

# Service Newsletter

NO. 181

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December 28, 1979

## 2236DE INTERACTIVE TERMINAL

This Newsletter contains information necessary to unpack, install, and maintain the 2236DE Interactive Terminal. Also contained in this newsletter is a description of the 2236DE including electrical and physical specifications, and an explanation of the various features found on the 2236DE.



LOOPBACK CONNECTIONS : 2-3 4-5 6-20

### 1. GENERAL DESCRIPTION

The 2236DE Interactive Terminal is a Z80-based intelligent CRT/-Workstation. It consists of a 12-inch (30.4 cm) diagonal measure CRT, a KEYTRONIC capacitive-type keyboard, a 12-Inch Monitor Electronics PCB (210-7456), and a Terminal PCB (210-7592) containing a Z80 micro-processor and the remaining workstation electronics. By locating most of the CRT electronics on one terminal board, production, installation, and maintenance procedures have been simplified.

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The 2236DE replaces the 2236D terminal on the VP/MVP product line. It offers several features not found on the 2236D Terminal. These features include character display attributes (highlighted displays, reverse video, etc.), alternate graphics set selection, box graphics, and screen dump. These features are explained in detail in Section 7 of this newsletter.

Power-up diagnostics are another feature of the 2236DE terminal. These diagnostic routines are run automatically whenever the terminal is turned on. Refer to Section 4 for further information.

The 2236D terminal will continue to be supported in the field; however, it will no longer be manufactured. It is not possible to upgrade a 2236D to a 2236DE.

#### 1.1 CRT and Keyboard

The 2236DE CRT displays a full 128 character set, including upper and lower case keyboard characters, foreign language characters, special symbols, and underscore. Each character can be assigned one or more display attributes such as high- or low-intensity display, blinking, reverse video, or underscore. The CRT can also display box graphics separate from character sets.

The KEYTRONIC keyboard (See Figure 1) operates in either of two modes, selected by a toggle switch labeled "A/A" and "A/a". In the "A/A" mode, alphabetic characters are displayed as upper-case whether shifted or unshifted, and numeric keys produce symbols and special characters. In the "A/a" mode, the keyboard functions as a standard typewriter keyboard. All keys on the keyboard, except RESET and EDIT, repeat after an initial delay, if held down.

The RETURN and FN keys are located in the alphanumeric section of the keyboard. The RETURN key is used to signal the CPU that entry of a particular data-field is complete. The FN key is a special function key used with 2200VP/MVP CPU configurations.

The Program Control Keys (for program control and execution) are as follows:

RESET	stops program listing and execution immediately, clears CRT screen and returns control to the user.
HALT/STEP	causes program execution to halt at completion of current statement or to execute one line at a time.
CONTINUE	continues program execution after a STOP verb has been executed or the HALT/STEP key has been touched.
CLEAR	clears program text and variable areas.
LOAD	loads specified programs from storage into memory.
RUN	initiates execution of the program.

The numeric keypad is a standard 10-key pad. Digits can be entered by using the numeric keys in either the numeric or the alphanumeric section of the keyboard.

The 16 Special Function Keys, located at the top of the keyboard, can be used in conjunction with the SHIFT key to provide a total of 32 special functions. These keys are user-definable; their meanings can be changed under software control. They are also used by the 2200VP/MVP System Bootstrap during Master Initialization to load the BASIC-2 Interpreter and Operating System.

The EDIT key is used to enter and exit the Edit mode. When in Edit mode, the Special Function Keys operate as follows:

RECALL	Used to recall a program line or Immediate Mode statement from memory for edit.
←-----	Moves cursor five spaces to the left.
←	Moves cursor a single space to the left.
----->	Moves cursor five spaces to the right.
→	Moves cursor a single space to the right.
INSERT	Expands a line for additional text and data entry by inserting a space character at current CRT cursor position.
DELETE	Deletes the character at current cursor position.

SPECIAL FUNCTION KEYS



TYPEWRITER  
KEYBOARD  
(Alpha-Numeric Section)

PROGRAM  
CONTROL KEYS

NUMERIC  
KEY PAD

FIGURE 1 KEYTRONIC Keyboard

ERASE	Erases that portion of the line from the current CRT cursor position to the end of the line.
BEGIN	Moves cursor to the beginning of current text line.
END	Moves cursor to the end of current text line.
↑	Moves cursor up to the previous CRT line (current text must occupy more than one CRT line).
↓	Moves cursor down to the next line on the CRT (current text must occupy more than one CRT line).

## 1.2 Chassis Controls

There are four controls located on the terminal. The Brightness and Contrast controls are on the lower right side of the terminal front panel. These controls are used to adjust the video display.

Two controls, labeled Tone and Clicker, are located on the back of the terminal chassis. The Tone control is used to adjust the volume of the audio alarm, which is programmed to sound whenever an illegal operation is attempted. The Clicker control is used to adjust the volume of the clicker, a sound emitted when a key is stroked, indicating an acceptable keycode has been entered. (See Figure 8.)

## 1.3 Specifications

Following are the specifications for the 2236DE Terminal:

### Physical Specifications:

Height	13.50 inches (34.3 cm)
Depth	20.50 inches (52 cm)
Width	19.75 inches (50.2 cm)
Weight	51 lbs (23.1 kg)

### Electrical Specifications:

Power Requirements	115 or 230 $\pm$ 10%
	50 or 60 Hz $\pm$ .5 Hz
	40 Watts
Heat Output	140 BTU/hr

Electrical Specifications: (Cont'd)

Fusing	2A @ 115V/60 Hz
	1A @ 230V/50 Hz

Display Specifications:

Size	12 in. diagonal (30.4 cm)
Capacity	24 lines, 80 char. per line

Character Size:

Height	0.16 in. (0.41 cm)
Width	0.09 in. (0.23 cm)

Operating Environment:	50° to 90° F (10° to 32° C)
	20% to 80% relative humidity (noncondensing)

Transmission Rate:	Manually selectable at 300, 600, 1200, 2400, 4800, 9600, or 19,200 baud.
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## 2. SITE PREPARATION

The 2236DE is designed to operate in a normal office environment; radical changes in temperature or humidity can adversely affect the terminal (Operating Environment, Section 1.3). The 2236DE should be located in an environment similar to that of the central processor and a separate grounded outlet should be provided for it. Refer to the 2200MVP Maintenance Manual (03-0071-1), Section 2 for more details.

## 3. UNPACKING AND INSTALLATION

The 2236DE is shipped completely assembled. An 8 foot (2.4 m) AC power cord and one 25 foot (7.6 m) direct-connection (signal) cable is supplied with each terminal. Longer direct-connection cables can be ordered if desired. Refer to Section 8 for cable part numbers.

Before unpacking the terminal, check the packing slip to ensure that the proper equipment has been delivered. After checking the packing slip, inspect the shipping carton for damage (crushed corners, punctures, etc.). If the carton appears undamaged, carefully remove the terminal and inspect it for damage. If damage is discovered, file an appropriate claim promptly with the carrier involved and notify the WLI Distribution Center (Dept. #90), Quality Assurance Dept., Tewksbury, MA 01876. Inform them of the extent of damage and arrange for equipment replacement, if necessary.

After inspecting the terminal exterior, trace the outline of the exposed portion of the CRT screen with a grease pencil. This outline is used in Section 3.3 for video display adjustments. (See Figure 2.)

Remove the terminal cover as follows: (See Figure 3.)

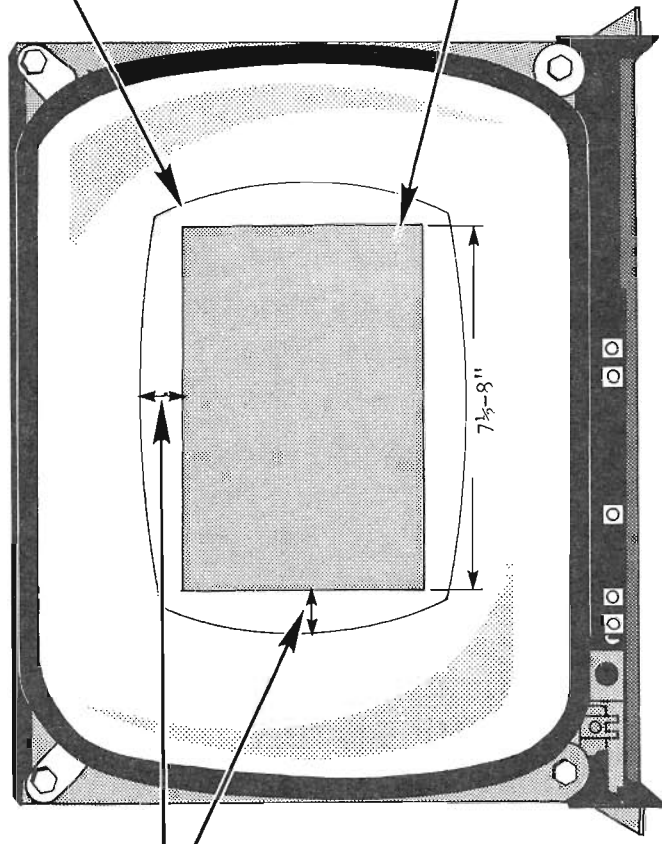
- a. Remove the three Phillips screws located under the plastic strip on the keyboard and remove the keyboard plate.
- b. Remove the Phillips screws on the left and right side of the terminal cover.
- c. Lift the cover up and away from the terminal; take care not to hit or nick the CRT, or strain the Brightness/Contrast wires.
- d. Remove the Brightness and Contrast control wires from the clamp on the side of the cover. Lay the cover on its side next to the terminal. Do not unplug the Brightness and Contrast Molex connector from the cross-brace at the top of the CRT.
- e. Remove foam packing material from front of 210-7456 PCB.

Visually inspect the inside of the terminal for metal shavings, solder splashes, loose connections, and improperly seated PCBs. Do not replace the cover at this time.

### 3.1 Voltage and Frequency Selection

The 2236DE operates on either 115 or 230 VAC and at either 50 or 60 Hz. Before connecting the terminal to a power source, check the serial

DRAW PERIMETER LINE AT START  
OF INSTALLATION



DISTANCE BETWEEN PERIMETER LINE  
AND RASTER SHOULD BE BETWEEN 1/2"  
AND 1

FIGURE 2 CRT Outline



tag attached to the terminal. Set the voltage-select switch on the lower right side of the CRT monitor to the appropriate position (115 or 230) and ensure that jumper J11 on the 210-7592 PCB is in position, if required. Install J11 if the terminal is to operate at 60 Hz, remove J11 if the terminal is to operate at 50 Hz. (See Figures 4 and 5.)

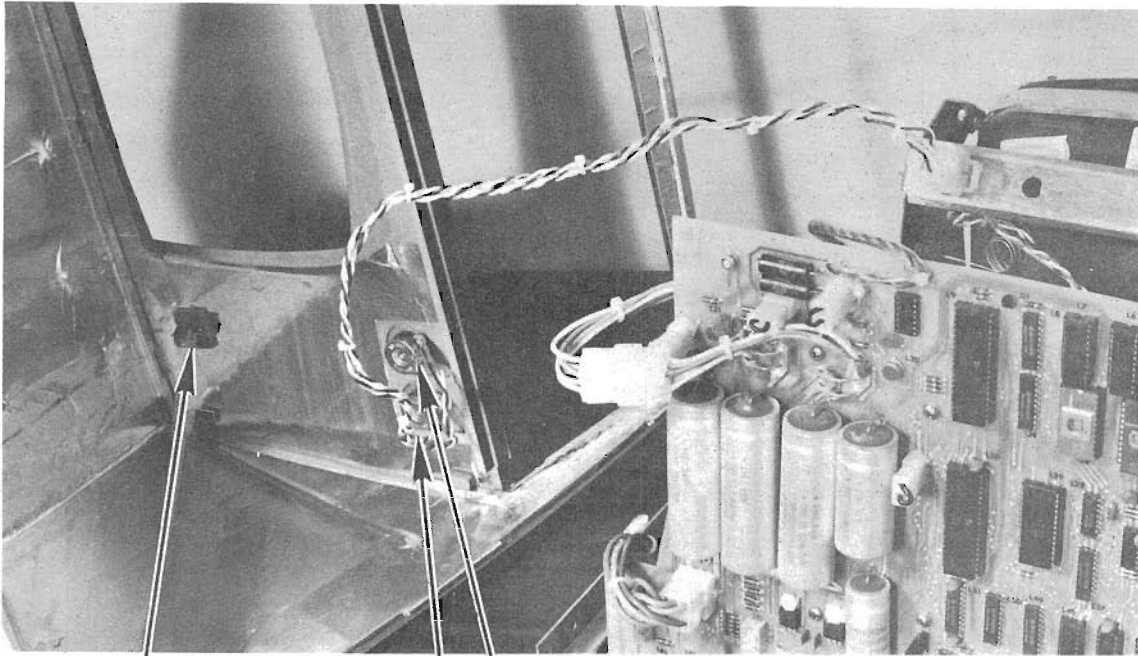
### 3.2 Voltage Checks and Adjustments

The power supply is located on the 210-7592 PCB. Five jumpers, labeled J14, J15, J16, J17, and J18, connect the power supply voltage to the logic circuits. Remove these five jumpers before performing the initial voltage checks and adjustments, which are performed as follows: (See Figures 5 and 6.)

#### **\*\*NOTE\*\***

Use only one hand when working inside an electronic chassis that is powered-up. This avoids the risk of grounding oneself to the chassis with one hand while touching an electrical connection with the other, causing severe shock.

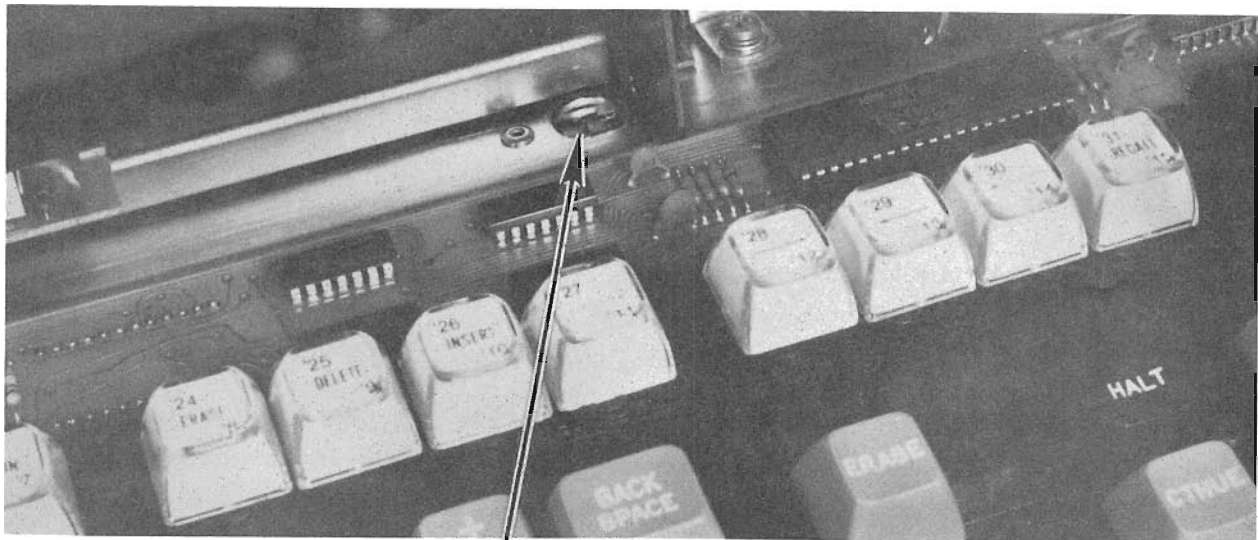
- a. Place the terminal in its permanent location.
- b. Ensure that the terminal ON/OFF switch on the rear of the chassis is in the OFF position. Plug in the AC power cord.
- c. Power-up the terminal.
- d. Connect the Common lead of a DVM to a  $\pm 0V$  location on the 210-7592 PCB. (Negative side of capacitor C19, for example.)
- e. Place the DVM probe against pin 1 of the J14 connector; a reading of  $+12\text{ VDC} \pm .12$  should be obtained. Adjust R72 to obtain the proper reading if voltage is out of limits.
- f. Place the DVM probe against pin 1 of the J15 connector; a reading of  $+5\text{ VDC} \pm .05$  should be obtained. Adjust R66 to obtain the proper reading if voltage is out of limits.
- g. Place the DVM probe against pin 2 of the J16 connector; a reading of  $+20\text{ VDC} \pm 3.0$  should be obtained. This voltage is non-adjustable, replace PCB if voltage is out of limits.
- h. Place the DVM probe against pin 2 of the J17 connector; a reading of  $-5\text{ VDC} \pm .25$  should be obtained. This voltage is



BRIGHTNESS AND  
CONTRAST CONTROL  
CLAMP

BRIGHTNESS  
AND  
CONTRAST

FIGURE 3 CRT and Cover



VOLTAGE SELECT SWITCH

← 115  
230 →

FIGURE 4 Voltage Select Switch

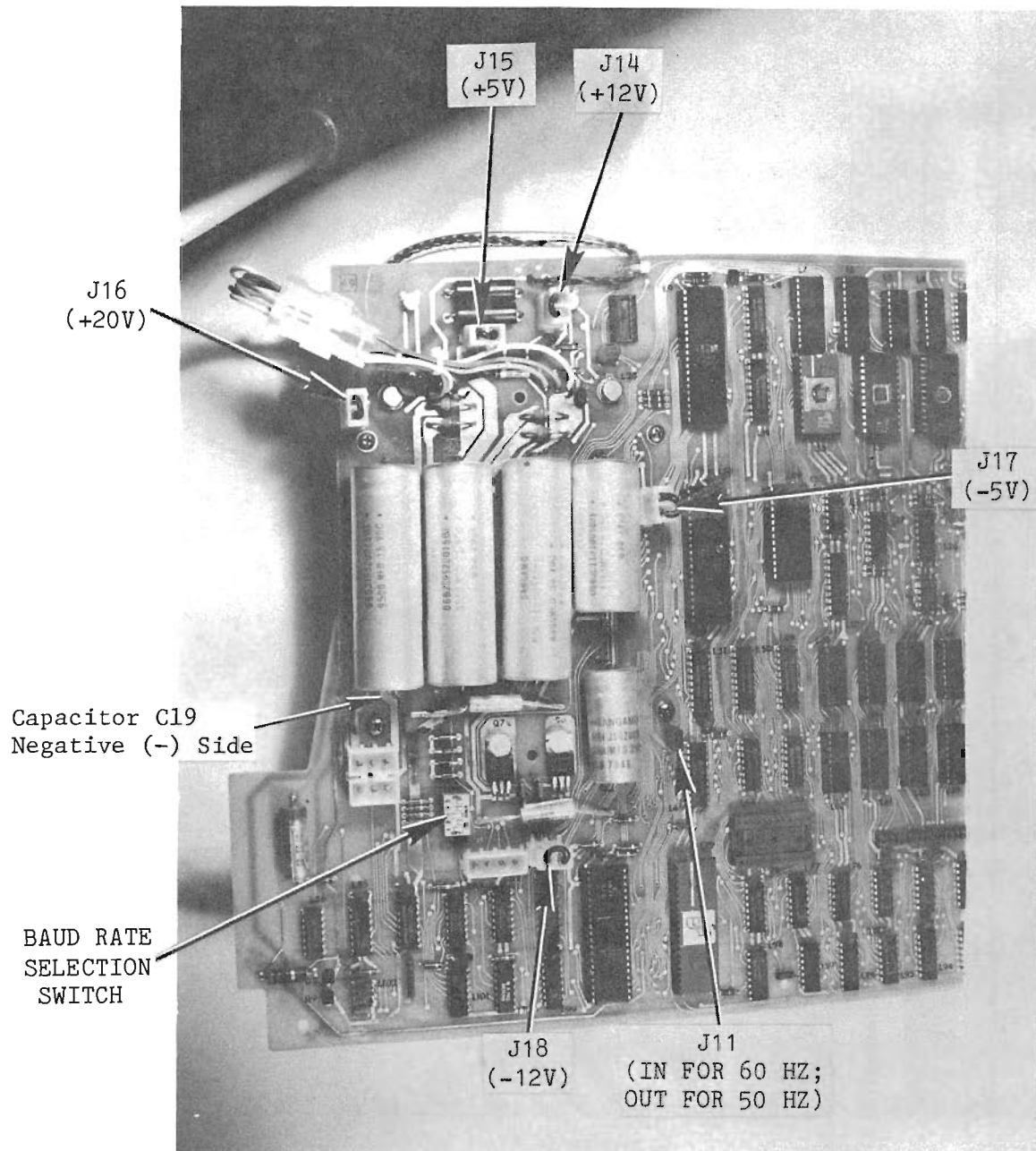


FIGURE 5 Jumper Locations (210-7592 PCB) and Baud Rate Selection Switch

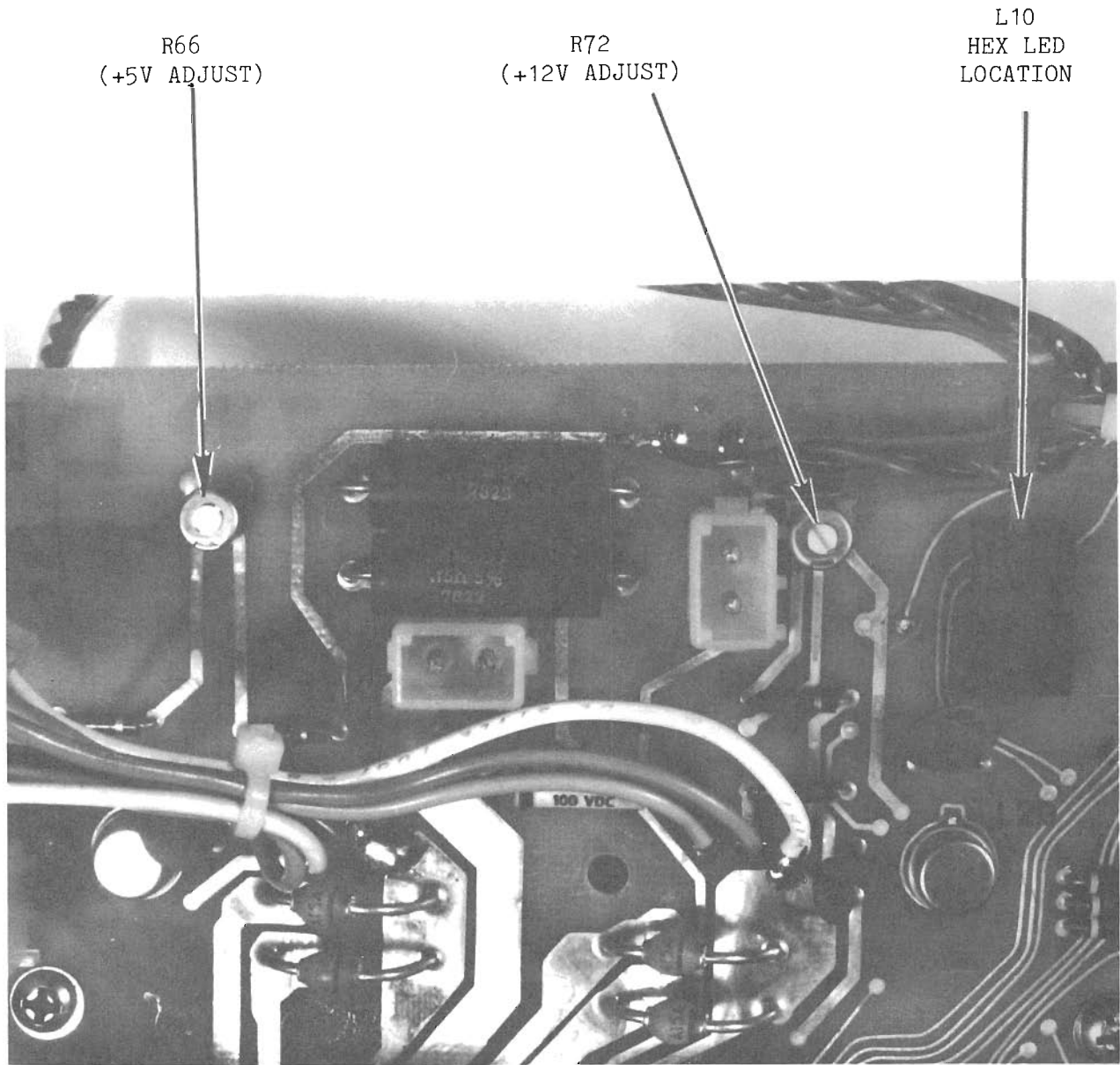


FIGURE 6 Close-up of R66 and R72

- non-adjustable, replace PCB if voltage is out of limits.
- i. Place the DVM probe against pin 1 of the J18 connector; a reading of  $-12 \text{ VDC} \pm .60$  should be obtained. This voltage is non-adjustable, replace PCB if voltage is out of limits.
  - j. If voltages are within limits, power-down the terminal and reinstall the five jumpers.
  - k. To check voltage under load conditions, power-up the terminal and recheck voltage readings according to the previous steps. Adjust voltages as necessary.

### 3.3 Video Display Adjustments

The following adjustments should not be attempted by anyone not familiar with CRT servicing procedures and precautions. Avoid prolonged close-range exposure to unshielded portions of the CRT to prevent injury from unnecessary exposure to X-ray radiation. Refer to Figures 2 and 7 when performing the following procedures.

Access to most display adjustment controls on the 7456 PCB is through the front of the terminal, using a non-conductive adjustment tool. Enter the following program on the 2236DE to display the letters HO over the entire CRT screen before performing the display adjustments:

```
1 FOR A = 1 TO 960
2 PRINT "HO";
3 NEXT A
```

- a. Adjust the brightness potentiometer (POT) located on the terminal cover until the video raster appears on the screen.
- b. If the character rows on the CRT are of unequal height, adjust the Vertical Linearity POT (R18) on the 210-7456 PCB.
- c. Adjust the Vertical Size POT (R24) on the 7456 PCB if a gap greater or less than  $3/4" \pm 1/4"$  exists between the top edge of the raster and the pencil line (from Section 3) on the CRT face.
- d. Adjust the Width Coil (Z2) on the 7456 PCB if the horizontal size of the raster is not  $7-3/4" \pm 1/4"$ .

