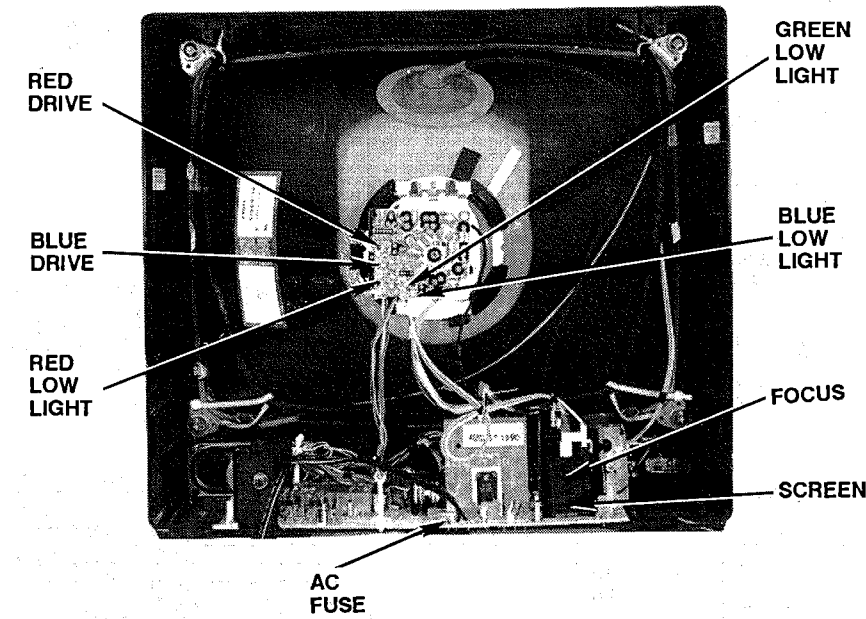


CABINET - REAR VIEW



TEST JIG HOOKUP				
Function	Chek-A-Color Adapter No.	PC Board Plug	Pin	Color
CRT	B239	# DY	1	Black
Yoke	D482		2	Yellow
Yoke Setting	YP2A		4	Red
Comments	Focus Tap		6	Blue

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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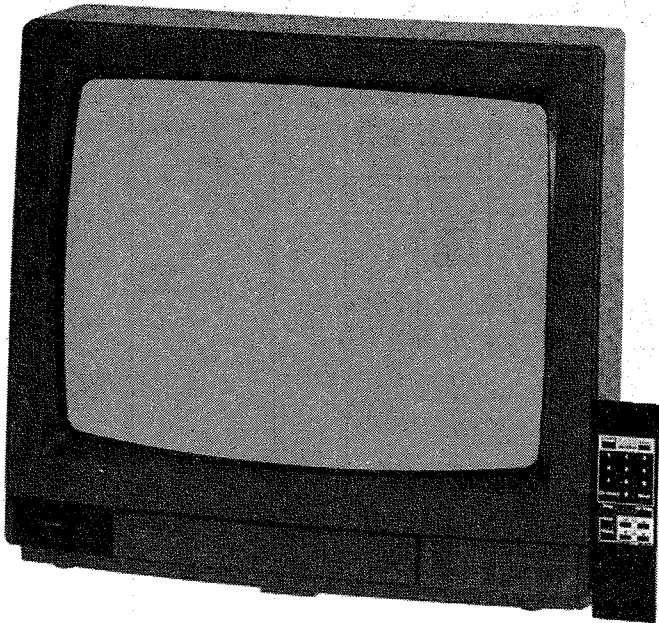
PHOTOFACT® Technical Service Data

SET 2874

MODELS CTM-1952R, CTM1953R

PANASONIC

PANASONIC
Model CTM-1952R (Chassis ADP201)



Essential coverage
for servicing a television receiver...

- Schematics
- Component locations
- Parts lists

Coverage includes this additional model and chassis:

