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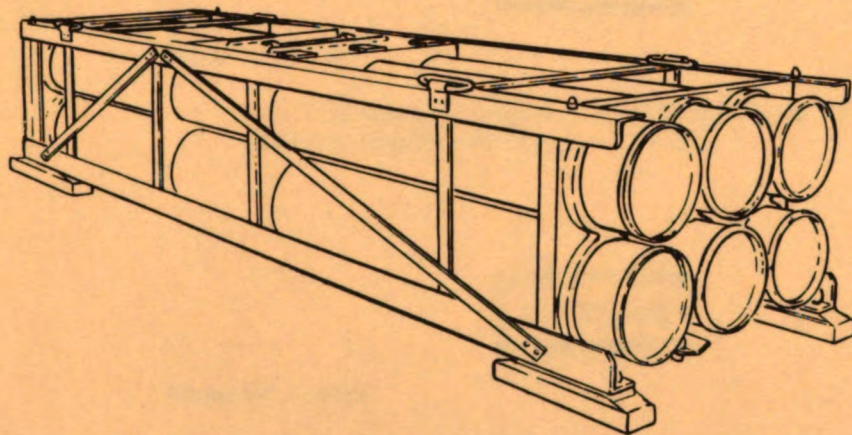
9-6920-646-14

TM 9-6920-646-14

TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DIRECT
SUPPORT, AND GENERAL SUPPORT
MAINTENANCE MANUAL

ROCKET POD, 298 MILLIMETER, TRAINING: M27
(6920-01-136-9550)



MULTIPLE LAUNCH
ROCKET SYSTEM

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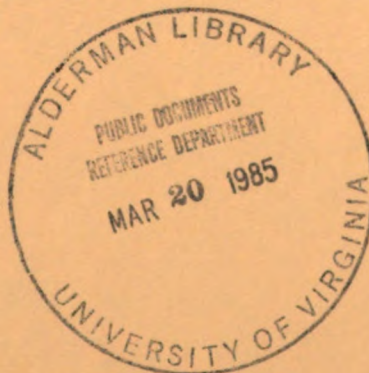
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DEPARTMENT OF THE ARMY

JUNE 1984

85-244

10-248-0588-0-101

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WARNING SUMMARY

Listed below is a summary of all warnings that appear in this manual. Warnings relating to the same hazard or those repeated several times throughout the manual are summarized and appear only once on this page.

WARNING

LLM movement.

DO NOT move the LLM until you have checked and made sure the path is clear.

WARNING

Electrical shock.

DO NOT work on electrical equipment alone. Be sure another person is nearby who can give first aid.

WARNING

Isopropyl alcohol.

ISOPROPYL ALCOHOL vapors are toxic. Avoid prolonged or repeated breathing of vapors or contact with skin. Use only with adequate ventilation. Solvent is flammable and should not be used near open flame. Fire extinguishers should be readily available when isopropyl alcohol is used.

FOR ARTIFICIAL RESPIRATION, REFER TO FM 21-11.

LIST OF EFFECTIVE PAGES

INSERT LATEST CHANGED PAGES DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands or vertical lines in outer margin of page. Extensively changed illustrations are indicated by a miniature pointing hand symbol pointing to the words MAJOR CHANGE.

Dates of issue for original and changed pages are:

Original 0 8 June 1984

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 99 CONSISTING OF THE FOLLOWING:

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Cover	0
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FO-1 (1)	0
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*Zero in this column indicates an original page.

ARMY

TECHNICAL MANUAL)
)
 No. 9-6920-646-14)

HEADQUARTERS
 DEPARTMENT OF THE ARMY
 Washington, D.C., 8 June 1984

**OPERATOR, ORGANIZATIONAL, DIRECT
 SUPPORT, AND GENERAL SUPPORT
 MAINTENANCE MANUAL**

**ROCKET POD, 298 MILLIMETER, TRAINING: M27
 (6920-01-136-9550)**

MULTIPLE LAUNCH ROCKET SYSTEM

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REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to Commander, U.S. Army Missile Command, Attn: DRSMI-SNPM, Redstone Arsenal, AL 35898. A reply will be furnished to you.

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HOW TO USE THIS MANUAL

This manual provides the information required to operate and maintain the MLP's M27 Training Rocket Pod (Trainer LP/C). It contains general information, such as the forms and records which must be maintained, a physical description of the equipment, and the principles of operation. Information is also provided on the description of the operator's controls and how the instructor, as the operator of the equipment, uses these controls to train a student.

To locate information in this manual, use the front cover index, the Table of Contents, the Chapter Contents, or the Alphabetical Index. The front cover index lists the major subjects contained in the manual and the page on which each subject is located. Black tabs on manual pages correspond to front cover index major subject tabs and to boxed heads in the Table of Contents. These black tabs may be used to locate each of the major subjects in the manual. The Table of Contents, in the front of the manual, locates general subjects. The Chapter Contents, in the front of each chapter, locates the specific subjects contained in the chapter. The Alphabetical Index is more detailed and will locate specific items. If you need to know where the Organizational Maintenance is located, look in the Table of Contents. If you need to know where a specific subject such as the Simulator Assembly Maintenance is located, refer to the Chapter Contents. But if you need to know how to remove and install a circuit card, look in the Alphabetical Index. Refer to the illustrated sample.

Read the principles of operation thoroughly. It will help you to better understand the equipment and make troubleshooting easier. The PMCS tables identify the equipment component and the time interval for periodic inspections. Troubleshooting tables will provide you with solutions to most equipment malfunctions. To simplify entry into troubleshooting tables, a symptom index is included to identify your trouble and direct you to the correct troubleshooting table and malfunction number within that table. The corrective action column in the troubleshooting table has a probable solution to your malfunction. The solution will often be a maintenance action described in the maintenance procedures. These procedures contain instructions for doing all the tasks that are necessary to restore the equipment to operating condition. You should familiarize yourself with the entire maintenance procedure before beginning the maintenance task.

The maintenance information is separated into three levels of maintenance as authorized by the Maintenance Allocation Chart (MAC). The three

levels of maintenance are: operator maintenance (performed by the instructor), organizational maintenance, and direct support maintenance. The maintenance information includes the preventive maintenance checks and services (PMCS), troubleshooting, and the maintenance procedures. The maintenance task for each item within the paragraph may be completed as an individual task. It is not necessary to perform the tasks on all items in the paragraph if only one item requires maintenance.

Each maintenance instruction has a paragraph number, title, list of tasks, and initial setup information you need to know before starting the job. The initial setup includes, as required, the following critical information:

Test/Support Equipment - Lists all the test equipment required to perform adjustment or checkout. Also, will list all the support equipment needed for the maintenance procedure. If no test or support equipment is required, heading is omitted.

Tools - Lists the tool kit and any special tools required to perform the tasks. If no tools are required, heading is omitted.

Fabricated Tools - Lists any tool which must be fabricated along with the reference to the appendix containing the fabrication details. If no fabricated tools are required, heading is omitted.

Materials/Parts - Lists all consumable parts and materials required to perform the tasks with reference to an item in an appendix. If no parts or materials are required, heading is omitted.

Personnel Required - Lists the number of personnel and their MOS required to perform the tasks.

References - Lists all technical manuals required to complete the tasks. If no other technical manual is required, heading is omitted.

Troubleshooting - Lists the paragraph number that contains the troubleshooting procedure for the maintenance tasks. If no troubleshooting is required, heading is omitted.

Equipment Conditions - Lists the condition the equipment must be in before starting the tasks. The normal equipment condition is with electrical power off and training LP/C's loaded. If these are the only equipment conditions required, heading is omitted.

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STEP 1

STEP 1. Find general subject in Table of Contents, then refer to Chapter Contents for specific item.

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5-1. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment for the trainer LPC, refer to the Modified Table of Equipment (MTOE) applicable to your unit.	5-4. TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE) TMDE for the trainer LPC is listed in the Maintenance Allocation Chart (MAC) in Appendix B.	
5-2. SPECIAL TOOLS. There are no special tools required for direct support maintenance of the trainer LPC.	5-5. REPAIR PARTS. Repair parts are listed and illustrated in TM 9-6920-646-247.	
5-3. SUPPORT EQUIPMENT. Refer to TM 9-6920-646-247 for support equipment required for direct support maintenance of the trainer LPC.		

STEP 2

STEP 2. Find specific item in Chapter Contents, then refer to paragraph and page number indicated for desired information.

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STEP 1

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Bushing, Maintenance Instructions

STEP 2

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Section IV DIRECT SUPPORT MAINTENANCE

5-10. GENERAL The maintenance instruction paragraphs cover the direct support maintenance tasks for the items of that component or assembly for which maintenance is authorized by the Maintenance Allocation Chart (MAC) in Appendix B. The maintenance task for each item within the paragraph may be completed as an individual task if it is not necessary to perform the tasks on all items in the paragraph if only one item requires maintenance.

5-11. TRAINER LPC MAINTENANCE INSTRUCTIONS.

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2. Bushings	5-21
3. Latch	5-21
4. Strike	5-22

INITIAL SETUP

Support Equipment:
 Truck wrecker (Item MB16, item 2)
 Hawk LPC 1150009 (item 2)

Tools:
 Kit tool 1303292
 Set shop 1303203
 Bar hooking (item 4)
 Drill electric (for items 1 and 4)
 Drill (size 1/8 inch for items 3 and 4)
 Pin hand for item 3
 Hammer pneumatic (for item 4)
 Support and cutting for item 3
 Riveter blind hand (for item 3)

Personnel Required:
 Wrecker Driver MKN4311
 MILRN Repairer MKN27M

Material Parts:
 Cloth cleaning 2, Appendix 2
 Hammer wire chromate 2, Appendix 2
 Shim steel, untreated 2, Appendix 2

Equipment and Tools:
 LPC included from SPLI (TM 9-1425-646-10) (for item 2)

NOTE
 The left and right side assemblies are removed and installed in the same manner.

1. SLIDE MOUNT

a. Remove

- Remove simulator assembly (paragraph 4-11).
- Remove fuses from socket simulator (paragraph 5-12).
- Using rivet pin wrench and Shim open end wrench, remove three screws. Then washers, three nuts and shim securing slide half in simulator.
- Using flat tip screwdriver, remove five screws securing stationary side to racket tube (item 2).

**SCREW (3)
 WASHER (3)
 NUT (3)
 SHIM (AS
 REQUIRED)**

SLIDE HALF

SIMULATOR

5-19

STEP 3

STEP 4

STEP 1. Find item in Alphabetical Index.

STEP 2. Locate paragraph.
 STEP 3. Locate item and page.
 STEP 4. Check initial setup.

STEP 5

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5-11. TRAINER LPC MAINTENANCE INSTRUCTIONS (CONT)

2. BUSHINGS.

a. Remove.

- Using 5/16 wrench and LPE bush, lift LPC onto support stand. Support could be made from four 55 gallon drums (one under each corner of LPC) and two 1/4 inch lumber.

NOTE
 Bushing on forward end of LPE is installed with a washer under the head of bush screw.

b. Install.

- Using artist brush, apply a coating of zinc chromate primer to outside surface of bushing and threads of four mounting screws.
- Using machinist hammer, lightly tap the bushing into the LPE.
- Secure bushing to LPE with four screws and four washers. If required, using rivet pin wrench, tighten screws.
- Using 5/16 wrench, remove LPE from support stand.
- If no further maintenance is required, perform follow on procedure (page 5-21).

3. LATCH

a. Remove

- Remove simulator assembly (paragraph 4-11).
- Open latch to full open position.
- Using electric drill and 1/8 inch twist drill through two rivet heads on inside of tube.
- Using drive pin punch, tap nut from rivet, securing latch to tube. Remove latch.

b. Install

- Using artist brush, apply zinc chromate primer to bushings.
- Place new latch in position and using blind rivet, install rivets from inside tube.
- Using end cutting nipper, cut the end of rivets. Use file to remove sharp edges from rivets.
- Install simulator assembly (paragraph 4-11).

TUBE
RIVET
LATCH

BUSHING
WASHER (4)
SCREW (4)

5-21

STEP 5. Locate page and item.
 STEP 6. Perform task.

STEP 7

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5-11. TRAINER LPC MAINTENANCE INSTRUCTIONS (CONT)

4. STRIKE

a. Remove

- Remove cover (paragraph 4-12).
- Position cover on vice and using electric drill and 1/8 inch twist drill, drill through head of two rivets.
- Using drive pin punch, remove two rivets. Remove strike.

b. Install

- Using artist brush, apply zinc chromate primer to rivets.
- Using rivet pin wrench, install two rivets. Using hammer, install rivets with heads on inside of cover.

RIVET
COVER
STRIKE

FOLLOW ON PROCEDURE
 Load LPC in SPLI (TM 9-1425-646-10).

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STEP 7. Perform follow-on procedure.

CHAPTER 1 INTRODUCTION

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Section I. GENERAL INFORMATION

1-1. SCOPE. This manual contains the instructor's operating instructions, and organizational and direct support maintenance instructions for Multiple Launch Rocket System (MLRS) M27 Training Rocket Pod (Trainer LP/C). The trainer LP/C (figure 1-1) physically and functionally represents the tactical LP/C. It is used for training personnel to load, unload, and perform simulated firing missions with the self-propelled launcher loader (SPLL). The trainer LP/C provides the instructor a means of inducing certain fault indications that will appear on the fire control panel in the SPLL.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS. Department of the Army forms and procedures used for equipment maintenance

will be those prescribed by TM 38-750, the Army Maintenance Management System.

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. Special instructions for the destruction of the trainer LP/C are contained in TM 43-0002-26.

1-4. QUALITY ASSURANCE/QUALITY CONTROL (QA/QC). Criteria for quality control inspection for direct and general support shall be in accordance with TM 750-245-4.

1-5. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS. Table 1-1 is the nomenclature cross-reference list identifying common names used for equipment referenced in this manual.

1-1. SCOPE (CONT)

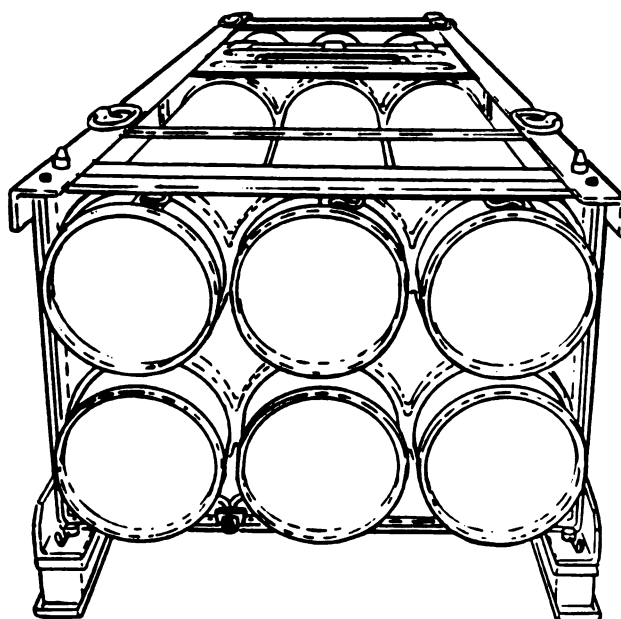
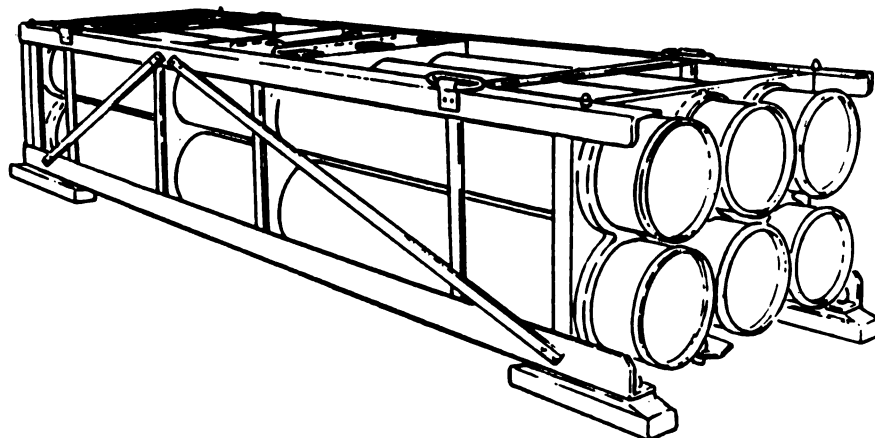


Figure 1-1. 298 Millimeter Training Rocket Pod: M27

Table 1-1. Nomenclature Cross-Reference List

COMMON NAME	OFFICIAL NOMENCLATURE
Self-Propelled Launcher Loader (SPLL)	Launcher, Rocket, Armored Vehicle Mounted: M270
Tactical LP/C	Rocket Pod, 298 Millimeter: M26
Trainer LP/C	Rocket Pod, 298 Millimeter, Training: M27

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS. If your trainer LP/C 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. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at U.S. Army Missile Command, ATTN: DRSMI-SNEM, Redstone Arsenal, AL 35898. We will send you a reply.

1-7. GLOSSARY AND LIST OF ABBREVIATIONS. In the glossary, in the back of this manual, there are definitions for some of the less common terms used. Also in the glossary, there is a list of abbreviations and their explanations. Abbreviations listed are those peculiar to this equipment and do not include common abbreviations contained in MIL-STD-12.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES. External appearance, center of gravity, and other characteristics of the trainer LP/C are the same as the tactical LP/C with the following exceptions:

a. Characteristics.

- (1) Launch tube No. 2, 3, and 6 are loaded with ballast instead of rockets.
- (2) Launch tubes No. 1 and 5 are empty.
- (3) Launch tube No. 4 contains the rocket simulator assembly.
- (4) Trainer LP/C is 920 kg (2028 lb) lighter than the tactical LP/C.

b. Capabilities and Features.

- (1) Electrical power for operation is provided by the SPLL. Batteries or other external electrical power is not required.
- (2) Points that come in contact with the SPLL are reinforced to allow for repeated loading/unloading operations with minimum wear.
- (3) Reduced weight to simulate loading of a tactical LP/C and unloading an expended LP/C.
- (4) Easy access for equipment maintenance.

1-9. LOCATION OF MAJOR COMPONENTS. The location of major components of the trainer LP/C are shown in figure 1-2. See figure 1-3 for location and detail of LP/C markings.

1-10. DIFFERENCES BETWEEN MODELS. There are no model differences between LP/C trainers.

1-11. EQUIPMENT DATA. Data regarding physical characteristics of the trainer LP/C is listed in table 1-2.

1-12. SAFETY, CARE, AND HANDLING. Safety, care, and handling instructions and important precautions to be observed for maintaining the trainer LP/C are provided in the procedures as they occur.

Table 1-2. Equipment Data

<u>Size</u>	
Length	4014mm (13 ft. 2 in.)
Width	1051mm (3 ft. 5 in.)
Height (less detachable skid)	716mm (2 ft. 4 in.)
<u>Weight</u>	1360 kg (2998 lb.)

1-9. LOCATION OF MAJOR COMPONENTS (CONT)

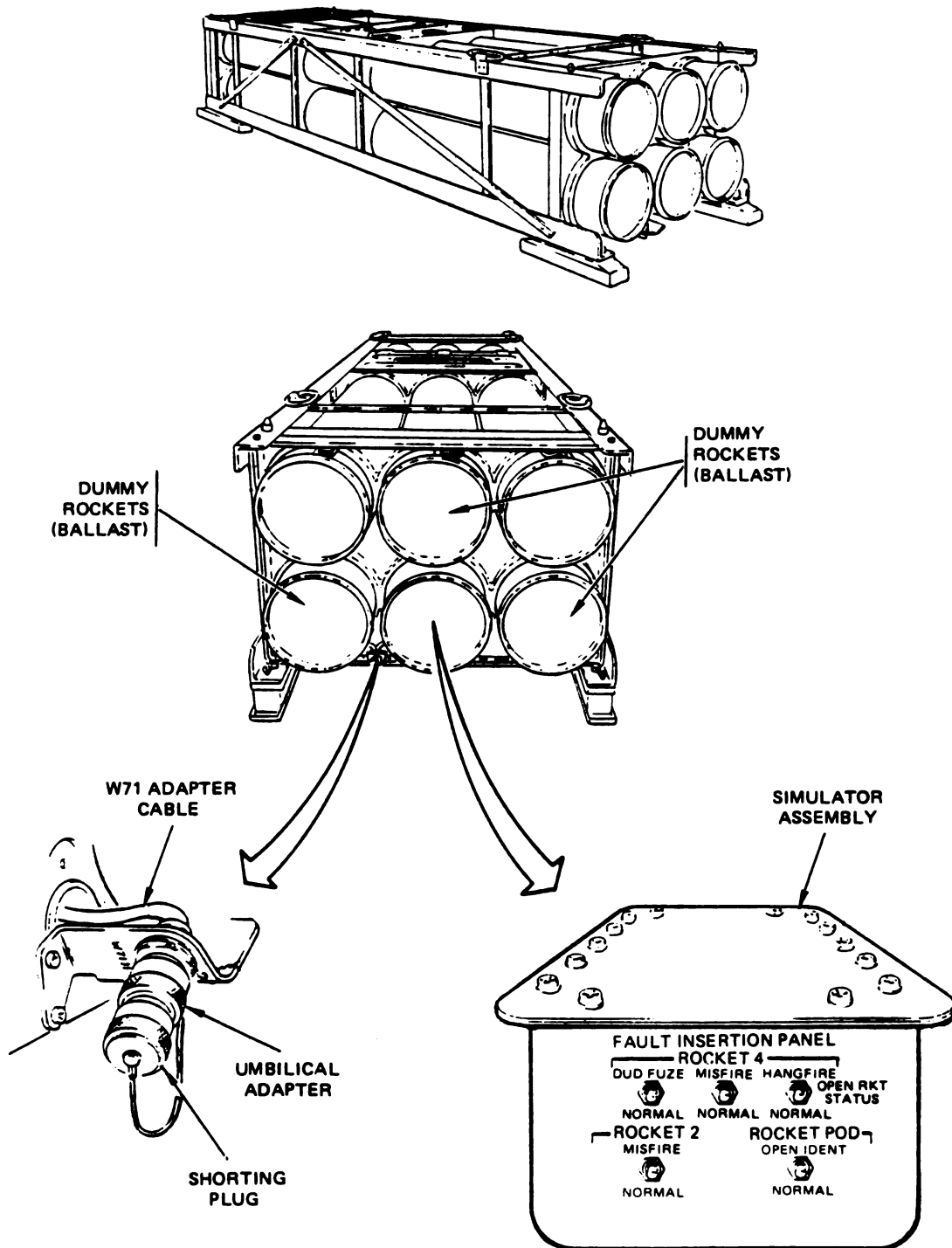
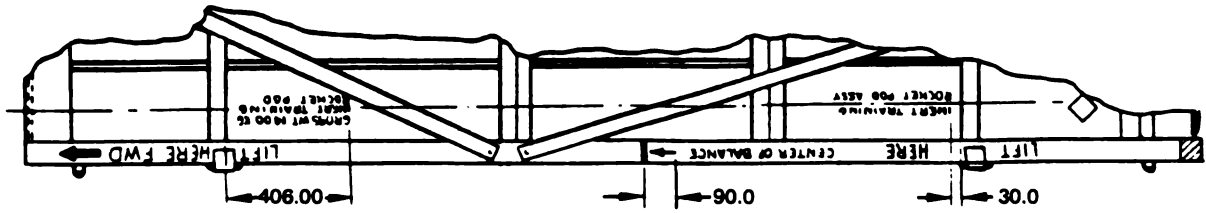
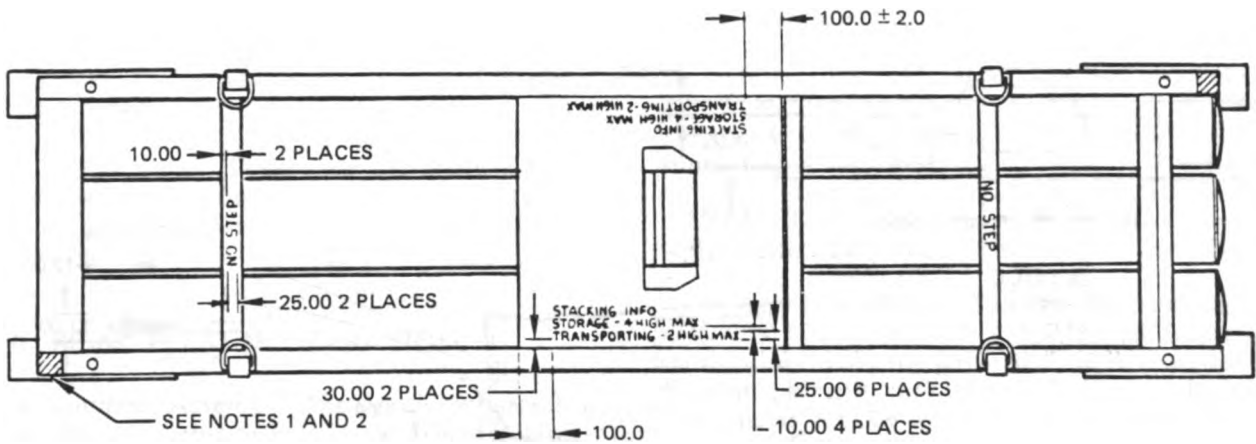


