
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)

DRIVER'S VISION ENHANCER (DVE)

AN/VAS-5A

FOR VEHICLES

**TRUCK, UTILITY, 4-DOOR: ARMAMENT CARRIER, ARMORED, 1-1/4 TON, 4X4,
M1025 (2320-01-128-9551) (EIC: BBF); M1025A1 (2320-01-371-9584) (EIC: BBV);
M1025A2 (2320-01-380-8233) (EIC: BB3);**

**TRUCK, UTILITY, 4-DOOR: ARMAMENT CARRIER, ARMORED, 1-1/4 TON, 4X4,
M1026 (2320-01-128-9552) (EIC: BBG); M1026A1 (2320-01-371-9579) (EIC: BBQ).**

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HEADQUARTERS, DEPARTMENT OF THE ARMY

SEPTEMBER 2005

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY,
Washington, D.C., 1 OCTOBER 2006

TECHNICAL BULLETIN INSTALLATION INSTRUCTIONS

FOR SYSTEMS

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

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PETER J. SCHOOMAKER
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JOYCE E. MORROW
Administrative Assistant to the
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TECHNICAL BULLETIN
NO. 9-2320-280-35-6

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 17 SEPTEMBER 2005

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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: Armament Carrier, Armored, 1-1/4 Ton, 4x4, M1025, M1025A1, M1025A2
 - Truck, Utility, 4-Door: Armament Carrier, Armored, 1-1/4 Ton, 4x4, M1026, M1026A1
- 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)
 - 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 capability.

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 gunner's platform. (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)
- (E): MK-2801

PLGR:

- (F): 57K4400

EPLRS:

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

FBCB2:

- (I): No kits available

DVE:

- (J): No kits available

MATERIAL REQUIRED FROM KITS:

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

| ITEM NO. | NOMENCLATURE | PART NUMBER | NSN | KIT | QTY. |
|----------|-------------------------------------|-----------------|------------------|---------------------------------|------|
| 1. | Antenna, AS-3499/VSQ-1 | A3005031 | 5820-01-183-9462 | (G),(H) | 1 |
| 2. | Bracket, Antenna | A3014546-1 | 5340-01-391-2742 | (A),(B),(C),(D),(E) | 1 |
| 3. | Bracket, PLGR Mount | 12480578 | N/A | (F) | 1 |
| 4. | Bracket, Seat | A3046202 | 5340-01-237-6202 | (G) | 1 |
| 5. | Cable, Antenna | A32551281W23 | 5995-01-468-9827 | (F) | 1 |
| 6. | Cable Assembly, Antenna, EPLRS | SM-C-911480 | 5995-01-167-1269 | (G),(H) | 1 |
| 7. | Cable Assembly, Power, Electrical | A3014040-9 | 5995-01-300-9324 | (B),(C),(D) | 1 |
| 8. | Cable Assembly, Power, EPLRS | A3004939 | 5995-01-198-0538 | (G),(H) | 1 |
| 9. | Cable Assembly, Radio Frequency | A3014031-17 | 5995-01-225-1660 | (E) | 1 |
| 10. | Cable Assembly, Radio Frequency | A3014031-8 | 5995-01-219-7035 | (A),(B),(C),(D),(E) | 1 |
| 11. | Cable Assembly, Radio Frequency | A3014032-3 | 5995-01-219-7025 | (B),(C),(D) | 1 |
| 12. | Clamp, Loop | MS21333-67 | 5340-00-079-7837 | (F) | 1 |
| 13. | Clamp, Loop | MS21333-75 | 5340-00-050-2740 | (A),(B),(C),(D),(E) | 5 |
| 14. | Clamp, Loop | MS21333-96 | 5340-00-088-1255 | (F) | 7 |
| 15. | Gasket | A3013655-1 | 5330-01-205-2864 | (A),(B),(C),(D),(E) | 3 |
| 16. | Grommet | MS35489-31 | 5325-00-174-9336 | (F) | 1 |
| 17. | Grommet | MS35489-143 | 5325-00-292-7558 | (F) | 2 |
| 18. | Insert | 12446871-2 | 5310-01-411-3422 | (F) | 1 |
| 19. | Loudspeaker | A3014065-1 | 5965-01-222-1420 | (A),(B),(C),(D) | 2 |
| 20. | Mount, Resilient | MT-6146/VSQ-1 | 5340-01-167-8297 | (G),(H) | 1 |
| 21. | Mounting Base, Electrical Equipment | A3013367-1 | 5975-01-188-8873 | (A),(B),(C), (D),(E),(H) | 1 |
| 22. | Mounting Base, Electrical Equipment | A3014053-1 | 5975-01-235-1962 | (B),(C) | 1 |
| 23. | Nut | MS35650-302 | 5310-00-934-9751 | (A),(B),(C),(D), (E),(G),(H) | 1 |
| 24. | Nut | MS51968-5 | 5310-00-880-7746 | (A),(B),(C), (D),(E),(H) | 2 |
| 25. | Nut | 271169 | 5310-00-124-9265 | (F) | 5 |
| 26. | Nut | 9419143 | 5310-01-148-0240 | (F) | 1 |
| 27. | Nut Strip | A3014064-1 | N/A | (B),(C),(D) | 1 |
| 28. | Plate, Mounting | A3014550-1 | N/A | (A),(B),(C),(D) | 2 |
| 29. | Screw, Cap | MS35207-261 | 5305-00-990-6444 | (F) | 1 |
| 30. | Screw, Cap | MS35307-365 | 5305-00-847-1159 | (A),(B),(C), (D),(E),(H) | 12 |
| 31. | Screw, Cap | B1821BH025C100N | 5305-00-225-3843 | (F) | 4 |
| 32. | Screw, Cap | B1821BH025C125N | 5305-00-068-0509 | (F) | 2 |

MATERIAL REQUIRED FROM KITS:

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

| ITEM NO. | NOMENCLATURE | PART NUMBER | NSN | KIT | QTY. |
|----------|---------------------|-----------------|------------------|---------------------------------|------|
| ■ 33. | Screw, Cap | B1821BH025C175N | 5305-00-071-2510 | (F) | 1 |
| 34. | Screw, Machine | MS35224-65 | 5310-00-543-5743 | (G) | 1 |
| 35. | Screw, Machine | MS35190-291 | 5305-00-958-5247 | (B) | 2 |
| 36. | Screw, Machine | MS35206-263 | 5305-00-984-6210 | (F) | 4 |
| ■ 37. | Screw, Self-Tapping | 9416639 | 5305-01-197-2320 | (F) | 1 |
| 38. | Screw, Self-Tapping | 9421073 | 5305-01-162-8512 | (F) | 15 |
| ■ 39. | Strap, Tiedown | MS3367-1-0 | 5975-00-984-6582 | (F) | 3 |
| 40. | Terminal Lug | 7728777 | 5940-00-983-4067 | (F) | 2 |
| 41. | Terminal Lug | 7728780 | 5940-01-035-4212 | (F) | 2 |
| 42. | Washer | MS27183-10 | 5310-00-809-4058 | (C),(D),(H) | 2 |
| ■ 43. | Washer | 2436161 | 5310-01-102-3270 | (F) | 23 |
| 44. | Washer, Lock | MS45904-68 | 5310-00-889-2528 | (A),(B),(C),(D),(E) | 8 |
| ■ 45. | Washer, Lock | MS35338-43 | 5310-00-045-3296 | (F) | 1 |
| 46. | Washer, Lock | MS35338-44 | 5310-00-582-5965 | (A),(B),(C), (D),(E),(F),(H) | 18 |
| 47. | Washer, Lock | MS45904-72 | 5310-00-889-2527 | (A),(B),(C),(D), (E),(G),(H) | 44 |
| 48. | Washer, Lock | MS45904-76 | 5310-00-061-1258 | (A),(B),(C), (D),(E),(H) | 8 |
| 49. | Wellnut | 12339397-3 | 5310-01-231-7455 | (F) | 1 |
| 50. | Wellnut | 12339397-6 | 5310-01-388-6205 | (F) | 1 |

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

| ITEM NO. | NOMENCLATURE | PART NUMBER | NSN | QTY. |
|----------|----------------------------------|--------------|------------------|------|
| 1. | Antenna, AS-3900/VRC | A3017899-2 | 5985-01-308-8988 | 2 |
| 2. | Antenna, Element (lower) | A3018230-1 | 5985-01-201-1498 | 2 |
| 3. | Antenna, Element (upper) | A3017901-2 | 5985-01-306-4622 | 2 |
| 4. | Antenna, PLGR | AT575-030 | 5985-01-375-4660 | 1 |
| 5. | Assembly, Display Lock | 872843-1 | N/A | 1 |
| 6. | Bolt | MS35751-18 | 5306-00-108-9988 | 4 |
| 7. | Bracket, DCM Roof Mount | 3245782-1 | N/A | 1 |
| 8. | Bracket, PLGR | 986-0645-001 | 5975-01-375-1302 | 1 |
| 9. | Bracket, PTM Control | 3236630-1 | N/A | 1 |
| 10. | Bracket, User Readout (URO) | A3006206 | 5340-01-386-7841 | 1 |
| 11. | Cable Assembly, Antenna, PLGR | 426-0141-050 | 6150-01-375-8662 | 1 |
| 12. | Cable Assembly, Ground | 12480567-1 | N/A | 1 |
| 13. | Cable Assembly, Power | 12480567-2 | N/A | 1 |
| 14. | Cable Assembly, Power, PLGR | 9728558-10 | 6150-01-375-8661 | 1 |
| 15. | Cable Assembly, Special Purpose | 3256881-1 | 6150-01-482-4740 | 1 |
| 16. | Cable, Azimuth Lock | 3221015-1 | N/A | 1 |
| 17. | Cable, Control | A3014037-4 | 5995-01-335-7863 | 1 |
| 18. | Cable, DCM/PTM Interconnect | 3220915-1 | N/A | 1 |
| 19. | Cable Assembly, INC-EPUU | A3279383-3 | 5995-01-453-9171 | 1 |
| 19.1. | Cable, W1 | 866003-3 | 5995-01-478-4908 | 1 |
| 19.2. | Cable, W2 | 881327-1 | 5995-01-478-4876 | 1 |
| 19.3. | Cable, W3N | 881336-1 | 5995-01-478-4913 | 1 |
| 19.4. | Cable, W3P | 881335-1 | 5995-01-478-4891 | 1 |
| 20. | Cable, Speaker | A3014038-3 | 5995-01-219-4704 | 2 |
| 21. | Clamp, Loop | MS21333-65 | 5340-00-905-0790 | 3 |
| 22. | Clamp, Loop | MS21333-69 | 5340-00-764-7051 | 4 |
| 23. | Clamp, Loop | MS21333-76 | 5340-00-724-7038 | 1 |
| 24. | Clamp, Loop | MS21333-98 | 5340-00-809-1490 | 1 |
| 25. | Clamp, Loop | MS21333-104 | 5305-01-162-8512 | 2 |
| 26. | Clamp, Loop | MS21333-121 | 5340-00-954-6014 | 1 |
| 27. | Compound, Anti-seize | MIL-A-907 | 8050-00-059-2761 | A/R |
| 28. | Control Cable Seal Assembly | 3220908 | 2990-00-365-1898 | 1 |
| 29. | CPU (Central Processing Unit) | 881292-1 | 7021-01-474-3793 | 1 |
| 30. | Decal | 12339060 | 7690-01-265-1135 | 1 |
| 31. | Decal | 861868-2 | N/A | 1 |
| 31.1. | Device, Serial Interface Adapter | 881331-1 | 4920-01-478-3722 | 1 |
| 32. | Display | 881293-1 | 7025-01-475-0229 | 1 |
| 33. | Grommet, Nonmetallic | 12338098 | 5325-01-308-5424 | 2 |
| 34. | Grommet, Nonmetallic | 2400 | 5325-01-289-7859 | 1 |
| 35. | Guard, Amp | 872842-1 | 5935-01-487-2172 | 1 |

MATERIAL REQUIRED BUT NOT INCLUDED IN KITS:

Table 4-2. Non-Kit Parts List for Installation of C4ISR Equipment (Contd).

| ITEM NO. | NOMENCLATURE | PART NUMBER | NSN | QTY. |
|----------|------------------------|-----------------|------------------|------|
| 36. | Guide, A-Frame Cable | 3220964-1 | 5820-01-183-9462 | 1 |
| 37. | Guide, Hood Cable | 3220912-1 | N/A | 1 |
| 38. | Insert | 12446871-1 | 5310-01-413-3276 | 4 |
| 39. | Insert | 12446871-2 | 5310-01-411-3422 | 3 |
| 40. | Isolation Kit, CPU | 872826-2 | 5340-01-481-5741 | 1 |
| 41. | Isolation Kit, Display | 872870-1 | 5340-01-481-5757 | 1 |
| 42. | Lanyard | 8925T5-7X19 | 4010-01-497-2675 | 1 |
| 43. | Mount, DCM | 3221839-1 | N/A | 1 |
| 44. | Mount, PTM A-Pillar | 3221002-1 | N/A | 1 |
| 45. | Mount, Ramball | RAM-D-111U | 5975-01-485-3615 | 1 |
| 46. | Mount, Resilient | MT-6146/VSQ-1 | 5340-01-167-8297 | 1 |
| 47. | Nut | MS35649-2252 | 5310-00-997-1888 | 3 |
| 48. | Nut | M45913/3-5CG8Z | N/A | 3 |
| 49. | Nut | 13218E0320-293 | 5310-00-913-8881 | 8 |
| 50. | Nut | 9418931 | 5310-01-187-7610 | 4 |
| 51. | Nut | 9418892 | 5310-01-157-9819 | 6 |
| 52. | Nut | 9417954 | 5310-00-931-8167 | 4 |
| 53. | Nut | MS35649-63 | 5310-00-804-3859 | 5 |
| 54. | Nut | MS35649-2382 | 5310-00-056-3395 | 2 |
| 55. | Nut, Lock | 271175 | 5310-01-333-5245 | 6 |
| 56. | Nut, Lock | M45913/4-4CG8Z | N/A | 4 |
| 57. | Panel, Enclosure | 12447141 | 2510-01-413-5993 | 1 |
| 58. | PTM Control Assembly | 3220905-1 | 5340-01-511-2705 | 1 |
| 59. | PTM Mount Assembly | 3220952-1 | 5855-01-511-2699 | 1 |
| 60. | Rack, Integrated | A3276903 | N/A | 1 |
| 61. | Rivet | SSLQ-68 | 5320-01-255-6608 | 3 |
| 62. | Rivet Nut | 3221003-14 | N/A | 13 |
| 63. | Rivet Nut | 3221004-14 | N/A | 2 |
| 64. | Rivet, Blind | 12339355-1 | 5320-01-271-6357 | 2 |
| 65. | Screw, Cap | B1821BH025C075N | 5305-00-068-0508 | 4 |
| 66. | Screw, Cap | B1821BH025C100N | 5305-00-225-3843 | 15 |
| 67. | Screw, Cap | B1821BH025C125N | 5305-00-068-0509 | 1 |
| 68. | Screw, Cap | B1821BH031C075N | 5306-00-226-4825 | 4 |
| 69. | Screw, Cap | B1821BH031C100N | 5306-00-226-4827 | 4 |
| 70. | Screw, Cap | B1821BH031F075N | 5306-00-050-1238 | 2 |
| 71. | Screw, Cap | B1821BH031F100N | 5305-00-051-4076 | 2 |
| 72. | Screw, Cap | B1821BH031F125N | 5305-00-051-4078 | 10 |
| 73. | Screw, Cap | B1821BH025C300N | 5305-00-071-2515 | 5 |
| 74. | Screw, Cap | B1821AH038C225N | 5305-01-434-2947 | 2 |
| 75. | Screw, Machine | 160035 | 5305-00-016-0035 | 1 |

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

| ITEM NO. | NOMENCLATURE | PART NUMBER | NSN | QTY. |
|----------|----------------------------|-----------------|------------------|------|
| 76. | Screw, Machine | MS35206-230 | 5305-00-889-3000 | 5 |
| 77. | Screw, Self-Tapping | 9426634 | 4320-00-570-6117 | 4 |
| 78. | Screw, Self-Tapping | 12342499-2 | 5305-01-264-5809 | 7 |
| 79. | Screw, Self-Tapping | 9426241 | 5305-01-206-7219 | 9 |
| 80. | Screw, Self-Tapping | 9421073 | 5305-01-162-8512 | 2 |
| 81. | Sleeve, Heat Shield | N/A | N/A | 1 |
| 82. | Spacer | 92510A318 | N/A | 4 |
| 83. | Spacer | 10705AL315C | 5365-01-487-3145 | 4 |
| 84. | Terminal Board | 12480570 | N/A | 1 |
| 85. | Terminal Board | MS27212-3-8 | 5940-00-950-7782 | 1 |
| 86. | Terminal Board Cover | 12480569-1 | N/A | 1 |
| 87. | Terminal Board Cover | 12480569-2 | N/A | 1 |
| 88. | Terminal Board Cover | MS18029-3S-2 | 5940-01-280-9304 | 2 |
| 89. | Terminal Link | MS25266-6N-2 | 6150-01-167-9267 | 1 |
| 90. | Terminal Lug | MS20659-108 | 5940-00-115-2674 | 2 |
| 91. | Terminal Lug | MS20659-141 | 5940-00-113-9825 | 4 |
| 92. | Terminal Lug | MS25036-108 | 5940-01-507-0326 | 1 |
| 93. | Terminal Lug | MS25036-150 | 5940-00-113-8184 | 1 |
| 94. | Terminal Lug | MS20659-129 | 5940-00-114-1314 | 2 |
| 95. | Tie, Stainless Steel Cable | 69855K72 | N/A | A/R |
| 96. | Tubing, Shrink | MS23053/4-302-0 | 5970-01-161-6796 | A/R |
| 97. | Washer | 12338095 | 5310-01-208-7576 | 6 |
| 98. | Washer | 9414920 | 5310-01-476-8589 | 2 |
| 99. | Washer | 9417373 | 5310-01-361-1163 | 1 |
| 100. | Washer | MS51412-23 | 5310-01-333-0060 | 2 |
| 101. | Washer | 3221003-9 | N/A | 5 |
| 102. | Washer | MS27183-10 | 5310-00-809-4058 | 2 |
| 103. | Washer | MS27183-12 | 5310-00-081-4219 | 6 |
| 104. | Washer | 2436163 | 5310-01-412-4013 | 2 |
| 105. | Washer, Lock | 120380 | 5310-00-543-2705 | 1 |
| 106. | Washer, Lock | MS35338-41 | 5310-00-045-4007 | 5 |
| 107. | Washer, Lock | MS35338-46 | 5310-00-637-9541 | 2 |
| 108. | Washer, Lock | MS35338-48 | 5310-00-584-5272 | 3 |
| 109. | Wingnut | MS51553-420 | 5310-01-384-2546 | 4 |
| 110. | Wire Assembly, Fuse (12V) | 12480568-2 | N/A | 1 |
| 111. | Wire Assembly, Fuse (24V) | 12480568-1 | N/A | 3 |
| 112. | Wire, Braided | AA59569F30T0375 | 6145-00-191-8402 | A/R |
| 113. | 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)
- 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.

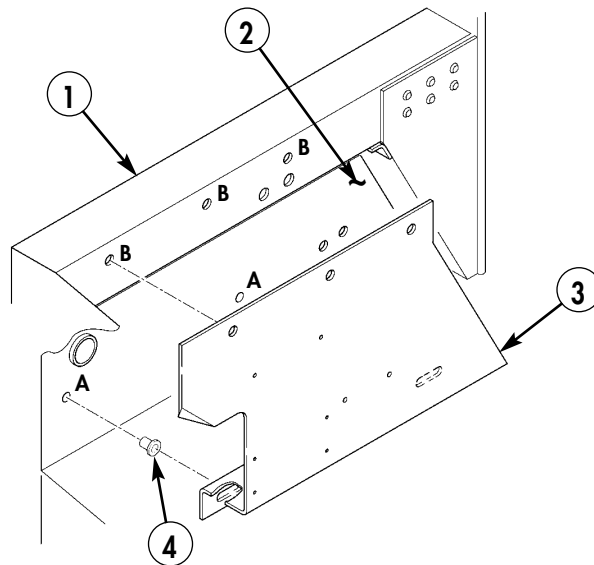
Section II. INSTALLATION OF TERMINAL BOARDS

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.

- 3-3. Locate, mark, and drill three 0.156-in. diameter holes marked A in cab enclosure panel (3).
- 3-4. Locate, mark, and drill two 0.156-in. diameter holes marked C in cab enclosure panel (3).
- 3-5. Locate, mark, and drill two 0.196-in. diameter holes marked B in cab enclosure panel (3).

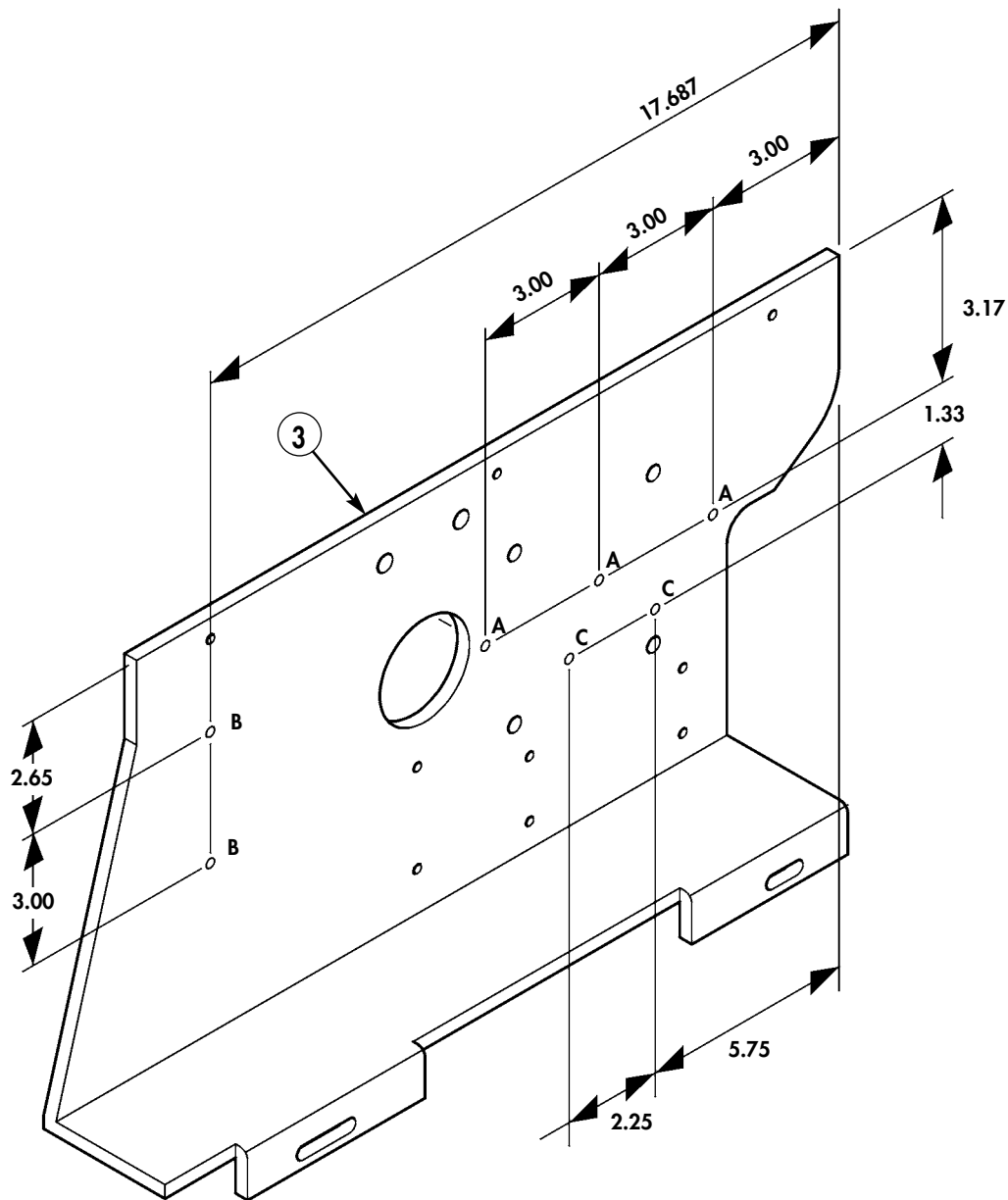


Figure 5-2.

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.

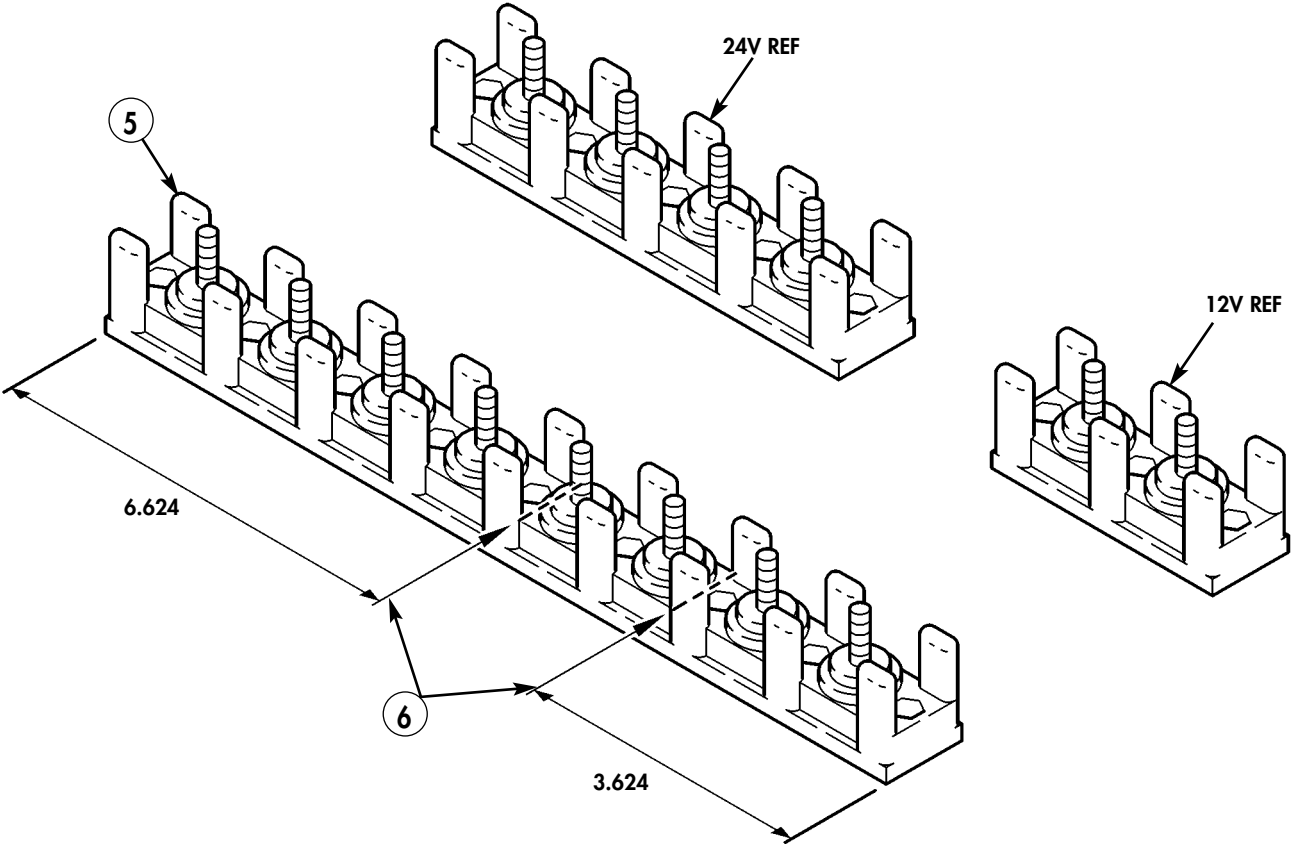


Figure 5-3.

5. TERMINAL BOARD – MS27212-3-8 – QTY. 1

3-7. Install five nut sleeves (9) in terminal board covers (7), (8), and (10) and secure with five snaprings (11).

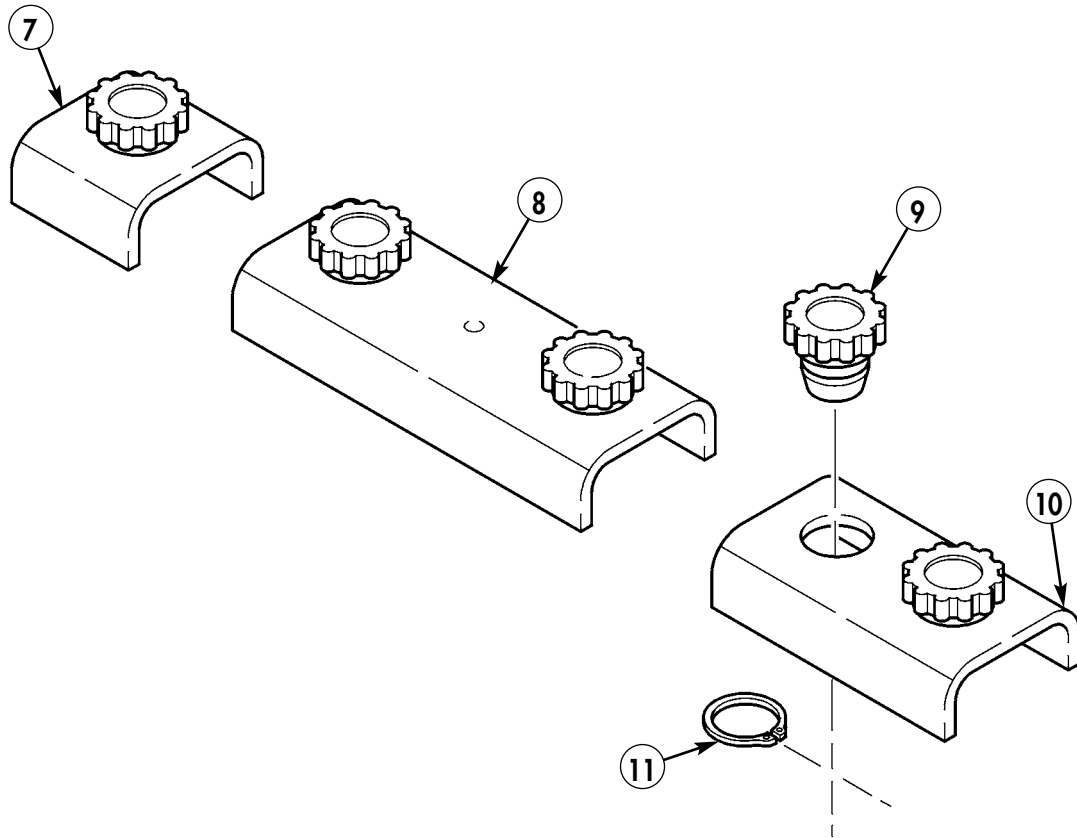


Figure 5-4.

- 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).

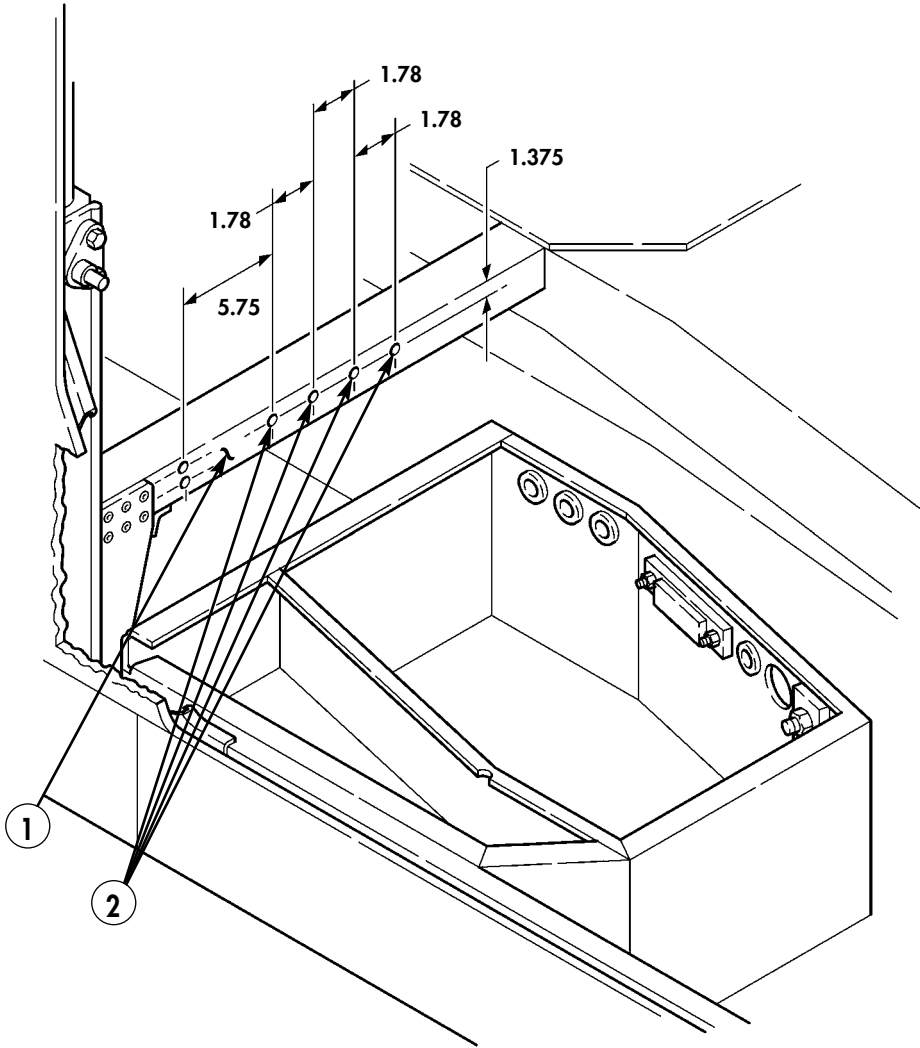
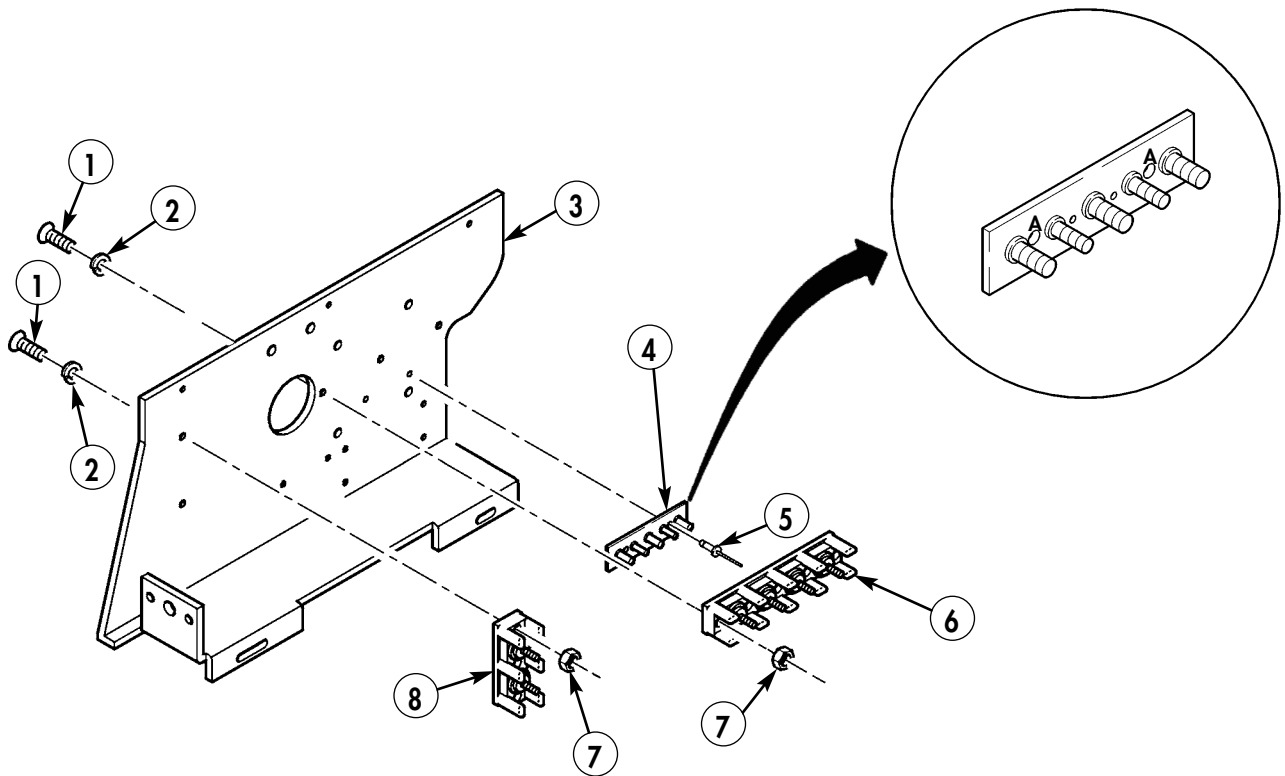


Figure 5-5.

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 5-6.

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

NOTE

- Refer to figure 5-7 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 one 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 terminal board cover (5).
- 6-4.** Route wire (8) through battery box hole (6).

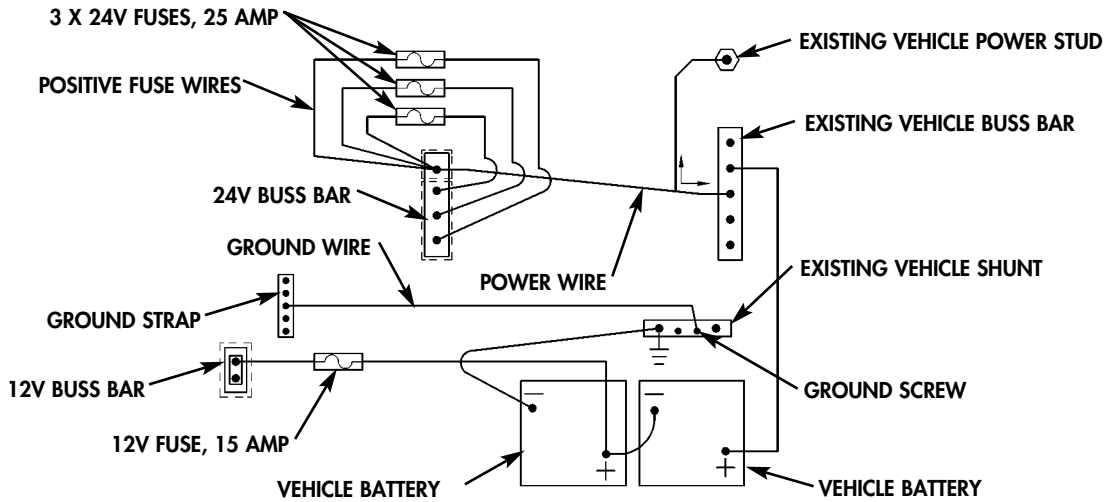
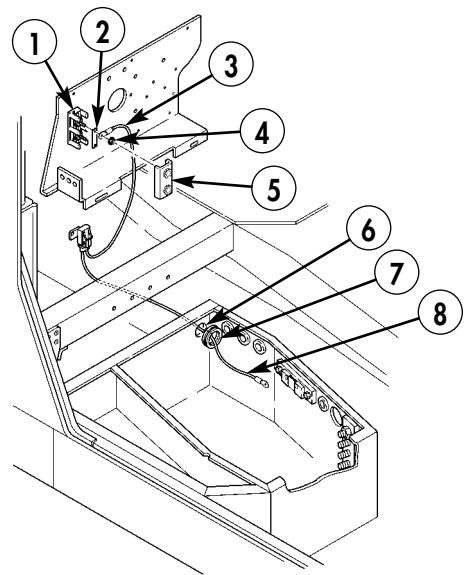


Figure 5-7.



- 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 5-8.

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

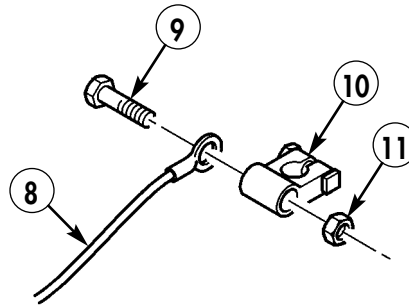
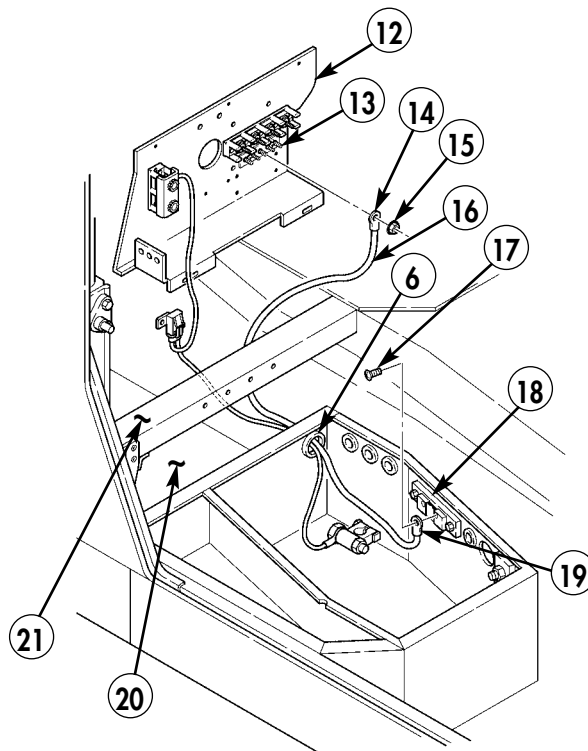


Figure 5-9.