MODEL	CHASSIS
CTM-1953R	ADP201



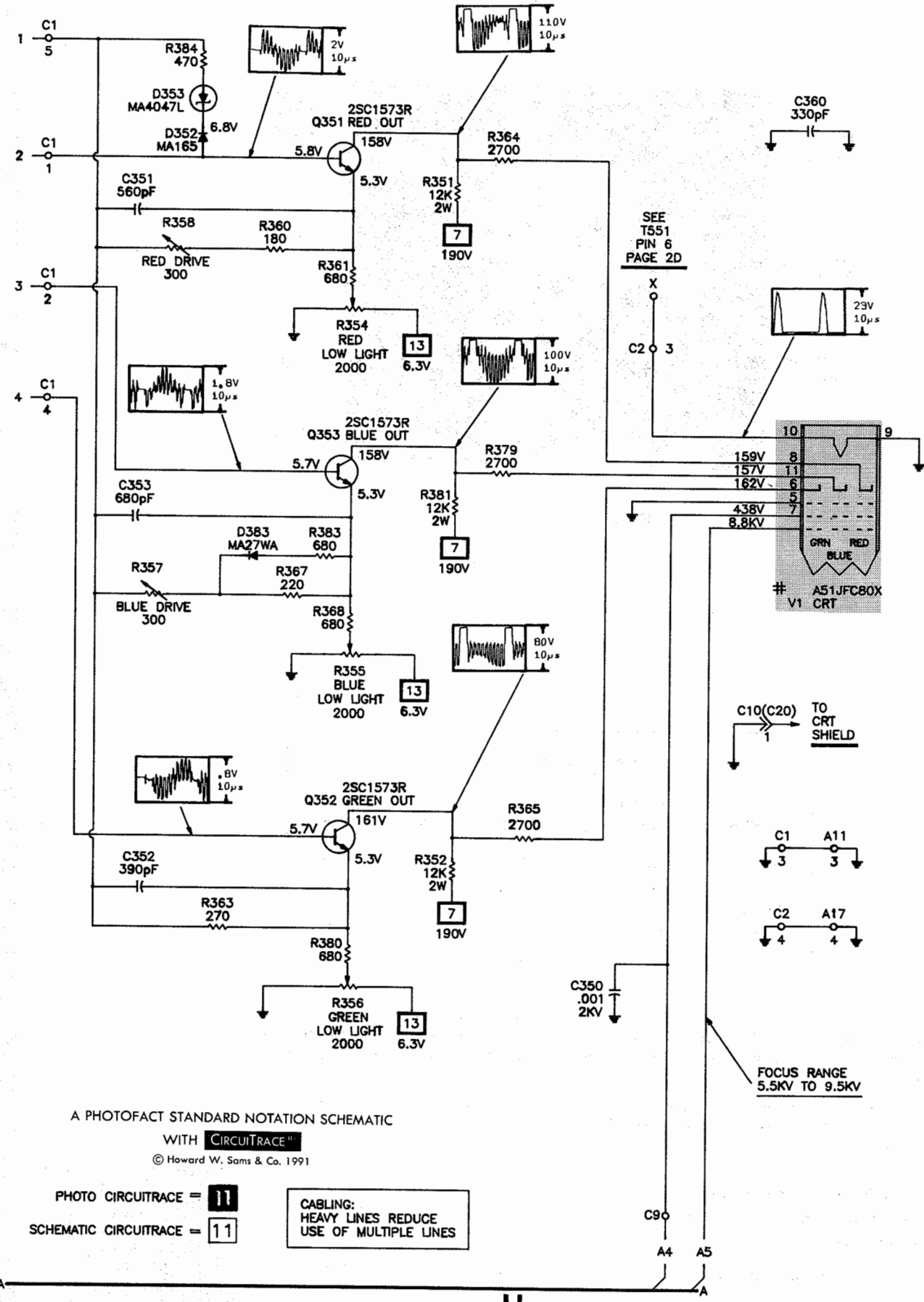
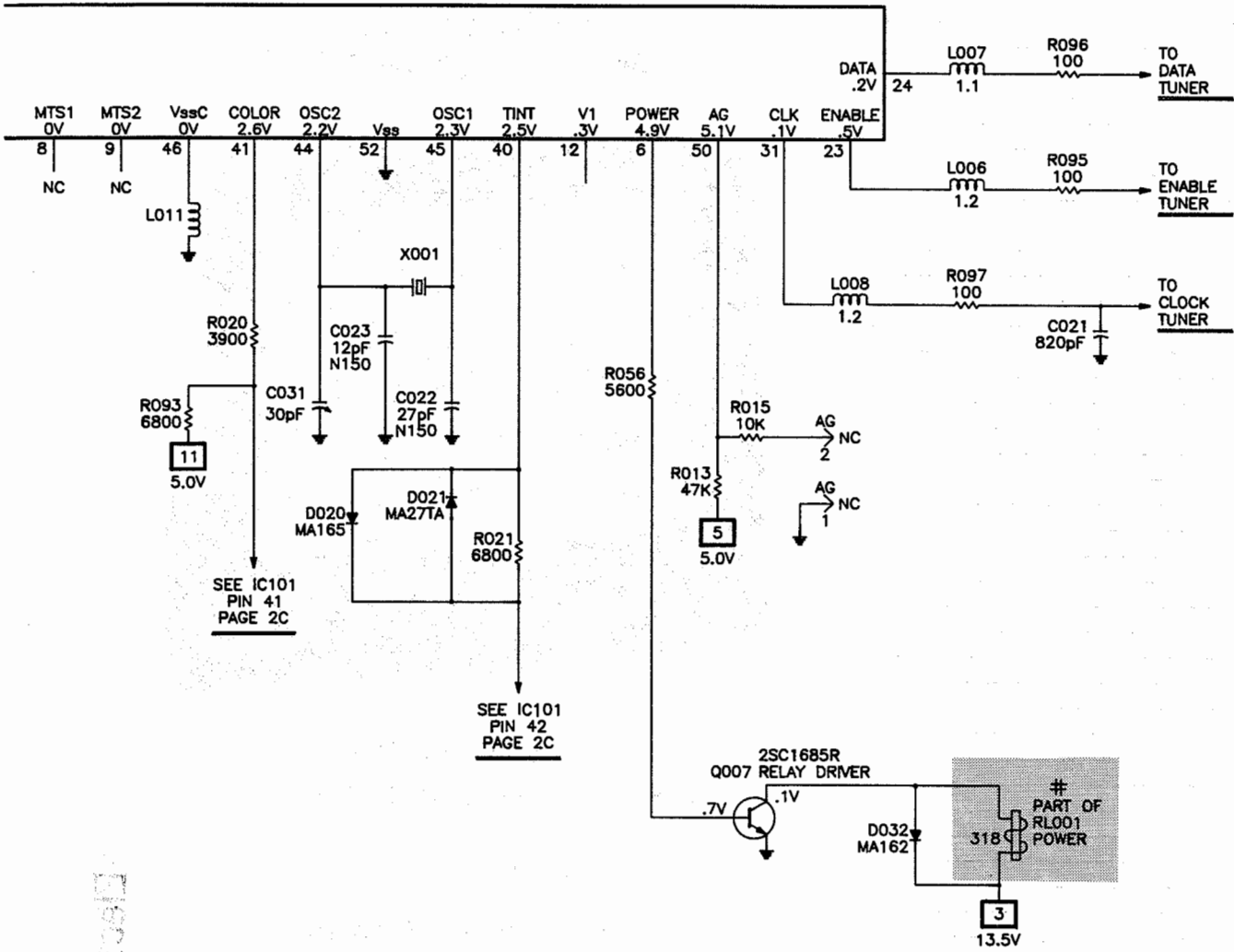
HOWARD W. SAMS & COMPANY

SEPTEMBER 1991 SET 2874

For Supplier Address,
See PHOTOFACT Annual Index

TUNER CONTROL SCHEMATIC continued

CRT SCHEMATIC



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

- X- Circuitry not used in some versions
 - Circuitry used in some versions
 - ↓ Ground
 - Chassis
 - Common tie point
- Waveforms and voltages are taken from ground, unless otherwise noted.
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.
Terminal identification may not be found on unit.
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.

