

PHOTOFACT® Folder

with CIRCUITRACE™

For Supplier Address See PHOTOFACT Index

ZENITH
CHASSIS 12KB4XZENITH
CHASSIS 12KB4X

MODEL	CHASSIS
M1 20C	12KB4X
M1 21A,S,Y	12KB4X
M1 28W	12KB4X
M820S	12KB4X



Model M121Y

ZENITH
CHASSIS 12KB4X

SAFETY PRECAUTIONS

See page 19,20.

INDEX

	Page		Page
Alignment		Photos (Continued)	
TV.....	4	Tuner Assembly.....	8
Disassembly Instructions.....	21	Placement Chart.....	5
Parts List		Resistance Measurements.....	16
TV.....	9 thru 13	Safety Precautions.....	19,20
UHF Tuner.....	20	Schematics	
Photos		TV.....	2
Cabinet-Rear View.....	21	UHF Tuner.....	20
CRT Socket Board.....	8	Servicing in the Field.....	21
Main Board.....	3,6,7,14,15,17,18	Troubleshooting Check Chart.....	16
Main Board-Shield Location.....	5		

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. 81PC2708

Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1981 Howard W. Sams & Co., Inc., Indianapolis, Indiana 46206. Printed in U. S. of America

DATE 1 -81

SET 1962 FOLDER 3

SAFETY PRECAUTIONS
PRODUCT SAFETY SERVICING GUIDELINES
FOR ZENITH 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.

CAUTION: NEVER ATTEMPT TO SERVICE A 12KB1X CHASSIS THAT IS CONNECTED DIRECTLY TO AN AC LINE. MAKE SURE IT IS CONNECTED THROUGH AN ISOLATION TRANSFORMER.

NO MATTER WHICH WAY THE AC PLUG IS INSERTED, A POTENTIAL SHOCK HAZARD IS PRESENT AT CHASSIS GROUND UNLESS AN ISOLATION TRANSFORMER IS USED DURING SERVICING.

One side of the AC input is fused; so, there's a 50% chance of blowing a fuse, or a 50% chance of destroying components and/or test equipment if an isolation transformer is not used. Therefore, DO NOT SERVICE WITHOUT AN ISOLATION TRANSFORMER.

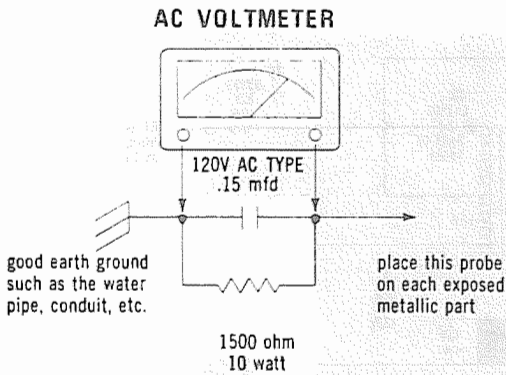
The chassis consists of a single circuit board mounted horizontally in the bottom of the cabinet. All circuit parts are mounted on the board except the Tuners, Customer controls, CRT and Deflection Yoke. The Horizontal Sweep Transformer is also mounted on the chassis circuit board. The board can be slid out of the cabinet without disconnecting and the TV receiver will operate with the board exposed. Screws are not required to hold the board in place. It slides into slots which are molded into the cabinet, and the cabinet back holds it in place.

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 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 uncover 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 "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 0.15 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 0.15 mfd. capacitor. Reverse the AC plug and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.75 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 PROTECTION

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 Zenith replacement tubes.

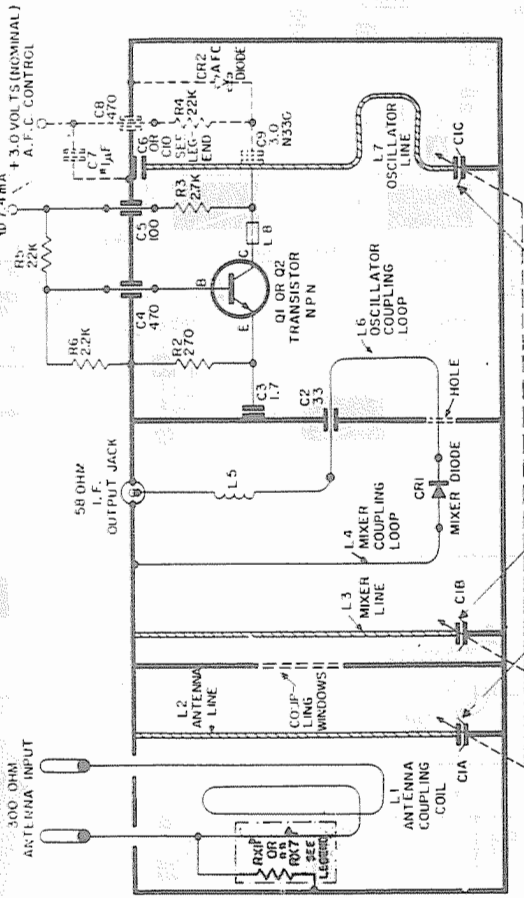
SUBJECT: X-RADIATION

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 HV is at the factory-specified level. It is only when the HV is excessive that X-radiation can be generated. The basic precaution which must be exercised is to keep the HV at the factory-recommended level. 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, also, under certain circumstances, may produce radiation in excess of desirable levels.
2. Only Zenith specified CRT anode connectors must be used.
3. It is essential that the serviceman has available at all times an accurate high voltage meter. The calibration of this 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 monochrome 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 reg-

- ulation is always checked as a standard servicing procedure, and that the reason for this prudent routine be clearly understood by everyone. It is important to record an accurate high voltage reading 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. In all earlier model receivers which used a high voltage rectifier vacuum tube, that tube should be replaced only with a Zenith recommended replacement type or a Zenith recommended solid state rectifier replacement. The high voltage compartment and all metal shields, where used, must be kept in place whenever the chassis is operating. If a shield is missing, it should be replaced at once as a standard servicing procedure.

SUBJECT: TIPS ON PROPER INSTALLATION

1. Never install any receiver in a closed-in recess, cubbyhole or closely fitting shelf space.
2. Never install 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.

