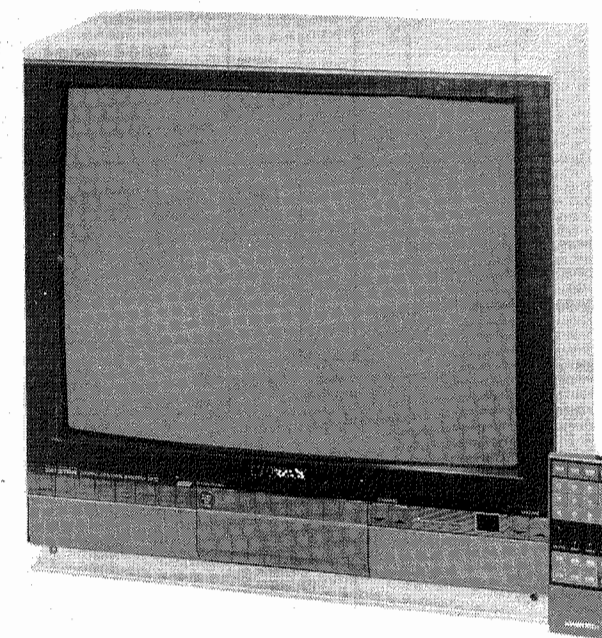


DES AND NOTES

PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11

Model	Chassis
RKE192SL01	20C603
RKE192SL02	20C603
RKE192SL03	20C603
RKE198SL01	20C602
RKF192CH01	20C608
RKF192CH02	20C608
RKF194CH01	20C605
RKF194CH02	20C605
RKF195CH01	20C605
RKF195CH02	20C605
RKF198CH01	20C609
RKF198CH02	20C609
RXE188	19C601



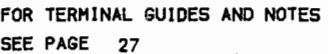
Representative Model

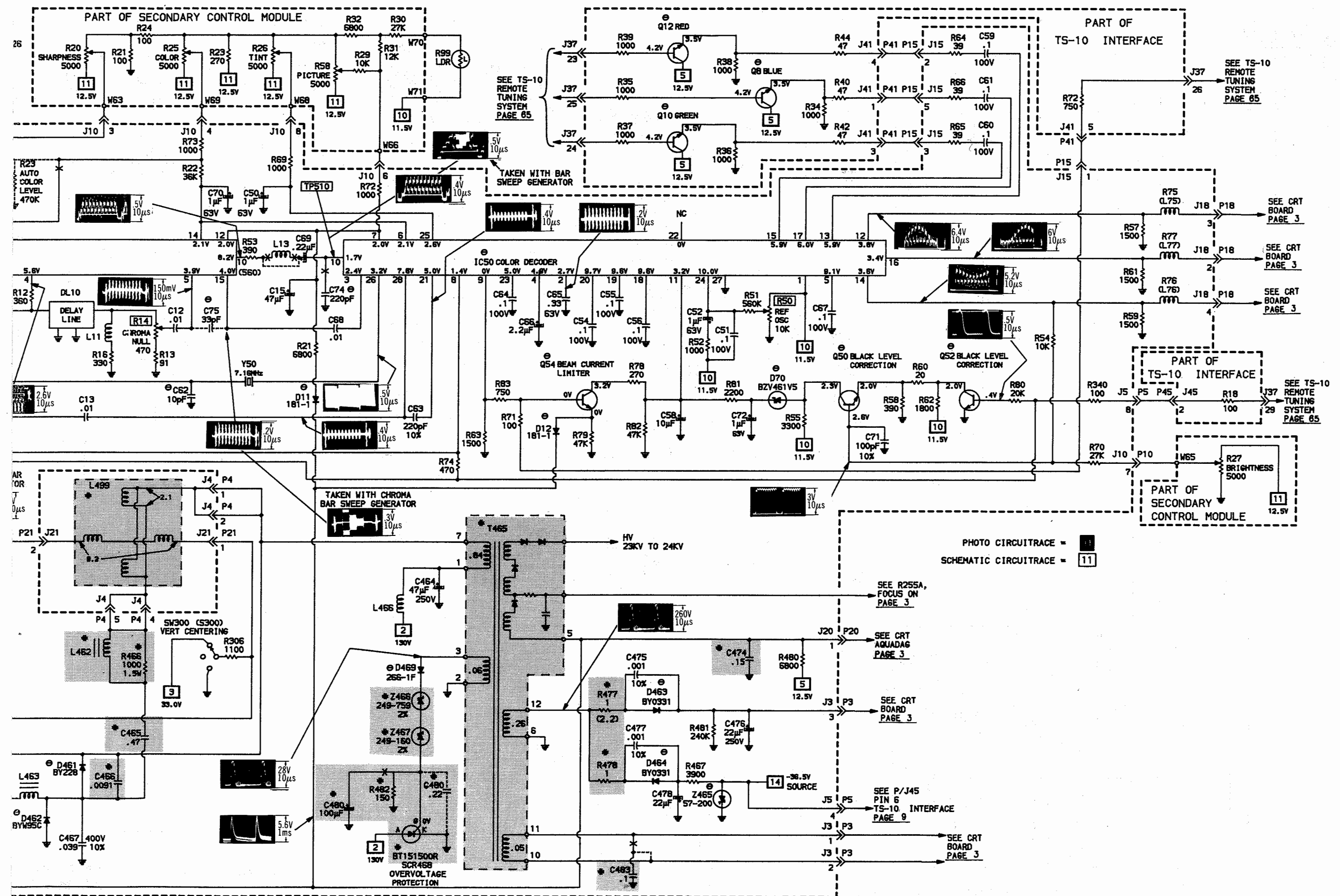
SAFETY PRECAUTIONS

See page 4.

INDEX

	Page		Page
Alignment		Photos (Continued)	
TV.....	6,71	SVM Module.....	51,69
Chassis Breakdown.....	74	TS-10 Tuning System Board.....	16
Convergence Adjustments.....	8	Quick-Checks Troubleshooting	
Disassembly Instructions.....	73	Main Board.....	29,48
GridTrace Location Guide		Stand-By Power Supply Module....	30
CRT Board.....	22	Safety Precautions.....	4
Interface Board.....	47	Schematics	
Main Board.....	10,67	Power Supply.....	75,76,77
Stand-By Power Supply Module....	52	Terminal Guides and Notes.....	27
Stereo Decoder Module.....	55	TV.....	2
SVM Module.....	51	Antenna Switch.....	53
TS-10 Tuning System Board.....	61	CRT.....	3
IC Functions.....	18,20,21,56,57	Display.....	54
Miscellaneous Adjustments.....	8	Interface.....	9,68,77
Parts List		Main.....	5,72
TV.....	32 thru 45	Secondary Control.....	17,60,68
Photos		Stand-By Power Supply.....	75
Cabinet-Rear View.....	73	Stereo Decoder.....	7,70
CRT Board.....	22	Stereo/SAP Indicator.....	64
CRT Neck Assembly.....	69	SVM.....	72,77
Main Board.....	11,14,15,28,62,63,66	TS-10 Tuning System.....	12,13,65
Main Board-Shield Location.....	26	UHF/VHF Tuner.....	19,58
Display Module.....	64	Servicing in the Field.....	73
Interface Board.....	46,47	Test Equipment.....	6
Secondary Control Board.....	50	Test-Jlg Hookup.....	24
Stand-By Power Supply Module....	31,52	Troubleshooting.....	24,25,26
Stereo Decoder Board.....	55,59	Troubleshooting Aid.....	23





CHASSIS BREAKDOWN

19C601

EMC607-A001	Main Chassis Board
EMC607-D004, E005	Main Chassis Board
EMC613-B002, C003	Main Chassis Board
APT025-A001	CRT Socket Board
APT025-C003, D004	CRT Socket Board
APT036-A001, B002	CRT Socket Board
ASC169-A001	Secondary Control Board
AVJ004-B002	Audio/Video Jack Panel
AVJ013-A001	Audio/Video Jack Panel
AVJ016-A001	Audio/Video Jack Panel
A10242-D004	Stereo Decoder Module
A10138-B003	Remote Receiver Module
ATC328-A001	Tuner Cluster Asm
ALD026-A001	Stereo/SAP Indicator Module
ATS038-A001	Tuning System Asm
A10264-C003	TS-9 Remote Tuning System Board
3402910001	UHF/VHF Tuner
7051020002	Interface Board
T174AB	Remote Transmitter

20C602

EMC605-A001	Main Chassis Board
EMC605-D004	Main Chassis Board
EMC611-B002, C003	Main Chassis Board
APT033-A001, C003	CRT Socket Board
APT034-B002	CRT Socket Board
APT037-C003	CRT Socket Board
A10178-A001	SVM Module
A10178-B002, C003	SVM Module
AVJ002-A001	Audio/Video Asm
A10168-A001	Audio/Video Jack Panel
RFS004-A001	Antenna Sw Module
APM001-A001	Stand-By Power Supply Module
A10242-D004	Stereo Decoder Module
ARR007-A001	Remote Receiver Module
ATC324-B003	Tuner Cluster Asm
ASC180-B002	Secondary Control Board
ATS036-A001	Tuning System Asm
A10180-D004	TS-10 Remote Tuning System Board
3402910001	UHF/VHF Tuner
A10170-B003	Interface Board
T325AD	Remote Transmitter
20C603	

EMC605-D004	Main Chassis Board
EMC611-B002, C003	Main Chassis Board
APT033-C003	CRT Socket Board
APT034-B002	CRT Socket Board
APT037-C003	CRT Socket Board
A10178-A001	SVM Module
A10178-B002, C003	SVM Module

AVJ007-A001	Audio/Video Jack Panel
AVJ007-B002	Audio/Video Jack Panel
A10298-A001	Audio/Video Jack Panel
RFS004-A001	Antenna Sw Module
7051020005	TS-9 Interface
A10242-D004	Stereo Decoder Module
A10138-B003	Remote Receiver Module
ATC362-B003	Tuner Cluster Asm
ASC178-B002	Secondary Control Board
ATS052-A001	Tuning System Asm
A10264-C003	TS-9 Remote Tuning System Board
3402910001	UHF/VHF Tuner
T185BB	Remote Transmitter

20C605

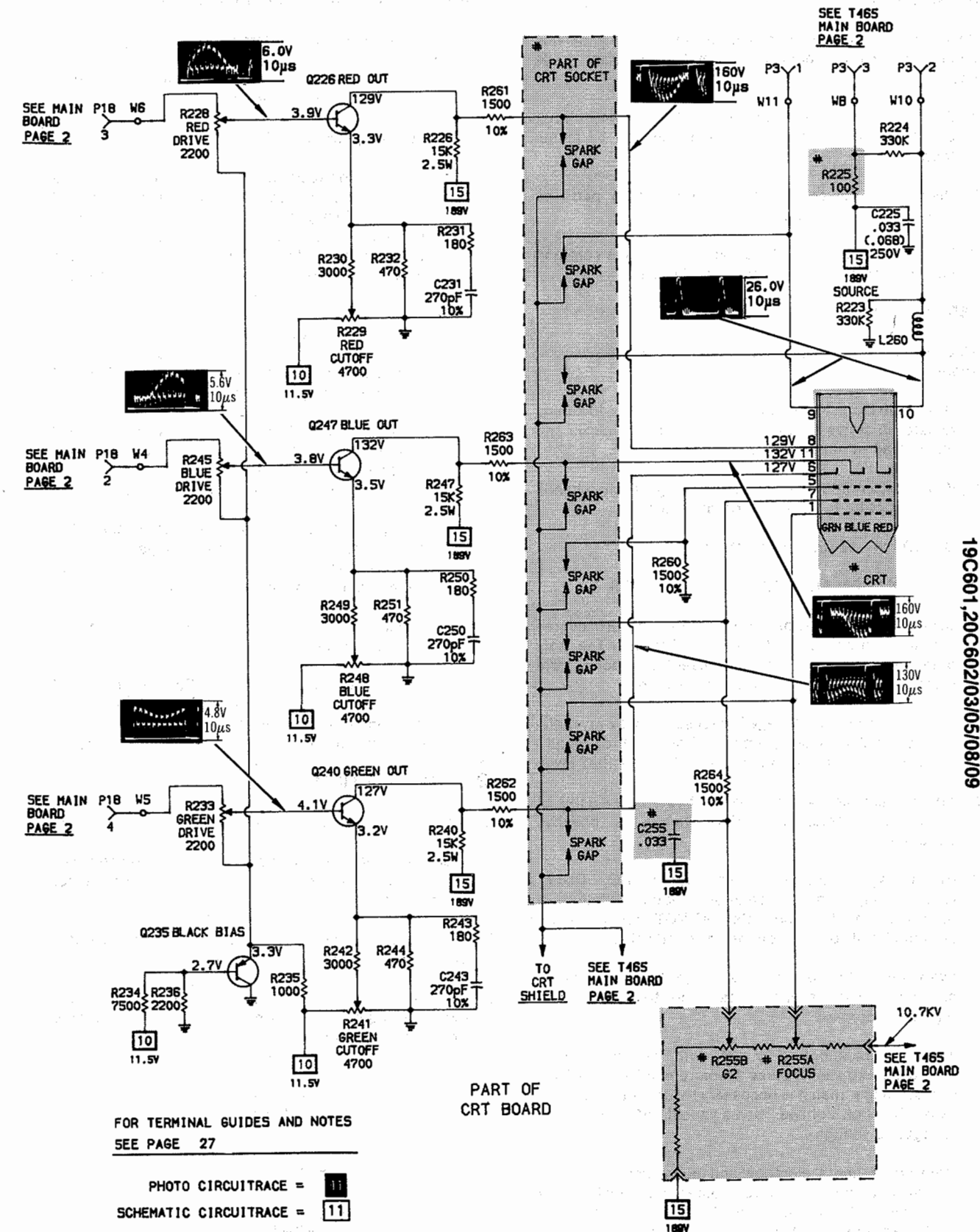
EMC611-B002, C003	Main Chassis Board
APT034-B002	CRT Socket Board
APT037-C003	CRT Socket Board
AVJ015-A001	Audio/Video Jack Panel
AVJ021-A001	Audio/Video Jack Panel
A10242-D004	Stereo Decoder Module
A10138-B003	Remote Receiver Module
ASC181-A001	Secondary Control Board
ATS055-A001	Tuning System Asm
A10264-C003	TS-9 Remote Tuning System Board
3402910001	UHF/VHF Tuner
7051940001	Interface Board
ADP008-B002	TS-9 Display Module
T175AB	Remote Transmitter
TUMA4B	Remote Transmitter

20C607

EMC611-C003	Main Chassis Board
APT034-B002	CRT Socket Board
APT037-C003	CRT Socket Board
AVJ020-A001	Audio/Video Jack Panel
A10305-A001	Audio/Video Jack Panel
A10242-D004	Stereo Decoder Module
A10138-C003	Remote Receiver Module
ATC432-B003	Tuner Cluster Asm
ASC196-B002	Secondary Control Board
ATS052-B002	Tuning System Asm
A10264-C003	TS-9 Remote Tuning System Board
3402910001	UHF/VHF Tuner
ATS062-B002	Tuning System Asm
A10262-C003	TS-9
3402910001	UHF/VHF Tuner
TUMA4B	Remote Transmitter

20C609

EMC611-C003	Main Chassis Board
APM001-A001	Stand-By Power Supply Module
APT034-B002	CRT Socket Board
APT037-C003	CRT Socket Board
AVJ017-A001	Audio/Video Jack Panel
A10303-A001	Audio/Video Jack Panel
RFS004-A001	Antenna Switch Module
A10242-D004	Stereo Decoder Module
ARR002-A001	Remote Receiver Module
ARR007-A001	Remote Receiver Module
A10178-B002, C003	SVM Module
ATC404-B002	Tuner Cluster Asm
ASC180-B002	Secondary Control Board
ATS059-B002	Tuning System Asm
A10289-B002	TS-10 Remote Tuning System Board
3402910001	UHF/VHF Tuner
TUAB5G	Remote Transmitter



A PHOTOFAC STANDARD NOTATION SCHEMATIC WITH CIRCUITTRACE

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CRT SOCKET BOARD - APT025-A001

SET 2642 FOLDER 2

SAFETY PRECAUTIONS

SERVICE WARNING

Service work should be performed only by qualified service technicians who are familiar with safety checks and guide lines.

- 1. For continued safety, no modification of any circuit should be attempted unless recommended by manufacturer.
- 2. Disconnect power source before replacing parts as some parts may be electrostatic sensitive.
- 3. Use an isolation transformer between the line cord and power receptacle, when servicing chassis.

SERVICING HIGH VOLTAGE AND PICTURE TUBE

When servicing the High Voltage circuits, extreme caution should be used.

- 1. Discharge static High Voltage by connecting a 10 kohms resistor in series with a test lead between chassis and anode lead of picture tube.
- 2. Wear shatter-proof eye protection (goggles) when handling the picture tube in case of implosion.
- 3. DO NOT lift picture tube by the neck.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Service personnel should be aware of the procedures and instructions covering x-ray radiation. The only potential source of x-ray in present day solid state receivers and monitors is the picture tube.

- 1. It is only when High Voltage is excessive that x-ray radiation is capable of being emitted from shell of picture tube. Be sure the High Voltage is set at specified level.
- 2. An accurate High Voltage meter should be available at all times. Meter calibration should be checked periodically.
- 3. High Voltage should be kept at rated value - NO HIGHER. Higher voltages may cause x-ray radiation or failure of other associated components. DO NOT depend on protection circuit to keep voltages at rated value.
- 4. Every time a chassis is serviced, High Voltage should be checked at various brightness levels to be sure it is regulating properly.
- 5. While troubleshooting a set with excessive High Voltage, avoid being close to picture tube. DO NOT operate longer than it is necessary to locate the cause of excessive High Voltage. Use a variable AC transformer to regulate voltage.
- 6. Many components, electrical and mechanical, in present chassis have safety related characteristics which are not evident with visual inspection. When these components are known, they are identified with a # on the schematic and in the parts list. When replacing these components, for SAFETY, use only an equivalent replacement part.

SAFETY CHECKS-FIRE AND SHOCK HAZARD

Cold Leakage Checks (Sets with isolated ground.)

- 1. Unplug the AC cord and connect a jumper across the two prongs on the plug.
- 2. Turn on power switch.
- 3. Measure the resistance, with an Ohm meter, between the jumpered AC plug and any exposed metal cabinet parts on the set such as: antenna screw heads, control shafts, handle brackets. Exposed metal parts that have a return path should measure between 200 kohms and 5 megohm. Parts without a return path must measure infinity.

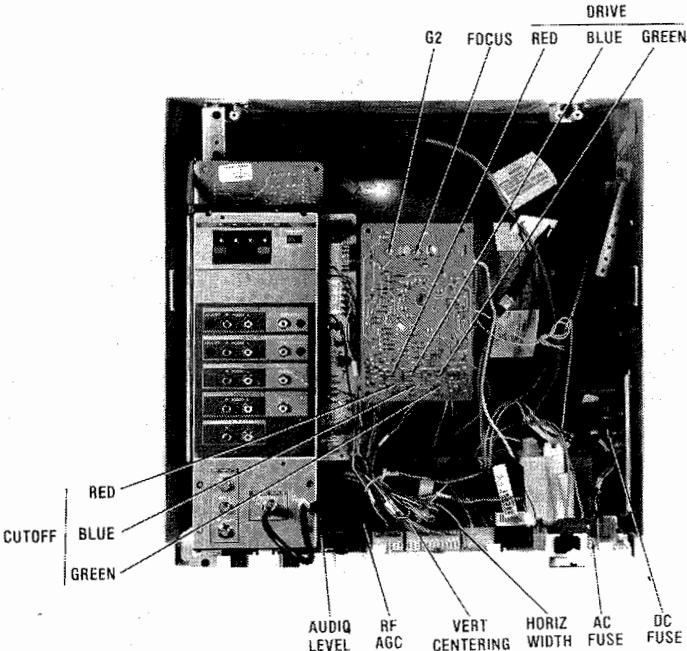
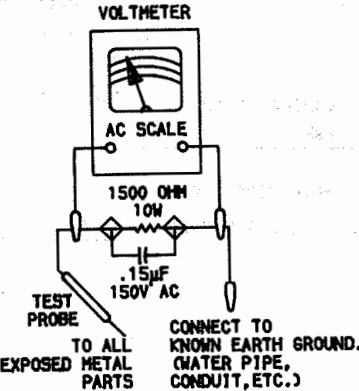
Leakage Current Hot Check

- 1. Plug the AC cord directly into AC outlet. DO NOT use an isolation transformer.
- 2. Connect a 1500 Ohm 10 watt resistor, in parallel with a .15µF 150V AC capacitor, between any exposed metal parts on the set and a good earth ground such as a water pipe. (See Figure below.)
- 3. Using an AC volt meter, with 1000 Ohms per volt or more sensitivity, measure the voltage across the resistor. Check each exposed part and measure voltage at each point.
- 4. Reverse the AC plug and repeat voltage measurement at each point.
- 5. The voltage at any point should not exceed .75 volts RMS. This corresponds to .5 milliamps AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected.

GENERAL GUIDE LINES

A final SAFETY check before returning the set to customer.

- 1. Check area repaired for poorly soldered or de-soldered connections. Check entire circuit board surface for solder splashes.
- 2. Check interboard wiring for pinched wires or wires contacting any high-wattage resistors.
- 3. Check that all control knobs, shields, covers, grounds and mounting hardware have been replaced. Be sure to replace all insulators.



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove eight screws holding cabinet back and remove back. Disconnect speaker and antenna connectors. Disconnect HV anode, CRT socket, deflection yoke connectors, degaussing coil connector and ground leads. Remove three screws holding main board assembly to cabinet bottom and remove assembly from cabinet. Remove four screws holding remote receiver tuning selector panel assembly to cabinet front and remove assembly from cabinet.

CRT REMOVAL

Follow "Chassis Removal" procedure and lay set facedown on a soft protective surface. Loosen and remove CRT neck 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 1/8-amp fuse is used for standby power-supply protection. (See photo, Cabinet - Rear View.)

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

VHF/UHF TUNER

See Miscellaneous Adjustments.

Channel (up) and (down) buttons are provided for channel scanning.

Ten numbered buttons on the remote are provided for two digit entry channel selection with scan (up) and (down) buttons provided for channel scanning.

SCAN/PROGRAM switch and ADD and DELETE 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.

WIDTH

The width may be varied by adjusting the width control.

FOCUS

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

AGC

The AGC may be varied by an AGC Delay control.

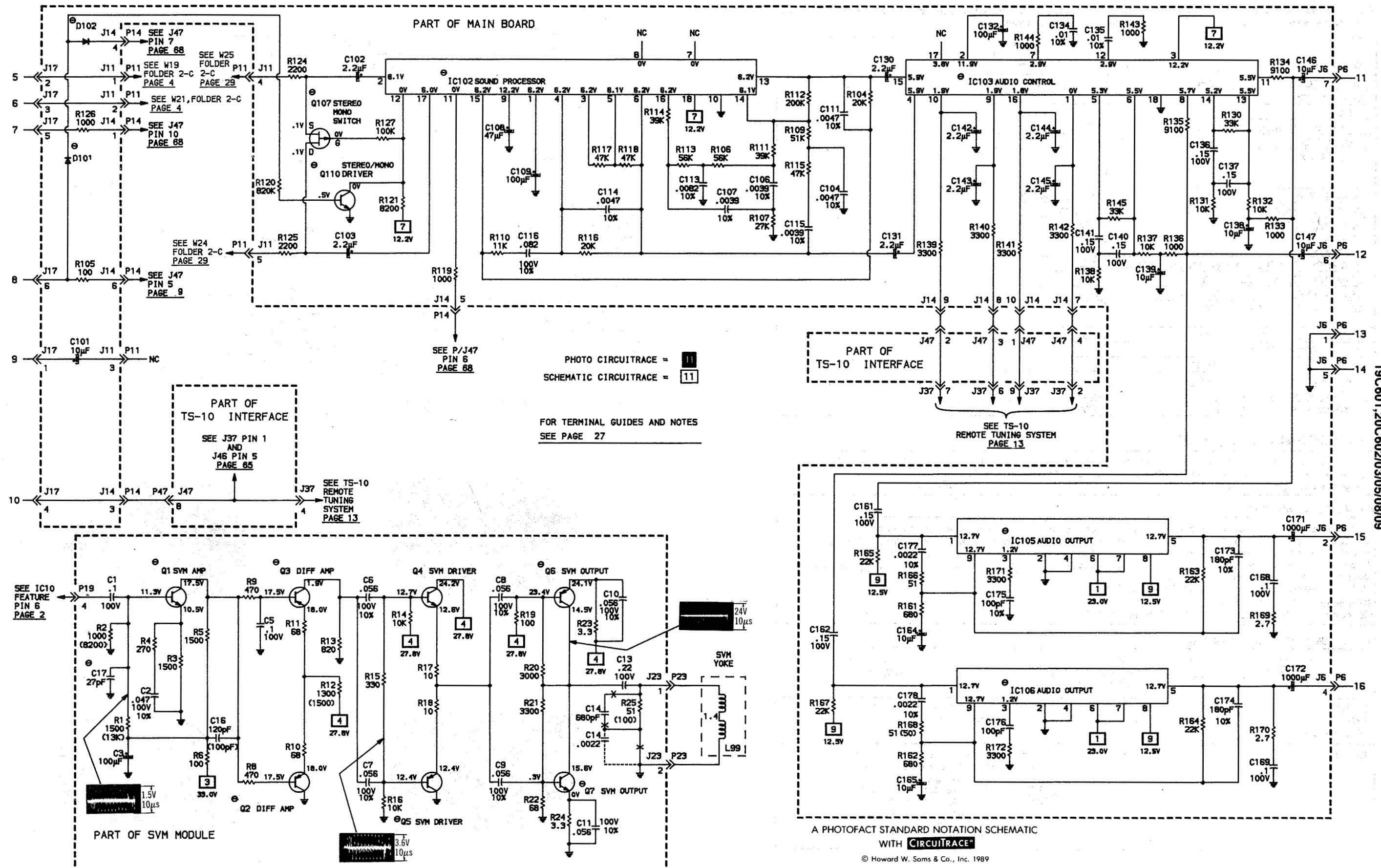
CENTERING

Horizontal centering is accomplished by proper adjustment of the horizontal centering control.

