

PHOTOFACT® Folder

with CIRCUITRACE™

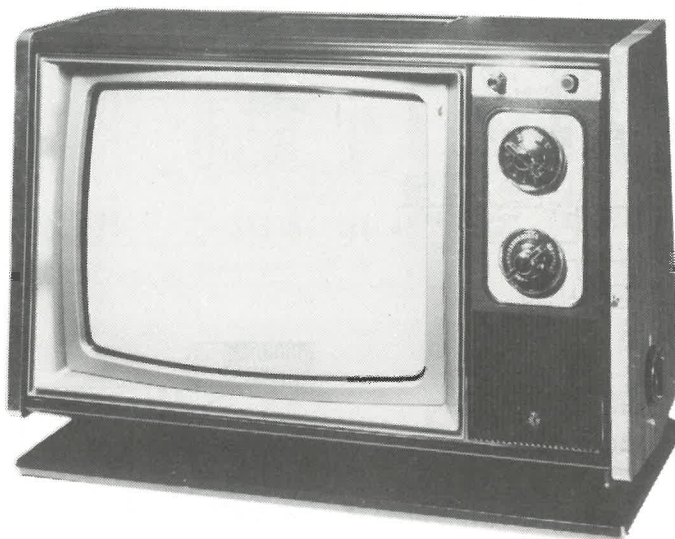
ZENITH CHASSIS
13HC10/10Z1

For Supplier Address See PHOTOFACT Index

COLOR TV

ZENITH CHASSIS
13HC10/10Z1

Model	Chassis
H1310C	13HC10Z1
H1316W	13HC10
H1320W	13HC10
S1321W	13HC10



Model H1316W

SAFETY PRECAUTIONS

See page 4

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HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206



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. 6PD1685

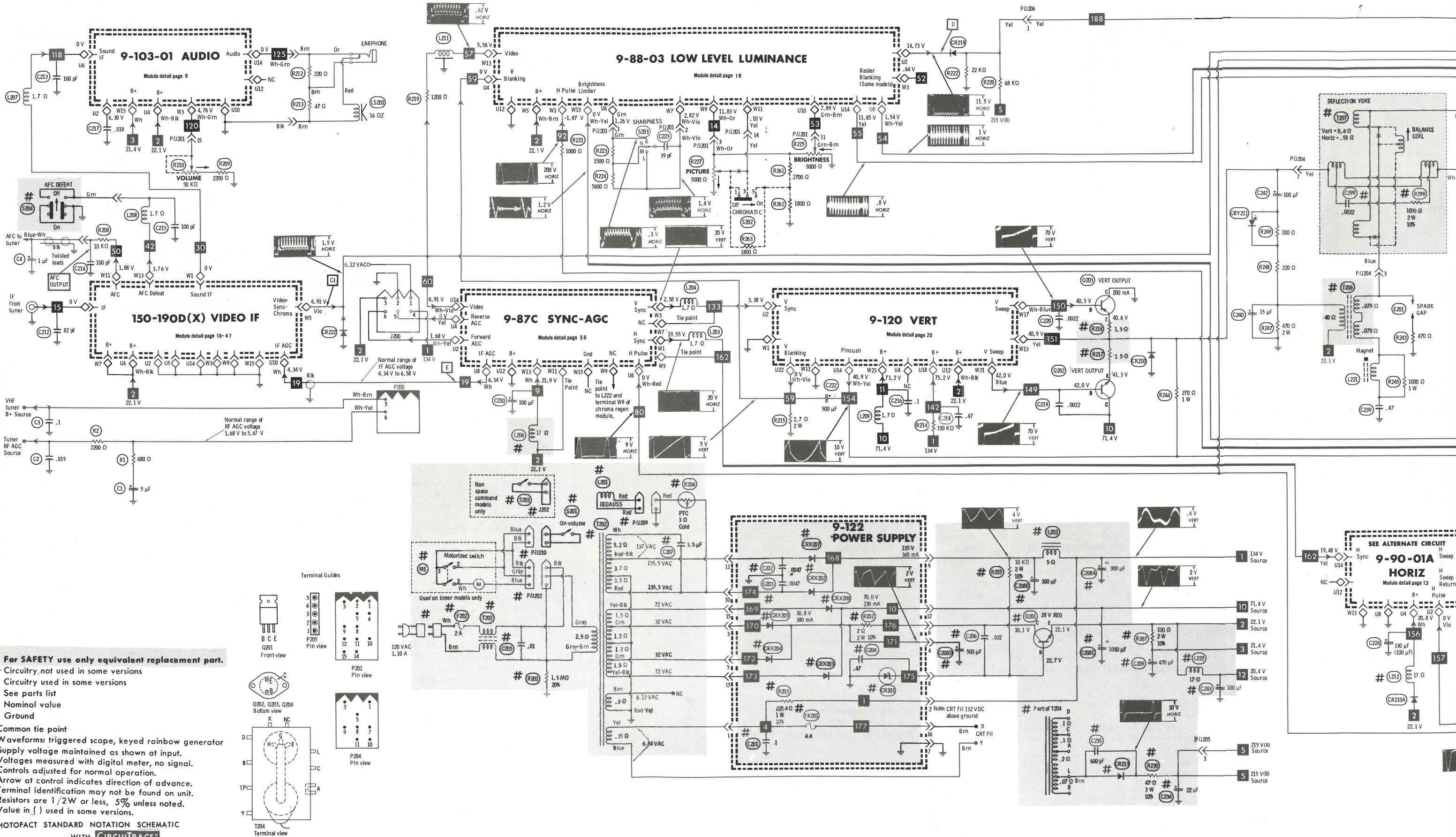
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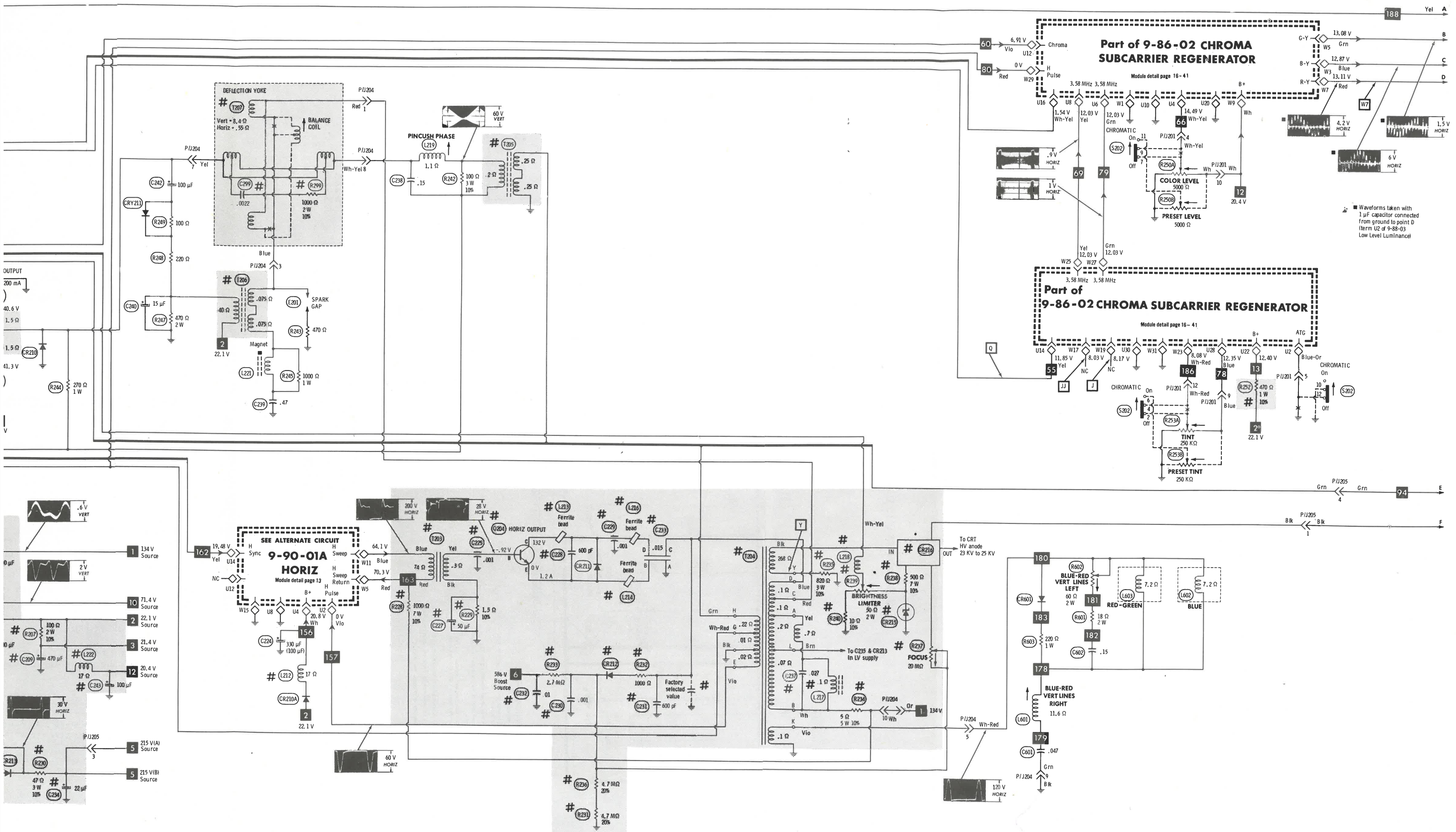
DATE 3-77

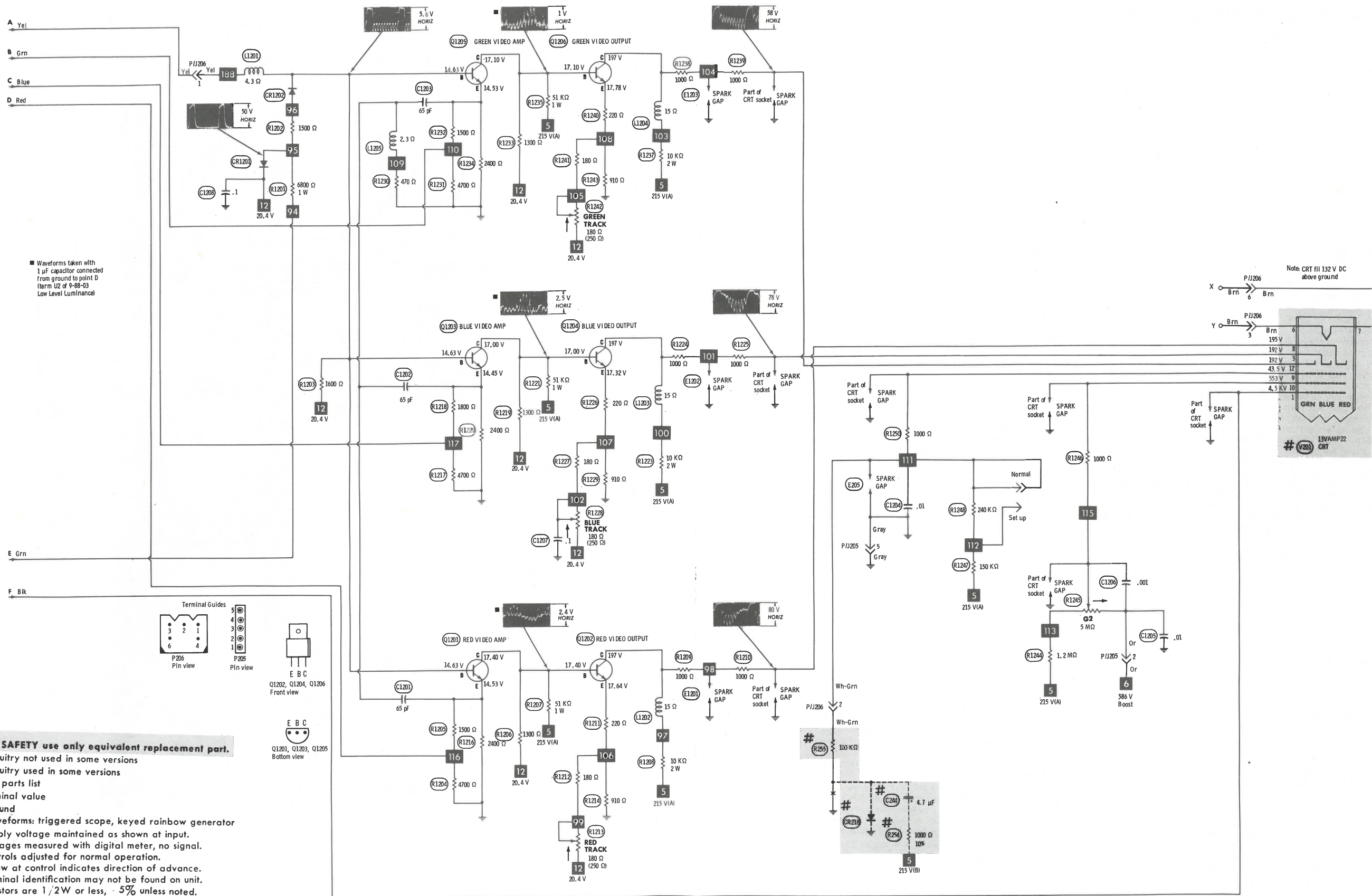
SET 1634 FOLDER 2

ZENITH CHASSIS
13HC10/10Z1

SET 1634 FOLDER 2







For SAFETY use only equivalent replacement part.

— Circuitry not used in some versions

--- Circuitry used in some versions

See parts list

Nominal value

Ground

Waveforms: triggered scope, keyed rainbow generator

Supply voltage maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Arrow at control indicates direction of advance.

Terminal identification may not be found on unit.

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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9-121A VIDEO OUTPUT MODULE

9-121A VIDEO OUTPUT MODULE

ZENITH CHASSIS
13HC10/10Z1

FOLDER 2

SAFETY PRECAUTIONS

PRODUCT SAFETY SERVICING GUIDELINES FOR COLOR TELEVISION RECEIVERS

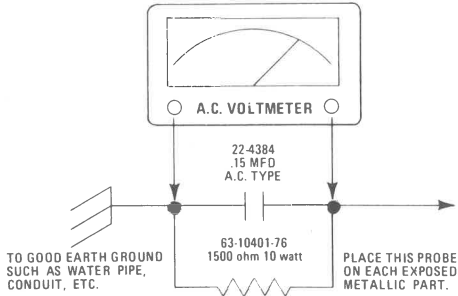
CAUTION: No modification of any circuit should be attempted. Service work should be performed only after you are thoroughly familiar with all of the following safety checks and servicing guidelines. To do otherwise increases the risk of potential hazards and injury to the user.

SAFETY CHECKS

After the original service problem has been corrected, a check should be made of the following:

SUBJECT: FIRE & SHOCK HAZARD

1. Be sure that 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 repair shop.
2. Never release a repair unless all protective devices such as insulators, barriers, covers, shields, strain reliefs, and other hardware have been reinstalled per original design.
3. Soldering must be inspected to discover possible cold solder joints, frayed leads, damaged insulation (including AC cord), solder splashes or sharp solder points. Be certain to remove all loose foreign particles.
4. Check the "across-the-line" capacitor 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 must be avoided.
6. All critical components (shaded on the schematic diagram and parts lists) such as fuses, flameproof resistors, capacitors, etc. must be replaced with exact Zenith types. Do not use replacement components other than those specified or make unrecommended circuit modifications.
7. After re-assembly of the set always perform an AC leakage test on all exposed metallic parts of the cabinet, (the channel selector knobs, antenna terminals, handle and screws) to be sure the set is safe to operate without danger of electrical shock. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST. Use an AC voltmeter, having 5000 ohms per volt or more sensitivity, in the following manner; Connect a 1500 ohm 10 watt resistor (63-10401-76), paralleled by a .15 mfd. 150V AC type capacitor (22-4384) between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination 1500 ohm resistor and .15 mfd. capacitor. Reverse the AC plug and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed .75 volts RMS. This corresponds to 0.5 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



SUBJECT: IMPLOSION

1. All Zenith picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage during installation. Avoid scratching the tube.
2. Use only recommended Zenith replacement tubes.

SUBJECT: X-RADIATION

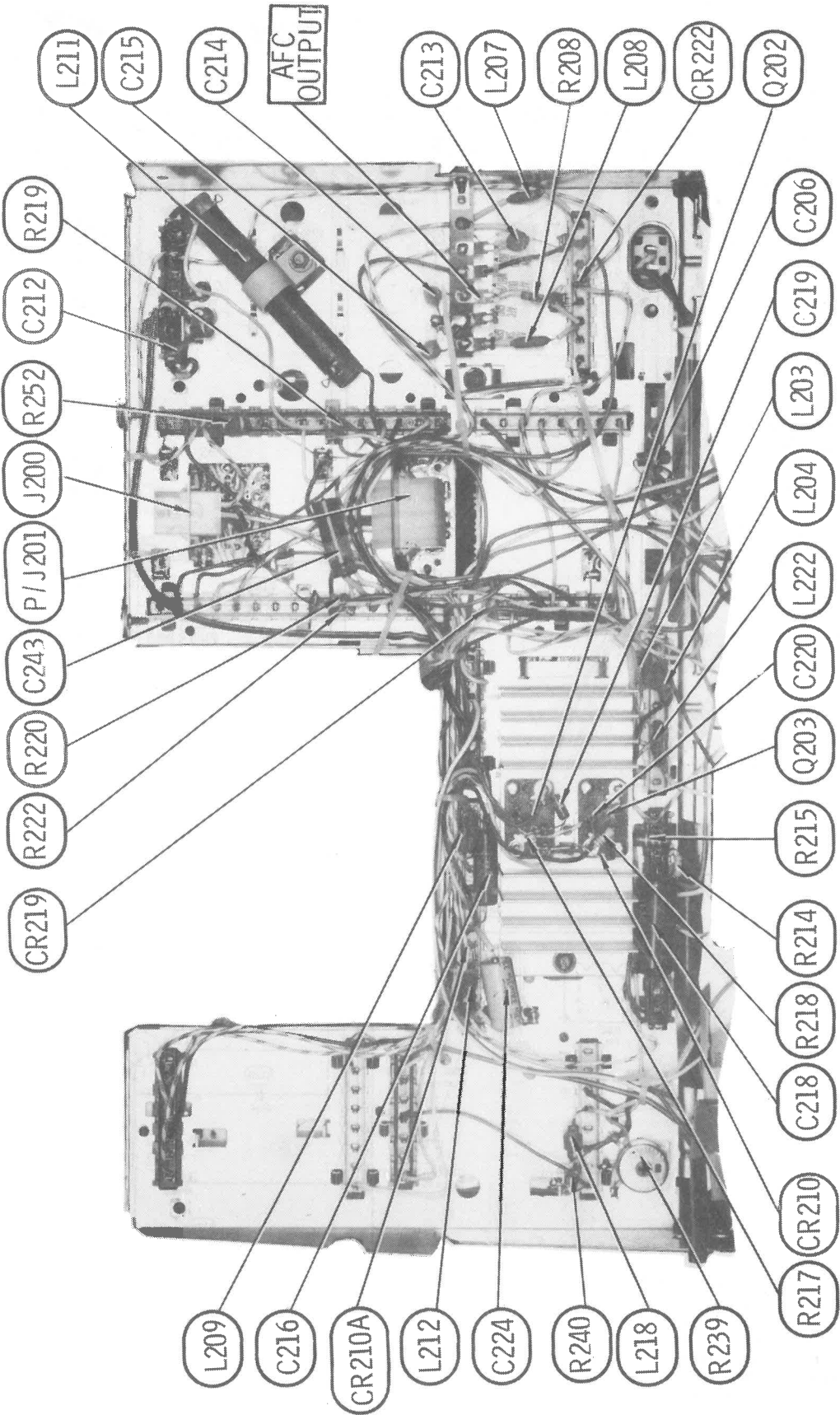
1. Be sure procedures and instructions to all service personnel cover the subject of X-radiation. The only potential source of X-rays in current TV receivers is the picture tube. However, this tube does not emit X-rays when the H.V. is at the factory specified level. It is only when the H.V. is excessive that X-radiation may be generated. Refer

to the X-ray Precaution Label which is located inside each television receiver for the correct high voltage. The proper value is also given in the applicable service manual. Operation at higher voltages may cause a failure of the picture tube or high voltage supply and, under certain circumstances, may produce radiation in excess of desirable levels.

2. Only Zenith specified CRT anode connectors must be used. The degaussing shield also serves as an X-ray shield in color sets, do not defeat its purpose.
3. It is essential that the serviceman has available an accurate and reliable high voltage meter. The calibration of the meter should be checked periodically against a reference standard, such as the one available at your distributor.
4. When the high voltage circuitry is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be run up and down while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly. We suggest that you and your service organization review test procedures so that voltage regulation is always checked as a standard servicing procedure, and that the high voltage reading be recorded on each customer's invoice.
5. When trouble shooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage compartment. Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.
6. Color transistor sets manufactured after June, 1973 ("E" Line and later), use new type picture tubes specifically designed to withstand higher operating voltages without causing excessive X-radiation. It is strongly recommended that the C.R.T. shop fixture be equipped with the new type tube. Addition of a permanently connected H.V. meter to the H.V. anode of the shop C.R.T. fixture is advisable. The C.R.T.'s in these sets should never be replaced with any other tube types as that may result in excessive X-radiation and possible violation of the law.
7. Starting with late production "E" line color sets, a special four lead damper capacitor was used. Its feature, the interlocking four leads, should not be defeated. However, each time one of these sets is serviced, for whatever reason, the part number of the capacitor should be examined. If it is the 22-7233 type (used in "E" and "F" model lines only), that capacitor must be replaced with an improved recommended type (22-7504-01). Please refer to Zenith Tech Topics (Issue No. 87) for the details. Your distributor will answer any questions, or you may write to Zenith for further details.

SUBJECT: TIPS ON PROPER INSTALLATION

1. Never install any receiver in a closed-in recess, cubbyhole or closely fitting shelf space.
2. Never install a receiver over, or close to a heat duct, or in the path of heated air flow.
3. Avoid conditions of high humidity such as; outdoor patio installations where dew is a factor, near steam radiators where steam leakage is a factor, etc.
4. Avoid placement where draperies may obstruct rear venting. The customer should also avoid the use of decorative scarves or other coverings which might obstruct ventilation.
5. Wall and shelf mounted installations using a commercial mounting kit, must follow the factory approved mounting instructions.
6. A receiver mounted to a shelf or platform must retain its original feet (or the equivalent thickness in spacers) to provide adequate air flow across the bottom. Bolts or screws used for fasteners must not touch any parts or wiring. Perform leakage tests on customized installations.
7. Caution customers against the mounting of a receiver on a sloping shelf or in a tilted position, unless the receiver is properly secured.
8. A receiver in a roll-about cart should be stable in its mounting to the cart. Caution the customer on the hazards of trying to roll a cart with small casters across thresholds or deep pile carpets.
9. Caution customers against the use of a cart or stand which has not been listed by Underwriters Laboratories, Inc. for use with their specific model of television receiver.



CHASSIS-FRONT VIEW

Courtesy of the Manufacturer

MISCELLANEOUS ADJUSTMENTS

HIGH VOLTAGE CHECK

No provision made for High Voltage Adjustment. Connect high voltage meter to picture tube anode. High voltage should not exceed 25KV at MINIMUM brightness and 120 volt AC line.

