

CABINET-REAR VIEW

## DISASSEMBLY INSTRUCTIONS

### CHASSIS REMOVAL

Remove knobs from cabinet front. Remove four screws holding cabinet back and remove back. Disconnect HV anode, CRT socket, deflection yoke connectors, degaussing coil connectors, speaker connectors and ground leads. Remove four screws holding tuner control and tuning selector panel assembly to cabinet front and remove assembly from cabinet. Channel Indicator is accessible for servicing. Remove two screws holding picture control assembly to cabinet front and remove assembly from cabi-

net. Release two latches holding main board assembly to cabinet bottom and slide board assembly out of 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 degaussing coil and CRT to cabinet front and lift CRT out of cabinet. Do not lift CRT by the neck.

## SERVICING IN THE FIELD

### CRT IMPLSION PROTECTION AND CLEANING

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

### FUSE DEVICES

A 2-amp fuse is used for AC line protection. (See photo, Cabinet-Rear View.)

### LAMP ACCESSIBILITY

Tuner assembly must be removed. See Disassembly Instructions.

### VHF/UHF TUNER

See Miscellaneous Adjustments.

### UHF AND VHF TUNERS

The UHF and VHF tuners employ a detent mechanism for channel selection. Fine tuning is accomplished by adjusting the fine tuning controls.

### HORIZONTAL OSCILLATOR

Adjustment of the horizontal hold is accomplished by the proper setting of the horizontal hold control. (See Placement Chart.)

### WIDTH

The width may be varied by the horizontal width control. (See Placement Chart.)

### FOCUS

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

### AGC

The AGC may be varied by an RF AGC Delay control. (See Placement Chart.)

### CENTERING

Vertical centering is accomplished by proper setting of the vertical centering switch. (See Placement Chart.)

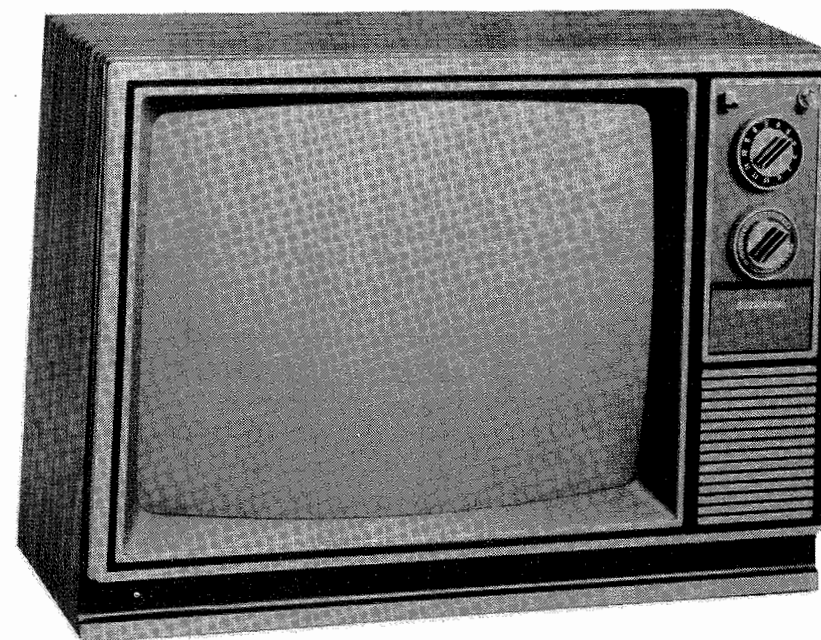
SET 2404 FOLDER 2

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SYLVANIA CHASSIS  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315



## SAFETY PRECAUTIONS

See page 4.

## INDEX

	Page		Page
Alignment		Photos (Continued)	
TV.....	6,7	Main Board-Shield Location.....	56
Block Diagram.....	61	Remote Transmitter T174AB.....	12
Convergence Adjustments.....	18	Secondary Controls.....	47,63
Disassembly Instructions.....	65	Tuner Mounting Board.....	46
GridTrace Location Guide		Tuning System Board (TS-6).....	23
CRT Board.....	20	Tuning System Board (TS-7).....	42
Main Board.....	17,48	Volume Board (TS-6).....	22
Miscellaneous Adjustments.....	18	Placement Chart.....	9
Parts List		Quick-Checks Troubleshooting	
Channel Selector.....	46	CRT Board.....	45
Display Panel (TS-7).....	44	Main Board.....	13,52
Remote Receiver.....	19	Resistance Measurements.....	56
Remote Transmitter.....	12	Safety Precautions.....	4
TV.....	29 thru 36	Schematics	
Tuner Control ATC076-A001.....	28,37	Terminal Guides and Notes.....	62
Tuner Control C13301-00AA.....	11	Remote Receiver.....	19
Tuner Control (TS-6).....	24	Remote Transmitter T147AB.....	12
Tuner Control (TS-7).....	41	TV.....	2,3
Tuning System Board (TS-6).....	23	TS-6 Non Remote Tuning.....	27,38
UHF Tuner.....	8	TS-7 Remote Tuning.....	26,39
VHF Tuner.....	10	Tuner Control ATC076-A001.....	28,37
Photos		Tuner Control C13301-00AA.....	11
Cabinet-Rear View.....	65	UHF Tuner.....	8,64
Channel Selector Board.....	46	UHF/VHF Tuners.....	25,40
Control Board.....	48	VHF Tuner.....	5,10,60
CRT Board.....	20,21,45	Servicing In the Field.....	65
CRT Socket A10241-A001.....	47	Test Equipment.....	6
CRT Neck Assembly.....	19	Troubleshooting.....	58,59
Display Board.....	22,44	Troubleshooting Aid.....	57
IR Preamp Board.....	24	Troubleshooting Charts	
Main Board...13,14,15,16,49,50,51,52		(TS-6, TS-7).....	53,54,55
		Tuner Chart (TS-7).....	43

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

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SET 2404 FOLDER 2

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SET 2404 FOLDER 2



**SEC. CONT. BD.**  
**A10020-A001**

TN6882

W1 W2 W3 W4 W5 W6 W7 W8 W9

R21 R22 R23 R24 R25 R26 R27 R28 R29 R30 R31 R32

BRT

COLOR TINT PIX

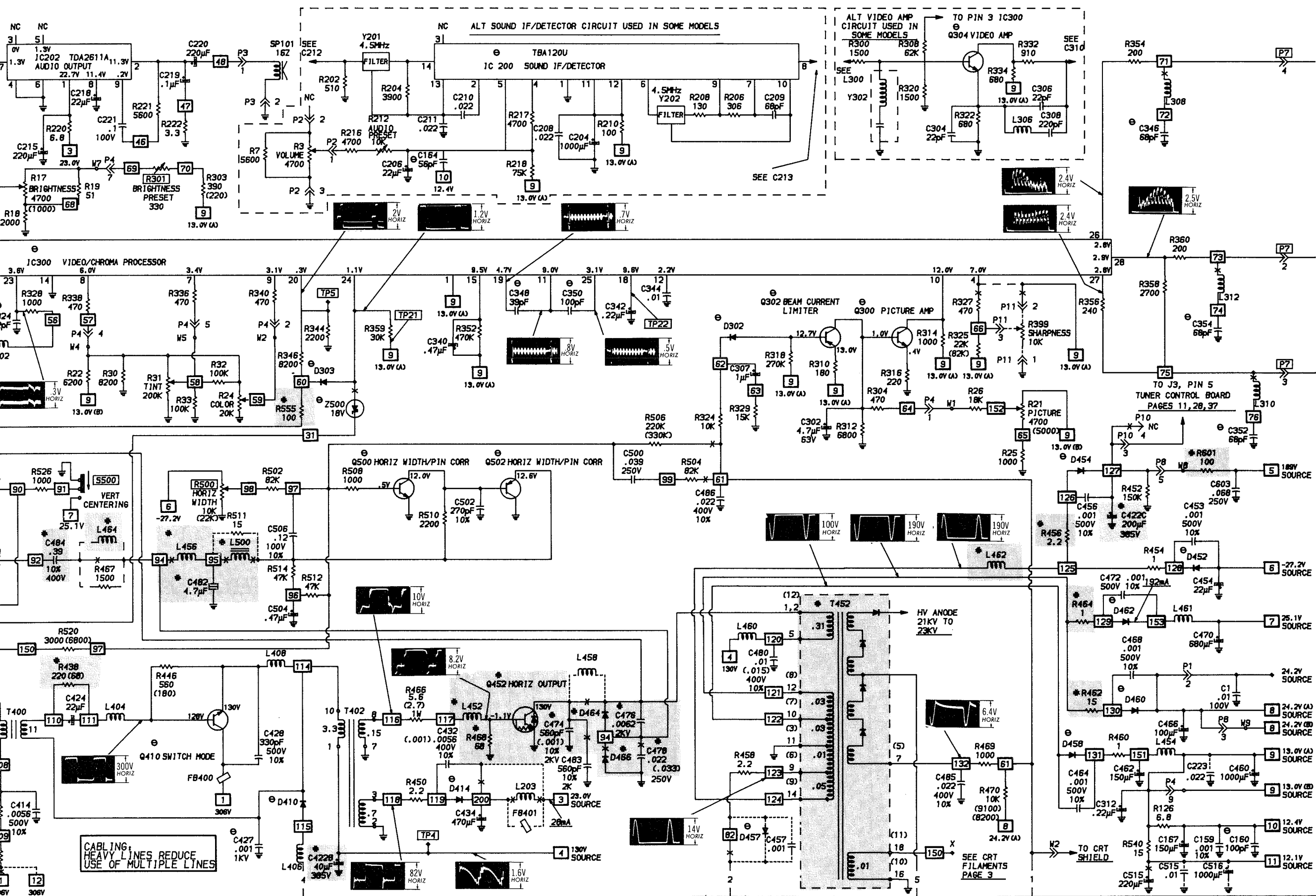
12346 24680-82345

Diagram illustrating the back of the control panel (ASC 211379-5) showing various controls and their wiring connections:

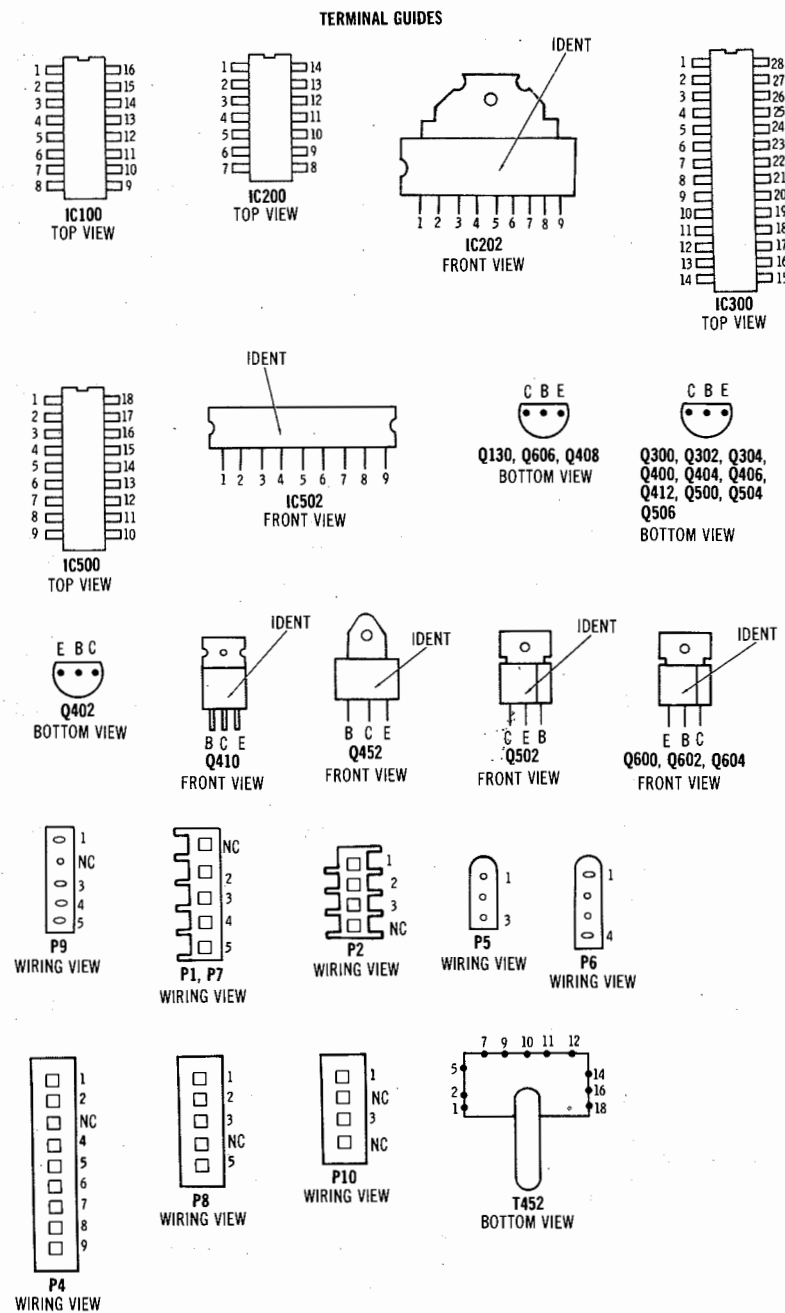
- Controls:** COLOR R24, TINT R31, PIC R21, BRITE R17, SHARP R34.
- Wiring Connections:**
  - W2 is connected to COLOR R24.
  - W4 is connected to TINT R31.
  - W5 is connected to TINT R31.
  - W9 is connected to PIC R21.
  - W7 is connected to BRITE R17.
  - W10 and W11 are connected to SHARP R34.
  - W12 is connected to SHARP R34.
  - W6 is connected to the bottom of the panel.
  - W1 is connected to the bottom of the panel.
- Other Labels:** R30, R33, R20, R19, R32, R22, R25, R18.

## SECONDARY CONTROL BOARDS

UHF TUNERS 3402770001, 3402880001



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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
- ⊙ See parts list
- \* Nominal value
- ⊥ Ground
- ⏏ Chassis
- ▽ 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.

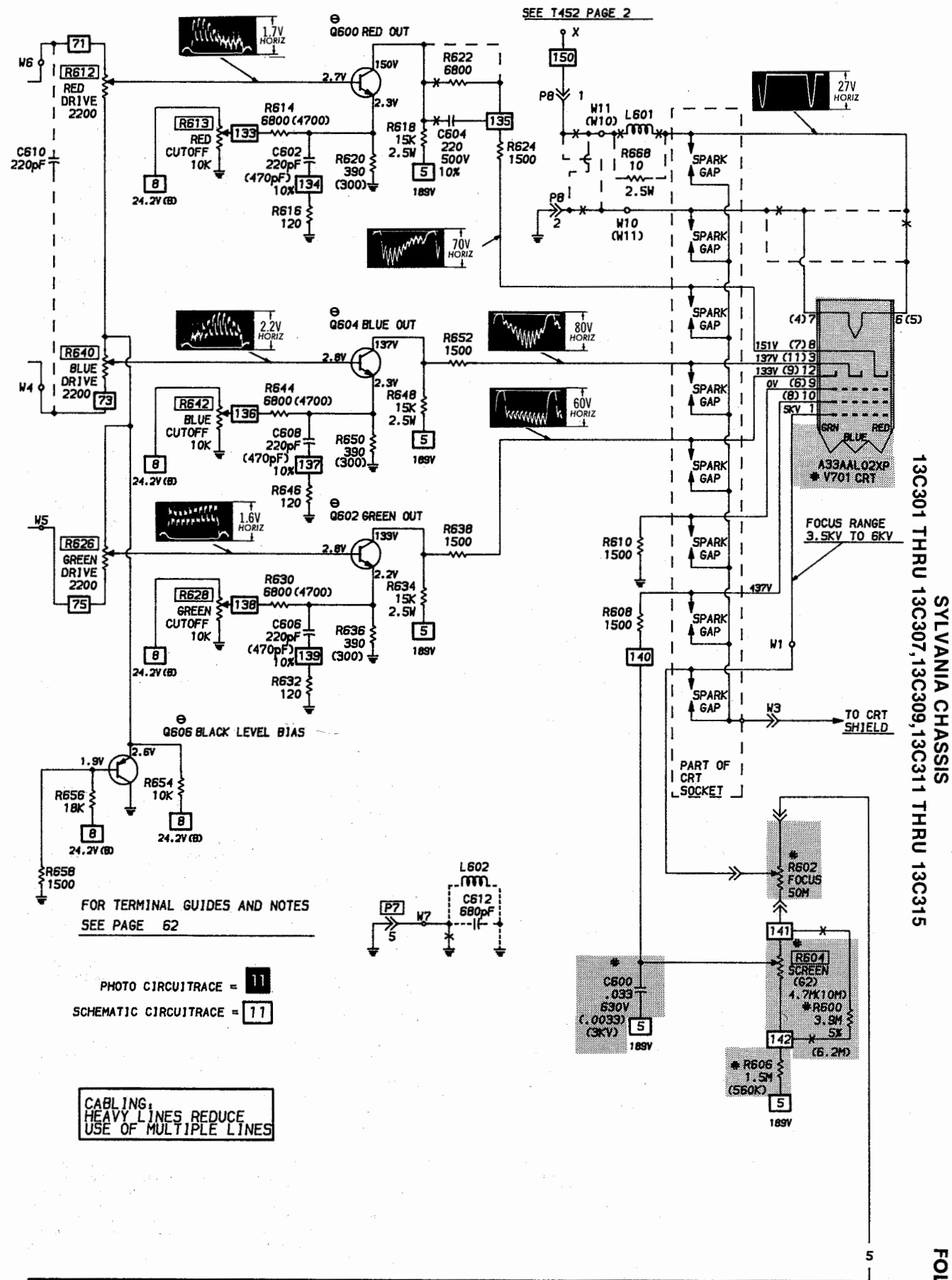
Terminal identification may not be found on unit.

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

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

Resistors are 1/2W or less, 5% unless noted.

Value in ( ) used in some versions.



A PHOTOFAC STANDARD NOTATION SCHEMATIC  
WITH CIRCUITRACE  
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SAFETY PRECAUTIONS

Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired receiver unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed according to the original design.
3. Soldering and wiring must be inspected to uncover possible cold solder joints, solder splashes, or sharp solder points, frayed leads, pinched leads, or damaged insulation (including ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. All critical components (shaded gray on the schematic diagrams and parts lists) such as: fuses, flameproof resistors, capacitors, transformers, etc., should be replaced with exact manufacturer's parts listed in the service information to avoid hazards caused by improper parts. Do not use replacement components other than those specified or make unrecommended circuit modifications.
7. When servicing any receiver, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many receivers use a polarized line cord (one wide pin on the plug). Defeating this safety device may create a potential hazard to the servicer and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After re-assembly of the set, always perform an ac leakage test, or resistance test from the line cord to all exposed metal parts of the cabinet. Also, check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc., to be sure the set is safe to operate without danger of electrical shock.

Implosion

1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or other damage during installation.
2. Use only replacement tubes as specified by the manufacturer.

X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the HV at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has available at all times an accurate HV meter. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of a X-radiation problem. High voltage should always be kept at the manufacturer's rated value — no higher — for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV does not exceed the specified value and that it is regulated correctly.  
We suggest that you and your service technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine be clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV reading be recorded on each customers' invoice, which will demonstrate a proper concern for the customers' safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.

6. New type picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types as that may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed metallic cabinet parts of the receiver, such as screw-heads, antennas and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from ac line cord.

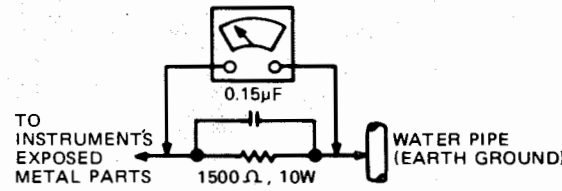


Figure 1

Leakage Current Hot Check

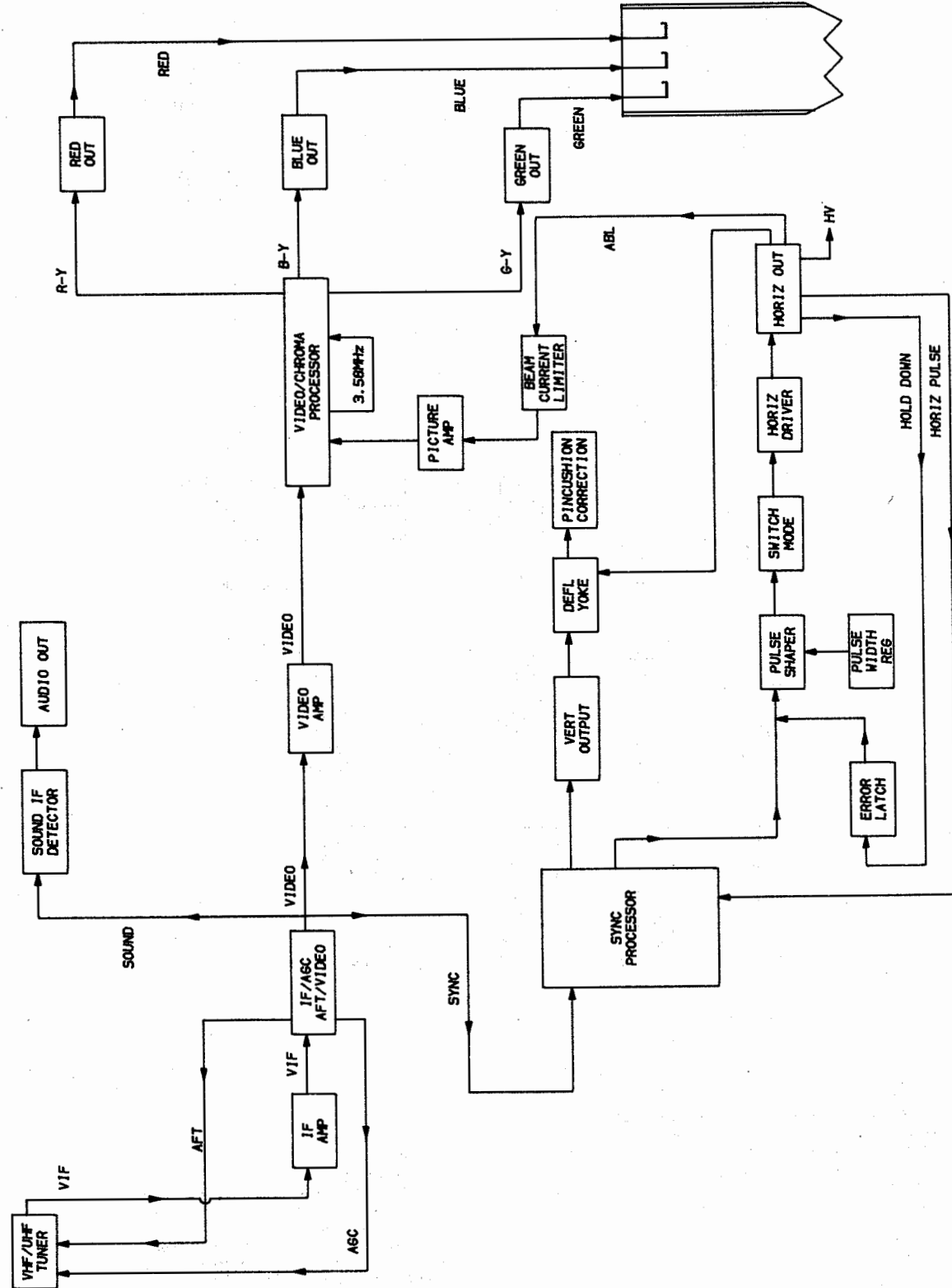
1. Do not use an isolation transformer for this test. Plug the completely re-assembled receiver directly into the ac outlet.
2. Connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15 mfd. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms/volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measurement is outside the limits specified, there is a possibility of shock hazard. The receiver should be repaired and re-checked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a N.A.P. Consumer Electronics Corp. (NAPCEC) approved type.

Parts Replacement

Many electrical and mechanical parts in NAPCEC television sets have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the NAPCEC recommended replacement parts shown in this service manual may create shock, fire or other hazards.