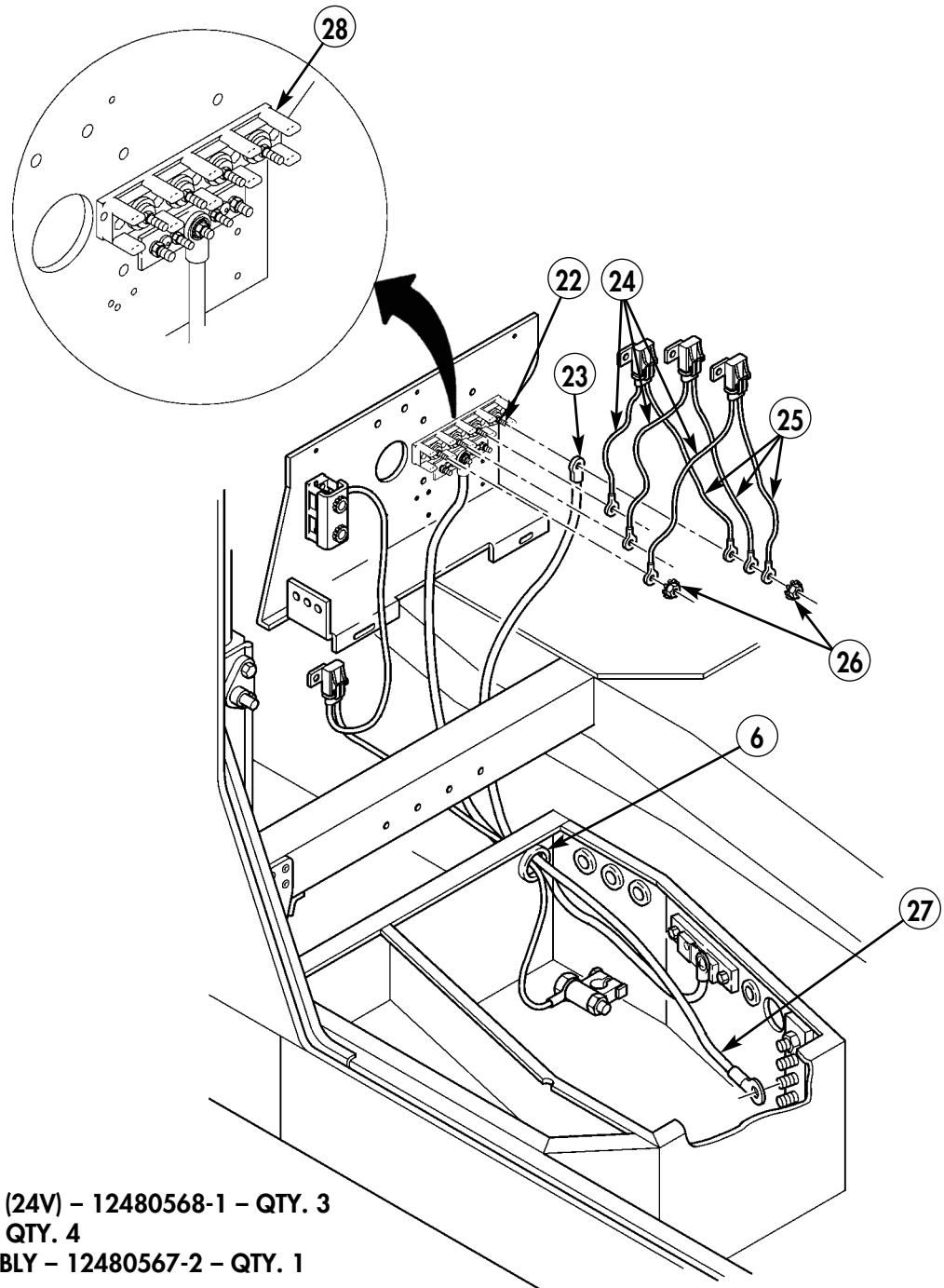
- 6-6. Position cab enclosure panel (12) in rear floor pan (20) and rear of B-beam (21). Do not secure cab enclosure panel (12) at this time.
- 6-7. Route ground cable (16) through battery box hole (6).
- 6-8. Secure terminal lug (14) to center terminal of terminal board (13) with nut (15), and secure terminal lug (19) to 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 5-10.

- 6-10.** Route 24V power cable (27) through hole (6) and install 24V power cable terminal lug (23) on inboard terminal board 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).



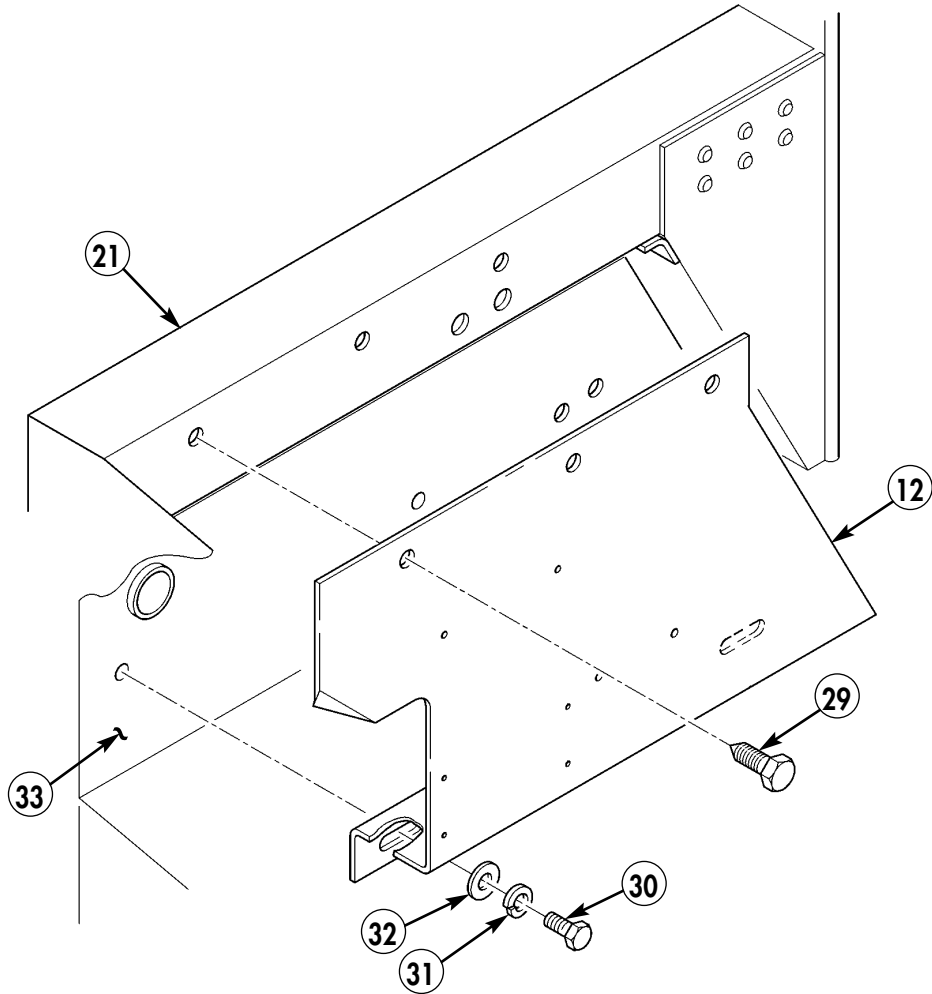
- 24. FUSE WIRE ASSEMBLY (24V) – 12480568-1 – QTY. 3**
- 26. LOCKNUT – 271175 – QTY. 4**
- 27. POWER CABLE ASSEMBLY – 12480567-2 – QTY. 1**

Figure 5-11.

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

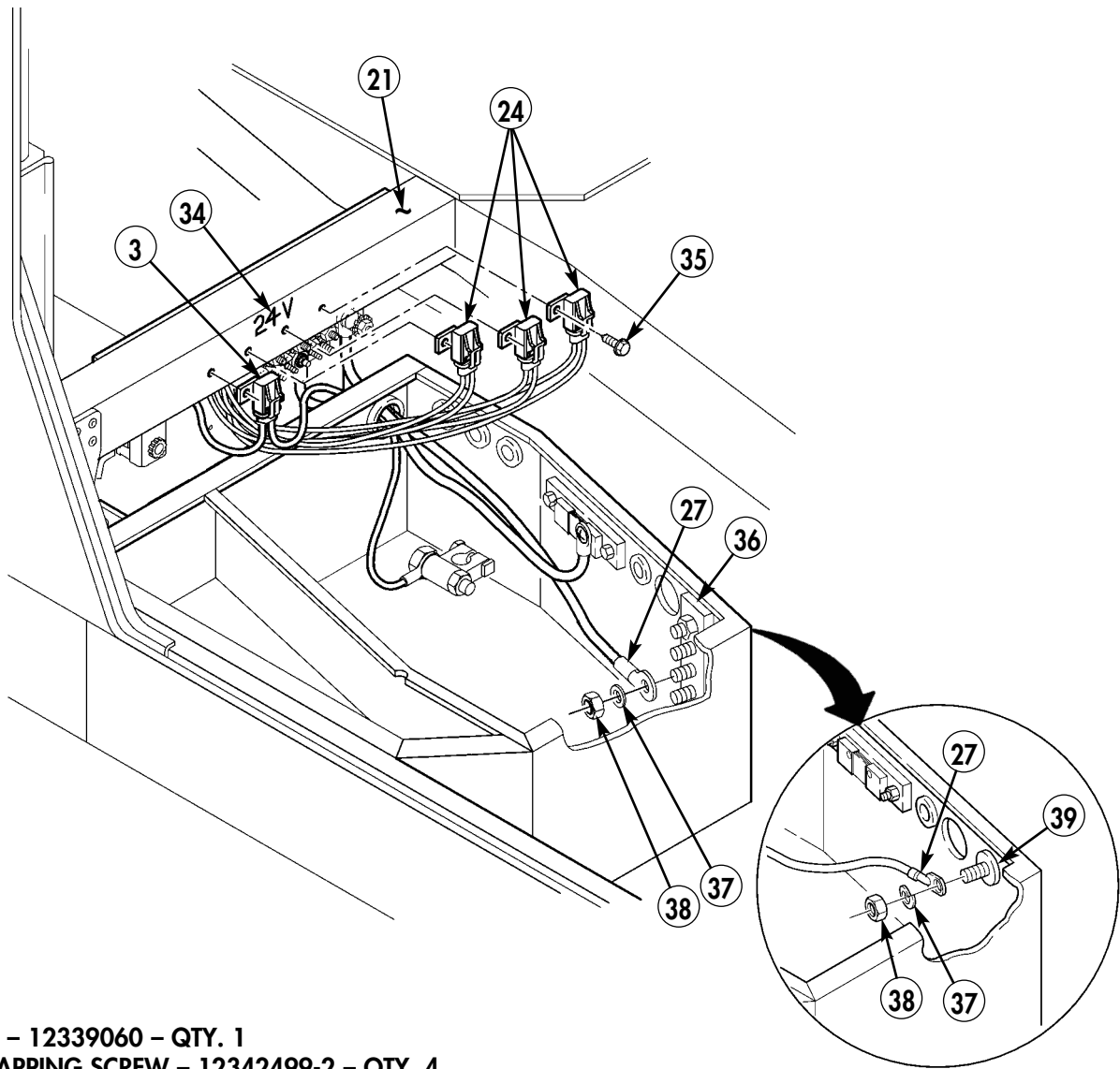
Figure 5-12.

- 6-16. Secure three 24V fuse wire assemblies (24) and one 12V fuse wire 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

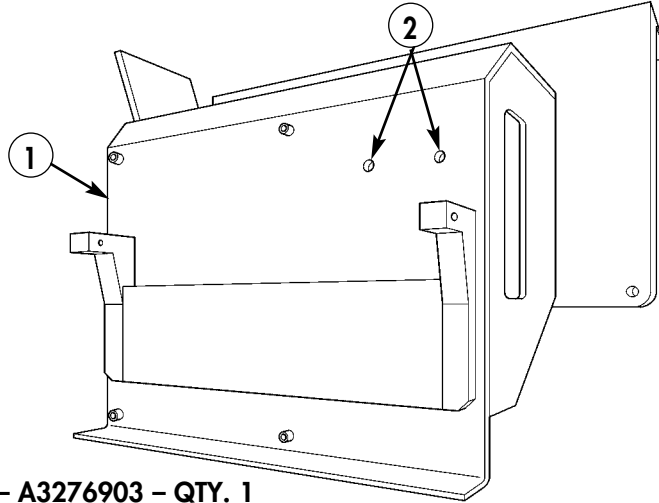
Figure 5-13.

Section VII. INTEGRATED RACK INSTALLATION

NOTE

Perform step 7-1 only if SINCGARS model AN/VRC-92F is to be installed.

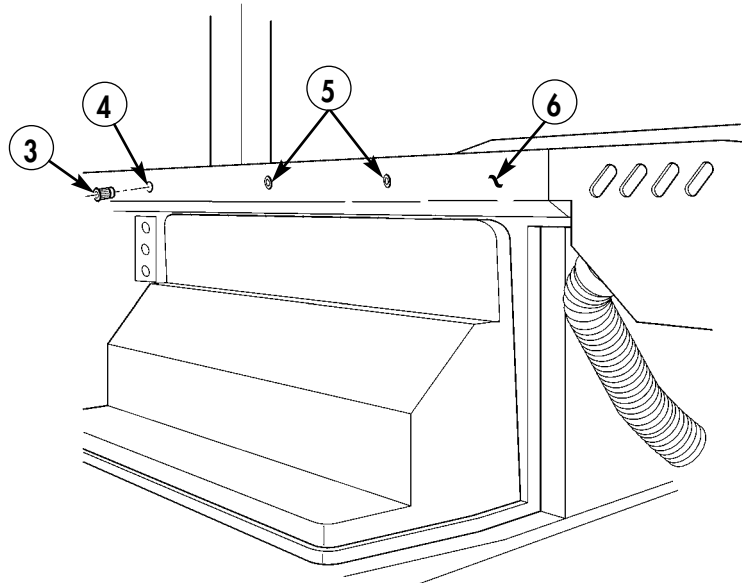
- 7-1. Remove two inserts (2) from bottom of integrated rack (1)



1. RACK, INTEGRATED - A3276903 - QTY. 1

Figure 5-14.

- 7-2. Using integrated rack (1) as template, locate, mark, and drill one 0.390-inch diameter hole (4) in dash (6).
- 7-3. Remove paint from vicinity of hole (4) and two existing inserts (5).
- 7-4. Install insert (3) in hole (4).
- 7-5. Apply anti-seize compound to inserts (3) and (5) as required.



3. INSERT - 12446871-2 - QTY. 1

Figure 5-15.

- 7-6. Remove paint from vicinity of three mounting slots (7) on integrated rack (1).
- 7-7. Apply anti-seize compound to three mounting slots (7) on integrated rack (1) as required.

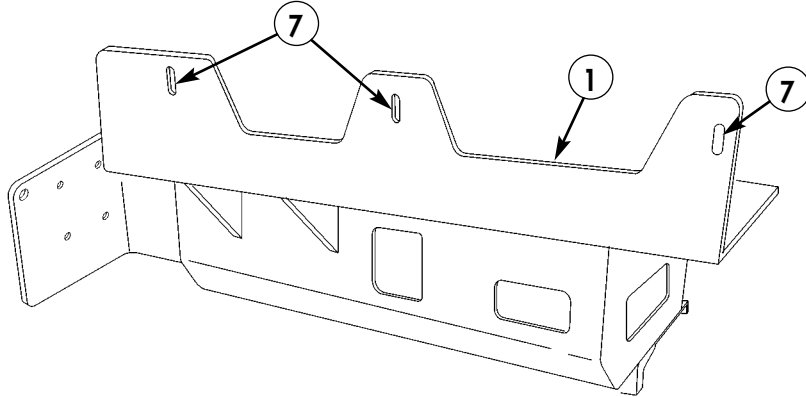
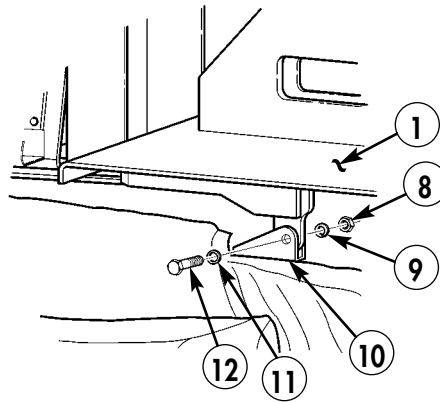


Figure 5-16.

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 of cabling. Secure rack only after all cabling has been routed.

- 7-8. Mount integrated rack (1) to existing radio rack mount (10) using capscrew (12), washer (11), lockwasher (9), and nut (8). Repeat for opposite side. Do not tighten screws.



- 8. NUT – MS35649-2382 – QTY. 2
- 9. LOCKWASHER – MS35338-46 – QTY. 2
- 11. WASHER – 2436163 – QTY. 2
- 12. CAPSCREW – B1821AH038C225N – QTY. 2

Figure 5-17.

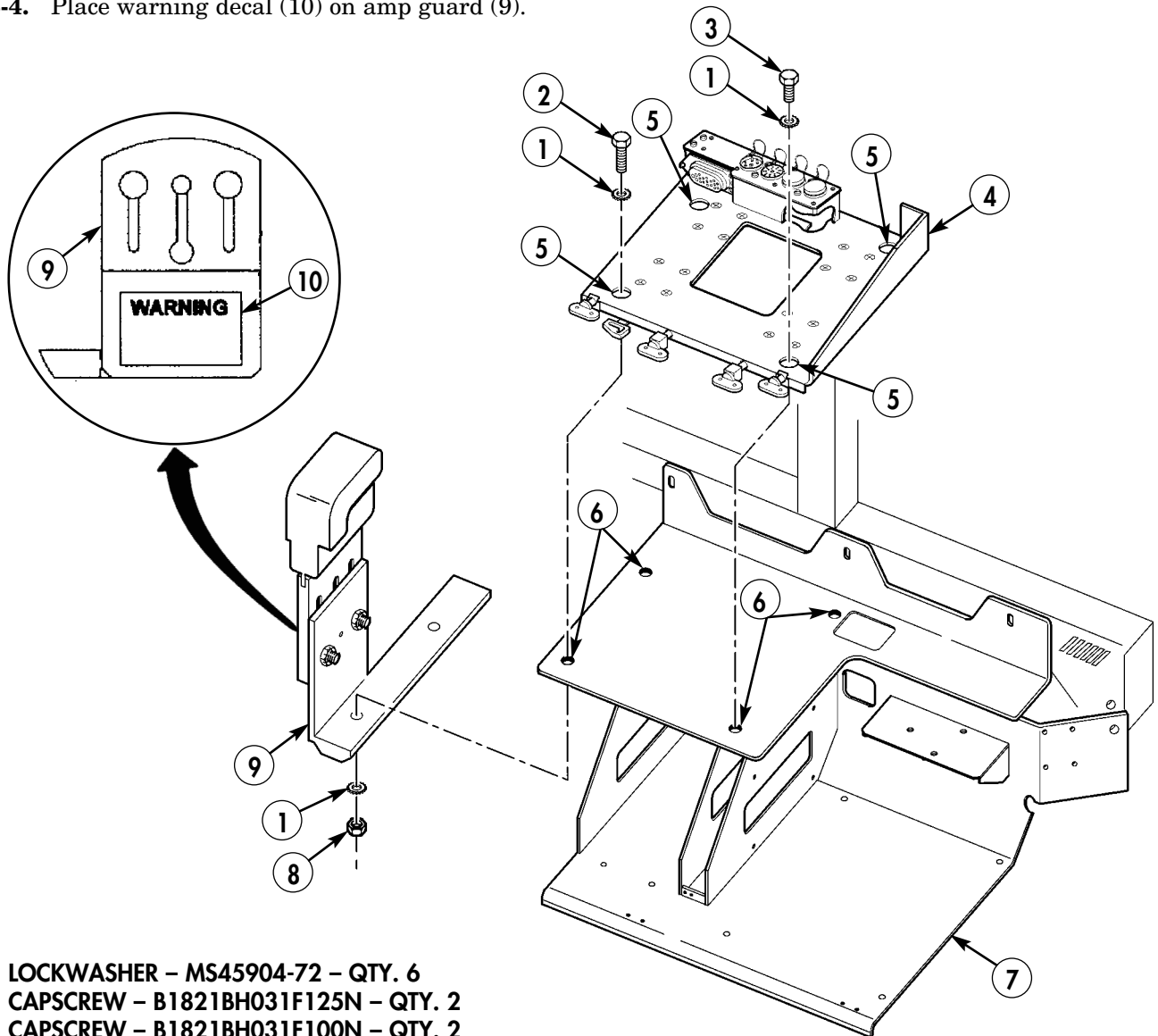
Section VIII. INSTALLATION OF SINGARS MOUNTING TRAY AND AMP GUARD

- 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 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's 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) to integrated rack (7) with two screws (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 – MS51968-5 – QTY. 2
- 9. AMP GUARD – 872842-1 – QTY. 1
- 10. DECAL – 861868-2 – QTY. 1

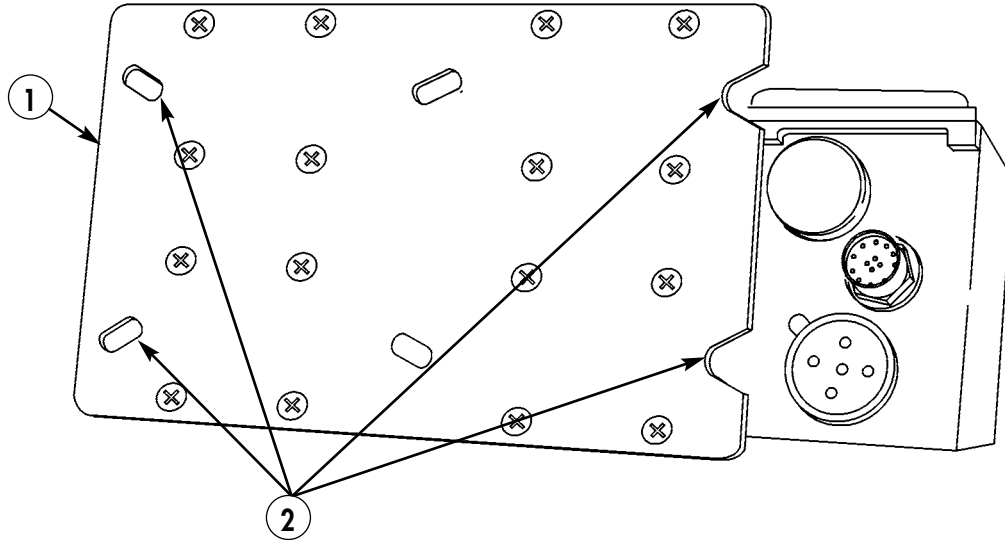
Figure 5-18.

Section IX. POWER AMPLIFIER INSTALLATION

NOTE

Perform this procedure only if SINCGARS 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 5-19.

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

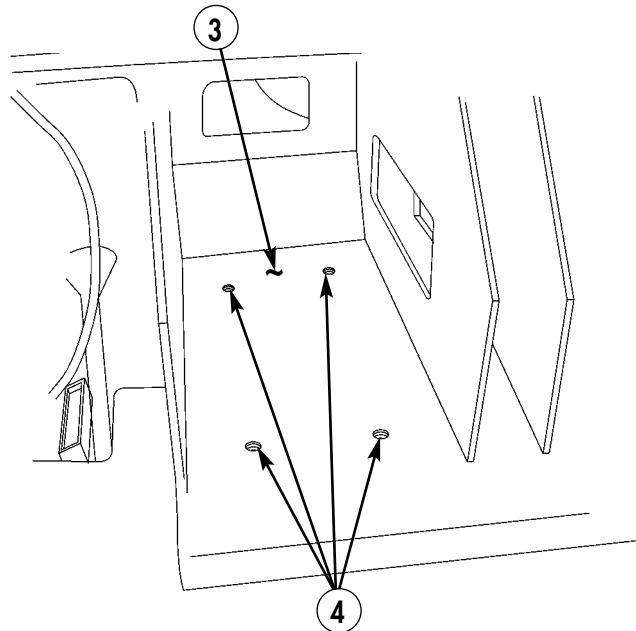
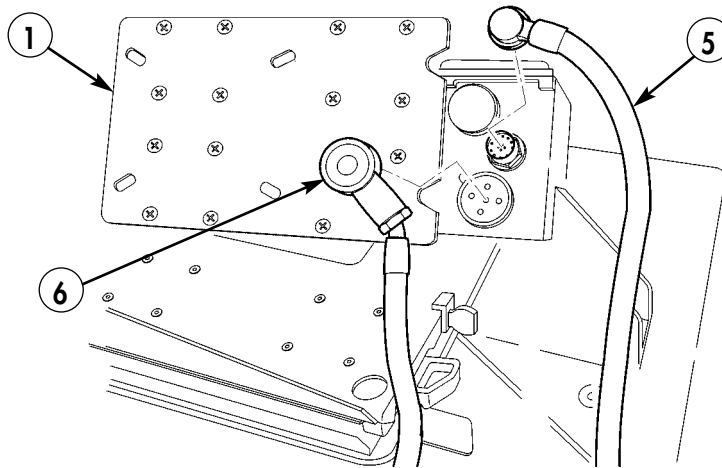


Figure 5-20.

- 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).



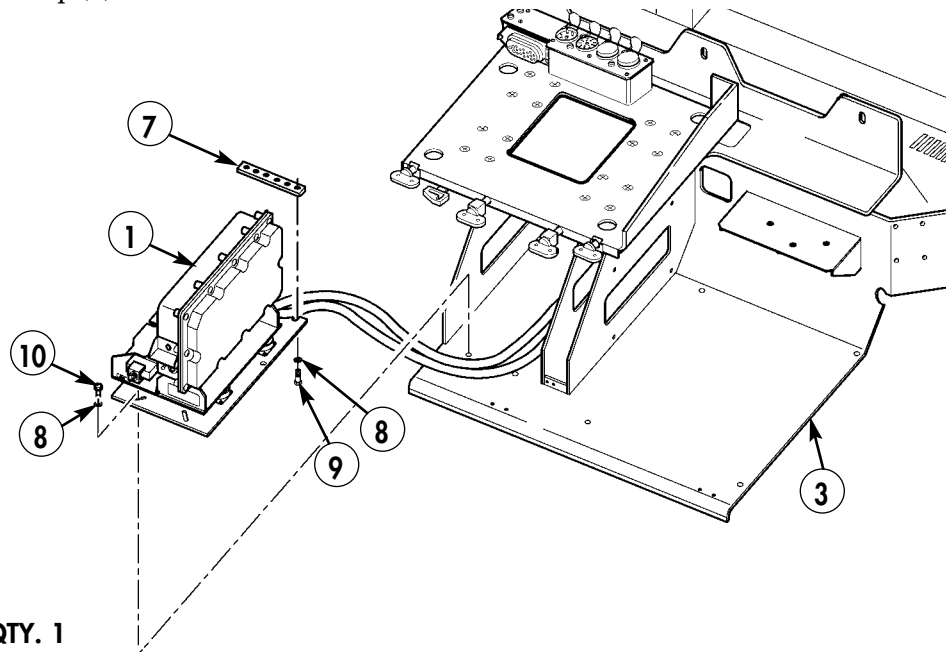
- 5. CONTROL CABLE – A3014037-4 – QTY. 1
- 6. POWER CABLE – A3014040-9 – QTY. 1

Figure 5-21.

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), four lockwashers (8), and nut strip (7).



- 7. NUT STRIP – A3014064-1 – QTY. 1
- 8. LOCKWASHER – MS45904-72 – QTY. 4
- 9. CAPSCREW – B1821BH031F125N – QTY. 2
- 10. CAPSCREW – B1821BH031F075N – QTY. 2

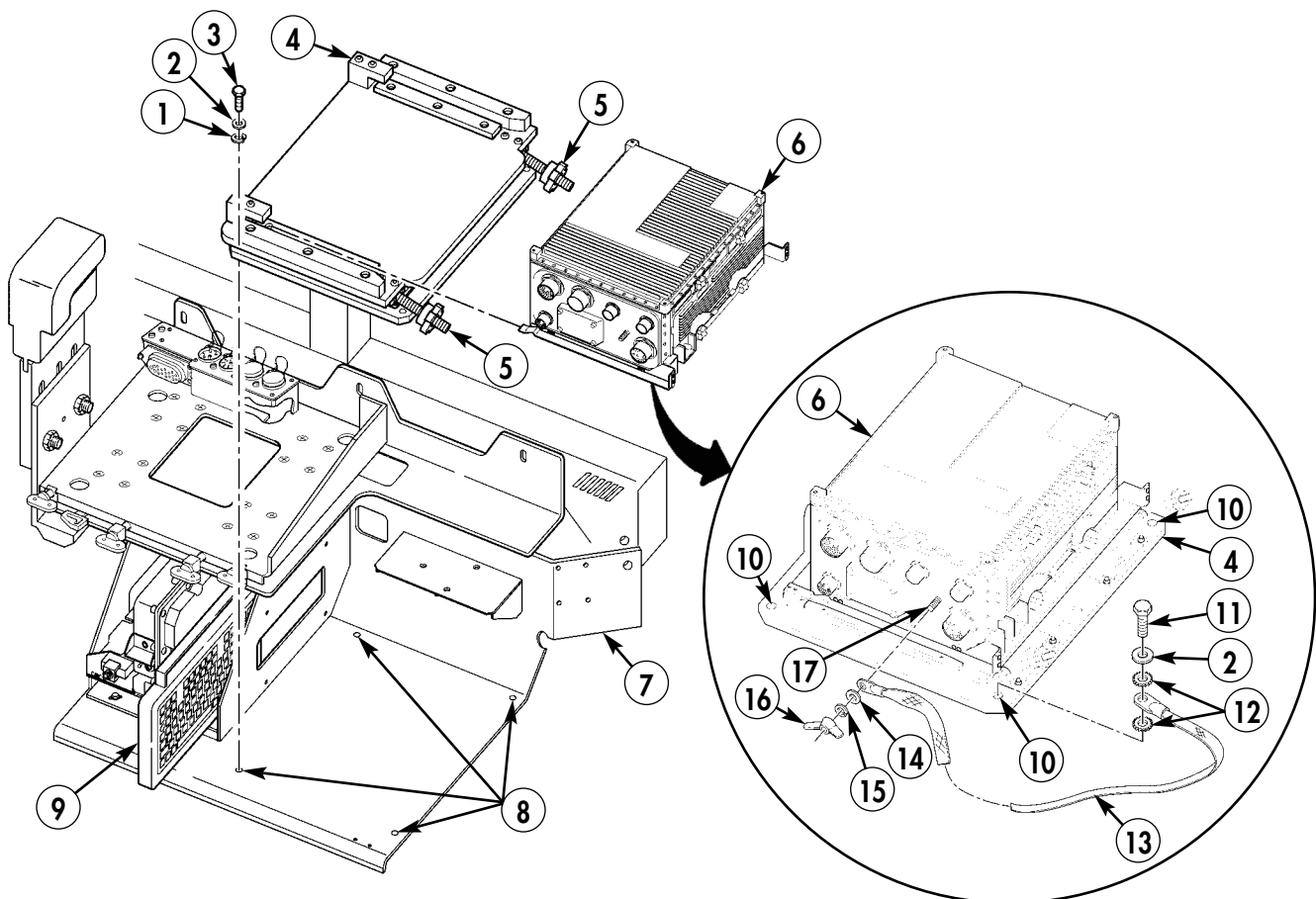
Figure 5-22.

Section X. FBCB2 COMPONENTS INSTALLATION

NOTE

SINGGARS model AN/VRC-92F shown.

- 10-1. Remove paint from vicinity of four holes (8) on integrated rack (7) and both sides of four holes (10) 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 (10).
- 10-3. Install keyboard (9) in keyboard slot of integrated rack (7).
- 10-4. Install CPU (6) on CPU isolation kit (4) with two existing fastener guards (5).
- 10-5. Fabricate ground strap (13) from 8.00-in. length of braided wire and two terminal lugs.
- 10-6. Install ground strap (13) on CPU ground stud (17) with existing washer (14), lockwasher (15), and wingnut (16).
- 10-7. Install ground strap (13) on CPU isolation kit (4) and integrated rack (7) with capscrow (11), washer (2), and two lockwashers (12).



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

11. CAPSCREW – B1821BH025C125N – QTY. 1
12. LOCKWASHER – MS45904-68 – QTY. 2
13. CPU GROUND STRAP
 - BRAIDED WIRE – AA59569F30T0375 – QTY. A/R
 - TERMINAL LUG – MS20659-141 – QTY. 2

Figure 5-23.

NOTE

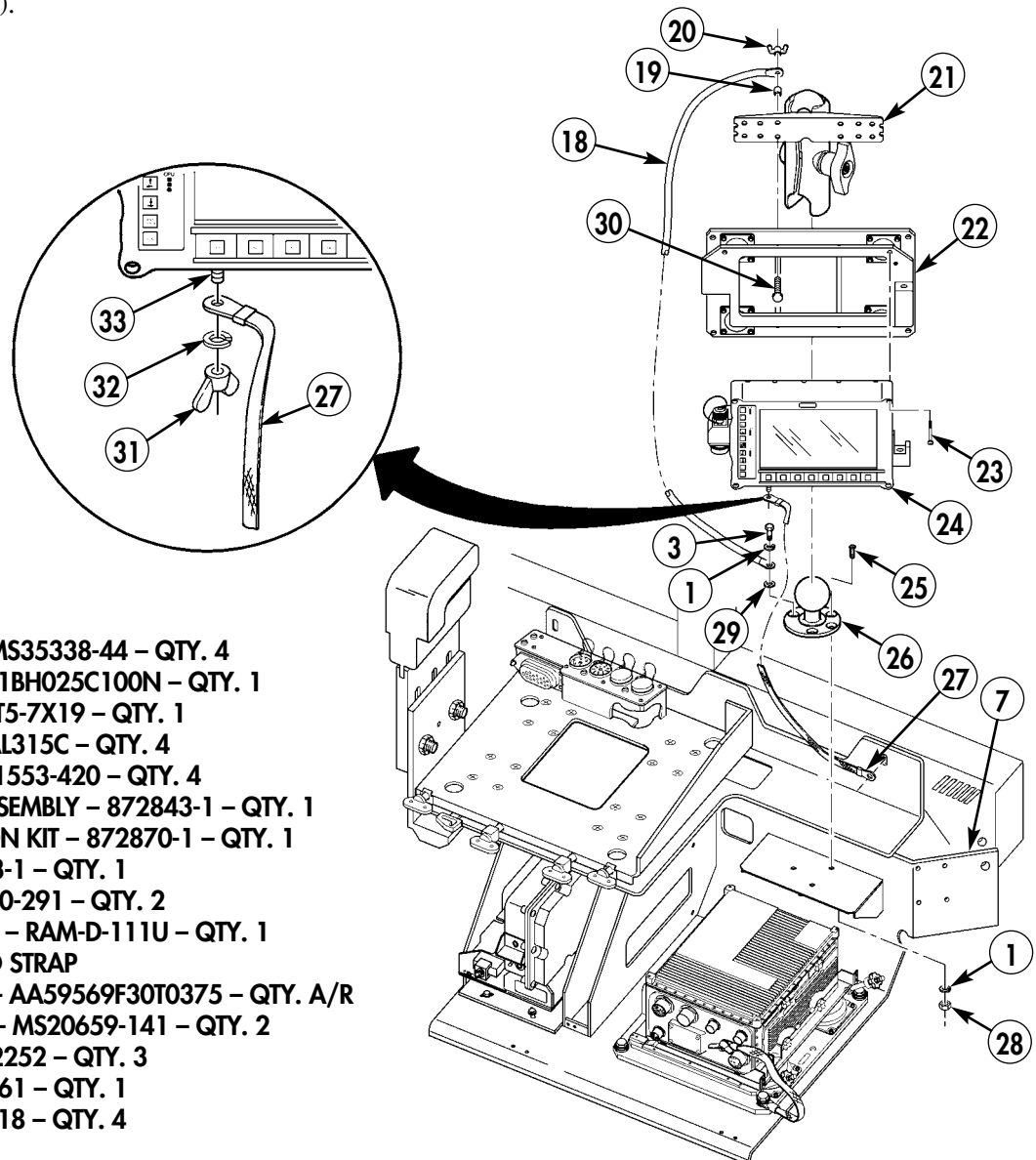
SINGGARS model AN/VRC-92F shown.

- 10-8. Install ramball mount (26) on integrated rack (7) with two screws (25), capscrew (3), lockwasher (1), lanyard (18), washer (29), three lockwashers (1), and nuts (28).
- 10-9. Install display isolation kit (22) on display lock assembly (21) with four bolts (30), spacers (19), lanyard (18), and four wingnuts (20).
- 10-10. Install display unit (24) on display isolation kit (22) with four screws (23).
- 10-11. Install display lock assembly (21) on ramball mount (26).
- 10-12. Fabricate display ground strap (27) from 8-in. length of braided wire and two terminal lugs.

NOTE

Remove paint from vicinity of integrated rack mounting hole before performing step 10-13. Apply anti-seize compound as required. Ground strap will be installed on integrated rack only when integrated rack is fully secured in vehicle.

- 10-13. Install display ground strap (27) on display ground stud (33) with existing lockwasher (32) and wingnut (31).

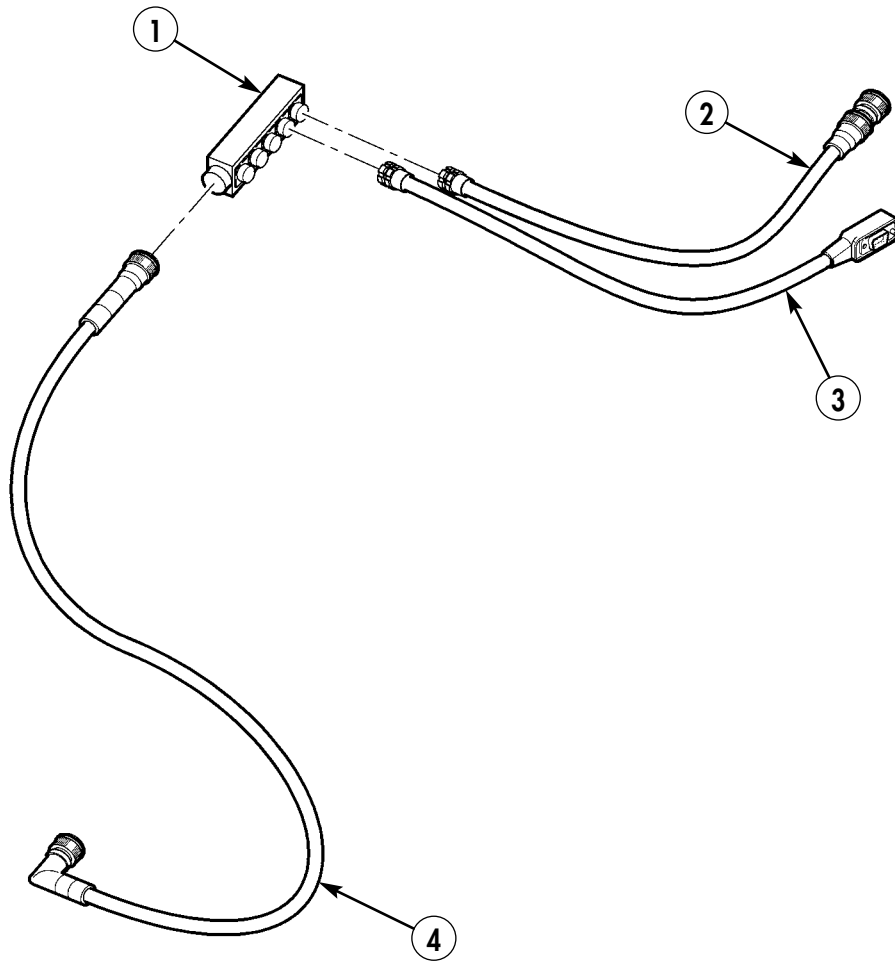


- 1. LOCKWASHER – MS35338-44 – QTY. 4
- 3. CAPSCREW B1821BH025C100N – QTY. 1
- 18. LANYARD – 8925T5-7X19 – QTY. 1
- 19. SPACER – 10705AL315C – QTY. 4
- 20. WINGNUT – MS51553-420 – QTY. 4
- 21. DISPLAY LOCK ASSEMBLY – 872843-1 – QTY. 1
- 22. DISPLAY ISOLATION KIT – 872870-1 – QTY. 1
- 24. DISPLAY – 881293-1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

Figure 5-24.

