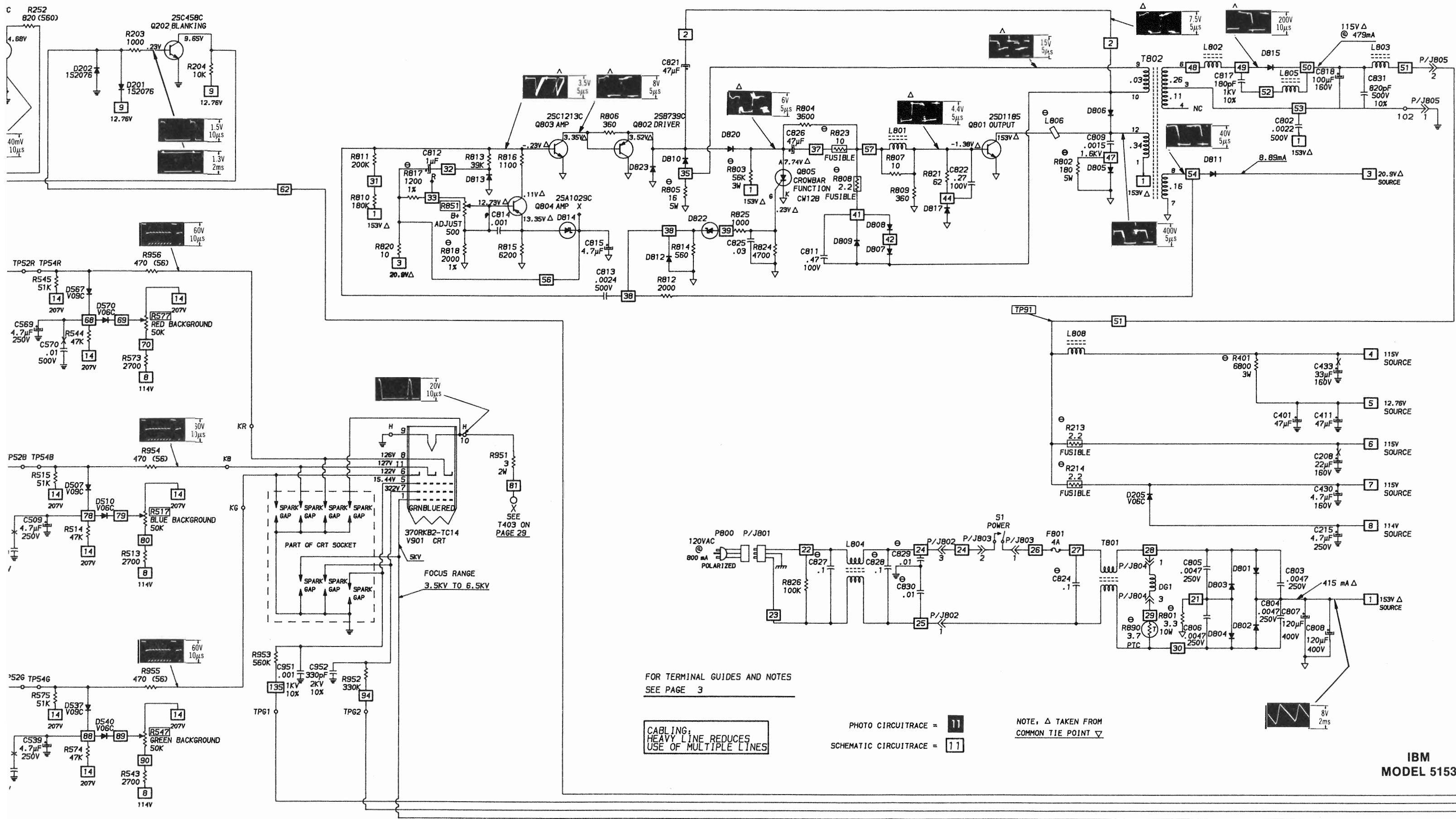


P2 CONNECTS TO J2 OF
COLOR/GRAPHICS MONITOR
ADAPTER
FOLDER CSCS2-B

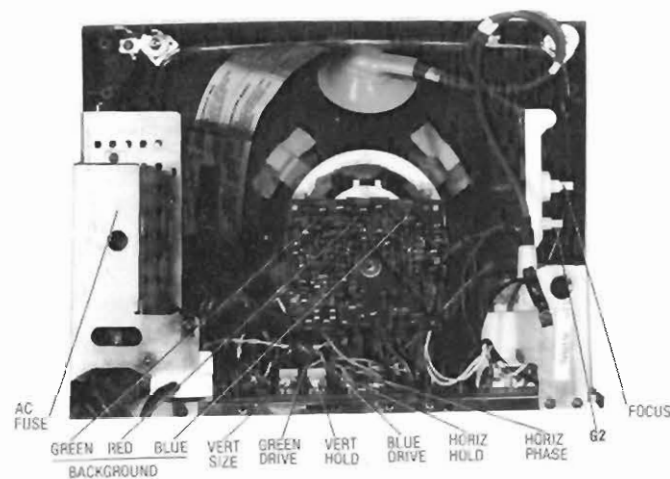


FOR TERMINAL GUIDES AND NOTES
SEE PAGE 3

CABLING:
HEAVY LINE REDUCES
USE OF MULTIPLE LINES

PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11

NOTE: Δ TAKEN FROM
COMMON TIE POINT ▽



CABINET-REAR VIEW DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove two caps from cabinet top and remove two screws holding cabinet to cabinet front. Remove four screws (from bottom) holding cabinet back to cabinet front and remove back.

Disconnect HV anode, CRT socket and ground leads. Remove two screws (from bottom) holding main chassis assembly to cabinet bottom and remove assembly from cabinet.

Remove four screws holding AC power assembly to power supply assembly and main chassis. Remove assembly and disconnect connectors as required. Remove five screws holding power supply assembly to main chassis assembly and cabinet front brace and remove power supply assembly. Remove four screws holding power supply cover

and lift cover off power supply. Remove five screws holding power board to chassis, disconnect connectors and lift board out of chassis.

Remove knobs from cabinet front. Remove three screws holding control indicator assembly to cabinet front and remove assembly from cabinet.

CRT REMOVAL

CAUTION: Set employs CRT with neck assemblies permanently bonded to CRT. **Do Not** attempt to remove neck assemblies from CRT.

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

SERVICING IN THE FIELD

CRT IMPLOSION PROTECTION AND CLEANING

Implosion protection is an integral part of the picture tube, cleaning accomplished without CRT removal.

FUSE DEVICES

A 4-amp fuse is used for AC line protection. (See photo, Cabinet-Rear View.)

LAMP ACCESSIBILITY

Lamp is accessible after removing cabinet back.

HORIZONTAL OSCILLATOR

Adjustment of the horizontal hold is accomplished by the proper setting of the horizontal hold control (See photo, Cabinet-Rear View.)

WIDTH

The width may be varied by adjusting the width coil. (See Placement Chart.)

FOCUS

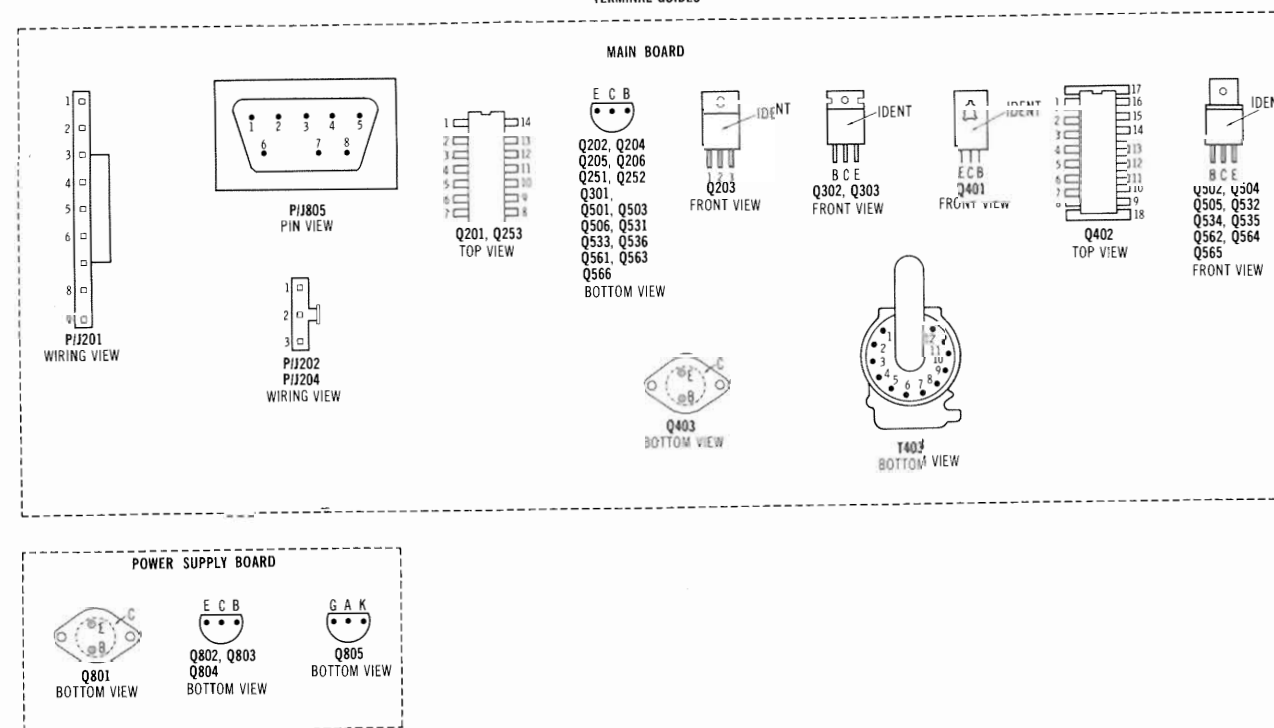
The focus may be varied by a focus control. (See photo, Cabinet-Rear View.)

CENTERING

Horizontal centering is accomplished by proper adjustment of the horizontal centering control. (See Placement Chart.)

Vertical centering is accomplished by proper adjustment of the vertical centering control. (See Placement Chart.)

TERMINAL GUIDES

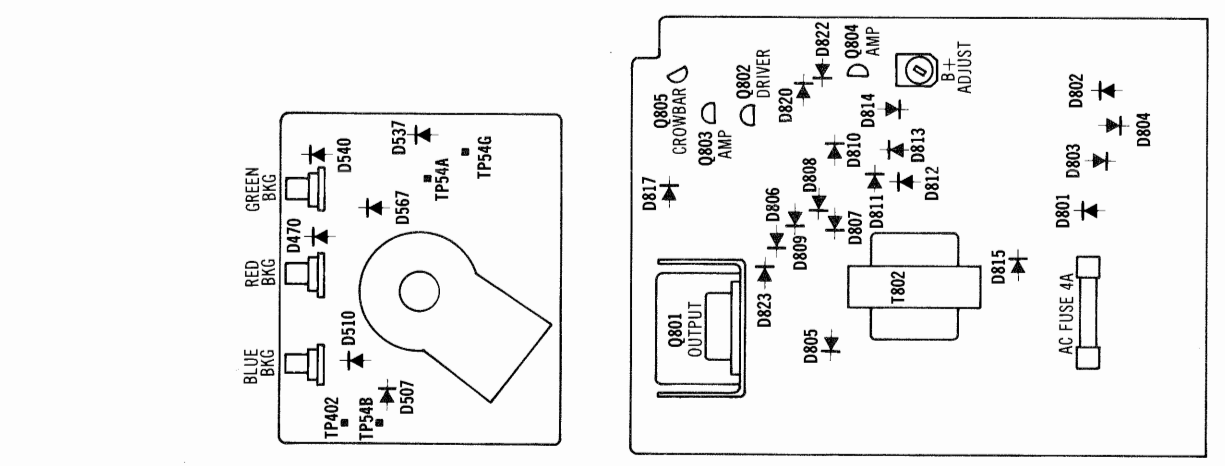
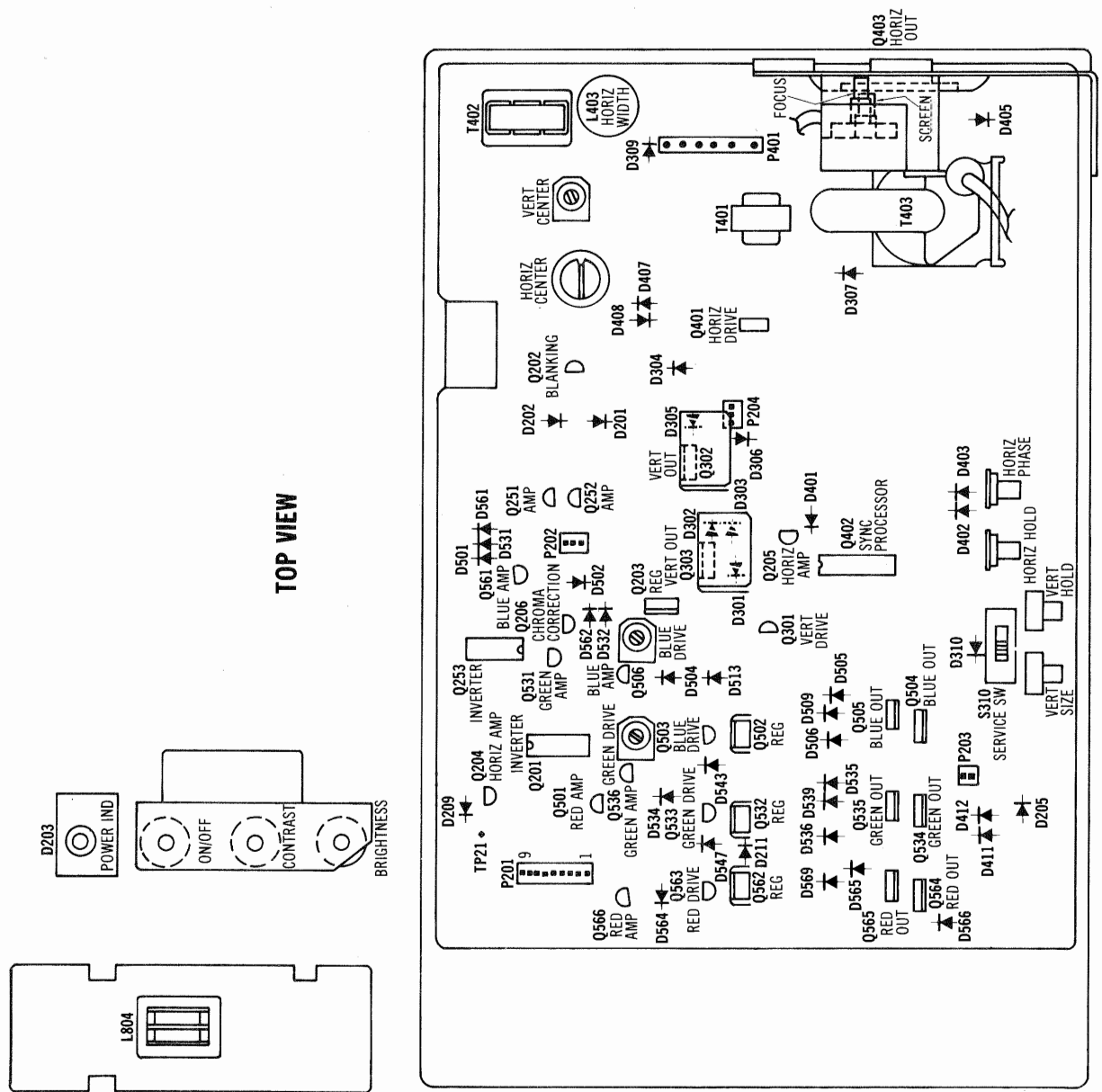


SCHEMATIC NOTES

- *— Circuitry not used in some versions
 - - - Circuitry used in some versions
 - See parts list
 - ⊕ Ground
 - ∇ Common tie point
- Waveforms and voltages are taken from ground, unless noted otherwise.
Waveforms: triggered scope, RGB 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.

