
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

FREQUENCY-HOPPING MULTIPLEXER (FHMUX)

TD-1456/VRC

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

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

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

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HEADQUARTERS, DEPARTMENT OF THE ARMY

SEPTEMBER 2005

CHANGE
NO. 1

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

**TECHNICAL BULLETIN
INSTALLATION INSTRUCTIONS**

FOR SYSTEMS

**SINGLE CHANNEL GROUND AND AIRBORNE
RADIO SYSTEM (SINCGARS)
AN/VRC-88F, AN/VRC-89F, AN/VRC-90F, AN/VRC-91F, AN/VRC-92F**

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By Order of the Secretary of the Army:

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

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A handwritten signature in black ink that reads "Joyce E. Morrow". The signature is written in a cursive style with a large, stylized initial "J".

JOYCE E. MORROW
Administrative Assistant to the
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0617805

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5-18-5-26	0
5-27	1
5-28-5-33	0
5-34-5-35	1
5-36-5-52	0
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5-78-5-82	0
5-83	1
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TECHNICAL BULLETIN
NO. 9-2320-280-35-4

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

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REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is <https://aeps.ria.army.mil>. The DA Form 2028 is located under the Public Applications section in the AEPS Public Home Page. Fill out the form and click on SUBMIT. Using this form on the AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or E-mail your letter or DA Form 2028 direct to: AMSTA-LC-LPIT / TECH PUBS, TACOM-RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The email address is TACOM-TECH-PUBS@ria.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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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:
 - a. Truck, Utility, 4-Door: Cargo/Troop Carrier, 1-1/4 Ton, 4x4, M998, M998A1
 - b. Truck, Utility, 4-Door: Cargo/Troop Carrier, 1-1/4 Ton, 4x4, M1038
 - c. Truck, Utility, 4-Door: Heavy Variant, 1-1/4 Ton, 4x4, M1097, M1097A1, M1097A2
- 1-2. The information contained in this technical bulletin is the official authorization to perform the installation of the C4ISR equipment at the direct support maintenance level through contract maintenance teams.

Section II. NOTES

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

Section III. GENERAL INFORMATION

- 3-1. Included in the C4ISR equipment are:
 - a. Single Channel Ground and Airborne Radio System (SINCGARS) Radio Set AN/VRC-88F/89F/90F/91F/92F Series
 - b. Force XXI Battle Command, Brigade-and-Below (FBCB2) AN/UYK-128 (V)4
 - c. Frequency-Hopping Multiplexer (FHMUX) TD-1456/VRC
 - d. Precision Lightweight Global Positioning System Receiver (PLGR) AN/PSN-11
 - e. Enhanced Position Location Reporting System (EPLRS) AN/VSQ-2 (V)
 - f. Driver's Vision Enhancer (DVE) AN/VAS-5A
 - g. 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:

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

Section V. CONSOLIDATED INDEX OF ARMY PUBLICATIONS

Refer to the latest issue of DA PAM 25-30 to determine whether there are new changes or additional publications pertaining to the C4ISR equipment.

CHAPTER 2

PURPOSE OF INSTALLATION

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

CHAPTER 3

COMPLETION TIME FOR INSTALLATION

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

CHAPTER 4

PREPARATION FOR INSTALLATION

Section I. PREPARATION OF VEHICLE

Ensure that the site includes adequate lighting and a power source when drilling is required. Inspect the vehicle for damage that could affect installation. Have any such damage repaired before installing the C4ISR equipment.

Section II. ITEMS TO BE REMOVED

- 2-1. Remove batteries. (Refer to TM 9-2320-280-20.)
- 2-2. Remove right-hand rear cab enclosure panel. (Refer to TM 9-2320-280-20.)
- 2-3. Remove insulation floorboard. (Refer to TM 9-2320-280-20.)
- 2-4. Remove standard radio rack. (Refer to TM 9-2320-280-20.)
- 2-5. Remove D-rings. (Refer to TM 9-2320-280-20.)

Section III. LIST OF ITEMS TO BE RETAINED

- 3-1. Batteries
- 3-2. 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. They will be shipped automatically.
- 10-2. U.S. Army Depots: Requisition C4ISR equipment through supply channels.
- 10-3. Multiservice: Instructions shall be included for multiservice modifications.
- 10-4. MAP/MAS countries: Instructions shall be provided for MAP/MAS countries.

Section XI. PARTS LIST

KITS REQUIRED FOR THIS INSTALLATION:

NOTE

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

SINGARS:

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

PLGR:

- (E): 57K4400

EPLRS:

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

FBCB2:

- (H): No kits available

DVE:

- (I): No kits available

FHMUX:

- (J): MK-2863

MATERIAL REQUIRED FROM KITS:

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

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	KIT	QTY.
1.	Bracket, Antenna	A3014546-1	5340-01-391-2742	(A),(B),(C),(D)	2
2.	Bracket, PLGR Mount	12480578	N/A	(E)	1
3.	Cable, Antenna	A32551281W23	5995-01-468-9827	(E)	1
4.	Cable Assembly, Antenna, EPLRS	SM-C-911480	5995-01-167-1269	(F),(G)	1
5.	Cable Assembly, Power, Electrical	A3154857-1	5995-01-438-7822	(J)	1
6.	Cable Assembly, Power, EPLRS	A3004939	5995-01-198-0538	(F),(G)	1
7.	Cable Assembly, Radio Frequency	A3014032-13	5995-01-301-0834	(J)	2
8.	Cable Assembly, Radio Frequency	A3014032-14	5995-01-226-2441	(J)	2
9.	Cable Assembly, Special Purpose	A3210672-1	5995-01-444-7933	(J)	1
10.	Clamp, Loop	MS21333-67	5340-00-079-7837	(E)	1
11.	Clamp, Loop	MS21333-96	5340-00-088-1255	(E)	3
12.	Clamp, Loop	MS21333-102	5340-00-984-8540	(B)	2
13.	Gasket	A3013655-1	5330-01-205-2864	(A),(B),(C), (D),(J)	2
14.	Grommet	MS21266-4N	5325-00-923-9512	(C),(D)	A/R
15.	Grommet	MS35489-31	5325-00-174-9336	(E)	1
16.	Grommet	MS35489-143	5325-00-292-7558	(E)	2
17.	Insert	12446871-2	5310-01-411-3422	(E)	1
18.	Loudspeaker	A3014065-1	5965-01-222-1420	(A),(B),(C),(D)	4
19.	Mounting Base, Electrical Equipment	A3013367-1	5975-01-188-8873	(A),(B),(C), (D),(G)	2
20.	Mounting Base, Electrical Equipment	A3014053-1	5975-01-235-1962	(B),(C)	1
21.	Nut	MS35650-302	5310-00-934-9751	(A),(B),(C), (D),(F),(G)	5
22.	Nut	MS51968-5	5310-00-880-7746	(A),(B),(C), (D),(G),(J)	10
23.	Nut	9419143	5310-01-148-0240	(E)	17
24.	Nut Strip	A3014064-1	N/A	(B),(C),(D)	1
25.	Plate, Mounting	A3014550-1	N/A	(A),(B),(C),(D)	4
26.	Screw, Cap	B1821BH025C100N	5305-00-225-3843	(E)	6
27.	Screw, Cap	B1821BH025C125N	5305-00-068-0509	(E)	17
28.	Screw, Cap	B1821BH025C175N	5305-00-071-2510	(E)	1
29.	Screw, Cap	MS35207-261	5305-00-990-6444	(E)	1
30.	Screw, Cap	MS35307-365	5305-00-847-1159	(A),(B),(C), (D),(G),(J)	8
31.	Screw, Machine	MS35224-65	5310-00-543-5743	(F)	1
32.	Screw, Machine	MS35190-291	5305-00-958-5247	(B)	2

MATERIAL REQUIRED FROM KITS (Contd):

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

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	KIT	QTY.
33.	Screw, Machine	MS35206-263	5305-00-984-6210	(E)	4
■ 34.	Screw, Self-Tapping	9416639	5305-01-197-2320	(E)	1
35.	Screw, Self-Tapping	9421073	5305-01-162-8512	(E)	7
■ 36.	Strap, Tiedown	MS3367-1-0	5975-00-984-6582	(E)	2
37.	Terminal Lug	7728777	5940-00-983-4067	(E)	2
38.	Terminal Lug	7728780	5940-01-035-4212	(E)	2
■ 39.	Washer	2436161	5310-01-102-3270	(E)	41
■ 40.	Washer, Lock	MS35338-43	5310-00-045-3296	(A),(B),(C),(D), (E),(F),(G)	5
41.	Washer, Lock	MS35338-44	5310-00-582-5965	(A),(B),(C), (D),(E),(G)	26
42.	Washer, Lock	MS35338-46	5310-00-637-9541	(C),(D),(F),(G)	2
43.	Washer, Lock	MS45904-68	5310-00-889-2528	(A),(B),(C),(D)	4
44.	Washer, Lock	MS45904-72	5310-00-889-2527	(A),(B),(C),(D), (F),(G),(J)	56
45.	Washer, Lock	MS45904-76	5310-00-061-1258	(A),(B),(C),(D), (G),(J)	9
46.	Wellnut	12339397-3	5310-01-231-7455	(E)	1
47.	Wellnut	12339397-6	5310-01-388-6205	(E)	1

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

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	QTY.
1.	Antenna	A3005031	5820-01-183-9462	1
2.	Antenna AS-3900/VRC	A3017899-2	5985-01-308-8988	1
3.	Antenna, Element (lower)	A3018230-1	5985-01-201-1498	1
4.	Antenna, Element (upper)	A3017901-2	5985-01-306-4622	1
5.	Antenna, PLGR	AT575-030	5985-01-375-4660	1
6.	Assembly, Display Lock	872843-1	N/A	1
7.	Bolt	MS35751-18	5306-00-108-9988	4
8.	Bolt, Carriage	90185A540	N/A	4
9.	Bracket, DCM B-Pillar Roof	3236682-1	N/A	1
10.	Bracket, DCM Roof Mount	3245782-1	N/A	1
11.	Bracket, PLGR	986-0645-001	5975-01-375-1302	1
12.	Bracket, PTM Control	3236630-1	N/A	1
13.	Bracket, User Readout (URO)	A3006206	5340-01-386-7841	1
14.	Cable, Antenna PLGR	426-0141-050	6150-01-375-8662	1
15.	Cable Assembly, Ground	12480567-1	N/A	1
16.	Cable Assembly, INC-EPUU	A3279383-2	5995-01-453-6608	1
17.	Cable Assembly, Power	3256881-1	6150-01-482-4740	1
18.	Cable Assembly, Power	A3014039-7	5995-01-336-6933	1
19.	Cable Assembly, Power	12480567-2	N/A	1
20.	Cable Assembly, Power, PLGR	9728558-10	6150-01-375-8661	1
21.	Cable, Azimuth Lock	3221015-1	N/A	1
22.	Cable, PTM Control Assembly	3220905-1	5340-01-511-2705	1
23.	Cable, DCM/PTM Interconnect	3220915-1	N/A	1
23.1.	Cable, W1	866003-3	5995-01-478-4908	1
23.2.	Cable, W2	881327-1	5995-01-478-4876	1
23.3.	Cable, W3N	881336-1	5995-01-478-4913	1
23.4.	Cable, W3P	881335-1	5995-01-478-4891	1
24.	Clamp, Loop	MS21333-65	5340-00-905-0790	3
25.	Clamp, Loop	MS21333-69	5340-00-764-7051	3
26.	Clamp, Loop	MS21333-76	5340-00-724-7038	1
27.	Clamp, Loop	MS21333-98	5340-00-809-1490	1
28.	Clamp, Loop	MS21333-104	5340-00-088-1254	2
29.	Clamp, Loop	MS21333-123	5340-00-989-1771	1
30.	Clamp, Loop	MS21333-70	5340-00-689-9514	2
31.	Control Cable Seal Assembly	3220908	2990-00-365-1898	1
32.	CPU (Central Processing Unit)	881292	7021-01-474-3793	1
33.	Decal	12339060	7690-01-265-1135	1
34.	Decal	861868-2	N/A	1
34.1.	Device, Serial Interface Adapter	881331-1	4920-01-478-3722	1
35.	Display	881293-1	7025-01-475-0229	1

MATERIAL REQUIRED BUT NOT INCLUDED IN KITS (Contd):

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

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	QTY.
36.	Frame	A3210675-1	N/A	1
37.	Grommet, Nonmetallic	12338098	5325-01-308-5424	2
38.	Grommet, Nonmetallic	2400	5325-01-289-7859	1
39.	Grommet, Nonmetallic	MS35489-12	5325-00-263-6651	1
40.	Grommet, Nonmetallic	MS21266-6N	5325-00-783-4753	A/R
41.	Guard, Amp	872842-1	5935-01-487-2172	1
42.	Guide, A-Frame Cable	3220964-1	5820-01-183-9462	1
43.	Guide, Hood Cable	3220912-1	N/A	1
44.	Insert	12446871-2	5310-01-411-3422	3
45.	Isolation Kit, CPU	872826-2	5340-01-481-5741	1
46.	Isolation Kit, Display	872870-1	5340-01-481-5757	1
47.	Lanyard	8925T5-7X19	4010-01-497-2675	1
48.	Mount, DCM	3221839-1	N/A	1
49.	Mount, PTM A-Pillar	3221002-1	N/A	1
50.	Mount, Ramball	RAM-D-111U	5975-01-485-3615	1
51.	Mounting Base, Electrical Equipment	A3154893	5975-01-430-3109	1
52.	Nut	MS35649-2252	5310-00-997-1888	3
53.	Nut	M45913/3-5CG8Z	N/A	3
54.	Nut	13218E0320-293	5310-00-913-8881	8
55.	Nut	271169	5310-00-124-9265	5
56.	Nut	9418892	5310-01-157-9819	10
57.	Nut	MS35649-63	5310-00-804-3859	5
58.	Nut	MS51943-4C	5310-00-935-3750	1
59.	Nut	MS35649-2382	5310-00-056-3395	2
60.	Nut, Lock	271175	5310-01-333-5245	6
61.	Nut, Lock	M45913/4-4CG8Z	N/A	9
62.	Panel, Enclosure	12447141	2510-01-413-5993	1
63.	PTM Control Assembly	3220905-1	5340-01-511-2705	1
64.	PTM Mount Assembly	3220952-1	5855-01-511-2699	1
65.	Rack, Integrated	A3276903	N/A	1
66.	Rivet	SSLQ-68	5320-01-255-6608	3
67.	Rivet Nut	3221004-14	N/A	2
68.	Rivet Nut	3221003-14	N/A	15
69.	Rivet Nut	3221003-20	N/A	2
70.	Rivet, Blind	12339355-1	5320-01-271-6357	2
71.	Screw, Cap	B1821BH025C075N	5305-00-068-0508	5
72.	Screw, Cap	B1821BH025C100N	5305-00-225-3843	20
73.	Screw, Cap	B1821BH025C150N	5305-00-071-2509	2
74.	Screw, Cap	B1821BH031F075N	5306-00-050-1238	2
75.	Screw, Cap	B1821BH025C300N	5305-00-071-2515	5

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

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	QTY.
76.	Screw, Cap	B1821BH031F100N	5305-00-051-4076	8
77.	Screw, Cap	B1821BH031F125N	5305-00-051-4078	12
78.	Screw, Cap	B1821AH038C225N	5305-01-434-2947	2
79.	Screw, Cap	B1821BH038F100N	5305-00-269-3236	6
80.	Screw, Cap	B1821BH031C125N	2306-00-226-4829	4
81.	Screw, Cap	B1821BH050C400N	5305-00-071-2079	3
82.	Screw, Cap	B1821BH050C450N	5305-00-071-2081	2
83.	Screw, Machine	160035	5305-00-016-0035	1
84.	Screw, Machine	MS35207-265	5305-00-993-1848	4
85.	Screw, Machine	MS35206-230	5305-00-889-3000	5
86.	Screw, Self-Tapping	12342499-2	5305-01-264-5809	7
87.	Screw, Self-Tapping	9426241	5305-01-206-7219	1
88.	Screw, Self-Tapping	9421073	5305-01-162-8512	2
89.	Sleeve, Heat Shield	N/A	N/A	1
90.	Spacer	10705AL315C	5365-01-487-3145	4
91.	Terminal Board	12480570	N/A	1
92.	Terminal Board	MS27212-3-8	5940-00-950-7782	1
93.	Terminal Board Cover	12480569-1	N/A	1
94.	Terminal Board Cover	12480569-2	N/A	1
95.	Terminal Board Cover	MS18029-3S-2	5940-01-280-9304	2
96.	Terminal Link	MS25226-6N-2	6150-01-167-9267	1
97.	Terminal Lug	MS20659-108	5940-00-115-2674	2
98.	Terminal Lug	MS20659-141	5940-00-113-9825	4
99.	Terminal Lug	MS25036-108	5940-00-143-4780	1
100.	Terminal Lug	MS25036-150	5940-00-113-8184	1
101.	Terminal Lug	MS20659-129	5940-00-114-1314	2
102.	Tie, Stainless Steel Cable	69855K72	N/A	A/R
103.	Tube, Closeout	3236685-1	N/A	1
104.	Tubing, Shrink	MS23053/4-302-0	5970-01-161-6796	A/R
105.	Washer	12338095	5310-01-208-7576	6
106.	Washer	2436161	5310-01-102-3270	23
107.	Washer	9414920	5310-01-476-8589	2
108.	Washer	MS27183-10	5310-00-809-4058	2
109.	Washer	9417373	5310-01-361-1163	1
110.	Washer	MS51412-23	5310-01-333-0060	2
111.	Washer	3221003-9	N/A	5
112.	Washer	MS27183-12	5310-00-081-4219	6
113.	Washer	2436163	5310-01-412-4013	2
114.	Washer, Lock	120380	5310-00-543-2705	1
115.	Washer, Lock	MS35338-41	5310-00-045-4007	5

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

ITEM NO.	NOMENCLATURE	PART NUMBER	NSN	QTY.
116.	Washer, Lock	MS35338-44	5310-00-045-3296	12
117.	Washer, Lock	MS35338-48	5310-00-584-5272	3
118.	Washer, Lock	MS45904-84	5310-00-935-8984	5
119.	Wellnut	12339397-6	N/A	1
120.	Wingnut	MS51553-420	5310-01-384-2546	4
121.	Wire Assembly, Fuse (12V)	12480568-2	N/A	1
122.	Wire Assembly, Fuse (24V)	12480568-1	N/A	3
123.	Wire, Braided	AA59569F30T0375	6145-00-191-8402	A/R
124.	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)
- Frequency-Hopping Multiplexer (FHMUX)
- 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.

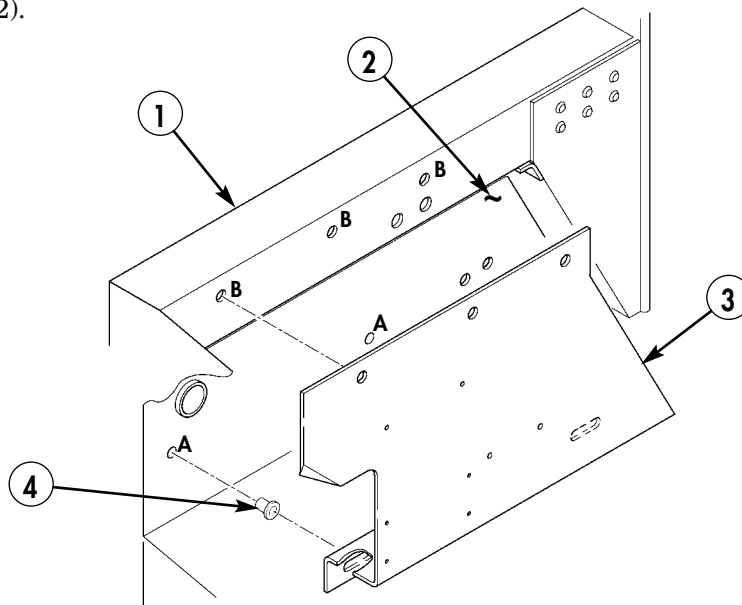
Section II. INSTALLATION OF TERMINAL BOARDS

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 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. ENCLOSURE PANEL – 12447141 – QTY. 1

4. INSERT – 12446871-2 – QTY. 2

Figure 5-1.

NOTE

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

3-3. Locate, mark, and drill three 0.156-in. diameter holes marked A in cab enclosure panel (1).

3-4. Locate, mark, and drill two 0.156-in. diameter holes marked C in cab enclosure panel (1).

3-5. Locate, mark, and drill two 0.196-in. diameter holes marked B in cab enclosure panel (1).

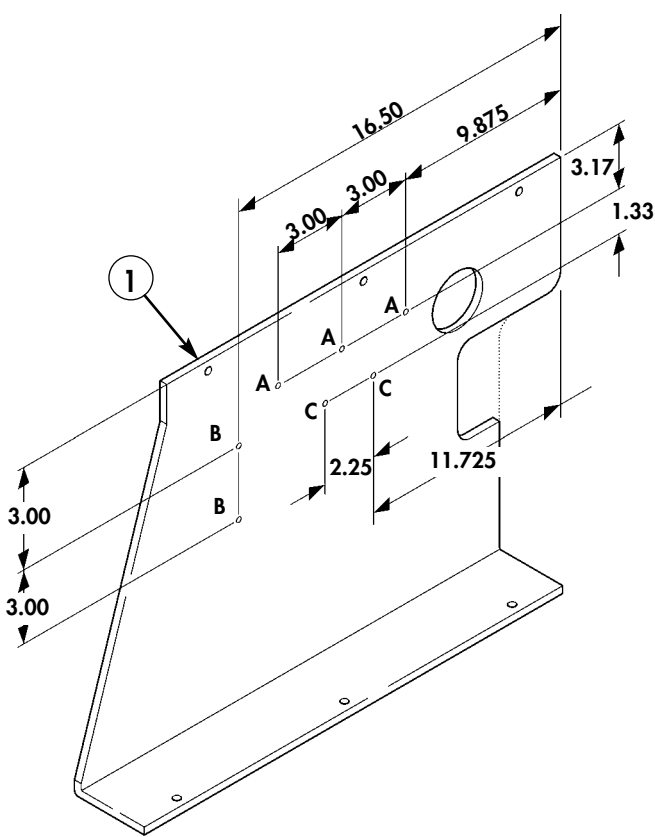


Figure 5-2.

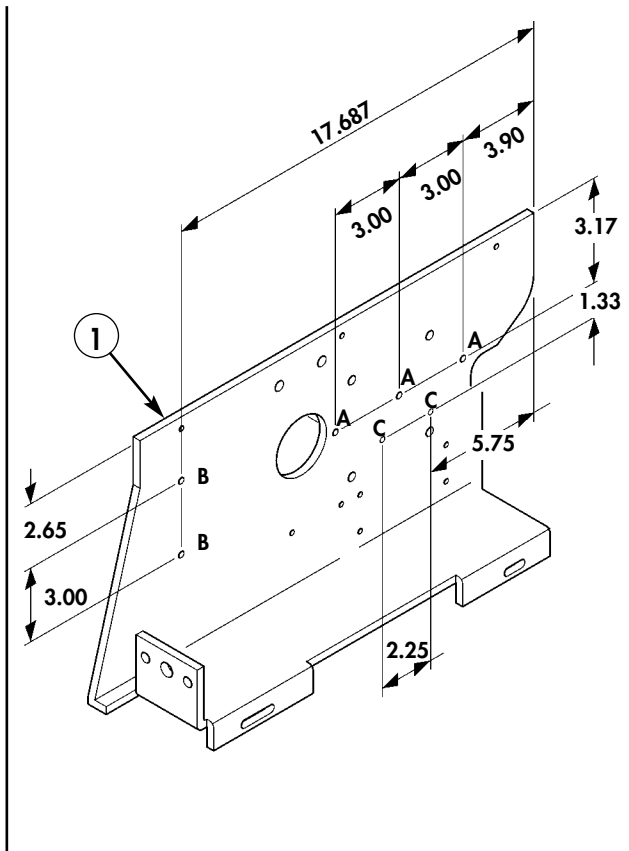


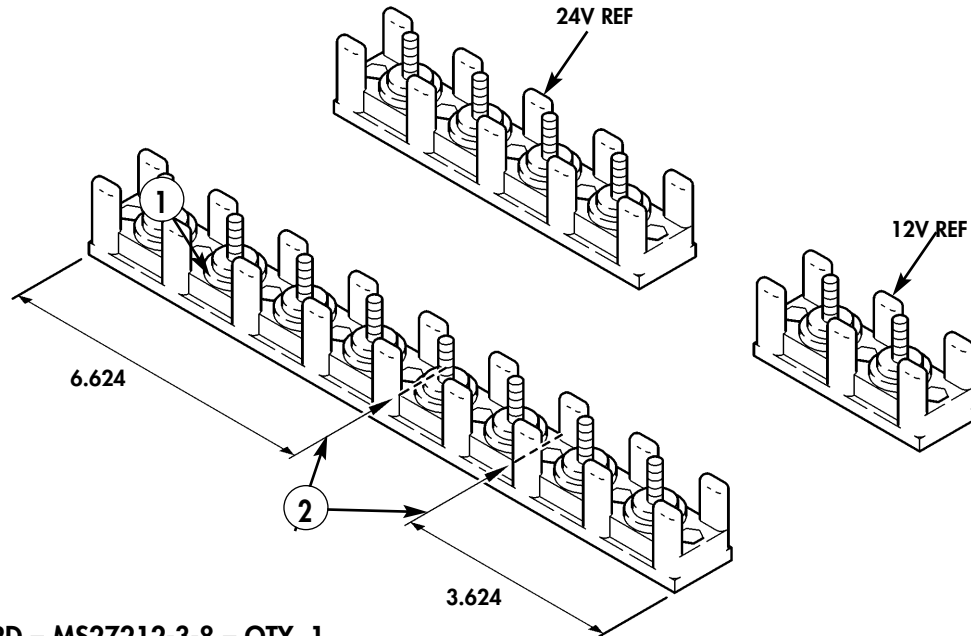
Figure 5-3.

CAUTION

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

3-6. Measure and cut terminal board (1) in two places (2). Remove burrs and sharp edges.

3-7. Install five nut sleeves (5) in terminal board covers (3), (4), and (6) and secure with snaprings (7).



- 1. TERMINAL BOARD – MS27212-3-8 – QTY. 1
- 3. TERMINAL BOARD COVER – 12480569-1 – QTY. 1
- 4. TERMINAL BOARD COVER – 12480569-2 – QTY. 1
- 6. TERMINAL BOARD COVER – MS18029-3S-2 – QTY. 1

Figure 5-4.

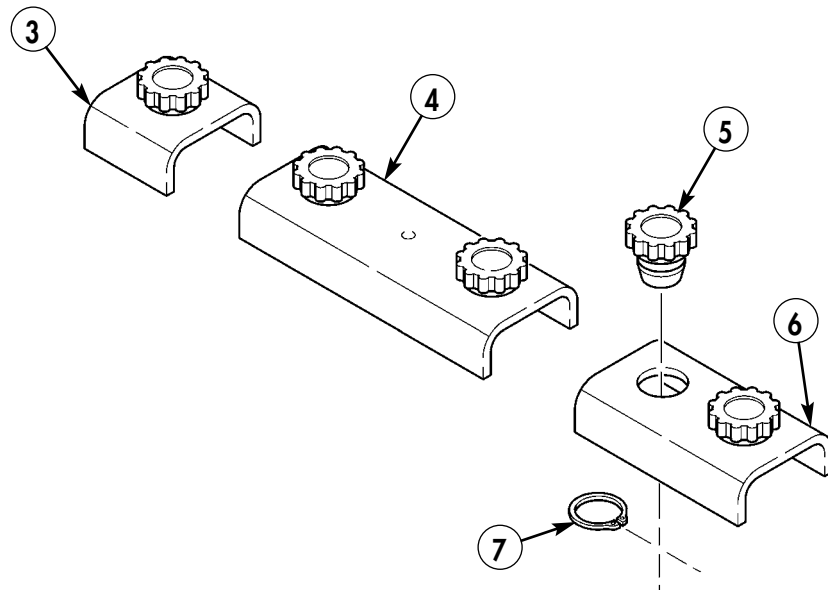


Figure 5-5.

Section IV. B-BEAM PREPARATION

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

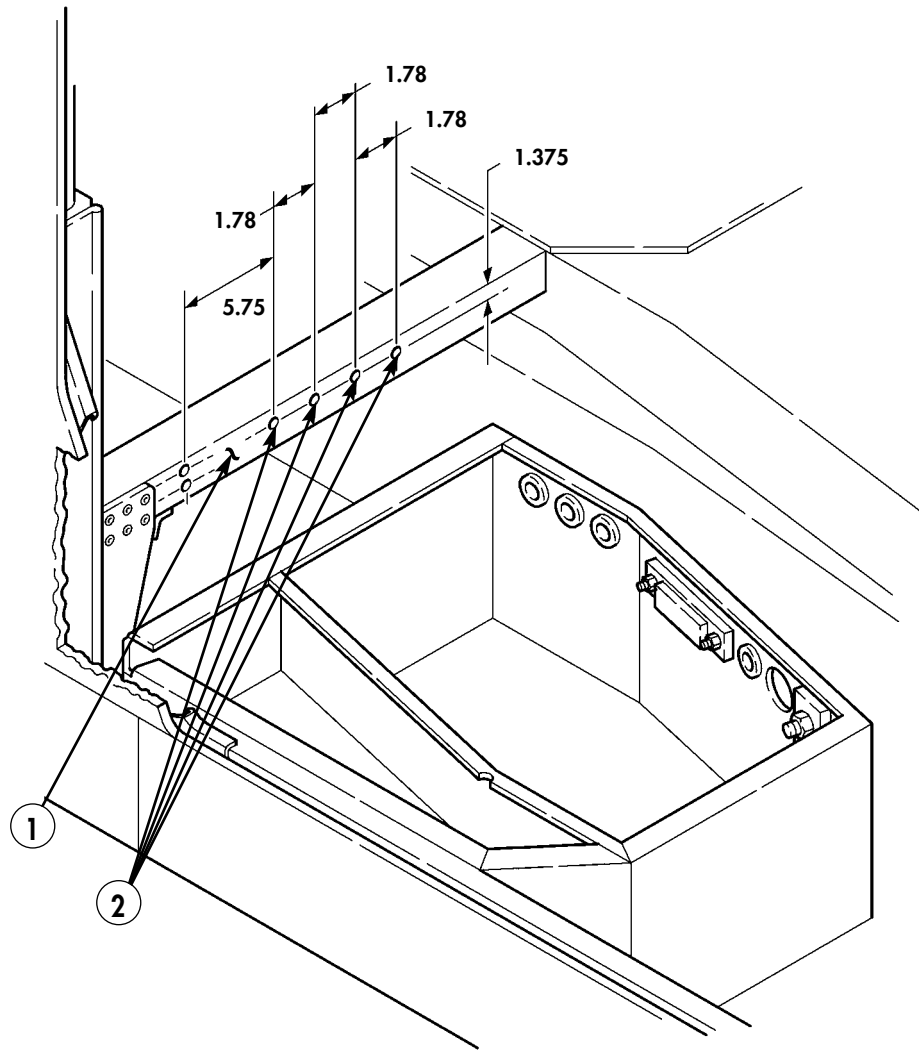
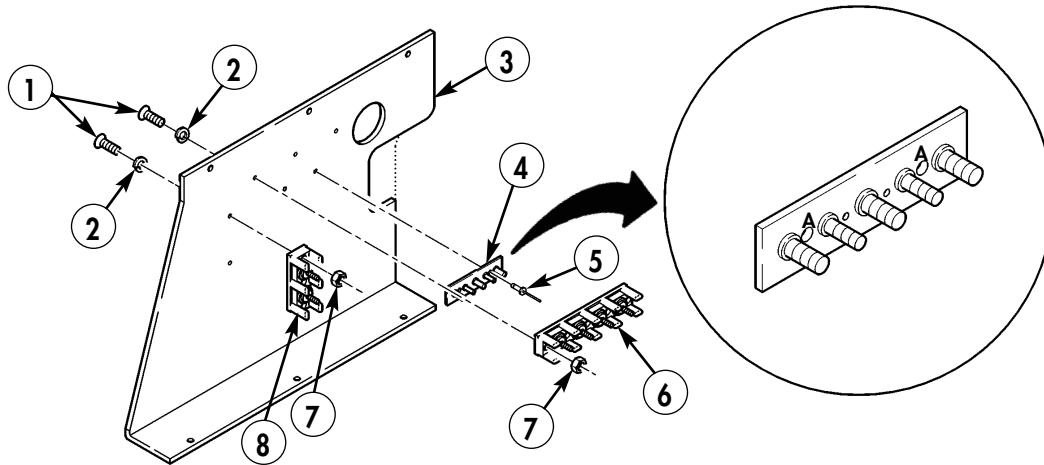


Figure 5-6.

Section V. ASSEMBLY OF CAB ENCLOSURE PANEL

- 5-1.** Install 12V terminal board (8) on cab enclosure panel (3) with two machine screws (1), lockwashers (2), and nuts (7).
- 5-2.** Install 24V terminal board (6) on cab enclosure panel (3) with three machine 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. MACHINE SCREW – MS35206-230 – QTY. 5**
- 2. LOCKWASHER – MS35338-41 – QTY. 5**
- 4. TERMINAL BOARD – 12480570 – QTY. 1**
- 5. BLIND RIVET – 12339355-1 – QTY. 2**
- 7. NUT – MS35649-63 – QTY. 5**

Figure 5-7.

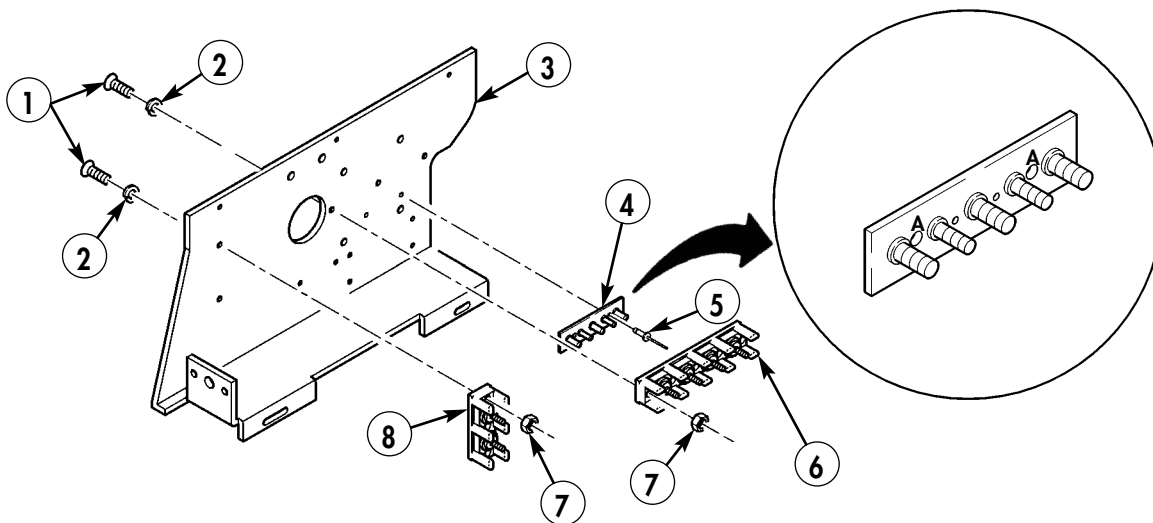


Figure 5-8.

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

NOTE

- Refer to figure 5-9 for wiring overview.
 - Perform steps 6-1 and 6-2 if hole and grommet do not exist in battery box.
- 6-1. Locate, mark, and drill 2.00-in. diameter hole (6) in upper right corner of rear wall of battery box.
 - 6-2. Install grommet (7) in hole (6).
 - 6-3. Secure terminal link (2) and fuse wire (3) to 12V terminal board (1) with two locknuts (4), and install cover (5).
 - 6-4. Route wire (8) through battery box hole (6).

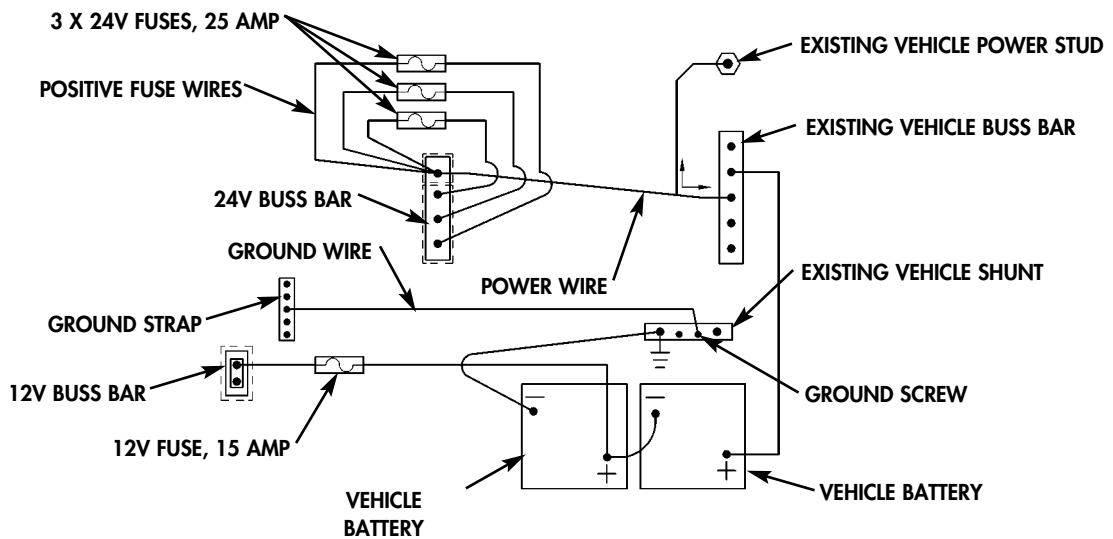
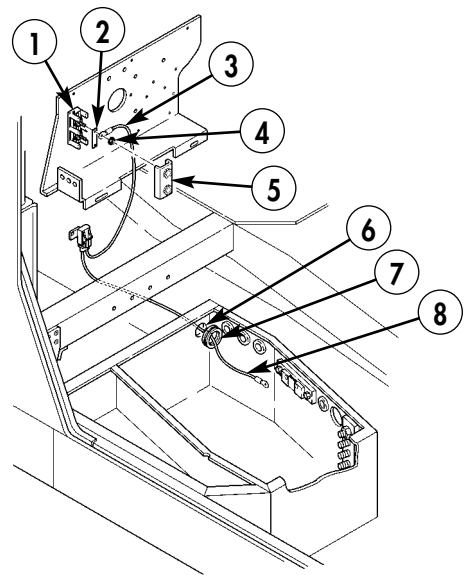


Figure 5-9.



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

Figure 5-10.

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

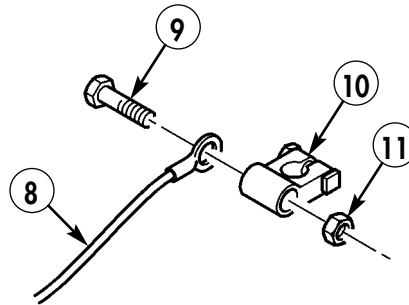
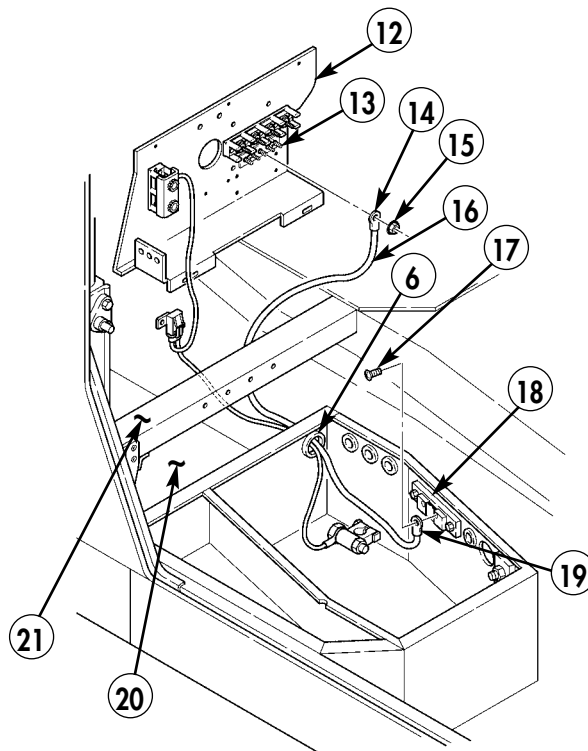


Figure 5-11.

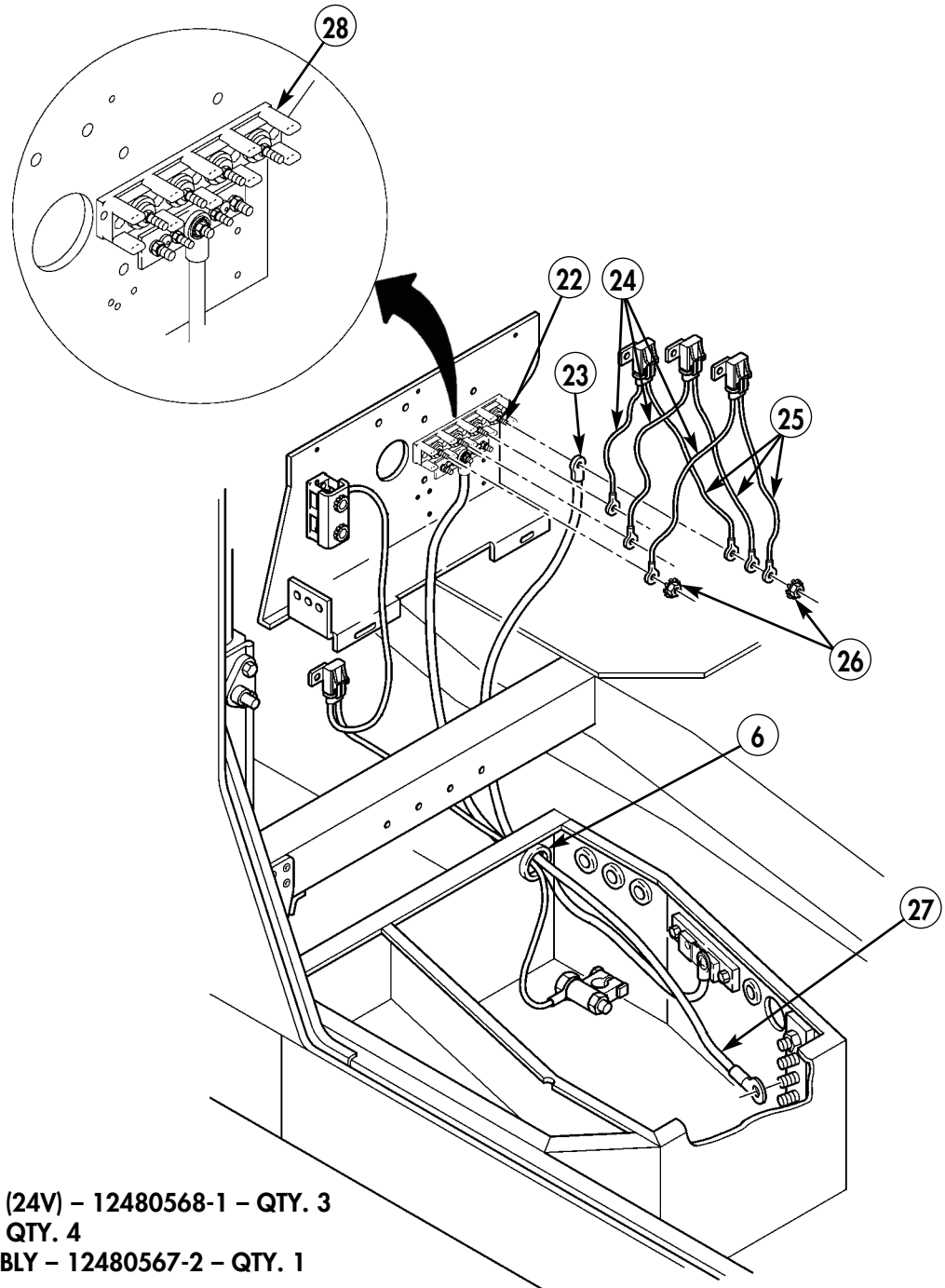
- 6-6.** Position cab enclosure panel (12) in rear floor pan (20) and rear of B-beam (21). Do not secure cab enclosure panel (12) at this time.
- 6-7.** Route ground cable (16) through battery box hole (6).
- 6-8.** Secure terminal lug (14) on center terminal of terminal board (13) with nut (15), and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



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

Figure 5-12.

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



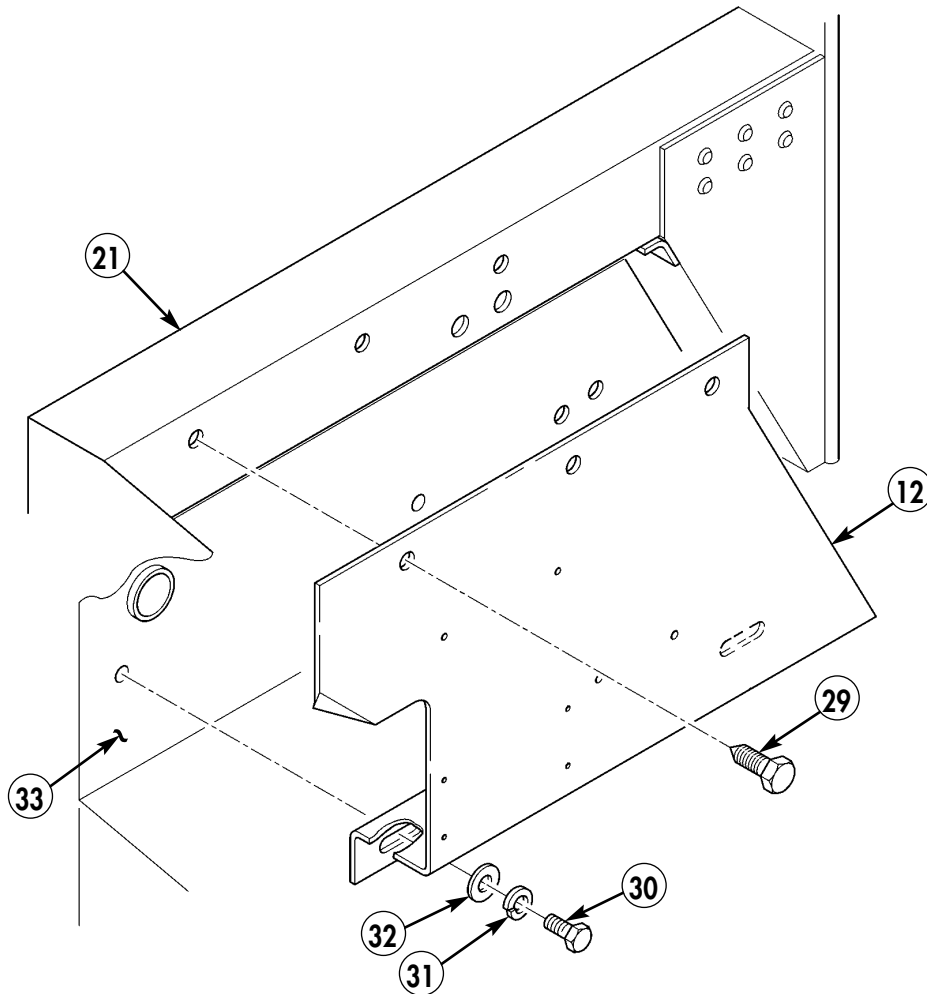
- 24. FUSE WIRE ASSEMBLY (24V) – 12480568-1 – QTY. 3
- 26. LOCKNUT – 271175 – QTY. 4
- 27. POWER CABLE ASSEMBLY – 12480567-2 – QTY. 1

Figure 5-13.