Section X.A. SERIAL INTERFACE ADAPTER DEVICE (SIAD) CABLES INSTALLATION

- 10.A-1. Install W3 cable (4) to SIAD (1).
- 10.A-2. Install W3N cable (2) to SIAD (1).
- 10.A-3. Install W3P cable (3) to SIAD (1).



- 1. SERIAL INTERFACE ADAPTER DEVICE – 881331-1 – QTY. 1
- 2. W3N CABLE – 881336-1 – QTY. 1
- 3. W3P CABLE – 881335-1 – QTY. 1
- 4. W3 CABLE – P/O 881331-1 – QTY. 1

Figure 5-24.1.

Section X.B. SERIAL INTERFACE ADAPTER DEVICE (SIAD) INSTALLATION

Position SIAD (1) securely between FBCB2 (2) and keyboard tray (3) on integrated rack (4).

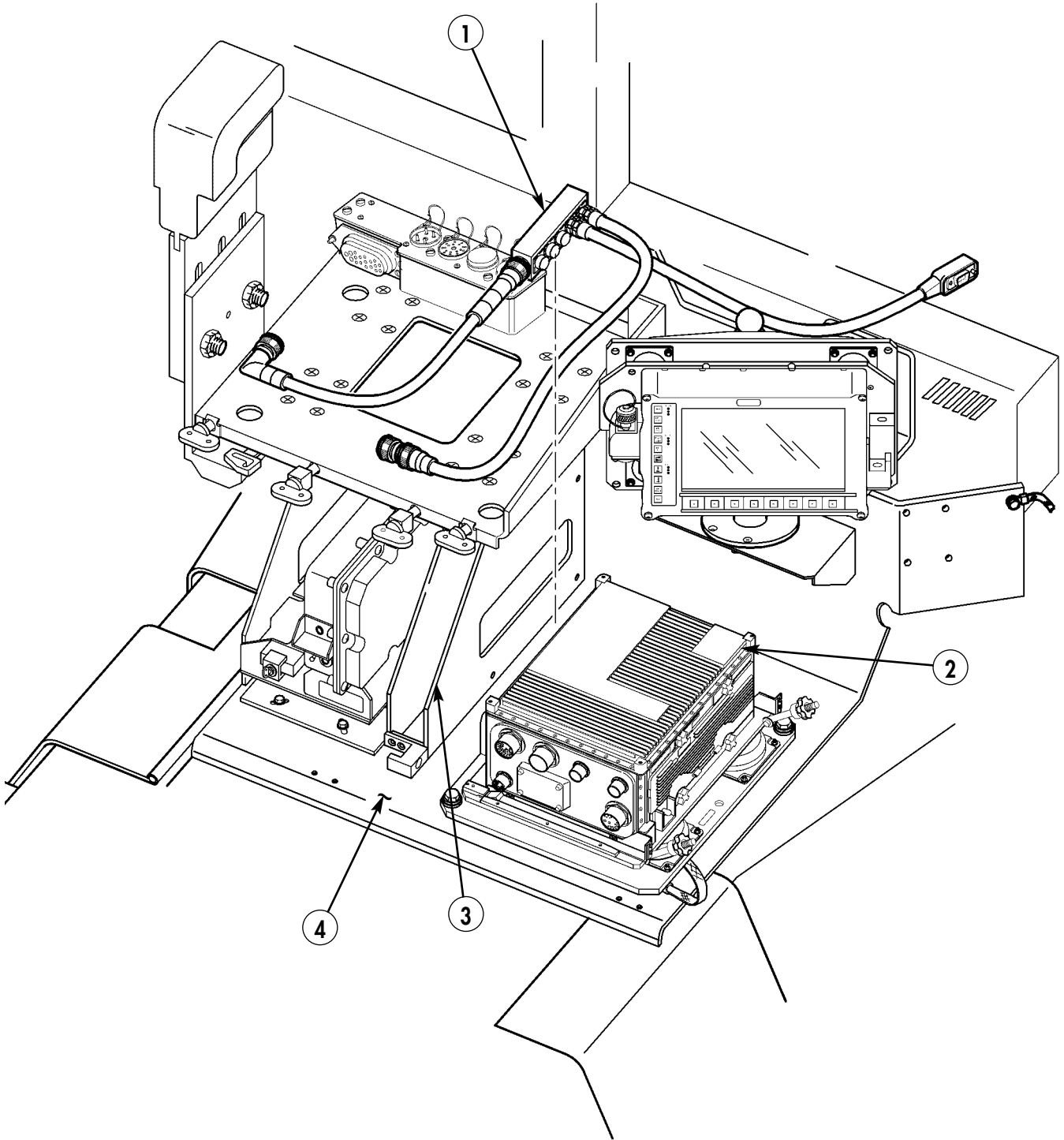
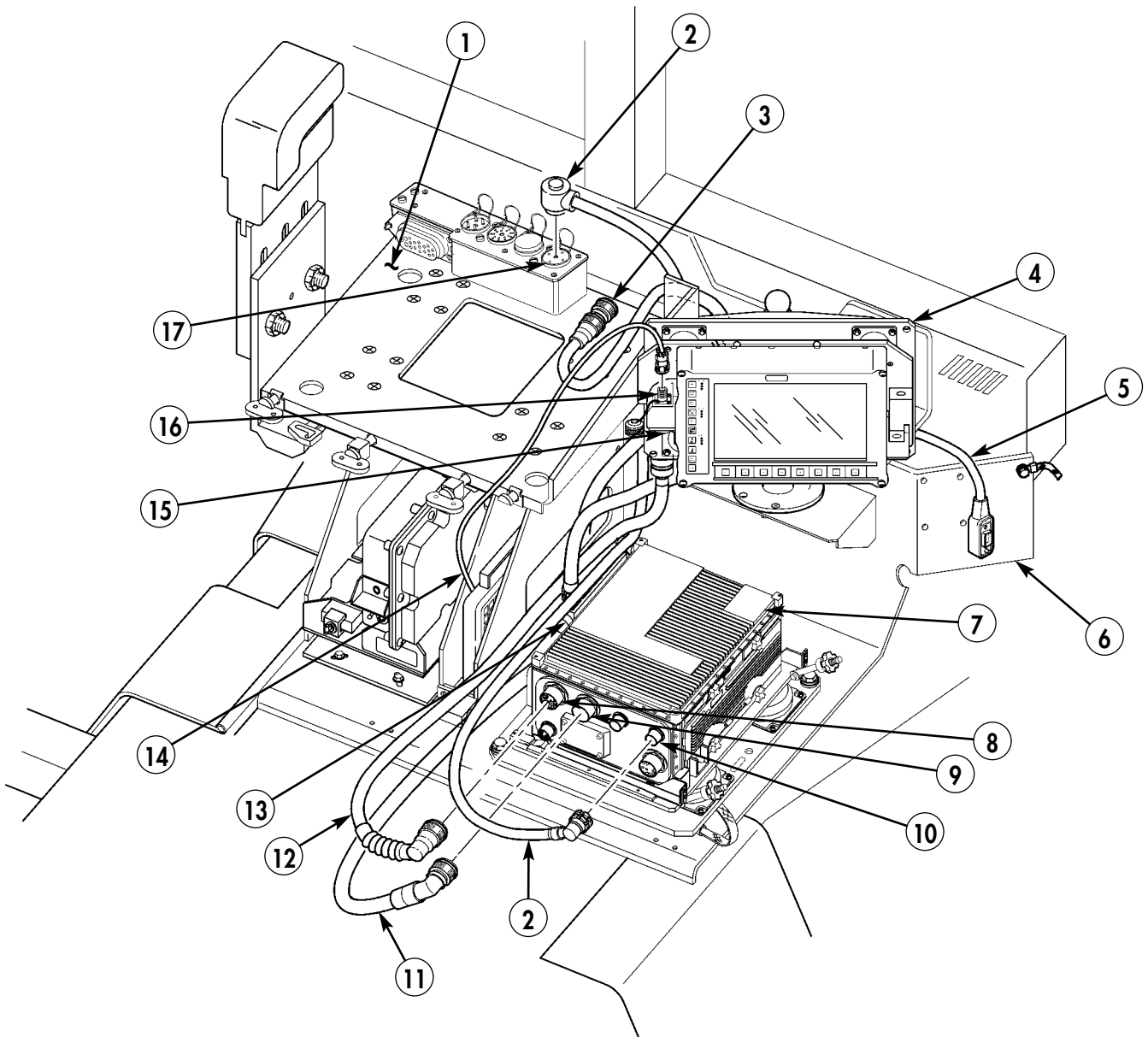


Figure 5-24.2.

Section X.C. FBCB2 CABLES INSTALLATION

- 10.C-1. Connect W3 cable (11) from SIAD (13) to J3 connector (9) on FBCB2 processor (7).
- 10.C-2. Route W3P cable (5) from SIAD (13) to DAGR mount (6).
- 10.C-3. Connect W2 cable (12) to J4 connector (8) on FBCB2 processor (7) and J1 connector (15) on FBCB2 display unit (4).
- 10.C-4. Connect W1 cable (2) to J1 connector (10) on FBCB2 processor (7). Route W1 cable (2) to A4J2 connector (17).
- 10.C-5. Connect keyboard cable (14) to J2 connector (16) on FBCB2 display unit (4).
- 10.C-6. Route W1J1 cable (3) to SINCGARS mount (1).



- 2. W1 CABLE - 866003-3 - QTY. 1
- 12. W2 CABLE - 881327-1 - QTY. 1

Figure 5-24.3.

10.C-7. Install Vehicular Amplifier Adapter (VAA) (18) into SINCGARS mount (1).

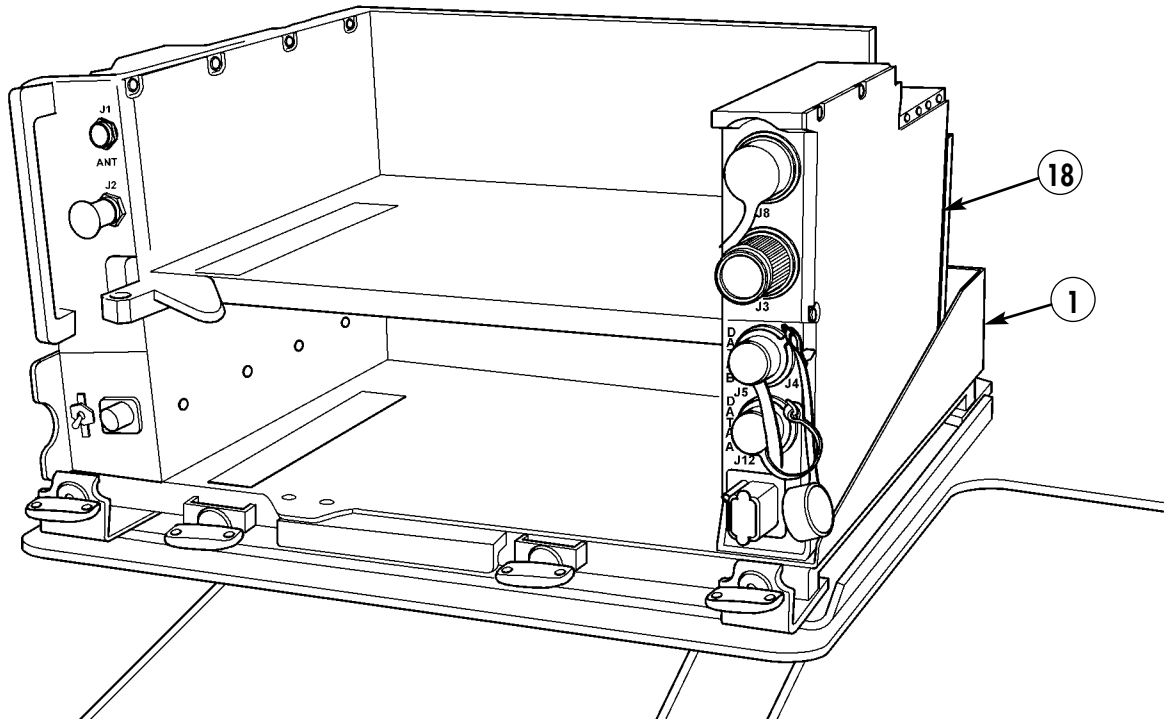


Figure 5-24.4.

10.C-8. Connect W3N cable (19) to J3 (20) connector on VAA (18).

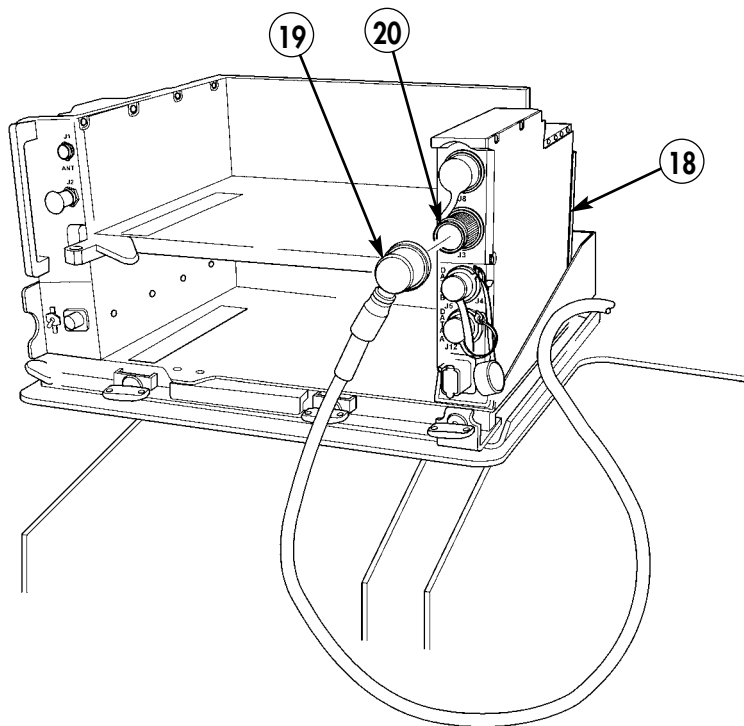


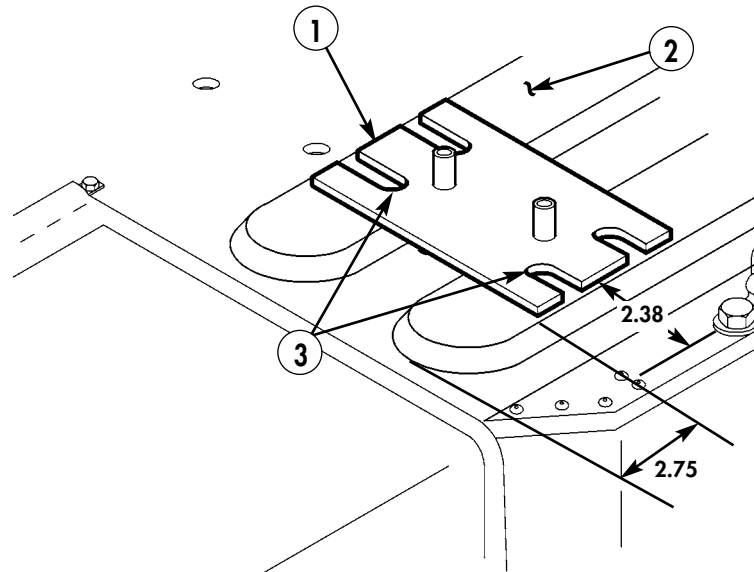
Figure 5-24.5.

Section XI. LOUDSPEAKER INSTALLATION

NOTE

- 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.

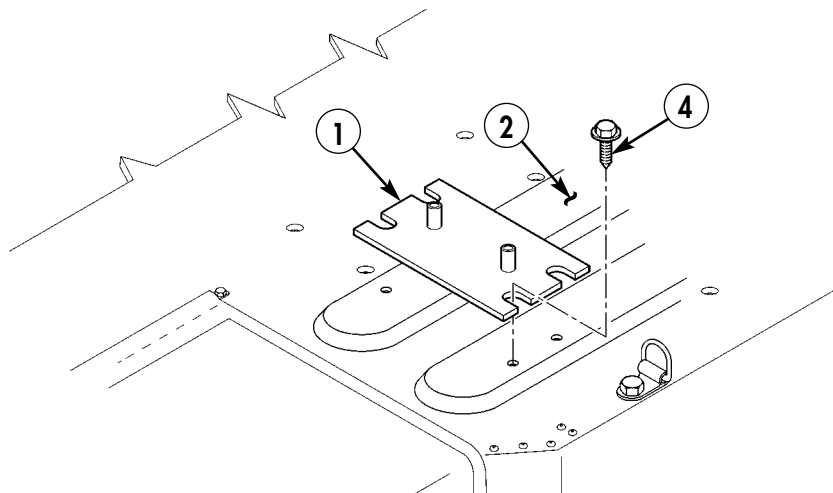
11-1. Using speaker mounting plate (1) as template, locate, mark, and drill four 0.201-in. diameter holes (3) in cargo floor (2).



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

Figure 5-25.

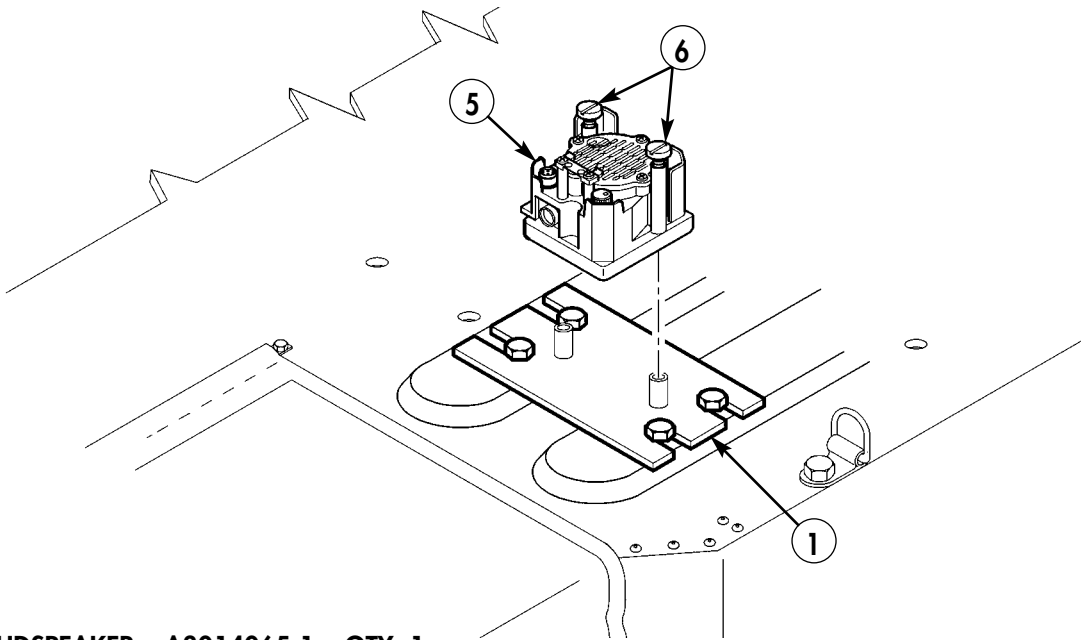
11-2. Attach speaker mounting plate (1) to cargo floor (2) with four self-tapping screws (4).



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

Figure 5-26.

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



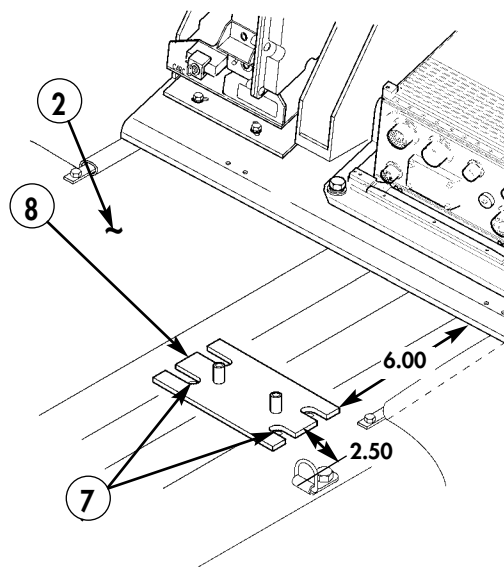
5. LOUDSPEAKER – A3014065-1 – QTY. 1

Figure 5-27.

NOTE

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

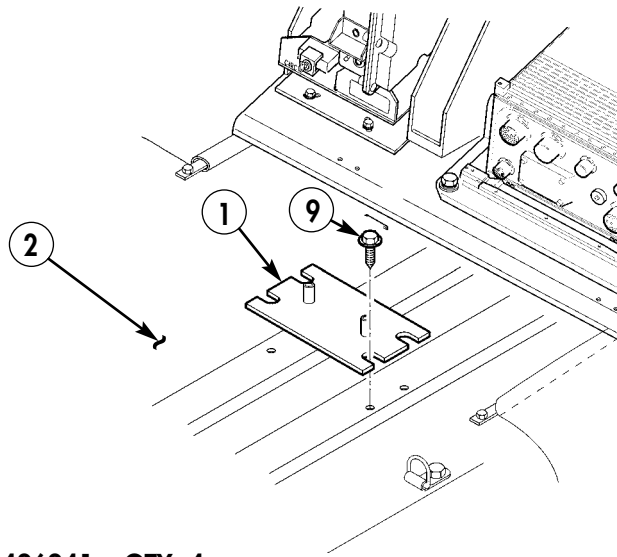
- 11-4. Using speaker mounting plate (8) as template, locate, mark, and drill four 0.201-in. diameter holes (7) in cargo floor (2).



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

Figure 5-28.

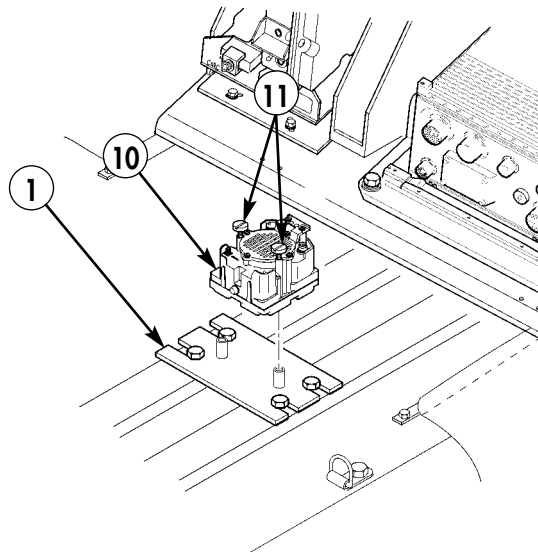
11-5. Attach speaker mounting plate (8) to cargo floor (2) with four self-tapping screws (9).



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

Figure 5-29.

11-6. Attach loudspeaker (10) to speaker mounting plate (8) with two externally-relieved body screws (11).



10. LOUDSPEAKER – A3014065-1 – QTY. 1

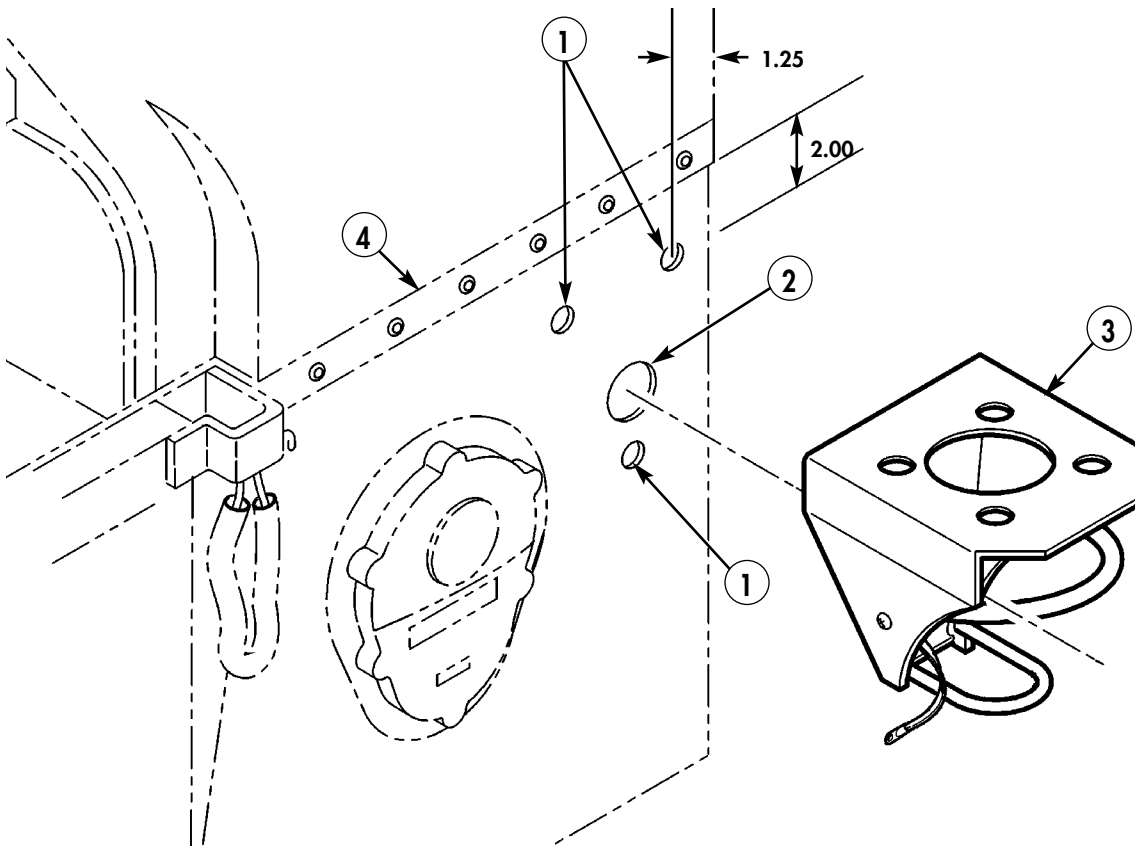
Figure 5-30.

Section XII. ANTENNA INSTALLATION

NOTE

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

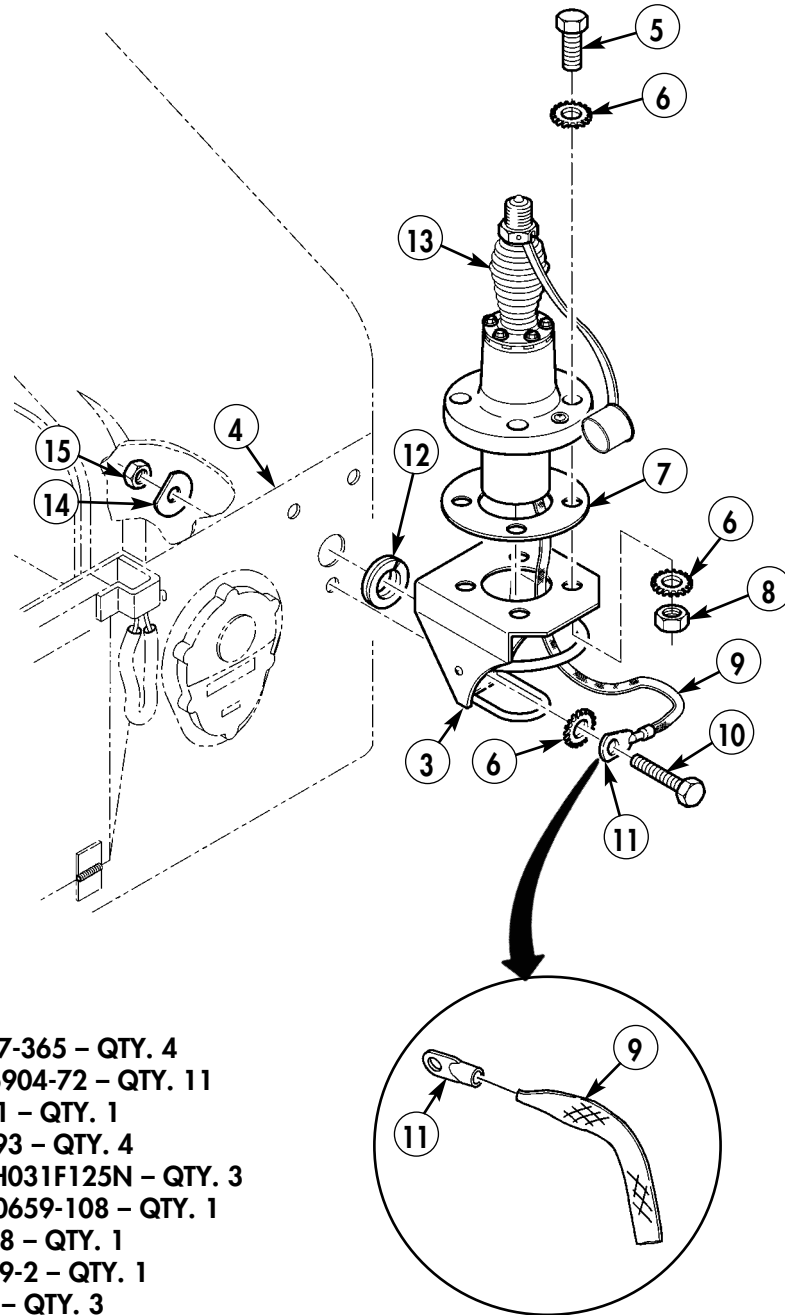
- 12-1. Using antenna bracket (3) as template, locate, mark, and drill 1.375-in. diameter hole (2) in rear wall (4).
- 12-2. Locate, mark, and drill three 0.343-in. diameter holes (1) in rear wall (4).
- 12-3. Remove paint from vicinity of three holes (1) in rear wall (4) and three holes in antenna bracket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



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

Figure 5-31.

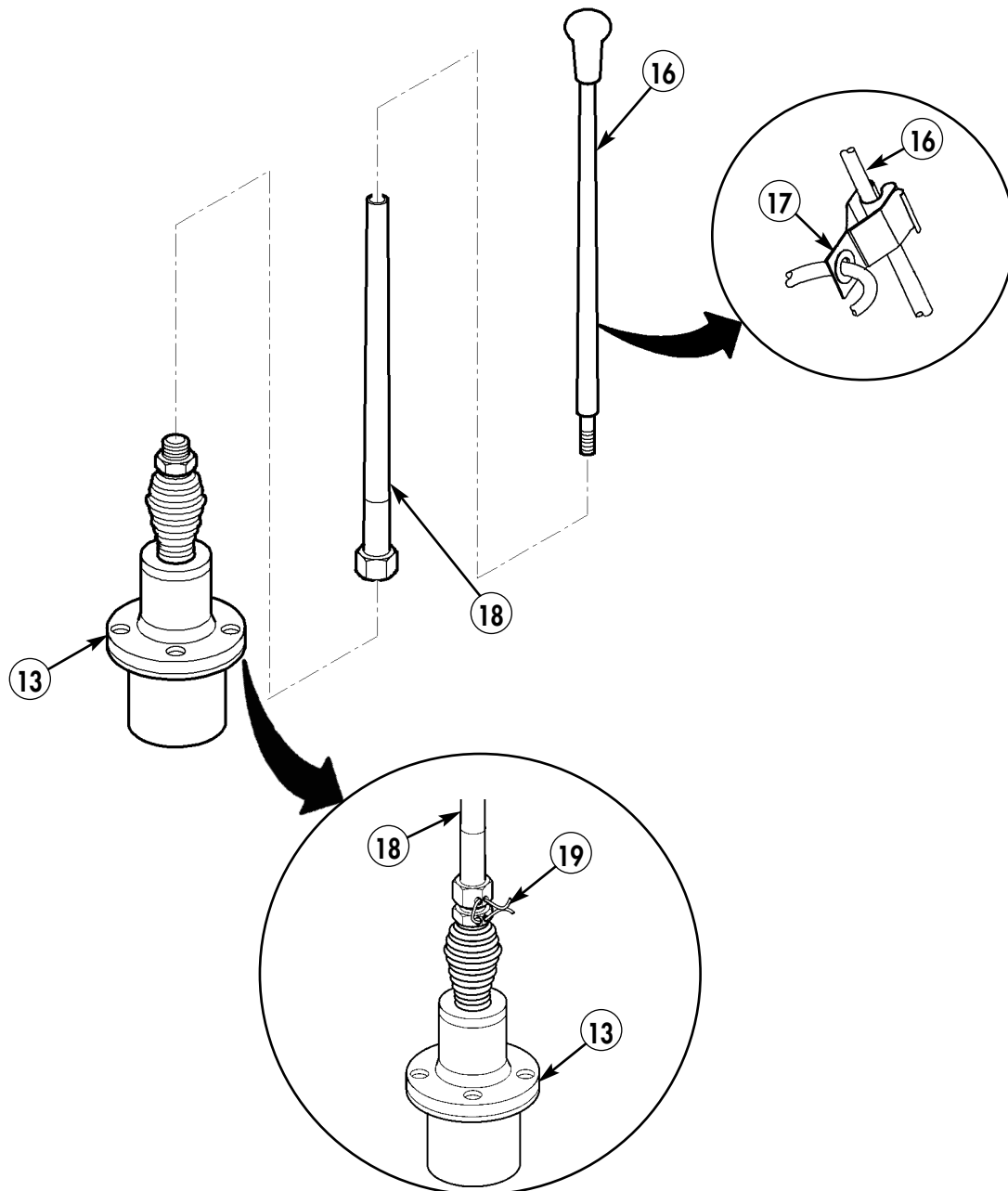
- 12-5. Install grommet (12) in hole of rear wall (4).
- 12-6. Position antenna (13) and gasket (7) on antenna bracket (3), and route existing ground strap (9) through antenna bracket (3).
- 12-7. Install antenna (13) on antenna bracket (3) with four capscrews (5), eight lockwashers (6), and four nuts (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). Secure ground strap (9) and antenna bracket (3) to rear wall (4) with capscrew (10), lockwasher (6), washer (14), and nut (15).



- 5. CAPSCREW – MS35307-365 – QTY. 4
- 6. LOCKWASHER – MS45904-72 – QTY. 11
- 7. GASKET – A3013655-1 – QTY. 1
- 8. NUT – 13218E0320-293 – QTY. 4
- 10. CAPSCREW – B1821BH031F125N – QTY. 3
- 11. TERMINAL LUG – MS20659-108 – QTY. 1
- 12. GROMMET – 12338098 – QTY. 1
- 13. ANTENNA – A3017899-2 – QTY. 1
- 14. WASHER – 12338095 – QTY. 3
- 15. NUT – 9418892 – QTY. 3

Figure 5-32.

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

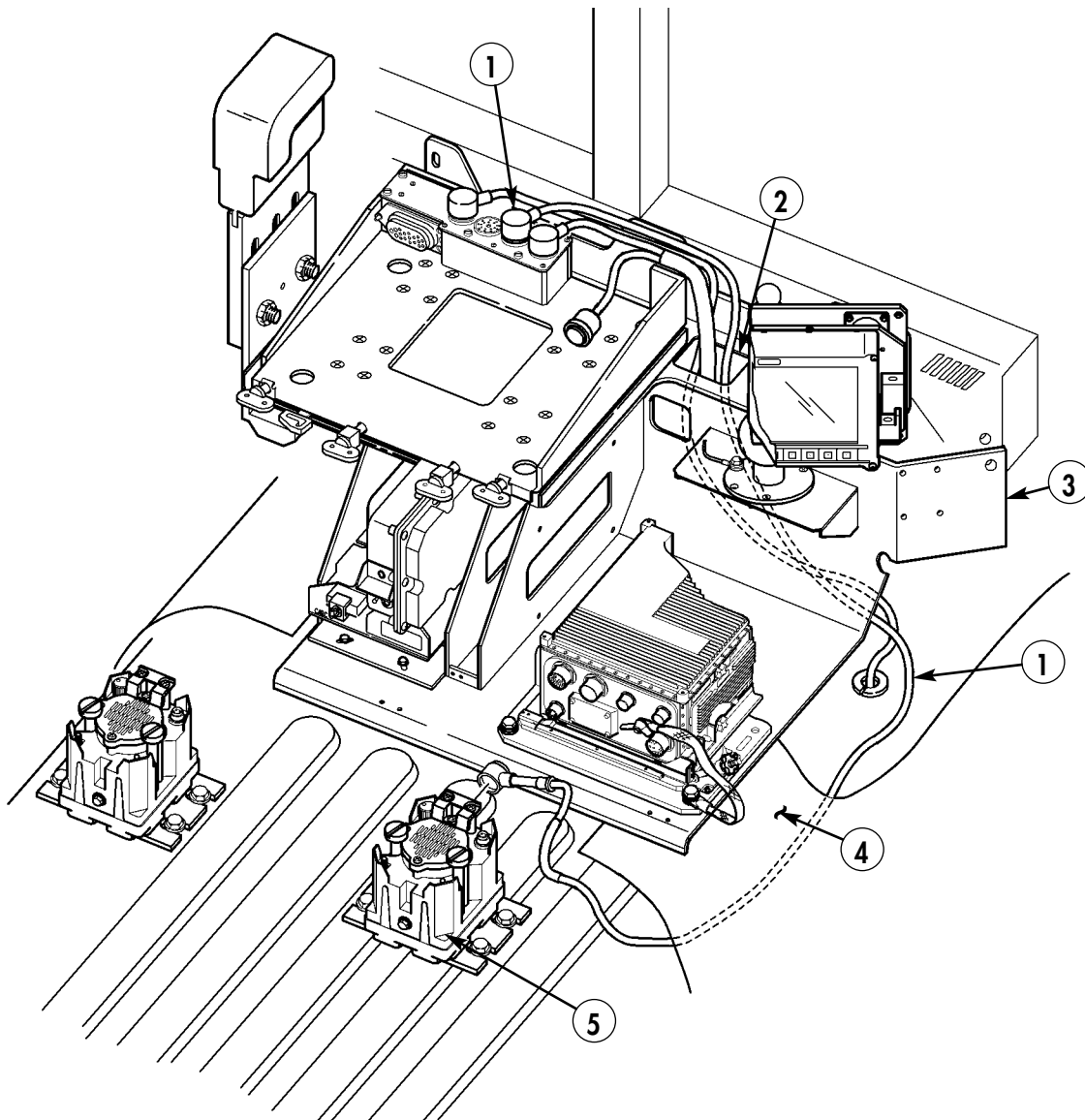
Figure 5-33.

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



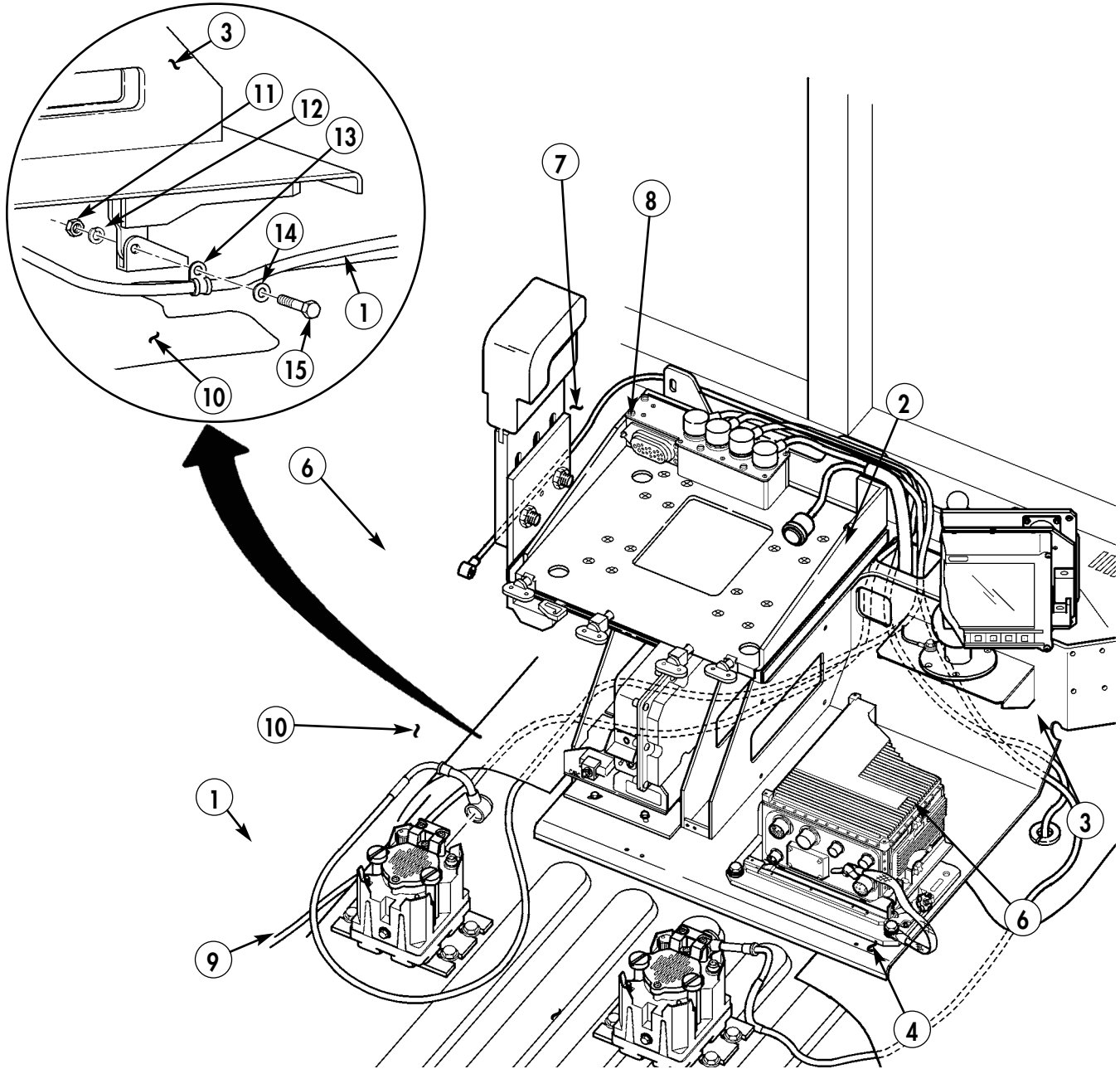
1. LOUDSPEAKER CABLE — A3014038-3 — QTY. 1

Figure 5-34.