Vertical centering is accomplished by proper adjustment of the vertical centering control. (See photo, Cabinet - Rear View.)

19C601, 20C602/03/05/08/09
SYLVANIA CHASSIS

FOLDER 2



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.
OSCILLOSCOPE	1560	SC61
GENERATORS		
RGB	1260	
MULTIBURST SIGNAL	1260	VA62
COLOR BAR	1211A,1248,1251,1260	VA62, CG25
ANALOG VOM	277	
DIGITAL VOM	2830	DVM37,DVM56,SC61
FREQUENCY METER	1803,1805	FC71,SC61
HI-VOLTAGE PROBE VOM/DMM Accessory probes	HV-44	HP200
ISOLATION TRANSFORMER	TR110,1604,1653,1655	PR57
CAPACITANCE ANALYZER	820	LC53
CRT ANALYZER	467,470	CR70
TEMPERATURE PROBE	TP-28	
AC LEAKAGE TESTER	1655	PR57
ILLUMINATION METER		
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

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.
Disconnect IF Cable at J7.
Connect a 8.0V DC Bias to TP614 (Pin 14 of IC601).

VIDEO IF ALIGNMENT (SWEEP MARKER GENERATOR)

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP601 (Pin 1 of J9 J9 Connector)	To J7	44MHz (10MHz Sweep)	47.25MHz	Adjust L600 for MINIMUM. See Figure 1.
To TP601	To J7	"	41.25MHz 42.17MHz 44.00MHz 45.75MHz 47.25MHz	Adjust L608 to position the 45.75MHz marker as high as possible on the response curve without lowering the amplitude of the response curve. See Figure 2. Note: Reconnect IF Plug.

TV ALIGNMENT INSTRUCTIONS (Continued)

VIDEO IF ALIGNMENT (BAR SWEEP GENERATOR)

BAR SWEEP GENERATOR	SCOPE INPUT	REMARKS
To Antenna Terminal	To TP601	Perform Video IF Adjustments per SWEEP/MARKER GENERATOR instructions above. See Figure 3.

4.5MHz TRAP ALIGNMENT

Tune in a strong TV signal and set the contrast at maximum. Adjust the fine tuning until a beat pattern is visible on the screen. Adjust T610 for MINIMUM beat interference.

SOUND IF ALIGNMENT

Tune in a station and adjust L611 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 L612.

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 TP602 (Pin 2 of J8 Connector)	To J7 (IF Input)	44MHz (10MHz Sweep)	45.75MHz	Adjust L609 to place 45.75MHz marker as shown. See Figure 4.

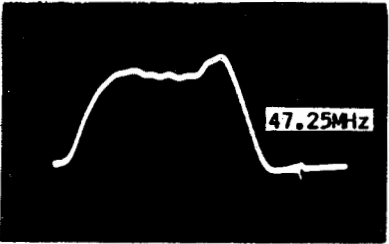


Figure 1

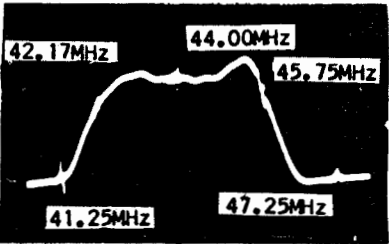


Figure 2



Figure 3

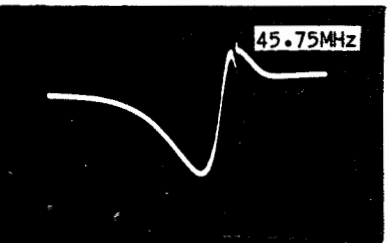
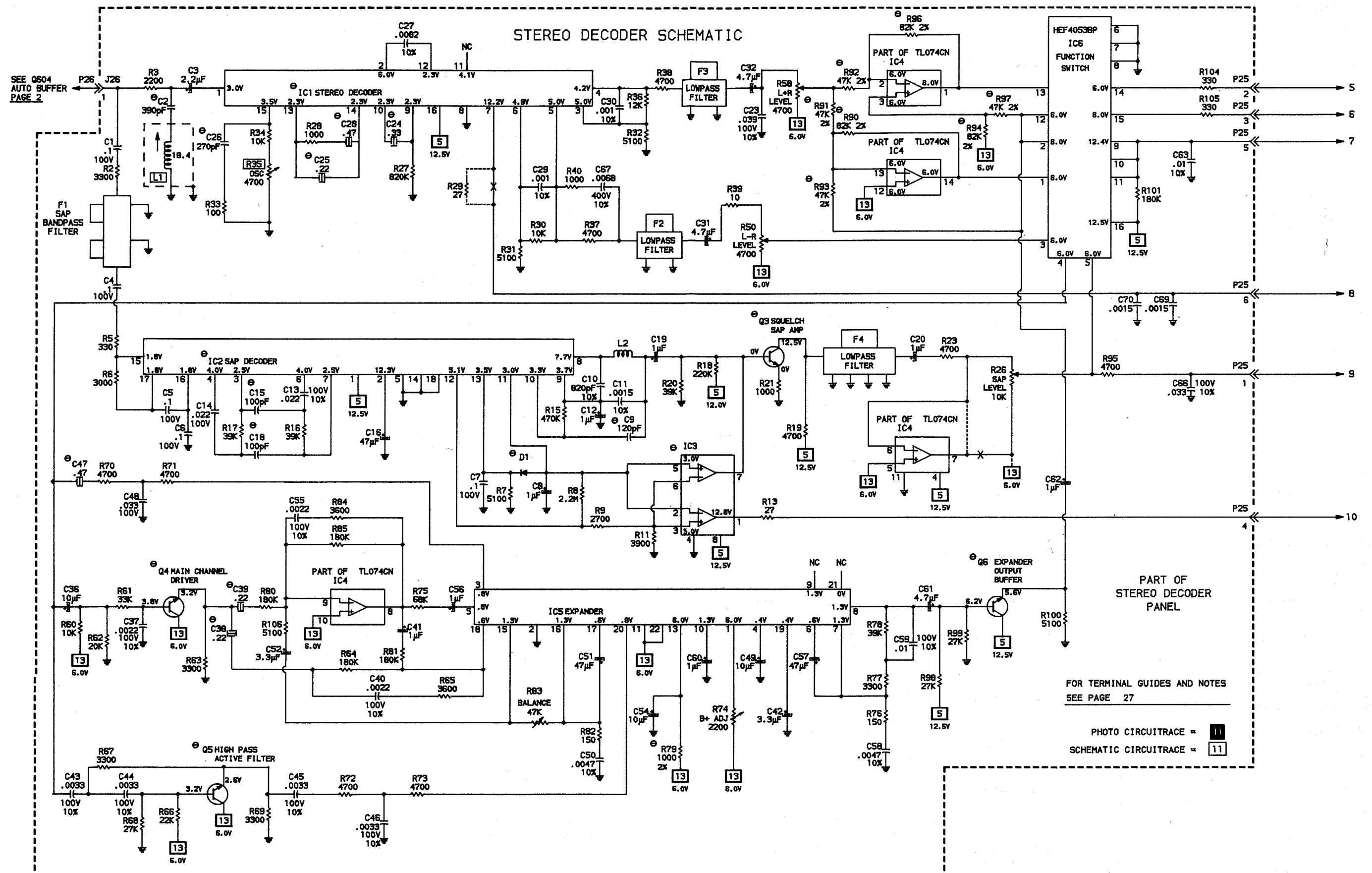


Figure 4



MISCELLANEOUS ADJUSTMENTS

PRETUNING

1. Connect antenna.
2. Turn power On.
3. Open secondary control access door.
4. Set SCAN/PROGRAM Switch to SCAN.
5. Select channel to be pretuned.
6. Momentarily depress ADD button.
7. Follow steps 5 and 6 for each channel to be pretuned.

Removing Channels

8. Follow steps 1-3.
9. Set SCAN/PROGRAM Switch to PROGRAM.
10. Select channel to be removed.
11. Momentarily depress DELETE button.
12. Follow steps 10 and 11 for each channel to be removed.
13. After pretuning, close secondary control access door.

130V B+ ADJUSTMENT

Allow a 15 minute warm up time. Set Brightness Control to MINIMUM. Connect DC voltmeter to TP4, low side to ground. Adjust 130V DC Adjust (R442) for 130V $\pm 1.0V$ DC.

AUDIO LEVEL ADJUSTMENT

Tune in a strong station. Set volume to MINIMUM. Adjust Audio Level Control (R617) to a point where sound is just audible.

RF AGC ADJUSTMENT

Tune in a station. Turn RF AGC Control (R618) fully clockwise and then counterclockwise until snow (noise) just disappears. Check all active channels and adjust slightly if necessary.

COMB FILTER ADJUSTMENT

Tune in a color bar pattern. Connect oscilloscope to TP510 (Pin 10 of IC50). Adjust Chroma Null Control (R14) and Comb Phase Control (L10) for MINIMUM chroma component of waveform.

HORIZONTAL FREQUENCY ADJUSTMENT

Tune in a color bar signal. Place a jumper from TP325 to ground. Adjust Horizontal Frequency Control (R331) until the color bars stop or slowly float across the screen. Remove jumper and check sync on all channels.

HORIZONTAL WIDTH AND CENTERING

Tune in a crosshatch pattern. Adjust Horizontal Centering Control (R333) to place pattern in the center of the screen. Adjust Horizontal Width Control (R471) for proper horizontal overscan at right and left sides of the screen.

VERTICAL CENTERING AND HEIGHT ADJUSTMENTS

Tune in a crosshatch pattern. Place Vertical Centering Switch (S300) in one of its three positions to center the pattern on the screen. Adjust Vertical Amplitude Control (R321) for a

slight overscan of the screen at the top and bottom.

COLOR TEMPERATURE ADJUSTMENTS

Disconnect the IF Cable at J7 to obtain a blank raster. Set Brightness, Picture and Color Controls fully counterclockwise. Set Sharpness and Tint Controls to midrange. Set G2 Control, Red Cutoff (R19), Green Cutoff (R39), and Blue Cutoff (R59) Controls fully counterclockwise. Set Red (R20), Green (R40) and Blue (R60) Drive Controls fully clockwise. Disconnect Vertical Yoke Plug (J21). Advance G2 Control until a horizontal line of one color is just visible. Adjust the Cutoff Controls of the remaining two colors to produce a low level white line. Reconnect Vertical Yoke Plug (J21) and IF Cable (J7) and tune in a picture. Adjust Drive Controls for best white in the highlights of the picture.

COLOR PURITY ADJUSTMENTS

Allow a 15 minute warm up and degauss the picture tube if necessary. Disconnect IF Plug (J7). Set Picture Control to Maximum and Brightness to midrange. Remove the rubber wedges and slide the yoke forward against the bell of the picture tube. Place the purity tabs together and at the 12 o'clock position, and the 6 pole magnets at the 10 o'clock position. Adjust the Green (R39) and Blue (R59) Cutoff Controls fully counterclockwise and the Red (R19) Cutoff Control fully clockwise. Spread and rotate the purity tabs to center the red band on the screen. Slide the deflection yoke back to produce a uniform red raster. Tighten the yoke clamp. Reconnect IF Cable at J7.

CONVERGENCE ADJUSTMENTS

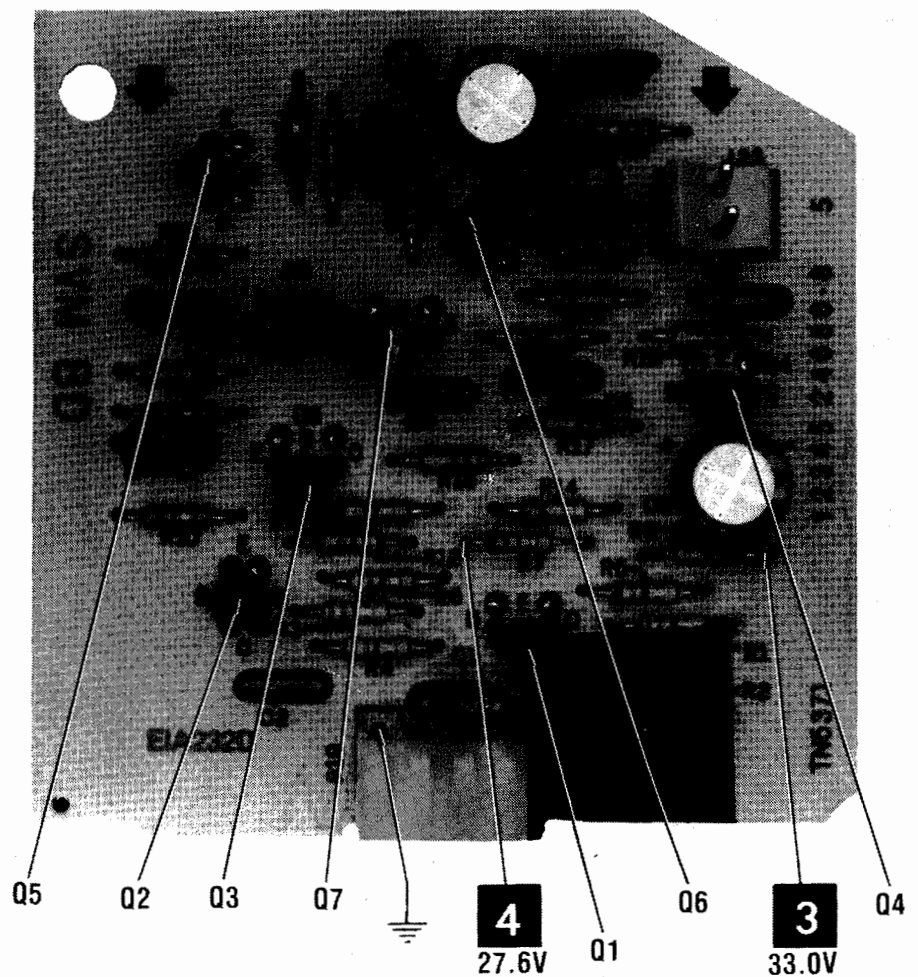
Allow a 15 minute warm up time and tune in a crosshatch pattern. Spread and rotate the tabs of the 4 pole magnets to converge the red and blue vertical and horizontal lines at the center of the screen. Spread and rotate the tabs of the 6 pole magnets to converge red/blue vertical and horizontal lines with the green lines at the center of the screen. Loosen the deflection yoke and remove the rubber wedges. Tilt the yoke vertically and horizontally to converge the edges of the screen. Replace wedges and tighten yoke clamp.

DISPLAY POSITION ADJUSTMENT

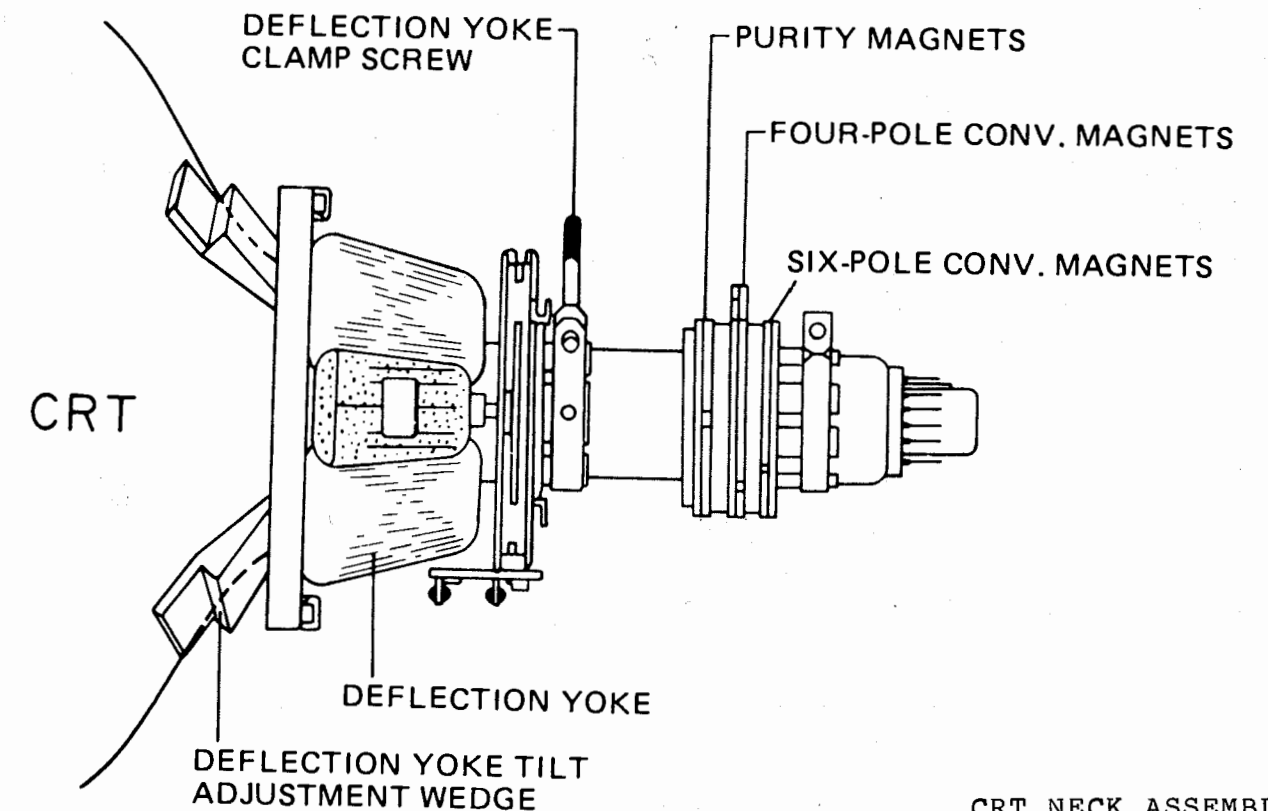
Tune in a color bar pattern. Press and hold the + or - buttons of the Bass, Treble or Balance Controls. Use the bar pattern to center the display by adjusting Display Position Control (R528) (on Tuner Control Board).

COLOR SYNC ADJUSTMENT

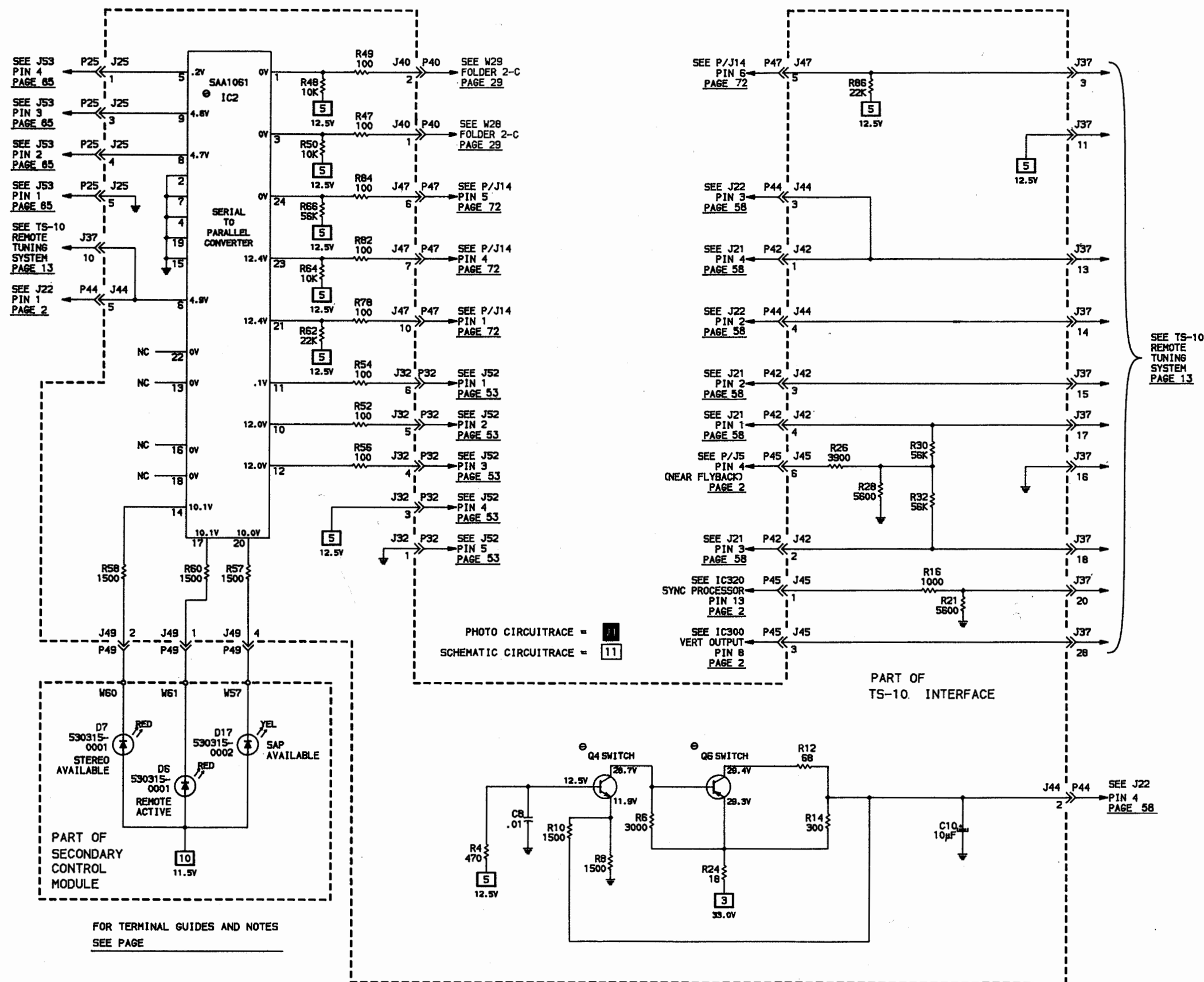
Tune in a color bar pattern. Change from channel to channel and check the color lock in. If color is slow to lock in, make slight adjustment of Color Sync Control (R50). Repeat procedure until color sync locks in quickly.