Figure 1-2. Location of Major Components

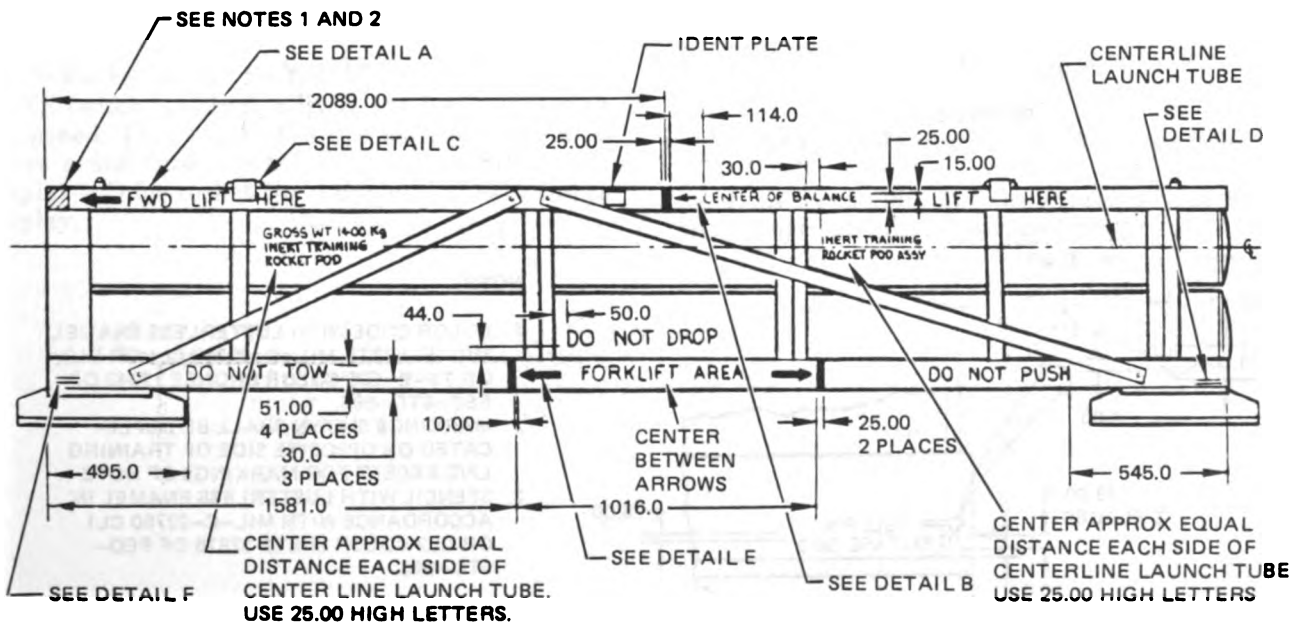
1-9. LOCATION OF MAJOR COMPONENTS (CONT)



RIGHT SIDE VIEW



TOP VIEW



LEFT SIDE VIEW

Figure 1-3. Location of LPIC Markings (Sheet 1 of 2)

1-9. LOCATION OF MAJOR COMPONENTS (CONT)

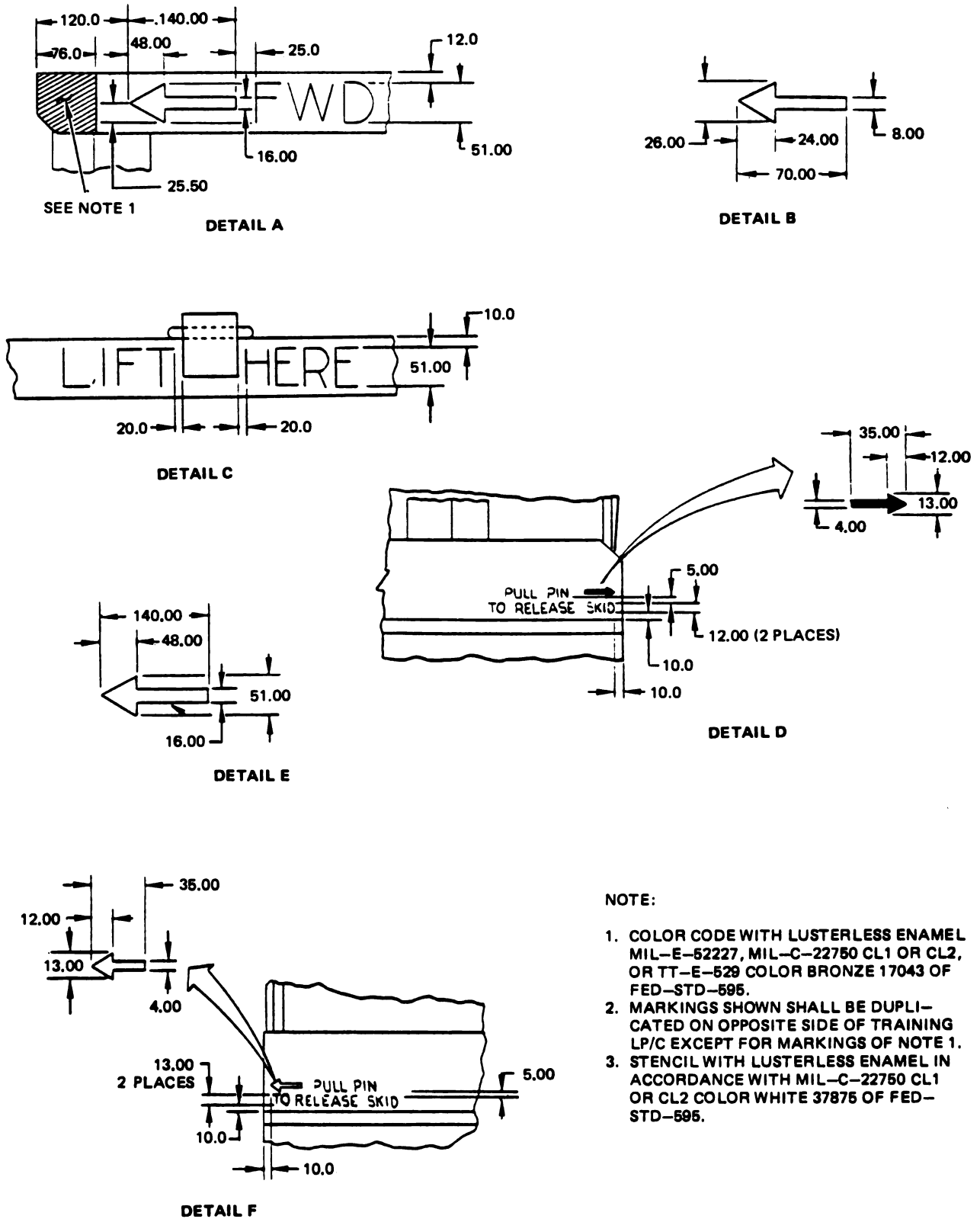


Figure 1-3. Location of LPIC Markings (Sheet 2 of 2)

Section III. PRINCIPLES OF OPERATION

1-13. GENERAL.

a. The trainer LP/C provides training simulation of the MLRS tactical LP/C loaded with ordnance dispensing rockets. Major components of the trainer are the LP/C structure, simulator assembly, and W71 cable assembly.

b. The LP/C structure has the external appearance of the tactical LP/C. A slide mount installation is added to the aft end of rocket tube No. 4 for mounting the simulator assembly. Bushings on the bottom of the LP/C are strengthened to minimize wear due to repeated loading/unloading operations.

c. The simulator assembly contains a fault insertion panel and electronic circuits for simulation of the rockets. There is a circuit card to simulate each rocket.

1-14. PRINCIPLES OF OPERATION.

a. **Simulator Assembly.** The simulator assembly allows the instructor to induce six different faults into the fire control system. He induces these faults by positioning switches on the fault insertion panel which is part of the simulator assembly. The following paragraphs explain how the switches cause the fault indications.

b. **Rocket 4 Fuze Switch.** When the ROCKET 4 FUZE switch is placed in DUD, the fuze test circuit is opened. This causes the fire control system to sense a dud fuze and the FCP in the SPLL will display a D for rocket No. 4 during a rocket status display.

c. **Rocket 4 RKT Status Switch.** When the ROCKET 4 RKT STATUS switch is placed in OPEN, the rocket status signal is interrupted before it reaches the circuit card simulator to simulate an empty rocket tube No. 4. Positioning the ROCKET 4 RKT STATUS switch to HANGFIRE completes the No. 4 igniter hi circuit when the FIRE switch on the FCP is actuated (figure 1-4). A path is complete through the NORMAL side of the ROCKET 4 MISFIRE switch, the HANGFIRE side of the ROCKET 4 RKT STATUS switch and back to the fire control system. This simulates a firing pulse was sent to the rocket motor. At the same time, a signal is sent through the NORMAL side of ROCKET 4 MISFIRE switch to circuit card simulator for rocket No. 4. A circuit path is complete for digital return, simulating a rocket still in tube No. 4. The fire control system in the SPLL interprets this as a HANGFIRE by sensing that a firing pulse was sent to the rocket and that a rocket is still in the tube.

d. **Rocket 4 Misfire Switch.** Positioning the ROCKET 4 MISFIRE switch to MISFIRE interrupts the igniter hi firing pulse before it reaches the simulator circuit card (figure 1-4), simulating a firing pulse sent by the fire control system but not received by the rocket motor.

e. **Rocket 2 Misfire Switch.** ROCKET 2 MISFIRE switch interrupts the igniter hi firing pulse for tube No. 2 before it reaches the simulator circuit card, simulating a firing pulse sent by the fire control system but not received by the rocket motor.

f. **Rocket Pod Ident Switch.** When the ROCKET POD IDENT switch is in OPEN, it interrupts the identification signal. The fire control system senses an improper umbilical cable connection.

1-14. PRINCIPLES OF OPERATION (CONT)

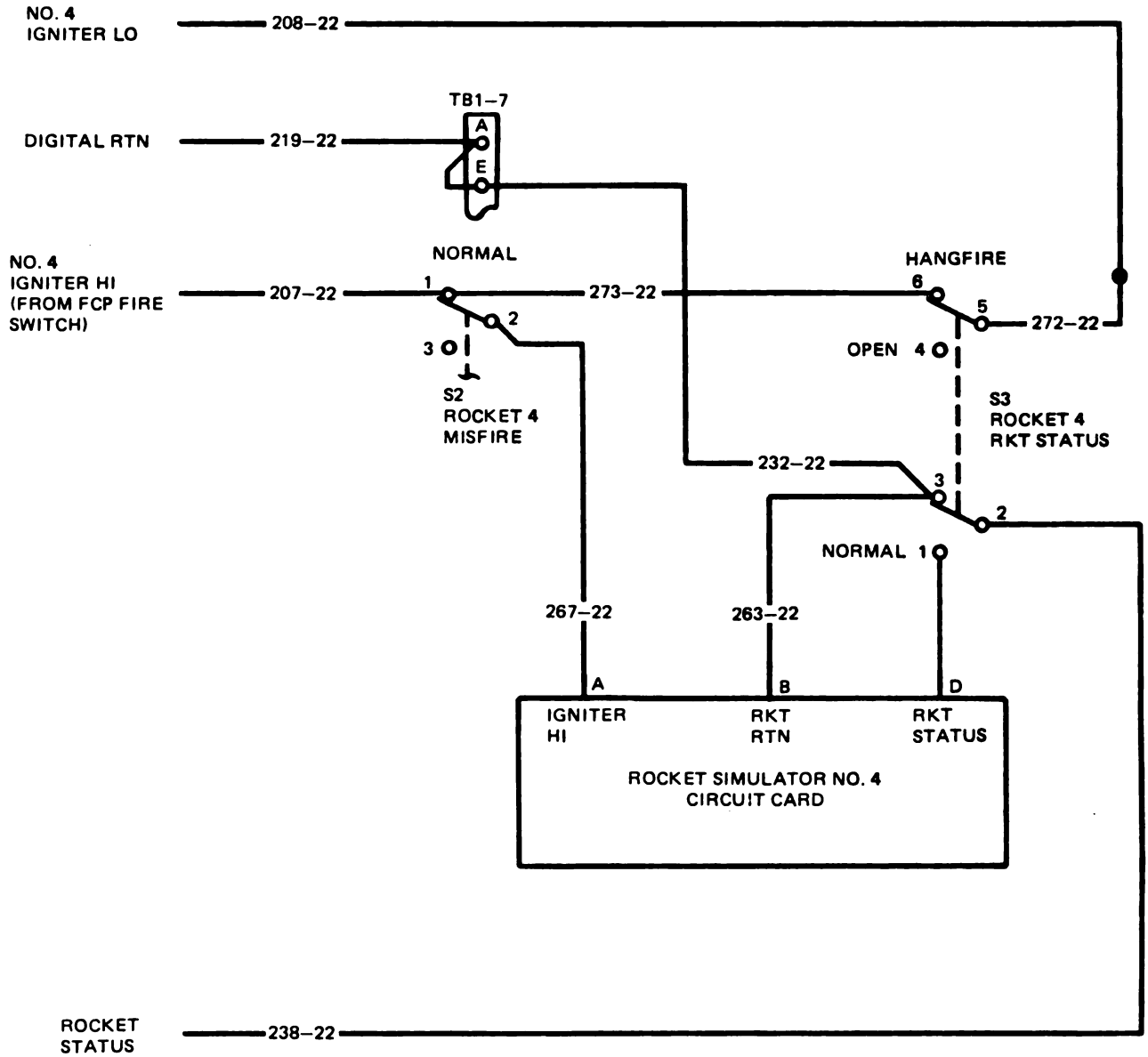


Figure 1-4. Rocket 4 Hangfire and Misfire Indication Circuit

CHAPTER 2 OPERATING INSTRUCTIONS

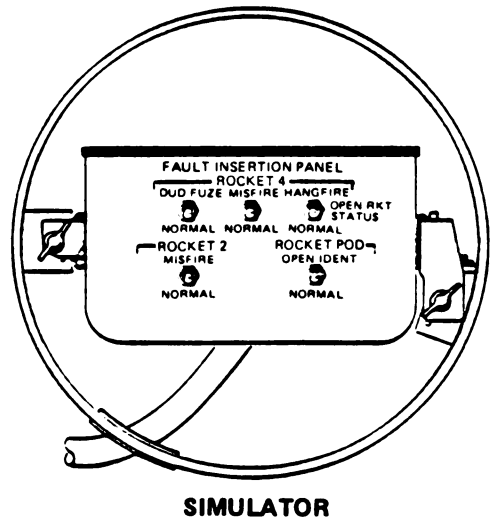
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Section I. DESCRIPTION AND USE OF OPERATOR CONTROLS

2-1. GENERAL. This section covers the information you, as the instructor, should know about the controls on the trainer LP/C. All of the controls required to insert a simulated LP/C fault are located on the simulator assembly fault insertion panel.

2-2. OPERATOR CONTROLS. Figure 2-1 shows the location of the operator fault insertion controls. Table 2-1 lists the controls, their positions, and the fault indications that will appear on the fire control panel in the carrier cab for each control position. Only those indications controlled by the trainer LP/C appear in this table. Controls and indications for the SPLL are contained in TM 9-1425-646-10.



**Figure 2-1. Fault Insertion Panel
Controls and Indicators**

Table 2-1. Fault Insertion Panel Controls and Indications

SWITCH	POSITION	FCP FAULT INDICATION
ROCKET 4 FUZE	NORMAL	None
	DUD	D will appear for rocket No. 4 in selected LP/C. If skip option was selected during system start up, the rocket will be skipped and the next rocket will be selected to be fired. If fire option was selected, the rocket will be fired but not counted as one to be fired on a target.
ROCKET 4 STATUS	NORMAL	None
	OPEN	Blank space under rocket No. 4 in selected LP/C.
	HANGFIRE	H will appear for rocket No. 4 in selected LP/C. If stop option was selected during system start up, the firing sequence will stop and HANGFIRE - SAFE AND ARM TO CONTINUE will appear on line 7. If continue option was selected, the system will attempt to fire the rocket again, and then the firing sequence will continue until the required number of rockets is fired.
ROCKET 4 MISFIRE	NORMAL	None
	MISFIRE	M will appear for rocket No. 4 in selected LP/C. If stop option selected during system start up, the firing sequence will stop and MISFIRE - SAFE AND ARM TO CONTINUE will appear on line 7. If continue option was selected, the system will attempt to fire the rocket again and then the firing sequence will continue until the required number of rockets is fired.
ROCKET POD IDENT	NORMAL	None
	OPEN	UMBILICAL CABLE NOT PROPERLY CONNECTED will appear on line 11.
ROCKET 2 MISFIRE		Same as ROCKET 4 MISFIRE except M will appear for rocket No. 2 in selected LP/C.

Section II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-3. GENERAL.

a. Preventive maintenance checks and services (PMCS) are the regular inspection and care of the trainer LP/C. The purpose of the PMCS is to find faults before they become large enough to need expensive and time-consuming repair or replacement. Table 2-2 lists the items you need to check. A code in the interval column tells you how often to check it.

(1) **Before (B) PMCS.** The before PMCS are done each day that the trainer LP/C is to be used on operations. These tasks should be done just before starting up for the days operation.

(2) **After (A) PMCS.** The after PMCS are done after each days operation.

b. Operation under bad conditions such as blowing sand or dust, heavy rainstorms, snow, or very high or very low temperatures, may require PMCS more often than scheduled. You will be notified whenever you need to do the PMCS more often than scheduled.

2-4. PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

a. Inspections and checks are numbered in the Item column and should be done in the sequence shown. This is the same number that you will enter in the TM Manual Column of the DA Form 2404. All deficiencies that you find during PMCS must be recorded on a DA Form 2404.

b. The Interval column contains a code (dot) opposite the item to indicate when it is to be checked.

c. The Item To Be Inspected lists the area of the trainer LP/C that must be checked.

d. How the inspection or check is to be done is explained in the Procedure column. Any trouble that you cannot correct must be reported to the next higher maintenance level on a DA Form 2404. Refer to TM 38-750, The Army Maintenance Management System (TAMMS), for complete instructions on how to fill out maintenance forms.

e. The Equipment Is Not Ready/Available If: column contains entries that identify what will cause the trainer LP/C to not be mission capable for readiness reporting purposes. The terms ready/available and mission capable refer to the same status - Equipment is on hand and is able to perform its mission (TM 38-750).

f. There are some common items which need to be checked but are not listed in the table. The following items should be checked during each PMCS.

(1) **Bolts, Nuts, Screws, Clamps.** Check them for looseness. If loose, tighten.

(2) **Welds.** Look for cracks, rust, and gaps. Notify next higher maintenance level of deficiencies.

Table 2-2. Operator Preventive Maintenance Checks and Services

B = Before

A = After

ITEM	INTERVAL		ITEM TO BE INSPECTED PROCEDURE	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	A		
1	•		<p>LP/C FRAME</p> <p>Check for obvious damage such as cracks, dents, gouges, and bent frames. Check for bronze color code. Notify next higher maintenance level of any defects.</p>	<p>Frame damaged enough to prevent LP/C from seating correctly in SPLL</p> <p>Lifting bar unsafe to load/unload LP/C in SPLL</p>
2	•	•	<p>LAUNCH TUBES AND COVERS</p> <p>Check that all launch tubes are securely covered. Check exterior of launch tubes for cracks, dents, and gouges. Notify next higher maintenance level of any defects.</p>	
3	•	•	<p>LIFTING BAR</p> <p>Check for cracks and bends. Notify next higher maintenance level of any defects.</p>	
4		•	<p>SHORTING PLUG</p> <p>Check that plug is securely installed. If missing, notify next higher maintenance level.</p>	

Section III. OPERATION

2-5. GENERAL. Trainer LP/C's are loaded and reloaded in a SPLL in the same manner as a tactical LP/C. For loading and reloading, refer to TM 9-1425-646-10. When loading the trainer LP/C, be sure to retain the four quick release pins, shock absorber skids, and skid pin sleeves that are removed before loading. After removal of the trainer LP/C from the SPLL, reinstall the four pins, skids, and sleeves.

2-6. OPERATION. Simulated LP/C responses and faults may be inserted into the trainer LP/C by the training instructor. The instructor positions the switches on the fault insertion panel to simulate defective fuzes, improperly connected umbilical cables, and hangfired and misfired rockets. These faults will appear as messages on the SPLL fire control panel during a training mission. The student will then follow the procedures in TM 9-1425-646-10 to correct the fault.

CHAPTER 3 OPERATOR MAINTENANCE

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Section I. OPERATOR MAINTENANCE

3-1. MAINTENANCE. There are no maintenance requirements authorized by the Maintenance Allocation Chart (MAC), Appendix B, to be performed at the operator level.

Section II. OPERATOR TROUBLESHOOTING

3-2. GENERAL. Your trainer LP/C may develop faults. The problem could have occurred during a mission or found during PMCS. This section has information to help you find the problem and correct it.

3-3. TROUBLESHOOTING. When some faults occur, a fault message or fault indication is displayed on the FCP. These faults could have been induced by the fault insertion panel. Faults are listed alphabetically in the symptom index, table

3-1. Some faults can occur that you are not authorized to correct. These faults are identified by an asterisk (*) in the troubleshooting procedure page column of the symptom index. Faults identified by an asterisk are not listed in troubleshooting (table 3-2) and they should be reported directly to the next higher maintenance level. Malfunction symptom numbers listed in table 3-1 correspond to troubleshooting malfunction numbers in table 3-2. Troubleshooting information for the SPL is contained in TM 9-1425-646-10.

Table 3-1. Symptom Index

MALFUNCTION NO.	TROUBLESHOOTING PROCEDURE PAGE
BLANK SPACE APPEARS FOR ROCKET STATUS IN TUBE NO. 1, 2, 3, 5, OR 6	*
1. BLANK SPACE APPEARS FOR ROCKET STATUS IN TUBE NO. 4	3-3
2. BLANK SPACE DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 RKT STATUS switch in OPEN; all other simulator switches in NORMAL)	3-3
D APPEARS FOR ROCKET STATUS IN TUBE NO. 1, 2, 3, 5, OR 6	*
3. D APPEARS FOR ROCKET STATUS IN TUBE NO. 4	3-3
4. D DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 FUZE switch in DUD; all other simulator switches in NORMAL)	3-3
5. FCP DOES NOT INDICATE HANGFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 RKT STATUS switch in HANGFIRE; all other simulator switches in NORMAL)	3-3
6. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 2 (Simulator ROCKET 2 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL)	3-3
7. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL)	3-3
FCP INDICATES HANGFIRE ON ROCKET NO. 1, 2, 3, 5, OR 6	*
8. FCP INDICATES HANGFIRE ON ROCKET NO. 4	3-4
FCP INDICATES MISFIRE ON ROCKET NO. 1, 3, 5, OR 6	*
9. FCP INDICATES MISFIRE ON ROCKET NO. 2	3-4
10. FCP INDICATES HANGFIRE ON ROCKET NO. 4	3-4
11. UMBILICAL CABLE NOT PROPERLY CONNECTED APPEARS ON FCP	3-4
12. UMBILICAL CABLE NOT PROPERLY CONNECTED DOES NOT APPEAR ON FCP (Simulator ROCKET POD IDENT switch in OPEN; all other simulator switches in NORMAL)	3-4

Table 3-2. Operator Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. BLANK SPACE APPEARS FOR ROCKET STATUS IN TUBE NO. 4	Check position of simulator ROCKET 4 RKT STATUS switch.	If switch is in NORMAL, notify next higher maintenance level. If switch is in OPEN, reset to NORMAL.
2. BLANK SPACE DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 RKT STATUS switch in OPEN; all other simulator switches in NORMAL)	Recheck position of all simulator switches.	If switches are positioned as specified, notify next higher maintenance level; if not, reset switches.
3. D APPEARS FOR ROCKET STATUS IN TUBE NO. 4	Check position of simulator ROCKET 4 FUZE switch.	If switch is in NORMAL, notify next higher maintenance level. If switch is in DUD, reset to NORMAL.
4. D DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 FUZE switch in DUD; all other simulator switches in NORMAL)	Recheck position of all simulator switches.	If switches are positioned as specified, notify next higher maintenance level; if not, reset switches.
5. FCP DOES NOT INDICATE HANGFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 RKT STATUS switch in HANGFIRE; all other simulator switches in NORMAL)	Recheck position of all simulator switches.	If switches are positioned as specified, notify next higher maintenance level; if not, reset switches.
6. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 2 (Simulator ROCKET 2 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL)	Recheck position of all simulator switches.	If switches are positioned as specified, notify next higher maintenance level; if not, reset switches.
7. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL)	Recheck positions of all simulator switches.	If switches are positioned as specified, notify next higher maintenance level; if not, reset switches.

