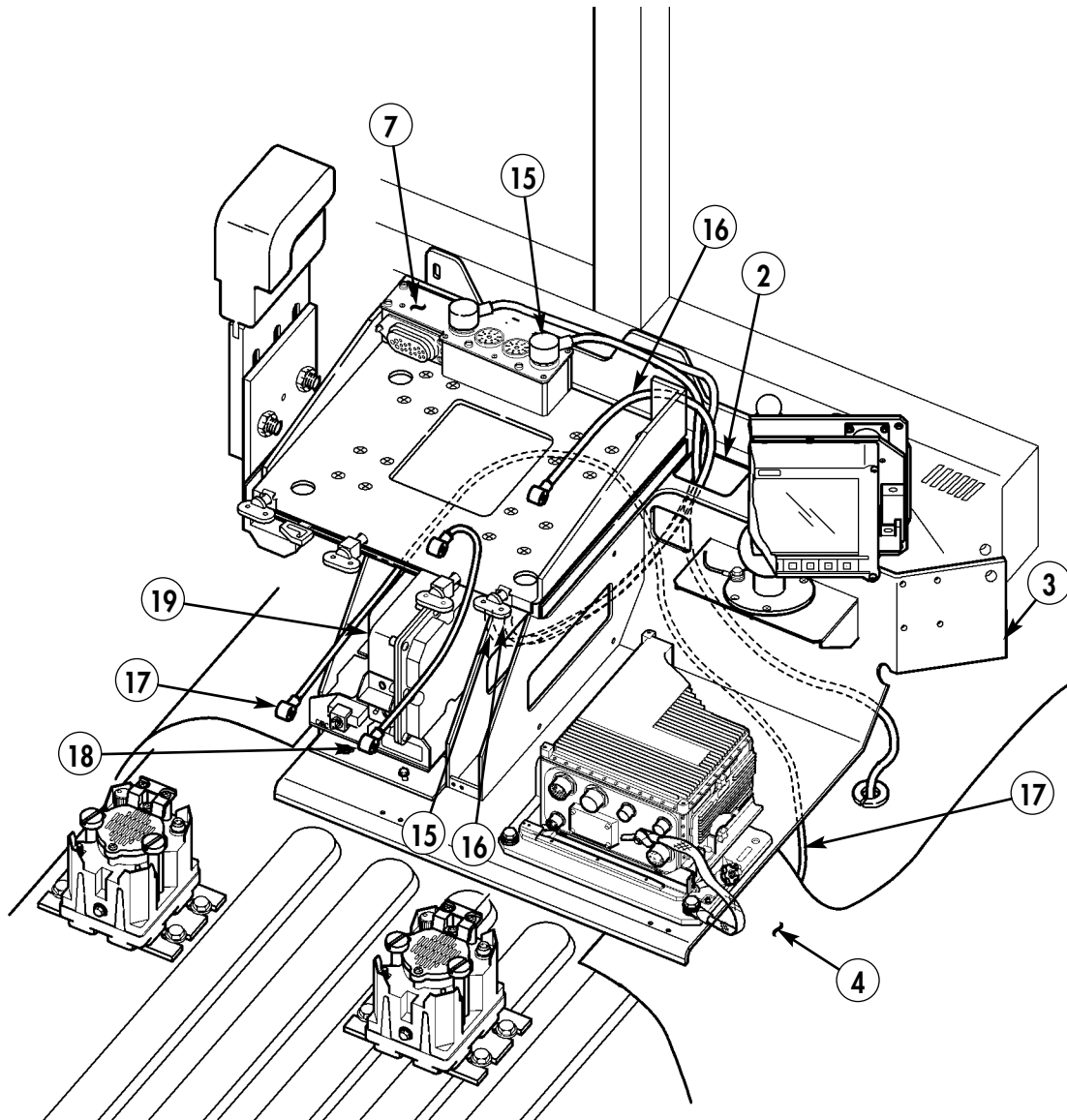
- 1. LOUDSPEAKER CABLE - A3014038-3 - QTY. 1
- 6. ANTENNA CABLE - A3014031-8 - QTY. 1
- 12. LOOP CLAMP - MS21333-121 - QTY. 1

Figure 5-38.

**NOTE**

- Perform steps 13-5 through 13-8 for vehicles with SINCGARS model AN/VRC-92F only.
- Previously routed cables have been removed from figure 5-39 for clarity.

- 13-5.** Route antenna cable (18) from mounting base (7) to MT-6353/VRC mounting base (19).
- 13-6.** Route power amp cable (15) from MT-6353/VRC mounting base (19) up through center access hole (2) and connect to mounting base (7).
- 13-7.** Route control cable (16) from MT-6353/VRC mounting base (19) up through center access hole (2) to mounting base (7).
- 13-8.** Route antenna cable (17) from front of MT-6353/VRC mounting base (19), under integrated rack (3), and under right-side tunnel insulation (4) towards rear of vehicle.



- 17. ANTENNA CABLE – A3014031-17 – QTY. 1**  
**18. ANTENNA CABLE – A3014032-3 – QTY. 1**

*Figure 5-39.*

**NOTE**

It may be necessary to drill four 0.147-in holes in right wheelwell utility area before performing step 13-9. (Refer to figure 5-40.)

- 13-9.** Route two antenna cables (6) and (17) along right rear seat/utility area with four self-tapping screws (20) and loop clamps (21).
- 13-10.** Route two antenna cables (6) and (17) through right wheelwell/utility area with existing grommet, retainer, screws, and plain-assembled nuts. (Refer to TM 9-2320-280-20.)

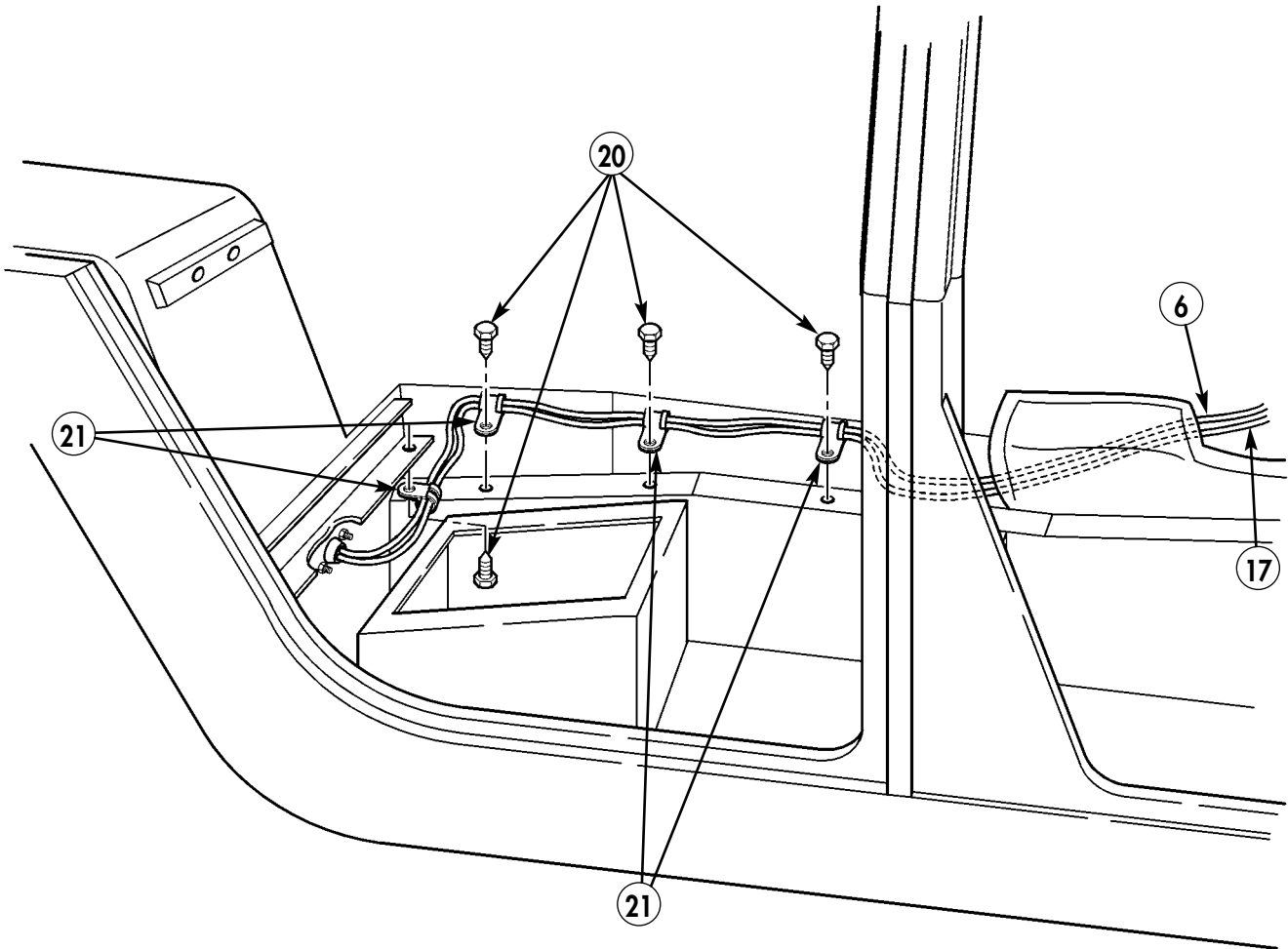
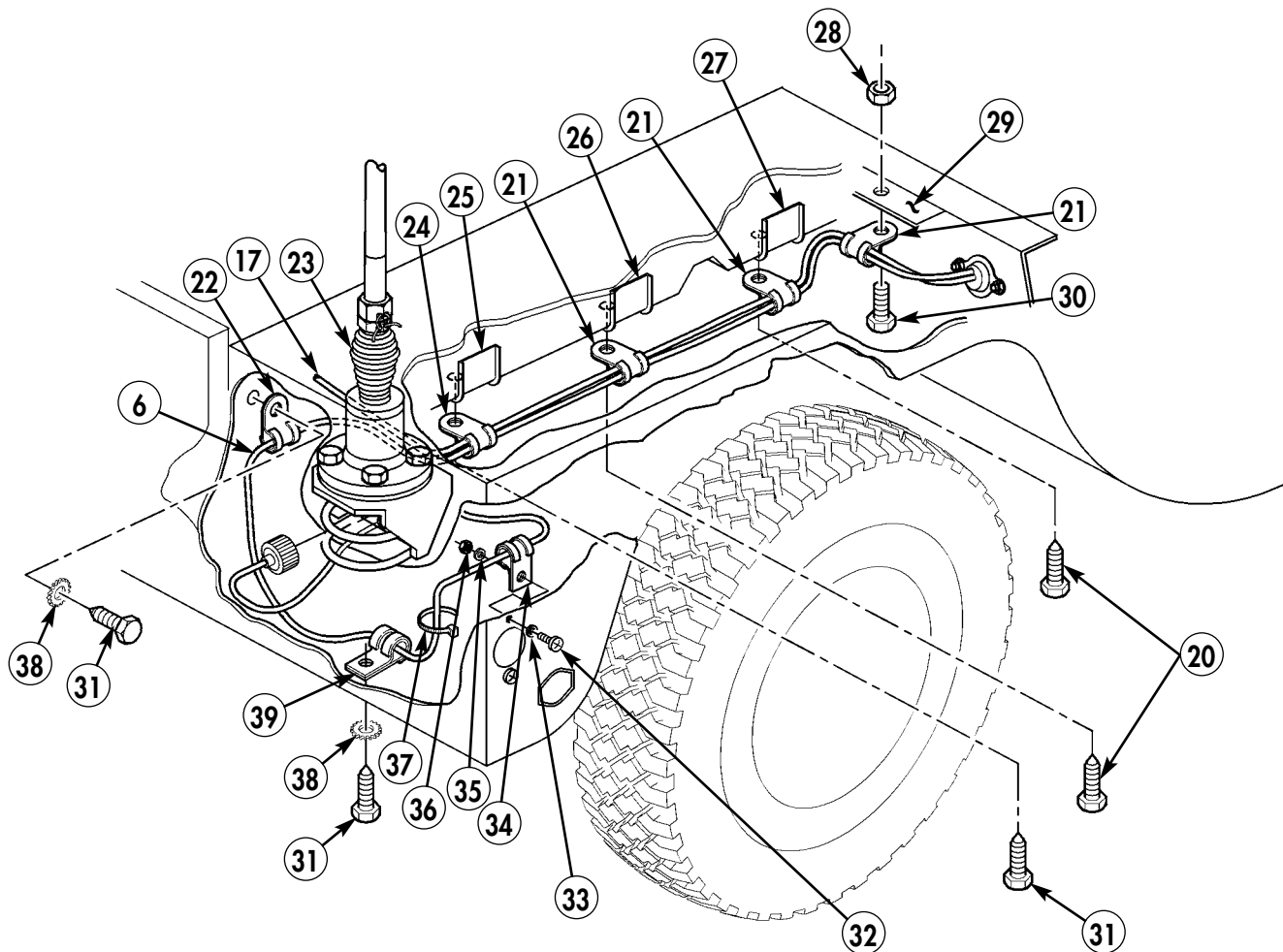


Figure 5-40.

- 20. SELF-TAPPING SCREW – 9421073 – QTY. 4**  
**21. LOOP CLAMP – MS21333-69 – QTY. 4**

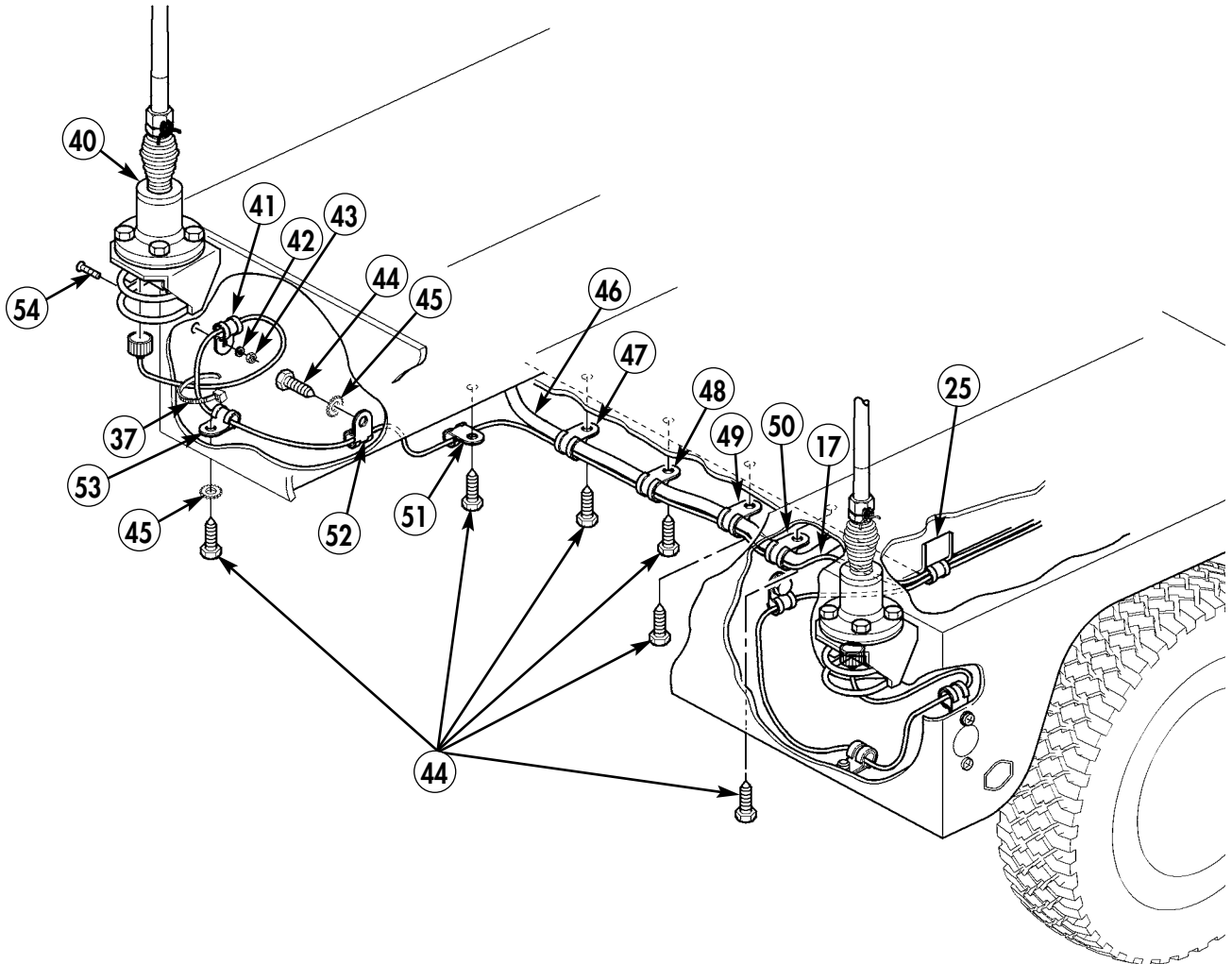
- 13-11. Route two antenna cables (6) along front wheelwell seam (29) and along front (27), intermediate (26), and rear (25) cargo bed supports. Secure with two self-tapping screws (20), loop clamps (21), screw (30), loop clamp (21), nut (28), and existing self-tapping screw (31) and loop clamp (24).
- 13-12. Route antenna cable (6) along taillight wiring harness with two existing loop clamps (22) and (39), self-tapping screws (31), and lockwashers (38).
- 13-13. Route antenna cable (6) to antenna base (23) with existing loop clamp (34), nut (36), lockwasher (35), washer (33), and screw (32).
- 13-14. Attach antenna cable (6) to antenna base (23).
- 13-15. Coil excess antenna cable (6) and secure to inside of taillight closeout cover with tiedown strap (37).



- 20. SELF-TAPPING SCREW – 9421073 – QTY. 2
- 21. LOOP CLAMP – MS21333-69 – QTY. 3
- 28. NUT – MS35650-302 – QTY. 1
- 30. SCREW – MS35224-65 – QTY. 1
- 37. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R

Figure 5-41.

- 13-16.** Route antenna cable (17) along existing taillight wiring harness (46) on rear cargo bed support (25) and secure with four existing loop clamps (47), (48), (49), (50), and existing self-tapping screws (44).
- 13-17.** Route antenna cable (17) along existing taillight wiring harness on left-side frame rail with three existing loop clamps (51), (52), (53), and existing self-tapping screws (44) and lockwashers (45).
- 13-18.** Route antenna cable (17) to antenna base (40) with existing loop clamp (41), screw (54), lockwasher (42), and nut (43).
- 13-19.** Attach antenna cable (17) to antenna base (40).
- 13-20.** Coil excess antenna cable (17) and secure to inside of taillight closeout cover with tiedown strap (37).

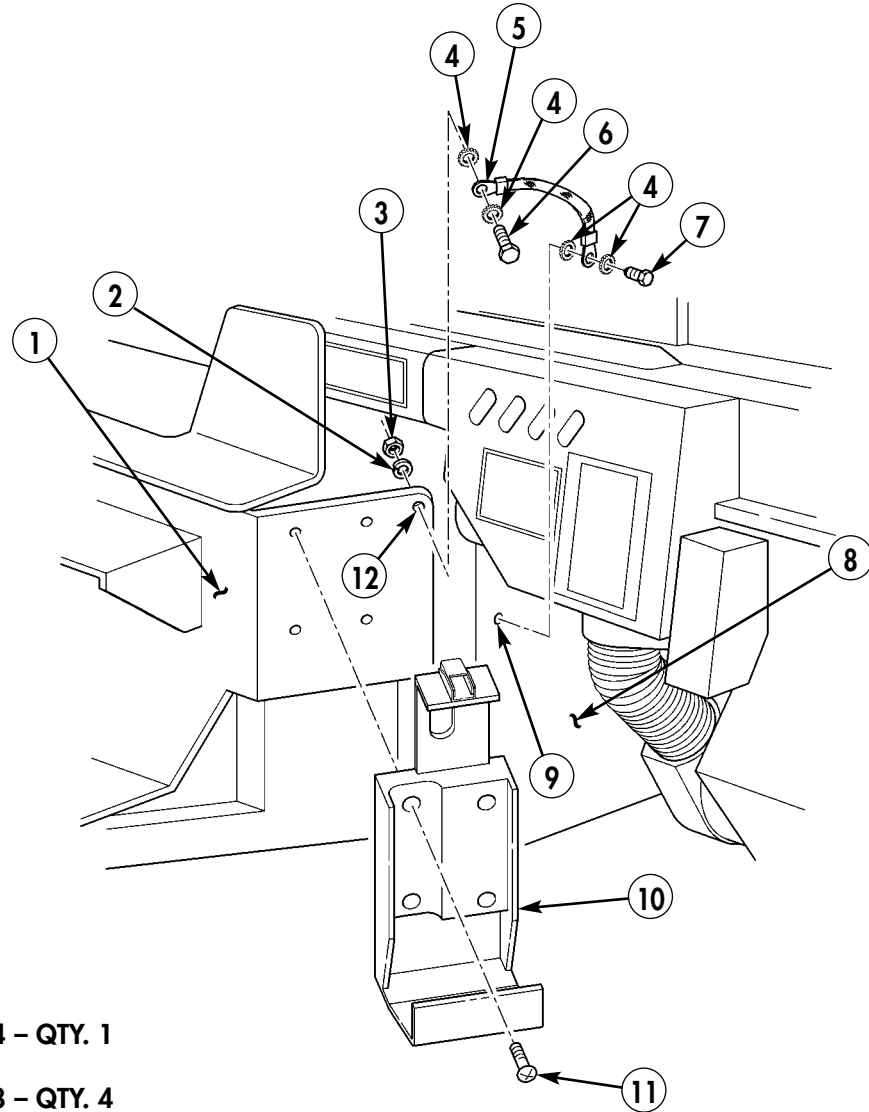


37. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R

Figure 5-42.

**Section XIV. PLGR BRACKET INSTALLATION**

- 14-1. Install PLGR bracket (10) on integrated rack (1) with four screws (11).
- 14-2. Locate, mark, and drill one 0.201-in. diameter hole (9) in right-side engine tunnel (8).
- 14-3. Remove paint from vicinity of hole (12) on integrated rack (1) and hole (9) on right-side engine tunnel (8). Apply anti-seize compound as required.
- 14-4. Fabricate ground strap (5) from 8.00-in. length of braided wire and two terminal lugs.
- 14-5. Install ground strap (5) on integrated rack (1) with capscrew (6), two lockwashers (4), lockwasher (2), and nut (3).
- 14-6. Install ground strap (5) on right-side engine tunnel (8) with self-tapping screw (7) and two lockwashers (4).



- 2. LOCKWASHER – MS35338-44 – QTY. 1
- 3. NUT – 9419143 – QTY. 1
- 4. LOCKWASHER – MS45904-68 – QTY. 4
- 5. GROUND STRAP
  - BRAIDED WIRE – AA59569F30T0375 – QTY. A/R
  - TERMINAL LUG – MS20659-129 – QTY. 2
- 6. CAPSCREW – B1821BH025C100N – QTY. 1
- 7. SELF-TAPPING SCREW – 9426241 – QTY. 1
- 10. PLGR BRACKET – 986-0645-001 – QTY. 1
- 11. SCREW – MS35206-263 – QTY. 4

Figure 5-43.



**Section XV. PLGR ANTENNA AND CABLE INSTALLATION**

15-1. Remove two plugs (1) from outer right-side windshield frame (3).

**NOTE**

Drilled holes on inside and outside of windshield frame should be aligned with each other to allow routing of PLGR cable through windshield frame.

15-2. Locate, mark, and drill one 0.375-in. diameter hole (2) in outer right-side windshield frame (3).

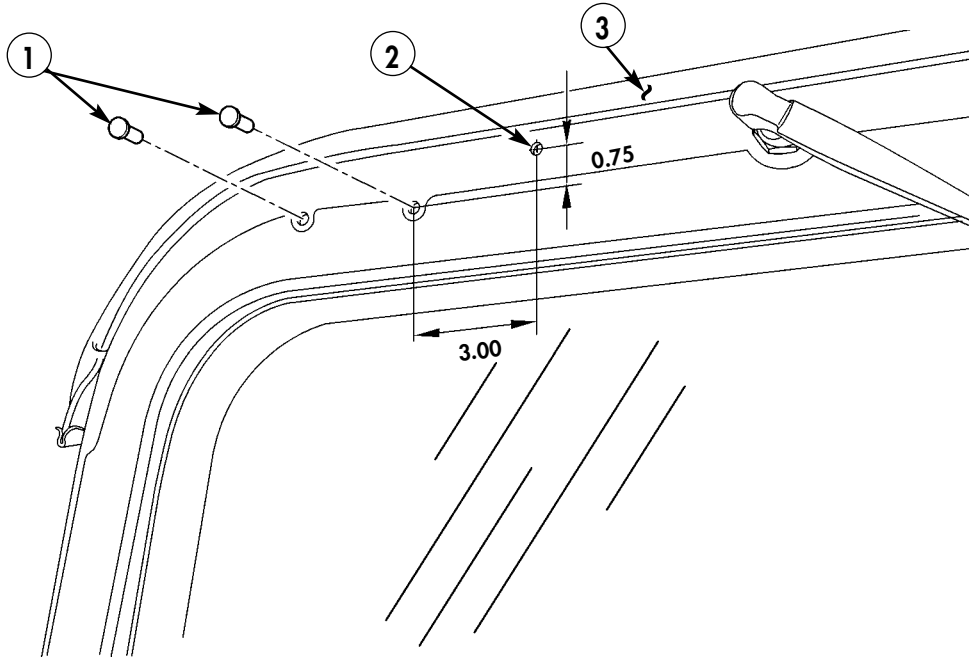


Figure 5-44.

15-3. Locate, mark, and drill one 0.375-in. diameter hole (4) in inner right-side windshield frame (5).

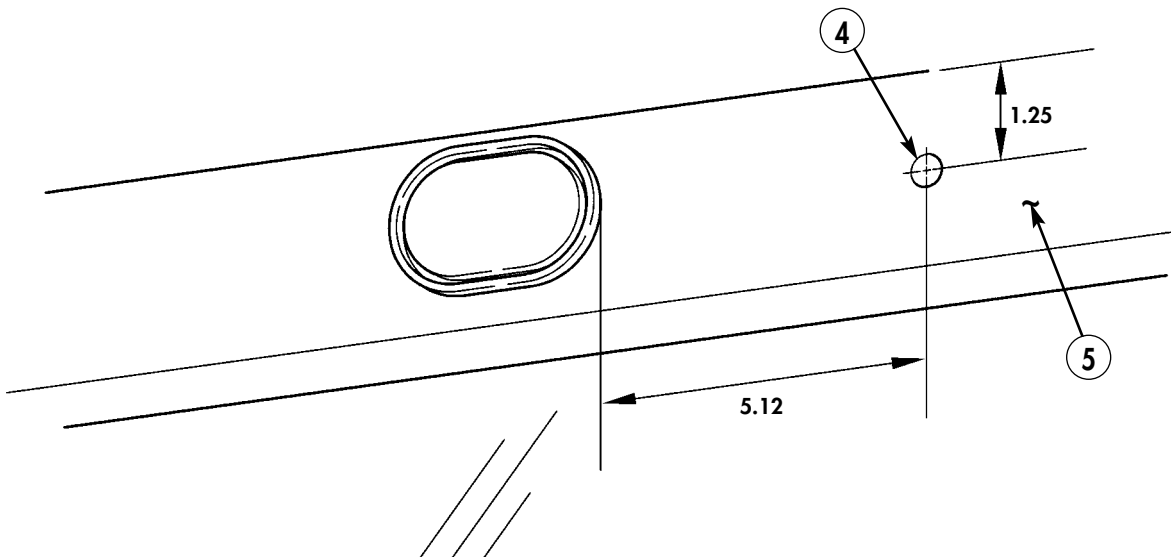
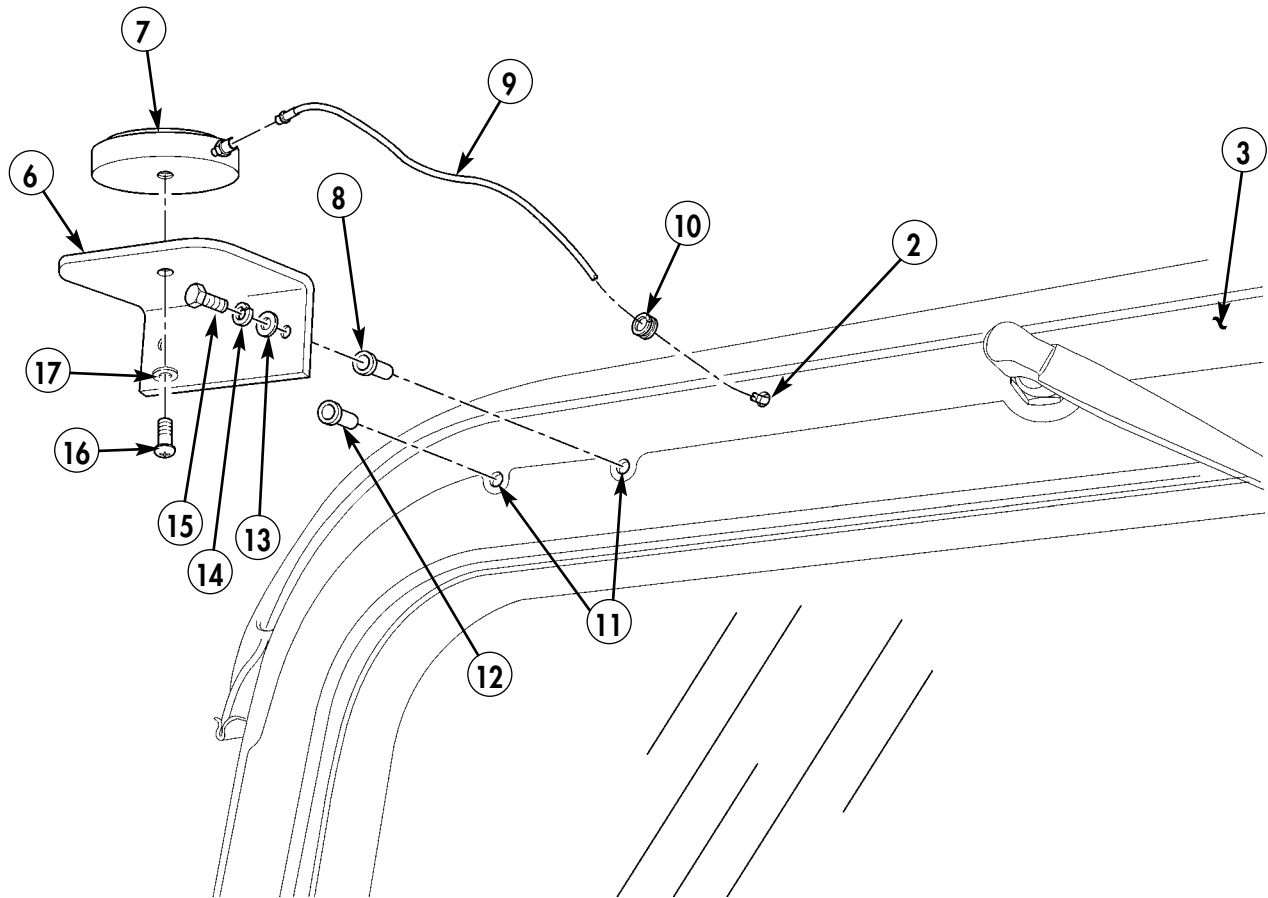


Figure 5-45.

- 15-4. Pull PLGR antenna cable (9) through hole (2) in outer right-side windshield frame (3).
- 15-5. Split one side of grommet (10), place on PLGR antenna cable (9), and insert grommet (10) in hole (2) in outer right-side windshield frame (3).
- 15-6. Install wellnuts (8) and (12) in holes (11).
- 15-7. Install PLGR antenna mount bracket (6) on outer right-side windshield frame (3) with two lockwashers (13), washers (14), and capscrews (15).
- 15-8. Install PLGR antenna (7) on PLGR antenna mount bracket (6) with washer (17) and screw (16).
- 15-9. Attach PLGR antenna cable (9) to PLGR antenna (7).



6. PLGR ANTENNA MOUNT BRACKET – 12480578 – QTY. 1
7. PLGR ANTENNA – AT575-030 – QTY. 1
8. WELLNUT – 12339397-6 – QTY. 1
9. PLGR ANTENNA CABLE – 426-0141-050 – QTY. 1
10. GROMMET – MS35489-143 – QTY. 1
12. WELLNUT – 12339397-3 – QTY. 1
13. LOCKWASHER – MS35338-44 – QTY. 2
14. WASHER – 9414920 – QTY. 2
15. CAPSCREW – B1821BH025C125N – QTY. 2
16. SCREW – 160035 – QTY. 1
17. WASHER – 9417373 – QTY. 1

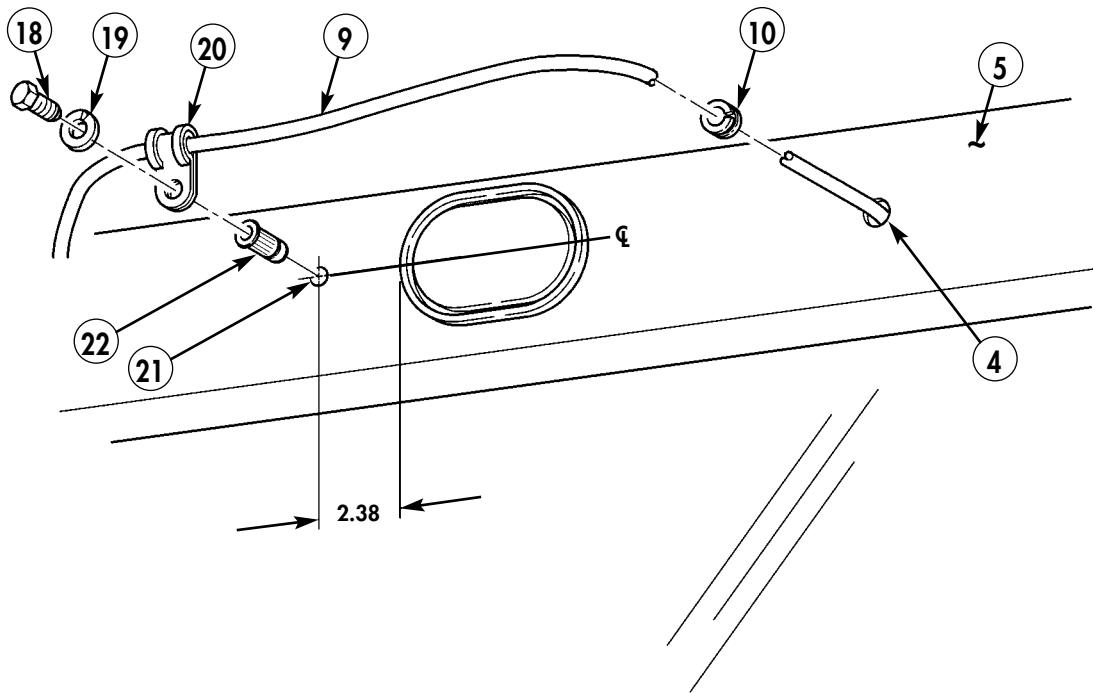
Figure 5-46.

- 15-10. Split one side of grommet (10) and place on PLGR antenna cable (9).
- 15-11. Insert PLGR antenna cable (9) and grommet (10) in hole (4) in inner right windshield frame (5).

**NOTE**

If sun visor kit has not been installed, perform steps 15-12 through 15-14. If sun visor has been installed, perform steps 15-15 and 15-16.

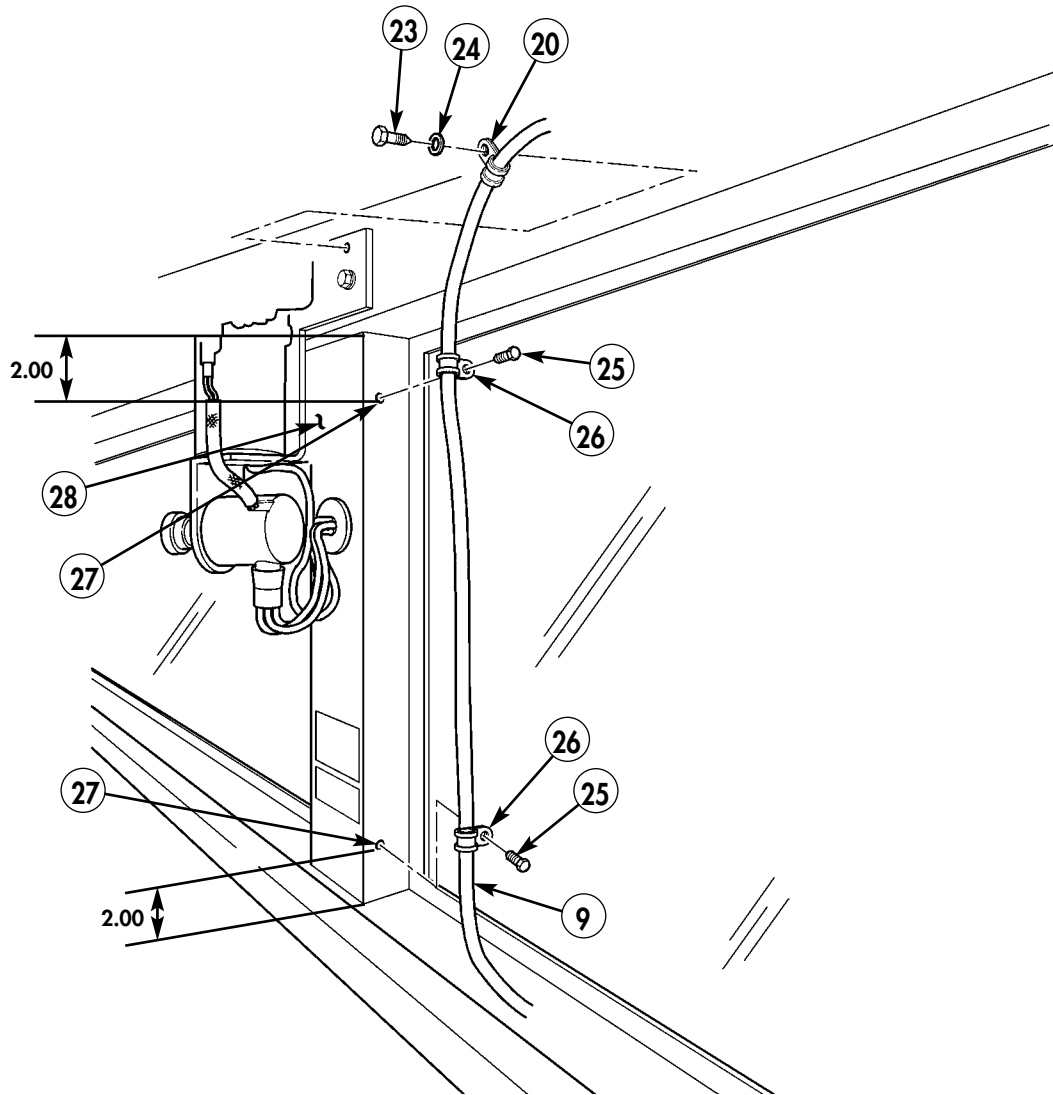
- 15-12. Locate, mark, and drill one 0.390-in. diameter hole (21) in windshield frame (5).
- 15-13. Install insert (22) in hole (21).
- 15-14. Route PLGR antenna cable (9) along inner right windshield frame (5) with loop clamp (20), lockwasher (19), and capscrew (18).
- 15-15. Remove capscrew (18) and lockwasher (19).
- 15-16. Route PLGR antenna cable (9) along inner right windshield frame (5) with loop clamp (20), lockwasher (19), and capscrew (18).



