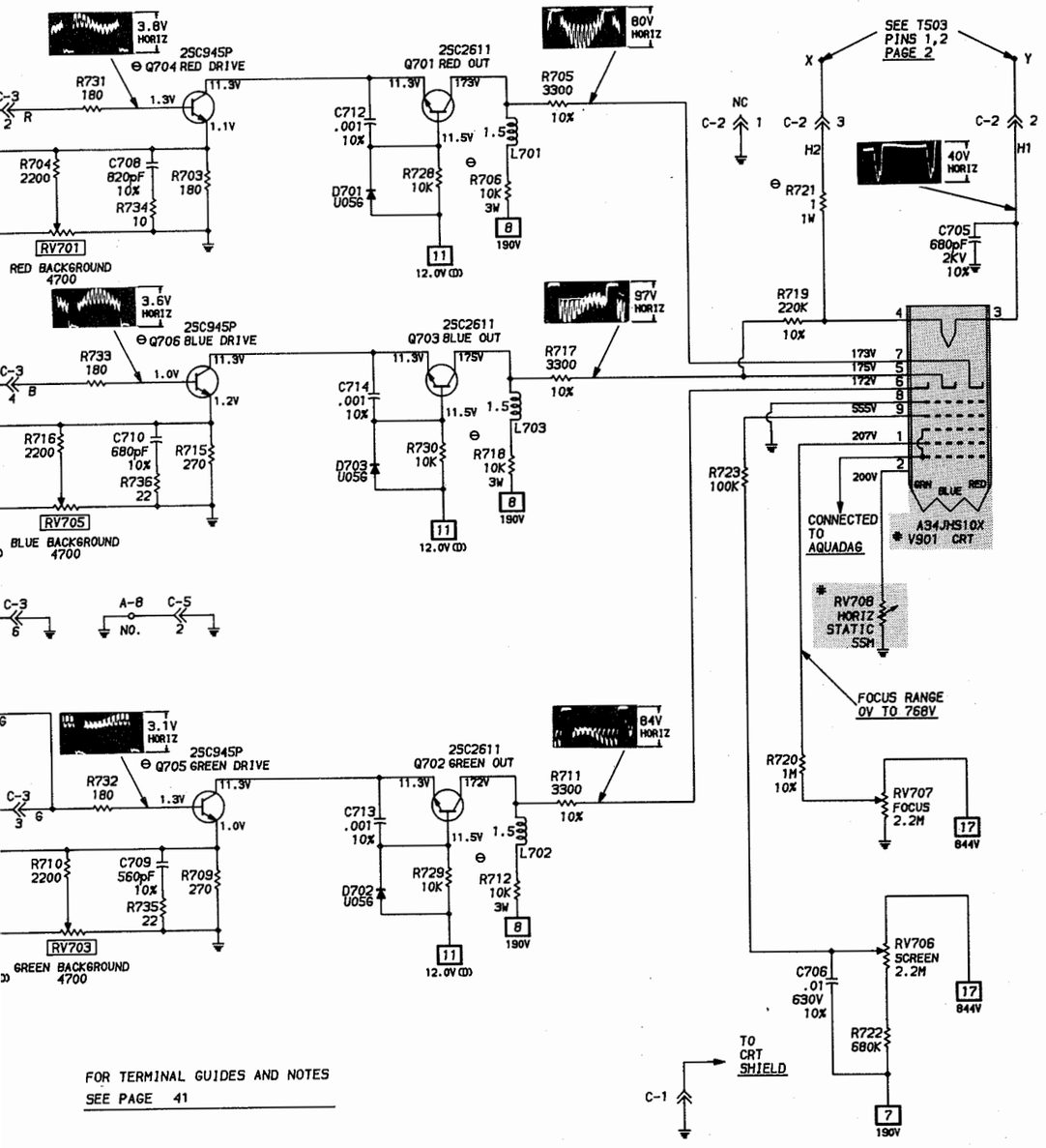
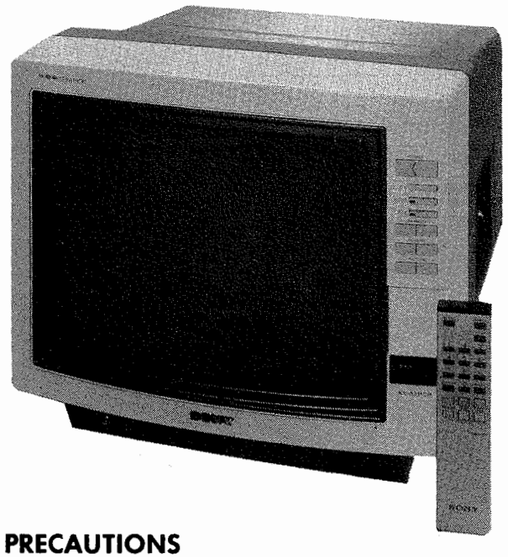


FOR TERMINAL GUIDES AND NOTES
SEE PAGE 41

PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11

SONY MODEL KV-1311CR

SAMS PHOTOFACT®
For Supplier Address See PHOTOFACT Index



SAFETY PRECAUTIONS

See pages 6,47.

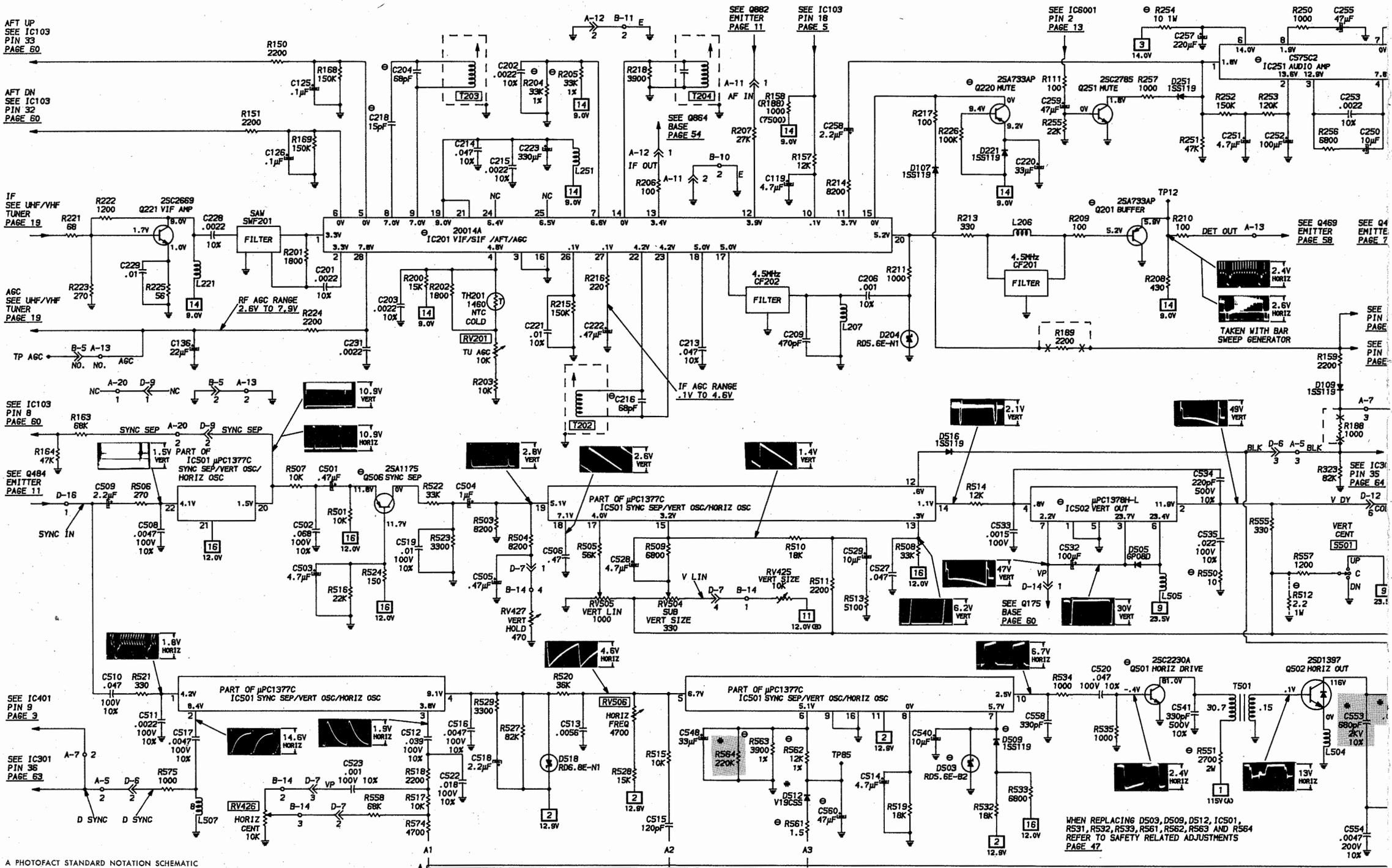
INDEX

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

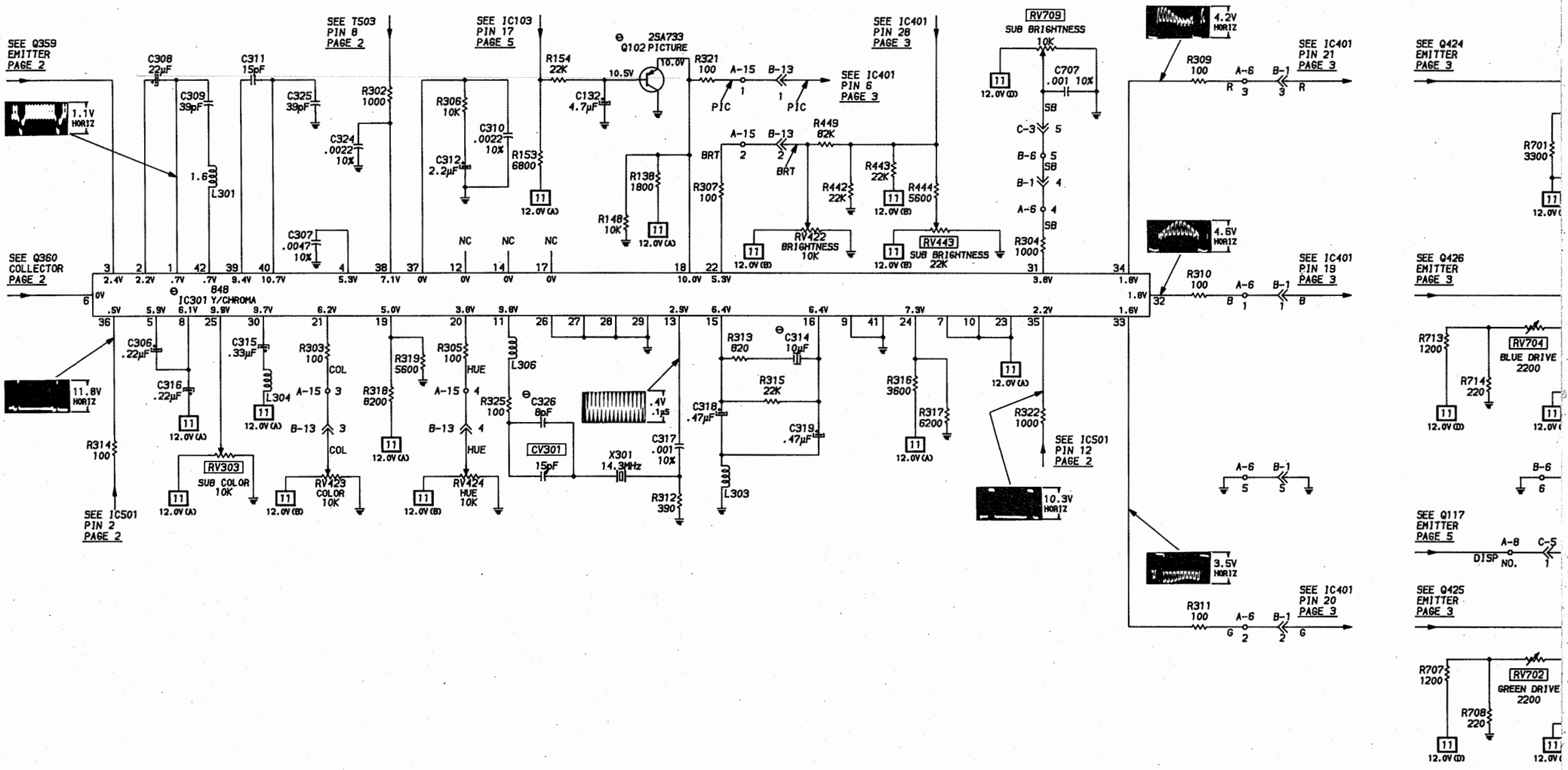
4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A.
Printed in U.S. of America. 86PD01211
DATE 3-86 SET 2393 FOLDER 2

SONY MODEL KV-1311CR

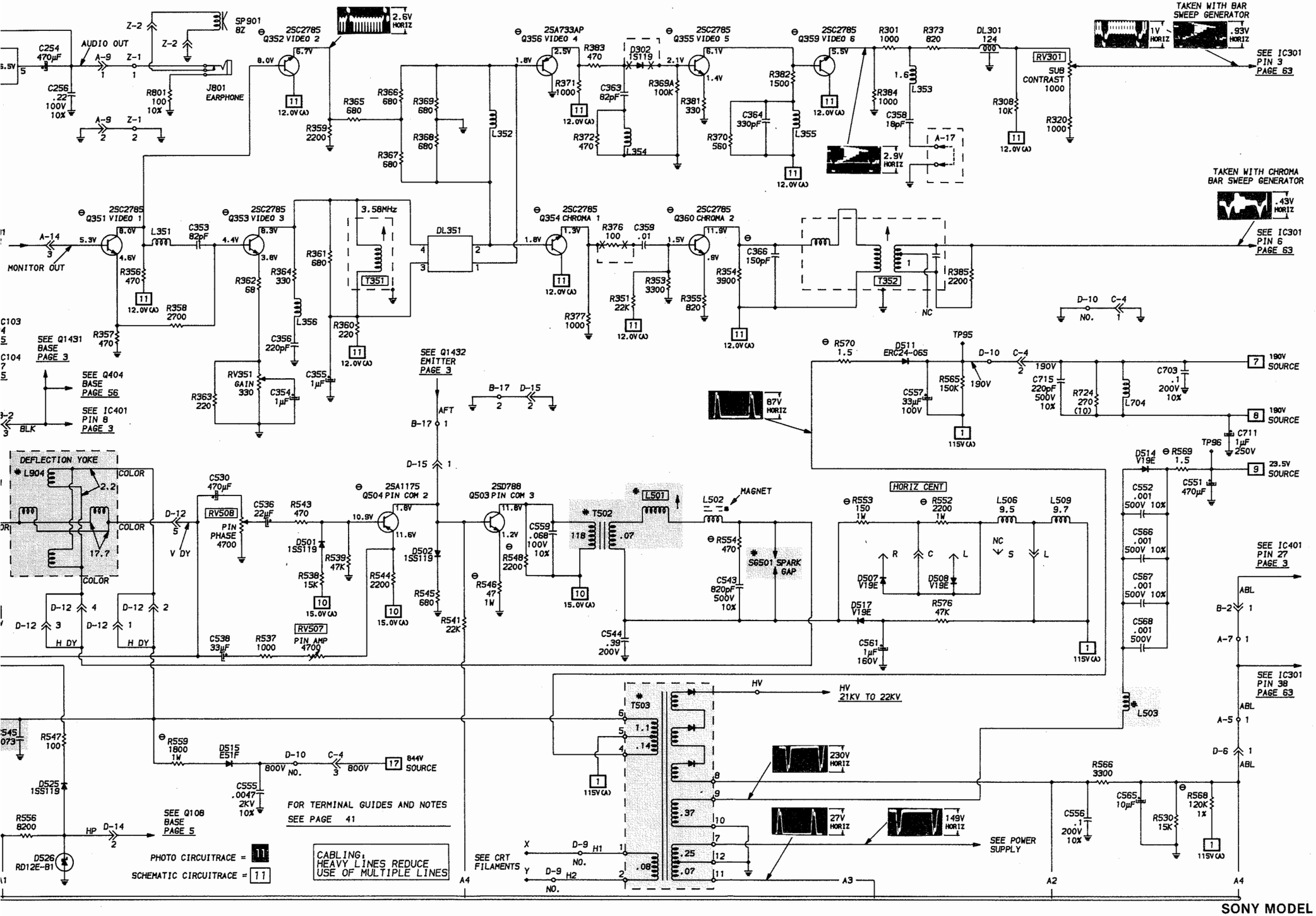
SET 2393 FOLDER 2



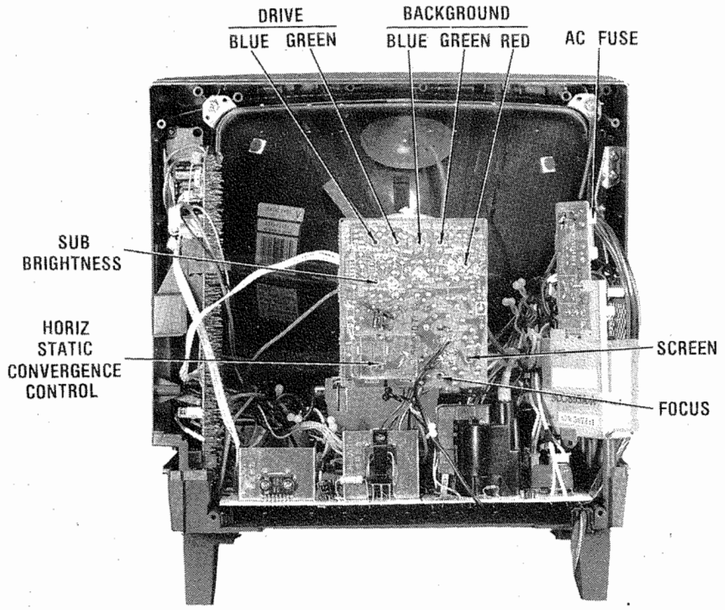
A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE™



A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE™



SONY MODEL
KV-1311CR



CABINET—REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove eight screws holding cabinet back and remove back. Disconnect HV anode, CRT socket, deflection yoke connector, degaussing coil connector and ground leads. Remove one screw holding B Board assembly to cabinet bottom and remove assembly from cabinet. Remove seven screws holding F and G Board assemblies to cabinet bottom and remove assemblies from cabinet. Release from below two latches that are holding retaining strips, that are holding A and D boards to the cabinet bottom and remove boards from cabinet. Remove two screws holding control panel to cabinet front and remove from cabinet.

CRT REMOVAL

Follow "Chassis Removal" procedure and lay set facedown on a soft protective surface. Loosen and remove CRT neck assemblies. 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 6.3-amp fuse is used for AC line protection. (See photo, Cabinet - Rear View.)

VHF/UHF TUNER

Also, see Miscellaneous Adjustments.

Channel Up and Down Buttons are provided for channel scanning. Ten numbered buttons and ENTER Button on the remote transmitter unit are provided for one or two digit entry channel selection with channel Up and Down buttons provided for channel scanning. ERASE and ADD Buttons are provided for pretuning. Fine tuning is automatic.

HORIZONTAL OSCILLATOR

Adjustment of the horizontal hold is accomplished by the proper setting of the Horizontal Frequency Control.

FOCUS

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

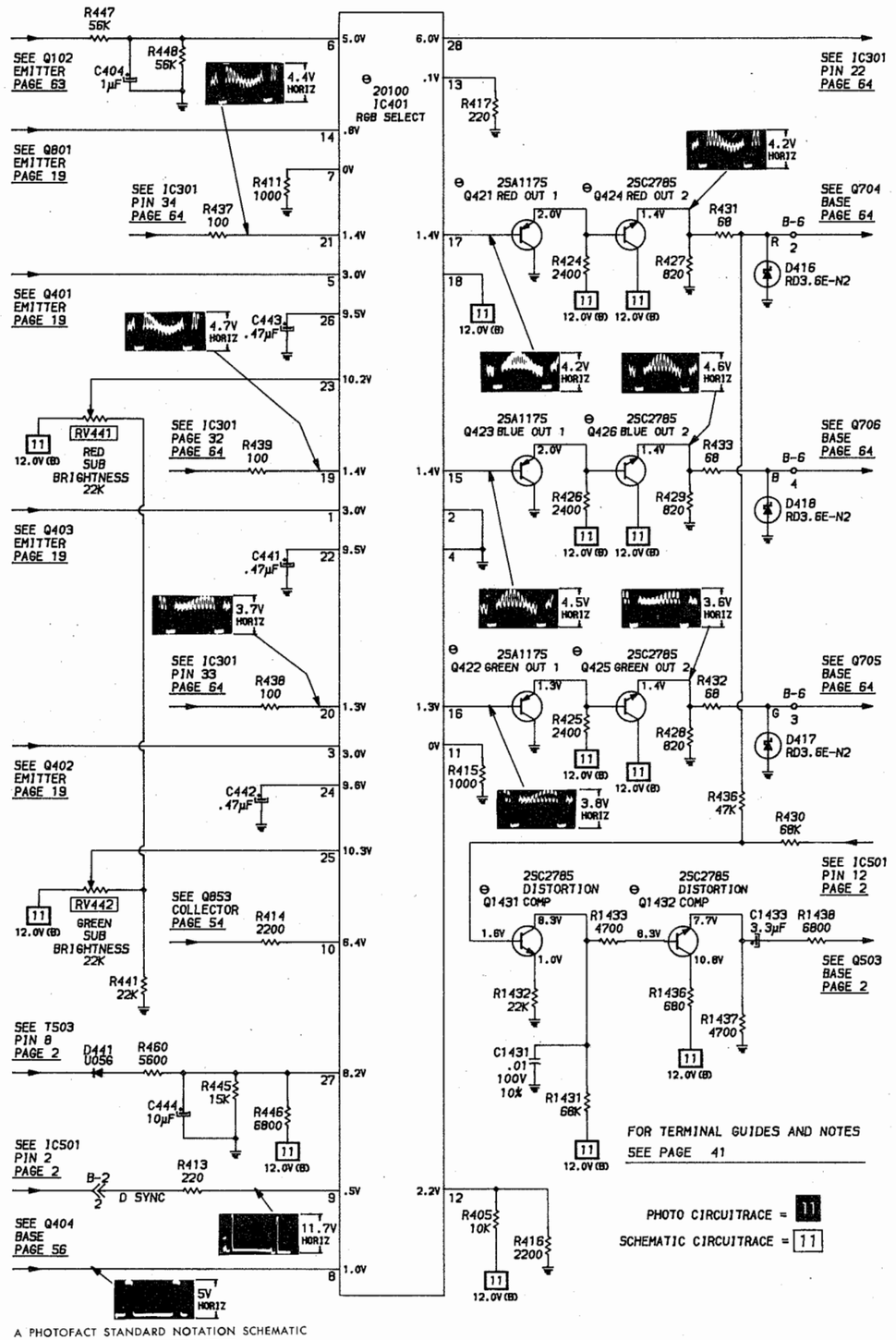
AGC

The AGC may be varied by TU AGC control. (See Alignment "A" Board Photo.)

CENTERING

Horizontal centering is accomplished by proper placement of the horizontal centering TIPS (R-C-L). (See Alignment "D" Board Photo.)

Vertical centering is accomplished by proper adjustment of the vertical centering switch. (See Alignment "D" Board Photo.)

