

SAFETY PRECAUTIONS

SERVICE WARNING

Only qualified service technicians who are familiar with safety checks and guidelines should perform service work. Before replacing parts, disconnect power source to protect electrostatically sensitive parts. Do not attempt to modify any circuit unless so recommended by the manufacturer. When servicing the receiver, use an isolation transformer between the line cord and power receptacle.

SERVICING THE HIGH VOLTAGE AND CRT

Use EXTREME CAUTION when servicing the high voltage circuits. To discharge static high voltage, connect a 10K ohms resistor in series with a test lead between the receiver ground and CRT anode lead. DO NOT lift the CRT by the neck. Always wear shatterproof goggles when handling the CRT to protect eyes in case of implosion.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Be aware of the instructions and procedures covering X-ray radiation. In solid-state receivers and monitors, the CRT is the only potential source of X-rays. Keep an accurate high voltage meter available at all times. Check meter calibration periodically. Whenever servicing a receiver, check the high voltage at various brightness levels to be sure it is regulating properly. Keep high voltage at rated value, NO HIGHER. Excessive high voltage may cause X-ray radiation or failure of associated components. DO NOT depend on protection circuits to keep voltage at rated value. When troubleshooting a receiver with excessive high voltage, avoid close contact with the CRT. DO NOT operate the receiver longer than necessary. To locate the cause of excessive high voltage, use a variable AC transformer to regulate voltage. In present receivers, many electrical and mechanical components have safety related characteristics which are not detectable by visual inspection. Such components are identified by a # on both the schematic and the parts list. For SAFETY, use only equivalent replacement parts when replacing these components.

GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning receiver to customer. Check repaired area for poorly soldered connections, and check entire circuit board for solder splashes. Check board wiring for pinched wires or wires contacting any high wattage resistors. Check that all control knobs, shields, covers, grounds, and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.

The listing of any available replacement part herein in no case constitutes a recommendation, warranty, or guarantee by SAMS Technical Publishing as to the quality and suitability of such replacement part. The numbers of the listed parts have been compiled from information furnished to SAMS Technical Publishing by the manufacturers of the specific type of replacement part listed.

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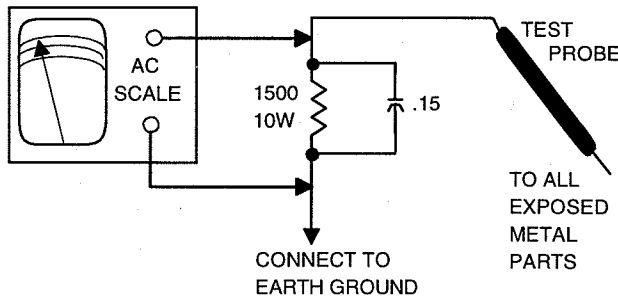
SAFETY CHECKS -- FIRE AND SHOCK HAZARD

Cold Leakage Checks for Receivers with Isolated Ground

Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch on (if applicable). Use an ohmmeter to measure the resistance between the jumped AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with a return path should measure between 1M ohms and 5.2M ohms. Parts without a return path must measure infinity.

Hot Leakage Current Check

Plug the AC cord directly into an AC outlet. DO NOT use an isolation transformer. Use a 1500 ohms, 10W resistor in parallel with a .15µF capacitor to connect between any exposed metal parts on the receiver and a good earth ground. (See figure below.) Use an AC voltmeter with at least 5000 ohms per volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point. Voltage measurements should not exceed .75VAC, 500µA. Any value exceeding this limit constitutes a potential shock hazard and must be corrected. If the AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.



HIGH VOLTAGE SHUTDOWN TEST

Apply 120VAC to set, turn set on, and adjust brightness and contrast to maximum. Short XRP-1 to XRP-2. The set should shut down and then cycle on and off. If the set does not shut down and then cycle on and off then the shutdown circuit requires repair. To resume normal operation, remove short from XRP-1 and XRP-2.



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PHOTOFACT® Technical Service Data

SET 4341

MODEL F27191DGF02 (CHASSIS CTC169GC)

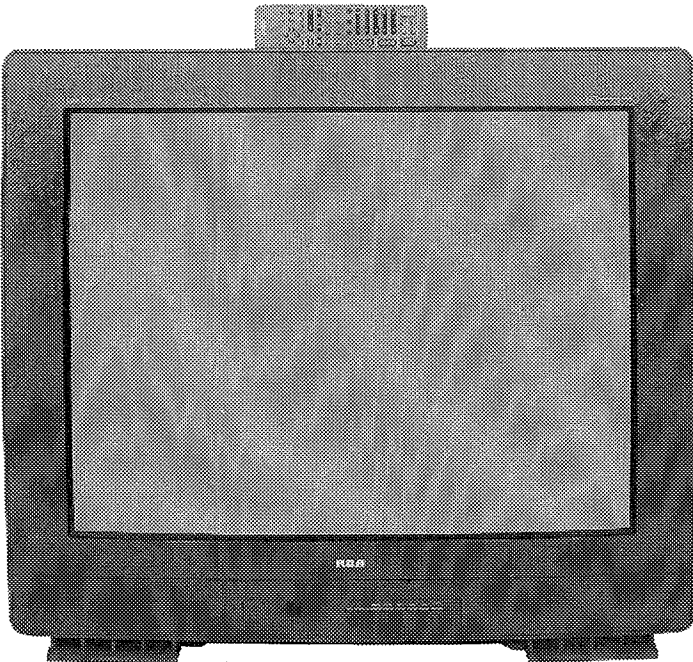
RCA

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RCA

Model F27191DGF02 (Chassis CTC169GC)



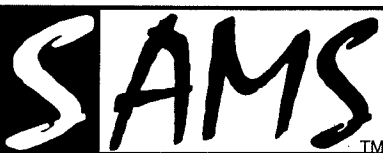
Representative Model

Essential coverage  
for servicing a television receiver...

- Schematics
- Component locations
- Parts list

Coverage includes these additional models and chassis:

| MODELS      | CHASSIS  |
|-------------|----------|
| F27191DGW02 | CTC169GC |
| F27193BTN02 | CTC169GC |
| G27390TNM02 | CTC169GC |
| G27391WKL02 | CTC169GC |
| G27391WKL03 | CTC169GC |



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SEPTEMBER 2000 SET 4341

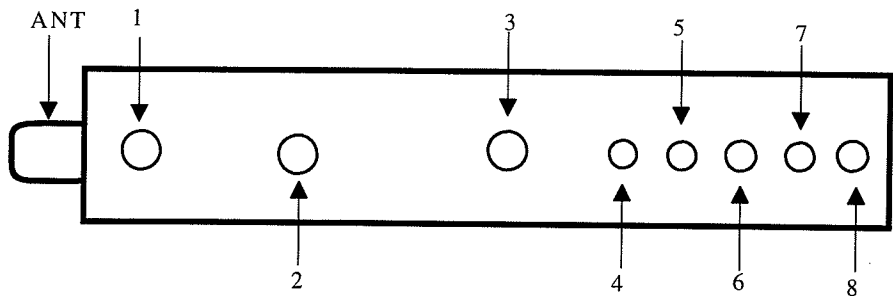
For Supplier Address,  
See PHOTOFACT Annual Index

TUNER INFORMATION

| TUNER VOLTAGE CHART |              |               |          |
|---------------------|--------------|---------------|----------|
| Pin                 | VHF Low Band | VHF High Band | UHF Band |
| 1 (AGC)             | 5.4V         | 4.1V          | 7.9V     |
| 2 (+12V)            | 12.0V        | 12.0V         | 12.0V    |
| 3 (IF)              | 11.7V        | 11.6V         | 11.7V    |
| 4 (+33V)            | 33.0V        | 33.0V         | 33.0V    |
| 5 (-12V)            | -12.0V       | -12.0V        | -12.0V   |
| 6 (+5V)             | 5.0V         | 5.0V          | 5.0V     |
| 7 (SDA)             | 5.0V         | 5.0V          | 5.0V     |
| 8 (SCK)             | 5.0V         | 5.0V          | 5.0V     |

NOTE: VHF Low Band voltages taken on channel 2.  
VHF High Band voltages taken on channel 7.  
UHF Band voltages taken on channel 14.

TUNER TERMINAL GUIDE



SCHEMATIC NOTES

# For SAFETY use only equivalent replacement part, see parts list.

✖ Circuitry not used in some versions.

--- Circuitry used in some versions.

⏏ Ground

⏏ Chassis ground

⏏ Common tie point

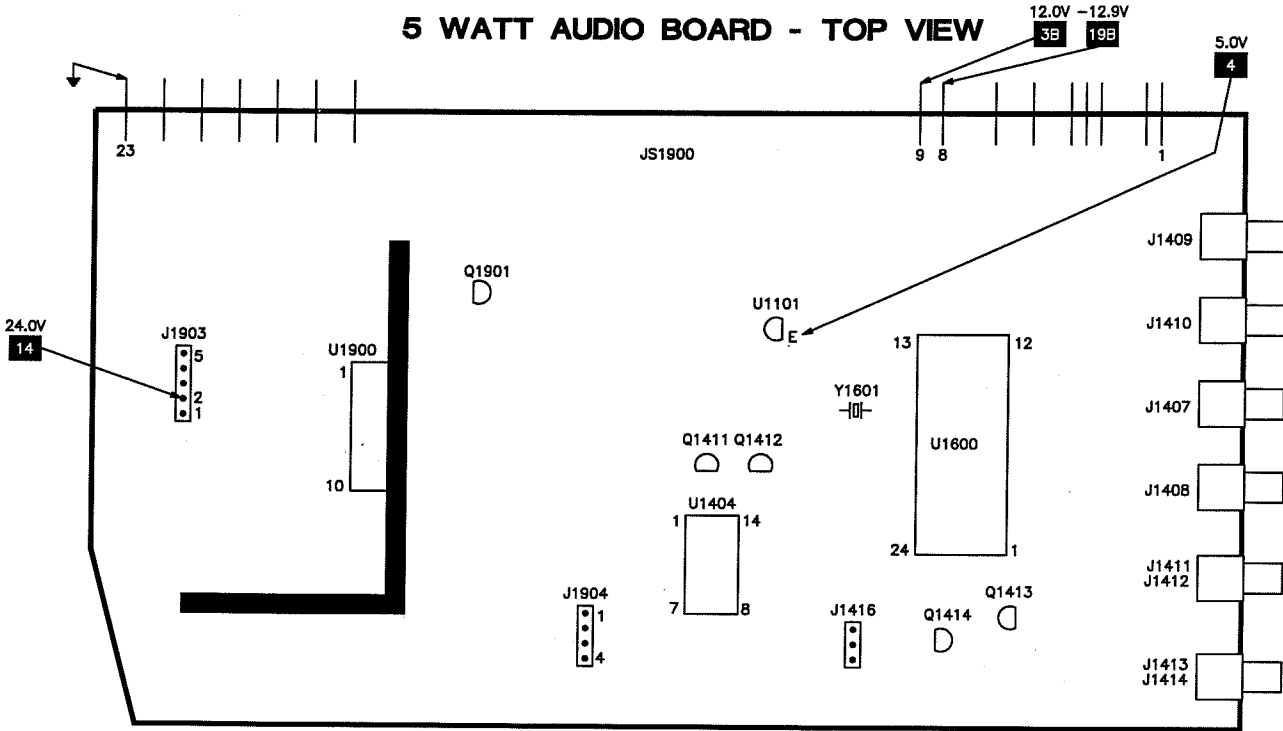
△ Taken from common tie point

3 Schematic CIRCUI TRACE ® Voltage source tie point.

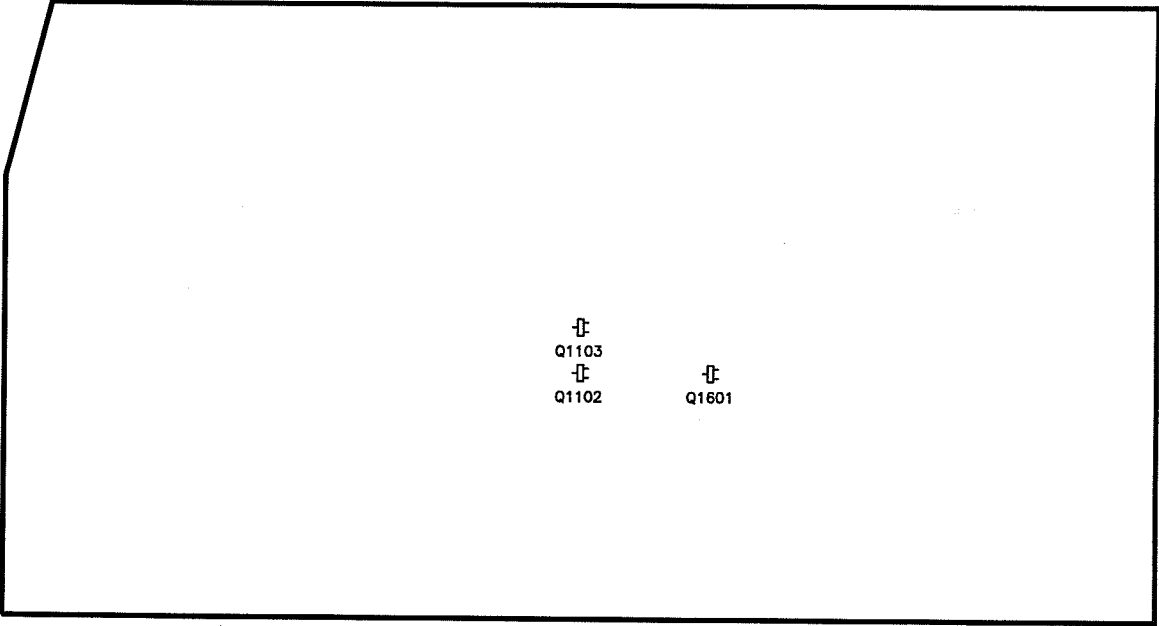
A Cabling: Heavy lines reduce use of multiple lines.

Waveforms and voltages are taken from ground, unless noted otherwise.  
Waveforms taken with triggered scope and colorbar signal.  
Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions.  
Supply voltages maintained as seen at input.  
Voltages measured with digital meter and a 1000µV RF signal, with colorbar pattern, applied to antenna terminal.  
Controls adjusted for normal operation.  
Capacitors are 50 volts or less, 5% or greater unless noted.  
Electrolytic capacitors are 50 volts or less, 20% or greater unless noted.  
Resistors are 1/2W or less, 5% or greater unless noted.  
Value in ( ) used in some versions.  
Measurements with switching as shown, unless noted.  
Rated voltage shown on zener diodes.

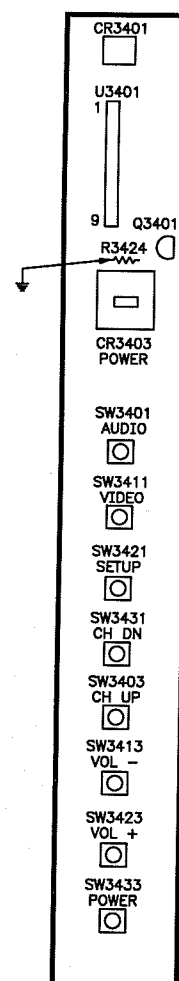
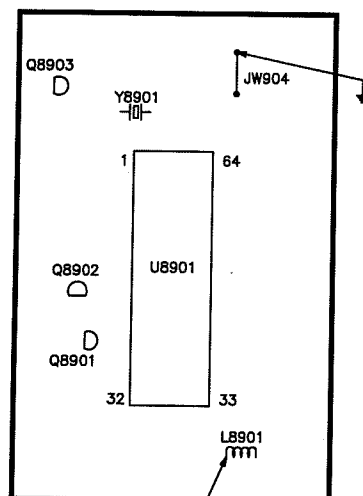
PLACEMENT CHART



