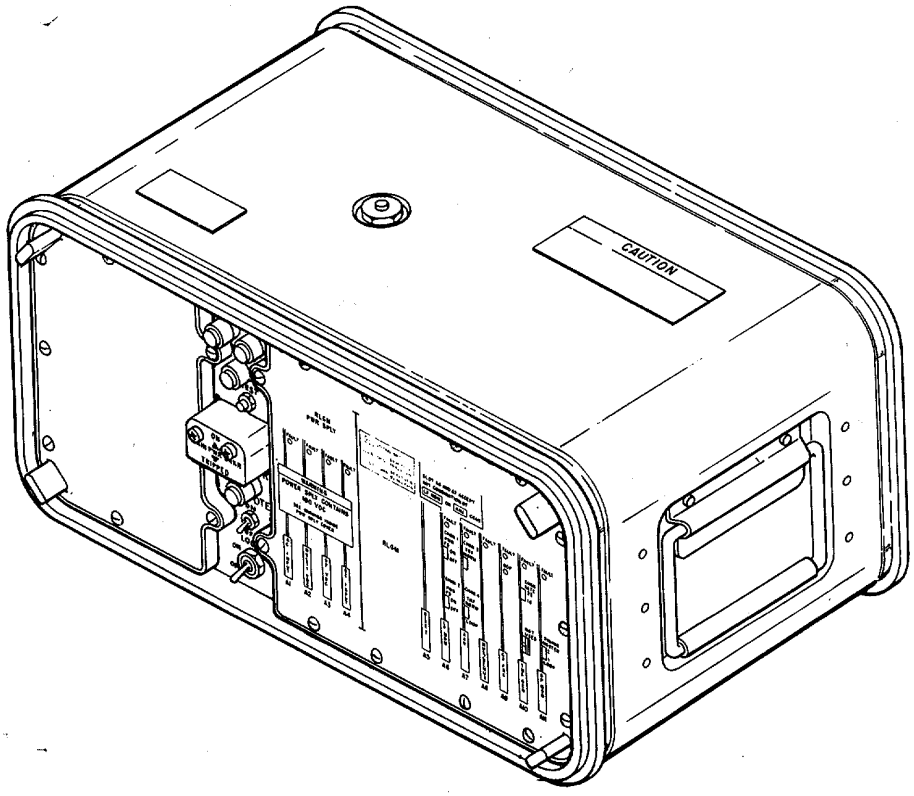
OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL



This copy is a reprint which includes current pages from Changes 1 and 2.

MULTIPLEXER TD-1233(P)/TTC (NSN 5820-01-145-2462)

DEPARTMENTS OF THE ARMY, THE NAVY, AND THE AIR FORCE

14 JANUARY 1985

Change

No. 3

DEPARTMENTS OF THE ARMY,
THE NAVY, AND THE AIR FORCE
Washington, DC, 1 December 1996

Operator' s and Unit
Maintenance Manual

MULTIPLEXER
TD-1233(P)/TTC
(NSN 5820-01-145-2462) (EIC: HCR)

TM 11-5805-706-12 / EE163-ED-OMI-010/E154-TD1233 / TO 31W2-2TTC-11, 14 January 1985, is changed as follows:

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page.

Remove Pages	*Insert Pages*
B-1 through B-9/(B-10 blank)	B-1 through B-10

2. File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
03366

By Order of the Secretary of the Navy:

WALTER H. CANTRELL
Rear Admiral, United States Navy
Commander, Space and Naval Warfare
Systems Command

By Order of the Secretary of the Air Force:

RONALD R. FOGLEMAN
General, United States Air Force
Chief of Staff

Official:

HENRY VICCELLIO, JR.
General, United States Air Force
Commander, AFMC

DISTRIBUTION:

To be distributed in accordance with the initial distribution number (IDN) 510182, requirements; for TM 11-5805-706-12.

Change
No. 2

DEPARTMENTS OF THE ARMY,
THE NAVY, AND THE AIR FORCE
Washington, DC, 15 March 1992

Operator's and Unit

Maintenance Manual

MULTIPLEXER-COMBINER

TD-1233(P)/TTC

(NSN 5820-01-145-2462) (EIC: N/A)

TM 11-5805-706-12/NAVELEX EE163-ED-OMI-010/TD1233(P)/TTC/TO 31W2-2TTC-11, 14 January 1985, is changed as follows:

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Added or revised illustrations are indicated by a bar adjacent to the identification number.

Remove pages	*Insert pages*
C/(D blank)	C/(D blank)
2-11 and 2-12	2-11 and 2-12

2. File this change sheet in front of the manual for reference purposes.

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
01071

By Order of the Secretary of the Navy:

ROBERT AILES
Rear Admiral, United States Navy
Command, Space and Naval Warfare
Systems Command

By Order of the Secretary of the Air Force:

LARRY D. WELSH
General, United States Air Force
Chief of Staff

Official:

CHARLES D. McDONALD
General, United States Air Force
Commander, Air Force
Logistics Command

DISTRIBUTION:

To be distributed in accordance with DA Form 12-51-E, block 0182, Operator and Unit maintenance requirements for TM 11-5805-706-12.

CHANGE

No. 1

DEPARTMENTS OF THE ARMY,
THE NAVY, AND THE AIR FORCE
Washington, DC, 15 November 1988

OPERATOR'S AND UNIT
MAINTENANCE MANUAL

MULTIPLEXER
TD-1233(P)/TTC
(NSN 5820-01-145-2462)

TM 11-5805-706-12/EE163-ED-OMI-010/E154-TD1233/T0 31W2-2TTC-11, 14 January 1985, is changed as follows:

1. Title of manual is changed as shown above.

2. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration number.

Remove pages	*Insert pages*
A through C/(D blank)	A through C/(D blank)
i through iii/(iv blank)	i through iii/(iv blank)
1-1 through 1-16	1-1 through 1-16
1-19 through 1-21/(1-22 blank)	1-13 through 1-21/(1-22 blank)
2-1 through 2-10	2-1 through 2-10
2-13 through 2-25/(2-26 blank)	2-13 through 2-25/(2-26 blank)
3-1/(3-2 blank)	3-1/(3-2 blank)
4-1 through 4-12	4-1 through 4-12
4-15 through 4-24	4-15 through 4-24
4-27 and 4-28	4-27 and 4-28
B-3 through B-9/(B-10 blank)	B-3 through B-9/(B-10 blank)
C-1 through C-5/(C-6 blank)	C-1 through C-5/(C-6 blank)
E-1 and E-2	E-1 and E-2

Remove pages	*Insert pages*
Glossary-1 and Glossary-2	Glossary-1 and Glossary-2
Index-1 through Index-6	Index-1 through Index-6
Figure FO-1 and Figure FO-2	Figure FO-1 and Figure FO-2

3. File this change sheet in front of the publication for reference purposes.

By Order of the Secretaries of the Army, the Navy and the Air Force:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

WILLIAM J. MEEHAN
Brigadier General, United States Army
The Adjutant General

JOHN C WEAVER
Rear Admiral, United States Navy
Commander, Space and Naval Warfare
Systems Command

Official:

WILLIAM O. NATIONS
Colonel, USAF
Director of Information
Management and Administration

LARRY D WELSH
General, USAF
Chief of Staff

DISTRIBUTION:
To be distributed in accordance with DA Form 12-51 operator and unit requirements for TO-1233/G

LIST OF EFFECTIVE PAGES INSERT LATEST CHANGE PAGES. DESTROY SUPERSEDED PAGES.

NOTE

The portion of text affected by the change is indicated by a vertical line in the outer margin of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

DATES OF ISSUE for original and changed pages are:

Original ..... 0 .....14 January 1985
Change..... 1 .....15 November 1988
Change..... 2 .....15 March 1992

TOTAL NUMBER OF PAGES in this publication is 125, consisting of the following:

Page No.	Chance No.*
A	1
B	0
C	2
D Blank	0
i - iii	1
iv Blank	0
1-1	0
1-2 - 1-5	1
1-6	0
1-7	1
1-8	0
1-9 - 1-16	1
1-17 - 1-18	0
1-19	1
1-20	0
1-21	1
1-22 Blank	0
2-1	0
2-2 - 2-3	1
2-4	0
2-5	1
2-6	0
2-7 - 2-9	1
2-10	0
2-11	2
2-12	0
2-13 - 2-14.1	1
2-14.2 Blank	0
2-15 - 2-21	1
2-22	0
2-23 - 2-25	1
2-26 Blank	0
3-1	1
3-2	0
4-1 - 4-2	1
4-3	0
4-4 - 4-5	1
4-6	0
4-7 - 4-9	1
4-10 - 4-11	0
4-12	1
4-13 - 4-14	0
4-15 - 4-18	1
4-19	0
4-20 - 4-24	1
4-25 - 4-26	0
4-27 - 4-28	1
4-29 - 4-38	0
A-1 - A-2	0
B-1 - B-2	0
B-3 - B-9	1
B-10 Blank	0
C-1	0
C-2 - C-5	1
C-6 Blank	0
E-1	1
E-2	0
Glossary-1 - Glossary-2	1
Index-1	1
Index-2	0
Index-3 - Index-4	1
Index-5	0
Index-6	1
DA Forms 2028 (8)	0
Figure FO-1	1
Figure FO-2	1

*Zero in this column indicates an original page.

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1. DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2. IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3. IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL

4. SEND FOR HELP AS SOON AS POSSIBLE

5. AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

HIGH VOLTAGE

- **Ground the equipment**
- **Avoid the Power Input**
- **Do Not Service Alone**
- **Use One Hand**

The high voltage used in this equipment can kill on contact. Observe the following safety precautions:

Before connecting primary power or the signal cables, connect a heavy gage copper wire from the ground lug on the rear panel to earth ground. Do not remove this wire until the signal cables and primary power have been disconnected.

Be careful not to contact the 115-volt ac input connections when installing or servicing the equipment

Never work on the equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who can administer first aid.

Where possible, use only one hand to service the equipment. Keep the other hand away to reduce the hazard of current flowing through the vital organs of the body

- **Ventilate**
- **No Smoking**
- **Use Gloves**
- **Wash**
- **Do Not Take Internally**

CLEANING SOLVENT

The fumes of trichlorotrifluoroethane used for cleaning this equipment can cause severe irritation or injury. Observe the following safety precautions:

Use only outside or in well ventilated areas and avoid breathing the fumes.

Do not smoke while using and do not use near an open flame or hot surface. Trichlorotrifluoroethane does not burn but heat converts the fumes to a toxic, irritating gas.

Use gloves that trichlorotrifluoroethane can't penetrate. Because the solvent dissolves the natural oils, avoid long or repeated contact with your skin

Wash hands immediately after using.

Do not drink If taken internally, see a doctor immediately.

- **Do Not Lift or Carry Alone**

HEAVY EQUIPMENT

This equipment weighs over 35 pounds and can cause serious injury if lifted or carried alone. Observe the following safety precaution:

Do not attempt to lift, carry, or move the equipment by yourself - get help

Technical Manual
No. 11-5805-706-12
Technical Manual
EE163-ED-OMI-O10/E154 TD1233
Technical Order
No. 31W2-2TTC-11

DEPARTMENTS OF THE ARMY,
THE NAVY, AND
THE AIR FORCE

Washington, DC, 14 January 1985

OPERATOR'S AND UNIT MAINTENANCE MANUAL MULTIPLEXER TD-1233 (P)/TTC (NSN 5820-01-145-2462)

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 letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-ME-PS, Fort Monmouth, New Jersey 07703-5000

For Air Force, submit AFTO Form 22 (Technical Order System Publication Improvement Report and Reply) in accordance with paragraph 6-5, Section VI, TO 00-5-1 Forward direct to prime ALC/MST activity

For Navy, Mail comments to the Commander, Space and Naval Warfare Systems Command, ATTN: SPAWAR 8122, Washington, DC 20363-5100

In any case, a reply will be furnished direct to you

LIST OF ILLUSTRATIONS

HOW TO USE THIS MANUAL

This manual tells you how to operate and maintain Multiplexer TD-1233(P)/TTC.

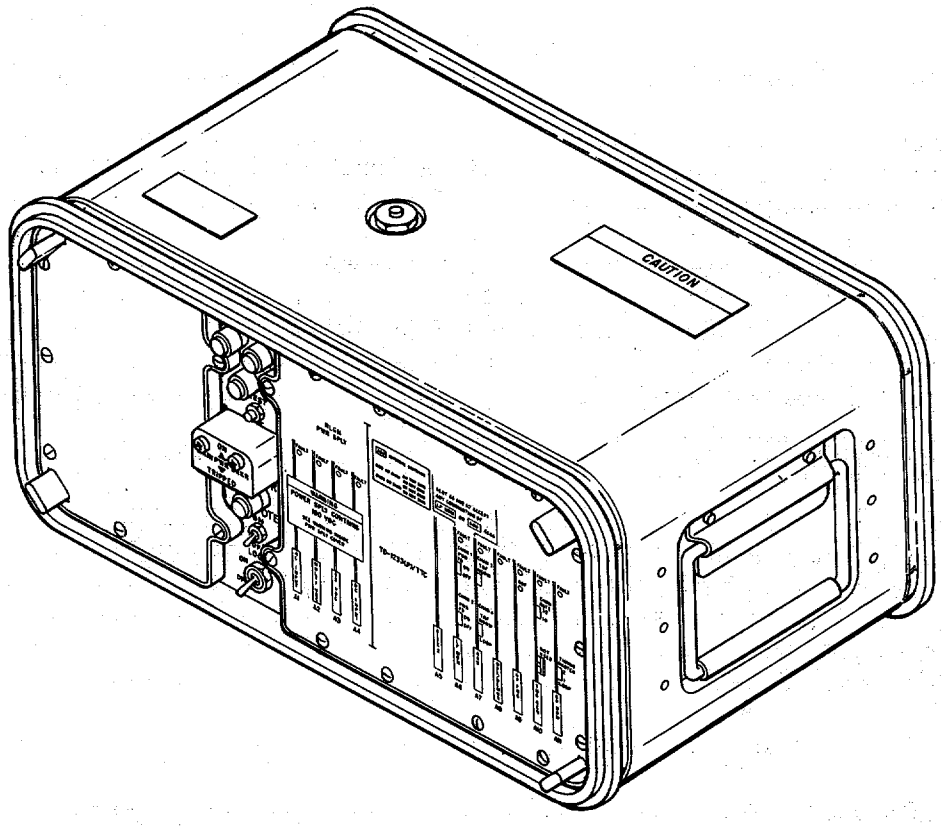
Step-by-step procedures with illustrations give you all the necessary information to install, operate, and maintain this equipment at a unit level. However, do not attempt any procedure before you first familiarize yourself with the entire procedure.

If you are looking for general information, use the table of contents in the front of this book to locate chapters and sections containing this information.

If you are looking for specific information, use the subject index in front of each chapter to locate the paragraph and page where the topic is discussed.

CHAPTER 1
INTRODUCTION

SECTION I. GENERAL INFORMATION



MULTIPLEXER
TD-1233(P)/TTC

EL1WG001

1-1. SCOPE

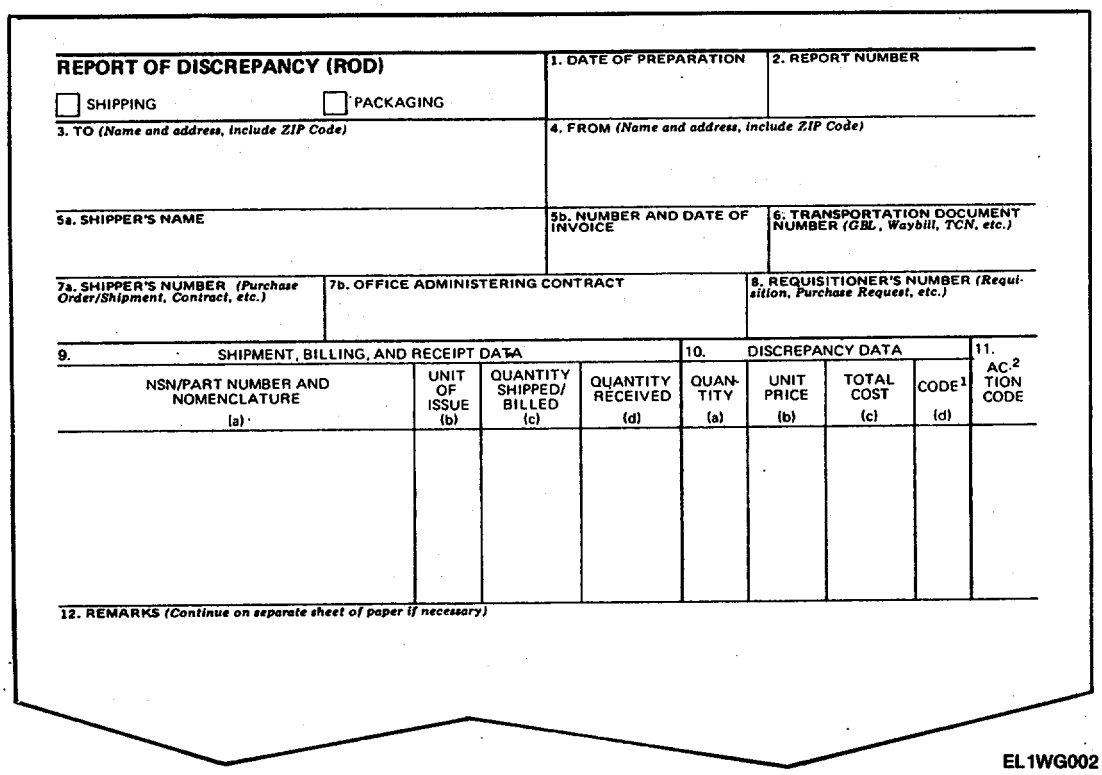
This manual provides general description, operation, and operator and/or unit maintenance instructions for Multiplexer TD-1233(P)/TTC. Multiplexer TD-1233(P)/TTC is referred to in this manual as the RLGM (Remote Loop Group Multiplexer).

1-2. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS

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

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS

a. Reports of Maintenance and Unsatisfactory Equipment Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750 as contained in Maintenance Management Update. Air Force personnel will use AFR 66-1 for maintenance reporting and TO-00-35D54 for unsatisfactory equipment reporting. Navy personnel will report maintenance performed using the Maintenance Data Collection Subsystem (MDCS) in accordance with OPNAVINST 4790.2, Volume 3, and unsatisfactory material conditions (UR submissions) in accordance with OPNAVINST 4790.2, Volume 2, Chapter 17.



REPORT OF DISCREPANCY (ROD)

☐ SHIPPING ☐ PACKAGING

1. DATE OF PREPARATION	2. REPORT NUMBER

3. TO *(Name and address, include ZIP Code)*	4. FROM *(Name and address, include ZIP Code)*

5a. SHIPPER'S NAME	5b. NUMBER AND DATE OF INVOICE	6. TRANSPORTATION DOCUMENT NUMBER *(GBL, Waybill, TCN, etc.)*

7a. SHIPPER'S NUMBER *(Purchase Order/Shipment, Contract, etc.)*	7b. OFFICE ADMINISTERING CONTRACT	8. REQUISITIONER'S NUMBER *(Requisition, Purchase Request, etc.)*

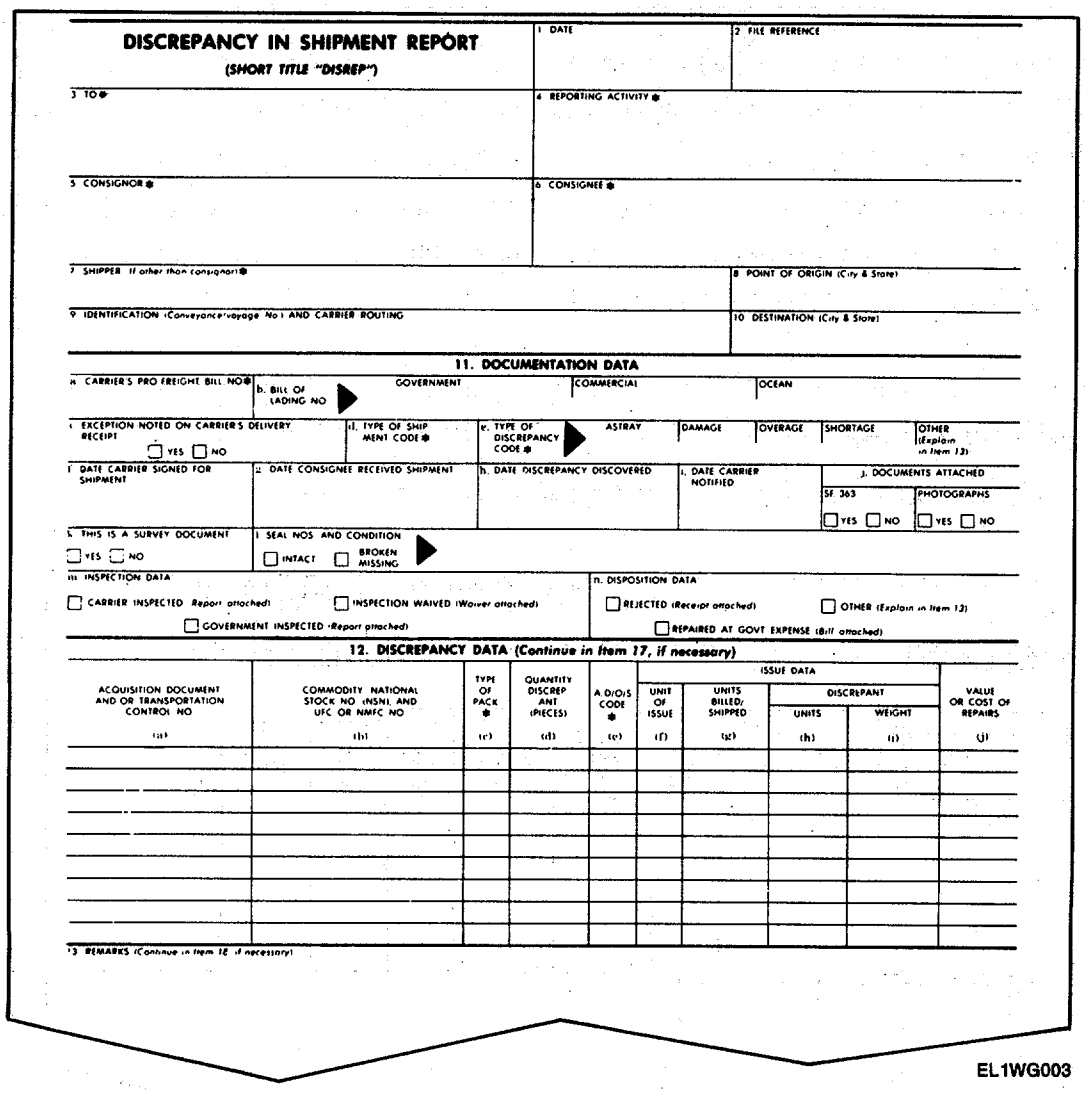
9. SHIPMENT, BILLING, AND RECEIPT DATA				10. DISCREPANCY DATA				11.
NSN/PART NUMBER AND NOMENCLATURE (a)	UNIT OF ISSUE (b)	QUANTITY SHIPPED/ BILLED (c)	QUANTITY RECEIVED (d)	QUANTITY (a)	UNIT PRICE (b)	TOTAL COST (c)	CODE[1] (d)	AC.[2] TION CODE

12. REMARKS *(Continue on separate sheet of paper if necessary)*

EL1WG002

b. Reporting of Item and Packaging Discrepancies Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/SECNAVINST 4355.18/AFR 400-54/MC0 4430.3J.

1-3. MAINTENANCE FORMS, RECORDS, AND REPORTS-Continued



DISCREPANCY IN SHIPMENT REPORT
(SHORT TITLE "DISREP")

1 DATE | 2 FILE REFERENCE
3 TO * | 4 REPORTING ACTIVITY *
5 CONSIGNOR * | 6 CONSIGNEE *
7 SHIPPER If other than consignor * | 8 POINT OF ORIGIN (City & State)
9 IDENTIFICATION (Conveyance/voyage No.) AND CARRIER ROUTING | 10 DESTINATION (City & State)

11. DOCUMENTATION DATA

a CARRIER'S PRO FREIGHT BILL NO * | b. BILL OF LADING NO | GOVERNMENT | COMMERCIAL | OCEAN
c EXCEPTION NOTED ON CARRIER'S DELIVERY RECEIPT ☐ YES ☐ NO | d. TYPE OF SHIPMENT CODE * | e. TYPE OF DISCREPANCY CODE * | ASTRAY | DAMAGE | OVERAGE | SHORTAGE | OTHER (Explain in Item 13)
f DATE CARRIER SIGNED FOR SHIPMENT | g. DATE CONSIGNEE RECEIVED SHIPMENT | h. DATE DISCREPANCY DISCOVERED | i. DATE CARRIER NOTIFIED | j. DOCUMENTS ATTACHED: SF 363 ☐ YES ☐ NO; PHOTOGRAPHS ☐ YES ☐ NO
k THIS IS A SURVEY DOCUMENT ☐ YES ☐ NO | l SEAL NOS AND CONDITION ☐ INTACT ☐ BROKEN MISSING
m INSPECTION DATA: ☐ CARRIER INSPECTED (Report attached) ☐ INSPECTION WAIVED (Waiver attached) ☐ GOVERNMENT INSPECTED (Report attached)
n. DISPOSITION DATA: ☐ REJECTED (Receipt attached) ☐ OTHER (Explain in Item 13) ☐ REPAIRED AT GOVT EXPENSE (Bill attached)

12. DISCREPANCY DATA (Continue in Item 17, if necessary)

ACQUISITION DOCUMENT AND OR TRANSPORTATION CONTROL NO (a)	COMMODITY NATIONAL STOCK NO (NSN) AND UFC OR NMFC NO (b)	TYPE OF PACK * (c)	QUANTITY DISCREPANT (PIECES) (d)	A D/O/S CODE * (e)	ISSUE DATA: UNIT OF ISSUE (f)	ISSUE DATA: UNITS BILLED/ SHIPPED (g)	ISSUE DATA: DISCREPANT UNITS (h)	ISSUE DATA: DISCREPANT WEIGHT (i)	VALUE OR COST OF REPAIRS (j)

13 REMARKS (Continue in Item 18 if necessary)

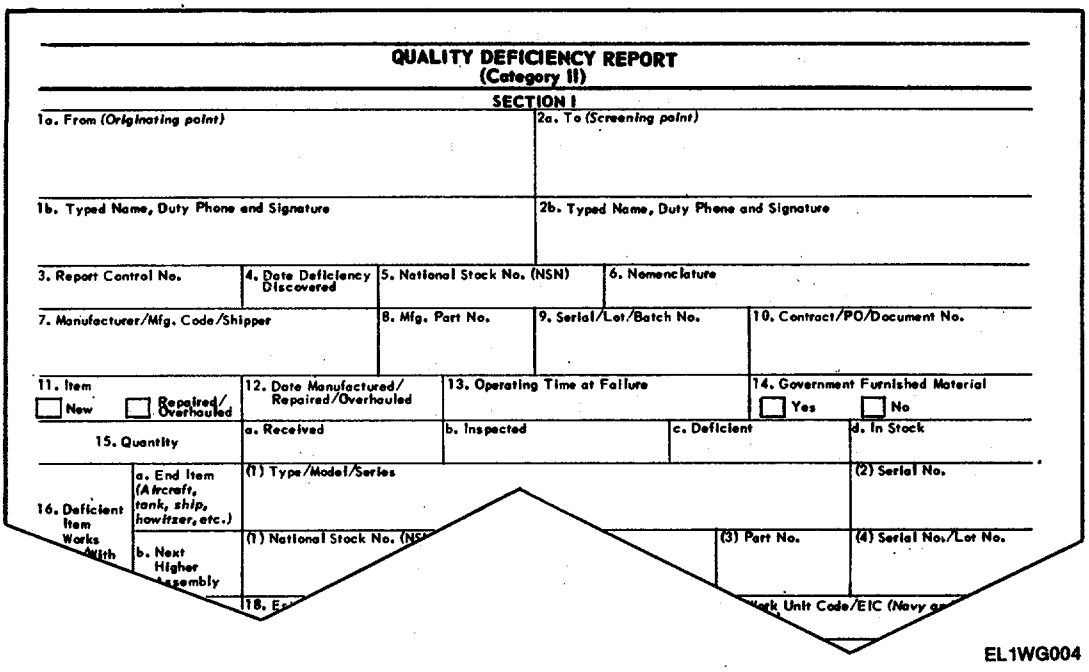
EL1WG003

c. Transportation Discrepancy Report (TDR) (SF 361). Fill out and forward Transportation Discrepancy Report (TDR) (SF 361) as prescribed in AR55-38/NAV-SUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-4. HAND RECEIPT (HR) MANUAL

There is no Hand Receipt Manual required for this equipment.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)


QUALITY DEFICIENCY REPORT
(Category II)
SECTION I
1a. From (Originating point)
2a. To (Screening point)
1b. Typed Name, Duty Phone and Signature
2b. Typed Name, Duty Phone and Signature
3. Report Control No.
4. Date Deficiency Discovered
5. National Stock No. (NSN)
6. Nomenclature
7. Manufacturer/Mfg. Code/Shipper
8. Mfg. Part No.
9. Serial/Lot/Batch No.
10. Contract/PO/Document No.
11. Item ☐ New ☐ Repaired/Overhauled
12. Date Manufactured/ Repaired/Overhauled
13. Operating Time at Failure
14. Government Furnished Material ☐ Yes ☐ No
15. Quantity
a. Received
b. Inspected
c. Deficient
d. In Stock
16. Deficient Item Works With
a. End Item (Aircraft, tank, ship, howitzer, etc.)
(1) Type/Model/Series
(2) Serial No.
b. Next Higher Assembly
(1) National Stock No. (NS
(3) Part No.
(4) Serial No./Lot No.
18. E
Unit Code/EIC (Navy
EL1WG004

a. Army. If your Multiplexer TD-1233(P)/TTC 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 performance or design. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-PA-MA-D, Fort Monmouth, New Jersey 07703-5000. We'll send you a reply.

b. Air Force. Air Force personnel are encouraged to submit EIRs in accordance with AFR 900-4.

c. Navy. Navy personnel are encouraged to submit EIRs through their local Beneficial Suggestion Program.

1-6. ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the Preventive Maintenance Checks and Services (PMCS) charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness.

1-7. DESTRUCTION OF ARMY ELECTRONICS MATERIEL

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2, Procedures for Destruction of Electronic Materiel to Prevent Enemy Use.

1-8. NOMENCLATURE CROSS-REFERENCE LIST

The following list will help you locate the official nomenclature of the major equipment associated with the RLGM. Official nomenclature must be used when completing report forms or when using technical manuals.

Common Name	Official Nomenclature	Reference Designation
AC INPUT		
AAU	Analog Applique Unit Circuit Card Assembly	A6 or A7*
BITE 2	BITE 2 Circuit Card Assembly	A5
DC INPUT	Dc Input Circuit Card Assembly	A4
GP FRG	Group Framing Circuit Card Assembly	A9
GP MDM	Group Modem Circuit Card Assembly	A11
LP MDM	Loop Modem Circuit Card Assembly	A6 or A7*
MUX/DEMUX	Mux/Demux Circuit Card Assembly	A8
MULTI VDC	Multi Vdc Circuit Card Assembly	A2

*The RLGM can be configured with any combination of AAU or LP MDM CCAs in slots A6 and A7.

1-8. NOMENCLATURE CROSS-REFERENCE LIST-Continued

Common Name	Official Nomenclature	Reference Designation
TMG GEN	Timing Generator Circuit Card Assembly	A10
52 VDC	52 Vdc Circuit Card Assembly	A3

1-9. LIST OF ABBREVIATIONS

Abbreviations are spelled out the first time they appear in text. However, a complete list of all abbreviations used in this manual is given below as an additional aid to knowing their full meaning. Acronyms also are included.

