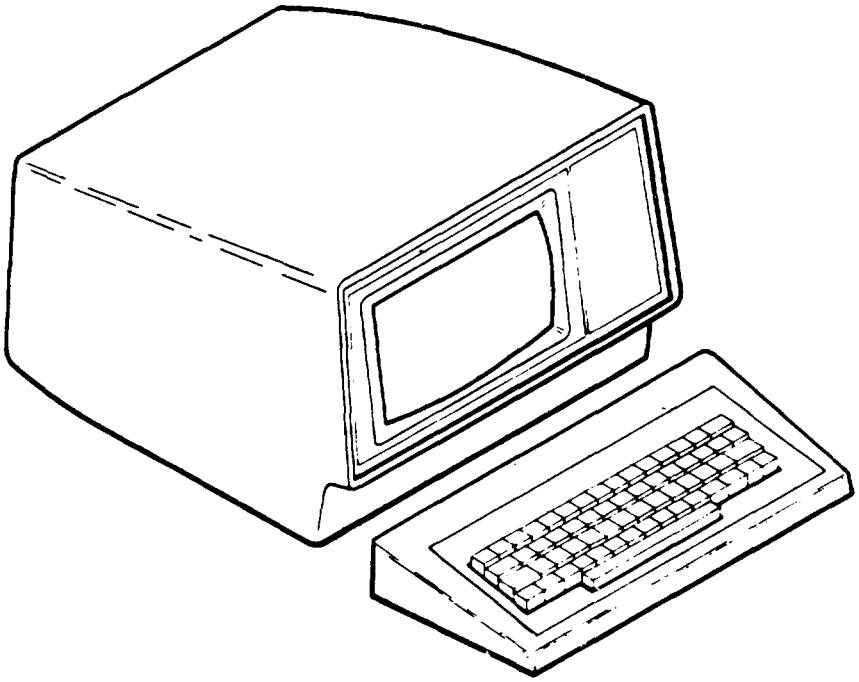
TM 11-7025-207-23

ORGANIZATIONAL AND DIRECT SUPPORT MAINTENANCE MANUAL

KEYBOARD-DISPLAY MX-10171/MYQ-4



(NSN 7025-01-094-0081)

HEADQUARTERS DEPARTMENT OF THE ARMY

8 MARCH 1984

WARNING

HIGH VOLTAGE

is used in the operation of this equipment

ELECTROCUTION

may result if personnel fail to observe safety precautions.

Never work on electronic equipment unless there is another person nearby. He/she should be familiar with the operation and hazards of the equipment. He/she should also be competent in giving first aid. When you are helped by operators, you must warn them about dangerous areas.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. If it is necessary to work on the equipment with power on, do not touch anything in the power supply area. Take special care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections when installing or operating this equipment.

Whenever possible, keep one hand away from the equipment to reduce the hazard of current flowing through vital organs of the body.

WARNING

Do not be misled by the term "low voltage". Voltages as low as 50 volts may cause death.

For artificial respiration, refer to FM 21-11.

WARNING

Remove rings, bracelets, wristwatches, and neck chains before working around electronic equipment. Jewelry can catch on equipment and cause injury, or may short across an electrical circuit and cause severe burns or electrical shock.

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 DRY WOODEN POLE OR A DRY 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

TECHNICAL MANUAL
No. 11-7025-207-23

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 8 March 1984

ORGANIZATIONAL AND DIRECT SUPPORT MAINTENANCE MANUAL KEYBOARD-DISPLAY MX-10171 /MYQ-4

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 and Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. A reply will be furnished to you.

HOW TO USE THIS MANUAL

This manual tells you how to troubleshoot and maintain the Keyboard-Display MX-10171/MYQ-4.

LOCATION OF SUBJECTS IN MANUAL

In this manual, paragraphs are numbered in order by chapter. For example, paragraph 2-3 is the third paragraph in chapter 2. Pages are also numbered this way. Using this numbering system, there are three easy ways to locate the information you need in this manual.

- Front cover locators
- Alphabetical index
- Index of maintenance procedures

Use the front cover locators and marked pages to quickly find the parts of the manual shown on the cover. These locators mark portions of the manual which are used often. If the information you need is not listed on the front cover, use the alphabetical index at the back of this manual. It lists all subjects covered in the manual and directs you to the subject by paragraph number. When you need a specific maintenance procedure, use the index at the start of chapter 3 or 4. This index lists all the maintenance procedures in the chapter and directs you to each procedure by page number.

MAINTENANCE PROCEDURES

Maintenance procedures in this manual have two features which help you perform them more easily:

- Initial setup boxes
- First-time performance aids

An initial setup box is used at the start of any procedure which requires setup items before you perform it. This box lists items needed to perform the procedure. If the box does not appear at the start of a procedure, no setup items are needed.

If you are using this manual to perform a procedure for the first time, always read through the entire procedure before you start. Always perform the task steps in the order given. This will help assure correct performance. Use the illustrations beside the tasks steps to find the parts of the equipment called out in the steps. Some steps include a reference to another paragraph. Go to that paragraph if you are not sure how the step is done.

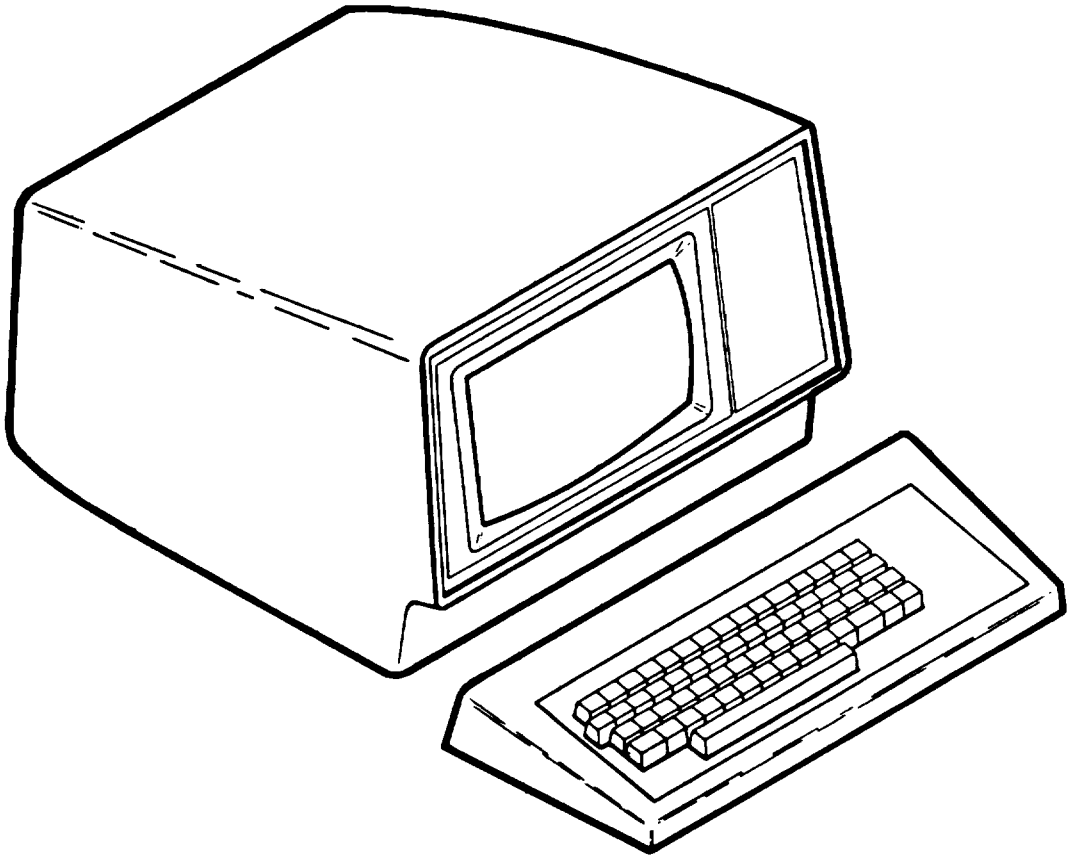


Figure 1-0. Keyboard-Display MX-01071/MYQ-4

CHAPTER 1
INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

Keyboard-Display MX-10171/MYQ-4 (fig. 1-0) is a keyboard video data terminal used to communicate with an associated data processing system. In the rest of this manual it will be called the console terminal. Use this manual for organizational and/or direct support maintenance of the console terminal.

1-2. INDEX OF PUBLICATIONS

Refer to the latest issue of DA PAM 310-1 to determine whether there are new editions, changes or additional publications pertaining to the console terminal.

11-3. MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

1-4. DESTRUCTION OF ARMY ELECTRONICS MATERIEL

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

11-5. ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will have Preventive Maintenance Checks and Services (PMCS) performed before storing. When removing the equipment from administrative storage, the PMCS checks should be performed to assure operational readiness. Disassembly and repacking of equipment for limited storage are covered in TM 740-90-1.

1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your console terminal needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at Commander, U. S. Army Communications and Electronics Command and Fort Monmouth, Attn: DRSEL-ME-MP, Fort Monmouth, NJ 07703. We'll send you a reply.

1-7. REFERENCE INFORMATION

This listing includes the nomenclature cross reference list, the list of abbreviations and an explanation of terms (glossary) used in this manual.

1-8. NOMENCLATURE CROSS REFERENCE LIST

Common names are used throughout this manual, but you must use the official nomenclature when filling out report forms, sending and EIR, or finding referenced technical manuals.

Common Name	Official Nomenclature
Console Terminal	Keyboard-Display MX-10171/MYQ-4

1-9. LIST OF ABBREVIATIONS

ASCII	American Standard Code for Information Interchange
BPS	Bits per second
BRK	Break
CAP	Capital
CLR	Clear
CRT	Cathode ray tube
CTL	Control
DEL	Delete
EIA	Electronic Industries Association
ESC	Escape
LF	Line feed
RAM	Random access memory
RPT	Repeat

1-10. GLOSSARY

A complete glossary of unusual terms is given in the back of this manual. (Glossary-l)

Section II. EQUIPMENT DESCRIPTION AND DATA

1-11. EQUIPMENT PURPOSE, CAPABILITIES AND FEATURES

The console terminal is a keyboard video display terminal. It transmits a code associated with each character and control key on the keyboard. A code will be transmitted as soon as a key or key combination is struck. If a displayable character is associated with the transmitted code, it will be shown on the CRT display. The console terminal:

- Sounds a tone when powered on and when a character is entered into the 75th column
- Connects with a computer system directly or through a modem

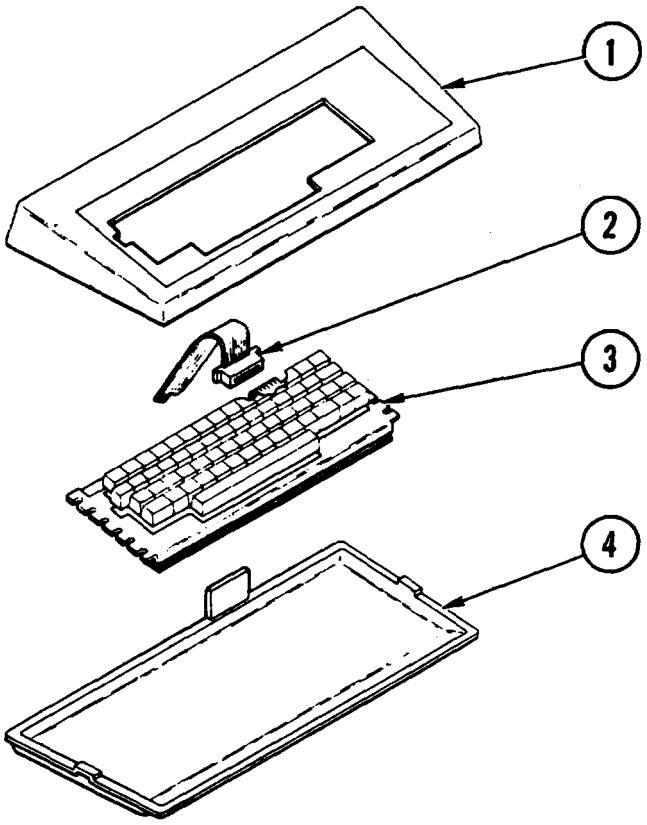
- Displays operator input and system messages from the computer
- Connects with a teleprinter to provide a paper copy of console terminal operations

1-12. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

The console terminal has two major components: the keyboard and the display unit.

1-13. KEYBOARD

The major components of the keyboard are illustrated and described in figure 1-1.

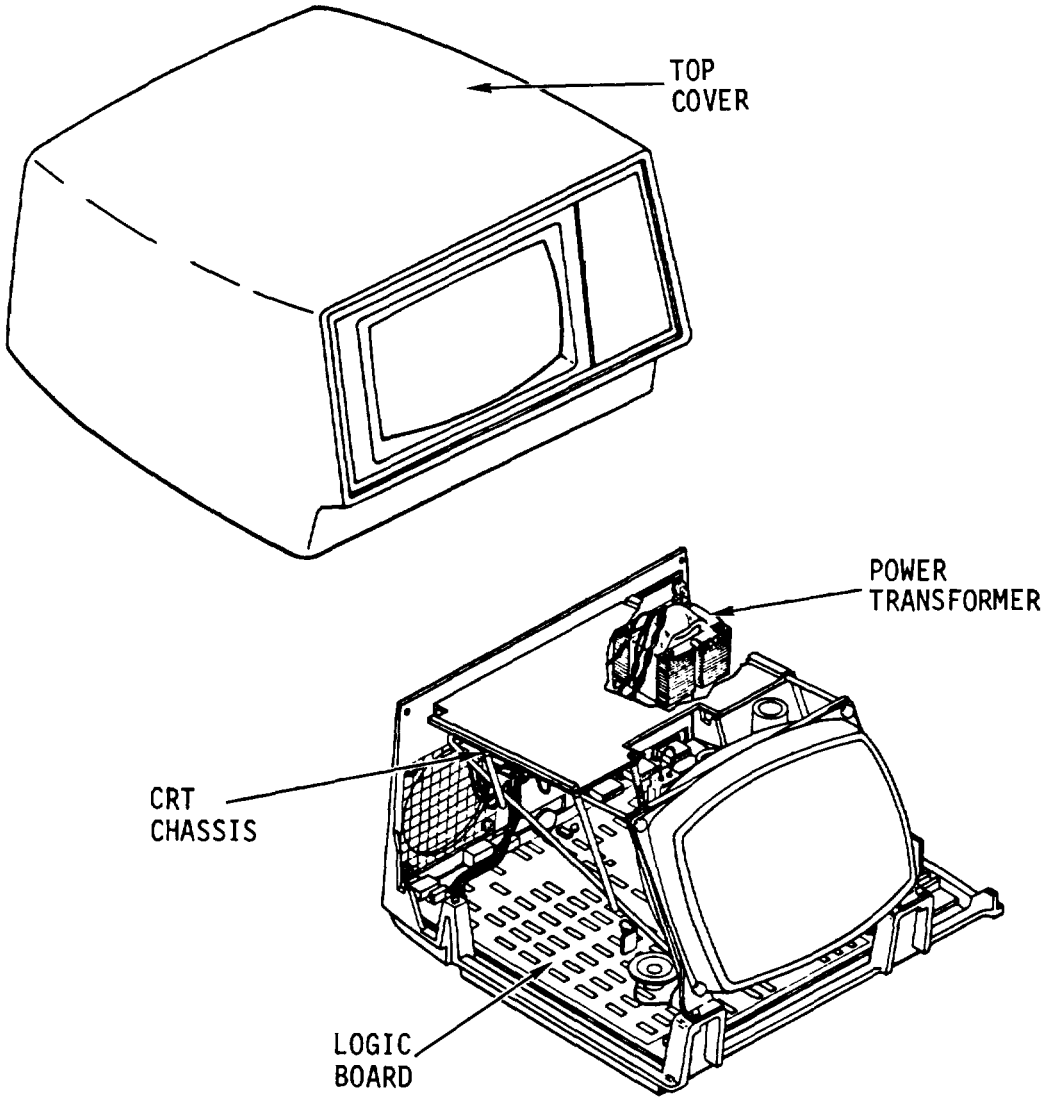


(1)	Cover	Houses keyboard circuit board
(2)	Cable	Interconnects keyboard with display unit
(3)	Keyboard circuit board	Contains the keyboard and the circuitry for generating ASCII code when associated key is pressed
(4)	Base	Mounts keyboard circuit board

Figure 1-1. Keyboard Major Components

1-14. DISPLAY UNIT

The major components of the display unit are illustrated and described in figure 1-2.



TOP COVER - Houses display unit.

CRT CHASSIS - Mounts cathode ray tube and circuitry for CRT operation.

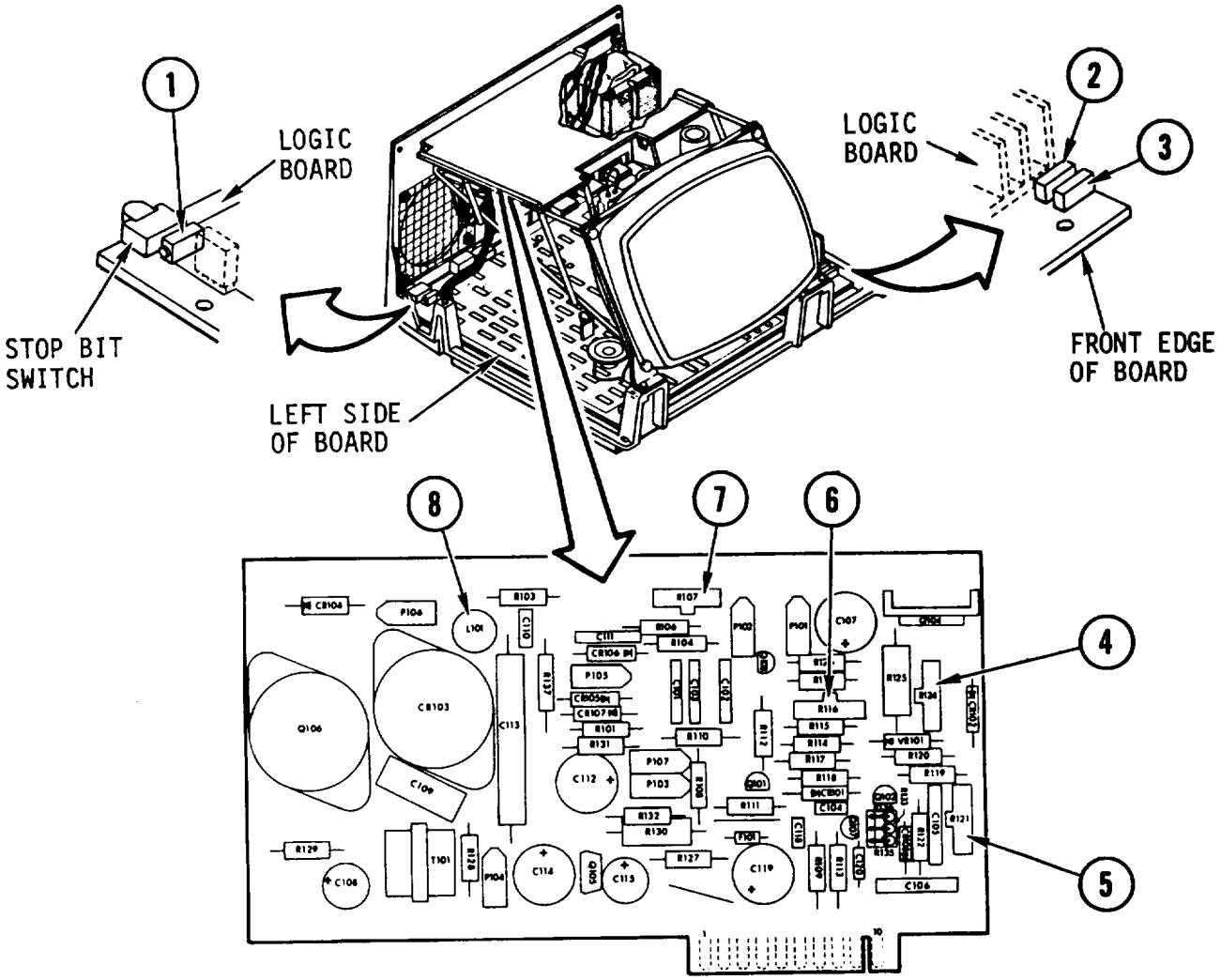
LOGIC BOARD - Contains logic circuitry required for display of received data on CRT.

POWER TRANSFORMER - Provides stepped down voltages for console terminal power supply.

Figure 1-2. Display Unit Major Components

1-15. INTERIOR MAINTENANCE CONTROLS

The display unit interior controls (fig. 1-3) are located on the logic board and on the CRT chassis printed wiring board.