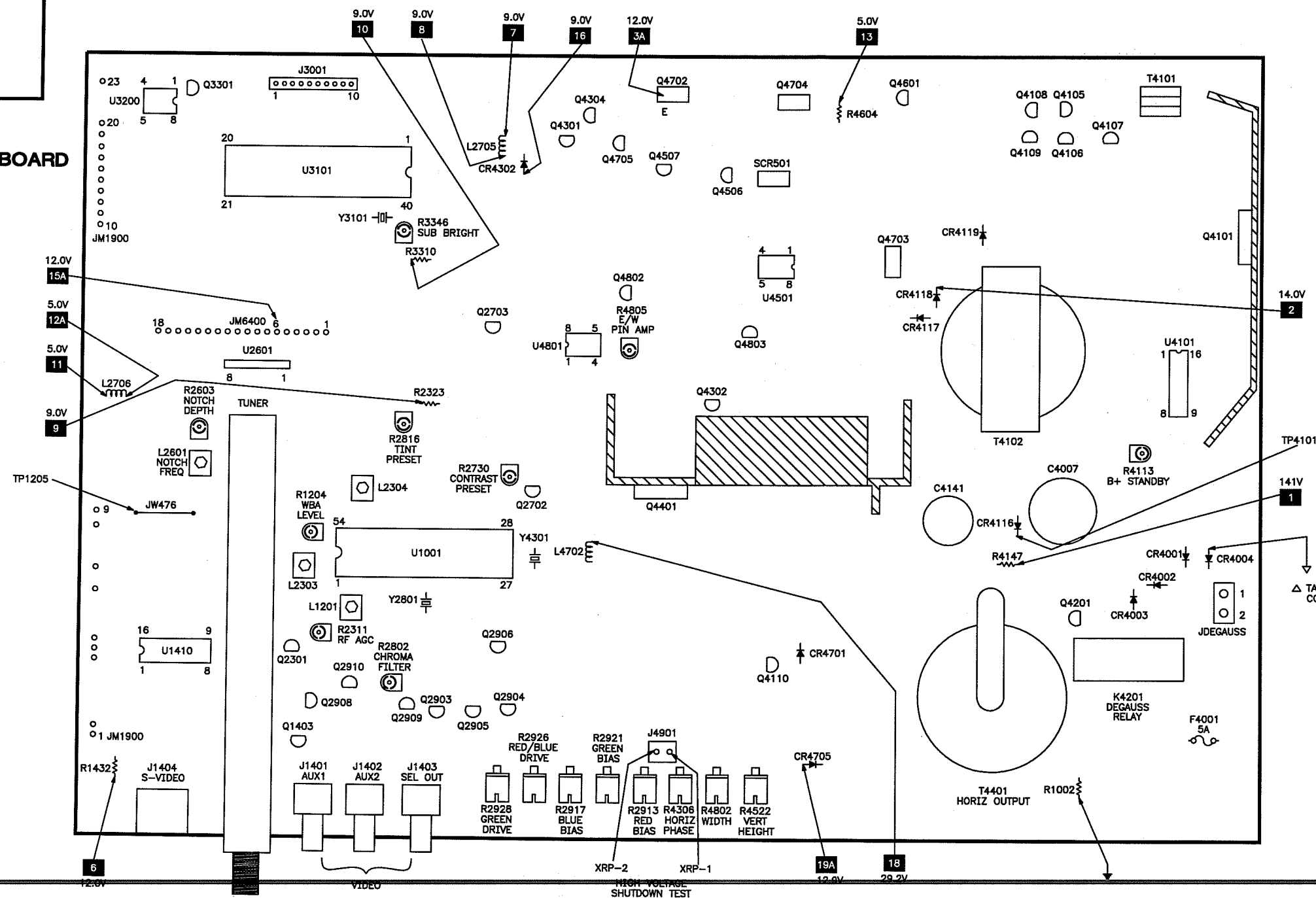
5 WATT AUDIO BOARD - BOTTOM VIEW



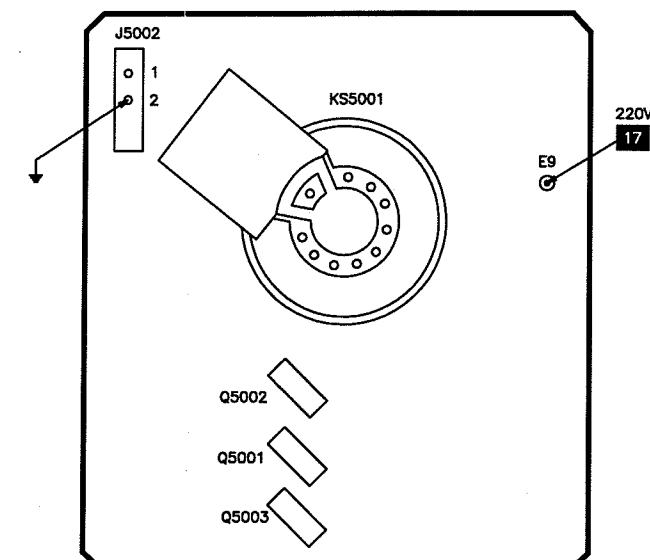
### PLACEMENT CHART continued



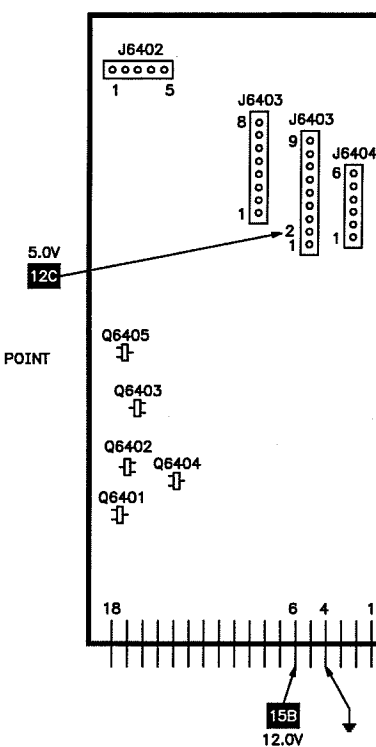
## MAIN BOARD - TOP VIEW



## CRT BOARD

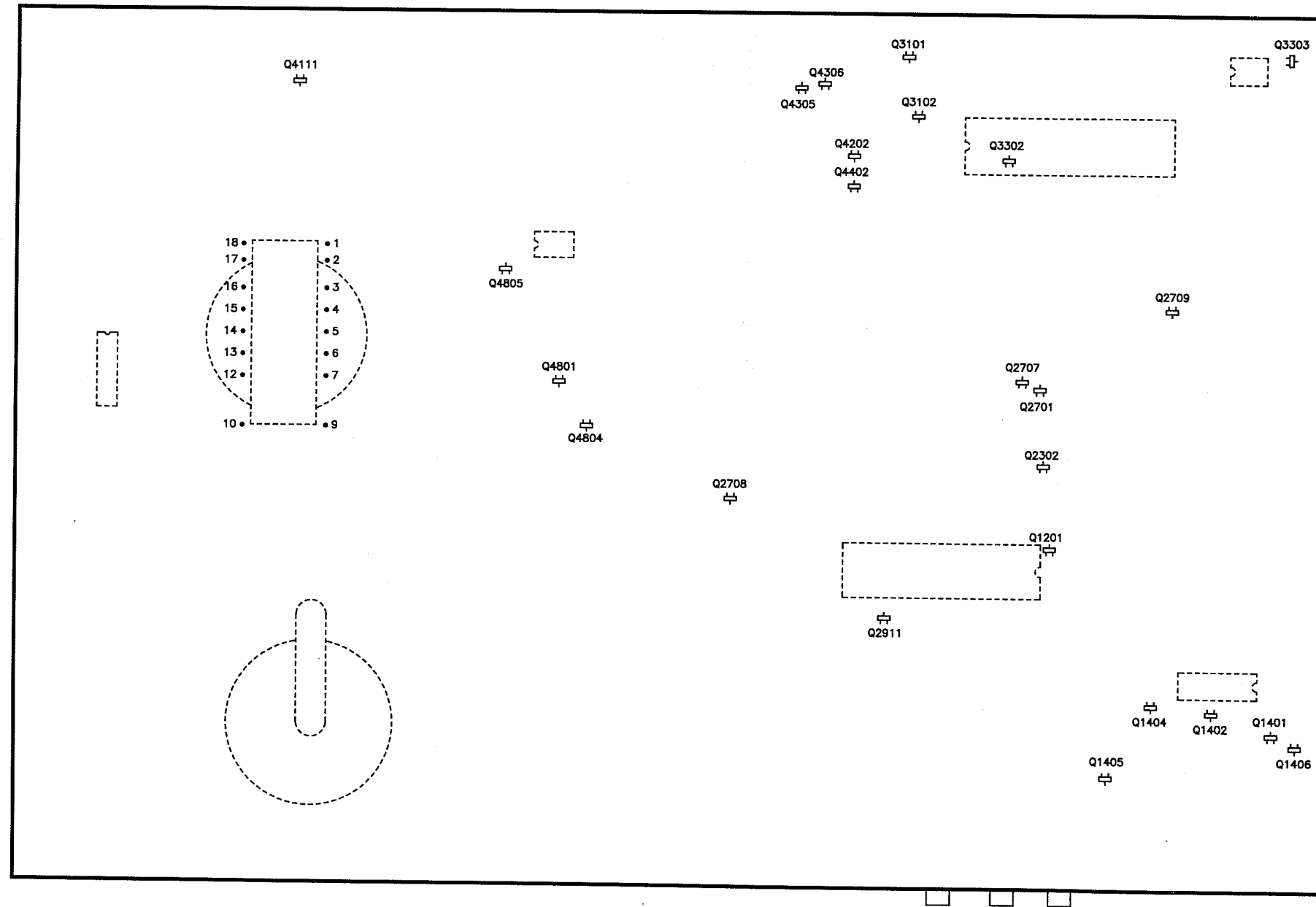


## PIP ADAPTER BOARD

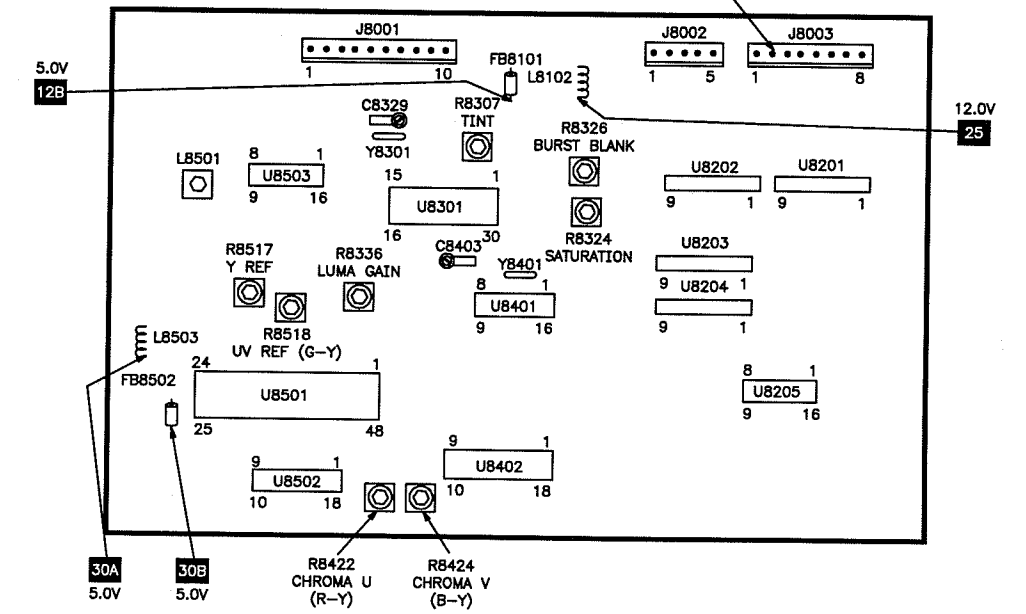


# PLACEMENT CHART continued

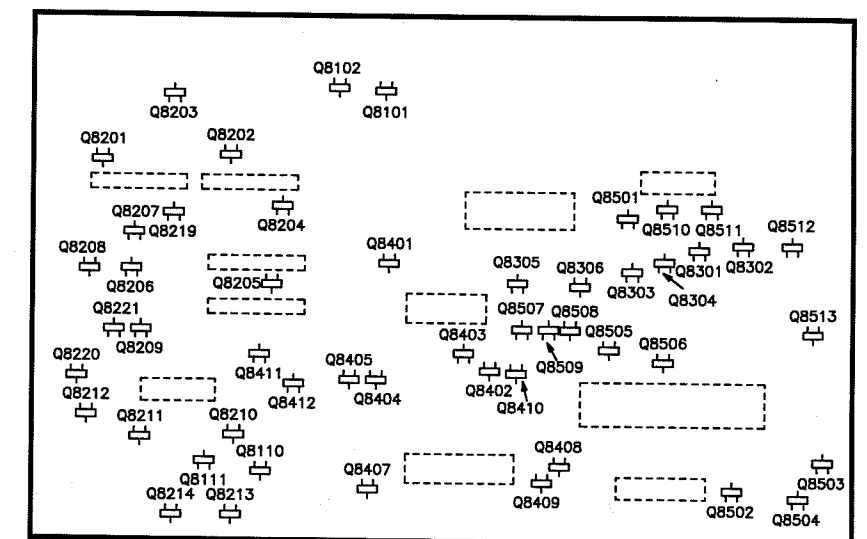
MAIN BOARD - BOTTOM VIEW



PIP BOARD - TOP VIEW



PIP BOARD - BOTTOM VIEW



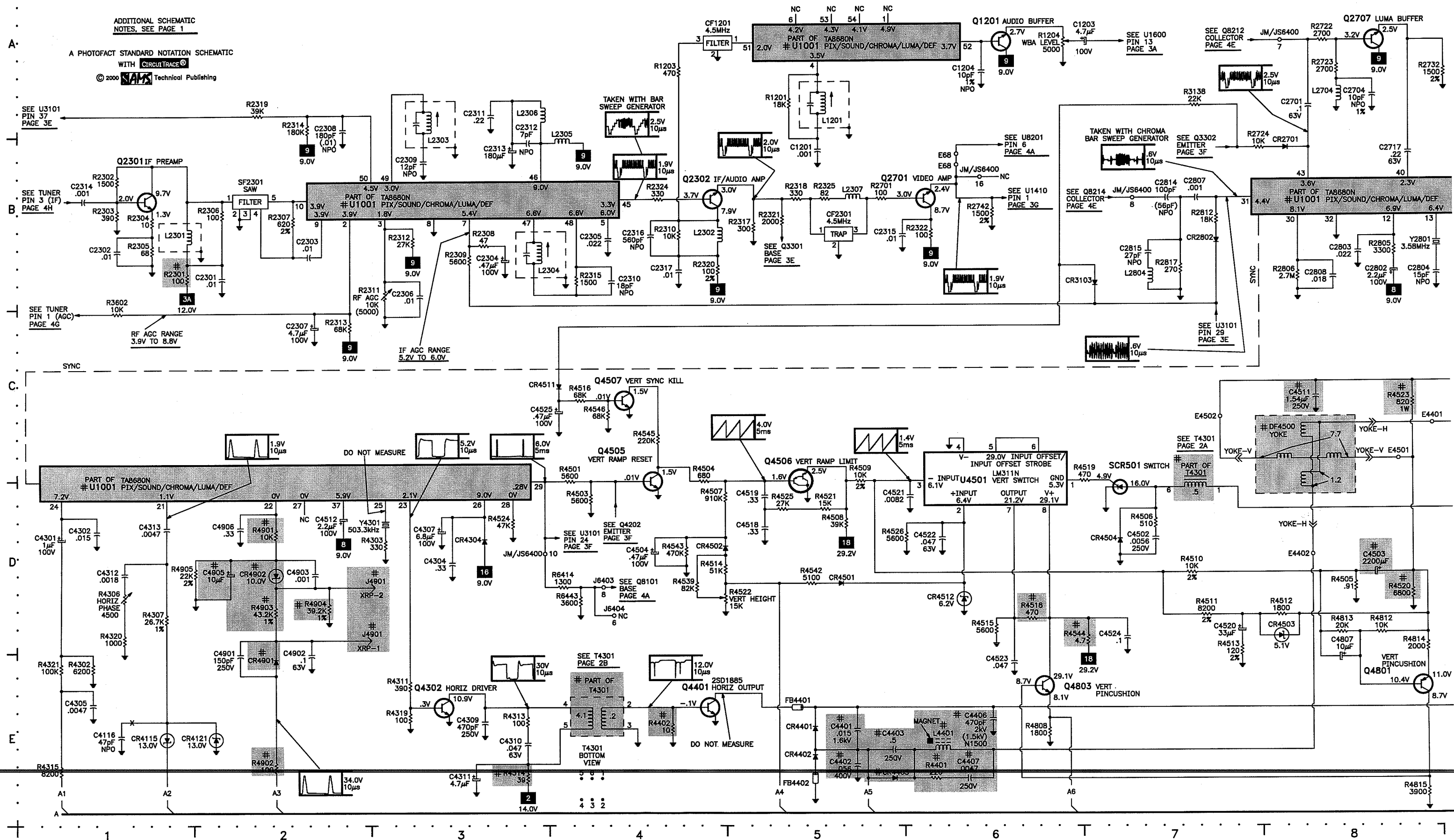
RCA

MODEL F27191DGF02 (CHASSIS CTC169GC)

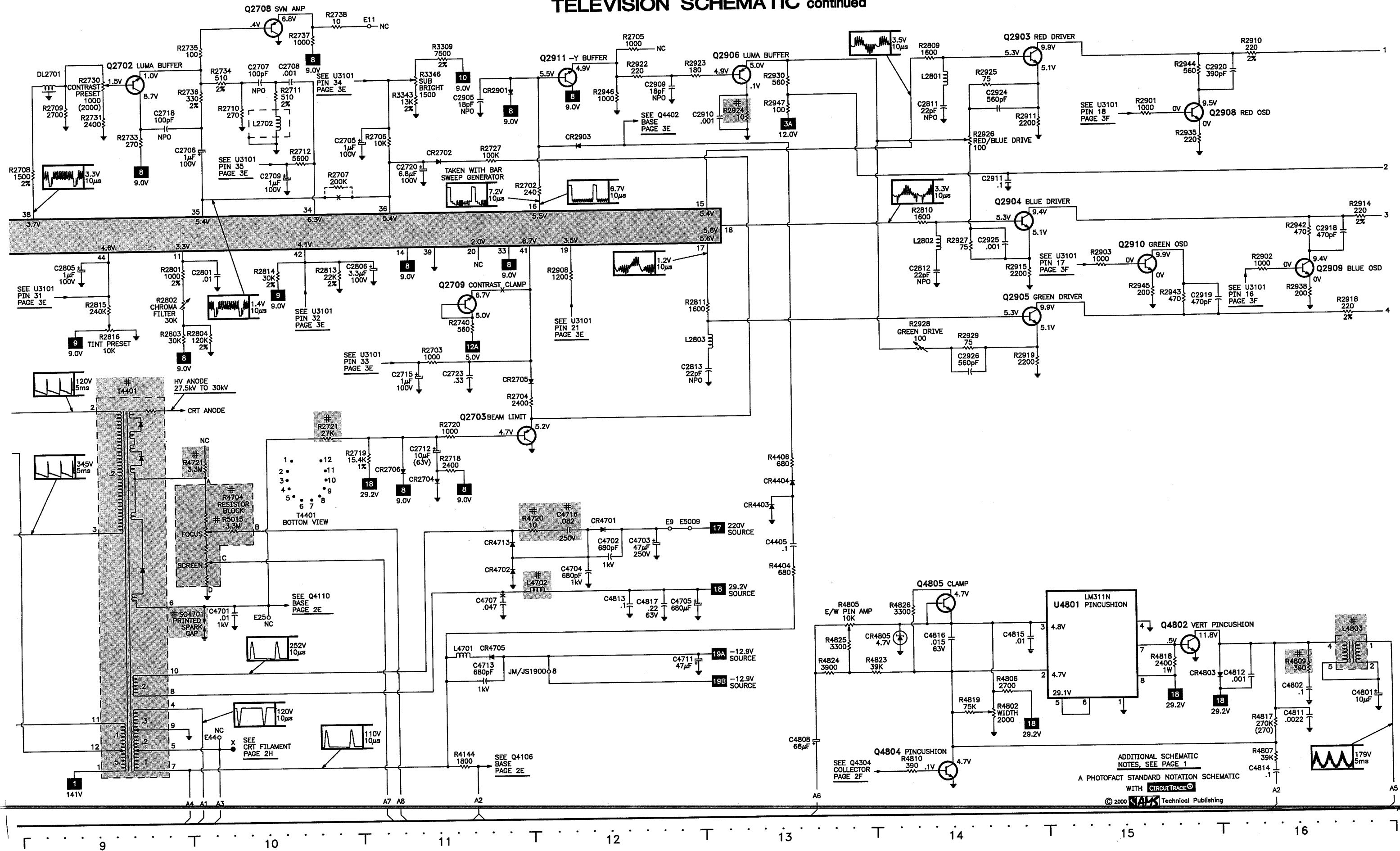
ADDITIONAL SCHEMATIC  
NOTES. SEE PAGE 1

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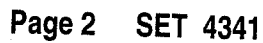


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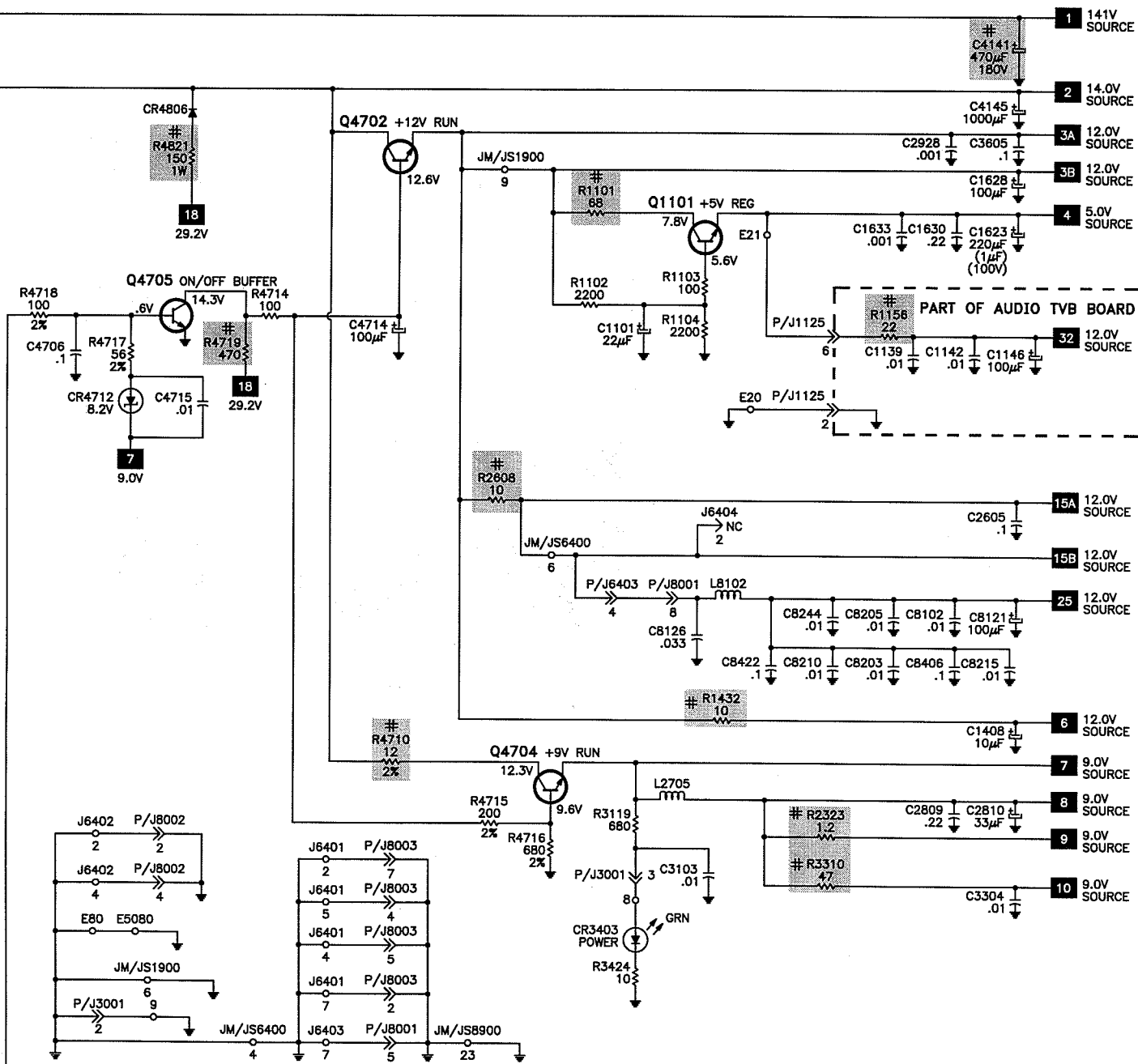




