

SAFETY PRECAUTIONS

SERVICE WARNING

Only qualified service technicians who are familiar with safety checks and guidelines should perform service work. Before replacing parts, disconnect power source to protect electrostatically sensitive parts. Do not attempt to modify any circuit unless so recommended by the manufacturer. When servicing the receiver, use an isolation transformer between the line cord and power receptacle.

SERVICING THE HIGH VOLTAGE AND CRT

Use EXTREME CAUTION when servicing the high voltage circuits. To discharge static high voltage, connect a 10K ohms resistor in series with a test lead between the receiver and CRT anode lead. DO NOT lift the CRT by the neck. Always wear shatterproof goggles when handling the CRT to protect eyes in case of implosion.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Be aware of the instructions and procedures covering X-ray radiation. In solid-state receivers and monitors, the CRT is the only potential source of X-rays. Keep an accurate high voltage meter available at all times. Check meter calibration periodically. Whenever servicing a receiver, check the high voltage at various brightness levels to be sure it is regulating properly. Keep high voltage at rated value, NO HIGHER. Excessive high voltage may cause X-ray radiation or failure of associated components. DO NOT depend on protection circuits to keep voltage at rated value. When troubleshooting a receiver with excessive high voltage, avoid close contact with the CRT. DO NOT operate the receiver longer than necessary. To locate the cause of excessive high voltage, use a variable AC transformer to regulate voltage. In present receivers, many electrical and mechanical components have safety related characteristics which are not detectable by visual inspection. Such components are identified by a # on both the schematic and the parts list. For SAFETY, use only equivalent replacement parts when replacing these components.

GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning receiver to customer. Check repaired area for poorly soldered connections, and check entire circuit board for solder splashes. Check inner board wiring for pinched wires or wires contacting any high wattage resistors. Check that all control knobs, shields, covers, grounds, and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.

TEST JIG HOOKUP				
Function	Chek-A-Color Adapter No.	PC Board Plug No.	Pin	Color
CRT	B239	Yoke-H	E4401	Red
Yoke	D4160		E4402	Blue
Yoke Setting	YP1A	Yoke-V	E4501	Yellow
Comments	Focus Tap		E4502	Green

The listing of any available replacement part herein in no case constitutes a recommendation, warranty, or guarantee by Howard W. Sams & Company as to the quality and suitability of such replacement part. The numbers of the listed parts have been compiled from information furnished to Howard W. Sams & Company by the manufacturers of the specific type of replacement part listed.

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Page 1 SET 3926

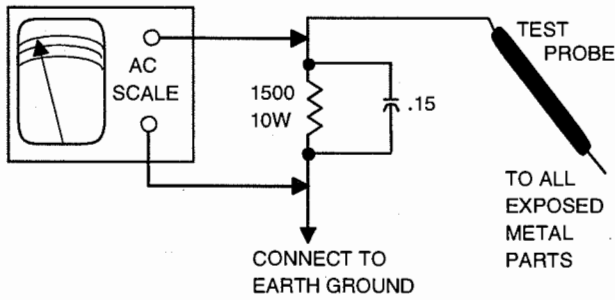
SAFETY CHECKS -- FIRE AND SHOCK HAZARD

Cold Leakage Checks for Receivers with Isolated Ground

Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch on (if applicable). Use an ohmmeter to measure the resistance between the jumped AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with a return path should measure between 1M ohms and 5.2M ohms. Parts without a return path must measure infinity.

Hot Leakage Current Check

Plug the AC cord directly into an AC outlet. DO NOT use an isolation transformer. Use a 1500 ohms, 10W resistor in parallel with a .15µF capacitor to connect between any exposed metal parts on the receiver and a good earth ground. (See figure below.) Use an AC voltmeter with at least 5000 ohms per volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point. Voltage measurements should not exceed .75VAC, 500µA. Any value exceeding this limit constitutes a potential shock hazard and must be corrected. If the AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.



**HIGH VOLTAGE SHUTDOWN TEST**

Apply 120VAC to set, turn set on, and adjust brightness and contrast to maximum. Short XRP-1 to XRP-2. The set should shut down and then cycle on and off. If the set does shut down and then cycle on and off then the shutdown circuit requires repair. To resume normal operation, remove short from XRP-1 and XRP-2.



98PF01288



PHOTOFACT® Technical Service Data

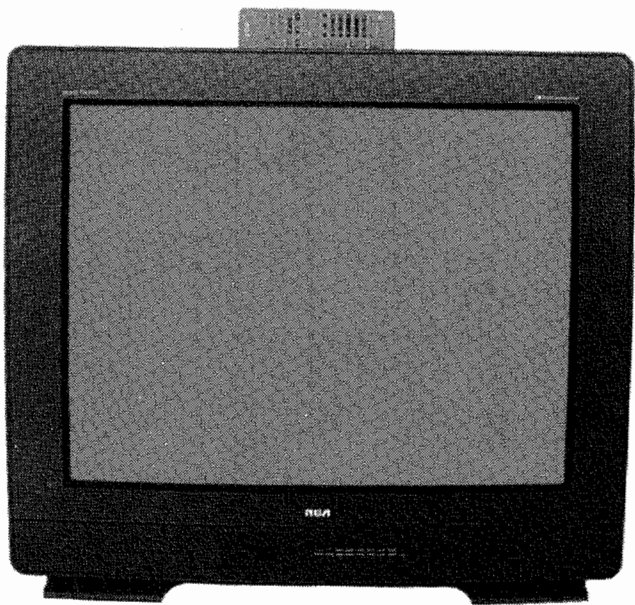
SET 3926

MODEL F27189ETNX1 (CHASSIS CTC169CA/CA2)

RCA

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RCA  
Model F27189ETNX1 (Chassis CTC169CA/CA2)



Representative Model

Essential coverage  
for servicing a television receiver...

- Schematics
- Component locations
- Parts list



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JANUARY 1998 SET 3926

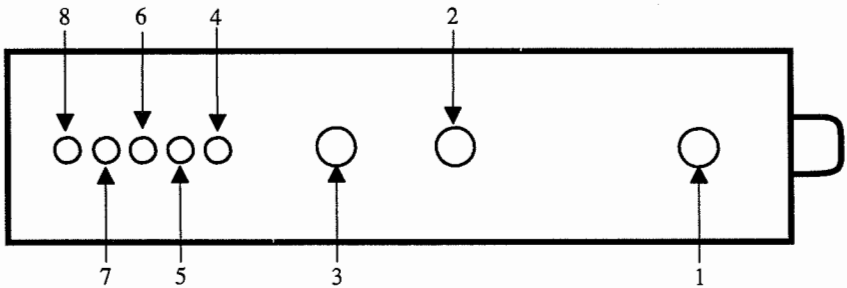
For Supplier Address,  
See PHOTOFACT Annual Index

TUNER INFORMATION

TUNER VOLTAGE CHART			
Pin	VHF Low Band	VHF High Band	UHF Band
1 (AGC)	5.4V	4.1V	7.9V
2 (+12V)	12.0V	12.0V	12.0V
3 (IF)	11.7V	11.6V	11.7V
4 (+33V)	32.6V	32.7V	32.7V
5 (-12V)	-10.0V	-10.0V	-10.0V
6 (+5V)	5.0V	5.0V	5.0V
7 (SDA)	5.0V	5.0V	5.0V
8 (SCK)	5.0V	5.0V	5.0V

Note: VHF Low Band voltages taken on channel 2.  
VHF High Band voltages taken on channel 7.  
UHF Band voltages taken on channel 14.

TUNER TERMINAL GUIDE



SCHEMATIC NOTES

- # For SAFETY use only equivalent replacement part, see parts list.
- ✱ Circuitry not used in some versions.
- Circuitry used in some versions.
- ⏏ Ground
- ⏏ Chassis ground
- ⏏ Common tie point
- △ Taken from common tie point
- 3 Schematic CIRCUITRACE® Voltage source tie point.
- A Cabling: Heavy lines reduce use of multiple lines.

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

Waveforms taken with triggered scope and colorbar signal. Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions.

Supply voltages maintained as seen at input.

Voltages measured with digital meter and a 1000µV RF signal, with colorbar pattern, applied to antenna terminal.

Controls adjusted for normal operation.

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

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

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

Value in ( ) used in some versions.

Measurements with switching as shown, unless noted.

Rated voltage shown on zener diodes.

MISCELLANEOUS ADJUSTMENTS

B+ STANDBY

Tune in a picture. Set brightness, contrast, and color to minimum. Connect a voltmeter to the cathode of CR4116. With 120VAC line input, adjust R4113 for 141V ±.5V.

HIGH VOLTAGE CHECK

Tune in a picture. Set brightness, contrast, and color to minimum. Connect a high voltage probe to the CRT anode. High voltage must measure 27.5kV to 30kV. High voltage must never exceed 30kV.

RF AGC

NOTE: R2311 should not require adjustment unless the tuner, U1001, or R2311 has been replaced.

Tune in the weakest local station. Adjust R2311 fully counterclockwise, and then clockwise for best picture. Check all other available channels for proper adjustment.

CONTRAST PRESET

Tune in a crosshatch pattern. Set brightness and color to minimum, contrast to midrange. Adjust R2730 to a point where highlights are visible.

TINT PRESET

Tune in an active channel. Adjust R2816 for proper flesh tones.

HORIZONTAL PHASE

Adjust R4306 to center the picture horizontally.

PINCUSHION

Tune in a crosshatch pattern. Adjust R4805 for straight vertical lines at the top and bottom of the screen. Adjust R4802 for a slight overscan.

SUB BRIGHTNESS

Tune in a crosshatch pattern. Set contrast, brightness, and color to minimum. Adjust R3346 for faintly visible highlights. Set contrast, brightness, and color to maximum. Check for blooming, readjust if necessary.

CHROMA FILTER

Tune in a color bar pattern. Adjust R2802 for the proper color display and clean transition between bars.

COLOR TEMPERATURE

Tune in a crosshatch pattern. Set color, contrast, R2913, R2917, R2921, and screen control to minimum. Set R2926, R2928, and brightness to midrange. Obtain a service line by shorting the collector of Q4505 to ground. Advance screen control until a line of one predominate color is just visible. Adjust R2913, R2917, and R2921 to obtain a white line. Set brightness and contrast to maximum. Adjust R2926 and R2928 for best black and white picture. Check tracking at low and high brightness.

SYNC LEVEL

Tune in a color bar signal. Connect an oscilloscope to the emitter of Q6423. Adjust R6488 for 5.0Vp-p.

CONVERGENCE/ PURITY

The deflection yoke is bonded to the CRT. Purity and convergence adjustments are not required.

STEREO ADJUSTMENTS

NOTE: Adjustments were made using a TV/stereo generator. Set receiver to stereo mode.

Wide Band Audio Level

Select 300Hz audio frequency and L+R modulating signal. Connect oscilloscope to pin 7 of JM1900. Adjust R1204 for .3V p-p.

Stereo/SAP Filter

Select SAP, 1kHz audio frequency, and L+R modulating signal. Connect oscilloscope to pin 3 of U1600. Adjust R1604 for minimum indication.

Stereo VCO

Select pilot, 1kHz audio frequency, and L+R modulating signal. Connect a digital voltmeter to pin 42 of U1600. Adjust R1616 for 1.35V.

Baseband LPF

Remove power to set, and unsolder jumper wire JW212. Connect an audio generator to pin 34 of U1600. Apply AC power, and set the frequency on audio generator for 15734Hz. Short pin 39 and pin 40 of U1600. Connect oscilloscope to pin 39 of U1600. Adjust R1606 for minimum response. Return JW212 to circuit.