- 10. GROMMET – MS35489-143 – QTY. 1
- 18. CAPSCREW – B1821BH025C100N – QTY. 1
- 19. LOCKWASHER – 120380 – QTY. 1
- 20. LOOP CLAMP – MS21333-96 – QTY. 1
- 22. INSERT – 12446871-2 – QTY. 1

Figure 5-47.

- 15-17. Locate, mark, and drill two 0.147-in. diameter holes (27) in windshield center frame (28).
- 15-18. Route PLGR antenna cable (9) along windshield center frame (28) with two self-tapping screws (25), loop clamps (26) and (20), existing screw (23), and washer (24).



- 20. LOOP CLAMP – MS21333-96 – QTY. 1
- 25. SELF-TAPPING SCREW – 9421073 – QTY. 2
- 26. LOOP CLAMP – MS21333-65 – QTY. 2

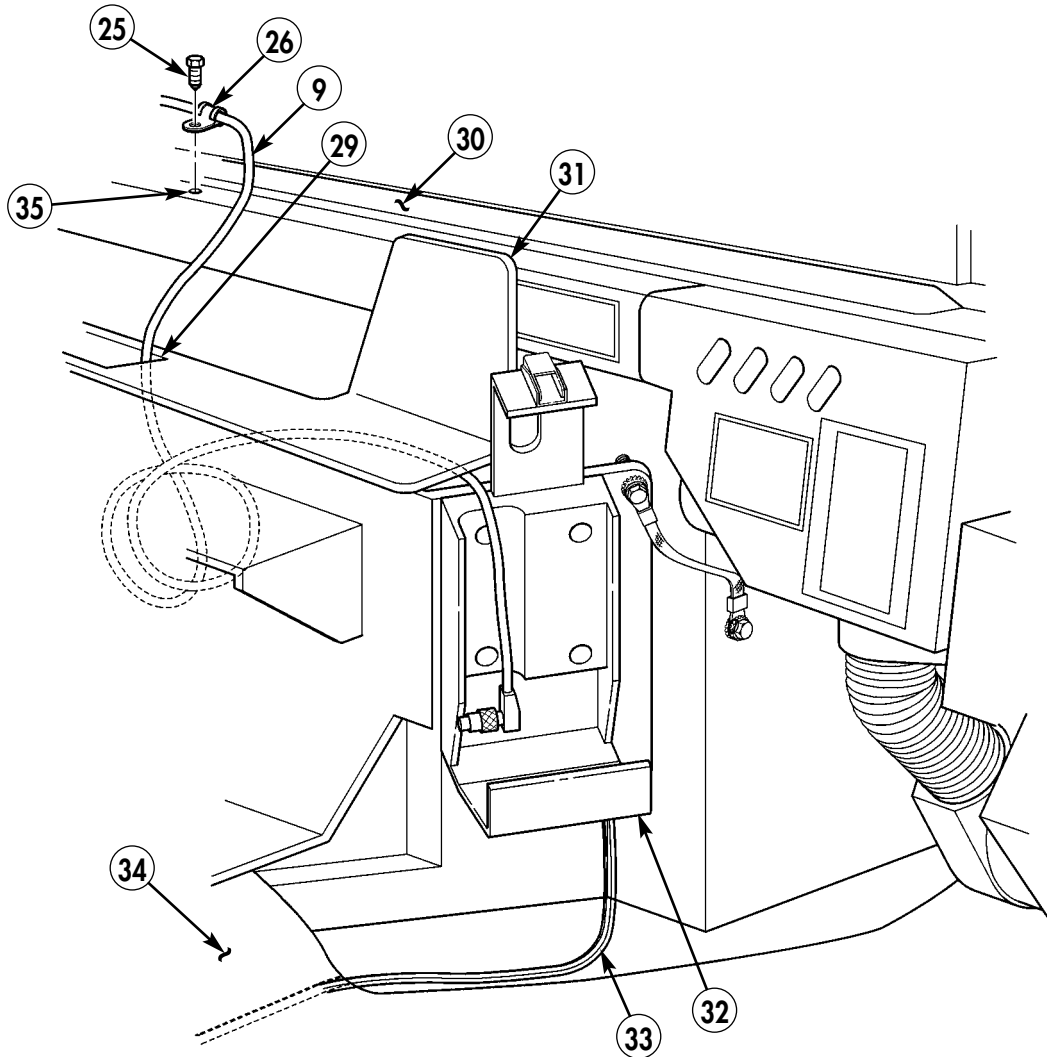
Figure 5-48.

- 15-19. Locate, mark, and drill one 0.147-in. hole (35) in top of windshield frame (30).
- 15-20. Route PLGR antenna cable (9) on top of windshield frame (30) and secure with loop clamp (26) and self-tapping screw (25).
- 15-21. Route PLGR antenna cable (9) down through center access hole (29) of integrated rack (31), and coil excess antenna cable (9) under integrated rack (31).
- 15-22. Route PLGR power cable (33) from bracket (32) to right-side tunnel insulation (34).

**NOTE**

Loosen right-side tunnel insulation before performing step 15-23.  
(Refer to TM 9-2320-280-20.)

- 15-23. Route PLGR power cable (33) under edge of right-side tunnel insulation (34) to 24V terminal bar at cab enclosure panel.



- 25. SELF-TAPPING SCREW - 9421073 - QTY. 1
- 26. LOOP CLAMP - MS21333-65 - QTY. 1
- 31. PLGR POWER CABLE - 9728558-10 - QTY. 1

Figure 5-49.

**NOTE**

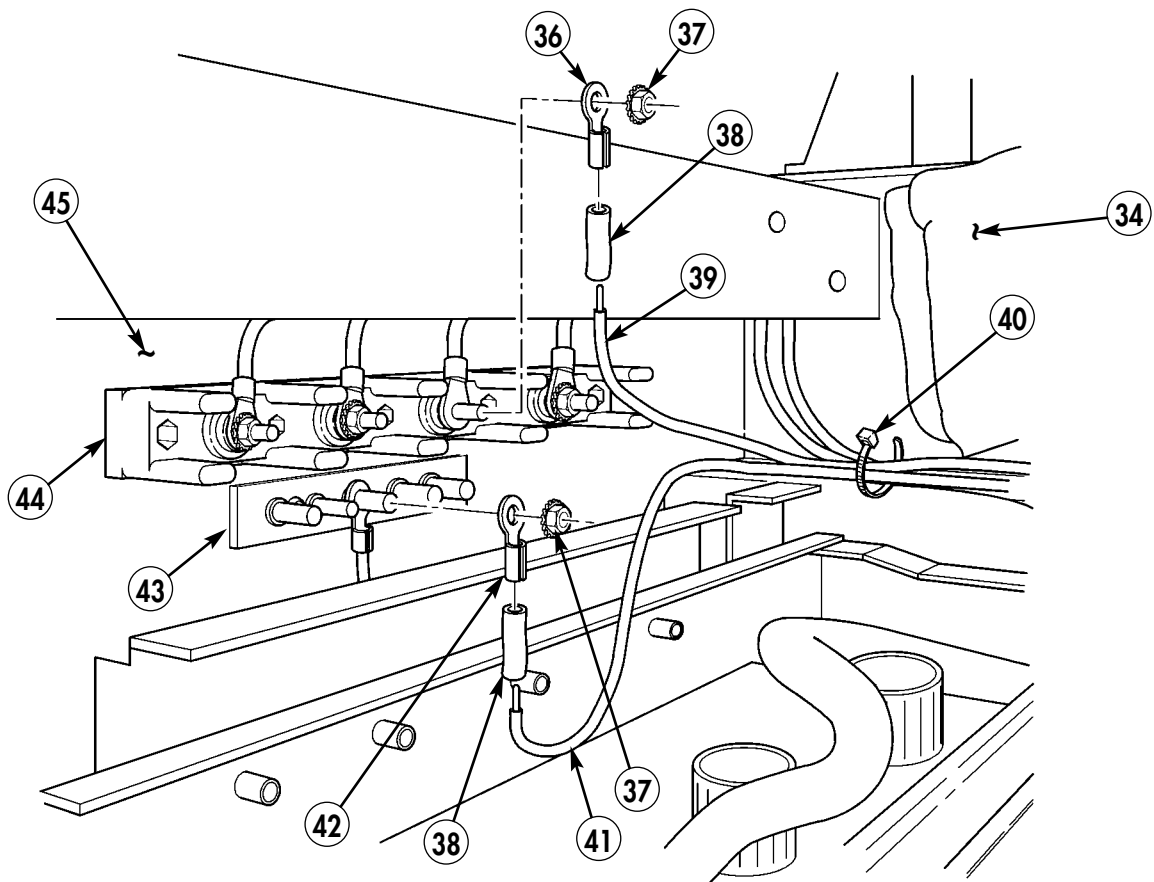
PLGR power cable positive lead insulation is ribbed.

- 15-24. Attach shrink tubing (38) and terminal lugs (36) and (42) to PLGR power cable negative lead (41) and PLGR power cable positive lead (39). (Refer to TM 9-2320-280-20 for terminal connector repair.)
- 15-25. Attach PLGR power cable positive lead (39) to 24V terminal board (44) located on cab enclosure panel (45) with existing nut (37).
- 15-26. Attach PLGR power cable negative lead (41) to ground strap (43) located on cab enclosure panel (45) with existing nut (37).
- 15-27. Coil excess positive and negative power leads, place beneath ground strap (43), and secure with tiedown strap (40).

**NOTE**

Ensure all excess antenna cable is inside cab of vehicle.

- 15-28. Coil excess antenna cable and store under integrated rack using tiedown strap (40) as necessary. (Refer to figure 5-49.)
- 15-29. Install right-side tunnel insulation (34). (Refer to TM 9-2320-280-20.)

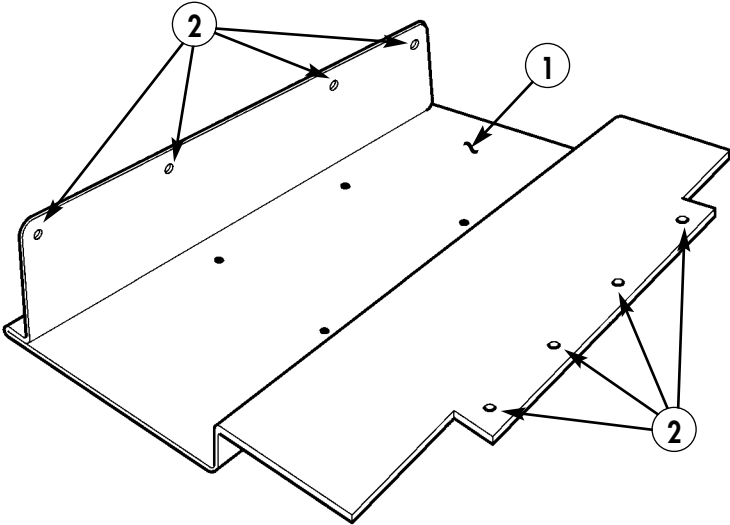
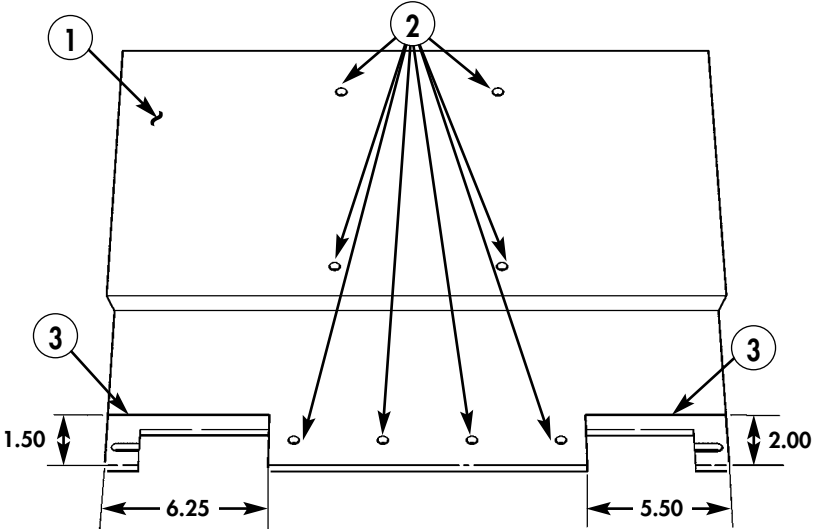


- 36. TERMINAL LUG – 7728780 – QTY. 1
- 38. SHRINK TUBING – MS23053/4-302-0 – QTY. A/R
- 40. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R
- 42. TERMINAL LUG – 7728777 – QTY. 1

Figure. 5-50.

**Section XVI. EPLRS MOUNTING INSTALLATION**

- 16-1.** Remove two sections (3) from mounting plate (1) as shown.
- 16-2.** Remove paint from vicinity of sixteen mounting holes (2) on mounting plate (1).



**1. MOUNTING PLATE, EPLRS – A3046204 – QTY. 1**

*Figure 5-51.*

**NOTE**

Procedure requires removal and reinstallation of left rear side rail, which may require assistance. (Refer to TM 9-2320-280-20.) Perform steps 16-3, 16-5, 16-6, 16-8, and 16-10 only for vehicles equipped with rear side rails.

- 16-3. Remove left rear side rail (4).
- 16-4. Using mounting plate (1) as template, locate, mark, and drill four 0.343-in. diameter holes (10) and four 0.281-in. diameter holes (16) in left rear wheelhouse (12).
- 16-5. Install left rear side rail (4). Do not tighten screws.
- 16-6. Using mounting plate (1) and left rear wheelhouse (12) as templates, drill four holes in left rear side rail (4) from underside of left rear wheelhouse (12).
- 16-7. Install resilient mount (8) on mounting plate (1) with four capscrews (7), eight lockwashers (6), and four nuts (9).
- 16-8. Remove paint from vicinity of eight mounting holes (16) and (10) on left rear wheelhouse (12). Apply anti-seize compound as required. Position mounting plate (1) between left side rail (4) and left rear wheelhouse (12) and align all holes.
- 16-9. Install mounting plate (1) on left rear wheelhouse (12) with four capscrews (5), lockwashers (14), eight washers (15), four nuts (13), capscrews (7), eight lockwashers (6), four spacers (11), and nuts (9).
- 16-10. Tighten all left side rail screws.

- 5. CAPSCREW - B1821BH025C125N - QTY. 4
- 6. LOCKWASHER - MS45904-72 - QTY. 16
- 7. CAPSCREW - B1821BH031C100N - QTY. 8
- 8. RESILIENT MOUNT - MT-6146/VSQ-1 - QTY. 1
- 9. NUT - 9417954 - QTY. 8
- 11. SPACER - A3046313 - QTY. 4
- 13. NUT - 9419143 - QTY. 4
- 14. LOCKWASHER - MS35338-44 - QTY. 4
- 15. WASHER - 2436161 - QTY. 8

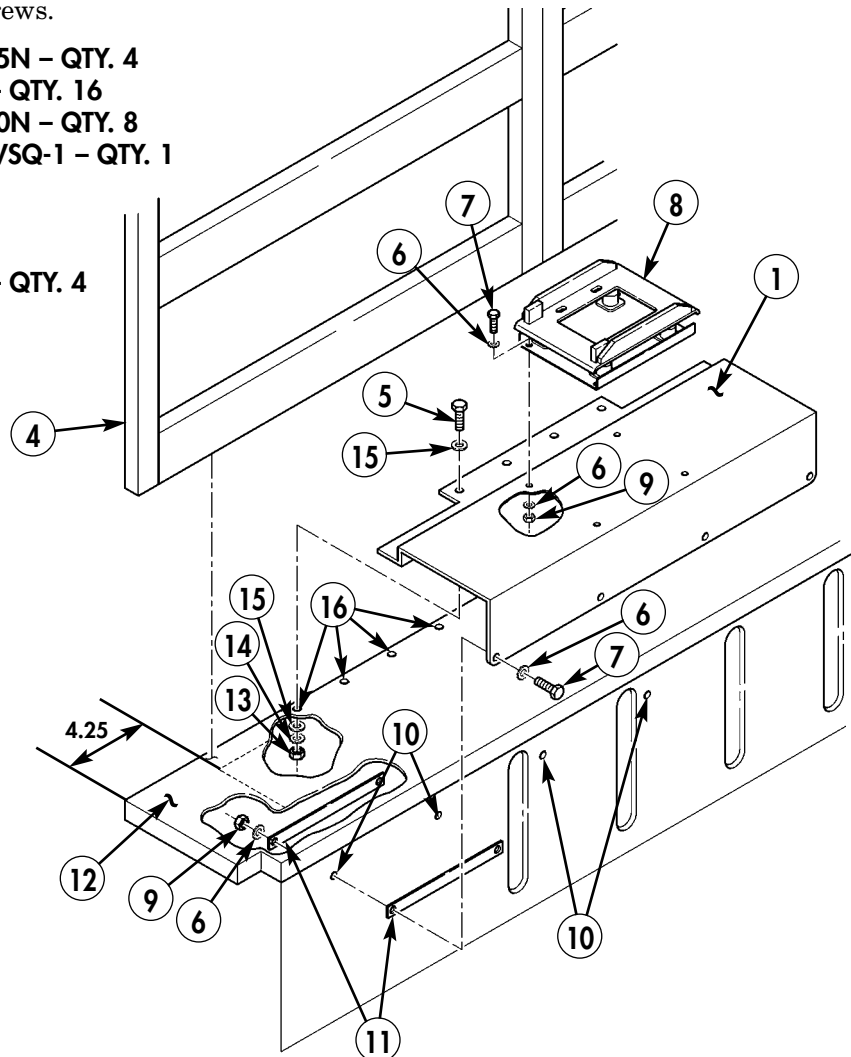
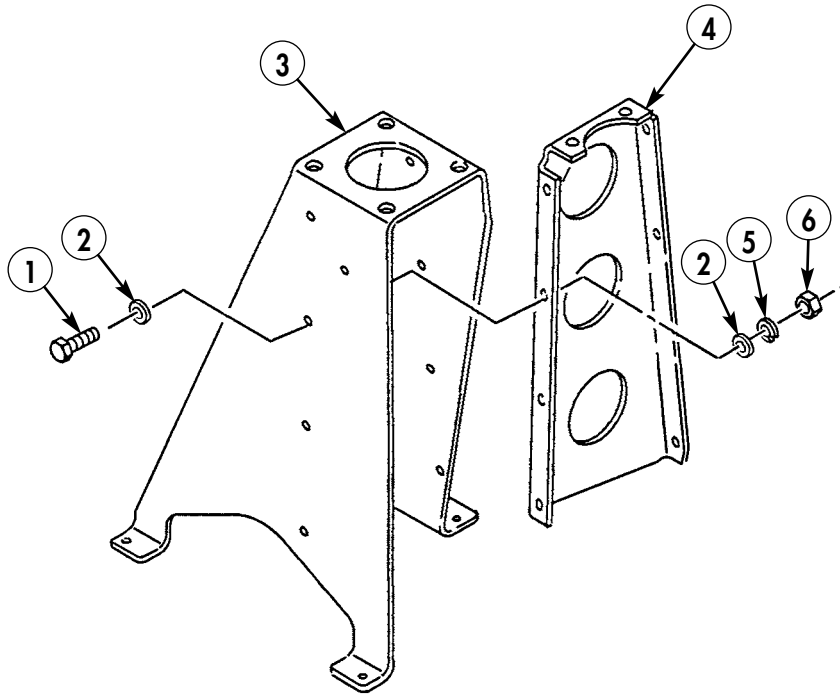


Figure 5-52.



**Section XVII. EPLRS ANTENNA INSTALLATION**

- 17-1. Assemble antenna mounting bracket (3) and antenna base reinforcement bracket (4) with eight capscrews (1), sixteen washers (2), eight lockwashers (5), and nuts (6) at this time.
- 17-2. Remove paint from vicinity of all mounting holes on both antenna plates, antenna mount assembly, and ground strap. Apply anti-seize compound as required. (Refer to figures 5-53 through 5-56.)



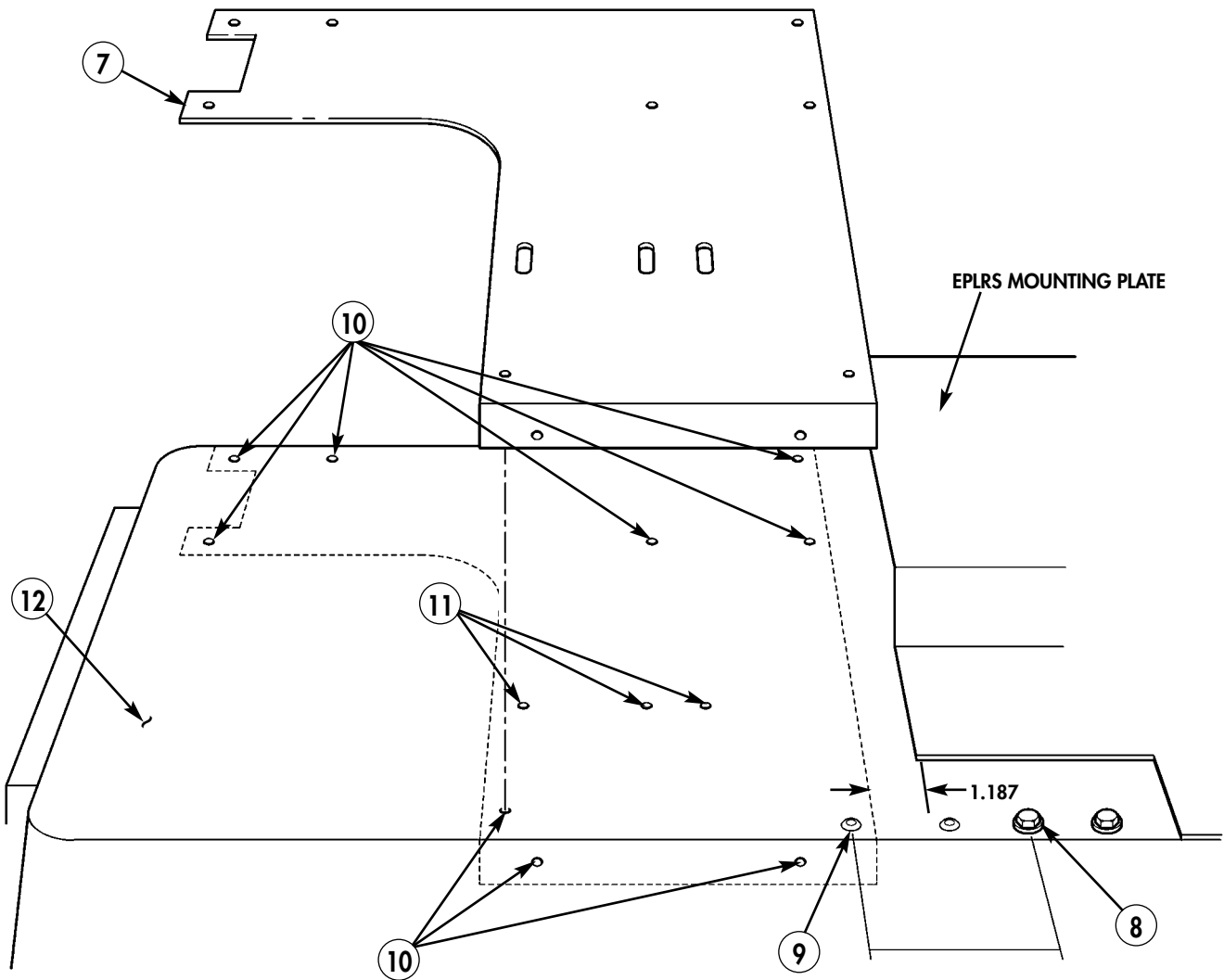
- 1. CAPSCREW – B1821BH025C125N – QTY. 8
- 2. WASHER – 2436161 – QTY. 16
- 3. ANTENNA MOUNTING BRACKET – A3046238 – QTY. 1
- 4. ANTENNA BASE REINFORCEMENT BRACKET – A3046241 – QTY. 1
- 5. LOCKWASHER – MS35338-44 – QTY. 8
- 6. NUT – 9419143 – QTY. 8

*Figure 5-53.*

**NOTE**

- Remove left rear side rail, if necessary. (Refer to TM 9-2320-280-20.)
- Rear edge of upper mounting plate should be approximately 1.187 in. from front edge of EPLRS mounting plate.

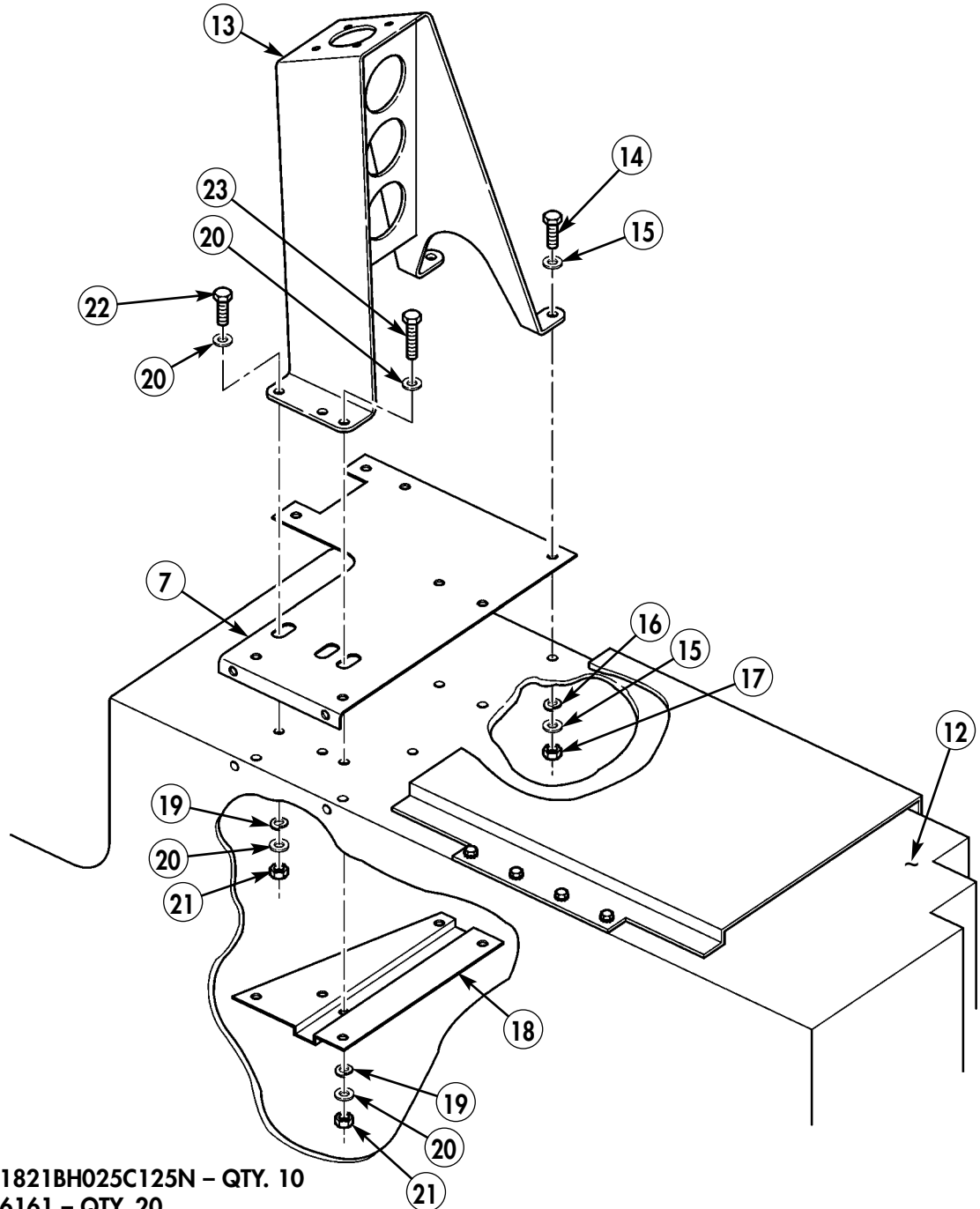
- 17-3.** Locate screw (8) on left rear wheelhouse (12), and drill out rivet (9) from left rear wheelhouse (12). Enlarge hole to 0.281 in.
- 17-4.** Using upper antenna plate (7) as template, locate, mark, and drill nine 0.281-in. holes (10) and three 0.408-in. holes (11) in left rear wheelhouse (12).



7. ANTENNA PLATE - A3104004 - QTY. 1

Figure 5-54.

**17-5.** Install antenna mount assembly (13), upper antenna plate (7), and lower antenna plate (18) on left rear wheelhouse (12) with ten capscrews (14), twenty washers (15), ten lockwashers (16), ten nuts (17), two capscrews (22), capscrew (23), six washers (20), three lockwashers (19), and nuts (21).



- 14. CAPSCREW – B1821BH025C125N – QTY. 10
- 15. WASHER – 2436161 – QTY. 20
- 16. LOCKWASHER – MS35338-44 – QTY. 10
- 17. NUT – 9419143 – QTY. 10
- 18. ANTENNA PLATE – A3157619 – QTY. 1
- 19. LOCKWASHER – 120382 – QTY. 3
- 20. WASHER – 2436163 – QTY. 6
- 21. NUT – 13218E0320-293 – QTY. 3
- 22. CAPSCREW – B1821BH038C150N – QTY. 2
- 23. CAPSCREW – B1821BH038C175N – QTY. 1

Figure 5-55.

**NOTE**

Perform step 17-6 only if not installing cargo soft-top enclosure; otherwise, skip to step 17-7.

- 17-6. Install antenna (25) on antenna mount assembly (13) with four capscrews (26), gasket (24), eight lockwashers (27), and four nuts (28).

**NOTE**

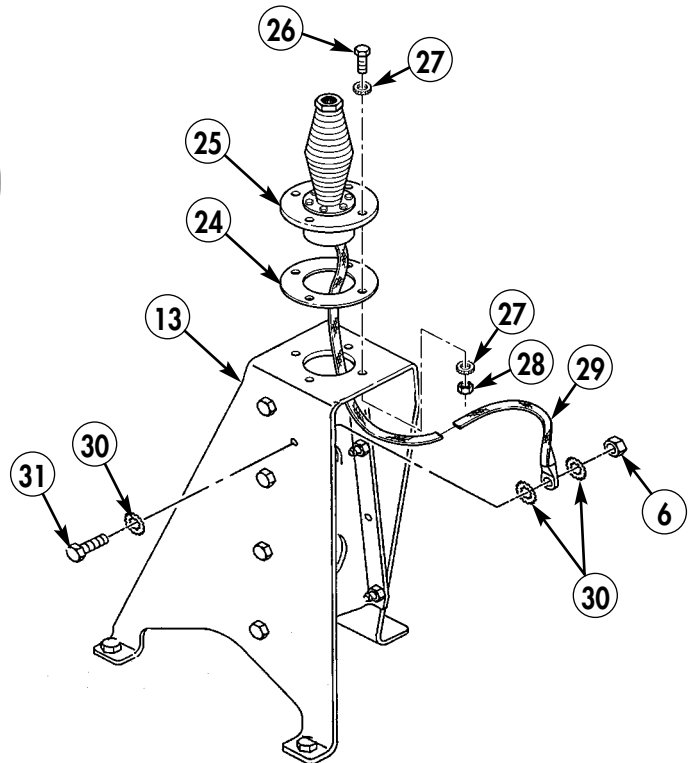
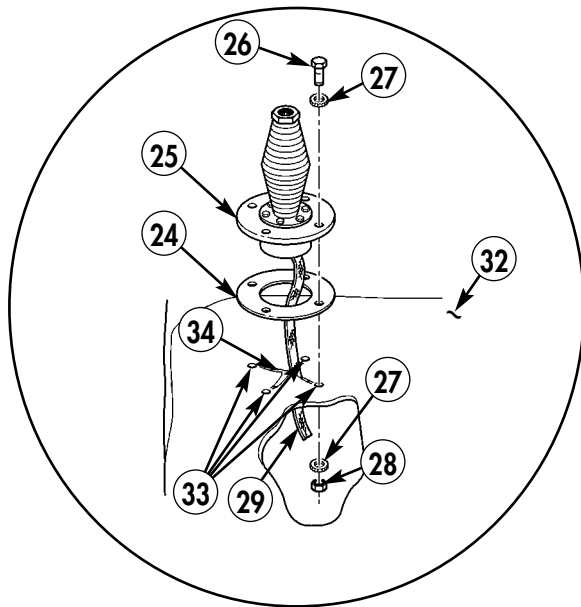
Perform steps 17-7 through 17-9 only when installing cargo soft-top enclosure.

- 17-7. Install cargo soft-top enclosure. (Refer to TM 9-2320-280-10.)

**NOTE**

Ensure all slack has been taken out of cargo soft-top enclosure and that cargo soft-top enclosure has been properly installed.

- 17-8. Using antenna (25) as template, locate, mark, and drill four 0.375-in. holes (33) and cut "X" (34) in cargo soft-top enclosure (32).
- 17-9. Install antenna (25) on antenna mount assembly (13) and cargo soft-top enclosure (32) with four capscrews (26), gasket (24), eight lockwashers (27), and four nuts (28), ensuring that ground strap (29) is inserted through cut hole (34).
- 17-10. Install ground strap (29) on antenna mount assembly (13) with screw (31), three lockwashers (30), and nut (6).
- 17-11. Tighten all nuts (6) and (28).
- 17-12. Install left rear side rail, if necessary. (Refer to TM 9-2320-280-20.)



- 6. NUT - 9419143 - QTY. 1
- 24. GASKET - A3013655-1 - QTY. 1
- 25. ANTENNA - A3005031 - QTY. 1
- 26. CAPSCREW - B1821BH038C150N - QTY. 4
- 27. LOCKWASHER - MS45904-76 - QTY. 8
- 28. NUT - 13218E0320-293 - QTY. 4
- 30. LOCKWASHER - MS45904-68 - QTY. 3

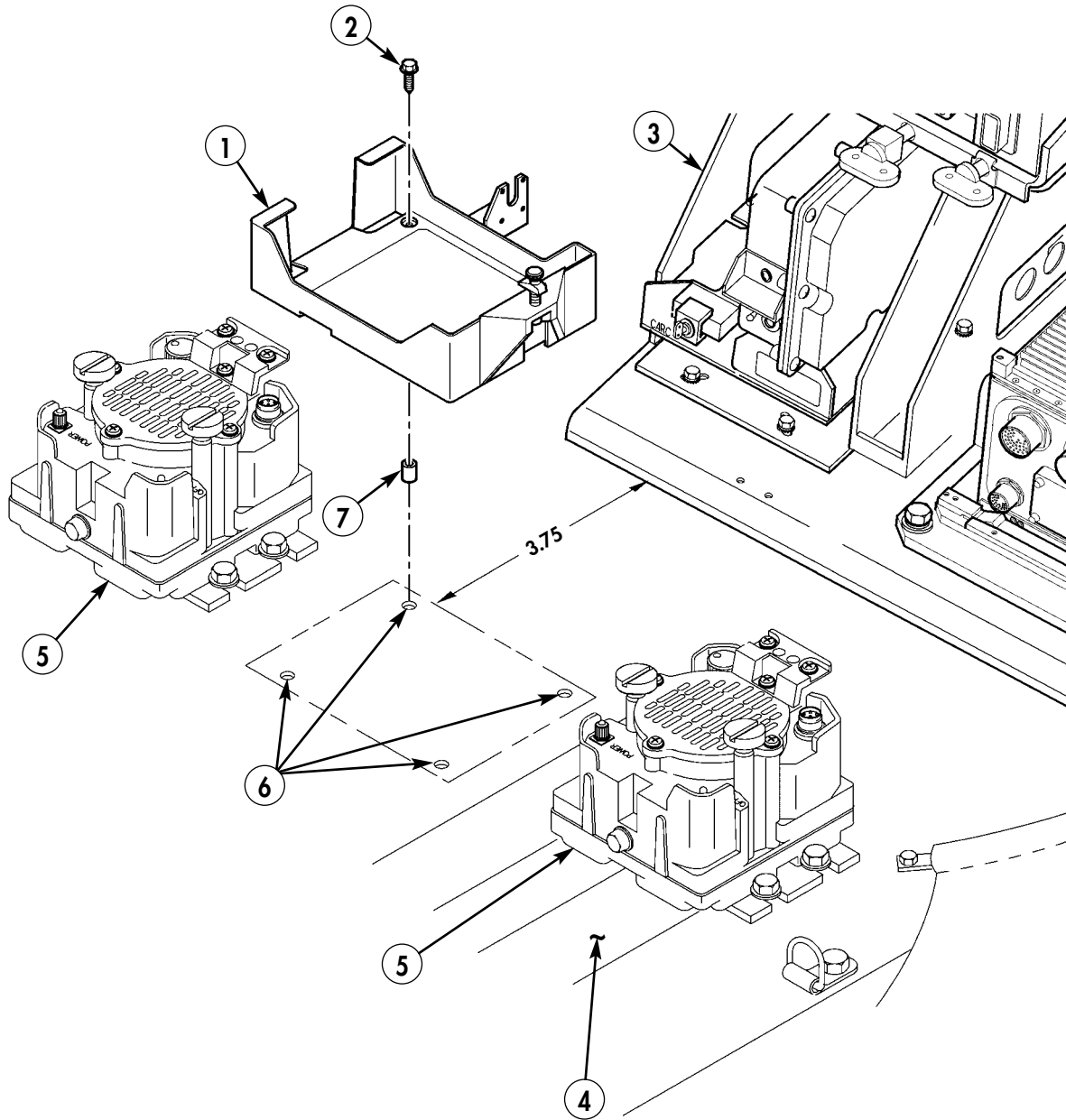
Figure 5-56.

**Section XVIII. EPLRS URO (USER READOUT) INSTALLATION**

**NOTE**

- This procedure is for URO installation without MTS installed. For URO installation with MTS installed, refer to chapter 5, section XXX.
- Ensure all mounting holes are on the flat surface of cargo floor raised ribs.

**18-1.** Locate, mark, and drill four 0.147-in. holes (6) on tunnel (4) in front of integrated rack (3) and centered between loudspeakers (5).



