

FOCUS      CENTERING      AC FUSE

**CABINET-REAR VIEW**

**DISASSEMBLY INSTRUCTIONS**

**CHASSIS REMOVAL**

Remove two plugs in cabinet top and bottom and remove two screws holding top of cabinet back to cabinet front. Remove six screws holding cabinet back to cabinet bottom and chassis frame. Remove back. Disconnect HV anode, CRT socket, deflection yoke connector and ground leads. Remove knobs from cabinet front. Remove two screws holding circuit board to cabinet front and remove board from cabinet. Remove two screws (from cabinet bottom) holding power supply assembly and remove assembly from cabinet.

**CRT REMOVAL**

Follow "Chassis Removal" procedure and lay set facedown on a soft protective surface. Loosen and remove CRT neck assembly. Remove four screws holding CRT to cabinet front and left CRT out of cabinet. Do Not lift CRT by the neck.

**SERVICING IN THE FIELD**

**FUSE DEVICES**

A 750mA fuse is used for AC line protection. (See photo, Cabinet-Rear View.)

**FOCUS**

The focus may be varied by a focus control. (See photo, Cabinet-Rear View.)

**CENTERING**

Centering is accomplished by proper adjustment of two magnetic rings located on the yoke rear cover. (See photo, Cabinet-Rear View.)

IBM  
MODEL 5151  
CMT4-1



IBM  
MODEL 5151  
CMT4-1

MODEL 5151

**PRELIMINARY SERVICE CHECKS**

ENCLOSED

**INDEX**

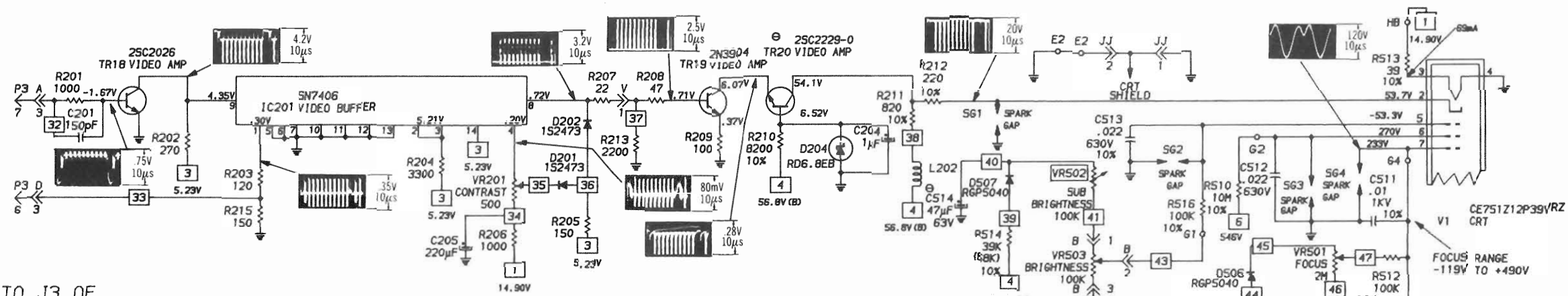
|                          | Page       |                         | Page |
|--------------------------|------------|-------------------------|------|
| Adjustment               | 5          | Placement Chart         | 3    |
| Disassembly Instructions | 16         | Resistance Measurements | 14   |
| GridTrace Location Guide |            | Schematics              |      |
| CRT Socket Board         | 10         | Notes                   | 14   |
| Main Board               | 11         | Terminal Guides         | 14   |
| Parts List               |            | TV                      | 2    |
| TV                       | 7 thru 10  | Servicing in the Field  | 16   |
| Photos                   |            | Troubleshooting         | 4,5  |
| Cabinet-Rear View        | 16         | Troubleshooting Aid     | 4    |
| CRT Socket Board         | 5,10       |                         |      |
| Main Board               | 6,11,12,13 |                         |      |

**SAMS**™ Howard W. Sams & Co., Inc.  
4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A.

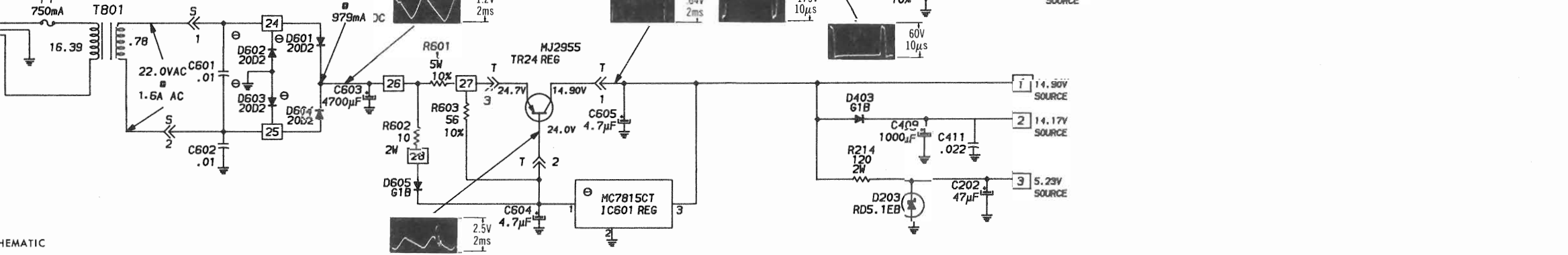
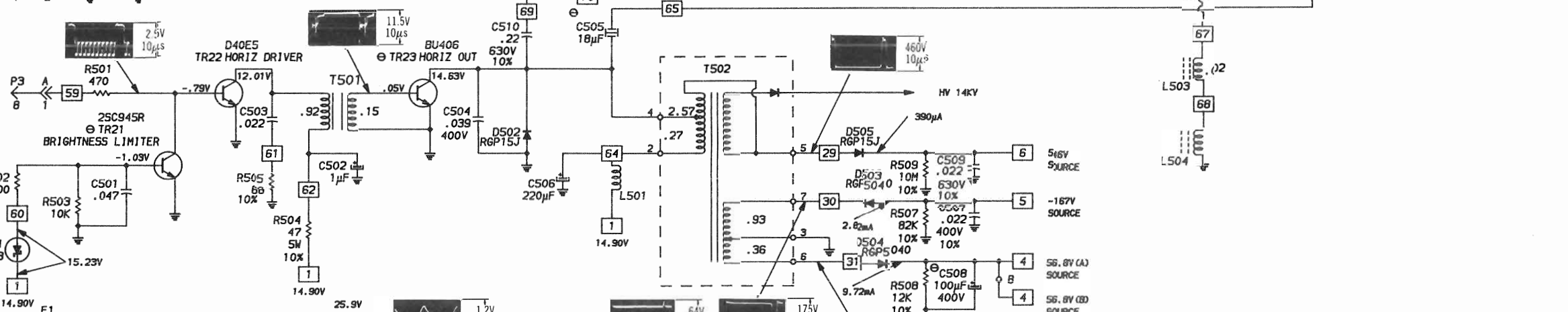
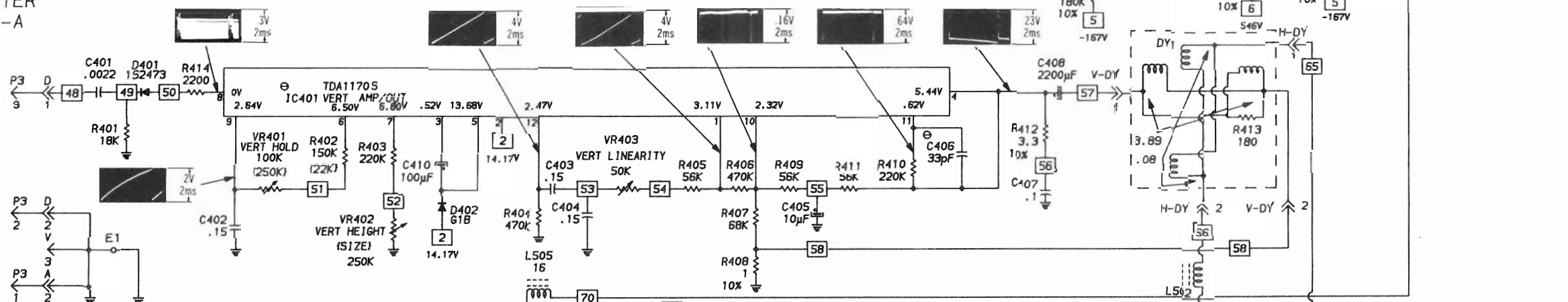
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed.

Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein.

© 1984 Howard W. Sams & Co., Inc.  
4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A.  
Printed in U.S. of America. 84CF14929      DATE 9-84