A PHOTOFAC STANDARD NOTATION SCHEMATIC
WITH "CIRCUITRACE"
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PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11
CABLING: HEAVY LINES REDUCE USE OF MULTIPLE LINES

PANASONIC
MODELS CTM-1952R, CTM-1953R

PARTS LIST continued

TEST EQUIPMENT

Test equipment listed by participating manufacturers 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	B&K Precision No.	SENCORE No.
Oscilloscope	1541A, 2120, 2125, 2160, 2190, 2522	SC61
Generators		
RGB	1249A, 1260	RG67
Multiburst Signal	1251, 1260	VA62A
Color Bar	1211A, 1249A, 1251, 1260	VA62A, CG25,NT64
TV Stereo	2009	ST65, ST66
Analog VOM	114, 117, 177, 214	-
Digital VOM	377, 388HD, 2700 Series, 2831A, 2860, 2900 Series	DVM37, DVM56A, SC61
Frequency Meter	1803A, 1804A, 1805, 1822, 1851, 1855	FC71, SC61
Hi-Voltage Probe	HV-44	HP200
VOM/DMM	-	TP212
Accessory Probes	PR-28(HV)	-
Isolation Transformer	TR110, 1604, 1653, 1655	PR57
Capacitance Analyzer	810A, 815, 820, 830	LC76, LC101, LC102
CRT Analyzer	480, 490	CR70
Temperature Probe	TP-28, TP-30	-
AC Leakage Tester	1655	PR57
Logic Probe	DP21, DP51	-
Logic Pulser	DP31, DP101	-
Inductance Analyzer	875A	LC76, LC101, LC102
Flyback Yoke Tester	875A	VA62A, LC76, LC101, LC102
TV Stereo Power Monitor	-	SR68
Field Strength Meter	-	FS73, FS74
Transistor Tester	510, 520B, 530	TF46
Video Analyzer	-	VA62A
Modulator/Converter	1201	-

CABINET PARTS

Item	Part No.
Cabint, Front (Model CTM-1952R)	TXFKY090SER
Cabint, Front (Model CTM-1953R)	TXFKY100SER
Cabinet, Back	TXFKU060SER
Door, Control	TKP1811831M
Grille, Speaker	TKP1757881
Nameplate, Panasonic	TBM173024-1



Created with pride by the
employees of Howard W. Sams
& Company.

J. Kocha, J. Young

MISCELLANEOUS

Item No.	Description	Mfr. Part No.	Notes
# CRA801	Capristor	EXNG131P155	130pf/1.5MEG
# F001	Fuse	XBA1F40NU100	4 Amp/125V AC
L010	Ferrite Bead	EXCELSA24T	-
L109	Ferrite Bead	EXCELSA35B	-
# L555	Ferrite Bead	EXCELSA24B	-
# L556	Ferrite Bead	EXCELSA24B	-
L561	Ferrite Bead	EXCELSA24T	-
# L801	Line Choke	ELF18D650A	-
# L804	Degaussing Coil	OLK19016M	-
# P001	AC Line Cord	TSX3134X	-
# RL001	Power Relay	TSE1864	-
S001	Switch	EVQQBH12T	Power
S002	Switch	EVQQBH12T	V Down
S003	Switch	EVQQBH12T	V Up
S004	Switch	EVQQBH12T	Channel Down
S005	Switch	EVQQBH12T	Channel Up
S006	Switch	EVQQBH12T	Normal
S008	Switch	EVQQBH12T	Display
S009	Switch	EVQQBH12T	Set Up
S010	Switch	EVQQBH12T	Video
S011	Switch	EVQQBH12T	TV/Video
S014	Switch	ESB621283	CATV
# V1	CRT	51GGB95X	-
X001	Crystal	TSS2077MX	Oscillator
X101	Filter	EFCH45MVK12N	SAW
X102	Trap	EFCS4R5MW3BA	4.5MHZ
X201	Filter	EFCS4R5MS4	4.5MHZ BandPass
X501	Crystal	EFOA503KS41	Oscillator
X601	Crystal	TSS816MX	3.58MHZ
	Antenna, VHF	TSA120024	-
	Fuse Holder	TJC6319	-
	Magnet	TLC2047	Purity & Static Convergence
	Receiver	EUR37234	-
	Socket, CRT	TJS1A5050	-
	Transmitter, Remote	EUR64976	-
	Tuner	ENV56897G3	-
	Wedge	TMM2A30201	Deflection Yoke

For SAFETY use only equivalent replacement part.