NOTE

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

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



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

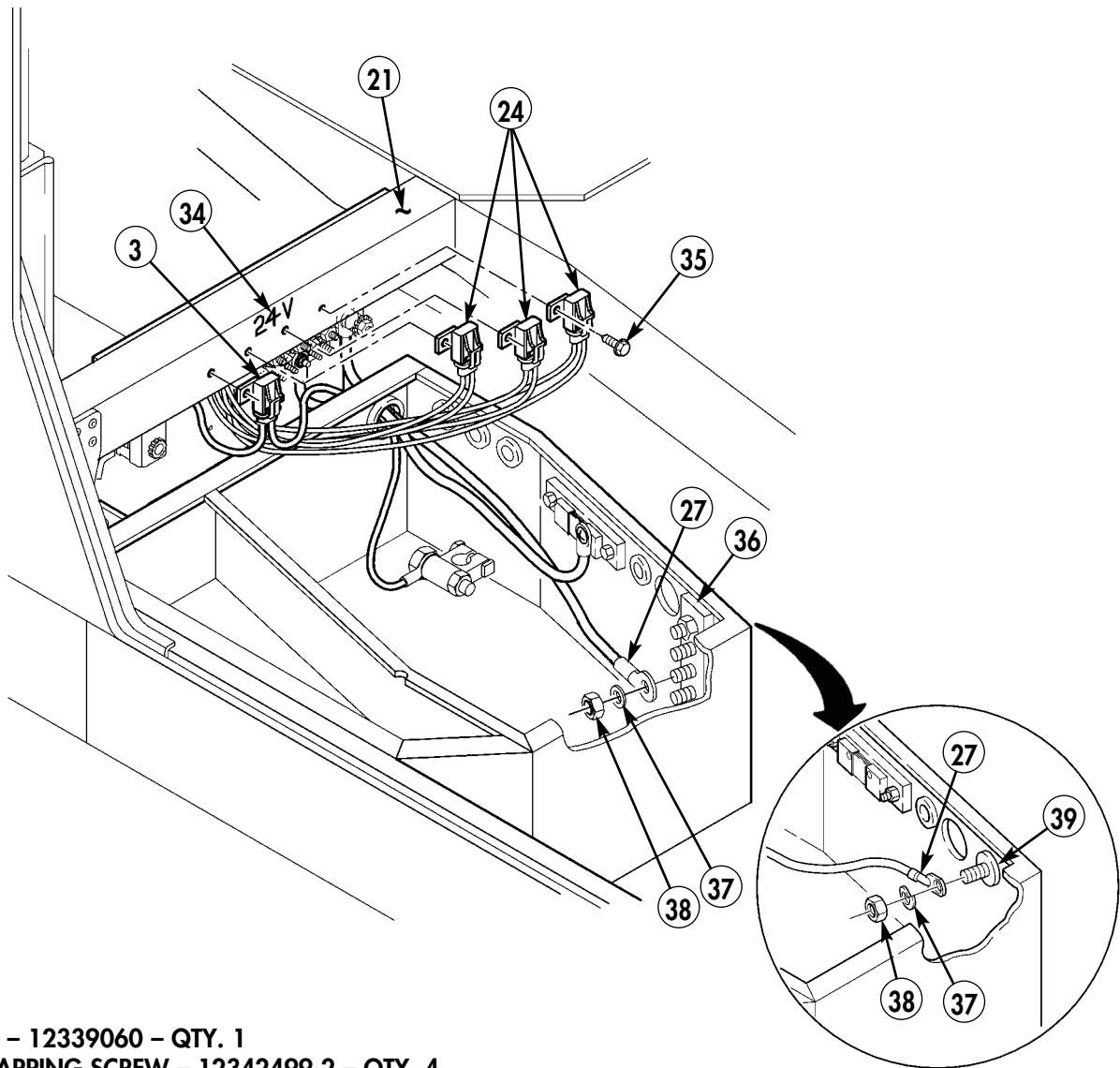
Figure 5-14.

- 6-16. Secure three 24V 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

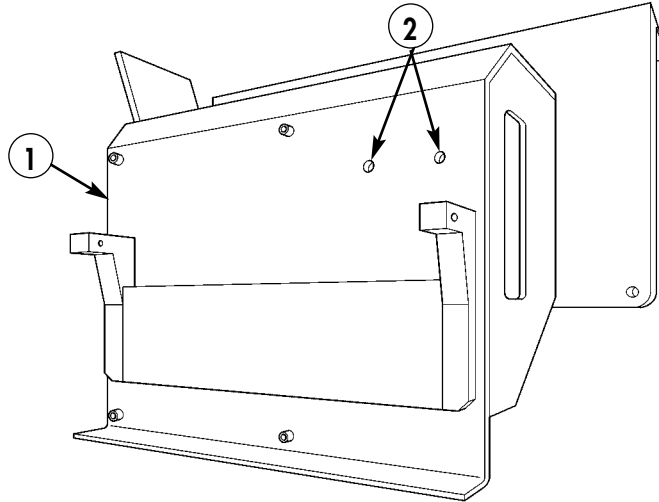
Figure 5-15.

Section VII. INTEGRATED RACK INSTALLATION

NOTE

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

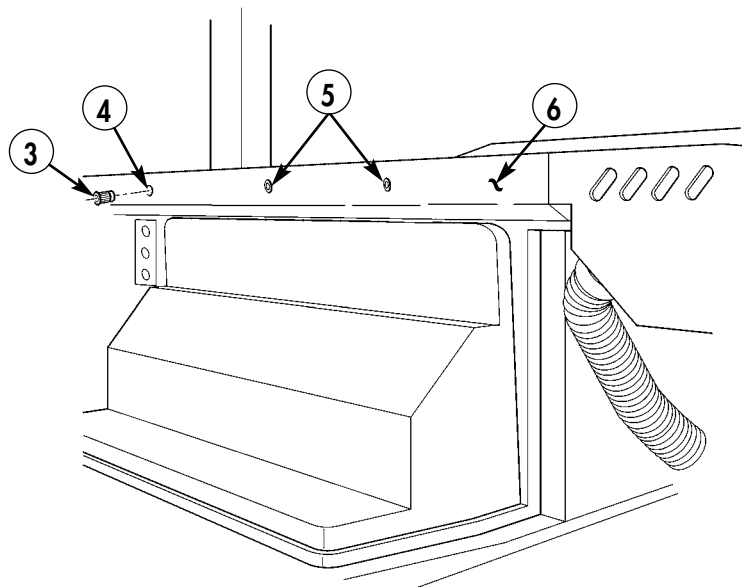
- 7-1. Remove two inserts (2) from bottom of integrated rack (1).



1. RACK, INTEGRATED – A3276903 – QTY. 1

Figure 5-16.

- 7-2. Using integrated rack (1) as template, locate, mark, and drill 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 antiseize compound to vicinity of inserts (3) and (5) as required.



3. INSERT – 12446871-2 – QTY. 1

Figure 5-17.

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

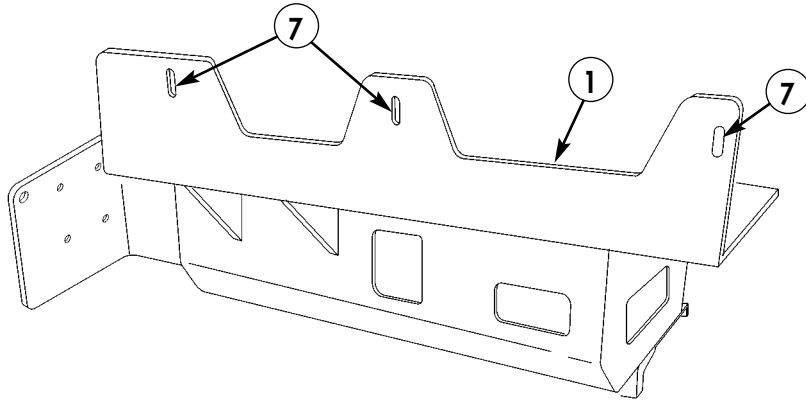
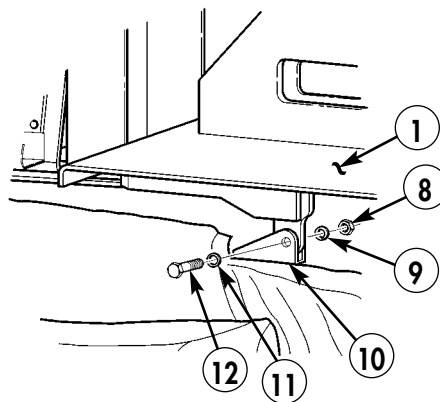


Figure 5-18.

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 5-19.

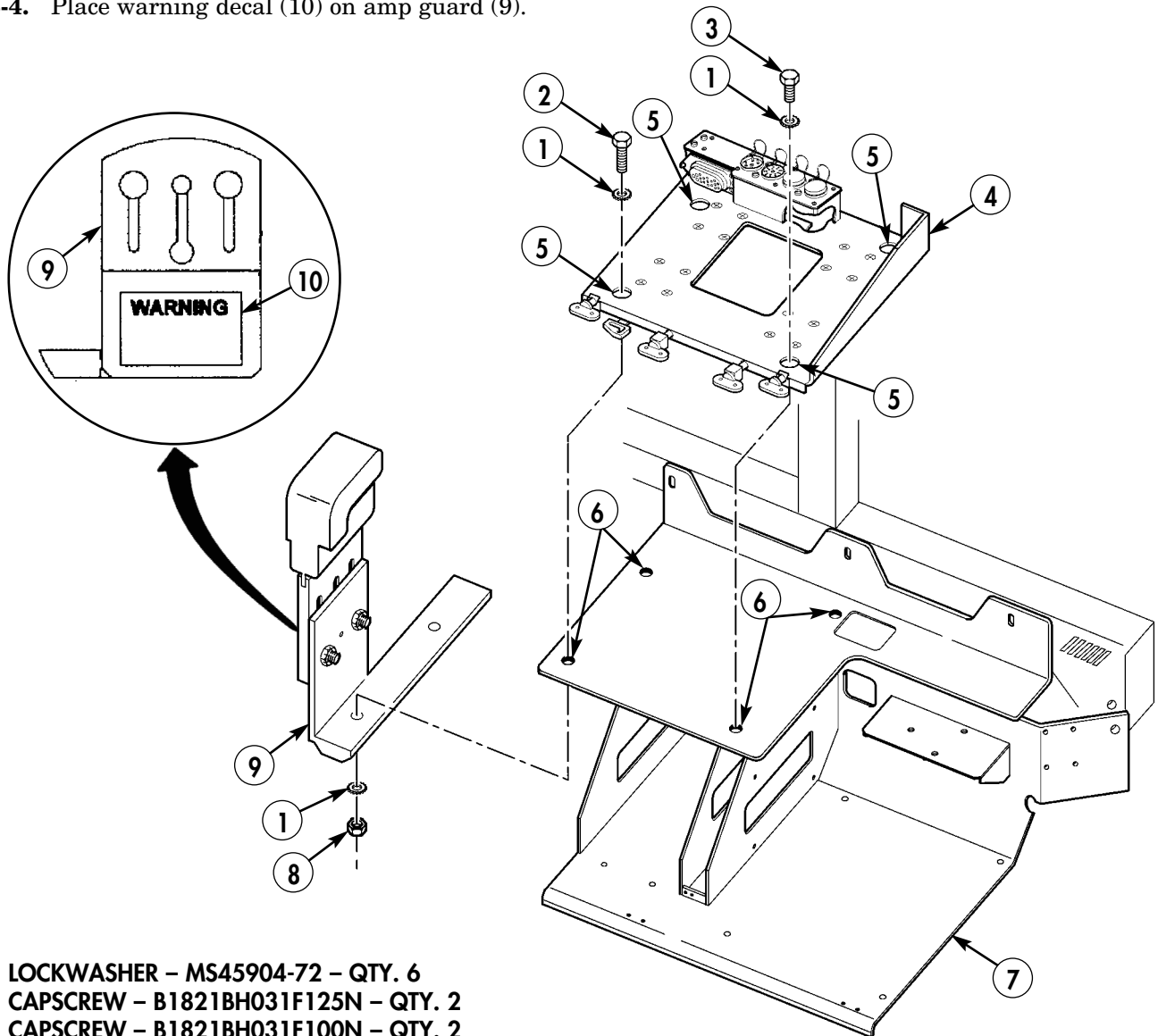
Section VIII. INSTALLATION OF SINGARS MOUNTING TRAY AND AMP GUARD

- 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 antiseize compound to vicinity of four mounting holes (6) and four mounting holes (5) 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) on integrated rack (7) with two capscrews (3) and two lockwashers (1).
- 8-4. Place warning decal (10) on amp guard (9).



1. LOCKWASHER – MS45904-72 – QTY. 6
 2. CAPSCREW – B1821BH031F125N – QTY. 2
 3. CAPSCREW – B1821BH031F100N – QTY. 2
 4. MOUNTING BASE, MT-6352/VRC – A3013367-1 – QTY. 1
 8. NUT – MS51968-5 – QTY. 2
 9. AMP GUARD – 872842-1 – QTY. 1
 10. DECAL – 861868-2 – QTY. 1

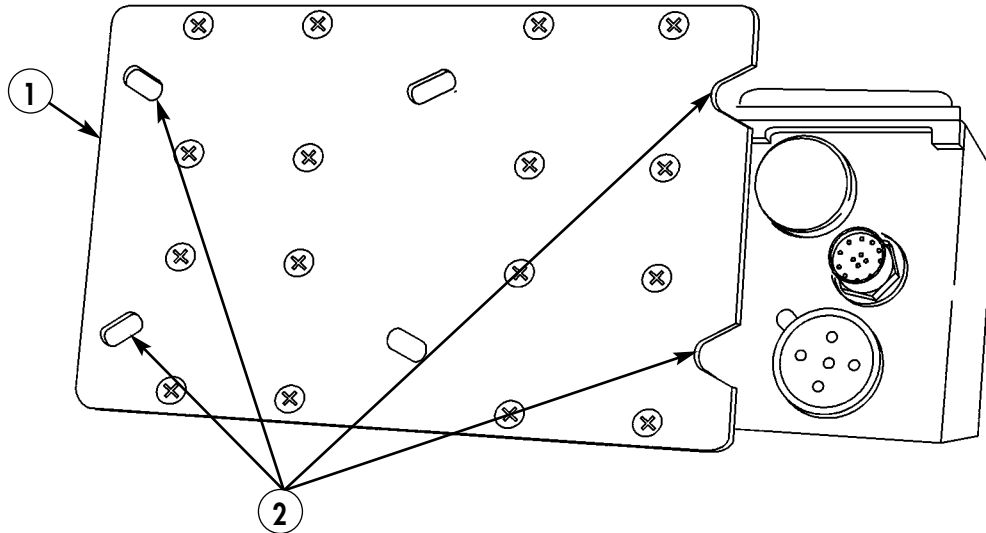
Figure 5-20.

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 antiseize compound as required.



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

Figure 5-21.

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

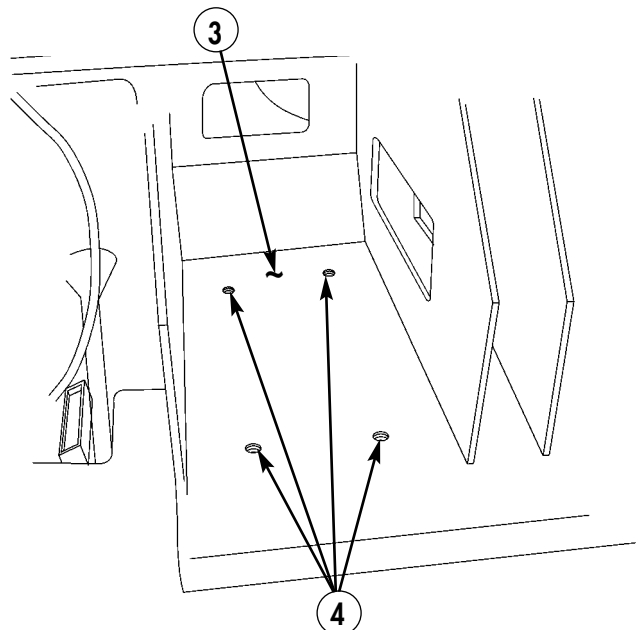
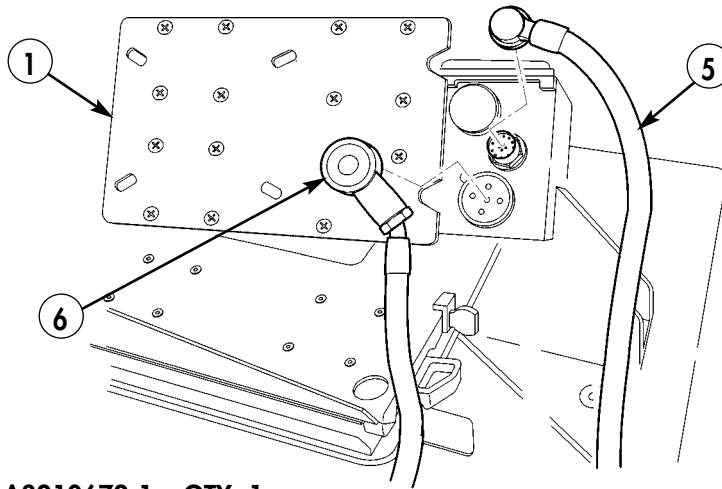


Figure 5-22.

- 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).
- 9-5. Route cables (5) and (6) through hole in back of integrated rack (3).



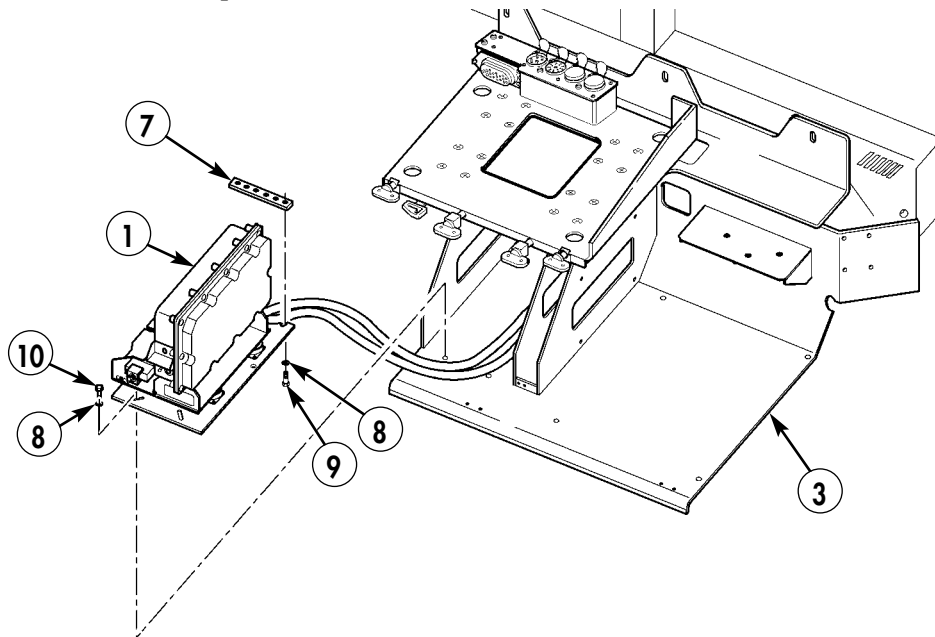
- 5. CONTROL CABLE – A3210672-1 – QTY. 1
- 6. POWER CABLE – A3154857-1 – QTY. 1

Figure 5-23.

NOTE

Ensure control cable and power cable are routed through hole in back of integrated rack before installing MT-6353/VRC mounting base.

- 9-6. Attach MT-6353/VRC mounting base (1) to integrated rack (3) with four 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

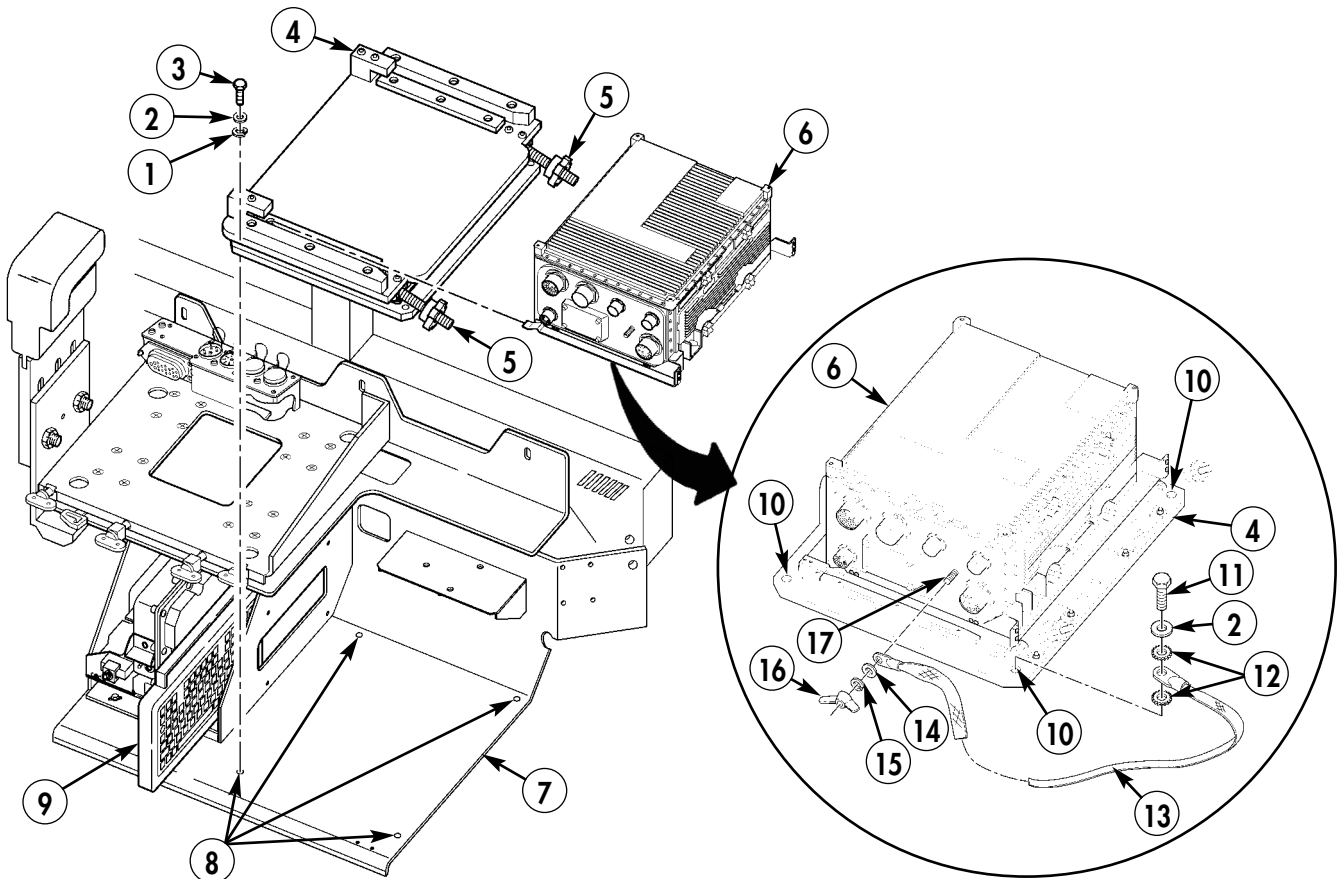
Figure 5-24.

Section X. FBCB2 COMPONENTS INSTALLATION

NOTE

SINCGARS model AN/VRC-92F shown.

- 10-1. Remove paint from vicinity of holes (8) on integrated rack (7) and on both sides from vicinity of corresponding 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 capscrew (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

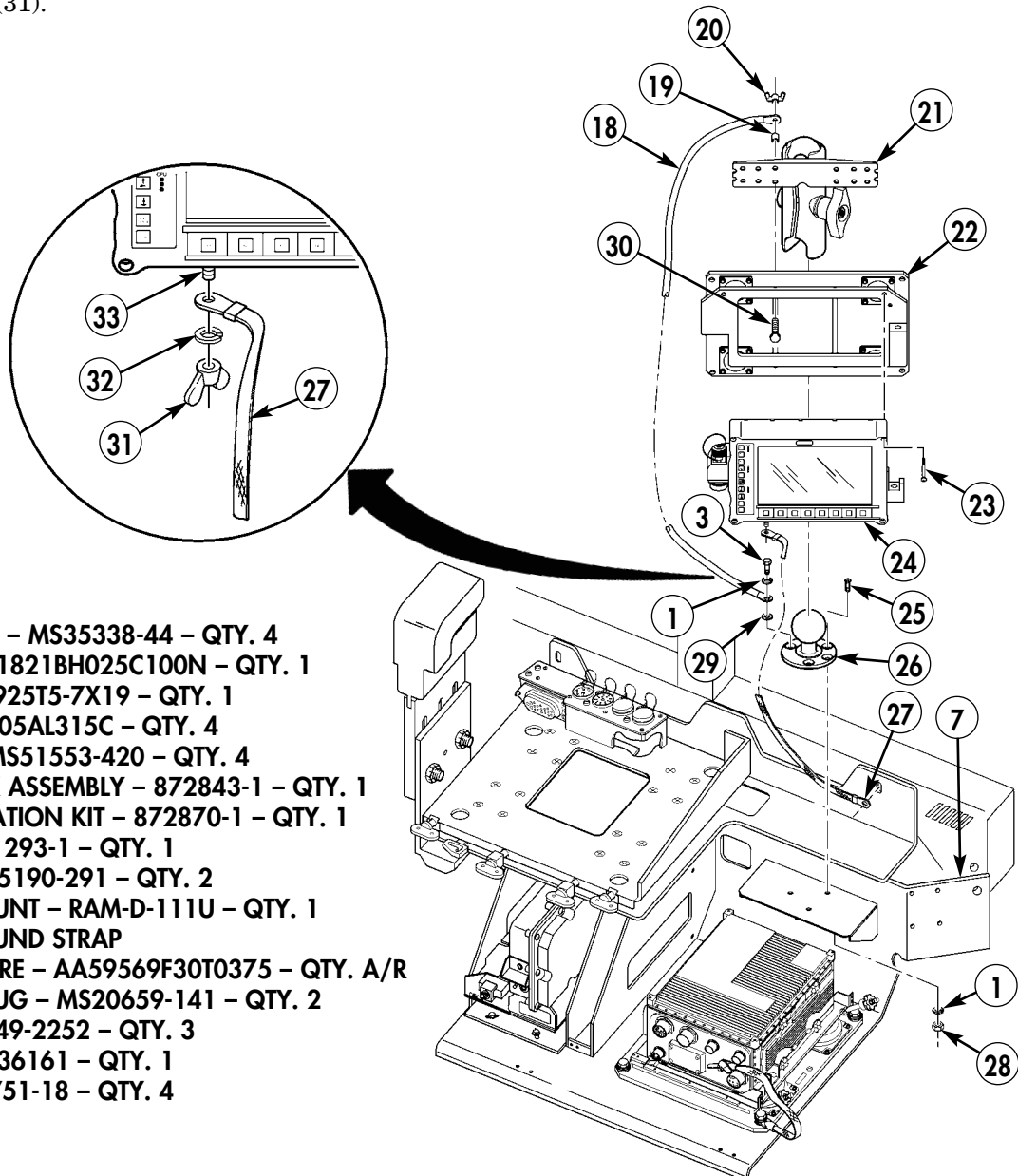
Figure 5-25.

- 10-8. Install ramball mount (26) on integrated rack (7) with two screws (25), screw (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).

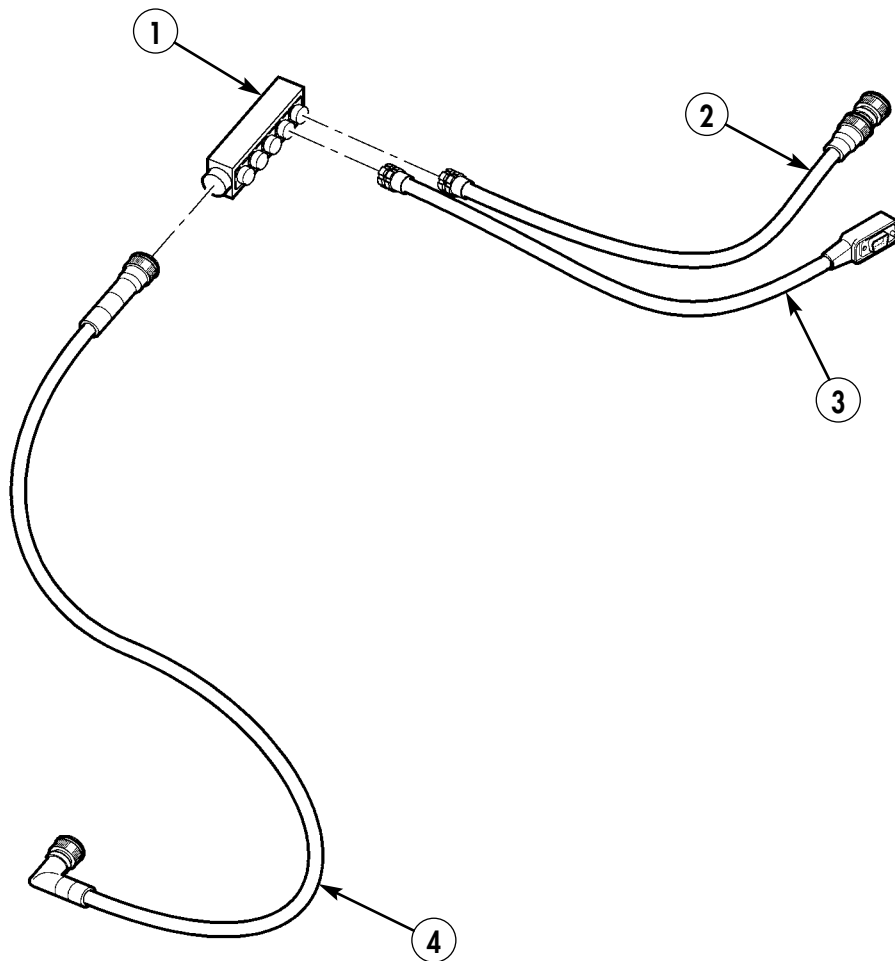


1. LOCKWASHER – MS35338-44 – QTY. 4
3. CAPSCREW B1821BH025C100N – QTY. 1
18. LANYARD – 8925T5-7X19 – QTY. 1
19. SPACER – 10705AL315C – QTY. 4
20. WINGNUT – MS51553-420 – QTY. 4
21. DISPLAY LOCK ASSEMBLY – 872843-1 – QTY. 1
22. DISPLAY ISOLATION KIT – 872870-1 – QTY. 1
24. DISPLAY – 881293-1 – QTY. 1
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 5-26.

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 5-26.1.

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

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

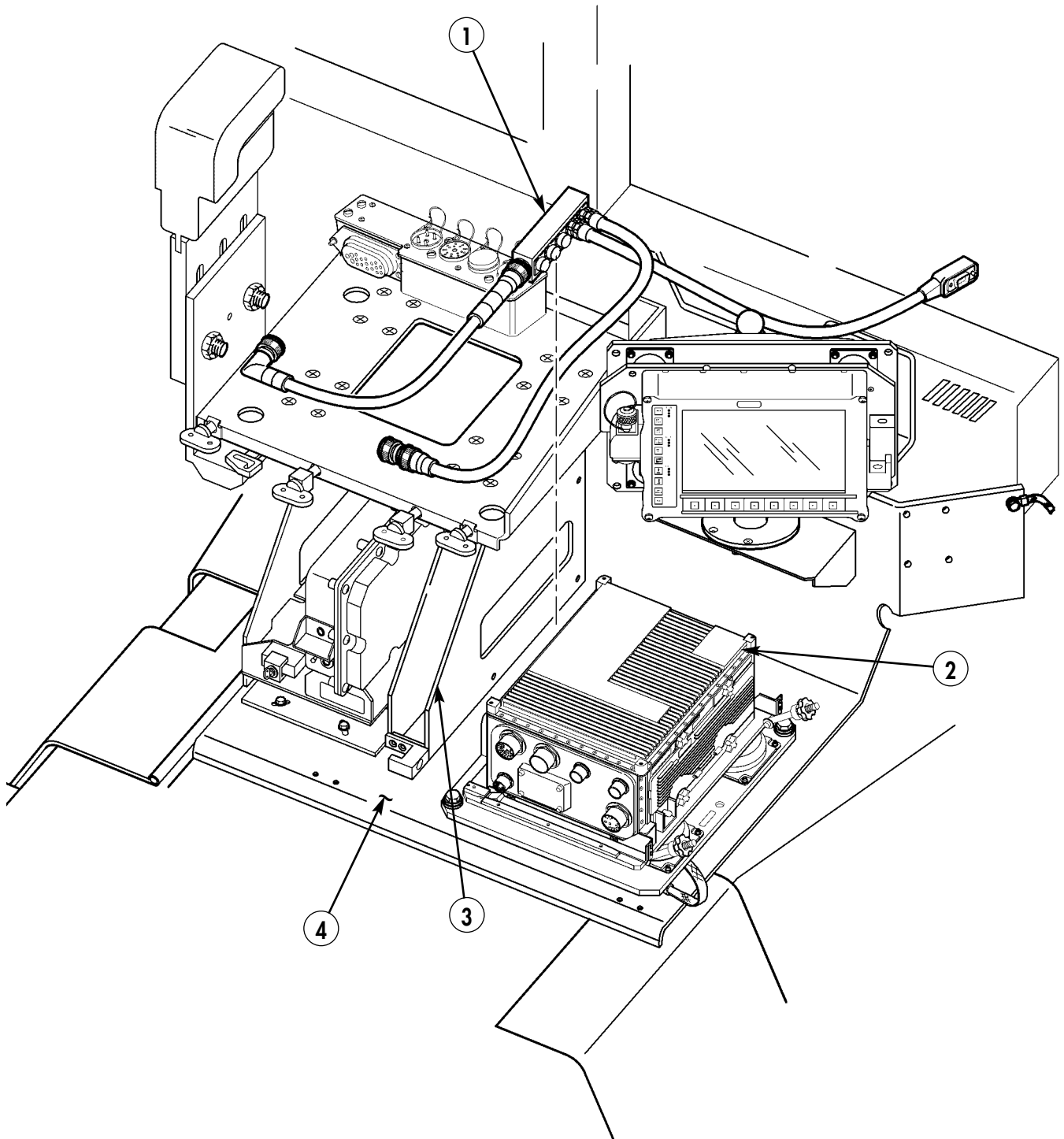
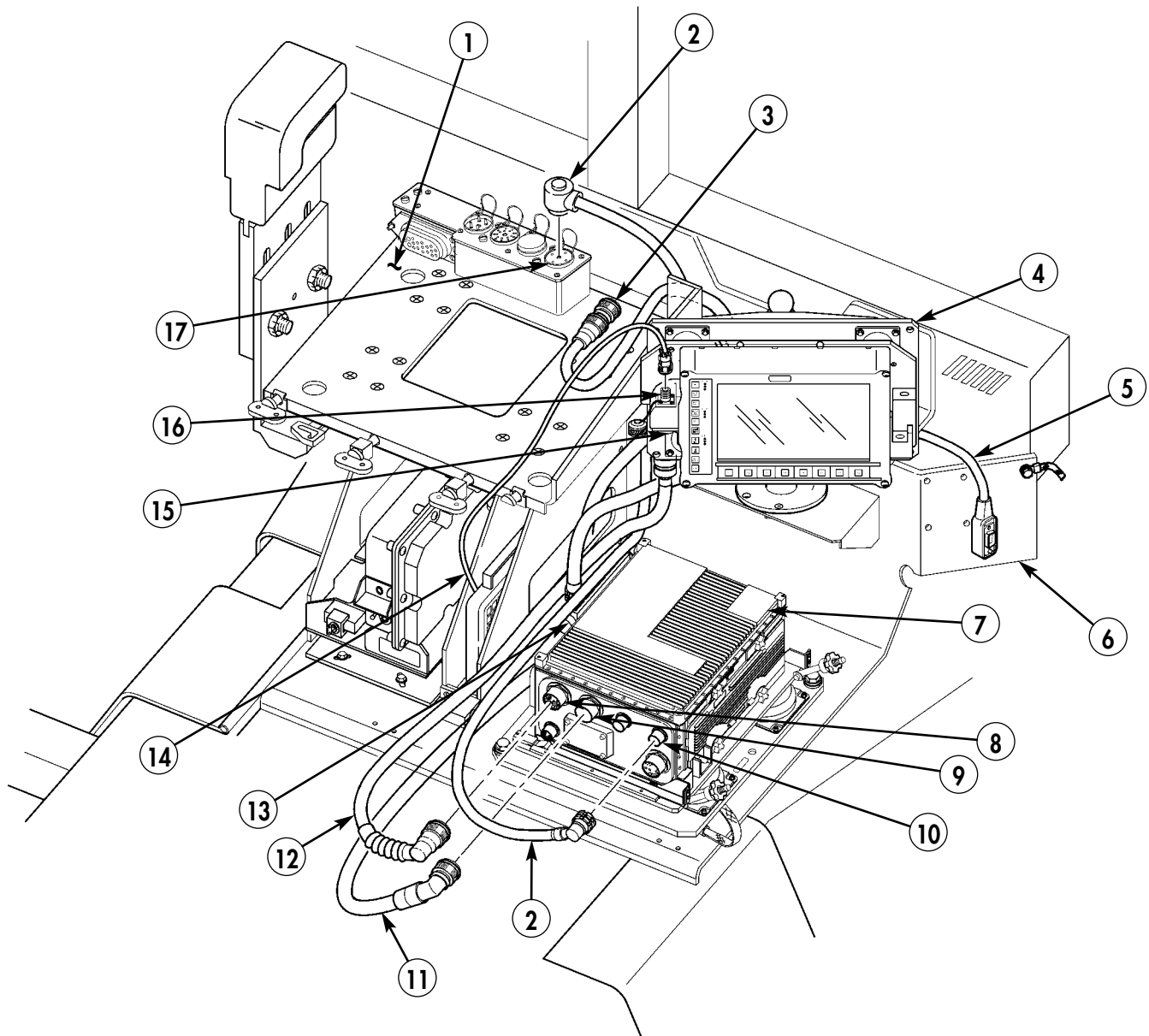


Figure 5-26.2.

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 5-26.3.

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

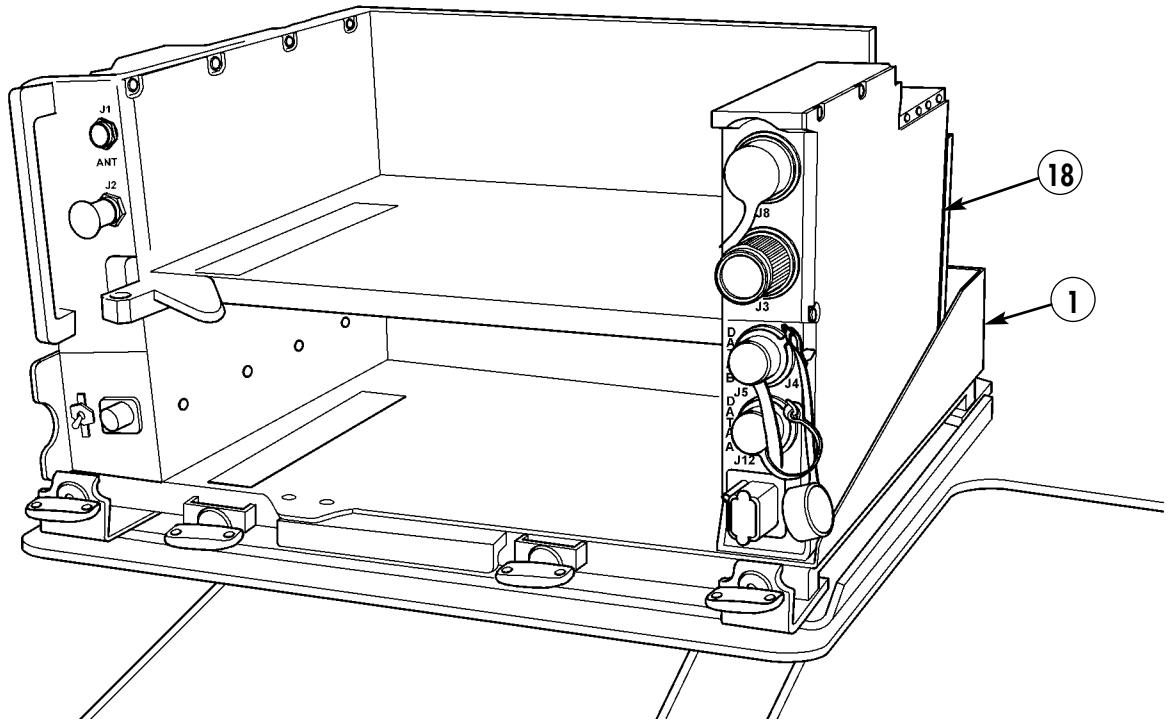


Figure 5-26.4.

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

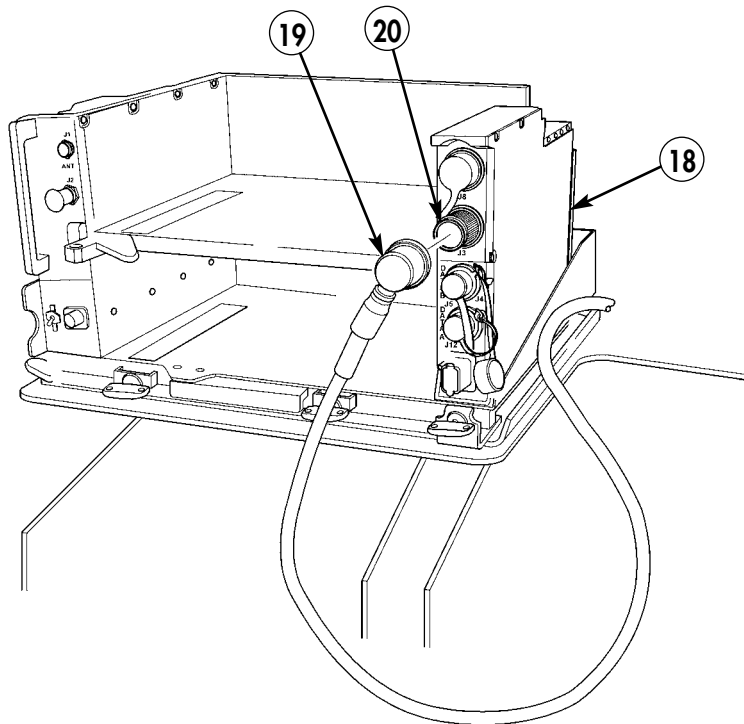


Figure 5-26.5.

Section XI. LOUDSPEAKER AND MULTI-NET RACK INSTALLATION

NOTE

Remove paint from vicinity of all mounting holes

- 11-1.** Using four speaker mounting plates (3) as template, locate, mark, and drill sixteen 0.281-in. diameter holes (7) in lower shelf (4).

NOTE

- To ensure proper fit, keep mounting holes near outside edge of speaker mounting plate holes.
- Do not install capscrews in two far-left side mounting holes at this time. These holes align with the frame and require longer capscrews. These capscrews are installed in step 11-3.

- 11-2.** Install four speaker mounting plates (3) on lower shelf (4) with fourteen capscrews (1), twenty-eight washers (2), fourteen lockwashers (6), and nuts (5).

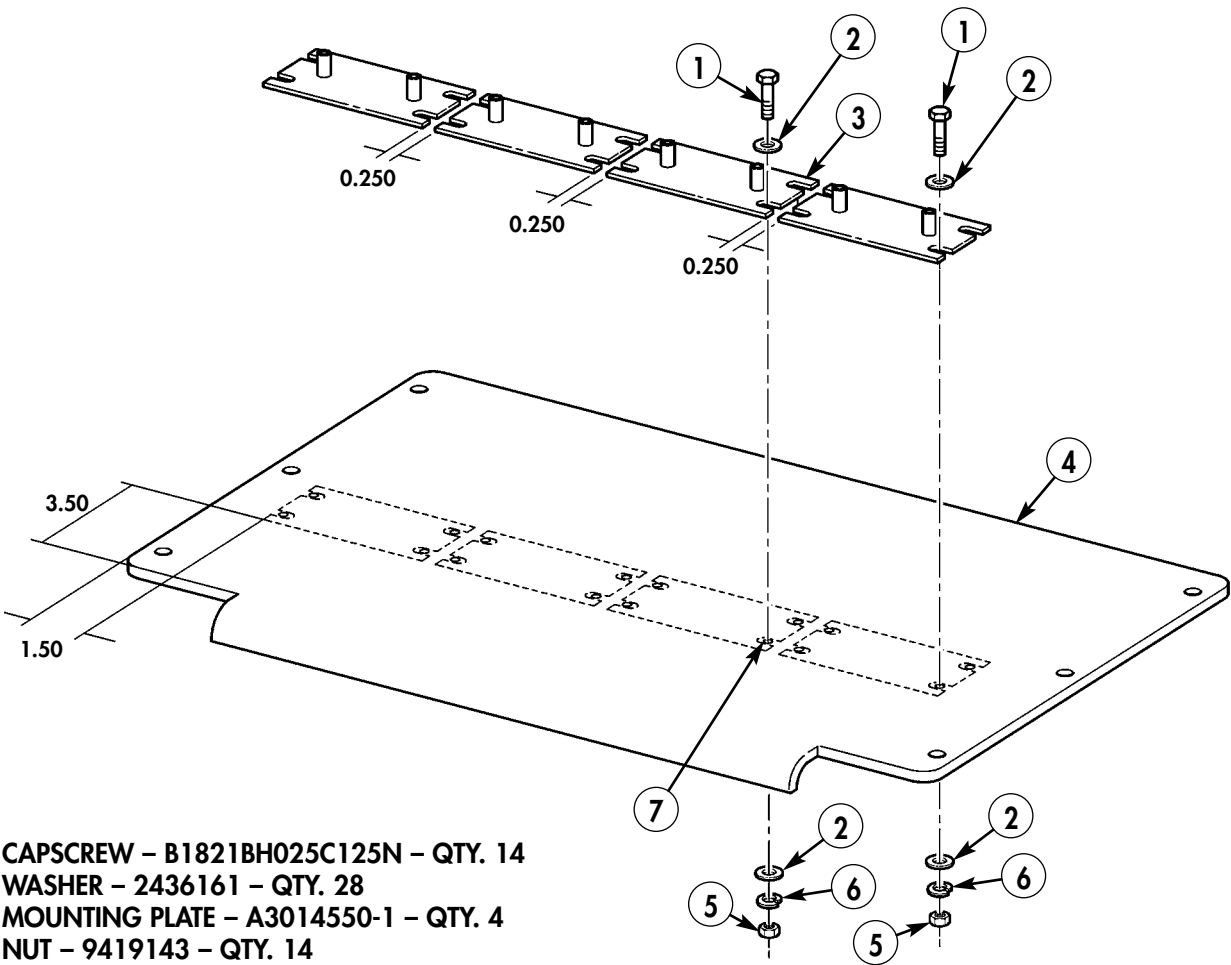
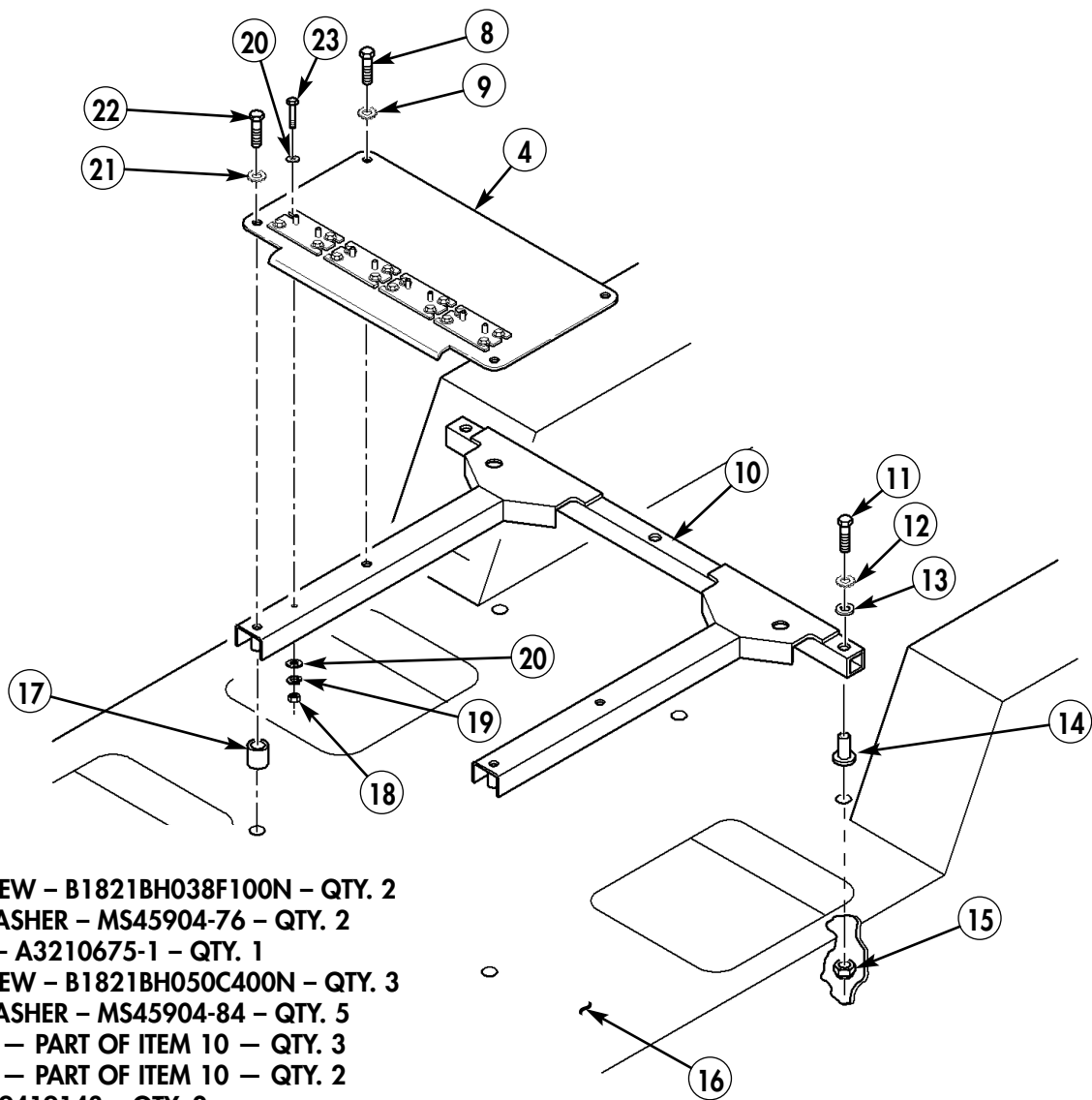


Figure 5-27.