Table 3-2. Operator Troubleshooting – Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
8. FCP INDICATES HANGFIRE ON ROCKET NO. 4	Check position of simulator ROCKET 4 RKT STATUS switch.	If switch is in NORMAL, notify next higher maintenance level. If switch is in HANGFIRE, reset switch.
9. FCP INDICATES MISFIRE ON ROCKET NO. 2	Check position of simulator ROCKET 2 MISFIRE switch.	If switch is in NORMAL, notify next higher maintenance level. If switch is in MISFIRE, reset switch.
10. FCP INDICATES MISFIRE ON ROCKET NO. 4	Check position of simulator ROCKET 4 MISFIRE switch.	If switch is in NORMAL, notify next higher maintenance level. If switch is in MISFIRE, reset switch.
11. UMBILICAL CABLE NOT PROPERLY CONNECTED APPEARS ON FCP	Check position of ROCKET POD IDENT switch.	If switch is in NORMAL, notify next higher maintenance level. If switch is in OPEN, reset switch.
12. UMBILICAL CABLE NOT PROPERLY CONNECTED DOES NOT APPEAR ON FCP (Simulator ROCKET POD IDENT switch in OPEN; all other simulator switches in NORMAL)	Recheck position of all simulator switches.	If switches are positioned as specified, notify next higher maintenance level; if not, reset switches.

CHAPTER 4 ORGANIZATIONAL MAINTENANCE

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	Special Tools	4-2	4-1
	Support Equipment	4-3	4-1
	Test, Measurement, and Diagnostic Equipment (TMDE)	4-4	4-1
	Repair Parts.	4-5	4-1
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	Checking Unpacked Equipment	4-7	4-2
SECTION III.	ORGANIZATIONAL TROUBLESHOOTING		4-2
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	Troubleshooting	4-9	4-2
SECTION IV.	ORGANIZATIONAL MAINTENANCE		4-6
	General	4-10	4-6
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	Rocket Tube No. 4 Maintenance Instructions	4-12	4-11

Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment required for the trainer LP/C, refer to the Modified Table of Equipment (MTOE) applicable to your unit.

4-2. SPECIAL TOOLS. There are no special tools required for organizational maintenance level of the trainer LP/C.

4-3. SUPPORT EQUIPMENT. There is no support equipment required for organizational maintenance level of the trainer LP/C.

4-4. TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE). There is no TMDE required for organizational level repair of the trainer LP/C.

4-5. REPAIR PARTS. Repair parts are listed and illustrated in TM 9-6920-646-24P.

Section II. SERVICE UPON RECEIPT

4-6. GENERAL. Using organizations should perform an inspection upon receipt of a trainer LP/C.

4-7. CHECKING UNPACKED EQUIPMENT. The following should be accomplished when a trainer LP/C is received.

a. Inspect the LP/C for damage incurred during shipment. If the equipment has been

damaged, report it on DD Form 6, Packaging Improvement Report.

b. Check LP/C against the packing list to see if the shipment is complete. Report all discrepancies in accordance with the instructions in TM 38-750.

c. Check the equipment log to see whether the LP/C has been modified.

Section III. ORGANIZATIONAL TROUBLESHOOTING

4-8. GENERAL. The trainer LP/C may develop faults. The problem could have been reported by the crew or you could have found it during maintenance. This section has the information to help you find the problem and correct it. If you correct a fault by replacing the simulator, let the next higher maintenance level personnel know the indications you had. This will save time and help them find the fault with the simulator. Organizational level troubleshooting for the SPL is in TM 9-1425-646-20.

4-9. TROUBLESHOOTING. The symptom index, table 4-1, is an alphabetical listing of faults that could not be corrected by the operator. Use the symptom index to identify the fault and to find the troubleshooting page. The fault and corrective action required are listed in table 4-2. Malfunction symptom numbers listed in table 4-1 correspond to troubleshooting malfunction numbers in table 4-2. Electrical schematic diagrams are located in back of this manual to aid you in troubleshooting.

Table 4-1. Symptom Index

MALFUNCTION NO.	TROUBLESHOOTING PROCEDURE PAGE
1. BLANK SPACE APPEARS FOR ROCKET STATUS IN TUBE NO. 1, 2, 3, 5, OR 6	4-3
2. BLANK SPACE APPEARS FOR ROCKET STATUS IN TUBE NO. 4 (ROCKET 4 RKT STATUS switch in NORMAL)	4-3
3. BLANK SPACE DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 RKT STATUS switch in OPEN; all other simulator switches in NORMAL)	4-4
4. D APPEARS FOR ROCKET STATUS IN TUBE NO. 1, 2, 3, 5, OR 6	4-4
5. D APPEARS FOR ROCKET STATUS IN TUBE NO. 4 (ROCKET 4 FUZE switch in NORMAL).	4-4
6. D DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 FUZE switch in DUD; all other simulator switches in NORMAL)	4-4
7. FCP DOES NOT INDICATE HANGFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 RKT STATUS switch in HANGFIRE; all other simulator switches in NORMAL).	4-4

Table 4-1. Symptom Index – Continued

MALFUNCTION NO.	TROUBLESHOOTING PROCEDURE PAGE
8. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 2 (Simulator ROCKET 2 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL).	4-4
9. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL).	4-5
10. FCP INDICATES HANGFIRE ON ROCKET NO. 1, 2, 3, 5, OR 6	4-5
11. FPC INDICATES HANGFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 RKT STATUS switch in NORMAL)	4-5
12. FCP INDICATES MISFIRE ON ROCKET NO. 1, 3, 5, OR 6	4-5
13. FCP INDICATES MISFIRE ON ROCKET NO. 2 (Simulator ROCKET 2 MISFIRE switch in NORMAL)	4-5
14. FCP INDICATES MISFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 MISFIRE switch in NORMAL)	4-6
15. UMBILICAL CABLE NOT PROPERLY CONNECTED APPEARS ON FCP (Simulator ROCKET POD IDENT switch in NORMAL)	4-6
16. UMBILICAL CABLE NOT PROPERLY CONNECTED DOES NOT APPEAR ON FCP (Simulator ROCKET POD IDENT switch in OPEN; all other simulator switches in NORMAL)	4-6

Table 4-2. Organizational Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. BLANK SPACE APPEARS FOR ROCKET STATUS IN TUBE NO. 1, 2, 3, 5, OR 6.	None	Step 1. Replace circuit card corresponding with tube number blank space (paragraph 4-11).
		Step 2. Replace simulator (paragraph 4-11).
2. BLANK SPACE APPEARS FOR ROCKET STATUS IN TUBE NO. 4 (ROCKET 4 RKT STATUS switch in NORMAL).	None	Step 1. Replace circuit card for rocket No. 4 (paragraph 4-11).
		Step 2. Replace simulator (paragraph 4-11).

Table 4-2. Organizational Troubleshooting – Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
3. BLANK SPACE DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 RKT STATUS switch in OPEN; all other simulator switches in NORMAL).	None	Step 1. Replace circuit card for rocket No. 4 (paragraph 4-11). Step 2. Replace simulator (paragraph 4-11).
4. D APPEARS FOR ROCKET STATUS IN TUBE NO. 1, 2, 3, 5, OR 6.	None	Replace simulator (paragraph 4-11).
5. D APPEARS FOR ROCKET STATUS IN TUBE NO. 4 (ROCKET 4 FUZE switch in NORMAL).	None	Replace simulator (paragraph 4-11).
6. D DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 FUZE switch in DUD; all other simulator switches in NORMAL).	None	Replace simulator (paragraph 4-11).
7. FCP DOES NOT INDICATE HANGFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 RKT STATUS switch in HANGFIRE; all other simulator switches in NORMAL).	None	Step 1. Replace circuit card for rocket No. 4 (paragraph 4-11). Step 2. Replace simulator (paragraph 4-11).
8. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 2 (Simulator ROCKET 2 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL).	None	Step 1. Replace circuit card for rocket No. 2 (paragraph 4-11). Step 2. Replace simulator (paragraph 4-11).

Table 4-2. Organizational Troubleshooting – Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
9. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL).	None	Step 1. Replace circuit card for rocket No. 4 (paragraph 4-11). Step 2. Replace simulator (paragraph 4-11).
10. FCP INDICATES HANGFIRE ON ROCKET NO. 1, 2, 3, 5, OR 6.	None	Step 1. Replace circuit card corresponding with tube number blank space (paragraph 4-11). Step 2. Replace simulator (paragraph 4-11).
11. FCP INDICATES HANGFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 RKT STATUS switch in NORMAL).	None	Step 1. Replace circuit card for rocket No. 4 (paragraph 4-11). Step 2. Replace simulator (paragraph 4-11).
12. FCP INDICATES MISFIRE ON ROCKET NO. 1, 3, 5, OR 6.	None	Step 1. Replace circuit card corresponding with tube number blank space (paragraph 4-11). Step 2. Replace simulator (paragraph 4-11).
13. FCP INDICATES MISFIRE ON ROCKET NO. 2 (Simulator ROCKET 2 MISFIRE switch in NORMAL).	None	Step 1. Replace circuit card for rocket No. 2 (paragraph 4-11). Step 2. Replace simulator (paragraph 4-11).

Table 4-2. Organizational Troubleshooting – Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
14. FCP INDICATES MISFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 MISFIRE switch in NORMAL).	None	Step 1. Replace circuit card for rocket No. 4 (paragraph 4-11). Step 2. Replace simulator (paragraph 4-11).
15. UMBILICAL CABLE NOT PROPERLY CONNECTED APPEARS ON FCP (Simulator ROCKET POD IDENT switch in NORMAL).	None	Replace simulator (paragraph 4-11).
16. UMBILICAL CABLE NOT PROPERLY CONNECTED DOES NOT APPEAR ON FCP (Simulator ROCKET POD IDENT switch in OPEN; all other simulator switches in NORMAL).	None	Replace simulator (paragraph 4-11).

Section IV. ORGANIZATIONAL MAINTENANCE

4-10. GENERAL. The maintenance instruction paragraphs cover the organizational maintenance tasks for the items of that component or assembly for which maintenance is authorized by the Maintenance Allocation Chart (MAC) in Appendix

B. The maintenance task for each item within the paragraph may be completed as an individual task. It is not necessary to perform the tasks on all items in the paragraph if only one item requires maintenance.

4-11. SIMULATOR ASSEMBLY MAINTENANCE INSTRUCTIONS. This paragraph covers the maintenance tasks for the following items:

<i>Item</i>	<i>Page</i>
1. Simulator Assembly	4-7
2. Circuit Card	4-8
3. Checkout	4-9

INITIAL SETUP

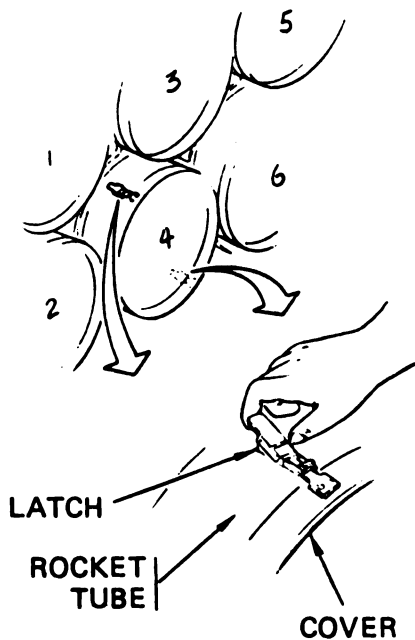
Tools
Kit, tool, 13032300

Personnel Required
MLRS Mechanic MOS 13M

1. SIMULATOR ASSEMBLY.

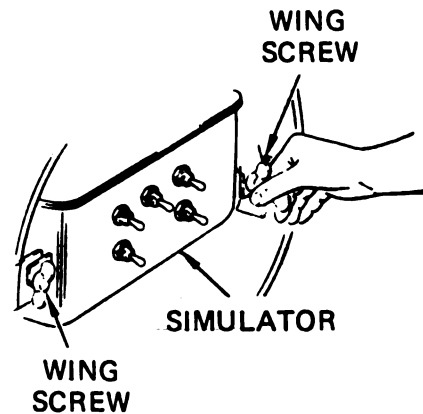
a. Remove.

(1) Release the two latches securing aft cover to rocket tube No. 4. Remove cover.

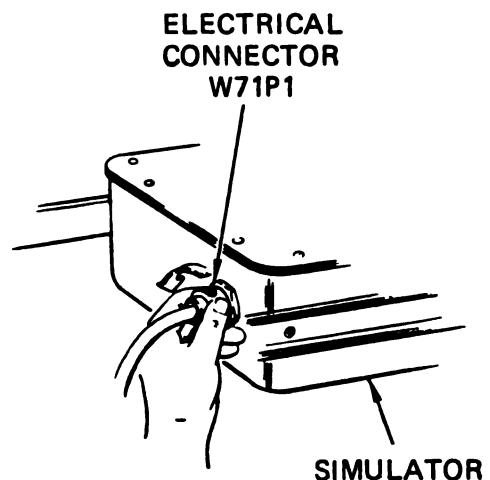


(2) Loosen wingscrew on each side of simulator. Rotate retaining brackets away from the simulator.

(3) Slide the simulator out until the latches on the rails engage.



(4) Disconnect electrical connector W71P1 from receptacle on back of simulator.



4-11. SIMULATOR ASSEMBLY MAINTENANCE INSTRUCTIONS (CONT)

(5) Release latches on each side of simulator and pull simulator all the way out of rocket tube.

b. Install.

(1) Mate the rails on side of simulator with rails in rocket tube. Slide simulator into tube until latches on side engage.

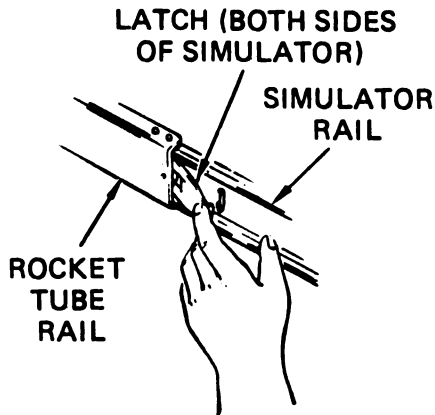
(2) Connect electrical connector W71P1 to receptacle on back of simulator.

(3) Press on rail latches, and slide simulator into rocket tube.

(4) Rotate retaining brackets over the ends of rails. Tighten wingscrews.

(5) Perform checkout (item 3).

(6) Install and secure aft cover to rocket tube with two latches.

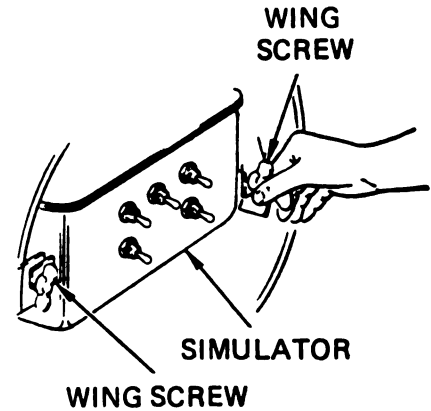


2. CIRCUIT CARD.

a. Remove.

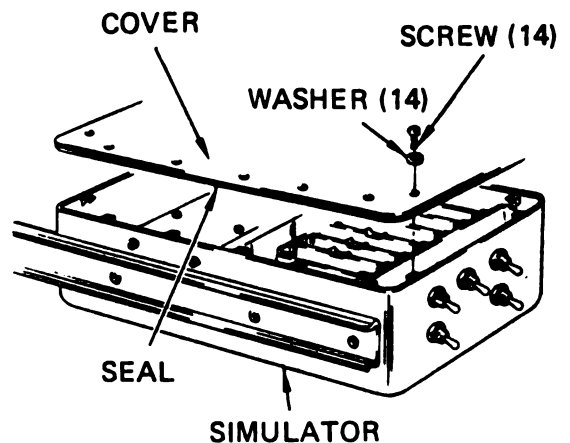
(1) Release the two latches securing aft cover to rocket tube No. 4.

(2) Loosen wingscrew on each side of simulator. Rotate retaining brackets away from the simulator.



(3) Slide the simulator out until the latches on the rails engage.

(4) Using a crosstip screwdriver, remove 14 screws and 14 washers securing cover to simulator. Remove cover. Discard washers.



(5) Lift the defective circuit card out of the simulator.

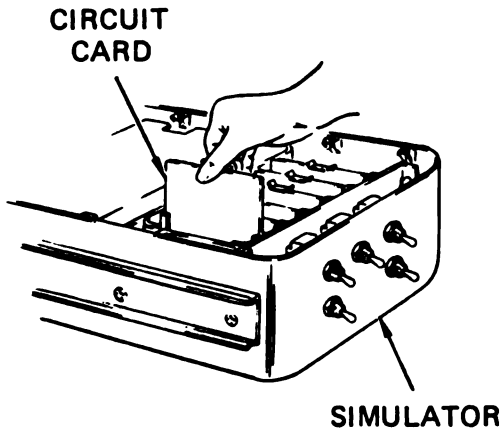
4-11. SIMULATOR ASSEMBLY MAINTENANCE INSTRUCTIONS (CONT)

b. Install.

NOTE

Circuit cards are identical and are interchangeable from one connector to another.

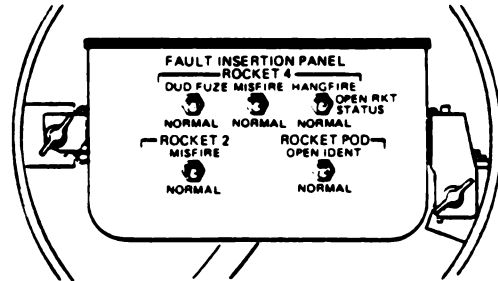
- (1) Insert the circuit card into simulator connector. Gently push on circuit card handle to make sure card is seated in simulator.



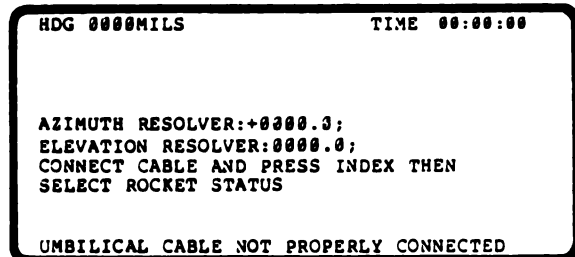
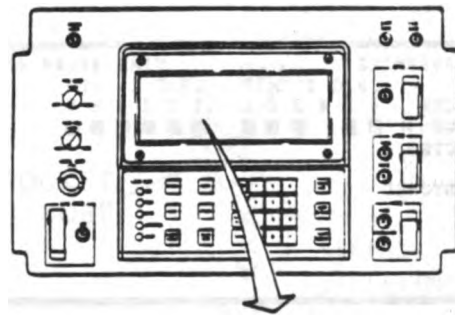
- (2) Inspect seal on cover for damage. Notify next higher maintenance level of any damage.
- (3) Install cover on simulator.
- (4) Secure cover to simulator with 14 new washers and 14 screws. Using a crosstip screwdriver, tighten screws.
- (5) Release latches and slide simulator into rocket tube.
- (6) Rotate retaining brackets over the ends of rails. Tighten wingscrews.
- (7) Perform checkout (item 3).
- (8) Secure aft cover to rocket tube with two latches.

3. CHECKOUT.

- a. On fault insertion panel, set ROCKET POD switch to OPEN IDENT.



- b. On FCP, set SYS PWR switch to ON.
- c. Select US PROMPTING.
- d. Select ROCKET STATUS and check that UMBILICAL CABLE NOT PROPERLY CONNECTED appears on FCP.
- e. On FCP, press INDEX.



4-11. SIMULATOR ASSEMBLY MAINTENANCE INSTRUCTIONS (CONT)

f. On fault insertion panel, set ROCKET POD switch to NORM and ROCKET 4 FUZE switch to DUD.

g. On FCP, select ROCKET STATUS. Check that UMBILICAL CABLE NOT PROPERLY CONNECTED is erased. Check that D appears for rocket 4.

```

HGD 0000MILS                TIME 00:00:00
ROCKETS  LP/C 1 M77  LP/C 2 AT2
          6 5 4 3 2 1  1 2 3 4 5 6
STATUS   ■ ■ D ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
SELECTED
LLM STOWED
    
```

h. On FCP, press INDEX.

i. On fault insertion panel, set ROCKET 4 FUZE switch to NORMAL and ROCKET 4 STATUS to OPEN.

j. On FCP, select ROCKET STATUS. Check that a blank space appears for rocket 4.

```

HGD 0000MILS                TIME 00:00:00
ROCKETS  LP/C 1 M77  LP/C 2 AT2
          6 5 4 3 2 1  1 2 3 4 5 6
STATUS   ■ ■   ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
SELECTED
LLM STOWED
    
```

k. On FCP, press INDEX.

l. On fault insertion panel, set ROCKET 4 RKT STATUS switch to HANGFIRE. Set ROCKET 2 MISFIRE switch to MISFIRE.

m. Perform a fire when ready manual data entry fire mission. Refer to TM 9-1425-646-10 observing the following.

(1) Use local coordinates for firing point entries.

(2) Use local coordinates for target entries.

(3) Check that rocket 4 shows H, and rocket 2 shows M. HANGFIRE - SAFE AND ARM TO CONTINUE will also appear.

```

HGD 0000MILS                TIME 00:00:00
ROCKETS  LP/C 1 M77  LP/C 2 AT2
          6 5 4 3 2 1  1 2 3 4 5 6
STATUS   ■ ■ H ■ M ■ ■ ■ ■ ■ ■ ■ ■
SELECTED          X   X
HANGFIRE-SAFE AND ARM TO CONTINUE
    
```

(4) On fault insertion panel, set ROCKET 4 RKT STATUS and ROCKET 2 MISFIRE switches to NORMAL.

(5) Press LLM STOW. When LLM STOWED appears on FCP. Disconnect and reconnect umbilical cable to erase HANGFIRE indications.

(6) On fault insertion panel, set ROCKET 4 MISFIRE switch in MISFIRE and repeat fire mission.

(7) On fault insertion panel, set ROCKET 4 MISFIRE switch to NORMAL.

(8) On FCP, press INDEX and then select ROCKET STATUS.

(9) Check FCP displays solid rectangle for each rocket.

```

HGD 0000MILS                TIME 00:00:00
ROCKETS  LP/C 1 M77  LP/C 2 AT2
          6 5 4 3 2 1  1 2 3 4 5 6
STATUS   ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
SELECTED
LLM STOWED
    
```

n. Install and secure aft cover to rocket tube with two latches.

4-12. ROCKET TUBE NO. 4 MAINTENANCE INSTRUCTIONS. This paragraph covers the maintenance tasks for the following items:

<i>Item</i>	<i>Page</i>
1. Cover	4-11
2. Chain	4-11

INITIAL SETUP

Personnel Required
MLRS Mechanic MOS 13M

1. COVER.

a. Remove.

(1) Release the two latches securing cover to rocket tube. Remove the cover.

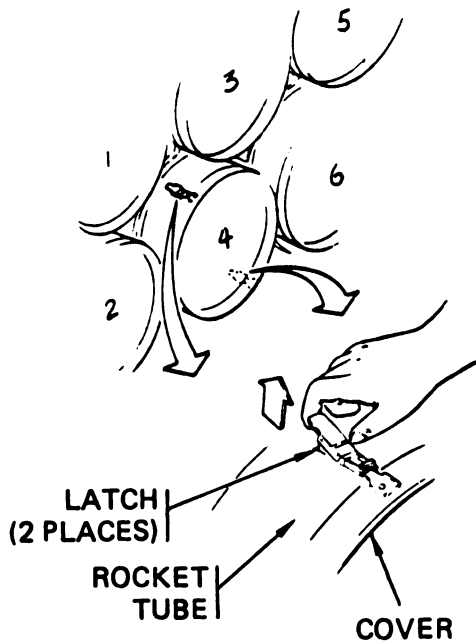
(2) Disconnect the cover chain at the rocket tube end by snapping the chain ball out of the end fitting.

b. Install.

(1) Remove the end fitting from the rocket tube end of chain.

(2) Connect replacement door chain to end fitting in rocket tube.

(3) Install cover on rocket tube and secure with two latches.



2. CHAIN.

a. Remove.

(1) Release the two latches securing cover to rocket tube. Remove cover.