P3 CONNECTS TO J3 OF  
MONOCHROME MONITOR/  
PRINTER ADAPTER  
FOLDER CSCS2-A



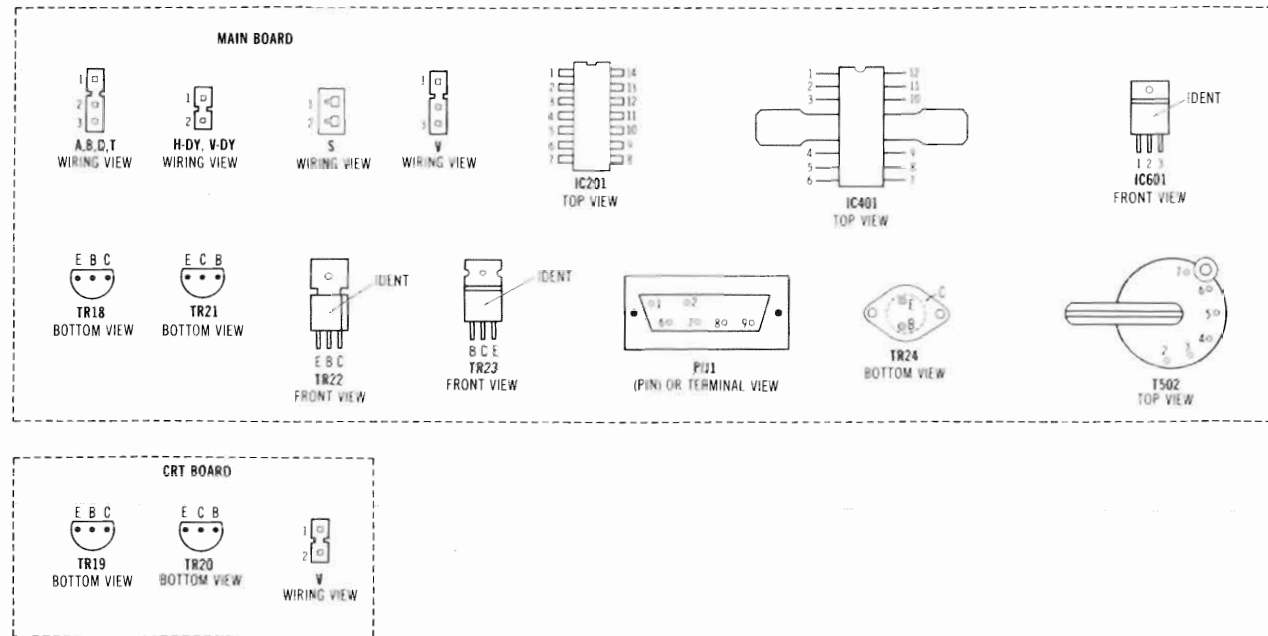
IBM  
MODEL 5151

FOR TERMINAL GUIDES AND  
NOTES SEE PAGE 14

## RESISTANCE MEASUREMENTS

| MEASUREMENTS TAKEN WITH LOW POWER OHMS METER |       |       |       |       |       |       |       |       |       |        |        |        |        |        |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| ITEM   | PIN 1 | PIN 2 | PIN 3 | PIN 4 | PIN 5 | PIN 6 | PIN 7 | PIN 8 | PIN 9 | PIN 10 | PIN 11 | PIN 12 | PIN 13 | PIN 14 |
| IC201  | 284   | 3440  | 3440  | 1549  | 0     | 0     | 0     | 2200  | 488   | 0      | 0      | 0      | 0      | 215    |
| IC401  | 1NF   | 1NF   | 1NF   | 1NF   | 1NF   | 8790  | 221K  | 1.8M  | 189K  | 160K   | 1NF    | 468K   |        |        |
| IC601  | 1NF   | 78.4  | 0     |       |       |       |       |       |       |        |        |        |        |        |
| V1   | 328K  | 13K   | FIL   | FIL   | 334K  | 1NF   | 1.1M  |       |       |        |        |        |        |        |
| ITEM   | E     | B     | C     |       | ITEM  | E     | B     | C     |       | ITEM   | E      | B      | C      |        |
| TR18   | 0     | 11K   | 473   |       | TR21  | 0     | 9940  | 1NF   |       | TR23   | 0      | .20    | 78.9   |        |
| TR19   | 98    | 2210  | 1NF   |       | TR22  | 0     | 1NF   | 125   |       | TR24   | 1NF    | 1NF    | 78.4   |        |
| TR20   | 1NF   | 21K   | 13K   |       |       |       |       |       |       |        |        |        |        |        |

### TERMINAL GUIDES



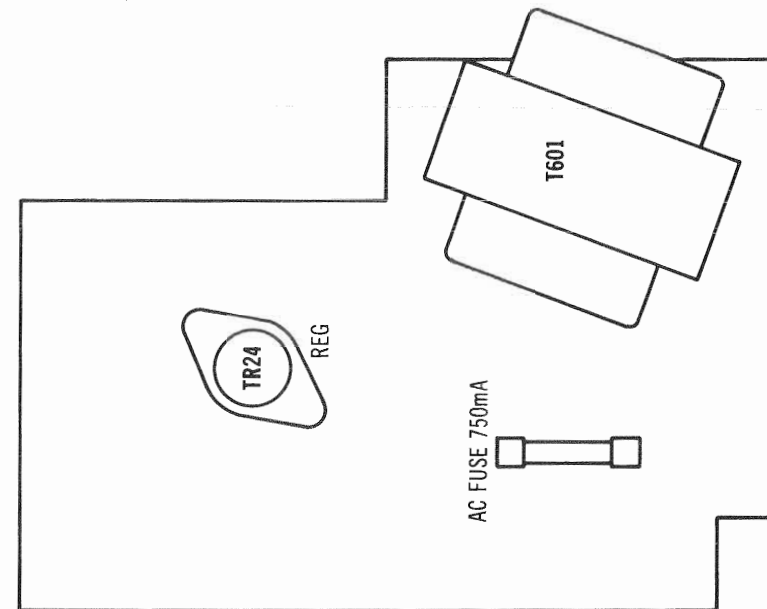
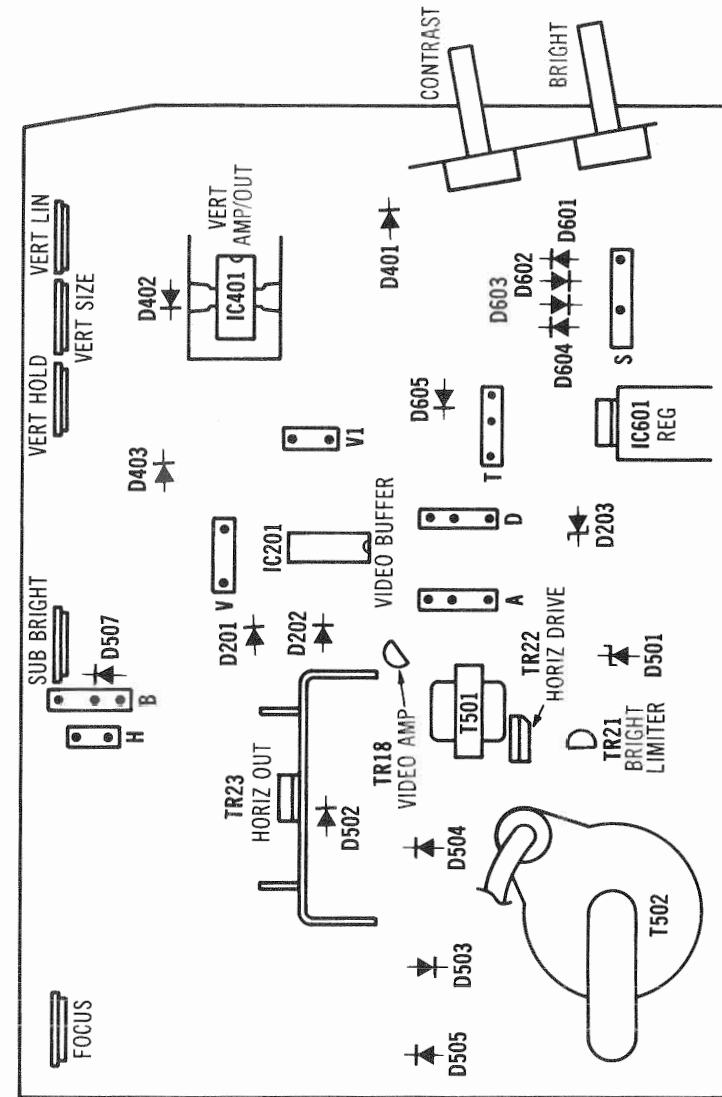
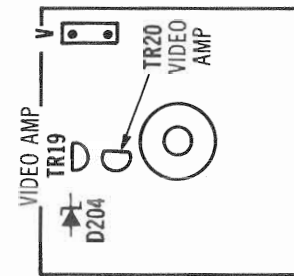
### SCHEMATIC NOTES

- \*— Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊙ See parts list
- ⊕ Ground

Waveforms and voltages are taken from ground, unless noted otherwise.  
 Waveforms: triggered scope, video pattern generator.  
 Item numbers in rectangles appear in the alignment/adjustment instructions.  
 Supply voltages maintained as shown at input.

Voltages measured with digital meter, with signal applied.  
 Controls adjusted for normal operation.  
 Terminal identification may not be found on unit.  
 Capacitors are 50 volts or less, 5% unless noted.  
 Electrolytic capacitors are 50 volts or less, 20% unless noted.  
 Resistors are 1/2W or less, 5% unless noted.  
 Value in ( ) used in some versions.  
 Measurements with switching as shown, unless noted.

### TOP VIEW



**IBM**  
**CMT4-1**  
**MODEL 5151**

### PLACEMENT CHART

## TROUBLESHOOTING AID

Note: Waveforms taken with trigged scope, Bar-Sweep generator. Schematic voltages measured with digital meter, no signal. Controls adjusted for normal operation.

### PICTURE

NO PIC, NO RASTER: Check for AC power supply and sources generated from Horizontal Output Transformer (T502). Refer to "Troubleshooting" Power Supply and Horizontal circuits.

NO PIC, HAS RASTER: Refer to "Troubleshooting" Video circuit.

LOW OR EXCESSIVE BRIGHTNESS: Check Video and Luminance circuits. Refer to "Troubleshooting" Video circuit.

### SWEEP

NO RASTER: Check HV rectifier, Part of Horizontal Output Transformer (T502). Refer to "Troubleshooting" Horizontal circuit.

NO VERT DEFLECTION: Refer to "Troubleshooting" Vertical circuit.

POOR VERT LIN OR FOLDOVER: Refer to "Troubleshooting" Vertical circuit.

POOR HORIZ LIN OR FOLDOVER: Refer to "Troubleshooting" Horizontal circuit.

NARROW PICTURE: Refer to "Troubleshooting" Horizontal circuit.

VERT OFF FREQUENCY: Refer to "Troubleshooting" Vertical circuit.

HORIZ OFF FREQUENCY: Refer to "Troubleshooting" Horizontal circuit.

### SYNC

NO VERT/HORIZ SYNC: Refer to "Troubleshooting" Sync circuit.

### Note:

Make sure that the problem is in the monitor and not in the computer. If the Monochrome Adapter fails, the monitor will lose raster, or sync, or both, according to whichever signal is missing from the computer to monitor.

## TROUBLESHOOTING

### POWER SUPPLY

Check the AC Line Fuse (F1). If open check Diodes D601, D602, D603, D604 and D605, Regulator Transistor (TR24) and Regulator IC (IC601). Also check Power Transformer (T801) and associated components. Replace defective parts and check for short to ground from the collector of Transistor TR24.