Separation

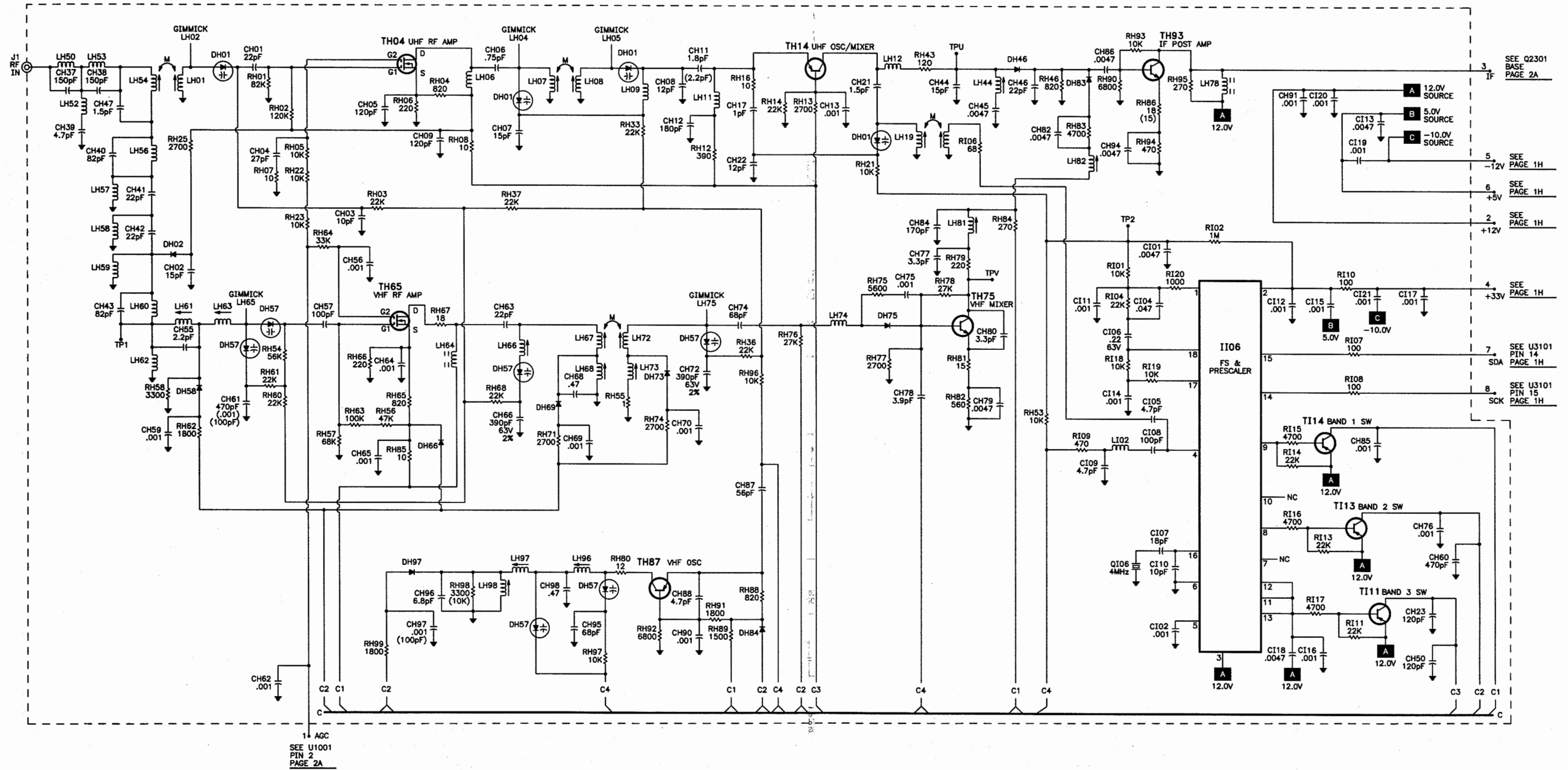
Select pilot, 300Hz audio frequency, and right modulating signal on generator. Connect an oscilloscope to pin 35 of U1600, adjust R1609 for minimum. Change audio frequency to 8kHz. Adjust R1611 for minimum. Repeat until no further decrease is obtained.

NEW CIRCUIT

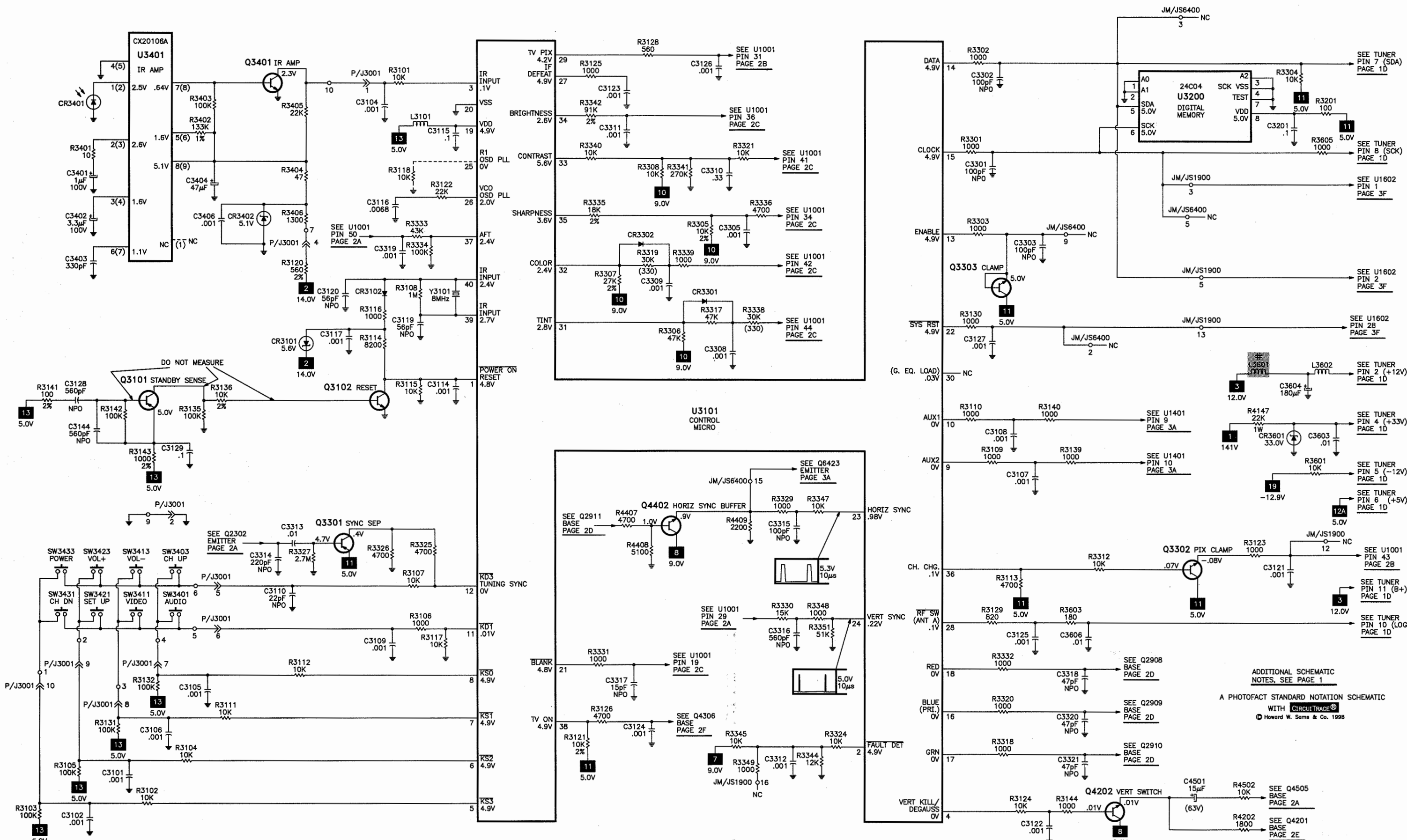
VERTICAL CIRCUIT

The vertical reset pulse from pin 29 of U1001 turns on Q4505 which allows C4518 and C4519 to discharge thru R4504 and resets Q4506. When Q4505 is turned off, C4518 and C4519 charge thru R4507. R4522 adjusts the amount of voltage to C4518 and C4519. This causes a vertical ramp signal to be applied to pin 3 of U4501. Current for vertical deflection is supplied from pins 2 and 3 of T4401. During horizontal retrace, pin 2 of T4401 is more positive than pin 3 of T4401 which causes upward deflection. During horizontal trace, pin 2 of T4401 is more negative than pin 3 of T4401 which causes downward deflection. The net current is controlled by the on and off time of SCR501. U4501 controls the on and off time of SCR501. A horizontal ramp signal is applied to pin 2 of U4501. When the voltage at pin 3 of U4501 exceeds the voltage at pin 2 of U4501, SCR501 is turned on which allows negative current flow thru the yoke.

## TUNER SCHEMATIC

ADDITIONAL SCHEMATIC  
NOTES, SEE PAGE 1A PHOTOFACIT STANDARD NOTATION SCHEMATIC  
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# SYSTEM CONTROL SCHEMATIC



G

H

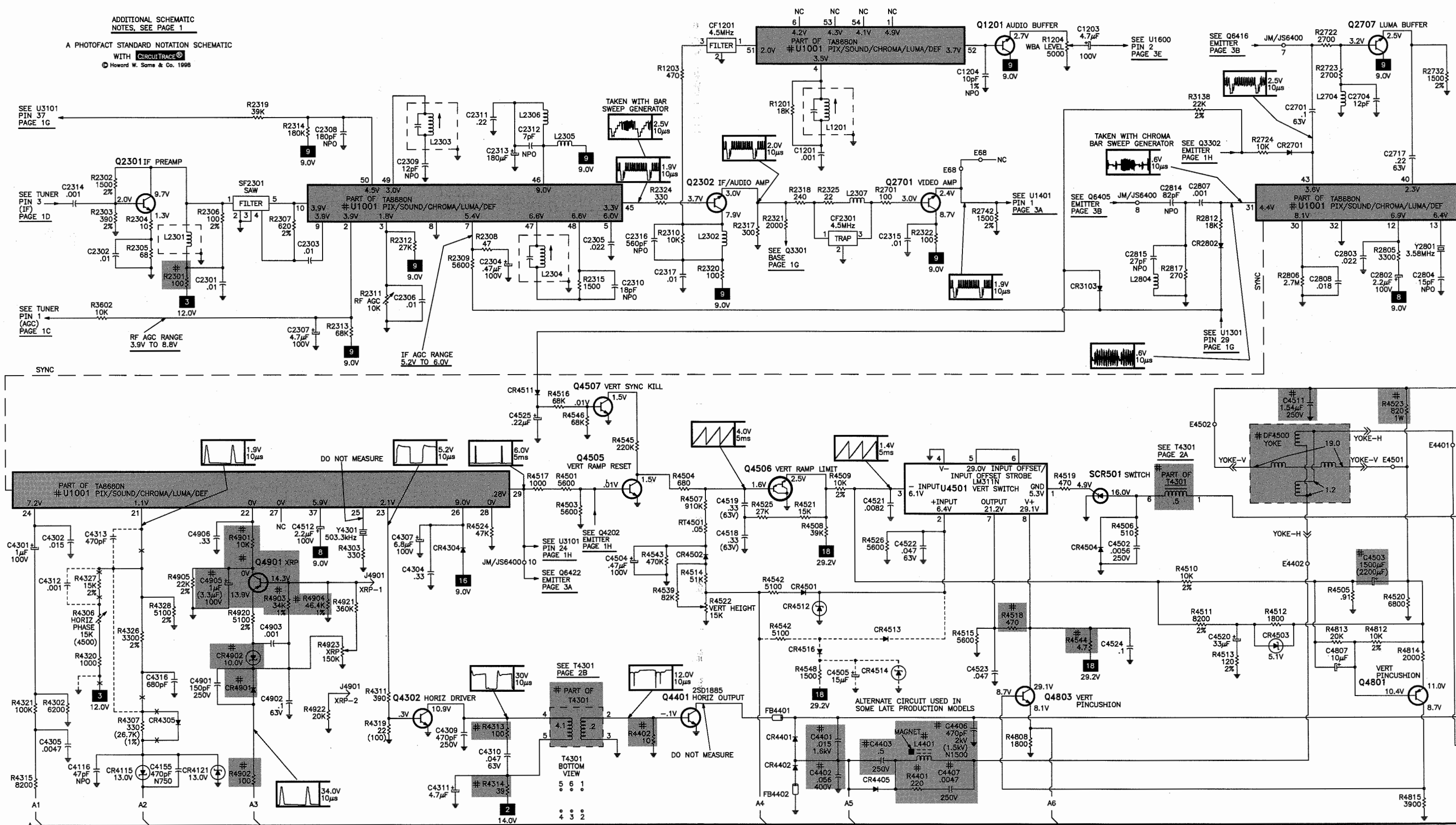
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RCA  
MODEL F27189ETNX1 (CHASSIS CTC169CACA2)