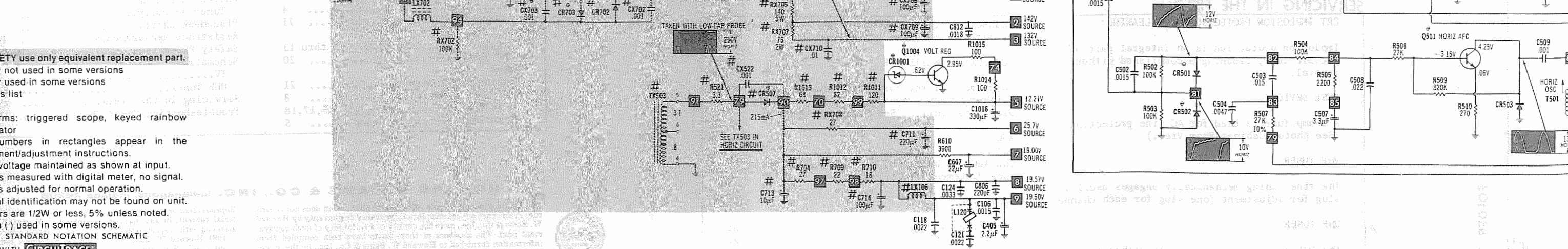
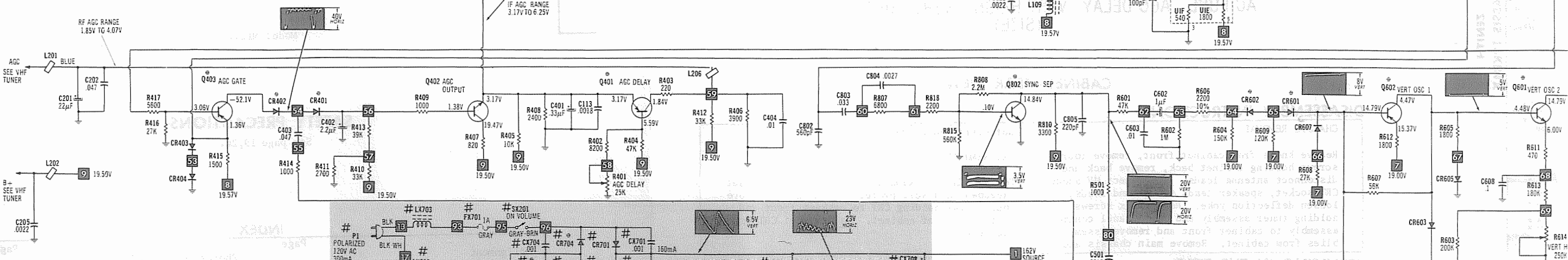
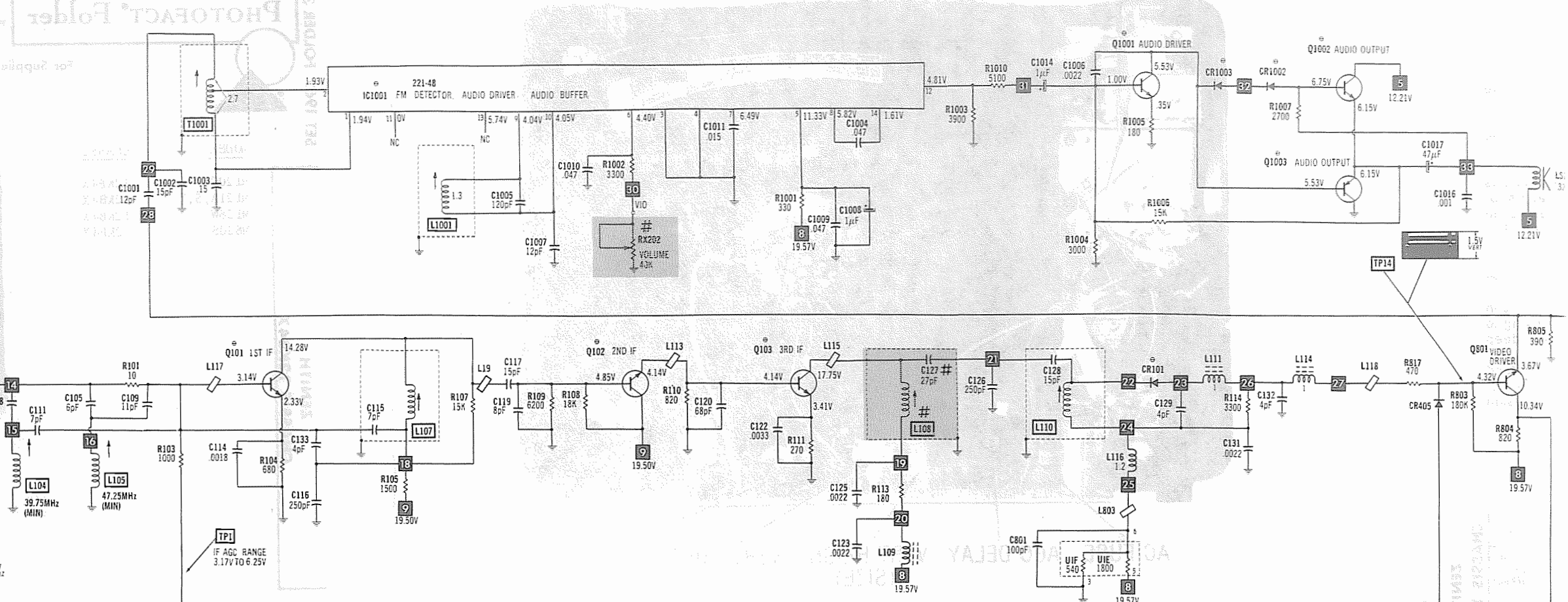
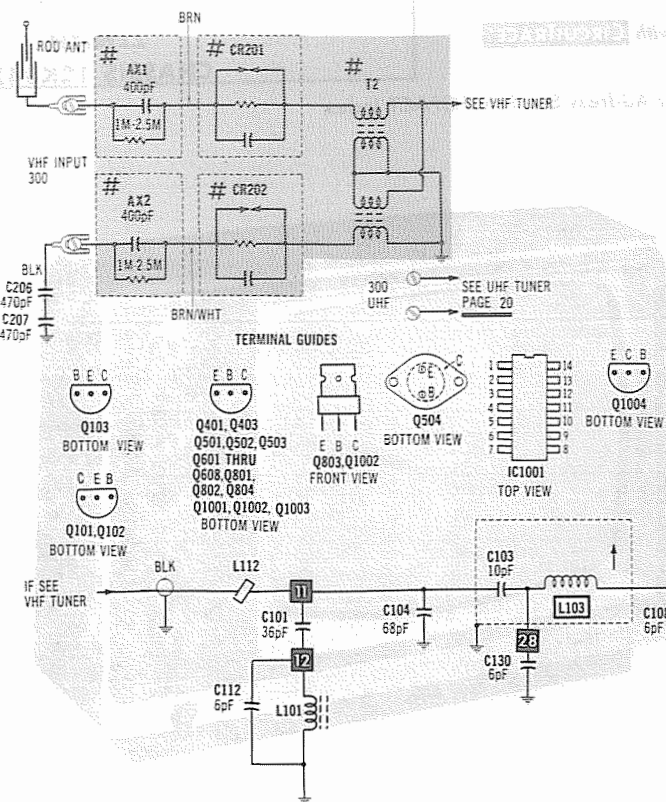


ITEM NO.	PART NUMBER	DESCRIPTION	RATING
C1A	PART OF	ANTENNA TUNING CAPACITOR	PART OF
C1B	ROTOR	MIXER TUNING CAPACITOR	ROTOR
C1C	ASSEMBLY	OSCILLATOR TUNING CAPACITOR	ASSEMBLY
C2	22-5887	33pF F.T. CAPACITOR ±10% LEADLESS (MINIATURE)	300 V
C3	22-6400	1.7pF LEADLESS DISC CAPACITOR P120	500 V
C4	22-5567	470 pF F.T. CAP. G.M.V. LEADLESS (MINIATURE)	100 V
C5	22-5571	100 pF F.T. CAP. ±10% ±0.5	500 V
C6	22-6859	9.0 pF ±0.5pF LEADLESS DISC CAP. N22C (FOR USE IN AFC TUNERS ONLY)	500 V
C7	22-7145	1.0pF ELECTROLYTIC ±10% ±0.5	50 V
C8	22-6858	470 pF F.T. CAP. G.M.V. (MINIATURE)	500 V
C9	22-6870	3.0 pF ±0.25 pF LEADLESS CAP. N330	500 V
C10	22-8792	10.5 pF ±0.5pF LEADLESS CAP. N150	500 V
DRX1	63-10526	1.5 MEGOHM RESISTOR ±20% (FOR COLD CHASSIS TUNERS ONLY)	1/2 W
R2	63-8917	270 OHM RESISTOR ±5% FILM TYPE	1/4 W
R3	63-8798	2.7K OHM RESISTOR ±5% FILM TYPE	1/4 W
R4	64-8803	22K OHM RESISTOR ±5% FILM TYPE	1/4 W
R5	63-8803	22K OHM RESISTOR 5% FILM TYPE	1/4 W
R6	63-8792	2.2K OHM RESISTOR ±5% FILM TYPE	1/4 W
DRX7	63-10526-02	3.3 MEGOHM RESISTOR ±20% (FOR HOT CHASSIS TUNERS ONLY)	1/2 W
L1	2-1535	ANTENNA COUPLING COIL	
L2		ANTENNA LINE	
L3		MIXER LINE	
L4	22-1549	MIXER COUPLING LOOP	
L5	22-3423	I.F. OUTPUT COIL	
L6	2-1541	OSCILLATOR COUPLING LOOP	
L7		OSCILLATOR LINE	
L8	143-404	IRON CORE READ	
FR1	103-01	DIODE	
FR2	103-404	A.F.C. DIODE	
Q1	121-551	TRANSISTOR, SILICON NPN, MOTOROLA, PLASTIC	
Q2	121-1001	TRANSISTOR, SILICON, NPN, NATIONAL, PLASTIC	

ZENITH
CHASSIS 12KB1X

FOLDER 3

UHF TUNER



For SAFETY use only equivalent replacement part.

--- Circuitry not used in some versions

--- Circuitry used in some versions

⊕ See parts list

⊕ Ground

Waveforms: triggered scope, keyed rainbow generator

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

Supply voltage maintained as shown at input.

Volts measured with digital meter, no signal.

Controls adjusted for normal operation.

Terminal identification may not be found on unit.

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

Value in () used in some versions.