Apply 120 VAC between P1 and P2 - the primary winding of Transformer T801, and check for 24.7V at the emitter of Transistor TR24. If the voltage is missing, check Resistor R601. Also, check for 22 VAC between the cathode of Diode D602 and the cathode of Diode D603. Check for 14.90V at the collector of Transistor TR24. If the voltage is missing, check Transistor TR24, IC601, Capacitor C409 and associated components. Check for 14.63V at the collector of the Horizontal Output Transistor (TR23). If the voltage is missing, check Coil L501, Horizontal Drive Transistor (TR22), Diode D502 and the winding of the Horizontal Output Transformer (T502) between pin 2 and pin 4 and associated components.

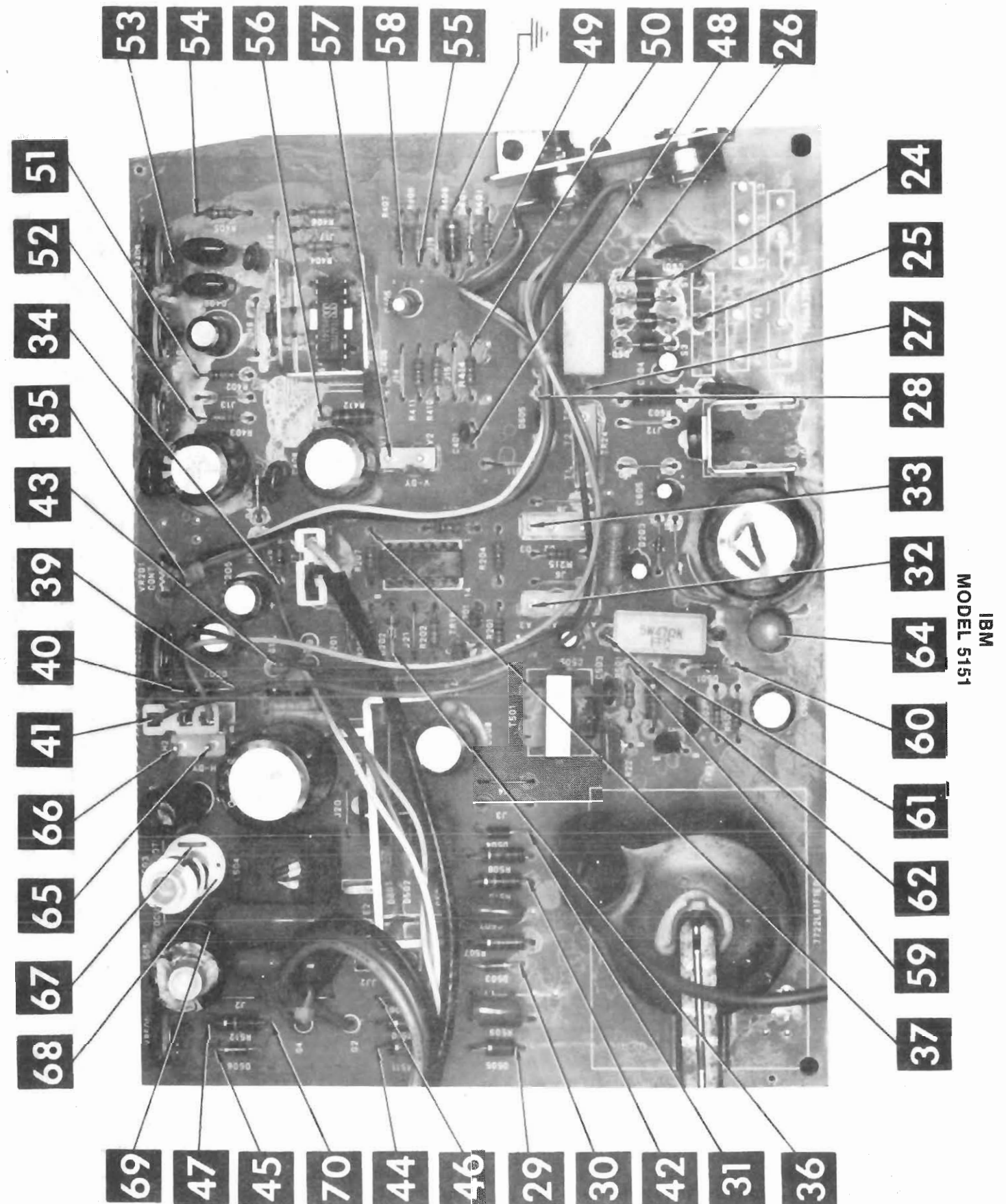
Check the sources that are developed from Transformer

T502. Check for 56.8V at the cathode of Diode D504, -167V at the anode of Diode D503 and 546V at the cathode of Diode D505. If these sources are missing refer to the "Horizontal" section of this Troubleshooting guide.

### HORIZONTAL

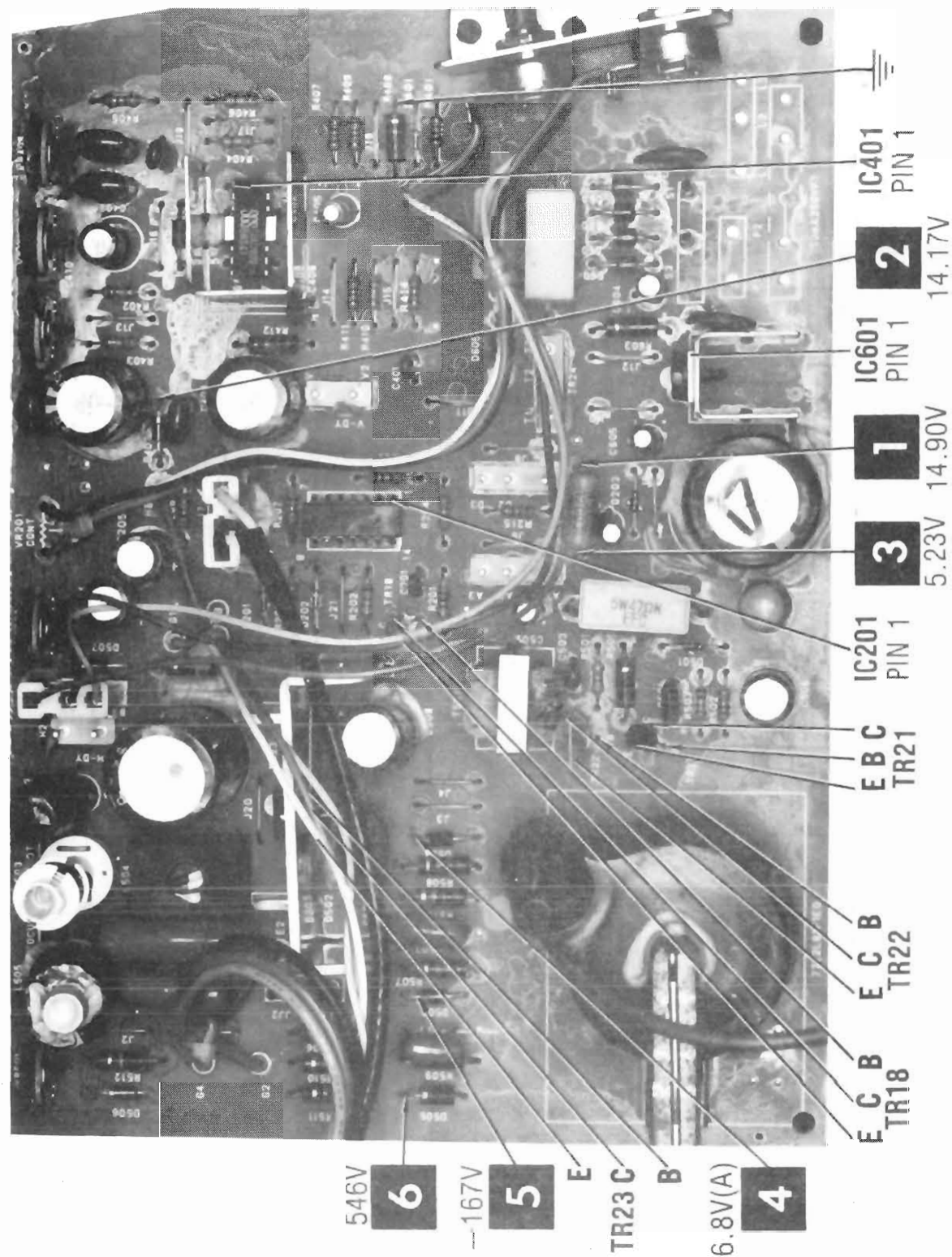
Check for 14.63V at the collector of the Horizontal Output Transistor (TR23). If the 14.63V is missing, check for the 14.90V source at the collector of the Regulator Transistor (TR24). Refer to the "Power Supply" section of this Troubleshooting guide and check Transistor TR23, Damper Diode (D502), Coil L501 and winding of the Horizontal Output Transformer (T502) between pins 2 and 4.

Inject a horizontal signal at the base of Transistor TR23. If the raster returns, check voltages and components associated with Horizontal Drive Transistor (TR22) and the Horizontal Drive Transformer (T501). If the raster does not return, check Transistor TR23, Diode D502, Transformer T502 and associated circuitry. The high voltage rectifier is part of Transformer T502 and may be defective.



A Howard W. Sams CIRCUITRACE Photo

MAIN BOARD



MAIN BOARD

A Howard W. Sams CIRCUITRACE Photo

## TROUBLESHOOTING (Continued)

### VIDEO

Inject a video signal at pin 3 of plug A, inject a positive horizontal sync pulse at pin 1 of plug A and inject a positive vertical sync pulse at pin 1 of plug D. Check for video on the CRT. If there is no video on the CRT, check for a video waveform at the base of the Video Amp Transistor (TR19). If the correct waveform appears at the base of Transistor TR19, check waveforms at the emitter of Video Amp Transistor (TR20) and at pin 2 of the CRT socket. If these waveforms are incorrect or missing, check Transistors TR19 and TR20 and associated components. Also, check the CRT and CRT voltages and waveforms. If the waveform at the base of Transistor TR19 is missing, check voltages, waveforms and components associated with pins 8, 9 and 4 of Video Buffer IC (IC201), Video Amp Transistor (TR18) and associated circuitry.

If the monitor has a low or excessive brightness, check voltages and components associated with the Brightness Limiter Transistor (TR21), Zener Diode (D501) and the Video

Amp Transistor (TR20). Also, check the CRT and CRT voltages and waveforms.