NOTE

- Use existing holes of D-rings to mount frame and shelf. Older model vehicles have existing strux nuts. If installing multi-net rack on a newer model vehicle, use locknuts.
- Any missing strux nuts must be replaced by locknuts.

- 11-3.** Install lower shelf (4) on frame (10) with two capscrews (23), four washers (20), two lockwashers (19), and nuts (18).
- 11-4.** Install lower shelf (4) and frame (10) on cargo bed (16) with two capscrews (22), lockwashers (21), spacers (17), and locknuts (15) if necessary.
- 11-5.** Install lower shelf (4) on frame (10) and cargo bed (16) with two capscrews (8), lockwashers (9), and locknuts (15) if necessary.
- 11-6.** Install frame (10) on cargo bed (16) with three capscrews (11), lockwashers (12), washers (13), spacers (14), and locknuts (15) if necessary.



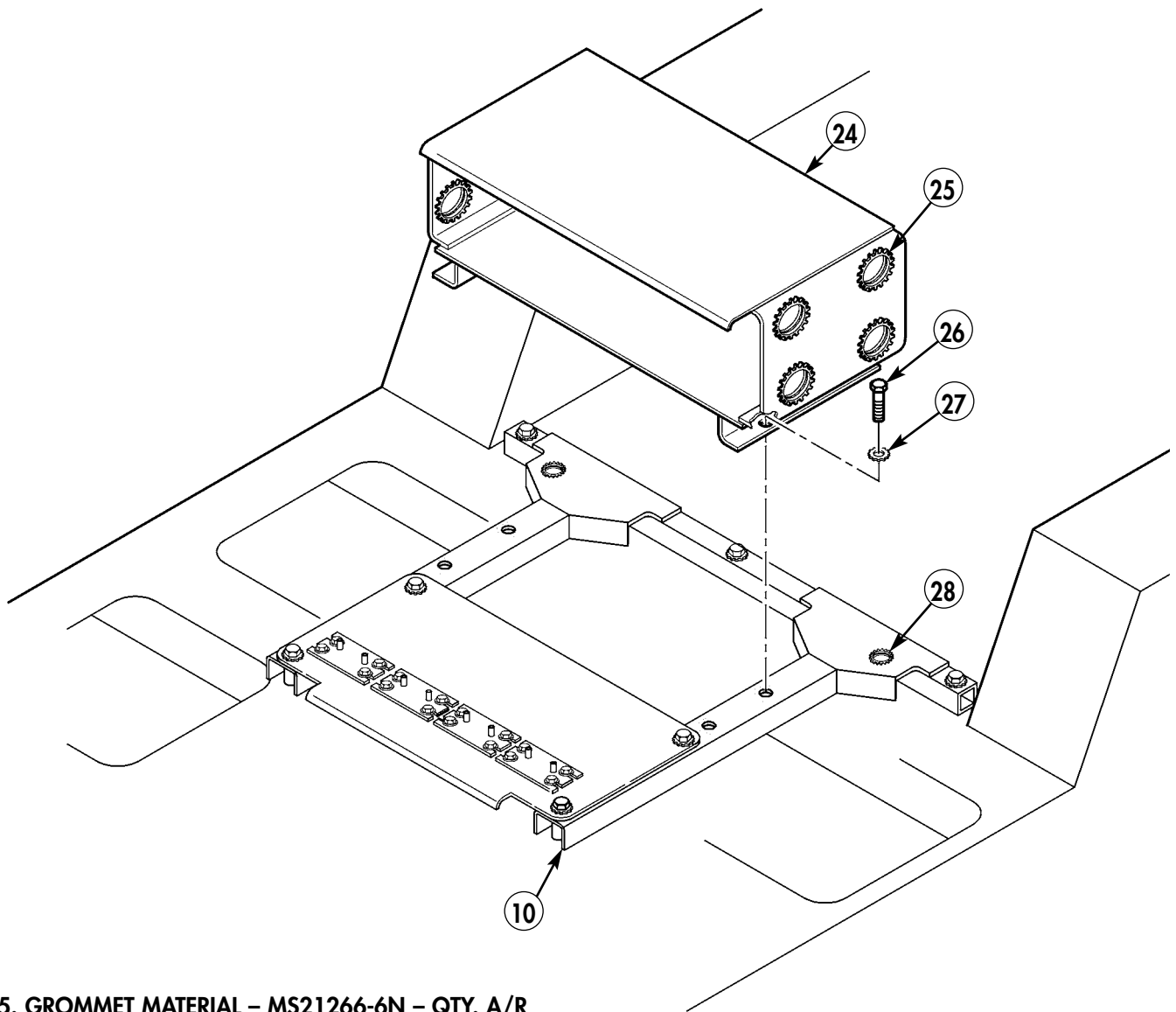
8. CAPSCREW – B1821BH038F100N – QTY. 2
 9. LOCKWASHER – MS45904-76 – QTY. 2
 10. FRAME – A3210675-1 – QTY. 1
 11. CAPSCREW – B1821BH050C400N – QTY. 3
 12. LOCKWASHER – MS45904-84 – QTY. 5
 14. SPACER – PART OF ITEM 10 – QTY. 3
 17. SPACER – PART OF ITEM 10 – QTY. 2
 18. NUT – 9419143 – QTY. 2
 19. LOCKWASHER – MS35338-44 – QTY. 2
 20. WASHER – 2436161 – QTY. 4
 22. CAPSCREW – B1821BH050C450N – QTY. 2
 23. CAPSCREW – B1821BH025C150N – QTY. 2

Figure 5-28.

NOTE

Remove paint from vicinity of all mounting holes. Apply antiseize compound as required.

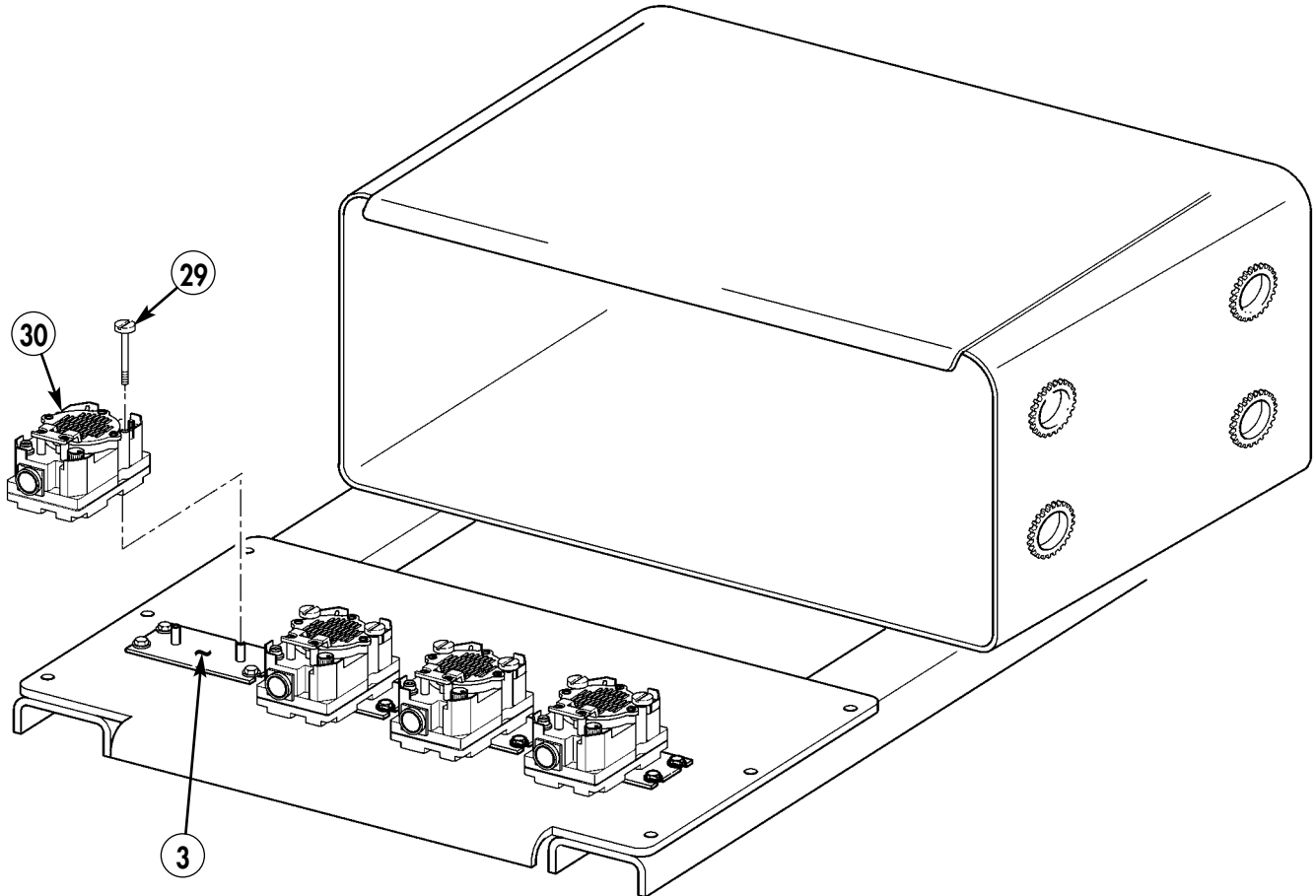
- 11-7. Install assembled multi-net rack (24) on frame (10) with four capscrews (26) and lockwashers (27).
- 11-8. Install grommet material (25) in eight holes of multi-net rack (24).
- 11-9. Install grommet material (28) in two holes of frame (10).



- 25. GROMMET MATERIAL - MS21266-6N - QTY. A/R
- 26. CAPSCREW - B1821BH038F100N - QTY. 4
- 27. LOCKWASHER - MS45904-76 - QTY. 4
- 28. GROMMET MATERIAL - MS21266-4N - QTY. A/R

Figure 5-29.

11-10. Install four loudspeakers (30) on speaker mounting plate (3) with eight externally-relieved body screws (29).



30. LOUDSPEAKER – A3014065-1 – QTY. 4

Figure 5-30.

Section XII. FHMUX MOUNT INSTALLATION

12-1. Locate, mark, and drill 0.343-in. diameter hole (1) in multi-net rack (2).

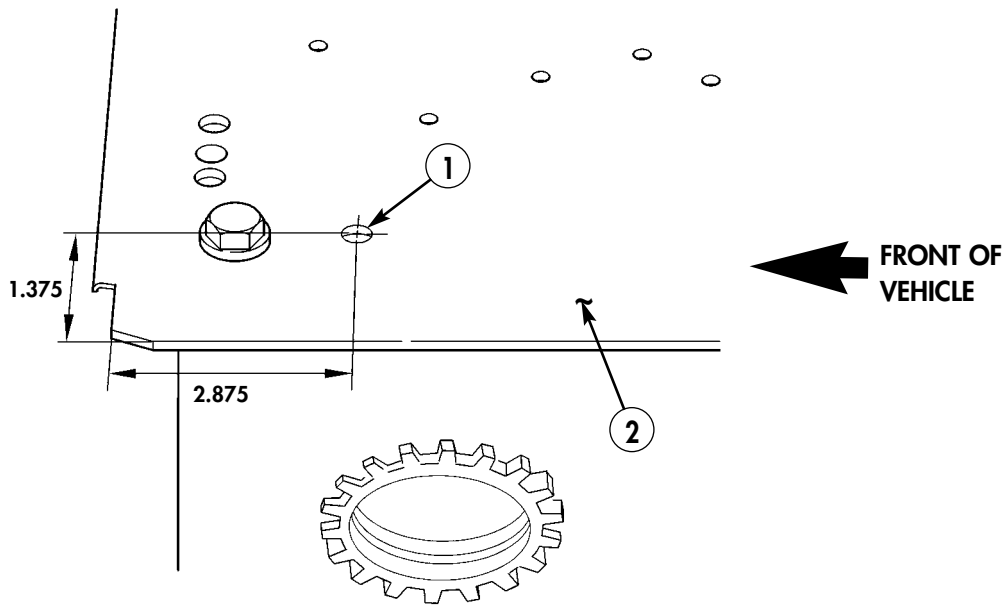
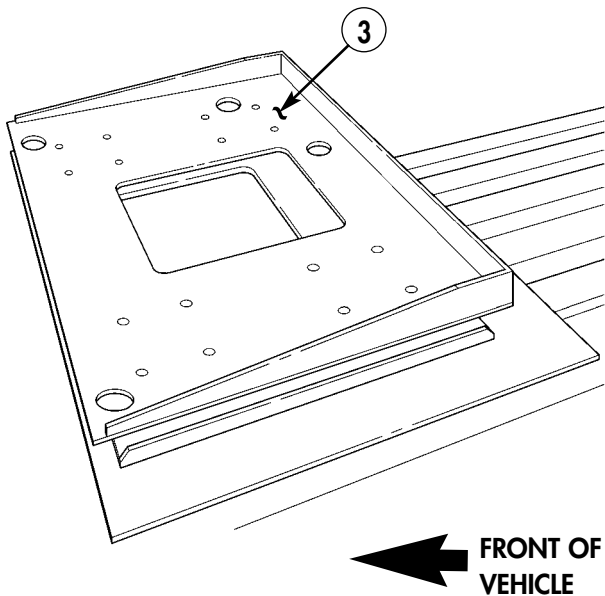


Figure 5-31.

12-2. Using MT-6845/VRC mount (3) as template, locate, mark, and drill three remaining holes (4).

12-3. Remove paint from vicinity of four mounting holes (4) and (1). Apply antiseize compound as required.



3. MOUNTING BASE, MT-6845/VRC – A3154893 – QTY. 1

Figure 5-32.

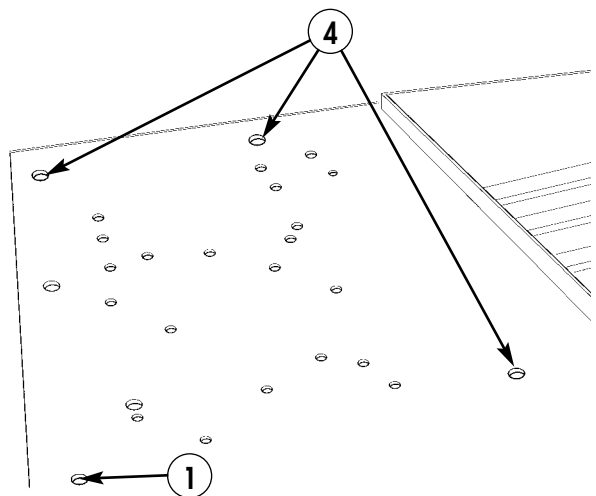
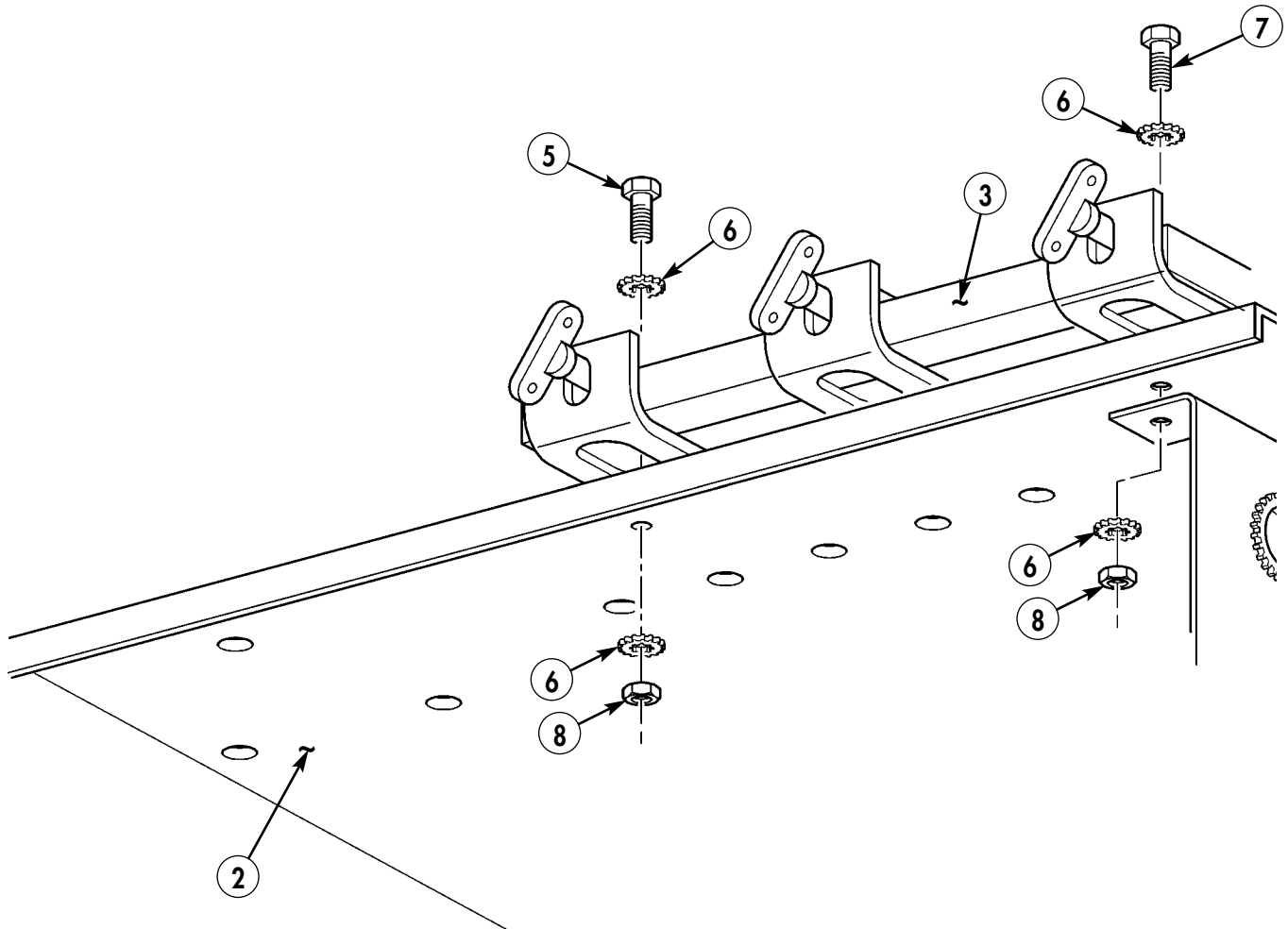


Figure 5-33.

- 12-4.** Mount MT-6845/VRC mount (3) to multi-net rack (2) with two capscrews (5), four lockwashers (6), and two nuts (8).
- 12-5.** Mount MT-6845/VRC mount (3) to multi-net rack (2) with two capscrews (7), four lockwashers (6), and two nuts (8).

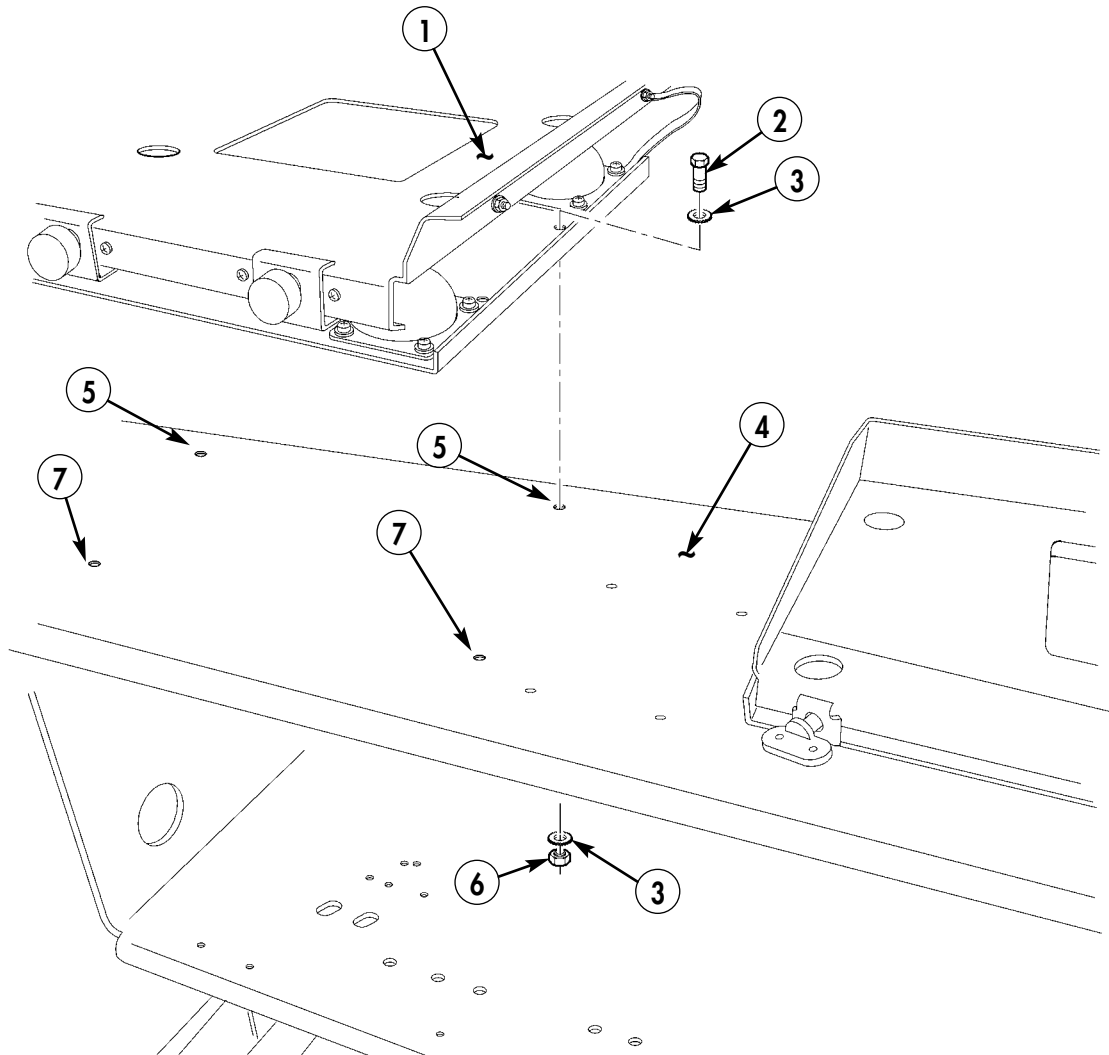


5. CAPSCREW – B1821BH031F100N – QTY. 2
 6. LOCKWASHER – MS45904-72 – QTY. 8
 7. CAPSCREW – B1821BH031F125N – QTY. 2
 8. NUT – MS51968-5 – QTY. 4

Figure 5-34.

Section XIII. EPLRS MOUNT INSTALLATION

- 13-1. Align MT-6146/VSQ mount (1) with two existing holes (5).
- 13-2. Using MT-6146/VSQ-1 mount (1) as template, locate, mark, and drill two 0.343-in. diameter holes (7). Remove paint from vicinity of four mounting holes (5) and (7). Apply antiseize compound as required.
- 13-3. Install MT-6146/VSQ-1 mount (1) on multi-net rack (4) with four capscrews (2), eight lockwashers (3), and four nuts (6).



2. CAPSCREW – B1821BH031C125N – QTY. 4
3. LOCKWASHER – MS45904-72 – QTY. 8
6. NUT – 9418892 – QTY. 4

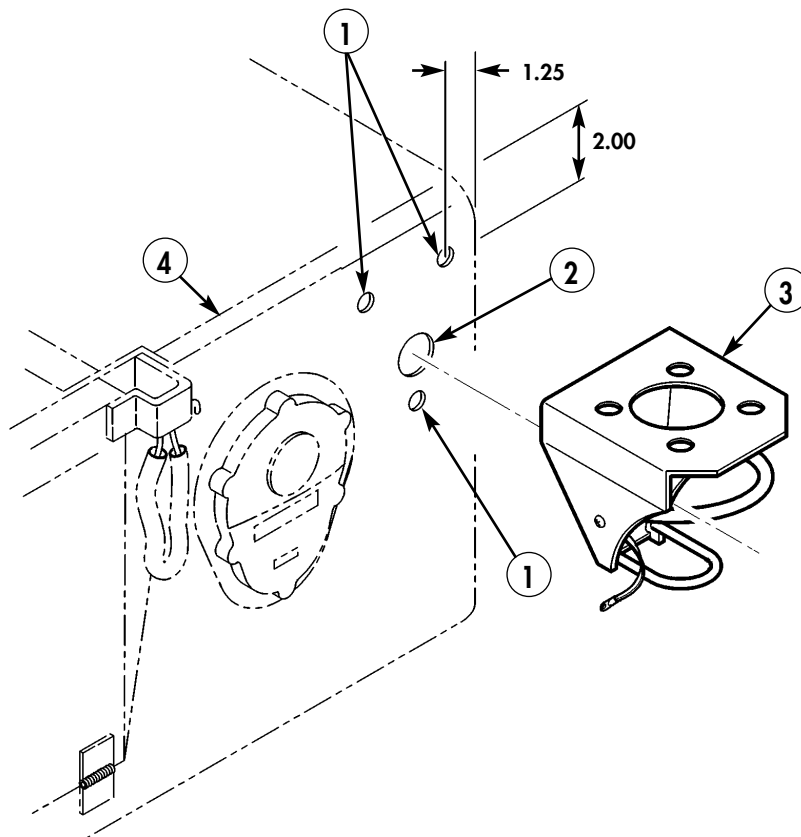
Figure 5-35.

Section XIV. SINGARS ANTENNA 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.)

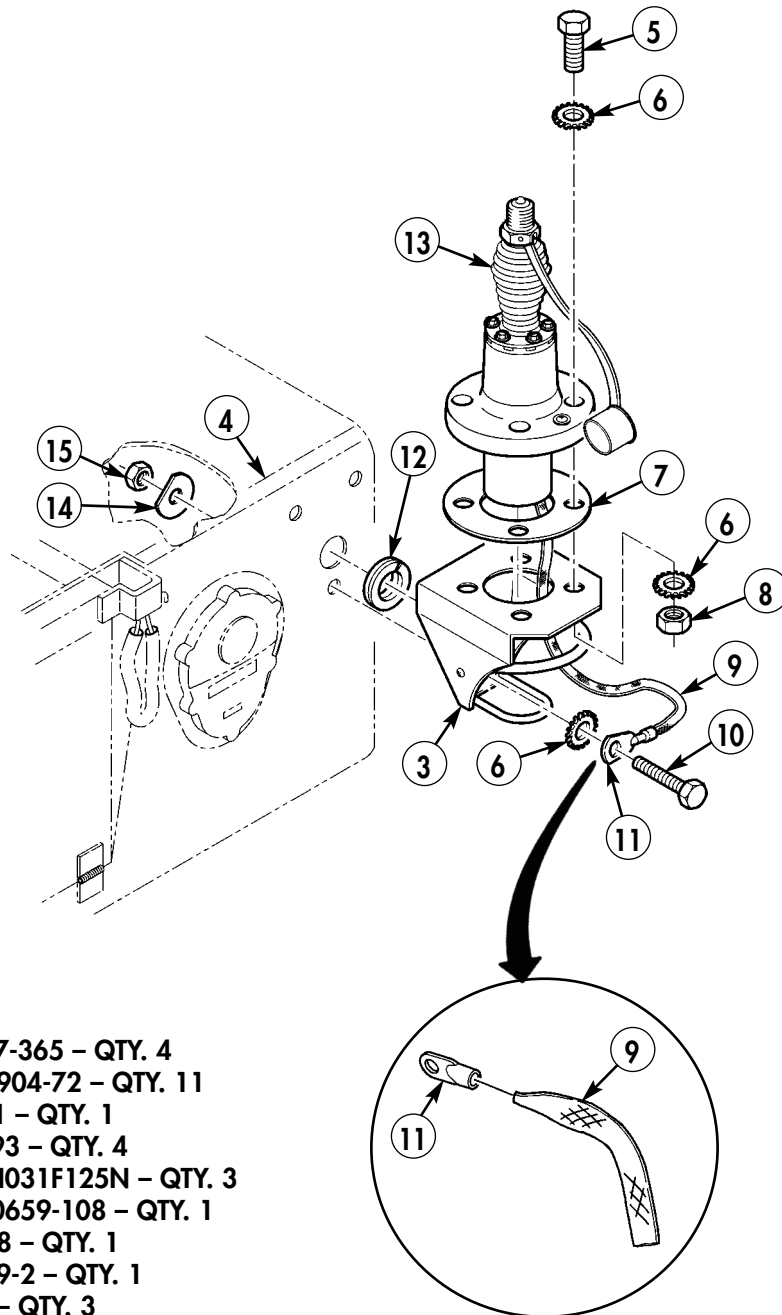
- 14-1. Using antenna mounting bracket (3) as template, locate, mark, and drill 1.375-in. diameter hole (2) in right rear wall (4).
- 14-2. Locate, mark, and drill three 0.343-in. diameter holes (1) in rear wall (4).
- 14-3. Remove paint from vicinity of three holes (1) and three matching holes in antenna mounting bracket (3).
- 14-4. Apply antiseize compound to vicinity of three holes (1) and rear of antenna mounting bracket (3).



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

Figure 5-36.

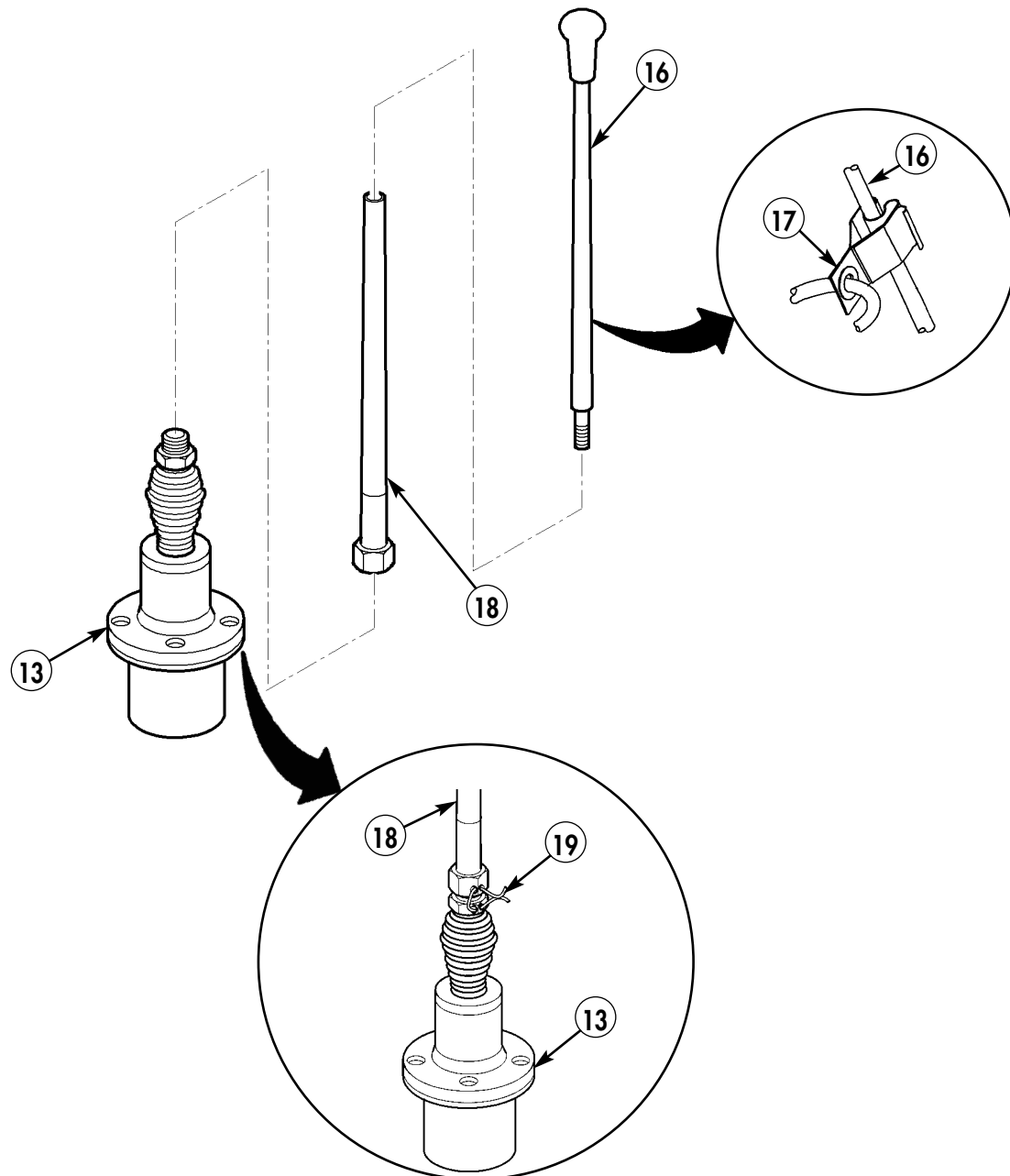
- 14-5. Install grommet (12) in hole of rear wall (4).
- 14-6. Position antenna (13) and gasket (7) on antenna mounting bracket (3) and route existing ground strap (9) through antenna mounting bracket (3).
- 14-7. Install antenna (13) on antenna bracket (3) with four capscrews (5), eight lockwashers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



- 5. CAPSCREW – MS35307-365 – QTY. 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 5-37.

- 14-10. Attach upper antenna element (16) to lower antenna element (18).
 14-11. Attach antenna assembly to antenna base (13).
 14-12. Attach fiber rope assembly (17) to upper antenna element (16).
 14-13. Secure lower antenna element (18) to antenna base (13) with lockwire (19).



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

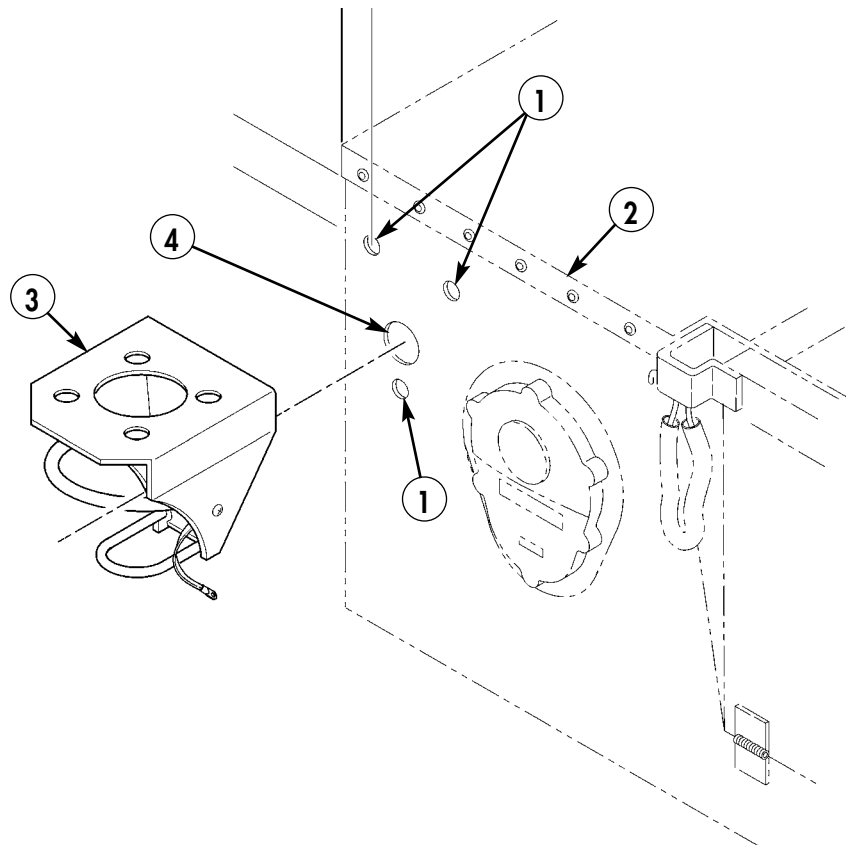
Figure 5-38.

Section XV. EPLRS ANTENNA 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.)

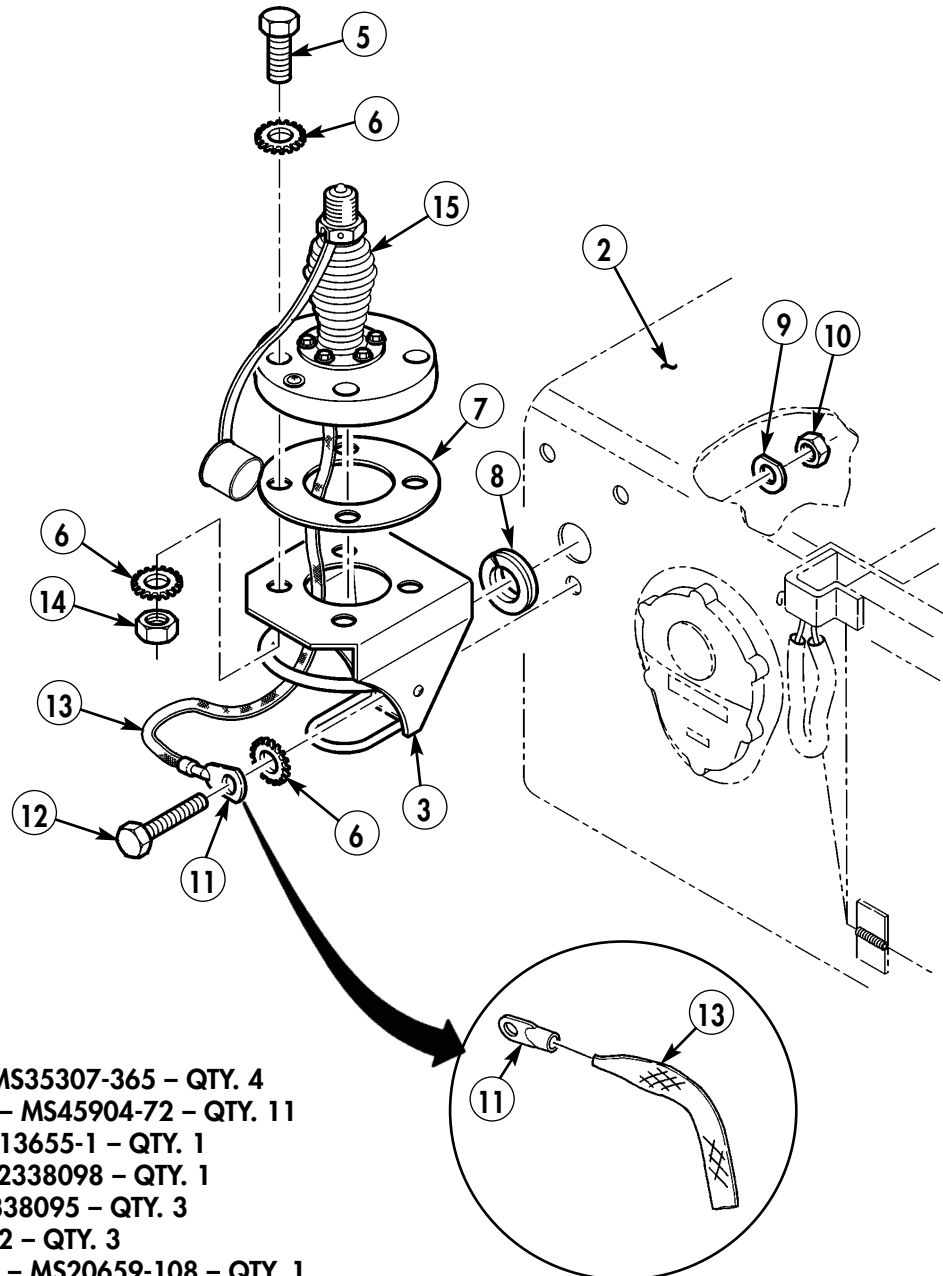
- 15-1. Using antenna mounting bracket (3) as template, locate, mark, and drill 1.375-in. diameter hole (4) in left rear wall (2).
- 15-2. Locate, mark, and drill three 0.343-in. diameter holes (1) in rear wall (2).
- 15-3. Remove paint from vicinity of three holes (1) and three matching holes in antenna mounting bracket (3).
- 15-4. Apply antiseize compound to vicinity of three holes (1) and rear of antenna mounting bracket (3).



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

Figure 5-39.

- 15-5.** Install grommet (8) in hole of rear wall (2).
- 15-6.** Position antenna (15) and gasket (7) on antenna mounting bracket (3) and route existing ground strap (13) through antenna mounting bracket (3).
- 15-7.** Install antenna (15) on antenna mounting bracket (3) with four capscrews (5), eight lockwashers (6), and four nuts (14).
- 15-8.** Install antenna mounting bracket (3) on rear wall (2) with two capscrews (12), lockwashers (6), washers (9), and nuts (10).
- 15-9.** Remove old terminal lug, and install new terminal lug (11) on ground strap (13). Install ground strap (13) and antenna mounting bracket (3) on rear wall (2) with capscrew (12), lockwasher (6), washer (9), and nut (10).



5. CAPSCREW – MS35307-365 – QTY. 4
 6. LOCKWASHER – MS45904-72 – QTY. 11
 7. GASKET – A3013655-1 – QTY. 1
 8. GROMMET – 12338098 – QTY. 1
 9. WASHER – 12338095 – QTY. 3
 10. NUT – 9418892 – QTY. 3
 11. TERMINAL LUG – MS20659-108 – QTY. 1
 12. CAPSCREW – B1821BH031F125N – QTY. 3
 14. NUT – 13218E0320-293 – QTY. 4
 15. ANTENNA – A3005031 – QTY. 1

Figure 5-40.

Section XVI. USER READOUT (URO) BRACKET INSTALLATION

16-1. Remove two screws (2) and connector mounting bracket (3) from User Readout (URO) bracket (1) and discard.

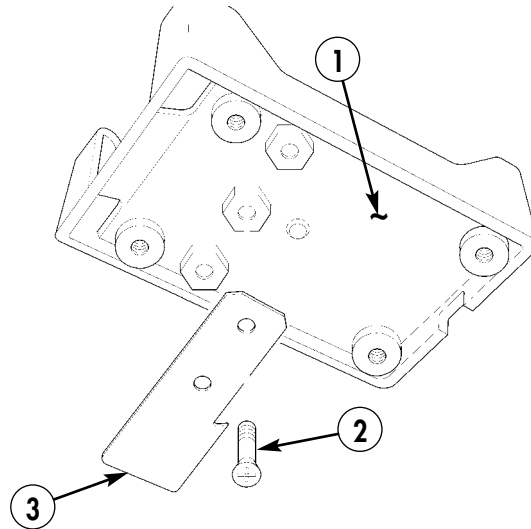
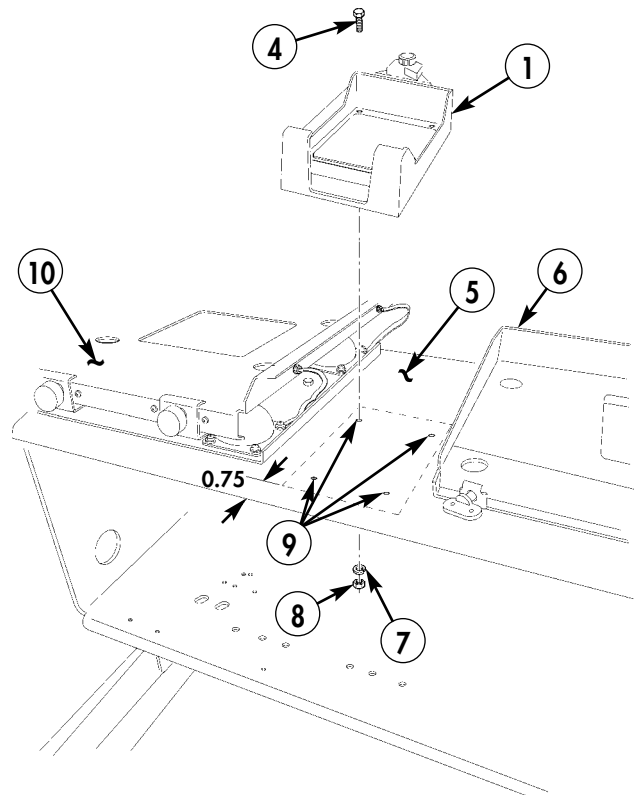


Figure 5-41.

16-2. Center URO bracket (1) on multi-net rack (5) between MT-6146/VSQ-1 mount (10) and MT-6352 mount (6).

16-3. Locate, mark and drill four 0.218-in. diameter mounting screw holes (9).

16-4. Install URO bracket (1) on multi-net rack (5) with four screws (4), lockwashers (7), and nuts (8).



- 1. URO (USER READOUT) BRACKET
- A3006206 - QTY. 1
- 4. SCREW - MS35207-265 - QTY. 4
- 7. LOCKWASHER - MS35338-43 - QTY. 4
- 8. NUT - MS35650-302 - QTY. 4

Figure 5-42.

Section XVII. REAR SINGARS MOUNT INSTALLATION

17-1. Locate, mark, and drill 0.343-in. diameter hole (2) in lower shelf of multi-net rack (1).

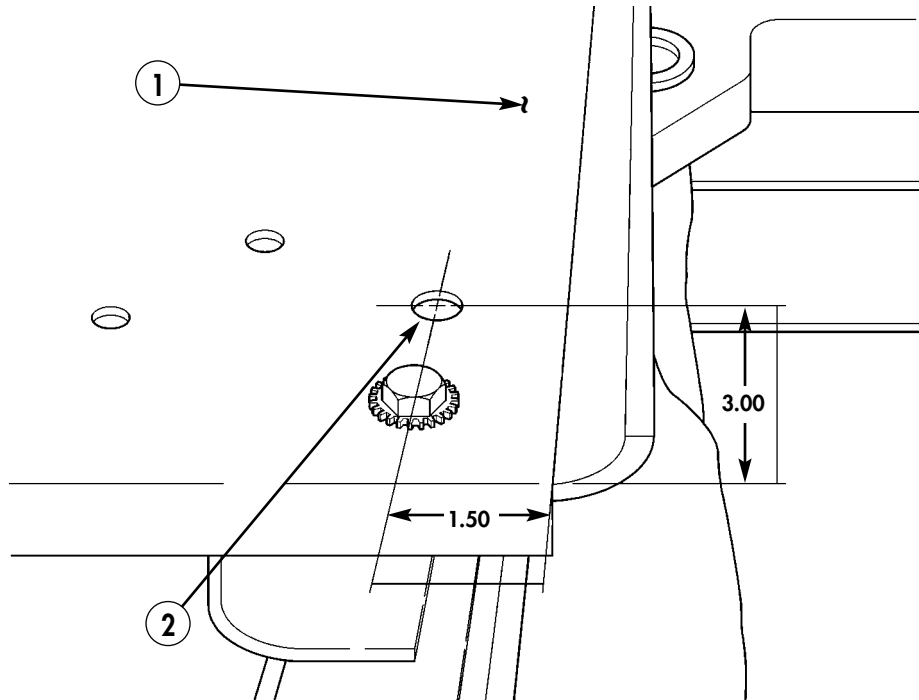


Figure 5-43.