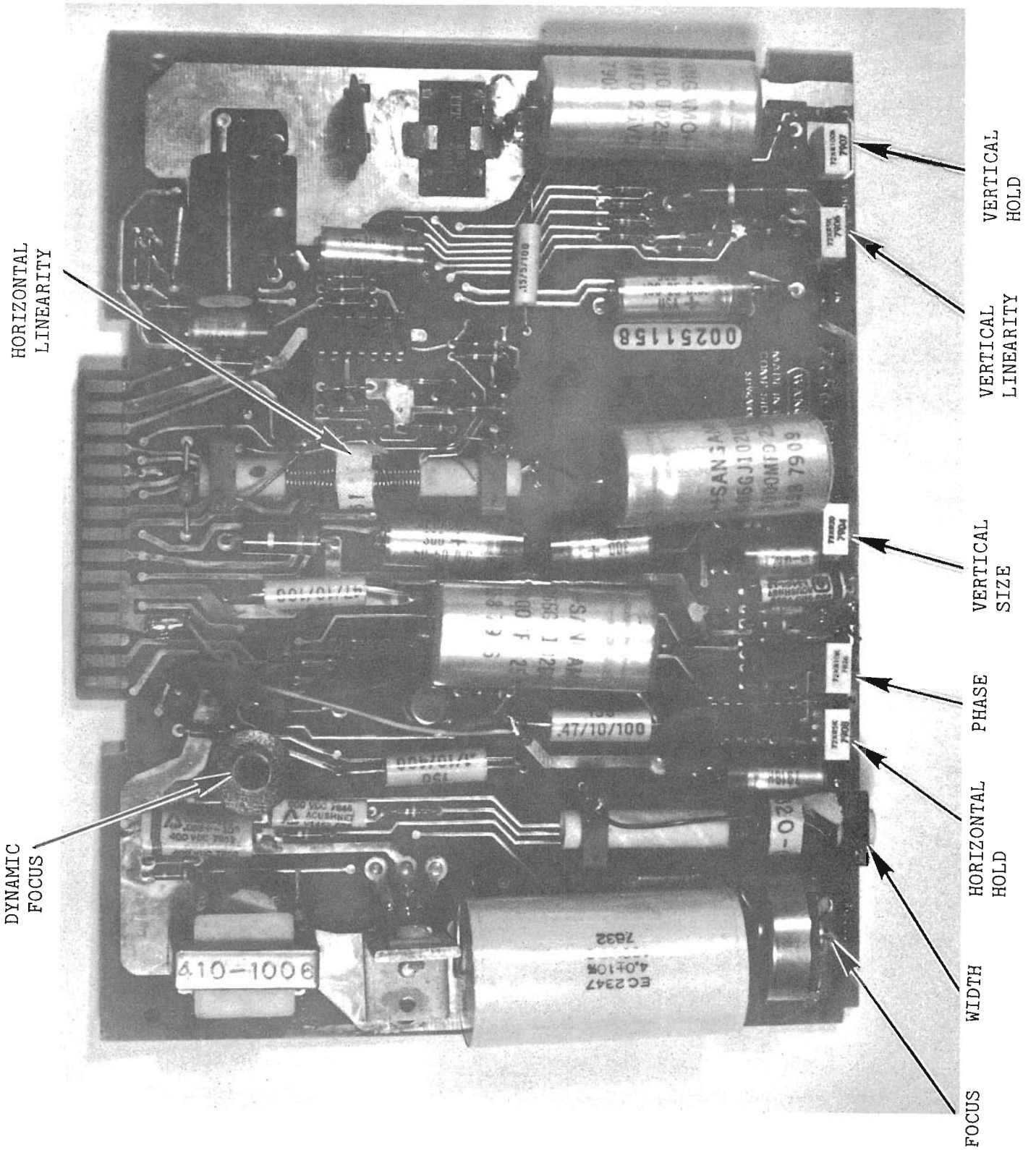


FIGURE 210-7456 PCB

- e. If the random character pattern is not horizontally aligned within the CRT display raster, adjust the Phase POT (R35) on the 7456 PCB to center the character set.
- f. Adjust the Focus POT, R28, on the 7456 PCB for best focus.

Once these adjustments have been made, power-down the terminal. Wash the grease pencil markings off the CRT face with a cloth dampened in a mild detergent solution. Perform Power-Up Diagnostics, as described in Section 4. If the diagnostics are successful, reassemble terminal and proceed as follows.

### 3.4 Terminal Interconnection

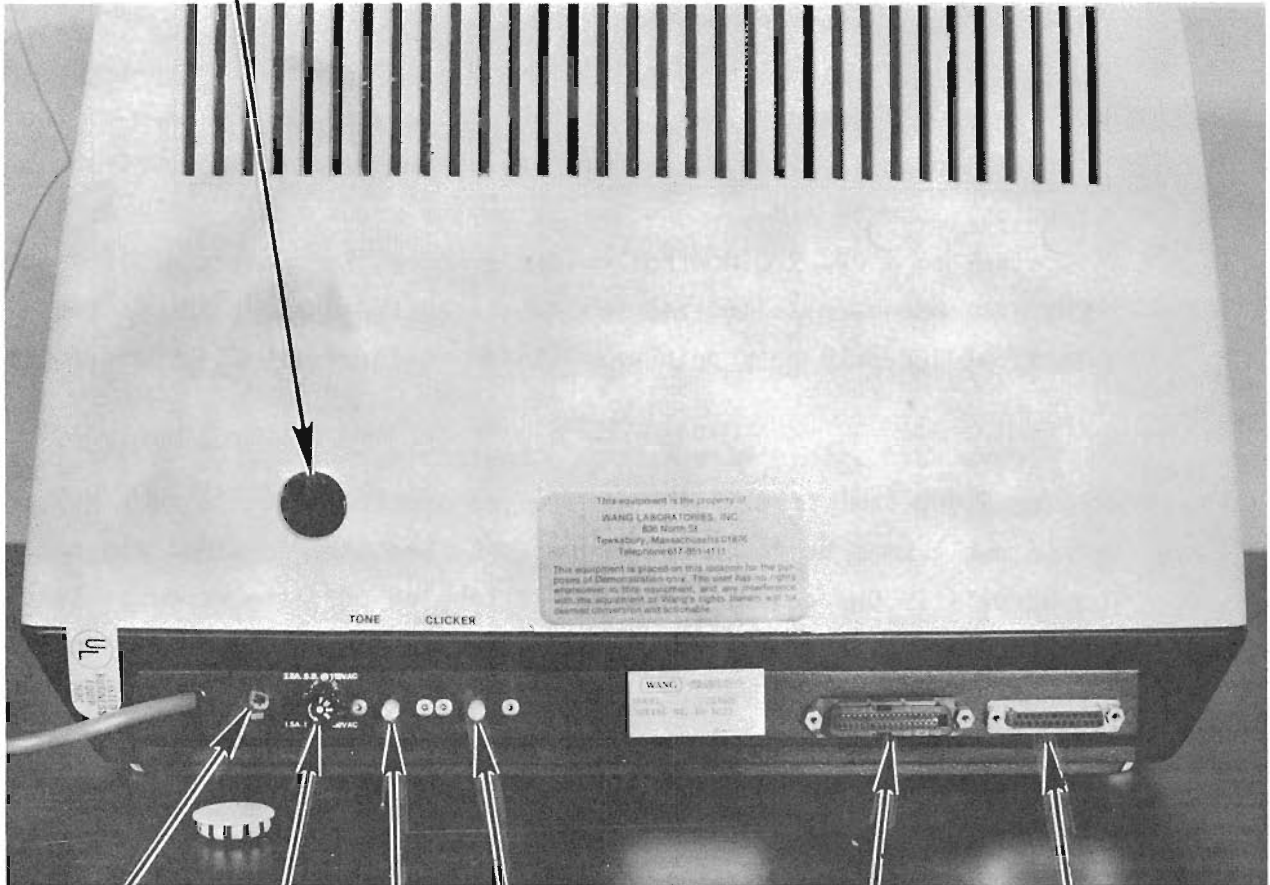
An RS-232-C and an AMP connector are located on the back of the terminal chassis. (See Figure 8.) As viewed from the rear of the terminal, the RS-232-C connector is on the right side, and connects the terminal to a CPU I/O controller (or a modem, for remote applications). The AMP connector is located beside the RS-232-C and connects the terminal directly to a printer. (Refer to Paragraph 7.4, Screen Dump.)

When used with a direct-connection cable, the 2236DE can be located up to 2,000 feet from a CPU. (Refer to Section 8, Cable Part Numbers.) This cable must be connected properly between the terminal and the controller. One end of the cable is labeled TER, the other is labeled MUX. Connect the end labeled TER to the RS-232-C connector. Do not connect the cable in reverse. The 2236DE can also be connected remotely to a CPU, via modems and telephone lines.

### 3.5 Terminal Controllers

The 2236DE is attached locally to a CPU by means of either of two devices: a 22C32 Triple Controller that connects the 2236DE to either a 2200VP or a 2200MVP system, or a 2236MXD Terminal Processor that connects the 2236DE to a 2200MVP system. By using a combination of two 2236MXDs and one 22C32, a total of nine terminals can be connected to an MVP System; only one 2236DE terminal can be connected to a VP system.

BAUD RATE SELECTION  
(PLUG REMOVED)



ON/OFF SWITCH

FUSE  
(2.5A, 3AG)

AUDIO ALARM  
TONE CONTROL

CLICKER  
VOLUME CONTROL

AMP-TYPE  
CONNECTOR  
(TO PRINTER)

RS-232-C TYPE  
CONNECTOR  
(TO CPU)

FIGURE 8 Rear of Terminal



The 22C32 and 2236MXD handle I/O operations between the terminal and CPU and act as buffers for data transmitted to/from the terminal. Communications between the terminal and the CPU by means of either a 2236MXD or 22C32 is asynchronous, full-duplex. The 2236MXD offers selectable line speeds ranging from 300 to 19.2K Baud; the 22C32 Triple Controller has a fixed communication rate of 19.2K Baud.

There are no modems capable of handling a 19.2K transmission rate, at this time. Because of this, the 22C32 Triple Controller, with its fixed 19.2K Baud rate, cannot support remote workstation applications. A 2236MXD controller must be used because of its selectable line speeds.

### 3.6 Controller Switch Settings

Refer to Paragraphs 3.3.2 through 3.4.2 of the 2200MVP Maintenance Manual (03-0071-1) for information concerning device address and baud rate settings for the 2236MXD. PROMs used on the 2236MXD must be R5 or above, the 210-7290-1 PCB must be at Rev. 1 or greater, and the 210-7291-1 PCB must be at Rev. 2 or greater in order to use a 2236DE terminal with a 2236MXD controller.

Because the 22C32 Triple Controller has a fixed baud rate of 19.2K, only device address switches, located on the lower right side of the 210-7515 PCB, are set in the controller. There are three switch banks on the 7515 PCB, the bottom right-most bank is used to set the terminal device address. Set these switches as follows:

<u>Number of Terminals</u>	<u>Switch Settings*</u>					<u>Device Address</u>
	<u>Sw1</u>	<u>Sw2</u>	<u>Sw3</u>	<u>Sw4</u>	<u>Sw5</u>	
One	1	0	0	0	0	00 <sub>16</sub>
Five**	1	0	0	1	0	40 <sub>16</sub>
Nine***	1	0	0	0	1	80 <sub>16</sub>

\* 0 = OFF; 1 = ON. Sw1 is the Terminal Enable, it is always set to 1; Sw2 - Sw5 are the Terminal Device Address Switches.

\*\* One 2236MXD; One 22C32 (MVP System only)

\*\*\* Two 2236MXDs; One 22C32 (MVP System only)

### 3.7 Baud Rate Selection

The baud rate selection switches for the 2236DE are located on the 210-7592 PCB. Access these switches by removing the large plug on the back of the terminal. (See Figures 5 and 8.) Switch One must be ON and Switch Two must be OFF; these two switches determine the number of data bits and type of parity used. Ensure that the baud rate switch settings at the terminal are the same as those at the controller or modem. Set the baud rate switches according to Table A.

Table A: Baud Rate Settings

<u>Baud Rate</u>	<u>Switch 1</u>	<u>Switch 2</u>	<u>Switch 3</u>	<u>Switch 4</u>	<u>Switch 5</u>
<u>300</u>	<u>ON</u>	<u>OFF</u>	<u>ON</u>	<u>ON</u>	<u>ON</u>
<u>600</u>	<u>ON</u>	<u>OFF</u>	<u>OFF</u>	<u>ON</u>	<u>ON</u>
<u>1200</u>	<u>ON</u>	<u>OFF</u>	<u>ON</u>	<u>OFF</u>	<u>ON</u>
<u>2400</u>	<u>ON</u>	<u>OFF</u>	<u>OFF</u>	<u>OFF</u>	<u>ON</u>
<u>4800</u>	<u>ON</u>	<u>OFF</u>	<u>ON</u>	<u>ON</u>	<u>OFF</u>
<u>9600</u>	<u>ON</u>	<u>OFF</u>	<u>OFF</u>	<u>ON</u>	<u>OFF</u>
<u>19,200</u>	<u>ON</u>	<u>OFF</u>	<u>ON</u>	<u>OFF</u>	<u>OFF</u>

### 4. POWER-UP DIAGNOSTICS

Whenever the 2236DE terminal is powered-up, diagnostic routines resident in the Z80 microcode are performed. If the diagnostics pass, the power-up message is displayed (see Figure 9) and control passes to the main microcode. The power-up message is displayed for three seconds and is cleared when the first character is received from the CPU. However, if the CPU is powered-up before the terminal CRT is sufficiently warmed-up, the terminal power-up message may not appear. If this occurs, power-down then immediately power-up the terminal.

If a failure is detected by the diagnostics, an audio alarm is activated and control is not passed to the main microcode. A HEX LED (WLI #340-0015) installed at location L10 on the 7592 PCB (see Figure 6) will display the failing diagnostic phase. Table B lists the diagnostic displays and possible causes of failure.

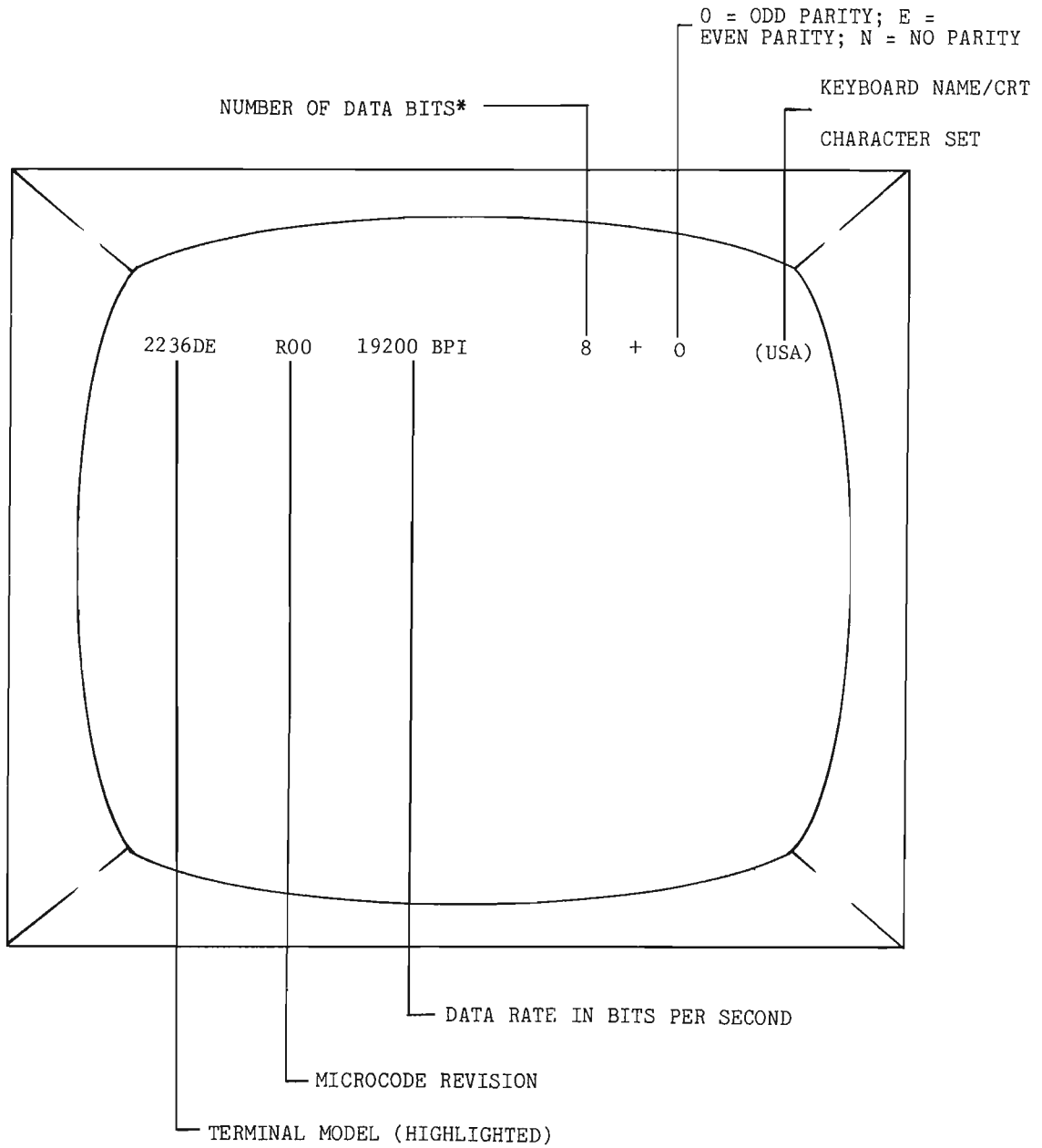


Figure 9: Terminal Display

\* If the # symbol is displayed, either the baud rate switches are incorrect or a problem exists in the terminal. If "???" is displayed, the baud rate switches are in an illegal setting. In this state the baud rate is undefined.

Table B: Power-Up Diagnostic Definitions

HEX LED DISPLAY	DISPLAY MEANING	TROUBLE LOCATIONS
0000	Z80 or PROM malfunction, or address decoding logic malfunction.	L2, L8, L9, L16, L17, L18, L19
0001	Z80 Reset and Conditional Jump Test	L2, L8, L9, L16, L17, L18, L19, L44
0010	Z80 Register and Processor Test	L9, L2, L44
0011	Memory Select Test	L8, L9, L19
0100	Data Bus Test	L9, L44, L51
0101	Address Bus Test	L8, L9, L19
0110	RAM Test	L4, L5
0111	RAM Test	L4, L5
1000	Not Used	
1001	PROM Test	L16, L17, L18, L56
1010	Keyboard Table PROMs Test	L16, L17, L18, L56
1011	Vertical Retrace Interrupt Test	L52, L79, L96

At power-up, the hardware blanks the Hex display. If either the Z80 (L9) and PROMs (L16, 17, 18), or the address decoding (L8, 19) logic are malfunctioning, the display could stay blanked. If any test fails in a predicted manner, the Hex display remains at the value of the failed test. After all tests are completed, the diagnostic loads a "0" into the display and passes control to the main microcode.

#### 5. PREVENTIVE MAINTENANCE

Preventive maintenance on the 2236DE is scheduled for every six months. It consists of inspecting the terminal for worn parts, adjusting the terminal controls as needed, general cleaning of the terminal, and updating the terminal with the appropriate ECNs.

Routine maintenance consists of cleaning the terminal cover, keyboard, and CRT face with a mild detergent solution when necessary.

## 6. MAJOR ASSEMBLY REMOVAL AND REPLACEMENT

This section discusses removal and replacement procedures for several major workstation assemblies. (See Figures 10, 11 and 12.) Before removing the following assemblies, ensure that the power switch is OFF and the AC power cord is unplugged. Remove the terminal cover as described in Section 3.

### 6.1 CRT Anode Discharge Procedure

Even with power removed, the terminal cathode ray tube can hold a charge of several thousand volts. To eliminate the risk of accidental CRT discharge, which can result in serious injury, discharge the CRT anode as follows: (See Figure 12)

- a) Attach\* one end of a length of insulated wire to the metal shaft of a plastic-handled, heavy-duty screwdriver.
- b) Attach\* the other end of the wire to CHASSIS GROUND.
- c) Using a non-conductive tool such as a plastic alignment tool, carefully raise the edge of the rubber anode cap high enough to insert the screwdriver.
- d) Taking care not to touch the metal shaft of the screwdriver or any metal part of the terminal, discharge the CRT anode by touching the anode clip with the grounded screwdriver.
- e) After discharging the CRT, remove the grounding wire and reseal the rubber anode cap.

### 6.2 Terminal Electronics PCB Removal

Remove the Terminal Electronics PCB (210-7592) as follows:  
(See Figures 10, 11, and 12.)

- a) Unplug all Molex connectors on the PCB.

\* Attach wire by means of alligator clips. If no clips are available, strip 3/4" of insulation from each end of the wire. Tightly wrap one end around the screwdriver shaft, secure the other end to CHASSIS GROUND, NOT LOGIC GROUND.

- b) Unplug the keyboard, printer, and CPU ribbon cables.
- c) Remove the four Phillips-head screws holding the PCB to the CRT chassis support rods.
- d) Lift the board up and out of the terminal.

To replace or reinstall the Terminal Electronics PCB, reverse the above procedure.

### 6.3 CRT Chassis Assembly Removal

Remove the CRT Chassis Assembly (270-0372) as follows: (See Figure 12)

**\*\*NOTE\*\***

In a 2236DE Terminal, replace a defective CRT chassis with a Wang CRT Chassis Assembly only.

- a) Unplug all Molex connectors on the 210-7592 PCB.
- b) Unplug the keyboard, printer, and CPU ribbon cables from the 210-7592 PCB.
- c) Unplug the Brightness/Contrast Molex connector from the cross-brace at the top of the CRT chassis.
- d) Remove the four Phillips-head screws holding the 7592 PCB support rods to the CRT chassis.
- e) Lift the 7592 PCB, still attached to the support rods, up and out of the terminal.
- f) Remove the four screws and star washers securing the CRT chassis to the terminal. The Monitor Electronics PCB (7456) is part of this chassis.
- g) Carefully lift the CRT Chassis Assembly up and out of the terminal.
- h) Reverse the above procedure to install a new assembly.
- i) Adjust Z1 on the 7456 PCB to achieve an 80X24 character display on the CRT.
- j) Perform the video display adjustments found in Section 3.3.

#### 6.4 Monitor Electronics PCB Removal

Remove the Monitor Electronics PCB (7456) by grasping the front of the PCB and pulling with a slow steady pressure, moving the PCB gently from side-to-side. Insert the Monitor PCB by reversing this procedure.

#### 6.5 KEYTRONICS Keyboard Assembly Removal

Remove the KEYTRONICS Keyboard Assembly (725-2618) as follows:

- a) Remove the four Phillips-head screws securing the keyboard to the chassis. Check that all four washers located between the keyboard and the chassis are accounted for.
- b) Unplug the keyboard ribbon cable from the keyboard PCB.
- c) Remove screw connecting keyboard ground strap to terminal chassis.
- d) Lift the keyboard up and away from the chassis.

To replace or reinstall the keyboard, reverse the above procedure.

#### 6.6 Power Transformer Removal

Remove the Power Transformer (410-0116) from the chassis as follows:

- a) Unplug the Molex connector joining the transformer to the 7592 PCB.
- b) Remove the four Phillips-head screws and washers securing the transformer to the chassis.
- c) Lift the transformer up and out of the chassis.

To replace or reinstall the transformer, reverse the above procedure.