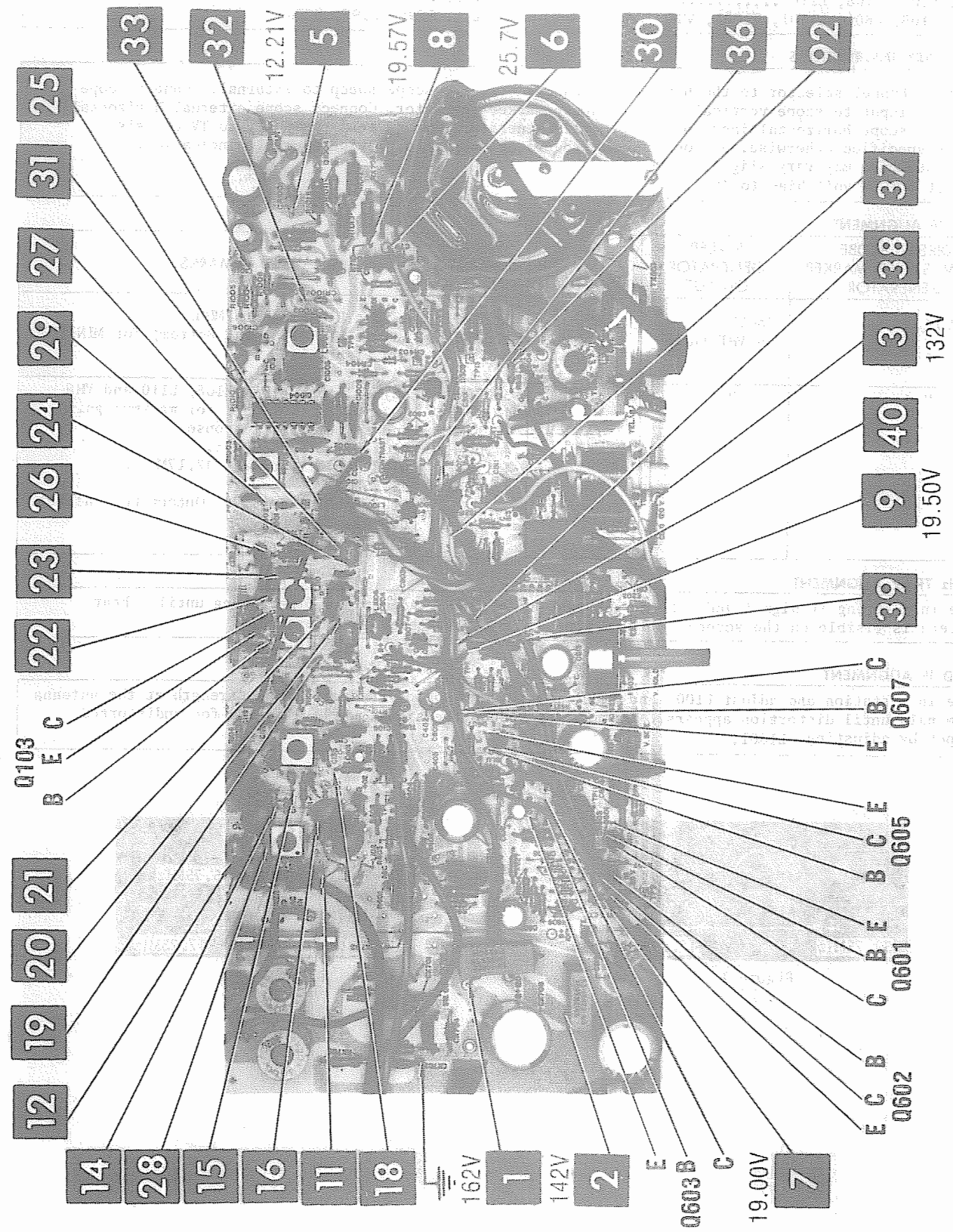
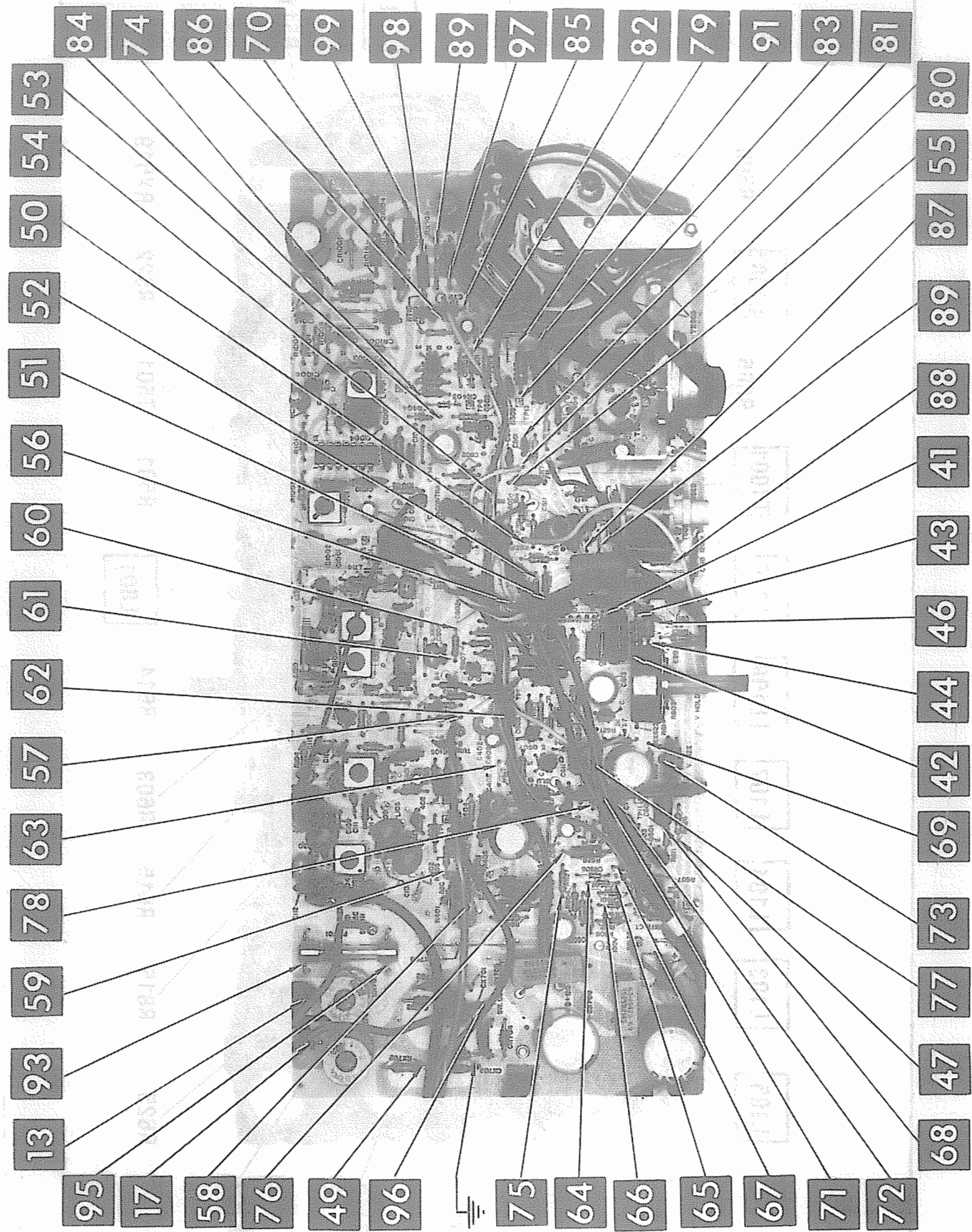
A PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH CIRCUITACE

© Howard W. Sams & Co., Inc. 1981



MAIN BOARD



A Howard W. Sams CIRCUITRACE Photo

MAIN BOARD

ZENITH
CHASSIS 12KB4X

FOLDER 3

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
VX201	42K	220K	FIL	FIL	42K	10M	0							
IC1001	INF	INF	0	0	967	13K	9530	INF	6840	6840	INF	2930	6770	85K
ITEM	E	B	C		ITEM	E	B	C		ITEM	E	B	C	
Q101	680	2980	2140		Q504	0	1.6	10K(1)		Q801	290	3820	1467	
Q102	820	4650	650		Q601	244K	1.3M(2)	1.3M(2)		Q802	0	437K	3900	
Q103	270	820	264		Q602	6340	1.3M(2)	1.3M(2)		Q803	165	440	18K(1)	
Q401	2000	13K	3690		Q603	INF(2)	867K	122K		Q804	INF(2)	10K	972	
Q402	2000	42K	1457		Q604	15K	120K	INF(2)		Q1001	180	3000	INF(2)	
Q403	2170	4770	INF(2)		Q605	0	15K	INF(2)		Q1002	18K	3670	987	
Q501	270	320	1M		Q607	INF(2)	INF(2)	0		Q1003	18K	INF(2)	0	
Q502	1587	INF(2)	1220		Q608	INF	3670	845		Q1004	0	INF(2)	1173	
Q503	0	220	1647											

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

TROUBLESHOOTING CHECK CHART

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

PICTURE or SOUND

NO PIC, NO SOUND, NO RASTER: Fuse,CR701 Thru CR704.

NO PIC, NO SOUND, HAS RASTER: Tuner,1st/2nd/3rd IF,CR101,Video Driver.

NO PIC, NO SOUND, HAS SNOW: Tuner,AGC Delay/Output/Gate,CR401,CR402.

NO PIC, HAS SOUND, NO RASTER: Video Output, CR802,CRT.

NO PIC, HAS SOUND, HAS RASTER: Video Output, CR802.

HAS PIC, NO SOUND: FM Detector,Audio Driver,Audio Buffer(IC1001),Audio Driver/Outputs.