17-2. Using SINGARS mounting base MT-6352/VRC as template, locate, mark, and drill four 0.343-in. diameter holes (3) in lower shelf of multi-net rack (1).

17-3. Remove paint from vicinity of holes (3) and apply antiseize compound as required.

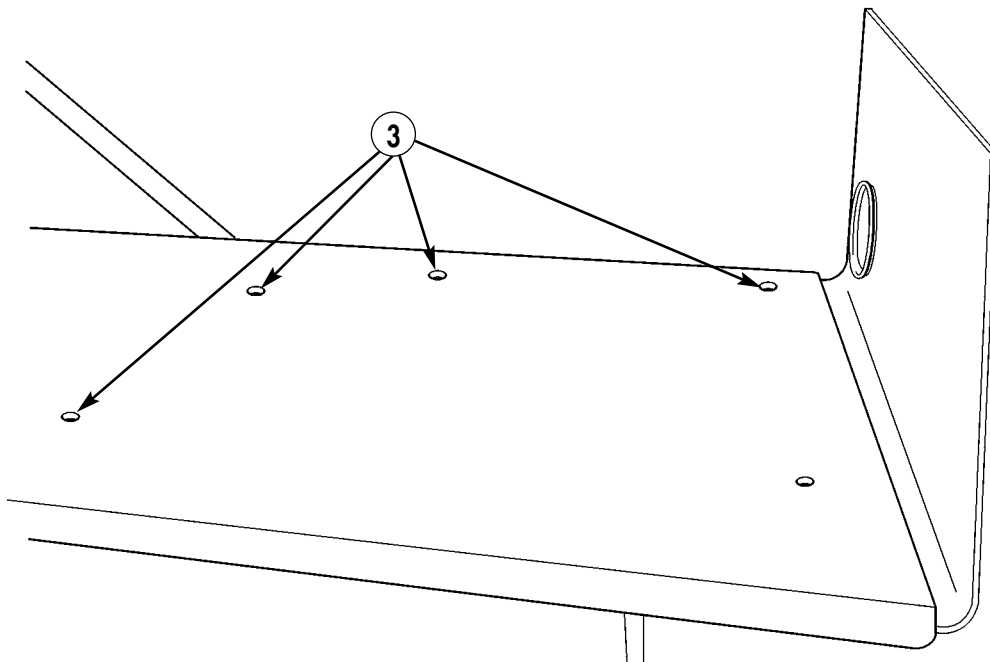
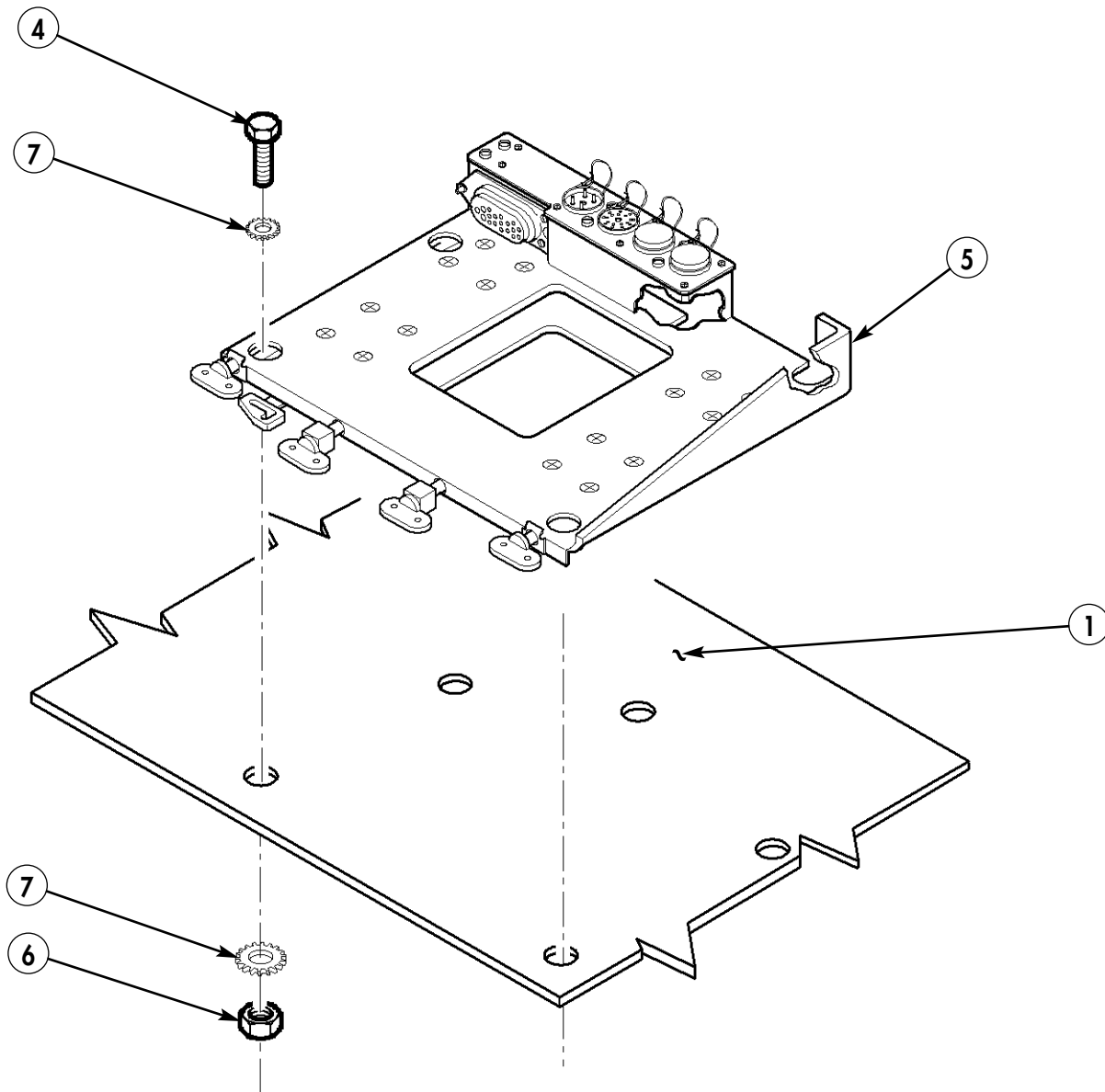


Figure 5-44.

17-4. Install SINCGARS mounting base MT-6352/VRC (5) using four capscrews (4), eight lockwashers (7), and four nuts (6) on multi-net rack (1).

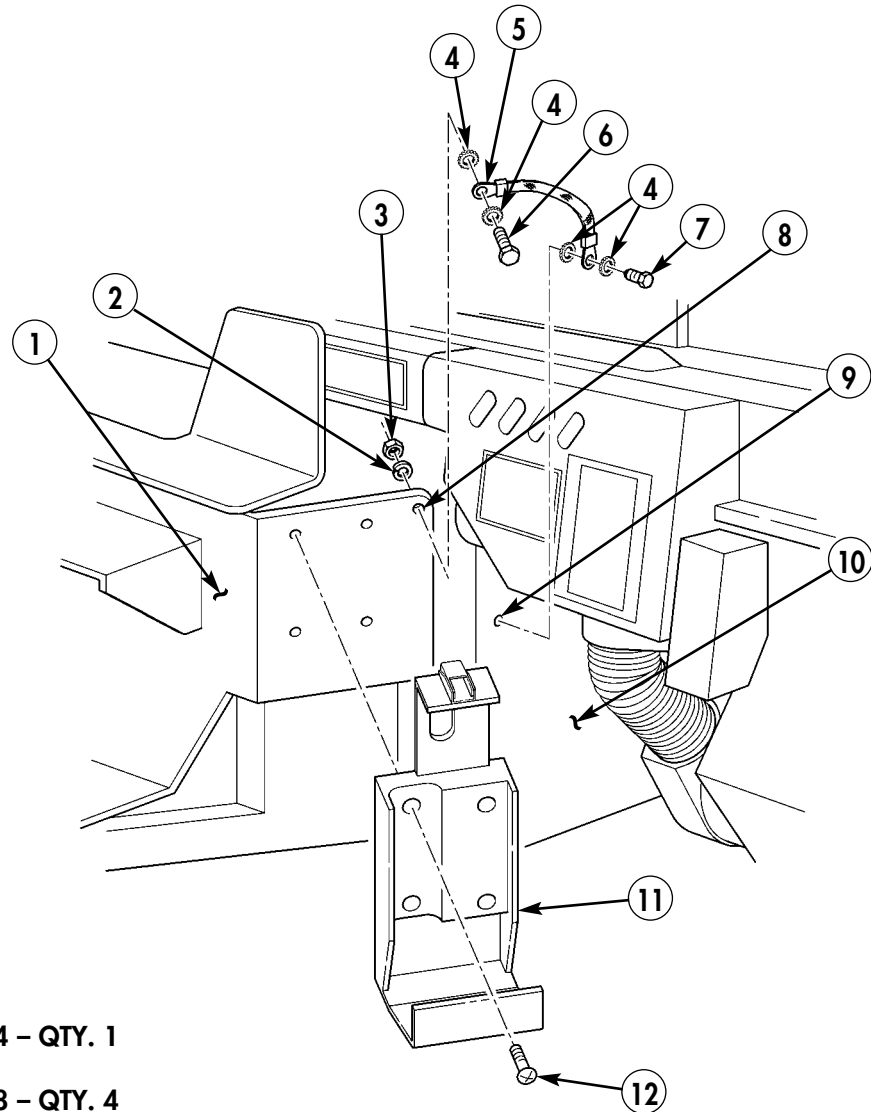


- 4. CAPSCREW - B1821BH031F100N - QTY. 4
- 5. MOUNTING BASE, MT-6352/VRC - A3013367-1 - QTY. 1
- 6. NUT - MS51968-5 - QTY. 4
- 7. LOCKWASHER - MS45904-72 - QTY. 8

Figure 5-45.

Section XVIII. PLGR BRACKET INSTALLATION

- 18-1. Install PLGR bracket (11) on integrated rack (1) with four screws (12).
- 18-2. Locate, mark, and drill one 0.201-in. diameter hole (9) in right side engine tunnel (10).
- 18-3. Remove paint from vicinity of hole (8) on integrated rack (1) and hole (9) on right side engine tunnel (10). Apply antiseize compound as required.
- 18-4. Fabricate ground strap (5) from 8.00-in. length of braided wire and two terminal lugs.
- 18-5. Install ground strap (5) on integrated rack (1) with capscrew (6), two lockwashers (4), lockwasher (2), and nut (3).
- 18-6. 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 5-46.

■ **Section XIX. PLGR ANTENNA AND CABLES INSTALLATION (WITHOUT BOLT-ON ARMOR)**

19-1. Remove two plugs (1) from outer right side windshield frame (3).

NOTE

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

19-2. Locate, mark, and drill 0.375-in. diameter hole (2) in outer right side windshield frame (3).

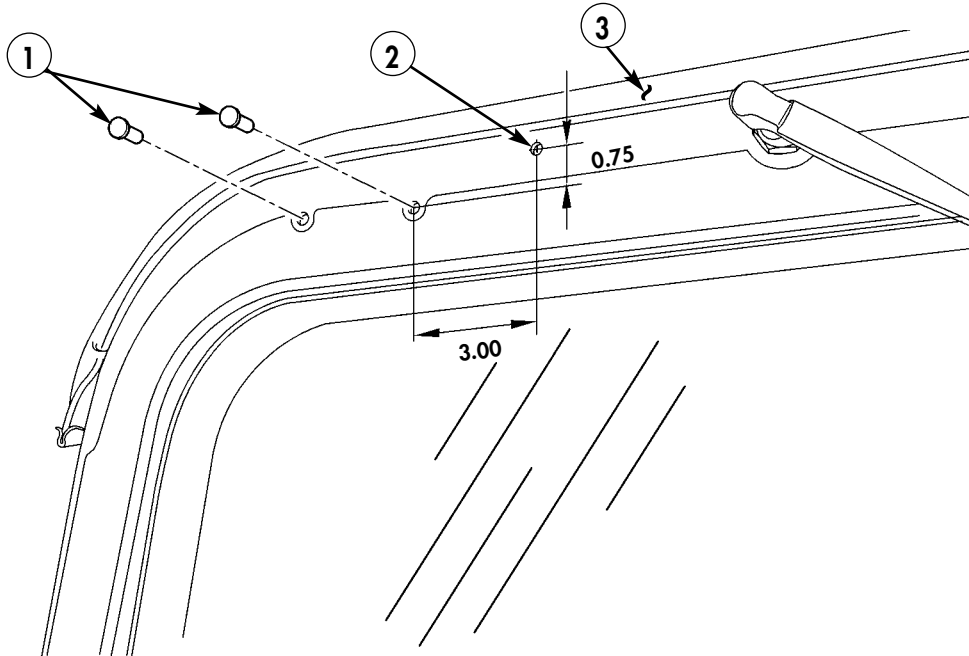


Figure 5-47.

19-3. Locate, mark, and drill 0.375-in. diameter hole (4) in inner right side windshield frame (5).

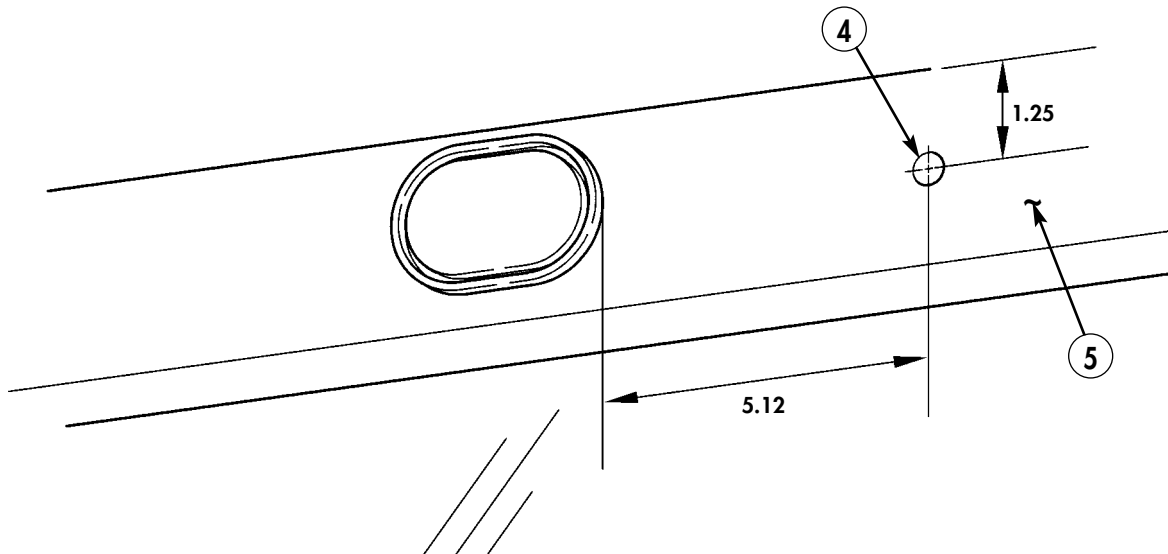
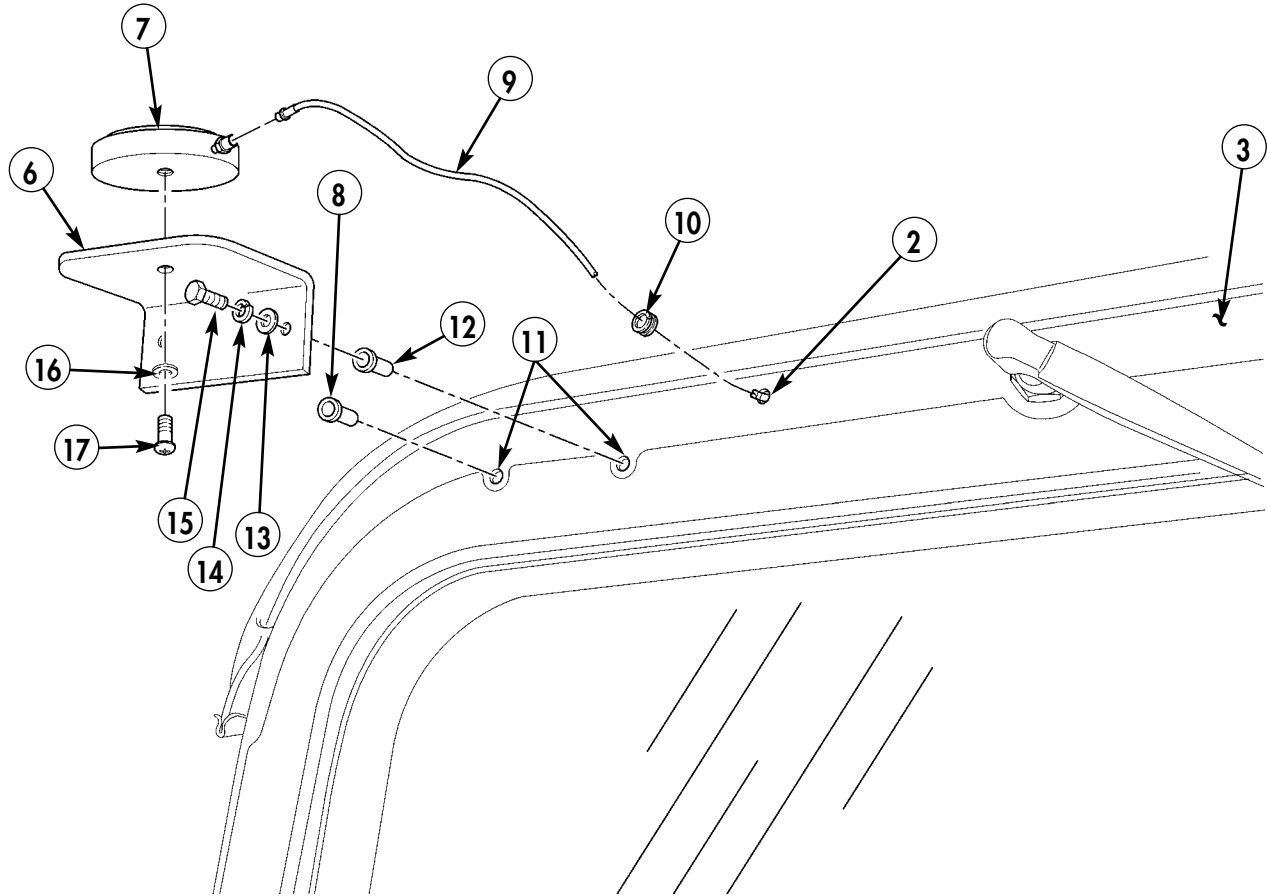


Figure 5-48.

- 19-4. Pull PLGR antenna cable (9) through hole (2) in outer right side windshield frame (3).
- 19-5. 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).
- 19-6. Install wellnuts (8) and (12) in holes (11).
- 19-7. Install PLGR antenna mount bracket (6) on outer right side windshield frame (3) with two washers (13), lockwashers (14), and capscrews (15).
- 19-8. Install PLGR antenna (7) on PLGR antenna mount bracket (6) with washer (16) and screw (17).
- 19-9. 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 - 12339397-3 - QTY. 1
9. PLGR ANTENNA CABLE - 426-0141-050 - QTY. 1
10. GROMMET - MS35489-143 - QTY. 1
12. WELLNUT - 12339397-6 - QTY. 1
13. WASHER - 9414920 - QTY. 2
14. LOCKWASHER - MS35338-44 - QTY. 2
15. CAPSCREW - B1821BH025C125N - QTY. 2
16. WASHER - 9417373 - QTY. 1
17. SCREW - 160035 - QTY. 1

Figure 5-49.

19-10. Split one side of grommet (10) and place on PLGR antenna cable (9).

19-11. Insert PLGR antenna cable (9) and grommet (10) in hole (4) in inner right windshield frame (5).

NOTE

If sun visor kit has not been installed, perform steps 19-12 through 19-14. If sun visor has been installed, perform step 19-15.

19-12. Locate, mark, and drill 0.390-in. diameter hole (21) in windshield frame (5).

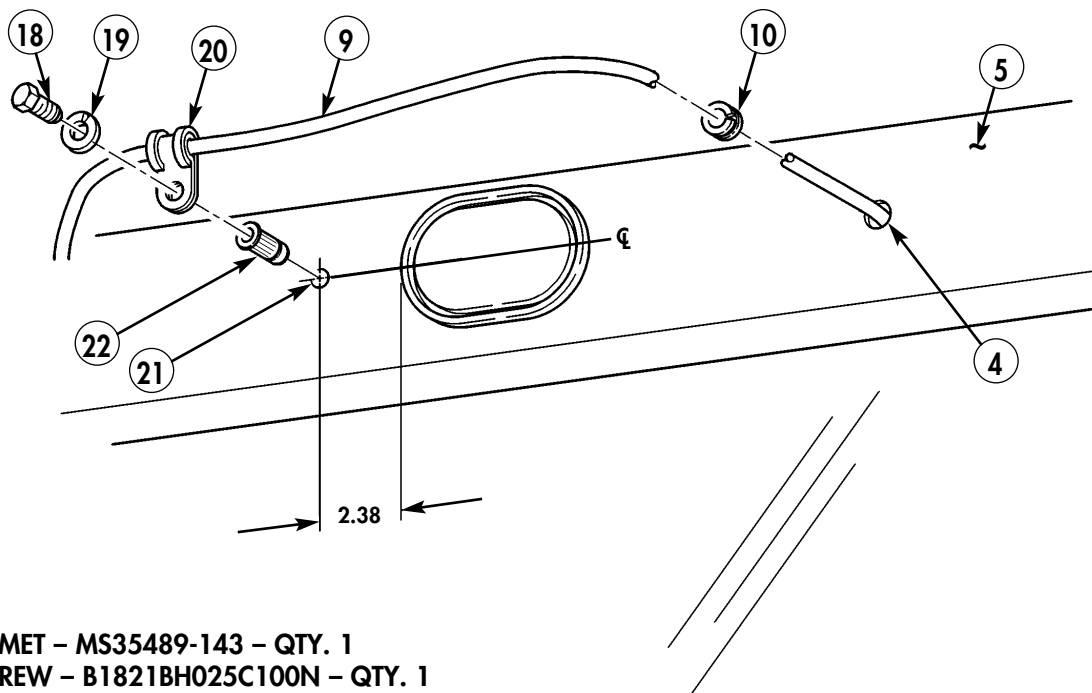
19-13. Install insert (22) in hole (21).

NOTE

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

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

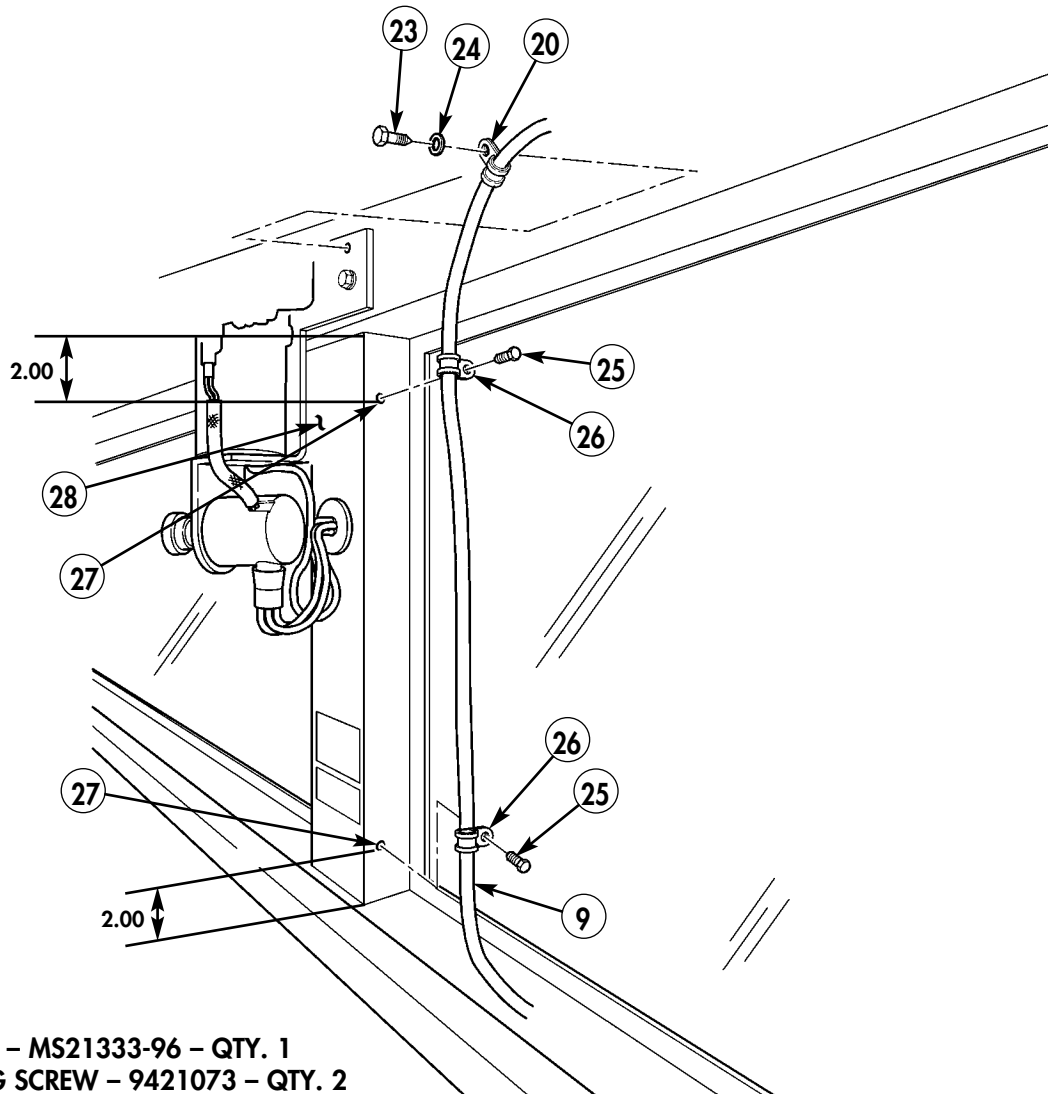
19-15. Route PLGR antenna cable (9) along inner right windshield frame (5) with loop clamp (20), lockwasher (19), and capscrew (18).



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

Figure 5-50.

- 19-16.** Locate, mark, and drill two 0.147-in. diameter holes (27) in windshield center frame (28).
- 19-17.** Route PLGR antenna cable (9) along windshield center frame (28) with two self-tapping screws (25), loop clamps (26) and (20), existing screw (23), and washer (24).



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

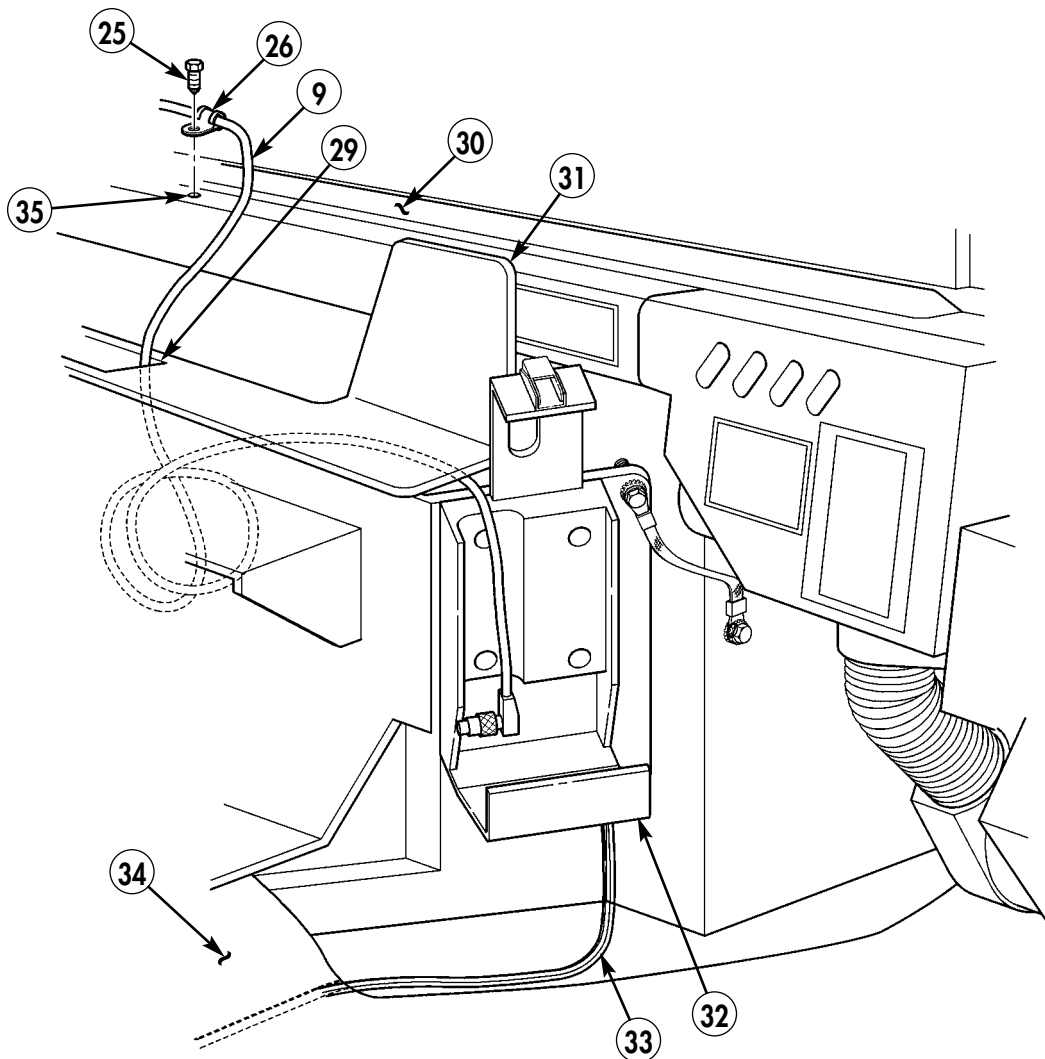
Figure 5-51.

- 19-18. Locate, mark, and drill 0.147-in. hole (35) in top of windshield frame (30).
- 19-19. Route PLGR antenna cable (9) on top of windshield frame (30) and secure with loop clamp (26) and self-tapping screw (25).
- 19-20. Route PLGR antenna cable (9) down through center access hole (29) of integrated rack (31), and coil excess antenna cable (9) under integrated rack (31).
- 19-21. Route PLGR power cable (33) from PLGR bracket (32) to right side tunnel insulation (34).

NOTE

Loosen right side tunnel insulation before performing step 19-22.
(Refer to TM 9-2320-280-20.)

- 19-22. Route PLGR power cable (33) under edge of right side tunnel insulation (34) to 24V terminal bar at cab enclosure panel.



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

Figure 5-52.

NOTE

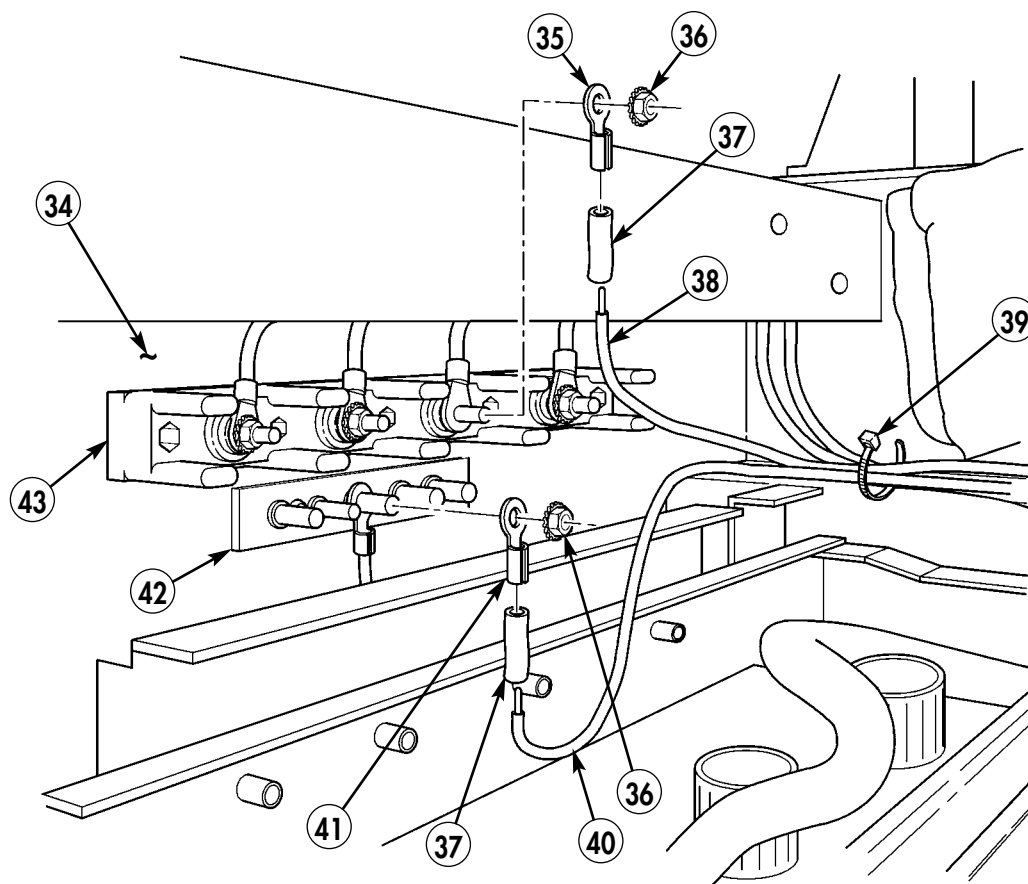
PLGR power cable positive lead insulation is ribbed.

- 19-23. Attach shrink tubing (37) and terminal lugs (35) and (41) to PLGR power cable negative lead (40) and PLGR power cable positive lead (38). (Refer to TM9-2320-280-20 for terminal connector repair.)
- 19-24. Attach PLGR power cable positive lead (38) to 24-volt terminal board (43), located on cab enclosure panel (34), with existing nut (36).
- 19-25. Attach PLGR power cable negative lead (40) to ground strap (42), located on cab enclosure panel (34), with existing nut (36).
- 19-26. Coil excess positive and negative power leads (38) and (40), place beneath ground strap (42), and secure with tiedown strap (39).

NOTE

Ensure all excess antenna cable is inside cab of vehicle.

- 19-27. Coil excess antenna cable and store under integrated rack using tiedown strap as necessary. (Refer to figure 5-52.)
- 19-28. Install right side tunnel insulation. (Refer to TM 9-2320-280-20.)

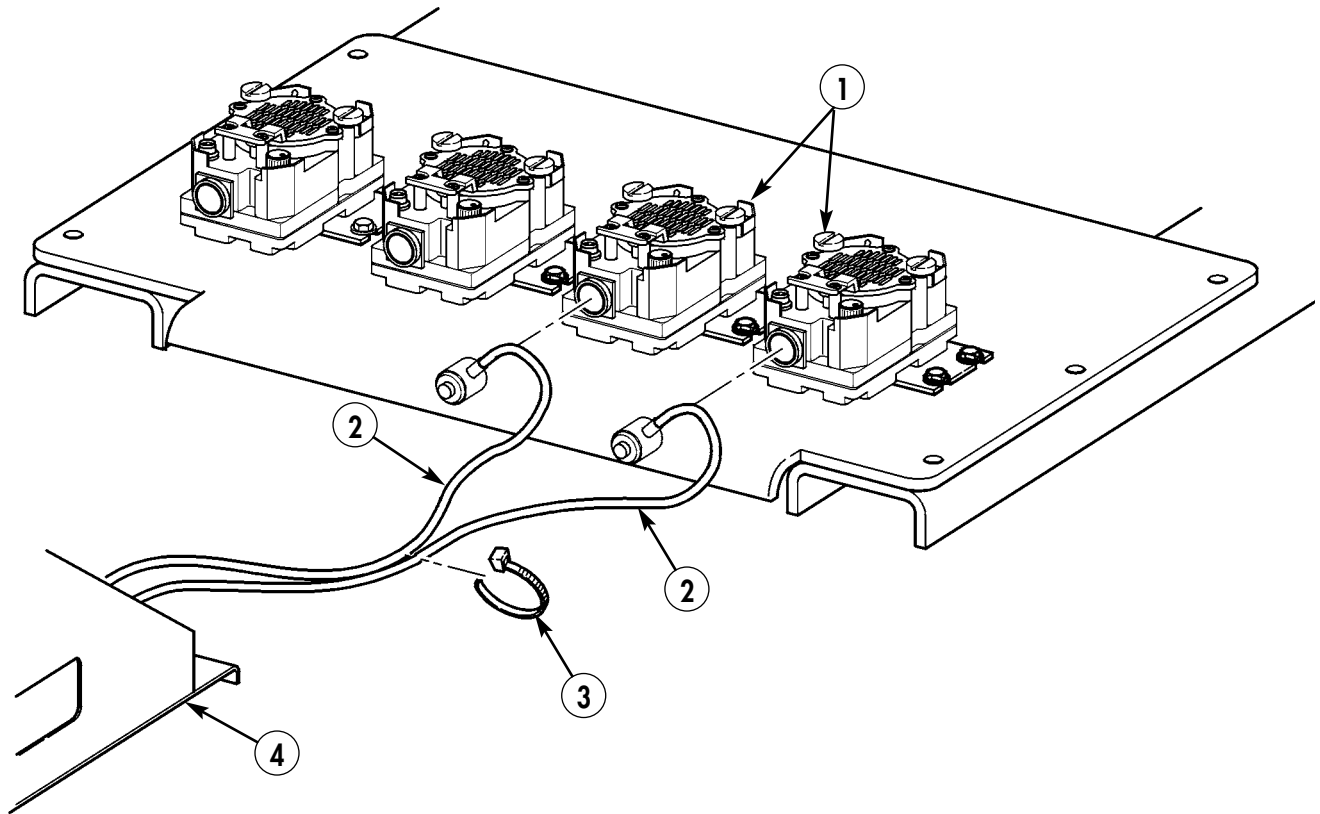


- 35. TERMINAL LUG – 7728780 – QTY. 1
- 37. SHRINK TUBING – MS23053/4-302-0 – QTY. A/R
- 39. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R
- 41. TERMINAL LUG – 7728777 – QTY. 1

Figure. 5-53.

Section XX. LOUDSPEAKER CABLES INSTALLATION

- 20-1. Connect speaker cables (2) to loudspeakers (1).
- 20-2. Secure cables (2) together with tiedown strap (3).
- 20-3. Route speaker cables (2) to integrated rack (4).



3. TIEDOWN STRAP – MS3367-1-0 – QTY. 1

Figure 5-54.

- 20-4.** Route speaker cables (2) through center access hole (6) in integrated rack (4) and behind SINCGARS mounting base MT-6352/VRC (5).

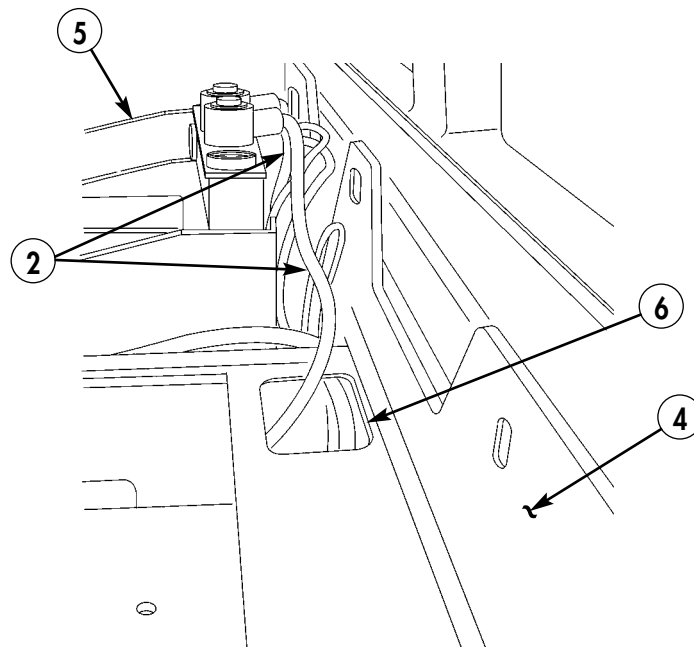


Figure 5-55.

- 20-5.** Connect speaker cables (2) to SINCGARS mounting base power distribution (7).

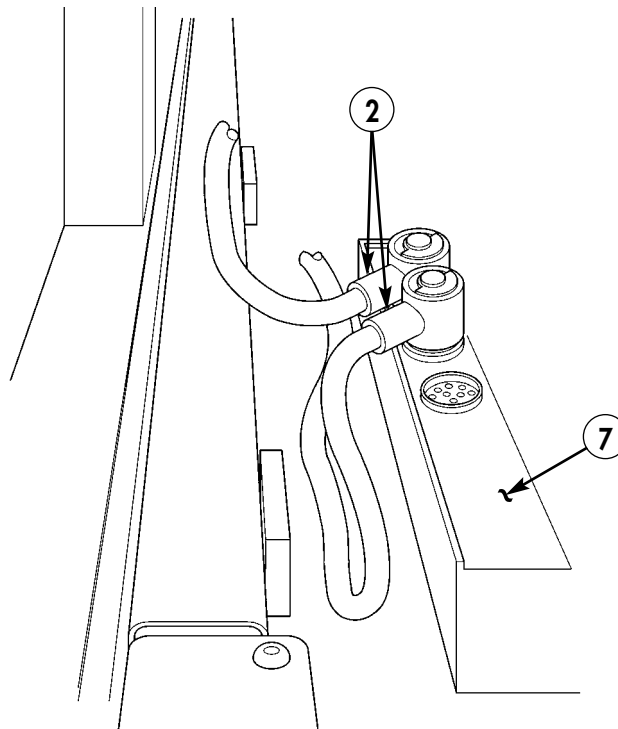


Figure 5-56.

20-6. Connect two speaker cables (10) to two loudspeakers (8). Route two speaker cables (10) under lower shelf (9).

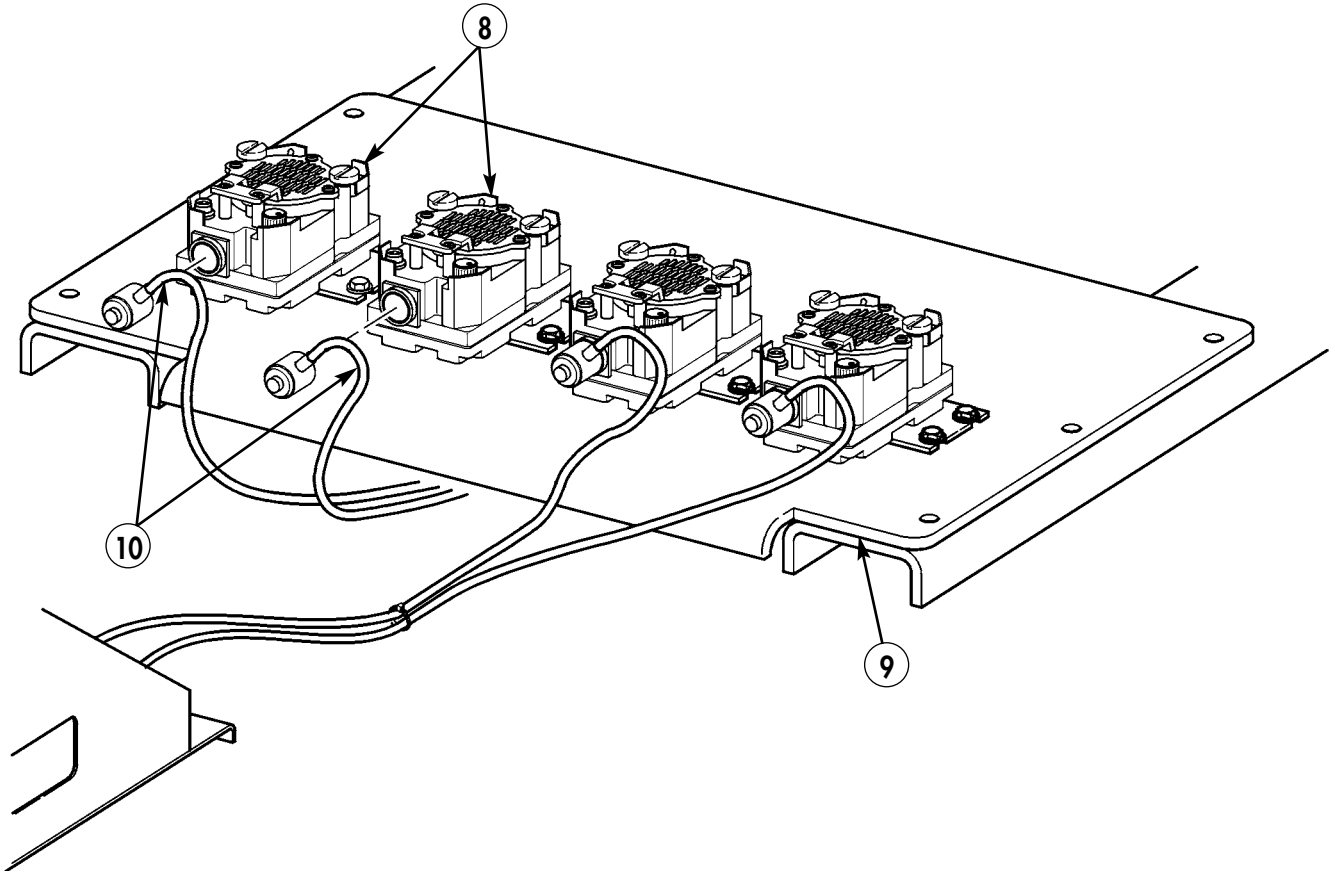


Figure 5-57.

20-7. Connect two speaker cables (10) to SINCGARS mounting base MT-6352/VRC (5).

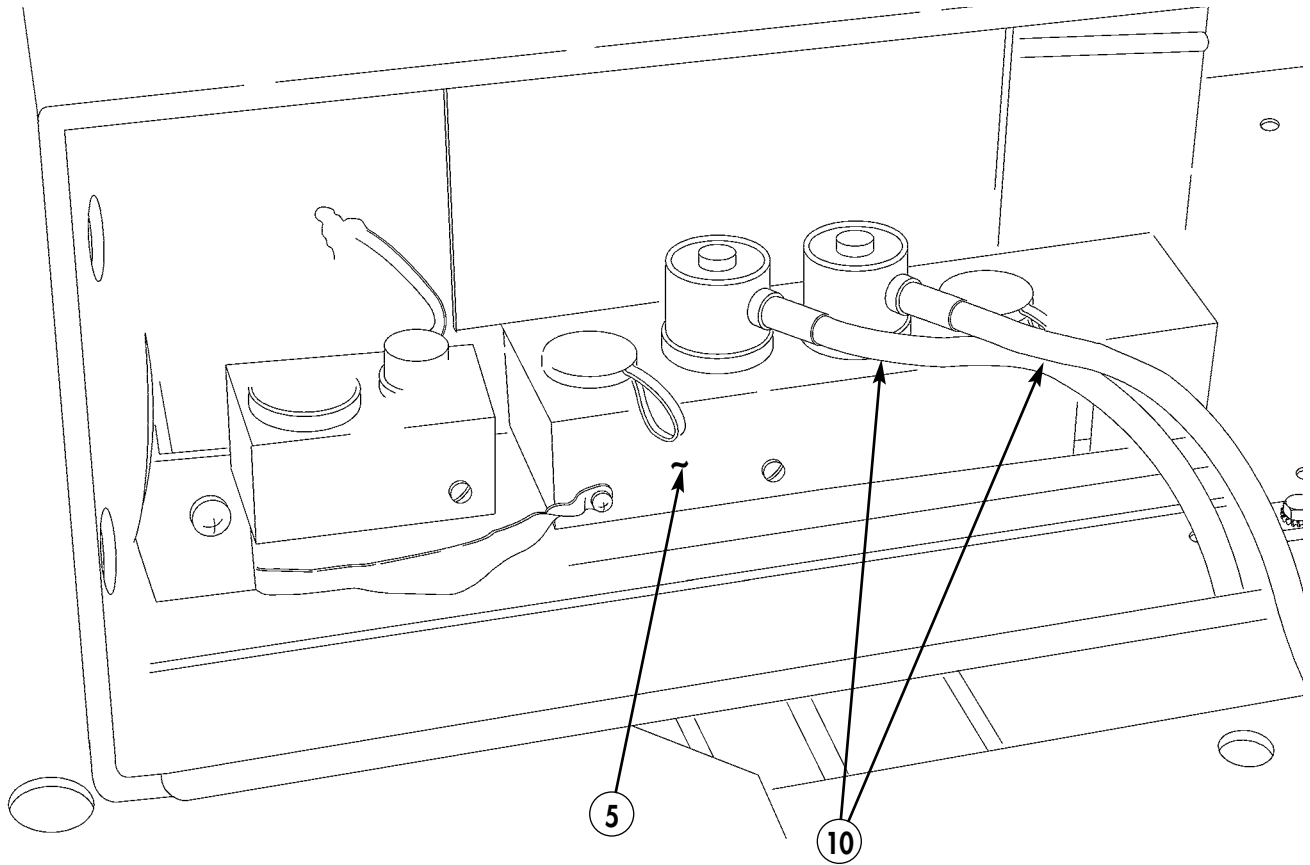


Figure 5-58.