AGC ADJUSTMENT

To adjust the AGC Delay Control (R416), tune in the weakest station available without snow in the picture. Turn the AGC Delay Control (R416) to the right until snow appears in the picture, then turn control back until snow just disappears. Check this setting against other weak stations in the area.

BRIGHTNESS RANGE AND LIMITER ADJUSTMENT

Connect a DC Meter to terminal Y of the Horizontal Output Transformer. Turn Brightness, Contrast, and Color Controls to maximum. Turn Brightness Limiter Control (R239) to MINIMUM. Connect a jumper from point E to ground. Adjust Brightness Range Control (R901) for - .17 volts. Remove jumper from point E and tune in a TV station. Adjust Brightness Limiter Control (R239) for - .9 volts.

CROSS TALK ADJUSTMENT

Connect a color bar generator to the antenna terminals and tune in a color bar pattern. Turn AFC to "ON" position. Turn Contrast Control to MINIMUM and Color Level Control (R250A) to mid-range. Adjust Tint Control to produce a magenta bar. Adjust Cross Talk Control (R1009) for uniform magenta color across the bar.

COLOR KILLER ADJUSTMENT

Turn to an unused channel and turn Color Level Control (R250A) to center position. Turn Color Killer Control (R1002) to the point just below where color appears in the snow.

ACC ADJUSTMENT

Connect a color bar generator to the antenna terminals and tune in a color bar pattern. Slide Normal-Test Switch to the Test position. Connect a DC Meter to point Q. Connect a jumper from point J to JJ and observe meter reading. Remove jumper from point J to JJ. Adjust ACC Control (R1015) for identical reading. Place Normal-Test Switch to Normal position.

APC ADJUSTMENT

Connect a color bar generator to the antenna terminals and tune in a color bar pattern. Adjust Tint Control to center position. Slide Normal-Test Switch to Test position. Adjust The APC Control (R1018) for MINIMUM movement of color bars.

TINT RANGE ADJUSTMENT

Connect a 1uF capacitor from point D to ground. Connect a scope to W7 (9-86-02 module). Set Tint Control (R253) to center position. Tune in a color bar pattern and adjust Tint Range Coil (Hue) (L1005) for 6th bar crossover.

DETECTOR LEVEL ADJUSTMENT

Turn to an usued channel and disconnect antenna. Connect a jumper from point E to ground. Connect a DC Meter to point C1. Adjust the Detector Level Control (R125) for 8.1 volts.

DYNAMIC PINCUSHION ADJUSTMENT

Connect a crosshatch generator to the antenna terminals and tune in a pattern. Adjust Pin-cushion Phase Coil (L219) for straight horizontal lines top and bottom of screen.

PURITY ADJUSTMENT

If the picture tube appears to be magnetized, use a degaussing coil to demagnetize picture tube and mounting brackets. Perform center convergence.

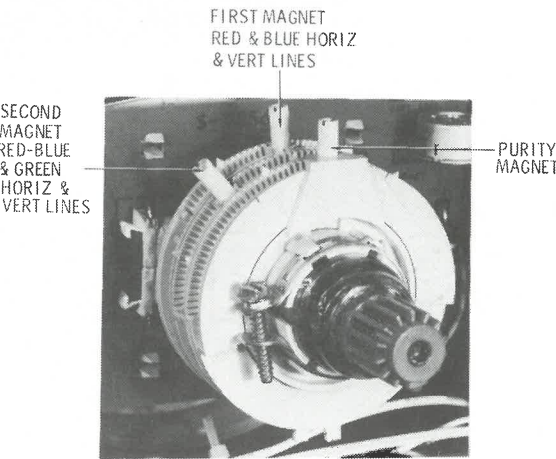
Connect a jumper from point E to ground. Turn the Red and Blue Tracking Control (R1213,R1228) to MINIMUM and the Green Tracking Control (R1242) to maximum. Loosen the Deflection Yoke and slide it back against the Static Convergence Assembly. Adjust the Horizontal Purity Knob (Rear Knob) to obtain a vertical green bar in the center of the screen. Slide the Deflection Yoke forward to obtain a uniform green screen. Check Red and Blue screens for purity.

COLOR TEMPERATURE ADJUSTMENT

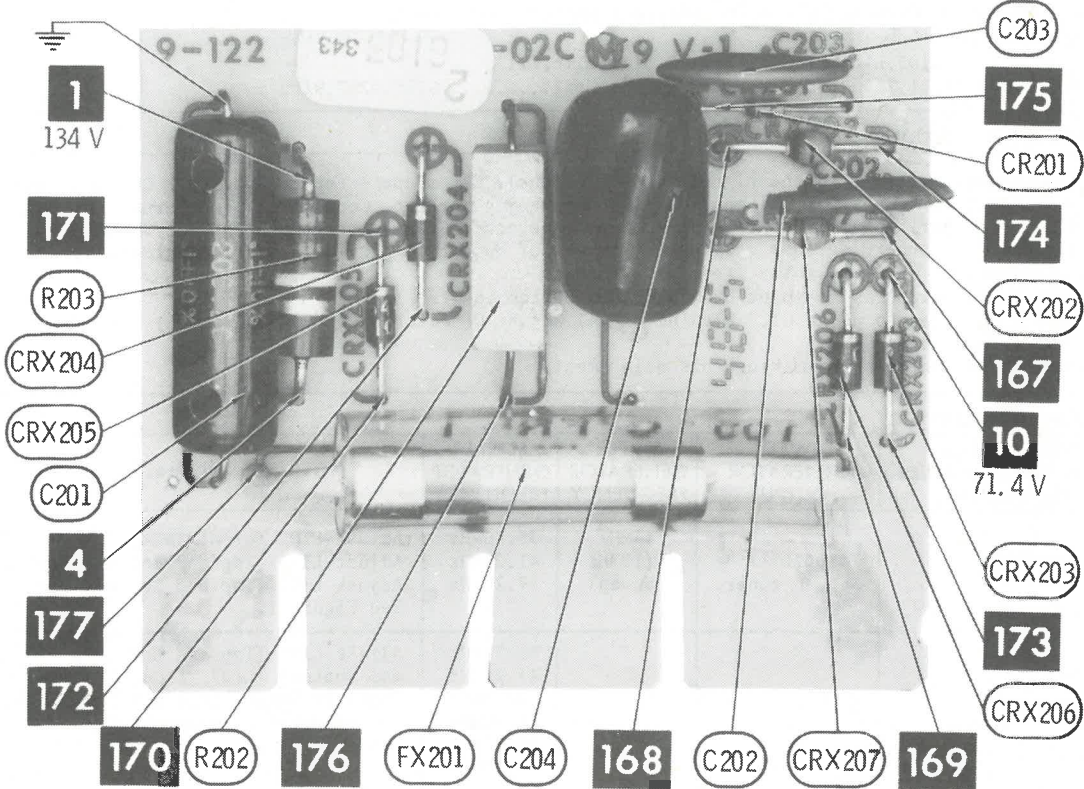
Connect a jumper from point E to ground. Turn the Color, Contrast, Brightness, and Tracking Controls to MINIMUM. Turn G2 Control (R1245) to MINIMUM. Place jumper located on CRT board to set-up position. Turn the G2 Control (R1245) to obtain a dim raster. Color of the dim raster will depend on the CRT. Return the jumper to the normal position and increase the Brightness Control to obtain the same dim raster. Adjust the two Tracking Controls of the colors that are not visible to obtain a white raster.

CONVERGENCE ADJUSTMENT

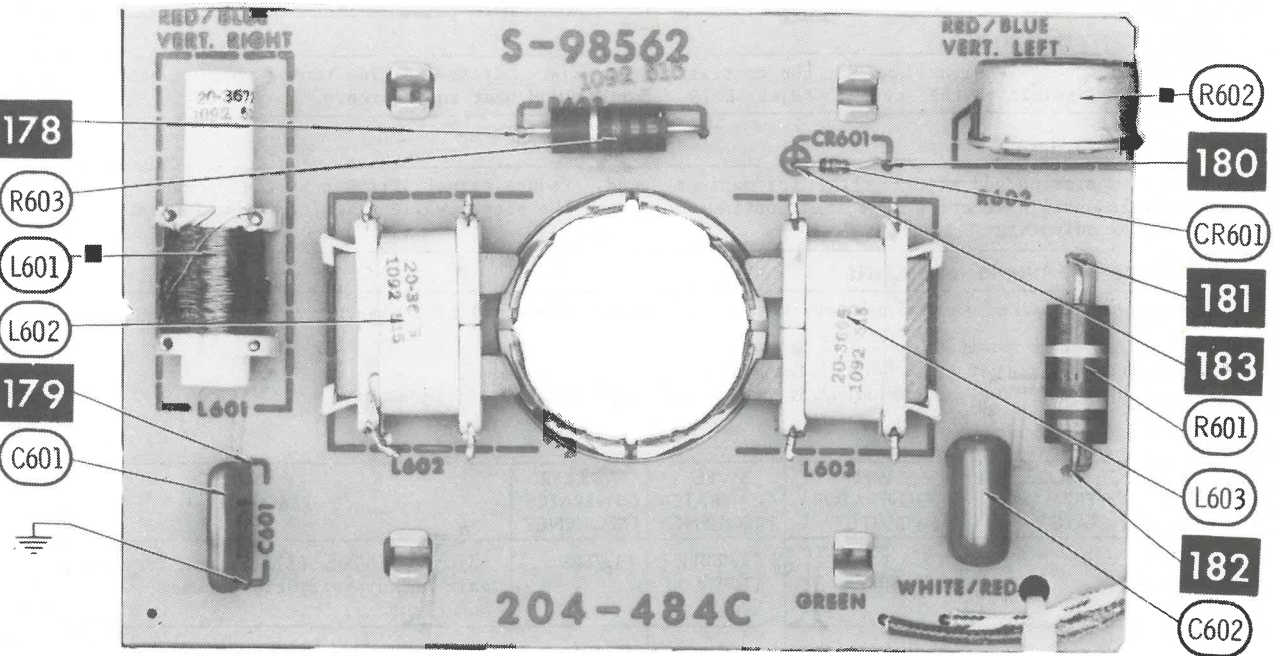
Connect a crosshatch generator to the antenna terminals. Adjust the first magnet to converge the red and blue lines. Turning the knob converges the red and blue vertical lines and rotating the first assembly converges the red and blue horizontal lines. Turn the knob on the second magnet assembly to converge the red and blue vertical lines over the green vertical lines. Rotate the second assembly to converge the red and blue horizontal lines over the green horizontal lines. Blue/Red Vertical (Left Side) Control (R602) converges the red and blue vertical lines on the left side of the screen. Blue/Red Vertical Lines Right Coil (L601) converges the red and blue vertical lines on the right side of the screen.



CRT NECK ASSEMBLY



A Howard W. Sams CIRCUITRACE® Photo 9-122 POWER SUPPLY MODULE



■ Adjustment

A Howard W. Sams CIRCUITRACE® Photo CONVERGENCE BOARD

ZENITH CHASSIS
13HC10/10Z1

FOLDER 2

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
L101,L102,L103,L105,L107,L108,L112,L113,L115,L116,L117,
L901,L1001,T1101,T1102,VHF Tuner IF Output Coil.....9296,9297,9300

PRELIMINARY INSTRUCTIONS

Set the channel selector to the highest unused channel. Set scope sweep to external. Connect scope vertical input to scope vertical input on sweep/marker generator. Connect scope external horizontal input to scope horizontal input on sweep/marker generator. Ground test equipment to TV chassis unless specified otherwise. Use only enough generator output to provide a usable indication.
Note: Response may vary slightly from that shown.
Connect a 7.2 volt Bias to point E. Place AFC Switch to off.
Connect a DC meter to point C1. With no signal adjust Detector Lever Control (R125) for 8.5 volts +0.2 volts.
Disconnect voltmeter after making this adjustment.

VIDEO IF ALIGNMENT

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To point C1	To point A on VHF tuner.	44MHz (10MHz Sweep)	39.75MHz 41.25MHz 47.25MHz	Adjust L102 for MINIMUM. Adjust L112 (Top and Bottom) for MINIMUM. Adjust L103 (Top and Bottom) for MINIMUM. See Figure 1.
"	"	"	39.75MHz 41.25MHz 42.17MHz 44.00MHz 45.75MHz 47.25MHz	Adjust L101 (Top and Bottom), L105 (Top and Bottom), L107, L108, L113 and VHF Tuner IF Output Coil for maximum gain and symmetry of response. See Figure 2. L101 Top affects 42.17MHz and 45.75MHz. L101 Bottom affects 44.00MHz and 45.75MHz. L105 Top affects 42.17MHz. L105 Bottom and L108 affects 44.00MHz. L107 affects tilt. L113 affects 45.75MHz. VHF Tuner IF Output affects overall response.

4.5MHz TRAP ALIGNMENT

Tune in a strong TV signal and set the contrast at maximum. Adjust the fine tuning until a beat pattern is visible on the screen. Adjust L115 for MINIMUM beat interference.

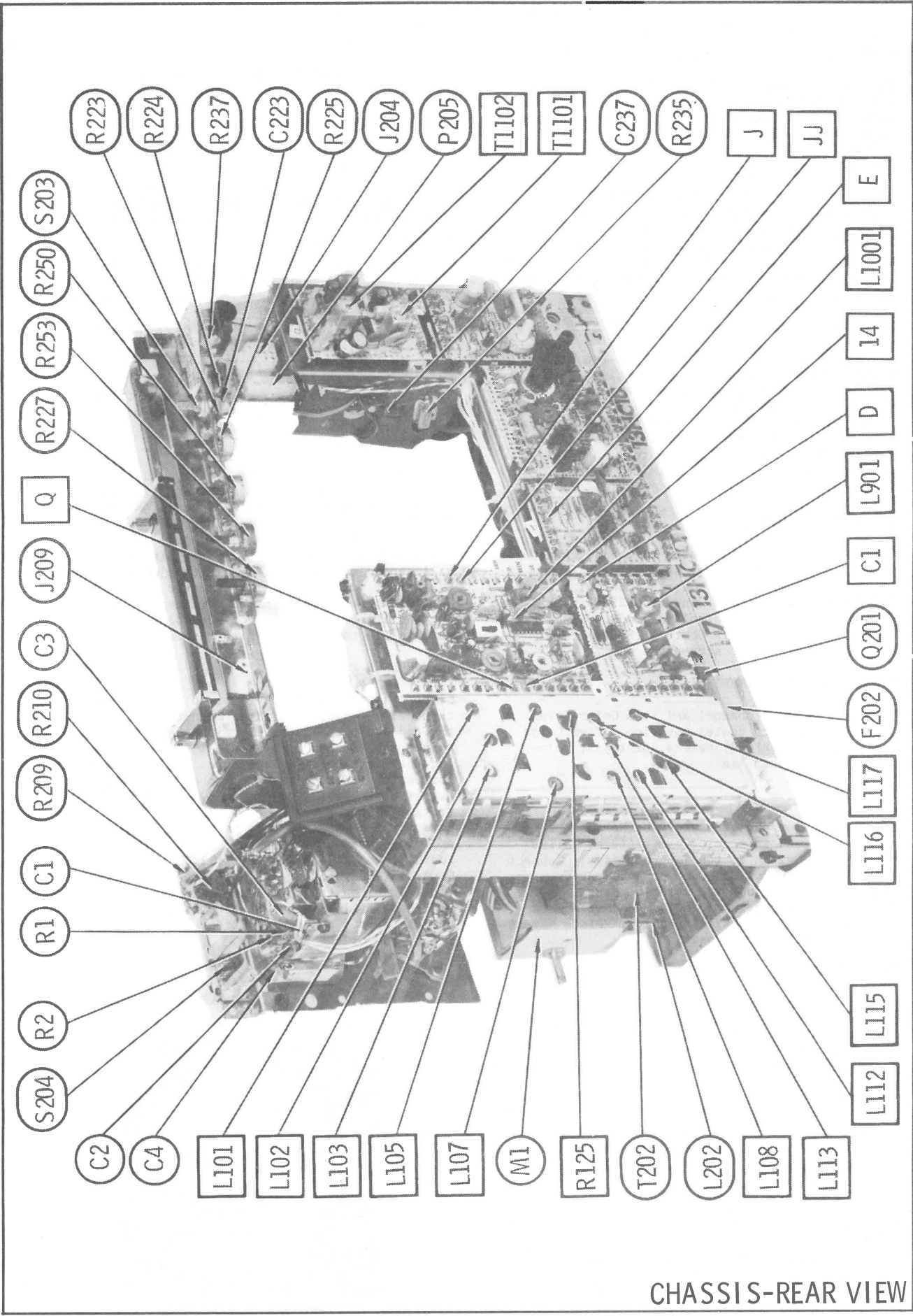
SOUND IF ALIGNMENT

Tune in a station and adjust T1102 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 T1101.

AUTOMATIC FINE TUNING ALIGNMENT

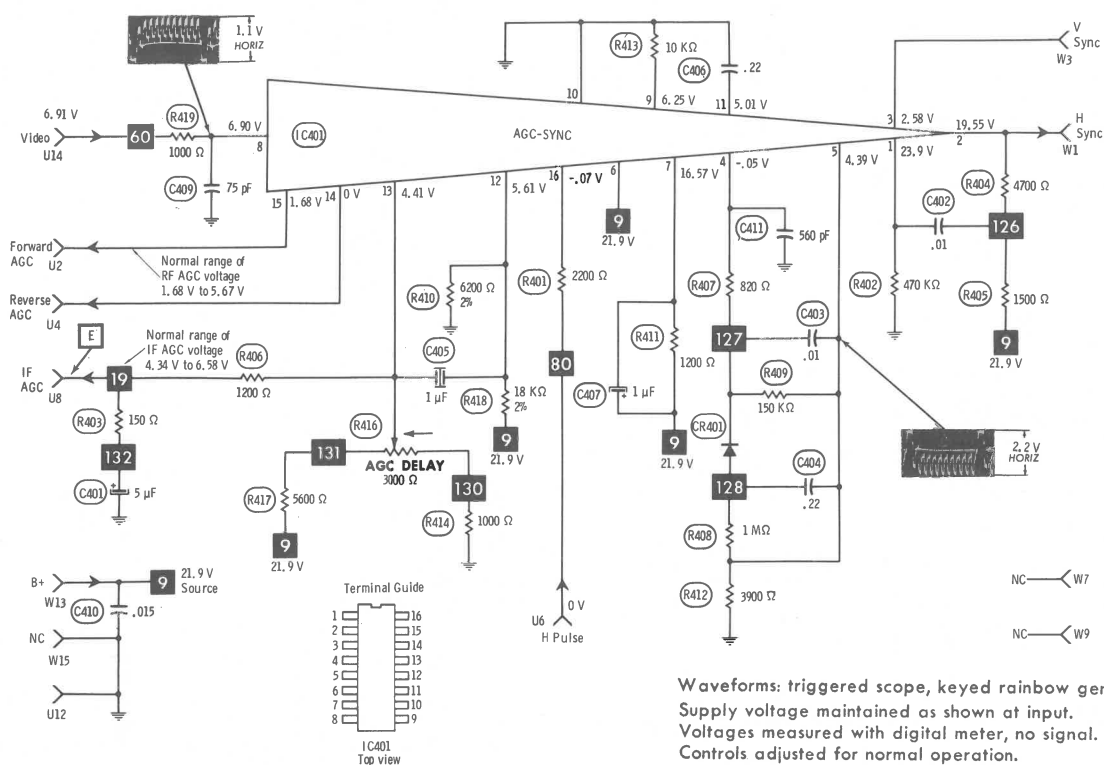
Connect as explained in preliminary instructions unless specified otherwise.
AFC Switch to on position.
Disconnect AFC output lead (White/Blue wire).
Adjust detector level as explained in preliminary instructions, if necessary.

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To AFC Output Terminal	To A on VHF Tuner	44.00MHz (10MHz Sweep)	45.75MHz	Adjust L116 and L117 Bottom for maximum gain and symmetry of response. See Figure 3.
"	"	"	"	Adjust L117 Top for crossover at 45.75MHz. See Figure 3.



CHASSIS-REAR VIEW

9-87C SYNC-AGC

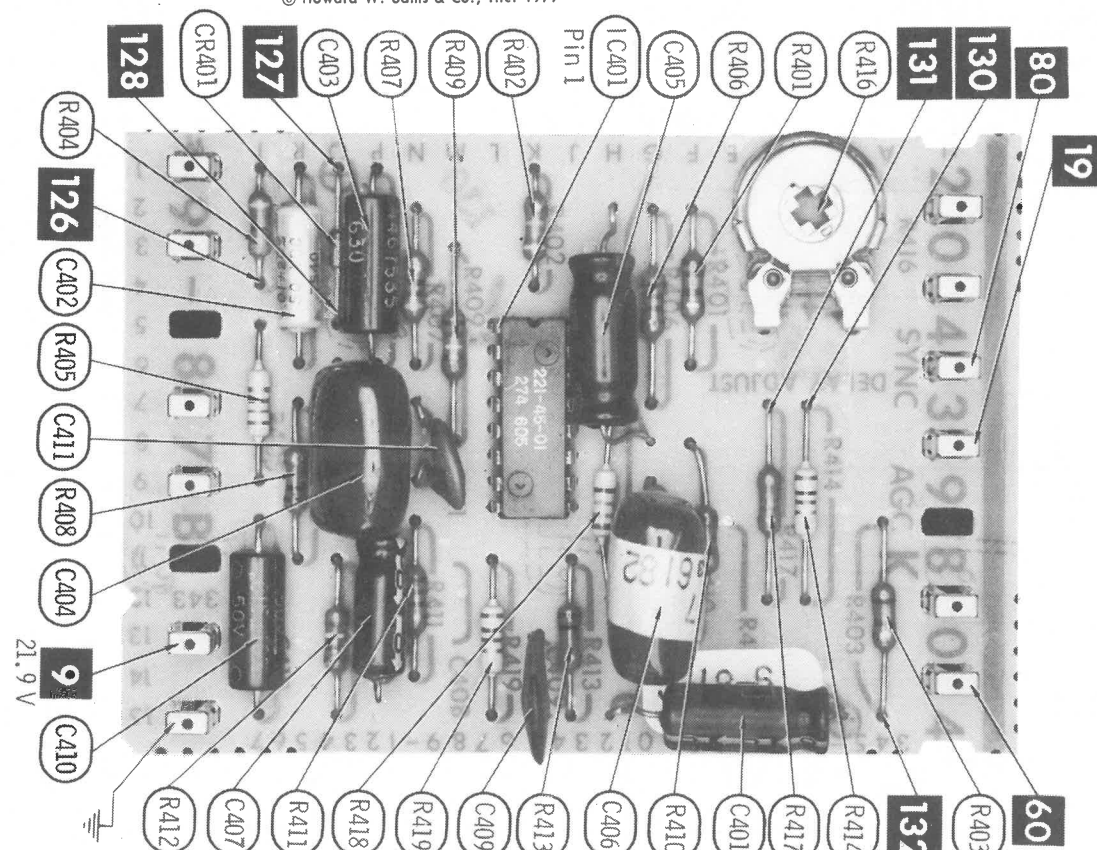


- Circuitry not used in some versions
- - - Circuitry used in some versions
- ⊗ See parts list
- * Nominal value
- ⊥ Ground

A PHOTOFAC STANDARD NOTATION SCHEMATIC
WITH CIRCUITACE

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Waveforms: triggered scope, keyed rainbow generator
Supply voltage maintained as shown at input.
Voltages measured with digital meter, no signal.
Controls adjusted for normal operation.
Arrow at control indicates direction of advance.
Terminal identification may not be found on unit.
Resistors are 1/2W or less, 5% unless noted.
Value in () used in some versions.