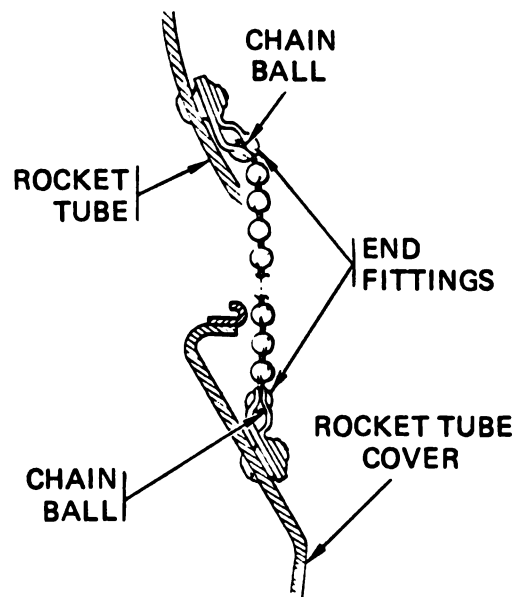
(2) Remove chain by snapping chain ball out of end fittings.

b. Install.

(1) Remove end fittings from the new chain.

(2) Connect chain to end fittings on cover and rocket tube.

(3) Install cover on rocket tube and secure with two latches.



CHAPTER 5 DIRECT SUPPORT MAINTENANCE

CHAPTER CONTENTS

		<i>Paragraph</i>	<i>Page</i>
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	Special Tools	5-2	5-1
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	Harness Assembly W70 Maintenance Instructions	5-15	5-33

Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

5-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment for the trainer LP/C, refer to the Modified Table of Equipment (MTOE) applicable to your unit.

5-2. SPECIAL TOOLS. There are no special tools required for direct support maintenance of the trainer LP/C.

5-3. SUPPORT EQUIPMENT. Refer to TM 9-6920-646-24P for support equipment required for direct support maintenance of the trainer LP/C.

5-4. TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE).

TMDE for the trainer LP/C is listed in the Maintenance Allocation Chart (MAC) in Appendix B.

5-5. REPAIR PARTS. Repair parts are listed and illustrated in TM 9-6920-646-24P.

Section II. SERVICE UPON RECEIPT

5-6. GENERAL. Organizations should perform an inspection upon receipt of a trainer LP/C.

report it on DD Form 6, Packaging Improvement Report.

5-7. CHECKING UNPACKED EQUIPMENT. The following should be accomplished when a trainer LP/C is received.

b. Check LP/C against the packing list to see if the shipment is complete. Report all discrepancies in accordance with the instructions in TM 38-750.

a. Inspect the LP/C for damage incurred during shipment. If the equipment has been damaged,

c. Check the equipment log to see whether the LP/C has been modified.

Section III. DIRECT SUPPORT TROUBLESHOOTING

5-8. GENERAL. Direct support level troubleshooting of the trainer LP/C consists of isolating faults in the simulator assembly and the W71 cable assembly.

action required are listed in table 5-2. Malfunction symptom numbers listed in table 5-1 correspond to troubleshooting malfunction numbers in table 5-2. For each fault, the test or inspection should be performed in the order listed. Verification of the corrective action will be completed after the simulator assembly and W71 cable assembly is installed in the LP/C and an operational mission is accomplished.

5-9. TROUBLESHOOTING. The symptom index, table 5-1, lists the faults alphabetically. Use this index to identify the fault and to find the troubleshooting page. The fault and corrective

Table 5-1. Symptom Index

MALFUNCTION NO.	TROUBLESHOOTING PROCEDURE PAGE
1. BLANK SPACE APPEARS ON FCP FOR ROCKET STATUS (All simulator switches in NORMAL)	5-3
2. BLANK SPACE DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 RKT STATUS switch in OPEN; all other simulator switches in NORMAL)	5-3
3. D APPEARS ON FCP FOR ROCKET STATUS (All simulator switches in NORMAL)	5-4
4. D DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 FUZE switch in DUD; all other simulator switches in NORMAL)	5-4
5. FCP DOES NOT INDICATE HANGFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 RKT STATUS switch in HANGFIRE; all other simulator switches in NORMAL)	5-4
6. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 2 (Simulator ROCKET 2 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL)	5-4

Table 5-1. Symptom Index – Continued

MALFUNCTION NO.	TROUBLESHOOTING PROCEDURE PAGE
7. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL)	5-5
8. FCP INDICATES ROCKET HANGFIRE (All simulator switches in NORMAL)	5-5
9. FCP INDICATES ROCKET MISFIRE (All simulator switches in NORMAL)	5-5
10. UMBILICAL CABLE NOT PROPERLY CONNECTED APPEARS ON FCP (All simulator switches in NORMAL).	5-5
11. UMBILICAL CABLE NOT PROPERLY CONNECTED DOES NOT APPEAR ON FCP (Simulator ROCKET POD IDENT switch in OPEN; all other simulator switches in NORMAL)	5-6

Table 5-2. Direct Support Troubleshooting

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
1. BLANK SPACE APPEARS ON FCP FOR ROCKET STATUS (All simulator switches in NORMAL)	Step 1. Check that all simulator switches are in NORMAL.	
	Step 2. Using a multimeter, perform applicable rocket status circuit check given in figure 5-1.	
		Circuit checks fail – Replace defective component.
		Circuit checks good – Troubleshoot fire control system (TM 9-1425-646-20).
2. BLANK SPACE DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 RKT STATUS switch in OPEN; all other simulator switches in NORMAL)	Step 1. Check that simulator ROCKET 4 RKT STATUS switch is in OPEN; all other simulator switches in NORMAL.	
	Step 2. Using a multimeter, perform rocket 4 open circuit check given in figure 5-2.	
		Circuit checks fail – Replace defective component.
		Circuit checks good – Troubleshoot fire control system (TM 9-1425-646-20).

Table 5-2. Direct Support Troubleshooting – Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
3. D APPEARS ON FCP FOR ROCKET STATUS (All simulator switches in NORMAL)	<p>Step 1. Check that all simulator switches are in NORMAL.</p> <p>Step 2. Using a multimeter, perform applicable rocket fuze circuit check given in figure 5-3.</p>	<p>Circuit checks fail – Replace defective component.</p> <p>Circuit checks good – Replace defective fuze (paragraph 5-12). If malfunction still exists, troubleshoot fire control system (TM 9-1425-646-20).</p>
4. D DOES NOT APPEAR FOR ROCKET STATUS IN TUBE NO. 4 (Simulator ROCKET 4 FUZE switch in DUD; all other simulator switches in NORMAL)	<p>Step 1. Check that simulator ROCKET 4 FUZE switch is in DUD; all other simulator switches in NORMAL.</p> <p>Step 2. Using a multimeter, perform rocket 4 dud fuze circuit check given in figure 5-4.</p>	<p>Circuit checks fail – Replace defective component.</p> <p>Circuit checks good – Troubleshoot fire control system (TM 9-1425-646-20).</p>
5. FCP DOES NOT INDICATE HANGFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 RKT STATUS switch in HANGFIRE; all other simulator switches in NORMAL)	<p>Step 1. Check that simulator ROCKET 4 RKT STATUS switch is in HANGFIRE; all other simulator switches in NORMAL.</p> <p>Step 2. Using a multimeter, perform rocket 4 hangfire circuit check given in figure 5-5.</p>	<p>Circuit checks fail – Replace defective component.</p> <p>Circuit checks fail – Troubleshoot fire control system (TM 9-1425-646-20).</p>
6. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 2 (Simulator ROCKET 2 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL)	<p>Step 1. Check that simulator ROCKET 2 MISFIRE switch is in MISFIRE; all other simulator switches in NORMAL.</p> <p>Step 2. Using a multimeter, perform rocket 2 misfire circuit check given in figure 5-6.</p>	<p>Circuit checks fail – Replace defective component.</p> <p>Circuit checks good – Troubleshoot fire control system (TM 9-1425-646-20).</p>

Table 5-2. Direct Support Troubleshooting – Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
7. FCP DOES NOT INDICATE MISFIRE ON ROCKET NO. 4 (Simulator ROCKET 4 MISFIRE switch in MISFIRE; all other simulator switches in NORMAL)	Step 1. Check that simulator ROCKET 4 MISFIRE switch is in MISFIRE; all other simulator switches in NORMAL.	
	Step 2. Using a multimeter, perform rocket 4 misfire circuit check given in figure 5-7.	
		Circuit checks fail – Replace defective component.
		Circuit checks good – Troubleshoot fire control system (TM 9-1425-646-20).
8. FCP INDICATES ROCKET HANGFIRE (All simulator switches in NORMAL)	Step 1. Check that all simulator switches are in NORMAL.	
	Step 2. Using a multimeter, perform applicable rocket status circuit check given in figure 5-1.	
		Circuit checks fail – Replace defective component.
		Circuit checks good – Troubleshoot fire control system (TM 9-1425-646-20).
9. FCP INDICATES ROCKET MISFIRE (All simulator switches in NORMAL)	Step 1. Check that all simulator switches are in NORMAL.	
	Step 2. Using a multimeter, perform applicable rocket status circuit check given in figure 5-1.	
		Circuit checks fail – Replace defective component.
		Circuit checks good – Troubleshoot fire control system (TM 9-1425-646-20).
10. UMBILICAL CABLE NOT PROPERLY CONNECTED APPEARS ON FCP (All simulator switches in NORMAL)	Step 1. Check that all simulator switches are in NORMAL.	
	Step 2. Using a multimeter, perform umbilical cable not properly connected circuit check given in figure 5-8.	
		Circuit checks fail – Replace defective component.
		Circuit checks good – Troubleshoot fire control system (TM 9-1425-646-20).

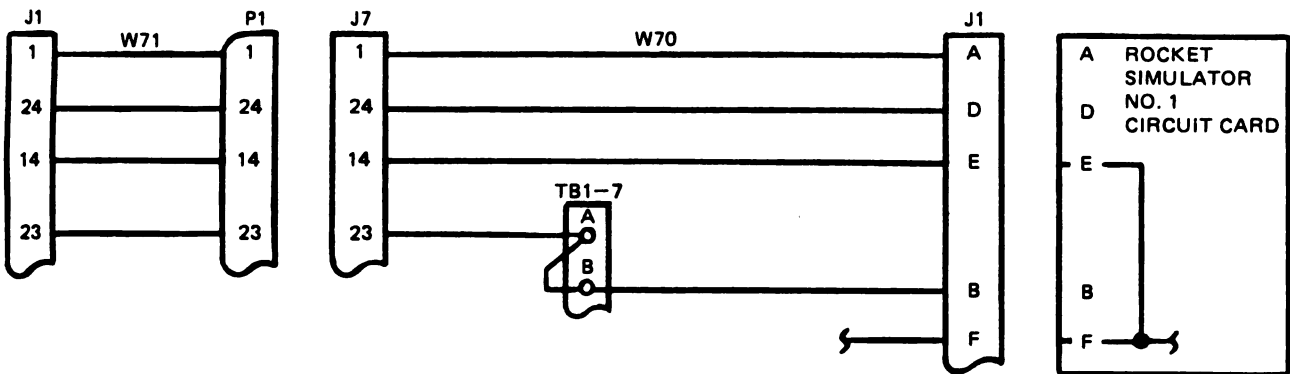
Table 5-2. Direct Support Troubleshooting – Continued

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION
11. UMBILICAL CABLE NOT PROPERLY CONNECTED DOES NOT APPEAR ON FCP (Simulator ROCKET POD IDENT switch in OPEN; all other simulator switches in NORMAL)	<p>Step 1. Check that simulator ROCKET POD IDENT switch is in OPEN; all other simulator switches in NORMAL.</p> <p>Step 2. Using a multimeter, perform umbilical cable not properly connected circuit check given in figure 5-9.</p>	<p>Circuit checks fail – Replace defective component.</p> <p>Circuit checks good – Troubleshoot fire control system (TM 9-1425-646-20).</p>

5-9. TROUBLESHOOTING (CONT)

TUBE NO. 1 ROCKET STATUS CIRCUIT CHECK

- A. Check for continuity between terminals A and B of TB1 terminal module 7. If continuity is not present, replace terminal module (paragraph 5-15).
- B. Perform continuity check on harness assembly W70. If continuity is not present, replace harness assembly (paragraph 5-15).
- C. Perform continuity check on adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).



TUBE NO. 2 ROCKET STATUS CIRCUIT CHECK

- A. Check for continuity between terminals 1 and 2 of ROCKET 2 MISFIRE switch S4. If continuity is not present, replace switch (paragraph 5-15).
- B. Check for continuity between terminals A and C of TB1 terminal module 7. If continuity is not present, replace terminal module (paragraph 5-15).
- C. Check for continuity between W70J2 pin E and W70J1 pin F. If continuity is not present, replace harness assembly (paragraph 5-15).
- D. Perform continuity check on harness assembly W70. If continuity is not present, replace harness assembly (paragraph 5-15).
- E. Perform continuity check on adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).

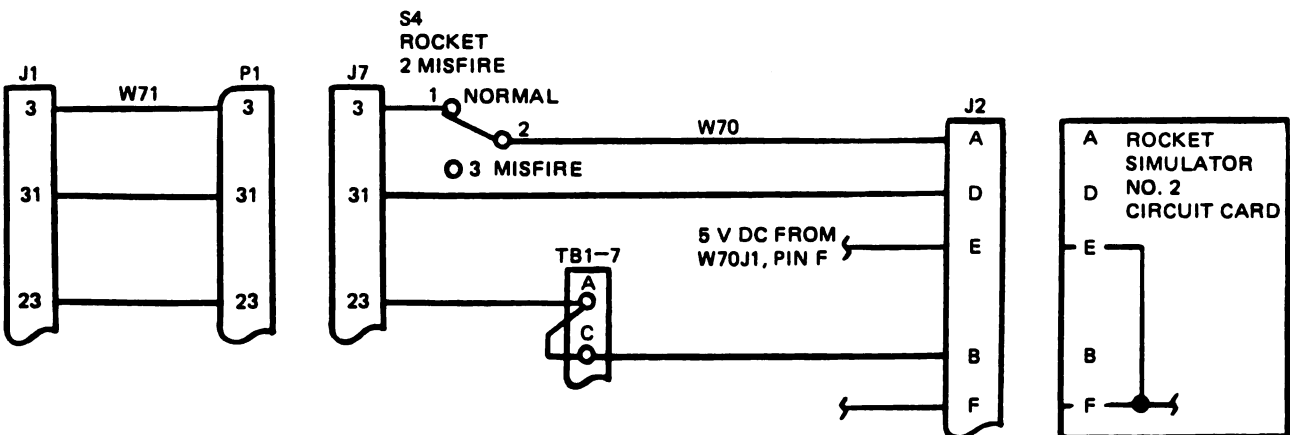


Figure 5-1. Rocket Status Circuit Check (Sheet 1 of 4)

5-9. TROUBLESHOOTING (CONT)

TUBE NO. 3 ROCKET STATUS CIRCUIT CHECK

- A. Check for continuity between terminals A and D of TB1 terminal module 7. If continuity is not present, replace terminal module (paragraph 5-15).
- B. Check for continuity between W70J3 pin E and W70J2 pin F. If continuity is not present, replace harness assembly (paragraph 5-15).
- C. Perform continuity check on harness assembly W70. If continuity is not present, replace harness assembly (paragraph 5-15).
- D. Perform continuity check on adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).

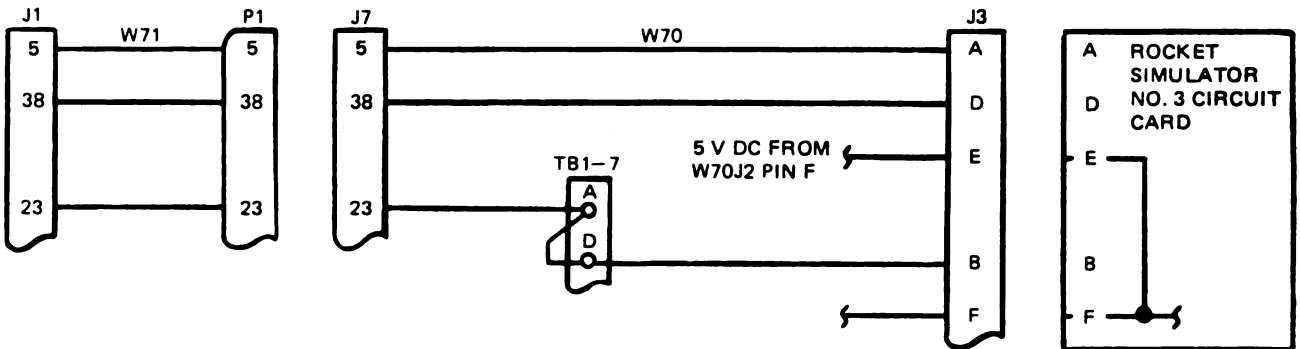


Figure 5-1. Rocket Status Circuit Check (Sheet 2 of 4)

5-9. TROUBLESHOOTING (CONT)

TUBE NO. 4 ROCKET STATUS CIRCUIT CHECK

- A. Check for continuity between terminals 1 and 2 of ROCKET 4 MISFIRE switch S2. If continuity is not present, replace switch (paragraph 5-15).
- B. Check for continuity between terminals 1 and 2 of ROCKET 4 RKT STATUS switch S3. If continuity is not present, replace switch (paragraph 5-15).
- C. Check for no continuity between terminals 5 and 6 of ROCKET 4 RKT STATUS switch S3. If continuity is present, replace switch (paragraph 5-15).
- D. Check for continuity between terminals A and E of TB1 terminal module 7. If continuity is not present, replace terminal module (paragraph 5-15).
- E. Check for continuity between W70J4 pin E and W70J3 pin F. If continuity is not present, replace harness assembly (paragraph 5-15).
- F. Perform continuity check on harness assembly W70. If continuity is not present, replace harness assembly (paragraph 5-15).
- G. Perform continuity check on adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).

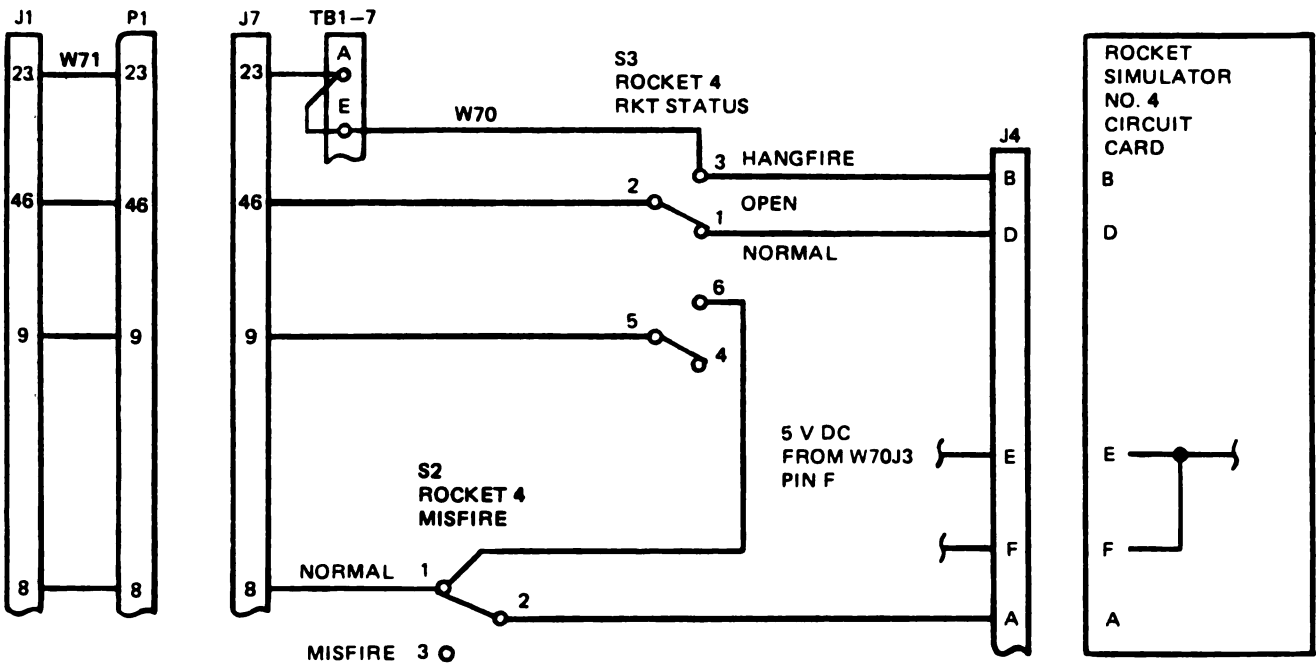
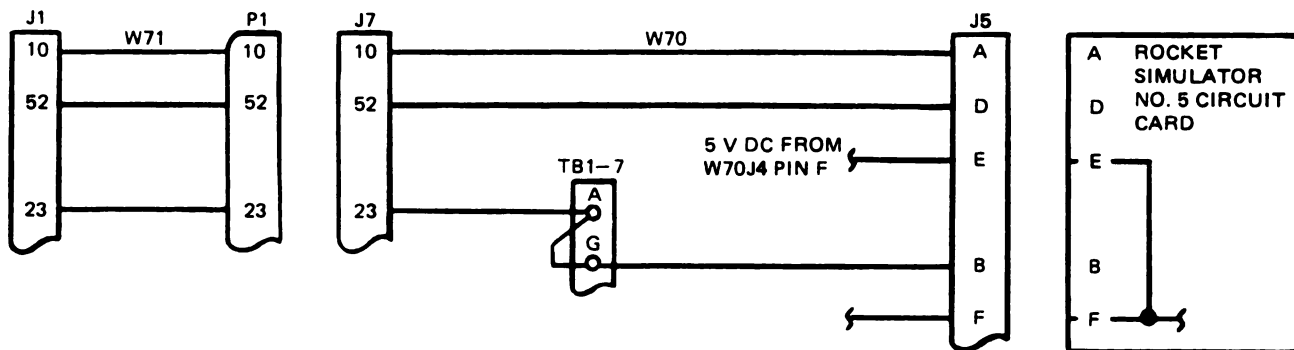


Figure 5-1. Rocket Status Circuit Check (Sheet 3 of 4)

5-9. TROUBLESHOOTING (CONT)

TUBE NO. 5 ROCKET STATUS CIRCUIT CHECK

- A. Check for continuity between terminals A and G of TB1 terminal module 7. If continuity is not present, replace terminal module (paragraph 5-15).
- B. Check for continuity between W70J5 pin E and W70J4 pin F. If continuity is not present, replace harness assembly W70 (paragraph 5-15).
- C. Perform continuity check on harness assembly W70. If continuity is not present, replace harness assembly (paragraph 5-15).
- D. Perform continuity check on adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).



TUBE NO. 6 ROCKET STATUS CIRCUIT CHECK

- A. Check for continuity between terminals A and F of TB1 terminal module 7. If continuity is not present, replace terminal module (paragraph 5-15).
- B. Check for continuity between W70J6 pin E and W70J5 pin F. If continuity is not present, replace harness assembly W70 (paragraph 5-15).
- C. Perform continuity check on harness assembly W70. If continuity is not present, replace harness assembly (paragraph 5-15).
- D. Perform continuity check on adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).

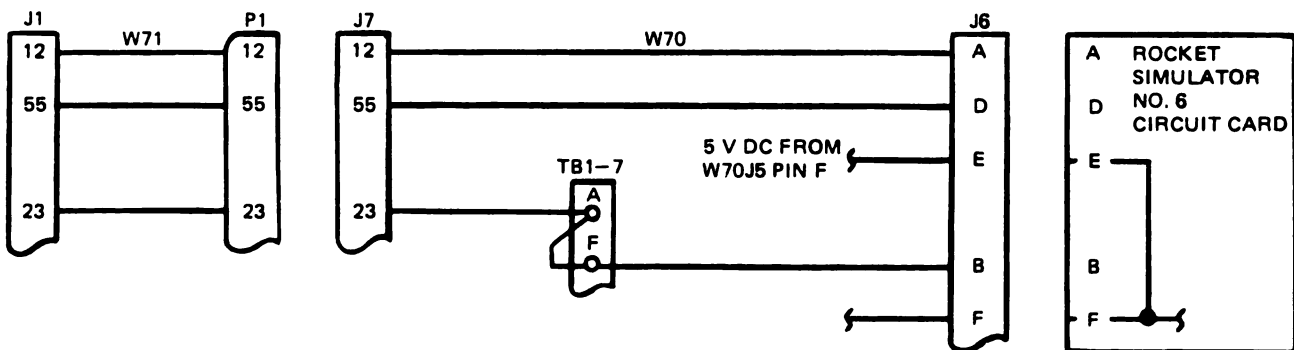


Figure 5-1. Rocket Status Circuit Check (Sheet 4 of 4)

5-9. TROUBLESHOOTING (CONT)

ROCKET 4 OPEN CIRCUIT CHECK

- A. Check for no continuity between terminals 1 and 2, 2 and 3, and 5 and 6 of ROCKET 4 RKT STATUS switch S3. If continuity is indicated, replace switch (paragraph 5-15).
- B. Check for continuity between terminals 1 and 2 of ROCKET 4 MISFIRE switch S2. If continuity is not present, replace switch (paragraph 5-15).
- C. Check for continuity between terminals A and E of TB1 terminal module 7. If continuity is not present, replace terminal module (paragraph 5-15).
- D. Check for continuity between W70J7 pin 8 and W70J4 pin A, and between W70J7 pin 23 and W70J4 pin B. If continuity is not present, replace harness assembly (paragraph 5-15).
- E. Check for continuity between W70J4 pin E and W70J3 pin F. If continuity is not present, replace harness assembly (paragraph 5-15).
- F. Perform continuity check of adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).