Abbreviation/Acronym	Definition
AVOW	Analog Voice Orderwire
BITE	Built-In Test Equipment
CCA	Circuit Card Assembly
COU	Control Orderwire Unit (Telephone Test Set TS-3647/G)
DGM	Digital Group Multiplex
DISREP	Discrepancy in Shipment Report
DNVT	Digital Non-secure Voice Terminal
DSVT	Digital Secure Voice Terminal
EIR	Equipment Improvement Recommendation
FSCM	Federal Supply Code for Manufacturers
GM	Group Modem (Modem, Digital Data MD-1026(P)/G)
GND	Ground
GP	Group
HR	Hand Receipt
LOI	Loss of Input

1-9. LIST OF ABBREVIATIONS-Continued

Abbreviation/Acronym	Definition
kb/s	Thousand Bits per Second
LED	Light Emitting Diode
MAC	Maintenance Allocation Chart
MDCS	Maintenance Data Collection Subsystem
MTOE	Modified Table of Organization and Equipment
MWO	Modification Work Orders
NRZ	Non-return to Zero
PMCS	Preventive Maintenance Checks and Services
RLGM	Remote Loop Group Multiplexer (Multiplexer TD-1233(P)/TTC)
RLGM/CD	Remote Loops Group Modem/Cable Driver (Modem, Cable Driver MD-1025/G)
RMC	Remote Multiplexer-Combiner (Multiplexer-Combiner TD-1234(P)/TTC)
RPSTL	Repair Parts and Special Tools List
ROD	Report of Discrepancy
SUP GP	Super group
TM	Technical Manual
TMDE	Test, Measurement, and Diagnostic Equipment
TMG	Timing
TO	Technical Order
TRF	Traffic
XMIT	Transmit

SECTION II. EQUIPMENT DESCRIPTION

1-10. PURPOSE

The RLGM is a remote digital group multiplexer used in field location multichannel communication systems. It has two primary functions. One is to multiplex up to four digital channel inputs of various rates into a group. The other is to demultiplex a group into separate channels, each channel at its own rate. The channels can be analog or digital at their external interface. The RLGM has an analog voice orderwire (AVOW) function.

1-11. EQUIPMENT CHARACTERISTICS, CAPABILITIES, FEATURES, AND USES

a. Characteristics.

- Shelter and rack mounted or in field location
- Powered from either a standard 115 V ac line, 28 V dc, or 180 V dc
- Interfaces with many different DGM equipments

b. Capabilities.

- Synchronous multiplexing
- Synchronous demultiplexing
- Operates from internal or loopback clock
- Analog voice orderwire

c. Features.

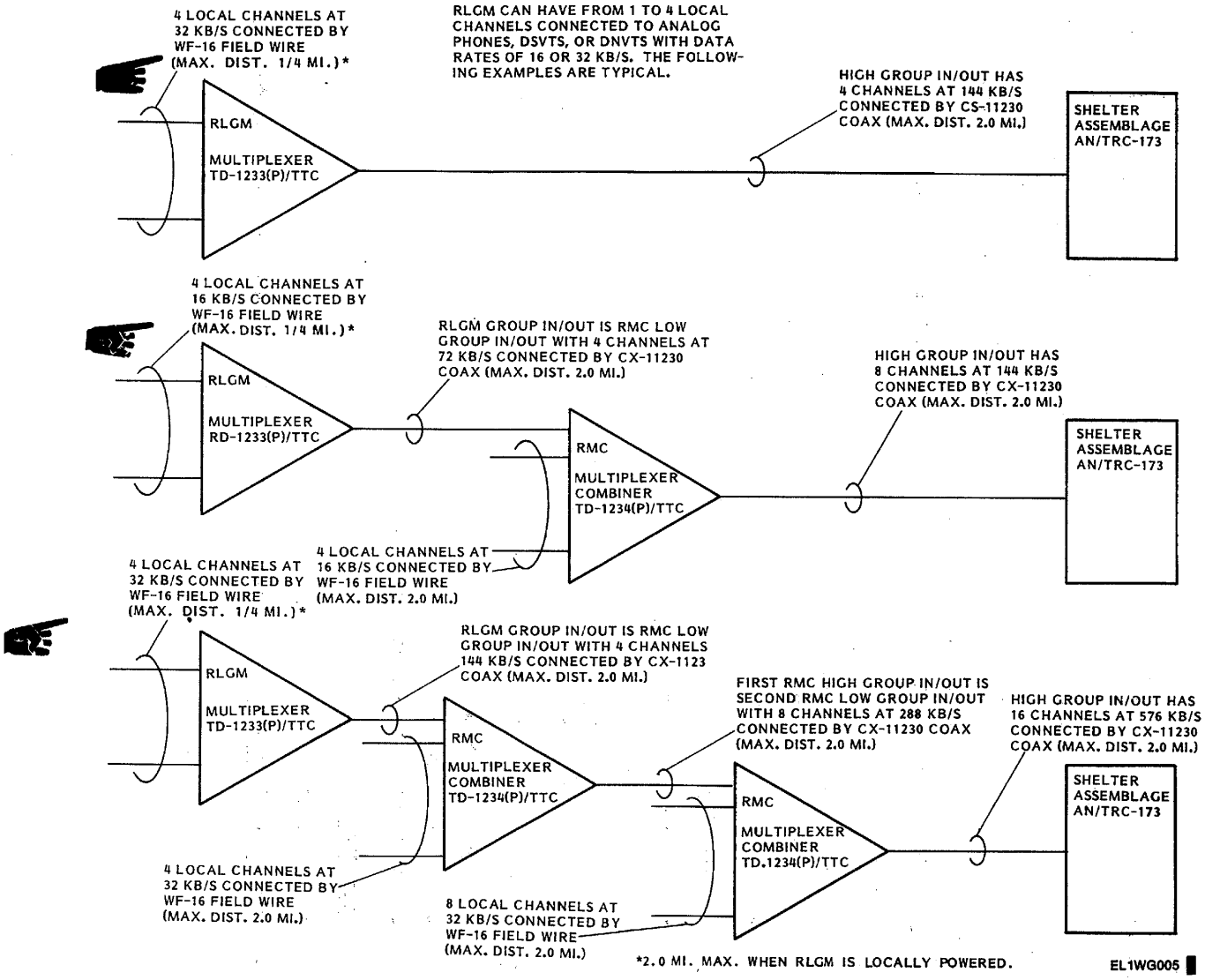
- Simple operation
- Built-in test equipment
- Rapid access to assemblies for ease of repair

d. Used With.

- AN/TRC-173

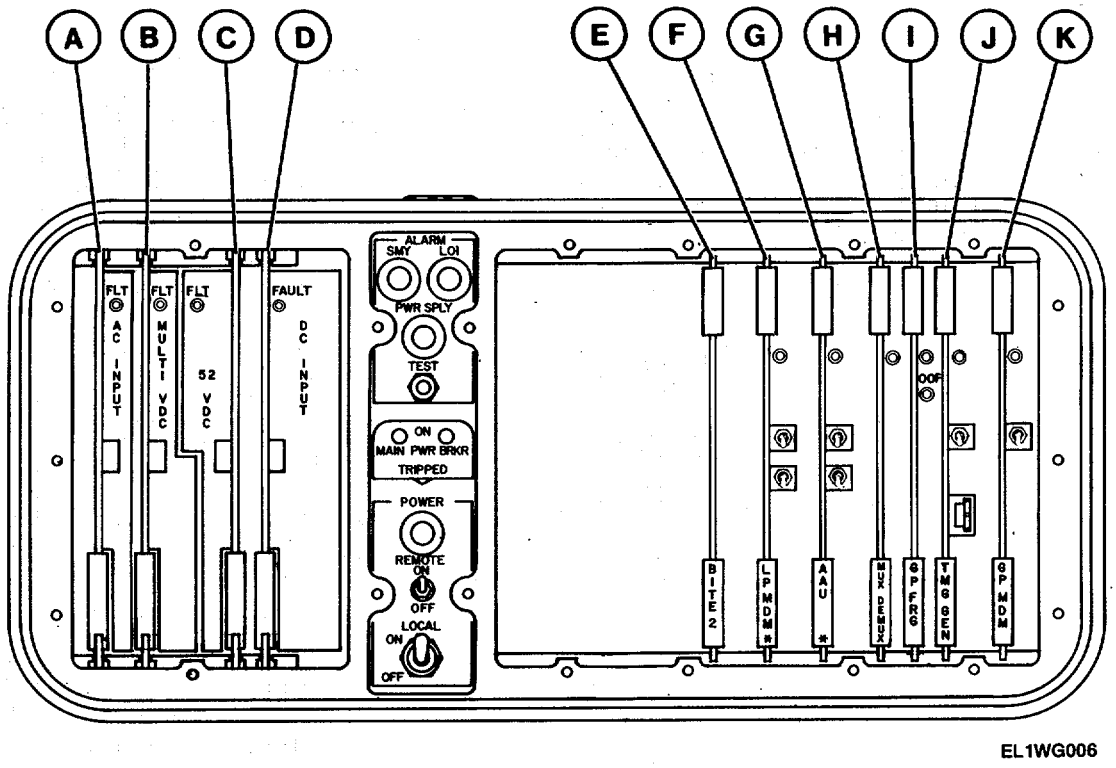
e. Typical Applications. See next page for diagram illustrating applications.

1-11 EQUIPMENT CHARACTERISTICS, CAPABILITIES, FEATURES, AND USES-Continued



1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

All major components of the RLGM are in a metal case which may be rack mounted.

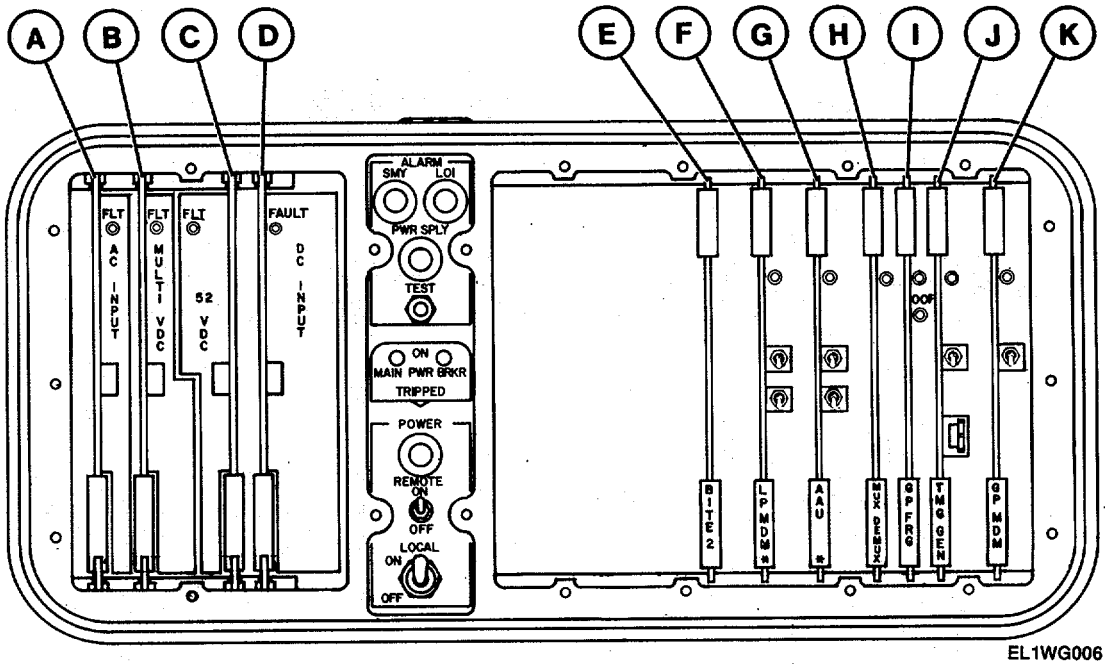


NOTE

Reference designators are shown on cover of RLGM.

Key	Name	Reference Designation	Function
A	AC INPUT CCA	A1	Provides rectified ac, sums system faults, drives indicator lamps, and initiates nuclear shutdown.
B	MULTI VDC CCA	A2	Provides +5, -5, +10, and -10 V dc.
C	52 VDC CCA	A3	Provides +52 V dc.
D	DC INPUT CCA	A4	Provides +150 V dc and +12 V dc when using dc as primary power for RLGM.
E	BITE 2 CCA	A5	Detects and indicates faults in the RLGM.

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS-Continued



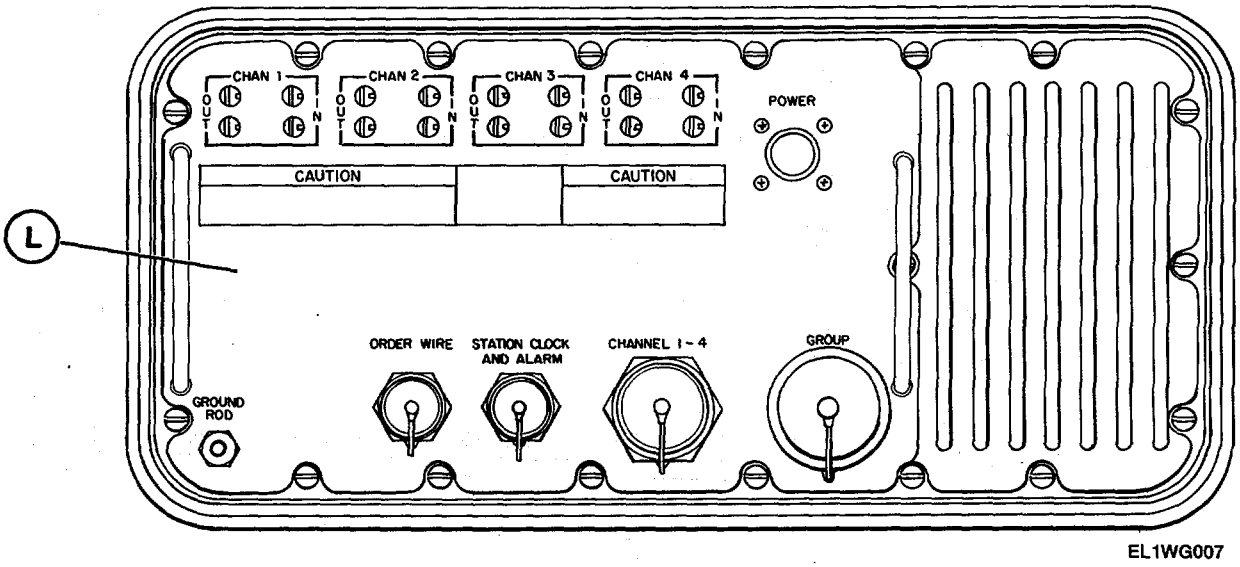
F	LP MDM CCA	A6 or A7 *	Provides modulation and demodulation of two diphase data channels. Also provides power for subscriber digital secure voice terminal (DSVT) or digital nonsecure voice terminal (DNVT).
G	AAU CCA**	A6 or A7 *	Provides duplex processing with two independent channels. Simultaneously accepts digital baseband NRZ data and transmits analog voice, and accepts analog voice and transmits digitally coded baseband NRZ.
H	MUX DEMUX CCA	A8	Multiplexes/demultiplexes channels and subchannels into/out of group data stream.

* The RLGM can be configured with any combination of loop modem or analog applique CCAs in slots A6 and A7.

** The RLGM is configured with two LP MDM CCAs. The AAU CCA must be ordered separately.

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS-Continued

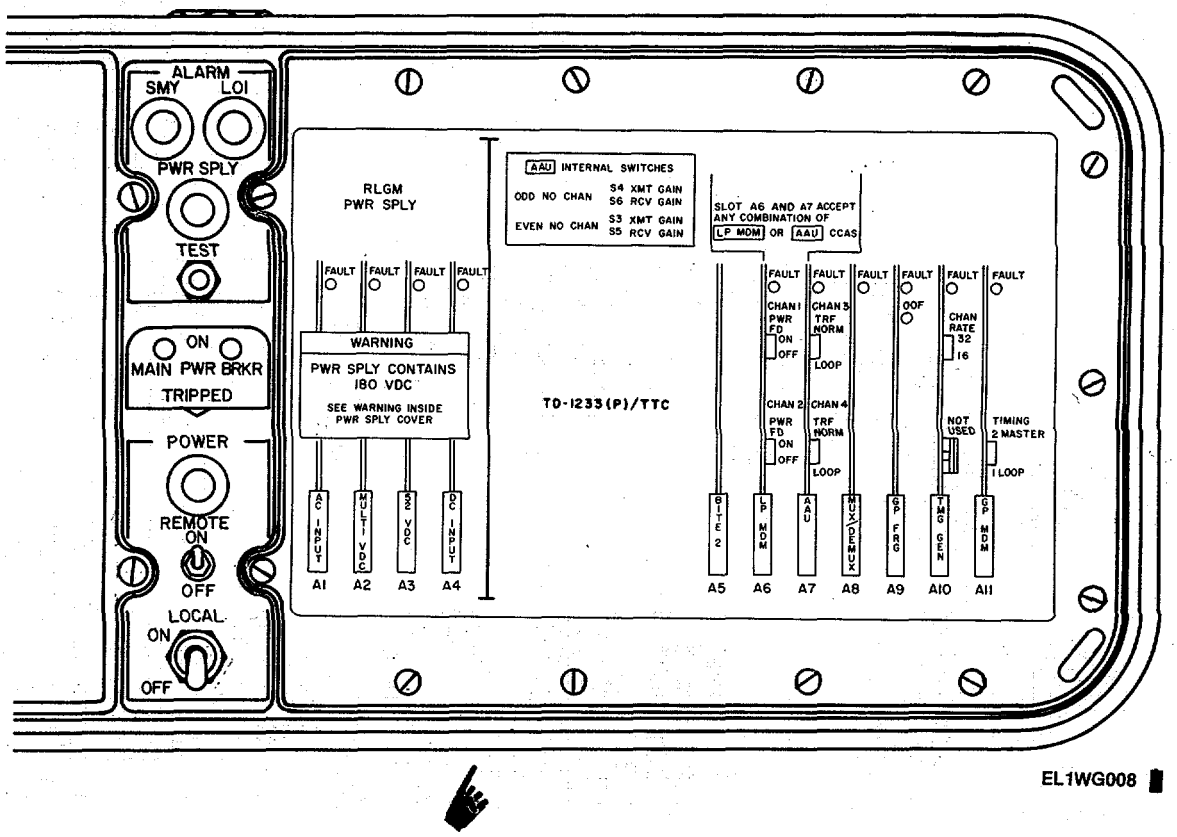
Key	Name	Reference Designation	Function
I	GP FRG CCA	A9	Controls framing routines.
J	TMG GEN CCA	A10	Provides timing signals necessary for framing and synchronization and multiplexing/demultiplexing.
K	GM MDM CCA	A11	Modulates baseband NRZ group data to conditioned diphase and demodulates conditioned diphase data to baseband NRZ data. Provides analog voice orderwire (AVOW) channel.



L	Rear Cover		Interfaces RLGM with other equipment.

1-13. EQUIPMENT CONFIGURATIONS

The RLGM can provide either loop modem or analog applique functions. It contains four channels on two CCAs. The RLGM can be configured with any combination of loop modem or analog applique CCAs in slots A6 and A7. The RLGM is baseline configured with the two LP MDM CCAs. If required, the Analog Applique Unit (AAUs) must be requisitioned separately by NSN. When issuing or transferring between property accounts, the AAU CCAs must be removed and then replaced with the LP MDM CCAs.



1-14. APPLICATIONS

The RLGM is installed in rack or field locations. It interfaces with other DGM and non-DGM units in a number of interconnection arrangements. These arrangements are those required by the communications system in which it operates. The RLGM may interface with, but is not necessarily limited to, the following equipment:

a. Digital Secure Voice Terminal (DSVT)

b. Analog Phones

c. Multiplexer TD-1234(P)/TTC (RMC)

d. Modem, Digital Data MD-1026(P)/G (GM)

e. Modem, Cable Driver MD-1025/G (RLGM/CD)

f. Digital Nonsecure Voice Terminal (DNVT)

g. Test Set, Telephone, TS-3647/G (COU)

1-15. PERFORMANCE DATA

a. Digital Channels (up to four).

- Transmit Waveform-Conditioned diphase, balanced
- Receive Waveform-Conditioned diphase, balanced
- DSVT Power Feed-+52 Vdc, 34.9 milliampere (mA) maximum (RLGM on remote power)

b. Analog Channels (up to four).

- Transmit Waveform-Analog, balanced
- Receive Waveform-Analog, balanced

c. Group Side.

- Transmit Waveform-Diphase, unbalanced
- Receive Waveform-Diphase, unbalanced

d. Station Clock Input.

- Waveform-Squarewave, balanced

e. Analog Orderwire Equipment Side.

- Transmit Waveform-Analog, balanced
- Receive Waveform-Analog, balanced

1-15. PERFORMANCE DATA--Continued

f. Analog Orderwire Line Side.

- Transmit Waveform-Analog, unbalanced
- Receive Waveform-Analog, unbalanced

g. Alarms

- S-Summary Fault; contact closure and lamp
- SA-Fault within unit; contact closure
- LOI-Loss of Input from cable or other units; lamp

h. Prime Power.

- Ac Input-104 to 126 volts (ac), 47 Hz to 420 Hz, 49 watts maximum
- Dc Input-22 to 32 volts (dc), 53 watts maximum
- Remote feed from MD-1025/G or TD-1234(P)/TTC-180 V dc, 40,watts maximum

i. Environmental Characteristics.

(1) Temperature

- Operating-25° F to +145° F (-32° C to +63° C)
- Storage-70° F to +160° F (-57° C to +71° C)

(2) Humidity

- Operating and Storage-Tropical levels

(3) Altitude

- Operating-10,000 feet maximum
- Air Transportation-40,000 feet maximum

j. Physical Characteristics.

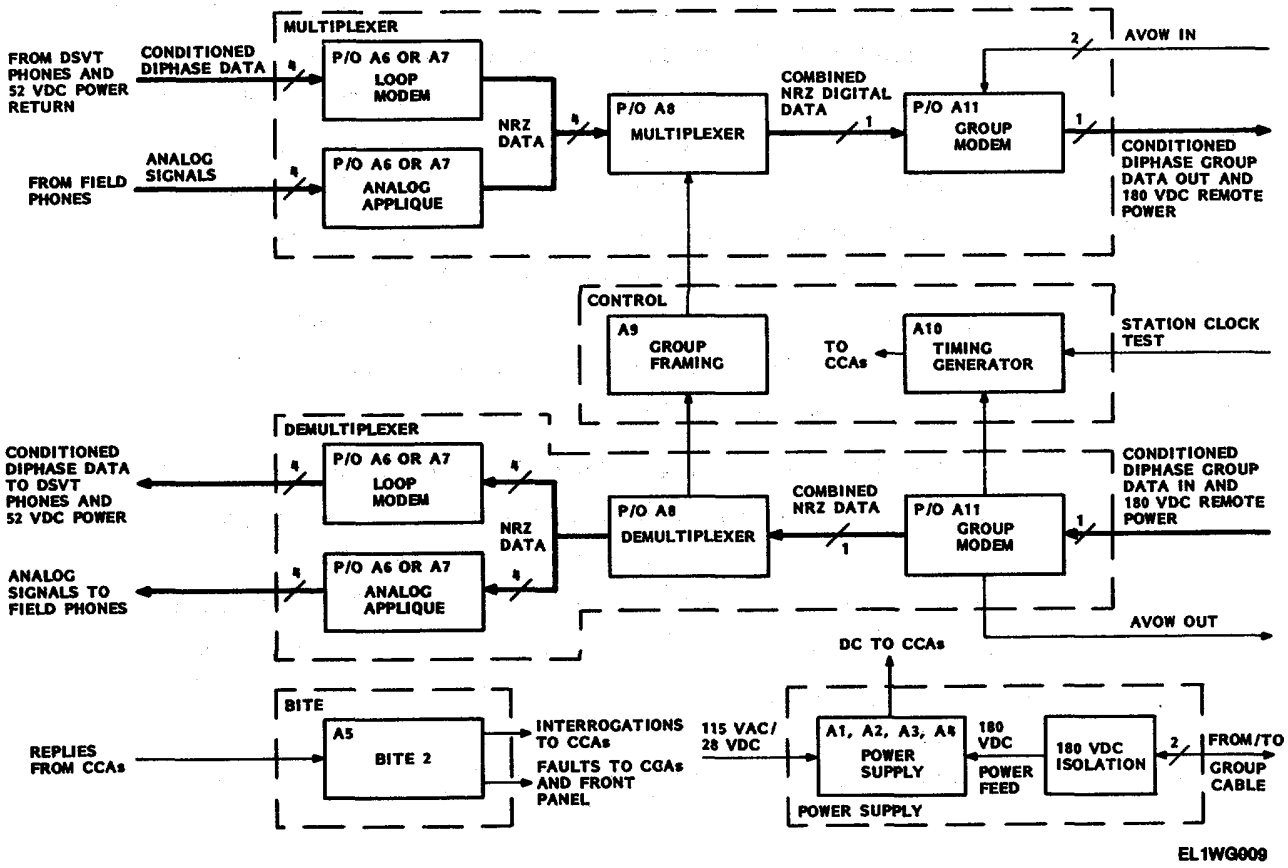
(1) Dimensions

- Height-8.5 inches
- Depth-13 inches
- Width-17.25 inches

(2) Weight-40 pounds

(3) Type of Mounting-19-inch rack or free standing

SECTION III. PRINCIPLES OF OPERATION



1-16 RLGM FUNCTIONAL DESCRIPTION

The remote loop group multiplexer (RLGM) is a full duplex multichannel communications system. It receives up to four channels of diphase data or analog signals and combines these into one group. The RLGM also receives four multiplexed channels of data and demultiplexes them to obtain up to four channels of data or analog signals for use by external equipment. It consists of the following functional sections:

- Multiplexer
- Demultiplexer
- Control
- BITE
- Power Supply

1-16. RLOM FUNCTIONAL DESCRIPTION-Continued

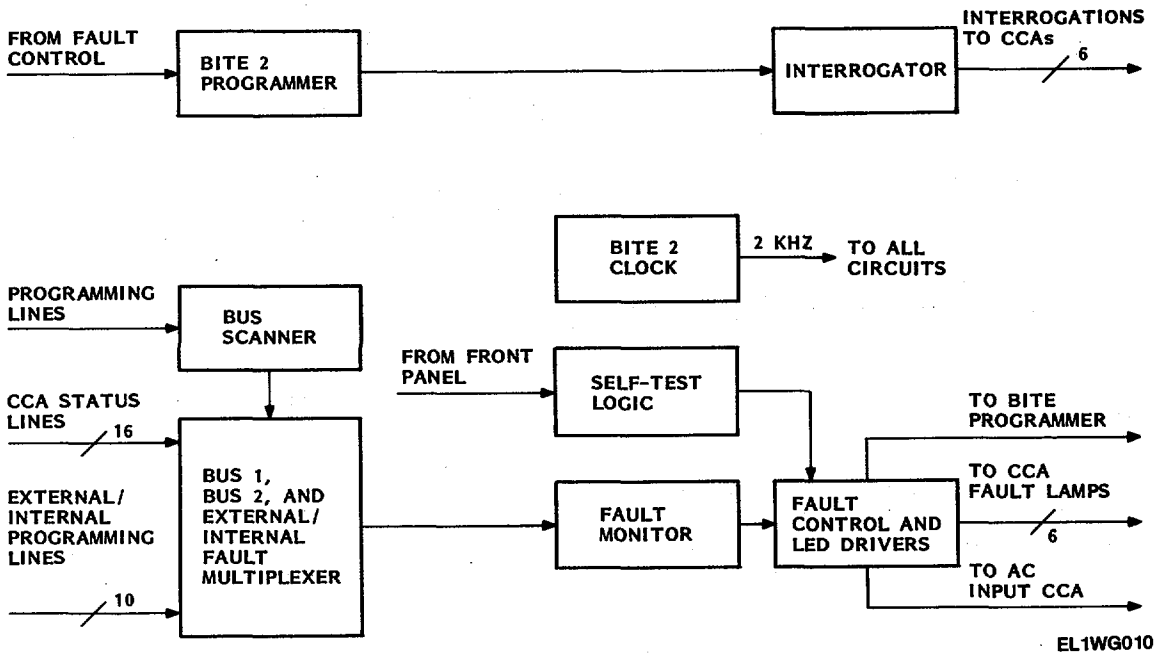
a. Multiplexer. The four loop modems or analog appliques get up to four channels of data or analog signals from external equipment. The external equipment is either digital secure or nonsecure terminals, or analog field telephones. The four channels of data or signals are converted to nonreturn to zero (NRZ) data by the loop modems or analog appliques and then sent to the multiplexer. In the multiplexer, the four channels are combined into one stream of NRZ digital data. The combined NRZ digital data is converted to conditioned diphase data by the group modem. The group modem sends the combined group data to external equipment by cable. The group modem also outputs analog voice orderwire (AVOW). The group side cable can also receive a remote power feed from other equipment, when 115 V ac or 28 V dc local primary power is not available.

b. Demultiplexer. The RLGM group modem receives a conditioned diphase group signal containing up to four multiplexed channels of data or analog signals. It converts this combined signal to NRZ data and sends it to the demultiplexer. In the demultiplexer, the four channels are separated (by demultiplexing) and sent to the loop modems or analog appliques. The loop modems convert the NRZ data to conditioned diphase data and sent it by cable to the digital secure voice terminal (DSVT) or digital nonsecure voice terminal (DNVT) along with a 52 V dc power feed. The analog appliques convert the NRZ data to analog signals and send the signals to field telephones.

c. Control. The demultiplexer separates framing data from the incoming group data stream and sends it to the group framing circuit card assembly (CCA). A framing signal is generated by the group framing CCA, based on recovered group framing signals, and is sent to the multiplexer. The multiplexer uses the framing signal to frame the RLGM outgoing data. The timing generator uses either the internal clock, or timing signals recovered from the incoming group data, to generate and send to all signal CCAs the timing signals that synchronize operation.

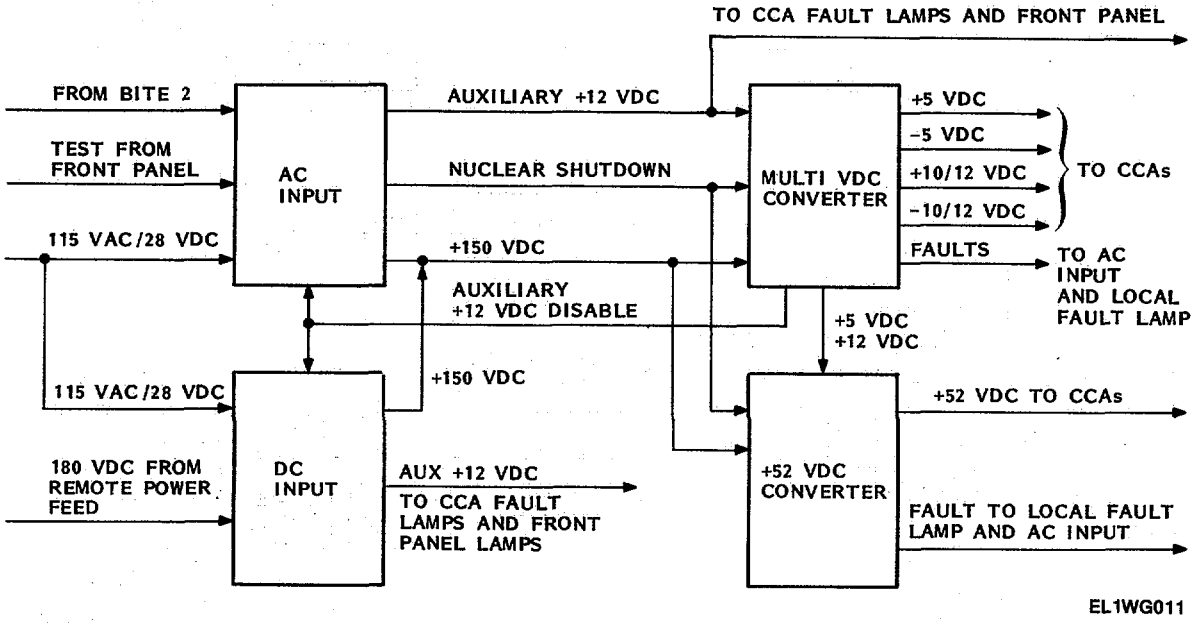
d. BITE. Under the control of the fault control circuits, the BITE 2 programmer decodes addresses and sends them to the interrogator. The interrogator then interrogates in sequence each BITE-sensored CCA in the RLGM. Each BITE-sensored CCA, when interrupted, sends it status reply to the bus 1, bus 2, external/internal fault multiplexer. The bus scanner, under the control of the programming lines,

1-16. RLGM FUNCTIONAL DESCRIPTION-Continued



sequences through the multiplexer inputs, selecting each input in turn and sending it to the fault monitor for processing. If two faults from the same CCA, on two different scans at least one second apart, are registered by the fault monitor, a fault condition is sent to the fault control and light emitting diode (LED) drivers. When the fault control receives a fault indication it decodes the fault and energizes the driver to light the proper CCA fault lamp. The fault control logic also sends a fault summary signal to the ac input CCA and sends control signals to the BITE 2 programmer. BITE 2 generates its own clock (2 kHz) that feeds all BITE 2 circuits. Use of the RLGM timing generator clock would not allow the BITE 2 to detect an RLGM timing generator failure. The external/internal multiplexer inputs, when scanned, provide data that is used by the fault monitor to determine if a fault is external to the unit. A front panel switch enables the self-test logic and lights all CCA and front panel lamps in a predescribed sequence. If the sequence is not as prescribed a BITE 2 fault is indicated.