9-87C AGC-SYNC MODULE

A Howard W. Sams CIRCUITACE Photo

TV ALIGNMENT INSTRUCTIONS (Continued)

CHROMA BANDPASS ALIGNMENT

Connect as explained in preliminary instructions. Set color control to maximum, tint control to mid-range, and color killer fully counterclockwise.

DETECTOR PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To Pin 14 of IC1001	To A on VHF tuner.	44MHz (10MHz Sweep)	3.08MHz 3.58MHz 4.08MHz	Adjust L1001 for maximum gain and symmetry of response. See Figure 4.
			(4.5MHz Trap)	Inability to obtain proper bandpass alignment may be due to misadjustment of the 4.5MHz trap. Adjust L115 for MINIMUM at 4.5MHz.

After completing Chroma Bandpass Alignment, reset color killer. (Refer to Miscellaneous Adjustments.)

3.58MHz TRAP ALIGNMENT

Connect scope and signal generator across 3.58MHz Trap L901. Set generator for 3.58MHz and adjust L901 for maximum indication on scope. This adjustment is made with the set turned off.

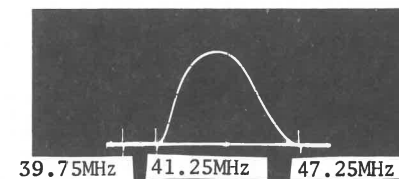


Figure 1.

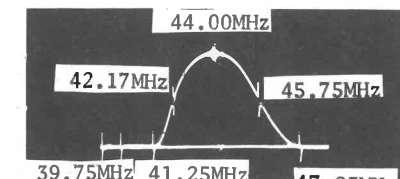


Figure 2.

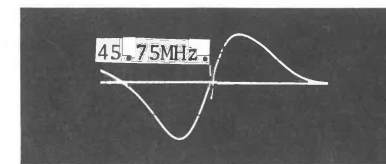


Figure 3.

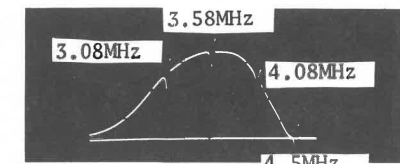


Figure 4.

ZENITH CHASSIS
13HC10/10Z1

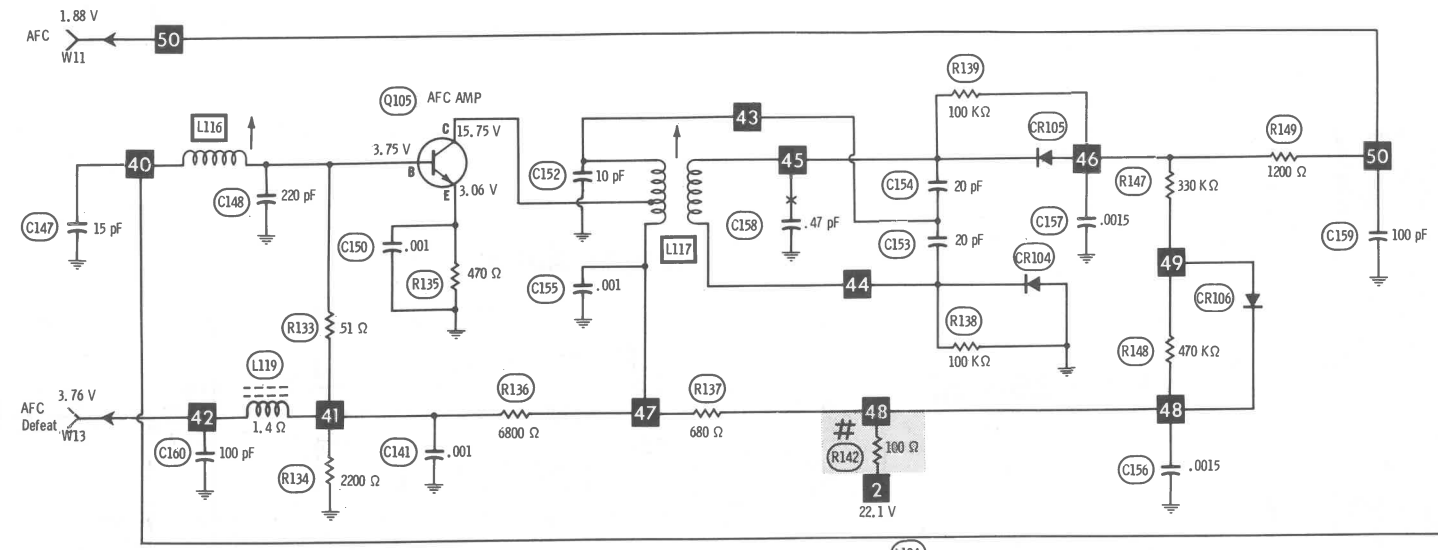
FOLDER 2



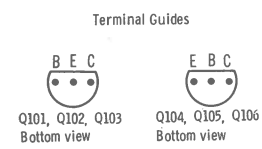
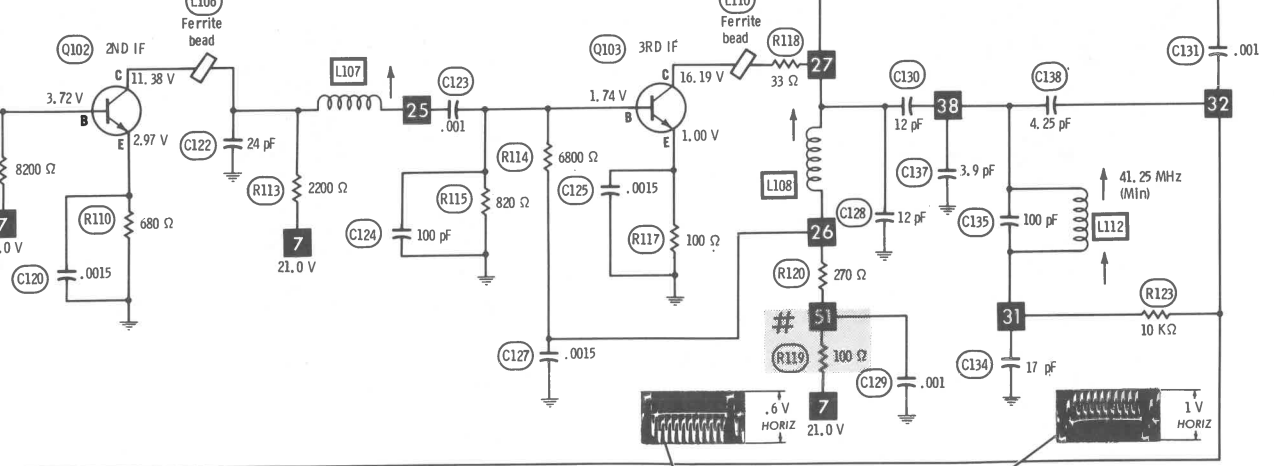
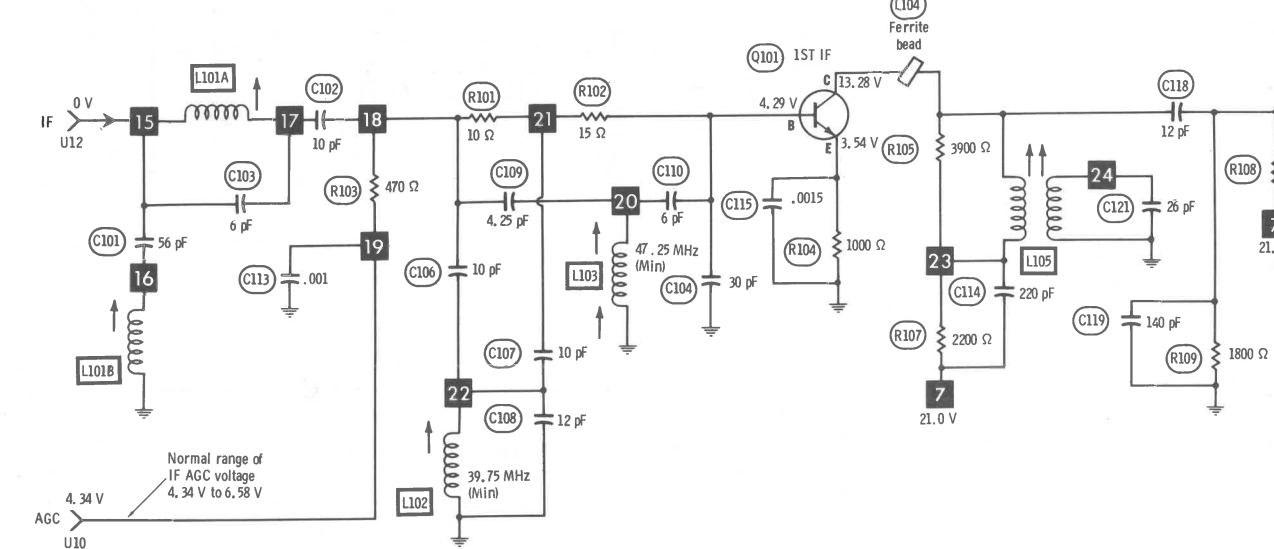
9-103-01 AUDIO MODULE



FOLDER 2



150-190D(X) VIDEO IF



For SAFETY use only equivalent replacement part.

— Circuitry not used in some versions

- - - Circuitry used in some versions

⊙ See parts list

* Nominal value

⊥ Ground

Waveforms: triggered scope, keyed rainbow generator

Supply voltage maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Arrow at control indicates direction of advance.

Terminal identification may not be found on unit.

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

Value in () used in some versions.

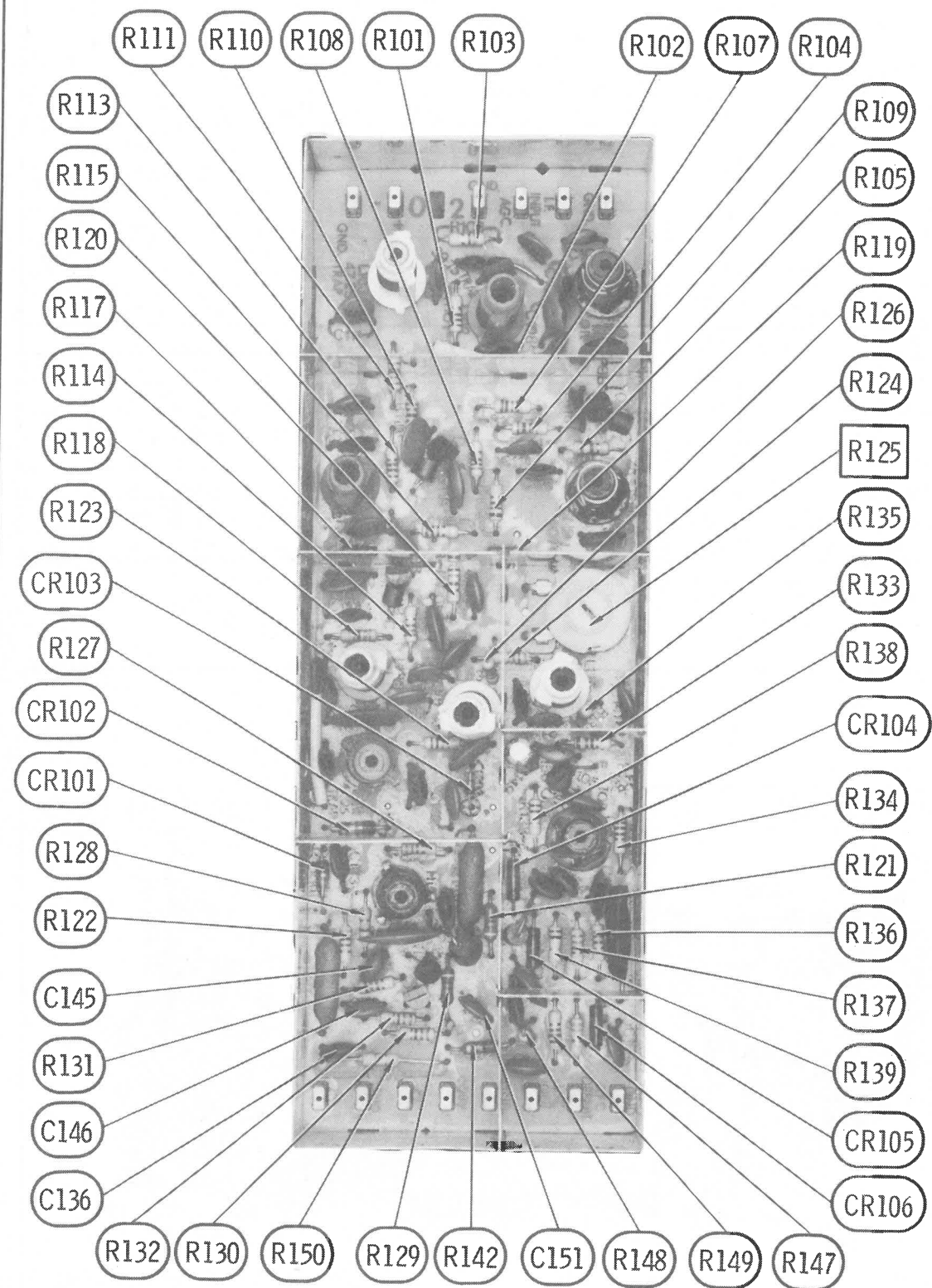
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150-190D (X) VIDEO IF MODULE

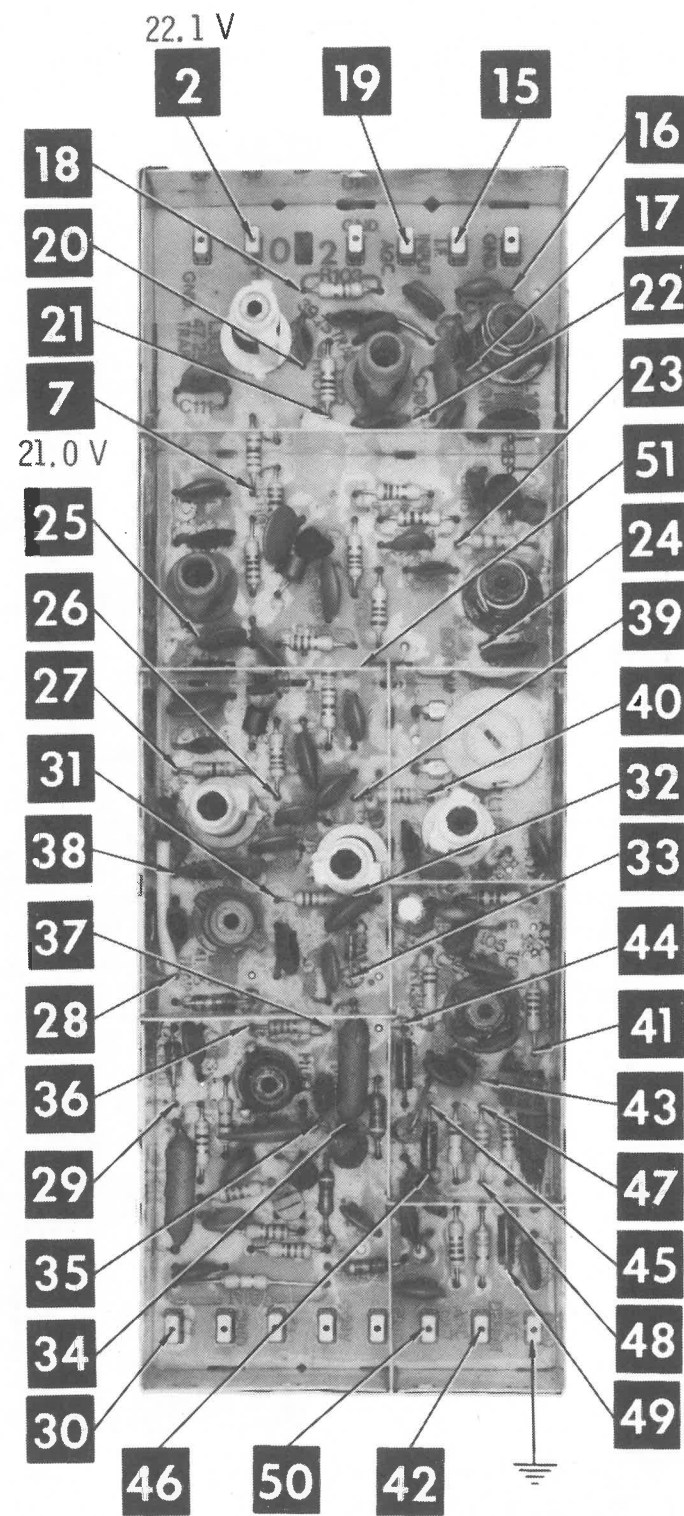
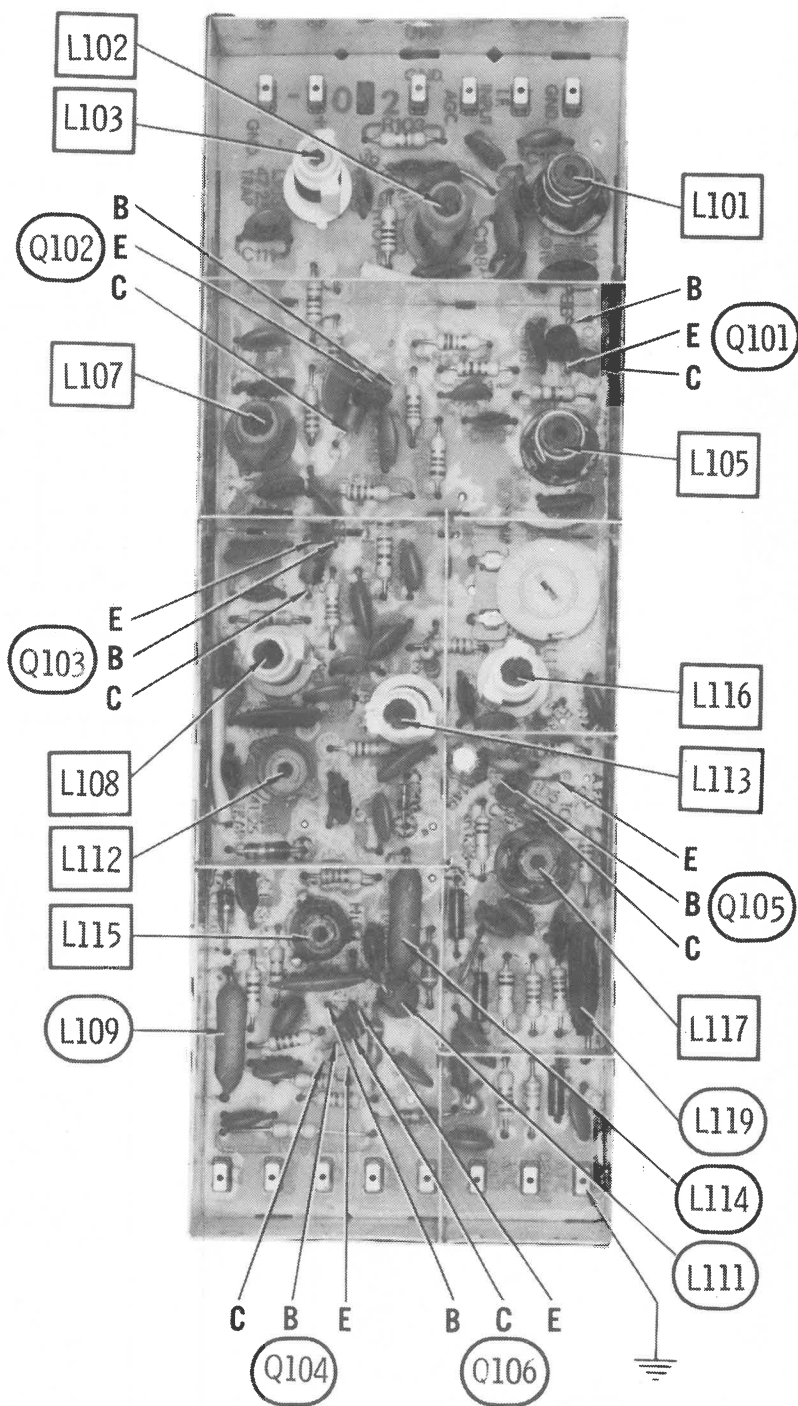
150-190D (X) VIDEO IF MODULE