NOTE

SINGGARS model AN/VRC-92F shown.

- 13-2. Route left-side loudspeaker cable (8) down through center access hole (2), under integrated rack (3), and under left-side tunnel insulation (10) towards left loudspeaker (9). Connect left-side loudspeaker cable (8) to left loudspeaker (9).
- 13-3. Secure left-side loudspeaker cable (8) to integrated rack (3) with loop clamp (13) and existing screw (15), washer (14), lockwasher (12), and nut (11). Do not tighten nut (11) at this time. Coil excess left-side loudspeaker cable (8) 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.



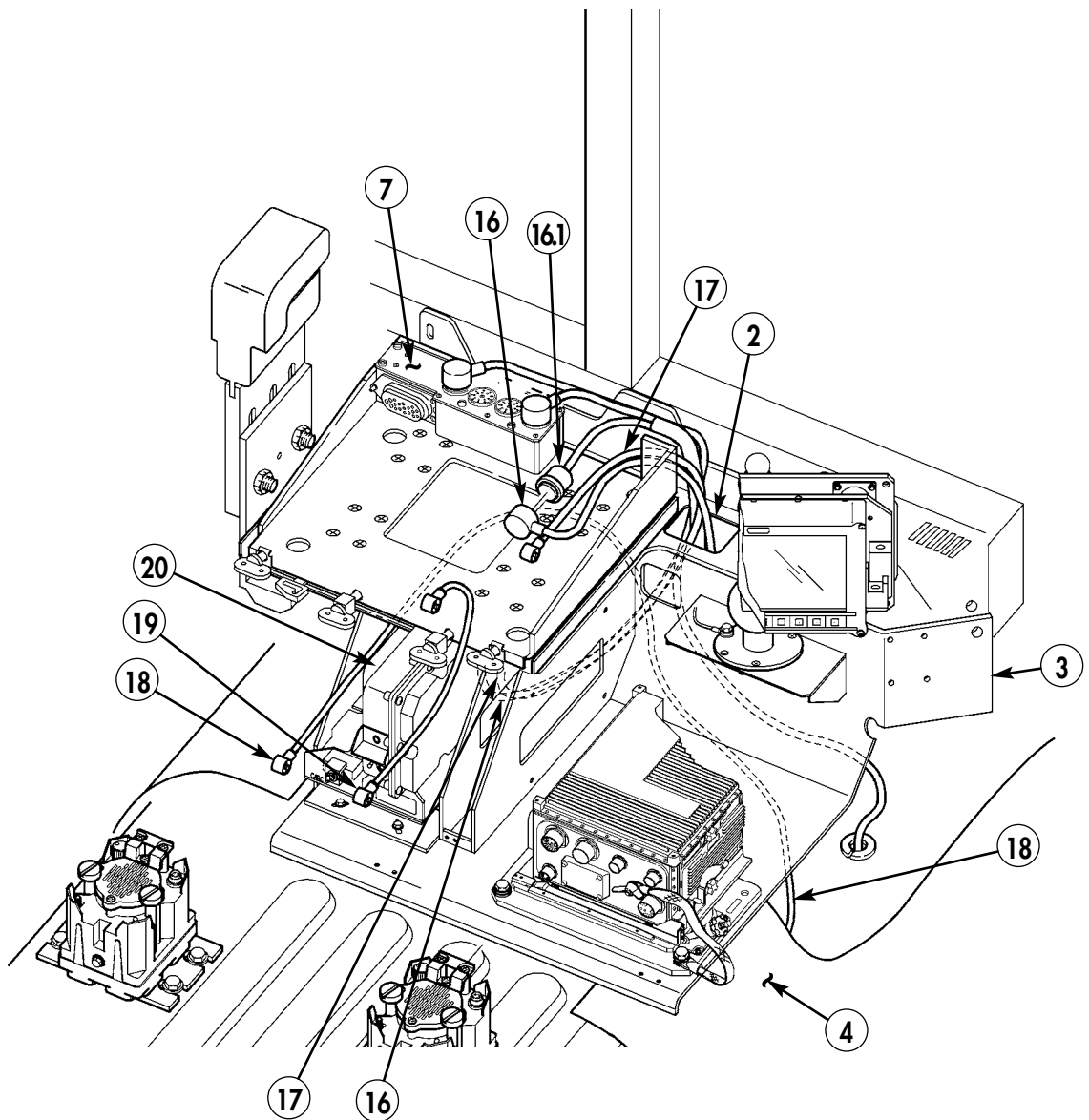
- 6. ANTENNA CABLE – A3014031-8 – QTY. 1
- 8. LOUDSPEAKER CABLE – A3014038-3 – QTY. 1
- 13. LOOP CLAMP – MS21333-121 – QTY. 1

Figure 5-35.

NOTE

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

- 13-5.** Route antenna cable (19) from mounting base (7) to MT-6353/VRC mounting base (20).
- 13-6.** Route power amp cable (16) from MT-6353/VRC mounting base (20) up through center access hole (2) and connect power amp cable (16) to connector on W1J1 cable (16.1).
- 13-7.** Route control cable (17) from MT-6353/VRC mounting base (20) up through center access hole (2) to mounting base (7).
- 13-8.** Route antenna cable (18) from front of MT-6353/VRC mounting base (20), under integrated rack (3), and under right-side tunnel insulation (4) towards rear of vehicle.



18. ANTENNA CABLE – A3014031-17 – QTY. 1

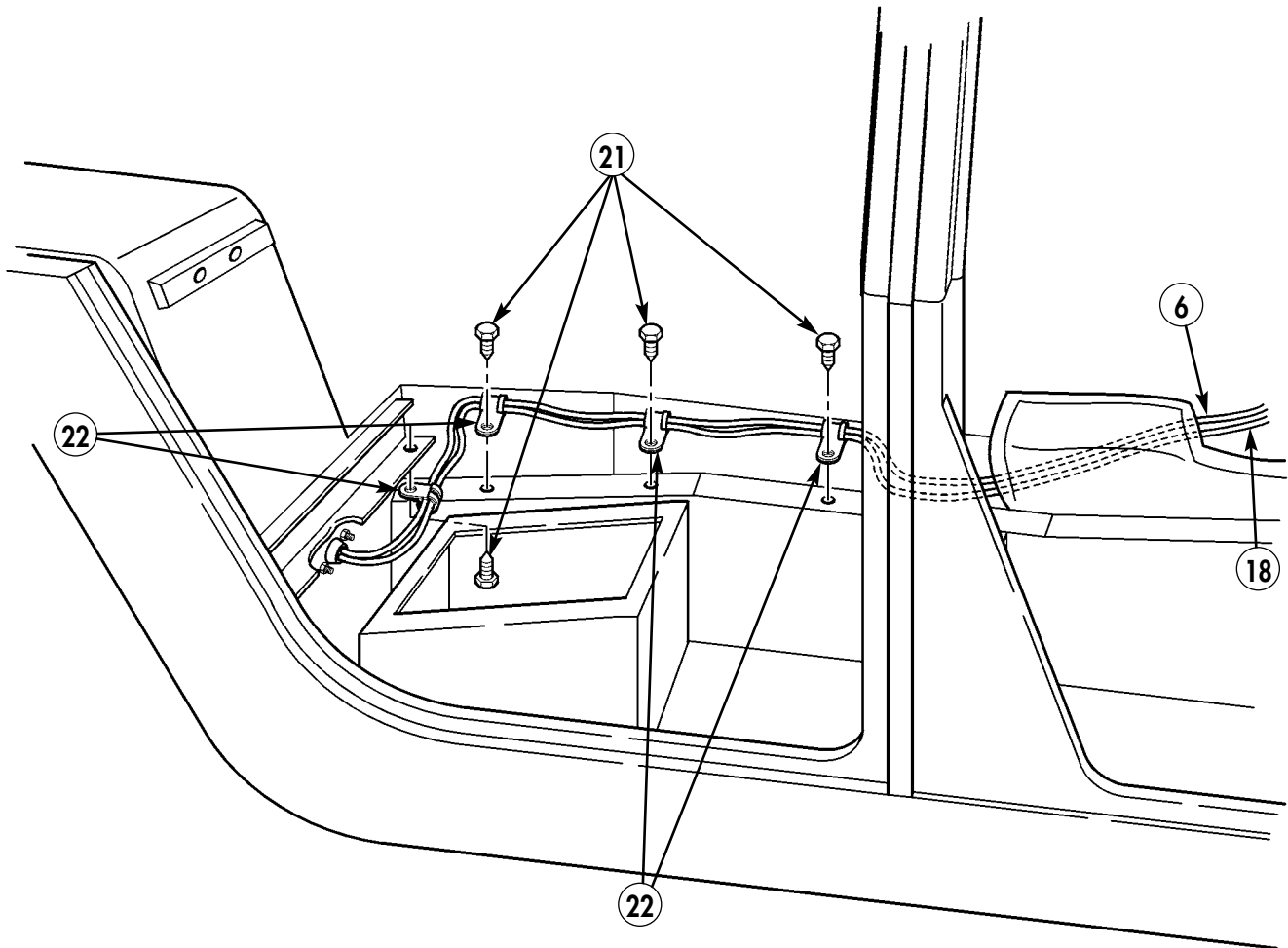
19. ANTENNA CABLE – A3014032-3 – QTY. 1

Figure 5-36.

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 5-37.)

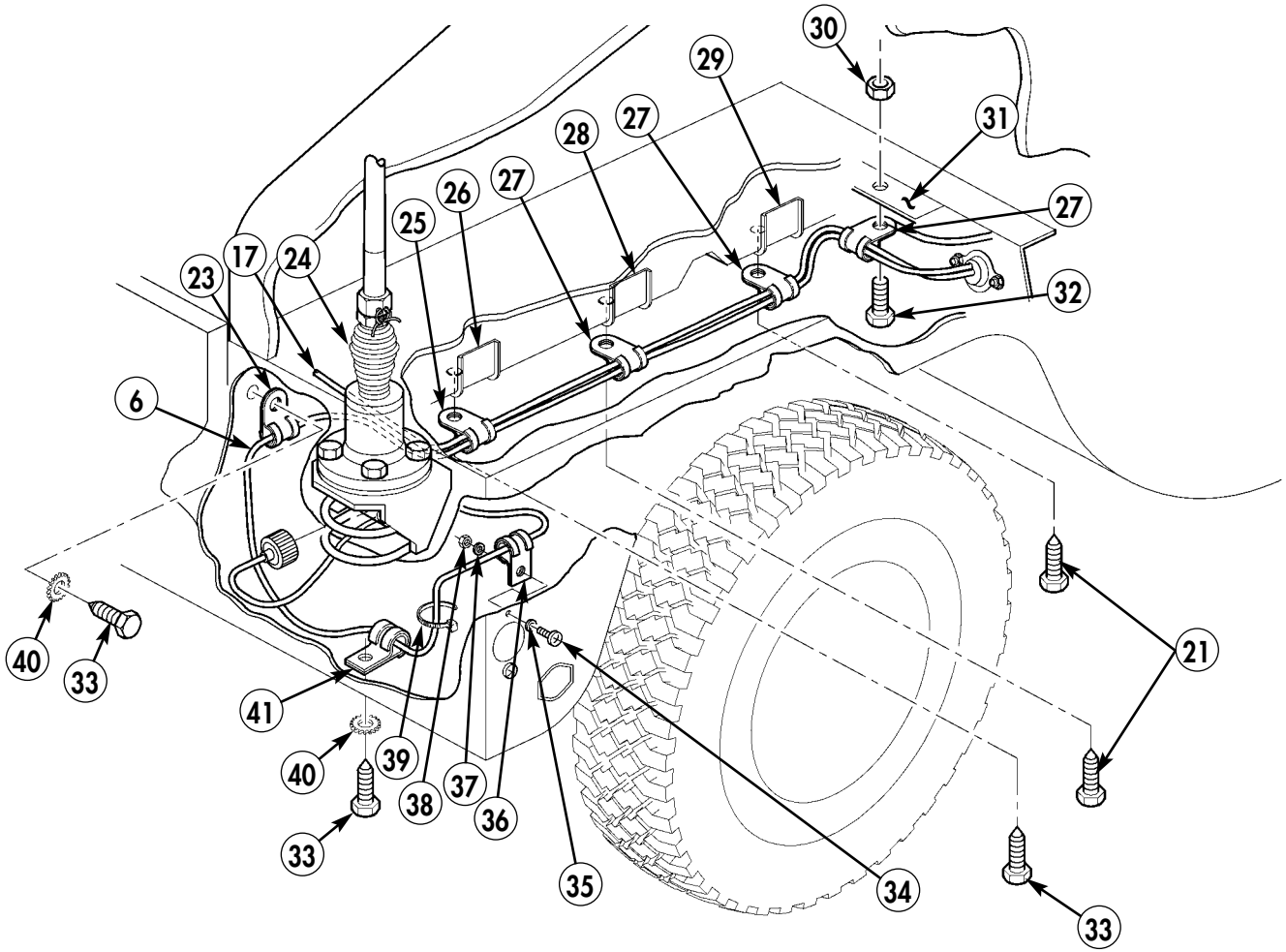
- 13-9. Route two antenna cables (6) and (18) along right rear seat/utility area with four self-tapping screws (21) and loop clamps (22).
- 13-10. Route two antenna cables (6) and (18) through right wheelwell/utility area with existing grommet, retainer, screws, and nut and lockwasher assemblies. (Refer to TM 9-2320-280-20.)



- 21. SELF-TAPPING SCREW - 9421073 - QTY. 4
- 22. LOOP CLAMP - MS21333-96 - QTY. 4

Figure 5-37.

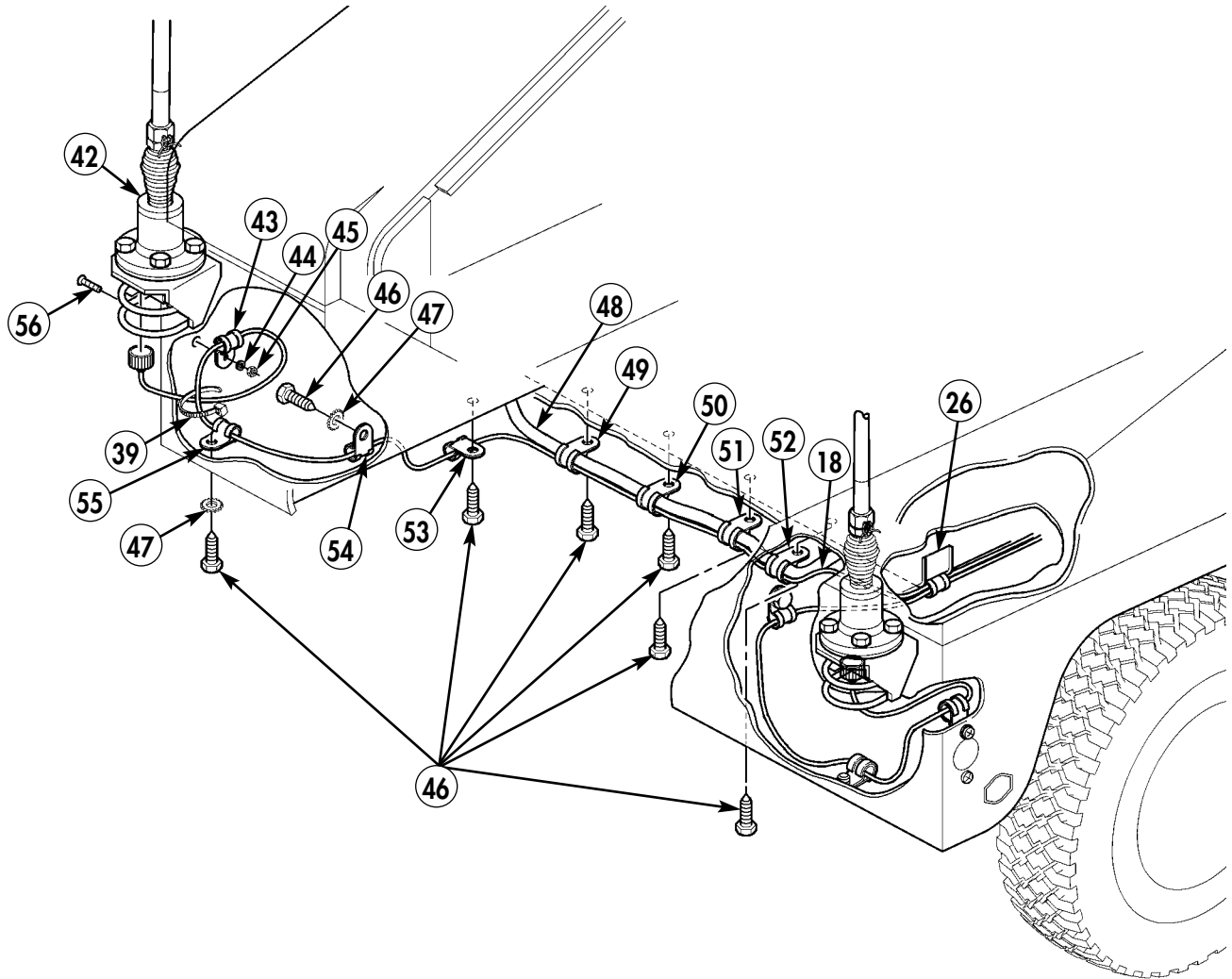
- 13-11. Route two antenna cables (6) along front wheelwell seam (31) and along front (29), intermediate (28), and rear (26) cargo bed supports. Secure with two self-tapping screws (21), loop clamps (27), screw (32), loop clamp (27), nut (30), and existing self-tapping screw (33) and loop clamp (25).
- 13-12. Route antenna cable (6) along taillight wiring harness with two existing loop clamps (23) and (41), self-tapping screws (33), and lockwashers (40).
- 13-13. Route antenna cable (6) to antenna base (24) with existing loop clamp (36), nut (38), lockwasher (37), washer (35), and screw (34).
- 13-14. Attach antenna cable (6) to antenna base (24).
- 13-15. Coil excess antenna cable (6) and secure to inside of taillight closeout cover with tiedown strap (39).



- 21. SELF-TAPPING SCREW - 9421073 - QTY. 2
- 27. LOOP CLAMP - MS21333-69 - QTY. 3
- 30. NUT - MS35650-302 - QTY. 1
- 32. SCREW - MS35224-65 - QTY. 1
- 34. LOOP CLAMP - MS21333-98 - QTY. 1
- 39. TIEDOWN STRAP - MS3367-1-0 - QTY. A/R

Figure 5-38.

- 13-16. Route antenna cable (18) along existing taillight wiring harness (48) on rear cargo bed support (26) and secure with four existing loop clamps (49), (50), (51), and (52) and existing self-tapping screws (46).
- 13-17. Route antenna cable (18) along existing taillight wiring harness on left-side frame rail with three existing loop clamps (53), (54), and (55) and existing self-tapping screws (46) and lockwashers (47).
- 13-18. Route antenna cable (18) to antenna base (42) with existing loop clamp (43), screw (56), lockwasher (44), and nut (45).
- 13-19. Attach antenna cable (18) to antenna base (42).
- 13-20. Coil excess antenna cable (18) and secure to inside of taillight closeout cover with tiedown strap (39).

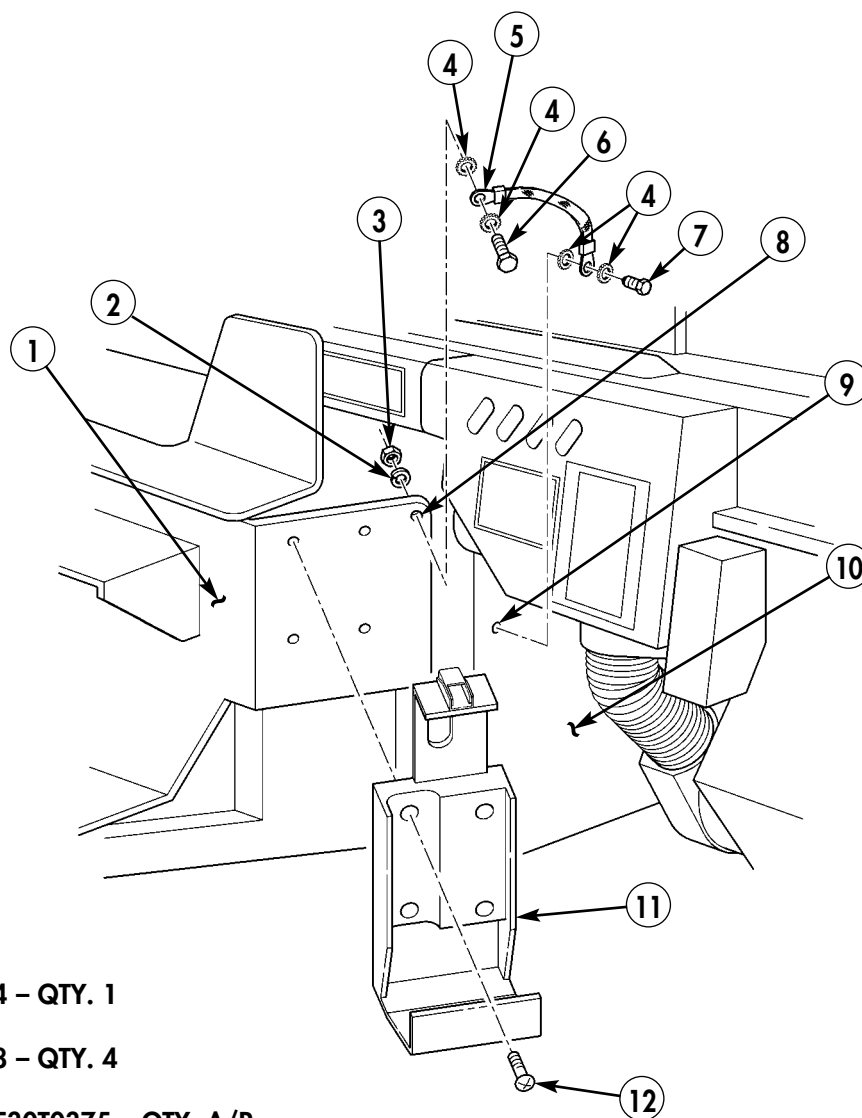


39. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R

Figure 5-39.

Section XIV. PLGR BRACKET INSTALLATION

- 14-1. Install PLGR bracket (11) on integrated rack (1) with four screws (12).
- 14-2. Locate, mark, and drill one 0.201-in. diameter hole (9) in right-side engine tunnel (10).
- 14-3. Remove paint from vicinity of hole (8) on integrated rack (1) and hole (9) on right-side engine tunnel (10). 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 (10) 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
11. PLGR BRACKET – 986-0645-001 – QTY. 1
12. SCREW – MS35206-263 – QTY. 4

Figure 5-40.

Section XV. PLGR ANTENNA AND CABLE INSTALLATION (WITHOUT BOLT-ON ARMOR)

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 0.375-in. diameter hole (2) in outer right-side windshield frame (3).

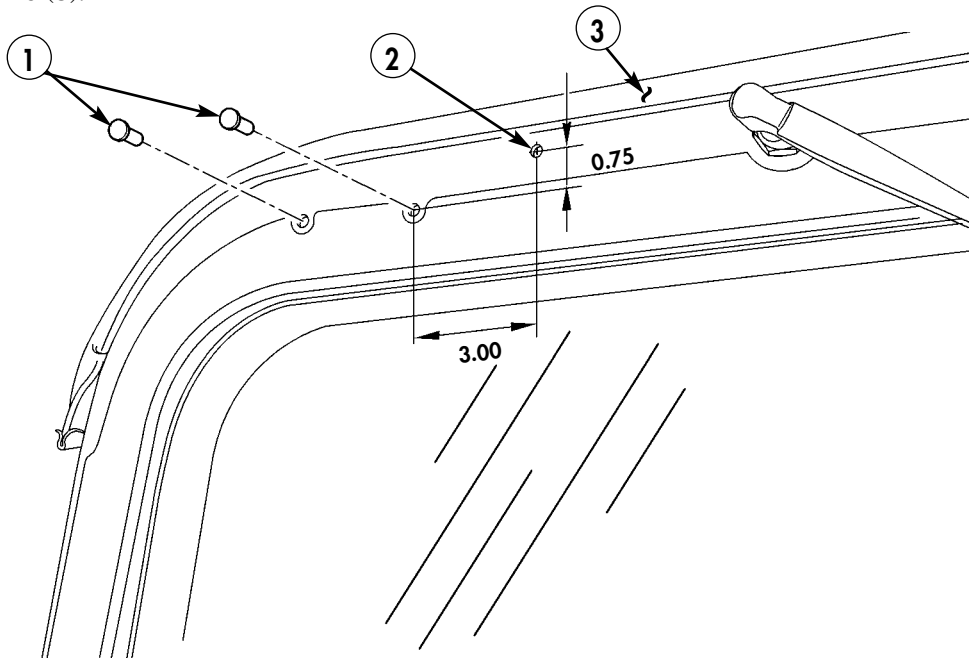


Figure 5-41.

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

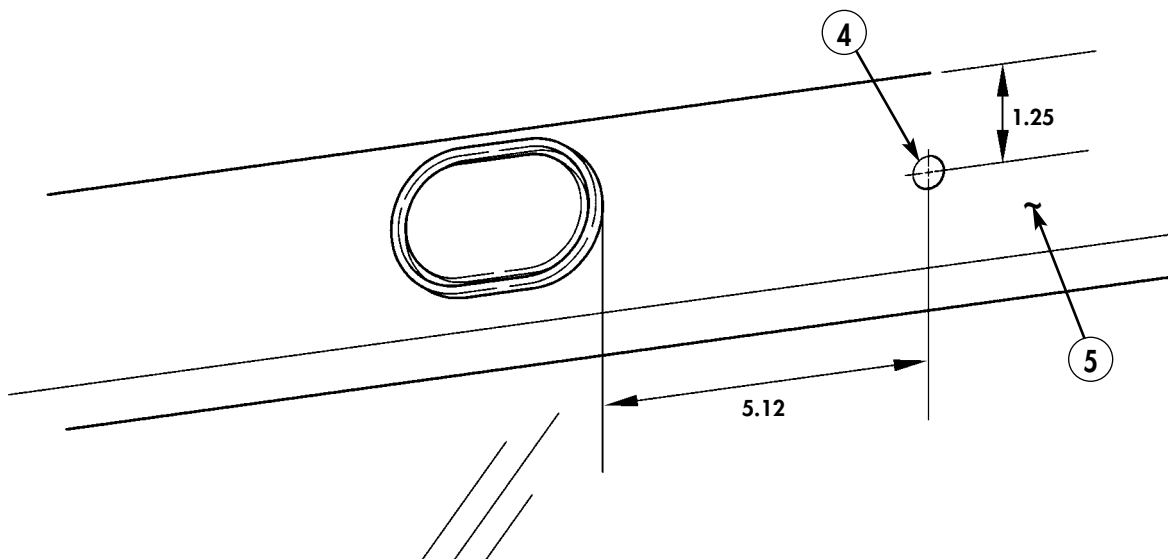
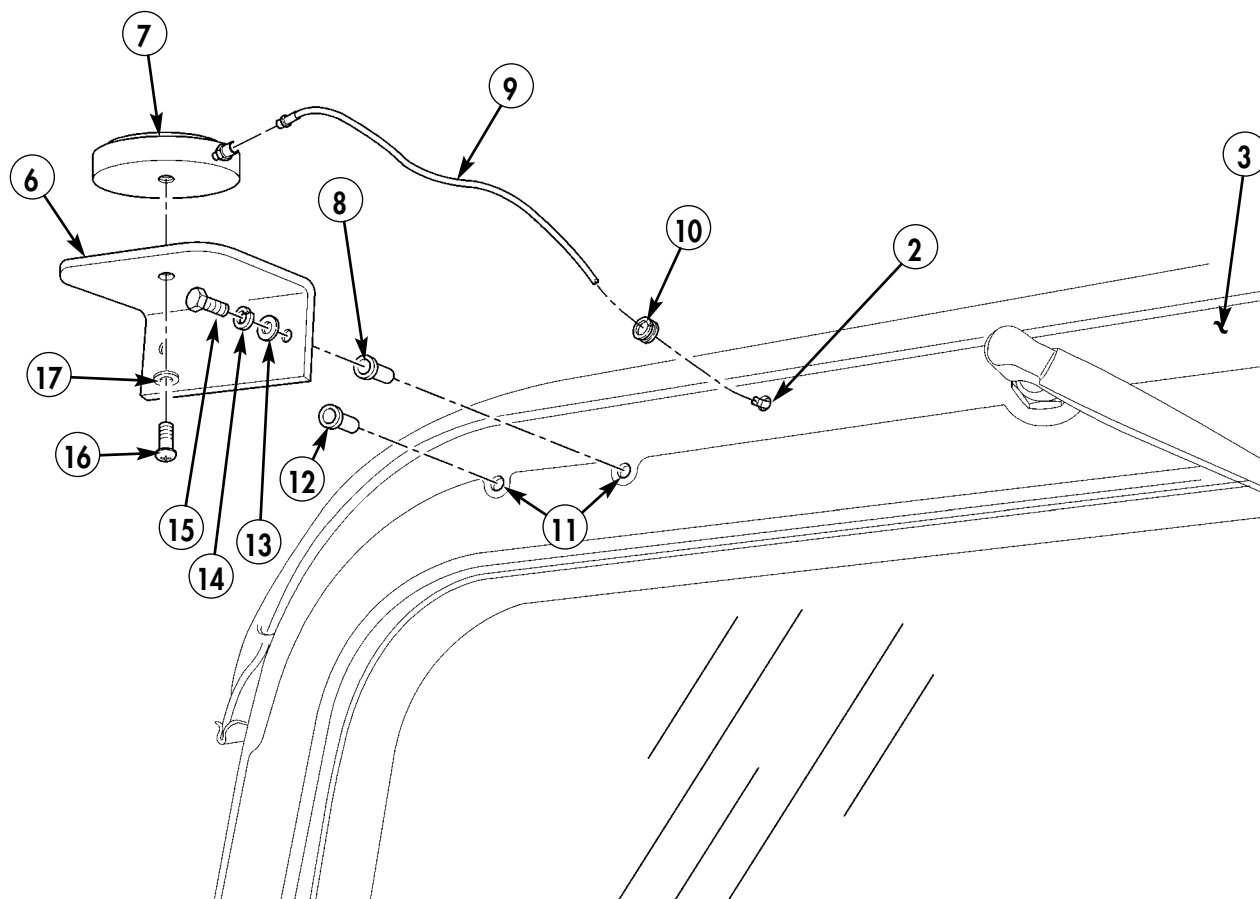


Figure 5-42.

- 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 washers (13), lockwashers (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. WASHER - 9414920 - QTY. 2
14. LOCKWASHER - MS35338-44 - QTY. 2
15. CAPSCREW - B1821BH025C125N - QTY. 2
16. SCREW - 160035 - QTY. 1
17. WASHER - 9417373 - QTY. 1

Figure 5-43.

15-10. Split one side of grommet (21) and place on PLGR antenna cable (9).

15-11. Insert PLGR antenna cable (9) and grommet (21) in hole (4) in inner-right windshield frame (5).

NOTE

If sun visor kit has not been installed, perform steps 15-12 and 15-13. If sun visor has been installed, perform step 15-14.

15-12. Locate, mark, and drill 0.390-in. diameter hole (22) in windshield frame (5).

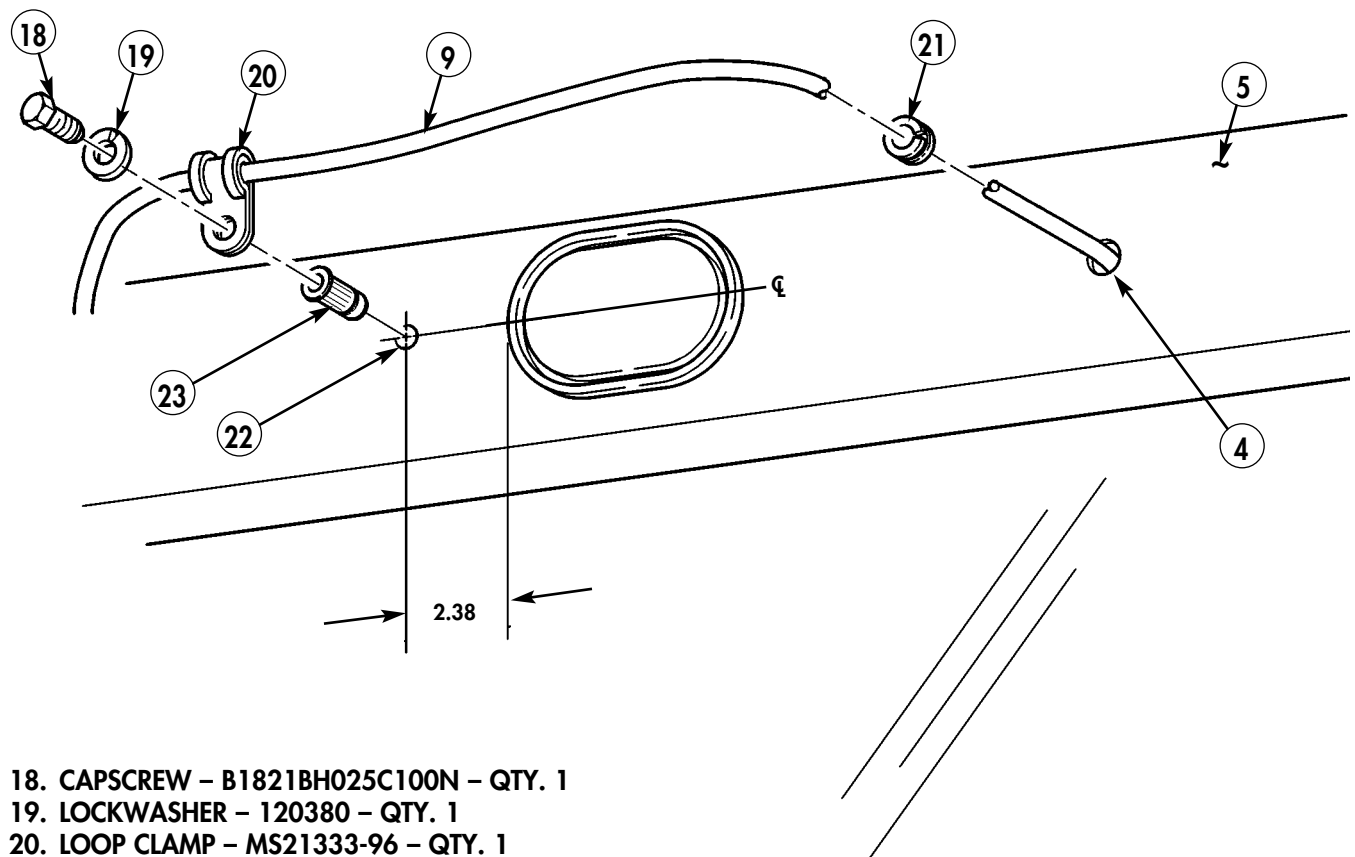
15-13. Install insert (23) in hole (22).

NOTE

Perform step 15-14 only if sun visor kit has been installed.

15-14. Remove capscrew (18) and lockwasher (19).

15-15. Route PLGR antenna cable (9) along inner-right windshield frame (5) with loop clamp (20), lockwasher (19), and capscrew (18).



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

Figure 5-44.

- 15-16.** Locate, mark, and drill two 0.147-in. diameter holes (28) in windshield center frame (29).
- 15-17.** Route PLGR antenna cable (9) along windshield center frame (29) with two self-tapping screws (26), loop clamps (27) and (20), existing screw (24), and washer (25).

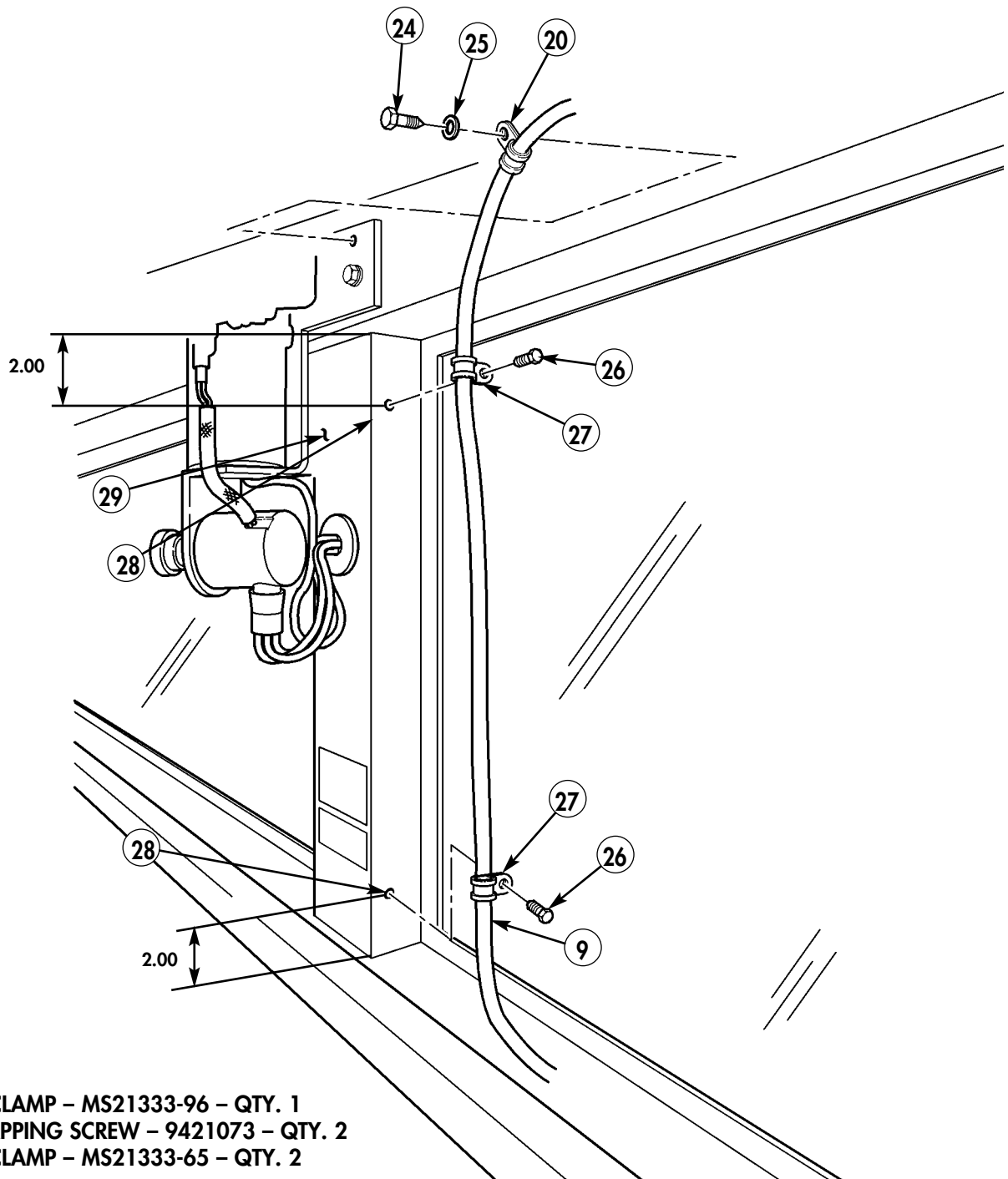


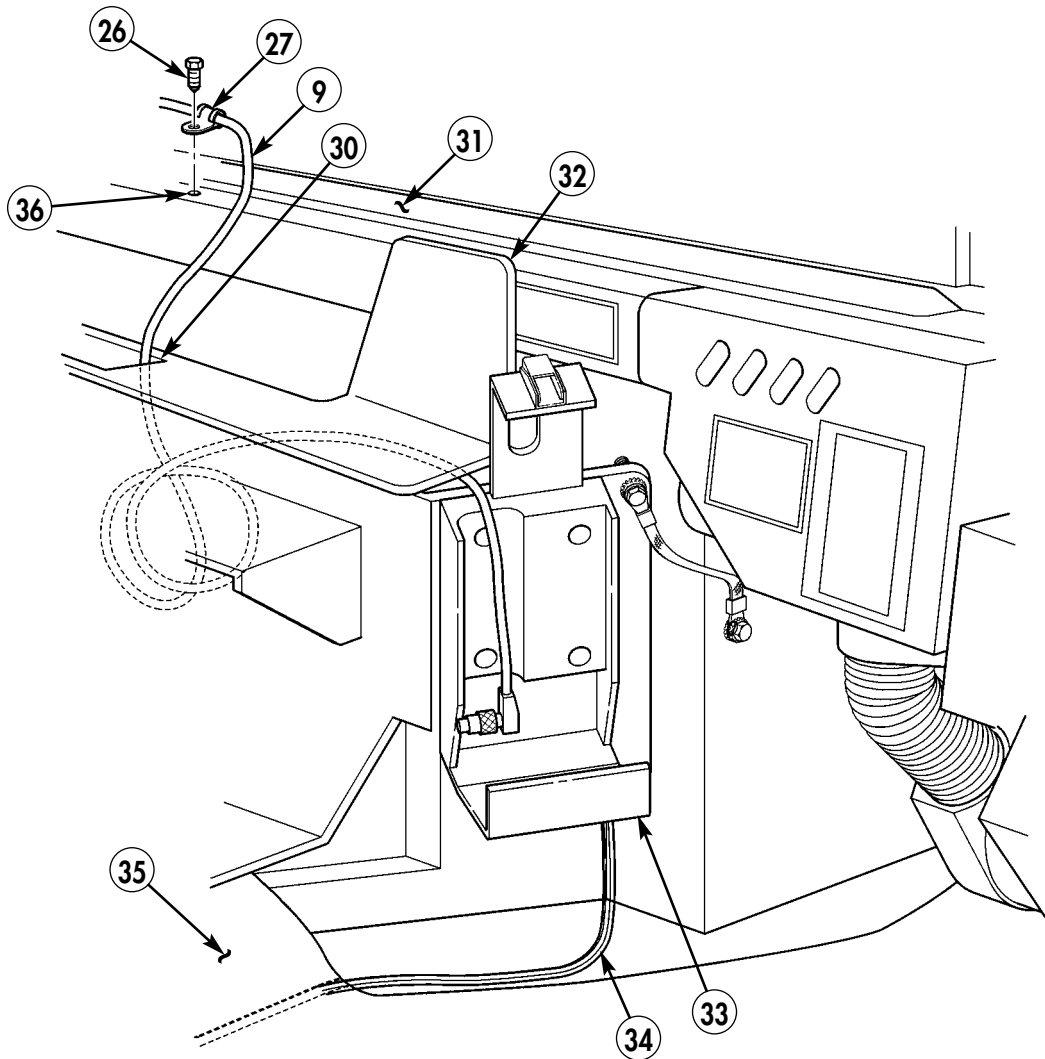
Figure 5-45.

