

**TD 17-6920-712**

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**TRAINING DOCUMENT**

**FOR**

**TANK WEAPON GUNNERY SIMULATION SYSTEM (TWGSS)**

**CONVERSION KIT**

**LOCAL REPRODUCTION AUTHORIZED**

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**1 AUGUST 1997**



TRAINING DOCUMENT  
TD 17-6920-712

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, D.C. June 20, 1997

TRAINING DOCUMENT  
FOR  
TANK WEAPON GUNNERY SIMULATION SYSTEM (TWGSS)  
CONVERSION KIT

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (*Recommended Changes to Publications and Blank Forms*) direct to: Simulation, Training, and Instrumentation Command, ATTN: AMSTI-LDM, 12350 Research Parkway, Orlando, FL 32826-3276. A reply will be furnished to you.

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## HOW TO USE THIS DOCUMENT

This manual is designed to aid in converting the Tank Weapon Gunnery Simulation System (TWGSS) from use on the M1/M1A1, to use on M1A2 tanks. It describes in detail the steps to convert an M1/M1A1 TWGSS for use on M1A2 tanks and conversion back to an M1/M1A1 TWGSS.

### FEATURES OF THIS DOCUMENT:

- A table of contents is provided at the beginning of most chapters and sections.
- **WARNINGS, CAUTIONS, and NOTES**, subject headings, and other important information are highlighted in **BOLD** print as visual aid.

#### **WARNING**

A **WARNING** indicates a hazard which can result in death or serious injury.

#### **CAUTION**

A **CAUTION** is reminder of safety practices or directs attention to usage practices that may result in damage to equipment.

#### **NOTE**

A **NOTE** is a statement containing information that will make the procedures easier to perform.

- An alphabetized list of abbreviations and their meaning are included in Chapter 1 for reference purposes.
- Statements and words of particular importance are printed in capital letters to create emphasis.
- An alphabetical index is provided at the end of the manual to assist in locating information not readily found in the table of contents.

### FOLLOW THESE GUIDELINES WHEN YOU USE THIS DOCUMENT:

- Read through this manual and become familiar with its contents before proceeding to convert a system or perform any maintenance procedures.
- A **WARNING SUMMARY** is provided at the beginning of this manual and should be read before performing any tasks.
- In the actual conversion of a system or during maintenance follow all **WARNING, CAUTIONS, and NOTES**. These are given immediately preceding the procedural steps to which they apply. If these instructions are not followed or care is not taken, injury to personnel or equipment may result.
- Within a chapter, section, or paragraph, headings are used to help group the material and assist you in quickly finding tasks. Read all preliminary information found at the beginning of each task. After completing a task, **ALWAYS** perform the follow-on maintenance at the end of the task.

# CHAPTER 1

## INTRODUCTION

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Paragraph ber	Paragraph Title	Page Number
1-1.	General .....	1-1
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### **1-1. GENERAL.**

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This document provides the information for converting the Tank Weapon Gunnery Simulation System (TWGSS) from use on the M1/M1A1, to use on M1A2 tanks to include maintaining the TWGSS conversion kit components. It describes in detail the steps to convert an M1/M1A1 TWGSS for use on M1A2 tanks and conversion back to an M1/M1A1 TWGSS.

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### **1-2. MAINTENANCE FORMS AND PROCEDURES.**

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Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, Functional Users Manual for the Army Maintenance Management System (TAMMS), as contained in the Maintenance Management Update.

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### **1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs).**

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If your TWGSS conversion kit needs improvement, let us know. Send us an EIR. You, the user are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF Form 368 ([Product Quality Deficiency Report](#)). Mail it to us at Simulation, Training, and Instrumentation Command, ATTN: AMSTI-LDT, 12350 Research Parkway, Orlando, FL 32826-3276. We will send you a reply.

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### **1-4. LIST OF ABBREVIATIONS.**

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CLS.....	Contractor Logistic Support
EIR .....	Equipment Improvement Recommendation
FCEU .....	Fire Control Electronics Unit

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## 1-4. LIST OF ABBREVIATIONS (Con't).

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FCS .....	Fire Control System
IAW.....	In Accordance With
LRF.....	Laser Rangefinder
TAMMS.....	The Army Maintenance Management System
TWGSS .....	Tank Weapon Gunnery Simulation System

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## 1-5. EQUIPMENT DESCRIPTION.

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a. **Purpose of TWGSS Conversion Kit.** The conversion kit provides a means to utilize the TWGSS with all models of the M1 tank family. The TWGSS design allows for software and component interchangeability. With the aid of the conversion kit, an M1 or M1A1 configured TWGSS set may be converted for use on an M1A2 tank.

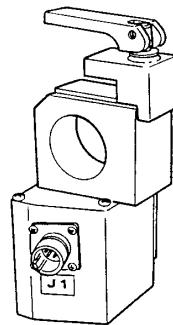
b. **Conversion Kit Configuration.** The conversion kit is configured with the required unique M1A2 components and cables needed to convert an M1/M1A1 TWGSS to an M1A2 TWGSS. A transport case is provided for storage of these unique components.

c. **Description of M1/M1A1 Unique Components.**

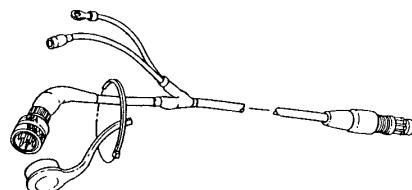
**NOTE**

**Components listed below will NOT  
be used with the M1A2 TWGSS.**

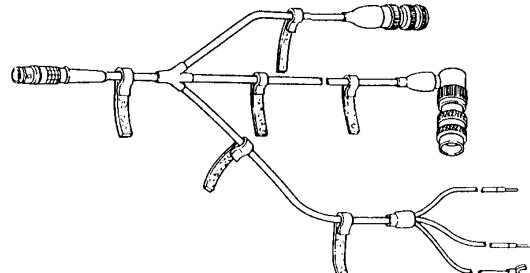
(1) **Turret Position Sensor (TPS).**  
Senses turret position in relation to hull and sends information to vehicle interface unit (PN: 8839115-101).



(2) **Cable Assembly, W9.** Provides the link between the vehicle interface unit connector J3 and turret networks box connector UJ1. Also provides power to Hoffman device when installed (PN: 8839132-311).