ZENITH CHASSIS
13HC10/10Z1

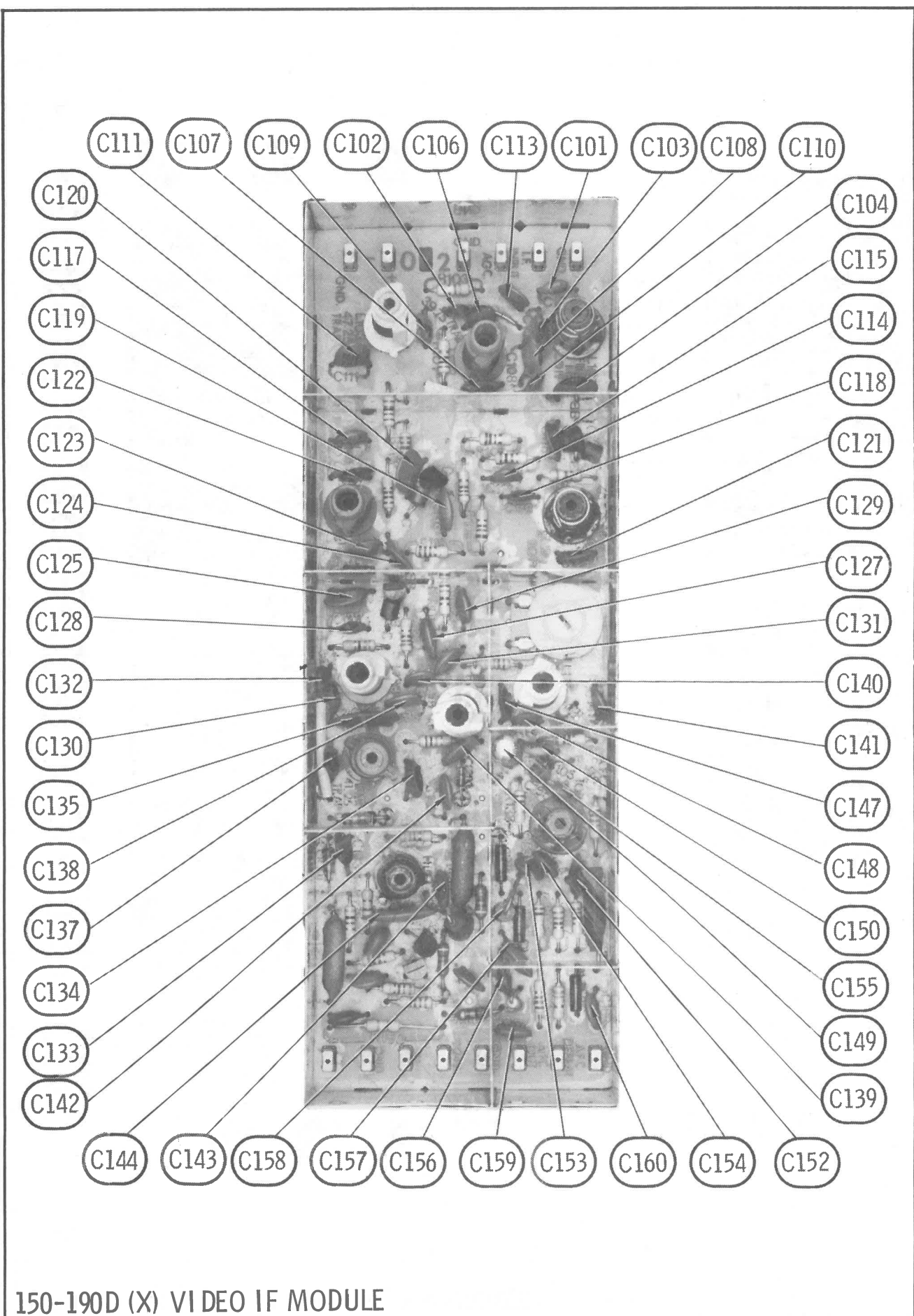
FOLDER 2



150-190D (X) VIDEO IF MODULE



A Howard W. Sams CIRCUITRACE® Photo 150-190D (X) VIDEO IF MODULE

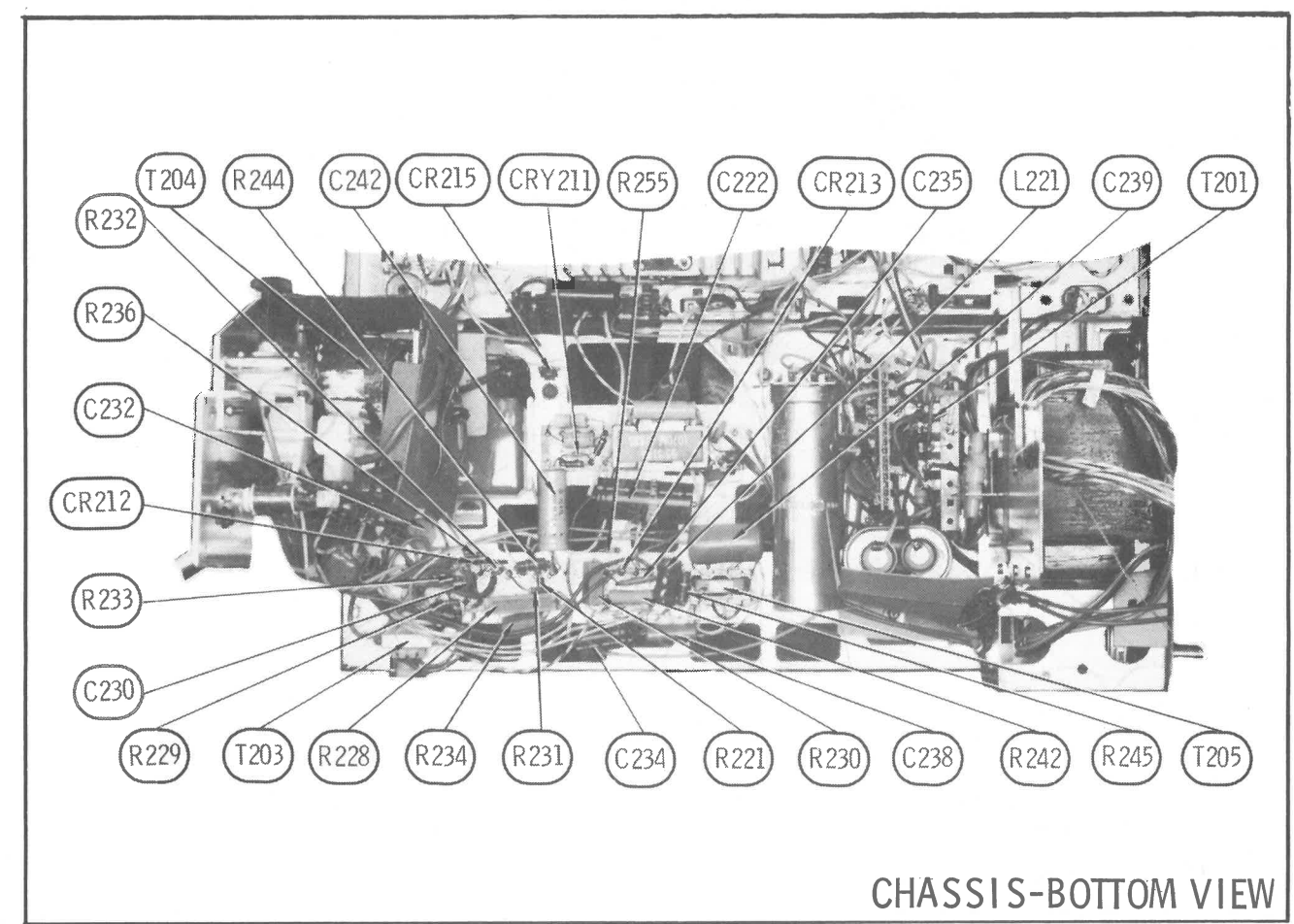


150-190D (X) VIDEO IF MODULE

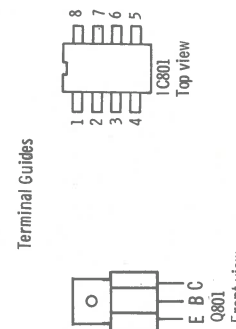
RESISTANCE MEASUREMENTS

MEASUREMENTS BELOW TAKEN WITH METER HAVING .08V MAX BETWEEN PROBE TIPS														
ITEM	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 11	PIN 12	PIN 13	PIN 14
V201	70M	NC	26K	NC	0	FIL	FIL	26K	80K	3.7M	0	26K	NC	
IC401	470K	6000	INF	150K	3800	170	1300	1700	10K	0	INF	4700	1300	INF
													PIN 15 3700	PIN 16 900
IC801	3200	0	9500	10K	150K	1250	14K	1600						
IC901	5500	45	0	7300	0	7800	1M	15K	4800	1M	22K	82K	INF	350
													PIN 15 100K	PIN 16 50
IC1001	35K	2800	2800	40K	0	1200	INF	INF	2200	2200	2200	170	8000	170
													PIN 15 35K	PIN 16 35K
IC1002	65K	700	700	35K	0	7000	550	1200	550	550	35K	35K	600K	600K
													PIN 15 35K	PIN 16 35K
IC1101	INF	INF	0	0	620	6000	8300	1M	6000	6000	INF	10K	5600	65K
IC1102	0	56K	TAB 0	TAB 0	TAB 0	INF	INF	INF	260	TAB 0	TAB 0	TAB 0	INF	0
ITEM	E	B	C		ITEM	E	B	C		ITEM	E	B	C	
Q101	1000	3800	2300		Q202	30K (1)	INF (2)	INF (2)		Q801	47	3500	INF (2)	
Q102	680	1500	2300		Q203	30K (1)	1150	0		Q1201	1800	1600	1500	
Q103	100	730	570		Q204	0	1.8	INF (2)		Q1202	500	1500	24K	
Q104	680	1800	820		Q701	150K	180K	40K		Q1203	1800	1600	1500	
Q105	470	1700	850		Q702	0	22K	2900		Q1204	520	1500	24K	
Q106	1100	3800	1800		Q704	33K	INF (2)	INF (2)		Q1205	1800	1600	1500	
Q201	160	INF (2)	INF (2)		Q706	INF (2)	INF (2)	INF (2)		Q1206	500	1500	24K	

(1) This reading will vary depending upon the condition of the electrolytic in the circuit.
 (2) Reading depends upon polarity of meter connections.



CHASSIS-BOTTOM VIEW



FOLDER 2

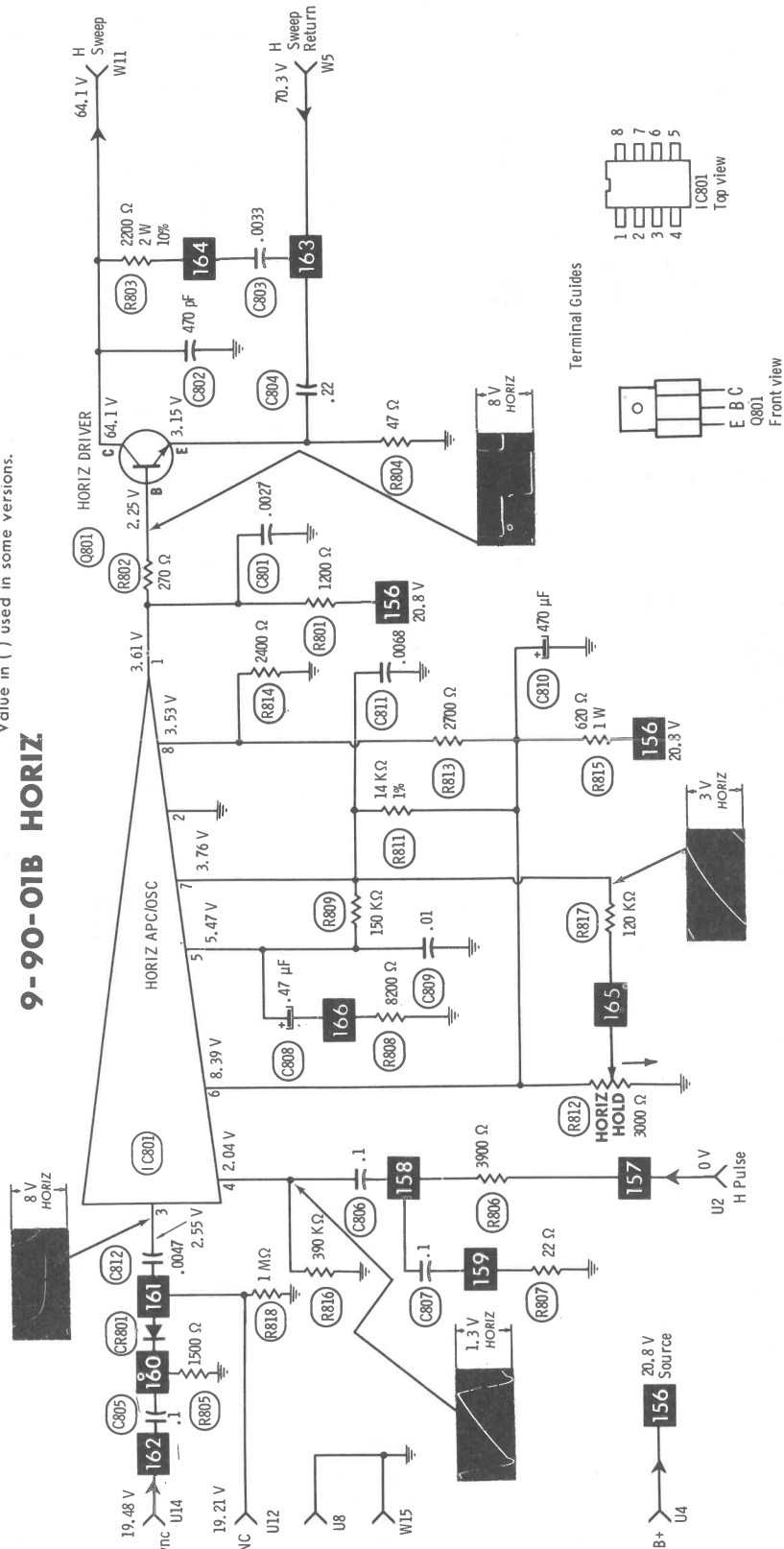
SET 1634 FOLDER 2

9-90-01B HORIZ MODULE

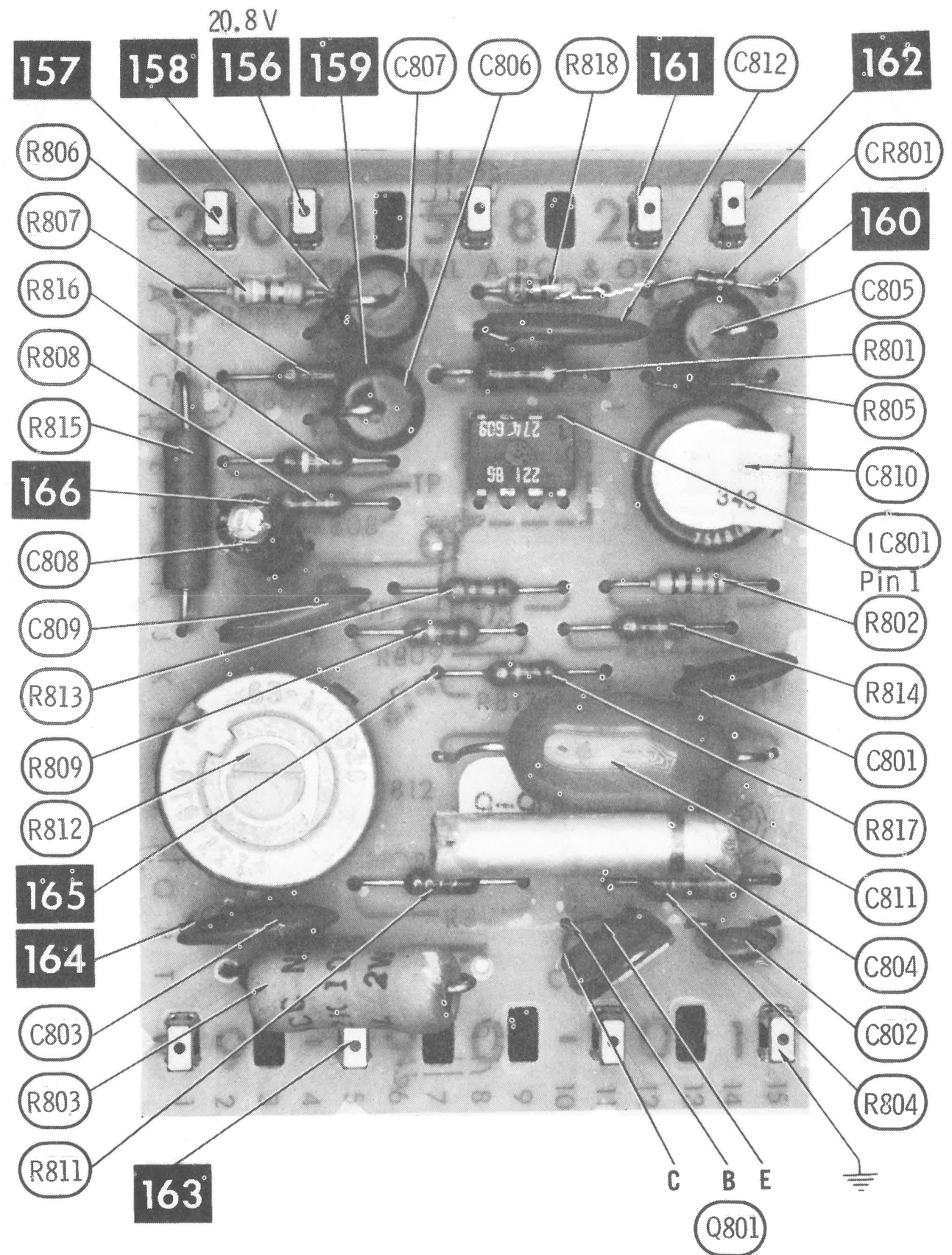
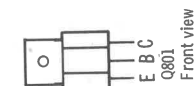
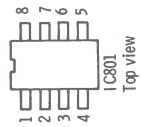
A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH **CIRCUITRACE**[®]
© Howard W. Sams & Co., Inc. 1977

Waveforms: triggered scope, keyed rainbow generator
Supply voltage maintained as shown at input.
Voltages measured with digital meter, no signal.
Controls adjusted for normal operation.
Arrow at control indicates direction of advance.
Terminal identification may not be found on unit.
Resistors are 1/2W or less, 5% unless noted.
Value in () used in some versions.

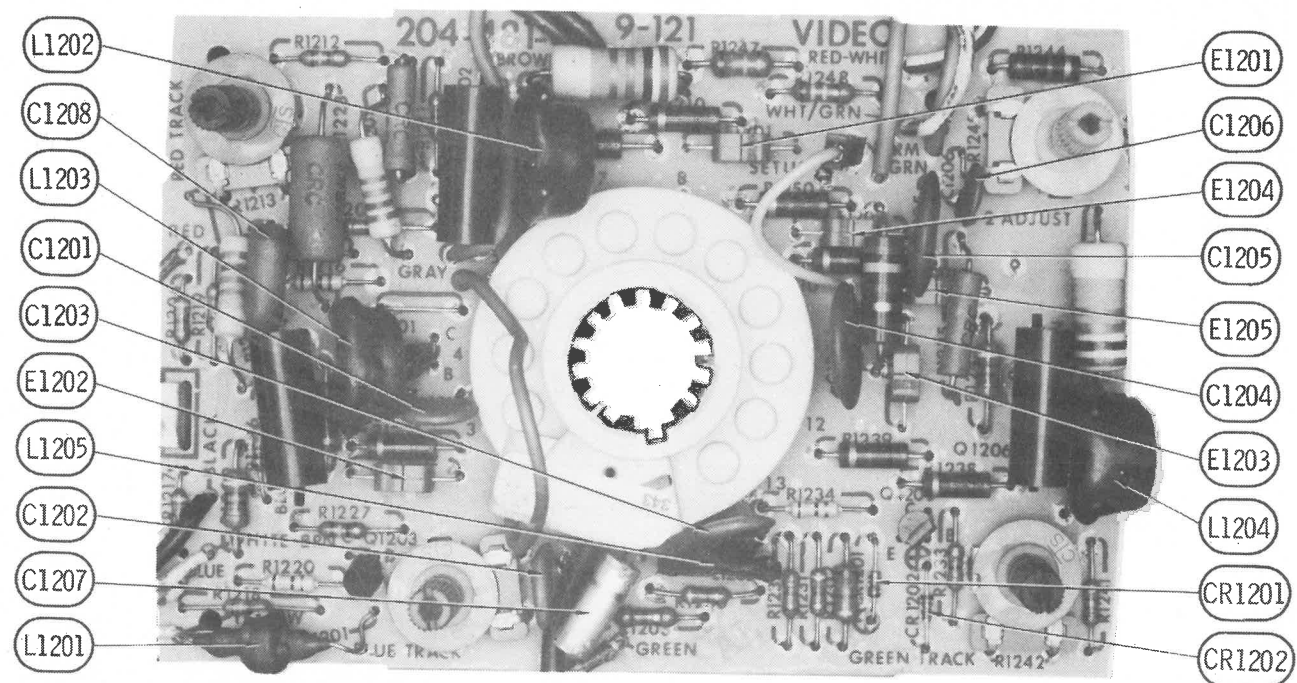
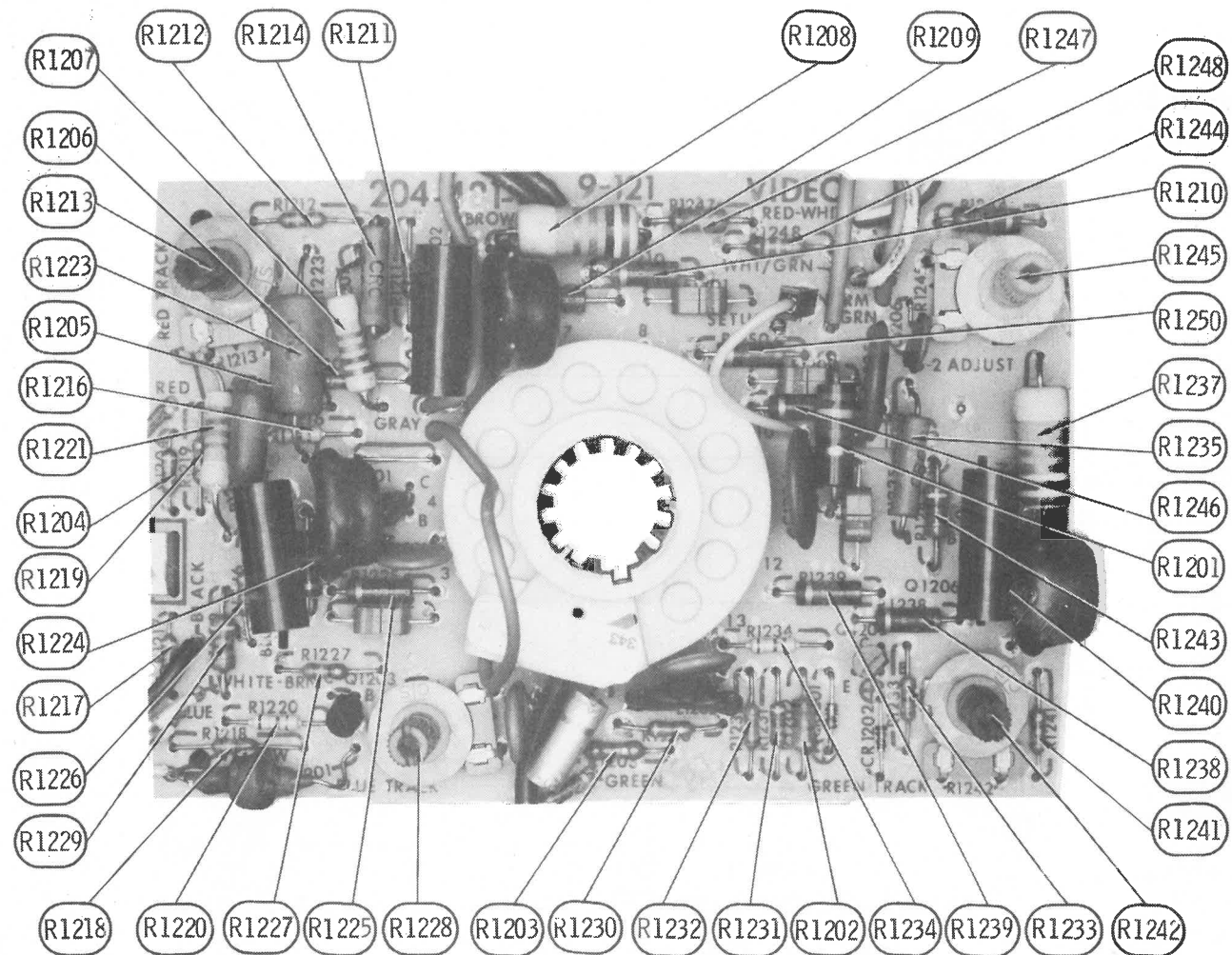
9-90-01B HORIZ