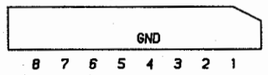


A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE™

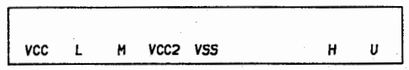
RGB BOARD

PINOUTS

IC1
CX20106



IC102
LA7910



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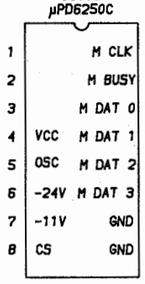
μPD6250C



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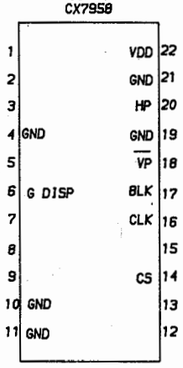

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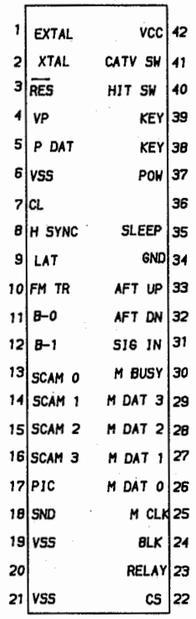

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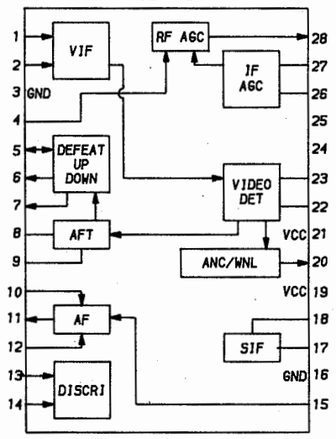
CX20014A



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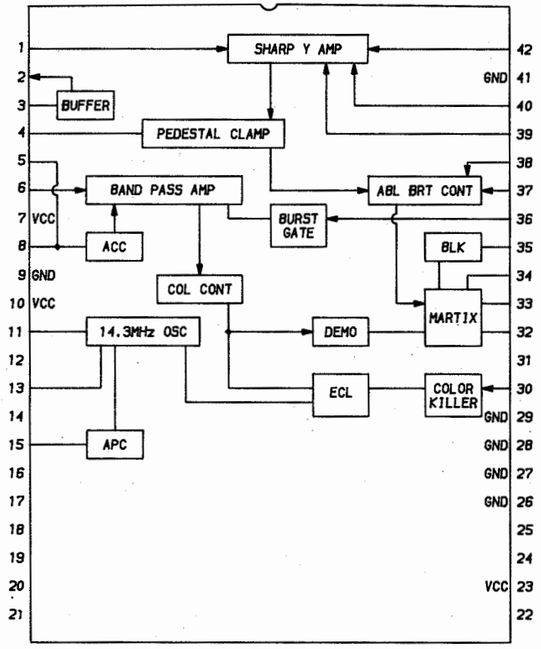
CX848



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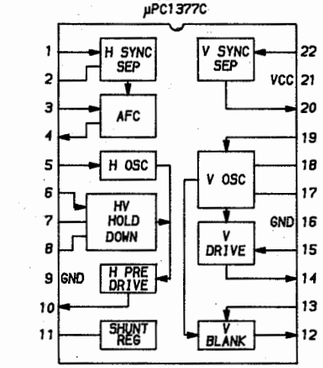

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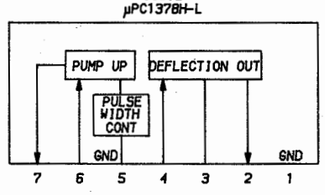

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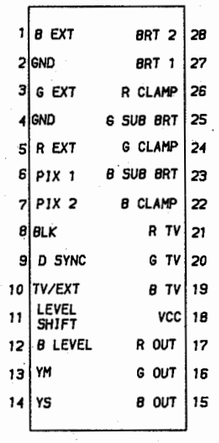
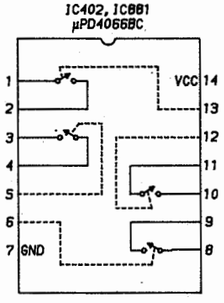


IC402, IC881
μPD4066BC



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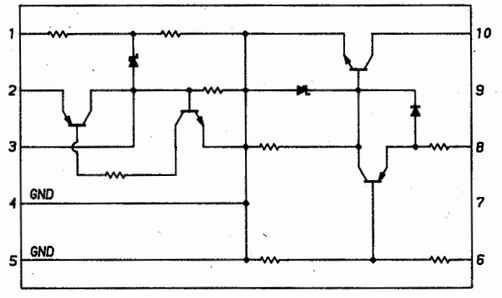
DM-17



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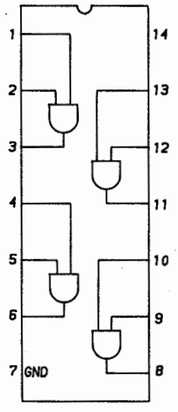

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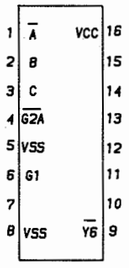
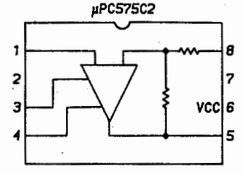
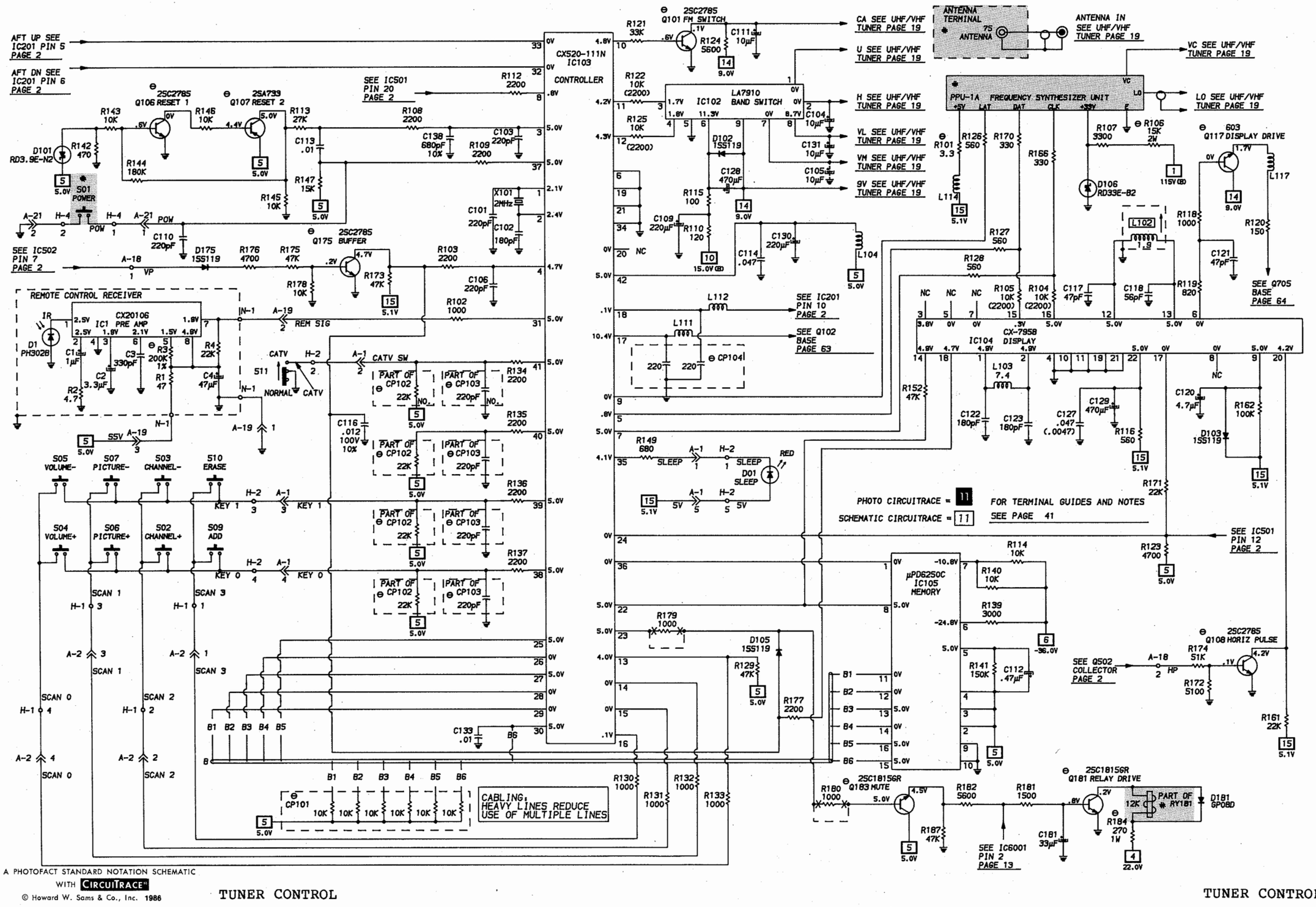


IC251
μPC575C2





A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE™

TUNER CONTROL

TUNER CONTROL

SAFETY PRECAUTIONS

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
   Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

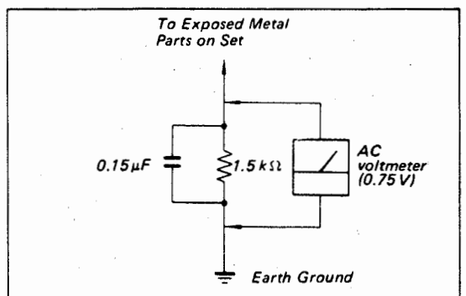


Fig. A. Using an AC voltmeter to check AC leakage.

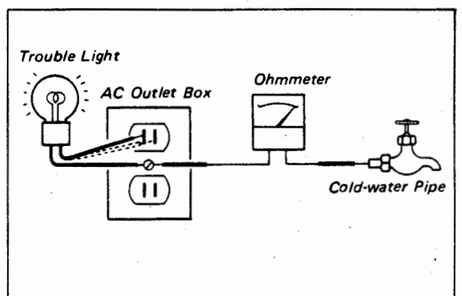
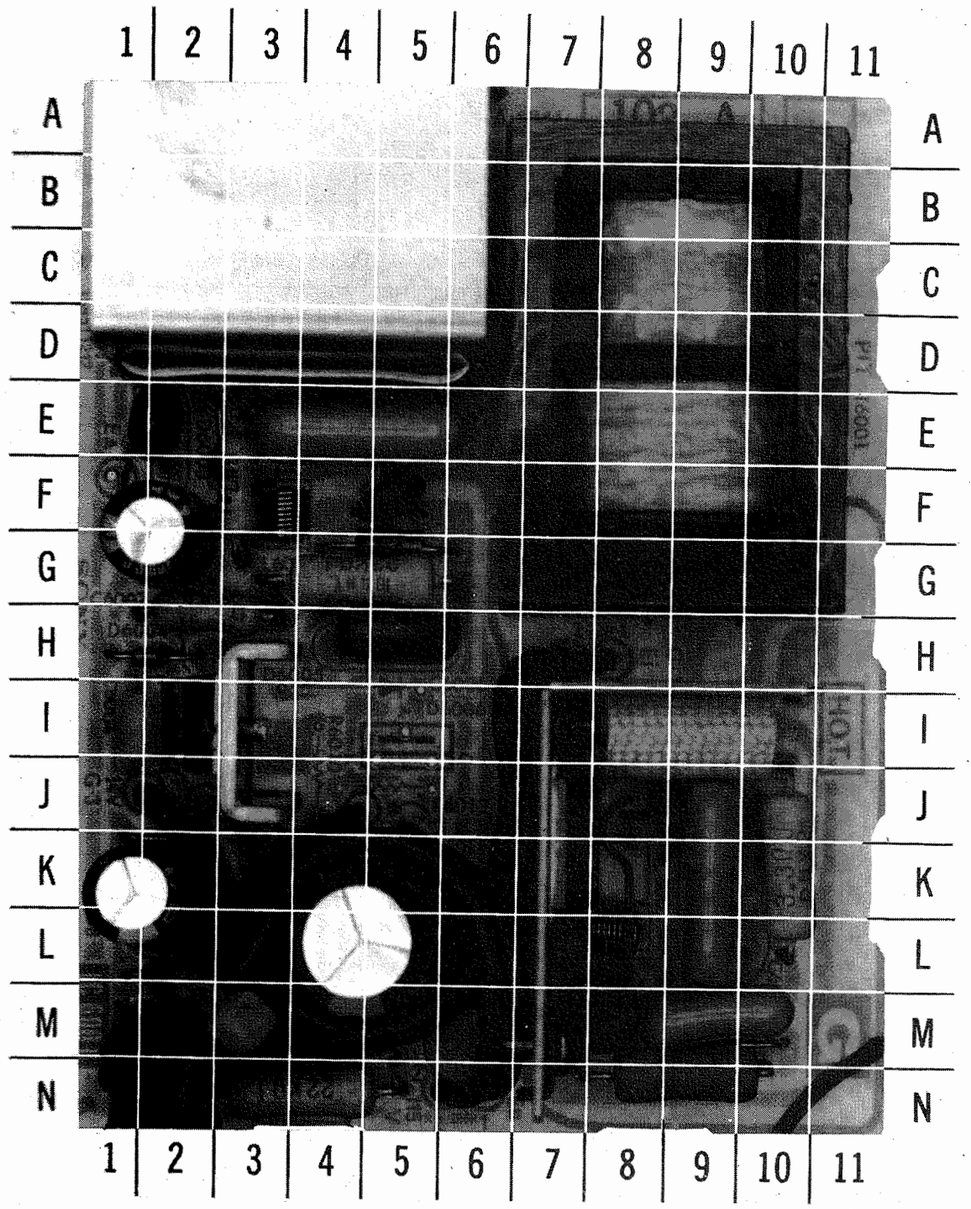


Fig. B. Checking for earth ground.

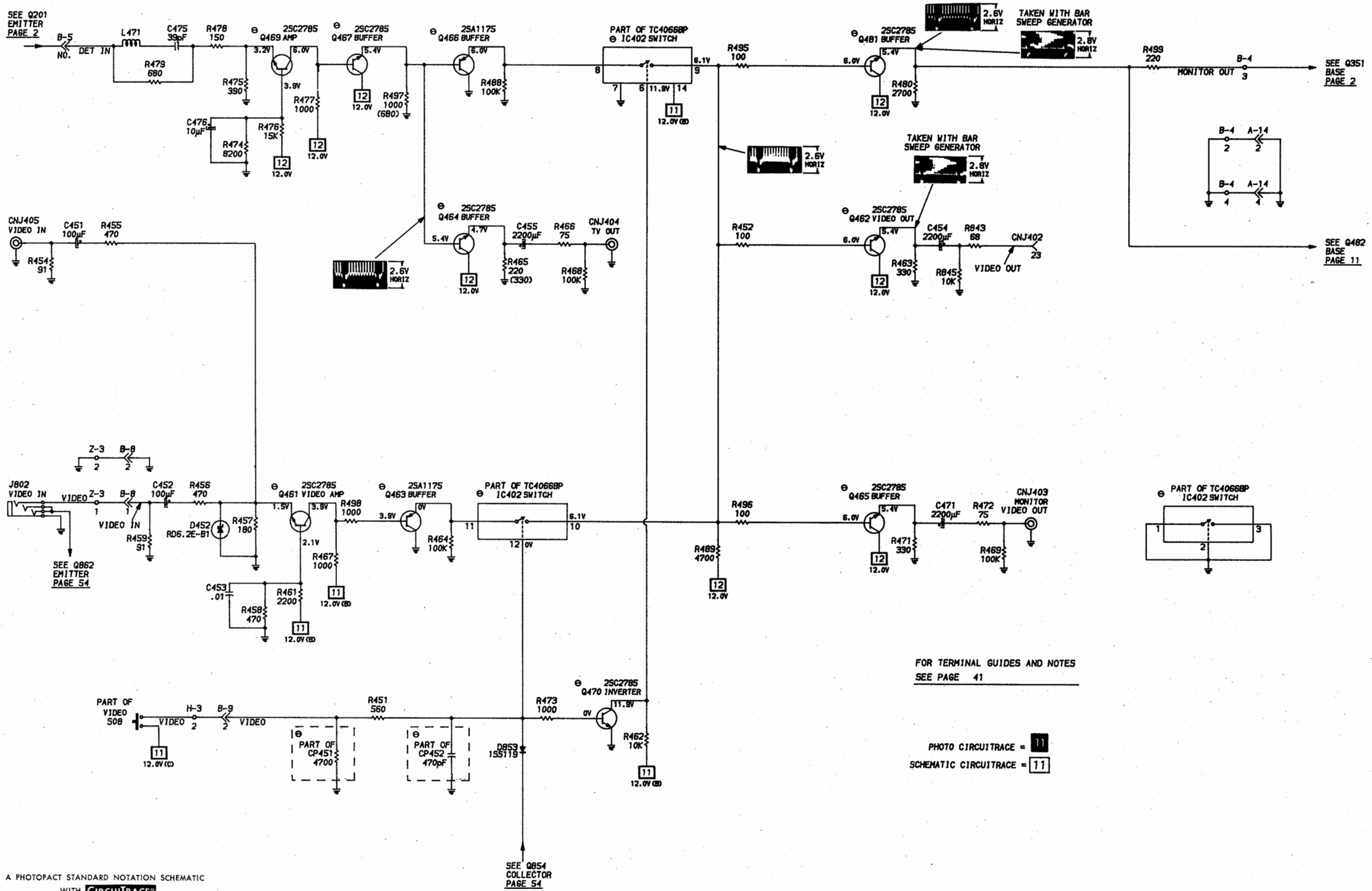
Courtesy of Manufacturer

G BOARD-GridTrace LOCATION GUIDE

C6001	M-9	C6012	J-10	L6002	L-9	R6004	N-5
C6002	K-9	C6013	F-5	L6003	F-3	R6005	N-4
C6003	J-8	D6001	M-9	L6004	I-1	R6006	N-4
C6004	E-4	D6002	G-5	L6005	M-6	R6007	F-3
C6005	E-2	D6003	F-2	L6006	I-8	R6008	G-4
C6006	H-5	D6004	H-2	Q6001	K-7	R6009	H-2
C6007	F-2	D6007	G-5	Q6002	I-2	R6013	L-2
C6008	K-1	D6008	K-2	R6001	I-9	T6001	D-9
C6009	L-5	IC6001	M-4	R6002	K-10	R6002	B-4
C6010	L-3	L6001	M-8	R6003	N-9		



A Howard W. Sams GRIDTRACE™ Photo

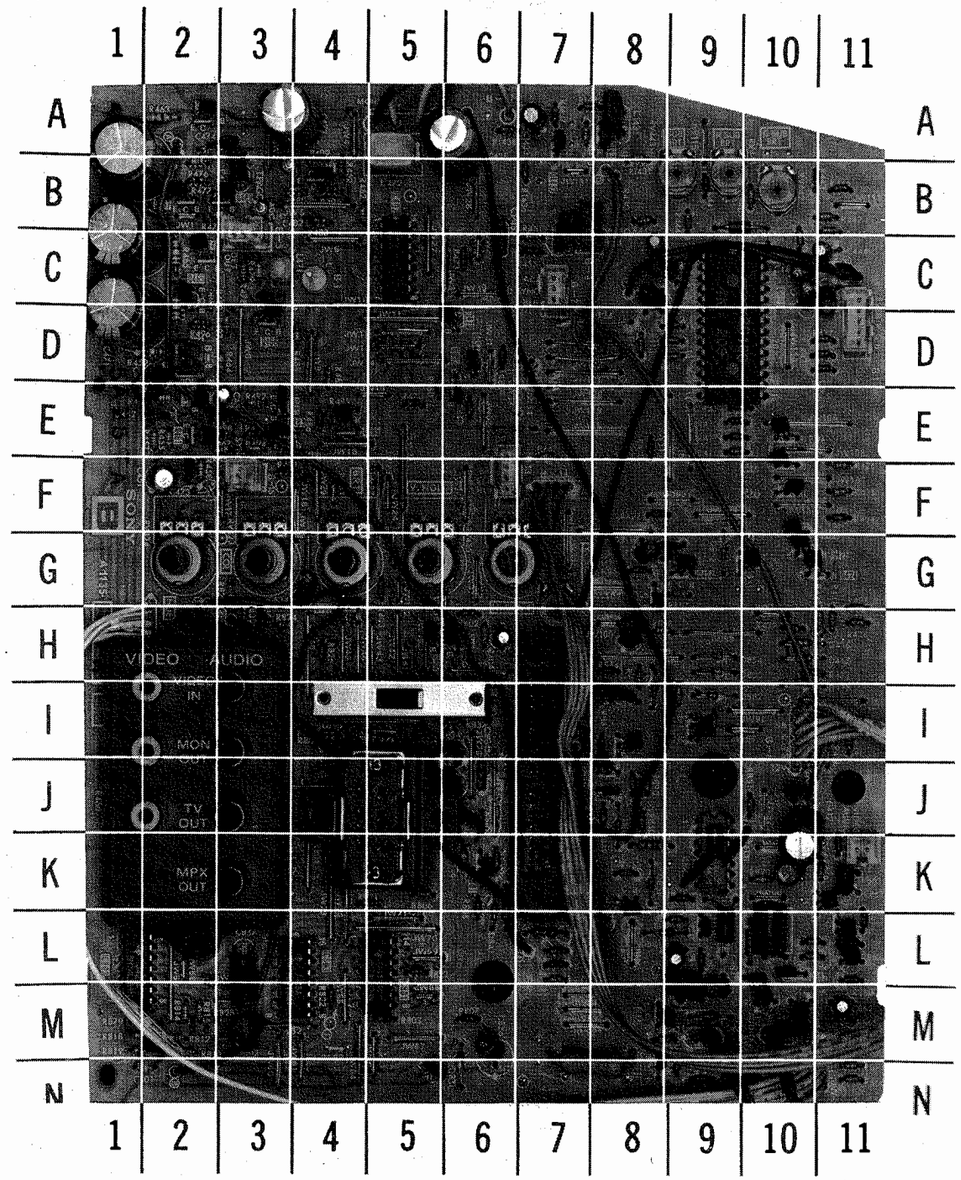


FOR TERMINAL GUIDES AND NOTES
SEE PAGE 41

PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11

A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE™

VIDEO



B BOARD

A Howard W. Sams GRIDTRACE™ Photo

B BOARD-GridTrace LOCATION GUIDE

B1	D-11	CP802	K-4	Q1432	A-7	R489	C-2	R870	K-10
B2	C-7	CP841	J-6	R402	H-6	R491	F-3	R871	N-9
B3	C-4	CP843	J-5	R403	G-5	R492	E-3	R872	L-10
B5	B-3	D416	H-10	R404	H-6	R493	E-3	R873	L-11
B8	D-2	D417	H-10	R405	B-10	R494	E-3	R874	L-11
B9	B-7	D418	H-10	R411	E-9	R495	B-4	R875	L-10
B12	K-11	D441	B-9	R412	D-9	R496	D-2	R876	K-11
B14	F-6	D452	E-2	R413	D-9	R497	D-3	R877	M-9
B16	F-3	D801	K-2	R414	D-9	R498	E-3	R878	J-8
C401	H-6	D802	M-3	R415	E-9	R499	A-4	R879	M-1
C402	C-9	D803	M-3	R416	E-9	R801	I-4	R880	L-11
C403	C-8	D804	J-4	R417	E-9	R802	I-4	R881	K-9
C404	C-8	D805	H-9	R418	E-8	R804	K-4	R882	L-9
C417	K-10	D831	N-6	R421	G-9	R805	K-4	R883	L-9
C421	G-9	D841	L-6	R422	F-8	R806	K-5	R884	I-9
C425	A-6	D851	K-8	R423	D-8	R807	M-6	R885	I-9
C434	J-10	D852	E-7	R424	F-11	R808	K-6	R886	I-7
C441	C-10	D853	G-9	R425	F-11	R809	J-6	R887	I-8
C442	C-11	D854	H-9	R426	F-11	R810	K-6	R888	C-10
C443	C-10	D855	I-8	R427	G-11	R811	K-2	R889	J-8
C444	C-11	D861	M-9	R428	H-11	R812	M-2	R890	J-8
C451	F-2	D881	L-9	R429	H-10	R813	M-2	R891	M-10
C452	D-2	D882	I-9	R430	B-8	R814	M-2	R892	N-11
C453	F-2	D883	J-8	R431	H-11	R815	M-2	R893	M-11
C454	A-1	IC401	D-9	R432	H-11	R816	K-2	R894	M-10
C455	B-1	IC402	C-5	R433	H-10	R818	M-1	R895	L-10
C456	E-3	IC801	L-5	R436	I-11	R819	M-1	R896	K-6
C471	C-1	IC802	L-1	R437	D-11	R821	K-5	R1431	A-8
C472	A-4	IC803	L-4	R438	D-11	R822	M-4	R1432	A-7
C473	G-3	IC881	K-9	R439	D-11	R823	L-5	R1433	A-7
C474	A-3	L471	C-3	R441	B-9	R824	H-3	R1436	B-7
C475	C-3	L472	A-5	R442	B-11	R825	H-3	R1437	A-7
C476	B-3	Q401	H-6	R443	B-10	R826	H-4	R1438	A-6
C801	N-2	Q402	H-5	R444	B-9	R827	K-3	RV422	G-4
C802	K-1	Q403	G-4	R445	B-11	R828	M-3	RV423	G-3
C803	N-5	Q404	G-9	R446	B-11	R829	G-3	RV424	G-2
C804	H-3	Q421	F-10	R447	E-7	R830	H-3	RV426	G-6
C831	G-8	Q422	E-10	R448	C-8	R831	H-3	RV427	H-7
C834	G-4	Q423	E-10	R449	B-8	R832	K-3	RV441	B-9
C836	M-6	Q424	G-10	R451	C-7	R833	I-5	RV442	B-10
C837	L-3	Q425	G-10	R452	B-4	R834	I-5	RV443	B-9
C841	L-9	Q426	F-10	R453	C-7	R835	J-5	S401	I-5
C842	J-6	Q461	E-2	R454	I-1	R836	J-5		
C843	J-6	Q462	A-2	R455	E-2	R837	I-6		
C844	I-6	Q463	E-2	R456	E-2	R838	J-5		
C854	I-8	Q464	C-2	R457	E-2	R839	N-8		
C855	H-8	Q465	C-2	R458	F-2	R840	E-6		
C861	K-11	Q466	D-3	R459	D-2	R841	L-7		
C862	M-11	Q467	B-2	R460	C-10	R842	L-7		
C863	L-11	Q469	B-3	R461	E-3	R843	L-7		
C864	N-9	Q470	D-6	R462	B-4	R845	L-7		
C865	M-9	Q481	B-4	R463	A-2	R846	K-6		
C881	K-10	Q482	E-3	R464	D-3	R847	I-7		
C882	L-10	Q483	E-3	R465	C-2	R848	L-7		
C883	L-9	Q484	E-3	R466	J-1	R849	K-8		
C884	M-9	Q485	E-4	R467	E-3	R850	J-8		
C885	K-9	Q801	K-6	R468	J-1	R851	J-10		
C891	N-10	Q802	H-3	R469	I-1	R853	K-8		
C892	M-10	Q851	G-10	R470	E-5	R854	H-8		
C893	M-10	Q852	J-8	R471	D-2	R855	H-8		
C1431	A-8	Q853	E-6	R472	I-1	R856	G-8		
C1433	A-7	Q854	D-6	R473	C-6	R857	G-9		
CNJ401	J-5	Q855	G-8	R474	A-3	R858	H-8		
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CNJ403	I-2	Q857	J-8	R476	B-2	R860	E-5		
CNJ404	J-2	Q858	I-8	R477	B-2	R861	K-11		
CNJ405	I-2	Q861	N-8	R478	C-2	R862	K-11		
CNJ406	I-3	Q862	L-11	R479	C-3	R863	M-11		
CNJ407	J-3	Q863	K-11	R480	B-4	R864	M-11		
CNJ408	I-3	Q864	M-9	R483	B-4	R865	N-9		
CNJ409	K-3	Q881	L-9	R485	E-4	R866	N-11		
CP451	B-7	Q882	L-10	R486	E-4	R867	M-9		
CP452	B-6	Q883	I-9	R487	D-4	R868	N-9		
CP801	K-4	Q1431	A-8	R488	D-4	R869	N-9		