IBM
CMT4-2
MODEL 5153



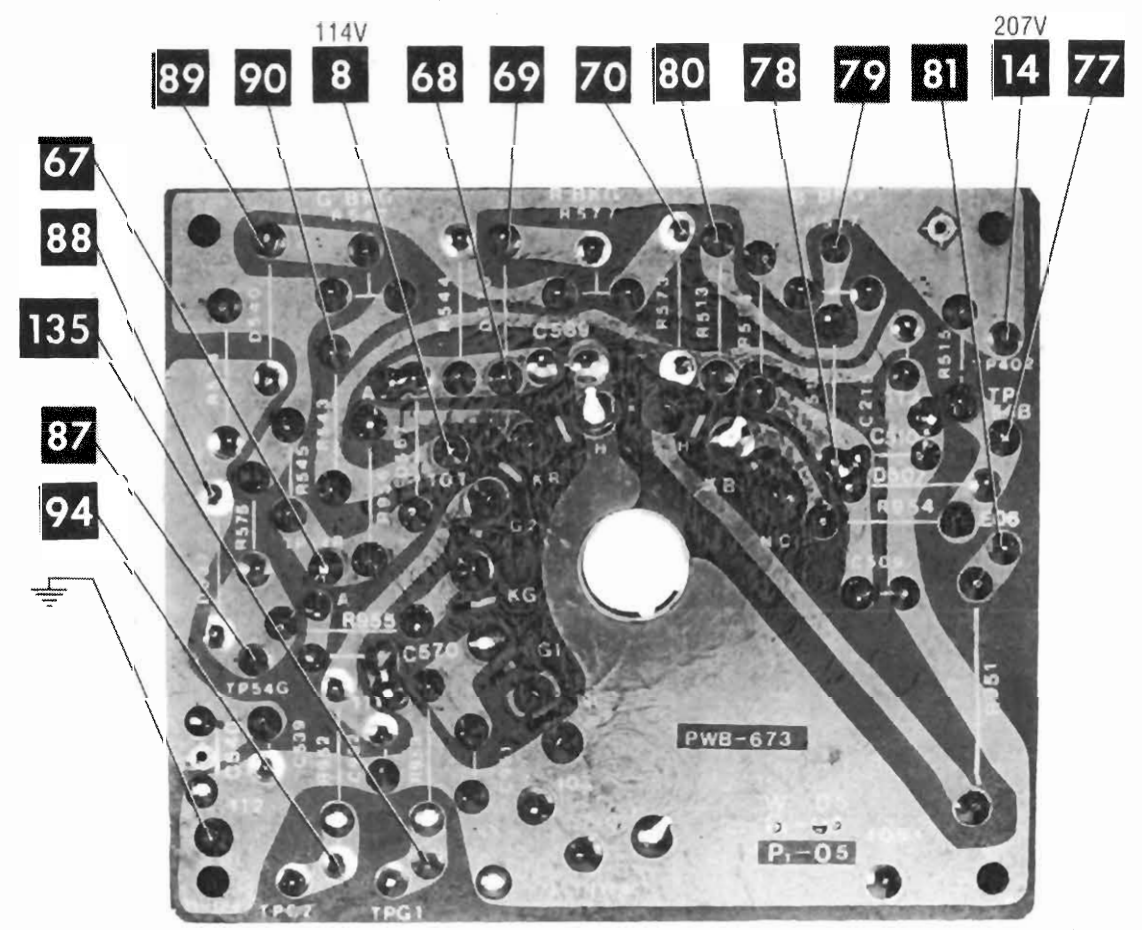
PLACEMENT CHART

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 |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-----------|--------------|--------------|--------|
| Q201 | 325 | 415 | 323 | 418 | 418 | 461 | 0 | 128 | 418 | 458 | 415 | 128 | 415 | 93 |
| Q203 | 135 | 0 | 93 | | | | | | | | | | | |
| Q253 | 322 | 417 | 417 | 459 | 262 | 197 | 0 | 262 | 324 | 128 | 324 | 128 | 324 | 93 |
| Q402 | 6470 | 3410 | 1628 | 8120 | INF | 253 | 48K | 4990 | 4650 | 315 | 4760 | 17K | INF | 84K |
| | | | | | | | | | | | PIN 15 | PIN 16 | PIN 17 | PIN 18 |
| | | | | | | | | | | | 4760 | 3460 | 14K | 0 |
| V901 | INF | NC | NC | 1 | 810K | INF | INF | INF | FIL | FIL | 4.5 | | | |
| ITEM | E | B | C | | ITEM | E | B | C | | ITEM | E | B | C | |
| Q202 | 0 | 1.6M | 10K | | Q502 | INF | 458 | INF | | Q561 | 727 | 241 | 93 | |
| Q204 | 1.6M | 1091 | 563 | | Q503 | 1.6M | 672 | INF | | Q562 | INF | 458 | INF | |
| Q205 | 4760 | 19K | 5430 | | Q504 | 9910 | 7970 | 5630 | | Q563 | 1.5M | 669 | INF | |
| Q206 | 0 | 71 | 1051 | | Q505 | 9910 | 7970 | 0 | | Q564 | 9980 | 7970 | 2520 | |
| Q251 | 195 | 282 | 93 | | Q506 | 810 | 320 | 0 | | Q565 | 9980 | 7970 | 0 | |
| Q252 | 195 | 197 | 93 | | Q531 | 727 | 241 | 93 | | Q566 | 805 | 302 | 0 | |
| Q301 | 0 | 3890 | 1.5M | | Q532 | INF | 458 | INF | | Q801 | 0(1) | 356(1) | 82(1) | |
| Q302 | 2260 | INF | INF | | Q533 | 1.6M | 671 | INF | | Q802 | INF(1) | INF(1) | 0(1) | |
| Q303 | 2260 | 1.5M | 0 | | Q534 | 10K | 7980 | 5630 | | Q803 | 0(1) | 561K(1) | INF(1) | |
| Q401 | 0 | 265 | 10K | | Q535 | 10K | 7980 | 0 | | Q804 | 6170(1) | 1987(1) | 542K(1) | |
| Q403 | 3.8 | 7.4 | 5570 | | Q536 | 808 | 330 | 0 | | Q805 | K 0(1) | G 4690(1) | A 3940(1) | |
| Q501 | 725 | 242 | 93 | | | | | | | | | | | |

(1) Taken with reference to isolated ground.



IBM
MODEL 5155

TROUBLESHOOTING AID

Note: Waveforms taken with triggered scope, Keyed-Rainbow generator. Schematic voltages measured with digital meter, no signal. Controls adjusted for normal operation.

PICTURE

NO PIC, NO RASTER: Check AC power supply and sources generated from Horizontal Output Transformer (T401). Refer to "Troubleshooting" Power Supply and Horizontal circuits.

NO PIC, HAS RASTER: Check source voltages from Horizontal Output Transformer (T401). Refer to "Troubleshooting" Horizontal circuits.

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 (T401). 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

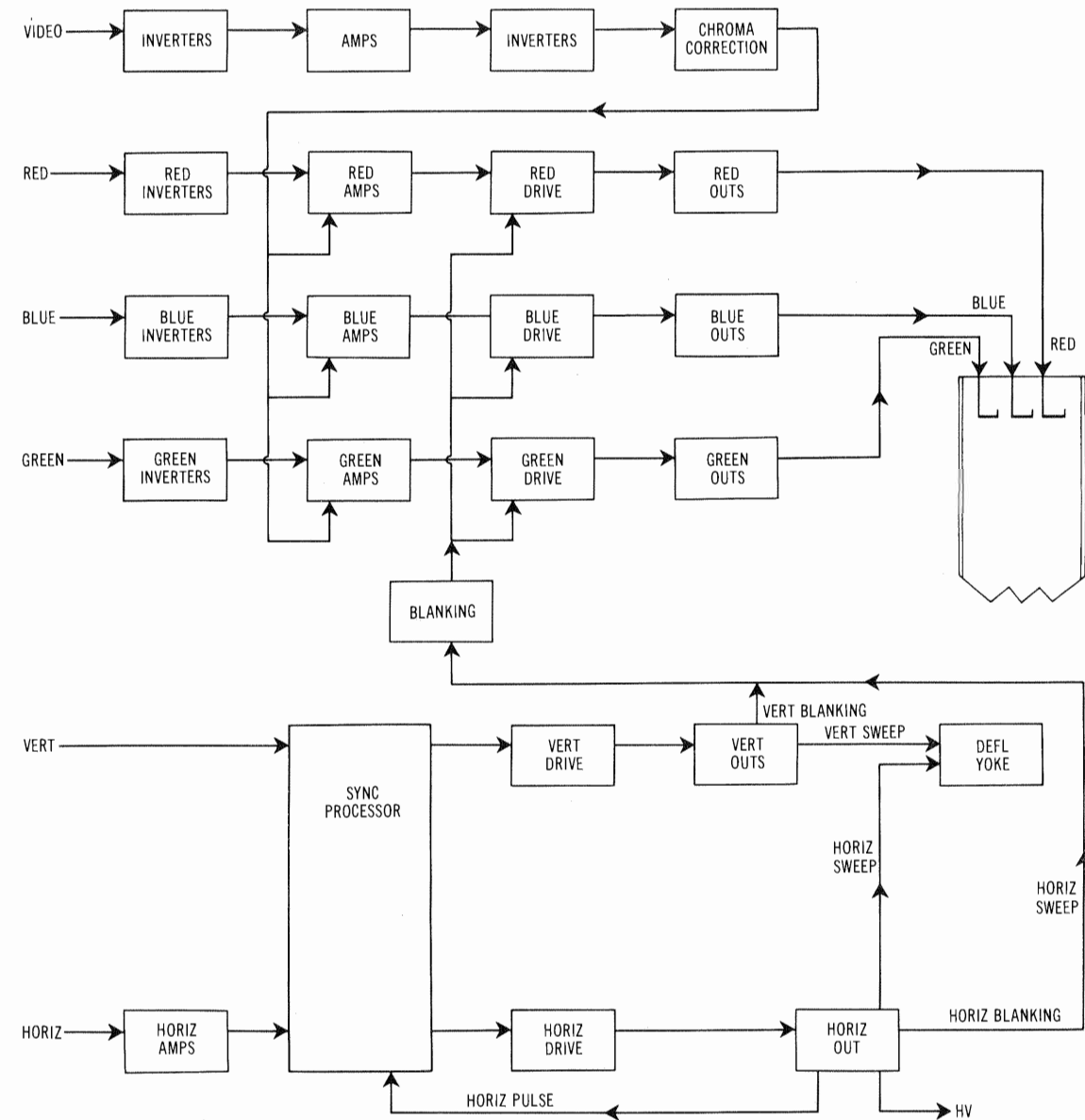
NO VERT/HORIZ SYNC: Refer to "Troubleshooting" Sync circuit.

RASTER

YELLOW (NO BLUE): Check Chroma and Blue Output circuits. Refer to "Troubleshooting" Raster circuit.

CYAN (NO RED): Check Chroma and Red Output circuits. Refer to "Troubleshooting" Raster circuit.

MAGENTA (NO GREEN): Check Chroma and Green Output circuits. Refer to "Troubleshooting" Raster circuit.



TROUBLESHOOTING

POWER SUPPLY

Check the AC Line Fuse (F801). If bad, check for possible short at Bridge Rectifier Diodes (D801 thru D804), DC to DC Converter Transformer (T802), Output Transistor (Q801) and SCR Q805. Replace defective components and apply 120 VAC power.

Check for 153V (with respect to isolated ground) at the cathode of Diode D801 and at the collector of Transistor Q801. Check voltages and waveforms (with respect to isolated ground) at pin 12 of Transformer T802, base of Transistor Q801 and the anode of SCR Q805. Check for 115V at the cathode of Diode D815. If the 115V is missing, check Transformer T802, Transistor Q801, SCR Q805 and associated components. Check sources that are developed from the Horizontal Output Transformer (T401), refer to the "Power Supply" section of this Troubleshooting guide.