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NOTES, SEE PAGE 1

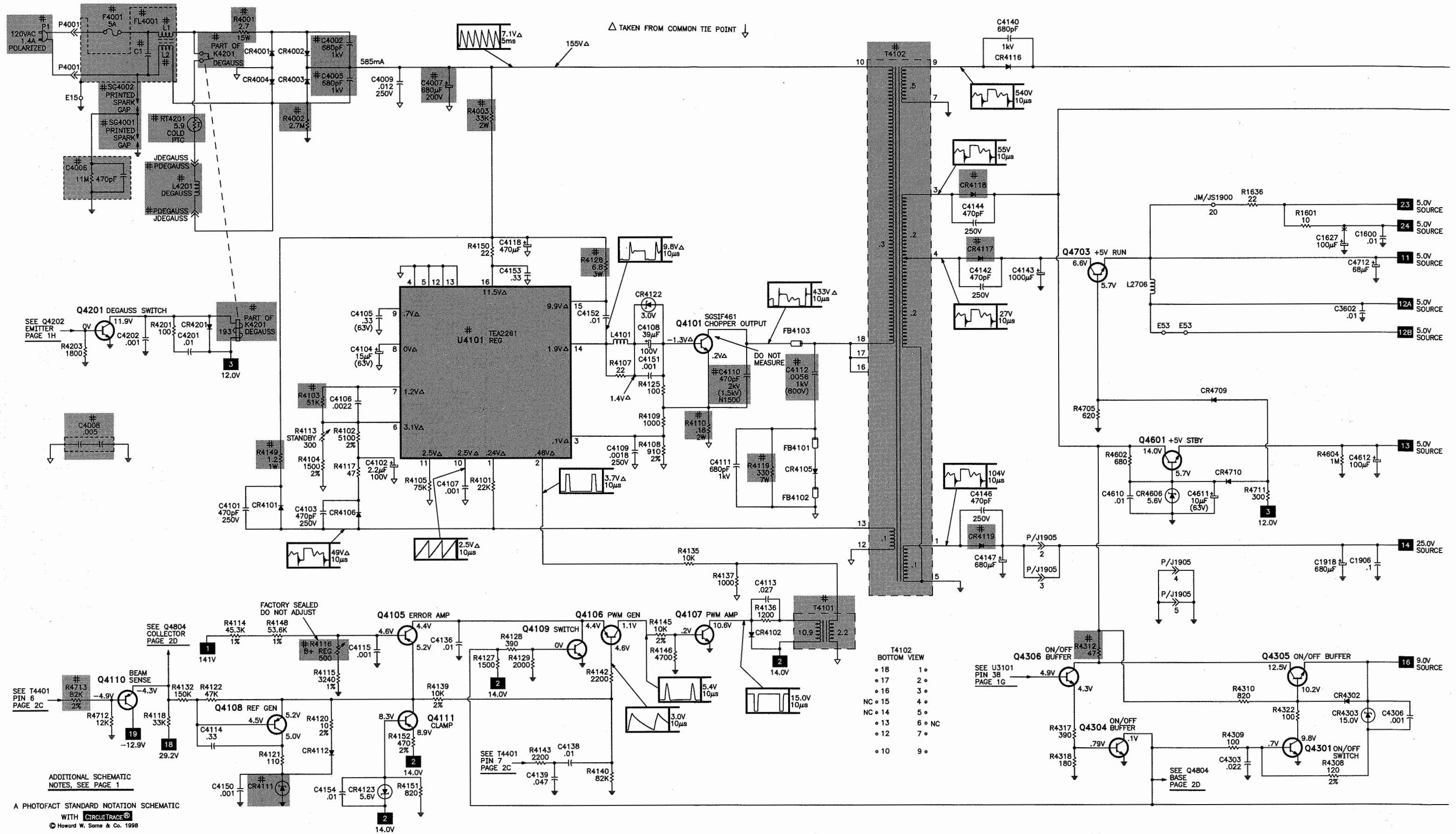
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## POWER SUPPLY SCHEMATIC



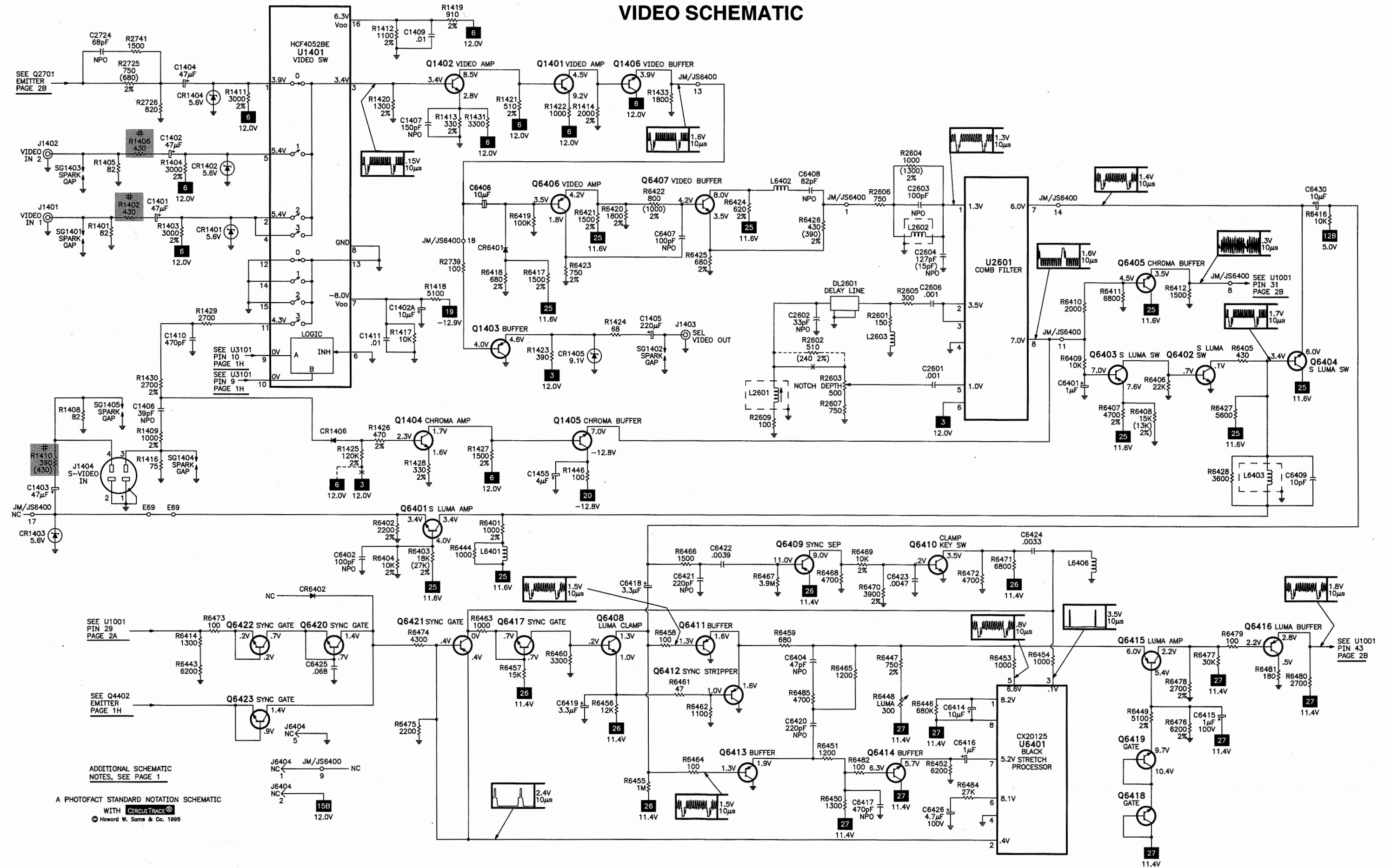




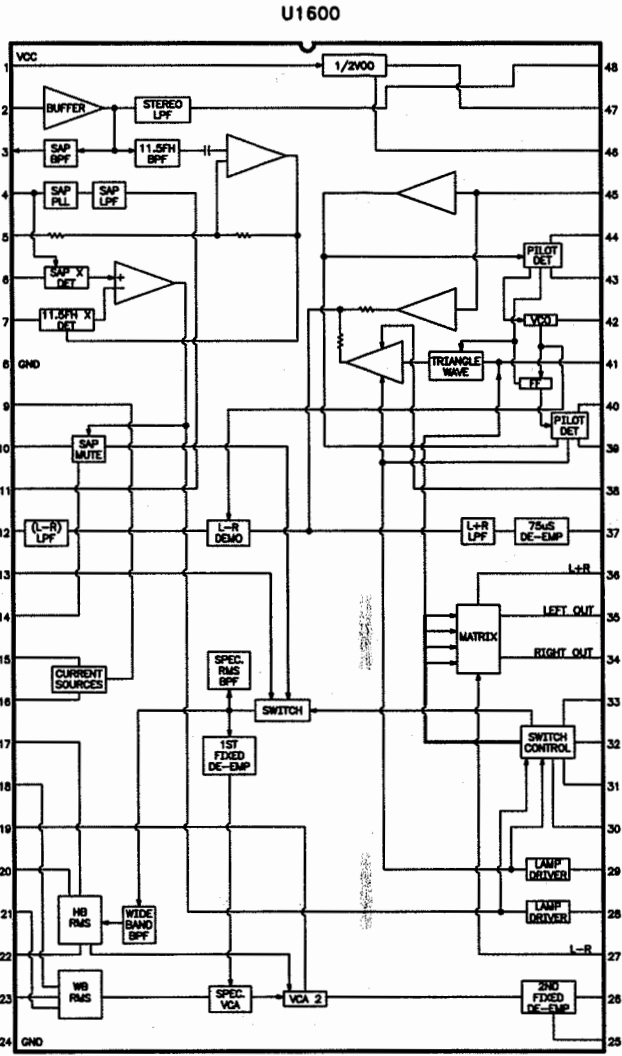
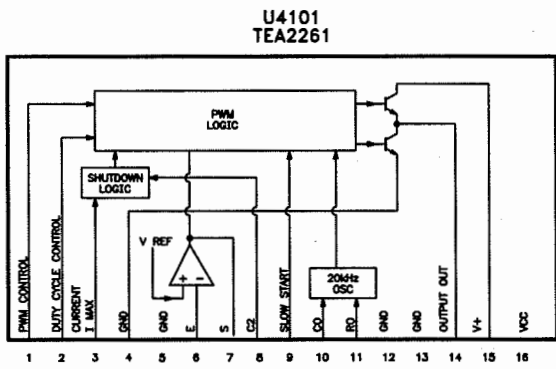
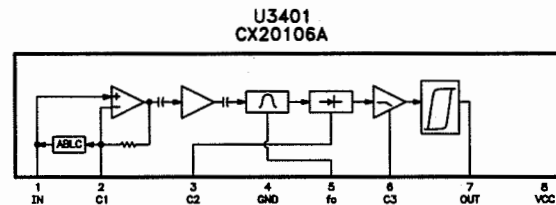
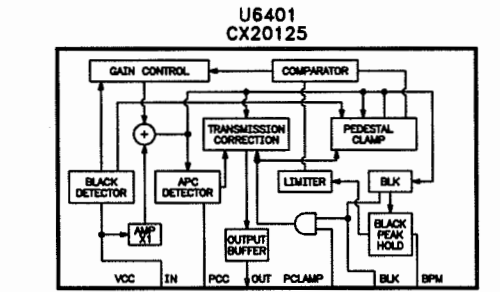
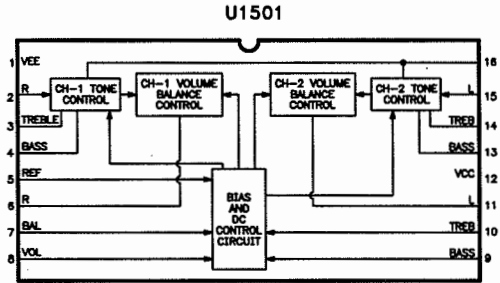
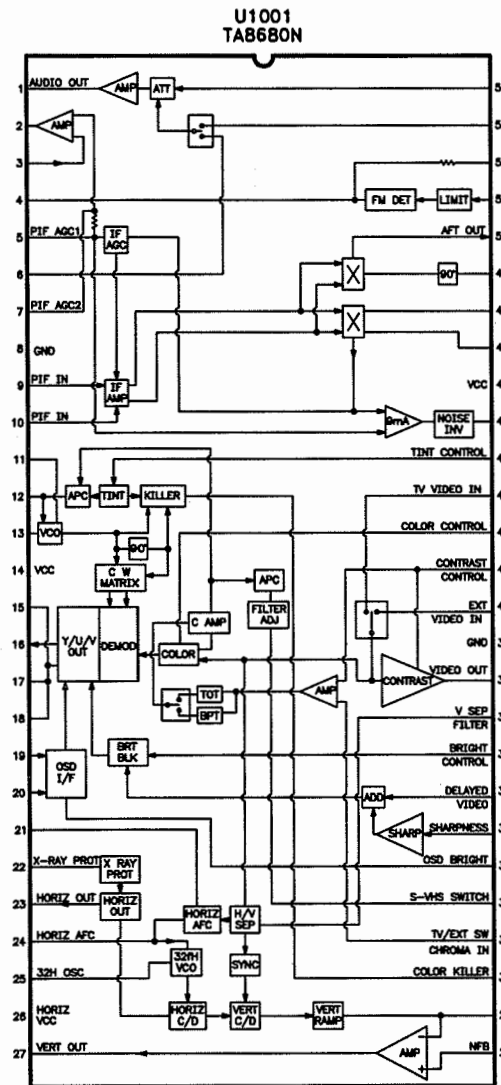
A