(3) **Cable Assembly, W10.** Provides the link between the loader's panel connector J1, vehicle interface unit connector J4, and the AN 1780/VRC or AN/VIC-3 amplifier unit (PN: 8839136-311).

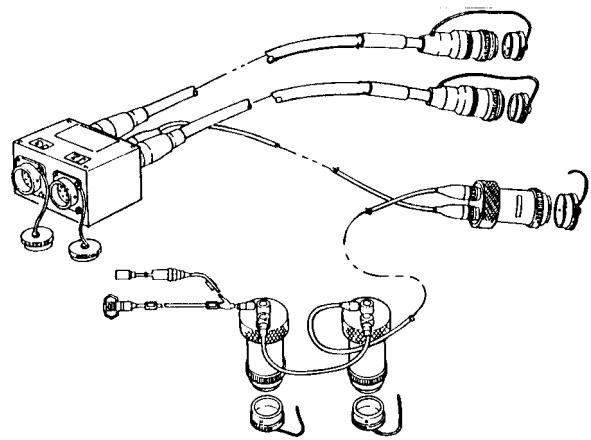


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## 1-5. EQUIPMENT DESCRIPTION (Con't).

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(4) **Cable Assembly, W11.** Provides the link between the loader's panel connector J2, TNB test connectors T1 and T2, Hoffman trigger, LOS unit, and CEU connectors (PN: 8839131-311 & 8839131-312).

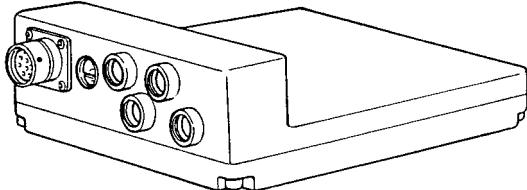


d. **Description of M1A2 Unique Components.**

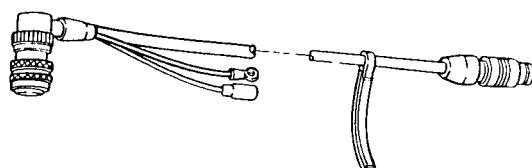
**NOTE**

Components listed below will NOT be used with the M1/M1A1 TWGSS.

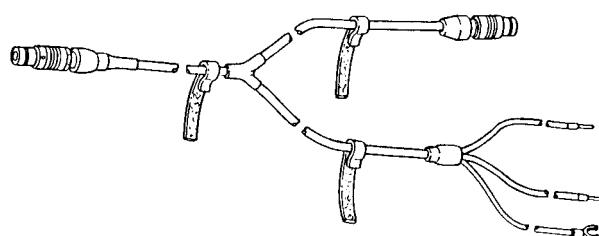
(1) **Expansion Unit.** Interfaces with 1553B data bus for vehicle and fire control system status. Receives and sends signals to vehicle fire control system, and provides this information to the vehicle interface unit (PN: 8851010-101).



(2) **Cable Assembly, W9.** Provides the link between the vehicle interface unit connector J3 and remote switching module connector UJ1. Also provides power to Hoffman device when installed (PN: 8839132-341).



(3) **Cable Assembly, W10.** Provides the link between the loader's panel connector J1, the expansion unit connector J2, and the AN 1780/VRC or the AN/VIC-3 amplifier units (PN: 8839136-341).



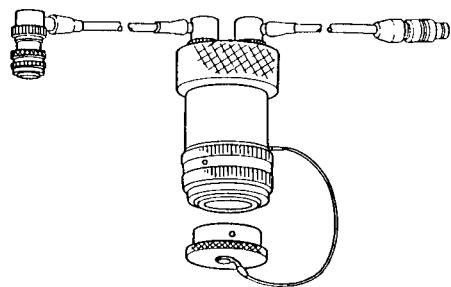
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**1-5. EQUIPMENT DESCRIPTION (Con't).**

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**(4) Cable Assembly, W11/Node**

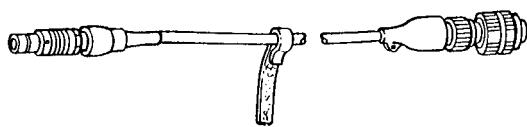
**M1A2 FCEU/TJ2.** Provides the link between the loader's panel connector J2, the FCEU connector TJ2, and the LRF node assembly connector J1 (PN: 8839131-341).

**(5) Cable Assembly, W13.**

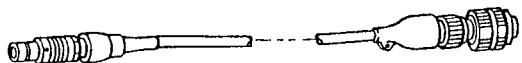
Provides the link between the expansion unit connector J1 and the vehicle interface unit connector J4 (PN: 8839130-341).

**(6) Cable Assembly, W14.**

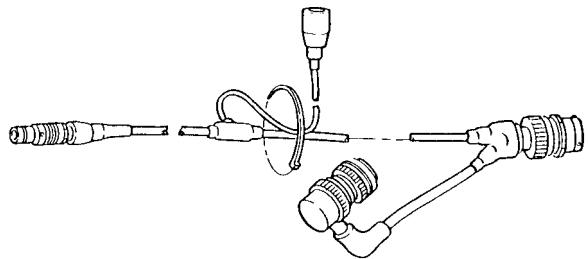
Provides the link between the expansion unit connector J4 and the alternate data coupler connector J6 (PN: 8839141-341).

**(7) Cable Assembly, W15.**

Provides the link between the expansion unit connector J5 and the primary data coupler connector J1 (PN: 8839142-341).

**(8) Cable Assembly, W16.**

Provides the link between the expansion unit connector J3 and the manual fire blasting machine cable BMACH-P-1, turret cable number 1W203-8/31, and the Hoffman device trigger when installed (PN: 8839140-341).

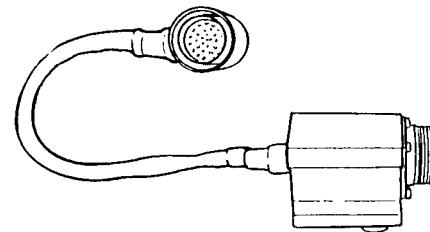


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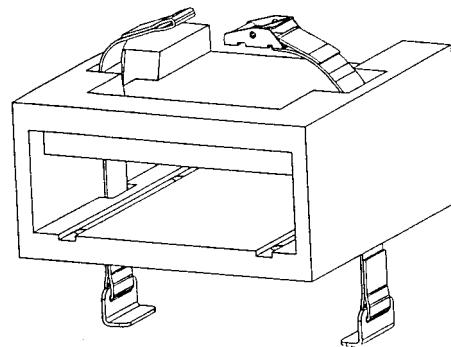
## 1-5. EQUIPMENT DESCRIPTION (Con't).