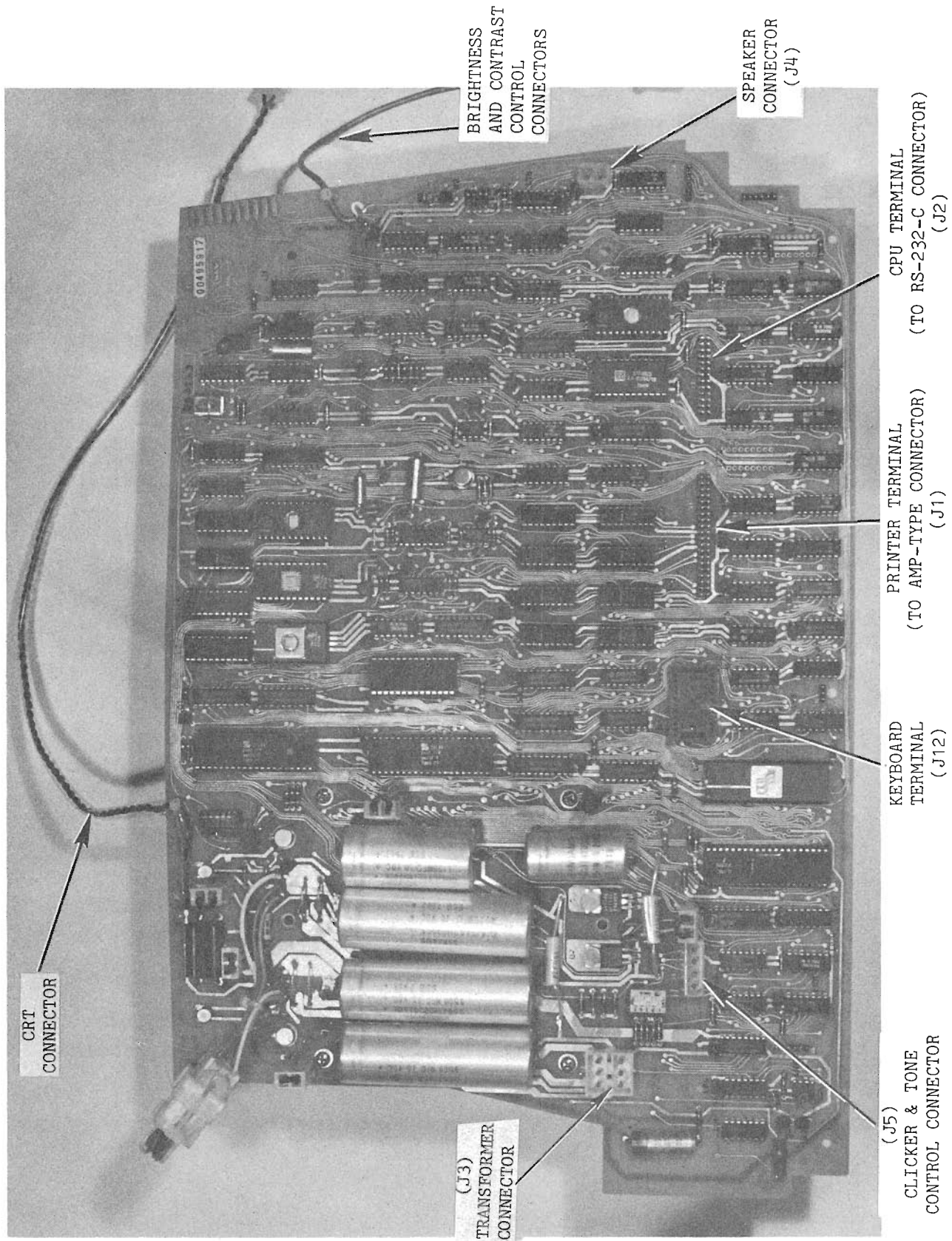


FIGURE 10 210-7592 PCB



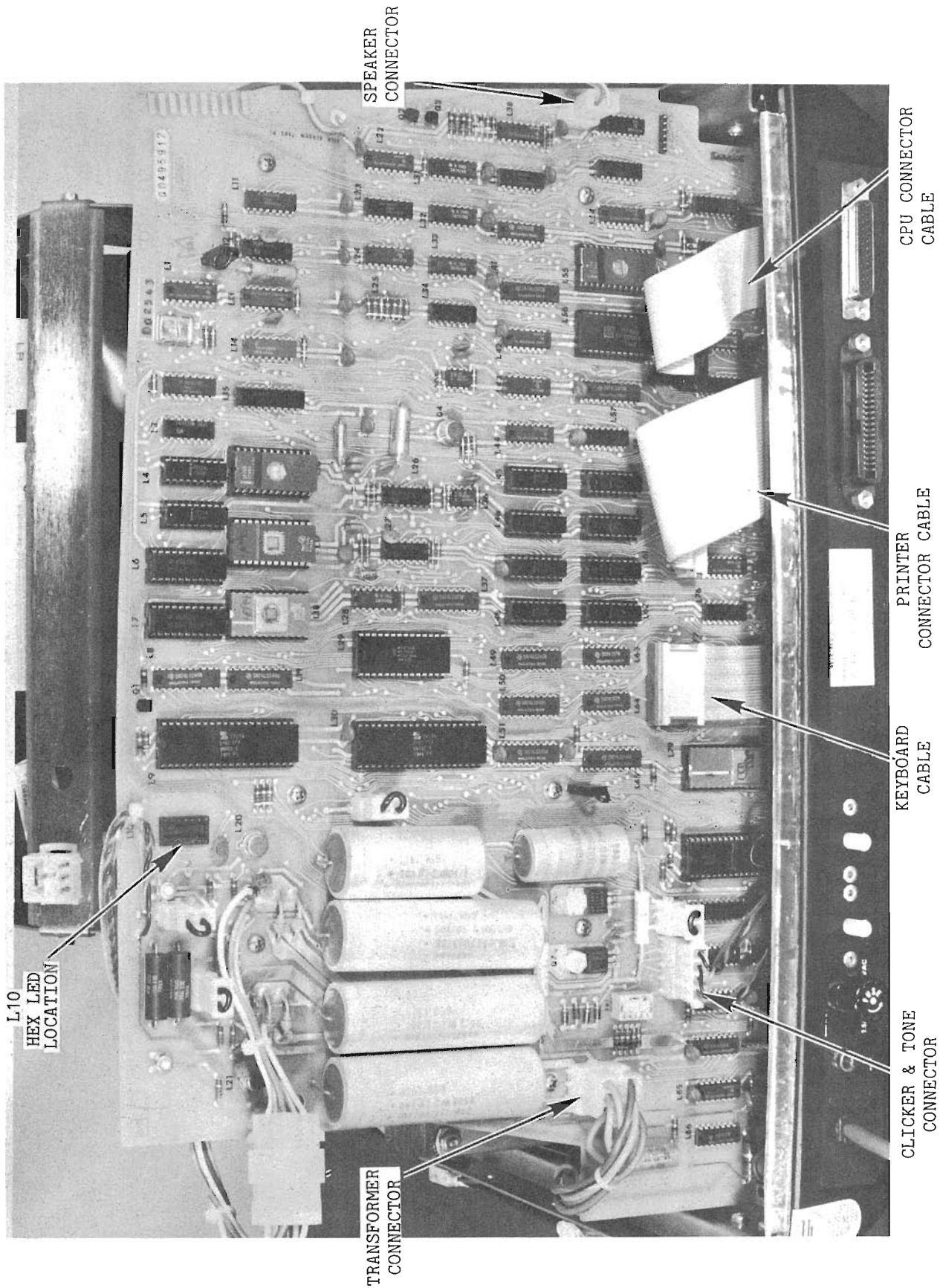


FIGURE 11 7592 PCB in Chassis

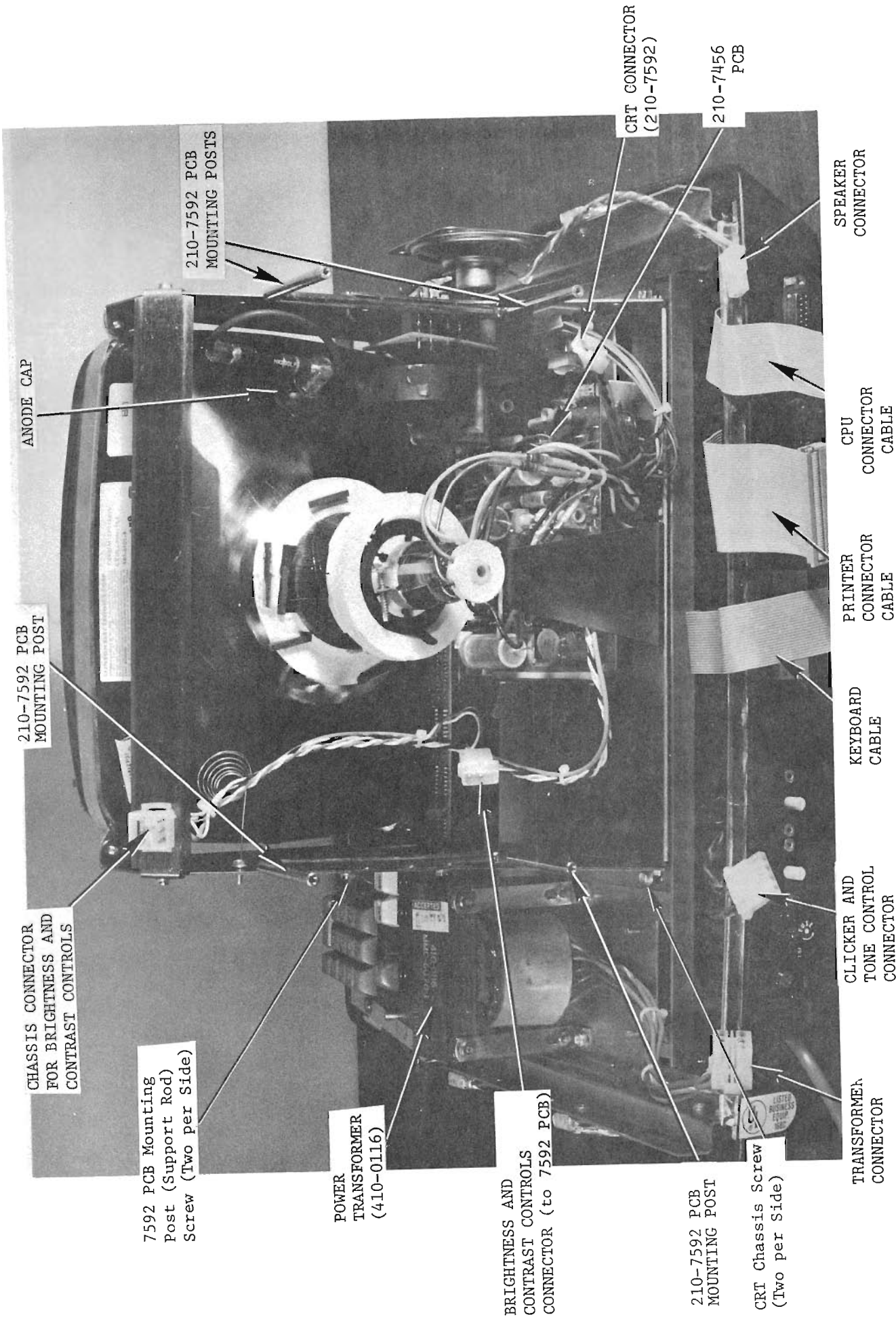


FIGURE 12 Rearview of Chassis with 7592 PCB Removed

## 7. STANDARD FEATURES

This section explains four standard features found on the 2236DE Terminal. These features are: Character Display Attributes, Alternate Graphics Set Selection, Box Graphics, and Screen Dump.

### 7.1 Character Display Attributes

Character display attributes can be selected for any character on the screen. They allow the user to highlight certain information. These attributes are as follows:

- a. Bright -- characters are displayed in high intensity.
- b. Blink -- characters appear to blink.
- c. Reverse Video -- background is white, characters are black.
- d. Underscore -- characters are displayed with an underscore.

The display attribute to be used is selected by sending a command of the following form to the CRT:

```
HEX(02 04 xx yy OE)      (Activates attribute)
HEX(02 04 xx yy OF)      (Terminates attribute)
```

```
where xx = 00 if not bright, no blink
           02 if bright
           04 if blink
           0B if bright, blink (not supported by 2236DE)
```

```
yy = 00 if not reverse video, no underscore
      02 if reverse video
      04 if underscore
      0B if reverse video, underscore
```

The selected display attribute is activated by HEX(OE) as in activating expanded print on certain Wang printers. If the selection sequence ends with HEX(OE), the selected display attribute begins immediately and remains in effect until the HEX(OF) command is given. Thus, it is possible to apply these display attributes to a portion of

a line or to several lines. Termination of the display attribute is accomplished by either carriage return (HEX(0D)) or HEX(0F).

The following is a summary of rules governing character attributes:

- a. HEX(02 04 xx yy 0F) selects but does not activate the specified display attribute.
- b. HEX(02 04 xx yy 0E) selects and activates the specified display attribute. HEX(0D) does not turn off the attribute.
- c. HEX(0F) is used to terminate the display attribute.
- d. CLEAR, RESET, and Screen Clear (HEX(03)) select normal display.
- e. HEX(0E) reactivates the selected display attribute. The attribute remains in effect until the occurrence of a HEX(0F) or a HEX(0D) (carriage return).
- f. Alternate attributes apply only to codes equal to HEX(10). Carriage return, line feed, non-destructive space, etc., preserve their meanings. PRINT AT() can be used to position the cursor. The third argument of PRINT AT(), used to blank sections of the screen, will work differently depending upon which attribute is currently selected.
- g. HEX(20) is a destructive space. PRINT TAB() and zoned format PRINT statements (PRINT, ) position the cursor with HEX(20)s, their effects vary with the currently active display attribute.
- h. The operating system considers all codes HEX(00)-HEX(0F) to occupy no space on output medium. So alternate attribute selection sequences can be included in programs without concern that the operating system may create automatic carriage returns at undesirable times.
- i. The USA Model 2236DE uses Normal/Underline as the default selection for codes HEX(80)-HEX(FF).

## 7.2 Alternate Graphics Set Selection

This feature allows the user to redefine the meaning of characters HEX(80) to HEX(FF). Use of the alternate character set provides up to 128 additional characters. The upper characters in the alternate character set are defined as graphics characters. When displayed, graphics characters are expanded to fill the entire character

position, enabling continuous lines (bars) to be displayed. The graphics character set consists of characters representing all combinations of sixths of a character space. The following sequence is used for alternate graphics set selection:

HEX(02 02 xx 0F)

where: xx = 00 if codes HEX(90) to HEX(FF) are used to underscore the normal characters HEX(10) to HEX(7F).  
= 02 if the alternate character set is to be used for codes HEX(80) to HEX(FF).

The rules governing character set selection are as follows:

- a. HEX(02 02 00 0F) selects the upper character set to be the normal characters, HEX(10) to HEX(7F) with underline.
- b. HEX(02 02 02 0F) selects the alternate character set for codes HEX(80) to HEX(FF), including character graphics symbols.
- c. Power On, CLEAR, and RESET select the default mode for codes HEX(80) to HEX(FF).
- d. The standard 2236DE uses normal character/underline as the default selection for codes HEX(80) to HEX(FF).

### 7.3 Box Graphics

This feature allows the user to display continuous horizontal and vertical lines, enabling information to be separated by lines or boxes. The horizontal line unit is displayed between character lines. It is the length of a character space and is positioned from the middle of one character space to the middle of the next. Vertical lines are drawn through the middle of a character space, coexisting with the character at that location. The vertical line unit is the height of a character space.

The Box Graphics feature allows the user to consider the CRT as having two separate displays (a box graphics display and a character display) located on one screen. In normal character mode, characters

and their attributes are modified while box graphics remain intact (Screen Clear clears both characters and box graphics). Characters and their attributes are undisturbed during a box graphics sequence. Because character mode and box graphic mode are independent of each other, it is easy to update portions of either display.

The BASIC-2 command "BOX (height, width)" allows users to implement the box feature. The first expression specifies the height of the box, the second specifies the width. The sign of the argument determines whether lines are drawn or erased: lines are drawn if the sign is positive, lines are erased if the sign is negative. If the box height is zero, a horizontal line is drawn or erased. A width of zero causes a vertical line to be drawn or erased. The box function positions the box so that the upper left hand corner is at the current cursor position. The CRT cursor does not move while a box is drawn.

The third argument of PRINT AT() is useful for clearing portions of the display. Though slower than screen clear, the statement "PRINT AT(0,0,)" is useful for clearing the characters from the screen without disturbing the box graphics.

#### 7.4 Screen Dump

This feature allows the user to obtain a hard-copy record of the CRT display through a local printer. The local printer must be directly connected to the 2236DE through the printer connector located on the back of the terminal (printer address =  $204_{16}$ ).

Screen Dump is activated by depressing the EDIT key for two seconds. The Screen Dump sequence is as follows:

- a. EDIT key is depressed and held (immediate click).
- b. After two seconds, a second click is sounded to indicate that the screen dump has been activated. Normal edit functions are invoked if key is released before second click.
- c. CRT and Printer buffers are no longer serviced. (Present print job interrupted)

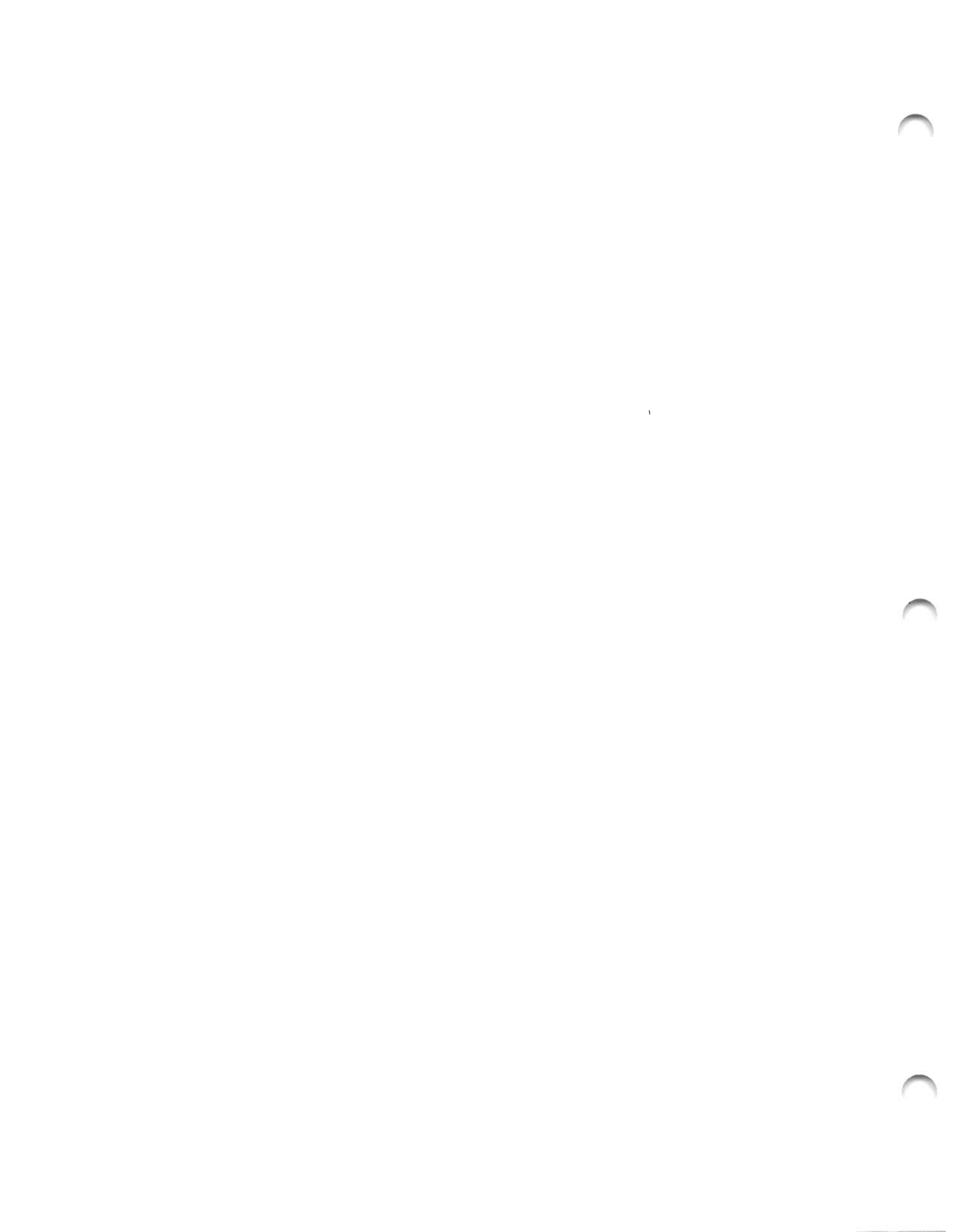
- d. Carriage Return is transmitted to printer.
- e. "Top-of-Form" command is transmitted to printer.
- f. The screen contents are printed. (Non-printable characters appear as "#")
- g. "Top-of-Form" command is transmitted to printer.
- h. Normal processing resumes.

The keyboard remains active during a screen dump. Depressing any key causes the screen dump to cease and normal processing to resume. If a user is printing through the terminal printer, the screen dump will be inserted in the printout. Even though screen dumps cause a page eject before and after the dump, minor problems could occur depending on the type of document being printed.

## 8. CABLE PART NUMBERS

Direct-connection cables (non-extendable) are available in 100 foot (30.5m) increments for distances up to 2000 feet (609.6 m). Modem cables are available in 12 foot (3.7 m), 25 foot (7.6 m), and 50 foot (15.2 m) lengths; however, combined cable distance from Wang equipment to a modem should not exceed a maximum of 50 feet (15.1 m) according to EIA standards. Cable numbers and lengths are as follows:

<u>Length</u>	<u>Part No.</u>
25 feet	120-2236-25
50 feet	120-2236-50
100 feet	120-2236-1
200 feet	120-2236-2
300 feet	120-2236-3
400 feet	120-2236-4
500 feet	120-2236-5
600 feet	120-2236-6
700 feet	120-2236-7
800 feet	120-2236-8
900 feet	120-2236-9
1000 feet	120-2236-10
1250 feet	120-2236-11
1500 feet	120-2236-12
1750 feet	120-2236-13
2000 feet	120-2236-14





APPENDIX A

2236DE BILL OF MATERIALS

LEGEND  
 1: P=PHANTOM; 2: ITEM MASTER DELY CODE; 3: \*-TAGGED OUT OF KIT(PROD STR)

POSITION IN STRUCTURE	LEGEND	COMPONENT PART NUMBER	DESCRIPTION	E C N	QUANTITY PER ASSY	U/M	L/T
1	IN	187-3236-DE-	2236-DE INTERACTIVE TERM WK/ST		1.0000	EACH	00010
2	IN	000-0003-	LABOR CALCULATING SYSTEMS		1.5530		00000
2	IN	000-0011-	LABOR QUALITY CONTROL		.3110		00000
2	IN	210-7592-A	PCA 2236E SINGLE BD TERM ELEC		1.0000	EACH	00010
3	IN	209-7592-	PCA 2236E SINGLE BD TERM ELEC		1.0000	EACH	00010
4	IN	000-0001-	LABOR CIRCUIT SYSTEMS		6.6210		00000
4	IN	000-0011-	LABOR QUALITY CONTROL		1.3240		00000
4	IN	000-6011-	CIRCUIT SYS.-ASSY. A		3.5000	EACH	00000
4	IN	220-1103-	CRT BRD (W2)(COAX)B6482-122	E11192	1.0000	EACH	00010
5	IN	000-0004-	LABOR SUB-SYSTEMS		.0740	EACH	00000
5	IN	000-0011-	LABOR QUALITY CONTROL		.0150		00000
5	IN	000-6043-	SUB-SYS.-CABLES		.0580	EACH	00000
5	FS	420-0018-	1 COND 24 GA SHIELDED CABLE AL 1702 EC8399		.8300	FEET	
5	IN	606-1103-	1/4" DIA WHT SHRNK BLK NUM 220-1103 E11776		1.0000	EACH	00001
5	IN	654-1150-	SOCKET HOUSING 1-480303-0		1.0000	EACH	
5	FS *	654-1165-R	SOCKET 30-22 GA (REEL) AMP 350078-4		2.0000	EACH	
4	IN	220-1136-	12 VOLT CABLE 2210 B6482-157	E12244	1.0000	EACH	00010
5	IN	000-0004-	LABOR SUB-SYSTEMS		.1300	EACH	00000
5	IN	000-0011-	LABOR QUALITY CONTROL		.0260		00000
5	IN	000-6043-	SUB-SYS.-CABLES		.1300	EACH	00000
5	P FS *	600-1000-	WIRE 22 GA BLACK		1.5800	FEET	
6	FS	600-1009-	WIRE 22 GA WHITE		1.0000	FEET	
5	P FS *	600-1002-	WIRE 22 GA RED		1.5800	FEET	
6	FS	600-1009-	WIRE 22 GA WHITE		1.0000	FEET	
5	FS *	605-0014-	TUBING #5 CLEAR		1.3700	FEET	
5	IN	605-1176-	3/8" DIA WHT SHRNK BLK NUM 220-1136 E11776		1.0000	EACH	00001
5	IN	554-1148-	SOCKET HOUSING 1-480318-0		1.0000	EACH	
5	FS *	654-1155-R	SOCKET 30-22 GA (REEL) AMP 350078-4		2.0000	EACH	
4	IN	300-1150-	CAP 100 PF 10% 500 V CERAMIC DISC		2.0000	EACH	
4	IN	300-1150-	CAP 150 PF 10% 500 V CERAMIC DISC		1.0000	EACH	
4	IN	300-1220-	CAP 220 PF 10% 500 V CERAMIC DISC		1.0000	EACH	
4	IN	300-1560-	CAP 560 PF 10% 500 V CERAMIC DISC		1.0000	EACH	
4	IN	300-1900-	CAP .95 UF +80-20% 12 V CERAMIC D		32.0000	EACH	00000
4	IN	300-1903-	CAP .01 UF +80-20% 25 V CERAMIC D	X13726	4.0000	EACH	
4	IN	300-1918-	.1 UF 50V +80-20% CERAMIC DISC	E13029	1.0000	EACH	
4	IN	300-1930-	.1 UF 50V +80-20% CERAMIC CAP(HIFRQ	E12076	2.0000	EACH	
4	IN	300-1931-	1 UF CERAMIC CAPACITOR(HIGH FREQ)	E13029	8.0000	EACH	
4	IN *	300-1965-	CAP .047 UF 50V+80-20% CERAMIC MLD	X13726	32.0000	EACH	
4	IN	300-2115-	CAP .015 UF 100 V MYLAR	E13664	1.0000	EACH	
4	IN	300-2147-	CAP .047 UF 10% 100 V MYLAR	E13029	1.0000	EACH	
4	IN	300-2248-	CAP .47 UF 10% 50 V MYLAR	E13664	2.0000	EACH	
4	IN	300-3010-	CAP 50 UF 50V -10+75% ELECT AXIAL	E12035	1.0000	EACH	
4	IN	300-3055-	1150 UF 50V ELECTROLYTIC CAPACITOR		1.0000	EACH	
4	IN	300-3062-	1000 UF 25V ELECTROLYTIC CAPACITOR		1.0000	EACH	
4	IN	300-3080-	4K UF 30V ELECT CAP(AXIAL LEAD)		1.0000	EACH	
4	IN	300-3081-	9.5K UF 15V ELECT CAP(AXIAL LEAD)		2.0000	EACH	
4	IN	300-4010-	CAP .56 UF 35 V 10% TANT AXIAL	E13664	2.0000	EACH	00001
5	FS	300-4010-R	CAP .56 UF 35V 10% TANT AXIAL T&R		1.0000	EACH	

4	FS	300-4016-R	-	-	CAP 3.3 UF	15V	10%	TANT AXIAL T&R	E13664	1.0000	EACH
4	IN	300-4020-	-	-	CAP 47.0 UF	15V	10%	TANT AXIAL	E13029	2.0000	EACH
4	IN	300-4022-	-	-	CAP 15.0 UF	20V	10%	TANT AXIAL	E12036	1.0000	EACH
5	FS	300-4022-R	-	-	CAP 15.0 UF	20V	10%	TANT AXIAL T&R		1.0000	EACH
4	IN	321-0029-	-	-	CRYSTAL	17.4000	5%	QUARTZ HC-18/U		1.0000	EACH
4	IN	325-1511-	-	-	SWITCH SLIDE	SPST	5	POS DIL		1.0000	EACH
4	FS	330-1010-	-	-	RES 10 OHM	1/4W	10%	FIXED COMP	E13664	1.0000	EACH
4	IN	330-1022-	-	-	RES 22 OHM	1/4W	10%	FIXED COMP	E13664	3.0000	EACH
4	IN	330-1057-	-	-	RES 56 OHM	1/4W	5%	FIXED COMP	E13664	1.0000	EACH
4	IN	330-1082-	-	-	RES 82 OHM	1/8W	10%	FIXED COMP	E13664	1.0000	EACH
4	FS	330-2011-	-	-	RES 100 OHM	1/4W	5%	FIXED COMP	E13664	1.0000	EACH
4	IN	330-2013-	-	-	RES 120 OHM	1/4W	5%	FIXED COMP	E13664	1.0000	EACH
4	IN	330-2016-	-	-	RES 150 OHM	1/4W	5%	FIXED COMP	E13664	1.0000	EACH
4	FS	330-2022-	-	-	RES 220 OHM	1/4W	10%	FIXED COMP	E13664	1.0000	EACH
4	FS	330-2033-	-	-	RES 330 OHM	1/4W	10%	FIXED COMP	E13664	1.0000	EACH
4	FS	330-2040-	-	-	RES 390 OHM	1/4W	5%	FIXED COMP	E13664	2.0000	EACH
4	IN	330-2047-	-	-	RES 470 OHM	1/4W	5%	FIXED COMP	E13664	1.0000	EACH
4	FS	330-2048-	-	-	RES 470 OHM	1/4W	5%	FIXED COMP	E13664	2.0000	EACH
4	FS	330-2068-	-	-	RES 680 OHM	1/4W	10%	FIXED COMP	E13664	1.0000	EACH
4	FS	330-3010-	-	-	RES 1K OHM	1/4W	10%	FIXED COMP	E13664	3.0000	EACH
4	FS	330-3015-	-	-	RES 1.5K OHM	1/4W	10%	FIXED COMP	E13664	16.0000	EACH
4	FS	330-3022-	-	-	RES 2.2K OHM	1/4W	10%	FIXED COMP	E13664	2.0000	EACH
4	IN	330-3047-	-	-	RES 4.7K OHM	1/4W	10%	FIXED COMP	E13664	3.0000	EACH
4	P FS	330-3047-4B-	-	-	RES 4.7K OHM	1/4W	10%	FIXED COMP	E13664	28.0000	EACH
5	IN *	330-3047-	-	-	RES 4.7K OHM	1/4W	10%	FIXED COMP	E13664	1.0000	EACH
4	IN	330-3052-	-	-	RES 5.1K OHM	1/4W	5%	FIXED COMP	E13664	1.0000	EACH
4	P FS	330-3052-4B-	-	-	RES 5.1K OHM	1/4W	5%	FIXED COMP	E13664	2.0000	EACH
5	IN *	330-3052-	-	-	RES 5.1K OHM	1/4W	5%	FIXED COMP	E13664	1.0000	EACH
4	P FS	330-3076-4B-	-	-	RES 7.5K OHM	1/4W	5%	FIXED COMP	E13664	2.0000	EACH
5	IN *	330-3076-	-	-	RES 7.5K OHM	1/4W	5%	FIXED COMP	E13664	1.0000	EACH
4	FS	370-3082-	-	-	RES 8.2K OHM	1/4W	10%	FIXED COMP	E13664	1.0000	EACH
4	P FS	330-4047-4B-	-	-	RES 47K OHM	1/4W	10%	FIXED COMP	E13664	1.0000	EACH
5	FS *	330-4047-	-	-	RES 47K OHM	1/4W	10%	FIXED COMP	E13664	1.0000	EACH
4	IN	332-1068-	-	-	48 OHM	1	10%	RESISTOR		1.0000	EACH
4	IN	334-0015-	-	-	0.15 OHM	5W	5%	FIXED RESISTOR		2.0000	EACH
4	IN	334-1001-	-	-	RES 1K OHM	VAR	TRIM	TOP ADJ RD	E13029	2.0000	EACH
4	IN	350-0200-	-	-	CONN 13-13	PSS	HFR	0.100 SPG STR	PIN PAIREL	1.0000	EACH
4	IN	350-0201-	-	-	CONN 20-20	PSS	HFR	0.100 SPG STR	PIN PAIREL	1.0000	EACH
4	IN	374-0002-	-	-	IC REG UA	7505	-5V	TO-220		1.0000	EACH
4	IN	374-0013-	-	-	IC REG UA	7912	-12V	TO-220		1.0000	EACH
4	IN	375-1012-	-	-	MPS 6512	SILICON	TRANSISTOR		PAIREL	1.0000	EACH
4	IN	375-1014-	-	-	MPS 6518	SILICON	TRANSISTOR		E1102	2.0000	EACH
4	IN	375-1027-	-	-	TSTR 2N3725	0.2K	90V	SH NPN S	E11102	1.0000	EACH
4	IN	375-1050-	-	-	TRANSISTOR	SPS6651				1.0000	EACH
4	IN	375-1052-	-	-	MPS 6514	TO 92	PLASTIC		E12036	1.0000	EACH
4	IN	375-0001-	-	-	TRANSIPAD	897887-1	LARGE		E12076	1.0000	EACH