CONTROLS

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

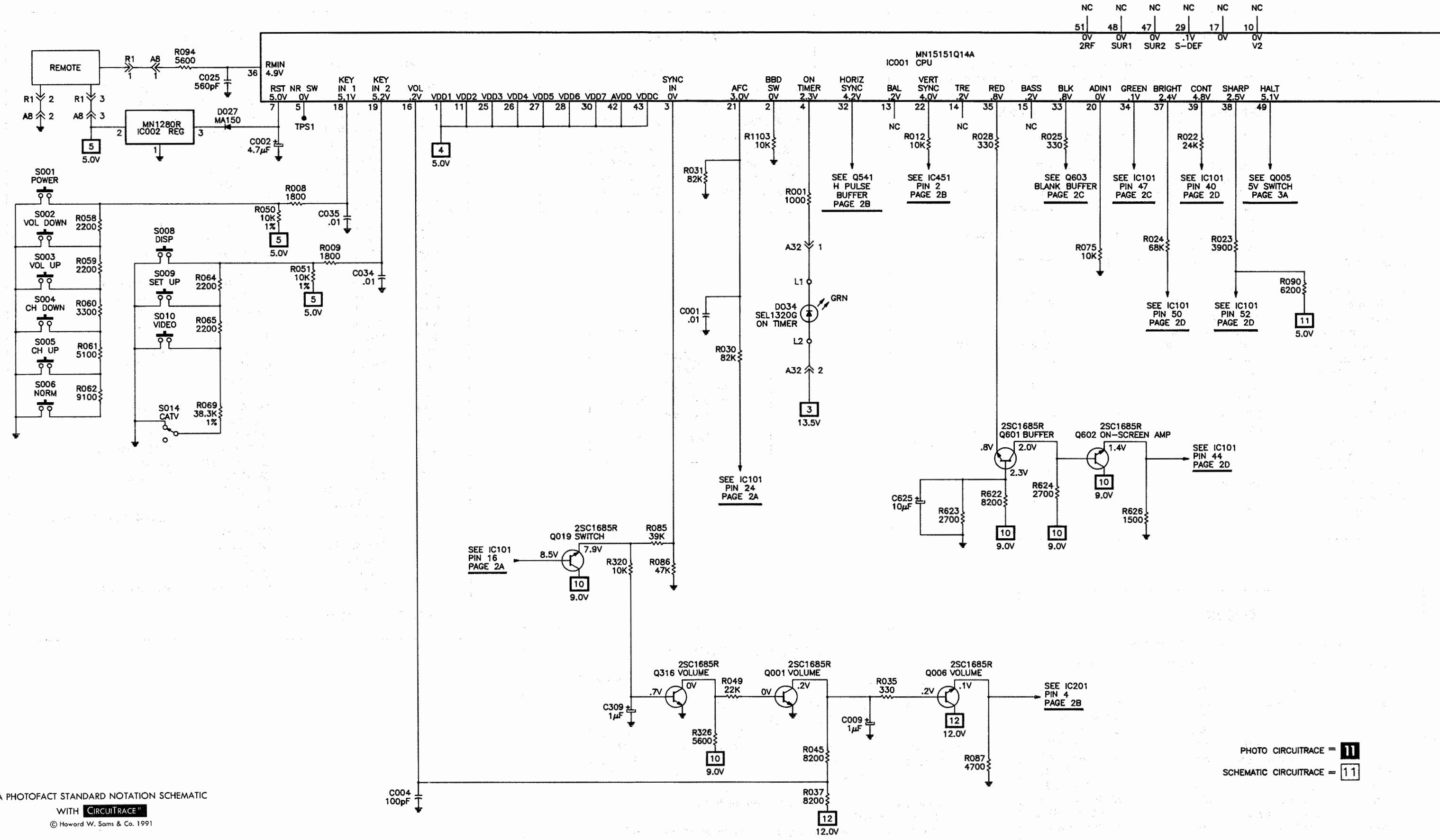
Item No.	Function	Resistance	Mfr. Part No.
R106	RF-AGC	5000	EVN60AA00B53
R304	Sub Contrast	2000	EVND4AA00B23
R318	Sub Bright	10K	EVN60AA00B14
R354	Red Low Light	2000	EVN49AA00B23
R355	Blue Low Light	2000	EVN49AA00B23
R356	Green Low Light	2000	EVN49AA00B23
R357	Blue Drive	300	EVN49AA00B32
R358	Red Drive	300	EVN49AA00B32
R453	Vert Size	50K	EVN60AA00B54
R524	Horiz Centering	200	EVND4AA00B22
R619	Sub Tint	5000	EVND4AA00B53

COILS & TRANSFORMERS

Item No.	Function	Mfr. Part No.	Other Identification
# L570	Yoke 90° Horiz 1.02mH Vert 25.8mH	TLY26330F	TLY26330F (1)
# T001	Power	TLP16297	TLP16297 (1)
# T501	Horiz Driver	ETH19Y70AY	G0711 (1)
# T502	Horiz Coupling	ETE19Z30AY	E1930 (1)
# T551	Horiz Output	TLF15615F (2)	5615F (1)

For Safety use only Equivalent Replacement Parts.
(1) Number on Unit.
(2) EVG / Russell Industries suggested replacement number FBT-211.

TUNER CONTROL SCHEMATIC



A PHOTOFAC STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE[®]
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PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11

PARTS LIST

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.

- B&K Precision
- Custom Components Corporation (Chek-A-Color)
- EVG / Russell Industries, Inc.
- GC-THORSEN
- NTE Electronics, Inc. (NTE)
- Philips ECG Company (ECG)
- PTS Electronics Corporation (PTS)
- Quam-Nichols Co. (Quam)
- Sencore, Inc.
- Thomson Consumer Electronics, Inc. (SK, TCE)

SEMICONDUCTORS

(Select replacement for best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
D004	MA165	-	NTE519	ECG519	SK3100
D005	QA205D	TVSQA205D	NTE5010A	ECG5010A	SK5A1
D020	MA165	-	NTE519	ECG519	SK3100
D021	MA27TA	-	NTE605A	ECG605A	SK7952
D022	MA161	-	NTE177	ECG177	SK9091
D027	MA150	-	NTE177	ECG177	SK9091
D031	AM01Z	-	NTE116	ECG116	SK3313
	ERA15-01	-	NTE552	ECG552	SK9000
D032	MA162	-	NTE519	ECG519	SK3100
D034	SEL1320G	-	NTE3167	ECG3167	SK2167
D302	MA150	-	NTE177	ECG177	SK9091
D352	MA165	-	NTE519	ECG519	SK3100
D353	MA4047L	-	NTE5009A	ECG5009A	SK4A7
D383	MA27WA	-	NTE605A	ECG605A	SK7952
D451	ERA15-01	-	NTE552	ECG552	SK9000
D452,53	MA165	-	NTE519	ECG519	SK3100
D454	MA150	-	NTE177	ECG177	SK9091
D470	MA4047L	-	NTE5009A	ECG5009A	SK4A7
D502	QA208C	TVSQA208C	NTE5016A	ECG5016A	SK8A2
D506	QA206B	TVSQA206B	NTE5012A	ECG5012A	SK6A0
# D531	AU01	-	NTE552	ECG552	SK9000
	AS01	-	NTE552	ECG552	SK9000
	ERA2204	-	NTE552	ECG552	SK9000
# D532	MA165	-	NTE519	ECG519	SK3100
# D533	QA208G	TVSQA208G	NTE5016A	ECG5016A	SK8A2
D542	MA165	-	NTE519	ECG519	SK3100
# D551	RU2N	-	NTE552	ECG552	SK9000
# D552 - D554	AS01	-	NTE552	ECG552	SK9000
	AU01	-	NTE552	ECG552	SK9000
	ERA2204	-	NTE552	ECG552	SK9000
D555	MA165	-	NTE519	ECG519	SK3100
D556	MA1360H	-	-	-	-
D557	QB105N	TVSQB105N	NTE135A	ECG135A	SK5V1
D560	QB109SA	TVSQB109SA	-	-	-
D603	MA150	-	NTE177	ECG177	SK9091
# D801 - D804	EM02BM	-	NTE125	ECG125	SK3081
	ERC13-08	-	NTE125	ECG125	SK3081
	ERC12-08	-	NTE125	ECG125	SK3081
	RM11B	-	NTE125	ECG125	SK3081
D806	ERPF5B0M050K	-	-	-	-
IC001	MN15151Q14A	-	-	-	-
	MN15151Q14	-	-	-	-
IC002	MN1280R	-	NTE15044	-	SK9854
# IC101	AN5160NK	-	-	-	-
	AN5160NK-N	-	-	-	-
IC201	AN5265	-	NTE1789	ECG1789	-
IC451	LA7835	-	NTE1855	ECG1855	SK10085
	LA7835-TV	-	NTE1855	ECG1855	SK10085
# IC551	AN78M12	-	NTE966	ECG966	SK3592
	AN78M12LB	-	NTE966	ECG966	SK3592
# IC801	STR30130	TVSSTR30130	NTE1777	ECG1777	SK9870