1. URO (USER READOUT) BRACKET – A3006206 – QTY. 1  
 2. SELF-TAPPING SCREW – 9426634 – QTY. 4  
 7. SPACER – 92510A318 – QTY. 4

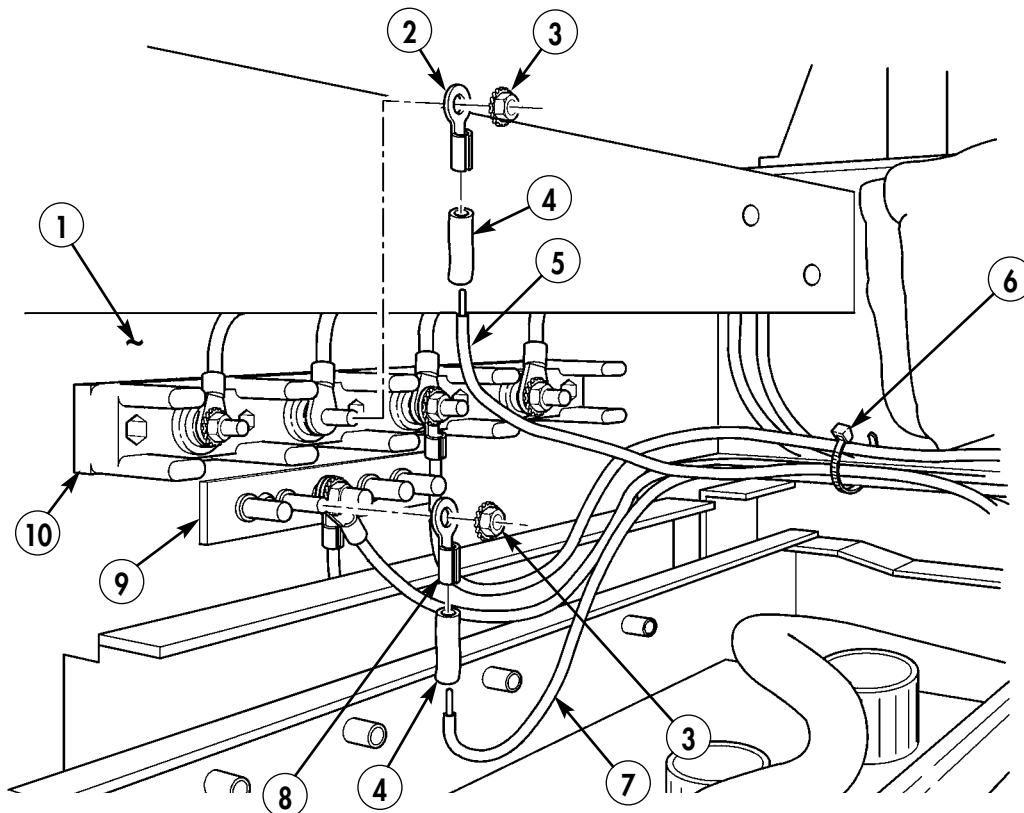
Figure 5-57.

## Section XIX. EPLRS CABLES INSTALLATION

### NOTE

- Lay out all cables in their approximate positions before clamps are installed. This will minimize cable length and ensure all slack is taken out of all cables from front of vehicle to rear.
- Excess slack in all cables will be stored under EPLRS mount assembly.
- This procedure applies to installation of EPLRS cables without MTS installed. Installation of EPLRS cables with MTS is similar.
- Loosen right-side tunnel insulation before performing step 19-1. (Refer to TM 9-2320-280-20.)

- 19-1. Route power cable (14) under right-side tunnel insulation towards terminal board. (Refer to figure 5-59.)
- 19-2. Attach shrink tubing (4) and two terminal lugs (2) and (8) to power cable negative lead (7) and power cable positive lead (5). (Refer to TM 9-2320-280-20 for terminal connector repair.)
- 19-3. Connect power cable positive lead (5) to 24V terminal board (10) on cab enclosure panel (1) with existing nut (3).
- 19-4. Connect power cable negative lead (7) to ground strap (9) on cab enclosure panel (1) with existing nut (3). Secure all leads together with tiedown strap (6).
- 19-5. Secure right-side tunnel insulation. (Refer to TM 9-2320-280-20.)



2. TERMINAL LUG – 7728780 – QTY. 1
4. SHRINK TUBING – MS23053/4-302-0 – QTY. A/R
6. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R
8. TERMINAL LUG – 7728777 – QTY. 1

Figure 5-58.

**NOTE**

Loosen left-side tunnel insulation before performing steps 19-6 through 19-8. (Refer to TM 9-2320-280-20.)

- 19-6. Route INC-EPUU cable (11) from integrated rack (13), down through center access hole (12), and under left-side tunnel insulation (18) towards rear of vehicle.
- 19-7. Route power cable (14) forward and under integrated rack (13) and under left-side tunnel insulation (18) towards rear of vehicle.
- 19-8. Route URO extension cable (17) towards URO bracket (16) between loudspeakers (15), and connect to URO bracket (16) with four screws (19), lockwashers (20), and nuts (21). Route remaining URO extension cable (17) under left-side tunnel insulation (18) and towards rear of vehicle.
- 19-9. Secure left-side tunnel insulation (18). (Refer to TM 9-2320-280-20.)

- 11. INC-EPUU CABLE - A3279383-3 - QTY. 1
- 14. EPLRS POWER CABLE - A3004939 - QTY. 1
- 17. URO EXTENSION CABLE - A3005328 - QTY. 1
- 19. SCREW - 9417875 - QTY. 4
- 20. LOCKWASHER - 131043 - QTY. 4
- 21. NUT 116002 - QTY. 4

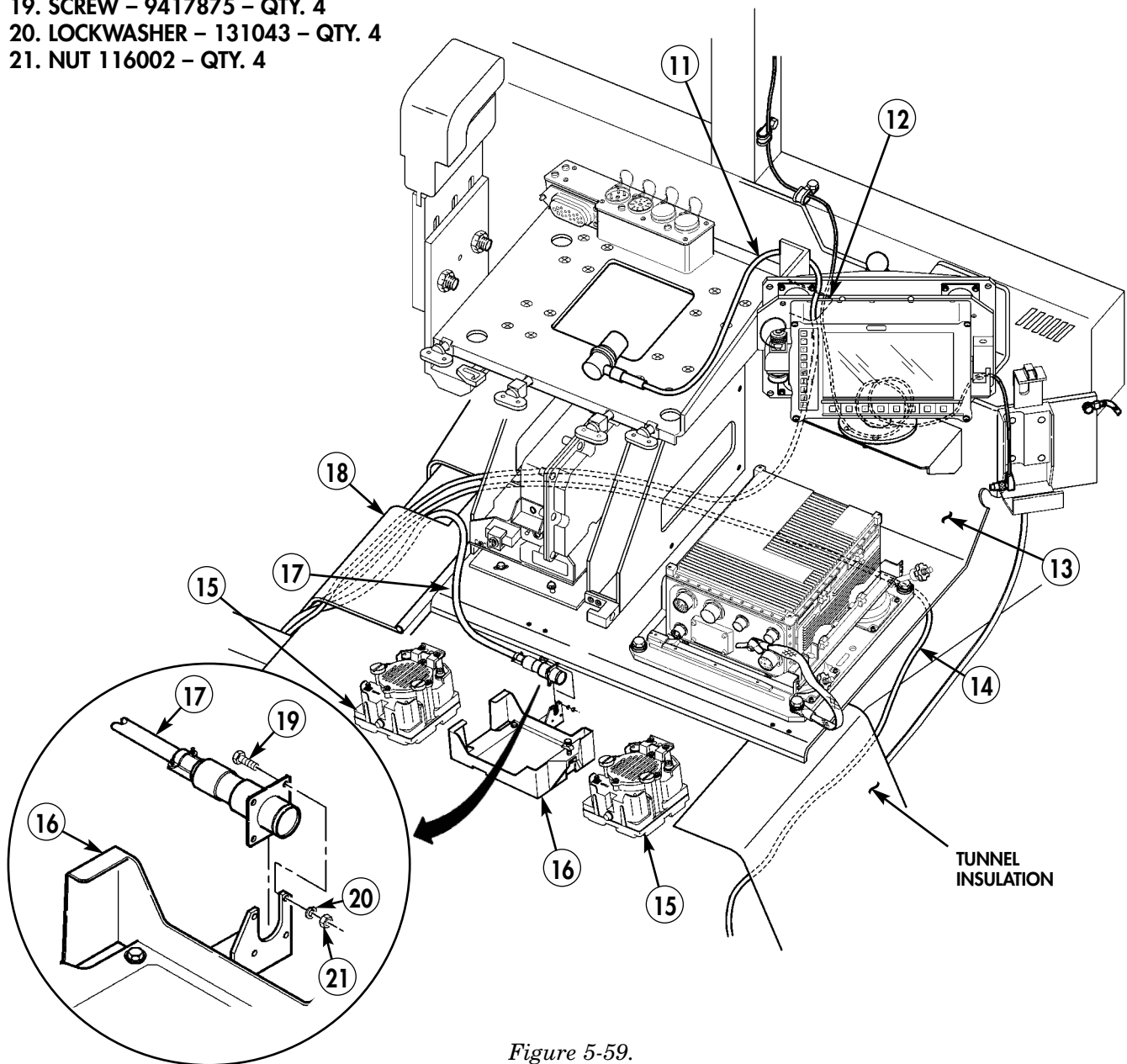
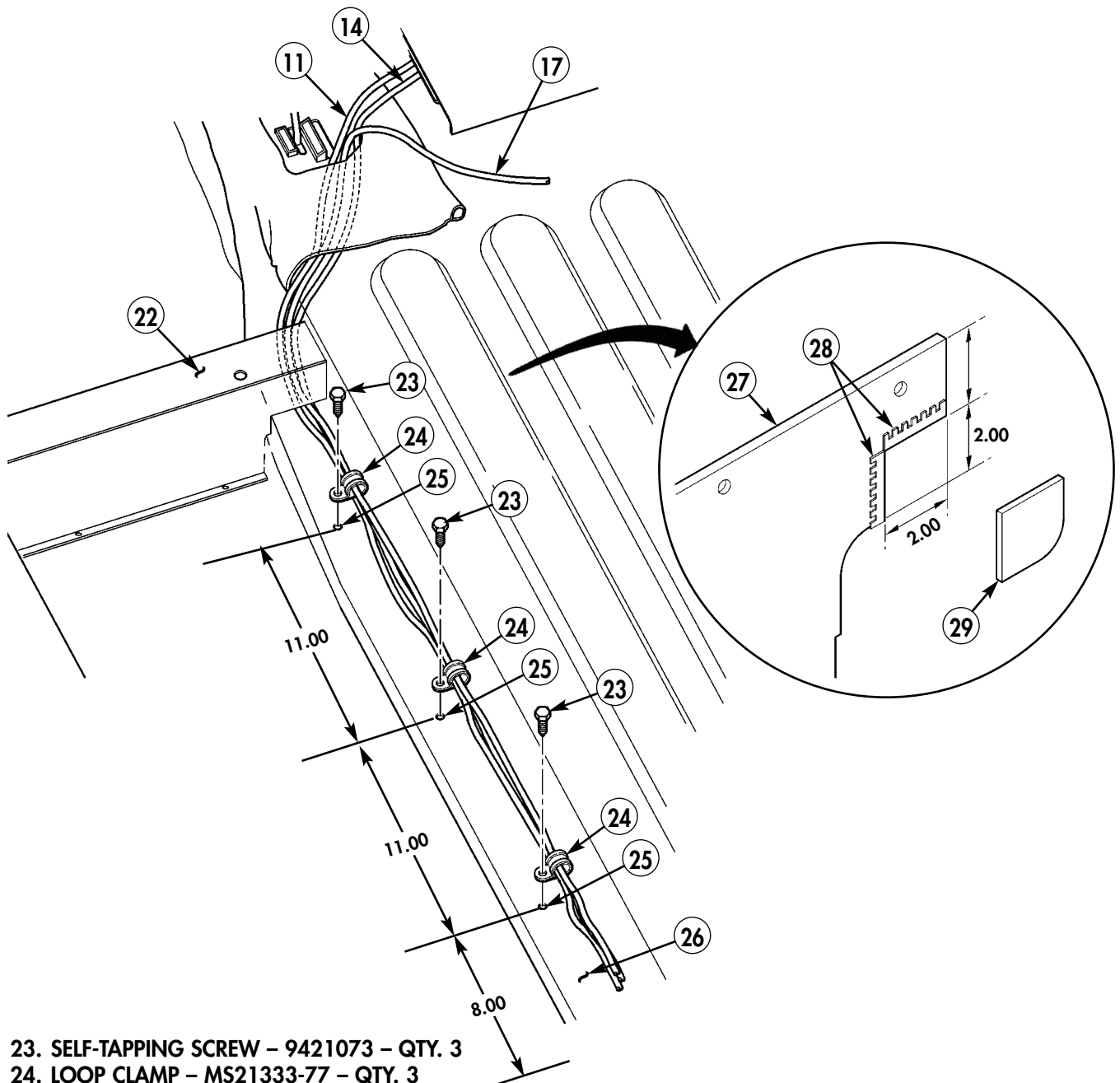


Figure 5-59.

**NOTE**

Perform step 19-10 for vehicles with left rear cab enclosure panel only.

- 19-10. Cut 2 x 2-in. section (29) from left rear cab enclosure panel (27). Install grommet (28) and cab enclosure panel (27). (Refer to TM 9-2320-280-20.)
- 19-11. Locate, mark, and drill three 0.147-in. holes (25) along tunnel edge (26).
- 19-12. Route INC-EPUU cable (11), URO extension cable (17), and power cable (14) rearward under B-beam (22) and along tunnel edge (26).
- 19-13. Route INC-EPUU cable (11), URO extension cable (17), and power cable (14) rearward along tunnel edge (26) and secure with three loop clamps (24) and self-tapping screws (23).

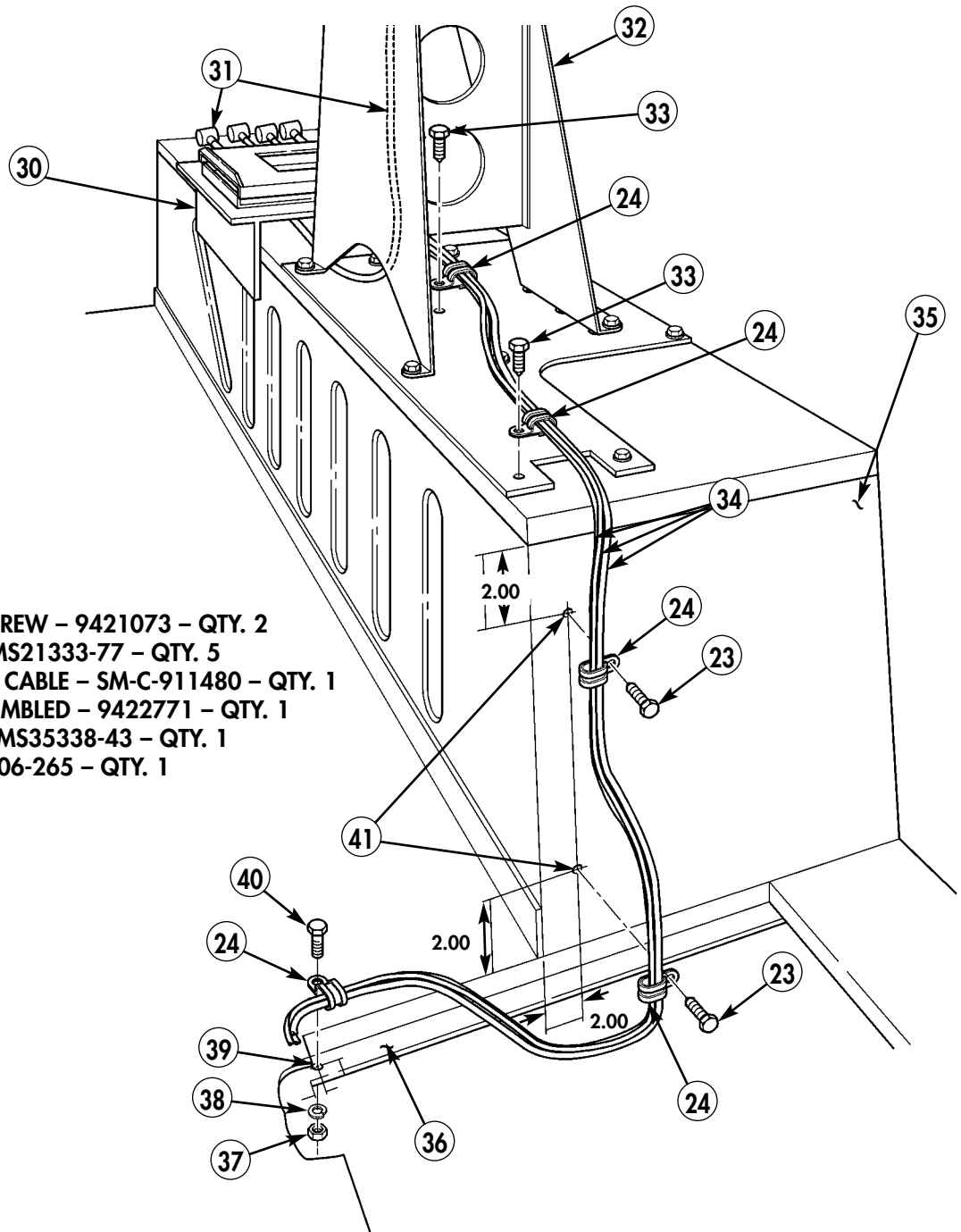


- 23. SELF-TAPPING SCREW – 9421073 – QTY. 3
- 24. LOOP CLAMP – MS21333-77 – QTY. 3
- 28. GROMMET – MS21266-1N – QTY. A/R

Figure 5-60.  
5-48



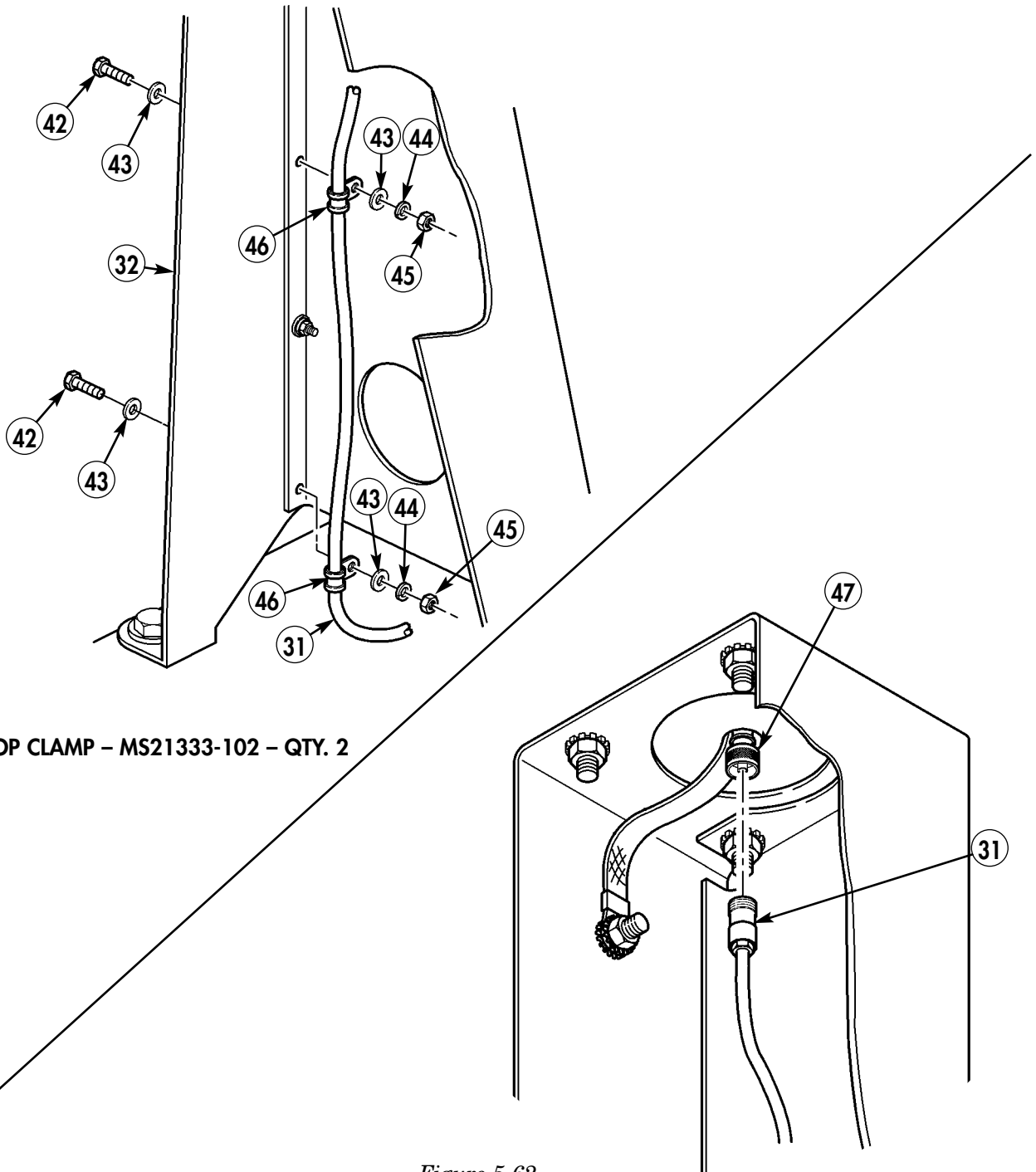
- 19-14. Locate, mark, and drill one 0.219-in. hole (39) in inboard corner on rear inside lip of left rear seat back support (36).
- 19-15. Locate, mark, and drill two 0.147-in. holes (41) in front face of left rear wheelhouse (35).
- 19-16. Route all cables (34) along rear perimeter of left rear seat back support (36), up front face of left rear wheelhouse (35), and under antenna base (32) and EPLRS mount assembly (30).
- 19-17. Secure all cables (34) with screw (40), lockwasher (38), nut (37), two self-tapping screws (23), two existing screws (33), and five loop clamps (24).
- 19-18. Route antenna cable (31) under EPLRS mount assembly (30) and up along front inboard side of antenna base (32).



- 23. SELF-TAPPING SCREW - 9421073 - QTY. 2
- 24. LOOP CLAMP - MS21333-77 - QTY. 5
- 31. EPLRS ANTENNA CABLE - SM-C-911480 - QTY. 1
- 37. NUT, PLAIN-ASSEMBLED - 9422771 - QTY. 1
- 38. LOCKWASHER - MS35338-43 - QTY. 1
- 40. SCREW - MS35206-265 - QTY. 1

Figure 5-61.

- 19-19. Secure antenna cable (31) to antenna base (32) with existing screws (42), two loop clamps (46), existing washers (43), existing lockwashers (44), and existing nuts (45).
- 19-20. Connect antenna cable (31) to antenna (47).
- 19-21. Take slack out of all cables and store under EPLRS mount assembly (30). (Refer to Figure 5-61.)
- 19-22. Tighten screws and nuts on all clamps.
- 19-23. Secure right-side tunnel insulation. (Refer to TM 9-2320-280-20.)



46. LOOP CLAMP - MS21333-102 - QTY. 2

Figure 5-62.

## Section XX. MTS MOUNT AND PLGR BRACKET INSTALLATION

### NOTE

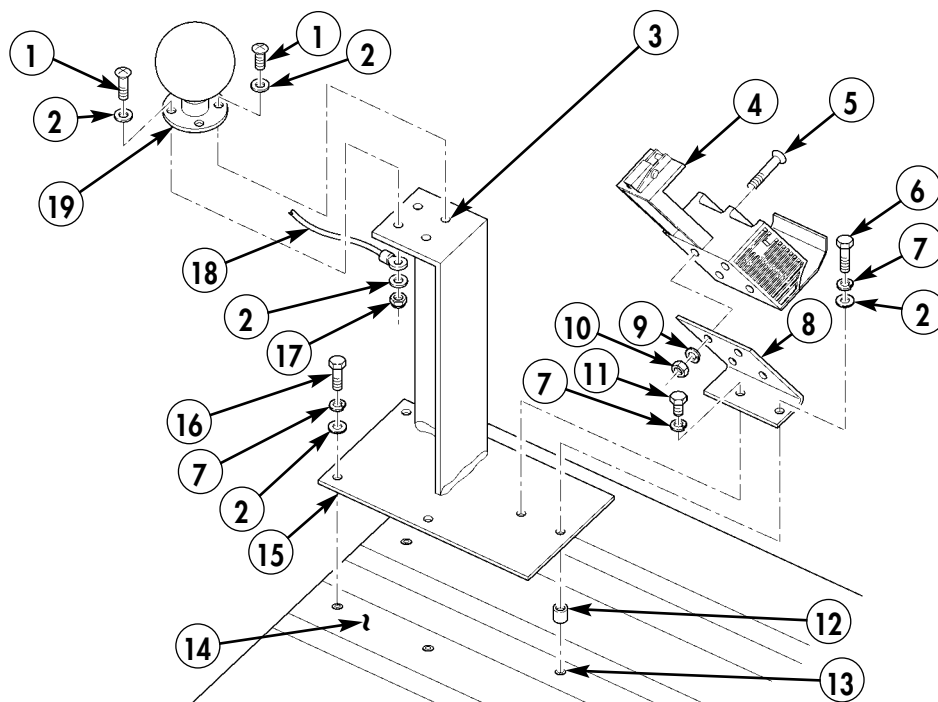
- Ensure all holes have been drilled and inserts installed. (Refer to chapter 5, section VII.)
- When attaching lower ball to MTS mounting bracket, leave left rear hole open to accommodate future loop clamp and MTS display wire.

- 20-1.** Position spacer (12) between insert (13) and MTS mounting base bracket (15). Attach MTS mounting base bracket (15) to floor (14) with three lockwashers (7), washers (2), and capscrews (16).
- 20-2.** Attach PLGR bracket (8) to MTS mounting base bracket (15) with lockwasher (7), capscREW (11), washer (2), lockwasher (7), and capscREW (6).
- 20-3.** Attach PLGR mount (4) to PLGR bracket (8) with four screws (5), lockwashers (9), and nuts (10).
- 20-4.** Fabricate ground strap (18) from 6-in. length of braided wire and two terminal lugs.

### NOTE

Ground strap will be installed on lower ball mount only at this time. Other end of ground strap will be installed with MTS display cables. (Refer to chapter 5, section XXVI.)

- 20-5.** Install ground strap (18) and lower ball mount (19) on MTS mounting base bracket (15) with three capscrews (1), six washers (2), and three locknuts (17). Leave hole (3) open for future loop clamps and MTS display wire.



- |                                           |                                                     |
|-------------------------------------------|-----------------------------------------------------|
| 1. CAPSCREW – B1821BH025C113N – QTY. 3    | 12. SPACER – 12340849 – QTY. 1                      |
| 2. WASHER – 2436161 – QTY. 12             | 15. MTS MOUNTING BASE BRACKET – RCSK-19648 – QTY. 1 |
| 4. PLGR BRACKET – 986-0645-001 – QTY. 1   | 16. CAPSCREW – B1821BH025C125N – QTY. 3             |
| 5. SCREW – MS35206-263 QTY. 4             | 17. LOCKNUT – MS51943-31 – QTY. 3                   |
| 6. CAPSCREW – B1821BH025C150N – QTY. 1    | 18. GROUND STRAP                                    |
| 7. LOCKWASHER – MS35338-44 – QTY. 5       | • BRAIDED WIRE – AA59569F30T0375 – QTY. A/R         |
| 8. PLGR MOUNT BRACKET – 12480576 – QTY. 1 | • TERMINAL LUG – MS20659-107 – QTY. 1               |
| 9. LOCKWASHER – MS35338-43 – QTY. 4       | • TERMINAL LUG – MS20659-141 – QTY. 1               |
| 10. NUT – 9422771 – QTY. 4                | 19. LOWER BALL MOUNT – D254 – QTY. 1                |
| 11. CAPSCREW – B1821BH025C075N – QTY. 1   |                                                     |

Figure 5-63.

## Section XXI. MTS CONTROL BOX INSTALLATION

### NOTE

Ensure all holes have been drilled and inserts installed. (Refer to chapter 5, section VII.)

- 21-1. Using MTS control box as template, locate, mark, and cut two 0.750-in. holes (2) in left-side tunnel insulation (1).

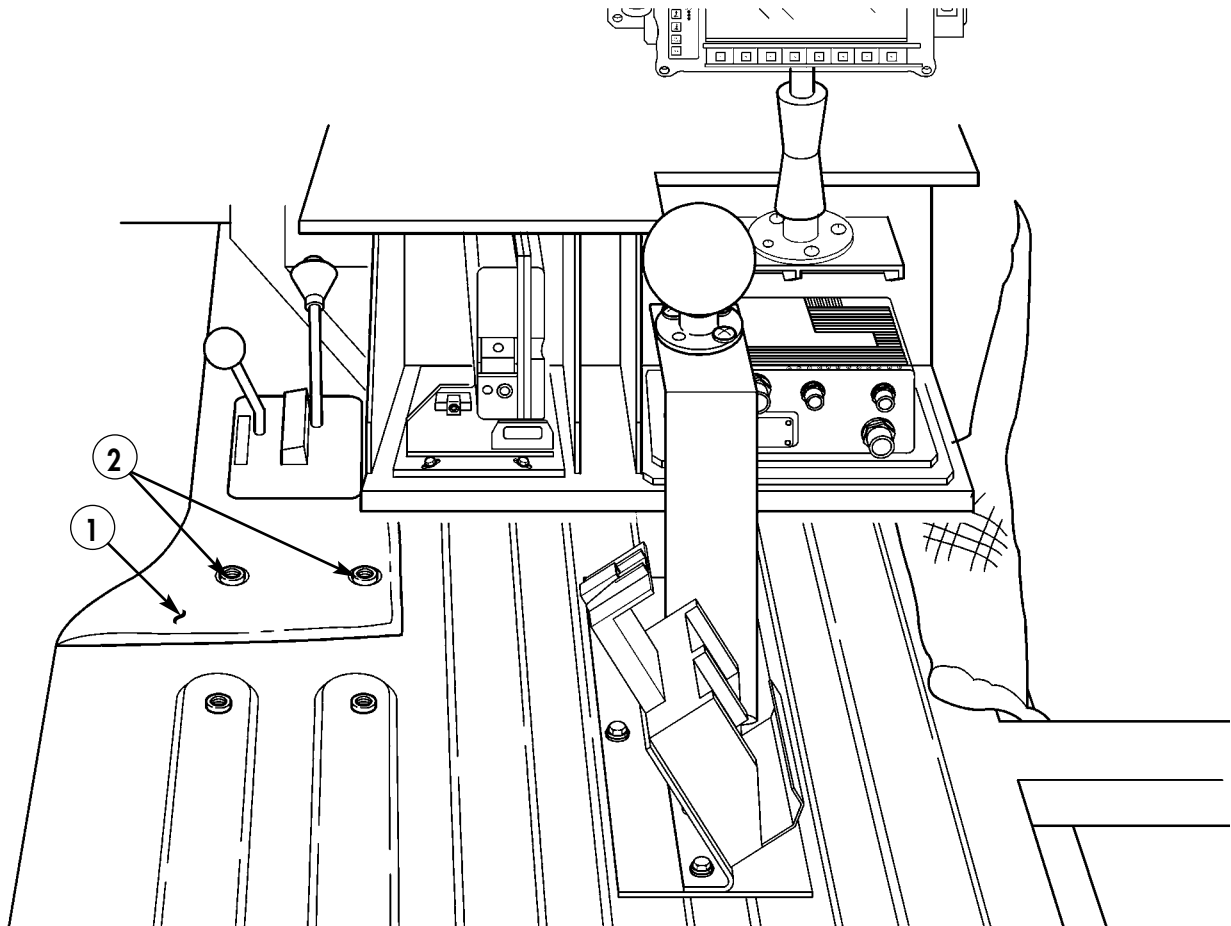


Figure 5-64.

**NOTE**

- Spacers are installed between control box and tunnel floor and only on front two mounting holes of control box, where tunnel insulation has been cut.
- Install spacer between right front mounting holes first.
- Do not tighten screws until all hardware has been installed.

- 21-2.** Install MTS control unit (3) on tunnel floor (10) with spacer (5), three lockwashers (12), washers (11), and capscrews (13).
- 21-3.** Locate, mark, and drill one 0.147-in. diameter hole (9) in tunnel floor (10).
- 21-4.** Remove paint from vicinity of hole (9) in tunnel floor (10) and from corner (4) of control box (3). Apply anti-seize compound as required.
- 21-5.** Fabricate ground strap (8) from 4-in. length of braided wire and two terminal lugs.
- 21-6.** Install ground strap (8) on tunnel floor (10) with lockwasher (7) and self-tapping screw (6).
- 21-7.** Install ground strap (8) on MTS control box (3) with lockwasher (12), washer (11), and capscrew (13). Mount control box (3) to tunnel floor (10) with spacer (5).
- 21-8.** Tighten all screws (6) and (13).

**3. MTS CONTROL UNIT – 7110-0315 – QTY. 1**

**5. SPACER – 12340849 – QTY. 2**

**6. SELF-TAPPING SCREW – 9418944 – QTY. 1**

**7. WASHER – 120391 – QTY. 1**

**8. GROUND STRAP**

- BRAIDED WIRE – AA59569F30T0375 – QTY. A/R

- TERMINAL LUG – MS20659-141 – QTY. 1

- TERMINAL LUG – MS20659-107 – QTY. 1

**11. WASHER – 2436161 – QTY. 4**

**12. LOCKWASHER – MS35338-44 – QTY. 4**

**13. CAPSCREW – B1821BH025C113N – QTY. 4**

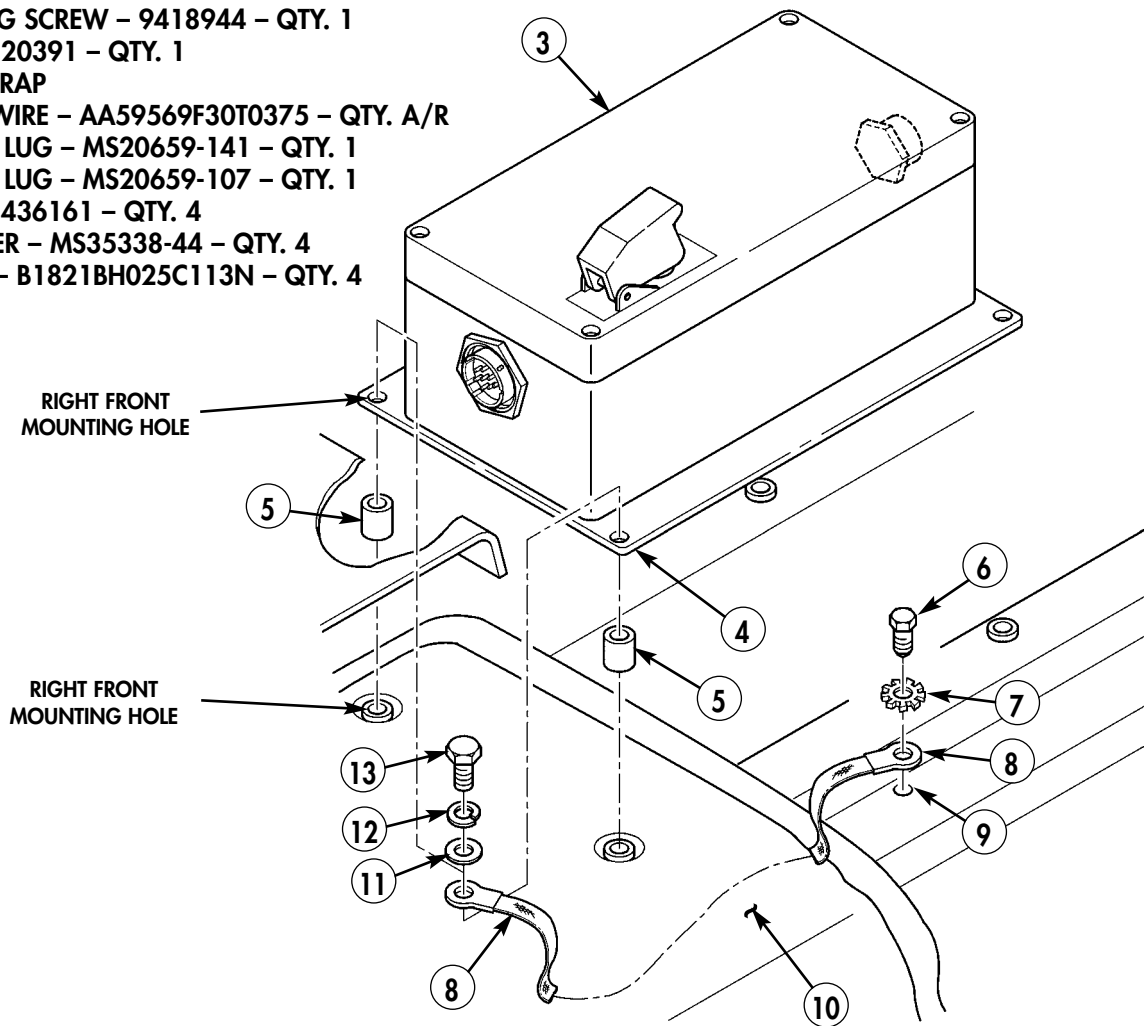


Figure 5-65.

### Section XXII. MTS ANTENNA INSTALLATION

**22-1.** If applicable, remove two bumpers (1) from windshield frame (2).

**22-2.** Remove four screws (3) from windshield frame (2).

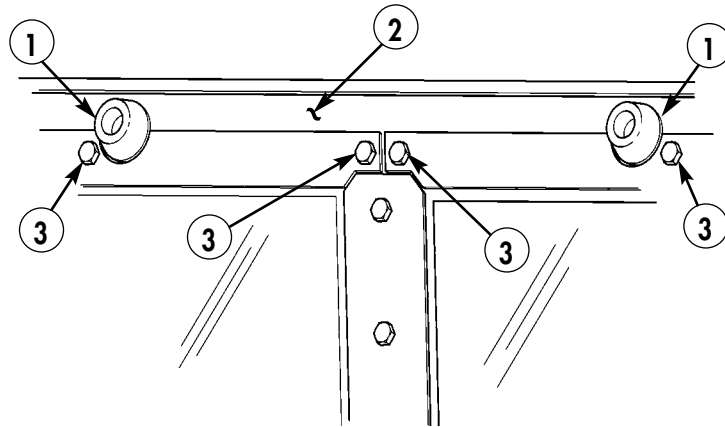
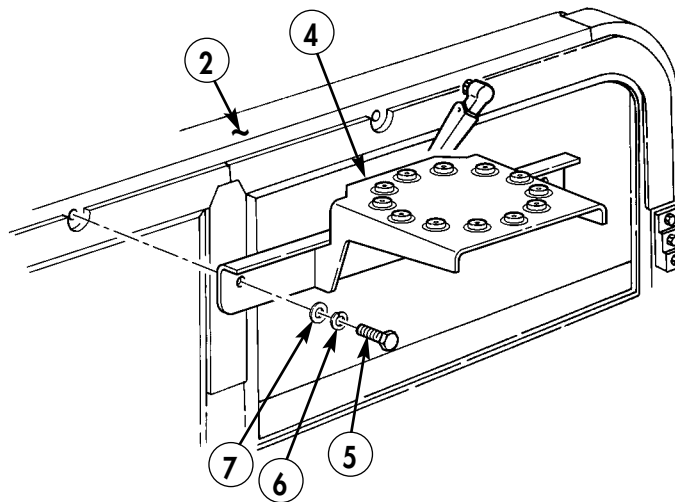


Figure 5-66.