### SYNC

The vertical and horizontal sync pulses are developed from the computer. The PC computer develops positive sync pulses. If there is no sync, check for a bad connection at pins 8 and 9 of the connector cable between the computer and the monitor.

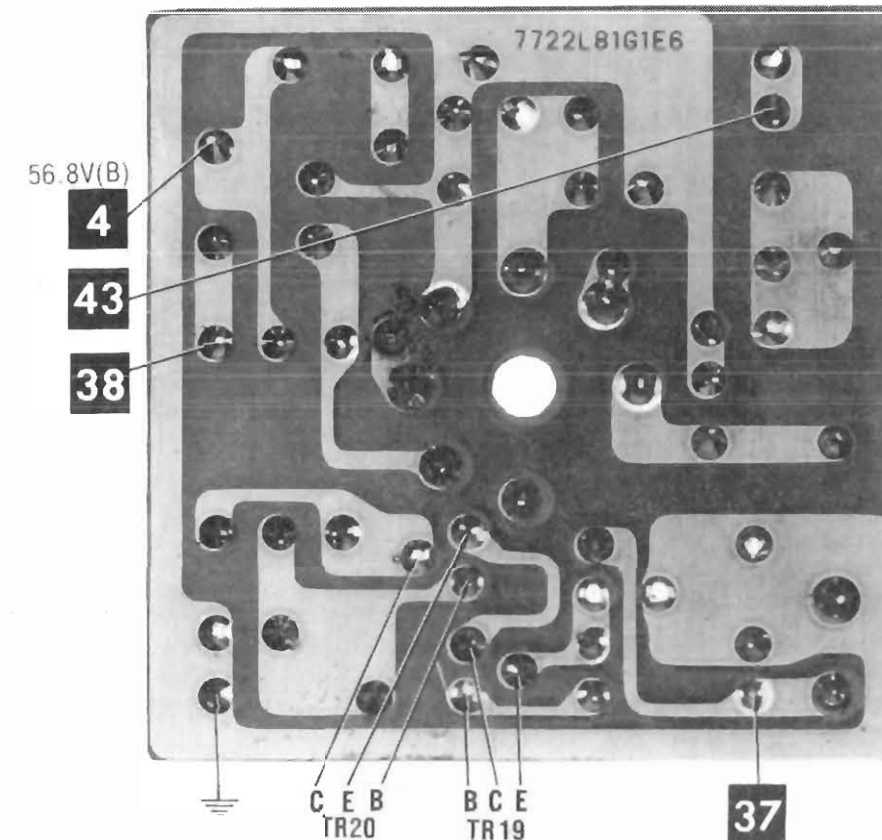
### VERTICAL

No vertical deflection. Check voltages, waveforms and components associated with pins 2, 3, 4 and 5 of the Vertical Amp/Output IC (IC401), Capacitor C406 and associated circuitry. Check voltages, waveforms and components associated with pins 1, 8 thru 12 of IC401 and check the vertical winding of the Deflection Yoke (DY1).

## ADJUSTMENT

### SUB BRIGHTNESS ADJUSTMENT

Display video information on the Monitor screen. Adjust the Brightness and Contrast Controls to Maximum. Adjust Sub Brightness Control (VR502) for suitable brightness without blooming or retrace lines on the screen.

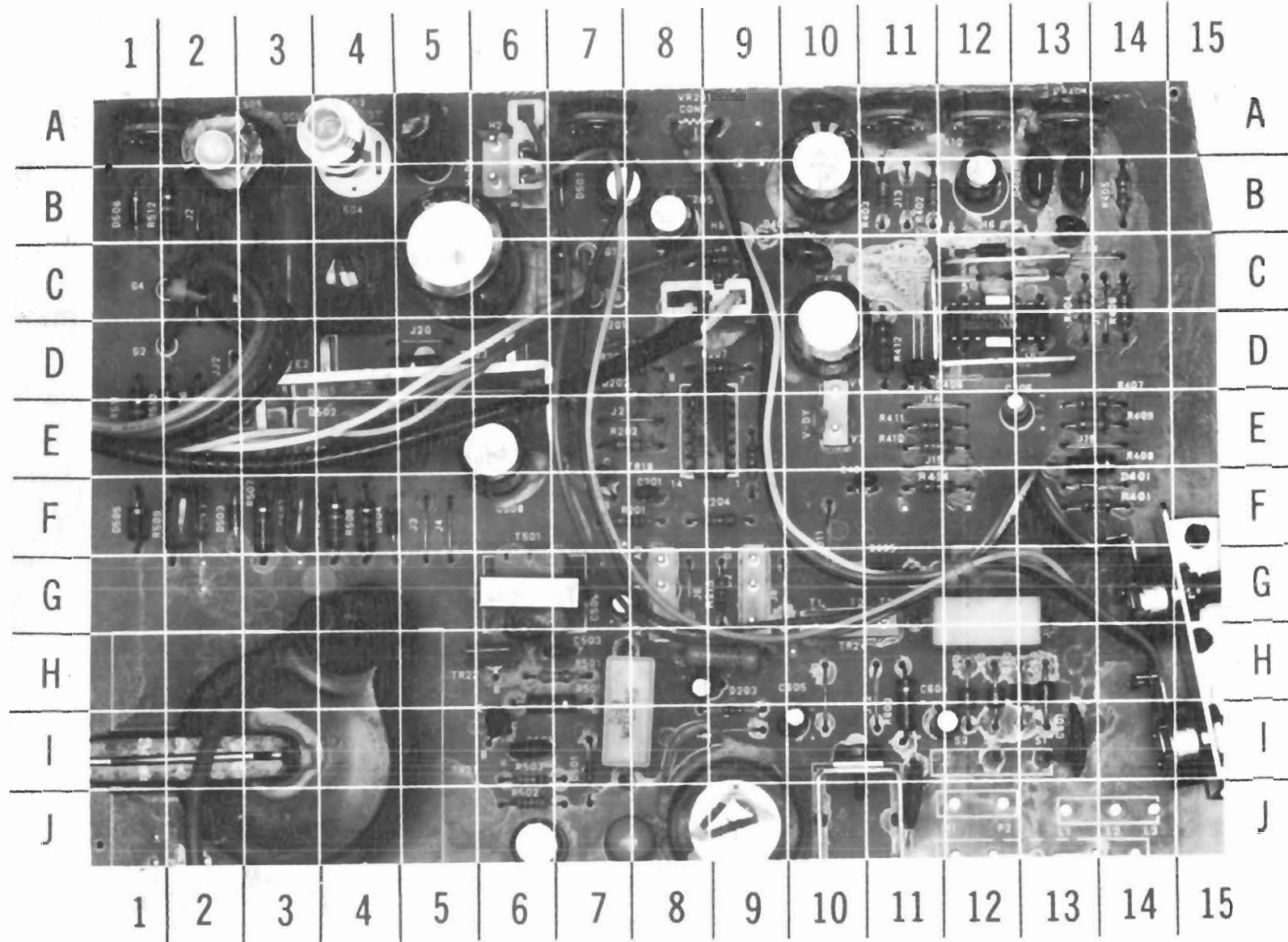


A Howard W. Sams CIRCUITRACE Photo

CRT SOCKET BOARD

CMT4.1  
 IBM  
 MODEL 5151

MAIN BOARD-GridTrace LOCATION GUIDE



|       |      |       |      |
|-------|------|-------|------|
| A     | G-8  | R405  | B-14 |
| B     | A-6  | R406  | C-14 |
| C201  | F-8  | R407  | E-14 |
| C202  | H-9  | R408  | E-13 |
| C204  | B-8  | R409  | E-14 |
| C401  | F-10 | R410  | E-11 |
| C402  | A-10 | R411  | E-11 |
| C403  | B-13 | R412  | D-11 |
| C404  | B-13 | R414  | F-11 |
| C405  | E-12 | R501  | H-7  |
| C406  | D-11 | R502  | J-6  |
| C407  | C-10 | R503  | I-6  |
| C408  | D-10 | R504  | I-7  |
| C409  | B-10 | R505  | H-7  |
| C410  | B-12 | R506  | E-2  |
| C411  | B-13 | R507  | F-3  |
| C501  | I-6  | R508  | F-4  |
| C502  | G-7  | R509  | F-2  |
| C503  | H-7  | R510  | E-1  |
| C504  | E-4  | R511  | E-1  |
| C505  | C-5  | R512  | B-2  |
| C506  | J-6  | R514  | C-7  |
| C507  | F-3  | R515  | F-4  |
| C508  | E-6  | R601  | G-12 |
| C509  | F-2  | R602  | G-12 |
| C510  | C-3  | R603  | I-11 |
| C511  | C-2  | S     | I-12 |
| C514  | B-7  | T     | G-10 |
| C601  | I-13 | TR18  | F-7  |
| C602  | J-11 | TR21  | I-6  |
| C603  | J-9  | TR22  | H-6  |
| C604  | I-12 | TR23  | D-5  |
| C605  | I-10 | V     | C-9  |
| D     | G-9  | V-DY  | E-10 |
| D201  | D-7  | VR201 | G-14 |
| D202  | D-7  | VR401 | A-11 |
| D203  | I-9  | VR402 | A-12 |
| D401  | F-13 | VR403 | A-13 |
| D402  | C-12 | VR501 | A-1  |
| D403  | B-10 | VR502 | A-7  |
| D501  | I-7  | VR503 | I-15 |
| D502  | E-4  |       |      |
| D503  | F-3  |       |      |
| D504  | F-4  |       |      |
| D505  | F-1  |       |      |
| D506  | B-1  |       |      |
| D507  | B-7  |       |      |
| D601  | H-13 |       |      |
| D602  | H-12 |       |      |
| D603  | H-12 |       |      |
| D604  | H-12 |       |      |
| D605  | G-11 |       |      |
| H-DY  | B-6  |       |      |
| IC201 | E-9  |       |      |
| IC401 | D-12 |       |      |
| IC601 | I-10 |       |      |
| L501  | J-7  |       |      |
| L502  | A-5  |       |      |
| L503  | A-4  |       |      |
| L504  | C-4  |       |      |
| L505  | A-2  |       |      |
| R201  | F-7  |       |      |
| R202  | E-7  |       |      |
| R203  | E-9  |       |      |
| R204  | F-9  |       |      |
| R205  | D-8  |       |      |
| R206  | C-9  |       |      |
| R207  | D-9  |       |      |
| R214  | H-9  |       |      |
| R215  | G-9  |       |      |
| R401  | F-14 |       |      |
| R402  | B-11 |       |      |
| R403  | B-11 |       |      |
| R404  | C-13 |       |      |

IBM  
MODEL 5151

## PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

### MISCELLANEOUS

| ITEM No. | PART NAME                       | MFR. PART No.  | NOTES                                     |
|----------|---------------------------------|----------------|---|
| P1       | Cord                            | 8529174 (1)    | AC Power<br>Includes Cable and Connectors |
| P/J1     | Signal Cable Assembly           | 8529173 (1)    |   |
| SG1      | Spark Gap                       |                |   |
| SG2      | Spark Gap                       |                |   |
| SG3      | Spark Gap                       |                |   |
| SG4      | Spark Gap                       |                |   |
| V1       | CRT<br>P.C. Board<br>P.C. Board | CE751Z12P39VRZ | Main Board<br>CRT Socket Board            |

(1) Restricted Availability.