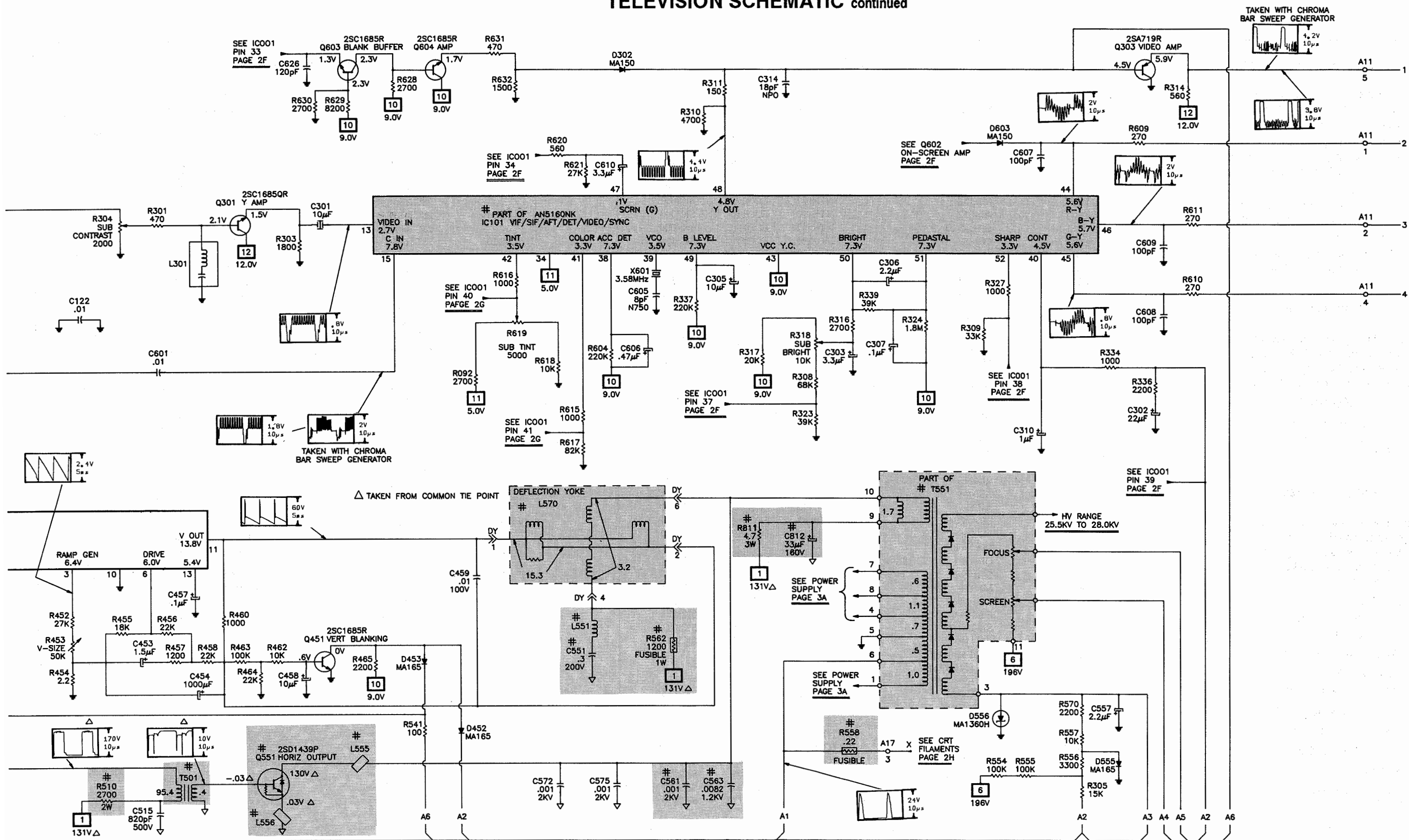
For SAFETY use only equivalent replacement part.