4	IN	376-0002-	-	IC 7400N 4 2 IN POS NAND GATE	E12036	5.0000	EACH
4	IN	376-0003-	-	IC 7410N 3 3 IN POS NAND GATE	E12036	1.0000	EACH
4	IN	376-0006-	-	IC 7474N 2 D EDGE TRIG FLIP-FLOP	E13029	5.0000	EACH
4	IN	376-0010-	-	IC 7404N HEX INVERTER	E12036	4.0000	EACH
4	IN	376-0012-	-	IC 7451N EXP 2 W 2 IN AND OR INV GT		1.0000	EACH
4	IN	376-0015-	-	IC 7402N 4 2 IN POS NOR GATE	E11192	2.0000	EACH
4	IN	376-0049-	-	IC 74155 2 2-4 LINE DECODER DEMX	E11192	1.0000	EACH
4	IN	376-0056-	-	IC 723 VOLTAGE REGULATOR	E13664	2.0000	EACH
4	IN	376-0076-	-	IC 7515CP 2 LINE DRIVER	E13664	1.0000	EACH
4	IN	376-0077-	-	IC 75154 4 LINE REC		1.0000	EACH
4	IN	376-0081-	-	IC 7408 4 2 IN POS AND GATE		1.0000	EACH
4	IN	376-0082-	-	IC 74157 4 2 IN MX		3.0000	EACH
4	IN	376-0085-	-	IC 7409 4 2 IN AND GATES		1.0000	EACH
4	IN	376-0093-	-	IC 7432 4 2 IN OR GATE	E12036	4.0000	EACH
4	IN	376-0094-	-	IC 74161 SYNCHRONOUS 4 BIT COUNTER		4.0000	EACH
4	IN	376-0104-	-	IC 9602 2 RETRIG RESET MONOSTBL MVB		2.0000	EACH
4	IN	376-0109-	-	IC 74166 8 BIT REGISTER		2.0000	EACH
4	IN	376-0119-	-	IC 74175 4 D TYPE EDGE TRIG F/F	E12036	1.0000	EACH
4	IN	376-0125-	-	IC 7427 3 3 IN NOR GATE		1.0000	EACH
4	IN	376-0126-	-	IC 555 TIMER	PATREL	2.0000	EACH
4	IN	376-0139-	-	IC 7414 HEX SCHMITT TRIGGER		1.0000	EACH
4	IN	376-0176-	-	IC 74367 HEX BUFFER		1.0000	EACH
4	IN	376-0186-	-	IC 7497 SYN RATE MULTIPLIERS	E13029	1.0000	EACH
4	IN	376-0191-	-	IC 74160 SYN 4 BIT CTR	E12036	1.0000	EACH
4	IN	376-0194-	-	IC 7411 3 3 IN POS AND GATE	E13029	1.0000	EACH
4	IN	376-0197-	-	IC 74S04 HEX INVERTER		1.0000	EACH
4	IN	376-0199-	-	IC 74S02 4 2 IN POS NOR GATE	E11192	2.0000	EACH
4	IN	376-0205-	-	IC 74S260 2 5 IN POS NOR GATE		1.0000	EACH
4	IN	376-0209-	-	IC 74LS10 3 3 IN POS NAND GATE		1.0000	EACH
4	IN	376-0226-	-	IC 74LS139 2 2-4 LINE DECODE	E12036	1.0000	EACH
4	IN	376-0232-	-	IC 74LS29R 4 IN MX STORAGE		1.0000	EACH
4	IN	376-0270-	-	IC 74S175 4 D-TYPE F/F		1.0000	EACH
4	IN	376-0271-	-	IC 74S86 4 2 INPUT EXCLUSIVE OR		1.0000	EACH
4	IN	376-0285-	-	IC 74LS245 8 BUS TRANS W/TR ST OUTP	E12036	1.0000	EACH
4	IN	376-0289-	-	IC 74LS374 8 LATCHES W/TR ST OUTP		3.0000	EACH
4	IN	376-0288-	-	IC 74LS244 OCTAL BUF/LINE DR 3 OUT		3.0000	EACH
4	IN	376-0294-	-	IC 74LS138 3-8 LINE DECODER/MPX	E13029	2.0000	EACH
4	IN	376-0297-	-	IC 74LS240 OCTAL BUF/LINE DR/LN REC		1.0000	EACH
4	IN	376-0301-	-	IC 74S158 QUAD 2/1 DATA SELECT/MVX	E12036	1.0000	EACH
4	IN	376-0309-	-	IC 74LS378 HEX D-TYP F/F SCHTT	E11192	1.0000	EACH
4	IN	376-0310-	-	IC 74LS373 OCTL D-TYP LATCHES SCHTT	E11192	3.0000	EACH
4	IN	376-0312-	-	IC 74LS75 4-BIT RISTARLE LATCH		1.0000	EACH
4	IN	376-9001-T	-	IC 14 PIN SOCKET LOW PROFILE T1	E12036	1.0000	EACH
4	IN	376-9003-	-	IC 24 PIN SOCKET BURNDY	E13029	5.0000	EACH
4	IN	376-9010-	-	IC 22 PIN SOCKET BURNDY # DILBZ22P1	E13029	2.0000	EACH
4	IN	376-9011-	-	IC 40 PIN SOCKET BURNDY # DILBZ40P1	PATREL	4.0000	EACH
4	IN	376-9014-	-	IC 18 PIN SOCKET	E12036	10.0000	EACH
4	IN	376-9015-	-	IC 28 PIN SOCKET BURNDY		1.0000	EACH
4	IN	376-9016-	-	IC 24 PIN SOCKET CAMBION	E13664	1.0000	EACH
4	IN	376-9017-	-	IC 24 POS ANTI-WICKING WAFER	E12036	1.0000	EACH
4	IN	360-1031-	-	D035 SIL 010DF 30V 100 MA AT 1V T&R	E13664	4.0000	EACH
4	IN	380-3008-	-	A15A RECTIFIER		4.0000	EACH

4	FS	380-4000-R	-	-	EM403 / 1V40C4 RECTIFIER (REEL)	E13664	4.0000	EACH	1.0000
4	IN	510-7502	-	-	PCF 2236E SINGLE PD TERM ELEC	PATREL	1.5000	EACH	1.5000
4	FS	605-1014	-	-	CABLE TYP, PAN-TY PLT1M-M	E13029	2.0000	EACH	2.0000
4	IN	650-3387	-	-	SCR 6-22 1/4 PAN SLOT MS NYL	E12036	2.0000	EACH	2.0000
4	IN	552-3202	-	-	NUT 6-32UNC HEX RFG PAT NYLON	E12036	3.0000	EACH	3.0000
4	IN	554-0174	-	-	CONN HEADER 7 .100 1ROW STR PIN	E13029	3.0000	EACH	3.0000
4	IN	554-0106	-	-	CONN HEADER 6 .100 1ROW STR PIN	E13029	2.0000	EACH	2.0000
4	IN	654-1146	-	-	6 POS PIN-HEADER AMP 1-380999-0	E13029	1.0000	EACH	1.0000
4	IN	554-1194	-	-	4 POS P-C-HEADER ASSY AMP 350211-1	E12036	1.0000	EACH	1.0000
4	IN	554-1158	-	-	2 POS PIN-HEADER ASSY AMP 350209-1	E12036	6.0000	EACH	6.0000
3	IN	220-1351	-	-	JUMPER PLUG CABLE 2236DE A6482-522	E13029	1.0000	EACH	1.0000
4	IN	000-0054	-	-	LAPOR SUR-SYSTEMS		.0600	EACH	.0600
4	IN	000-0011	-	-	LABOR QUALITY CONTROL		.0120	EACH	.0120
4	IN	000-5043	-	-	SUR-SYS.-CABLES		.0600	EACH	.0600
4	P	600-0000	-	-	WIRE 18 GA BLACK UL		.1000	FEET	.1000
4	IN	654-1148	-	-	SOCKET HOUSING 1-480318-0		1.0000	EACH	1.0000
4	FS	654-1163-R	-	-	PV TERM 30-22 GA (REEL) AMP 350079-4		2.0000	EACH	2.0000
3	WC	377-0071	-	-	TR 1402A / 1602A TRANS & REC I.C.		1.0000	EACH	1.0000
3	IN	377-0323	-	-	EA8308APC 71C ROM PATTERN	E13639	1.0000	EACH	1.0000
3	IN	377-0341-L	-	-	2114L 1024X4 BIT STATIC RAM LOW PWR	E13639	10.0000	EACH	10.0000
3	IN	377-0342	-	-	280 PIO 40 PIN I.C.		1.0000	EACH	1.0000
3	IN	377-0343	-	-	280 CTC 28 PIN I.C.		1.0000	EACH	1.0000
3	IN	377-0344	-	-	280 CPU 40 PIN I.C.	PATREL	1.0000	EACH	1.0000
3	IN	377-0372	-	-	IC 5027-175337 CPT VTAC		1.0000	EACH	1.0000
3	P	378-2446-R1	-	-	2236DE K80 LOGKUP TABLE #3 L16	E12948	1.0000	EACH	1.0000
4	FS	377-0317	-	-	IC 2700 1X8 F. PROM 450 NS INTEL	E12948	1.0000	EACH	1.0000
3	P	378-2447-R1	-	-	2236DE GRAPHICS CHAR TABLE #4 L15	E12948	1.0000	EACH	1.0000
4	FS	377-0317	-	-	IC 2700 1X8 F. PROM 450 NS INTEL	E12948	1.0000	EACH	1.0000
3	P	378-4094-R1	-	-	2236DE TERMINAL MICROCODE #1 L18	E12948	1.0000	EACH	1.0000
4	FS	377-0348	-	-	TMS 2715 2K BY 8 BIT E PROM	E12948	1.0000	EACH	1.0000
3	P	378-4095-R1	-	-	2236DE TERMINAL MICROCODE #2 L17	E12948	1.0000	EACH	1.0000
4	FS	377-0348	-	-	TMS 2715 2K BY 8 BIT E PROM	E12948	1.0000	EACH	1.0000
2	IN	270-0576	-	-	2236DE WK/ST CHASSIS	E12542	1.0000	EACH	1.0000
3	IN	000-0004	-	-	LABOR SUB-SYSTEMS		2.2110	EACH	2.2110
3	IN	000-0011	-	-	LABOR QUALITY CONTROL		.4420	EACH	.4420
3	IN	000-6041	-	-	SUB-SYS.-CHASSIS		3.0000	EACH	3.0000
3	IN	220-1076	-	-	POWER CARD ASSY (F CHAS) B6482-95		1.0000	EACH	1.0000
4	IN	000-0004	-	-	LABOR SUB-SYSTEMS		.1840	EACH	.1840
4	IN	000-0011	-	-	LABOR QUALITY CONTROL		.0370	EACH	.0370
4	IN	000-6043	-	-	SUB-SYS.-CABLES		.1730	EACH	.1730
4	IN	420-1096	-	-	POWER CORD, 10 FT 18AWG	X11034	1.0000	EACH	1.0000
4	P	600-0001	-	-	WIRE 18 GA BROWN UL	E11034	.7100	FEET	.7100
5	FS	600-0009	-	-	WIRE 18 GA WHITE UL		1.0000	FEET	1.0000
4	P	600-0054	-	-	WIRE 18 GA GREEN/YELLOW UL		.6200	FEET	.6200
5	FS	600-0009	-	-	WIRE 18 GA WHITE UL		1.0000	FEET	1.0000

4	FS	505-0131-	-	-	TUBING 1/4 BLACK					.5400	FEET	
4	FS	505-1074-	-	-	CABLE TYE, PAN-TY PLTIIM-M					1.0000	EACH	
4	IN	505-1076-	-	-	1/2 DIA WHT SPRK BLK NUM 220-1076	E12008				1.0000	EACH	00001
4	FS	554-0552-R	-	-	#6 RING TONGUE BLU 9A14-6M(2K/REEL)					1.0000	EACH	
4	FS	554-013-R	-	-	FASSTON TERY 1R-2? RED AMP2-350803-2	E12144				3.9000	EACH	
3	IN	220-1131-	-	-	P054 WIRE&LUG ASSY(IE CHAS)6482-12					1.0000	EACH	00010
4	IN	000-0074-	-	-	LABOR SUB-SYSTEMS					.0070	EACH	00000
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL					.0010	EACH	00000
4	IN	000-6643-	-	-	SUB-SYS.-CABLES					.0090	EACH	00000
4	P	FS	500-0554-	-	WIRE 18 GA GREEN/YELLOW UL					.2500	FEET	
5	FS	500-2009-	-	-	WIRE 1R GA WHITE UL					1.0000	FEET	
4	FS	554-0550-R	-	-	#6 RING TONGUE RED 9A16-6M(2K/REEL)	EC5924				1.0000	EACH	
3	IN	220-1143-	-	-	WIRE & LUG ASSY TYPE P065 D6482-12	E13527				1.0000	EACH	00010
4	IN	000-0074-	-	-	LABOR SUB-SYSTEMS					.0090	EACH	00000
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL					.0020	EACH	00000
4	IN	000-6643-	-	-	SUB-SYS.-CABLES					.0090	EACH	00000
4	P	FS	600-5130-	-	12 GA BLACK STRANDED WIRE					.5000	FEET	
5	FS	500-5109-	-	-	12 GA WHITE STRANDED WIRE					1.0000	FEET	
4	FS	654-0017-R	-	-	TERMINAL FASTON .250X.032 P010R258M					1.0000	EACH	
4	FS	654-0075-R	-	-	#10 RING TNG YLO 9A10-10 MIK					1.0000	EACH	
3	IN	220-1131-	-	-	CABLE SPEAKER 2236E	B6482-462	E11322			1.0000	EACH	00010
4	IN	000-0074-	-	-	LABOR SUB-SYSTEMS					.1600	EACH	00000
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL					.0320	EACH	00000
4	IN	000-6643-	-	-	SUB-SYS.-CABLES					.1500	EACH	00000
4	P	FS	500-2004-	-	WIRE 24 GA YELLOW UL					.5400	FEET	
5	FS	500-2009-	-	-	WIRE 24 GA WHITE UL					1.0000	FEET	
4	P	FS	600-2006-	-	WIRE 24 GA BLUE UL					.5400	FEET	
5	FS	500-2009-	-	-	WIRE 24 GA WHITE UL					1.0000	FEET	
4	FS	505-0010-	-	-	TUBING PVC #8 CLFAR	E12244				.5780	FEET	
4	FS	505-1074-	-	-	CABLE TYE, PAN-TY PLTIIM-M	E12244				1.0000	EACH	
4	IN	554-1148-	-	-	SOCKET HOUSING 1-4R0318-0					1.0000	EACH	
4	FS	554-1165-R	-	-	SOCKET 30-22 GA (REEL) AMP 350078-4					2.0000	EACH	
3	IN	220-1132-	-	-	CABLE POT	B6482-466	E11322			1.0000	EACH	00010
4	IN	000-0074-	-	-	LABOR SUB-SYSTEMS					.3400	EACH	00000
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL					.0680	EACH	00000
4	IN	000-6643-	-	-	SUB-SYS.-CABLES					.3400	EACH	00000
4	P	FS	600-2000-	-	WIRE 24 GA BLACK UL	E11560				.7500	FEET	
5	FS	500-2009-	-	-	WIRE 24 GA WHITE UL					1.0000	FEET	
4	P	FS	600-2005-	-	WIRE 24 GA GREEN UL					.3800	FEET	
5	FS	500-2009-	-	-	WIRE 24 GA WHITE UL	W70FF-76				1.0000	FEET	
4	P	FS	600-2006-	-	WIRE 24 GA BLUE UL					.3800	FEET	

QTY	UNIT	DESCRIPTION	REF	PRICE	UNIT PRICE	TOTAL
5	FS	600-2009-	-	-	1.0000	FEET
4	FS	605-0010-	-	-	.4540	FEET
4	FS	605-1004-	-	-	1.0000	EACH
4	FS	654-1165-R	-	-	4.0000	EACH
4	IN	654-1195-	-	-	1.0000	EACH
3	IN	220-3085-	-	-	1.0000	EACH
4	IN	000-0004-	-	-	.2500	EACH
4	IN	000-0011-	-	-	.0500	EACH
4	IN	000-6043-	-	-	.2500	EACH
4	IN	350-0413-	-	-	1.0000	EACH
4	IN	350-2500-M	-	-	1.0000	EACH
5	IN	350-2500-	-	-	1.0000	EACH
4	FS	420-0078-	-	-	.5000	FEET
3	IN	220-3086-	-	-	1.0000	EACH
4	IN	000-0004-	-	-	.3400	EACH
4	IN	000-0011-	-	-	.0580	EACH
4	IN	000-6043-	-	-	.3400	EACH
4	IN	350-0600-	-	-	1.0000	EACH
4	IN	350-2506-	-	-	1.0000	EACH
4	FS	422-0045-	-	-	.5000	FEET
3	IN	270-3139-	-	-	1.0000	EACH
4	IN	000-0004-	-	-	.3400	EACH
4	IN	000-0011-	-	-	.0680	EACH
4	IN	000-6043-	-	-	.3400	EACH
4	IN	410-0116-	-	-	1.0000	EACH
4	FS	605-0105-	-	-	.5000	FEET
4	FS	605-1004-	-	-	4.0000	EACH
4	FS	654-1163-R	-	-	6.0000	EACH
4	IN	654-1185-	-	-	1.0000	EACH
3	IN	320-0300-	-	-	1.0000	EACH
3	IN	325-0033-	-	-	1.0000	EACH
3	IN	325-2112-	-	-	1.0000	EACH
3	IN	335-0033-	-	-	1.0000	EACH
3	IN	335-0034-	-	-	1.0000	EACH
3	IN	360-0000-	-	-	1.0000	EACH
3	IN	360-9000-	-	-	1.0000	EACH
3	IN	360-9002-	-	-	1.0000	EACH
3	IN	360-9003-	-	-	1.0000	EACH
3	IN	380-5001-	-	-	1.0000	EACH
3	IN	410-2005-	-	-	1.0000	EACH
3	IN	451-1100-	-	-	1.0000	EACH
3	IN	451-3996-	-	-	1.0000	EACH
3	IN	452-0423-	-	-	1.0000	EACH
3	IN	462-0411-	-	-	4.0000	EACH
3	IN	462-0426-	-	-	4.0000	EACH
3	IN	510-6749-	-	-	1.0000	EACH
4	FS	600-2009-	-	-	1.0000	FEET
4	FS	605-0010-	-	-	.4540	FEET
4	FS	605-1004-	-	-	1.0000	EACH
4	FS	654-1165-R	-	-	4.0000	EACH
4	IN	654-1195-	-	-	1.0000	EACH
3	IN	220-3085-	-	-	1.0000	EACH
4	IN	000-0004-	-	-	.2500	EACH
4	IN	000-0011-	-	-	.0500	EACH
4	IN	000-6043-	-	-	.2500	EACH
4	IN	350-0413-	-	-	1.0000	EACH
4	IN	350-2500-M	-	-	1.0000	EACH
5	IN	350-2500-	-	-	1.0000	EACH
4	FS	420-0078-	-	-	.5000	FEET
3	IN	220-3086-	-	-	1.0000	EACH
4	IN	000-0004-	-	-	.3400	EACH
4	IN	000-0011-	-	-	.0580	EACH
4	IN	000-6043-	-	-	.3400	EACH
4	IN	350-0600-	-	-	1.0000	EACH
4	IN	350-2506-	-	-	1.0000	EACH
4	FS	422-0045-	-	-	.5000	FEET
3	IN	270-3139-	-	-	1.0000	EACH
4	IN	000-0004-	-	-	.3400	EACH
4	IN	000-0011-	-	-	.0680	EACH
4	IN	000-6043-	-	-	.3400	EACH
4	IN	410-0116-	-	-	1.0000	EACH
4	FS	605-0105-	-	-	.5000	FEET
4	FS	605-1004-	-	-	4.0000	EACH
4	FS	654-1163-R	-	-	6.0000	EACH
4	IN	654-1185-	-	-	1.0000	EACH
3	IN	320-0300-	-	-	1.0000	EACH
3	IN	325-0033-	-	-	1.0000	EACH
3	IN	325-2112-	-	-	1.0000	EACH
3	IN	335-0033-	-	-	1.0000	EACH
3	IN	335-0034-	-	-	1.0000	EACH
3	IN	360-0000-	-	-	1.0000	EACH
3	IN	360-9000-	-	-	1.0000	EACH
3	IN	360-9002-	-	-	1.0000	EACH
3	IN	360-9003-	-	-	1.0000	EACH
3	IN	380-5001-	-	-	1.0000	EACH
3	IN	410-2005-	-	-	1.0000	EACH
3	IN	451-1100-	-	-	1.0000	EACH
3	IN	451-3996-	-	-	1.0000	EACH
3	IN	452-0423-	-	-	1.0000	EACH
3	IN	462-0411-	-	-	4.0000	EACH
3	IN	462-0426-	-	-	4.0000	EACH
3	IN	510-6749-	-	-	1.0000	EACH

3	FS	600-3000-	-	-	WIRE 26 GA BLACK				1.2500	FEET
4	FS	500-3009-	-	-	WIRE 26 GA WHITE				1.0000	FEET
3	FS	605-0006-	-	-	TUBING NBR 12 CLEAR	E12177			.3000	FEET
3	FS	605-0010-	-	-	TUBING PVC #8 CLEAR	E12177			.0417	FEET
3	FS	605-0012-	-	-	TUBING #4 CLEAR	E11814			.0417	FEET
3	FS	605-0024-	-	-	TEFLON TUBING #2 PENNTUBE#1-5115	E12853			.0830	ROLL
3	FS	605-1004-	-	-	CABLE TYE, PAN-TY PLTIM-M	E12853			1.0000	EACH
3	IN	650-2121-	-	-	SCR 4-4A 3/8 PHIL FLAT H MS SS	E13527			2.0000	EACH
3	IN	650-3120-	-	-	6-32 X 3/8 PAN HD PHL MS SS SEMS	E12177			2.0000	EACH
3	IN	650-4120-	-	-	8-32 X 3/8 PAN HD PHL MS SS SEMS	E13527			1.0000	EACH
3	IN	650-4150-	-	-	8-32 X 1/2 PAN HD PHL MS SS SEMS	E13432			3.0000	EACH
3	IN	650-4200-	-	-	SCR 8-32 5/8 PHIL PH MS SS	E13432			1.0000	EACH
3	IN	651-0401-	-	-	RIVET,POP 1/8 X 3/16 AD42ABS				4.0000	EACH
3	IN	652-2005-	-	-	4-40 LOCK-NUT KEYS,SS	E13527			2.0000	EACH
3	IN	652-3004-	-	-	NUT 6-32UNC HEY SMALL PAT	SS E12177			4.0000	EACH
3	IN	652-4000-	-	-	NUT 8-32UNC HEX REG PAT	SS			4.0000	EACH
3	IN	653-3001-	-	-	WASH 6 .15CID .2800D INT T	ST			2.0000	EACH
3	IN	653-3003-	-	-	WASH 6 .141ID .2530D SPLIT	SS			2.0000	EACH
3	IN	653-4002-	-	-	#8 FLAT WASHER (.375 0 .187 I .149)	E13432			5.0000	EACH
3	IN	654-0125-	-	-	FAST-ON TERMINAL AMP #60465-2				1.0000	EACH
3	IN	654-1036-	-	-	#6 GROUND LUG				1.0000	EACH
3	IN	654-1238-	-	-	HEYCO STRAIN RELIEF SR5P-4				1.0000	EACH
3	IN	654-1256-	-	-	CLAMP, CABLE 1/2 INCH	E13310			1.0000	EACH
3	IN	654-1288-	-	-	SNAP PUSHING SP-625-8(5/8HOLE1/2ID)	E13432			1.0000	EACH
2	P	IN	279-0359-	-	2236E INTERACTIVE TERM COMMON ASSY				1.0000	EACH
3	IN	220-1143-	-	-	WIRE & LUG ASSY TYPE P065 D6482-12				1.0000	EACH
4	IN	000-0004-	-	-	LABOR SUB-SYSTEMS				.0090	EACH
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL				.0020	EACH
4	IN	000-6043-	-	-	SUB-SYS.-CABLES				.0090	EACH
4	P	FS	600-0000-	-	12 GA BLACK STRANDED WIRE				.5000	FEET
5	FS	500-6109-	-	-	12 GA WHITE STRANDED WIRE				1.0000	FEET
4	FS	654-0017-R	-	-	TERMINAL FASTON .250X.032 P010R258M				1.0000	EACH
4	FS	654-0075-R	-	-	#10 RNG TNG YLO 8A13-10 MIK				1.0000	EACH
3	IN	220-1361-	-	-	JUMPER PLUG CABLE 2236DE A6482-522	E12322			5.0000	EACH
4	IN	000-0004-	-	-	LABOR SUB-SYSTEMS				.0500	EACH
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL				.0120	EACH
4	IN	000-6043-	-	-	SUB-SYS.-CABLES				.0500	EACH
4	P	FS	600-0000-	-	WIRE 18 GA BLACK UL				.1000	FEET
4	IN	654-1148-	-	-	SOCKET HOUSING 1-480318-0				1.0000	EACH
4	FS	654-1163-R	-	-	PN TERM 30-22 GA(REEL) AMP 350079-4				2.0000	EACH
3	IN	220-2236-25-	-	-	2236 DIRECT CABLE ASSY	E13656			1.0000	EACH
4	IN	000-0004-	-	-	LABOR SUB-SYSTEMS				1.0000	EACH
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL				.2000	EACH
4	IN	000-5043-	-	-	SUB-SYS.-CABLES				.7360	EACH
4	IN	350-1030-	-	-	DB-25P CH CONN 6000 SERIES				2.0000	EACH
4	IN	350-4102-	-	-	BUSHING MS3420-4 TELESCOPE				2.0000	EACH
4	IN	350-4250-	-	-	MALE SCR RETAINER FOR CABLE SHELL	E13233			2.0000	EACH