Section XXI. ANTENNA CABLE 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.)

- 21-1. Attach antenna cable (15) to antenna base (17).
- 21-2. Route antenna cable (15) from antenna base (17) with loop clamp (8), existing nut (11), existing lockwasher (10), existing washer (9) and existing screw (7).
- 21-3. Route antenna cable (15) along taillight wiring harness with two existing loop clamps (16) and (14), self-tapping screws (6), and lockwashers (13).
- 21-4. Route antenna cable (15) along rear (19), intermediate (20), and front (21) cargo bed supports and along front wheelwell seam (2). Secure with two self-tapping screws (5), loop clamps (3), screw (4), loop clamp (3), nut (1), and existing self-tapping screw (6) and clamp (18).
- 21-5. Route antenna cable through right wheelwell/utility area and secure with existing clamp, grommet, retainer, screws, and plain-assembled nuts. (Refer to TM 9-2320-280-20.)
- 21-6. Coil excess antenna cable (15) and secure to inside of taillight closeout cover with tiedown strap (12).

- 1. NUT – MS35650-302 – QTY. 1
- 3. LOOP CLAMP – MS21333-69 – QTY. 3
- 4. SCREW – MS35224-65 – QTY. 1
- 5. SELF-TAPPING SCREW – 9421073 – QTY. 2
- 8. LOOP CLAMP – MS21333-98 – QTY. 1
- 12. TIEDOWN STRAP – MS3367-1-0 – QTY. A/R

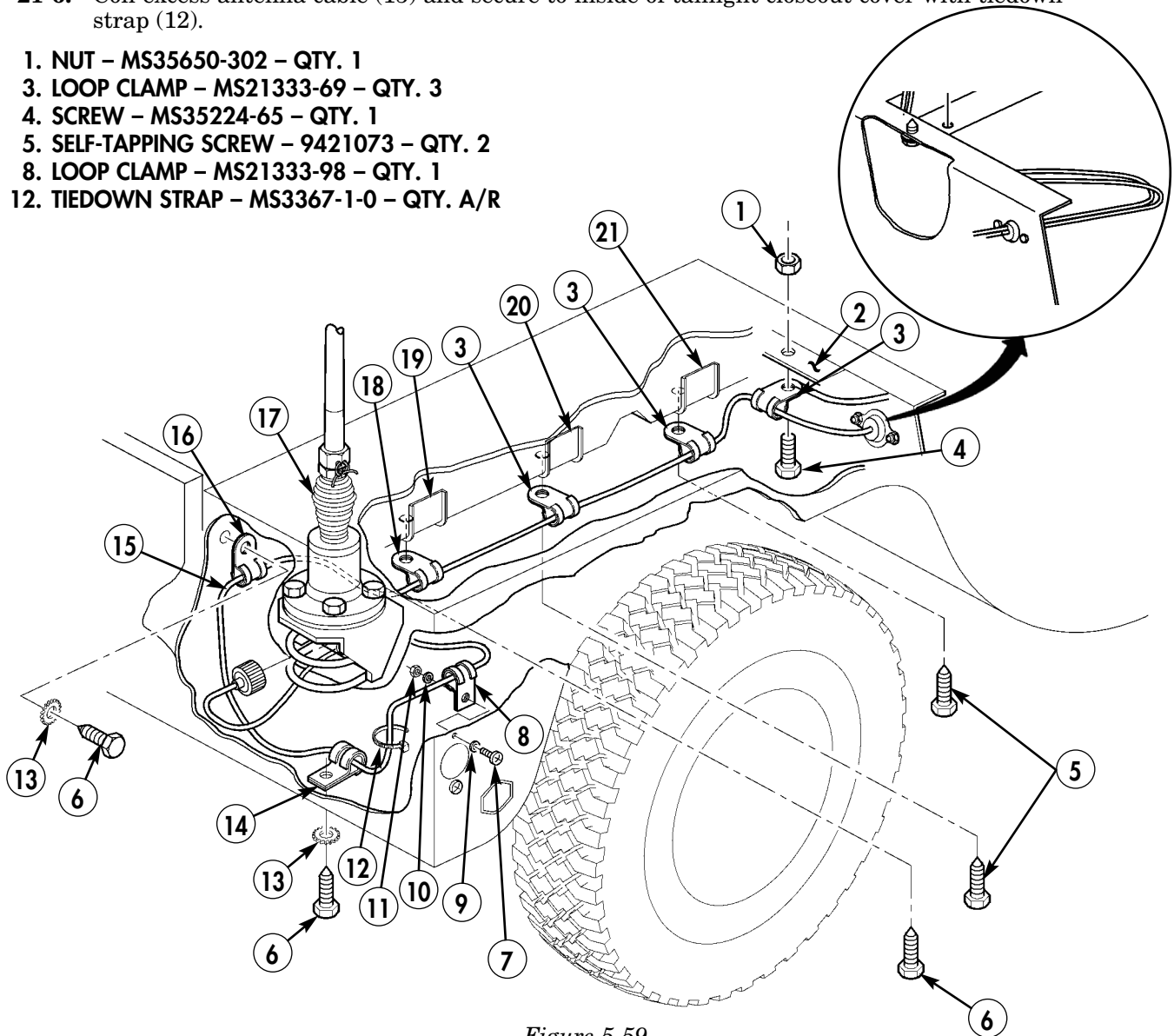
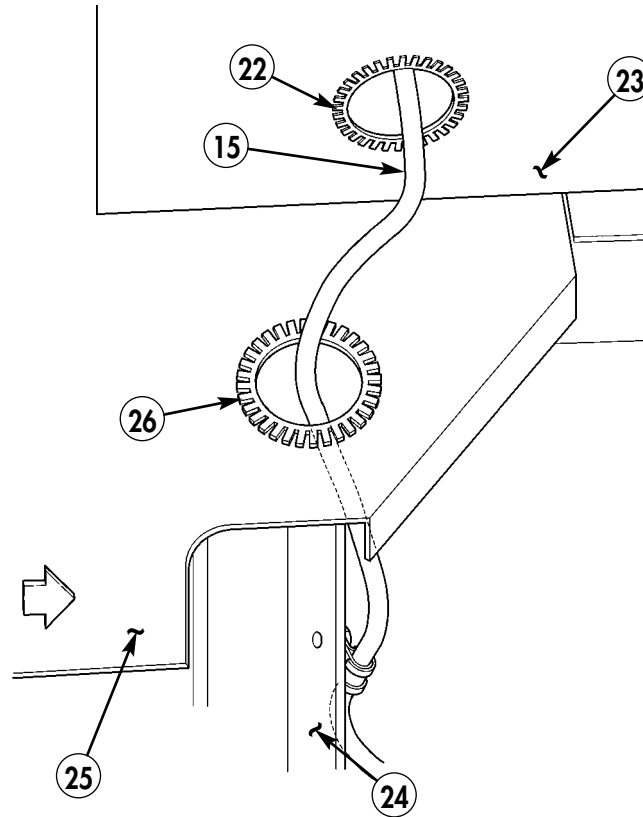


Figure 5-59.

21-7. Route antenna cable (15) along C-beam (24) through hole (26) in frame (25) and into lower hole (22) in multi-net rack (23).



15. CABLE, ANTENNA, RED – A3014032-14 – QTY. 1

Figure 5-60.

21-8. Route antenna cable (15) through upper hole (28) in multi-net rack (25), under EPLRS mount MT-6146/VSQ (27), to vicinity of FHMUX mount MT-6845/VRC.

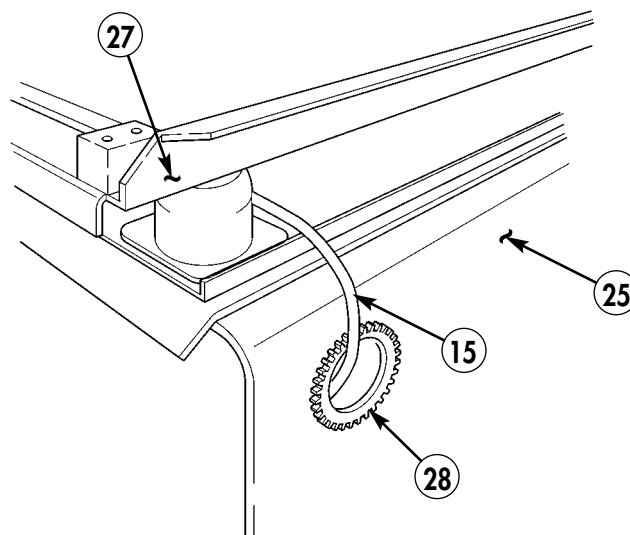


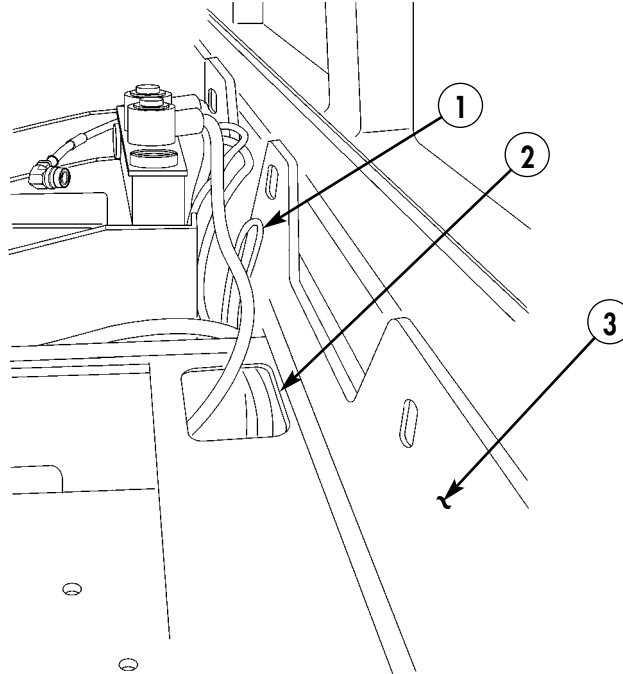
Figure 5-61.

Section XXII. FHMUX ANTENNA CABLES INSTALLATION

NOTE

Ensure rear SINGARS mounting base MT-6352/VRC has been installed. (Refer to chapter 5, section XVII.)

22-1. Route bundle with red antenna cable (1) through center access hole (2) in integrated rack (3).



1. CABLE, ANTENNA, RED – A3014032-14 – QTY. 1

Figure 5-62.

22-2. Route bundle with red antenna cable (1) under integrated rack (3) to multi-net rack (4) and FHMUX mount MT-6845/VRC (5).

22-3. Coil excess cable under FHMUX mount MT-6845/VRC (5).

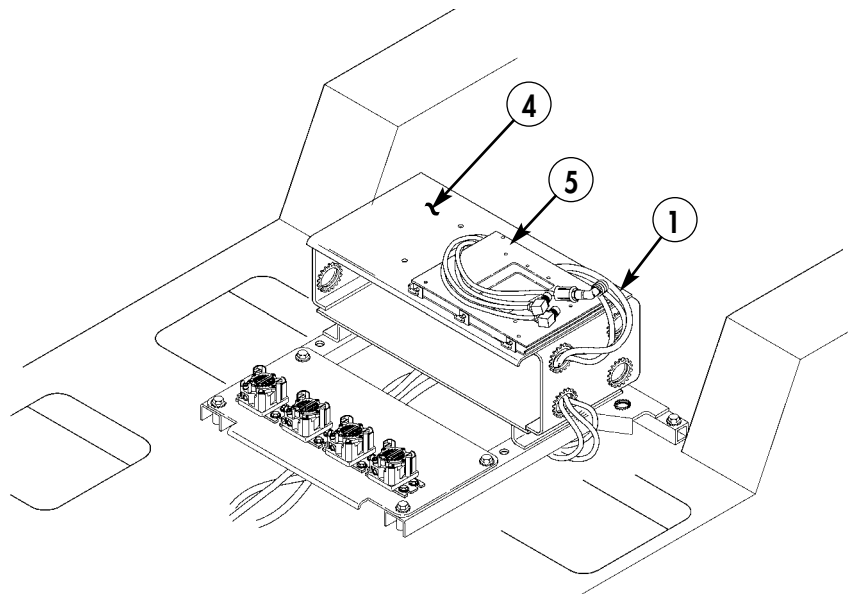
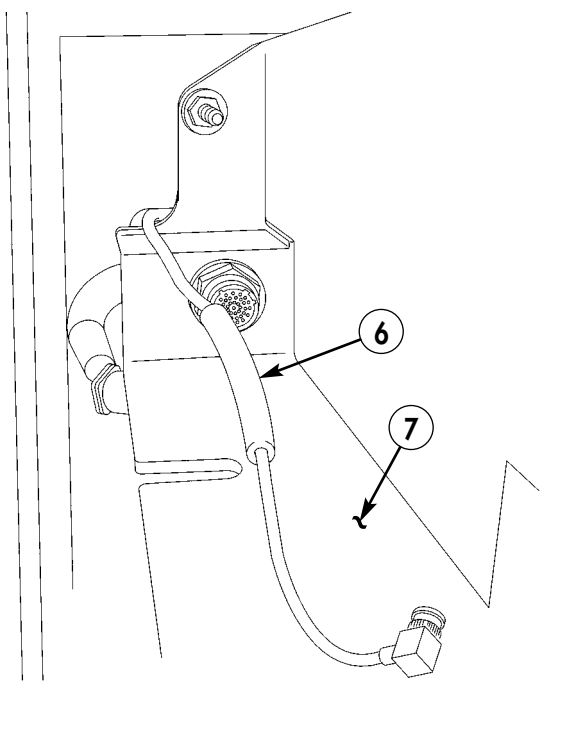


Figure 5-63.

NOTE

Perform steps 22-4 through 22-7 for SINCGARS model AN/VRC-92F only.

- 22-4.** Route white antenna cable (6) to MT-6353/VRC power amp assembly (7).
- 22-5.** Route white antenna cable (6) along floor and under multi-net rack (4).
- 22-6.** Route white antenna cable (6) to FHMUX mount MT-6845/VRC (5).
- 22-7.** Coil excess cable under FHMUX mount MT-6845/VRC (5).



6. CABLE, ANTENNA, WHITE - A3014032-14 - QTY. 1

Figure 5-64.

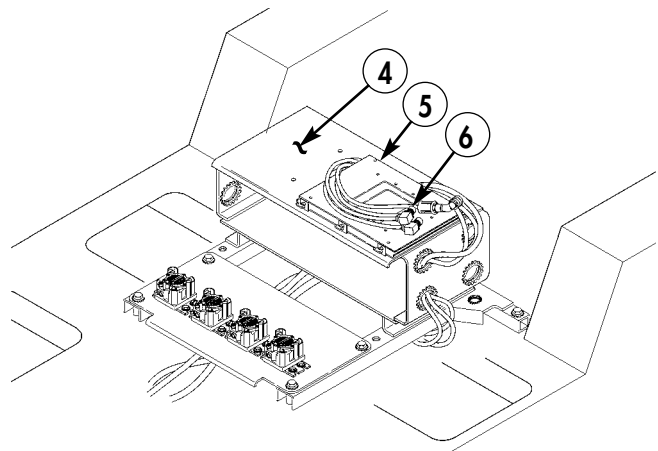


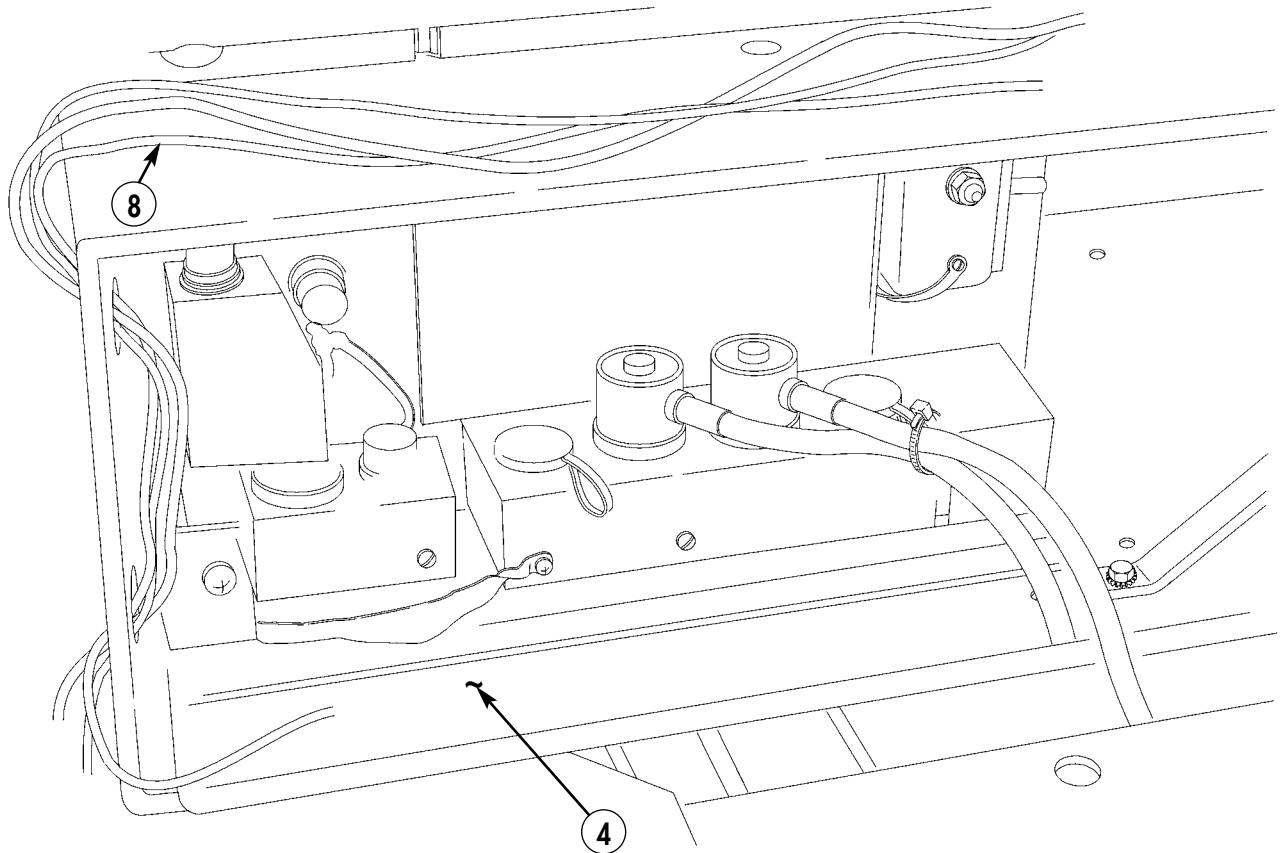
Figure 5-65.

NOTE

Route green antenna cable A3014032-13 similarly, if required.

22-8. Route bundle with orange antenna cable (8) from SINCGARS mounting base MT-6352/VRC.

22-9. Route bundle with orange antenna cable (8) through multi-net rack (4).



8. CABLE, ANTENNA, ORANGE - A3014032-13 - QTY. 1

Figure 5-66.

22-10. Route bundle with orange antenna cable (8) to FHMUX mount MT-6845/VRC (5).

22-11. Coil excess antenna cable (8) under FHMUX mount MT-6845/VRC (5).

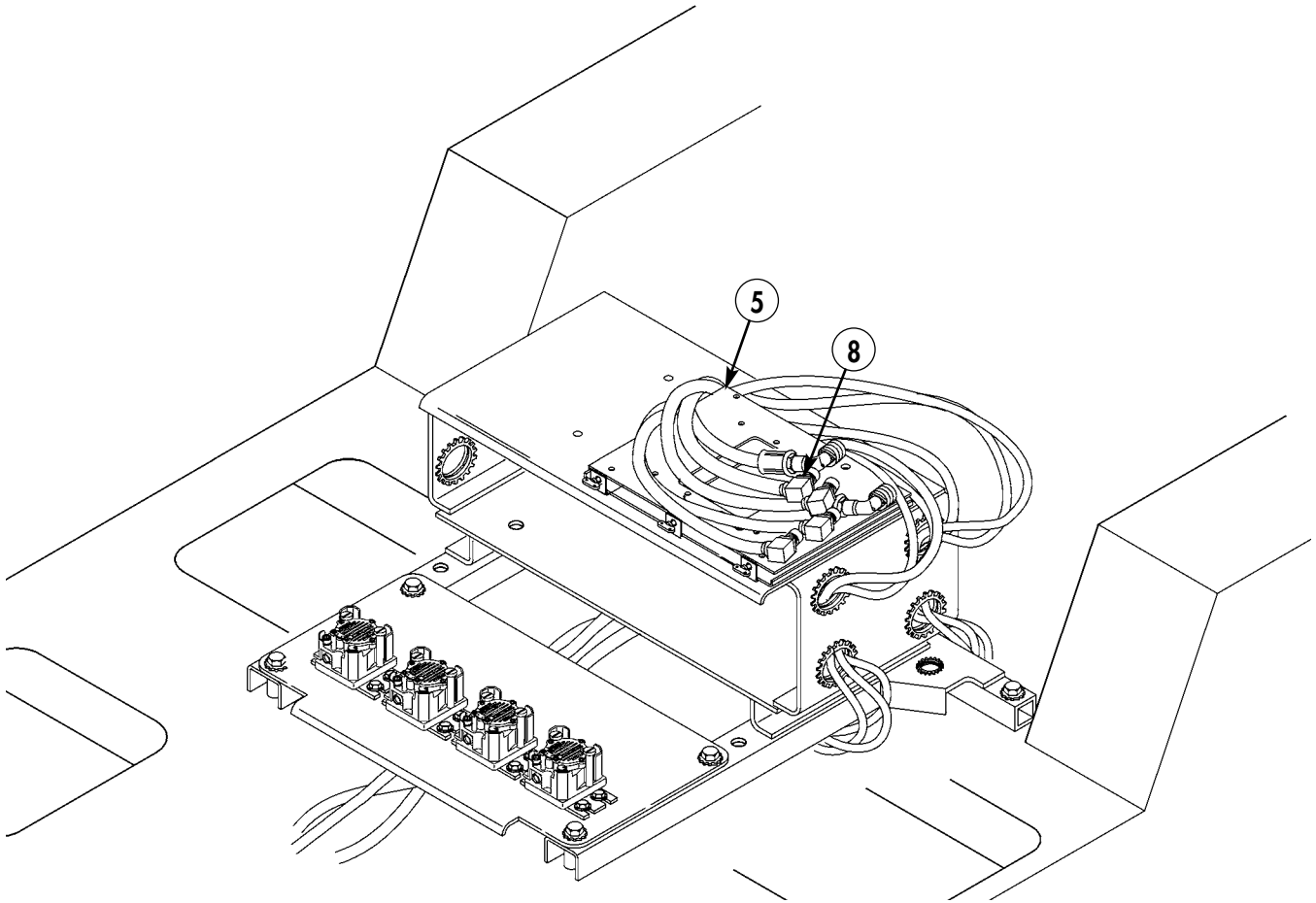


Figure 5-67.

Section XXIII. FHMUX AND SINGARS POWER CABLES INSTALLATION

NOTE

Ensure rear SINGARS mounting base MT-6352/VRC has been installed. (Refer to chapter 5, section XVII.)

23-1. Connect FHMUX power cable (1) to SINGARS mounting base MT-6352/VRC (2).

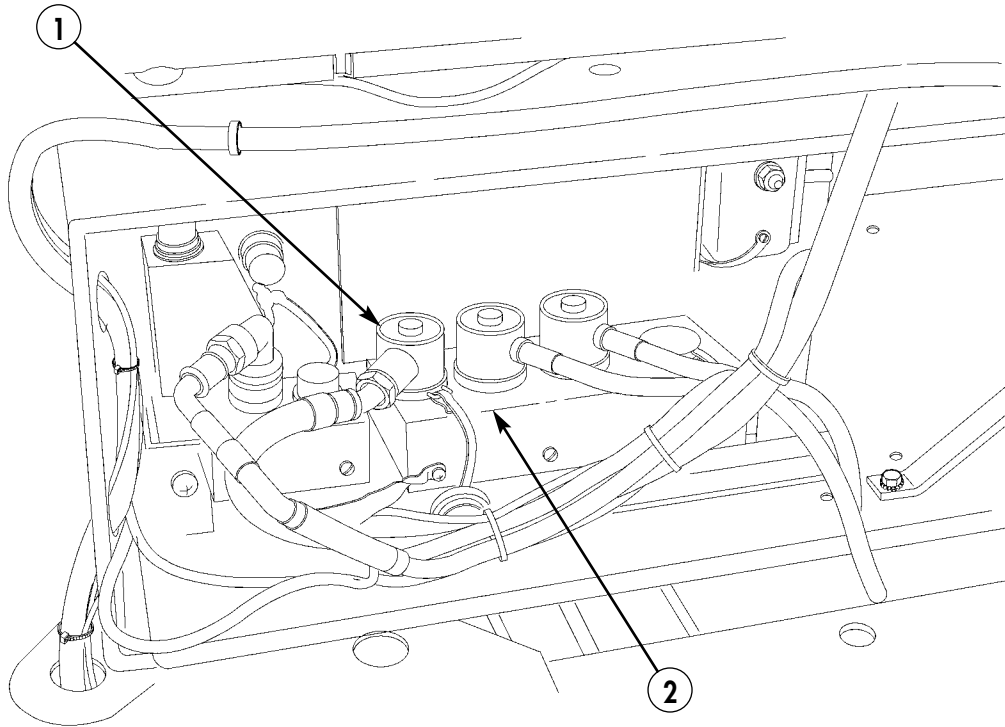


Figure 5-68.

NOTE

Previously installed cables for figure 5-69 have been removed for clarity.

- 23-2.** Route FHMUX power cable (4) to FHMUX mount MT-6845/VRC (3).
- 23-3.** Coil excess cable and stow under FHMUX mount MT-6845/VRC (3).

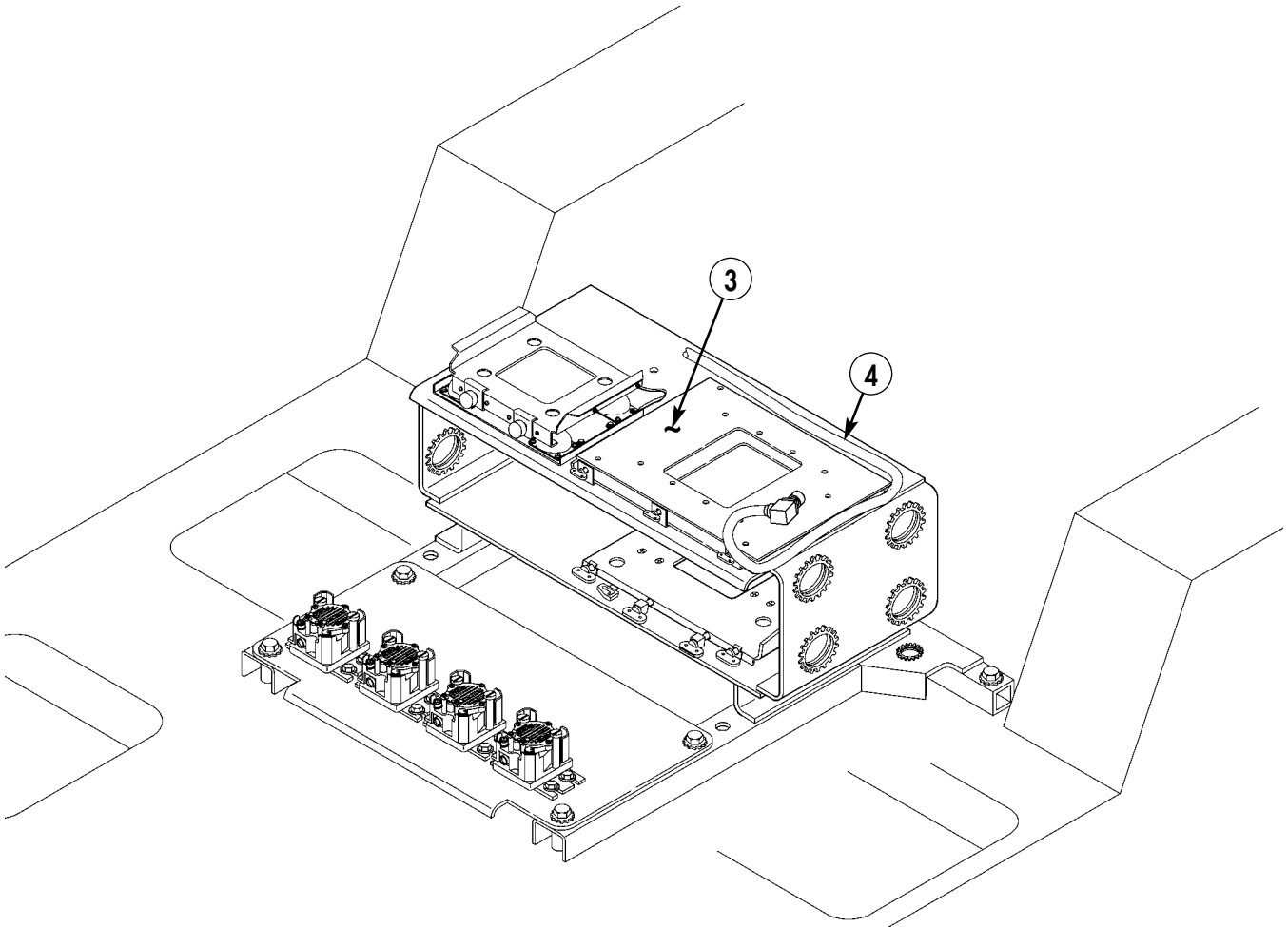


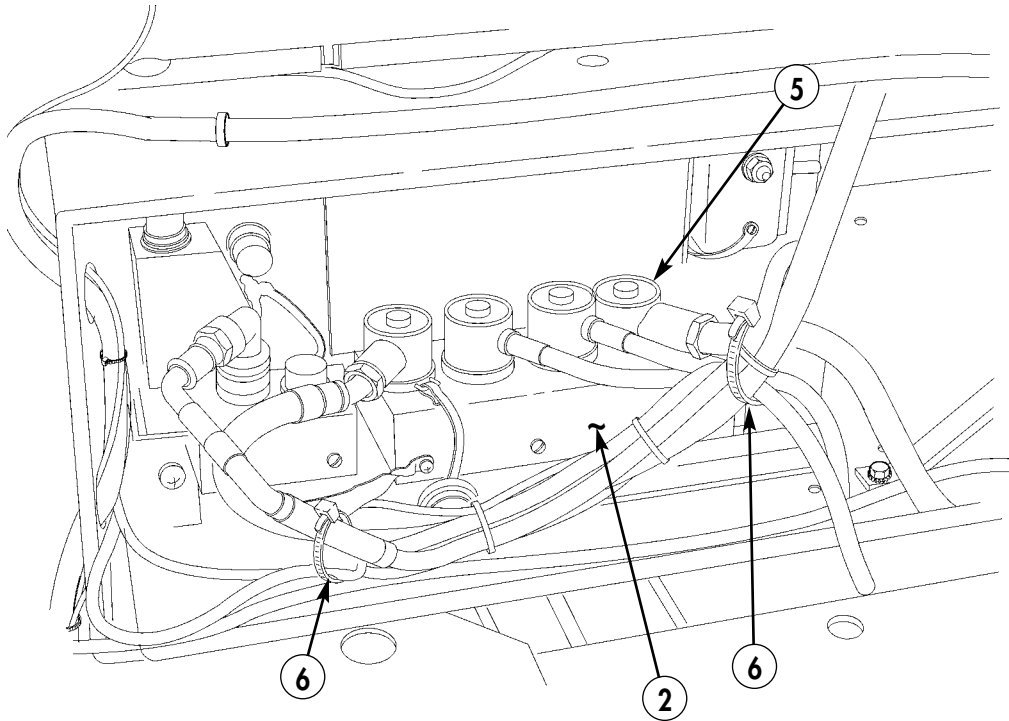
Figure 5-69.

23-4. Connect rear SINCGARS power cable (5) to SINCGARS mounting base MT-6352/VRC (2).

23-5. Route rear SINCGARS power cable (5) along B-beam (7) to cab enclosure panel.

23-6. Secure cables (5) together with two tiedown straps (6).

23-7. Coil excess cable (5) and store under multi-net rack. (Refer to figure 5-69.)



5. REAR SINCGARS POWER CABLE – A3014039-7 – QTY. 1

6. TIEDOWN STRAP – MS3367-1-0 – QTY. 2

Figure 5-70.

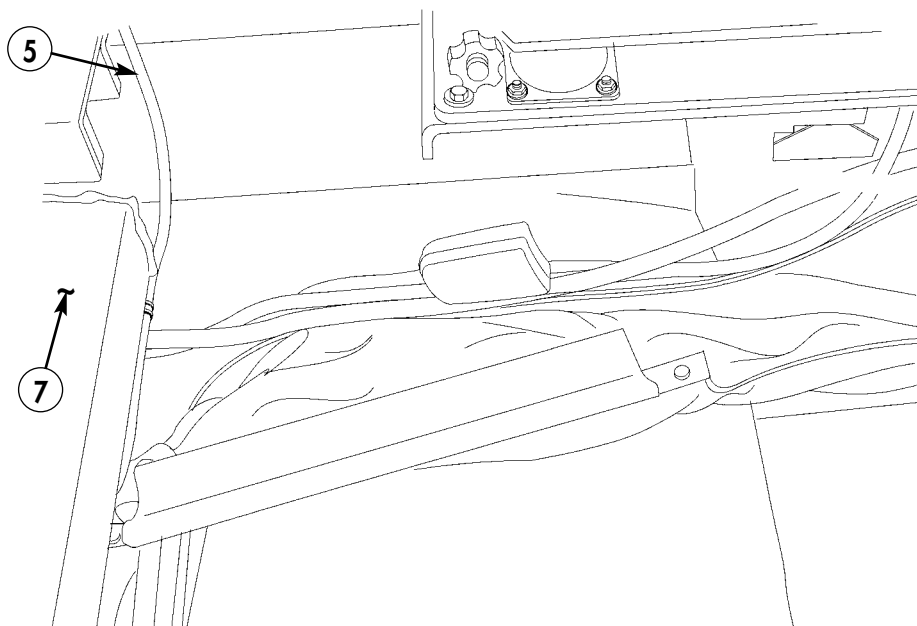


Figure 5-71.

NOTE

Perform steps 23-8 through 23-10 for SINCGARS model AN/VRC-92F only.

- 23-8.** Route auxiliary mount power cable (12) and control cable (11) through center access hole (9) in integrated rack (10).
- 23-9.** Connect auxiliary mount power cable (12) to connector on W1J1 cable (8).

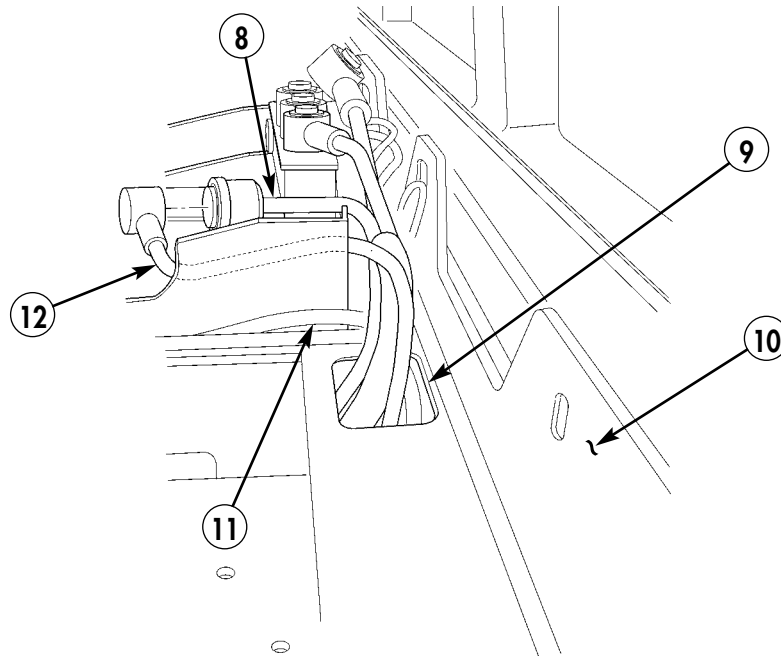


Figure 5-72.

- 23-10.** Route control cable (11) to SINCGARS mounting base MT-6352/VRC (13) on integrated rack (10).

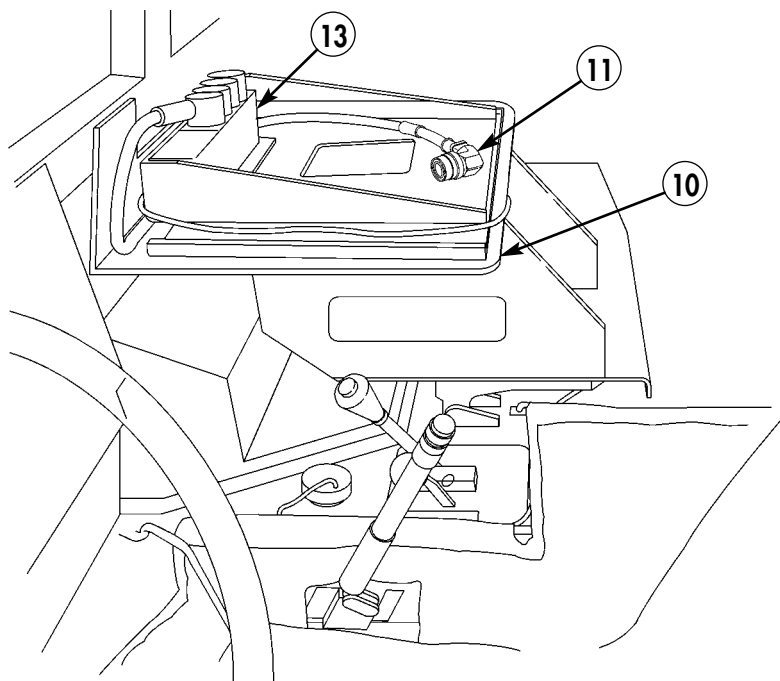


Figure 5-73.

23-11. Route front SINCGARS power cable (14) through center access hole (9) of integrated rack (10).

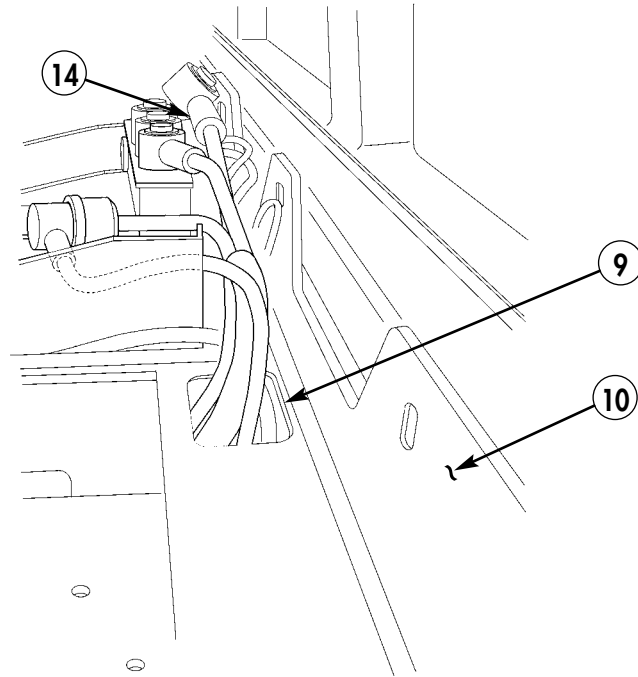


Figure 5-74.

23-12. Connect front SINCGARS power cable (14) to SINCGARS mounting base MT-6352/VRC (13).

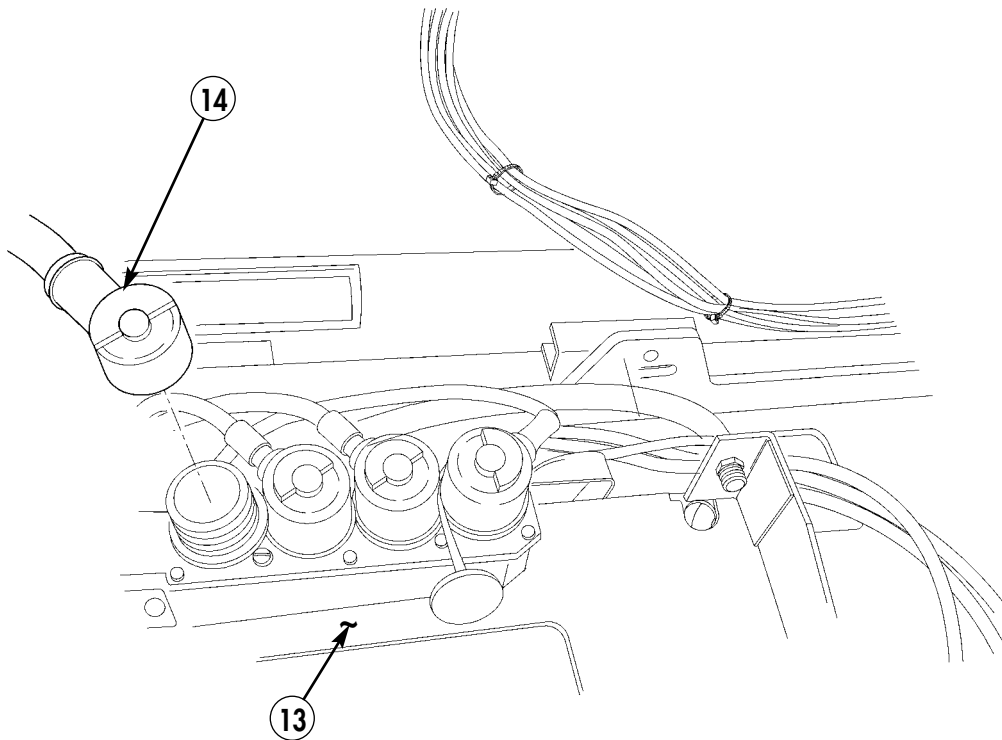
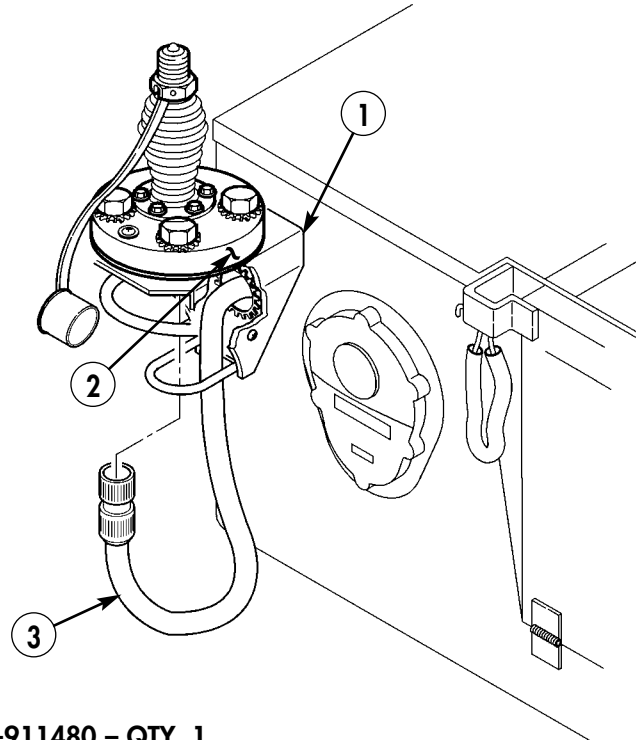


Figure 5-75.

Section XXIV. EPLRS CABLES INSTALLATION

24-1. Attach antenna cable (3) to antenna (2) and route through hole in bracket (1).

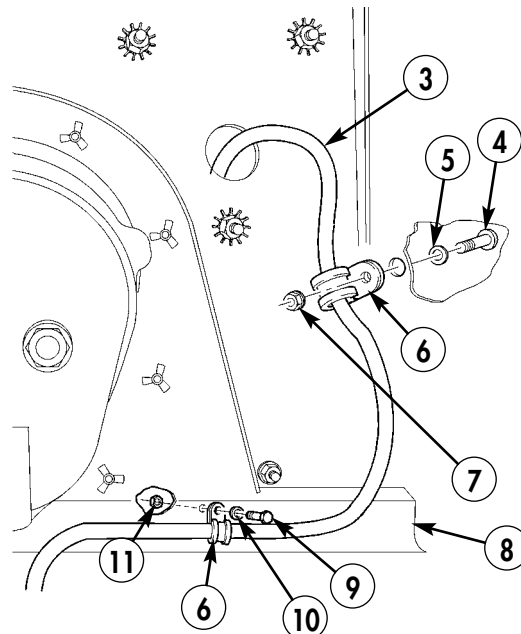


3. EPLRS ANTENNA CABLE – SM-C-911480 – QTY. 1

Figure 5-76.

24-2. Route antenna cable (3) along left inside of vehicle with loop clamp (6), existing screw (4), washer (5), and captive nut (7).

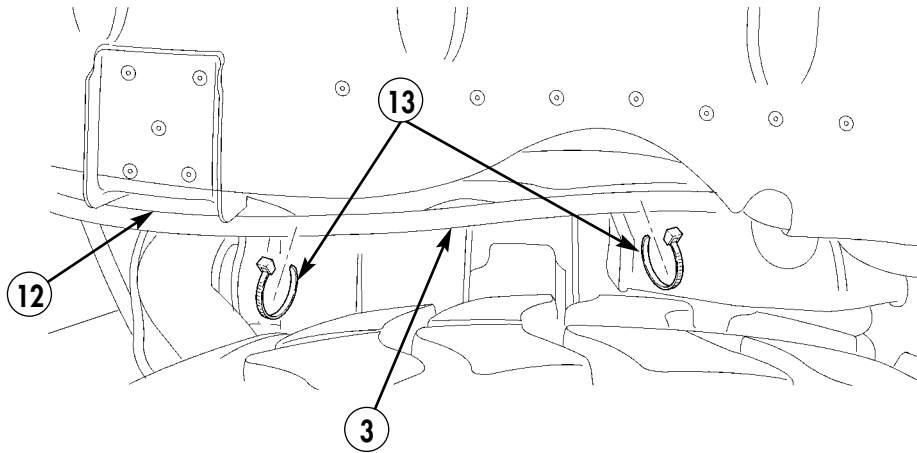
24-3. Route antenna cable (3) along crossmember (8) with capscrew (9), washer (10), loop clamp (6), and nut (11).



- 6. LOOP CLAMP – MS21333-102 – QTY. 2
- 9. CAPSCREW – B1821BH025C075N – QTY. 1
- 10. WASHER – 2436161 – QTY. 2
- 11. NUT – MS51943-4C – QTY. 1

Figure 5-77.

24-4. Route antenna cable (3) along outside rear of vehicle. Secure antenna cable (3) to existing harness (12) with tiedown straps (13) as required.



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

Figure 5-78.