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(9) **Node M1A2 FCEU/J12.** Provides the connecting point for electrical input from system components to vehicle fire control electronics unit (FCEU) (PN: 8851020-101).



(10) **Bracket Assembly, Expansion Unit.** Houses and secures the expansion unit within the vehicle interface assembly (PN: 8852109-101).



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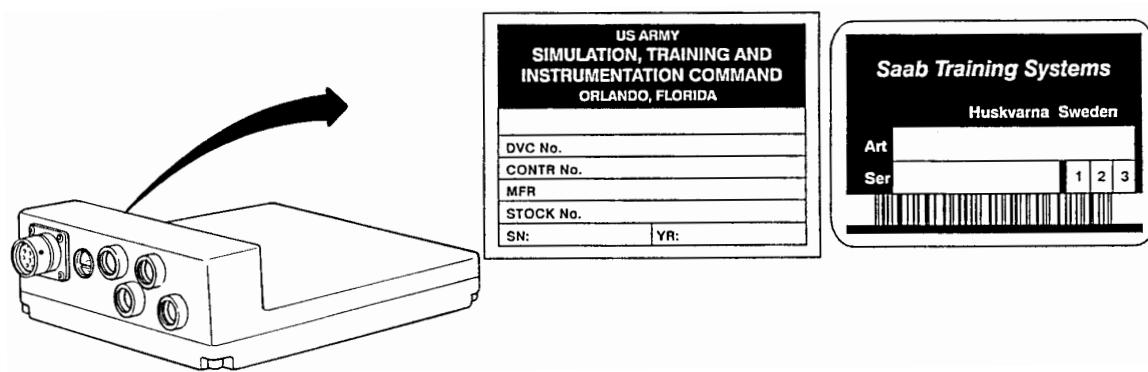
## 1-6. MATERIAL USED IN CONJUNCTION WITH MAJOR ITEM.

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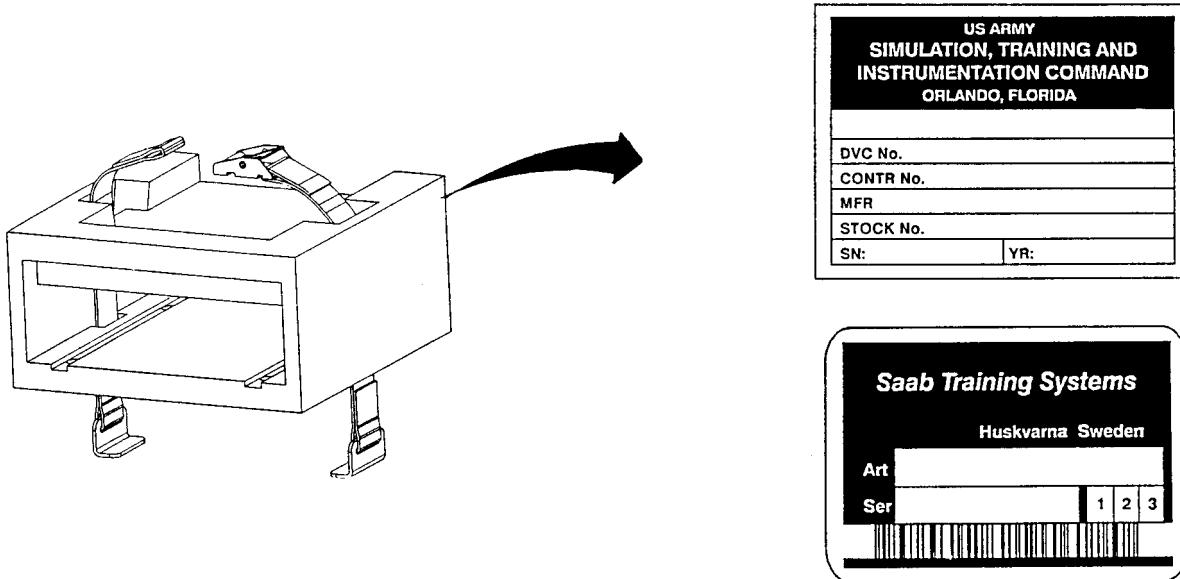
**Tank Weapon Gunnery Simulation System (TWGSS) (M1/M1A1).** With the conversion kit installed, TWGSS part number 8839010-101 can be used on an M1A2 tank.

## 1-7. LOCATION AND DESCRIPTION OF DECALS.

### a. Expansion Unit.



### b. Expansion Unit Bracket.

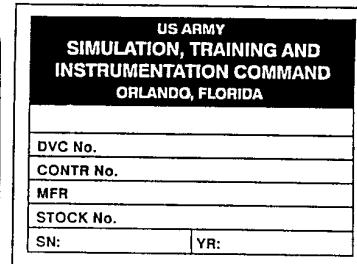
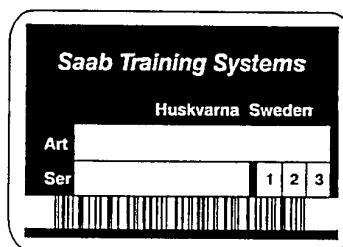
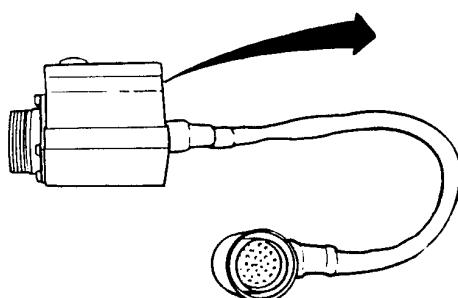


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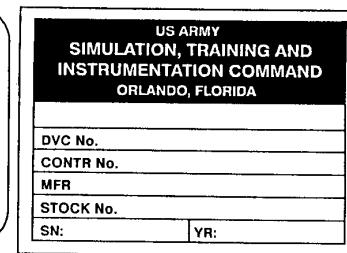
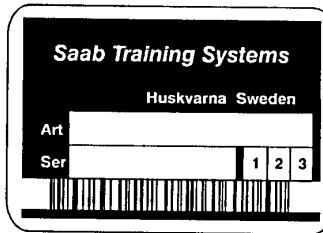
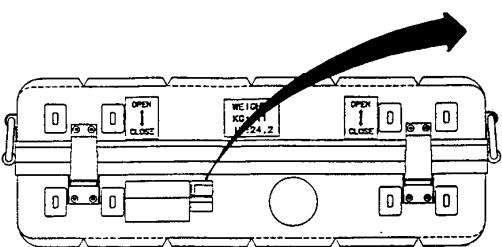
## 1-7. LOCATION AND DESCRIPTION OF DECALS (Con't).