OVERLOADED PICTURE: AGC Delay/Output/Gate.
LOW OR EXCESSIVE BRIGHTNESS: Video Output, CR802.

SWEEP

NO RASTER, HAS SOUND: HV Rect(TX503),CRT.
NO RASTER, NO SOUND: Horiz Osc/Driver/Output.

NO VERT DEFLECTION: Vert Osc 1 & 2/Vert Amps/Outputs,CR604.

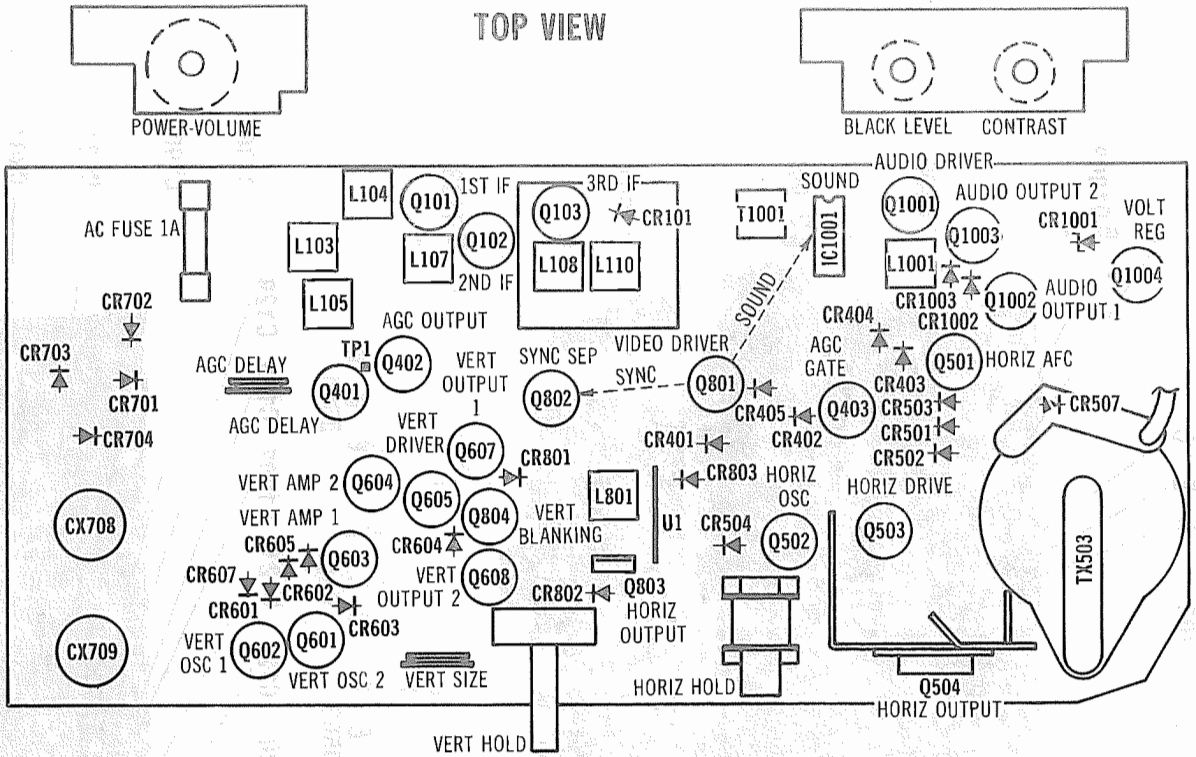
POOR VERT LIN OR FOLDOVER: Vert Amps/Outputs, CR604.

POOR HORIZ LIN OR FOLDOVER: Horiz Driver/Output.

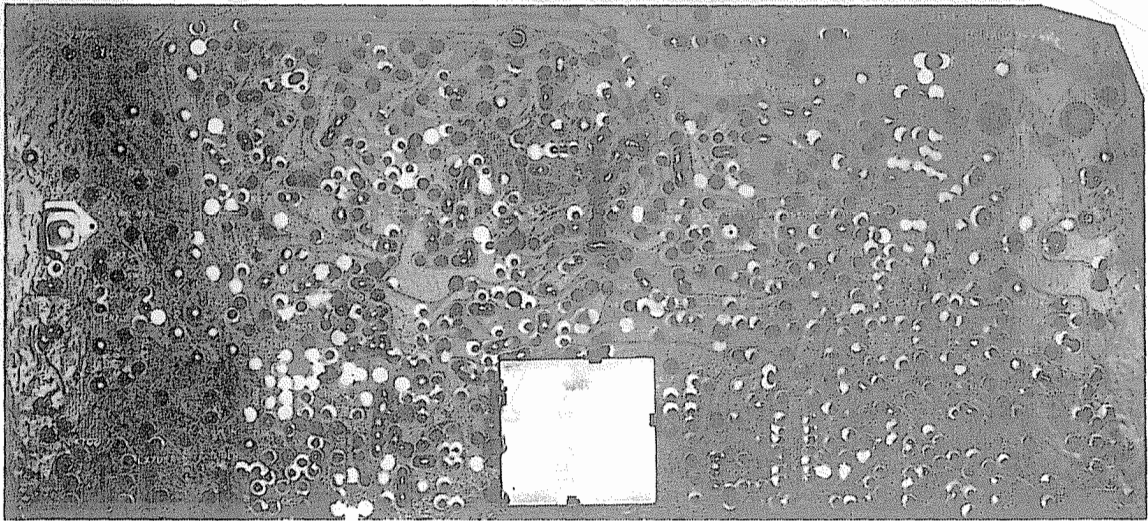
NARROW PICTURE: Horiz Driver/Output.
VERT OFF FREQUENCY: Vert Osc 1 & 2.
HORIZ OFF FREQUENCY: Horiz Osc,CR504.

SYNC

NO VERT SYNC: Vert Osc 1 & 2.
NO HORIZ SYNC: Horiz Osc/AFC,CR501,CR502.
NO VERT/HORIZ SYNC: Sync Sep.