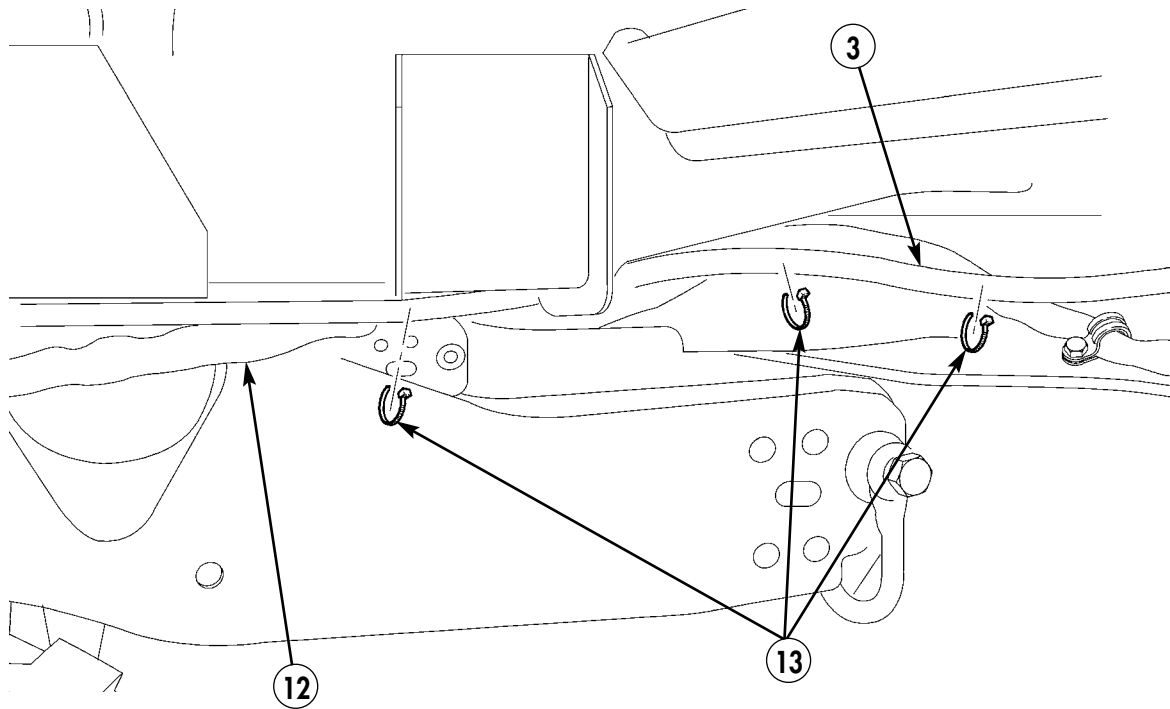
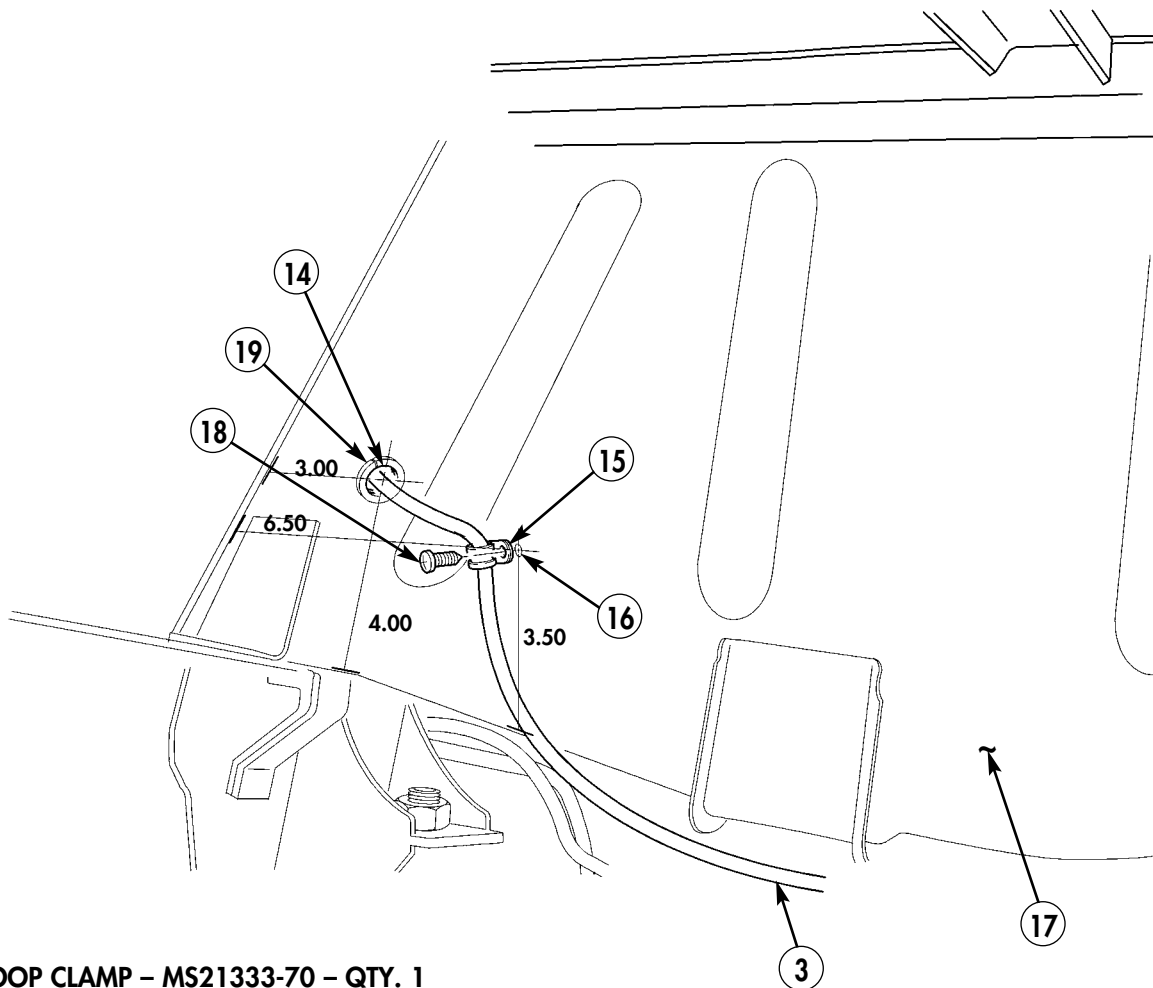


Figure 5-79.

- 24-5.** Route antenna cable (3) along outside of left wheelhouse (17).
- 24-6.** Locate, mark, and drill 0.147-in. diameter hole (16) in outer wall of left wheelhouse (17).
- 24-7.** Locate, mark, and drill 1.00-in. diameter hole (14) in outer wall of left wheelhouse (17).
- 24-8.** Install grommet (19) in hole (14).
- 24-9.** Route antenna cable (3) through hole (14).
- 24-10.** Secure antenna cable (3) to left wheelhouse (17) with loop clamp (15) and self-tapping screw (18).



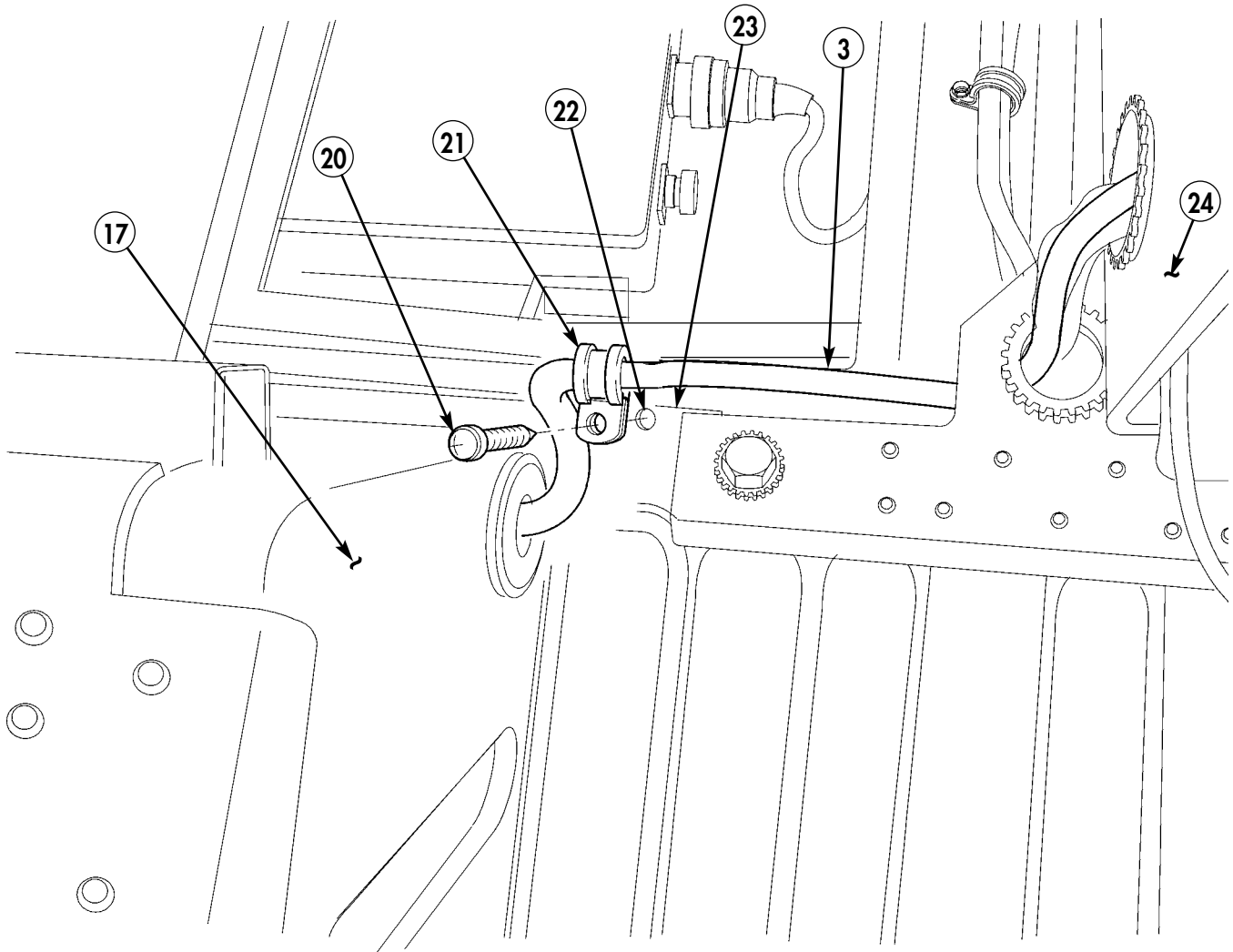
- 15. LOOP CLAMP - MS21333-70 - QTY. 1**
18. SELF-TAPPING SCREW - 9421073 - QTY. 1
19. GROMMET - MS35489-12 - QTY. 1

Figure 5-80.

24-11. Locate, mark, and drill 0.147-in. diameter hole (22) in lip of cargo floor (23).

24-12. Route left side antenna cable (3) through left wheelhouse (17) to multi-net rack (24).

24-13. Secure antenna cable (3) to cargo floor (23) with loop clamp (21) and self-tapping screw (20).



20. SELF-TAPPING SCREW - 9421073 - QTY. 1

21. LOOP CLAMP - MS21333-70 - QTY. 1

Figure 5-81.

24-14. Bundle antenna cable (3) with FHMUX cabling (25) and route through multi-net rack (24).

24-15. Route antenna cable (3) to top of multi-net rack (24).

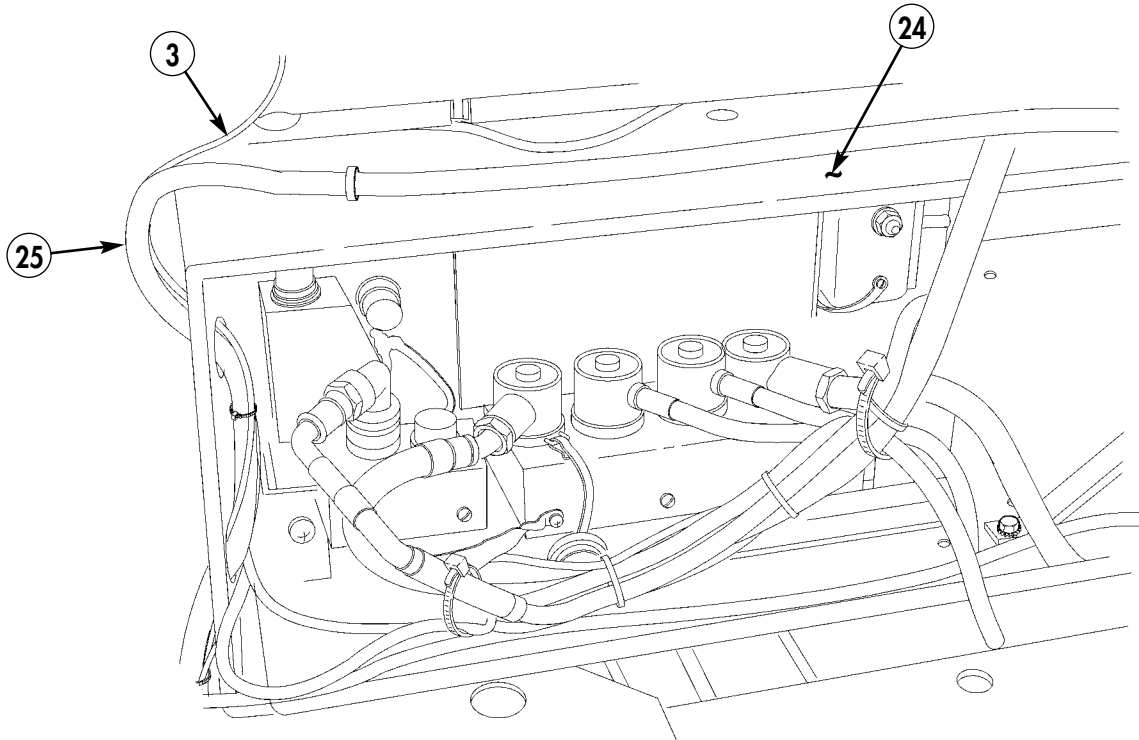


Figure 5-82.

24-16. Route antenna cable (3) to vicinity of EPLRS mount MT-6146/VSQ (26).

24-17. Coil and stow excess cable (3) under EPLRS mount MT-6146/VSQ (26).

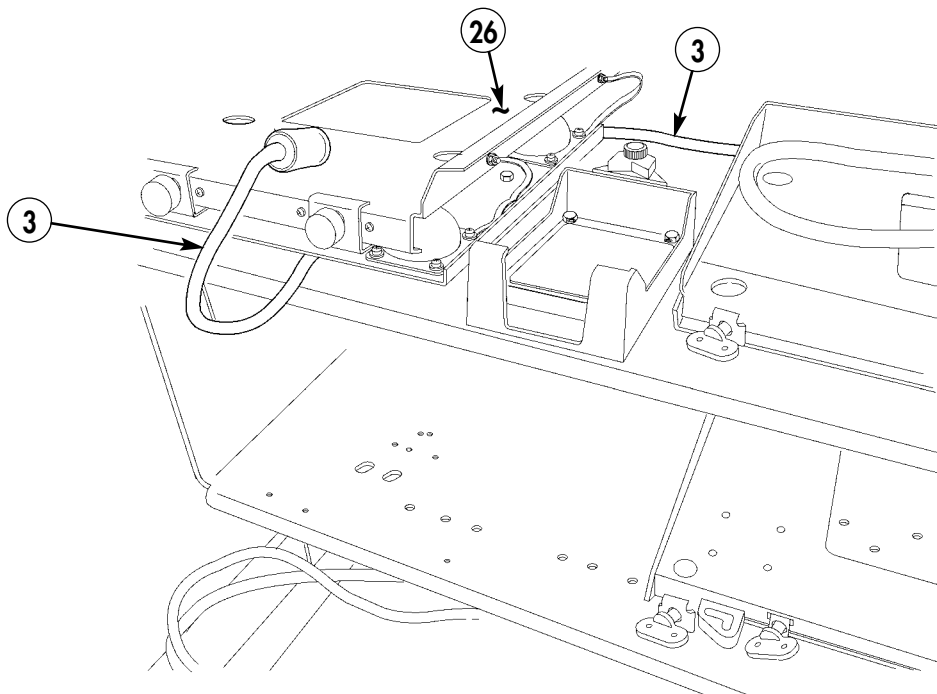
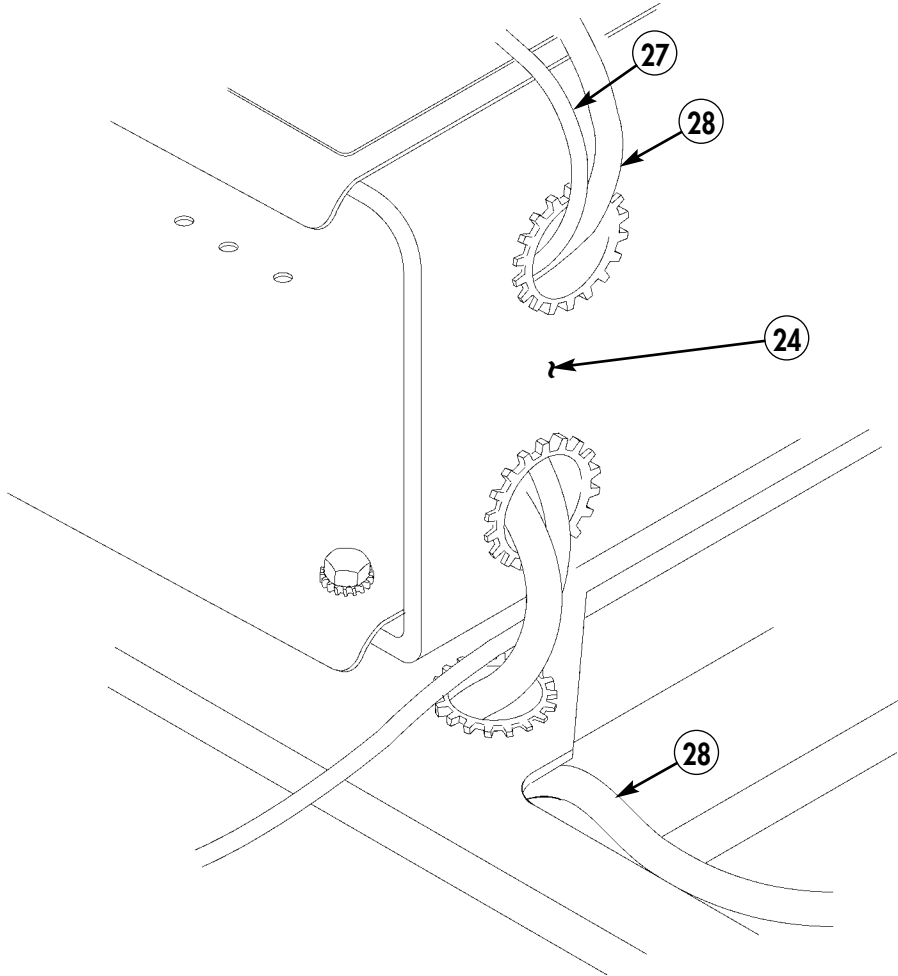


Figure 5-83.

- 24-18. Route INC-EPUU (27) and power cable (28) from mount unit down through side of multi-net rack (24).
- 24-19. Route power cable (28) under tunnel insulation to terminal board.



- 27. INC-EPUU CABLE – A3279383-2 – QTY. 1
- 28. EPLRS POWER CABLE – A3004939 – QTY. 1

Figure 5-84.

NOTE

Previously installed cables for figure 5-85 have been removed for clarity.

- 24-20.** Route INC-EPUU cable (27) through center access hole (30).
- 24-21.** Route INC-EPUU cable (27) to SINGARS mounting base MT-6352/VRC (29).
- 24-22.** Coil excess INC-EPUU cable (27) under integrated rack (31).

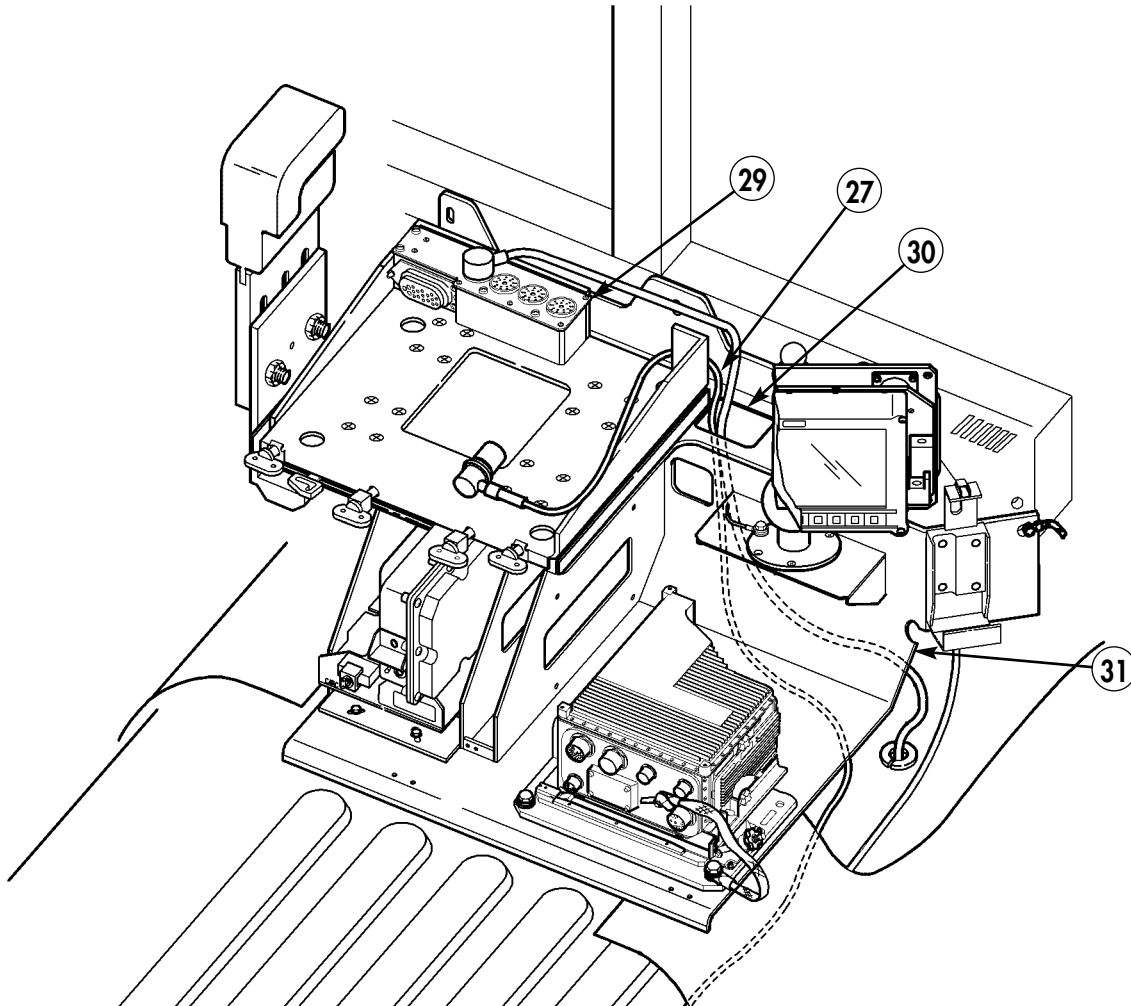
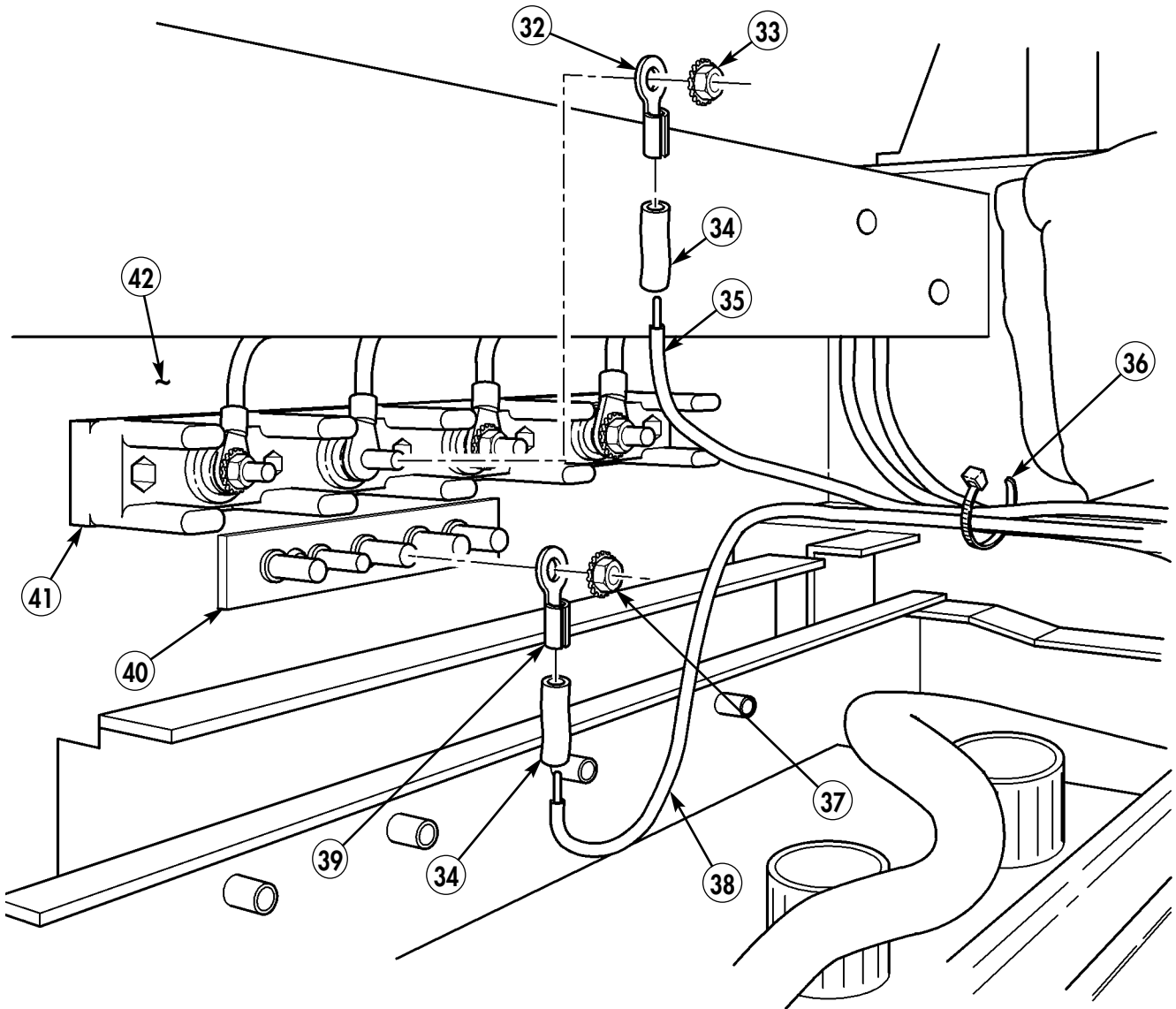


Figure 5-85.

- 24-23. Attach heat shrink tubing (34) and two terminal lugs (32) and (39) to power cable negative lead (38) and power cable positive lead (35). (Refer to TM 9-2320-280-20 for terminal connector repair.)
- 24-24. Connect power cable positive lead (35) to 24-volt terminal board (41), located on cab enclosure panel (42), with existing nut (33).
- 24-25. Connect power cable negative lead (38) to ground strap (40), located on cab enclosure panel (42), with existing nut (37). Secure leads (35) and (38) together with tiedown strap (36).



- 32. TERMINAL LUG - 7728780 - QTY. 1
- 34. SHRINK TUBING - MS23053/4-302-0 - QTY. A/R
- 36. TIEDOWN STRAP - MS3367-1-0 - QTY. A/R
- 39. TERMINAL LUG - 7728777 - QTY. 1

Figure 5-86.

Section XXV. 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.

- 25-1.** Remove six bolts (3), twelve washers (4), six nuts (7), and two hood brackets (6) from hood (1).
25-2. Remove bracket (9) from top side of hood (1).
25-3. Drill out five rivets (8) from hood (1), rubber hood seal (5) and retaining strip (2).
25-4. Remove retaining strip (2) from hood (1).
25-5. Cut retaining strip (2). Discard cut portion of retaining strip (2).
25-6. Cut rubber hood seal (5). Discard cut portion of rubber hood seal (5).

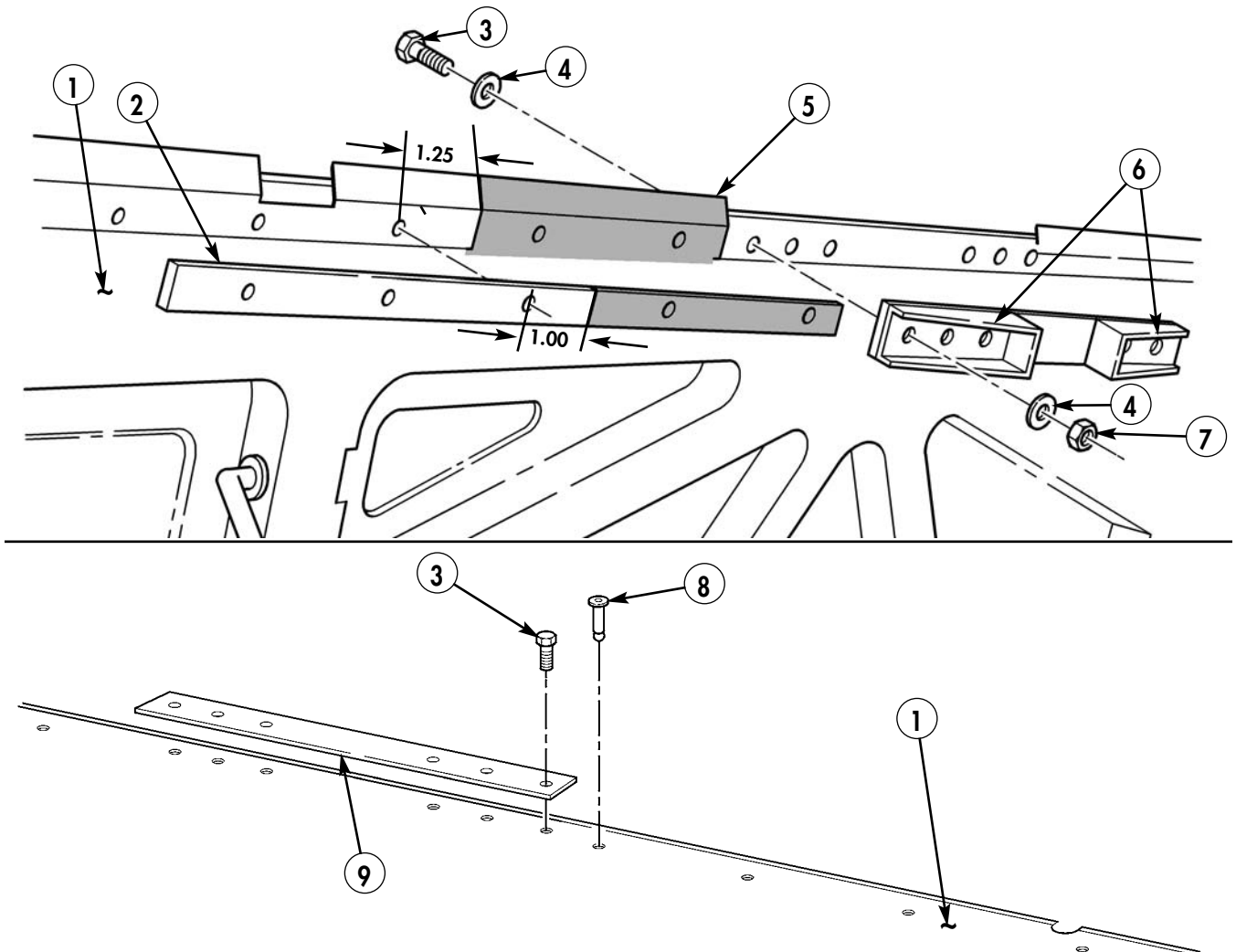


Figure 5-87.

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.

25-7. Locate, mark, and cut area (10) on hood (1).

25-8. Reinstall two hood brackets (6) and bracket (9) on top side of hood (1) with six bolts (3), twelve washers (4), and six nuts (7) on hood (1).

25-9. Reinstall retaining strip (2) with three rivets (8).

NOTE

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

25-10. 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.

25-11. Apply a thin coat of adhesive to hood cable guide (11) and matching area on hood (1), and install cable guide (11) on hood (1).

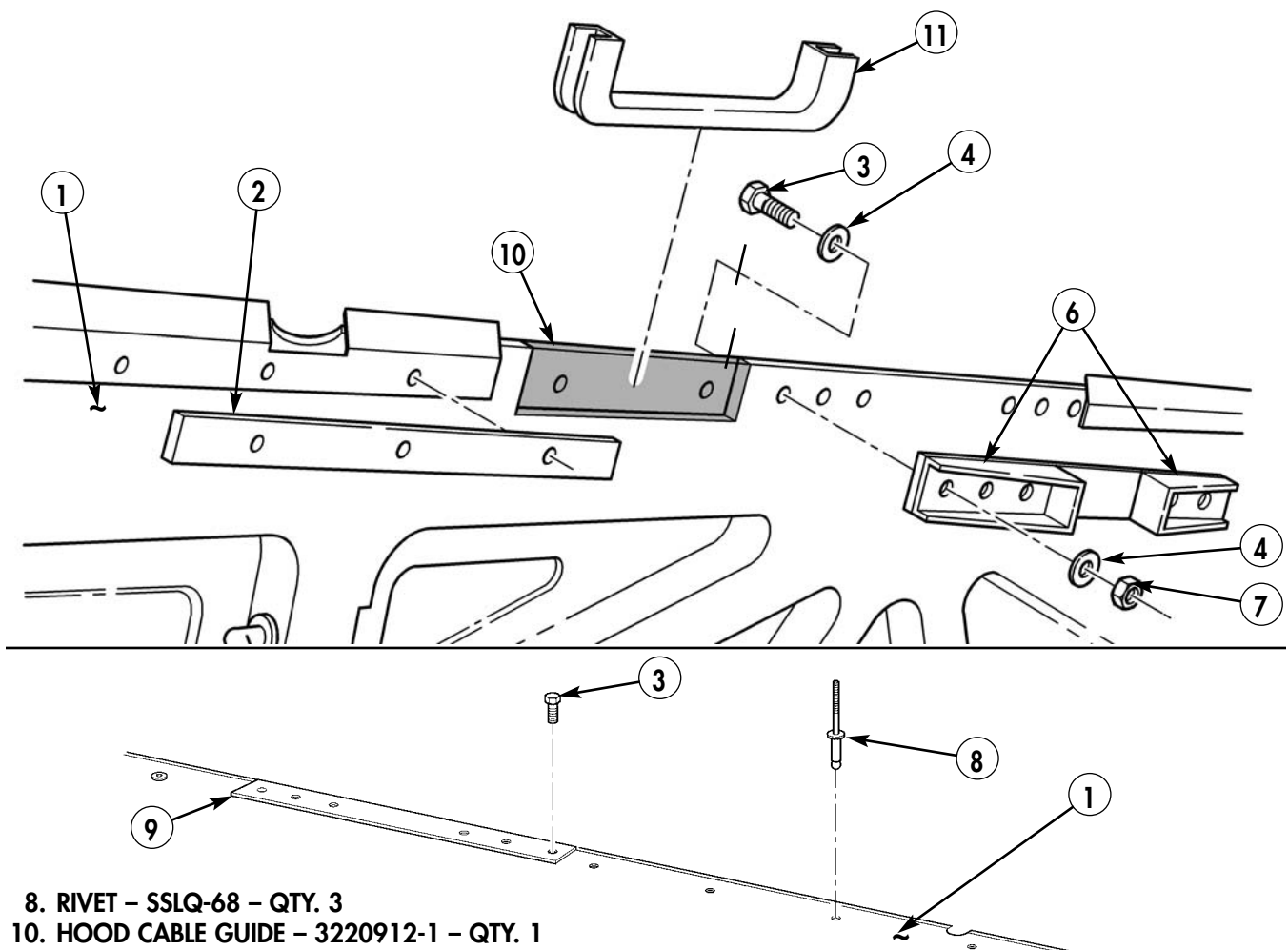
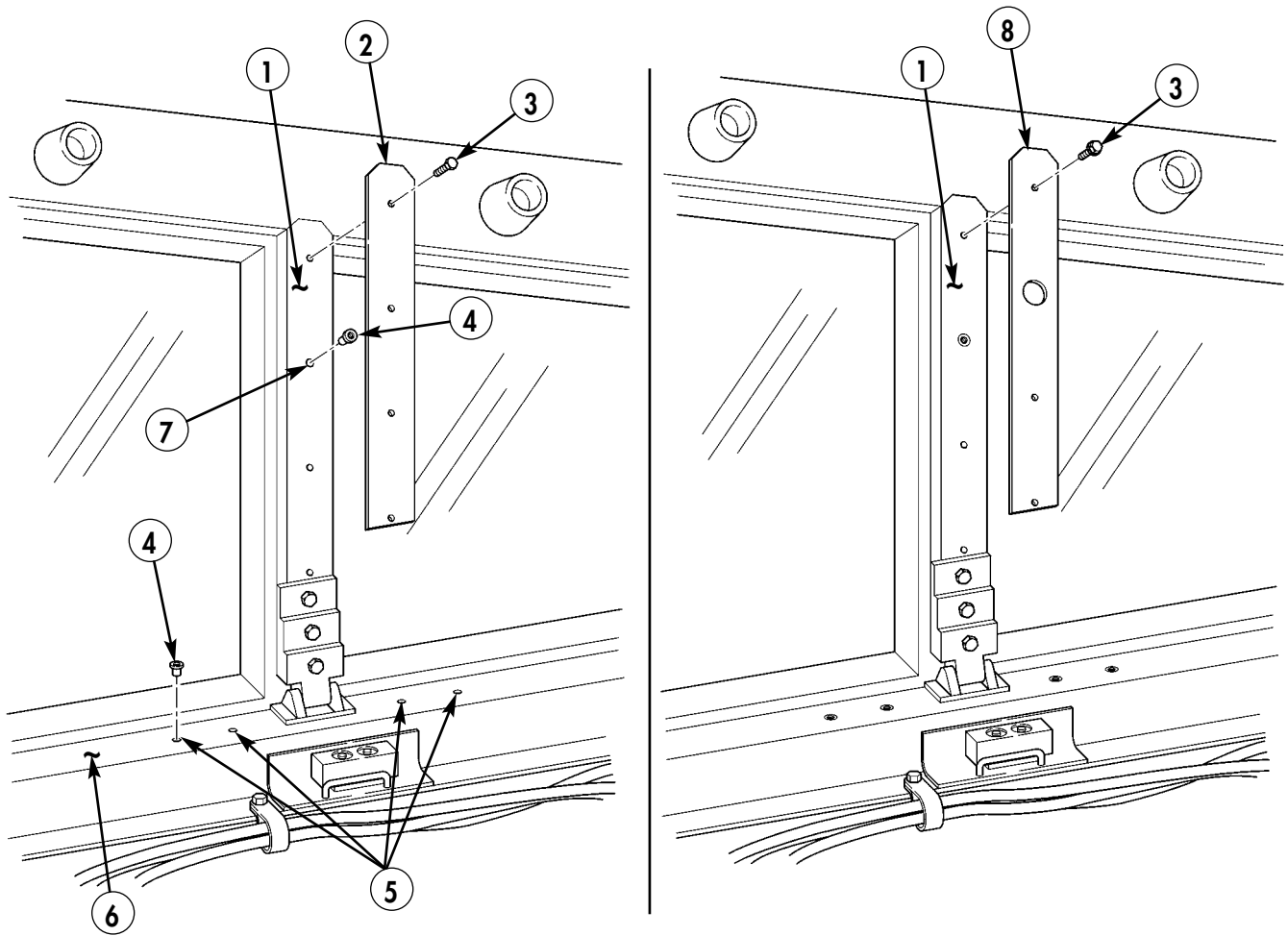


Figure 5-88.

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

- 26-1.** Remove four existing screws (3) and existing center windshield retainer (2) from center windshield frame (1). Retain three screws (3).
- 26-2.** Using PTM mount assembly as template, locate, mark, and drill four 0.391-in. dia. holes (5) on A-frame pillar flange (6).
- 26-3.** Enlarge hole (7) to 0.391-in. dia. on center windshield frame (1).
- 26-4.** Install one rivet nut (4) on center windshield frame (1) and four rivet nuts (4) on A-frame pillar flange (6).
- 26-5.** 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 5-89.

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

- 27-1.** Remove two screws (2), nuts (4), and clamps (1) from A-frame pillar flange (5). Retain hardware.
- 27-2.** Locate and mark cutout area (3) on A-frame pillar flange (5).
- 27-3.** Cut out area (3) of A-frame pillar flange (5). Use fine mill file or crocus cloth to remove all burrs and sharp edges.

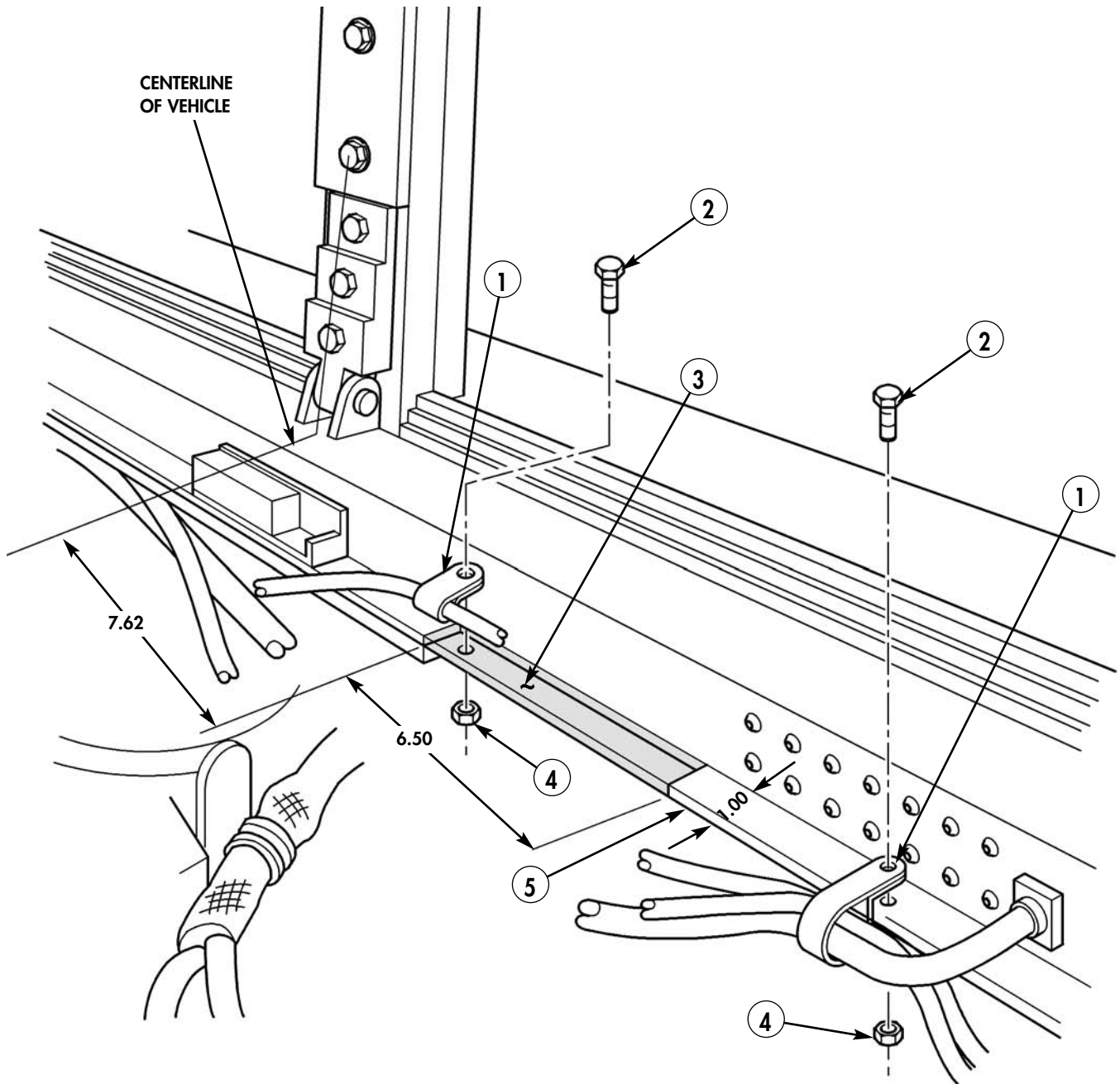


Figure 5-90.

- 27-4. Using A-frame cable guide (13) as template, mark four mounting hole locations (11), (8), and (6).
- 27-5. Drill two 0.391-in. holes (8) on vertical wall (7).
- 27-6. Drill two 0.277-in. holes (6) and (11) on A-frame pillar flange (5).
- 27-7. Install two rivet nuts (12) on vertical wall (7).
- 27-8. Apply thin coat of adhesive to A-frame cable guide (13) and matching areas on A-frame pillar flange (5) and vertical wall (7).
- 27-9. 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).
- 27-10. Locate, mark, and drill 0.221-in. hole (15) on center of A-frame pillar flange (5).
- 27-11. Reinstall two cable clamps (1) on A-frame pillar flange (5) with existing screws (2) and nuts (4).