FOR TERMINAL GUIDES AND NOTES
SEE PAGE 41

PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11

CNJ402 29 $\overline{YS}$ — R848 100 — D841 RD6.2E-B1 — R808 270 — 13 5.0V — R810 220 — 1.4V — Q801 2SC2785 BUFFER .8V — 13 5.0V — R809 1000

PART OF S401 R68 DIGITAL ← ANALOG — R896 39K — 13 5.0V — R418 220 — SEE IC401 PIN 14 PAGE 3

CNJ401 2 — R804 33 — PART OF CP801 ⊖ TYPE — ⊖ PART OF CP802 470

SN74LS09N PART OF IC801 — PB 5 .1V, PB 4 3.9V → PB 6 .1V — R822 1500 — R824 270 — R827 8200 — D803 1SS119

CNJ401 4 — R805 33 — PART OF CP801 ⊖ TYPE — ⊖ PART OF CP802 470

SN74LS09N PART OF IC801 — PB 13 .1V, PB 12 3.9V → PB 11 .1V — R823 1500 — R826 270

CNJ401 3 — R806 33 — PART OF CP801 ⊖ TYPE — ⊖ PART OF CP802 470

SN74LS09N PART OF IC801 — PB 1 .1V, PB 2 3.9V → PB 3 .1V — R821 1500 — R825 270 — R828 2200 — D802 1SS119 — R807 1000 — 13 5.0V

PART OF S401 R68 DIGITAL ← ANALOG — CNJ402 25 R — C842 47µF — PART OF CP841 75 — PART OF CP843 ⊖ TYPE — R835 6800 — R837 22K — 11 12.0V — ⊖ 2SC2785 Q401 RED IN 3.0V 2.4V — R404 3300 — 11 12.0V — C401 10µF — SEE IC401 PIN 5 PAGE 3

PART OF S401 R68 DIGITAL ← ANALOG — CNJ402 27 B — C844 47µF — PART OF CP841 75 — PART OF CP843 ⊖ TYPE — R838 6800 — R833 22K — 11 12.0V — ⊖ 2SC2785 Q403 BLUE IN 3.0V 2.4V — R403 3300 — 11 12.0V — C403 10µF — SEE IC401 PIN 1 PAGE 3

PART OF S401 R68 DIGITAL ← ANALOG — CNJ402 26 G — C843 47µF — PART OF CP841 75 — PART OF CP843 ⊖ TYPE — R836 6800 — R834 22K — 11 12.0V — ⊖ 2SC2785 Q402 GREEN IN 3.0V 2.4V — R402 3300 — 11 12.0V — C402 10µF — SEE IC401 PIN 3 PAGE 3

SEE IC501 PIN 12 PAGE 2 — R423 2700 — C421 150pF — R421 10K — R422 3300 — ⊖ 2SC2785 Q404 SYNC 3.9V .2V

CNJ401 1 — 5.0V — D801 RD6.2E-B1 — R811 1500 — 13 5.0V — R816 220 — R412 220 — SEE IC401 PIN 8 PAGE 3

SN74LS86N PART OF IC802 — PB 13 5.0V, 12 4.4V → PB 11 — R832 22K (2200) — ⊖ 2SC2785 Q802 BUFFER 4.1V 3.5V — R831 1200 — R830 1000 — C804 330pF 10% — R829 5600 — 13 5.0V

SN74LS09N PART OF IC801 — PB 10 5.0V, PB 9 3.9V → PB 8 5.0V — R803 1000 — C802 39pF — 13 5.0V

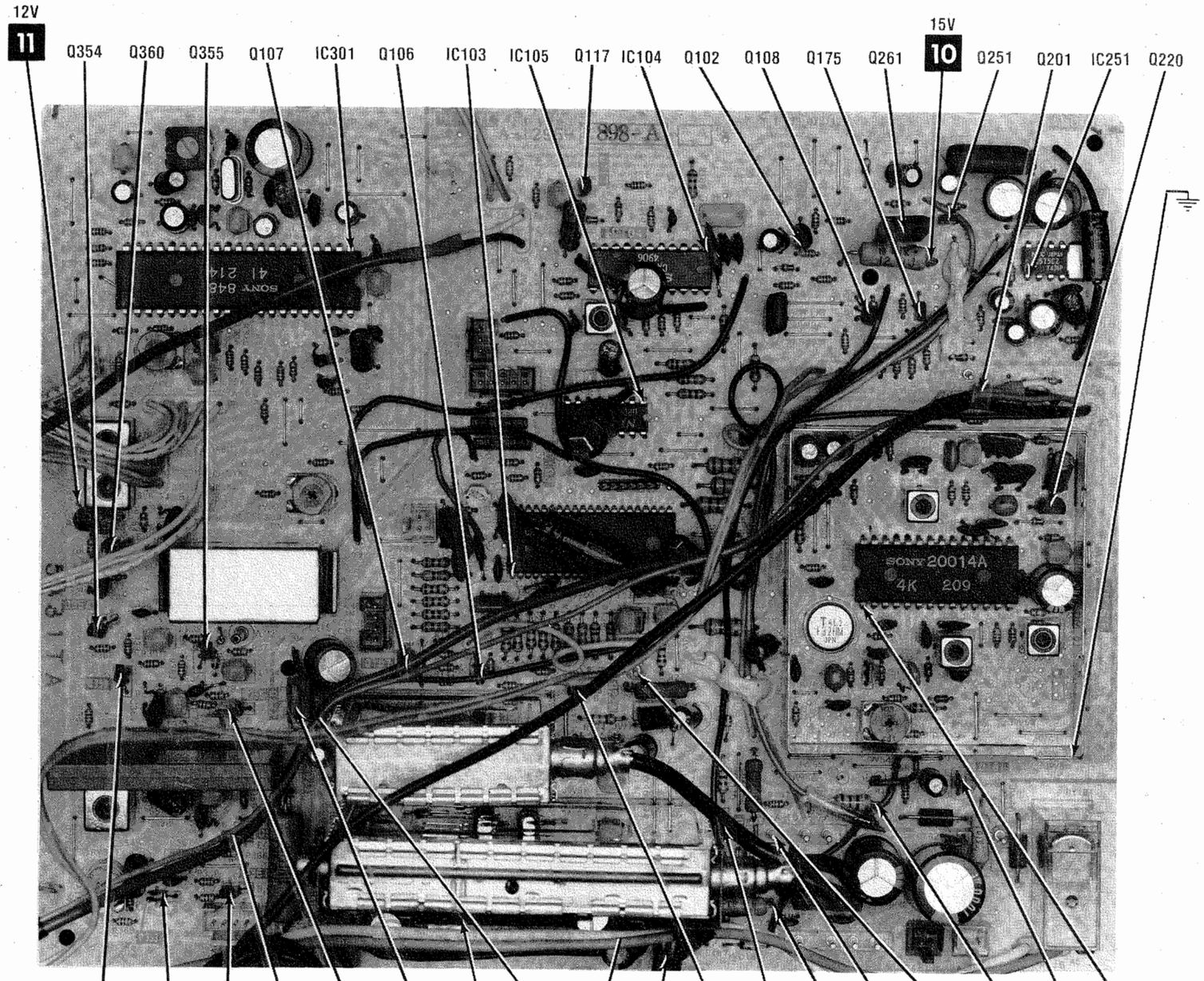
SN74LS13BN IC803 GATE — 4 5.0V, 6 3.9V, 3 .1V, 1 .1V, 2 .1V, 9 4.2V, 16, 7 4.2V — 10 NC, 11 NC, 12 NC, 13 NC, 14 NC, 15 NC, 5 4.2V, 8 — 13 5.0V NC

SN74LS86N PART OF IC802 — PB 1, PB 2 → PB 3; PB 4, PB 5 → PB 6

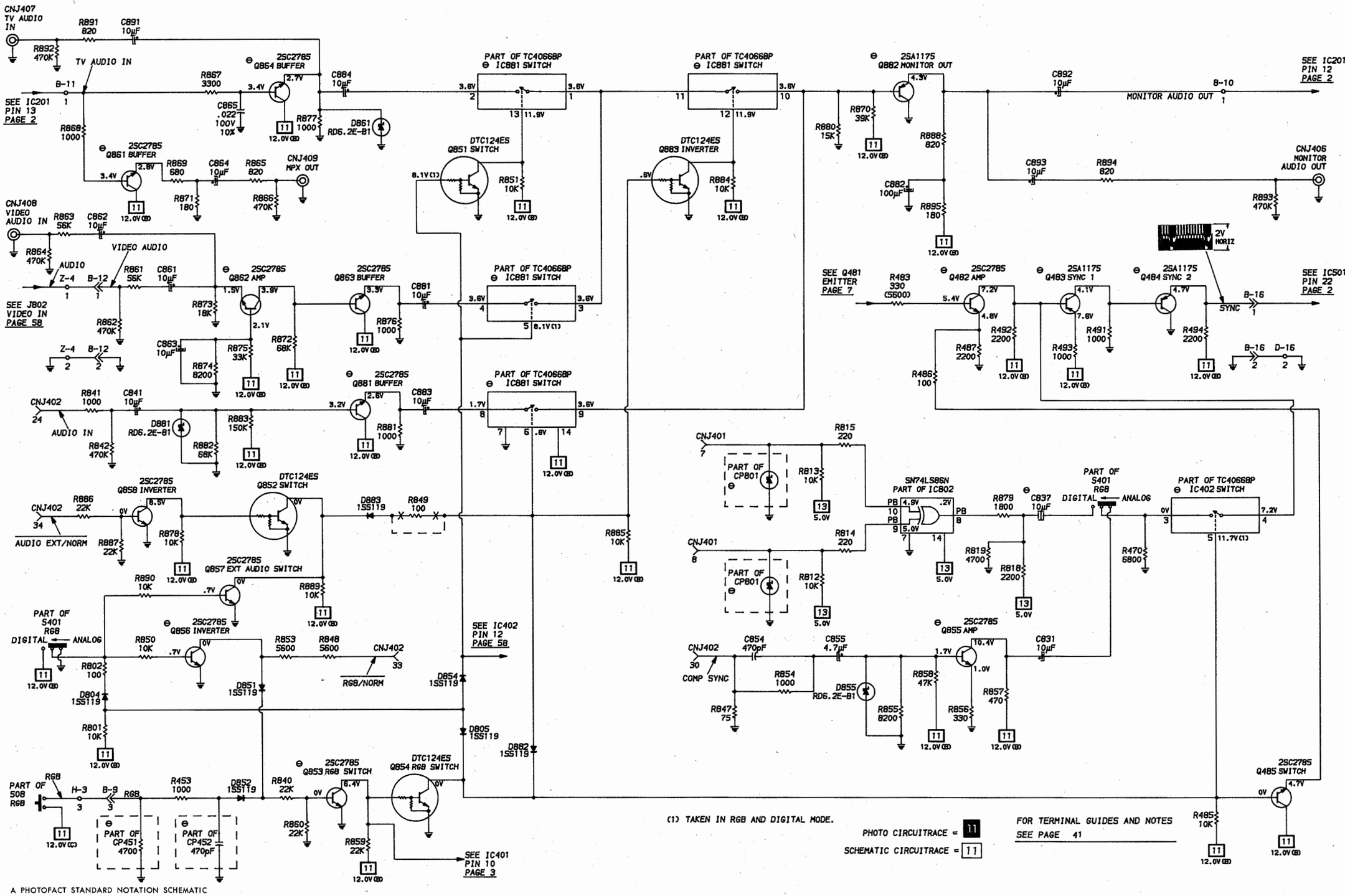
CNJ402 4, 6, 7, 8, 9, 10 — CNJ402 11, 12, 13, 14, 15, 16

CNJ402 NC 1, 2, 3, 5, 17, 18 — CNJ402 NC 19, 20, 21, 22, 28, 31, 32

RGB

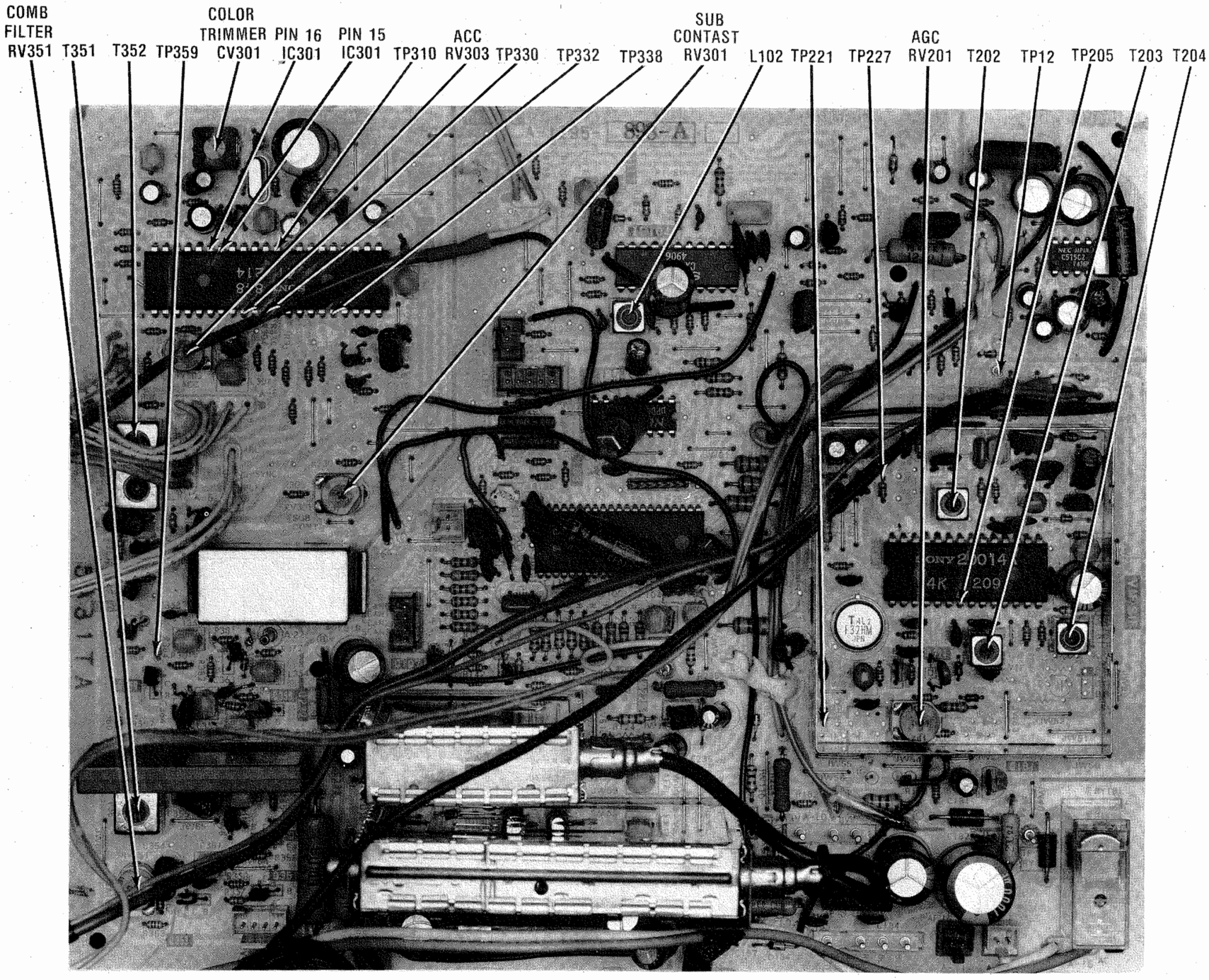


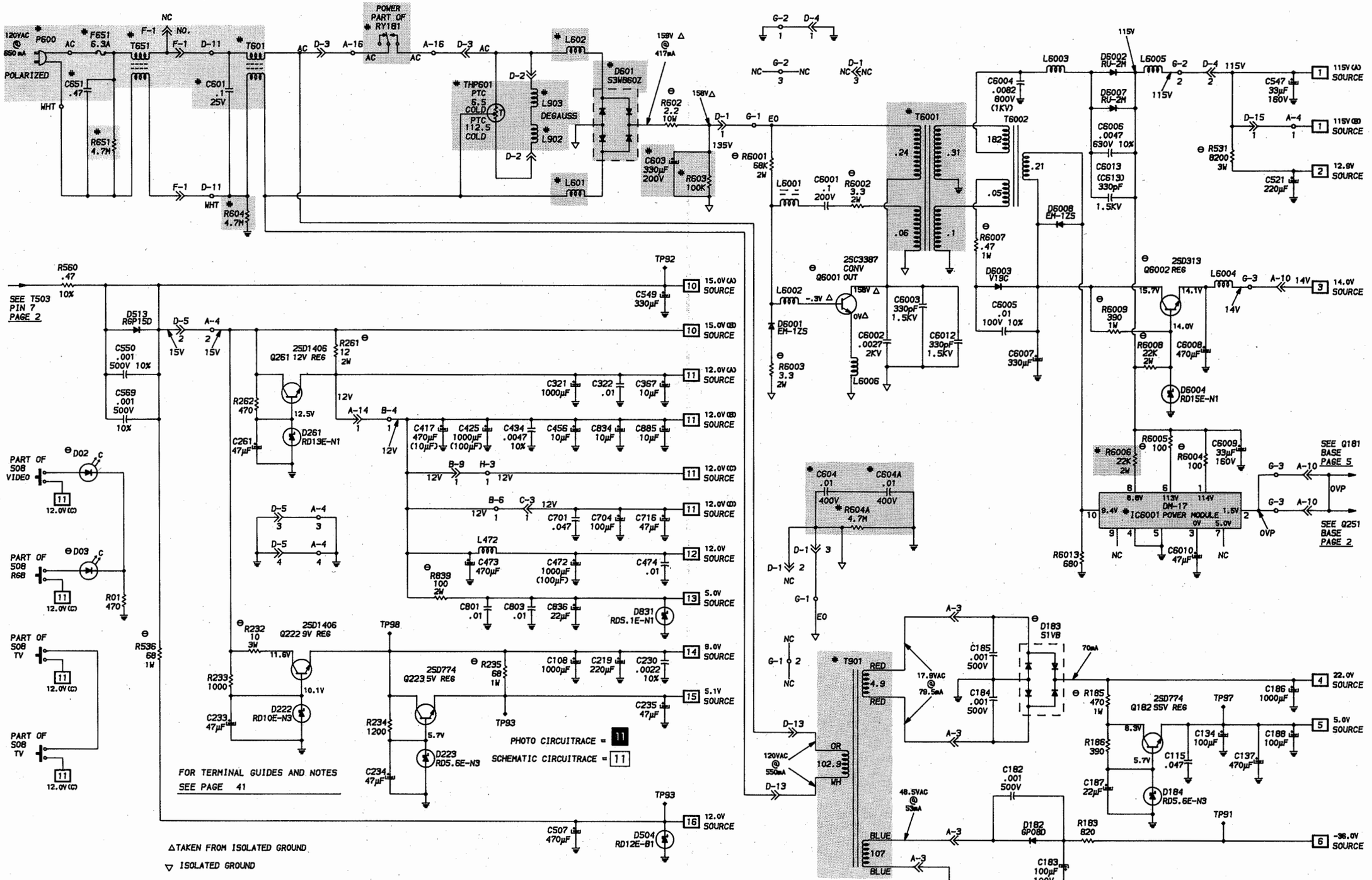
NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED



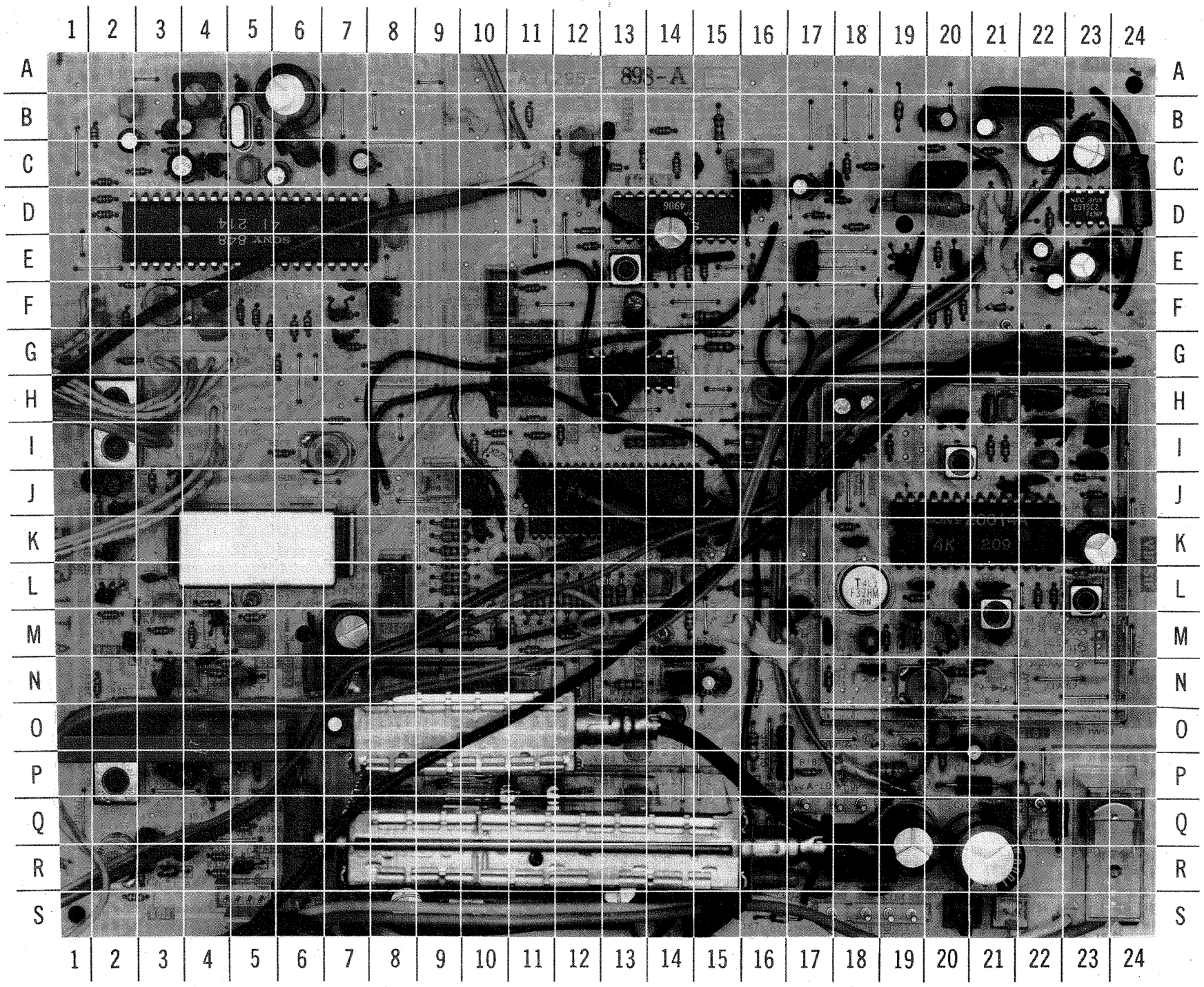
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE™