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C. **Node Assembly, M1A2 FCEU.**



d. **Storage Case.**




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## 1-8. CABLES AND CABLE CONNECTORS.

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a. **Identification.** The cables contained in the TWGSS conversion kit are provided with identification bands. Bands are numbered from W9 through W11 and W13 through W16. The cables are also provided with an identification band at each end. These identify the connector of the cable and the connecting point for that cable. Connectors are typically numbered from J1 through J5.

b. **Cable Connection and Disconnection Instructions.**

(1) Align cable connector with connecting point by aligning either the red dot at cable connector with the red dot at connecting point, or by aligning the keyway at the connecting point.

(2) For cable connectors with knurled collars, rotate collar clockwise to connect. For all other cable connectors, push straight in to connect.

---

**1-8. CABLES AND CABLE CONNECTORS (Con't).**

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**CAUTION**

**Any attempt to disconnect a cable by pulling only on the cable will damage the cable and cable connector.**

(3) To disconnect the knurled collar type of cable connector, rotate collar counterclockwise to disconnect. For all other cable connectors, pull straight out on connector body to disconnect.

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**1-9. EQUIPMENT DATA.**

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**CONVERSION KIT:**

## Expansion Unit:

Length .....	8.5 in. (21.59 cm)
Width .....	6.1 in. (15.49 cm)
Height .....	2.3 in. (8.13 cm)
Weight .....	2 lb. 14 oz. (1.30 kg)

## Bracket Expansion Unit:

Length .....	6.7 in. (17.0 cm)
Width .....	6.7 in. (17.0 cm)
Height .....	3.5 in. (9.0 cm)
Weight .....	0.8 lb. (0.4 kg)

## Node Assembly, M1A2 FCEU:

Length .....	4.6 in. (11.68 cm)
Width .....	2.8 in. (7.11 cm)
Height .....	2.6 in. (6.60 cm)
Weight .....	1 lb. (0.45 kg)

## Storage Case:

Length .....	23.6 in. (60.0 cm)
Width .....	19.6 in. (50.0 cm)
Height .....	7.8 in. (20.0 cm)
Weight .....	24 lb. (11 kg)

## CHAPTER 2

### CONVERSION INSTRUCTIONS

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Paragraph ber	Paragraph Title	Page Number
2-1.	Unpacking and Packing Components .....	2-1
2-2.	Preliminary Inspection Instructions.....	2-1
2-3.	Conversion of M1/M1A1 TWGSS to M1A2 TWGSS .....	2-2
2-4.	Restore M1A2 TWGSS to M1/M1A1 TWGSS Configuration and Assemble TWGSS Conversion Kit .....	2-7

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#### **2-1. UNPACKING AND PACKING COMPONENTS.**

---

- a. The Tank Weapon Gunnery Simulation System (TWGSS) Conversion Kit components and cables are assembled in a ready-to-use configuration. The components and cables are packed in a single storage case. The case is designed to store items as indicated by shaped cutouts in the foam cushioning.
- b. An illustrated components list is found on the inside of storage case lid. Use this illustrated list as a guide when unpacking and packing the conversion kit components.
- c. An illustrated components list for the storage case is also found in Appendix A.

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#### **2-2. PRELIMINARY INSPECTION INSTRUCTIONS.**

---

- a. Perform Preventive Maintenance Checks and Services (PMCS) IAW Chapter 3, Section II of this manual.
- b. Check all components of the conversion kit against components list found on the inside of storage case lid.

---

## 2-3. CONVERSION OF M1/M1A1 TWGSS TO M1A2 TWGSS.

---

*This Task Covers:*

- |               |             |
|---------------|-------------|
| a. Removal    | c. Assembly |
| b. Conversion |             |

---

*Initial Setup:*

**Required Equipment:**

- TWGSS Conversion Kit
- M1/M1A1 TWGSS

**References:**

- TM 9-6920-709-12&P-1-1
  - TM 9-6920-709-12&P-1-2
- 

**a. REMOVAL**

**NOTE**

- Refer to Appendix E, Illustrated Components List, in TM 9-6920-709-12&P-1-1 for illustration of the contents of M1/M1A1 TWGSS.
- The part number of cable assemblies appears at the end of each step to aid in identifying the proper cable.

1. Remove turret position sensor unit from TWGSS storage case and set aside.
2. Remove M1/M1A1 TWGSS manual from TWGSS storage case and set aside.
3. Remove W11 cable assembly from TWGSS storage case. Coil cable assembly and set aside (PN: 8839131-311).
4. Remove vehicle interface assembly from TWGSS storage case.
5. Release velcro straps to separate cables and to aid in locating and identifying cable labels.
6. Disconnect W10 cable assembly connector J4 from vehicle interface unit connector J4. Coil cable assembly and set aside (PN: 8839136-311).
7. Disconnect W9 cable connector J3 from vehicle interface connector J3. Coil cable assembly and set aside (PN: 8839132-311).

**NOTE**

**Refer to Appendix A for illustration of the contents of TWGSS conversion kit.**

8. Remove all items from TWGSS conversion kit storage case, separate and arrange all items to aid in locating and identifying cables.