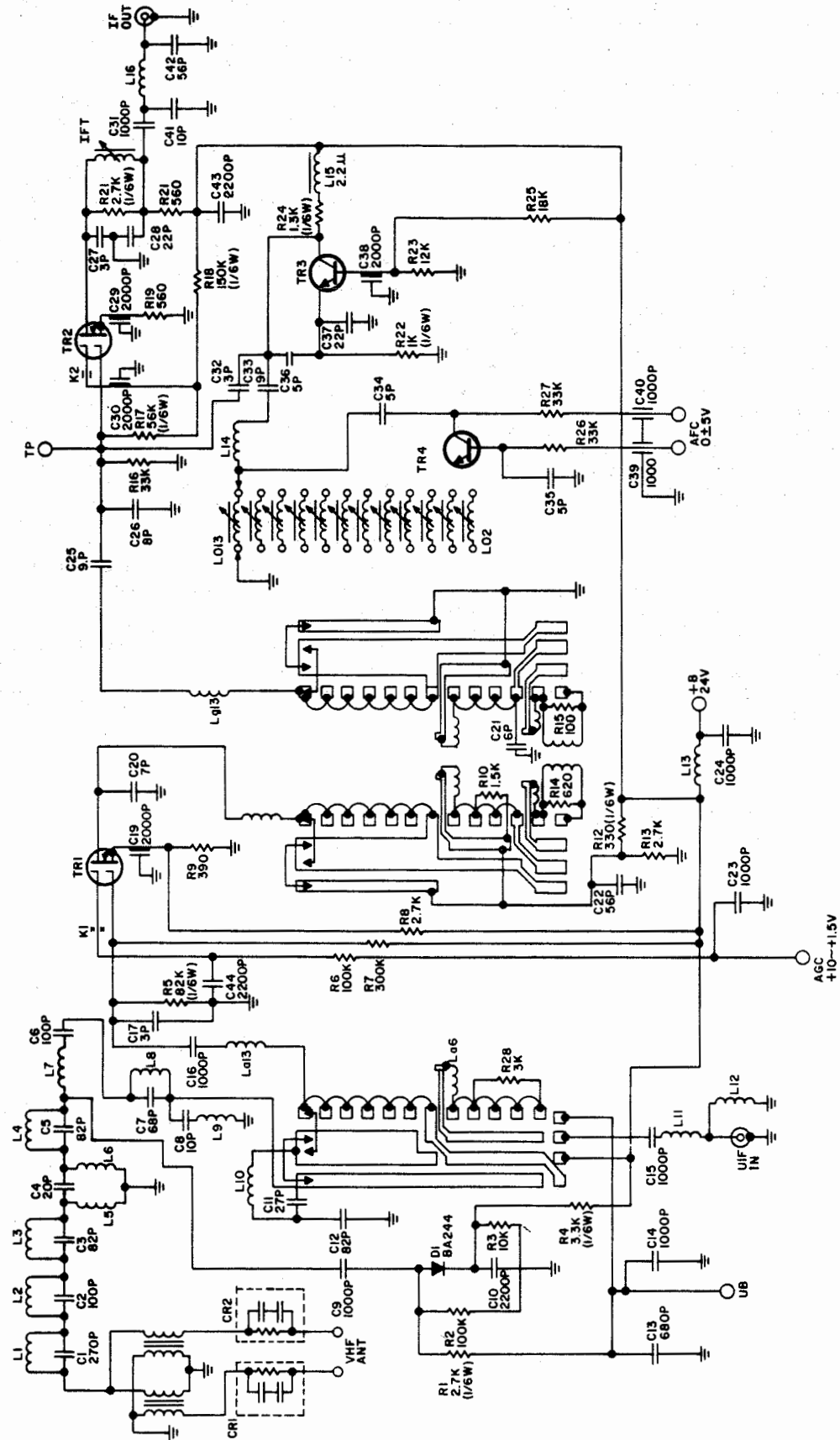
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FOLDER 2

BLOCK DIAGRAM

Courtesy of the Manufacturer

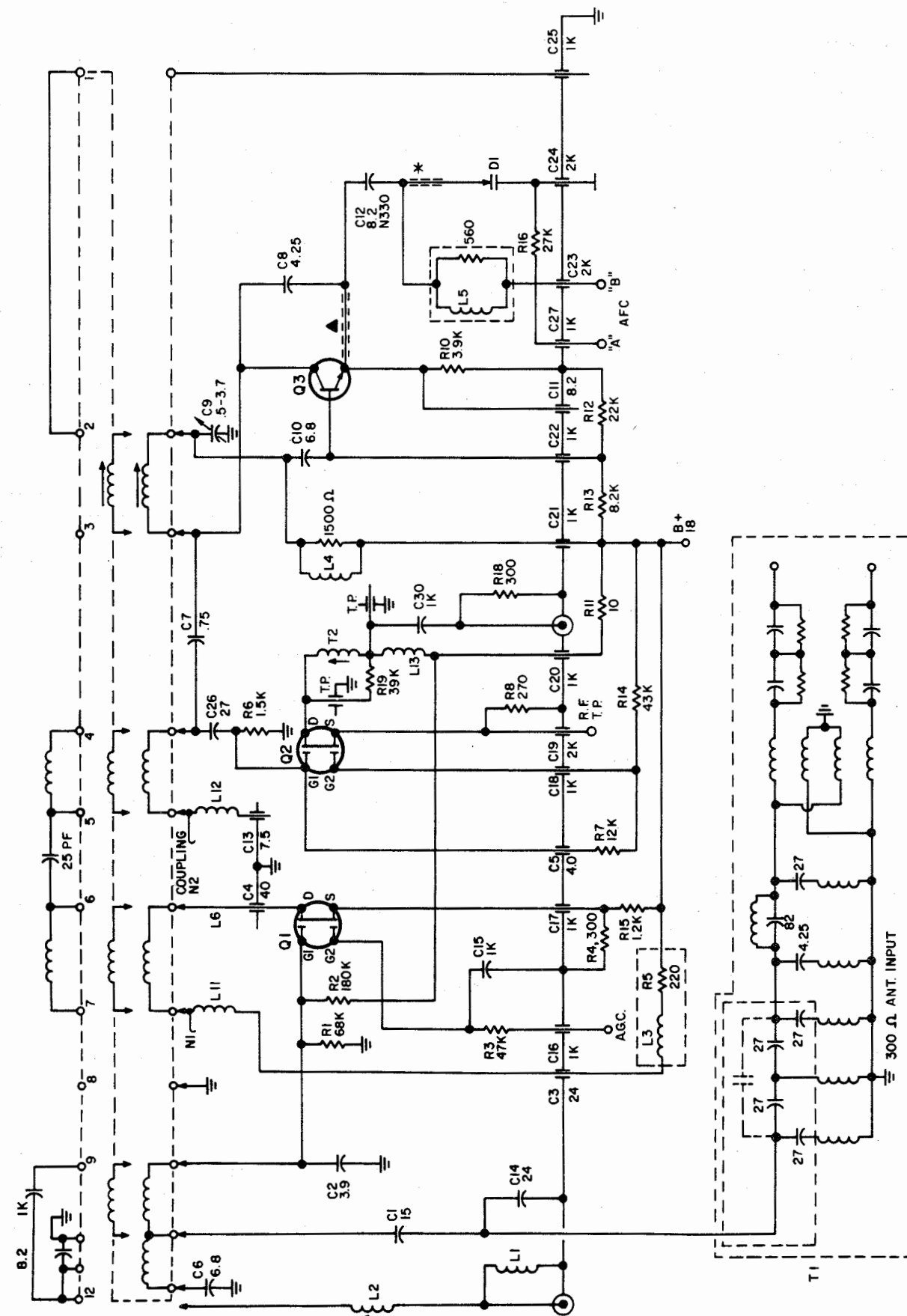
VHF TUNER 3402780001 SCHEMATIC DIAGRAM



Courtesy of the Manufacturer

VHF TUNER 3402780001

3402460020 SCHEMATIC DIAGRAM



Courtesy of the Manufacturer

VHF TUNER 3402460020

13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

FOLDER 2

SET2404 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.	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

C322.....5000  
R112, R212, R301, R426, R500, R516, R542, R546, R570.....8606, 8606L, 8869

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 Plug at J1.  
Connect a +7.4V Bias to TP18 (Junction R118 and C150).

SOUND IF ALIGNMENT

Tune in a station and adjust L205 and L207 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 L205.

TROUBLESHOOTING (Continued)

10, 20, 24 ,26 27 and 28 of IC300. If the waveform is present, check the voltages, wave-  
forms and components associated with Red Out-  
put Transistor (Q600), Green Output Transistor  
(Q602), Blue Output Transistor (Q604), Black  
Level Bias Transistor (Q606) and the CRT. If  
there is insufficient or too much brightness,  
check the voltages and components associated  
with Beam Current Limiter Transistor (Q302).

VERTICAL

If there is no vertical sweep, inject a verti-  
cal signal at pin 1 of Vertical Output IC  
(IC502). If vertical sweep returns, check the  
voltages, waveforms and components associated  
with pins 1 thru 4 of Sync Processor IC  
(IC500). If vertical sweep does not return,  
check the voltages, waveforms and components  
associated with Vertical Output IC IC502 and  
the Deflection Yoke (DY1). Vertical linearity  
or foldover problems may be caused by Electro-  
lytics C510, C511, C512 and C546 being defec-  
tive. If the vertical oscillator is off fre-  
quency, check the voltages and components asso-  
ciated with pin 3 of IC500.

SYNC

If there is no vertical or horizontal sync,  
check for the proper vertical and horizontal  
sync pulses at TP6. If missing, check compo-  
nents associated with TP6. If sync pulses are  
present at TP6, check for the proper vertical  
waveforms at pin 3 and 4 of Sync Processor IC  
(IC500) and the proper horizontal waveforms at  
pin 15.

RASTER

If there is no raster, but High Voltage is  
present, check the CRT and CRT voltages. If

there is no Red, check the voltages, waveforms  
and components associated with pin 26 of Vid-  
eo/Chroma Processor IC (IC300) and Red Output  
Transistor (Q600). If there is no Green,  
check the voltages, waveforms and components  
associated with pin 27 of IC300 and Green Out-  
put Transistor (Q602). If there is no Blue,  
check the voltages, waveforms and components  
associated with pin 28 of IC300 and Blue Out-  
put Transistor (Q604). If the raster has a  
keystone shape, check the Deflection Yoke  
(DY1). If the raster has height or width prob-  
lems, refer to the "Vertical" or "Horizontal"  
and "Power Supply" sections of this Trouble-  
shooting guide.

CHROMA

If there is no color, check for a chroma wave-  
form at pin 13 of Video/Chroma Processor IC  
(IC300). If waveform is absent, check compo-  
nents associated with pin 13 of IC300. If the  
waveform is present, check for the proper  
color waveforms at pins 26, 27 and 28. If  
waveforms are missing, check the voltages,  
waveforms and components associated with pins  
7 thru 9, 11, 12, 15 thru 19 and 21 thru 28 of  
IC300. Check to be sure the 3.58MHz oscil-  
lator is operating at the correct frequency.  
If there is improper hue (tint), check the  
voltages and components associated with pin 7  
of IC300. If the proper color waveforms are  
present at pins 26, 27 and 28, check the volt-  
ages, waveforms and components associated with  
Red Output Transistor (Q600), Green Output  
Transistor (Q602), Blue Output Transistor  
(Q604) and the CRT.

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## TROUBLESHOOTING

### POWER SUPPLY

If there is no raster or sound, check AC Fuse (F400). If open, check Capacitors C400, C404, C406, C425, Electrolytics C402 and C422, Diodes D400, D402 and Mode Switch Transistor (Q410). If Fuse F400 is good, apply 120V AC and check for 322V at the collector of Transistor Q410. If the voltage is missing, check Line Filter (L402), Power Switch (S400), Resistor R402 and Coil L405. If voltage is present, refer to the "Horizontal" section of this Troubleshooting guide.

### HORIZONTAL

Make sure that the set is not in shutdown. Refer to the "High Voltage Shutdown" section of this Troubleshooting guide. If set is not in shutdown, inject a horizontal signal at the base of Pulse Shaper Transistor (Q400) and turn set on. If set comes on and stays on, check the voltages, waveforms and components associated with pins 8 thru 18 of Sync Processor IC (IC500). If set does not come on, check the voltages, waveforms and components associated with Pulse Shaper Transistor Q400, Horizontal Driver Transistor (Q402), Pulse Width Regulator Transistor (Q404), Error Latch Transistors (Q406, Q408), Mode Switch Transistor (Q410), Over Voltage Sensing Transistor (Q412), Horizontal Driver Transformer (T400), Mode Switch Transformer (T402), Horizontal Output Transformer (T452) and Horizontal Output Transistor (Q452). Check B+ sources derived from T452. Check for 130V at TP4, 13.3V at TP9, 195V at the cathode of D454, 13.5V at the cathode of D458, 24.6V at the cathode of D460, 25.7V at the cathode of D462, and -28.1V at the anode of D452. The High Voltage Rectifier is part of T452 and may be defective. If the Horizontal Oscillator is off frequency, check the voltages and components associated with pin 15 of IC500. Horizontal linearity or fold-over problems may be due to Capacitors C474, C476, C478, C484 and Coils L456 and L464.

### HIGH VOLTAGE SHUTDOWN

The High Voltage is monitored by rectifying pulses from High Voltage Transformer (T452). Should the High Voltage Increase, the rectified voltage at the cathode of D456 will also increase and at a certain level will turn on Over Voltage Sensing Transistor (Q412). This turns on Error Latch Transistors (Q406 and Q408) which shutdown the set. To troubleshoot set that has been shutdown, remove Diode D456 from circuit, use a Variac for AC power, start with about 50V AC and troubleshoot until defect has been located and corrected. Return D456 to circuit. NOTE: Care should be taken in defeating the High Voltage Shutdown circuit as this may cause excessive X-radiation and damage to the CRT, Transformer T452 and associated components. Monitor High Voltage, use a Variac for AC power and troubleshoot.

NOTE: Voltages taken with TV in shutdown.

	E	B	C
Q400	.15V	.56V	.73V
Q402	.73V	1.4V	.83V
Q404	.73V	.37V	.73V
Q406	.42V	.06V	.71V
Q408	0V	.85V	.06V
Q410	0V	0V	354V
Q412	1.36V	.31V	.85V
TP4	0V		

### IF-AGC

If there is no picture or sound, inject an IF signal at the IF Input and check for a picture on the CRT. If a picture is present on the CRT, check the Tuner, AGC and AFC circuits. If a picture is not present on the CRT, check for a video waveform at TP1. If a video waveform is present, refer to the "Video" section of this Troubleshooting guide. If there is no video waveform at TP1, apply AGC bias to pin 14 of IF/AGC/AFT/Video IC (IC100). If a picture is now present at TP1, check the components associated with pin 14 of IC100. If a picture is still missing at TP1, check the voltages, waveforms and components associated with pins 1, 2, 5 and 7 thru 16 of IC100, and IF Amp Transistor (Q130). A defective AGC circuit can cause an overloaded picture, excessive snow or loss of picture and sound. See AGC Voltage Chart for voltages that change with signal.

### AGE VOLTAGE CHART

IC100	Pin 4	3.1V
IC100	Pin 14	7.3V

### AUDIO

If there is video but no audio, inject an audio signal at pin 7 of Audio Output IC (IC202). If audio is now present, check the voltages, waveforms and components associated with Sound IF/Detector IC (IC200). If audio is still missing, check the voltages, waveforms and components associated with IC202 and the speaker.

### VIDEO

If there is no video, inject a video signal at TP1. If video is now present, refer to the "IF-AGC" section of this Troubleshooting guide. If there is no video with a video signal injected at TP1, check for a video waveform at pins 5 and 6 of Video/Chroma/Processor IC (IC300). If waveform is missing, check the voltages, waveforms and components associated with TP1, Video Amp Transistor (Q304) and pins 5 and 6 of IC300. If there is a video waveform at pins 5 and 6 of IC300, check for a video waveform at pins 26, 27 and 28. If waveform is missing, check the voltages, waveforms and components associated with pins 1 thru 4,

## TV ALIGNMENT INSTRUCTIONS (Continued)

### AUTOMATIC FINE TUNING ALIGNMENT

Connect as explained in preliminary instructions unless specified otherwise. Disconnect Plug at J1.

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP19 (Pin 3-P1 Plug)	To J1	44MHz (10MHz Sweep)	45.75MHz	Adjust L156 for Maximum gain and symmetry of response. See Figure 5.

NOTE: Reconnect Plug at J1.

### VIDEO IF ALIGNMENT (SWEEP MARKER GENERATOR)

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP1	To J1	44MHz (10MHz Sweep)	47.25MHz	Adjust L129 for MINIMUM. See Figure 1.
"	"	"	45.75MHz	Adjust L155 to position the 45.75MHz marker as high as possible on the response curve without lowering the amplitude of the response curve. NOTE: Reconnect Plug at J1. See Figure 2.
"	To TP on VHF Tuner	"	42.17MHz 44.00MHz 45.75MHz 47.25MHz	Adjust IF Output Coil (VHF Tuner) for Maximum gain and symmetry of response. See Figure 3.

### VIDEO IF ALIGNMENT (BAR SWEEP GENERATOR)

BAR SWEEP GENERATOR	SCOPE INPUT	REMARKS
To Antenna Terminals	To TP1	Perform Video IF Adjustments per SWEEP/MARKER GENERATOR instructions above. See Figure 4.

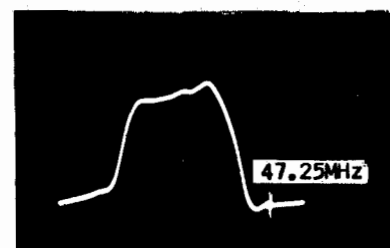


Figure 1

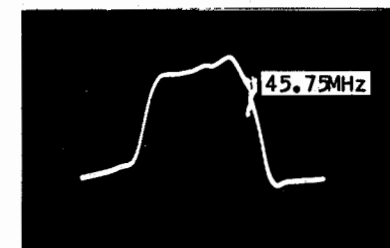


Figure 2

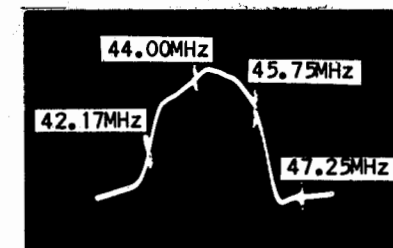


Figure 3

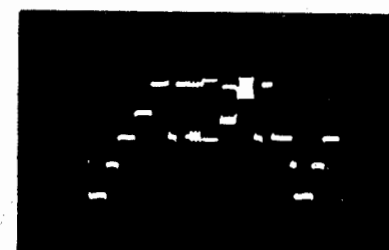


Figure 4

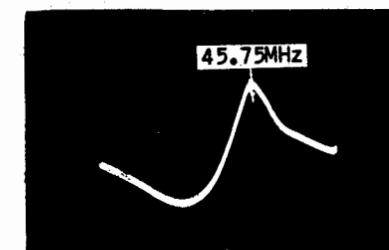
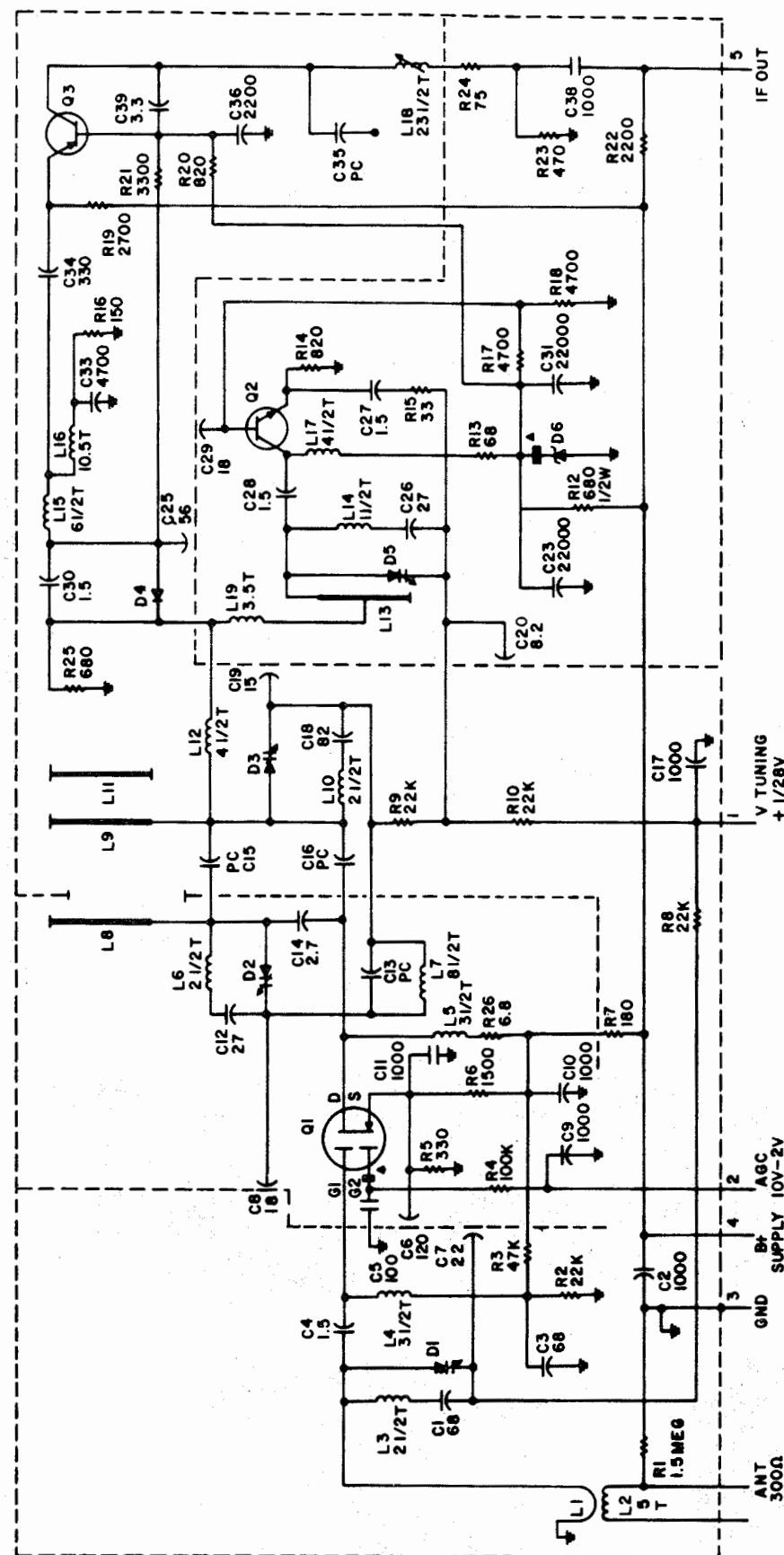


Figure 5

13C301 THRU 13C307, 13C309, 13C311 THRU 13C315  
SYLVANIA CHASSIS

FOLDER 2

# UHF TUNER 3403020003 SCHEMATIC DIAGRAM



3403020003 UHF TUNER (Complete Asm.)  
REPLACEMENT PARTS LIST (Continued)

COILS	UHF Antenna	3617470003	MISCELLANEOUS	SEMICONDUCTORS	5301951004
L2	2 1/2 Turns	.....	FB1	Diode, Varactor	5301951004
L3	3 1/2 Turns	.....	FB2	Diode, Varactor	5301951004
L4	3 1/2 Turns	.....	.....	D1	5301951004
L5	2 1/2 Turns	.....	.....	D2	5301951004
L6	3 1/2 Turns	.....	.....	D3	5301951004
L7	7 1/2 Turns	.....	.....	D4	5301951004
L8	2 1/2 Turns	.....	.....	D5	5301951004
L9	4 1/2 Turns	.....	.....	D6	5301951004
L10	1 1/2 Turns	.....	.....	Transistor, Mosfet-Dual RF	6104180001
L11	6 1/2 Turns	.....	.....	Transistor, NPN	6104190001
L12	10 1/2 Turns	.....	.....	Transistor, Hi-Freq. IF	6103900001
L13	4 1/2 Turns	.....	.....		
L14	23 1/2 Turns	.....	.....		
L15	3 1/2 Turns	.....	.....		
L16	3 1/2 Turns	.....	.....		
L17	3 1/2 Turns	.....	.....		
L18	3 1/2 Turns	.....	.....		
L19	3 1/2 Turns	.....	.....		

## 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 (T452). Refer to "Troubleshooting" Power Supply and Horizontal circuits.

NO PIC, NO SOUND, HAS RASTER: Check IF-AGC and source voltages from Horizontal Output Transformer (T452). Refer to "Troubleshooting" IF-AGC and Horizontal circuits.

NO PIC, HAS SOUND, NO RASTER: Check Horizontal Output Transformer (T452) 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 (T452). 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.

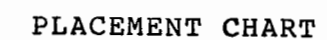
INCORRECT HUE (TINT): Refer to "Troubleshooting" Chroma circuit.