AUDIO

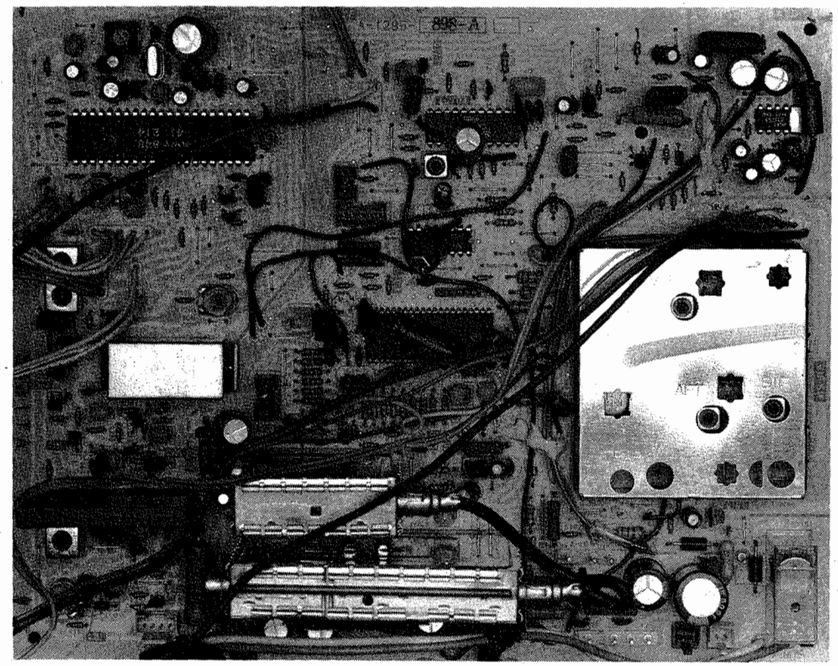

COMB FILTER RV351
T351
T352
TP359
COLOR TRIMMER CV301
PIN 16 IC301
PIN 15 IC301
TP310
ACC RV303
TP330
TP332
TP338
SUB CONTAST RV301
L102
TP221
TP227
AGC RV201
T202
TP12
TP205
T203
T204



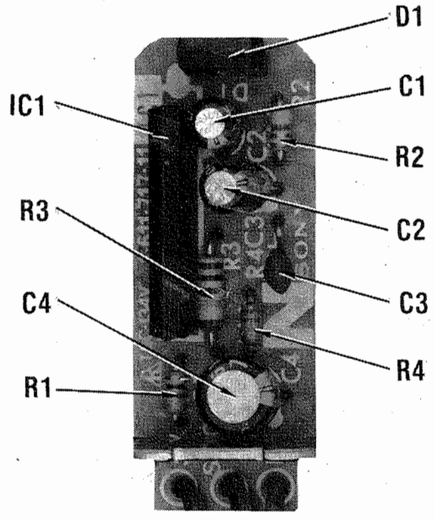
A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE™



A Howard W. Sams GRIDTRACE™ Photo



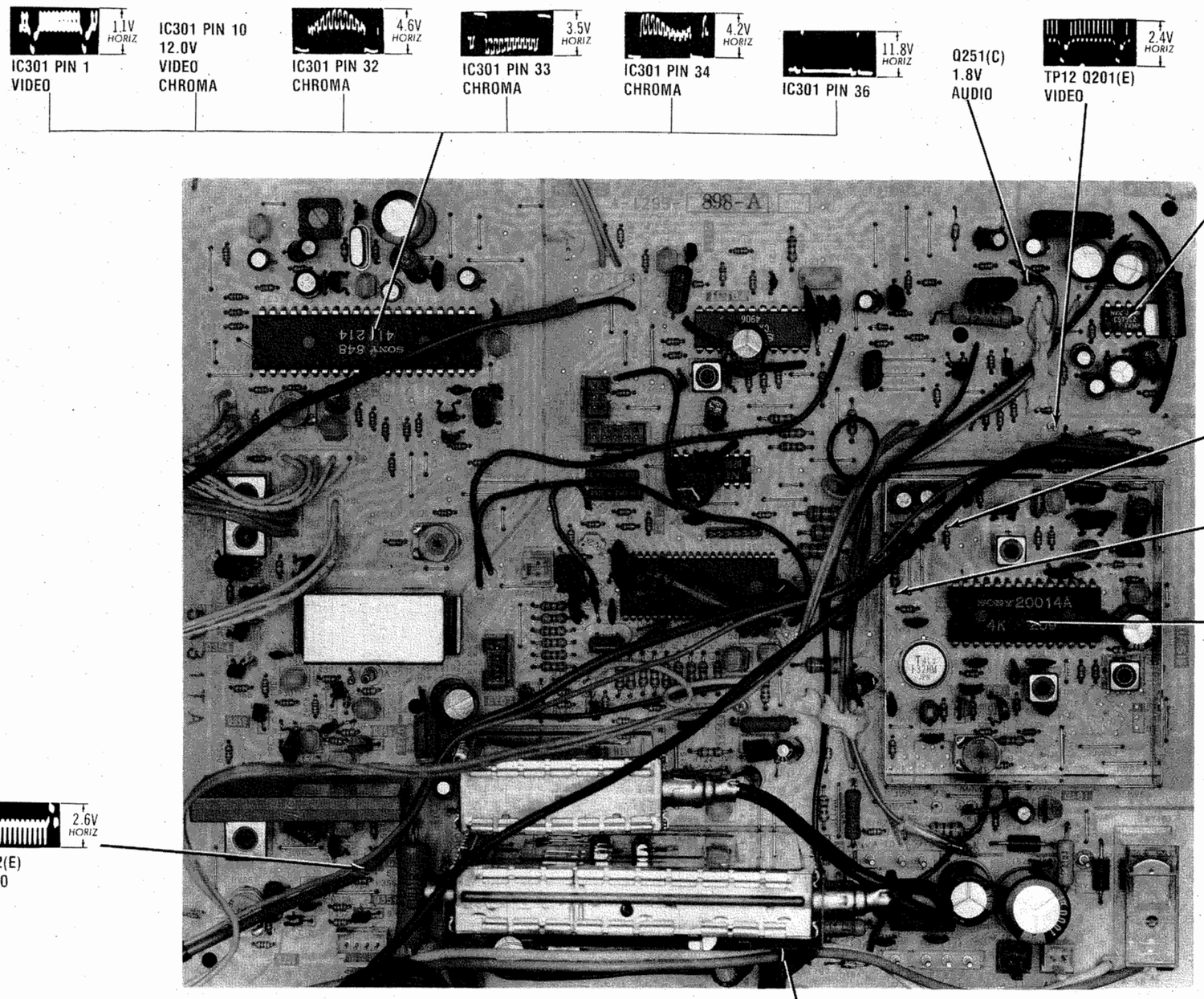
A BOARD-SHIELD LOCATION



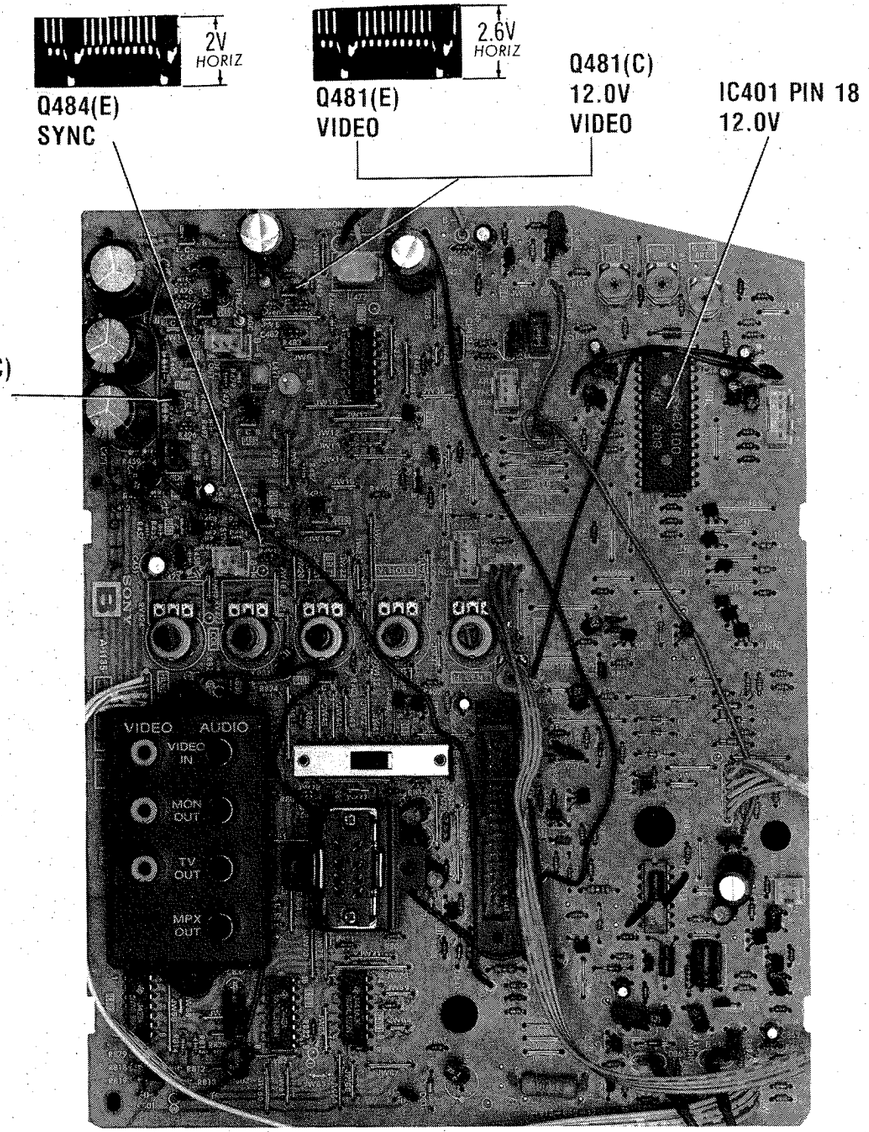
N BOARD

A BOARD-GridTrace LOCATION GUIDE

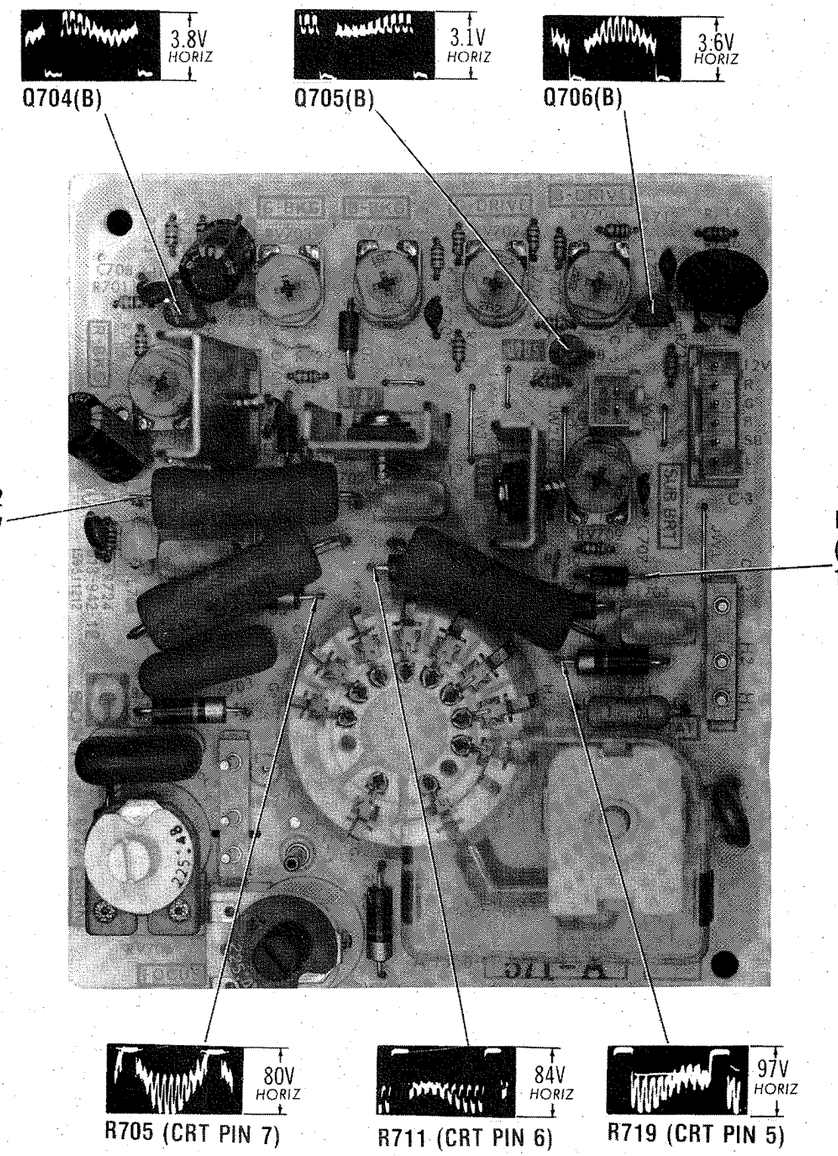
A1	G-11	C234	N-15	IC301	D-5	R129	K-9	R223	M-19	RV351	R-2
A2	L-8	C235	O-14	L102	E-13	R130	L-9	R224	J-17	RY181	R-24
A3	S-18	C250	E-24	L103	C-16	R131	K-9	R225	L-19	SWF201	L-18
A9	Q-17	C251	E-22	L104	I-10	R132	L-9	R226	J-23	T202	I-20
A10	Q-17	C252	E-23	L111	L-14	R133	K-9	R232	Q-6	T203	M-21
A11	S-20	C253	D-23	L112	L-15	R134	I-10	R233	R-6	T204	L-23
A12	S-21	C254	C-23	L114	O-13	R135	H-11	R234	N-14	T351	P-2
A14	S-5	C255	D-24	L117	B-12	R136	I-11	R235	M-14	T352	I-2
A19	F-10	C256	B-22	L206	H-21	R137	I-12	R250	B-23	TH201	M-20
A21	J-9	C257	C-22	L207	I-22	R138	C-18	R251	D-22	TP12	F-21
A22	L-5	C258	E-22	L221	M-18	R139	G-15	R252	E-22	TP250	L-20
C101	K-11	C259	B-21	L251	J-23	R140	G-15	R253	E-23	TP221	N-17
C102	J-10	C261	B-20	L301	D-8	R141	G-14	R254	O-16	TP227	I-19
C103	K-10	C306	C-6	L303	B-2	R142	M-10	R255	C-21	TP310	D-5
C104	S-10	C307	C-7	L304	F-4	R143	M-10	R256	F-24	TP330	E-4
C106	K-12	C308	C-7	L306	C-5	R144	M-11	F257	D-21	TP332	E-5
C108	S-13	C309	D-8	L351	Q-4	R145	L-10	R261	D-20	TP338	E-6
C109	S-8	C310	G-7	L352	N-4	R146	M-10	R262	C-20	TP359	M-2
C110	J-10	C311	F-7	L353	L-3	R147	I-10	R301	M-3	X101	L-11
C111	P-10	C312	F-8	L354	M-5	R148	C-18	R302	G-7	X301	B-5
C112	F-13	C314	C-4	L355	N-4	R149	G-11	R303	C-2		
C113	J-10	C315	F-4	L356	P-4	R150	I-16	R304	F-5		
C114	J-11	C316	C-6	Q101	M-13	R151	H-16	R305	D-2		
C115	J-10	C317	C-4	Q102	C-18	R152	E-14	R306	F-7		
C116	E-17	C318	B-3	Q106	M-10	R153	D-18	R307	F-2		
C117	E-12	C319	C-2	Q107	M-9	R154	D-18	R308	I-6		
C118	E-14	C321	B-6	Q108	E-19	R157	L-16	R309	G-6		
C119	L-17	C322	B-6	Q117	B-13	R158	M-14	R310	F-5		
C120	C-12	C324	F-7	Q175	E-20	R159	D-17	R311	F-5		
C121	C-15	C325	F-8	Q181	O-21	R161	F-20	R312	B-4		
C122	D-16	C326	A-5	Q182	S-15	R162	C-13	R313	C-4		
C123	D-16	C353	R-4	Q183	P-16	R166	M-12	R314	F-6		
C125	I-18	C354	Q-3	Q201	G-22	R168	I-18	R315	C-3		
C126	H-18	C355	P-3	Q220	I-23	R169	H-18	R316	F-2		
C127	D-16	C356	P-4	Q221	M-19	R170	M-11	R317	F-3		
C128	S-10	C358	L-3	Q222	N-6	R171	E-19	R318	B-2		
C129	D-14	C359	K-2	Q223	N-14	R172	E-19	R319	C-3		
C130	J-13	C363	N-4	Q251	C-21	R173	F-20	R320	H-7		
C131	S-12	C364	N-3	Q261	C-20	R174	F-18	R321	D-3		
C132	C-17	C366	J-3	Q351	R-5	R175	E-20	R322	F-6		
C133	I-13	C367	J-1	Q352	Q-5	R176	F-20	R323	G-8		
C134	J-15	CF202	H-22	Q353	R-3	R177	E-15	R325	B-5		
C136	P-11	CP101	I-14	Q354	L-2	R178	E-20	R351	J-2		
C137	H-13	CP102	H-11	Q355	M-4	R179	I-16	R353	K-2		
C138	K-12	CP103	H-11	Q356	N-5	R180	O-16	R354	J-3		
C181	O-21	CP104	K-14	Q359	M-2	R181	P-20	R355	K-3		
C182	Q-21	CV301	A-4	Q360	J-2	R182	P-17	R356	Q-5		
C183	R-19	D101	M-9	R101	O-13	R183	P-19	R357	R-4		
C184	S-18	D102	S-9	R102	F-11	R184	Q-22	R358	R-4		
C185	S-17	D103	C-13	R103	L-11	R185	R-16	R359	P-5		
C186	R-21	D105	N-16	R104	D-12	R186	R-16	R360	N-2		
C187	S-15	D106	P-9	R105	E-12	R187	Q-16	R361	P-4		
C188	S-14	D107	F-21	R106	R-7	R188	B-15	R362	R-3		
C201	K-18	D109	D-17	R107	P-8	R189	F-16	R363	S-2		
C202	L-20	D175	F-19	R108	L-11	R200	N-20	R364	P-4		
C203	L-19	D181	Q-22	R109	J-10	R201	K-18	R365	P-5		
C204	L-21	D182	P-21	R110	S-8	R202	N-20	R366	O-3		
C206	H-22	D183	R-18	R111	P-19	R203	N-20	R367	N-2		
C209	I-22	D184	S-16	R112	L-12	R204	M-20	R368	M-2		
C213	J-22	D204	H-23	R113	L-9	R205	N-4	R369	N-5		
C214	J-21	D221	J-23	R114	F-15	R206	L-22	R370	N-3		
C215	K-23	D222	N-6	R115	S-9	R207	L-22	R371	N-4		
C216	H-20	D223	N-15	R116	E-16	R208	F-23	R372	M-5		
C218	M-21	D251	D-21	R118	B-14	R209	G-21	R373	K-3		
C219	M-7	D261	E-19	R119	C-14	R210	G-23	R377	K-2		
C220	I-23	D302	M-4	R120	C-12	R211	I-21	R381	L-4		
C221	H-19	DL301	K-5	R121	L-13	R213	I-21	R382	M-4		
C222	H-18	DL351	O-4	R122	L-13	R214	E-21	R383	N-4		
C223	K-23	IC102	S-10	R123	H-14	R215	H-20	R384	M-2		
C228	M-17	IC103	J-13	R124	N-13	R216	I-19	R385	G-2		
C229	M-19	IC104	D-14	R125	L-13	R217	H-23	R386	L-5		
C230	N-18	IC105	G-13	R126	L-12	R218	L-23	RV201	N-20		
C231	I-18	IC201	K-21	R127	L-11	R221	N-17	RV301	I-7		
C233	O-7	IC251	D-23	R128	L-12	R222	M-19	RV303	F-3		



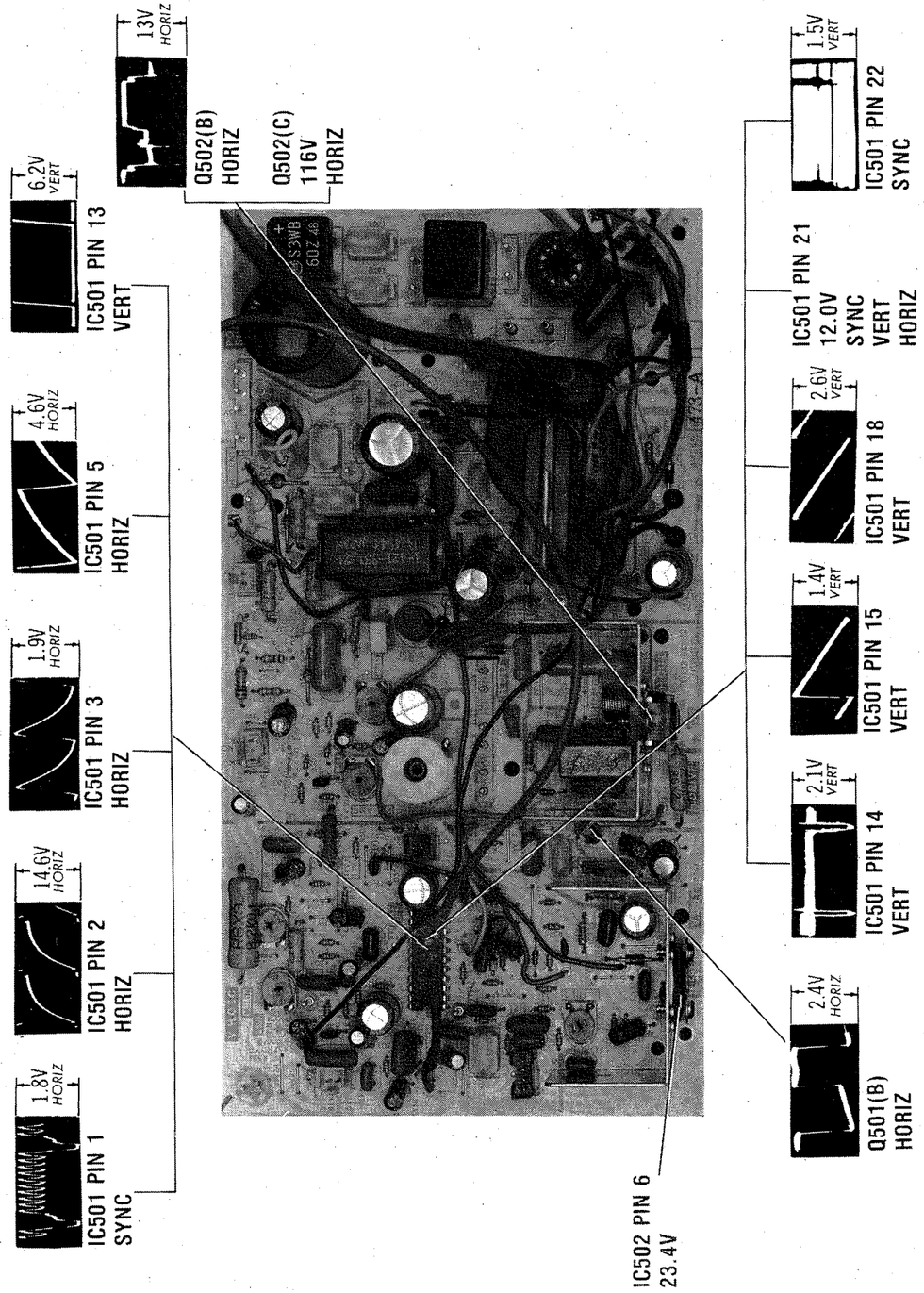
A Howard W. Sams QUICK-CHECKS™ Photo



B BOARD



C BOARD



D BOARD

TROUBLESHOOTING (Continued)

check for the proper chroma waveforms at pins 32, 33 and 34 of IC301. If these waveforms are absent, check the voltages, waveforms and components with pins 6, 20, 21, 30 thru 36, and 38 of IC301. Check the 14.3MHz oscillator at pins 11 and 13 of IC301. If there is no color sync, check for a horizontal sync pulse at pin 36 of IC301 and the adjustment of Capacitor CV301. If there is inadequate tint range, check the voltages, waveforms and components associated with pins 15, 16 and 20 of IC301. If the proper chroma waveforms are present at pins 32, 33 and 34 of IC301, check the voltages, waveforms and components associated with pins 15 thru 21 of RGB Select IC (IC401).