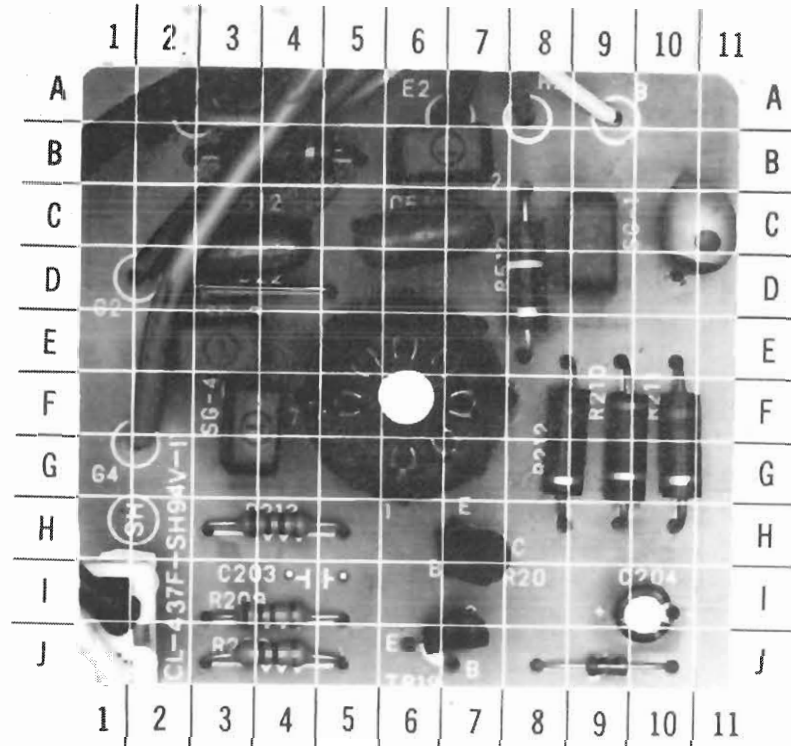
### CABINET & CABINET PARTS (When ordering specify model, chassis & color)

| ITEM                       | PART No.    | ITEM             | PART No. |
|----------------------------|-------------|------------------|----------|
| Back Cover                 | 8529230 (1) | Knob, Brightness | 8529177  |
| Cover Plug, Upper (2 used) | 8529231 (1) | Knob, Contrast   | 8529178  |
| Front Panel                | 8529229 (1) |                  |          |

(1) Restricted Availability.

### CRT SOCKET BOARD GridTrace LOCATION GUIDE

|      |      |      |      |      |     |      |     |
|------|------|------|------|------|-----|------|-----|
| C204 | I-10 | R208 | J-4  | R213 | H-4 | SG-3 | F-3 |
| C512 | C-3  | R209 | I-4  | R513 | D-8 | SG-4 | F-3 |
| C513 | C-6  | R210 | F-9  | R516 | B-4 | TR19 | J-7 |
| D204 | J-9  | R211 | F-10 | SG-1 | C-9 | TR20 | H-7 |
| L202 | C-10 | R212 | G-8  | SG-2 | B-6 |      |     |



CRT SOCKET BOARD A Howard W. Sams GRIDTRACE™ Photo

## PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

### SEMICONDUCTORS (Select replacement for best results)

| ITEM No.       | TYPE No.  | MFR. PART No. | REPLACEMENT DATA          |                   |                      |                      |              |                  |                 |  |
|----------------|-----------|---------------|---------------------------|-------------------|----------------------|----------------------|--------------|------------------|-----------------|--|
|                |           |               | GENERAL ELECTRIC PART No. | MOTOROLA PART No. | NEWTONE NTE PART No. | PHILIPS ECG PART No. | RCA PART No. | WORKMAN PART No. | ZENITH PART No. |  |
| D201,2         | 1S2473    |               | GE-514                    | 1N4935            | NTE519               | ECG519               | SK3100/519   | WEP925/519       | 103-131         |  |
| D203           | RD5-1EB   |               | GEZD-5.1                  | 1N5231B           | NTE5010A             | ECG5010A             | SK5A1/5010A  | WEP1411/5010     | 103-279-10      |  |
| D204           | RD6-8EB   |               | GEZD-6.8                  | 1N5235B           | NTE5014A             | ECG5014A             | SK6A8/5014A  | WEP1415/5014     | 103-29009       |  |
| D401           | 1S2473    |               | GE-514                    | 1N4935            | NTE519               | ECG519               | SK3100/519   | WEP925/519       | 103-131         |  |
| D402,3         | G1B       |               | GE-504A                   | 1N4004            | NTE116               | ECG116               | SK3031A      | WEP157           | 212-76-02       |  |
| D501           | RD16EB3   |               | GEZD-16                   | 1N5246B           | NTE5025A             | ECG5025A             | SK16A/5025A  | WEP1427/5025     | 103-231         |  |
| D502           | RGF15J    |               | GE-511                    |                   | NTE552               | ECG552               | SK3318A      | WEP172/506       | 103-287         |  |
| D503,4         | RGF5040   |               | GE-511                    |                   | NTE552               | ECG552               | SK9000/552   | WEP172/506       | 103-287         |  |
| D505           | RGF15J    |               | GE-511                    |                   | NTE552               | ECG552               | SK3318A      | WEP172/506       | 103-287         |  |
| D506,7         | RGF5040   |               | GE-511                    |                   | NTE552               | ECG552               | SK9000/552   | WEP172/506       | 103-287         |  |
| D601 thru D604 | 2002      |               | GE-510                    | 1N4007            | NTE125               | ECG125               | SK5010/117A  | WEP170/125       | 212-29000       |  |
| D605           | G2D       |               | GE-510                    | 1N4007            | NTE125               | ECG125               | SK5010/117A  | WEP170/125       | 212-29000       |  |
| IC201          | G1B       |               | GE-504A                   | 1N4004            | NTE116               | ECG116               | SK3031A      | WEP157           | 212-76-02       |  |
| IC401          | SN7406    |               | GE-7406                   |                   | NTE7406              | ECG7406              | SK7406       |                  | HE-443-698      |  |
|                | TDA1170S  |               |                           |                   | NTE1289              | ECG1289              | SK9182/1289  |                  |                 |  |
|                | TDA1170   |               |                           |                   | NTE1289              | ECG1289              | SK9182/1289  |                  |                 |  |
| IC601          | MC7815CT  |               |                           | MC7815CT          | NTE968               | ECG968               | SK3593/968   |                  | HE-442-63       |  |
| TR18           | L7815CV   |               |                           | MC7815CT          | NTE968               | ECG968               | SK3593/968   |                  | HE-442-63       |  |
| TR19           | 2SC2026   |               |                           |                   | NTE123AP             | ECG123AP             | SK9139+      |                  | 121-29000A      |  |
| TR20           | 2N3904    |               | GE-222*                   | MPSA05            | NTE399               | ECG399               | SK3854/123AP | WEP736/123A      | 121-29045*      |  |
|                | 2SC2229-0 |               | GE-222*                   | MPSA42*           | NTE399               | ECG399               | SK3244       | WEP68/287*       | 121-29045*      |  |
|                | 2SC1921   |               | GE-222*                   | MPSA42*           | NTE399               | ECG399               | SK9352/399   | WEP68/287*       | 121-29045*      |  |
| TR21           | 2SC945R   |               | GE-212                    | MPSA18*           | NTE85                | ECG85                | SK3124A/289A | WEP736/123A*     | 121-972*        |  |
| TR22           | 2SC945    |               | GE-212                    | MPSA18*           | NTE85                | ECG85                | SK3124A/289A | WEP736/123A*     | 121-972*        |  |
| TR23           | D40E5     |               | D40E5                     | D40E5             | NTE186               | ECG186               | SK3192/186   | WEP751/186       | 121-29008       |  |
|                | BU406     |               | BU406                     | BU406             | NTE379               | ECG379               | SK9085/379   | WEP379/379       | 121-29111       |  |
|                | BU408     |               | BU406                     | BU406             | NTE379               | ECG379               | SK9085/379   | WEP379/379       | 121-29111       |  |
| TR24           | MJ2955    |               | GE-74                     | MJ2955            | NTE219               | ECG219               | SK3173/219   | WEP760/219       | 121-29058       |  |

\* Lead configuration may vary from original.  
+ Rotate 180° to conform with original lead configuration.