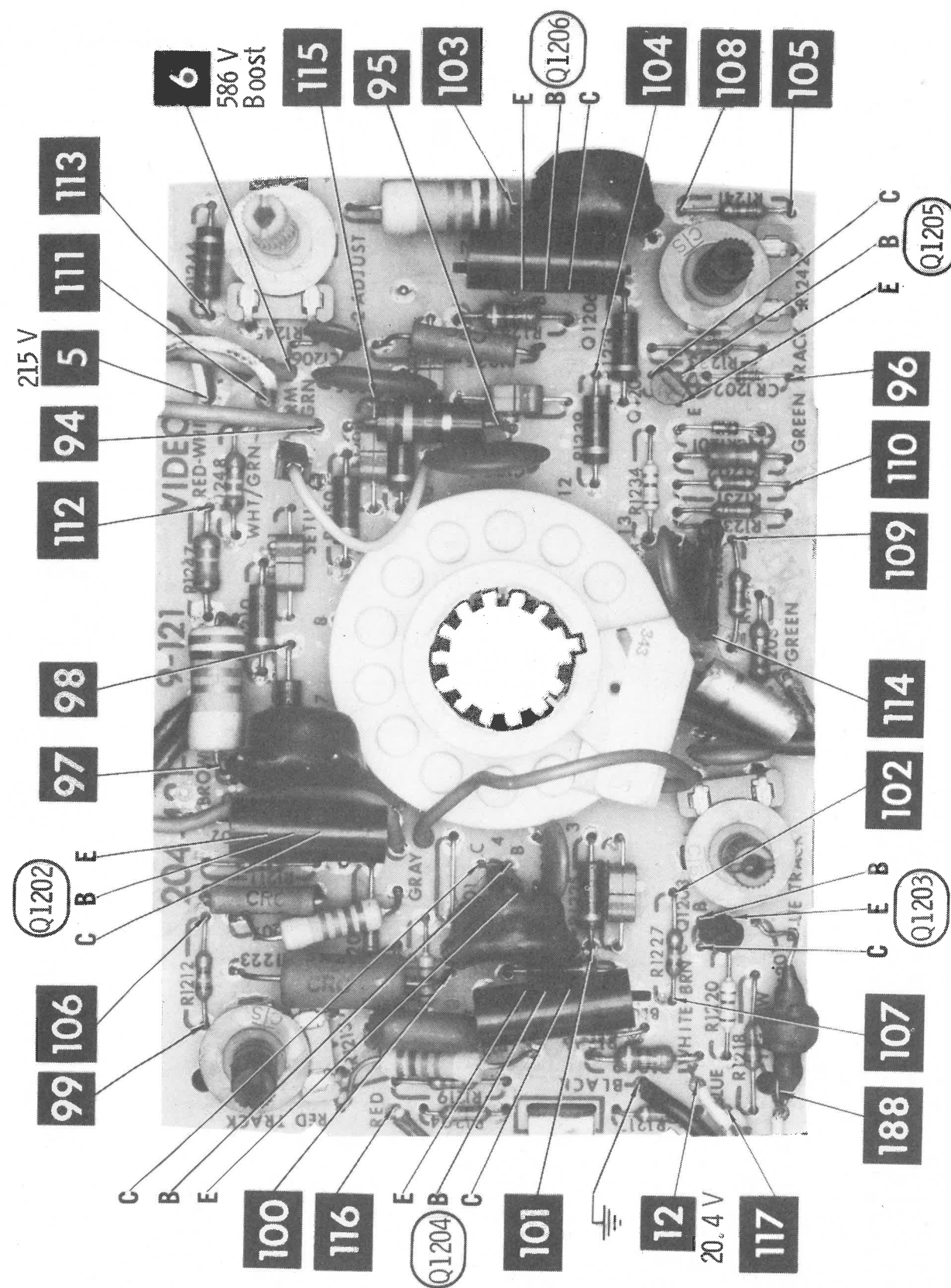
Terminal Guides



A Howard W. Sams **CIRCUITRACE**[®] Photo 9-90-01B HORIZ MODULE



9-121A VIDEO OUTPUT MODULE

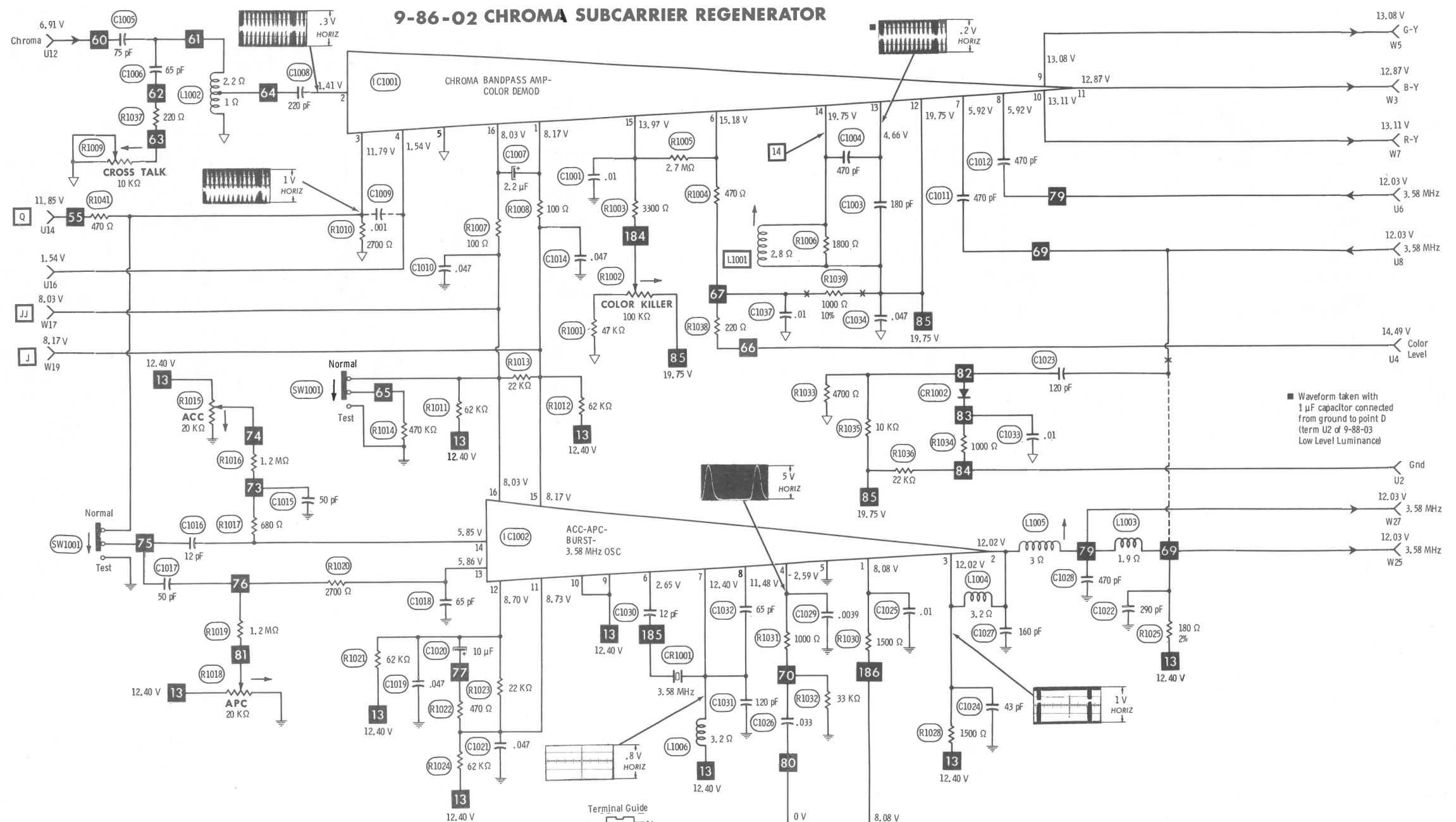


A Howard W. Sams CIRCUITRACE Photo 9-121A VIDEO OUTPUT MODULE

ZENITH CHASSIS
13HC10/10Z1

FOLDER 2

9-86-02 CHROMA SUBCARRIER REGENERATOR



For SAFETY use only equivalent replacement part.

— Circuitry not used in some versions

--- Circuitry used in some versions

⊕ See parts list

⊗ Nominal value

⊥ Ground

▽ Common tie point

Waveforms: triggered scope, keyed rainbow generator

Supply voltage maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Arrow at control indicates direction of advance.

Terminal identification may not be found on unit.

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

Value in () used in some versions.

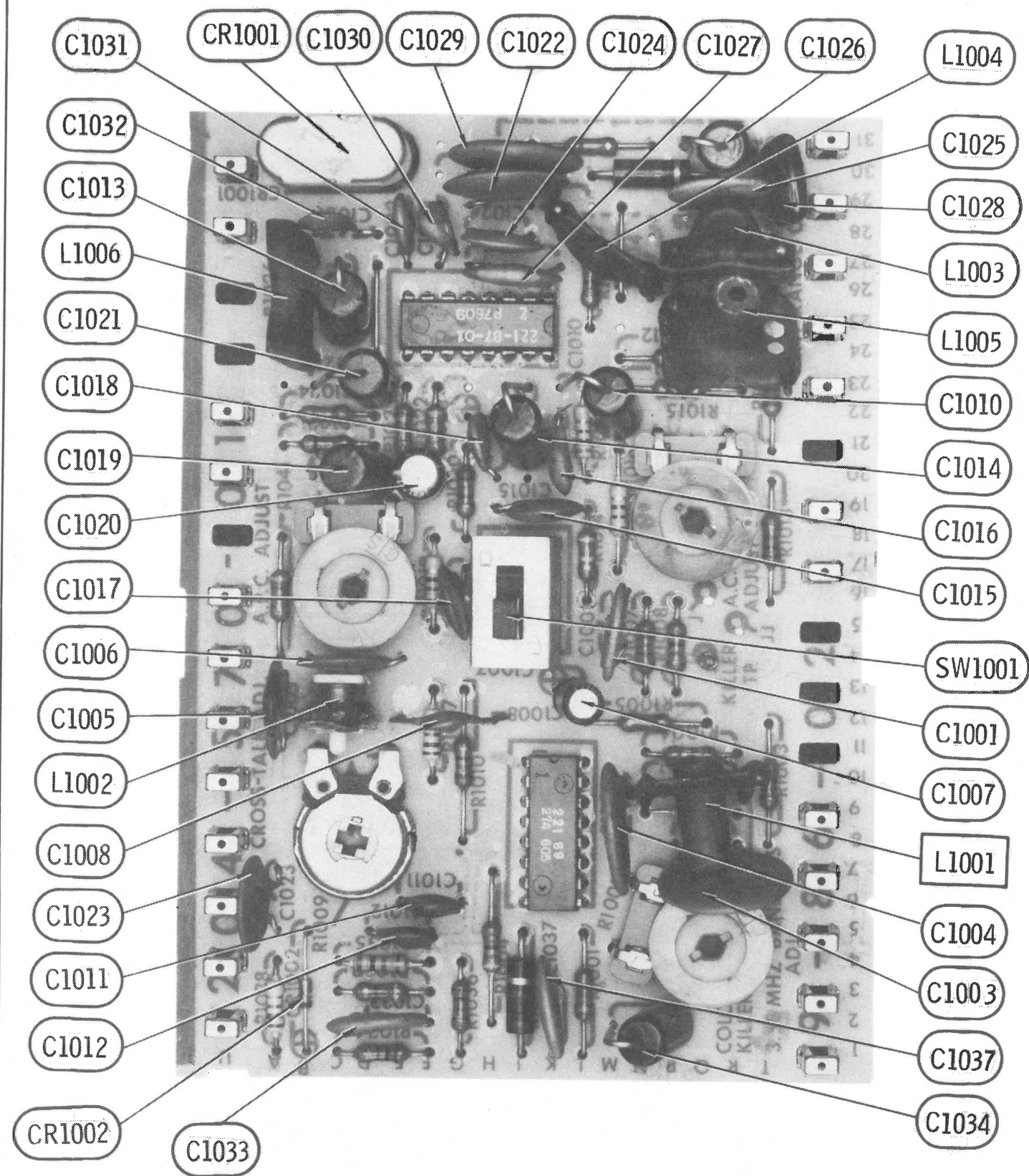
A PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH CIRCUITRACE®

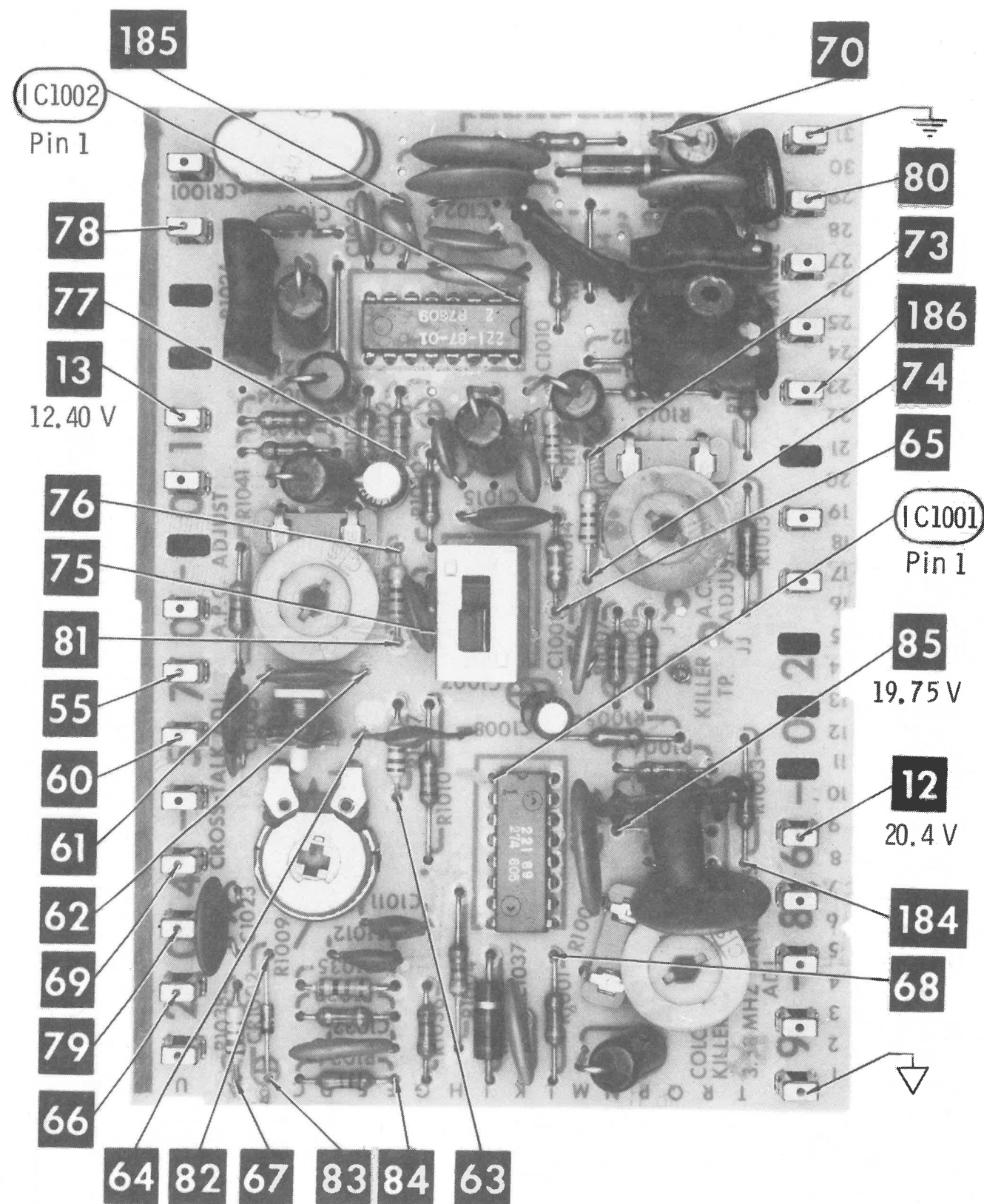
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9-86-02 CHROMA SUB REGENERATOR MODULE

9-86-02 CHROMA SUB REGENERATOR MODULE



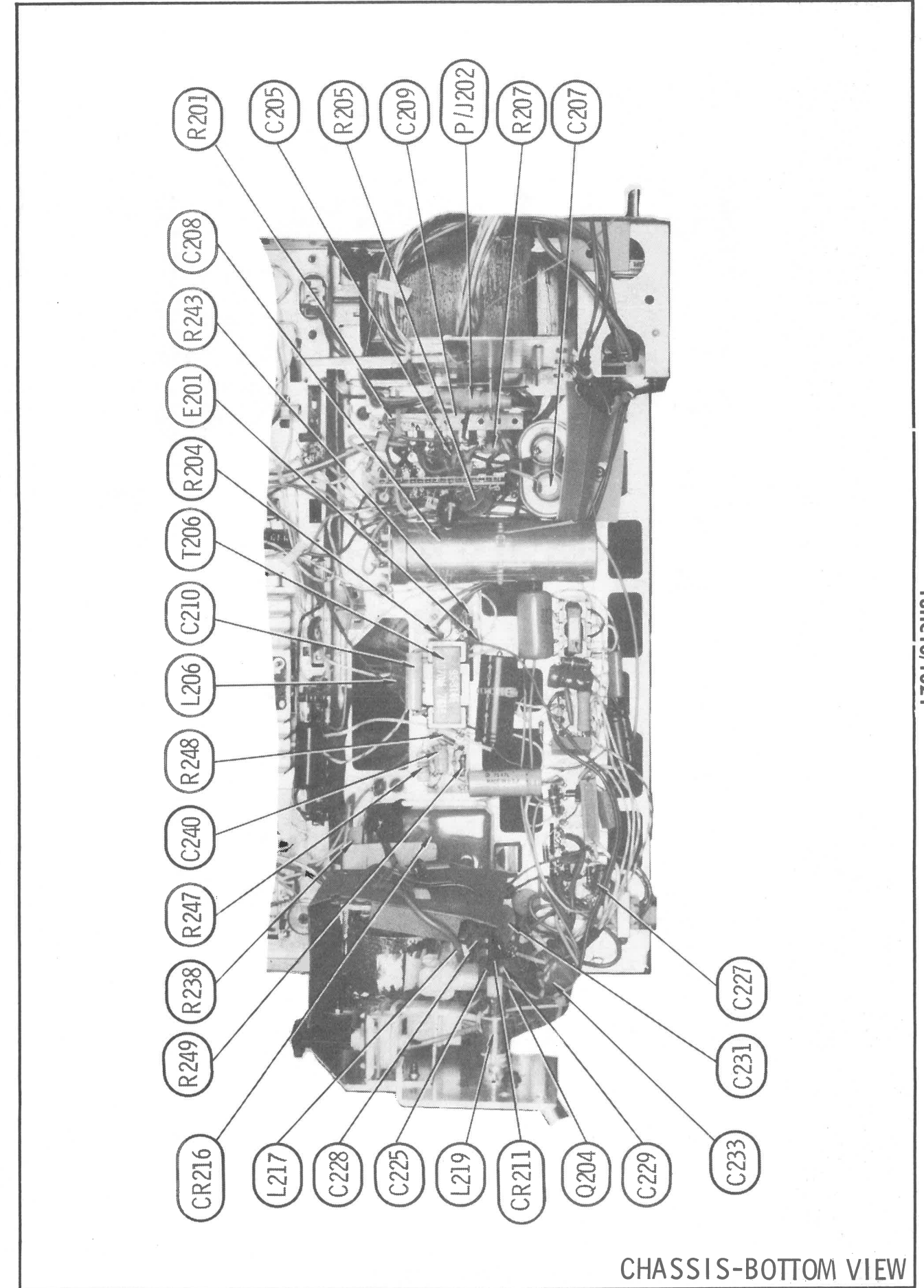
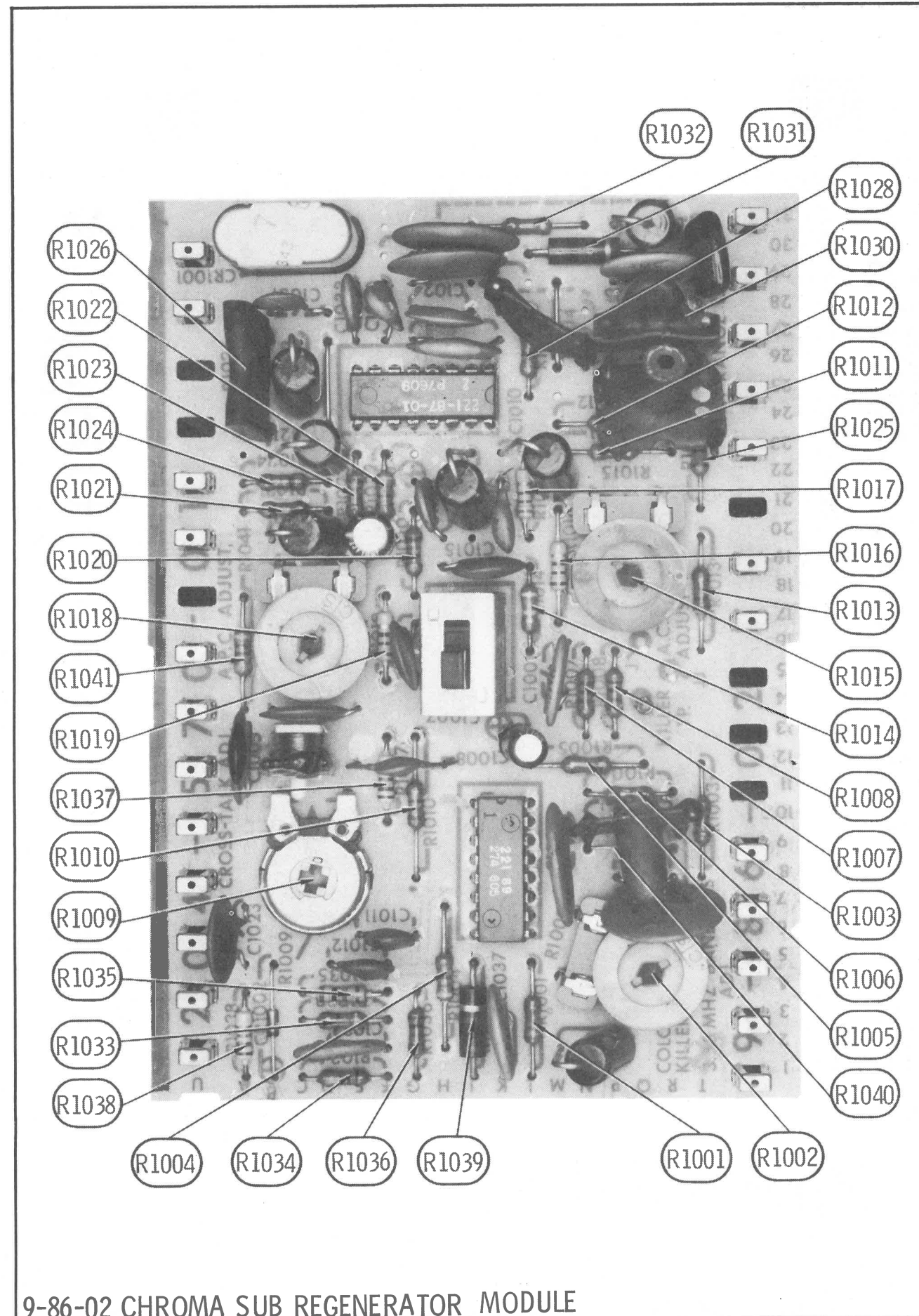
9-86-02 CHROMA SUB REGENERATOR MODULE