SAFETY PRECAUTIONS

SAFETY RELATED ADJUSTMENTS

R564, ADJUSTMENT (HOLD, DOWN)

When replacing the following components (marked with ◪ on the schematic diagram), perform the adjustment as follows.

R531, R532, R533, R561, R562, R563, R564, D503, D509, D512, IC501.

1. +B voltage check

1) Receive the monoscope signal.

PICTURE VR . . . . . initial setting position

BRIGHT VR . . . . . center click position.

2) Supply 130 $^{+2}_{-0}$ V AC to with variable auto transformer.

3) Confirm the voltage of +B line (R551) is less than 116.5V dc.

2. Operation check

1) Receive the monoscope signal.

PICTURE VR . . . . . initial setting position

BRIGHT VR . . . . . center click position

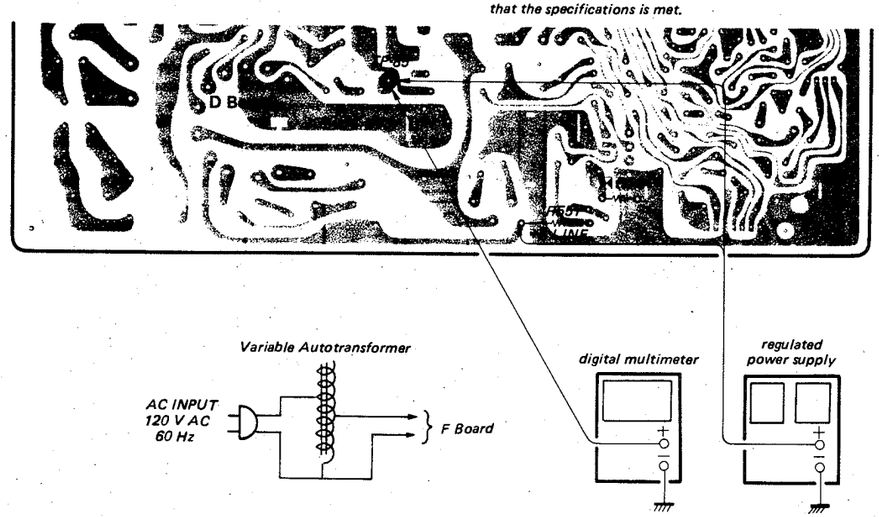
2) Confirm that a voltage of 21.3±1.6V dc appears between TP-85 and GND.

3) Confirm that the hold-down circuit operation (the rastar disappears) when 24.35$^{+0.05}_{-0}$V dc is applied to TP-85 from regulated-power supply.

Note: *If the hold-down circuit operates, immediately cut ac and applied dc voltage.*

4) Confirm that the hold-down circuit does not operate when 23.85$^{+0.05}_{-0}$ V dc is applied to TP-85 from regulated-power supply.

3. If step 1)~4) is not satisfied, select the value of R564 so that the specifications is met.



Courtesy of Manufacturer

TROUBLESHOOTING (Continued)

fier Transistor (Q862) and Monitor Output Transistor (Q882). Inject an audio signal at pin 24 of Connector CNJ402, apply 1.0V DC to pin 34 of CNJ402, Switch S401 to Analog mode, depress the RGB Switch and check for sound at the speaker. If there is no sound, check the voltages, waveforms and components associated with pins 6 thru 10, and 14 of IC881, Buffer Transistor (Q881), and Switching Transistor (Q852), Inverter Transistors (Q856, Q858, Q883), and Ext. Audio Switch Transistor (Q857).

VIDEO

If there is no video, inject a video signal at TP12 and check for video on the CRT. If there is video, refer to the "IF-AGC" section of this Troubleshooting guide. If there is no video, check for a video waveform at pin 3 of Plug A14. If there is no video at pin 3, check the voltages, waveforms and components associated with video Output Transistors (Q462), Video Buffer Transistors (Q464 thru Q467, Q481), Amplifier Transistor (Q469) and pins 6, 8, 9, 10 and 14 of Switch IC (IC402). If there is video at pin 3 of A14, check for a video waveform at pin 3 of Y/Chroma IC (IC301). If there is no video at pin 3, check the voltages, waveforms and components associated with Video Transistors (Q351, Q352, Q353, Q355, Q356, Q359), Chroma Transistors (Q354, Q360) and pin 3 of IC301. If there is video at pin 3 of IC301, check for video at pins 32, 33 and 34 of IC301. If there is no video, check the voltages, waveforms and components associated with pins 1 thru 5, 7, 8, 10, 18 thru 22 , 32 thru 35, 37, 38, 39, 40 and 42 of IC301. If there is video at pins 32, 33 and 34 of IC301, check for video at pins 2, 3 and 4 of Plug B-6. If there is no video, check the voltages, waveforms and components associated with pins 6, 10, 15 thru 21 of RGB Select IC (IC401) and Red, Green and Blue Output Transistors (Q421 thru Q426). If there is video at pins 2, 3 and 4 of B-6, check the voltages, waveforms and components associated with Red, Green and Blue Output Transistors (Q701 thru Q706) and the CRT. Inject a video signal at the Video Input Jack CNJ405, Switch to Video mode and check for video on the CRT. If there is no video, check the voltages, waveforms and components associated with Video Amp Transistor (Q461), Video Buffer Transistors (Q463, Q465, Q481), Video Output Transistor (Q462) and pins 9 thru 14 of Switch IC (IC402). If the brightness is inadequate or cannot be controlled, check the voltages, waveforms and components associated with pins 18, 22 and 38 of IC301, pin 27 of IC401 and pin 9 of the CRT.

RGB

Depress the RGB Switch, Input the Red, Green and Blue signals at pins 25, 26 and 27 respectively of Jack CNJ402, the composite Sync signal at pin 30 of CNJ402, and Y signal at pin 29 of CNJ402, Switch (S401) to the Analog position and check for the proper display on the CRT. If the display is absent, check the voltages, waveforms and components associated with pins 1, 3, 5, 6 thru 14, and 22 thru 28 of RGB Select IC (IC401) and pins 3 thru 6 of Switch IC (IC402). Input the proper digital RGB signals at Jack CNJ401, Switch S401 to the Digital position and check for the proper display on the CRT. If the display is absent, check the voltages, waveforms and components associated with Gate IC (IC801, IC802, IC803), Sync Transistor (Q404) and Buffer Transistor (Q802).

VERTICAL

Inject a vertical drive signal at pin 14 of Sync Sep/Vertical/Horizontal Osc IC (IC501) and check for vertical deflection. If vertical sweep is now present, check the voltages, waveforms and components associated with pins 12 thru 22 of IC501. If there is still no vertical deflection, check the voltages, waveforms and components associated with Vertical Output IC (IC502), Deflection Yoke (L904) and Pincushion Transistors (Q503, Q504). If the vertical oscillator is off frequency, check the voltages, waveforms and components associated with pins 17 thru 20 of IC501. Vertical linearity or foldover problems may be caused by the vertical feedback and bias circuits, check Electrolytics C504, C505, C528, C529, C530, C532 and C538 for defects.

SYNC

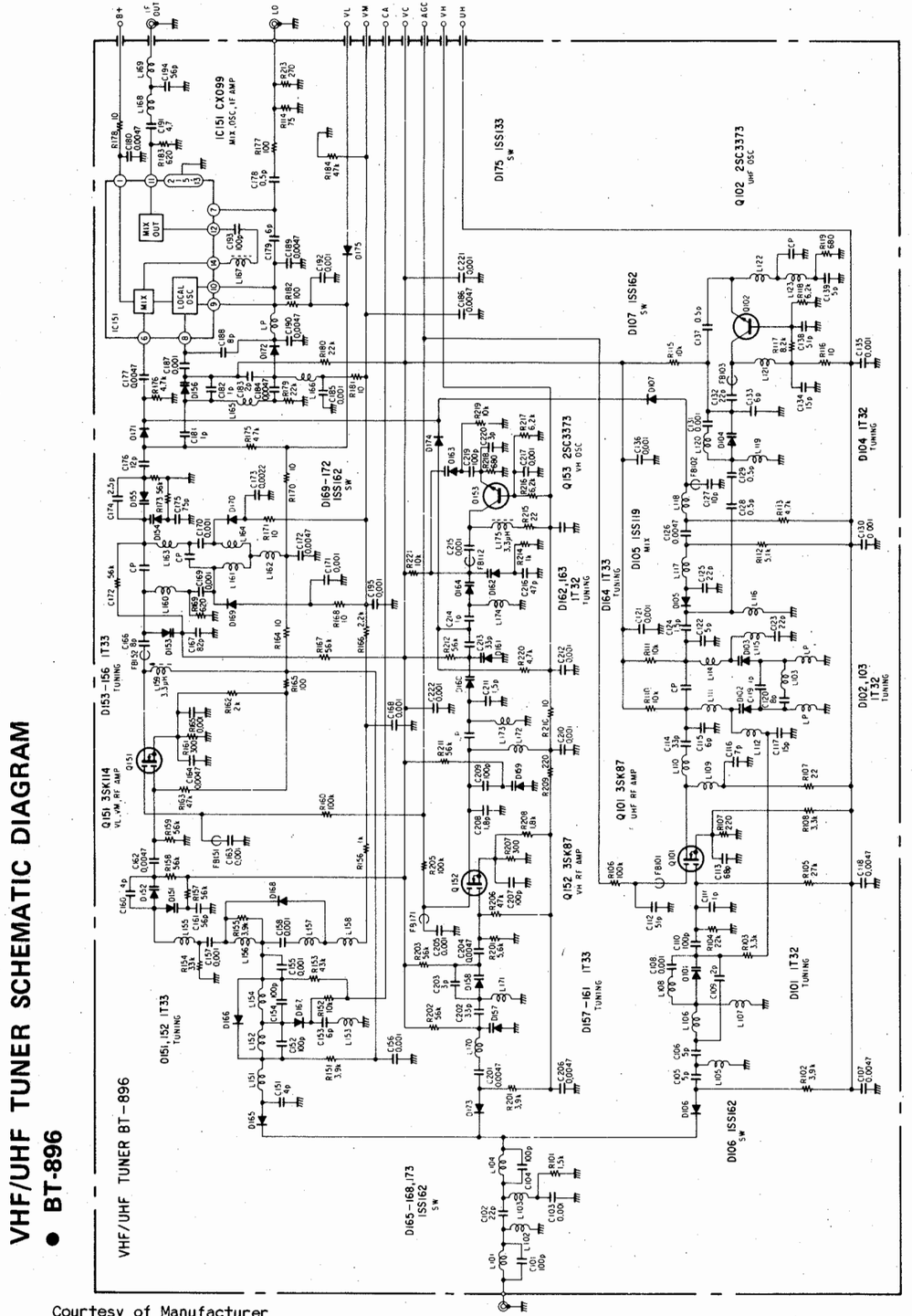
If there is no vertical or horizontal sync, check for a video waveform at pin 1 of Plug D-16. If the waveform is absent, check the voltages, waveforms and components associated with Amplifier Transistor (Q482), Sync Transistors (Q483, Q484) and Switch Transistor (Q485). If there is no vertical sync, check the voltages, waveforms and components associated with pins 17 thru 22 of Sync Sep/Vertical Osc/ Horizontal Osc IC (IC501). If there is no horizontal sync, check the voltages, waveforms and components associated with pins 1 thru 5 of IC501.

RASTER

Check the CRT and CRT voltages. If there is no green, check the voltages, waveforms and components associated with pin 33 of Y/Chroma IC (IC301), pins 6, 18, 20, 24 and 25 of RGB Select IC (IC401) and Green Output Transistors (Q422, Q425, Q702 and Q705). If there is no blue, check the voltages, waveforms and components associated with pin 32 of IC301, pins 15, 19, 22 and 23 of IC401 and Blue Output Transistors (Q423, Q426, Q703 and Q706). If there is no red, check the voltages, waveforms and components associated with pin 34 of IC301, pins 17, 21 and 26 of IC401 and Red Output Transistors (Q421, Q424, Q701 and Q704). If the raster has a pincushion shape, check the voltages, waveforms and components associated with Pincushion Transistors (Q503, Q504). If the raster has a keystone shape, check the Deflection Yoke (L904). If the raster has height or width problems, refer to the "Vertical" or "Horizontal" and "Power Supply" sections of this Troubleshooting guide.

CHROMA

If there is no color, check for a chroma waveform at pin 6 of Y/Chroma IC (IC301). If the waveform is missing, check the voltages, waveforms and components associated with Chroma Amp Transistors (Q354, Q360) and pin 6 of the CRT. If there is a chroma waveform at pin 6,



TEST EQUIPMENT

Test Equipment listed by Manufacturer illustrates typical or equivalent equipment used by SAMS' Engineers to obtain measurements and is compatible with most types used by field service technicians.

Equipment Name	B & K Precision Equipment No.	Sencore Equipment No.	Simpson Equipment No.
OSCILLOSCOPE	1560	SC61	454
GENERATORS			
RGB	1260		
MULTIBURST SIGNAL	1260	VA62	
COLOR BAR	1211A,1248,1251,1260	VA62, CG25	431
ANALOG VOM	277		260-7,160,165, 260-6XL,260-7P, 260-6XLP
DIGITAL VOM	2830	DVM37,DVM56,SC61	463,464,470,474,467E
FREQUENCY METER	1803,1805	FC71,SC61	710
HI-VOLTAGE PROBE VOM/DMM Accessory probes	HV-44	HP200	248 00168,00411,00749
ISOLATION TRANSFORMER	TR110,1604,1653,1655	PR57	
CAPACITANCE ANALYZER	820	LC53	
CRT ANALYZER	467,470	CR70	
TEMPERATURE PROBE	TP-28		IR-10,00760,00758; 383,389,388
AC LEAKAGE TESTER	1655	PR57	229
ILLUMINATION METER			408-2
LOGIC PROBE	DP51		
LOGIC PULSER	DP101		
INDUCTANCE ANALYZER		LC53	
FLYBACK YOKE TESTER		LC53,VA62	

TV ALIGNMENT INSTRUCTIONS

Use an isolation transformer, or observe polarity, and maintain line voltage at 120VAC.
Allow a 20-minute warm-up period for receiver and test equipment.
Suggested Alignment Tools: GC ELECTRONICS
L102, T202, T203, T204, T351, T352..... 9440
L502..... 8606

PRELIMINARY INSTRUCTIONS

Set the channel selector to the highest unused channel. Set scope sweep to external. Connect scope vertical input to scope vertical input on sweep/marker generator. Connect scope external horizontal input to scope horizontal input on sweep/marker generator. Ground test equipment to TV chassis unless specified otherwise. Use only enough generator output to provide a usable indication.
Note: Response may vary slightly from that shown.
Connect a 4.8 Volt Bias to TP227.

VIDEO IF ALIGNMENT (SWEEP MARKER GENERATOR)

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP12	To TP221	44MHz (10MHz Sweep)	41.25MHz 42.17MHz 44.00MHz 45.75MHz	Adjust T202 for Maximum gain and symmetry of response at 45.75. See Figure 1.

VIDEO IF ALIGNMENT (BAR SWEEP GENERATOR)

BAR SWEEP GENERATOR	SCOPE INPUT	REMARKS
TP221	To TP12	Perform Video IF Adjustments per SWEEP/MARKER GENERATOR instructions above. See Figure 2.

TROUBLESHOOTING

POWER SUPPLY

If there is no raster or sound, check AC Fuse (F651). If Fuse F651 is open, check Capacitors C601, C651, Power Transformer (T901) and Bridge Rectifier Diode (D601). Apply power to the set, depress Power Switch and check for 159V* at the cathode of D601. If this voltage is missing, check Line Filters (T601 and T651), Coils L601, L602, Relay (RY181) and voltages and components associated with Relay Drive Transistors (Q181 and Q183). If 159V* is present, check for 115V at the cathode of Diode D6002 and 15.7V at the cathode of Diode D6003. If these voltages are missing, check the voltages, waveforms amd components associated with Converter Output Transistor (Q6001), Converter Transformer (T6001), Regulator Transistor (Q6002) and Power Module IC (IC601). Check for a short from the emitter of Transistor Q6002 and the cathode of Diode D6002 to ground. If the proper voltage is present at the emitter of Transistor Q6002 and the cathode of Diode D6002, refer to the "Horizontal" and "High Voltage Shutdown" section of this Troubleshooting guide.

HORIZONTAL

Determine that the TV is not in shutdown, refer to the "High Voltage Shutdown" section of this Troubleshooting guide. If the TV is not in shutdown, inject a horizontal drive signal at the base of the Horizontal Output Transistor (Q502). If horizontal sweep is now present, check the voltages, waveforms and components associated with pins 5 thru 10 of Sync Sep/Vertical Osc/Horizontal Osc IC (IC501) and Horizontal Driver Transistor (Q501). If there is still no horizontal deflection, check the voltages, waveforms and components associated with Transistor Q502 and Horizontal Output Transformer (T503). Check Rectifier Diodes D510 thru D515 and associated components for defects. The High Voltage Rectifier is part of Transformer T503, and if defective, will affect the performance of the horizontal circuits. If the horizontal oscillator is off frequency, check the voltages, waveforms and components associated with pins 1 thru 5 of IC501. Horizontal linearity or foldover problems may be caused by Capacitors C543, C544, C545, C553 and C554 being defective.

HIGH VOLTAGE SHUTDOWN

If the TV is in shutdown, measure the voltages (See Voltages measured in Shutdown). The high voltage is monitored by Diode D512 rectifying pulses from the Horizontal Output Transformer (T503), should the high voltage increase, the rectified voltage at the cathode of Diode D512 will also increase. This increased voltage is applied through Resistor R562 to pin 6 of Sync Sep/Vertical Osc/Horizontal Osc IC (IC501) triggering the shutdown circuit which shuts down the set. To troubleshoot, remove Diode D512 from the circuit and use a variac for AC power. Start with 60V AC and increase as necessary to locate and correct defect. Return Diode D512 to the circuit.

Voltages measured in Shutdown

TP84	IC501	
116V	Pin 6	.13V
	Pin 7	3.6V
	Pin 8	3.0V

NOTE: Care should be taken in defeating the High Voltage Shutdown circuit as this may cause excessive X-Ray radiation and damage to the CRT, Transformer T503 and associated components. Monitor the high voltage and troubleshoot.

IF-AGC

Inject a video IF signal at the IF Input and check for video on the CRT. If video is present, check the Tuner, Tuner Control, Tuner AFT and AGC circuits. If there is no video on the CRT, check for a video waveform at TP12. If video is present at TP12, refer to the "Video" section of this Troubleshooting guide. If there is no video at TP12, apply AGC bias to pin 26 of VIF/SIF/AFT/AGC IC (IC201). If video is now present, check the components associated with the AGC circuits at pins 4, and 26 thru 28 of IC201. If there is still no video at TP12, check the voltages, waveforms and components associated with pins 1 thru 9, and 19 thru 28 of IC201 and VIF Amp Transistor (Q221). A defective AGC circuit can cause an overloaded picture, excessive snow or loss of picture and sound. See AGC Voltage Chart for AGC voltages with signal.

IC201	
Pin 26	4.7V
Pin 27	4.7V
Pin 28	2.6V

AUDIO

Inject an audio signal at pin 11 of VIF/SIF/AFT/AGC IC (IC201) and check for sound at the speaker. If there is no sound, check the voltages, waveforms and components associated with pin 11 of IC201 and Audio Amplifier IC (IC251). If there is sound at the speaker, Inject an audio signal at pin 12 of IC201 and with volume at maximum, check for sound at the speaker. If there is no audio, check the voltages, waveforms and components associated with pins 10, 12 and 15 of IC201. If there is audio, inject an audio IF signal at pin 17 of IC201 and check for sound at the speaker. If there is no audio, check the voltages, waveforms and components associated with pins 13, 14, 17 and 18 of IC201, pins 1, 2, 10, 11, and 12 of Switch IC (IC881) and Audio Buffer Transistor (Q864), Monitor Output Transistor (Q882). If there is audio at the speaker, check the components associated with pins 17 and 20 of IC201. Check the voltage at pin 10 of IC201, it should measure .12V at Mute and 5.19V at Maximum volume. Inject an audio signal at the Audio Input Jack (CNJ408). Switch to Video mode and check for audio at the speaker. If there is no audio, check the voltages, waveforms and components associated with pins 1, 3, 4, 5, and 9 thru 12 of IC881, Buffer Transistors (Q861, Q863, Q864), Ampli-

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 or SOUND

NO PIC, NO SOUND, NO RASTER: Check AC power supply and sources generated from Horizontal Output Transformer (T503). Refer to "Troubleshooting" Power Supply and Horizontal circuits.

NO PIC, NO SOUND, HAS RASTER: Check IF-AGC and source voltages from Horizontal Output Transformer (T503). Refer to "Troubleshooting" IF-AGC and Horizontal circuits.

NO PIC, HAS SOUND, NO RASTER: Check Horizontal Output Transformer (T503) sources and Video circuit. Refer to "Troubleshooting" Horizontal and Video circuits.

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

HAS PIC, NO SOUND: Refer to "Troubleshooting" Audio circuit.

OVERLOADED PICTURE: Refer to "Troubleshooting" IF-AGC circuit.

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

SWEEP

NO RASTER, HAS SOUND: Check HV rectifier, Part of Horizontal Output Transformer (T503). Refer to "Troubleshooting" Horizontal circuit.

NO RASTER, NO SOUND: 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.

COLOR (B/W operating normally)

NO COLOR: Refer to "Troubleshooting" Chroma circuit.

WEAK COLOR: Refer to "Troubleshooting" Chroma circuit.

NO COLOR SYNC: Refer to "Troubleshooting" Chroma circuit.

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

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

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

INCORRECT HUE (TINT): Refer to "Troubleshooting" Chroma circuit.

TV ALIGNMENT INSTRUCTIONS (Continued)

SOUND IF ALIGNMENT

Tune in a station and adjust T204 for maximum sound. Reduce signal strength at the antenna terminals until distortion appears. Continue to reduce the signal while aligning for undistorted output by adjusting T204.

AUTOMATIC FINE TUNING ALIGNMENT

Connect as explained in preliminary instructions unless specified otherwise.