---

## 2-3. CONVERSION OF M1/M1A1 TWGSS TO M1A2 TWGSS (Cont).

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**b. CONVERSION**

**NOTE**

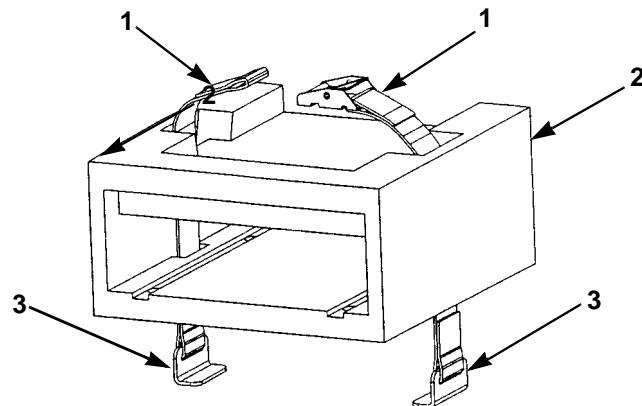
- The part number of cable assemblies appears at the end of each step to aid in identifying the proper cable.
- Refer to vehicle interface assembly cabling diagram to aid during conversion (see page 2-6).

1. Release the buckle (1) and loosen the straps on the expansion unit bracket (2).

**NOTE**

**Ensure the expansion unit cable connectors are facing in the same direction as the video mixer unit cable connectors.**

2. Position strap clips (3) under video mixer unit located in the vehicle interface assembly.
3. With the expansion unit bracket (2) in place on the video mixer unit, tighten bracket straps to secure the assemblies in place. Secure the buckle (1).



4. Locate cable bundle of conversion kit containing W10, W11, and W15.

**NOTE**

**Cables should be routed into the vehicle interface assembly through the lower opening at the top of the assembly.**

5. Connect W15 cable connector J5 to expansion unit connector J5 (PN: 8839142-341).
6. Connect W10 cable connector J2 to expansion unit connector J2 (PN: 8839136-341).
7. Locate cable bundle of conversion kit containing cables W9, W14, and W16.

---

**2-3. CONVERSION OF M1/M1A1 TWGSS TO M1A2 TWGSS (Cont).**

---

**NOTE**

**Cables should be routed into the vehicle interface assembly through the lower opening at the top of the assembly.**

8. Connect W14 cable connector J4 to expansion unit connector J4 (PN: 8839141-341).
9. Connect W16 cable connector J3 to expansion unit connector J3 (PN: 8839140-341).
10. Connect W9 cable connector J3 to vehicle interface unit J3 (PN: 8839132-341).
11. Connect W13 cable connector J1 to expansion unit connector J1 and connector J4 to vehicle interface connector J4 (PN: 8839130-341).
12. Check W8 cable connection J3 to video mixer connector J3.
13. Check W4 cable connection between video mixer unit connector J1 and vehicle interface unit connector J2.
14. Check W3 cable connection J2 to video mixer unit connector J2.
15. Ensure all cable connections within the vehicle interface assembly are secure.

**NOTE**

**The system cables exiting the vehicle interface assembly must be grouped into two bundles with velcro straps (see diagram on page 2-6).**

16. Group cable assemblies W8, W9, W14, and W16. Secure the cables together using attached velcro straps.
17. Group cable assemblies W3, W10, W11, and W15. Secure the cables together using attached velcro straps.
18. Secure cable bundles using velcro straps to the vehicle interface assembly using the hole located at the top left side of the bracket.
19. Secure the two cable bundles together at the vehicle interface assembly using one velcro strap.
20. Coil cable bundles and place on top of vehicle interface assembly.

**c. ASSEMBLY****NOTE**

**The part number of cable assemblies appears at the end of each step to aid in identifying the proper cable.**

1. Place vehicle interface assembly with coiled cable bundles in position No. 8 of TWGSS storage case 2 of 2.
2. Place Node Assembly, M1A2 FCEU/J12 in position No. 8 of TWGSS storage case 2 of 2 (PN: 8851020-101).
3. Place M1A2 TWGSS TM 9-6920-709-12&P-1-2 in TWGSS storage case 1 of 2.
4. Close and secure lids of TWGSS storage cases.

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**2-3. CONVERSION OF M1/M1A1 TWGSS TO M1A2 TWGSS (Cont).**

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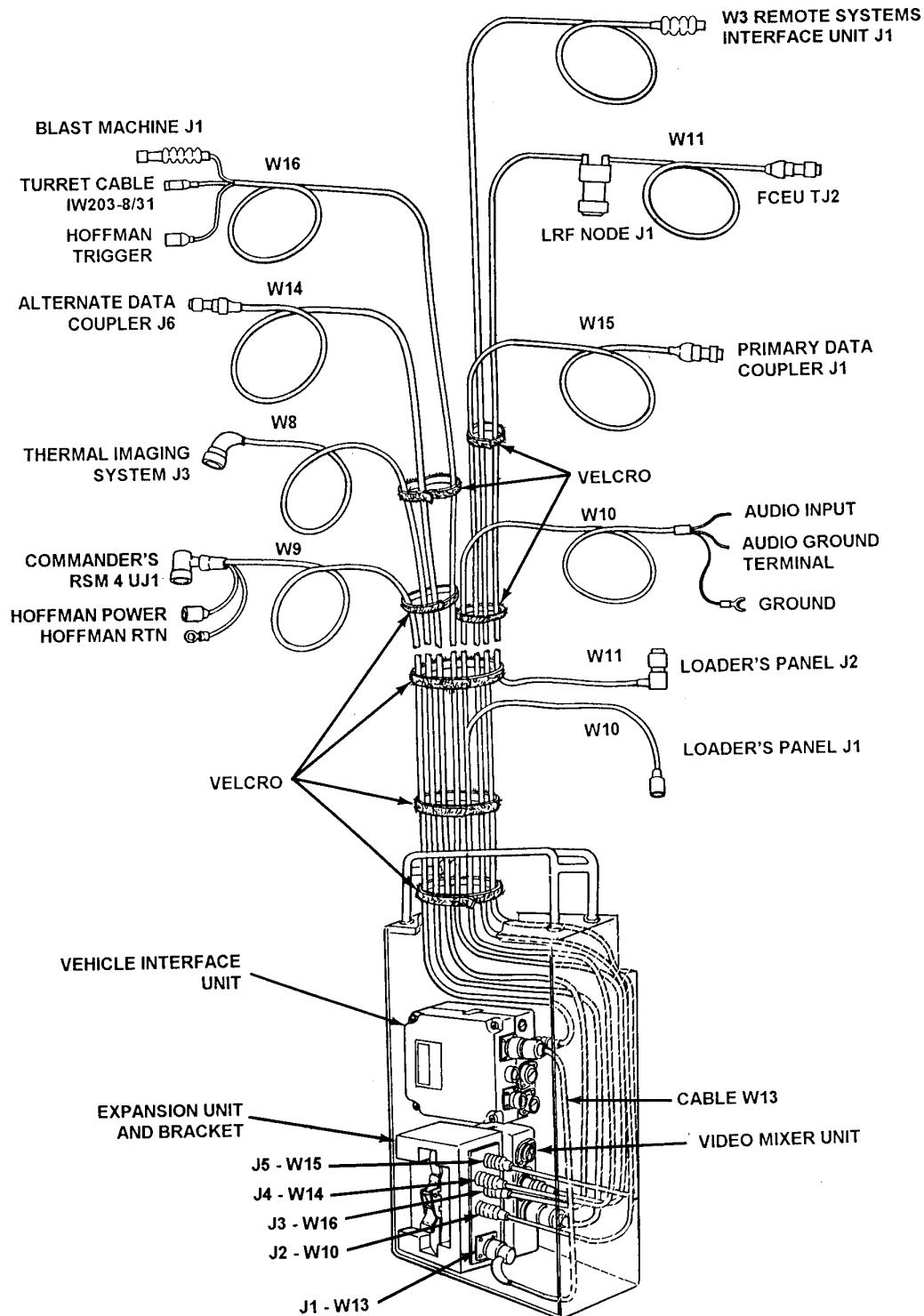
**FOLLOW-ON TASKS:**

