ORION

COLOR TELEVISION RECEIVER

PAL/SECAM

COLOR 514

SPECIFICATIONS

PICTURE SIZE	20 inch
SYSTEM	PAL/SECAM
FREQUENCY RANGE VHF(L)	2 - 4, X - S2 ch
VHF(H)	S3 - S10, 5 - 12, S11 - S20 ch
UHF	21 - 69 ch
MAXIMUM SENSITIVITY VHF	20 dB
UHF	25 dB
INTERMEDIATE FREQUENCY:	
Picture IF Carrier Frequency	38.9 MHz
Color Sub Carrier Frequency	34.47 MHz
Sound IF Carrier Frequency	33.4 MHz
SOUND INTERMEDIATE FREQUENCY	5.5 MHz
MAXIMUM OUTPUT POWER	2.0 W
10% THD OUTPUT POWER	1.8 W
POWER SOURCE	AC 220V

IMPORTANT

*FOR SERVICE WORK ALWAYS USE MAINS ISOLATING TRANSFORMER, CHASSIS IS LIVE. (IRRESPECTIVE OF POLARITY OF MAINS PLUG.)

*IN CASE OF REMOVING PCB OR SOMETHING, AFTER UNFASTENING THE WIRE OR CHANGING THE WIRE POSITION, IT IS IMPORTANT TO PUT THE FASTENING OF WIRE AND THE POSITION OF WIRE AS IT WAS.
BECAUSE, PICTURE DISTORTION OR SOMETHING MAY APPEAR ON THE DISPLAY.
SO, BE SURE TO CONFIRM THE FASTENING AND POSITION OF WIRE BEFOREHAND.
THEN START TO THE OPERATION.

*INFERIOR SILICON GREASE CAN DAMAGE IC's AND TRANSISTORS.
WHEN REPLACING AN IC OR TRANSISTOR, USE ONLY SPECIFIED SILICON GREASE (YG6260).
REMOVE ALL THE OLD SILICON BEFORE APPLYING NEW SILICON.

CONTENTS

ALIGNMENT INSTRUCTIONS

SHUT DOWN CIRCUIT

When the high voltage rises, a simultaneous voltage increase will develop at terminal 9 of the Horizontal Output Transformer(FB401), and be applied to pin 52 of IC401. If excessive high voltage is produced, the increased voltage developed exceeds the rating of zener diode D405 causing the Horizontal Oscillator to stop functioning and the high voltage system to shut down.

HORIZONTAL AND VERTICAL SIZE ADJUSTMENT

Adjust the control (VR501) and (VR401) so that the picture fills the picture from top to bottom and is proportionate to the width.

RF AGC ADJUSTMENT

The RF AGC control is adjusted at the factory and rarely requires re-adjustment unless the received picture exhibits too much snow or the receiver lacks sensitivity. Home adjustment can be made by tuning in a weak snowy station and adjusting RF AGC for the least amount of snow. For a more accurate adjustment, use the following procedure.

1. Receive the test pattern signal (80dB).
2. Adjust AGC pin of IV tuner (IP011) to 4.75V with VR201 control.

SUB BRIGHT ADJUSTMENT

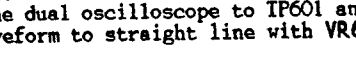
1. Receive the Monochrome Pattern.
2. Press the NORMAL button on the remote control unit.
3. Adjust VR603 until 0% of gray scale will be black.

FOCUS ADJUSTMENT

Adjust focus control on the flyback transformer for a defined picture.

HUE DELAY ADJUSTMENT

1. Receive the DEM Pattern.
2. Connect the dual oscilloscope to IP601 and IP602.
4. Adjust waveform to straight line with VR601 and L603.



VERTICAL POSITION ADJUSTMENT

1. Receive the Color Bar Pattern.
2. Adjust SW401 until the horizontal line of the color bar will come to around center of the CRT.

HORIZONTAL POSITION ADJUSTMENT

1. Receive the Color Bar Pattern.
2. Adjust VR402 until the color width of both ro screen edges will be equal.
3. Receive broadcasting signal, than confirm picture is normal.

SUB COLOR ADJUSTMENT

1. Receive the Color Bar Pattern.
2. Press the NORMAL button on the remote control unit.
3. Connect the oscilloscope to IP801.
4. Adjust VR602 until red color level will be 75%.

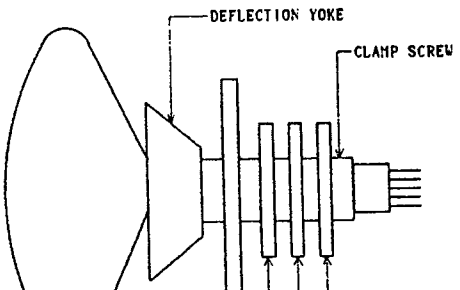
T'TEXT FREQUENCY ADJUSTMENT

1. Receive the noise signal.
2. Connect the frequency counter to TP851.
3. Adjust TC851 until the counter will be 6.001 MHz.

COLOR PURITY ADJUSTMENT

The receiver must be operated 10 minutes prior to this procedure and the face plate of the CRT must be at room temperature. The following procedure is recommended while using a Dot/Bar Generator.

1. Check for correct location of all neck components. (Refer to Fig. 1)
2. Rough-in the static convergence at the center of the CRT, as explained in the static convergence.
3. Rotate the contrast control to maximum CCW position and rotate brightness control as far CW as possible without causing the picture to "bloom".
4. Rotate the Red (VR801) and Blue (VR804) Cut off controls to maximum CCW position. Rotate the Green (VR803) Cut off control sufficiently in a CW direction
5. Loosen the deflection yoke clamp screw and pull the deflection yoke toward the rear of the CRT.
6. Begin the following adjustment with the tabs on the round purity magnet rings set together, slowly separate the two tabs while at the same time rotating them to adjust for a uniform green stripe at the center of the CRT screen.
7. Carefully slide the deflection yoke forward to achieve green (uniform green screen).
   NOTE; Center purity is obtained by adjusting the tabs on the round purity magnet rings, outer edge purity is obtained by sliding the deflection yoke forward.
8. Check for red and blue field purity by reducing the output of the Green (VR803) Cut off control and alternately increasing output of Red (VR801) and Blue (VR804) Cut off controls and touch-up adjustments, if required.
9. Tighten deflection yoke with clamp screw.



A	B	C
4 POLE MAGNETS	6 POLE MAGNETS	PURITY MAGNETS

Fig. 1 Picture Tube Neck Component Location

BLACK AND WHITE TRACKING

The purpose of this procedure is to adjust the bias applied to the picture tube to obtain good black and white picture production at all brightness levels while, at the same time achieving maximum useable brightness. Proper RF AGC control adjustment should have been verified prior to performing this procedure.

1. With antenna connected to the receiver, go to a channel with strong reception. Adjust the fine tuning control so that the receiver will not produce a color picture while the following adjustment are being performed.
2. Rotate the Red (VR802) and Blue (VR805) Drive control fully CW and then back CCW to the center of their rotation ranges.
3. Rotate the Green (VR803), Red (VR801) and Blue (VR804) Cut off controls to the fully CCW end of their rotation ranges.
4. Set normal-service switch to service position. Adjust the voltage of test point (collector of green output transistor on CRT PCB) to DC150V with sub brightness control. Voltage measurement should be measured with an oscilloscope.
5. Rotate the screen control to the fully CCW end of its rotation range. Then, rotate it CW until a dim line of one pronounced color (green, red or blue) is obtained.

6. The other two color Cut off controls must be rotated CW until a dim white line is obtained.
7. Set normal-service switch to normal position.
8. If required, perform touch-up adjustment of the Red (VR802) and Blue (VR805) Drive controls to produce a uniform monochrome picture.
9. Rotate the brightness and contrast controls fully CCW.
10. Rotate the brightness control CW until a dim raster is obtained.
11. If the screen does not display with uniformity, steps 2 through 10 of this procedure must be repeated.

STATIC CONVERGENCE ADJUSTMENT

1. Switch the Receiver ON and allow it to warm up for 15 minutes.
2. Connect the output of a Crosshatch Generator to the receiver and concentrating on the center of the CRT screen, proceed as follows:

a. Locate a pair of 4 pole magnet rings. Rotate individual rings (change spacing between tabs) to converge the vertical red and blue lines. Rotate a pair of rings (maintaining spacing between tabs) to converge the horizontal red and blue lines.

b. After completing red and blue center convergence, locate a pair of 6 pole magnet rings. Rotate individual rings (change spacing between tabs) to converge the vertical red and blue (magenta) and green lines. Rotate a pair of rings (maintaining spacing between tabs) to converge the horizontal red and blue (magenta) and green lines.

DYNAMIC CONVERGENCE ADJUSTMENT

Dynamic convergence (convergence of the three color fields at the edges of the CRT screen) is accomplished by proper insertion and positioning of three rubber wedges between the edge of the deflection yoke and the tunnel of the CRT. This is accomplished in the following manner.

1. Switch the Receiver ON and allow it to warm up for 15 minutes.
2. Apply crosshatch pattern from Dot/Bar Generator to receiver. Observe spacing between lines around edges of CRT screen.
3. Tilt the deflection yoke up or down, and insert tilt adjustment wedges (1) and (2) between the deflection yoke and the CRT until the improper convergence illustrated in **Fig. 2 (A)** has been corrected.
4. Tilt the deflection yoke right and left, and insert tilt adjustment wedge (3) between the deflection yoke and the CRT until the improper convergence illustrated in **Fig. 2 (B)** has been corrected.
5. Alternately change spacing between, and depth of insertion of the three wedges proper dynamic convergence is obtained.
6. Use a strong adhesive tape to firmly secure each of the three wedges to the funnel of the CRT.
7. Check purity and adjust, if necessary.

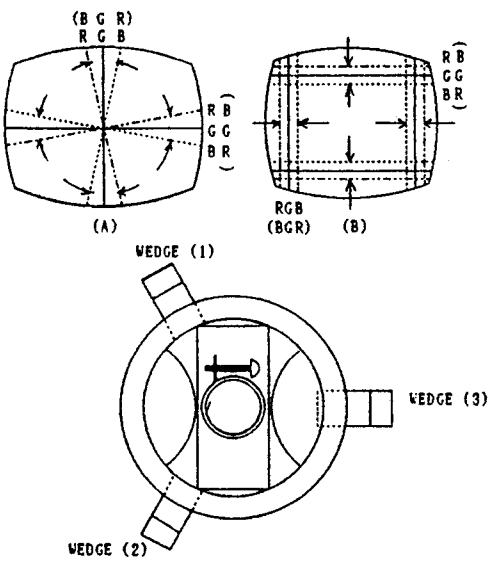


Fig. 2 Dynamic Convergence Adjustment

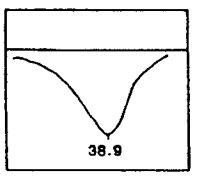
VIDEO IF AND TRAP ALIGNMENT

TEST EQUIPMENT CONNECTION

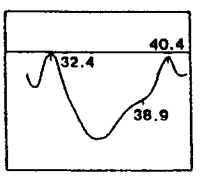
OSCILLOSCOPE .... Set AC-DC switch to AC position.