B

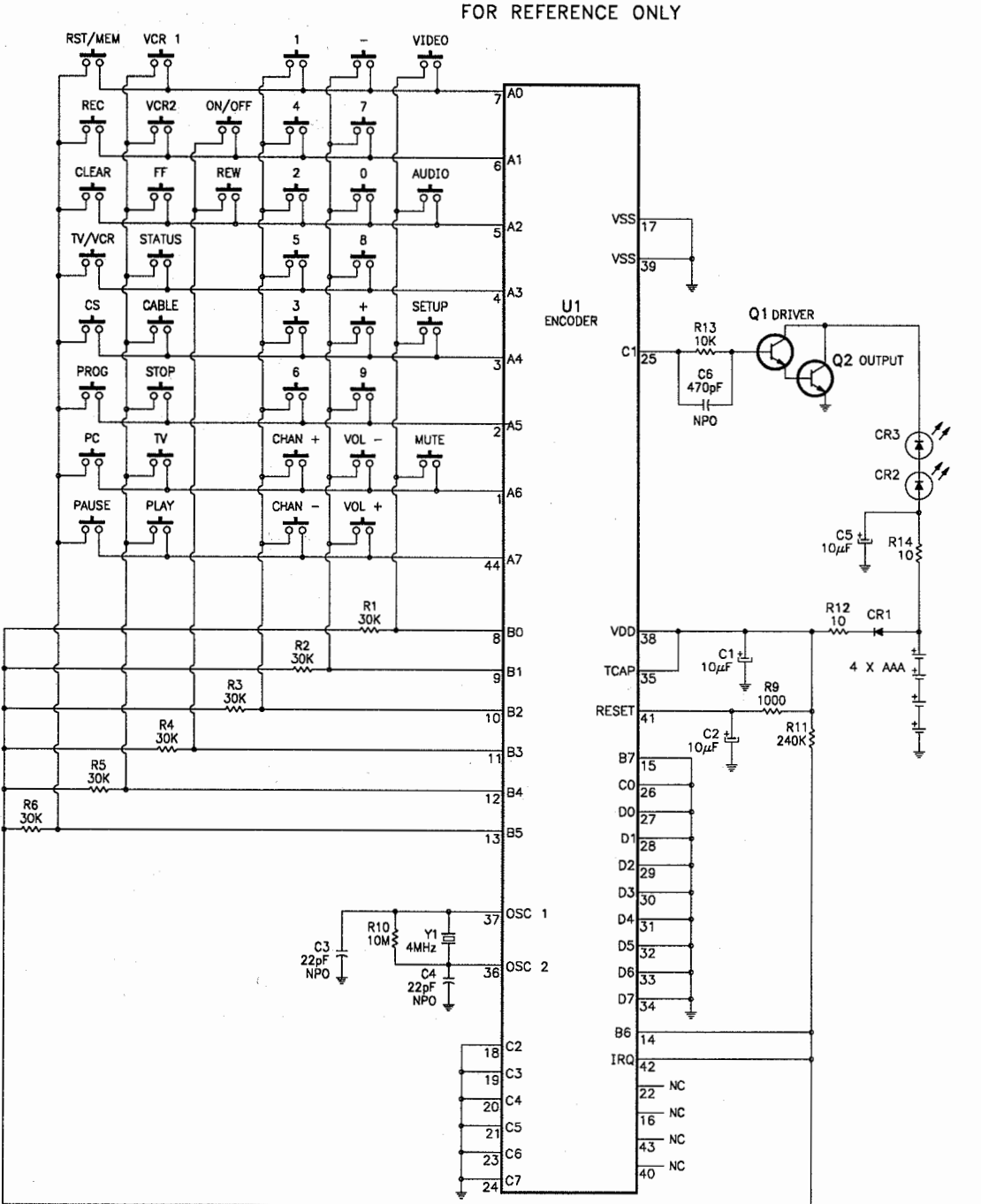
VIDEO SCHEMATIC



# IC FUNCTIONS



# REMOTE TRANSMITTER SCHEMATIC



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# AUDIO SCHEMATIC

SEE Q1201  
EMITTER  
PAGE 2B

U1600  
STEREO  
DBX DECODER

LEFT OUT 5.9V

RIGHT OUT 5.9V

U1410  
AUDIO SWITCH

Q1406A BUFFER

Q1407 BUFFER

Q1507 LEFT FOLLOWER

Q1551 EXP

Q1503 EXP SWITCH

Q1500 EXP 12V

U1402 AMP

U1602  
I/O BUS  
EXPANDER

Q1601 MUTE

Q1901 MUTE

Q1409 SLOW START

Q1400 SLOW START

Q1408 SLOW START

Q1410 SLOW START

Q1401A SLOW START

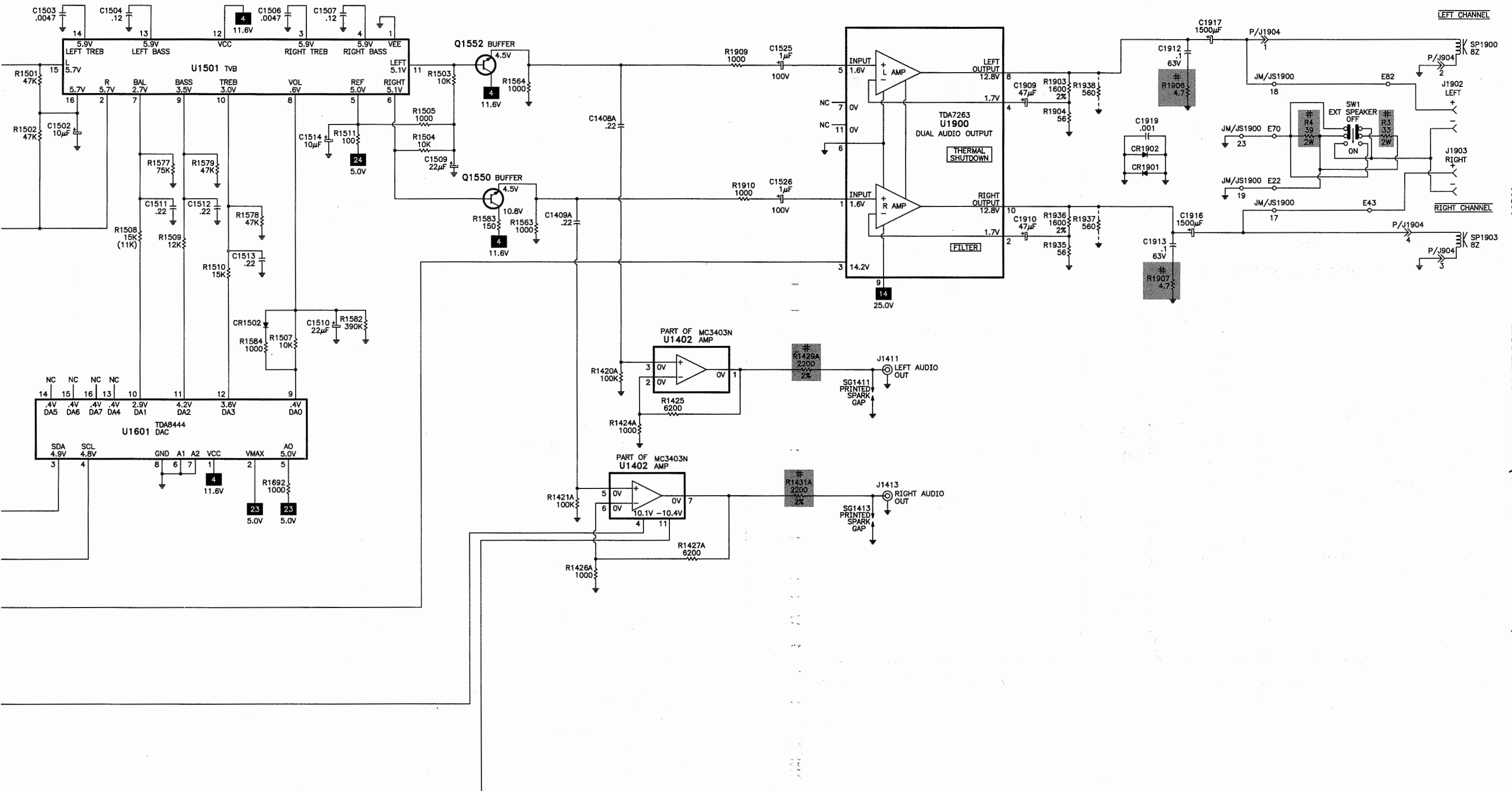
ADDITIONAL SCHEMATIC  
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# AUDIO SCHEMATIC continued

RCA

MODEL F27189ETNX1 (CHASSIS CTC169CA/CA2)