VERTICAL

No vertical deflection. Inject a vertical signal at pin 2 of the Sync Processor IC (Q402). If vertical deflection returns, check voltages, waveforms and components associated with pins 2, 3, 4, 6, 7 and 8 of IC Q402 and associated circuitry. If the vertical deflection does not return, check voltages, waveforms and components associated with Vertical Driver Transistor (Q301), Vertical Output Transistor (Q302 and Q303), Electrolytic C315 and the vertical winding on the deflection yoke.

Vertical linearity or foldover problems can be caused by vertical feedback and bias circuits. Check the condition of Diodes D301 thru D306, Electrolytic C315, Side Pincushion Transformer (T402) and associated circuitry.

CMT4-2
IBM
MODEL 5153

TROUBLESHOOTING (Continued)

SYNC

No vertical sync. Check for vertical pulses at pin 9 of P2, check voltages, waveforms and components associated with pins 2 thru 8 of the Sync Processor IC (Q402).

No horizontal sync. Check for horizontal pulses at pin 8 of P2, check voltages, waveforms and components associated with the Horizontal Amp Transistors (Q204 and Q205) and pins 13 thru 16 of IC Q402.

RASTER

Check the CRT and CRT voltages and waveforms.

Raster is magenta (No green). Check voltages, waveforms and components associated with Transistors Q535, Q534, Q532, Q533 and pin 4 of the CRT socket.

Raster is yellow (No blue). Check voltages, waveforms and components associated with Transistors Q505, Q504, Q502, Q503 and pin 9 of the CRT socket.

Raster is cyan (No red). Check voltages, waveforms and components associated with Transistors Q565, Q564, Q562, Q563 and pin 6 of the CRT socket.

Raster has a keystone shape. Check the deflection yoke.

Raster has a pincushion shape. Check the Side Pincushion Transformer (T402) and associated circuitry.

Raster has height or width problems. Refer to the "Vertical", "Horizontal" and "Power Supply" sections of this Troubleshooting guide.

HORIZONTAL

Check for 115V at the collector of the Horizontal Output Transistor (Q403). If 115V is missing, check for 115V at TP91, at both ends of Coil L404 and at pins 7 and 8 of the Horizontal Output Transformer (T401). If the 115V is missing at TP91, refer to the "Power Supply".

Inject a horizontal signal at the base of Transistor Q403. If the high voltage returns, check voltages, waveforms and

components associated with pins 9 thru 12 of the Sync Processor IC (Q402), Horizontal Driver Transistor (Q401) and associated components. If the high voltage does not return, check voltages, waveforms and components associated with Transistor Q403 and Transformer T401.

The high voltage rectifier is a part of Transformer T401 assembly and may be bad. Check for possible shorts at the B+ sources that are developed from Transformer T401 that could be loading down the horizontal circuits. Check for 207V at the cathode of Diode D405, 43.2V at the cathode of Diode D307 and 13.61V at the cathode of Diode D404.

Poor horizontal linearity or foldover problems may be caused by the condition of Capacitors C422 and C415, Side Pincushion Transformer (T402) and associated circuitry.

VIDEO

No characters appear on the screen of the CRT. Check for 5.01V at pin 14 of the Inverter ICs (Q201 and Q253) and check the Regulator IC (Q203).

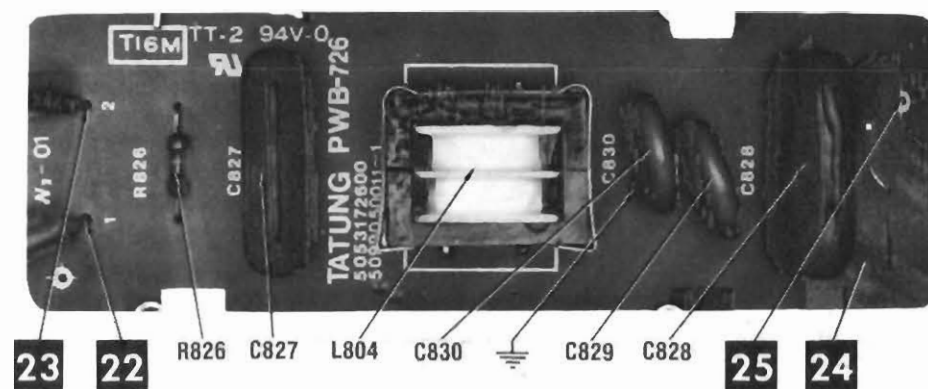
Inject a video signal at the base of the Blue Amp Transistor (Q506) and check for blue picture on the CRT. If there is no video on the CRT, check voltages, waveforms and components associated with Transistors Q506, Q502, Q503, Q504 and Q505.

Inject a video signal at the base of the Green Amp Transistor (Q536) and check for green picture on the CRT. If there is no video on the CRT, check voltages, waveforms and components associated with Transistors Q536, Q532, Q533, Q534 and Q535.

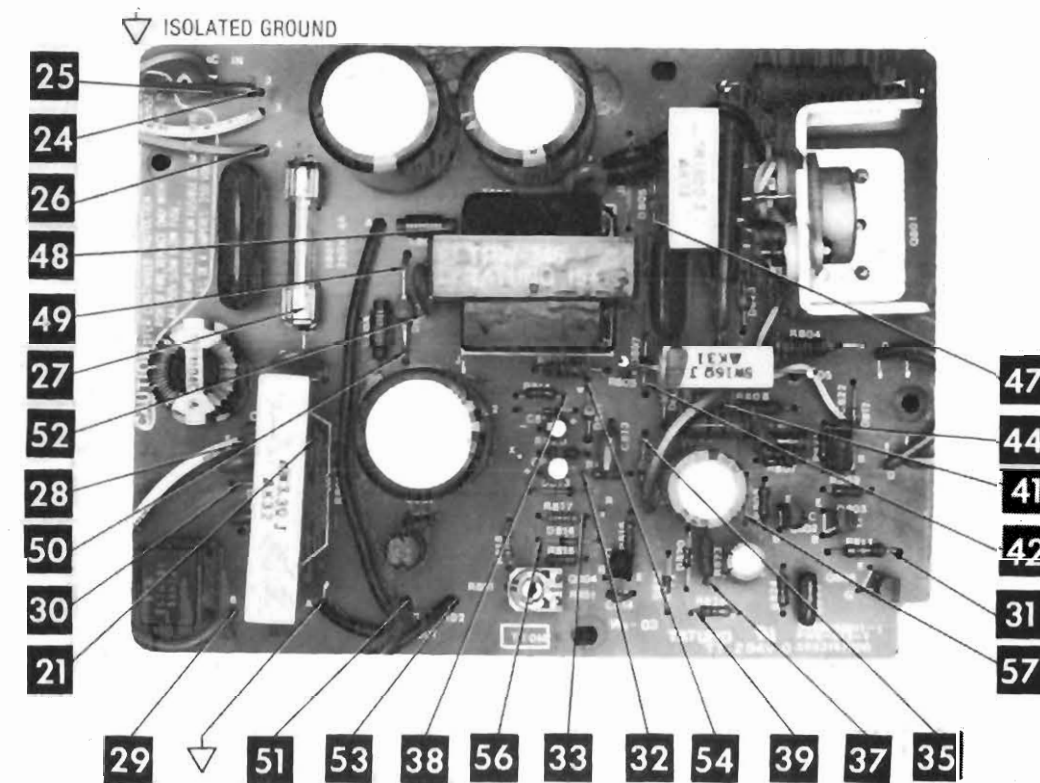
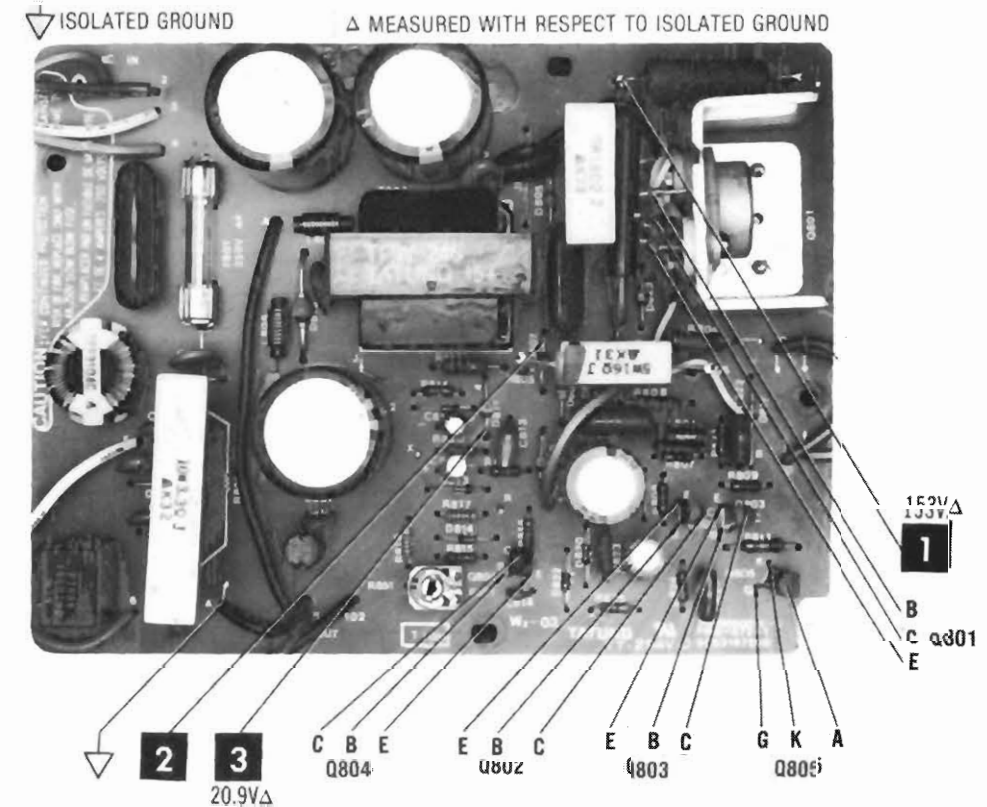
Inject a video signal at the base of the Red Amp Transistor (Q566) and check for red picture on the CRT. If there is no video on the CRT, check voltages, waveforms and components associated with Transistors Q566, Q562, Q563, Q564 and Q565.

If video appears on the screen of the CRT, check voltages, waveforms and components associated with Transistors Q206, Q251, Q252 and ICs Q201 and Q253. Check the CRT and CRT voltages and waveforms.

Video has retrace lines, check voltages and components associated with the Blanking Transistor (Q202).