4	IN	350-4251-	-	-	CABLE SHELL CLAMP ASSY	E12590	2.0000	EACH	00001
4	IN	420-0101-	-	-	3 TWISTED PR 24GA BRAIDED SHLD CBL	E12590	25.1600	EACH	
4	IN	458-0361-	-	-	GROUND STRAP C6815-2R	E12590	4.0000	EACH	
4	FS	605-0000-	-	-	TUBING #10 CLEAR		.0800	FEET	
4	FS	605-0002-	-	-	TUBING #15 CLEAR		.2700	FEET	
4	FS	605-0123-	-	-	SHRINK TUBING TYPE RMF 3/16 ID 8LK	E12590	.3300	FEET	
4	FS	606-2236-25-	-	-	CBL MARKER WH/BK 2236 120-2236-25	E12590	2.0000	EACH	00001
5	FS	605-0137-	-	-	TUBING 1/4 WH SHRINK POLYOLEFIN		.1140	FEET	
4	IN	615-1343-	-	-	LABEL MUX CABLE CONN A5300-1072		1.0000	EACH	
4	IN	615-1344-	-	-	LABEL TERMINAL CABLE CON A5300-1072		1.0000	EACH	
3	IN	220-3039-	-	-	24 PIN FLAT CABLE ASSY(18")C6482-79	E12542	1.0000	EACH	00010
4	IN	000-0004-	-	-	LABOR SUB-SYSTEMS		.0330	EACH	00000
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL		.0070	EACH	00000
4	IN	000-6043-	-	-	SUB-SYS.-CABLES		.0490	EACH	00000
4	IN	350-0403-	-	-	24 PIN FLAT CABLE PLUG		2.0000	EACH	
4	FS	420-0050-	-	-	24 COND FLAT CABLE 3M 3365/24		1.5000	FEET	
3	IN	270-0372-	-	-	12" MONITOR ASM II (LESS PWR SUP)	E12150	1.0000	EACH	00010
4	IN	000-0064-	-	-	LABOR SUB-SYSTEMS		3.7100	EACH	00000
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL		.7420	EACH	00000
4	IN	020-6045-	-	-	SUB-SYS.-MONITORS		3.7100	EACH	00000
4	IN	210-7455-	-	-	PCA 12" MONITOR FLEC	EC8373	1.0000	EACH	00010
4	IN	000-0035-	-	-	LABOR PRODUCTION SYSTEMS		.4950	EACH	00000
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL		.0990	EACH	00000
4	IN	000-9659-	-	-	OTHER DIRECT COST		10.4210	EACH	00000
4	IN	300-1047-	-	-	CAP 47 PF 10% 500 V CERAMIC DISC		1.0000	EACH	
4	IN	300-1470-	-	-	CAP 470 PF 10% 500 V CERAMIC DISC		1.0000	EACH	
4	IN	300-1820-	-	-	CAP 820 PF 10% 500 V CERAMIC DISC		1.0000	EACH	
4	IN	300-1912-	-	-	CAP .02 UF 20% 500 V CERAMIC DISC	E13020	3.0000	EACH	
4	IN	300-1915-	-	-	CAP .0056 UF 20% 500 V CERAMIC DISC		2.0000	EACH	
4	IN	300-1915-	-	-	CAP .02 UF +60-20% 1.4 V CERAMIC D		1.0000	EACH	
4	IN	300-1918-	-	-	CAP .1 UF +60-20% 20 V CERAMIC DISC		2.0000	EACH	
4	IN	300-1931-	-	-	1 UF CERAMIC CAPACITOR(HIGH FREQ)	EC9161	1.0000	EACH	
4	IN	300-2215-	-	-	CAP .15 UF 10% 100 V MYLAR		1.0000	EACH	
4	IN	300-2247-	-	-	CAP .47 UF 10% 100 V MYLAR	EC7776	2.0000	EACH	
4	IN	300-3310-	-	-	CAP .1 UF 10% 400 V MYLAR	EC7776	1.0000	EACH	
4	IN	300-2412-	-	-	CAP .033 UF 10% 400 V METL MYLAR		1.0000	EACH	
4	IN	300-2413-	-	-	CAP 4.0 UF 10% 100 V METL MYLAR		1.0000	EACH	
4	IN	300-2414-	-	-	CAP .01 UF 10% 50 V POLYSTYRENE		1.0000	EACH	
4	IN	300-2415-	-	-	CAP .0033 UF 10% 600 V MYLAR		1.0000	EACH	
4	IN	300-2418-	-	-	CAP 2.2 UF 10% 100 V METL MYLAR	EC7776	1.0000	EACH	
4	IN	300-3006-	-	-	CAP 10 UF 16V -10+75% ELECT AXIAL		2.0000	EACH	
4	IN	300-3009-	-	-	CAP 35 UF 16V -10+75% ELECT AXIAL		3.0000	EACH	
4	IN	300-3010-	-	-	CAP 50 UF 50V -10+75% FLECT AXIAL		1.0000	EACH	
4	IN	300-3033-	-	-	CAP 100 UF 25V -10+75% ELECT AXIAL		1.0000	EACH	
4	IN	300-3062-	-	-	1000 UF 25V ELECTROLYTIC CAPACITOR		3.0000	EACH	
4	IN	300-4000-	-	-	CAP 1.0 UF 35 V 10% TANT AXIAL		1.0000	EACH	00001
4	FS	300-4000-R	-	-	CAP 1.0 UF 35V 10% TANT AXIAL T&R		1.0000	EACH	
4	IN	300-4022-	-	-	CAP 15.0 UF 20 V 10% TANT AXIAL	EC7776	1.0000	EACH	00001

Q	FS	300-4022-R	-	CAP 15.0 UF	20V	10% TANT	AXIAL	TRR	1.0000	EACH
5	IN	320-00F1-	-	COIL,LINEARITY	EX4063-1	C6815-901			1.0000	EACH
5	IN	320-0053-	-	COIL,WIDTH	EX4062-1	C6815-900			1.0000	EACH
5	IN	320-0054-	-	COIL,DYNAMIC	FOCUS				1.0000	EACH
5	P FS *	330-1022-4B-	-	RES 22 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	IN *	330-1022-	-	RES 22 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-1047-4B-	-	RES 47 OHM	1/4W	10% FIXED	COMP		3.0000	EACH
5	FS *	330-1047-	-	RES 47 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-1058-4B-	-	RFS 58 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	IN *	330-1058-	-	RFS 58 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-2015-4B-	-	RES 150 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	FS *	330-2015-	-	RES 150 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-2018-4B-	-	RES 180 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	FS *	330-2018-	-	RES 180 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-2022-4B-	-	RES 220 OHM	1/4W	10% FIXED	COMP		2.0000	EACH
5	FS *	330-2022-	-	RES 220 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-2047-4B-	-	RES 470 OHM	1/4W	10% FIXED	COMP		3.0000	EACH
5	IN *	330-2047-	-	RES 470 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-2068-4B-	-	RES 580 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	FS *	330-2068-	-	RES 580 OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-3010-4B-	-	RES 1K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	FS *	330-3010-	-	RES 1K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-3012-4B-	-	RES 1.2K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	FS *	330-3012-	-	RES 1.2K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-3022-4B-	-	RES 2.2K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	FS *	330-3022-	-	RES 2.2K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-3047-4B-	-	RES 4.7K OHM	1/4W	10% FIXED	COMP		2.0000	EACH
5	IN *	330-3047-	-	RES 4.7K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-3068-4B-	-	RES 6.8K OHM	1/4W	10% FIXED	COMP		2.0000	EACH
5	FS *	330-3068-	-	RES 6.8K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-4015-4B-	-	RES 15K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	FS *	330-4015-	-	RES 15K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-4018-4B-	-	RES 18K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	FS *	330-4018-	-	RES 18K OHM	1/4W	10% FIXED	COMP		1.0000	EACH
5	P FS *	330-4022-4B-	-	RES 22K OHM	1/4W	10% FIXED	FILM		1.0000	EACH
5	FS *	330-4022-	-	RES 22K OHM	1/4W	10% FIXED	FILM		1.0000	EACH

5	P	FS *	330-4027-4R-	-	RES	27K	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
6	FS *	330-4027-	-	-	RES	27K	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
5	P	FS	330-4068-4B-	-	RES	68K	OHM	1/4W	10%	FIXED	COMP	EC8519	1.0000	EACH
6	FS *	330-4068-	-	-	RES	68K	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
5	P	FS *	330-5010-4B-	-	RES	100K	OHM	1/4W	10%	FIXED	COMP		3.0000	EACH
6	IN *	330-5010-	-	-	RES	100K	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
5	P	FS *	330-5022-4B-	-	RES	220K	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
6	IN *	330-5022-	-	-	RES	220K	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
5	P	FS *	330-5027-4B-	-	RES	270K	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
6	FS *	330-5027-	-	-	RES	270K	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
5	P	FS *	330-6012-4B-	-	RES	1.2M	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
6	IN *	330-6012-	-	-	RES	1.2M	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
5	P	FS *	330-6047-4B-	-	RES	4.7M	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
6	IN *	330-6047-	-	-	RES	4.7M	OHM	1/4W	10%	FIXED	COMP		1.0000	EACH
5	IN	331-0022-	-	-	RES	2.2	OHM	1/2W	10%	FIXED	COMP		1.0000	EACH
6	FS	331-0022-R	-	-	RES	2.2	OHM	1/2W	10%	FIXED	COMP	T&R	1.0000	EACH
5	IN	331-2010-	-	-	RES	100	OHM	1/2W	10%	FIXED	COMP		1.0000	EACH
6	FS	331-2010-R	-	-	RES	100	OHM	1/2W	10%	FIXED	COMP	T&R	1.0000	EACH
5	IN	332-1033-	-	-	RES	33	OHM	1W	10%	FIXED	COMP		1.0000	EACH
5	IN	333-0057-	-	-	RES	8.25K	OHM	1/8W	1%	FIXED	FILM		1.0000	EACH
5	IN	336-0331-	-	-	RES	2.5	MFG	OHM	POT	750V			1.0000	EACH
5	IN	336-1015-	-	-	RES	10K	OHM	VAR	TRIM	SIDE	ADJ	SG	1.0000	EACH
5	IN	336-1019-	-	-	RES	100K	OHM	VAR	TRIM	SIDE	ADJ	SG	1.0000	EACH
5	IN	336-1020-	-	-	RES	5K	OHM	VAR	TRIM	SIDE	ADJ	SG	2.0000	EACH
5	IN	336-1021-	-	-	RES	20	OHM	VAR	TRIM	SIDE	ADJ	SG	1.0000	EACH
5	IN	337-1056-	-	-	RES	56	OHM	2W	10%	FIXED	COMP		1.0000	EACH
5	IN	337-3012-	-	-	RES	1.2K	OHM	2W	10%	FIXED	COMP		1.0000	EACH
5	IN	375-1012-	-	-	MPS	6E12	SILICON	TRANSISTOR					1.0000	EACH
5	IN	375-1014-	-	-	MPS	6E18	SILICON	TRANSISTOR					1.0000	EACH
5	IN	375-1027-	-	-	TSTR	2N3725	0.8W	80V	SH	NPN	S		1.0000	EACH
5	IN	375-1056-	-	-	MPS	U04	TRANSISTOR						1.0000	EACH
5	IN	375-1057-	-	-	BU-124	TRANSISTOR							1.0000	EACH
5	IN	375-9031-	-	-	TRANSIPAD	8977887-1	LARGE						1.0000	EACH
5	IN	375-9015-	-	-	MICA	INSUL#DF10R	FOR	375-1034/1035	E11035				1.0000	EACH
5	IN	375-6239-	-	-	IC	NE592A	VICFO	AMP					1.0000	EACH
5	IN	375-6250-	-	-	TBA	950	I.C.						1.0000	EACH
5	IN	375-0241-	-	-	TDA	1044	I.C.						1.0000	EACH
5	P	FS *	380-1021-4B-	-	D335	SIL	DIODE	30V,	100MA	AT	1V	.4B	EC7776	EACH
6	FS	380-1021-R	-	-	D335	SIL	DIODE	30V,	100MA	AT	1V	T&R		EACH
5	IN	360-2056-	-	-	D10	ZEN	1N752	A	5.6V	400MW	S	D0-7	1.0000	EACH
5	IN	380-2091-	-	-	D10	ZEN	1N757	A	9.1V	400MW	S	D0-7	1.0000	EACH

QTY	UNIT	DESCRIPTION	PRICE	TOTAL
6	FS	380-2091-R - - DID ZEN 1N757A 9.1V 400MW SD07 T+R	1.0000	6.0000
5	IN	380-3009- - VG-1X RECTIFIER 1KV	2.0000	10.0000
5	IN	380-3010- - SIF4 400V DIODE	2.3000	11.5000
5	IN	380-3012- - 3SIF2 3AMP 200V RECTIFIER	1.0000	5.0000
5	FS	380-4000- - DIO 1N4004 400V 1A RECT S D041	1.0000	5.0000
5	FS	380-4000-R - - EM403 / 1N4004 RECTIFIER (REEL)	1.0000	5.0000
5	IN	410-1006- - EX4061 TRANSFMR HORIZ DR C5068-1006	1.0000	5.0000
5	IN	451-4833- - BRACKET HEATSINK 12"MNTR B6836-133	1.0000	5.0000
5	IN	510-7456- - PCB 12" MONITOR ELEC	1.0000	5.0000
5	FS	505-0003- - TUBING #18 CLEAR	.2500	1.2500
5	FS	505-0120- - TEFLOW TUBING #22 CLEAR 100 FT ROLL	.2500	1.2500
5	IN	550-3080- - 6-32 X 1/4 PAN HD PHL MS SS SEMS	1.0000	5.0000
5	IN	550-3087- - SCR 6-32 1/4 PAN SLOT MS NYL	1.0000	5.0000
5	IN	653-3002- - WASH 6 .141ID .2500D .062 FL NYL	1.0000	5.0000
5	IN	653-4004- - WASH 8 .170ID .3750D .062 FL NYL	1.0000	5.0000
5	FS	560-0123- - THERMAL COMPOUND DCW#340(14 OZ TURE	.2100	1.0500
4	IN	220-0160- - BRIGHTNESS POT CABLE ASSY C6482-140	1.0000	4.0000
5	IN	000-0004- - LABOR SUB-SYSTEMS	.0640	0.3200
5	IN	000-0011- - LABOR QUALITY CONTROL	.0130	0.0650
5	IN	000-0043- - SUB-SYS.-CABLES	.3600	1.8000
5	P FS	* 330-1368-48- - RES 68 OHM 1/4W 10% FIXED COMP	1.0000	5.0000
6	IN *	330-1368- - RES 68 OHM 1/4W 10% FIXED COMP	1.0000	6.0000
5	IN	336-0332- - 250K OHM POT (BRIGHTNESS)	1.0000	5.0000
5	IN	336-0335- - 250.0HM CONTRAST CONTROL	1.0000	5.0000
5	P FS *	600-1000- - WIRE 22 GA BLACK	4.0000	20.0000
6	FS	600-1009- - WIRE 22 GA WHITE	1.0000	6.0000
5	P FS *	600-1002- - WIRE 22 GA RED	2.0000	10.0000
6	FS	600-1009- - WIRE 22 GA WHITE	1.0000	6.0000
5	P FS *	600-1004- - WIRE 22 GA YELLOW	2.0000	10.0000
6	FS	600-1009- - WIRE 22 GA WHITE	1.0000	6.0000
5	FS *	600-1009- - WIRE 22 GA WHITE	4.0000	20.0000
5	FS	605-0010- - TUBING PVC #8 CLEAR	.5000	2.5000
5	FS *	605-1004- - CABLE TYE, PAN-TY PLTIM-M	6.0000	30.0000
5	FS *	654-1165-R - - SOCKET 3C-22 GA (REEL) AMP 350078-4	6.0000	30.0000
5	IN	654-1185- - 6 POS SOC HOUSING AMP 1-480270-0	1.0000	5.0000
4	P IN	270-3068- - 12" CRT HARNESS ASSY D6482-139	1.0000	4.0000
5	IN	000-0004- - LABOR SUB-SYSTEMS	.6370	3.1850
5	IN	000-0011- - LABOR QUALITY CONTROL	.1270	0.6350
5	IN	000-6045- - SUB-SYS.-MONITORS	.0000	0.0000
5	IN	350-2072- - 110 DEG CRT SOCKET	1.0000	5.0000
5	FS	420-0018- - 1 COND 24 GA SHIELDED CABLE AL 1702	1.4200	7.1000
5	P FS *	600-1000- - WIRE 22 GA BLACK	2.0400	10.2000
6	FS	600-1009- - WIRE 22 GA WHITE	1.0000	6.0000

5	P	FS *	600-1002-	-	-	WIRE 22 GA RED						1.2500	FEET
6	FS		600-1009-	-	-	WIRE 22 GA WHITE						1.0000	FEET
5	P	FS *	600-1004-	-	-	WIRE 22 GA YELLOW						1.4200	FEET
6	FS		600-1009-	-	-	WIRE 22 GA WHITE			EC8495			1.0000	FEET
5	FS *	600-1009-	-	-	-	WIRE 22 GA WHITE			EC8495			2.2500	FEET
5	FS *	605-0014-	-	-	-	TUBING #5 CLEAR			E10607			.2920	FEET
5	FS	605-0021-	-	-	-	TUBING HEATSHRINK 1/801A IRRAD POLY			EC8495			.0600	FEET
5	IN	654-0100-	-	-	-	15 DUAL POS EDGE CONN MOL#09-506155						1.0000	EACH
5	FS	654-0101-R	-	-	-	CRIMP TERMINAL EDGE CONN#08-05-0301			E12147			13.0000	EACH
5	IN	654-1004-	-	-	-	44 GROUND LUG 1414-4						1.0000	EACH
5	IN	554-1147-	-	-	-	PIN HOUSING 1-480319-0						1.0000	EACH
5	IN	654-1149-	-	-	-	PIN HOUSING 1-480305-0			RF2401			1.0000	EACH
5	FS *	654-1164-R	-	-	-	PIN TERM 20-14 GA(REEL)AMP 61118-4			RF2401			1.0000	EACH
5	FS *	654-1166-R	-	-	-	PIN TERM 30-22 GA(REEL)AMP3500079-4			RF2401			9.0000	EACH
4	P	IN	270-3092-	-	-	YOKE ASSY (12" MONITOR) 86482-246						1.0000	EACH
5	IN	000-0004-	-	-	-	LABOR SUB-SYSTEMS						.0400	EACH
5	IN	000-0011-	-	-	-	LABOR QUALITY CONTROL						.0080	EACH
5	IN	000-6045-	-	-	-	SUB-SYS.-MONITORS						.0000	EACH
5	IN	320-0052-	-	-	-	DEFLECTION YOKE EX5012 C6815-902						1.0000	EACH
5	FS *	654-0101-R	-	-	-	CRIMP TERMINAL EDGE CONN#08-05-0301						4.0000	EACH
4	P	IN	270-3104-	-	-	12"FLYBACK XFORMER HARN C6482-327			EC9723			1.0000	EACH
5	IN	000-0004-	-	-	-	LABOR SUB-SYSTEMS						.2080	EACH
5	IN	000-0011-	-	-	-	LABOR QUALITY CONTROL						.0420	EACH
5	IN	000-6045-	-	-	-	SUB-SYS.-MONITORS						.0000	EACH
5	IN	410-1007-	-	-	-	EX4002 FLYBACK TRANSFORMER C5068-1007						1.0000	EACH
5	P	FS	600-0500-	-	-	20 GA WIRE PLK UL						.9100	FEET
5	P	FS	600-0501-	-	-	20 GA WIRE BRN UL			W/OFF-76			.8700	FEET
6	FS		600-0509-	-	-	20 GA WIRE WHT UL						1.0000	FEET
5	P	FS	600-0502-	-	-	20 GA WIRE RED UL						.8700	FEET
5	FS		600-0509-	-	-	20 GA WIRE WHT UL						1.0000	FEET
5	P	FS	600-0503-	-	-	20 GA WIRE GRN UL			W/OFF-73			.9100	FEET
6	FS		600-0509-	-	-	20 GA WIRE WHT UL						1.0000	FEET
5	P	FS	600-0505-	-	-	20 GA WIRE GRN UL			W/OFF-76			.8700	FEET
6	FS		600-0509-	-	-	20 GA WIRE WHT UL						1.0000	FEET
5	P	FS	600-0506-	-	-	20 GA WIRE PLU UL						.8300	FEET
6	FS		600-0509-	-	-	20 GA WIRE WHT UL						1.0000	FEET
5	P	FS	600-0507-	-	-	20 GA WIRE VIO UL			W/OFF-73			.8300	FEET
6	FS		600-0509-	-	-	20 GA WIRE WHT UL						1.0000	FEET
5	FS		605-1004-	-	-	CABLE TIE, PAN-TY PLTJM-M			E11874			2.0000	EACH
5	IN	605-1011-	-	-	-	TY-WRAP IDENT MARKER			E11874			1.0000	EACH
5	FS		654-0101-R	-	-	CRIMP TERMINAL EDGE CONN#08-05-0301			E12147			7.0000	EACH

4	IN *	334-0048-	-	-	RES 18 OHM 5W 5% 1/4W NON-IND	E11E11	1.0000	EACH
4	IN *	340-0101-	-	-	TUBE CATHODE RAY 12" RECT P31		1.0000	EACH
4	IN	340-0101-6	-	-	12"CRT 6.3V @ 300 MA FILAMENT W/PPG	E11S11	.0000	EACH
4	IN	350-2073-	-	-	ANODE CONNECTOR (125-29)		1.0000	EACH
4	IN	360-3011-	-	-	HX20CLP 2KV RECT. DIODE		1.0000	EACH
4	IN	451-1121-	-	-	CHASSIS,12" MONITOR-MOD D6836-110		1.0000	EACH
4	IN	451-3856-	-	-	PANEL,SIDE(L.H.)(12"W)D6836-102		1.0000	EACH
4	IN	451-3857-	-	-	PANEL,SIDE(R.H.)(12"W)D6836-102		1.0000	EACH
4	IN	451-4472-	-	-	SRKT,NECKSAVER(12"W)C6836-107		1.0000	EACH
4	IN	451-4473-	-	-	SRKT,SUPPORT(12"W)B6836-104		1.0000	EACH
4	IN	451-4895-	-	-	SRKT FLYBACK MTG C6835-135	E12469	.0000	EACH
4	IN	452-4042-	-	-	GUIDE,CARD RCG-2 4"		2.0000	EACH
4	IN	452-0293-	-	-	SPCR,DELTRIN 3/8DIA 4-40TAPB6835-505		2.0000	EACH
4	IN	465-1443-	-	-	SPRING,GROUNDING(12"MON)B6836-105		1.0000	EACH
4	IN	478-0448-	-	-	INSULATOR,NECKSAVER SRKT B6836-132	E10052	1.0000	EACH
4	FS	605-1074-	-	-	CABLE TYE, PAN-TY PLTIM-M		2.0000	EACH
4	FS	615-1454-	-	-	LABEL,MODEL 12W B6611-207	E10479	1.0000	EACH
4	IN	650-2120-	-	-	4-40 X 3/4 PAN HD PHL MS SS SEMS		2.0000	EACH
4	IN	651-0025-	-	-	#10X5/16 HEX HD SLOT TAP SCR TYPE-B	E12461	.0000	EACH
4	IN	651-0030-	-	-	SCREW,SELF TAP T-8 #4X1/2"UL PHHD PH	E10723	3.0000	EACH
4	IN	651-0037-	-	-	SCR #X3/8 HEX HD SLT SELF TAP B CAD	E10125	9.0000	EACH
4	FS	651-0053-	-	-	#10X3/8 HEX HD SLOT TRAP SCR TYPE-B	E12461	4.0000	EACH
4	IN	654-1184-	-	-	CONN 6 POS HOUSING AMP 1-470271-0		1.0000	EACH
4	IN	654-1275-	-	-	CABLE CLAMP 1/4" ADHESIVE BACK KKU4	E10948	1.0000	EACH
4	IN	656-1008-	-	-	MAGNET,YELLOW TYPE 1 (2169)	E10787	5.0000	EACH
4	IN	656-1009-	-	-	MAGNET,SILVER TYPE 2 (1166)	E10787	2.0000	EACH
4	IN	656-1010-	-	-	MAGNET,RED TYPE 3 (169)	E10787	2.0000	EACH
4	IN	656-1011-	-	-	MAGNET,PURPLE TYPE 4 (4167)	E10787	2.0000	EACH
4	IN	656-1013-	-	-	MAGNET,LG YELLOW TYPE 5	E10787	2.0000	EACH
4	IN	656-1014-	-	-	MAGNET,LG RED TYPE 5	E10787	2.0000	EACH
4	FS	660-0027-	-	-	1" PERMACELL TAPE #672 (BLACK)		1.0000	FEET
4	FS	660-0136-	-	-	GLUE,HOTMELT(.75"DX1.375LG)	EC9775	.0500	EACH
3	IN	270-0579-	-	-	HEATSINK ASSY 2236E	E12542	1.0000	EACH
4	IN	000-0084-	-	-	LABOR SUS-SYSTEMS		.5000	EACH
4	IN	000-0011-	-	-	LABOR QUALITY CONTROL		.1000	EACH
4	IN	000-5042-	-	-	SUBSYSTEMS-HEATSINKS		.5000	EACH
4	IN	220-1351-	-	-	HEATSINK CABLE	E12244	1.0000	EACH
5	IN	000-0094-	-	-	LABOR SUB-SYSTEMS		.5000	EACH
5	IN	000-0011-	-	-	LABOR QUALITY CONTROL		.1000	EACH
5	IN	000-6043-	-	-	SUB-SYS.-CABLES		.5000	EACH
5	P	600-0001-	-	-	WIRE 18 GA BROWN UL		.8500	FEET
6	FS	600-0009-	-	-	WIRE 18 GA WHITE UL		1.0000	FEET
5	P	600-0002-	-	-	WIRE 18 GA RED UL		.7000	FEET
6	FS	600-0009-	-	-	WIRE 18 GA WHITE UL		1.0000	FEET
5	P	600-0003-	-	-	WIRE 18 GA ORANGE UL		.9300	FEET
6	FS	600-0009-	-	-	WIRE 18 GA WHITE UL		1.0000	FEET
5	P	600-0004-	-	-	WIRE 18 GA YELLOW UL		.9300	FEET
6	FS	600-0009-	-	-	WIRE 18 GA WHITE UL		1.0000	FEET