SWEEP-MARKER GENERATOR .... Connect H SCOPE and V SCOPE output cable from SWEEP-MARKER GENERATOR to H and V input connectors on the OSCILLOSCOPE, connect hot lead of SWEEP-MARKER OUTPUT cable to test point TP001 on PCB001; connect ground lead to chassis ground. Connect pick up SWEEP-MARKER INPUT cable to TP007; ground lead to chassis ground. (PROBE B)

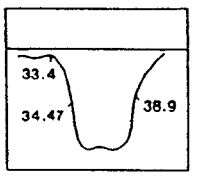
1. Connect 10K ohm variable resistor between TP004, B+ (12V) to ground.
   Install AGC VR to prevent saturation in waveform, then adjust AGC VR for proper size of waveform. On the other hand, in case IF AGC voltage is supplied externally, adjust for proper size of waveform on condition that IF AGC voltage is within 10V and is gradually decreased.
2. Adjust **L204** to obtain maximum amplitude of response curve at 38.9 MHz.
   (Refer to Response Curve "A")
3. Re-connect hot lead of SWEEP-MARKER GENERATOR OUTPUT cable from TP001 to TV tuner TP.(With 2.7K ohm resistor)
4. Re-Connect SWEEP-MARKER GENERATOR INPUT cable from TP007 to TP012. (PROBE A)
5. Adjust **L207** to obtain maximum amplitude of response curve at 32.4 MHz. **(Refer to Response Curve "B")**
6. Connect a 100 ohm resistor between TP009 and TP010. Re-Connect SWEEP-MARKER GENERATOR INPUT cable from TP012 to TP007. (PROBE B)
7. Adjust **L206** abtain maximum amplitude of response curve. **(Refer to Response Curve "C")**
8. Disconnect the 10K ohm variable resistor and 100 ohm resistor from the circuit.
   Disconnect C006, C217 and C218. (solder bridge)
9. Re-Connect SWEEP-MARKER GENERATOR INPUT cable from TP007 to TP006. (PROBE B)
10. Set the AFT SW to ON position
11. Adjust **L203** to place 38.9 MHz marker at reference line on response curve.
    (Refer to Response Curve "D")
12. Re-connect C006, C217 and C218. (solder bridge)
13. Connect the oscillator (38.9 MHz) to the tuner pack TP.
14. Ajust **L203** to keep constant DC voltage at TP006 with AFT ON and AFT OFF.



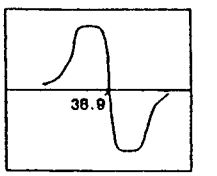
CURVE "A"



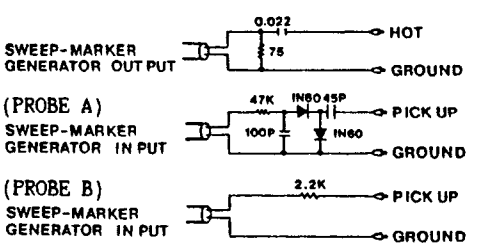
CURVE "B"



CURVE "C"



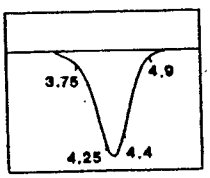
CURVE "D"



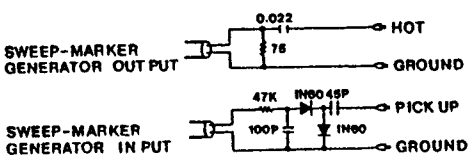
SECAM CHROMA BANDPASS ALIGNMENT

TEST EQUIPMENT CONNECTION
GENERAL ..... PAL-SECAM switch to SECAM position.
SWEEP-MARKER GENERATOR ... Connect H. SCOPE and V. SCOPE output cable from SWEEP-MARKER GENERATOR to H. and V. input connectors on the OSCILLOSCOPE, connect hot lead of SWEEP-MARKER OUTPUT cable to IP on TV tuner; connect ground lead to chassis ground.
Connect pick up lead SWEEP-MARKER INPUT cable to IP604; ground lead to chassis ground.

1. Adjust L605 to obtain best overall response curve. (Refer to Response Curve "E")



CURVE "E"



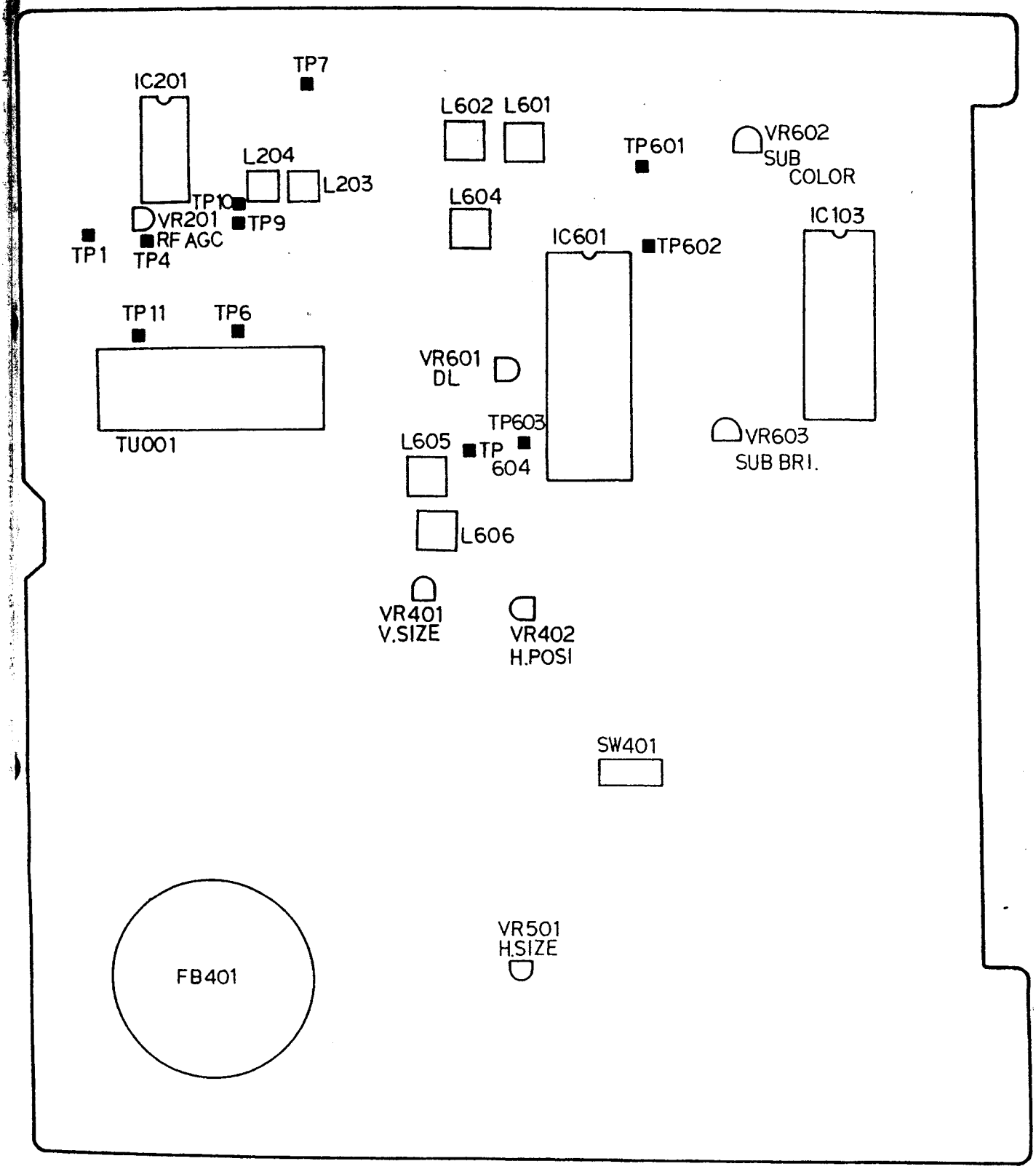
SECAM IDENT ADJUSTMENT

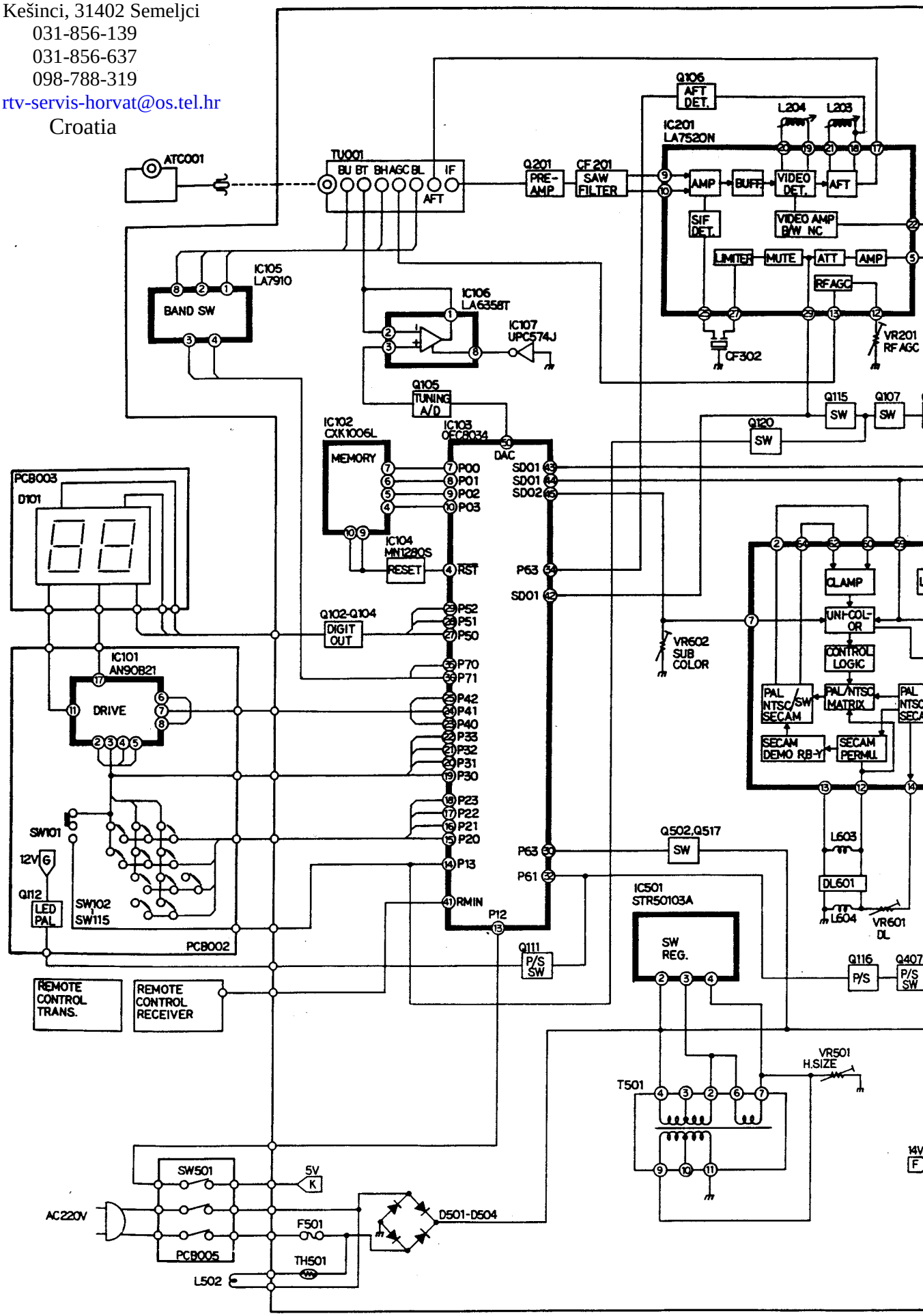
1. Receive the signal of secam color pattern.
2. Connect the DC voltmeter to TP603 and ground.
3. Adjust the voltage to maximum with L606.