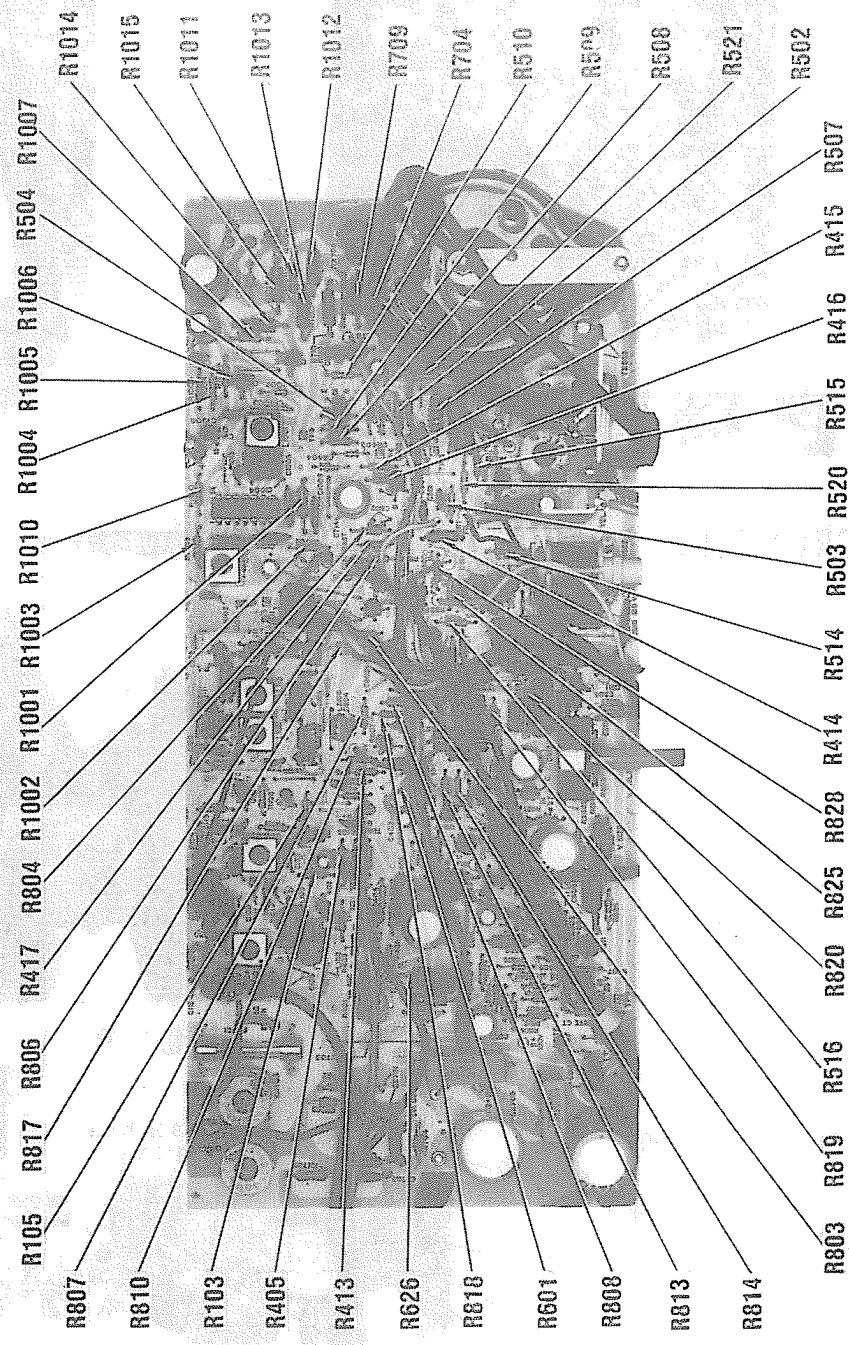
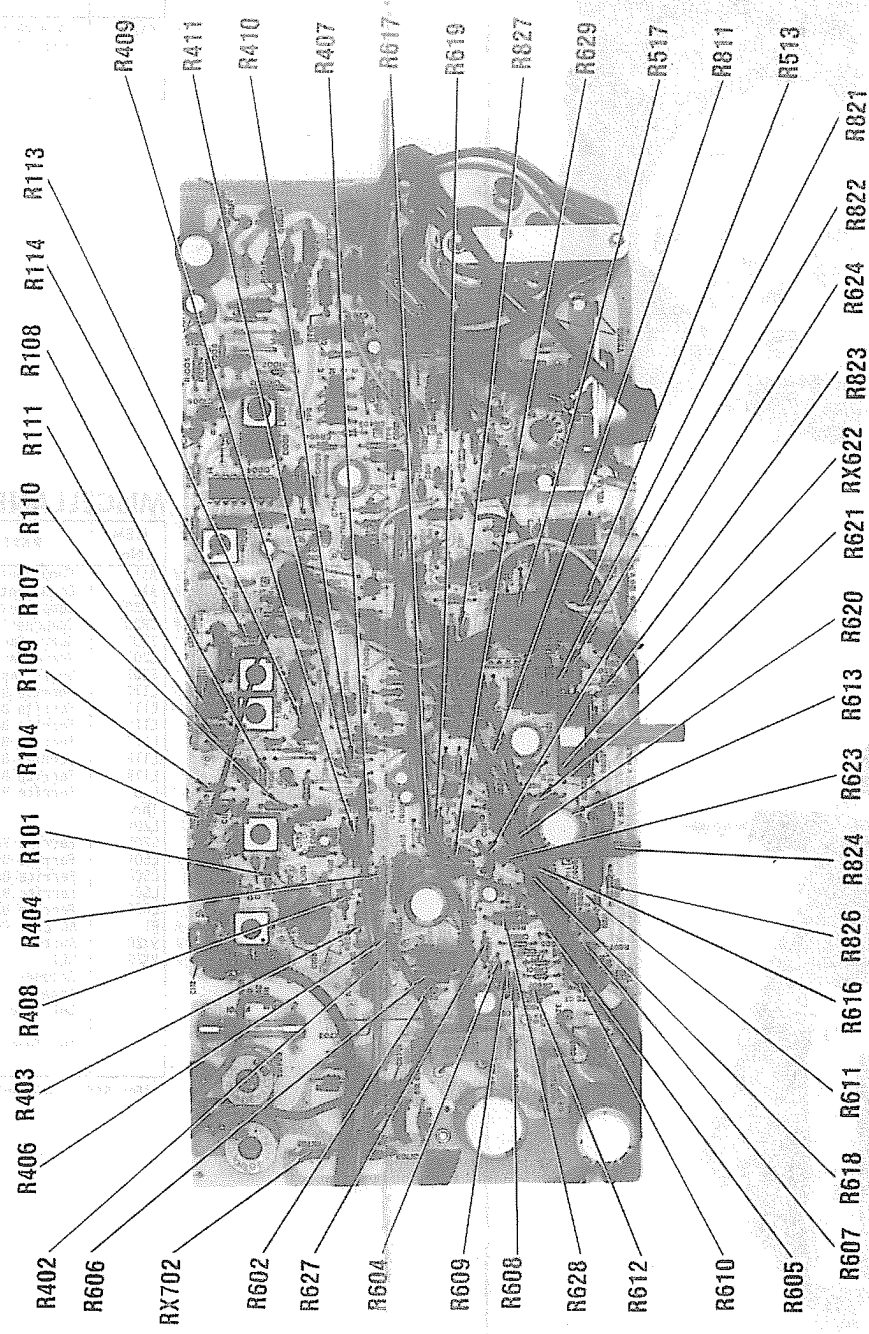
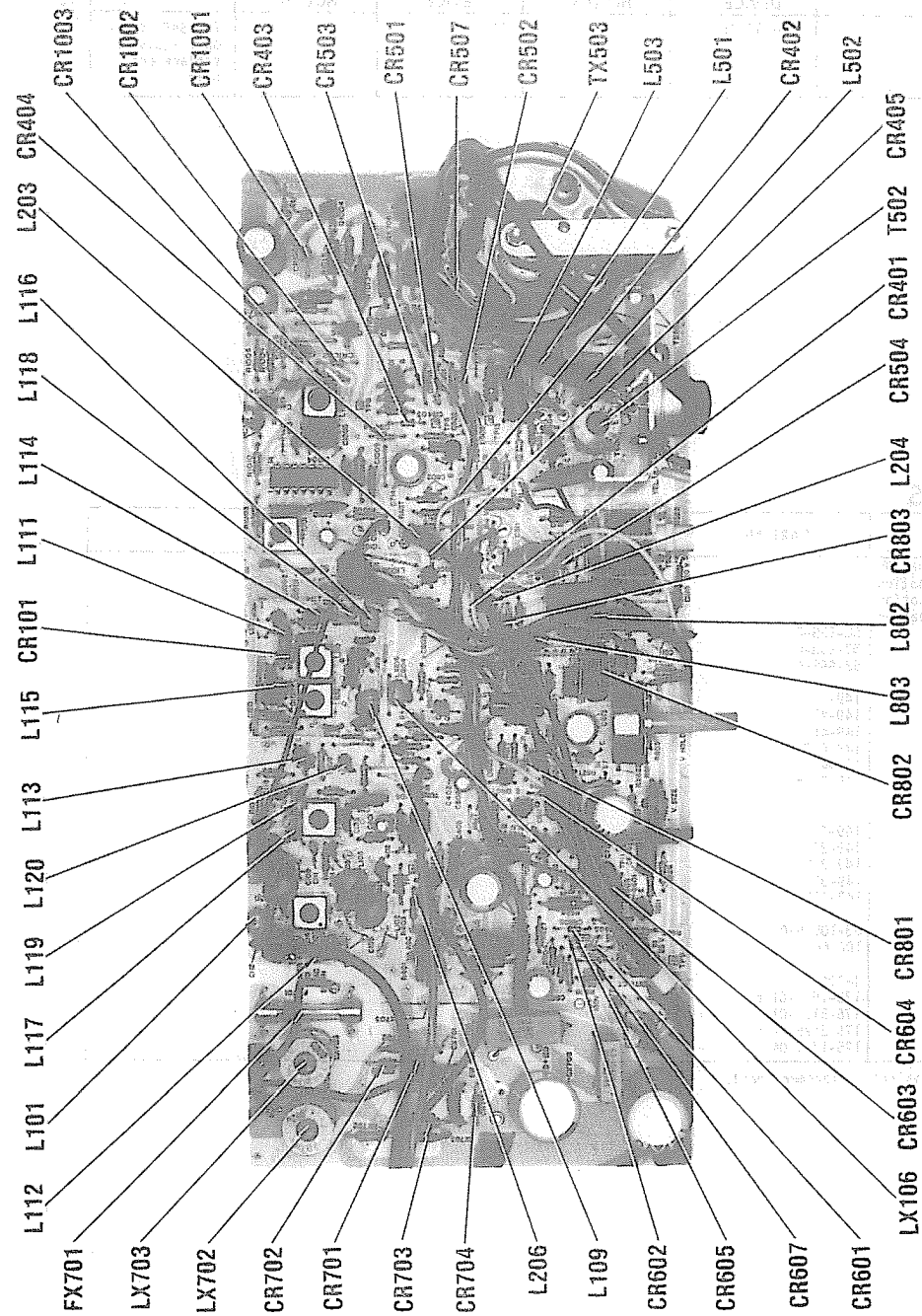


PLACEMENT CHART



MAIN BOARD-SHIELD LOCATION

MAIN BOARD



MAIN BOARD

ZENITH
CHASSIS 12KBX

FOLDER 3

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)

Table with 5 columns: ITEM No., FUNCTION, REPLACEMENT DATA (PART No., OTHER IDENTIFICATION, MILLER PART No.), and REMARKS. Rows include L101, L103, L104, L105, L107, L108, L109, L110, L111, L114, L116, L801, L802, L1001, LX106, LX702, LX703, T2, and T1001.