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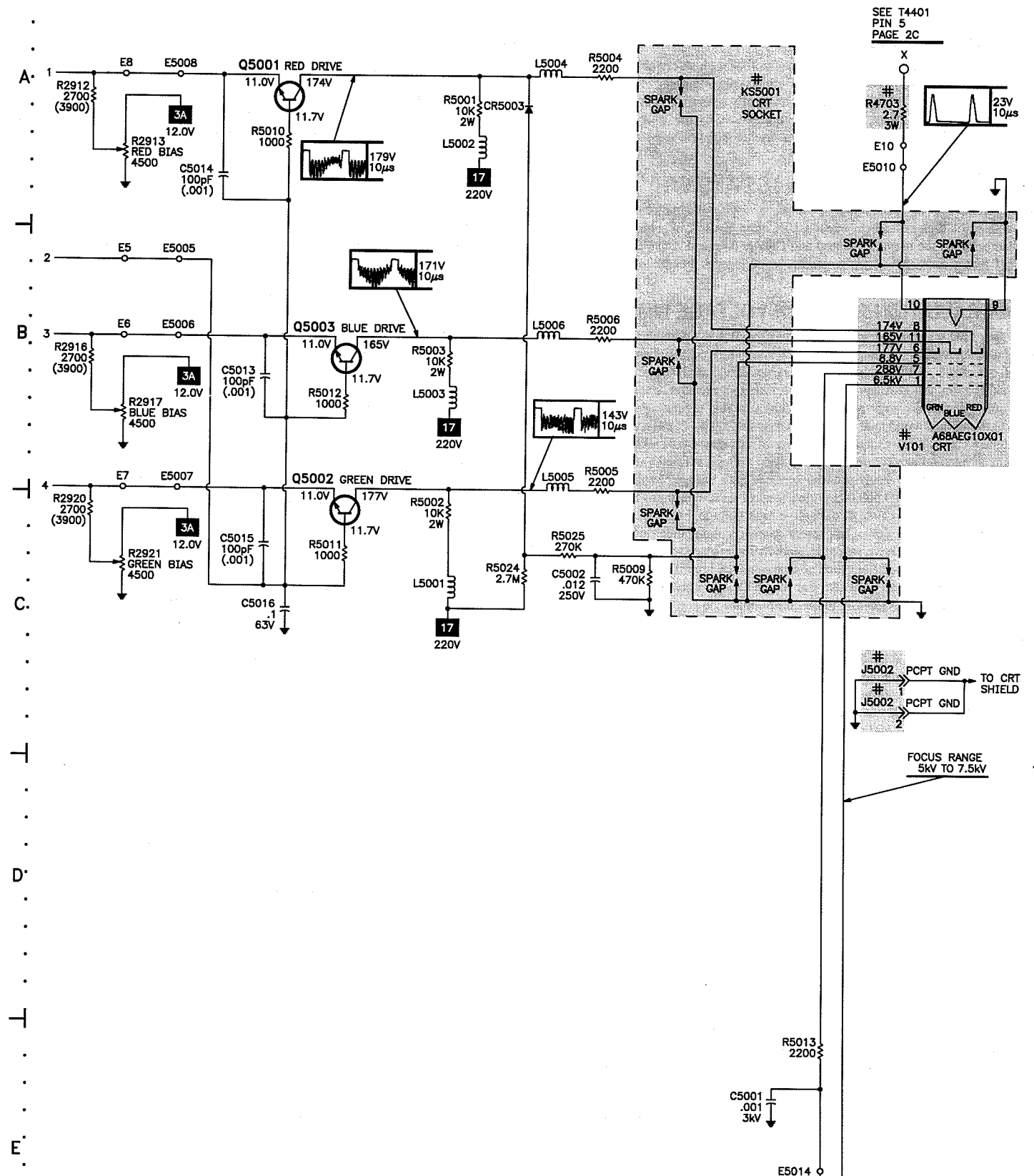


## POWER SUPPLY SCHEMATIC <sup>G</sup> continued



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## H CRT SCHEMATIC



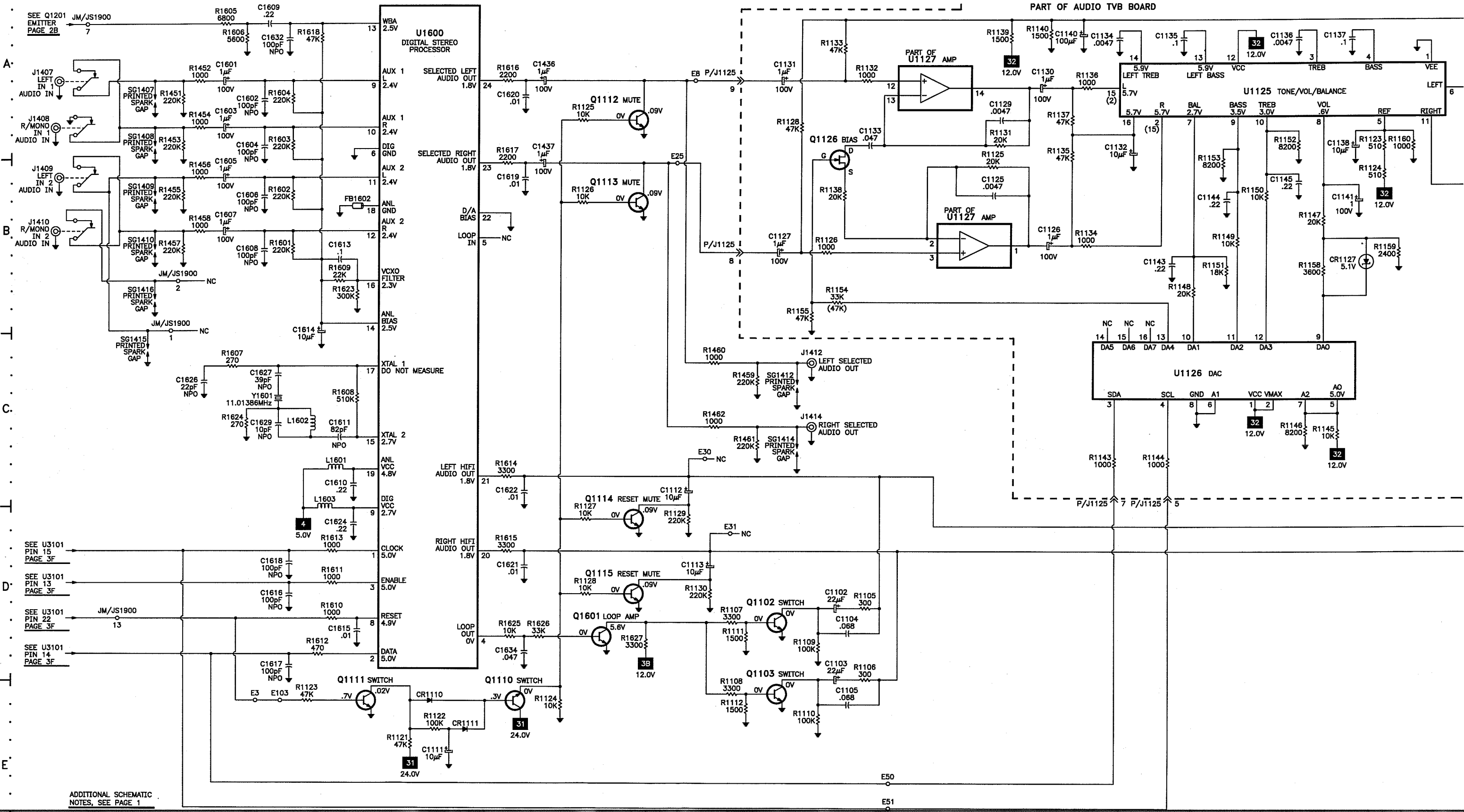
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AUDIO SCHEMATIC



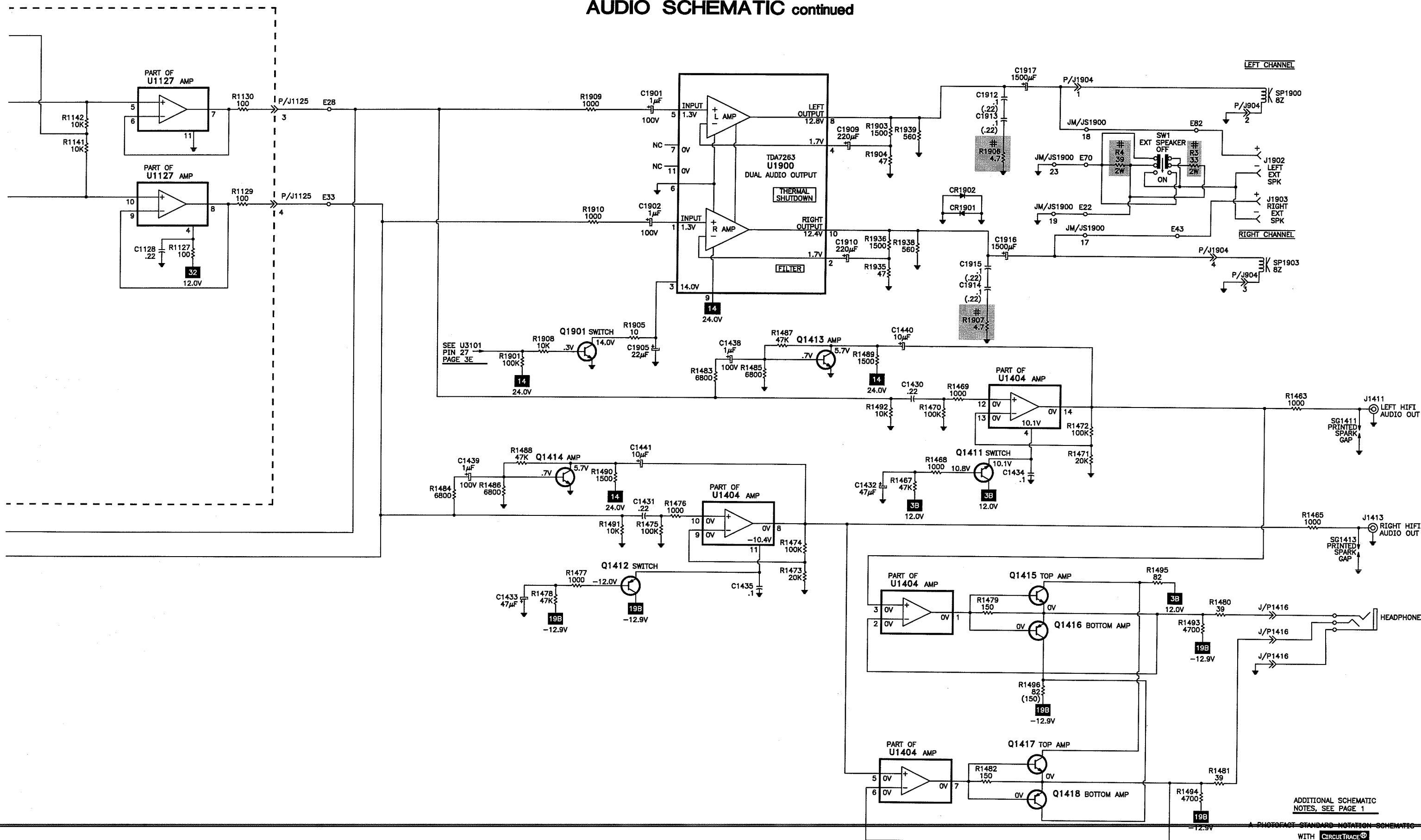
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# AUDIO SCHEMATIC continued



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# SYSTEM CONTROL SCHEMATIC

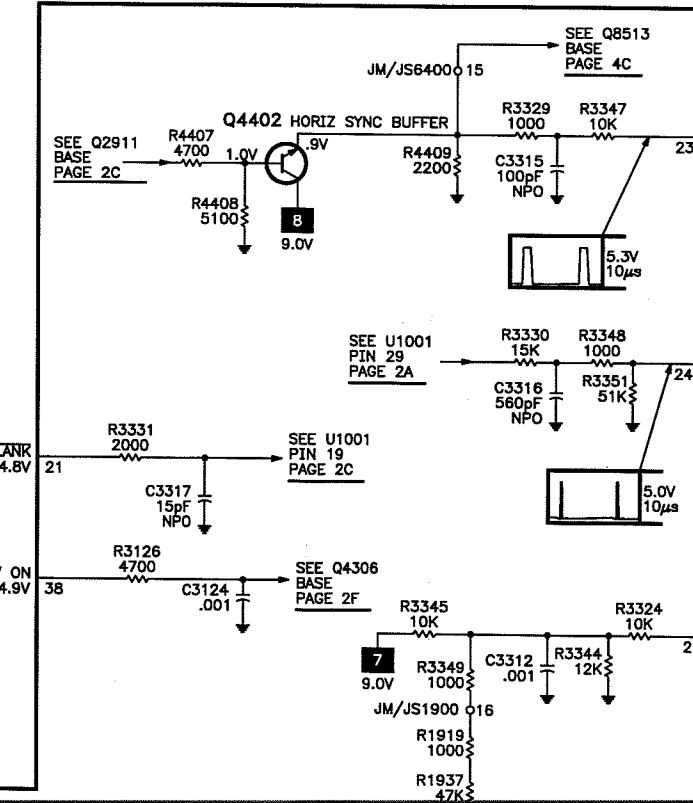
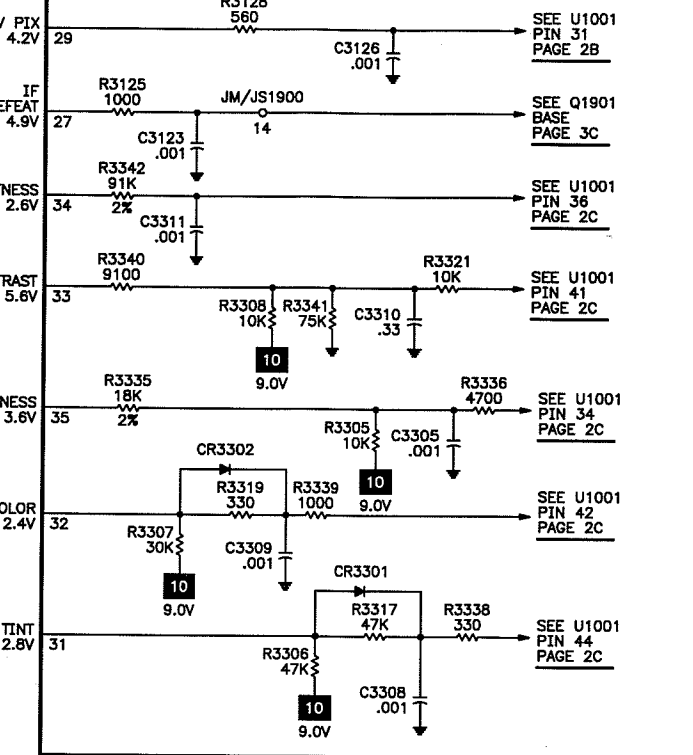
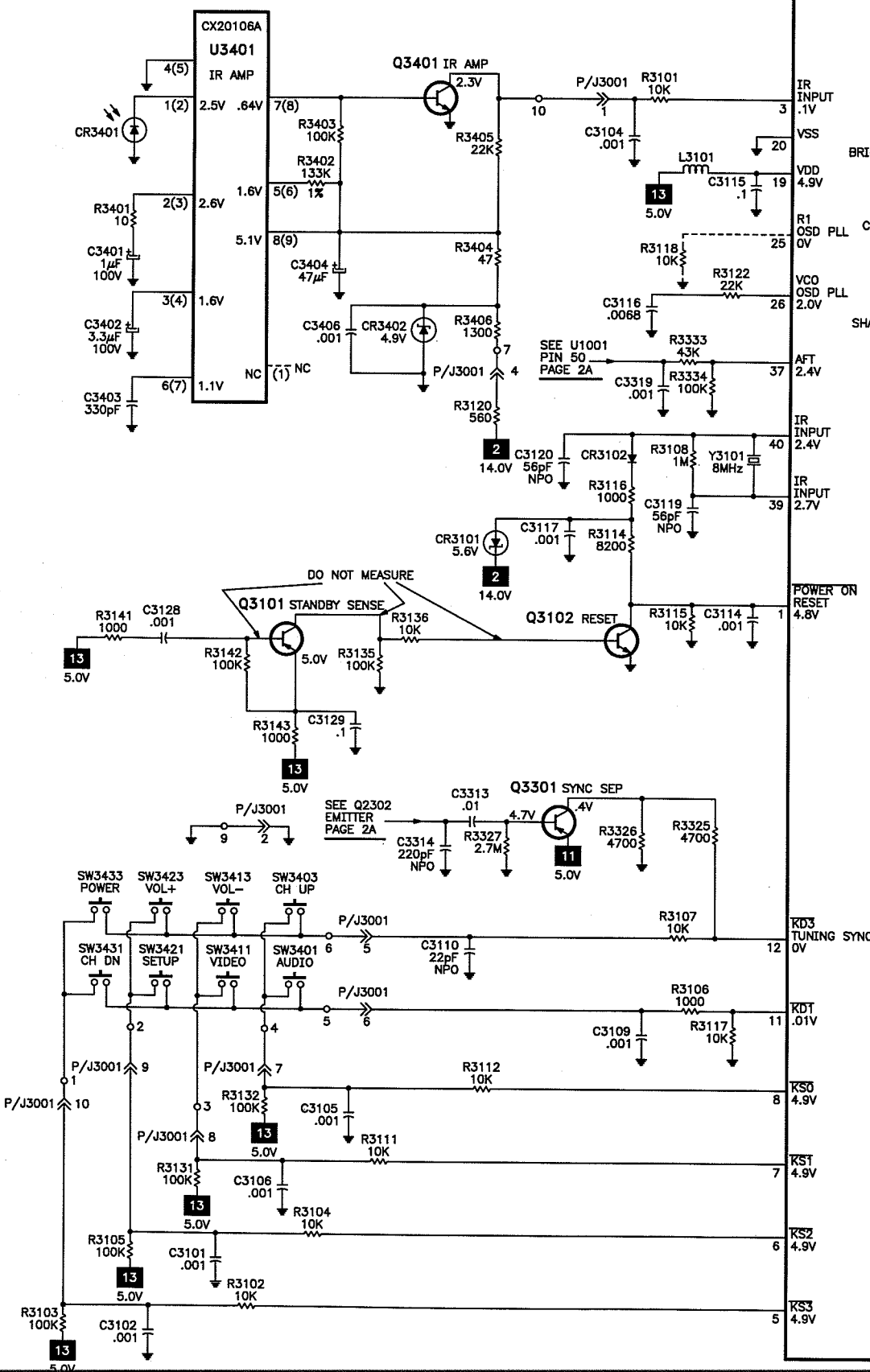
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B