**CMT4-1**  
IBM  
MODEL 5151

## PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

### WIRING DATA

|   |  |
|---|--|
| High Voltage Lead .....                   | Use BELDEN No. 8869 (17 KV)  |
| Shielded Hook-up Wire .....               | Use BELDEN No. 8401 or 8421 (Single-Conductor)<br>8208 (Two-Conductor)                       |
| General-use Unshielded Hook-up Wire ..... | Use BELDEN No. 8529 (Solid) Available in 13 Colors<br>8522 (Stranded) Available in 13 Colors |

### ELECTROLYTIC CAPACITORS

Item numbers not listed are normally available at local distributors.

| ITEM No. | RATING                 | MFR. PART No. | ITEM No. | RATING              | MFR. PART No. |
|----------|------------------------|---------------|----------|---------------------|---------------|
| C505     | 18 25V NP<br>47 50V NP |               | C508     | 100 400V<br>22 160V |               |

### CAPACITORS

Item numbers not listed are normally available at local distributors.

| ITEM No. | RATING        | MFR. PART No. | ITEM No. | RATING | MFR. PART No. |
|----------|---------------|---------------|----------|--------|---------------|
| C406     | 33 NPO 50V 5% |               |          |        |               |

### CONTROLS (All wattages 1/2 watt, or less, unless listed)

| ITEM NO. | FUNCTION           | RESISTANCE | MFR. PART NO. | NOTES |
|----------|--------------------|------------|---------------|-------|
| VR201    | Contrast           | 500        |               |       |
| VR401    | Vert Hold          | 100K       |               |       |
|          | Vert Hold          | 250K       |               |       |
| VR402    | Vert Height (Size) | 250K       |               |       |
| VR403    | Vert Linearity     | 50K        |               |       |
| VR501    | Focus              | 2M         |               |       |
| VR502    | Sub Brightness     | 100K       |               |       |
| VR503    | Brightness         | 100K       |               |       |

### RESISTORS (Power and Special)

| ITEM No.     | RATING                      | REPLACEMENT DATA |                   |                  |
|--------------|-----------------------------|------------------|-------------------|------------------|
|              |                             | MFR. PART No.    | NEW-TONE PART No. | WORKMAN PART No. |
| R504<br>R601 | 47 10% 5W WW<br>1 10% 5W WW |                  | 5W047<br>5W1D0    | 24-3010          |

## PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

### TRANSFORMER (Power)

| ITEM No. | RATING                |                         |        | REPLACEMENT DATA               |                     |       |
|----------|-----------------------|-------------------------|--------|--------------------------------|---------------------|-------|
|          | PRI.                  | SEC. 1                  | SEC. 2 | MFR. PART No.                  | THORDARSON PART No. | NOTES |
| T801     | 120V AC @<br>340mA AC | 22.0V AC @<br>1600mA AC |        | 8529235 (1)<br>74507600534 (2) |                     |       |
|          | SEC. 3                | SEC. 4                  | SEC. 5 |                                |                     |       |
|          |                       |                         |        |                                |                     |       |

- (1) Restricted Availability.  
(2) Number on unit.

### COILS & TRANSFORMERS (Sweep Circuits)

| ITEM No. | FUNCTION                             | REPLACEMENT DATA |                      |                     |
|----------|--------------------------------------|------------------|----------------------|---------------------|
|          |                                      | MFR. PART No.    | OTHER IDENTIFICATION | THORDARSON PART No. |
| DY1      | Yoke 90° Horiz 66.6uH<br>Vert 7.28mH |                  | 74820102235 (1)      |                     |
| L503     | Width                                |                  | 08014 (1)            |                     |
| L505     | Dynamic Focus                        |                  | 01002 (1)            |                     |
| T501     | Horiz Driver                         |                  | 74580200439 (1)      |                     |
| T502     | Horiz Output                         |                  | 74730102538 (1)      |                     |

- (1) Number on unit.

IBM  
MODEL 5151

### COILS (RF-IF)

| ITEM No. | FUNCTION         | MFR. PART No. | ITEM No. | FUNCTION         | MFR. PART No. |
|----------|------------------|---------------|----------|------------------|---------------|
| L202     | RF Choke (4.7uH) |               | L503     | Peaking          |               |
| L501     | RF Choke         |               | L504     | Horiz Linearity  |               |
| L502     | Peaking          |               | L505     | Peaking (5.58mH) |               |

### FUSE DEVICES

| ITEM NO. | DESCRIPTION                 | MFR. PART NO. |        | NOTES |
|----------|-----------------------------|---------------|--------|-------|
|          |                             | DEVICE        | HOLDER |       |
| F1       | 750ma @ 250V<br>Fast Acting | 8529175 (1)   |        |       |

- (1) Restricted Availability.



PRELIMINARY SERVICE CHECKS

This data provides the user with a time-saving service tool which is designed for quick isolation and repair of computer malfunctions.

Check all interconnecting cables for good connection and correct hook-up before making service checks.

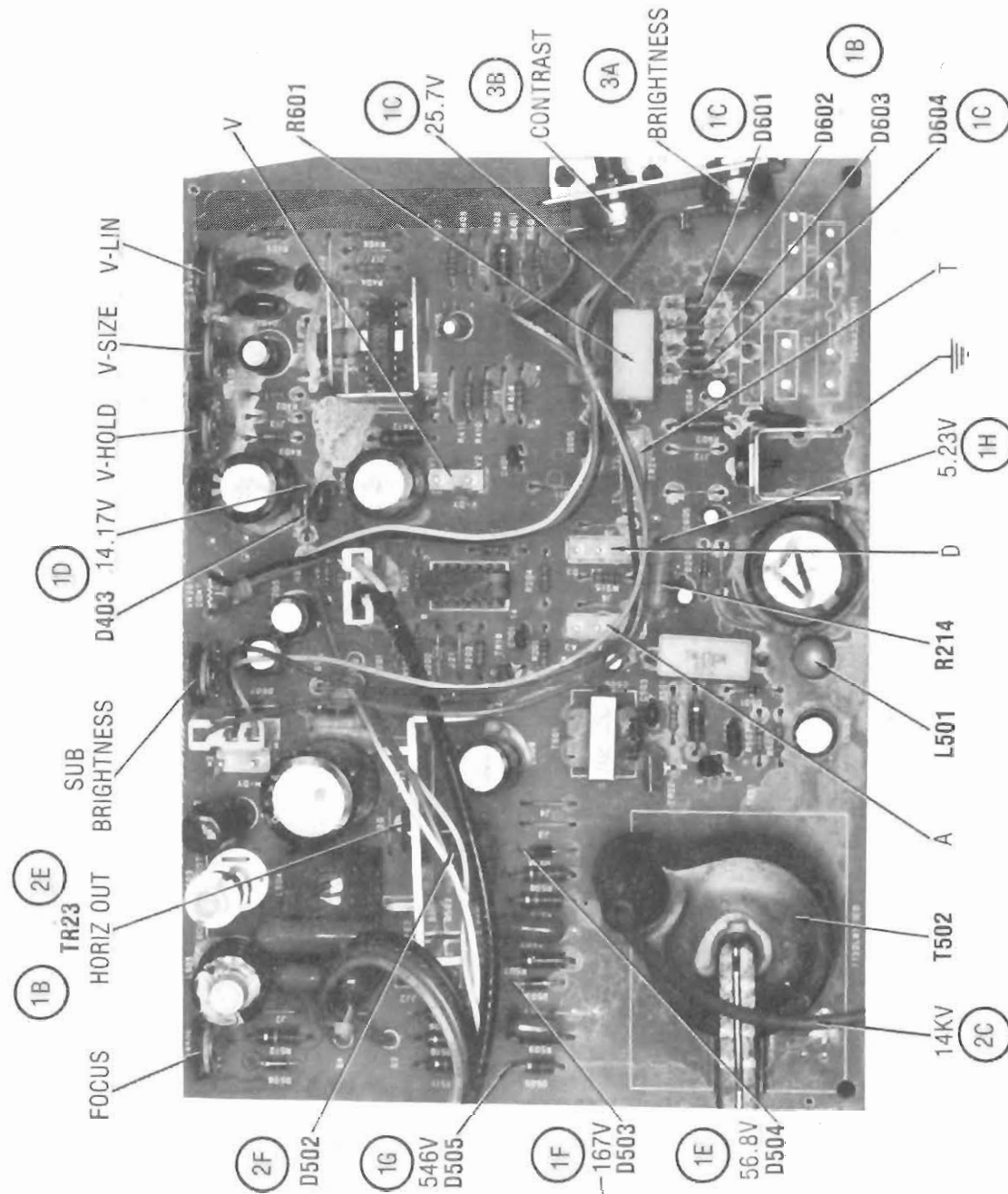
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove two plugs in cabinet top and remove two screws holding top of cabinet back to cabinet front. Remove six screws holding cabinet back to cabinet bottom and chassis frame. Remove back. Disconnect HV anode, CRT socket, deflection yoke connector and ground leads. Remove knobs from cabinet front. Remove two screws holding circuit board to cabinet front and remove board from cabinet. Remove two screws (from cabinet bottom) holding power supply assembly and remove assembly from cabinet.

CRT REMOVAL

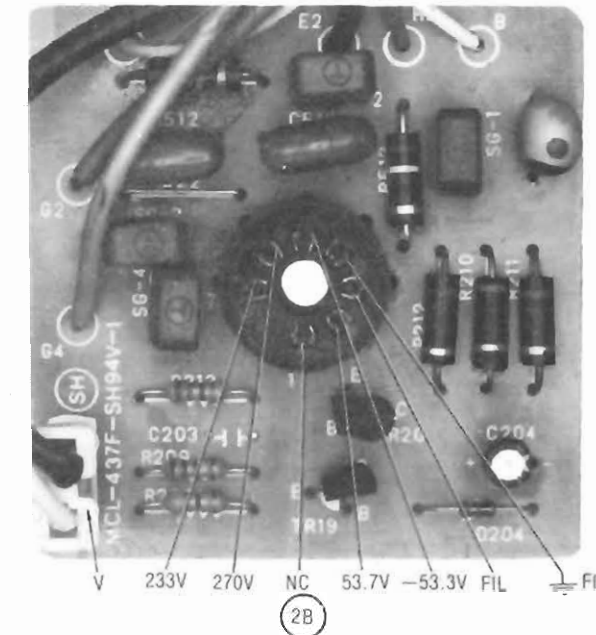
Follow "Chassis Removal" procedure and lay set facedown on a soft protective surface. Loosen and remove CRT neck assembly. Remove four screws holding CRT to cabinet front and lift CRT out of cabinet. Do Not lift CRT by the neck.