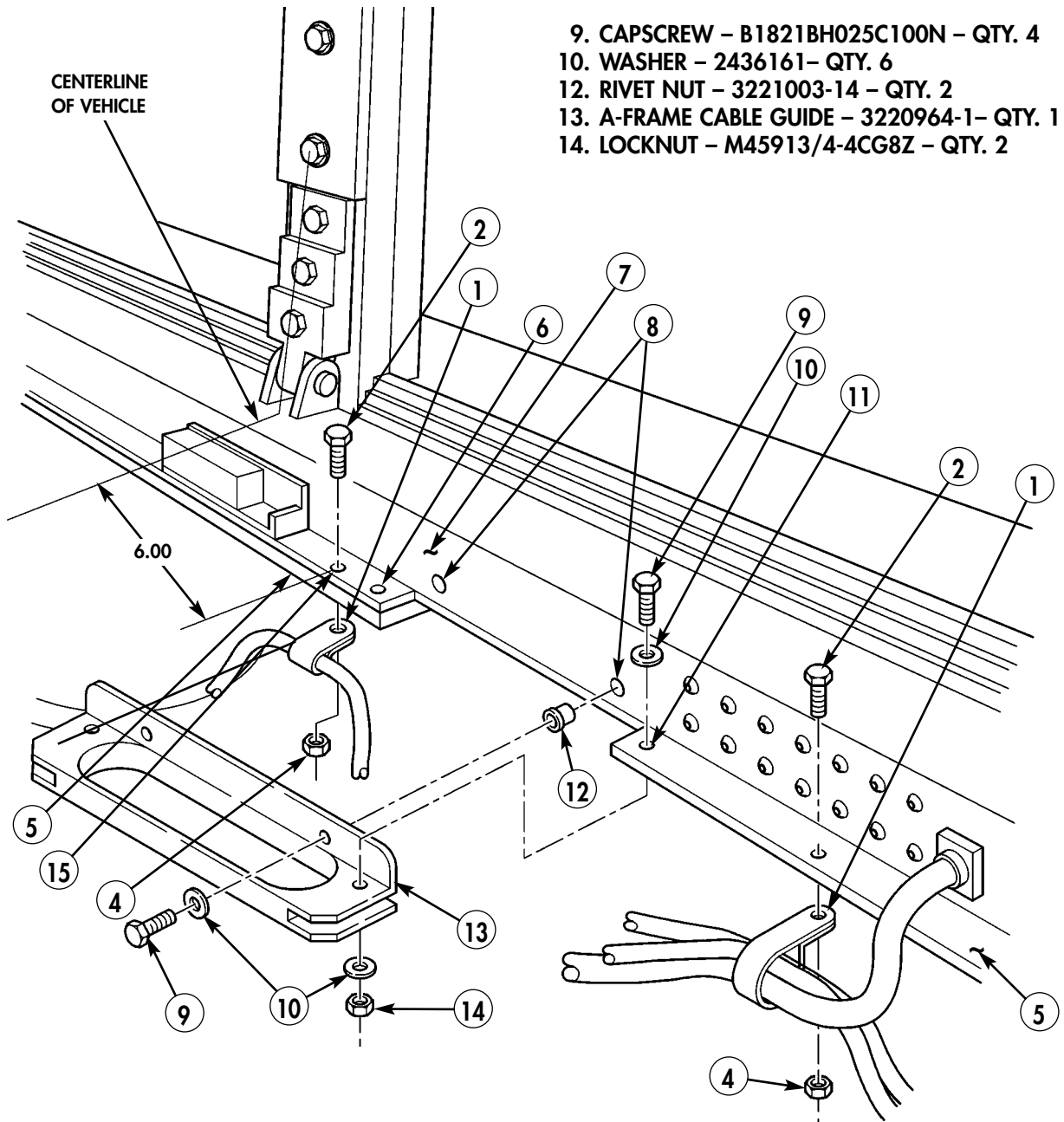
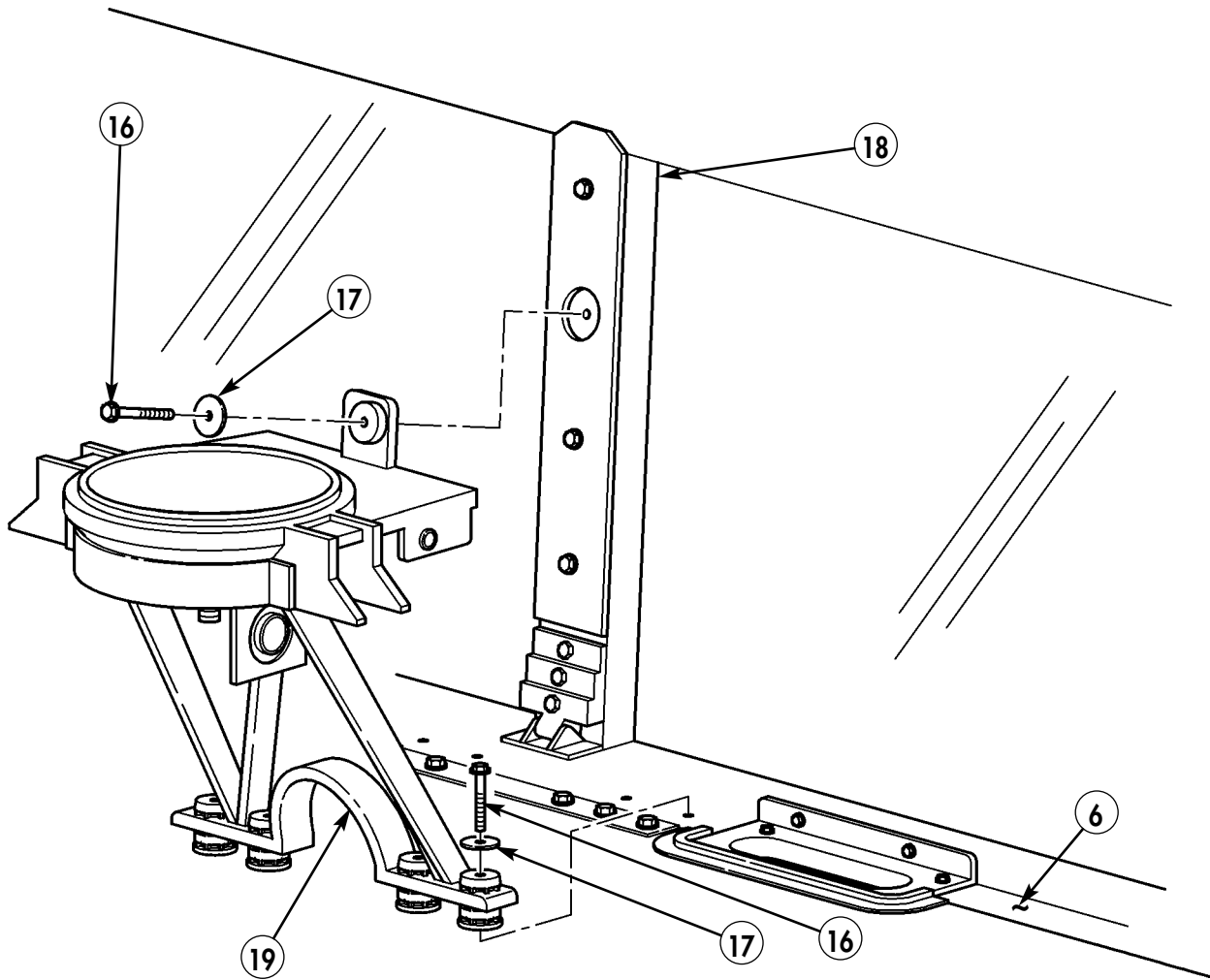


Figure 5-91.

27-12. 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).

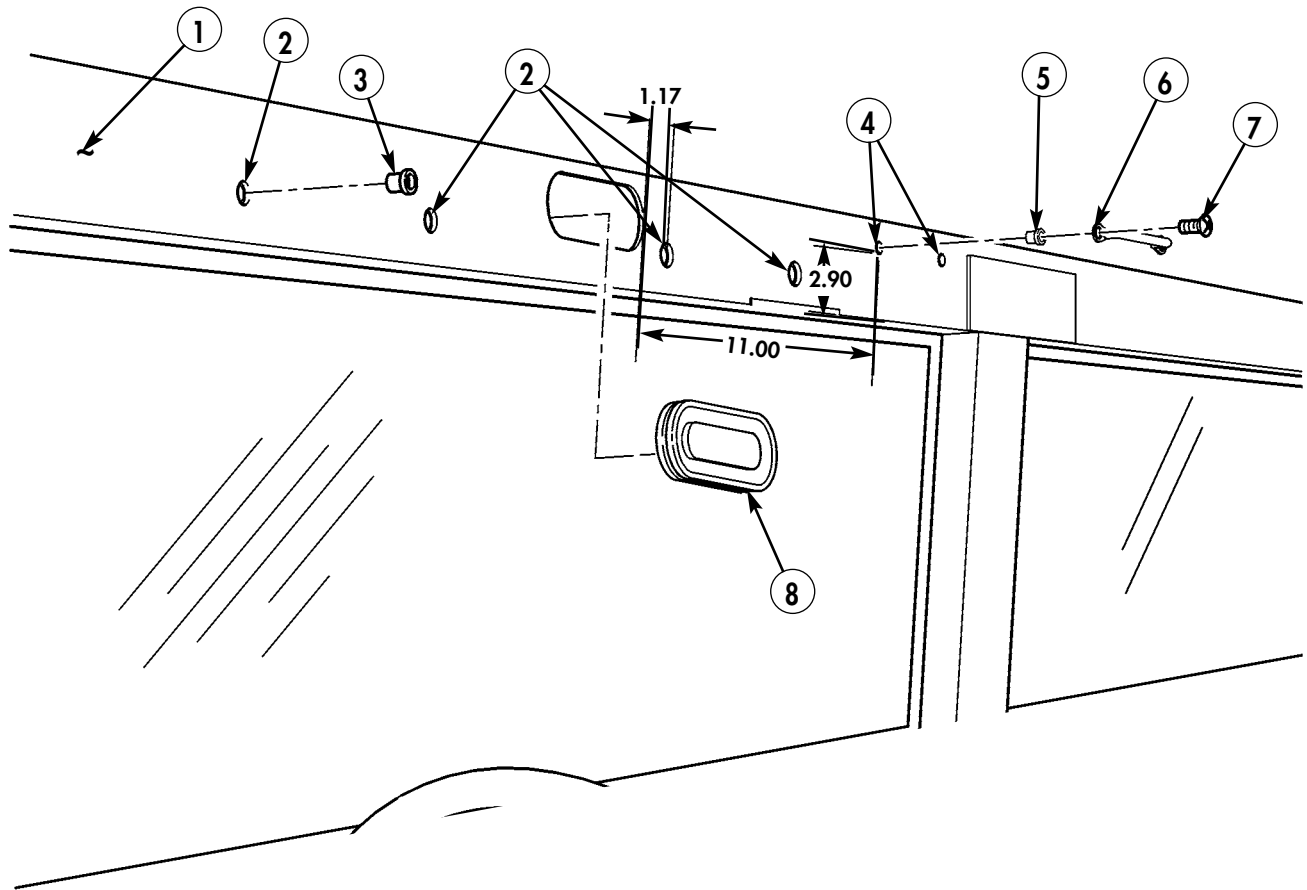


- 16. CAPSCREW - B1821BH025C300N - QTY. 5
- 17. WASHER - 3221003-9 - QTY. 5
- 19. PTM MOUNT ASSEMBLY - 3220952-1 - QTY. 1

Figure 5-92.

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

- 28-1. Remove driver's sun visor, if installed. (Refer to TM 9-2320-280-20.)
- 28-2. Remove access cover (8).
- 28-3. Remove left side footman loop (6) from original location on left side of windshield frame (1). (Refer to TM 9-2320-280-20.) Retain screws.
- 28-4. Using footman loop (6) as template, locate, mark, and drill two 0.296-in. holes (4) in left side of windshield frame (1).
- 28-5. Install two rivet nuts (5) in windshield frame (1).
- 28-6. Reinstall footman loop (6) in new location in windshield frame (1) with existing screws (7).
- 28-7. Using DCM roof mount assembly as template, locate, mark, and drill four 0.391-in. holes (2) in windshield frame (1).
- 28-8. Install four rivet nuts (3) in windshield frame (1).
- 28-9. Install access cover (8).



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

Figure 5-93.

NOTE

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

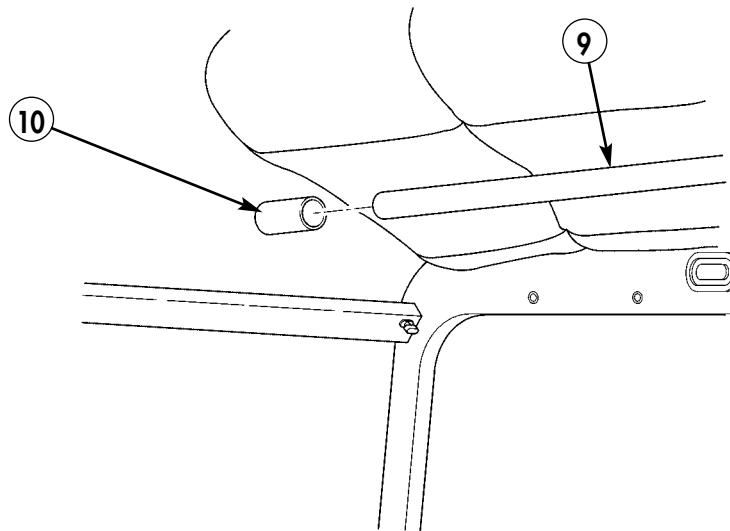
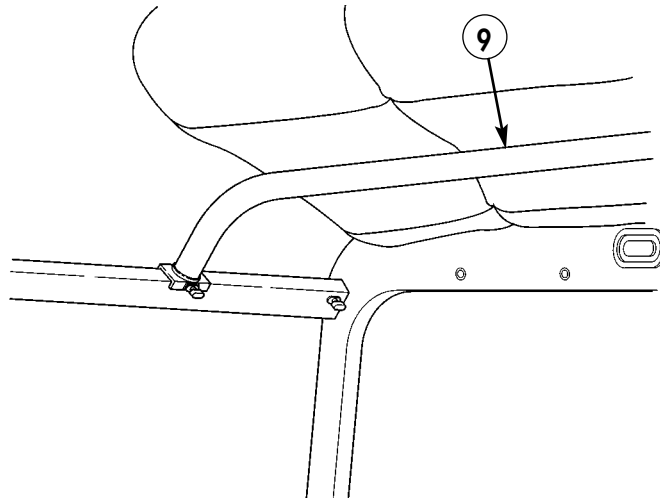
28-10. Remove two screws securing left side of soft top support bow (9). (Refer to TM 9-2320-280-10.)

NOTE

Cut where support bow begins to bend down.

28-11. Cut soft top support bow (9) as shown, and discard.

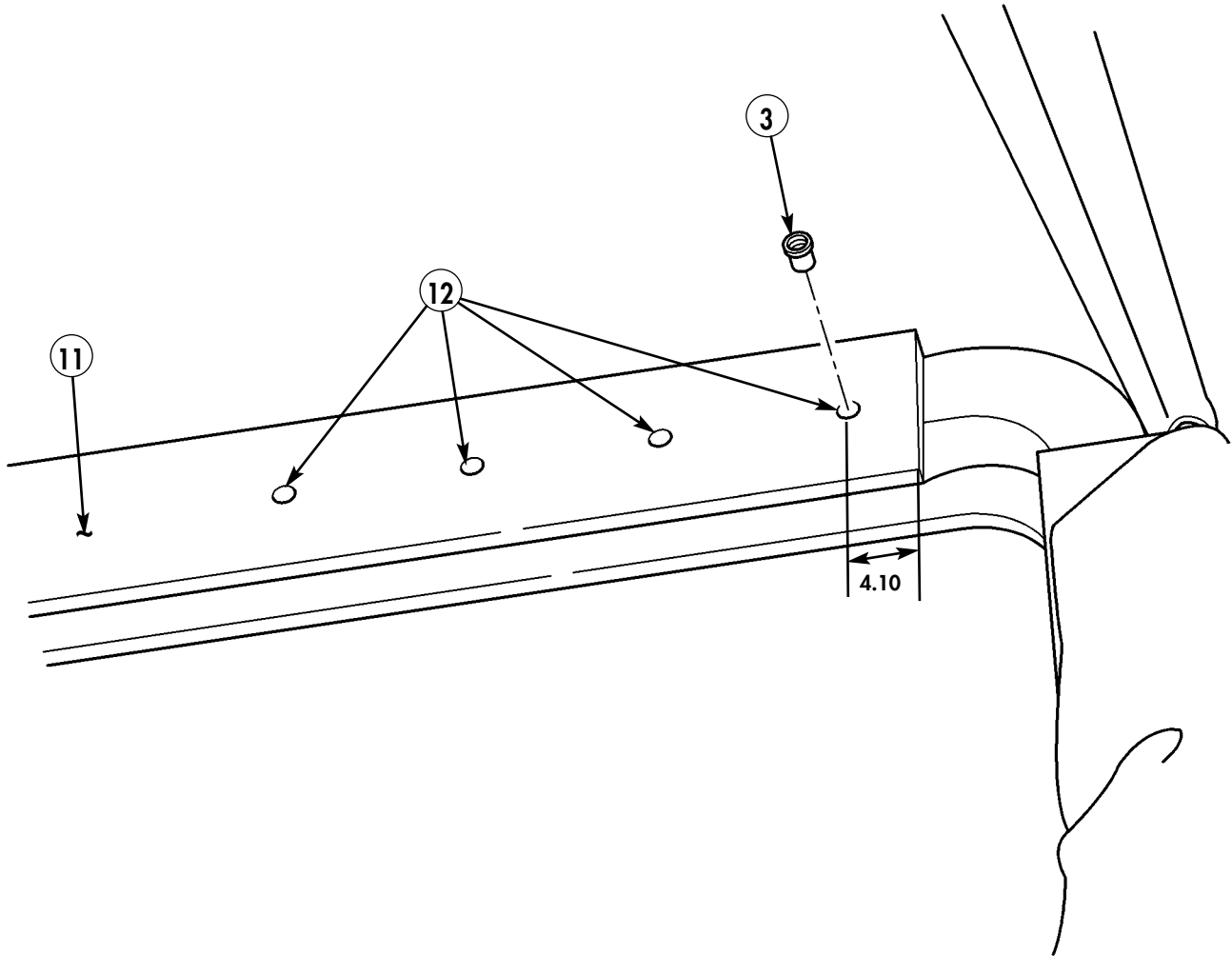
28-12. Slide bow closeout tube (10) onto end of soft top support bow (9).



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

Figure 5-94.

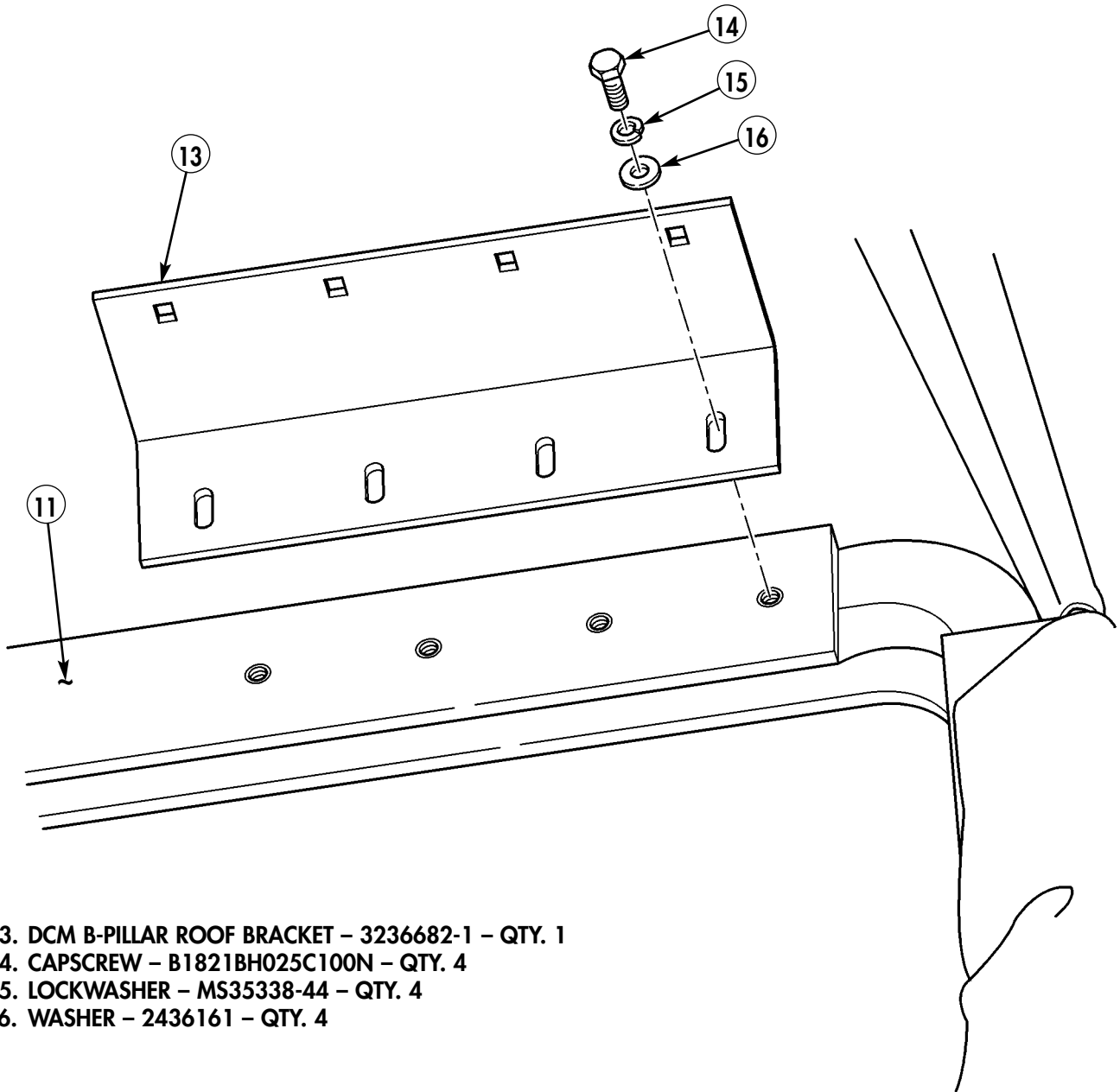
- 28-13. Using DCM B-pillar roof bracket as template, locate, mark, and drill four 0.391-in. holes (12) on B-pillar (11).
- 28-14. Install four rivet nuts (3) in B-pillar (11).



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

Figure 5-95.

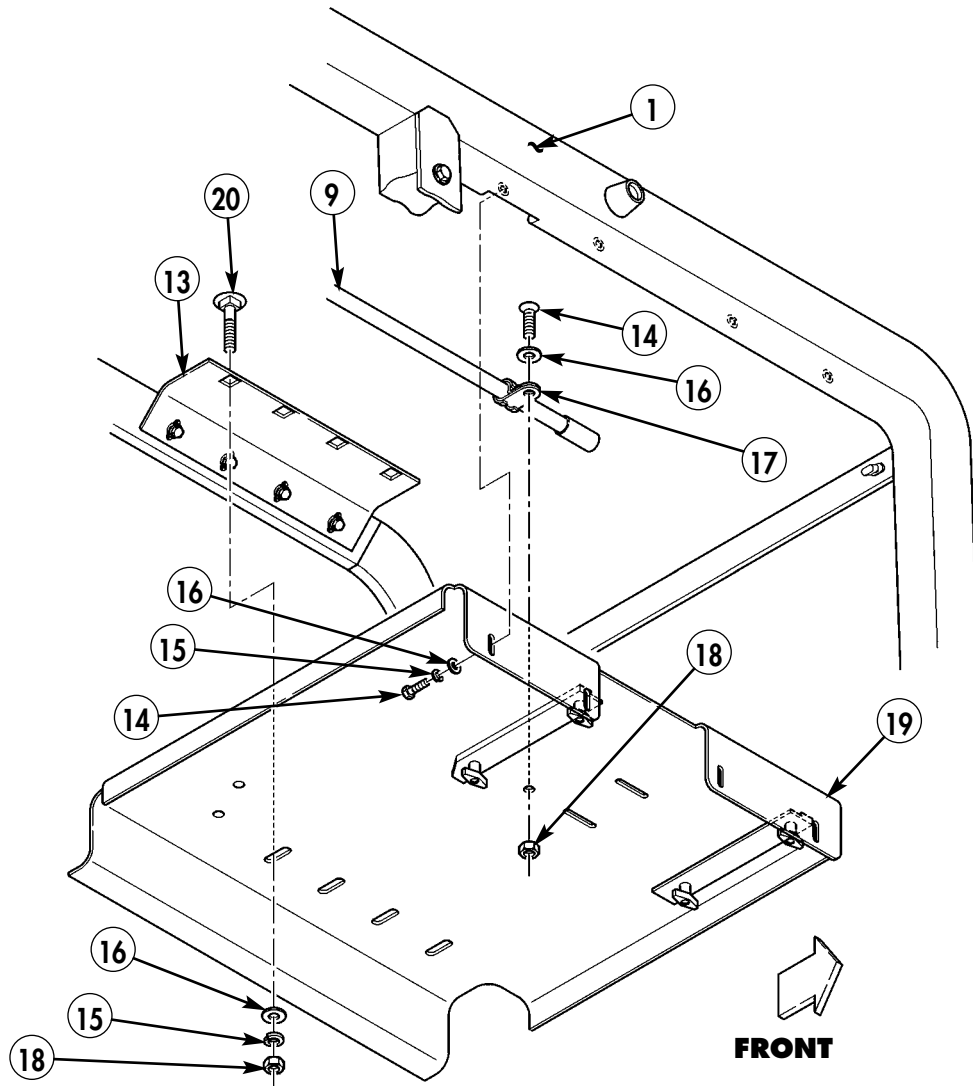
28-15. Install DCM B-pillar roof bracket (13) on B-pillar (11) with four capscrews (14), lockwashers (15), and washers (16). Do not tighten capscrews (14).



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

Figure 5-96.

- 28-16.** Install DCM roof mount bracket (19) on inside of windshield frame (1) with four capscrews (14), lockwashers (15), and washers (16), and on B-pillar roof bracket (13) with four carriage bolts (20), washers (16), lockwashers (15), and locknuts (18).
- 28-17.** Install loop clamp (17) on soft top support bow (9) and DCM roof mount (19) with capscrew (14), washer (16), and locknut (18). Tighten all capscrews (14).

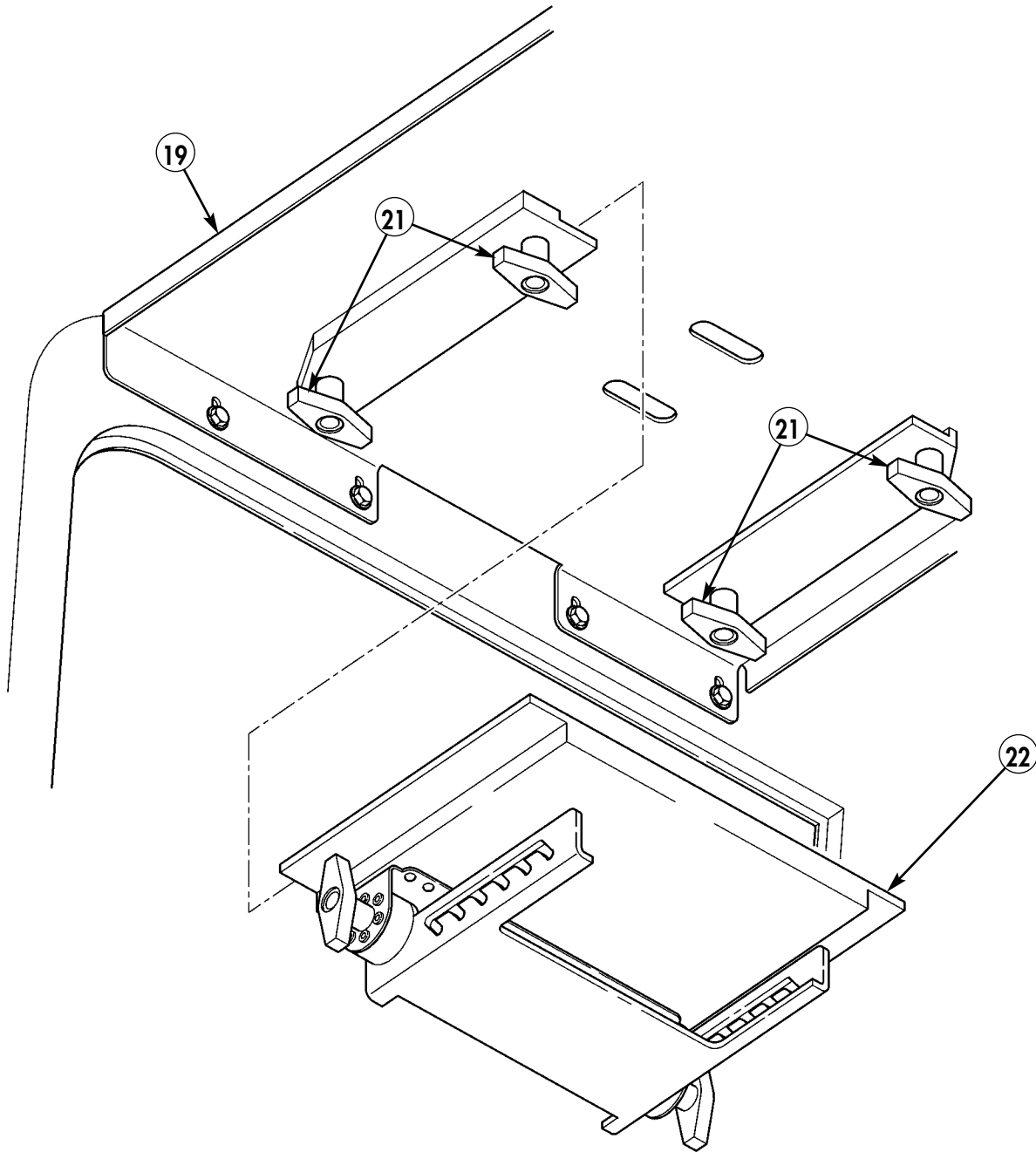


14. CAPSCREW - B1821BH025C100N - QTY. 5
 15. LOCKWASHER - MS35338-44 - QTY. 8
 16. WASHER - 2436161 - QTY. 9
 17. LOOP CLAMP - MS21333-123 - QTY. 1
 18. LOCKNUT - M45913/4-4CG8Z - QTY. 5
 19. DCM ROOF MOUNT BRACKET - 3245782-1 - QTY. 1
 20. CARRIAGE BOLT - 90185A540 - QTY. 4

Figure 5-97.

28-18. Loosen four hand knobs (21) on DCM roof mount (19). Slide DCM mount (22) onto DCM roof mount bracket (19). Tighten four hand knobs (21).

28-19. Install vehicle soft top. (Refer to TM 9-2320-280-10.)



22. DCM MOUNT – 3221839-1 – QTY. 1

Figure 5-98.

Section XXIX. PAN AND TILT MODULE (PTM) CONTROL MOUNTING BRACKET INSTALLATION**NOTE**

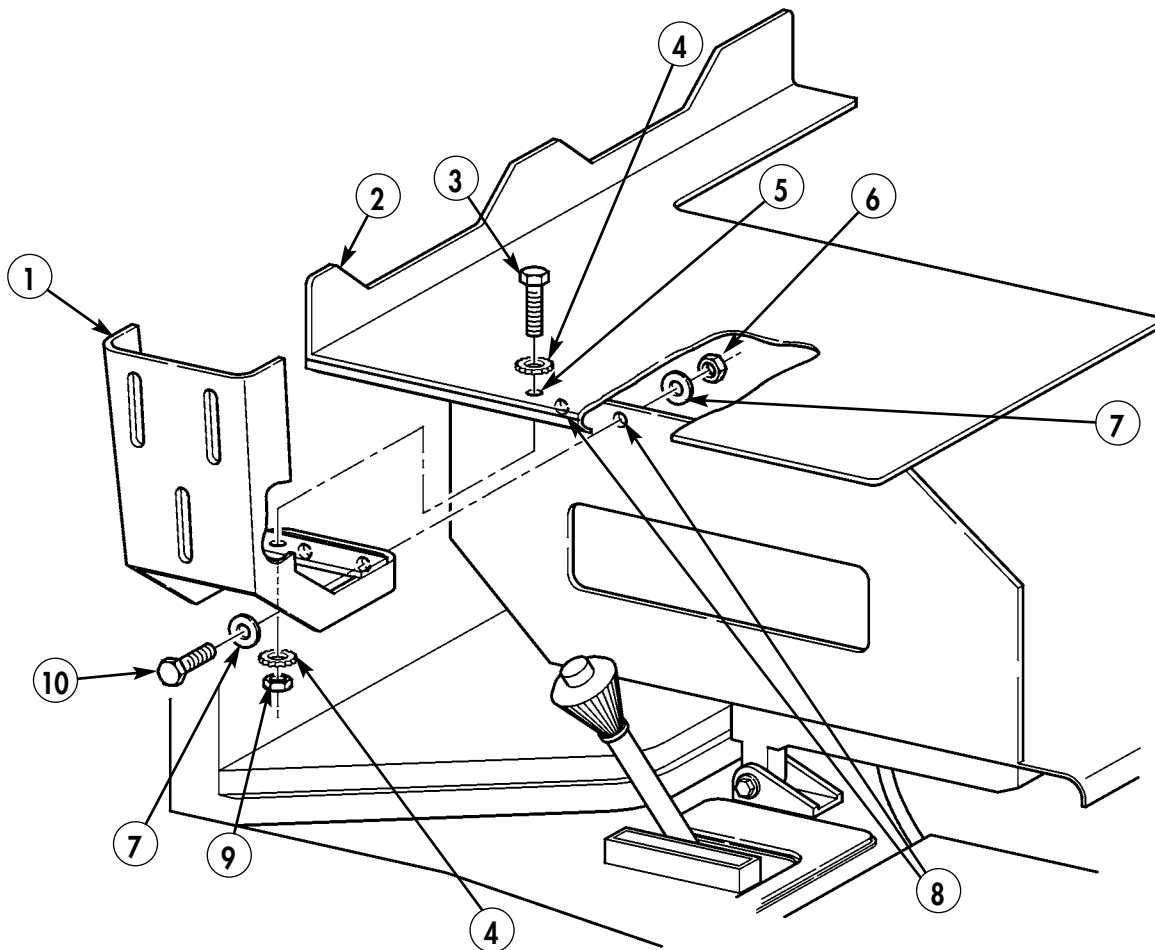
SINGARS mount and amp guard share existing mounting hardware with PTM control mounting bracket.

- 29-1.** Remove SINGARS mount and amp guard if necessary. (Refer to chapter 5, section VIII.)
- 29-2.** 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

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

- 29-3.** Install SINGARS mount and amp guard if removed. (Refer to chapter 5, section VIII.)
- 29-4.** 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 5-99.

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

- 30-1. Locate, mark, and drill 1.375-in. hole (1) for control cable seal assembly (2) on tunnel (3).
- 30-2. Position control cable seal assembly (2) and mark two hole locations (5).
- 30-3. Drill two 0.391-in. holes in marked locations (5).
- 30-4. Insert two rivet nuts (4) into tunnel (3).
- 30-5. 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.
- 30-6. For vehicles equipped with FBCB2, route PTM control cable assembly (8) through PTM control mounting bracket (7).

NOTE

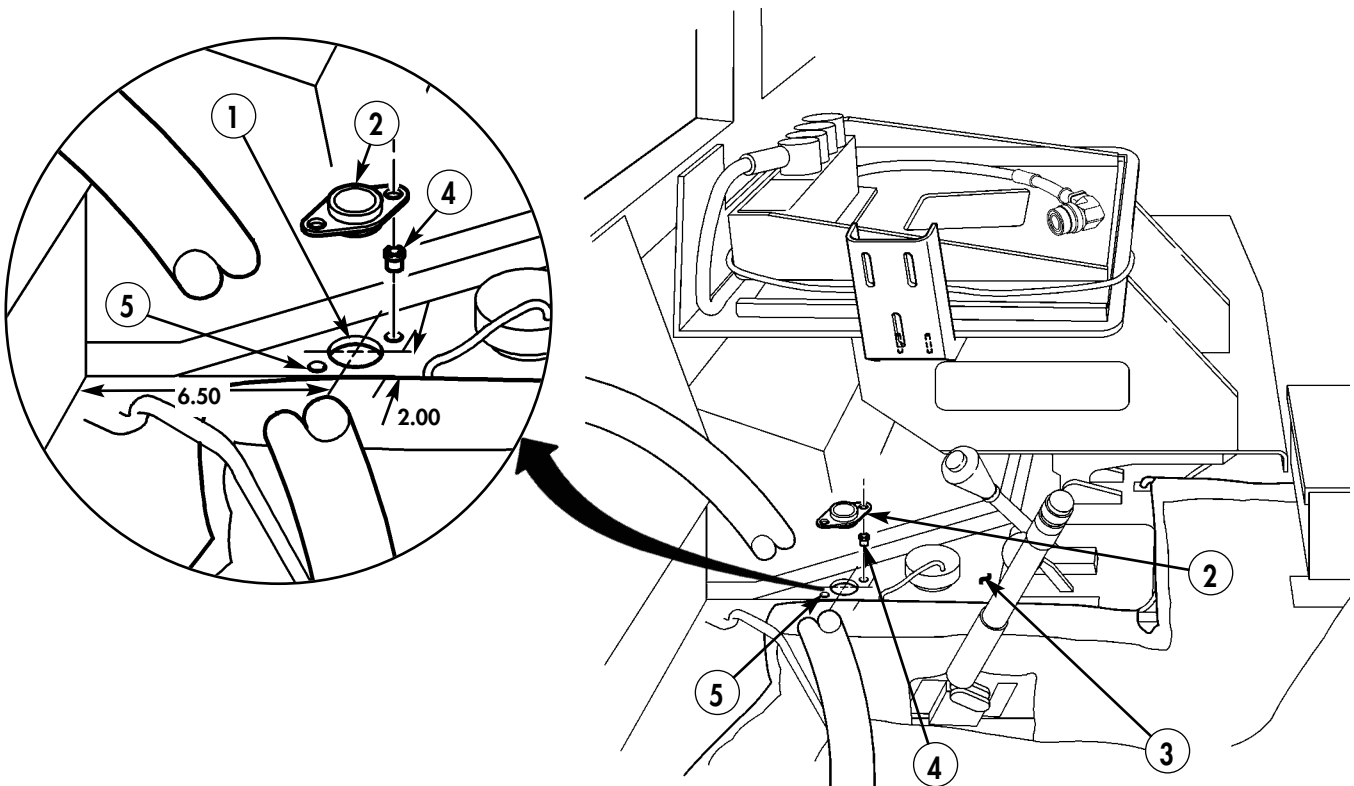
It may be necessary to remove azimuth lock cable adjusting nut to route cabling.

- 30-7. 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.

- 30-8. Cut sides of four holes on grommet of control cable seal assembly (2).
- 30-9. Insert three cables (6), (8), and (9) from PTM control mounting bracket (7) into tunnel hole (1).
- 30-10. 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 5-100.

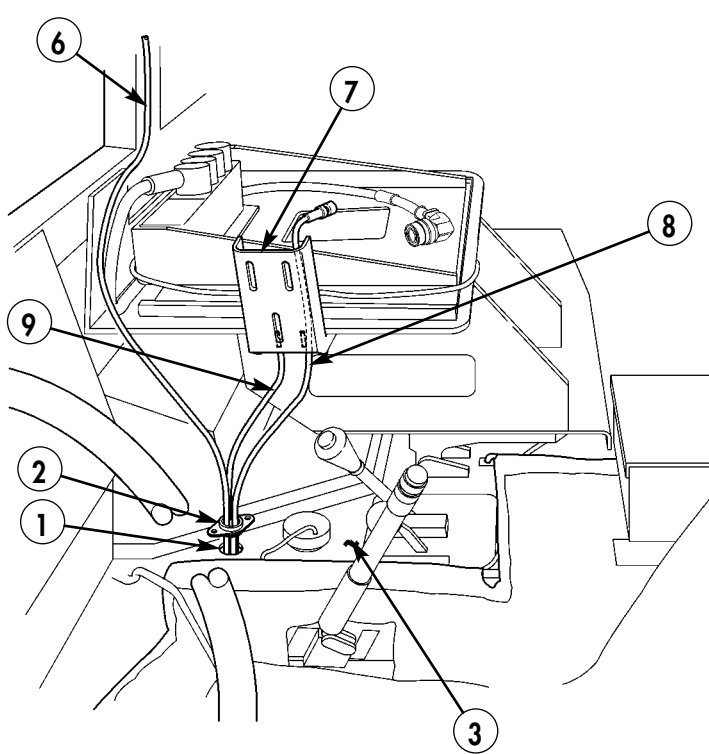


Figure 5-101.

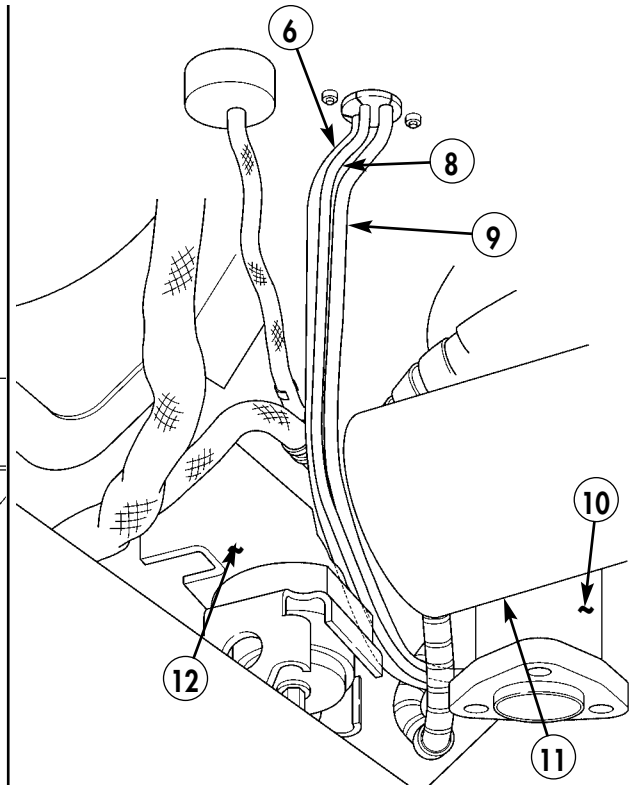
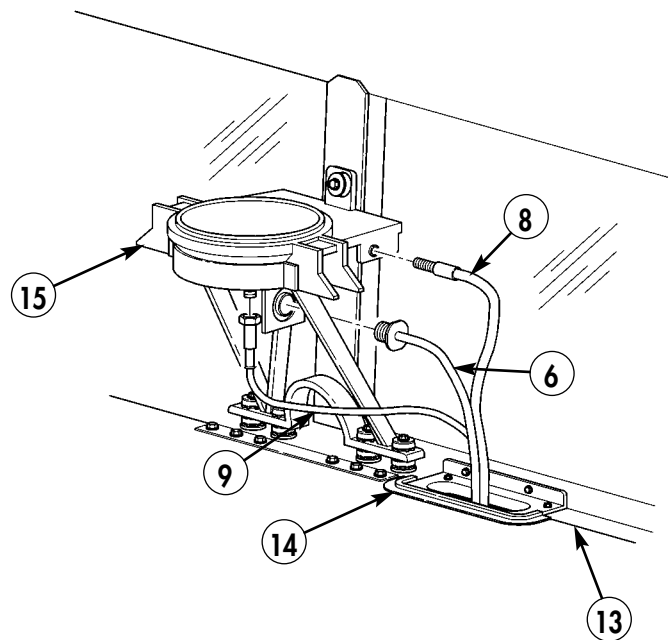


Figure 5-102.



- 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 5-103.

CAUTION

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

- 30-11.** 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.

- 30-12.** 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.

- 30-13.** 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.

- 30-14.** Insert azimuth control cable (8) into side of PTM mount assembly (15).
30-15. Install azimuth control cable rubber boot (19) on azimuth control cable (8).
30-16. 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).
30-17. Tighten azimuth control cable locking nut (20).
30-18. Position azimuth sector gear assembly (25) onto PTM mount assembly (15).
30-19. Insert azimuth control cable (8) into PTM mount assembly cable lock (37).

NOTE

PTM control assembly must be in the center position.

- 30-20.** 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 30-15 through 30-19, adjusting the azimuth sector gear assembly (25) position on the azimuth control cable (8) until alignment is achieved.
30-21. Secure azimuth sector gear assembly (25) to PTM mount assembly (15) with bolt (27) and washer (26).
30-22. Insert azimuth lock cable (9) through hole (29) into PTM mount assembly (15).
30-23. Install azimuth lock cable rubber boot (23) on azimuth lock cable (9).
30-24. 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.
30-25. Ensure azimuth control cable (8), azimuth lock cable (9), and rubber boots (19) and (23) are installed correctly.

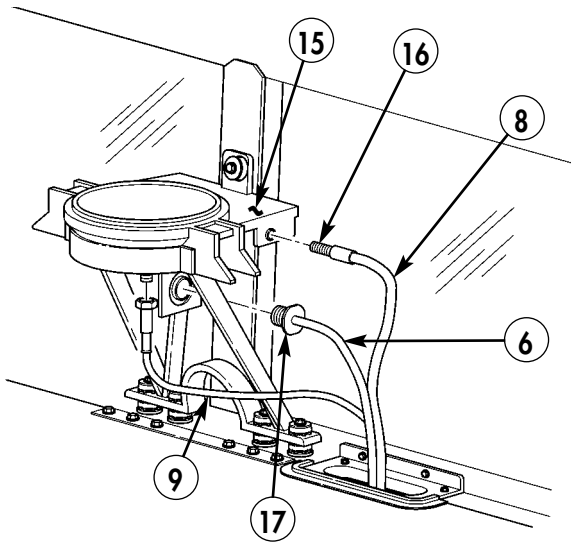


Figure 5-104.

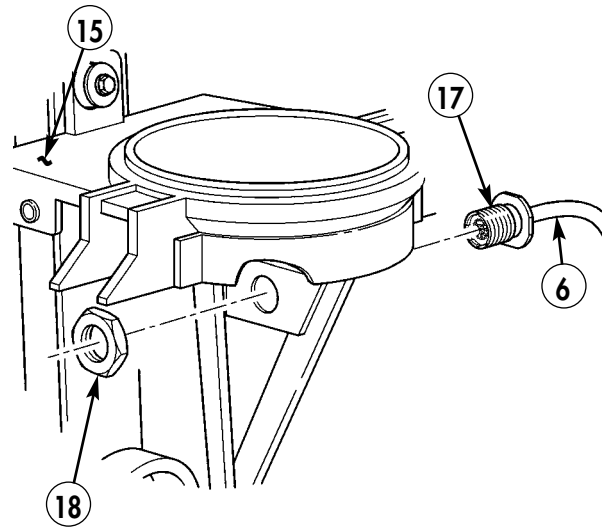
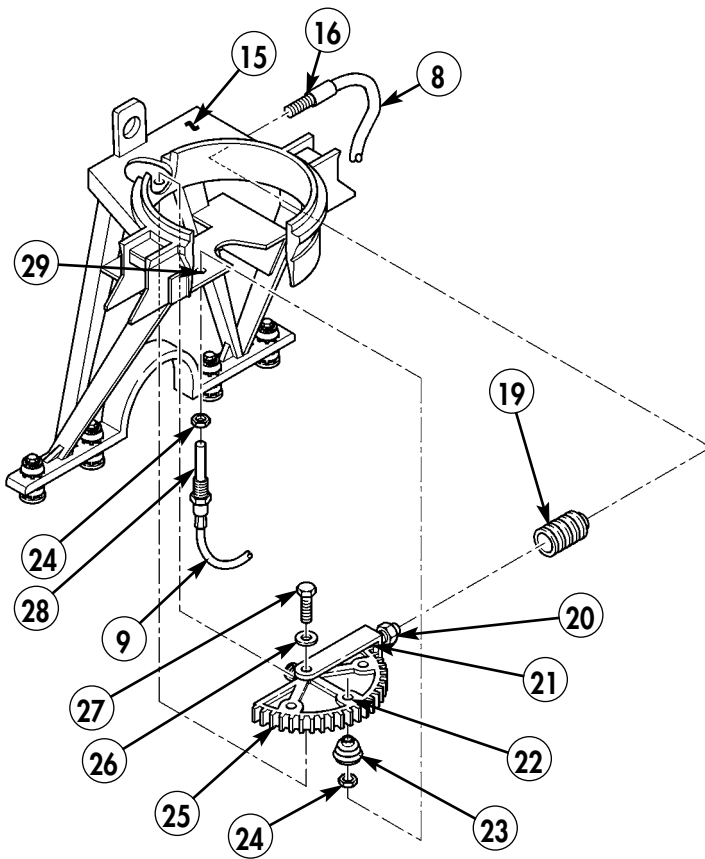


Figure 5-105.



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

Figure 5-106.

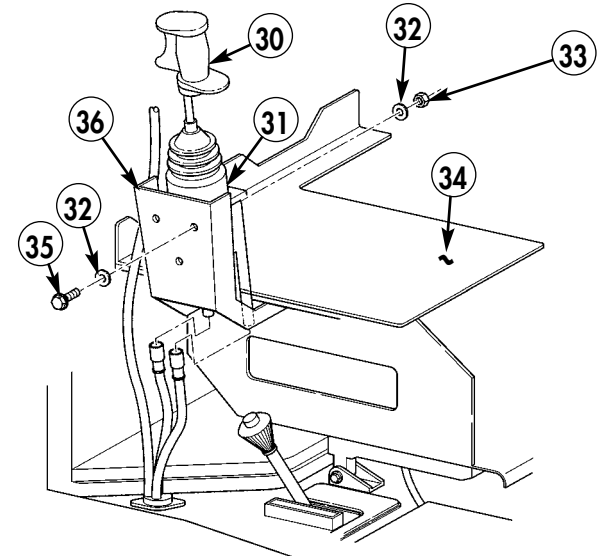


Figure 5-107.