- 15-18. Locate, mark, and drill 0.147-in. hole (36) in top of windshield frame (31).
- 15-19. Route PLGR antenna cable (9) on top of windshield frame (31) and secure with loop clamp (27) and self-tapping screw (26).
- 15-20. Route PLGR antenna cable (9) down through center access hole (30) of integrated rack (32), and coil excess antenna cable (9) under integrated rack (32).
- 15-21. Route PLGR power cable (34) from PLGR installation mount (33) to right-side tunnel insulation (35).

NOTE

Loosen right-side tunnel insulation before performing step 15-22.
(Refer to TM 9-2320-280-20.)

- 15-22. Route PLGR power cable (34) under edge of right-side tunnel insulation (35) to 24V terminal bar at cab enclosure panel.



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

Figure 5-46.

NOTE

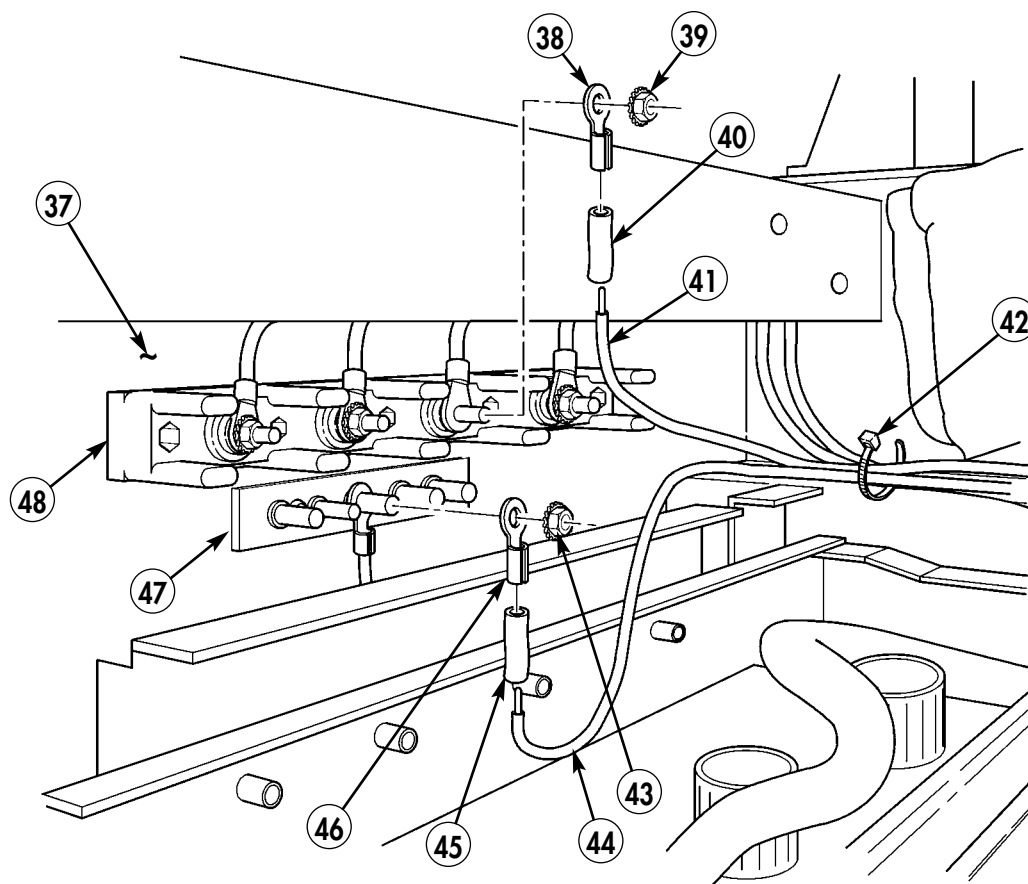
PLGR power cable positive lead insulation is ribbed.

- 15-23. Attach shrink tubing (40) and terminal lugs (38) and (46) to PLGR power cable negative lead (44) and PLGR power cable positive lead (41). (Refer to TM9-2320-280-20 for terminal connector repair.)
- 15-24. Attach PLGR power cable positive lead (41) to 24V terminal board (48), located on cab enclosure panel (37), with existing nut (39).
- 15-25. Attach PLGR power cable negative lead (44) to ground strap (47), located on cab enclosure panel (37), with existing nut (43).
- 15-26. Coil excess positive and negative power leads (41) and (44), place beneath ground strap (47), and secure with tiedown strap (42).

NOTE

Ensure all excess antenna cable is inside cab of vehicle.

- 15-27. Coil excess antenna cable and store under integrated rack using tiedown strap as necessary. (Refer to Figure 5-46.)
- 15-28. Install right-side tunnel insulation. (Refer to TM 9-2320-280-20.)

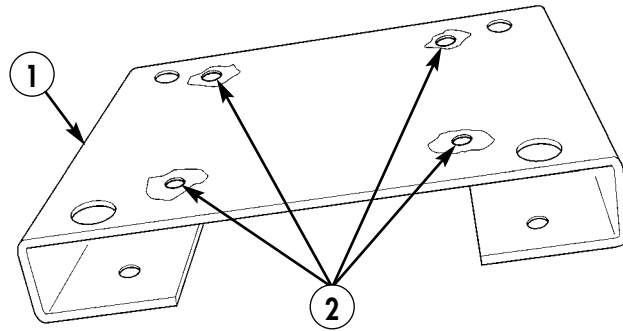


- 38. TERMINAL LUG - 7728780 - QTY. 1
- 40. SHRINK TUBING - MS23053/4-302-0 - QTY. A/R
- 42. TIEDOWN STRAP - MS3367-1-0 - QTY. A/R
- 46. TERMINAL LUG - 7728777 - QTY. 1

Figure. 5-47.

Section XVI. EPLRS MOUNTING INSTALLATION

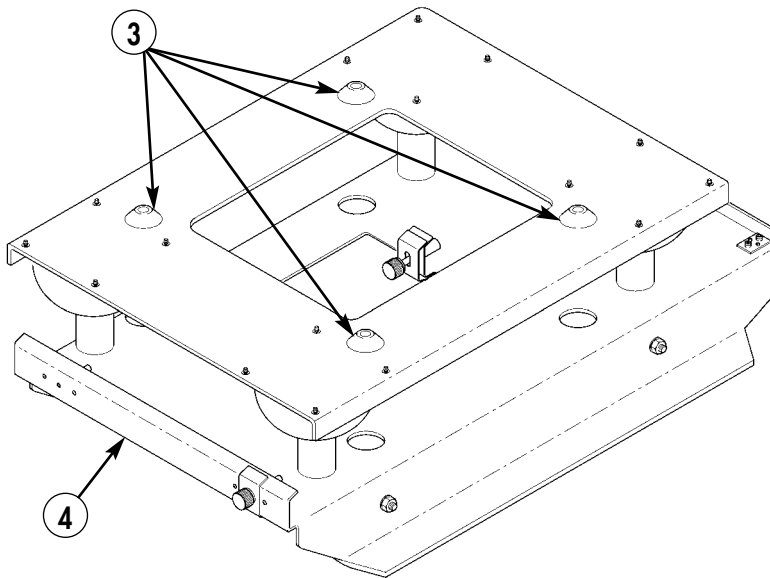
- 16-1.** Remove paint from vicinity of four mounting holes (2) on EPLRS C-mounting bracket (1). Apply anti-seize compound as required.



- 1. C-MOUNTING BRACKET – A3046202 – QTY. 1**

Figure 5-48.

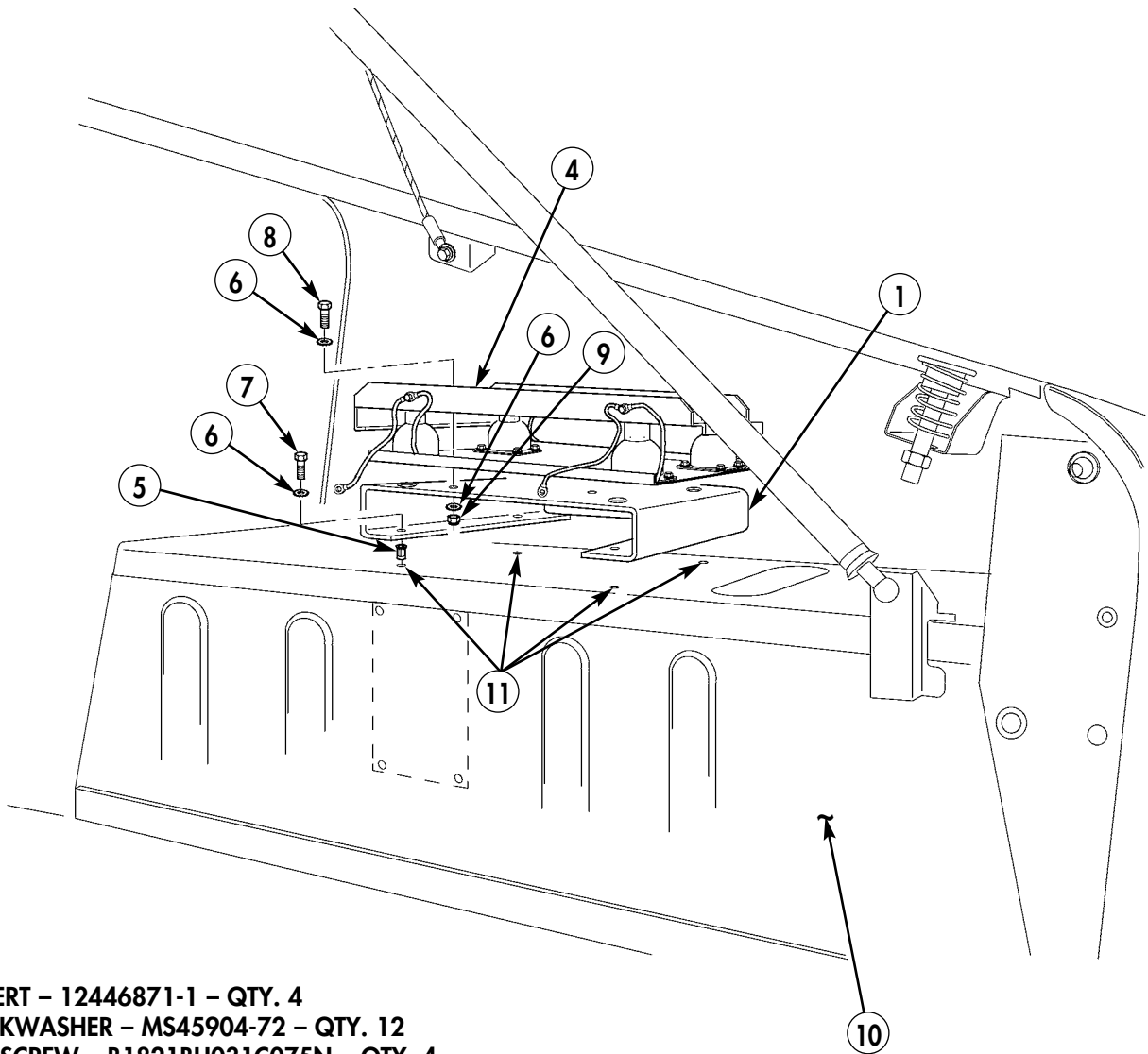
- 16-2.** Remove paint from vicinity of four mounting holes (3) on bottom of MT-6146/VSQ-1 mount (4).



- 4. RESILIENT MOUNT – MT-6146/VSQ-1 – QTY. 1**

Figure 5-49.

- 16-3. Using C-mounting bracket (1) as template, locate, mark, and drill four 0.531-in. diameter holes (11) in center of right rear wheelhouse (10).
- 16-4. Install four inserts (5) in right rear wheelhouse (10).
- 16-5. Install resilient mount (4) on C-mounting bracket (1) with four capscrews (8), eight lockwashers (6), and four nuts (9).
- 16-6. Install C-mounting bracket (1) on right rear wheelhouse (10) with four capscrews (7) and lockwashers (6).

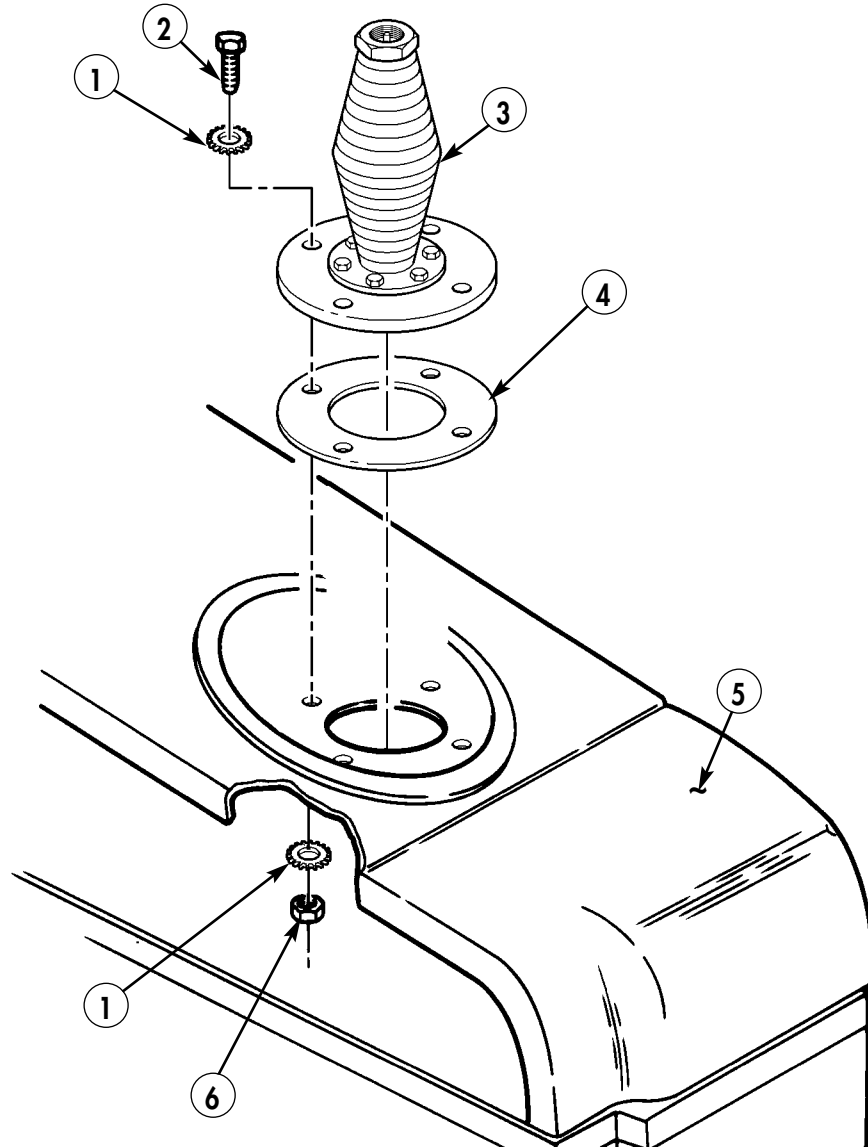


- 5. INSERT - 12446871-1 - QTY. 4
- 6. LOCKWASHER - MS45904-72 - QTY. 12
- 7. CAPSCREW - B1821BH031C075N - QTY. 4
- 8. CAPSCREW - B1821BH031C100N - QTY. 4
- 9. NUT - 9417954 - QTY. 4

Figure 5-50.

Section XVII. EPLRS ANTENNA INSTALLATION

Install antenna (3) on right rear cargo shell (5) with gasket (4), four capscrews (2), eight lockwashers (1), and four nuts (6).



- 1. LOCKWASHER – MS45904-76 – QTY. 8
- 2. CAPSCREW – MS35307-365 – QTY. 4
- 3. ANTENNA – A3005031 – QTY. 1
- 4. GASKET – A3013655-1 – QTY. 1
- 6. NUT – 9418931 – QTY. 4

Figure 5-51.

Section XVIII. EPLRS URO (USER READOUT) INSTALLATION

18-1. Remove two existing screws (2) and connector bracket (3) from URO bracket (1).

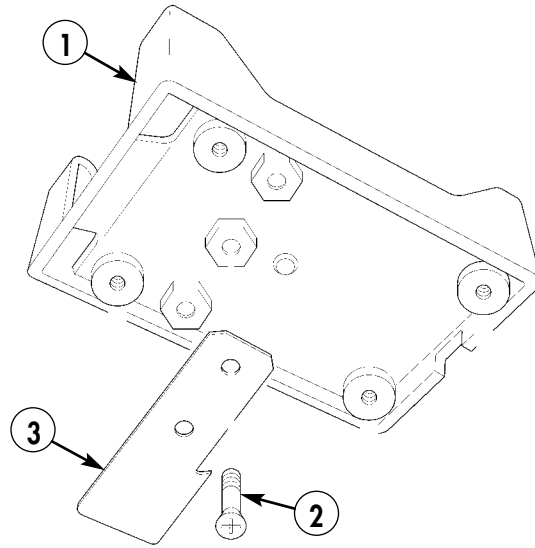
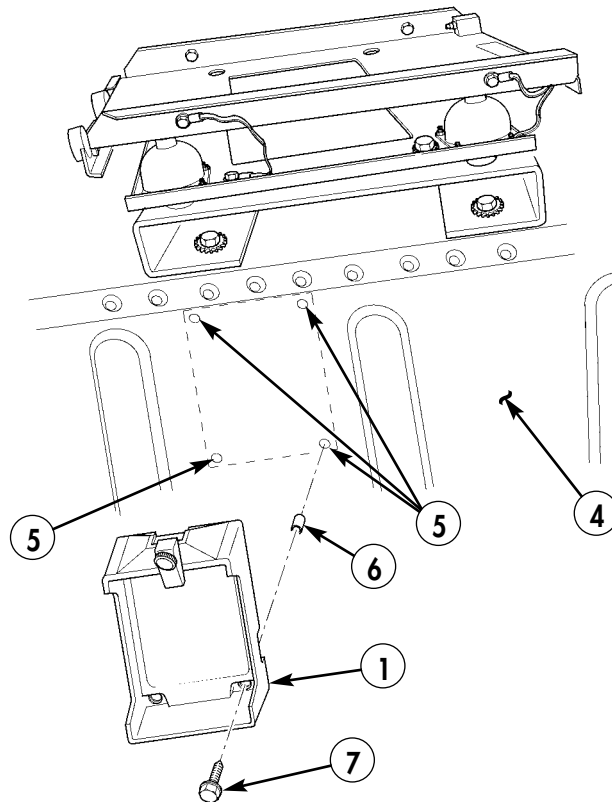


Figure 5-52.

18-2. Using URO bracket (1) as template, mark and drill four 0.147-in. holes (5) in right rear wheelhouse (4).

18-3. Install URO bracket (1) on right rear wheelhouse (4) with four self-tapping screws (7) and spacers (6).



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

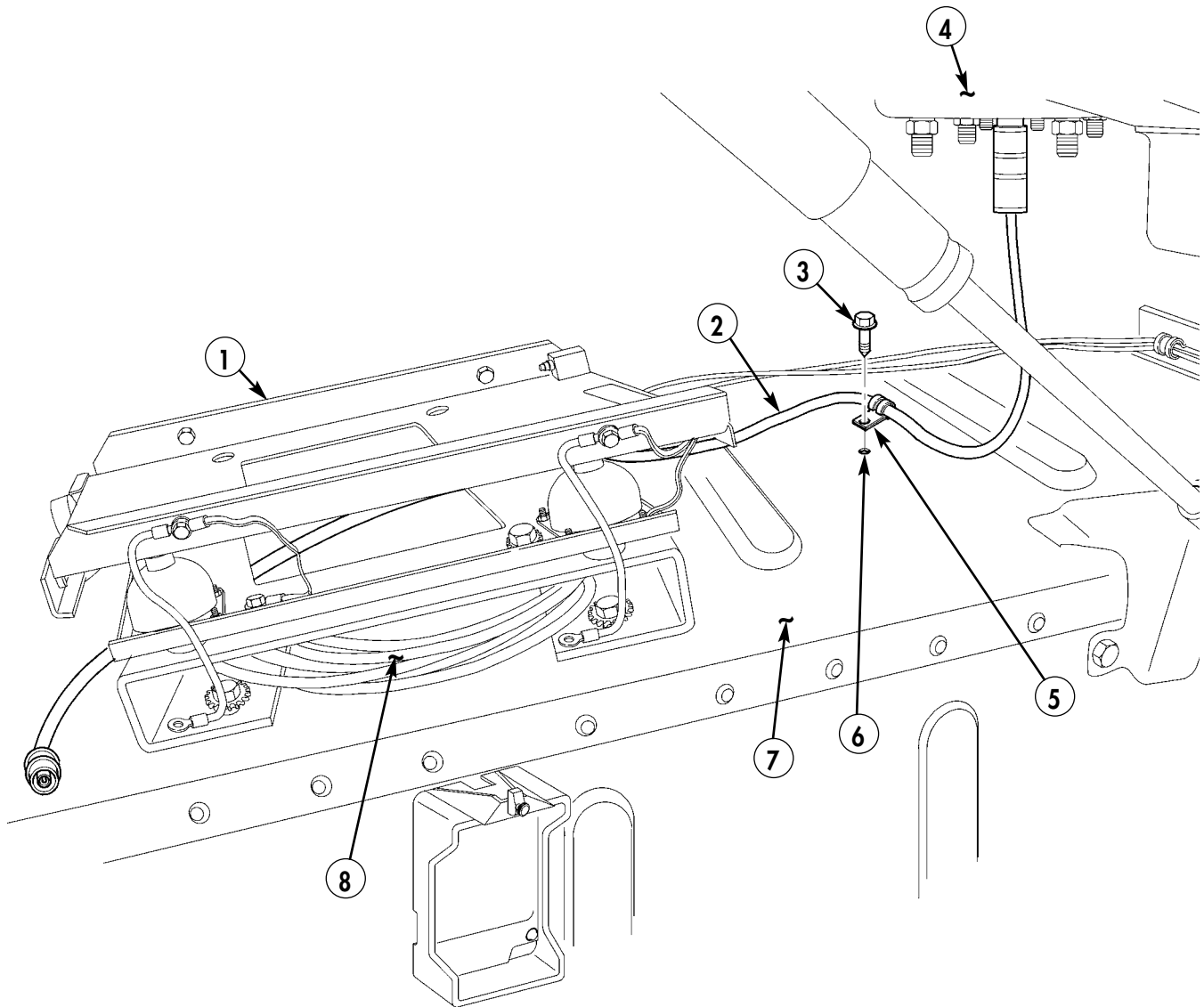
Figure 5-53.

Section XIX. EPLRS CABLES INSTALLATION

NOTE

- Lay out all cables in their approximate positions before clamps are installed. This will minimize their length and ensure 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.

- 19-1.** Drill one 0.147-in. hole (6) in right rear wheelhouse (7) between EPLRS mount assembly (1) and antenna (4).
- 19-2.** Connect antenna cable (2) to antenna (4) and route cable behind EPLRS mount assembly (1), leaving enough cable length to connect to opposite side of EPLRS unit. Coil excess cable (8) and store under mount assembly (1).
- 19-3.** Secure antenna cable (2) to wheelhouse (7) with loop clamp (5) and self-tapping screw (3).



- 2. EPLRS ANTENNA CABLE – SM-C-911480 – QTY. 1**
3. SELF-TAPPING SCREW – 9421073 – QTY. 1
5. CLAMP, LOOP – MS21333-69 – QTY. 1

Figure 5-54.

19-4. Locate, mark, and drill five 0.147-in holes (9) in right rear wheelhouse (7), ensuring that three holes on top of wheelhouse are spaced evenly apart.

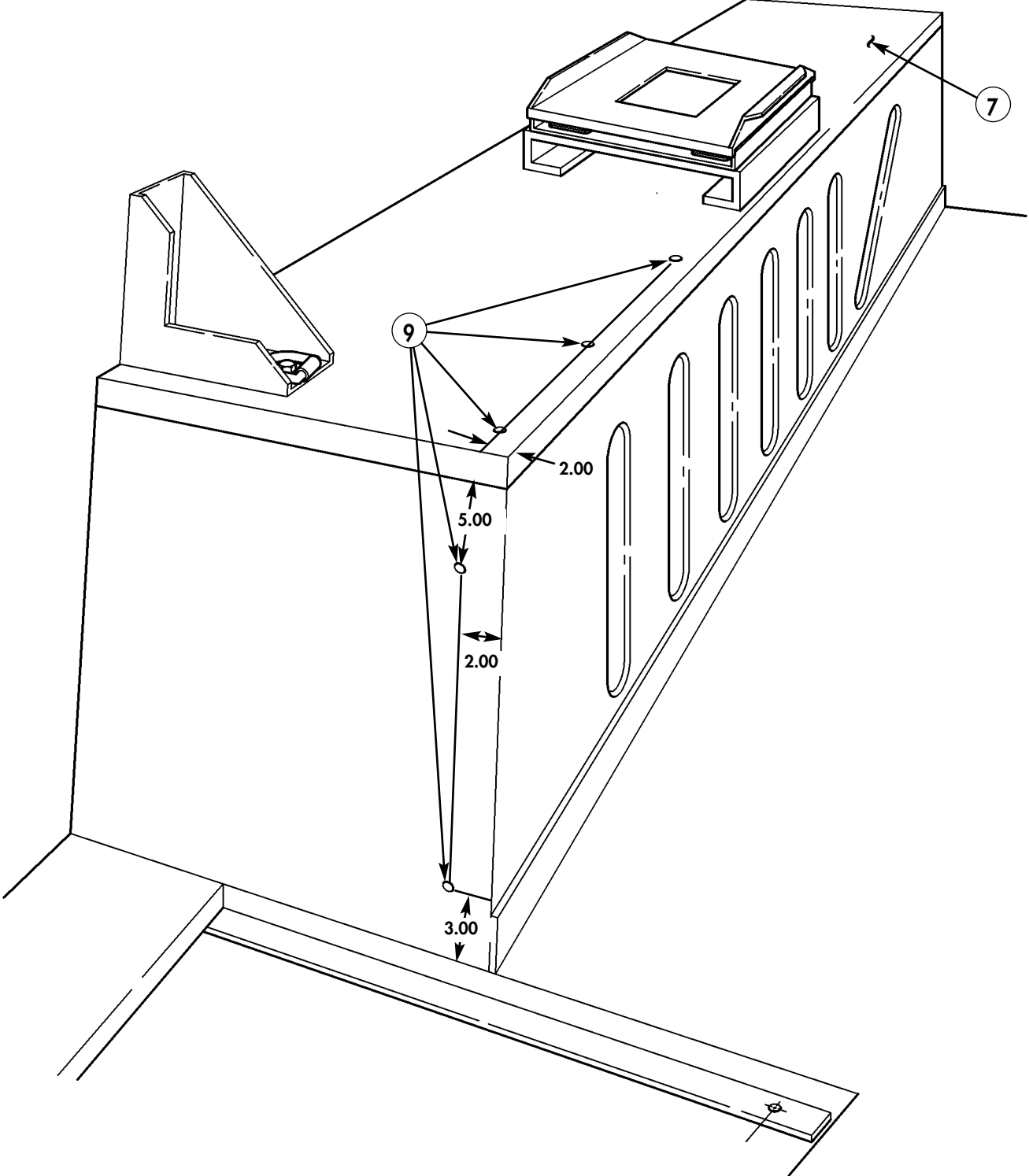
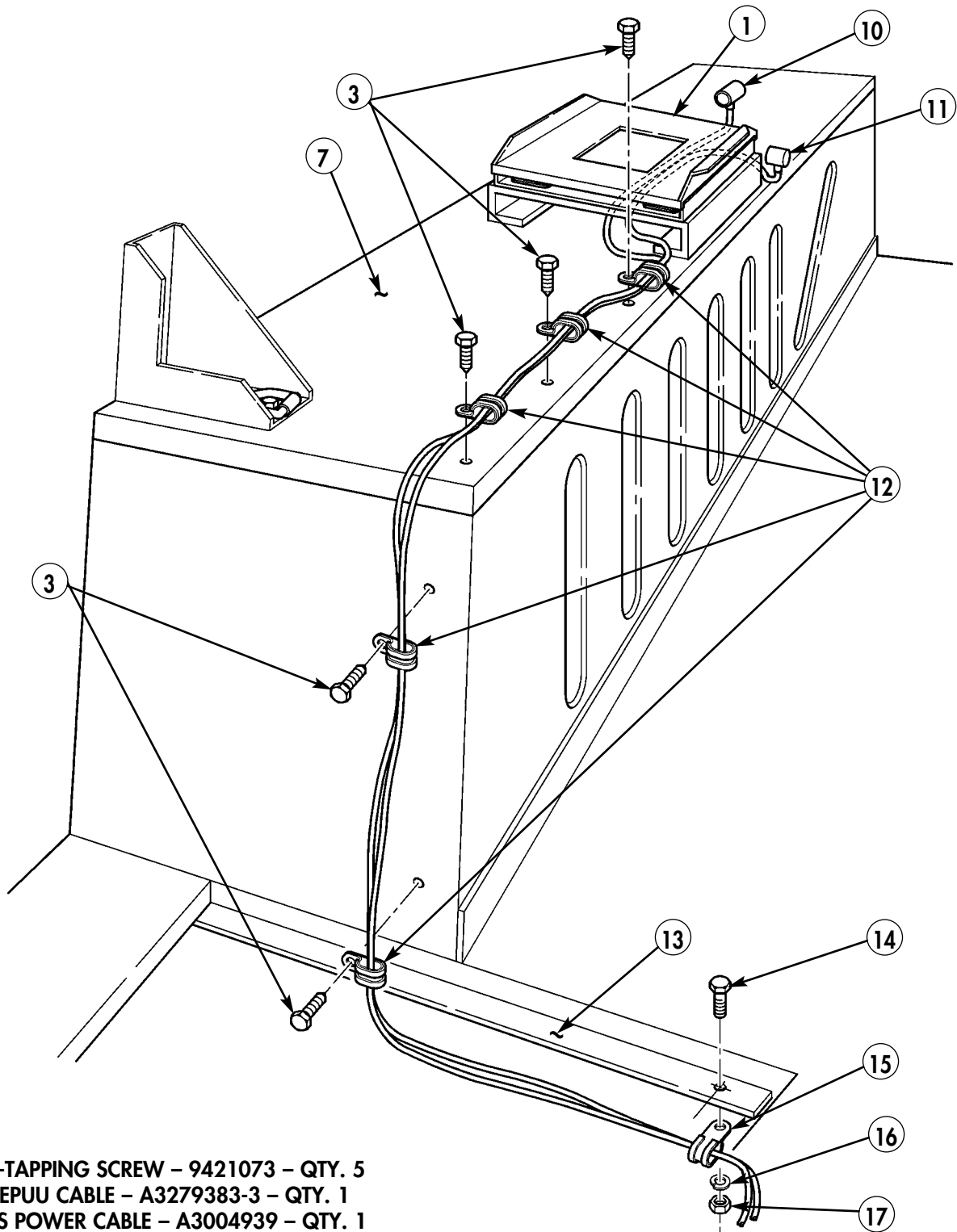


Figure 5-55.

- 19-5. Route INC-EPUU cable (10) and EPLRS power cable (11) under mount assembly (1), along right rear wheelhouse (7), and along rear inside lip of right rear seat back support (13).
- 19-6. Secure INC-EPUU cable (10) and EPLRS power cable (11) to right rear wheelhouse (7) and rear inside lip of right rear seat back support (13) with five self-tapping screws (3), loop clamps (12), and existing screw (14), clamp (15), lockwasher (16), and nut (17).



- 3. SELF-TAPPING SCREW - 9421073 - QTY. 5
- 10. INC-EPUU CABLE - A3279383-3 - QTY. 1
- 11. EPLRS POWER CABLE - A3004939 - QTY. 1
- 12. LOOP CLAMP - MS21333-75 - QTY. 5

Figure 5-56.

NOTE

Loosen right-side tunnel insulation. (Refer to TM 9-2320-280-20.)

- 19-7.** Route INC-EPUU cable (10) and power cable (11) forward along tunnel edge (21) and under B-beam (19), and secure to tunnel edge (21) with existing screws (18) and clamps (20).

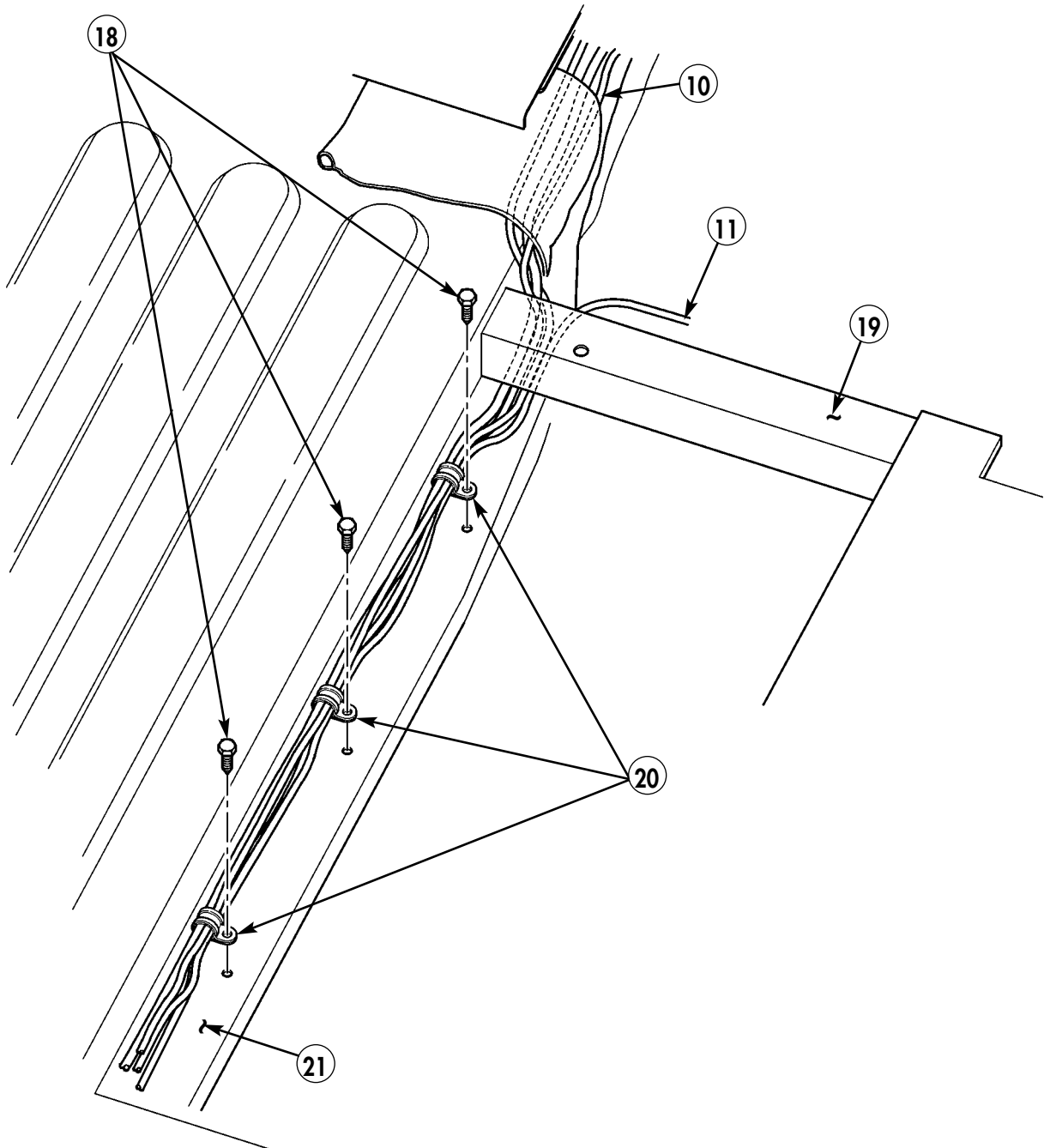


Figure 5-57.

- 19-8. Route INC-EPUU cable (10) under right-side tunnel insulation (22) and under integrated rack (23).
- 19-9. Route power cable (11) under B-beam (19) towards terminal board area.