1-16. RLGM FUNCTIONAL DESCRIPTION-Continued



e. Power Supply. Using 115 V ac as a primary power input, the ac input CCA converts the 115 V ac to +150 V dc and also generates a +12 V dc auxiliary voltage. Both the +150 V dc and +12 V dc auxiliary are sent to the multi Vdc converter. The +12 V dc auxiliary also goes to the CCA and front panel lamps to energize them prior to operation of the multi Vdc converter's +12 V dc supply. Other inputs to the ac input CCA are from BITE 2 and the front panel TEST switch. Pressing the TEST switch lights up all CCA fault lamps and front panel lamps. The input from BITE 2 interrogates the power supply to determine its fault status. Nuclear shutdown commands from the ac input CCA go to both the multi Vdc converter and the +52 Vdc converter. The multi Vdc converter receives +150 V dc from either the ac input CCA or the dc input CCA and converts it to +5 V dc, -5 V dc, +10/12 V dc for use by the RLGM CCAs. When the +10/12 V dc supply is operating, an auxiliary +12 V dc disable command is sent to the ac input CCA. Faults occurring in the multi Vdc converter are sent to the ac input CCA for monitoring by BITE 2, and light the card fault lamp. Reference voltages of +5 V dc and +12 V dc go to the +52 Vdc converter CCA from the multi Vdc converter CCA. The +52 Vdc converter CCA receives +150 V dc from the ac input

1-16. RLGM FUNCTIONAL DESCRIPTION-Continued

CCA or the dc input CCA and converts it to +52 V dc. Regulation of the +52 V dc is accomplished by using +5 V dc and +12 V dc from the multi Vdc converter CCA. Faults within the +52 Vdc converter light the card fault lamp and are transmitted to the ac input CCA for monitoring by BITE 2. The dc input CCA operates with a primary input of +28 V dc or a remote power feed of 180 V dc. It senses the primary power voltage to determine if the feed is 115 V ac, 28 V dc, or 180 V dc and internal circuits switch operation of the power supply to conform with the type of primary and +52 Vdc converter. Auxiliary +12 V dc is also generated by the dc input CCA for the same purposes as provided by the ac input CCA.

f. Power Feed. A 52 Vdc power feed is available with each LM channel. The power feed can supply a DSVT or DNVT.

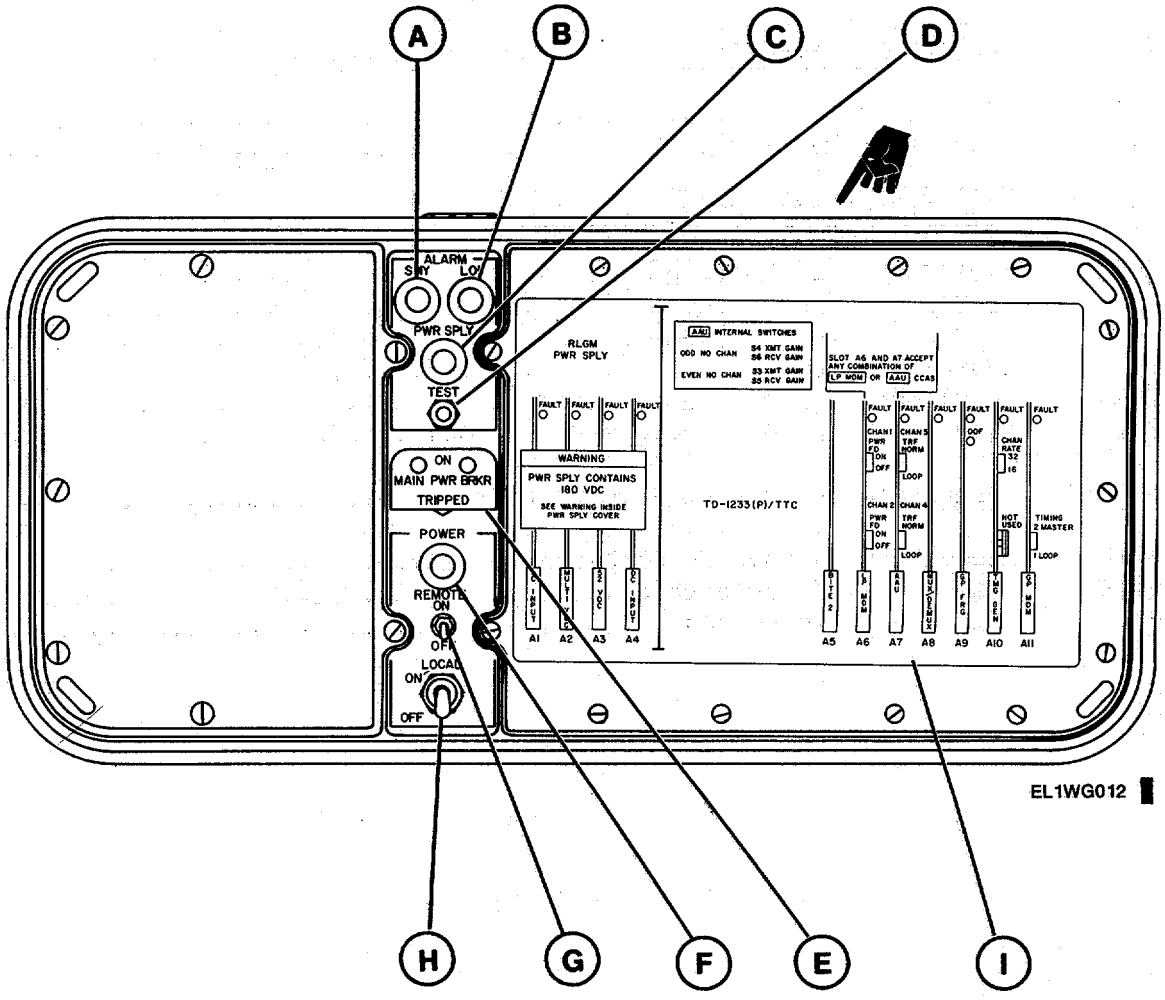
CHAPTER 2
OPERATING INSTRUCTIONS

SECTION I. DESCRIPTION AND USE OF

OPERATORS CONTROLS AND INDICATORS

2-1. FRONT PANEL CONTROLS AND INDICATORS

All RLGM operator controls and indicators are located on the front panel. All other controls and indicators are located on the CCAs and are for maintenance and system setup.

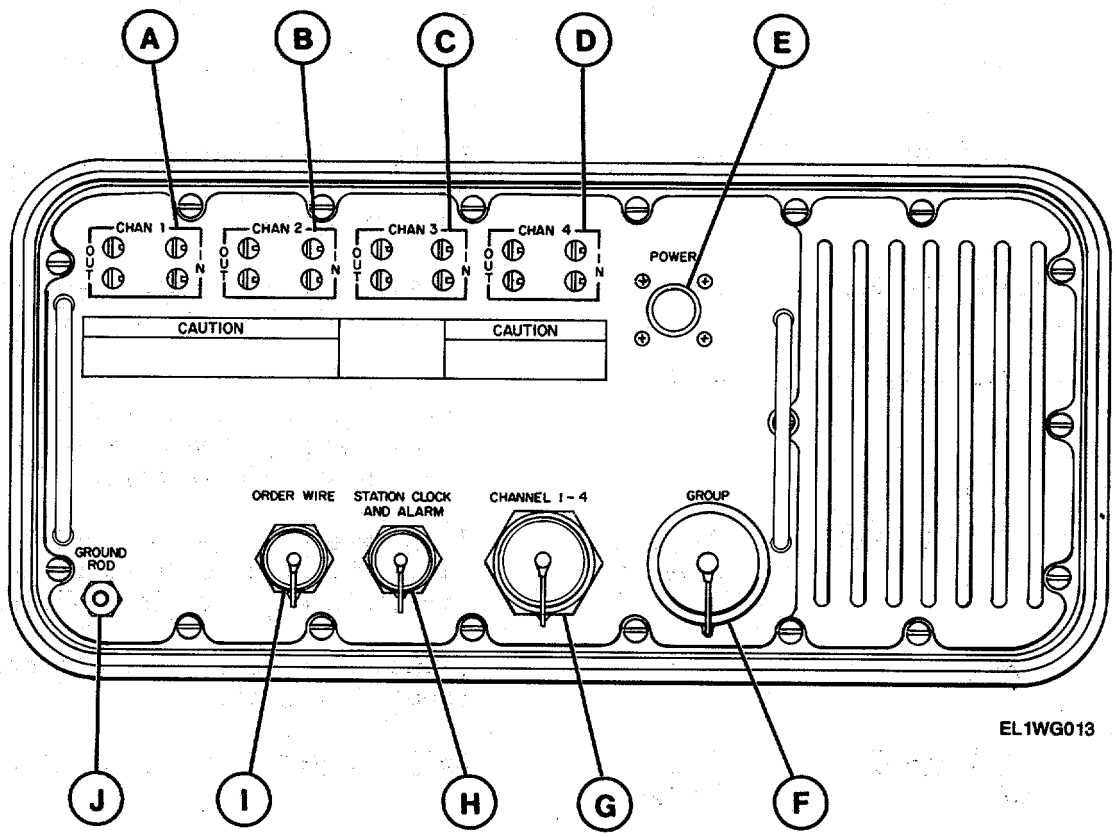


A label on the front panel shows the locations of all CCAs and CCA-mounted controls and indicators. The label is a handy reference for use during maintenance and system setup. Switch settings may be marked on the label with a grease pencil.

2-1. FRONT PANEL CONTROLS AND INDICATORS-Continued

Key	Name	Type	Function
A	ALARM SMY	Lamp	Lights if a fault is detected by the RLGM.
B	ALARM LOI	Lamp	Lights if one or more CCA loses an external input. The CCA fault lamp also lights.
C	ALARM PWR SPLY	Lamp	Lights if one or more power supply output voltages are out of tolerance.
D	ALARM TEST	Pushbutton	Energizes the BITE circuits in a test mode to light all fault and alarm lamps on the RLGM and fault LEDs on A6 through All.
E	MAIN PWR BRKR	Circuit Breaker	Trips when an overload exists in the RLGM. Can be reset by throwing circuit breaker to ON position.
F	POWER	Lamp	Lights when power is on to power supply circuits.
G	POWER REMOTE ON/OFF	Toggle Switch	Switches remote power on or off.
H	POWER LOCAL ON/OFF	Toggle Switch	Switches local power, 115 V ac or +28 V dc, to power supply on or off.
I	Label	Label	Identifies internal controls and indicators.

2-2. REAR COVER ASSEMBLY CONNECTORS

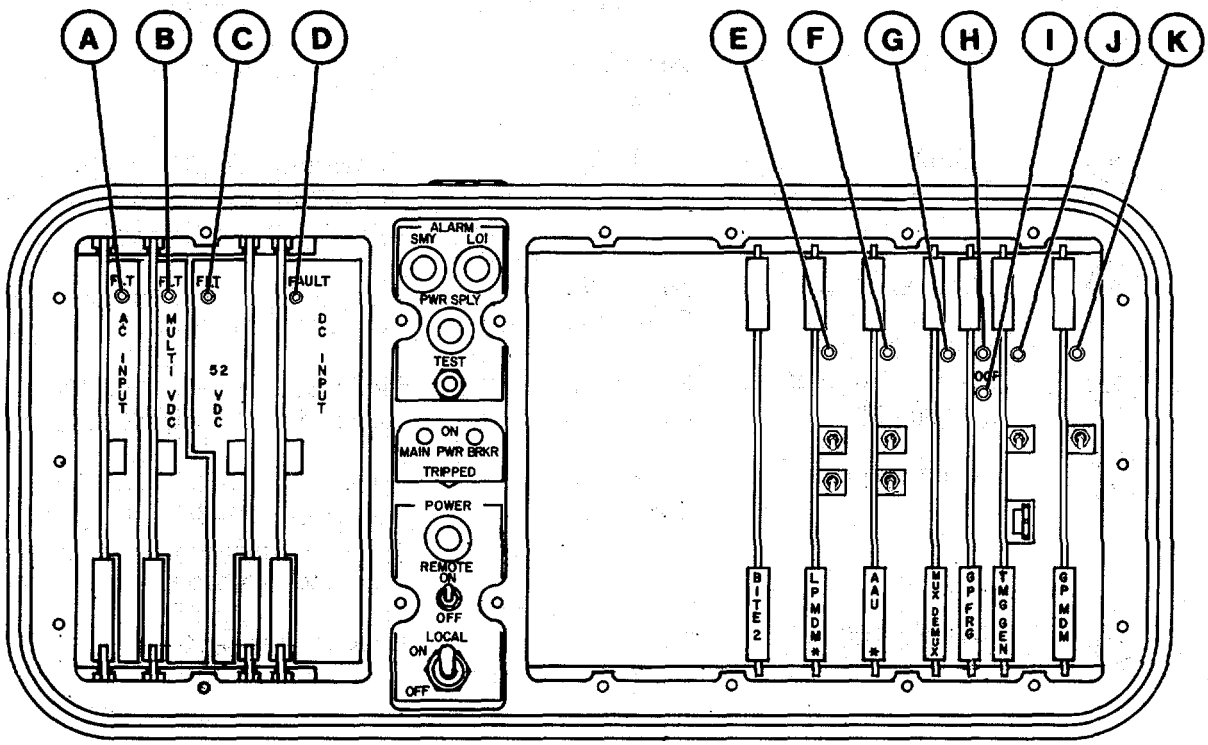


Key	Name	Type	Function
A	CHAN 1 IN/OUT	Field Wire Posts	Provides connections for channel 1 input/output to a DSVT, DNVT, or analog phone.
B	CHAN 2 IN/OUT	Field Wire Posts	Provides connections for channel 2 input/output to a DSVT, DNVT, or analog phone.
C	CHAN 3 IN/OUT	Field Wire Posts	Provides connections for channel 3 input/output to a DSVT, DNVT, or analog phone.
D	CHAN 4 IN/OUT	Field Wire Posts	Provides connections for channel 4 input/output to a DSVT, DNVT, or analog phone.

2-2. REAR COVER ASSEMBLY CONNECTORS-Continued

Key	Name	Type	Function
E	POWER	Multipin Connector	Ac or dc power input connector.
F	GROUP	Dual Coax	Provides input/output connection for line-side group data in and group data out signals.
G	CHANNEL 1-4	Multipin Connector	Provides input/output connections for channel data.
H	STATION CLOCK and ALARM	Multipin Connector	Provides connection for station clock input signal and for alarms.
I	ORDER WIRE	Multipin Connector	Provides connection for Telephone Test Set TS-3647/G (COU) to access group orderwire circuit, orderwire in, and orderwire out signals.
J	GROUND ROD	Lug	Ground connector.

2-3. CIRCUIT CARD ASSEMBLY CONTROLS AND INDICATORS

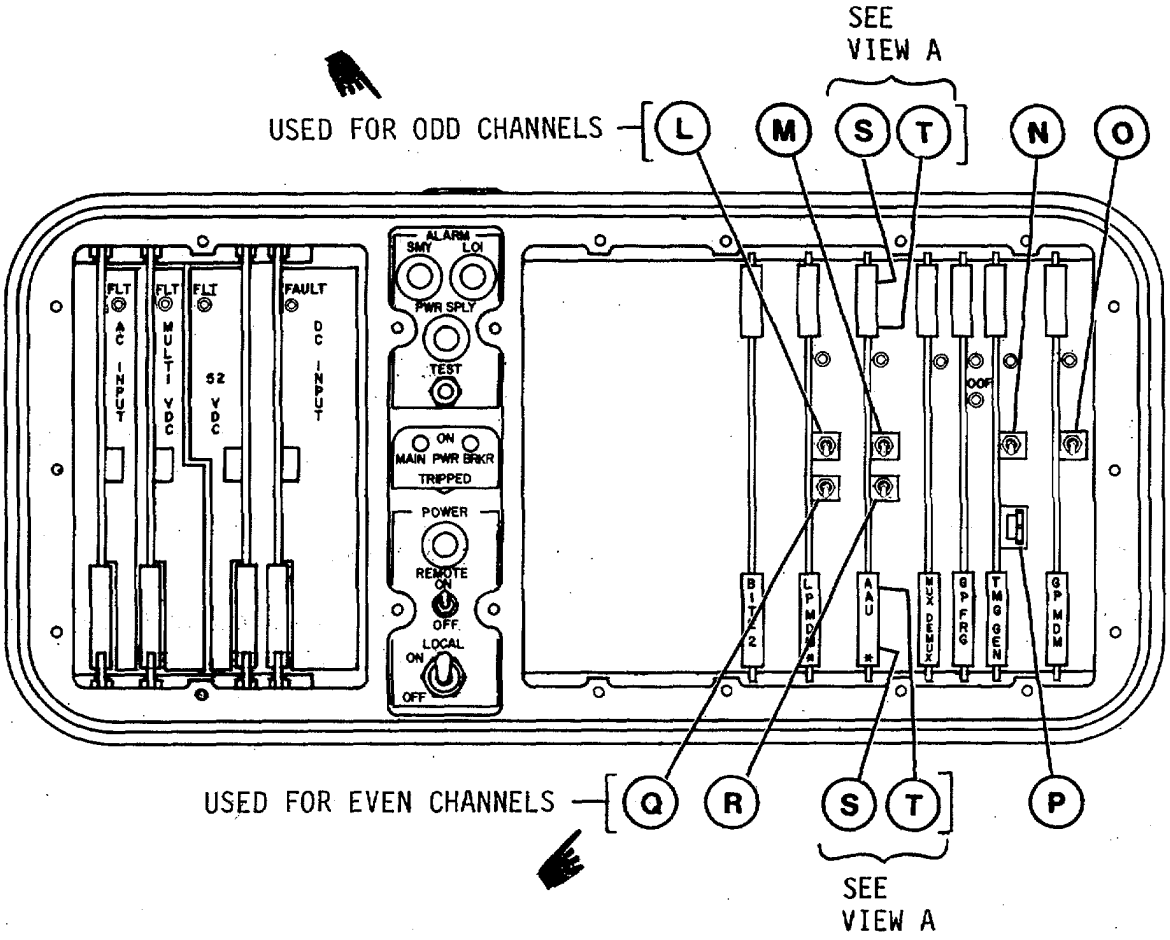


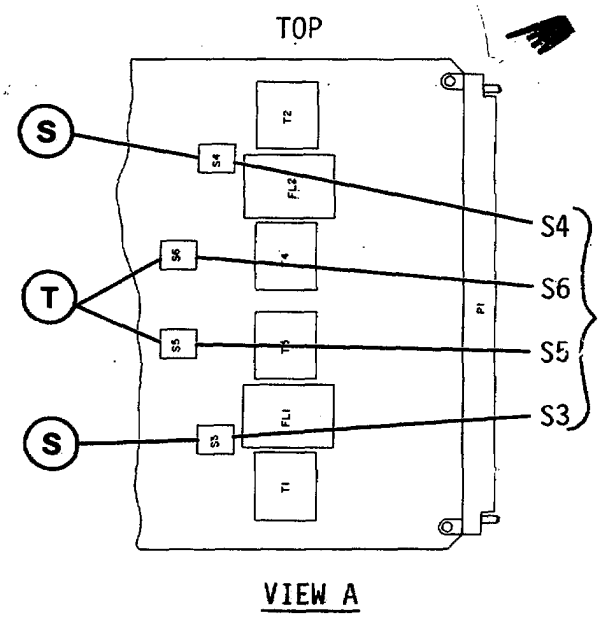
EL1WG014

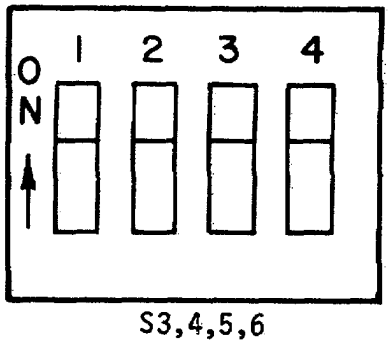
2-3. CIRCUIT CARD ASSEMBLY CONTROLS AND INDICATORS-Continued

Key	Name	Type	Function
A	FLT	Red LED	Lights if fault is detected on ac input CCA.
B	FLT	Red LED	Lights if fault is detected on multi Vdc CCA.
C	FLT	Red LED	Lights if fault is detected on 52 Vdc CCA.
D	FAULT	Red LED	Lights if fault is detected on dc input CCA.
E	Fault	Red LED	Lights if loop modem CCA malfunctions or lacks proper input.
F	Fault	Red LED	Lights if analog appliqué CCA malfunctions.
G	Fault	Red LED	Lights if mux/demux CCA malfunctions or lacks proper input.
H	Fault	Red LED	Lights if group framing CCA malfunctions or lacks proper input.
I	Out of Frame (OOF)	Red LED	Lights if group framing CCA frame sync is lost.
J	Fault	Red LED	Lights if timing generator CCA malfunctions or lacks proper input.
K		Red LED	Lights if group modem CCA malfunctions or lacks proper input.

2-3. CIRCUIT CARD ASSEMBLY CONTROLS AND INDICATORS-Continued







EL1WG015

2-3. CIRCUIT CARD ASSEMBLY CONTROLS AND INDICATORS-Continued

Key	Name	Type	Function
L	CHAN 1 PWR FD ON/OFF	Toggle Switch	Provides power to DSVT or DNVT when set to ON.
M	TRF NORM/LOOP	Toggle Switch	Selects normal system operation mode when set to NORM position, or AAU test mode when set to LOOP.
N	CHAN RATE 16/32	Toggle Switch	Selects the desired group traffic bit rate.
O	TIMING MASTER/LOOP	Toggle Switch	Selects the use of either master or loop (line side recovered clock).
P	GP RATE	Thumbwheel	Not Used.
Q	CHAN 2 PWR FD ON/OFF	Toggle Switch	Provides power to DSVT or DNVT when set to ON.
R	TRF NORM/LOOP	Toggle Switch	Selects normal system operation mode when set to NORM, or system test mode when set to LOOP.
S	CHANNEL TRANSMIT GAIN	4 Pole, SLIDE Activator Dip Switch-SPST	Selects required channel INPUT gain.
T	CHANNEL RECEIVER GAIN	4 Pole, SLIDE Activator Dip Switch-SPST	Selects required channel OUTPUT gain.

SECTION II. OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-4. GENERAL

To be sure that your equipment is always ready for your mission, you must do scheduled preventive maintenance checks and services (PMCS). The scheduled inspections allow defects to be discovered and corrected before they result in serious damage or failure.

2-5. OPERATOR PMCS TABLE

A PMCS table for the RLGM is provided below. There is one category or interval of PMCS: W. It heads the INTERVAL column of the PMCS table. A dot in the INTERVAL column indicates the check and/or service that you should perform at a particular time.

a. W stands for weekly. W - PMCS are important preventive maintenance checks and services you make at weekly intervals to keep serious problems from suddenly happening. You should perform W --PMCS if:

- You are the assigned operator and have not operated the item since the last W - PMCS.
- You are operating the item for the first time.

b. If your equipment fails to operate. Troubleshoot with proper equipment. Report any deficiencies using the proper forms (see DA Pam 738-750).

NOTE

Use your PMCS table Item no. column to get the number for the TM ITEM NO. column of DA Form 2404 (Equipment Inspection and Maintenance Worksheet) when recording results of PMCS.

2-5. OPERATOR PMCS TABLES- Continued

NOTE

If your equipment must be in operation all the time, check and service those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down or when orderwire channels are available.

c. Routine checks are not listed as PMCS checks. The following are some of the routine checks:

- Cleaning
- Washing
- Dusting
- Checking for frayed cables
- Storing items not in use
- Covering unused receptacles
- Check for loose nuts, bolts, and screws

d. You should perform routine checks as the need comes up.

WARNING:

Shock hazard may exist if proper shielded power cable is not used. Have Direct Support personnel check the power cable, being used with the equipment, to ensure it is the proper one.

2-5. OPERATOR PMCS TABLES - Continued

DA FORM 2404. EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET.

EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET

For use of this form, see TM 38-750; the proponent agency is the Office of the Deputy Chief of Staff for Logistics.

1. ORGANIZATION	2. NOMENCLATURE AND MODEL
126 Signal Company, Fort Myer, VA	

3. REGISTRATION/SERIAL/FSN	4a. MILES	b. HOURS	c. ROUNDS FIRED	d. HOT STARTS	5. DATE	6. TYPE INSPECTION
					13 JUN	PMCS

7. APPLICABLE REFERENCE

TM NUMBER	TM DATE	TM NUMBER	TM DATE

INSTRUCTIONS - Perform each check listed in the TM applicable to the inspection performed. Following the sequence listed in pertinent TM, complete form as follows:

COLUMN a - Enter TM item number.

COLUMN b - Enter the applicable condition status symbol.

COLUMN c - Enter deficiencies and shortcomings.

COLUMN d - Show corrective action for deficiency or shortcoming listed in Column c.

COLUMN e - Individual ascertaining completed corrective action initial in this column.

ALL INSPECTIONS AND EQUIPMENT CONDITIONS RECORDED ON THIS FORM HAVE BEEN DETERMINED IN ACCORDANCE WITH DIAGNOSTIC PROCEDURES AND STANDARDS IN THE TM CITED HEREON.

8a. SIGNATURE (Person(s) performing inspection)	8b. TIME	9a. SIGNATURE (Maintenance Supervisor)	9b. TIME	10. MANHOURS REQUIRED
Joseph D. Soldier	0920 hours			

TM ITEM NO. a	STATUS b	DEFICIENCIES AND SHORTCOMINGS c	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e
11		Power indicator lamp failed to light.	Replaced bulb.	J.O.L

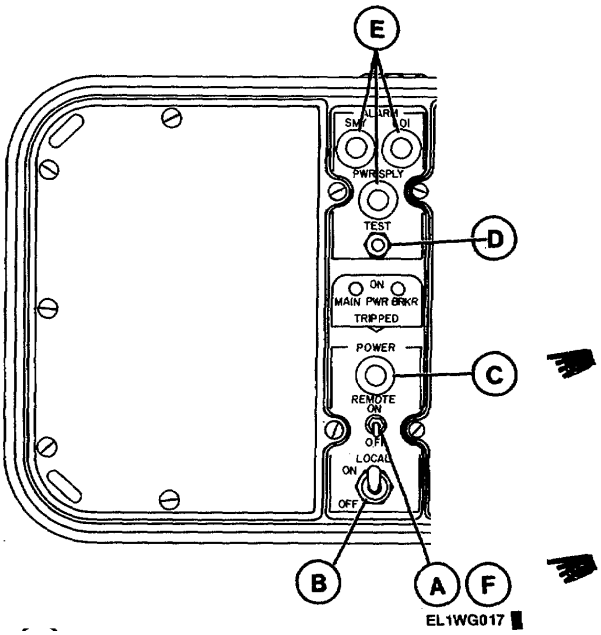
USE PMCS ITEM NO.

DA FORM 1 JAN 64 2404

EL1WG016

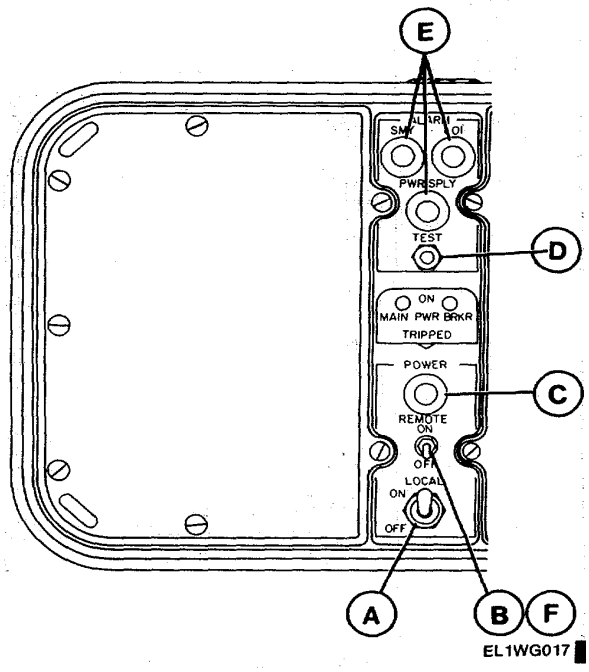
2-5. OPERATOR PMCS TABLE-Continued

PMCS TABLE

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	FOR READINESS REPORTING EQUIPMENT IS NOT READY/ AVAILABLE IF:
1	●	RLGM BITE Test (Local Power)		
			A Set REMOTE ON/OFF to OFF.	POWER lamp does not light.
			B Set LOCAL ON/OFF switch to ON.	
			C POWER lamp lights.	
			D Press and release ALARM TEST switch.	
			E ALARM (SMY, PWR SPLY and LOI) lamps light.	Any one of the lamps does not light or does not go off when ALARM TEST switch is released.
			F Set REMOTE ON/OFF switch back to the position needed for normal equipment operation.	

2-5. OPERATOR PMCS TABLE-Continued

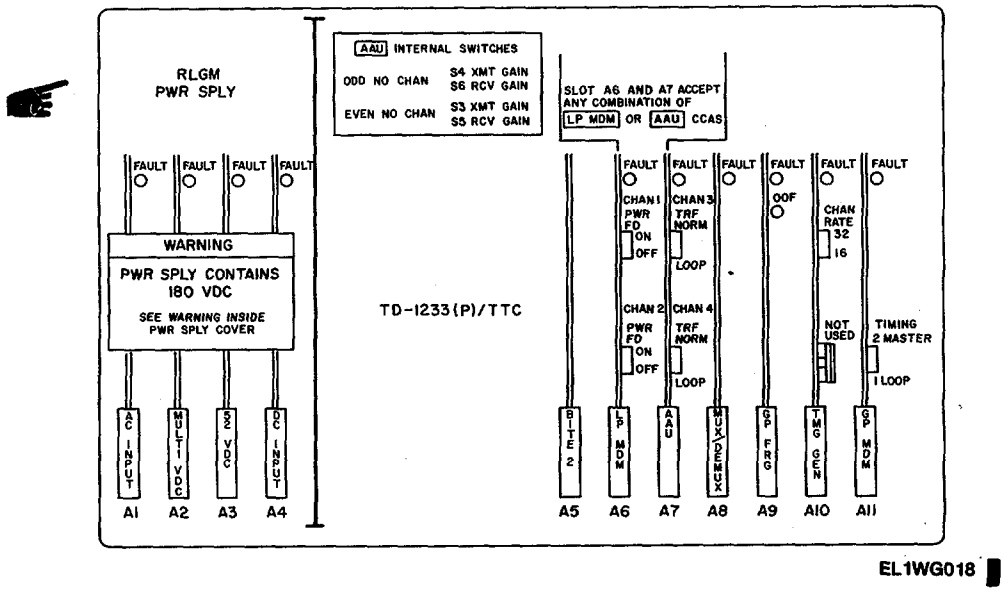
PMCS TABLE

ITEM NO.	INTERVAL W	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	FOR READINESS REPORTING EQUIPMENT IS NOT READY/ AVAILABLE IF:
2	●	RLGM BITE Test (Local Power)	 **A** Set REMOTE ON/OFF to OFF. **B** Set LOCAL ON/OFF switch to ON. **C** POWER lamp lights. **D** Press and release ALARM TEST switch. **E** ALARM (SMY, PWR SPLY and LOI) lamps light. **F** Set REMOTE ON/OFF switch back to the position needed for normal equipment operation.	POWER lamp does not light. Any one of the lamps does not light or does not go off when ALARM TEST switch is released.

SECTION III. OPERATION UNDER USUAL CONDITIONS

2-6. RESETTING CCA SWITCHES

After initial installation and operation of the RLGM, changes in system use may require resetting switches on the RLGM. If CCA switches must be reset, refer to the following table for switch setting data. Changes of system use will be directed by personnel at the system control point. Refer to label on front cover of RLGM.