13C301 THRU 13C307, 13C309, 13C311 THRU 13C315  
SYLVANIA CHASSIS

FOLDER 2

### MEASUREMENTS TAKEN WITH LOW POWER OHMS METER

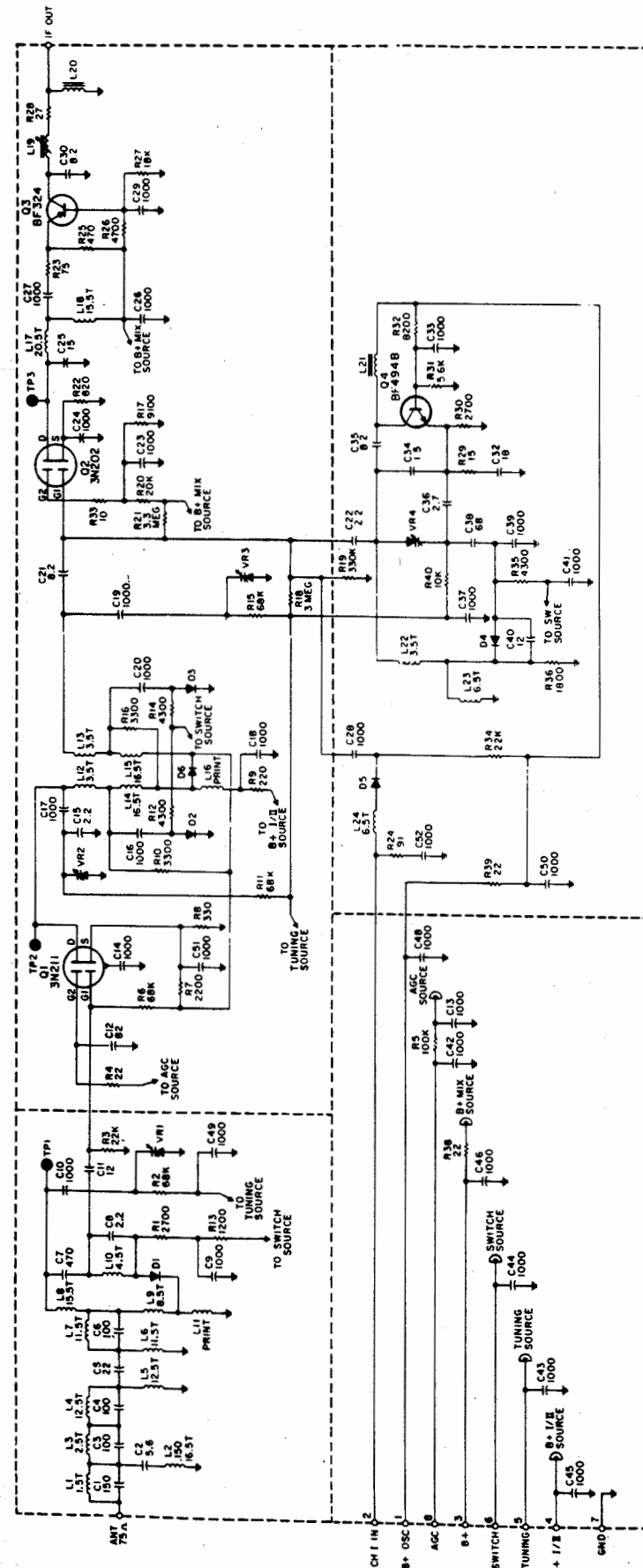
56



## FOLDER 2

# VHF TUNER 3403010004 SCHEMATIC DIAGRAM

## 3403010004-VHF TUNER (Complete Asm.) REPLACEMENT PARTS LIST



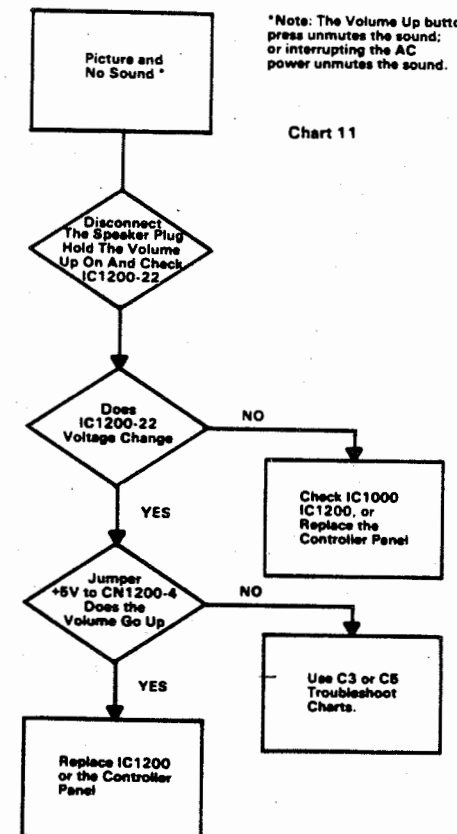
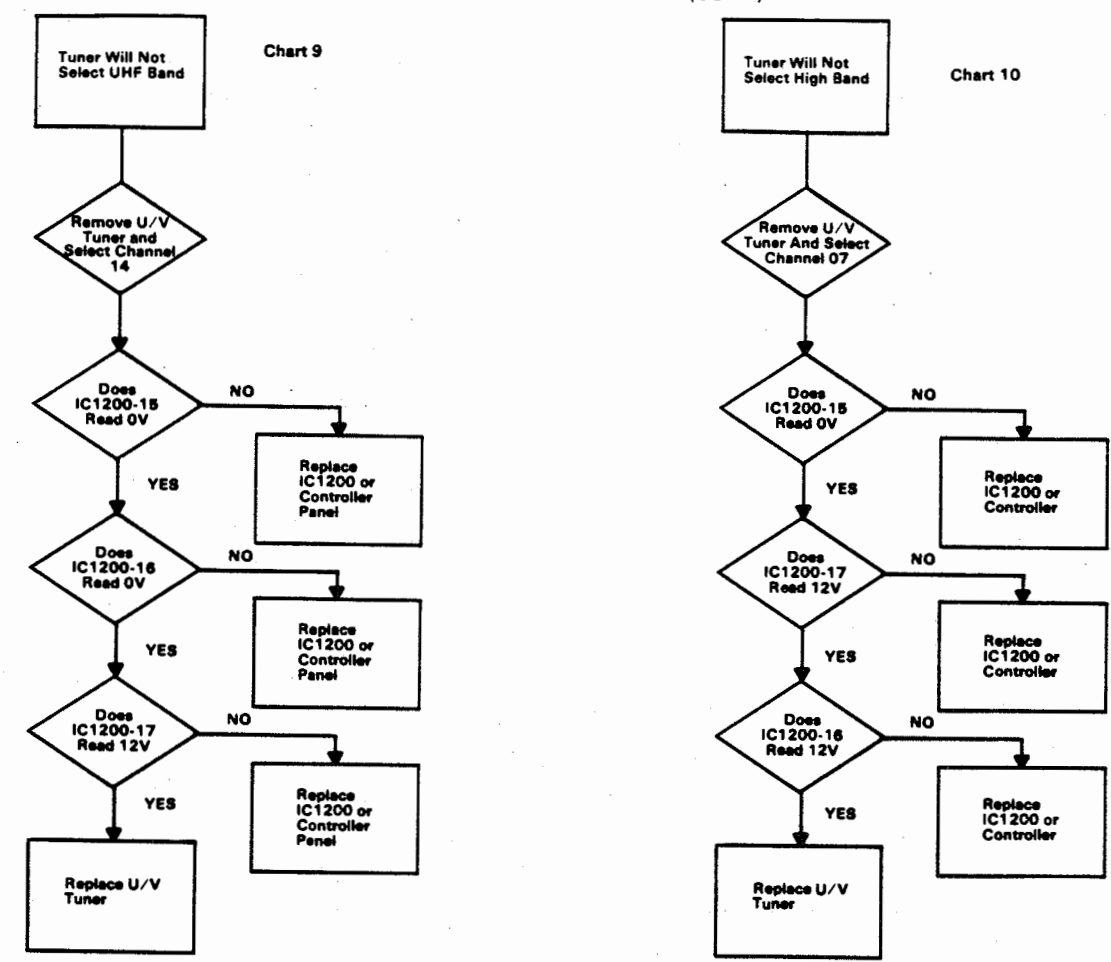
Ref.	Description	Part No.
<b>COILS</b>		
L1	Coil, 1 1/2 Turns	-----
L2	Coil, 16 1/2 Turns	-----
L3	Coil, 2 1/2 Turns	-----
L4	Coil, 12 1/2 Turns	-----
L5	Coil, 12 1/2 Turns	-----
L6	Coil, 13 1/2 Turns	-----
L7	Coil, 11 1/2 Turns	-----
L8	Coil, 14 1/2 Turns	-----
L9	Coil, 8 1/2 Turns	-----
L10	Coil, 4 1/2 Turns	-----
L12	Coil, RF Choke	3615070017
L13	Coil, RF Choke	3615070017
L14	Coil, 14 1/2 Turns	-----
L15	Coil, 16 1/2 Turns	-----
L17	Coil, 20 1/2 Turns	-----
L18	Coil, 15 1/2 Turns	-----
L19	Coil, 14 1/2 Turns	-----
L20	Coil, 5.6 Peaking	3614445690
L21	Coil, Fixed	3616830001
L22	Coil, 3 1/2 Turns	-----
L23	Coil, 6 1/2 Turns	-----
L24	Coil, 6 1/2 Turns	-----
<b>SEMICONDUCTORS</b>		
Q1	Transistor, Mosfet	6103510001
Q2	Transistor, Mosfet	6103990001
Q3	Transistor, RF Amp	6103900001
Q4	Transistor, NPN	6104000001
D1 thru D6	Diode, Bandswitch	5302051003
D5	Diode, Bandswitch	5301811001
D6	Diode, Bandswitch	5302051003
VR1 thru VR4	Diode, Varactor	5301881004
<b>MISCELLANEOUS</b>		
	Connector	1812850008
	VHF Tuner Cover(2 used)	7334360001
	Shield Bottom	7336920001
	Antenna Shield	7336940001

NOTES:  
 1. UNLESS OTHERWISE SPECIFIED  
 2. CAPACITANCE VALUES OF 1 OR GREATER ARE IN PICOFARADS.  
 3. CAPACITANCE VALUES OF LESS THAN 1 ARE IN MICROFARADS.  
 4. RESISTORS ARE 1/4WATT, 5%.  
 5. \* REFER TO BOM 340301 FOR REQUIREMENT.  
 6. \*\* GROUP 2 ONLY.

VHF TUNER 3403010004

Courtesy of the Manufacturer

## TS7 TROUBLESHOOTING CHARTS (CONT.)



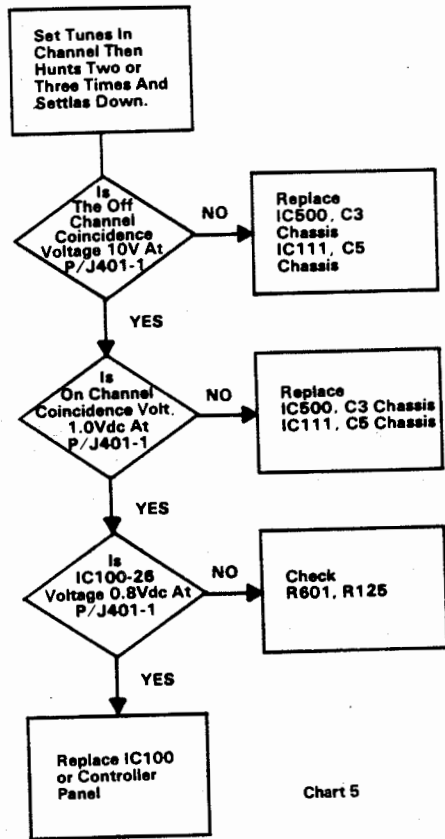
\*Note: The Volume Up button press unmutes the sound; or interrupting the AC power unmutes the sound.

Courtesy of the Manufacturer

SYLVANIA CHASSIS  
 13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

FOLDER 2

TS6 TROUBLESHOOTING CHARTS



TS7 TROUBLESHOOTING CHARTS

Chart 7

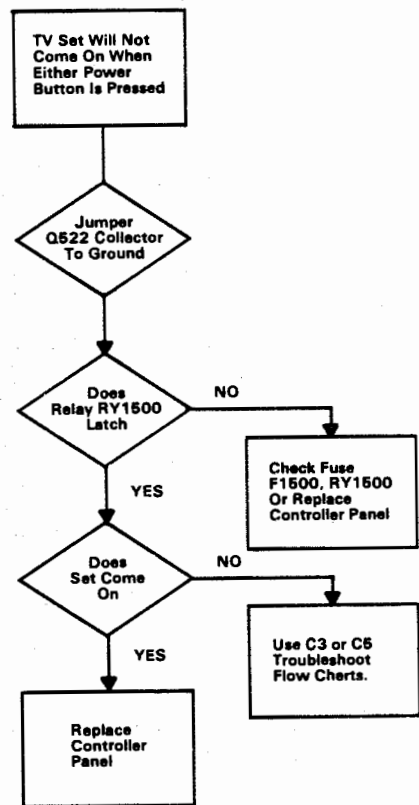
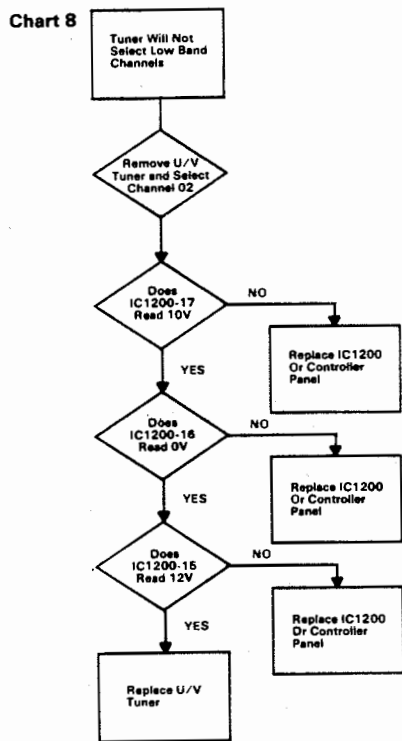
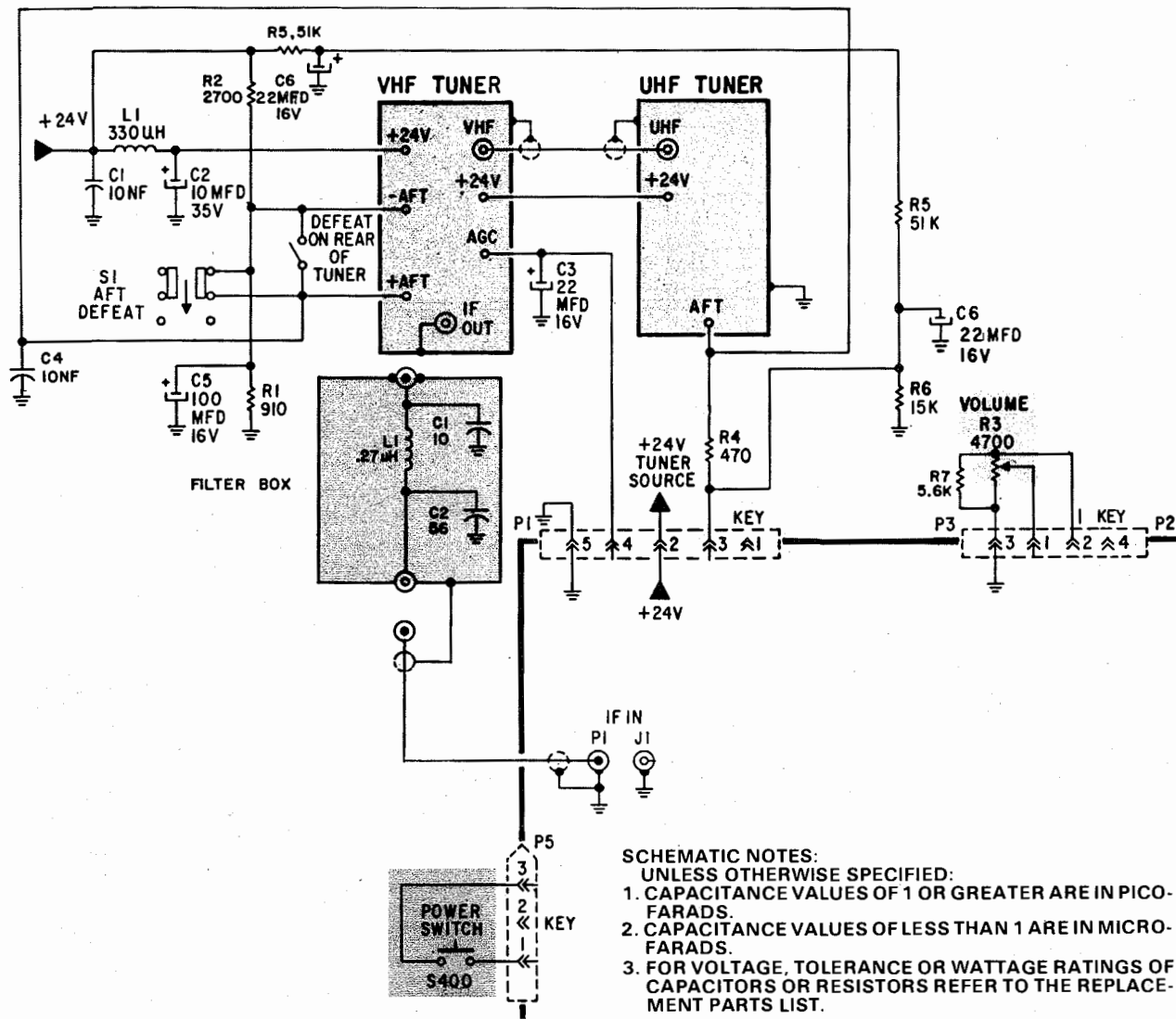


Chart 8



Courtesy of the Manufacturer

C13301-00AA TUNER CONTROL UNIT SCHEMATIC DIAGRAM



SYLVANIA CHASSIS  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

SCHEMATIC NOTES:  
UNLESS OTHERWISE SPECIFIED:  
1. CAPACITANCE VALUES OF 1 OR GREATER ARE IN PICO-FARADS.  
2. CAPACITANCE VALUES OF LESS THAN 1 ARE IN MICRO-FARADS.  
3. FOR VOLTAGE, TOLERANCE OR WATTAGE RATINGS OF CAPACITORS OR RESISTORS REFER TO THE REPLACEMENT PARTS LIST.

C13301-00AA TUNER CONTROL UNIT REPLACEMENT PARTS LIST

Ref.	Description	Part No.	Ref.	Description	Part No.
<b>Coil</b>			<b>Miscellaneous</b>		
L1	RF Choke Coil, 330uH.	3606760021	P1	5 Pin Square Wire Connector w/Contacts	1813500005
<b>Capacitors</b>			P2	4 Pin Square Wire Connector w/Contacts	1813500004
C1	Ceramic, .01uF., 20%	2506600002	P5	3 Pin Male Connector	1807350002
C2	Electrolytic, 10uF., 35V	2701171135		Female Contacts f/P5 (2 used)	1807250001
C3	Electrolytic, 22uF., 16V	2701172116		Insulator f/ Volume On-Off Switch	1444240001
C4	Ceramic, .01uF., 20%	2506600002		UHF to VHF Cable Assembly	7044660001
C5	Electrolytic, 100uF., 16V	2701171216		-Phono Plugs (2 used)	1808150002
C6	Electrolytic, 22uF., 16V	2701172116		I.F. Cable Assembly w/Plugs	4613920003
<b>Resistors</b>				Antenna Filter Assembly	7042760002
R1	Carbon Film, 910 ohm, 5%, 1/4W	2302149115		-Phono Socket	1810950003
R2	Carbon Film, 2700 ohm, 5%, 1/4W	2302142725		-L2 Peaking Coil, 27uH	3618130279
R4	Carbon Film, 470 ohm, 5%, 1/4W	2302144715		-C1 Ceramic, 10pF, 5%, 500V, NPO	2505461005
R5	Carbon Film, 51k ohm, 5%, 1/4W	2302145135		-C2 Ceramic, 56pF, 5%, 500V, NPO	2505465605
R6	Carbon Film, 15k ohm, 5%, 1/4W	2302141535		Negative Polarizing Key f/P1	1813510001
				Negative Polarizing Key f/P2	1813510001
<b>Controls &amp; Switches</b>			<b>Courtesy of the Manufacturer</b>		
S1	AFT Switch	1606370008			

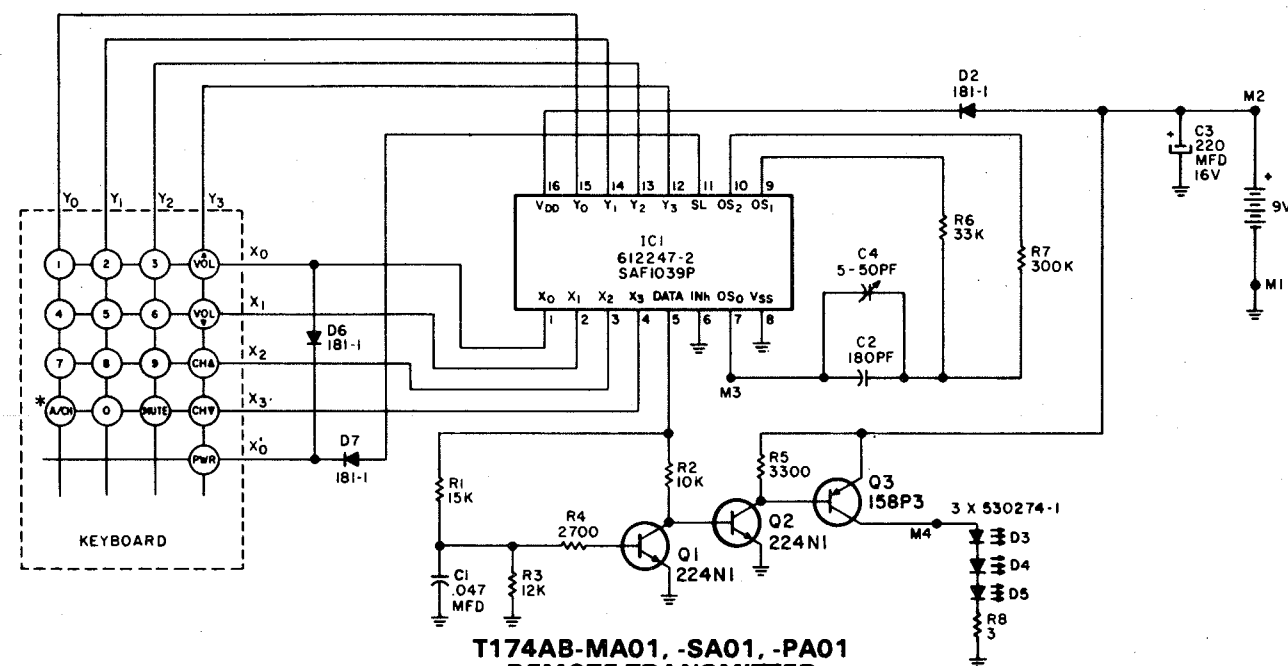
Courtesy of the Manufacturer

TUNER CONTROL C13301-00AA

SET2404 FOLDER 2

FOLDER 2

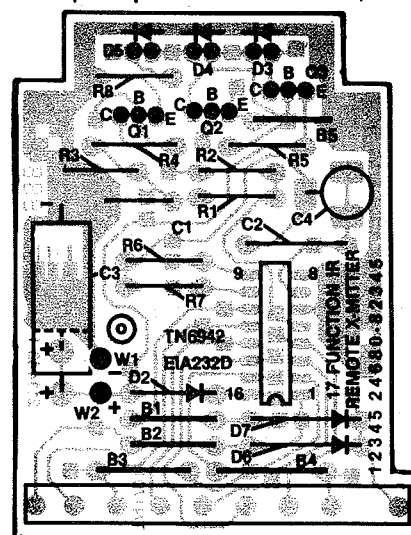
# T174AB REMOTE TRANSMITTER SCHEMATIC DIAGRAM



## T174AB-MA01, -SA01, -PA01 REMOTE TRANSMITTER REPLACEMENT PARTS LIST

Ref.	Description	Part No.	Ref.	Description	Part No.
<b>CAPACITORS</b>					
C1	.047uF., 20%, 250V, Polyester	2506554730	<b>SEMICONDUCTORS (Continued)</b>		
C2	180pF., 2.5%, 630Vdc, Polypropylene	2507191912	D6	Diode	5301811001
C3	22uF., 16V, Electrolytic	2702032216	D7	Diode	5301811001
C4	50pF., Trimmer	2602200003	Q1	Transistor, NPN	6102240001
<b>RESISTORS</b>					
(All are 5%, 1/4W, Carbon Film)					
R1	15k ohm	2302811535	Q2	Transistor, NPN	6102240001
R2	10k ohm	2302811035	Q3	Transistor, PNP	6101580003
R3	12k ohm	2302811235	IC1	IC, Remote Transmitter Encoder	6122470002
R4	2700 ohm	2302142725	<b>MISCELLANEOUS</b>		
R5	3.3k ohm	2302813325			
R6	33k ohm	2302813325			
R7	300k ohm	2302813045			
R8	3 ohm	2302143095			
<b>SEMICONDUCTORS</b>					
D2	Diode	5301811001			
D3 thru D5	Diode, IR Emitting	5302740001			

## T174AB 17 BUTTON REMOTE TRANSMITTER PC BOARD (Component Side Shown)



REMOTE TRANSMITTER T174AB Courtesy of the Manufacturer

# TS6 TROUBLESHOOTING CHARTS

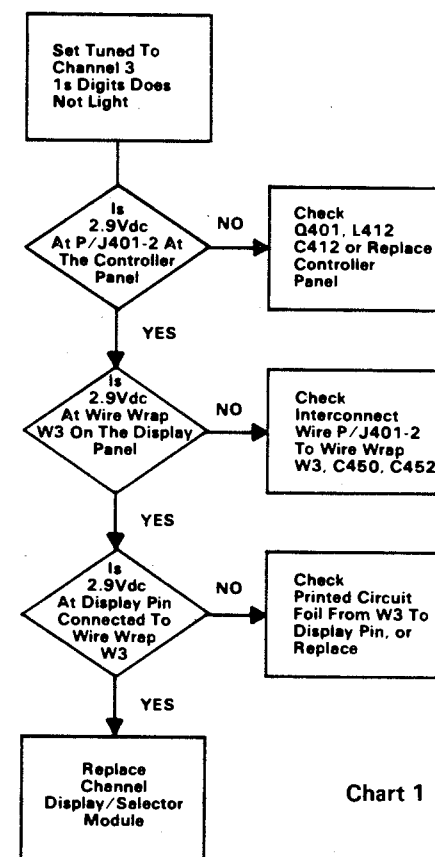


Chart 1

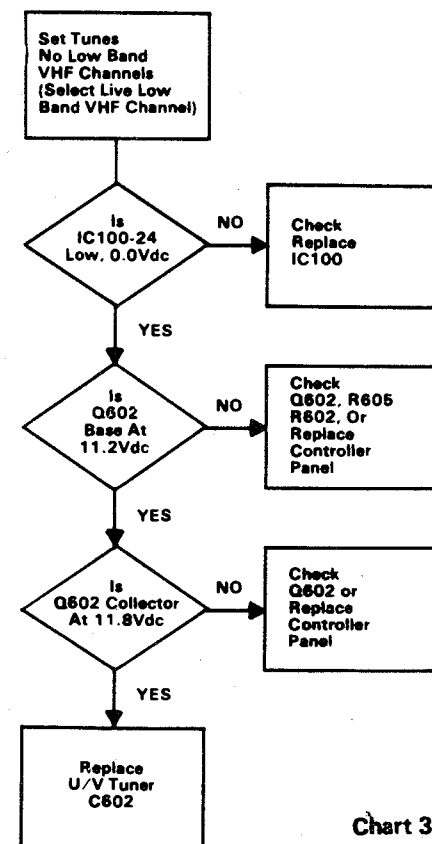


Chart 3

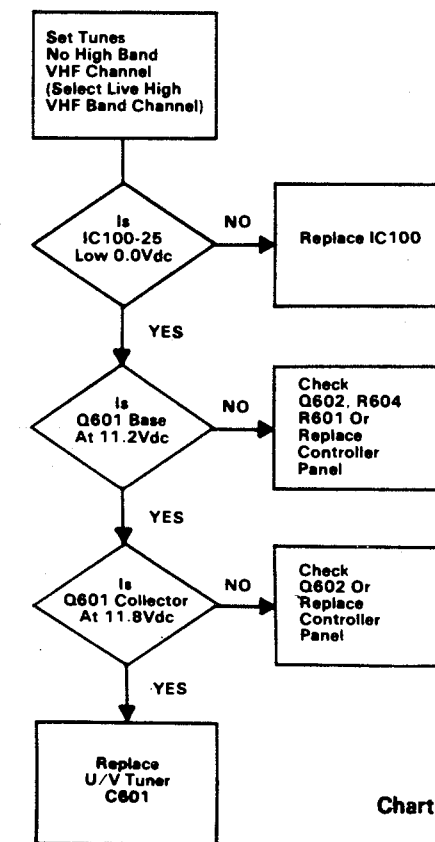


Chart 2

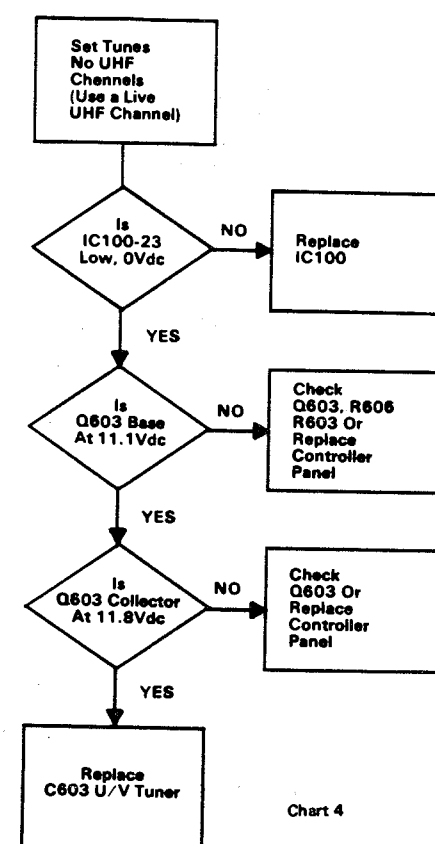
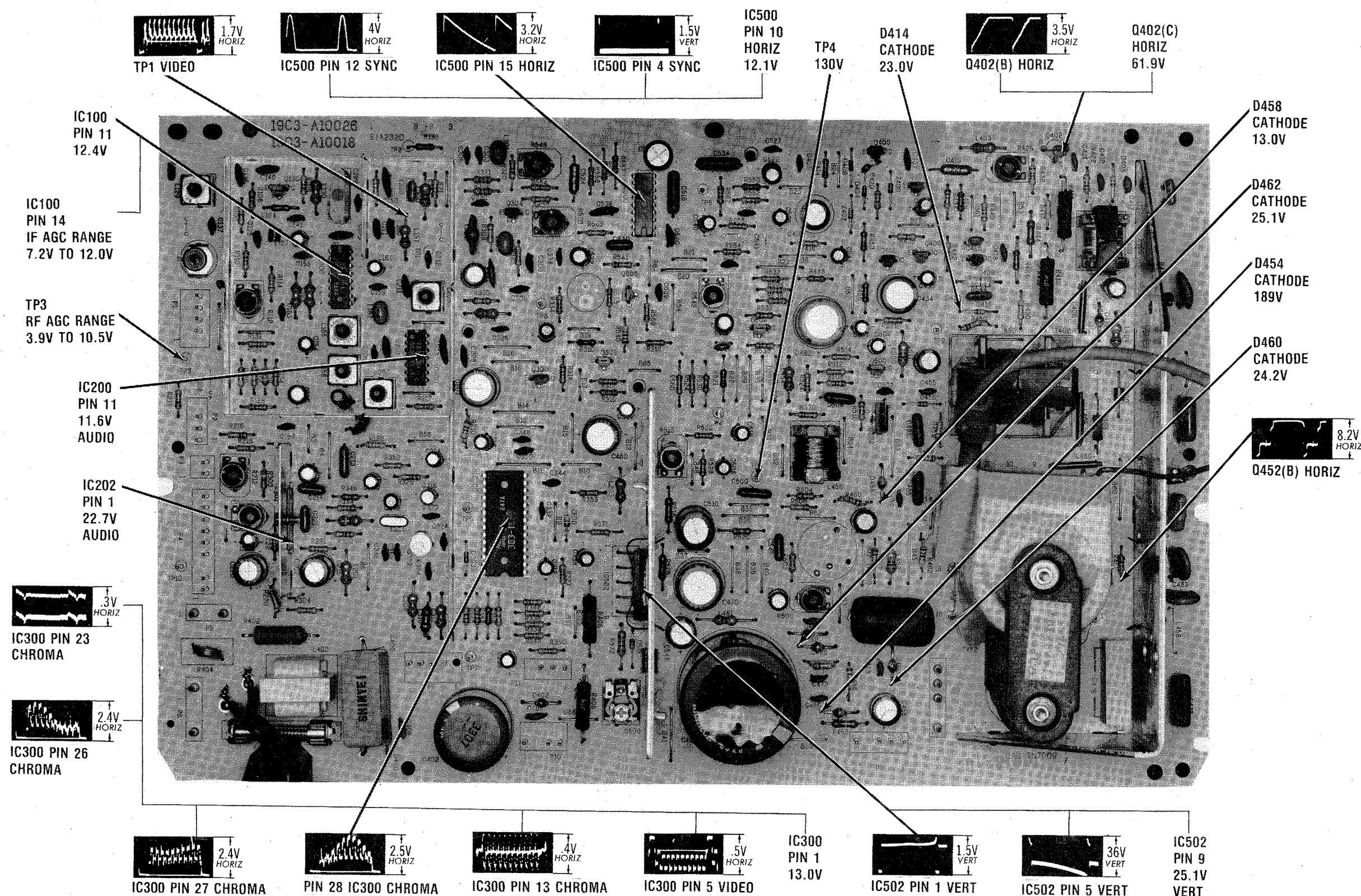