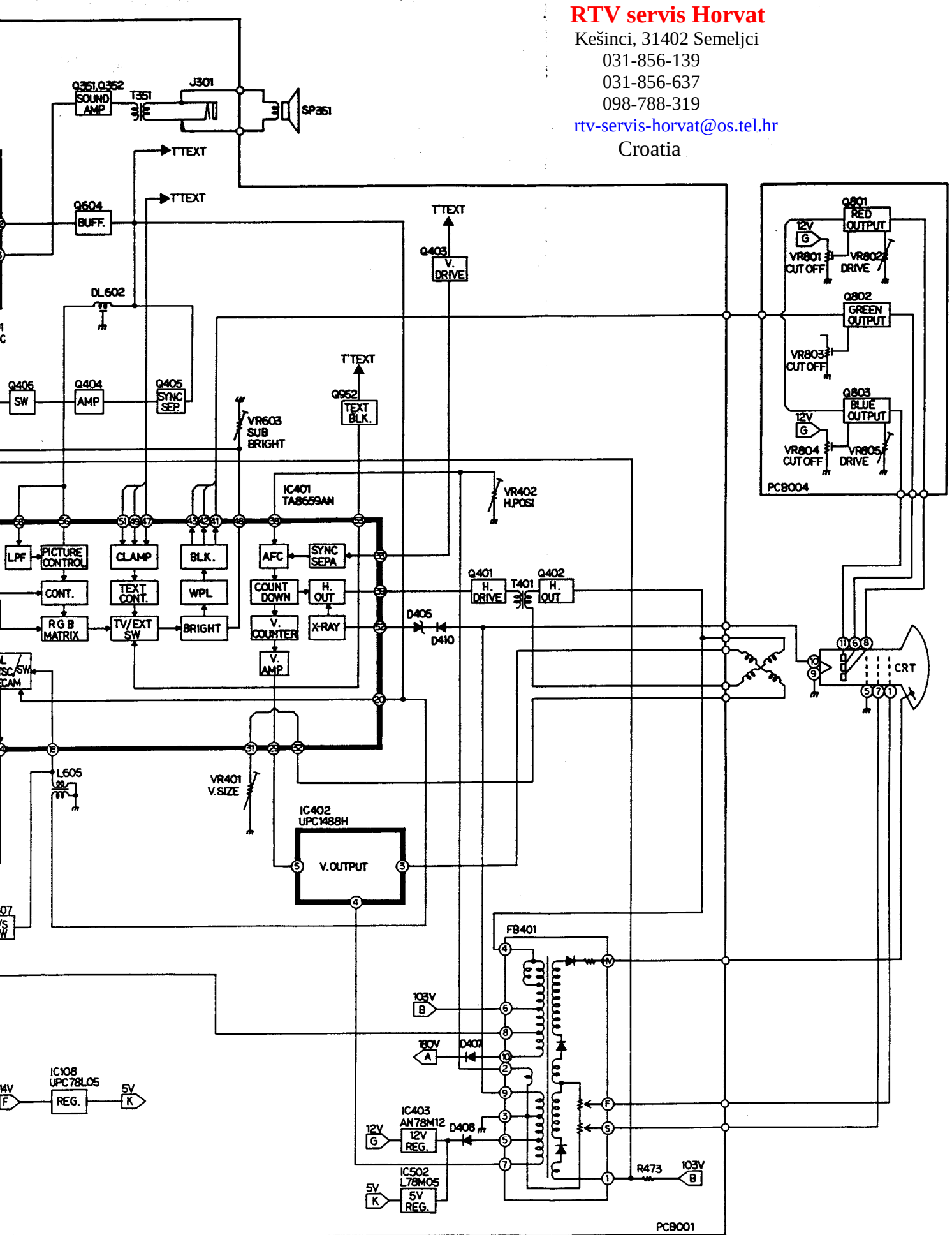
SECAM PHASE ADJUSTMENT

1. Receive the signal of secam color pattern.
2. Adjust L601 and L602 not to change the color of the pattern while tuning the Color control from minimum to maximum position.

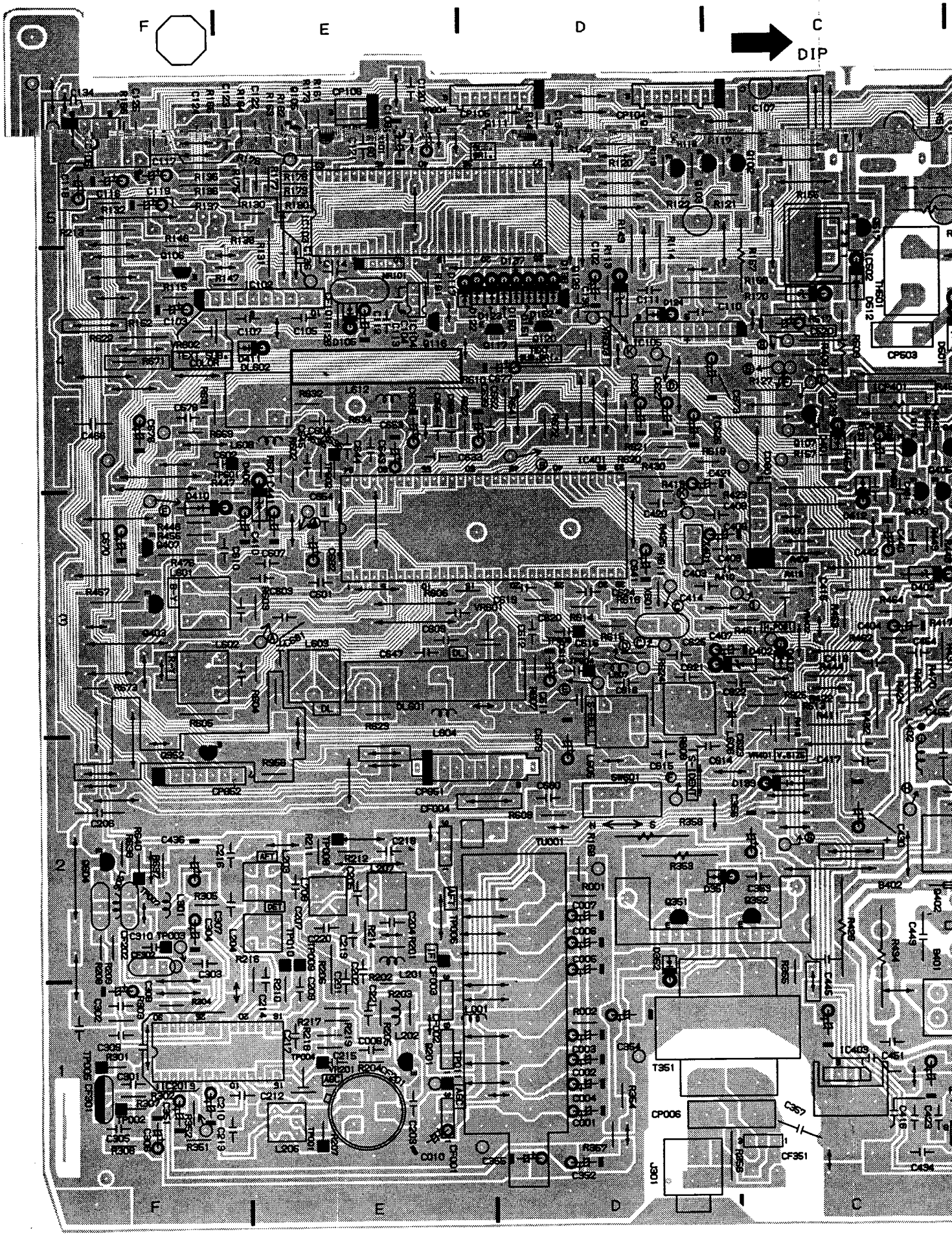
MAJOR COMPONENTS LOCATION GUIDE







MAIN P.C.BOARD



MAIN P.C.BOARD

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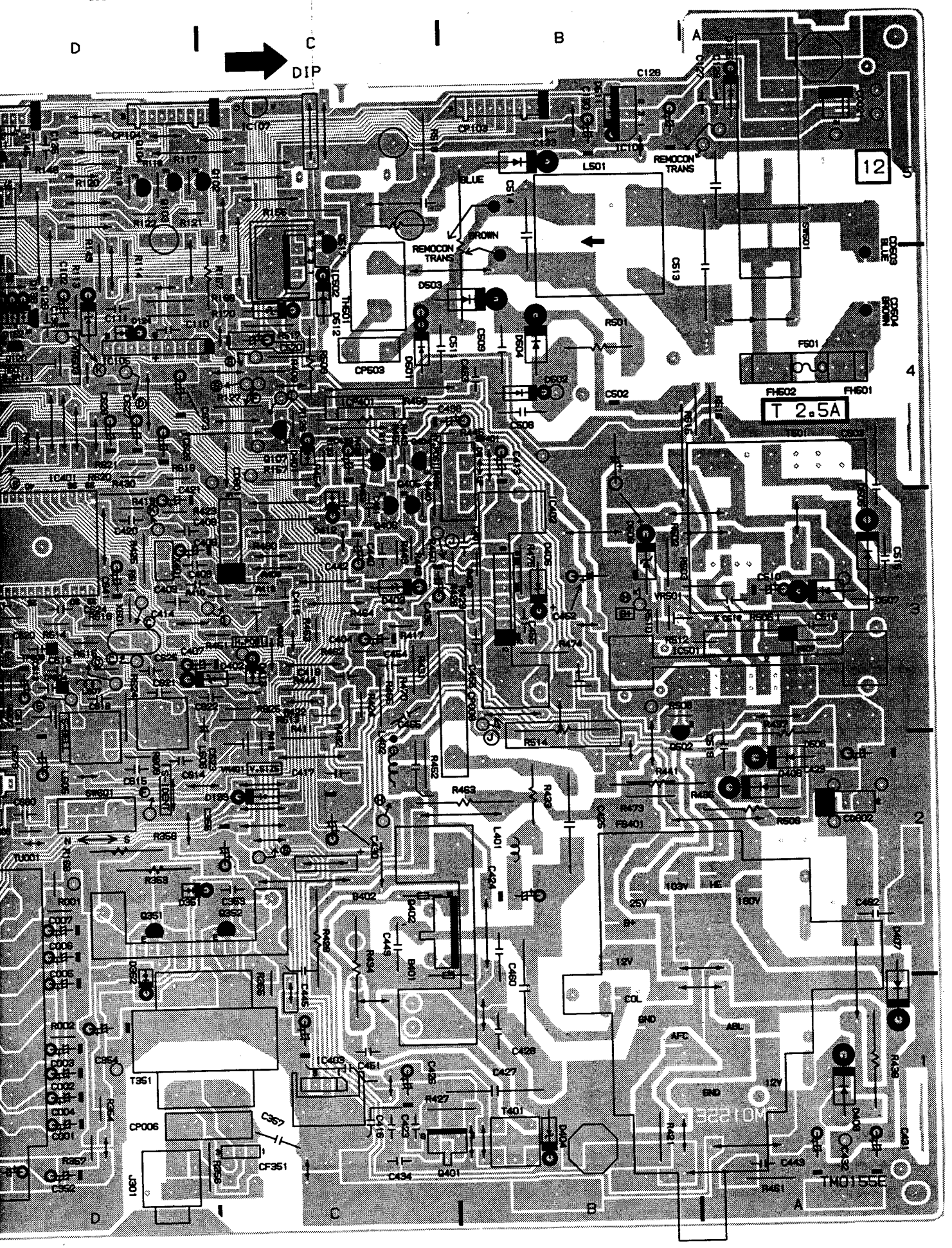
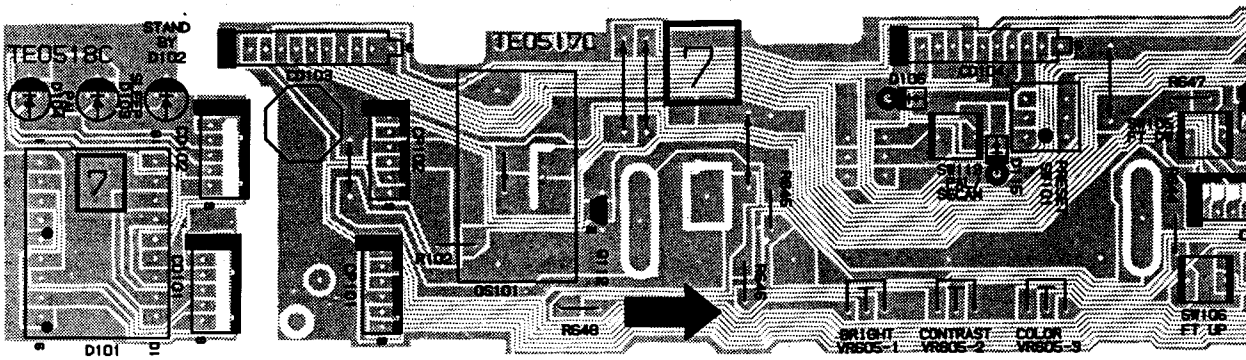