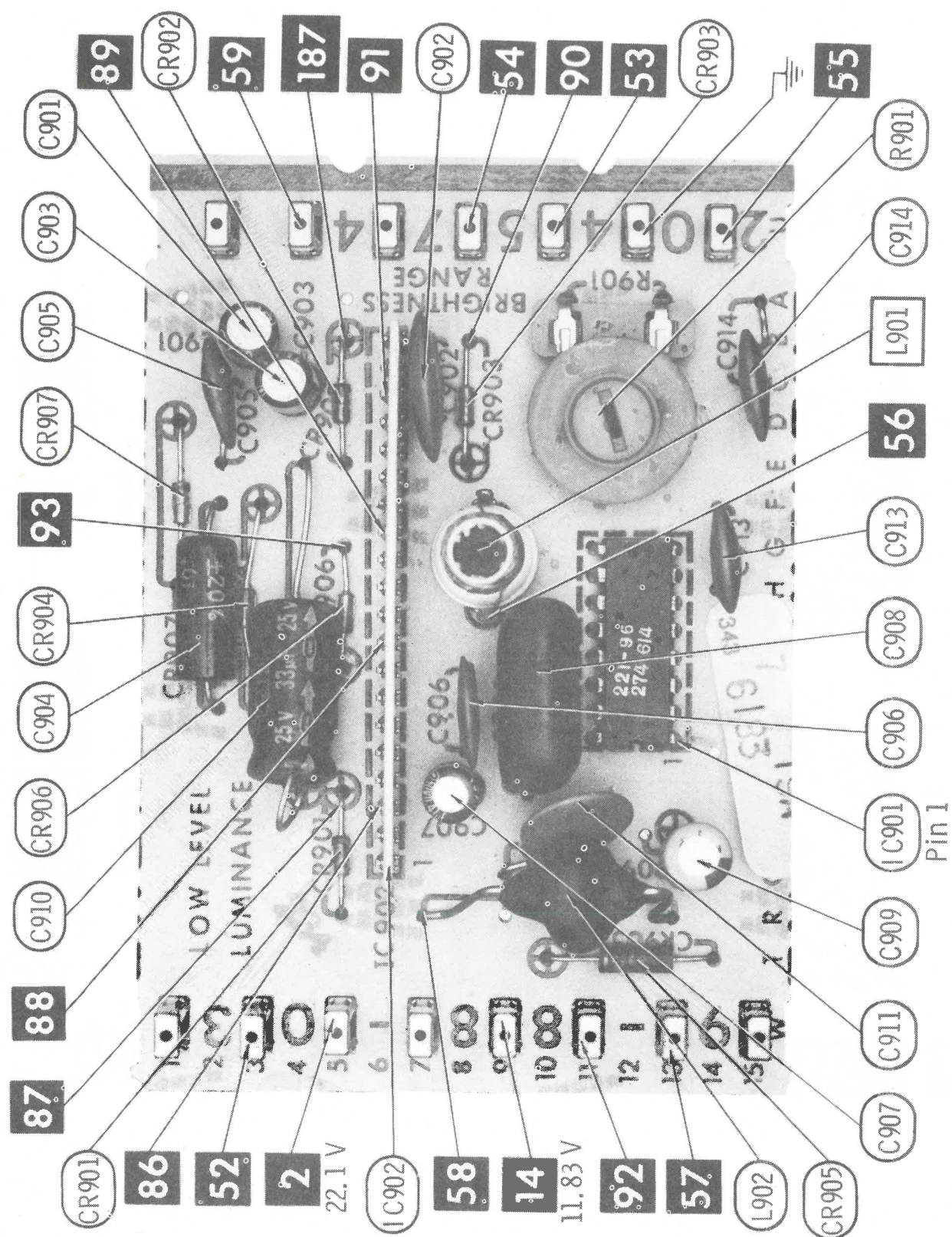
9-86-02 CHROMA SUB REGENERATOR MODULE

ZENITH CHASSIS
13HC10/10Z1

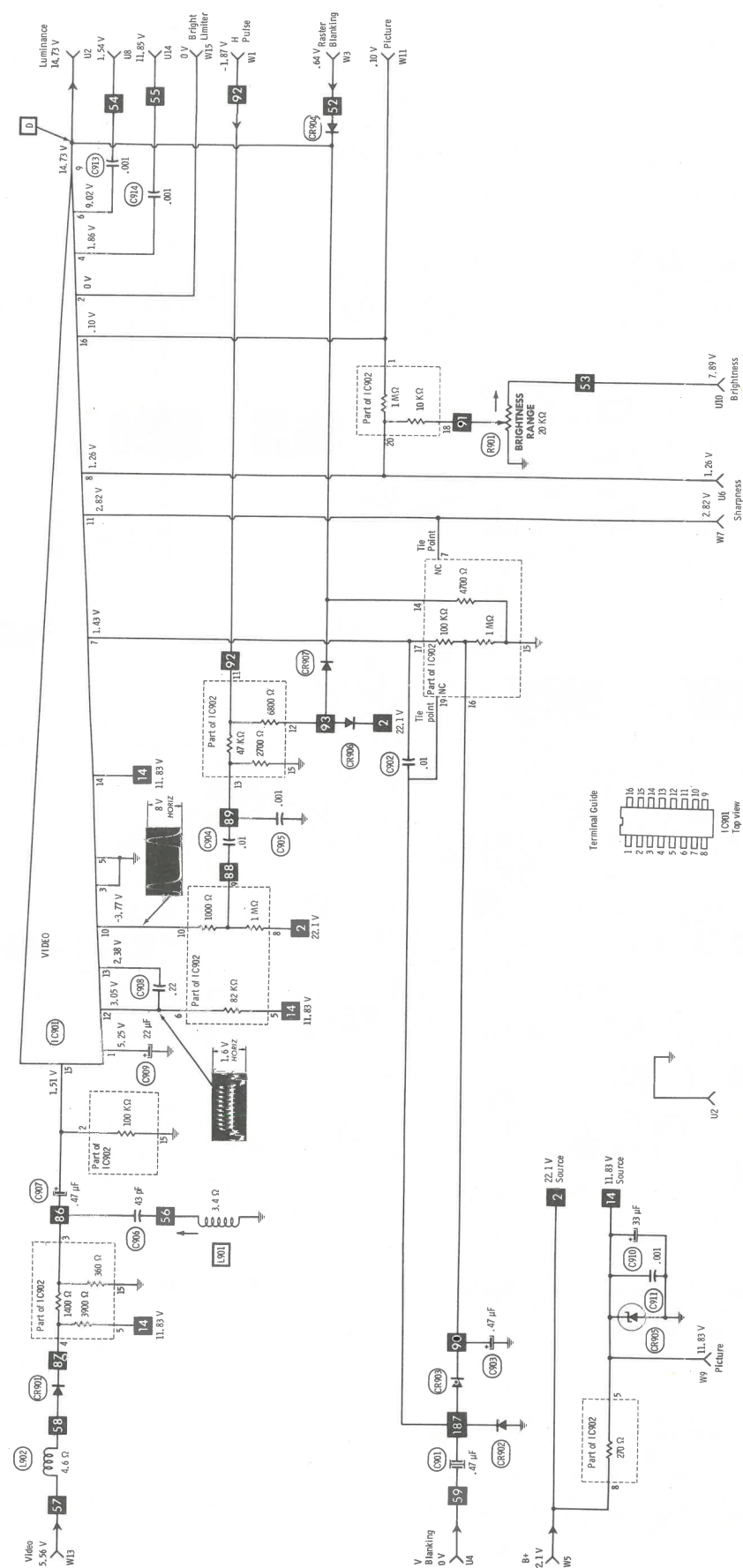
FOLDER 2



9-88-03 LOW LEVEL LUMINANCE MODULE

A Howard W. Sams **CIRCUITRACE®** Photo

9-88-03 LOW LEVEL LUMINANCE



Waveforms: triggered scope, keyed rainbow generator
Supply voltage maintained as shown at input.
Voltages measured with digital meter, no signal.
Controls adjusted for normal operation.
Arrow at control indicates direction of advance.
Terminal identification may not be found on unit.
Resistors are 1/2W or less, 5% unless noted.
Value in () used in some versions.

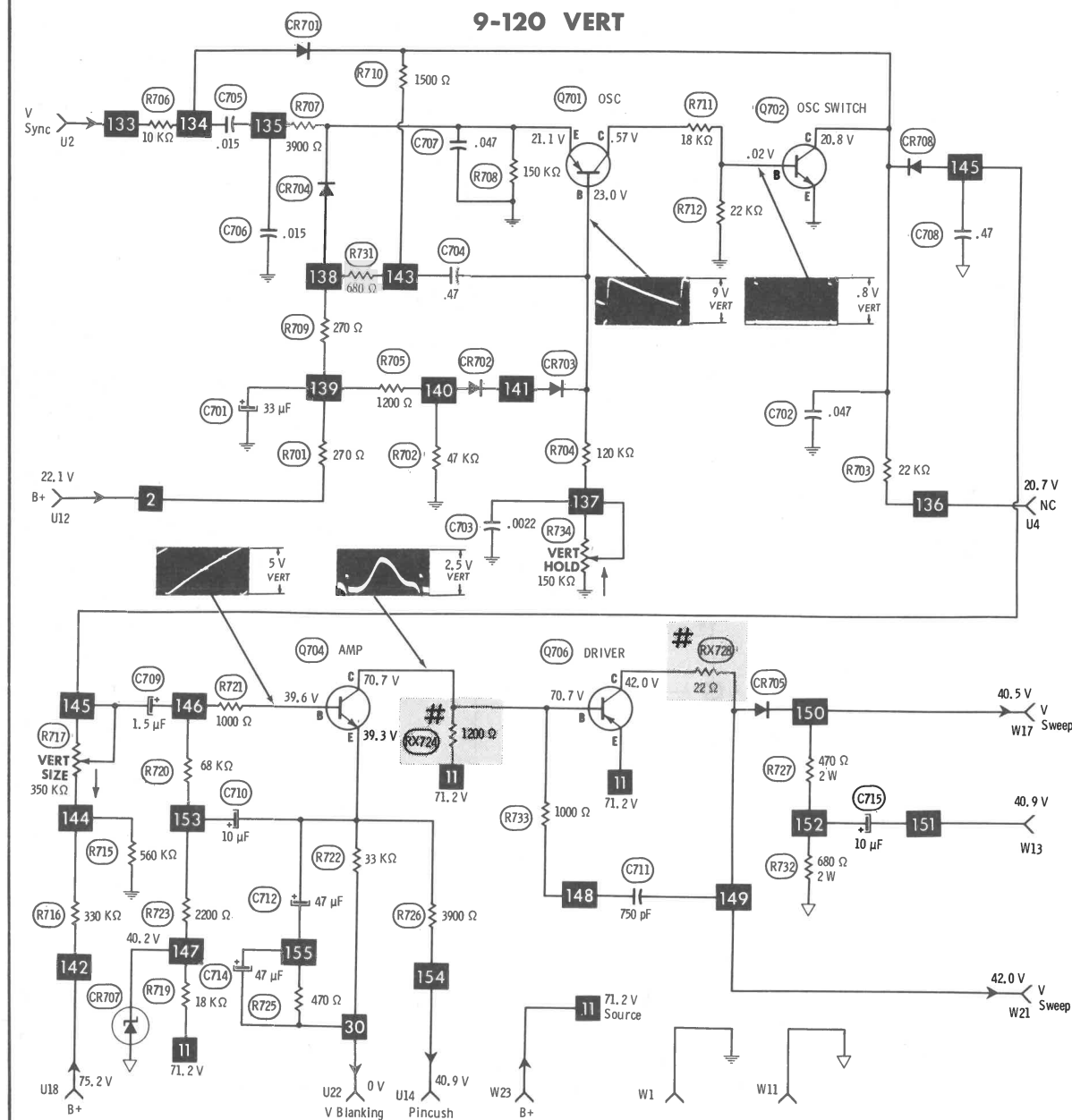
*— Circuitry not used in some versions
 --- Circuitry used in some versions
 e See parts list
 * Nominal value
 ⚡ Ground

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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FOLDER 2

**ZENITH CHASSIS
13HC10/10Z1**



For SAFETY use only equivalent replacement part.

— Circuitry not used in some versions

--- Circuitry used in some versions

⊙ See parts list

* Nominal value

⊥ Ground

▽ Common tie point

Waveforms: triggered scope, keyed rainbow generator

Supply voltage maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Arrow at control indicates direction of advance.

Terminal identification may not be found on unit.

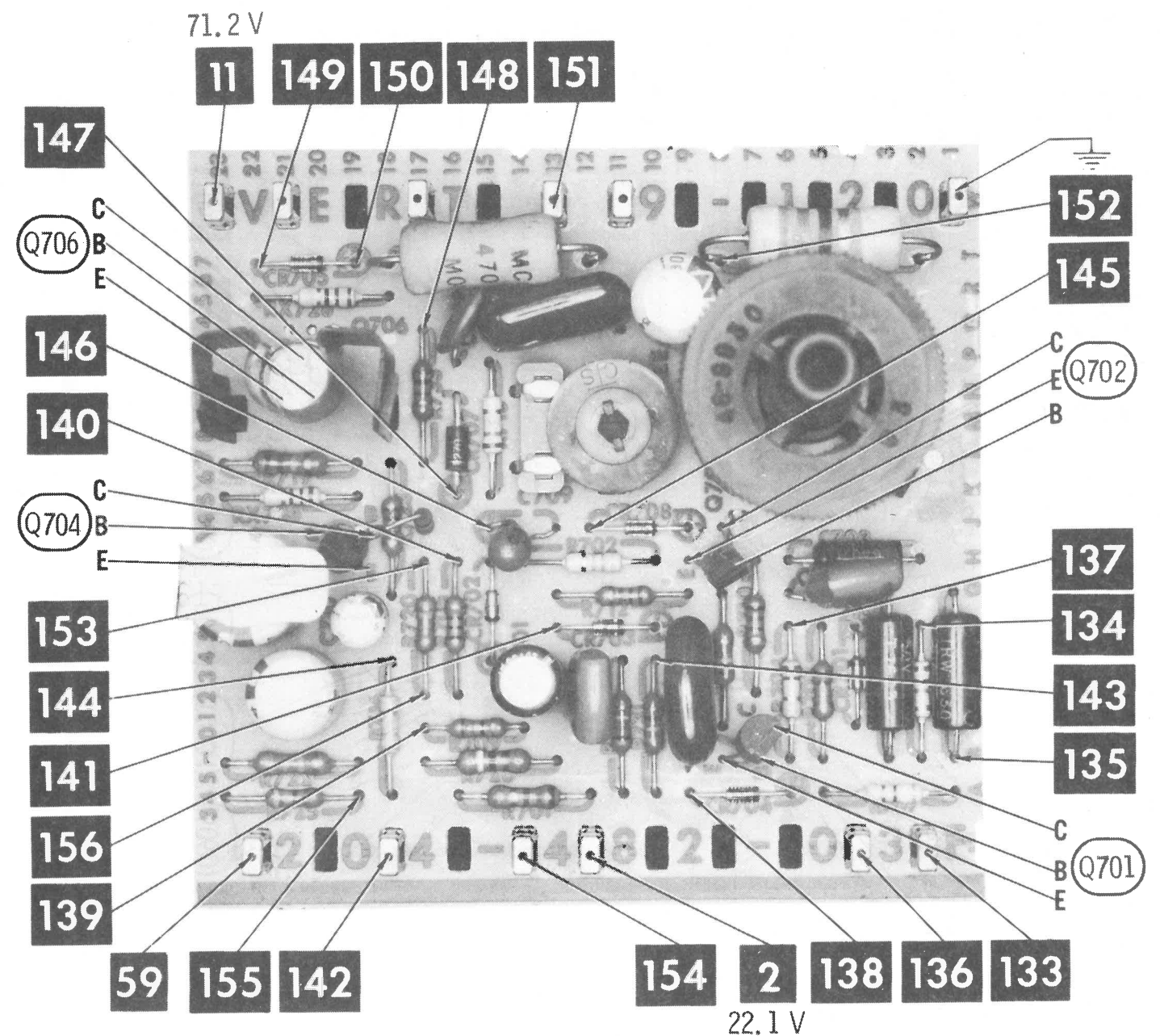
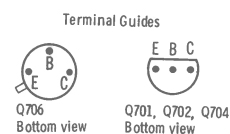
Resistors are 1/2W or less, 5% unless noted.

Value in () used in some versions.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

WITH CIRCUITRACE

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9-120 VERTICAL MODULE

A Howard W. Sams CIRCUITRACE® Photo

9-120 VERTICAL MODULE

TROUBLESHOOTING CHECK CHART

The following chart lists component failures most likely to produce the indicated symptoms.

PICTURE or SOUND

NO PIC, NO SOUND, NO RASTER: Fuses,CRX202 thru CRX207,CR201,CR213,24V Reg

 NO PIC, NO SOUND, HAS RASTER: Tuner,1ST/2ND/3RD IFs,Video IF Module

 NO PIC, NO SOUND, HAS SNOW: Tuner,AGC,Sync-AGC Module

 NO PIC, HAS SOUND, NO RASTER: CR215,CR904,CR907, CR219,CR1202,Low Level Luminance Module,CRT

 NO PIC, HAS SOUND, HAS RASTER: CR103,1ST Video, 1ST Video Amp,Video IC,Video IF/Low Level Luminance Module

 HAS PIC, NO SOUND: CR101,CR102,Sound IF-Audio Det/Amp,Audio Output,Video IF/Audio Modules

 OVERLOADED PICTURE: AGC,CR103,Sync-AGC/Video IF Modules

 LOW OR EXCESSIVE BRIGHTNESS: CR904,CR906,CR907, Video IC,CR1201,CR1202,Low Level Luminance Module

SYNC

 NO VERT SYNC: Vert Osc/Osc Switch,CR701,CR704, Vert Module

 NO HORIZ SYNC: Horiz APC/Osc,Horiz Module

 NO VERT/HORIZ SYNC: AGC-Sync,AGC-Sync Module

RASTER

 YELLOW (NO BLUE): Chroma Bandpass Amp-Color Demod,Blue Video Amp/Output,CRT,Chroma Module

 CYAN (NO RED): Chroma Bandpass Amp-Color Demod, Red Video Amp/Output,CRT,Chroma Module

 MAGENTA (NO GREEN): Chroma Bandpass Amp-Color Demod,Green Video Amp/Output,CRT,Chroma Module

SWEEP

NO RASTER, HAS SOUND: Horiz APC/Osc/Horiz Driver/Output,CRX211,Horiz Module

 NO VERT DEFLECTION: Vert Osc/Osc Switch/Amp/ Driver/Outputs,Vert Module

 POOR VERT LIN OR FOLDOVER: Vert Osc/Osc Switch/ Amp/Driver/Output,Vert Module

 POOR HORIZ LIN OR FOLDOVER: Horiz APC/Osc,Horiz Driver/Output,Horiz Module

 NARROW PICTURE: Horiz Driver/Output,CRX211,Horiz Module

 VERT OFF FREQUENCY: Vert Osc/Osc Switch,CR702, CR703,CR704,Vert Module

 HORIZ OFF FREQUENCY: Horiz APC/Osc,Horiz Module

COLOR (B/W operating normally).Y)

NO COLOR: Chroma Bandpass Amp-Color Demod,ACC- APC-Burst-3.58MHz Osc,Chroma Module

 WEAK COLOR: Chroma Bandpass Amp-Color Demod, ACC-APC-Burst-3.58MHz Osc,Chroma Module

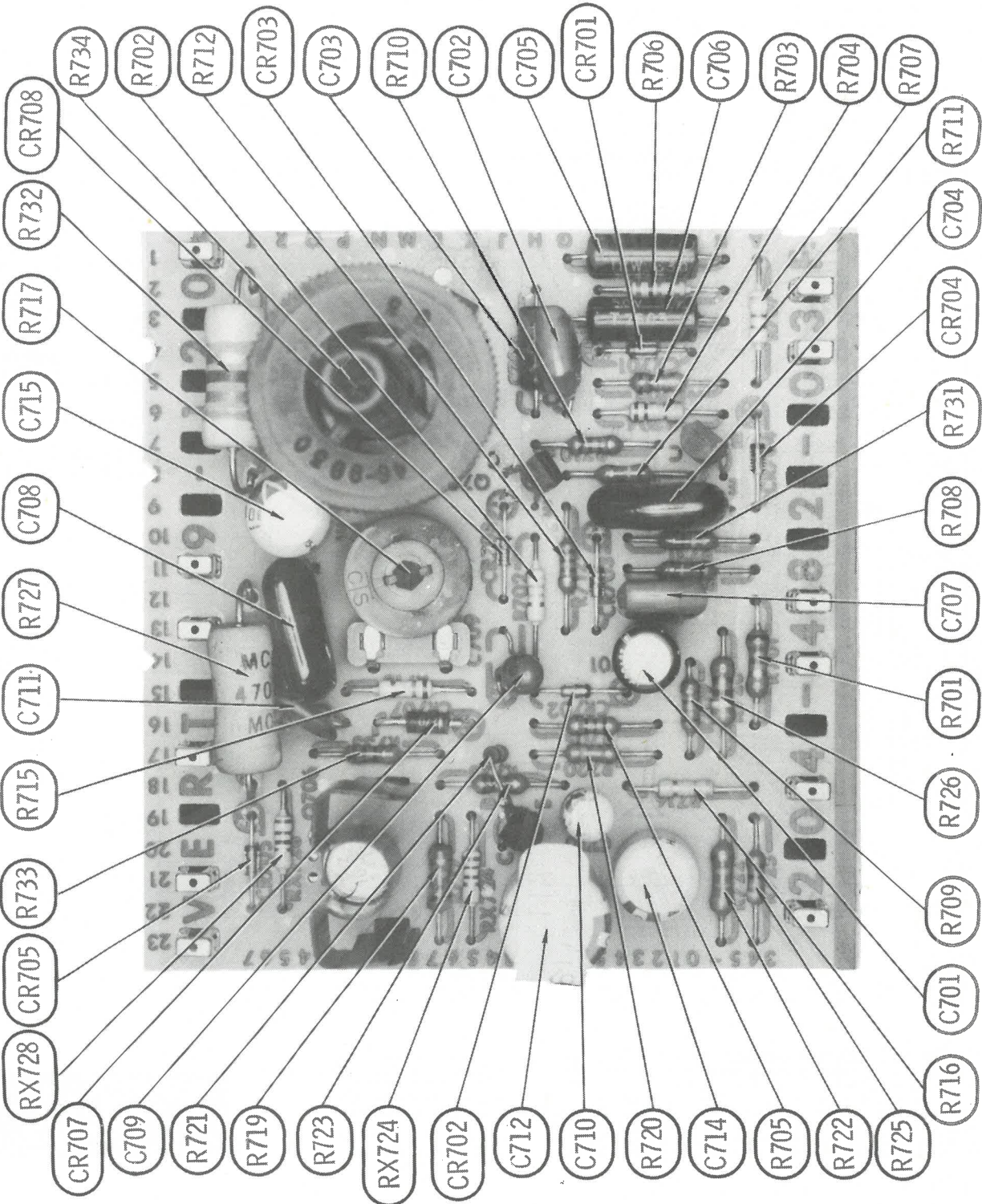
 NO COLOR SYNC: ACC-APC-Burst-3.58MHz Osc,Chroma Module

 NO GREEN: Chroma Bandpass Amp-Color Demod,Green Video Amp/Output,Chroma Module

 NO BLUE: Chroma Bandpass Amp-Color Demod,Blue Video Amp/Output,Chroma Module

 NO RED: Chroma Bandpass Amp-Color Demod,Red Video Amp/Output,Chroma Module

 INCORRECT HUE (TINT): ACC-APC-Burst-3.58MHz Osc,Chroma Module



9-120 VERTICAL MODULE

ZENITH CHASSIS
13HC10/10Z1

FOLDER 2



FIG. 81 SCHEMATIC DIAGRAM
SPACE COMMAND 100/MOTORIZED CHANNEL SELECTOR
FOR MODEL SH1321. (13-INCH "H" LINE COLOR TV)

NOTES:

1. THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED IN THIS WAY. IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES INTO THE SETS IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED.
2. RESISTOR R60, IS METAL FILM RESISTOR AND MUST BE REPLACED WITH AN EQUIVALENT TYPE TO INSURE ORIGINAL PERFORMANCE CHARACTERISTICS.
3. ALL VOLTAGES TAKEN WITH A VOLT METER HAVING AN INPUT RESISTANCE OF ELEVEN MEGOHMS. VOLTAGES MAY VARY BY ± 10 PERCENT.
4. CHANNEL SWITCH SHOWN IN CHANNEL 2 POSITION.
5. THE VOLTAGES AT THE TERMINAL PINS OF U51 SHOULD BE MEASURED WITH THE 12 PIN PLUG DISCONNECTED FROM TUNER CONTROL CENTER.
6. VOLTAGE AT AFC OUTPUT AS SHOWN WHEN AN +8 VOLTS ON 9-137 OR 175-2025 / 2026 +3.2 VOLTS ON 9-137-01 OR 175-2025 / 2026-01 IS APPLIED TO AFC INPUT LEAD.
7. THE FOLLOWING VOLTAGES SHOULD BE MEASURED WITH THE 12 PIN PLUG CONNECTED TO THE TUNER CONTROL CENTER.