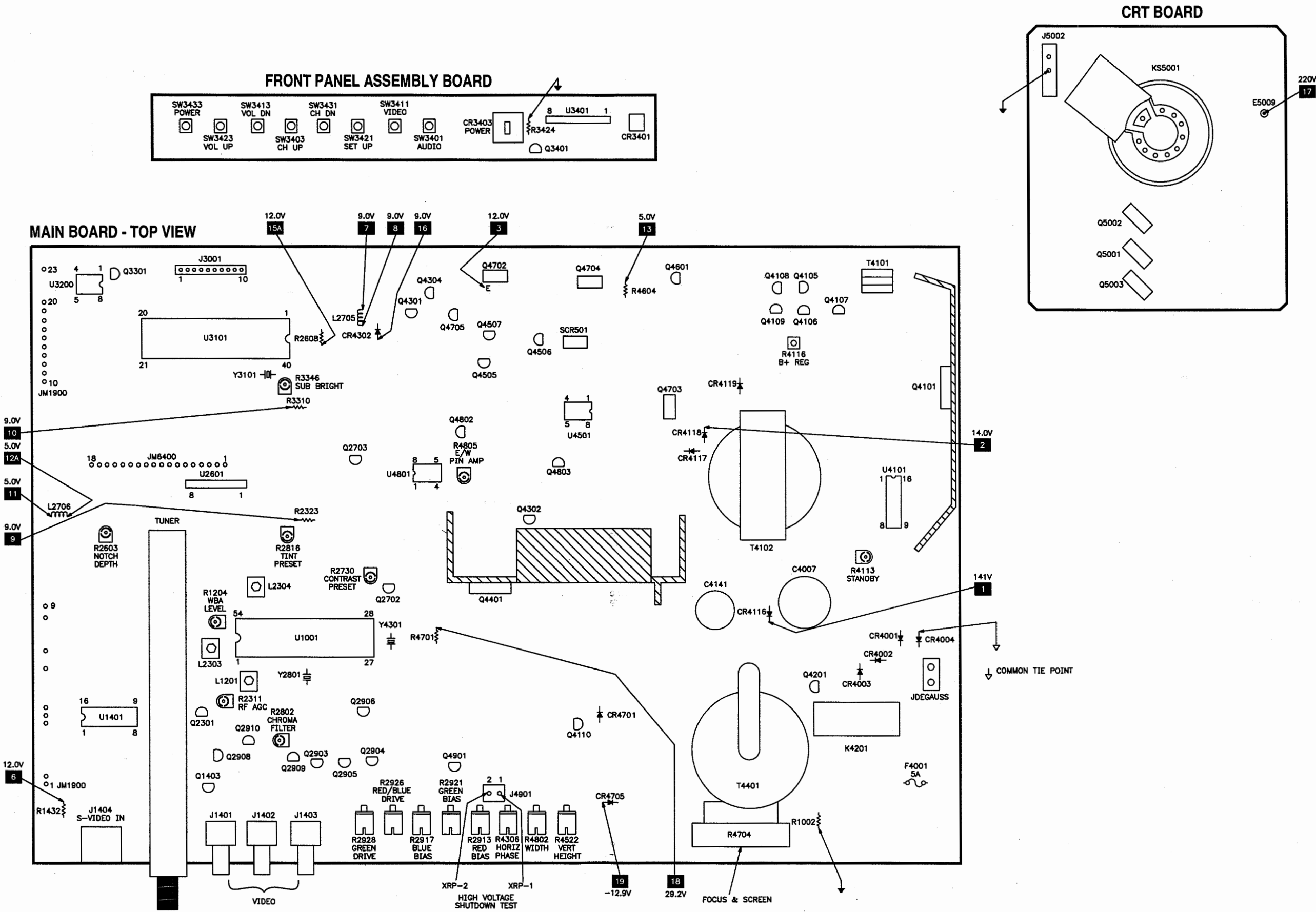


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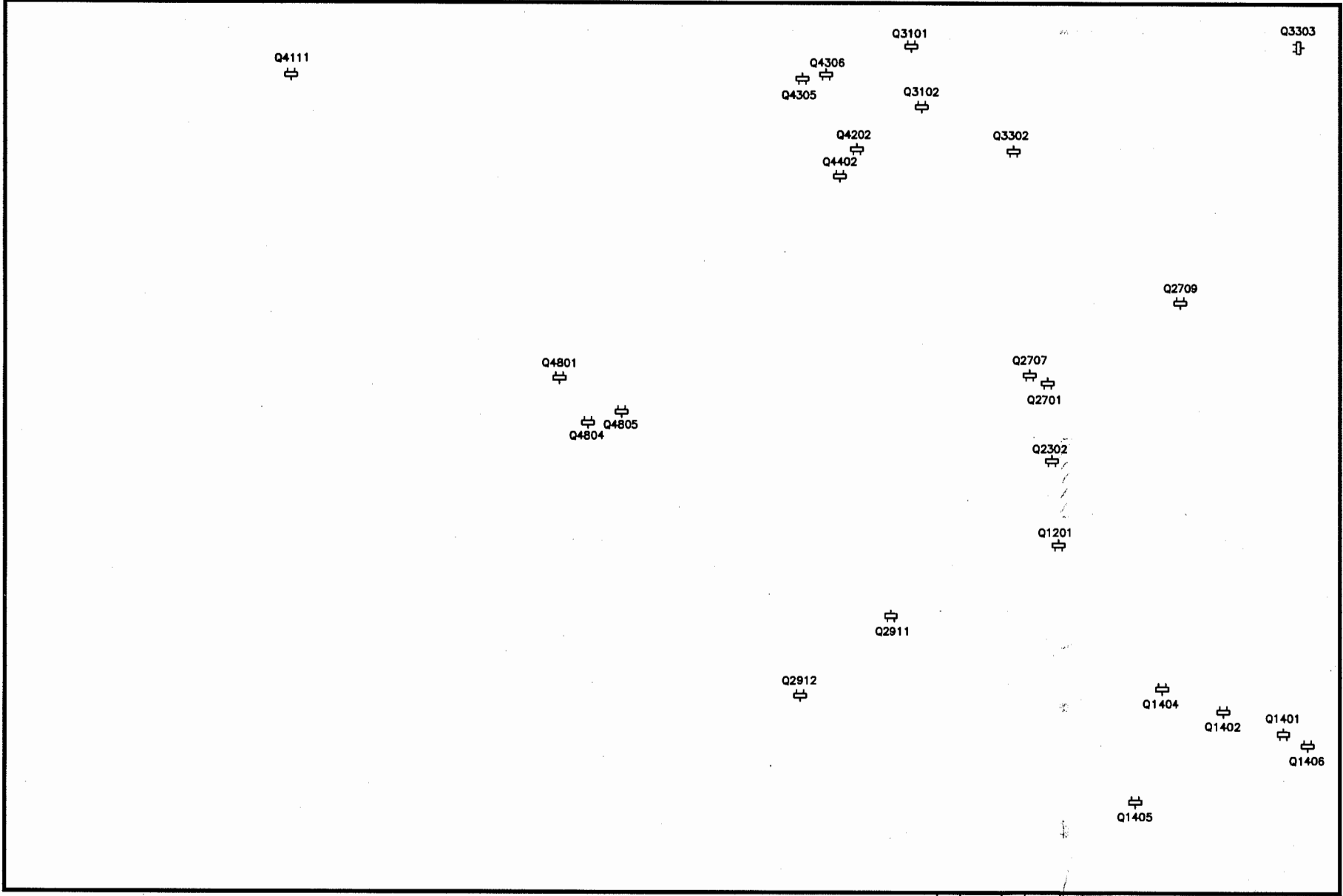