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP205 (Junction Pin 7-IC1201 & R204).	To TP221	44MHz (10MHz Sweep)	45.75MHz	Adjust T203 to place 45.75MHz marker at crossover as shown. See Figure 3.

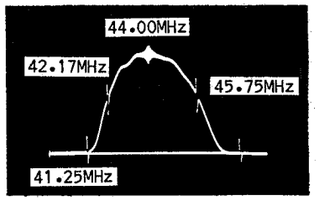


Figure 1

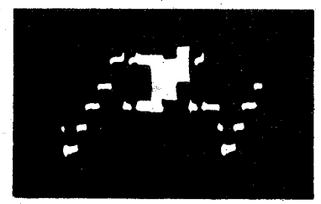


Figure 2

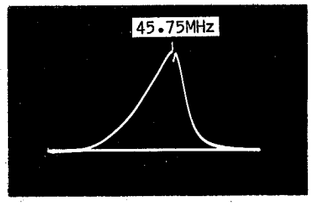
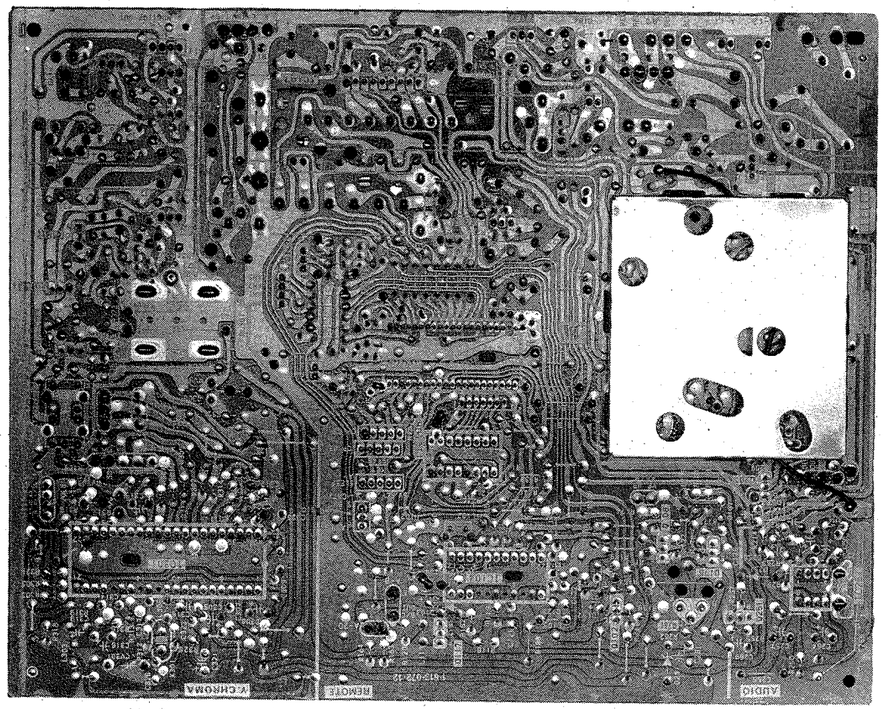
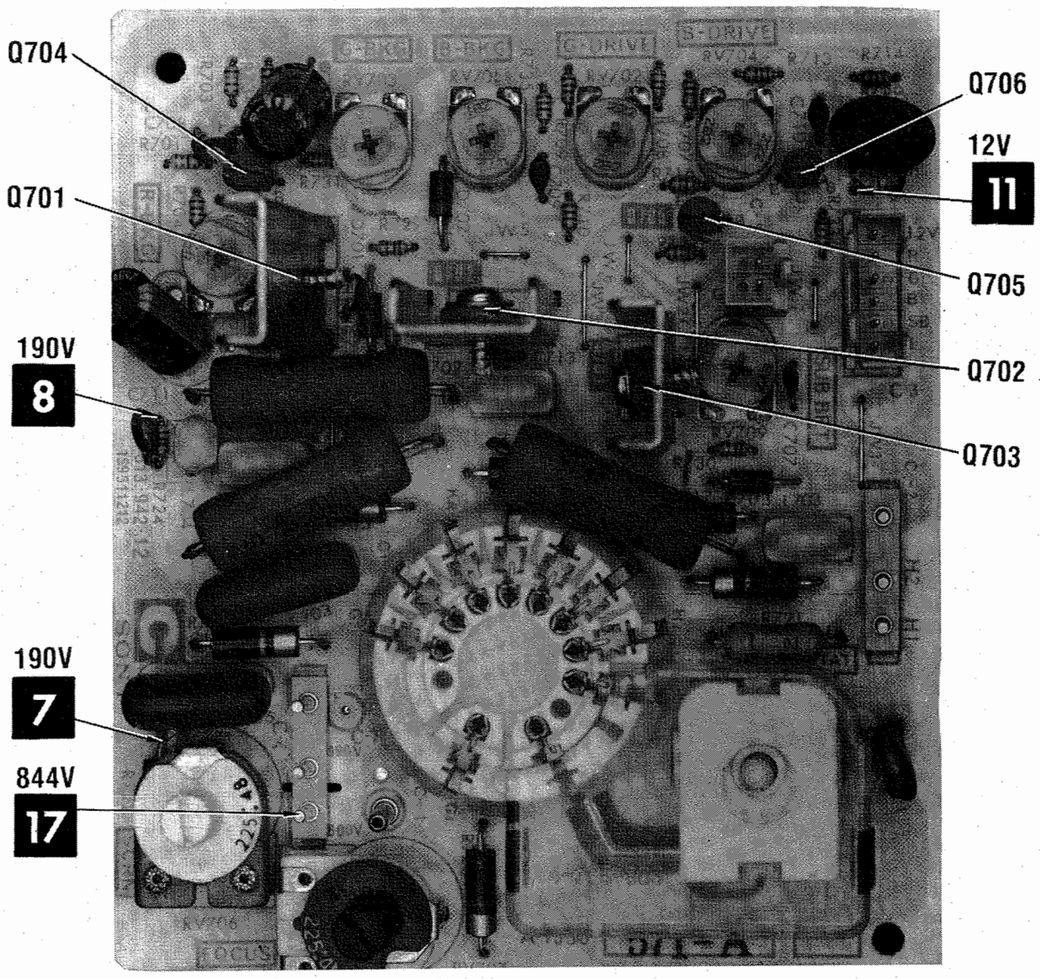


Figure 3



A BOARD-SHIELD LOCATION



C BOARD

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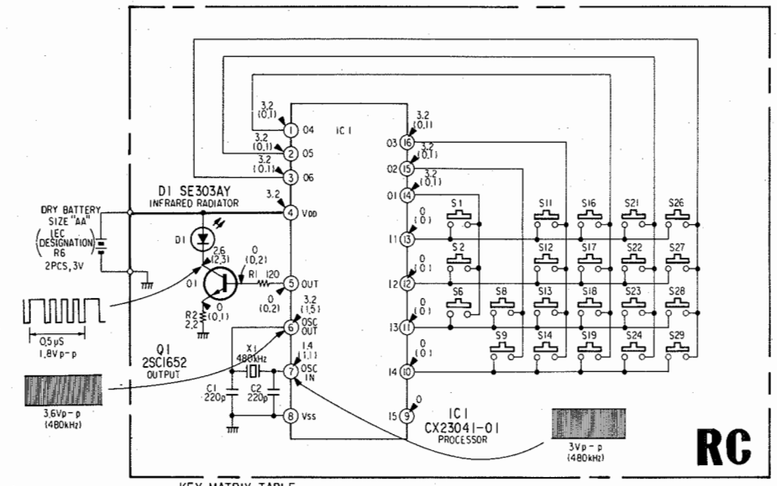
SCHEMATIC DIAGRAM

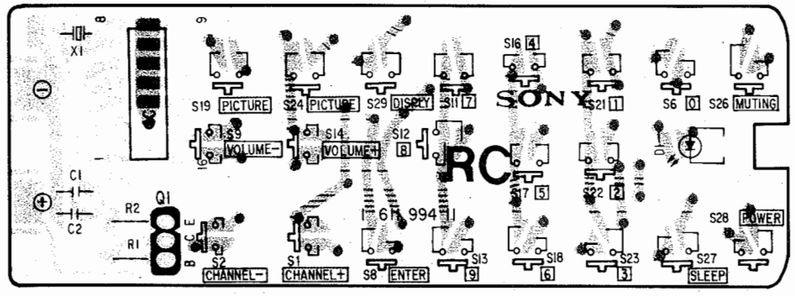


KEY MATRIX TABLE

	O1	O2	O3	O4	O5	O6
I1	S1 CH+		S11 7	S16 4	S21 1	S26 MUTE
I2	S2 CH−		S12 8	S17 5	S22 2	S27 SLEEP
I3	S6 0	S8 ENTER	S13 9	S18 6	S23 3	S28 POWER
I4		S9 VOL−	S14 VOL+	S19 PIC−	S24 PIC+	S29 DISPLAY

- All voltages are in V (volt).
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10 MΩ/V digital voltmeter.
  No marking: S1 is depressed.
  ( ): no depressed.
- Voltage variations may be noted due to normal production tolerances.

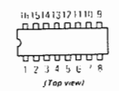
REMOTE CONTROL TRANSMITER



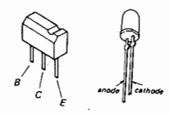
REMOTE CONTROL TRANSMITER BOARD

PRINTED WIRING BOARD
— Conductor Side —

CX23041-01



2SC1652 SE303AY

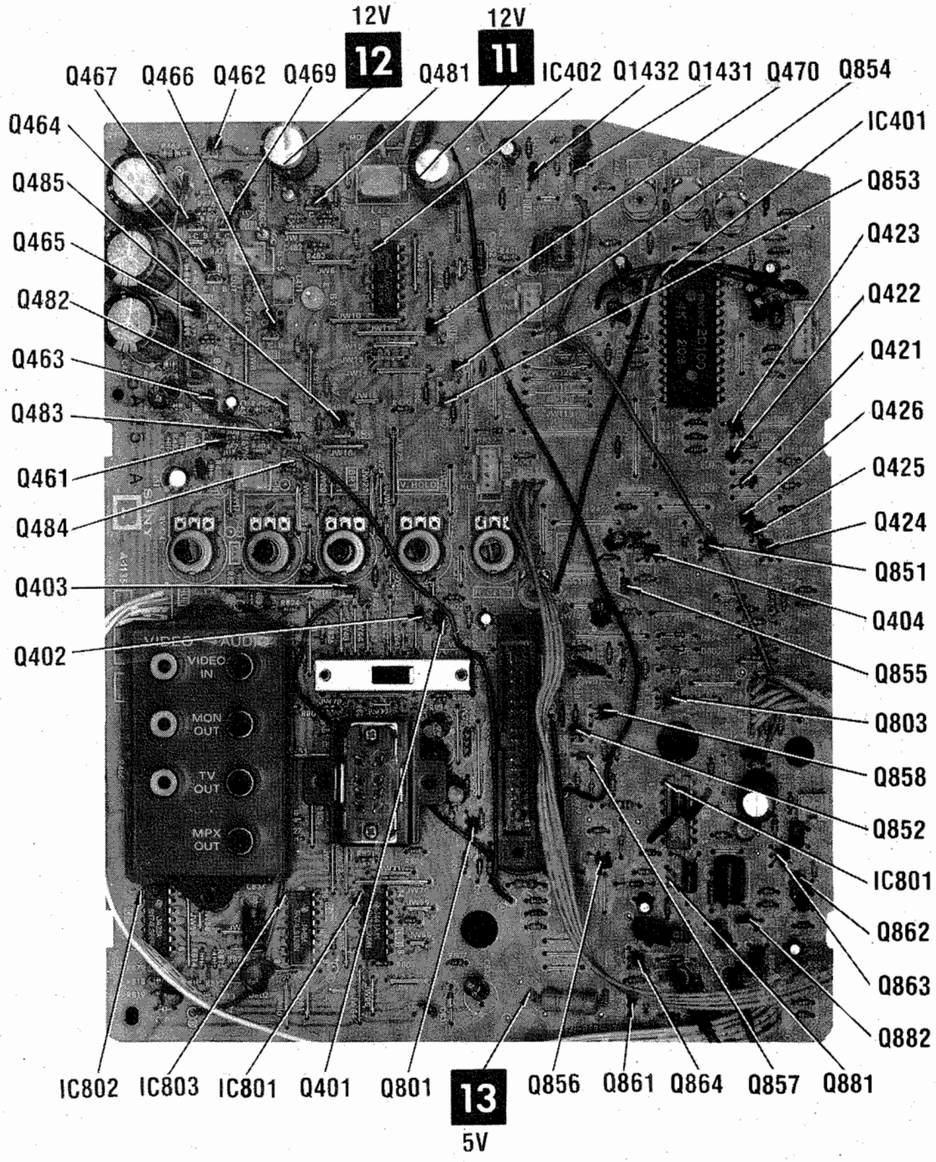


REMOTE CONTROL TRANSMITER PARTS LIST

Ref.No.	Part No.	Description			
	*1-614-210-11	RC BOARD ********			
	4-370-637-01	TERMINAL (A), BATTERY			
	4-370-638-01	TERMINAL (B), BATTERY			
		CAPACITOR			
C1	1-102-110-00	CERAMIC	220PF	10%	50V
C2	1-102-110-00	CERAMIC	220PF	10%	50V
C3	1-102-074-00	CERAMIC	0.001MF	10%	50V
		DIODE			
D1	8-719-107-82	DIODE SE303AY			

Ref.No.	Part No.	Description			
		IC			
IC1	8-759-910-39	IC CX23041-01			
		TRANSISTOR			
Q1	8-729-965-22	TRANSISTOR 2SC1652			
		RESISTOR			
R1	1-247-809-00	CARBON	120	5%	1/6W
R2	1-247-767-00	CARBON	2.2	5%	1/6W
		CRYSTAL			
X1	1-527-476-00	OSCILLATOR, CERAMIC			

Courtesy of Manufacturer



NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED

B BOARD

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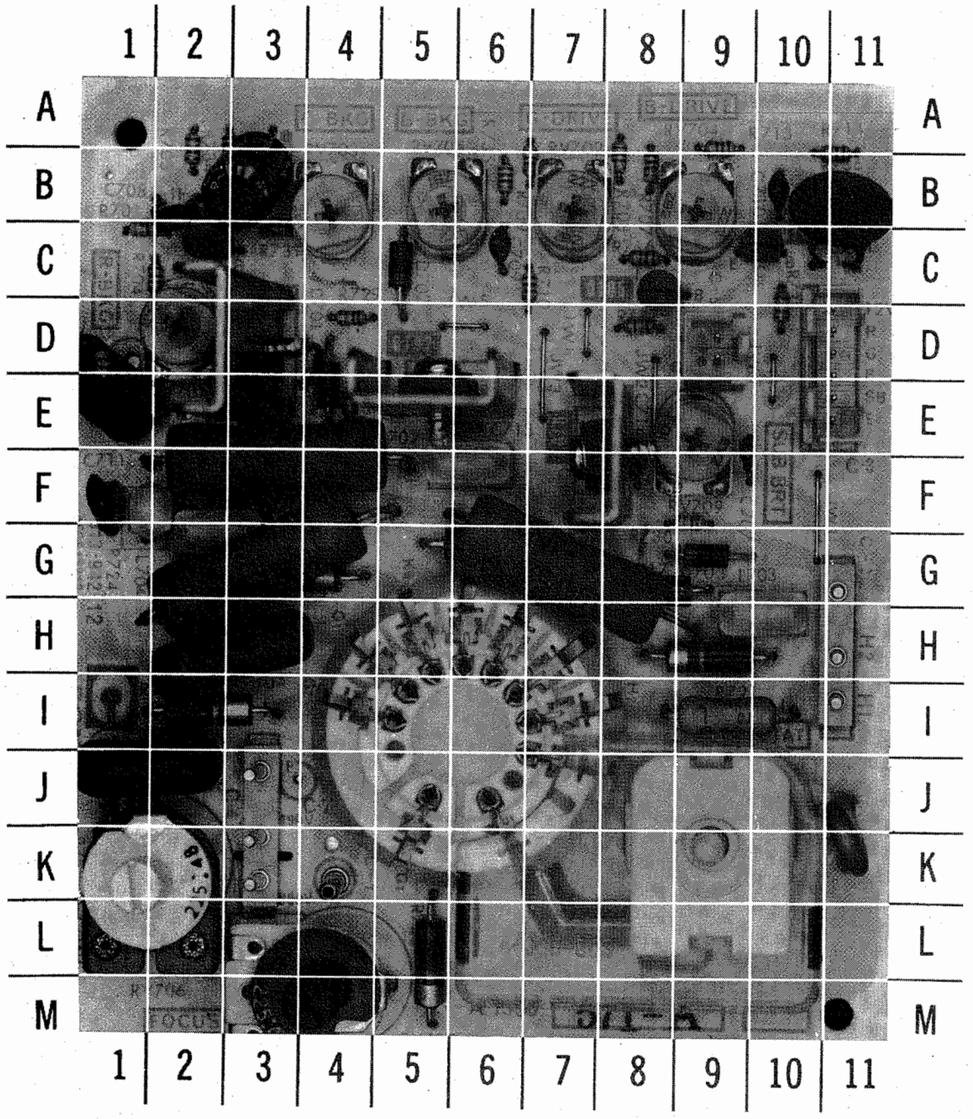
C BOARD-GridTrace LOCATION GUIDE

C1	K-4	C712	D-4	Q704	C-2	R714	A-11	R732	D-8
C2	H-11	C713	E-5	Q705	C-8	R715	B-11	R733	D-10
C3	D-11	C714	F-8	Q706	C-10	R716	C-8	R734	B-2
C4	K-3	C715	F-1	R701	C-1	R717	G-8	R735	B-6
C5	D-9	C716*	H-9	R703	B-2	R718	G-7	R736	B-11
C701	C-11	D701	E-4	R704	C-2	R719	H-9	RV701	D-2
C703	H-3	D702	C-5	R705	G-4	R720	L-5	RV702	B-7
C704	B-3	D703	G-9	R706	G-3	R721	I-9	RV703	B-4
C705	K-11	L701	G-2	R707	B-8	R722	K-1	RV704	B-9
C706	J-2	L702	F-6	R708	B-8	R723	I-2	RV705	B-5
C707	E-9	L703	H-10	R709	B-6	R724	F-1	RV706	K-1
C708	B-2	L704	F-1	R710	C-6	R728	E-4	RV707	M-4
C709	C-6	Q701	D-3	C711	G-6	R729	D-4	RV708	K-9
C710	B-10	Q702	E-5	R712	F-3	R730	F-9	RV709	E-9
C711	E-1	Q703	F-7	R713	A-9	R731	C-3	* Located on other side of board	



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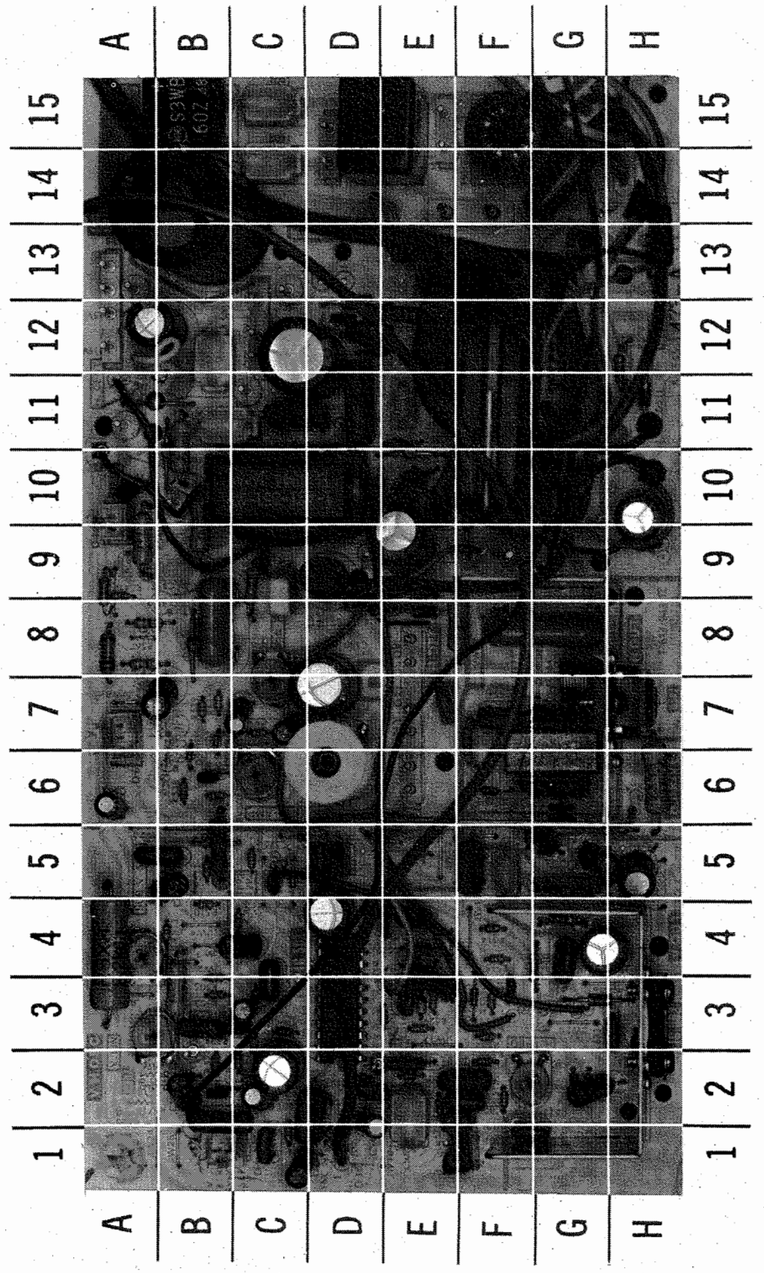
C BOARD

SONY MODEL KV-1311CR

FOLDER 2



D BOARD

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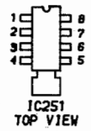
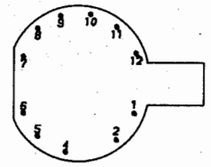
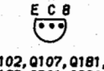
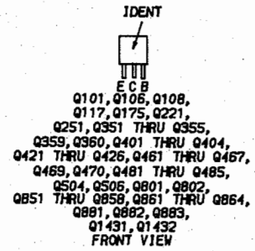
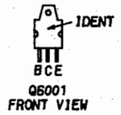
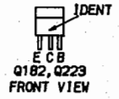


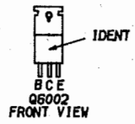


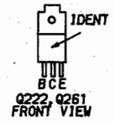


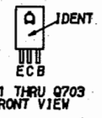


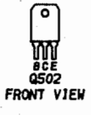












 # For SAFETY use only equivalent replacement part, see parts list.

—✕— Circuitry not used in some versions

- - - Circuitry used in some versions

Θ See parts list

※ Nominal value

⏚ Ground

▽ Common tie point

Waveforms and voltages are taken from ground, unless noted otherwise.

Waveforms: triggered-scope, keyed rainbow generator.

Item numbers in rectangles appear in the alignment/adjustment instructions.