9-137-01(USED WITH SYNCHRONOUS DET. I.F.) SAME AS 9-137 EXCEPT:			
ITEM NUMBER	PART NUMBER	DESCRIPTION	
R002	OMIT 63-9922-24	150K OHM FILM RESISTOR ±5%	.25 W
R014	ADD 63-10324-38	500K OHM METAL FILM RESISTOR ±5%	.50 W

THE LETTER "X" IN THE ELECTRICAL SCHEMATIC AND PARTS LIST DESIGNATES SPECIAL FAIL SAFE COMPONENTS WHICH ARE REQUIRED TO MAINTAIN SAFE PERFORMANCE. THESE COMPONENTS SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL SCHEMATIC.

**ZENITH CHASSIS
13HC10/10Z1**



FIG. 48 SCHEMATIC DIAGRAM VHF VARACTOR TUNERS

FIG. 48 SCHEMATIC DIAGRAM VHF VARACTOR TUNERS

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS™ for the most up-to-date replacement.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
LS201	3" PM 16 Ohms	49-1258	30A05Z16	

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA						
		PART No.		BUSS PART No.		LITTELFUSE PART No.		WORKMAN PART No.
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	HOLDER	DEVICE
F202	2A @ 125V Slow-Blow Pigtail	136-117-24 #		MDV2		315002		
FX201	4A @ 250V Quick Acting Piatail	136-106 #		GJV-4		318004		

For SAFETY use only equivalent replacement part.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
CR1001	Crystal	103-152-01	3.58MHz
E1201	Spark Gap	52-2240-05	
E1202	Spark Gap	52-2240-05	
E1203	Spark Gap	52-2240-05	
E1204	Spark Gap	52-2240-05	
E1205	Spark Gap	52-2240-05	
L201	Degaussing Coil	20-3548-11 #	
M1	Switch	#	Motorized (Used on timer models only)
P/J202	Socket	#	(Used on non space command models only)
P/J209	Socket	#	Convergence
P/J210	Socket	#	Volume
S201	Switch	#	Part of Volume Control
S202	Switch	85-1291-17	Chromatic
S203	Switch	85-1476 or 85-1476-01	Sharpness
S204	Switch	#	AFC Defeat
SW1001	Switch	85-1390	Normal-Test
	AC Interlock	58-371 #	
	AC Power Cord	11-322-02 #	
	Magnet	S-98552	
	Printed Circuit Board	A-5131	
	Printed Circuit Board	S-98562	Static and Purity Assembly
	UHF Tuner	175-1611B(C) #	Chromatic (Includes switch)
	UHF Tuner	175-1958U #	Convergence
	UHF Tuner	175-1960-02 #	
	VHF Tuner	175-2206-50C #	
	VHF Tuner	175-2205-50 #	
	VHF Tuner	175-1527 #	
	VHF Tuner	175-2205-20 #	
	UHF Antenna	S-86924-01	RUSSELL Replacement B0W-1H
	VHF Antenna	1-135	(2 Reg)

For SAFETY use only equivalent replacement part.

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

ITEM	PART No.
Model H1310C	
Cabinet Rear Assembly	A-2659
Cabinet Front Assembly	A-4419
Dial Scale UHF	S-99948
Knob-Vertical Hold	46-9935
Knob-Brightness,Color Level,Tint, Sharpness (4 used)	46-9945
Knob-UHF Fine Tuning	46-9980
Knob-VHF Fine Tuning	46-9981
Knob-Control Coupler for 46-9935	46-10030
Knob-On/Off Volume	46-10045
Knob-Focus with Shaft	46-10059
Knob-VHF Channel Selector	46-10130
Knob-UHF Channel Selector	46-10131
Knob-Picture	46-10137
Model H1316W	
Cabinet Rear Assembly	A-3606
Cabinet Front Assembly	A-3610
Dial Scale-UHF	A-3607
Knob-Control (AFC)	46-9928-02
Knob-Control External Vert	46-9935
Knob-Timer External	46-9937-02
Knob-UHF Fine Tuning	46-9950

ITEM	PART No.
Model H1320W	
Cabinet Rear Assembly	A-2660
Cabinet Front Assembly	A-2974
Grille	S-99227
Escutcheon Assembly Control, TV	S-99228
Knob-Vertical,Horizontal Hold	46-9935
Knob-Sharpness,Brightness,Color Level, Tint (4 used)	46-9945
Knob-Channel Selector	46-9954
Knob-Control Coupler for 46-9935	46-10030
Knob-On/Off Volume	46-10045
Knob-Focus	46-10059
Knob-Picture	46-10137
Channel Selector Unit	175-5037
Knob-VHF Fine Tuning	46-9951
Knob-Internal Vert Control	46-10030
Knob-Control With Hex Shaft	46-10059
Knob-Sharpness,Brightness,Color Level,Tint	46-10108
Knob-On/Off Volume	46-10116
Knob-VHF Channel Selector	46-10128
Knob-UHF Channel Selector	46-10129
Knob-Picture	46-10137
Knob-Internal Timer	

PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS™ for the most up-to-date replacement.

WIRING DATA

High Voltage Lead	Use BELDEN No. -8866 (40 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. 8528 (Solid) Available in 12 Colors 8522 (Stranded) Available in 12 Colors
300-Ohm Tuner Input Lead	Use BELDEN No. 8225
75-Ohm Tuner Input Lead	Use BELDEN No. 8241
300-Ohm Antenna Lead-in	Use BELDEN No. 8275 (Foam Core) or 8285 (Foam Jacketed)
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) 4-Conductor 8485 (Round) 5-Conductor 8488 (Round) 8-Conductor

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	MFGR. PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V201	13VAMP22 #				

For SAFETY use only equivalent replacement part.

MODULES/PLUG-IN BOARDS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
	Module	9-103-01	Audio
	Module	9-86-02(B)	Chroma
	Module	9-90-01A	Horizontal
	Module	9-90-01B	Horizontal (Used in some versions)
	Module	9-88-03	Luminance
	Module	9-87C	Sync AGC
	Module	9-120	Vertical
	Module	150-190D	Video IF (Used in Chassis 13HC10)
	Module	150-115	Video IF (Used in Chassis 13HC10Z1)
	Module	9-121A	Video Output
	Module	9-122#	Power Supply

For SAFETY use only equivalent replacement part.

SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFGR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
CR101		103-23-01	1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
CR102		103-23-01	1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
CR103		103-202	1N60	1N60	PTC206	HEPR9135	RE 47	SK3088	RT-263	ECG109
CR104		103-271	1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
CR105		103-271	1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
CR106		103-271	1N34AS	1N34A	PTC207	HEPR9134	RE 47	SK3087	RT-200	ECG109
CR201		103-278#	GEZD-24	ZB24A	HEPZ0423	RE 128	SK3151	RT-259	ECG5081	
CR210		103-254	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR210A		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR211		103-287#	GE-511	D172	PTC216	HEPR3012	RE 55	SK3130	RT-203	ECG506
		103-193#(1)	GE-511	D172	PTC216	HEPR3012	RE 55	SK3130	RT-203	ECG506
CR212		103-287#	GE-511	D172	PTC216	HEPR3012	RE 55	SK3130	RT-203	ECG506
		103-193#(1)	GE-511	D172	PTC216	HEPR3012	RE 55	SK3130	RT-203	ECG506
CR213		103-287#	GE-511	D172	PTC216	HEPR3012	RE 55	SK3130	RT-203	ECG506
		103-193#(1)	GE-511	D172	PTC216	HEPR3012	RE 55	SK3130	RT-203	ECG506
CR215		103-194#	GEZD-7.5	D1207	PTC216	HEPR3012	RE 55	SK3130	RT-203	ECG506
CR216		212-145-01#			ZB7.5A	HEPZ0410	RE 111	SK3059	RT-239	ECG138
		212-146-01#								
		(1)								
CR217		103-76	GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116
CR218		103-142	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR219		103-142	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR222		103-254	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR401		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR601		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR701		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR702		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR703		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR704		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR705		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR707		103-270	GEZD-39	Z1125	ZB39A	HEPZ0428			RT-251	ECG5086
		103-279-37(1)			ZB36A	HEPZ0427				ECG5085
CR708		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR801		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR901		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR902		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR903		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR904		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR905		103-279-21	GEZD-12	Z1212	ZB12A	HEPZ0415	RE 118	SK3062	RT-243	ECG142
CR906		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177

ZENITH CHASSIS
13HC10/10Z1

FOLDER 2

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS™ for the most up-to-date replacement.

SEMICONDUCTORS (Select replacement transistor for best results) (cont)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA							
			GENERAL ELECTRIC PART No.	IR WORKMAN PART No.	MALLORY PART No.	MOTOROLA PART No.	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.
CR907		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR1002		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR1201		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CR1202		103-142-01	GE-300	D200	PTC214	HEPRO602	RE 52	SK3100	RT-218	ECG177
CRX202		103-76 #	GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116
CRX203		103-245 #	GE-504A	5A4D	PTC201	HEPRO053	RE 49	SK3016	RT-214	ECG116
CRX204		103-245 #	GE-504A	5A4D	PTC201	HEPRO053	RE 49	SK3016	RT-214	ECG116
CRX205		103-245 #	GE-504A	5A4D	PTC201	HEPRO053	RE 49	SK3016	RT-214	ECG116
CRX206		103-245 #	GE-504A	5A4D	PTC201	HEPRO053	RE 49	SK3016	RT-214	ECG116
CRX207		103-76 #	GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116
CRX211		103-76	GE-504A	5A4D	PTC201	HEPRO052	RE 49	SK3030	RT-213	ECG116
IC401		221-45-01	GEIC-13		PTC731			SK3170	TVCM-15	ECG731
IC801		221-86								
IC901		221-96								
IC902		105-114								
IC1001		221-69	GEIC-33		PTC733		RE 324-IC	SK3149	TVCM-34	ECG791
IC1002		221-87			PTC715					ECG714
IC1101		221-48	GEIC-2	IC-507	PTC726	HEPC6063P	RE 305-IC	SK3072	TVCM-11	ECG712
IC1102		221-77	GEIC-27		PTC732	HEPC6090	RE 322-IC		TVCM-65	ECG810
Q101		121-503	GE-60 *	TR-24 *	PTC132 *	HEPS0017 *	RE 28 *	SK3117 *	RT-187 *	ECG229 *
Q102		121-501 (1)	GE-39 *	TR-70 *	PTC132 *	HEPS0017 *	RE 28 *	SK3039 *	RT-187 *	ECG161 *
		121-509	GE-60 *	TR-53 *	PTC132 *	HEPS0014 *	RE 28 *	SK3117 *	RT-187 *	ECG161 *
		121-507 (1)	GE-60 *	TR-70 *	PTC132 *	HEPS0014 *	RE 28 *	SK3117 *	RT-187 *	ECG161 *
		121-508 (1)	GE-60 *	TR-70 *	PTC132 *	HEPS0014 *	RE 28 *	SK2117 *	RT-187 *	ECG161 *
Q103		121-524	GE-60 *	TR-70 *	PTC132 *	HEPS0015 *	RE 192 *	SK3117 *	RT-187 *	ECG233 *
		121-895A	GE-60 *	TR-51	PTC132 *	HEPS0015	RE 28	SK3117	RT-187 *	ECG161
Q104		121-895 (1)	GE-60 *	TR-51	PTC132 *	HEPS0015	RE 28	SK3117	RT-187 *	ECG161
		121-925	GE-20	TR-21	PTC123	HEPS0015	RE 10	SK3018	RT-107 *	ECG108
Q105		121-986	GE-22	TR-30	PTC103	HEPS0019	RE 26	SK3025	RT-126A	ECG159
Q106		121-966-01	GE-66	TR-55	PTC110	HEPS5027	RE 21	SK3054	RT-197	ECG152
Q201		121-1008		TR-57	PTC112	HEPS5019			RT-190	ECG291
Q202		121-1009		TR-58	PTC113	HEPS5018			RT-189	ECG292
Q203		121-1003#	GE-36	TR-61	PTC129A	HEPS5020	RE 30	SK3111		ECG238
Q204		121-973	GE-21	TR-30	PTC131	HEPS0019	RE 18	SK3114 *	RT-172	ECG129
Q701		121-975	GE-20	TR-24	PTC136	HEPS0025	RE 13	SK3122 *	RT-172	ECG123A
Q702		121-972	GE-20	TR-21	PTC136	HEPS0015	RE 13	SK3122 *	RT-172	ECG123A
Q704		121-1007	GE-48 *	TR-88	PTC141	HEPS3003	RE 18	SK3025	RT-115	ECG129
Q706		121-980 (1)	GE-58	TR-73	PTC111	HEPS5006	RE 76	SK3083	RT-195	ECG189
Q801		121-1014	GE-27	TR-75	PTC124 *	HEPS5015	RE 44 *	SK3104	RT-159A	ECG190
		121-755 (1)	GE-27	TR-75	PTC124 *	HEPS5015	RE 44 *	SK3104	RT-159A	ECG190
		121-755 (1)	GE-27	TR-75	PTC124 *	HEPS5015	RE 44 *	SK3104	RT-159A	ECG190
		121-895	GE-60	TR-51	PTC132	HEPS0020	RE 28	SK3117	RT-187	ECG161
Q801A		121-868-01	GE-27	TR-79		HEPS3021	RE 73	SK3104	RT-159A	ECG171
Q1201		121-895	GE-60	TR-51	PTC132	HEPS0020	RE 28	SK3117	RT-187	ECG161
Q1202		121-868-01	GE-27	TR-79		HEPS3021	RE 73	SK3104	RT-159A	ECG171
Q1203		121-895	GE-60	TR-51	PTC132	HEPS0020	RE 28	SK3117	RT-187	ECG161
Q1204		121-868-01	GE-27	TR-79		HEPS3021	RE 73	SK3104	RT-159A	ECG171
Q1205		121-895	GE-60	TR-51	PTC132	HEPS0020	RE 28	SK3117	RT-187	ECG161
Q1206		121-868-01	GE-27	TR-79		HEPS3021	RE 73	SK3104	RT-159A	ECG171

For SAFETY use only equivalent replacement part.

* Lead Configuration may vary from original.

(1) Used in some versions.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	5 15V	22-5424	PC5-50	TT15X5	TVA-1144
C4	1 50V	22-7143	PC1-50	VTT1B63	EV-1615
C149	.47 50V		PC1-50	VTR47B63	EV-1610
C208A	300 150V	22-7507 #			
B	300 150V				
C	1000 85V				
D	500 35V				
C209	470 35V	22-7144-11 #	WBR500-35	VTT470L35	EV-1450
C210	100 50V	22-7143-08	PC100-50	VTT100H50	EV-1530
C222	500 75V	22-6305		TC10501A	TVA-1319.5
C224	330 35V	22-7144-10	WBR300-35	VTT330K35	EV-1445
C227	50 10V	22-6283 #	PC50-10	TT10X50A	TVA-1129.94
C234	22 250V	22-7498 #			
C240	15 50V	22-7506	WBR16-150	MTA15D50	TVA-1305
C242	100 100V	22-5536	WBR100-150	MTA100G100	TVA-1346
C243	100 50V	22-7143-08	PC100-50	VTT100H50	EV-1530
C244	4.7 250V	22-7379 #			
C401	5 15V	22-5424	PC5-50	TT15X5	TVA-1144
C405	1 25V NP	22-6693	WNP1-50	TCN501A	TVAN-1560
C407	1 50V	22-7143	PC1-50	VTT1B63	EV-1615
C701	33 25V	22-7152-06	PC30-25	VTT33D25	EV-1325
C709	1.5 50V	22-7232		TDCT155M050FL	SD50-1R59
C710	10 25V	22-7152-04	PC10-25	VTT10A25	EV-1322
C712	47 80V	22-7156-07	WBR50-150	MTV50DJ100	TVA-1343
C714	47 35V	22-7508	PC50-50	VTT47F35	EV-1426
C715	10 80V	22-7156-04	WBR10-150	MTV10CD100	TVA-1337
C808	.47 50V	22-7390-02	PC1-50	VTR47B63	EV-1610
C810	470 16V	22-7151-11	PC500-16	VTT470J16	EV-1250

IC1101 TCG 810, ECG 810, TM 80, 221-77

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.

Have your local distributor check Sams COUNTER FACTS™ for the most up-to-date replacement.

COILS (RF-IF) (cont)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L218	Peaking (320uH)	20-2028 #		72F334AP	
L221	Horiz Lin	20-3675			
L222	Peaking (663uH)	20-2061 #		72F684AP	
L901	3.58MHz Trap	20-3754			
L902	Peaking (68uH)	20-2030			
L1001	Chroma Bandpass	20-3577-02			
L1002	Chroma Take-off	95-3080			
L1003	RF Choke (7.5uH)	20-2311			
L1004	Peaking (47uH)	20-2301		72F475AP	
L1005	Hue	20-3577-02			
L1006	RF Choke (18uH)	20-2302		72F105AP	
L1201	Peaking (100uH)	20-2021		72F104AP	
L1202	Peaking (550uH)	20-2024		6144	
L1203	Peaking (550uH)	20-2024		6144	
L1204	Peaking (550uH)	20-2024		6144	
L1205	RF Choke (20uH)	20-2312			
T201	Line Choke	95-2964 #		5252	
T1101	Quadrature	95-2789			
T1102	Sound Input IF	95-2620			

For SAFETY use only equivalent replacement part.

COILS & TRANSFORMERS (Sweep Circuits)

ITEM No.	FUNCTION	REPLACEMENT DATA				
		MFR. PART No.	OTHER IDENTIFICATION	MILLER PART No.	THORDARSON PART No.	TRIAD PART No.
L217	Link Coil	# (1)				
L219	Pincushion Phase	20-3711				
L601	R/B Vert Lines (Rt)	20-3672				
	Convergence Yoke					
L602	Blue Section	20-3666				
L603	R/G Section	20-3666				
T203	Horiz Driver	95-2895-04 #				
T204	Horiz Output	95-3148-04 #				
	Horiz Output	95-3148-05 # (2)				
T205	T/B Pincushion	95-3186 #				
T206	Side Pincushion	95-3146 #				
T207	Yoke Horiz = .82mH	95-3145-03 #				
	110° Vert = 17.5mH					

For SAFETY use only equivalent replacement part.

(1) Part of Horiz Output Transformer, Part Number 95-3148-04.

(2) Used in some versions.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (10 CURRENT 1000~)	MFR. PART No.	THORDARSON PART No.	TRIAD PART No.	
L202	.36A DC	5	.1H	95-3150 #		C40X	# For SAFETY use only equivalent replacement part.

TRANSFORMER (Power)

ITEM No.	RATING			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFR. PART No.	THORDARSON PART No.	TRIAD PART No.	
T202	120V AC @ 1.1A AC	408V AC Tap @ 270V AC CT @ .36A DC	144V AC CT @ .23A DC Tap @ 64V AC CT @ .38A DC	95-3149 #			# For SAFETY use only equivalent replacement part.
	SEC. 3	SEC. 4	SEC. 5				
	6.84V AC @ .85A AC	6.12V AC @ .15A AC					

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
R1228	Blue Tracking Blue Tracking	180 250	63-9697-20 63-9697-08 (6)				
R1242	Green Tracking Green Tracking	180 250	63-9697-21 63-9697-09 (6)				
R1245	G2 (Master)	5Meg	63-9697-13				

- # For SAFETY use only equivalent replacement part.
(3) For horizontal mounting, bend the two outside terminals to fit PC board. Use jumper to connect center terminal to PC Board.
(6) Alternate part, may be used in some versions.
(18) Cut off left hand terminal and use original mounting bracket.
(19) Used in Models H1320W and SH1321W.
(20) Used in Model H1310C and H1320W.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		ITEM No.	RATING	REPLACEMENT DATA	
		WORKMAN PART No.	MFGR. PART No.			WORKMAN PART No.	MFGR. PART No.
R111	51 5% 1/4W Carbon	*	63-10559-41 #	R234	5 10% 5W WW	5W-SQ-5	63-5294 #
R119	100 5% 1/4W Carbon	CD-100	63-10559-48 #	R235	820 10% 3W WW		63-10268 #
R127	3300 2% 1/4W Carbon			R236	4.7M 20% 1/2W Carbon	CA-4.7Meg	63-7940 #
R142	100 5% 1/4W Carbon	CD-100 *	6310559-48 #	R238	500 10% 7W WW		63-10279 #
R201	1.5M 20% 1/2W Carbon	CA-1.5Meg	63-10526 #	R240	10 10% 1/2W Carbon	CA-10	63-1701 #
R202	2 10% 2W WW		63-10193 #	R242	100 10% 3W Film	20-0003	63-10379-48
R203	220K 10% 1W Carbon	CB-220000	63-6168 #	R252	470 10% 1W Carbon	CB-470	63-6056 #
R204	25.3 CoId PTC	FR605	63-8687 #	R254	1000 10% 1/2W Carbon	CA-1000	63-1785 # (1)
R205	10K 10% 2W Film		63-7252 #	R255	100K 5% 1/2W Carbon	CA-100000 *	63-7216 #
R207	100 10% 2W Film		63-8344 #	R299	1000 10% 2W Carbon	CC-1000	#
R217	1.5 5% 1/2W Carbon	*	63-10565-04 #	R410	6200 2% 1/4W Carbon		63-9919-91
R218	1.5 5% 1/2W Carbon	*	63-10565-04 #	R418	18K 2% 1/4W Carbon	*	63-9920-02
R228	1000 10% 7W WW		63-3296 #	R811	14K 1% 1/4W Film		63-10533-02
R229	1.5 10% 1/2W Carbon		63-4508 #	R1025	180 2% 1/4W Carbon	*	63-9919-54
R230	47 10% 3W WW		63-10430-64 #	R1040	22 5% 1/8W Carbon	*	63-10543-32 #
R231	4.7M 20% 1/2W Carbon	CA-4.7Meg	63-7940 #	RX725	1200 5% 1/4W Carbon	CD-1200 *	63-10559-74 #
R232	1000 5% 1/2W Carbon	CA-1000 *	63-10329-72 #	RX728	22 5% 1/4W Carbon	CD-22 *	63-10559-32 #
R233	2.7M 5% 1/2W Carbon	CA-2.7Meg	63-1928 #				

- # For SAFETY use only equivalent replacement part.
* Specify carbon film.
(1) Used in some versions.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L101	Video Input IF/Bandpass	95-3096-01			
L102	39.75MHz Trap	20-3145-01			
L103	47.25MHz Trap	20-3409-01			
L105	Video IF	95-3097-01			
L107	Video IF	20-3587-02			
L108	Video IF (Pri)	20-3145-01			
L109	RF Choke (27uH)	20-2707		72F275AP	
L111	RF Choke (27uH)	20-2707		72F275AP	
L112	41.25MHz Trap	20-3669			
L113	Video IF (Sec)	30-3405-02			
L114	RF Choke (27uH)	20-2707		72F275AP	
L115	4.5MHz Trap	95-3118			
L116	AFC Input IF	30-3405-02			
L117	AFC Discriminator	95-3069-01			
L203	RF Choke (27uH)	20-2707		72F275AP	
L204	RF Choke (27uH)	20-2707		72F275AP	
L206	Peaking (663uH)	20-2061 #		72F684AP	
L207	RF Choke (27uH)	20-2707		72F275AP	
L208	RF Choke (27uH)	20-2707		72F275AP	
L209	RF Choke (27uH)	20-2707		72F275AP	
L211	Delay Line	20-3674			
L212	Peaking (663uH)	20-2061 #		72F684AP	

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements. Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA			
		MFGR. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C901	.47 50V NP	22-7407-01	WNP1-50	TCN501A	TVAN-1560
C903	.47 50V	22-7390	PC1-50	VTTR47B63	EV-1610
C907	.47 50V	22-7390	PC1-50	VTTR47B63	EV-1610
C909	22 16V	22-7151-05	PC25-25	VTT22A16	EV-1224
C910	33 25V	22-7142-06	PC30-25	VTT33D25	EV-1325
C1007	2.2 50V	22-7390-01	PC2-100	VTT2R2A50	EV-1517
C1020	10 25V	22-7389	PC10-25	VTT10A25	EV-1322
C1107	4.7 25V	22-7152-03	PC5-50	VTT4R7A50	EV-1319
C1111	100 25V	22-7152-08	PC100-25	VTT100G25	EV-1330
C1113	100 25V	22-7152-08	PC100-25	VTT100G25	EV-1330
C1116	220 25V	22-7152-09	PC250-25	VTT220H25	EV-1340

- # For SAFETY use only equivalent replacement part.