CONTROL/LED P.C.BOARD



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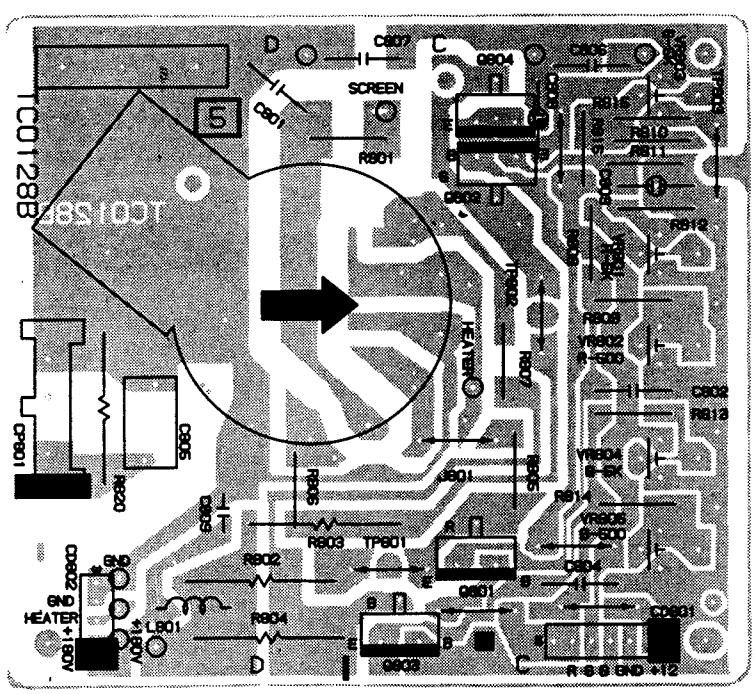
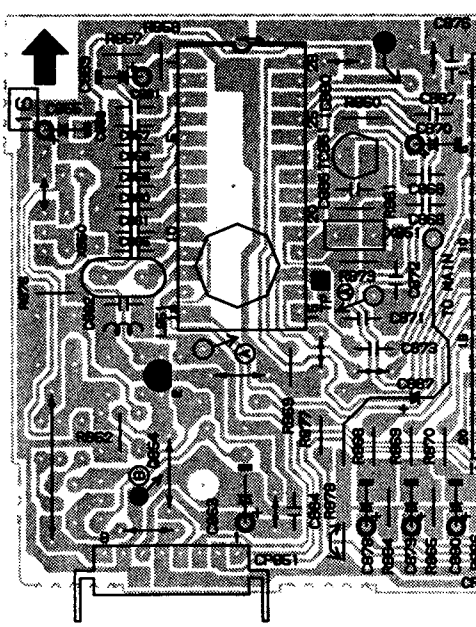
CRT P.C.BOARD



T'TEXT P.C.



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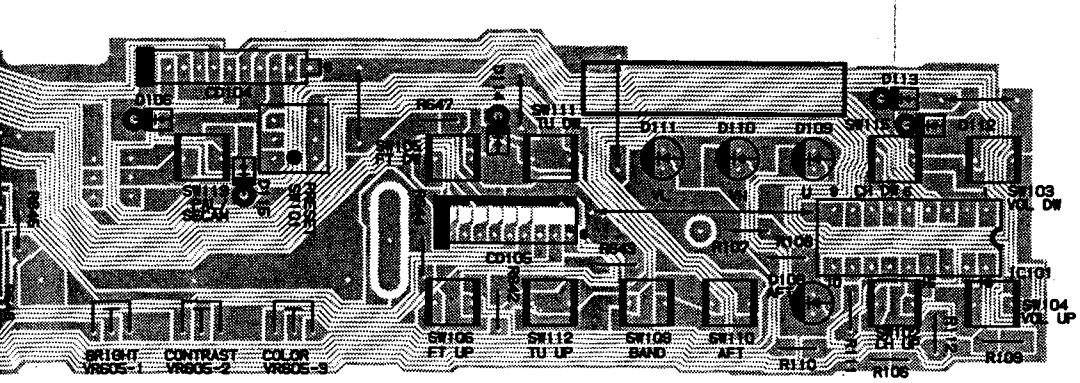

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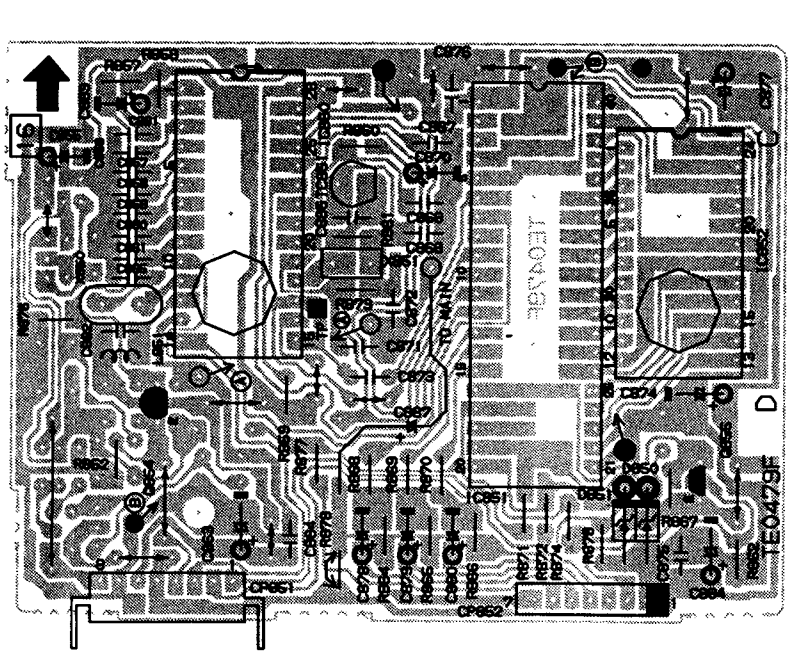
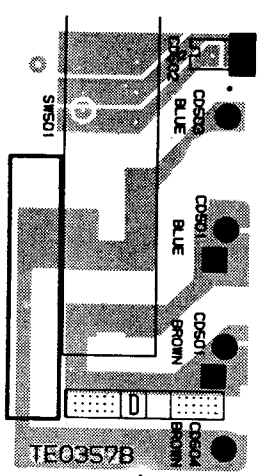
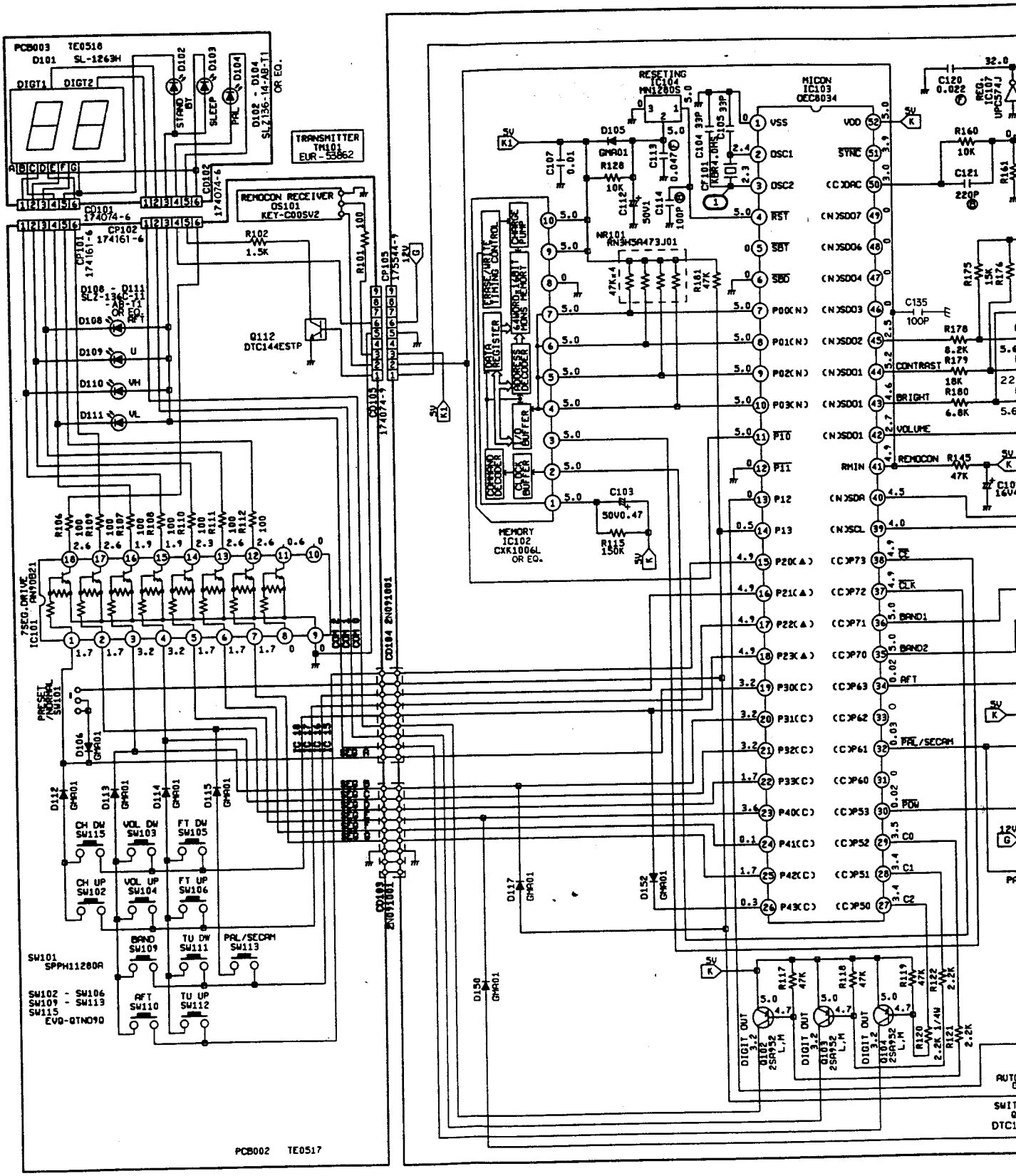