**22-3.** Mount antenna mounting bracket (4) to windshield frame (2) with two lockwashers (6), washers (7), and capscrews (5).

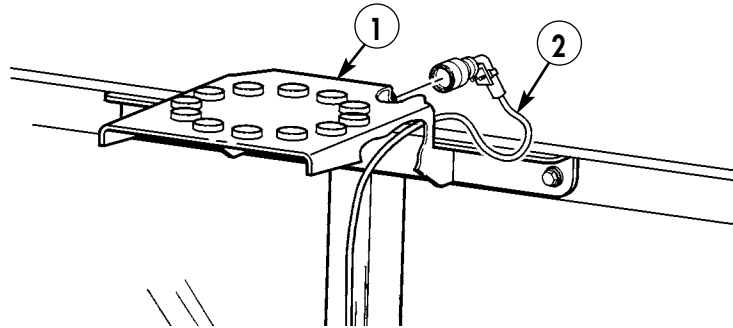


- 4. MTS ANTENNA MOUNTING BRACKET - 7110-0302 - QTY. 1
- 5. CAPSCREW - B1821BH025C125N - QTY. 2
- 6. LOCKWASHER - MS35338-44 - QTY. 2
- 7. WASHER - 2436161 - QTY. 2

Figure 5-67.

**Section XXIII. MTS ANTENNA CABLE INSTALLATION**

- 23-1. Connect antenna cable (2) to connector on antenna bracket (1).
- 23-2. Route antenna cable (2) under antenna bracket (1).



**2. ANTENNA CABLE – 506B338-01 – QTY. 1**

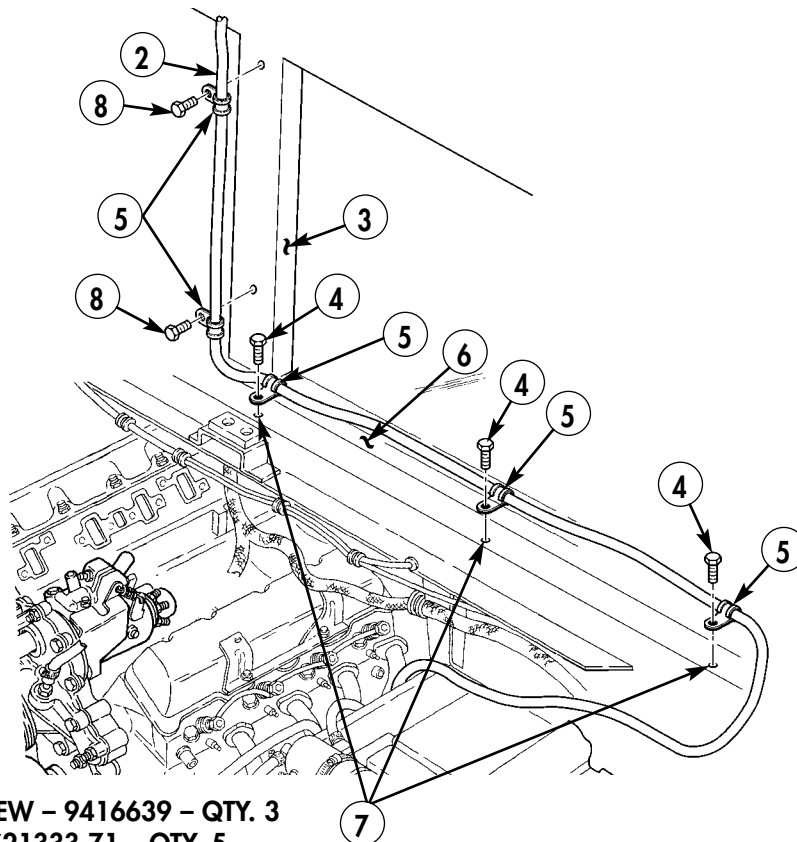
*Figure 5-68.*

- 23-3. Route antenna cable (2) down windshield center post (3), securing with two loop clamps (5) and existing screws (8).

**NOTE**

Perform steps 23-4 and 23-5 for vehicles without windshield retainers.

- 23-4. Locate, mark, and drill three 0.147-in. diameter holes (7) on driver-side front cowl (6).
- 23-5. Route antenna cable (2) along driver-side front cowl (6) to engine compartment and secure with three clamps (5) and screws (4).



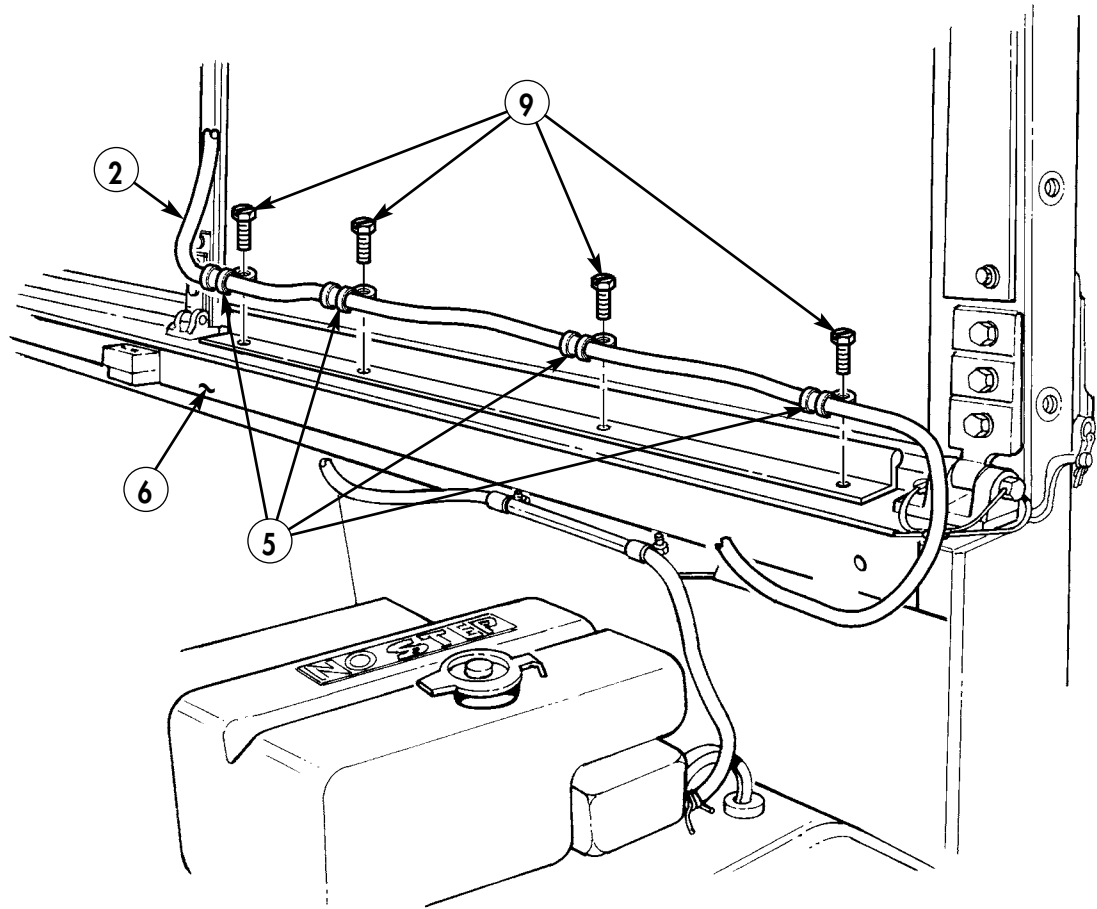
- 4. SELF-TAPPING SCREW – 9416639 – QTY. 3
- 5. LOOP CLAMP – MS21333-71 – QTY. 5

*Figure 5-69.*

**NOTE**

Perform step 23-6 for vehicles with windshield retainers.

- 23-6.** Route antenna cable (2) along driver-side front cowl (6) to engine compartment and secure with four loop clamps (5) and existing screws (9).



- 5. LOOP CLAMP – MS21333-71 – QTY. 4**

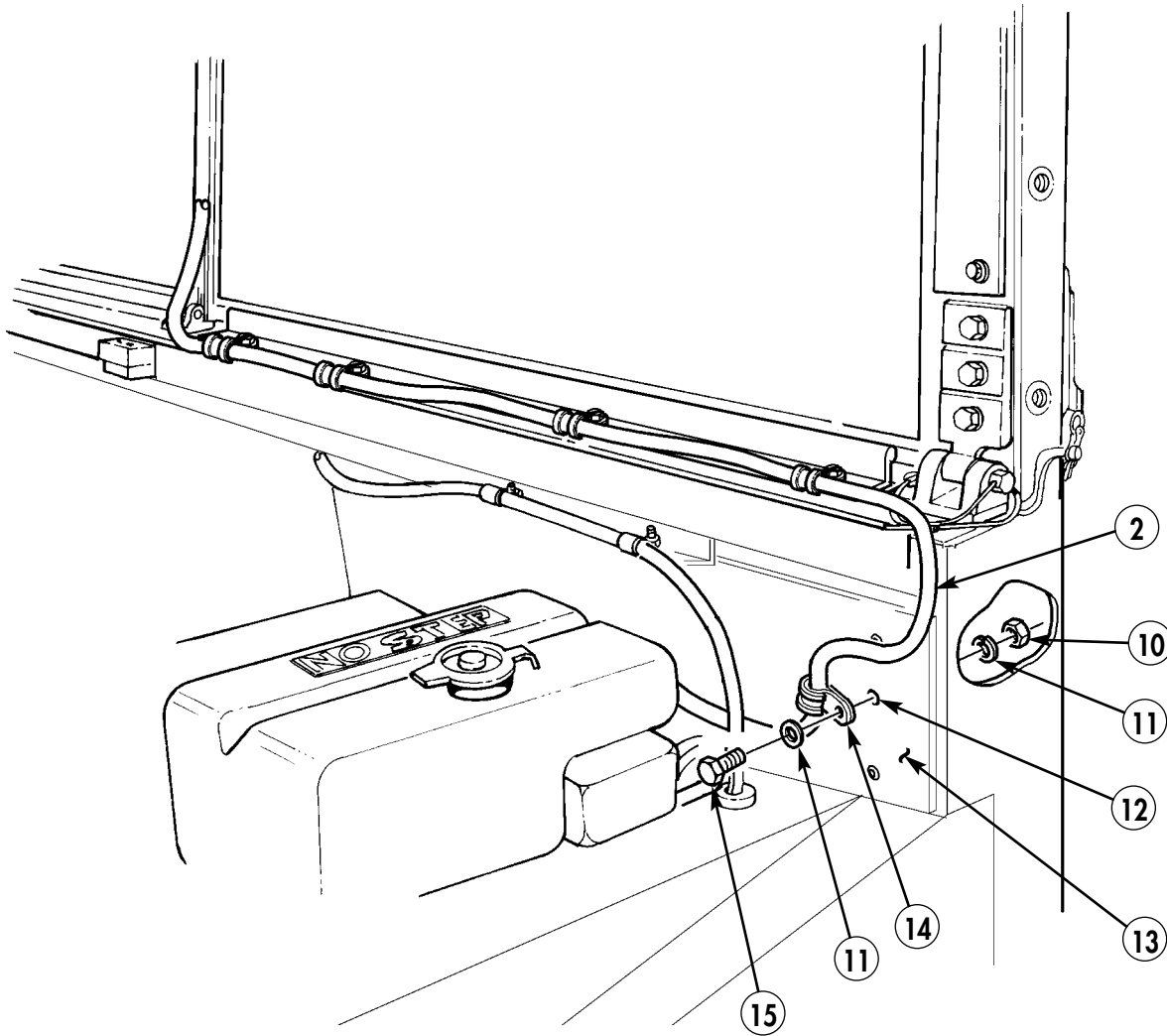
*Figure 5-70.*



**NOTE**

Perform steps 23-7 and 23-8 for vehicles with old-style mirror bracket removed/not installed.

- 23-7.** Drill out rivet (12) from engine compartment wall (13) with 0.281-in. drill bit.
- 23-8.** Route antenna cable (2) along engine compartment wall (13) and secure with capscrew (15), washer (11), loop clamp (14), washer (11), and nut (10).



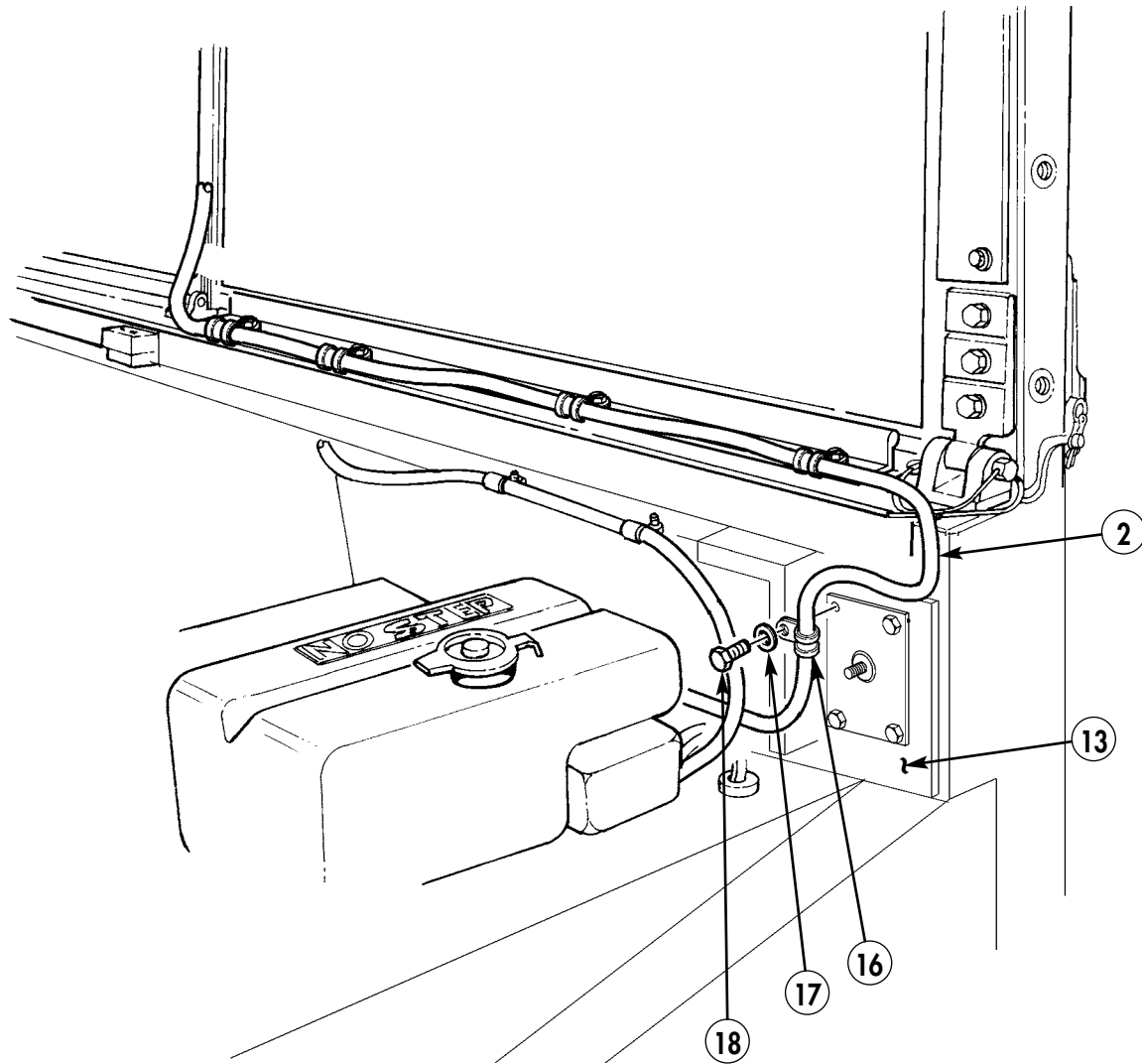
10. NUT - 9419143 - QTY. 1  
 11. WASHER - 2436161 - QTY. 2  
 14. LOOP CLAMP - MS21333-102 - QTY. 1  
 15. CAPSCREW - B1821BH025C075N - QTY. 1

*Figure 5-71.*

**NOTE**

Perform step 23-9 for vehicles with old-style mirror bracket installed.

- 23-9.** Route antenna cable (2) along engine compartment wall (13) and secure with loop clamp (16), existing washer (17), and screw (18).



**16. LOOP CLAMP – MS21333-112 – QTY. 1**

*Figure 5-72.*

- 23-10. Remove three existing plugs (19) on driver's side of engine compartment wall (13).
- 23-11. Enlarge largest hole (20) to 1.25-in. diameter.

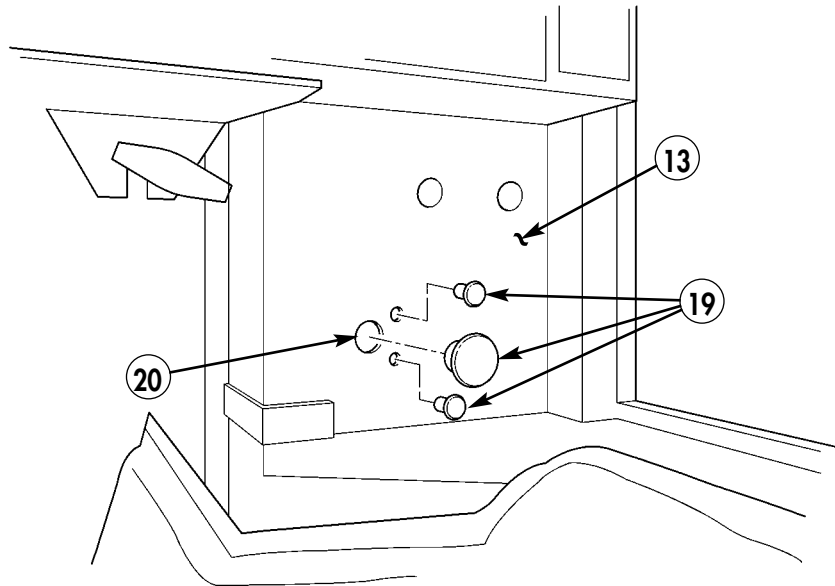


Figure 5-73.

- 23-12. Route antenna cable (2) through engine compartment wall (13) and through hole (20) to interior of vehicle.

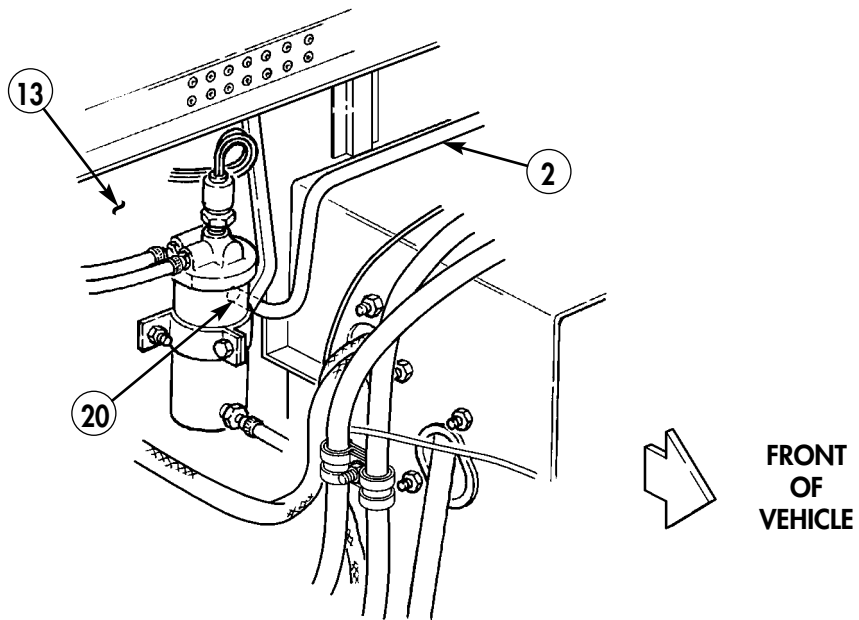


Figure 5-74.

**23-13.** Attach connector (23) to plate (22) with four screws (24) and nuts (21).

**23-14.** Connect antenna cable (2) to back of connector (23).

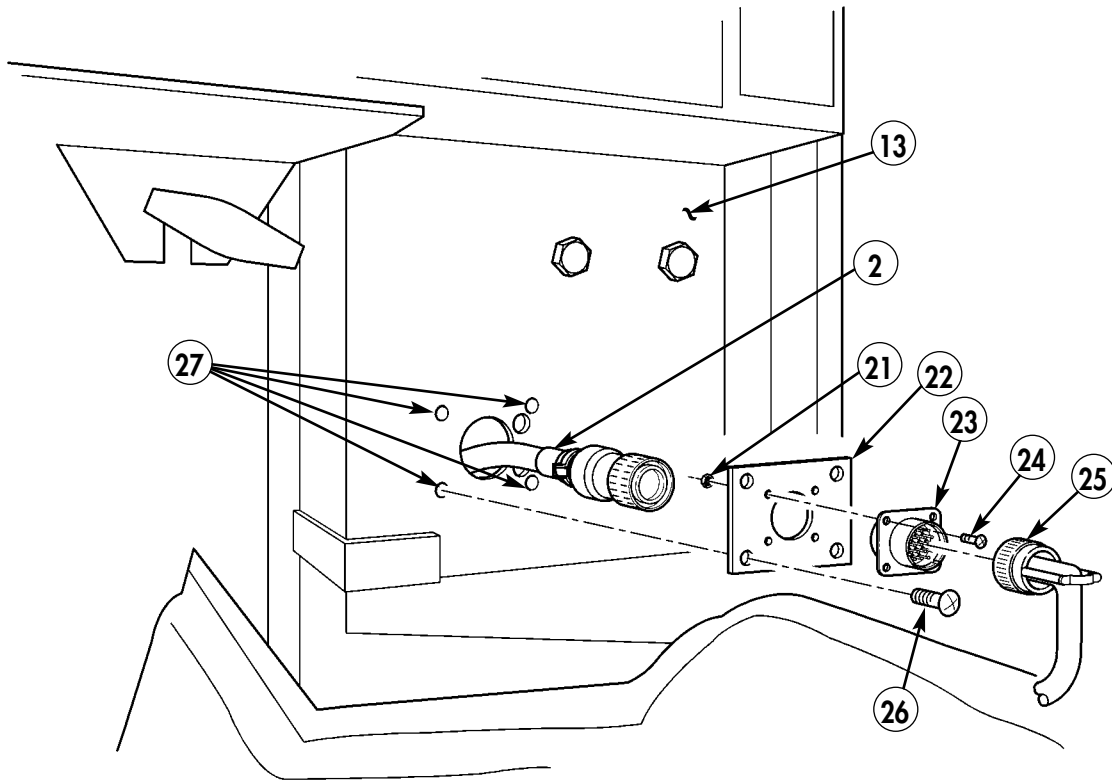
**NOTE**

Ensure large key is at bottom of connector.

**23-15.** Using plate (22) as template, locate, mark, and drill four 0.147-in. diameter holes (27) in engine compartment wall (13).

**23-16.** Attach plate (22) to engine compartment wall (13) with four self-tapping screws (26).

**23-17.** Connect antenna cable (25) to connector (23).



- 21. NUT - 116002 - QTY. 4
- 23. CONNECTOR - MS3119E14-19 - QTY. 1
- 24. SCREW - 9417875 - QTY. 4
- 25. ANTENNA CABLE - 506B339-01 - QTY. 1
- 26. SELF-TAPPING SCREW - 9416639 - QTY. 4

*Figure 5-75.*

**NOTE**

Loosen left-side tunnel insulation before performing step 23-18.  
(Refer to TM 9-2320-280-20.)

**23-18.** Route MTS antenna cable (25) under left-side tunnel insulation (28).

**23-19.** Connect MTS antenna cable (25) to MTS control unit J6 connector (29).

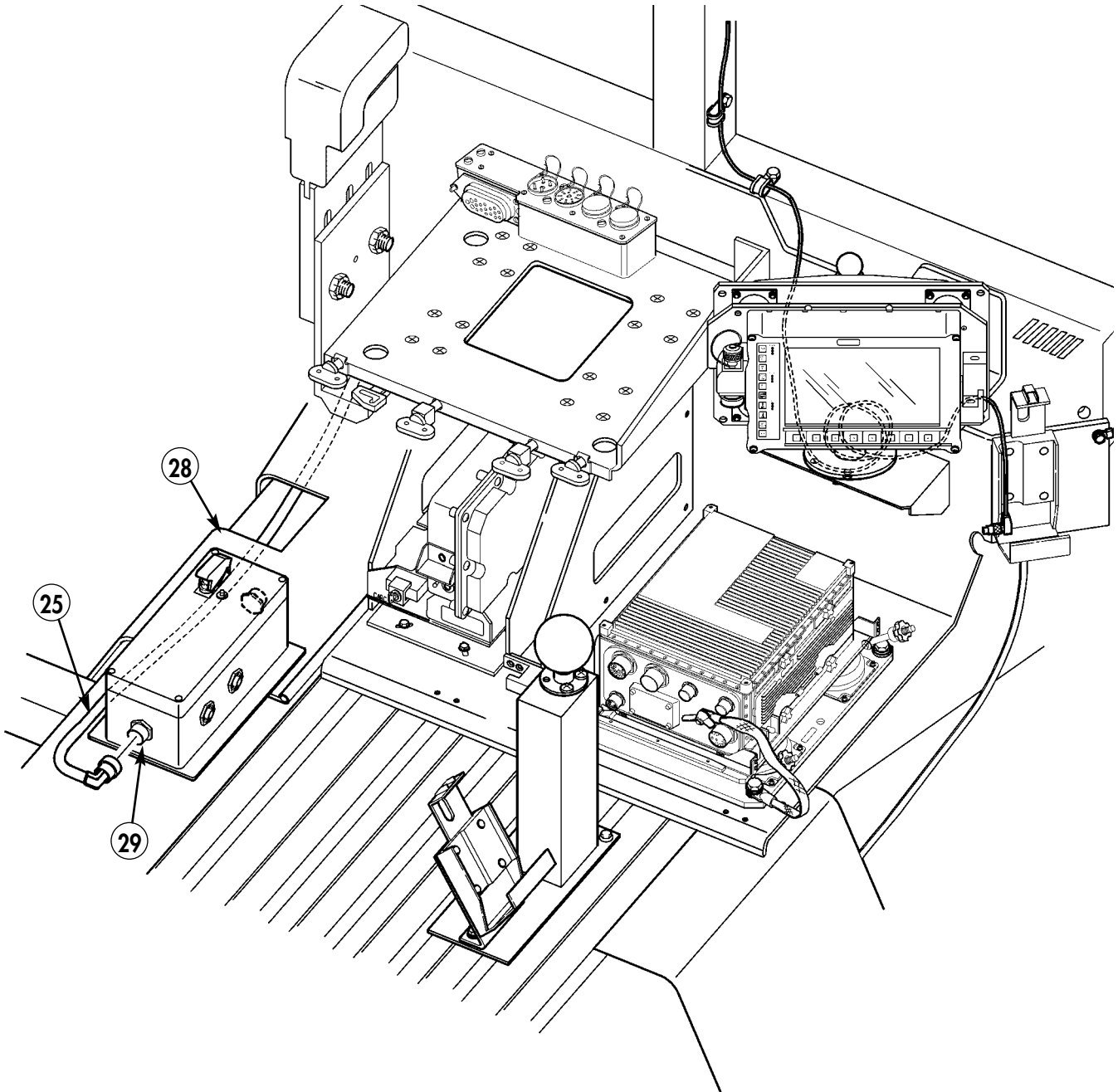


Figure 5-76.

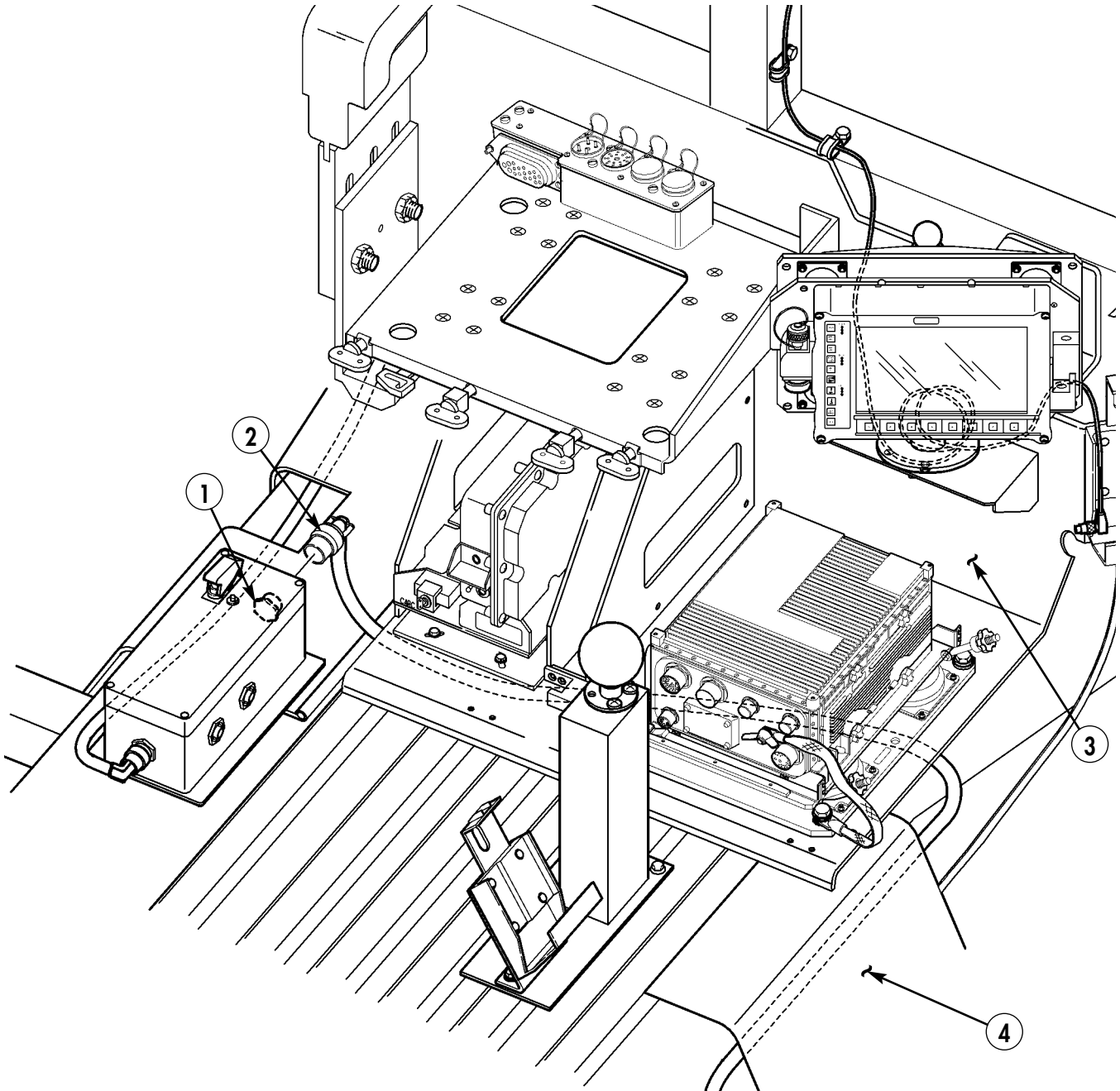
### Section XXIV. MTS POWER CABLE INSTALLATION

24-1. Connect MTS power cable (2) to MTS control unit J9 connector (1).

**NOTE**

Loosen right-side tunnel insulation before performing step 24-2.  
(Refer to TM 9-2320-280-20.)

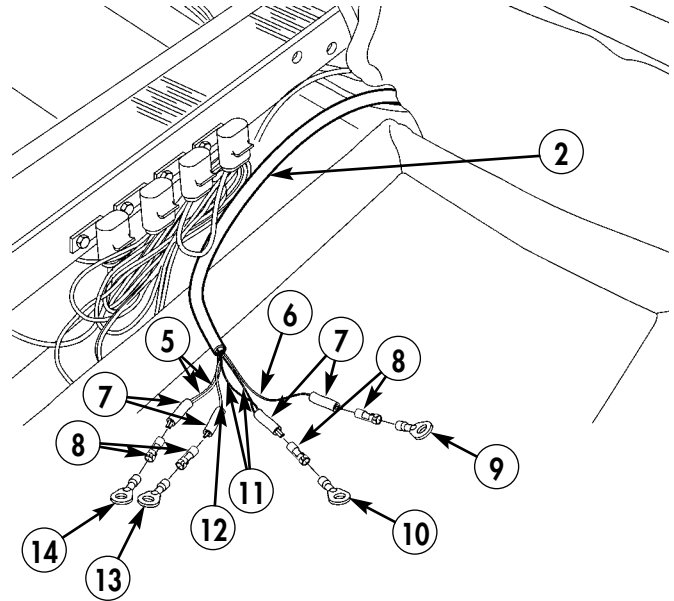
24-2. Route MTS power cable (2) under integrated rack (3) and under right-side tunnel insulation (4) to B-beam.



2. MTS POWER CABLE – 506B340-01 – QTY. 1

Figure 5-77.

- 24-3.** Attach shrink tubing (7), four terminal lugs (9), (10), (13), and (14), and splices (8) to two black leads (11), white lead (6), green lead (12), and two red leads (5) on MTS power cable (2). (Refer to TM 9-2320-280-20 for terminal connector repair.)



7. SHRINK TUBING – MS23053/4-302-0 – QTY. A/R  
 8. SPLICE – NAS1387-4 – QTY. 4  
 9. TERMINAL LUG – MS25036-103 – QTY. 1  
 10. TERMINAL LUG – MS25036-108 – QTY. 1  
 13. TERMINAL LUG – MS25036-150 – QTY. 1  
 14. TERMINAL LUG – MS25036-154 – QTY. 1  
 17. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R

Figure 5-78.

- 24-4.** Install negative leads (6) and (11) on outboard ground strap (18) with existing nut (16).  
**24-5.** Install positive leads (5) and (12) on outboard 24V terminal board (15) with existing nut (16).  
**24-6.** Secure all leads together with tiedown strap (17).

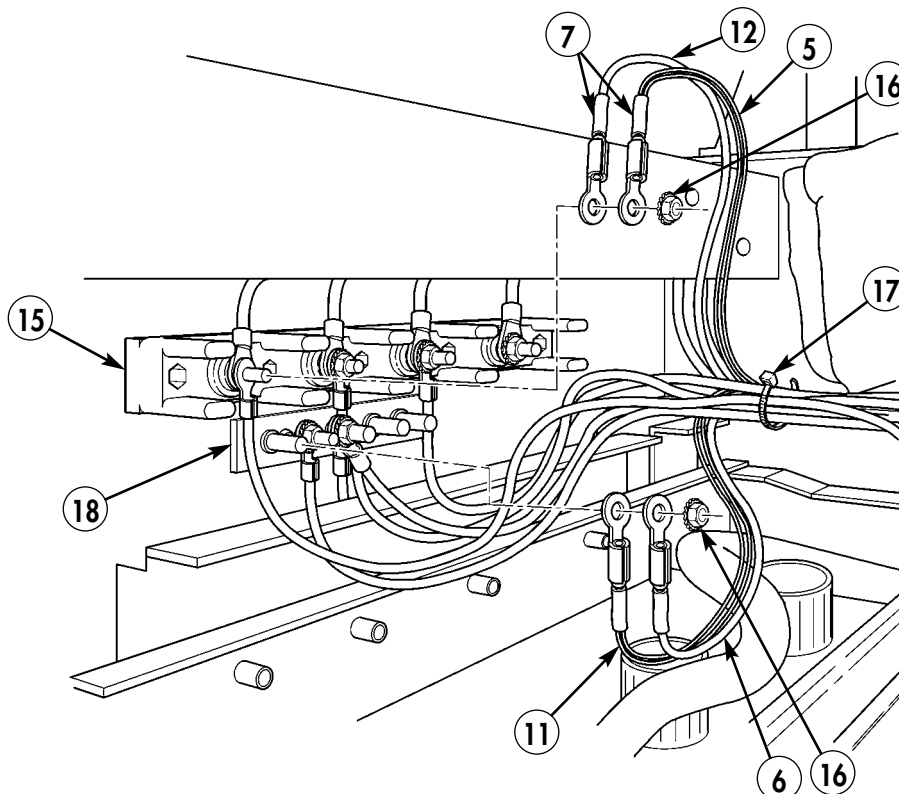


Figure 5-79.

### Section XXV. MTS PLGR POWER CABLE INSTALLATION

- 25-1. Position PLGR power cable (4) on PLGR mount (1).
- 25-2. Route PLGR power cable (4) to battery box and secure with loop clamp (8) and existing screw (5), lockwasher (6), washer (7), spacer (9), loop clamp (3), and existing screw (2).

- 3. LOOP CLAMP – MS21333-67 – QTY. 1
- 4. PLGR POWER CABLE – 9728558-10 – QTY. 1
- 8. LOOP CLAMP – MS21333-98 – QTY. 1

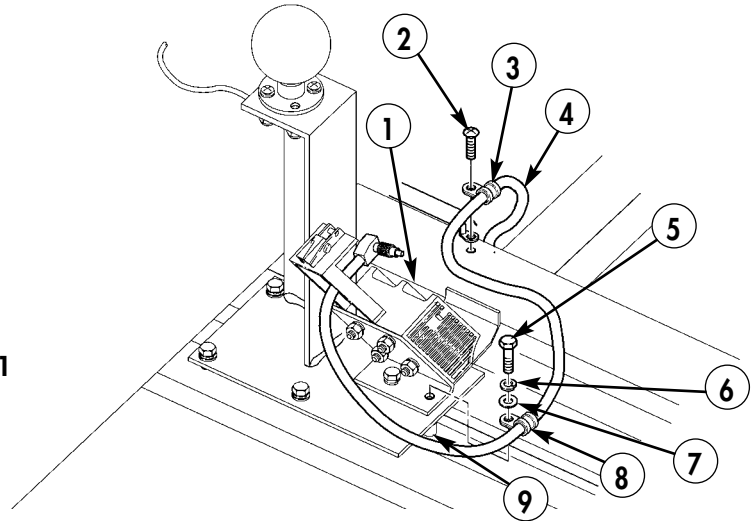
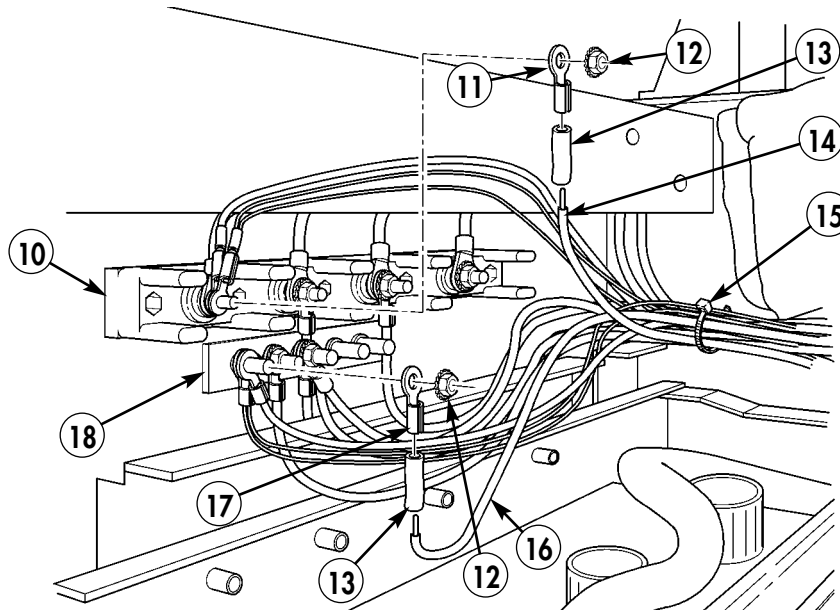


Figure 5-80.