CAPACITORS

ITEM No.	RATING	MFGR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.015 100V 10%			WMF1S15	EWFIAT115	1PB-S15
C3	.1 50V			WMF05P1	EWFO5010	431P1049R5
C101	56 N1500 10%				*	10TCW-Q56
C102	10 NPO 5%		DTZ-10	NP010	CN0410	10TCC-Q10
C103	6 NPO 5%		DTZ-6R8	NP06P8	CN0568	10TCC-V68
C104	30 NPO 5%		DTZ-33	NP033	CN0433	10TCC-Q33
C106	10 NPO 5%		DTZ-10	NP010	CN0410	10TCC-Q10
C107	10 NPO 5%		DTZ-10	NP010	CN0410	10TCC-Q10
C108	12 NPO 5%				CN0412	10TCC-Q12
C109	4.25 NPO ±.25					
C110	6 N330 5%				*	
C111	.001		DD-102G	GP1000	GP210	5GA-D10
C113	.001		DD-102G	GP1000	GP210	5GA-D10
C114	220 10%		DD-221		GP322	10TS-T22
C115	.0015		DD-152		GP215	10TS-D15
C117	.001		DD-102G	GP1000	GP210	5GA-D10
C118	12 NPO 5%				CN0412	10TCC-Q12
C119	140 N1500 10%				*	
C120	.0015		DD-152		GP215	10TS-D15
C121	26 N075 5%				*	
C122	24 NPO 5%		DTZ-25	NP025	CN0425	10TCC-Q25
C123	.001		DD-102G	GP1000	GP210	5GA-D10
C124	100 N1500 10%		DTX-101		CN15-310	10TCW-T10
C125	.0015		DD-152		GP215	10TS-D15
C127	.0015		DD-152		GP215	10TS-D15
C128	12 NPO 5%				CN0412	10TCC-Q12
C129	.001		DD-102G	GP1000	GP210	5GA-D10
C130	12 NPO 5%		DD-102G	GP1000	CN0412	10TCC-Q12
C131	.001				GP210	5GA-D10
C132	1.8 ±.25					
C133	6 NPO 5%		DTZ-6R8	NP06P8	CN0568	10TCC-V68
C134	17 NPO 5%				CN0418	10TCC-Q18
C135	100 NPO 5%		DTZ-100	NP0100	CN0310	10TCC-T10
C136	6 NPO 5%		DTZ-6R8	NP06P8	CN0568	10TCC-V68
C137	3.9 NPO ±.5					
C138	4.25 N075 ±.25				*	
C139	.0015		DD-152		GP215	10TS-D15
C140	8 NPO 5%		DTZ-10	NP010	CN0410	10TCC-Q10
C141	.001		DD-102G	GP1000	GP210	5GA-D10
C142	4.25 N075 ±.25				*	
C143	3.6 N075 ±.25				*	
C144	180 NPO 5%		DTZ-180			10TCC-T18
C145	5 NPO 5%		DTZ-4R7	NP04P7	CN0547	10TCC-V47
C146	.001		DD-102G	GP1000	GP210	5GA-D10
C147	15 NPO 5%		DTZ-15	NP015	CN0415	10TCC-Q15
C148	220 10%		DD-221		GP322	10TS-T22
C150	.001		DD-102G	GP1000	GP210	5GA-D10
C151	.001		DD-102G	GP1000	GP210	5GA-D10
C152	10 NPO 5%		DTZ-10	NP010	CN0410	10TCC-Q10
C153	20 N150 5%				*	
C154	20 N150 5%				*	
C155	.001		DD-102G	GP1000	GP210	5GA-D10
C156	.0015		DD-152		GP215	10TS-D15
C157	.0015		DD-152		GP215	10TS-D15
C158	.47pF 10%	(1)		DPMS2P47	EWFI1A047	1PB-P47
C159	100 N1500 10%		DTX-101		CN15-310	10TCW-T10
C160	100 N1500 10%		DTX-101		CN15-310	10TCW-T10
C201	.1 200V 10%	22-4368 #		DPMS2P1	EWF2010	2PB-P10
C202	.0047 1KV	22-7272 #		GP4700	GP247	5GA-D47
C203	.0047 1KV	22-7272 #		GP4700	GP247	5GA-D47
C204	.47 50V 10%	22-5018 #		WMF05P47	EWFO5047	431P4749R5
C205	.01 1.4KV	22-6005 #			2HV110	30GA-S10

ZENITH CHASSIS
13HC10/10Z1

FOLDER 2

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C206	.022 50V	#			M192P2239R8	192P2239R8
C207	3.5 440AC +6%	22-7126-01 #			*	10TCS-Q82
C212	82 N330 5%	22-4999		N100	CN7310	10TCU-T10
C213	100 N750 5%				CN15-310	10TCW-T10
C214	100 N1500 10%	22-3383			CN15-310	10TCW-T10
C215	100 N1500 10%	22-3383			EWf2010	2PB-P10
C216	.1 200V 10%			DPMS2P1		
C217	.018 100V 10%	22-7159-19				
C218	.47 200V	22-4415				
C219	.0022 100V 10%			CD19FD222J03	SX222	MWC-222
C220	.0022 100V 10%			CD19FD222J03	SX222	MWC-222
C223	39 N075 1KV 5%	22-3015			*	
C225	.001	22-6311 #				
C228	600 2KV N2200 10%	22-6461 #				
C229	.001	22-6864 #				
C230	.001 2KV	22-4979 #			2HV210	BL-D10
C231	600 2KV N2200 10%	22-6461 #				
C232	.01 1.5KV	22-4671 #			2HV110	30GA-S10
C233	.015 1.6KV	22-7505 #				
C235	600 2KV N2200 10%	22-6461 #				
C237	.027 200V 10%	22-4104 #				
C238	.15 200V 10%	22-4158				
C239	.47 400V	22-7501			SXM110	
C402	.01 50V	22-7160-16	CPJ-103		SXM110	
C403	.01 100V 10%	22-7161-16	CPJ-103		EWf05022	431P2249R5
C404	.22 50V 10%			WMF05P22	431P2249R5	431P2249R5
C406	.22 50V 10%			WMF05P22	CN0475	10TCC-Q75
C409	75 NPO 5%			NP075	SXM215	
C410	.015 50V 10%		DTZ-75		GP356	10TS-T56
C411	560 10%		CPJ-153		EWf1A147	1PB-S47
C601	.047 100V 10%		DD-561		EWf1A015	1PB-P15
C602	.15 100V 10%				EWf1A147	1PB-S47
C702	.047 100V				MWC-222	MWC-222
C703	.0022 100V 10%				CD19FD222J03	1PB-P47
C704	.47 100V 10%				DPMS2P47	
C705	.015 50V	22-7159-18	CPJ-153		SXM215	
C706	.015 50V	22-7159-18	CPJ-153		SXM215	
C707	.047 100V				EWf1A147	1PB-S47
C708	.47 100V 10%				EWf1A047	1PB-P47
C711	750 10%	22-5585				
C801	.0027 10%		DD-272		GP227	5GA-D27
C802	470 1KV 10%		DD-471		GP347	10TS-T47
C803	.0033 10%		DD-332		GP233	5GA-D33
C804	.22 200V				EWf6022	6PS-P22
C805	470 1KV 10%		DD-471		GP347	10TS-T47
	.1 50V	22-7445-28 (2)			SXL010	
C806	.1 50V	22-7445-28			SXL010	
C807	.1 50V	22-7445-28			SXL010	
C809	.01		DC-103	MGP01	TA110	TG-S10
C811	.0068 125V +	22-7457				
C812	470 1KV 10%	(2)	DD-471	GP470	GP347	10TS-T47
C902	.01		DC-103	MGP01	TA110	TG-S10
C904	.01 100V		CPJ-103		SXM110	
C905	.001 1KV 10%		DD-102		GP210	10TS-D10
C906	43 NPO 5%		DTZ-47	NP047	CN0447	10TCC-Q47
C908	.22 100V 10%			DPMS2P22	EWf1A022	1PB-P22
C911	.001 1KV 10%		DD-102		GP210	10TS-D10
C913	.001 1KV 10%		DD-102		GP210	10TS-D10
C194	.001 1KV 10%		DC-103	MGP01	TA110	TG-S10
C1001	.01				*	10TCS-T18
C1003	180 N330 5%	22-7394			CN15-347	10TCW-T47
C1004	470 N1500 5%		DTX-471		CN0475	10TCC-Q75
C1005	75 NPO 5%		DTZ-75	NP075	CN0468	10TCC-Q68
C1006	65 NPO 5%		DTZ-68	NP068	GP322	10TS-T22
C1008	220 10%		DD-221		GP210	10TS-D10
C1009	.001 1KV 10%	(1)	DD-102		GP210	10TS-D10
C1010	.047 100V				EWf1A147	1PB-S47
C1011	470 1KV 10%		DD-471	GP470	GP347	10TS-T47
C1012	470 1KV 10%		DD-471	GP470	GP347	10TS-T47
C1013	.047 100V				EWf1A147	1PB-S47
C1014	.047 100V				EWf1A147	1PB-S47
C1015	50 5%		DTZ-50	NP050	CN0450	10TCC-Q50
C1016	12 N080 5%	22-2379				10TCU-Q12
C1017	50 NPO 5%		DTZ-50	NP050	CN0450	10TCC-Q50
C1018	65 N1500 5%				CN15-468	10TCW-Q68
C1019	.047 100V				EWf1A147	1PB-S47
C1021	.047 100V				EWf1A147	1PB-S47
C1022	290 N750 5%				CN7327	10TCU-T27
C1023	120 N750 100V 5%		DTN-120			10TCU-T12
C1024	43 NPO 5%		DTZ-47	NP047	CN0447	10TCC-Q47
C1025	.01		DC-103	MGP01	TA110	TG-S10
C1026	.033 100V 10%					
C1027	160 N750 5%		DTN-150	N150	CN7315	10TCU-T15
C1028	470 100V 5%			CD15FD471J03	SX347	MWA-471
C1029	.0039 1KV 10%					

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

Replacement parts shown may be superseded by the availability of newly introduced replacements.
Have your local distributor check Sams COUNTER FACTS® for the most up-to-date replacement.

CAPACITORS (cont)

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA			
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.
C1030	12 5%		DTN-120		CN0412	10TCC-Q12
C1031	120 N750 100V 5%				10TCU-T12	10TCU-T12
C1032	65 N1500 5%		DC-103	MGP01	CN15-468	10TCW-Q68
C1033	.01			DPMS2S47	TA110	TG-S10
C1034	.047 100V		DC-103	MGP01	EWf1A147	1PB-S47
C1037	.01				TA110	TG-S10
C1101	6 NPO +.25	22-2381				
C1102	15 NPO 10%		DTZ-15	NP015	CN0415	10TCC-Q15
C1103	12 NPO 5%				CN0412	10TCC-Q12
C1104	.047 100V			DPMS2S47	EWf1A147	1PB-S47
C1105	.047 100V			DPMS2S47	EWf1A147	1PB-S47
C1106	120 N030 5%	22-5912				10TCM-T12
C1108	.15 100V 10%			DPMS2P15	EWf1A015	1PB-P15
C1109	.0033 10%		DD-332	GP3300	GP233	5GA-D33
C1110	.22 50V 10%			WMF05P22	EWf05022	431P2249R5
C1112	220 10%		DD-221		GP322	10TS-T22
C1114	.0033 10%		DD-332	GP3300	GP233	5GA-D33
C1115	.15 12V				MAG12015	HY-365
C1201	65 NPO 5%		DTZ-68	NP068	CN0468	10TCC-Q68
C1202	65 NPO 5%		DTZ-68	NP068	CN0468	10TCC-Q68
C1203	65 NPO 5%		DTZ-68	NP068	CN0468	10TCC-Q68
C1204	.01 1.5KV				2HV110	30GA-S10
C1205	.01 1.5KV				2HV110	30GA-S10
C1206	.001 1KV 10%		DD-102		GP210	10TS-D10
C1207	.1 50V 10%			WMF05P1	EWf05010	431P1049R5
C1208	.1 50V 10%			WMF05P1	EWf05010	431P1049R5

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

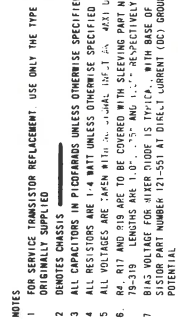
For SAFETY use only equivalent replacement part.

(1) Used in some versions.

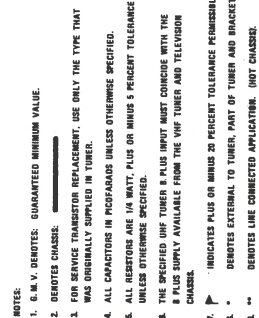
(2) Used in Module 9-90-01B.

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

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA				
			MFR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	MALLORY PART No.	TRW PART No.
R125	Detector Level	2000	63-9697-06	T-2500 (3)	C-252 (3)	MTC23L4	U201R252B
	Peak Picture	5000	63-10595-05				
R210	(Sharpness)		(6)				
	Volume/Switch	50K	63-10598-01#				
	Volume/Switch	50K	63-10601-07#				
			(20)				
R225	Brightness	5000	63-10595-01	F1-5000,SNK012	B47-5000-S or [NP-5000-S, NML-A-300,TT-2]	PTA53L or [RU53L, SL37,SN1000]	BU11,CF8,SS6A
R227	Picture	5000	63-10595-03	F2-5000,SNK012		RU53A,SL37,SN1000 or [UA53A,SN1000]	BU11,CF60,SS6A
R237	Focus	20Meg	63-10614#				
R239	Brightness Limiter	50 2W	63-8989#				
R250	Color Level	5000	63-10595-01	F1-5000,SNK012	B47-5000-S or [NP-5000-S, NML-A-300,TT-2]	PTA53L or [RU53L, SL37,SN1000]	BU11,CF8,SS6A
		5000	(19)				
R253	Preset Color Level	250K	63-10595-02	F1-250K,SNK012	B47-250K-S or [NP-250K-S, NML-A-300,TT-2]	RU254L,SL37,SN1000 or [UA254L,SN1000]	BU11,CF15,SS6A
			(19)				
R416	Tint	250K	63-10596-02				
R602	Preset Tint	3000	63-9697-01	T-2500 (3)	C-252 (3)	MTC33L4	X201R302B (3)
	AGC Delay	60	63-10530	V-60 (18)	U39-75 (18)	MRC60P (18)	110-60 (18)
R717	Blue/Red Vert Lines	350K	63-10585-01				
R734	(Left Side)	150K	63-10537	F1-150K,SN100, AK-40	NP-150K-S, UP-N-010,TT-3	MTC3253L4	BU11,CF72,SS6A, DC2
R812	Vert Size	3000	10532,C				
R901	Brightness Range	20K	63-9697	T-20K (3)	C-253 (3)	MTC24L4	U201R253B
			(6)				
R1002	Color Killer	100K	63-9697-15	T-100K (3)	C-104 (3)	MTC15L4	U201R104B
	(3.58MHz Bandpass)						
	Color Killer	100K	63-9697-04	T-100K (3)	C-104 (3)	MTC15L4	U201R104B
	(3.58MHz Bandpass)		(6)				
R1009	Cross-Talk	10K	63-10531				
R1015	ACC	20K	63-9697-14	T-20K (3)	C-253 (3)	MTC24L4	U201R253B
	ACC	20K	63-9697	T-20K (3)	C-253 (3)	MTC24L4	U201R253B
			(6)				
R1018	APC	20K	63-9697-14	T-20K (3)	C-253 (3)	MTC24L4	U201R253B
	APC	20K	63-9697	T-20K (3)	C-253 (3)	MTC24L4	U201R253B
			(6)				
R1213	Red Tracking	180	63-9697-19				
	Red Tracking	250	63-9697-07				
			(6)				



Courtesy of the Manufacturer

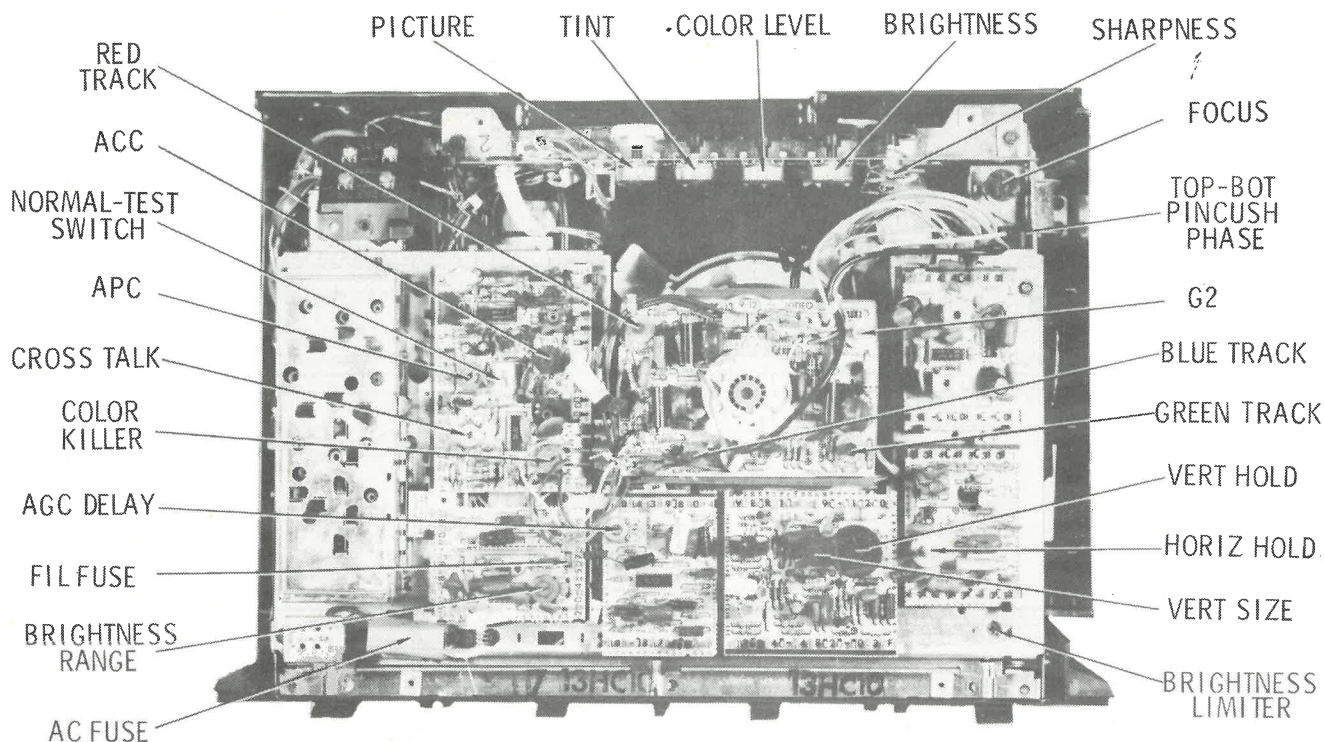


"THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED. THIS WAY IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES INTO THE SETS IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED"

175-1950
175-1951
175-1952
175-1953

FIG. 63 SCHEMATIC DIAGRAM UHF TUNERS

175-2225
175-2225-01



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Disconnect antenna leads and remove five screws holding cabinet back. Remove back.

Note: Most components can be serviced without chassis removal.

Remove all knobs. Disconnect CRT Socket, deflection yoke and degaussing coil. Remove four screws from bottom of set holding chassis. Remove five screws holding tuner assembly and two more screws holding chassis. Slide chassis

partially from cabinet to allow access to components. Disconnect H-V anode lead, speaker wires, and ground straps. Slide chassis from cabinet.

CRT REMOVAL

Follow "Chassis Removal" procedure and lay set face down on a soft protective surface. Remove convergence and deflection assembly from CRT neck. Remove four screws holding CRT. Remove degaussing coil. Lift CRT from cabinet front. Do not lift CRT by the neck.

SERVICING IN THE FIELD

CRT IMPLOSION PROTECTION AND CLEANING

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

FUSE DEVICES

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

A 4-amp fuse is used for CRT filament protection. (See Placement Chart.)

VHF TUNER

The fine tuning mechanically engages oscillator slug for adjustment (one slug for each channel).

UHF TUNER

The UHF tuner employs a detent mechanism for channel selection. Fine tuning is adjusted by rotating the fine tuning knob.

HORIZONTAL OSCILLATOR

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

FOCUS

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

AGC

The AGC may be varied by an AGC delay control. (See photo, Cabinet-Rear View.)