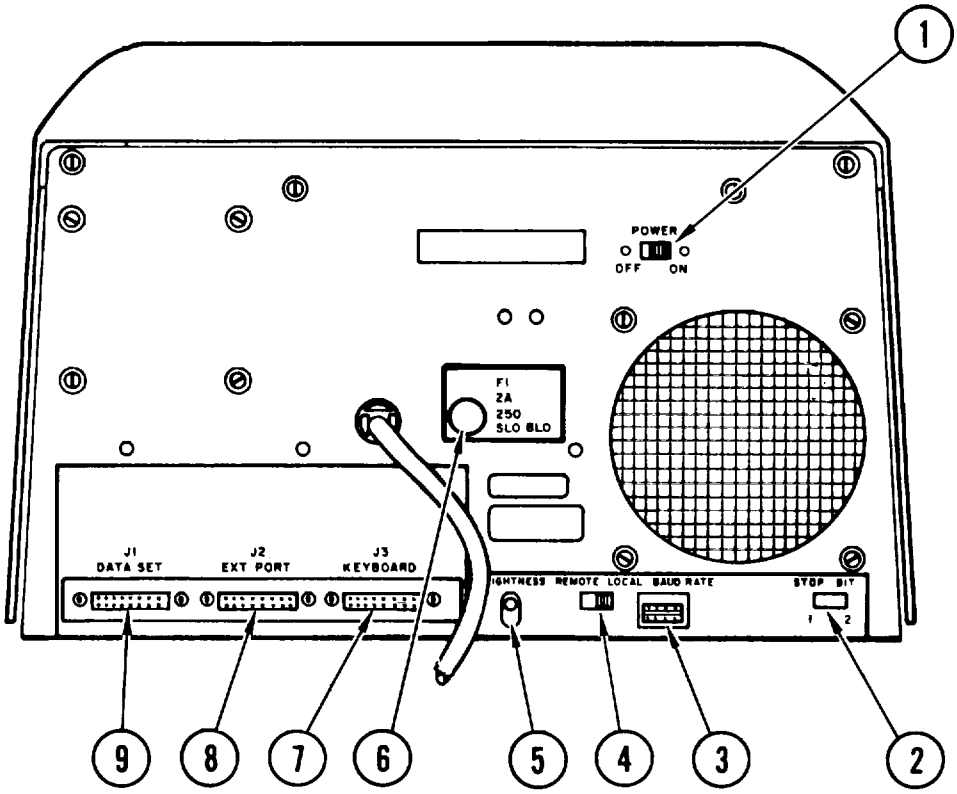


(1)	Contrast control	Adjusts intensity of characters displayed on CRT
(2)	+15 volt control	Adjusts output of +15 volt power supply
(3)	+5 volt control	Adjusts output of +5 volt power supply
(4)	Height control	Adjusts vertical size of display on CRT
(5)	Vertical linearity control	Adjusts linearity of vertical display on CRT
(6)	Vertical frequency control	Adjusts stability of vertical display on CRT
(7)	Focus control	Adjusts definition of characters displayed on CRT
(8)	Width Control	Adjusts width of display on CRT

Figure 1-3. Display Unit Interior Maintenance Controls

1-16. EXTERIOR CONNECTORS AND CONTROLS

All exterior connectors and controls (fig. 1-4) are located on the rear of the display unit.



(1)	POWER ON/OFF	Two-position switch that turns terminal ON and OFF. Appearance of cursor on bottom line of display screen indicates that power is on.
(2)	STOP BIT 1, 2	Switch-selectable positions 1 and 2 for one or two stop bits per character; selection determined by system data format and application.
(3)	BAUD RATE	Switch that sets proper communication line speed. Determined by system configuration.
(4)	REMOTE/LOCAL	Two-position switch that places terminal in either off-line (local) or on-line (remote) operating mode.
(5)	BRIGHTNESS	Control which varies intensity of image displayed on screen of display unit.
(6)	F1 Terminal Fuse	2.0 amp, 250 V, slow blow fuse. Protects power circuit.
(7)	J3 KEYBOARD	Connector for keyboard cable.
(8)	J2 EXT PORT	Connector for auxiliary output device cable.
(9)	J1 DATA SET	Connector for communications cable.

Figure 1-4. Display Unit Exterior Connectors and Maintenance Controls

1-17. EQUIPMENT IDENTIFICATION PLATE

An equipment identification plate (fig. 1-5) is located on the rear of the display unit.

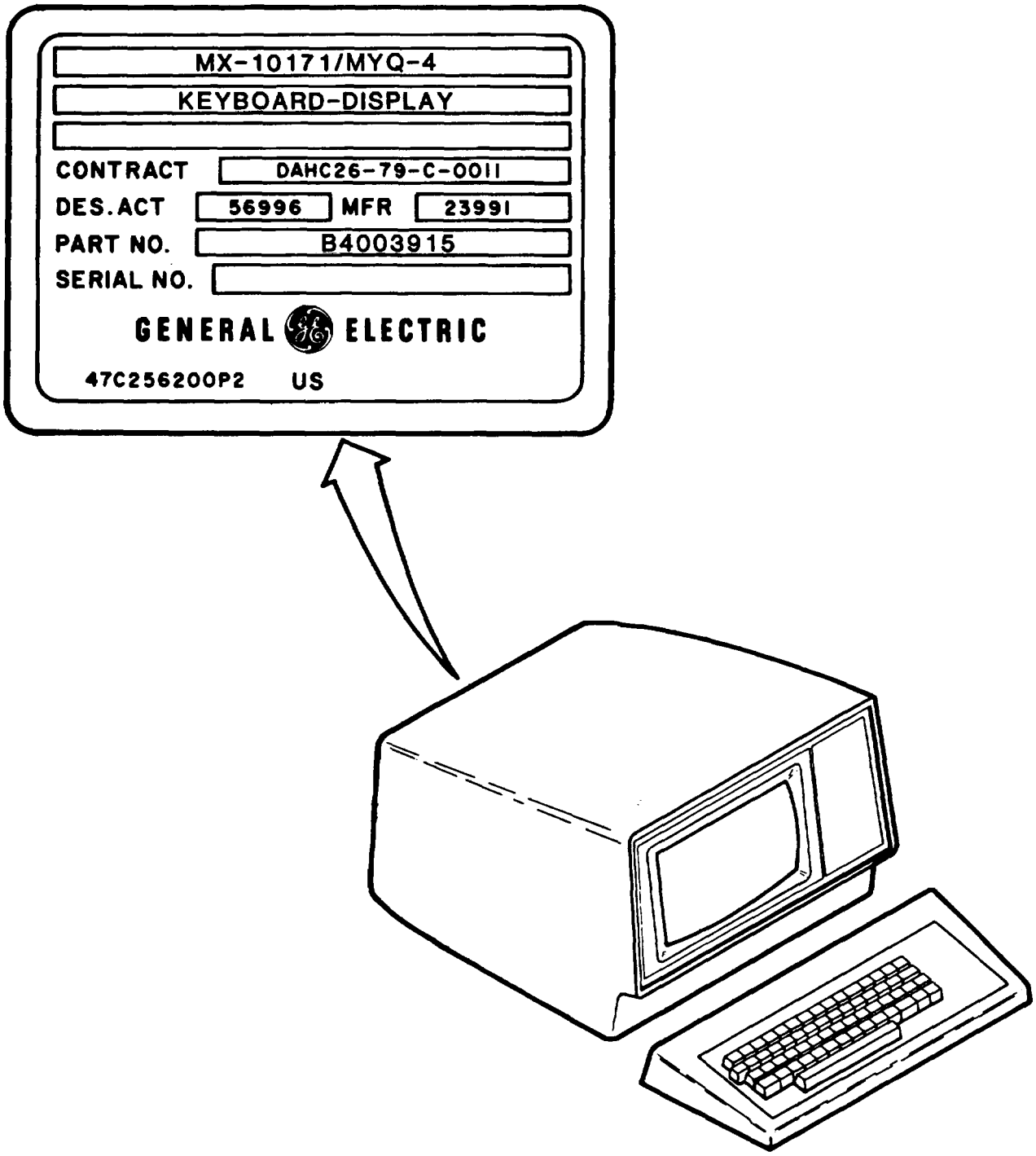


Figure 1-5. Console Terminal Identification Plate

1-18. EQUIPMENT DATA

Weight and dimensions:

Weight	40.0 lb (18.2 kg)
Height	13.1 in. (33.3 cm)
Width	18.1 in. (46.0 cm)
Depth	23.8 in. (60.5 cm)

Operating environment:

Temperature 50°F to 100°F (10°C to 38°C)
Relative humidity 10% to 80% (noncondensing)

Electrical requirements:

Voltage 102 V ac to 132 V ac
Frequency 60 Hz

Display:

Line format 12 lines of 80 characters each (960 character capacity)
Character set 63 ASCII (uppercase alphabet, numerics and special symbols)

Keyboard:

Configuration 60 solid state keys (36 alphanumeric and 24 special function)
Capability Full 128 character, 7 bit ASCII code set

Communication interface:

EIA interface Conforms to RS-232-C
Mode Full duplex, asynchronous
Data (baud) rate 75, 110, 150, 300, 600, 1200, 1800, 2400, 4800, or 9600 bauds
Character structure 10-bits (start, 7 data bits, parity, stop) 11-bits (start, 7 data bits, parity, stop, stop)
Parity generation Odd, even or mark (1) parity for 10 or 11 bit characters

CHAPTER 2
TECHNICAL PRINCIPLES OF OPERATION

2-1. GENERAL

This chapter tells you how the console terminal works as part of a computer system. This information will aid you during troubleshooting. It will also help you perform maintenance procedures.

2-2. FUNCTIONAL DESCRIPTION

Data displayed on the cathode ray tube may come from the keyboard, the associated data processing system or an auxiliary input device connected to the terminal extension port. Figure 2-1 is a functional block diagram of the console terminal.

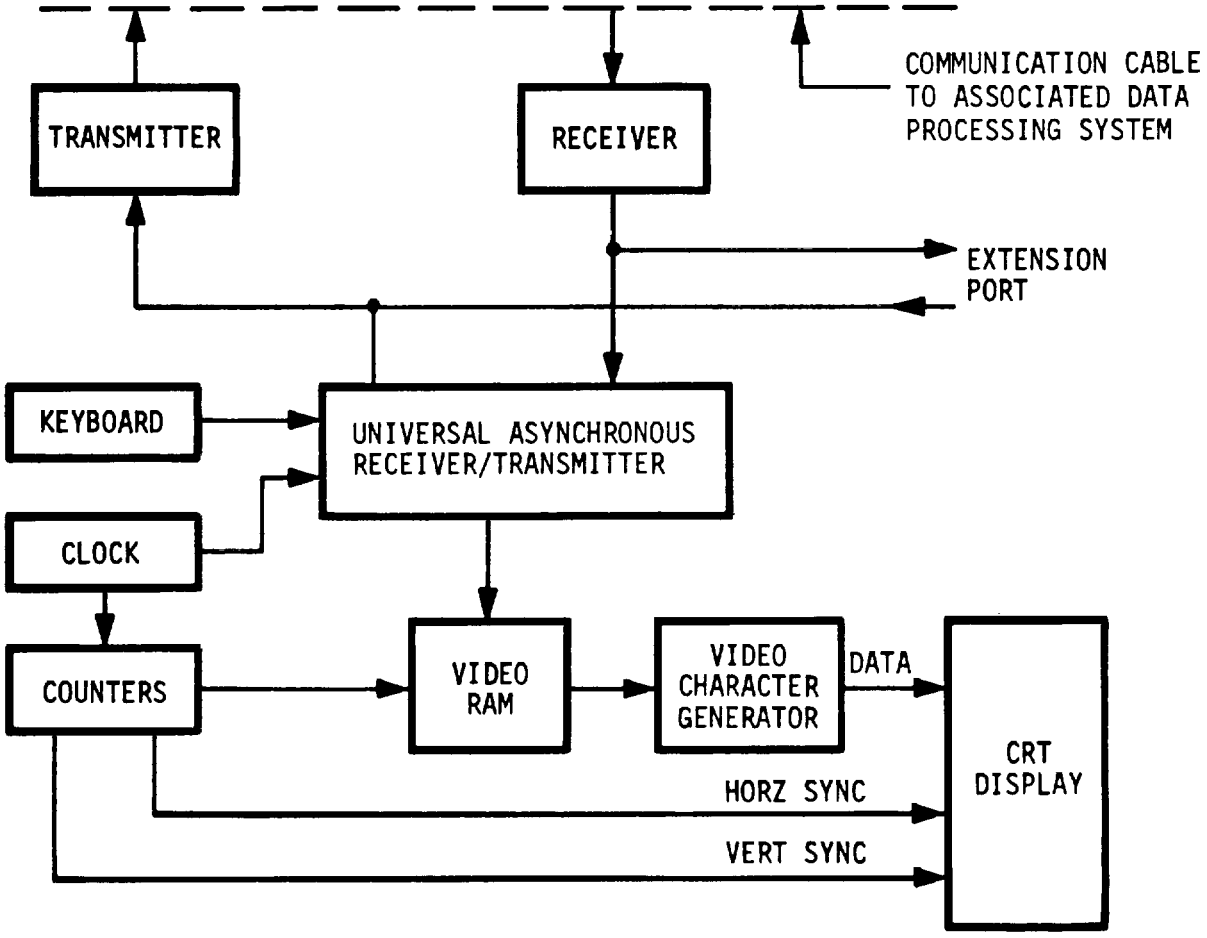


Figure 2-1. Functional Block Diagram

In on-line operation, the universal asynchronous receiver/transmitter (UAR/T) accepts 7-bit characters in parallel from the keyboard and adds the proper start, parity, and stop bits. It then sends these 9, 10, or 11-bit characters serially to the transmitter. The transmitter sends the data to the computer.

Data from the computer enters the terminal in serial form through the receiver. The incoming data consists of 9, 10, or 11-bit characters, depending upon the terminal configuration. The UAR/T removes the start, parity, and stop bits from the character and transfers the remaining 7 bits of data to the video RAM (random access memory) address determined by the cursor position. When this address is selected by the video scan counters, the data is shifted to the video generator where the corresponding dot matrix is generated and sent to the cathode ray tube. A clock function provides timing for horizontal and vertical synchronization, and for the selectable baud rate.

Data from the terminal is sent to the associated data processing system through the interface transmitter. It is then echoed back for display on the cathode ray tube. If the terminal has an auxiliary output device, such as a printer, the echoed data is also sent to the device from the terminal.

During local (off-line) operation, data is displayed directly on the CRT rather than being echoed back by the associated data processing system.

CHAPTER 3
ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

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

3-1. COMMON TOOLS AND EQUIPMENTI

For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

3-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Refer to TM 11-7010-203-23P for a complete listing and description of special tools, TMDE and support equipment required by organizational maintenance. Also refer to appendix B for a list of tools pertaining to the console terminal.

3-3. SPARES AND REPAIR PARTS

Refer to TM 11-7010-203-23P for a complete listing and description of spares and repair parts required for organizational maintenance of this equipment.

Section II. SERVICE UPON RECEIPT

3-4. UNPACKING

Upon receipt of new equipment, check packing list and instructions for any precautions or specific unpacking procedures.

3-5. CHECKING UNPACKED EQUIPMENT

Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364, Discrepancy in Shipment Report. Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with the instructions of TM 38-750. Check the equipment to ensure that required Modification Work Orders have been applied to accordance with DA PAM 310-1.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-6. GENERAL

Organizational maintenance PMCS is the required inspection and care of the equipment necessary to keep it in good operating condition. Routine checks like equipment inventory, cleaning, dusting, washing, checking for frayed cables, storing items not in use, covering unused receptacles and checking for loose nuts and bolts are not listed in your PMCS. They are things you should do anytime you see they must be done. If you find a routine check like one of these listed in your PMCS, it was listed because operators reported problems with this item.

3-7. PMCS PROCEDURES

PMCS procedures are done at fixed intervals for the following purposes:

- Make sure that the equipment is operable
- Prevent equipment problems in future operation
- Identify and resolve minor problems in the equipment before they become major problems
- Scheduled cleaning of the equipment

3.8. ITEM NUMBER COLUMN

The checks/services in the PMCS table are numbered in order of performance. Use this ITEM number when filling out DA Form 2404 (Equipment Inspection and Maintenance Worksheet).

3-9. ITEM TO BE INSPECTED COLUMN

The items listed in this column are based on the major components of the equipment and use common names of these components.

3-10. PROCEDURE COLUMN

This column gives you the check or service procedure which you must perform on the item.

3-11. EQUIPMENT WILL BE REPORTED NOT READY/AVAILABLE IF COLUMN

This column tells you under what conditions the equipment will be unable to perform its primary mission. When you notice this condition during PMCS you must report it on the proper form and tell your supervisor.

Table 3-1. Organizational Preventive Maintenance Checks and Services

Legend

M - Monthly S - Semiannually

Item No.	Interval M	Interval S	Item to be inspected	Procedure	Equipment will be reported Not Ready/Available if:
1	•			Check operation of console terminal as follows: 1. Power up console terminal. 2. Set REMOTE-LOCAL switch on display unit to LOCAL. 3. Verify that all operating keyboard characters will print on display unit screen. 4. Power down console terminal.	All keyboard characters not displayed on screen.
2	•		Console Terminal	Clean console terminal as follows: 1. Power off console terminal and pull power plug from outlet. 2. Remove top cover from display unit. **WARNING** Use care when handling or working around the cathode ray tube (CRT). Damage to the CRT could cause an implosion resulting in possible severe injury from flying glass. **CAUTION** Work carefully while cleaning. Clean thoroughly but do not damage components, wiring or brackets.	

Table 3-1. Organizational Preventive Maintenance Checks and Services -- Continued

Item No.	Interval M	Interval S	Item to be inspected	Procedure	Equipment will be reported Not Ready/Available if:
				3. Vacuum metal surfaces, wiring and components using a soft-bristled, brush-type nozzle. 4. Loosen dust and dirt in corners, crevices and between components using a small, soft-bristled brush. Vacuum up dust and dirt. 5. Replace top cover.	

CHAPTER 4
DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Index of Maintenance Procedures

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

4-1. COMMON TOOLS AND EQUIPMENT

For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

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

Refer to TM 11-7010-203-23P for a complete listing and description of special tools, TMDE and support equipment required by direct support maintenance. Also refer to appendix B for a list of tools pertaining to the console terminal.

4-3. SPARES AND REPAIR PARTS

Refer to TM 11-7010-203-23P for a complete listing and description of spares and repair parts required for direct support maintenance of this equipment.

Section II. TROUBLESHOOTING

4-4. GENERAL

The most effective way to troubleshoot a fault in this equipment is to follow a routine which guides you through the five phases of troubleshooting (fig. 4-1). By following this routine you assure accurate use of fault isolation and fix procedures. You also improve your troubleshooting skills.

4-5. TROUBLESHOOTING PHASES

Each of the five phases in this routine is designed to accomplish a specific goal.

a. Fault Discovery. Usually, the operators or supervisor will notice faulty performance first. They must report the fault on the proper form so you will have the facts you need for the next phase.

b. Failure Confirmation. Based on the facts provided, you must confirm the failure and define the symptom. The symptom is the first clue you will use in the troubleshooting process.

c. Troubleshooting Entry. Using the symptom defined during phase two, find the troubleshooting flow chart which will help you isolate the fault in the equipment. The checkout and symptom index chart (chart-OO) will help you do this.

d. Trouble Isolation. Follow the step-by-step procedures in the flow chart to isolate and correct the cause of the equipment failure.

e. After Maintenance. When you have made the fix recommended in the trouble- shooting procedure, you must check your work. Use the chart titled After Maintenance Check. It tells you how to test your repair and make sure the equipment now works as it should.