A Howard W. Sams CIRCUITRACE® Photo



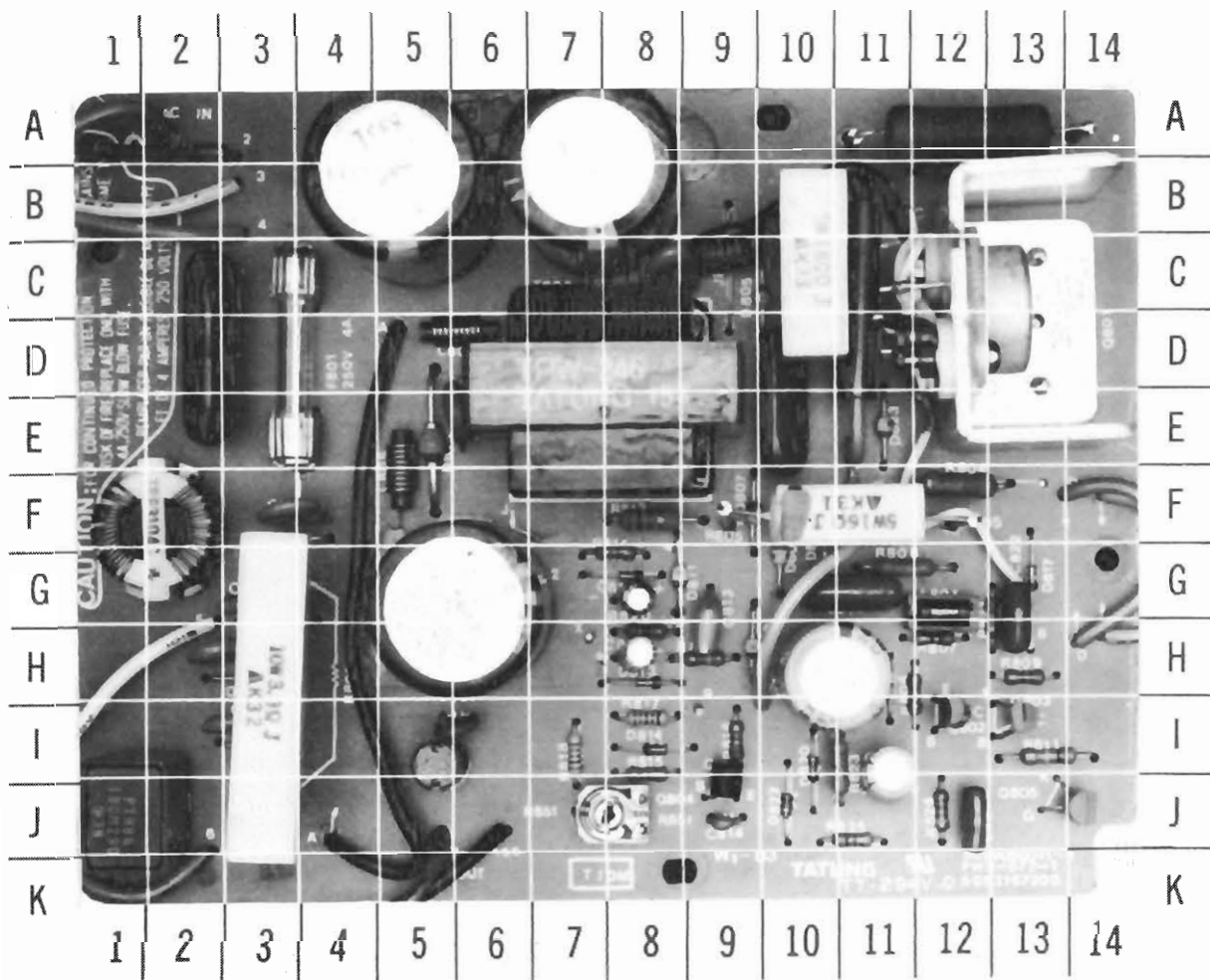
A Howard W. Sams CIRCUITRACE® Photo

POWER SUPPLY BOARD

IBM
MODEL 5153

POWER SUPPLY BOARD GridTrace LOCATION GUIDE

| | | | | | | | |
|------|------|------|------|------|------|------|------|
| C802 | C-8 | C831 | I-5 | F801 | D-4 | R809 | H-13 |
| C803 | F-3 | D801 | F-3 | L801 | G-12 | R810 | B-12 |
| C804 | F-3 | D802 | I-3 | L802 | D-6 | R811 | I-13 |
| C805 | G-3 | D803 | G-3 | L803 | I-5 | R812 | F-8 |
| C806 | H-3 | D804 | H-3 | L805 | E-5 | R813 | H-9 |
| C807 | B-7 | D805 | C-10 | L806 | C-11 | R814 | G-8 |
| C808 | B-5 | D806 | F-11 | Q801 | C-13 | R815 | I-8 |
| C809 | E-10 | D807 | F-9 | Q802 | I-12 | R816 | I-9 |
| C811 | G-11 | D808 | G-10 | Q803 | I-13 | R817 | I-8 |
| C812 | H-8 | D809 | F-10 | Q804 | J-9 | R818 | J-7 |
| C813 | G-9 | D810 | H-9 | Q805 | J-14 | R820 | H-8 |
| C814 | J-9 | D811 | G-9 | R | I-9 | R821 | G-13 |
| C815 | G-8 | D812 | G-8 | R801 | H-3 | R823 | I-11 |
| C817 | E-6 | D813 | H-8 | R802 | C-10 | R824 | J-12 |
| C818 | G-5 | D814 | I-8 | R803 | A-12 | R825 | J-11 |
| C821 | H-10 | D815 | E-5 | R804 | F-12 | R851 | J-7 |
| C822 | G-13 | D817 | G-13 | R805 | F-11 | R890 | J-1 |
| C824 | D-2 | D820 | I-10 | R806 | H-11 | T801 | F-2 |
| C825 | J-12 | D822 | J-10 | R807 | H-12 | T802 | D-7 |
| C826 | I-11 | D823 | E-11 | R808 | G-11 | X | H-7 |



POWER SUPPLY BOARD

A Howard W. Sams | **GRIDTRACE™** Photo

MISCELLANEOUS ADJUSTMENTS

B + ADJUSTMENT

Connect a DC meter to TP91, low side to ground. Apply power to Monitor. Adjust B+ Adjust Control (R851) for +115V.

HORIZONTAL HOLD ADJUSTMENT

Connect a RGB video pattern generator to the Monitor. Use a color bar pattern. Connect a .1µF Capacitor from TP22 to ground. Adjust Horizontal Hold Control (R409) until the bars stop (in sync) or slowly float across the screen. Remove the .1µF Capacitor.

HORIZONTAL AND VERTICAL CENTERING

Connect a RGB video pattern generator to the Monitor. Use a color bar pattern. Adjust Horizontal Center Control (R434) for best horizontal centering of the raster. Adjust Vertical Center Control (R336) for best vertical centering of the raster.

HORIZONTAL PHASE CONTROL

Adjust Horizontal Phase Control (R413) to place the cursor at the left edge of the raster.

PURITY ADJUSTMENT

Degauss the CRT, if necessary. Set the Blue (R517) and Green (R547) Background Controls to MINIMUM. Advance the Red Background Control (R577) to produce a red raster. Loosen the deflection yoke and slide it back against the Purity/Convergence Assembly. Adjust the Purity Magnets to produce a vertical red stripe at the center of the screen. Slide the deflection yoke forward to produce uniform red

raster. Check for pure blue and green screens by advancing the Blue (R517) and Green (R547) Background Controls one at a time.

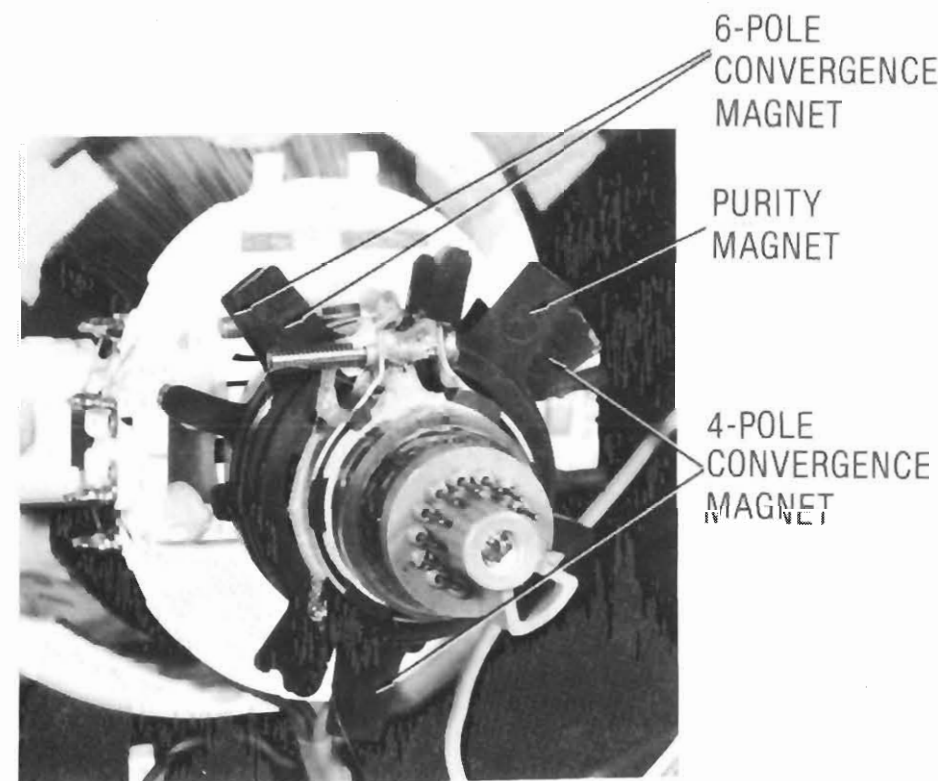
COLOR TEMPERATURE ADJUSTMENT

Set the Blue (R506) and Green (R536) Drive Controls to midrange. Set the Red (R577), Blue (R517) and Green (R547) Background Controls to MINIMUM. Set Service Switch (S301) to Service position. From MINIMUM position adjust Screen Control (R999B) to obtain a dim line of a predominate color. Adjust the two background controls of the least predominate colors to obtain a dim white line. Set Service Switch to Normal. Adjust the Blue (R506) and Green (R536) Drive Controls for a black and white picture

CONVERGENCE ADJUSTMENTS

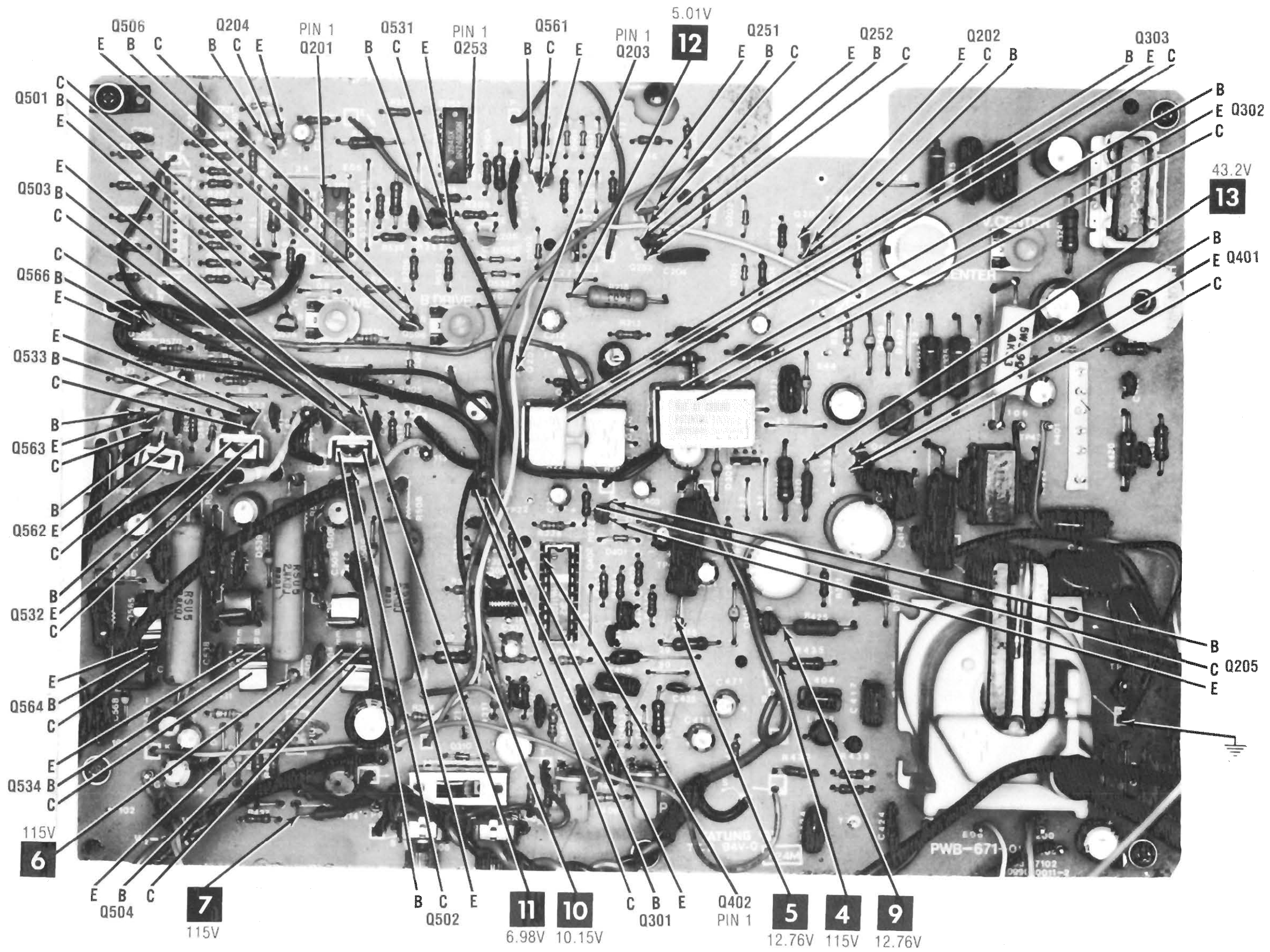
Connect a RGB video pattern generator to the antenna terminals and tune in a dot pattern. Adjust Four-pole Convergence Magnets to converge the red and blue dots at the center of the screen. Adjust Six-pole Convergence Magnets to converge the red/blue dots over the green dots at the center of the screen.

Tune in a crosshatch pattern. Remove the rubber wedges between the deflection yoke and CRT. Tilt the deflection yoke up or down to converge the vertical lines at the top and bottom of the screen and the horizontal lines at the right and left sides of the screen. Tilt the deflection yoke to the right or left to converge the horizontal lines at the top and bottom of the screen and the vertical lines at the right and left sides of the screen. Repeat convergence procedure if necessary to obtain the best overall convergence. Replace the rubber wedges.