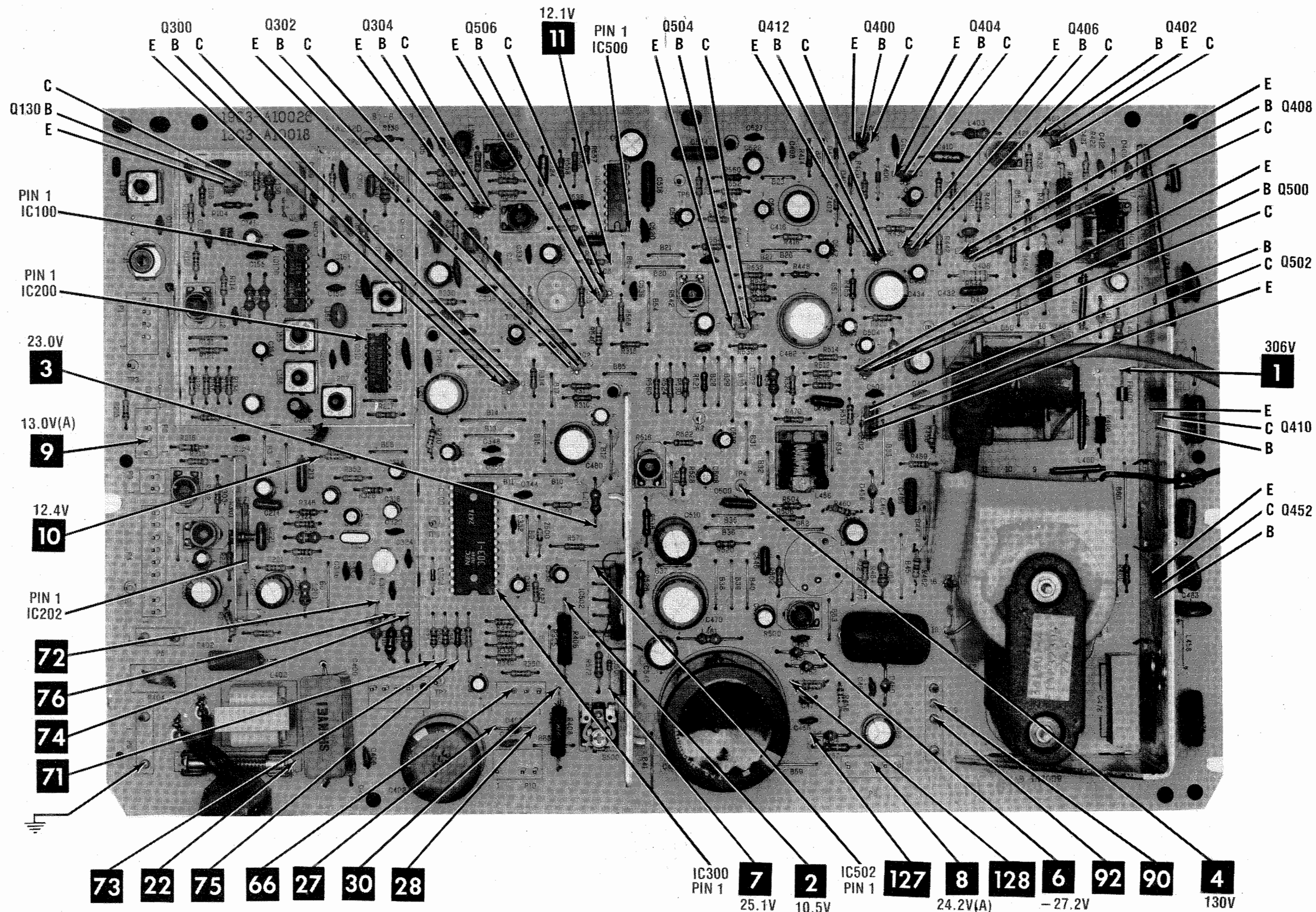
Chart 4

13C301 THRU 13C307, 13C309, 13C311 THRU 13C315  
SYLVANIA CHASSIS

FOLDER 2

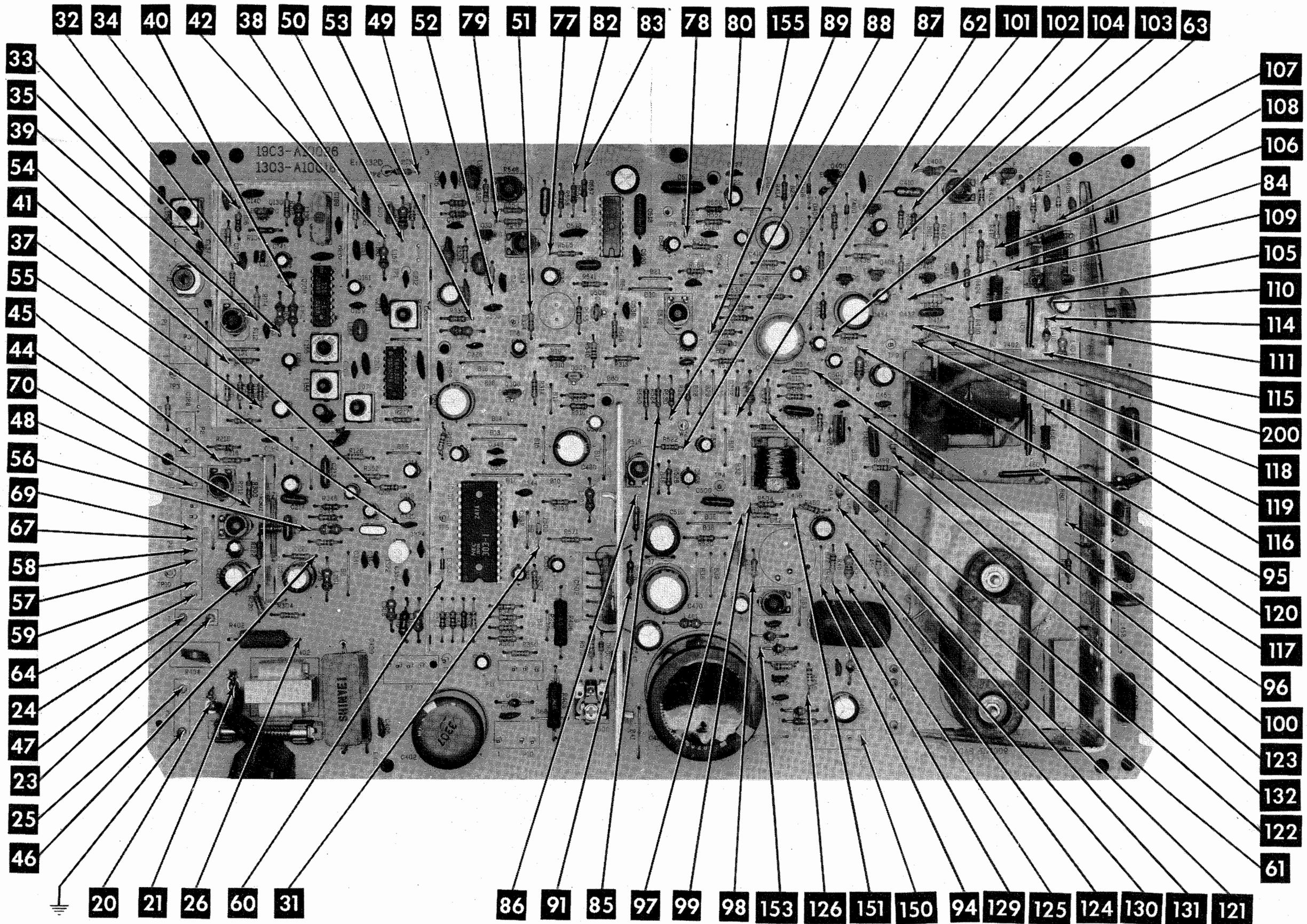
Courtesy of the Manufacturer





SYLVANIA CHASSIS  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

FOLDER 2



SYLVANIA CHASSIS  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

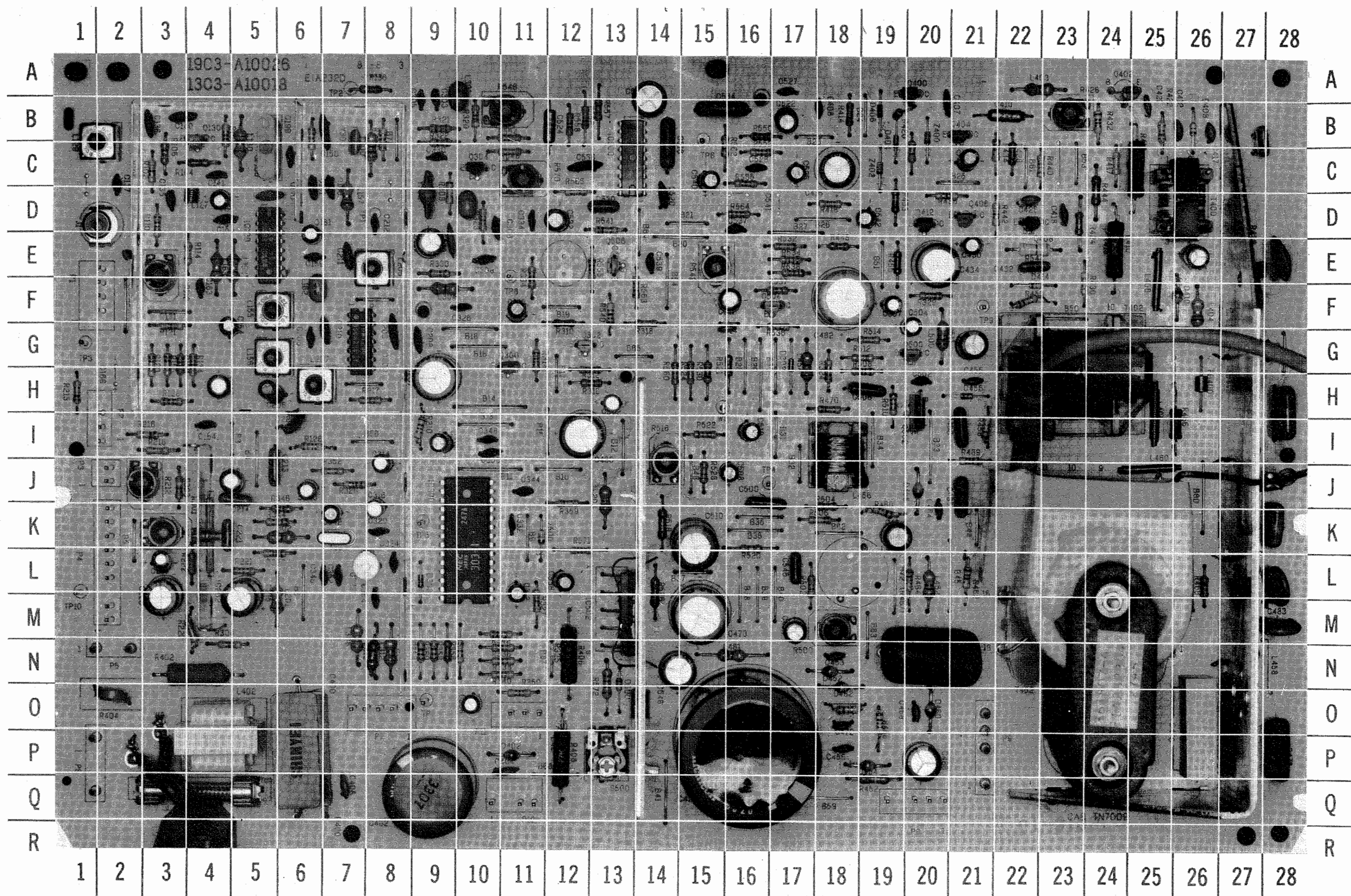
FOLDER 2

MAIN BOARD

A Howard W. Sams CIRCUITRACE® Photo

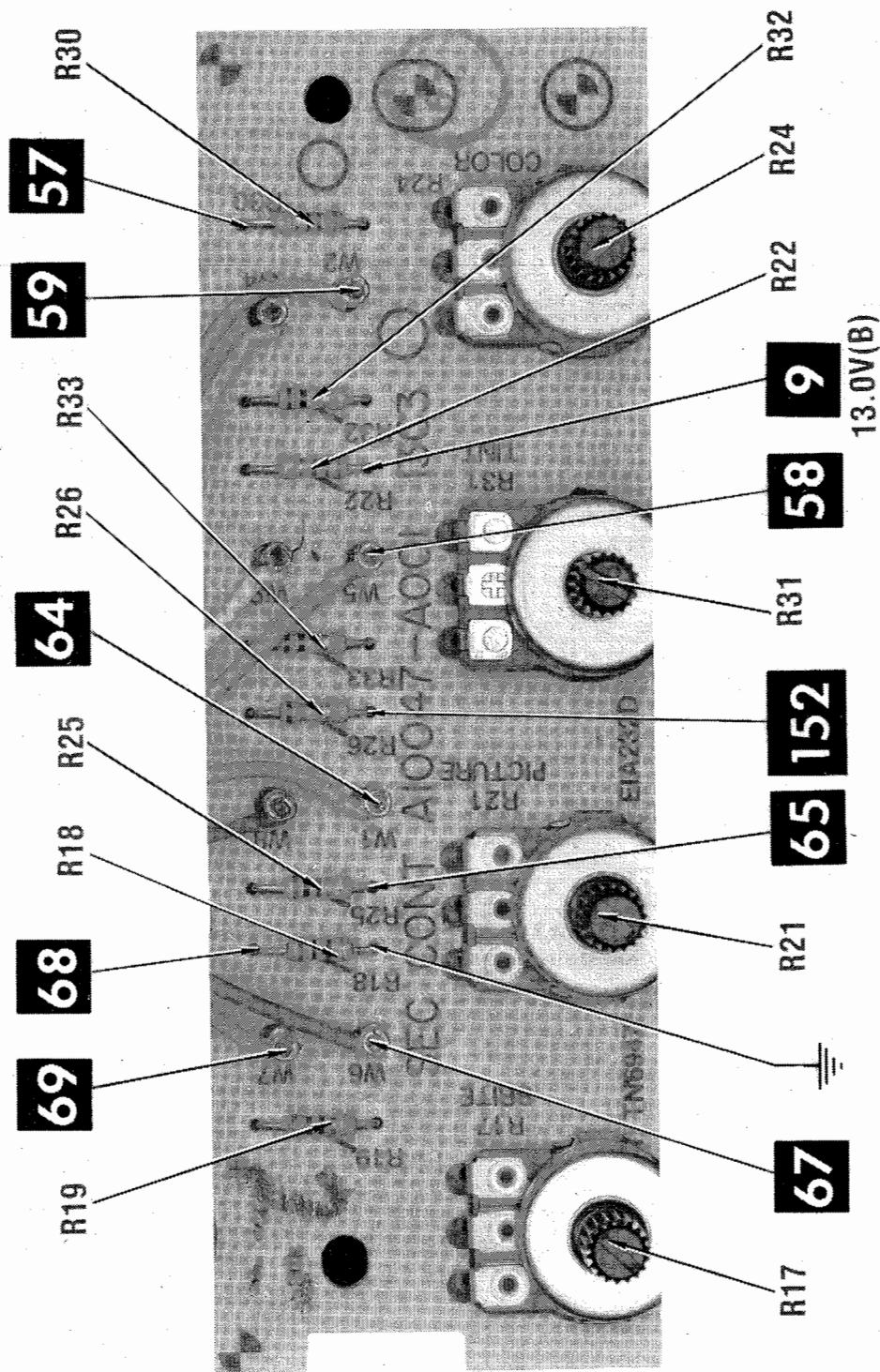
MAIN BOARD

SET 2404 FOLDER 2



SYLVANIA CHASSIS  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

FOLDER 2



MAIN BOARD GridTrace LOCATION GUIDE

C135	D-3	C417	B-26	D456	H-21	Q502	H-20	R420	C-20	SF130	C-5
C136	B-3	C418	D-23	D458	J-20	Q504	T-16	R422	B-25	T400	D-26
C137	Q-2	C420	Q-21	D460	Q-20	Q506	E-13	R424	D-23	T402	H-23
C140	B-3	C421	B-25	D462	Q-18	R102	Q-3	R426	B-23	T452	L-24
C141	Q-4	C422A	P-16	D464	Q-27	R104	Q-4	R428	C-22	TP1	D-8
C145	D-5	C422B	P-16	D466	P-27	R106	Q-3	R430	E-23	TP4	J-16
C150	B-7	C422C	P-16	D500	N-13	R108	B-4	R432	B-24	TP5	K-9
C151	Q-6	C424	F-26	F400	Q-4	R110	D-3	R434	C-21	TP6	B-15
C153	D-4	C425	H-28	FB400	H-26	R112	F-3	R436	D-20	TP9	F-21
C154	Q-4	C426	D-22	IC100	E-5	R114	E-4	R438	D-27	TP18	B-6
C155	D-4	C427	E-28	IC200	G-7	R118	B-6	R440	C-22	TP19	F-2
C159	F-6	C428	Q-28	IC202	K-4	R120	Q-3	R442	D-21	TP21	I-2
C160	Q-7	C430	E-21	IC300	K-10	R121	Q-3	R444	C-24	TP22	K-9
C161	F-6	C432	E-22	IC500	C-13	R126	I-6	R446	Q-27	Y300	B-7
C163	F-4	C434	E-20	IC502	M-13	R128	H-3	R448	F-18	Y302	D-9
C164	I-4	C453	N-18	J1	D-2	R130	Q-3	R450	F-22	Y304	K-7
C165	H-4	C454	M-17	L127	Q-4	R134	Q-4	R452	Q-19	Z400	B-20
C167	F-9	C455	H-21	L129	B-2	R136	A-8	R453	D-19	Z402	C-19
C199	Q-6	C456	P-18	L130	B-5	R155	Q-3	R454	Q-18	Z500	K-11
C203	Q-8	C458	Q-21	L154	E-5	R210	I-9	R455	E-19		
C205	Q-6	C460	I-12	L155	F-5	R212	J-3	R456	Q-19		
C206	H-5	C462	K-19	L156	G-5	R215	H-1	R458	I-21		
C207	H-9	C464	K-20	L157	D-7	R216	I-3	R460	K-19		
C208	Q-9	C466	P-20	L162	F-6	R217	H-8	R462	L-21		
C210	Q-7	C468	Q-20	L163	E-4	R218	I-3	R464	L-20		
C211	F-7	C470	M-15	L201	M-5	R220	M-4	R466	I-26		
C212	D-8	C472	Q-18	L203	J-13	R221	L-5	R468	L-26		
C213	J-5	C474	L-28	L205	E-8	R222	L-4	R469	I-21		
C214	J-5	C476	Q-26	L207	H-6	R301	K-3	R470	H-18		
C215	H-5	C478	P-28	L300	C-8	R302	B-8	R500	M-18		
C218	J-4	C480	K-28	L301	A-10	R303	J-3	R502	L-17		
C219	L-3	C482	F-18	L302	K-6	R304	N-4	R504	J-18		
C220	H-3	C483	M-28	L303	D-10	R308	D-9	R506	K-18		
C221	K-4	C484	N-20	L304	F-9	R310	F-12	R508	Q-19		
C222	I-6	C485	J-21	L308	M-7	R312	G-13	R510	H-19		
C302	H-13	C486	I-21	L310	N-8	R314	G-11	R512	G-19		
C303	A-9	C500	J-16	L312	N-8	R316	H-12	R514	G-19		
C305	A-9	C502	H-20	L402	P-4	R318	F-14	R516	J-14		
C306	D-10	C504	Q-20	L403	A-22	R320	B-10	R518	K-14		
C307	F-19	C506	H-19	L404	F-26	R321	B-9	R520	K-16		
C308	F-10	C508	J-16	L405	H-25	R322	B-9	R521	Q-16		
C310	F-11	C510	K-15	L406	E-25	R323	D-10	R522	I-15		
C312	L-11	C511	F-16	L408	F-27	R324	H-18	R524	H-15		
C314	J-8	C512	I-16	L452	L-26	R325	N-12	R526	L-14		
C316	K-8	C514	G-16	L454	G-17	R326	J-7	R528	J-15		
C318	I-9	C515	A-14	L456	I-18	R327	M-11	R530	H-15		
C320	K-8	C518	B-14	L460	J-25	R328	L-5	R532	E-17		
C322	L-7	C520	D-14	L461	N-16	R329	F-20	R534	E-17		
C324	L-8	C522	B-17	L462	L-20	R330	E-9	R536	Q-17		
C326	F-10	C524	B-12	L500	G-20	R334	F-11	R537	F-17		
C328	E-9	C526	C-17	P1	F-2	R336	H-11	R538	E-17		
C330	Q-9	C527	A-17	P2	I-2	R338	H-11	R540	F-13		
C332	K-11	C528	Q-16	P3	J-2	R340	H-11	R541	D-13		
C334	D-11	C530	D-13	P4	L-2	R342	M-11	R542	E-15		
C336	Q-10	C532	D-12	P5	N-2	R344	K-5	R544	E-22		
C338	L-12	C534	B-15	P6	P-1	R346	K-6	R546	B-11		
C340	J-6	C537	D-16	P7	Q-8	R350	Q-11	R548	Q-11		
C342	K-7	C538	C-12	P8	Q-20	R352	J-7	R550	B-16		
C344	J-11	C539	E-14	P9	P-21	R354	H-9	R552	Q-16		
C346	L-6	C540	C-15	P10	Q-11	R356	H-10	R554	B-11		
C348	I-10	C542	D-19	P11	Q-11	R358	H-9	R555	E-12		
C350	I-10	C545	L-17	Q130	B-4	R359	J-12	R556	B-12		
C352	L-7	C546	N-14	Q300	G-11	R360	H-9	R557	B-13		
C354	M-8	D302	G-17	Q302	G-12	R402	N-4	R558	B-12		
C400	P-6	D303	L-9	Q304	C-10	R404	Q-2	R560	H-14		
C402	Q-9	D400	Q-7	Q400	A-20	R406	H-12	R562	Q-15		
C404	P-11	D402	P-11	Q402	B-21	R408	P-12	R564	D-16		
C406	Q-7	D404	B-19	Q404	D-21	R410	Q-25	R566	Q-16		
C407	B-20	D406	B-19	Q406	D-22	R412	B-18	R568	F-13		
C408	B-18	D408	B-26	Q408	H-27	R414	B-19	R570	Q-11		
C410	B-22	D410	F-26	Q410	D-20	R416	D-18	R571	K-12		
C412	B-26	D414	F-22	Q412	M-27	R417	Q-24	R572	N-13		
C414	B-27	D452	N-18	Q452	E-20	R418	E-24	S500	P-13		
C416	C-18	D454	P-19	Q500							

SYLVANIA CHASSIS  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

FOLDER 2

MISCELLANEOUS ADJUSTMENTS

RF AGC DELAY

Tune in a weak station, or loosely couple the antenna to obtain a snowy picture. Set RF AGC Delay Control (R112) fully clockwise. Slowly turn RF AGC Delay Control counterclockwise to a point slightly beyond MINIMUM snow.

AUDIO PRESET ADJUSTMENT

Set Volume Control and Audio Preset Control (R212) to MINIMUM. Adjust Audio Preset Control clockwise to a point where sound or noise can just be heard.

B+ ADJUSTMENT

Use an Isolation Transformer for this adjustment. Adjust Isolation Transformer for 120V AC. Connect a DC meter to TP4, low side to ground. Adjust Control (R426) for 130 Volt  $\pm$  1 V DC.

3.58MHz OSCILLATOR ADJUSTMENT

Connect a color bar generator to the antenna terminal and tune in a color bar pattern. Set Color and Tint Controls to midrange. Connect a jumper from TP22 (pin 18 IC300) to TP21 (+12 Volt source). Connect a jumper from TP5 (pin 20 IC300) to ground. Adjust 3.58MHz Oscillator (C322) until colors stop or slowly drift.

HORIZONTAL OSCILLATOR ADJUSTMENT

Tune in a picture and connect a jumper from TP6 to ground. Adjust Horizontal Frequency Control (R546) until picture stops or slowly drifts. Remove jumper from TP6 and check for lock in on channels.

HORIZONTAL AND VERTICAL CENTERING

Connect a color bar generator to the antenna terminals and tune in a crosshatch pattern. Adjust Horizontal Centering Control (R570) for proper horizontal centering. Adjust Vertical Centering Switch (S500) to center the crosshatch pattern on the screen.

VERTICAL FREQUENCY ADJUSTMENT

Tune in a station and adjust for a normal picture. Adjust Vertical Frequency Control (R542) until picture locks in. Check lock in by switching from channel to channel. If necessary readjust until proper lock in is obtained.

CONVERGENCE ADJUSTMENTS

NOTE: Before attempting convergence adjustments the receiver should be operated for at least 15 minutes. Connect a color bar genera-

tor to the antenna terminals and tune in a crosshatch pattern. Spread the tabs of the 4-pole magnets to converge the red and blue vertical lines in the center of the screen, rotate the tabs, to converge the red and blue horizontal lines at the center of the screen. Spread and rotate the tabs of the 6-pole magnets to converge the red and blue with the green line(s) (horizontal and vertical) at the center of the screen. Remove the rubber wedges from the picture tube. Tilt the yoke vertically and horizontally to converge edges of screen. Apply adhesive to wedges and carefully replace on picture tube.

HORIZONTAL WIDTH

Connect a color bar generator to the antenna terminals and tune in a crosshatch pattern. Adjust Horizontal Width Control (R500) to obtain approximately 3/8 of an inch overscan on each side of the screen.