PLACEMENT CHART

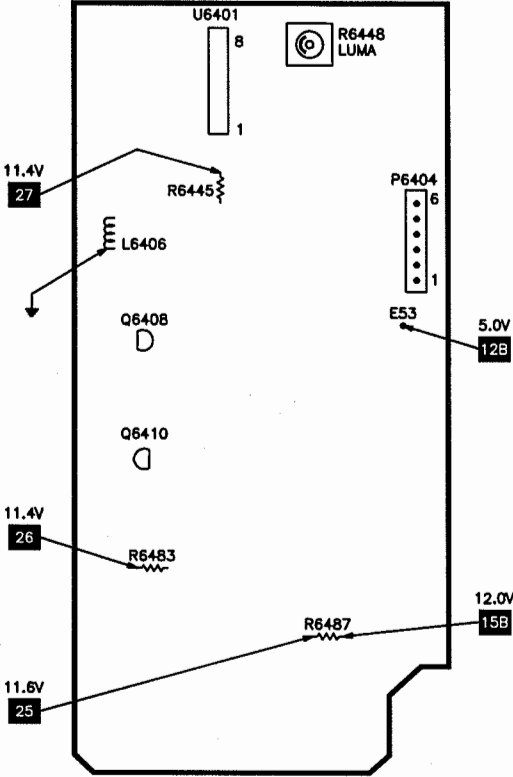


PLACEMENT CHART continued

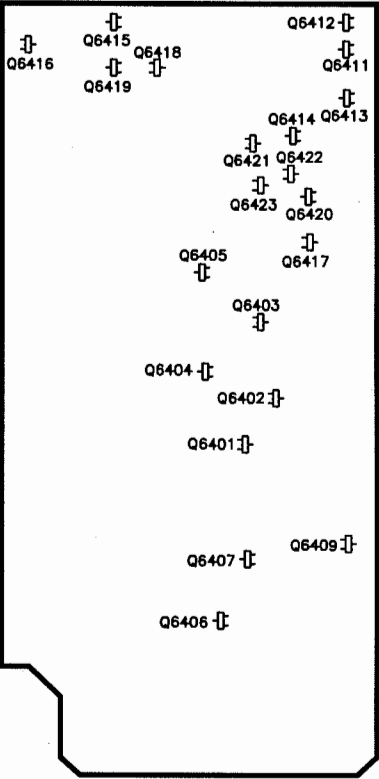
MAIN BOARD - BOTTOM VIEW



BLACK STRETCH BOARD - TOP VIEW

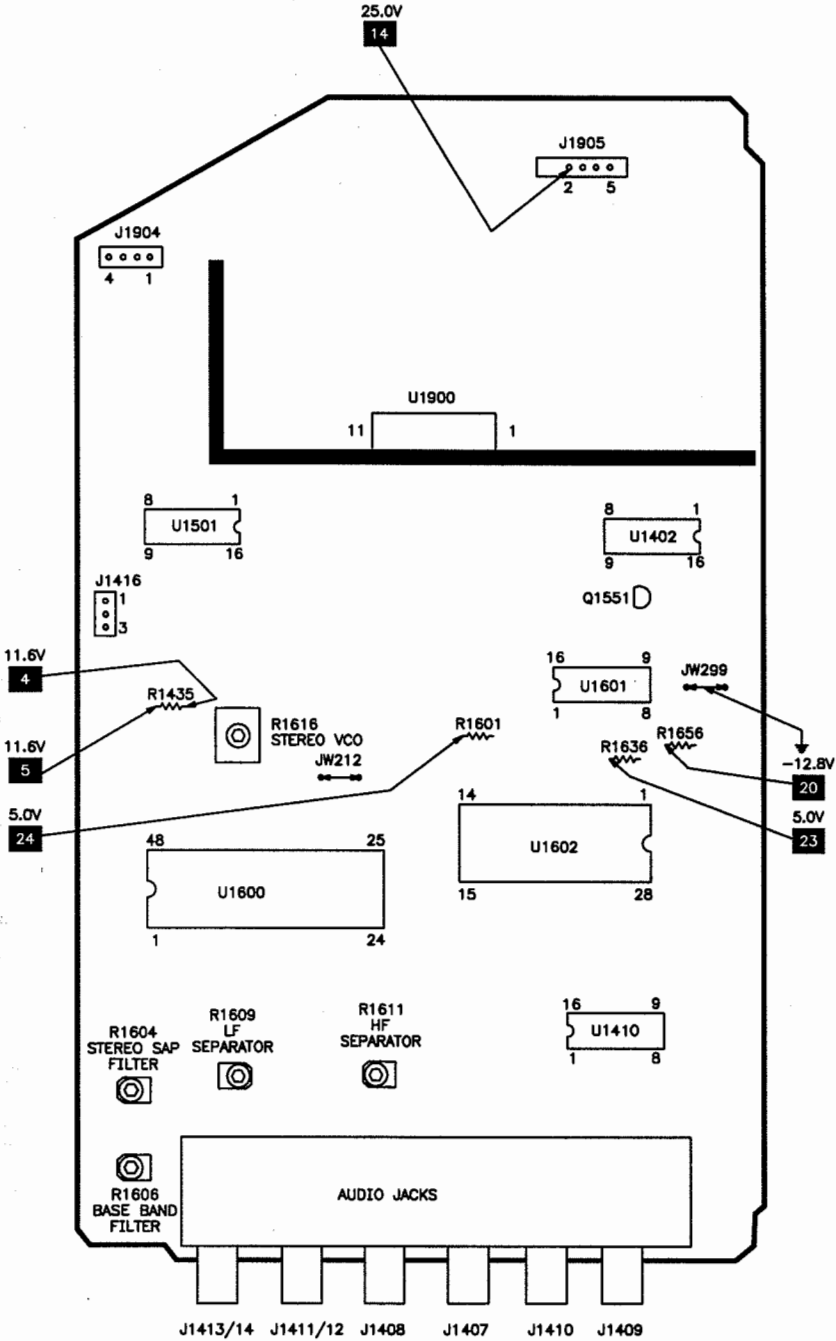


BLACK STRETCH BOARD - BOTTOM VIEW

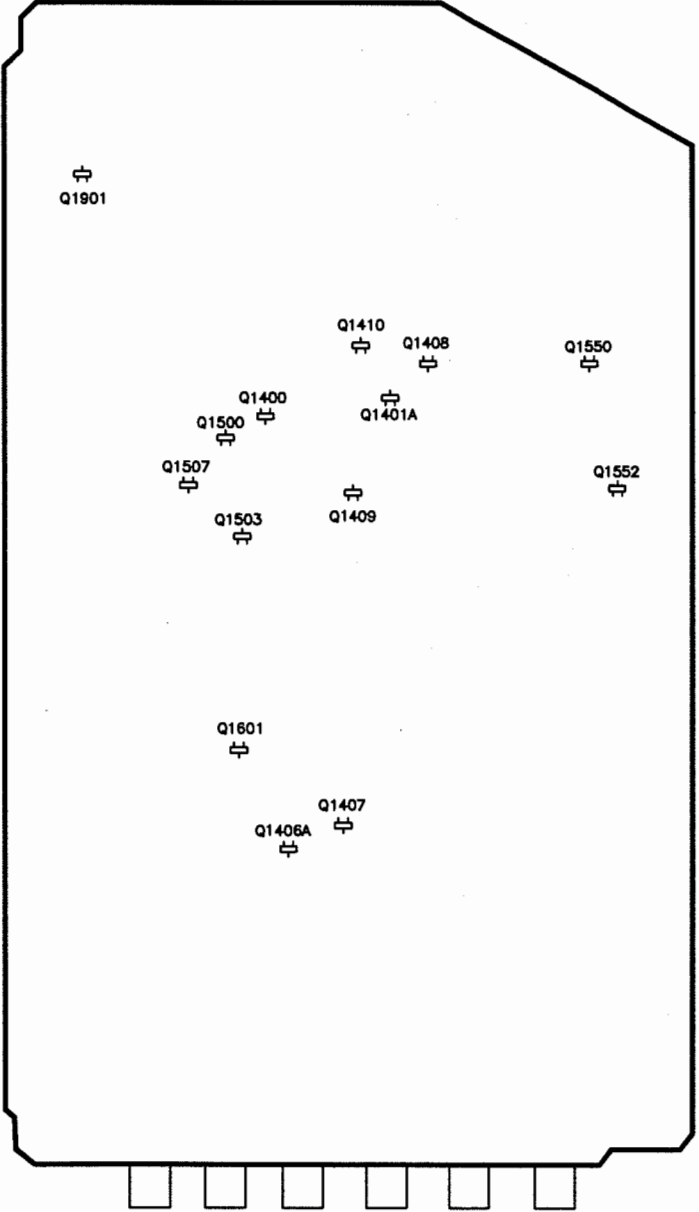


**PLACEMENT CHART** continued

5W ANALOG AUDIO BOARD - TOP VIEW



5W ANALOG AUDIO BOARD - BOTTOM VIEW



**Important Parts Information**

- The parts listed here are those not usually available from a well-stocked supply cabinet or bin.
- Where items may be replaced with equivalent parts, several alternates are shown from participating vendors.
- On the parts lists, safety items are marked with a # to remind you that only exact replacements are recommended for these items.
- When ordering parts, state the model number, part number, and description.

**Obtaining Parts**

Many of these parts are available from your local Sams authorized distributor or the manufacturer of the equipment. Call Sams for the name of your nearest distributor:

800-428-7267

Or consult the Sams *Annual Index* for the address of the original equipment manufacturer.

**Participating Vendors**

Information on test equipment and replacement parts is listed in these pages for the following participating vendors. Consult the Sams *Annual Index* for their current address.

- Custom Components Corporation (Chek-A-Color)
- NTE Electronics, Inc. (NTE)
- Philips ECG Company (ECG)
- PTS Electronics Corporation (PTS)
- Sencore, Inc.
- Terrell & Nobis (TNI Electronics)
- Thomson Consumer Electronics, Inc. (SK, TCE)

**TEST EQUIPMENT**

Test equipment listed by participating manufacturer illustrates typical or equivalent equipment used by Sams engineers to obtain measurements. This equipment is compatible with most types used by field service technicians.

Equipment	Sencore No.	Equipment	Sencore No.
Oscilloscope	SC3100	Isolation Transformer	PR57
Generators		Capacitance Analyzer	LC101, LC102
RGB	CM2000	CRT Analyzer	CR70
Multiburst Signal	VG91	AC Leakage Tester	PR57
Color Bar	VG91	Inductance Analyzer	LC101, LC102
TV Stereo	VG91	Flyback Yoke Tester	TVA92
Digital VOM	SC3100	TV Stereo Power Monitor	SR68, PA81
Frequency Meter	SC3100	Field Strength Meter	SL750
Hi-Voltage Probe	HP200	Transistor Tester	TF46
Accessory Probes	TP212	Video Analyzer	VG91, TVA92

PARTS LIST

SEMICONDUCTORS

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
CR1401 Thru					
CR1404	-	176746	NTE5011A	ECG5011A	SK5A6
CR1405	-	192848	NTE5018A	ECG5018A	SK9A1
CR1406	-	164874	NTE177	ECG177	SK9091
CR1501, 02	-	164717	NTE519	ECG519	SK3100
CR1901, 02	-	147015	NTE125	ECG125	SK5010A
CR2701, 02	-	164717	NTE519	ECG519	SK3100
CR2704, 05, 06	-	164717	NTE519	ECG519	SK3100
CR2802	-	164717	NTE519	ECG519	SK3100
CR2901, 03	-	164717	NTE519	ECG519	SK3100
CR3101	-	176746	NTE5011A	ECG5011A	SK5A6
CR3102, 03	-	164717	NTE519	ECG519	SK3100
CR3301, 02	-	164717	NTE519	ECG519	SK3100
CR3401	-	150711	-	-	-
CR3402	-	182827	NTE5010A	ECG5010A	SK5A1
CR3403	-	175393	-	-	-
CR3601	-	200155	-	-	-
CR4001 Thru					
CR4004	-	147015	NTE125	ECG125	SK5010A
CR4101	-	164588	NTE587	ECG587	SK9937
CR4102	-	164717	NTE519	ECG519	SK3100
CR4105	-	207878	-	-	-
CR4106	-	176296	NTE125	ECG125	SK5010A
# CR4111	-	202055	NTE5577	ECG5577	SK6727
CR4112	-	164874	NTE177	ECG177	SK9091
CR4115	-	136634	NTE143A	ECG143A	SK13V
CR4116	-	200157	NTE142A	ECG142A	SK12V
# CR4117	-	176296	NTE125	ECG125	SK5010A
# CR4118, 19	-	164590	NTE580	ECG580	SK5036
CR4121	-	136634	NTE143A	ECG143A	SK13V
CR4122	-	200158	-	-	-
CR4123	-	176746	NTE5011A	ECG5011A	SK5A6
CR4201	-	164717	NTE519	ECG519	SK3100
CR4302	-	164717	NTE519	ECG519	SK3100
CR4303	-	161871	NTE145A	ECG145A	SK15V
CR4304, 05	-	164717	NTE519	ECG519	SK3100
CR4401	-	198596	-	-	-
CR4402	-	164589	NTE558	ECG558	SK3998
CR4403	-	139706	NTE177	ECG177	SK9091
CR4404	-	164717	NTE519	ECG519	SK3100
CR4405	-	140971	NTE552	ECG552	SK9000
CR4501	-	164717	NTE519	ECG519	SK3100
CR4502	-	139706	NTE177	ECG177	SK9091
CR4503	-	146320	NTE135A	ECG135A	SK5V1
CR4504	-	164589	NTE558	ECG558	SK3998
CR4511	-	164717	NTE519	ECG519	SK3100
CR4512	-	129938	NTE137A	ECG137A	SK6V2
CR4606	-	176746	NTE5011A	ECG5011A	SK5A6
CR4701	-	176296	NTE125	ECG125	SK5010A
CR4702	-	153672	NTE552	ECG552	SK9000
CR4705	-	176296	NTE125	ECG125	SK5010A
CR4709	-	164717	NTE519	ECG519	SK3100
CR4710	-	139706	NTE177	ECG177	SK9091

# For SAFETY use only equivalent replacement part.

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
CR4712	-	161871	NTE145A	ECG145A	SK15V
	-	209741	-	-	-
CR4713	-	153672	NTE552	ECG552	SK9000
CR4803	-	176296	NTE125	ECG125	SK5010A
CR4805	-	138974	NTE137A	ECG137A	SK6V2
CR4806	-	164717	NTE519	ECG519	SK3100
# CR4901	-	157301	NTE177	ECG177	SK9091
# CR4902	-	159429	NTE5019T1	ECG5019T1	SK9970
CR5003	-	139706	NTE177	ECG177	SK9091
	-	174489	NTE177	ECG177	SK9091
CR6401, 02	-	164717	NTE519	ECG519	SK3100
Q1201	-	179740	NTE2406*	ECG2406*	SK10097*
Q1400	-	179740	NTE2406*	ECG2406*	SK10097*
Q1401	-	179740	NTE2406*	ECG2406*	SK10097*
Q1401A	-	179741	NTE2407*	ECG2407*	SK10098*
Q1402	-	179740	NTE2406*	ECG2406*	SK10097*
Q1403	-	179741	NTE2407*	ECG2407*	SK10098*
Q1404, 05, 06	-	179740	NTE2406*	ECG2406*	SK10097*
Q1406A	-	179741	NTE2407*	ECG2407*	SK10098*
Q1407, 08	-	179741	NTE2407*	ECG2407*	SK10098*
Q1409	-	179740	NTE2406*	ECG2406*	SK10097*
Q1410	-	179741	NTE2407*	ECG2407*	SK10098*
Q1500	-	179741	NTE2407*	ECG2407*	SK10098*
Q1503	-	179740	NTE2406*	ECG2406*	SK10097*
Q1507	-	179741	NTE2407*	ECG2407*	SK10098*
Q1550	-	179740	NTE2406*	ECG2406*	SK10097*
Q1551	-	192849	-	-	-
Q1552	-	179740	NTE2406*	ECG2406*	SK10097*
Q1601	-	179740	NTE2406*	ECG2406*	SK10097*
Q1901	-	179740	NTE2406*	ECG2406*	SK10097*
Q2301	-	146848	NTE229*	ECG229*	SK3246A*
Q2302	-	179740	NTE2406*	ECG2406*	SK10097*
Q2701	-	179740	NTE2406*	ECG2406*	SK10097*
Q2702	-	146847	NTE123AP	ECG123AP	SK3854
Q2703	-	143806	NTE159	ECG159	SK3466
Q2707, 09	-	179740	NTE2406*	ECG2406*	SK10097*
Q2903, 04	-	176980	NTE123AP	ECG123AP	SK3854
Q2905	-	176980	NTE123AP	ECG123AP	SK3854
Q2906	-	143806	NTE159	ECG159	SK3466
Q2908, 09	-	176980	NTE123AP	ECG123AP	SK3854
Q2910	-	176980	NTE123AP	ECG123AP	SK3854
Q2911	-	179740	NTE2406*	ECG2406*	SK10097*
Q3101	-	179741	NTE2407*	ECG2407*	SK10098*
Q3102	-	179740	NTE2406*	ECG2406*	SK10097*
Q3301	-	145410	NTE159	ECG159	SK3466
Q3302, 03	-	179740	NTE2406*	ECG2406*	SK10097*
Q3401	-	146847	NTE123AP	ECG123AP	SK3854
Q4101	SGSIF461	200165	-	ECG2311%	-
Q4105, 06	-	143802	NTE159	ECG159	SK3466
Q4107	-	146847	NTE123AP	ECG123AP	SK3854
Q4108	-	143802	NTE159	ECG159	SK3466
Q4109	-	146847	NTE123AP	ECG123AP	SK3854

# For SAFETY use only equivalent replacement part.

\* Lead configuration may vary from original.

% Use Insulating hardware supplied with replacement.