- 25-3. Attach shrink tubing (13) and two terminal lugs (11) and (17) to PLGR power cable negative lead (16) and PLGR power cable positive lead (14). (Refer to TM 9-2320-280-20 for terminal connector repair.)
- 25-4. Attach PLGR power cable positive lead (14) to 24V terminal board (10) with existing nut (12).
- 25-5. Attach PLGR power cable negative lead (16) to ground strap (18) with existing nut (12).
- 25-6. Secure all leads together with tiedown strap (15).
- 25-7. Secure right-side tunnel insulation. (Refer to TM9-2320-280-20.)
- 25-8. Coil excess cable and store under integrated rack.

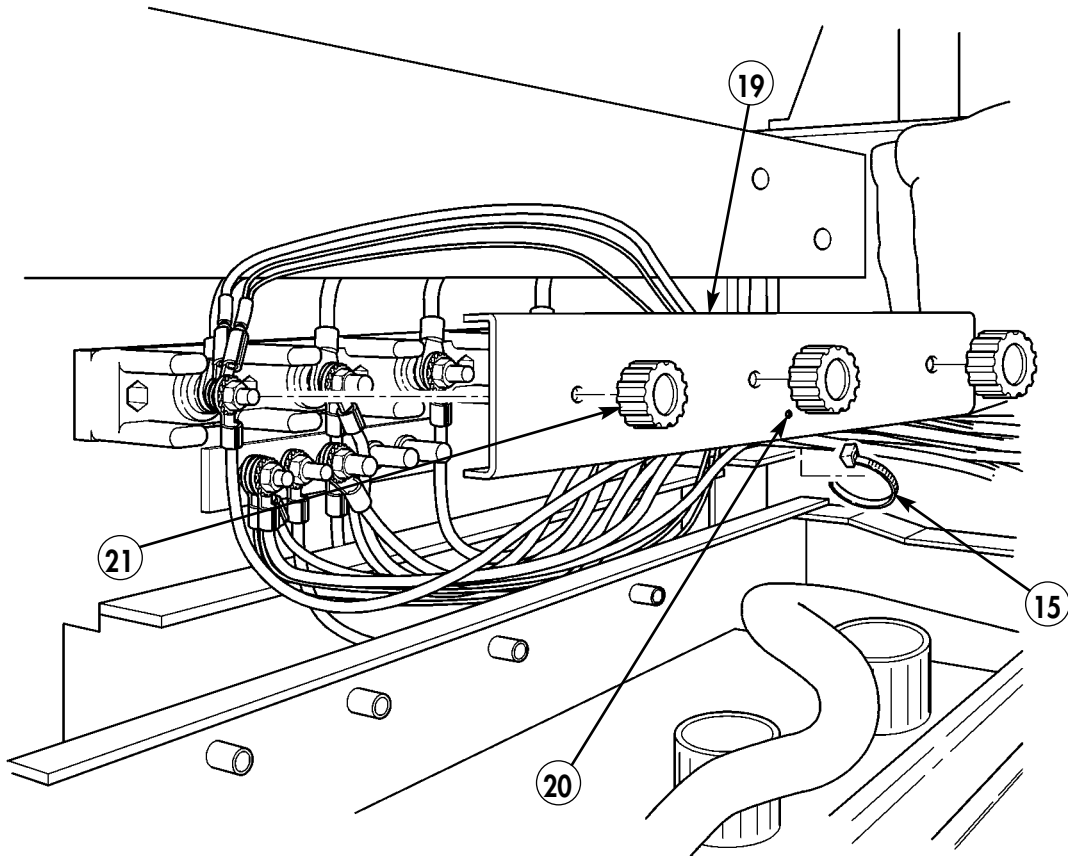


- 11. TERMINAL LUG – 7728780 – QTY. 1
- 14. SHRINK TUBING – MS23053/4-302-0 – QTY. A/R
- 15. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R
- 17. TERMINAL LUG – 7728777 – QTY. 1

Figure 5-81.



- 25-9.** Locate, mark, and drill one 0.25-in. diameter hole (20) in terminal board cover (19).
- 25-10.** Insert tiedown strap (15) in hole (20).
- 25-11.** Install 24V terminal board cover (19) with three existing nuts (21) and tiedown strap (15).



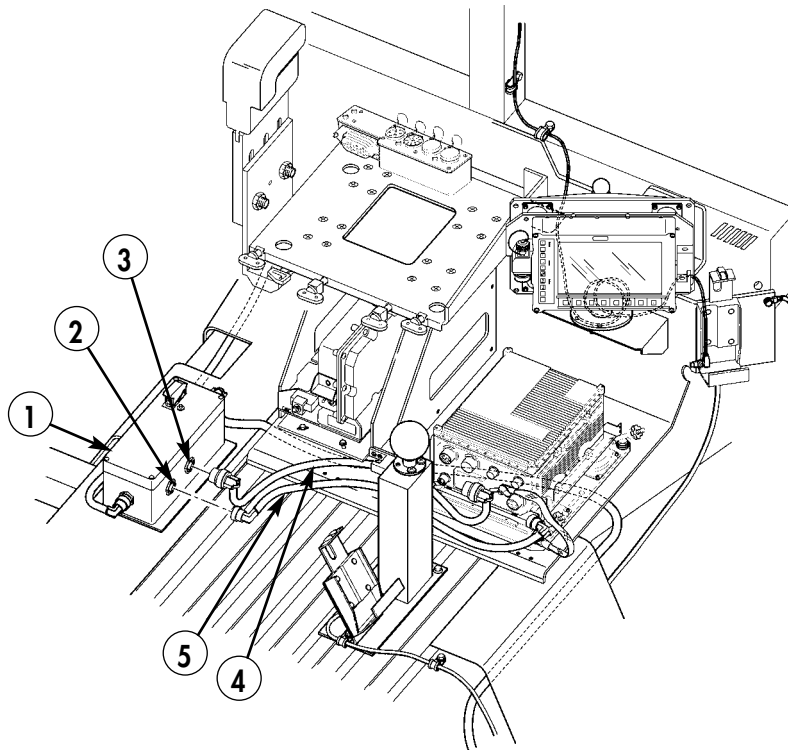
- 15. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R**
- 19. TERMINAL BOARD COVER – 12480569-2 – QTY. 1**

*Figure 5-82.*

### Section XXVI. MTS DISPLAY CABLES INSTALLATION

**26-1.** Connect MTS display power cable (4) to J8 connector (3) on MTS control box (1).

**26-2.** Connect MTS data cable (5) to J7 connector (2) on control box (1).

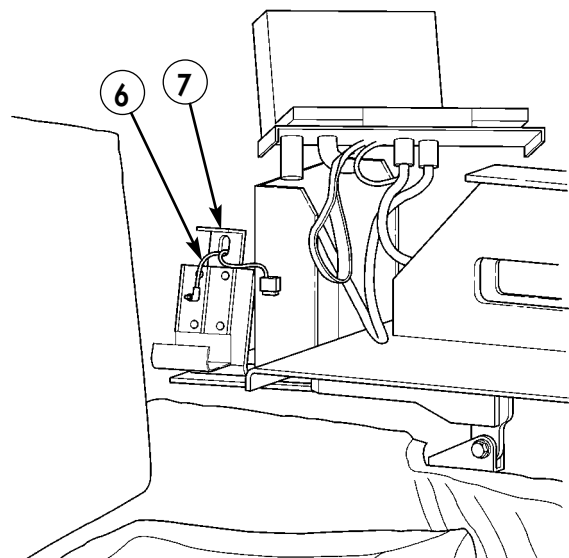


**4. MTS DISPLAY POWER CABLE – 506B407-04 – QTY. 1**

**5. MTS DATA CABLE – 506B408-04 – QTY. 1**

*Figure 5-83.*

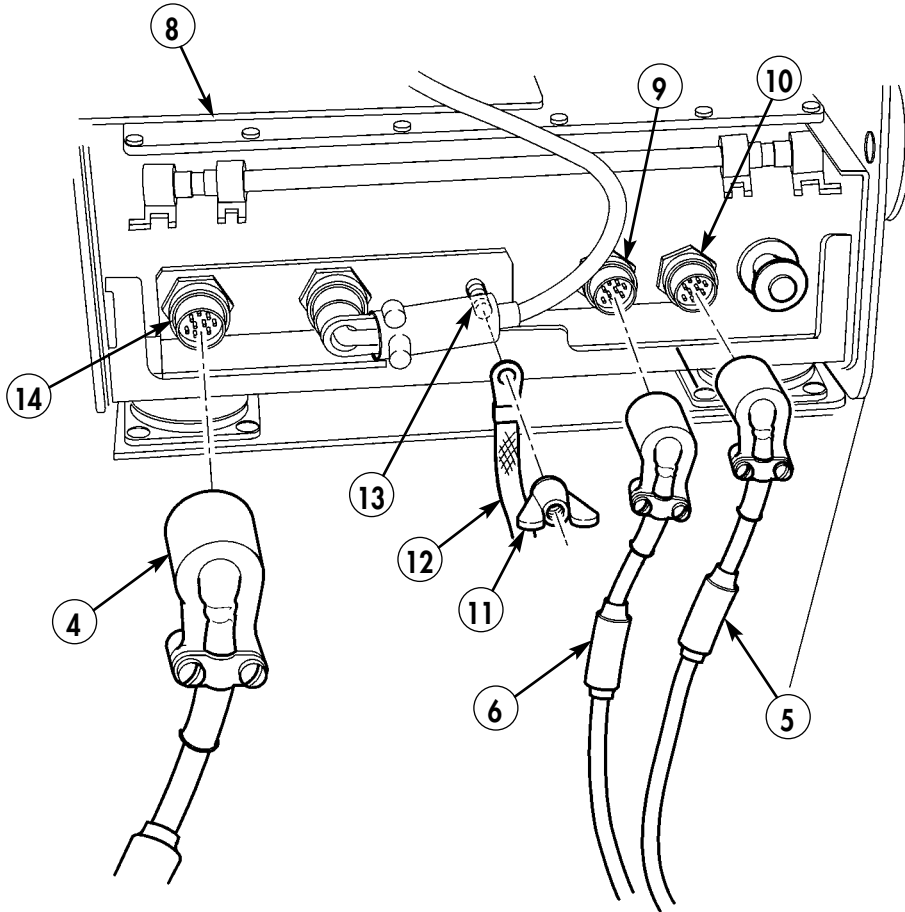
**26-3.** Position PLGR data cable (6) on PLGR mount (7).



**6. PLGR DATA CABLE – 506B409-04 – QTY. 1**

*Figure 5-84.*

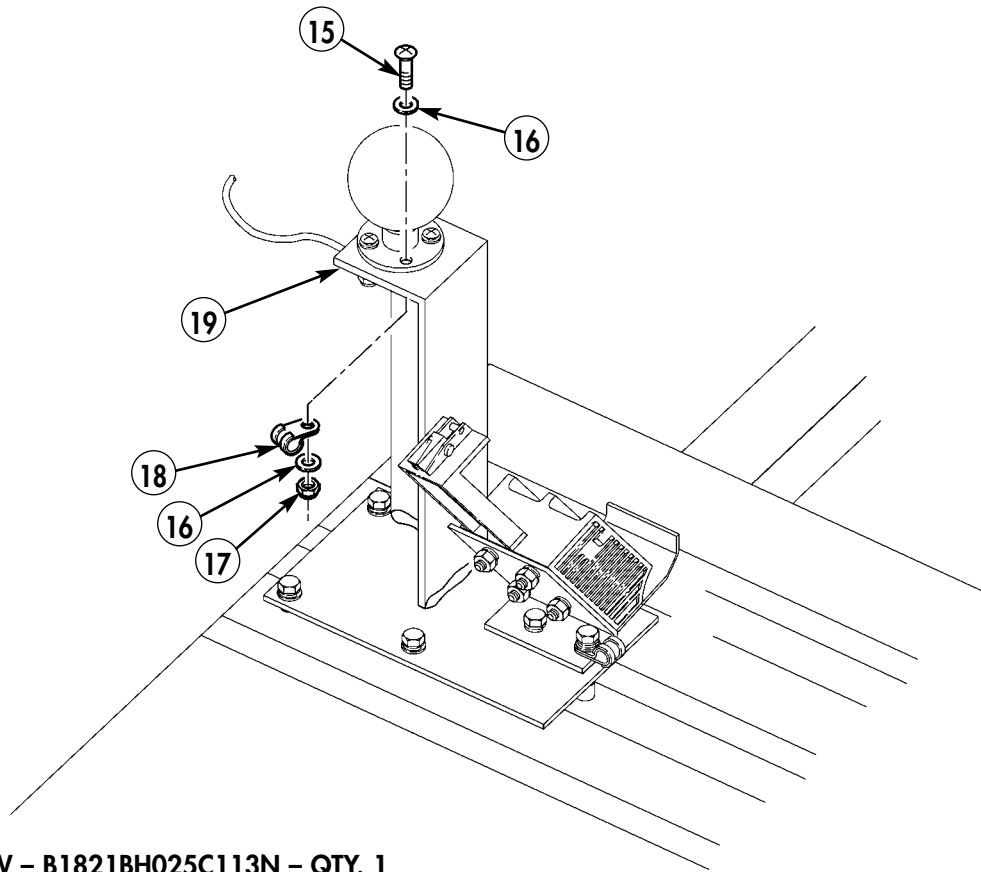
- 26-4. Connect MTS display power cable (4) to power connector (14) on display unit (8).
- 26-5. Connect MTS data cable (5) to connector COM 2 (10) on display unit (8).
- 26-6. Connect PLGR data cable (6) to connector COM 1 (9) on display unit (8).
- 26-7. Install ground strap (12) on display unit stud (13) with wingnut (11).



11. WINGNUT – MS51553-102 – QTY. 1

Figure 5-85.

- 26-8.** Coil excess cable and attach to MTS mount (19) with loop clamp (18), washer (16), capscrew (15), washer (16), and locknut (17).



15. CAPSCREW - B1821BH025C113N - QTY. 1  
16. WASHER -2436161 - QTY. 2  
17. LOCKNUT - MS51943-31 - QTY. 1  
18. LOOP CLAMP - MS21333-107 - QTY. 1

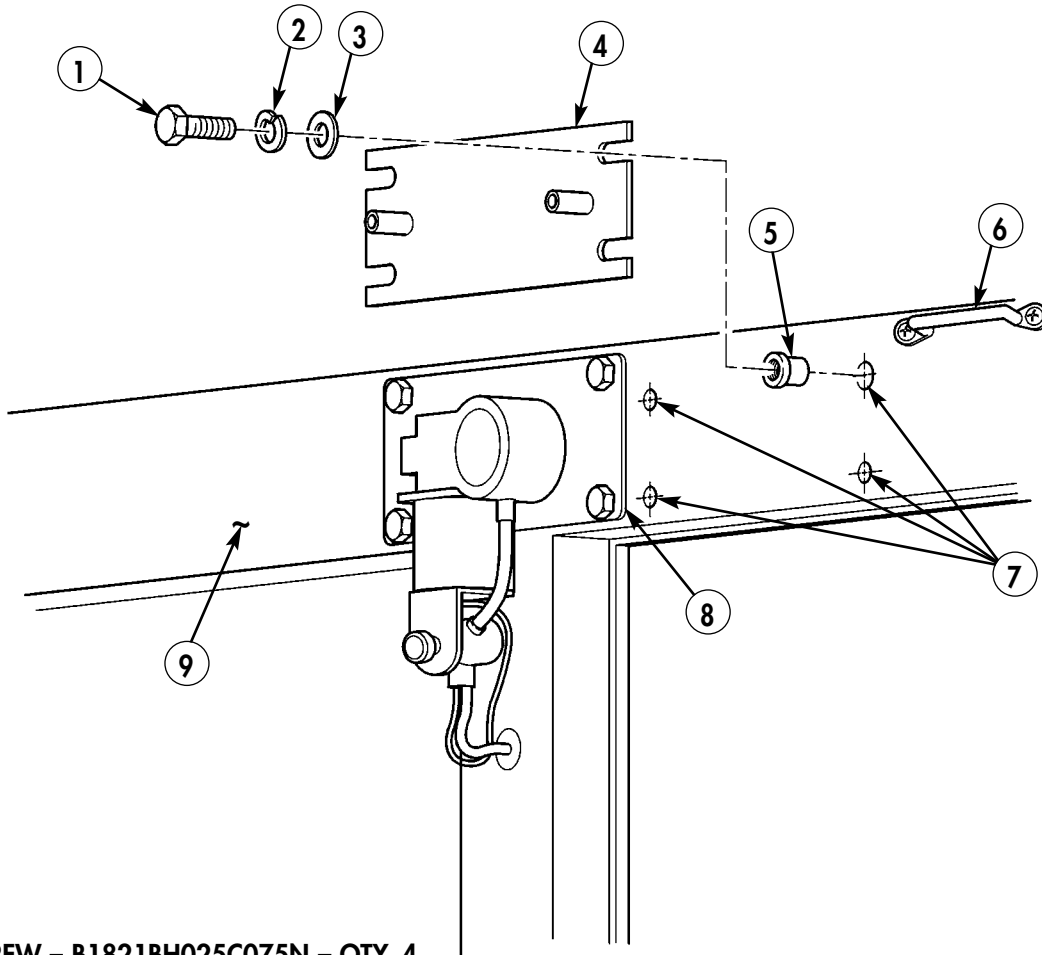
*Figure 5-86.*

**Section XXVII. LOUDSPEAKER INSTALLATION WITH MTS**

**NOTE**

- This procedure covers loudspeaker installation for vehicles with MTS installed.
- Perform steps 27-1 through 27-7 for vehicles with vertical wiper motor only.
- If sun visor kit has been installed, remove driver-side visor. (Refer to TM 9-2320-280-20.)
- Relocate all caution labels as necessary.

- 27-1.** Using right mounting plate (4) as template, center on right side of windshield frame (9) between wiper motor mounting plate (8) and footman loop (6). Mark and drill four 0.390-in. diameter holes (7) in windshield frame (9).
- 27-2.** Install four inserts (5) in windshield frame (9).
- 27-3.** Install mounting plate (4) on windshield frame (9) with four capscrews (1), lockwashers (2), and washers (3).



- 1. CAPSCREW - B1821BH025C075N - QTY. 4
- 2. LOCKWASHER -MS35338-44 - QTY. 4
- 3. WASHER - 2436161 - QTY. 4
- 4. MOUNTING PLATE - A3014550-1 - QTY. 1
- 5. INSERT - 12446871-2 - QTY. 4

Figure 5-87.

- 27-4. Using left mounting plate (4) as template, center on left side of windshield frame (9) between wiper mounting plate (8) and footman loop (11). Mark and drill four 0.390-in. diameter holes (10) in windshield frame (9).
- 27-5. Install four inserts (5) in windshield frame (9).
- 27-6. Install mounting plate (4) on windshield frame (9) with four capscrews (1), lockwashers (2), and washers (3).

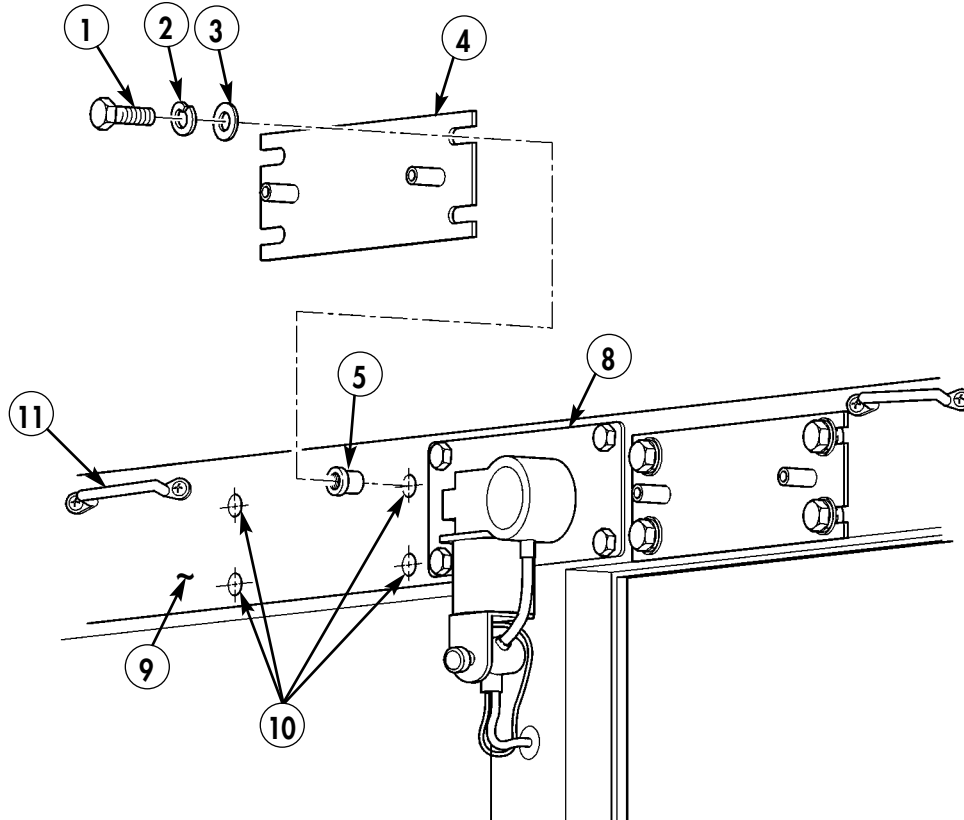
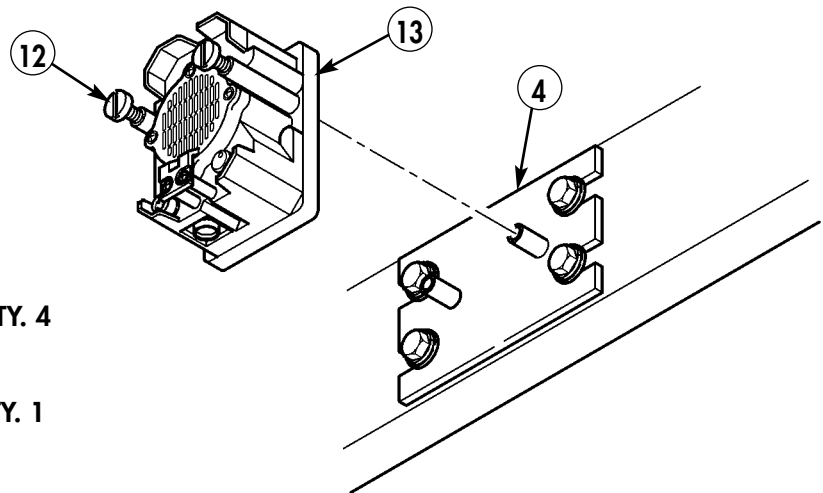


Figure 5-88.

- 27-7. Attach left loudspeaker (13) to left mounting plate (4) with two externally-relieved body screws (12). Repeat for opposite side.



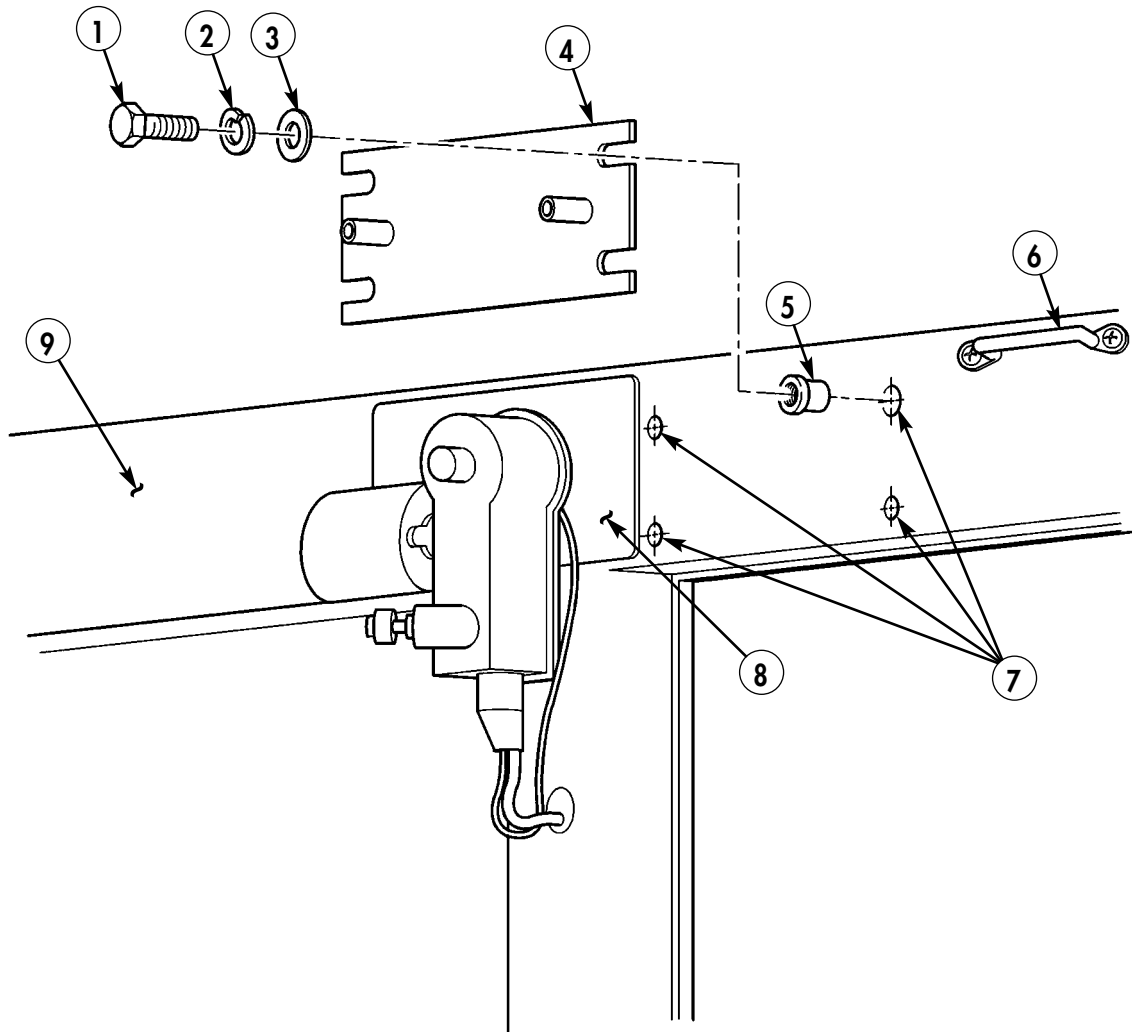
- 1. CAPSCREW - B1821BH025C075N - QTY. 4
- 2. LOCKWASHER -MS35338-44 - QTY. 4
- 3. WASHER - 2436161 - QTY. 4
- 4. MOUNTING PLATE - A3014550-1 - QTY. 1
- 5. INSERT - 12446871-2 - QTY. 4
- 13. LOUDSPEAKER -A3014065-1 -QTY. 2

Figure 5-89.

**NOTE**

Perform steps 27-8 through 27-14 for vehicles with horizontal wiper motor only.

- 27-8. Using right mounting plate (4) as template, center on right side of windshield frame (9) between wiper motor mounting plate (8) and footman loop (6). Mark and drill four 0.390-in. diameter holes (7) in windshield frame (9).
- 27-9. Install four inserts (5) in windshield frame (9).
- 27-10. Install mounting plate (4) on windshield frame (9) with four capscrews (1), lockwashers (2), and washers (3).



- 1. CAPSCREW - B1821BH025C075N - QTY. 4
- 2. LOCKWASHER -MS35338-44 - QTY. 4
- 3. WASHER - 2436161 - QTY. 4
- 4. MOUNTING PLATE - A3014550-1 - QTY. 1
- 5. INSERT - 12446871-2 - QTY. 4

Figure 5-90.

- 27-11. Using left mounting plate (4) as template, center on left side of windshield frame (9) between access hole (15) and footman loop (11). Mark and drill four 0.390-in. holes (14) in windshield frame (9).
- 27-12. Install four inserts (5) in windshield frame (9).
- 27-13. Install mounting plate (4) on windshield frame (9) with four capscrews (1), lockwashers (2), and washers (3).

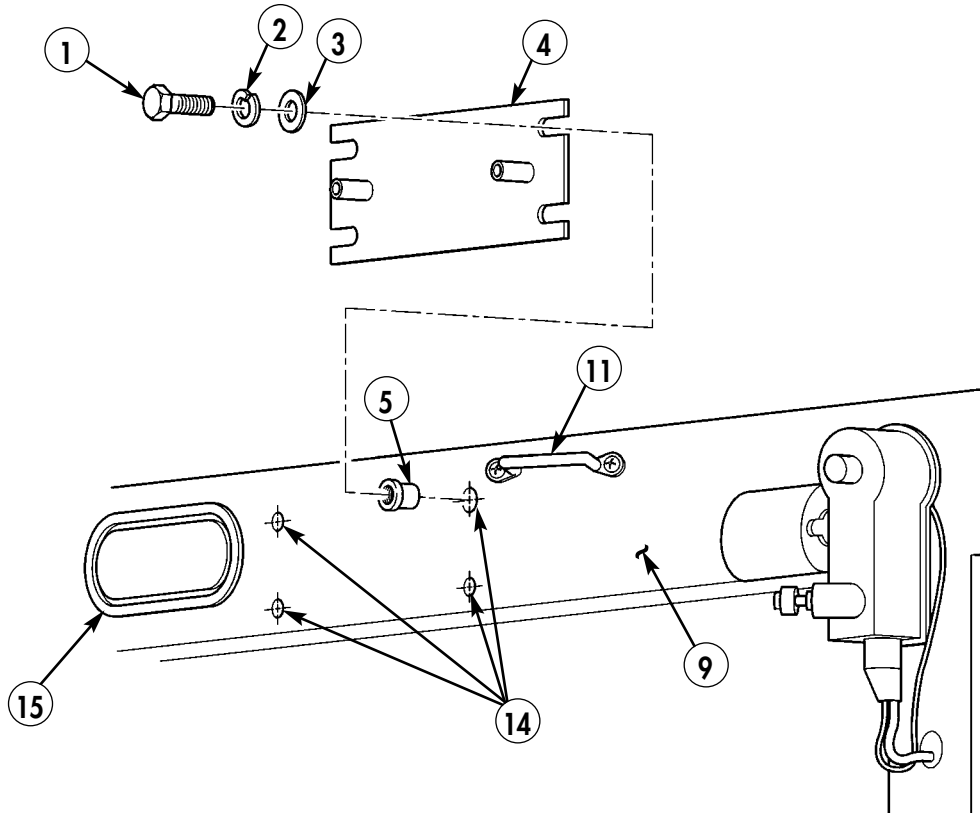
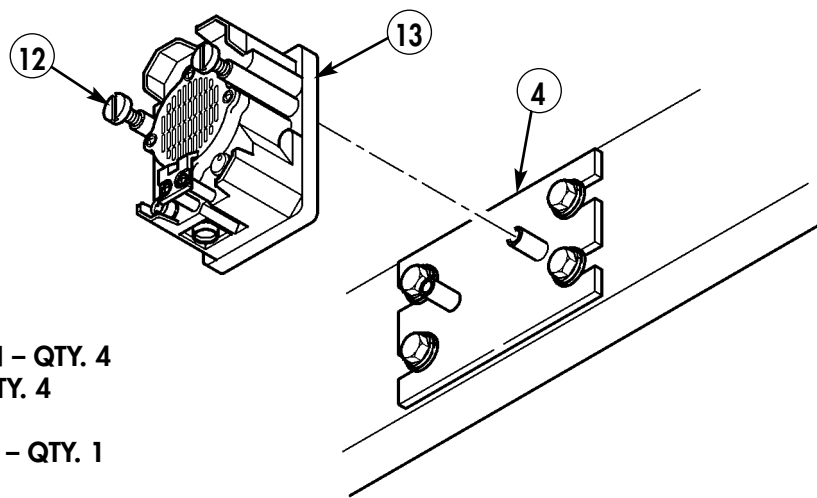


Figure 5-91.

- 27-14. Attach loudspeaker (13) to mounting plate (4) with two externally-relieved body screws (12). Repeat for opposite side.



- 1. CAPSCREW - B1821BH025C075N - QTY. 4
- 2. LOCKWASHER -MS35338-44 - QTY. 4
- 3. WASHER - 2436161 - QTY. 4
- 4. MOUNTING PLATE - A3014550-1 - QTY. 1
- 5. INSERT - 12446871-2 - QTY. 4
- 13. LOUDSPEAKER -A3014065-1 -QTY. 2

Figure 5-92.

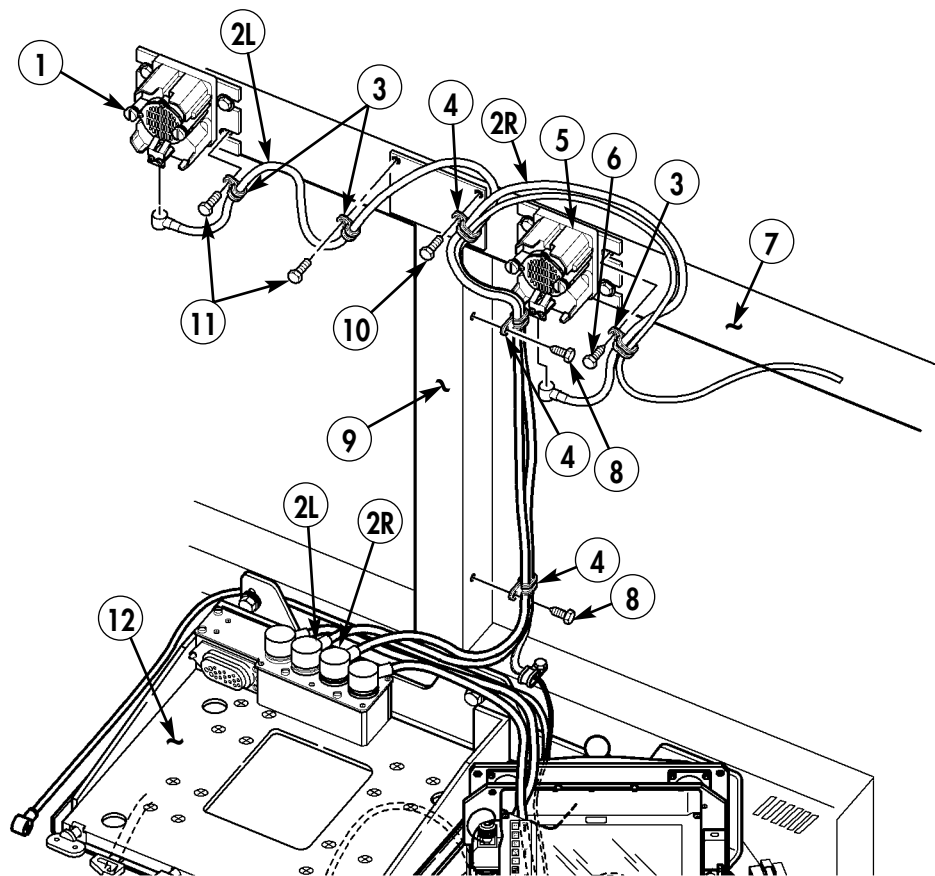


## Section XXVIII. LOUDSPEAKER CABLES INSTALLATION WITH MTS

### NOTE

- This procedure covers installation of loudspeaker cables with MTS installed.
- Routing for speaker cables with horizontal wiper motor is shown. Speaker cable routing with vertical wiper motor is similar. For vertical wiper motor speaker placement, refer to chapter 5, section XXVII.

- 28-1.** Route two loudspeaker cables (2L) and (2R) from mounting base (12) up along windshield center post (9) and secure with three loop clamps (4), two existing self-tapping screws (8), and existing screw (10).
- 28-2.** Route left-side loudspeaker cable (2L) along windshield frame (7) and secure to windshield frame (7) with two loop clamps (3) and existing screws (11). Connect speaker cable (2L) to left speaker (1).
- 28-3.** Route right-side loudspeaker cable (2R) around right speaker (5) and secure to windshield frame (7) with loop clamp (3) and existing screw (6). Connect right speaker cable (2R) to right speaker (5).



- 2L. LOUDSPEAKER CABLE – A3014038-3 – QTY. 1  
 2R. LOUDSPEAKER CABLE – A3014038-3 – QTY. 1  
 3. LOOP CLAMP – MS21333-102 – QTY. 3  
 4. LOOP CLAMP – MS21333-104 – QTY. 3

Figure 5-93.

### Section XXIX. PLGR ANTENNA AND CABLE INSTALLATION WITH MTS

#### NOTE

- Perform this procedure only when installing additional PLGR antenna when MTS is installed.
- Drilled holes on inside and outside of windshield frame should be aligned with each other to allow routing of PLGR cable through windshield frame.
- Relocate all caution labels as necessary.

**29-1.** Using PLGR antenna mount bracket as template, locate, mark, and drill two 0.50-in. holes (3) in outer windshield frame (1).

**29-2.** Locate, mark, and drill one 0.375-in. diameter hole (2) in outer windshield frame (1).

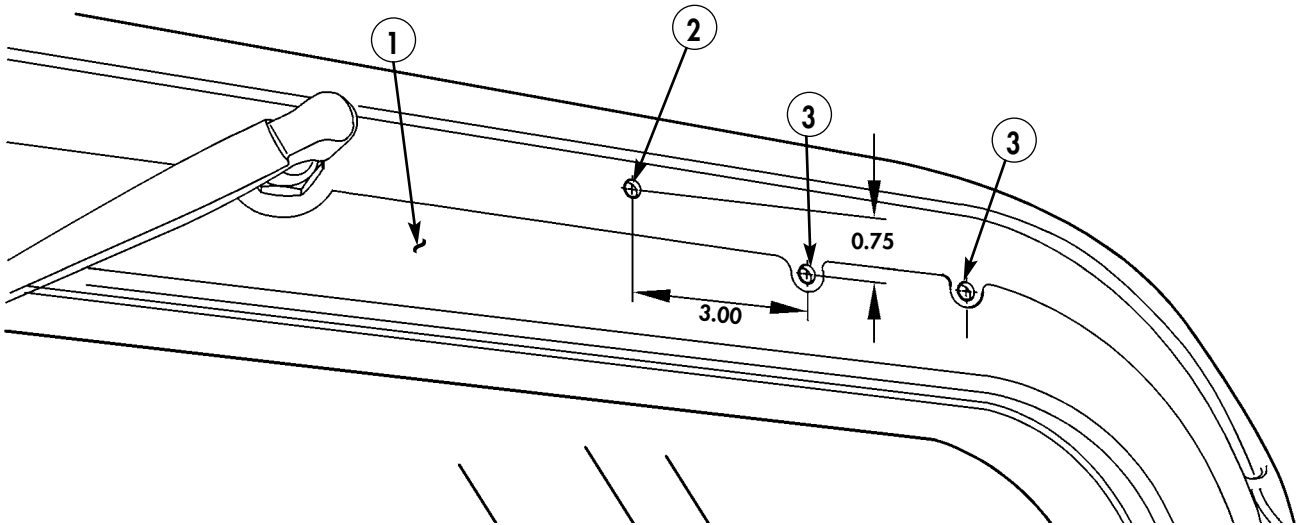


Figure 5-94.