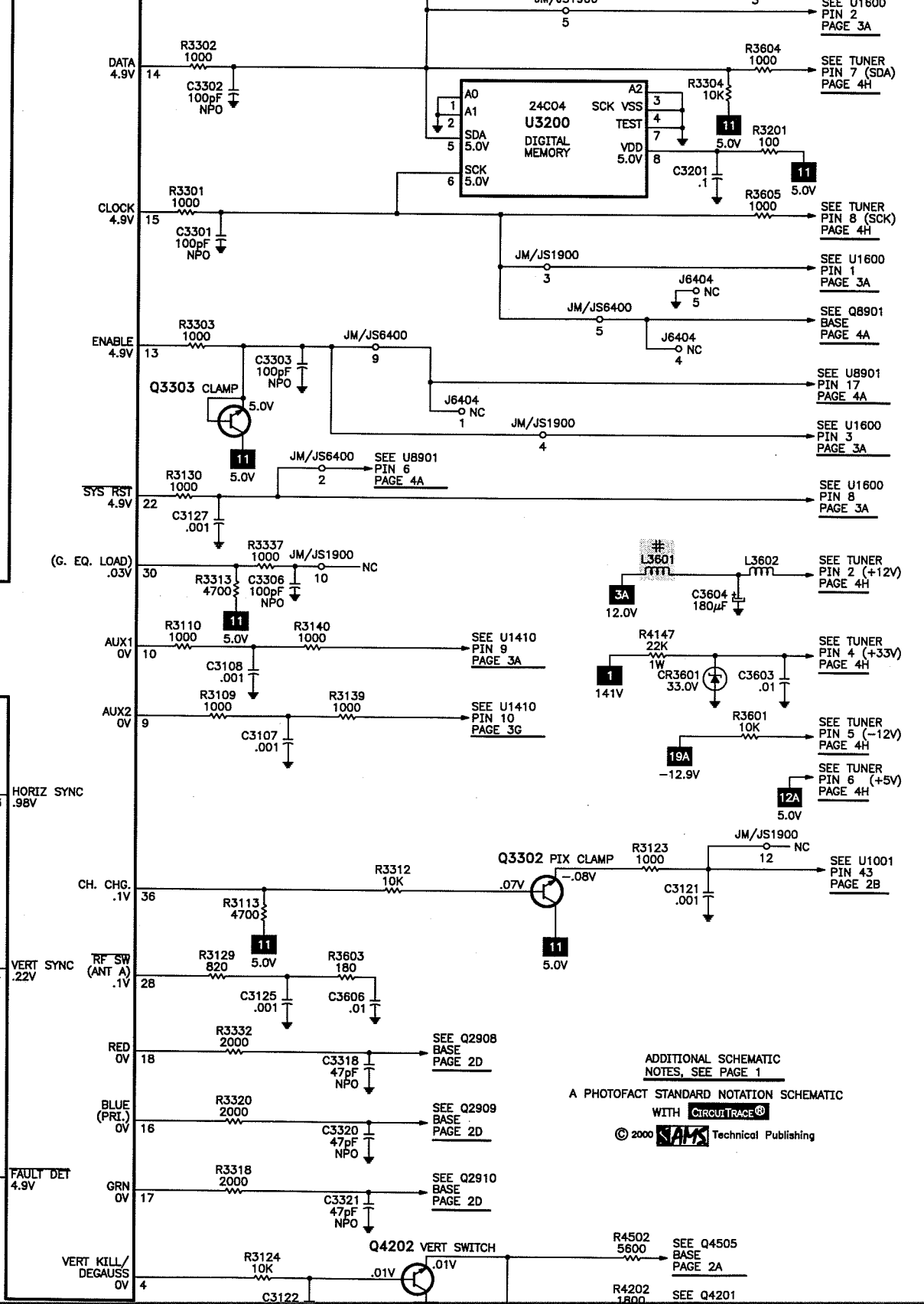
C

D

E

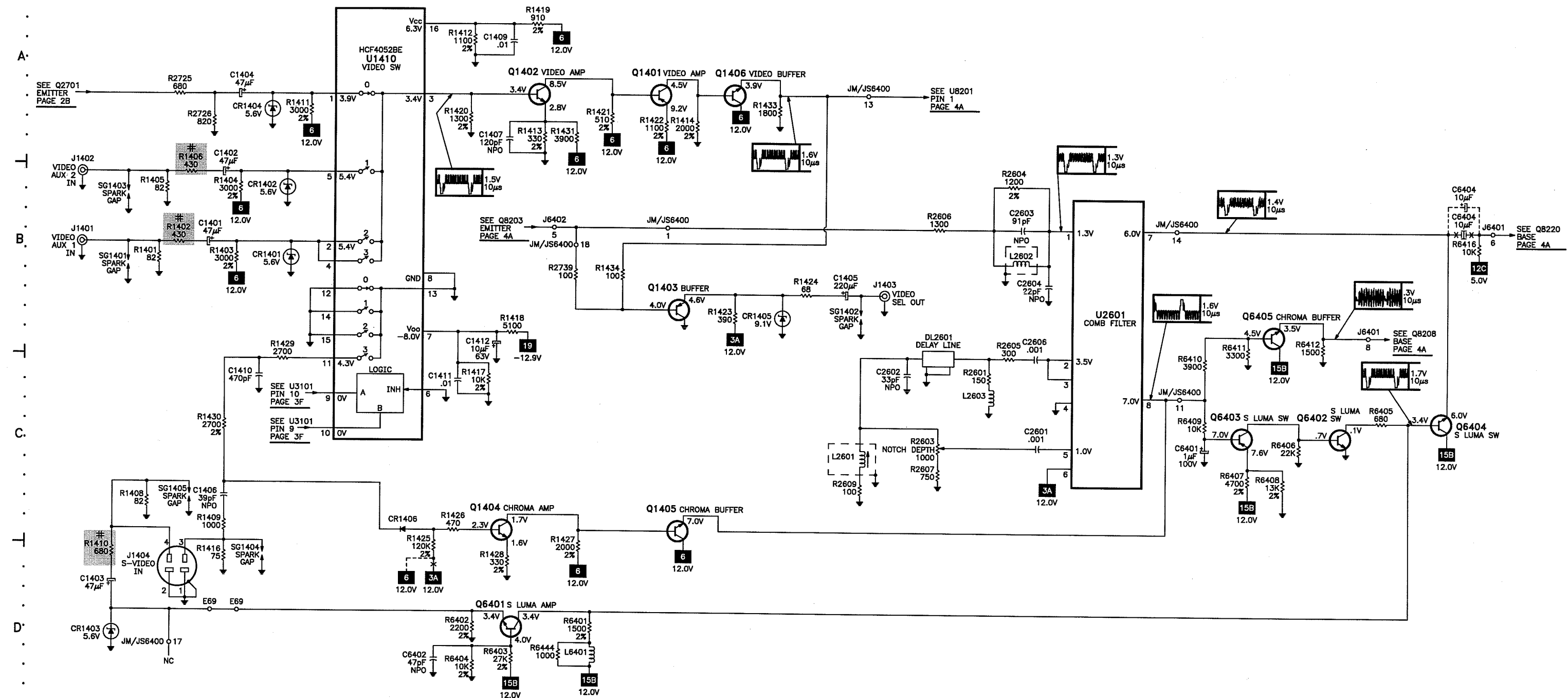


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# VIDEO SWITCHING / COMB FILTER SCHEMATIC



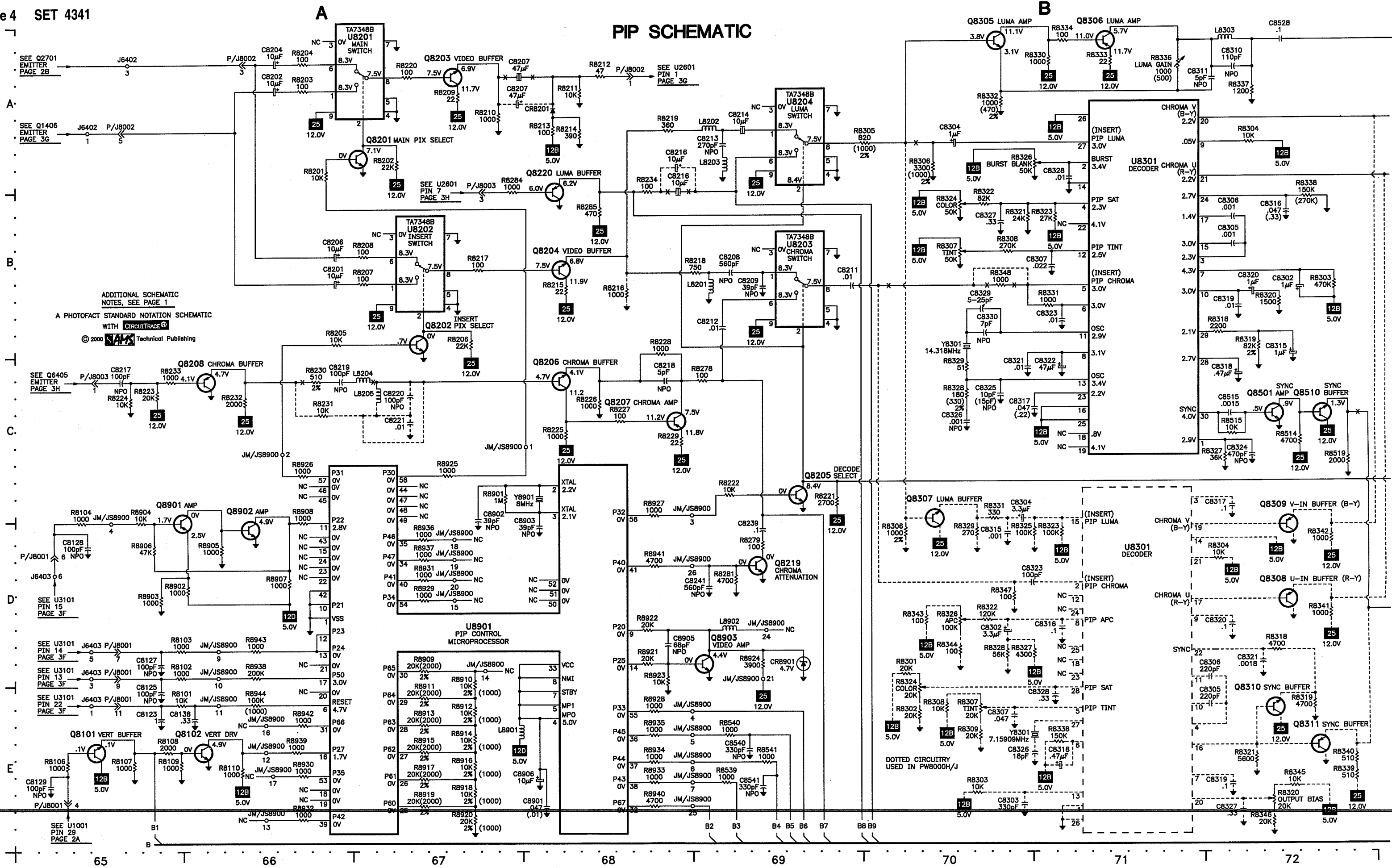
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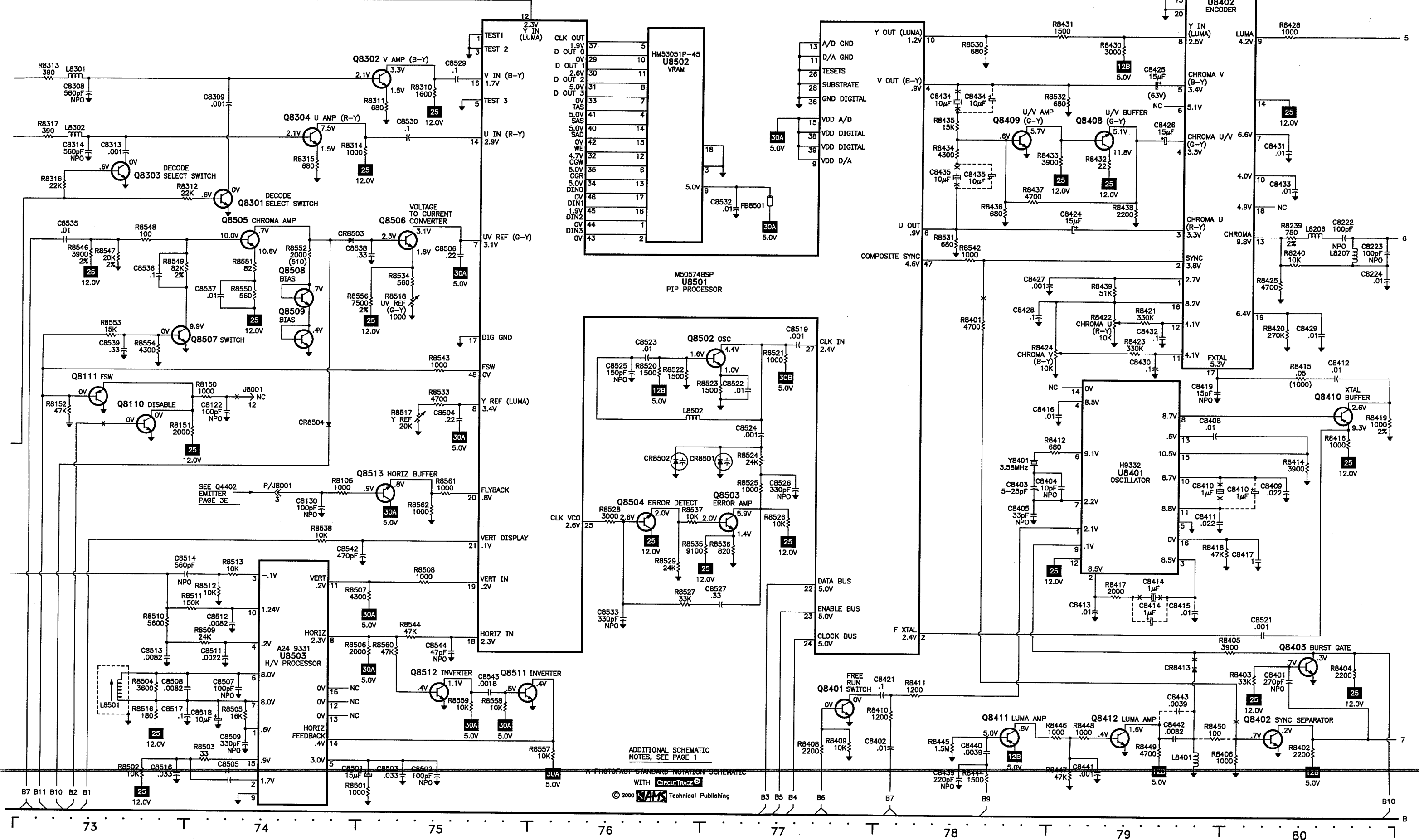
RCA

MODEL F27191DGF02 (CHASSIS CTC169GC)

PIP SCHEMATIC

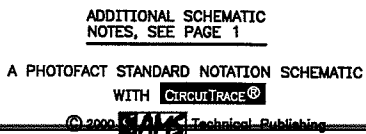
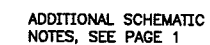


### PIP SCHEMATIC continued





# E

**F**

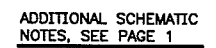
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## H

BCA

**MODEL E27191DGE02 (CHASSIS CTC169GC)**



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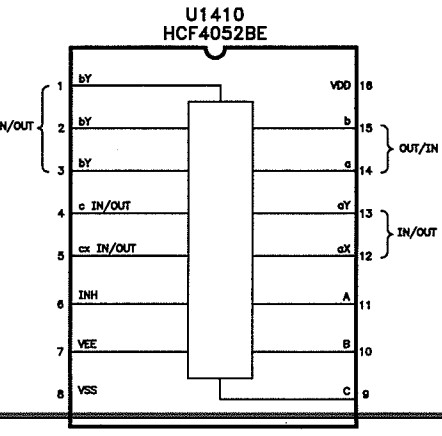
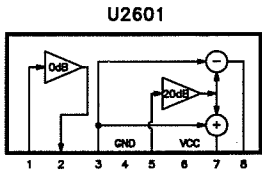
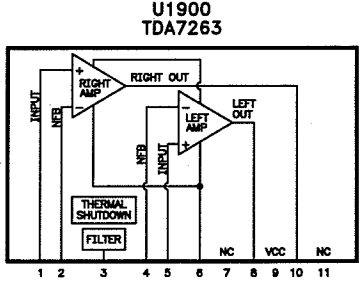
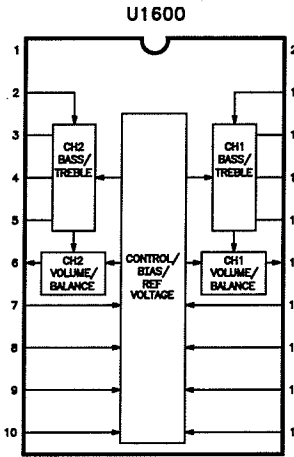
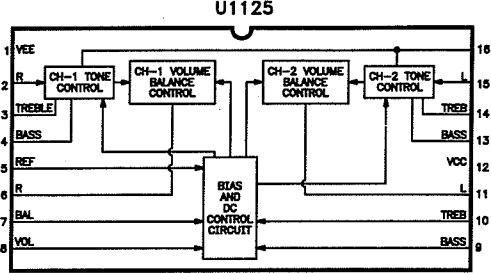
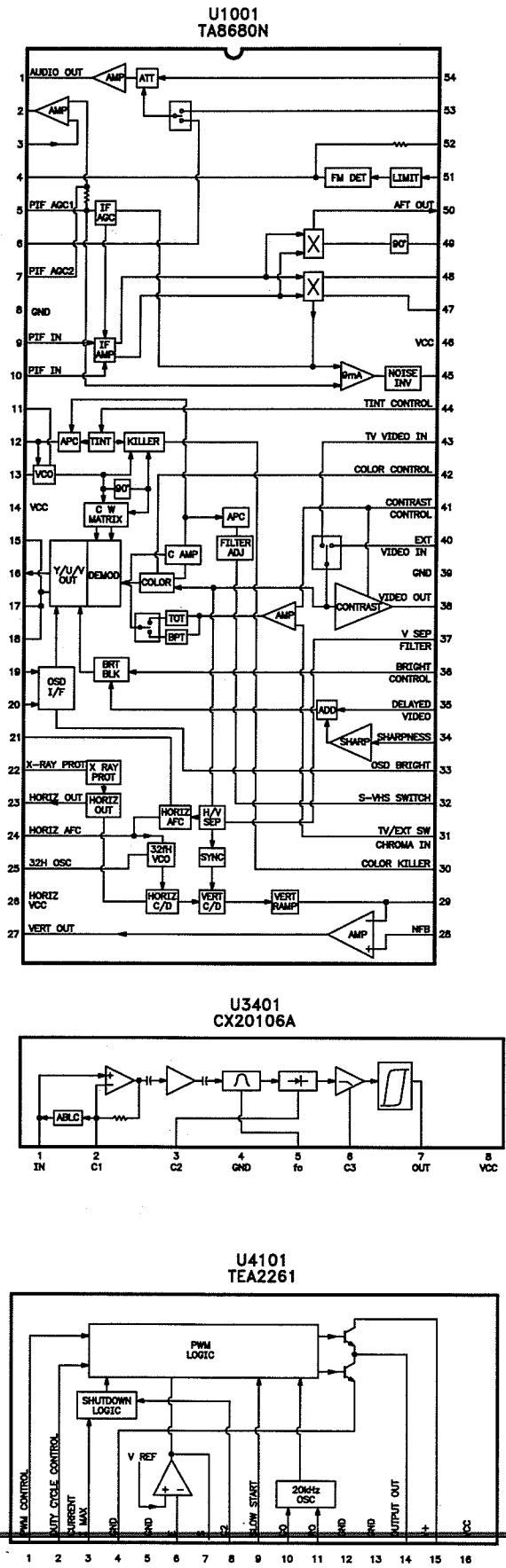
SCHEMATIC COMPONENT LOCATION GUIDE