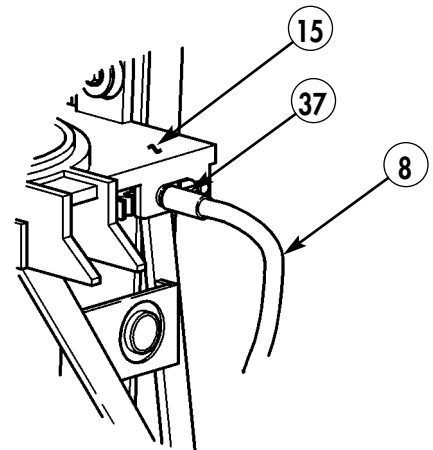
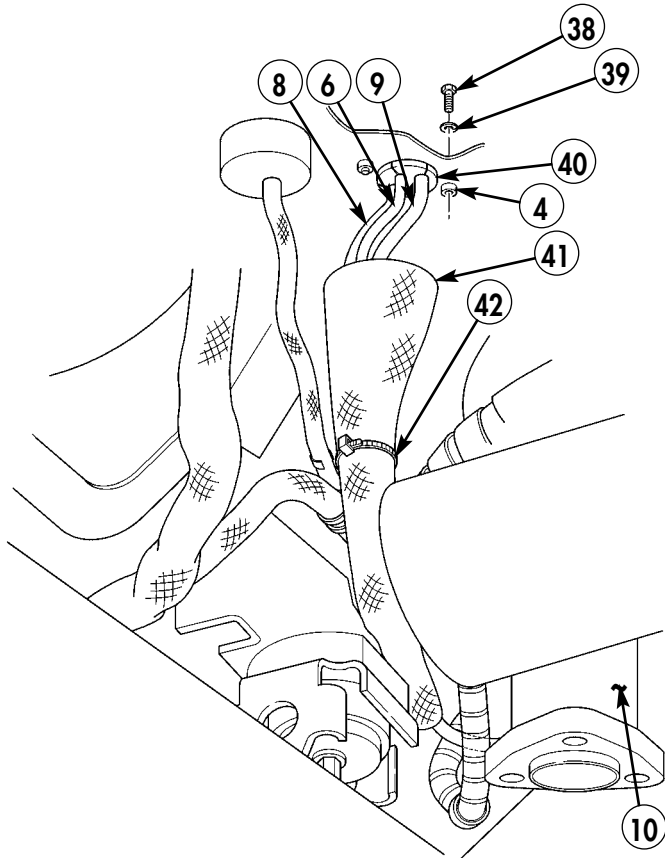


Figure 5-108.

- 30-26. 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).
- 30-27. 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 cables (6), (8), and (9) with cable ties (42).
- 30-28. 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 5-109.

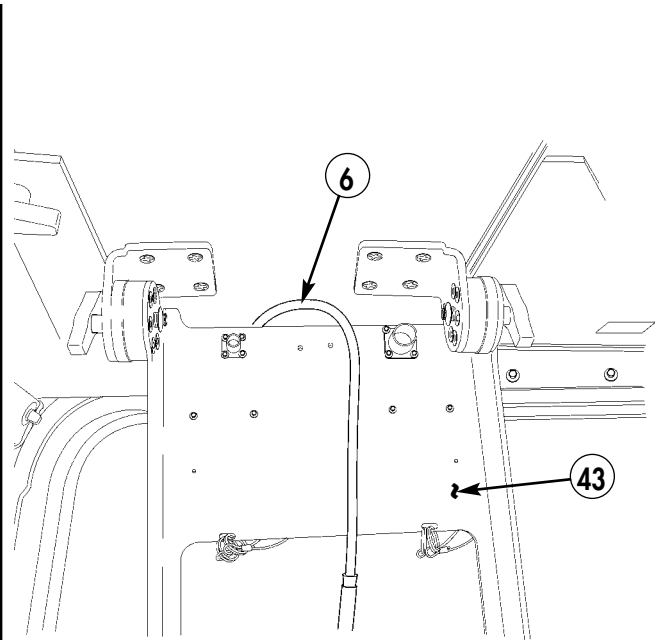


Figure 5-110.

Section XXXI. LCD PROTECTIVE ASSEMBLY INSTALLATION

NOTE

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

- 31-1.** Install LCD protective assembly on DCM.

NOTE

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

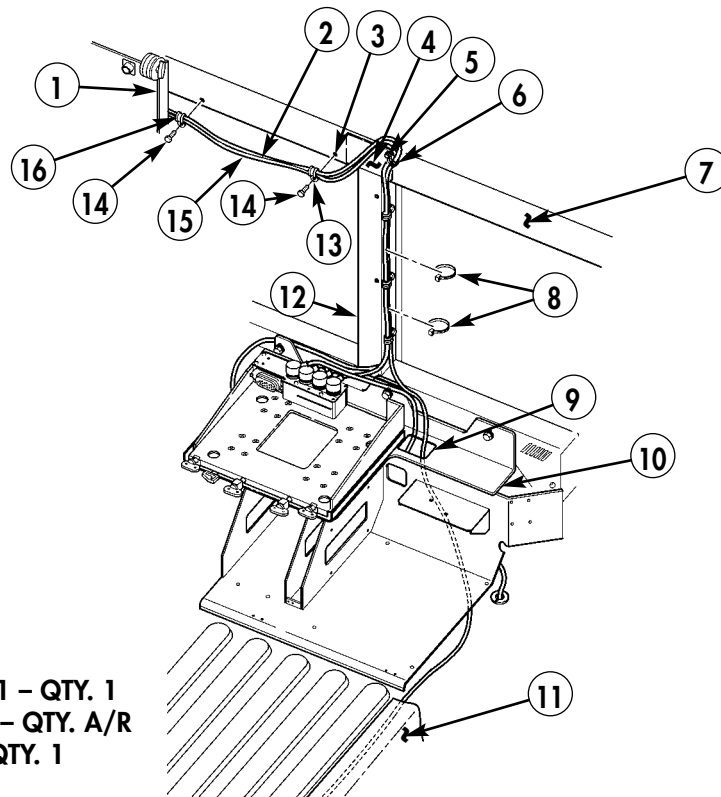
- 31-2.** Place stowage pouch in rear seat storage.

Section XXXII. DVE POWER CABLE INSTALLATION

NOTE

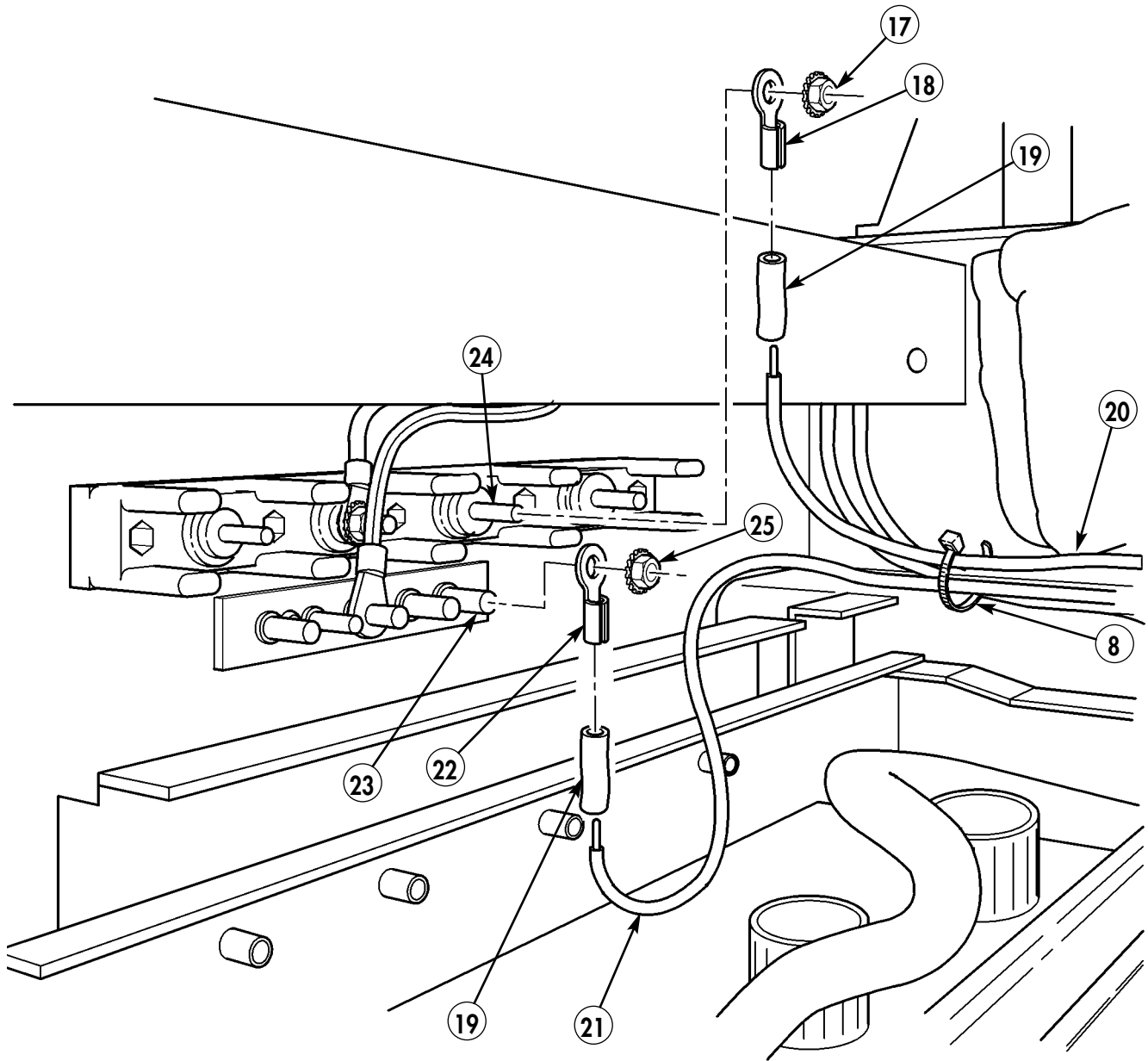
Previously routed cables are not shown for clarity.

- 32-1.** 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.
- 32-2.** 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.)
- 32-3.** Attach DVE power cable positive lead (20) to 24V terminal board (24) with existing nut (17).
- 32-4.** Attach DVE power cable negative lead (21) to ground strap (23) with existing nut (25).
- 32-5.** Secure all leads together with tiedown strap (8).
- 32-6.** Remove two existing screws, lockwasher, and washers from DCM mount (1) and windshield frame (7).
- 32-7.** Secure two cables (2) and (15) on windshield frame (7) with clamp (16) and screw (14).
- 32-8.** Secure DCM mount (1) on windshield frame (7) with existing washers, lockwashers, and nuts.
- 32-9.** If required, locate, mark, and drill 0.147-inch diameter hole (3) in windshield frame (7).
- 32-10.** Secure two cables (2) and (15) to windshield frame (7) with clamp (13) and screw (14).
- 32-11.** Remove screw (5) and clamp (6) from windshield wiper bracket (4).
- 32-12.** Secure two cables (2) and (15) to windshield wiper bracket (4) with existing clamp (6) and existing screw (5).
- 32-13.** Secure two cables (2) and (15) to existing cables with tiedown straps (8).
- 32-14.** Install right side tunnel insulation. (Refer to TM 9-2320-280-20-3.)
- 32-15.** Install batteries. (Refer to TM 9-2320-280-20-2.)



- 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 5-111.



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

Figure 5-112.

SECTION XXXIII. WINDSHIELD ARMOR MODIFICATION

NOTE

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

- 33-1. Remove four capscrews (5) and left capping ring (4) from left side of windshield frame (1).
- 33-2. Remove four capscrews (5) and right capping ring (6) from right side of windshield frame (1).
- 33-3. Remove five capscrews (3) and upper capping ring (2) from windshield frame (1).

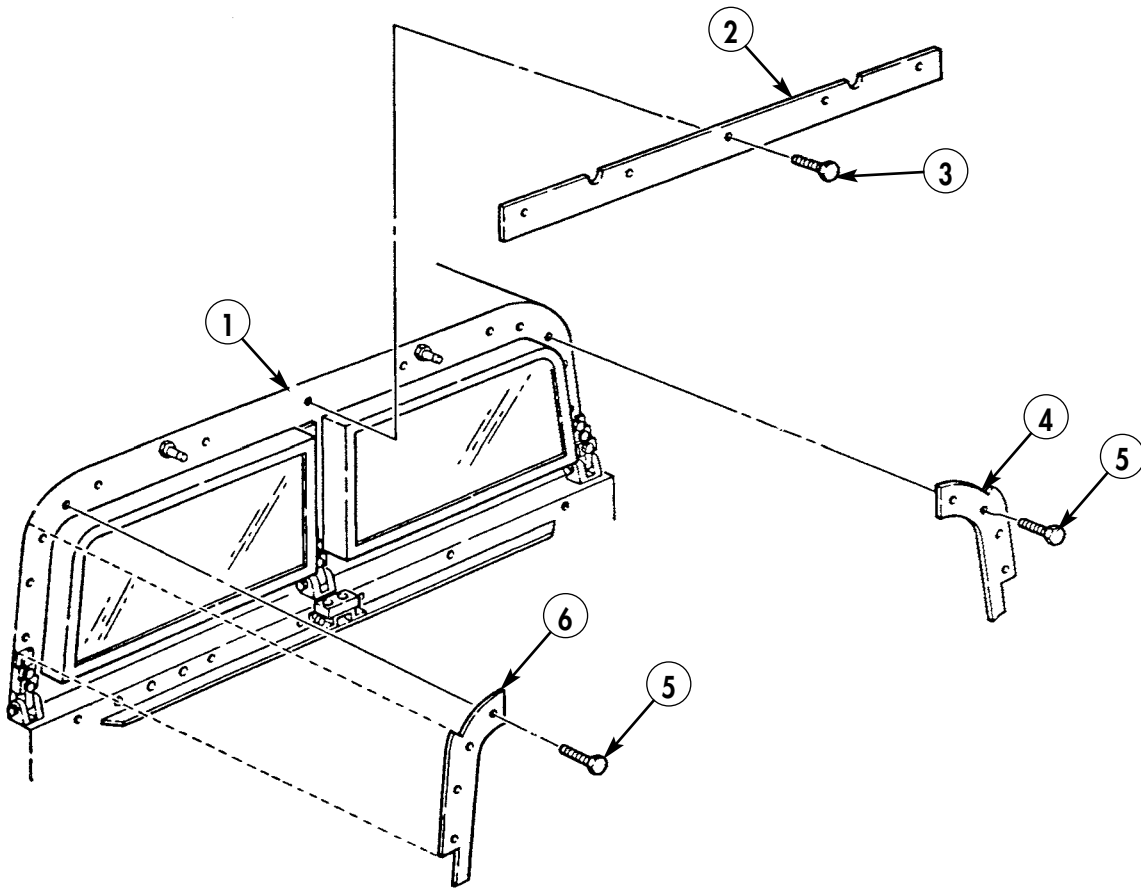


Figure 5-113.

NOTE

Left side shown; right side opposite.

33-4. Locate, mark, and remove section of armor on left capping ring (4). Repeat for right side.

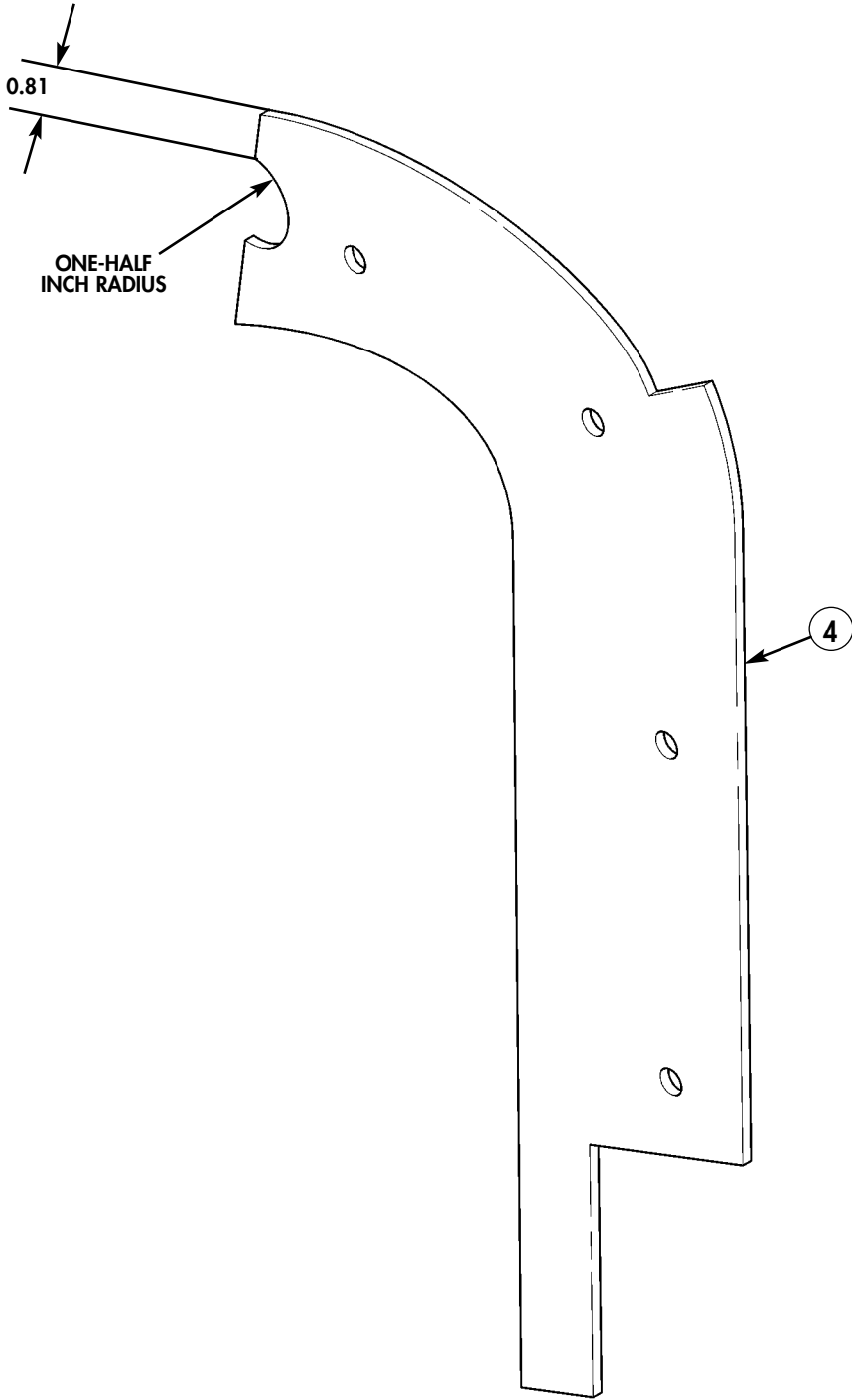


Figure 5-114.

NOTE

Right side shown; left side opposite.

33-5. Locate, mark, and remove sections of armor on upper capping ring (2).

33-6. Spot paint all exposed metal surfaces. (Refer to TM 43-0139.)

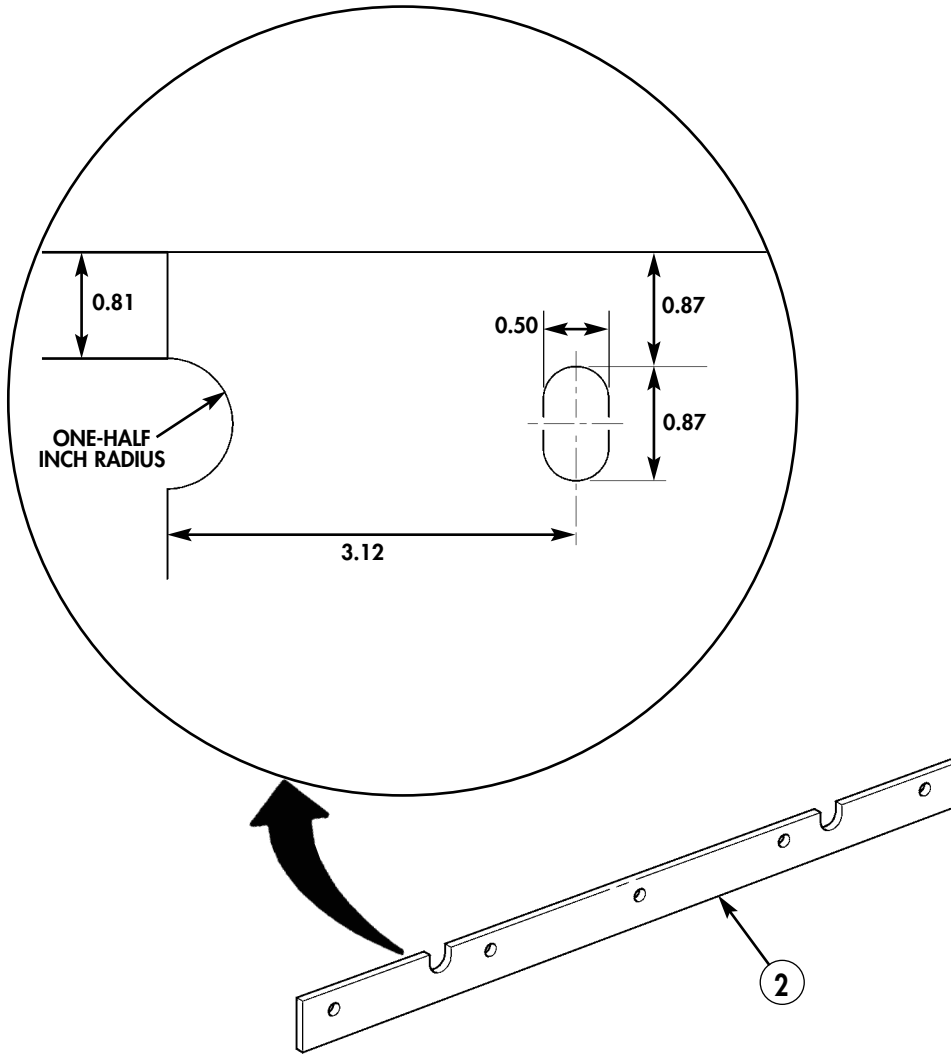
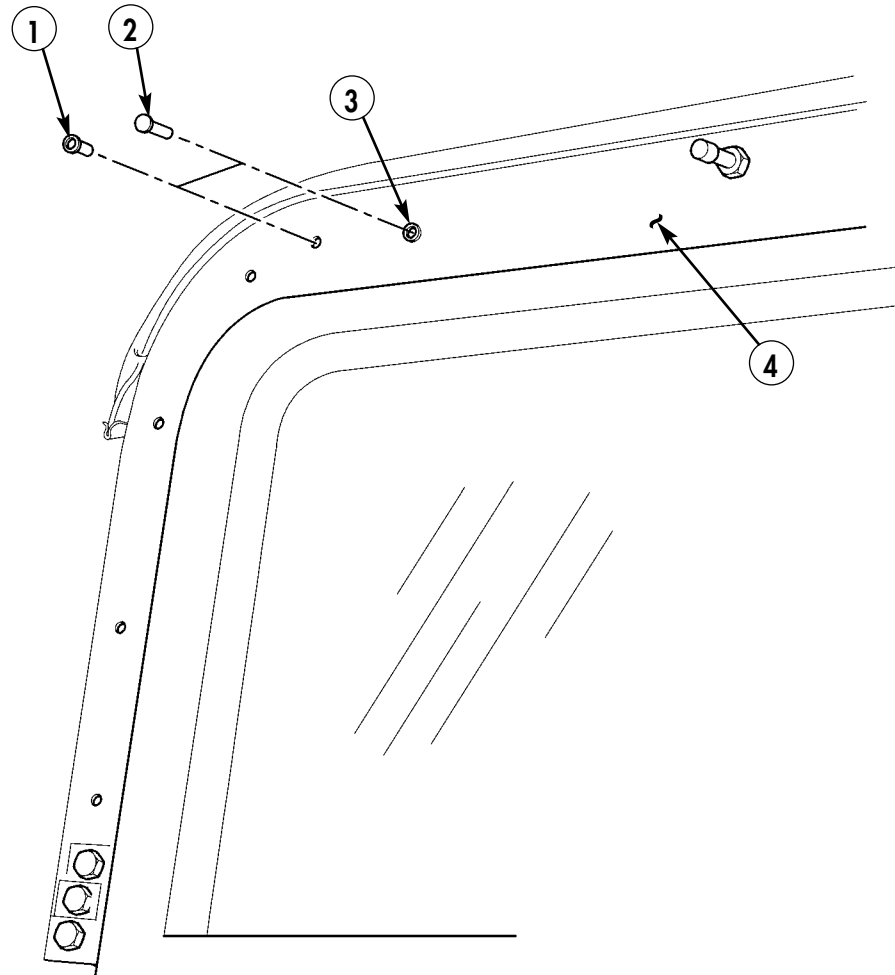


Figure 5-115.

Section XXXIV. 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.

- 34-1.** Remove two plugs (2) from right side of windshield frame (4).
- 34-2.** 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 5-116.

NOTE

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

- 34-3. Locate, mark, and drill one 0.562-in. diameter hole (5) on right side of A-pillar (6).

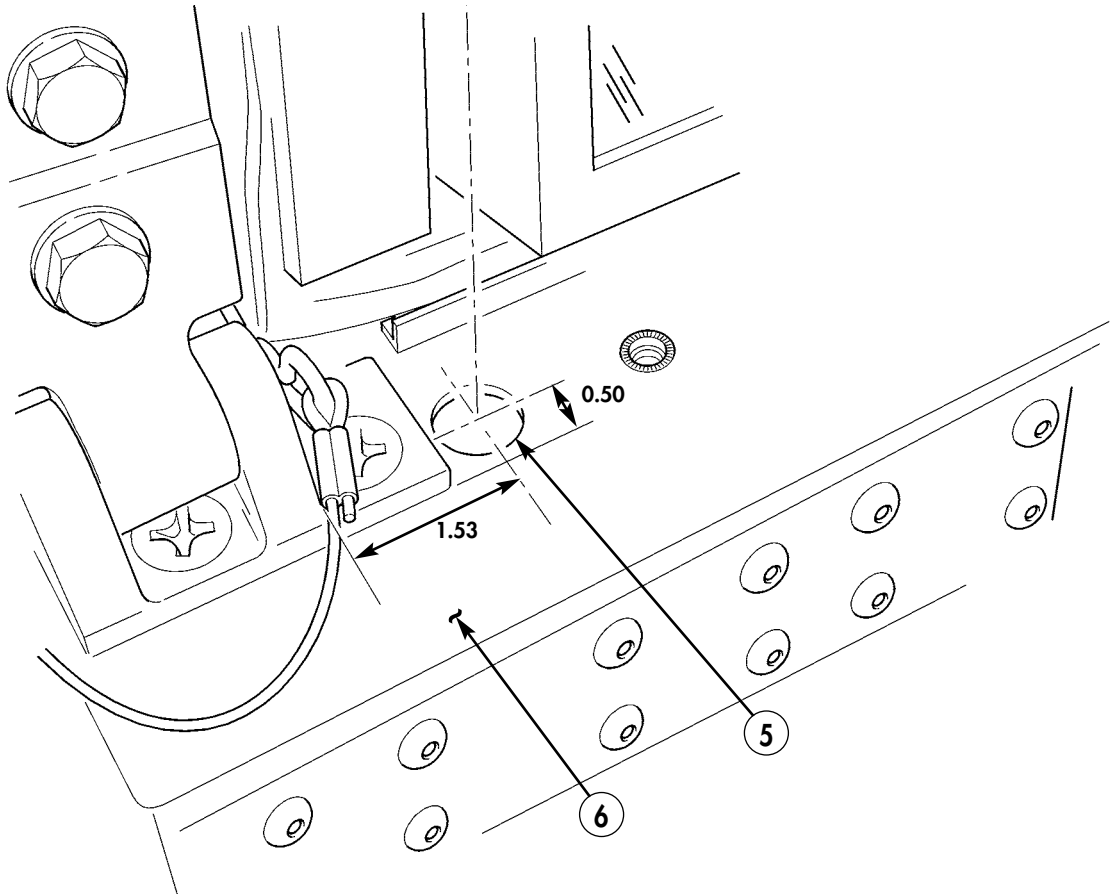


Figure 5-117.

- 34-4. Install modified upper capping ring (7) on windshield frame (4) with five existing capscrews (8).
- 34-5. Install modified right capping ring (11) on right side of windshield frame (4) with four existing capscrews (10).
- 34-6. Install modified left capping ring (9) on left side of windshield frame (4) with four existing capscrews (10).

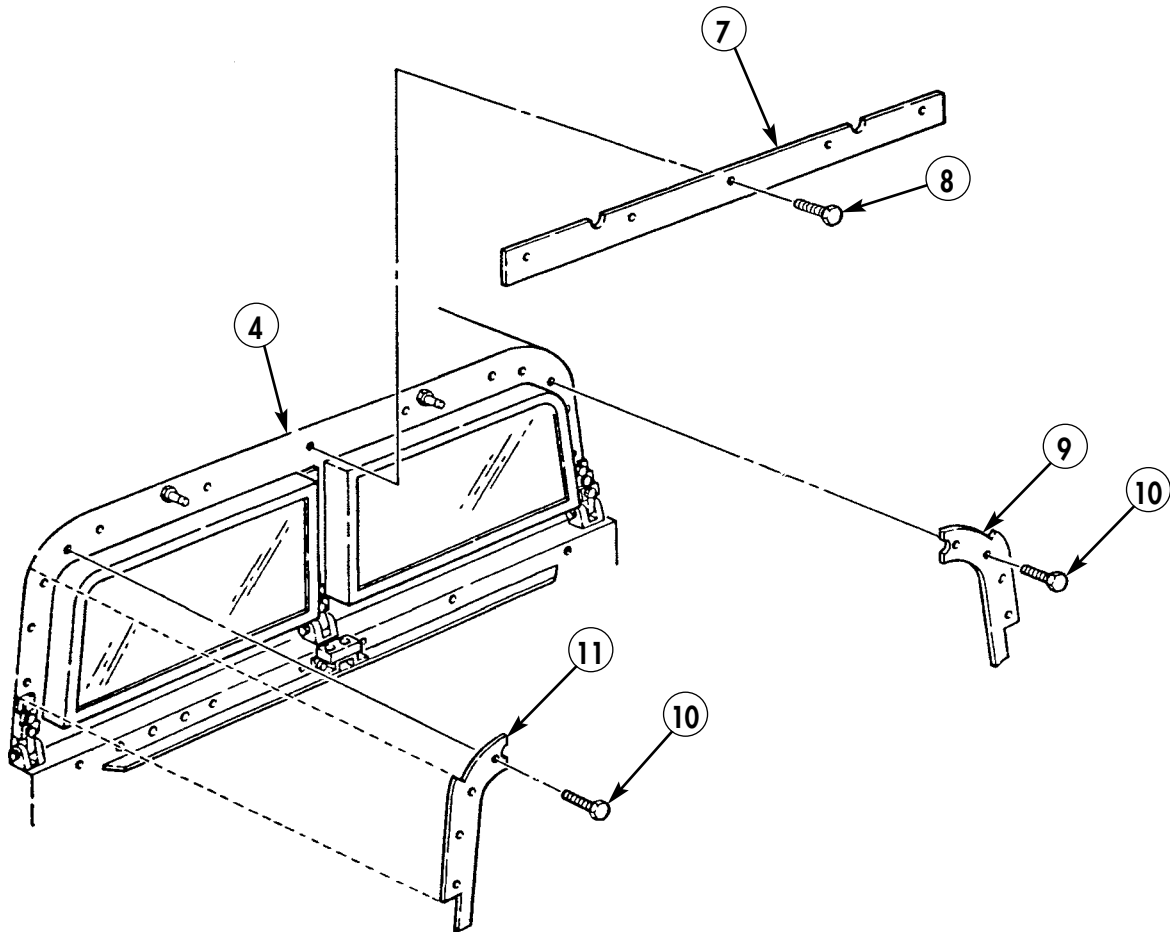
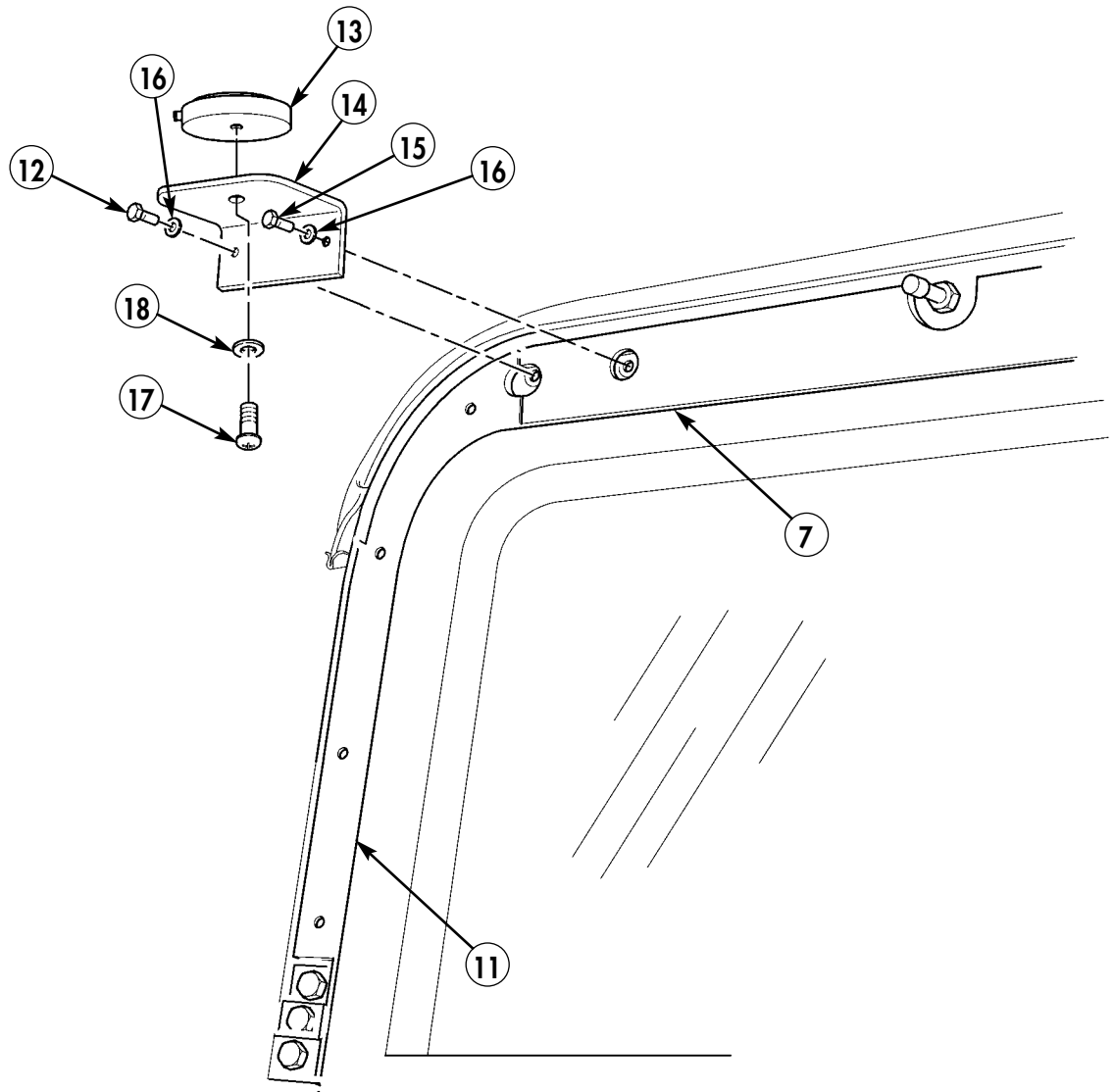


Figure 5-118.

34-7. Install antenna (13) on support (14) with lockwasher (18) and capscrew (17).

34-8. Install support (14) on right capping ring (11) and upper capping ring (7) with capscrews (12) and (15) and two washers (16).



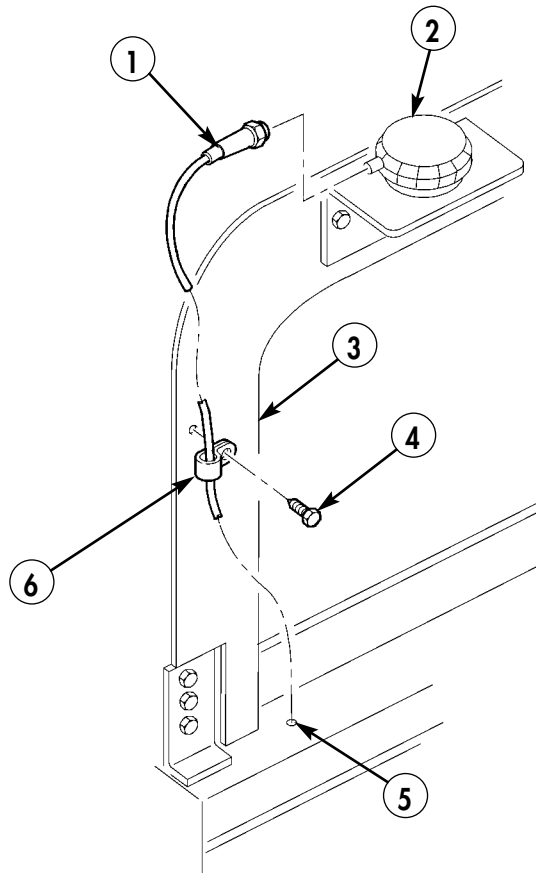
- 12. CAPSCREW - B1821BH025C125N - QTY. 1
- 13. PLGR ANTENNA - AT575-030 - QTY. 1
- 14. PLGR ANTENNA MOUNT BRACKET - QTY. 1
- 15. CAPSCREW - B1821BH025C175N - QTY. 1
- 16. WASHER - 2436161 - QTY. 2
- 17. CAPSCREW - MS35207-261 - QTY. 1
- 18. LOCKWASHER - MS35338-43 - QTY. 1

Figure 5-119.

Section XXXV. ANTENNA CABLE INSTALLATION**NOTE**

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

- 35-1.** Route antenna cable (1) through hole (5) and connect antenna cable (1) to antenna (2).
- 35-2.** Remove self-tapping screw (4) from right capping ring (3).
- 35-3.** 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**

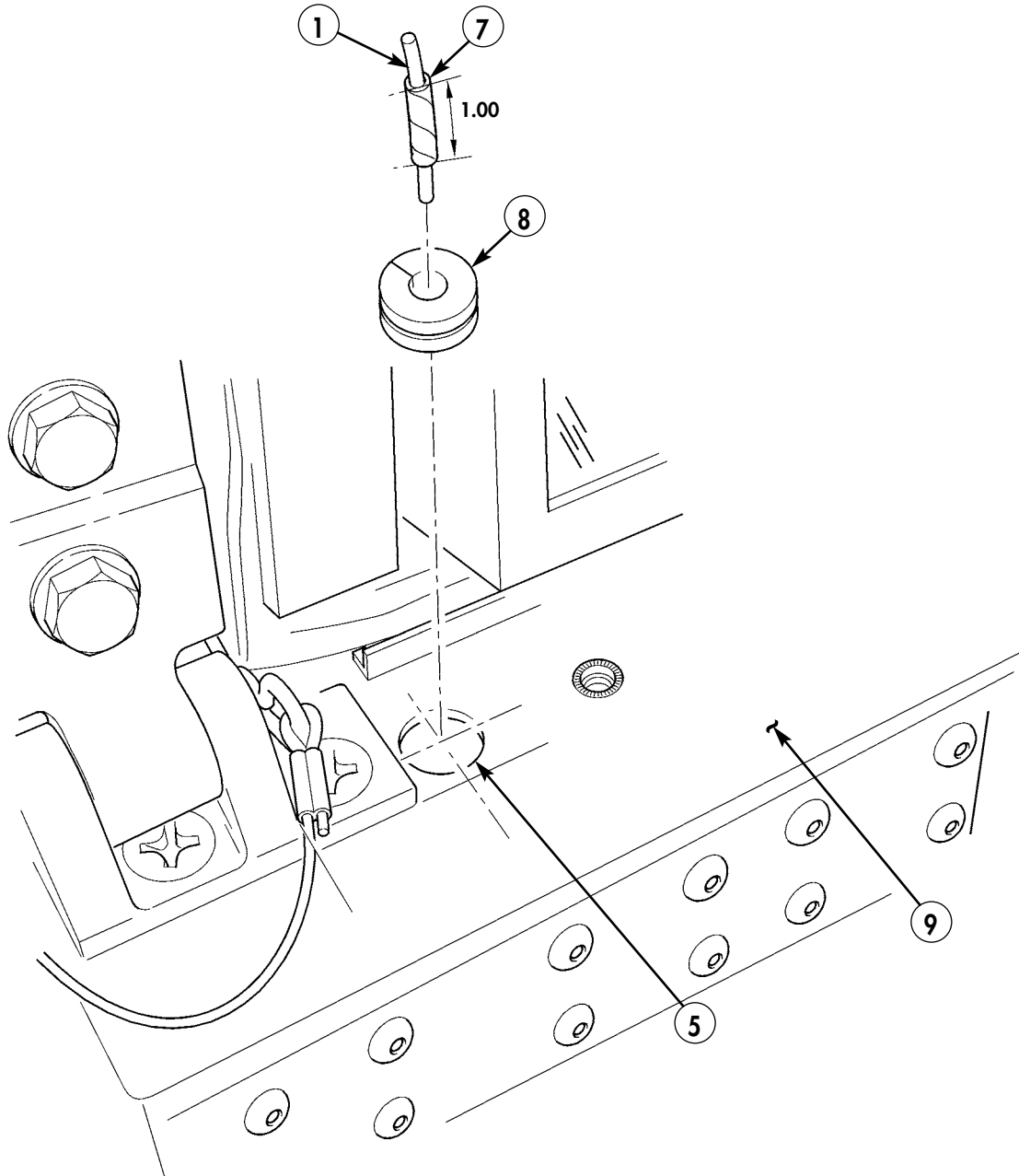
Figure 5-120.

- 35-4. Split grommet (8) and install on antenna cable (1).
- 35-5. Wrap electrical tape (7) around antenna cable (1).
- 35-6. Install antenna cable (1) with electrical tape (7) in grommet (8).

NOTE

Apply sealing compound on grommet.

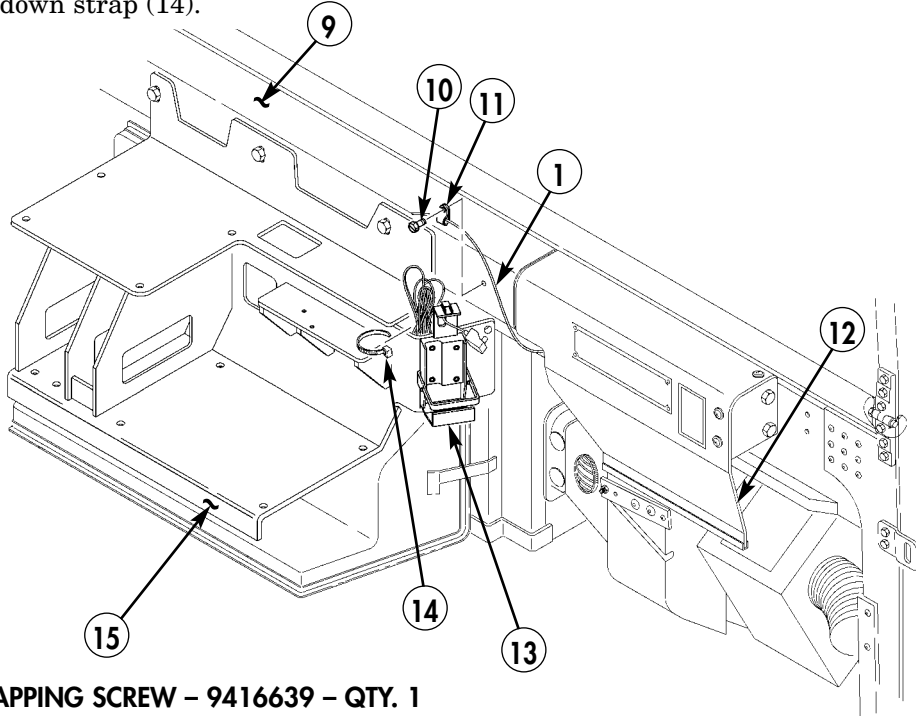
- 35-7. Install grommet (8) in hole (5) on A-pillar (9).



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

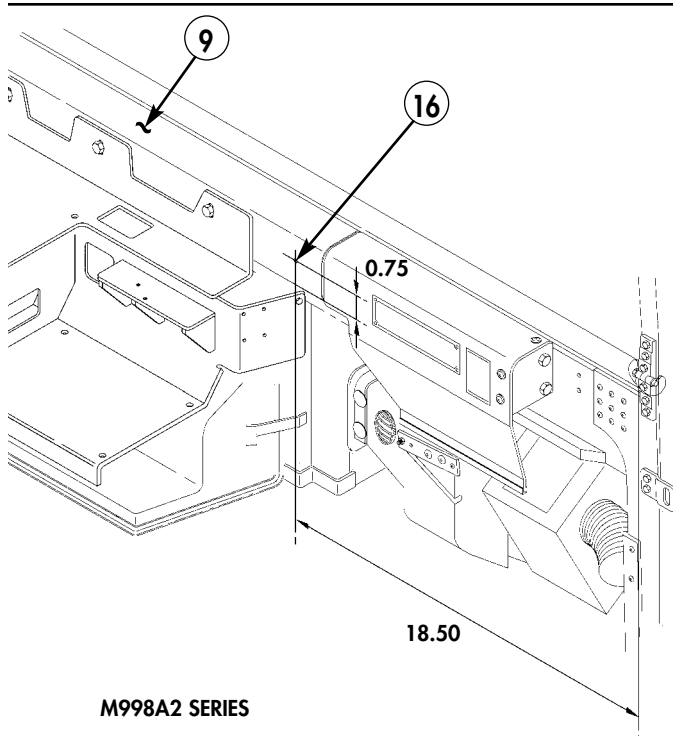
Figure 5-121.

- 35-8. Route antenna cable (1) behind heater shield (12) to installation mount (13).
- 35-9. Locate, mark, and drill one 0.147-in. diameter hole (16) in plenum (9).
- 35-10. Secure antenna cable (1) to plenum (9) with clamp (11) and self-tapping screw (10).
- 35-11. Secure excess antenna cable (1) behind installation mount (13) on integrated radio rack (15) with tiedown strap (14).



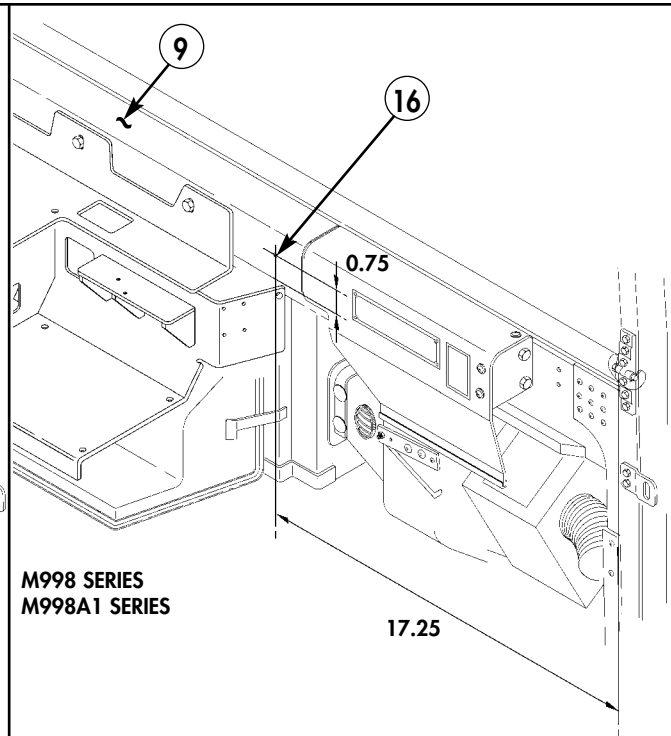
- 10. SELF-TAPPING SCREW - 9416639 - QTY. 1
- 11. CLAMP - MS21333-67 - QTY. 1
- 14. TIEDOWN STRAP - MS3367-1-0 - QTY. 1

Figure 5-122.



M998A2 SERIES

Figure 5-123.



M998 SERIES
M998A1 SERIES

Figure 5-124.

By Order of the Secretary of the Army:

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

Official:



SANDRA R. RILEY
Administrative Assistant to the
Secretary of the Army
0520906

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ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO.*	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON (Provide exact wording of recommended changes, if possible)
1	5-13		8-3	5-20		<p>Quantity of lockwasher MS45904-72 is 6.</p> <p>Two lockwashers are used on driver side with a nut, and one lockwasher is used on passenger side.</p>

SAMPLE

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

TYPED NAME, GRADE, OR TITLE <p style="text-align: center;">Pat Smith</p>	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION <p style="text-align: center;">AV272-4162</p>	SIGNATURE <p style="text-align: center;"><i>Pat Smith</i></p>
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