**29-3.** Locate, mark, and drill one 0.375-in. diameter hole (4) in left-side inner windshield frame (5).

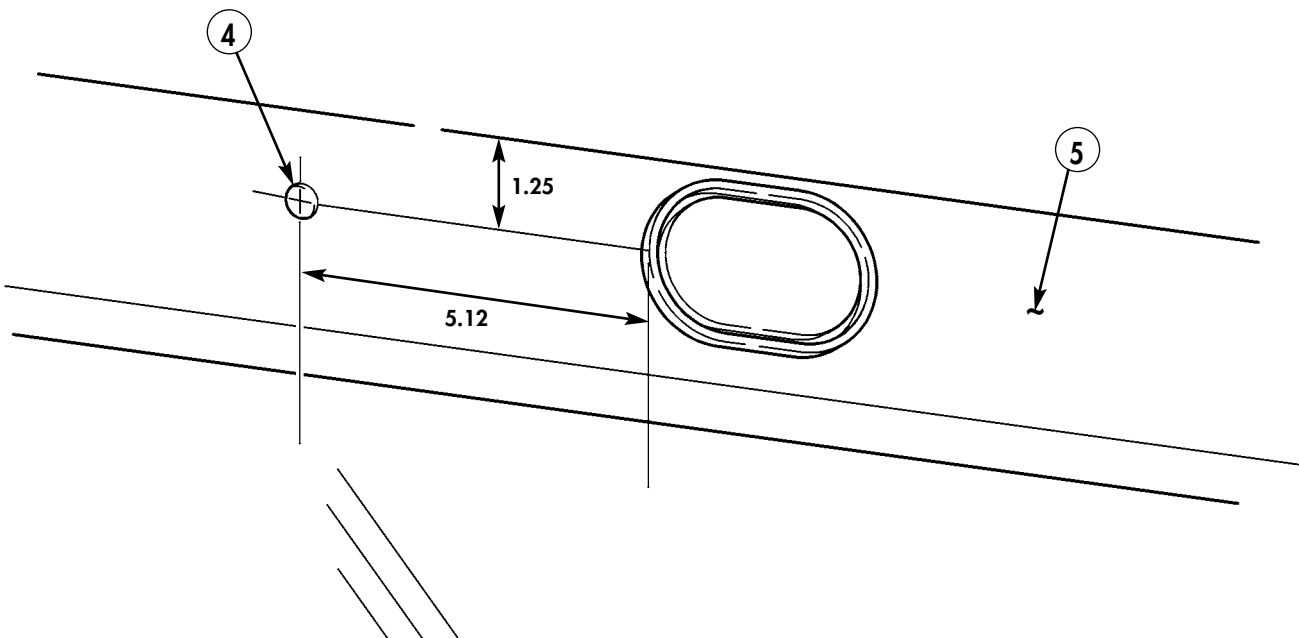
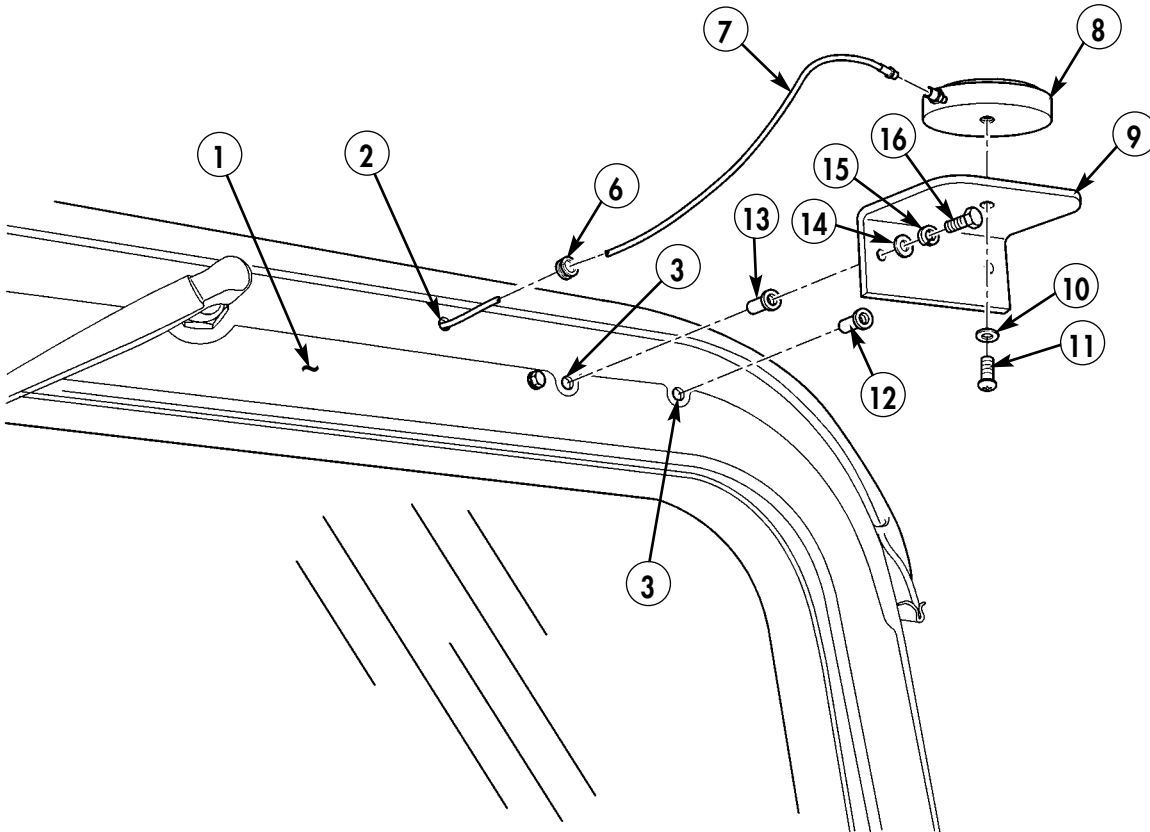


Figure 5-95.

- 29-4.** Pull PLGR antenna cable (7) through hole in left-side outer windshield frame (1). Split one side of grommet (6), place grommet (6) on cable (7), and insert grommet (6) in hole (2) in outer left-side windshield frame (1).
- 29-5.** Install wellnuts (12) and (13) in holes (3).
- 29-6.** Install PLGR antenna mount bracket (9) on outer left-side windshield frame (1) with two lockwashers (15), washers (14), and capscrews (16).
- 29-7.** Install PLGR antenna (8) on PLGR antenna mount bracket (9) with washer (10) and screw (11).
- 29-8.** Pull PLGR antenna cable (7) through hole (2) in left-side outer windshield frame (1) and grommet (6).
- 29-9.** Attach PLGR antenna cable (7) to PLGR antenna (8).



- 6. GROMMET – MS35489-143 – QTY. 1**  
**7. PLGR ANTENNA CABLE – 426-0141-050 – QTY. 1**  
**8. PLGR ANTENNA – AT575-030 – QTY. 1**  
**9. PLGR ANTENNA MOUNT BRACKET – 12480578 – QTY. 1**  
**10. WASHER – 9417373 – QTY. 1**  
**11. SCREW – 160035 – QTY. 1**  
**12. WELLNUT – 12339397-3 – QTY. 1**  
**13. WELLNUT – 12339397-6 – QTY. 1**  
**14. WASHER – 9414920 – QTY. 2**  
**15. LOCKWASHER – MS35338-44 – QTY. 2**  
**16. CAPSCREW – B1821BH025C125N – QTY. 2**

*Figure 5-96.*

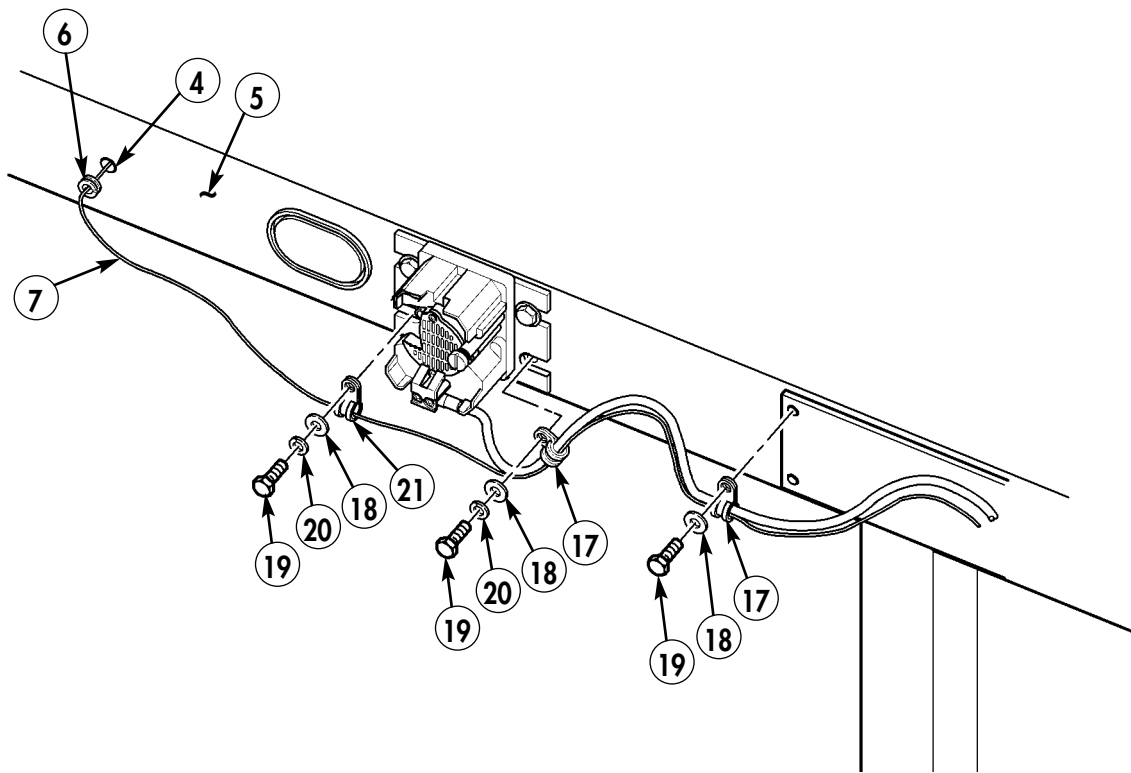
**NOTE**

- Perform steps 29-10 through 29-12 for vehicles with horizontal wiper motor only.
- Ensure all slack has been taken up outside after routing cable to inside of vehicle.

**29-10.** Route PLGR antenna cable (7) through hole (4) in left-side inner windshield frame (5).

**29-11.** Split one side of grommet (6), place grommet (6) on cable (7), and insert grommet (6) in hole (4) in left-side inner windshield frame (5).

**29-12.** Route cable (7) along left-side inner windshield frame (5) and secure with loop clamp (21) and existing clamps (17), screws (19), washers (18), and lockwashers (20).



- 6. GROMMET – MS35489-143 – QTY. 1
- 21. LOOP CLAMP – MS21333-96 – QTY. 1

*Figure 5-97.*

**NOTE**

Perform steps 29-13 through 29-18 for vehicles with vertical wiper motor only.

**29-13.** Route PLGR antenna cable (7) through hole (4) in left-side inner windshield frame (5).

**29-14.** Split one side of grommet (6), place grommet (6) on cable (7), and insert grommet (6) in hole (4) in left-side windshield frame (5).

**NOTE**

Perform steps 29-15 and 29-16 for vehicles without sun visor kit installed.

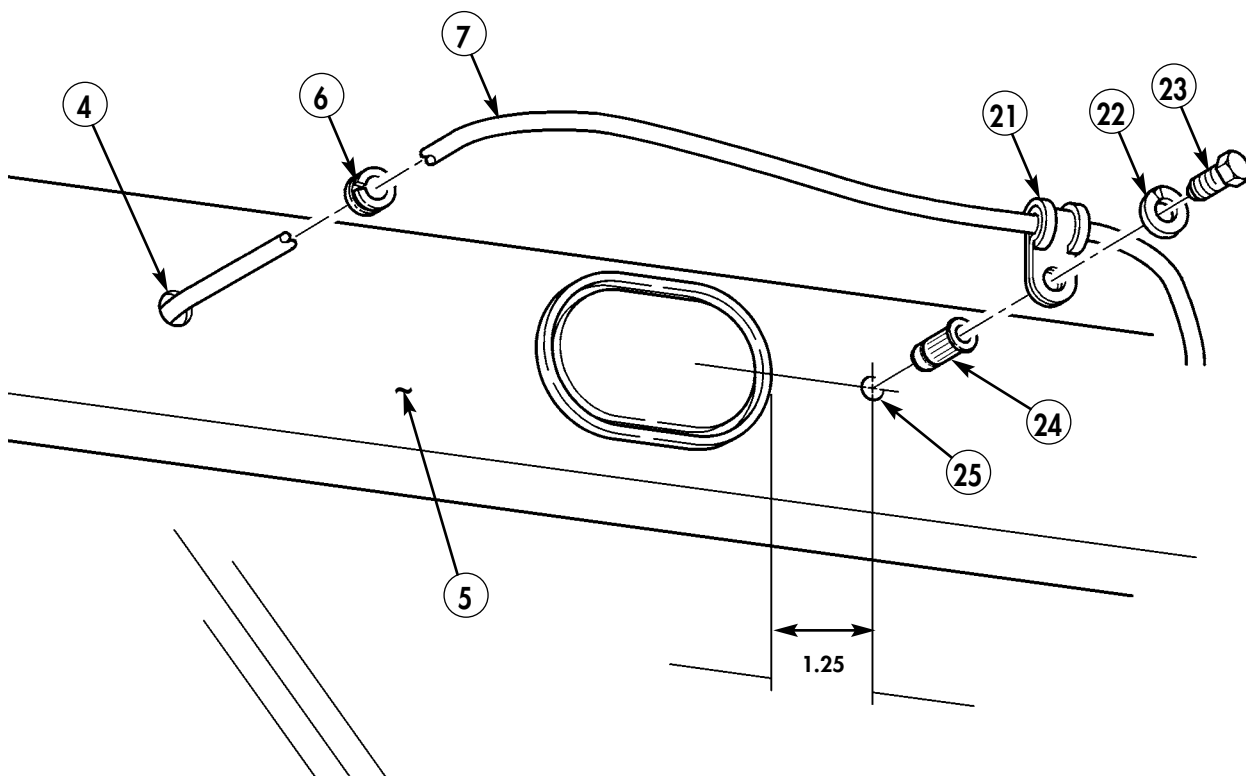
**29-15.** Locate, mark, and drill one 0.390-in. hole (25) in left-side windshield frame (5). Install insert (24) in hole (25).

**29-16.** Route cable (7) along left-side windshield frame (5) and secure with loop clamp (21), capscrew (23), and lockwasher (22).

**NOTE**

- Perform step 29-17 for vehicles with sun visor kit installed.
- Antenna cable is secured with topmost sun visor bracket screw.

**29-17.** Route cable (7) along left-side windshield frame (5) and secure with loop clamp (21), existing capscrew (23), and lockwasher (22).



- 6. GROMMET – MS35489-143 – QTY. 1**  
**21. LOOP CLAMP – MS21333-96 – QTY. 1**  
**22. LOCKWASHER – MS35338-44 – QTY. 1**  
**23. CAPSCREW – B1821BH025C100N – QTY. 1**  
**24. INSERT – 12446871-2 – QTY. 1**

Figure 5-98.

- 29-18. Route cable (7) along left-side inner windshield frame (5) and secure with existing clamp (28), screw (26), and washer (27).

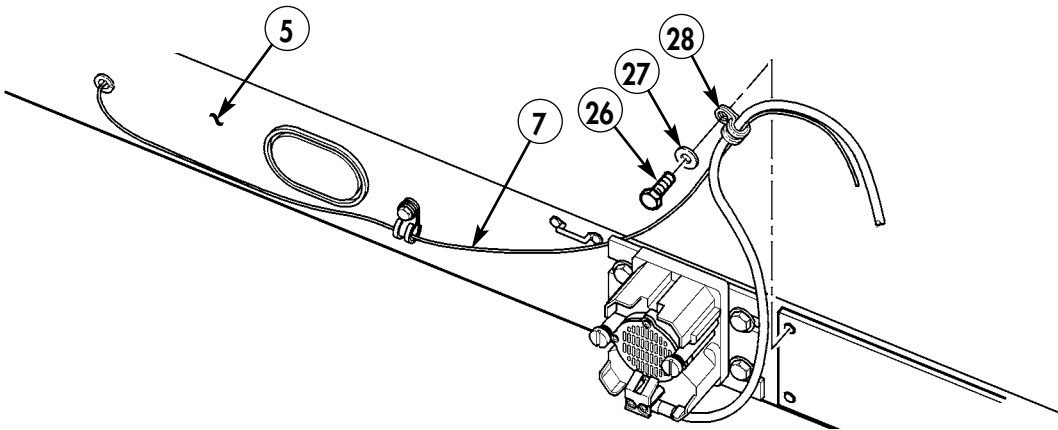


Figure 5-99.

- 29-19. Route cable (7) down along windshield center post (32) and secure with existing loop clamps (31), screws (29), and washer (30).

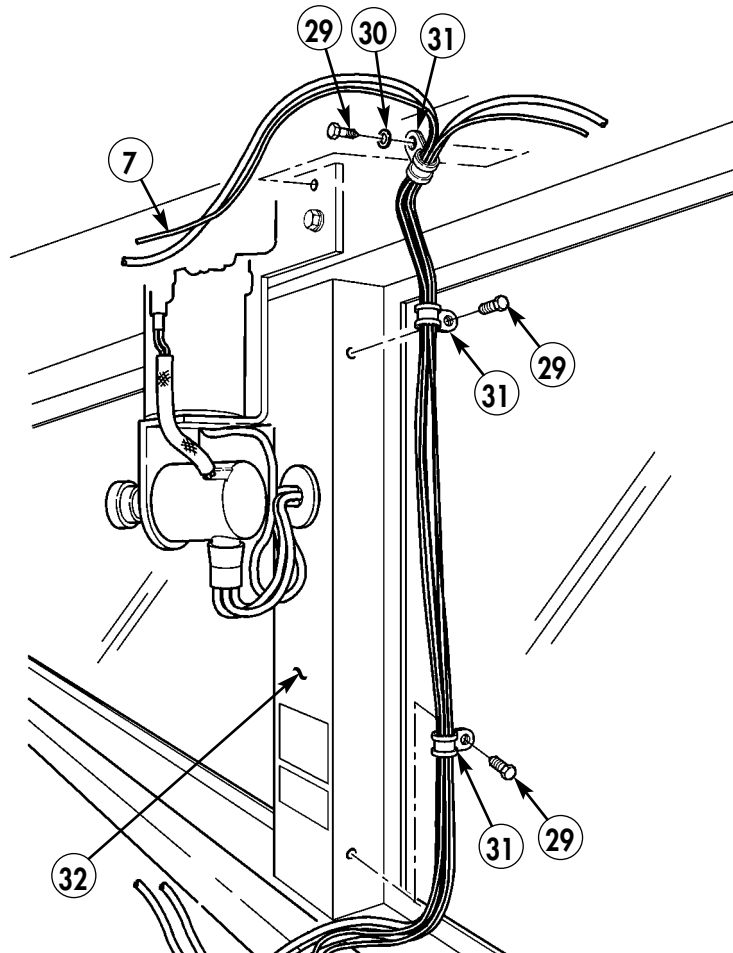


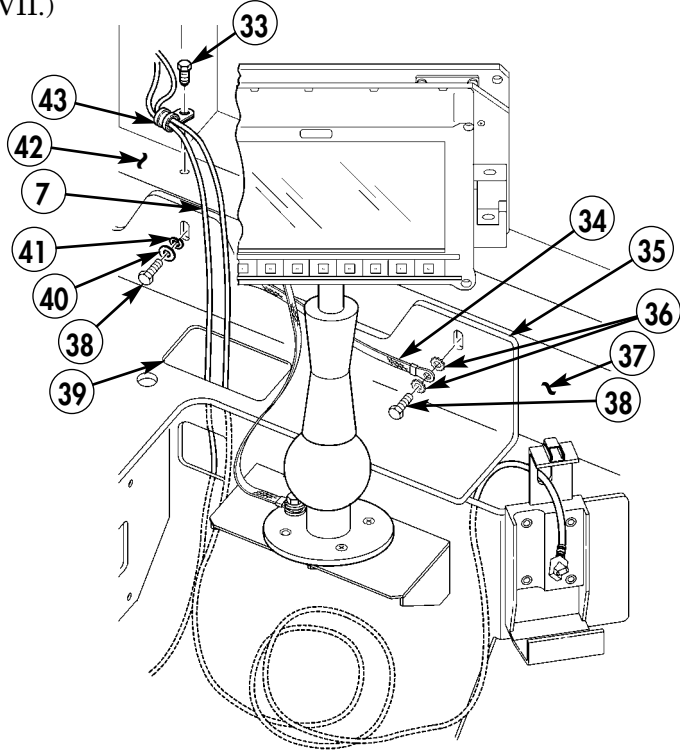
Figure 5-100.

- 29-20.** Route antenna cable (7) through existing loop clamp (43) on lower windshield frame (42) and through center access hole (39) of integrated rack (35). Secure antenna cable (7) with existing self-tapping screw (33).

**NOTE**

Integrated rack will be secured to dash at this time.

- 29-21.** Secure integrated rack (35) to dash (37) with three capscrews (38), two washers (40), lockwashers (41) and (36), and ground strap (34). Tighten lower mounting screws on integrated rack (35). (Refer to chapter 5, section VII.)



- 36.** LOCKWASHER – MS45904-68 – QTY. 2  
**38.** CAPSCREW – B1821BH025C100N – QTY. 3  
**40.** WASHER – MS27183-10 – QTY. 2  
**41.** LOCKWASHER – MS35338-44 – QTY. 2

Figure 5-101.

- 29-22.** Route antenna cable (7) from under integrated rack (35) to PLGR bracket (44). Coil excess cable and store under integrated rack (35).

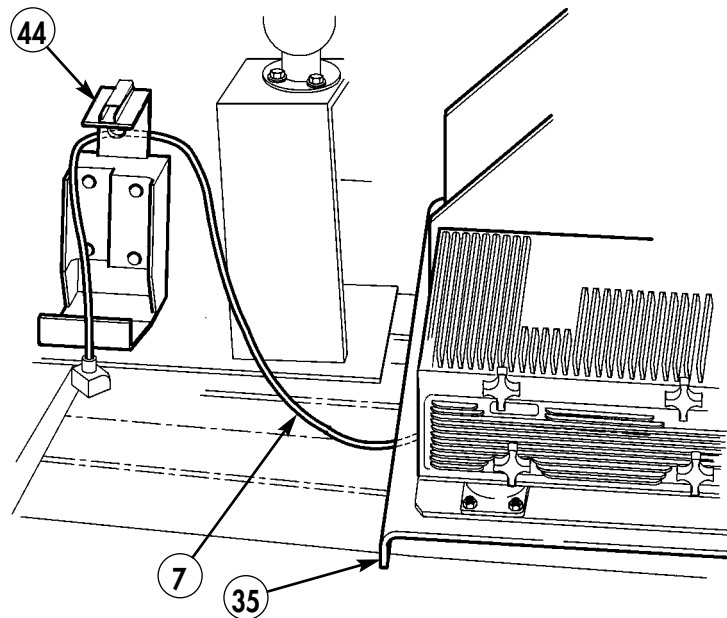


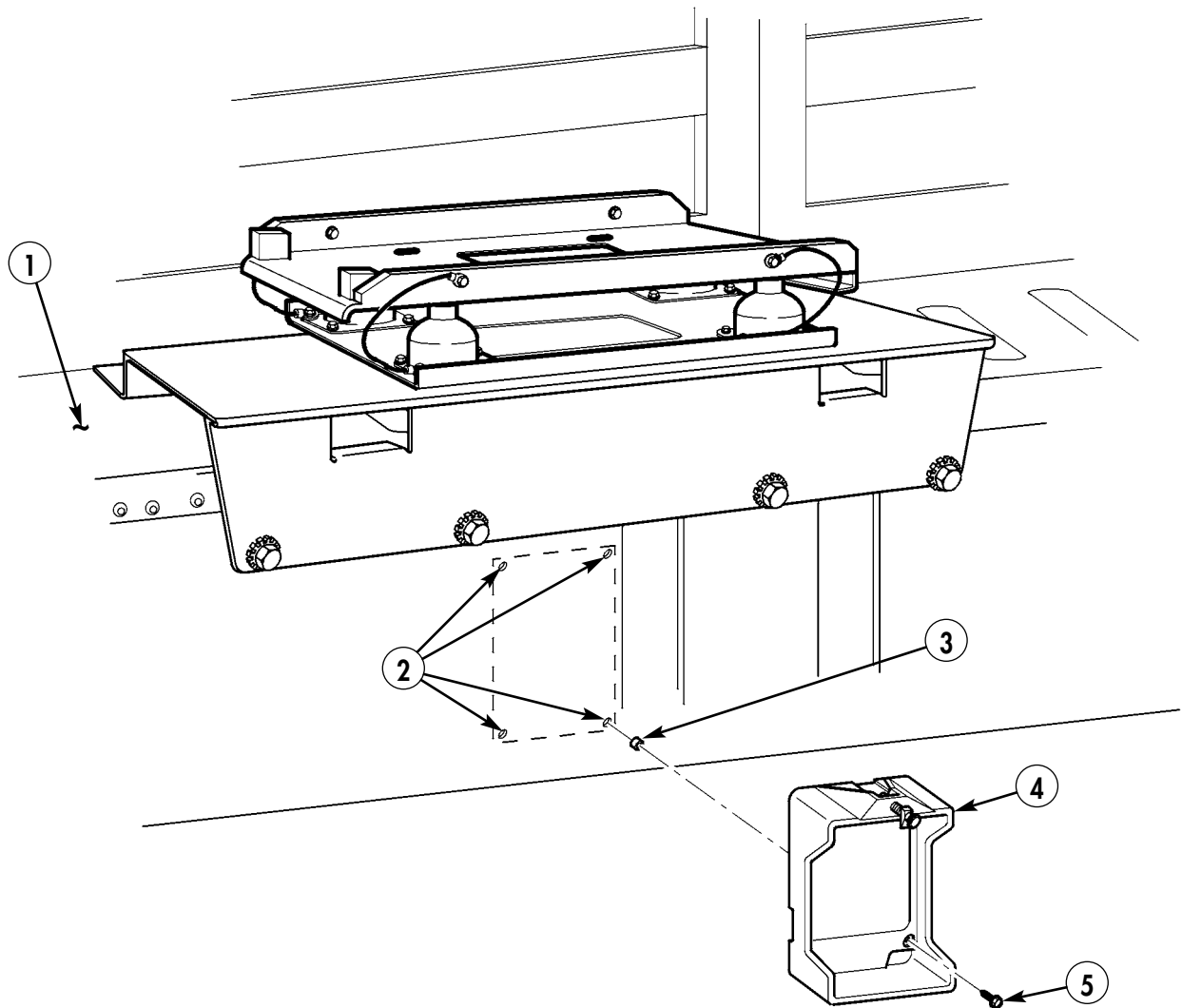
Figure 5-102.

### Section XXX. EPLRS URO (USER READOUT) INSTALLATION WITH MTS

#### NOTE

This procedure is for URO installation with MTS installed.

- 30-1. Locate, mark, and drill four 0.147-in. holes (2) in left rear wheelhouse (1).
- 30-2. Install URO (User Readout) bracket (4) on left rear wheelhouse (1) with four self-tapping screws (5) and spacers (3).



- 3. SPACER – 92510A318 – QTY. 4
- 4. URO (USER READOUT) BRACKET – A3006206 – QTY. 1
- 5. SELF-TAPPING SCREW – 9426634 – QTY. 4

Figure 5-103.



**Section XXXI. DVE HOOD CABLE GUIDE INSTALLATION**

**NOTE**

- Cover engine compartment prior to performing DVE installation to keep metal and fiberglass filings out of engine compartment.
- Once DVE installation is complete, Pan and Tilt Module (PTM) mount may require adjustment to obtain optimum DVE elevation-viewing angle. This adjustment is made by adding or removing washers from PTM mounting bolt between HMMWV windshields.

- 31-1.** Remove six bolts (3), twelve washers (4), six nuts (7), and two hood brackets (6) from hood (1).  
**31-2.** Remove bracket (9) from top side of hood (1).  
**31-3.** Drill out five rivets (8) from hood (1), rubber hood seal (5), and retaining strip (2).  
**31-4.** Remove retaining strip (2) from hood (1).  
**31-5.** Cut retaining strip (2). Discard cut portion of retaining strip (2).  
**31-6.** Cut rubber hood seal (5). Discard cut portion of rubber hood seal (5).

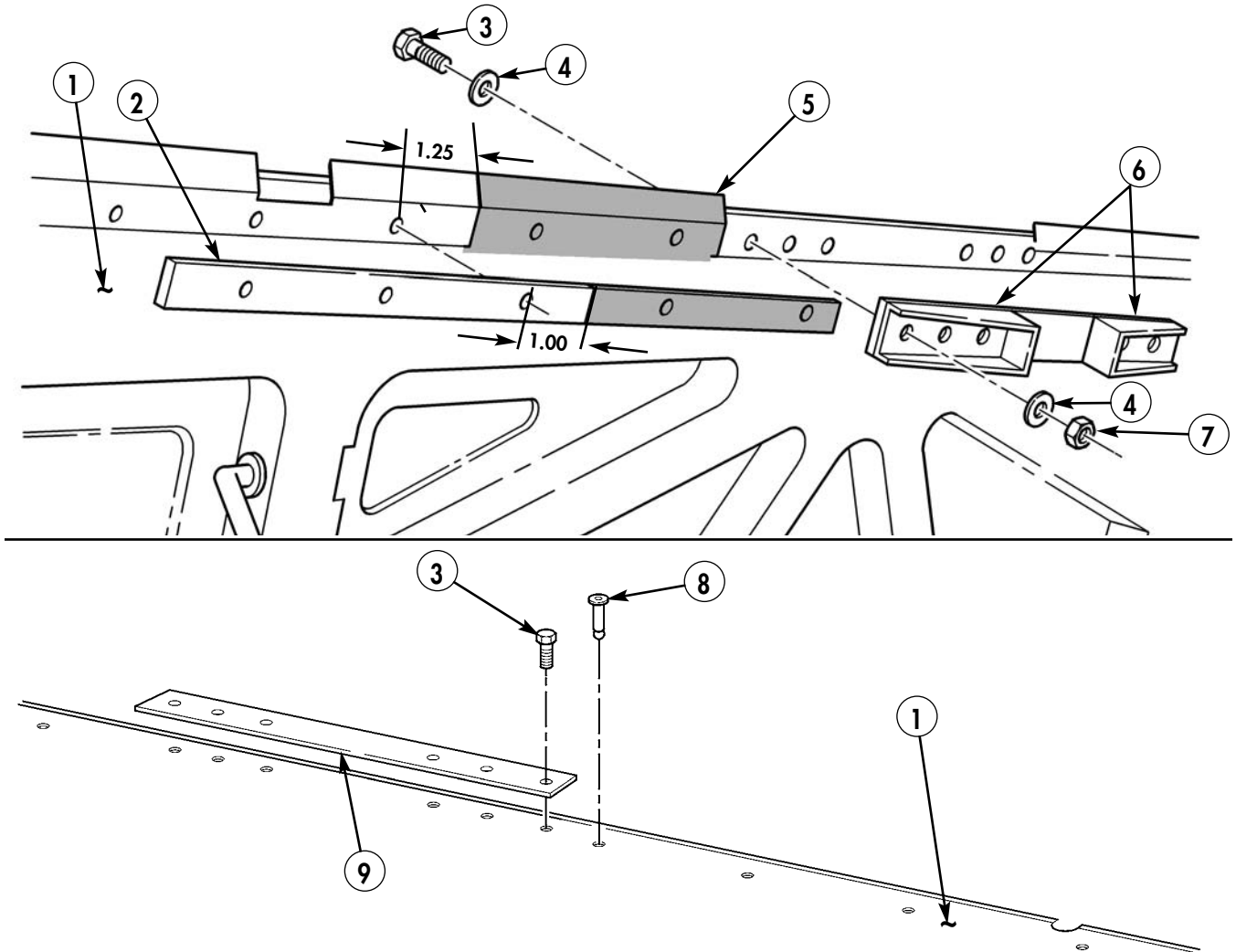


Figure 5-104.

**CAUTION**

- Use caution to avoid cutting notch in hood too large. If cutout notch is too large, the hood cable guide cannot be correctly installed.
- Remove and retain plug for reinstallation if cutting of hood will damage plug.

**NOTE**

- Use scrap pieces of 2x4 boards to prop open hood.

**31-7.** Locate, mark, and cut area (10) on hood (1).

**31-8.** Reinstall two hood brackets (6) and bracket (9) on top side of hood (1) with six bolts (3), twelve washers (4), and six nuts (7).

**31-9.** Reinstall retaining strip (2) with three rivets (8).

**NOTE**

File hood and hood cable guide as required to ensure a snug fit.

**31-10.** Ensure hood cable guide (11) fits securely in cut area (10). Remove cable guide (11).

**NOTE**

Heat lamp or heat gun may be used to speed curing time for adhesive.

**31-11.** Apply thin coat of adhesive to hood cable guide (11) and matching area on hood (1), and install cable guide (11) on hood (1).

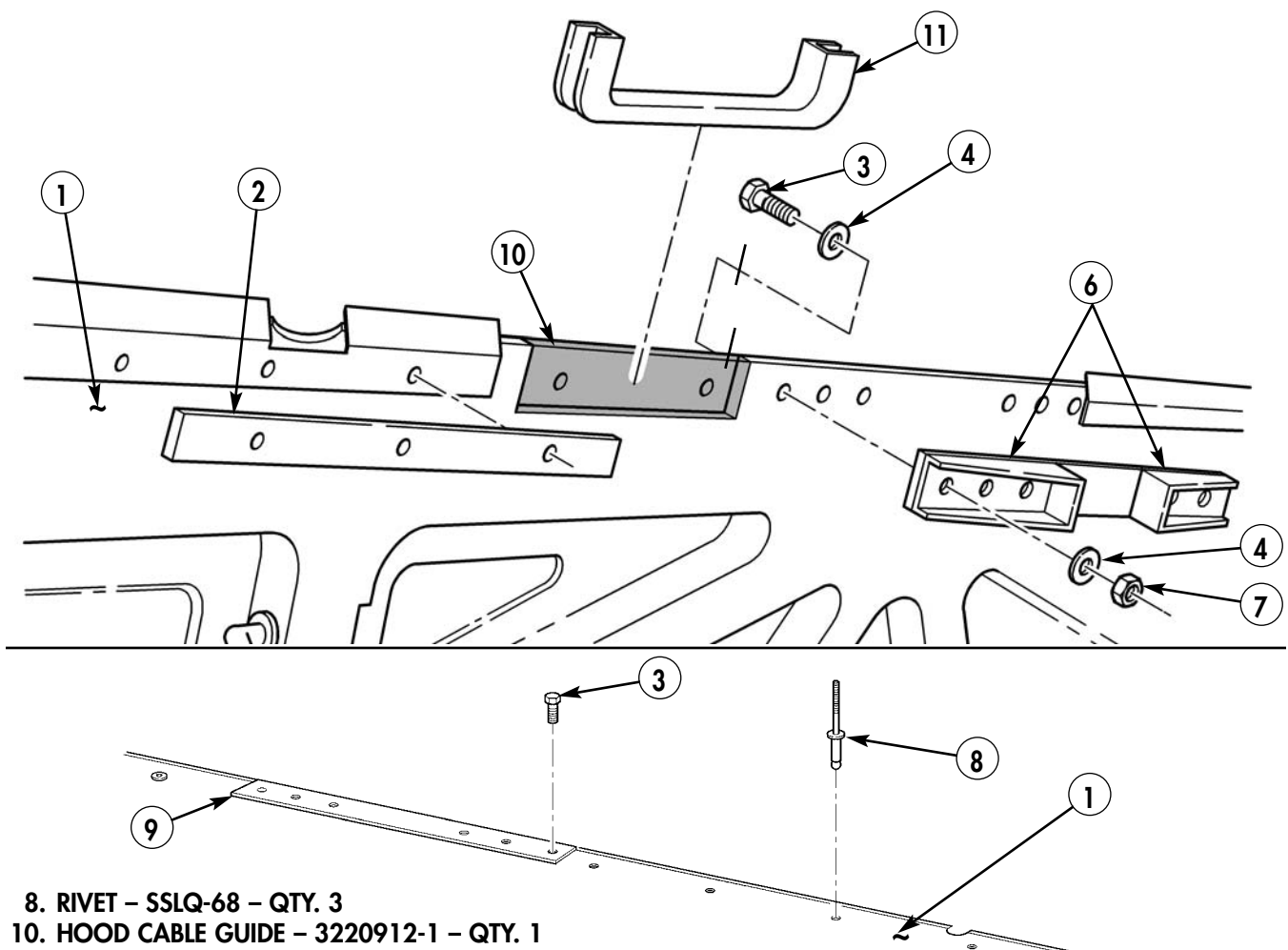
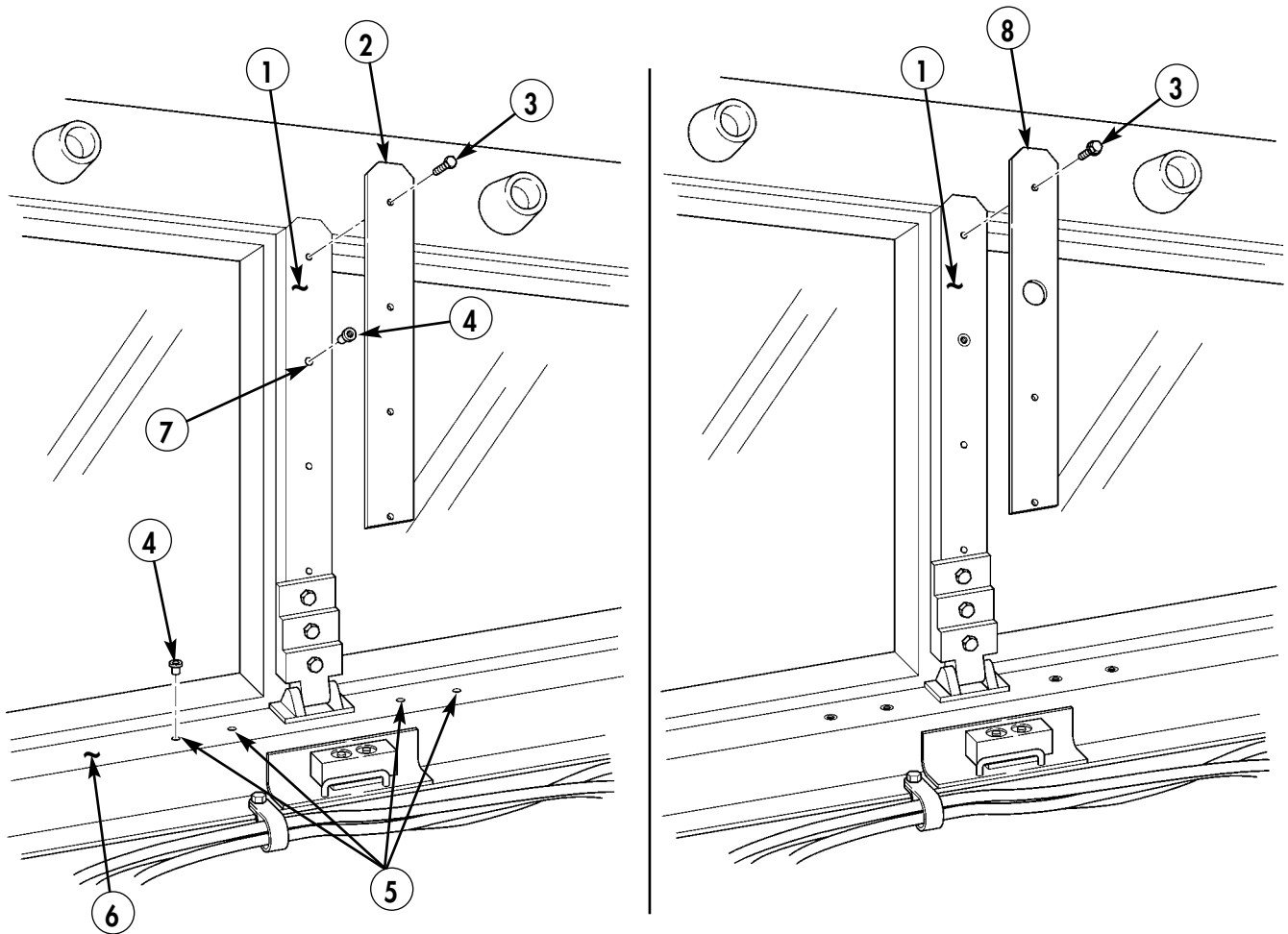


Figure 5-105.