Supply voltages maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

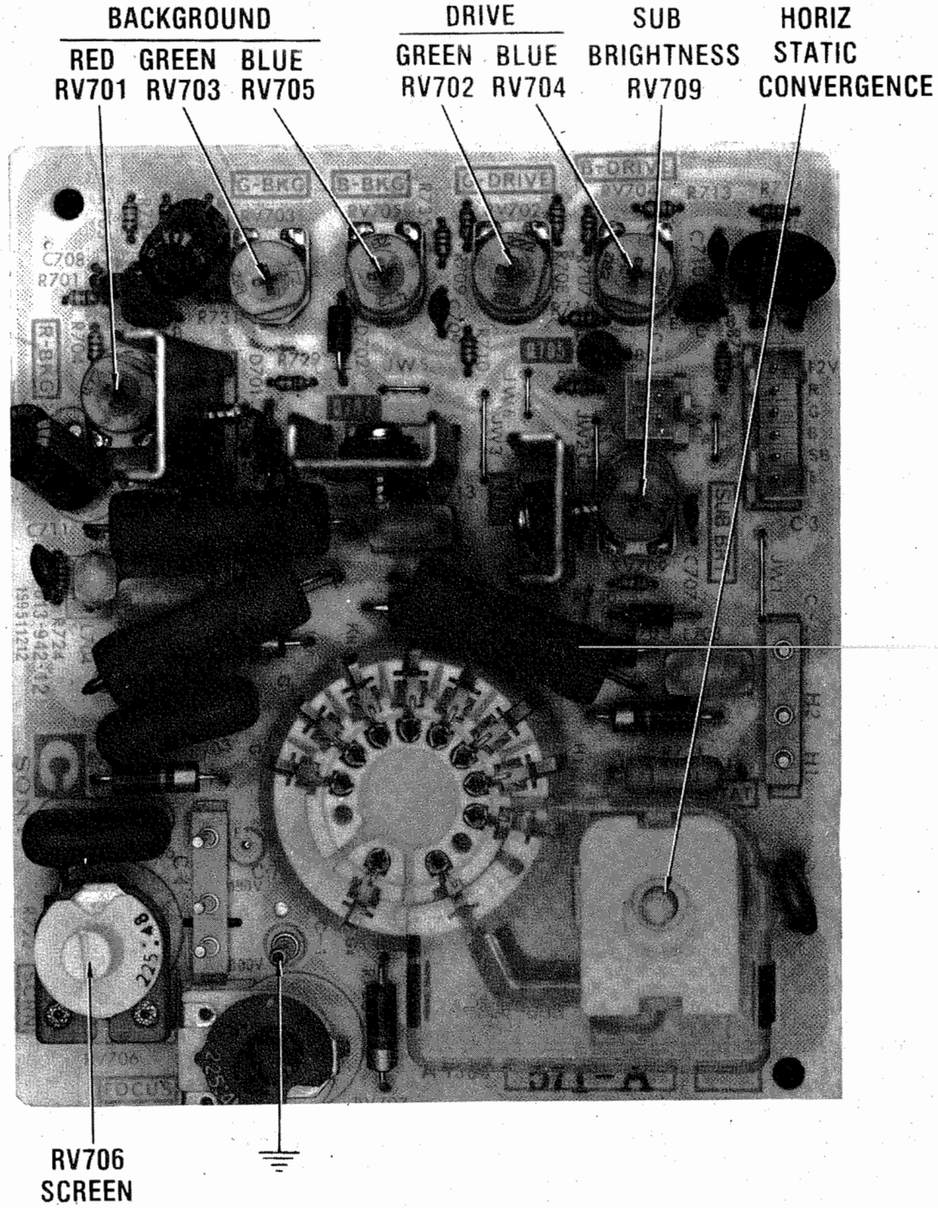
Terminal identification may not be found on unit.

Capacitors are 50 volts or less, 5% unless noted.

Electrolytic capacitors are 50 volts or less, 20% unless noted.

Resistors are ½W or less, 5% unless noted.

TERMINAL GUIDES AND NOTES

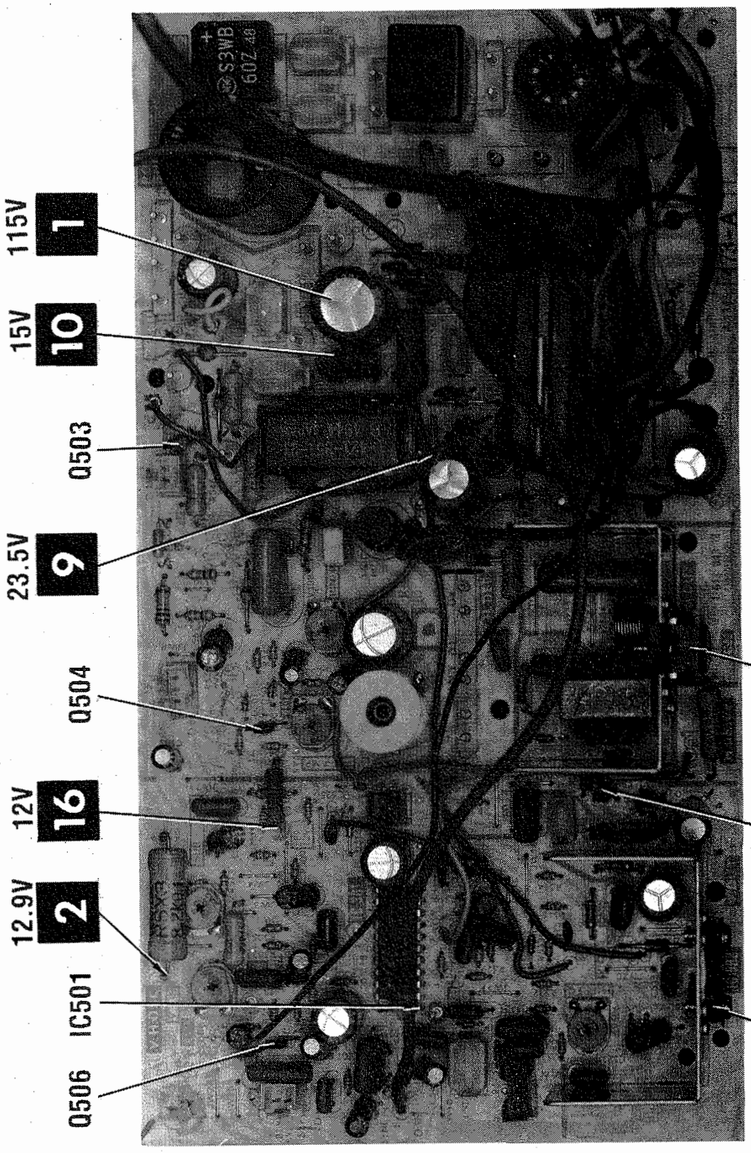


ALIGNMENT-C BOARD

D BOARD-GridTrace LOCATION GUIDE

C501	C-2	D18	C-13	R544	B-6
C502	B-2	D501	B-6	R545	B-7
C503	B-2	D502	B-7	R546	A-9
C504	C-3	D503	D-2	R547	B-5
C505	G-2	D504	F-3	R548	C-11
C506	C-3	D505	G-3	R550	G-4
C507	C-2	D507	A-11	R551	H-6
C508	C-1	D508	B-10	R552	B-11
C509	C-1	D509	E-2	R553	B-10
C510	D-2	D511	H-11	R554	C-9
C511	D-2	D512	F-10	R555	E-5
C512	F-2	D513	D-12	R556	F-7
C513	E-4	D514	E-10	R557	E-6
C514	E-4	D515	E-8	R558	G-2
C515	F-3	D516	C-5	R559	F-8
C516	E-3	D517	B-8	R560	E-12
C517	E-2	D518	E-3	R561	F-10
C518	E-3	D525	C-5	R562	H-5
C519	B-3	D526	F-6	R563	H-5
C520	F-5	D601	B-15	R564*	H-5
C521	D-4	IC501	D-3	R565	H-10
C522	F-2	IC502	H-3	R566	A-9
C523	F-1	L501	D-9	R568	A-8
C527	B-5	L502	D-6	R569	D-10
C528	C-4	L503	E-11	R570	H-12
C529	B-5	L504	G-7	R574	G-4
C530	D-7	L505	F-5	R575	E-2
C532	G-4	L506	B-11	R576	A-8
C533	H-3	L507	E-2	R602	A-14
C534	H-3	L509	B-12	R603	A-14
C534	G-4	L601	C-15	R604	H-13
C536	C-7	L602	C-14	RV504	A-4
C538	C-7	Q501	G-5	RV505	A-3
C540	D-1	Q502	H-7	RV506	F-2
C541	G-6	Q503	A-10	RV507	C-6
C543	C-9	Q504	B-10	RV508	C-7
C544	B-8	Q506	B-2	S501	G-5
C545	G-8	R501	C-2	SG501	C-9
C547	C-12	R503	B-3	T501	G-6
C548	G-5	R504	C-3	T502	C-2
C549	A-12	R505	B-3	T503	F-11
C550	D-12	R506	C-1	T601	F-15
C551	E-9	R507	C-3	THP601	D-15
C552	E-11	R508	C-5	TP501	D-2
C553	E-7	R509	C-4		
C554	F-7	R510	B-4		
C555	E-9	R511	B-5		
C556	D-11	R513	B-4		
C557	H-10	R514	F-4		
C558	E-4	R515	F-4		
C559	B-11	R516	B-2		
C560	H-5	R417	G-2		
C561	B-7	R518	F-2		
C565	A-6	R519	E-4		
C566	E-10	R520	E-3		
C567	E-10	R521	D-2		
C568	E-10	R522	C-3		
C569	D-12	R523	B-3		
C601	G-14	R524	B-2		
C603	B-14	R527	E-3		
C604	E-13	R528	F-2		
C604A	E-13	R529	E-3		
D1	D-13	R530	A-8		
D2	D-15	R531	A-4		
D3	F-14	R532	F-3		
D4	C-12	R533	F-3		
D5	A-12	R534	E-5		
D6	A-7	R535	F-5		
D7	F-1	R536	B-5		
D9	B-1	R537	C-7		
D12	E-7	R538	B-6		
D13	E-15	R539	B-7		
D14	D-5	R541	A-9		
D15	A-10	R543	C-7		

* Located on other side of board



NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED

D BOARD

MISCELLANEOUS ADJUSTMENTS (Continued)

VERTICAL SIZE AND LINEARITY

Tune in local station. Adjust Vertical Linearity (VR505) for best overall picture. Adjust Vertical Size (VR504) for slight overscan at both top and bottom.

APC ADJUSTMENT

Select picture with color bar pattern. Set Hue to Center, Color to Maximum. Connect a 10K ohm resistor from TP330 (pin 30 of IC301) to ground. Connect a 10K ohm resistor from TP338 (pin 38 of IC301) to TP310 (pin 10 of IC301). Connect a jumper between pins 15 and 16 of IC301. Adjust Color Trimmer Capacitor (CV301) until colors stop or slowly drift across the screen.

ACC ADJUSTMENT

Tune in a strong TV station. Set Color to Midrange. Adjust ACC Control (RV303) for suitable color intensity.

PIN AMP AND PIN PHASE ADJUSTMENT

Connect a pattern generator to the antenna terminals and tune in a crosshatch pattern. Adjust Pin Amp Control (RV507) to produce straight vertical lines on the screen. Adjust Pin Phase Control (RV508) for parallel vertical lines at left and right side of screen.

PURITY ADJUSTMENT

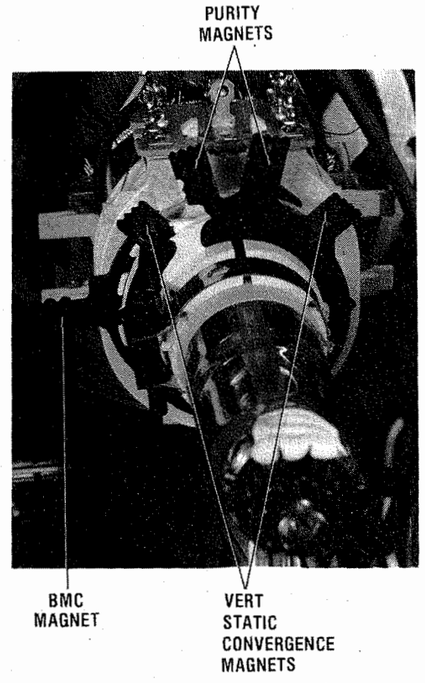
If the picture tube appears to be magnetized, use a degaussing coil to demagnetize picture tube and mounting brackets. Loosen deflection yoke and slide it back as far as possible. Set Red Background (BKG) Control (RV701) to Maximum and Blue (RV705) and Green (RV703) Background (BKG) Controls to MINIMUM. Adjust purity rings on rear of deflection yoke to center the vertical red band. Slide the deflection yoke forward until a uniform red screen is obtained. If necessary, use disc magnets to correct impurity at the corners of the screen. (See Parts List.) Place disc magnets at rear corners of the picture tube.

CONVERGENCE ADJUSTMENT

Connect crosshatch generator to the antenna terminals and tune in a dot pattern. Adjust the Horizontal Static Control to converge the red and blue dots horizontally over the green dot at the center of the screen. Rotate the Vertical Static Magnets to converge the red and blue dots vertically over the green dot at the center of the screen. NOTE: Rotate the two Vertical Static Magnets equally, one to the right and one to the left from vertical position. NOTE: Some versions may use a BMC Magnet. To adjust the BMC Magnet, slide it in and out to correct for insufficient horizontal static convergence. Rotate the BMC Magnet to correct for insufficient vertical static convergence. Tune in a crosshatch pattern. If necessary, remove the rubber wedges between the deflection yoke and picture tube. 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 vertical lines at the right and left sides of the screen. Replace the rubber wedges. To correct the convergence at the corners of the screen, slide a permalloy magnet assembly between the picture tube and the deflection yoke behind the areas affected on the screen. Position the permalloy assemblies for the best horizontal and vertical convergence correction in the corners affected. Repeat appropriate convergence procedure if necessary to obtain the best overall convergence.

COLOR TEMPERATURE ADJUSTMENT

Connect a crosshatch generator to the antenna terminals and tune in a crosshatch pattern. Set the Brightness and Picture Controls to MINIMUM. Turn G (Green RV702), and B (Blue RV704), Drive Controls to Maximum. Turn B (Blue (RV705), G (Green RV703), and R (Red RV701) Background (BKG) Controls to MINIMUM. Turn Sub-Brite Adjust Control (RV709) to obtain a faintly visible crosshatch pattern. Adjust Background (BKG) Controls for best white balance on the faintly visible pattern. Turn the Brightness and Picture Controls to Maximum. Adjust the Drive Controls for best white balance on the pattern. Check tracking at high and low brightness levels and repeat procedure if necessary.



CRT NECK ASSEMBLY

PARTS LIST AND DESCRIPTION (Continued)

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

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
	P.C. Board	A-1135-252-A	RGB Select, Audio, Video Switch (B Board Complete)
	P.C. Board	A-1330-571-A	CRT Board (C Board Complete)
	P.C. Board	A-1345-473-A	Sync/HV Output/Power Rectifier (D Board Complete)
	P.C. Board	1-613-944-11	Power Input (F Board Complete)
	P.C. Board	1-613-945-11	Power (G Board Complete)
	P.C. Board	1-613-069-11	Customer Control (H Board Complete)
	P.C. Board	1-611-717-11	Remocon Receiver (N Board Complete)
	P.C. Board	1-613-070-11	Speaker/Earphone (Z1 Board Complete)
	P.C. Board	1-613-071-11	Video In (Z2 Board Complete)
	P.C. Board	1-614-210-11	Remote Transmitter (RC Board Complete)
	Spacers	3-703-003-00	Yoke Positioning (3 used)

For SAFETY use only equivalent replacement part.

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

ITEM	PART No.
Bezel Assembly	X-4374-004-1
Back Cover Assembly	X-4374-003-1
Bottom Block Assembly	4-372-026-21
Lid-Bottom	4-372-021-11
Door-Control	4-374-018-01
Button-Power On/Off	4-374-008-01
Button-TV	4-374-012-01
Button-Video and RGB	X-4374-001-1

ITEM	PART No.
Button-Channel Up and Down	4-372-014-01
Button-Volume and Picture Up and Down	4-372-015-01
Button-Add and Erase	4-335-306-00
Button-Cable Selector	4-374-002-01
Knob-Hue, Color, Bright, V Hold, H Cent	4-372-006-01

MISCELLANEOUS ADJUSTMENTS

CHANNEL PRETUNING

1. Connect antenna.
2. Turn power On.
3. Open tuning switch access door.
4. Select channel to be pretuned.
5. Momentarily depress ADD Button.
6. Follow steps 4 and 5 for each channel to be pretuned.

Removing Channels

7. Follow steps 1 through 3.
8. Select channel to be removed.
9. Momentarily depress ERASE Button.
10. Follow steps 8 and 9 for each channel to be removed.

HORIZONTAL FREQUENCY ADJUSTMENT

Tune in a station. Connect a .1mfd capacitor from TP501 (pin 1 of IC501) to ground. Adjust Horizontal Frequency Control (RV506) until picture stops or slowly floats. Remove capacitor and check on all channels.

HORIZONTAL WIDTH ADJUSTMENT

Tune in a picture and adjust Horizontal Width Control (L502) for proper horizontal width.

HORIZONTAL CENTERING ADJUSTMENT

Move Connector (Horiz Centering) to one of the terminals (L, C or R) at Horizontal Centering, whichever gives the best horizontal centering.

VERTICAL CENTERING ADJUSTMENT

Move Vert Centering Switch (S501) to one of three positions (Up, C or Dn), whichever gives the best vertical centering.

APC ADJUSTMENT

Tune in a strong strength VHF TV station. Turn AGC Control (RV201) until snow appears and then back off until snow just disappears.

INDICATOR POSITION ADJUSTMENT

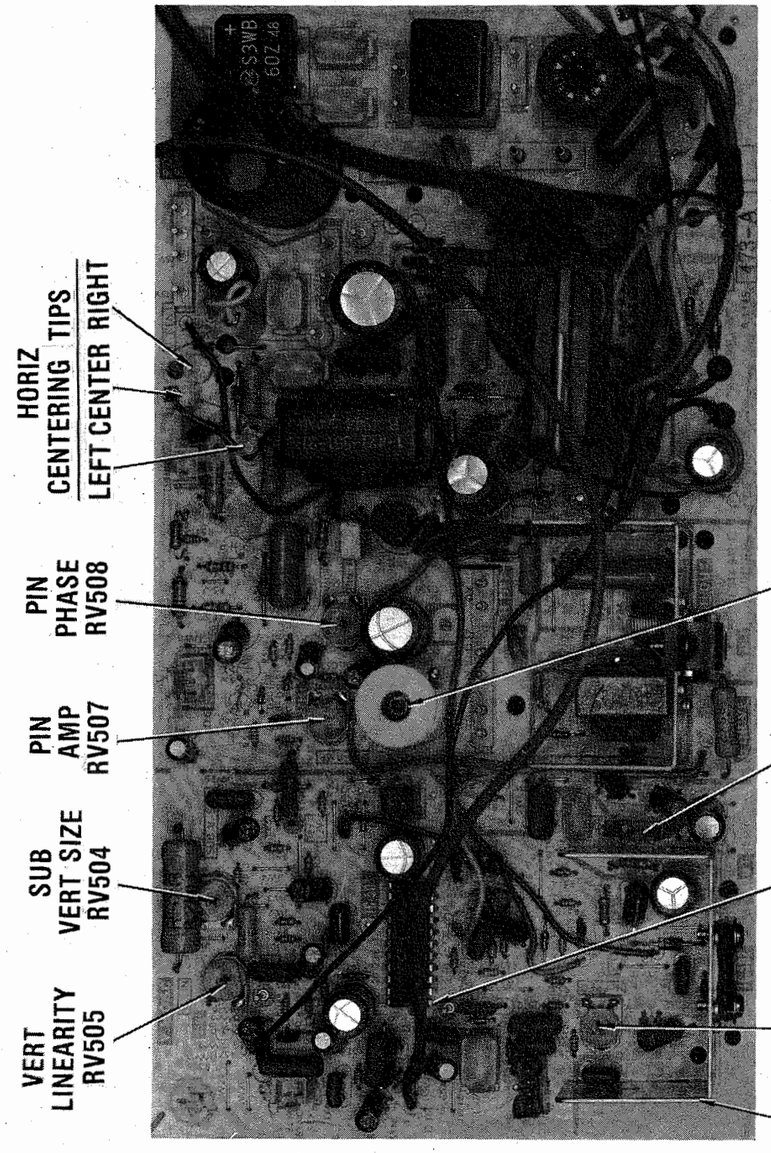
Tune in a picture. Set the Brightness Control to midrange. Press and hold the Picture Control. Adjust L102 until the Maximum Indicating bar is approximately 3/4 inch from right side of screen.

SUB CONTRAST

Connect a color bar generator to the antenna terminals and tune in a color bar pattern. Connect a scope to pin 32 IC301. Set picture, Brightness, Color and Hue Controls to midrange. Connect a 10K ohm resistor from pin 30 to pin 10 of IC301. Adjust Sub Contrast Control (RV301) for 1.0V p-p from sync tip of waveform on scope.

COMB FILTER ADJUSTMENT

Connect a color bar generator to the antenna terminal and tune in the color bar pattern. Connect a scope to emitter of Q359 (TP359), adjust T351 and RV351 for MINIMUM color component in the waveform on scope.



SONY MODEL KV-1311CR

ALIGNMENT-D BOARD

FOLDER 2

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	
# F651	6.3 Amp @ 125V AC Fast Acting	1-532-509-11	1-533-127-00 (1)	

\# For SAFETY use only equivalent replacement part.
(1) Two used for each fuse.

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
CF201	Filter	1-409-332-00	Ceramic, 4.5MHz Trap
CF202	Filter	1-527-943-00	Ceramic
CP101	Resistor Block		6-10K Resistors
CP102	Resistor Block		4-22K Resistors
CP103	Capacitor Block		4-220pF Capacitors
CP104	Capacitor Block		2-220pF Capacitors
CP451	Resistor Block		2-4700 Ohm Resistors
CP452	Capacitor Block		2-470pF Capacitors
CP801	Diode Block		5-Zener Diodes
CP802	Resistor Block		3-470 Ohm Resistors
CP841	Resistor Block		3-75 Ohm Resistors
CP843	Diode Block		3-Zener Diodes
D01	LED	8-719-106-34	SR632D
D02	LED	8-719-812-42	TLY124
D03	LED	8-719-812-42	TLY124
D1	Photodiode	8-719-110-32	PH302B
# IC6001	Power Module	1-235-388-11	
# L901	Degaussing Coil	1-426-175-11	
# L902	Degaussing Coil	1-426-175-11	
# RY181	Relay	1-515-491-11	Power On/Off
# S01	Switch	1-552-774-21	Power On/Off
S02	Switch	1-552-774-00	Channel Up
S03	Switch	1-552-774-00	Channel Down
S04	Switch	1-552-774-00	Sound Up
S05	Switch	1-552-774-00	Sound Down
S06	Switch	1-552-774-00	Picture Up
S07	Switch	1-552-774-00	Picture Down
S08	Switch	1-570-054-11	TV-Video-RGB
S09	Switch	1-552-774-00	Add
S10	Switch	1-552-774-00	Erase
S11	Switch	1-554-419-00	CATV/Normal
S401	Switch	1-516-789-XX	RGB (Digital/Analog)
S501	Switch	1-554-187-00	Vertical Centering
# SG501	Spark Gap	1-519-063-XX	
SWF201	Filter	1-404-227-51	SAW
# TU101	UHF/VHF Tuner	1-463-470-00	
# TU102	Synthesizer	1-463-471-32	
# V901	CRT	A34JHS10X	
X101	Filter	1-567-254-11	
X301	Crystal	1-527-722-00	14.3 MHz Oscillator
	Antenna Terminal Board	1-536-739-00	
#	Cord	1-557-761-11	AC Power
	Earphone	1-504-034-32	
	Magnet	1-452-032-00	Disk, 10MM
	Magnet	1-452-094-00	Rotatable Disk, 15MM
	Magnet	1-452-277-00	BMC
	P.C. Board	A-1295-989-A	VIF/SIF/AGC/Band Switch/Chroma/ Audio Amp (A Board Complete)