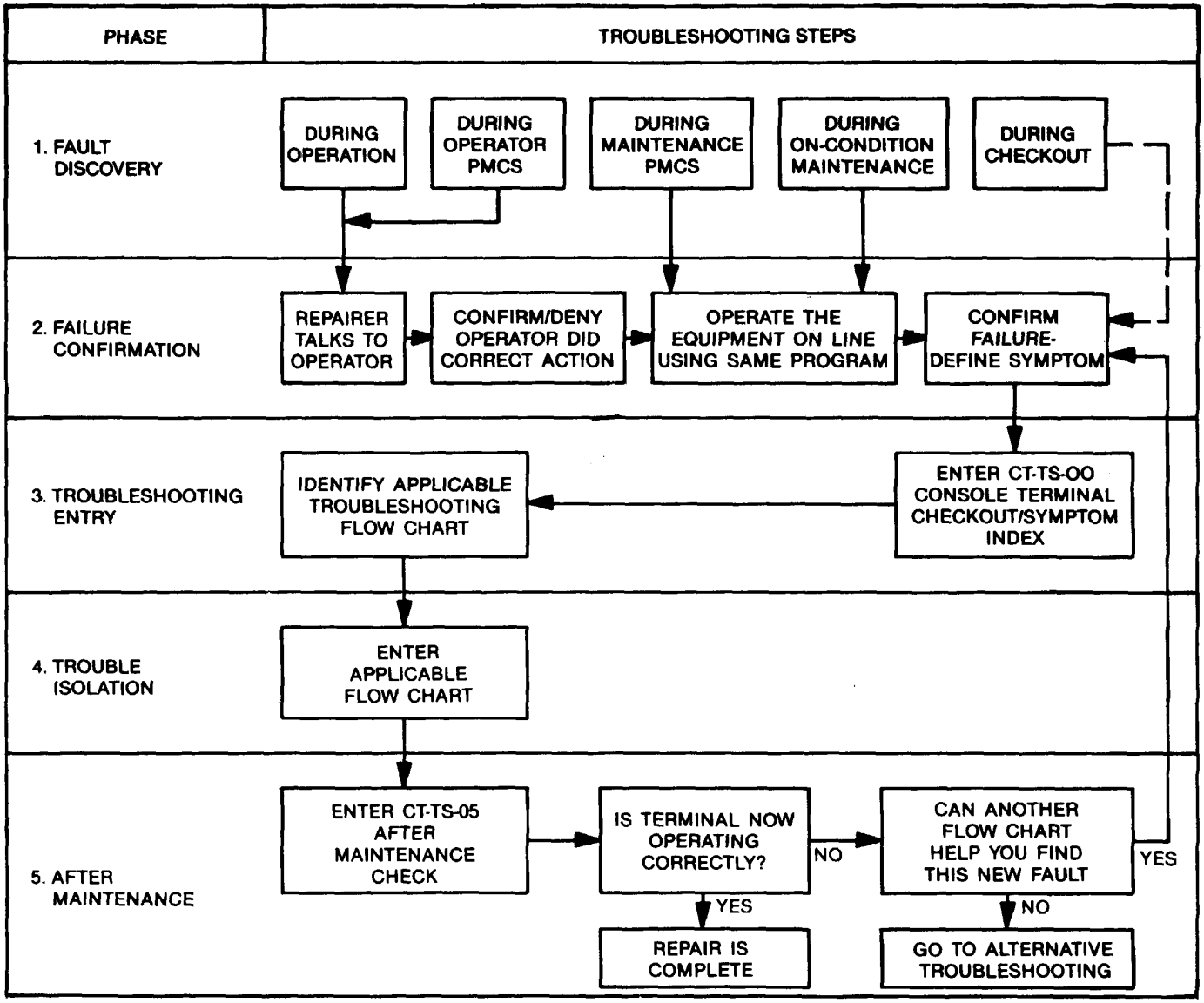


Figure 4-1. Troubleshooting Phases

4-6. ALTERNATIVE TROUBLESHOOTING TECHNIQUES

When a failure causes a symptom which is not covered in the symptom index or not corrected by the troubleshooting procedure in the flow chart, you must try alternative techniques.

a. Understand Principles of Operation. Sometimes the symptom may have no specific procedure given to troubleshoot it. When this happens, remember that the equipment always operates the same way. By comparing the faulty operation with expected or normal operation you may find the cause of the failure and be able to fix it.

b. Check the Circuits. All electronic equipment uses circuits to route power through the components. Any break in continuity will cause some type of failure. By running continuity checks on suspect circuits you may find the cause of the failure. Use the schematic diagrams in appendix D to check the circuits in this equipment.

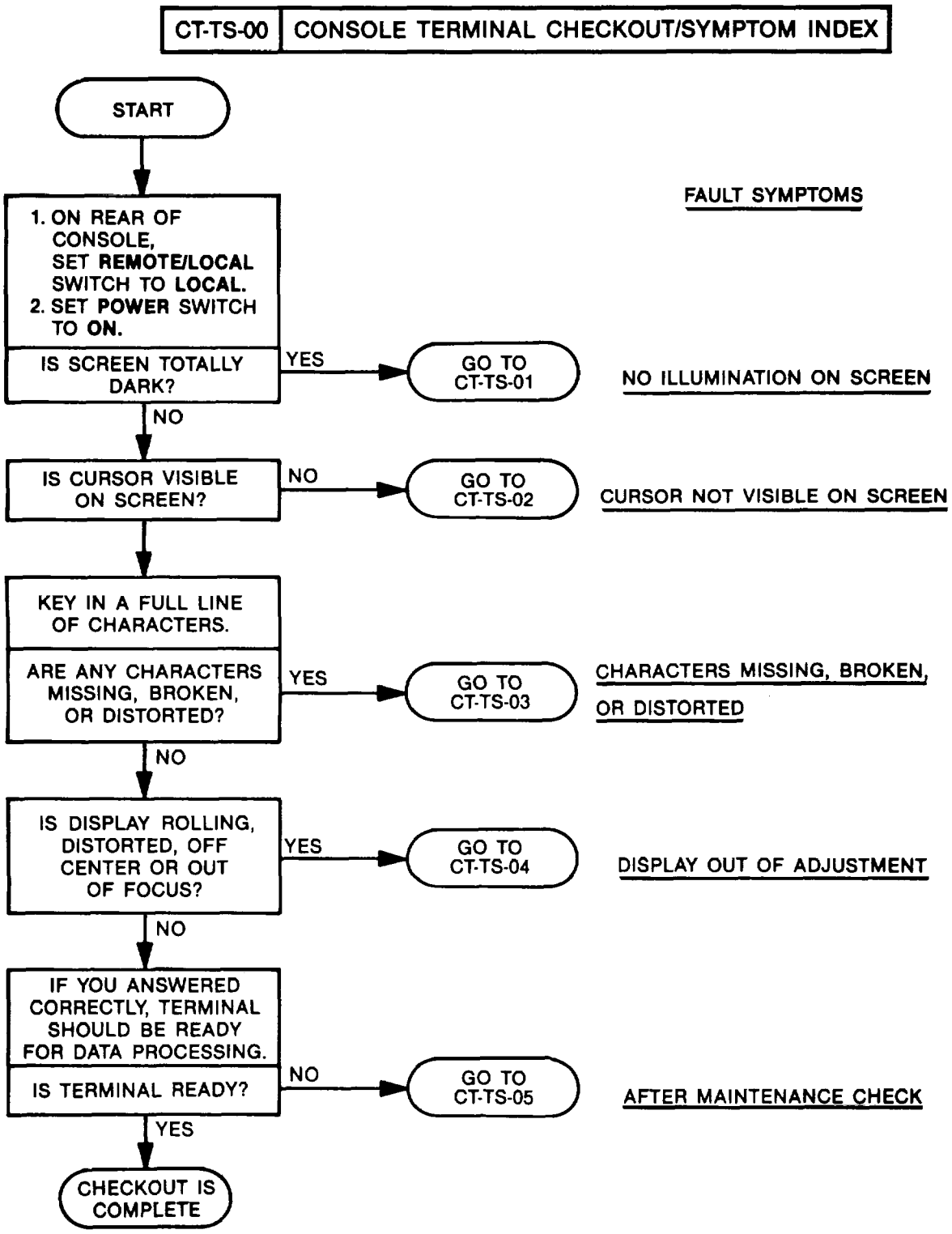
c. Check Past Maintenance Records. If the unusual failure occurred before, it should appear in the maintenance records for the equipment. The records should also tell you how the failure was corrected. Use the same fix this time.

d. Trial and Error Repair. Usually trial and error repairs should be avoided. They are costly and can induce additional symptoms. However, when your experience with the equipment leads you to suspect a definite cause, you should try the repair as a last resort before shipping the equipment to depot for maintenance.

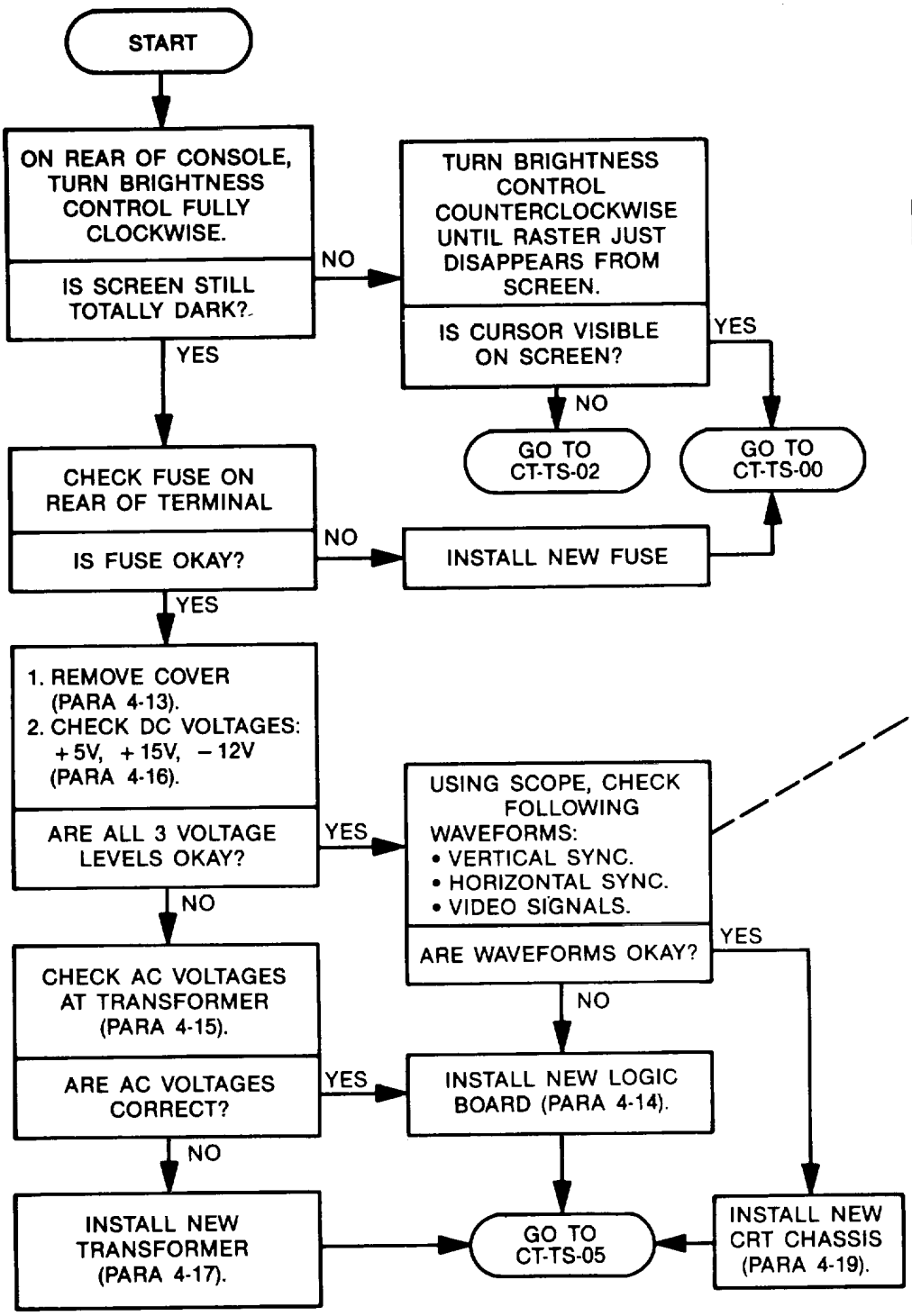
4-7. TROUBLESHOOTING PROCEDURES

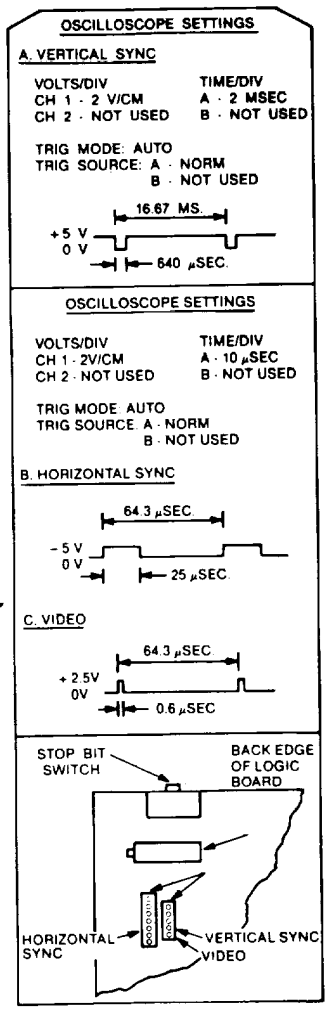
The troubleshooting procedures are arranged as flow charts. The charts consist of background information, specific instructions and decision points. Symbols (table 4-1) are used to organize the charts and guide you through a step-by-step trouble isolation procedure for each known failure symptom.

SYMBOL	MEANING
START	This is a STARTING POINT symbol. This is where you enter a troubleshooting flow chart.
NOTE	This is a NOTE symbol. It contains information you need to do your work, but which is not a procedural step.
CAUTION	This is a CAUTION symbol. It alerts you to the possible danger of breaking equipment in the steps that follow.
WARNING	This is a WARNING symbol. It alerts you to possible danger in the steps that follow.
INFORMATION	This is an INFORMATION symbol. It contains information that helps you make a test or understand the troubleshooting process.
TEST QUESTION NO	This is a TEST/DECISION SYMBOL. It contains a test you must do and a question you must answer. If the results of a test tell you the answer is YES, you will follow the YES arrow to the next symbol. If your answer is NO, you will follow the NO arrow.
YES (A) (A)	These are CONNECTING POINT symbols. They are used in pairs. If the arrow points to the circle, it is the point where you leave a branch of the flow chart. If the arrow points away from the circle, it is the point where you go back into the flow chart. For example, you would go from (A) on one page to (A) on the next page.
INSTALL NEW ITEM (PARA 3-X)	This is a CORRECTIVE ACTION symbol. It tells you what to do to correct the problem. It will also refer you to the paragraph that contains the needed repair or adjustment procedure.
GO TO XX-XX-XX	This is a GO TO symbol. It tells you to go to another flow chart. The X's in the symbol at the left stand for a chart code.
GO TO TM FOR SYSTEM	*Other forms for GO TO symbol:* This symbol tells you to go to the system Technical Manual for further troubleshooting, such as running a T&V program.
GO TO START	This symbol tells you to go back to the START point of the same flow chart.

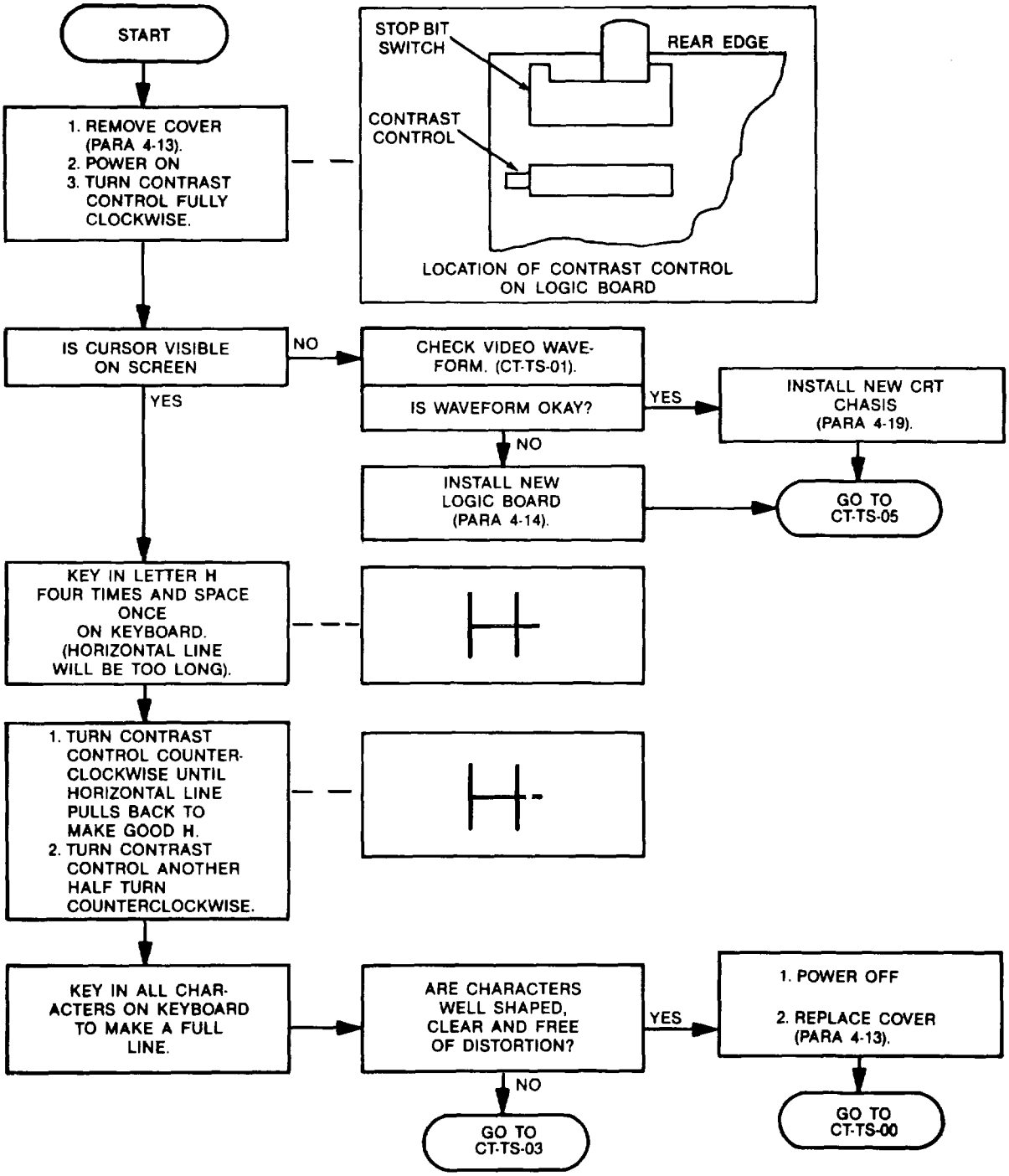

CT-TS-00
CONSOLE TERMINAL CHECKOUT/SYMPTOM INDEX
START
1. ON REAR OF CONSOLE, SET REMOTE/LOCAL SWITCH TO LOCAL.
2. SET POWER SWITCH TO ON.
IS SCREEN TOTALLY DARK?
YES
GO TO CT-TS-01
NO ILLUMINATION ON SCREEN
NO
IS CURSOR VISIBLE ON SCREEN?
NO
GO TO CT-TS-02
CURSOR NOT VISIBLE ON SCREEN
KEY IN A FULL LINE OF CHARACTERS.
ARE ANY CHARACTERS MISSING, BROKEN, OR DISTORTED?
YES
GO TO CT-TS-03
CHARACTERS MISSING, BROKEN, OR DISTORTED
NO
IS DISPLAY ROLLING, DISTORTED, OFF CENTER OR OUT OF FOCUS?
YES
GO TO CT-TS-04
DISPLAY OUT OF ADJUSTMENT
NO
IF YOU ANSWERED CORRECTLY, TERMINAL SHOULD BE READY FOR DATA PROCESSING.
IS TERMINAL READY?
NO
GO TO CT-TS-05
AFTER MAINTENANCE CHECK
YES
CHECKOUT IS COMPLETE
FAULT SYMPTOMS