For SAFETY use only equivalent replacement part. (1) Includes 10pF capacitor. (2) Includes 7pF capacitor. (3) Includes 27pF capacitor. (4) Includes 15pF capacitor.

COILS & TRANSFORMERS (Sweep Circuits)

Table with 7 columns: ITEM No., FUNCTION, REPLACEMENT DATA (MFGR. PART No., OTHER IDENTIFICATION, MILLER PART No., THORDARSON PART No., TRIAD PART No.). Rows include T501, T502, TX201, and TX503.

For SAFETY use only equivalent replacement part.

SPEAKER

Table with 4 columns: ITEM No., TYPE, REPLACEMENT DATA (MFGR. PART No., QUAM PART No.), and NOTES. Row includes LS201.

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

Table with 2 columns: Description and Replacement Data. Rows include High Voltage Lead, Shielded Hook-up Wire, General-use Unshielded Hook-up Wire, 300-Ohm Tuner Input Lead, 300-Ohm Antenna Lead-in, and Antenna Rotor Cable.

SEMICONDUCTORS (Select replacement transistor for best results)

Table with 11 columns: ITEM No., TYPE No., MFGR. PART No., REPLACEMENT DATA (GENERAL ELECTRIC PART No., NEW-TONE PART No., RCA PART No., ECG PART No., THORDARSON PART No., WORKMAN PART No., ZENITH PART No., MOTOROLA PART No.). Rows include CR101, CR401, CR402, CR403, CR404, CR405, CR501, CR502, CR503, CR504, CR507, CR601, CR602, CR603, CR604, CR605, CR607, CR701, CR702, CR703, CR704, CR801, CR802, CR803, CR1001, CR1002, CR1003, IC1001, Q101, Q102, Q103, Q401, Q402, Q403, Q501, Q502, Q503, Q504, Q601, Q602, Q603, Q604, Q605, Q607, Q608, Q801, Q802, Q803, Q804, Q1001, Q1002, Q1003, Q1004.

For SAFETY use only equivalent replacement part. * Lead configuration may vary from original. + Rotate 180° to conform with original lead configuration. (7) Two required - select matched pair.

ZENITH CHASSIS 12KB4X

FOLDER 3

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			
		MFR. PART No.	MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C201	22 16V	22-7376	TT15X20A	QCP-4162-01	TVA-1147
C401	.33 50V	22-7390-05	TDC33AM050EL	QCP-2107-01	SD50-R339
C402	2.2 25V	22-7389-03	YTT2R2A50	QCP-3114-01	EV-1617.1
C405	2.2 25V	22-7389-03	YTT2R2A50	QCP-3114-01	EV-1617.1
C507	3.3 50V	22-7390-03	YTT3R3A50	QCP-3118-01	EV-1618.1
C513	22 25V	22-7152-05	YTT22D25	QCP-3137-01	EV-1424
C602	1 50V	22-7153	VTT1A50	QCP-3107-01	EV-1615
C607	22 25V	22-7152-05	VTT22D25	QCP-3137-01	EV-1424
C611	22 16V	22-7151-05	VTT22D16	QCP-3137-01	EV-1224
C613	22 100V	22-7172-06			
C614	1000 10V	22-7150-12	VTT100Q10	QCP-3195-01	EV-1161
C616	1 25V	22-7389-02	VTT1A50	QCP-3107-01	EV-1615
C711	220 35V	22-7154-09	VTT220K35	QCP-3175-01	EV-1440
C713	10 50V	22-7153-04	VTT100K50	QCP-3132-01	EV-1622
C714	100 25V	22-7152-08	VTT100Q25	QCP-3168-01	EV-1331
C813	1 250V	22-7371	TC56A		TVA-1540*
C1008	1 50V	22-7153	VTT1A50	QCP-3107-01	EV-1615
C1014	1 50V	22-7153	VTT1A50	QCP-3107-01	EV-1615
C1017	47 16V	22-7151-07	VTT47D16	QCP-3154-01	EV-1226
C1018	330 25V	22-7152-10	VTT330L25	QCP-3181-01	EV-1345
CX708	100 180V	22-7678			
CX709	100 180V	22-7678			

For SAFETY use only equivalent replacement part.
* Axial replacement for radial device.

CAPACITORS

ITEM No.	RATING	MFR. PART No.	REPLACEMENT DATA		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C101	36 NPO 50V 5%		CN0439		10TCC-Q39
C103	10 50V		CN0410		10TCC-Q10
C104	68 NPO 50V 5%		CN0468		10TCC-Q68
C105	6pF N150 50V \pm .25				10TCP-V68
C106	.0015 50V		GP215	QCP-5168-01	5GA-D15
C108	6pF N150 50V \pm .25		*		10TCP-V68
C109	11 N150 50V \pm .25		*		10TCP-Q12
C111	7pF N220 50V \pm .25	22-7637-06A	*		
C112	6pF N150 50V \pm .5		CP218		10TCP-V68
C113	.0018 50V 10%		GP219		10TS-D18
C114	.0018 50V 10%		*		10TS-D18
C115	7pF 50V		*		10TCC-V82
C116	250 N220 50V 10%	22-7679-01			
C117	15 N330 50V 5%				10TCS-Q15
C118	.0022 50V		GP222	QCP-5172-01	5GA-D22
C119	6pF N150 50V \pm .25		*		10TCP-V82
C120	68 NPO 50V 5%		CN0468		10TCC-Q68
C121	.0022 50V		GP222	QCP-5172-01	5GA-D22
C122	.0033 50V		GP233	QCP-5176-01	5GA-D33
C123	.0022 50V		GP222	QCP-5172-C1	5GA-D22
C124	.0033 50V		GP233	QCP-5176-C1	5GA-D33
C125	.0022 50V		GP222	QCP-5172-01	5GA-D22
C126	250 N220 50V 5%	22-7679-01	*		
C127	27 50V				
C128	15 50V		CN0415		10TCC-Q15
C129	4pF N150 50V \pm .5		*		
C130	6pF N150 50V \pm .25		*		10TCP-V68
C131	.0022 50V		GP222	QCP-5172-01	5GA-D22
C132	4pF N150 50V \pm .5	22-7646-02A			
C133	4pF N150 50V \pm .5	22-7646-02A			
C202	.047 100V		EWFA1A47		1PB-S47
C204	39 2KV 10%	22-7693			
C205	.0022 50V		GP222	QCP-5172-01	5GA-D22
C206	470 50V		GP347		10TS-T47
C207	470 50V		GP347		10TS-T47
C403	.047 50V		MA65015		
C404	.01 50V		MA65011		
C501	.0015 50V 10%		GP215		10TS-D15
C502	.0015 50V 10%		GP215		10TS-D15
C503	.015 50V		MA650115		
C504	.0047 50V 10%		JE247		10SS-S47
C508	.022 50V		TA125	QCP-5217-01	TC-S25
C509	.001 50V 10%		GP210		10TS-D10
C510	.0033 100V 10%		EWFA1A233		1PB-D33
C511	.0033 50V 10%		EWFA1A233		1PB-D33
C512	220 50V		GP322		10TS-T22
C514	.0039 1KV		GP239		5GA-D39
C603	.01 50V 10%		JE110		2SS-S10
C608	.1 50V 5%	22-7714			
C609	.1 50V 10%		EWFO5010		431P049R5
C615	.1 50V 10%		EWFO5010		431P049R5
C617	.01 50V		MA65011		
C801	100 NPO 50V 10%		CN0310		10TCC-T10

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		
			MALLORY PART No.	SPRAGUE PART No.	
				Q-LINE	GENERAL LINE
C802	560 50V 10%		GP356		10TS-T56
C803	.033 50V 10%		M192P3339R8		192P3339R8
C804	.0027 50V 10%		GP227		10TS-D27
C805	220 50V		GP322		10TS-T22
C806	220 50V		GP322		10TS-T22
C807	270 50V 10%		GP327		10TS-T27
C808	.0012 1KV 10%		GP212		10TS-D12
C809	.0015 100V 10%		EWFA215		6PS-D15
C810	.1 200V		EWFA2010		2PB-P10
C811	.0047 500V 10%		JE247		10SS-D47
C812	.0018 500V 10%		GP218		10TS-D18
C814	.01 500V		MA65011		
C1001	12 N150 50V 5%		*		10TCP-Q12
C1002	15 NPO 50V 10%		CN0415		10TCC-Q15
C1003	.15 10V		MA612015		HY-365
C1004	.047 100V		EWFA1A47		1PB-S47
C1005	120 50V 5%		CN0312		10TCC-T12
C1006	.0022 50V 10%		CP222		10TS-D22
C1007	12 N330 50V 5%	22-7639-10A	*		
C1009	.047 100V		TA150	QCP-5236-01	TG-S50
C1010	.047 100V		TA150	QCP-5236-01	TG-S50
C1011	.015 50V 10%	22-7613-26B			2SS-S15
C1016	.001 50V 10%		GP210		10TS-D10
CX515	.1 200V 10%	22-7682	EWFA210		2PB-P10
CX516	200 2KV 10%	22-7319			
CX517	200 2KV 10%	22-7319			
CX522	.001 500V 10%	22-7241	GP210		10TS-D10
CX701	.001 500V 10%	22-7241	GP210		10TS-D10
CX702	.001 500V 10%	22-7241	GP210		10TS-D10
CX703	.001 500V 10%	22-7241	GP210		10TS-D10
CX704	.001 500V 10%	22-7241	GP210		10TS-D10
CX710	.01 500V	22-4905-01	JE110		10TS-D1022-7241