PURITY ADJUSTMENT

NOTE: Allow 15 minute warm up. Degauss the picture tube and mounting brackets. Set Picture Control to MINIMUM and adjust Brightness Control for normal brightness. Disconnect Plug from J1 (IF Input) for a blank raster. Set Green (R628) and Blue (R642) Cutoff Controls fully counterclockwise to obtain a red raster. Loosen the yoke clamp and slide yoke back as close to the purity magnet as possible. Rotate and spread the purity magnet tabs until the red band is centered on the screen. Move the yoke slowly forward until a uniform red raster is obtained. Tighten yoke clamp and reconnect Plug at J1 (IF Input)

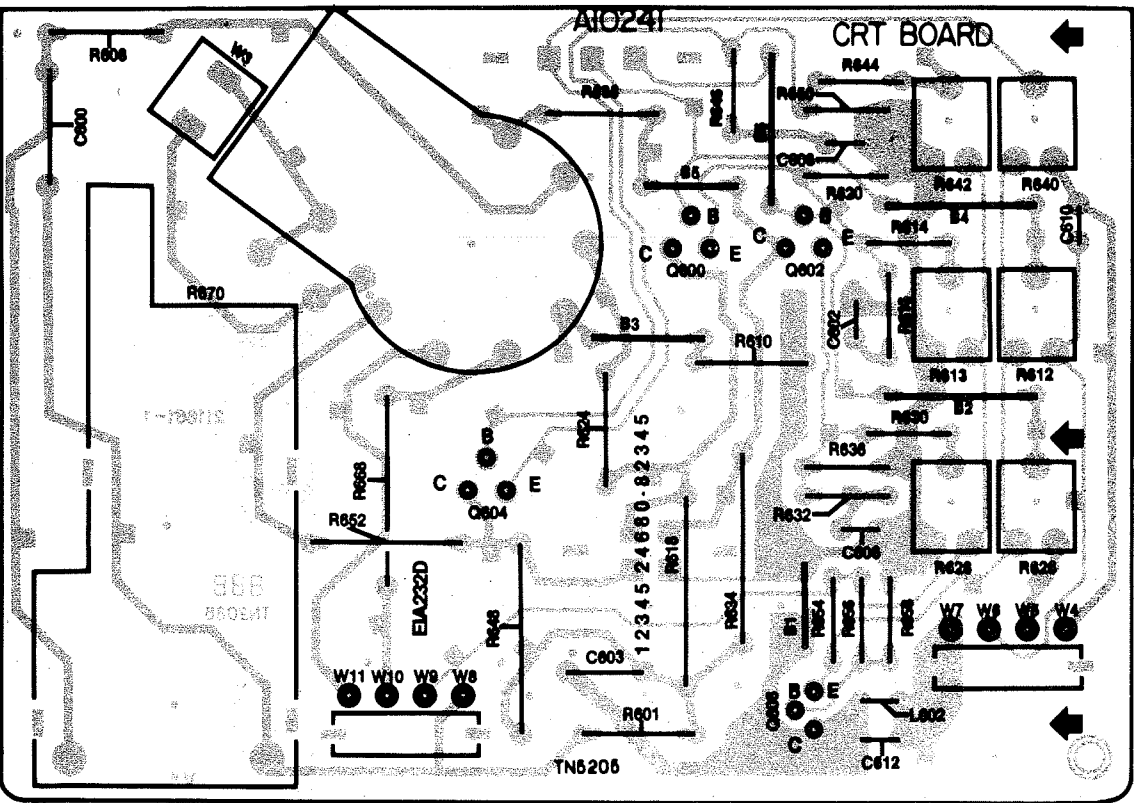
COLOR TEMPERATURE ADJUSTMENTS

Set channel selector to an unused channel. Set Brightness, Picture and Color Controls to MINIMUM. Set Green (R628), Red (R613), Blue (R642) Cutoff Controls and Brightness Preset (R301) to MINIMUM. Set G2 Control (R604) to MINIMUM. Set Green (R626), Red (R612) and Blue (R640) Drive Controls to Maximum. Turn set off and connect a jumper from pin 1 of IC502 to its own heatsink to collapse raster. Remove Plug P7 and reconnect so that only pin 5 is making contact. Adjust G2 Control until a dim line of one color appears. Adjust Cutoff Controls of the two missing colors to produce a low level white line. Remove jumper from IC502 and reconnect Plug P7. Tune in a picture and adjust Brightness Preset Control for a low level picture. Set Picture Control to Maximum and Brightness Control to midrange. Adjust Drive Controls for best white in highlights of the picture. Readjust Brightness Preset Control if necessary.

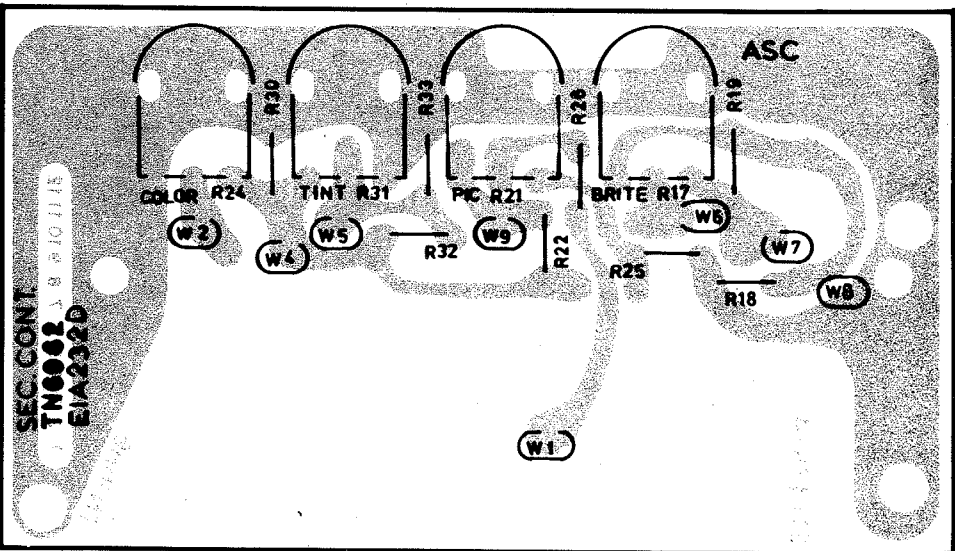
WIRING DATA

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
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

A10241-A001 CRT SOCKET PANEL PC BOARD  
(Component Side Shown)



ASC018-A001 SECONDARY CONTROL PANEL PC BOARD  
(Component Side Shown)



Courtesy of the Manufacturer  
CRT SOCKET A10241-A001/SECONDARY ASC018-A001 BOARDS

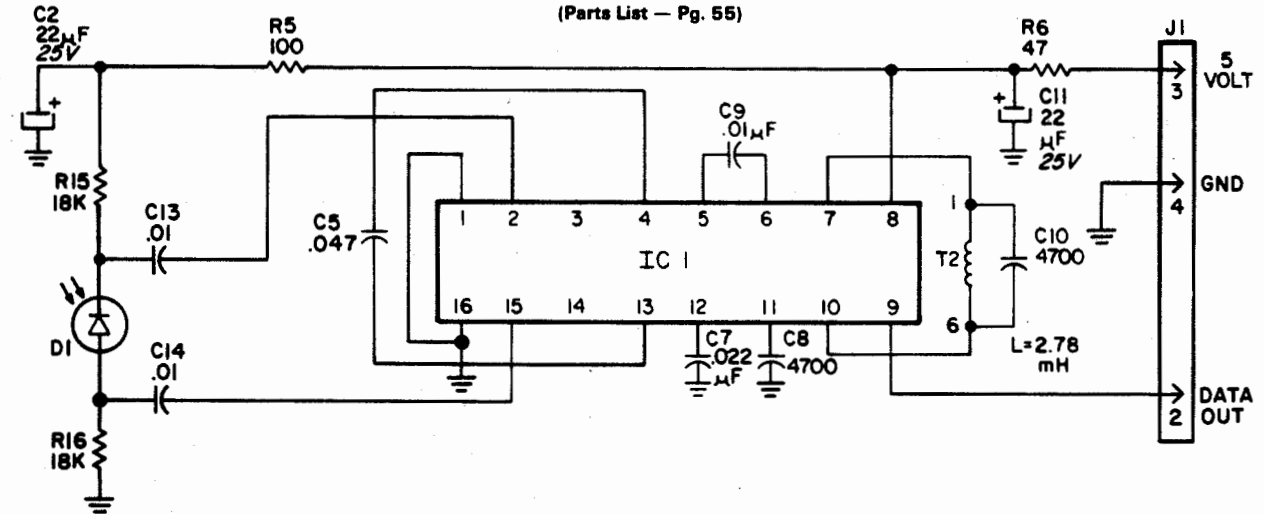
SYLVANIA CHASSIS  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

FOLDER 2

# A10031-A001 ONE KNOB CHANNEL SELECT P.C. BOARD REPLACEMENT PARTS LIST

Ref.	Description	Part No.	Ref.	Description	Part No.
<b>Resistors</b>			<b>Controls &amp; Switches (Continued)</b>		
R10	Metal Film, 68.1kohm, 1%, ¼W	2302556812	R16	Ch. 9 Tuning, 100kohm, 20%	2204341042
R13	Metal Film, 51.1kohm, 1%, ¼W	2302555112	R18	Ch. 10 Tuning, 100kohm, 20%	2204341042
R17	Metal Film, 48.7kohm, 1%, ¼W	2302554872	R19	Ch. 11 Tuning, 100kohm, 20%	2204341042
R22	Metal Film, 31.6kohm, 1%, ¼W	2302553162	R20	Ch. 12 Tuning, 100kohm, 20%	2204341042
R23	Metal Film, 8250 ohm, 1%, ¼W	2302558251	R21	Ch. 13 Tuning, 100kohm, 20%	2204341042
R24	Metal Film, 26.7kohm, 1%, ¼W	2302552672	S1	Channel Select Sw. (18 positions)	1606960001
R25	Metal Film, 28kohm, 1%, ¼W	2302552802	S2	AFT Leaf Sw. (mounted on the back of S1)	1607000002
R26	Metal Film, 2740 ohm, 1%, ¼W	2302552741			
R27	Metal Film, 44.2kohm, 1%, ¼W	2302554422			
R28	Metal Film, 57.6kohm, 1%, ¼W	2302555762			
<b>Controls &amp; Switches</b>			<b>Miscellaneous</b>		
A1	R1 thru R6, UHF Tuning Block & AFT Sw. (Ch. A to F)	2204400001	J1	Neon Lamp	1807160009
R7	Ch. 2 Tuning, 100kohm, 20%	2204341042	J4	9 Pin Square Wire Connector w/ Contacts	1813500009
R8	Ch. 3 Tuning, 100kohm, 20%	2204341042		Negative Polarizing Key f/J1	1813510001
R9	Ch. 4 Tuning, 100kohm, 20%	2204341042		4 Pin Square Wire Connector w/Contacts	1813500004
R11	Ch. 5 Tuning, 100kohm, 20%	2204341042		Negative Polarizing Key f/J4	1813510001
R12	Ch. 6 Tuning, 100kohm, 20%	2204341042		Bulb Holder f/Neon Lamp	1442820002
R14	Ch. 7 Tuning, 100kohm, 20%	2204341042		Detent Gear	1450950001
R15	Ch. 8 Tuning, 100kohm, 20%	2204341042		Tuning Shaft	1450940001
				Copper Detent Spring	7342740001
				Bearings f/Detent Spring (2 used)	7333560005
				Retaining Ring f/Tuning Shaft	1026620009

## A10138-A002 REMOTE RECEIVER SCHEMATIC (Used In Later Production) (Parts List — Pg. 55)

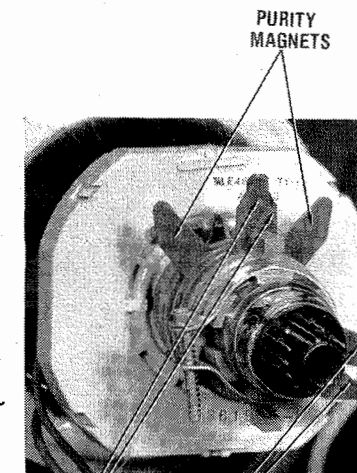


## A10138-A002 REMOTE RECEIVER MODULE REPLACEMENT PARTS LIST

Ref.	Description	Part No.	Ref.	Description	Part No.
CAPACITORS			RESISTORS (Continued)		
C2	22pF., 25V, Electrolytic	2701592125	R6	47 ohm	2302854705
C5	.047uF.	2508334738	R15	15k ohm	2302851535
C7	.022uF., +80-20%, 50V, Ceramic	2508332238	R16	18k ohm	2302851835
C8	4700pF., 10%, 50V, Ceramic	2508314729	SEMICONDUCTORS		
C9	.01uF., 10%, 50V, Ceramic	2508311039	D1	Diode, Photo	5302350001
C10	4700uF., 10%, 50V, Ceramic	2508314729	IC1	IC, Decoder	6124500001
C11	22uF., 25V, Electrolytic	2701592125	MISCELLANEOUS		
C13	.01uF., 10%, 50V, Ceramic	2508311039	T2	Coil	3719870001
C14	.01uF., 10%, 50V, Ceramic	2508311039		Front Cap Shield	7343920001
RESISTORS				Rear Cap Shield	7344150002
(All are 5%, 1/4W, Carbon Film)				Receiver Grill	7326110002
R1	100k ohm	2302851045		Spacer	1448050001
R2	1M ohm	2302851055		Support Bracket	1452330002
R3	1M ohm	2302851055		4 Pin Wafer Connector	1815310104
R4	4.7k ohm	2302854725			
R5	100 ohm	2302851015			

Courtesy of the Manufacturer

REMOTE RECEIVER



6-POLE  
CONVERGENCE  
MAGNETS

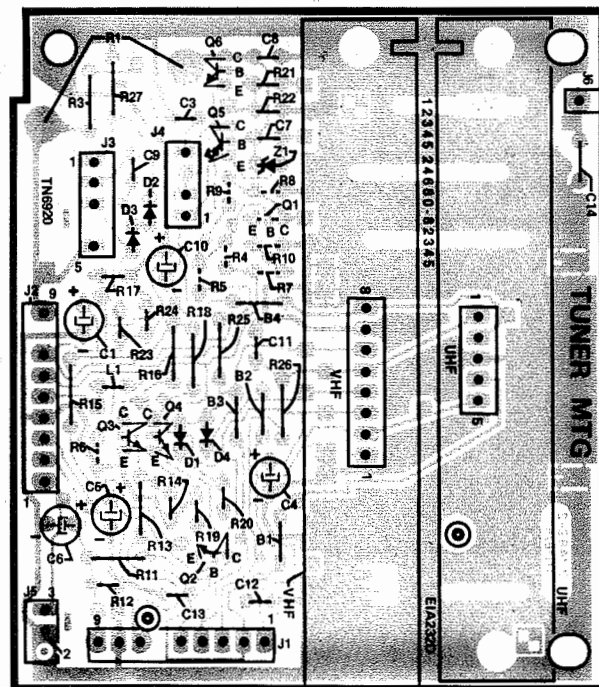
4-POLE  
CONVERGENCE  
MAGNETS

CRT NECK ASSEMBLY

SET2404 FOLDER 2

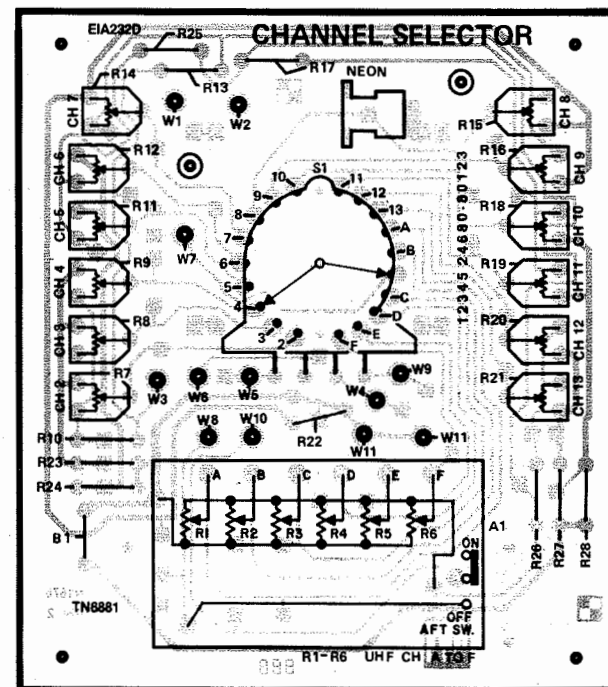
19

## A10037-A001 TUNER MOUNTING P.C. BOARD OVERLAY (VIEWED FROM THE COMPONENT SIDE)



Courtesy of the Manufacturer

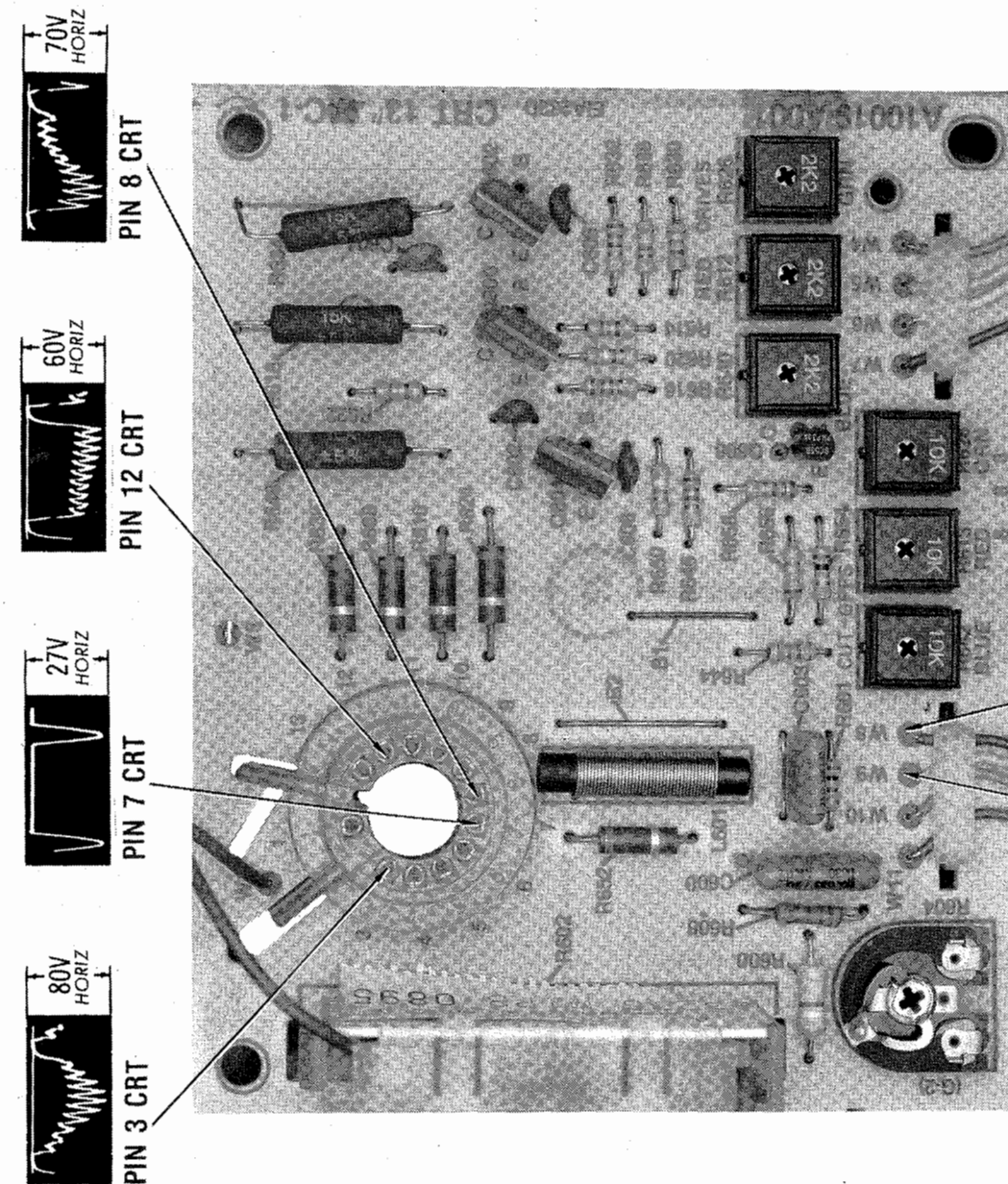
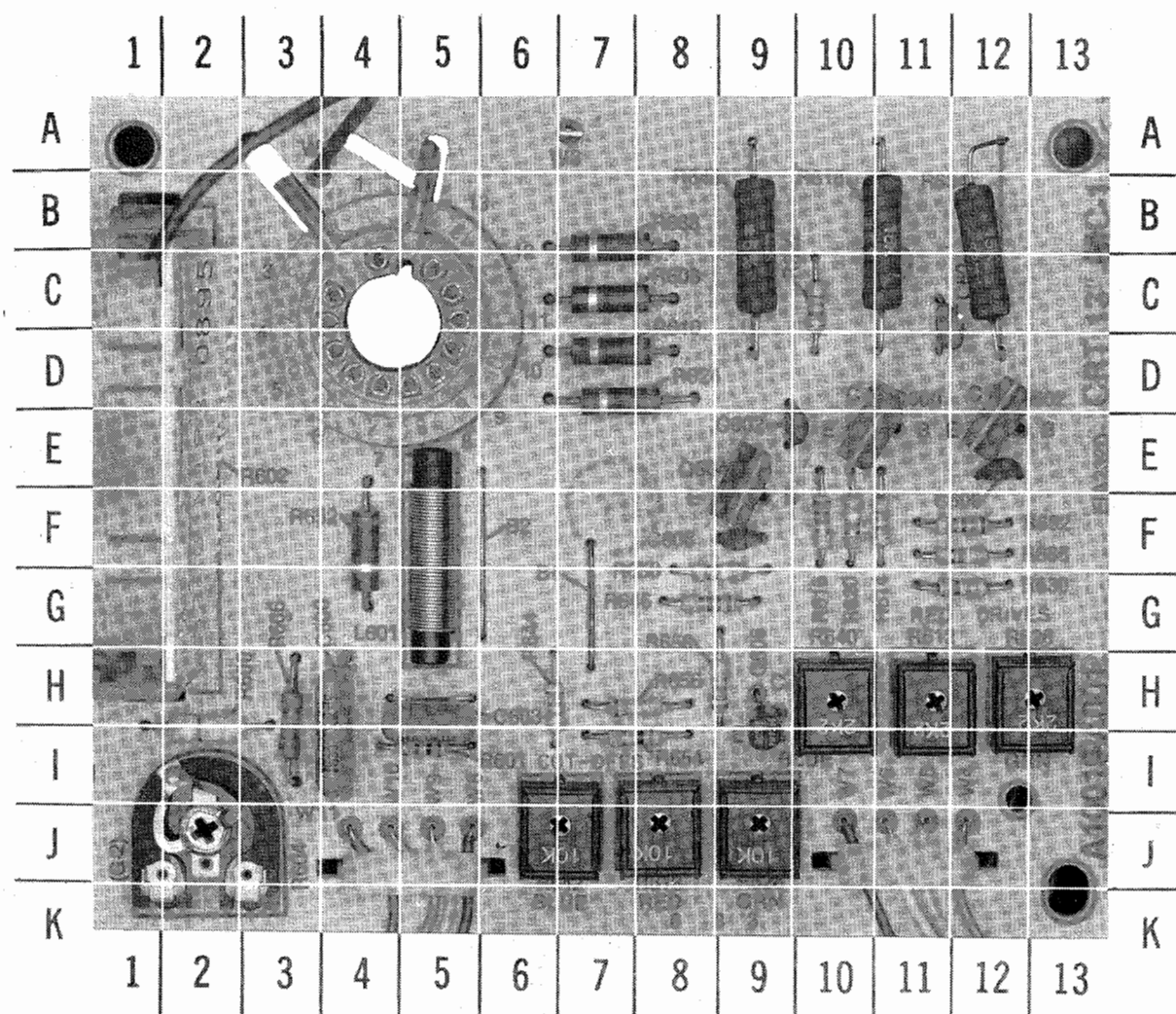
## A10031-A001 CHANNEL SELECT P.C. BOARD OVERLAY (VIEWED FROM THE COMPONENT SIDE)



CHANNEL SELECTOR/TUNER MOUNTING BOARDS

# CRT BOARD GridTrace LOCATION GUIDE

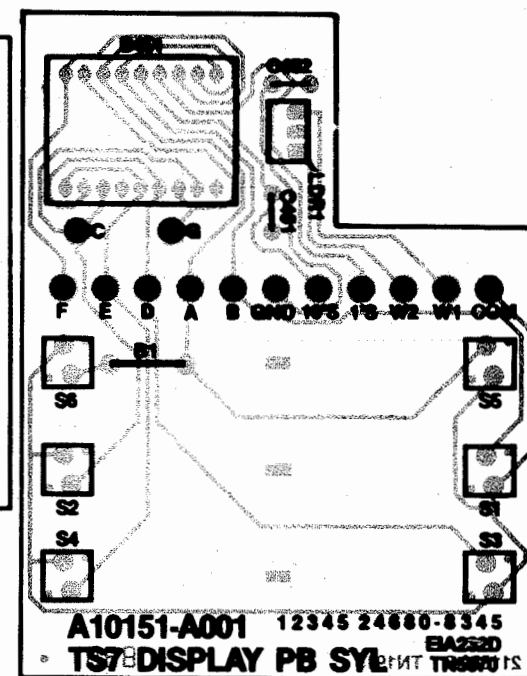
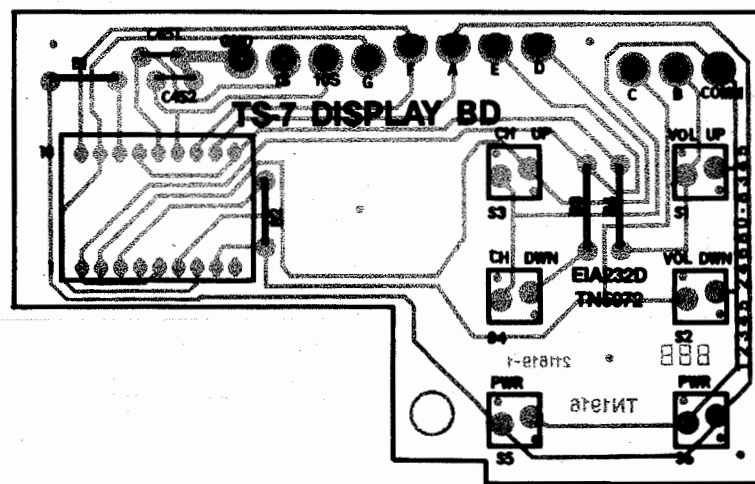
C600	I-4	R600	I-2	R618	B-11	R640	F-10
C602	E-10	R601	I-5	R620	F-10	R642	J-7
C603	H-5	R602	E-1	R622	C-10	R644	F-6
C604	C-11	R604	J-2	R624	D-7	R646	Q-8
C606	E-12	R606	H-3	R626	H-13	R648	Q-9
C608	F-9	R608	C-7	R628	J-9	R650	Q-9
L601	F-5	R610	D-7	R630	G-12	R652	T-4
Q600	E-10	R612	F-11	R632	F-12	R654	T-8
Q602	E-12	R613	J-8	R634	B-12	R656	T-7
Q604	E-9	R614	F-11	R636	F-12	R658	T-9
Q606	H-9	R616	F-10	R638	B-7		