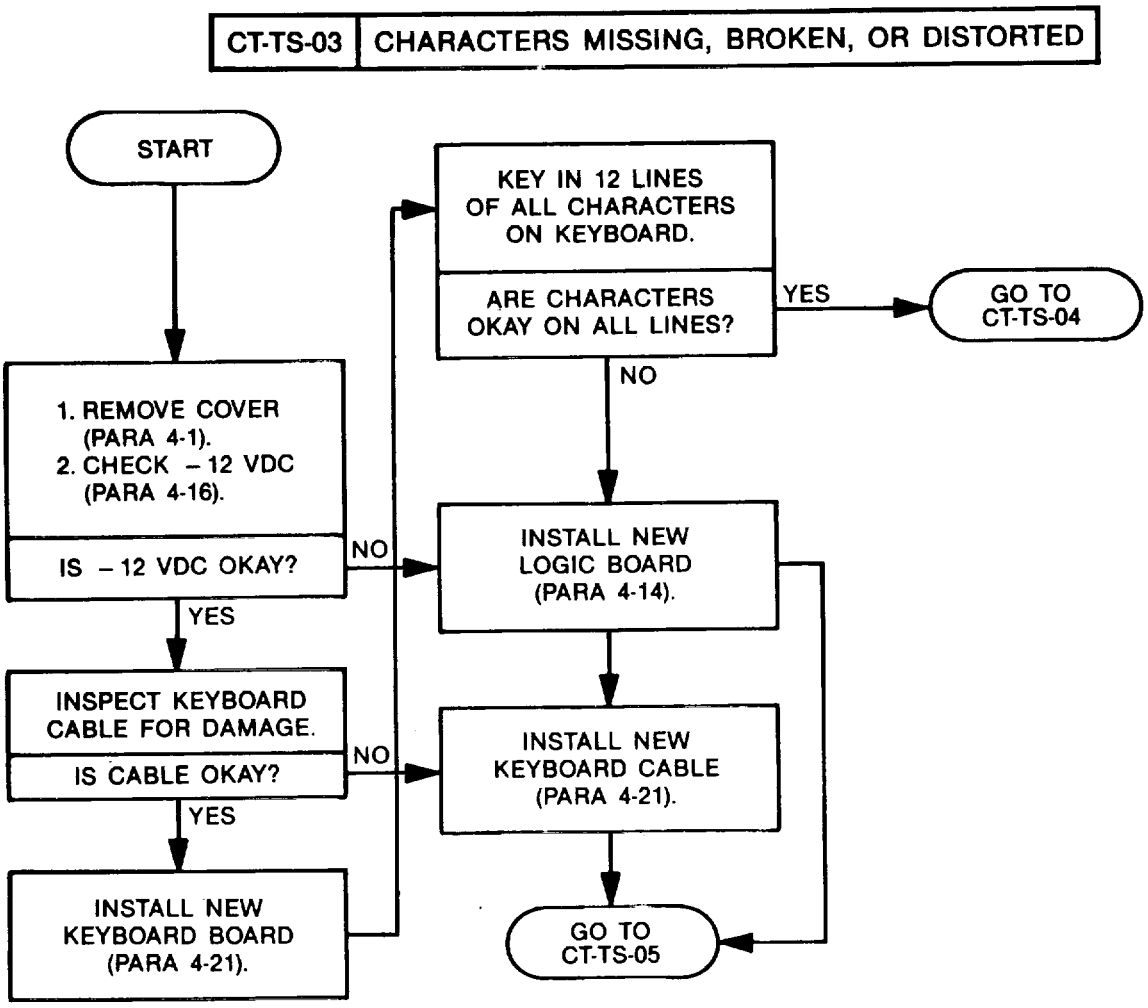
CT-TS-01 NO ILLUMINATION ON SCREEN

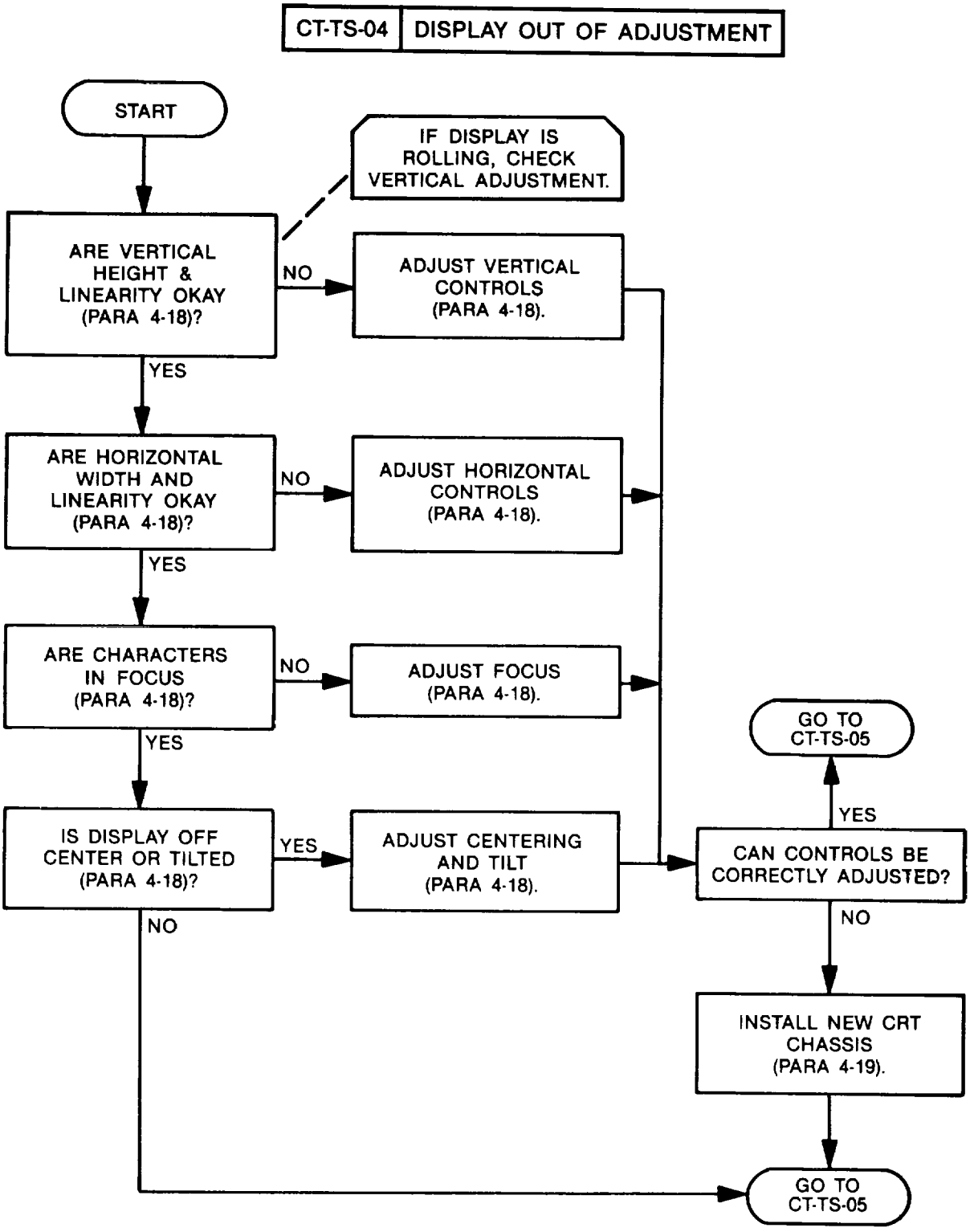




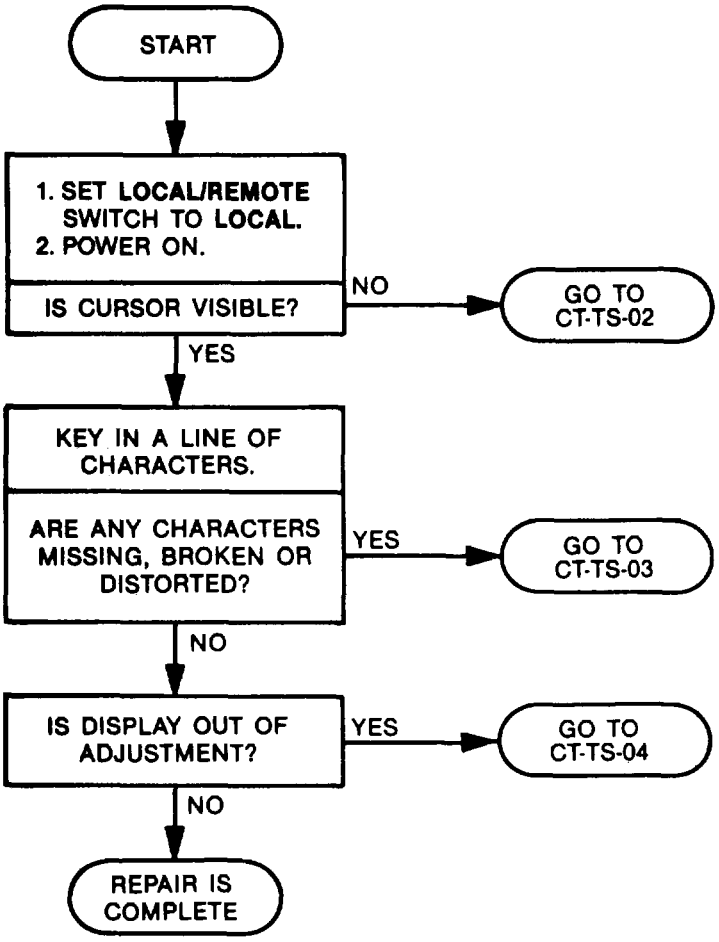
CT-TS-02 CURSOR NOT VISIBLE ON SCREEN




CT-TS-03
CHARACTERS MISSING, BROKEN, OR DISTORTED
START
1. REMOVE COVER (PARA 4-1).
2. CHECK – 12 VDC (PARA 4-16).
IS – 12 VDC OKAY?
NO
YES
INSPECT KEYBOARD CABLE FOR DAMAGE.
IS CABLE OKAY?
NO
YES
INSTALL NEW KEYBOARD BOARD (PARA 4-21).
KEY IN 12 LINES OF ALL CHARACTERS ON KEYBOARD.
ARE CHARACTERS OKAY ON ALL LINES?
YES
GO TO CT-TS-04
NO
INSTALL NEW LOGIC BOARD (PARA 4-14).
INSTALL NEW KEYBOARD CABLE (PARA 4-21).
GO TO CT-TS-05


CT-TS-04
DISPLAY OUT OF ADJUSTMENT
START
IF DISPLAY IS ROLLING, CHECK VERTICAL ADJUSTMENT.
ARE VERTICAL HEIGHT & LINEARITY OKAY (PARA 4-18)?
NO
ADJUST VERTICAL CONTROLS (PARA 4-18).
YES
ARE HORIZONTAL WIDTH AND LINEARITY OKAY (PARA 4-18)?
NO
ADJUST HORIZONTAL CONTROLS (PARA 4-18).
YES
ARE CHARACTERS IN FOCUS (PARA 4-18)?
NO
ADJUST FOCUS (PARA 4-18).
YES
IS DISPLAY OFF CENTER OR TILTED (PARA 4-18)?
YES
ADJUST CENTERING AND TILT (PARA 4-18).
NO
CAN CONTROLS BE CORRECTLY ADJUSTED?
YES
GO TO CT-TS-05
NO
INSTALL NEW CRT CHASSIS (PARA 4-19).
GO TO CT-TS-05

CT-TS-05	AFTER MAINTENANCE CHECK



Section III. MAINTENANCE PROCEDURES

4-8. GENERAL

The individual maintenance procedures in this section contain the corrective actions required to fix a failure which was isolated during troubleshooting.

4-9. EQUIPMENT HANDLING PRECAUTIONS

As with most data processing equipment, the console terminal is very sensitive to dirt, dust, and even smoke. Follow the rules below to avoid damage to the equipment.

a. Make sure hands, hair, clothing, and shoes are clean before working on the console terminal.

b. Do not touch board connector terminals with any tool, bare hands, or a dirty cloth. Tools will damage the fragile connector. Dirt or body sweat will cause corrosion.

c. If a board is to be transported, place it in its original shipping container. If unavailable, pack it carefully with clean packing material that will prevent physical damage and will not cause corrosion.

d. Ground your body to discharge static electricity by touching a metal chassis or cabinet before touching a board. A static discharge from you to a board can destroy integrated circuits on the board.

e. Do not use masking tape labels.

4-10. BOARD HANDLING PRECAUTIONS

Printed circuit boards used in the console terminal are sensitive to static electricity and corrosive materials. Follow the handling precautions below to avoid damage.

a. Hold boards by their edges whenever you handle them.

b. Store and ship boards in static free bags.

c. Store boards in a humidity controlled environment.

d. Do not smoke in the area where boards are used or stored.

e. Do not put beverages on or near boards. An accidental spill can cause corrosion and chemical damage.

f. Never leave boards lying around unprotected.

4-11. CATHODE RAY TUBE HANDLING PRECAUTIONS

The cathode ray tube (CRT) can implode on impact. Anytime you are working on or near the CRT be careful not to force or hit components attached to it. Such actions could cause an implosion resulting in flying glass and injury to personnel.

4-12. MAINTENANCE PROCEDURES

Before you start a corrective maintenance procedure, you should gather all the items or help listed in the initial setup box for that procedure. Read the procedure carefully and do only what each step tells you to do. Some steps are followed by a reference. Use the reference any time you are not sure what you must do for that step. Always do the steps in the order they are given unless the procedure requires decision steps. When decision steps are involved, go in the order indicated by the decision.

4-13. REMOVE/REPLACE TOP COVER

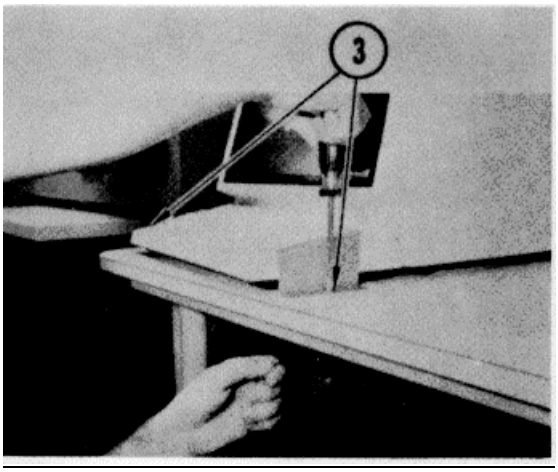
INITIAL SETUP
Common Tools
- Tool kit

Remove

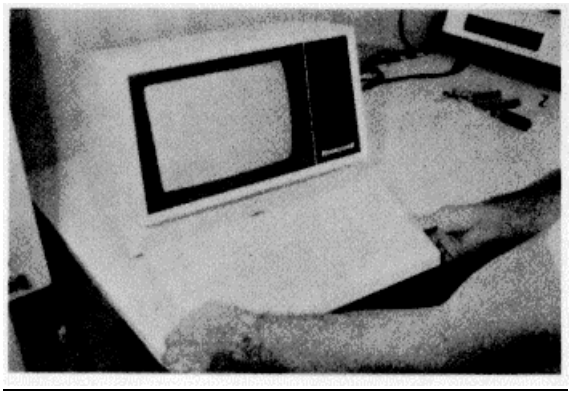
1. Power OFF.
2. Pull ac power plug from outlet.

NOTE

In some installations, keyboard is secured to work surface with brackets. They must be removed to access keyboard.

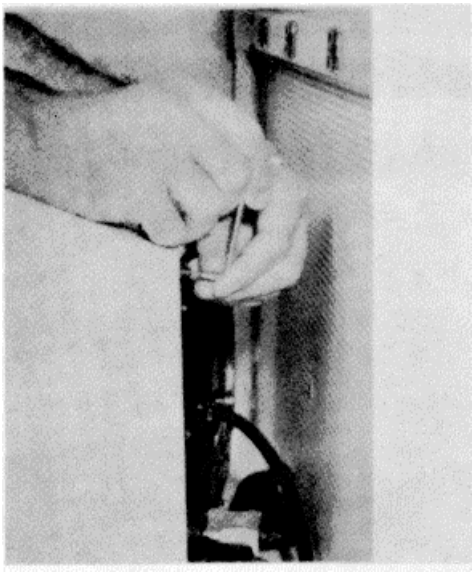


3. If necessary unbolt bracket from each side of keyboard.

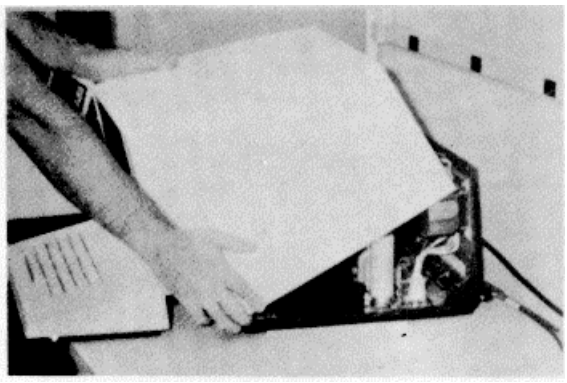


4. Slide keyboard toward you about 3 inches.

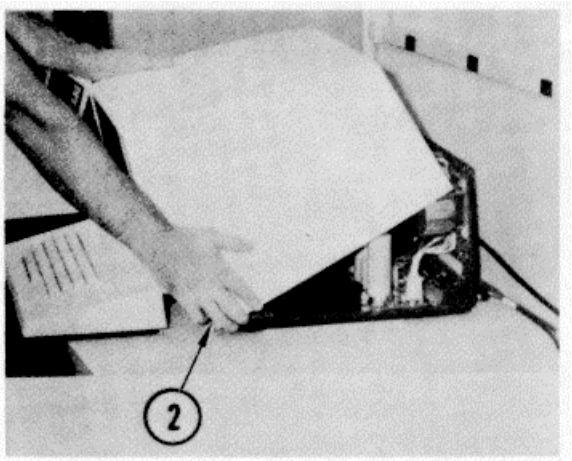
4-13. REMOVE/REPLACE TOP COVER (CONT)



5. Remove two cover screws, flat washers, and lock washers from top corners on back of display unit.



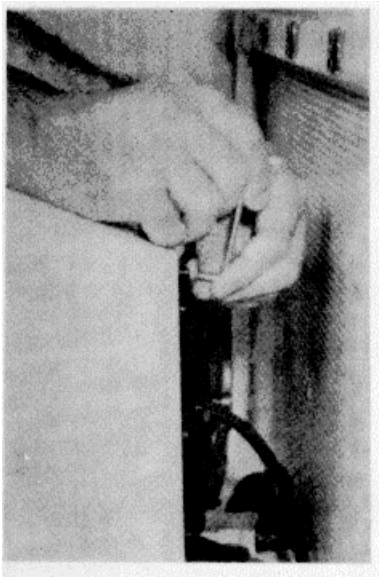
6. Tilt cover forward.
7. Lift cover off.



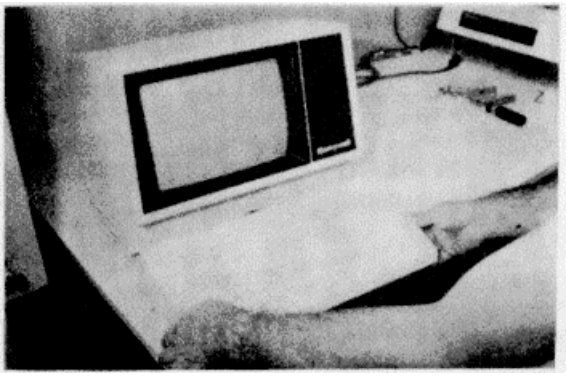
Replace

1. Lower cover to base.
2. Align notches in front corners of cover with notches on base.
3. Lower rear of cover.

4-13. REMOVE/REPLACE TOP COVER (CONT)



4. Install two cover screws, flat washers and lock washers in top corners on back of display unit.



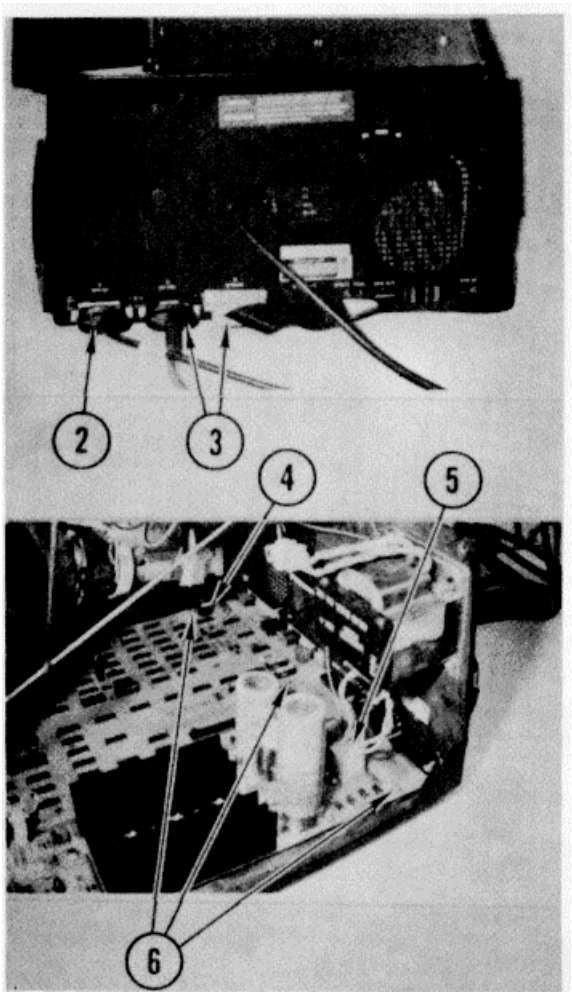
5. Slide keyboard in place.
6. If necessary bolt brackets on each side of keyboard.
7. Push ac power plug into outlet.
8. Power ON.

4-14. REMOVE/REPLACE LOGIC BOARD

INITIAL SETUP

Common Tools
- Tool kit

Materials/Spare Parts
- Tags (for cable)
- Pen or pencil



Remove

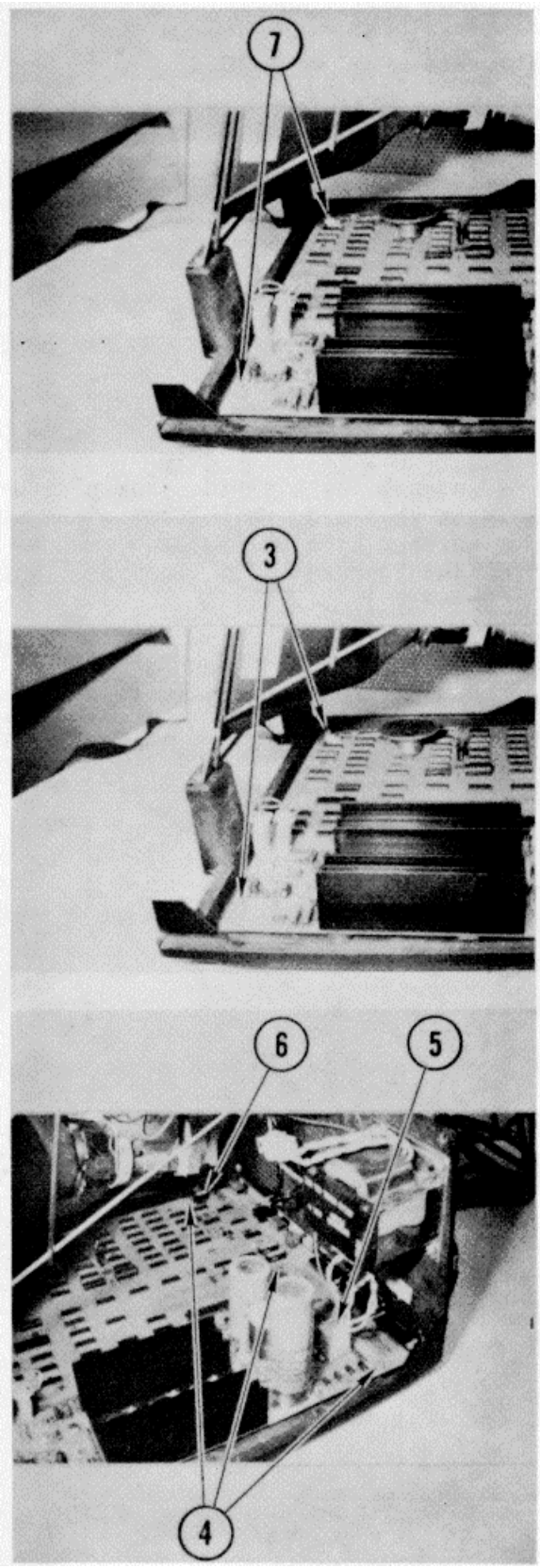
1. Remove top cover (para. 4-13).