|       |     |       |     |       |     |       |     |       |     |       |     |       |     |        |     |        |     |        |     |       |     |       |     |       |     |       |     |       |     |       |     |       |       |       |     |
|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|--------|-----|--------|-----|--------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-------|-------|-----|
| C1    | A17 | C1614 | C34 | C2804 | B8  | C3403 | B49 | C4504 | D4  | C8206 | B66 | C8323 | B71 | C8519  | C77 | CR4115 | E1  | K4201  | A18 | Q1401 | A60 | Q6401 | D59 | R1105 | D37 | R1414 | A60 | R1608 | C34 | R2709 | A9  | R2945 | B15   | R3337 | C54 |
| C1101 | B27 | C1615 | D34 | C2805 | B9  | C3404 | B50 | C4511 | C8  | C8207 | A67 | C8323 | D70 | C8520  | C24 | CR4116 | A22 | K4201  | B18 | Q1402 | A59 | Q6402 | C63 | R1106 | E37 | R1416 | D58 | R1609 | B34 | R2710 | A10 | R2946 | A12   | R3338 | C53 |
| C1102 | D37 | C1616 | D34 | C2806 | B11 | C3406 | B50 | C4512 | D2  | C8207 | A67 | C8324 | C72 | C8521  | D80 | CR4117 | B22 | K55001 | A31 | Q1403 | B60 | Q6403 | C63 | R1107 | D36 | R1417 | C59 | R1610 | D34 | R2711 | A10 | R2947 | A13   | R3339 | B52 |
| C1103 | E37 | C1617 | D34 | C2807 | B7  | C3602 | B24 | C4518 | D5  | C8208 | B69 | C8325 | C70 | C8522  | C77 | CR4118 | B22 | L1     | A17 | Q1404 | D59 | Q6404 | C64 | R1108 | E36 | R1418 | C59 | R1611 | D34 | R2712 | B10 | R3101 | A51   | R3340 | B52 |
| C1104 | D37 | C1618 | D34 | C2808 | B8  | C3603 | C56 | C4519 | D5  | C8209 | B69 | C8326 | C70 | C8523  | C76 | CR4119 | D22 | L2     | A17 | Q1405 | D60 | Q6405 | C63 | R1109 | D37 | R1419 | A59 | R1612 | D34 | R2718 | C11 | R3102 | E49   | R3341 | B52 |
| C1105 | E37 | C1619 | B35 | C2809 | D28 | C3604 | C56 | C4520 | D7  | C8210 | C27 | C8326 | E70 | C8524  | C77 | CR4120 | D22 | L1201  | A21 | Q1406 | A60 | Q8101 | E65 | R1110 | E37 | R1420 | A59 | R1613 | D34 | R2719 | C11 | R3103 | E49   | R3342 | A52 |
| C1110 | D24 | C1620 | A35 | C2810 | D28 | C3605 | B28 | C4521 | D5  | C8211 | B69 | C8327 | B70 | C8525  | C76 | CR4121 | E2  | L1601  | C34 | Q1411 | C46 | Q8102 | E66 | R1111 | D37 | R1421 | A59 | R1614 | C35 | R2720 | C11 | R3104 | E50   | R3343 | A11 |
| C1111 | E35 | C1621 | D35 | C2811 | A14 | C3606 | D54 | C4522 | D6  | C8212 | B69 | C8327 | E72 | C8526  | D77 | CR4122 | B20 | L1602  | C34 | Q1412 | D44 | Q8110 | C73 | R1112 | E37 | R1422 | A60 | R1615 | D35 | R2721 | C10 | R3105 | E49   | R3344 | E53 |
| C1112 | C36 | C1622 | C35 | C2812 | B14 | C4002 | A18 | C4523 | E6  | C8213 | A69 | C8328 | B71 | C8527  | D77 | CR4123 | E19 | L1603  | D34 | Q1413 | C45 | Q8111 | C73 | R1120 | D24 | R1423 | B60 | R1616 | A35 | R2722 | A8  | R3106 | D51   | R3345 | E52 |
| C1113 | D36 | C1623 | B28 | C2813 | C13 | C4005 | A18 | C4524 | D7  | C8214 | A69 | C8328 | E71 | C8528  | A72 | CR4201 | B18 | L2301  | B1  | Q1414 | C44 | Q8201 | A66 | R1121 | E35 | R1424 | B60 | R1617 | B35 | R2723 | A8  | R3107 | D51   | R3346 | A11 |
| C1125 | B38 | C1624 | D34 | C2814 | B7  | C4006 | B17 | C4525 | C4  | C8215 | C28 | C8329 | B70 | C8529  | A75 | CR4302 | E24 | L2302  | B4  | Q1415 | D46 | Q8202 | C67 | R1122 | E35 | R1425 | D59 | R1618 | A34 | R2724 | B7  | R3108 | B51   | R3347 | D53 |
| C1126 | B38 | C1626 | C34 | C2815 | B7  | C4007 | A19 | C4610 | C23 | C8216 | B68 | C8330 | B70 | C8530  | B75 | CR4303 | E24 | L2305  | B3  | Q1416 | D46 | Q8203 | A67 | R1123 | B40 | R1426 | D59 | R1623 | B34 | R2725 | A57 | R3109 | C54   | R3348 | D53 |
| C1127 | B37 | C1627 | C34 | C2905 | A11 | C4008 | C17 | C4611 | C23 | C8216 | B68 | C8401 | E80 | C8531  | C24 | CR4304 | D3  | L2306  | A3  | Q1417 | E46 | Q8204 | B68 | R1123 | E34 | R1427 | D59 | R1624 | C34 | R2726 | A57 | R3110 | C54   | R3349 | E53 |
| C1128 | B41 | C1628 | B28 | C2909 | A12 | C4009 | A19 | C4612 | C24 | C8217 | C65 | C8402 | E78 | C8532  | B77 | CR4401 | E5  | L2307  | B5  | Q1418 | E46 | Q8205 | C69 | R1124 | B40 | R1428 | D59 | R1625 | D35 | R2727 | B11 | R3111 | E50   | R3351 | D53 |
| C1129 | A38 | C1629 | C34 | C2910 | A13 | C4101 | D18 | C4701 | D10 | C8218 | C68 | C8403 | D78 | C8533  | D76 | CR4402 | E5  | L2601  | C61 | Q1601 | D36 | Q8206 | C68 | R1124 | E36 | R1429 | C58 | R1626 | D35 | R2730 | A9  | R3112 | E50   | R3401 | B49 |
| C1130 | A38 | C1630 | B28 | C2911 | B14 | C4102 | C19 | C4702 | D12 | C8219 | C66 | C8404 | D79 | C8535  | B73 | CR4403 | D13 | L2602  | B61 | Q1901 | C44 | Q8207 | C68 | R1125 | A36 | R1430 | C58 | R1627 | D36 | R2731 | A9  | R3113 | D54   | R3402 | B50 |
| C1131 | A37 | C1632 | A34 | C2918 | B16 | C4103 | D18 | C4703 | D12 | C8220 | C67 | C8405 | D78 | C8536  | B73 | CR4404 | C13 | L2603  | C61 | Q2301 | B1  | Q8208 | C66 | R1125 | B38 | R1431 | A59 | R1901 | C43 | R2732 | A8  | R3114 | C51   | R3403 | A50 |
| C1132 | B39 | C1633 | B27 | C2919 | B16 | C4104 | C19 | C4704 | D12 | C8221 | C67 | C8406 | C28 | C8537  | B74 | CR4405 | E5  | L2702  | A10 | Q2302 | B4  | Q8209 | B81 | R1126 | B36 | R1432 | C27 | R1903 | A45 | R2733 | A9  | R3115 | C51   | R3404 | B50 |
| C1133 | B37 | C1634 | D35 | C2920 | A16 | C4105 | B19 | C4705 | D12 | C8222 | B80 | C8408 | C79 | C8538  | B75 | CR4501 | D5  | L2704  | A8  | Q2701 | B6  | Q8210 | B81 | R1126 | B37 | R1433 | A60 | R1904 | B45 | R2734 | A10 | R3116 | C51   | R3405 | A50 |
| C1134 | A39 | C1901 | A44 | C2924 | A14 | C4106 | C18 | C4706 | B25 | C8223 | B80 | C8409 | D80 | C8539  | C73 | CR4502 | D4  | L2705  | D27 | Q2702 | A9  | Q8211 | D82 | R1127 | B42 | R1434 | B60 | R1905 | C44 | R2735 | A10 | R3117 | D51   | R3406 | B50 |
| C1135 | A39 | C1902 | B44 | C2925 | B14 | C4107 | C19 | C4707 | D11 | C8224 | B80 | C8410 | D80 | C8540  | E69 | CR4503 | D7  | L2706  | B23 | Q2703 | C11 | Q8212 | D83 | R1127 | D36 | R1451 | A33 | R1906 | B46 | R2736 | A10 | R3118 | B51   | R3424 | D27 |
| C1136 | A40 | C1905 | C44 | C2926 | C14 | C4108 | C20 | C4711 | E12 | C8225 | B81 | C8410 | D80 | C8541  | E69 | CR4504 | D7  | L2801  | A14 | Q2707 | A8  | Q8213 | D82 | R1128 | A37 | R1452 | A33 | R1907 | B46 | R2737 | A10 | R3119 | D27   | R3601 | C56 |
| C1137 | A40 | C1906 | D24 | C2928 | B28 | C4109 | C20 | C4712 | B24 | C8226 | B81 | C8411 | D80 | C8542  | D75 | CR4511 | C4  | L2802  | B14 | Q2708 | A10 | Q8214 | D83 | R1128 | D36 | R1453 | B33 | R1908 | C43 | R2738 | A10 | R3120 | B50   | R3602 | C1  |
| C1138 | B40 | C1909 | A45 | C3101 | E49 | C4110 | C21 | C4713 | E11 | C8227 | B82 | C8412 | C80 | C8543  | E75 | CR4512 | D6  | L2803  | C13 | Q2709 | B11 | Q8219 | D69 | R1129 | B42 | R1454 | A33 | R1909 | A44 | R2739 | B59 | R3122 | B51   | R3603 | D54 |
| C1139 | B27 | C1910 | B45 | C3102 | E49 | C4111 | C21 | C4714 | B26 | C8228 | A82 | C8413 | D79 | C8544  | E75 | CR4606 | C23 | L2804  | B7  | Q2903 | A14 | Q8220 | B68 | R1129 | D36 | R1455 | B33 | R1910 | B44 | R2740 | C11 | R3123 | D55   | R3604 | A56 |
| C1140 | A38 | C1912 | A46 | C3103 | D27 | C4112 | C21 | C4715 | B25 | C8228 | A82 | C8414 | D79 | C8901  | E68 | CR4701 | D12 | L3101  | B51 | Q2904 | B14 | Q8221 | B81 | R1130 | A42 | R1456 | B33 | R1919 | E53 | R2742 | B6  | R3124 | E54   | R3605 | B56 |
| C1141 | B40 | C1913 | A46 | C3104 | A51 | C4113 | D21 | C4716 | D12 | C8229 | C24 | C8414 | D79 | C8902  | D67 | CR4702 | D11 | L3601  | C55 | Q2905 | C14 | Q8301 | B74 | R1130 | D36 | R1457 | B33 | R1935 | B45 | R2801 | B9  | R3125 | A52   | R4001 | A18 |
| C1142 | B28 | C1914 | B46 | C3105 | E50 | C4114 | E18 | C4801 | E16 | C8230 | D82 | C8415 | D79 | C8903  | D68 | CR4705 | E11 | L3602  | C56 | Q2906 | A13 | Q8302 | A75 | R1131 | B38 | R1458 | B33 | R1936 | B45 | R2802 | B9  | R3126 | E52   | R4002 | A18 |
| C1143 | B39 | C1915 | B46 | C3106 | E49 | C4115 | D19 | C4802 | E16 | C8233 | E82 | C8416 | C79 | C8904  | C24 | CR4709 | C23 | L4101  | C20 | Q2908 | A15 | Q8303 | B73 | R1132 | A37 | R1459 | C37 | R1937 | E53 | R2803 | C9  | R3128 | A52   | R4003 | A19 |
| C1144 | B39 | C1916 | B46 | C3107 | C54 | C4116 | E1  | C4807 | E8  | C8236 | D83 | C8417 | D80 | C8905  | D68 | CR4710 | C23 | L4201  | B18 | Q2909 | B16 | Q8304 | B74 | R1133 | A37 | R1460 | C36 | R1938 | B46 | R2804 | C10 | R3129 | D54   | R4101 | C19 |
| C1145 | B40 | C1917 | A46 | C3108 | C54 | C4118 | B19 | C4808 | E13 | C8238 | D83 | C8419 | C79 | C8906  | E68 | CR4712 | B25 | L4401  | E6  | Q2910 | B15 | Q8305 | A70 | R1134 | B38 | R1461 | C37 | R1939 | A46 | R2805 | B8  | R3130 | C54   | R4102 | C18 |
| C1146 | B28 | C1918 | D24 | C3109 | D51 | C4136 | D19 | C4811 | E16 | C8239 | D69 | C8421 | E77 | CF1201 | A4  | CR4713 | D11 | L4701  | E11 | Q2911 | A12 | Q8306 | A71 | R1135 | B38 | R1462 | C36 | R2301 | B1  | R2806 | B8  | R3131 | E49   | R4103 | C18 |
| C1201 | B5  | C2301 | B2  | C3110 | D50 | C4138 | E20 | C4812 | E16 | C8240 | C82 | C8422 | C27 | CF2301 | B5  | CR4803 | E16 | L4702  | D11 | Q3101 | C49 | Q8307 | D70 | R1136 | A38 | R1463 | C48 | R2302 | B1  | R2809 | A14 | R3132 | E49   | R4104 | C18 |
| C1203 | A6  | C2302 | B1  | C3114 | C51 | C4139 | E20 | C4813 | D12 | C8241 | D69 | C8424 | B79 | CR1110 | E35 | CR4805 | D14 | L4803  | D16 | Q3102 | C50 | Q8308 | D72 | R1137 | A38 | R1465 | D48 | R2303 | B1  | R2810 | B14 | R3135 | C50   | R4105 | C19 |
| C1204 | A6  | C2303 | B2  | C3115 | B51 | C4140 | A22 | C4814 | E16 | C8242 | B81 | C8425 | A79 | CR1111 | E35 | CR4806 | A25 | L5001  | C30 | Q3301 | D50 | Q8309 | D72 | R1138 | B37 | R1467 | C46 | R2304 | B1  | R2811 | B13 | R3136 | C50   | R4107 | C20 |
| C1401 | B57 | C2304 | B3  | C3116 | B51 | C4141 | A28 | C4815 | D14 | C8244 | C27 | C8426 | B79 | CR1127 | B40 | CR4901 | E2  | L5002  | A30 | Q3302 | D55 | Q8310 | E72 | R1139 | A38 | R1468 | C46 | R2305 | B1  | R2812 | B7  | R3138 | A7    | R4108 | C20 |
| C1402 | B57 | C2305 | B4  | C3117 | C50 | C4142 | B22 | C4816 | D14 | C8301 | C24 | C8427 | B78 | CR1401 | B58 | CR4902 | D2  | L5003  | B30 | Q3303 | B54 | Q8311 | E72 | R1140 | A38 | R1469 | C46 | R2306 | B2  | R2813 | B10 | R3139 | C54   | R4109 | C20 |
| C1403 | D57 | C2306 | C3  | C3119 | C51 | C4143 | B22 | C4817 | D12 | C8302 | B72 | C8428 | C78 | CR1402 | B58 | CR5003 | A30 | L5004  | A30 | Q3401 | A50 | Q8401 | E77 | R1141 | A41 | R1470 | C46 | R2307 | B2  | R2814 | B10 | R3140 | C54   | R4110 | C20 |
| C1404 | A58 | C2307 | C2  | C3120 | B50 | C4144 | B22 | C4901 | E2  | C8302 | D70 | C8429 | C80 | CR1403 | D57 | CR8201 | A68 | L5005  | C30 | Q4101 | C20 | Q8402 | E80 | R1142 | A41 | R1471 | C47 | R2308 | B3  | R2815 | B9  | R3141 | C49   | R4113 | C18 |
| C1405 | B61 | C2308 | B2  | C3121 | D56 | C4145 | A28 | C4902 | E2  | C8303 | C24 | C8430 | C79 | CR1404 | A58 | CR8413 | E79 | L5006  | B30 | Q4105 | D19 | Q8403 | E80 | R1143 | C39 | R1472 | C47 | R2309 | B3  | R2816 | C9  | R3142 | C49   | R4114 | D18 |
| C1406 | C58 | C2309 | B3  | C3122 | E54 | C4146 | D22 | C4903 | D2  | C8303 | E70 | C8431 | B80 | CR1405 | B60 | CR8501 | C77 | L6401  | D59 | Q4106 | D20 | Q8404 | C81 | R1144 | C39 | R1473 | D45 | R2310 | B4  | R2817 | B7  | R3143 | C49   | R4115 | E18 |
| C1407 | A59 | C2310 | B4  | C3123 | A52 | C4147 | D22 | C4905 | D2  | C8304 | A70 | C8432 | C79 | CR1406 | D58 | CR8502 | C76 | L8101  | C23 | Q4107 | D20 | Q8405 | C82 | R1145 | C40 | R1474 | D45 | R2311 | C3  | R2901 | A15 | R3201 | A56</ |       |     |