A Howard W. Sams CIRCUITRACE® Photo SVM MODULE - A10178-A001, B002, C003

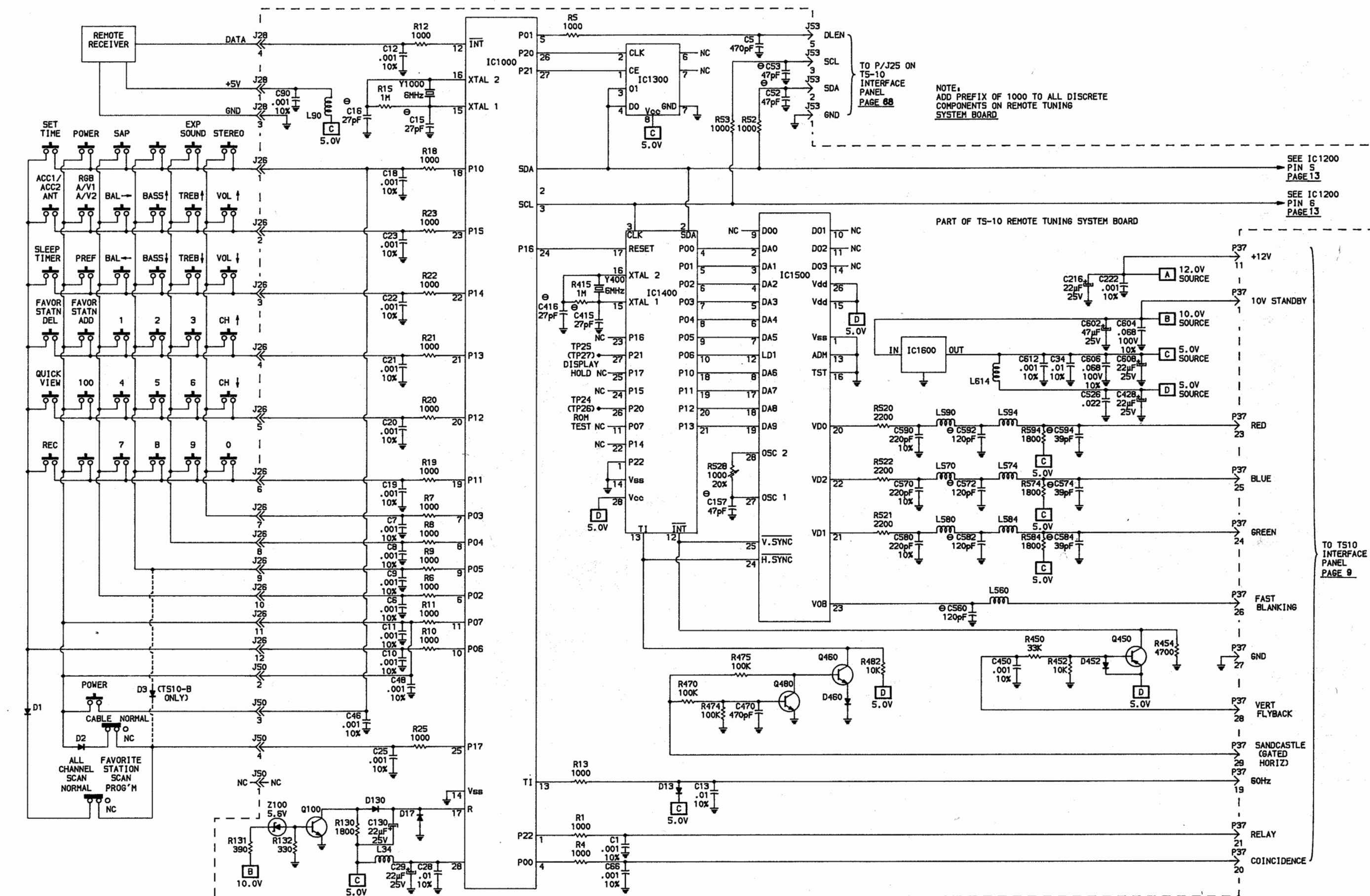


CRT NECK ASSEMBLY



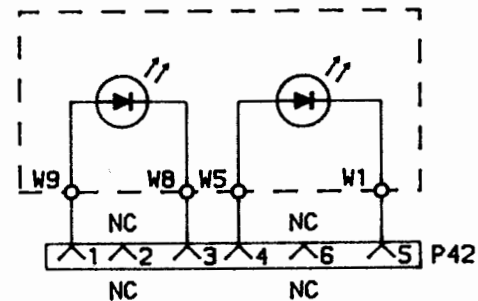
MAIN BOARD-GridTrace LOCATION GUIDE-EMC605-A001,D004/EMC607-A001,D004,E005/EMC611-B002,C003/EMC613-B002,C003

C11	K-2	C170	L-9	C464	I-20	DL10	K-5	R53	I-5	R164	H-11	R443	C-13
C12	K-4	C171	J-10	C465	N-17	F400	Q-25	R54	H-7	R166	I-11	R444	C-15
C13	H-3	C172	P-10	C466	N-21	FB1	G-20	R55	E-5	R167	L-11	R447	K-17
C14	J-2	C173	I-11	C467	L-20	FB2	H-27	R56	L-7	R168	N-11	R461	E-15
C15	J-5	C174	O-11	C469	H-19	FB3	D-27	R57	J-7	R169	K-11	R462	D-15
C16	F-4	C175	G-11	C470	I-19	FB4	G-26	R58	D-6	R170	N-10	R463	D-16
C17	H-2	C176	M-11	C471	H-18	FB5	O-19	R59	J-7	R171	G-11	R464	F-17
C18	H-2	C177	H-11	C472	J-17	FB6	M-18	R60	D-7	R172	L-11	R466	O-17
C50	F-5	C178	M-11	C473	K-18	FB7	G-27	R61	G-7	R300	K-14	R467	P-16
C51	F-5	C300	L-14	C474	K-20	IC10	J-3	R62	D-7	R301	L-13	R469	G-17
C52	E-6	C301	L-13	C475	P-21	IC50	H-6	R63	F-8	R302	M-13	R470	H-17
C54	Q-5	C302	O-13	C476	P-22	IC102	C-2	R64	I-7	R303	P-12	R471	N-16
C55	F-6	C303	P-14	C477	P-20	IC103	C-8	R65	F-8	R304	L-13	R472	H-17
C56	G-6	C304	M-13	C478	Q-20	IC105	H-11	R66	F-8	R305	P-13	R473	H-19
C57	Q-3	C305	O-14	C480	I-24	IC106	N-11	R67	E-11	R306	P-13	R474	I-18
C58	J-6	C320	H-12	C483	O-23	IC300	M-14	R68	J-3	R307	K-13	R475	H-19
C59	I-7	C321	G-14	C600	L-8	IC320	G-13	R69	E-3	R309	P-15	R476	I-18
C60	F-8	C322	F-12	C601	Q-3	IC403	B-20	R70	E-5	R318	C-13	R477	O-21
C61	G-7	C323	K-14	C602	P-4	IC601	N-7	R71	H-8	R320	P-15	R478	P-20
C62	F-3	C324	J-13	C603	P-5	IC603	P-7	R72	I-2	R321	J-12	R479	M-19
C63	G-4	C325	I-13	C604	P-5	J7	P-2	R73	K-2	R322	I-12	R480	L-15
C64	F-6	C326	K-14	C605	N-6	L10	K-3	R74	F-9	R323	H-17	R481	P-21
C65	H-4	C327	I-14	C606	O-6	L11	K-5	R75(L75)	J-8	R324	G-11	R482	J-24
C66	H-4	C328	F-12	C607	O-6	L13	I-5	R76(L76)	F-8	R325	I-13	R600	L-9
C67	G-4	C329	F-12	C608	O-7	L14	E-11	R77(L77)	F-8	R326	I-13	R601	Q-3
C68	I-3	C330	H-14	C609	O-6	L15	J-4	R78	H-7	R327	J-14	R602	Q-4
C69	J-5	C331	F-14	C610	O-8	L401	F-26	R79	J-7	R329	I-12	R603	Q-3
C70	H-3	C332	G-14	C611	N-3	L403	B-25	R80	E-10	R330	E-13	R604	Q-3
C71	E-7	C333	F-14	C612	M-5	L431	B-17	R81	E-8	R331	E-12	R605	N-3
C72	F-7	C334	N-15	C613	M-6	L432	B-16	R82	E-8	R332	F-13	R606	P-5
C73	K-3	C335	H-13	C614	M-6	L461	N-18	R83	H-8	R333	F-13	R607	O-7
C74	J-6	C400	P-25	C616	N-3	L462	P-17	R86	E-6	R334	H-15	R608	M-8
C102	D-2	C402	M-27	C617	P-6	L463	L-17	R104	B-2	R335	G-14	R610	M-9
C103	B-2	C403	K-27	C618	Q-6	L466	K-20	R105	B-6	R336	O-18	R611	P-4
C104	B-5	C404	K-27	C619	P-7	L600	Q-4	R106	B-3	R337	D-14	R612	M-9
C106	A-3	C405	J-28	C620	Q-7	L602	O-3	R107	B-3	R338	G-13	R613	N-4
C107	B-3	C406	Q-25	C621	O-8	L604	Q-7	R109	B-4	R339	B-14	R614	M-5
C108	C-4	C407	C-26	C622	Q-7	L605	M-6	R110	C-1	R340	Q-12	R615	M-4
C109	C-4	C408	I-26	C623	P-8	L606	M-8	R111	A-5	R400	E-28	R616	M-3
C110	B-7	C409	F-27	C624	P-9	L607	M-4	R112	B-5	R401	N-26	R617	Q-1
C111	B-2	C410	C-23	C625	Q-9	L608	N-8	R113	B-4	R402	A-25	R618	O-9
C112	C-6	C411	B-21	C626	O-2	L609	N-9	R114	C-2	R403	B-24	R619	N-1
C113	B-4	C412	B-21	C627	O-2	L611	Q-8	R115	C-5	R404	D-28	R620	N-1
C114	D-3	C413	D-23	D11	J-6	L612	P-9	R116	D-3	R405	H-28	R621	M-3
C115	C-5	C414	B-25	D12	J-7	Q50	E-6	R117	D-3	R406	F-26	SCR468	I-23
C116	D-2	C415	A-27	D70	F-6	Q52	D-7	R118	D-3	R407	D-27	SF600	O-5
C130	B-7	C416	C-28	D101	C-6	Q54	I-7	R119	B-5	R408	E-24	SW300	O-13
C131	C-9	C417	H-27	D102	C-6	Q107	D-1	R120	D-6	R409	B-23	T400	P-27
C132	D-8	C418	H-27	D170	J-9	Q110	D-5	R121	B-6	R410	A-22	T402	G-23
C133	C-7	C419	I-27	D300	N-15	Q321	C-14	R123	B-13	R411	C-21	T460	F-16
C134	D-10	C420	D-21	D308	M-13	Q400	G-27	R124	E-1	R412	B-22	T465	M-25
C135	B-9	C421	E-18	D400	M-28	Q401	A-23	R125	E-1	R413	B-22	TP4	O-15
C136	B-12	C422	C-27	D401	K-28	Q402	A-23	R126	A-4	R414	B-21	TP325	G-11
C137	B-12	C423	B-23	D402	K-26	Q430	A-15	R127	C-1	R415	B-22	TP510	I-6
C138	A-11	C429	H-20	D403	J-27	Q461	E-16	R130	B-11	R416	C-22	TP601	M-1
C139	E-8	C430	H-20	D405	D-27	Q462	N-19	R131	A-11	R417	K-26	TP602	O-1
C140	C-10	C431	E-18	D406	I-27	Q463	I-18	R132	A-12	R419	D-21	TP614	N-5
C141	D-9	C432	F-19	D408	C-22	Q464	J-19	R133	C-12	R420	B-25	Y50	G-4
C142	B-10	C433	D-18	D409	C-23	Q600	P-3	R134	B-10	R421	B-22	Y601	M-4
C143	C-11	C434	F-20	D411	D-23	Q602	M-3	R135	D-11	R428	C-17	Z320	C-14
C144	B-8	C435	C-19	D412	E-25	Q604	Q-5	R136	D-11	R429	P-15	Z404	A-25
C145	C-8	C436	D-18	D429	E-19	R10	L-2	R137	D-10	R430	F-18	Z407	C-23
C146	K-9	C437	C-21	D430	G-20	R11	L-2	R138	E-9	R431	E-15	Z410	B-22
C147	Q-10	C438	B-16	D431	F-18	R12	K-3	R139	A-10	R432	E-20	Z436	A-16
C161	H-10	C439	A-13	D432	D-19	R13	K-6	R140	B-11	R433	D-20	Z465	P-16
C162	L-10	C440	A-13	D433	B-19	R14	K-5	R141	B-9	R434	C-19	Z466	I-11
C163	K-9	C441	D-19	D434	B-16	R15	K-4	R142	B-8	R435	B-18	Z467	I-22
C164	J-9	C442	B-19	D435	B-18	R16	K-4	R143	A-10	R436	A-19		
C165	M-10	C443	B-18	D461	N-20	R21	I-6	R144	D-10	R437	B-14		
C166	I-10	C460	D-17	D462	M-20	R22	I-4	R145	C-9	R438	B-19		
C167	N-10	C461	D-16	D463	P-21	R50	E-4	R161	I-10	R439	C-13		
C168	K-10	C462	E-16	D464	P-19	R51	E-5	R162	N-11	R440	B-13		
C169	O-10	C463	M-20	D469	J-22	R52	E-5	R163	J-11	R442	C-12		

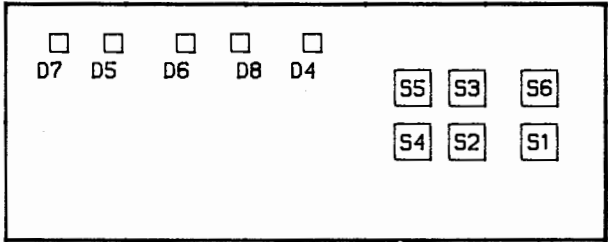


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19C601,20C602/03/05/08/09

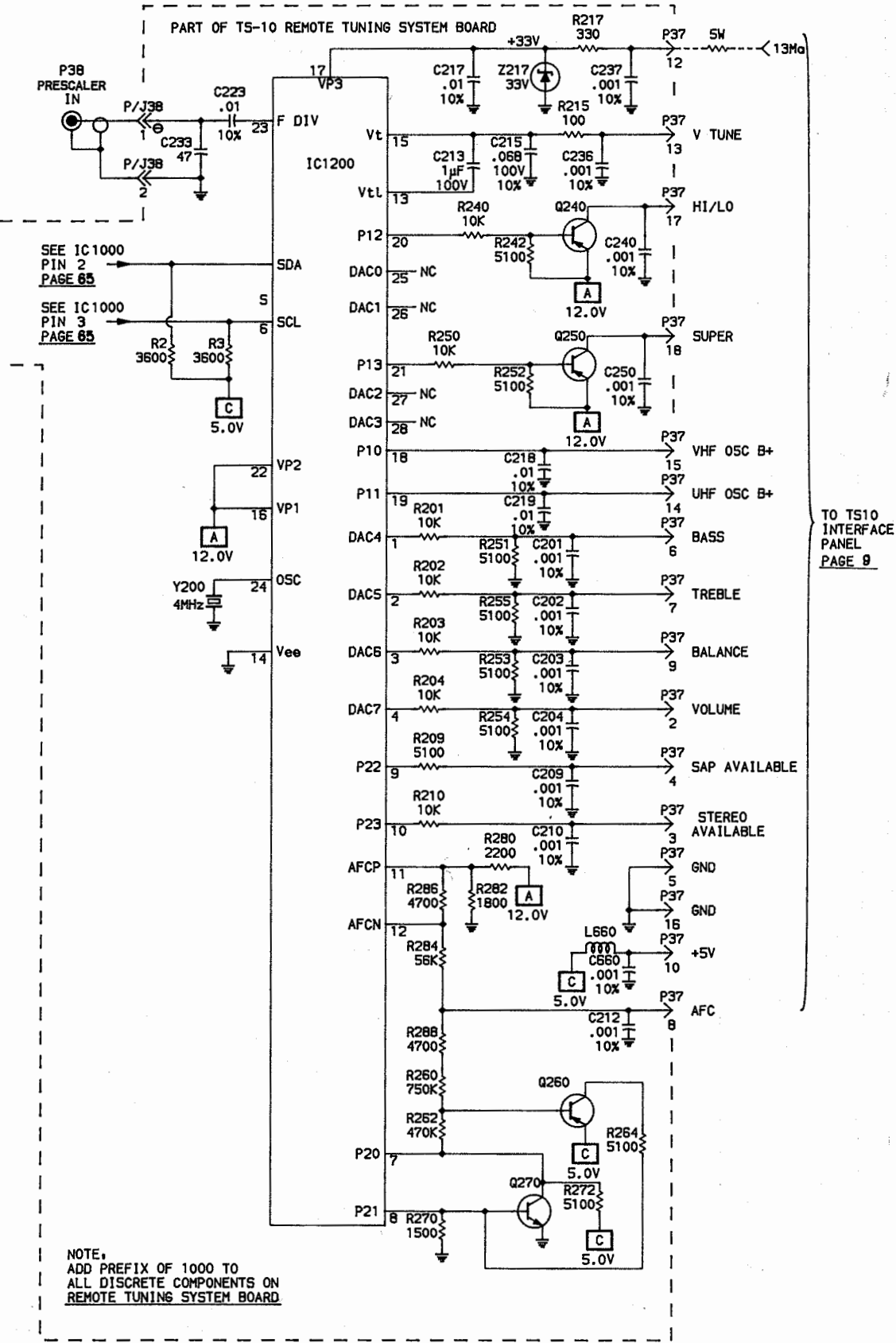
FOLDER 2



STEREO/SAP INDICATOR MODULE - ALD026-A001

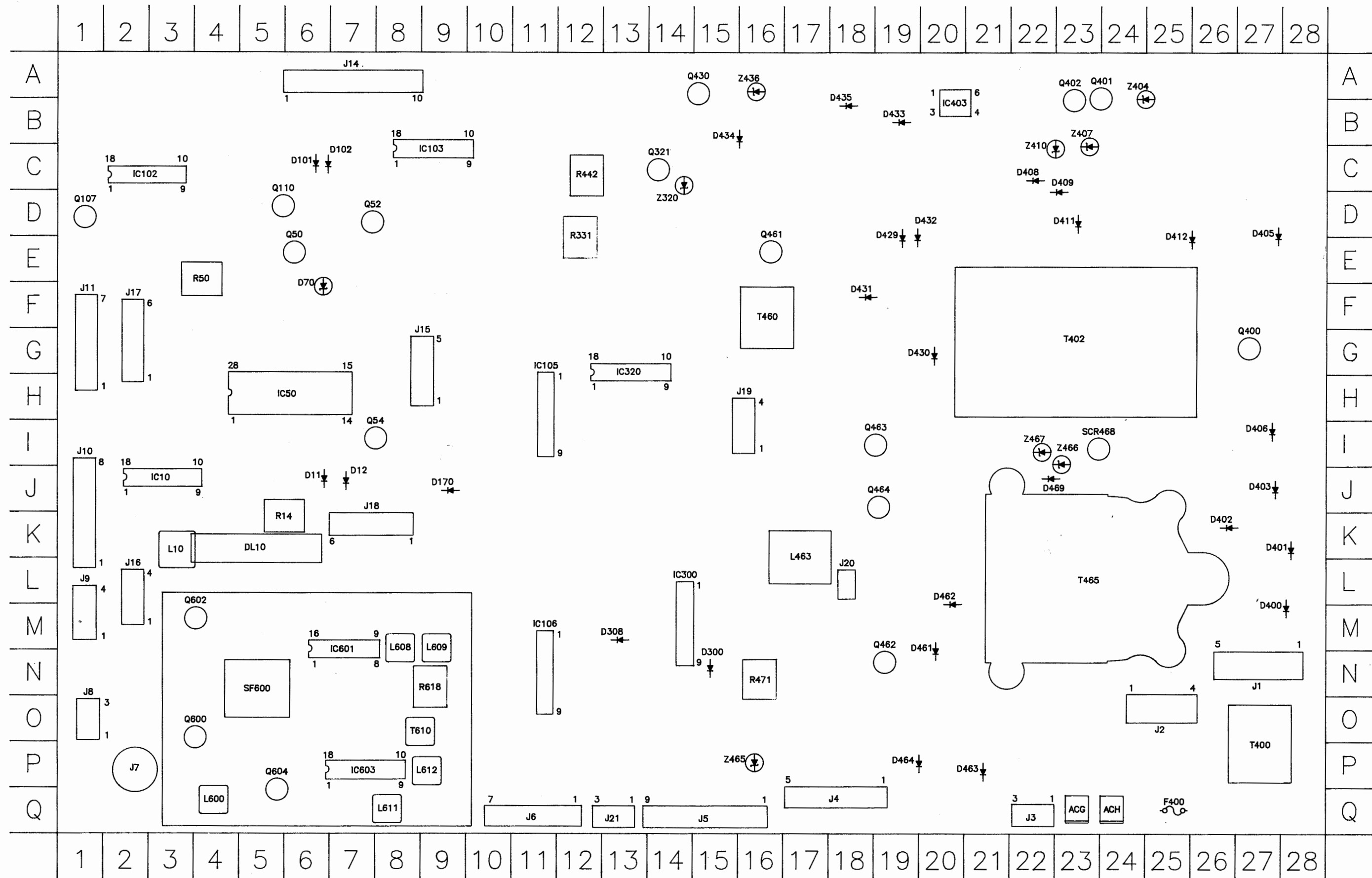


DISPLAY MODULE - ADP008-B002



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TS-10 TUNING SYSTEM
BOARD-A10180-D004



SYLVANIA CHASSIS
19C601, 20C602/03/05/08/09

FOLDER 2

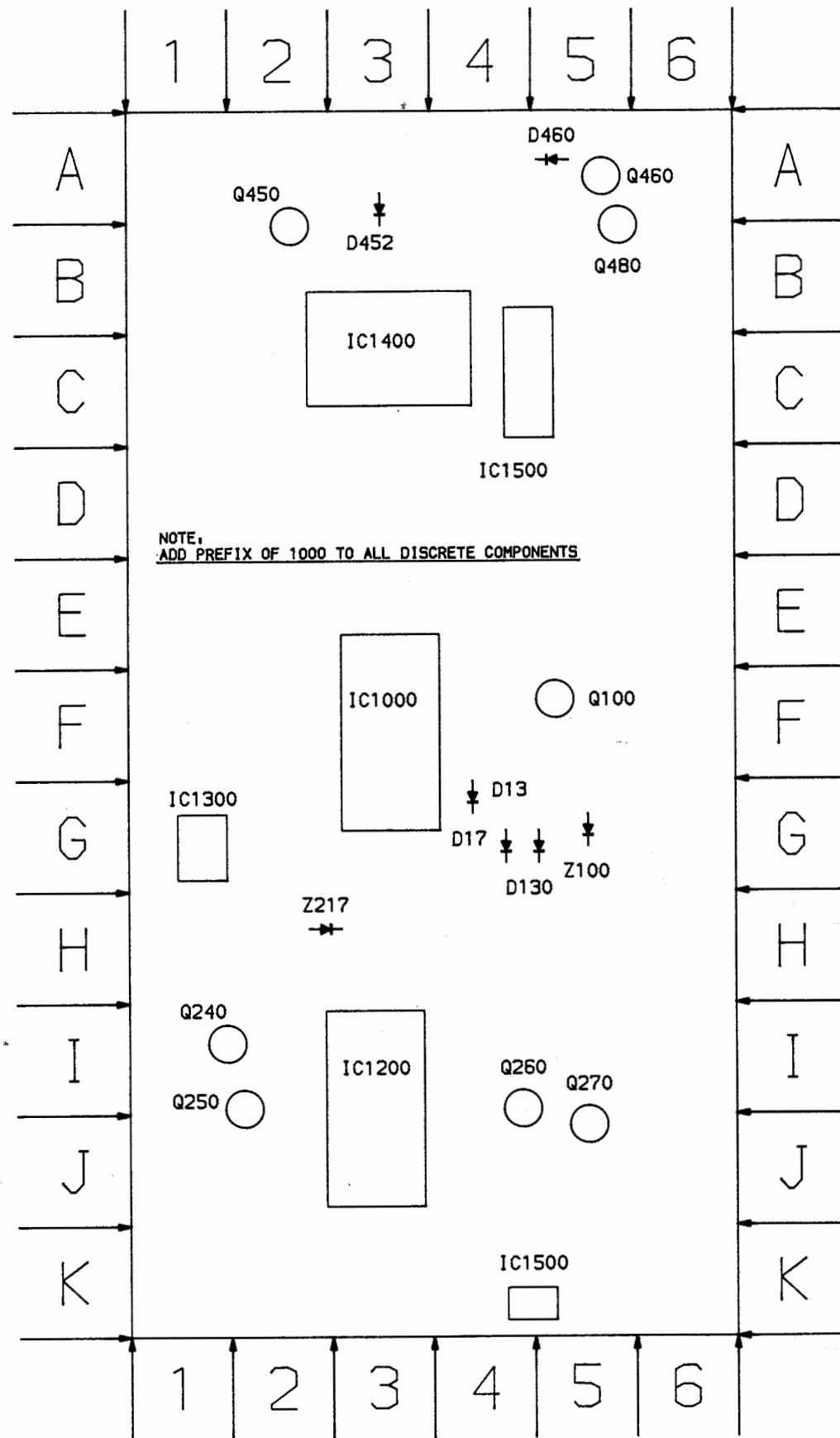
MAIN BOARD-EMC607-D004, E005/
EMC611-C003/EMC613-C003