NOTE

In some installations, display unit and keyboard are bolted to the work surface. If bolted down, remove console terminal. (See your system manual.)

2. Loosen screws enough to pull off cable. Tag and pull out cable from J1.
3. Repeat step 2 for J2 and J3.
4. Pull off connector P-07.
5. Pull off connector P-12.
6. Remove three screws.

4-14. REMOVE/REPLACE LOGIC BOARD (CONT)



7. Remove nuts.

8. Lift board off screws. Pull board away from back of terminal.

9. Lift board out.

Replace

1. On new board, make sure dip switches are set to requirements of your system. (See your system manual.)

2. Set new board in terminal on screws. Make sure control rods go through holes in back of terminal.

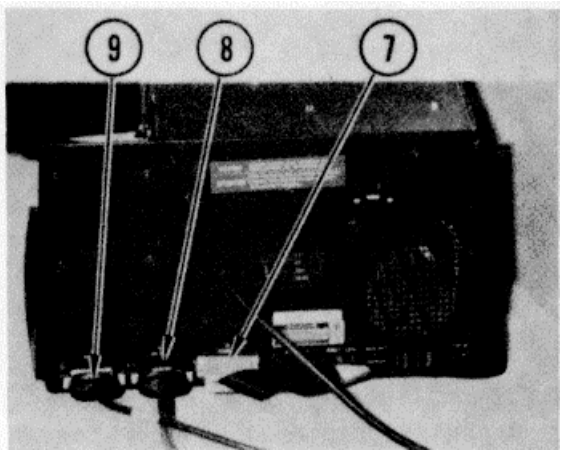
3. Replace nuts.

4. Replace screws.

5. Push on connector P-12.

6. Push on connector P-07.

4-14. REMOVE/REPLACE LOGIC BOARD (CONT)



7. Push keyboard cable into J3. Tighten screws.
8. Push cable P2 into J2. Tighten screws.
9. Push communications cable into J1. Tighten screws.
10. Adjust CRT chassis controls (para. 4-18, steps 2 thru 42).

4-15. CHECK AC VOLTAGES

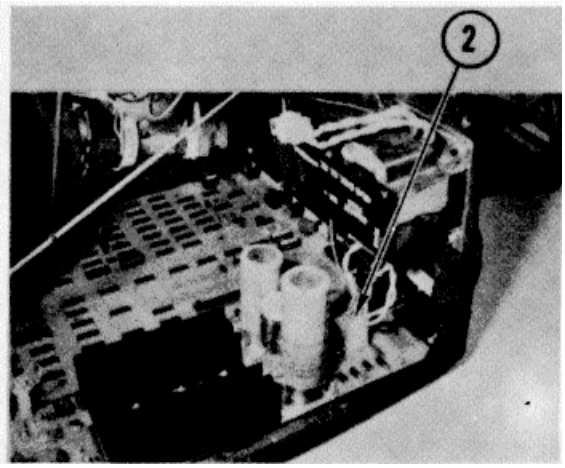
INITIAL SETUP

Common Tools
• Tool kit

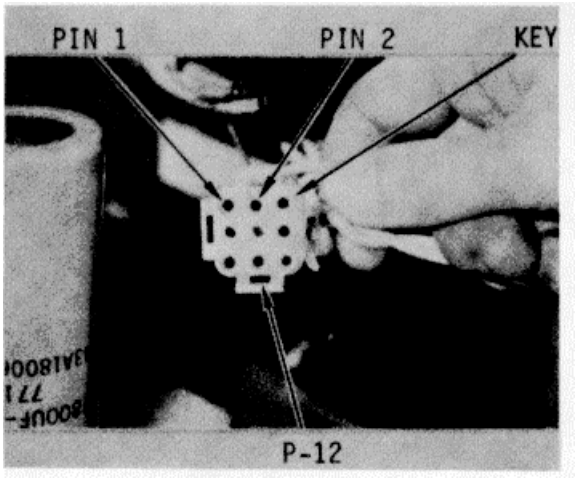
Test, Measurement and Diagnostic Equipment
• Multimeter

WARNING

High voltage is used in the operation of this equipment. Electrocution may result if you fail to observe safety precautions.

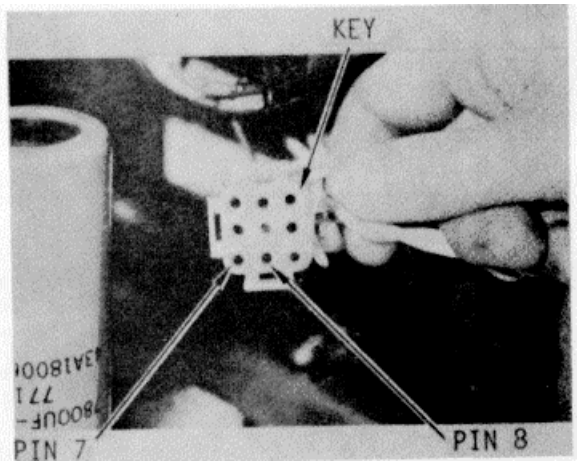


1. Remove top cover (para 4-13).
2. Pull connector P-12 off board.
3. Push ac power plug into outlet. Power ON.
4. Set up multimeter to 20 volt ac range.

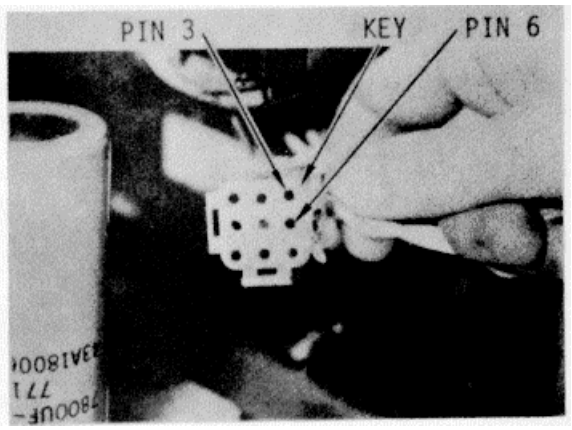


5. Hold connector P-12 as shown. Push one lead in pin 1. Push other lead in pin 2.
6. Check readout. It should be 9.75 $\pm$ 1.25 V ac.

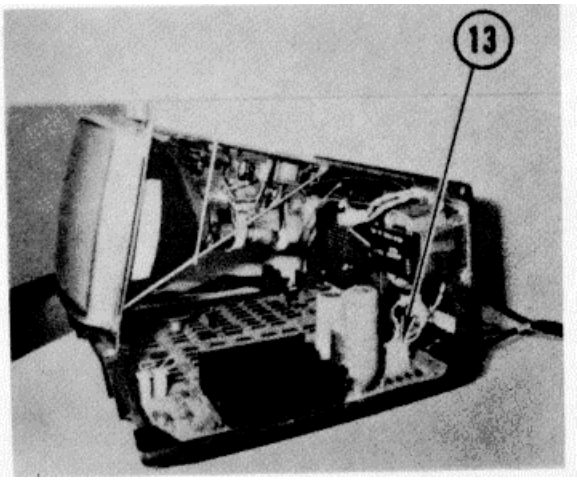
4-15. CHECK AC VOLTAGES (CONT)



7. Move leads to pins 7 and 8.
8. Check readout. It should be 16.45 ± 0.45 V ac.



9. Move leads to pins 3 and 6. Set multimeter to 200 volt ac range.
10. Check readout. It should be 19.45 ± 0.55 V ac.

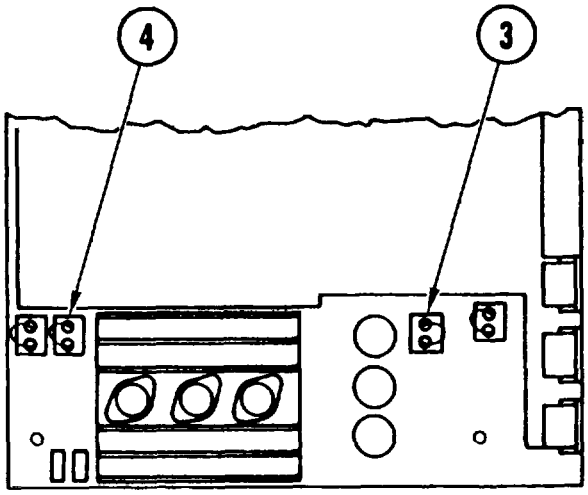


11. Disconnect leads.
12. Power OFF. Pull ac power plug from outlet.
13. Push connector P-12 on board.
14. Replace top cover (para 4-13).

4-16. CHECK/ADJUST DC VOLTAGES

INITIAL SETUP

Common Tools	Test, Measurement and Diagnostic Equipment
• Tool kit	• Multimeter

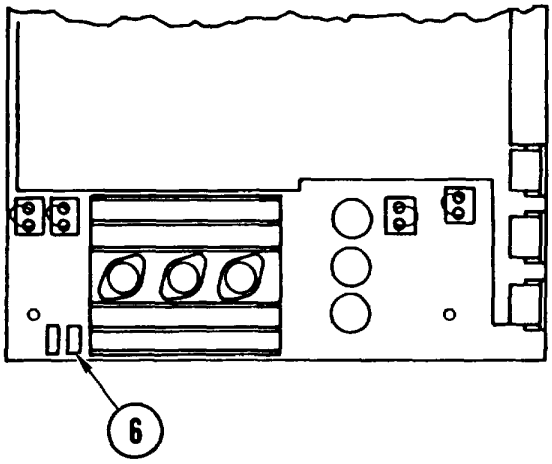


WARNING

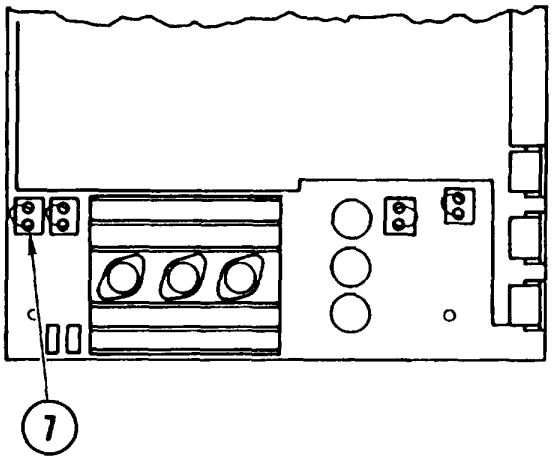
High voltage is used in the operation of this equipment. Electrocution may result if you fail to observe safety precautions.

1. Remove top cover (para. 4-13).
2. Push ac power plug into outlet. Power ON.
3. Set up multimeter to 20 volt dc range. Push negative lead into top of jumper plug D06. Make sure tip of lead touches metal.
4. Push positive lead into top of jumper plug L07B. Make sure tip of lead touches metal.
5. Check readout.
   - If +5.0 $\pm$ 0.05 V dc, go to step 7
   - If not +5.0 $\pm$ 0.05 V dc, go to step 6

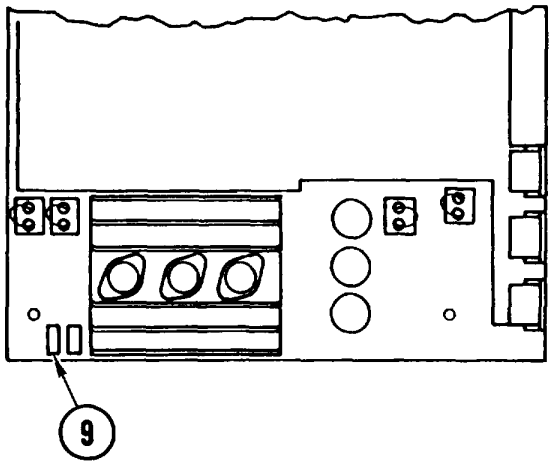
4-16. CHECK/ADJUST DC VOLTAGES (CONT)



6. Turn R7 until readout is ±5.0 + 0.05 V dc.

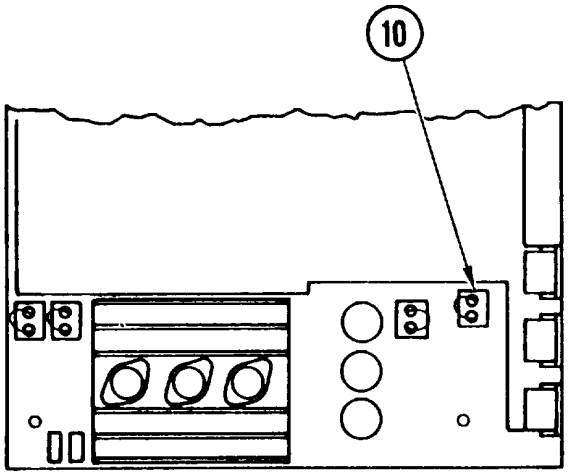


7. Move positive lead to jumper plug L07A. Make sure tip of lead touches metal.
8. Check readout.
   - If +15.0 ± 0.05 V dc, go to step 10
   - If not +15.0 ± 0.05 V dc, go to step 9



9. Turn R15 until readout is +15.0 ± 0.05 V dc.

4-16. CHECK/ADJUST DC VOLTAGES (CONT)



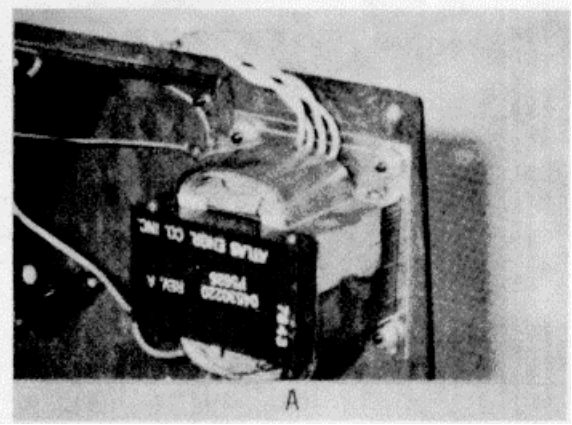
10. Move positive lead to connector shown. Make sure tip of lead touches metal.
11. Check readout. It should be -12.0 $\pm$ 0.05 V dc.
12. Disconnect multimeter leads.
13. Replace top cover (para. 4-13).

4-17. REMOVE/REPLACE POWER TRANSFORMER

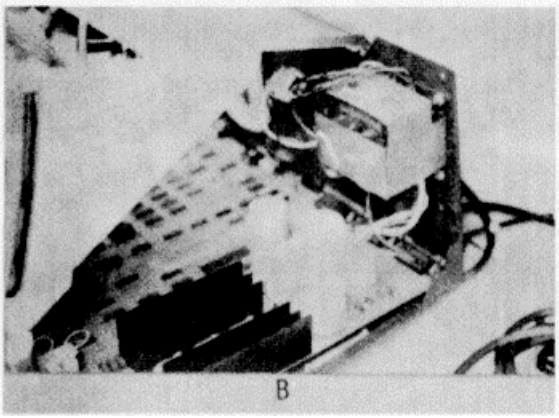
INITIAL SETUP

Common Tools
• Tool kit

Materials/Spare Parts
• Tags
• Pen or pencil



A


B

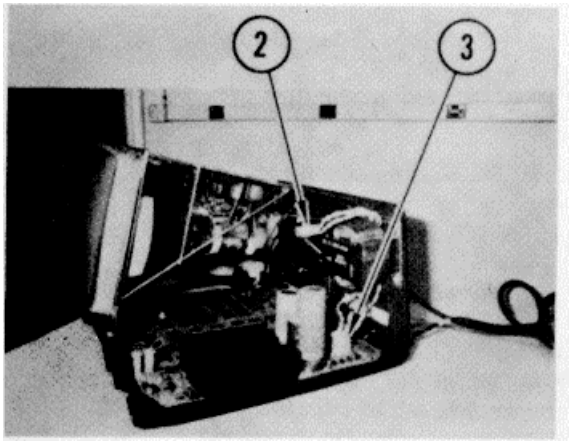
NOTE

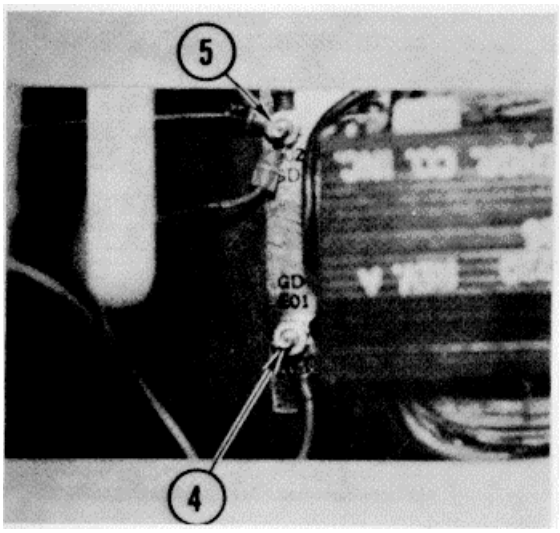
In some installations the console terminal transformer has different appearance and wire mounting.

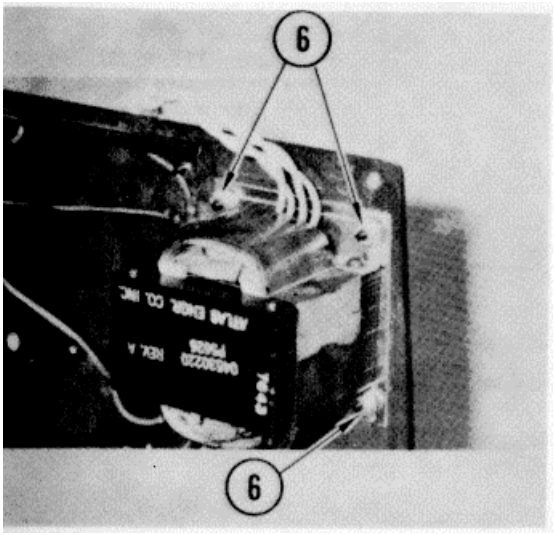
- If your console terminal transformer looks like that in A, do part A, Remove and Replace.

- If your console terminal transformer looks like that in B, do part B, Remove and Replace.

4-17. REMOVE/REPLACE POWER TRANSFORMER (CONT)







Remove

PART A

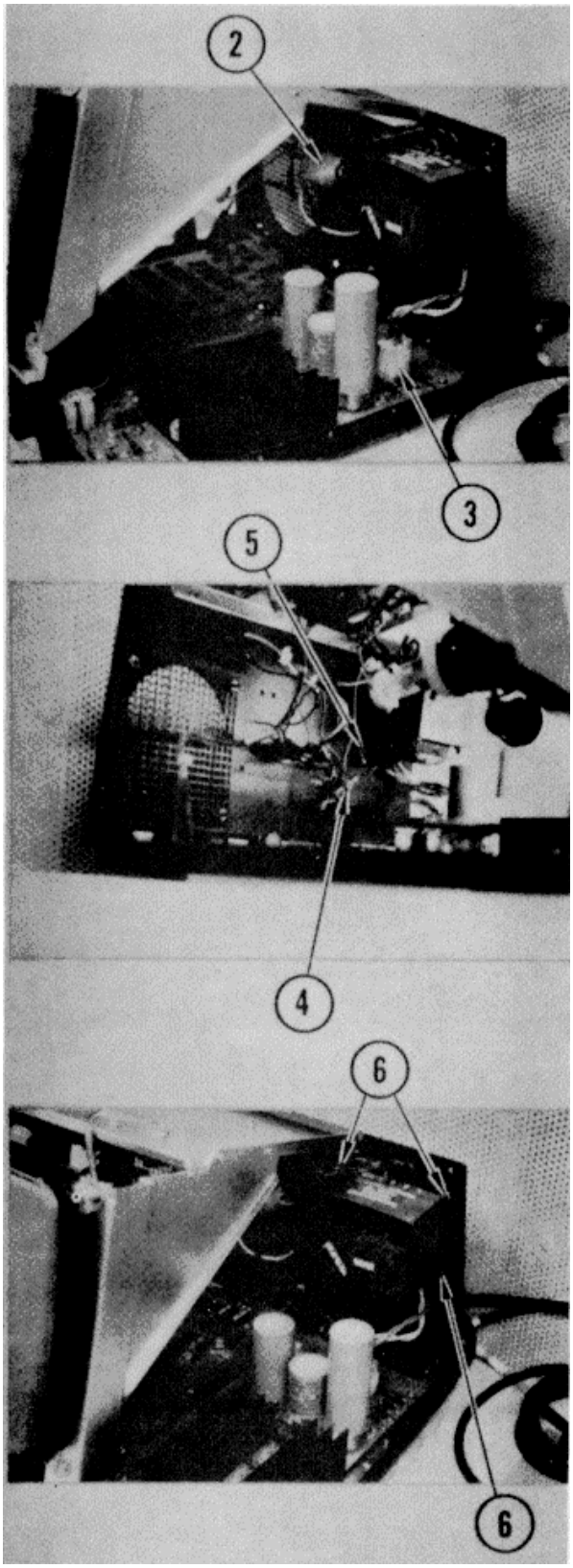
1. Remove top cover (para.4-13).
2. Pull apart connector P-11.
3. Pull connector P-12 off board.
4. Remove nut. Pull wire off screw.
5. Remove nut. Pull wire off screw.