SCHEMATIC COMPONENT LOCATION GUIDE continued

|       |     |       |     |       |     |       |     |       |     |       |     |        |     |       |     |
|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|--------|-----|-------|-----|
| R4202 | E55 | R4719 | B25 | R8202 | A67 | R8304 | A72 | R8412 | C78 | R8532 | A79 | R8943  | D66 | U8503 | E74 |
| R4302 | E1  | R4720 | D11 | R8203 | A66 | R8304 | D71 | R8413 | C82 | R8533 | C75 | R8944  | E66 | U8901 | D67 |
| R4303 | D3  | R4721 | C10 | R8204 | A66 | R8305 | A69 | R8414 | C80 | R8534 | B75 | RT4201 | A18 | V101  | B32 |
| R4306 | D1  | R4802 | E14 | R8205 | C66 | R8306 | A70 | R8415 | C80 | R8535 | D77 | SCR501 | D7  | Y1601 | C34 |
| R4307 | D1  | R4805 | D13 | R8206 | C67 | R8306 | D70 | R8416 | C80 | R8536 | D77 | SF2301 | B2  | Y2801 | B8  |
| R4308 | E24 | R4806 | E14 | R8207 | B66 | R8307 | B70 | R8417 | D79 | R8537 | D76 | SG1401 | B57 | Y3101 | B51 |
| R4309 | E23 | R4807 | E16 | R8208 | B66 | R8307 | E70 | R8418 | D80 | R8538 | D74 | SG1402 | B61 | Y4301 | D3  |
| R4310 | E23 | R4808 | E6  | R8209 | A67 | R8308 | B70 | R8419 | C80 | R8539 | E69 | SG1403 | B57 | Y8301 | C70 |
| R4311 | E3  | R4809 | E16 | R8210 | A67 | R8308 | E70 | R8420 | C80 | R8540 | E69 | SG1404 | D58 | Y8301 | E70 |
| R4312 | D23 | R4810 | E14 | R8211 | A68 | R8309 | E70 | R8421 | C79 | R8541 | E69 | SG1405 | C57 | Y8401 | C78 |
| R4313 | E3  | R4812 | D8  | R8212 | A68 | R8310 | A75 | R8422 | C79 | R8542 | B78 | SG1407 | A33 | Y8901 | C68 |
| R4314 | E3  | R4813 | D8  | R8213 | A68 | R8311 | A75 | R8423 | C79 | R8543 | C75 | SG1408 | B33 |       |     |
| R4315 | E1  | R4814 | D8  | R8214 | A68 | R8312 | B73 | R8424 | C79 | R8544 | D75 | SG1409 | B33 |       |     |
| R4317 | E22 | R4815 | E8  | R8215 | B68 | R8313 | A73 | R8425 | B80 | R8546 | B73 | SG1410 | B33 |       |     |
| R4318 | E22 | R4817 | E16 | R8216 | B68 | R8314 | B75 | R8427 | A81 | R8547 | B73 | SG1411 | C48 |       |     |
| R4319 | E3  | R4818 | E15 | R8217 | B67 | R8315 | B74 | R8427 | A82 | R8548 | B73 | SG1412 | C37 |       |     |
| R4320 | D1  | R4819 | E14 | R8218 | B68 | R8316 | B73 | R8428 | A80 | R8549 | B74 | SG1413 | D48 |       |     |
| R4321 | E1  | R4821 | B25 | R8219 | A68 | R8317 | B73 | R8429 | A81 | R8550 | B74 | SG1414 | C37 |       |     |
| R4322 | E24 | R4823 | E13 | R8220 | A67 | R8318 | B71 | R8429 | A81 | R8551 | B74 | SG1415 | C33 |       |     |
| R4401 | E6  | R4824 | E13 | R8221 | C69 | R8318 | D72 | R8430 | A79 | R8552 | B74 | SG1416 | B33 |       |     |
| R4402 | E4  | R4825 | D13 | R8222 | C69 | R8319 | C72 | R8431 | A78 | R8553 | C73 | SG4701 | D10 |       |     |
| R4404 | D13 | R4826 | D14 | R8223 | C65 | R8319 | E72 | R8432 | B79 | R8554 | C73 | SP1900 | A48 |       |     |
| R4406 | C13 | R4901 | D2  | R8224 | C65 | R8320 | B72 | R8433 | B79 | R8556 | B75 | SP1903 | B48 |       |     |
| R4407 | D52 | R4902 | E2  | R8225 | C68 | R8320 | E72 | R8434 | B78 | R8557 | E76 | SW3401 | D49 |       |     |
| R4408 | D52 | R4903 | D2  | R8226 | C68 | R8321 | B70 | R8435 | A78 | R8558 | E75 | SW3403 | D49 |       |     |
| R4409 | D53 | R4904 | D2  | R8227 | C68 | R8321 | E72 | R8436 | B78 | R8559 | E75 | SW3411 | D49 |       |     |
| R4501 | D4  | R4905 | D1  | R8228 | C68 | R8322 | B70 | R8437 | B78 | R8560 | E75 | SW3413 | D49 |       |     |
| R4502 | E55 | R5001 | A30 | R8229 | C68 | R8322 | D70 | R8438 | B79 | R8561 | D75 | SW3421 | D49 |       |     |
| R4503 | D4  | R5002 | C30 | R8230 | C66 | R8323 | B71 | R8439 | B79 | R8562 | D75 | SW3423 | D49 |       |     |
| R4504 | D4  | R5003 | B30 | R8231 | C66 | R8323 | D71 | R8440 | C81 | R8901 | C67 | SW3431 | D49 |       |     |
| R4505 | D8  | R5004 | A31 | R8232 | C66 | R8324 | B70 | R8441 | C81 | R8902 | D66 | SW3433 | D49 |       |     |
| R4506 | D7  | R5005 | C31 | R8233 | C65 | R8324 | D70 | R8442 | C81 | R8903 | D65 | T4101  | D21 |       |     |
| R4507 | D4  | R5006 | B31 | R8234 | B68 | R8325 | D70 | R8443 | A81 | R8904 | D65 | T4102  | A21 |       |     |
| R4508 | D5  | R5009 | C31 | R8235 | B81 | R8326 | A70 | R8444 | E78 | R8905 | D66 | T4301  | D7  |       |     |
| R4509 | D5  | R5010 | A29 | R8236 | B81 | R8326 | D70 | R8445 | E78 | R8906 | D65 | T4301  | E4  |       |     |
| R4510 | D7  | R5011 | C30 | R8237 | B82 | R8327 | C72 | R8446 | E78 | R8907 | D66 | T4401  | C9  |       |     |
| R4511 | D7  | R5012 | B30 | R8238 | B82 | R8327 | D70 | R8447 | E79 | R8908 | D66 | U1001  | A5  |       |     |
| R4512 | D7  | R5013 | E31 | R8239 | B80 | R8328 | C70 | R8448 | E79 | R8909 | D67 | U1001  | B3  |       |     |
| R4513 | E7  | R5015 | D10 | R8240 | B80 | R8328 | D70 | R8449 | E79 | R8910 | E67 | U1001  | B8  |       |     |
| R4514 | D4  | R5024 | C30 | R8241 | B81 | R8329 | C70 | R8450 | E79 | R8911 | E67 | U1001  | D1  |       |     |
| R4515 | D6  | R5025 | C30 | R8242 | B81 | R8329 | D70 | R8501 | E75 | R8912 | E67 | U1125  | A39 |       |     |
| R4516 | C4  | R6401 | D59 | R8243 | B82 | R8330 | A71 | R8502 | E73 | R8913 | E67 | U1126  | C39 |       |     |
| R4518 | D6  | R6402 | D59 | R8244 | B82 | R8331 | B70 | R8503 | E74 | R8914 | E67 | U1127  | A37 |       |     |
| R4519 | D6  | R6403 | D59 | R8245 | A82 | R8331 | D70 | R8504 | E73 | R8915 | E67 | U1127  | A41 |       |     |
| R4520 | D8  | R6404 | D59 | R8246 | A82 | R8332 | A70 | R8505 | E74 | R8916 | E67 | U1127  | B38 |       |     |
| R4521 | D5  | R6405 | C63 | R8247 | C82 | R8333 | A71 | R8506 | E75 | R8917 | E67 | U1127  | B41 |       |     |
| R4522 | D4  | R6406 | C63 | R8248 | D82 | R8334 | A71 | R8507 | D75 | R8918 | E67 | U1404  | C46 |       |     |
| R4523 | C8  | R6407 | C63 | R8249 | D82 | R8336 | A71 | R8508 | D75 | R8919 | E67 | U1404  | D44 |       |     |
| R4524 | D3  | R6408 | C63 | R8250 | D83 | R8337 | A72 | R8509 | E74 | R8920 | E67 | U1404  | D45 |       |     |
| R4525 | D5  | R6409 | C62 | R8251 | D82 | R8338 | B72 | R8510 | D73 | R8921 | D68 | U1404  | E45 |       |     |
| R4526 | D5  | R6410 | C62 | R8252 | D83 | R8338 | E71 | R8511 | D74 | R8922 | D68 | U1410  | A58 |       |     |
| R4539 | D4  | R6411 | C63 | R8253 | D83 | R8339 | E72 | R8512 | D74 | R8923 | D68 | U1600  | A35 |       |     |
| R4542 | D5  | R6412 | C63 | R8255 | B83 | R8340 | E72 | R8513 | D74 | R8924 | D69 | U1900  | B45 |       |     |
| R4543 | D4  | R6414 | D3  | R8256 | B83 | R8341 | D72 | R8514 | C72 | R8925 | C67 | U2601  | B62 |       |     |
| R4544 | D6  | R6416 | B64 | R8257 | E82 | R8342 | D72 | R8515 | C72 | R8926 | C66 | U3101  | C52 |       |     |
| R4545 | C4  | R6443 | D4  | R8258 | E82 | R8343 | D70 | R8516 | E73 | R8927 | D68 | U3200  | A55 |       |     |
| R4546 | C4  | R6444 | D59 | R8259 | D82 | R8344 | D70 | R8517 | C75 | R8928 | E68 | U3401  | A49 |       |     |
| R4602 | C23 | R8101 | E65 | R8260 | E82 | R8345 | E72 | R8518 | B75 | R8929 | D67 | U4101  | C19 |       |     |
| R4604 | C24 | R8102 | E65 | R8261 | E83 | R8346 | E72 | R8519 | C72 | R8930 | E66 | U4501  | D6  |       |     |
| R4703 | A32 | R8103 | D65 | R8270 | D83 | R8347 | D70 | R8520 | C76 | R8931 | D67 | U4801  | D15 |       |     |
| R4704 | D10 | R8104 | D65 | R8271 | A83 | R8348 | B70 | R8521 | C77 | R8932 | E66 | U8201  | A67 |       |     |
| R4705 | C23 | R8105 | D74 | R8277 | E83 | R8401 | C78 | R8522 | C76 | R8933 | E68 | U8202  | B67 |       |     |
| R4710 | D26 | R8106 | E65 | R8278 | C68 | R8402 | E80 | R8523 | C77 | R8934 | E68 | U8203  | B69 |       |     |
| R4711 | C23 | R8107 | E65 | R8279 | D69 | R8403 | E80 | R8524 | C77 | R8935 | E68 | U8204  | A69 |       |     |
| R4712 | E17 | R8108 | E65 | R8281 | D69 | R8404 | E80 | R8525 | D77 | R8936 | D67 | U8205  | A82 |       |     |
| R4713 | E17 | R8109 | E65 | R8284 | B67 | R8405 | E80 | R8526 | D77 | R8937 | D67 | U8301  | A71 |       |     |
| R4714 | B25 | R8110 | E66 | R8285 | B68 | R8406 | E80 | R8527 | D76 | R8938 | E66 | U8301  | D71 |       |     |
| R4715 | D26 | R8150 | C74 | R8301 | D70 | R8408 | E77 | R8528 | D76 | R8939 | E66 | U8401  | C79 |       |     |
| R4716 | D26 | R8151 | C74 | R8302 | E70 | R8409 | E77 | R8529 | D76 | R8940 | E68 | U8402  | A79 |       |     |
| R4717 | B25 | R8152 | C73 | R8303 | D72 | R8410 | E78 | R8530 | A78 | R8941 | D68 | U8501  | B76 |       |     |
| R4718 | B25 | R8201 | B66 | R8303 | E70 | R8411 | E78 | R8531 | B78 | R8942 | E66 | U8502  | A76 |       |     |

IC FUNCTIONS



# MISCELLANEOUS ADJUSTMENTS

## B+ STANDBY

Tune in a picture. Set brightness, contrast, and color to minimum. Connect a voltmeter to the cathode of CR4116. With 120VAC line input, adjust R4113 for 141V ±.5V.

## HIGH VOLTAGE CHECK

Tune in a picture. Set brightness, contrast, and color to minimum. Connect a high voltage probe to the CRT anode. High voltage must measure 27.5kV to 30kV. High voltage must never exceed 30kV.

## RF AGC

NOTE: R2311 should not require adjustment unless the tuner, U1001, or R2311 has been replaced.

Tune in the weakest local station. Adjust R2311 fully counterclockwise, and then clockwise for best picture. Check all other available channels for proper adjustment.

## CONTRAST PRESET

Tune in a crosshatch pattern. Set brightness and color to minimum, contrast to midrange. Adjust R2730 to a point where highlights are visible.

## TINT PRESET

Tune in an active channel. Adjust R2816 for proper flesh tones.

## HORIZONTAL PHASE

Adjust R4306 to center the picture horizontally.

## PINCUSHION

Tune in a crosshatch pattern. Adjust R4805 for straight vertical lines at the top and bottom of the screen. Adjust R4802 for a slight overscan.

## SUB BRIGHTNESS

Tune in a crosshatch pattern. Set contrast, brightness, and color to minimum. Adjust R3346 for faintly visible highlights. Set contrast, brightness, and color to maximum. Check for blooming, readjust if necessary.

## CHROMA FILTER

Tune in a color bar pattern. Adjust R2802 for the proper color display and clean transition between bars.

## COLOR TEMPERATURE

Tune in a crosshatch pattern. Set color, contrast, R2913, R2917, R2921, and screen control to minimum. Set R2926, R2928, and brightness to midrange. Obtain a service line by shorting the collector of Q4505 to ground. Advance screen control until a line of one predominate color is just visible. Adjust R2913, R2917, and R2921 to obtain a white line. Set brightness and contrast to maximum. Adjust R2926 and R2928 for best black and white picture. Check tracking at low and high brightness.

## CONVERGENCE/ PURITY

The deflection yoke is bonded to the CRT. Purity and convergence adjustments are not required.

## PIP ADJUSTMENTS

### 3.58MHz Oscillator

Tune in a color bar signal. Select PIP mode to display the color bar signal on the main and PIP picture. Short pin 1 of U8401 to ground. Connect a frequency counter (100X probe) to the emitter of Q8410, and ground to PIP shield. Adjust C8403 for 3.579545kHz ± 15Hz.

### 14.318MHz Oscillator

Tune in a color bar signal. Select PIP mode to display the color bar signal on the main and PIP picture. Short pin 6 of U8301 to ground. Connect a frequency counter (100X probe) to pin 19 of U8301, and ground to PIP shield. Adjust C8329 for 3.579545kHz ±5Hz.

### 125kHz Oscillator

Tune in a color bar signal. Select PIP mode to display the color bar signal on the main and PIP picture. Short pin 3 of U8503 to ground. The PIP picture should lose horizontal sync. Adjust L8501 for minimum movement of the PIP picture. Remove short from pin 3 of U8503. PIP picture should be stable.

### Burst Blanking

Tune in a color bar signal. Select PIP mode to display the color bar signal on the main and PIP picture. Connect oscilloscope to pin 3 of U8301 and ground to PIP shield. Adjust R8326 to eliminate the burst portion of the signal from the chroma signal. Notice that the level of burst and chroma signal will vary as the control is adjusted through its range. Start with the control fully counter clockwise, signal should peak, then null, then peak again as cotrol is adjusted. The correct setting is at null between two peaks.

### Luma Gain

Tune in a color bar signal. Select PIP mode to display the color bar signal on the main and PIP picture. Connect oscilloscope to collector of Q8306 and ground to PIP shield. Adjust R8336 for 1.3Vpp ±.1Vpp.

### Color Saturation

Tune in a color bar signal. Select PIP mode to display the color bar signal on the main and PIP picture. Connect oscilloscope to collector of Q8302 and ground to PIP shield. Adjust R8324 for 1.3Vpp ±.1Vpp.

### Luma Reference Level

Tune in a color bar signal. Select PIP mode to display the color bar signal on the main and PIP picture. Set color level on menu to minimum. Adjust R8517 for equal luminance levels on both the main and PIP picture.

### Chroma Reference Level

Tune in a color bar signal. Select PIP mode to display the color bar signal on the main and PIP picture. Connect oscilloscope to collector of Q8210 and ground to PIP shield. Alternately adjust R8422 and R8424 for minimum non-chroma portion of signal. Tune in a color picture off the air, adjust R8307 and R8518 for flesh tone on both pictures.

# NEW CIRCUIT

## VERTICAL CIRCUIT

The vertical reset pulse from pin 29 of U1001 turns on Q4505 which allows C4518 and C4519 to discharge thru R4504 and resets Q4506. When Q4505 is turned off, C4518 and C4519 charge thru R4507. R4522 adjusts the amount of voltage to C4518 and C4519. This causes a vertical ramp signal to be applied to pin 3 of U4501. Current for vertical deflection is supplied from pins 2 and 3 of T4401. During horizontal retrace, pin 2 of T4401 is more positive than pin 3 of T4401 which causes upward deflection. During horizontal trace, pin 2 of T4401 is more negative than pin 3 of T4401 which causes downward deflection. The net current is controlled by the ON and OFF time of SCR501. U4501 controls the ON and OFF time of SCR501. A horizontal ramp signal is applied to pin 2 of U4501. When the voltage at pin 3 of U4501 exceeds the voltage at pin 2 of U4501, SCR501 is turned on which allows negative current flow thru the yoke.

# TEST EQUIPMENT

Test equipment listed by participating manufacturer illustrates typical or equivalent equipment used by Sams engineers to obtain measurements. This equipment is compatible with most types used by field service technicians.

| Equipment             | Sencore No. |
|-----------------------|-------------|
| Oscilloscope          | SC3100      |
| Generators            |             |
| RGB                   | CM2125      |
| Multiburst Signal     | VG91        |
| Color Bar             | VG91        |
| TV Stereo             | VG91        |
| Digital VOM           | SC3100      |
| Frequency Meter       | SC3100      |
| Hi-Voltage Probe      | HP200       |
| Accessory Probes      | TP212       |
| Isolation Transformer | PR570       |
| Capacitance Analyzer  | LC102       |
| CRT Analyzer          | CR7000      |
| AC Leakage Tester     | PR570       |
| Inductance Analyzer   | LC102       |
| Flyback Yoke Tester   | TVA92       |
| Field Strength Meter  | SL753       |
| Transistor Tester     | TF46        |
| Horizontal Analyzer   | HA-2500     |
| Video Analyzer        | VG91, TVA92 |

PARTS LIST

SEMICONDUCTORS

(Select the replacement that gives the best results.)

| Item No.         | Type No. | Mfr. Part No. | ECG Part No. |
|------------------|----------|---------------|--------------|
| CR1110, 11       | -        | 164717        | ECG519       |
| CR1401 Thru      | -        |               |              |
| CR1404           | -        | 176746        | ECG5011A     |
| CR1405           | -        | 192848        | ECG5018A     |
| CR1406           | -        | 164874        | ECG177       |
| CR1901, 02       | -        | 147015        | ECG125       |
| CR2701, 02       | -        | 164717        | ECG519       |
| CR2704, 05, 06   | -        | 164717        | ECG519       |
| CR2802           | -        | 164717        | ECG519       |
| CR2901           | -        | 164717        | ECG519       |
| CR2903           | -        | 164717        | ECG519       |
| CR3101           | -        | 176746        | ECG5011A     |
| CR3102, 03       | -        | 164717        | ECG519       |
| CR3301, 02       | -        | 164717        | ECG519       |
| CR3401           | -        | 150711        | -            |
| CR3402           | -        | 182827        | ECG5010A     |
| CR3403           | -        | 175393        | -            |
| CR3601           | -        | 200155        | ECG5035A     |
| CR4001 Thru      | -        |               |              |
| CR4004           | -        | 147015        | ECG125       |
| CR4101           | -        | 164588        | ECG587       |
| CR4102           | -        | 164717        | ECG519       |
| CR4105           | -        | 200156        | -            |
|                  | -        | 207878        | ECG519       |
| CR4106           | -        | 176296        | ECG552       |
| # CR4111 (1)     | -        | -             | ECG242       |
| CR4112           | -        | 164874        | ECG177       |
| CR4115           | -        | 136634        | ECG143A      |
| CR4116           | -        | 200157        | ECG142A      |
| # CR4117         | -        | 176296        | ECG552       |
| # CR4118, 19, 20 | -        | 164590        | ECG580       |
| CR4121           | -        | 136634        | ECG143A      |
| CR4122           | -        | 200158        | -            |
| CR4123           | -        | 176746        | ECG5011A     |
| CR4201           | -        | 164717        | ECG519       |
| CR4302           | -        | 164717        | ECG519       |
| CR4303           | -        | 161871        | ECG145A      |
| CR4304           | -        | 164717        | ECG519       |
| CR4401           | -        | 198596        | -            |
| CR4402           | -        | 164589        | ECG580       |
| CR4403           | -        | 139706        | ECG177       |
| CR4404           | -        | 164717        | ECG519       |
| # CR4405         | -        | 140971        | ECG558       |
| CR4501           | -        | 164717        | ECG519       |
| CR4502           | -        | 139706        | ECG177       |
| CR4503           | -        | 146320        | ECG135A      |
| CR4504           | -        | 164589        | ECG580       |
| CR4511           | -        | 164717        | ECG519       |
| CR4512           | -        | 129938        | ECG137A      |
| CR4606           | -        | 161081        | ECG5011T1    |
| CR4701           | -        | 176296        | ECG552       |
| CR4702           | -        | 153672        | ECG552       |
| CR4705           | -        | 176296        | ECG552       |
| CR4709           | -        | 196062        | ECG519       |
| CR4710           | -        | 139706        | ECG177       |
| CR4712           | -        | 161871        | ECG145A      |
| CR4713           | -        | 153672        | ECG552       |
| CR4803           | -        | 176296        | ECG552       |
| CR4805           | -        | 138974        | ECG5069A     |

# For SAFETY use only equivalent replacement part.  
(1) Part of CR4111 regulator kit, Mfr. Part No. 202055.

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

| Item No.       | Type No. | Mfr. Part No. | ECG Part No. |
|----------------|----------|---------------|--------------|
| CR4806         | -        | 164717        | ECG519       |
| # CR4901       | -        | 157301        | ECG177       |
| # CR4902       | -        | 159429        | ECG5019T1    |
| CR5003         | -        | 139706        | ECG177       |
|                | -        | 174489        | ECG177       |
| CR8201         | -        | 164874        | ECG177       |
| CR8413         | -        | 164874        | ECG177       |
| CR8501, 02 (2) | -        | 160521        | -            |
| CR8503, 04     | -        | 164874        | ECG177       |
| CR8901         | -        | 138974        | ECG5069A     |
| Q1101          | -        | 146847        | ECG123AP     |
| Q1102, 03      | -        | 179740        | ECG2406      |
| Q1110 Thru     | -        |               |              |
| Q1115          | -        | 179740        | ECG2406      |
| Q1201          | -        | 179740        | ECG2406      |
| Q1401          | -        | 179741        | ECG2407      |
| Q1402          | -        | 179740        | ECG2406      |
| Q1403          | -        | 143806        | ECG159       |
| Q1404, 05, 06  | -        | 179740        | ECG2406      |
| Q1411          | -        | 179740        | ECG2406      |
| Q1412          | -        | 179741        | ECG2407      |
| Q1413, 14, 15  | -        | 179740        | ECG2406      |
| Q1416          | -        | 179741        | ECG2407      |
| Q1417          | -        | 179740        | ECG2406      |
| Q1418          | -        | 179741        | ECG2407      |
| Q1601          | -        | 179740        | ECG2406      |
| Q1901          | -        | 146847        | ECG123AP     |
| Q2301          | -        | 146848        | ECG229       |
| Q2302          | -        | 179740        | ECG2406      |
| Q2701          | -        | 179740        | ECG2406      |
| Q2702          | -        | 146847        | ECG123AP     |
| Q2703          | -        | 143806        | ECG159       |
| Q2707          | -        | 179740        | ECG2406      |
| Q2708          | -        | 179741        | ECG2407      |
| Q2709          | -        | 179740        | ECG2406      |
| Q2903, 04, 05  | -        | 176980        | ECG123AP     |
| Q2906          | -        | 143806        | ECG159       |
| Q2908, 09, 10  | -        | 176980        | ECG123AP     |
| Q2911          | -        | 179740        | ECG2406      |
| Q3101          | -        | 179741        | ECG2407      |
| Q3102          | -        | 179740        | ECG2406      |
| Q3301          | -        | 145410        | ECG159       |
| Q3302, 03      | -        | 179740        | ECG2406      |
| Q3401          | -        | 146847        | ECG123AP     |
| Q4101          | SGSIF461 | 200165        | ECG2311      |
| Q4105, 06      | -        | 143802        | ECG159       |
| Q4107          | -        | 146847        | ECG123AP     |
| Q4108          | -        | 143802        | ECG159       |
| Q4109          | -        | 146847        | ECG123AP     |
| Q4110          | -        | 143802        | ECG159       |
| Q4111          | -        | 179741        | ECG2407      |
| Q4201          | -        | 146847        | ECG123AP     |
| Q4202          | -        | 179740        | ECG2406      |
| Q4301          | -        | 146847        | ECG123AP     |
| Q4302          | -        | 200168        | -            |
| Q4304          | -        | 146847        | ECG123AP     |
| Q4305, 06      | -        | 179740        | ECG2406      |
| Q4401          | 2SD1885  | 200167        | ECG2324%     |

# For SAFETY use only equivalent replacement part.  
% Use Insulating hardware supplied with replacement.  
(2) Matched pair.