POWER SWITCH P.C.BOARD





NOTE: THIS SCHEMATIC DIAGRAM I
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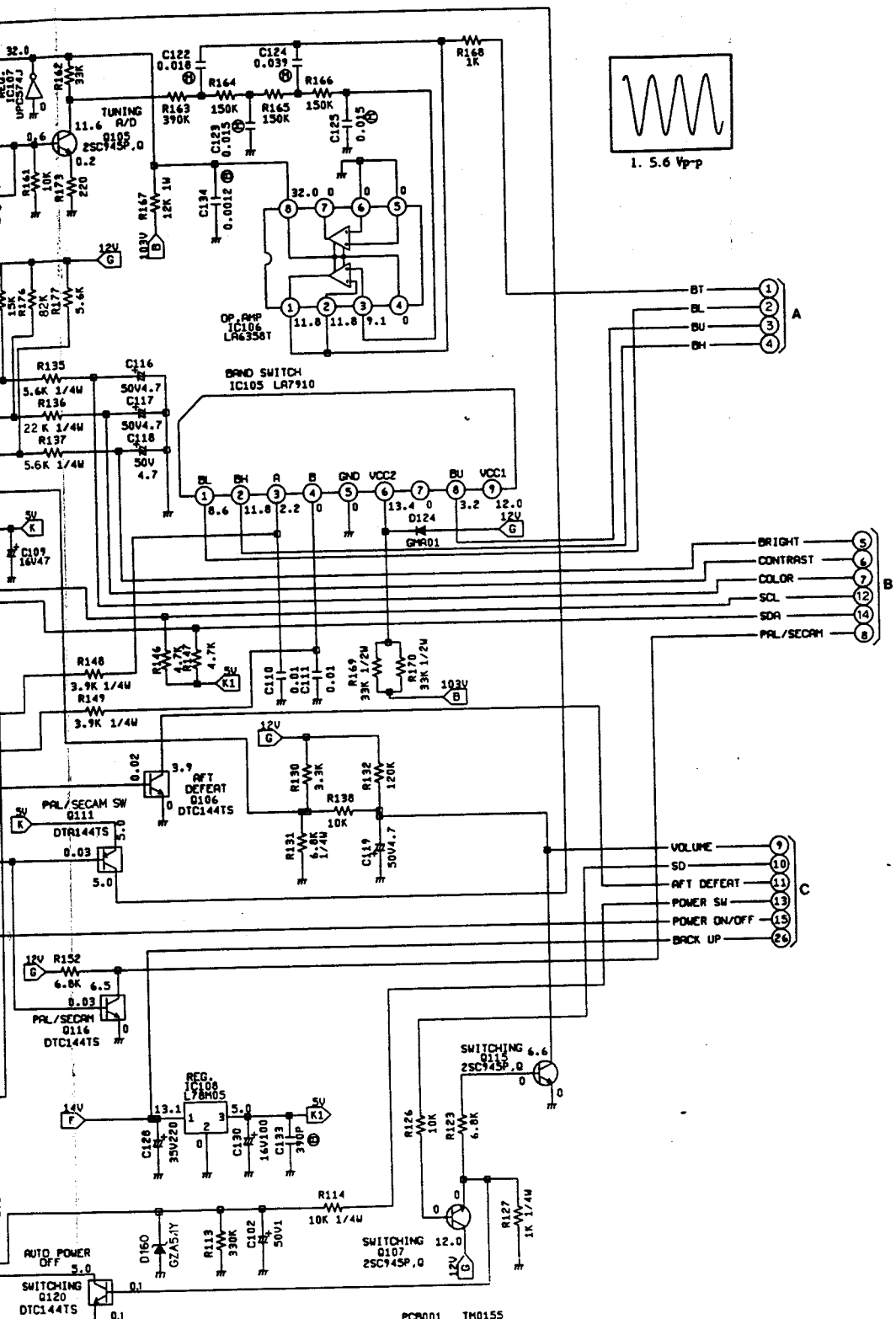
HEMATIC DIAGRAM



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MAIN/ CONTROL SCHEMATIC DIAGRAM

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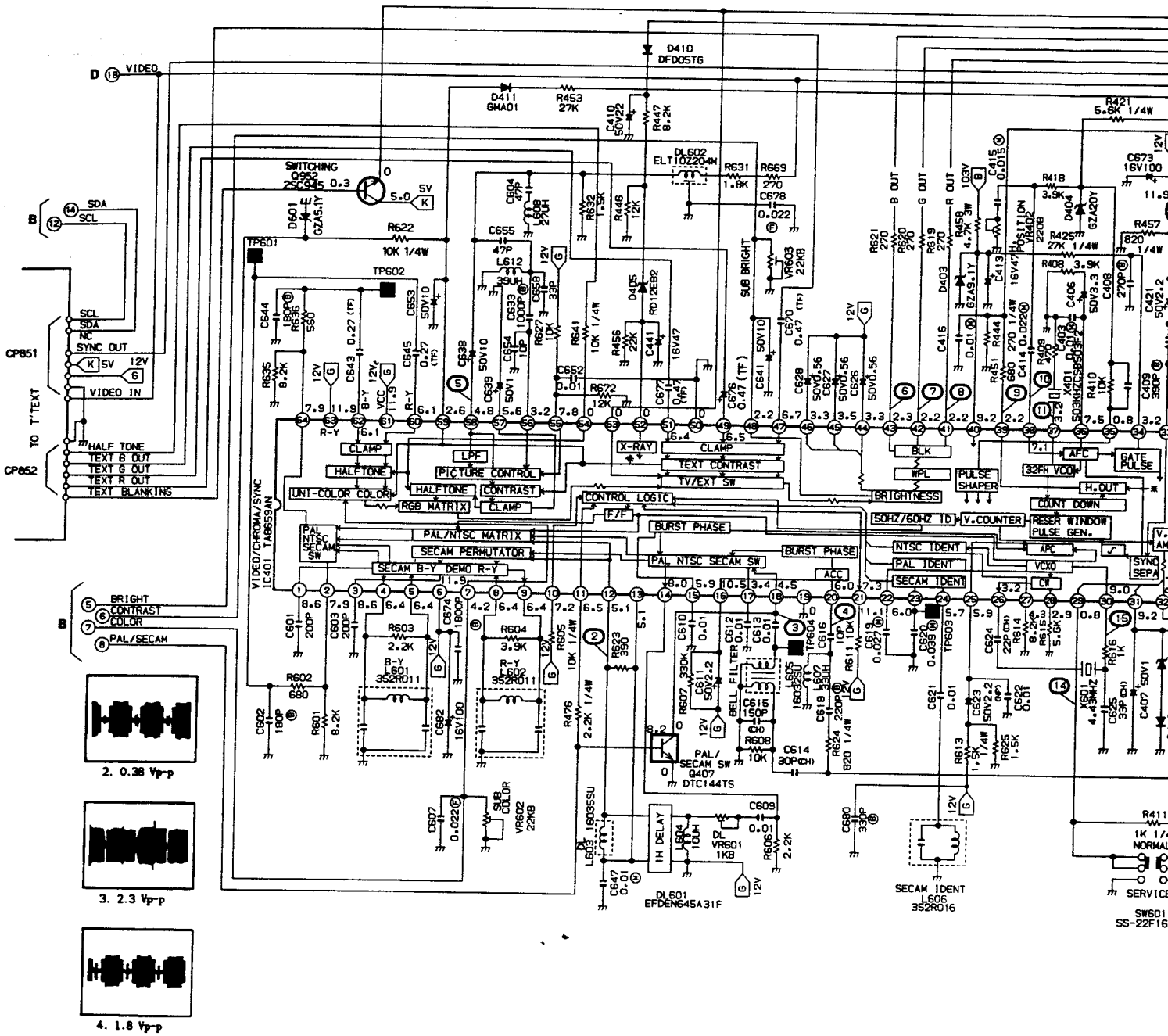

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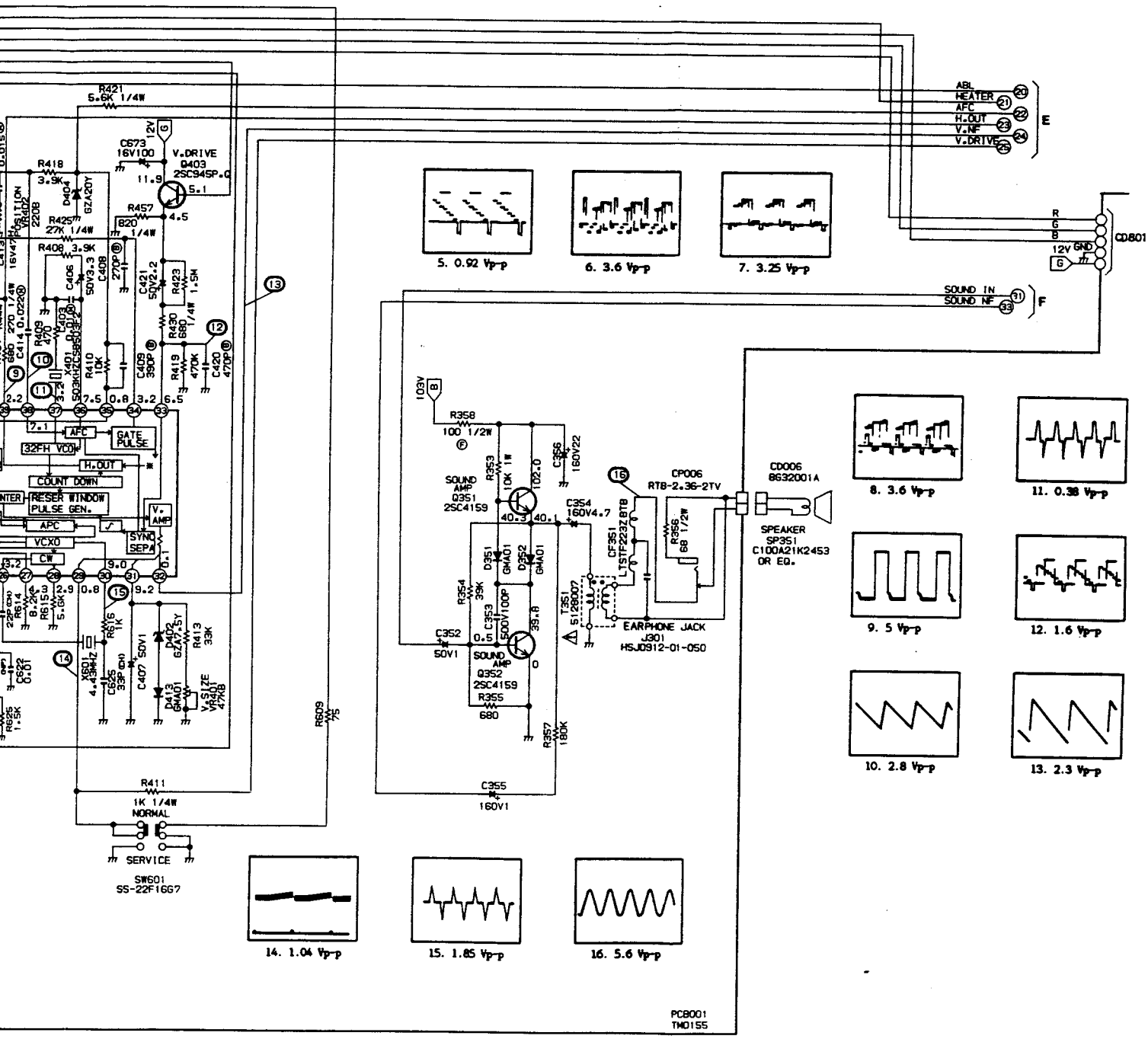