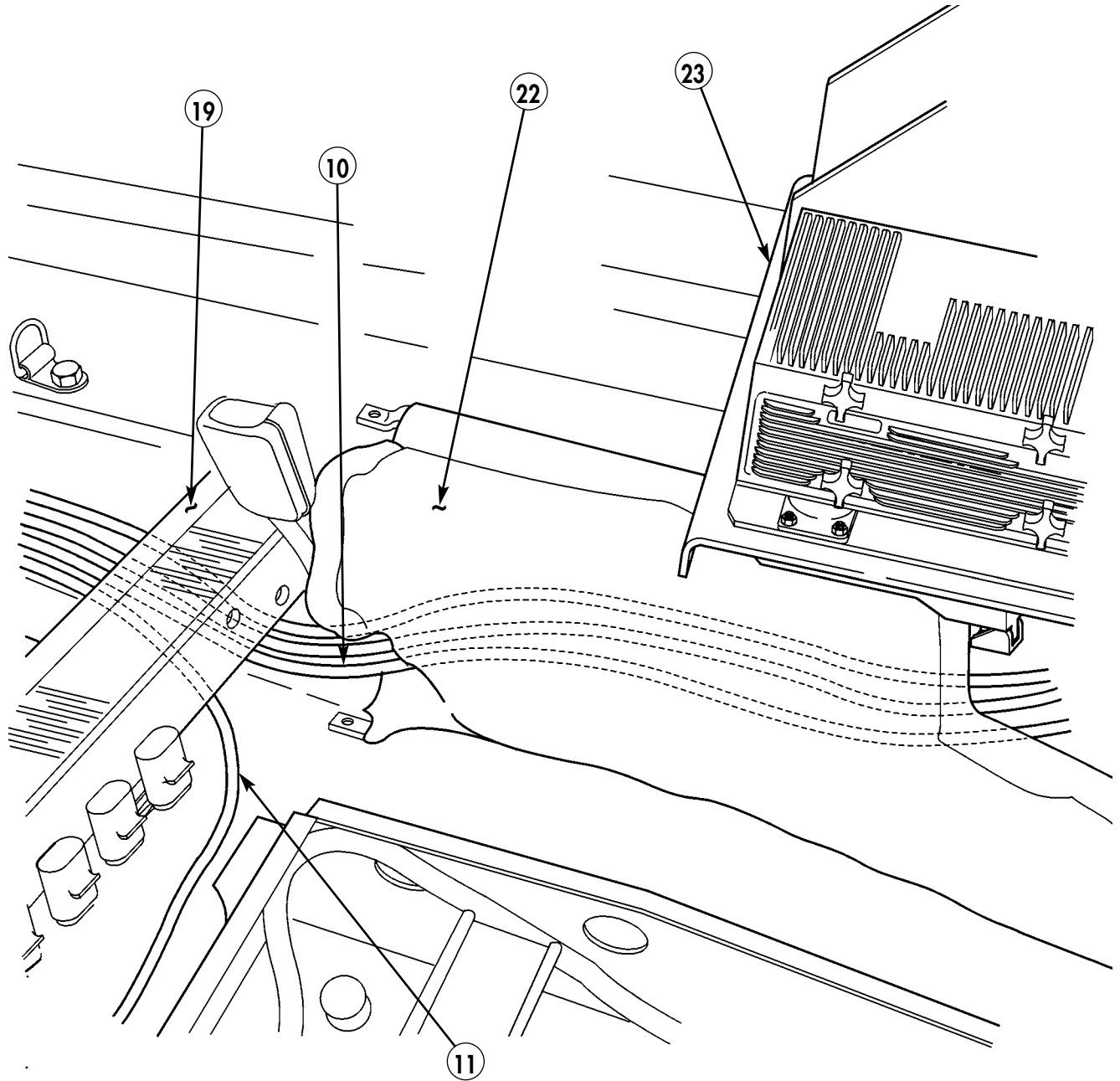


Figure 5-58.

- 19-10.** Attach shrink tubing (26) and two terminal lugs (24) and (30) to power cable negative lead (29) and power cable positive lead (27). (Refer to TM 9-2320-280-20 for terminal connector repair.)
- 19-11.** Connect power cable positive lead (27) to 24V terminal board (32) located on cab enclosure panel (33), with existing nut (25).
- 19-12.** Connect power cable negative lead (29) to ground strap (31), located on cab enclosure panel (33), with existing nut (25). Secure leads together with tiedown strap (28).

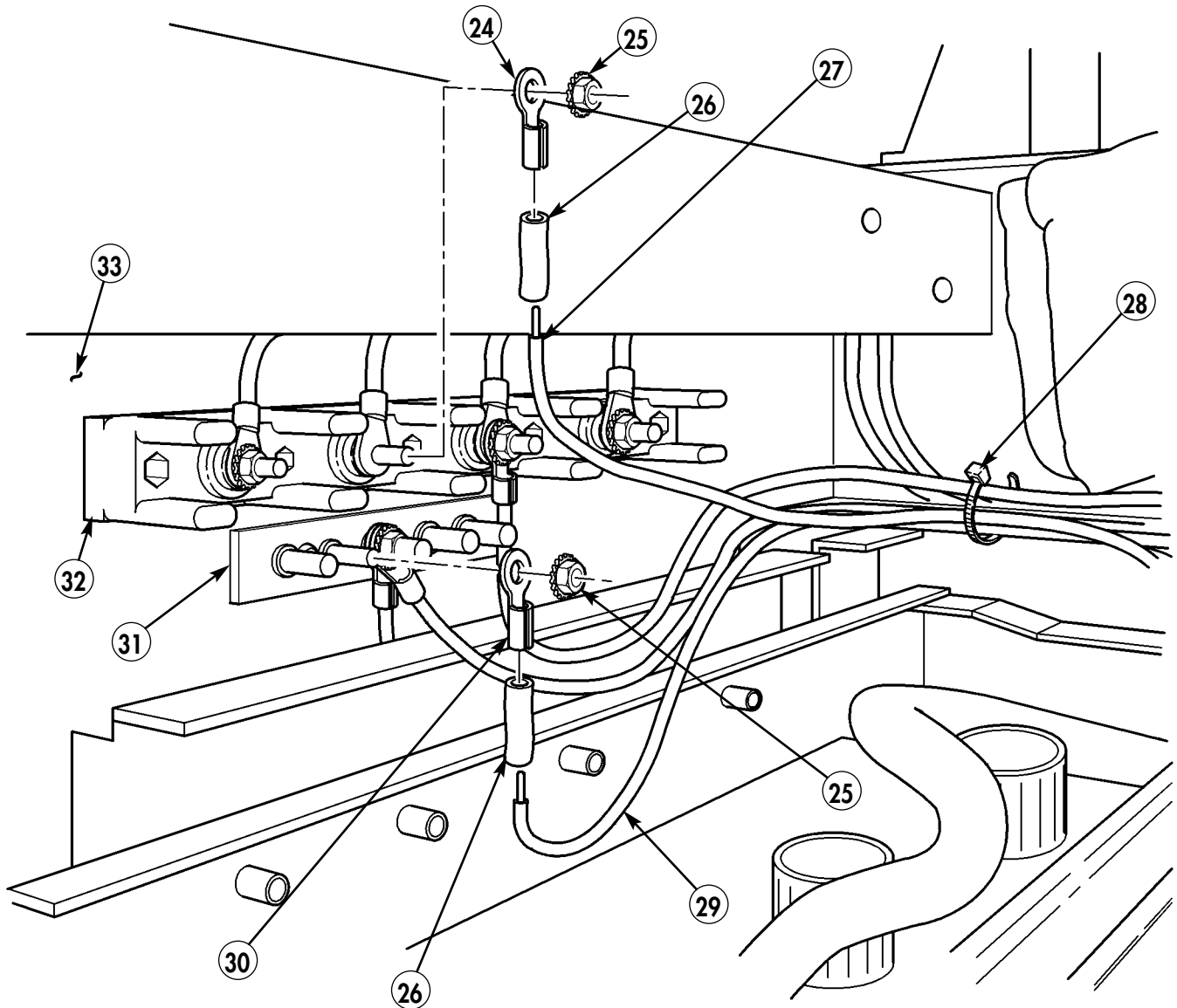


Figure 5-59.

- 24. TERMINAL LUG - 7728780 - QTY. 1**
26. SHRINK TUBING - MS23053/4-302-0 - QTY. A/R
28. TIEDOWN STRAP - MS3367-1-0 - QTY. A/R
30. TERMINAL LUG - 7728777 - QTY. 1

NOTE

- All previously routed cables have been removed from figure 5-60 for clarity.
- SINCGARS model AN/VRC-92F shown.

- 19-13.** Route INC-EPUU cable (10) forward under integrated rack (23), up through center access hole (35), and rest on SINCGARS mount (34).
- 19-14.** Take slack out of all cables and store under EPLRS mount assembly (1). (Refer to figure 5-54.)
- 19-15.** Tighten all screws on all clamps.
- 19-16.** Secure right-side tunnel insulation (22). (Refer to TM 9-2320-280-20.)

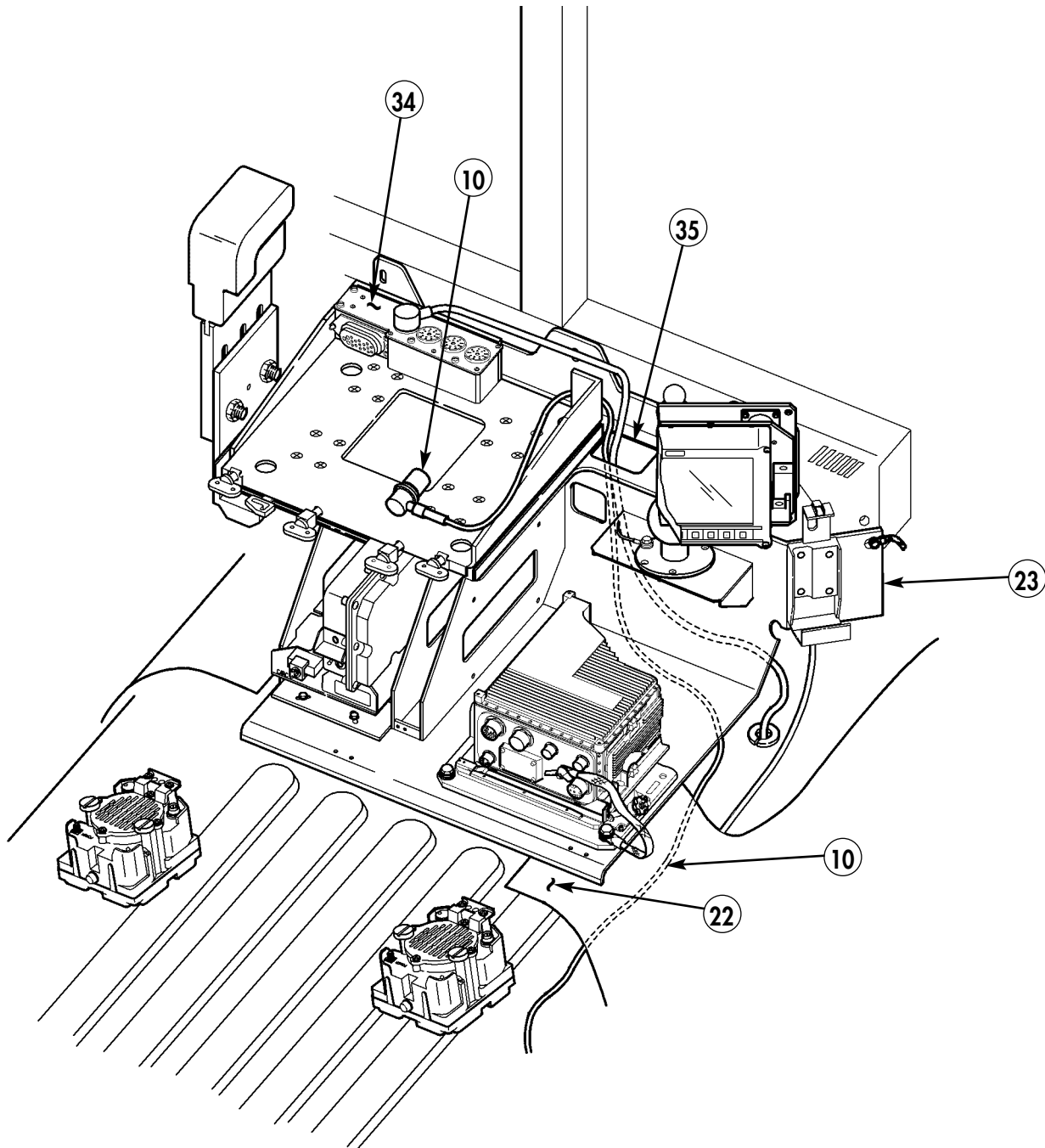
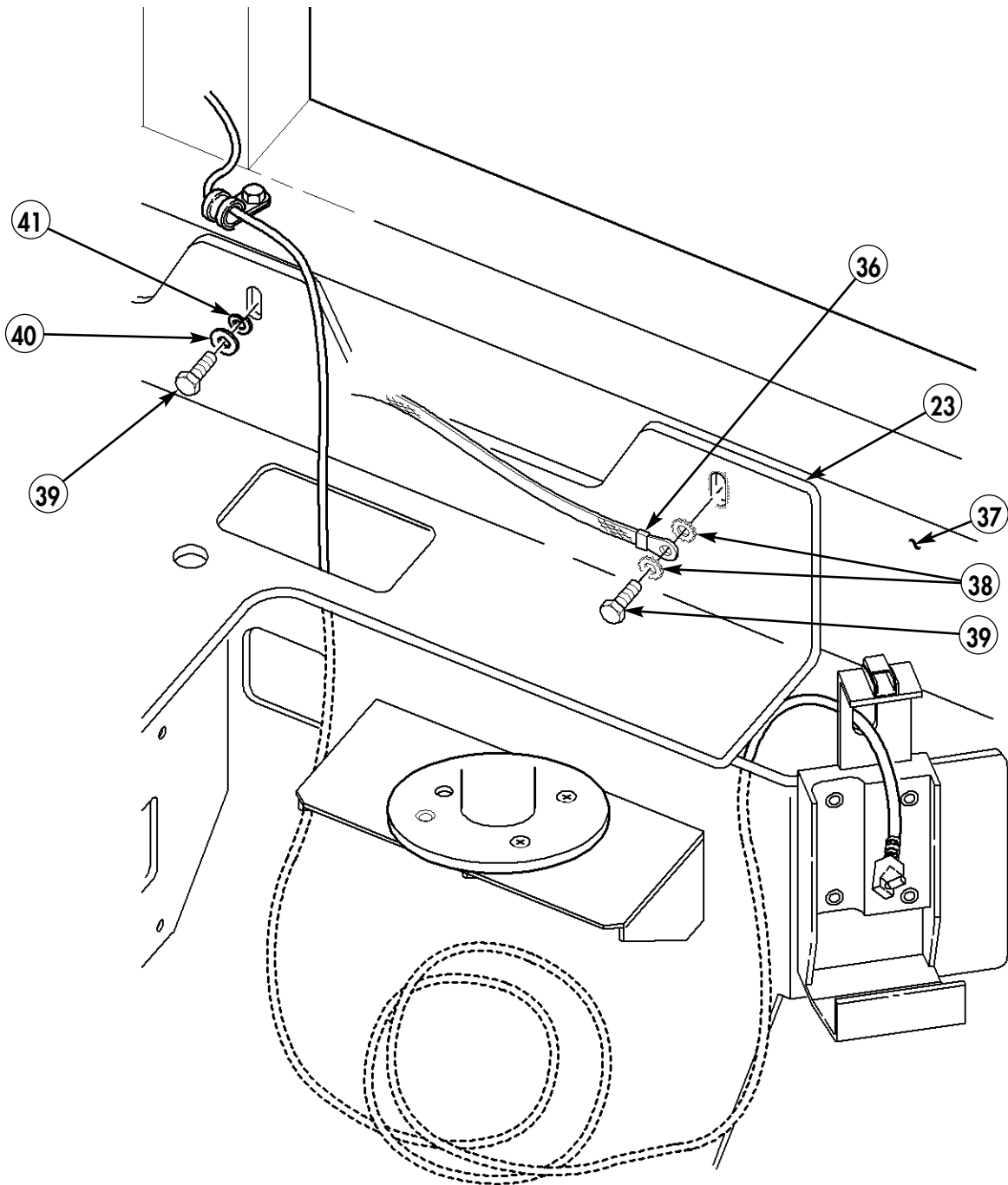


Figure 5-60.

NOTE

Integrated rack will be secured to dash at this time.

- 19-17.** Secure integrated rack (23) to dash (37) with three capscrews (39), two washers (40), lockwashers (41) and (38), and ground strap (36). Tighten lower mounting screws on integrated rack (23). (Refer to chapter 5, section VII.)



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

Figure 5-61.

Section XX. 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.

- 20-1.** Remove six bolts (3), twelve washers (4), six nuts (7), and two hood brackets (6) from hood (1).
20-2. Remove bracket (9) from top side of hood (1).
20-3. Drill out five rivets (8) from hood (1) and remove rubber hood seal (5) and retaining strip (2).
20-4. Remove retaining strip (2) from hood (1).
20-5. Cut retaining strip (2). Discard cut portion of retaining strip (2).
20-6. Cut rubber hood seal (5). Discard cut portion of rubber hood seal (5).

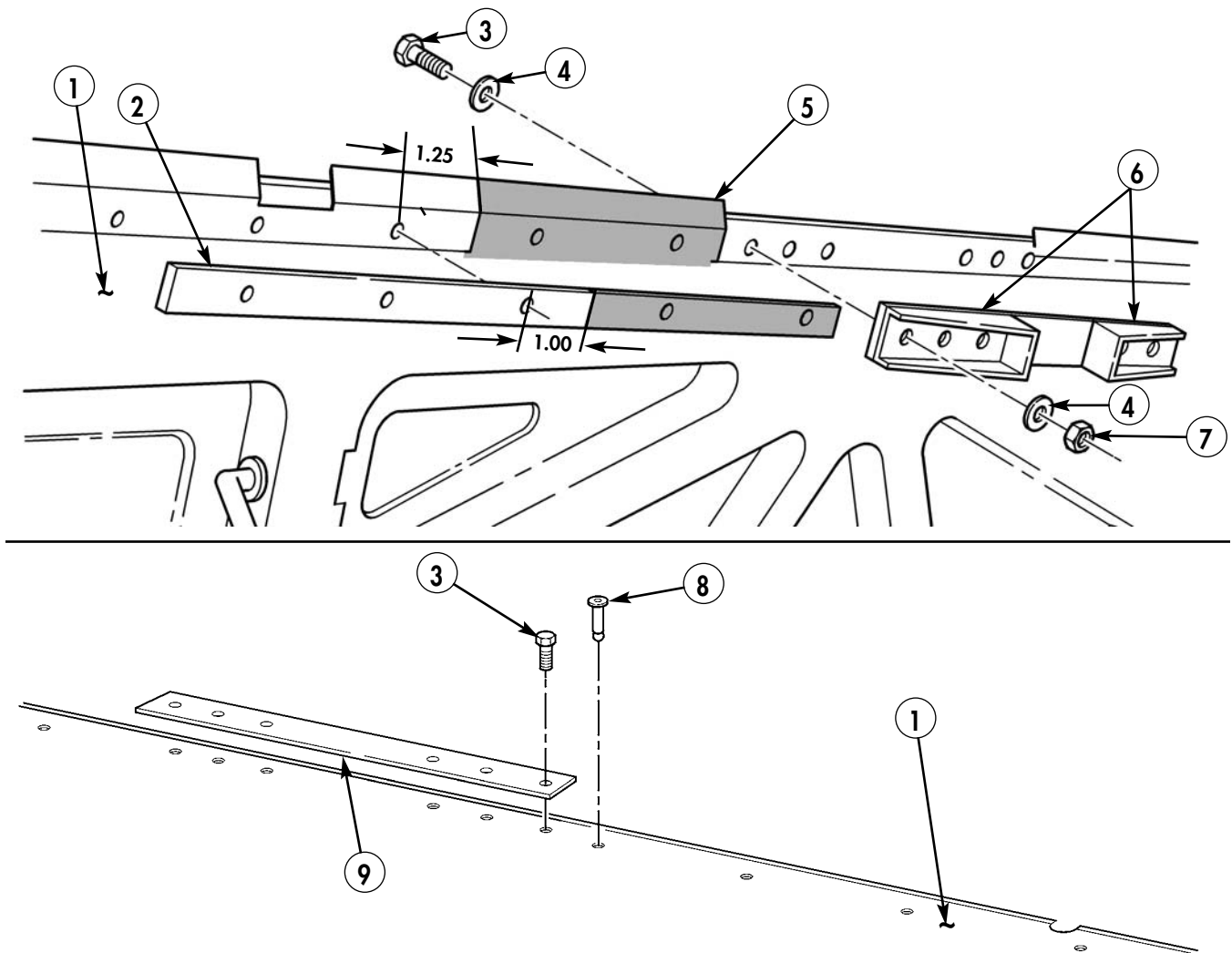


Figure 5-62.

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.

- 20-7. Locate, mark, and cut area (10) on hood (1).
- 20-8. Reinstall hood brackets (6) and bracket (9) on top side of hood (1) with six bolts (3), twelve washers (4), and six nuts (7).
- 20-9. Reinstall retaining strip (2) with three rivets (8).

NOTE

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

- 20-10. 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.

- 20-11. Apply thin coat of adhesive to hood cable guide (11) and matching area on hood (1), and install cable guide (11) on hood (1).

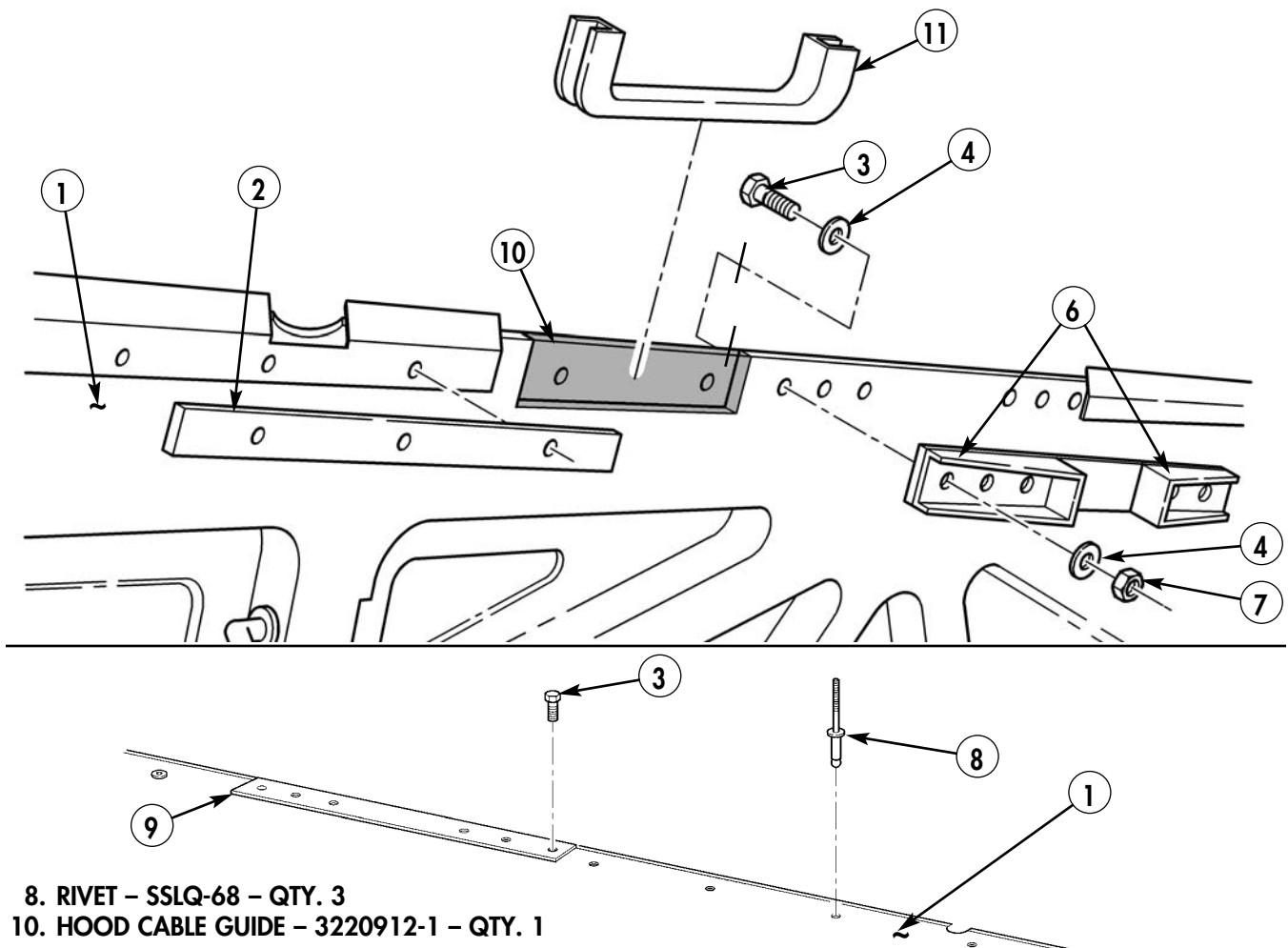
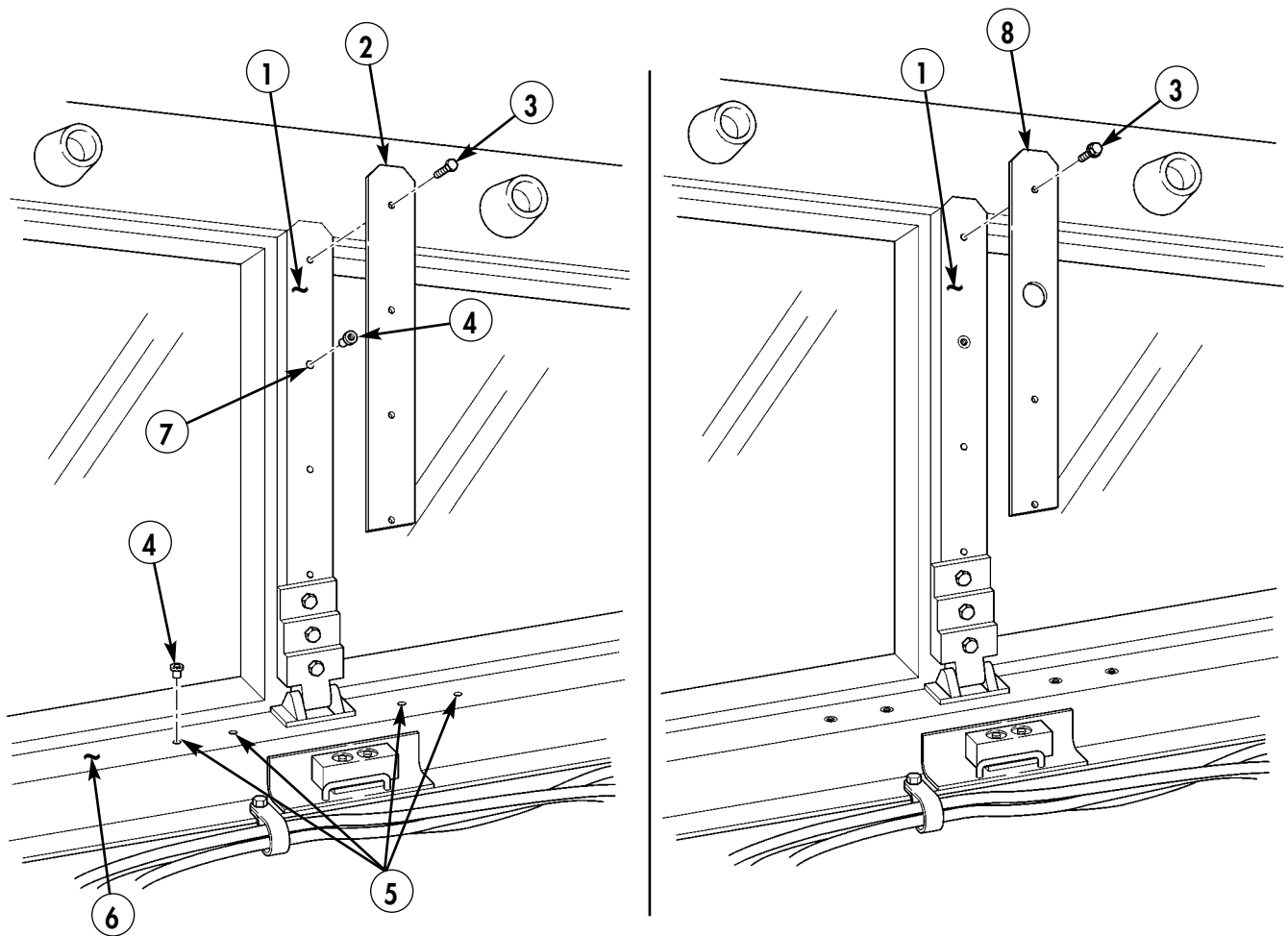


Figure 5-63.

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

- 21-1. Remove four existing screws (3) and existing center windshield retainer (2) from center windshield frame (1). Retain three screws (3).
- 21-2. Using PTM mount assembly as template, locate, mark, and drill four 0.391-in. holes (5) on A-frame pillar flange (6).
- 21-3. Enlarge hole (7) on center windshield frame (1) to 0.391 in.
- 21-4. Install one rivet nut (4) on center windshield frame (1) and four rivet nuts (4) on A-frame pillar flange (6).
- 21-5. 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 5-64.

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

- 22-1.** Remove two screws (2), nuts (4), and clamps (1) from A-frame pillar flange (5). Retain hardware.
- 22-2.** Locate and mark cutout area (3) on A-frame pillar flange (5).
- 22-3.** Cut out area (3) of A-frame pillar flange (5). Use fine-mill file or crocus cloth to remove all burrs and sharp edges.

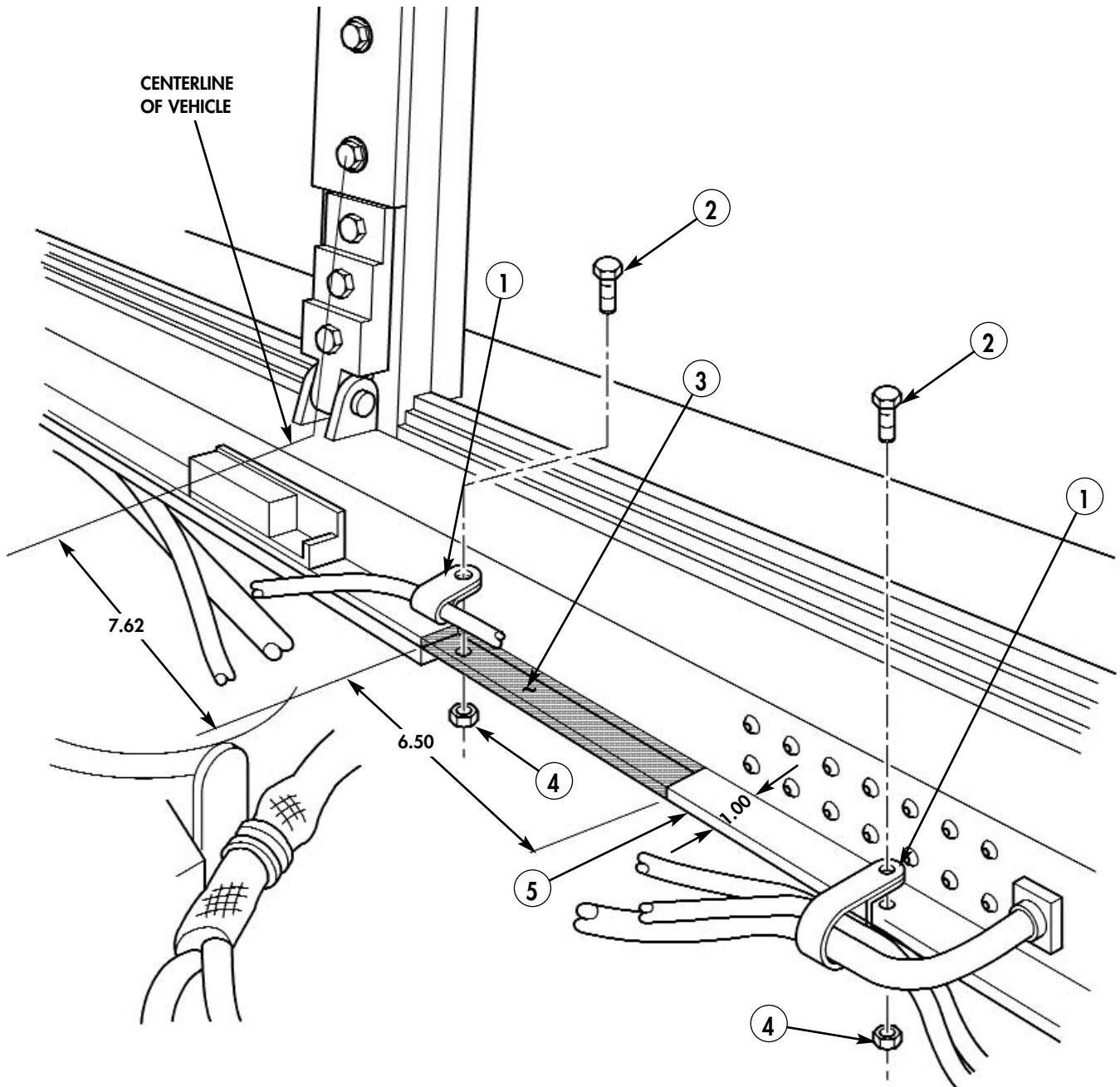


Figure 5-65.

- 22-4. Using A-frame cable guide (13) as template, mark four mounting hole locations (11), (8), and (6).
- 22-5. Drill two 0.391-in. holes (8) on vertical wall (7).
- 22-6. Drill two 0.277-in. holes (6) and (11) on A-frame pillar flange (5).
- 22-7. Install two rivet nuts (12) on vertical wall (7).
- 22-8. Apply thin coat of adhesive to A-frame cable guide (13) and matching areas on A-frame pillar flange (5) and vertical wall (7).
- 22-9. 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).
- 22-10. Locate, mark, and drill one 0.221-in. hole (15) on center of A-frame pillar flange (5).
- 22-11. Reinstall two cable clamps (1) on A-frame pillar flange (5) with existing screws (2) and nuts (4).

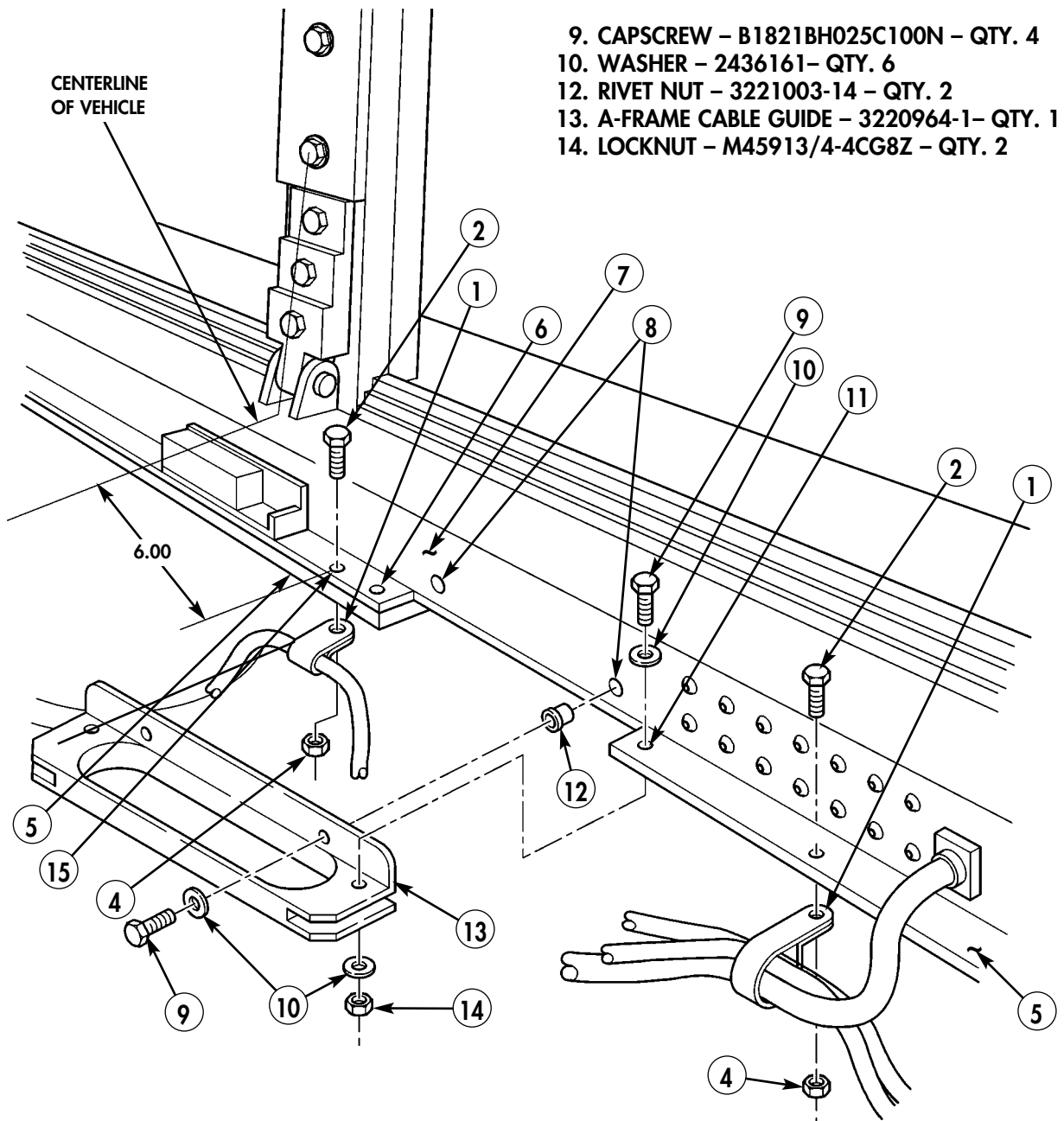
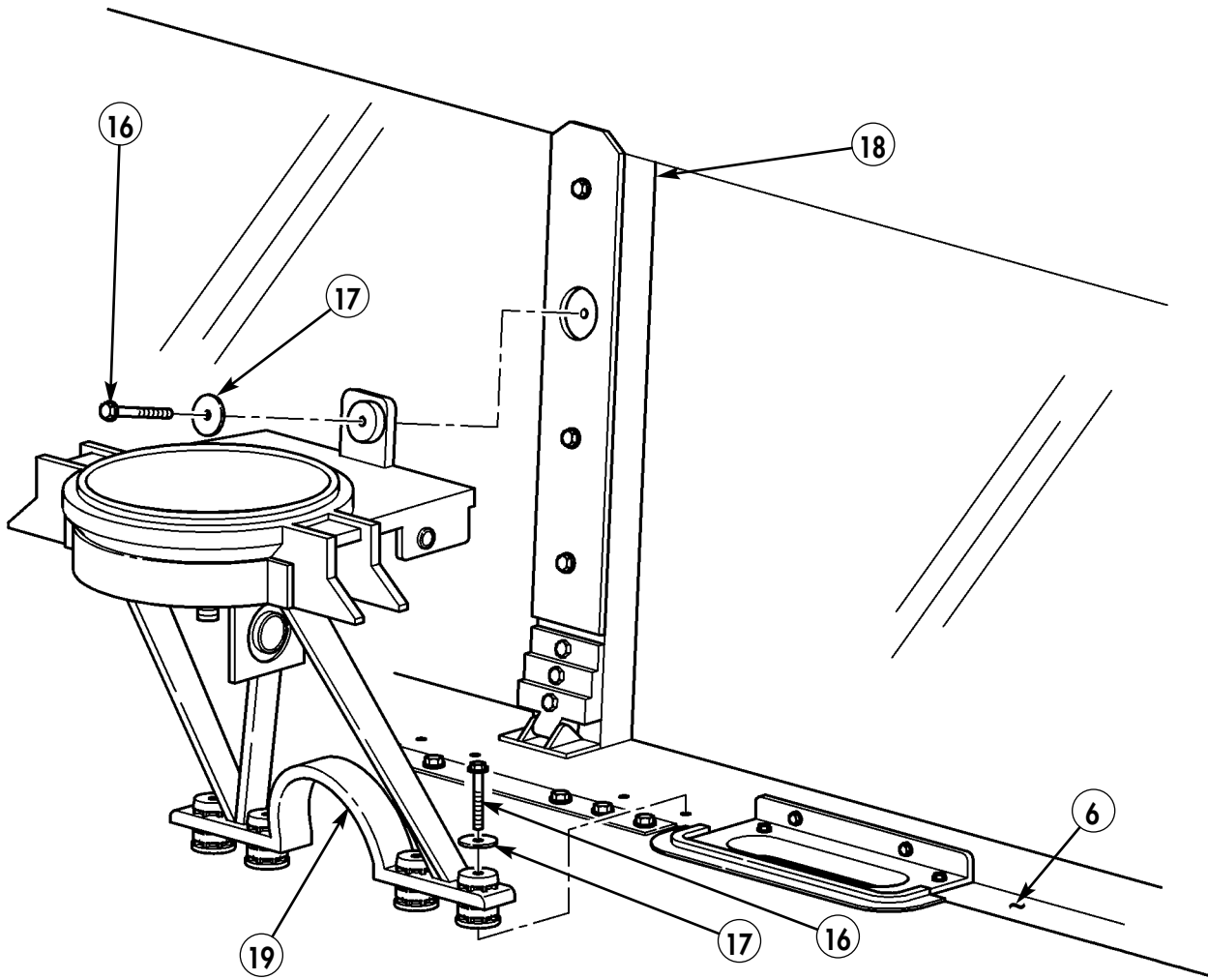


Figure 5-66.

- 22-12.** 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 5-67.