Switch Name	Function	
CHAN RATE	Select the desired channel bit rate by operating the switch as follows:	
	Position	Setting
	32	Switch is set to 32 (up) position to provide 32 kb/s. The group rate becomes 144 kb/s.
	16	Switch is set to 16 (down) position to provide 16 kb/s. The group rate becomes 72 kb/s.
PWR FD	Select channel power feed as follows:	
	Position	Setting
	ON	Operate switch to ON position to provide power to DSVT or DNVT.
	OFF	Operate switch to OFF position to turn off power DSVT or DNVT

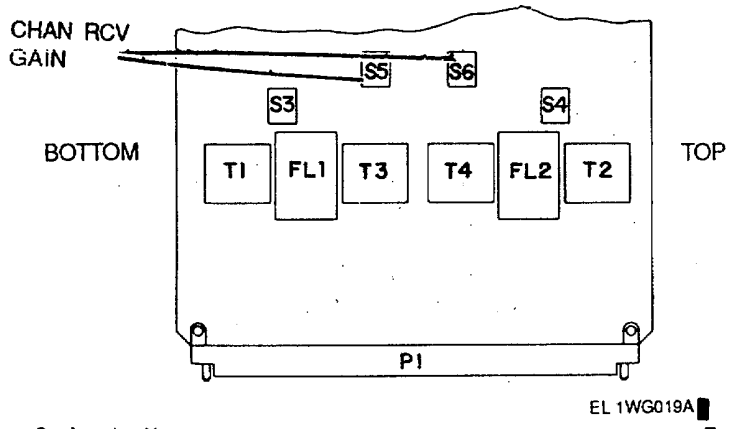
2-6. RESETTING CCA SWITCHES-Continued

Switch Name	Function	
TRF	Selects traffic mode function as follows:	
	Position	Setting
	NORM	Operate switch to NORM position for normal system operation.
	LOOM	Operate switch to LOOP position for AAU test purposes.
TIMING	Selects desired clock source.	
	Position	Setting
	MASTER	Operate to this position when the unit provides master timing for the system.
	LOOP	Operate to this position when clock recovered from group receive-traffic is to be used for timing.

2-6. RESETTING CCA SWITCHES-Continued

Switch Name	Function
CHAN RCV GAIN S5, S6	Selects required OUTPUT gain for cable attenuation.

Switch Slide Position	Setting Data	Test Tone Level
1	-3 Db	-20 dBm
2	0 dB	-17 dBm
3	+10 dB	-7 dBm
4	+20 dB	+3 dBm



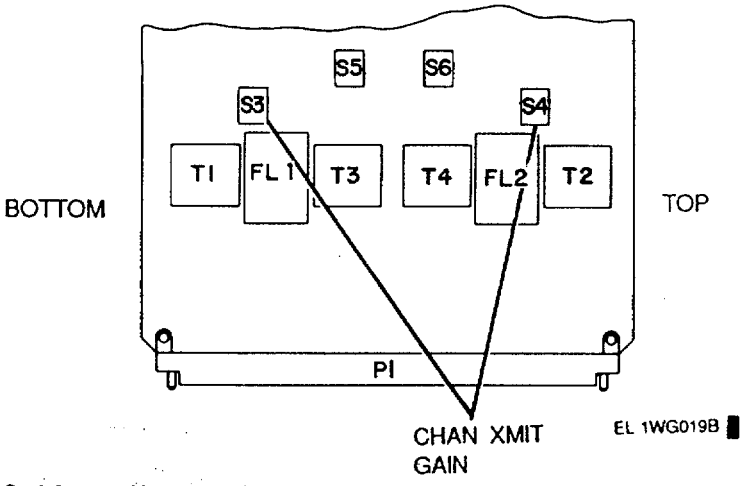
AAU GAIN SETTINGS VS. FIELD WIRE DISTANCE TO FIELD PHONE

MILES	OUTPUT SETTING (S5, S6)
0	2
1	2
2	3
3	3
4	3
5	3
6	4

NOTE: THE SLIDER WITH THE INDICATOR NUMBER SHOULD BE SET TO ON.
ALL OTHER SLIDERS SHOULD BE SET TO OFF.

Switch Name	Function
CHAN XMT GAIN S3, S4	Selects required INPUT gain for cable attenuation.

Switch Slide Position	Setting Data	Test Tone Level
1	+3 dB	-20 dBm
2	0 dB	-17 dBm
3	-10 dB	-7 dBm
4	-20 dB	+3 dBm

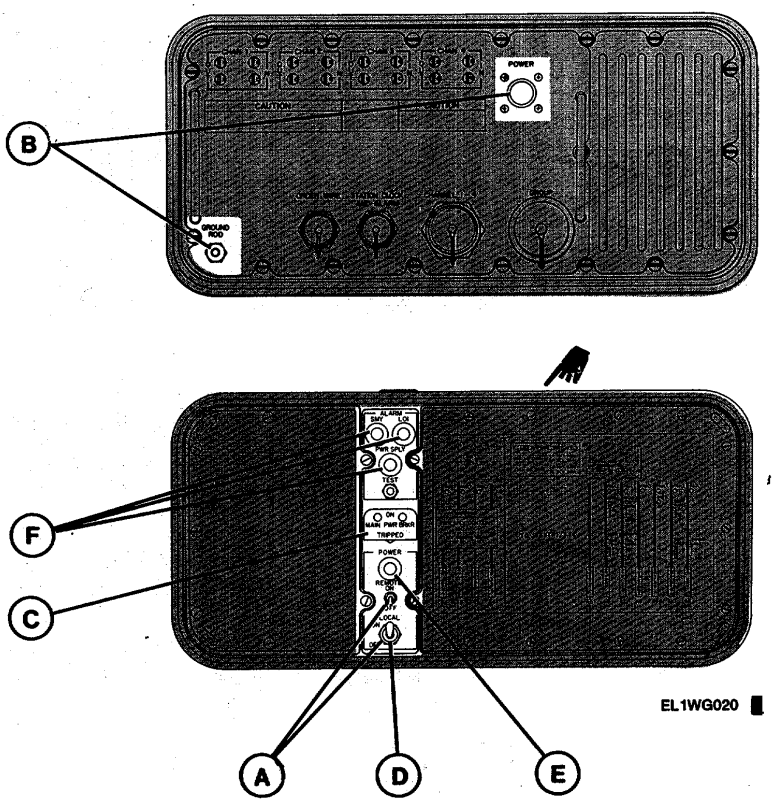


AAU GAIN SETTINGS VS. FIELD WIRE DISTANCE TO FIELD PHONE

MILES	OUTPUT SETTING (S3, S4)
0	4
1	3
2	3
3	3
4	3
5	3
6	3

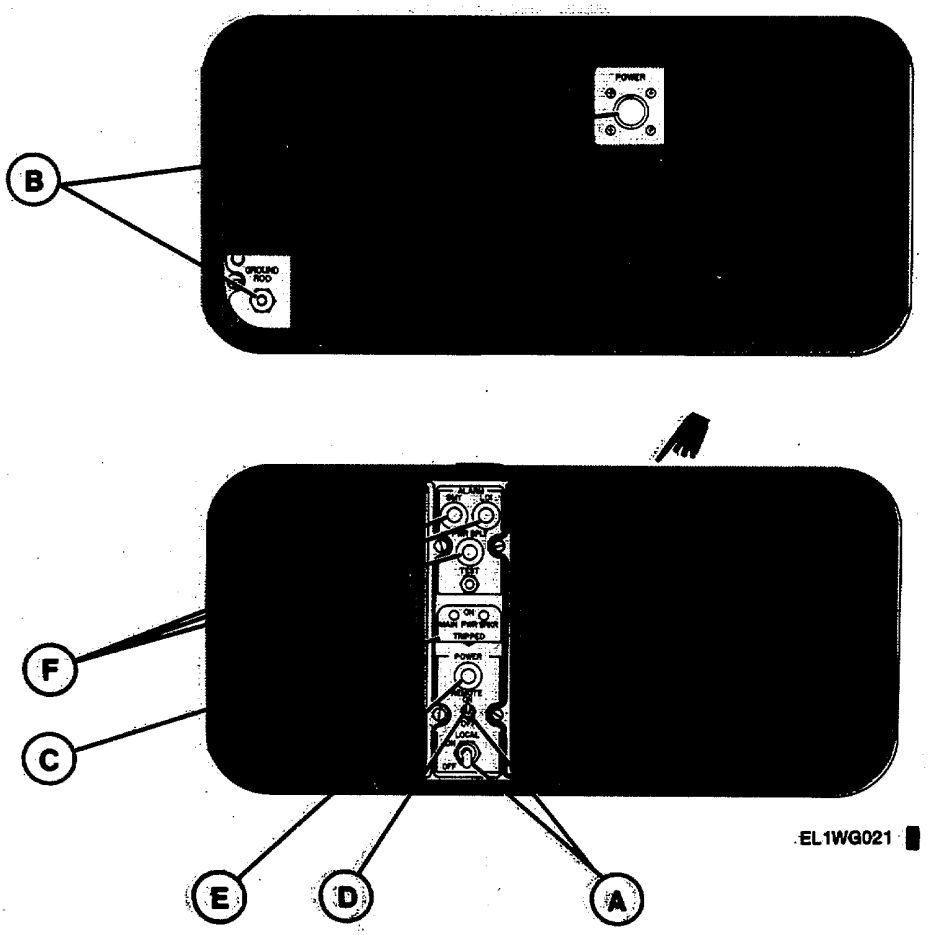
NOTE: THE SLIDER WITH THE INDICATOR NUMBER SHOULD BE SET TO ON.
ALL OTHER SLIDERS SHOULD BE SET TO OFF.

2-7. EQUIPMENT TURNON (LOCAL OPERATION)



A. Insure REMOTE and LOCAL POWER ON/OFF switches are OFF.
B. Insure power cable is connected, and RLGM is grounded.
C. Insure MAIN PWR BRKR is ON.
D. Set LOCAL ON/OFF switch to ON.
E. POWER lamp lights.
F. After 5-second warmup, these alarm lamps should be off.
If not, see Chapter 4, Section IV, Troubleshooting.

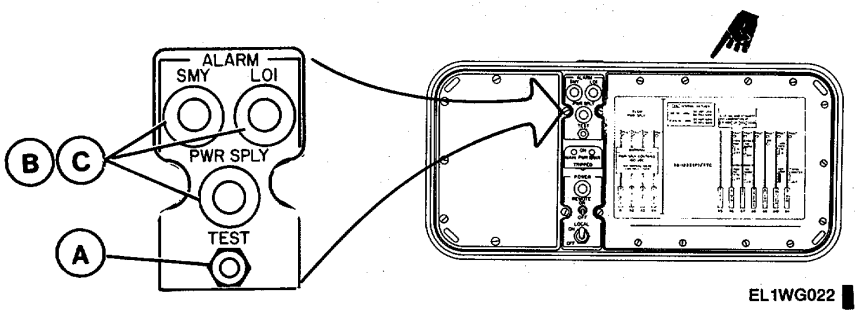
2.8. EQUIPMENT TURNON-(REMOTE OPERATION)



A. Insure REMOTE and LOCAL POWER ON/OFF switches are OFF.
B. Insure power cable is connected, and RLGM is grounded.
C. Insure MAIN PWR -BRKR is ON.
D. Set REMOTE ON/OFF switch to ON.
E. POWER lamp lights.
F. After 5-second warmup, these ALARM lamps should be off.
If not, see Chapter 4, Section IV, Troubleshooting.

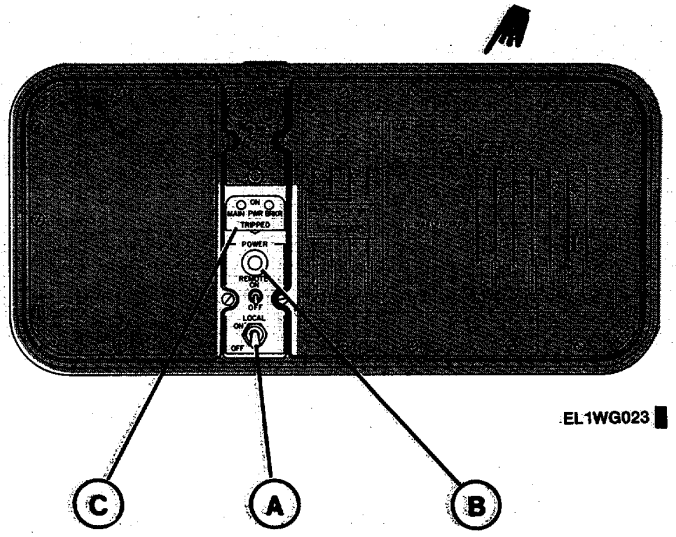
2-9. OPERATOR CHECKS

The only operator check required is a BITE test. The system must be operating.



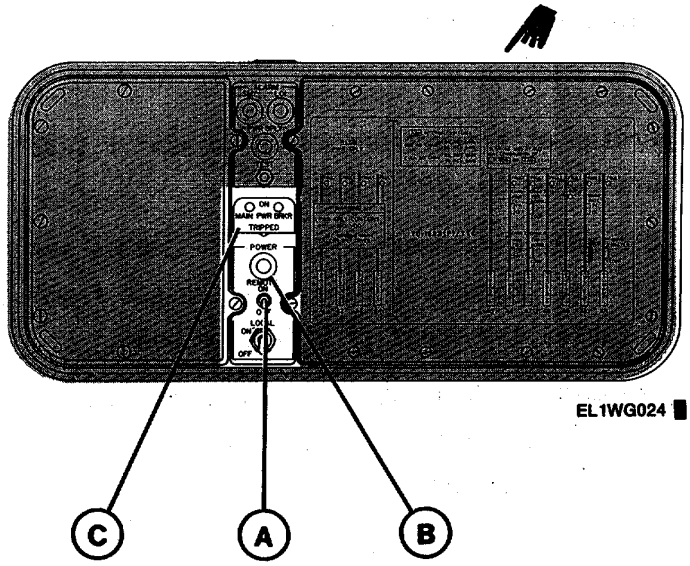
A. Press and release ALARM TEST pushbutton.
B. Lamps should light.
C. If any lamps fail to light, refer to organizational level maintenance.

2-10. EQUIPMENT TURNOFF (LOCAL OPERATION)



A. Set LOCAL ON/OFF switch -to OFF.
B. POWER 1 amp goes off.
C. Leave MAIN PWR BRKR ON.

2-11. EQUIPMENT TURNOFF (REMOTE OPERATION)



A. Set REMOTE ON/OFF switch to OFF.
B. POWER lamp goes off.
C. Leave MAIN PWR BRKR ON.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-12. OPERATING IN UNUSUAL WEATHER

The RLGM will operate in the following environments:

a. Arctic Climate.

- The RLGM operates at temperatures down to -250 F (-32° C) and can be stored at temperatures down to -70° F (-570 C).
- Extreme cold causes components, especially cables and plastic components, to become brittle. Permanent damage can result from mechanical shock to components. Cables can break if kinked or bent.
- When cold equipment is brought into a warm room, moisture will condense on its surfaces. Before operation, allow equipment to warm to room temperature, then dry thoroughly with cloth.

b. Tropical Climate.

- The RLGM operates at temperatures as high as +1450 F (+630 C) and can be stored at temperatures as high as +1600 F (+710 C)-.
- Extreme heat and humidity can cause moisture and fungus growth which ,can cause improper operation. Keep cover on as much as possible and ventilate the equipment as often as possible.

c. Desert Climate.

- The RLGM operates at temperatures up to +1450 -F (+630 C) and can be stored at temperatures up to +1600 F (+71°0 C).
- Windblown sand, dirt, or dust will damage the equipment. Keep cover on as much as possible.

d. Salt Air.

- Salt air can corrode the connectors and controls on the RLGM. Keep cover on as much as possible and clean surfaces with damp cloth (fresh water).

e. High Altitudes.

- The RLGM can operate at altitudes up to 10,000 feet and can ,be stored at altitudes up to 40,000 feet.

2-13. ELECTRICAL INTERFERENCE

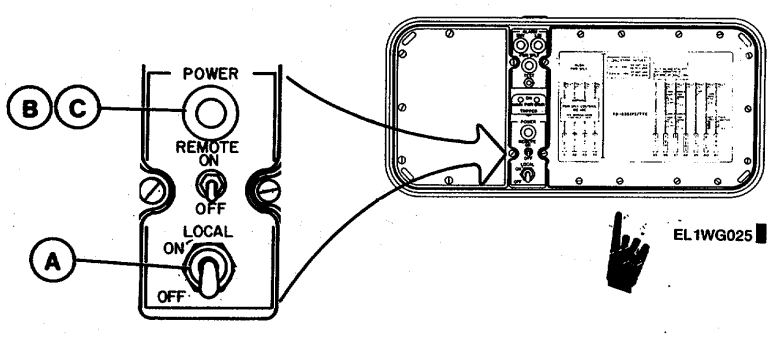
Observe the following guidelines to minimize electrical interference caused by external sources:
a. Keep ground connections secure.
b. Keep cable connections secure.
c. Keep captive screws on the CCA covers secure.

2-14. EMERGENCY PROCEDURES

NOTE

Any shelter or facility circuit breaker controlling power to the RLGM may control power to other equipment. Assure that the emergency warrants turning off the other equipment before operating this circuit breaker.

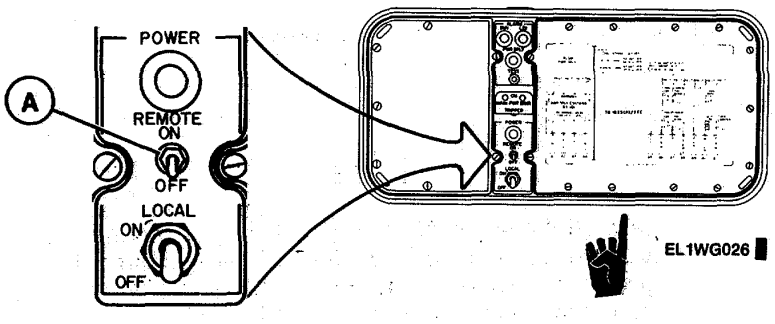
a. Emergency Turnoff (Local). There are no special emergency turnoff procedures. In an emergency, perform the following:



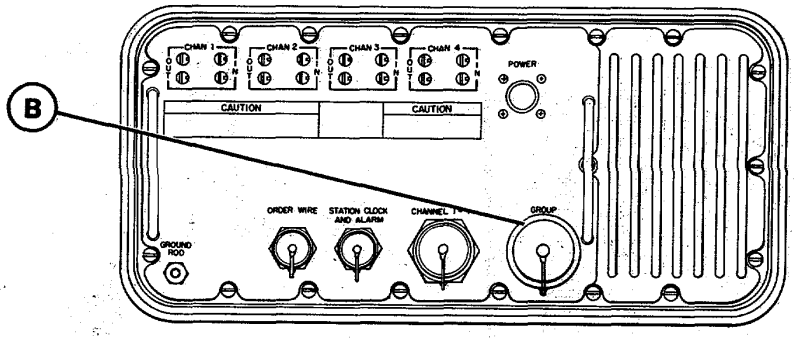
A. Quickly set LOCAL ON/OFF switch to OFF.
B. POWER indicator lamp should go out.
C. If POWER indicator fails to go out, trip external circuit breaker supplying facility power to the RLGM.

2-14. EMERGENCY PROCEDURES-Continued

b. Emergency Turnoff, Remote. There are no special emergency turnoff procedures. In an emergency, perform the following:



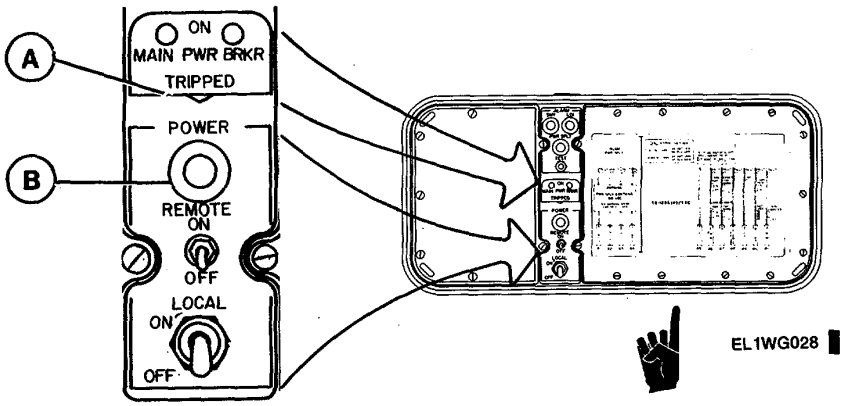
A. Quickly set REMOTE ON/OFF switch to OFF.



B. If power does not go off, disconnect the GROUP Connector.

2-14. EMERGENCY PROCEDURES-Continued

c. Power Transients (Local Power). If power to the RLGM varies, MAIN PWR BRKR may trip. If this occurs:



A. Set MAIN PWR BRKR to ON.
B. POWER indicator lamp should light.

CHAPTER 3

OPERATOR MAINTENANCE

For the purpose of this manual, operator and unit maintenance are one and the same.

CHAPTER 4
UNIT MAINTENANCE

Section I. REPAIR PARTS; SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to Section III, Maintenance Allocation Chart (MAC). For Air Force, refer to appropriate Table of Allowances (TA).

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

For Repair Parts and Special Tools List (RPSTL), refer to TM-11-5805-706-24P (Army) or TO 31W2-TTC-14 (USAF).

Maintenance tools and equipment as authorized by the Maintenance Allocation Chart (refer to Appendix B, MAC) for unit maintenance are as follows: Tool Kit, Electronic Equipment TK-101/G, 1 each.

4-3. REPAIR PARTS

Repair parts are listed and illustrated in the RPSTL (TM-11-5805-706-24P) covering operator and unit maintenance for the RLGM. For Air Force, refer to TO 31W2-TTC-14.

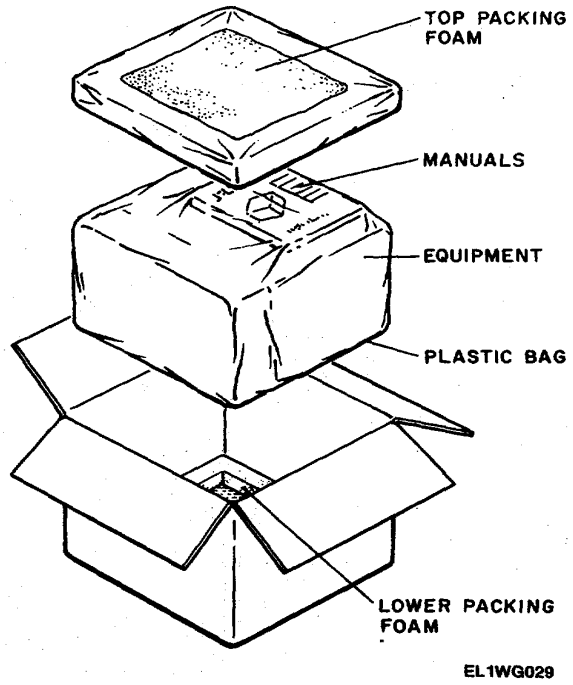
Section II. SERVICE UPON RECEIPT

WARNING

Heavy Equipment

This equipment weighs over 35 pounds and can cause serious injury if lifted or carried alone. Do not attempt to lift, carry, or move the equipment by yourself use at least two persons.

4-4. UNPACKING



a. Open.

- Use sharp knife to cut reinforcing tape on top of carton.
- Open top of box.

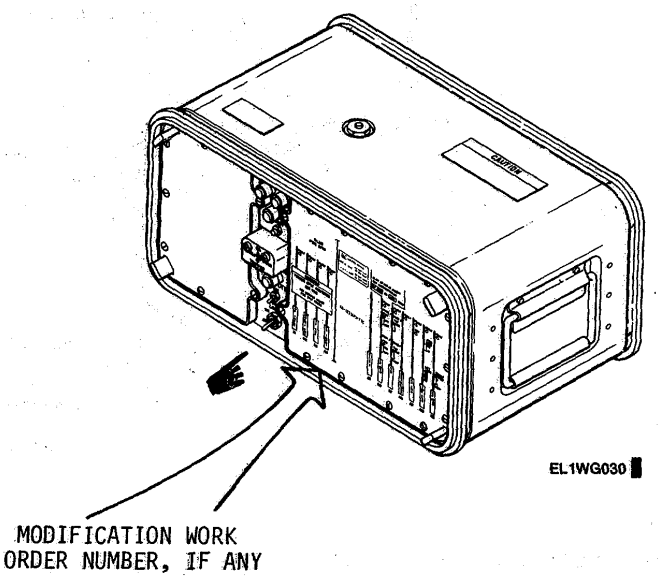
b. Remove RLGM.

- Lift out top packing.
- Lift out equipment including manuals.
- Use sharp knife to slit plastic bag.
- Remove manuals and equipment.
- Remove front and rear shipping covers from the RLGM.

4-5. CHECKING UNPACKED EQUIPMENT

a. Damage. Inspect the equipment for damage incurred during shipment. If equipment has been damaged, report the damage on SF 364 (Report of Discrepancy (ROD)). For Air Force use DD Form 173 (Material Deficiency Report (Category 1)).

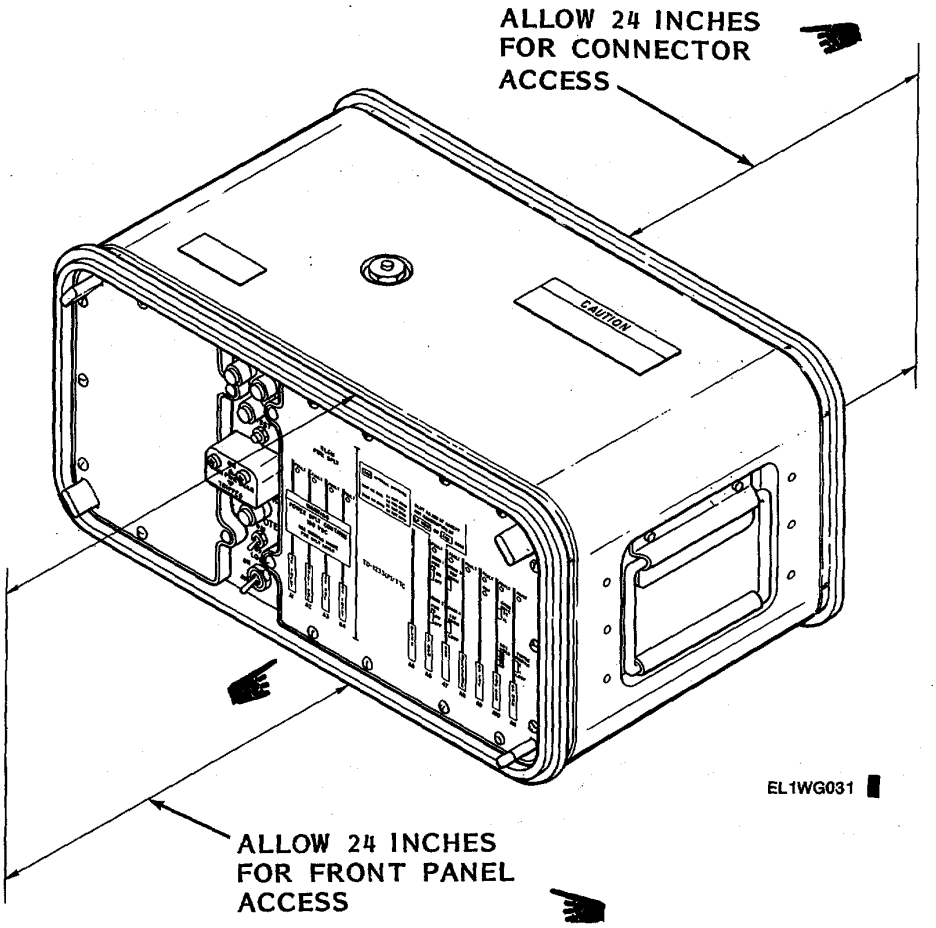
b. Packing Slip. Check equipment against the packing slip to see if shipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.



c. Modifications. Check DA Pam 25-30, Consolidated Index of Army Publications and Blank Forms, for Modification Work Orders (MWO) applicable to this equipment. Compare MWO number (if any) obtained from DA Pam 25-30 with that on equipment. If numbers disagree, equipment must be modified.

4-6. FIELD INSTALLATION

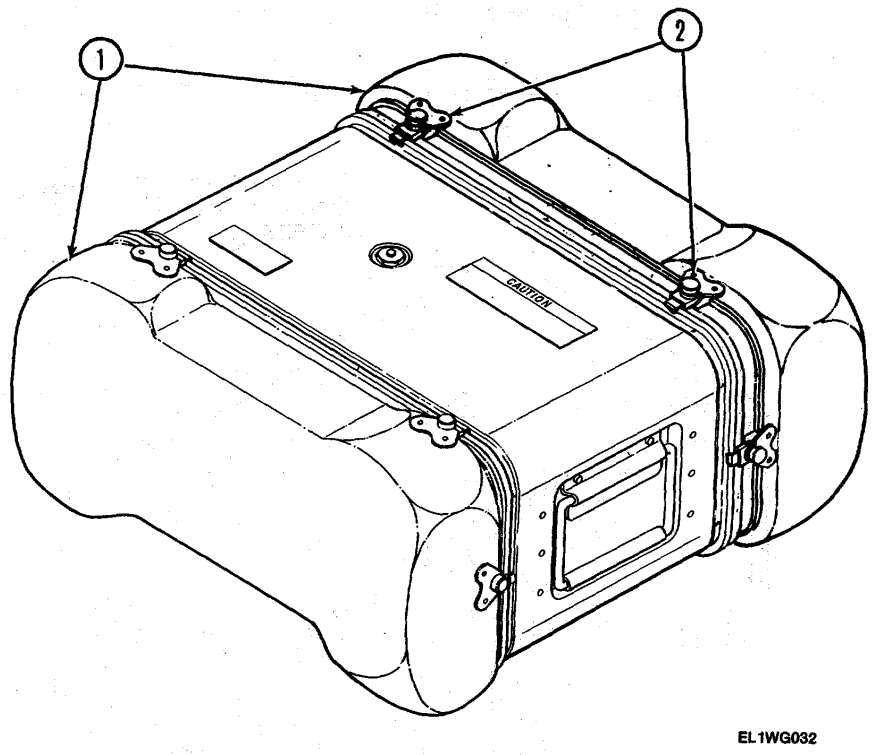
a. Tools and Equipment Required. No special tools or test equipment are required for field installation. Provision for an appropriate earth ground and an approved ground strap or wire with hardware for attaching to a ¼-20 threaded ground rod must be available. Neither the ground strap nor the attaching hardware are supplied with the RLGM. A standard 3-wire ac/dc power cable must also be provided. The power cable is not part of the RLGM.



b. Location. The RLGM may be placed on the ground or on any suitable surface. Avoid wet areas if possible. Space must be available for access to rear connectors and front panel controls and for removing CCAs.

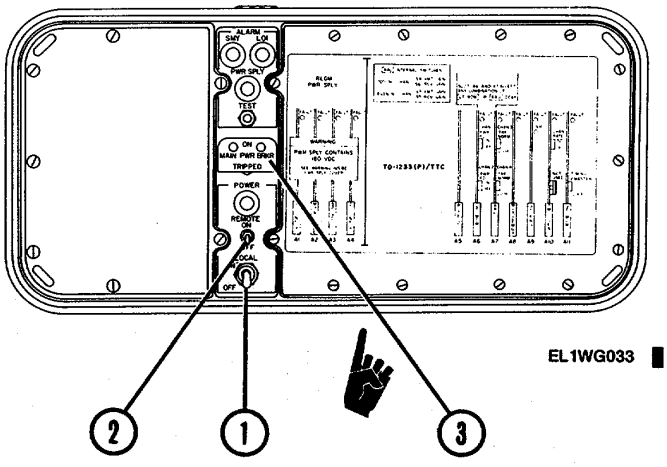
4-6. FIELD INSTALLATION-Continued

c. Preparation.

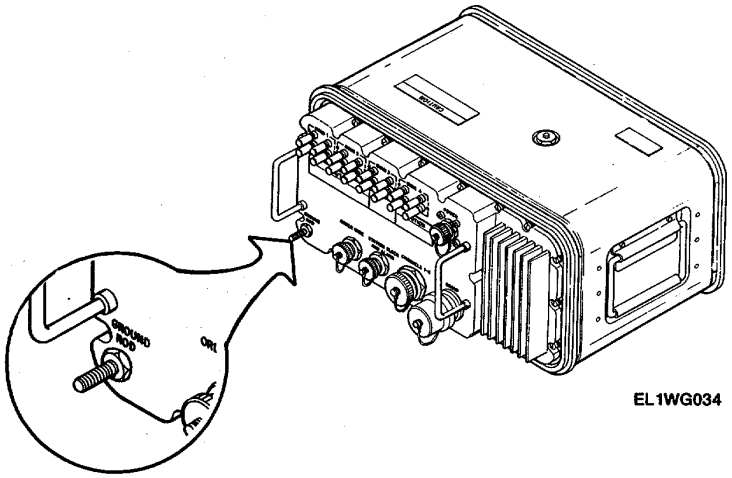


- Remove transit covers 1 by unsnapping six latches 2 on each cover.
- Place RLGM in selected location.