**Section XXXII. DVE PAN AND TILT MODULE (PTM) MOUNT ASSEMBLY PREPARATION AND PILLAR MOUNT INSTALLATION**

- 32-1.** Remove four existing screws (3) and existing center windshield retainer (2) from center windshield frame (1). Retain three screws (3).
- 32-2.** Using PTM mount assembly as template, locate, mark, and drill four 0.391-in. holes (5) on A-frame pillar flange (6).
- 32-3.** Enlarge hole (7) to 0.391 in. on center windshield frame (1).
- 32-4.** Install one rivet nut (4) on center windshield frame (1) and four rivet nuts (4) on A-frame pillar flange (6).
- 32-5.** Install PTM A-pillar mount (8) on center windshield frame (1) with three existing screws (3).



- 4. RIVET NUT - 3221003-14 - QTY. 5**
- 8. PTM A-PILLAR MOUNT- 3221002-1 - QTY. 1**

*Figure 5-106.*

**Section XXXIII. DVE A-FRAME CABLE GUIDE AND PAN AND TILT MODULE (PTM) MOUNT ASSEMBLY INSTALLATION**

- 33-1.** Remove two screws (2), nuts (4), and clamps (1) from A-frame pillar flange (5). Retain hardware.
- 33-2.** Locate and mark cutout area (3) on A-frame pillar flange (5).
- 33-3.** Cut out area (3) of A-frame pillar flange (5). Use fine-mill file or crocus cloth to remove all burrs and sharp edges.

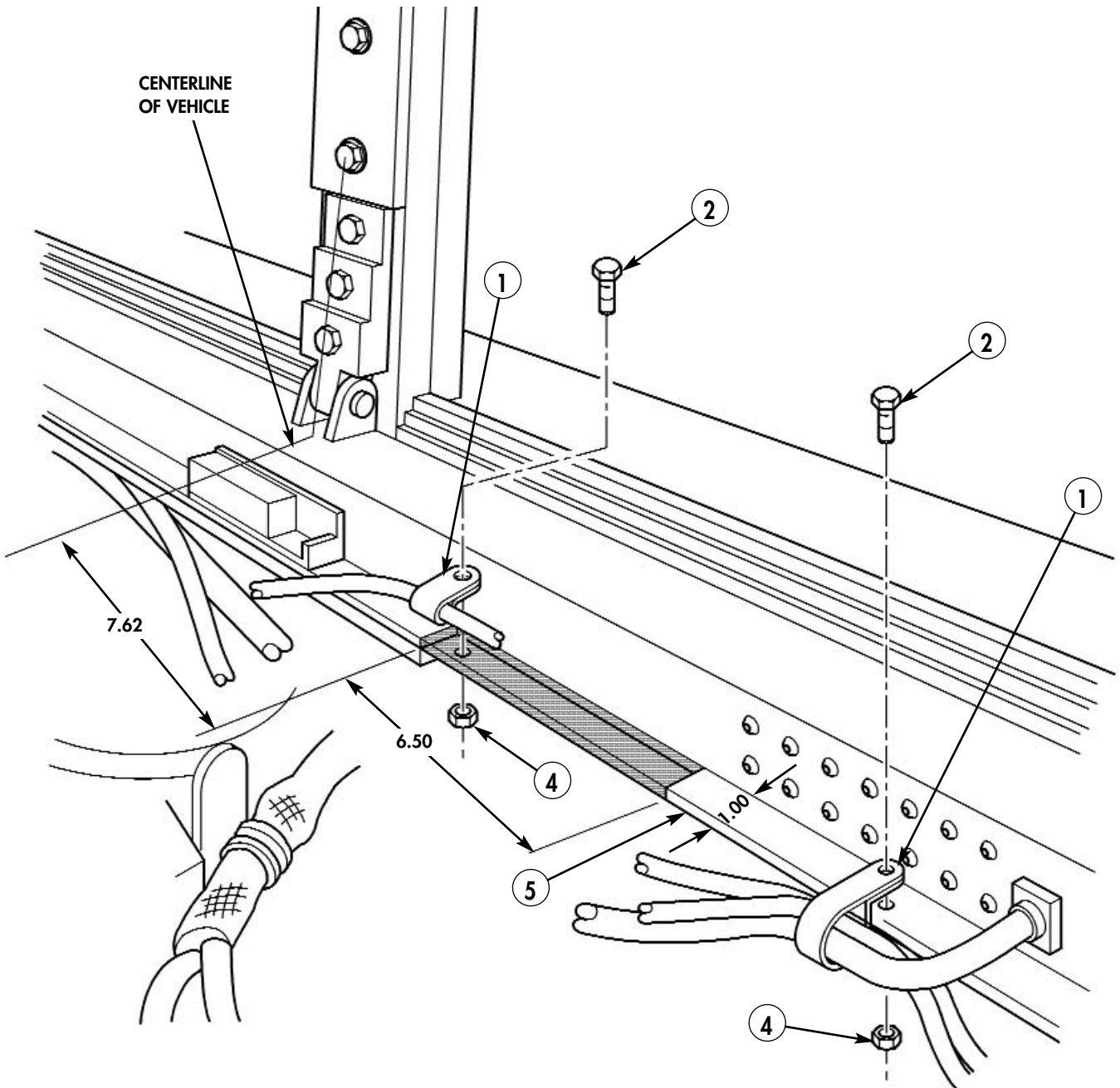


Figure 5-107.

- 33-4. Using A-frame cable guide (13) as template, mark four mounting hole locations (11), (8), and (6).
- 33-5. Drill two 0.391-in. holes (8) on vertical wall (7).
- 33-6. Drill two 0.277-in. holes (6) and (11) on A-frame pillar flange (5).
- 33-7. Install two rivet nuts (12) in holes (8) on vertical wall (7).
- 33-8. Apply thin coat of adhesive to A-frame cable guide (13) and matching areas on A-frame pillar flange (5) and vertical wall (7).
- 33-9. Install A-frame cable guide (13) on A-frame pillar flange (5) and vertical wall (7) with four capscrews (9), six washers (10), and two locknuts (14).
- 33-10. Locate, mark, and drill 0.221-in. hole (15) on center of A-frame pillar flange (5).
- 33-11. Reinstall two cable clamps (1) on A-frame pillar flange (5) with existing screws (2) and nuts (4).

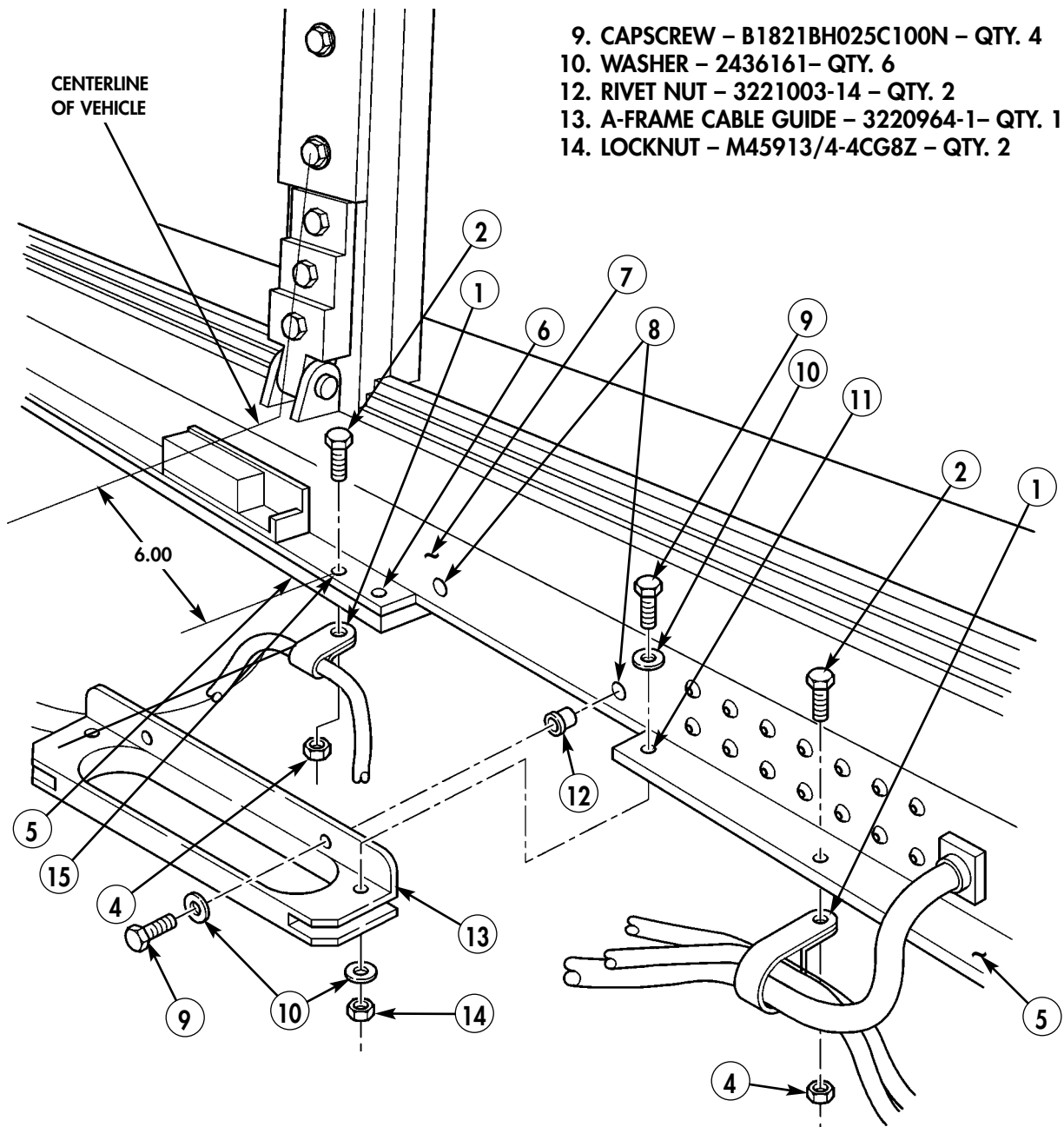
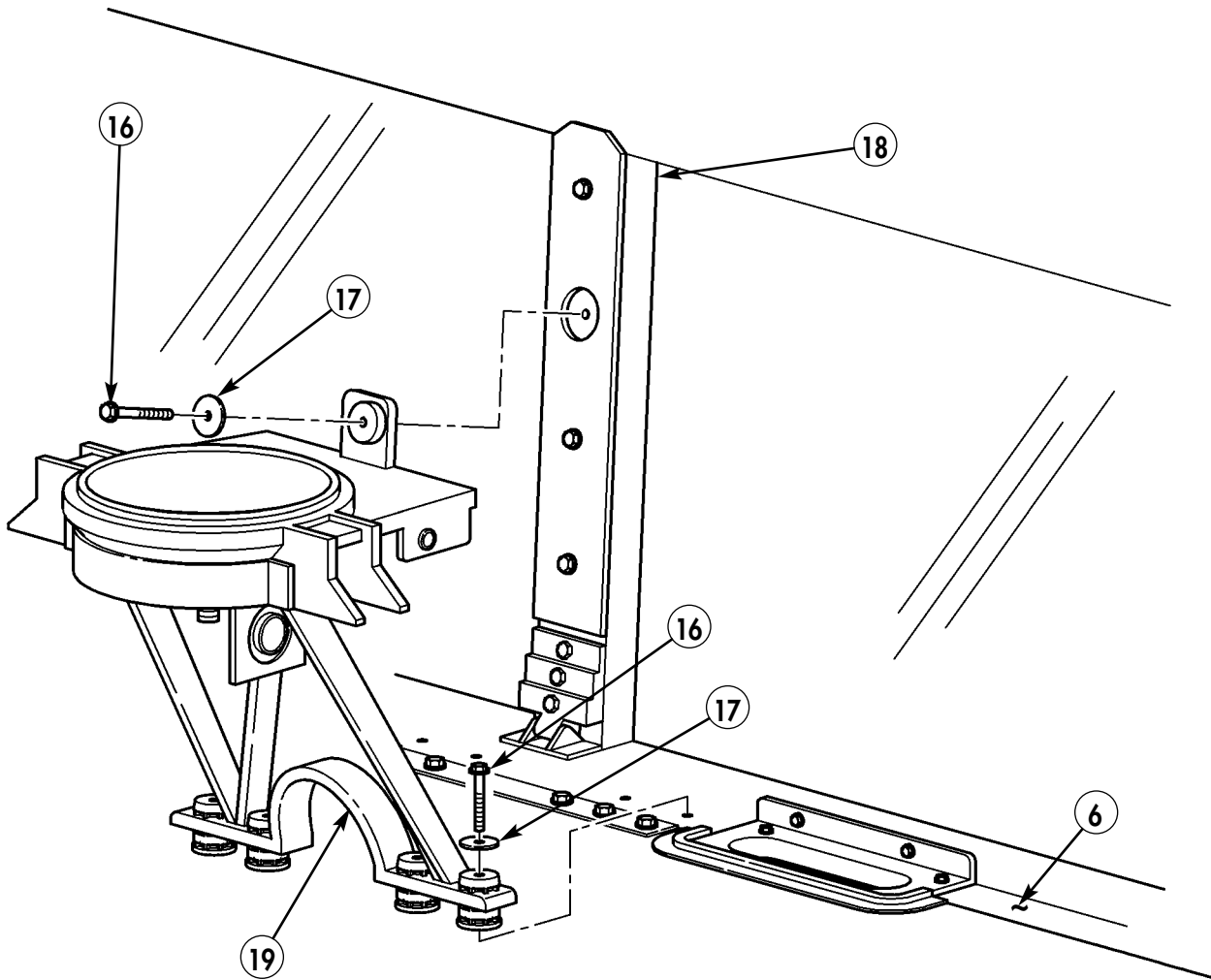


Figure 5-108.

**33-12.** Install PTM mount assembly (19) on A-frame pillar flange (6) with four capscrews (16) and washers (17), and on center windshield frame (18) with capscrew (16) and washer (17).

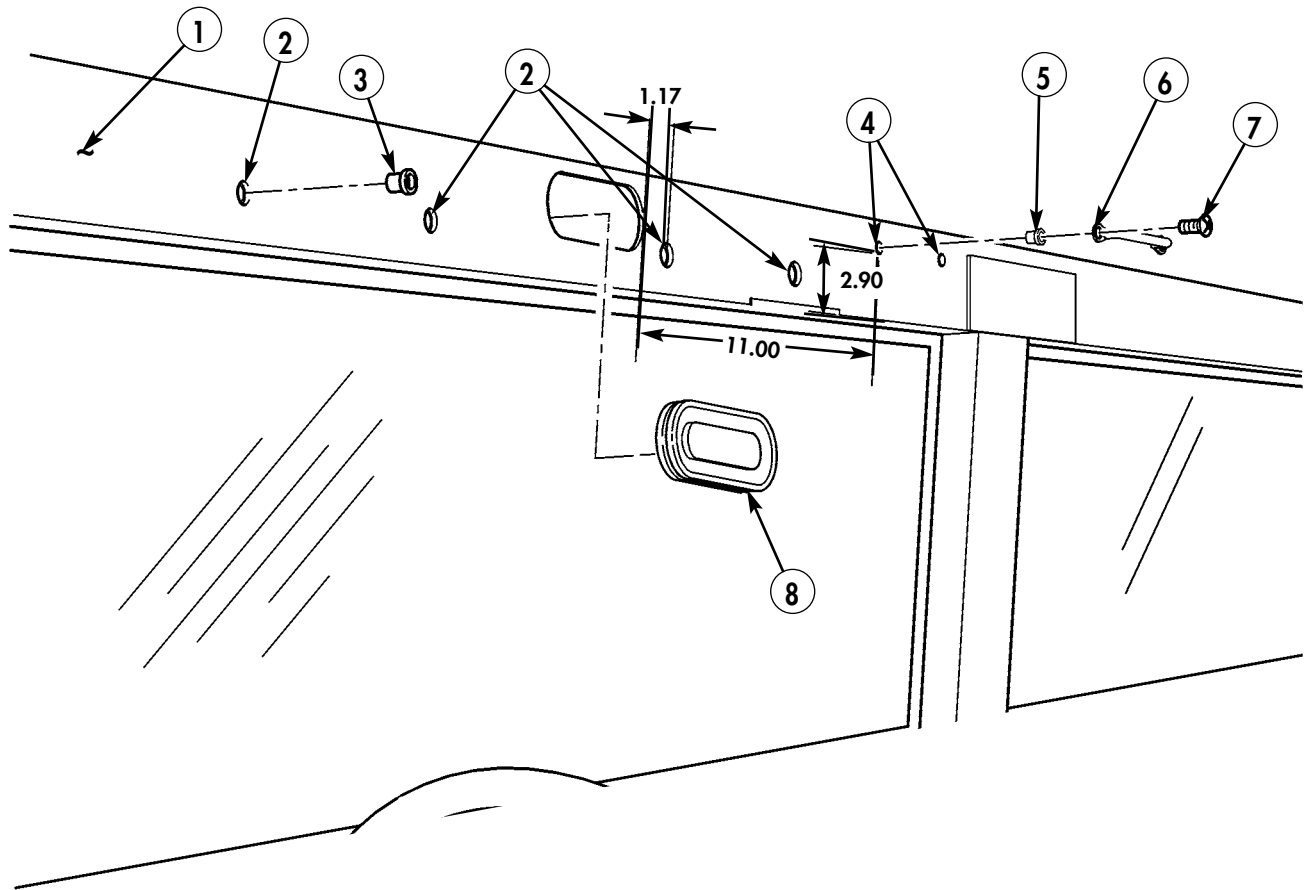


- 16. CAPSCREW - B1821BH025C300N - QTY. 5
- 17. WASHER - 3221003-9 - QTY. 5
- 19. PTM MOUNT ASSEMBLY - 3220952-1 - QTY. 1

*Figure 5-109.*

**Section XXXIV. DVE DISPLAY CONTROL MODULE (DCM) ROOF MOUNT INSTALLATION**

- 34-1. Remove driver's sun visor, if installed. (Refer to TM 9-2320-280-20.)
- 34-2. Remove access cover (8).
- 34-3. Remove left-side footman loop (6) from original location on left side of windshield frame (1). (Refer to TM 9-2320-280-20.) Retain screws.
- 34-4. Using footman loop (6) as template, locate, mark, and drill two 0.296-in. holes (4) in left side of windshield frame (1).
- 34-5. Install two rivet nuts (5) in holes (4) in windshield frame (1).
- 34-6. Reinstall footman loop (6) in new location in windshield frame (1) with existing screws (7).
- 34-7. Using DCM roof mount assembly as template, locate, mark, and drill four 0.391-in. holes (2) in windshield frame (1).
- 34-8. Install four rivet nuts (3) in holes (2) in windshield frame (1).
- 34-9. Reinstall access cover (8).



- 3. RIVET NUT – 3221003-14 – QTY. 4
- 5. RIVET NUT – 3221003-20 – QTY. 2

Figure 5-110.

**NOTE**

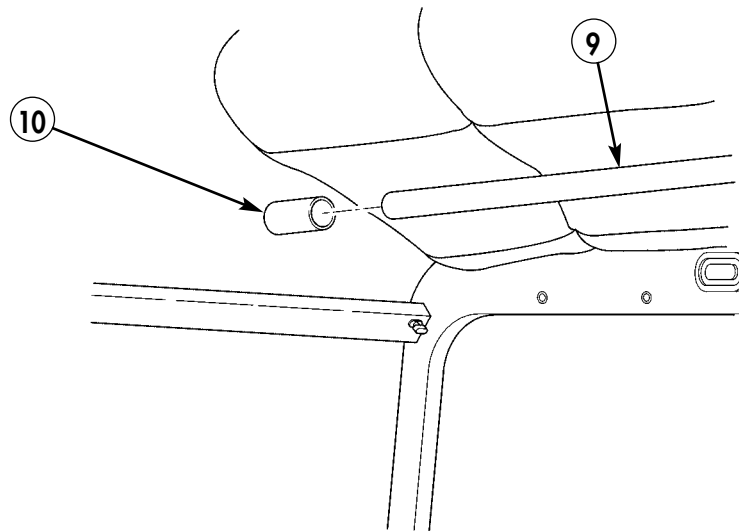
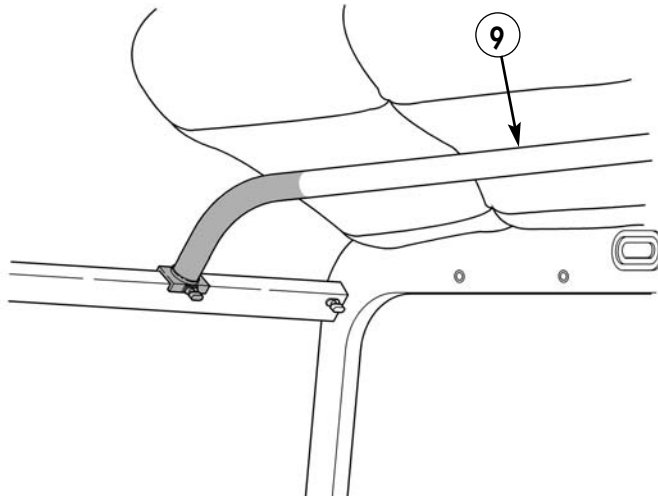
Loosen soft-top fasteners to allow soft top to be folded back on the left side for access to support bow and top of DCM mount.

- 34-10.** Remove two screws securing left side of soft-top support bow (9). (Refer to TM 9-2320-280-10.)

**NOTE**

Cut where support bow begins to bend down.

- 34-11.** Cut soft-top support bow (9) as shown and discard.  
**34-12.** Slide bow closeout tube (10) onto end of soft-top support bow (9).

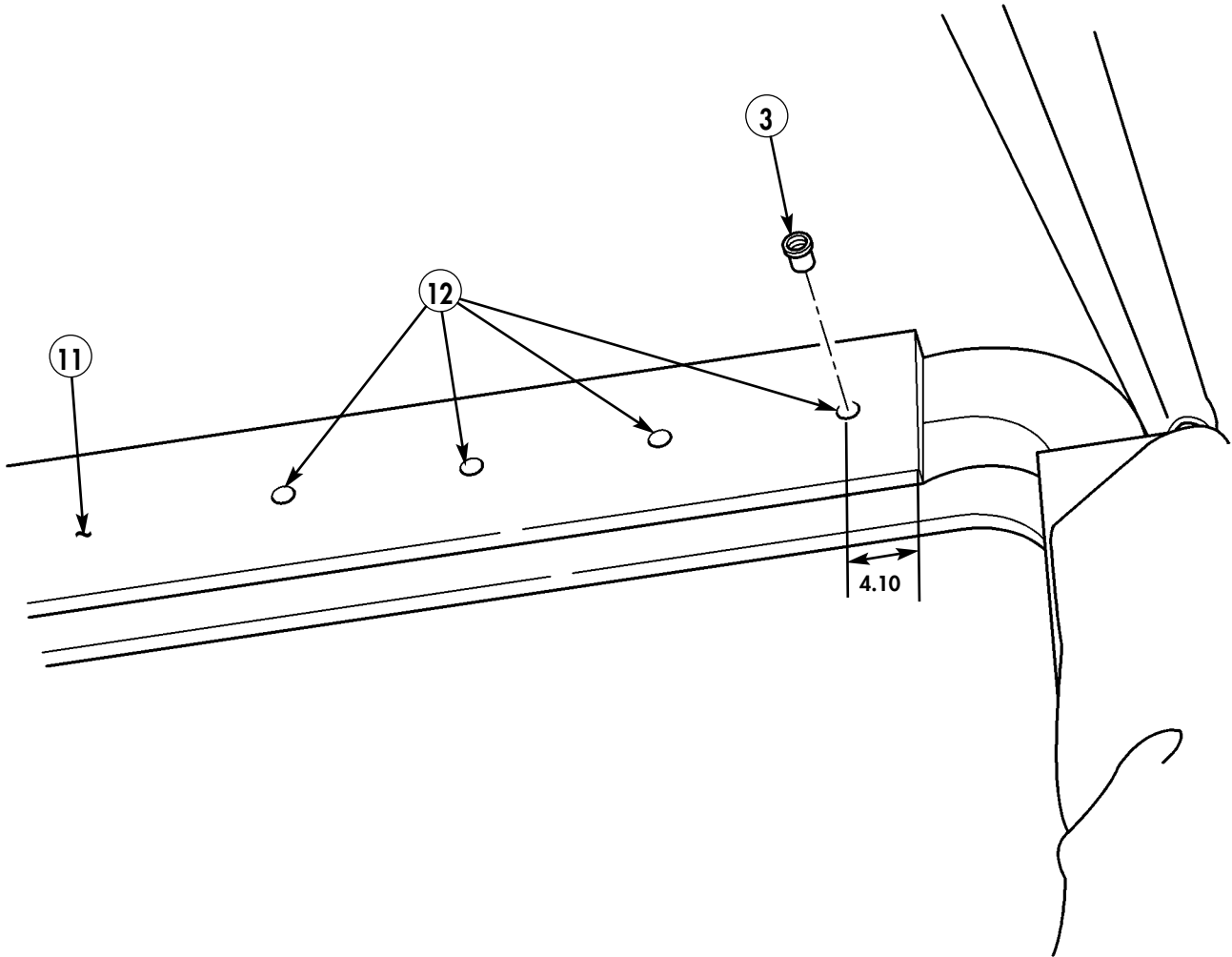


**10. CLOSEOUT TUBE - 3236685-1 - QTY. 1**

*Figure 5-111.*



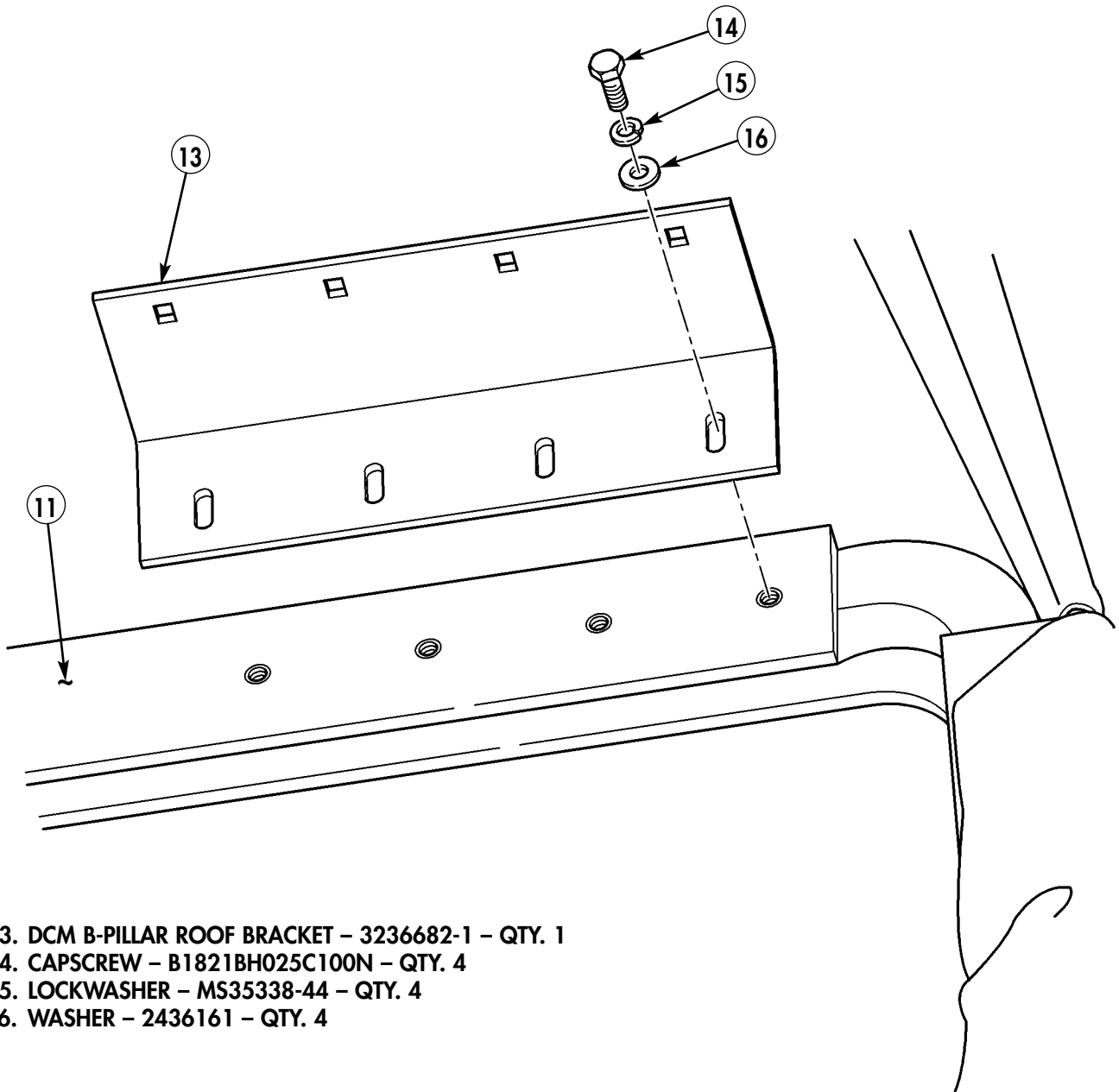
- 34-13. Using DCM B-pillar roof bracket as template, locate, mark, and drill four 0.391-in. holes (12) on B-pillar (11).
- 34-14. Install four rivet nuts (3) in B-pillar (11).



3. RIVET NUT - 3221003-14 - QTY. 4

Figure 5-112.

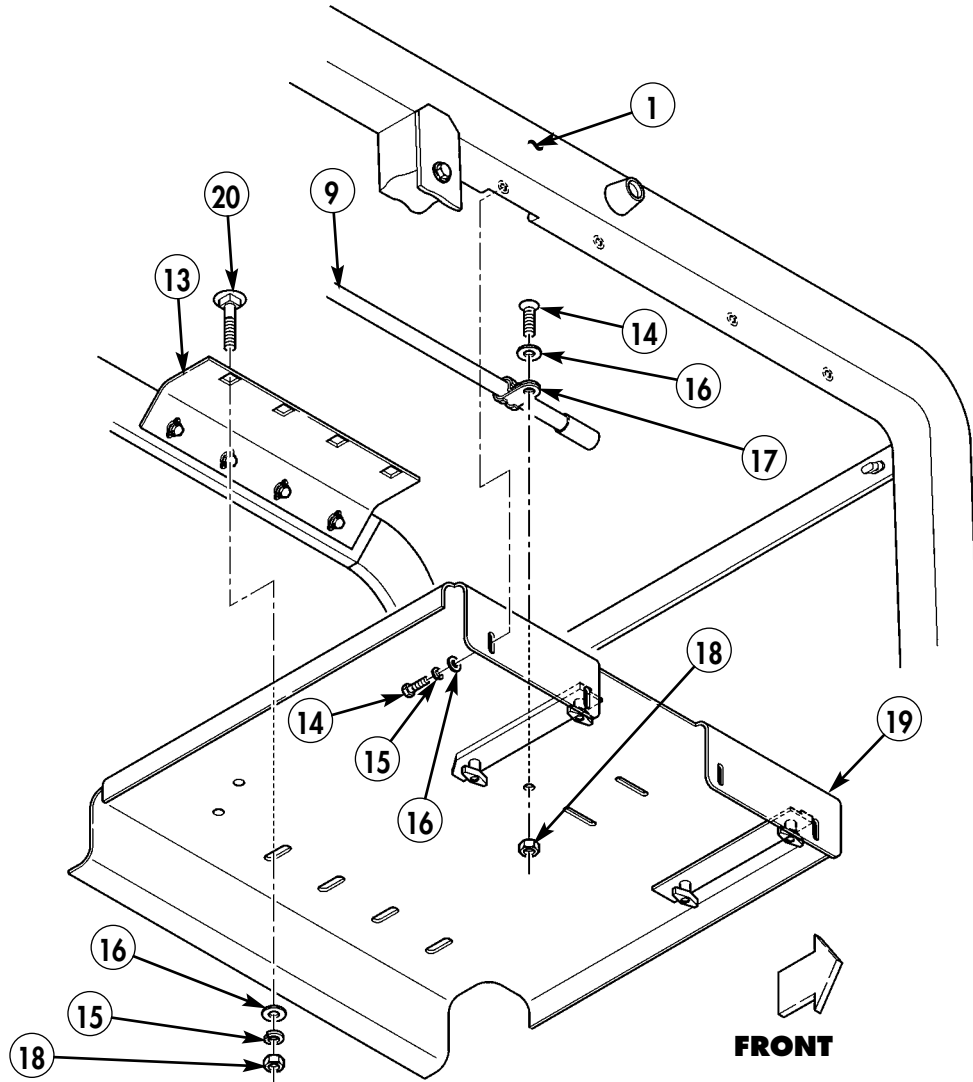
**34-15.** Install DCM B-pillar roof bracket (13) on B-pillar (11) with four capscrews (14), lockwashers (15), and washers (16). Do not tighten capscrews (14).



- 13. DCM B-PILLAR ROOF BRACKET - 3236682-1 - QTY. 1
- 14. CAPSCREW - B1821BH025C100N - QTY. 4
- 15. LOCKWASHER - MS35338-44 - QTY. 4
- 16. WASHER - 2436161 - QTY. 4

*Figure 5-113.*

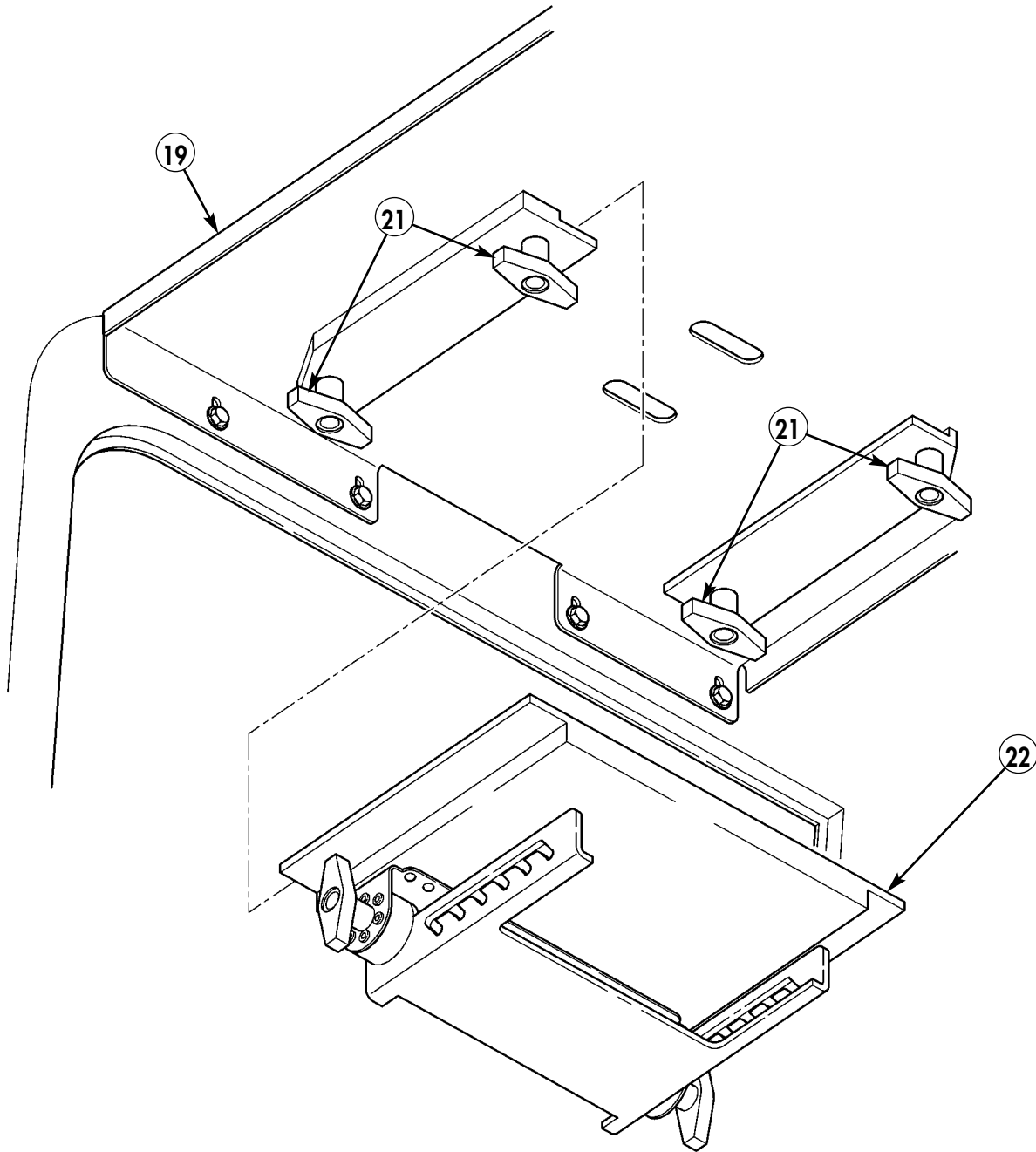
- 34-16.** Install DCM roof mount bracket (19) on inside of windshield frame (1) with four capscrews (14), lockwashers (15), and washers (16), and on B-pillar roof bracket (13) with four carriage bolts (20), washers (16), lockwashers (15), and locknuts (18).
- 34-17.** Install loop clamp (17) on soft-top support bow (9) and DCM roof mount (19) with capscrew (14), washer (16), and locknut (18). Tighten all locknuts (18).