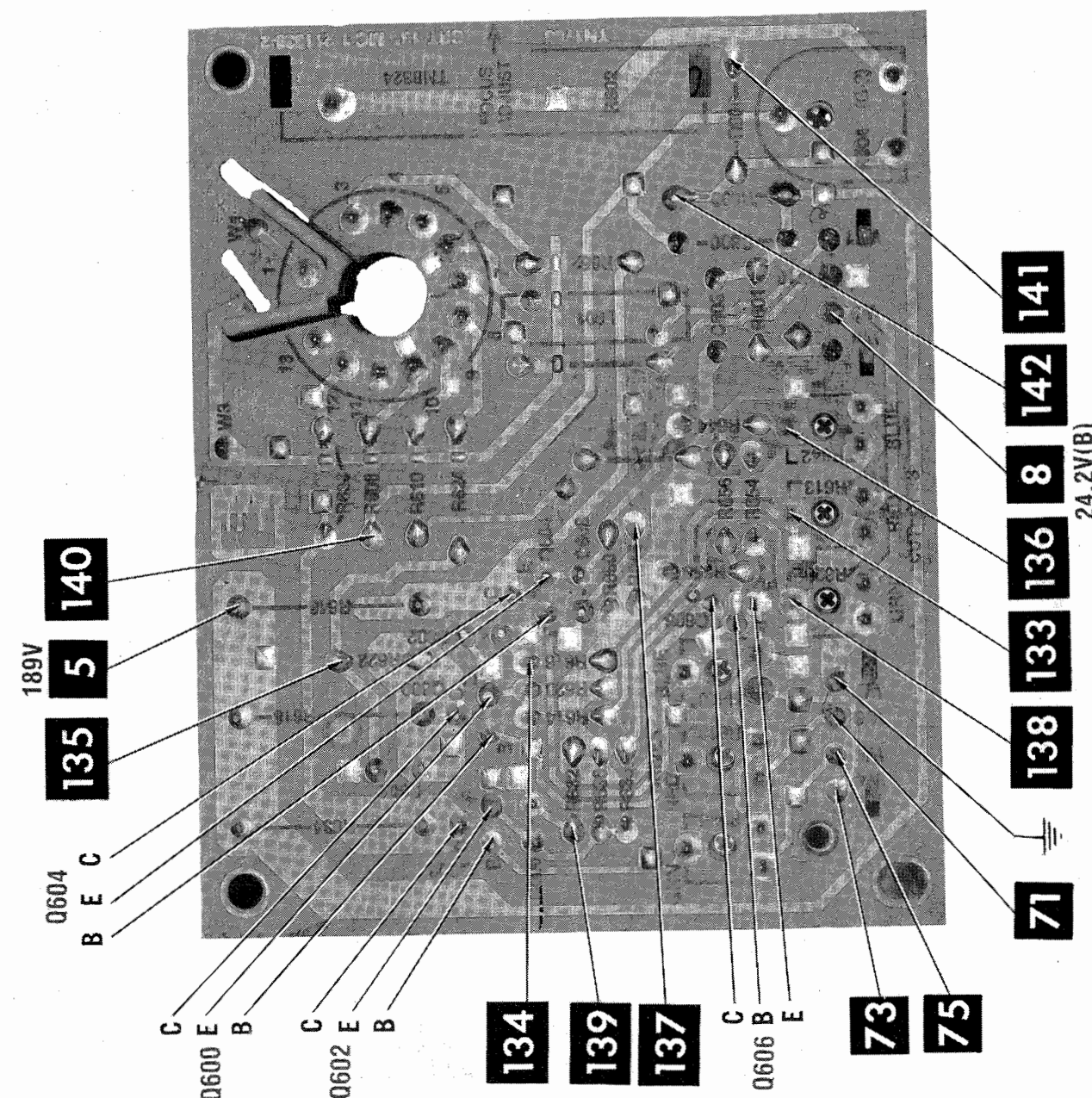
SYLVANIA CHASSIS  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

A681 A2.4V  
8W 6W  
INT01 INT01

**A10151-A001 (TS7)**  
**DISPLAY PANEL PC BOARD**  
**(Component Side Shown)**



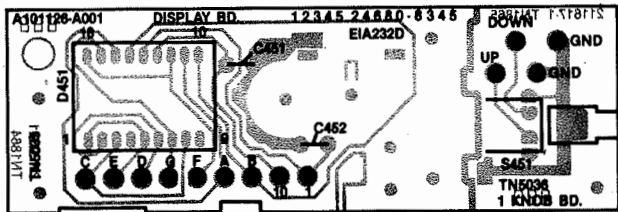
Ref.	Description	Part No.	Ref.	Description	Part No.
<b>CAPACITORS</b>			<b>MISCELLANEOUS</b>		
C451	1000pF., 10%, 50V, Ceramic	2508311029	CN1000	Connector, 8 Pin	1811931008
C452	1000pF., 10%, 50V, Ceramic	2508311029		Contacts f/ CN1000	1811330001
<b>CONTROLS &amp; SWITCHES</b>			CN1030	Connector, 3 Pin	1811931001
S1	Pushbutton Switch, Vol. Up	1606880004		Contacts f/ CN1030	1811133001
S2	Pushbutton Switch, Vol. Dn.	1606880004	D451	Socket f/ LED	1816200018
S3	Pushbutton Switch, Ch. Up	1606880004		LED, Dual Digit Display	5303030001
S4	Pushbutton Switch, Ch. Dn.	1606880004		Socket f/ D451	1816200018
S5	Pushbutton Switch, Power On	1606880004			
S6	Pushbutton Switch, Power Off	1606880004			



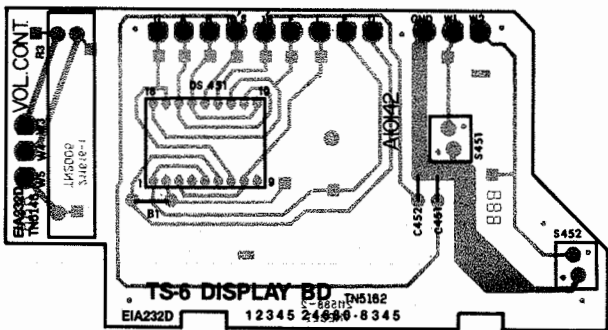
**SYLVANIA CHASSIS**  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

## FOLDER 2

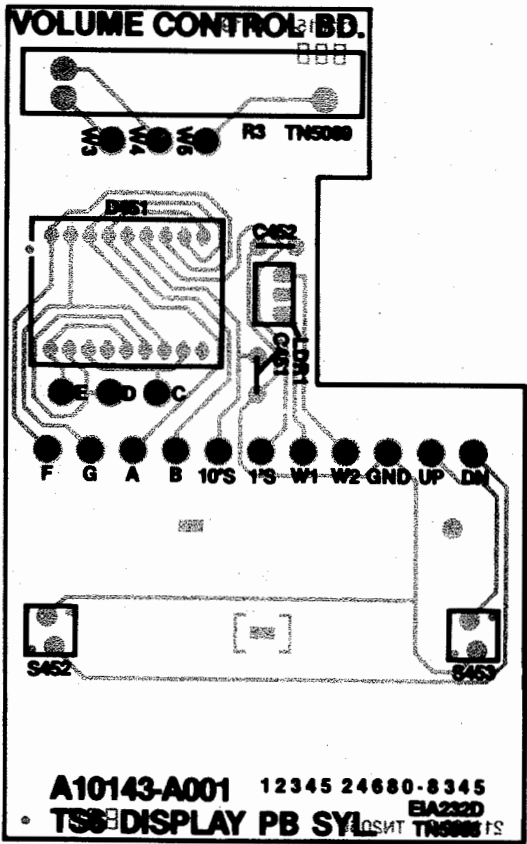
A10126-A001 (TS6) DISPLAY & VOLUME CONTROL PANEL PC BOARD (Component Side Shown)



A10142-A001 (TS6) DISPLAY & VOLUME CONTROL PANEL PC BOARD (Component Side Shown)



A10143-A001 (TS6) DISPLAY & VOLUME CONTROL PANEL PC BOARD (Component Side Shown)



Courtesy of the Manufacturer

TS7 Tuner Charts

System On Channel 03 (No Carrier)

Tuner Pin	Tuner In Socket	Tuner Out Of Socket	Function
-2	0	0	UHF Band Switch
-3	10.1	12.1	AGC
-4	11.3	12.0	Low V Band Switch
-5	0	0	High V Band Switch
-6	0	0	Ground
-7	11.8	12	Tuner B+
-8	5	32.8	Tuning Voltage
-9	0	0	Ground
-10	0	0	Ground
-11	4.5	0	Not Used
-12	4.4	0	Pre Scaler Out
-13	4.9	5	Pre Scaler B+

CITAC CONTROL VOLTAGE			
BAND	BANDSWITCH PINS		
	15	16	17
UHF	LOW 0 V	LOW 0 V	HIGH 12V
VHF LOW BAND	HIGH 12V	LOW 0V	LOW 0V
VHF HIGH BAND	LOW 0V	HIGH 12V	LOW 0V

INTERCONNECT PLUGS VOLTAGE CHART Test Points

Use Figure 11 For Test Point Locations

CN1030	Voltage	Function	Interconnect
-1	4.8	Common	W11
-2	3.2	Q70 Collector	W3
-3	3.1	Q60 Collector	W2
-4	---	---	---

CN1090	Voltage	Function	Interconnect
-1	---	Ground	Remote P/J1-4
-2	4.9V	Remote Receiver B+	Remote P/J1-3
-3	4.8V	Data Line	Remote P/J1-2
-4	---	---	---

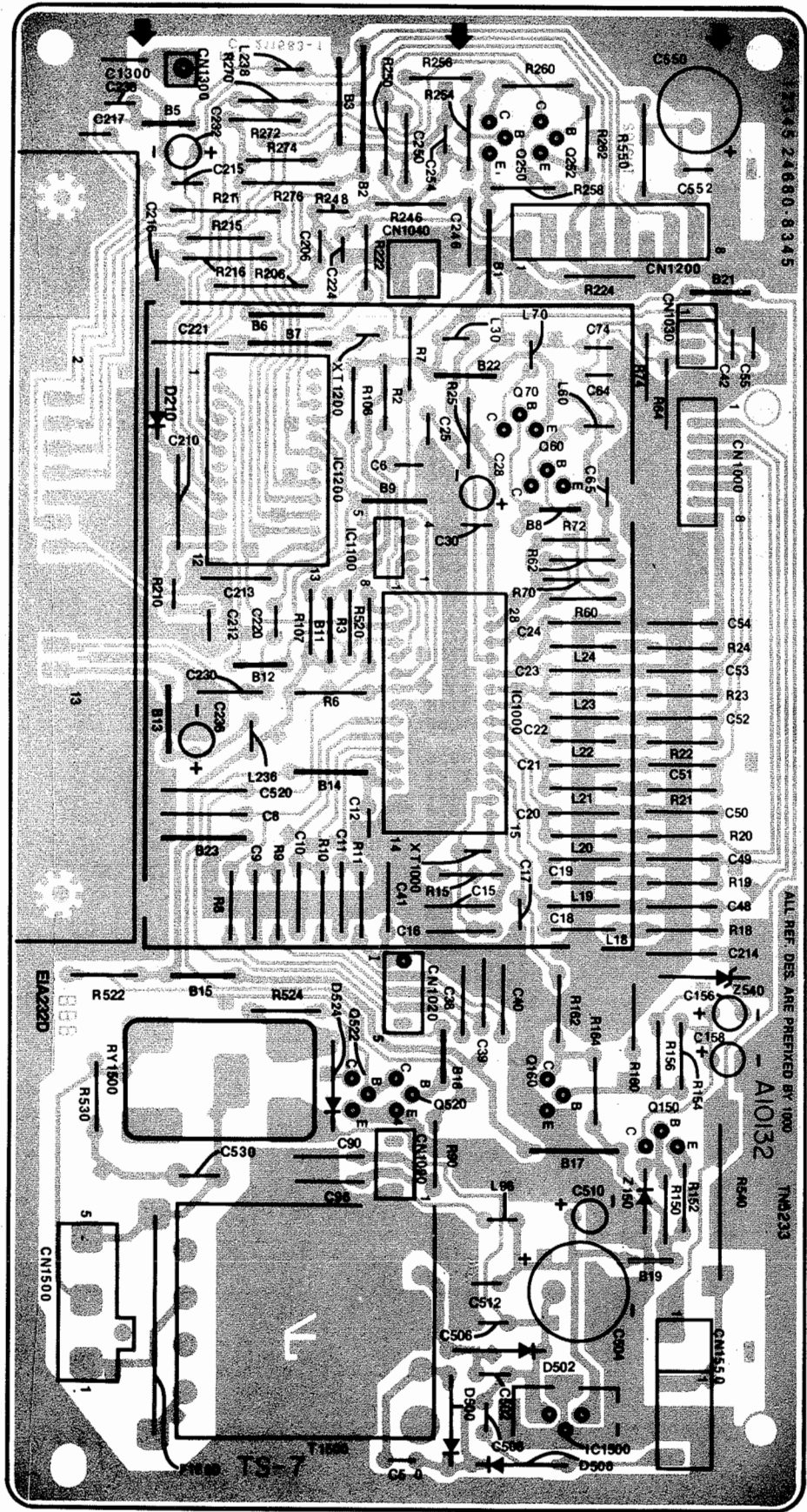
CN1200	Voltage	Function	Interconnect
-1	0.4 to 5.4	Volume	P/J2-1
-2	10.5	Coincidence	P/J12-4
-3	---	---	---
-4	6.7	AFT	P/J1-3
-5	10.0	AGC	P/J1-4
-6	0.0	Ground	P/J1-5
-7	11.7	12V Source	P/J12-2
-8	---	---	---

CN1550	Voltage	Function	Interconnect
-1	16 7	High B+	P/J10-4
-2	---	---	---
-3	---	---	---
-4	---	---	---
-5	---	---	---
-6	---	---	---

13C301 THRU 13C307, 13C309, 13C311 THRU 13C315 SYLVANIA CHASSIS

FOLDER 2

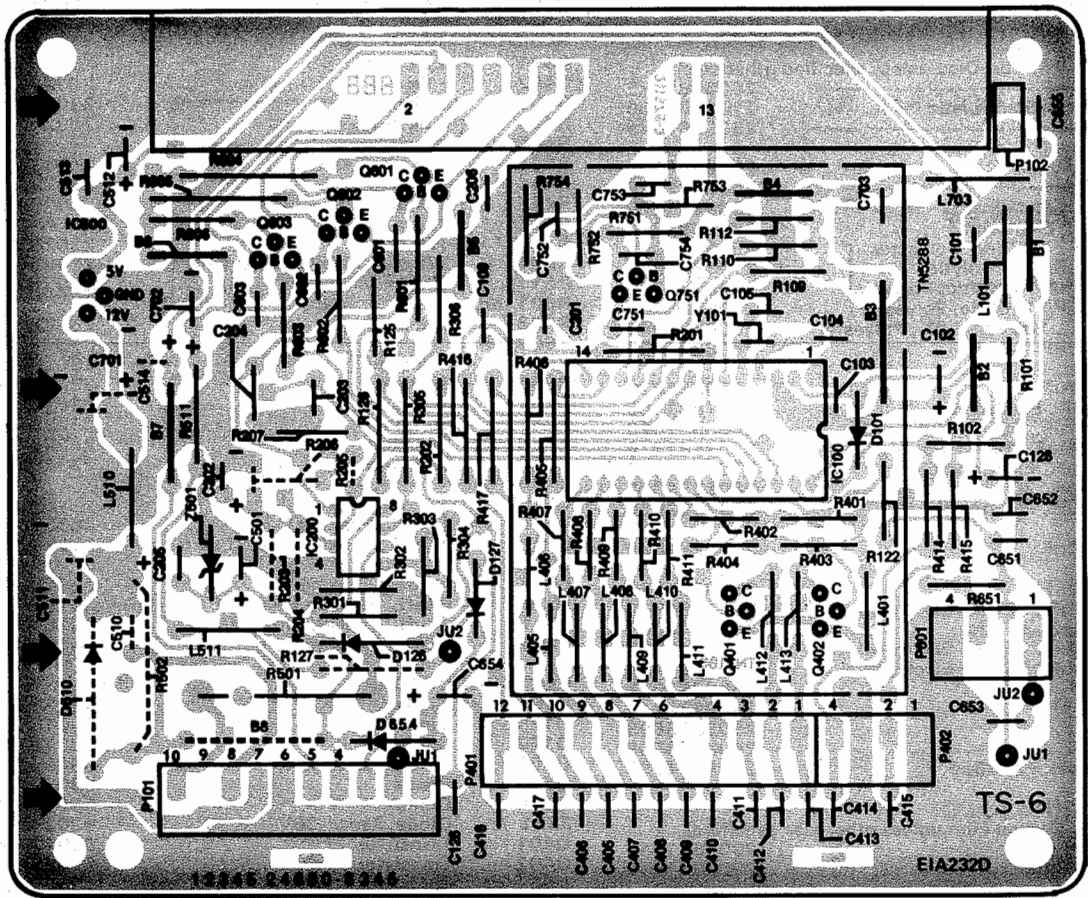
A10132-A001 (TS7) TUNING SYSTEM PC BOARD  
(Component Side Shown)



TUNING SYSTEM BOARD (TS-7)

Courtesy of the Manufacturer

A10127-A001 (TS6) TUNING SYSTEM PC BOARD  
(Component Side Shown)



A10142-A003, A10143-A001 & A10126  
TS6 DISPLAY BOARD ASSEMBLIES  
REPLACEMENT PARTS LIST

Ref.	Description	Part No.	Ref.	Description	Part No.
<b>CAPACITORS</b>					
C451	1000pF., 10%, 50V, Ceramic	2508311029	<b>MISCELLANEOUS</b>		
C452	1000pF., 10%, 50V, Ceramic	2508311029	J401	Connector, 12 Pin Square Wire	1813500012
<b>SWITCHES &amp; CONTROLS</b>			J402	Negative Polarizing Key f/P401	1813510001
R3	Slide Volume Control	2204320004		Connector, 4 Pin Square Wire	1817140004
S451	Rotary Ch. Select Switch	1607160001	J601	Negative Polarizing Key f/P402	1813510001
S452	Momentary Pushbutton Switch	1606880004	D451	Connector, 4 Pin Square Wire	1817140001
S453	Momentary Pushbutton Switch	1606880004		(A10142 & A10143)	
	(10143)			Negative Polarizing Key f/J601	1813510001
				LED, Dual Digit Display	5303030001

Courtesy of the Manufacturer

TUNING SYSTEM BOARD (TS-6)

SYLVANIA CHASSIS  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315  
FOLDER 2

**A10127-A001  
(TS6) TUNER CONTROL MODULE  
REPLACEMENT PARTS LIST**

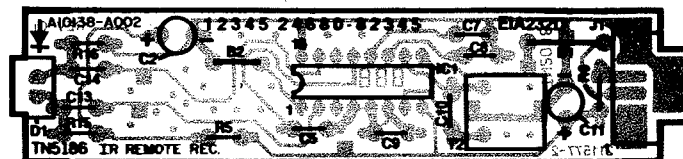
Ref.	Description	Part No.	Ref.	Description	Part No.
<b>CAPACITORS</b> (All are 50Vdc, 10%, Cer. Disc unless specified otherwise)			<b>RESISTORS (Continued)</b>		
C101	.001uF.	2508281029	R401	6.2k ohm	2302816225
C102	2.2uF., Electrolytic	2701682050	R402	5.6k ohm	2302815625
C103	.001uF.	2508281029	R403	6.2k ohm	2302816225
C104			R404	5.6k ohm	2302815625
& C105	22pF., 5%	2508372205	R405 thru		
C109	.001uF.	2508281029	R411	270 ohm, 1/4W	2303162719
C126	.001uF.	2508281029	R414	12k ohm	2302812235
C128	1uF., Electrolytic	2701681050	R415	22k ohm	2302812235
C201	.1uF., 100Vdc, Polyester	2508801049	R416		
C202	2.2uF., Electrolytic	2701682050	& R417	470 ohm	2302814715
C203	.047uF., 100Vdc, Polyester	2508794739	R501	22k ohm, 2.5W, Metal Film	2302662235
C204	.33uF., 100Vdc, Polyester	2508803349	R511	20 ohm	2302812005
C205	.1uF., 100Vdc, 20%, Polyester	2508801040	R601 thru		
C206	.001uF.	2508281029	R603	15k ohm	2302811535
C405 thru			R604 thru		
C417	.001uF.	2508281029	R606	51k ohm	2302815135
C501	10uF., Electrolytic	2701681150	R651	3k ohm	2302813025
C510	.001uF., 500V, 20%	2505521020	R751	3.3k ohm	2302813325
C511	1000uF., 16V, Electrolytic	2701681316	R752	560 ohm	2302815615
C512	4.7uF., Electrolytic	2701685050	R753	16k ohm	2302811635
C513	.01uF., 20%	2508291030	R754	5.6k ohm	2302815625
C514	2.2uF., Electrolytic	2701682050			
C601 thru			<b>COILS</b>		
C603	.001uF.	2508281029	L101	4.7uH., Peaking Coil	3618134799
C651 thru			L401	4.7uH., Peaking Coil	3618134799
C653	.001uF.	2508281029	L403 thru		
C654	150uF., 16Vdc, Electrolytic	2701688216	L413	4.7uH., Peaking Coil	3618134799
C655	560pF., 2k Vdc	2508840002	L510	82uH., Peaking Coil	3618358209
C701	100uF., 16Vdc, Electrolytic	2701681216	L511	33uH., Peaking Coil	3618353309
C702	100uF., 25Vdc, Electrolytic	2701681225	L703	33uH., Peaking Coil	3618353309
C703	.001uF.	2508281029			
C751	220pF.	2508282219	<b>SEMICONDUCTORS</b>		
C752	56pF.	2508375609	D101	Diode	5301811002
C753	33pF.	2508373309	D126	Diode	5301811002
C754	4.7pF., +/- .25pF.	2508374797	D127	Diode	5301811002
			D203	Diode, Schottky	5302471001
			D510	Diode	5302670002
			D654	Diode	5301811002
			Z501	Diode, Zener, 30V	5302491300
<b>RESISTORS</b> (All are 5%, 1/4W, Carbon Film unless otherwise specified)			Q401	Transistor, PNP	6104340001
R101	180k ohm	2302811845	Q402	Transistor, PNP	6104340001
R102	100k ohm	2302811045	Q601	Transistor, PNP	6104340001
R109			Q602	Transistor, PNP	6102230001
& R110	15k ohm	2302811525	Q603	Transistor, PNP	6104340001
R112	15k ohm	2302811525	Q751	Transistor, NPN	6104190002
R122	470 ohm	2302814715	IC100	IC, Micro	6124410004
R125	15k ohm	2302811525	IC200	IC, Dual Op-Amp	6122850003
R126	11k ohm	2302811135	IC500	IC, 5V Regulator	6121030003
R127	8.2k ohm	2302818225			
R201	15k ohm	2302811535	<b>MISCELLANEOUS</b>		
R202	5.1k ohm	2302811525	FB751	Ferrite Bead	3640050005
R203	110k ohm, 2%	2302811142	Y101	4.5MHz Crystal	5604170008
R204	10k ohm, 2%	2302811032		Heat Sink f/IC500	7316650002
R207	68k ohm	2302816835		Socket, 28 Pin f/IC500	1815220028
R301	22k ohm, 2%	2302812232		RF Shield f/IC100, Top	7345110001
R302	3k ohm, 2%	2302813022		RF Shield f/IC100, Bottom	7345110001
R303	15k ohm, 2%	2302811532		UHF/VHF Varactor Tuner	3402630001
R304	1M ohm, 2%	2302811052		(82 Channel)	
R305	51k ohm	2302815135			
R306	10k ohm	2302811035			

**A10132-A001 TS7 TUNER CONTROL MODULE  
REPLACEMENT PARTS LIST (Continued)**

Ref.	Description	Part No.	Ref.	Description	Part No.
<b>CAPACITORS (Continued)</b>			<b>RESISTORS (Continued)</b>		
C1221	10pF., 50Vdc, 10%, Ceramic	2507391029	R1206	2.7k ohm	2302812725
C1224	.001uF., 50Vdc, 10%, Ceramic Disc	2508281029	R1210	100 ohm	2302811015
C1230	39pF., 50Vdc, 5%, Ceramic Disc	2507393905	R1215 thru		
C1232	47uF., 25V, Electrolytic	2701685125	R1217	51 ohm	2302815105
C1236	22uF., 25V, Electrolytic	2701682125	R1222	3.3k ohm	2302813325
C1238	.001uF., 50Vdc, 10%, Ceramic Disc	2508281029	R1224	3.3k ohm	2302813325
C1250	.001uF., 50Vdc, 20%, Tubular Cer.	2507481020	R1246	10k ohm	2302811035
C1254	.047uF., 100Vdc, 10%, Polyester	2508804739	R1250	1k ohm	2302811025
C1300	560pF., 2kVdc, 10%, Ceramic Dis	2508840002	R1254	560 ohm	2302815615
C1500	.001uF., 50Vdc, 10%, Ceramic Disc	2508281029	R1256	560 ohm	2302815615
C1502	.001uF., 50Vdc, 10%, Ceramic Disc	2508281029	R1258	10k ohm	2302811035
C1504	1000uF., 25V, Electrolytic	2701681325	R1260	10k ohm	2302811035
C1506	.022uF., 100Vdc, 10%, Polyester	2508802239	R1262	22k ohm	2302812235
C1510	10uF., 50V, Electrolytic	2701681150	R1270	47k ohm	2302814735
C1512	.022uF., 100Vdc, 10%, Polyester	2508802239	R1272	1.8k ohm	2302811825
C1520	.022uF., 50Vdc, 20%, Polyester	2507481020	R1274	1.8k ohm	2302811825
C1530	.01uF., 125Vac, +80-20%, Cer. Disc	2506260017	R1276	1.8k ohm	2302811825
C1550	1000uF., 16V, Electrolytic	2701681325	R1520	10k ohm	2302811035
C1552	.022., 100Vdc, 10%, Polyester	2508802239	R1522	4.7k ohm	2302814725
			R1524	39 ohm	2302813905
			R1530	82 ohm	2302818205
			R1540	22k ohm, 2.5W, Metal Film	2302662235
			R1550	12 ohm, .5W	2302121205
<b>COILS &amp; TRANSFORMERS</b>			<b>SEMICONDUCTORS</b>		
L1018 thru			D1210	Diode, Schottky	5302470001
L1024	33uH., Peaking Coil	3618133309	D1500	Diode	5301711002
L1030	12uH., Peaking Coil	3619551209	D1502	Diode	5301711002
L1060	33uH., Peaking Coil	3618133309	D1524	Diode	5301711002
L1070	33uH., Peaking Coil	3618133309	Z1150	Diode, 3.9V, Zener	5301571399
L1096	12uH., Peaking Coil	3619551209	Z1540	Diode, 33V, 1W, Zener	5301921330
L1236	12uH., Peaking Coil	3619551209	Q1060	Transistor, PNP	6102230001
L1238	12uH., Peaking Coil	3619551029	Q1070	Transistor, PNP	6102230001
T1500	Power Transformer	3004000002	Q1150	Transistor, PNP	6100830001
			Q1160	Transistor, NPN	6102320002
			Q1250	Transistor, PNP	6100830001
			Q1252	Transistor, NPN	6102320002
			Q1520	Transistor, NPN	6102320002
			Q1522	Transistor, NPN	6102240001
			IC1000	IC, Microcomputer	6124260003
			IC1200	IC, Interface	6124240001
			IC1500	IC, 5V Regulator	6124790001
			<b>MISCELLANEOUS</b>		
			CN1000	Connector, 8 Circuit	1814920008
			CN1030	Connector, 3 Circuit	1814920003
			CN1090	Connector, 4 Circuit	1814920004
			F1500	Fuse, Slo-Blow, 1/4W	1808655012
			XT1000	Crystal, 5.12Mhz	5604440001
			XT1200	Crystal, 4.5Mhz	5604170005
			RY1500	Power Relay	1607230003
				Socket f/IC1200	1815220024
				Socket f/IC1000	1815220028
				Heat Sink f/IC1500	7316650002
				Square Wire Connectors (25 used)	1811580101