A Howard W. Sams GRIDTRACE™ Photo

MAIN BOARD-EMC607-D004, E005/
EMC611-C003/EMC613-C003

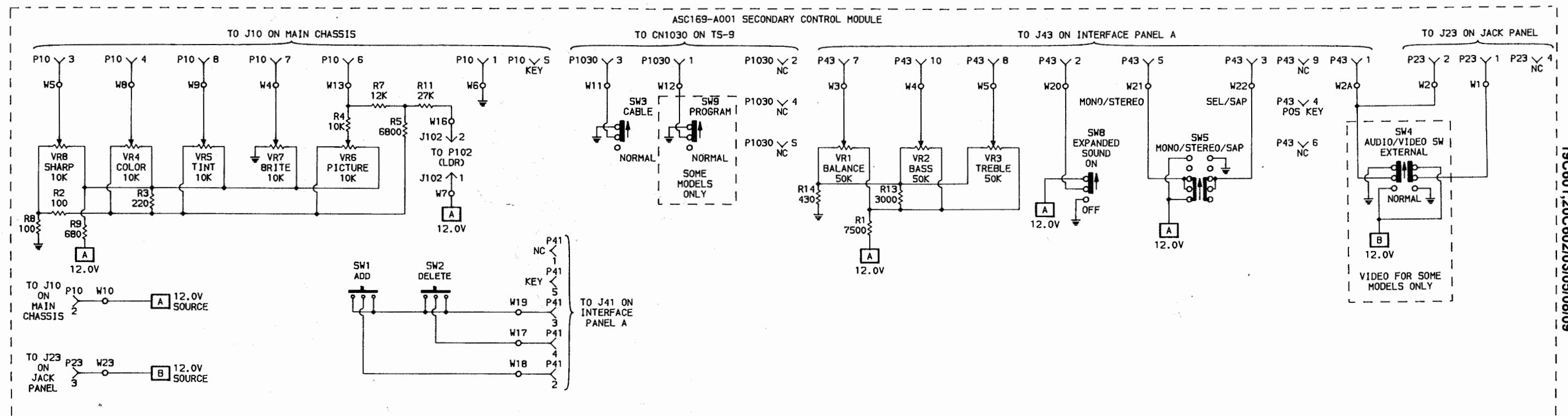


15



TS-10 TUNING SYSTEM BOARD-A10180-D004 -GridTrace LOCATION GUIDE

C1001	E-6	D1130	G-4	R1253	J-4
C1005	A-1	D1452	B-3	R1254	J-4
C1006	D-1	D1460	A-4	R1255	J-4
C1007	E-1	IC1000	G-3	R1260	I-5
C1008	E-1	IC1200	J-3	R1262	I-5
C1009	D-1	IC1300	G-1	R1264	I-5
C1010	D-1	IC1400	B-4	R1270	J-5
C1011	D-1	IC1500	B-4	R1272	J-4
C1012	H-1	IC1600	K-4	R1280	H-5
C1013	E-5	J26	F-1	R1282	H-6
C1015	E-3	J28	I-1	R1284	I-6
C1016	E-3	J50	C-1	R1286	I-5
C1018	F-1	J53	B-1	R1288	I-5
C1019	E-1	L1034	H-1	R1415	C-2
C1020	E-1	L1090	J-1	R1450	A-6
C1021	F-1	L1560	B-6	R1452	A-2
C1022	F-1	L1570	C-5	R1454	B-2
C1023	F-1	L1574	C-6	R1470	A-6
C1025	B-1	L1580	D-5	R1474	B-6
C1028	G-2	L1584	D-6	R1475	A-6
C1029	G-2	L1590	E-5	R1482	A-3
C1034	G-1	L1594	E-5	R1520	D-5
C1046	C-1	L1614	E-4	R1521	D-5
C1048	B-1	L1660	H-6	R1522	C-5
C1052	B-1	P37	K-6	R1528	A-4
C1053	A-1	P38	K-2	R1574	B-6
C1066	E-6	Q1100	F-5	R1584	C-6
C1090	I-1	Q1240	I-2	R1594	C-6
C1130	H-5	Q1250	J-2	TP24	C-3
C1157	B-4	Q1260	J-4	TP25	C-3
C1201	J-6	Q1270	J-5	Y1000	G-3
C1202	J-6	Q1450	A-2	Y1200	K-6
C1203	I-6	Q1460	A-5	Y1400	C-2
C1204	K-6	Q1480	B-5	Z1100	G-5
C1209	J-6	R1001	G-4	Z1217	H-12
C1210	J-6	R1002	J-4		
C1212	I-6	R1003	J-4		
C1213	H-3	R1004	G-4		
C1215	H-2	R1005	D-3		
C1216	I-2	R1006	D-3		
C1217	H-2	R1007	E-1		
C1218	F-6	R1008	E-1		
C1219	F-6	R1009	E-1		
C1222	G-6	R1010	D-2		
C1223	J-2	R1011	D-2		
C1233	K-2	R1012	H-1		
C1237	G-6	R1013	F-4		
C1240	F-6	R1015	E-3		
C1250	F-6	R1018	F-2		
C1415	B-2	R1019	F-2		
C1416	B-2	R1020	F-2		
C1428	B-2	R1021	F-2		
C1450	B-6	R1022	F-2		
C1470	B-6	R1023	G-2		
C1526	B-6	R1025	D-2		
C1560	B-5	R1052	B-1		
C1570	C-5	R1053	A-1		
C1572	C-5	R1130	G-5		
C1574	B-6	R1131	G-5		
C1580	D-5	R1132	F-4		
C1582	D-6	R1201	J-4		
C1584	D-6	R1202	J-4		
C1590	E-5	R1203	J-4		
C1592	E-5	R1204	J-4		
C1594	E-6	R1209	K-4		
C1602	K-5	R1210	K-4		
C1604	K-6	R1215	H-3		
C1606	K-3	R1217	H-3		
C1608	K-3	R1240	I-2		
C1612	E-4	R1242	I-2		
C1660	I-6	R1250	I-2		
D1013	G-4	R1251	J-5		
D1017	G-4	R1252	J-2		



SYLVANIA CHASSIS
19C601, 20C602/03/05/08/09

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IC1200 CITAC			
1	DAC 4	DAC 3	28
2	DAC 5	DAC 2	27
3	DAC 6	DAC 1	26
4	DAC 7	DAC 0	25
5	SDA	OSC	24
6	SCL	F DIV	23
7	P20	VP 2	22
8	P21	P13	21
9	P22	P12	20
10	P23	P11	19
11	AFCP	P10	18
12	AFCN	VP 3	17
13	Vt1	VP 1	16
14	VEE	Vt	15

IC1000 MICRO			
1	P22		28
2	SDA	P21	27
3	SCL	P20	26
4	P00	P17	25
5	P01	P16	24
6	P02	P15	23
7	P03	P14	22
8	P04	P13	21
9	P05	P12	20
10	P06	P11	19
11	P07	P10	18
12	INT	R	17
13	T1	XTL 2	16
14	VSS	XTL 1	15

IC1 TRANSMITTER			
1	X7	VDD	28
2	SSM	X6	27
3	Z0	X5	26
4	Z1	X4	25
5	Z2	X3	24
6	Z3	X2	23
7	NDATA	X1	22
8	DATA	X0	21
9	DR7	TP1	20
10	DR6	TP2	19
11	DR5	OSC	18
12	DR4	DR0	17
13	DR3	DR1	16
14	VSS	DR2	15

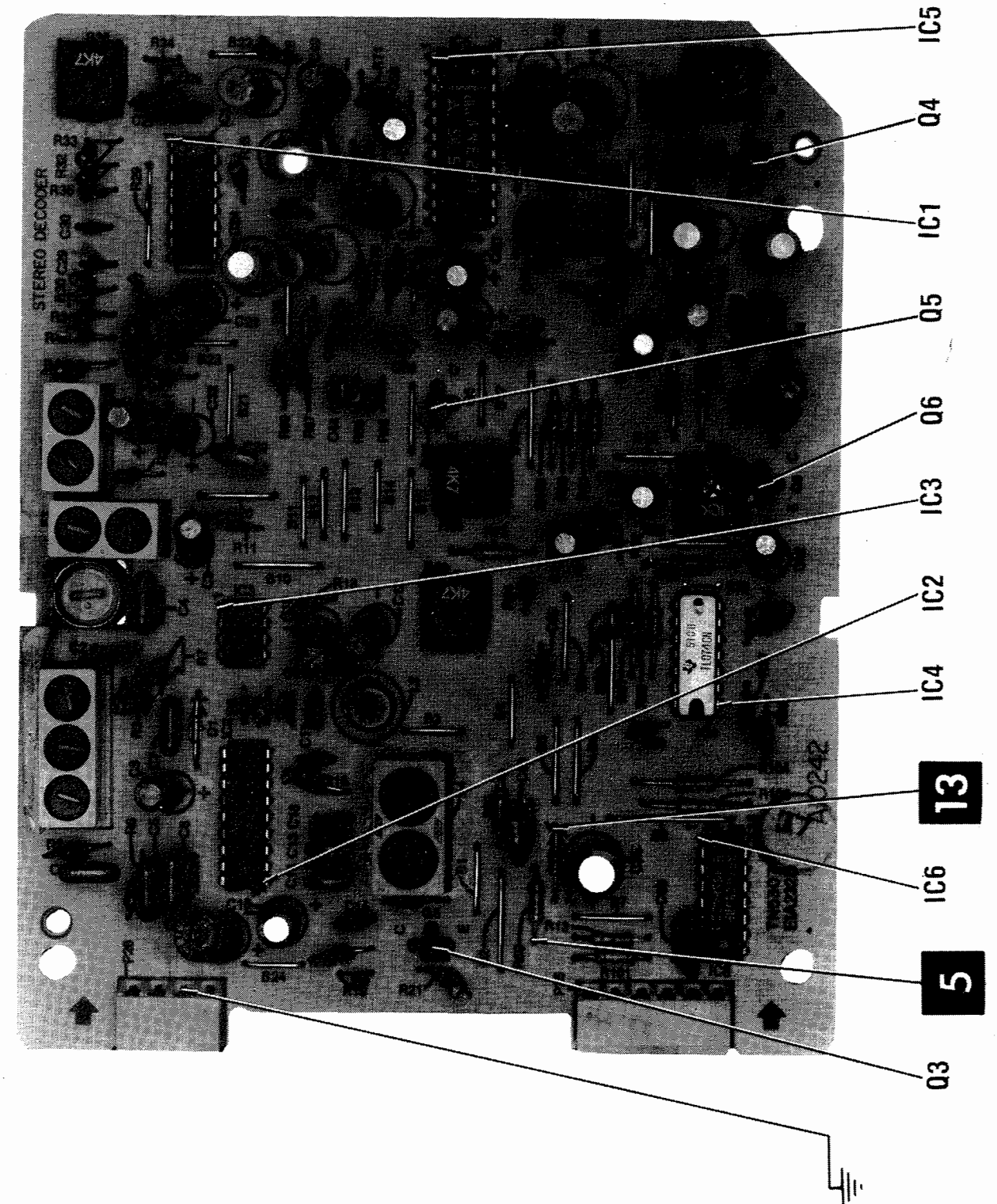
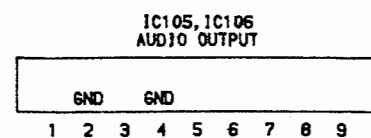
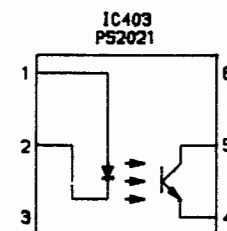
IC1400 MICRO			
1	P22	VCC	28
2	SDA	P21	27
3	CLK	P20	26
4	P00	P17	25
5	P01	P15	24
6	P02	P16	23
7	P03	P14	22
8	P04	P13	21
9	P05	P12	20
10	P06	P11	19
11	P07	P10	18
12	INT	RESET	17
13	T1	XTAL 2	16
14	VSS	XTAL 1	15

IC1500 GRAPHICS GEN/MATRIX			
1	VSS	OSC 2	28
2	DA0	OSC 1	27
3	DA1	VDD	26
4	DA2	V SYNC	25
5	DA3	H SYNC	24
6	DA4	VOB	23
7	DA5	VO2	22
8	DA6	VO1	21
9	D00	V00	20
10	D01	DA9	19
11	D02	DA8	18
12	LD1	DA7	17
13	ADM	TST	16
14	D03	VDD	15

IC1300	
1	CE
2	CLK
3	D1
4	D0
5	GND
6	
7	
8	VCC

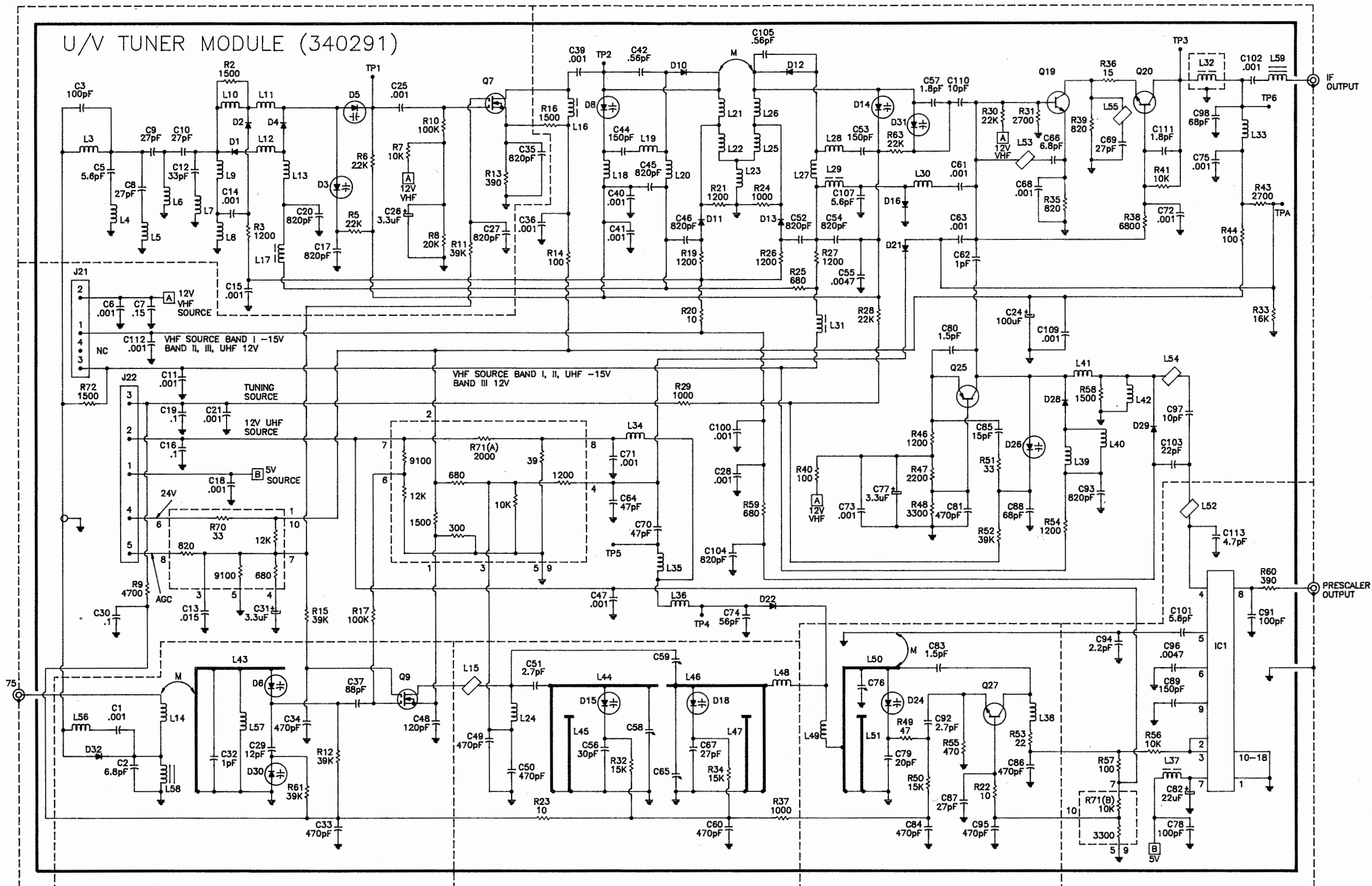
IC1100 DISPLAY	
1	GND
2	
3	
4	
5	
6	
7	
8	

IC1 TRANSMITTER			
1	X0	VDD	16
2	X1	Y0	15
3	X2	Y1	14
4	X3	Y2	13
5	DATA	Y3	12
6	INH	SL	11
7	OSO	OS2	10
8	VSS	OS1	9



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

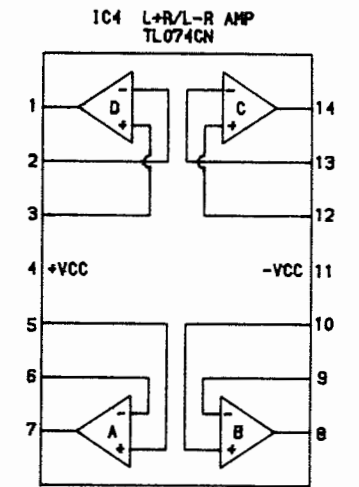
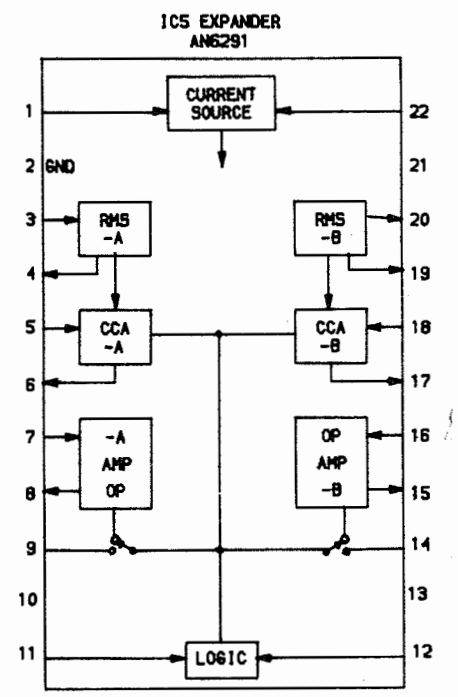
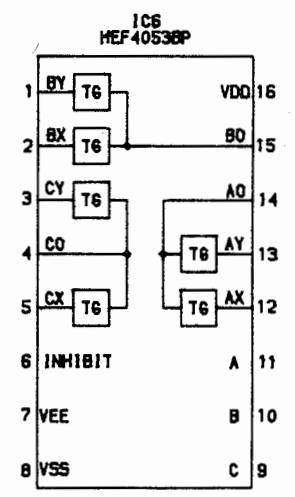
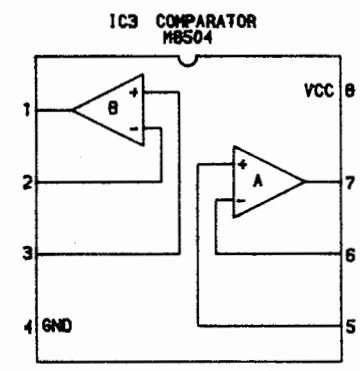
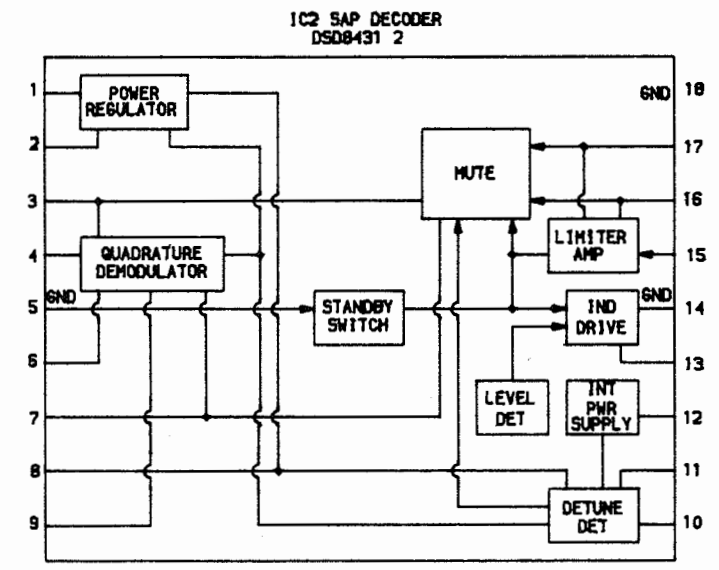
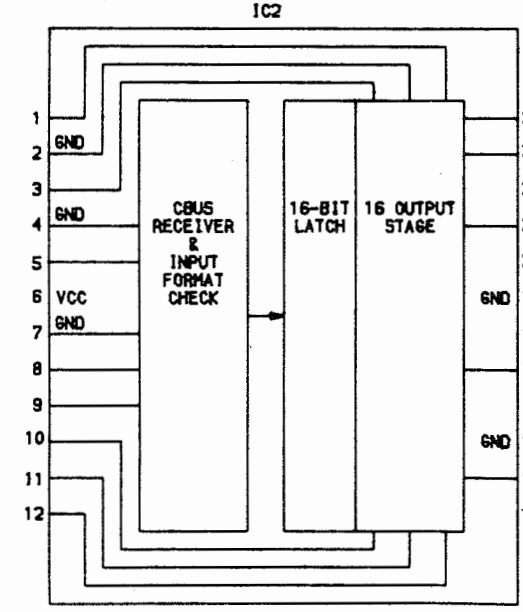
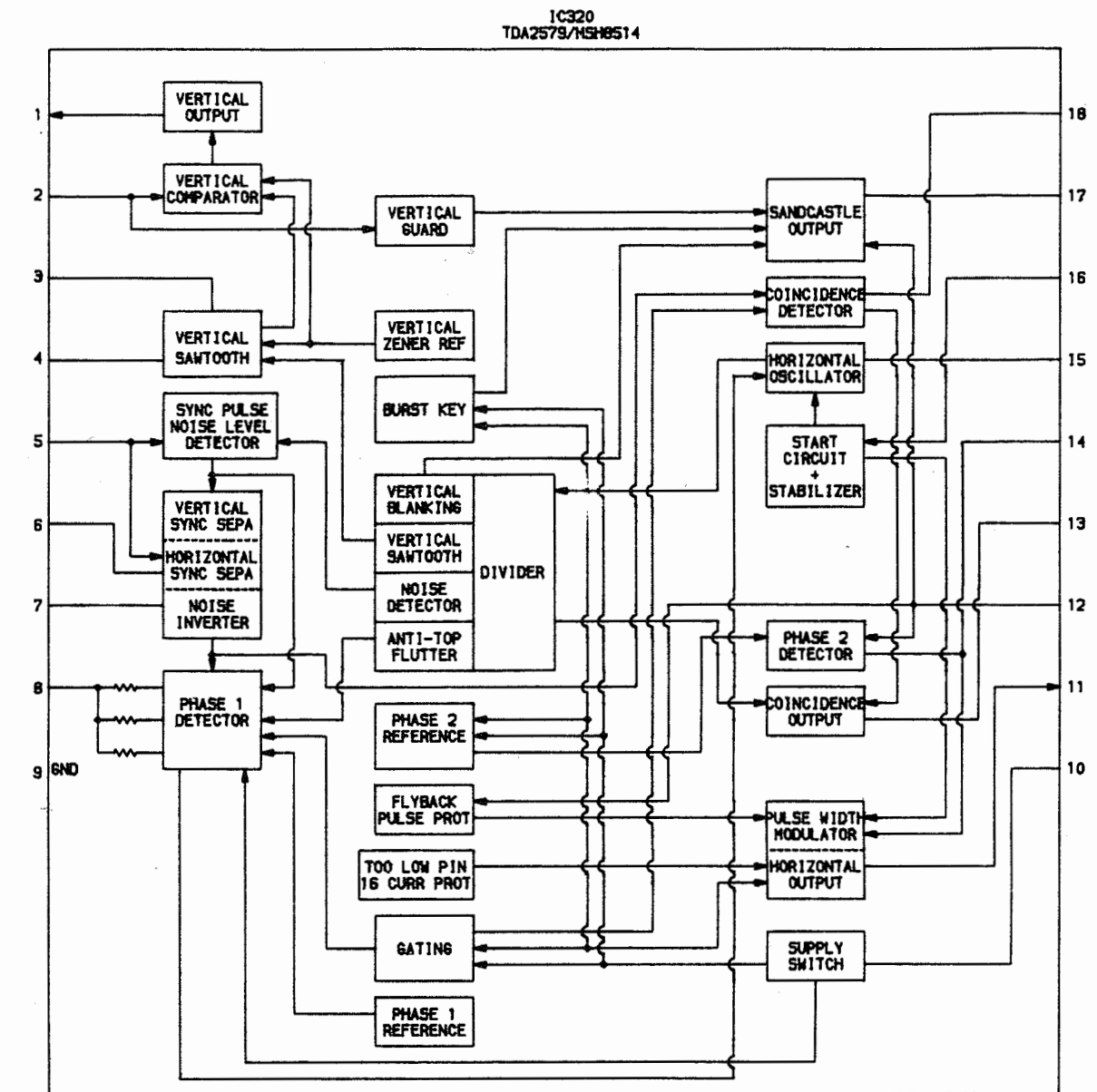
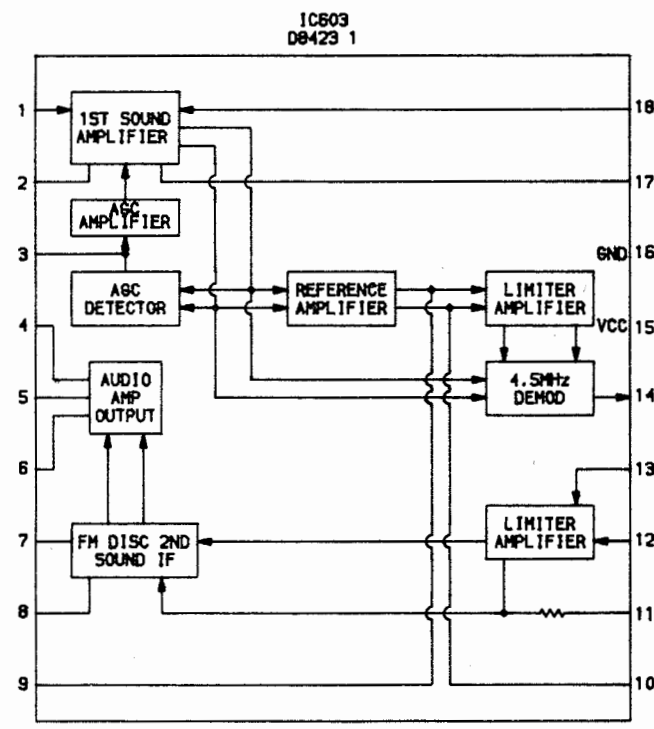
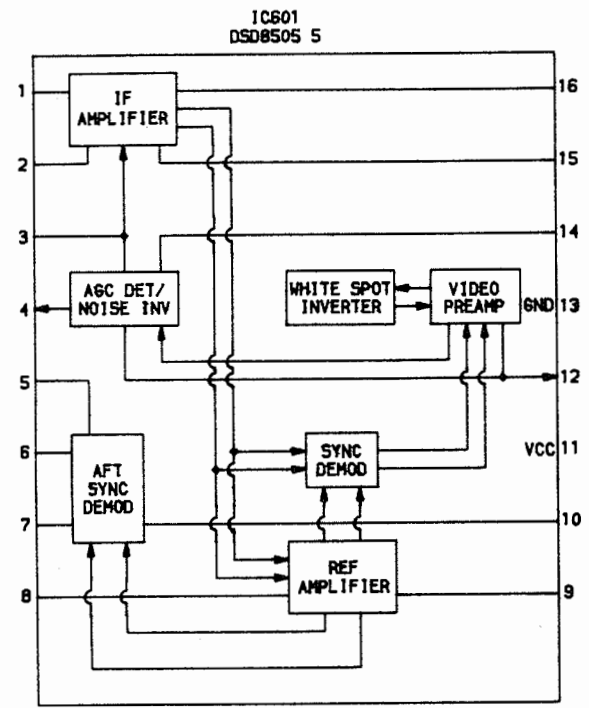
U/V TUNER MODULE (340291)