CAUTION

Removing screws loosens transformer. If transformer falls, it could damage board below.

6. While holding transformer, remove screws, washers, and nuts.
7. Lift out transformer.

4-17. REMOVE/REPLACE POWER TRANSFORMER (CONT)



PART B

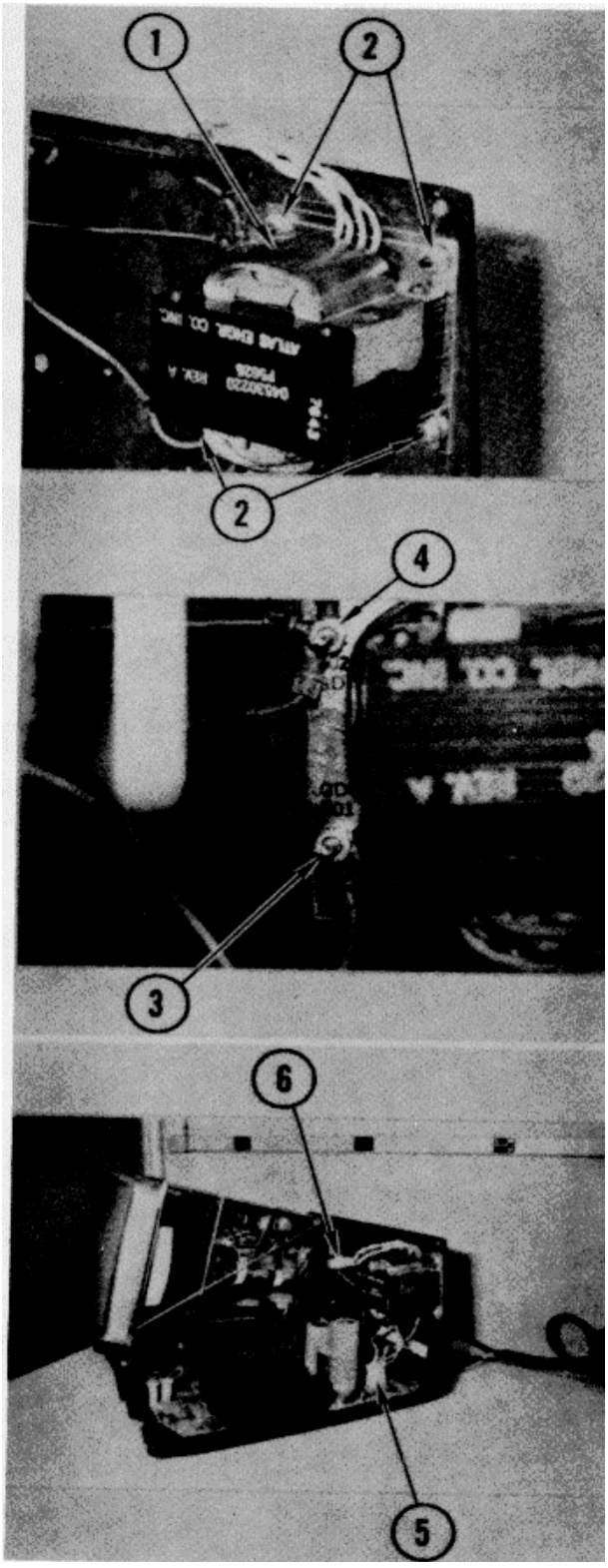
1. Remove top cover (para 4-13).
2. Pull apart connector.
3. Pull connector off board.
4. Remove nuts, tag, then pull off wires.
5. Remove transformer supporting nut, washer, and screw. Tag, then pull off wire.

CAUTION

Removing screws loosens transformer. If transformer falls, it could damage board below.

6. While holding transformer, remove three nuts, washers, and screws.
7. Lift out transformer.

4-17. REMOVE/REPLACE POWER TRANSFORMER (CONT)

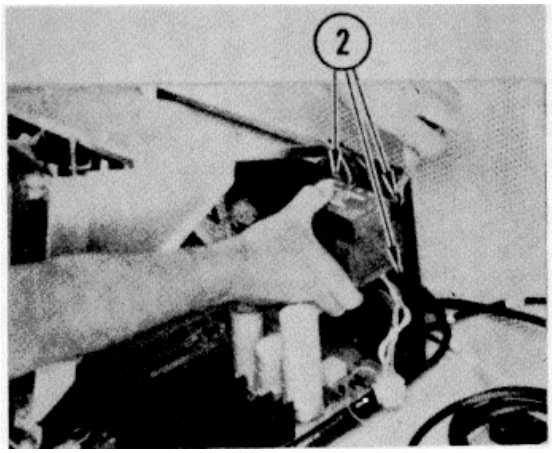


Replace

PART A

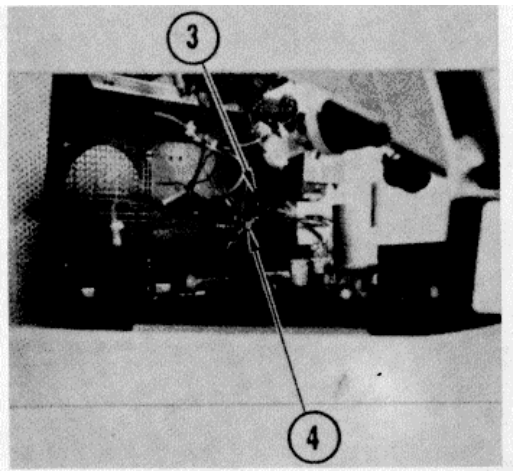
1. Hold new transformer in console terminal so marking 1234SHD faces up.
2. Replace screws, washers and nuts.
3. Locate wire labeled SHD on transformer. Push wire on screw EO1. Replace nut.
4. Push wire leading from connector P-12 onto screw E02. Replace nut.
5. Push P-12 on board.
6. Push together P-11.
7. Replace top cover (para 4-13).

4-17. REMOVE/REPLACE POWER TRANSFORMER (CONT)

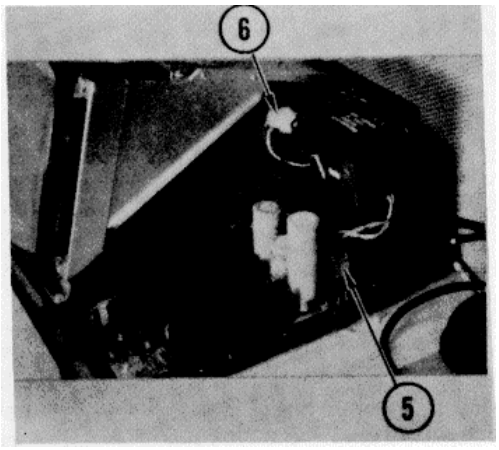


PART B

1. Hold transformer in console terminal as shown.
2. Replace and tighten screws, washers, and nuts.



3. Replace wire. Replace and tighten transformer supporting screw, washer, and nut,
4. Replace wires. Replace and tighten nuts.

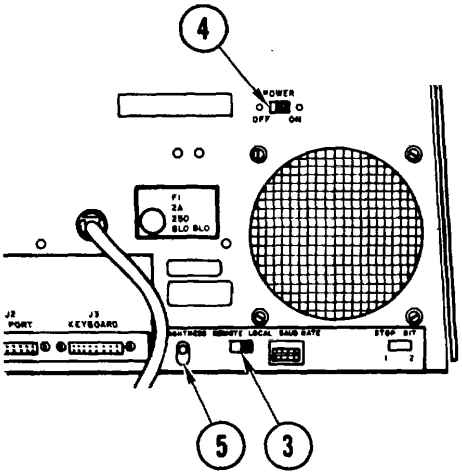


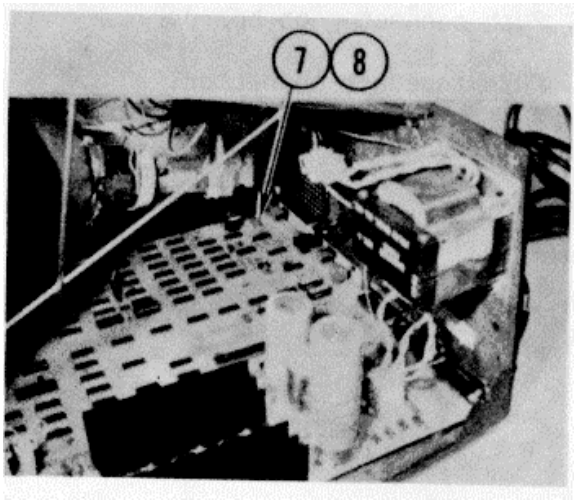
5. Push connector on board.
6. Push together connector.
7. Replace top cover (para 4-13).

4-18. ADJUST CRT CHASSIS CONTROLS

INITIAL SETUP

Common Tools
• Tool kit





NOTE

Steps 1 thru 4 are common to all adjustments. Perform these steps then proceed to the required adjustment.

1. Remove top cover (para 4-13).

WARNING

High voltage is used in the operation of this equipment. Electrocution may result if personnel fail to observe safety precautions.

Use care when handling or working around the CRT. Damage to the CRT could cause an implosion resulting in possible severe injury from flying glass.

2. Push ac power plug into outlet.
3. Set REMOTE-LOCAL switch at rear of display unit to LOCAL.
4. Power ON.

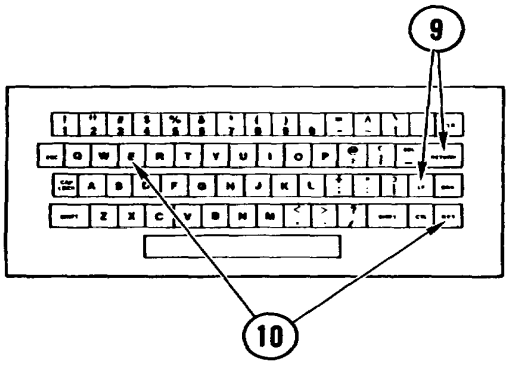
Brightness

5. Adjust BRIGHTNESS control at rear of display unit until raster just disappears and cursor remains on screen.

Contrast

6. On keyboard, press H four times, then press space bar once.
7. While you watch screen, turn contrast control on board until crossbar on H looks like this: -
8. Turn contrast control in other direction until crossbar moves back inside H. Continue to turn another half-turn.

A18. ADJUST CRT CHASSIS CONTROLS (CONT)

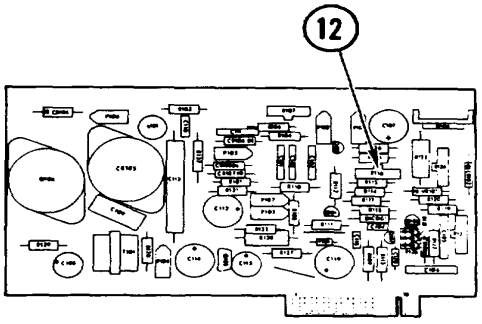


Vertical Adjustments

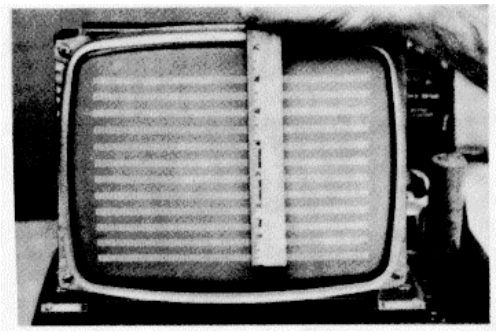
9. Press RETURN. Press LF.

10. Press and hold RPT. Press and hold E until line is filled with E's.

11. Repeat steps 9 and 10 until full screen of E's is displayed.



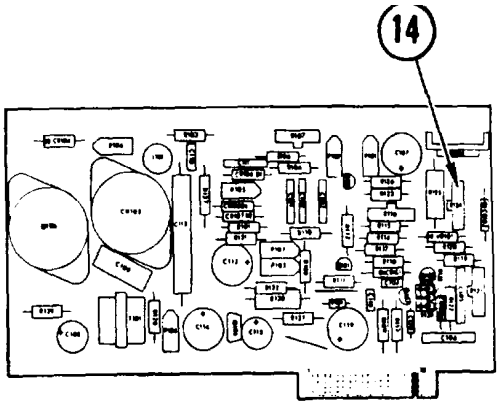
12. Set the vertical frequency control (R116) to the center of its rotation. If necessary, readjust for stable display.



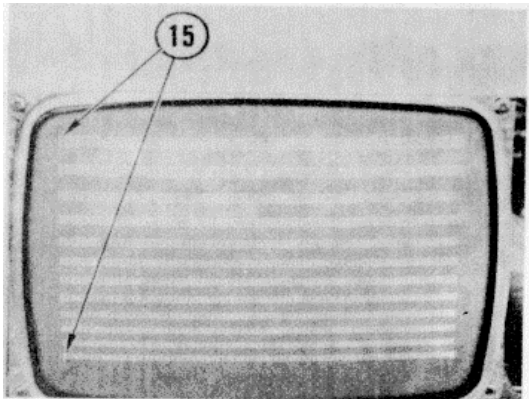
13. Measure height of display.

    - If 6 in., go to step 15
    - If not 6 in., go to step 14

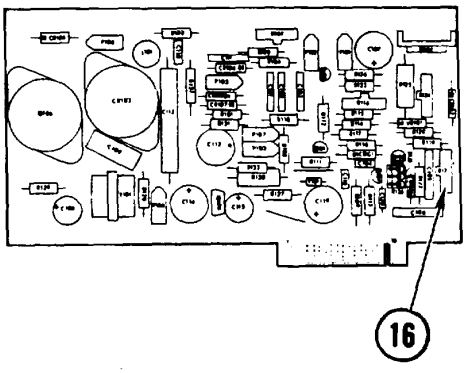
4-18. ADJUST CRT CHASSIS CONTROLS (CONT)



14. Adjust height control (R124) for display height of 6 in.



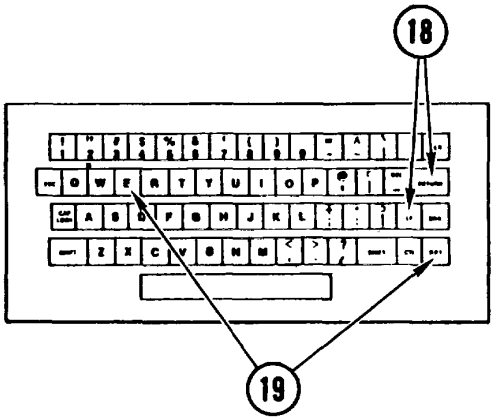
15. Measure height of E in top line. Measure height of E in bottom line.
    - If heights are equal, go to step 17
    - If heights are not equal, go to step 16



16. Adjust vertical linearity control (R121) for equal characters height in top and bottom lines.

17. Recheck measurements of steps 13 and 15.

4-18 ADJUST CRT CHASSIS CONTROLS (CONT)

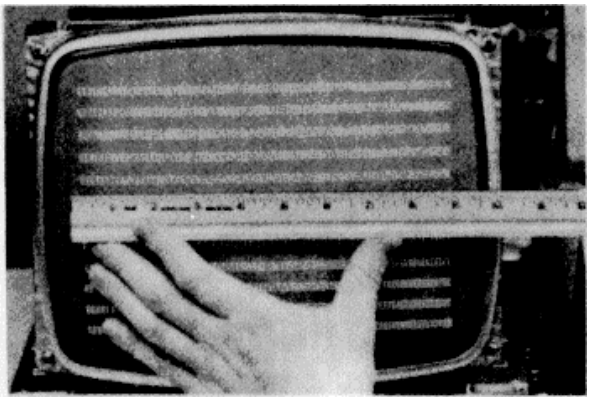


Horizontal Adjustments

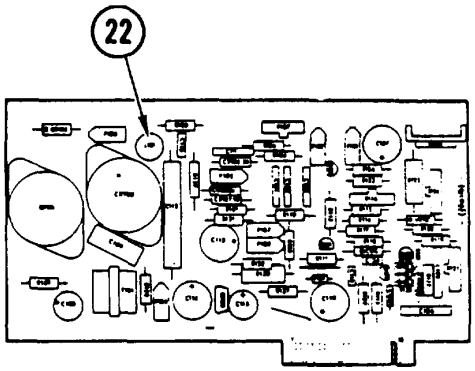
18. Press RETURN. Press LF.

19. Press and hold RPT. Press and hold E until line is filled with E's.

20. Repeat steps 18 and 19 until full screen of E's is displayed.

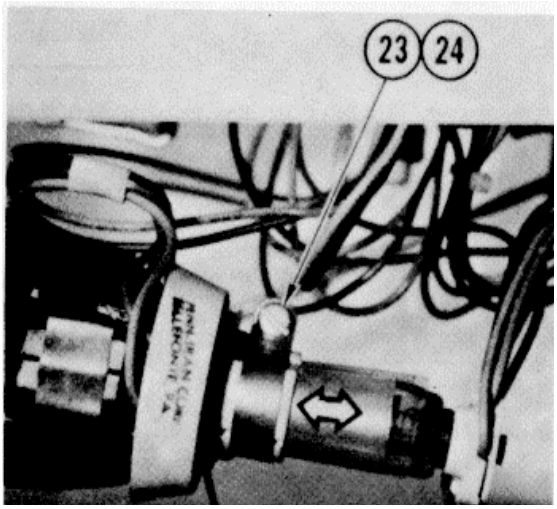


21. Measure width of display.
    - If 9 in., go to step 25
    - If not 9 in., go to step 22



22. Adjust width control L101 for display width of 9 in.
    - If L101 will not adjust width to 9 in., go to step 23
    - If adjustment can be made, go to step 25

4-18. ADJUST CRT CHASSIS CONTROLS (CONT)

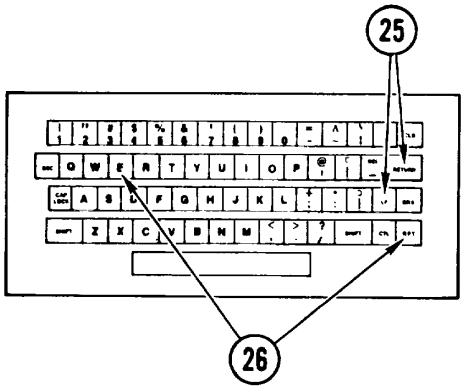


23. Loosen screw on yolk clamp.

24. Pull horizontal linearity sleeve out of yoke. Insert the sleeve approximately 2/3 of its length into yoke. Tighten yoke screw. Repeat step 22.

NOTE

If the sleeve sticks, turn off power. Remove CRT connector, loosen yoke screw further, if necessary, and carefully slide yoke off CRT. Free sleeve and carefully replace yoke and sleeve on CRT.

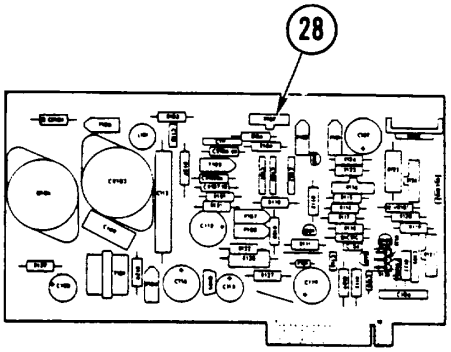


Focus

25. Press RETURN. Press LF.

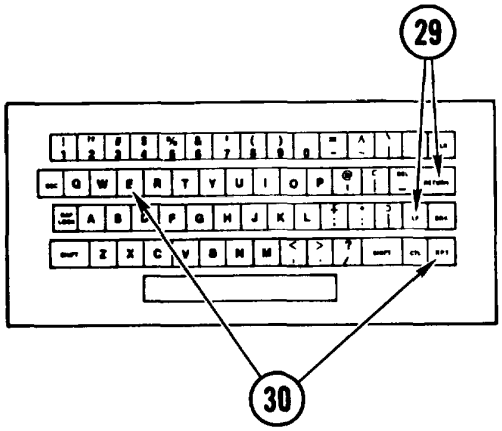
26. Press and hold RPT. Press and hold E until line is filled with E's.