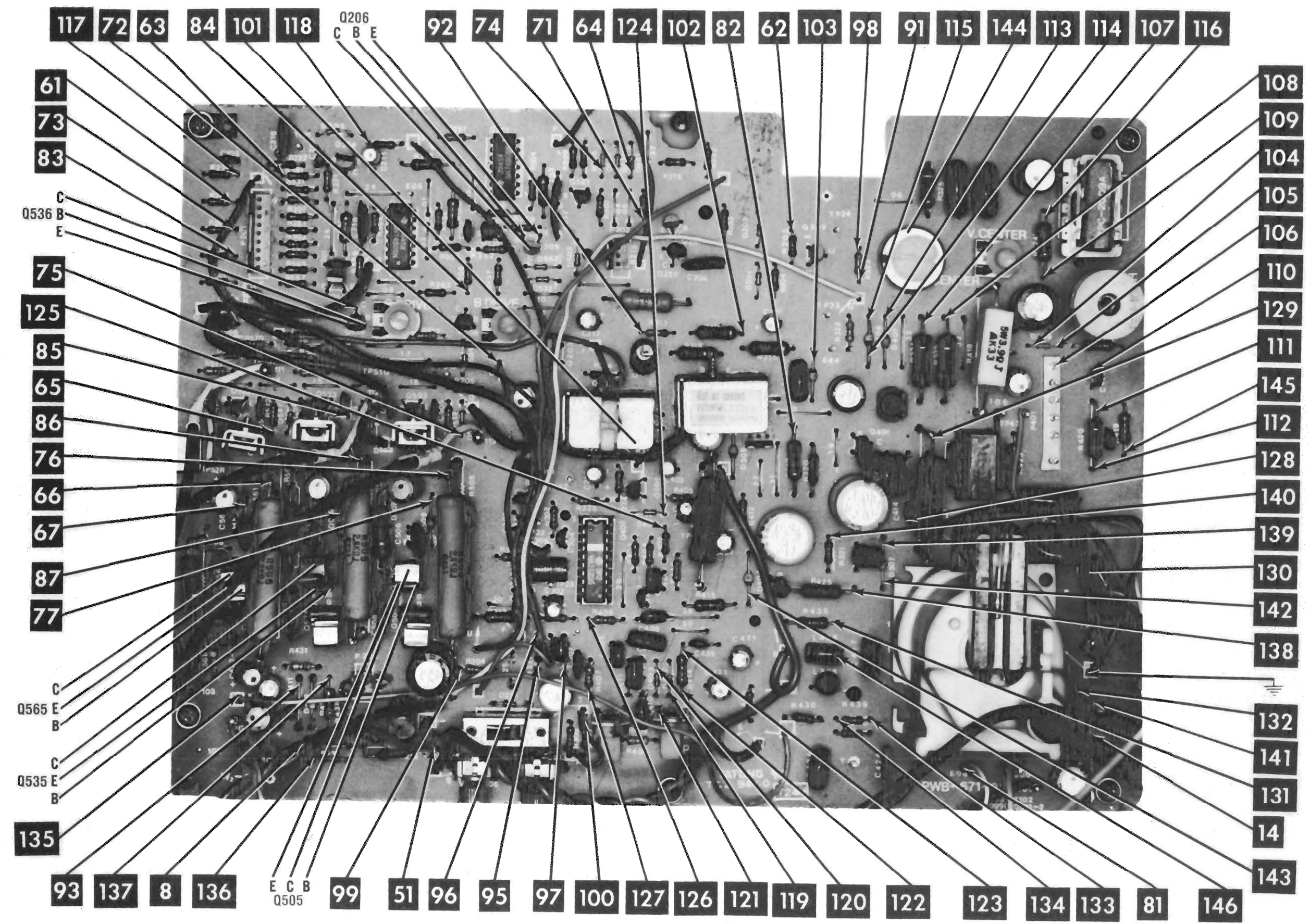
CRT NECK ASSEMBLY

CMT-4-2
IBM
MODEL 5153



IBM
MODEL 5153

IBM
CMT4-2 MODEL 5153

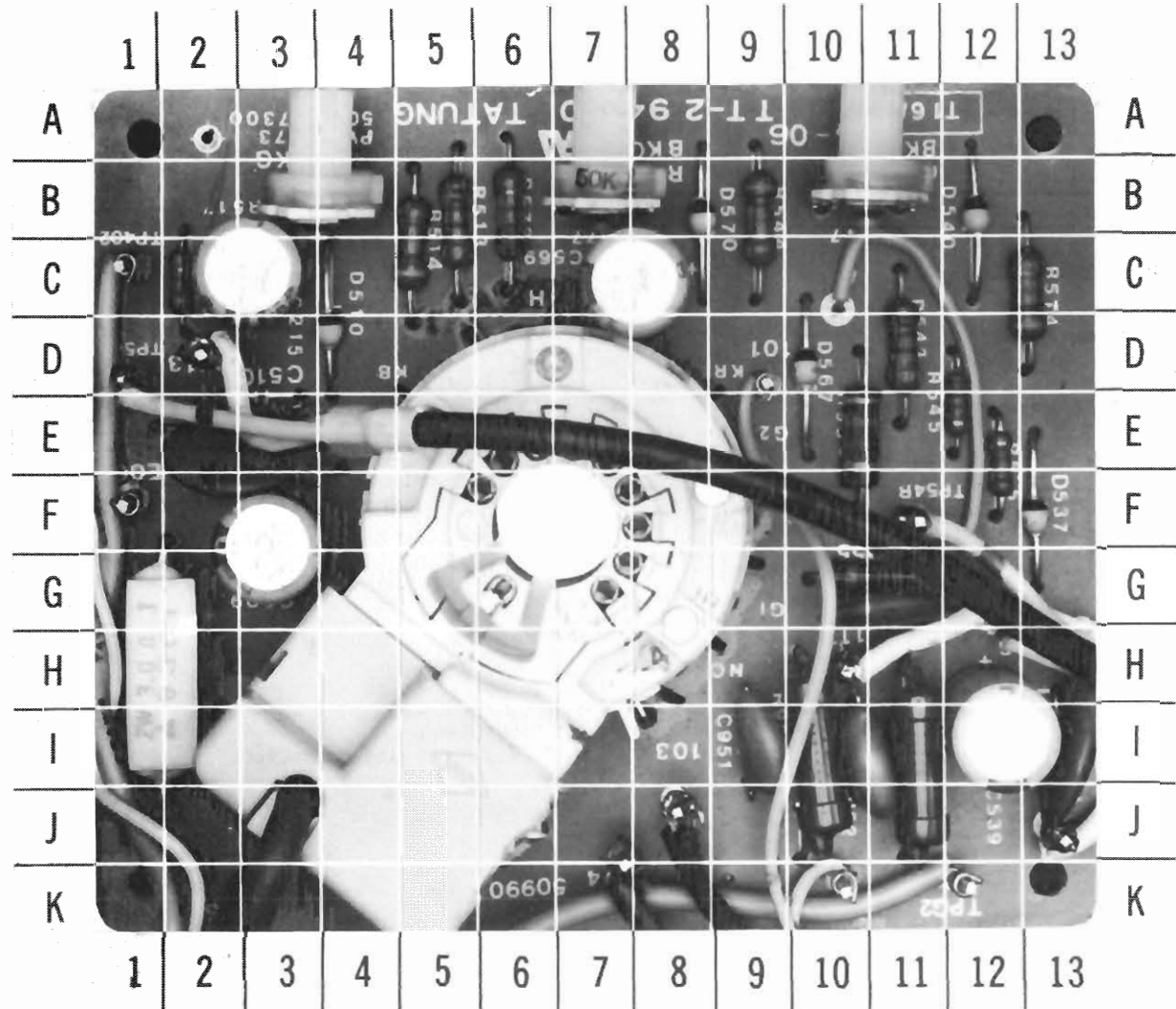


CRT SOCKET BOARD GridTrace LOCATION GUIDE

| | | | | | | | |
|------|------|------|------|------|------|-------|------|
| C215 | C-3 | D510 | D-4 | R543 | D-11 | R952 | I-11 |
| C509 | G-3 | D537 | F-13 | R544 | B-9 | R953 | I-10 |
| C510 | E-2 | D540 | B-12 | R545 | E-12 | R954 | E-2 |
| C539 | I-12 | D567 | D-10 | R547 | B-11 | R955 | G-11 |
| C540 | I-13 | D570 | B-8 | R573 | B-6 | R956 | E-10 |
| C569 | C-7 | R513 | B-5 | R574 | C-13 | TP54B | D-2 |
| C570 | G-11 | R514 | C-5 | R575 | E-12 | TP54G | H-12 |
| C951 | I-9 | R515 | C-2 | R577 | B-7 | TP54R | F-11 |
| C952 | I-11 | R517 | B-4 | R951 | H-1 | TP402 | C-1 |
| D507 | D-3 | | | | | | |

MAIN BOARD GridTrace LOCATION GUIDE

| | | | | | | | | | |
|------|------|--------|------|------|------|------|------|-------|------|
| C201 | E-5 | C537 | K-4 | Q253 | B-9 | R324 | D-24 | R568 | M-3 |
| C202 | D-8 | C538 | N-4 | Q301 | J-10 | R325 | C-21 | R569 | E-5 |
| C203 | C-11 | C541 | I-4 | Q302 | H-15 | R331 | G-22 | R570 | G-3 |
| C204 | E-14 | C565 | I-3 | Q303 | H-12 | R332 | G-25 | R571 | H-2 |
| C205 | B-2 | C566 | L-2 | Q401 | I-19 | R334 | G-20 | R572 | I-3 |
| C206 | H-10 | C567 | K-2 | Q402 | L-12 | R335 | G-2 | R579 | M-1 |
| C208 | P-7 | C568 | O-1 | Q501 | E-5 | R336 | D-22 | R580 | D-5 |
| C209 | Q-26 | C571 | I-2 | Q502 | I-7 | R401 | K-15 | R581 | N-3 |
| C210 | B-4 | D201 | E-16 | Q503 | I-7 | R402 | L-14 | R582 | G-4 |
| C211 | B-6 | D202 | D-16 | Q504 | N-7 | R403 | L-13 | S301 | Q-9 |
| C212 | F-12 | D205 | R-5 | Q505 | M-7 | R404 | L-13 | T401 | J-22 |
| C213 | J-12 | D209 | A-5 | Q506 | F-8 | R405 | K-14 | T402 | C-25 |
| C216 | A-3 | D211 | J-3 | Q531 | D-9 | R406 | N-12 | T403 | O-22 |
| C217 | D-11 | D301 | I-12 | Q532 | I-4 | R407 | P-12 | TP21 | B-4 |
| C218 | D-5 | D302 | I-13 | Q533 | I-4 | R408 | Q-13 | TP22 | J-11 |
| C301 | O-11 | D303 | I-13 | Q534 | N-5 | R409 | Q-12 | TP43 | I-3 |
| C302 | N-11 | D304 | H-17 | Q535 | M-4 | R410 | M-14 | TP44 | O-25 |
| C303 | L-10 | D305 | H-16 | Q536 | F-5 | R411 | P-13 | TP52B | J-7 |
| C304 | L-11 | D306 | J-15 | Q561 | C-11 | R412 | K-16 | TP52G | J-4 |
| C305 | L-10 | D307 | M-19 | Q562 | I-2 | R413 | Q-14 | TP52R | J-2 |
| C306 | N-10 | D309 | G-24 | Q563 | I-2 | R414 | P-14 | TP91 | R-8 |
| C307 | O-11 | D310 | P-10 | Q564 | N-2 | R415 | N-15 | TPG1 | Q-2 |
| C308 | P-11 | D401 | K-13 | Q565 | M-2 | R416 | K-21 | | |
| C309 | K-10 | D402 | P-14 | Q566 | F-2 | R417 | J-21 | | |
| C310 | H-18 | D403 | P-13 | R203 | D-17 | R418 | G-22 | | |
| C311 | F-16 | D404 | M-16 | R204 | E-17 | R419 | I-26 | | |
| C313 | H-17 | D405 | Q-25 | R205 | H-8 | R420 | I-25 | | |
| C314 | I-15 | D407 | G-19 | R206 | E-8 | R421 | P-25 | | |
| C315 | F-24 | D408 | G-19 | R207 | D-4 | R423 | J-23 | | |
| C316 | B-23 | D411 | Q-4 | R208 | C-2 | R425 | M-18 | | |
| C318 | H-23 | D412 | Q-4 | R209 | D-10 | R426 | P-16 | | |
| C319 | F-23 | D501 | B-12 | R213 | Q-6 | R430 | Q-17 | | |
| C321 | G-13 | D502 | E-11 | R214 | R-7 | R431 | Q-4 | | |
| C401 | L-15 | D504 | G-8 | R216 | B-14 | R434 | D-20 | | |
| C402 | K-14 | D505 | L-8 | R218 | F-13 | R435 | N-18 | | |
| C403 | J-14 | D506 | L-6 | R219 | C-9 | R436 | Q-5 | | |
| C404 | M-13 | D509 | L-7 | R220 | B-2 | R437 | R-5 | | |
| C405 | O-12 | D513 | I-8 | R221 | C-5 | R438 | Q-5 | | |
| C406 | N-13 | D531 | B-12 | R222 | B-3 | R439 | Q-19 | | |
| C407 | O-13 | D532 | E-10 | R223 | B-6 | R440 | Q-19 | | |
| C408 | P-13 | D534 | G-5 | R224 | J-12 | R501 | C-4 | | |
| C409 | N-13 | D535 | L-5 | R225 | J-12 | R502 | D-2 | | |
| C410 | Q-13 | D536 | L-4 | R226 | K-12 | R503 | D-4 | | |
| C411 | P-15 | D539 | L-5 | R231 | C-13 | R504 | C-10 | | |
| C412 | J-20 | D543 | I-6 | R232 | B-15 | R506 | F-9 | | |
| C413 | J-19 | D547 | I-4 | R233 | D-15 | R507 | C-12 | | |
| C414 | K-20 | D561 | B-13 | R252 | D-9 | R508 | M-8 | | |
| C417 | O-19 | D562 | E-10 | R257 | A-8 | R509 | B-11 | | |
| C418 | L-24 | D564 | G-2 | R258 | B-7 | R510 | G-7 | | |
| C419 | M-25 | D565 | L-3 | R261 | D-4 | R511 | H-7 | | |
| C420 | K-24 | D566 | O-2 | R263 | E-7 | R512 | I-8 | | |
| C421 | I-25 | D569 | L-3 | R264 | B-11 | R519 | L-6 | | |
| C422 | H-25 | L301 | M-11 | R302 | K-11 | R520 | C-10 | | |
| C423 | R-25 | L302 | L-19 | R303 | Q-12 | R521 | N-8 | | |
| C424 | R-20 | L401 | H-20 | R304 | O-9 | R531 | C-4 | | |
| C425 | C-22 | L403 | F-25 | R305 | M-10 | R532 | E-2 | | |
| C426 | C-21 | L404 | O-18 | R306 | R-9 | R533 | E-4 | | |
| C428 | L-17 | L501 | K-8 | R307 | O-11 | R534 | D-8 | | |
| C429 | M-17 | L531 | L-6 | R308 | Q-11 | R536 | F-7 | | |
| C430 | Q-7 | L561 | K-3 | R309 | R-10 | R537 | E-9 | | |
| C431 | P-3 | L808 | P-18 | R310 | N-11 | R538 | L-5 | | |
| C432 | P-3 | P/J201 | D-3 | R311 | O-10 | R539 | D-8 | | |
| C433 | K-19 | P/J202 | D-12 | R312 | N-9 | R540 | G-4 | | |
| C434 | R-18 | P/J203 | P-6 | R313 | F-13 | R541 | H-4 | | |
| C435 | O-15 | P/J204 | I-16 | R314 | H-12 | R542 | I-6 | | |
| C436 | Q-3 | P/J401 | I-24 | R315 | G-16 | R549 | L-4 | | |
| C471 | O-16 | Q201 | D-6 | R316 | F-15 | R550 | C-8 | | |
| C505 | I-7 | Q202 | D-18 | R317 | I-13 | R551 | M-5 | | |
| C506 | L-7 | Q203 | G-11 | R318 | G-14 | R561 | B-4 | | |
| C507 | K-7 | Q204 | B-5 | R319 | J-17 | R562 | E-2 | | |
| C508 | N-6 | Q205 | K-12 | R320 | J-18 | R563 | F-4 | | |
| C511 | I-6 | Q206 | D-10 | R321 | L-18 | R564 | D-6 | | |
| C535 | I-5 | Q251 | D-14 | R322 | F-18 | R566 | F-3 | | |
| C536 | L-4 | Q252 | D-14 | R323 | E-19 | R567 | E-4 | | |