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.	NOTES	REPLACEMENT DATA			
				ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.
DP801	6.2B1(ZENER)	8-719-102-60		ECG5013A	SK6A2/5013A	WEP1414/5013	103-Z9008
D101	RD3.9E-N2	8-719-911-19		ECG5007A	SK3A9/5007A	WEP1407/5007	
D102,103	1SS119	8-719-911-19		ECG519	SK3100/519	WEP925/519	103-131
D105	1SS119	8-719-911-19		ECG519	SK3100/519	WEP925/519	103-131
D106	RD33E-B2	8-719-101-04		ECG5036A	SK33A/5036A	WEP1438/5036	103-Z9004
D107	1SS119	8-719-911-19		ECG519	SK3100/519	WEP925/519	103-131
D109	1SS119	8-719-911-19		ECG519	SK3100/519	WEP925/519	103-131
D175	1SS119	8-719-911-19		ECG519	SK3100/519	WEP925/519	103-131
D181	GP08D			ECG156	SK3051/156	WEP4008/5809	212-Z9000
D182	U05G	8-719-911-55		ECG5806	SK3848/5806	WEP4006/5806	212-Z9000
D183	S1VB			ECG167	SK3647/167	WEP1052/167	212-Z9001
	S1VB20	8-719-511-20		ECG167	SK3647/167	WEP1052/167	212-Z9001
	S1VB10S			ECG166	SK9075/166	WEP1051/166	212-Z9001
D184	RD5.6E-N3	8-719-102-72		ECG5011A	SK5A6/5011A	WEP1412/5011	103-Z9007
D204	RD5.6E-N1	8-719-102-70		ECG5011A	SK5A6/5011A	WEP1412/5011	103-Z9007
D221	1SS119	8-719-911-19		ECG519	SK3100/519	WEP925/519	103-131
D222	RD10E-N3	8-719-102-91		ECG5019A	SK10A/5019A	WEP1420/5019	103-Z9010
D223	RD5.6E-N3	8-719-102-72		ECG5011A	SK5A6/5011A	WEP1412/5011	103-Z9007
D251	1SS119	8-719-911-19		ECG519	SK3100/519	WEP925/519	103-131
D261	RD13E-N1	8-719-102-99		ECG5022A	SK13A/5022A	WEP1424/5022	103-96
D302	1SS119	8-719-911-19		ECG519	SK3100/519	WEP925/519	103-131
D416 thru D418	RD3.6E-N2	8-719-102-58		ECG5006A	SK3A6/5006A	WEP1406/5006	103-Z9005
D441	U05G	8-719-911-55		ECG5806	SK3848/5806	WEP4006/5806	212-Z9000
D452	RD6.2E-B1	8-719-100-37		ECG5013A	SK6A2/5013A	WEP1414/5013	103-Z9008
D501,502	1SS119	8-719-911-19		ECG519	SK3100/519	WEP925/519	103-131
D503	RD5.6E-B2	8-719-100-35		ECG5011A	SK5A6/5011A	WEP1412/5011	103-Z9007
D504	RD12E-B1	8-719-100-64		ECG5021A	SK12A/5021A	WEP1423/5021	103-Z79-21
D505	U05G	8-719-911-55		ECG5806	SK3848/5806	WEP4006/5806	212-Z9000
D507,508	V19E	8-719-901-93		ECG552	SK9000/552	WEP172/506	103-287
D509	1SS119	8-719-911-19		ECG519	SK3100/519	WEP925/519	103-131
D510	RGP15G	8-719-921-53	(1)	ECG580	SK5036/580		103-316-04
D511	ERC24-06S	8-719-924-06		ECG552	SK9000/552	WEP172/506	103-287
# D512	V19GSS	8-719-901-95		ECG552	SK9000/552	WEP172/506	103-287
D513	RGP15G	8-719-921-53		ECG580	SK5036/580		103-316-04

ITEM No.	NTE PART No.
DP801	NTE5013A
D101	NTE5007A
D102,103	NTE519
D105	NTE519
D106	NTE5036A
D107	NTE519
D109	NTE519
D175	NTE519
D181	NTE156
D182	NTE5806
D183	NTE167
	NTE167
	NTE166
D184	NTE5011A
D204	NTE5011A
D221	NTE519
D222	NTE5019A
D223	NTE5011A
D251	NTE519
D261	NTE5022A
D302	NTE519
D416 thru D418	NTE5006A
D441	NTE5806
D452	NTE5013A
D501,502	NTE519
D503	NTE5011A
D504	NTE5021A
D505	NTE5806
D507,508	NTE552
D509	NTE519
D510	NTE580
D511	NTE552
# D512	NTE580
D513	

PARTS LIST AND DESCRIPTION (Continued)

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

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.
DL301	Delay Line	1-415-176-00
DL351	Delay Line	1-415-280-00
L102	Indicator Position	1-404-538-11
L103	Peaking (1mH)	1-407-717-00
L104	RF Choke (.22uH)	1-408-877-00
L111	Peaking (3.9uH)	1-408-404-00
L112	Peaking (3.9uH)	1-408-404-00
L114	RF Choke (1.2uH)	1-408-398-00
L117	Peaking (6.8H)	1-408-407-00
L206	Peaking (15uH)	1-408-411-00
L207	RF Choke (2.7uH)	1-408-596-00
L221	RF Choke (.68uH)	1-408-709-00
L251	RF Choke (8.2uH)	1-408-408-00
L301	Peaking (100uH)	1-408-421-00
L303	RF Choke (1.2uH)	1-408-398-00
L304	RF Choke (1.2uH)	1-408-398-00
L306	Peaking (1.2uH)	1-408-398-00
L351	Peaking (18uH)	1-408-412-00
L352	Peaking (15uH)	1-408-411-00
L353	Peaking (100uH)	1-408-421-00
L354	RF Choke (47uH)	1-408-417-00
L355	RF Choke (18uH)	1-408-412-00
L356	Peaking (18uH)	1-408-412-00
L471	Peaking (27uH)	1-408-414-00
L472	RF Choke (2.2uH)	1-408-235-00
# L501	Horizontal Linearity	1-459-295-11

ITEM No.	FUNCTION	MFGR. PART No.
L502	Width	1-459-348-11
# L503	Peaking (33uH)	1-407-699-00
L504	RF Choke	1-407-365-00
L505	RF Choke (15uH)	1-407-695-00
L506	Peaking (3.3mH)	1-408-237-00
L507	RF Choke (2.7mH)	1-408-236-00
L509	Peaking (3.3mH)	1-408-237-00
# L601	RF Choke (3.3uH)	1-408-225-11
# L602	RF Choke (3.3uH)	1-408-225-11
L701	RF Choke (100uH)	1-407-705-00
L702	RF Choke (100uH)	1-407-705-00
L703	RF Choke (100uH)	1-407-705-00
L704	RF Choke (47uH)	1-408-450-11
L6001	RF Choke	1-459-406-00
L6002	RF Choke	1-425-612-00
L6003	RF Choke	1-425-612-00
L6004	RF Choke (3.3uH)	1-407-687-00
L6005	RF Choke (45mH)	1-459-155-00
L6006	RF Choke	1-425-612-00
T202	Video IF	1-404-467-00
T203	AFT	1-404-467-00
T204	Sound IF	1-404-505-00
T351	Comb Filter (22uH)	1-407-571-00
T352	Bandpass	1-425-786-00
# T601	Line Filter	1-421-357-31
# T651	Line Filter	1-421-412-11

For SAFETY use only equivalent replacement part.

COILS & TRANSFORMERS

ITEM No.	FUNCTION	MFGR. PART No.	OTHER IDENTIFICATION	NOTES
# L904	Yoke Horiz 1.9mH 90° Vert 28.2mH	1-451-250-11	1-451-250-11 (1)	
T501	Horiz Drive	1-437-131-00	437-131-00 (1)	
# T502	Pincushion	1-421-351-21	1-421-351-21 (1)	
# T503	Horiz Output	1-439-311-11	1-439-311-11 (1)	
# T901	Power	1-447-695-11	1-447-695-11 (1)	
# T6001	Isolation	1-421-670-21	1-421-670-21 (1)	
# T6002	Regulator	1-421-668-11	1-421-668-11 (1)	

For SAFETY use only equivalent replacement part.
(1) Number on unit.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP901	3 1/2" X 2" PM 8 Ohm	1-503-239-00		

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					NOTES
			NTE PART No.	ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.	
D514	V19E	8-719-901-93	NTE552	ECG552	SK9000/552	WEP172/506	103-287	
D515	ESIF	8-719-300-65	NTE525	ECG525	SK3925/525	WEP177/525	212-Z9010	
D516	1SS119	8-719-911-19	NTE519	ECG519	SK3100/519	WEP925/519	103-131	
D517	V19E	8-719-901-93	NTE552	ECG552	SK9000/552	WEP172/506	103-287	
D518	RD6.8E-N1	8-719-102-76	NTE5014A	ECG5014A	SK6A8/5014A	WEP1415/5014	103-Z9009	
D525	1SS119	8-719-911-19	NTE519	ECG519	SK3100/519	WEP925/519	103-131	
D526	RD12E-B1	8-719-100-64	NTE5021A	ECG5021A	SK12A/5021A	WEP1423/5021	103-279-21	
# D601	S3WB60Z	8-719-503-06	NTE5315	ECG5315	SK3988/5315			
D701 thru D703	U05G	8-719-911-55	NTE5806	ECG5806	SK3848/5806	WEP4006/5806	212-Z9000	
D801	RD6.2E-B1	8-719-100-37	NTE5013A	ECG5013A	SK6A2/5013A	WEP1414/5013	103-Z9008	
D802 thru D805	1SS119	8-719-911-19	NTE519	ECG519	SK3100/519	WEP925/519	103-131	
D831	RD5.1E-N1	8-719-102-67	NTE5010A	ECG5010A	SK5A1/5010A	WEP1411/5010	103-279-10	
D841	RD6.2E-B1	8-719-100-37	NTE5013A	ECG5013A	SK6A2/5013A	WEP1414/5013	103-Z9008	
D851 thru D854	1SS119	8-719-911-19	NTE519	ECG519	SK3100/519	WEP925/519	103-131	
D855	RD6.2E-B1	8-719-100-37	NTE5013A	ECG5013A	SK6A2/5013A	WEP1414/5013	103-Z9008	
D861	RD6.2E-B1	8-719-100-37	NTE5013A	ECG5013A	SK6A2/5013A	WEP1414/5013	103-Z9008	
D881	RD6.2E-B1	8-719-100-37	NTE5013A	ECG5013A	SK6A2/5013A	WEP1414/5013	103-Z9008	
D882,883	1SS119	8-719-911-19	NTE519	ECG519	SK3100/519	WEP925/519	103-131	
D6001	EM-1ZS	8-719-300-91	NTE116	ECG116	SK3311	WEP156	212-76-02	
D6002	RU-2M	8-719-302-00	NTE552	ECG552	SK9000/552	WEP172/506	103-287	
D6003	V19E	8-719-901-93	NTE552	ECG552	SK9000/552	WEP172/506	103-287	
D6004	RD15E-N1	8-719-103-09	NTE5024A	ECG5024A	SK15A/5024A	WEP1426/5024	103-Z9013	
D6007	RU-2M	8-719-302-00	NTE552	ECG552	SK9000/552	WEP172/506	103-287	
D6008	EM-1ZS	8-719-300-91	NTE116	ECG116	SK3311	WEP156	212-76-02	
IC102	LA7910	8-759-800-65	NTE1658	ECG1658				
IC103	CX-520111N CX520-108N	8-759-910-21						
IC104	CX-7958	8-759-909-50						
IC105	CX7958	8-759-102-12						
IC201	μPD6250C 20014A CX20014A	8-752-001-41						

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.	NOTES	REPLACEMENT DATA				
				NTE PART No.	ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.
IC251	C575C2	8-759-157-52					WEP4066B/4066B	905-369
	uPC575C			NTE4066B	ECG4066B	SK4066B	WEP4066B/4066B	905-369
IC301	848	8-758-480-00						
	CX848					SK7653		
IC401	20100	8-752-010-00				SK7653		
	CX20100							HE-443-816
IC402	TC4066BP	8-759-140-66		NTE74LS09	ECG74LS09	SK74LS86		HE-443-891
IC501	uPD4066BC	8-759-100-60		NTE74LS86	ECG74LS86	SK74LS138		HE-443-877
IC502	uPC1377C			NTE74LS138	ECG74LS138	SK4066B	WEP4066B/4066B	905-369
	uPC1378H	8-759-113-78		NTE4066B	ECG4066B	SK4066B	WEP4066B/4066B	905-369
	uPC1378H-L			NTE4066B	ECG4066B			
IC801	SN74LS09N	8-759-900-09				SK3124A/289A	WEP910/289	921-1114
IC802	SN74LS86N	8-759-900-86		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
IC803	SN74LS138N	8-759-901-38		NTE85	ECG85	SK3114A/290A	WEP62/159*	121-Z9067
IC881	TC4066BP			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	uPD4066BC	8-759-140-66		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
				NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q101	2SC2785	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458			NTE290A	ECG290A	SK3114A/290A	WEP62/159	121-Z9067
Q102	2SA733	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1048GR			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1175							
Q106	2SC2785	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q107	2SA733	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP62/159	121-Z9067
	2SA1048GR			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q108	2SC2785	8-729-245-83						
	2SC2458			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q117	603			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2603			NTE289A	ECG289A	SK9137/382	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE289A	ECG289A	SK9137/382	WEP910/289	921-1114
				NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q175	2SC2785	8-729-245-83						
	2SC2458			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q181	2SC1815GR			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP66/199	121-Z9065
Q182	2SD774	8-729-177-43		NTE382	ECG382	SK3250/315	WEP922/315	921-1114

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.	NTE PART No.	WORKMAN PART No.
CP101	Resistor Network			
CP103	Resistor Network			
CP451	Resistor Network			
CP802	Resistor Network			
CP841	Resistor Network			
R3	200K 1% 1/4W Metal Film	1-214-784-00		
R101	3.3 5% 1/8W Non Flammable Carbon Film	1-247-771-00	QW3D3	22-1036
R106	15K 5% 2W Non Flammable Metal Oxide	1-206-692-00	2W315	22-4124
R184	270 5% 1W Non Flammable Metal Oxide	1-213-136-00	1W127	22-3082
R185	470 5% 1W Non Flammable Metal Oxide	1-213-139-00	1W147	22-3088
R204	33K 1% 1/6W Metal Film	1-215-457-00		
R205	33K 1% 1/6W Metal Film	1-215-457-00		
R232	10 5% 3W Non Flammable Metal Oxide	1-206-511-00		
R235	68 5% 1W Non Flammable Metal Oxide	1-213-129-00	1W068	22-3068
R254	10 5% 1W Non Flammable Metal Oxide	1-212-372-00	1W010	22-3048
R261	12 5% 2W Non Flammable Metal Oxide	1-206-465-00	2W012	22-4050
R512	2.2 5% 1W Non Flammable Metal Oxide	1-212-364-00	1W2D0	
R531	8200 5% 3W Non Flammable Metal Oxide	1-206-747-00		
R536	68 5% 1W Non Flammable Metal Oxide	1-213-129-00	1W068	22-3068
R546	47 5% 1W Non Flammable Metal Oxide	1-213-127-00	1W047	22-3064
R548	2200 5% 1/8W Non Flammable Carbon Film	1-247-839-00	QW222	22-1104
R550	10 5% 1/8W Non Flammable Carbon Film	1-247-783-00	QW010	22-1048
R551	2700 5% 2W Non Flammable Metal Oxide	1-206-674-00	2W227	22-4106
R552	2200 5% 1W Non Flammable Metal Oxide	1-213-147-00	1W222	22-3104
R553	150 5% 1W Non Flammable Metal Oxide	1-213-133-00	1W115	22-3076
R554	470 5% 1/4W Non Flammable Carbon Film	1-247-123-00	QW147	22-1088
R559	1800 5% 1W Non Flammable Metal Oxide	1-213-146-00	1W218	22-3102
R561	1.5 5% 1/8W Non Flammable Carbon Film	1-247-021-00	QW1D5	
R562	12K 1% 1/4W Metal Film	1-214-755-00		
R563	3900 1% 1/4W Metal Film	1-214-743-00		
# R564	220K 5% 1/4W Carbon Film			
R568	120K 1% 1/2W Metal Film	1-214-915-00		
R569	1.5 5% 1/8W Non Flammable Carbon Film	1-247-021-00	QW1D5	
R570	1.5 5% 1/8W Non Flammable Carbon Film	1-247-021-00	QW1D5	
R602	2.2 5% 10W WW	1-205-707-00	10W2D2	
# R603	100K 5% 1/2W Carbon Film	1-244-921-51	HW410	22-2144
# R604	4.7M 10% 1/2W Carbon Comp	1-202-727-11		22-2184
# R651	4.7M 10% 1/2W Carbon Comp	1-202-727-51		22-2184
R706	10K 5% 3W Non Flammable Metal Oxide	1-206-749-00		
R712	10K 5% 3W Non Flammable Metal Oxide	1-206-749-00		
R718	10K 5% 3W Non Flammable Metal Oxide	1-206-749-00		
R721	1 5% 1W Non Flammable Metal Oxide	1-212-360-00	1W1D0	
R839	100 5% 2W Non Flammable Metal Oxide	1-206-640-00	2W110	22-4072
R6001	68K 5% 2W Non Flammable Metal Oxide	1-214-475-00	2W368	22-4140
R6002	3.3 5% 2W Non Flammable Metal Oxide	1-206-451-00	2W3D3	
R6003	3.3 5% 2W Non Flammable Metal Oxide	1-206-451-00	2W3D3	
R6004	100 5% 1/8W Non Flammable Carbon Film	1-247-807-00	QW110	22-1072
R6005	100 5% 1/8W Non Flammable Carbon Film	1-247-807-00	QW110	22-1072
# R6006	22K 5% 2W Non Flammable Metal Oxide	1-206-696-61	2W322	22-4128
R6007	.47 5% 1W Non Flammable Metal Oxide	1-212-356-00	1WD47	
R6008	22K 5% 2W Non Flammable Metal Oxide	1-206-696-00	2W322	22-4128
R6009	390 5% 1W Non Flammable Metal Oxide	1-213-138-00	1W139	22-3086
TH201	NTC 1460 Cold	1-800-202-XX		
# THP601	PTC 112.5 Tapped @ 6.5	1-806-710-11		

For SAFETY use only equivalent replacement part.

PARTS LIST AND DESCRIPTION (Continued)

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

ELECTROLYTIC CAPACITORS Items Not Listed Are Normally Available at Local Distributors.

ITEM No.	RATING	MFGR. PART No.
C314	10 16V NP	1-121-806-00
C547	33 160V	1-123-024-00
# C603	330 200V	1-125-338-11

ITEM No.	RATING	MFGR. PART No.
C837	10 16V NP	1-121-806-00
C6009	33 160V	1-123-024-00

For SAFETY use only equivalent replacement part.

CAPACITORS Items Not Listed Are Normally Available at Local Distributors.

ITEM No.	RATING	MFGR. PART No.
C204	68 NPO 50V 5%	1-102-525-00
C216	68 NPO 50V 5%	1-102-525-00
C218	15 NPO 50V 5%	1-102-851-00
C326	8pF NPO 50V ±.5pF	1-102-865-00
C366	150 N220 50V 5%	1-102-888-00
# C545	.0073 2KV 3%	1-136-093-11
# C553	680 2KV 10%	1-162-116-51
# C601	.1 125VAC	1-130-680-11

ITEM No.	RATING	MFGR. PART No.
# C604	.01 400V	1-161-744-51
# C604A	.01 400V	1-161-744-51
# C651	.47 300V 20%	1-136-311-51
CP102	Cap Network	
CP104	Cap Network	
CP452	Cap Network	
CV301	15pF Trimmer	1-141-147-XX

For SAFETY use only equivalent replacement part.

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

ITEM NO.	FUNCTION	RESISTANCE	MFGR. PART NO.	NOTES
RV201	TU AGC	10K	1-228-724-00	
RV301	Sub Contrast	1000	1-228-720-00	
RV303	Sub Color	10K	1-228-724-00	
RV351	Gain	330	1-228-718-00	
RV422	Brightness	10K Detent @ 50%	1-230-487-00	
RV423	Color	10K	1-230-488-11	
RV424	Hue	10K	1-230-488-11	
RV425	Vert Size	10K	1-230-488-11	
RV426	Horiz Cent	10K Detent @ 50%	1-230-487-11	
RV427	Vert Hold	470	1-228-719-00	
RV441	Red Sub Brightness	22K	1-228-725-00	
RV442	Green Sub Brightness	22K	1-228-725-00	
RV443	Sub Brightness	22K	1-228-725-00	
RV504	Sub Vert Size	330	1-228-718-00	
RV505	Vert Lin	1000	1-228-720-00	
RV506	Horiz Freq	4700	1-228-723-00	
RV507	Pin Amp	4700	1-228-723-00	
RV508	Pin Phase	4700	1-228-723-00	
RV701	Red Background	4700	1-230-104-00	
RV702	Green Drive	2200	1-230-103-00	
RV703	Green Background	4700	1-230-104-00	
RV704	Blue Drive	2200	1-230-103-00	
RV705	Blue Background	4700	1-230-104-00	
RV706	Screen	2.2M	1-226-063-00	
RV707	Focus	2.2M	1-226-114-00	
# RV708	Horiz Static	55M	1-230-164-11	
RV709	Sub Brightness	10K	1-230-106-00	

For SAFETY use only equivalent replacement part.

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.	NOTES	NTE PART No.	REPLACEMENT DATA ECG PART No.	REPLACEMENT DATA RCA PART No.	REPLACEMENT DATA WORKMAN PART No.	REPLACEMENT DATA ZENITH PART No.
Q183	2SC1815GR			NTE85	ECG85	SK3124A/289A	WEP66/199	121-Z9065
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q201	2SA733AP			NTE290A	ECG290A	SK3114A/290A	WEP62/159	121-Z9067
	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1048GR	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q220	2SA733AP			NTE290A	ECG290A	SK3114A/290A	WEP62/159	121-Z9067
	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1048GR	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SC2669	8-729-266-93		NTE290A	ECG290A	SK3124A/289A		921-1114
Q221	2SD1406	8-729-201-78		NTE289A	ECG289A	SK9591		
Q222								
Q223	2SD774	8-729-177-43		NTE382	ECG382	SK3250/315	WEP922/315	921-1114
Q251	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q261 thru	2SD1406	8-729-201-78				SK9391		
Q351	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q355	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q356	2SA733AP			NTE290A	ECG290A	SK3114A/290A	WEP62/159*	121-Z9067
	2SA1048GR	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q359	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q360	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q401 thru	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q404	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q421 thru	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q423	2SA1048GR	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q424 thru	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q426	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q461,462	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q463	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1048GR	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q464,465	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114

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					
			NOTES	NTE PART No.	ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.
Q466	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1048GR	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q467	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q469,470	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q481,482	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q483,484	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1048GR	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q485	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q501	2SC2230A			NTE399	ECG399	SK9352/399	WEP68/287	121-Z9045
	2SC2688	8-729-168-82		NTE157	ECG157	SK3747/157	WEP61/157	121-Z9016
Q502	2SD1397	8-729-800-35		NTE2302	ECG2302	SK9422		
Q503	2SD788	8-729-378-84		NTE293	ECG293	SK3849/293	WEP912/293	121-Z9066
Q504	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1048GR	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q506	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1048GR	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q701 thru Q703	2SC2611	8-729-326-11		NTE157	ECG157	SK3747/157	WEP61/157	121-Z9016
Q704 thru Q706	2SC945P			NTE85	ECG85	SK3124A/289A	WEP736/123A*	121-972
	2SC945			NTE85	ECG85	SK3124A/289A	WEP736/123A*	121-972
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q801,802	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q851,852	DTC124ES	8-729-900-36						
Q853	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q854	DTC124ES	8-729-900-36						
Q855 thru Q858	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q861 thru Q864	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114

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					
			NOTES	NTE PART No.	ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.
Q881	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q882	2SA1175			NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
	2SA1048GR	8-729-204-83		NTE290A	ECG290A	SK3114A/290A	WEP911/290A	121-Z9003*
Q883	DTC124ES	8-729-900-36						
Q1431,1432	2SC2785			NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
	2SC2458	8-729-245-83		NTE85	ECG85	SK3124A/289A	WEP910/289	921-1114
Q6001	2SC3387			NTE2301	ECG2301			
	2SC3387-SY	8-729-301-11		NTE2301	ECG2301			
Q6002	2SD313			NTE152	ECG152	SK3893/152	WEP745/152	121-987-03
	2SD313HP	8-729-831-33		NTE152	ECG152	SK3893/152	WEP745/152	121-987-03

\# For SAFETY use only equivalent replacement part.
* Lead configuration may vary from original.
(1) Used in some versions.

WIRING DATA

High Voltage Lead	Use BELDEN No.	9867 (30 KV)
Shielded Hook-up Wire	Use BELDEN No.	8401 or 8421 (Single-Conductor)
		8208 (Two-Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8529 (Solid) Available in 13 Colors
		8522 (Stranded) Available in 13 Colors
300-Ohm Tuner Input Lead	Use BELDEN No.	8225
75-Ohm Tuner Input Lead	Use BELDEN No.	8241
300-Ohm Antenna Lead-In	Use BELDEN No.	8275 (Foam Core) or 8285 (Foam Jacketed)
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) 4-Conductor
		8485 (Round) 5-Conductor
		8488 (Round) 8-Conductor