27. Repeat steps 25 and 26 until full screen of E's is displayed.



28. Adjust focus control (R107) until characters on screen are sharp.

4-18. ADJUST CRT CHASSIS CONTROLS (CONT)

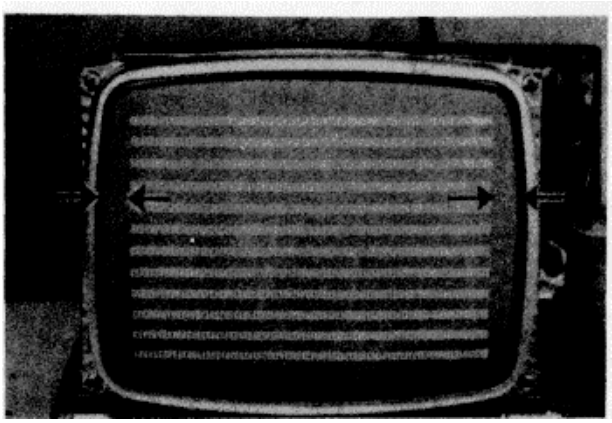


Centering

29. Press RETURN. Press LF.

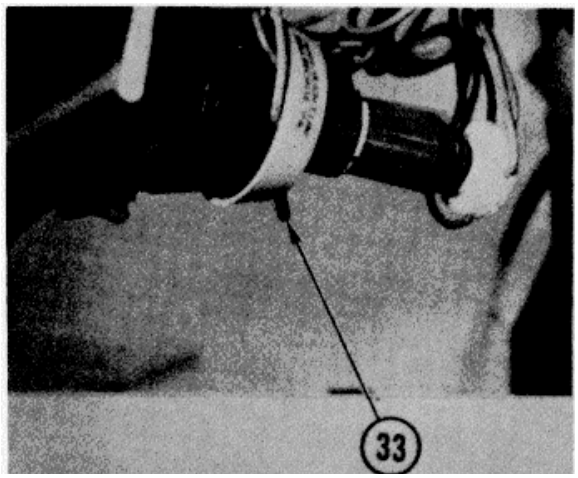
30. Press and hold RPT. Press and hold E until line is filled with E's.

31. Repeat steps 29 and 30 until full screen of E's is displayed.



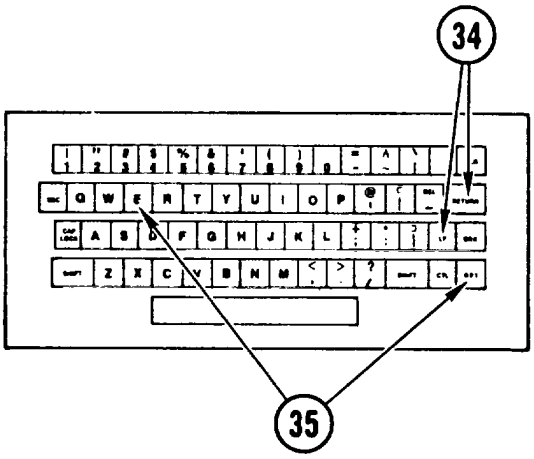
32. Measure distance from edge of display to edge of screen. Measure distance from other edge of display to edge of screen.

    - If distances are equal, go to step 34
    - If distances are not equal, go to step 33



33. Move tabs on ring magnets until distances noted in step 32 are equal.

4-18. ADJUST CRT CHASSIS CONTROLS (CONT)

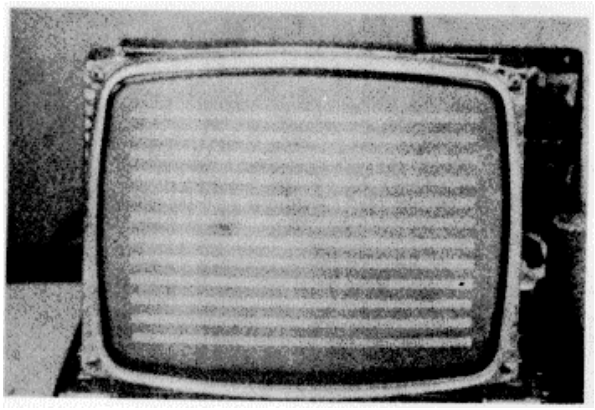


Tilt

34. Press RETURN. Press LF.

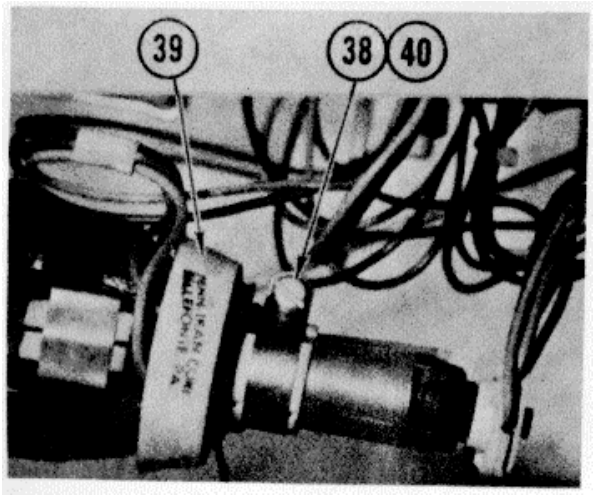
35. Press and hold RPT. Press ahd hold E until line is filled with E's.

36. Repeat steps 34 and 35 until full screen of E's is displayed.



37. Check if display is tilted.

    - If no, go to step 41
    - If yes, go to step 38



38. Loosen screw on yoke clamp.

39. Grasp white plastic ring. Turn yoke until display is level.

40. Tighten screw.

41. Power off.

42. Replace top cover (para 4-13).

4-19. REMOVE/REPLACE CRT CHASSIS

INITIAL SETUP

Common Tools
- Tool kit

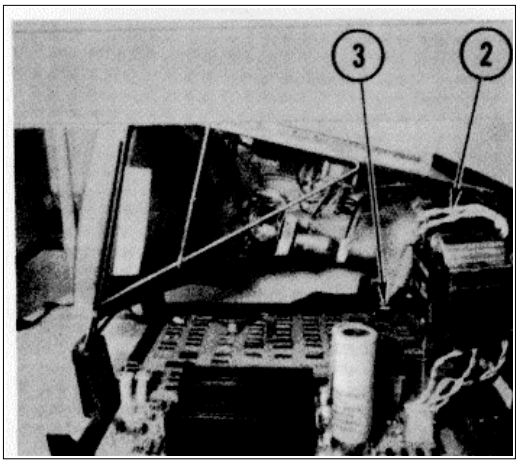
Materials/Spare Parts
- Tags
- Pencil

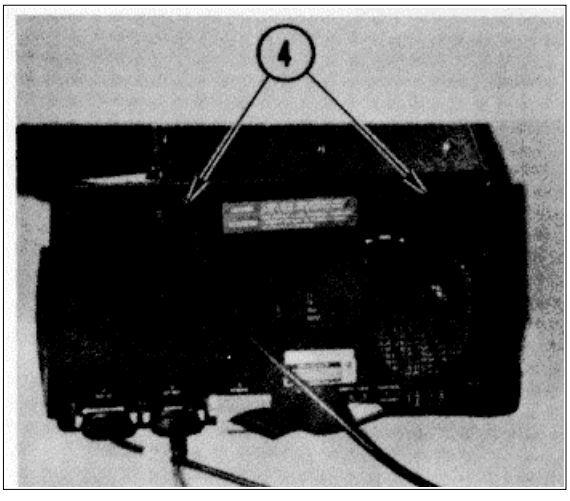
WARNING

Use care when handling or working around the CRT. Damage to the CRT could cause an implosion resulting in possible severe injury from flying glass.

CAUTION

Hold CRT chassis firmly while removing all screws, otherwise chassis could drop on logic board.

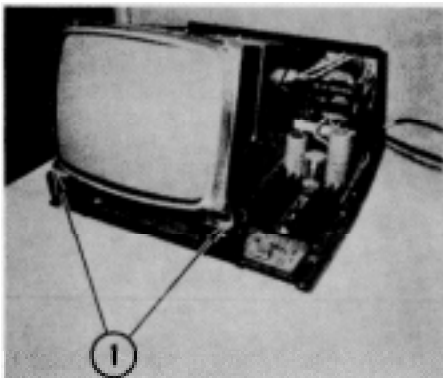




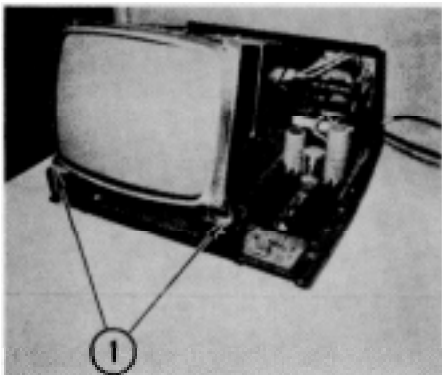
Remove

1. Remove top cover (para 4-13).
2. Tag ground wire. Cut tie wrap and remove ground wire from stud adjacent to transformer.
3. Tag and pull P-07 off logic board.
4. While holding chassis, remove screws.

4-19. REMOVE/REPLACE CRT CHASSIS (CONT)

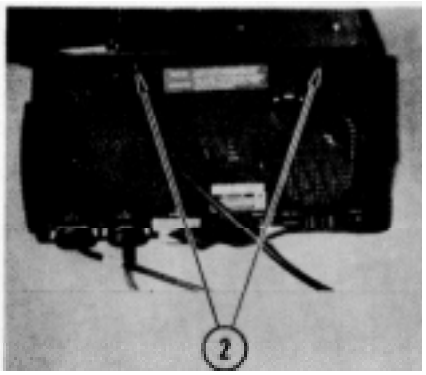


5. While holding chassis, remove screws.
6. Lift off chassis.



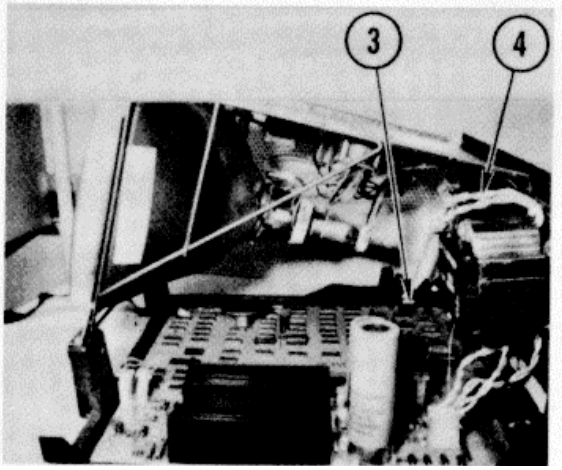
Replace

1. Holding new chassis firmly, replace screws.



2. Holding new chassis firmly, replace screws.

4-19. REMOVE/REPLACE CRT CHASSIS (CONT)



3. Push plug P-07 onto logic board.
4. Attach ground wire to stud.

5. Push ac power plug into outlet.
6. Power ON.
7. Adjust CRT chassis (para 4-18).
8. Replace top cover (para 4-13).

4-20. REMOVE/REPLACE KEYBOARD ASSEMBLY

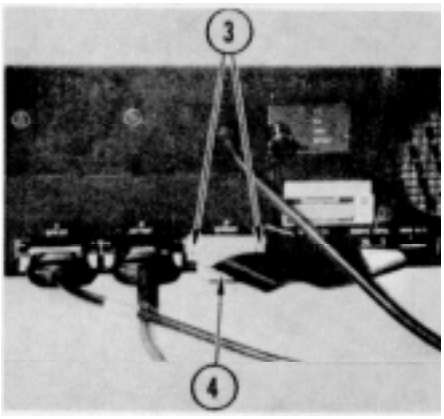
INITIAL SETUP
Common Tools
•Tool kit

Remove

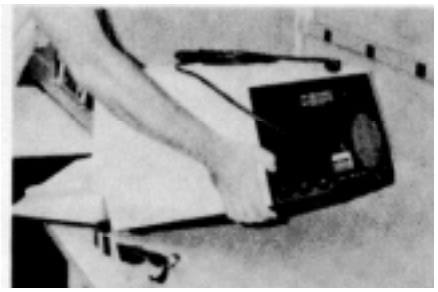
1. Power off.

NOTE

In some installations, display unit and keyboard are bolted to work surface.

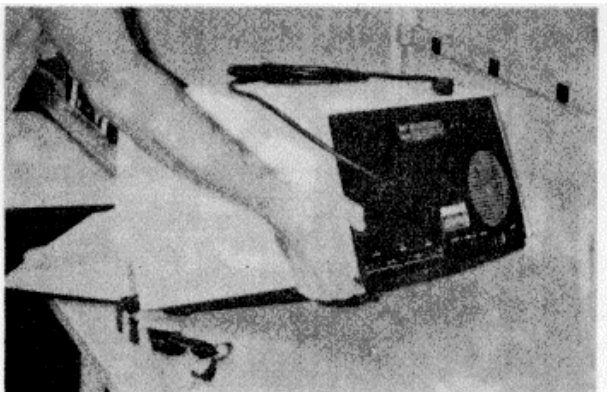


2. If bolted down, remove console terminal. (See your system manual.)
3. Loose)i screws enough to pull off cable.
4. Pull off cable.



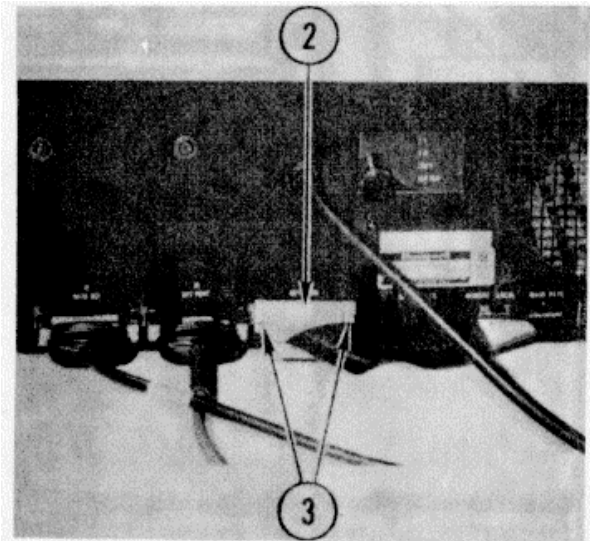
5. To pull cable from underneath unit, lift terminal.
6. Remove keyboard.

4-20. REMOVE/REPLACE KEYBOARD ASSEMBLY (CONT)



Replace

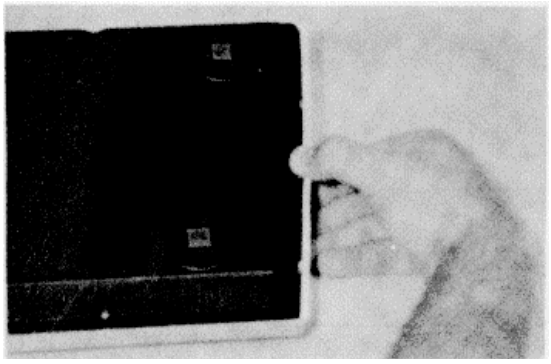
1. Lift terminal and route cable underneath unit. It should lie flat. Fold and tuck excess underneath.



2. Push cable into J3.
3. Tighten screws.
4. If necessary, bolt display unit to work surface.
5. Slide keyboard in place.
6. If necessary bolt brackets on each side of keyboard.
7. Push ac power plug into outlet.
8. Power ON.

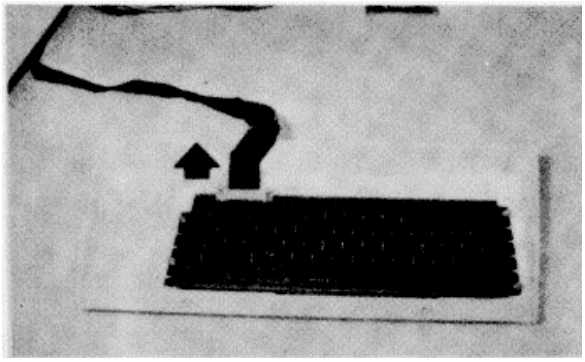
4-21. REMOVE/REPLACE KEYBOARD CABLE/BOARD

INITIAL SETUP
Common Tools
•Tool kit



Remove

1. Remove keyboard assembly from terminal (para 4-20).
2. Turn keyboard over, as shown.
3. Gently spreading edges of case, lift out cover.

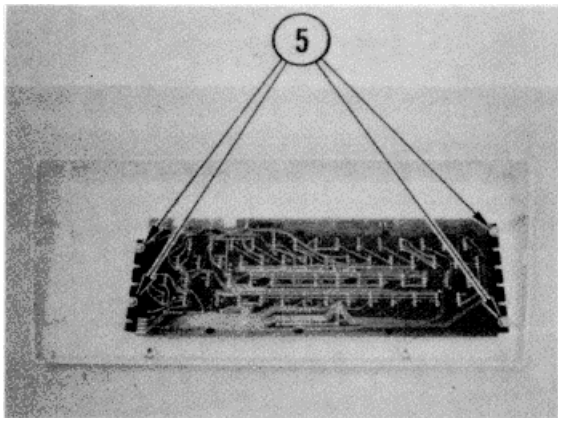


4. Pull cable off board.

NOTE

If only the cable is being removed, task is complete. If the board is being removed, go to step 5.

4-21. REMOVE/REPLACE KEYBOARD CABLE/BOARD (CONT)

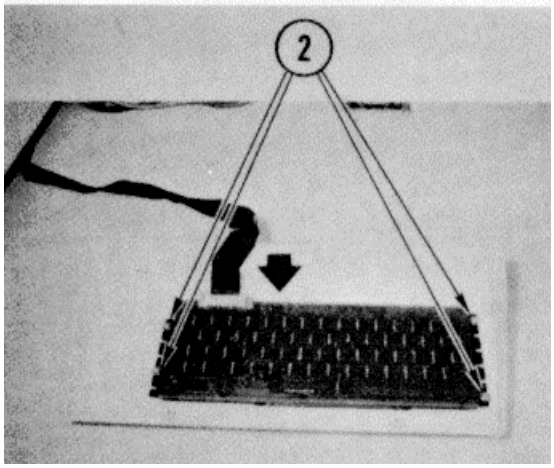


5. Using screwdriver, remove four screws.
6. Lift out board.

Replace

NOTE

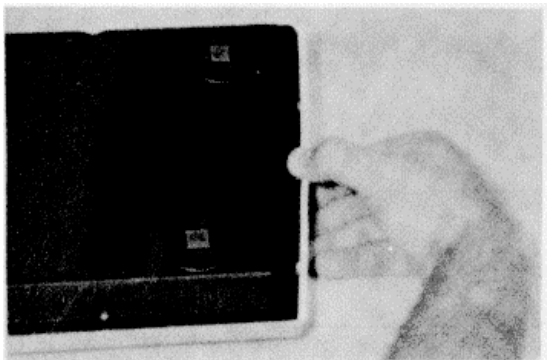
If board is being replaced, go to step 1. If cable is being replaced, go to step 3.



1. Position board into case.
2. Using screwdriver, install four screws.
3. Push cable onto board as shown.

NOTE

Before replacing cover, make sure keys do not stick or rub.



4. Gently spreading edges of case, replace cover.
5. Replace keyboard assembly (para 4-20).

APPENDIX A

REFERENCES

A-1. INTRODUCTION

This appendix lists all forms, field manuals and technical manuals referenced in, or required for use with, this technical manual.

A-2. FORMS

Equipment Inspection and Maintenance Worksheet ..... DA Form 2404
Quality Deficiency Report ..... Form SF 368
Discrepancy in Shipment Report ..... Form SF 364
Recommended Changes to Equipment Technical Manuals ..... DA Form 2028-2
Recommended Changes to Publications and Blank Forms ..... DA Form 2028
Maintenance Request ..... DA Form 2407

A-3. TECHNICAL MANUALS

Operator's Manual: Keyboard-Display MX-10171/MYQ-4 ..... TM 11-7025-207-10
Procedures for Destruction of Electronic Materiel to Prevent Enemy Use (Electronics Command) ..... TM 750-244-2
The Army Maintenance Management System (TAMMS) ..... TM 38-750
Administrative Storage of Equipment ..... TM 740-90-1

A-4. MISCELLANEOUS PUBLICATIONS

Consolidated Index of Army Publications and Blank Forms ..... DA PAM 310-1

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL

This Maintenance Allocation Chart (MAC) provides a summary of maintenance operations for the console terminal. This document assigns categories of maintenance for specific maintenance functions on repairable items and identifies tools and equipment required to perform each function. Each maintenance function is assigned to the lowest level of maintenance prepared to perform that function for the terminal. It should be understood that each maintenance function can also be performed at all higher levels of maintenance. The higher levels of maintenance will have tools and test equipment to perform the maintenance functions assigned to and normally performed by lower levels of maintenance.
The following paragraphs of Section I present maintenance function definitions, explanation of MAC column entries, and explanation of column entries of the tool and test equipment requirements section. Section II presents the MAC for the console terminal and Section III presents the tool and test equipment requirements for the console terminal.

B-2. MAINTENANCE FUNCTION DEFINITIONS.

Maintenance Functions are limited to and-defined as follows:

a. Inspect. Determination of the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. Verification of serviceability and detection of beginning failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Performance of operations required periodically to keep an item in proper operating condition. Such operations would include cleaning, preservation, draining, painting, or replenishment of fuel/lubricants/hydraulic fluids or compressed air supplies.

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

e. Aline. Adjustment of specified variable elements of an item to the maximum or desired performance.

f. Calibrate. Determination and cause corrections to or adjustments to instruments or test measuring and diagnostic equipment used in precision measurement. Consists of comparing two instruments, one a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. Emplacement, seating, or fixing into position an item, part, or module (component or assembly) in a manner to allow proper functioning of the equipment/system.

h. Replace. Substitution of a serviceable like-type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. Application of maintenance services (inspect, test, service, adjust, aline, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remaching, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module/component/assembly, and item or system. This function does not include trial and error replacement of consumable spare type items such as fuses, lamps, or electronic tubes.

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

k. Rebuild. Restoration of unserviceable equipment to a like-new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hour, miles etc.) considered in classifying Army equipment/components.