QTY	UNIT	PART NO	DESCRIPTION	PRICE	TOTAL	UNIT	PRICE	TOTAL
5	FS	600-0006-	WIRE 18 GA BLUE UL	.7000	3.5000	FEET		
6	FS	600-0009-	WIRE 18 GA WHITE UL	1.0000	6.0000	FEET		
5	FS	600-0009-	WIRE 18 GA WHITE UL	.8100	4.0500	FEET		
5	FS	605-1004-	CABLE TYE, PAN-TY PLTIM-M	2.0000	10.0000	EACH	E12820	
5	IN	605-1011-	TY-WRAP IDENT MARKER	1.0000	5.0000	EACH	E12820	
5	FS	654-1163-R	PN TERM 30-22 GA(REEL) AMP 350079-4	6.0000	30.0000	EACH		
5	IN	654-1185-	5 POS SOC HOUSING AMP 1-480270-0	1.0000	5.0000	EACH		
4	IN	375-1046-	TRANSISTOR 2N5282 (TO-3)	2.0000	8.0000	EACH		
4	IN	375-9014-	INSULATOR XTOR MOUNT WECKERSSER TM-1	2.0000	8.0000	EACH		
4	IN	375-9020-	MICA WSHR (LARGE) FOR POWER X1STORS	2.0000	8.0000	EACH		
4	IN	478-0537-	HEATSINK 2236	1.0000	4.0000	EACH		
4	IN	650-3200-	SCR 6-32 5/8 PHIL PH MS SS	4.0000	16.0000	EACH		
4	IN	652-3004-	NUT 6-32UNC HEX SMALL PAT SS	4.0000	16.0000	EACH		
4	IN	653-3000-	WASH 6 .149ID .3750D .016 FL SS	4.0000	16.0000	EACH		
4	IN	653-3001-	WASH 6 .150ID .2880D INT T ST	4.0000	16.0000	EACH		
4	IN	654-1006-	#6 GROUND LUG	2.0000	8.0000	EACH		
3	WC	272-0004-	928W2 BEZEL ASSY(ALUM TAPE) 6841-31	1.0000	3.0000	EACH	E12150	
4	IN	000-0011-	LABOR QUALITY CONTROL	.0400	0.1600	EACH		00010
4	IN	000-0024-	LABOR PREP AREA	.1980	0.7920	EACH		00000
4	IN	449-0111-5	BEZEL,12" CRT (GREEN) E6646-104	1.0000	4.0000	EACH	EC8420	
4	IN	660-0028-11-	TAPE,ST SHLD 7"X10 1/4" E6841-132	1.0000	4.0000	EACH	EC7391	
5	IN	660-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.1000	0.5000	EACH		
4	IN	660-0028-12-	TAPE,ST SHLD 2 1/2"X10 1/4"E6841-121	1.0000	4.0000	EACH	EC7391	
5	IN	660-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.0294	1.4700	EACH		
4	IN	660-0028-13-	TAPE,ST SHLD 2"X12" E6841-128	1.0000	4.0000	EACH	EC7391	
5	IN	660-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.0256	1.2800	EACH		
3	WC	279-1015-	926WZ BASE ASSY(ALUM TAPE) 6841-30	1.0000	3.0000	EACH		00010
4	IN	000-0011-	LABOR QUALITY CONTROL	.1229	0.5016	EACH		00000
4	IN	000-0024-	LABOR PREP AREA	.6080	2.4320	EACH		00000
4	IN	449-0095-	2220 BASE C6621-36	1.0000	4.0000	EACH		
4	IN	451-2134-	COVER,BOTTOM(E&F)D6829-122	1.0000	4.0000	EACH		
4	IN	651-0400-	RIVET AVDEL 11250412 1/8 X 3/8 LG	16.0000	64.0000	EACH	E10900	
4	IN	651-0402-	RIVET AVDEL 11210615 3/16 X 7/16 LG	4.0000	16.0000	EACH		
4	IN	651-1010-	SONIC SERT POLMAN #313132	4.0000	16.0000	EACH		
4	IN	655-0205-	BUMPER,WHITE #209,SSW	4.0000	16.0000	EACH		
4	IN	660-0028-10-	TAPE,ST SHLD 1 1/4"X7" E6841-133	6.0000	24.0000	EACH	EC7391	
5	IN	660-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.0095	0.4750	EACH		
4	IN	660-0028-5-	TAPE,ST SHLD 1 3/4"X2 3/4"E6841-122	2.0000	8.0000	EACH	EC7391	
5	IN	660-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.0051	2.5500	EACH		
4	IN	660-0028-6-	TAPE,ST SHLD 4"X1 1/2" E6841-130	1.0000	4.0000	EACH	EC7391	
5	IN	660-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.0476	2.3800	EACH		
4	IN	660-0028-7-	TAPE,ST SHLD 1 3/8"X1 1/2"E6841-134	1.0000	4.0000	EACH	EC7391	

QTY	UNIT	ITEM NO	DESCRIPTION	UNIT PRICE	TOTAL PRICE	UNIT
5	IN	560-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.0172	EACH	
4	IN	560-0028-8	TAPE,ST SHLD 1 1/2"X17 1/2E6841-129 EC7391	1.0000	EACH	
5	IN	560-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.0277	EACH	
4	IN	560-0028-9	TAPE,ST SHLD 2 1/2"X7" E6841-131 EC7391	2.0000	EACH	
5	IN	560-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.0192	EACH	
3	WC	279-4116-	2236 DE COVER ASSY E11811	1.0000	EACH 00010	
4	IN	000-0011-	LABOR QUALITY CONTROL	.1130	00000	
4	IN	000-0024-	LABOR PREP AREA	.5650	EACH 00000	
4	IN	449-0289-	COVER MACH (OPEN VENTS) E6621-62	1.0000	EACH	
4	IN	560-0028-1	TAPE,ST SHLD 9 3/4"X15" E6841-120	2.0000	EACH	
5	IN	560-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.2500	EACH	
4	IN	560-0028-2	TAPE,ST SHLD 12"X16" E6841-119	2.0000	EACH	
5	IN	560-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.2500	EACH	
4	IN	560-0028-3	TAPE,ST SHLD 2 1/2"X12" E6841-135	2.0000	EACH	
5	IN	560-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.0322	EACH	
4	IN	560-0028-4	TAPE,ST SHLD 3 1/4"X22" E6841-127	1.0000	EACH	
5	IN	560-0028-	TAPE,AL 28X36 SHT .004 E6841-114	.0833	EACH	
3	IN	350-4506-	CONN 2 POS. SHUNT .100 CTR 2236DF E12322	2.0000	EACH	
3	IN *	449-0246-	RETAINER,CRT STRIP C6872-106 X13699	2.0000	EACH	
3	IN	452-0524-	PLATE KEYBOARD STATIC 86827-502 E11812	1.0000	EACH	
3	IN *	452-1068-	FIN PLT WLOMT & SS CHA75R D6621-110 X13699	1.0000	EACH	
3	IN	452-2342-5	OPS EC13699 USE 452-1068 X13699	1.0000	EACH 00000	
3	IN	452-2517-	700 PROGRAM CLAMPS R5900-39 (2 X13699	2.0000	EACH 00000	
3	IN	458-0436-	SUPPORT,ROD WELDMENT(LH)C6852-702	1.0000	EACH	
3	IN	458-0437-	SUPPORT,ROD WELDMENT(RH)C6852-702	1.0000	EACH	
3	IN	462-0110-	301 MB SPACER (3/8 OD 5/32 ID NYLON E11812	4.0000	EACH	
3	IN	478-0061-	700 PROGRAM CLAMP NUTS B5900-27 (2 X13699	2.0000	EACH	
3	FS	605-1004-	CABLE TYE, PAN-TY PLTIM-M E12542	2.0000	EACH	
3	IN	615-0398-	PROGRAM STRIP (SILK SCR) C6857-5	1.0000	EACH	
3	IN	615-1322-	LABEL,HDW LEVFL #K STA C6611-62	1.0000	EACH	
3	IN	615-1328-	LABEL,928W18W2 CONN IDENT C6841-112	1.0000	EACH	
3	IN	650-2121-	SCR 4-40 3/8 PHIL FLAT H MS SS E11812	2.0000	EACH	
3	IN	650-3120-	SCR 6-32 5/8 PHIL PH MS SS E11812	4.0000	EACH	
3	IN	650-4133-	SCR 6-32 3/8 PAN HD PHL MS SS SEMS	6.0000	EACH	
3	IN	650-6121-	8-32 X 3/8 FLANGE WHIZ-LOCK MS ZINC	3.0000	EACH	
3	IN	650-6360-W	10-32X3/8 TRUSS HD PHL MS SS	6.0000	EACH	
3	IN	650-6642-	10-32X1 1/8 TRUSS HD PHL SS(WHITE)	2.0000	EACH	
3	IN *	651-0507-	SCR 10-32 5/8 PHIL FLAT H MS SS E13095	3.0000	EACH	
3	IN	652-0029-	CLIP TINFRMAN C12041-012-4 X13699	2.0000	EACH	
3	IN	652-0032-	8-32 LOCK-NUT KEPS 511-081800-50	4.0000	EACH	
3	IN	652-0100-	6-32 LOCK-NUT KEPS 511-061800-00	7.0000	EACH	
3	FS	652-0100-	SPEED NUT U TYPE C7852 824 E13326	1.0000	EACH	
3	IN	653-0022-	WASH 3/8 .398ID .6920D INT T ST	4.0000	EACH	
3	IN	653-3002-	WASH 6 .141ID .2500D .062 FL NYL E11812	8.0000	EACH	
3	IN	653-4005-	WASH 8 .176ID .3810D INT EXT ST	3.0000	EACH	



3	IN	653-6022-	-	-	WASHER, #10 SPRING	4.0000	EACH
3	IN	654-0125-	-	-	FAST-ON TERMINAL AMP #60465-2	1.0000	EACH
3	IN	654-1274-	-	-	CABLE CLAMP ADH-BACK DKLSP 021-0375	1.0000	EACH
3	IN	655-0099-9	-	-	PLUG BUTTON WHITE C-6815-79	2.0000	EACH
3	IN	655-0018-9	-	-	PLUG BUTTON WHITE C-6815-79	2.0000	EACH
3	IN	655-0157-	-	-	512/712 KNOB ALCO KN700BA	2.0000	EACH
2	IN	360-1025-SB-	-	-	FUSE 2 1/2 AMP 250V SB CERAMC 3AG E12149	1.0000	EACH
2	IN	725-2618-	-	-	22360E KEYTRONICS KEYBOARD ASSY E12319	1.0000	EACH

END OF REPORT MB0080-A



3  
2



APPENDIX B

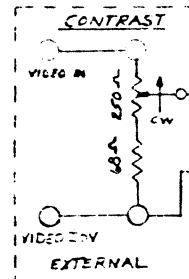
SCHEMATICS

<u>SCHEMATIC #</u>	<u>BOARD NAME</u>	<u>PAGE</u>
210-7456	Electronics for 9" and 12" Monitors	B-2
210-7592	Single Board Terminal Electronics	B-3/B-10
725-2618	Keytronics Keyboard	B11

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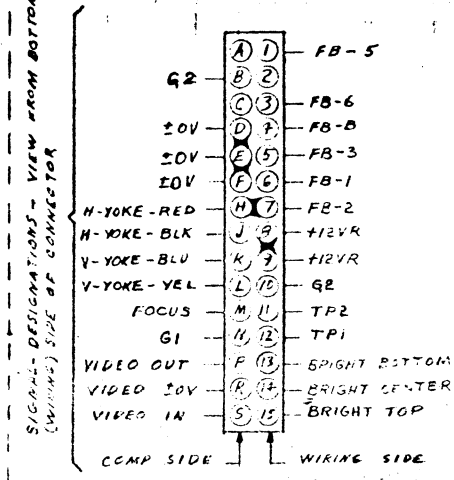
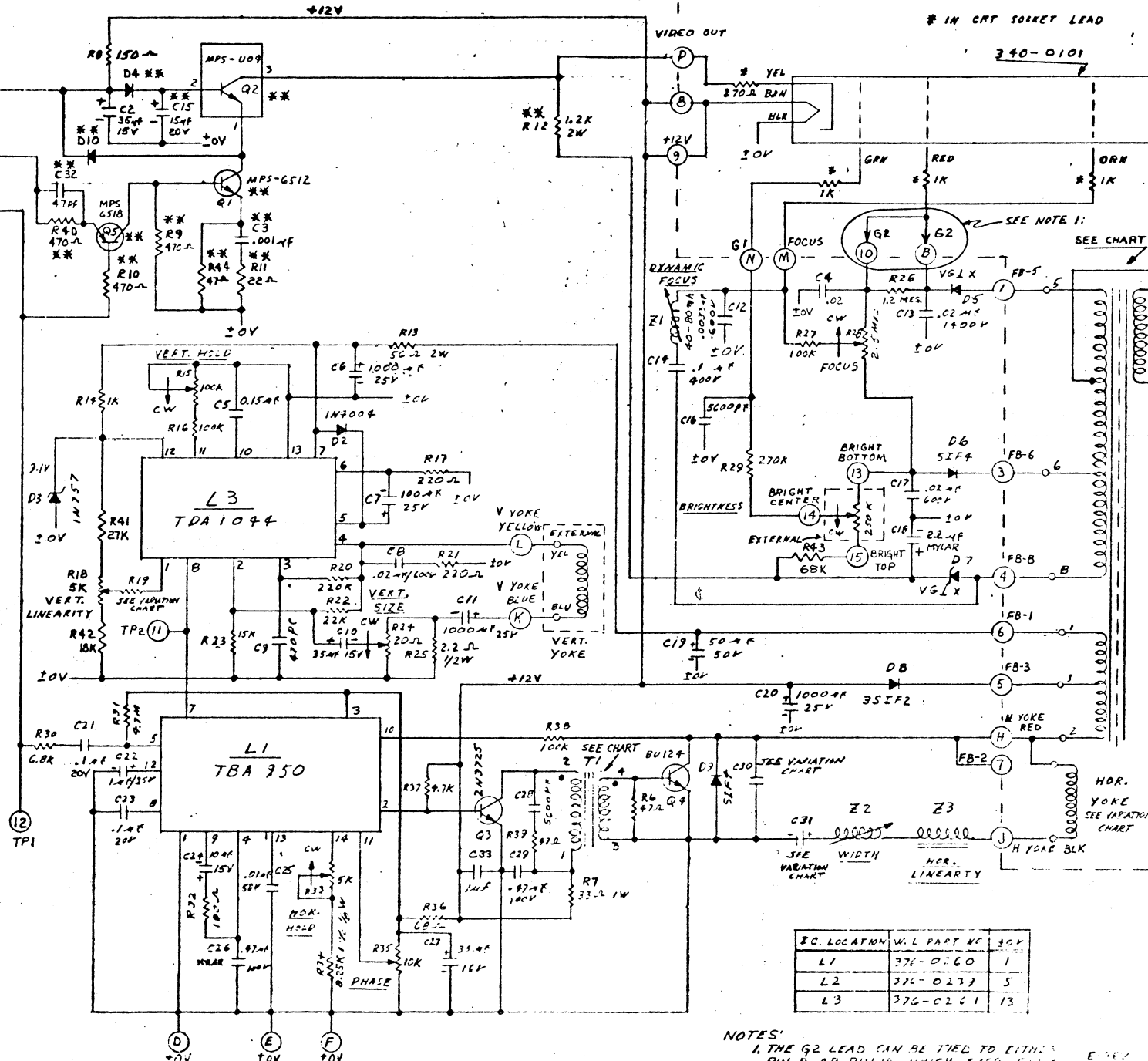
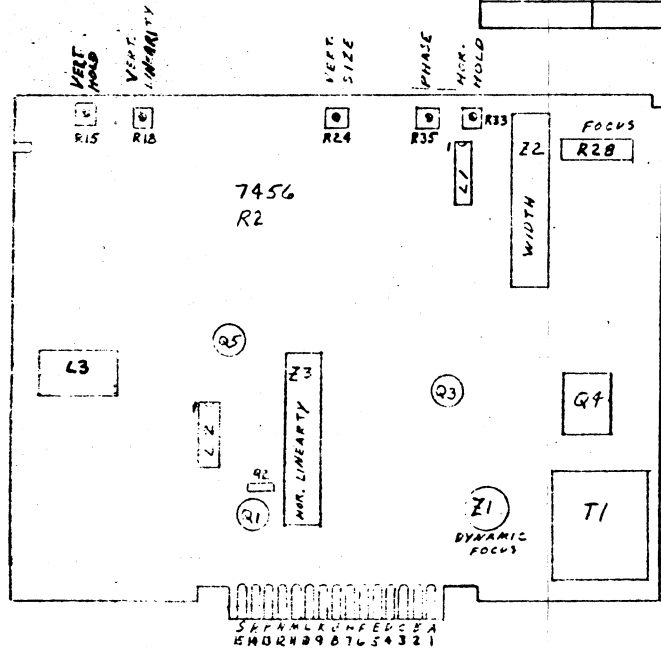
MILLIMETERS IN PARENTHESES TOLERANCES TO BE EQUIVALENT TO INCH DIMENSIONS.

HOLE LEGEND & TOLERANCES		
SIZE	DESCRIPTION	QTY
Ø.035 - .035	Ø.002 - .001	
Ø.044 - .044	Ø.004 - .001	
Ø.051 - .050	Ø.005 - .001	



VARIATION CHART			
COMP	7456	7456-1	7456-2
R19	330-2063	330-4007	330-5063
C30	300-2412	300-2417	300-2412
C31	300-2415	300-2415	300-2413
Z2	320-0055	320-0055	320-0055
Z3	320-0055	320-0055	320-0051
HOR. YOKE	320-0057	320-0057	320-0057
FLY-BK	320-0057	320-0057	320-0057
R5	330-2065	330-2065	330-3065

COMPONENTS NOT LISTED FOR 7456-2		
R9	1040	330-2047
R1		331-2010
R11		330-1022
R12		337-3012
R44		330-1047
C5		300-1706
L15		300-4022
Q5		375-1014
Q2		375-1056
D4, D5		300-1001
C32		300-1047
Q1		375-1012



COMP.	W.L. PART NO.	COMP.	W.L. PART NO.
R2	330-3022	C11, 24	300-3006
R3, 37	330-3047	C10, 27	300-3002
R4	330-3012	C7	300-1302
R14	330-3010	C1	300-1400
		C2	300-2415
R6, 39, 44	330-1047	C20, 29	300-2247
R5	330-2015	C4	300-2210
R2, 10, 40	330-2017	C1, 12	300-1700
R12	337-3012	C9	300-3010
R13	337-1056	C21, 23	300-1710
R15	330-1019	C22	300-4000
R16, 21, 38	330-5010	C25	300-2414
R17, 21	330-2022	C15	300-2418
R1	331-2010	C4, 17	300-1912
R30	330-3068	C5	300-2215
R20	330-5022	C2, 11, 20	300-2215
R11	330-1022	C7	300-0330
R22	330-4022	C13	300-1714
R23	330-4015	C32	375-1047
R24	330-1021	C1	375-1052
R25	331-0022	C2	375-1052
R26	330-2012	C3	375-1057
R28	320-0031	C4	375-1057
R29	330-5027	C5	375-1057
R31	330-0017	C15	300-4022
R10	330-3014	T1	410-1006
R19, 33	330-1020		
R31	330-0027		
R32	330-1015		
R33	330-1055		
R7	330-1023		
R41	330-4027		
R42	330-4015		
D1	375-1000		
D2	375-1000		
D3	375-1000		
D5, 7	375-1000		
E2, 7	375-1000		
E9	375-1000		
D4, 10	300-1001		
E1	320-0056		
R43	330-4068		

IC LOCATION	W.L. PART NO.	SOV
L1	375-0160	1
L2	375-0239	5
L3	375-0261	13

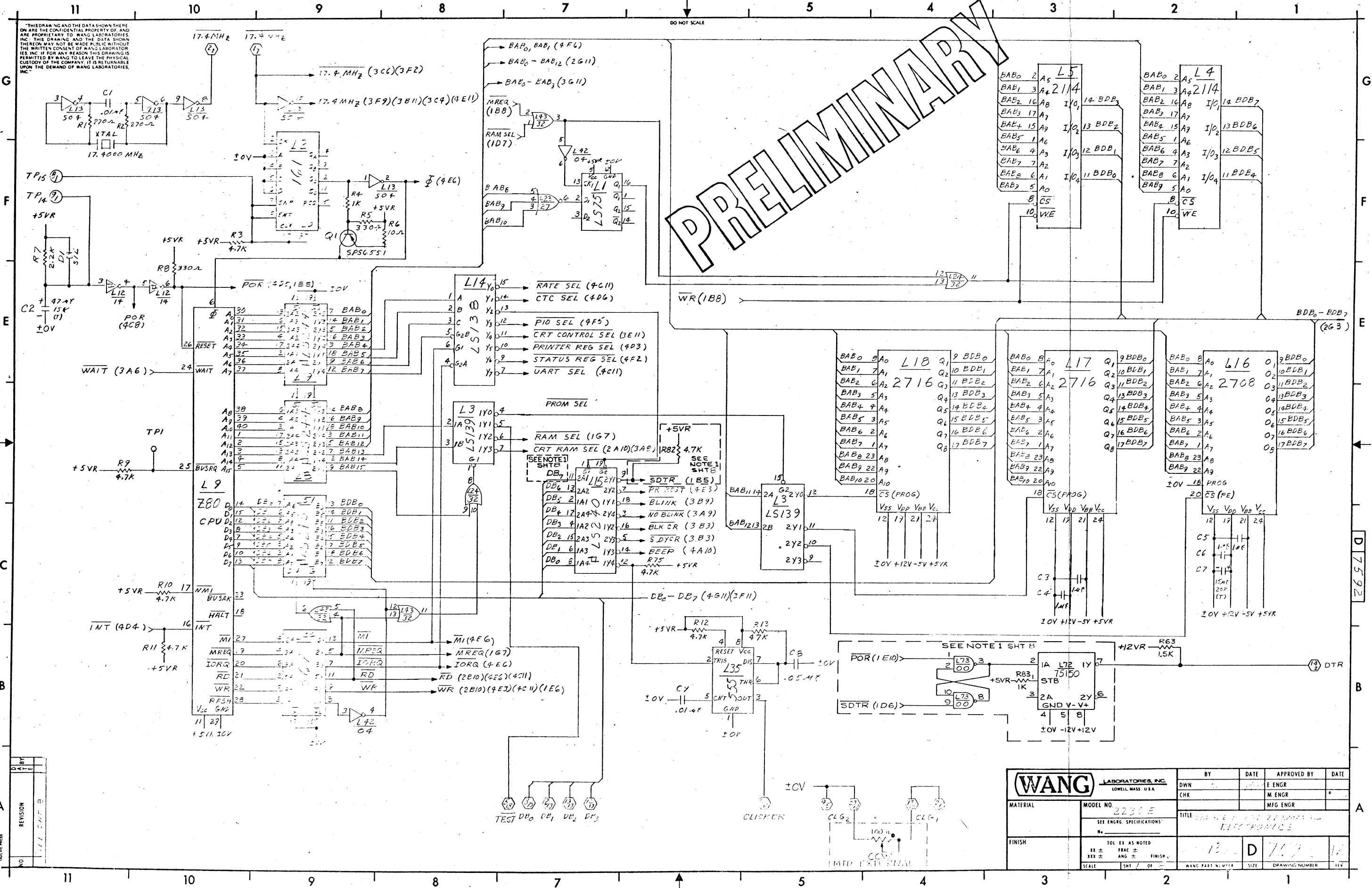
NOTES:  
 1. THE G2 LEAD CAN BE TIED TO EITHER PIN B OR PIN 10 WHICH EVER GIVES BEST PERFORMANCE.  
 E-REV 7456-1 7456-2  
 3 3 3

REVISION	DATE	APPROVED BY	DATE
<b>WANG</b>		ELECTRONICS FOR 9" AND 12" MONITOR	
D 7456		6	

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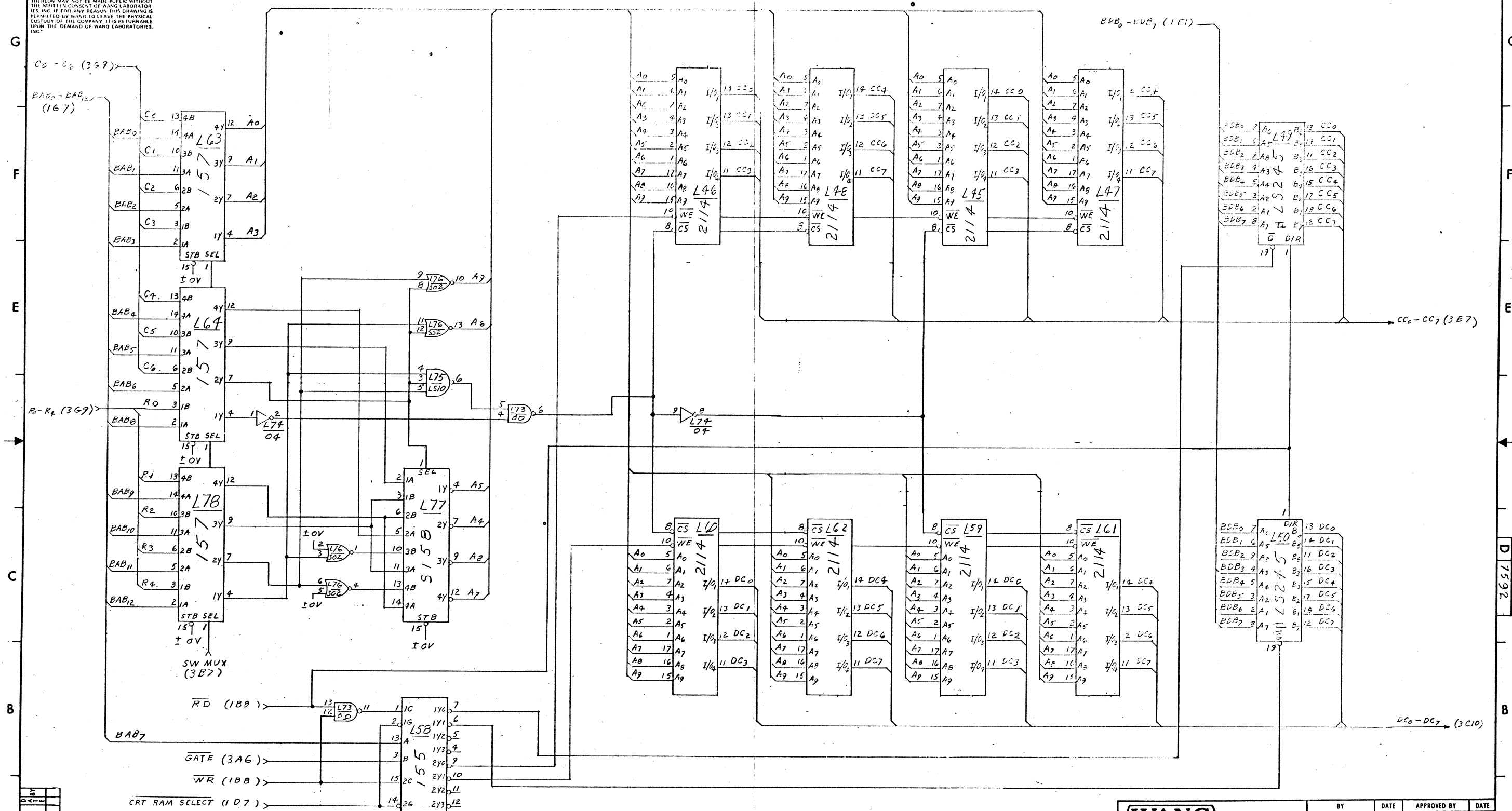


REV	BY	DATE	DESCRIPTION
1	...	...	...