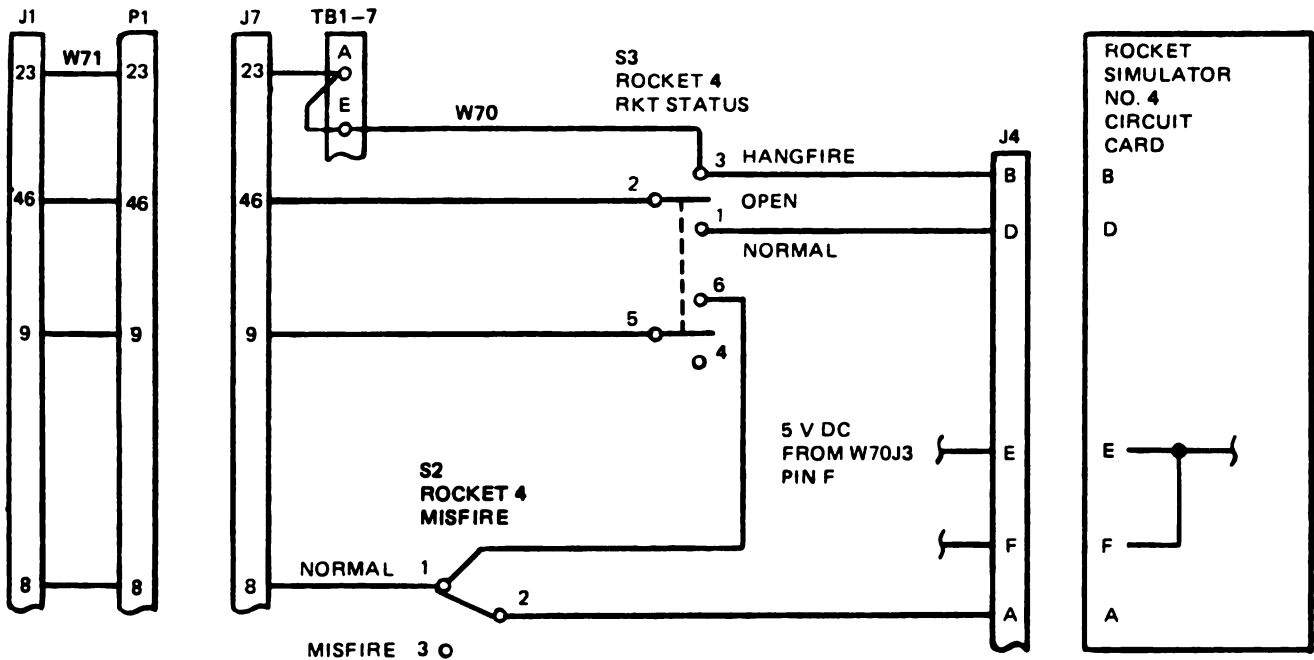


Figure 5-2. Rocket 4 Open Circuit Check

5-9. TROUBLESHOOTING (CONT)

ROCKET FUZE CIRCUIT CHECK

Tube No. 4

- A. Check for continuity between terminals 1 and 2 of ROCKET 4 FUZE switch S1. If continuity is not present, replace switch (paragraph 5-15).
- B. Perform continuity check between terminals B and G, C and H, and D and J of TB1 terminal module 4. If continuity is not present, replace terminal module (paragraph 5-15).
- C. Perform continuity check between W70J7 pins 39, 43, and 42, and TB1 terminal module 4. If continuity is not present, replace harness assembly W70 (paragraph 5-15).
- D. Perform continuity check on pins 39, 43, and 42 of adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).

Tubes No. 1, 2, 3, 5, and 6

- A. Perform continuity check of applicable TB1 terminal module. If continuity is not present, replace terminal module (paragraph 5-15).
- B. Perform continuity check between harness connector W70J7 and applicable TB1 terminal module. If continuity is not present, replace harness assembly (paragraph 5-15).
- C. Perform continuity check of applicable pins on adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).

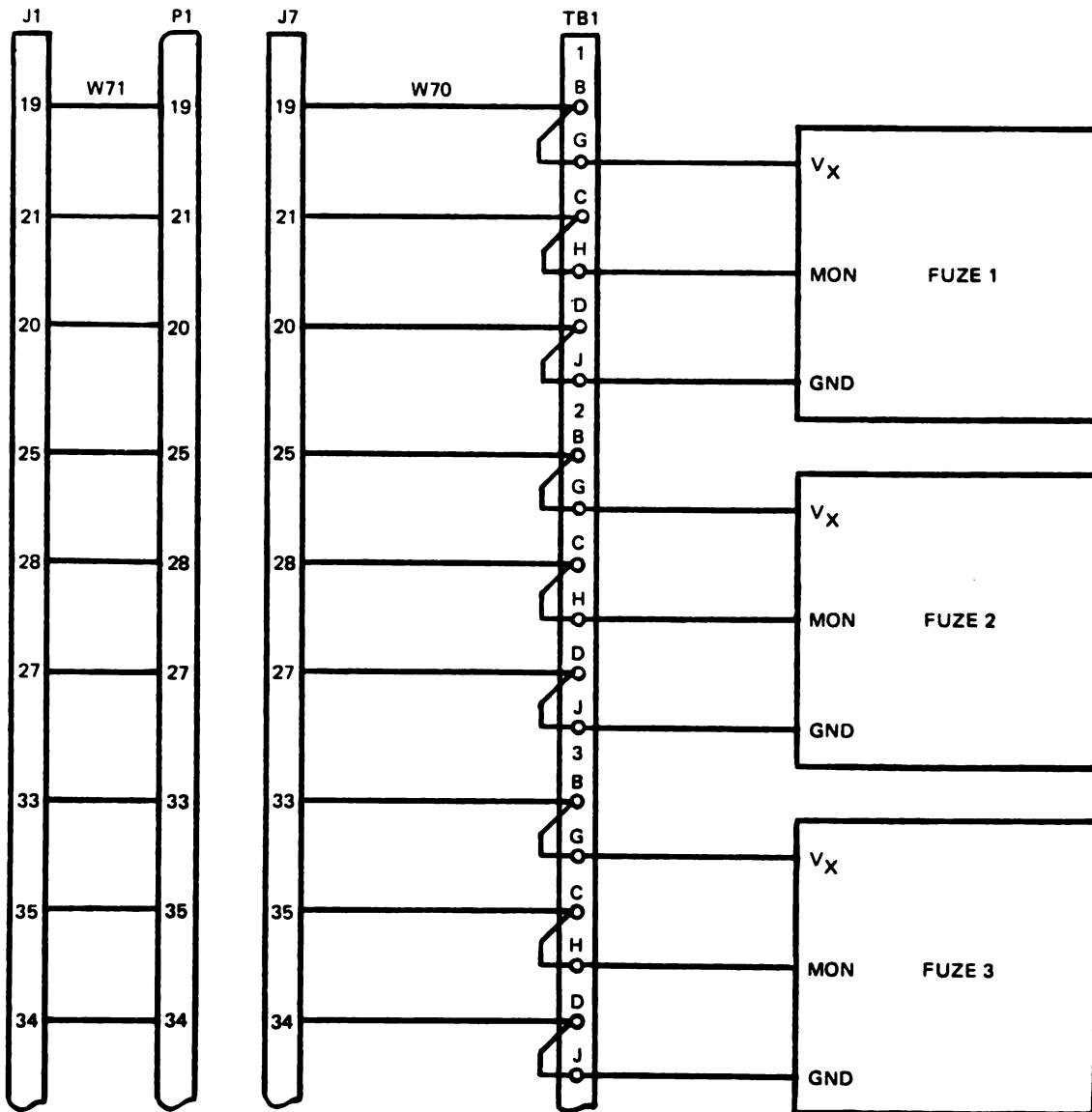


Figure 5-3. Rocket Fuze Circuit Check (Sheet 1 of 2)

5-9. TROUBLESHOOTING (CONT)

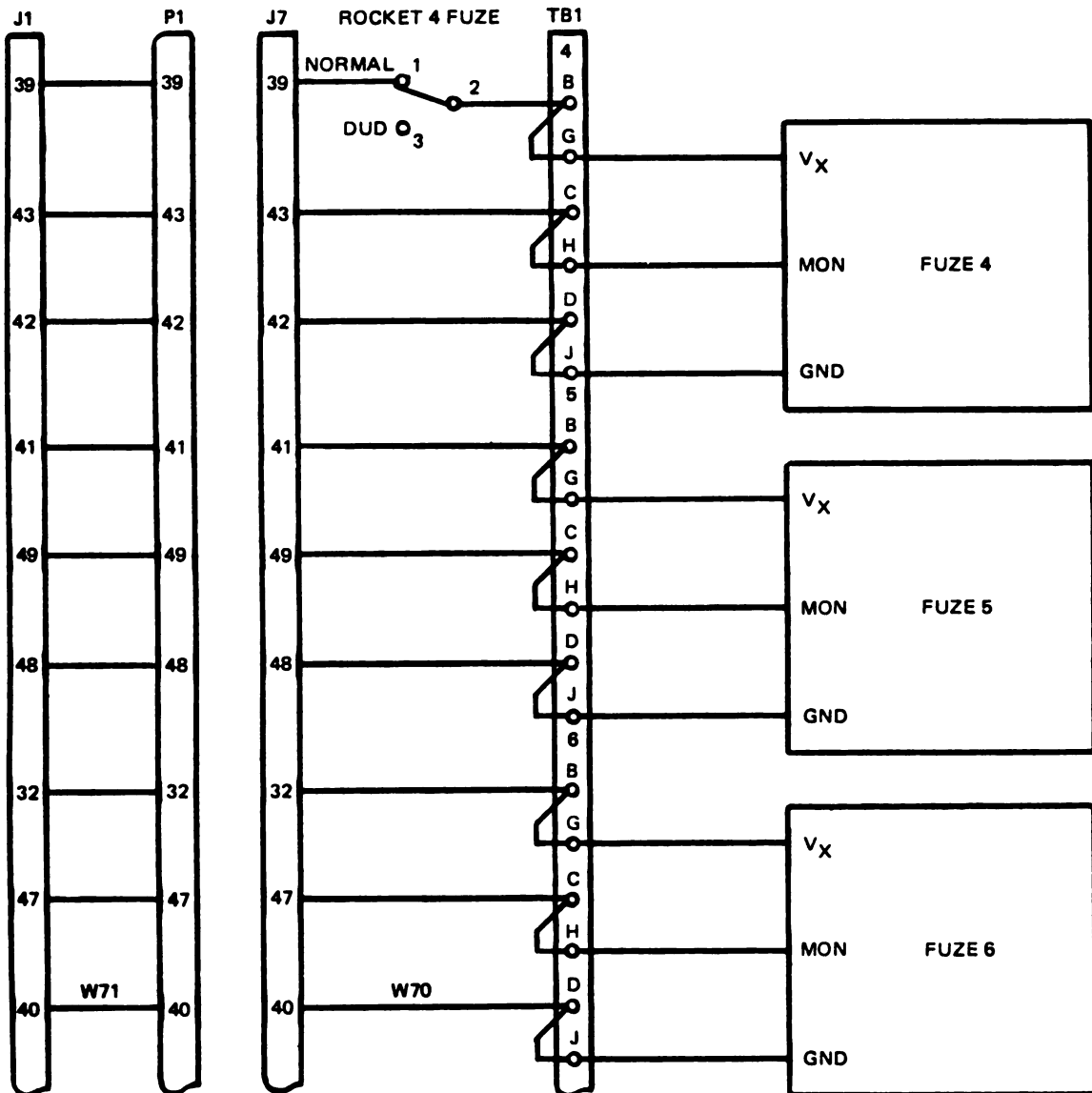


Figure 5-3. Rocket Fuze Circuit Check (Sheet 2 of 2)

5-9. TROUBLESHOOTING (CONT)

ROCKET 4 DUD FUZE CIRCUIT CHECK

- A. Check for no continuity between terminals 1 and 2 of ROCKET 4 FUZE switch S1. If continuity is present, replace switch (paragraph 5-15).
- B. Perform continuity check on TB1 terminal module 4. If continuity is not present, replace terminal module (paragraph 5-15).
- C. Place ROCKET 4 FUZE switch in NORMAL.
- D. Perform continuity check between harness assembly connector W70J7 and terminal module 4. If continuity is not present, replace harness assembly (paragraph 5-15).
- E. Perform continuity check on adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14). If continuity is present, replace fuze (paragraph 5-12).

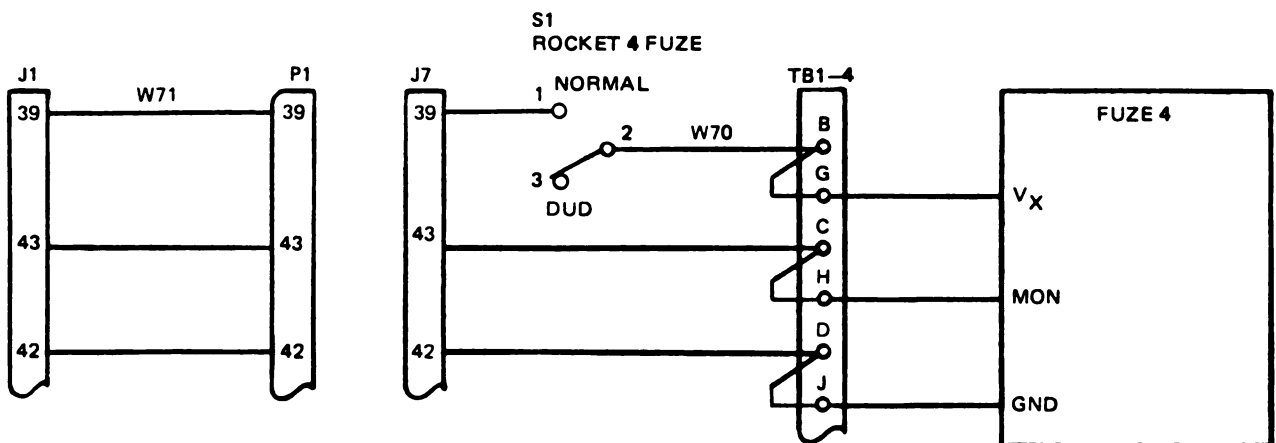


Figure 5-4. Rocket 4 Dud Fuze Circuit Check

5-9. TROUBLESHOOTING (CONT)

ROCKET 4 HANGFIRE CIRCUIT CHECK

- A. Check for continuity between terminals 2 and 3 and 5 and 6 of ROCKET 4 RKT STATUS switch S3. If continuity is not present, replace switch (paragraph 5-15).
- B. Check for continuity between terminals 1 and 2 of ROCKET 4 MISFIRE switch S2. If continuity is not present, replace switch (paragraph 5-15).
- C. Check for continuity between terminals A and E of TB1 terminal module 7. If continuity is not present, replace terminal module (paragraph 5-15).
- D. Check for continuity between pins 8 and 9 and 46 and 23 of W70J7. If continuity is not present, replace harness assembly (paragraph 5-15).
- E. Check for continuity between W70J7 pin 8 and W70J4 pin A, and between W70J7 pin 46 and W70J4 pin B. If continuity is not present, replace harness assembly (paragraph 5-15).
- F. Check for continuity between W70J4 pin E and W70J3 pin F. If continuity is not present, replace harness assembly (paragraph 5-15).
- G. Perform continuity check on adapter cable W71. If continuity is not present replace adapter cable (paragraph 5-14).

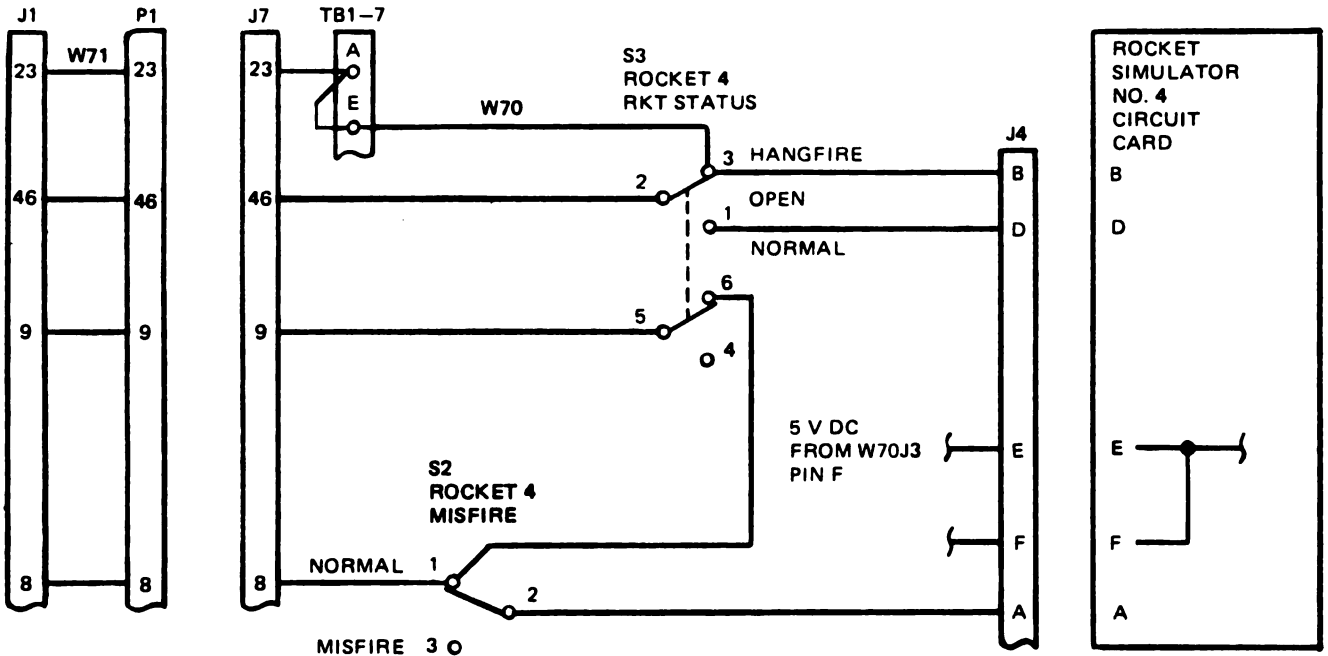


Figure 5-5. Rocket 4 Hangfire Circuit Check

5-9. TROUBLESHOOTING (CONT)

ROCKET 2 MISFIRE CIRCUIT CHECK

- A. Check for no continuity between terminals 1 and 2 of ROCKET 2 MISFIRE switch S4. If continuity is present, replace switch (paragraph 5-15).
- B. Check for continuity between terminals A and C of TB1 module 7. If continuity is not present, replace terminal module (paragraph 5-15).
- C. Check for continuity between W70J2 pin E and W70J1 pin F. If continuity is not present, replace harness assembly W70 (paragraph 5-15).
- D. Place ROCKET 2 MISFIRE switch in NORMAL.
- E. Perform continuity check of harness assembly W70. If continuity is not present, replace harness assembly (paragraph 5-15).
- F. Perform continuity check of adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).

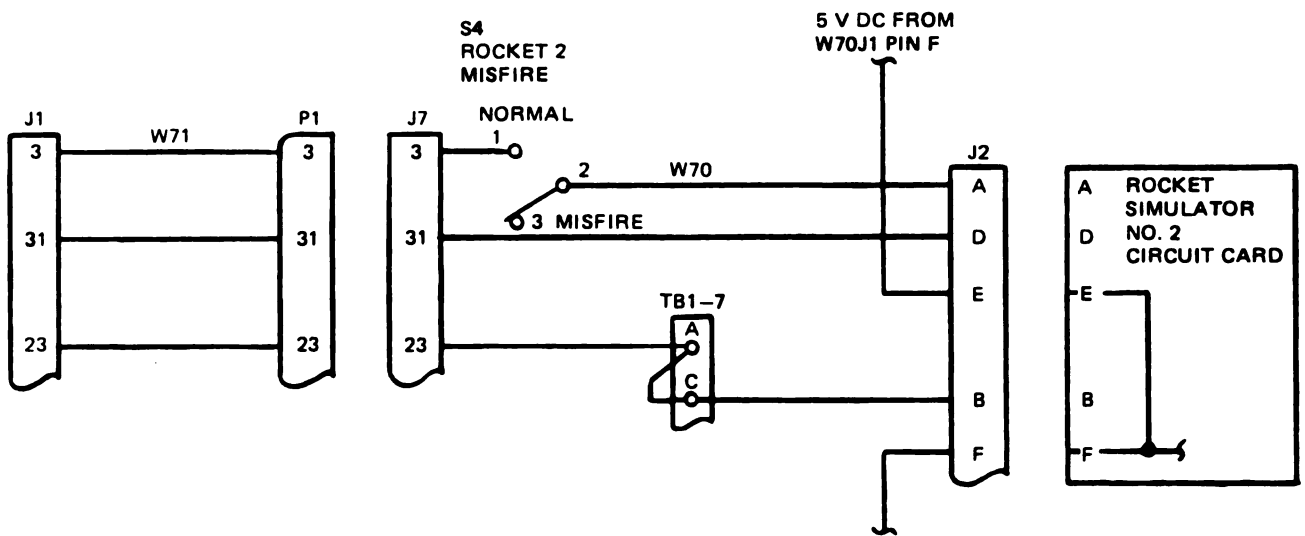


Figure 5-6. Rocket 2 Misfire Circuit Check

5-9. TROUBLESHOOTING (CONT)

ROCKET 4 MISFIRE CIRCUIT CHECK

- A. Check for no continuity between terminals 1 and 2 of ROCKET 4 MISFIRE switch S2. If continuity is present, replace switch (paragraph 5-15).
- B. Check for no continuity between terminals 5 and 6 of ROCKET 4 RKT STATUS switch S3. If continuity is present, replace switch (paragraph 5-15).
- C. Check for continuity between terminals 1 and 2 of ROCKET 4 RKT STATUS switch S3. If continuity is not present, replace switch (paragraph 5-15).
- D. Check for continuity between terminals A and E of TB1 terminal module 7. If continuity is not present, replace terminal module (paragraph 5-15).
- E. Check for continuity between W70J7 pin 23 and W70J4 pin B, and between W70J7 pin 46 and W70J4 pin D. If continuity is not present, replace harness assembly W70 (paragraph 5-15).
- F. Check for continuity between W70J4 pin E and W70J3 pin F. If continuity is not present, replace harness assembly W70 (paragraph 5-15).
- G. Perform continuity check on adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).