B-3. EXPLANATION OF MAC COLUMN ENTRIES.

a. Group Number. This column lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next highest assembly.

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

c. Maintenance Function. This column lists the functions to be performed on the item listed in the Component/Assembly column.

d. Maintenance Category. This column specifies, by the listing of a “worktime” figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in the Maintenance Function column. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance categories, appropriate “worktime” figures will be shown for each category. The number of man-hours specified by the “worktime” 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, troubleshooting 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 MAC.

Subcolumns of the Maintenance category Column are:

C -- Operation/Crew
O -- Organizational
F -- Direct Support
H -- General Support
D – Depot

e. Tools and Equipment. This column specifies by code those common tool sets (not individual tools) and special tools, test, and supporting equipment required to perform the designated function.

Explanation of Column Entries of Tool and Test Equipment Requirements Table.

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column presents the National/NATO Stock number of the specific tool or test equipment when these numbers are assigned.

e. Tool Number. This column lists the manufacturer's part number of the tool, followed by the Federal supply code for the manufacturer (5 digit) in parentheses, when these numbers are fully identified.

Section II. MAINTENANCE ALLOCATION CHART FOR KEYBOARD DISPLAY MX-10171/MYQ-4

GROUP NUMBER	COMPONENT	MAINTENANCE FUNCTION	MAINTENANCE LEVEL					TOOLS AND TE	REMARKS
			UNIT		INTERMEDIATE DEPOT				
			C	O	F	H	D		
05	Keyboard Display (MX-10171/MYQ-4)	Test			0.1			3,4	F
		Replace			0.4			1,2	
		Repair			0.3			1,2	
		Overhaul					40.0		A
0501	Circuit Card Assy.	Test			0.1			3	
		Replace			0.1			1	
		Repair					0.5		A
0502	Chassis, Display	Test			0.1			3,4	
		Adjust			0.2			1,4	
		Replace			0.5			1,2	
		Repair					0.5		A
0503	Keyboard Assembly	Test			0.1			3,4	
		Replace			0.1			1	
		Repair			0.2			1,3,4	
050301	Circuit Card Assy.	Test			0.1			3,4	
		Replace			0.1			1	
		Repair					0.2		A
050302	Cable Assy. Keyboard	Test			0.1			4	
		Replace			0.1			1	

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR KEYBOARD DISPLAY MX-10171/MYQ-4

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O,F	Tool Kit Electronic Equipment TK17	5180-01-023-4982	
2	F	Decimal Socket Set	5120-00-247-0748	
3	F	Oscilloscope, OS-261/C	6625-00-127-0079	
4	F	Multimeter, Digital AN/USM-451	6625-01-060-6804	

DRSEL-MA Form 6013-1. (1 Mar 77') HISA-FM 411-77'

SECTION IV. MAINTENANCE ALLOCATION CHART FOR KEYBOARD DISPLAY MX-10171/MYQ-4

Reference Code	Remarks
A.	Repair by contractor.
B.	DS repair of 0107 Power Supply limited to replacement of fan and/or fuses.
C.	DS repair of 0125 Power Distribution Unit limited to replacement of fuses.
D.	DS repair of 07U5U01 XPS/4 Board limited to replacement of fuses.
E.	DS repair of 0706 Universal Wire Harness limited to replacement of connectors and limit switch.
F.	See Technical System Manual for Complete Group Coding.

APPENDIX C

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists expendable supplies and materials you are authorized for the support of console terminal.

C-2. GENERAL

This list identifies items that do not have to accompany console terminal and that do not have to be turned in with it.

C-3. EXPLANATION OF LISTING

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment.

Section II. EXPENDABLE SUPPLIES AND MATERIALS

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
	C	8305-00-222-2423	Cloth, lintfree	YD
	C	7930-00-664-6910	Glass Cleaner (non-spray) 58536 A-A-40	CO

APPENDIX D

SCHEMATIC DIAGRAMS

Index of Diagrams

Figure D-1 shows the logic board power supply schematic diagram.

Figure D-2 is the primary power schematic diagram.

Foldouts FO-1 and FO-2 show the console terminal functions and circuitry. This information will be helpful if the troubleshooting procedures within this manual fail to help you isolate a fault. You can use common procedures to check the circuits.

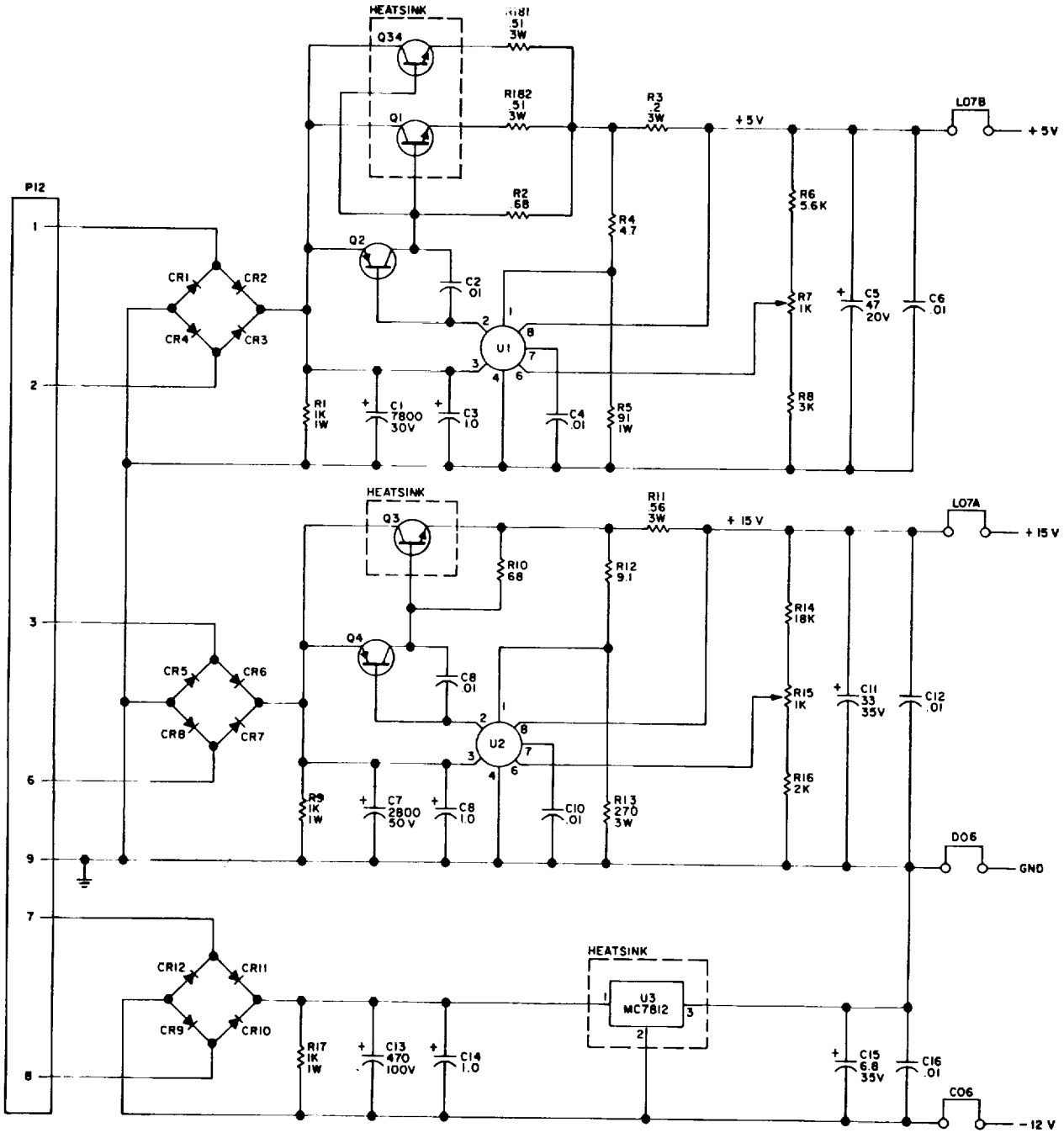


Figure D-1. Logic Board Power Supply Schematic Diagram

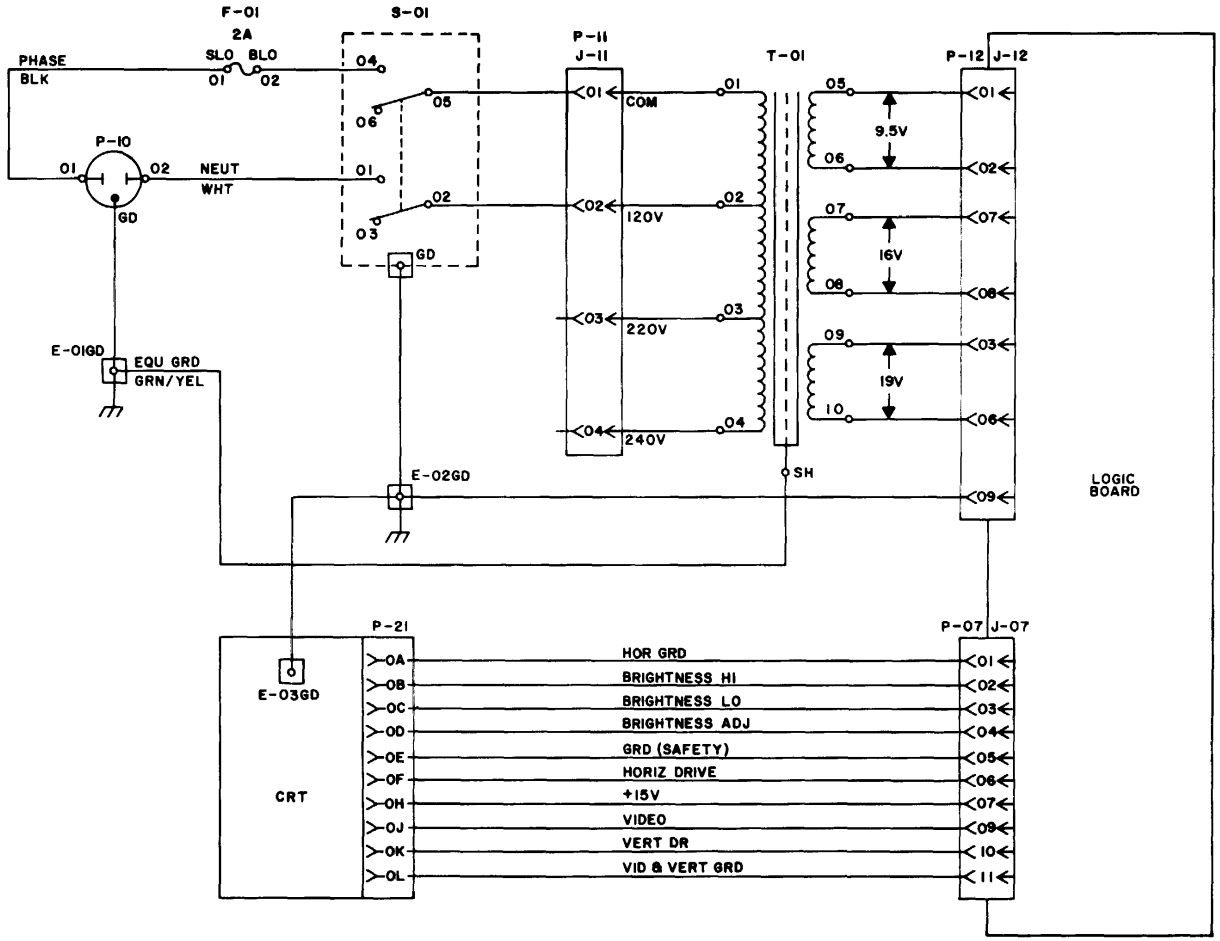


Figure D-2. Primary Power Schematic Diagram

INDEX

SUBJECT P (CONT) PARAGRAPH

GLOSSARY

ASCII. American Standard Code for Information Interchange. The standard used for transmission of data between computer systems and remote terminals over telephone lines.

ASYNCHRONOUS. Data communication mode which is not time related. Uses stop and start bits instead of time pulses to organize data for transmission.

CRT. Cathode ray tube. An electron tube used for visual display purposes.

BAUD. A unit of measure of data transmission.

BAUD RATE. Rate at which data bits are transmitted (bits per second).

CURSOR. A distinctive mark (such as a square or underline) that indicates where the next character will be displayed on a video terminal.

EIA. Electronic Industries Association. A trade organization of the electronics industry which sets technical standards used by government agencies and the electronics industry.

FULL DUPLEX. Communications mode which allows transmission and reception at the same time.

HEAT SINK. A metal device used for absorbing and dissipating heat.

PARITY (BITS). A common technique for error detection in data transmission. Parity check bits are added to the data so that each group of bits adds up to an even number for even parity and an odd number for odd parity.

RS-232-C. An EIA standard that defines data interface characteristics.

RAM. Random Access Memory. A high speed, semiconductor memory commonly used for registers.

SYNC. Any signal that allows one device to operate precisely in step with another.

SYNCHRONOUS. Data communication mode which operates at one baud rate and does not need start/stop elements.

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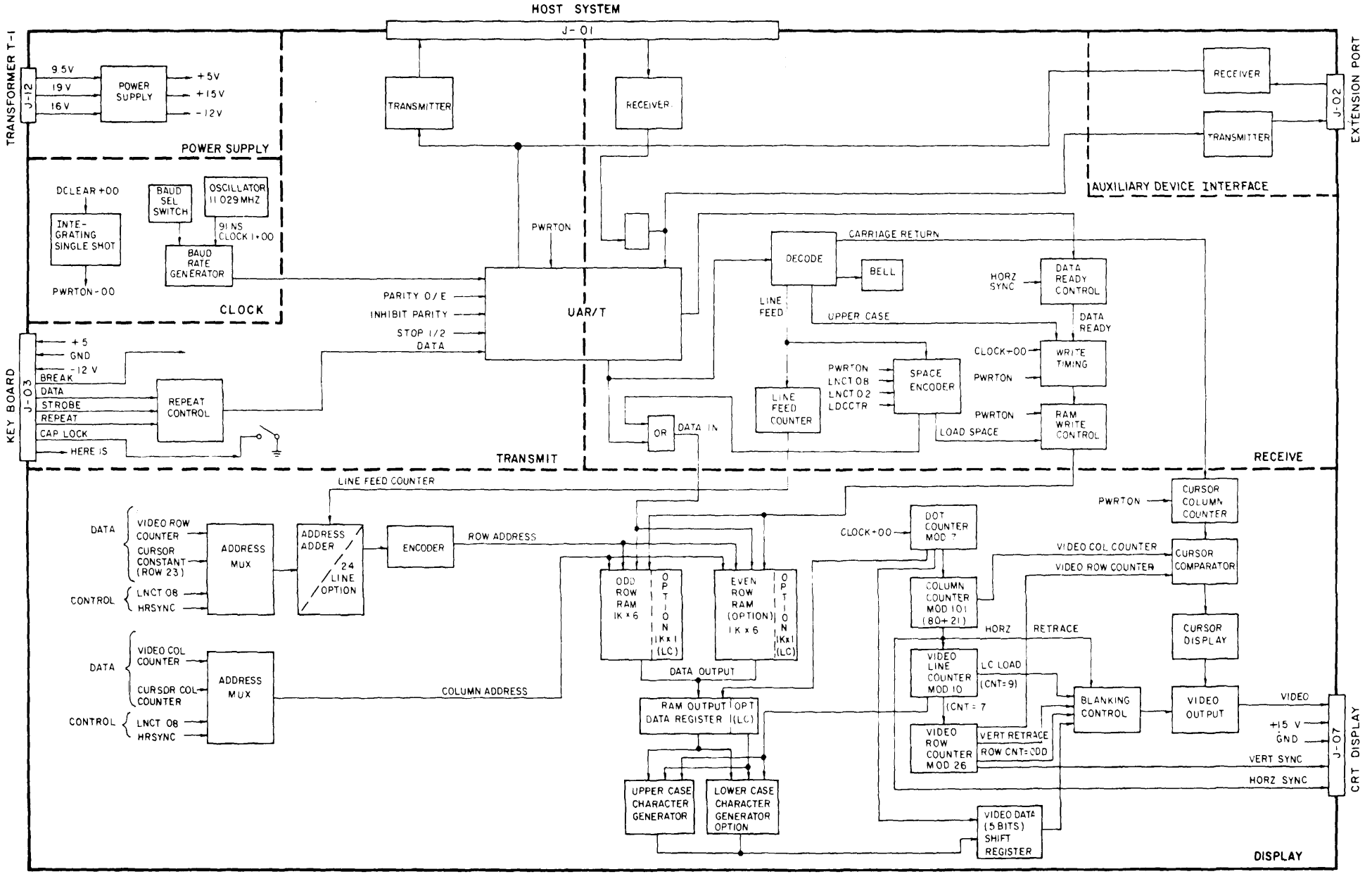

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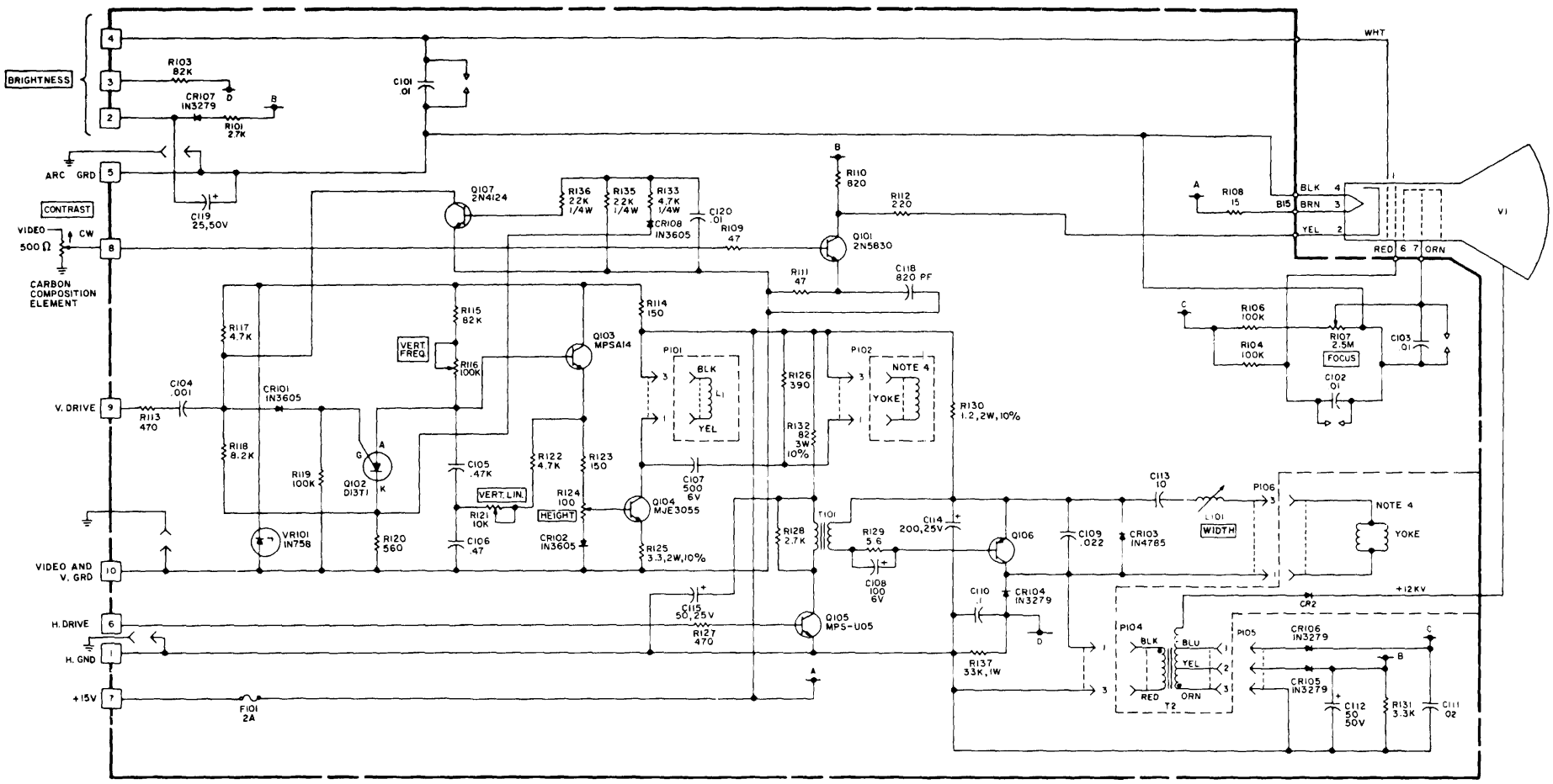
F0-1. Intermediate Block Diagram



NOTES:

1. UNLESS OTHERWISE SPECIFIED; ALL RESISTORS ARE 1/2 ±5%, ALL CAPACITORS ARE IN μF.
2. DENOTES MOLEX PIN CONNECTOR.
3. DENOTES PRINTED CIRCUIT CARD EDGE CONNECTOR.
4. YOKE LEAD IDENTIFICATION; P106 – BLUE AND RED LEADS. P102 – BROWN AND YELLOW LEADS.

TEST POINT	VOLTAGE
A	+15
B	+34
C	+400
D	−160

MOLEX CONNECTOR

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F0-2. CRT Display Chassis Schematic Diagram

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