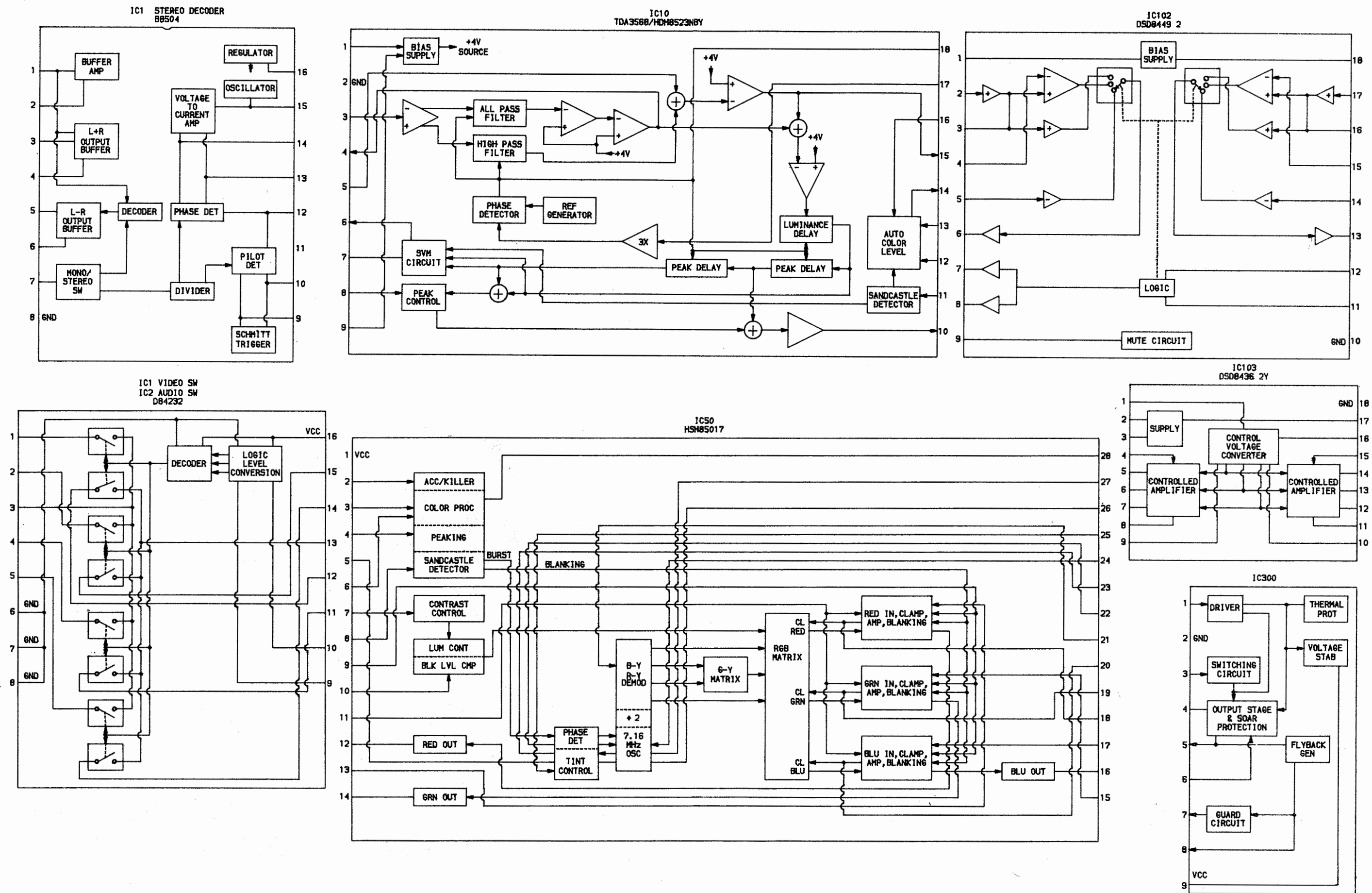


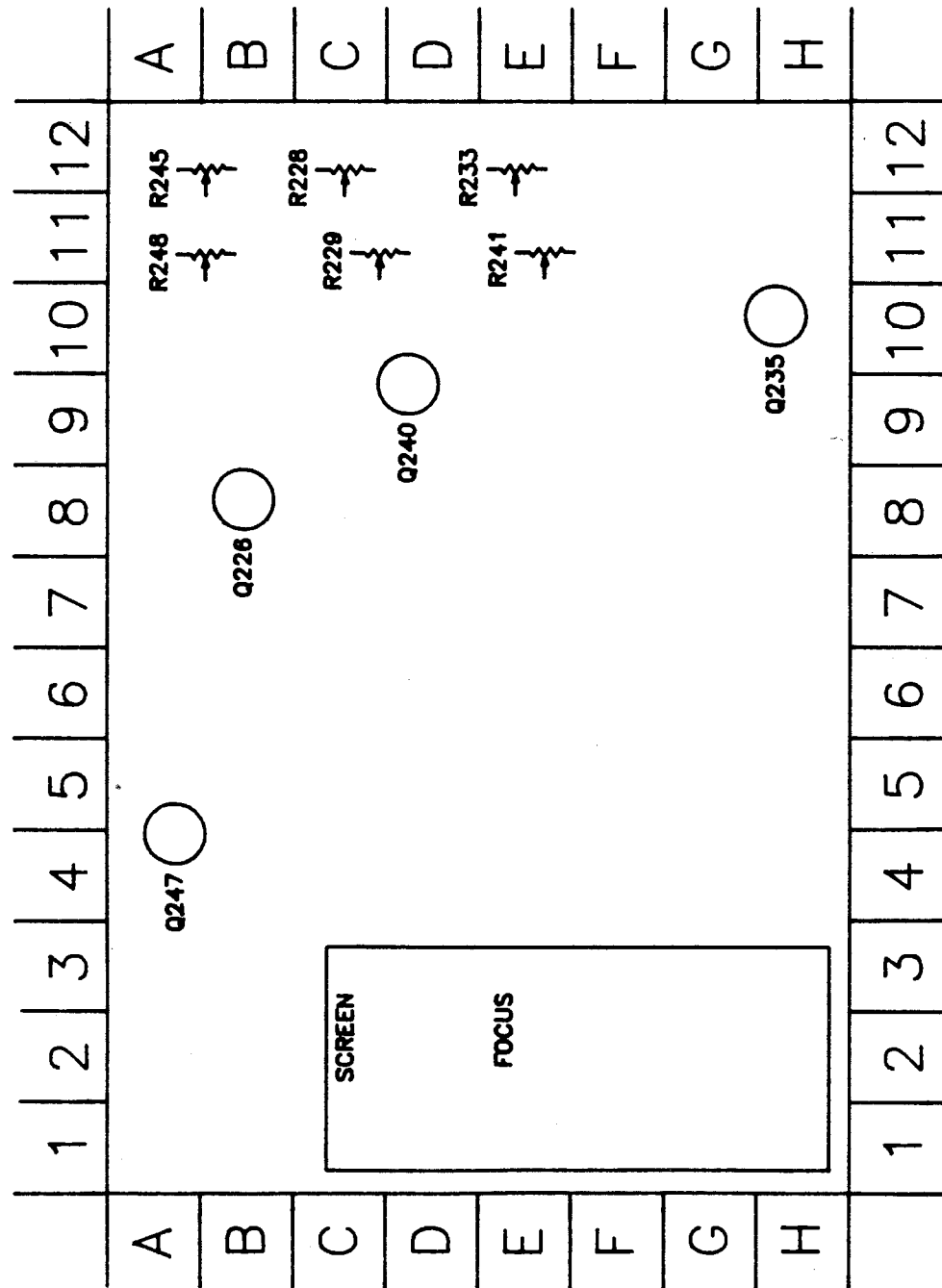
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UHF/VHF TUNER-3402910001





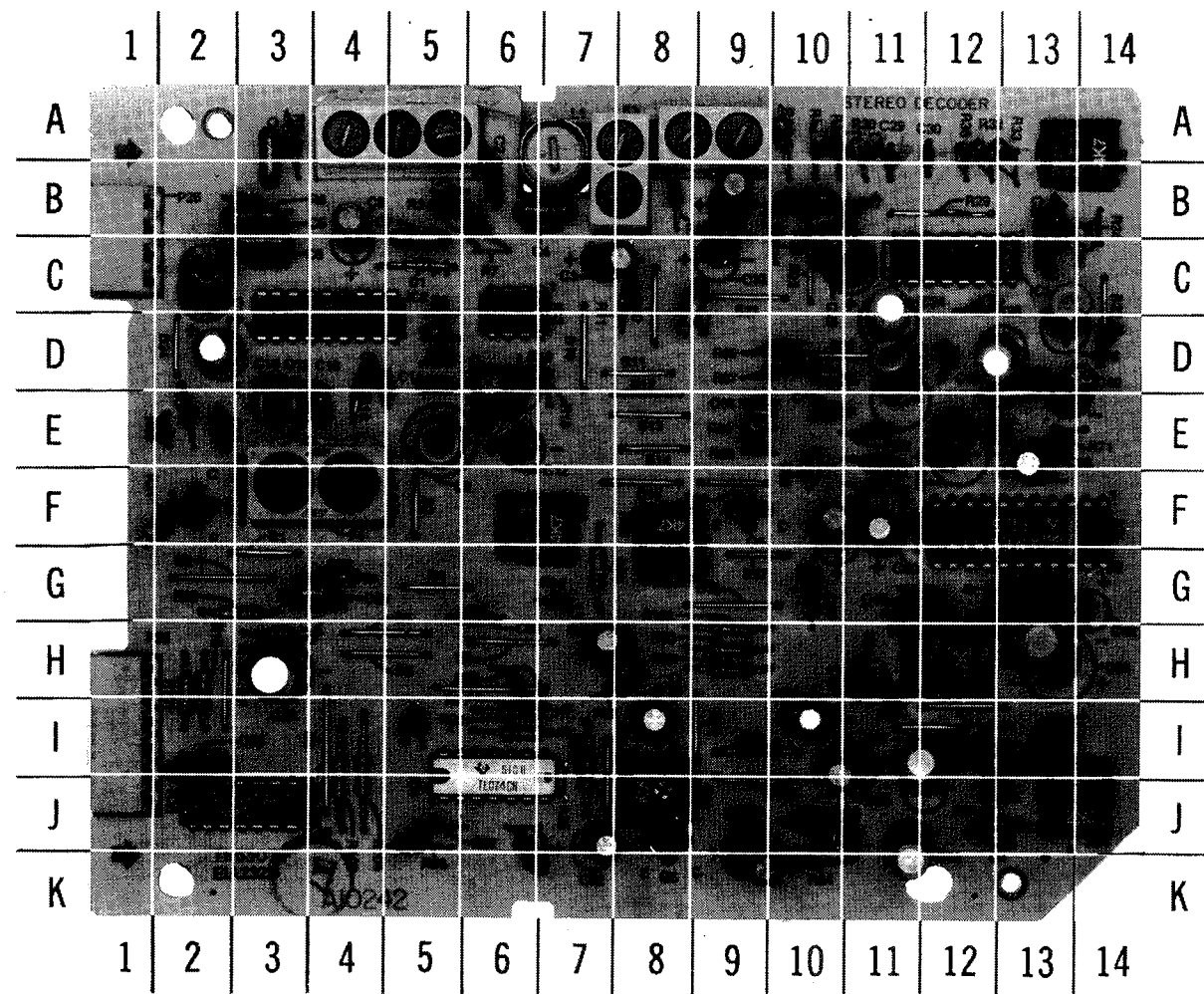


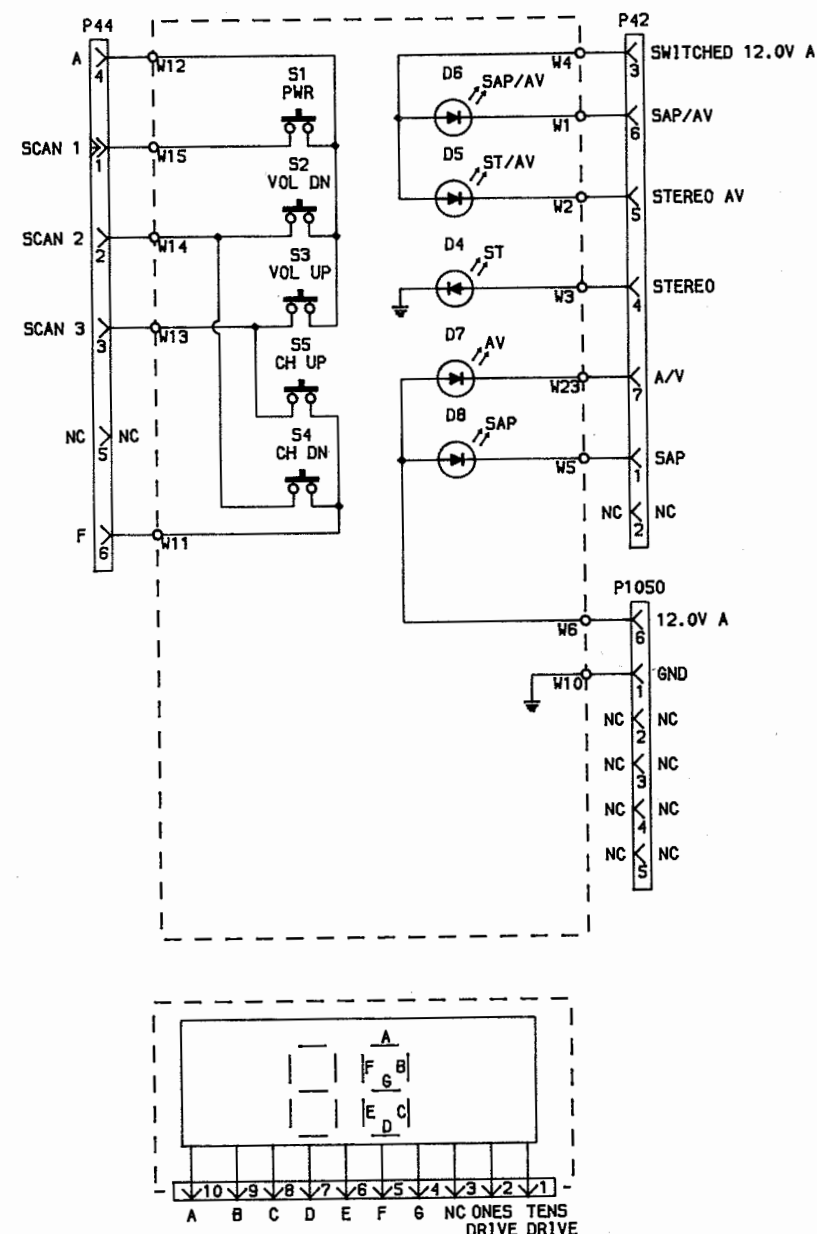
CRT SOCKET BOARD -
APT025-A001 -
GridTrace LOCATION
GUIDE

C225	H-7
C231	D-10
C243	F-9
C250	B-10
C255	B-2
L260	G-7
Q226	B-8
Q235	H-10
Q240	D-9
Q247	B-5
R223	F-9
R224	G-9
R225	H-6
R226	B-6
R228	C-12
R229	C-11
R230	C-10
R231	D-10
R232	C-9
R233	E-12
R234	F-10
R235	F-10
R236	F-9
R240	C-9
R241	E-11
R242	E-10
R243	E-9
R244	E-9
R245	B-12
R247	A-3
R248	B-11
R249	A-10
R250	B-9
R251	B-10
R255	D-10
R260	E-8
R261	B-7
R262	D-8
R263	B-4
R264	D-4

STEREO DECODER MODULE - A10242-D004 - GridTrace LOCATION GUIDE

C1	A-3	C35	H-3	C69	D-14	R18	D-7	R69	D-10
C2	B-6	C36	I-11	C70	B-11	R19	E-2	R70	E-13
C3	C-7	C37	I-13	D1	C-5	R20	F-3	R71	E-13
C4	B-7	C38	J-11	F1	A-5	R21	F-2	R72	G-11
C5	B-3	C39	I-12	F2	A-9	R23	H-8	R73	G-13
C6	C-3	C40	J-10	F3	A-8	R26	J-8	R74	J-14
C7	B-5	C41	H-7	F4	F-3	R27	D-12	R75	G-7
C8	B-4	C42	G-13	IC1	C-12	R28	C-12	R76	E-11
C9	E-6	C43	D-10	IC2	D-4	R30	A-11	R77	E-11
C10	D-4	C44	E-9	IC3	C-6	R31	A-10	R78	F-11
C11	D-5	C45	G-10	IC4	J-6	R32	A-12	R79	F-12
C12	E-6	C46	G-12	IC5	F-13	R33	A-13	R80	H-9
C13	E-3	C47	D-11	IC6	J-3	R34	B-14	R81	H-9
C14	E-3	C48	D-13	L1	A-7	R35	A-14	R82	H-11
C15	E-2	C49	D-14	L2	E-5	R36	A-12	R83	H-12
C16	D-2	C50	H-11	Q3	F-2	R37	A-10	R84	G-7
C17	C-2	C51	G-13	Q4	J-13	R38	B-8	R85	H-6
C18	E-4	C52	I-10	Q5	F-9	R39	B-10	R90	I-5
C19	D-6	C54	F-10	Q6	J-8	R40	A-10	R91	I-6
C20	I-8	C55	G-6	R2	A-3	R50	F-7	R92	I-7
C22	C-11	C56	E-13	R3	B-5	R58	F-8	R93	I-6
C23	C-9	C57	E-12	R5	B-5	R59	G-3	R94	J-6
C24	C-11	C58	E-10	R6	B-3	R60	J-12	R95	G-4
C25	D-13	C59	E-10	R7	B-6	R61	J-13	R96	J-5
C26	B-13	C60	F-11	R8	C-5	R62	I-12		
C27	B-13	C61	K-9	R9	D-5	R63	I-12		
C28	C-13	C62	J-7	R11	C-8	R64	K-10		
C29	A-11	C63	I-2	R13	H-2	R65	J-10		
C30	A-12	C66	G-4	R15	D-5	R66	E-9		
C31	B-9	C67	B-10	R16	D-4	R67	D-10		
C32	B-9	C68	H-13	R17	E-2	R68	E-9		





DISPLAY MODULE - ADP008-B002

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 (T465). Refer to "Troubleshooting" Power Supply and Horizontal circuits.

NO PIC, NO SOUND, HAS RASTER: Check IF-AGC and source voltages from Horizontal Output Transformer (T465). Refer to "Troubleshooting" IF-AGC and Horizontal circuits.

NO PIC, HAS SOUND, NO RASTER: Check Horizontal Output Transformer (T465) 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 (T465). 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.

TEST JIG HOOKUP

FUNCTION	Chek-A-Color ADAPTER NO.	RCA / TeleMatic ADAPTER NO.	
CRT YOKE YOKE SETTING	B239 YP1 Focus Tap	10J683 10J761 Horiz 1.9, Vert 8 FVS-3950 Focus Voltage Supply	

TROUBLESHOOTING

POWER SUPPLY

Check the AC Fuse (F400) and Thermistor (R400). If F400 is open, check Capacitors C400 thru C403 and C405, and Diodes D400 thru D403. If R400 is open, check Switch Mode Transformer (T402), Duty Cycle Control Transistor, (Q402), Switch Mode Regulator (Q400), and horizontal Output Transistor (Q462). Apply 120V AC, depress the Power Switch and check for 160V* at the cathode of D401. If this voltage is missing, check Transformer T901, Relay RL901, Relay Drive Transistors (Q901, Q902) and associated components. Check the voltages and components associated with pins 1, 11, 18, 28 of Microprocessor IC (IC1000) and Regulator IC (IC1600). If 160V* is present at the cathode of D401, check for 130V at TP4, 33V at the cathode of Diode D433, 23V at the cathode of D432, 12V at the cathode of Diode D435 and 8.8V at the collector of Start Up Transistor (Q321). If none of these voltages are present, check the voltages, waveforms and components associated with Differential Transistor (Q430), Transformer T402, Transistor Q400, Duty Cycle Control Transistors (Q401, Q402), IC403 and Transistor Q462. If the proper voltage is present at TP4 and all sources fed by Transformer T402, refer to the "Horizontal" section of this Troubleshooting guide. If the voltage on the collector of Q400 is 177V* and a very high frequency sound comes from the set, the TV may be in shutdown, refer to the "Horizontal" and "High Voltage Shutdown" sections of this Troubleshooting guide. The above described condition may also be produced by a defect in the Power Supply.

*With respect to isolated ground.

HORIZONTAL

Determine if the TV is in shutdown, refer to the "High Voltage Shutdown" section of this Troubleshooting guide. If the TV is not in shutdown, inject a horizontal signal at the base of the Horizontal Output Transistor (Q462). If there is horizontal deflection,

check the voltages, waveforms and components associated with pins 10 thru 18 of Sweep Processor (IC320) and Horizontal Driver Transistor (Q461). If there is no horizontal sweep, check the voltages, waveforms and components associated with Transistor Q462 and Horizontal Output Transformer (T465). Check Rectifier Diodes D463, D464, D469 and associated components for defects. The High Voltage Rectifier is part of Transformer T465 and if defective, it will affect the performance of the horizontal circuits. Horizontal linearity or width problems may be caused by Transistors Q463, Q464, Coil L463 and associated components being defective.

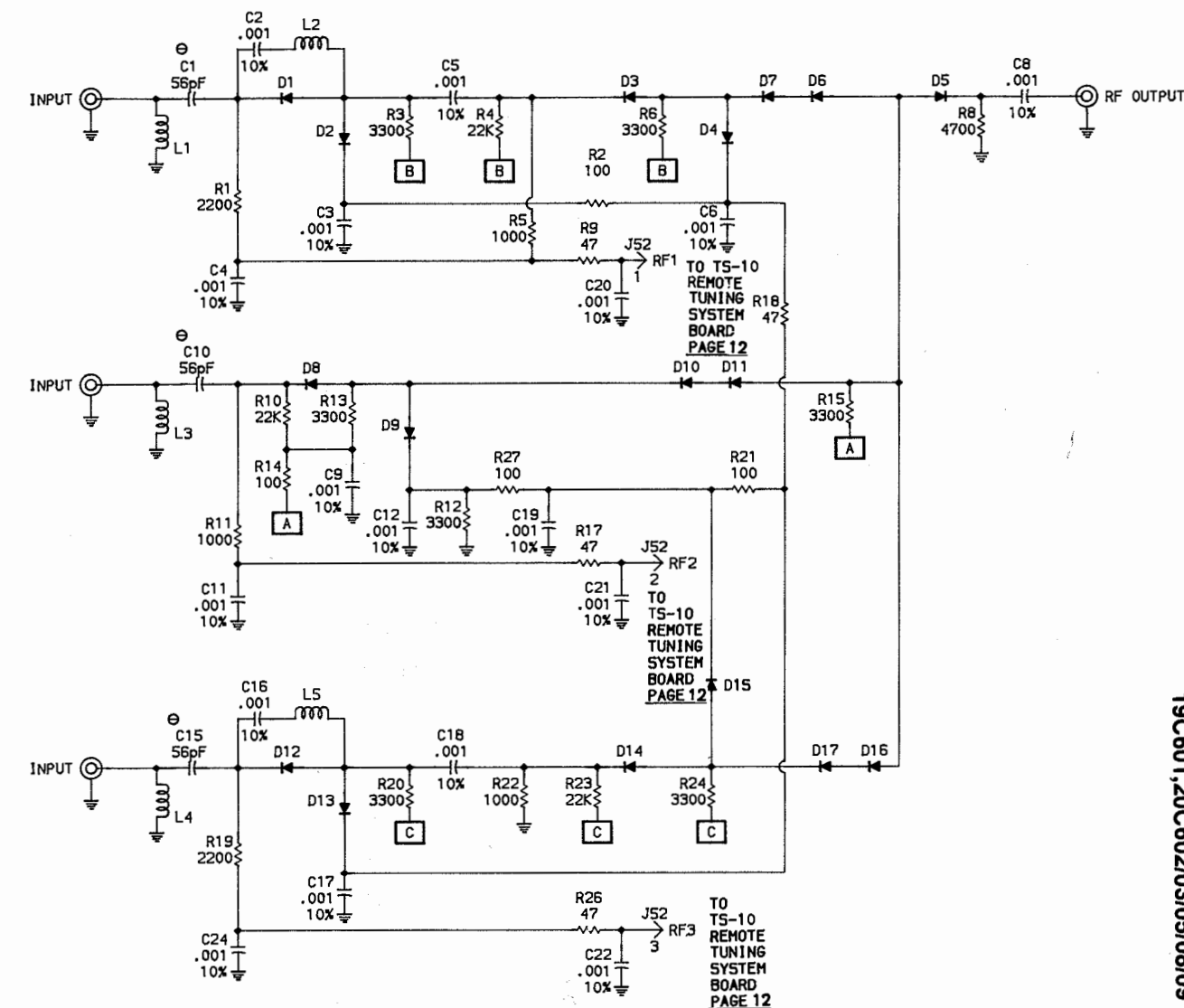
HIGH VOLTAGE SHUTDOWN

The high voltage is monitored by Diode D469 rectifying pulses from the Horizontal Output Transformer (T465). Should the high voltage increase, the rectified voltage at the cathode of D469 will also increase and trigger Zener Diode (Z466, Z467) into conduction. This action turns on SCR468 which shuts down the set. To troubleshoot, remove D469 from the set, disconnect the HV lead and check for 130V at the collector of Transistor Q462. If this voltage is greater than 130V, refer to the "Power Supply" section of Troubleshooting guide. If the voltage on the collector of Q462 is 130V, check the voltages and components associated with Diodes Z466, Z467, D469 and SCR468 and Transformer T465.