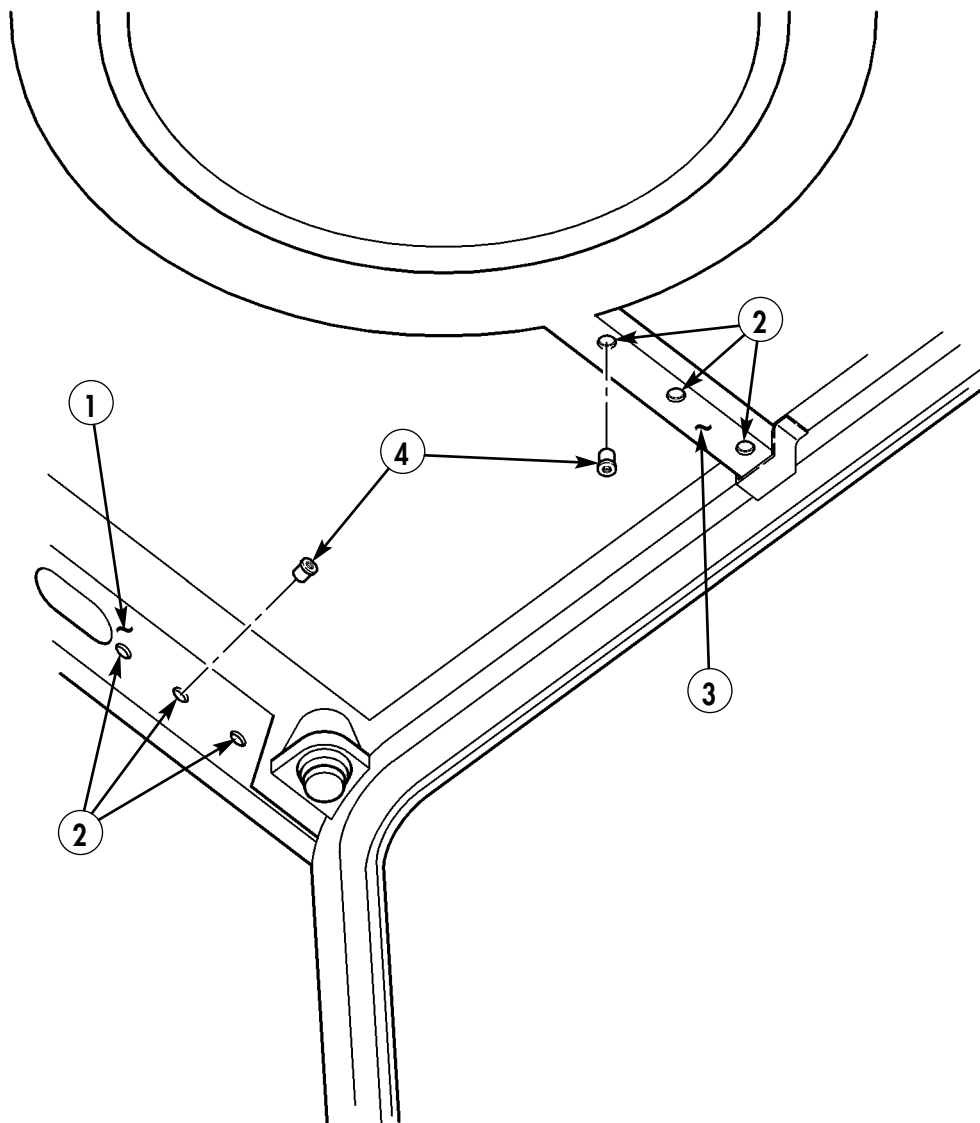
Section XXIII. DVE DISPLAY CONTROL MODULE (DCM) ROOF MOUNT INSTALLATION

NOTE

- DCM mount is installed flush with vehicle roof. Remove roof insulation on driver's side if necessary. (Refer to TM 9-2320-280-20.)
- Remove driver-side sun visor if installed. (Refer to TM 9-2320-280-20.)

23-1. Using DCM roof mount as template, locate, mark, and drill six 0.391-in. holes (2) on driver-side support rail (3) and driver-side outer rail (1).

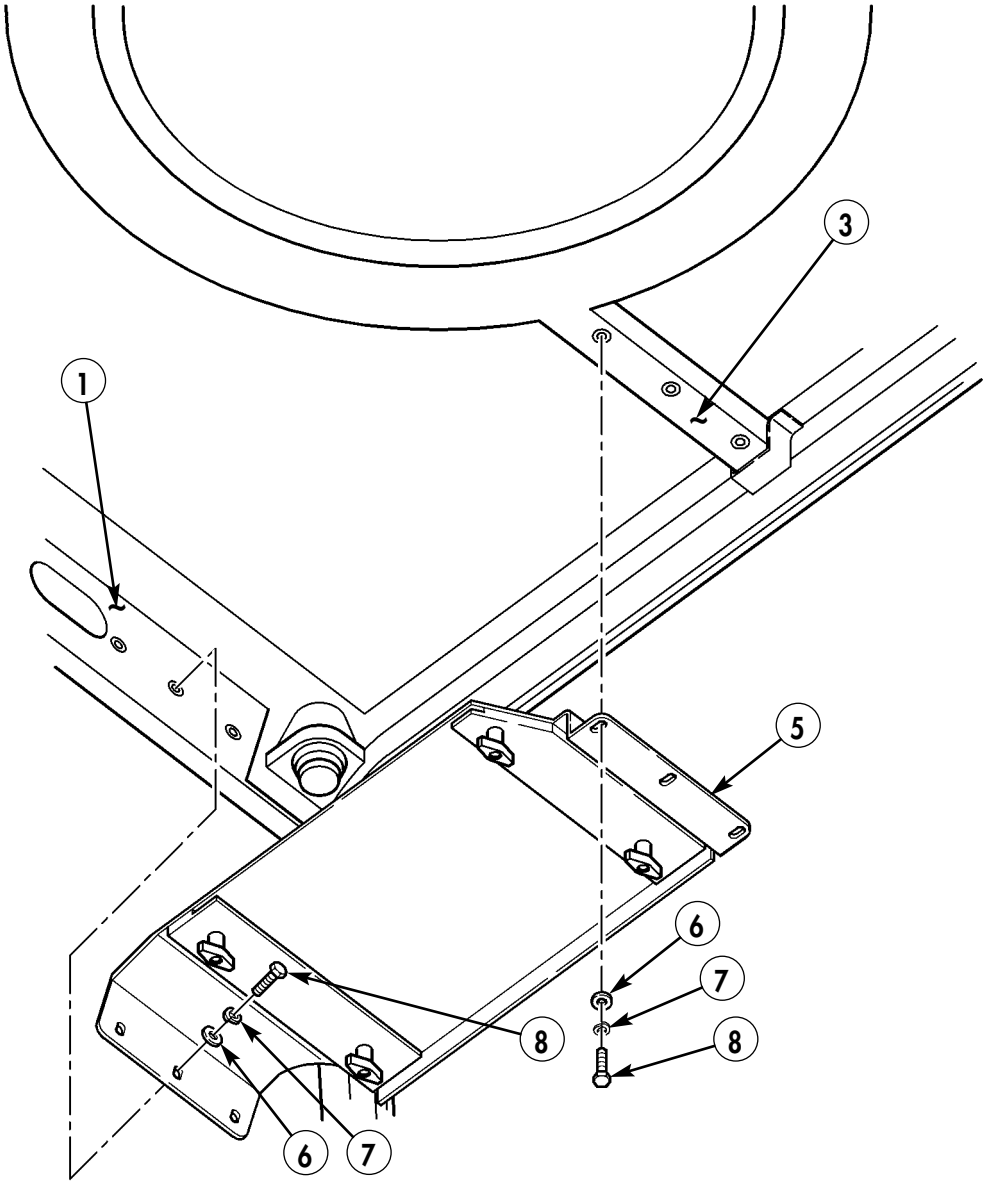
23-2. Install six rivet nuts (4) in six holes (2).



4. RIVET NUT – 3221003-14 – QTY. 6

Figure 5-68.

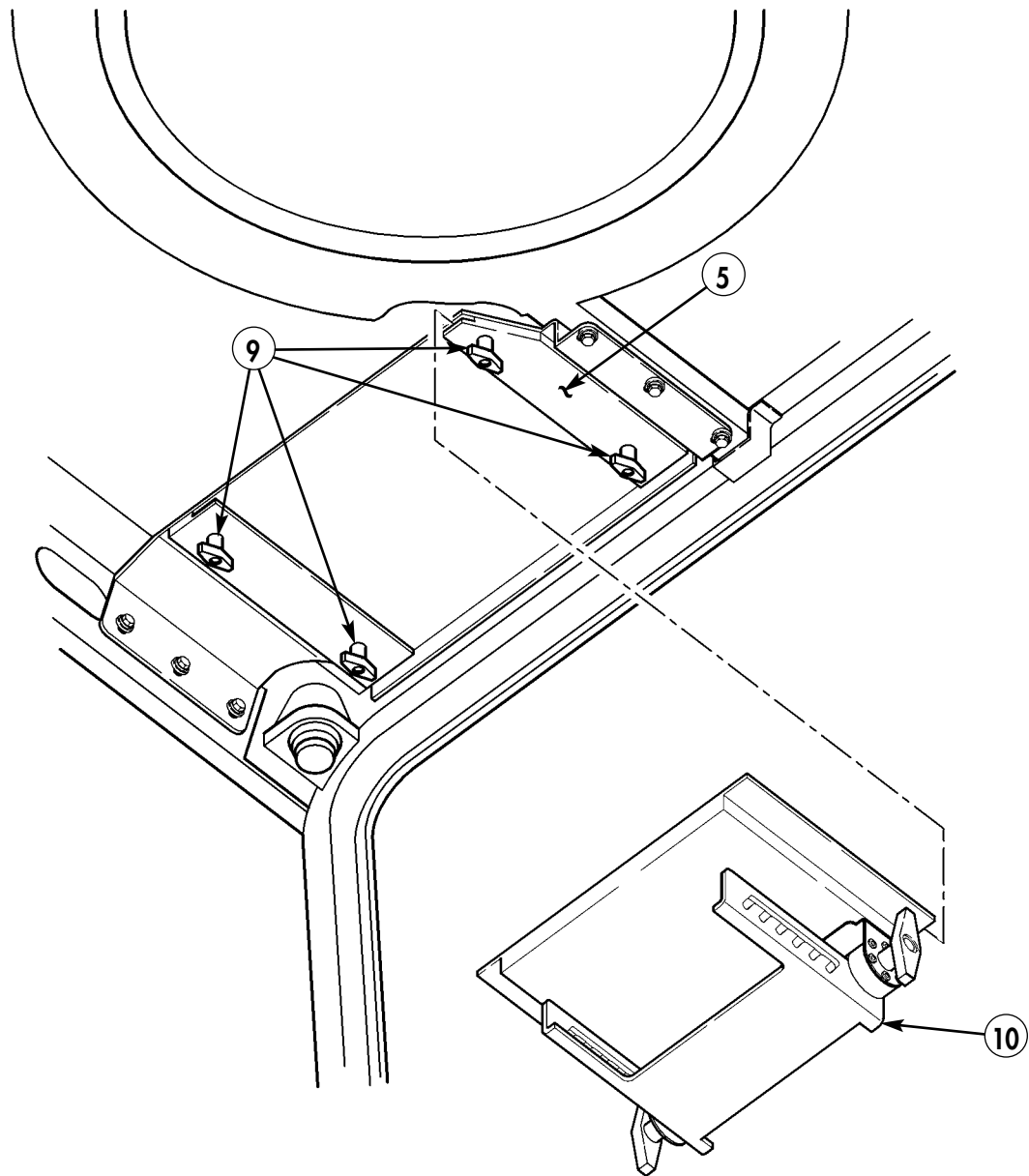
23-3. Install DCM roof mount (5) on driver-side outer rail (1) and driver-side support rail (3) with six capscrews (8), lockwashers (7), and washers (6).



- 5. DCM ROOF MOUNT BRACKET - 3245782-1 - QTY. 1
- 6. WASHER - 2436161 - QTY. 6
- 7. LOCKWASHER - MS35338-44 - QTY. 6
- 8. CAPSCREW - B182BH025C100N - QTY. 6

Figure 5-69.

- 23-4. Loosen four hand knobs (9) on DCM roof mount (5). Slide DCM mount (10) onto DCM roof mount (5). Tighten four hand knobs (9).



10. DCM MOUNT - 3221839-1 - QTY. 1

Figure 5-70.

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

NOTE

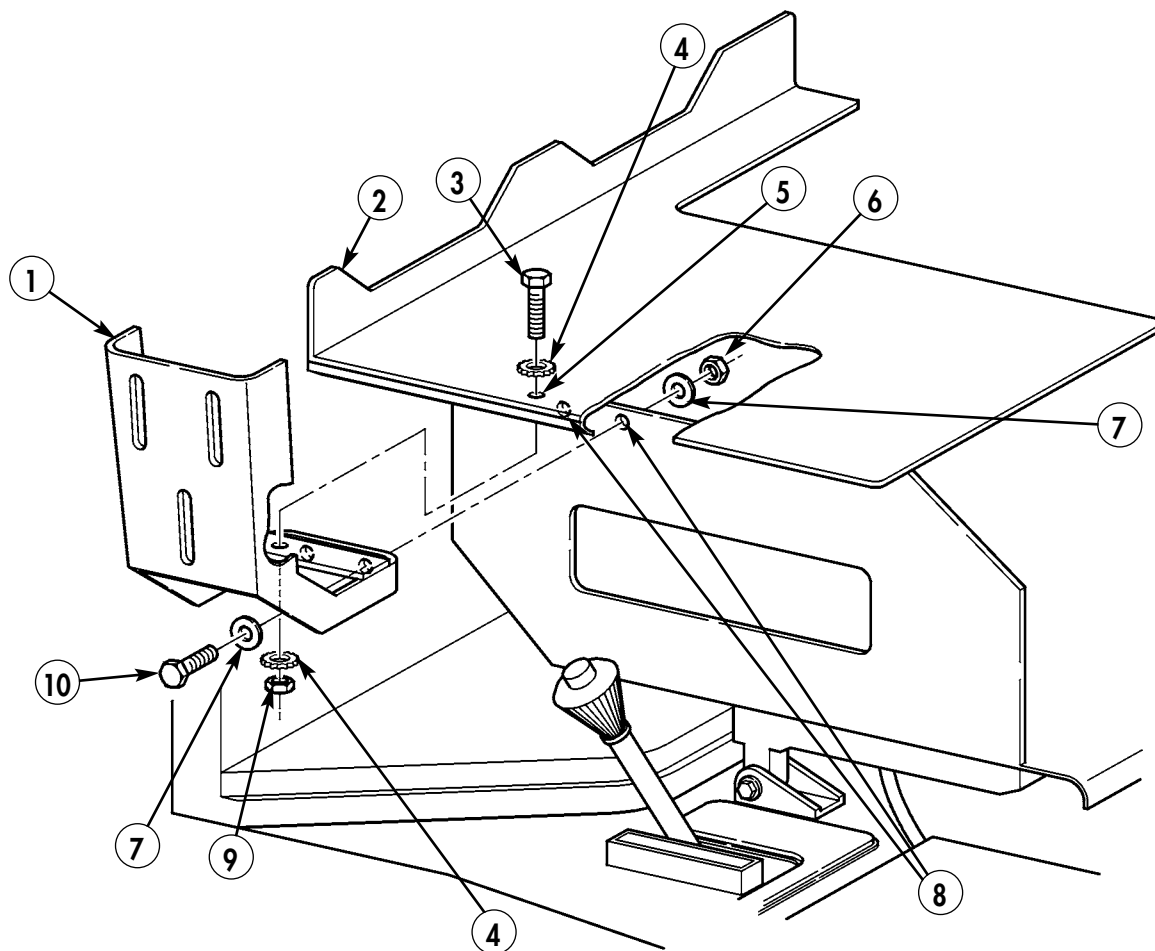
SINGGARS mount and amp guard share existing mounting hardware with PTM control mounting bracket.

- 24-1. Remove SINGGARS mount and amp guard if necessary. (Refer to chapter 5, section VIII.)
- 24-2. Using existing hole (5) and PTM control mounting bracket (1) as template, locate, mark, and drill two 0.281-in. holes (8) on integrated rack (2).

NOTE

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

- 24-3. Install SINGGARS mount and amp guard if removed. (Refer to chapter 5, section VIII.)
- 24-4. Install PTM control mounting bracket (1) on integrated rack (2) with two capscrews (10), four washers (7), two locknuts (6), and existing screw (3), two lockwashers (4), and nut (9).



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

Figure 5-71.

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

- 25-1. Locate, mark, and drill one 1.375-in. hole (1) for control cable seal assembly (2) on tunnel (3).
- 25-2. Position control cable seal assembly (2) and mark two hole locations (5).
- 25-3. Drill two 0.391-in. holes in marked locations (5).
- 25-4. Insert two rivet nuts (4) in tunnel (3).
- 25-5. Insert 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.
- 25-6. For vehicles equipped with FBCB2, route PTM control cable assembly (8) through PTM control mounting bracket (7).

NOTE

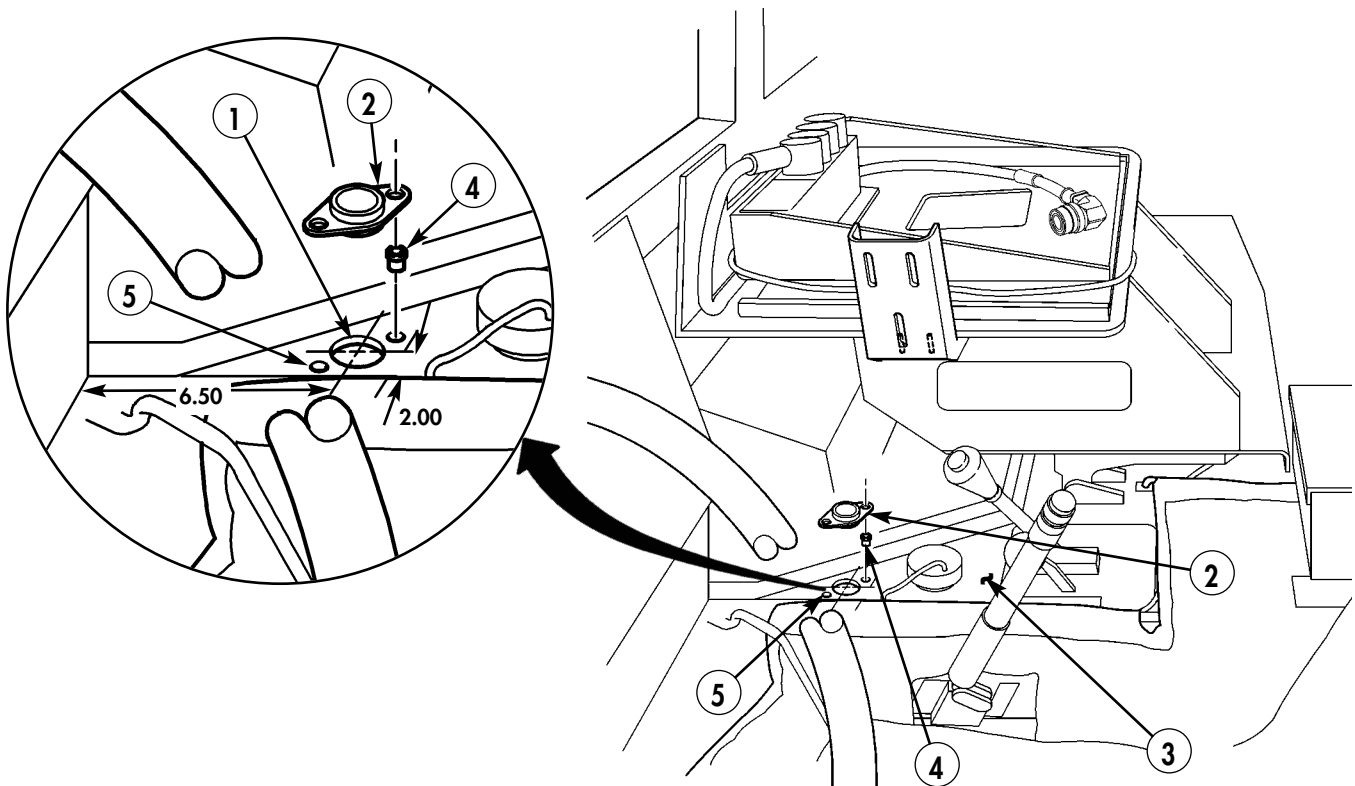
It may be necessary to remove azimuth lock cable adjusting nut to route cabling.

- 25-7. Insert 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.

- 25-8. Cut sides of four holes on grommet of control cable seal assembly (2).
- 25-9. Insert three cables (6), (8), and (9) from PTM control mounting bracket (7) in tunnel hole (1) through control cable seal assembly (2).
- 25-10. 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 5-72.

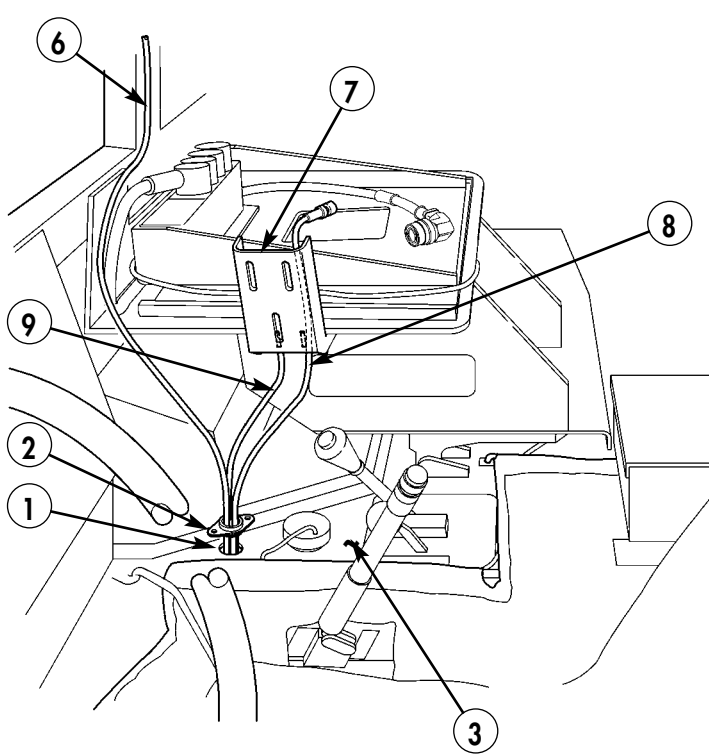


Figure 5-73.

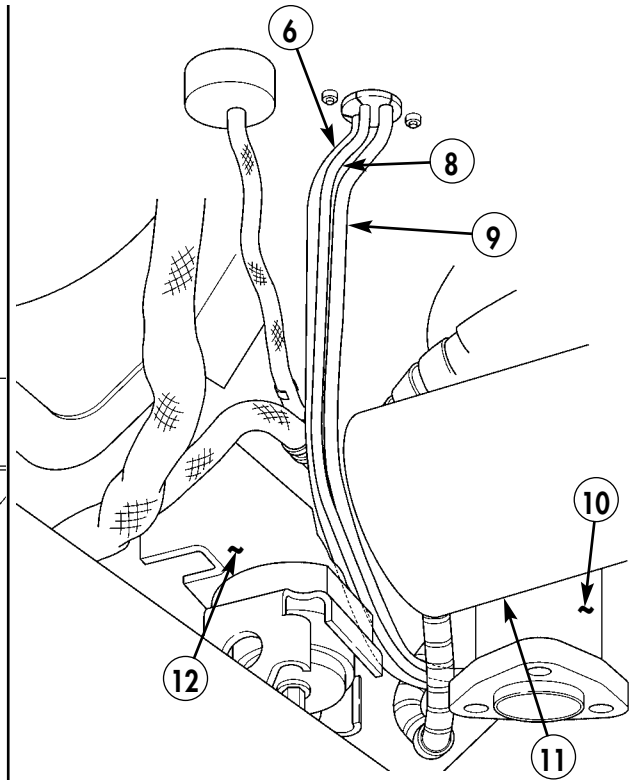
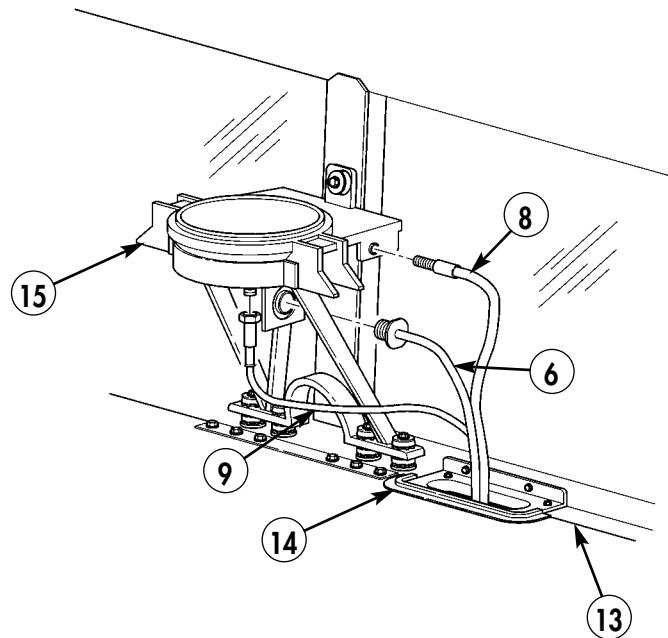


Figure 5-74.



- 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 5-75.

CAUTION

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

- 25-11.** 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.

- 25-12.** 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.

- 25-13.** 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.

- 25-14.** Insert azimuth control cable (8) into side of PTM mount assembly (15).
25-15. Install azimuth control cable rubber boot (19) on azimuth control cable (8).
25-16. Install azimuth control cable (8) into 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).
25-17. Tighten azimuth control cable locking nut (20).
25-18. Position azimuth sector gear assembly (25) onto PTM mount assembly (15).
25-19. Insert azimuth control cable (8) into PTM mount assembly cable lock (37).

NOTE

PTM control assembly must be in the center position.

- 25-20.** 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 25-15 through 25-19, adjusting the azimuth sector gear assembly (25) position on the azimuth control cable (8) until alignment is achieved.
25-21. Secure azimuth sector gear assembly (25) to PTM mount assembly (15) with bolt (27) and washer (26).
25-22. Insert azimuth lock cable (9) through hole (29) into PTM mount assembly (15).
25-23. Install azimuth lock cable rubber boot (23) on azimuth lock cable (9).
25-24. Adjust top and bottom locking/adjuster nuts (24) until locking pin (28) clears azimuth sector gear assembly (25) by 1/16 in. when PTM control azimuth locking trigger is pulled.
25-25. Ensure azimuth control cable (8), azimuth lock cable (9), and rubber boots (19) and (23) are installed correctly.

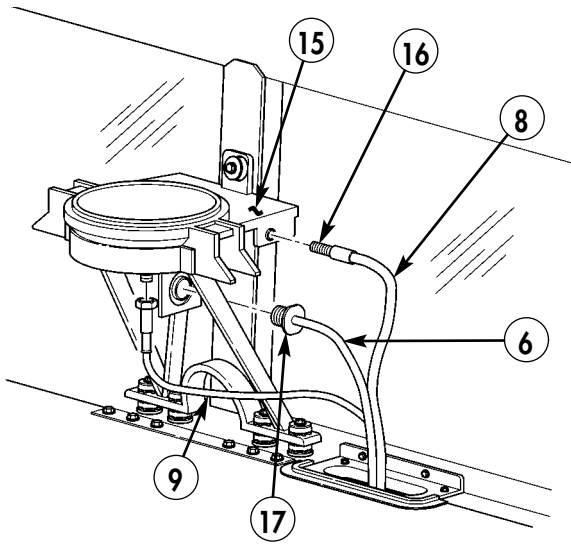


Figure 5-76.

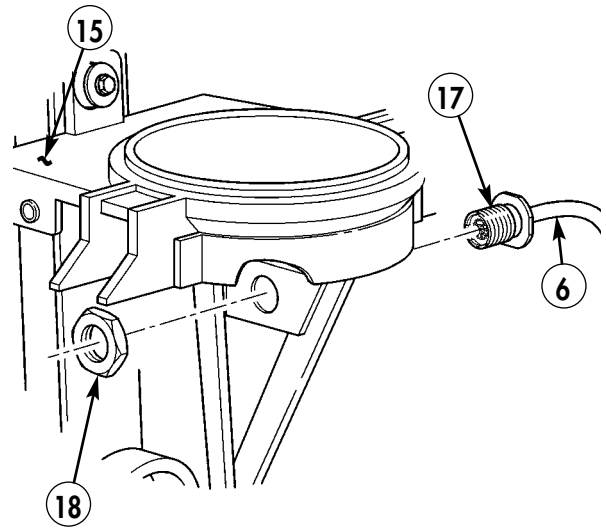


Figure 5-77.

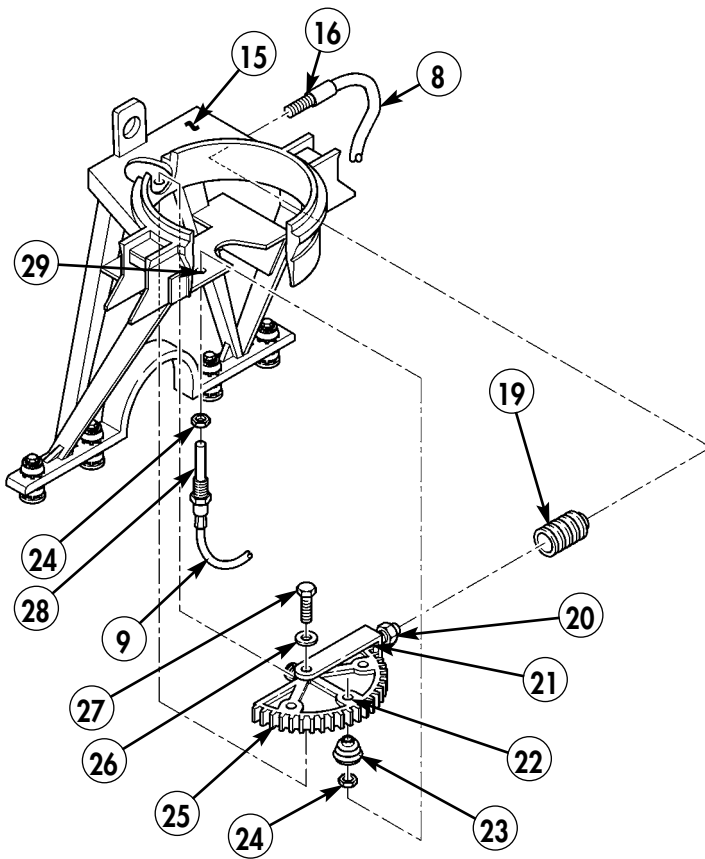


Figure 5-78.

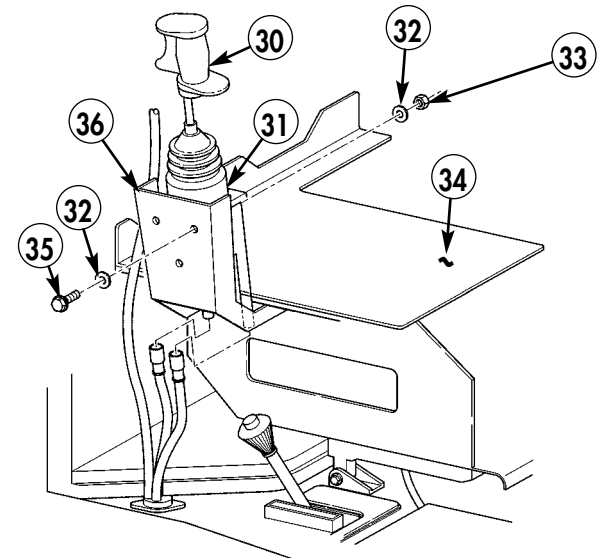


Figure 5-79.

- 33. NUT - M45913/3-5CG8Z - QTY. 3
- 34. WASHER - MS27183-12 - QTY. 6
- 35. SCREW - QTY. 3

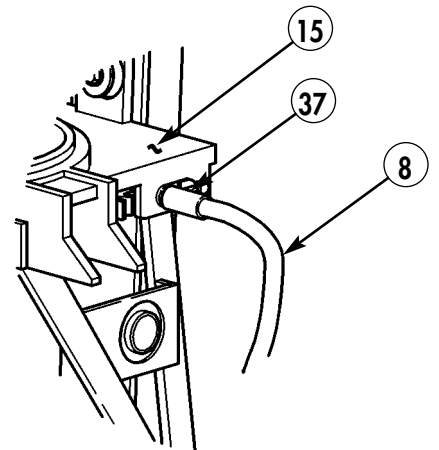
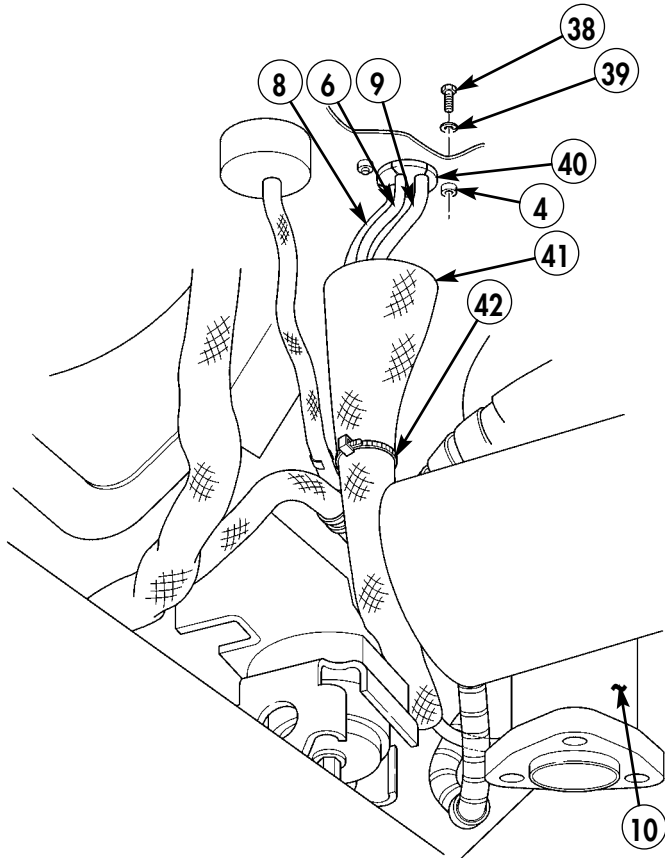


Figure 5-80.

- 25-26. Install control cable seal assembly rubber grommet (40) on DVE/PTM cables (6), (8), and (9). Secure control cable seal assembly rubber grommet (40) on tunnel rivet nuts (4) with two capscrews (38) and washers (39).
- 25-27. Cover DVE/PTM cables (6), (8), and (9) that run along vehicle exhaust pipe (10) with heat shield sleeve (41). Secure heat shield sleeve (41) and DVE/PTM control cables (8) and (9) with cable ties (42).
- 25-28. 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 5-81.

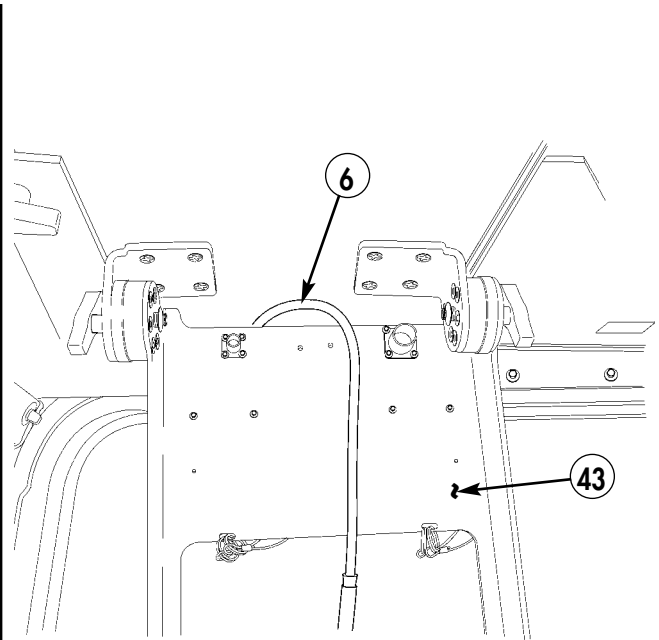


Figure 5-82.

Section XXVI. LCD PROTECTIVE ASSEMBLY INSTALLATION

NOTE

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

- 26-1.** Install LCD protective assembly on DCM.

NOTE

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

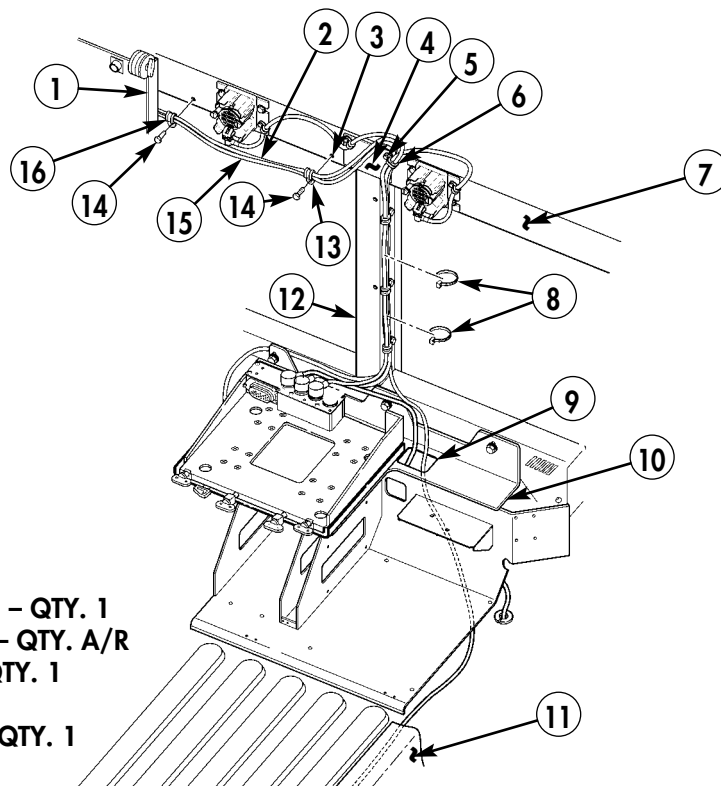
- 26-2.** Place stowage pouch in rear seat storage.

Section XXVII. DVE POWER CABLE INSTALLATION

NOTE

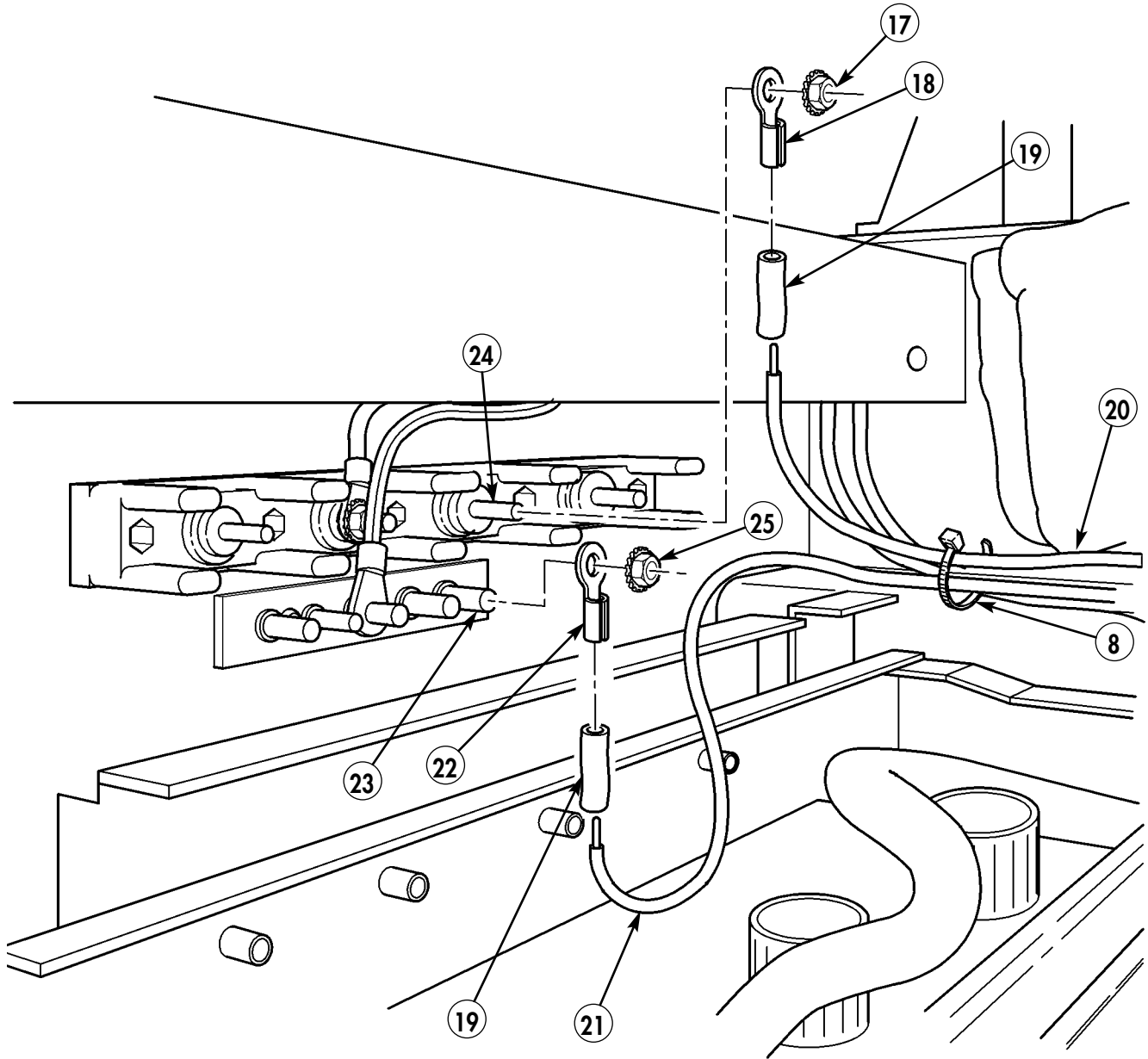
Previously routed cables have been removed for clarity.