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

| Item No.      | Type No.  | Mfr. Part No. | ECG Part No. |
|---------------|-----------|---------------|--------------|
| Q4402         | -         | 179740        | ECG2406      |
| Q4505         | -         | 146847        | ECG123AP     |
| Q4506         | -         | 148970        | -            |
| Q4507         | -         | 146847        | ECG123AP     |
| Q4601         | -         | 146847        | ECG123AP     |
| Q4702, 03, 04 | -         | 157627        | ECG54        |
| Q4705         | -         | 146847        | ECG123AP     |
| Q4801         | -         | 179741        | ECG2407      |
| Q4802         | -         | 200168        | -            |
| Q4803         | -         | 146847        | ECG123AP     |
| Q4804, 05     | -         | 179740        | ECG2406      |
| Q5001, 02, 03 | -         | 146826        | ECG171       |
| Q6401, 02     | -         | 179740        | ECG2406      |
| Q6403         | -         | 179741        | ECG2407      |
| Q6404, 05     | -         | 179740        | ECG2406      |
| Q8101, 02, 10 | -         | 179740        | ECG2406      |
| Q8111         | -         | 179741        | ECG2407      |
| Q8201 Thru    | -         |               |              |
| Q8206         | -         | 179740        | ECG2406      |
| Q8207 Thru    | -         |               |              |
| Q8210         | -         | 179741        | ECG2407      |
| Q8211         | -         | 179740        | ECG2406      |
| Q8212         | -         | 179741        | ECG2407      |
| Q8213         | -         | 179740        | ECG2406      |
| Q8214         | -         | 179741        | ECG2407      |
| Q8219         | -         | 179740        | ECG2406      |
| Q8220         | -         | 179741        | ECG2407      |
| Q8221         | -         | 179740        | ECG2406      |
| Q8301 Thru    | -         |               |              |
| Q8305         | -         | 179740        | ECG2406      |
| Q8306         | -         | 179741        | ECG2407      |
| Q8307 (3)     | -         | -             | -            |
| Q8308 (3)     | -         | -             | -            |
| Q8309 (3)     | -         | -             | -            |
| Q8310 (3)     | -         | -             | -            |
| Q8311 (3)     | -         | -             | -            |
| Q8401 Thru    | -         |               |              |
| Q8405         | -         | 179740        | ECG2406      |
| Q8407         | -         | 179741        | ECG2407      |
| Q8407A        | -         | 179740        | ECG2406      |
| Q8408, 09     | -         | 179740        | ECG2406      |
| Q8410, 11     | -         | 179741        | ECG2407      |
| Q8412         | -         | 179740        | ECG2406      |
| Q8501         | -         | 179740        | ECG2406      |
| Q8502         | -         | 181476        | -            |
| Q8503, 04     | -         | 179740        | ECG2406      |
| Q8505         | -         | 179741        | ECG2407      |
| Q8506 Thru    | -         |               |              |
| Q8513         | -         | 179740        | ECG2406      |
| Q8901         | -         | 145410        | ECG159       |
| Q8902, 03     | -         | 146847        | ECG123AP     |
| SCR501        | -         | 197591        | ECG5424      |
| # U1001       | TA8680N   | 200137        | ECG7010      |
| U1404         | -         | 205919        | ECG859       |
| U1410         | HCF4052BE | 161079        | ECG4052B     |
| U1600         | -         | 250032        | -            |
| U1900         | TDA7263   | 250031        | -            |
| U2601         | -         | 179729        | -            |
| U3101         | -         | 206396        | -            |

# For SAFETY use only equivalent replacement part.  
(3) Used in PW8000H7.



PARTS LIST continued

| SEMICONDUCTORS continued                              |             |               |              |
|---|-------------|---------------|--------------|
| (Select the replacement that gives the best results.) |             |               |              |
| Item No.  | Type No.    | Mfr. Part No. | ECG Part No. |
| U3200   | 24CO4       | 207126        | -            |
| U3401   | CX20106A    | 195885        | -            |
| # U4101   | TEA2261     | 200419        | -            |
| U4501   | LM311N      | 200420        | ECG922M      |
| U4801   | LM311N      | 200420        | ECG922M      |
| U8201 Thru  |             |               |              |
| U8204   | TA7348B     | 176873        | ECG1826      |
| U8205   | M74HC4053B1 | 197646        | -            |
| U8301   | -           | 197647        | -            |
| U8301 (3)   | -           | -             | -            |
| U8401   | H9332       | 197648        | -            |
| U8402   | MC1377P     | 197649        | -            |
| U8501   | M50574BSP   | 202916        | -            |
| U8502   | HM53051P-45 | 197651        | -            |
| U8503   | A24 9331    | 159433        | ECG1739      |
| U8901   | -           | 202918        | -            |
| Audio TVB Board                                       |             |               |              |
| CR1127  | -           | 206730        | -            |
| Q1126   | -           | 192849        | -            |
| U1125   | -           | 176226        | ECG1576      |
| U1126   | -           | 204290        | -            |
| U1127   | -           | 149018        | ECG987       |
| # For SAFETY use only equivalent replacement part.    |             |               |              |
| (3) Used in PW8000H/J.                                |             |               |              |

| Important Parts Information  |  |
|--|--|
| <ul style="list-style-type: none"><li>The parts listed here are those not usually available from a well-stocked supply cabinet or bin.</li><li>Where items may be replaced with equivalent parts, several alternates are shown from participating vendors.</li><li>On the parts lists, safety items are marked with a # to remind you that only exact replacements are recommended for these items.</li><li>When ordering parts, state the model number, part number, and description.</li></ul> |  |
| Obtaining Parts  |  |
| Many of these parts are available from your local Sams authorized distributor or the manufacturer of the equipment. Call Sams for the name of your nearest distributor:<br><br>800-428-7267  |  |
| Or consult the Sams <i>Annual Index</i> for the address of the original equipment manufacturer.  |  |
| Participating Vendors  |  |
| Information on test equipment and replacement parts is listed in these pages for the following participating vendors. Consult the Sams <i>Annual Index</i> for their current address.  |  |
| <ul style="list-style-type: none"><li>Philips ECG Company (ECG)</li><li>Sencore, Inc.</li><li>Terrell &amp; Nobis (TNI Electronics)</li></ul>  |  |

| CAPACITORS & ELECTROLYTICS                         |                      |               |
|--|----------------------|---------------|
| Item No.   | Rating               | Mfr. Part No. |
| # C1   | 1µF 25V NP           | 202435        |
| C1204  | 10pF 1% NPO          | 174402-       |
| C1406  | 39pF 5% 50V NPO      | 181090        |
| C1407  | 120pF 5% 50V NPO     | 174414        |
| C1602, 04, 06, 08                                  | 100pF 5% 50V NPO     | 174412        |
| C1611  | 82pF 5% 50V NPO      | 176828        |
| C1616, 17, 18                                      | 100pF 5% 50V NPO     | 174412        |
| C1626  | 22pF 10% 50V NPO     | 194903        |
| C1627  | 39pF 5% 50V NPO      | 181090        |
| C1629  | 10pF 1% 50V NPO      | 174402        |
| C1632  | 100pF 5% 50V NPO     | 174412        |
| C2308  | 180pF 5% 50V NPO     | 190543        |
|  | .01 10% 50V          | 174423        |
| C2309  | 12pF 5% 50V NPO      | 174403        |
| C2310  | 18pF 10% 50V NPO     | 193337        |
| C2312  | 7pF ±.5pF 50V NPO    | 174401        |
| C2316  | 560pF 5% 50V NPO     | 200139        |
| C2602  | 33pF 5% 50V NPO      | 174408        |
| C2603  | 91pF 5% 50V NPO      | 181092        |
| C2604  | 22pF 5% 50V NPO      | 174406        |
| C2704  | 10pF 1% 50V NPO      | 174402        |
| C2707, 18  | 100pF 5% 50V NPO     | 174412        |
| C2804  | 15pF 5% 50V NPO      | 174404        |
| C2811, 12, 13                                      | 22pF 5% 50V NPO      | 174406        |
| C2814  | 100pF 5% 50V NPO     | 174412        |
|  | 56pF 5% 50V NPO      | 190542        |
| C2815  | 27pF 10% 50V NPO     | 192050        |
| C2905, 09  | 18pF 5% 50V NPO      | 174405        |
| C3110  | 22pF 5% 50V NPO      | 174406        |
| C3119, 20  | 56pF 5% 50V NPO      | 190542        |
| C3301, 02  | 100pF 5% 50V NPO     | 174412        |
| C3303, 06  | 100pF 5% 50V NPO     | 174412        |
| C3314  | 220pF 5% 50V NPO     | 178188        |
| C3315  | 100pF 5% 50V NPO     | 174412        |
| C3316  | 560pF 10% 50V NPO    | 202904        |
| C3317  | 15pF 5% 50V NPO      | 174404        |
| C3318, 20, 21                                      | 47pF 5% 50V NPO      | 174409        |
| # C4002, 05  | 680pF 20% 1kV        | 190538        |
| # C4007  | 680µF 20% 200V       | 190560        |
| # C4008  | .005 20% 25V         | 195697        |
| # C4110  | 470pF 2kV N1500      | -             |
|  | 470pF 1.5kV N1500    | 143242        |
| C4111  | 680pF 20% 1kV        | 190538        |
| # C4112  | .0056 5% 1kV         | -             |
|  | .0056 5% 800V        | 201619        |
| C4116  | 47pF NPO             | -             |
| C4140  | 680pF 10% 1kV        | 190538        |
| # C4141  | 470µF 20% 180V       | 200147        |
| # C4401  | .015 1.6kV           | 206007        |
| # C4402  | .056 5% 400V         | 200149        |
| # C4403  | .5 5% 250V           | 200150        |
| # C4406  | 470pF 5% 2kV N1500   | -             |
|  | 470pF 5% 1.5kV N1500 | 143242        |
| # C4407  | .0047 10% 250V       | 190534        |
| # C4503  | 2200µF 10% 35V       | 200151        |
| # C4511  | 1.54µF 5% 250V       | 200152        |
| C4701  | .01 20% 1kV          | 137583        |
| C4702, 04, 13                                      | 680pF 20% 1kV        | 190538        |
| # C4716  | .082 10% 250V        | 175430        |
| # C4905  | 10µF 20% 50V         | 189981        |
| # For SAFETY use only equivalent replacement part. |                      |               |

| CAPACITORS & ELECTROLYTICS continued                 |                    |               |
|--|--------------------|---------------|
| Item No.   | Rating             | Mfr. Part No. |
| C5001  | .001 10% 3kV       | 120696        |
| C6402  | 47pF 5% 50V NPO    | 174409        |
| C6404  | 10µF 20% 25V NP    | 146256        |
|  | 10µF 20% 25V       | -             |
| C8122  | 100pF 5% 50V NPO   | 174412        |
| C8125  | 100pF 5% 50V NPO   | 193340        |
| C8127 Thru   |                    |               |
| C8130  | 100pF 5% 50V NPO   | 193340        |
| C8207  | 47µF 20% 25V NP    | 193580        |
|  | 47µF 20% 25V       | -             |
| C8208  | 560pF 10% 50V NPO  | 202904        |
| C8209  | 39pF 10% 50V NPO   | 202905        |
| C8213  | 270pF 5% 50V NPO   | 197597        |
| C8214  | 10µF 20% 25V NP    | 146256        |
| C8216  | 10µF 20% 25V NP    | 146256        |
|  | 10µF 20% 25V NP    | -             |
| C8217  | 100pF 5% 50V NPO   | 174412        |
| C8218  | 5pF ±.5pF 50V NPO  | 202906        |
| C8219, 20  | 100pF 5% 50V NPO   | 193340        |
| C8222, 23  | 100pF 5% 50V NPO   | 193340        |
| C8228  | 1µF 20% 50V NP     | 196641        |
|  | 1µF 20% 50V        | -             |
| C8230  | 39pF 2% 50V NPO    | 181090        |
| C8233  | 5pF ±.25pF 50V NPO | 202906        |
| C8240  | 10pF 5% 50V NPO    | 174402        |
| C8241  | 560pF 10% 50V NPO  | 202904        |
| C8242  | 100pF 5% 50V NPO   | 193340        |
| C8308  | 560pF 5% 50V NPO   | 200139        |
| C8310  | 110pF 5% 50V NPO   | 197596        |
| C8311  | 5pF ±.5pF 50V NPO  | 195909        |
| C8314  | 560pF 5% 50V NPO   | 200139        |
| C8324  | 470pF 10% 50V NPO  | 192040        |
| C8325  | 10pF 1% 50V NPO    | 197602        |
|  | 15pF 5% 50V NPO    | 202907        |
| C8326  | .001 10% 50V NPO   | 197600        |
| C8329  | 5pF - 25pF Trimmer | 138701        |
| C8330 (1)  | 7pF NPO            | -             |
| C8401  | 270pF 5% 50V NPO   | 197597        |
| C8403  | 5pF - 25pF Trimmer | 138701        |
| C8404  | 10pF ±.5pF 50V NPO | 161099        |
| C8405  | 33pF 5% 50V NPO    | 146833        |
| C8410, 14  | 1µF 20% 50V NP     | 196641        |
|  | 1µF 20% 50V        | -             |
| C8419  | 15pF 5% 50V NPO    | 202907        |
| C8434, 35  | 10µF 20% 25V NP    | 146256        |
|  | 10µF 20% 25V       | -             |
| C8438  | 270pF 5% 50V NPO   | 181084        |
| C8439  | 220pF 5% 50V NPO   | 178188        |
| C8502, 07  | 100pF 5% 50V NPO   | 193340        |
| C8509  | 330pF 5% 50V NPO   | 181100        |
| C8514  | 560pF 10% 50V NPO  | 202904        |
| C8525  | 150pF 5% 50V NPO   | 181091        |
| C8526  | 330pF 5% 50V NPO   | 181100        |
| C8533  | 330pF 10% 50V NPO  | 195922        |
| C8540, 41  | 330pF 5% 50V NPO   | 181100        |
| C8544  | 47pF 5% 50V NPO    | 174409        |
| C8902, 03  | 39pF 5% 50V NPO    | 178815        |
| C8905  | 68pF 5% 50V NPO    | 145676        |
| (1) Part of Y8301 crystal kit, Mfr. Part No. 221195. |                    |               |

PARTS LIST continued

CONTROLS & RESISTORS

| Item No.    | Function/Rating      | Mfr. Part No. |
|-------------|----------------------|---------------|
| # R3        | 33 5% 2W             | 196014        |
| # R4        | 39 5% 2W             | 175788        |
| # R1101     | 68 5% 1/2W           | 179297        |
| # R1120     | 10 5% 1/4W           | 829010        |
| R1204       | 5000 WBA Level       | 181113        |
| # R1402     | 430 5% 1/4W          | 829143        |
| R1403       | 3000 2% 1/10W        | 194917        |
| R1404       | 3000 2% 1/8W         | 190464        |
| # R1406     | 430 5% 1/4W          | 829143        |
| # R1410     | 680 5% 1/4W          | 204793        |
| R1411       | 3000 2% 1/10W        | 194917        |
| R1412       | 1100 2% 1/10W        | 202586        |
| R1413       | 330 2% 1/8W          | 181488        |
| R1414       | 2000 5% 1/4W         | 175321        |
| R1417       | 10K 2% 1/8W          | -             |
|             | 10K 5% 1/8W          | 174364        |
| R1419       | 910 2% 1/8W          | 182627        |
| R1420       | 1300 2% 1/8W         | 182823        |
| R1421       | 510 2% 1/10W         | 202585        |
| R1422       | 1100 2% 1/10W        | 202586        |
| R1425       | 120K 2% 1/8W         | 180816        |
| R1427       | 2000 2% 1/8W         | 189995        |
| R1428       | 330 2% 1/8W          | 181488        |
| R1430       | 2700 2% 1/4W         | 176648        |
| # R1432     | 10 5% 1/4W           | 829010        |
| # R1906, 07 | 4.7 5% 1/4W          | 200197        |
| # R2301     | 100 5% 1/4W          | 175325        |
| R2307       | 620 2% 1/8W          | 181493        |
| R2311       | 10K RF AGC           | 181107        |
|             | 5000 RF AGC          | -             |
| R2320       | 100 2% 1/8W          | -             |
|             | 100 5% 1/8W          | 176818        |
| # R2323     | 1.2 5% 1/4W          | 200172        |
| R2603       | 1000 Notch Depth     | 181106        |
| R2604       | 1200 2% 1/8W         | 190463        |
| # R2608     | 10 5% 1/4W           | 829010        |
| R2708       | 1500 2% 1/4W         | 175367        |
| R2711       | 510 2% 1/8W          | 157993        |
| R2719       | 15.4K 1% 1/4W        | 200175        |
| # R2721     | 27K 10% 1/2W         | 206037        |
| R2730       | 1000 Contrast Preset | 181109        |
|             | 2000 Contrast Preset | -             |
| R2732       | 1500 2% 1/8W         | -             |
|             | 1500 5% 1/8W         | 162001        |
| R2734       | 510 2% 1/8W          | 157993        |
| R2736       | 330 2% 1/8W          | 181488        |
| R2742       | 1500 2% 1/8W         | -             |
| R2801       | 1000 2% 1/8W         | -             |
|             | 1000 5% 1/8W         | 174348        |
| R2802       | 30K Chroma Filter    | 177366        |
| R2804       | 120K 2% 1/8W         | -             |
|             | 120K 5% 1/8W         | 174357        |
| R2813       | 22K 2% 1/8W          | 174367        |
| R2814       | 30K 2% 1/10W         | 200176        |
| R2816       | 10K Tint Reset       | 181107        |
| R2910       | 220 2% 1/8W          | 181492        |
| R2913       | 4500 Red Bias        | 190533        |
| R2914       | 220 2% 1/8W          | 181492        |
| R2917       | 4500 Blue Bias       | 190533        |
| R2918       | 220 2% 1/8W          | 181492        |
| R2921       | 4500 Green Bias      | 190533        |