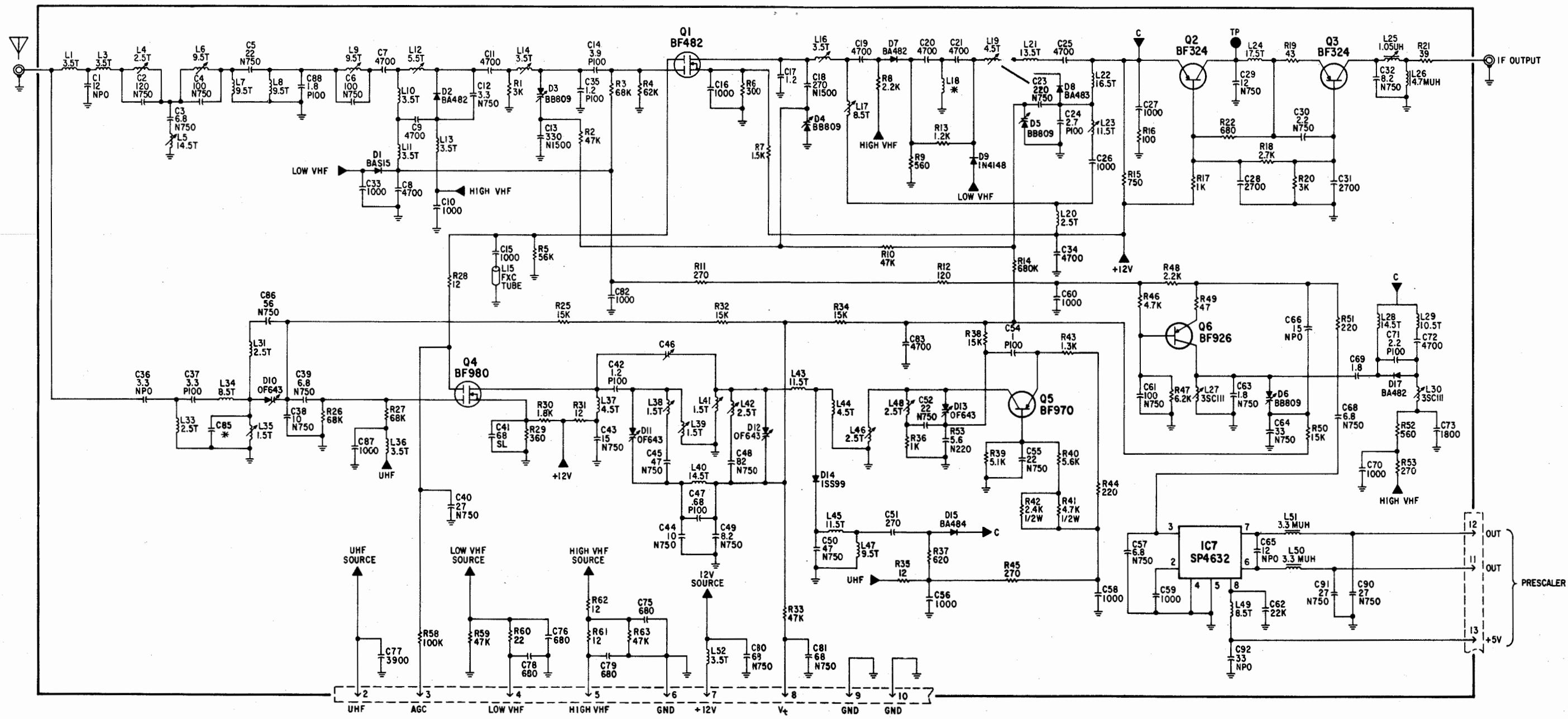
Courtesy of the Manufacturer

**A10138-A002 IR PRE-AMP ASM. PC BOARD  
(Component Side Shown)**



Courtesy of the Manufacturer

# UHF/VHF VARACTOR TUNER 3402630001 SCHEMATIC DIAGRAM

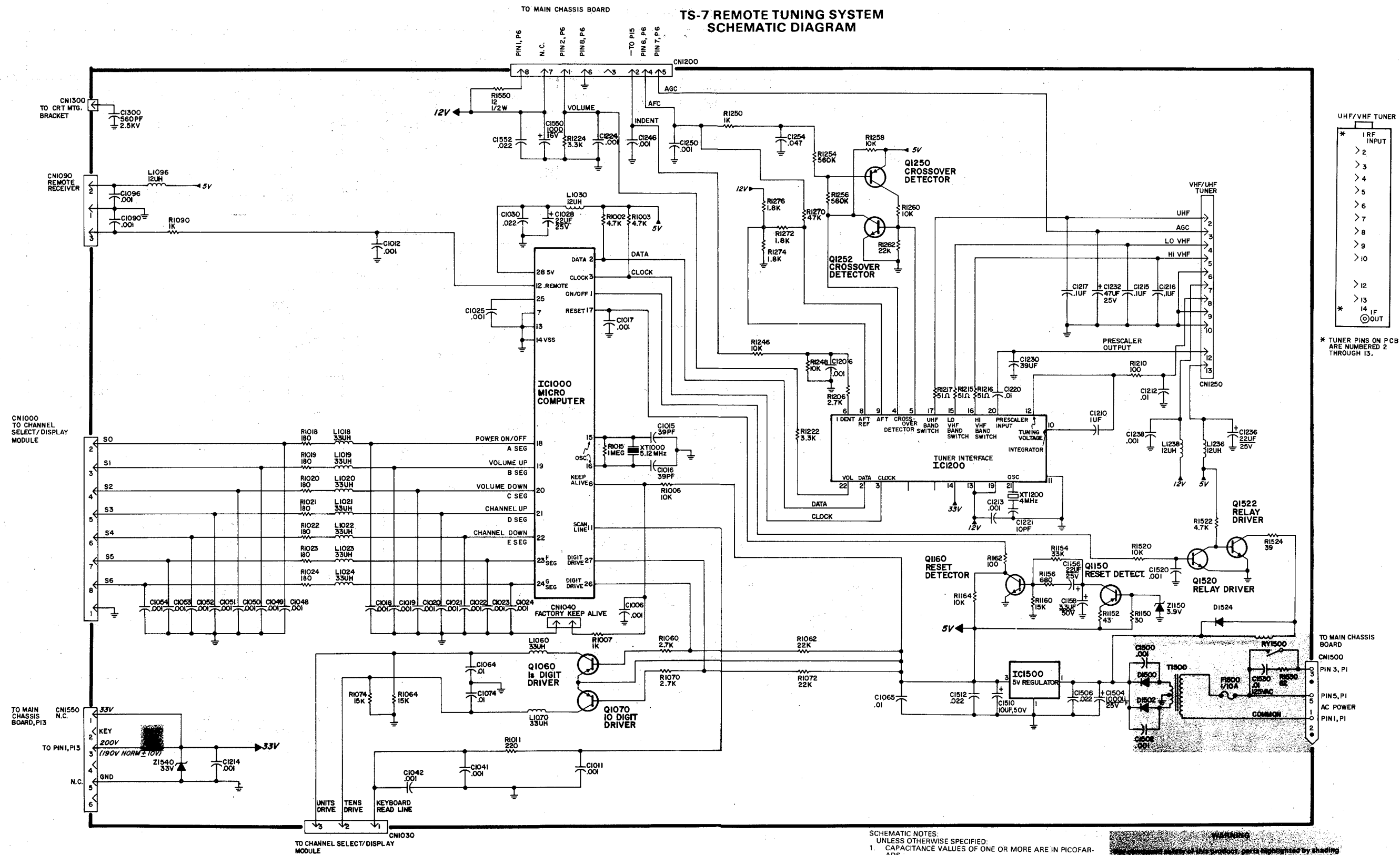


SYLVANIA CHASSIS  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

## 3402630001 TUNER ASSEMBLY (PARTIAL ASM.) REPLACEMENT PARTS LIST (83 CH. TUNER USED WITH TS-6 & TS-7 TUNING SYSTEMS)

Ref.	Description	Part No.
<b>SEMICONDUCTORS ONLY</b>		
D1	Diode, Type BAS15	-----
D2	Diode, Type BA482	2805015301
D3	Diode, Varactor, Type BB809	2805025301
D4	Diode, Varactor, Type BB809	2805025301
D5	Diode, Varactor, Type BB809	2805025301
D6	Diode, Varactor, Type BB809	2805025301
D7	Diode, Type BA482	2805015301
D8	Diode, Type BA483	2805015302
D9	Diode, Type 1N4148	-----
D10	Diode, Varactor, Type OF643	-----
D11	Diode, Varactor, Type OF643	-----
D12	Diode, Varactor, Type OF643	-----
Q1	N Channel MOSFET, Type BF482	2805045301
Q2	PNP Transistor, Type BF324	-----
Q3	PNP Transistor, Type BF324	-----
Q4	N Channel MOSFET, Type BF980	2805076101
Q5	PNP Transistor, Type BF970	-----
Q6	PNP Transistor, Type BF926	-----
IC7	Prescaler IC, Type SP4632	-----

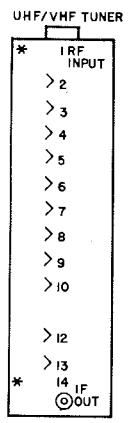
NOTES:  
UNLESS OTHERWISE SPECIFIED:  
1. ALL RESISTORS ARE IN OHMS, 1/4W, 5%.  
2. ALL CAPACITORS ARE IN PICO FARADS.  
\* INDICATES PRINTED ON PC BOARD.



SCHEMATIC NOTES:  
UNLESS OTHERWISE SPECIFIED:  
1. CAPACITANCE VALUES OF ONE OR MORE ARE IN PICOFARADS.  
2. CAPACITANCE VALUES OF LESS THAN ONE ARE IN MICROFARADS.  
3. FOR VOLTAGE, WATTAGE OR TOLERANCE RATINGS OF CAPACITORS OR RESISTORS, REFER TO THE ELECTRICAL REPLACEMENT PARTS LIST.  
4. \*TUNER PINS ON THE P.C. BOARD ARE NUMBERED 2 THRU 13. PIN 1 IS THE R.F. INPUT; PIN 14 IS THE I.F. OUTPUT.  
5. THE REFERENCE NUMBERS OF DISCRETE COMPONENTS SCREENED ON THE P.C. BOARD MUST HAVE 1000 ADDED TO THEM IN ORDER TO CROSS-REFERENCE THEM TO THIS SCHEMATIC.

WARNING:  
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### TS-6 NON-REMOTE TUNING SYSTEM SCHEMATIC DIAGRAM

Under no circumstances should the original design be modified or altered without written permission from the N.A.P. Consumer Electronics Corp. NAPCEC assumes no liability, express or implied, arising out of any unauthorized modification of design.

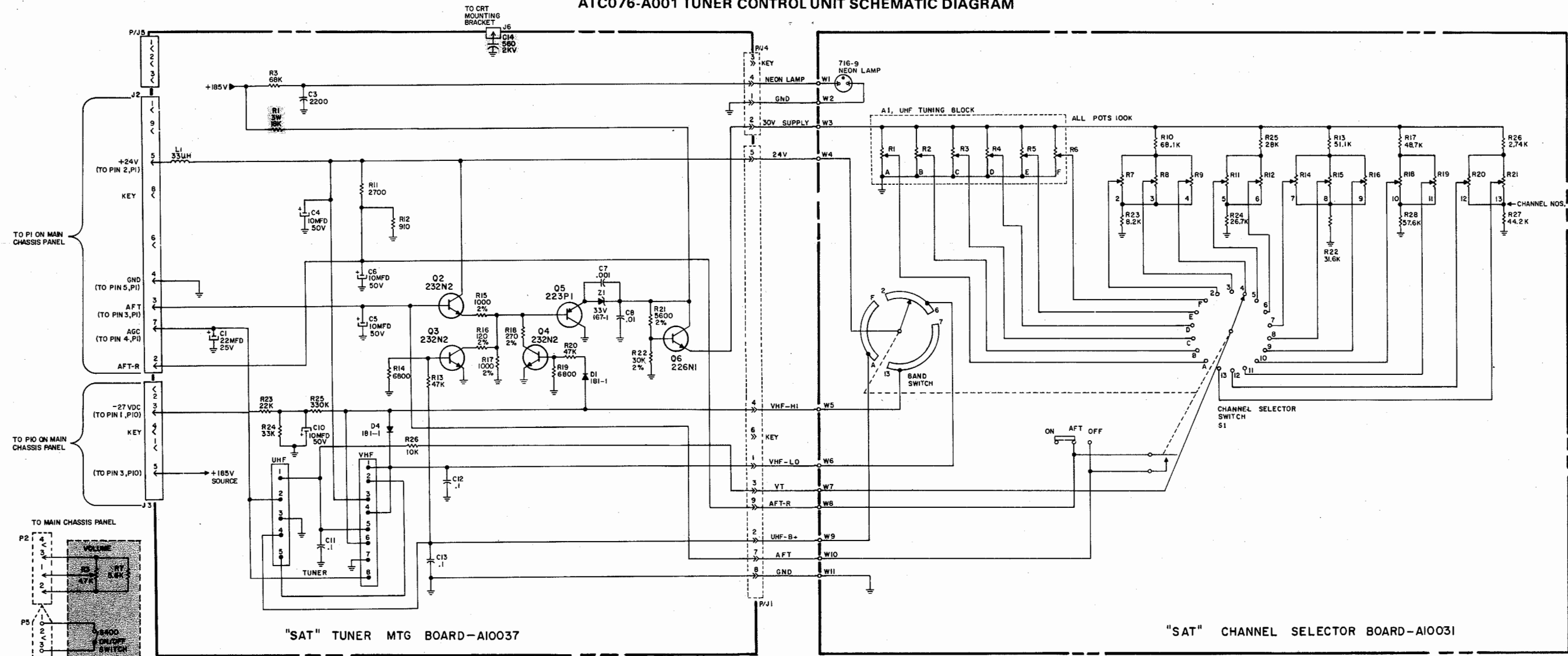


**SYLVANIA CHASSIS**  
13C301 THRU 13C307, 13C309, 13C311 THRU 13C315

\* TUNER PINS ON PCB ARE  
NUMBERED 2 THROUGH 13.

## FOLDER 2

ATC076-A001 TUNER CONTROL UNIT SCHEMATIC DIAGRAM



SCHEMATIC NOTES:  
UNLESS OTHERWISE SPECIFIED:  
1. CAPACITANCE VALUES OF 1 OR GREATER ARE IN PICO-FARADS.  
2. CAPACITANCE VALUES OF LESS THAN 1 ARE IN MICRO-FARADS.  
3. FOR VOLTAGE, TOLERANCE OR WATTAGE RATINGS OF CAPACITORS OR RESISTORS REFER TO THE REPLACEMENT PARTS LIST.

ATC076-A001 TUNER CONTROL UNIT  
GENERAL REPLACEMENT PARTS LIST

Ref.	Description	Part No.
	Tuner Mounting P.C. Board Asm. (Varactor A10037-A001 Tuners not included)	
	Channel Select P.C. Board Asm. (see the A10037-A001 Replacement Parts List for individual parts)	
	UHF Varactor Tuner	3403020003
	VHF Varactor Tuner	3403010004
	On-Off Volume Control, 4.7kohm	2202610007
R7	Carbon Film, 5.6kohm, 5%, 1/4W	2302145625
P5	3 Pin Male Connector Housing	1807350002
	Female Contacts f/P5 (2 used)	1807250001
P2	4 Pin Square Wire Connector w/Contacts	1813500004
	Negative Polarizing Key f/P2	1813510001
	Window f/Neon Lamp	1450970001
	Plastic Front Panel	1450960004
	Front Panel Inlay	1518700001
	Cable Clamp	1022980140

A10037-A001 ONE KNOB TUNER  
MOUNTING P.C. BOARD  
REPLACEMENT PARTS LIST

Ref.	Description	Part No.
	Coils	
L1	Peaking Coil, 33uH.	3617353309
	Capacitors	
C1	Electrolytic, 22uF., 25V	2701592125
C3	Ceramic, 2200pF., 10%, 500V	2508612229
C4	Electrolytic, 10uF., 20%, 50V	2701591150
C5	Electrolytic, 10uF., 20%, 50V	2701591150
C6	Electrolytic, 10uF., 20%, 50V	2701591150
C7	Ceramic, 1000pF., 10%, 500V	2508601029
C8	Ceramic, 0.1uF., +80 -20%, 50V	2508581039
C10	Electrolytic, 10uF., 50V	2701591150
C11	Polyester, .1uF., 10%, 100V	2508451049
C12	Polyester, .1uF., 10%, 100V	2508801049
C14	Ceramic, 550pF., 10%, 2kV	2508800002
	Resistors	
R1	Carbon Film, 10kohm, 5%, 1/4W	2302146835
R3	Carbon Film, 68kohm, 5%, 1/4W	2302142725
R11	Carbon Film, 2700 ohm, 5%, 1/4W	2302149115
R12	Carbon Film, 910 ohm, 5%, 1/4W	2302144735
R13	Carbon Film, 47kohm, 5%, 1/4W	2302736825
R14	Carbon Film, 6800 ohm, 5%, 1/4W	2302141022
R15	Carbon Film, 1kohm, 2%, 1/4W	

Ref.	Description	Part No.
	Resistors (Continued)	
R16	Carbon Film, 120 ohm, 2%, 1/4W	2302141215
R17	Carbon Film, 1kohm, 2%, 1/4W	2302731022
R18	Carbon Film, 270 ohm, 2%, 1/4W	2302142712
R19	Carbon Film, 6800 ohm, 5%, 1/4W	2302736825
R20	Carbon Film, 47kohm, 5%, 1/4W	2302734735
R21	Carbon Film, 5600 ohm, 2%, 1/4W	2302735622
R22	Carbon Film, 30kohm, 2%, 1/4W	2302733032
R23	Carbon Film, 22kohm, 5%, 1/4W	2302732235
R24	Carbon Film, 33kohm, 5%, 1/4W	2302733335
R25	Carbon Film, 330kohm, 5%, 1/4W	2302143345
R26	Carbon Film, 10kohm, 5%, 1/4W	2302141035
	Semiconductors	
D1	Silicon Diode	5301819001
D4	Silicon Diode	5301819001
Z1	Zener Diode, 33V	5301671001
Q2	NPN Silicon Transistor	6102320002
Q3	NPN Silicon Transistor	6102320002
Q4	NPN Silicon Transistor	6102320002
Q5	PNP Silicon Transistor	6102230001
Q6	NPN Silicon Transistor	6102260001
	Miscellaneous	
	Tuner Shield	7342890001

13C301 THRU 13C307, 13C309, 13C311 THRU 13C315  
SYLVANIA CHASSIS

FOLDER 2

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	A10018-A001	Main Board (Ch. 13C301-00AA, 13C302-00AA, 13C303-00AA, 13C304-00AA and 13C305-00AA)
	P.C. Board	A10018-A002	Main Board (Ch. 13C301-00BA, 13C302-00BA, 13C303-00BA, 13C304-00BA and 13C305-00BA)
	P.C. Board	A10018-B003	Main Board (Ch. 13C301-00CA, 13C302-00CA, 13C303-00CA,DA, 13C304-00CA and 13C305-00CA)
	P.C. Board	A10018-B005	Main Board (Ch. 13C302-00CA, 13C303-00CA, 13C304-00CA and 13C305-00CA)
	P.C. Board	A10018-C006	Main Board (Ch. 13C302-00DA, 13C303-00EA,FA, 13C304-00DA, 13C305-00DA, 13C309-00AA and 13C313-00AA)
	P.C. Board	A10018-C007	Main Board (Ch. 13C302-00EA, 13C303-00GA,HA, 13C304-00EA,GA, 13C305-00EA, 13C309-00BB and 13C312-00AA)
	P.C. Board	A10244-A001	Main Board (Ch. 13C302-00FA, 13C306-00AA, 13C307-00AA and 13C311-00AA)
	P.C. Board	A10274-A001	Main Board (Ch. 13C312-00CC)
	P.C. Board	A10276-A001	Main Board (Ch. 13C313-00BB)
	P.C. Board	A10019-A001	CRT Board (Ch. 13C301 Series, 13C302 Series, 13C303 Series, 13C304 Series and 13C305 Series)
	P.C. Board	A10019-B003	CRT Board (Ch. C13C302-00BA,CA,DA and EA, Ch. 13C303-00BA,CA,DA,EA,FA,GA and HA, Ch. 13C304-00BA,CA,DA,EA,FA and GA, 13C305-00CA, DA and EA, Ch. 13C309-00AA,BB, Ch. 13C312-00AA, BB, Ch. 13C313-00AA,BB)
	P.C. Board	A10241-A001	CRT Board (Ch. 13C302-00FA, 13C306-00AA, 13C307-00AA, 13C311-00AA, 13C312-00CC, 13C313-00CC, 13C314-00AA and 13C315-00AA)
	P.C. Board	A10020-A001	Secondary Controls (Ch. 13C301-00 Series, 13C303-00 Series)
	P.C. Board	A10047-A001	Secondary Controls (Ch. 13C302-00 Series, 13C309-00AA,BB and 13C314-00AA)
	P.C. Board	ASC018-A001	Secondary Controls (Ch. 13C304-00AA,BA,CA, DA,EA and 13C305-00 Series)
	P.C. Board	ASC120-B002	Secondary Controls (Ch. 13C306-00AA, 13C307-00AA, 13C312-00 Series, 13C313-00 Series and 13C315-00 Series)
	P.C. Board	ASC147-A001	Secondary Control (Ch. 13C304-00FA and GA)
	P.C. Board	ASC251-A001	Secondary Controls (Ch. 13C311-00AA)
	P.C. Board	ATC076-A001	Tuner Control (Ch. 13C302 Series and 13C304 Series)
	P.C. Board	ATC137-A001	Tuner Control (Ch. 13C305 Series)
	P.C. Board	ATC139-A001	Tuner Control (Ch. 13C303-00AA,BA,CA,EA and GA)
	P.C. Board	ATC203-A001	Tuner Control (Ch. 13C303DA,FA and HA)
	P.C. Board	ATC231-A001	Tuner Control (Ch. 13C307-00AA)
	P.C. Board	ATC238-A001	Tuner Control (Ch. 13C313-00AA,BB,CC)
	P.C. Board	ATC239-A001	Tuner Control (Ch. 13C312-00AA,BB,CC)
	P.C. Board	ATC247-A001	Tuner Control (Ch. 13C309-00AA,BB and 13C314-00AA)
	P.C. Board	ATC251-A001	Tuner Control (Ch. 13C311-00AA)
	P.C. Board	ATC252-A001	Tuner Control (Ch. 13C306-00AA)
	P.C. Board	C13301-00AA	Tuner Control (Ch. 13C301-00AA,BA and CA)
	Socket	1816270001	CRT
	UHF Tuner	3403020003	PTS Part Number 3403020003
	UHF Tuner	3402770002	PTS Part Number 3402770002
	UHF Tuner	3402480018	PTS Part Number 3402480018
	VHF Tuner	3403010004	PTS Part Number 3403010004
	VHF Tuner	3402460020	PTS Part Number 3402460020
	VHF Tuner	3402780002	PTS Part Number 3402780002
	Wedge	644867001	Yoke (3 used)

# For SAFETY use only equivalent replacement part.

PARTS LIST AND DESCRIPTION

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

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFGR. PART No.	REPLACEMENT DATA				
			NOTES	NTE PART No.	ECG PART No.	RCA PART No.	WORKMAN PART No.
D302,3							
D400	1N5062	5301811001		NTE177	ECG177	SK9091/177	WEP1062/177
D402	1N5062	5302621001		NTE125	ECG125	SK3081/125	WEP170/125
D404		5302621001		NTE177	ECG177	SK3081/125	WEP170/125
D406		5301811001		NTE177	ECG177	SK9091/177	WEP1062/177
D408		5302611001		NTE552	ECG552	SK9000/552	WEP172/506
D410	BAS11	5302601002		NTE552	ECG552	SK9000/552	WEP172/506
D414	BYV950	5302611001		NTE552	ECG552	SK9000/552	WEP172/506
D452	BAS11	5302601001		NTE580	ECG580	SK5036/580	WEP925/519
D454	BYV95B	5302601001		NTE580	ECG580	SK5036/580	WEP925/519
D456	BAV18	5302681001		NTE519	ECG519	SK3100/519	WEP925/519
D457	BAV18	5302681001(1)		NTE519	ECG519	SK3100/519	WEP925/519
D458	BYV95B	5302601001(2)		NTE580	ECG580	SK5036/580	WEP172/506
D460	BYV95B	5301841001(3)		NTE506	ECG506	SK3998/506	WEP172/506
D462	BYV95B	5302601001		NTE580	ECG580	SK5036/580	WEP172/506
D464	BY448	5302591001		NTE580	ECG580	SK5036/580	WEP172/506
D466	BYV95B	5302601001(4)		NTE580	ECG580	SK5036/580	WEP172/506
D500	BAS11	5302611001		NTE552	ECG552	SK7635	WEP172/506
IC100	126-1	6121260001				SK7635	WEP172/506
	TDA2541						WEP172/506
IC200	TBA120U	6123700001		NTE1580	ECG1580	SK7743/1580	WEP1416L/1416
IC202	TDA2611A	6123270001		NTE1566	ECG1566	SK7726/1566	WEP1416L/1416
IC300	303-1	6123030001		NTE1416	ECG1416	SK9016/1410	WEP1416L/1416
IC500	TDA3570	6123280001(5)		NTE1416	ECG1416	SK9016/1410	WEP1416L/1416
	TDA2577	6124450001(6)					WEP1416L/1416
IC502	TDA3651AQ	6123290001		NTE395+	ECG395+	SK9434+	WEP736/123A+
Q130	TDA3651A	6103909001		NTE395+	ECG395+	SK9434+	WEP736/123A+
Q300	BF324	6103902001(7)		NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A
	435-1	6104359001		NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A
	BC548	6104352001(7)		NTE123AP	ECG123AP	SK3854/123AP	WEP736/123A

13C301 THRU 13C307,13C309,13C311 THRU 13C315  
SYLVANIA CHASSIS

30 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.	MFG. PART No.	REPLACEMENT DATA						
			NOTES	NTE PART No.	ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.	
Q302	434-1 BC558	6104349001		NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
Q304	435-1 BC548	6104352001(7)		NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
				NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
				NTE199*	ECG199*	SK3245/199*	WEP66/199*	121-972*	
				NTE399	ECG399	SK9352/399	WEP68/287*	121-Z9045*	
Q400	435-2 BC548C	6104352002(7)		NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
Q402	434-1 BC558	6104342001(7)		NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
Q404	434-1 BC558	6104349001		NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
Q406	434-1 BC558	6104342001(7)		NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
Q408	BC548	6105119001(9)		NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
				NTE47	EC47	SK9459/47			
				NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
				NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
# Q410	BUX84	6104360001		NTE51	EC51	SK9452/51			
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
# Q412	434-1 BC558	6104349001		NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
# Q452	BU508A	6104342001(7)		NTE2300	ECG2300	SK9476/2300			
				NTE2300	ECG2300	SK9476/2300			
				NTE2300	ECG2300	SK9476/2300			
				NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
Q500	435-1 BC548	6104359001(14)		NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
				NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
				NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
				NTE123AP+	ECG123AP+	SK3854/123AP+	WEP736/123A+	121-Z9000A+	
Q502	BD826	6104380001(14)		NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
Q504	434-1 BC558	6104349001		NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
Q508	434-1 BC558	6104342001(7)		NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	
				NTE159+	ECG159+	SK3466/159+	WEP62/159+	121-Z9003+	

PARTS LIST AND DESCRIPTION (Continued)

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

COILS & TRANSFORMERS (Sweep Circuits)

ITEM No.	FUNCTION	MFGR. PART No.	OTHER IDENTIFICATION	NOTES
DY1	Yoke Horiz 2.28mH 90° Vert 26.2mH	3619050001	361905-1 (1)	
T400	Horiz Driver	3204030001	50061 (1)	
T452	Horiz Output	3618070004 (2) 3619630001 (3)	361807-4 (1)	

# For SAFETY use only equivalent replacement part.

(1) Number on unit.