PARTS LIST AND DESCRIPTION

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

SEMICONDUCTORS (Select replacement transistor for best results)

| ITEM No. | TYPE No. | MFGR. PART No. | REPLACEMENT DATA | | | | | | | ZENITH PART No. |
|-----------|----------|----------------|---------------------------|-------------------|-----------------------|----------------------|--------------|------------------|------------|-----------------|
| | | | GENERAL ELECTRIC PART No. | MOTOROLA PART No. | NEW-TONE NTE PART No. | PHILIPS ECG PART No. | RCA PART No. | WORKMAN PART No. | | |
| D201,2 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D205 | V06C | | GE-504A | 1N4003 | NTE116 | EGG116 | SK3311 | WEP156 | 212-76-02 | |
| D209 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D211 | HZ-7B1 | | GEZD-6+8 | 1N5235B | NTE5014A | EGG5014A | SK6A8/5014A | WEP1415/5014 | 103-Z9009 | |
| | HZ-7B | | GEZD-6+8 | 1N5235B | NTE5014A | EGG5014A | SK6A8/5014A | WEP1415/5014 | 103-Z9009 | |
| D301 thru | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D303 | V09C | | GE-511 | 1N4005 | NTE552 | EGG552 | SK5002 | WEP172/506 | 103-287 | |
| D304,5 | V06E | | GE-504A | 1N4005 | NTE116 | EGG116 | SK3017B | WEP158/116 | 212-76-02 | |
| D306 | V09G | | GE-511 | 1N4005 | NTE552 | EGG552 | SK9000/552 | WEP172/506 | 103-287 | |
| D307 | V09G | | GE-511 | 1N4005 | NTE552 | EGG552 | SK9000/552 | WEP172/506 | 103-287 | |
| D309 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D310 | HZ11A | | GEZD-11 | 1N5241B | NTE5020A | EGG5020A | SK11A/5020A | WEP1421/5020 | 103-279-20 | |
| D401 thru | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D403 | V09E | | GE-511 | 1N4935 | NTE552 | EGG552 | SK9000/552 | WEP172/506 | 103-287 | |
| D404 | V09C | | GE-511 | 1N4003 | NTE116 | EGG116 | SK3311 | WEP156 | 103-287 | |
| D405 | V09C | | GE-511 | 1N4003 | NTE552 | EGG552 | SK5002 | WEP172/506 | 103-287 | |
| D407,8 | V09C | | GE-511 | 1N4003 | NTE552 | EGG552 | SK5002 | WEP172/506 | 103-287 | |
| D411,12 | V06C | | GE-504A | 1N4003 | NTE116 | EGG116 | SK3311 | WEP156 | 212-76-02 | |
| D501,2 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D504,5 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D506 | V06C | | GE-504A | 1N4003 | NTE116 | EGG116 | SK3311 | WEP156 | 212-76-02 | |
| D507 | V09C | | GE-511 | 1N4003 | NTE552 | EGG552 | SK5002 | WEP172/506 | 103-287 | |
| D509,10 | V06C | | GE-504A | 1N4003 | NTE116 | EGG116 | SK3311 | WEP156 | 103-287 | |
| D513 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D531,32 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D534,35 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D536 | V06C | | GE-504A | 1N4003 | NTE116 | EGG116 | SK3311 | WEP156 | 212-76-02 | |
| D537 | V09C | | GE-511 | 1N4003 | NTE552 | EGG552 | SK5002 | WEP172/506 | 103-287 | |
| D539,40 | V06C | | GE-504A | 1N4003 | NTE116 | EGG116 | SK3311 | WEP156 | 212-76-02 | |
| D543 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D547 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D561,62 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D564,65 | 1S2076 | | GE-514 | 1N4935 | NTE519 | EGG519 | SK3100/519 | WEP925/519 | 103-131 | |
| D566 | V06C | | GE-504A | 1N4003 | NTE116 | EGG116 | SK3311 | WEP156 | 212-76-02 | |
| D567 | V09C | | GE-511 | 1N4003 | NTE552 | EGG552 | SK5002 | WEP172/506 | 103-287 | |

PARTS LIST AND DESCRIPTION (Continued)

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

FUSE DEVICES

| ITEM NO. | DESCRIPTION | MFGR. PART NO. | | NOTES |
|----------|------------------------|----------------|--------|-------|
| | | DEVICE | HOLDER | |
| F801 | 4A @ 250V Slow-Blow | | | |

TRANSFORMER (DC-DC Converter)

| ITEM No. | RATING | | | REPLACEMENT DATA | | |
|----------|------------------------|------------------------|------------------------|------------------|---------------------|-------|
| | PRI. | SEC. 1 | SEC. 2 | MFGR. PART No. | THORDARSON PART No. | NOTES |
| | | | | | | |
| T802 | 400V p-p @ 412mA DC | 200V p-p @ 479mA DC | 40V p-p @ 8.89mA DC | TPW-246 (1) | | |
| | 14V p-p @ 64mA DC | | | | | |

(1) Number on unit.

MISCELLANEOUS

| ITEM No. | PART NAME | MFGR. PART No. | NOTES |
|----------|-----------------|----------------|--------------------------------------|
| D203 | LED | 8654275 (1) | Power, FLV310, Grn (2.07V @ 10.78mA) |
| DG1 | Degaussing Coll | 8654275 (1) | |
| L806 | Ferrite Bead | | |
| P800 | Power Cord | 8529158 | AC |
| S1 | Switch | | Power |
| S301 | Switch | | Normal/Service |
| V901 | CRT | 8529290 (1)(2) | 370RKB2-TC14 |
| | P.C. Board | | Main Board |
| | P.C. Board | | Power Supply Board |
| | P.C. Board | | CRT Socket Board |
| | P.C. Board | | AC Input Board |
| | Signal Cable | 8529334 (1) | Includes Cable and Connectors |

(1) Restricted Availability.

(2) Includes CRT and Yoke.

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

| ITEM | PART No. | ITEM | PART No. |
|---|-------------|--------------------|----------|
| Front Cover (Includes Top, Bottom and Power Supply Brackets). | 8529285 (1) | Plug, Cover Screw | |
| Rear Cover | 8529286 (1) | Knob, Brightness | 8529287 |
| | | Knob, Contrast | 8529288 |
| | | Knob, Power On/Off | 8529289 |

(1) Restricted Availability.

IBM
MODEL 5155

PARTS LIST AND DESCRIPTION (Continued)

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

RESISTORS (Power and Special)

| ITEM No. | RATING | REPLACEMENT DATA | | |
|----------|--------------------------|------------------|-------------------|------------------|
| | | MFGR. PART No. | NEW-TONE PART No. | WORKMAN PART No. |
| R213 | 2.2 1/2W Fusible | | | |
| R214 | 2.2 1/2W Fusible | | | |
| R320 | 10 1/2W Fusible | | | |
| R401 | 6800 5% 3W Metal Oxide | | | |
| R416 | 4700 5% 3W Metal Oxide | | | |
| R418 | 3.9 5% 5W WW | | 5W3D9 | |
| R421 | 2.2 1/2W Fusible | | | |
| R425 | 2.2 1/2W Fusible | | | |
| R430 | 10K 2% 1/4W Carbon Film | | QW310 | 22-2253 |
| R508 | 2400 5% 5W WW | | | |
| R521 | 56 1/2W Fusible | | | |
| | 10 1/2W Fusible | | | |
| R538 | 2400 5% 5W WW | | | |
| R551 | 56 1/2W Fusible | | | |
| | 10 1/2W Fusible | | | |
| R568 | 2400 5% 5W WW | | | |
| R581 | 56 1/2W Fusible | | | |
| | 10 1/2W Fusible | | | |
| R801 | 3.3 5% 10W WW | | 10W3D3 | |
| R802 | 180 5% 5W WW | | 5W118 | |
| R803 | 56K 5% 3W Metal Oxide | | | |
| R805 | 16 5% 5W WW | | | |
| R808 | 2.2 1/2W Fusible | | | |
| R817 | 1200 1% 1/4W Carbon Film | | | |
| R818 | 2000 1% 1/4W Carbon Film | | | |
| R823 | 10 1/2W Fusible | | | |
| R890 | PTC 3.7 Cold | | | FR605 |

COILS (RF-IF)

| ITEM No. | FUNCTION | MFGR. PART No. |
|----------|------------------|----------------|
| L301 | RF Choke (5uH) | |
| L302 | RF Choke | |
| L401 | RF Choke (3.3mH) | |
| L404 | RF Choke (18uH) | |
| L501 | RF Choke (10uH) | |
| L531 | RF Choke (10uH) | |
| L561 | RF Choke (10uH) | |

| ITEM No. | FUNCTION | MFGR. PART No. |
|----------|---------------|----------------|
| L801 | RF Choke | |
| L802 | RF Choke | |
| L803 | RF Choke | |
| L804 | AC Line Choke | |
| L805 | RF Choke | |
| L808 | RF Choke | |
| T801 | AC Line Choke | |

COILS & TRANSFORMERS (Sweep Circuits)

| ITEM No. | FUNCTION | REPLACEMENT DATA | | |
|----------|-------------------------------------|------------------|----------------------|---------------------|
| | | MFGR. PART No. | OTHER IDENTIFICATION | THORDARSON PART No. |
| DY | Yoke 90° Horiz 2.02mH Vert 134mH | 8529290 (2)(3) | 89235100 (1) | |
| L403 | Width | | TWH104 (1) | |
| T401 | Horiz Driver | | TLN114 (1) | |
| T402 | Side Pincushion | | TPC2009A (1) | |
| T403 | Horiz Output | | TFB150A (1) | |

- (1) Number on unit.
- (2) Includes CRT and Yoke.
- (3) Restricted Availability.

PARTS LIST AND DESCRIPTION (Continued)

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

SEMICONDUCTORS (Select replacement transistor for best results)

| ITEM No. | TYPE No. | MFGR. PART No. | REPLACEMENT DATA | | | | | | |
|----------|-----------|----------------|---------------------------|-------------------|-----------------------|----------------------|--------------|------------------|-----------------|
| | | | GENERAL ELECTRIC PART No. | MOTOROLA PART No. | NEW-TONE NTE PART No. | PHILIPS ECG PART No. | RCA PART No. | WORKMAN PART No. | ZENITH PART No. |
| D569,70 | V06C | | GE-504A | 1N4003 | NTE116 | ECG116 | SK3311 | WEP156 | 212-76-02 |
| D801 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D802 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D803 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D804 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D805 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D806 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D807 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D808 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D809 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D810 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D811 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D812 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D813 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D814 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D815 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D817 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D820 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D822 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| D823 | | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| Q201 | SN74S05N | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| Q202 | HD74S05 | | GE-511 | | NTE552 | ECG552 | SK9000/552 | WEP172/506 | 103-287 |
| Q203 | 2SC458C | | GE-210 | 2N4401* | NTE85 | ECG85 | SK3124A/289A | WEP910/289 | 121-972* |
| Q204 | HA17805,P | | GEVR-102 | MC7805CT | NTE960 | ECG960 | SK3591/960 | WEP910/289 | 221-Z9043 |
| Q204 | 2SC458C | | GE-210 | 2N4401* | NTE85 | ECG85 | SK3124A/289A | WEP910/289 | 121-972* |
| Q205 | 2SA844D,E | | GE-65 | 2N5679* | NTE234 | ECG234 | SK3247/234 | WEP907/234 | 121-Z9005 |
| Q206 | 2SC458C | | GE-210 | 2N4401* | NTE85 | ECG85 | SK3124A/289A | WEP910/289 | 121-972* |
| Q251,52 | 2SC458C | | GE-210 | 2N4401* | NTE85 | ECG85 | SK3124A/289A | WEP910/289 | 121-972* |
| Q253 | SN74S05N | | GE-210 | 2N4401* | NTE74S05 | ECG74S05 | SK3124A/289A | WEP910/289 | 121-972* |
| Q301 | HD74S05 | | GE-222* | MPSU10* | NTE74S05 | ECG74S05 | SK9352/399 | WEP750 | 121-Z9045* |
| Q302 | 2SC1921 | | GE-375 | | NTE399 | ECG399 | SK9118/375 | WEP763/375 | 121-Z9106 |
| Q303 | 2SD1136C | | GE-375 | | NTE54 | ECG54 | SK9363/398 | WEP61/157 | 121-Z9115 |
| Q401 | 2SB861C | | GE-232 | MJE340 | NTE398 | ECG398 | SK3747/157 | WEP61/157 | 121-Z9016 |
| Q402 | 2SC2611BK | | GE-232 | | NTE157 | ECG157 | SK3747/157 | WEP61/157 | 121-Z9016 |
| Q402 | HA11235 | | GE-232 | | NTE1550 | ECG1550 | SK9249/1550 | WEP61/157 | 121-Z9016 |

IBM
CMT4-2
MODEL 5153

PARTS LIST AND DESCRIPTION (Continued)