4-6. FIELD INSTALLATION-Continued



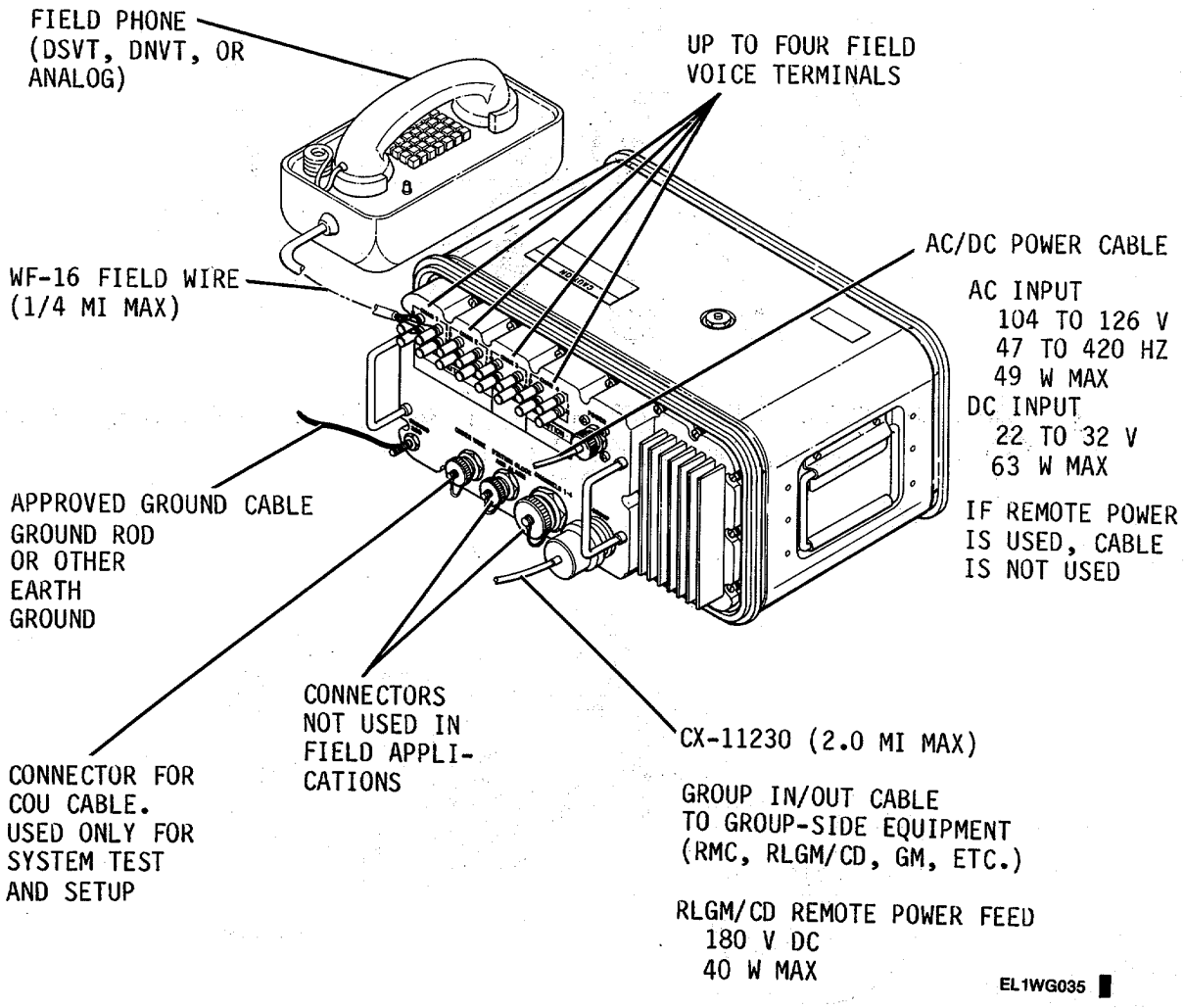
- Ensure both LOCAL POWER ON/OFF switch 1 and REMOTE POWER ON/OFF switch 2 are OFF and MAIN PWR BRKR 3 is ON.
-



d. Wiring Connections. Figures FO-1 and FO-2 show typical applications and wiring connections. Using ¼ 20 hardware attach a suitable ground strap or wire to GROUND ROD on rear cover assembly. Ground strap must be connected to an earth ground in an approved manner. A ground rod or grounded conductive piping are recommended.

4-6. FIELD INSTALLATION-Continued

e. Preliminary Setup. Operator settable switches on some CCAs may have to be reset as directed by personnel at the system control point. See paragraph 2-6 for resetting CCA switches.



f. Field Wiring. Field wiring will vary depending upon the system plan. Equipment and cables to be connected to LOCAL CHANNEL, LOW GROUP, and HIGH GROUP connectors will be designated by personnel at the system control point. A typical field installation is shown above.

Section III. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

4-7. GENERAL

To be sure that your equipment is always ready for your mission, you must do scheduled preventive maintenance checks and services (PMCS). When you are doing any PMCS or routine checks, keep in mind WARNINGS and CAUTIONS about electrical shock and bodily harm.

4-8. PMCS TABLE

A PMCS table for Multiplexer TD-1233(P)/TTC appears at the end of this section. There is one category or interval of PMCS: B. It heads the INTERVAL column of the PMCS table. A dot in the INTERVAL column indicates the check and/or service that should be performed in unit maintenance personnel at a particular time.

a. B stands for before. B - PMCS should be performed before operation to make sure your equipment is ready to go.

NOTE

Use your PMCS table to get the number for the TM ITEM NO. column of DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

NOTE

If your equipment must be in operation all the time, check and service those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down or when orderwire channels are available.

4-8. PMCS TABLE-Continued

b. Whenever an equipment is reinstalled after removal for any reason, perform the necessary PMCS.

c. Routine checks are not listed as PMCS checks. The following are some of the routine checks.

- Checking for frayed cables
- Storing items not in use
- Covering unused receptacles
- Checking for loose nuts, bolts, and screws
- Cleaning
- Dusting
- Washing

d. You should perform routine checks as the need comes up.

4-8. PMCS TABLE-Continued

DA FORM 2404, EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET.

EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET

For use of this form, see TM 38-750; the proponent agency is the Office of the Deputy Chief of Staff for Logistics.

1. ORGANIZATION	2. NOMENCLATURE AND MODEL
126 Signal Company, Fort Myer, VA	

3. REGISTRATION/SERIAL/FSN	4a. MILES	b. HOURS	c. ROUNDS FIRED	d. HOT STARTS	5. DATE	6. TYPE INSPECTION
					13 Jun	PMCS

7. APPLICABLE REFERENCE

TM NUMBER	TM DATE	TM NUMBER	TM DATE

INSTRUCTIONS - Perform each check listed in the TM applicable to the inspection performed. Following the sequence listed in pertinent TM, complete form as follows:

COLUMN a - Enter TM item number.

COLUMN b - Enter the applicable condition status symbol.

COLUMN c - Enter deficiencies and shortcomings.

COLUMN d - Show corrective action for deficiency or shortcoming listed in Column c.

COLUMN e - Individual ascertaining completed corrective action initial in this column.

ALL INSPECTIONS AND EQUIPMENT CONDITIONS RECORDED ON THIS FORM HAVE BEEN DETERMINED IN ACCORDANCE WITH DIAGNOSTIC PROCEDURES AND STANDARDS IN THE TM CITED HEREON.

8a. SIGNATURE (Person(s) performing inspection)	8b. TIME	9a. SIGNATURE (Maintenance Supervisor)	9b. TIME	10. MANHOURS REQUIRED
Joseph D. Potter	0920 hours			

TM ITEM NO. a	STATUS b	DEFICIENCIES AND SHORTCOMINGS c	CORRECTIVE ACTION d	INITIAL WHEN CORRECTED e
11		Power indicator lamp failed to light.	Replaced bulb.	J.D.L

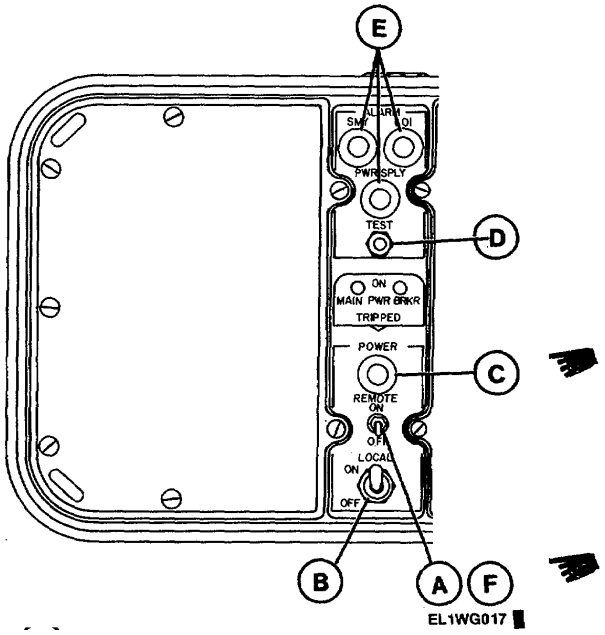
USE PMCS ITEM NO.

DA FORM 1 JAN 64 2404

EL1WG016

4-8. PMCS TABLE-Continued

PMCS TABLE

ITEM NO.	INTERVAL B	ITEM TO BE INSPECTED	PROCEDURES CHECK AND HAVE REPAIRED OR ADJUSTED AS NECESSARY
		Local Power Only	
1	●	Power On	**A** Set REMOTE ON/OFF to OFF. **B** Set LOCAL ON/OFF switch to ON.
2	●	BITE Test	**C** POWER lamp lights. **D** Press and release ALARM TEST switch. **E** ALARM (SMY, PWR SPLY and LOI) lamps light.

Section IV. TROUBLESHOOTING

4-9. TROUBLESHOOTING PROCEDURE

The flowchart information is based on visual symptoms obtained from the RLGM BITE lamps. Before troubleshooting, check that all CCA switches are set as directed by the system control point.

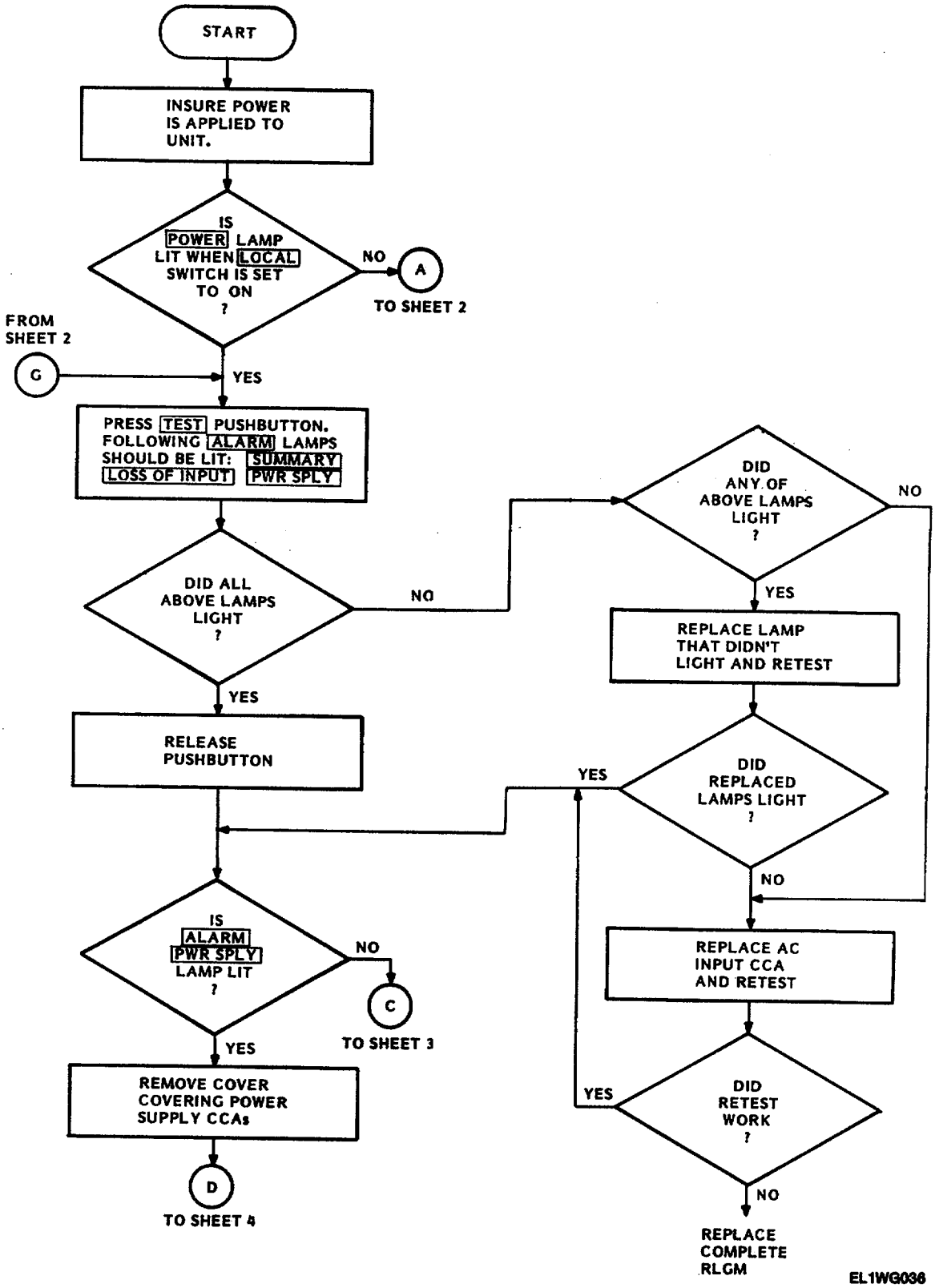
The flowchart is a step-by-step path through the RLGM. All decisions are made in the diamond shaped (◇) boxes and require a yes or no answer. All instructions are given in the rectangular shaped boxes (▭) and must be accomplished before moving on with the procedure. When the word END is reached, the fault should be corrected.

When replacing a CCA that has settable switches:

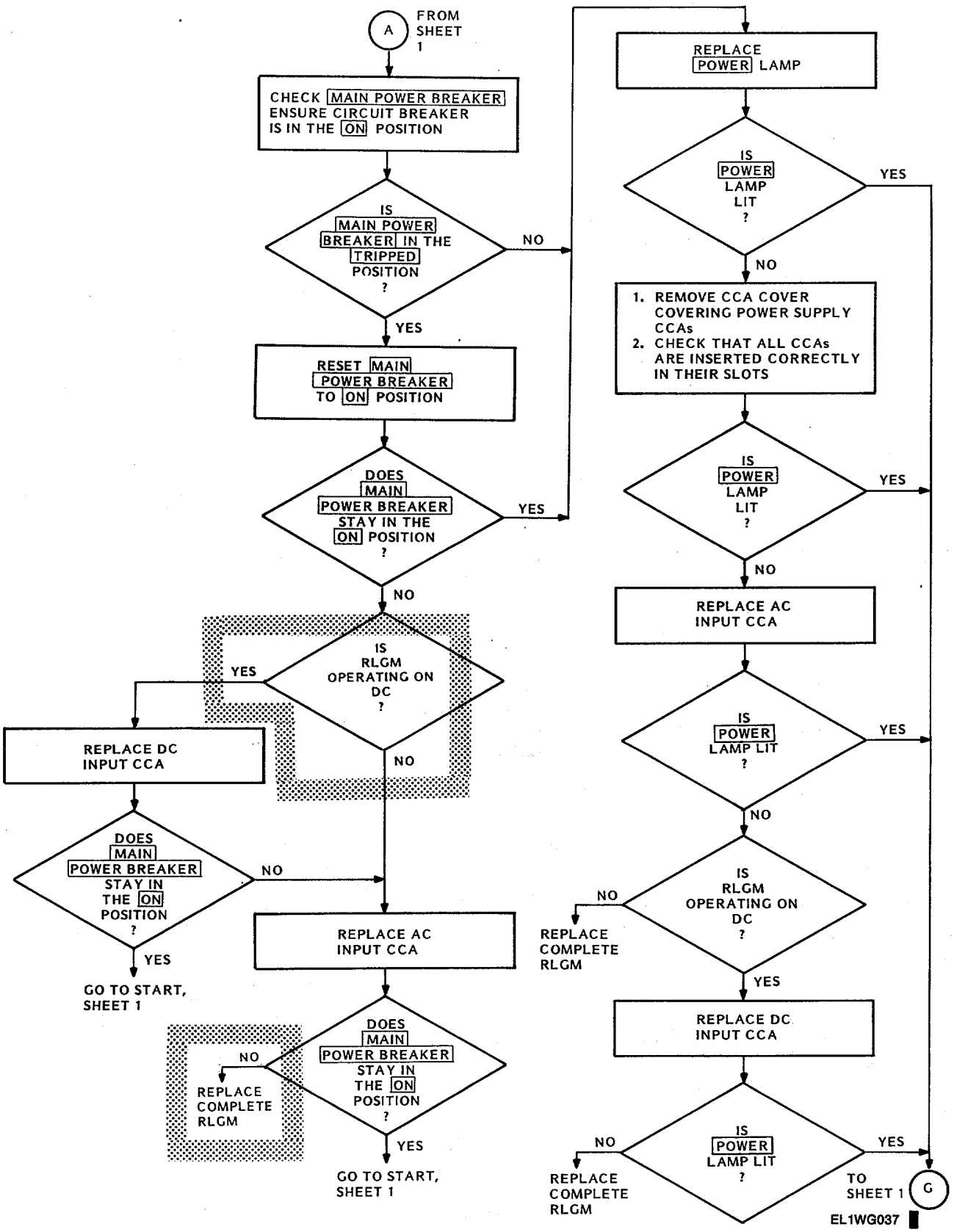
- Note positions of switches on old CCA.
- Set switches on new CCA in same positions.

If faults occur during system setup, check that all switches are properly set.

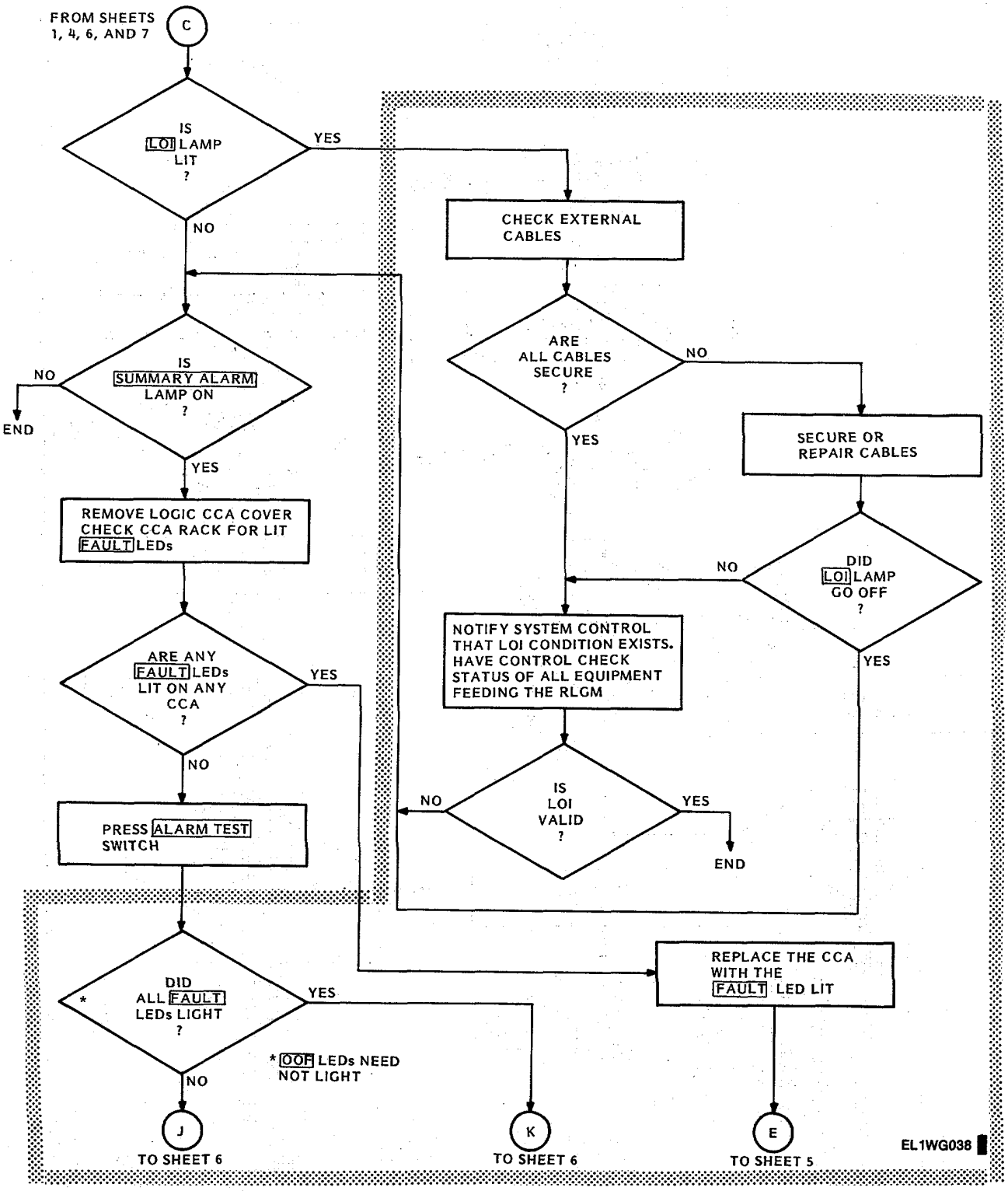
4-10. TROUBLESHOOTING FLOWCHART, LOCAL-Sheet 1 of 7



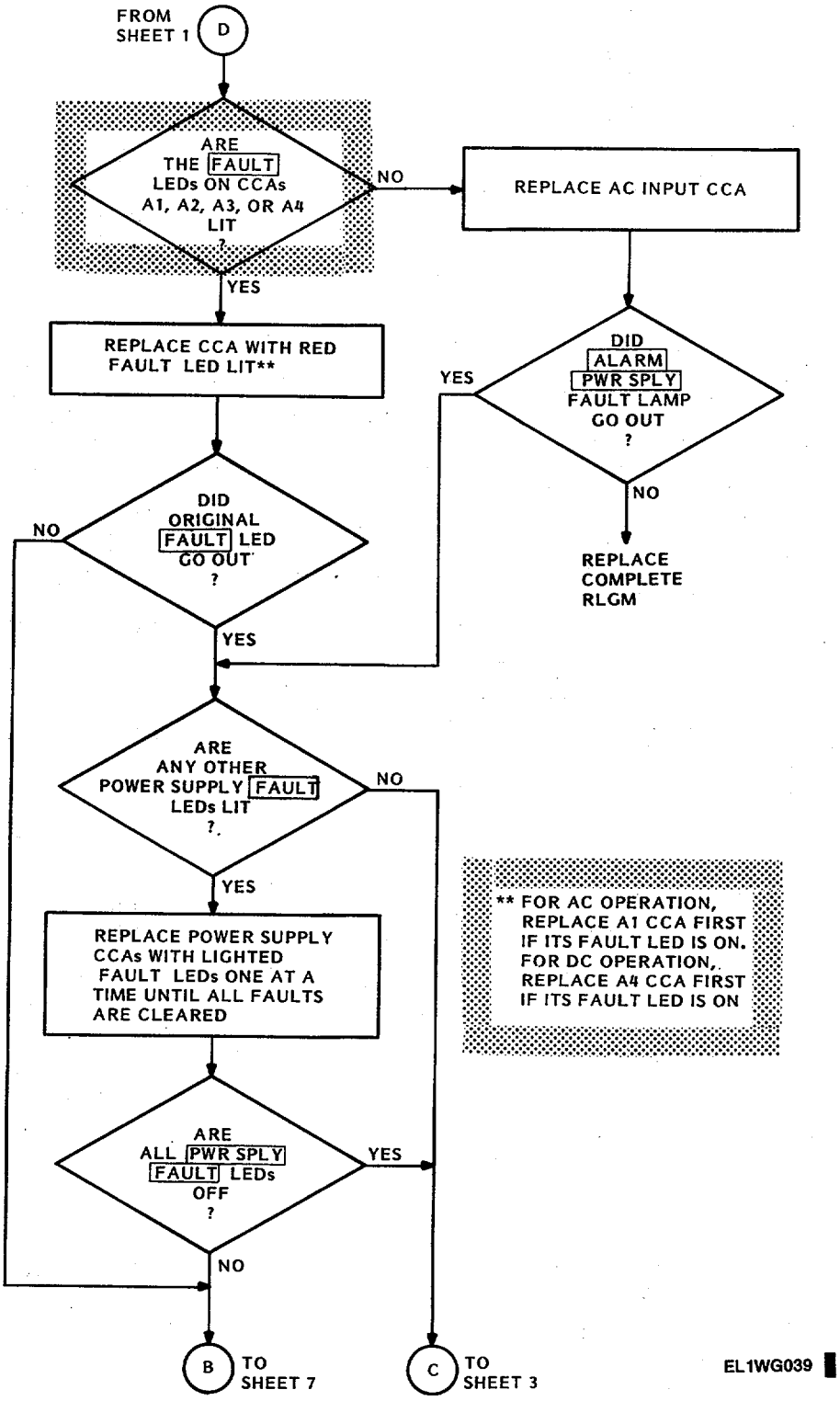
4-10. TROUBLESHOOTING FLOWCHART, LOCAL-Sheet 2 of 7



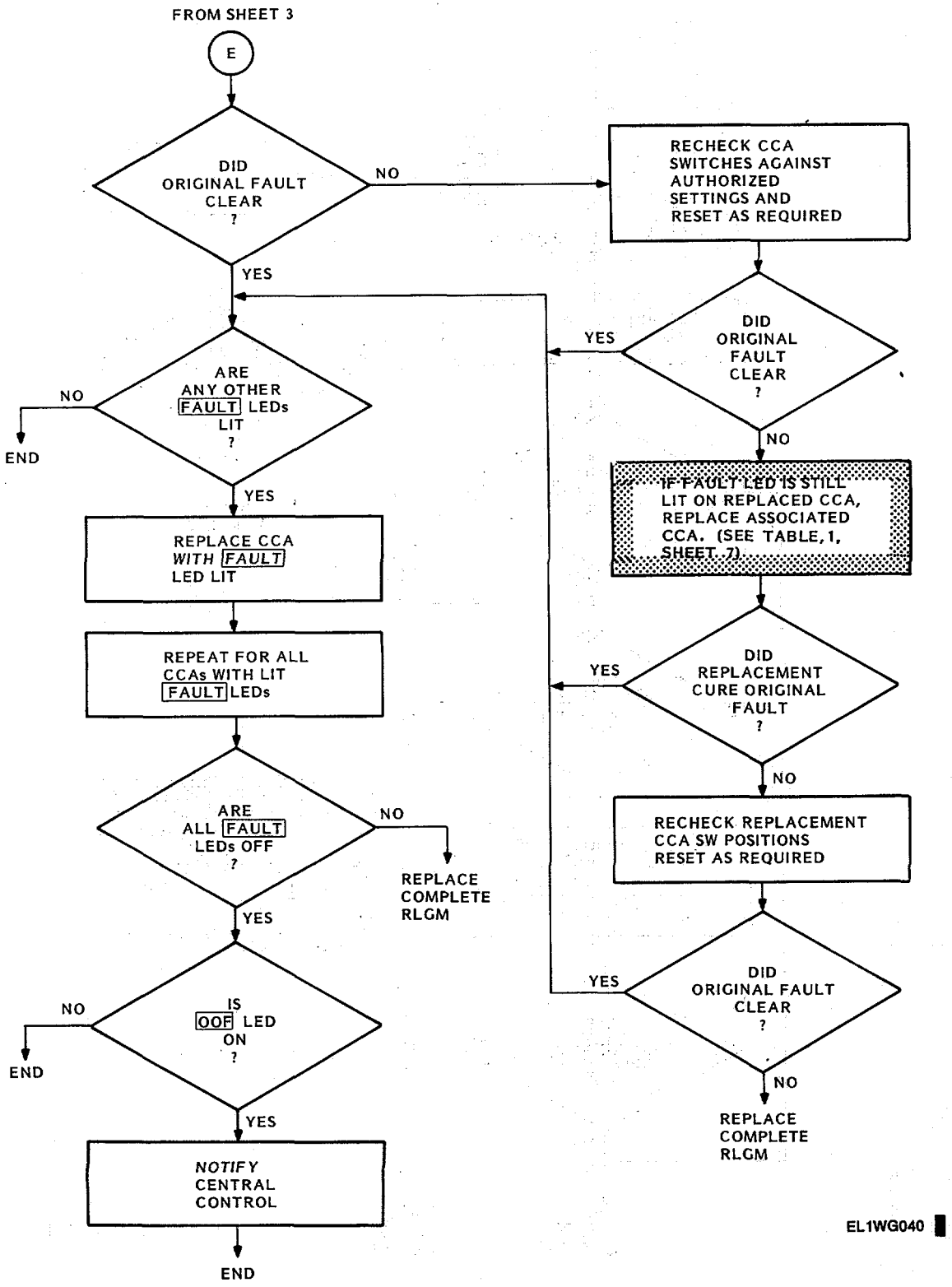
4-10. TROUBLESHOOTING FLOWCHART, LOCAL-Sheet 3 of 7



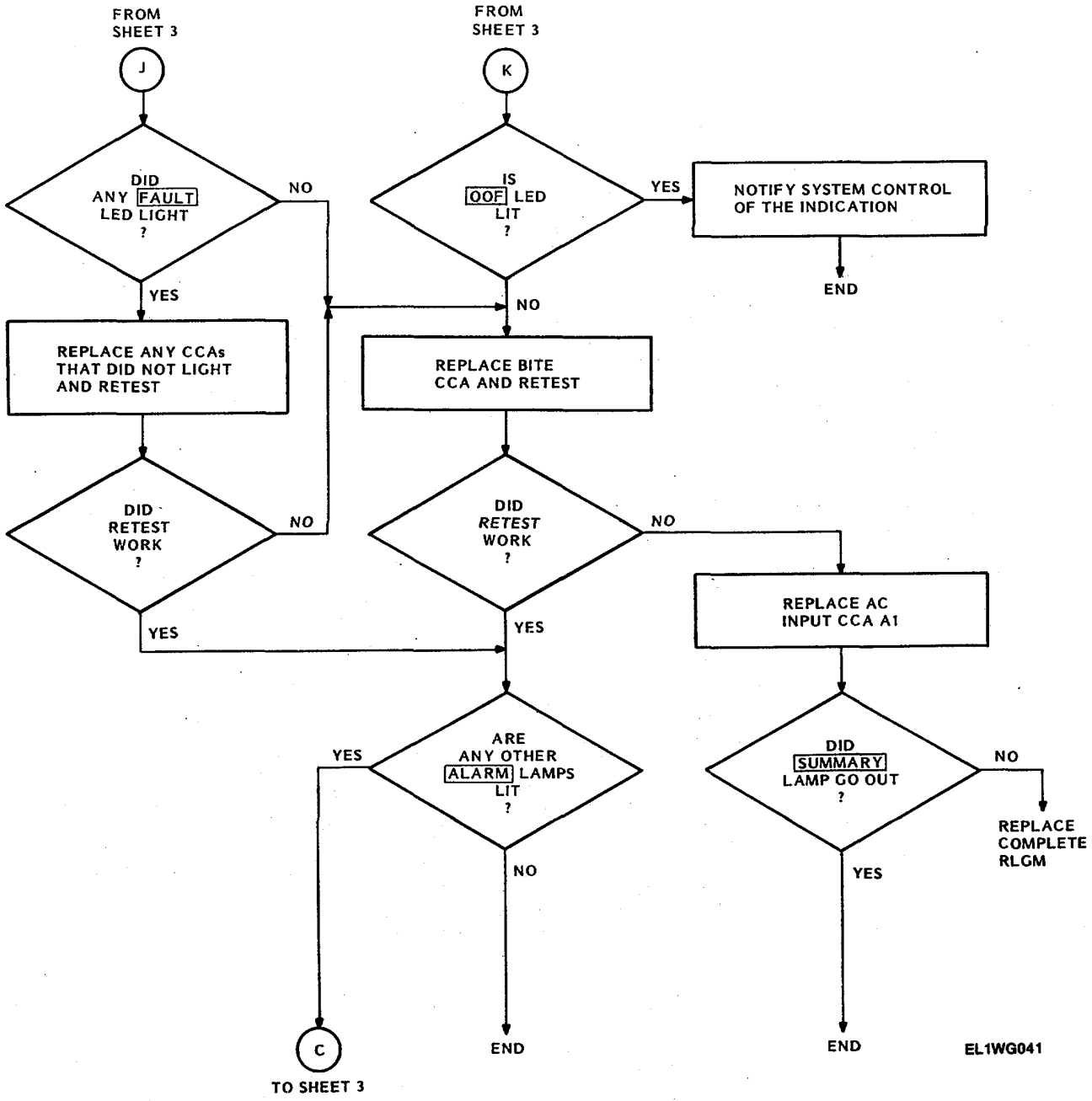
4-10. TROUBLESHOOTING FLOWCHART, LOCAL-Sheet 4 of 7