SEMICONDUCTORS continued

(Select replacement for best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
Q001,4	2SC1685R	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229
Q005	2SA564AQ	-	NTE290A	ECG290A	SK3932
	2SA564AQR	-	NTE290A	ECG290A	SK3932
Q006,7,	2SC1685R	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229
Q019	2SC1685R	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229
Q102	2SC1685Q	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229
Q301	2SC1685Q	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229
Q303	2SA719R	-	NTE290A	ECG290A	SK3114A
	2SA719QR	-	NTE290A	ECG290A	SK3114A
Q316	2SC1685R	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229
Q351 - Q353	2SC1573R	-	NTE399	ECG399	SK9352
	2SC1573NC	-	NTE399	ECG399	SK9352
	2SC1573AQ	-	NTE399	ECG399	SK9352
Q451	2SC1685R	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229
Q454	2SA564AQ	-	NTE290A	ECG290A	SK3932
	2SA564AQR	-	NTE290A	ECG290A	SK3932
Q501	2SC1573A	-	NTE399	ECG399	SK9352
	2SC1573AH	-	NTE399	ECG399	SK9352
# Q531	2SC1685R	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229
# Q532	2SA564AQ	-	NTE290A	ECG290A	SK3932
	2SA564AQR	-	NTE290A	ECG290A	SK3932
# Q533	2SC1685R	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229
Q541	2SC1685R	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229
# Q551	2SD1439P	-	NTE2302	ECG2302	SK9422
	2SD1439PLB	-	NTE2302	ECG2302	SK9422
Q601 - Q604	2SC1685R	-	NTE85	ECG85	SK9229
	2SC1685QR	-	NTE85	ECG85	SK9229

For SAFETY use only equivalent replacement part.

TELEVISION SCHEMATIC continued

PARTS LIST continued

ELECTROLYTIC CAPACITORS

Item	Rating	Mfr. Part No.
C301	10 16V NP	ECEA1CN100S
C452	1 25V Tantalum	ECSZ25EF1V
# C531	33 25V	ECEA1EU330
# C552	220 25V	ECEA1EU221
# C553	10 250V	ECEA2EU100
# C559	220 25V	ECEA1EU221
# C566	220 35V	ECEA1VU221
# C805	330 200V	ECES2DU331G
# C806	22 160V	ECEA2CU220
# C812	33 160V	ECEA160V33Z

For SAFETY use only equivalent replacement part.

CAPACITORS

Item	Rating	Mfr. Part No.
C022	27 N150 50V 5%	ECCF1H270JP
C023	12 N150 50V 5%	ECCF1H120JP
CO31	30pf Trimmer	ECRHA030E41
C103	2 NPO 50V .25pF	ECCF1H020CC
C104	2 NPO 50V .25pF	ECCF1H020CC
C112	18 NPO 50V 5%	ECCF1H180JC
C151	68 NPO 50V 5%	ECCF1H680JC
C152	15 NPO 50V 5%	ECCF1H150JC
C155	2 NPO 50V .25pF	ECCF1H020CC
C207	68 N150 50V 10%	ECCF1H680KP
C314	33 NPO 50V 5%	ECCF1H330JC
C355	.001 500V 10%	ECKD2H102KB
C459	.01 100V 10%	ECQM1103KZ
C503	220 N750 50V 5%	ECCF1H221JU
C513	10 500V .1pF	ECCD2H100F
C514	820 500V 10%	ECKD2H821KB
C515	820 500V 10%	ECKD2H821KB
# C533	.01 50V	ECKF1H103ZF
# C551	.39 200V 5%	ECQF2H394JS
C554	560 500V 10%	ECKD2H561KB
C555	560 500V 10%	ECKD2H561KB
# C561	.001 2KV 5%	ECKD3D102JB
	.0012 2KV 5%	ECKD3D122JB
	.0015 2KV 5%	ECKD3D152JB
	680 2KV 5%	ECKD3D681JB
	820 2KV 5%	ECKD3D821JB
# C563	.0082 1.2KV	ECWH12H822JS
# C568	560 500V 10%	ECKD2H561KB
# C572	.001 2KV 5%	ECKD3D102JB
# C575	560 2KV 5%	ECKD3D561JB
C605	8 N750 50V .5pF	ECCF1H080DU
# C802	.01 500V	ECKD2H103PU
# C803	.01 500V	ECKD2H103PU
# C804	.01 500V	ECKD2H103PU
# C817	.015 125V AC 10%	ECQU1A153KH
# C818	.015 125V AC 10%	ECQU1A153KH
# C819	.0022 125V AC	ECKCFL222ZE

For SAFETY use only equivalent replacement part.

RESISTORS

Item No.	Rating	Mfr. Part No.	NTE Replacement
# D806	7.2 Cold PTC	ERPF5BOM050K	-
R050	10K 1% 1/4W Metal Flim	EROS2CKF1002	-
R051	10K 1% 1/4W Metal Flim	EROS2CKF1002	-
R069	38.3K 1% 1/4W Metal Flim	ER025CKF3832	-
R206	22 5% 1W Fusible	ERQ1CJP220	F1W022
# R509	5600 5% 2W Metal Flim	ERG2ANJ562	2W256
# R510	2700 5% 2W Metal Flim	ERG2ANJ272	2W272
# R531	47 5% 1/4W Carbon Flim	ERD25FJ470	QW047
# R532	24.3K 1% 1/4W Metal Flim	EROS2CKF2432	-
# R533	17.4K 1% 1/4W Metal Flim	EROS2CKF1742	-
# R534	150K 5% 1/4W Carbon Flim	ERDS2TJ154	QW415
# R535	2700 5% 1/4W Carbon Flim	ERDS2TJ272	QW272
# R536	820 5% 1/4W Carbon Flim	ERDS2TJ821	QW182
# R537	18K 5% 1/4W Carbon Flim	ERDS2TJ183	QW318
# R538	8200 5% 1/4W Carbon Flim	ERDS2TJ822	QW282
# R539	15K 5% 1/4W Carbon Flim	ERDS2TJ153	QW315
# R551	1 5% 1W Fusible	ERQ1CJP1R0	F1W1D0
# R552	1 5% 1/2W Carbon Flim	ERDS1FJ1R0	HW1D0
# R553	1 5% 1/2W Carbon Flim	ERDS1FJ1R0	HW1D0
# R558	2.2 5% 1W Fusible	ERQ12HKR22	F1W2D2
R559	68 5% 3W Metal Flim	ERG3ANJ680	3W068
R560	68 5% 2W Metal Flim	ERG2SJS680	-
# R562	1200 5% 1W Metal Flim	ERG1ANJ122	1W212
# R801	.82 10% 5W WW	ERF5ZKR82	5WD82
# R802	180 5% 15W WW	ERF15ZJ181	-
# R804	220K 5% 1/4W Carbon Flim	ERDS2TJ224	QW422
# R805	10K 5% 1/2W Carbon Flim	ERDS1TJ103	HW310
# R807	47 5% 1/4W Carbon Flim	ERD25FJ470	QW047
# R808	33 5% 1/4W Carbon Flim	ERD25FJ330	QW033
# R810	5.6 5% 3W Fusible	ERQ3CJ5R6	-
# R811	4.7 5% 3W Metal Flim	ERX3ANJ4R7	3W4D7
# R815	2.7M 10% 1/2W Carbon Comp	ERC12ZGK275	HW527
# R816	1 10% 1/2W WW	ERW12PK1R0	-

For SAFETY use only equivalent replacement part.