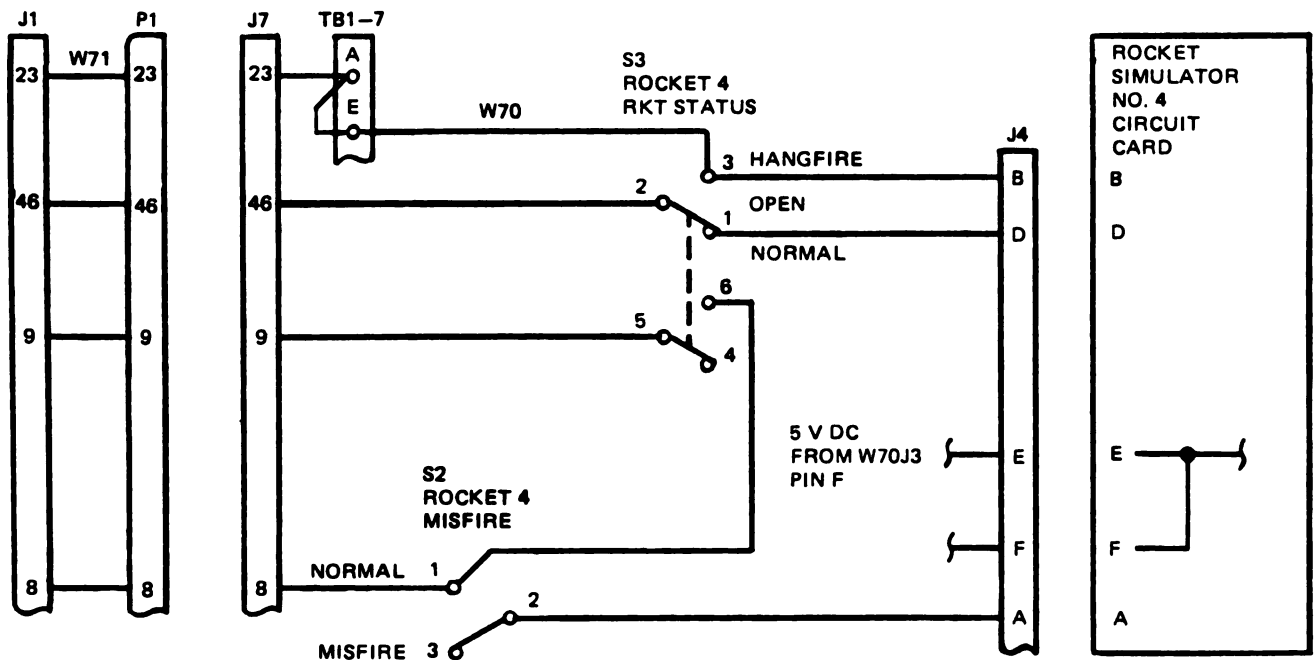


Figure 5-7. Rocket 4 Misfire Circuit Check

5-9. TROUBLESHOOTING (CONT)

UMBILICAL CABLE NOT PROPERLY CONNECTED CIRCUIT CHECK

- A. Check for continuity between terminals 1 and 2 of ROCKET POD IDENT switch S5. If continuity is not present, replace switch (paragraph 5-15).
- B. Check for continuity between pins 17 and 18 of W70J7. If continuity is not present, replace harness assembly (paragraph 5-15).
- C. Perform continuity check on adapter cable W71. If continuity is not present, replace adapter cable (paragraph 5-14).

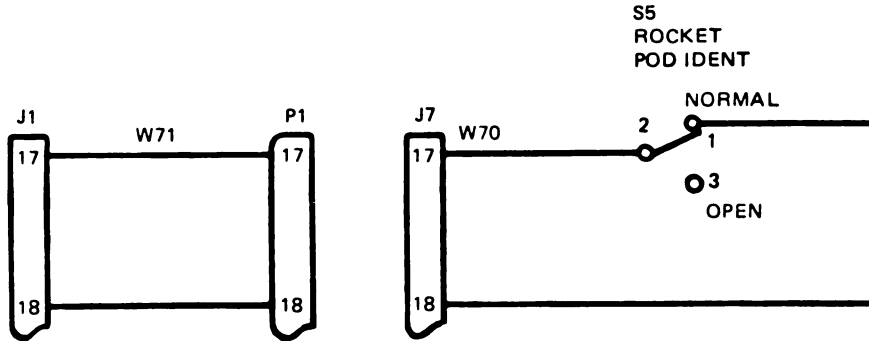


Figure 5-8. Umbilical Cable Not Properly Connected Circuit Check, All Switches in NORMAL

UMBILICAL CABLE NOT PROPERLY CONNECTED CIRCUIT CHECK

- A. Check for no continuity between terminals 1 and 2 of ROCKET POD IDENT switch S5. If continuity is present, replace switch (paragraph 5-15).

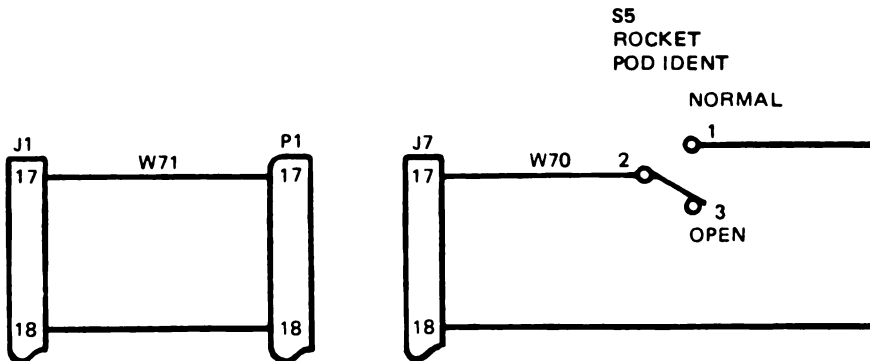


Figure 5-9. Umbilical Cable Not Properly Connected Circuit Check, ROCKET POD IDENT Switch in OPEN, All Others in NORMAL

Section IV. DIRECT SUPPORT MAINTENANCE

5-10. GENERAL. The maintenance instruction paragraphs cover the direct support maintenance tasks for the items of that component or assembly for which maintenance is authorized by the Maintenance Allocation Chart (MAC) in Appendix

B. The maintenance task for each item within the paragraph may be completed as an individual task. It is not necessary to perform the tasks on all items in the paragraph if only one item requires maintenance.

5-11. TRAINER LP/C MAINTENANCE INSTRUCTIONS. This paragraph covers the maintenance tasks for the following items:

<i>Item</i>	<i>Page</i>
1. Slide Mount	5-19
2. Bushings	5-21
3. Latch	5-21
4. Strike	5-22

INITIAL SETUP

Support Equipment

- Truck, wrecker, 5-ton M816 (item 2)
- Hoist, LP/C, 11508999 (item 2)

Tool

- Kit, tool, 13032302
- Set, shop, 13032303
 - Bar, bucking, rivet (for item 4)
 - Drill, electric (for items 3 and 4)
 - Drill, twist, 1/8-inch (for items 3 and 4)
 - File, hand (for item 3)
 - Hammer, pneumatic (for item 4)
 - Nippers, end cutting (for item 3)
 - Riveter, blind, hand (for item 3)

- Rivet set, pneumatic (for item 4)
- Vise (for item 4)

Personnel Required

- Wrecker Driver MOS 63H
- MLRS Repairer MOS 27M

Materials/Parts

- Cloth, cleaning (2, Appendix E)
- Primer, zinc chromate (9, Appendix E)
- Shim stock, laminated (7, Appendix E)

Equipment Condition

- LP/C unloaded from SPLL (TM 9-1425-646-10) (for item 2)

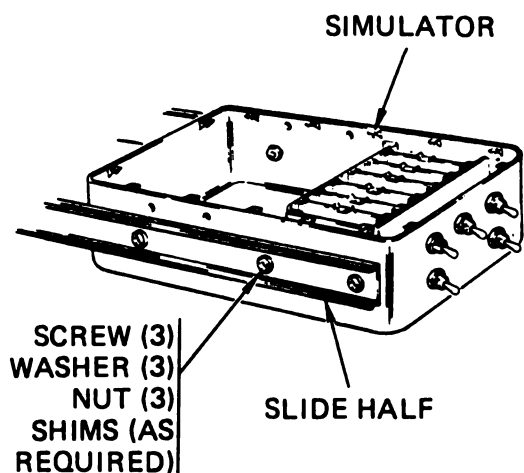
NOTE

The left and right slide assembly is removed and installed in the same manner.

1. SLIDE MOUNT.

a. Remove.

- (1) Remove simulator assembly (paragraph 4-11).
- (2) Remove fuzes from rocket simulator (paragraph 5-12).
- (3) Using crosstip screwdriver and 7mm open end wrench, remove three screws, three washers, three nuts, and shims securing slide half to simulator.

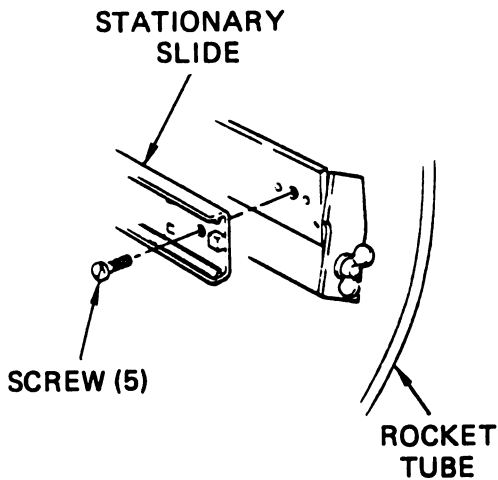


- (4) Using flat tip screwdriver, remove five screws securing stationary slide to rocket tube. Remove slide.

5-11. TRAINER LP/C MAINTENANCE INSTRUCTIONS (CONT)

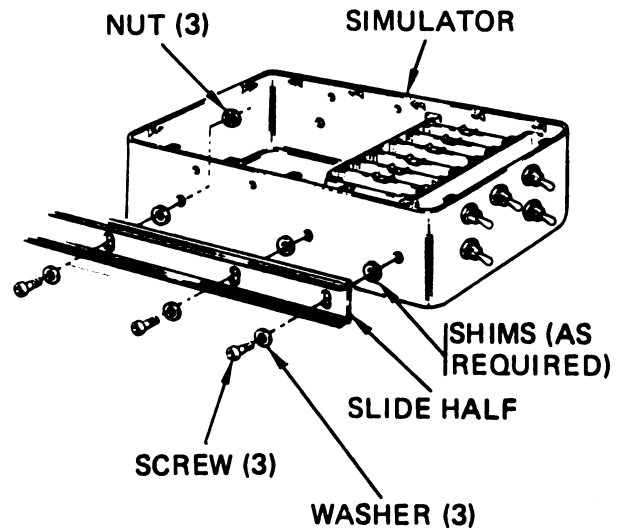
b. Install.

- (1) Separate the slide halves.
- (2) Using artist brush, apply a coat of zinc chromate primer to threads of five stationary slide mounting bolts. Wipe off excess primer.
- (3) Secure the stationary slide to rocket tube with five screws. Using a flat tip screwdriver, tighten screws.



- (4) Secure slide half to simulator with three screws, three washers, and three nuts. Using 7mm open end wrench and crosstip screwdriver, tighten screws.

- (5) Try to slide the simulator into the rocket tube. If simulator does not slide easily, remove the slide and add or remove shims as necessary until simulator slides in and out easily.



- (6) Install fuzes in simulator (paragraph 5-12).
- (7) Install simulator assembly (paragraph 4-11).

5-11. TRAINER LP/C MAINTENANCE INSTRUCTIONS (CONT)

2. BUSHINGS.

a. Remove.

(1) Using 5-ton wrecker and LP/C hoist, lift LP/C onto support stand. Support could be made from four 55-gallon drums (one under each corner of LP/C) and two-by-four lumber.

NOTE

Bushing on forward end of LP/C is installed with a washer under the head of each screw.

(2) Using crosstip screwdriver, remove four screws (and four washers if installed) securing bushing to LP/C. Tap bushing off LP/C.

b. Install.

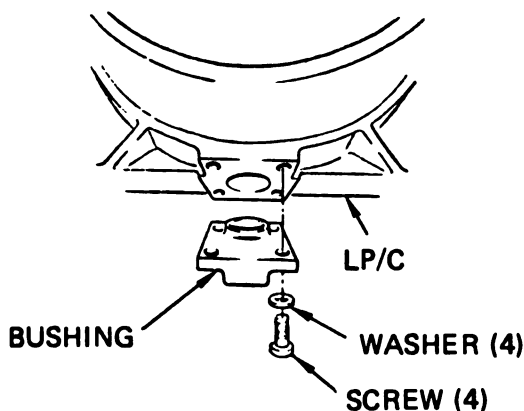
(1) Using artist brush, apply a coating of zinc chromate primer to outside surface of bushing and to threads of four mounting screws.

(2) Using machinist hammer, lightly tap the bushing into the LP/C.

(3) Secure bushing to LP/C with four screws, and four washers, if required. Using crosstip screwdriver, tighten screws.

(4) Using 5-ton wrecker, remove LP/C from support stand.

(5) If no further maintenance is required, perform follow-on procedure (page 5-23).



3. LATCH.

a. Remove.

(1) Remove simulator assembly (paragraph 4-11).

(2) Open latch to the full open position.

(3) Using electric drill and 1/8-inch twist drill, drill through two rivet heads on inside of tube.

(4) Using drive pin punch, tap out two rivets securing latch to tube. Remove latch.

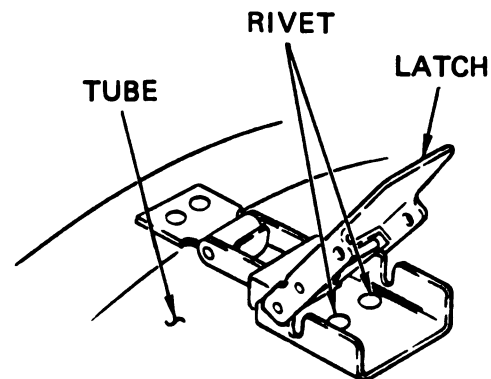
b. Install.

(1) Using artist brush, apply zinc chromate primer to two rivets.

(2) Place new latch in position and using blind riveter, install two rivets from inside tube.

(3) Using end cutting nippers, cut stems off of rivets. Use file to remove sharp edges from rivets.

(4) Install simulator assembly (paragraph 4-11).



5-11. TRAINER LP/C MAINTENANCE INSTRUCTIONS (CONT)

4. STRIKE.

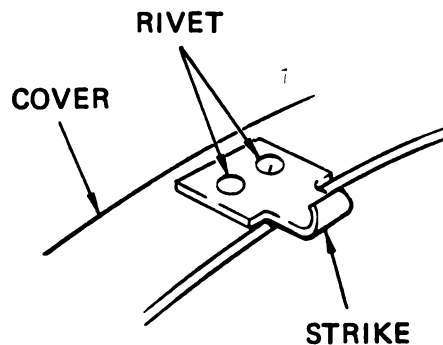
a. Remove.

- (1) Remove cover (paragraph 4-12).
- (2) Position cover in vise and using electric drill and 1/8-inch twist drill, drill through head of two rivets.
- (3) Using drive pin punch, remove two rivets. Remove strike.

b. Install.

- (1) Using artist brush, apply zinc chromate primer to two rivets.
- (2) Position new strike on cover. Using pneumatic rivet set with pneumatic hammer and bucking bar, install two rivets with heads on inside of cover.

- (3) Remove cover from vise.
- (4) Install cover (paragraph 4-12).



FOLLOW-ON PROCEDURE

Load LP/C in SPLL (TM 9-1425-646-10).

5-12. SIMULATOR ASSEMBLY MAINTENANCE INSTRUCTIONS. This paragraph covers the maintenance tasks for the following items:

<i>Item</i>	<i>Page</i>
1. Fuze Restraint	5-23
2. Fuze	5-24
3. Restraint Nutplate	5-24
4. Cover Anchor Nuts	5-25
5. Seal	5-26

INITIAL SETUP

Tools

- Kit, tool, 13032302
- Set, shop, 13032303
- Bar, bucking, rivet (for item 3)
- Drill, electric (for items 3 and 4)
- Drill, twist, 3/32-inch (for items 3 and 4)
- Hammer, pneumatic (for items 3 and 4)
- Rivet set, pneumatic (for items 3 and 4)

Materials/Parts

- Primer, zinc chromate, (9, Appendix E)
- Sealant (5, Appendix E)
- Shim stock, laminated (7, Appendix E)

Personnel Required

- MLRS Repairer MOS 27M

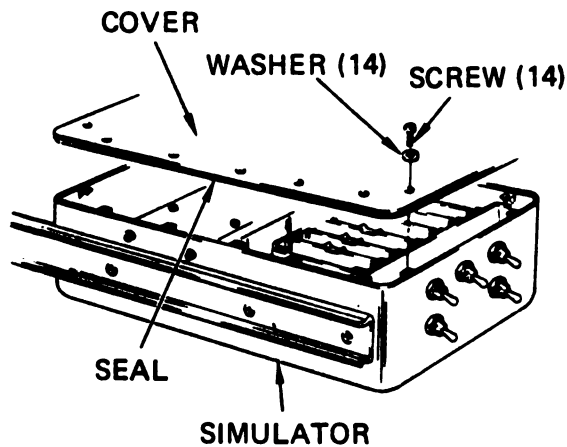
Equipment Condition

- Simulator assembly removed from LP/C (paragraph 4-11)

1. FUZE RESTRAINT.

a. Remove.

(1) Using crosstip screwdriver, remove 14 screws and 14 washers securing simulator cover. Remove cover. Discard washers.



(2) Using crosstip screwdriver, remove two screws and two washers on each side of restraint.

(3) Using crosstip screwdriver, remove four screws securing restraint to fuzes. Remove restraint.

b. Install.

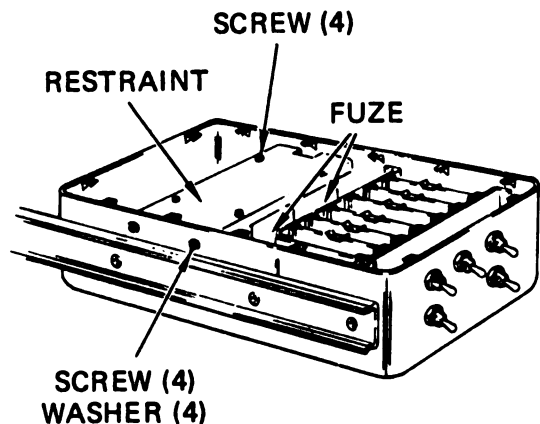
(1) Position restraint over fuzes. Using crosstip screwdriver, secure restraint to fuzes with four screws.

(2) Using crosstip screwdriver, secure the sides of the restraint with four screws and four washers.

(3) Inspect seal on cover. Replace damaged seal (item 5).

(4) Using crosstip screwdriver, secure cover to simulator with 14 screws and 14 new washers.

(5) If no further maintenance is required, perform follow-on procedure (page 5-27).



5-12. SIMULATOR ASSEMBLY MAINTENANCE INSTRUCTIONS (CONT)

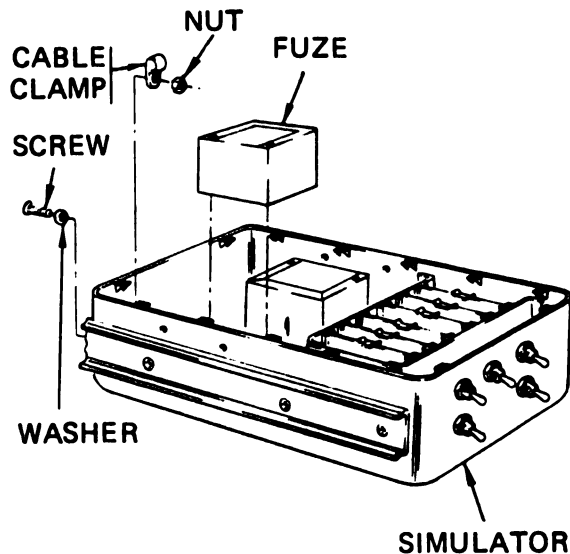
2. FUZE.

a. Remove.

- (1) Remove fuze restraint (item 1).
- (2) Using contact tool, remove fuze electrical wiring at terminal module.
- (3) Using 8mm box end wrench and crosstip screwdriver, remove screw, washer, and nut securing cable clamp to simulator housing.
- (4) Cut away cable ties as necessary and remove defective fuze.

b. Install.

- (1) Using the removed fuze as a pattern, measure and cut new fuze wires to proper length.
- (2) Using wire strippers, strip approximately 6mm (1/4 inch) of insulation from end of fuze wires.
- (3) Using crimping tool and contact positioner, install a contact on each fuze wire.
- (4) Position fuze in simulator.
- (5) Using contact tool, connect fuze wires to terminal junction module. See figure FO-1.
- (6) Replace cable ties as required.
- (7) Apply sealant around cable clamp mounting hole and, using 8mm box end wrench and crosstip screwdriver, secure wiring harness to simulator housing with washer, screw, and nut.
- (8) Install fuze restraint (item 1).



3. RESTRAINT NUTPLATE.

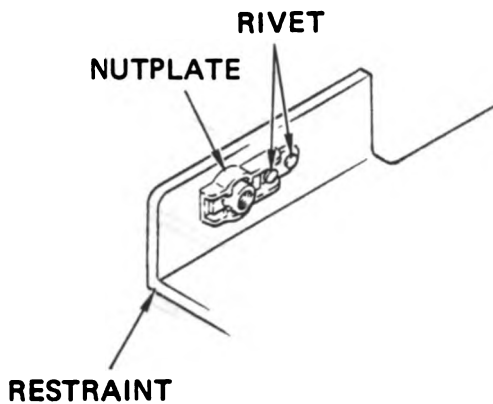
a. Remove.

- (1) Remove fuze restraint (item 1).
- (2) Secure restraint in vise. Using electric drill and 3/32-inch twist drill, drill through two rivet heads on defective nutplate.
- (3) Using drive pin punch and hammer, remove two rivets securing nutplate. Remove nutplate.

5-12. SIMULATOR ASSEMBLY MAINTENANCE INSTRUCTIONS (CONT)

b. Install.

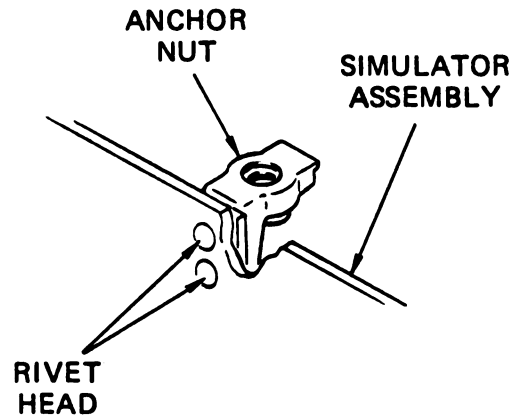
- (1) Using artist brush, apply zinc chromate primer to two rivets.
- (2) Position new nutplate on restraint. Using pneumatic rivet set, pneumatic hammer, and bucking bar, install two rivets.
- (3) Remove restraint from vise.
- (4) Install fuze restraint (item 1).



CAUTION

Do not drop stem of rivet inside of simulator assembly.

- (3) Using drive pin punch and hammer, remove two rivets. Remove nutplate and shim. Retain shim.



4. COVER ANCHOR NUTS.

a. Remove.

- (1) Using crosstip screwdriver, remove 14 screws and 14 washers securing simulator cover. Remove cover. Discard washers.
- (2) Using electric drill and 3/32-inch twist drill, drill through head of two rivets securing defective anchor nut.

b. Install.

- (1) If shim is damaged, make new shim from laminated shim stock the same thickness as old shim. Use nutplate as guide to drill holes in shim.
- (2) Using artist brush, apply zinc chromate primer to two rivets.
- (3) Place nutplate and shim in position. Using pneumatic rivet set, pneumatic hammer, and drive punch as bucking bar, install two rivets.

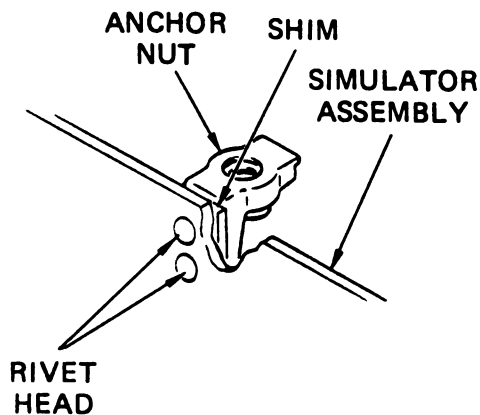
5-12. SIMULATOR ASSEMBLY MAINTENANCE INSTRUCTIONS (CONT)

(4) Clean and inspect inside simulator assembly for any metal chips, rivet stems, or other foreign matter.

(5) Inspect seal on cover. Replace seal, if required (item 5).

(6) Position cover on simulator assembly. Using crosstip screwdriver, install 14 screws and 14 new washers to secure cover.

(7) If no further maintenance is required, perform follow-on procedure (page 5-27).

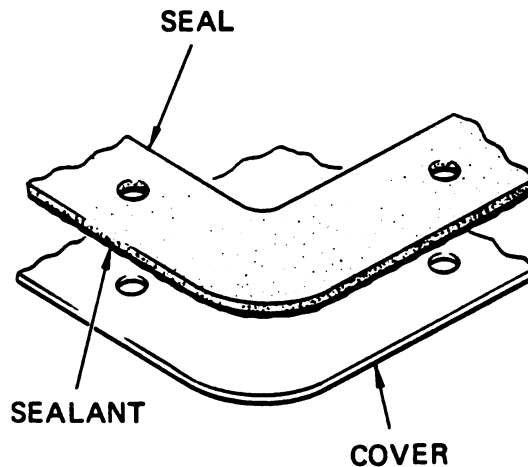


b. Install.

(1) Apply sealant to one side of new seal and press into place on cover. Allow sealant to dry 1/2 hour before installing cover.

(2) Using crosstip screwdriver, secure cover to simulator with 14 screws and 14 new washers.

(3) If no further maintenance is required, perform follow-on procedure.