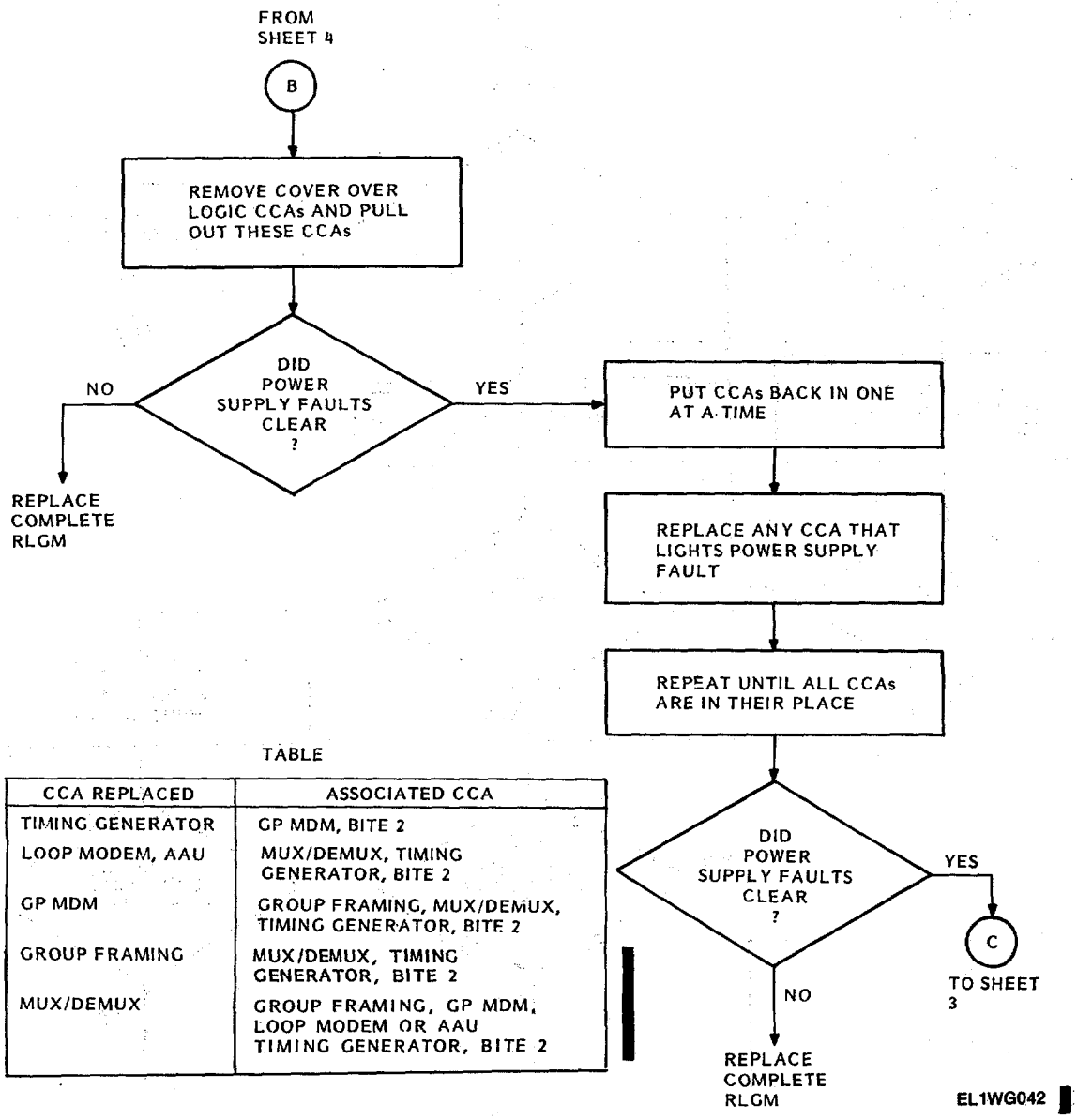
4-10. TROUBLESHOOTING FLOWCHART, LOCAL-Sheet 5 of 7



4-10. TROUBLESHOOTING FLOWCHART, LOCAL-Sheet 6 of 7



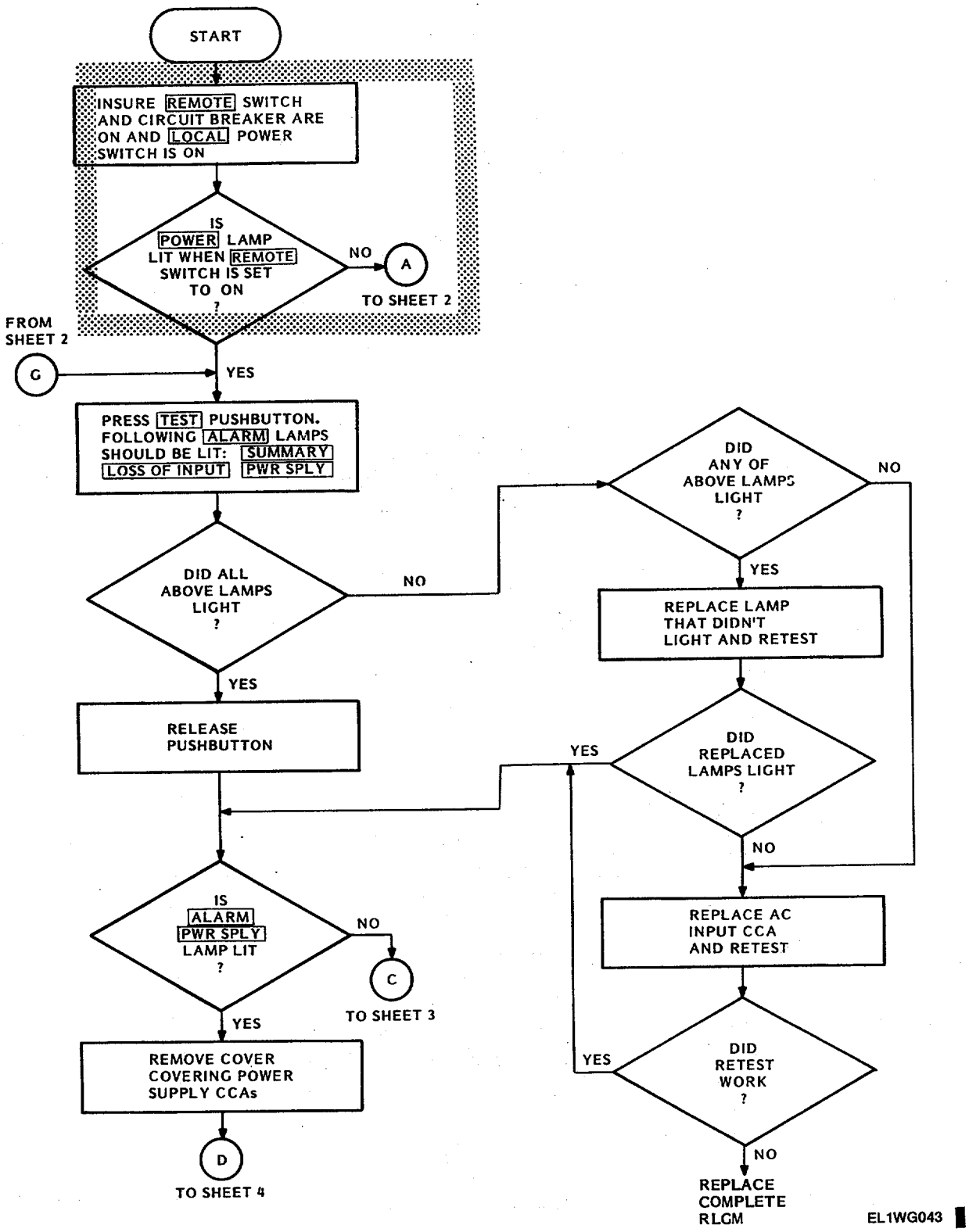
4-10. TROUBLESHOOTING FLOWCHART, LOCAL-Sheet 7 of 7



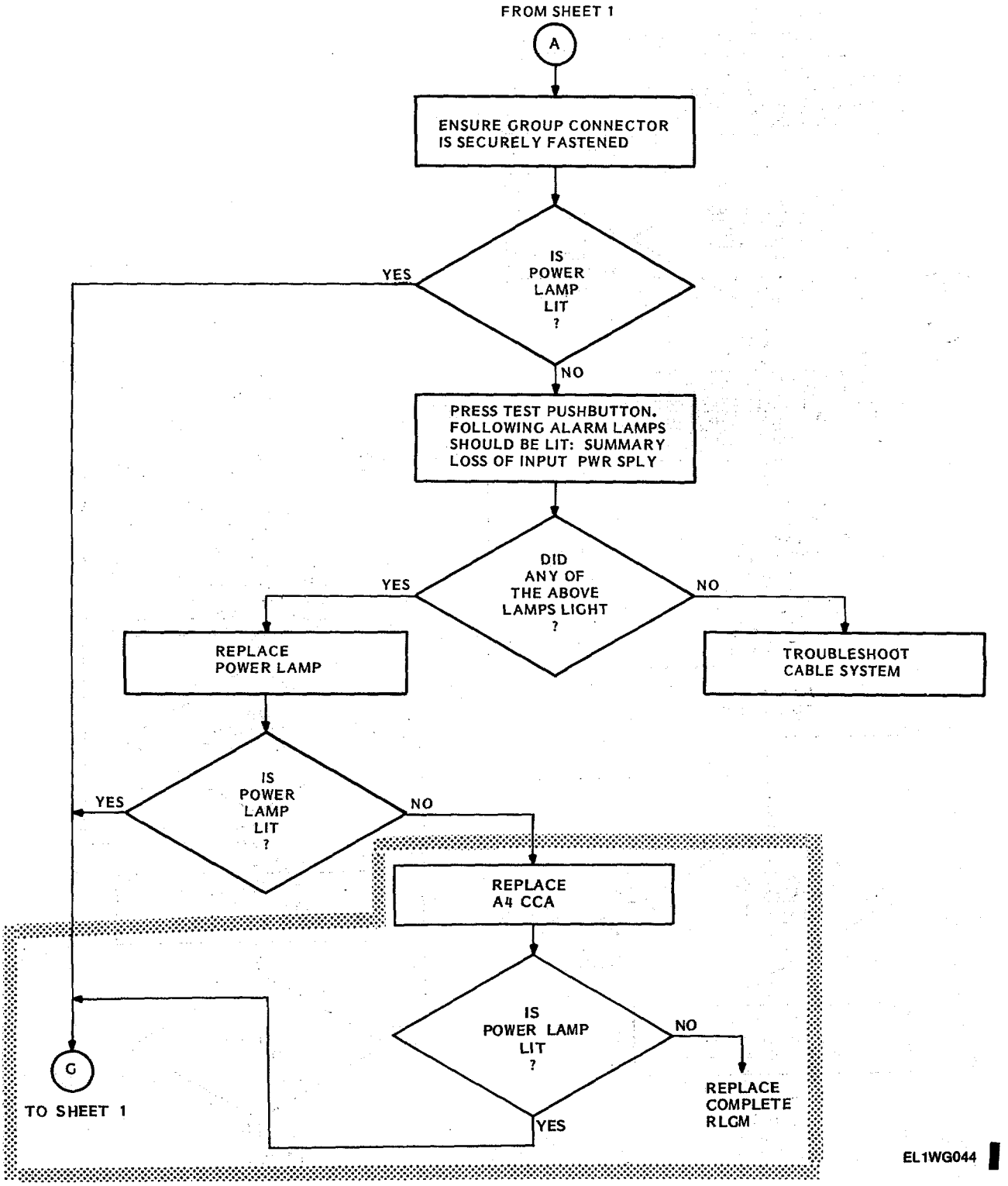
TABLE

CCA REPLACED	ASSOCIATED CCA
TIMING GENERATOR	GP MDM, BITE 2
LOOP MODEM, AAU	MUX/DEMUX, TIMING GENERATOR, BITE 2
GP MDM	GROUP FRAMING, MUX/DEMUX, TIMING GENERATOR, BITE 2
GROUP FRAMING	MUX/DEMUX, TIMING GENERATOR, BITE 2
MUX/DEMUX	GROUP FRAMING, GP MDM, LOOP MODEM OR AAU TIMING GENERATOR, BITE 2

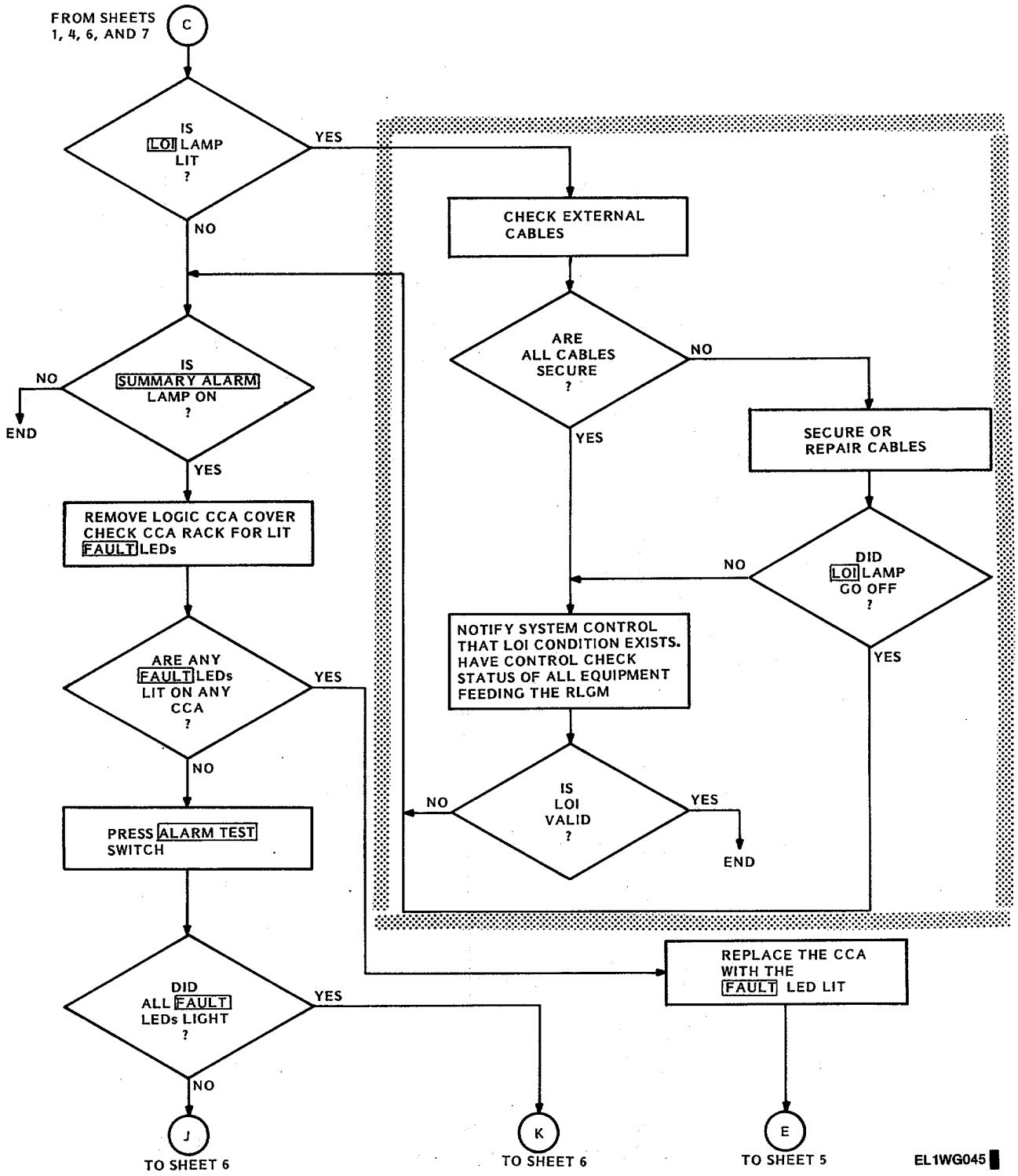
4-11. TROUBLESHOOTING FLOWCHART, REMOTE-Sheet 1 of 7



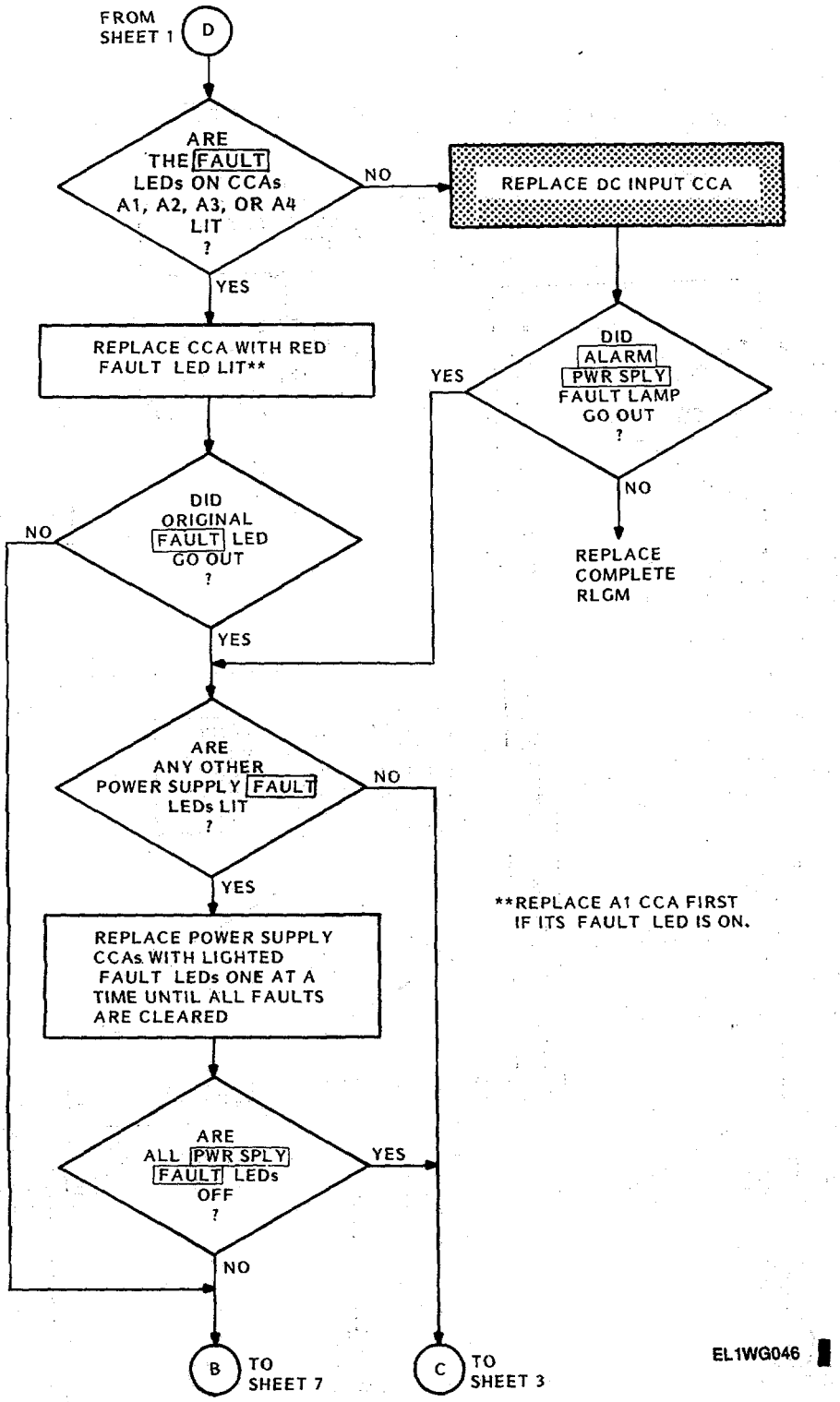
4-11. TROUBLESHOOTING FLOWCHART, REMOTE-Sheet 2 of 7



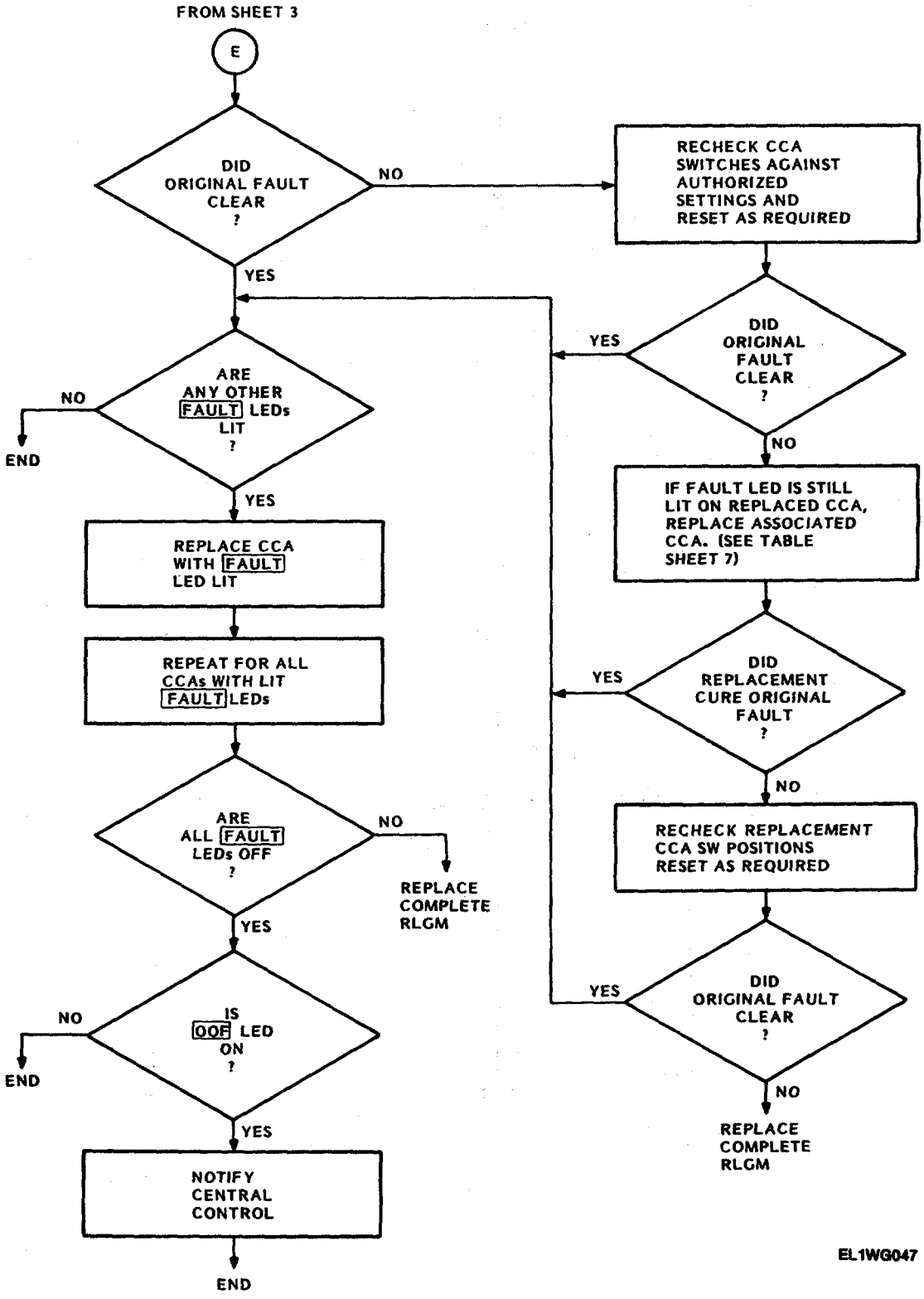
4-11. TROUBLESHOOTING FLOWCHART, REMOTE-Sheet 3 of 7



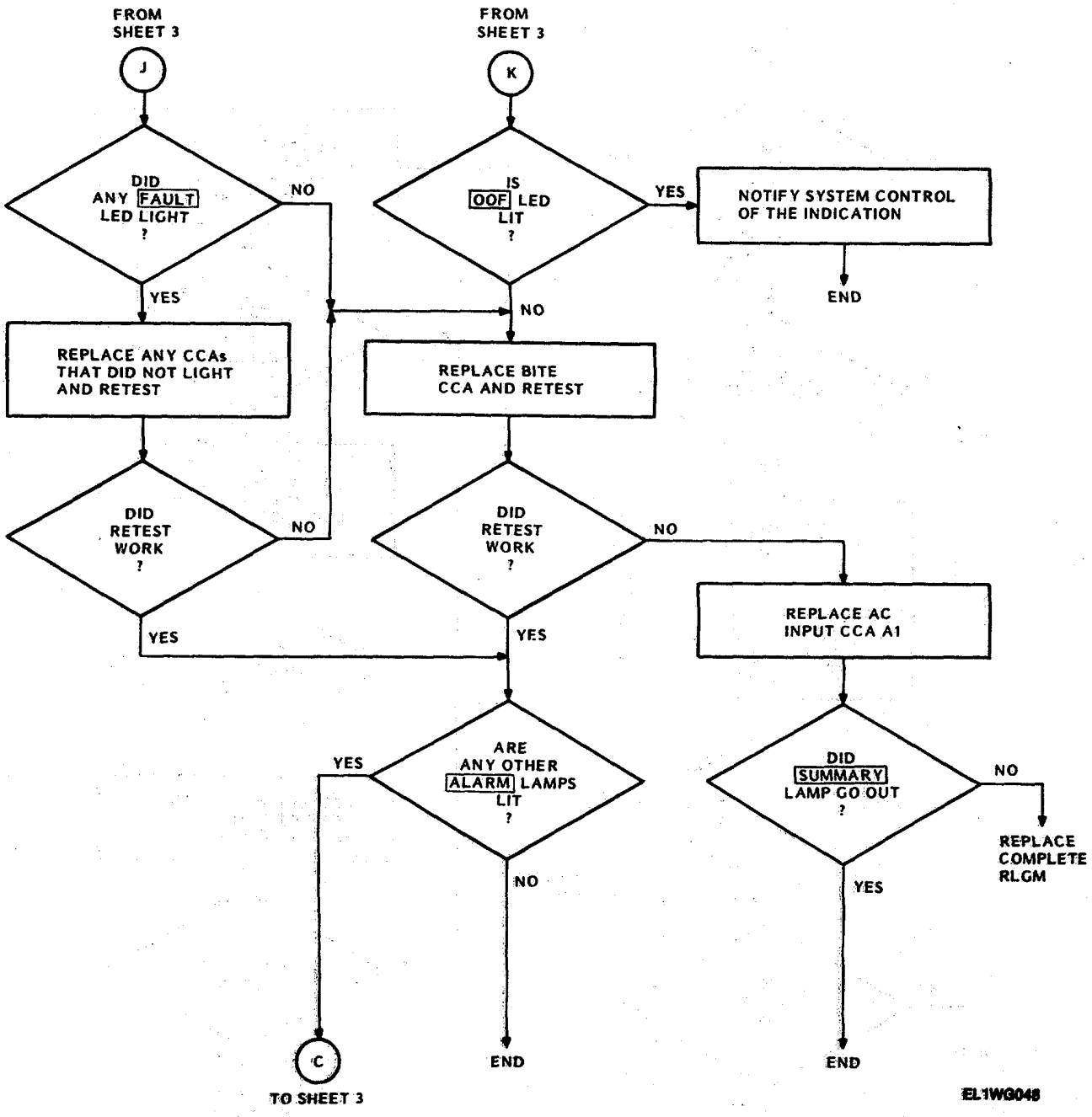
4-11. TROUBLESHOOTING FLOWCHART, REMOTE-Sheet 4 of 7



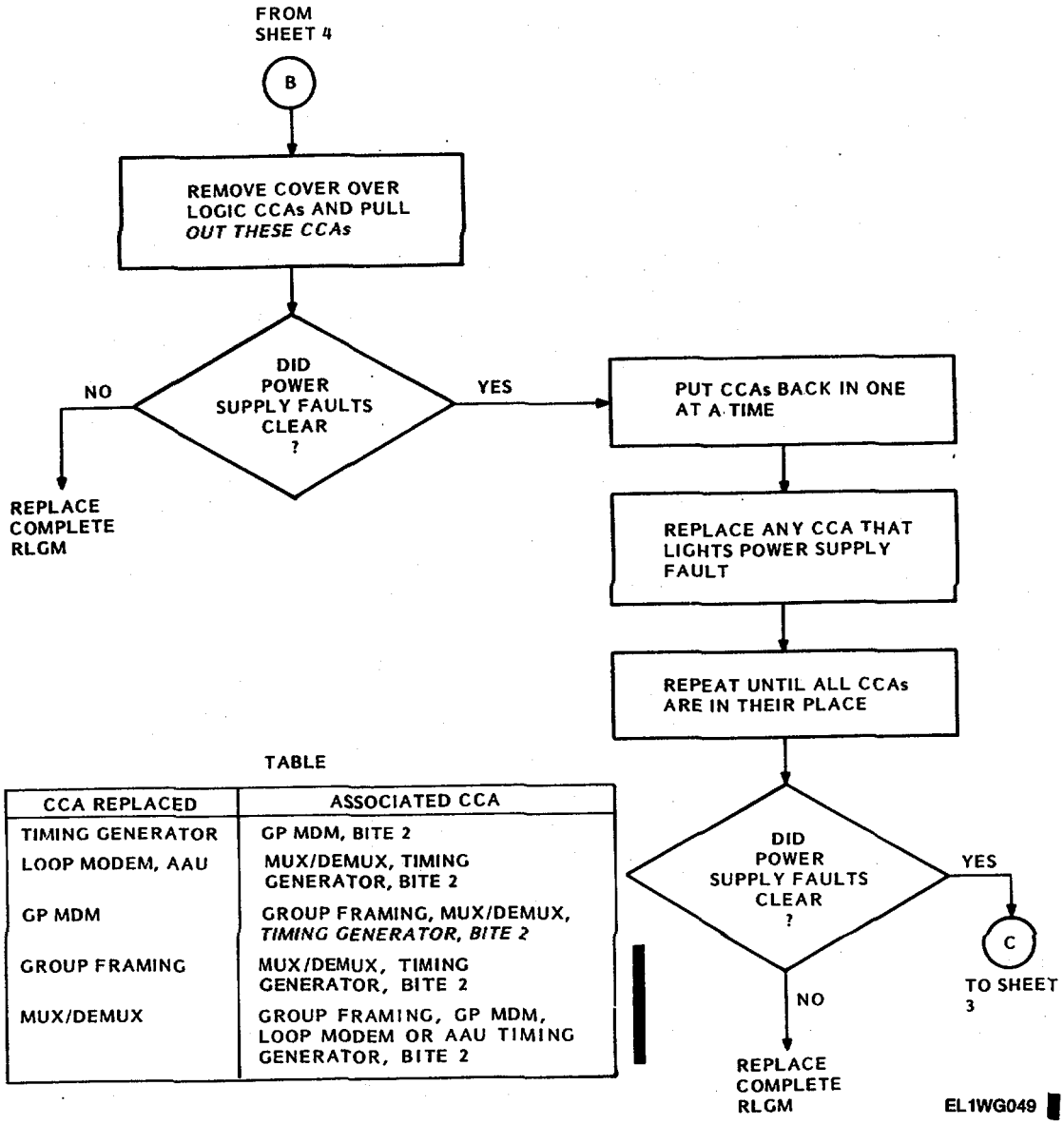
4-11. TROUBLESHOOTING FLOWCHART, REMOTE-Sheet 5 of 7



4-11. TROUBLESHOOTING FLOWCHART, REMOTE-Sheet 6 of 7



4-11. TROUBLESHOOTING FLOWCHART, REMOTE-Sheet 7 of 7



TABLE

CCA REPLACED	ASSOCIATED CCA
TIMING GENERATOR	GP MDM, BITE 2
LOOP MODEM, AAU	MUX/DEMUX, TIMING GENERATOR, BITE 2
GP MDM	GROUP FRAMING, MUX/DEMUX, *TIMING GENERATOR, BITE 2*
GROUP FRAMING	MUX/DEMUX, TIMING GENERATOR, BITE 2
MUX/DEMUX	GROUP FRAMING, GP MDM, LOOP MODEM OR AAU TIMING GENERATOR, BITE 2

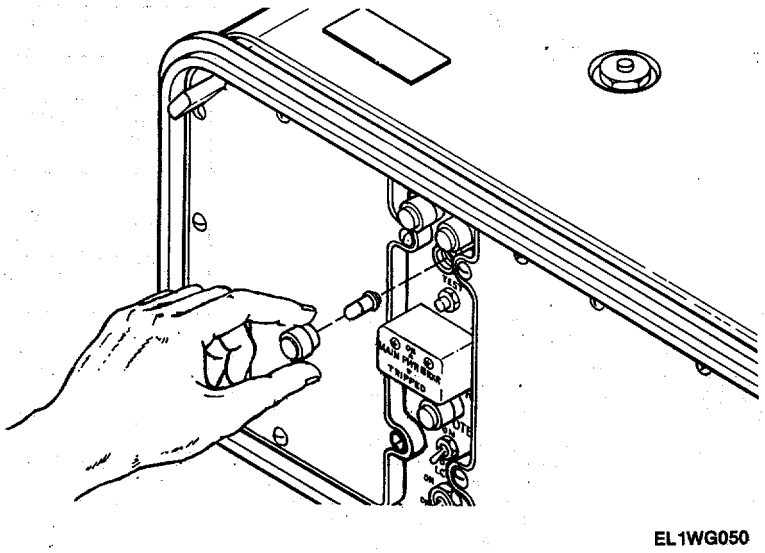
Section V. MAINTENANCE PROCEDURES

4-12. UNIT MAINTENANCE

Unit corrective maintenance of the RLGM consists of removing and replacing those items found to be defective during troubleshooting. These procedures are limited to removal and replacement of lamp bulbs, cover assemblies, and circuit card assemblies.