COILS (RF-IF)

Item No.	Rating	Mfr. Part No.
L006	Peaking (5.6uH)	TLUABTA5R6K
L007	Peaking (5.6uH)	TLUABTA5R6K
L008	Peaking (5.6uH)	TLUABTA5R6K
L011	RF Choke (1.0uH)	TLUABTA1ROK
L103	AFT	TLI67394-1
L104	Peaking (1.2uH)	TLQ012K205C
L105	VCO	TLI158755
L106	Peaking (15uH)	TLUABTA150K
L108	Peaking (1.2uH)	TLQ012K205C
L201	Quadrature	TLS63318-2
L202	Peaking (4.7uH)	TLUABTA4R7K
L301	3.58MHZ TRAP	ELB5A082
L354	RF Choke (150uH)	TLUABTA151K
# L551	Linarity	TLH15601P

For SAFETY use only equivalent replacement part.

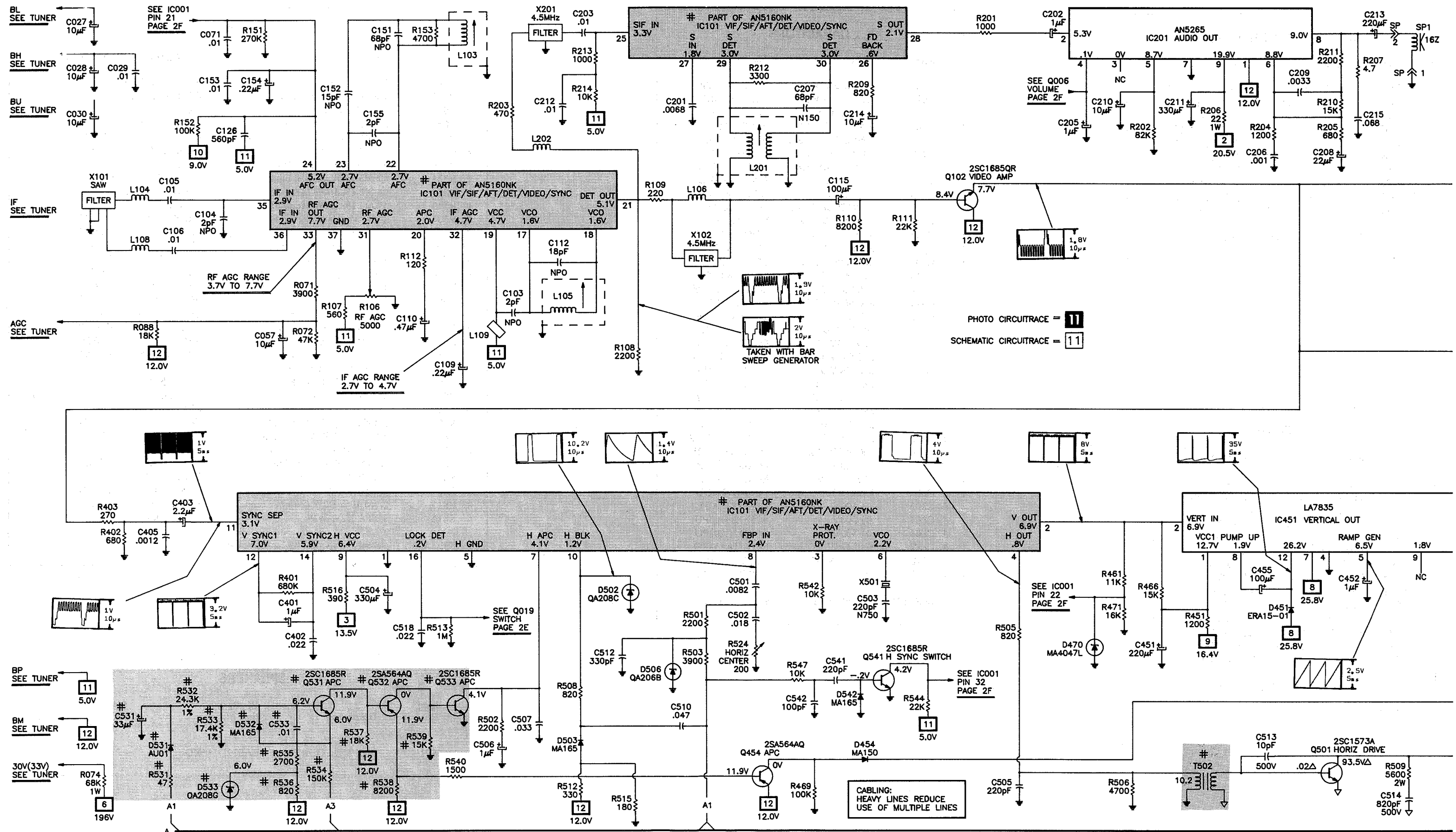
SPEAKERS

Item No.	Description	Mfr. Part No.	QUAM Part No.
SP1	3" X 5" 16 Ohm PM	EAS12D516KG	-