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MAIN SCHEMATIC DIAGRAM

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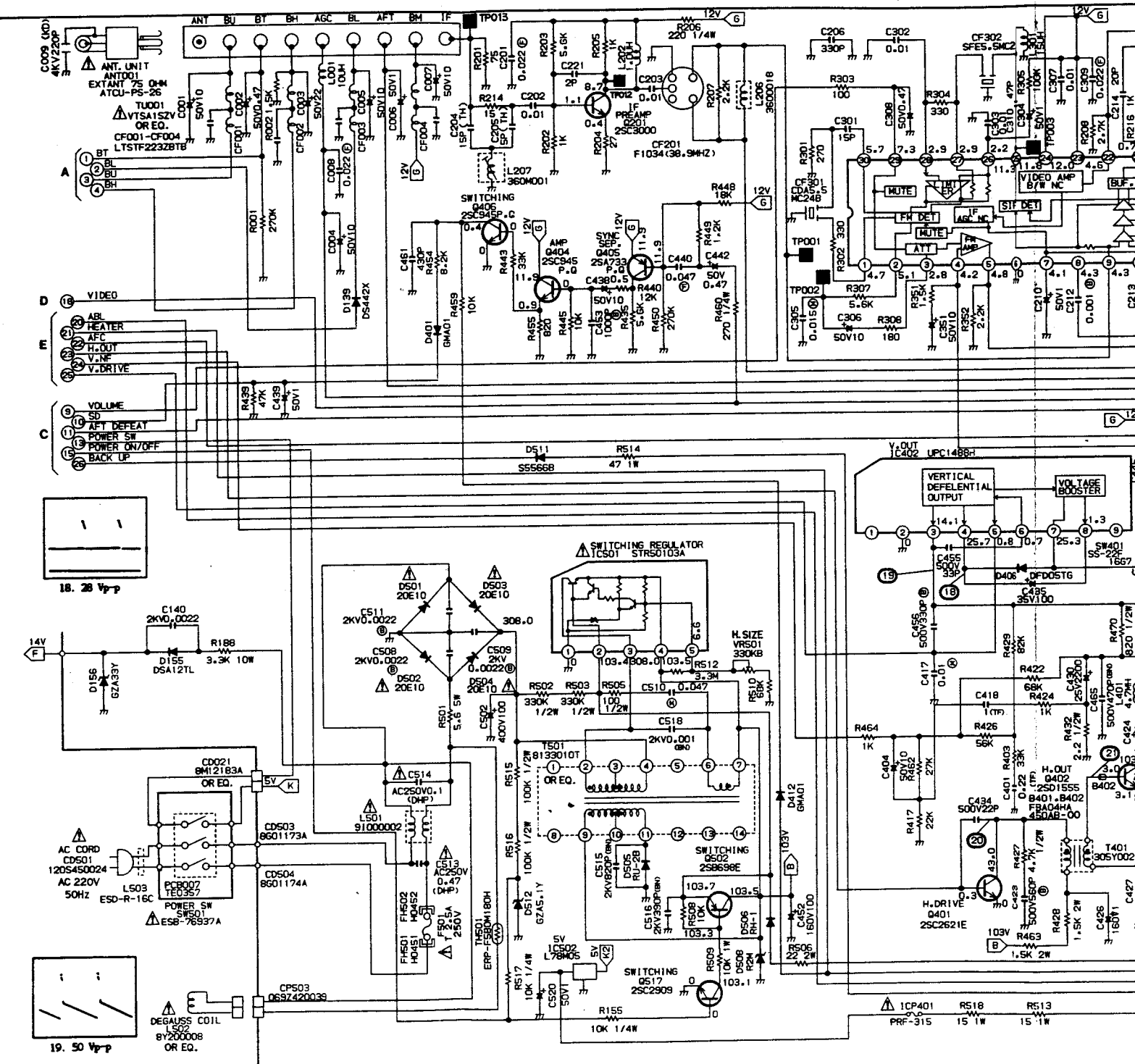
MAIN/POWER/CRT SCHEMATI



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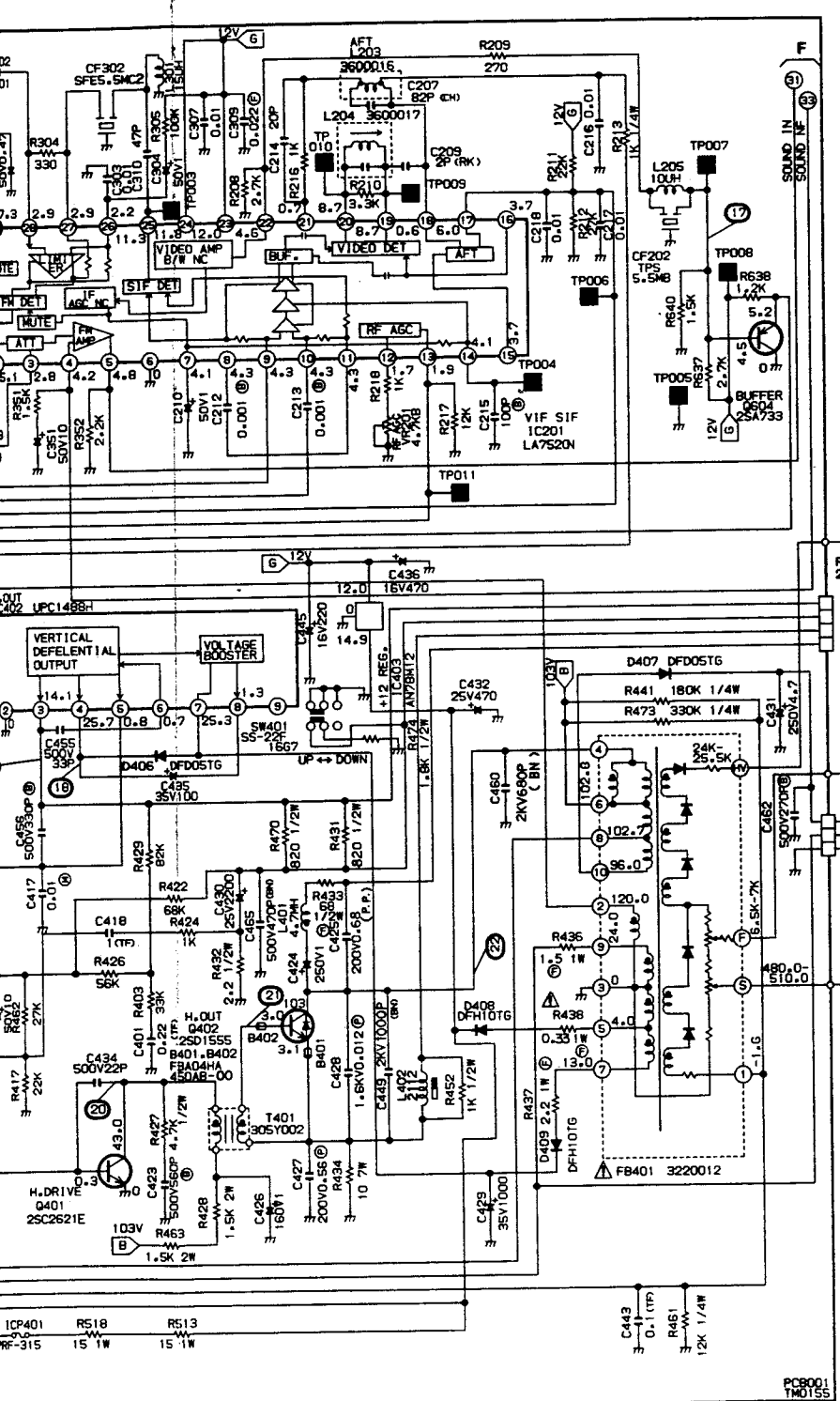

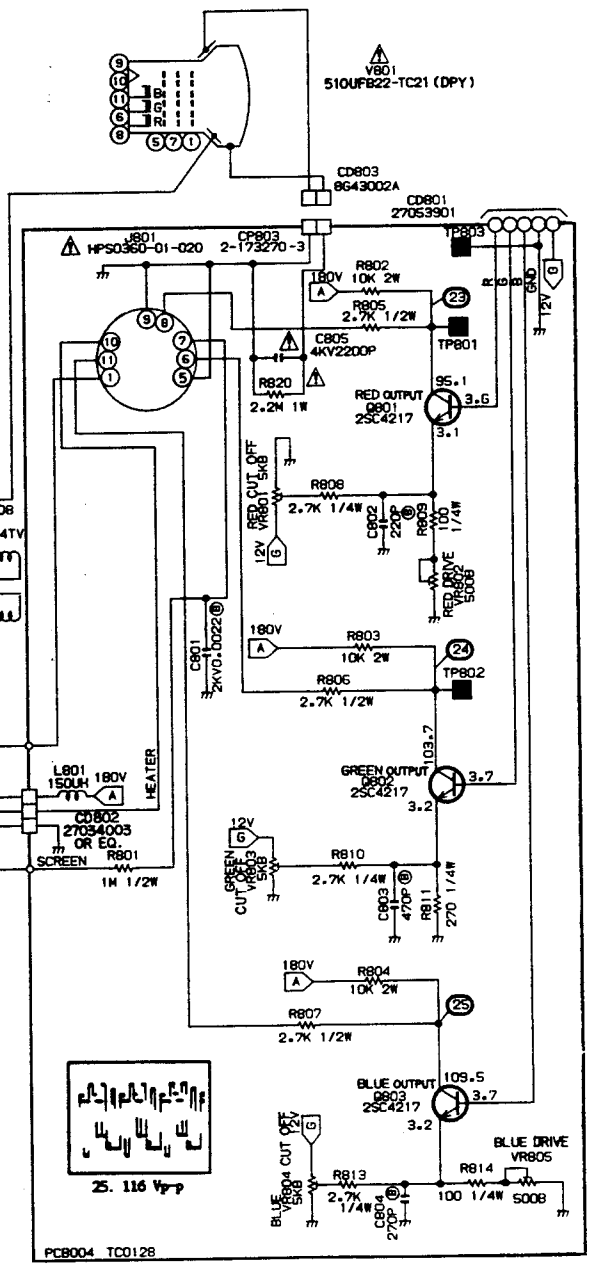

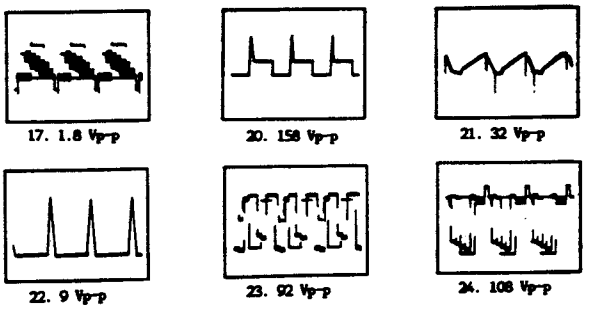

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MAIN / POWER / CRT SCHEMATIC DIAGRAM