- Place turret position sensor in conversion kit storage case.
- Place W9 cable assembly in conversion kit storage case (PN: 8839132-311).
- Place W10 cable assembly in conversion kit storage case (PN: 8839136-311).
- Place W11 cable assembly in conversion kit storage case (PN: 8839131-311).
- Place TWGSS conversion manual in conversion kit storage case (TD 17-6920-712).
- Close and secure conversion kit storage case lid.

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**2-3. CONVERSION OF M1/M1A1 TWGSS TO M1A2 TWGSS (Cont).**


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**Cabling Diagram.**

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## 2-4. RESTORE M1A2 TWGSS TO M1/M1A1 TWGSS CONFIGURATION AND ASSEMBLE TWGSS CONVERSION KIT.

---

*This Task Covers:*

- |                 |             |
|-----------------|-------------|
| a. Removal      | c. Assembly |
| b. Re-configure |             |

---

*Initial Setup:*

**Required Equipment:**

- TWGSS Conversion Kit
- M1A2 TWGSS

**References:**

- TM 9-6920-709-12&P-1-1
- TM 9-6920-709-12&P-1-2

a. **REMOVAL**

**NOTE**

- Refer to Appendix E, Illustrated Components List, in TM 9-6920-709-12&P-1-2 for illustration of the contents of M1A2 TWGSS.
- The part number of cable assemblies appears at the end of each step to aid in identifying the proper cable.

1. Remove Node, M1A2 FCEU/J12 from TWGSS storage case. Set node assembly aside (PN: 8851020-101).
2. Remove vehicle interface assembly from TWGSS storage case.
3. Release velcro straps securing the vehicle interface assembly cables. Separate cables to aid in locating and identifying cable labels.
4. Disconnect W13 cable connector J1 from expansion unit connector J1. Disconnect W13 cable connector J4 from vehicle interface unit connector J4. Set cable assembly aside (PN: 8839130-341).
5. Disconnect W10 cable connector J2 from expansion unit connector J2 (PN: 8839136-341).
6. Disconnect W15 cable connector J5 from expansion unit connector J5. (PN: 8839142-341).
7. Coil cable bundle containing W10, W11, and W15 and set aside.
8. Disconnect W14 cable connector J4 from expansion unit connector J4 (PN: 8839141-341).
9. Disconnect W16 cable connector J3 from expansion unit connector J3 (PN: 8839140-341).
10. Disconnect W9 cable connector J3 from vehicle interface unit connector J3 (PN: 8839132-341).
11. Remove and coil cable bundle and set aside.
12. Release strap securing expansion unit assembly to the video mixer unit.
13. Remove expansion unit assembly from vehicle interface assembly.

**NOTE**

**Refer to Appendix A for illustration of the contents of the TWGSS conversion kit.**

14. Remove all items from TWGSS conversion kit storage case. Separate and arrange all items to aid in locating and identifying cable labels.

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**2-4. RESTORE M1A2 TWGSS TO M1/M1A1 TWGSS CONFIGURATION AND ASSEMBLE TWGSS CONVERSION KIT (Cont).**

---

**b. RE-CONFIGURE**

**NOTE**

- **The part numbers of cable assemblies appear at the end of each step to aid in identifying the proper cable.**
- **Refer to vehicle interface assembly cabling diagram to aid during conversion (see page 2-10).**
- **Cables should be routed into the vehicle interface assembly through the lower opening at the top of the assembly. Keep cables coming out of the assembly separated for easy identification.**

1. Connect W9 cable connector J3 to vehicle interface unit connector J3 (PN: 8839132-311).
2. Connect W10 cable connector J4 to vehicle interface connector J4 (PN: 8839136-311).
3. Check W8 cable connection J3 to video mixer connector J3.
4. Check W4 cable connection between video mixer unit connector J1 and vehicle interface unit connector J2.
5. Check W3 cable connection J2 to video mixer unit connector J2.
6. Ensure all cable connections within the vehicle interface assembly are secure.

**NOTE**

**The system cables exiting the vehicle interface assembly must be grouped into two bundles using velcro.**

7. Separate and arrange all cables to aid in locating and identifying cable labels.
8. Locate W8 cable assembly and the turret position sensor (TPS) lead of W10. Secure the cables together using existing velcro straps.
9. Locate the cable assemblies W3, W9, and W10 lead (Radio Set 1780). Secure the cables together using existing velcro straps.
10. Secure cable bundles using existing velcro straps to the vehicle interface assembly using the hole located at the top left side of the bracket. Coil cable bundles and place on top of vehicle interface assembly.

**c. ASSEMBLY**

**NOTE**

**The part number of cable assemblies appears at the end of each step to aid in identifying the proper cable.**

1. Place vehicle interface assembly with coiled cable bundles in position No. 8 of TWGSS storage case 2 of 2.
2. Place W11 cable assembly in position No. 8 of TWGSS storage case 2 of 2 (PN: 8839131-311).