- 27-1. 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.
- 27-2. 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.)
- 27-3. Attach DVE power cable positive lead (20) to 24V terminal board (24) with existing nut (17).
- 27-4. Attach DVE power cable negative lead (21) to ground strap (23) with existing nut (25).
- 27-5. Secure all leads together with tiedown strap (8).
- 27-6. Remove two existing screws, lockwasher, and washers from DCM mount (1) and windshield frame (7).
- 27-7. Secure two cables (2) and (15) to windshield frame (7) with clamp (16) and screw (14).
- 27-8. Secure DCM mount (1) to windshield frame (7) with existing washers, lockwashers, and nuts.
- 27-9. If required, locate, mark, and drill one 0.147-in. diameter hole (3) in windshield frame (7).
- 27-10. Secure two cables (2) and (15) to windshield frame (7) with clamp (13) and screw (14).
- 27-11. Remove screw (5) and loop clamp (6) from windshield wiper bracket (4).
- 27-12. Secure two cables (2) and (15) to windshield wiper bracket (4) with existing clamp (6) and existing screw (5).
- 27-13. Secure two cables (2) and (15) to existing cables with tiedown straps (8).
- 27-14. Install right-side tunnel insulation. (Refer to TM 9-2320-280-20.)
- 27-15. 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 5-83.



- 8. TIEDOWN STRAP - MS3367-1-0 - QTY. 1
- 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 5-84.

SECTION XXVIII. WINDSHIELD ARMOR MODIFICATION

NOTE

Perform following steps for vehicles with bolt-on armor installed.

- 28-1. Remove four capscrews (5) and left capping ring (4) from left side of windshield frame (1).
- 28-2. Remove four capscrews (5) and right capping ring (6) from right side of windshield frame (1).
- 28-3. Remove five capscrews (3) and upper capping ring (2) from windshield frame (1).

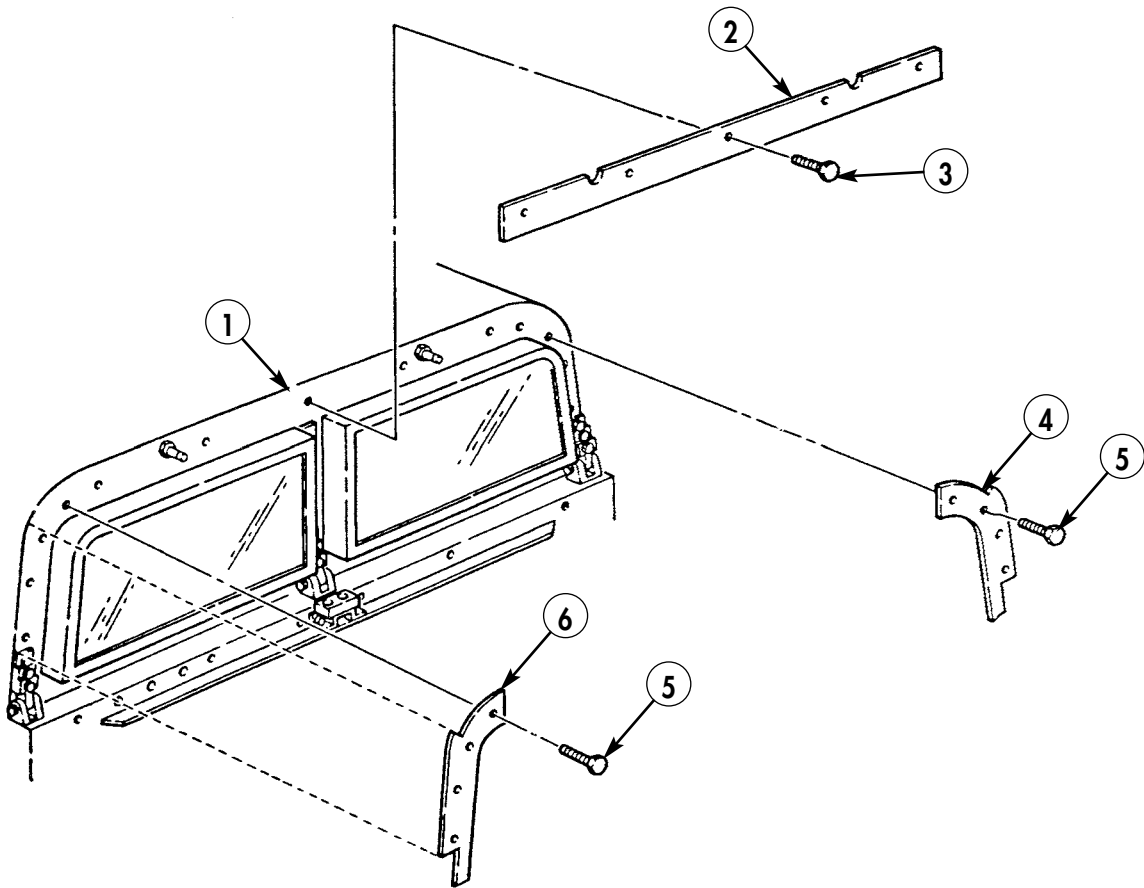


Figure 5-85.

NOTE

Left side shown; right side opposite.

28-4. Locate, mark, and remove section of armor on left capping ring (4). Repeat for right side.

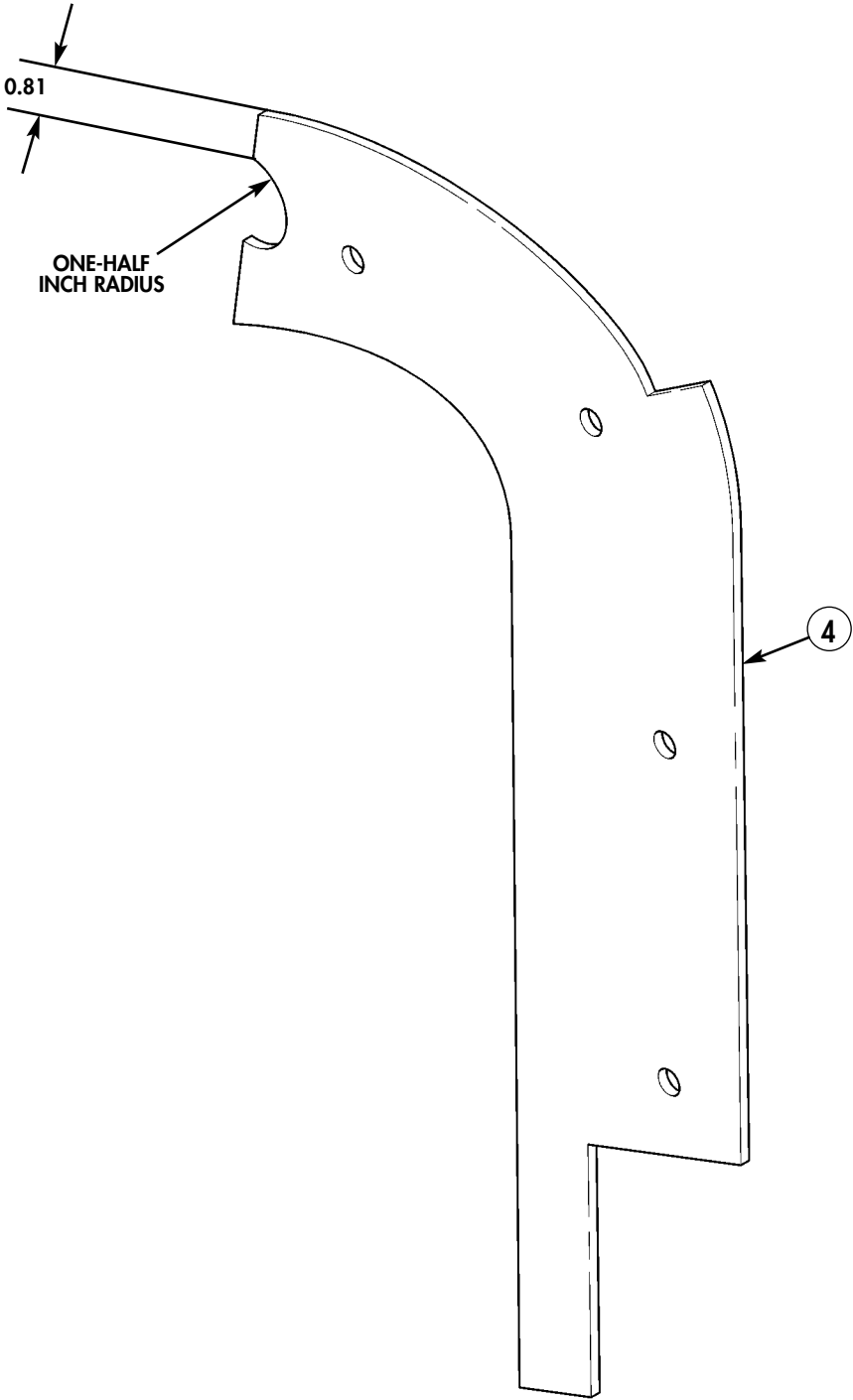


Figure 5-86.

NOTE

Right side shown; left side opposite.

28-5. Locate, mark, and remove sections of armor on upper capping ring (2).

28-6. Spot paint all exposed metal surfaces. (Refer to TM 43-0139.)

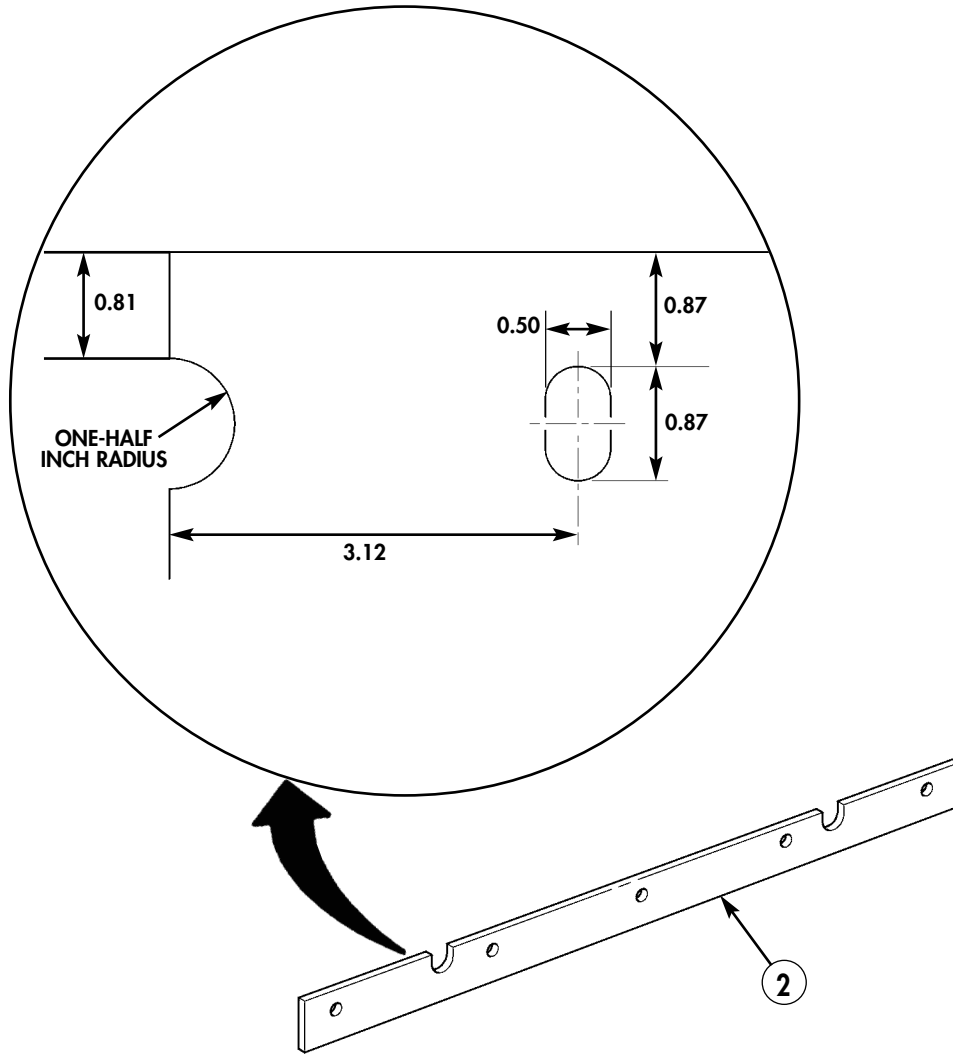
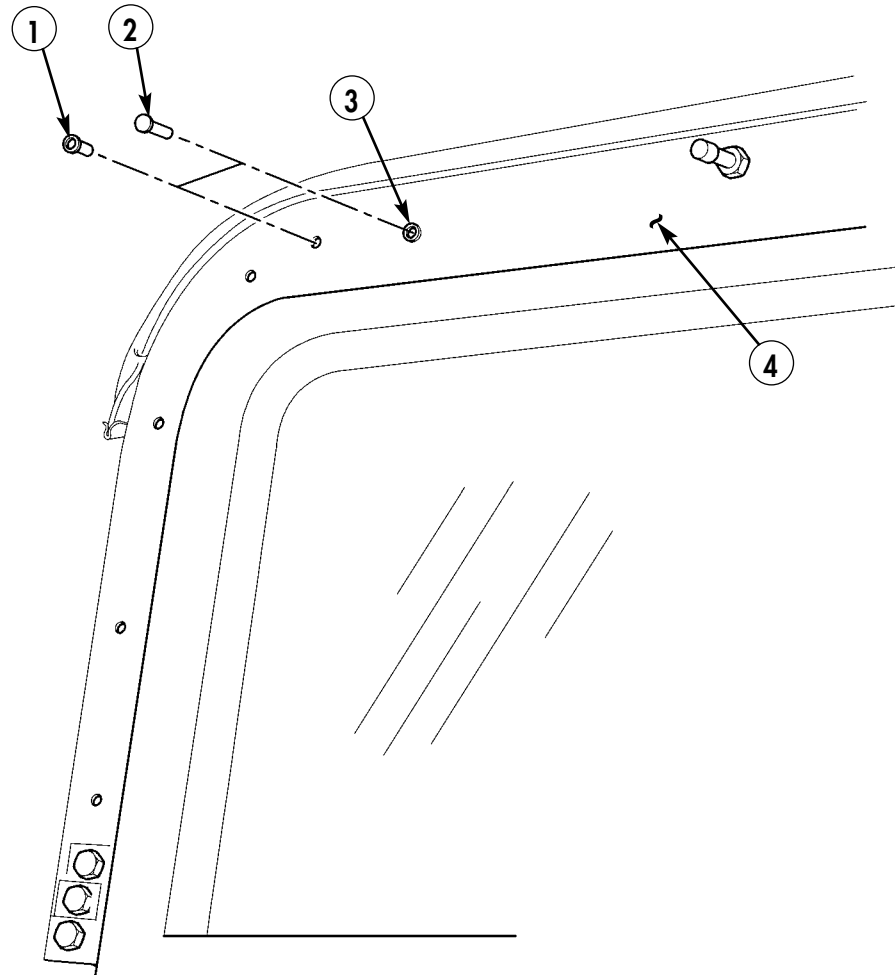


Figure 5-87.

Section XXIX. ARMOR AND ANTENNA INSTALLATION (WITH BOLT-ON ARMOR)**NOTE**

Perform following steps for vehicles with bolt-on armor and antenna mounted on right side of windshield frame.

- 29-1.** Remove two plugs (2) from right side of windshield frame (4).
- 29-2.** Install wellnuts (1) and (3) in right side of windshield frame (4).



- 1. WELLNUT - 12339397-6 - QTY. 1
- 3. WELLNUT - 12339397-3 - QTY. 1

Figure 5-88.

NOTE

It may be necessary to drill pilot hole prior to drilling 0.562-in. diameter hole.

- 29-3.** Locate, mark, and drill one 0.562-in. diameter hole (5) on right side of A-pillar (6).

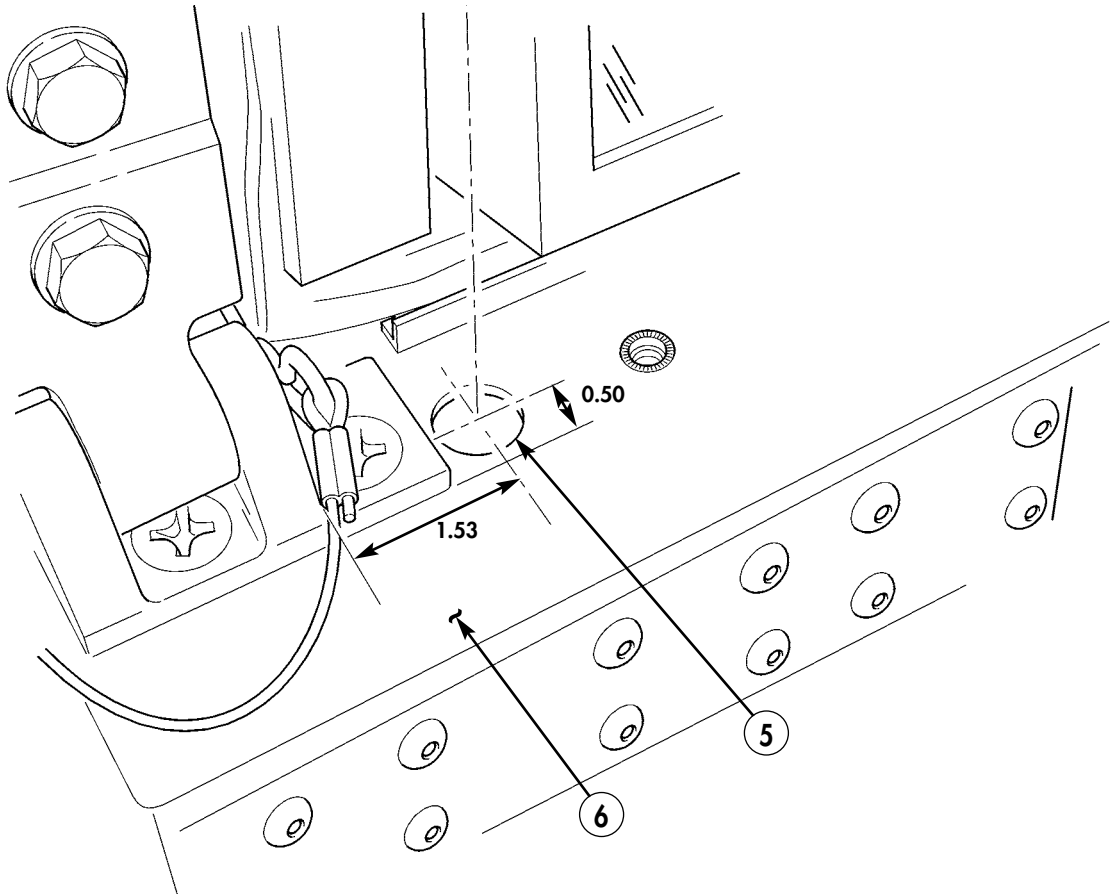


Figure 5-89.

- 29-4. Install modified upper capping ring (7) on windshield frame (4) with five existing capscrews (8).
- 29-5. Install modified right capping ring (11) on right side of windshield frame (4) with four existing capscrews (10).
- 29-6. Install modified left capping ring (9) on left side of windshield frame (4) with four existing capscrews (10).

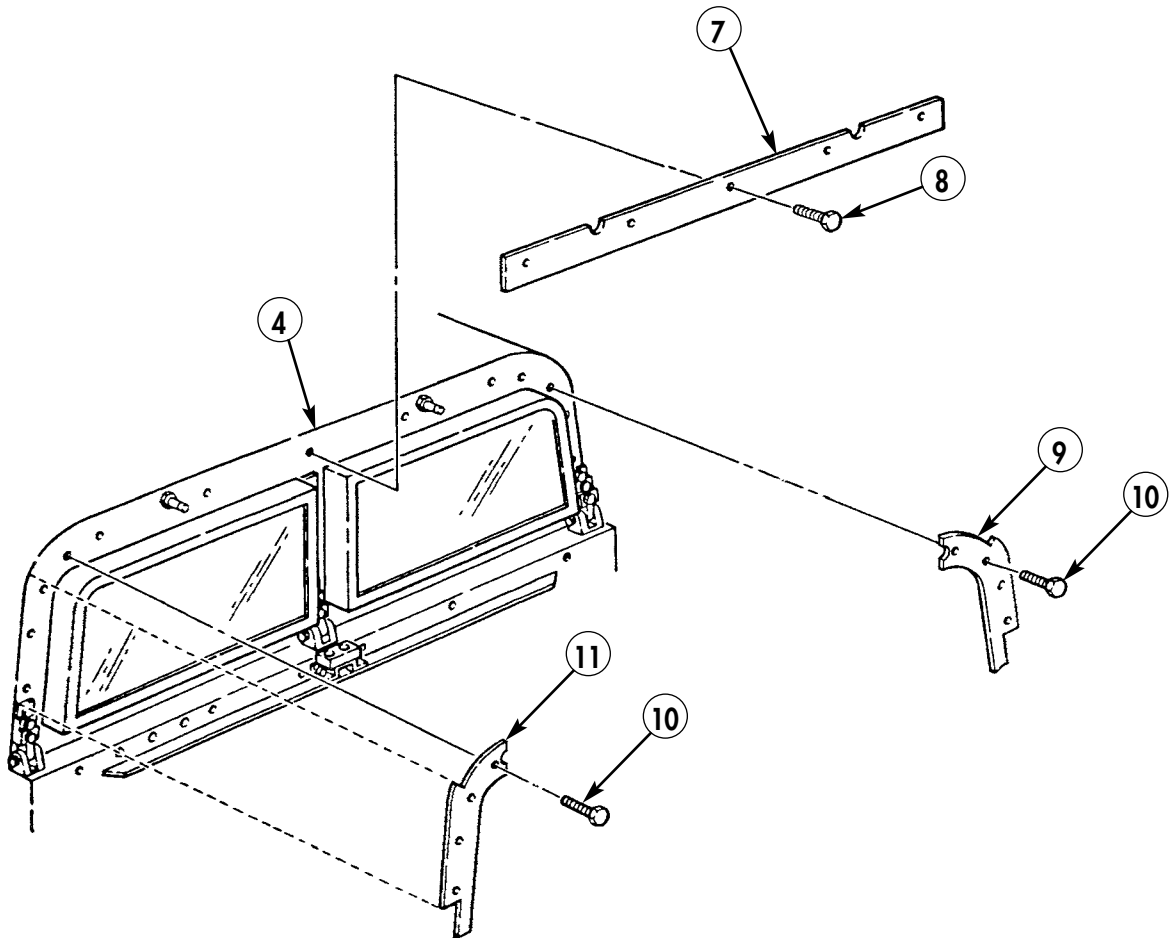
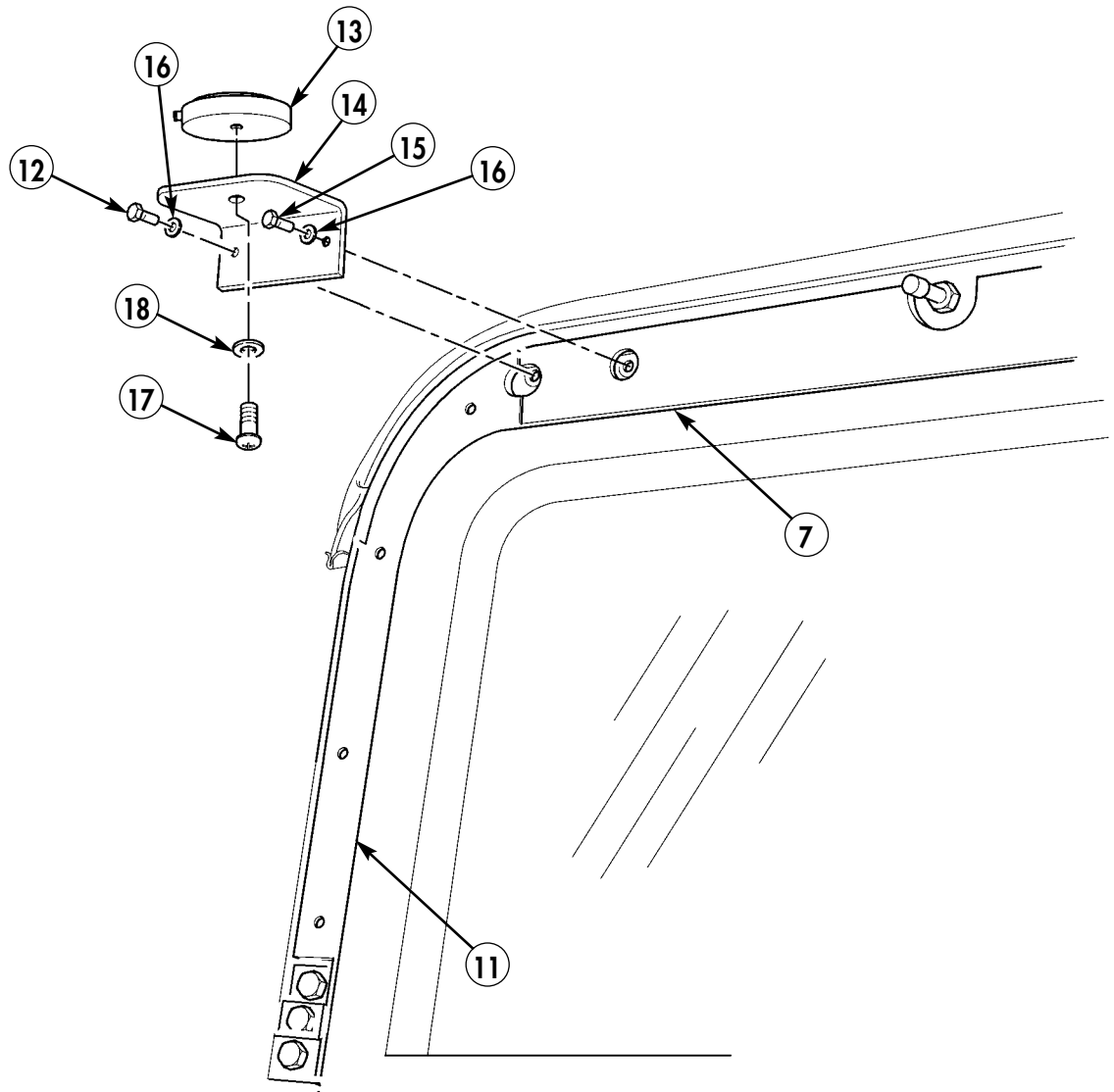


Figure 5-90.

29-7. Install antenna (13) on support (14) with lockwasher (18) and capscrew (17).

29-8. Install support (14) on right capping ring (11) and upper capping ring (7) with capscrews (12) and (15) and two washers (16).



- 12. CAPSCREW - B1821BH025C125N - QTY. 1
- 13. PLGR ANTENNA - AT575-030 - QTY. 1
- 14. PLGR ANTENNA MOUNT BRACKET - 12480578 - QTY. 1
- 15. CAPSCREW - B1821BH025C175N - QTY. 1
- 16. WASHER - 2436161 - QTY. 2
- 17. CAPSCREW - MS35207-261 - QTY. 1
- 18. LOCKWASHER - MS35338-43 - QTY. 1

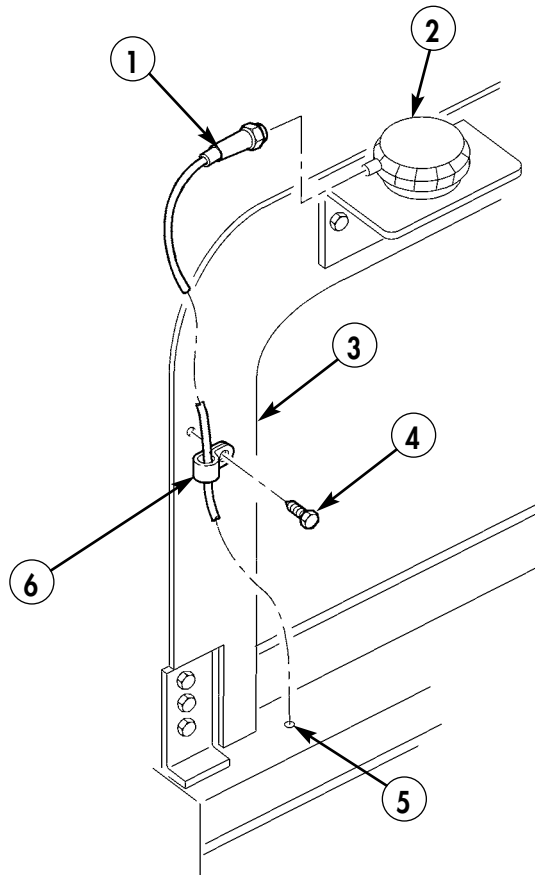
Figure 5-91.

Section XXX. ANTENNA CABLE INSTALLATION (WITH BOLT-ON ARMOR)

NOTE

Perform following steps for vehicles with bolt-on armor and antenna installed on right side of windshield frame.

- 30-1. Route antenna cable (1) through hole (5) and connect antenna cable (1) to antenna (2).
- 30-2. Remove self-tapping screw (4) from right capping ring (3).
- 30-3. Secure antenna cable (1) to right capping ring (3) with clamp (6) and existing self-tapping screw (4).



- 1. ANTENNA CABLE – A32551281W23 – QTY. 1
- 6. CLAMP – MS21333-96 – QTY. 1

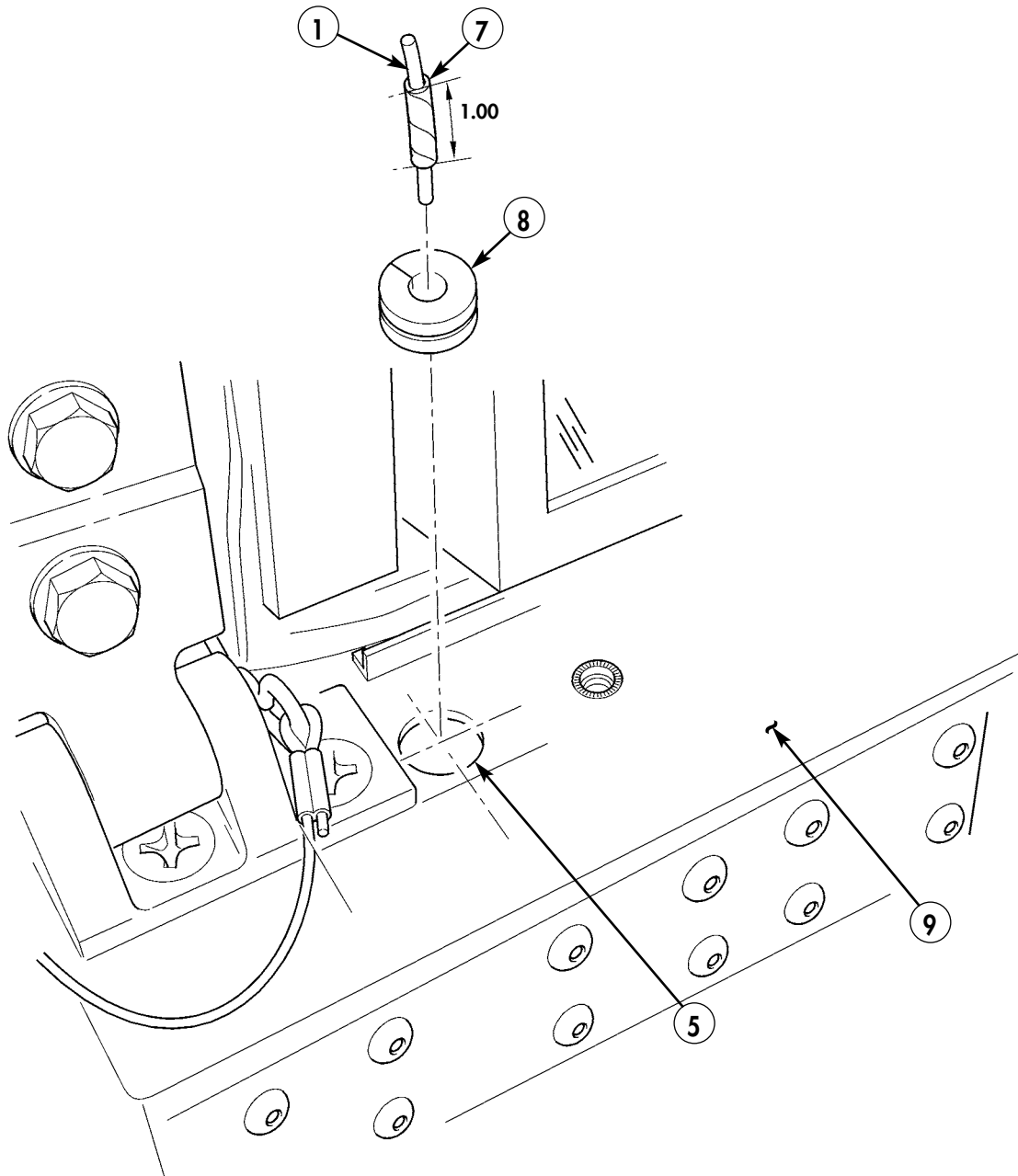
Figure 5-92.

- 30-4. Split grommet (8) and install on antenna cable (1).
- 30-5. Wrap electrical tape (7) around antenna cable (1).
- 30-6. Install antenna cable (1) with electrical tape (7) in grommet (8).

NOTE

Apply sealing compound on grommet.

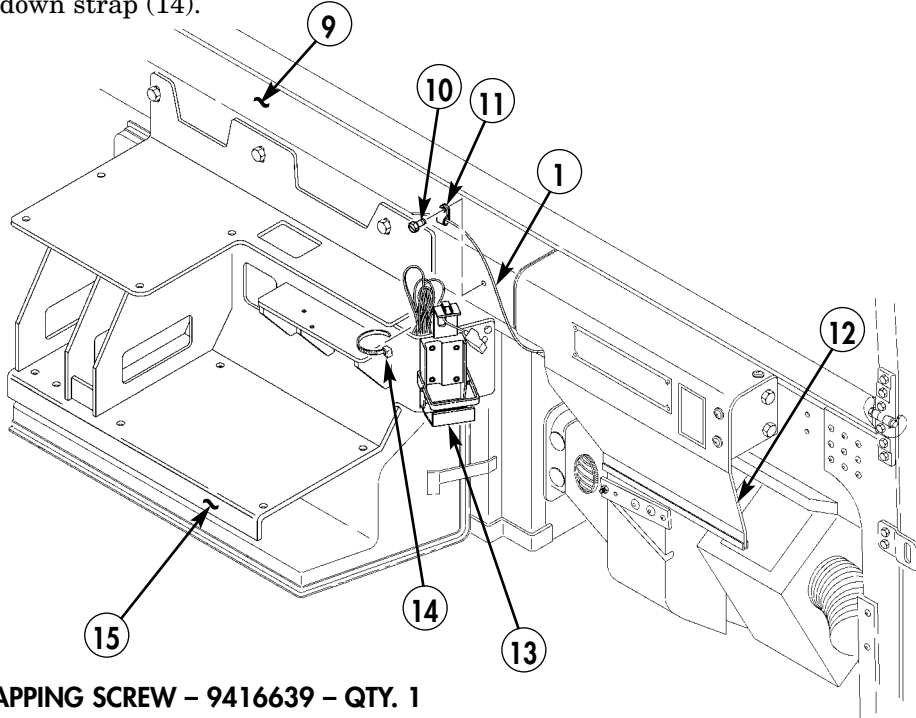
- 30-7. Install grommet (8) in hole (5) on A-pillar (9).



- 7. ELECTRICAL TAPE – HH-I-595 – QTY. A/R
- 8. GROMMET – MS35489-31 – QTY. 1

Figure 5-93.

- 30-8. Route antenna cable (1) behind heater shield (12) to installation mount (13).
- 30-9. Locate, mark, and drill one 0.147-in. diameter hole (16) in plenum (9).
- 30-10. Secure antenna cable (1) to plenum (9) with clamp (11) and self-tapping screw (10).
- 30-11. Secure excess antenna cable (1) behind installation mount (13) on integrated radio rack (15) with tiedown strap (14).



- 10. SELF-TAPPING SCREW - 9416639 - QTY. 1
- 11. CLAMP - MS21333-67 - QTY. 1
- 14. TIEDOWN STRAP - MS3367-1-0 - QTY. 1

Figure 5-94.

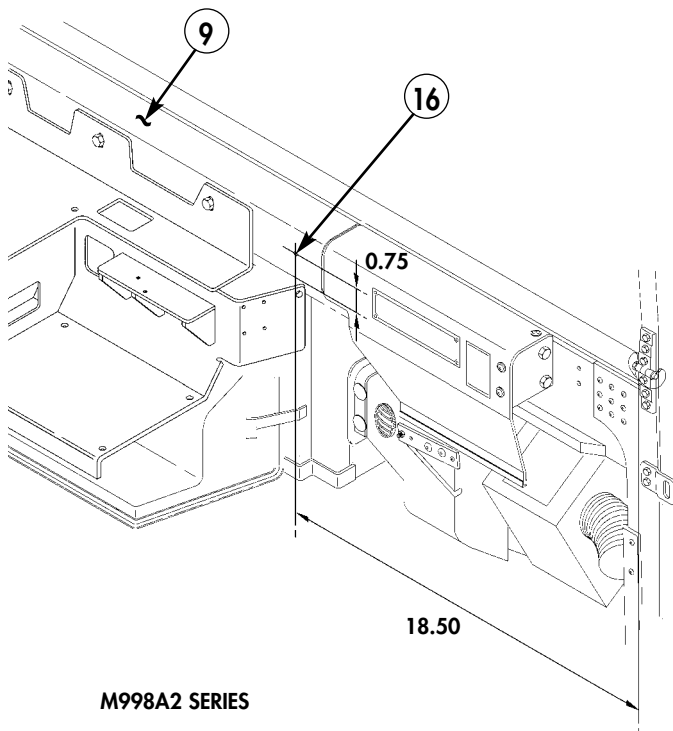


Figure 5-95.

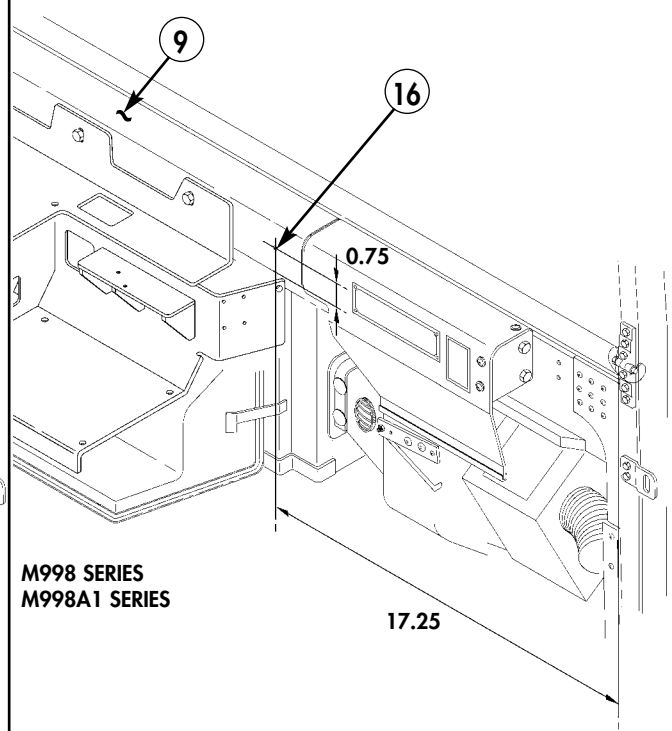


Figure 5-96.

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

Official:



SANDRA R. RILEY
Administrative Assistant to the
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| 1 | 5-44 | | | 5-56 | | <p>Loop clamp MS21333-75 and self-tapping screw 9421073 quantity should be 5.</p> |

SAMPLE

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

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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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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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| TYPED NAME, GRADE, OR TITLE | TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION | SIGNATURE |
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