For SAFETY use only equivalent replacement part.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

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

ITEM No.	FUNCTION	RESISTANCE	REPLACEMENT DATA		
			MFR. PART No.	MALLORY PART No.	TRW PART No.
R201	Contrast	1000	63-10770-09		
R204	Brightness (Black Level)	250K	63-10770-10		
R401	AGC Delay	25K	63-10636		
R614	Vert Hold	250K	63-10505-01		
R615	Vert Height (Size)	450K	63-9228-10		
RX202	Volume/Switch	40K	63-10539-02		

For SAFETY use only equivalent replacement part.

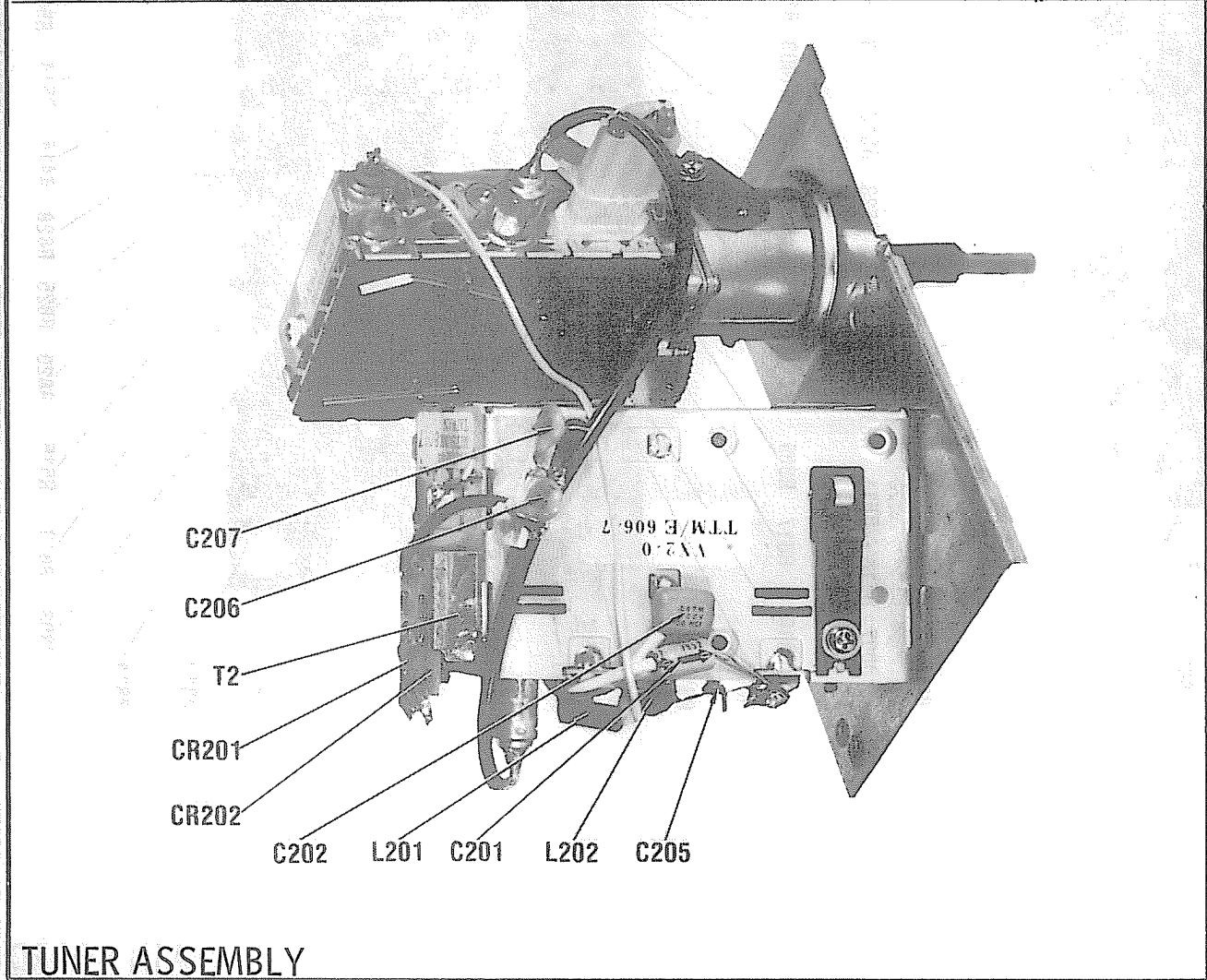
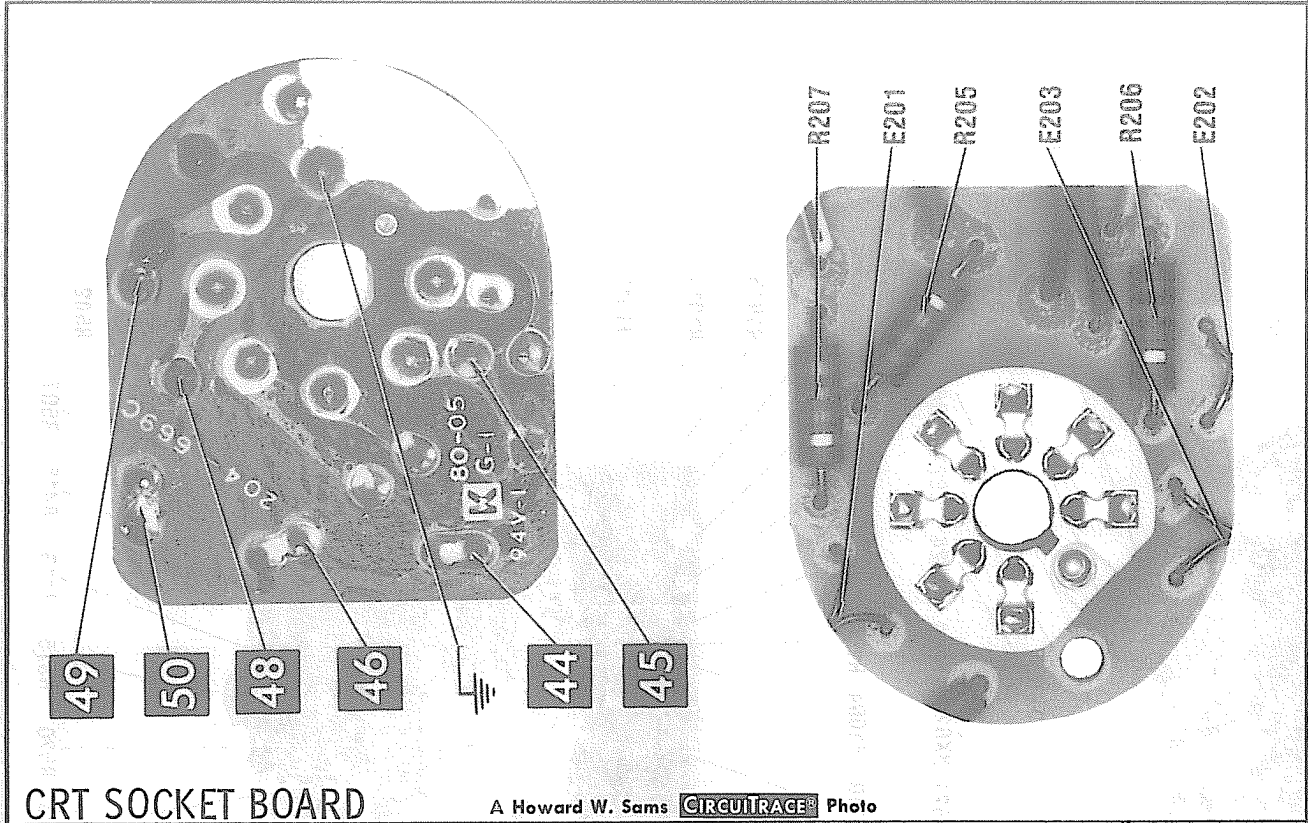
RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		MFRG. PART No.	SPRAGUE/ Q-LINE PART No.	WORKMAN PART No.			MFRG. PART No.	SPRAGUE/ Q-LINE PART No.	WORKMAN PART No.
R520	3.9 5% 1/4W Carbon Film	63-10559-14	QLP-1035		# RX622	100 5% 1/2W Carbon Film	63-10565-48	QUP-2148	22-2072
R521	3.3 5% 1/4W Carbon Film	63-10559-12	QLP-1030	22-1036	# RX702	100K 5% 1/2W Carbon Film	63-10244-20	QUP-2292	22-2144
P621	1500 5% 1/4W Carbon Film	63-10235-76	QLP-1204	22-1106	# RX705	140 5% 5W WW	63-10822		
R704	27 5% 1/2W Carbon	63-1718	PB-2705	22-2058	# RX707	75 5% 2W WW	63-10420-69		
R709	22 5% 1/2W Carbon	63-1714	PB-2205	22-2056	# RX708	27 5% 1/4W Carbon Film	63-10559-34	QUP-1120	22-1058
R710	18 5% 1/2W Carbon	63-1711	PB-1805	22-2054	# RX1011	120 5% 1/2W Carbon Film	63-10565-50	QUP-2152	22-2074
RX519	56 10% 1/2W Carbon	63-1733	PB-5605	22-2066	# RX1012	82 5% 1/2W Carbon Film	63-1739	QUP-2144	22-2070
RX523	82K 10% 1/2W Carbon	63-1066	PB-8235	22-2142	# RX1013	68 5% 1/2W Carbon Film	63-1735	QUP-2140	22-2068
					U1	Resistive Network	105-148-C2		