WANG LABORATORIES, INC. LOWELL, MASS. U.S.A.		BY	DATE	APPROVED BY	DATE
MATERIAL	MODEL NO. 2230 E	DWN		E ENGR	
FINISH	SEE ENGR. SPECIFICATIONS	CHK		M ENGR	
	TOL EX AS NOTED			MFG ENGR	
	XX ± FRAC ± FINISH				
	SCALE SHT 7 OF 11				

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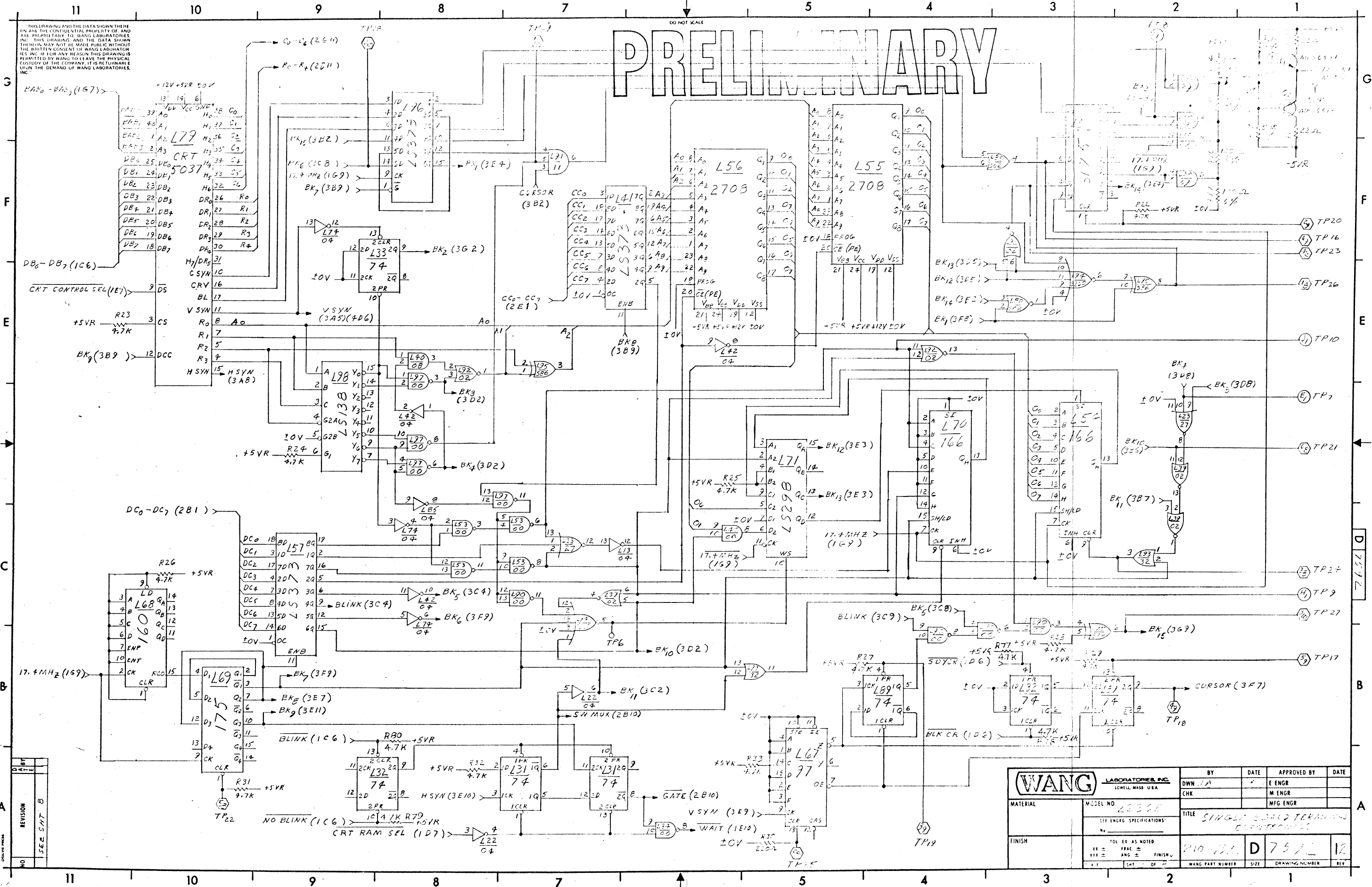


# PRELIMINARY

NO.	REVISION	DATE	BY	CHK

<b>WANG</b> LABORATORIES, INC. LOWELL, MASS. USA		BY	DATE	APPROVED BY	DATE
		DWN		E ENGR	
MATERIAL: SEE ENGR SPECIFICATIONS FINISH: TOL IS AS NOTED 11 ± FRAC ± FINISH 12 ± ANG ± FINISH		CHK		M ENGR	
				MFG ENGR	
MODEL NO. 222-222 TITLE: SMALL BOARD TERMINAL ELECTRONIC		110-152	D 7592	12	
WANG PART NUMBER: 222-222		SIZE	DRAWING NUMBER	REV	

# PRELIMINARY



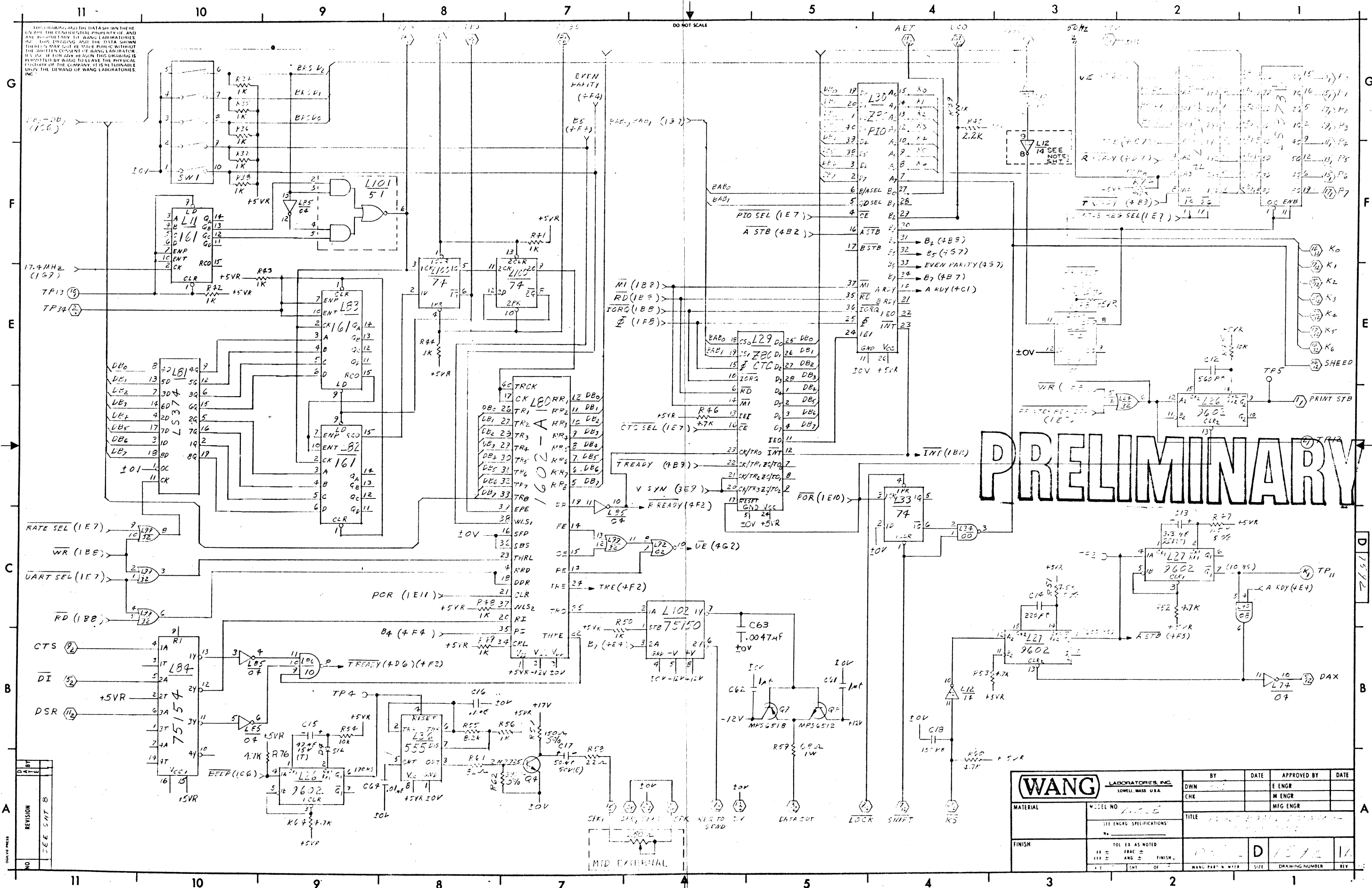
NO.	REVISION	DATE	BY	CHK.	APP.
	SEE SAT B				

<b>WANG</b> LABORATORIES, INC. LOWELL, MASS. U.S.A.		BY	DATE	APPROVED BY	DATE
		DWN		E ENGR	
MATERIAL MODEL NO. 2236A SEE ENGRG SPECIFICATIONS No.		CHK		M ENGR	
				MFG ENGR	
FINISH 101 ER AS NOTED 111 ± FRAC ± 112 ± ANG ± FINISH 113 ±		TITLE			
		SINGLE BOARD TERMINAL ELECTRONICS			
		210-121	D	75/2	12
				WANG PART NUMBER	REV.

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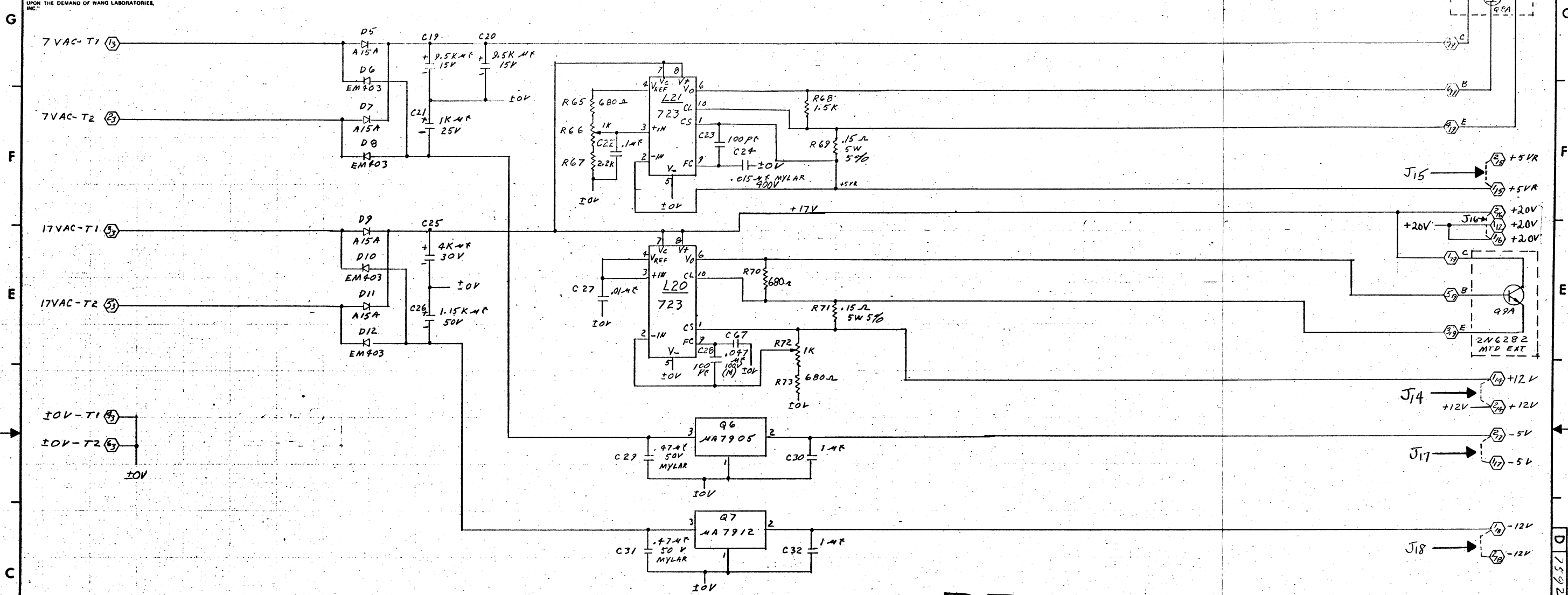
<b>(WANG)</b> LABORATORIES, INC. LOWELL, MASS. U.S.A.		BY	DATE	APPROVED BY	DATE
MATERIAL		DWN		E ENGR	
MODEL NO.		CHK		M ENGR	
SEE ENGR SPECIFICATIONS		TITLE		MFG ENGR	
FINISH		TOL EX AS NOTED			
18 ±		FRAC ±			
110 ±		ANG ±			
4.1		SMT			
		WANG PART N. W. B. I. S. I. E.			
		SIZE		DRAWING NUMBER	
				REV	

NO.	REVISION	DATE	BY
	SEE SHT B		



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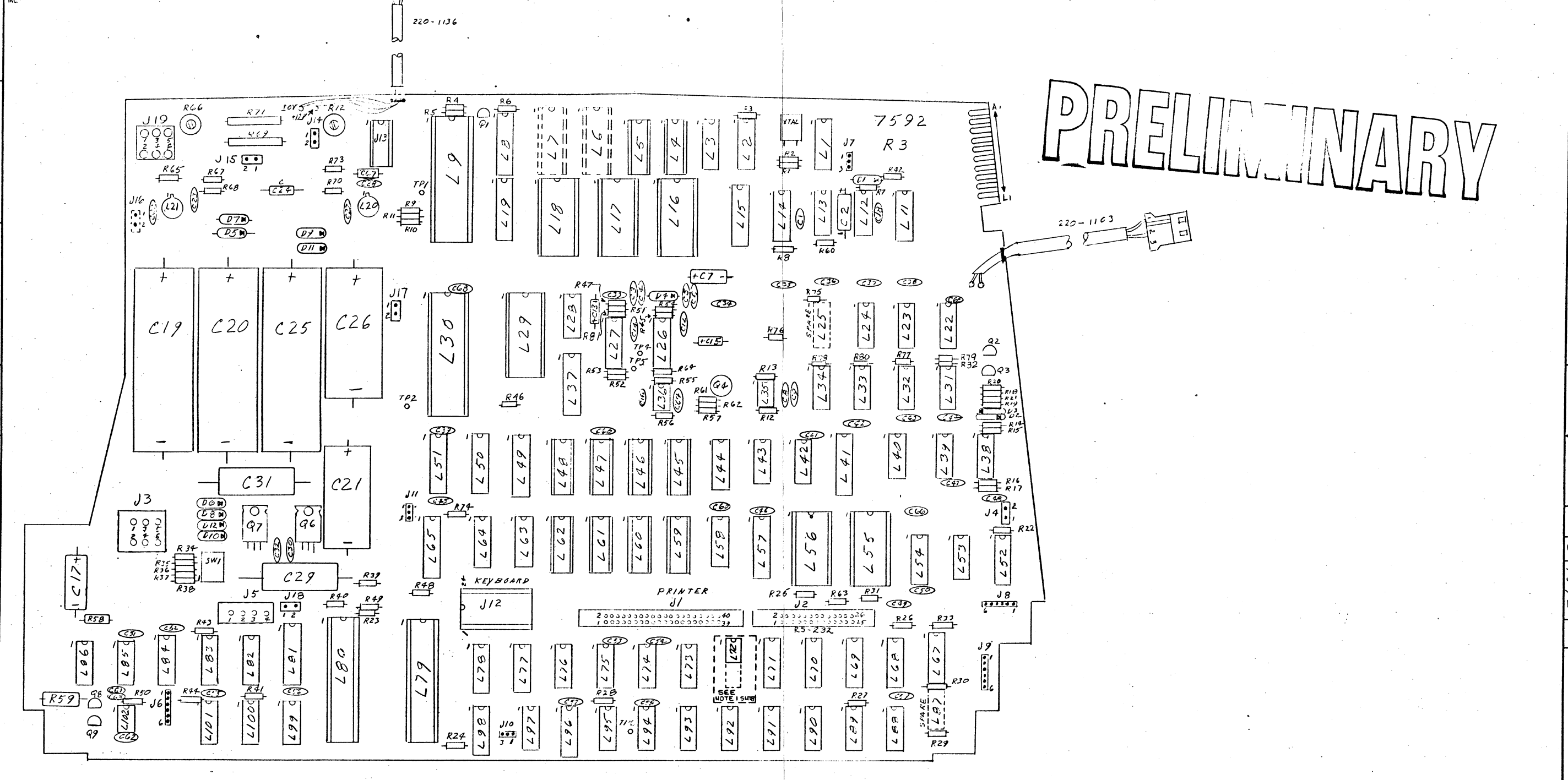
NO.	REVISION	DATE	BY
	SEE SH 8		

<b>WANG</b> LABORATORIES, INC. LOWELL, MASS. U.S.A.		BY	DATE	APPROVED BY	DATE
MATERIAL		DWN	4/2/68	E ENGR	
MODEL NO. 2236 E		CHK		M ENGR	
SEE ENGR SPECIFICATIONS				MFG ENGR	
FINISH		TITLE SINGLE BOARD TERMINAL ELECTRONICS			
22 = 22° ± AS NOTED		210-7592 D		7 5 9 2 12	
333 = 333° ±		WANG PART NUMBER		SIZE DRAWING NUMBER REV.	
SCALING		SMT		OF C	

11 10 9 8 7 6 5 4 3 2 1

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DO NOT SCALE



PRELIMINARY

NO.	REVISION	DATE	BY
	SEE SH78		

<b>WANG</b> LABORATORIES, INC. LOWELL, MASS. U.S.A.		BY	DATE	APPROVED BY	DATE
		DWN		E ENGR	
MATERIAL MODEL NO. 223AE SEE ENGR. SPECIFICATIONS No.		CHK		M ENGR	
				MFG ENGR	
FINISH 101 EX. AS NOTED XX ±    FRAC ±    FINISH XII ±    ANG ±    FINISH SCALE    SHT    OF    3		TITLE SINGLE BOARD TERMINAL ELECTRONICS		210-7592	D
		WANG PART NUMBER		SIZE	DRAWING NUMBER

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DO NOT SCALE

210 = 209 + 378 OR 377

210	209	L4,5,45-43,39,62	L9	L16	L17	L18	L29	L30	L55	L56	L79	L80
7592-A	7592	377-0341-L	377-0344	378-2416-R1	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	377-0323	377-0372	377-0071
AZERTY 7592-B	7592	377-0341-L	377-0344	378-2620	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2415	377-0372	377-0071
SWEDISH 7592-C	7592	377-0341-L	377-0344	378-2624	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2416	377-0372	377-0071
U.K. 7592-D	7592	377-0341-L	377-0344	378-2627	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2418	377-0372	377-0071
GERMAN 7592-E	7592	377-0341-L	377-0344	378-2629	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2420	377-0372	377-0071
SWISS/GER. 7592-F	7592	377-0341-L	377-0344	378-2626	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2414	377-0372	377-0071
SWISS/FR. 7592-G	7592	377-0341-L	377-0344	378-2625	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2414	377-0372	377-0071
NL 7592-H	7592	377-0341-L	377-0344	378-2630	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2419	377-0372	377-0071
NO 7592-J	7592	377-0341-L	377-0344	378-2622	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2417	377-0372	377-0071
CYRILLIC 7592-K	7592	377-0341-L	377-0344	378-2628	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2413	377-0372	377-0071
DANISH 7592-L	7592	377-0341-L	377-0344	378-2623	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2417	377-0372	377-0071
GR/LT 7592-M	7592	377-0341-L	377-0344	378-2621	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2421	377-0372	377-0071
AL 7592-N	7592	377-0341-L	377-0344	378-2647	378-4095-R1	378-4094-R1	377-0343	377-0342	378-2447-R1	378-2648	377-0372	377-0071

PRELIMINARY

NO	REVISION

SEE SHEET B

<b>(WANG)</b> LABORATORIES, INC. LOWELL, MASS. U.S.A.		BY DWH	DATE 11/2/52	APPROVED BY E ENGR	DATE
MATERIAL	MODEL NO. 22.36E	CHK		M ENGR	
	SEE ENGRG SPECIFICATIONS			MFG ENGR	
FINISH	TOL. EX. AS NOTED XX ± FRAC ± XXX ± ANG ± FINISH	TITLE SINGLE BOARD TERMINAL ELECTRONICS			
	SCALE	210-7592	D	7592	12
	SHT 1 OF 5	WANG PART NUMBER	SIZE	DRAWING NUMBER	REV.

THIS DRAWING AND THE DATA SHOWN THERE ON ARE THE CONFIDENTIAL PROPERTY OF, AND ARE PROPRIETARY TO, WANG LABORATORIES, INC. THIS DRAWING AND THE DATA SHOWN THEREIN MAY NOT BE MADE PUBLIC WITHOUT THE WRITTEN CONSENT OF WANG LABORATORIES, INC. IF FOR ANY REASON THIS DRAWING IS REPRODUCED BY WANG TO LEAVE THE PHYSICAL CUSTODY OF THE COMPANY, IT IS RETURNABLE UPON THE DEMAND OF WANG LABORATORIES, INC.

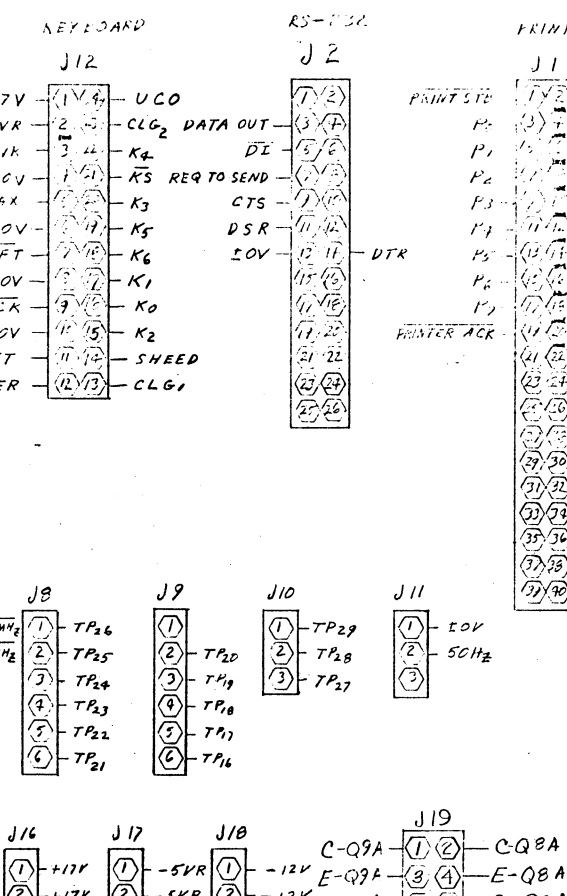


Table with 3 columns: COMPONENT, W.L. PART NO, TYPE. Lists components like J1, J2, J3, J4, J5, J6, J7, J8, J9, J10, J11, J12, J13 and their respective part numbers and types.

NOTE: 1. THESE COMP MAY OR MAYNOT BE ON BOARD. E REV 2# BELOW COMP NOT PRESENT. E REV 3# ABOVE COMP SHOULD BE PRESENT. SEE 107, 1D8, 1B3 & 4F3.

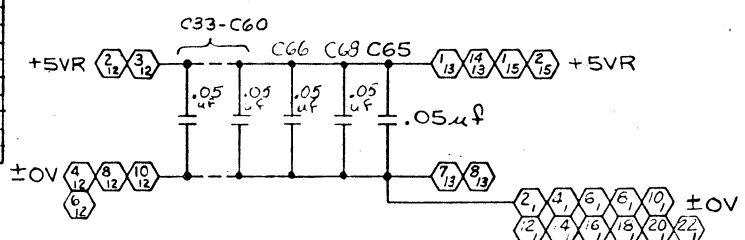
Large table with 3 columns: W.L. PART NO, W.L. PART NO, TYPE. Lists various electronic components and their part numbers.

Table with 3 columns: I.C. TYPE, LOCATION, SPARE. Lists integrated circuits and their locations on the board.

Table with 3 columns: COMPONENT, W.L. PART NO, TYPE. Lists various electronic components and their part numbers.

Table with 2 columns: Component Name, Quantity. Lists components like ABT, CLG1, CLG2, J4, J5, J6, J7, J8, J9, J10, J11, J12, J13, J14, J15, J16, J17, J18, J19, SPK1, SPK2, SPK, SPKG, and their quantities.