NOTE: Care should be taken in defeating the High Voltage Shutdown circuit as this may cause excessive X-ray radiation from and damage to the CRT, Transformer T465 and associated components. Monitor the high voltage and troubleshoot.

Voltages taken in shutdown

SCR468	TP4
K 0V	0V
G .70V	
A 0V	



A PHOTOFAC STANDARD NOTATION SCHEMATIC
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19C601, 20C602/03/05/08/09

FOLDER 2

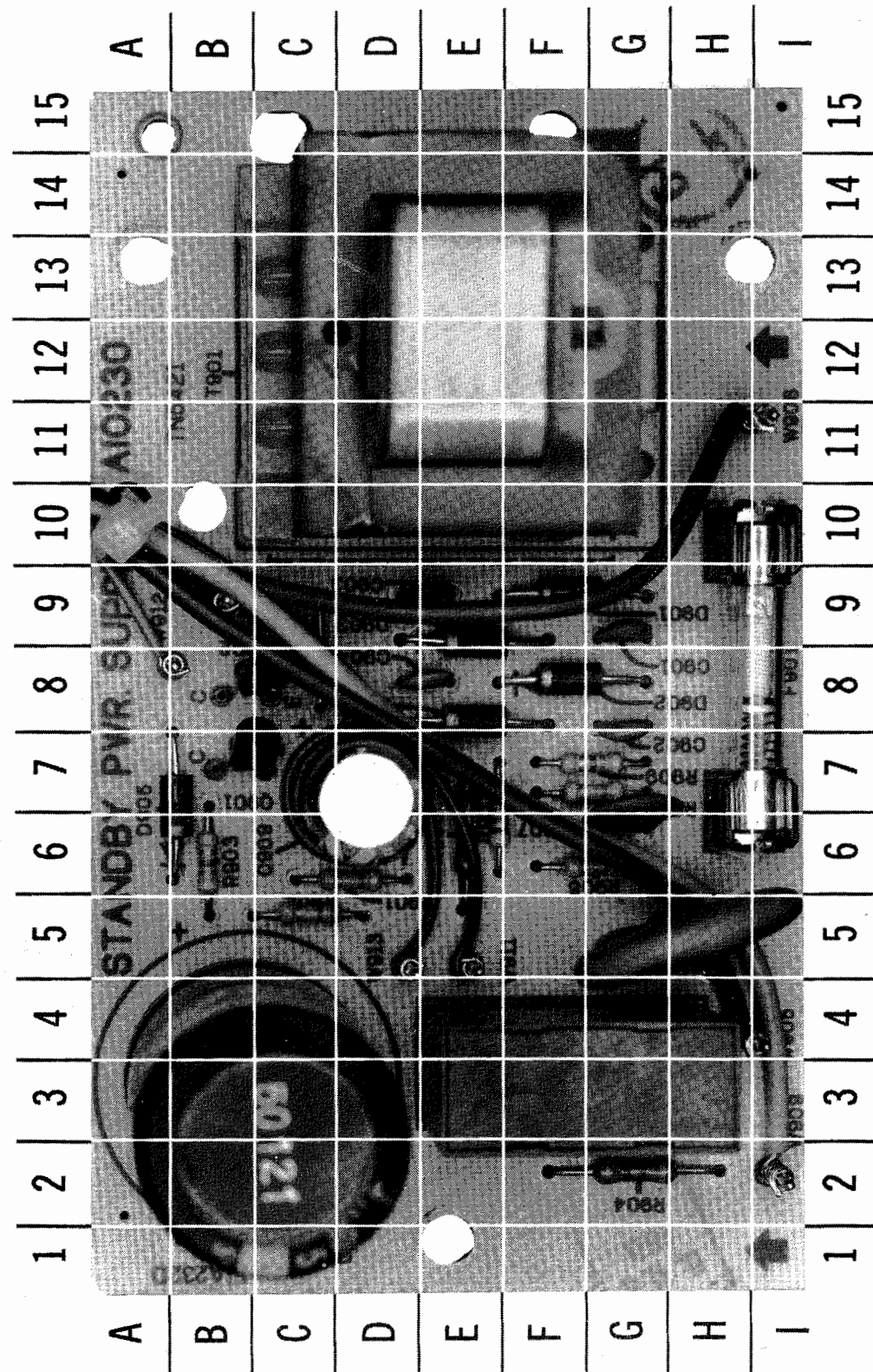
ANTENNA SWITCH MODULE - RFS004-A001 2

STAND-BY POWER SUPPLY MODULE - APM001-A001-GridTrace LOCATION GUIDE

C901	G-9	C906	H-5	D903	E-9	Q902	C-8	R904	G-2	R908	E-6
C902	G-7	C907	G-6	D904	E-8	R901	D-6	R905	G-7	R909	G-7
C903	E-9	C909	D-7	D905	B-7	R902	C-5	R906	G-6	RL901	F-3
C904	E-8	D901	F-9	F901	I-8	R903	B-6	R907	E-6	T901	E-13
C905	B-2	D902	F-8	Q901	B-7						

STAND-BY POWER SUPPLY
MODULE - APM001-A001

A Howard W. Sams GRIDTRACE™ Photo



TROUBLESHOOTING (Continued)

IF-AGC

Inject an 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 the emitter of Video Buffer Transistor (Q602). If video is present, refer to the "Video" section of this Troubleshooting guide. If there is no video at the emitter of Q602, apply AGC bias to pin 14 of VIF/SIF/AFT/AGC IC (IC601). If video is now present at the emitter of Q602, check the components associated with pins 3, 4 and 14 of IC601. If video is missing, check the voltages, waveforms and components associated with the IF Preamp Transistor (Q600), Transistor Q602 and pins 1, 2, 5 thru 12, 15 and 16 of IC601. A defective AGC circuit may cause an overloaded picture, excessive snow or loss of picture and sound. See AGC Voltage Chart for AGC voltages with signal.

IC601	
Pin 3	.69V
Pin 4	4.7V
Pin 14	7.0V

AUDIO

Select a station that is transmitting stereo and SAP signals and check for an audio waveform at pin 6 of SIF/FM Det/Amp IC (IC603). If there is no audio, check the voltages, waveforms and components associated with IC603. If there is an audio waveform at pin 6 of IC603, check for an audio waveform at the base of Squelch SAP Amp Transistor (Q3) and pins 5 and 4 of Stereo Decoder IC (IC1). If there is no audio at the base of Q3, check the voltages, waveforms and components associated with SAP Decoder IC (IC2) and Comparator IC (IC3). If there is no audio at pins 4 and 5 of IC1, check the voltages, waveforms and components associated with IC1. There will be no audio at pin 5 of IC1 when a mono signal is being received. If there is audio at the base of Q3 and pins 4 and 5 of IC1, check for an audio waveform at pins 2 and 3 of Plug P25 and pins 2 and 12 of Function Switch IC (IC6). If there is no audio, check the voltages, waveforms and components associated with IC6, L-R/L+R Amp IC (IC4), Expander IC (IC5), Expander Output Buffer Transistor (Q6), High Pass Active Filter Transistor (Q5), Main Channel Driver Transistor (Q4) and Transistor Q3. If there is audio at pins 2 and 3 of Plug P25 in Stereo, Mono and SAP, check for an audio waveform at pins 6 and 13 of Sound Processor IC (IC102). If there is no audio, check the voltages, waveforms and components associated with IC102 and pins 1, 3, 9, 10, 12, 13 of Audio Switcher IC (IC2) on Audio Video Board. If there is audio at pins 6 and 13 of IC102, check the voltages, waveforms and components associated with Audio Control IC (IC103) and Audio Output IC (IC5, IC6). Check the voltage at pin 1 of IC103, it should measure .2V at Mute and 3.4V at Maximum volume. If there is no audio at the Audio Output Jacks or the Speaker in EXT Audio Mode, check the voltages, waveforms and components associated with Audio Buffer Transistors (Q18, Q20, Q23, Q24, Q30, Q32), Transistor Q4 and IC2.

VIDEO

Inject a video signal at the emitter of Video Buffer Transistor (Q602) and check for video on the CRT. If video is present, refer to the "IF-AGC" section of this Troubleshooting guide. If there is no video on the CRT, check for a video waveform at pin 3 of Feature IC (IC10). If there is no video at pin 3, check the voltages, waveforms and components associated with Video Buffer Transistor (Q16), Video Amp Transistors (Q12, Q14) and pins 1, 3, 4, 9, 10, 12 and 16 of Video Switch IC (IC1). If there is video at pin 3 of IC10, check for a video waveform at pin 10 of Color Decoder IC (IC50). If there is no video, check the voltages, waveforms and components associated with IC10. Check the voltages and components associated with pins 1, 3, 8, 9, 10, 12 of IC10. If there is video at pin 10 of IC50, check for a video waveform at pins 12, 14 and 16 of IC50. If there is no video, check the voltages, waveforms and components associated with pins 1, 7, 9, 10, 11, 12, 14 and 16 of IC50. If there is video at pins 12, 14 and 16 of IC50, check the CRT and the voltages, waveforms and components associated with Output Transistors (Q11, Q31 and Q51). If the brightness is inadequate or can't be controlled, check the voltages and components associated with Beam Limiter Transistor (Q354), Black Level Correction Transistors (Q50, Q52), Black Bias Transistor (Q2) and pin 7 of the CRT. If there is no video on the CRT in EXT Video Mode, check the voltages, waveforms and components associated with Video Buffer Transistors (Q2, Q6) and pins 2, 3, 4, 5, 13, 14 and 15 of Video Switch IC (IC1).

VERTICAL

Inject a vertical drive signal at pin 1 of Sync Processor (IC320). If vertical deflection is now present, check the voltages, waveforms and components associated with pins 1 thru 4 of IC320. If there is no vertical sweep, check the voltages, waveforms and components associated with Vertical Output IC (IC300). Check for the B+ voltages on pins 6 and 9 of IC300. Vertical linearity or height problems may be caused by the vertical feedback and bias circuits, check Electrolytics C303, C304 and C305 for defects.

SYNC

Check for a video waveform at pin 5 of Sync Processor (IC320). If this waveform is missing, check the components associated with pin 5. If there is no vertical sync, check the voltages, waveforms and components associated with pins 6 and 7 of IC320. If there is no horizontal sync, check the voltages, waveforms and components associated with pins 6, 7, 8, 14 and 15 of IC320.

RASTER

Check the CRT and CRT voltages. If there is no red, check the voltages and components associated with pin 12 of Color Decoder IC (IC50) and Red Output Transistor (Q11). If there is no green, check the voltages and components associated with pin 14 of IC50 and Green Output Transistor (Q31). If there is no blue,

SYLVANIA CHASSIS
19C601, 20C602/03/05/08/09

FOLDER 2

TROUBLESHOOTING (Continued)

check the voltages and components associated with pin 16 of IC50 and Blue Output Transistor (Q51). If the raster has a keystone shape, check the Deflection Yoke (L499). If the raster has height or width problems, refer to the "Vertical" or "Horizontal" sections of this Troubleshooting guide.

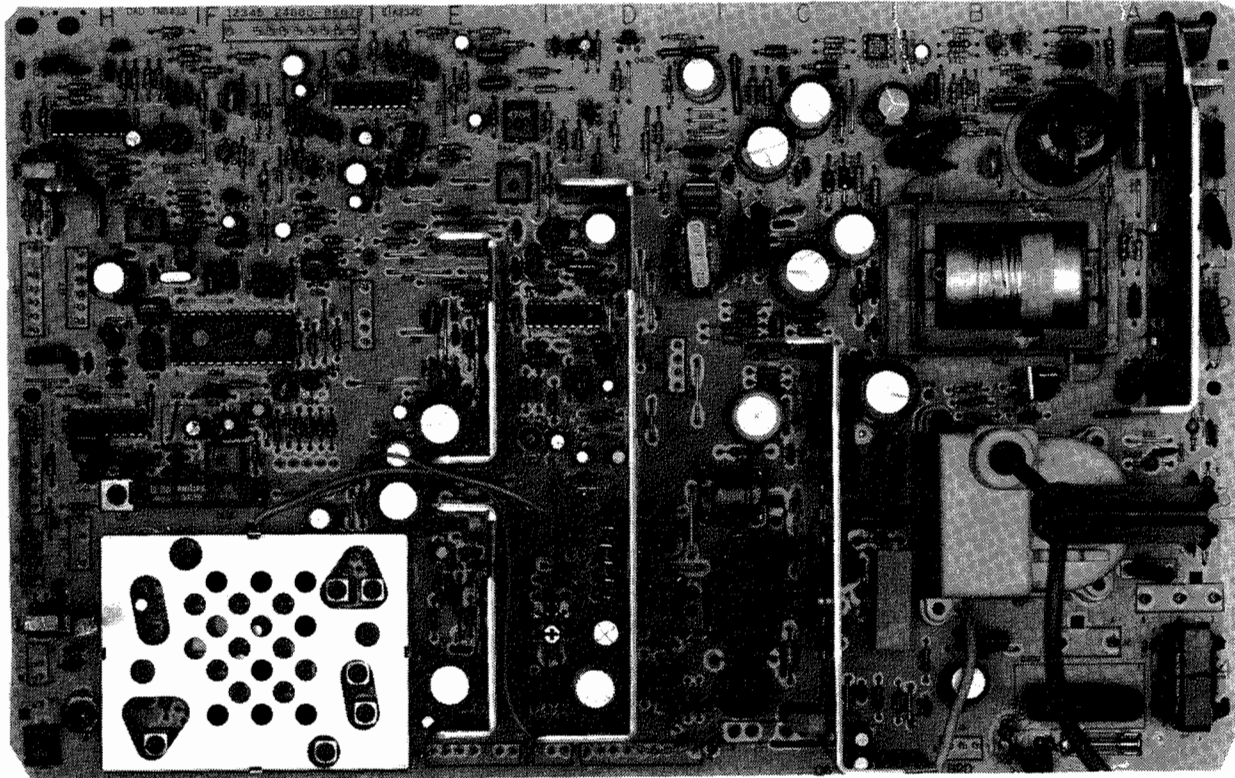
CHROMA

Check for a chroma waveform at pin 15 of Feature IC (IC10). If this waveform is missing, check the voltages, waveforms and components associated with pins 4, 5, and 11 thru 16 of IC10. If the chroma waveform is present at pin 15 of IC10, check for the proper chroma waveforms at pins 12, 14 and 16 of Color Decoder IC (IC50). If missing, check the voltages, waveforms and components associated with pins 2 thru 6, 8, 9 and 12 thru 28 of IC50. Check the 7.16MHz oscillator at pins 24 and 26 of IC50. If there is no color sync, check the voltages, waveforms and components associated

with pin 8 of IC50 and 7.16MHz Oscillator Adjust Control (R50). If there is inadequate tint range, check the voltages and components associated with pin 25 of IC50. If the proper chroma waveforms are present at pins 12, 14 and 16 of IC50, refer to the "Raster" section of this Troubleshooting guide.

S.V.M.

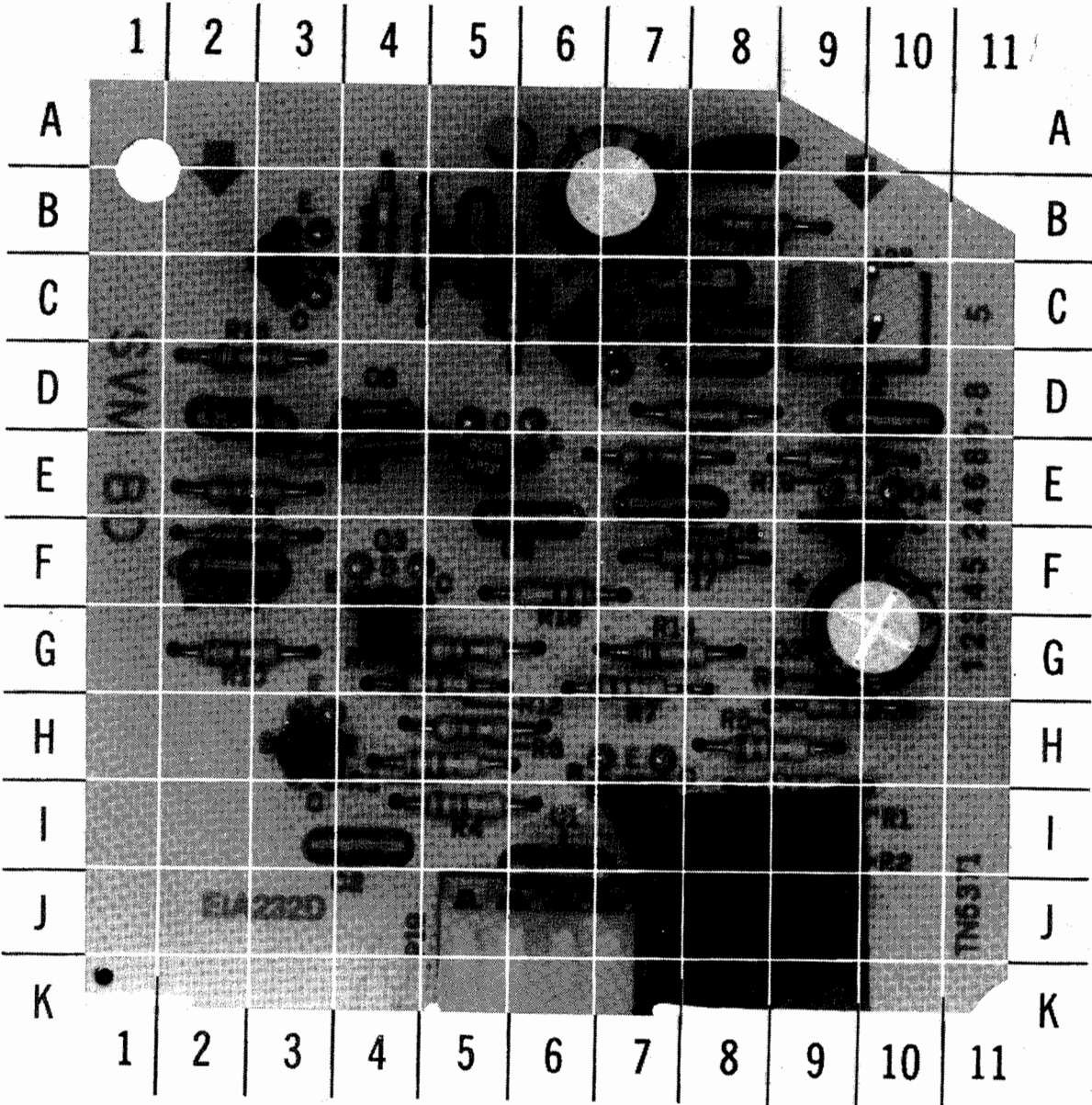
The purpose of the S.V.M. circuit (Sweep Velocity Modulation) is to improve the video detail in the areas around the sides, top and bottom of the CRT in comparison with the middle. It accelerates and decelerates the electron beam as it travels toward the face of the CRT, to produce a more faithful rendition of detail across the entire face of the CRT. If the circuit is suspected of being defective, check for the proper waveform at the output. If this waveform is missing, check the voltages, waveforms and components associated with the S.V.M. circuit.



MAIN BOARD-SHIELD LOCATION

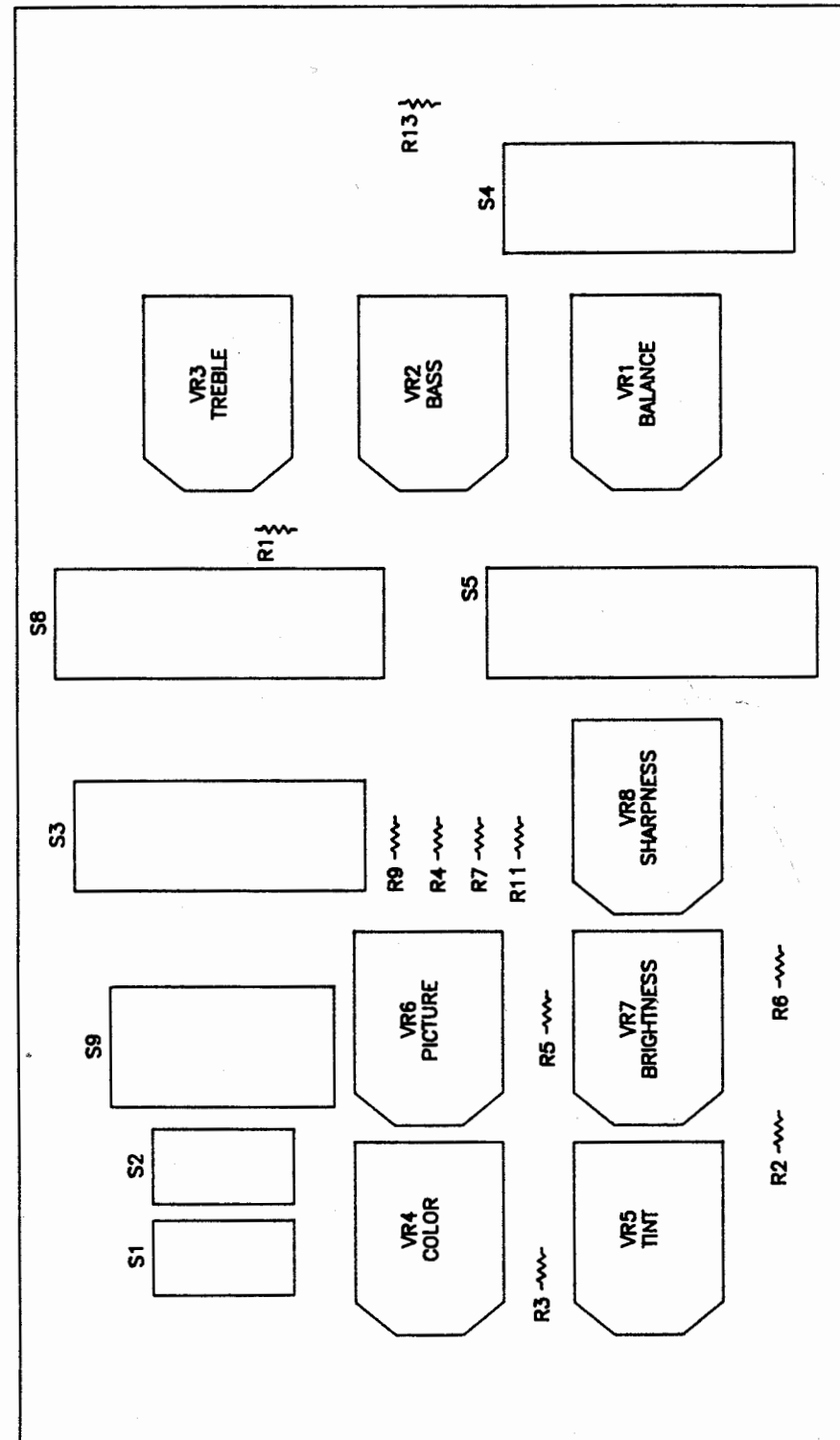
SVM MODULE - A10178-A001,B002,C003-GridTrace LOCATION GUIDE

C1	I-16	C13	C-8	R2	I-9	R14	G-7
C2	I-4	C14	A-8	R3	H-5	R15	E-3
C3	G-10	C16	J-7	R4	I-5	R16	D-2
C4	B-7	C17	I-9	R5	H-9	R17	F-8
C5	F-2	Q1	I-7	R6	H-9	R18	F-6
C6	E-4	Q2	H-3	R7	G-7	R19	E-9
C7	D-2	Q3	G-4	R8	H-5	R20	E-7
C8	E-7	Q4	F-10	R9	G-5	R21	C-6
C9	F-6	Q5	C-3	R10	G-2	R22	B-4
C10	D-8	Q6	C-6	R11	F-2	R23	D-8
C11	B-5	Q7	E-5	R12	G-5	R24	B-4
C12	D-10	R1	I-9	R13	E-2	R25	B-8