MAIN BOARD

IBM MODEL 5151  
CMT4-1

IBM MODEL 5151  
CMT4-1



CRT SOCKET BOARD

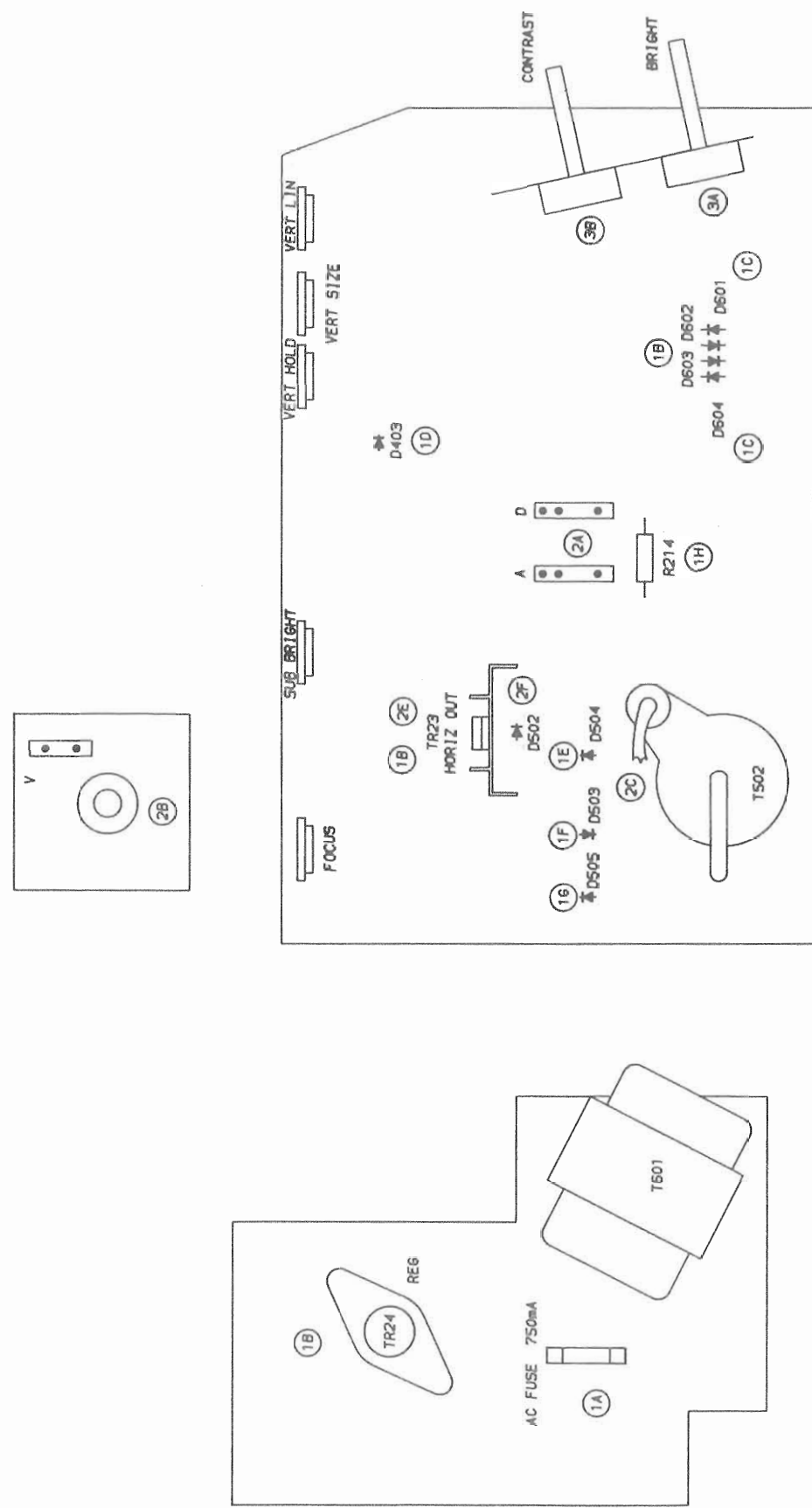
SAMS™ Howard W. Sams & Co., Inc. 4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A.

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed.

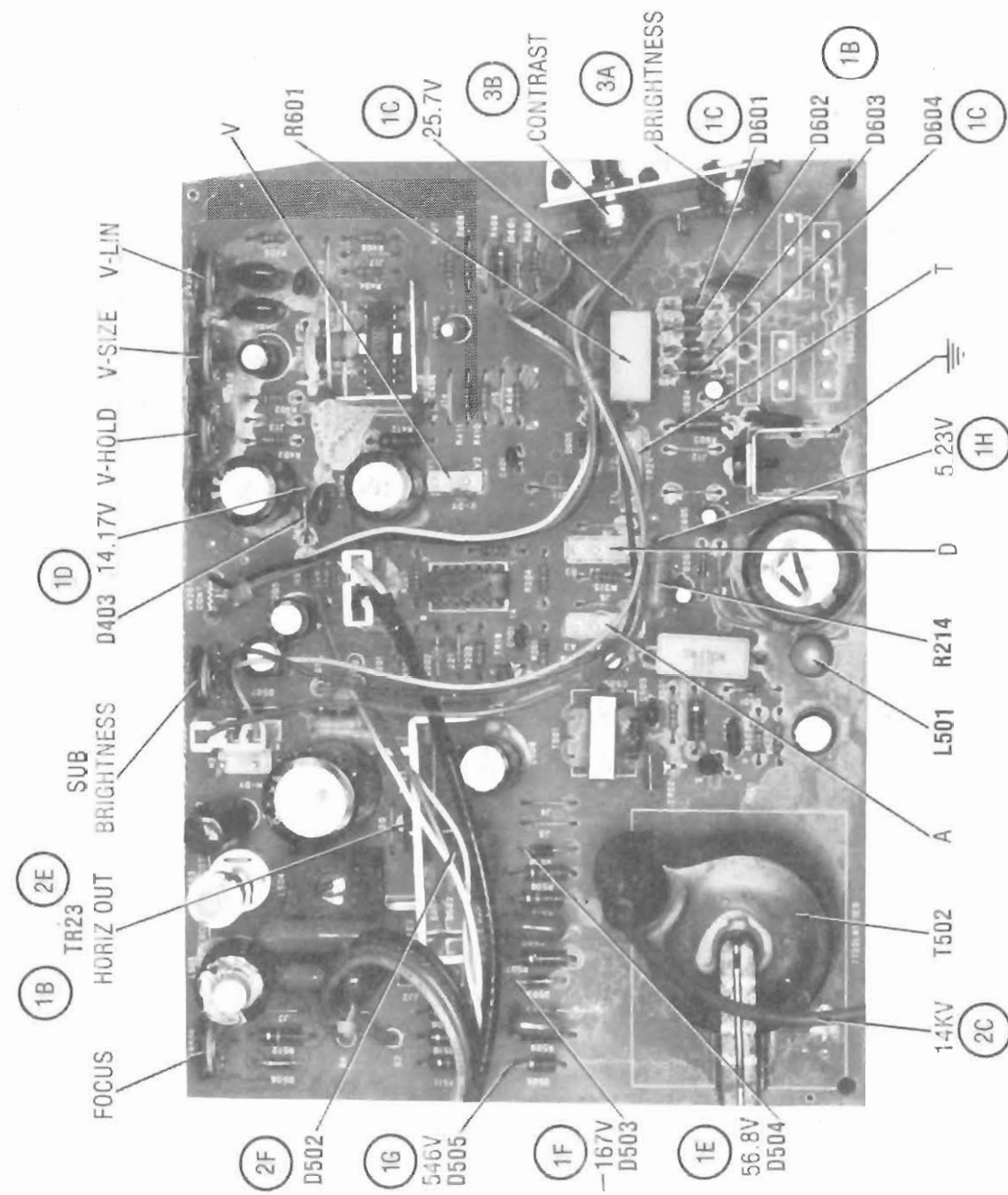
Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1984 Howard W. Sams & Co., Inc. 4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A. Printed in U.S. of America. 84CF14929 DATE 9-84

**PRELIMINARY SERVICE CHECKS (Continued)**

**PLACEMENT CHART**



**MAIN BOARD**



## PRELIMINARY SERVICE CHECKS (Continued)

### SERVICE CHECKS

SEE INTERCONNECTING DIAGRAM, PLACEMENT CHART, AND PHOTOS TO MATCH THE NUMBER IN THE CIRCLES WITH THOSE IN THE FOLLOWING DATA FOR SERVICE CHECKS TO BE PERFORMED.

#### ① POWER SUPPLY

Check the following:

- (A) AC Fuse F1.
- (B) If fuse is open, check the Bridge Rectifier Diodes (D601 thru D604), Regulator Transistor (TR24), and Horizontal Output Transistor (TR23).
- (C) 25.7V at the cathodes of Diodes D601 and D604.
- (D) 14.17V at the cathode of Diode D403.
- (E) 56.8V at the cathode of Diode D504.
- (F) -167V at the anode of Diode D503.
- (G) 546V at the cathode of Diode D505.
- (H) 5.23V at Resistor R214.

#### ② NO DISPLAY

- (A) Check for a bad connection at the video input connector.
- (B) Check the voltages on the CRT.
- (C) Check the high voltage with a high voltage probe.
- (D) Check CRT with CRT tester.
- (E) Check the Horizontal Output Transistor (TR23).
- (F) Check Damper Diode (D502).

#### ③ POOR BRIGHTNESS AND CONTRAST

- (A) Clean the Brightness Control (VR503).
- (B) Clean the Contrast Control (VR201).

## ADJUSTMENT

### SUB BRIGHTNESS ADJUSTMENT

Display video information on the Monitor screen. Adjust the Brightness and Contrast controls to Maximum. Adjust Sub Brightness Control (VR502) for suitable brightness without blooming or retrace lines on the screen.