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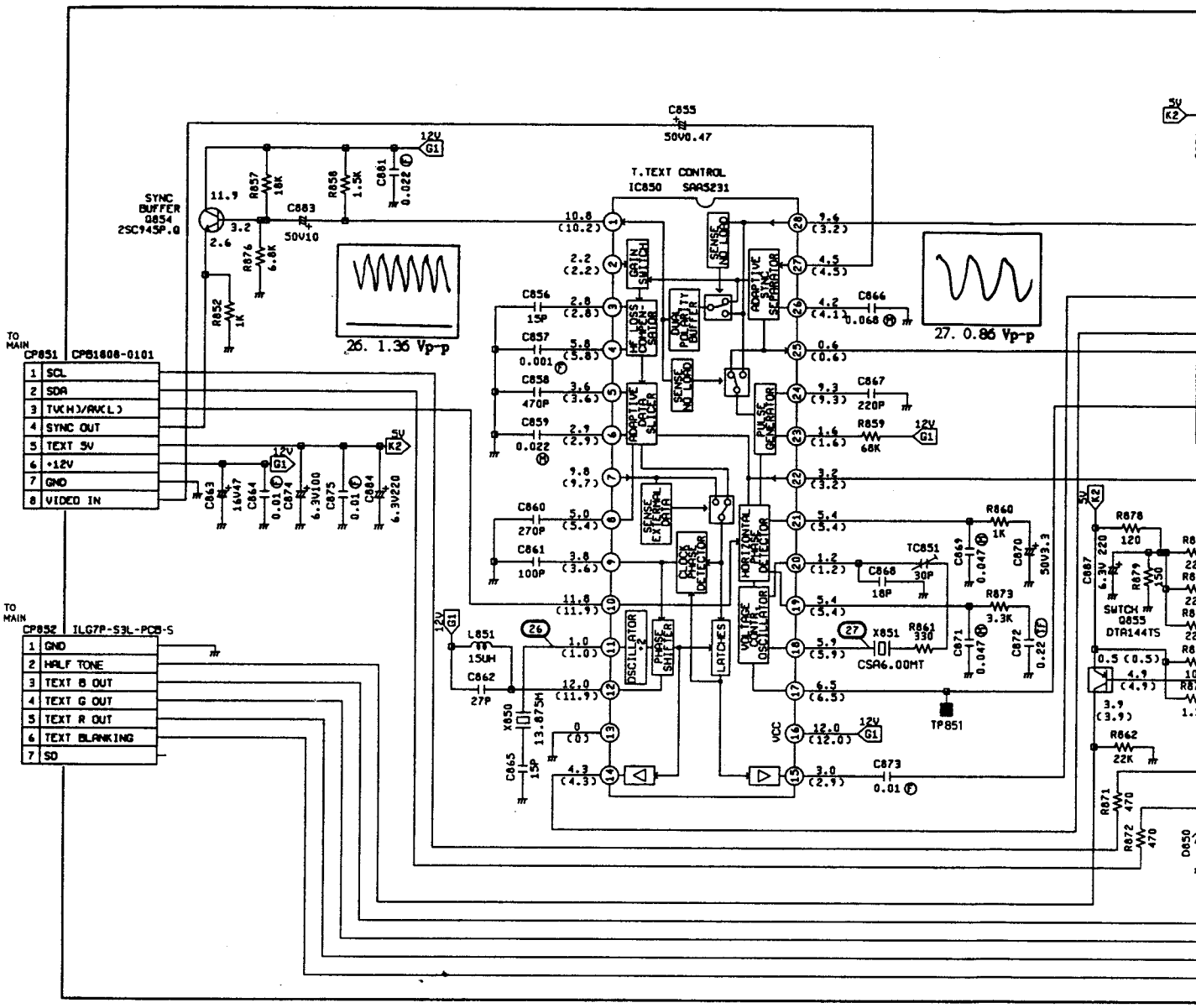
T'TEXT SCHEMATIC DIAG



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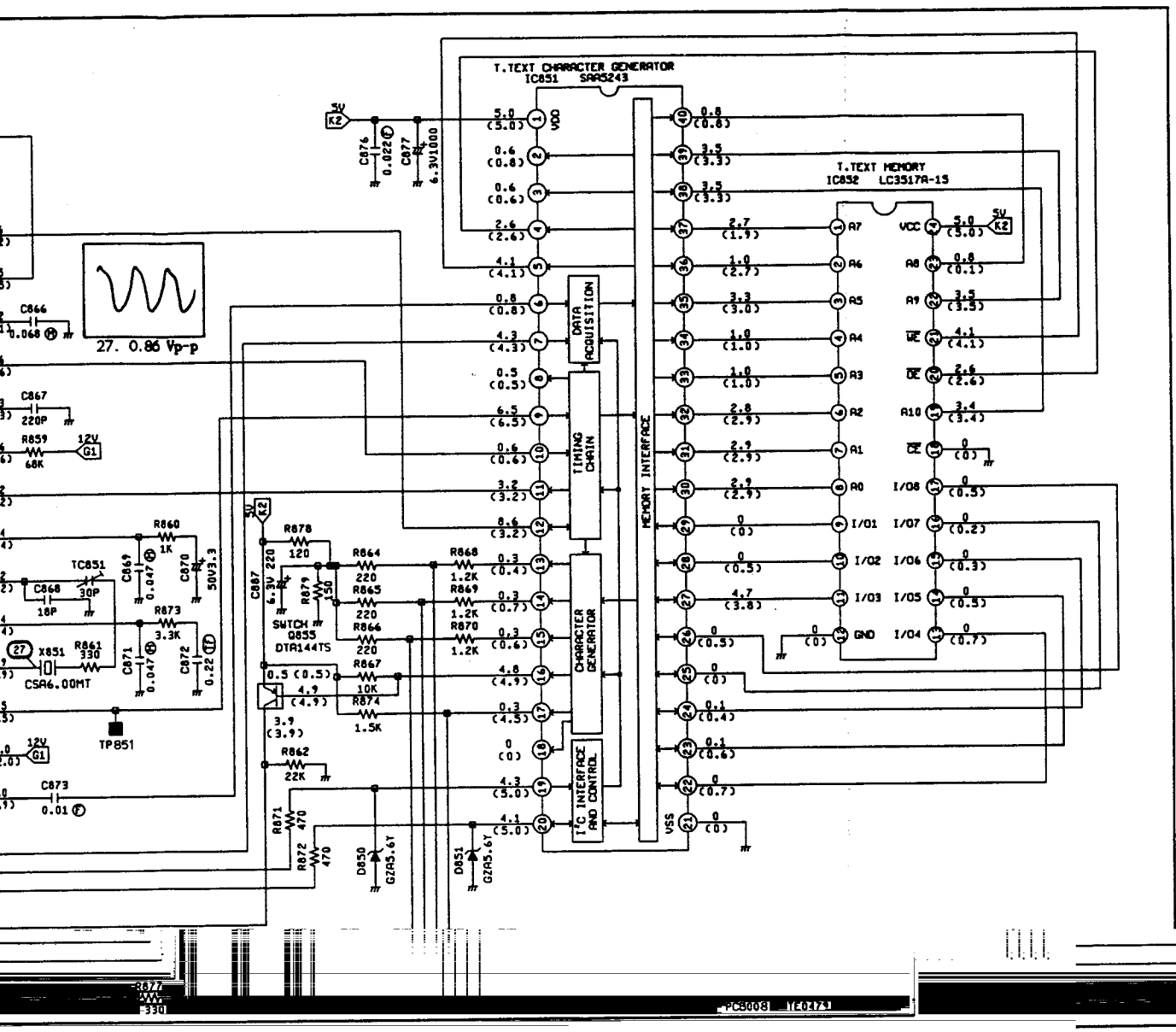
NOTE:

T'TEXT SCHEMATIC DIAGRAM



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE FIGURE WITH ( ) IS THE VOLTAGE IN NORMAL TV OPERATION.
THE FIGURE WITHOUT ( ) IS THE VOLTAGE IN TELETEXT OPERETION.

S PIECES REPAREES PAR UN ⚠ ETANT
NGEREUSES AN POINT DE VUE SECURITE
UTILISER QUE CELLS DECRITES
NS LA NOMENCLATURE DES PIECES.

T'TEXT SCHEMATIC DIA

MECHANICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION	
101	A35490A720	CABINET,FRONT ASS'Y	
102	713SPD0007	DOOR	
103	737SPA0002	BUTTON,CAP	
104	735SPA0002	BUTTON,CHANNEL	
105	736SPA0003	BUTTON,POWER	
106	A35490A740	CABINET,BACK ASS'Y	
		SHEET,RATING	
107	761KSA0062	FRAME,CRT	
108	751SNA0002	PLATE,EARTH WIRE(3)	
109	751SNA0004	PLATE,EARTH WIRE(2)	
110	741SUA0001	SPRING,EARTH	
111	800SR00002	SHEET,CRT SUPPORT	
112	753KSA0018	EARTH,LUG	
113	749SUA0001	SPRING,ANTENNA	
201	8117540A62	TAPPING(B0) TRUSS	4*16 BK
202	8110540B04	TAP TITE(P) TRUSS	4*20 CH
203	82A60B2161	WASHER	6.3*22*T1.6
204	8300560004	SL NUT	M6
---	J1A1TGA02A	GUARANTEE CARD	
---	J3530128A	WARNING SHEET	
---	J3549001A	INSTRUCTION BOOK	
---	J3549003A	SCHEMATIC DIAGRAM	
---	792SHA0009	PACKAGE,TOP	
---	792SHA0010	PACKAGE,BOTTOM	
---	793SCD0366	GIFT BOX	

THIS ELECTRICAL PARTS LIST IS STANDARD PART LIST, BUT
INTERCHANGEABLE PARTS MAY BE USED IN THE UNIT.
SEE THE INTERCHANGEABLE PARTS LIST AFTER THE STANDARD PARTS LIST.