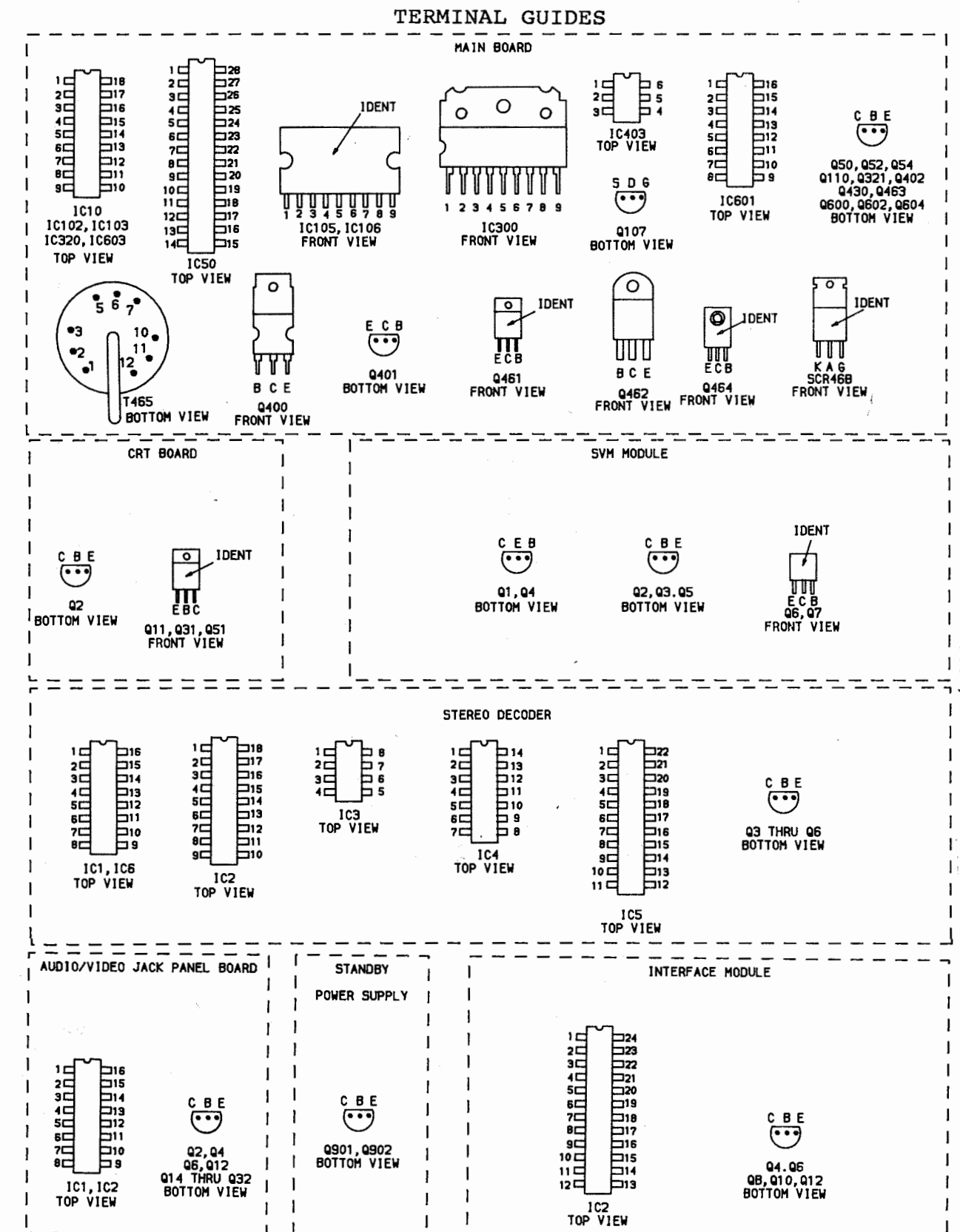


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19C601,20C602/03/05/08/09

FOLDER 2



SECONDARY CONTROL BOARD - ASC169-A001



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

* Circuitry not used in some versions

--- Circuitry used in some versions

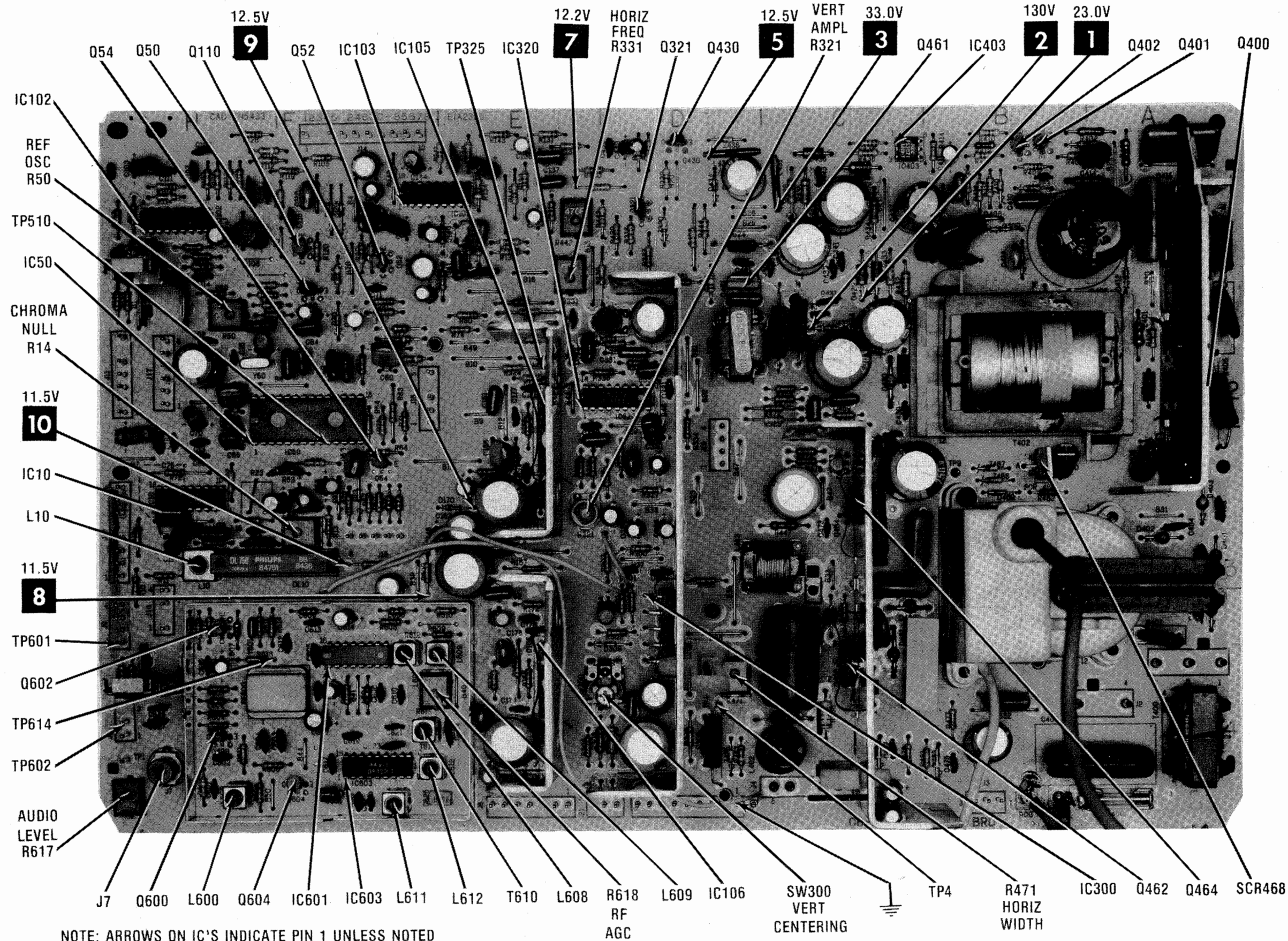
Waveforms and voltages are taken from ground, unless noted otherwise.

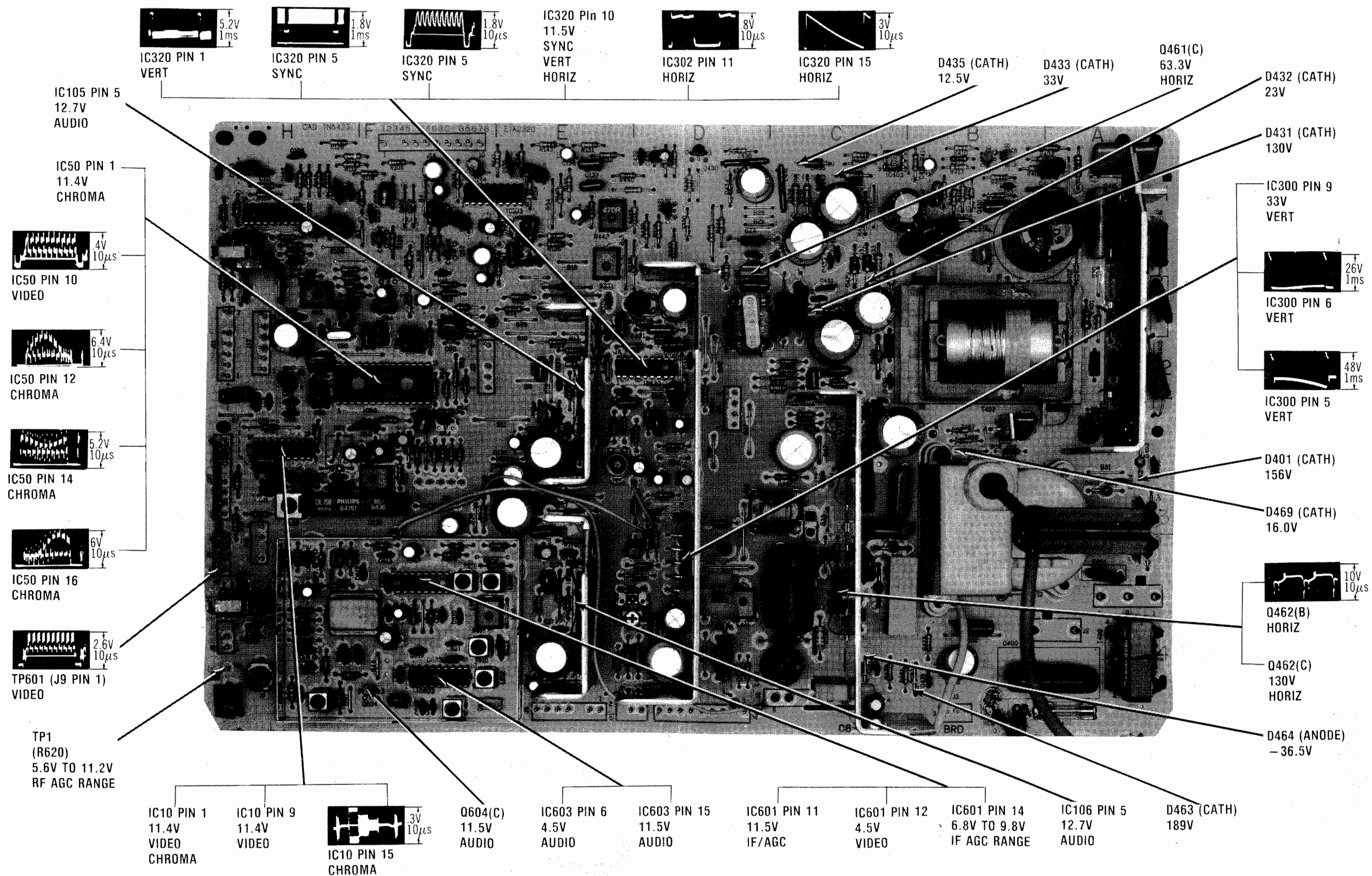
Waveforms: triggered scope, keyed rainbow generator. Item numbers in rectangles appear in the alignment/adjustment instructions.

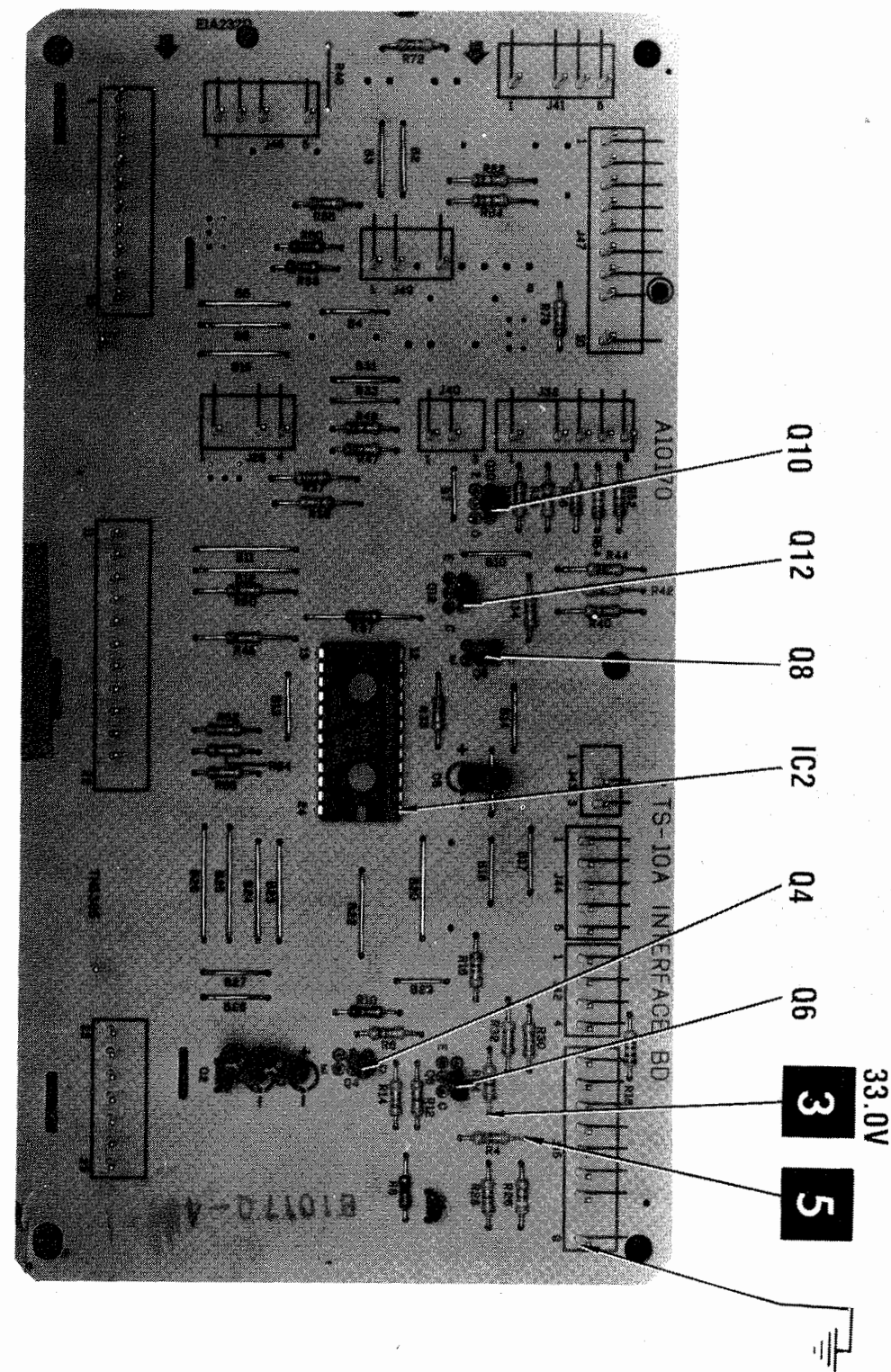
Supply voltages maintained as shown at input.

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 1/2W or less, 5% unless noted. Value in () used in some versions.

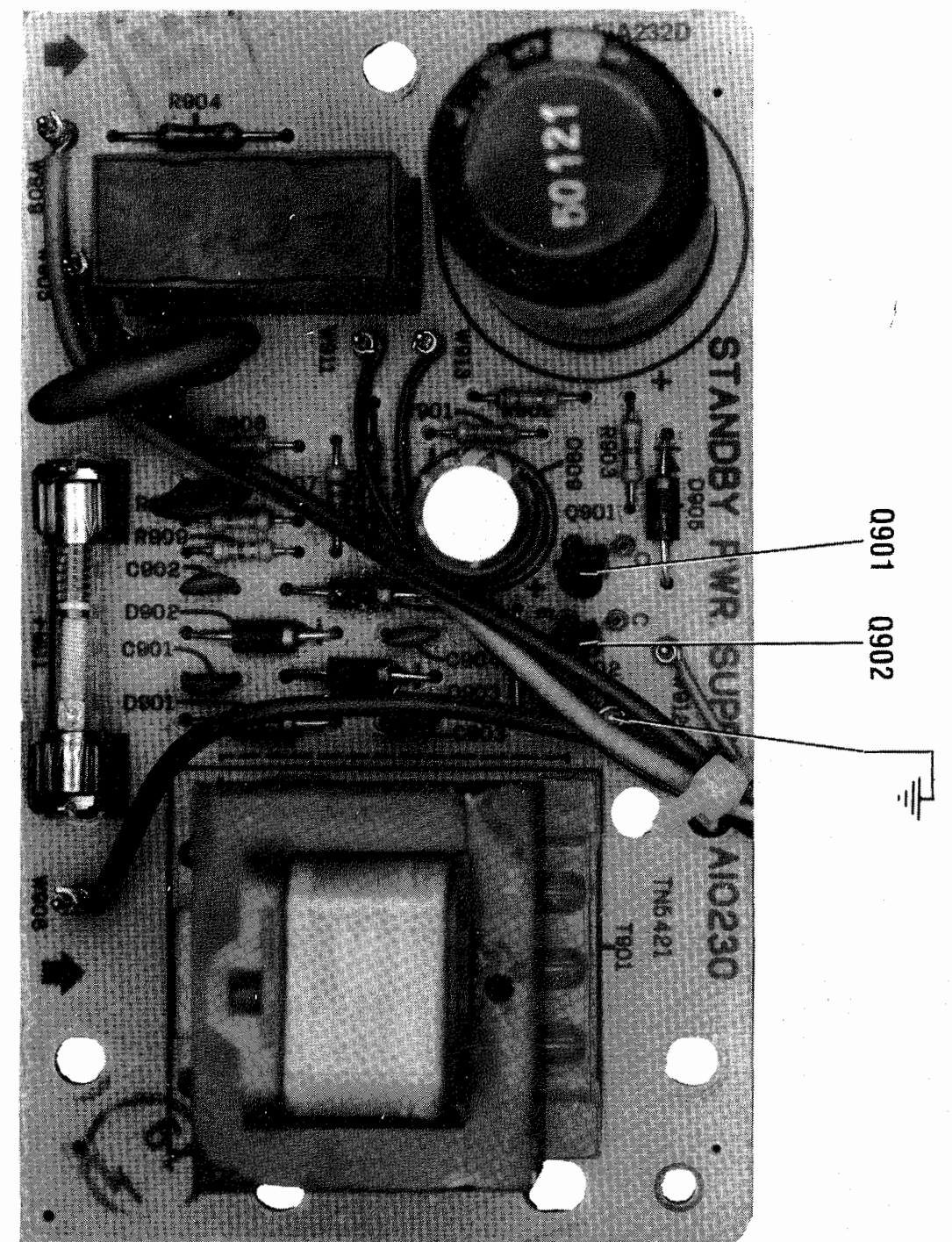
⊕ See parts list
⊕ Ground
⊕ Chassis
⊕ Common tie point







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



PARTS LIST AND DESCRIPTION

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

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	ZENITH PART No.	NOTES
D11,12 D70	5301811001 BZV461V5	NTE177	ECG177	SK9091/177	103-131	USED SOME VERSIONS
D101,2 D103 D170	5303011002 5301811001 5301811001 5301811001	NTE177 NTE177 NTE177	ECG177 ECG177 ECG177	SK9091/177 SK9091/177 SK9091/177	103-131 103-131 103-131	
D300 D308 D400, 1,2,3	5301571001 5301811001 1N5062	NTE552 NTE177 NTE506	ECG552 ECG177 ECG506	SK9000/552 SK9091/177 SK3175A	103-287 103-131 212-Z9007	
D405,6	5302601002	NTE552	ECG552	SK9000/552	103-287	
D408	BY0331	NTE580	ECG580	SK5036/580	212-Z9000	
D409	5303101003	NTE580	ECG580	SK5036/580	212-Z9000	USED SOME VERSIONS
D411,12 D429	5301811001 5302601002	NTE177 NTE552	ECG177 ECG552	SK9091/177 SK9000/552	103-131 103-287	
D430	BYW95C	NTE580	ECG580	SK5036/580	212-Z9000	
D431	5303051003	NTE580	ECG580	SK5036/580	212-Z9000	
D432,3	BY0331 5303101003 5302601002	NTE580 NTE580 NTE552	ECG580 ECG580 ECG552	SK9091/177 SK9000/552 SK7046/5846	103-131 103-287	
D434 D435 D461	5301811001 5302601002 BY228	NTE177 NTE552 NTE5846	ECG177 ECG552 ECG5846	SK9091/177 SK9000/552 SK7046/5846	103-131 103-287	
D462	5303121001 BYW95C 5303051003 5302601002	NTE580 NTE580 NTE552	ECG580 ECG580 ECG552	SK5036/580 SK5036/580 SK9000/552	212-Z9000 212-Z9000 103-287	
D463,4 D465 D469	BY0331 5303101003 5303101003 5302601001	NTE580 NTE580 NTE580 NTE177	ECG580 ECG580 ECG580 ECG177	SK5036/580 SK5036/580 SK9091/177	212-Z9000 212-Z9000 103-131	

PARTS LIST AND DESCRIPTION (Continued)

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

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

ITEM No.	DESCRIPTION	MFGR. PART No.	NOTES
	Back, Cabinet	1458080002	Models RKF194CH01,2/RKF195CH01,2
	Back, Cabinet	1456460002	Models RKE192SL01,2,3/RKE198SL01
	Back, Cabinet	1456460005	Models RKF198CH01,2/RKF192CH01,2
	Bezel, Control	1458510001	Models RKE192SL01,2,3
	Bezel, R.H. Control	1456860002	Models RKE198SL01
	Bezel, L.H. Control	1456860004	Models RKE198SL01
	Crystal, Channel Display	1458610002	Models RKF194CH01,2/RKF195CH01,2
	Door, Sec. Control	1458580002	Models RKF194CH01,2/RKF195CH01,2
	Door, Sec. Control	1458350001	Models RKE192SL01,2,3
	Door, Sec. Control	1456480002	Models RKF198CH01,2/RKE198SL01
	Hinge, Door	7338510009	(2 used) Model RKE192SL01,2,3/ RKF192CH01,2
	Housing, LED	1459170001	Models RKF192CH01,2
	Keypad, Sec. Control	1456890002	Models RKF198CH01,2/RKE198SL01
	Knob, Sec. Control Blue	1458670002	(3 used) Models RKF194CH01,2/ RKF195CH01,2
	Knob, Sec. Control Red	1458670003	(5 used) Models RKF194CH01,2/ RKF195CH01,2
	Latch, Door	1219940001	Models RKF194CH01,2/RKF195CH01,2/ RKE192SL01,2,3/RKF192CH01,2
	Pushbutton, Door Release	1456490006	Models RKF198CH01,2
	Pushbutton, Sec. Control	1456490002	Models RKE198SL01
	Door Release	1460380016	(2 used) Models RKF194CH01,2/ RKF195CH01,2
	Pushbutton, Add/Delete	1458390002	Models RKE192SL01,2,3
	Pushbutton, Channel Down	1460380007	Models RKF194CH01,2/ RKF195CH01,2
	Pushbutton, Channel Up	1460380006	Models RKF194CH01,2/RKF195CH01,2
	Pushbutton, Power	1460380010	Models RKF194CH01,2/RKF195CH01,2
	Pushbutton, Power	1458410001	Models RKE192SL01,2,3
	Pushbutton, Volume Down	1460380009	Models RKF194CH01,2/RKF195CH01,2
	Pushbutton, Volume Up	1460380008	Models RKF194CH01,2/RKF195CH01,2
	Pushbutton Strip, ANT/CH/VOL	1458400001	Models RKE192SL01,2,3
	Spring, Door	7346980003	Models RKF198CH01,2
	Spring, Door	7346980001	Models RKE198SL01
	Spring, Door Button	7347040001	Models RKE198SL01

PARTS LIST AND DESCRIPTION (Continued)

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

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
	LED LED LED LED LED Slide Controls Slide Switch Slide Switch Yoke Wedge Yoke Wedge Yoke Wedge	5303200002 5302970002 5303200001 5302970001 5302970003 1458370001 1458380001 1458380002 6448670001 6458520001 6458520002	Dual Digit Display, Used in chassis 20C603 Amber (2 used), Used in chassis 20C605 Channel Display, Used in chassis 20C605,608 Green, Used in chassis 20C605 Red (2 used), Used in chassis 20C605 (8 used), Used in chassis 20C603 (5 used), Used in chassis 20C603 (5 used), Used in chassis 20C605 (3 used) Used in chassis 20C602,603 (3 used) Used in chassis 20C605,608,609 Used in chassis 20C605,608,609
STAND-BY POWER SUPPLY BOARD			
# RL901	Relay	1607230004	
ATC324-B003 TUNER CONTROL ASSEMBLY			
	Keyboard Keypad Sec Control Speaker (2 X 3 1/2) Stereo Headphones Jack	702777000 1456890002 5823011004 1816290001	
ATC328-A001 TUNER CONTROL ASSEMBLY			
LDR1 S1	LDR Power Switch Keyboard LED Channel Display	2303160002 1607240001 7027730001 5303200001	
ATC362-B003 TUNER CONTROL ASSEMBLY			
	Head Phone Assembly Keyboard LDR Mtg Bracket LED Channel Display Slide Switch Speaker (2 X 3 1/2)	7051030002 7027990002 7347000001 530320000 1458380001 5823011002	2 Used
ATC404-B002 TUNER CONTROL ASSEMBLY			
	Headphones Phone Jack Keyboard Keypad Sec Control LDR Assembly Speaker (2 X 3 1/2)	1816290001 7027770003 1456890002 7015910017 5823011004	
ATC432-B003 TUNER CONTROL ASSEMBLY			
	Channel Display LED Headphones Phone Jack LDR Assembly Speaker (2 X 3 1/2)	5303200002 1816290001 7015910020 58230110004	

For SAFETY use only equivalent replacement part.
(1) Used In Chassis 20C603,20C602,20C605,20C608,20C609.