(2) Models with A10018-A001, A002, B005 and C006 Main Chassis.

(3) Models with A10244-A001, A10274-A001 and A10276-A001 Main Chassis.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP101	3" X 5" PM 16 Ohms	583508-1003 (1)	35A05Z16	(1) Number on unit.

FUSE DEVICES

ITEM NO.	DESCRIPTION	MFGR. PART NO.		NOTES
		DEVICE	HOLDER	
F400	2A @ 125V Slow-Blow	1810215200	1810070001 (1)	(1) Two used.

# For SAFETY use only equivalent replacement part.

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
FB400	Ferrite Bead	3640460001	
FB401	Ferrite Bead	3640460001	
L400	Degaussing Coil	3619570002	
J1	Jack	1813720001	IF Input
P1	Jack	1813720002	IF Input
P2	Plug	1817140005	Tuner
P3	Plug	1817140004	Volume
P4	Plug		Speaker
	Plug	1813500109	Secondary Controls
	Plug	1817140009	Secondary Controls (ASC120-B002 and ASC147-A001)
P5	Plug	1816140005	On/Off Switch (ATC250-A001 and ATC251-A001)
P7	Plug	1816140012	On/Off Switch
P8	Plug	1813500005	CRT Board
P11	Plug	1817140005	CRT Board
P400	Cord	1817140004	Secondary Controls
S1	Switch		AC Power, Polarized
S400	Switch		AFT
S500	Switch		Power (Part of Volume Control)
SF130	Filter	1606720001	Vertical Centering
V701	CRT	3618020001	SAW
	CRT	A33AAL02XP	Models CAB114WA01,WA02
	CRT	A33AL01XP	Model CAC120WA01
	CRT	A33AAL01XP	Models CAC122WA01,WA02
	CRT	A33AAL03XP	Models CAD130WA01,WA02
	CRT	A33ACS01XP	Model CAE130WA01
	CRT	CBA33ACS01	Model RAD135WA03
	CRT	CBA33AAL03	Models RAD135WA01,02
Y300	Filter	3617560001	Ceramic - 4.5MHz
Y302	LC Trap	3616910001	3.58MHz
Y304	Crystal	5604040005	3.58MHz
	Antenna, UHF		UHF-RUSSELL Replacement BOW-4H
	Antenna, VHF		VHF-RUSSELL Replacement POR-12H
	Antenna, VHF		RUSSELL Replacement ROD SIM-4H
	Capristor	2502330007	CRT to Tuner Cluster
	Magnet	3619050001	Convergence and Purity

13C301 THRU 13C307,13C308,13C311 THRU 13C315

SYLVANIA CHASSIS

FOLDER 2

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.
# R560	6800 5% 1/4W Carbon Film	2302816825	QW268	22-1116
	10K 5% 1/4W Carbon Film	2302811035	QW310	22-1120
# R562	330 5% 1/4W Carbon Film	2302813315	QW133	22-1084
# R564	1500 5% 1/4W Carbon Film	2302811525	QW215	22-1100
# R565	820 5% 1/4W Carbon Film	2302738215	QW182	22-1094
# R566	150K 5% 1/4W Carbon Film	2302811545	QW415	22-1148
# R568	10K 5% 1/4W Carbon Film	2302811035	QW310	22-1120
# R600	3.9M 5% 1/2W Metal Film	2302673955		
# R601	100 5% 1/4W Carbon Film	2302811015	QW110	22-1072
# R606	1M 5% 1/2W Metal Film	2302671055	HW510	

# For SAFETY use only equivalent replacement part.

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.	ITEM No.	FUNCTION	MFGR. PART No.
L1	RF Choke	3606760021	L306	Peaking (56uH)	3618355609
L127	Peaking	3616821206	L308	Peaking (3.3uH)	3618353390
L129	47.25MHz Trap	3617990005	L310	Peaking (3.3uH)	3618353390
L130	RF Choke (1.2uH)	3618351290		Peaking (6.8uH)	3618356899
L154	Peaking (.82uH)	3618350829	L312	Peaking (3.3uH)	3618353390
L155	Video IF	3617990003	L402	Line Choke	3619150001
L156	AFT	3617990004	L403	Peaking (22uH)	3618352209
L157	Peaking (5.6uH)	3618355699	L404	Peaking (5.6uH)	3618355699
L162	RF Choke (1.2uH)	3617351299	L405	RF Choke (5.3uH)	3618000005
L163	Peaking (.82uH)	3618350829	L406	Peaking (12uH)	3618000008
L201	RF Choke (22uH)	3617352205	L408	Peaking (.5uH)	3618000003
	(5.6uH)	3618355699	L452	Peaking (5.3uH)	3618000005
L203	RF Choke (22uH)	3618352209	L454	RF Choke (12uH)	3618351209
L205	Sound IF	3619680001	L456	Peaking (690uH)	3619100003
L207	Sound IF	3619680002	L458	Peaking (5.3uH)	3618000005
L300	Peaking (10uH)	3618351009	L460	RF Choke (12uH)	3618000001
L301	Peaking (100uH)	3619551015		RF Choke	3618000014
	Peaking (120uH)	3619551215	L461	RF Choke (12uH)	3618351209
L302	Peaking (39uH)	3618353909	L462	RF Choke (22uH)	3618352209
L303	Peaking (18uH)	3618351809	L464	Linearity	3620300001
	Peaking (47uH)	3619554705	L500	Peaking (1mH)	3618351029
L304	Peaking (18uH)	3618351809	L601	RF Choke (42uH)	3618000007
	Peaking (15uH)	3618351509			

# For SAFETY use only equivalent replacement part.

TRANSFORMER (Remote)

ITEM No.	RATING			REPLACEMENT DATA		
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.		NOTES
# T1500				3004000002 (1)		

For SAFETY use only equivalent replacement part. (1) Models with A10132-A001 TS7 Tuner Control Module.

TRANSFORMER (Switched Mode)

ITEM No.	RATING			REPLACEMENT DATA		
	PRI.	SEC. 1	SEC. 2	MFGR. PART No.		NOTES
# T402	1-10 350VPP (1) @ 560mA DC	2-3 80VPP (1) @ 28mA DC	7-8 10.5VPP (1) @ 320mA DC	3618040001  312213850050 (2)		

# For SAFETY use only equivalent replacement part. (1) Horizontal rate.  
(2) Number on unit.

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.	ZENITH PART No.
Q506	434-1	6104349001(14) 6104342001(7)		NTE159+ NTE159+	ECG159+ ECG159+	SK3466/159+ SK3466/159+	121-Z9003+ 121-Z9003+
Q600	471-1	6104390001(12) 6104340001(13)		NTE171	ECG171	SK3201/171	121-822
Q602	471-1	6104390001(12) 6104340001(13)		NTE171	ECG171	SK3201/171	121-822
Q604	471-1	6104390001(12) 6104340001(13)		NTE171	ECG171	SK3201/171	121-822
Q606	BC558 434-1	6104349001(12) 5300731045 5300731045 5301571180(11)		NTE159+ NTE159+ NTE5014A NTE5014A NTE5027A	ECG159+ ECG159+ ECG5014A ECG5014A ECG5027A	MEP62/159+ MEP62/159+ MEP1415/5014 MEP1415/5014 MEP1429/5027	121-Z9003+ 121-Z9003+ 103-Z9009 103-Z9009 103-252

# For SAFETY use only equivalent replacement part.

\* Lead configuration may vary from original.

+ Rotate 180° to conform with original lead configuration.

(1) Used In Chassis 13C302-00FA; 13C306-00AA; 13C307-00AA; 13C311-00AA; 13C312-00BB,CC; 13C313-00BB,CC; 13C314-00AA; 13C315-00AA.

(2) Used In Chassis 13C301-00AA,BA; 13C302-00AA,BA,CA; 13C303-00AA,BA,CA; 13C304-00AA,BA,CA,DA; 13C304-00AA,BA,CA; 13C305-00AA,BA,CA; 13C306-00AA,BA,CA,EA; 13C307-00AA,BA,CA; 13C308-00AA,BA,CA,EA; 13C309-00AA,BA,CA,EA; 13C310-00AA,BA,CA,EA; 13C311-00AA,BA,CA,EA; 13C312-00AA,BA,CA,EA; 13C313-00AA,BA,CA,EA; 13C314-00AA,BA,CA,EA; 13C315-00AA,BA,CA,EA; 13C316-00AA,BA,CA,EA; 13C317-00AA,BA,CA,EA; 13C318-00AA,BA,CA,EA; 13C319-00AA,BA,CA,EA; 13C320-00AA,BA,CA,EA; 13C321-00AA,BA,CA,EA; 13C322-00AA,BA,CA,EA; 13C323-00AA,BA,CA,EA; 13C324-00AA,BA,CA,EA; 13C325-00AA,BA,CA,EA; 13C326-00AA,BA,CA,EA; 13C327-00AA,BA,CA,EA; 13C328-00AA,BA,CA,EA; 13C329-00AA,BA,CA,EA; 13C330-00AA,BA,CA,EA; 13C331-00AA,BA,CA,EA; 13C332-00AA,BA,CA,EA; 13C333-00AA,BA,CA,EA; 13C334-00AA,BA,CA,EA; 13C335-00AA,BA,CA,EA; 13C336-00AA,BA,CA,EA; 13C337-00AA,BA,CA,EA; 13C338-00AA,BA,CA,EA; 13C339-00AA,BA,CA,EA; 13C340-00AA,BA,CA,EA; 13C341-00AA,BA,CA,EA; 13C342-00AA,BA,CA,EA; 13C343-00AA,BA,CA,EA; 13C344-00AA,BA,CA,EA; 13C345-00AA,BA,CA,EA; 13C346-00AA,BA,CA,EA; 13C347-00AA,BA,CA,EA; 13C348-00AA,BA,CA,EA; 13C349-00AA,BA,CA,EA; 13C350-00AA,BA,CA,EA; 13C351-00AA,BA,CA,EA; 13C352-00AA,BA,CA,EA; 13C353-00AA,BA,CA,EA; 13C354-00AA,BA,CA,EA; 13C355-00AA,BA,CA,EA; 13C356-00AA,BA,CA,EA; 13C357-00AA,BA,CA,EA; 13C358-00AA,BA,CA,EA; 13C359-00AA,BA,CA,EA; 13C360-00AA,BA,CA,EA; 13C361-00AA,BA,CA,EA; 13C362-00AA,BA,CA,EA; 13C363-00AA,BA,CA,EA; 13C364-00AA,BA,CA,EA; 13C365-00AA,BA,CA,EA; 13C366-00AA,BA,CA,EA; 13C367-00AA,BA,CA,EA; 13C368-00AA,BA,CA,EA; 13C369-00AA,BA,CA,EA; 13C370-00AA,BA,CA,EA; 13C371-00AA,BA,CA,EA; 13C372-00AA,BA,CA,EA; 13C373-00AA,BA,CA,EA; 13C374-00AA,BA,CA,EA; 13C375-00AA,BA,CA,EA; 13C376-00AA,BA,CA,EA; 13C377-00AA,BA,CA,EA; 13C378-00AA,BA,CA,EA; 13C379-00AA,BA,CA,EA; 13C380-00AA,BA,CA,EA; 13C381-00AA,BA,CA,EA; 13C382-00AA,BA,CA,EA; 13C383-00AA,BA,CA,EA; 13C384-00AA,BA,CA,EA; 13C385-00AA,BA,CA,EA; 13C386-00AA,BA,CA,EA; 13C387-00AA,BA,CA,EA; 13C388-00AA,BA,CA,EA; 13C389-00AA,BA,CA,EA; 13C390-00AA,BA,CA,EA; 13C391-00AA,BA,CA,EA; 13C392-00AA,BA,CA,EA; 13C393-00AA,BA,CA,EA; 13C394-00AA,BA,CA,EA; 13C395-00AA,BA,CA,EA; 13C396-00AA,BA,CA,EA; 13C397-00AA,BA,CA,EA; 13C398-00AA,BA,CA,EA; 13C399-00AA,BA,CA,EA; 13C400-00AA,BA,CA,EA; 13C401-00AA,BA,CA,EA; 13C402-00AA,BA,CA,EA; 13C403-00AA,BA,CA,EA; 13C404-00AA,BA,CA,EA; 13C405-00AA,BA,CA,EA; 13C406-00AA,BA,CA,EA; 13C407-00AA,BA,CA,EA; 13C408-00AA,BA,CA,EA; 13C409-00AA,BA,CA,EA; 13C410-00AA,BA,CA,EA; 13C411-00AA,BA,CA,EA; 13C412-00AA,BA,CA,EA; 13C413-00AA,BA,CA,EA; 13C414-00AA,BA,CA,EA; 13C415-00AA,BA,CA,EA; 13C416-00AA,BA,CA,EA; 13C417-00AA,BA,CA,EA; 13C418-00AA,BA,CA,EA; 13C419-00AA,BA,CA,EA; 13C420-00AA,BA,CA,EA; 13C421-00AA,BA,CA,EA; 13C422-00AA,BA,CA,EA; 13C423-00AA,BA,CA,EA; 13C424-00AA,BA,CA,EA; 13C425-00AA,BA,CA,EA; 13C426-00AA,BA,CA,EA; 13C427-00AA,BA,CA,EA; 13C428-00AA,BA,CA,EA; 13C429-00AA,BA,CA,EA; 13C430-00AA,BA,CA,EA; 13C431-00AA,BA,CA,EA; 13C432-00AA,BA,CA,EA; 13C433-00AA,BA,CA,EA; 13C434-00AA,BA,CA,EA; 13C435-00AA,BA,CA,EA; 13C436-00AA,BA,CA,EA; 13C437-00AA,BA,CA,EA; 13C438-00AA,BA,CA,EA; 13C439-00AA,BA,CA,EA; 13C440-00AA,BA,CA,EA; 13C441-00AA,BA,CA,EA; 13C442-00AA,BA,CA,EA; 13C443-00AA,BA,CA,EA; 13C444-00AA,BA,CA,EA; 13C445-00AA,BA,CA,EA; 13C446-00AA,BA,CA,EA; 13C447-00AA,BA,CA,EA; 13C448-00AA,BA,CA,EA; 13C449-00AA,BA,CA,EA; 13C450-00AA,BA,CA,EA; 13C451-00AA,BA,CA,EA; 13C452-00AA,BA,CA,EA; 13C453-00AA,BA,CA,EA; 13C454-00AA,BA,CA,EA; 13C455-00AA,BA,CA,EA; 13C456-00AA,BA,CA,EA; 13C457-00AA,BA,CA,EA; 13C458-00AA,BA,CA,EA; 13C459-00AA,BA,CA,EA; 13C460-00AA,BA,CA,EA; 13C461-00AA,BA,CA,EA; 13C462-00AA,BA,CA,EA; 13C463-00AA,BA,CA,EA; 13C464-00AA,BA,CA,EA; 13C465-00AA,BA,CA,EA; 13C466-00AA,BA,CA,EA; 13C467-00AA,BA,CA,EA; 13C468-00AA,BA,CA,EA; 13C469-00AA,BA,CA,EA; 13C470-00AA,BA,CA,EA; 13C471-00AA,BA,CA,EA; 13C472-00AA,BA,CA,EA; 13C473-00AA,BA,CA,EA; 13C474-00AA,BA,CA,EA; 13C475-00AA,BA,CA,EA; 13C476-00AA,BA,CA,EA; 13C477-00AA,BA,CA,EA; 13C478-00AA,BA,CA,EA; 13C479-00AA,BA,CA,EA; 13C480-00AA,BA,CA,EA; 13C481-00AA,BA,CA,EA; 13C482-00AA,BA,CA,EA; 13C483-00AA,BA,CA,EA; 13C484-00AA,BA,CA,EA; 13C485-00AA,BA,CA,EA; 13C486-00AA,BA,CA,EA; 13C487-00AA,BA,CA,EA; 13C488-00AA,BA,CA,EA; 13C489-00AA,BA,CA,EA; 13C490-00AA,BA,CA,EA; 13C491-00AA,BA,CA,EA; 13C492-00AA,BA,CA,EA; 13C493-00AA,BA,CA,EA; 13C494-00AA,BA,CA,EA; 13C495-00AA,BA,CA,EA; 13C496-00AA,BA,CA,EA; 13C497-00AA,BA,CA,EA; 13C498-00AA,BA,CA,EA; 13C499-00AA,BA,CA,EA; 13C500-00AA,BA,CA,EA; 13C501-00AA,BA,CA,EA; 13C502-00AA,BA,CA,EA; 13C503-00AA,BA,CA,EA; 13C504-00AA,BA,CA,EA; 13C505-00AA,BA,CA,EA; 13C506-00AA,BA,CA,EA; 13C507-00AA,BA,CA,EA; 13C508-00AA,BA,CA,EA; 13C509-00AA,BA,CA,EA; 13C510-00AA,BA,CA,EA; 13C511-00AA,BA,CA,EA; 13C512-00AA,BA,CA,EA; 13C513-00AA,BA,CA,EA; 13C514-00AA,BA,CA,EA; 13C515-00AA,BA,CA,EA; 13C516-00AA,BA,CA,EA; 13C517-00AA,BA,CA,EA; 13C518-00AA,BA,CA,EA; 13C519-00AA,BA,CA,EA; 13C520-00AA,BA,CA,EA; 13C521-00AA,BA,CA,EA; 13C522-00AA,BA,CA,EA; 13C523-00AA,BA,CA,EA; 13C524-00AA,BA,CA,EA; 13C525-00AA,BA,CA,EA; 13C526-00AA,BA,CA,EA; 13C527-00AA,BA,CA,EA; 13C528-00AA,BA,CA,EA; 13C529-00AA,BA,CA,EA; 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13C714-00AA,BA,CA,EA; 13C715-00

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.	ITEM No.	RATING	MFGR. PART No.
# C402	220 200V	2701392220	# C422C	200 385V	2701710001
# C422A	40 385V	2701710001	# C482	4.7 50V NP	2701540001
# C422B	40 385V	2701710001			

# For SAFETY use only equivalent replacement part.

CAPACITORS Items Not Listed Are Normally Available At Local Distributors.

ITEM No.	RATING	MFGR. PART No.	ITEM No.	RATING	MFGR. PART No.
C137	18 5% 50V NPO	2508411805	C348	39 5% 50V NPO	2508413905
C141	56 5% 50V NPO	2508415605	C350	100 5% 50V NPO	2508411015
C155	100 5% 50V NPO	2508411015	C352	68 5% 50V NPO	2508416805
C160	100 5% 50V NPO	2508411015		150 5% 50V	2508411515
C164	56 5% 50V NPO	2508415605	C354	68 5% 50V NPO	2508416805
C212	10 10% 50V NPO	2508411008		150 5% 50V	2508411515
	33 5% 50V	2508413305	# C400	.22 20% 125V	2506472240
C303	56 5% 50V NPO	2508415605	# C404	2200 10% 500V	2508612229
	47 5% 50V	2508414705	# C406	2200 10% 500V	2508612229
C305	10 10% 50V NPO	2508411008	C427	1000 20% 1KV	2508850007
C306	100 10% 50V NPO	2508411015		N330	
	22 5% 50V	2508412205		1000 10% 500V	2508611029
C308	100 10% 50V NPO	2508411015	# C474	1000 10% 2KV	2508850009
	220 5% 50V	2508422215		560 10% 2KV	2508850004
C320	56 5% 50V NPO	2508415605	# C476	6200 5% 2KV	2508186225
C322	Trimmer 3.58MHz	2602290001	# C478	.022 5% 250V	2508172235
C324	22 5% 50V NPO	2508412205	# C483	560 10% 2KV	2508840009
C326	56 5% 50V NPO	2508415605		1000 10% 2KV	2508850009
C328	220 5% 50V N220	2508422215	# C484	.39 10% 400V	2508050001
C330	39 5% 50V NPO	2508413905	C528	68 5% 50V NPO	2508416805
C332	33 5% 50V NPO	2508413305	# C545	.033 10% 250V	2509603339
	150 5% 50V	2508411515	# C600	.033 20% 630V	2508163330
C346	68 5% 50V NPO	2508416805			
	150 5% 50V	2508411515			

# 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
# R3	Volume/Sw	4700	2203610007 (5)	
	Volume/Sw	4700	2203610003 (6)	
	Volume/Sw	4700	2204580001 (7)	
	Volume/Sw	4700	2204320004 (8)	
	Volume/Sw	4700	2203610020 (9)	
	Volume/Sw	4700	1606650004 (10)	
R17	Brightness	4700	2204130015 (1)	
	Brightness	1000	2203890003 (2)	
	Brightness	1000	2204130016 (3)	
	Brightness		2204590012 (4)	
R21	Picture	4700	2204130005 (1)	
	Picture	4700	2203890001 (2)	
	Picture	4700	2204130019 (3)	
	Picture		2204590009 (4)	
R24	Color	20K	2204130006 (1)	
	Color	20K	2203890003 (2)	
	Color	20K	2204130017 (3)	
	Color		2204590013 (4)	
R31	Tint	200K	2204130007 (1)	
	Tint	200K	2203890004 (2)	
	Tint	200K	2204130018 (3)	
	Tint		2204590014 (4)	

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
R34	Sharpness	10K	2204130025 (3)	
	Sharpness	10K	2204590009 (4)	
R112	RF AGC Delay	22K	2204162232	
R212	Audio Preset	10K	2204161032	
R301	Brightness Preset	330	2204163312	
R426	130V DC Adj	10K	2204161032	
R500	Horiz Width	10K	2204161032	
	Horiz Width	10K	2204162232	
R516	Vert Height	100	2204161012	
R542	Vert Frequency	2.2M	2204162252	
R546	Horiz Frequency	10K	2204161032	
R570	Horiz Centering	10K	2204161032	
# R602	Focus	50M	2204210001	
	Focus		2204620004	
# R604	Screen (G2)	4.7M (10M)	2203884752	
		2200	2204202222	
R612	Red Drive	10K	2204201032	
R613	Red Cutoff	2200	2204202222	
R626	Green Drive	10K	2204201032	
R628	Green Cutoff	2200	2204202222	
R640	Blue Drive	10K	2204201032	
R642	Blue Cutoff			

# For SAFETY use only equivalent replacement part.

- (1) Used In Chassis 13C302-00AA,BA,CA,DA,EA,FA, 13C304-00AA,BB and 13C314-00A.  
(2) Used In Chassis 13C301-00AA,BA,CA, 13C303-00AA,BA,CA,DA,EA,FA,GA and HA.  
(3) Used In Chassis 13C304-00AA,BA,CA,DA,EA,FA,GA.  
(4) Used In Chassis 13C306-00AA, 13C307-00AA, 13C312-00AA-CC, 13C313-00AA-CC and 13C315-00AA.  
(5) Used In Tuner Control ATC076-A001.  
(6) Used In Tuner Control ATC139-A001, ATC203-A001, ATC247-A001 and C13301-00AA.  
(7) Used In Tuner Control ATC137-A001.  
(8) Used In Tuner Control A10142-A003 and A10143-A001.  
(9) Used In Tuner Control ATC250-A001 and ATC251-A001.  
(10) Used In Tuner Control ATC252-A001.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	WORKMAN PART No.
# R402	1.8 10% 5W WW	2401211889	5W108	FR605
# R404	PTC 8.7 Cold	2302070005 or 2302070008		FR605
		2302815635	QW356	22-1138
# R422	56K 5% 1/4W Carbon Film	2302751214		
# R424	121K 1% 4W Metal Film	2302755621		
# R428	5620 1% 4W Metal Film	2302756341		
# R453	634 1% 4W Metal Film	2302754751		
	475 1% .4W Metal Film	2302681085		
# R454	1 5% 1/3W Metal Film	2302757501		
# R455	511 1% .4W Metal Film	2302757501		
	750 1% .4W Metal Film	2302682285		
# R456	2.2 5% 1/3W Metal Film	2302682285		
# R458	2.2 5% 1/3W Metal Film	2302681085		
# R460	1 5% 1/3W Metal Film	2302681595		
# R462	15 5% 1/3W Metal Film	2302681085		
# R464	1 5% 1/3W Metal Film	2303095685		
# R466	5.6 5% 1.6W Metal Film	2302400001		
	2.7 10% 4W Metal Film	2302812205	QW022	22-1056
# R468	22 5% 1/4W Carbon Film	2302816805	QW068	22-1068
	68 5% 1/4W Carbon Film	2302811015	QW110	22-1072
# R555	100 5% 1/4W Carbon Film	2302811035	QW310	22-1120
# R556	10K 5% 1/4W Carbon Film	2302812215	QW122	22-1080
# R557	220 5% 1/4W Carbon Film	2302813015	QW130	
# R558	300 5% 1/4W Carbon Film	2302811135	QW311	
	11K 5% 1/4W Carbon Film	2302814715	QW147	22-1088
# R559	470 5% 1/4W Carbon Film			

13C301 THRU 13C307,13C309,13C311 THRU 13C315

SYLVANIA CHASSIS

FOLDER 2