# For SAFETY use only equivalent replacement part

CONTROLS & RESISTORS continued

| Item No.    | Function/Rating        | Mfr. Part No. |
|-------------|------------------------|---------------|
| # R2924     | 10 5% 1/4W             | 200442        |
| R2926       | 100 Red/Blue Drive     | 190531        |
| R2928       | 100 Green Drive        | 190531        |
| R3309       | 7500 2% 1/8W           | 200178        |
| # R3310     | 47 5% 1/4W             | 175040        |
| R3335       | 18K 2% 1/10W           | 205356        |
| R3342       | 91K 2% 1/10W           | 200180        |
| R3343       | 13K 2% 1/8W            | 178285        |
| R3346       | 1500 Sub Brightness    | 200181        |
| R3402       | 133K 1% 1/4W           | 195752        |
| # R4001     | 2.7 10% 15W Wirewound  | 190487        |
| # R4002     | 2.7M 5% 1/2W           | 183127        |
| # R4003     | 33K 5% 2W              | 200182        |
| R4102       | 5100 2% 1/4W           | 175417        |
| # R4103     | 51K 5% 1/4W            | 175315        |
| R4104       | 1500 2% 1/4W           | 175367        |
| R4108       | 910 2% 1/4W            | 203097        |
| # R4110     | .18 5% 2W Wirewound    | 200183        |
| R4113       | 300 Standby            | 190525        |
| R4114       | 45.3K 1% 1/4W          | 176506        |
| R4115       | 3240 1% 1/4W           | 200184        |
| # R4116 (1) | 500 B+ Regulator       | -             |
| # R4119     | 330 5% 7W Wirewound    | 200185        |
| R4120       | 10 2% 1/4W             | 200186        |
| # R4126     | 6.8 5% 3W Wirewound    | 206016        |
| R4148       | 53.6K 1% 1/4W          | 200189        |
| # R4149     | 1.2 5% 1W              | 831A12        |
| R4152       | 470 2% 1/8W            | -             |
|             | 470 5% 1/8W            | 174346        |
| R4306       | 4500 Horizontal Phase  | 190533        |
| R4307       | 26.7K 1% 1/4W          | 196081        |
| R4308       | 120 2% 1/8W            | 181485        |
| # R4312     | 47 5% 1/4W             | 175040        |
| # R4314     | 39 5% 1/2W             | 200192        |
| # R4401     | 220 5% 1/2W            | 176651        |
| # R4402     | 10 5% 1/2W             | 181098        |
| R4509, 10   | 10K 2% 1/8W            | 174364        |
| R4511       | 8200 2% 1/8W           | 181065        |
| R4513       | 120 2% 1/8W            | 181485        |
| # R4518     | 470 2% 1/4W            | 175412        |
| # R4520     | 6800 5% 1/2W           | 179248        |
| R4522       | 15K Vertical Height    | 200417        |
| # R4523     | 820 5% 1W Nonflammable | 175349        |
| # R4544     | 4.7 5% 1/4W            | 200197        |
| # R4703     | 2.7 5% 3W Wirewound    | 196074        |
| # R4704 (2) | Resistor Block         | 196072        |
| # R4710     | 12 2% 1/4W             | 829012        |
| # R4713     | 68K 10% 1/2W           | 830368        |
| R4715       | 200 2% 1/4W            | 175363        |
| R4716       | 680 2% 1/4W            | 175312        |
| R4717       | 56 2% 1/4W             | 175318        |
| R4718       | 100 2% 1/8W            | 181486        |
| # R4719     | 470 5% 1/2W            | 176793        |
| # R4720     | 10 5% 1/4W             | 830010        |
| # R4721     | 3.3M 10% 1/2W          | 181986        |
| R4802       | 2000 Width             | 200199        |
| R4805       | 10K E/W Pin Amplitude  | 181107        |
| # R4809     | 390 5% 1/2W            | 175769        |
| # R4821     | 150 5% 1W              | 175784        |

# For SAFETY use only equivalent replacement part.

(1) Part of CR4111 regulator kit, Mfr. Part No. 202055.

(2) Screen and focus controls are part of R4704.

CONTROLS & RESISTORS continued

| Item No.    | Function/Rating         | Mfr. Part No. |
|-------------|-------------------------|---------------|
| # R4901     | 10K 5% 1/4W             | 175317        |
| # R4902     | 100 5% 1/4W             | 175325        |
| # R4903     | 43.2K 1% 1/4W           | 200202        |
| # R4904     | 39.2K 1% 1/4W           | 190469        |
| R4905       | 22K 2% 1/4W             | 175054        |
| # R5015 (3) | 3.3M                    | -             |
| R6401       | 1500 2% 1/8W            | 181482        |
| R6402       | 2200 2% 1/8W            | 181079        |
| R6403       | 27K 2% 1/8W             | 193061        |
| R6404       | 10K 2% 1/8W             | 174364        |
| R6407       | 4700 2% 1/8W            | 178287        |
| R6408       | 13K 2% 1/8W             | 178285        |
| R8230       | 510 2% 1/10W            | 202585        |
| R8235, 36   | 680 2% 1/10W            | 195939        |
| R8239       | 750 2% 1/10W            | 202914        |
| R8249       | 200 2% 1/10W            | 202915        |
| R8251       | 270 2% 1/10W            | 197623        |
| R8258, 60   | 200 2% 1/10W            | 202915        |
| R8305       | 820 2% 1/8W             | 176814        |
| R8305 (4)   | 1000 2% 1/8W            | 190462        |
| R8306       | 3300 2% 1/8W            | 181080        |
| R8306 (4)   | 1000 2% 1/8W            | 190462        |
| R8307       | 50K Tint                | 190526        |
| R8307 (4)   | 20K Tint                | -             |
| R8319       | 82K 2% 1/10W            | 197906        |
| R8320 (4)   | 20K Output Bias         | -             |
| R8324 (4)   | 50K Color               | 190526        |
| R8324 (4)   | 20K Color               | -             |
| R8326       | 50K Burst Blank         | 190526        |
| R8326 (4)   | 100K APC                | -             |
| R8328       | 330 2% 1/8W             | 181488        |
|             | 180 2% 1/8W             | 181067        |
| R8332       | 1000 2% 1/10W           | 197638        |
|             | 470 2% 1/10W            | 194926        |
| R8336       | 1000 Luma Gain          | 181106        |
|             | 500 Luma Gain           | 181112        |
| R8419       | 1000 2% 1/10W           | 197638        |
| R8422       | 10K Chroma U (R-Y)      | 181107        |
| R8424       | 10K Chroma V (B-Y)      | 181107        |
| R8517       | 20K Y Reference         | 191389        |
| R8518       | 1000 UV Reference (G-Y) | 181106        |
| R8546       | 3900 2% 1/10W           | 197907        |
| R8547       | 20K2% 1/10W             | 197904        |
| R8549       | 82K 2% 1/10W            | 197906        |
| R8556       | 7500 2% 1/10W           | 205348        |
| R8909       | 20K 2% 1/4W             | 175351        |
|             | 2000 5% 1/4W            | 175321        |
| R8910       | 10K 2% 1/4W             | 175317        |
|             | 1000 5% 1/4W            | 175055        |
| R8911       | 20K 2% 1/4W             | 175351        |
|             | 2000 5% 1/4W            | 175321        |
| R8912       | 10K 2% 1/4W             | 175317        |
|             | 1000 5% 1/4W            | 175055        |
| R8913       | 20K 2% 1/4W             | 175351        |
|             | 2000 5% 1/4W            | 175321        |
| R8914       | 10K 2% 1/4W             | 175317        |
|             | 1000 5% 1/4W            | 175055        |
| R8915       | 20K 2% 1/4W             | 175351        |
|             | 2000 5% 1/4W            | 175321        |

# For SAFETY use only equivalent replacement part.

(3) Part of R4704 resistor block, Mfr. Part No. 196072.

(4) Used in PW8000H/J.

PARTS LIST continued

CONTROLS & RESISTORS continued

| Item No. | Function/Rating | Mfr. Part No. |
|----------|-----------------|---------------|
| R8916    | 10K 2% 1/4W     | 175317        |
|          | 1000 5% 1/4W    | 175055        |
| R8917    | 20K 2% 1/4W     | 175351        |
|          | 2000 5% 1/4W    | 175321        |
| R8918    | 10K 2% 1/4W     | 175317        |
|          | 1000 5% 1/4W    | 175055        |
| R8919    | 20K 2% 1/4W     | 175351        |
|          | 2000 5% 1/4W    | 175321        |
| R8920    | 20K 2% 1/4W     | 175351        |
|          | 1000 5% 1/4W    | 175055        |
| # RT4201 | 5.9 Cold PTC    | 190002        |

Audio TVB Board

|         |            |        |
|---------|------------|--------|
| # R1156 | 22 5% 1/4W | 829022 |
|---------|------------|--------|

# For SAFETY use only equivalent replacement part.

COILS & TRANSFORMERS

| Item No.     | Function/Rating             | Mfr. Part No. |
|--------------|-----------------------------|---------------|
| # DF4500 (1) | Yoke Horiz 1mH<br>Vert 19mH | -             |
| FB1602       | Ferrite Bead                | 181469        |
| FB4101, 02   | Ferrite Bead                | 152102        |
| FB4103       | Ferrite Bead                | 153328        |
| FB4401       | Ferrite Bead                | 161237        |
| FB4402       | Ferrite Bead                | 206390        |
| FB8101       | Ferrite Bead                | 154052        |
| FB8501, 02   | Ferrite Bead                | 154052        |
| # L1 (2)     | Line Filter                 | -             |
| # L2 (2)     | Line Filter                 | -             |

# For SAFETY use only equivalent replacement part.

(1) Bonded part of CRT.

(2) Part of FL4001, Mfr. Part No. 202584.

COILS & TRANSFORMERS continued

| Item No.      | Function/Rating      | Mfr. Part No. |
|---------------|----------------------|---------------|
| L1201         | SIF                  | 190504        |
| L1601, 02, 03 | 2.2μH                | 197616        |
| L2301         | .68μH                | 195708        |
| L2302         | 2.2μH                | 197616        |
| L2303         | AFT                  | 190506        |
| L2304         | VIF                  | 190503        |
| L2305         | 2.2μH                | 197616        |
| L2306         | -                    | 206035        |
| L2307         | 18μH                 | 195711        |
| L2601         | 18μH Notch Frequency | 181131        |
| L2602         | 39μH                 | 195710        |
| L2603         | -                    | 160518        |
| L2702         | 39μH                 | 195710        |
| L2704         | -                    | 149167        |
| L2705         | 4.7μH                | 158726        |
| L2706         | 10μH                 | 175409        |
| L2801, 02, 03 | 22μH                 | 195712        |
| L2804         | -                    | 200161        |
| L3101         | 10μH                 | 175409        |
| # L3601       | -                    | 161243        |
| L3602         | -                    | -             |
| L4101         | 2.2μH                | 190480        |
| # L4201       | Degaussing           | 250050        |
| # L4401       | -                    | 196064        |
| L4701         | 47μH                 | 190729        |
| # L4702       | 10μH                 | 175409        |
| # L4803       | -                    | 206391        |
| L5001         | 120μH                | 195750        |
| L5002         | 270μH                | 205222        |
| L5003         | 220μH                | 195707        |
| L5004, 05, 06 | 47μH                 | 195713        |
| L6401         | 47μH                 | 195713        |
|               | 68μH                 | 149167        |
| L8101, 02     | 10μH                 | 204486        |
| L8201         | 47μH                 | 195713        |
| L8202         | 56μH                 | 196107        |
| L8203         | 4.7μH                | 197614        |
| L8204 Thru    |                      |               |
| L8207         | 22μH                 | 195712        |
| L8301, 02     | -                    | 189987        |
| L8303         | 4.7μH                | 197614        |
| L8401         | -                    | 202912        |
| L8501         | 200μH                | 160145        |
|               | -                    | 214573        |
| L8502         | -                    | 202913        |
| L8503         | 10μH                 | 204486        |
| L8901, 02     | 10μH                 | 156370        |
|               | 10μH                 | 204486        |
| # T4101       | ISO Driver           | 200204        |
| # T4102       | Switch Mode          | 206392        |
| # T4301       | Horizontal Drive     | 205196        |
| # T4401       | Horizontal Output    | 200207        |

# For SAFETY use only equivalent replacement part.

MISCELLANEOUS

| Item No.       | Description | Mfr. Part No. | Notes                    |
|----------------|-------------|---------------|--------------------------|
| # C4006        | Capristor   | 250102        | 470pF, 11M               |
| CF1201         | Filter      | 195702        | 4.5MHz                   |
| CF2301         | Trap        | 181125        | -                        |
| DL2601         | Delay Line  | 223169        | Comb Filter              |
| DL2701         | Delay Line  | 195704        | -                        |
| DL8201         | Delay Line  | 190007        | PIP                      |
| # F4001        | Fuse        | 175425        | 5Amp, 125V, Fast Acting  |
| # FL4001       | Filter      | 202584        | AC Line                  |
| J1401          | Jack        | 190514        | Video Auxillary 1 Input  |
| J1402          | Jack        | 190514        | Video Auxillary 2 Input  |
| J1403          | Jack        | 190514        | Selected Video Output    |
| J1404          | Socket      | 195705        | S-Video Input            |
| J1407          | Jack        | 190513        | Left 1 Audio Input       |
| J1408          | Jack        | 190512        | Right/Mono 1 Audio Input |
| J1409          | Jack        | 190513        | Left 2 Audio Input       |
| J1410          | Jack        | 190512        | Right/Mono 2 Audio Input |
| J1411, 12      | Jack        | 190516        | Assembly                 |
| J1413, 14      | Jack        | 190515        | Assembly                 |
| J1902          | Jack        | -             | Left External Speaker    |
| J1903          | Jack        | -             | Right External Speaker   |
| # K4201        | Relay       | 190490        | Degaussing               |
| # KS5001       | Socket      | 189986        | CRT                      |
| # P1           | Line Cord   | 187802        | AC, Polarized            |
| SF2301         | Filter      | 200203        | SAW                      |
| SP1900, 03 (1) | Speaker     | 183166        | 3" X 8", 8 Ohms          |
| SP1900, 03 (2) | Speaker     | 201716        | 3" X 8", 16 Ohms         |
| SW1            | Switch      | -             | Speaker (On/Off)         |
| SW3401         | Switch      | 181724        | Audio                    |
|                | Switch      | 207842        | Audio                    |
| SW3403         | Switch      | 181724        | Channel Up               |
|                | Switch      | 207842        | Channel Up               |
| SW3411         | Switch      | 181724        | Video                    |
|                | Switch      | 207842        | Video                    |
| SW3413         | Switch      | 181724        | Volume Down              |
|                | Switch      | 207842        | Volume Down              |
| SW3421         | Switch      | 181724        | Setup                    |
|                | Switch      | 207842        | Setup                    |
| SW3423         | Switch      | 181724        | Volume Up                |
|                | Switch      | 207842        | Volume Up                |
| SW3431         | Switch      | 181724        | Channel Down             |
|                | Switch      | 207842        | Channel Down             |
| SW3433         | Switch      | 181724        | Power                    |
| # V101         | CRT         | A68AEG101     | A68AEG10X01              |
| Y1601          | Crystal     | 250036        | 11.01386MHz              |
| Y2801          | Crystal     | 161235        | 3.58MHz                  |
| Y3101          | Crystal     | 182839        | 8MHz                     |
| Y4301          | Resonator   | 200210        | 503.3kHz                 |
| Y8301          | Crystal Kit | 221195        | 14.318MHz                |
| Y8301 (3)      | Crystal Kit | 221195        | 7.15909MHz               |
| Y8401          | Crystal     | 161235        | 3.58MHz                  |
| Y8901          | Crystal     | 196028        | 8MHz                     |
|                | Crystal     | 209856        | 8MHz                     |
|                | Adapter     | 189263        | Antenna 75 To 300 Ohms   |
| #              | Cover       | 200215        | For R4704 Resistor Block |
| #              | Housing     | 200216        | For R4704 Resistor Block |
|                | Jack        | -             | Headphone                |
|                | Magnet      | 179806        | Beam Bender              |

# For SAFETY use only equivalent replacement part.

(1) Used in models F27191DGF02, F27191DGW02, G27390TNM02, G27391WKL02, and G27391WKL03.

(2) Used in models F27193BTN02,

(3) Used in PW8000H/J.

PARTS LIST continued

| MISCELLANEOUS continued   |             |               |                 |
|---|-------------|---------------|-----------------|
| Item No.  | Description | Mfr. Part No. | Notes           |
|   | PC Board    | 206750        | Audio TVB       |
|   | PC Board    | 201627        | CRT             |
|   | PC Board    | 250109        | Front Panel     |
|   | PC Board    | 200211        | PIP Adapter     |
|   | PC Board    | 202588        | PIP             |
|   | PC Board    | 202911        | PIP Micro       |
|   | PC Board    | 205991        | 5 WATT Audio    |
|   | Socket      | 189986        | CRT             |
|   | Transmitter | 197460        | Remote, CRK59A  |
|   | Tuner (4)   | 200075        | UHF/VHF, M-2016 |
| # For SAFETY use only equivalent replacement part.                                |             |               |                 |
| (4) Contact TNI Electronics for replacement; order by manufacturer's part number. |             |               |                 |

| CABINET PARTS                                      |               |
|--|---------------|
| Item   | Mfr. Part No. |
| Models F27191DFG02, F27191DFGW02                   |               |
| Cabinet Rear                                       | BK0997        |
| # Cabinet Wrap                                     | 201604        |
| # Chassis Tray                                     | 203100        |
| # Jack Panel                                       | 206753        |
| # Lens, LED  | 250045        |
| Logo (RCA)   | 195980        |
| Mask, Basic & Buttons                              | MK1176        |
| Overlay, Jack Panel (Without holes)                | 195807        |
| # Overlay, Jack Panel (13 Jack, S-Video)           | 200214        |
| # Speaker Housing, Left                            | 196035        |
| # Speaker Housing, Right                           | 196036        |
| Window IR  | 201603        |
| # For SAFETY use only equivalent replacement part. |               |

| CABINET PARTS continued                            |               |
|--|---------------|
| Item   | Mfr. Part No. |
| Model F27193BTN02                                  |               |
| Cabinet Rear                                       | BK1150        |
| # Chassis Tray                                     | 203100        |
| # Jack Panel                                       | 206753        |
| # Lens, LED  | 250045        |
| Logo (RCA)   | 195980        |
| Mask, Cabinet Front                                | MK1202        |
| Overlay, Jack Panel (Without holes)                | 195807        |
| # Overlay, Jack Panel (13 Jack, S-Video)           | 200214        |
| # Overlay, Speaker                                 | 200431        |
| Support Frame                                      | 200433        |
| Window IR  | 200430        |
| Model G27390TNM02                                  |               |
| Cabinet Rear                                       | BK1114        |
| # Chassis Tray                                     | 203100        |
| # Jack Panel                                       | 206753        |
| # Lens, LED  | 250045        |
| Logo (RCA)   | 250044        |
| Mask, Basic & Buttons                              | MK1113        |
| Overlay, Jack Panel (Without holes)                | 195807        |
| # Overlay, Jack Panel (13 Jack, S-Video)           | 200214        |
| Model G27391WKL02                                  |               |
| Cabinet Rear                                       | BK1181        |
| Caster   | 201724        |
| Caster Socket                                      | 148073        |
| # Chassis Tray                                     | 203100        |
| Glass Door   | 210252        |
| Hinge Door   | 201721        |
| # Jack Panel                                       | 206753        |
| # Lens, LED  | 250045        |
| Logo (RCA)   | 250044        |
| Mask, Basic & Buttons                              | MK1180        |
| Overlay, Jack Panel (Without holes)                | 195807        |
| # Overlay, Jack Panel (13 Jack, S-Video)           | 200214        |
| Pull, Door   | 201722        |
| Model G27391WKL03                                  |               |
| Cabinet Rear                                       | BK1181        |
| Caster   | 201724        |
| Caster Socket                                      | 148073        |
| # Chassis Tray                                     | 203100        |
| Glass Door   | 201720        |
| Hinge Door   | 201721        |
| # Jack Panel                                       | 206753        |
| # Lens, LED  | 250045        |
| Logo (RCA)   | 250044        |
| Mask, Basic & Buttons                              | MK1180        |
| Overlay, Jack Panel (Without holes)                | 195807        |
| # Overlay, Jack Panel (13 Jack, S-Video)           | 200214        |
| Pull, Door   | 201722        |
| # For SAFETY use only equivalent replacement part. |               |

RCA

MODEL F27191DGF02 (CHASSIS CTC169GC)