RCA

MODEL F27189ETNX1 (CHASSIS CTC169CACA2)



PARTS LIST continued

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
Q4110	-	143802	NTE159	ECG159	SK3466
Q4111	-	179741	NTE2407*	ECG2407*	SK10098*
Q4201	-	146847	NTE123AP	ECG123AP	SK3854
Q4202	-	179740	NTE2406*	ECG2406*	SK10097*
Q4301	-	146847	NTE123AP	ECG123AP	SK3854
Q4302	-	200168	-	-	-
Q4304	-	146847	NTE123AP	ECG123AP	SK3854
Q4305, 06	-	179740	NTE2406*	ECG2406*	SK10097*
Q4401	2SD1885	200167	NTE2324%	ECG2324%	SK10136
Q4402	-	179740	NTE2406*	ECG2406*	SK10097*
Q4505	-	146847	NTE123AP	ECG123AP	SK3854
Q4506	-	148970	-	-	-
Q4507	-	146847	NTE123AP	ECG123AP	SK3854
Q4601	-	146847	NTE123AP	ECG123AP	SK3854
Q4702, 03	-	157627	NTE54	ECG54	SK9366
Q4704	-	157627	NTE54	ECG54	SK9366
Q4705	-	146847	NTE123AP	ECG123AP	SK3854
Q4801	-	179741	NTE2407*	ECG2407*	SK10098*
Q4802	-	200168	-	-	-
Q4803	-	146847	NTE123AP	ECG123AP	SK3854
Q4804, 05	-	179740	NTE2406*	ECG2406*	SK10097*
# Q4901	-	147665	NTE159	ECG159	SK3466
Q5001, 02, 03	KTC3229	208434	-	ECG376	-
Q6401, 02	-	179740	NTE2406*	ECG2406*	SK10097*
Q6403	-	179741	NTE2407*	ECG2407*	SK10098*
Q6404, 05	-	179740	NTE2406*	ECG2406*	SK10097*
Q6406	-	179741	NTE2407*	ECG2407*	SK10098*
Q6407	-	179740	NTE2406*	ECG2406*	SK10097*
Q6408	-	146847	NTE123AP	ECG123AP	SK3854
Q6409	-	179741	NTE2407*	ECG2407*	SK10098*
Q6410	-	146847	NTE123AP	ECG123AP	SK3854
Q6411, 12, 13	-	179741	NTE2407*	ECG2407*	SK10098*
Q6414	-	179740	NTE2406*	ECG2406*	SK10097*
Q6415, 16	-	179741	NTE2407*	ECG2407*	SK10098*
Q6417	-	179740	NTE2406*	ECG2406*	SK10097*
Q6418	-	179741	NTE2407*	ECG2407*	SK10098*
Q6419, 20	-	179740	NTE2406*	ECG2406*	SK10097*
Q6421	-	179741	NTE2407*	ECG2407*	SK10098*
Q6422, 23	-	179740	NTE2406*	ECG2406*	SK10097*
SCR501	-	197591	NTE5424	ECG5424	-
-	-	194320	-	-	-
# U1001	TA8680N	200137	NTE7010	ECG7010	SK10479
U1402	MC3403N	207827	-	ECG710	SK3102
U1401	HCF4052BE	161079	NTE4052B	ECG4052B	SK4052B
U1501	-	176226	-	-	-
U1600	-	190484	-	-	-
U1601	TDA8444	204290	-	-	-
U1602	-	207828	-	-	-
U1900	TDA7263	250031	-	-	-
U3101	-	210736	-	-	-
U3401	CX20106A	195885	-	-	-
# U4101	TEA2261	200419	-	-	-

# For SAFETY use only equivalent replacement part.  
\* Lead configuration may vary from original.  
% Use Insulating hardware supplied with replacement.

SEMICONDUCTORS continued

(Select the replacement that gives the best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
U4501	LM311N	200420	NTE922M	ECG922M	SK3668
U4801	LM311N	200420	NTE922M	ECG922M	SK3668
U6401	CX20125	201146	-	-	-
Tuner					
DH01	-	200553	-	-	-
DH02	-	200471	-	-	-
DH46	-	200472	-	-	-
DH57	-	200554	-	-	-
DH58	-	200471	-	-	-
DH66	-	200472	-	-	-
DH69, 73	-	200471	-	-	-
DH75	-	200555	-	-	-
DH83, 84	-	200472	-	-	-
DH97	-	200471	-	-	-
II06	-	200558	-	-	-
TH04	-	200566	-	-	-
TH14	-	200567	-	-	-
TH65	-	200566	-	-	-
TH75	-	200557	-	-	-
TH87	-	200574	-	-	-
TH93	-	200557	-	-	-
TI11, 13, 14	-	200556	-	-	-



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CABINET PARTS

Item	Mfr. Part No.
Cabinet, Back	BK1310
Cabinet Front, Mask	MK1314
Window, IR	200430

PARTS LIST continued

CONTROLS & RESISTORS

Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
# R3	33 5% 2W Nonflammable	196014	2W033
# R4	39 5% 2W Nonflammable	175788	2W039
R1204	5000 WBA Level	181113	-
# R1402	430 5% 1/4W	829143	QW143
R1403	3000 2% 1/10W	194917	-
R1404	3000 2% 1/8W	190464	-
# R1406	430 5% 1/4W	829143	QW143
R1409	1000 2% 1/8W	190462	-
# R1410	390 5% 1/4W	433018	QW139
# R1410 (1)	430 5% 1/4W	829143	QW143
R1411	3000 2% 1/10W	194917	-
R1412	1100 2% 1/10W	202586	-
R1413	330 2% 1/8W	181488	-
R1414	2000 2% 1/4W	175321	-
R1419	910 2% 1/8W	182627	-
R1420	1300 2% 1/8W	182823	-
R1421	510 2% 1/10W	202585	-
R1425	120K 2% 1/8W	180816	-
R1426	470 2% 1/8W	182628	-
R1427	1500 2% 1/8W	181482	-
R1428	330 2% 1/8W	181488	-
# R1429A	2200 2% 1/4W	176632	QW222
R1430	2700 2% 1/4W	176648	QW227
# R1431A	2200 2% 1/4W	176632	QW222
# R1432	10 5% 1/4W Nonflammable	829010	QW010
# R1452, 54	1000 2% 1/4W	108865	QW210
# R1456, 58	1000 2% 1/4W	108865	QW210
# R1488	2200 2% 1/4W	176632	QW222
# R1494	2200 2% 1/4W	176632	QW222
R1604	20K Stereo SAP Filter	191389	-
R1606	50K Base Band Filter	190526	-
R1609	100K LF Separator	181108	-
R1611	250K HF Separator	195951	-
R1616	50K Stereo VCO	190526	-
# R1655	3.3 5% 1/2W Nonflammable	175772	QW3D3
# R1656	10 5% 1/4W Nonflammable	829010	QW010
R1903	1600 2% 1/2W	175311	HW216
# R1906, 07	4.7 5% 1/4W	147960	QW4D7
R1936	1600 2% 1/2W	175311	HW216
# R2301	100 5% 1/4W	175325	QW110
R2302	1500 2% 1/8W	181482	-
R2303	390 2% 1/8W	178284	-
R2306	100 2% 1/8W	181486	-
R2307	620 2% 1/8W	181493	-
R2311	10K RF AGC	181107	-
# R2323	1.2 5% 1/4W	200172	QW1D2
R2602	510 5% 1/8W	174347	-
	240 2% 1/8W	190460	-
R2603	500 Notch Depth	181106	-
	500 Notch Depth	181112	-
R2604	1000 2% 1/8W	190462	-
R2604 (1)	1300 2% 1/8W	182823	-

# For SAFETY use only equivalent replacement part.  
(1) Used in model CTC169CA2.

CONTROLS & RESISTORS continued

Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
R2703	1000 2% 1/8W	190462	-
R2706	10K 2% 1/8W	174364	-
R2708	1500 2% 1/4W	175367	QW215
R2710	100 2% 1/8W	181486	-
R2711	560 2% 1/8W	182822	-
R2719	15.4K 1% 1/4W	200175	-
# R2721	27K 5% 1/2W	206037	HW327
R2725	750 2% 1/10W	202914	-
	680 2% 1/10W	197644	-
R2730	1000 Contrast Preset	181109	-
R2732	1500 2% 1/8W	181482	-
R2733	270 2% 1/8W	181481	-
R2734	430 2% 1/8W	190461	-
R2734 (1)	1000 2% 1/8W	190462	-
R2736	910 2% 1/8W	182627	-
R2740	560 2% 1/8W	182822	-
R2742	1500 2% 1/4W	175367	QW215
	1500 2% 1/8W	181482	-
R2801	1000 2% 1/8W	190462	-
R2802	30K Chroma Filter	177366	-
R2804	120K 2% 1/8W	180816	-
R2813	22K 2% 1/8W	174367	EW322
R2814	30K 2% 1/10W	200176	-
R2816	10K Tint Preset	181107	-
R2910	220 2% 1/8W	181492	-
R2913	4500 Red Bias	190533	-
R2914	220 2% 1/8W	181492	-
R2917	4500 Blue Bias	190533	-
R2918	220 2% 1/8W	181492	-
R2921	4500 Green Bias	190533	-
R2922	220 2% 1/8W	181492	-
# R2924	10 5% 1/4W	829010	QW010
R2926	100 Red/ Blue Drive	190531	-
R2928	100 Green Drive	190531	-
R2935	220 2% 1/8W	181492	-
R2938	200 2% 1/8W	178280	-
R2942, 43	470 2% 1/8W	182628	-
R2944	560 2% 1/8W	182822	-
R2945	200 2% 1/8W	178290	-
# R2947	10 5% 1/4W Nonflammable	829010	QW010
R3120	560 2% 1/8W	182822	-
R3121	10K 2% 1/8W	174364	-
R3136	10K 2% 1/8W	174364	-
R3138	22K 2% 1/8W	174367	EW322
R3141	100 2% 1/8W	181486	-
R3143	1000 2% 1/8W	190462	-
R3305	10K 2% 1/8W	174364	-
R3307	27K 2% 1/10W	205245	-
R3309	7500 2% 1/8W	200178	-
# R3310	47 5% 1/4W	175040	QW047

# For SAFETY use only equivalent replacement part.  
(1) Used in model CTC169CA2.

CONTROLS & RESISTORS continued

Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
R3335	18K 2% 1/10W	205356	-
R3342	91K 2% 1/10W	200180	-
R3343	13K 2% 1/8W	178285	-
R3346	1500 Sub Bright	200181	-
R3402	133K 1% 1/4W	195752	-
# R4001	2.7 10% 15W Wirewound	190487	-
# R4002	2.7M 10% 1/2W	217662	HW527
# R4003	33K 5% 2W	200182	2W333
R4102	5100 2% 1/4W	175417	QW251
# R4103	51K 5% 1/4W	175315	QW351
R4104	1500 2% 1/4W	175367	QW215
R4108	910 2% 1/4W	203097	QW191
# R4110	.18 5% 2W Wirewound	200183	-
R4113	300 Standby	190525	-
R4114	45.3K 1% 1/4W	176506	-
R4115	3240 1% 1/4W	200184	-
# R4116	500 B+ Regulator	202055	-
# R4119	330 5% 7W Wirewound	200185	-
R4120	10 2% 1/4W	200186	QW010
# R4126	6.8 5% 3W Wirewound	206016	-
R4139, 45	10K 2% 1/8W	174364	-
R4148	53.6K 1% 1/4W	200189	-
# R4149	1.2 5% 1W	831A12	1W1D2
R4152	470 2% 1/8W	182628	-
R4306	15K Horizontal Phase	200417	-
	4500 Horizontal Phase	190533	-
R4307	26.7K 1% 1/4W	196081	-
	330 5% 1/4W	175046	QW133
R4308	120 2% 1/8W	181485	-
# R4312	47 5% 1/4W	175040	QW047
# R4313	100 5% 1/2W	176796	HW110
# R4314	39 5% 1/2W	200192	HW039
R4326	3300 2% 1/10W	195938	-
R4327	15K 2% 1/4W	175360	QW315
R4328	5100 2% 1/8W	175418	-
# R4401	220 5% 1/2W	176651	HW122
# R4402	10 5% 1/2W	181098	HW010
R4509, 10	10K 2% 1/8W	174364	-
R4511	8200 2% 1/8W	181065	-
R4513	120 2% 1/8W	181485	-
# R4518	470 5% 1/4W	829147	QW147
R4522	15K Vertical Height	200417	-
# R4523	820 5% 1W Nonflammable	175349	1W182
# R4544	4.7 5% 1/4W	200197	QW4D7
# R4701	10 5% 1/2W Nonflammable	830010	HW010
# R4703	2.7 5% 3W Wirewound	196074	-
# R4704	Resistor Block	196072	-
# R4710	12 2% 1/4W	829012	QW012
# R4713	82K 2% 1/2W	830382	HW382
R4715	200 2% 1/4W	175363	QW120
R4716	680 2% 1/4W	175312	QW168
R4717	56 2% 1/4W	175318	QW056
R4718	100 2% 1/8W	181486	-