14. CAPSCREW - B1821BH025C100N - QTY. 5  
 15. LOCKWASHER - MS35338-44 - QTY. 8  
 16. WASHER - 2436161 - QTY. 9  
 17. LOOP CLAMP - MS21333-123 - QTY. 1  
 18. LOCKNUT - M45913/4-4CG8Z - QTY. 5  
 19. DCM ROOF MOUNT BRACKET - 3245782-1 - QTY. 1  
 20. CARRIAGE BOLT - 90185A540 - QTY. 4

Figure 5-114.

- 34-18. Loosen four hand knobs (21) on DCM roof mount (19). Slide DCM mount (22) onto DCM roof mount (19). Tighten four hand knobs (21).
- 34-19. Install vehicle soft top. (Refer to TM 9-2320-280-10.)



22. DCM MOUNT – 3221839-1 – QTY. 1

Figure 5-115.

## Section XXXV. PAN AND TILT MODULE (PTM) CONTROL MOUNTING BRACKET INSTALLATION

### NOTE

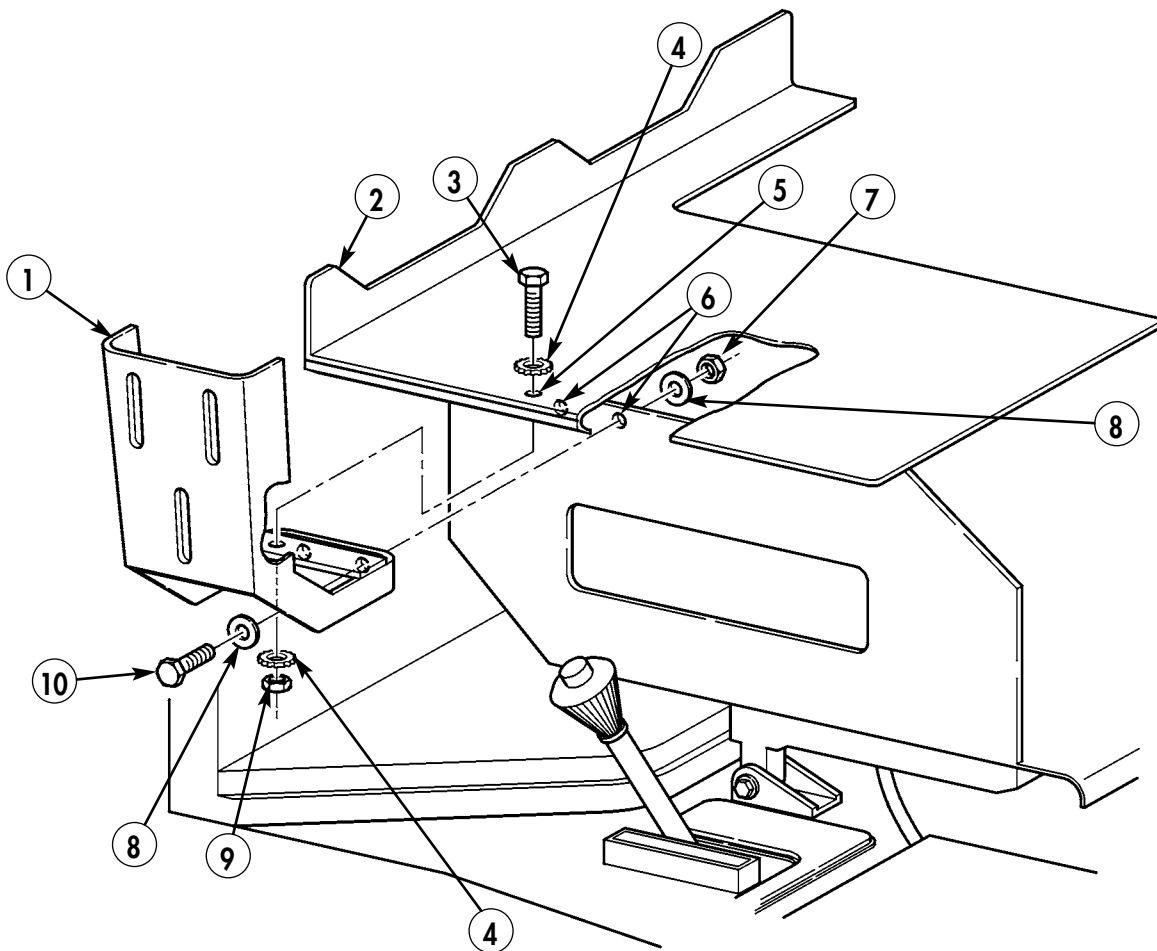
SINGARS mount and amp guard share existing mounting hardware with PTM control mounting bracket.

- 35-1. Remove SINGARS mount and amp guard if necessary. (Refer to chapter 5, section VIII.)
- 35-2. Using existing hole (5) and PTM control mounting bracket (1) as template, locate, mark, and drill two 0.281-in. holes (6) on integrated rack (2).

### NOTE

SINGARS mount and amp guard must be in place before PTM mount is installed.

- 35-3. Install SINGARS mount and amp guard if removed. (Refer to chapter 5, section VIII.)
- 35-4. Install PTM control mounting bracket (1) on integrated rack (2) with two capscrews (10), four washers (8), two locknuts (7), and existing screw (3), two lockwashers (4), and nut (9).



- 1. PTM CONTROL MOUNTING BRACKET – 3236630-1 – QTY. 1
- 7. LOCKNUT – M45913/4-4CG8Z – QTY. 2
- 8. WASHER – 2436161- QTY. 4
- 10. CAPSCREW – B1821BH025C100N – QTY. 2

Figure 5-116.

**Section XXXVI. PAN AND TILT MODULE (PTM) CONTROL ASSEMBLY, CONTROL CABLE ASSEMBLY, AND DCM/PTM INTERCONNECT CABLE INSTALLATION**

- 36-1.** Locate, mark, and drill one 1.375-in. hole (1) for control cable seal assembly (2) on tunnel (3).
- 36-2.** Position control cable seal assembly (2) and mark two hole locations (5).
- 36-3.** Drill two 0.391-in. holes in marked locations (5).
- 36-4.** Insert two rivet nuts (4) in tunnel (3).
- 36-5.** Route DCM connector end of DCM/PTM interconnect cable (6) from transmission compartment through hole (1) in tunnel (3), through control cable seal assembly (2), and into driver's compartment.
- 36-6.** For vehicles equipped with FBCB2, route PTM control cable assembly (8) through PTM control mounting bracket (7).

**NOTE**

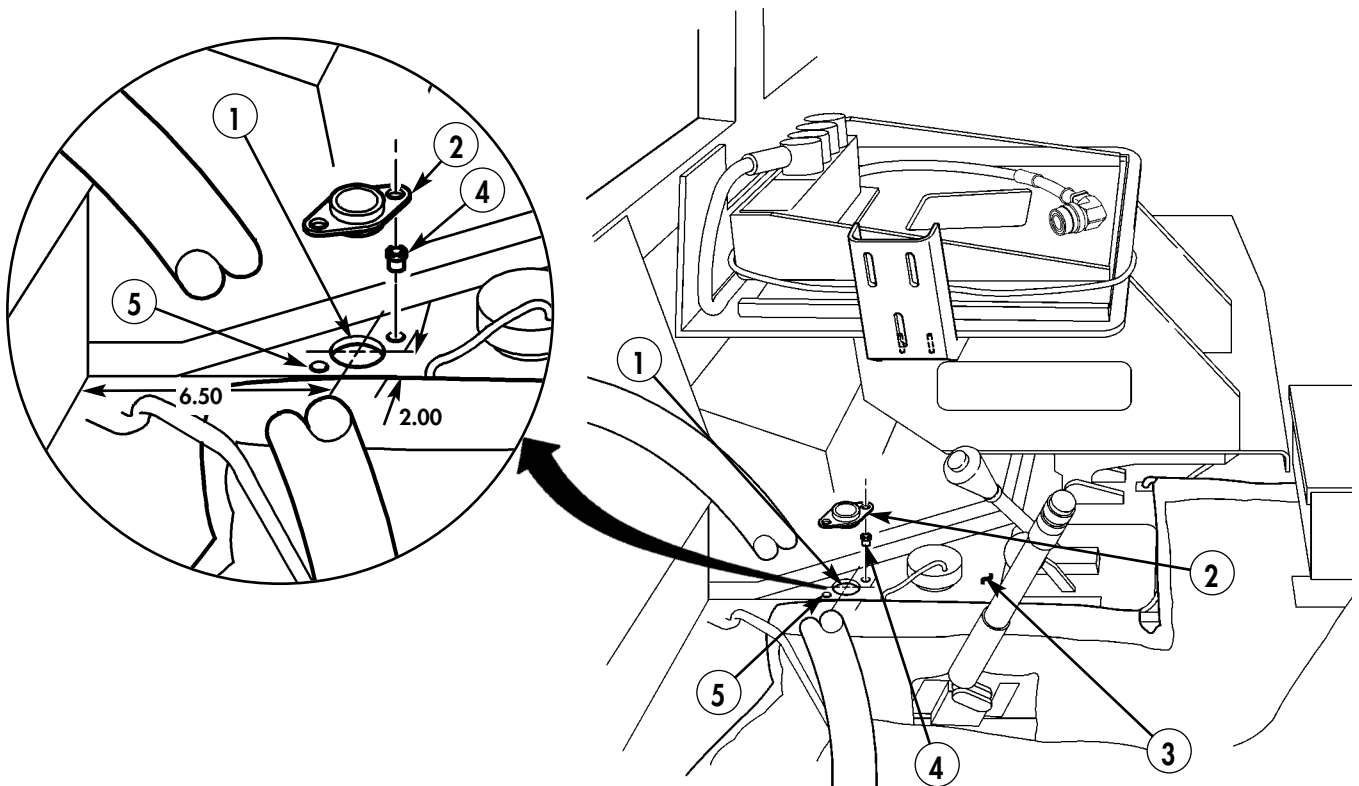
It may be necessary to remove azimuth lock cable adjusting nut to route cabling.

- 36-7.** Route two cables (8) and (9) from PTM control mounting bracket (7) through control cable seal assembly (2).

**NOTE**

Holes in grommet must be enlarged to allow cables to fit.

- 36-8.** Cut sides of four holes on control cable seal assembly's (2) grommet.
- 36-9.** Route three cables (6), (8), and (9) from PTM control mounting bracket (7) into tunnel hole (1).
- 36-10.** Route three cables (6), (8), and (9) along exhaust pipe (10), body mount (12), and oil filter (11). Continue routing cables (6), (8), and (9) through engine compartment to A-frame cable guide (14) on A-frame pillar flange (13) to PTM mount assembly (15).



- 2. CONTROL CABLE SEAL ASSEMBLY – 3220908 – QTY. 1**
- 4. RIVET NUT – 3221004-14 – QTY. 2**

Figure 5-117.

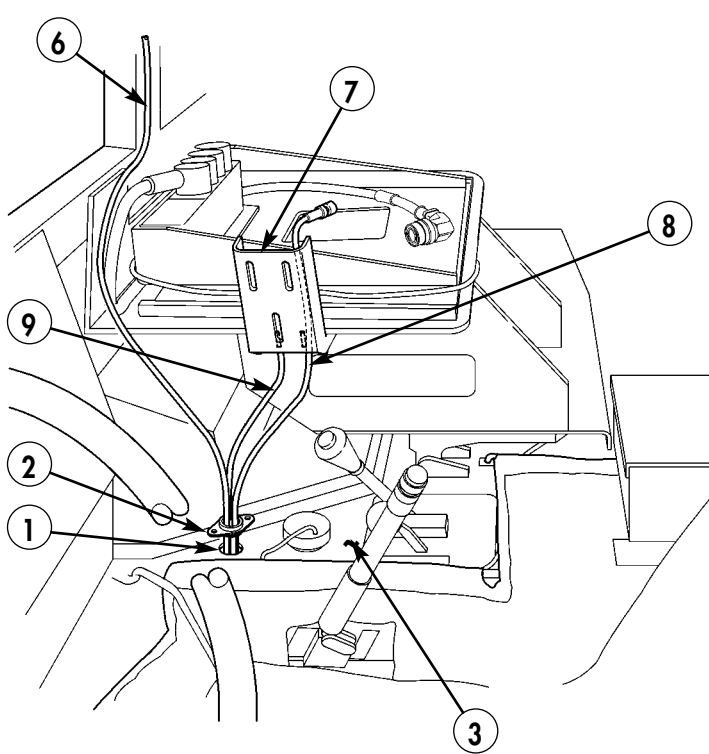


Figure 5-118.

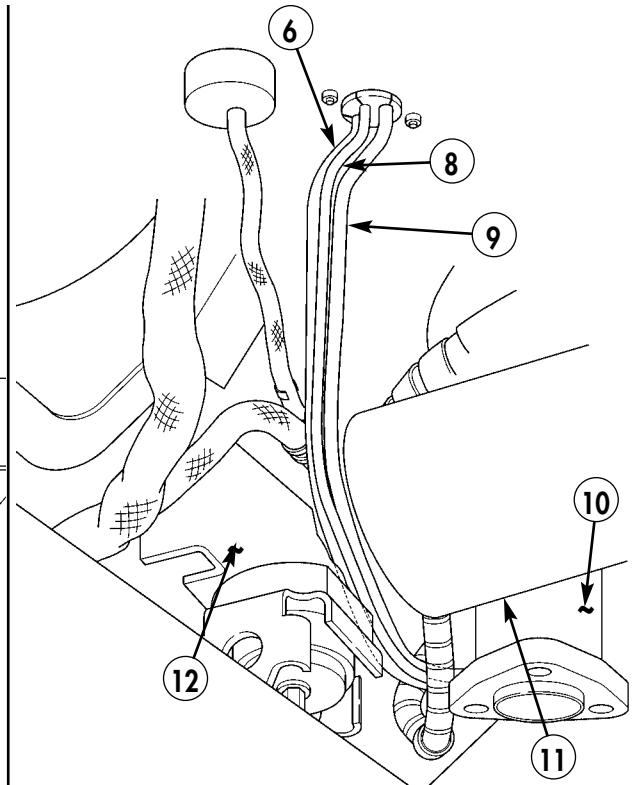
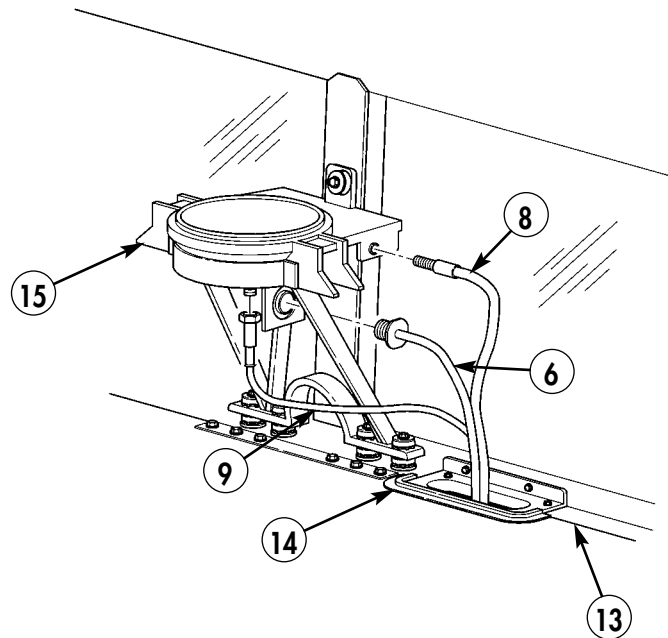


Figure 5-119.



- 6. DCM/PTM INTERCONNECT CABLE - 3220915-1 - QTY. 1
- 8. PTM CONTROL CABLE ASSEMBLY - 3220905-1 - QTY. 1
- 9. AZIMUTH LOCK CABLE - 3221015-1 - QTY. 1

Figure 5-120.

**CAUTION**

Do not overtighten DCM/PTM interconnect cable. The DCM/PTM interconnect cable is made of plastic and will break when overtightened.

- 36-11.** Secure PTM connector end (17) of DCM/PTM interconnect cable (6) to PTM mount assembly (15) with nut (18).

**NOTE**

Apply anti-seize compound as required.

- 36-12.** Mount PTM control assembly (31) on PTM control mount bracket assembly (36) with three screws (35), six washers (32), and three nuts (33). Ensure PTM control assembly handle (30) has sufficient room to clear steering wheel and integrated radio rack (34).

**NOTE**

Installation of PTM azimuth control cable may take several attempts before all adjustments are correct.

- 36-13.** Remove bolt (27) and washer (26) from PTM mount assembly (15) and azimuth sector gear assembly (25).

**NOTE**

To determine which cable is the azimuth control cable, move PTM control handle left, right, fore, and aft to see which cable moves.

- 36-14.** Insert azimuth control cable (8) in side of PTM mount assembly (15).  
**36-15.** Install azimuth control cable rubber boot (19) on azimuth control cable (8).  
**36-16.** Install azimuth control cable (8) in clevis (21) of azimuth sector gear (25) until approximately one thread of shaft (16) is exposed through clevis (21). This is the starting position for aligning azimuth sector gear assembly (25).  
**36-17.** Tighten azimuth control cable locking nut (20).  
**36-18.** Position azimuth sector gear assembly (25) on PTM mount assembly (15).  
**36-19.** Insert azimuth control cable (8) in PTM mount assembly cable lock (37).

**NOTE**

PTM control assembly must be in the center position.

- 36-20.** Ensure that azimuth locking pin hole (22) in azimuth sector gear assembly (25) is aligned with azimuth lock cable (9) in PTM mount assembly (15). If aligned, proceed to next step. If not aligned, repeat steps 36-15 through 36-19, adjusting the azimuth sector gear assembly (25) position on the azimuth control cable (8) until alignment is achieved.  
**36-21.** Secure azimuth sector gear assembly (25) to PTM mount assembly (15) with bolt (27) and washer (26).  
**36-22.** Insert azimuth lock cable (9) through hole (29) into PTM mount assembly (15).  
**36-23.** Install azimuth lock cable rubber boot (24) on azimuth lock cable (9).  
**36-24.** Adjust top and bottom locking/adjuster nuts (23) until locking pin (28) clears azimuth sector gear assembly (25) by 1/16 in. when PTM control azimuth locking trigger is pulled.  
**36-25.** Ensure azimuth control cable (8), azimuth lock cable (9), and rubber boots (19) and (24) are installed correctly.



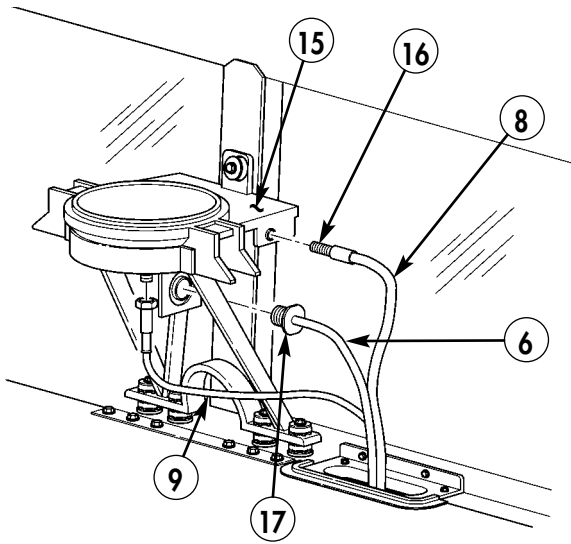


Figure 5-121.

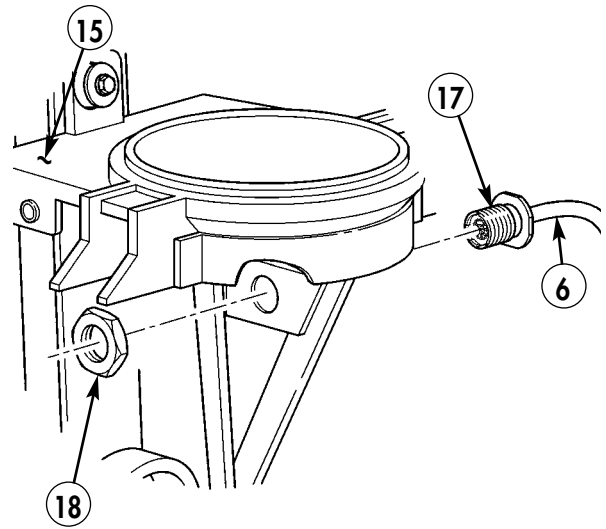
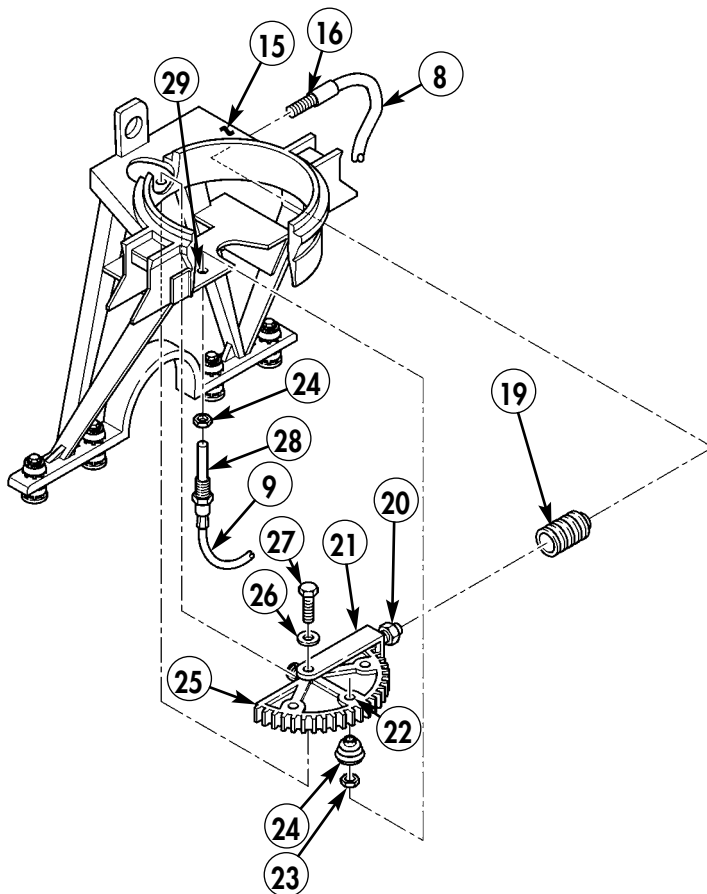


Figure 5-122.



- 15. PTM MOUNT ASSEMBLY - 3220952-1 - QTY. 1
- 31. PTM CONTROL ASSEMBLY - 3220905-1 - QTY. 1
- 33. NUT - M45913/3-5CG8Z - QTY. 3
- 34. WASHER - MS27183-12 - QTY. 6
- 35. SCREW - QTY. 3

Figure 5-123.

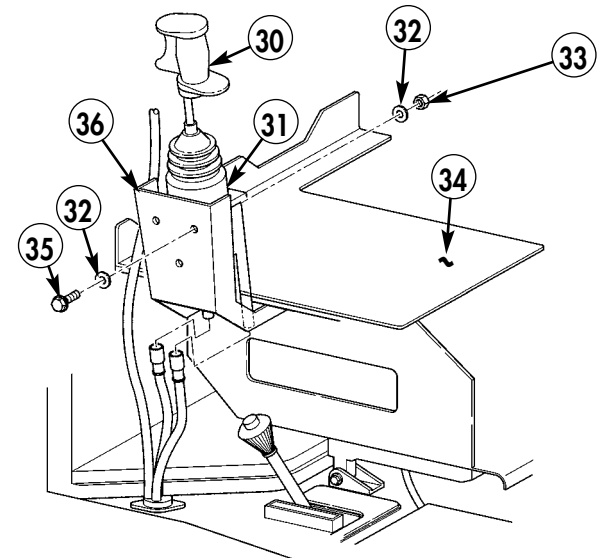


Figure 5-124.

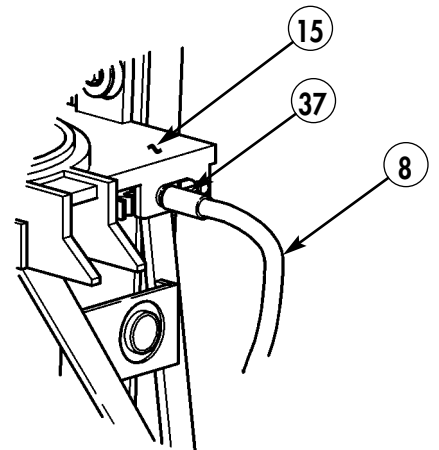
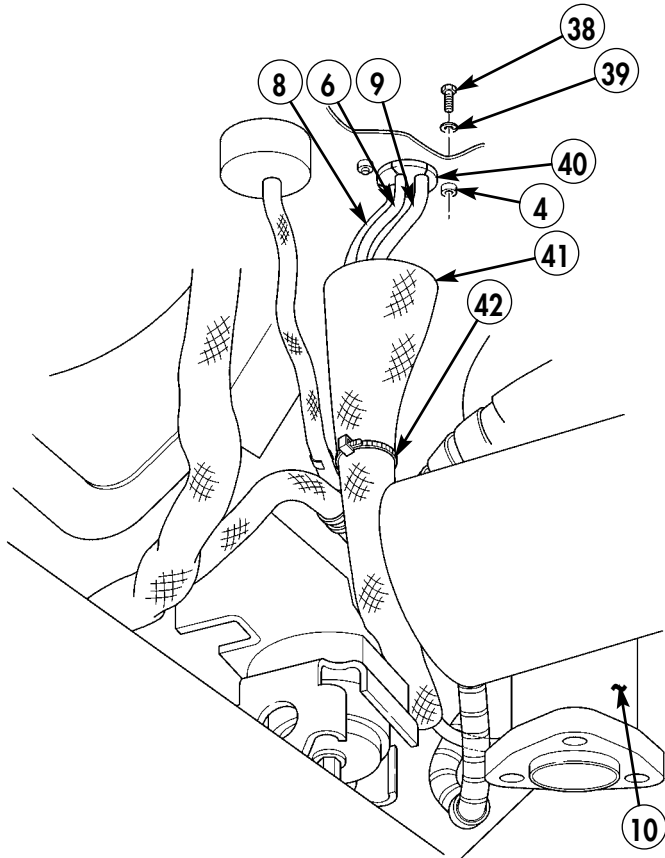


Figure 5-125.

- 36-26. Install control cable seal assembly rubber grommet (40) on DVE/PTM cables (6), (8), and (9). Secure control cable seal assembly rubber grommet (40) to tunnel rivet nuts (4) with two capscrews (38) and washers (39).
- 36-27. Cover cables (6), (8), and (9) that run along vehicle exhaust pipe (10) with heat shield sleeve (41). Secure heat shield sleeve (41) and cables (6), (8), and (9) with cable ties (42).
- 36-28. Route DCM/PTM interconnect cable (6) behind radio rack to DCM mounting assembly (43).



- 38. CAPSCREW – B1821BH025C075N – QTY. 2
- 39. WASHER – MS27183-10 – QTY. 2
- 41. HEAT SHIELD SLEEVE – QTY. 1
- 42. STAINLESS STEEL CABLE TIE – 69855K72 – QTY. A/R

Figure 5-126.

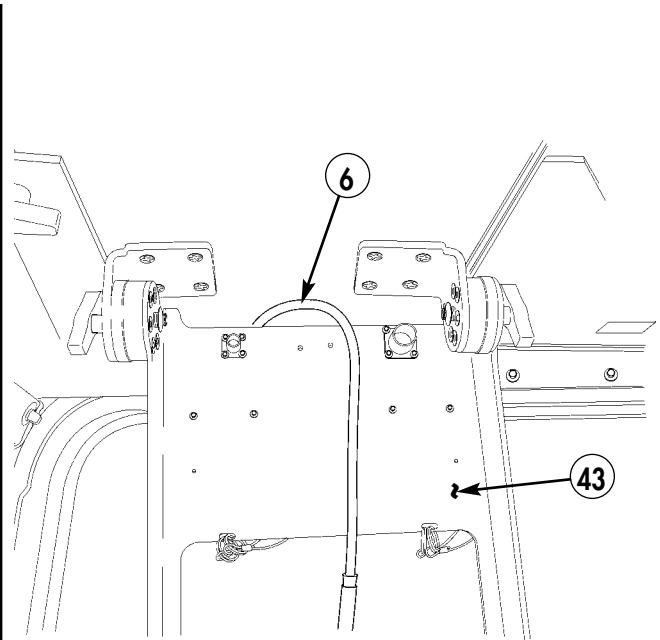


Figure 5-127.

## Section XXXVII. LCD PROTECTIVE ASSEMBLY INSTALLATION

### **NOTE**

Installation of the LCD protective assembly is optional. Perform the following operations only if desired.

- 37-1.** Install LCD protective assembly on DCM.

### **NOTE**

LCD protective assembly is stored in stowage pouch 3256879-1.

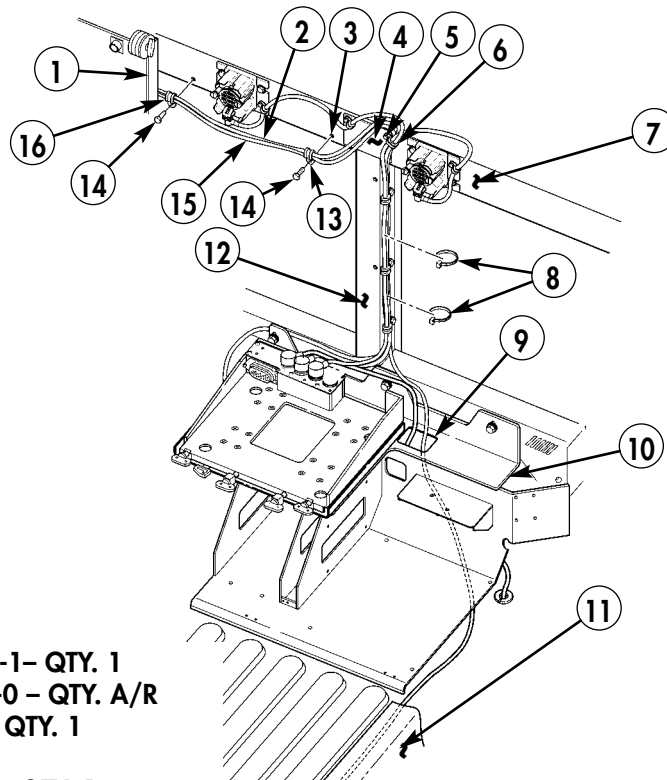
- 37-2.** Place stowage pouch in rear seat storage.

### Section XXXVIII. DVE POWER CABLE INSTALLATION

**NOTE**

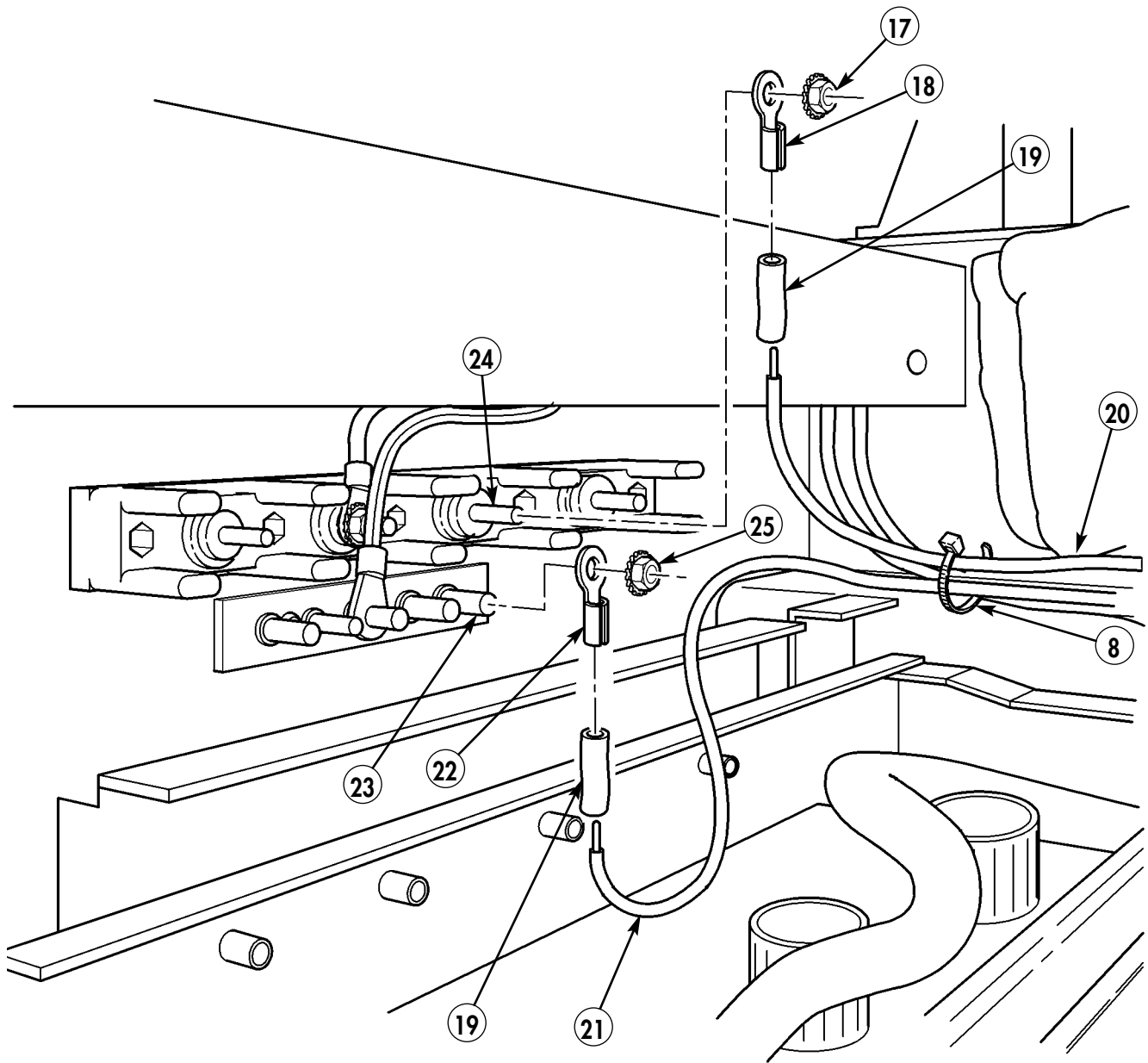
Previously routed cables have been removed for clarity.

- 38-1. Route DVE power cable (2) from DCM mount (1) to center of windshield center support (12), through access cutout (9) in integrated radio rack (10), and under tunnel insulation (11) to rear of battery box.
- 38-2. Attach shrink tubing (19) and two terminal lugs (18) and (22) to DVE power cable negative lead (21) and DVE power cable positive lead (20). (Refer to TM 9-2320-280-20 for terminal connector repair.)
- 38-3. Attach DVE power cable positive lead (20) to 24V terminal board (24) with existing nut (17).
- 38-4. Attach DVE power cable negative lead (21) to ground strap (23) with existing nut (25).
- 38-5. Secure all leads together with tiedown strap (8).
- 38-6. Remove two existing screws, lockwashers, and washers from DCM mount (1) and windshield frame (7).
- 38-7. Secure two cables (2) and (15) to windshield frame (7) with clamp (16) and screw (14).
- 38-8. Secure DCM mount (1) to windshield frame (7) with existing washers, lockwashers, and nuts.
- 38-9. If required, locate, mark, and drill one 0.147-in. diameter hole (3) in windshield frame (7).
- 38-10. Secure two cables (2) and (15) to windshield frame (7) with clamp (13) and screw (14).
- 38-11. Remove screw (5) and clamp (6) from windshield wiper bracket (4).
- 38-12. Secure two cables (2) and (15) to windshield wiper bracket (4) with existing clamp (6) and existing screw (5).
- 38-13. Secure two cables (2) and (15) to existing cables with tiedown straps (8).
- 38-14. Install right-side tunnel insulation. (Refer to TM 9-2320-280-20.)
- 38-15. Install batteries. (Refer to TM 9-2320-280-20.)



- 2. DVE POWER CABLE – 3256881-1 – QTY. 1
- 8. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R
- 13. LOOP CLAMP – MS21333-76 – QTY. 1
- 14. SCREW – 9421073 – QTY. 2
- 16. LOOP CLAMP – MS21333-104 – QTY. 1

Figure 5-128.



- 8. TIEDOWN STRAP - MS3367-1-0 - QTY. A/R
- 18. TERMINAL LUG - MS25036-150 - QTY. 1
- 19. SHRINK TUBING - MS23053/4-302-0 - QTY. A/R
- 22. TERMINAL LUG - MS25036-108 - QTY.1

Figure 5-129.



By Order of the Secretary of the Army:

PETER J. SCHOOMAKER  
*General, United States Army*  
*Chief of Staff*

Official:



SANDRA R. RILEY  
*Administrative Assistant to the*  
*Secretary of the Army*  
0520905

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PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER <b>TB 9-2320-280-35-3</b>	DATE <b>17 SEP 2005</b>	TITLE <b>TECHNICAL BULLETIN INSTALLATION INSTRUCTIONS</b>
------------------------------------------------------	----------------------------	------------------------------------------------------------------

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO.*	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible)
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1	5-59		23-11	5-73		Hole should be enlarged to 1.25-in. diameter
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**SAMPLE**

*\*Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE, OR TITLE <b>Pat Smith</b>	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION <b>AV272-4162</b>	SIGNATURE <i>Pat Smith</i>
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PART II - REPAIR PARTS AND SPECIAL TOOLS LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION/FORM NUMBER TB 9-2320-280-35-3	DATE 17 SEP 2005	TITLE TECHNICAL BULLETIN INSTALLATION INSTRUCTIONS
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION
<h1>SAMPLE</h1>								

PART III - REMARKS *(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

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<b>ITEM NO.</b>	<b>PAGE NO.</b>	<b>PARA-GRAPH</b>	<b>LINE NO.*</b>	<b>FIGURE NO.</b>	<b>TABLE NO.</b>	<b>RECOMMENDED CHANGES AND REASON</b> <i>(Provide exact wording of recommended changes, if possible)</i>	
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
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PUBLICATION/FORM NUMBER TB 9-2320-280-35-3	DATE 17 SEP 2005	TITLE TECHNICAL BULLETIN INSTALLATION INSTRUCTIONS
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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

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ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO.*	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON <i>(Provide exact wording of recommended changes, if possible)</i>

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