PRELIMINARY



E-REV 4

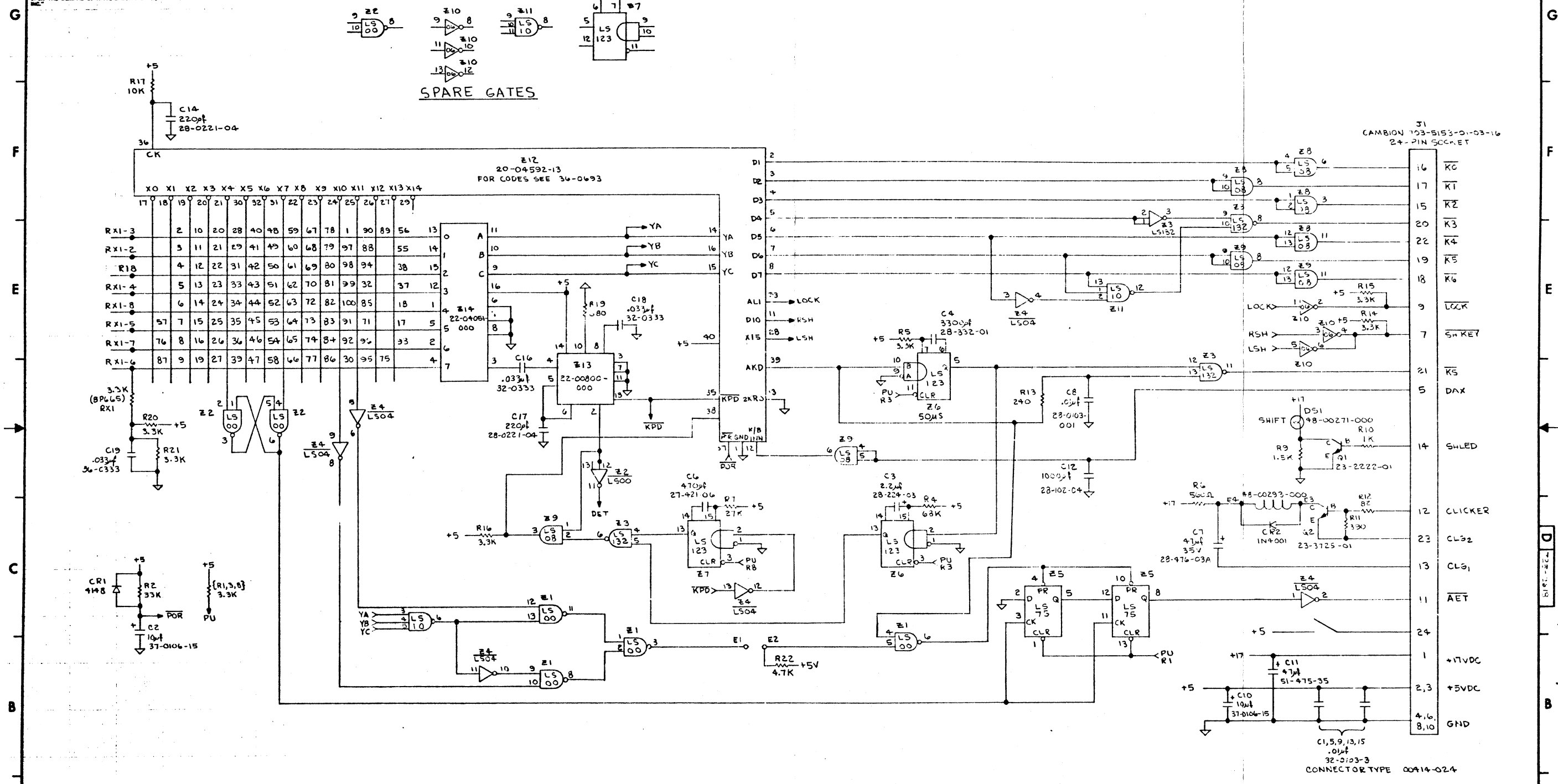
Revision history table with columns: NO, REVISION, and description of changes.

WANG LABORATORIES, INC. header and specification table including material, model no, title, and drawing number.

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DO NOT SCALE

31  
CAMBION 703-B153-01-03-16  
24-PIN SECRET



SPARE GATES

REV	DESCRIPTION	DATE
0	ORIGINATED PER DWG # EB33 APP'D:	12-27-73
1	REVISED PER SCN # 1218 APP'D:	2-27-75

JAN 16 1980  
PRELIMINARY

BY		DATE	APPROVED BY	DATE
SDB		12-27-73	E ENGR	
CNR			M ENGR	
			MFG ENGR	

MATERIAL		MODEL NO.	TITLE	
---		928	KEYTRONICS KEYBOARD	
---		SEE EMERG. SPECIFICATIONS		
		TOL. EE. AS NOTED	725-2618	D 725-2618
		FINISH	SIZE	DRAWING NUMBER
		SCALE	WANG PART NUMBER	REV.

**CUSTOMER ENGINEERING**

# **PUBLICATION UPDATE BULLETIN**

DATE: 12/21/83

3401

PUB to 729 - 0476

2236DE TERMINAL

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**REASON FOR CHANGE:**

**THIS PUB UPDATES THE 2236DE TERMINAL SN# 181 TO INCLUDE THE ILLUSTRATED PARTS BREAKDOWN (IPB) AND THE PARTS LIST.**

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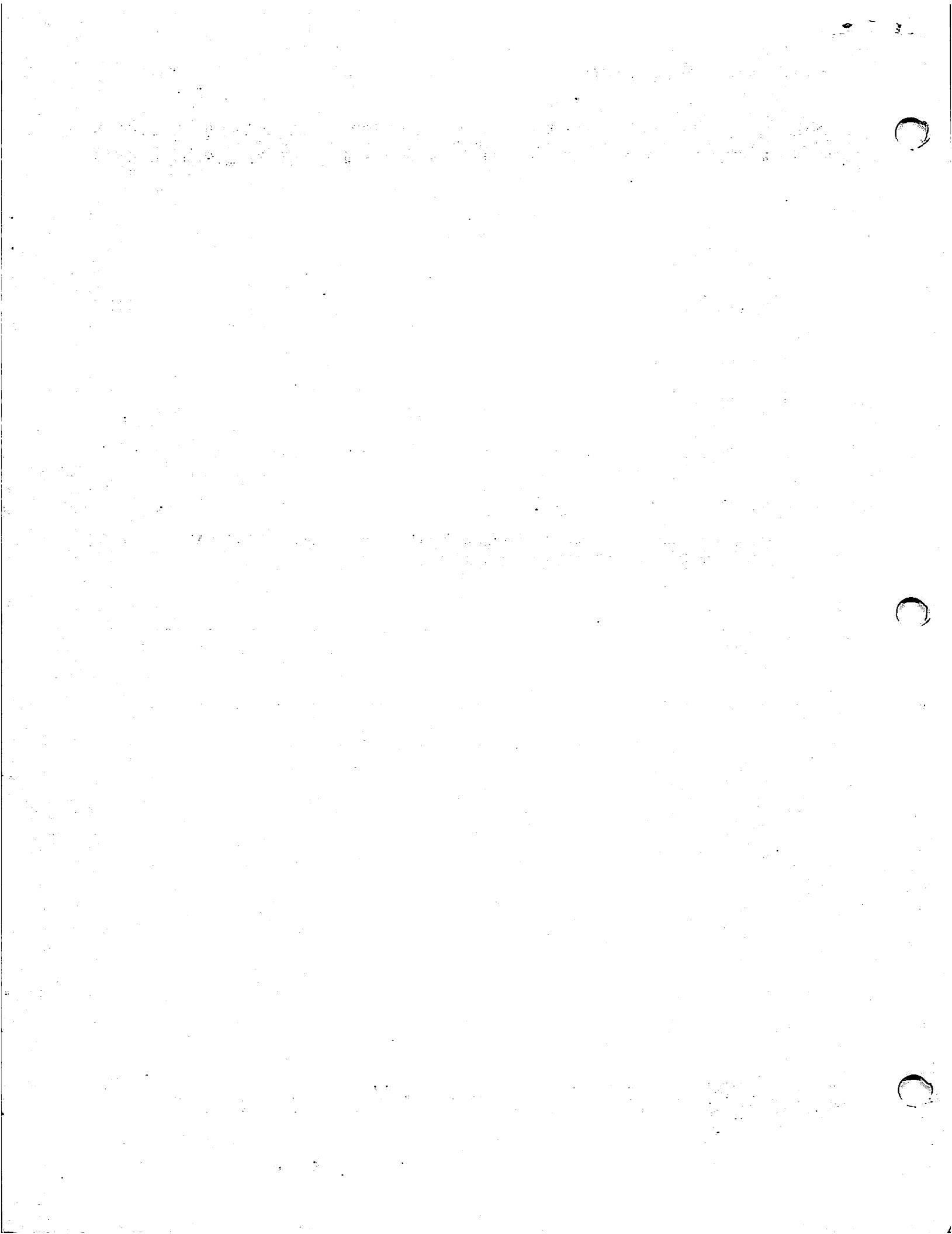
**WANG**

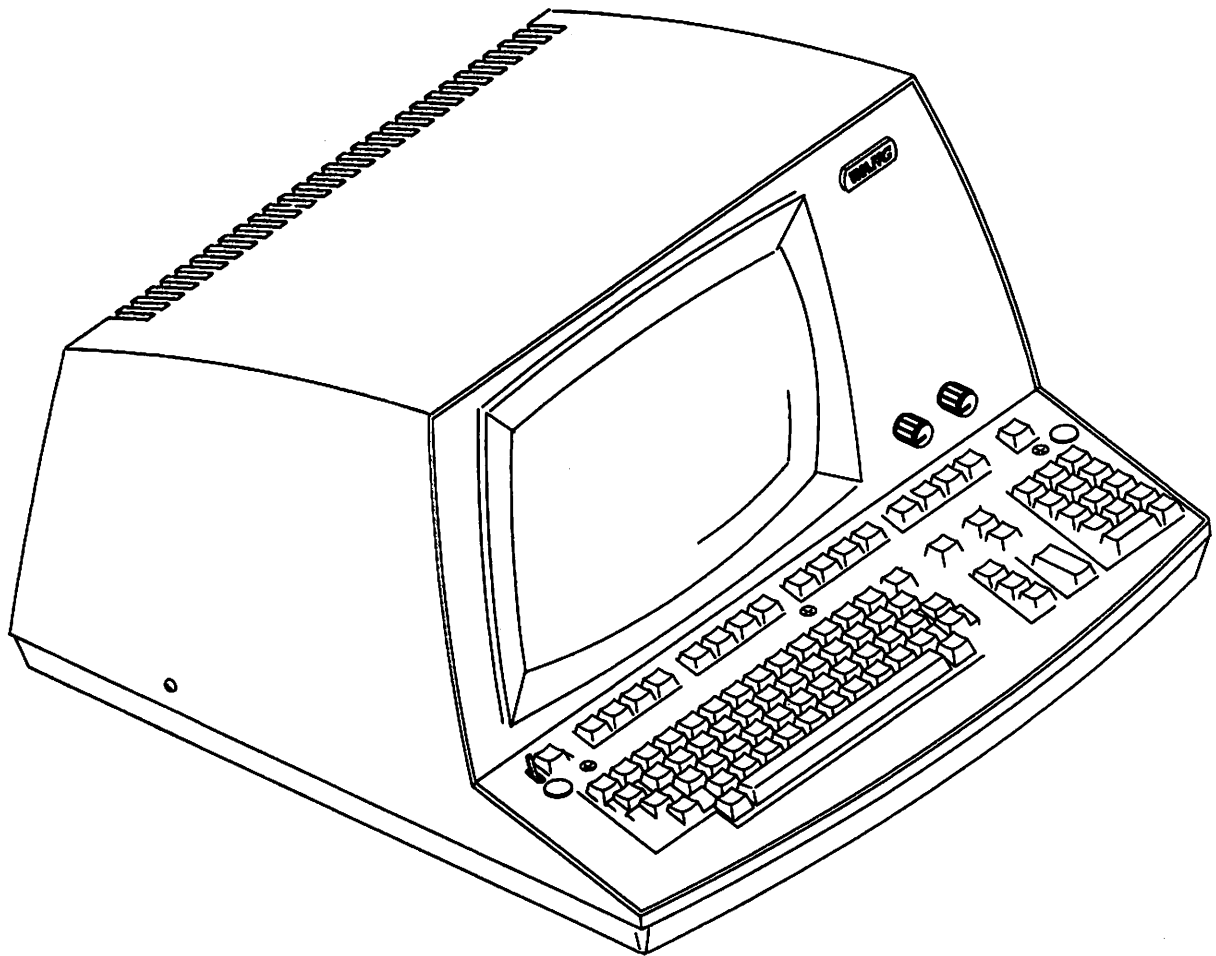
LABORATORIES, INC.

ONE INDUSTRIAL AVENUE, LOWELL, MASSACHUSETTS 01851. TEL. (617) 459-5000. TWX 710 343-6769. TELEX 94-7421

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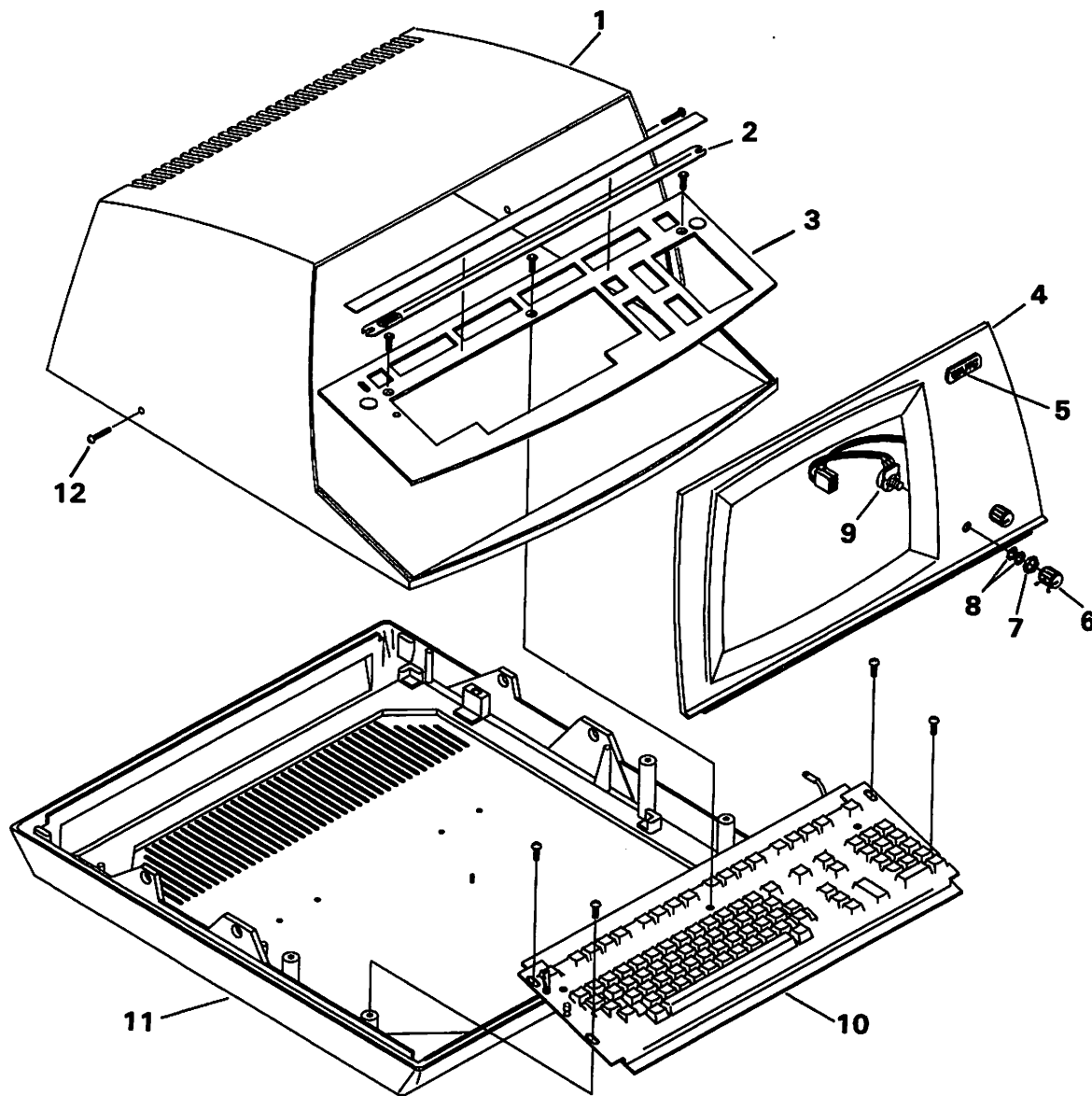


**FIGURE 1 FRONTISPIECE (ASSEMBLY PART NO. 177-3236DE)**

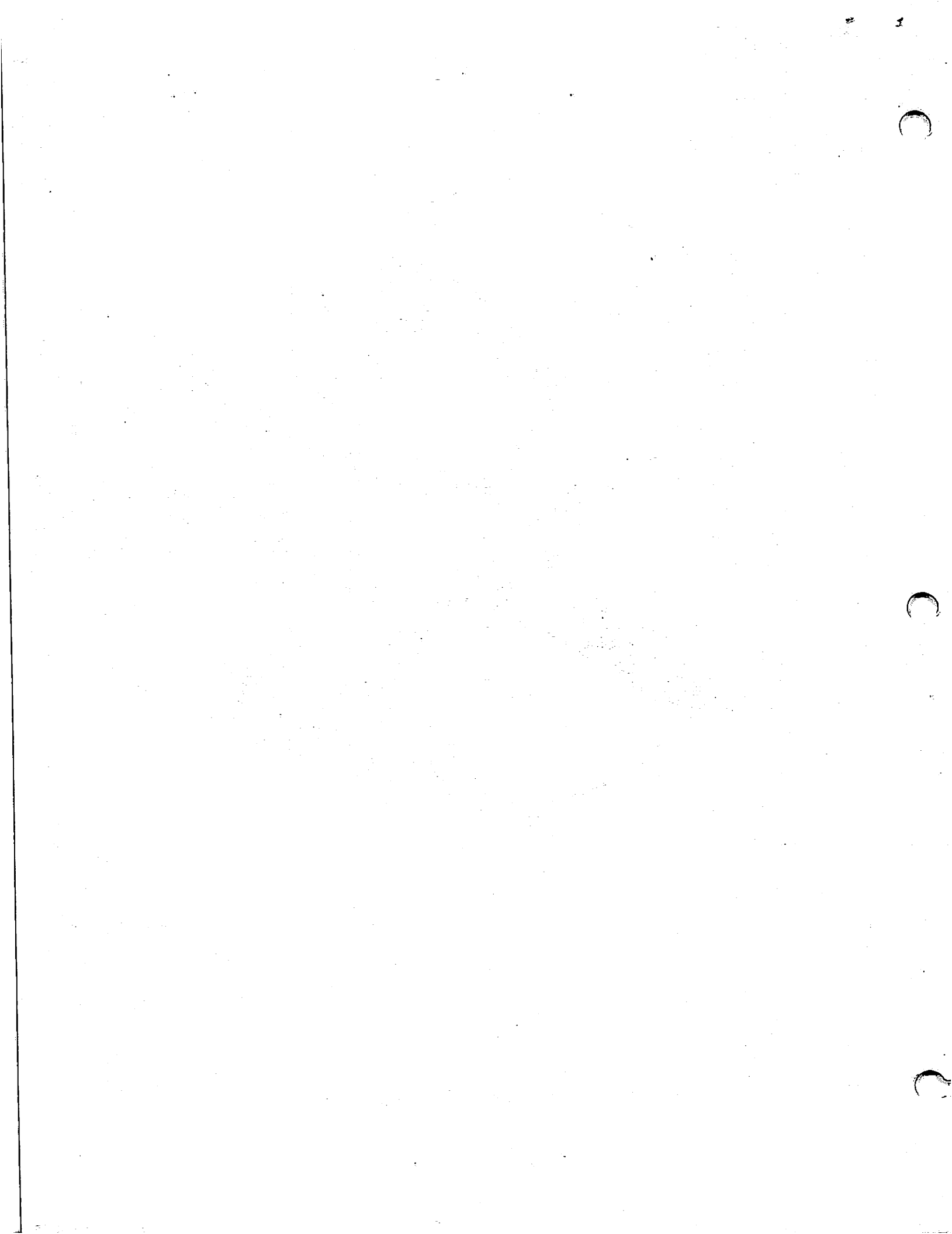


EXTERNAL COVERS ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION
1	449-0289	COVER, MACH (OPEN VENTS)
2	615-0398	PROGRAM STRIP
3	452-1068	PLATE FINISHING WLDMENT
4	449-0459	BEZEL, 12" CRT
5	449-0548	PLATE LOGO, WORKSTATION
6	655-0157	KNOB, ALCO
7	652-0036	3/8"-32, NUT
8	653-0022	LOCK WASHER
9	220-0160	CABLE ASSEMBLY, BRIGHTNESS POT
10	725-2618	DE KEYBD <del>DW</del> STANDARD
11	279-1026	BASE ASSEMBLY
12	650-4105	10-32x11/8 TRUSS HD PHL
	725-2637	DW KYBRD



**FIGURE 2 EXTERNAL COVERS ASSEMBLY**



**12" MONITOR & 2236DE WK/ST CHASSIS ASSEMBLY**

<b>ITEM NO.</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
1	210-7592-1A	PCA 2236DW SINGLE BD THERM ELEC
2	270-0579	HEATSINK ASSEMBLY
3	651-0037	#8x3/8" SLTD HEX S.T.SCREW
4	451-3857	SIDE PANEL (R.H.)
5	270-3092	YOKE ASSEMBLY
6	340-0108	CRT
7	270-0372	12" MONITOR ASSEMBLY
8	651-0053	#10x3/8"HEX HD S.T. SCREW
9	PART OF 7	
10	PART OF 7	
11	380-3011	20KV DIODE
12	350-2073	ANODE CONNECTOR
13	462-0413	SPACER
14	270-3104	FLYBACK TRANSFORMER ASSEMBLY
15	650-2087	4-40x1/4" SCREW
16	210-7456	PCA 12" MONITOR ELEC
17	451-1121	CHASSIS, 12"
18	451-4472	NECKSAVER BRACKET
19	478-0448	NECKSAVER BRACKET INSULATOR
20	651-0037	#8x3/8" SLTD HEX S.T. SCREW
21	651-0037	#8x3/8" SLTD HEX S.T. SCREW
22	452-4042	CARD GUIDE
23	465-1643	GROUNDING SPRING
24	651-0037	#8x3/8" SLTD HEX S.T. SCREW
25	451-4473	SUPPORT BRACKET
26	PART OF 57	
27	PART OF 57	
28	325-2117	SWITCH SLIDE DPDT 115-220
29	654-1288	SNAP BUSHING
30	451-3856	SIDE PANEL (L.H.)
31	652-0032	8-32 LOCKNUT KEPS
32	410-2005	LINE FILTER
33	652-2004	HEX NUT
34	220-1740	A.C. CABLE
35	270-0576	2236DE WK/ST CHASSIS ASSEMBLY
36	451-1100	CRT CHASSIS
37	650-3120	6-32x3/8" SCREW
38	220-3086	FLAT CABLE ASSEMBLY 2236E
39	320-0300	SQ. MAGNETIC SPEAKER
40	325-0033	TOGGLE SWITCH
41	360-9003	LOCKWASHER
42	360-9002	HEXNUT
43	336-0032	100 OHM POT
44	336-0035	250 OHM POT
45	652-2005	4-40 LOCKNUT KEPS
46	220-3085	FLAT CABLE ASSEMBLY RS/232
47	451-3996	SCREENED REAR PANEL

**12" MONITOR & 2236DE WK/ST CHASSIS ASSEMBLY (CONT.)**

<b>ITEM NO.</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
48	650-2082	4-40x1/4" FLAT HD SCREW
49	360-0000	FUSE HOLDER
50	360-1025-SB	FUSE 2 1/2 AMP 250V
51	458-0423	REAR PANEL STATIC GROUND
52	220-1076	POWER CORD ASSEMBLY
53	653-3000	FLAT WASHER #6
54	650-3120	6-32x3/8" SCREW
55	653-4002	FLAT WASHER #8
56	650-4160	8-32x1/2" SCREW
57	270-3139	TRANSFORMER ASSEMBLY
58	458-0436	SUPPORT ROD L.H.
59	458-0437	SUPPORT ROD R.H.

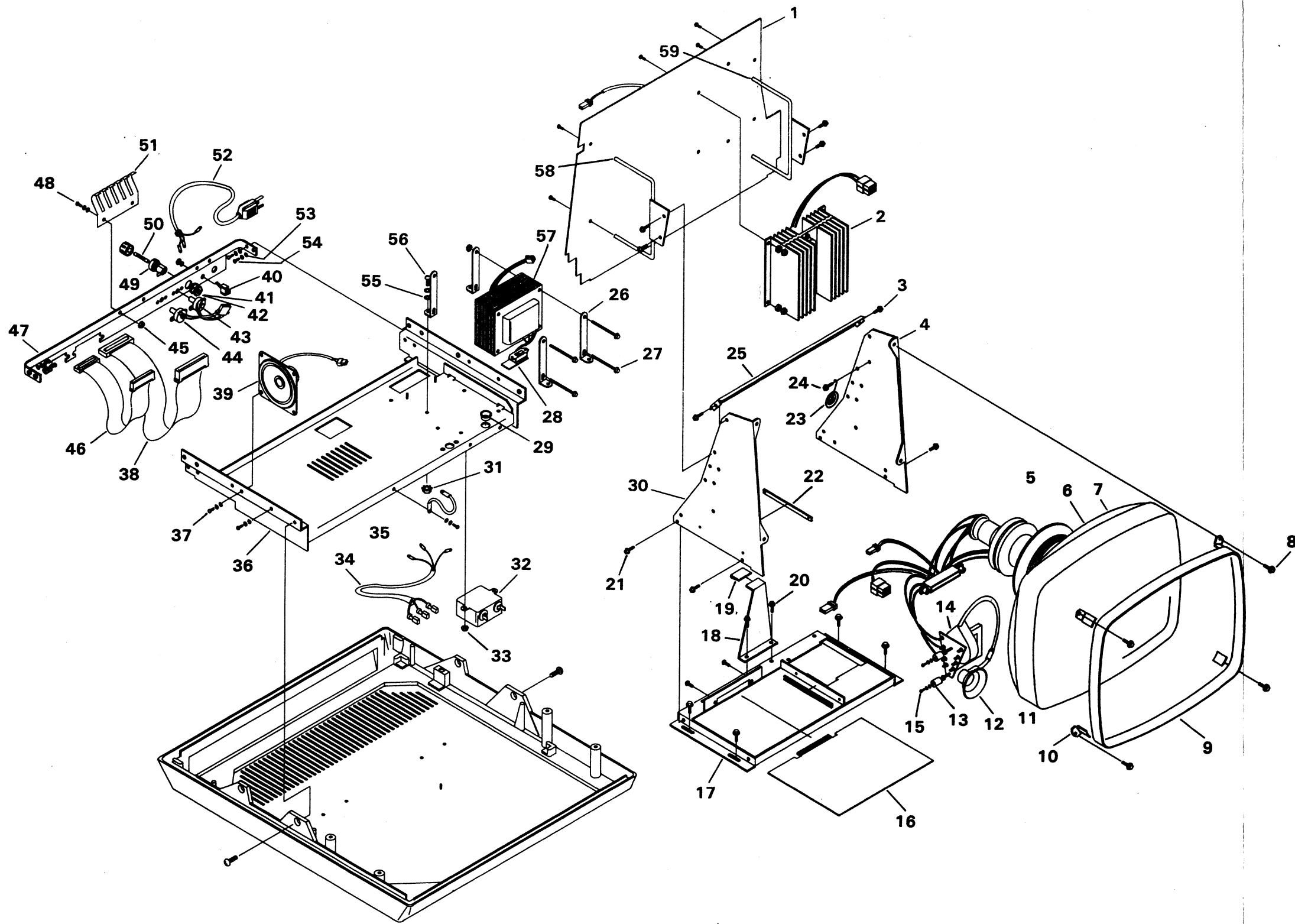


FIGURE 3 12" MONITOR & 2236DE WK/ST CHASSIS ASSEMBLY