## TEST EQUIPMENT AND TOOLS

### TEST EQUIPMENT

Digital Volt/Ohm Meter  
High Voltage Probe  
CRT Tester

### TOOLS

Phillips Screwdriver  
1/4" Nut Driver  
Soldering Iron  
Desoldering Tool

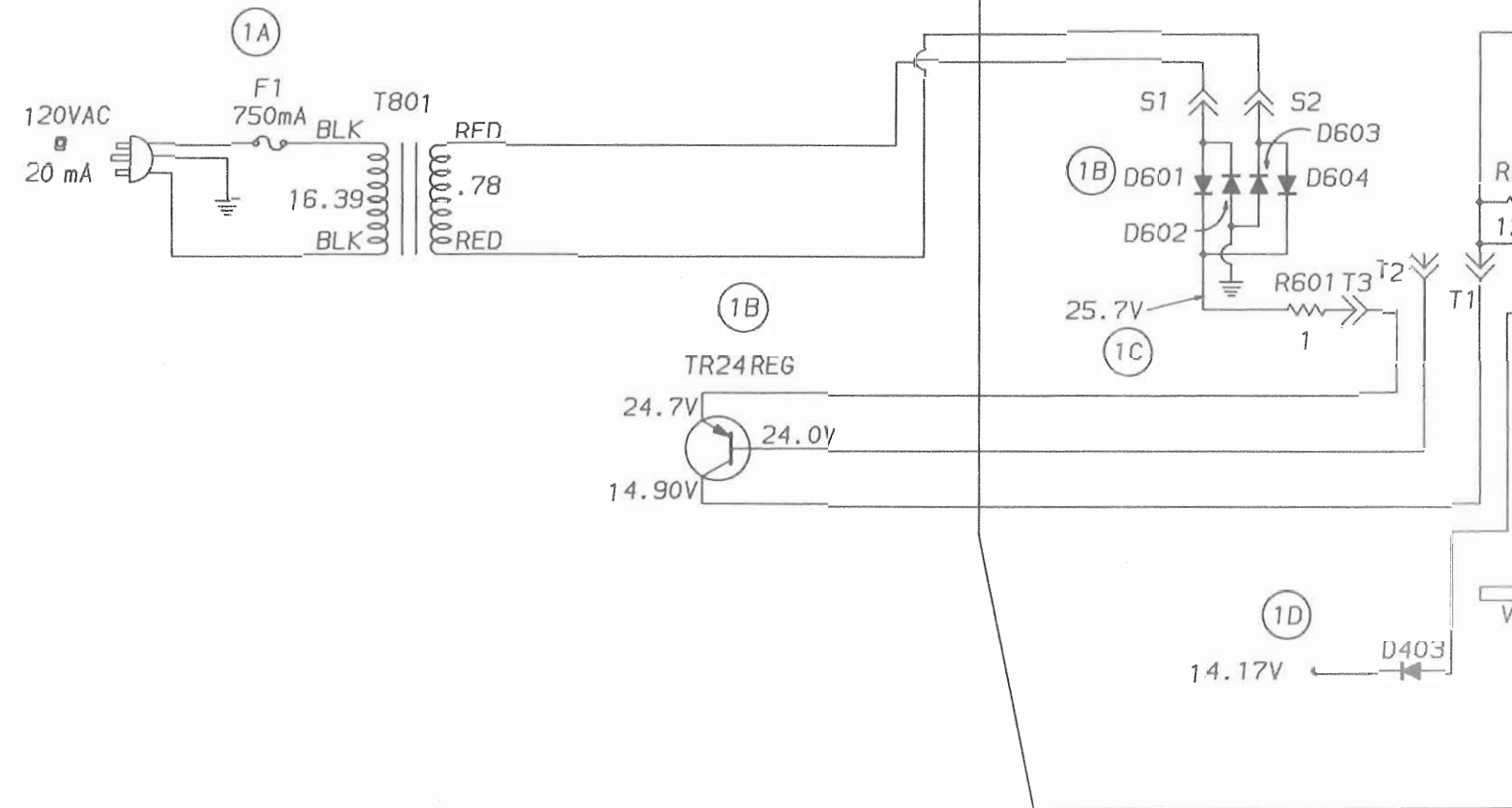
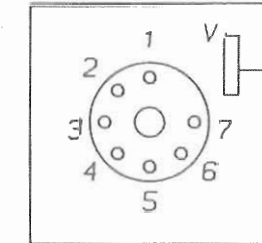
## PARTS LIST AND DESCRIPTION

| ITEM | PART NO. | DESCRIPTION                  |
|------|----------|------------------------------|
| D403 |          | DIODE                        |
| D502 |          | DIODE                        |
| D503 |          | DIODE                        |
| D504 |          | DIODE                        |
| D505 |          | DIODE                        |
| D601 |          | BRIDGE RECTIFIERS            |
| thru |          |                              |
| D604 |          |                              |
| F1   |          | 750mA FUSE                   |
| R214 |          | 120ohm, 2W RESISTOR          |
| TR23 |          | HORIZONTAL OUTPUT TRANSISTOR |
| TR24 |          | REGULATOR TRANSISTOR         |

## PRELIMINARY SERVICE CHECKS (Continued)

- 1 NC
- 2 53.7V
- 3 FIL
- 4 FIL
- 5 -53.3V
- 6 270V
- 7 233V

### CRT BOARD



## PRELIMINARY SERVICE CHECKS (Continued)

### HECKS (Continued)

#### ECKS

IT CHART, AND PHOTOS TO MATCH THE FOLLOWING DATA FOR SERVICE

#### NO DISPLAY

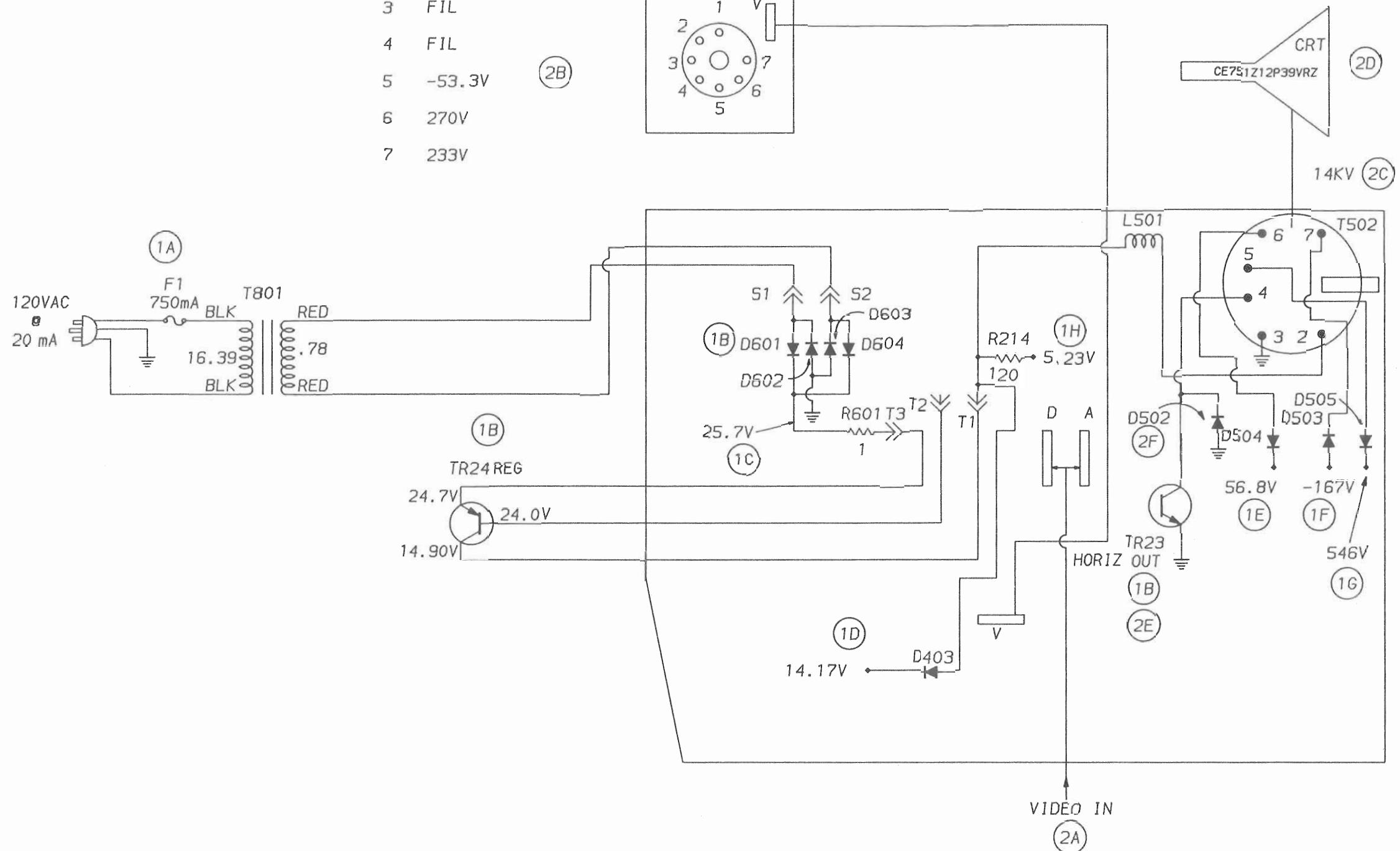
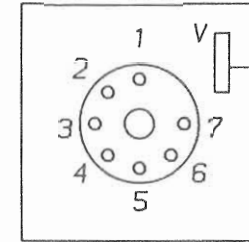
- (A) Check for a bad connection at the video input connector.
- (B) Check the voltages on the CRT.
- (C) Check the high voltage with a high voltage probe.
- (D) Check CRT with CRT tester.
- (E) Check the Horizontal Output Transistor (TR23).
- (F) Check Damper Diode (D502).

#### POOR BRIGHTNESS AND CONTRAST

- (A) Clean the Brightness Control (VR503).
- (B) Clean the Contrast Control (VR201).

- 1 NC
- 2 53.7V
- 3 FIL
- 4 FIL
- 5 -53.3V
- 6 270V
- 7 233V

#### CRT BOARD



IBM  
CMT4-1  
MODEL 5151

NT

onitor screen. Adjust is to Maximum. Adjust or suitable brightness n the screen.

### PARTS LIST AND DESCRIPTION

| PART NO. | DESCRIPTION                  |
|----------|------------------------------|
| D503     | DIODE                        |
| D502     | DIODE                        |
| D503     | DIODE                        |
| D504     | DIODE                        |
| D505     | DIODE                        |
| D601     | BRIDGE RECTIFIERS            |
| F1       | 750mA FUSE                   |
| R214     | 120ohm, 2W RESISTOR          |
| TR23     | HORIZONTAL OUTPUT TRANSISTOR |
| TR24     | REGULATOR TRANSISTOR         |

INTERCONNECTING DIAGRAM