4-13. REMOVAL AND REPLACEMENT OF LAMPS

Only the lamps for the SMY, PWR SPLY, LOI, and POWER lights are replaceable at the organizational maintenance level.



EL1WG050

REMOVAL

1 Turn lens assembly counterclockwise and remove.

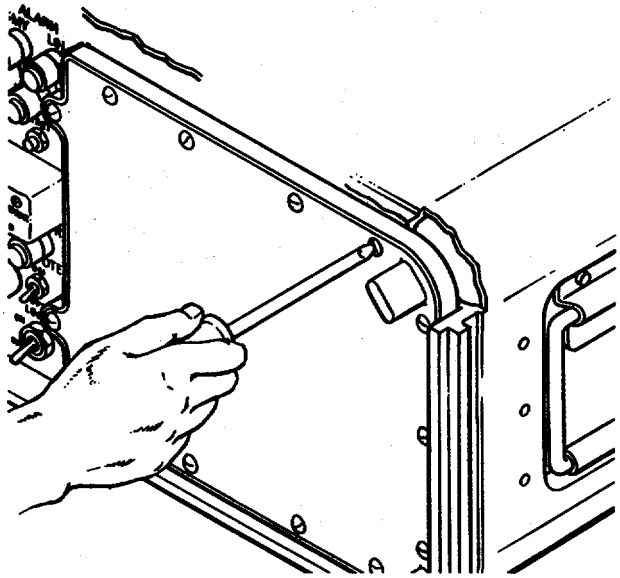
2 Pull lamp loose from lens assembly and remove.

REPLACEMENT

1 Press new lamp into lens assembly.

2 Reinstall lens assembly and turn clockwise to secure.

4-14. REMOVAL AND REPLACEMENT OF LOGIC CCA COMPARTMENT COVER ASSEMBLY



REMOVAL

- Using flat blade screwdriver, loosen 13 captive screws securing CCA cover assembly and remove cover.

REPLACEMENT

- Install CCA cover assembly and secure 13 captive screws. Do not overtighten.

4-15. REMOVAL AND REPLACEMENT OF LOGIC CCAs

CAUTION

Static discharge can damage microcircuit components on CCAs. To avoid this damage, observe the following:

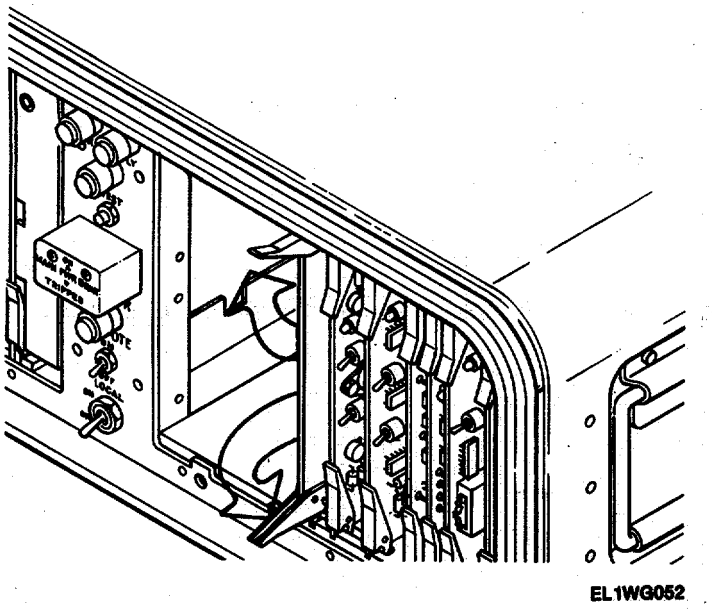
(1) Handle CCAs by their edges only.

(2) Do not wrap, store, or ship CCAs in plastic bags; use containers made of heavy paper or aluminum foil.

(3) Do not rub CCAs against clothing or wipe with a cloth made with synthetic fibers (plastic, acrylic, nylon, etc.).

PRELIMINARY PROCEDURES:

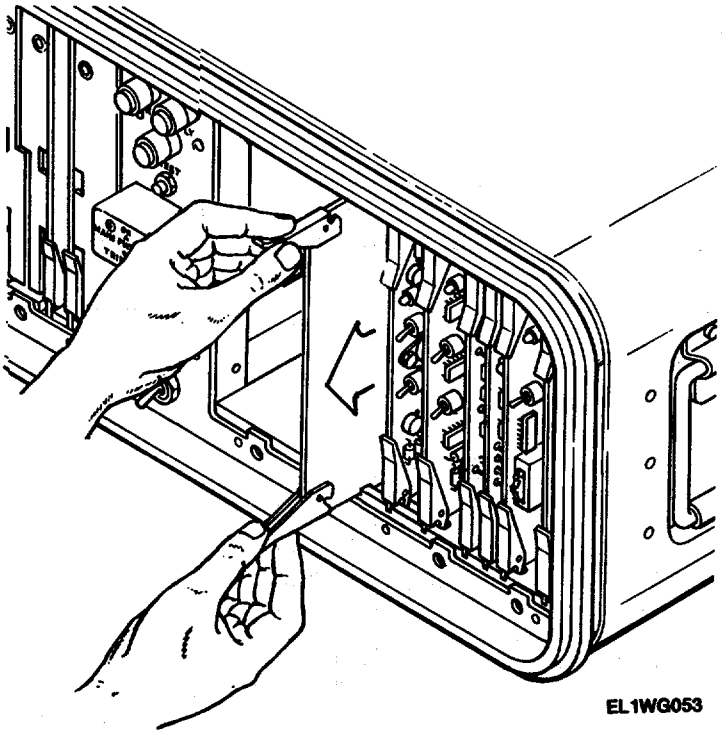
- Remove logic CCA compartment cover (See paragraph 4-14).



REMOVAL

1 Swing out both levers on card at the same time to disengage card from connector.

4-15. REMOVAL AND REPLACEMENT OF LOGIC CCAs-Continued



2 Carefully pull out card.

3 Note positions of any CCA switches.

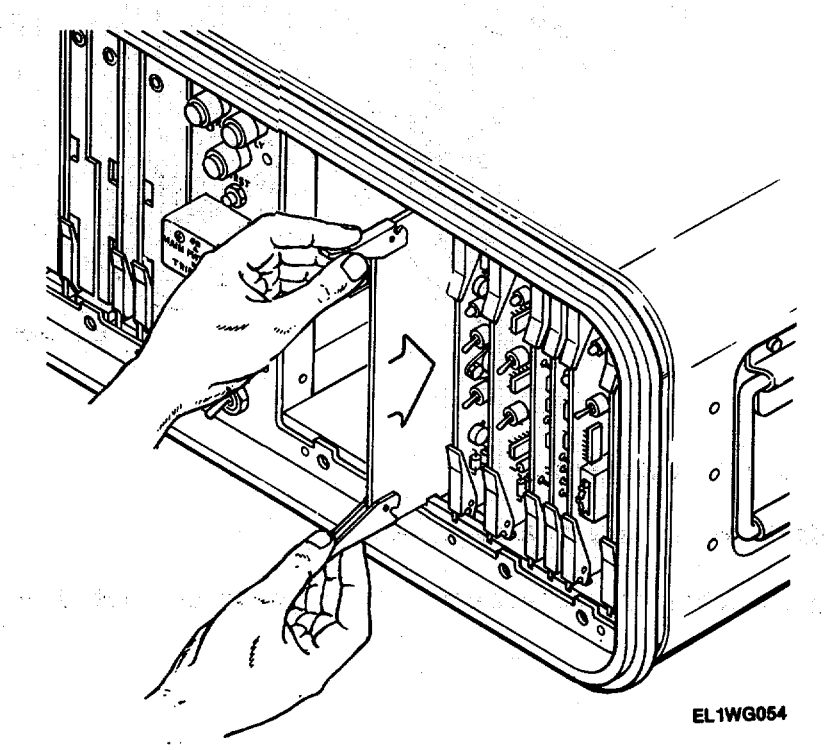
4 Set any switches on replacement CCA to positions noted on removed CCA.

4-15. REMOVAL AND REPLACEMENT OF LOGIC CCAs-Continued

REPLACEMENT

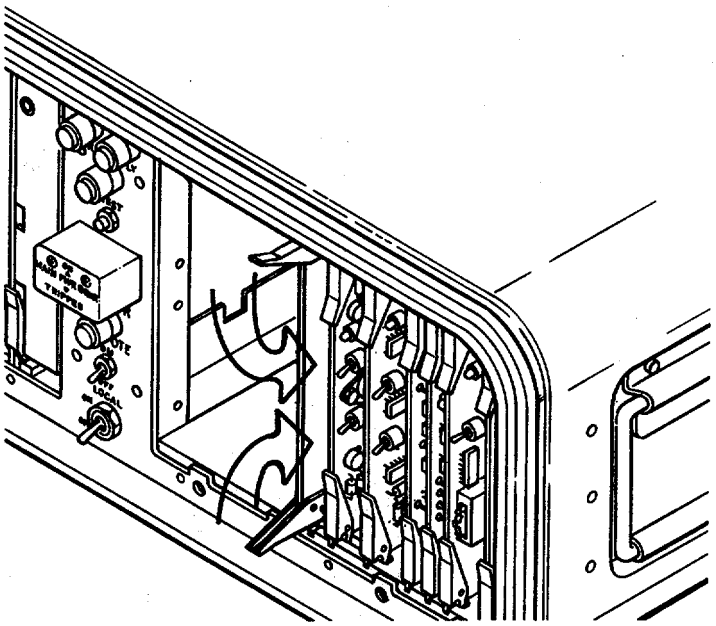
CAUTION

Damage will result if excessive force is used to insert cards. If cards cannot be inserted with reasonable force, insure card identification on card extractor matches that on slot. Insure that levers are straight out before insertion.



1 Aline card in slot and carefully push in. As card begins to engage, levels will begin to move in.

4-15. REMOVAL AND REPLACEMENT OF LOGIC CCAs-Continued



2 When card is properly in place, swing in both levers at the same time to engage card in connector.

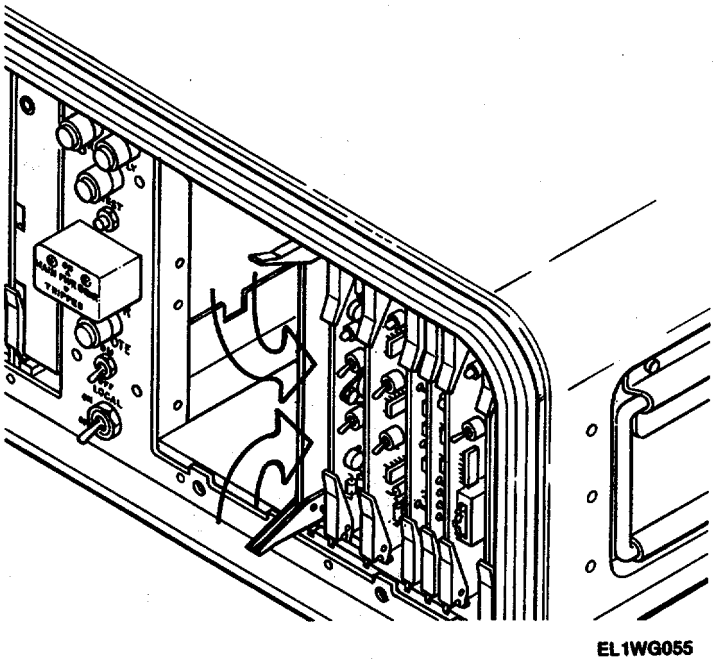
3 Replace logic CCA compartment cover. (See paragraph 4-14.)

4-16. REMOVAL AND REPLACEMENT OF POWER SUPPLY CCA COMPARTMENT COVER ASSEMBLY

WARNING

HIGH VOLTAGE

The high voltage used in this equipment can kill on contact. Ground the equipment. Avoid the 115-volt ac input. Do not service alone. Where possible, use one hand to service.



EL1WG055

REMOVAL

- Using a flat blade screwdriver, loosen seven captive screws securing CCA cover assembly and remove cover.

REPLACEMENT

- Install CCA cover assembly and secure seven captive screws. Do not overtighten.

4-17. REMOVAL AND REPLACEMENT OF POWER SUPPLY CCAs

WARNING

HIGH VOLTAGE
The high voltage used in this equipment can kill on contact. Ground the equipment. Avoid the 115-volt ac input. Do not service alone. Where possible, use one hand to service.

CAUTION

Static discharge can damage-microcircuit components on CCAs. To avoid this damage, observe the following:

(1) Handle CCAs by their edges only.

(2) Do not wrap, store, or ship CCAs in plastic bags; use containers made of heavy paper or aluminum foil.

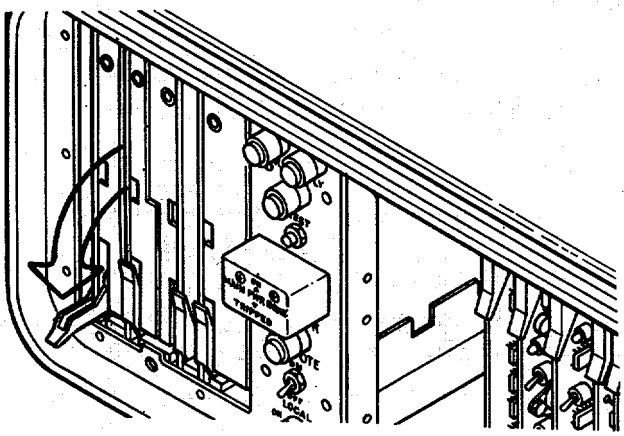
(3) Do not rub CCAs against clothing or wipe with a cloth made with synthetic fibers (plastic, acrylic, nylon, etc.).

PRELIMINARY PROCEDURES

- Set front panel LOCAL or REMOTE ON/OFF switch to OFF.
- Remove power supply CCA compartment cover. (See paragraph 4-15.)

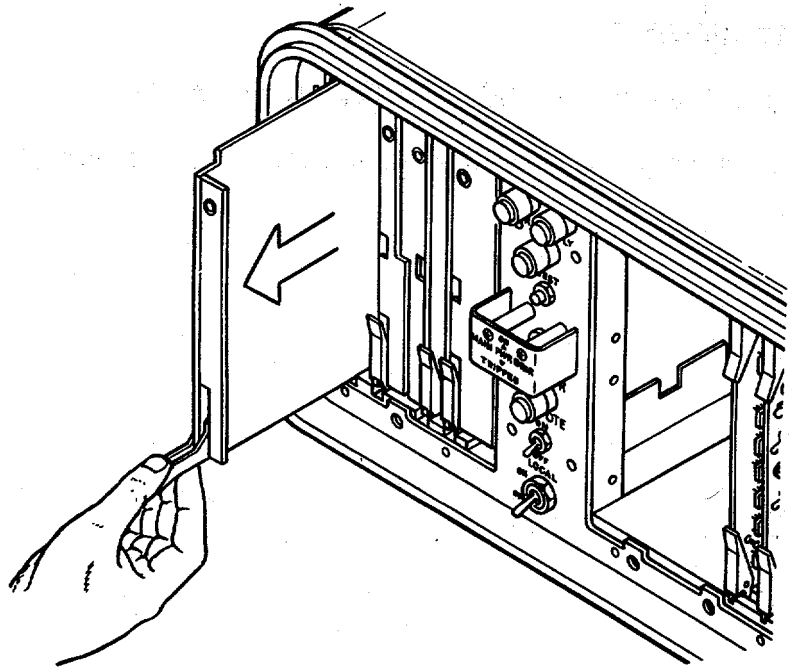
4-17. REMOVAL AND REPLACEMENT OF POWER SUPPLY CCAs-Continued

REMOVAL



EL1WG057

1 Swing out lever on bottom of card.



EL1WG058

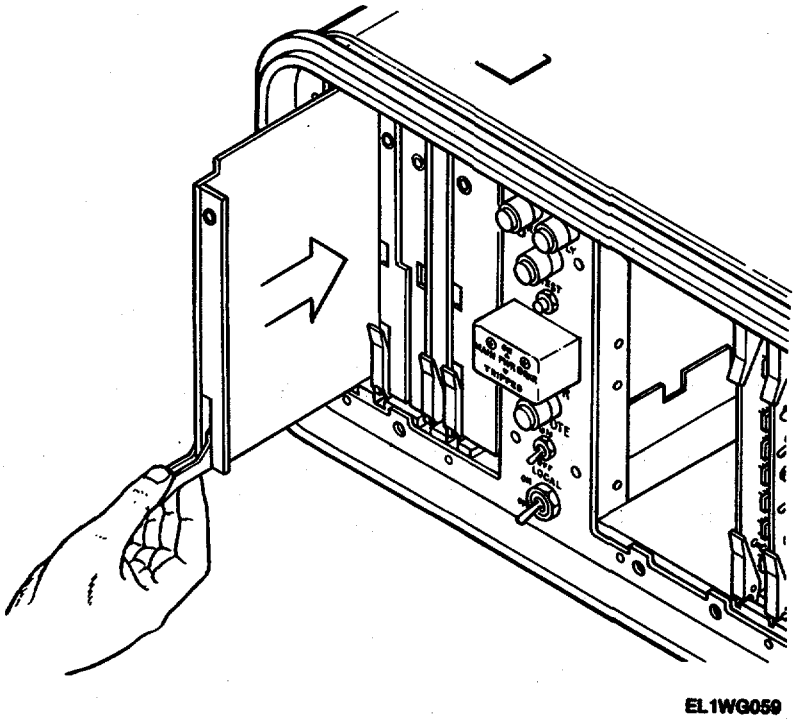
2 Carefully pull out card.

4-17. REMOVAL AND REPLACEMENT OF POWER SUPPLY CCAs-Continued

REPLACEMENT

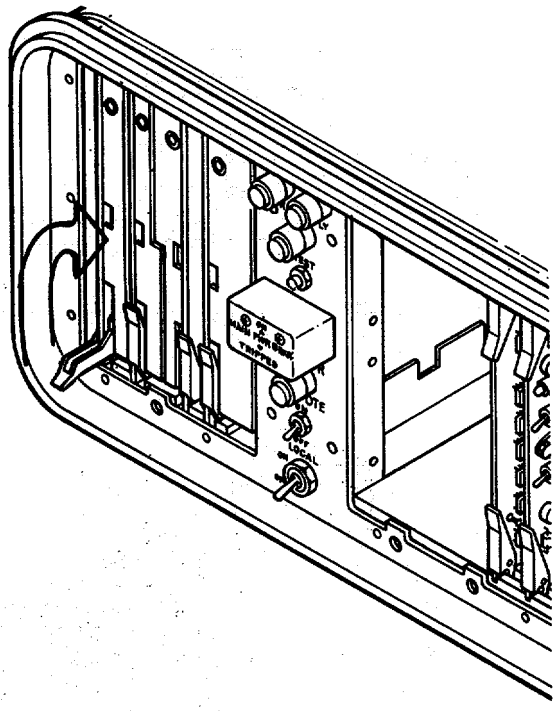
CAUTION

Damage will result if excessive force is used to insert cards.
If cards cannot be inserted with reasonable force, insure card identification on red anodized frame matches that on slot.
Insure that levers are straight out before insertion.



1 Aline card in slot and carefully push in.

4-17. REMOVAL AND REPLACEMENT OF POWER SUPPLY CCAs-Continued



2 When card is properly in place, swing in lever to engage card in connector.

3 Replace power supply CCA compartment cover. (See paragraph 4-16.)

4 Set front panel LOCAL or REMOTE ON/OFF switch to ON.

APPENDIX A
REFERENCES

A-1. SCOPE

This appendix lists all forms, technical publications, and miscellaneous publications referenced in the manual.

A-2. FORMS

Technical Order System Publication Improvement Report and Reply	AFTO Form 22
Recommended Changes to Publications and Blank Forms	DA Form 2028
Recommended Changes to Equipment Technical Publications	DA Form 2028-2
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Discrepancy in Shipment Report (DISREP)	SF 361
Report of Discrepancy (ROD)	SF 364
Material Deficiency Report (Category 1)	DA Form 173
Quality Deficiency Report (Category 2)	SF 368

A-3. TECHNICAL MANUALS

Procedures for Destruction of Electronic Materiel to Prevent Enemy Use (Electronics Command)	TM 750-244-2
Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools Lists (Including Depot Maintenance Repair Parts and Special Tools) for Multiplexer TD-1233(P)/TTC (NSN 5820-01-145-2462)	TM 11-5805-706-24P

A-4. REGULATIONS

Report of Transportation Discrepancies in Shipments	AR 55-38
Reporting of Item and Packaging Discrepancies	AR 735-11-2

A-5. MISCELLANEOUS PUBLICATIONS

Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items)	CTA 50-970
Consolidated Index of Army Publications and Blank Forms	DA Pam 310-1
The Army Maintenance Management System (TAMMS)	DA Pam 738-750
Federal Supply Code for Manufacturers (FSCM)	SB 708-42

APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1 GENERAL

a. This Appendix provides a general explanation of all maintenance and repair functions authorized at various maintenance levels.

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 levels.

c. Section Ill 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. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

e. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment 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.

B-2. MAINTENANCE FUNCTIONS - Continued

f. 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 proper functioning of an equipment or system.

g. 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 third position code of the SMR code.

h. Repair. The application of maintenance services including fault location/ troubleshooting, removal/installation, and disassembly/ assembly procedures, and maintenance actions 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.

i. 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.

j. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like-new condition in accordance with the 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 equipment/components.

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

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

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

c. Column 3, Maintenance Function. This column 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 Level. This column specifies, by the listing of a work time figure in the appropriate subcolumn(s), the level 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 level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels; appropriate

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

work time figures will be shown for each level. 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 levels are as follows:

C	Operator or Crew (Unit Level)
O	Organizational Maintenance (Unit Level)
F	Direct support Maintenance
H	General support Maintenance
D	Depot Maintenance

e Column 5, Tools and Test Equipment. This column 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 code correlates with a code in the MAC, Section II column 5.

b Column 2, Maintenance Level. The lowest level 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.

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 fuction being performed as indicated in the MAC, Section II.

Section II. MAINTENANCE ALLOCATION CHART

MULTIPLEXER TD-1233(P)/TTC

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	C	(4) Maintenance Level Unit O	Direct Support F	General Support H	Depot D	(5) Toots and Equipment Ref Code	(6) Remark Code
00	MULTIPLEXER TD-1233(P)/TTC (PN SM-D-876631)	INSPECT		1.20				10	A
		SERVICE		0.10				10	B
		REPAIR		2.50				10	C
		INSPECT			0.40			11	A
		TEST			0.70			03, 11	D
		REPAIR			1.10			03, 11	E
		INSPECT				1.20		11	A
		TEST				3.30		02,03,05,11	H
		REPAIR				19.90		02,03,05,06, 11	G
		TEST					8.00	02,03,05,12, 13,14,21,25, 30,31,32,33, 35,38,49	J
		REPAIR					20.00	02,03,05,06, 07,08,11,12, 13,14,21,25, 30,31,32,33, 35, 38, 49	K
		OVERHAUL					31.10	02,03,05,06, 07,08,11,12, 13,14, 21, 25, 30,31,32,33, 35,38,49	F
01	AC INPUT CCA (PN SM-D-884579)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT				0.10		11	HT1
		TEST				0.30		02,03,05	HT3
		REPAIR				1.20		02,03,05,06,11	HT2
02	MULTI VDC CCA (PN SM-D-884567)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT				0.10		11	HT1
		TEST				0.30		02,03,05	HT3
		REPAIR				1.20		02, 03, 05, 06, 11	HT2
03	52 VDC CCA (PN SM-D-884571)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT				0.10		11	HT1
		TEST				0.30		02,03,05	HT3
		REPAIR				1.20		02,03,05,06,11	HT2
04	DC INPUT CCA (PN SM-D-884575)	INSPECT		0.10				10	OT1
		REPLACE		0.20				10	OT2
		INSPECT					0.10	11	DT1
		TEST					0.30	03,05	DT6
		REPAIR					1.20	03,05,06,11	DT5

Section II. MAINTENANE ALLO CATION CHART
FOR
MULTIPLEXER TD-1233(P)/TTC (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level					(5) Tools and Equipment Ref Code	(6) Remarks Code
			Unit		Direct Support	General Support	Depot		
			C	O	F	H	D		
05	BITE 2 CCA	INSPECT		0.10				10	OT1
	(PN SM-E-986241)	REPLACE		0.20				10	OT2
		INSPECT				0.10		11	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				2.10		02,03,05,06,11	HT2
06	LOOP MODEM CCA	INSPECT		0.10				10	OT1
	(PN SM-E-986235)	REPLACE		0.20				10	OT2
		INSPECT				0.10		11	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				2.20		02, 03, 05, 06, 11	HT2
07	MUX/DEMUX CCA	INSPECT		0.10				10	OT1
	(PN SM-E-986247)	REPLACE		0.20				10	OT2
		INSPECT				0.10		11	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				2.10		02, 03, 05, 06, 11	HT2
08	GROUP FRAMING CCA	INSPECT		0.10				10	OT1
	(PN SM-E-986250)	REPLACE		0.20				10	OT2
		INSPECT				0.10		11	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				2.10		02, 03, 05, 06, 11	HT2
09	TIMING GENERATOR CCA	INSPECT		0.10				10	OT1
	(PN SM-E-986239)	REPLACE		0.20				10	OT2
		INSPECT				0.10		11	HT1
		TEST				0.30		02,03,05	HT3
		REPAIR				2.20		02,03,05,06,11	HT2
IO	GROUP FRAMING CCA	INSPECT		0.10				IO	OT1
	(PN SM-E-986232)	REPLACE		0.20				IO	OT2
		INSPECT					0.10	11	DT1
		TEST							DT6
		REPAIR					2.20	03,05,06,11	DT5
11	ANALOG APPLIQUE UNIT CCA	INSPECT		0.10				10	OT1
	(PN SM-D-959323)	REPLACE		0.20				10	OT2
		INSPECT				0.10		11	HT1
		TEST				0.30		02, 03, 05	HT3
		REPAIR				2.20		02, 03, 05, 06, 11	HT2

Section II. MAINTENANCE ALLOCATION CHART
FOR
MULTIPLEXER TD-1233(P)/TTC (Continued)

(1) Group Number	(2) Component/Assembly	(3) Maintenance Function	(4) Maintenance Level: Unit C	Unit O	Direct SUPPORT F	General Support H	Depot D	(5) Tools and Equipment Ref Code	(6) Remarks Code
12	REMOTE LOOP GROUP MULTIPLEXER SUBASSEMBLY (PN SM-E-986285)	INSPECT			0.30			11	FT1
		TEST			0.60			03,11	FT2
		REPAIR			0.90			03,11	FT3
		INSPECT					0.70	11	DT1
		TEST					1.30	03,11,21	DT2
		REPAIR						03,06,07,08,11 21	DT3
1201	REAR COVER SUBASSEMBLY (PN SM-E-985941)	INSPECT			0.10			11	FT1
		TEST			0.20			03,11	FT2
		REPAIR			0.20			03,11	FT3
		REPLACE			0.20			11	FT4
		INSPECT					0.20	11	DT1
		REPAIR					1.20	03,06,08,11,21	DT3
		TEST					0.30	03,11,21	DT2
1202	CONNECTOR PLATE LOGIC (PN SM-D-985949)	INSPECT					0.10	11	DT1
		REPAIR					0.60	03,06,08,11	DT3
		TEST					0.20	03,11	DT2
1203	INTERFACE AND BACKPLANE ASSEMBLY (PN SM-E-985960)	INSPECT			0.10			11	FT1
		TEST			0.20			03,11	FT2
		REPAIR			**0.50**			03,11	FT3
		INSPECT					0.30	11	DT1
		TEST					**3.10**	**03,11**	DT2
		REPAIR					0.60	03,06,07,08,11	DT3
120301	INTERFACE PANEL, POWER SUPPLY (PN SM-D-985962)	INSPECT					0.10	11	**DT1**
		REPAIR					1.00	03,06,08,11	DT3
		TEST					**0.20**	03,11	**DT2**
120302	BACKPLANE (PN SM-D-985961)	INSPECT					0.10	11	**DT1**
		REPLACE					0.70	11	DT4
		REPAIR					0.80	03,06,11	DT3
		TEST					0.20	**03,11**	DT2

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR MULTIPLEXER TD-1233(P)/TTC

TOOL OR TEST EQUIPMENT REF. CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER
02	H,D	TEST STATION, ELECTRONIC EQUIPMENT, AN/USM-410 (V)3, OR EQUIVALENT, WITH INTERFACE ADAPTERS	6625-01-077-5452
03	F,H,D	MULTIMETER DIGITAL, AN/PSM-45A**	6625-01-265-6000
05	H,D	OSCILLOSCOPE, OS-261C(V)1/U OR EQUIVALENT	6625-01-119-7314
06	H,D	BENCH REPAIR FACILITY, PACE PRC-350C**	3439-00-196-0703
07	D	WIREWRAP TOOL, GARDNER DENVER, 14 X A2 W/SLEEVE, BIT, AND UNWRAPPING TOOL FOR AWG 30 WIRE	—
08	D	CONTACT TOOL KIT***	—
10	0	TOOL KIT, ELECTRONIC EQUIPMENT, TK-101/G	5180-00-064-5178
11	F, H, D	TOOL KIT, ELECTRONIC EQUIPMENT, TK-105/G*	5180-00-610-8177
12	D	DIGITAL DATA GENERATOR, SG-1139/G	6625-01-136-2046
13	D	TRANSMISSION TEST SET, HP-3551A	6625-01-062-0176
14	D	BREAKOUT TEST CABLES, G285556-1 WITH POWER FEED/LOAD ADAPTER BOX, G285892	
21	D	SURGE ARRESTOR TEST SET, TS-3684()/T	5895-01-044-5332
25	D	+28 VOLT DC SOURCE, LK343-A-FM	6130-00-245-3251
30	D	SIGNAL GENERATOR, HP-8660C OPT. 001, 3	6625-01-003-7414
31	D	RF PLUG-IN, HP-86601A	6625-01-008-2166
32	D	AUXILIARY PLUG-IN, HP-86631B	6625-00-356-3172
33	D	PLUSE GENERATOR, SG-1105/U	6625-01-010-3524
35	D	180V DC POWER SUPPLY	
38	D	MODEM, CABLE DRIVER, MD-1025/G	5120-01-145-4905
49	D	UUT POWER CABLE, G227705	

Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS

MULTIPLEXER TD-1233(P)/TTC (Continued)

TOOL OR TEST REF. CODE	MAINTENANCE LEVEL	NOMENCLATURE	STOCK NUMBER
		NOTES	
		*ITEM 11, ADDITIONAL HAND TOOLS REQUIRED,	
		NOT SUPPLIED IN TK-105/G:	
		CROSS TIP SREWDRIVER NO. 4	
		SOCKET WRENCH SET	5120-00-542-5799
		SOCKET WRENCH, 5/8"	5120-00-542-4571
		SCREWDRIVER, FLAT-TIP, 3/8"	5120-00-237-6985
		OPEN END WRENCH, 9/16"	5120-00-277-9517
		**OR AIR FORCE EQUIVALENT	
		*** ITEM 8, CONNECTOR TOOLS REQUIRED:	
		CRIMPING TOOL M22520/1-01	5120-00-165-3912
		LOCATOR TOOL M225201/1-02	5120-00-016-6382
		INSERTION TOOL MS24256A20	5120-00-079-4598
		EXTRACTOR TOOL MS24256R20	5120-00-079-4601
		CRIMPING TOOL AMP #90222-6	5120-01-068-0745
		EXTRACTOR TOOL AMP #91092-1	5120-01-332-6147
		LOCATOR TOOL M22520/1-04	5120-00-016-7852
		INSERTER TOOL MS27495A20	5120-00-177-6967
		INSERTION/EXTRACTOR TOOL MS27534-20	5120-01-335-8730
		EXTRACTOR TOOL MS27495R20	5120-00-177-6966

Section IV. REMARKS FOR ' MULTIPLEXER- TD-1233(P)ITTC

REF CODE	REMARKS
	MAINTENANCE TASKS (DETAILED)
A	VISUALLY INSPECT UNIT/ASSEMBLY FOR EXTERNAL DAMAGE, CRACKS, CORROSION, ETC. USE AUTHORIZED TOOL KIT (TK-101/G OR TK-105/G). NO. 4 CROSS TIP SCREWDRIVER AND 112" OPEN END WRENCH AS NECESSARY. REPAIR BY REPLACEMENT OF FRONT PANEL COMPONENTS, REAR CONNECTOR ASSEMBLY, AND COMPONENTS AUTHORIZED AT DS ONLY WHEN A VISUAL INSPECTION SHOWS A COMPONENT TO BE DAMAGED.
B	SERVICE EXTERIOR UNIT- CLEAN, DUST, AND REMOVE DIRT, GREASE, FUNGUS, ETC., AS NECESSARY.
C	USING TK-101/G TOOL KIT. REMOVE COVER ASSEMBLY. FAULT LOCATE BY OBSERVING EACH CCA FOR AN ILLUMINATED LED (BITE INDICATION). TEST EXTERNAL LAMP CIRCUITS. CHECK SWITCHES FOR PROPER INDICATION AND FREEDOM OF MOVEMENT. REPAIR OF UNIT LIMITED TO REPLACEMENT OF LAMP BULBS AS REQUIRED AND REPLACEMENT OF CCAs WHEN AUTHORIZED IN RPSTL. GOOD CCAs WHICH ARE REPLACED DURING TROUBLESHOOTING PROCEDURES MUST NOT BE EVACUATED. AFTER FAULTY CCA IS LOCATED, ALL CCAs REMOVED FROM UNIT, WHICH ARE NC RESPONSIBLE' FOR THE FAULT, MUST BE RETURNED TO THE UNIT.
D	USING TK-105/G TOOL KIT, NO. 4 CROSS TIP SCREWDRIVER, 1/2" OPEN END WRENCH, AND AN/PSM-45A AS NECESSARY, CHECK FRONT PANEL CONTROL AND INDICATORS, AND REAR CONNECTORS AND TEST BY MAKING APPROPRIATE CONTINUITY CHECKS (ONLY AFTER REPAIR HAS BEEN COMPLETED).
E	REPAIR OF UNIT LIMITED TO REPLACEMENT OF REAR CONNECTOR ASSEMBLY, SWITCHES, AND COMPONENTS USING THE TK-105/G TOOL KIT. NO. 4 CROSS TIP SCREWDRIVER. AND 1/2" OPEN END WRENCH AS NECESSARY (ONLY AFTER VISUAL INSPECTION SHOWS DAMAGE). AFTER REPAIR. TEST UNIT FOR CONTINUITY.
F	OVERHAUL OF UNIT AT DEPOT CONSISTS OF THE INSPECTION. TEST, AND REPAIR/REPLACEMENT OF CASE ASSEMBLY MOUNTED COMPONENTS AND CONNECTOR ASSEMBLY COMPONENTS AND THE REPLACEMENT OF ALL CIRCUIT CARD ASSEMBLIES. THE OVERHAUL OF THIS UNIT MAY USE ALL AUTHORIZED TOOLS AND TEST EQUIPMENT INDICATED ON THIS MAC.
G	FOR APPROVEd SRAs ONLY. USING AN/USM-410 TEST STATION, AN/PSM-45A DIGITAL MULTIMETER. AND OS-261C(V)1/U OSCILLOSCOPE. FAULT LOCATE/TROUBLESHOOT CCA. THEN USING TK-10510 TOOL KIT AND PRC-350C BENCH REPAIR FACILITY, REPAIR CCA REPLACING FAULTY COMPONENTS. TEST ITEM AFTER REPAIR. NOTE: PAINT STRIPPER, ISOPROPYL ALCOHOL, AND EPOXY MAY BE USED AS REQUIRED TO STRIP, CLEAN, AND TOUCH UP AFFECTED AREAS OF THE CCA.
H	USING AN/USM-410 TEST STATION, AN/PSM-45A DIGITAL MULTIMETER, AND OS-261C(V)1/U OSCILLOSCOPE. TEST CCA.
J	TEST UNIT IN ACCORDANCE WITH DMWR PROCEDURES.
K	REPAIR CONSISTS OF REPAIR/REPLACEMENT OF DEFECTIVE CASE MOUNTED COMPONENTS, CONNECTOR ASSEMBLY COMPONENTS, AND CIRCUIT CARD ASSEMBLIES.
	ORGANIZATIONAL MAINTENANCE TASKS (DETAILED)
OT1	USING TK-10110 TOOL KIT AS REQUIRED, VISUALLY INSPECT CCA OR ASSEMBLY FOR BITE INDICATION. DAMAGE, DEFECTS, CRACKS, CORROSION, AND DAMAGED SWITCHES.
OT2	USING TK-10110 TOOL KIT, REMOVE COVER ASSEMBLY AS NECESSARY, THEN REMOVE AND REPLACE FAULTY CCAs OR ASSEMBLIES AS REQUIRED.

Section IV. REMARKS FOR MULTIPLEXER TD-1233(P)/TTC (Continued)

REF CODE	REMARKS
	DIRECT SUPPORT MAINTENANCE TASKS (DETAILED)
FT1	USING TK-105/G TOOL KIT AS NECESSARY, VISUALLY INSPECT ASSEMBLY FOR EXTERNAL DAMAGE, CRACKS, CORROSION, AND DAMAGED SWITCHES.
FT2	USING TK-105/G TOOL KIT AND AN/PSM-45A DIGITAL MULTIMETER AS NECESSARY, TEST REPLACED ITEM MAKING CONTINUITY AND SHORTS MEASUREMENTS, ONLY AFTER REPAIR HAS BEEN COMPLETED.
FT3	USING TK-105/G TOOL KIT, REPLACE FRONT PANEL COMPONENTS OR CONNECTORS ONLY WHEN INSPECTION SHOWS DAMAGE. AFTER REPAIR USING AN/PSM-45A DIGITAL MULTIMETER, TEST BY MAKING CONTINUITY AND SHORTS MEASUREMENTS. NOTE: REAR CONNECTOR ASSEMBLY REPAIR IS LIMITED TO REPLACEMENT OF MECHANICAL COMPONENTS (i.e., HANDLES, GASKET MATERIAL).
FT4	USING TK-105/G TOOL KIT, REPLACE ASSEMBLY AS REQUIRED.
FT5	REPAIR OF FIELD TRANSPORT COVERS LIMITED TO REPLACEMENT OF CAPTIVE SCREWS, PACKING GASKET, BUMPERS, AND LATCHES. USE TK-105/G TOOL KIT AS REQUIRED.
	SRA MAINTENANCE TASKS (DETAILED) (FOR APPROVED SRAs ONLY).
HT1	USING TK-105/G TOOL KIT AS NECESSARY, VISUALLY INSPECT ASSEMBLY FOR EXTERNAL DAMAGE, CRACKS, CORROSION, ETC.
HT2	USING AN/USM-410 TEST STATION, AN/PSM-45A DIGITAL MULTIMETER, AND OS-261C(V)1/U OSCILLOSCOPE, FAULT LOCATE/TROUBLESHOOT CCA. THEN USING TK-105/G TOOL KIT AND PRC-350C BENCH REPAIR FACILITY, REPAIR CCA REPLACING FAULTY COMPONENTS. TEST ITEM AFTER REPAIR. NOTE: PAINT STRIPPER, ISOPROPYL ALCOHOL, AND EPOXY MAY BE USED AS REQUIRED TO STRIP. CLEAN, AND TOUCH UP AFFECTED AREAS OF THE CCA.
HT3	USING AN/USM-410 TEST STATION. AN/PSM-45A DIGITAL MULTIMETER, AND OS-261C(V)1/U OSCILLOSCOPE, TEST CCA.
	DEPOT MAINTENANCE TASKS (DETAILED)
DT1	USING TK-105/G TOOL KIT AS NECESSARY, VISUALLY INSPECT ASSEMBLY FOR EXTERNAL DAMAGE, CRACKS, CORROSION, ETC. (REFER TO DMWR.)
DT2	USING AN/PSM-45A DIGITAL MULTIMETER. TEST ASSEMBLY MAKING CONTINUITY AND SHORTS MEASUREMENTS. (REFER TO DMWR.)
DT3	USING TK-105/G TOOL KIT, WIREWRAP TOOL, CONTACT TOOL KIT. PRC-350C BENCH REPAIR FACILITY, AN/PSM-45A DIGITAL MULTIMETER, AND TS-3634 SURGE ARRESTOR TEST SET AS REQUIRED, REPAIR ASSEMBLY AS NECESSARY. (REFER TO DMWR.)
DT4	USING TK-105/G TOOL KIT. REPLACE BACKPLANE
DT5	FAULT LOCATE/TROUBLESHOOT LRU USING TEST EQUIPMENT AUTHORIZED BY THIS MAC, AND OTHER TMDE, AS REQUIRED. THEN USING TK-105/G TOOL KIT AND PRC-350C BENCH REPAIR FACILITY, OR ITS EQUIVALENT, REPAIR CCA, REPLACING FAULTY COMPONENTS. NOTE: PAINT STRIPPER. ISOPROPYL ALCOHOL, AND EPOXY MAY BE USED AS REQUIRED TO STRIP, CLEAN, AND TOUCH UP AFFECTED AREAS OF THE CCA.
DT6	USING TEST EQUIPMENT AUTHORIZED BY THIS MAC AND OTHER TMDE, AS REQUIRED, TEST CCA. REFER TO DMWR FOR TEST REQUIREMENTS.

U.S. GOVERNMENT PRINTING OFFICE: 1997 -

PIN: 056905-003

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 RLGM to help you inventory items required for safe and efficient operation.

C-2. GENERAL

The components of End Item List 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 that require packaging 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. An illustration is furnished to assist you in identifying the items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the RLGM in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the LGM 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.

C-3. EXPLANATION OF COLUMNS-Continued

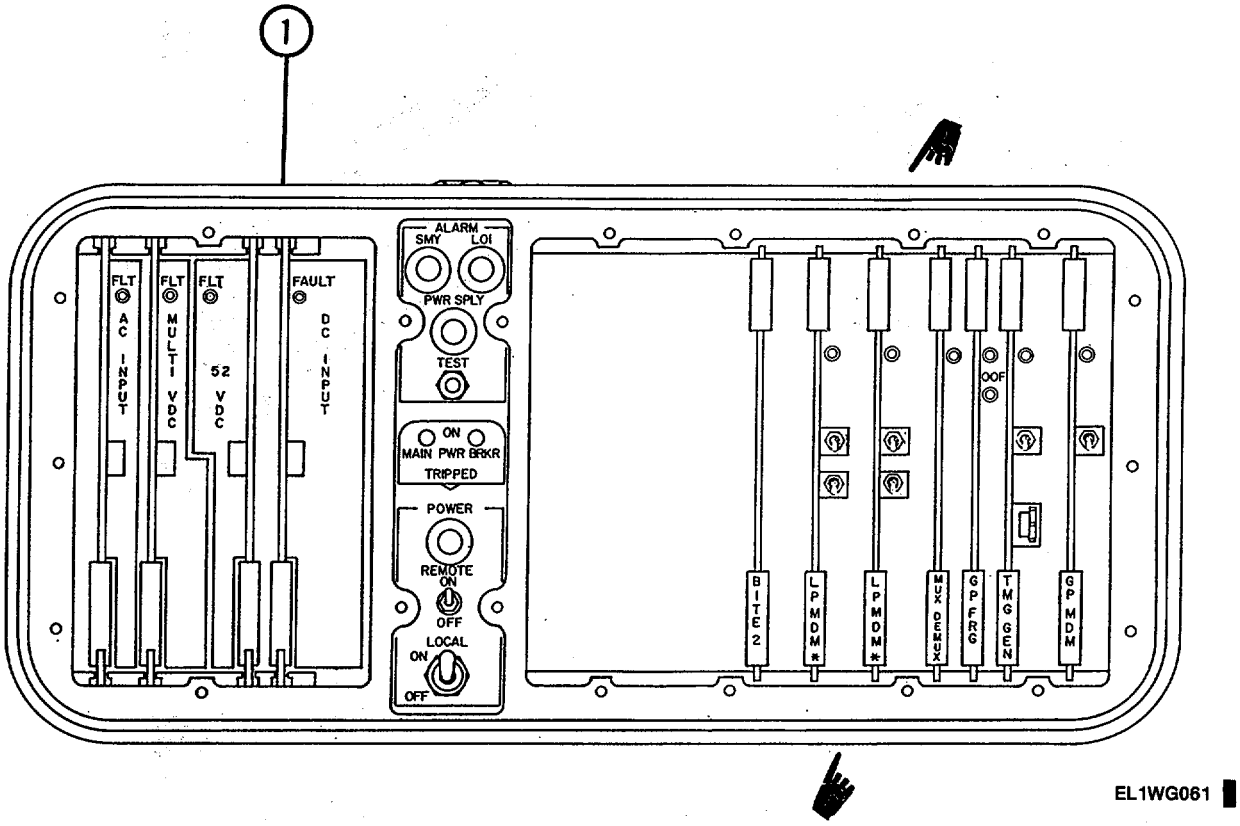
d. Column 4, Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two- character alphabetical abbreviation (e.g., ea, in., pr).

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

SECTION II. COMPONENTS OF END ITEM

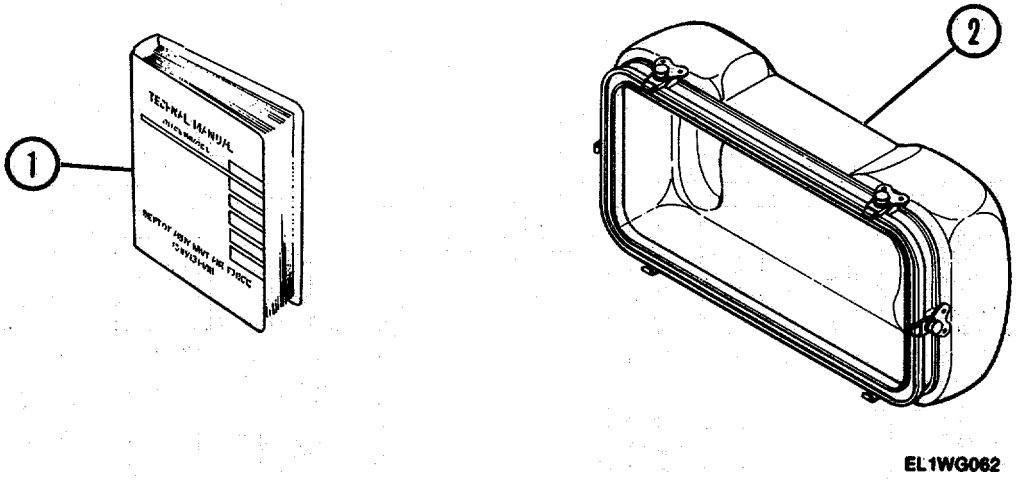
This listing is for information purposes only and is not authority to requisition replacements. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. An illustration is furnished to assist you in identifying the items (the analog applique unit CCA is not part of the RLGM. This CCA must be requisitioned separately by NSN if required).

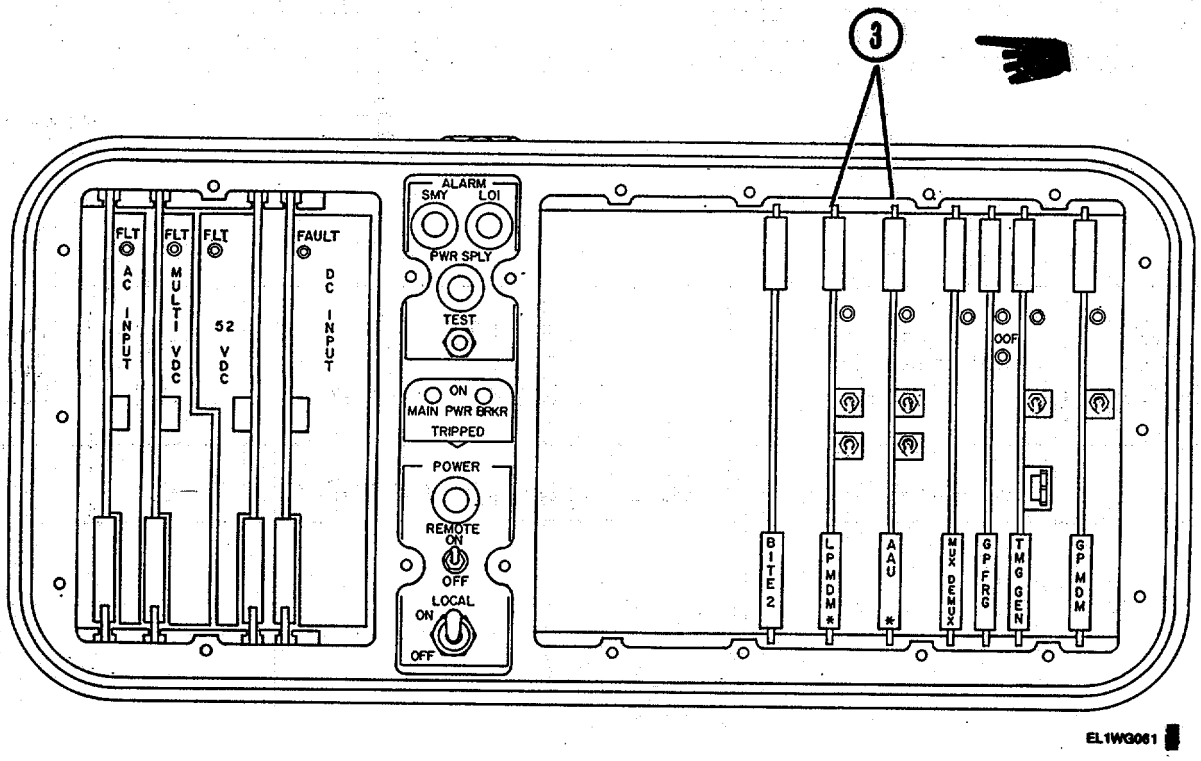
SECTION II. COMPONENTS OF END ITEM- Continued



(1) Illus Number	(2) National Stock Number	(3) Description FSCM and Part Number	(4) U/M	(5) Rqd
1	5820-01-145-2460	Multiplexer TD-1233(P)TTC	Ea	1

SECTION III. BASIC ISSUE ITEMS





SECTION II. BASIC ISSUE ITEMS -- Continued

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM) AND PART NUMBER	(4) U/M	(5) QTY REQ'D
		Technical Manual		
1	N/A	TM 11-5805-706-12	Ea	1
2	N/A	Cover, Case	Ea	2
3	5820-01-140-1314	Loop Modem CCA SM-D-986235		
3	5820-01-140-1312	Analog Applique Unit CCA* SM-D-959323	Ea	

*The AAU CCA is not part of the end item. If required, the AAU CCA must be requisitioned separately and configured as required. When the end item is transferred between property accounts, the AAU CCA must be removed.

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 RLGM. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

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 narrative instructions to identify the material (e.g., "use cleaning rag, item 2, Appendix E").

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

C	Operator or Crew
O	Unit 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 request or 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 Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

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	0	6850-00-105-3084	Cleaning compound, trichlorotrifluoroethane (80244) MIL-C-81302	Pt
2	0	8305-00-267-3015	Cheesecloth (81348) -CCCC440	yd

GLOSSARY

Word	Meaning
Analog Applique	A unit which processes analog data and converts it into digital data.
Channel	An individual signal which is used by an individual end instrument such as a telephone.
Clock	A source of timing signals.
Conditioned Diphase	A waveform for data transmission designed for simple timing extraction.
Converter	A device used to change a signal from one form to another.
Data	The signal that contains the digital information to be processed or transmitted.
Demodulation	The process of removing the modulated carrier from the data.
Demultiplex	he process by which one signal is separated into two or more independent signals.
Energize	To activate or turn on.
Faults	Error or indication that something is wrong with the equipment.
Frame	The array of bits between two frame bits.
Group	More than one channel combined into a single signal.
Malfunction	Error or indication that something is wrong with the equipment.
Modem	A modulation/demodulation device that: 1. Takes signals from sources such as multiplexers and generates waveforms suitable to the transmission medium. 2. Takes signals from the transmission medium and converts them to a form suitable for data processing in demultiplexers.
Modulation	The process of superimposing a data stream on a carrier for transmission purposes.
Multiplexer	A device used to combine two or more signals for transmission over a single channel.

GLOSSARY-Continued

Word	Meaning
Nonreturn to Zero	A signal having two states termed zero and one, and no neutral condition.
Orderwire	A circuit used by maintenance to communicate between facilities.
Station Clock	A timing source used for timing one or more equipments with an assemblage.
Synchronous	Data sources timed from a common timing source.
Timing	A signal used to mark the time position of bits in a digital stream.

ALPHABETICAL INDEX

ALPHABETICAL INDEX-Continued

ALPHABETICAL INDEX-Continued

ALPHABETICAL INDEX-Continued

ALPHABETICAL INDEX-Continued

ALPHABETICAL INDEX--Continued

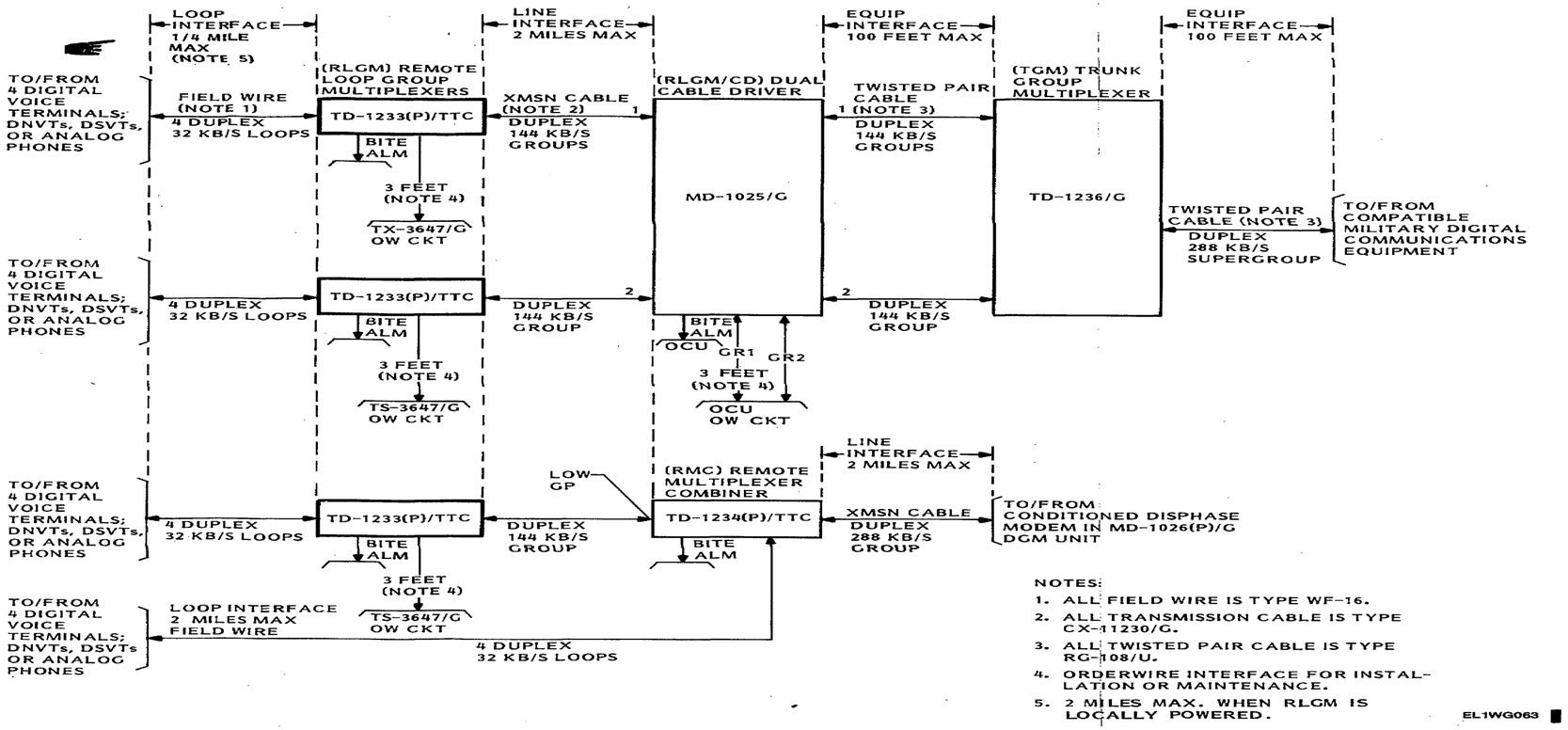
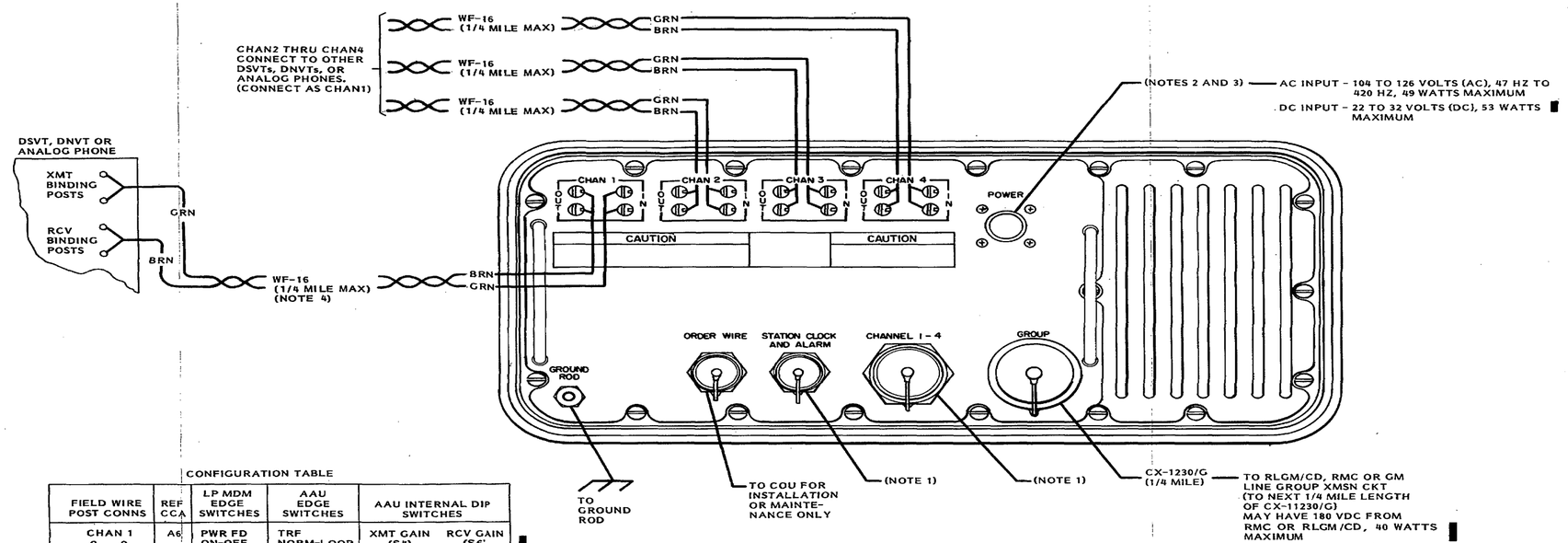


Figure FO-1. Multiplexer TD-12233 (P) /TCC Sample Application

Change 1



CONFIGURATION TABLE

FIELD WIRE POST CONNS	REF CCA	LP MDM EDGE SWITCHES	AAU EDGE SWITCHES	AAU INTERNAL DIP SWITCHES	
CHAN 1 OUT IN	A6	PWR FD ON-OFF (S2) -TOP-	TRF NORM-LOOP (S2)	XMT GAIN (S4)	RCV GAIN (S6)
CHAN 2 OUT IN	A6	PWR FD ON-OFF (S1) -BOTTOM-	TRF NORM-LOOP (S1)	XMIT GAIN (S3)	RCV GAIN (S5)
CHAN 3 OUT IN	A7	PWR FD ON-OFF (S2) -TOP-	TRF NORM-LOOP (S2)	XMT GAIN (S4)	RCV GAIN (S6)
CHAN 4 OUT IN	A7	PWR FD ON-OFF (S1) -BOTTOM-	TRF NORM-LOOP (S1)	XMT GAIN (S3)	RCV GAIN (S5)

Figure FO-2. Multiplexer TD-1233 (P) /TTC External Connections diagram

Change 1

By Order of the Secretaries of the Army, the Navy and the Air Force:

JOHN A WICKHAM, JR.
General, United States Army
Chief of Staff

Official:

DONALD J. DELANDRO
Brigadier General, United States Army
The Adjutant General

G.B. SCHICK, JR.
Rear Admiral, United States Navy
Commander, Naval Electronic Systems Command

Official:

EARL T. O'LOUGHLIN
General, USAF, Commander, Air Force Logistics Command

CHARLES A. GABRIEL
General, USAF
Chief of Staff

DISTRIBUTION:
To be distributed in accordance with DA Form 12-51C literature requirements for TD-1233/TTC.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1994 0 - 300-421 (82899)

TEAR ALONG PERFORATED LINE

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

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

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER	SIGN HERE

DA FORM 1 JUL 79 2028-2

PREVIOUS EDITIONS ARE OBSOLETE.

P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

THE METRIC SYSTEM AND EQUIVALENTS

'NEAR MEASURE

. Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

'VEIGHTS

Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

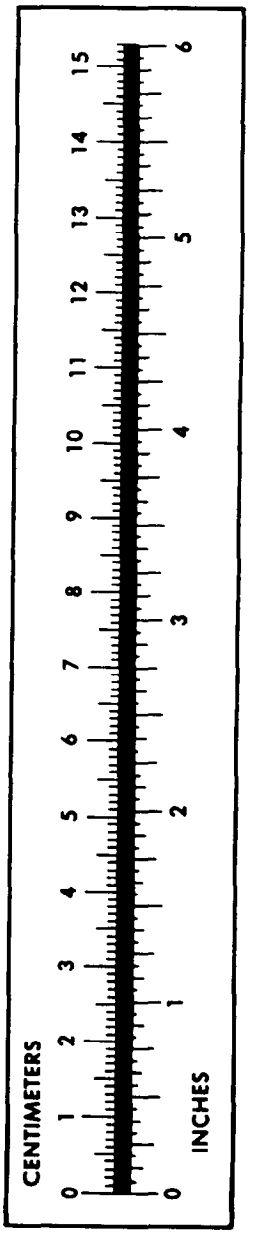
TEMPERATURE

5/9(°F - 32) = °C
212° Fahrenheit is evuivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5C° + 32 =°F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
ıts	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
lometers per Liter	Miles per Gallon	2.354
meters per Hour	Miles per Hour	0.621



PIN: 056905-003