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

SEMICONDUCTORS (Select replacement transistor for best results)

| ITEM No. | TYPE No. | MFGR. PART No. | REPLACEMENT DATA | | | | | | ZENITH PART No. |
|----------|-----------|----------------|---------------------------|-------------------|-----------------------|----------------------|--------------|------------------|-----------------|
| | | | GENERAL ELECTRIC PART No. | MOTOROLA PART No. | NEW-TONE NTE PART No. | PHILIPS ECG PART No. | RCA PART No. | WORKMAN PART No. | |
| Q403 | 2SD898B | | GE-210 | BU208 | NTE89 | EC689 | SK9119/89 | WEP89/89 | 121-Z9112 |
| Q501 | 2SC458C | | GE-251 | 2N4401* | NTE85 | EC685 | SK3124A/289A | WEP910/289 | 121-972* |
| Q502 | 2SC1514 | | GE-86 | TIP50 | NTE376 | EC6376 | SK9362/376 | WEP779/198 | 121-Z9028 |
| Q503 | 2SC1906 | | | MP56543* | NTE107 | ECG107 | SK3293/107 | WEP923/316* | 121-522* |
| Q504 | 2SD757C,D | | | | | | | | |
| Q505 | 2SB717C,D | | GE-65 | 2N5679* | NTE234 | ECG234 | SK3247/234 | WEP907/234 | 121-Z9005 |
| Q506 | 2SA844D,E | | GE-210 | 2N4401* | NTE85 | EC685 | SK3124A/289A | WEP910/289 | 121-972* |
| Q531 | 2SC458C | | GE-251 | TIP50 | NTE376 | EC6376 | SK9362/376 | WEP779/198 | 121-Z9028 |
| Q532 | 2SC1514 | | GE-86 | MP56543* | NTE107 | ECG107 | SK3293/107 | WEP923/316* | 121-522* |
| Q533 | 2SC1906 | | | | | | | | |
| Q534 | 2SD757C,D | | | | | | | | |
| Q535 | 2SB717C,D | | | | | | | | |
| Q536 | 2SA844D,E | | GE-65 | 2N5679* | NTE234 | ECG234 | SK3247/234 | WEP907/234 | 121-Z9005 |
| Q561 | 2SC458C | | GE-210 | 2N4401* | NTE85 | EC685 | SK3124A/289A | WEP910/289 | 121-972* |
| Q562 | 2SC1514 | | GE-251 | TIP50 | NTE376 | EC6376 | SK9362/376 | WEP779/198 | 121-Z9028 |
| Q563 | 2SC1906 | | GE-86 | MP56543* | NTE107 | ECG107 | SK3293/107 | WEP923/316* | 121-522* |
| Q564 | 2SD757C,D | | | | | | | | |
| Q565 | 2SB717C,D | | | | | | | | |
| Q566 | 2SA844E | | | | | | | | |
| Q801 | 2SD1185 | | GE-65 | 2N5679* | NTE234 | ECG234 | SK3247/234 | WEP907/234 | 121-Z9005 |
| Q802 | 2SB739C | | | | | | | | |
| Q803 | 2SC1213C | | GE-48 | 2N2906A | NTE294 | ECG294 | SK3841/294 | WEP916/294 | 121-Z9067 |
| Q804 | 2SA1029C | | GE-268 | 2N4401* | NTE289A | ECG289A | SK3122 | WEP910/289 | 121-Z9065 |
| Q805 | CM12B | | GE-269 | 2N4403 | NTE290A | ECG290A | SK3114A/290A | WEP911/290A | 121-Z9003 |

* Lead configuration may vary from original.

WIRING DATA

High Voltage Lead Use BELDEN No. 9867 (30 KV) or 8866 (40 KV)
 Shielded Hook-up Wire Use BELDEN No. 8401 or 8421 (Single-Conductor)
 Use BELDEN No. 8208 (Two-Conductor)
 General-use Unshielded Hook-up Wire Use BELDEN No. 8529 (Solid) Available in 13 Colors
 Use BELDEN No. 8522 (Stranded) Available in 13 Colors

PARTS LIST AND DESCRIPTION (Continued)

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

ELECTROLYTIC CAPACITORS

Item numbers not listed are normally available at local distributors.

| ITEM No. | RATING | MFGR. PART No. |
|----------|-------------|----------------|
| C306 | 2.2 25V 10% | |

| ITEM No. | RATING | MFGR. PART No. |
|----------|--------|----------------|
| | | |

CAPACITORS

Item numbers not listed are normally available at local distributors.

| ITEM No. | RATING | MFGR. PART No. |
|----------|---------------|----------------|
| C824 | .1 125VAC 10% | |
| C827 | .1 125VAC | |
| C828 | .1 125VAC | |

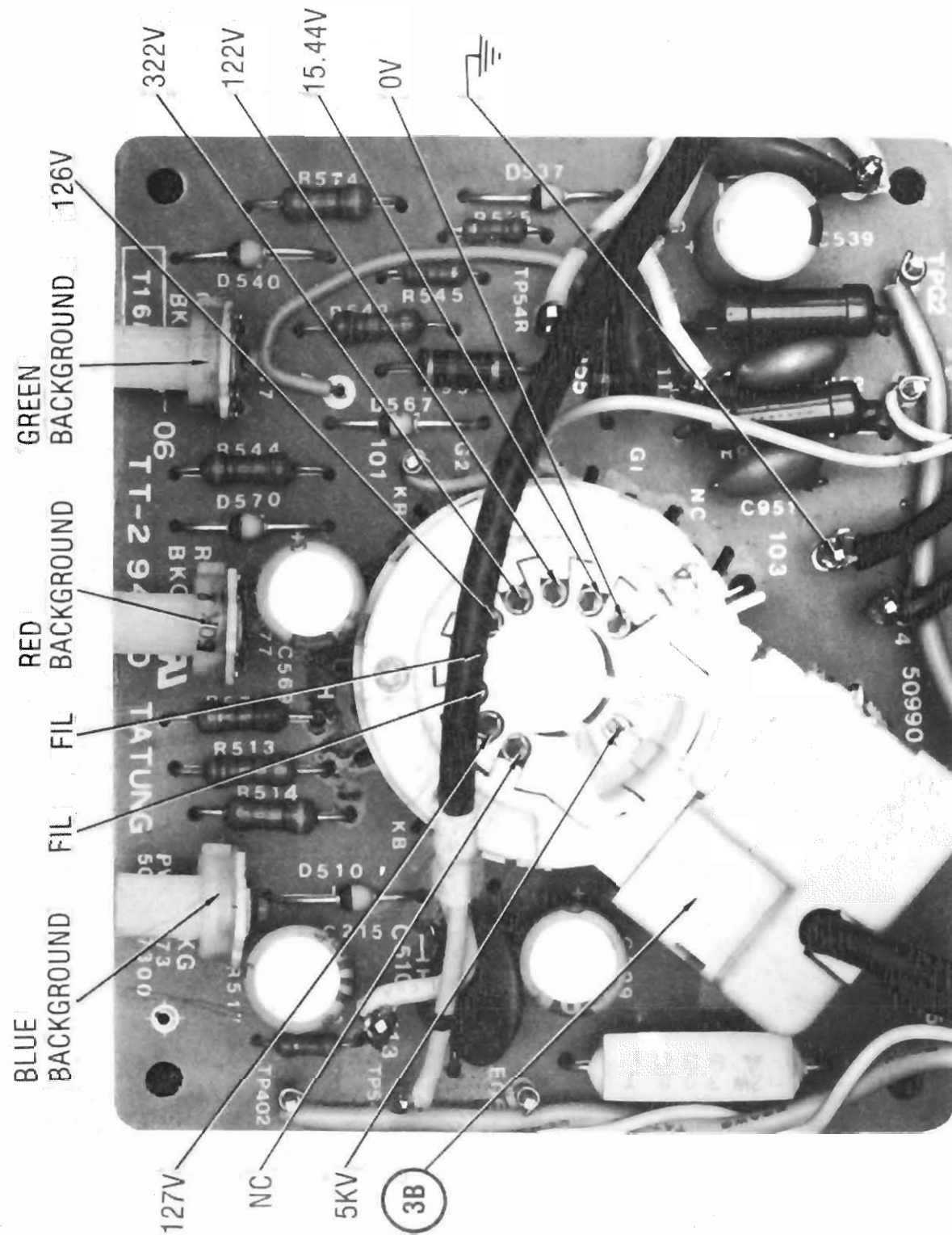
| ITEM No. | RATING | MFGR. PART No. |
|----------|------------|----------------|
| C829 | .01 125VAC | |
| C830 | .01 125VAC | |

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

| ITEM NO. | FUNCTION | RESISTANCE | MFGR. PART NO. | NOTES |
|----------|------------------|------------|----------------|-------|
| R210 | Brightness | 100K | | |
| | Brightness | 50K | | |
| R215 | Contrast | 500 | | |
| R306 | Vert Size | 500 | | |
| R309 | Vert Hold | 5000 | | |
| R336 | Vert Center | 5000 | | |
| R409 | Horiz Hold | 5000 | | |
| R413 | Horiz Phase | 5000 | | |
| R434 | Horiz Center | 500 | | |
| R506 | Blue Drive | 1000 | | |
| R517 | Blue Background | 50K | | |
| R536 | Green Drive | 1000 | | |
| R547 | Green Background | 50K | | |
| R566A | Red Drive | 1000 | | |
| R577 | Red Background | 50K | | |
| R851 | B+ Adjust | 500 | | |
| R999A | Focus | (18) | | |
| B | Screen | | | |

(18) R999A and B part of T403.

IBM
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CRT SOCKET BOARD

CMT4-2 IBM MODEL 5153

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 hookup before making service checks.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove two caps from cabinet top and remove two screws holding cabinet to cabinet front. Remove four screws (from bottom) holding cabinet back to cabinet front and remove back.

Disconnect HV anode, CRT socket and ground leads. Remove two screws (from bottom) holding main chassis assembly to cabinet bottom and remove assembly from cabinet.

Remove four screws holding AC power assembly to power supply assembly and main chassis. Remove assembly and disconnect connectors as required.

Remove five screws holding power supply assembly to main chassis assembly and cabinet front brace and remove power supply assembly.

Remove four screws holding power supply cover and lift cover off power supply. Remove five screws holding power board to chassis, disconnect connectors and lift board out of chassis.

Remove knobs from cabinet front. Remove three screws holding control indicator assembly to cabinet front and remove assembly from cabinet.

CRT REMOVAL

CAUTION: Set employs CRT with neck assemblies permanently bonded to CRT. **Do Not** attempt to remove neck assemblies from CRT.

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

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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.

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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

- (A) Check AC Fuse (F801).
- (B) If Fuse F801 is bad, check Bridge Rectifier Diodes (D801 thru D804).
- (C) Check for 120VAC at the output connector of the AC Input Board.
- (D) If the 120VAC is missing, check Coil L804.
- (E) Disconnect DC output connector from Power Board.
- (F) Check for 115V across the DC output connector on the Power Board. If 115V is missing, check the Power Board by substitution.
- (G) Check the adjustment of B+ Adjust Control (R851), see Miscellaneous Adjustments.

2 NO RASTER

- (A) Check the CRT HV Anode voltage with a HV probe.

- (B) If the HV is missing, check the Horizontal Output Transistor (Q403).
- (C) Check for 115V at the collector of Transistor Q403.
- (D) If the 115V is missing, check Coils L404, L808, and pin 7 and 8 of the Horizontal Output Transformer (T403) for continuity.
- (E) Check the Sync Processor IC (Q402) by substitution.
- (F) Check the Service Switch (S301).
- (G) Check the CRT with a CRT tester.

3 NO VIDEO

- (A) Check RGB connector P2 at the Computer and P201 at the Monitor for bad connections.
- (B) Check the voltages on the CRT socket.

TEST EQUIPMENT AND TOOLS

TEST EQUIPMENT

Digital Volt/Ohm Meter
High Voltage Probe
CRT Tester

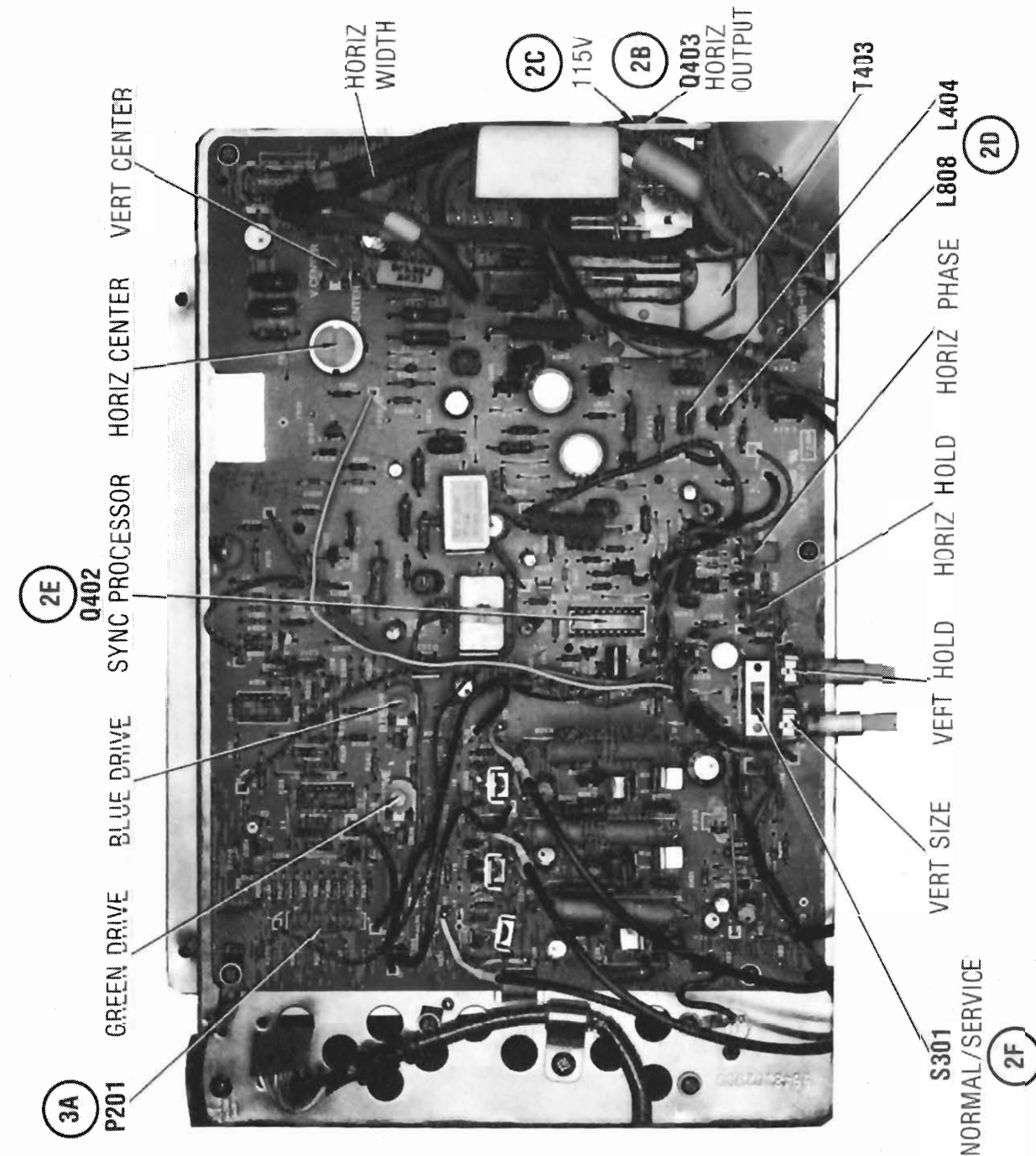
TOOLS

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

PARTS LIST AND DESCRIPTION

| ITEM | PART NO. | DESCRIPTION |
|----------------------|----------|--------------------------|
| D801 thru D804 | | Bridge Rectifiers |
| F801 | | 4A Fuse |
| L404 | | RF Choke |
| L804 | | AC Line Choke |
| L808 | | RF Choke |
| Q402 | | Sync Processor IC |
| Q403 | | Horiz Output Transistor |
| R851 | | B+ Adjust Control |
| S301 | | Service Switch |
| T403 | | Horiz Output Transformer |

PRELIMINARY SERVICE CHECKS (Continued)



IBM
MODEL 5153

CHASSIS-TOP VIEW

PRELIMINARY SERVICE CHECKS (Continued)

PRELIMINARY SERVICE CHECKS (Continued)



POWER SUPPLY BOARD

MISCELLANEOUS ADJUSTMENTS

B + ADJUSTMENT

Connect a DC meter to TP91, low side to ground. Apply power to Monitor. Adjust B+ Adjust Control (R851) for +115V.