# For SAFETY use only equivalent replacement part.

RCA

MODEL F27189ETNX1 (CHASSIS CTC169CA/CA2)

PARTS LIST continued

CONTROLS & RESISTORS continued			
Item No.	Function/Rating	Mfr. Part No.	NTE Part No.
# R4719	470 5% 1/2W	830147	HW147
# R4720	10 5% 1/2W Nonflammable	830010	HW010
# R4801	1M 5% 1/8W	174361	-
R4802	2000 Width	200199	-
R4805	10K E/W Pin Amp	18107	-
# R4809	390 5% 1/2W	175769	HW139
R4812	10K 2% 1/8W	174364	-
# R4821	150 5% 1W	175784	1W115
R4825	3300 2% 1/10W	195938	-
# R4901	10K 5% 1/4W	175317	QW310
# R4902	100 5% 1/4W	175325	QW110
# R4903	34K 1% 1/4W	207881	-
# R4904	46.4K 1% 1/4W	204794	-
R4905	22K 2% 1/4W	175054	QW322
R4920	5100 2% 1/4W	175417	QW251
R4923	150K XRP	207883	-
# R5015	3.3M	196072	-
R6401	1000 2% 1/4W	175055	QW210
R6402	2200 2% 1/8W	181079	-
R6403	18K 2% 1/8W	174366	-
	27K 2% 1/8W	174366	-
R6404	10K 2% 1/8W	174364	-
R6407	4700 2% 1/8W	178287	-
R6408	15K 2% 1/8W	192835	-
	13K 2% 1/8W	178285	-
R6417	1500 2% 1/8W	181482	-
R6418	680 2% 1/4W	178286	-
R6420	1800 2% 1/8W	181484	-
R6421	1500 2% 1/8W	181482	-
R6422	800 2% 1/8W	176814	-
R6422 (1)	1000 2% 1/8W	190462	-
R6423	750 2% 1/8W	181056	-
R6424	620 2% 1/8W	181493	-
R6425	680 2% 1/8W	178286	-
R6426	430 2% 1/8W	190461	-
R6426 (1)	390 2% 1/8W	178284	-
R6447	750 2% 1/8W	181056	-
R6448	300 Luma	190525	-
R6449	5100 2% 1/8W	175418	-
R6469	10K 2% 1/8W	174364	-
R6470	3900 2% 1/8W	157377	-
R6476	6200 2% 1/8W	181058	-
R6478	2700 2% 1/8W	181064	-
# R6487	10 5% 1/4W	829010	QW010
# RT4201	5.9 Cold PTC	207768	-
# For SAFETY use only equivalent replacement part.			
(1) Used in model CTC169CA2.			

CAPACITORS & ELECTROLYTICS		
Item No.	Rating	Mfr. Part No.
C1204	10pF 1% 50V NPO	174402
C1406	39pF 5% 50V NPO	181090
C1407	150pF 5% 50V NPO	181091
C1616	2.2µF 20% 50V NP	190527
	2.2µF 20% 100V NP	195691
C1617	3.3µF 20% 50V NP	190528
	3.3µF 20% 100V NP	189992
C1618	4.7µF 20% 50V NP	190529
	4.7µF 20% 100V NP	189992
C2308	180pF 5% 50V NPO	190543
C2309	12pF 5% 50V NPO	174403
C2310	18pF 5% 50V NPO	194440
C2312	7pF ±.5pF 50V NPO	174401
C2316	560pF 5% 50V NPO	200139
C2602	33pF 5% 50V NPO	174408
C2603	100pF 5% 50V NPO	174412
C2604	127pF 5% 50V NPO	174407
C2604 (1)	15pF 5% 50V NPO	174404
C2707	100pF 5% 50V NPO	174414
C2718	100pF 5% 50V NPO	174412
C2724	68pF 5% 50V NPO	193339
C2724 (1)	180pF 5% 50V NPO	193338
C2804	15pF 5% 50V NPO	174404
C2811 Thru		
C2813	22pF 5% 50V NPO	174406
C2815	27pF 10% 50V NPO	192050
C2905, 09	18pF 5% 50V NPO	174405
C3110	22pF 5% 50V NPO	194903
C3119, 20	56pF 5% 50V NPO	190542
C3128	560pF 5% 50V NPO	200139
C3144	560pF 10% 50V NPO	202904
C3301, 02	100pF 5% 50V NPO	174412
C3303	100pF 5% 50V NPO	174412
	100pF 5% 50V NPO	193340
C3314	220pF 5% 50V NPO	178188
C3315	100pF 5% 50V NPO	174412
C3316	560pF 10% 50V NPO	202904
C3317	15pF 5% 50V NPO	174404
	15pF 5% 50V NPO	202907
C3318	47pF 5% 50V NPO	174409
C3320, 21	47pF 5% 50V NPO	174409
# C4002, 05	680pF 20% 1kV	190538
# C4007	680µF 20% 200V	190560
# C4008	.005 20% 25V	195697
# C4110	470pF 5% 2kV N1500	-
	470pF 5% 1.5kV N1500	143242
C4111	680pF 20% 1kV	190538
# C4112	.0056 5% 1kV	-
	.0056 5% 800V	201619
C4116	47pF 5% 50V NPO	143867
# For SAFETY use only equivalent replacement part.		
(1) Used in model CTC169CA2.		

CAPACITORS & ELECTROLYTICS continued		
Item No.	Rating	Mfr. Part No.
C4140	680pF 20% 1kV	190538
# C4141	470µF 20% 180V	200147
C4155	470pF 5% 50V N750	210893
# C4401	.015 1.6kV	206007
# C4402	.056 5% 400V	200149
# C4403	.5 5% 250V	200150
# C4406	470pF 5% 2kV N1500	-
	470pF 5% 1.5kV N1500	143242
# C4407	.0047 10% 250V	190534
# C4503	1500µF 10% 35V	-
	2200µF 10% 35V	200151
# C4511	1.54µF 5% 250V	200152
C4701	.01 20% 1kV	137583
C4702, 04	680pF 20% 1kV	190538
C4713	680pF 20% 1kV	190538
# C4716	.082 10% 250V	181404
C4801	10µF 20% 50V NP	196060
# C4905	1µF 20% 100V	189991
	3.3µF 20% 100V	-
C5001	.001 10% 3kV	120696
C6402	100pF 5% 50V NPO	174412
C6404	47pF ± 5% 50V NPO	174402
C6406	10µF 20% 25V NP	146256
C6407	100pF 5% 50V NPO	174412
C6408	82pF 5% 50V NPO	176828
C6417	470pF 10% 50V NPO	174416
C6420, 21	220pF 5% 50V NPO	178188
# For SAFETY use only equivalent replacement part.		

PARTS LIST continued

COILS & TRANSFORMERS

Item No.	Function/Rating	Mfr. Part No.
# DF4500 (1)	Yoke Horiz 1mH Vert 19mH	-
FB4101, 02	Ferrite Bead	152102
FB4103	Ferrite Bead	153328
FB4401	Ferrite Bead	161237
FB4402	Ferrite Bead	206390
L1201	-	190504
L2301	.68µH	195708
L2302	2.2µH	197616
L2303	-	190506
L2304	-	190503
L2305	2.2µH	197616
L2306	-	206035
L2307	18µH	195711
L2601	18µH	181131
L2602	39µH	195710
L2603	-	161243
L2702	39µH	195710
L2704	-	195750
L2705	4.7µH	158726
L2706	10µH	175409
L2801	22µH	195712
L2802	22µH	195712
L2803	22µH	195712
L2804	-	200161
L3101	10µH	175409
# L3601	-	161243
L3602	10µH	207880
L4101	2.2µH	190480
# L4201	Degaussing	250050
# L4401	-	196064
L4701	47µH	190729
# L4702	10µH	175409
# L4803	-	206391
L5001	100µH	161243
L5002	270µH	205222
L5003	220µH	195707
L6401	-	200161
L6402	22µH	195712
L6403	120µH	195750
L6406	-	176622
# T4101	PWM	200204
# T4102	Switch Mode	207884
# T4301	Horizontal Drive	205196
# T4401	Horizontal Output	200207
Tuner		
LH64	3.9µH	200559
LH78	1.2µH	200481

# For SAFETY use only equivalent replacement part.  
(1) Bonded to CRT.

MISCELLANEOUS

Item No.	Description	Mfr. Part No.	Notes
# C4006	Capristor	250102	11M, 470pF
CF1201	Filter	195702	4.5MHz
CF2301	Trap	181125	4.5MHz
DL2601	Delay Line	223169	-
DL2701	Delay Line	195704	-
# F4001	Fuse	175425	5Amp, 125V, Fast Acting
# FL4001	Filter	207879	AC Line
J1401	Jack	190514	Video Input 1
J1402	Jack	190514	Video Input 2
J1403	Jack	190514	Selected Video Output
J1404	Jack	195705	S-Video Input
J1407	Jack	190513	Left Input 1 Audio Input
J1408	Jack	190512	Right/Mono Input 1 Audio Input
J1409	Jack	190513	Left Input 2 Audio Input
J1410	Jack	190512	Right/Mono Input 2 Audio Input
J1411	Jack	190516	Left Audio Output
J1412	Jack	190516	Left Select Audio Output
J1413	Jack	190515	Right Audio Output
J1414	Jack	190515	Right Select Audio Output
# K4201	Relay	190490	Degaussing
# KS5001	Socket	189986	CRT
# P1	Line Cord	187802	AC, Polarized
SF2301	Filter	200203	SAW
SP1900, 03	Speaker	201716	3" X 8", 8 Ohms
SW1	Switch	211982	External Speaker
SW3401	Switch	181724	Audio
	Switch	207842	Audio
SW3403	Switch	181724	Channel Up
	Switch	207842	Channel Up
SW3411	Switch	181724	Video
	Switch	207842	Video
SW3413	Switch	181724	Volume Down
	Switch	207842	Volume Down
SW3421	Switch	181724	Set Up
	Switch	207842	Set Up
SW3423	Switch	181724	Volume Up
	Switch	207842	Volume Up
SW3431	Switch	181724	Channel Down
	Switch	207842	Channel Down
SW3433	Switch	181724	Power
	Switch	207842	Power
U2601	Filter	179729	Comb
# V101	CRT	A68AEG10X01	A68AEG10X01
Y2801	Crystal	161235	3.58MHz
Y3101	Crystal	182839	8MHz
Y4301	Resonator	200210	503.3kHz
	Adapter	193983	Antenna 75 To 300 Ohms

# For SAFETY use only equivalent replacement part.

MISCELLANEOUS continued

Item No.	Description	Mfr. Part No.	Notes
	Jack Panel	206753	-
	PC Board (1)	210880	Black Stretch
	PC Board (1)	203094	CRT
	PC Board (1)	207813	External Speaker
	PC Board (1)	250109	Front Panel Assembly
	PC Board (1)	219413	5W Analog Audio
	Transmitter	197461	Remote (CRK59B)
	Tuner (1)(2)	200075	UHF/VHF (M-2016)
Tuner			
QI06	Crystal	200560	4MHz

(1) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.  
(2) Contact TNI Electronics for replacement; order by part number on tuner.

RCA

MODEL F27189ETNX1 (CHASSIS CTC169CA/CA2)