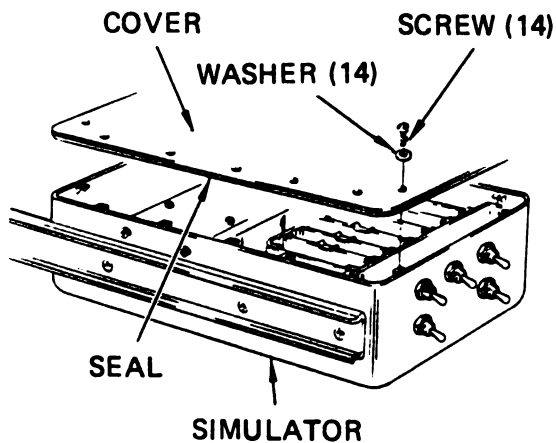


5. SEAL.

a. Remove.

(1) Using crosstip screwdriver, remove 14 screws and 14 washers securing simulator cover. Remove cover. Discard washers.

(2) Using scraping knife, remove old seal.



FOLLOW-ON PROCEDURE

Install simulator assembly (paragraph 4-11).

5-13. CIRCUIT CARD SUPPORT ASSEMBLY MAINTENANCE INSTRUCTIONS. This paragraph covers the maintenance tasks for the following items:

<i>Item</i>	<i>Page</i>
1. Circuit Card Support Assembly	5-27
2. Circuit Card Guide	5-27
3. Nutplate	5-28

INITIAL SETUP

Tools

- Kit, tool, 13032302
- Set, shop, 13032303
- Bar, bucking, rivet (for item 3)
- Drill, electric (for item 3)
- Drill, twist, 3/32-inch (for item 3)
- Hammer, pneumatic (for item 3)

- Rivet set, pneumatic (for item 3)
- Vise, machinist (for item 3)

Materials/Parts

- Cloth, cleaning (2, Appendix E)
- Primer, zinc chromate (9, Appendix E)

Personnel Required

- MLRS Repairer MOS 27M

1. CIRCUIT CARD SUPPORT ASSEMBLY.

a. Remove.

(1) Remove harness assembly W70 (paragraph 5-15).

(2) Using crosstip screwdriver, remove eight screws and washers securing support to simulator.

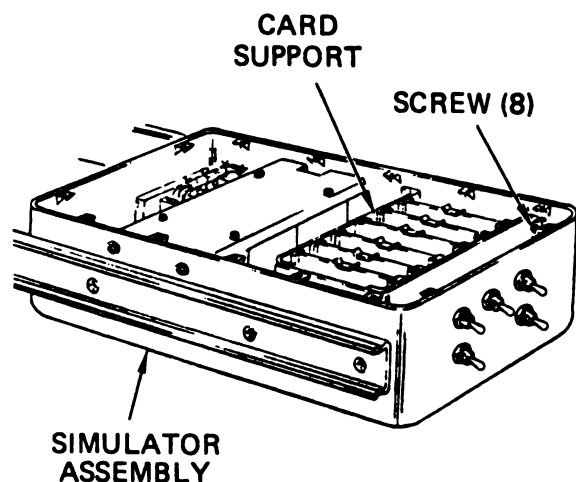
(3) Remove support assembly.

b. Install.

(1) Position new support assembly in simulator.

(2) Secure support to simulator with eight screws and washers. Using crosstip screwdriver, tighten screws.

(3) Install harness assembly W70 (paragraph 5-15).



2. CIRCUIT CARD GUIDE.

a. Remove.

(1) Using crosstip screwdriver, remove 14 screws and 14 washers securing cover. Remove cover. Discard washers.

5-13. CIRCUIT CARD SUPPORT ASSEMBLY MAINTENANCE INSTRUCTIONS (CONT)

(2) Lift the circuit card out of defective card guide.

(3) Insert knife blade under ends of card guide and pry loose. Remove card guide.

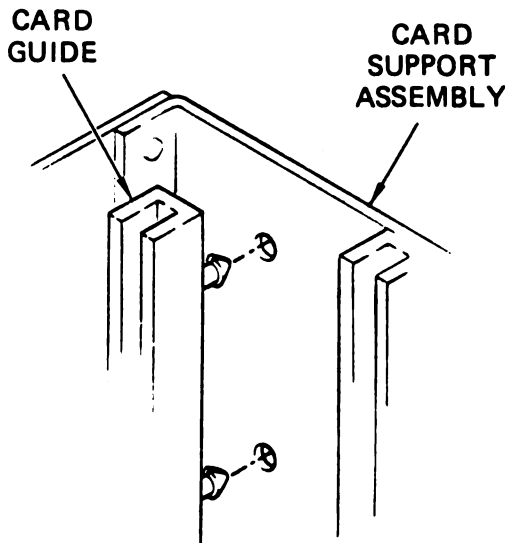
b. Install.

(1) Place new card guide in card support assembly and press until card guide snaps into position.

(2) Insert circuit card into card guide.

(3) Inspect seal on cover. If seal is damaged, replace (paragraph 5-12).

(4) Position cover on simulator assembly and install 14 screws and 14 new washers. Using crosstip screwdriver, tighten screws.



3. NUTPLATE.

a. Remove.

(1) Remove circuit card support assembly (item 1).

(2) Position support assembly in vise. Using electric drill and 3/32-inch twist drill, drill through heads of two rivets securing defective nutplate.

(3) Using drive pin punch and hammer, remove rivet stems. Remove nutplate.

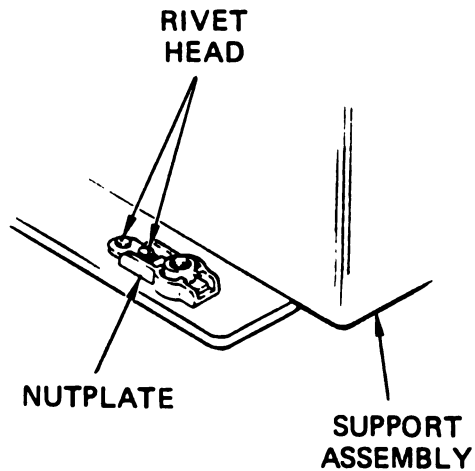
b. Install.

(1) Apply zinc chromate primer to two rivets.

(2) Position new nutplate nut on support assembly. Using rivet set, pneumatic hammer, and bucking bar, install two rivets.

(3) Remove support assembly from vise.

(4) Install support assembly (item 1).



5-14. ADAPTER CABLE W71 MAINTENANCE INSTRUCTIONS. This paragraph covers the maintenance tasks for the following items:

<i>Item</i>	<i>Page</i>
1. Adapter Cable	5-29
2. Shorting Plug	5-30
3. Umbilical Adapter	5-31
4. Mounting Bracket	5-31
5. Helical Insert	5-32

INITIAL SETUP

Tools

- Kit, tool, 13032302
- Set, shop, 13032303
- Extractor, screw thread (for item 5)
- Insert, 5mm thread (for item 5)
- Tool, tang breakoff (for item 5)

Materials/Parts

Lockwire (3, Appendix E)

Personnel Required

MLRS Repairer MOS 27M

References

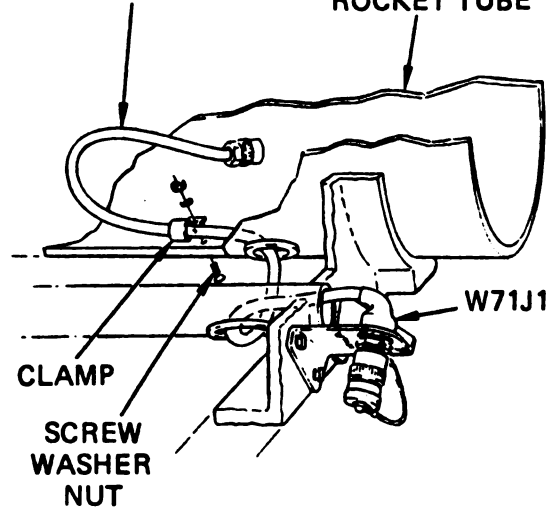
TM 9-1425-646-20

1. ADAPTER CABLE.

a. Remove.

- (1) Remove simulator assembly (paragraph 4-11).
- (2) Unscrew shorting plug from umbilical adapter.
- (3) Remove umbilical adapter from W71J1.
- (4) Using diagonal pliers, cut and remove lockwire securing W71J1 jamnut.
- (5) Using electrical slip joint pliers, remove jamnut. Remove shorting plug retaining cable.
- (6) Using crosstip screwdriver and 8mm box and wrench, remove screw, washer, and nut securing clamp on adapter cable W71. Remove clamp.
- (7) Pull cable out of mounting bracket and out through rocket tube.

ADAPTER CABLE W71 ROCKET TUBE



b. Install.

- (1) Feed J1 end of cable through hole in rocket tube.

5-14. ADAPTER CABLE W71 MAINTENANCE INSTRUCTIONS (CONT)

(2) Insert J1 into mounting bracket. Install shorting plug retaining cable ring on J1.

(3) Screw jamnut on J1. Using electrical slip joint pliers, tighten jamnut.

(4) Using wire twister pliers, safety-wire jamnut to bracket with lockwire.

(5) Install umbilical adapter on J1.

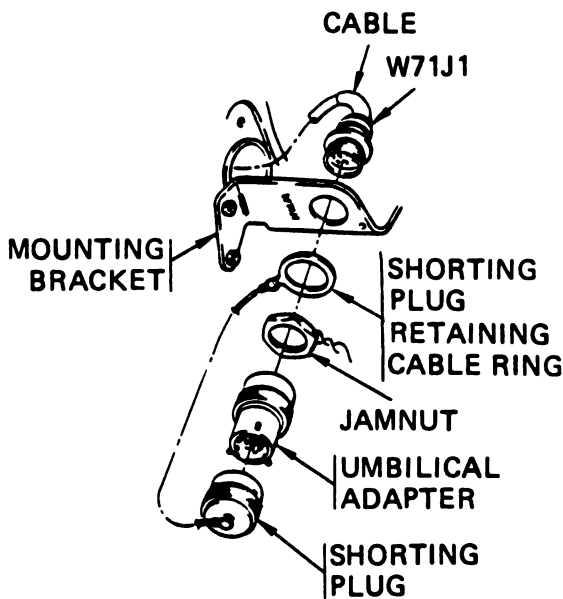
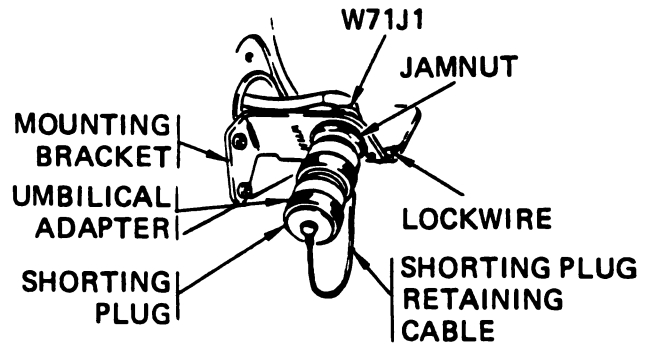
(6) Install shorting plug on umbilical adapter.

(7) Position clamp on adapter cable W71 and secure with screw, washer, and nut. Using crosstip screwdriver and 8mm box end wrench, tighten nut.

(8) Install simulator assembly (paragraph 4-11).

(4) Using electrical slip joint pliers, remove jamnut securing W71J1 to mounting bracket.

(5) Remove shorting plug retaining cable ring from W71J1.



2. SHORTING PLUG.

a. Remove.

(1) Unscrew shorting plug from umbilical adapter.

(2) Remove umbilical adapter from W71J1.

(3) Using diagonal pliers, cut and remove lockwire from jamnut.

b. Install.

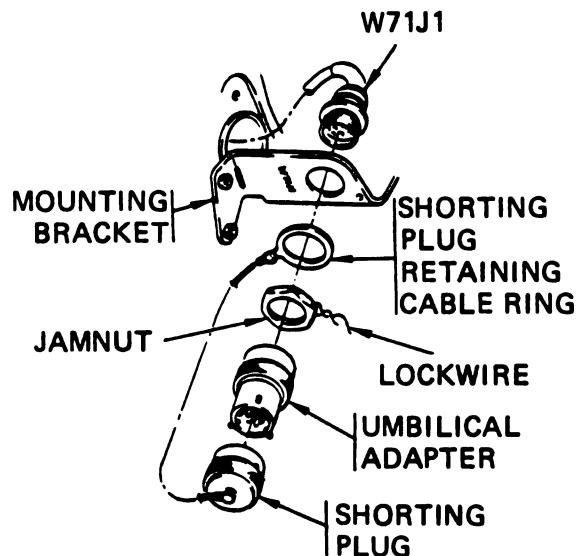
(1) Hold W71J1 in mounting bracket and install shorting plug retaining cable ring and jamnut on W71J1.

(2) Using electrical slip joint pliers, tighten jamnut.

(3) Using wire twister pliers, safety-wire jamnut to bracket with lockwire.

(4) Install umbilical adapter on W71J1.

(5) Install shorting plug on umbilical adapter.



5-14. ADAPTER CABLE W71 MAINTENANCE INSTRUCTIONS (CONT)

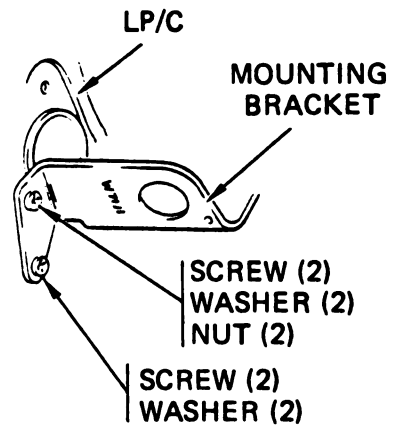
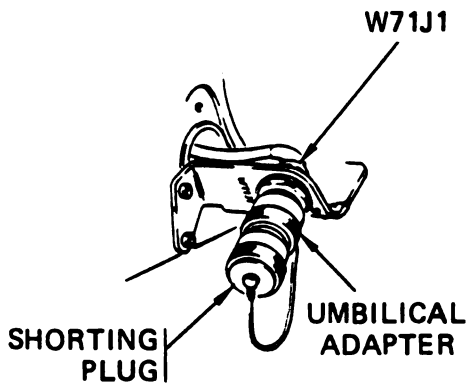
3. UMBILICAL ADAPTER.

a. Remove.

- (1) Remove the shorting plug from the umbilical adapter.
- (2) Remove the umbilical adapter from W71J1.

b. Install.

- (1) Install umbilical adapter on W71J1.
- (2) Install shorting plug on umbilical adapter.



b. Install.

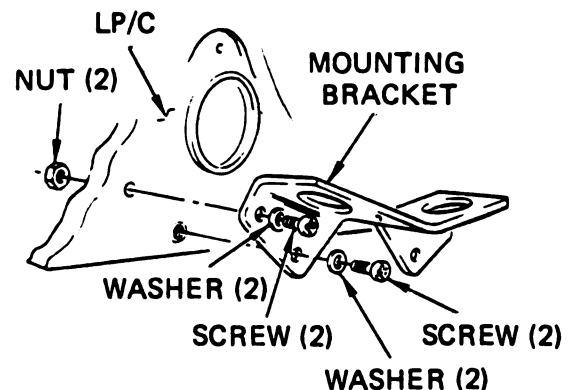
- (1) Prepare area for electrical bond (TM 9-1425-646-20).
- (2) Position bracket on LP/C and install two long screws, two washers, and two nuts. Using crosstip screwdriver and 8mm socket, tighten screws.
- (3) Using artist brush, apply a thin coat of zinc chromate primer to threads of small screws. Install two screws and two washers. Using crosstip screwdriver, tighten screws.

- (4) Install shorting plug (item 2).

4. MOUNTING BRACKET.

a. Remove.

- (1) Remove shorting plug (item 2).
- (2) Pull connector W71J1 out of mounting bracket.
- (3) Using crosstip screwdriver, remove two short screws and two washers.
- (4) Using crosstip screwdriver and 8mm socket, remove two long screws, two washers, and two nuts securing mounting bracket to LP/C. Remove bracket.



5-14. ADAPTER CABLE W71 MAINTENANCE INSTRUCTIONS (CONT)

5. HELICAL INSERT.

a. Remove.

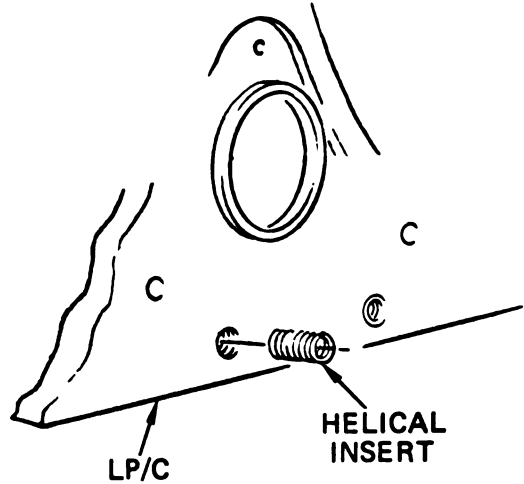
- (1) Remove mounting bracket (item 4).
- (2) Using machinists hammer, tap extractor tool into defective insert. While keeping pressure on tool, turn tool handle counterclockwise to remove insert.

b. Install.

- (1) Using artist brush, apply coat of zinc chromate primer to outside threads of replacement insert.
- (2) Install insert in LP/C to just below surface of LP/C.
- (3) Cock tang breakoff tool and insert tool into insert.

(4) Trigger tang breakoff tool and remove tool from insert.

(5) Install mounting bracket (item 4).



5-15. HARNESS ASSEMBLY W70 MAINTENANCE INSTRUCTIONS. This paragraph covers the maintenance tasks for the following items:

<i>Item</i>	<i>Page</i>
1. Harness Assembly	5-33
2. Circuit Card Connectors J1 - J6	5-35
3. Terminal Junction Module	5-35
4. Connector J7	5-36
5. Switches	5-37

INITIAL SETUP

Tools

- Kit, tool, 13032302
- Set, shop, 13032303
- Positioner, contact (for item 4)
- Tool, contact (for item 3)

Materials/Parts

- Alcohol, isopropyl (1, Appendix E)
- Paper, abrasive (4, Appendix E)
- Solder (6, Appendix E)
- Twine, lacing (8, Appendix E)

Personnel Required

MLRS Repairer MOS 27M

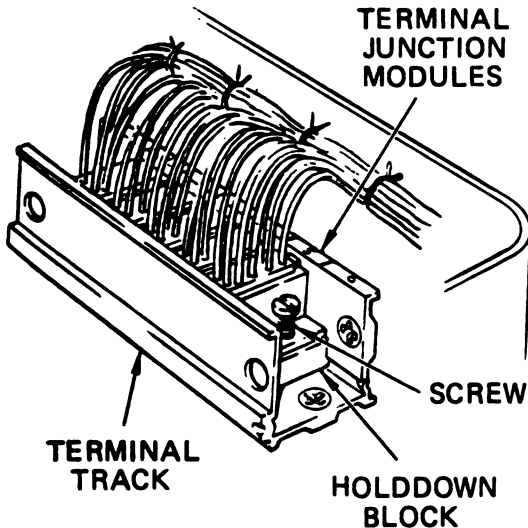
I. HARNESS ASSEMBLY.

a. Remove.

(1) Using crosstip screwdriver, remove 14 screws and 14 washers securing cover on simulator assembly. Remove cover. Discard washers.

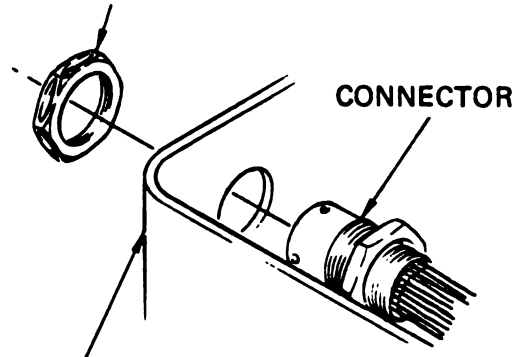
(2) Using flat tip screwdriver, loosen screw on terminal junction module holddown block. Slide holddown block and terminal junction modules out of terminal track.

(3) Remove two fuze assemblies (paragraph 5-12).



(4) Using electrical slip joint pliers, remove jamnut securing connector W70J7 to simulator assembly. Push connector inside simulator assembly and screw jamnut on connector.

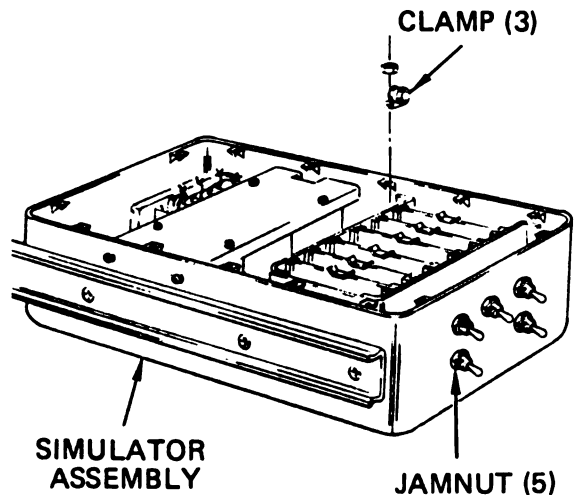
JAMNUT



SIMULATOR ASSEMBLY

(5) Remove clamps securing harness assembly to simulator assembly.

(6) Using 1/2-inch box end wrench, remove jamnuts securing switches to fault insertion panel. Remove switches from panel and install jamnuts on switches.

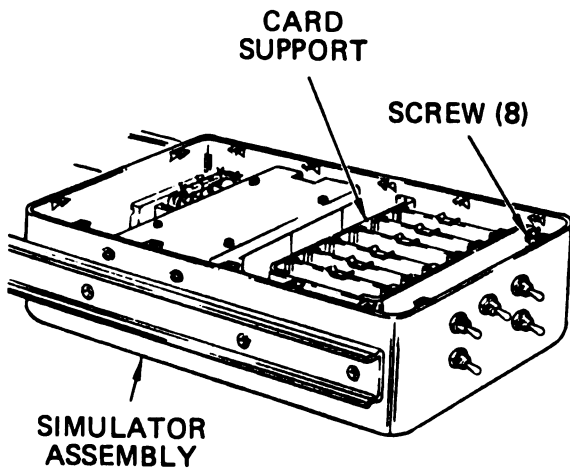


5-15. HARNESS ASSEMBLY W70 MAINTENANCE INSTRUCTIONS (CONT)

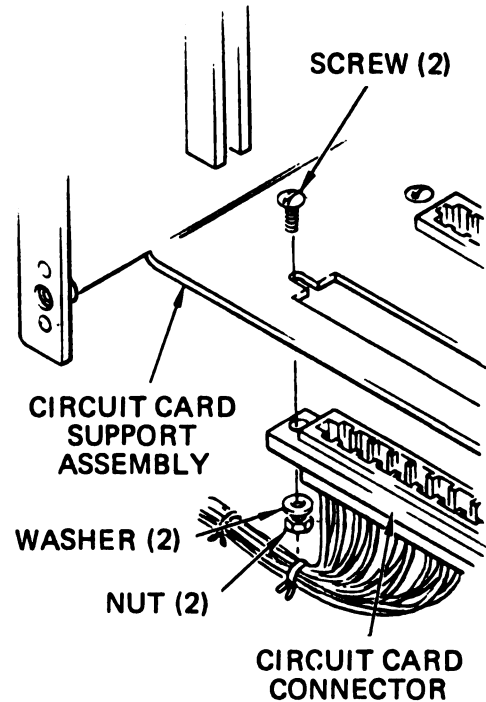
(7) Lift six circuit cards out of card support assembly.

(8) Using crosstip screwdriver, remove four screws and four washers securing card support assembly to side of simulator and four screws and four washers securing it to bottom of simulator. Discard washers.

(9) Carefully lift card support assembly out of simulator assembly with harness assembly.



(5) Position switches in fault insertion panel with keyway on bottom and secure with jamnuts. Using 1/2-inch box end wrench, tighten jamnuts. See figure FO-1 for switch location.



(10) Using crosstip screwdriver and 4mm nut driver wrench, remove two screws, two washers, and two nuts securing each circuit card connector to card support assembly. Remove connectors from card support assembly.

b. Install.

(1) Position circuit card connectors on card support assembly and install two screws, two washers, and two nuts on each connector. Using crosstip screwdriver and 4mm nut driver wrench, tighten nuts.

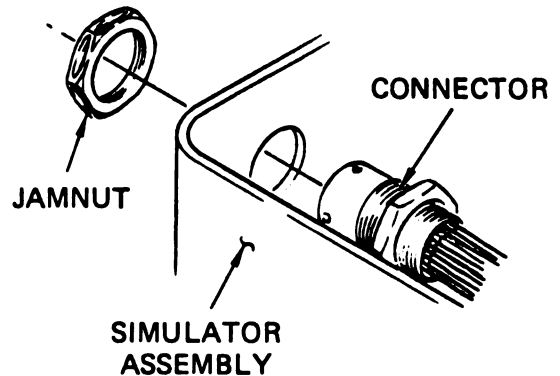
(2) Carefully position new harness assembly and card support assembly in simulator assembly.