HORIZONTAL HOLD ADJUSTMENT

Connect a RGB video pattern generator to the Monitor. Use a color bar pattern. Connect a .1μF Capacitor from TP22 to ground. Adjust Horizontal Hold Control (R409) until the bars stop (in sync) or slowly float across the screen. Remove the .1μF Capacitor.

HORIZONTAL AND VERTICAL CENTERING

Connect a RGB video pattern generator to the Monitor. Use a color bar pattern. Adjust Horizontal Center Control (R434) for best horizontal centering of the raster. Adjust Vertical Center Control (R336) for best vertical centering of the raster.

HORIZONTAL PHASE CONTROL

Adjust Horizontal Phase Control (R413) to place the cursor at the left edge of the raster.

PURITY ADJUSTMENT

Degauss the CRT, if necessary. Set the Blue (R517) and Green (R547) Background Controls to MINIMUM. Advance the Red Background Control (R577) to produce a red raster. Loosen the deflection yoke and slide it back against the Purity/Convergence Assembly. Adjust the Purity Magnets to produce a vertical red stripe at the center of the screen. Slide the deflection yoke forward to produce uniform red

raster. Check for pure blue and green screens by advancing the Blue (R517) and Green (R547) Background Controls one at a time.

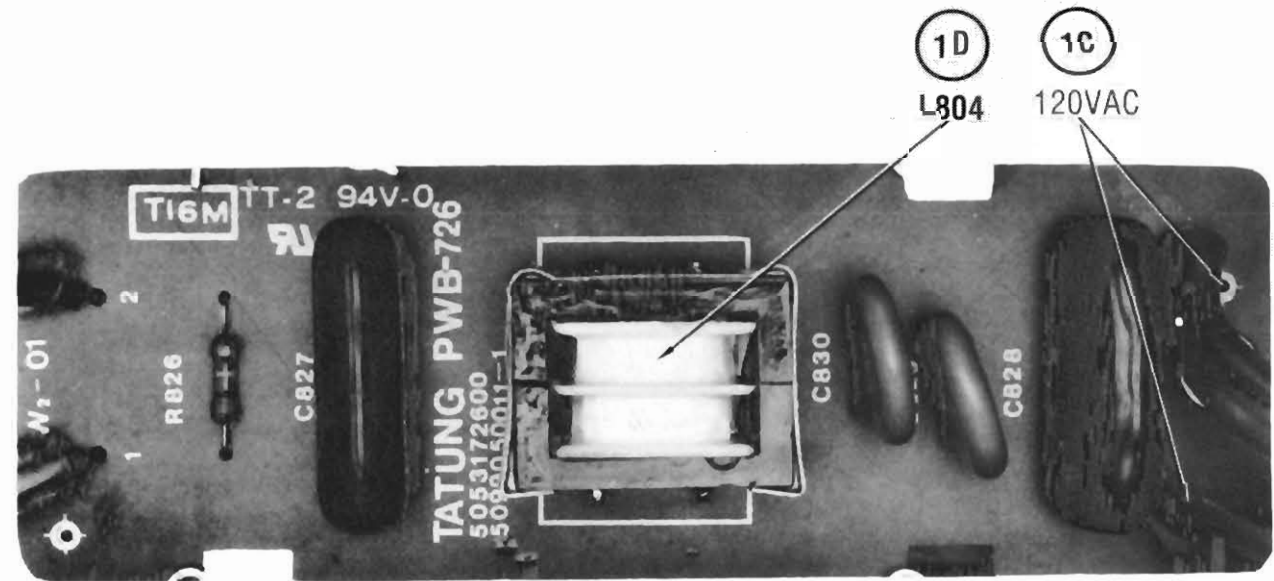
COLOR TEMPERATURE ADJUSTMENT

Set the Blue (R506) and Green (R536) Drive Controls to midrange. Set the Red (R577), Blue (R517) and Green (R547) Background Controls to MINIMUM. Set Service Switch (S301) to Service position. From MINIMUM position adjust Screen Control (R999B) to obtain a dim line of a predominate color. Adjust the two background controls of the least predominate colors to obtain a dim white line. Set Service Switch to Normal. Adjust the Blue (R506) and Green (R536) Drive Controls for a black and white picture

CONVERGENCE ADJUSTMENTS

Connect a RGB video pattern generator to the antenna terminals and tune in a dot pattern. Adjust Four-pole Convergence Magnets to converge the red and blue dots at the center of the screen. Adjust Six-pole Convergence Magnets to converge the red/blue dots over the green dots at the center of the screen.

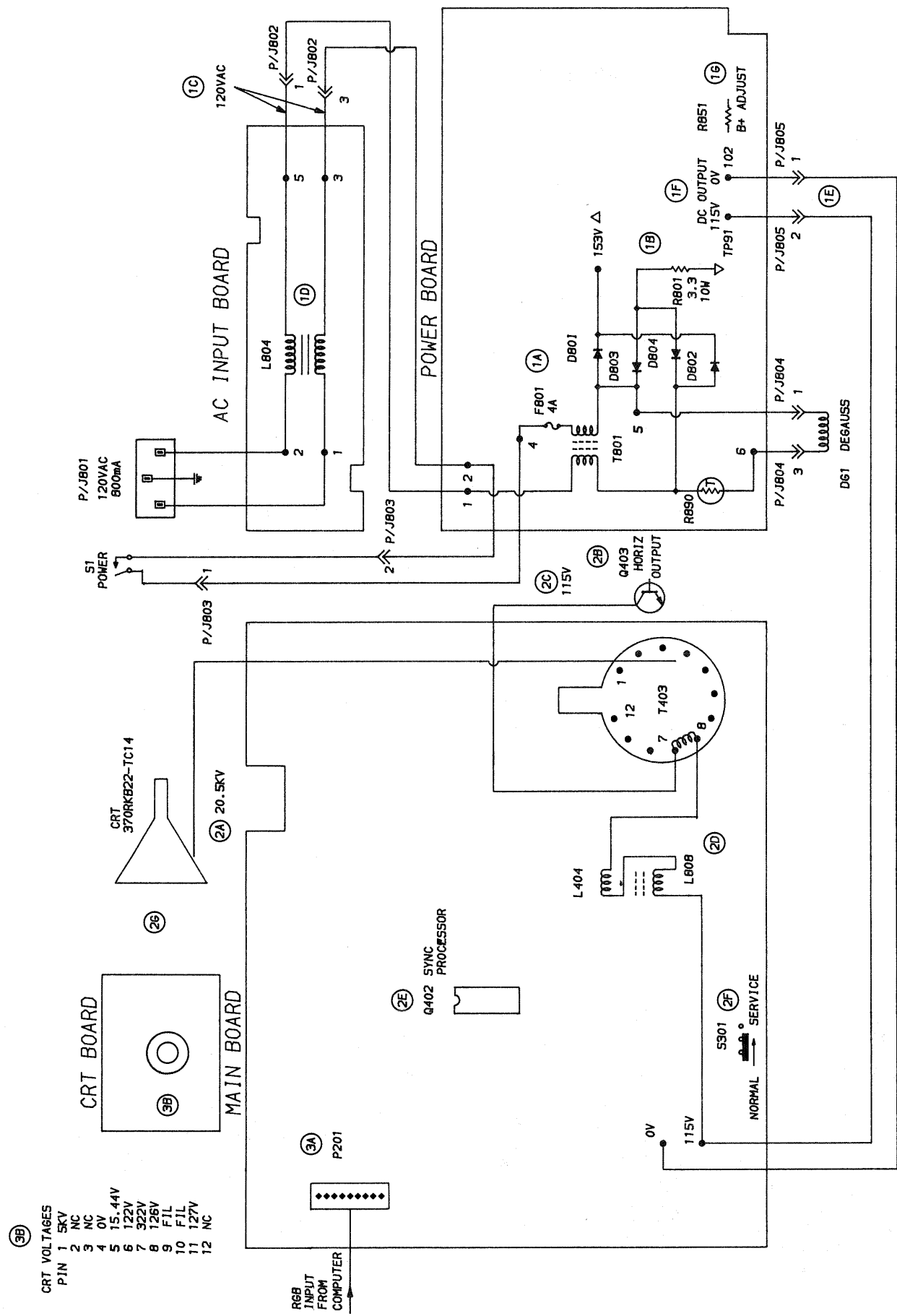
Tune in a crosshatch pattern. Remove the rubber wedges between the deflection yoke and CRT. Tilt the deflection yoke up or down to converge the vertical lines at the top and bottom of the screen and the horizontal lines at the right and left sides of the screen. Tilt the deflection yoke to the right or left to converge the horizontal lines at the top and bottom of the screen and the vertical lines at the right and left sides of the screen. Repeat convergence procedure if necessary to obtain the best overall convergence. Replace the rubber wedges.



AC INPUT BOARD

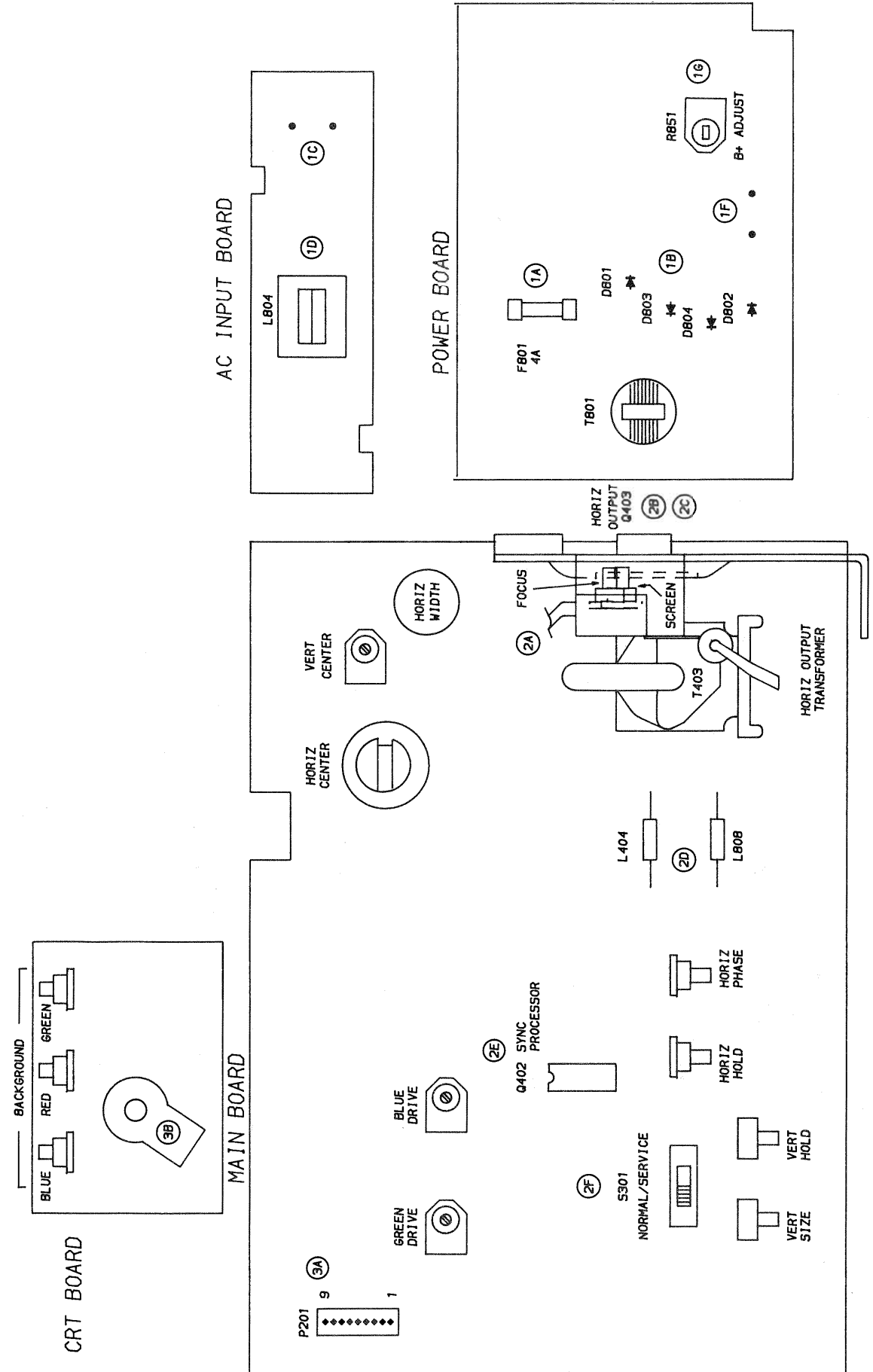
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PRELIMINARY SERVICE CHECKS (Continued)



INTERCONNECTING DIAGRAM

PRELIMINARY SERVICE CHECKS (Continued)



PLACEMENT CHART

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