For SAFETY use only equivalent replacement part.

ZENITH
CHASSIS 12KB4X

FOLDER 3



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.

FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA				NOTES
		PART No.		BUSS PART No.		
		DEVICE	HOLDER	DEVICE	HOLDER	
FX701	1A @ 250V Quick-Acting	136-113-15		ACC-1		#For SAFETY use only equivalent replacement part.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
# AX1	Component Combination		Antenna Isolation
# AX2	Component Combination		Antenna Isolation
# CR201	Component Combination		Antenna Isolation
# CR202	Component Combination		Antenna Isolation
E201	Spark Gap	52-958-02	
E202	Spark Gap	52-958-02	
E203	Spark Gap	52-958-02	
L112	Ferrite Bead		
L113	Ferrite Bead	149-418	
L115	Ferrite Bead	149-417	
L117	Ferrite Bead	149-417	
L118	Ferrite Bead	149-417-01	
L119	Ferrite Bead	149-418	
L201	Ferrite Bead	149-333	
Thru			
L204			
L206	Ferrite Bead	149-333	
L501	Ferrite Bead	149-379	
L502	Ferrite Bead	149-379	
L503	Ferrite Bead	149-379	
L803	Ferrite Bead	149-333	
P1	AC Line Cord		
# SX201	Switch	63-10539-02	Power On/Off (Part of Volume Control RX202)
# VX201	CRT	100-648	12VCBP4 or 12VCAP4
	Antenna	1-139	UHF RUSSELL Replacement LIN-2H
	UHF Tuner	175-1965-01 or 175-5120-01	UHF RUSSELL Replacement Assembly COM-BH
	VHF Tuner	175-2126-22 or 175-1732-04	

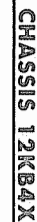
#For SAFETY use only equivalent replacement part.

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

ZENITH
CHASSIS 12KB4X

FOLDER 3

FOLDER 3



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
L103, L107, L108, L110 9440
L104, L105, L801, L1001, T1001, 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 +5.7 volt bias to TP1.

VIDEO IF ALIGNMENT

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To TP14	To TP on VHF tuner.	44MHz (10MHz Sweep)	39.75MHz 47.25MHz	Adjust L104 for MINIMUM. Adjust L105 (Top and Bottom) for MINIMUM. See Figure 1.
"	"	"	39.75MHz 41.25MHz 42.17MHz 44.00MHz 45.75MHz 47.25MHz	Adjust L103, L107, L108, L110 and VHF Tuner IF Output Coil for maximum gain and symmetry of response. L107 affects 44.00MHz. L108 and L110 affect 42.17MHz and 45.75MHz. L103 and VHF Tuner IF Output Coil affect overall response. See Figure 2.

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 L801 for MINIMUM beat interference.

SOUND IF ALIGNMENT

Tune in a station and adjust L1001 and T1001 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 L1001.

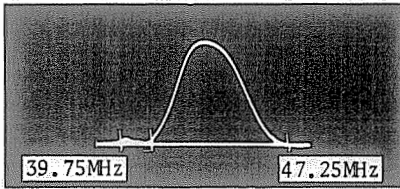


Figure 1

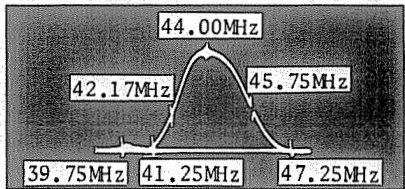
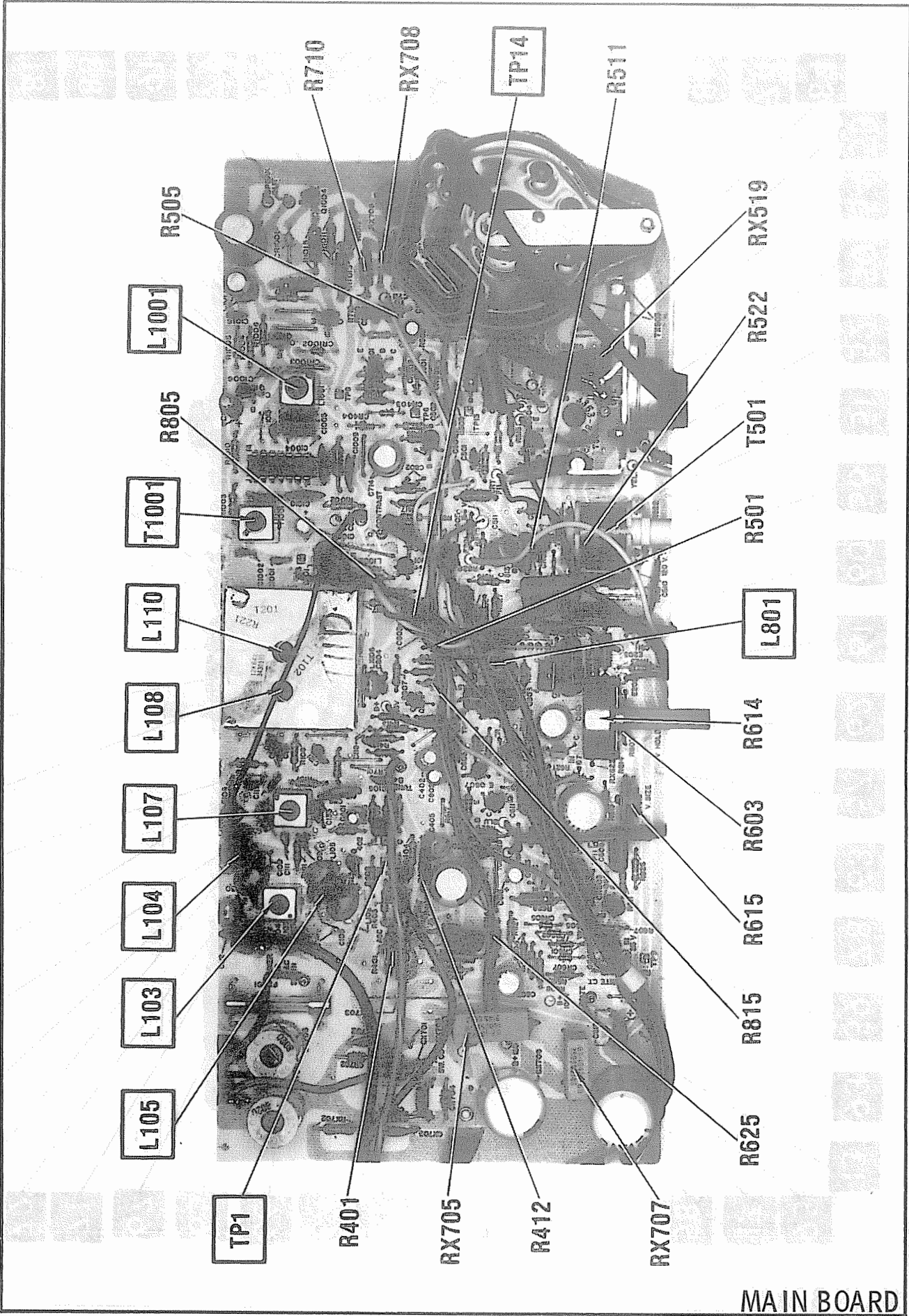


Figure 2



ZENITH
CHASSIS 12KB4X

FOLDER 3