---

**2-4. RESTORE M1A2 TWGSS TO M1/M1A1 TWGSS CONFIGURATION AND ASSEMBLE TWGSS CONVERSION KIT (Cont).**

---

3. Place turret position sensor (TPS) in position No. 8 of TWGSS storage case 1 of 2.
4. Place M1/M1A1 TWGSS TM 9-6920-709-12&P-1-1 in TWGSS storage case 1 of 2.
5. Close and secure lids of TWGSS storage cases.

**FOLLOW-ON TASKS:**

- Place Node, M1A2 FCEU/J12 in conversion kit storage case (PN: 8851020-101).
- Place W13 cable assembly in conversion kit storage case (PN: 8839130-341).

**NOTE**

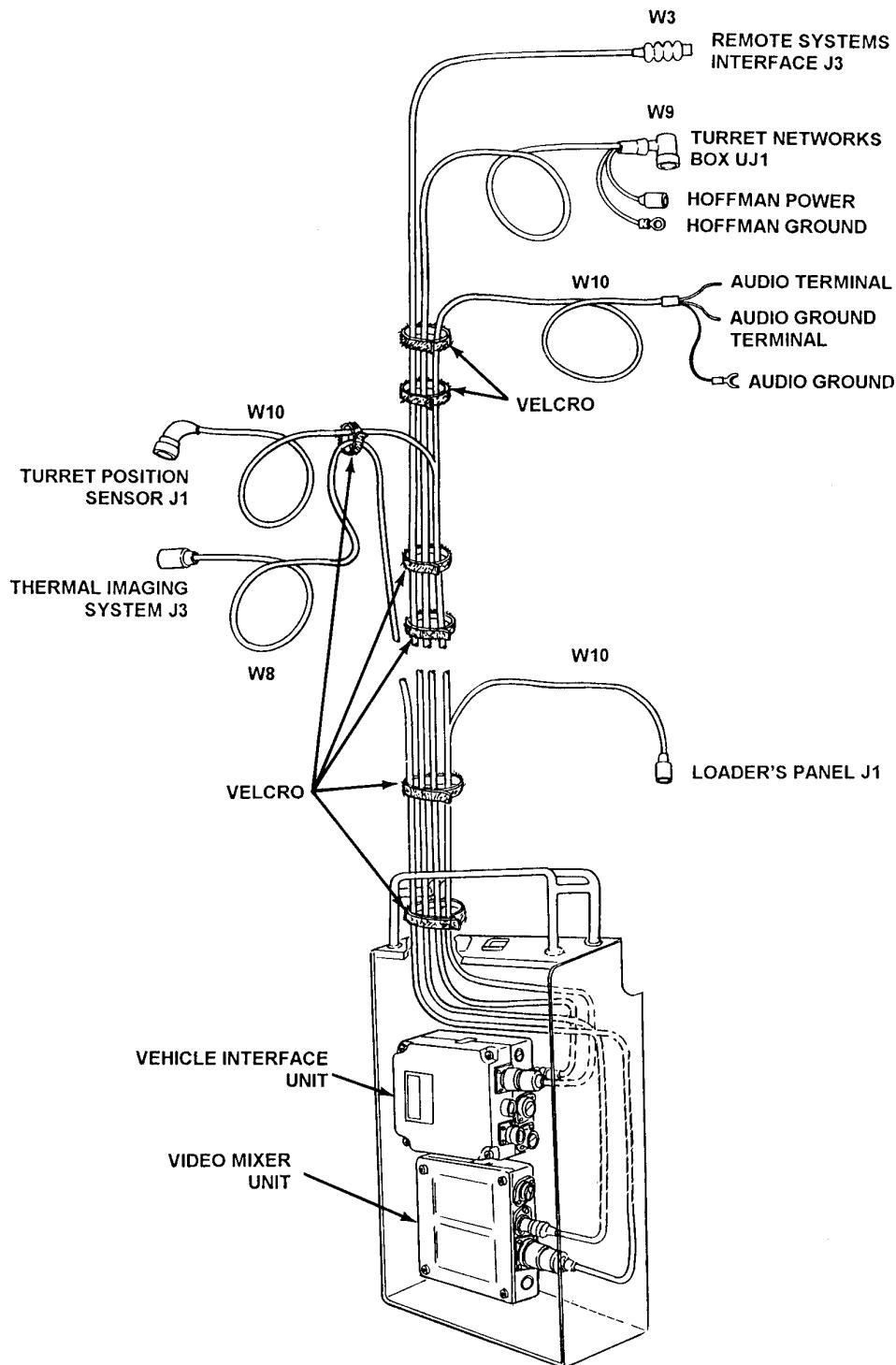
**Cables are grouped in two bundles by cable ties.**

- Place W11 Cable Node Assembly, M1A2 FCEU/TJ2 in conversion kit storage case (PN: 8839131-341).
- Place W15 cable assembly in conversion kit storage case (PN: 8839142-341).
- Place W10 cable assembly in conversion kit storage case (PN: 8839136-341).
  
- Place W14 cable assembly in conversion kit storage case (PN: 8839141-341).
- Place W16 cable assembly in conversion kit storage case (PN: 8839140-341).
- Place W9 cable assembly in conversion kit storage case (PN: 8839132-341).
  
- Place conversion kit manual in conversion kit storage case (TD 17-6920-712).
- Place expansion unit with bracket in conversion kit storage case (position No 1).
- Close and secure conversion kit storage case lid.

---

**2-4. RESTORE M1A2 TWGSS TO M1/M1A1 TWGSS CONFIGURATION AND ASSEMBLE TWGSS CONVERSION KIT (Cont).**

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**Cabling Diagram.**

## CHAPTER 3

### MAINTENANCE INSTRUCTIONS

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#### **Section I. SERVICE UPON RECEIPT**

Paragraph ber	Paragraph Title	Page Number
3-1.	General.....	3-1
3-2.	Unpacking Components.....	3-1
3-3.	Inspection Instructions .....	3-1
3-4.	Servicing Instructions .....	3-1

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#### **3-1. GENERAL.**

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When a new, used, or reconditioned Tank Weapon Gunnery Simulation System (TWGSS) conversion kit is first received, determine whether it has been properly prepared for service and is in condition to perform its mission. Follow the inspection instructions in paragraph 3-3 and servicing instructions in paragraph 3-4.