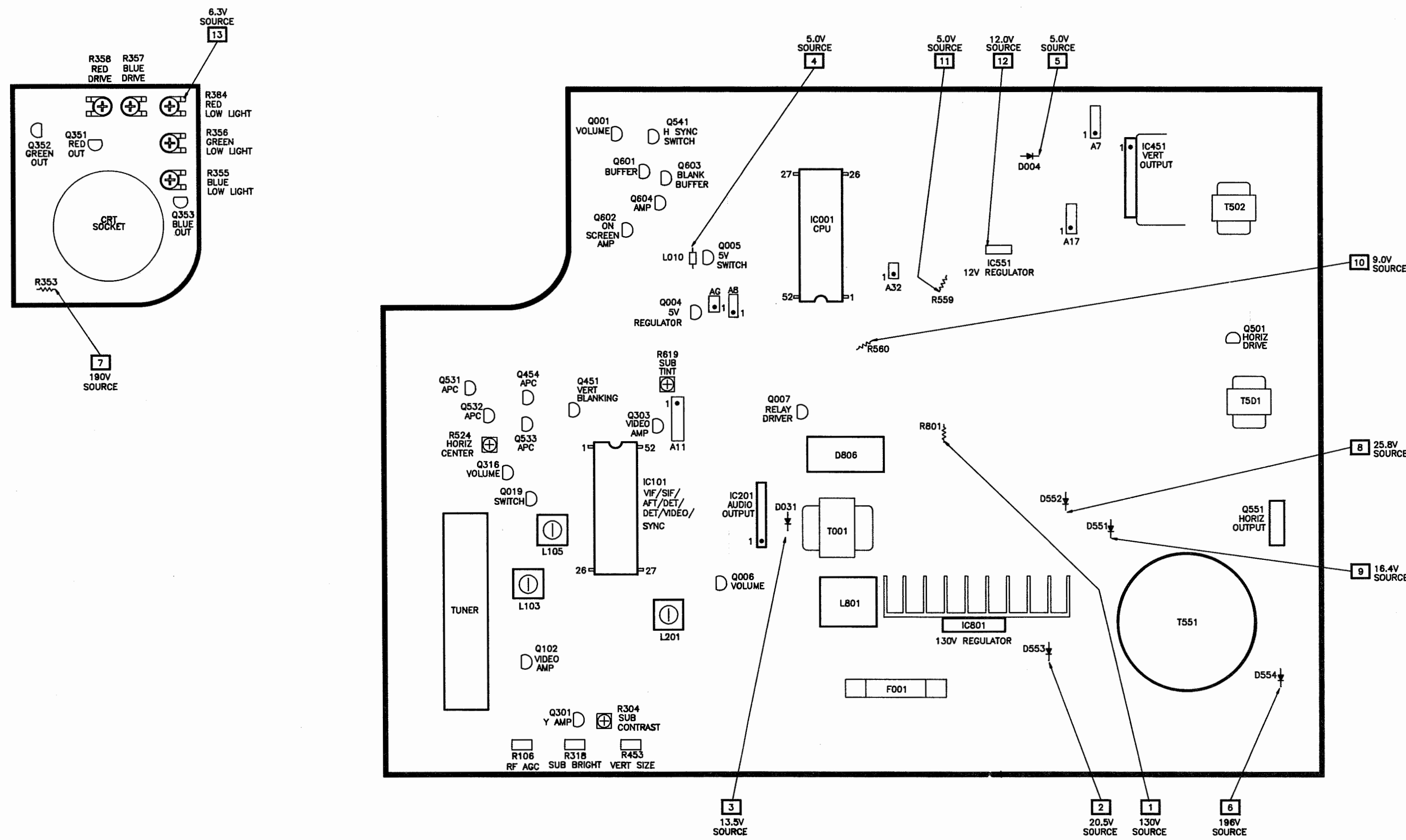
WITH **CIRCUITRACETM**

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PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11



PLACEMENT CHART



PANASONIC

MODELS CTM-1952R, CTM-1953R

NOTES

PANASONIC

MODELS CTM-1952R, CTM-1953R

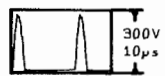


PHOTO CIRCUITRACE = 11

SCHEMATIC CIRCUITRACE = 11

△ TAKEN FROM COMMON TIE POINT

SAFETY PRECAUTIONS

NOTES

SERVICE WARNING

ONLY qualified service technicians who are familiar with safety checks and guidelines should perform service work. For continued SAFETY:

- 1. Before replacing parts, disconnect power source to protect electrostatically sensitive parts.
- 2. Do not attempt to modify any circuit unless so recommended by the manufacturer.
- 3. When servicing chassis, use an isolation transformer between the line cord and power receptacle.

SERVICING HIGH VOLTAGE AND PICTURE TUBE

Use EXTREME CAUTION when servicing the High Voltage circuits.

- 1. To discharge static High Voltage, connect a 10 kilohm resistor in series with a test lead between chassis and picture tube anode lead.
- 2. DO NOT lift picture tube by the neck.
- 3. ALWAYS wear shatterproof goggles when handling picture tube 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 picture tube is the only potential source of x-rays.

- 1. Keep an accurate High Voltage meter available at all times. Check meter calibration periodically.
- 2. Whenever servicing a chassis, check High Voltage at various brightness levels to be sure it is regulating properly.
- 3. 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.
- 4. When troubleshooting a set with excessive High Voltage, avoid close contact with picture tube. DO NOT operate set longer than necessary. To locate the cause of excessive High Voltage, use a variable AC transformer to regulate voltage.
- 5. In present chassis, 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.

SAFETY CHECKS – FIRE AND SHOCK HAZARD

Cold Leakage Checks for Sets with Isolated Ground

- 1. Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch ON.
- 2. Use an ohmmeter to measure the resistance between the jumpered 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 200 kilohms and 5 megohms. Parts without a return path must register infinity.

Hot Leakage Current Check

- 1. Plug the AC cord directly into AC outlet. DO NOT use an isolation transformer.
- 2. Use a 1500-ohm, 10-watt resistor in parallel with a .15-microfarad 150 Volts AC capacitor to connect between any exposed metal parts on the set and a good earth ground. (See figure below.)
- 3. Use an AC voltmeter with at least 1000 ohms-per-volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point.
- 4. Voltage readings should not exceed .75 volts RMS (5 milliamps AC). Any value exceeding this limit constitutes a potential shock hazard and must be corrected.
- 5. If AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.

GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning set to customer.

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