(3) Secure card support assembly to simulator assembly with four screws and new washers in side and bottom. Using crosstip screwdriver, tighten screws.

(4) Install six circuit cards. See figure FO-1 for card location.

(6) Position connector W70J7 in rear panel and secure with jamnut. Using electrical slip joint pliers, tighten jamnut.

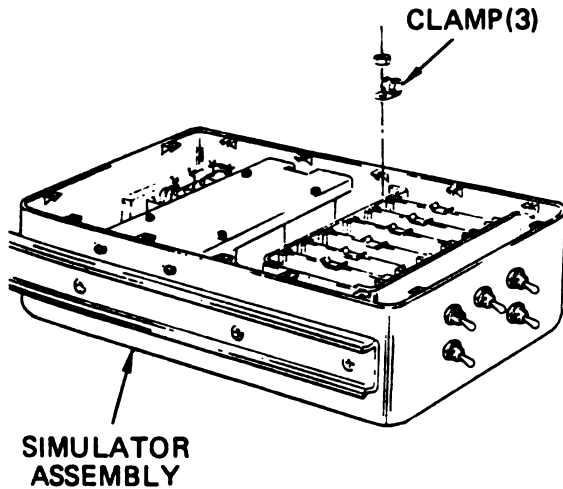
(7) Install two fuze assemblies (paragraph 5-12).



5-15. HARNESS ASSEMBLY W70 MAINTENANCE INSTRUCTIONS (CONT)

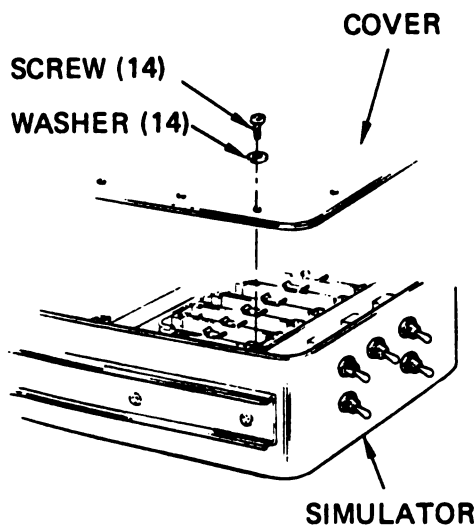
(8) Slide terminal junction modules and holddown block in terminal track. Using flat tip screwdriver, tighten holddown block screw.

(9) Install harness clamps and secure harness to simulator assembly.



(10) Inspect seal on cover. If seal is damaged, replace (paragraph 5-12).

(11) Position cover on simulator assembly and install 14 screws and 14 new washers. Using crosstip screwdriver, tighten screws.

**2. CIRCUIT CARD CONNECTORS J1 - J6.****a. Remove.**

(1) Remove harness assembly W70 (item 1).

(2) Using electric solder handle and soldering iron tip, unsolder harness wires from defective connector.

b. Install.

(1) Using electric solder handle and soldering iron tip, solder harness wires to new connector. See figure FO-1 for wire connections.

WARNING

Isopropyl alcohol vapors are toxic. Avoid prolonged or repeated breathing of vapors or contact with skin. Use only with adequate ventilation. Solvent is flammable and should not be used near open flame. Fire extinguishers should be readily available when isopropyl alcohol is used.

(2) Using isopropyl alcohol, clean excess solder from connections.

(3) Install harness assembly W70 (item 1).

3. TERMINAL JUNCTION MODULE.**a. Remove.**

(1) Using crosstip screwdriver, remove 14 screws and 14 washers securing cover. Remove cover. Discard washers.

(2) Using contact tool, remove harness wires from the defective terminal junction module.

(3) Using flap tip screwdriver, loosen screw securing holddown block in terminal track.

(4) Slide holddown block and defective terminal junction module out of terminal track.

b. Install.

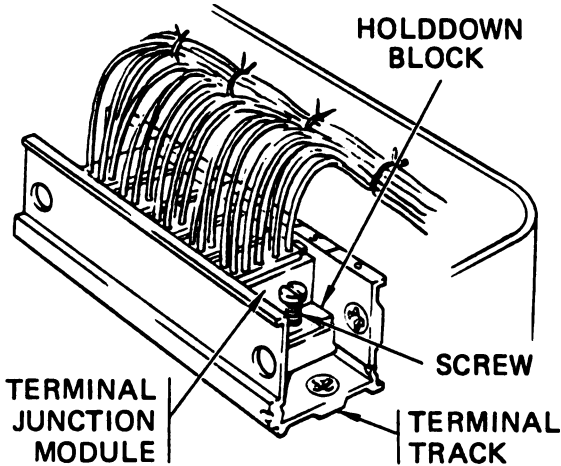
(1) Slide new terminal junction module and holddown block in terminal track. Using flat tip screwdriver, tighten holddown block screw. See figure FO-1 for terminal junction module locations.

(2) Using contact tool, install harness wires in new terminal junction module. Install seal plugs in unused holes in module. See figure FO-1 for correct wire installation.

5-15. HARNESS ASSEMBLY W70 MAINTENANCE INSTRUCTIONS (CONT)

(3) Inspect cover seal for damage. If damaged, replace (paragraph 5-12).

(4) Install cover and secure with 14 screws and 14 new washers. Using crosstip screwdriver, tighten screws.



4. CONNECTOR J7.

a. Remove.

(1) Using crosstip screwdriver, remove 14 screws and 14 washers securing cover to simulator assembly. Remove cover. Discard washers.

(2) Using electrical slip joint pliers, remove jamnut securing connector. Push connector inside simulator.

NOTE

If connector is defective, remove all contacts from connector and replace connector. If only a contact is defective, remove only the defective contacts.

(3) Using contact tool, remove contacts from connector.

(4) If only a contact is defective, use diagonal pliers and cut defective contact from wire.

b. Install.

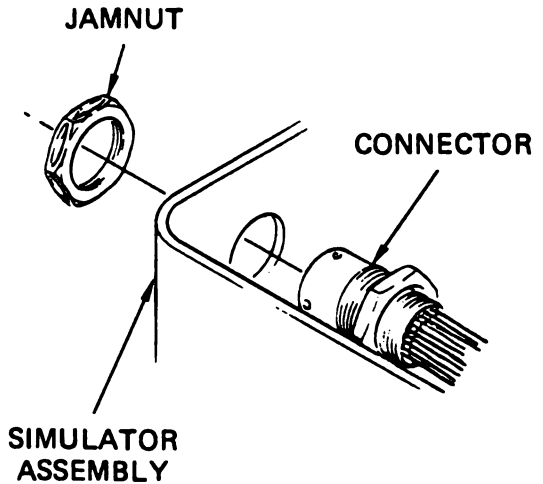
(1) If only a contact was defective, using wire stripper, strip 4mm of insulation from wire. Using contact positioner and crimping tool, install new contact on wire.

(2) Using contact tool, install contacts in connector. Using sealing plugs, fill unused holes in connector. See figure FO-1 for correct wire connections.

(3) Position connector J7 in simulator and secure with jamnut. Using electrical slip joint pliers, tighten jamnut.

(4) Inspect cover seal. If seal is damaged, replace (paragraph 5-12).

(5) Position cover on simulator assembly and install 14 screws and 14 new washers. Using crosstip screwdriver, tighten screws.



5-15. HARNESS ASSEMBLY W70 MAINTENANCE INSTRUCTIONS (CONT)

5. SWITCHES.

a. Remove.

(1) Using crosstip screwdriver, remove 14 screws and 14 washers securing cover. Remove cover. Discard washers.

(2) Using 1/2-inch box end wrench, remove jamnut securing switch to fault insertion panel. Remove switch.

NOTE

If wire marking is not visible, tag wires to aid in installation.

(3) Using flat tip screwdriver, remove screws securing wires to switch. Discard defective switch.

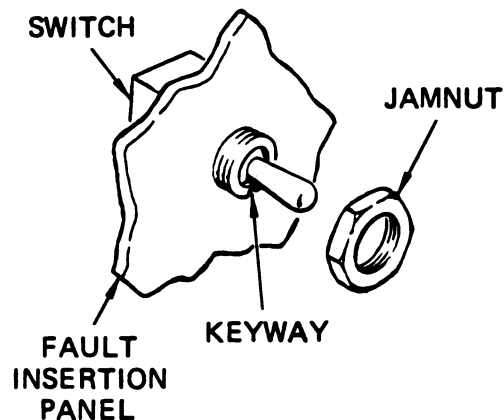
b. Install.

(1) Connect wire to switch and secure with screw. Using flat tip screwdriver, tighten screw. See figure FO-1 for correct wire connection.

(2) Install switch in fault insertion panel with keyway on bottom and secure with jamnut. Using electrical slip joint pliers, tighten jamnut.

(3) Inspect cover seal. If seal is damaged, replace (paragraph 5-12).

(4) Install cover on simulator assembly and secure with 14 screws and 14 new washers. Using crosstip screwdriver, tighten screws.



CHAPTER 6 GENERAL SUPPORT MAINTENANCE

There are no general support maintenance requirements on the trainer LP/C.

APPENDIX A REFERENCES

A-1. GENERAL. This appendix lists all forms, field manuals, and technical manuals referenced in this manual. These publications will assist you in maintaining the trainer LP/C. You should check them constantly for the latest changes and revisions.

A-2. FORMS.

DA Form 285
Accident Report

DA Form 2028
Recommended Changes to Publications and Blank Forms

DA Form 2404
Equipment Inspection and Maintenance Worksheet

DA Form 2407
Maintenance Request

DD Form 6
Packing Improvement Report

SF 368
Quality Deficiency Report

A-3. FIELD MANUALS.

FM 21-11
First Aid

A-4. REGULATIONS.

AR385-40
Accident Reporting and Records

AR75-1
Logistics (General) Malfunctions Involving Ammunition and Explosives

A-5. TECHNICAL MANUALS.

TM 38-750
The Army Maintenance Management System (TAMMS)

TM 740-90-1
Administrative Storage of Equipment

TM 750-245-4
Direct and General Support, Quality Control Inspection Criteria (Guided Missile System)

TM 43-0002-26
Destruction of Materiel to Prevent Enemy Use, MLRS

TM 9-1300-206
Ammunition and Explosives Standard

TM 9-1425-646-10
Operator's Manual, Launcher, Rocket, Armored Vehicle Mounted: M270

TM 9-1425-646-20
Maintenance Manual, Organizational, Launcher, Rocket, Armored Vehicle Mounted: M270

TM 9-1450-646-10
Operating and Maintenance Instructions, Carrier, MLRS

TM 9-1450-646-20
Organizational Maintenance Manual, Carrier, MLRS

TM 9-6920-646-24P
Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) For Trainer, Launch Pod Container (Multiple Launch Rocket System)

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The Maintenance Allocation Chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from Section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

B-2. MAINTENANCE FUNCTIONS. Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to

preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases.

d. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. Aline. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. Replace. To remove an unserviceable item and install a serviceable counterpart in its place. Replace is authorized by the MAC and is shown as the 3d position code of the SMR code.

i. Repair. The application of maintenance services¹, including fault location/troubleshooting², removal/installation, and disassembly/assembly³ procedures, and maintenance actions⁴ to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

¹Services – inspect, test, service, adjust, aline, calibrate, and/or replace.

²Fault locate/troubleshoot – The process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

³Disassemble/assemble – encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least componency identified as maintenance significant (i.e., assigned an SMR code) for the category of maintenance under consideration.

⁴Actions – welding, grinding, riveting, straightening, facing, remachinery, and/or resurfacing.

B-2. MAINTENANCE FUNCTIONS (CONT)

j. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc.) considered in classifying Army equipments/components.

B-3. EXPLANATION OF COLUMNS IN THE MAC, SECTION II.

a. Column 1, Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be 00.

b. Column 2, Component/Assembly. Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in Column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly

time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

C – Operator or crew
O – Organizational Maintenance
F – Direct Support Maintenance
H – General Support Maintenance
D – Depot Maintenance

e. Column 5, Tools and Equipment. Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. Column 6, Remarks. This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in Section IV.

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS, SECTION III.

a. Column 1, Reference Code. The tool and test equipment reference code correlates with a code used in the MAC, Section II, Column 5.

b. Column 2, Maintenance Category. The lowest category of maintenance authorized to use the tool or test equipment.

c. Column 3, Nomenclature. Name or identification of the tool or test equipment.

d. Column 4, National Stock Number. The National stock number of the tool or test equipment.

e. Column 5, Tool Number. The manufacturer's part number.

B-5. EXPLANATION OF COLUMNS IN REMARKS, SECTION IV.

a. Column 1, Reference Code. The code recorded in column 6, Section II.

b. Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART FOR M27

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT	(6) REMARKS
			C	O	F	H	D		
0010	LP/C ASSEMBLY TRAINER	Test	0.00	0.37	0.38	0.00	0.00	1, 2, 4	
		Repair	0.55	0.00	0.31	0.00	0.00	2, 4	
		Fault Location	0.00	0.23	0.00	0.00	0.00	3	
9000	SIMULATOR ROCKET	Remove/Replace	0.00	0.14	0.00	0.00	0.00	1	
		Repair	0.00	0.27	0.81	0.00	0.00	1, 2, 4	
9020	CARD SUPPORT ASSEMBLY	Remove/Replace	0.00	0.00	1.30	0.00	0.00	2, 4	
		Repair	0.00	0.00	0.03	0.00	0.00	2	
9025	HARNESSE ASSEMBLY W70	Remove/Replace	0.00	0.00	1.38	0.00	0.00	2	
9030	COVER ASSEMBLY	Repair	0.00	0.00	0.16	0.00	0.00	2, 4	
9035	RESTRAINT ASSEMBLY	Remove/Replace	0.00	0.00	0.27	0.00	0.00	2	
		Repair	0.00	0.00	0.22	0.00	0.00	2, 4	
9060	COVER ASSEMBLY TUBE, AFT	Remove/Replace	0.00	0.10	0.00	0.00	0.00	1	
		Repair	0.00	0.09	0.21	0.00	0.00	1, 2, 4	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR M27

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/ NATO STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, ORGANIZATIONAL	5180-01-110-2146	13032300
2	F	TOOL KIT, DS/GS	5180-01-110-2150	13032302
3	F	METER	5840-01-114-2598	8050A-01
4	F	SHOP SET, DS/GS	4933-01-110-8949	13032303

Section IV. REMARKS

REFERENCE CODE	REMARKS
	NONE

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

C-1. SCOPE. This appendix lists components of end item and basic issue items for the trainer LP/C to help you inventory items required for safe and efficient operation.

C-2. GENERAL. The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the trainer LP/C in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the trainer LP/C during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS. The following provides an explanation of columns found in the tabular listings:

a. Column (1) – Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) – National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

c. Column (3) – Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number. If item needed differs for different models of this equipment, the model is shown under the Usable On heading. These codes are identified as:

<u>Code</u>	<u>Used On</u>
PAA	Model XXX
PAB	Model XXXX
PAC	Model XXXX

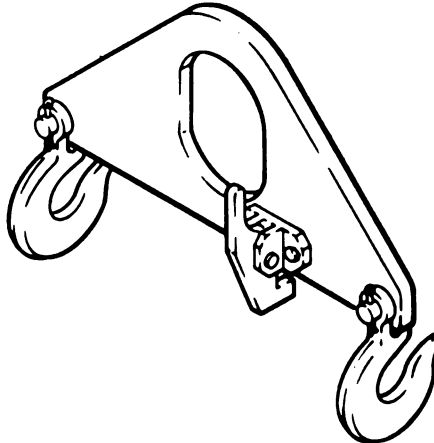
d. Column (4) – Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column (5) – Quantity Required (Qty Rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQR
NONE					

Section III. BASIC ISSUE ITEMS



(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION FSCM AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQR
1	1055-01-137-4441	LAUNCH POD/CONTAINER HOIST ASSEMBLY (18876) 11508999			

APPENDIX D ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

D-1. SCOPE. This appendix lists additional items you are authorized for support of the LP/C.

D-2. GENERAL. This list identifies items that do not come with the LP/C and do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

D-3. EXPLANATION OF LISTING. National stock numbers, descriptions, and quantities are provided to help you identify and request the

additional items you need to support this equipment. If the item you need differs for different models of this equipment, the model is listed in the Usable On column. These codes are identified as follows:

<u>Code</u>	<u>Used On</u>
PAA	Model XXX
PAB	Model XXXX
PAC	Model XXXX

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION PART NO. AND FSCM	(3) USABLE ON CODE	(4) QTY AUTH U/M
NONE			

APPENDIX E EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1. SCOPE. This appendix lists expendable supplies and materials you will need to operate and maintain the trainer LP/C.

E-2. EXPLANATION OF COLUMNS.

a. Column 1 – Item Number. This number is assigned to the entry in the listing and is referenced in the initial setup to identify the material.

b. Column 2 – Level. This column identifies the lowest level of maintenance that requires the listed item.

- C – Operator/Crew
- O – Organizational Maintenance
- F – Direct Support Maintenance
- H – General Support Maintenance

c. Column 3 – National Stock Number. This is the National stock number assigned to the item; use it to requisition the item.

d. Column 4 – Description. Indicates the federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. Column 5 – Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	F	6810-00-753-4993	Alcohol, isopropyl, TT1735 GAD	pt
2	F	7920-00-205-1711	Cloth, cleaning, DD-R-30 (81348)	ea
3	F	9505-00-293-4208	Lockwire, MS20995C32 (96906)	lb
4	F	5350-01-127-6855	Paper, abrasive, PP121CL7 Grit 240 (81348)	
5	F	8030-00-723-2746	Sealant, MIL-S-8802, CL B2	pt
6	F	3439-00-453-5469	Solder	lb
7	F		Stock, shim, MIL-S-22499, Comp 1, Type I CL, 20.375 Thk (81348)	
8	F	4020-01-006-5548	Twine, lacing, MIL-T-713, Type P	
9	F	8010-00-515-2208	Zinc, chromate, TT-P-1757 (81348)	

GLOSSARY

Section I. ABBREVIATIONS

D - Dud	MAC - Maintenance Allocation Chart
EIR - Equipment Improvement Recommendation	MLRS - Multiple Launch Rocket System
EXEC - Execute	mm - Millimeter
FCP - Fire Control Panel	MTOE - Modified Table of Equipment
FCS - Fire Control System	Nom - Newton Meter
H - Hangfire	NORM - Normal
IDENT - Identification	PMCS - Preventive Maintenance Checks and Services
kgs - Kilogram	RKT - Rocket
LLM - Launcher Loader Module	RPSTL - Repair Parts and Special Tools List
LP/C - Launch Pod/Container	SPLL - Self-Propelled Launcher Loader
M - Misfire	

Section II. DEFINITION OF UNUSUAL TERMS

Azimuth Direction in a flat or horizontal plane, expressed in degrees from north.	Counterclockwise Rotate or turn to the left, in the opposite direction the hands of a clock move as you look at it.
Circuit Card An electronic circuit with the conductor imbedded in an insulated material.	Data Factual information used as a basis for decisions or measuring.
Clockwise Rotate or turn to the right, in the direction the hands of a clock move as you look at it.	Diagnostic Identifying a problem from its symptoms; an analysis of the cause of the problem.
Component An essential part of the equipment; a small part, that with other parts, make up the whole equipment.	Digital Calculations done by a numerical method; such as the fire control computer which operates with numbers expressed directly as digits.
Computer An automatic electronic machine that does calculations; such as the fire control computer that figures rocket aiming angle (direction).	Disengage To release from, remove from or detach.

GLOSSARY – Continued

Deactivate

To cause to become inoperative.

Elevation

The angular distance above the horizon.

Heading

A compass direction.

Inoperative

Not working.

Menu

A list of choices from which you may make a selection.

Mode

A method of operation.

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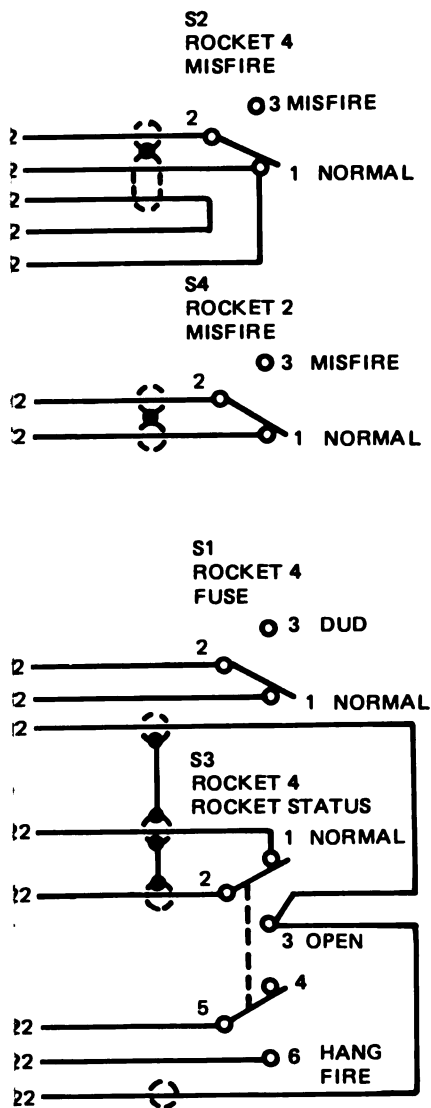
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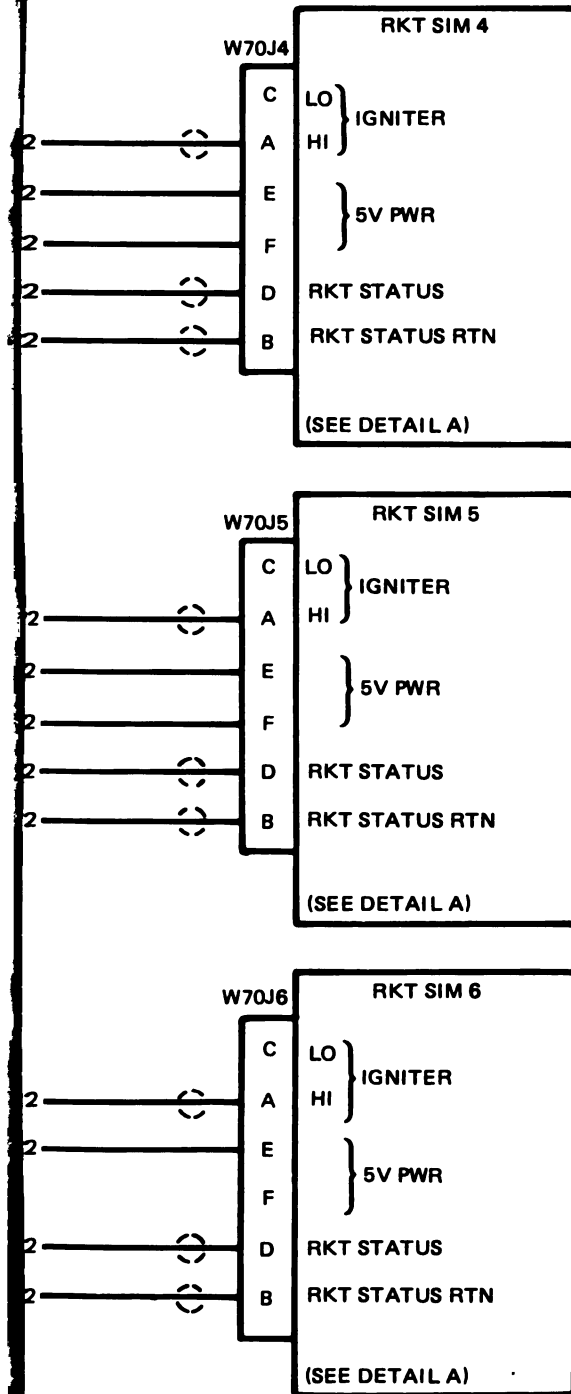
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Simulator Assembly Schematic Diagram





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IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

"B" Ready Relay K11 is shown with two #9 contacts. That contact which is wired to pin 8 of relay K16 should be changed to contact #10.

Reads: Multimeter B indicates 600 K ohms to 9000 K ohms.

Change to read: Multimeter B indicates 600 K ohms minimum.

Reason: Circuit being checked could measure infinity. Multimeter can read above 9000 K ohms and still be correct.

NOTE TO THE READER:

Your comments will go directly to the writer responsible for this manual, and he will prepare the reply that is returned to you. To help him in his evaluation of your recommendations, please explain the reason for each of your recommendations, unless the reason is obvious.

All comments will be appreciated, and will be given immediate attention. Handwritten comments are acceptable.

For your convenience, blank "tear out" forms, preprinted, addressed, and ready to mail, are included in this manual.

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