---

#### **3-2. UNPACKING COMPONENTS.**

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Refer to paragraph 2-1 for instructions on unpacking components.

---

#### **3-3. INSPECTIONS INSTRUCTIONS.**

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- a. Inspect the equipment for any damage incurred during shipment. Also check to see if the equipment has been modified.
- b. Check the equipment against the packing slip to ensure that the shipment is complete. Report any discrepancies in accordance with instructions in DA Pam 735-750.

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#### **3-4. SERVICING INSTRUCTIONS.**

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- a. Perform Preventive Maintenance Checks and Services in accordance with M1/M1A1 TWGSS TM 9-6920-709-12&P-1-1, M1A2 TWGSS TM 9-6920-709-12&P-1-2, and Chapter 3, Section II of this manual. Schedule the next PMCS on DA Form DD314.
- b. Report problems on DA Form 2407 to Contractor Logistic Support (CLS).

**TD 17-6920-712**

## Section II. MAINTENANCE INSTRUCTIONS

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3-7.	General PMCS Procedures .....	3-3
Table 3-1.	Preventive Maintenance Checks and Services (PMCS) .....	3-4

---

### **3-5. MAINTENANCE PROCEDURES.**

---

Refer to M1/M1A1 TWGSS, TM 9-6920-709-12&P-1-1 and M1A2 TWGSS, TM 9-6920-709-12&P-1-2 for required maintenance instructions and procedures.

---

### **3-6. MAINTENANCE ALLOCATION CHART.**

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Refer to M1/M1A1 TWGSS, TM 9-6920-709-12&P-1-1 and M1A2 TWGSS, TM 9-6920-709-12&P-1-2 for allocation of maintenance levels and tool and test equipment requirements.

---

### **3-7. GENERAL PMCS PROCEDURES.**

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- a. Perform Preventive Maintenance Checks and Services on the TWGSS conversion kit components IAW Table 3-1.
- b. Report problems on DA Form 2407 to Contractor Logistic Support (CLS).

**Table 3-1. Preventive Maintenance Checks and Services (PMCS).**

<b>Item No.</b>	<b>Interval</b>	<b>Item to Check/Service</b>	<b>Procedure</b>	<b>Not Fully Mission Capable If:</b>
1	Before	Storage Case	Check hinges, latches, and housing for damage. Check foam interior for dirt or damage. Clean if necessary. Check for moisture. Allow to air dry if necessary.	
2	Before	Expansion Unit Assembly	a. Check color of moisture indicator. Color should be pale blue or white. b. Check cable connectors for damage. c. Check expansion unit bracket for missing or broken parts.	a. Moisture indicator is pale pink. Notify CLS. b. Cable connectors are damaged. Notify CLS. c. Missing or damaged parts. Notify CLS.
3	Before	Node Assembly M1A2 FCEU	a. Check cable and cable connectors for damage. b. Check node assembly for damage.	a. Cable or connectors damaged. Notify CLS. b. Node damaged. Notify CLS.
4	Before	Cable Assemblies	a. Check cables for damage and/or missing velcro straps. b. Check cable connectors for damage and/or missing caps.	a. Damaged or missing parts. Notify CLS. b. Damaged or missing parts. Notify CLS.
5	After	Storage Case	Check hinges, latches, and housing for damage. Check foam interior for dirt or damage. Clean if necessary. Check for moisture. Allow to air dry if necessary.	
6	After	Expansion Unit Assembly	a. Check color of moisture indicator. Color should be pale blue or white. b. Check cable connectors for damage. c. Check expansion unit bracket for missing or broken parts.	a. Moisture indicator is pale pink. Notify CLS. b. Cable connectors are damaged. Notify CLS. c. Missing or damaged parts. Notify CLS.
7	After	Node Assembly M1A2 FCEU	a. Check cable and cable connectors for damage. b. Check node assembly for damage.	a. Cable or connectors damaged. Notify CLS. b. Node damaged. Notify CLS.
8	After	Cable Assemblies	a. Check cables for damage and/or missing velcro straps. b. Check cable connectors for damage and/or missing caps.	a. Damaged or missing parts. Notify CLS. b. Damaged or missing parts. Notify CLS.

## APPENDIX A

### ILLUSTRATED COMPONENTS LIST

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#### A-1. SCOPE.

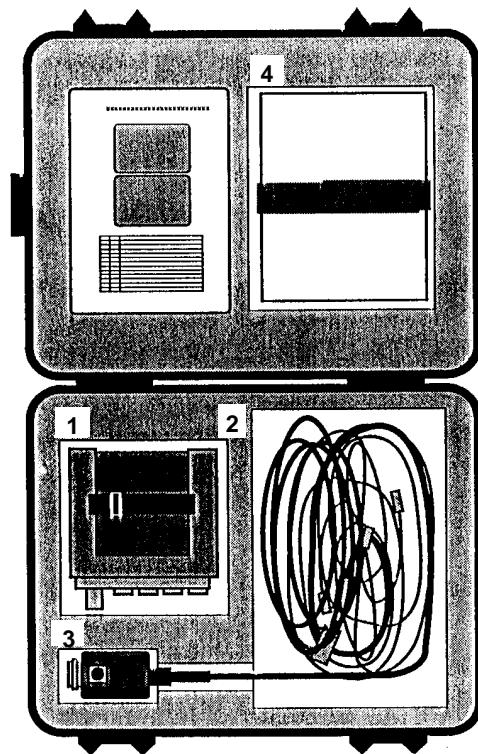
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This appendix lists and illustrates components of the Tank Weapon Gunnery Simulation System (TWGSS) Conversion Kit as they are stored in the storage case.

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A-2. ILLUSTRATED COMPONENTS LISTS.

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Item	Qty	Description	Part Number
1	1	Expansion Unit Assembly	8851010-101
2	1	Node M1A2 FCEU/TJ2 (W11)	8839131-341
2	1	Cable, Power (W9)	8839132-341
2	1	Cable, Loader's Panel (W10)	8839136-341
2	1	Cable, Expansion Unit (W13)	8839130-341
2	1	Cable 1553 Bus A (W14)	8839141-341
2	1	Cable 1553 Bus B (W15)	8839142-341
2	1	Cable Trigger (W16)	8839140-341
3	1	Node M1A2 FCEU/J12	8851020-101
4	1	Manual	

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