PARTS LIST AND DESCRIPTION (Continued)

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

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	ZENITH PART No.	NOTES
IC10	TDA3568 6125620001 6124730001 6124710001 6124720001 6124120002 6124770002	NTE1567 NTE3041 NTE3041	ECG1567 ECG3041 ECG3041	SK7805/1567 SK2041/3041 SK2041/3041		
IC300 IC320 IC403	6124440001 TDA2579 6124760001 PS2021 5302980001	NTE1413 NTE1752 NTE123AP NTE123AP NTE123AP	ECG1413 ECG1752 ECG123AP ECG123AP ECG123AP	SK7635/1413 SK3854/123AP SK3854/123AP SK3854/123AP SK3854/123AP	121-Z9000A 121-Z9000A 121-Z9000A 121-Z9000A 121-Z9000A	
IC601 IC603 Q50 Q52	6121260001 6124490001 6104359001 6104359002 6104359001	NTE123AP NTE123AP NTE123AP NTE123AP NTE123AP	ECG123AP ECG123AP ECG123AP ECG123AP ECG123AP	SK3854/123AP SK3854/123AP SK3854/123AP SK3854/123AP SK3854/123AP	121-Z9000A 121-Z9000A 121-Z9000A 121-Z9000A 121-Z9000A	
Q54 Q107 Q110 Q321 Q400	6104359001 6102349001 6104359001 6104349001 BU808 6105320001	NTE123AP NTE123AP NTE159 NTE2315 NTE2315	ECG123AP ECG123AP ECG159 ECG2315 ECG2315	SK3854/123AP SK3854/123AP SK3466/159 SK3854/123AP SK3854/123AP	121-Z9000A 121-Z9000A 121-Z9000A 121-Z9000A 121-Z9000A	
Q401 Q402 Q430 Q461	6105269001 6105009001 6105009004 BF819 6105310001	NTE294 NTE123AP NTE123AP NTE198 NTE198	ECG294 ECG123AP ECG123AP ECG198 ECG198	SK3841/294 SK3854/123AP SK3854/123AP SK3220/198 SK3220/198	121-Z9067 121-Z9000A 121-Z9000A 121-Z9028 121-Z9028	
Q462 Q463 Q464	BU508V 6104330003 6104359001 BD136 6105280001	NTE2300 NTE2300 NTE123AP NTE185 NTE374	ECG2300 ECG2300 ECG123AP ECG185 ECG374	SK9476/2300 SK9476/2300 SK3854/123AP SK3191/185 SK9042/374	121-Z9000A 121-Z9002 121-Z9105	

PARTS LIST AND DESCRIPTION (Continued)

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

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	ZENITH PART No.	NOTES
Q600	6103909001	NTE395	ECG395	SK9434		
Q602,4	6104359001	NTE123AP	ECG123AP	SK3854/123AP	121-Z9000A *	#
SCR468	BT151500R	NTE5456	ECG5457	SK3598/5457	185-Z9010	
	6110180001	NTE5456	ECG5457	SK3598/5457	185-Z9010	
Z320	5301571439	NTE5008A	ECG5008A	SK4A3/5008A	103-279-08	
Z404	5301571220	NTE5030A	ECG5030A	SK22A/5030A	103-144	
Z407	5301571249	NTE5000A	ECG5000A	SK2A4/5000A		
Z410	5301571110	NTE5020A	ECG5020A	SK11A/5020A	103-279-20	
Z436	5302491629	NTE5013T1	ECG5013T1			
Z465	5301571200	NTE5029A	ECG5029A	SK20A/5029A	103-Z9023	#
Z466	5302491759	NTE5015A	ECG5015A	SK7A5/5015A	103-Z9002	#
Z467	5302491160					#
CRT SOCKET BOARD	APT025-A001					
Q226	6102500003	NTE171	ECG171	SK3201/171	121-822	
Q235	6104340001	NTE159	ECG159	SK3466/159	121-Z9003 *	
Q240,7	6102500003	NTE171	ECG171	SK3201/171	121-822	
STEREO DECODER MODULE A10242-D004						
D1	5301811001	NTE177	ECG177	SK9091/177	103-131	
IC1	612496-1	NTE1655	ECG1655	SK7687/1655		
IC2	6124960001	NTE1655	ECG1655	SK7687/1655		
IC3	6124680001	NTE228A	ECG228A	SK9462/228A	121-Z9049 *	
IC4	6124940001	NTE778A	ECG778A	SK3465/778A	221-Z9034	
	TL074CN	NTE859	ECG859			
	6125390001	NTE859	ECG859			
IC5	AN6291	NTE1744	ECG1744		221-303	
IC6	6124890001	NTE1744	ECG1744		221-303	
	HEF4053BP	NTE4053B	ECG4053B	SK4053B	905-354	
	6124930001	NTE4053B	ECG4053B	SK4053B	905-354	
Q3,4,5,6	6104350001	NTE123AP *	ECG123AP *	SK3854/123AP *	121-Z9000A *	
Z1	5301571629	NTE5013A	ECG5013A	SK6A2/5013A	103-Z9008	

PARTS LIST AND DESCRIPTION (Continued)

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

MISCELLANEOUS

ITEM No.	PART NAME	MFG. PART No.	NOTES
ASC169-A	001 SECONDARY CONTROL	MODULE	
SW1	Add Switch	1606680002	
SW2	Delete Switch	1606680002	
SW3	Cable/Normal Switch	1607100001	
SW4	Audio/Video Switch	1607100001	
SW5	Mono/Stereo/SAP Switch	1607110001	
SW8	Expanded Sound Switch	1607110001	
A10180-D	004, TS-10 REMOTE TUNING SYSTEM		
Y1000	6MHz Crystal	5604440003	
Y1200	4MHz Crystal	5604440004	
Y1400	6MHz Crystal	5604440003	
MAIN BOARD			
DL10	Delay Line	3615790006	
F1	Filter	3620180001	SAP Band Pass
F2	Filter	3620150001	Main Low Pass
F3	Filter	3620150001	Main Low Pass
F4	Filter	3620140001	SAP Low Pass
FB1	Ferrite Bead	3640460003	SAP Low Pass
	Ferrite Bead	3640460003	
FB2	Ferrite Bead	3640460001	
FB3	Ferrite Bead	3640460001	
	Ferrite Bead	3640460003	
FB4,5,6,7	Ferrite Bead	3640460001	
F400	4 Amp @ 125V Fast Acting	1815205400	
F901	.125 Amp @ 250V Slow Blow	1810215012	
P400	Cord, AC	4614070001	AC Power, Used In Chassis 190601,200602
	Cord	4614070003	AC Power, Used In chassis 200603,605,608
	Cord	4614070005	AC Power, Used In chassis 200609
SF600	Filter	3619880001	SAW
SW300	Switch	1606720001	Vertical Centering (3 way)
Y50	Filter	5604450002	Crystal 7.1590MHz
Y600	Filter	3619880001	SAW
Y601	Filter	3617560001	Trap 4.5MHz
	Antenna	7012090003 (1)	UHF Russell Replacement BOW-4H
	Antenna	7043890005 (1)	VHF Russell Replacement POR-12H
			VHF Russell Replacement ROD-SIM-4H (2 used)
	Convergence/Purity Assembly	3615730008	Used In chassis 200602,603605,608
	Convergence/Purity Assembly	3619720001	Used In chassis 200609
	CRT	A51ADL00X	Used In chassis 200602,603,605 608,609
	CRT	A51JFC60X	Used In chassis 200605,608,609
	Degaussing Coil	3620210005	Used In chassis 200602,603,608,609
	Degaussing Coil	3620210010	Used In chassis 200603,608,609
	Degaussing Coil	3620210009	Used In chassis 200605
	Jack, Headphone	1816290001	Used In chassis 200602,603,605,608,609
	LDR Assembly	7015910020	Used In chassis 200603,608
	LDR Assembly	7015910017	Used In chassis 200602,609

PARTS LIST AND DESCRIPTION (Continued)

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

COILS & TRANSFORMERS

ITEM No.	FUNCTION	MFGR. PART No.	OTHER IDENTIFICATION	NOTES
# DY1	Yoke Horiz 1.72mH	7050730007 (2)	362051-1 (1)	
# DY1	90° Vert 19.6mH			
# DY1	Yoke Horiz	3620330001 (3)		
# SVM	Vert			
# SVM	Yoke 2.9uH	3619720001 (2)	361972-1 (1)	
# SVM	Part of Conv/Purity Assembly			
# SVM	Yoke	3615730008 (3)		
# SVM	Part of Conv/Purity Assembly			
# T402	Mode Switch	3620070001	362007-1 (1)	
# T460	Horiz Driver	3204030003	311233830540 (1)	
# T465	Horiz Output	3619941001	361994-2001 (1)	
# T465	Horiz Output	3619941003 (4)		
# T901	Stand-by			
# DY1	Deflection Yoke	3620511001 (5)	300400-1 (1)	
# DY1	Deflection Yoke	3620340001 (5)		

For SAFETY use only equivalent replacement part.
(1) Number on Unit.
(2) Used In Chassis 20C6.
(3) Used In Chassis 19C6.
(4) Used In EMC611,613 assemblies.
(5) Used In Chassis 20C603,20C602,20C605,20C608,20C609.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
	2 X 3 1/2	5823011004		2 used, Model RKE192SL01,2,3/ RKF192CH01,2/RKF198CH01,2
	2 X 3 1/2 PM 8 Ohm	5823011002		2 used, Model RKE198SL01
	3	5803211001		4 used, Model RKF194CH01,2/ RKF195CH01,2
	Tweeter	5801160001		2 used, Model RKF194CH01,2/ RKF195CH01,2

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
DISPLAY	MODULE ADPO08-B002		
D4	Stereo (Red) LED	5302970003	
D5	Stereo/AV (Red) LED	5302970003	
D6	SAP/AV (Amber) LED	5302970002	
D7	AV (Green) LED	5302970001	
D8	SAP (Amber) LED	5302970002	
S1	Power Switch	1607250001	2 Used
S2	Volume Down	1607250001	
S3	Volume Up	1607250001	
S4	Channel Down	1607250001	
S5	Channel Up	1607250001	
STEREO	SAP INDICATOR MODULE ALD026-A001		
	SAP (Amber) LED	5301890002	
	Stereo (Red) LED	5301890001	
APT025-A001	CRT SOCKET BOARD		
#	CRT Socket	1813710104	

PARTS LIST AND DESCRIPTION (Continued)

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

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	ZENITH PART No.	NOTES
TS-10 REMOTE TUNING SYSTEM BOARD						
A10180-D004						
D1013	5301811001	NTE177	ECG177	SK9091/177	103-131	
D1017	5302471001	NTE112	ECG112	SK3089/112	103-61	
D1130	5301811001	NTE177	ECG177	SK9091/177	103-131	
D1452	5301811001	NTE177	ECG177	SK9091/177	103-61	
D1460	5302471001	NTE112	ECG112	SK3089/112		
IC1000	6124870002					
IC1200	6124220001					
IC1300	6124850002					
IC1400	6124860002					
IC1500	6124880001					
IC1600	6124790001					
Q1100	6102329002	NTE960	ECG960	SK3591/960	221-Z9043	
Q1240, 50	6102239001	NTE123AP	ECG123AP	SK3854/123AP	121-Z9000A	*
Q1260	6100839001	NTE159	ECG159	SK3466/159	121-Z9003	
Q1270	6102329002	NTE159	ECG159	SK3466/159	121-Z9003	*
Q1450	6100839001	NTE159	ECG159	SK3466/159	121-Z9003	
Q1460	6102329002	NTE123AP	ECG123AP	SK3854/123AP	121-Z9000A	**
Q1480	6102329002	NTE123AP	ECG123AP	SK3854/123AP	121-Z9000A	**
Z1100	5301571569	NTE5011A	ECG5011A	SK5A6/5011A	103-Z9007	
Z1217	5301921330	NTE147A	ECG147A	SK33V/147A	103-Z9004	

SYLVANIA CHASSIS
19C601,20C602/03/05/08/09

FOLDER 2

PARTS LIST AND DESCRIPTION (Continued)
When ordering parts, state Model, Part Number, and Description
SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	ZENITH PART No.	NOTES
UHF/VHF TUNER 340291001						
D1	5303131002					
D2	5303131001					
D3	5302301003					
D4	5303131001					
D5	5301881005					
D6,8	5302301003					
D10,11,12	5303131001					
D13	5303131002					
D14,15	5302301003					
D16	5303131002					
D18	5302301003					
D21	5303131002					
D22	5301941003					
D24,6	5302301003					
D28,9	5303131001					
D30	5301881005					
D31	5301951005					
D32	5303131001					
IC1	SP4552					
	6124840001					
Q7	6105040001					
Q9	BF980					
Q19	6105190001					
Q20	6105020001					
Q25	6105030001					
Q27	6102460001					
	6104190003					

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.
A10242-D004	STEREO DECODER PANEL			
R79	1000 2% 1/4W Carbon Film	2302851022	QW210	
R90	82K 2% 1/4W Carbon Film	2302858232	QW382	
R91	47K 2% 1/4W Carbon Film	2302814732	QW347	
R92	47K 2% 1/4W Carbon Film	2302814732	QW347	
R93	47K 2% 1/4W Carbon Film	2302814732	QW347	
R94	82K 2% 1/4W Carbon Film	2302858232	QW382	
R96	82K 2% 1/4W Carbon Film	2302858232	QW382	
R97	47K 2% 1/4W Carbon Film	2302854732	QW347	
	STAND BY POWER SUPPLY BOARD			
# R904	82 5% 1/2W Carbon Film	2032828205	HW082	

For SAFETY use only equivalent replacement part.
(1) EMC605, EMC607, EMC613

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.	ITEM No.	FUNCTION	MFGR. PART No.
MAIN BOARD			L463	Bridge	3619100006
L10	Phase Null	3619660001 (1)	L464	Coil (12uH)	3620410001 (3)
L11	45.75MHz	3619660003 (2)	L466	RF Choke (42uH)	3620440003
	RF Choke (18uH)	3618131509 (3)	L600	47.25MHz Trap	3620090001 (3)
L13	RF Choke (18uH)	3618131809		47.25MHz Trap	3620091001 (8)
	Peaking (22uH)	3618132209 (4)	L602	Peaking (1.2uH)	3618131290
L14	Peaking (22uH)	3618132205 (5)	L604	Peaking (2.2uH)	3618132290
	RF Choke (3.3uH)	3618133395 (6)	L605	Peaking (2.2uH)	3618132290
L15	RF Choke (6.8uH)	3618136899 (7)	L606	RF Choke (.33uH)	3618130330
L17	RF Choke (15uH)	3618131509	L607	Peaking (10uH)	3618131009
L75	Peaking (15uH)	3618131509 (8)	L608	45.75MHz Detector	3620090002 (3)
L76	Peaking (3.3uH)	3618133395 (3)		45.75MHz Detector	3620091002 (8)
L77	Peaking (3.3uH)	3618133395 (3)	L609	45.75MHz AFT	3620090003 (3)
L401	Peaking (3.3uH)	3618353395		45.75MHz AFT	3620091003 (8)
L403	RF Choke (.5uH)	3620420001	L611	4.5MHz Discriminator	3620100001 (3)
L431	RF Choke (12uH)	3620410001		4.5MHz Discriminator	3620101001 (8)
L432	RF Choke (12uH)	3620410001	L612	45.75MHz Detector	3620090002 (3)
L461	Peaking (2.2uH)	3620410003		45.75MHz Detector	3620091002 (8)
L462	Linearity (15uH)	3620280005 (6)	# T400	Line Choke	3619840001
	Linearity (15uH)	3620230002 (7)	T610	4.5 MHz Filter	3620110001
			Y601	4.5MHz Trap	3617560001
A10180-D004, TS-10 REMOTE					
TUNING SYSTEM					
L1034	RF Choke (12uH)	3619551209	L1590	Peaking (22uH)	3619552209
L1090	RF Choke (12uH)	3619551209	L1594	Peaking (12uH)	3619551209
L1560	Peaking (18uH)	3619551809	L1614	RF Choke (12uH)	3619551209
L1570	Peaking (22uH)	3619552209	L1660	RF Choke (12uH)	3619551209
L1574	Peaking (12uH)	3619551209	APT025-A001 CRT SOCKET BOARD		
L1580	Peaking (22uH)	3619552209			
L1584	Peaking (18uH)	3619551209	L260	RF Choke (15uH)	3620440004

For SAFETY use only equivalent replacement part.
(1) Used In EMC605-A001, D004/EMC607-A001, D004/EMC611-B002/EMC613-B002 Assemblies.
(2) Used In EMC607-E005/EMC611-C003/EMC613-C003 Assemblies.
(3) Used In EMC605-A001/EMC607-A001 Assemblies.
(4) Used In EMC605/607/611 Assemblies.
(5) Used In EMC613 Assemblies.
(6) Used In EMC605/611 Assemblies.
(7) Used In EMC607/613 Assemblies.
(8) Used In EMC605-D004/EMC607-D004, E005/EMC611-B002, C003/EMC613-B002, C003 Assemblies.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description
CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM NO.	FUNCTION	RESISTANCE	MFGR. PART NO.	NOTES
MAIN BOARD				
R14	Chroma Null	470	2204714712	
R23	Auto Color Level	470K	2204714742	
R50	Ref OSC	10K	2204711032	
R321	Vert Amplitude	470K	2204164742	
R331	Horiz Freq	10K	2204711032	
R333	Horiz Center	10K	2204161032	
R442	130V Adj	470	2204714712	
R471	Horiz Width	10K	2204711032	
R617	Audio Level	1000	2204711022	
R618	RF AGC	100K	2204711042	
ASC169-A001 SECONDARY CONTROL MODULE				
VR1	Balance	50K	2204590011	
VR2	Bass	50K	2204590011	
VR3	Treble	50K	2204590011	
VR4	Color	10K	2204590001	
VR5	Tint	10K	2204590001	
VR6	Picture	10K	2204590001	
VR7	Brightness	10K	2204590001	
VR8	Sharpness	10K	2204590016	
A10180-D004, TS-10 TUNING SYSTEM BOARD				
R1528	OSC ADJ	1000	2204161022	
A10242-D004 STEREO DECODER PANEL				
R26	SAP Level	10K	2204201032	
R35	OSC Adjust	4700	2204204722	
R50	L-R Level	4700	2204204722	
R58	L+R Level	4700	2204204722	
R74	Timing Adjust	2200	2204202222	
R83	8KHz Adjust	47K	2204204732	

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	
MAIN BOARD				
R400	16.1 Cold NTC	2303240001		
R401	11.6 Cold PTC	2302070008		
R405	56 5% 5W WW	2401215695	5W056	
	56 5% 5W WW	2400800143 (1)	5W056	
R413	4300 2% 1/4W Carbon Film	2302814332	QW243	
R415	1100 2% 1/4W Carbon Film	2302811122	QW211	
R428	1 5% 1/2W Metal Film	2302271085	HW1D0	
R429	10K 5% 2.5W Metal Film	2303101035		
R431	61.9K 1% 1/4W Carbon Film	2302756193		
R432	1 5% 1/2W Metal Film	2302271085	HW1D0	
R433	1 5% 1/2W Metal Film	2302271085	HW1D0	
R434	1 5% 1/2W Metal Film	2302271085	HW1D0	
R435	1 5% 1/2W Metal Film	2302271085	HW1D0	
R437	20K 1% 1/4W Carbon Film	2302752003		
R440	4320 1% 1/4W Carbon Film	2302754322		
R466	1000 5% 1.6W Metal Film	2303091025		
R477	2.2 5% 1/3W Metal Film	2302682285		
R478	1 5% 1/3W Metal Film	2302681085		
R482	150 5% 1/4W Carbon Film	2302811515	QW115	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description
SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.					
		NTE PART No.	ECG PART No.	TCE PART No.	ZENITH PART No.	NOTES
INTERFACE BOARD 7051020005 INTERFACE						
BOARD A 10170-B003/TS10						
IC2	SAA1061					
Q4	6124780001					
Q6	6104350001					
Q8, 10, 12	6104340004					
	6104350001					
SVM MODULE A10178-B002, C003						
Q1	6105299001					
Q2, 3	6103909001					
Q4	6105299001					
Q5	6103909001					
Q6	6105279001					
Q7	6105359001					
SVM MODULE A10178-A001						
Q1	6105292001					
Q2, 3	6103902001					
Q4	6105292001					
Q5	6103902001					
Q6	6105272001					
Q7	6105352001					
Z1	5301571369					
ANTENNA SWITCH MODULE RFS004-A001						
D1 THRU D17	5303046001					
		NTE123AP	ECG123AP	SK3854/123AP	121-Z9000A	
		NTE159	ECG159	SK3466/159	121-Z9003	
		NTE123AP	ECG123AP	SK3854/123AP	121-Z9000A	
	NTE395		ECG395			
	NTE395		ECG395			
				SK9434		
				SK9434		
		NTE229	ECG229	SK3246A/229	121-Z9021	
		NTE395	ECG395	SK9434		
		NTE229	ECG229	SK3246A/229	121-Z9021	
		NTE395	ECG395	SK9434		
		NTE383	ECG383	SK9138/383	921-1115	
		NTE382	ECG382	SK9137/382	921-1114	
						USED SOME VERSIONS

PARTS LIST AND DESCRIPTION (Continued)
When ordering parts, state Model, Part Number, and Description
SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	TCE PART No.	ZENITH PART No.	NOTES
STAND-BY POWER SUPPLY MODULE APM001-A001						
D901, 2, 3, 4, 5	5301711001					
Q901, 2	6104352001					
		NTE552 NTE123AP	ECG552 ECG123AP	SK9000/552 SK3854/123AP	103-287 121-Z9000A *	

For SAFETY use only equivalent replacement part.
* Lead configuration may vary from original.

WIRING DATA

High Voltage Lead	Use BELDEN No. 9867 (30 KV)
Shielded Hook-up Wire	Use BELDEN No. 8401 or 8421 (Single-Conductor)
General-use Unshielded Hook-up Wire	8208 (Two-Conductor)
	8529 (Solid) Available in 13 Colors
	8522 (Stranded) Available in 13 Colors
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	8464 (Flat) or 8484 (Round) 4-Conductor
	8485 (Round) 5-Conductor
	8488 (Round) 8-Conductor

PARTS LIST AND DESCRIPTION (Continued)
When ordering parts, state Model, Part Number, and Description
ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFGR. PART No.
MAIN BOARD		
# C480	100 25V	2701681225 (1)
A10242-D004 STEREO DECODER PANEL		
C24	.33 50V NP	2701623950
C28	.47 50V	2701625950
C47	.47 50V	2701625950

For SAFETY use only equivalent replacement part.
(1) EMC605-D004, EMC611-B002, C003, EMC607-E005, EMC613-B002, C003

ITEM No.	RATING	MFGR. PART No.

CAPACITORS

ITEM No.	RATING	MFGR. PART No.
MAIN BOARD		
C16	3.3 NPO 50V 5%	2508413397
C18	22 NPO 50V 5%	2508412205
C62	10 NPO 50V 10%	2508411008
C74	68 NPO 50V 5%	2508416805
	120 NPO 50V 5%	2508411215 (1)
C75	33 NPO 50V 5%	2508413305
C322	68 NPO 50V 5%	2508416805
C400	.22 125VAC	2509842240
C408	.0047 200VAC	2507204725 (2)
C420	.0047 50V	2509860001
C463	680 2KV 5%	2508850015
A10242-D004 STEREO DECODER PANEL		
C2	390 N750 50V 5%	2508393915
C9	120 NPO 50V 10%	2508411219
C18	100 NPO 50V 10%	2508411019
C26	270 N750 50V 5%	2508432715
A10178-B002, C003, A10178-A001		
SCAN VELOCITY MODULE		
C17	27 NPO 50V 5%	2508412705 (4)
A10180-D004 TS-10 TUNING SYSTEM BOARD		
C1015	27 NPO 50V 5%	2507392705
C1016	27 NPO 50V 5%	2507392705
C1052	47 NPO 50V 5%	2508414705
C1053	47 NPO 50V 5%	2508414705
C1157	47 NPO 50V 5%	2507394705
C1233	47 NPO 50V 5%	2508414705
C1415	27 NPO 50V 5%	2508412705
C1416	27 NPO 50V 5%	2508412705
C1560	120 NPO 50V 5%	2508411215
C1572	120 NPO 50V 5%	2508411215
C1574	39 NPO 50V 5%	2508413905
C1582	120 NPO 50V 5%	2508411215
C1584	39 NPO 50V 5%	2508413905
C1592	120 NPO 50V 5%	2508411215
C1594	39 NPO 50V 5%	2508413905

For SAFETY use only equivalent replacement part.
(1) EMC605, EMC611
(2) EMC605-D004, EMC607-D004, E005, EMC611-B002, C003, EMC613-B002, C003
(3) EMC607-E005, EMC611-C003, EMC613-C003
(4) Used in version A10178-B002, C003

ITEM No.	RATING	MFGR. PART No.
# C465	.47 400V 5%	2508050002
	.51 400V 5%	2508050008 (1)
# C466	.0091 2KV 5%	2508189125
# C474	.15 50V 20%	2508591540
# C480	.22 100V	2509592240
# C483	.1 400V	2509581040
C601	10 NPO 50V 5%	2508411008
C616	33 NPO 50V 5%	2508413305
C621	33 NPO 50V 5%	2508413305
C628	33 NPO 50V 5%	2508413305 (3)
C629	33 NPO 50V 5%	2508413305 (3)
C630	33 NPO 50V 5%	2508413305 (3)
C631	33 NPO 50V 5%	2508413305 (3)
RFS004-A001 RF Antenna Switch Module		
C1	56 NPO 50V 5%	2530015605
C10	56 NPO 50V 5%	2530015605
C15	56 NPO 50V 5%	2530015605
STAND BY POWER SUPPLY BOARD		
# C906	.01 125V AC	2506260017