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION		
RESISTORS				
R167	R31181123J	R.METAL OXIDE	12K OHM	1W
R188	R5M2CF332J	R.CEMENT	3.3K OHM	
R353	R31161103J	R.METAL OXIDE	10K OHM	1W
R358	R61582101J	R.FUSE	100 OHM	1/2W
R428	R3118A152J	R.METAL OXIDE	1.5K OHM	2W
R433	R61562680J	R.FUSE	68 OHM	1/2W
R434	R5M2CE100J	R.CEMENT	10 OHM	7W
R436	R614811R5J	R.FUSE	1.5 OHM	1W
R437	R615812R2J	R.FUSE	2.2 OHM	1W
⚠ R438	R61481R33K	R.FUSE	0.33 OHM	1W
R458	R3128B472J	R.METAL OXIDE	4.7K OHM	3W
R463	R3118A152J	R.METAL OXIDE	1.5K OHM	2W
R501	R5M2CD5R6K	R.CEMENT	5.6 OHM	5W
R506	R3118A220J	R.METAL OXIDE	22 OHM	2W
R509	R31181103J	R.METAL OXIDE	10K OHM	1W
R513	R3K181150J	R.METAL	15 OHM	1W
R518	R3K181150J	R.METAL	15 OHM	1W
R802	R3118A103J	R.METAL OXIDE	10K OHM	2W
R803	R3118A103J	R.METAL OXIDE	10K OHM	2W
R804	R3118A103J	R.METAL OXIDE	10K OHM	2W
⚠ R820	R03101225J	RC	2.2M OHM	1W
CAPACITORS				
C009	C030309H2K	CC	220 PF	4KV B
C134	C0F0B04B3K	CC	1200 PF	B
C140	C02FB07H3K	CC	0.0022UF	2KV B
C356	E025FB220M	CE	22 UF	160V
C425	P441F2684J	CMPP	0.68 UF	200V
C427	P441F2564J	CMPP	0.56 UF	200V
C428	P442F9123J	CMPP	0.012 UF	1600V
C429	E0E7F4102M	CE	1000 UF	35V
C430	E0E7F3222M	CE	2200 UF	25V
C431	E025FD4R7M	CE	4.7 UF	250V
C449	C01BBN713K	CC	1000 PF	2KV B
C452	E025FB101M	CE	100 UF	160V
C502	E0260H101T	CE	100 UF	400V
C508	C02FB07H3K	CC	0.0022UF	2KV B
C509	C02FB07H3K	CC	0.0022UF	2KV B
C511	C02FB07H3K	CC	0.0022UF	2KV B
⚠⚠ C513	P4440B474M	CMPP	0.47 UF	250V
⚠⚠ C514	P4440B104M	CMPP	0.1 UF	250V
C515	C03BBN7W2K	CC	820 PF	2KV
C516	C01BB07N2K	CC	390 PF	2KV B
C518	C01BBN713K	CC	0.001 UF	2KV B
C674	C0F0B04G3K	CC	1800 PF	B
C801	C02FB07H3K	CC	0.0022UF	2KV B
⚠ C805	C03FE09H3M	CC	2200 PF	4KV E
C869	P1E4F0473K	CP	0.047 UF	50V
C877	E0AIF0102M	CE	1000 UF	6.3V
C887	E08700221M	CE	220 UF	6.3V
SEMICONDUCTORS				
D101	0040322001	LED DISPLAY IC	SL-1263H	
D102	002132Q030	LED	SLZ136-14-AB-T1	
D103	002132Q030	LED	SLZ136-14-AB-T1	
D104	002132Q030	LED	SLZ136-14-AB-T1	
D105	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D106	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D108	002132Q020	LED	SLZ-136C-11-AB-T1	
D109	002132Q020	LED	SLZ-136C-11-AB-T1	
D110	002132Q020	LED	SLZ-136C-11-AB-T1	
D111	002132Q020	LED	SLZ-136C-11-AB-T1	
D112	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D113	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D114	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D115	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D117	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D124	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D139	D13TDS442X	DIODE,SILICON	DS442X-BT	
D150	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D152	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D155	D23HDSA12T	DIODE,RECTFIER	DSA12TL-FB2	
D156	D93003300Y	DIODE,ZENER	GZA33 Y	
D160	D93T05R10Y	DIODE,ZENER	GZA5.1 Y	
D351	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D352	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D401	D13TGMA010	DIODE,SILICON	GMA-01-BT	
D402	D93T07R50Y	DIODE,ZENER	GZA7.5 Y BT	
D403	D93T09R10Y	DIODE,ZENER	GZA9.1 Y BT	
D404	D93T02000Y	DIODE,ZENER	GZA20 Y BT	
D405	D92T0120B2	DIODE,ZENER	RD12EB 2 TA11R	
D406	D23TFD05TG	DIODE,RECTIFIER	DFD05TG-BT	
D407	D23TFD05TG	DIODE,RECTIFIER	DFD05TG-BT	

REF.NO	PART NO	DESCRIPTION	
SEMICONDUCTORS (CONT)			
D408	D23FFH10TG	DIODE,RECTIFIER	DFH10TG-KB4
D409	D23FFH10TG	DIODE,RECTIFIER	DFH10TG-KB4
D410	D23TFD05TG	DIODE,RECTIFIER	DFD05TG-BT
D411	D13TGMA010	DIODE,SILICON	GMA-01-BT
D412	D13TGMA010	DIODE,SILICON	GMA-01-BT
D413	D13TGMA010	DIODE,SILICON	GMA-01-BT
⚠ D501	D28020E100	DIODE,SILICON	20E10
⚠ D502	D28020E100	DIODE,SILICON	20E10
⚠ D503	D28020E100	DIODE,SILICON	20E10
⚠ D504	D28020E100	DIODE,SILICON	20E10
D505	D2B00RU2B0	DIODE,SILICON	RU-2B
D506	D2BF00RH10	DIODE,RECTIFIER	RH-1
D508	D2B000R2M0	DIODE,AVALANCE	R2M
D511	D25T5566B0	DIODE,RECTIFIER	S5566B(TPE3)
D512	D93T05R10Y	DIODE,ZENER	GZA5.1 Y BT-T
D601	D93T05R10Y	DIODE,ZENER	GZA5.1 Y BT-T
D850	D93005R60Y	DIODE,ZENER	GZA5.6 Y
D851	D93005R60Y	DIODE,ZENER	GZA5.6 Y
IC101	I01D10B210	IC	AN90B21
IC102	I30S1006L0	IC	CXK1006L
IC103	I51D080340	IC	OEC8034
IC104	I01901280S	IC	MN1280S
IC105	I03S079100	IC	LA7910
IC106	I03D06358T	IC	LA6358T
IC107	I02190574J	IC	UPC574J-T
IC108	I03B98M050	IC	L78M05-SA
IC201	I03DE7520N	IC	LA7520N
IC401	I05DE86590	IC	TA8659AN
IC402	I02SD14880	IC	UPC1488H
IC403	I01A98M120	IC	AN78M12
⚠ IC501	I2B490103A	IC	STR50103A
IC502	I03B98M050	IC	L78M05-SA
IC850	I9KDF52310	IC	SAA5231
IC851	I4KDF52430	IC	SAA5243
IC852	I53D03517C	IC	LC3517A-15
Q102	TAST009520	TRANSISTOR,SILICON	2SA952(C)-T
Q103	TAST009520	TRANSISTOR,SILICON	2SA952(C)-T
Q104	TAST009520	TRANSISTOR,SILICON	2SA952(C)-T
Q105	TCST009450	TRANSISTOR,SILICON	2SC945(C)-T
Q106	TN7TD03002	COMPOUND,TRANSISTOR	DTC144T S
Q107	TCST00945Q	TRANSISTOR,SILICON	2SC945(C)-T Q
Q111	TP7TD03002	COMPOUND,TRANSISTOR	DTA144T S
Q112	TN7TD03001	COMPOUND,TRANSISTOR	DTC144ESTP
Q115	TCST00945Q	TRANSISTOR,SILICON	2SC945(C)-T Q
Q116	TN7TD03002	COMPOUND,TRANSISTOR	DTC144T S
Q120	TN7TD03002	COMPOUND,TRANSISTOR	DTC144T S
Q201	TC3T030000	TRANSISTOR,SILICON	2SC3000-AA
Q351	TC30041590	TRANSISTOR,SILICON	2SC4159
Q352	TC30041590	TRANSISTOR,SILICON	2SC4159
Q401	TC3Q02621E	TRANSISTOR,SILICON	2SC2621E-RAC
Q402	TD5F015550	TRANSISTOR,SILICON	2SD1555
Q403	TCST009450	TRANSISTOR,SILICON	2SC945(C)-T
Q404	TCST00945Q	TRANSISTOR,SILICON	2SC945(C)-T Q
Q405	TAST00733Q	TRANSISTOR,SILICON	2SA733(C)-T Q
Q406	TCST00945Q	TRANSISTOR,SILICON	2SC945(C)-T Q
Q407	TN7TD03002	COMPOUND,TRANSISTOR	DTC144T S
Q502	T83T00698E	TRANSISTOR,SILICON	2SB698E-AA
Q517	TC3T029090	TRANSISTOR,SILICON	2SC2909
Q604	TAST007330	TRANSISTOR,SILICON	2SA733(C)
Q801	TC3F042170	TRANSISTOR,SILICON	2SC4217-RAC
Q802	TC3F042170	TRANSISTOR,SILICON	2SC4217-RAC
Q803	TC3F042170	TRANSISTOR,SILICON	2SC4217-RAC
Q854	TCST009450	TRANSISTOR,SILICON	2SC945(C)-T
Q855	TP7TD03002	COMPOUND,TRANSISTOR	DTA144T S
Q952	TCST009450	TRANSISTOR,SILICON	2SC945(C)-T
COILS & TRANSFORMERS			
L001	021JA6100K	COIL	10 UH
L202	0216731R0M	COIL	1.0 UH
L203	033600016N	COIL,VIDEO IFT	3600016
L204	033600017N	COIL,VIDEO IFT	3600017
L205	021JA6100K	COIL	10 UH
L206	033600018C	COIL,VIDEO IFT	3600018
L207	03360M001N	COIL,TRAP	360M001
L301	021JA6150K	COIL	15 UH
L401	021679472K	COIL	4.7 MH
L402	0221000012	COIL,LINEARITY	2112
⚠ L501	0291000002	COIL,LINE FILTER	91000002
⚠ L502	028Y200008	COIL,DEGAUSS	8Y200008
L503	02AXA509C1	FILTER,LINE	ESD-R-16C
L601	03352R011S	COIL,CHROMA	352R011
L602	03352R011S	COIL,CHROMA	352R011

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO	PART NO	DESCRIPTION
COILS & TRANSFORMERS (CONT)		
L603	03352R007S	COIL,CHROMA 16035SU
L604	021JA6100K	COIL 10 UH
L605	03302R001S	COIL,CHROMA 16032SU
L606	03352R016S	COIL,CHROMA 352R016
L607	021JA6330K	COIL 33 UH
L608	021JA6270K	COIL 27 UH
L612	021JA6390K	COIL 39 UH
L601	021JA2151K	COIL 150 UH
L651	021Z73150K	COIL 15 UH Q=50
⚠ T381	045126007U	TR.,SOUND OUTPUT 5126007
T401	03305Y002S	TRANS.,HORIZONTAL DRIVE 305Y002
T501	048133010T	TRANSFORMER,SWITCHING 8133010T
JACKS		
J301	0602101004	JACK,RCA 3.5 HSJ0912-01-050
⚠ J801	0662130007	SOCKET,CRT HPS0360-01-020
SWITCHES		
SW101	0501201007	SWITCH,PUSH SPPH11280A
SW102	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW103	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW104	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW105	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW106	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW109	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW110	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW111	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW112	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW113	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW115	0504101T13	SWITCH,TACT EVQ-QTN09Q
SW401	0510B22001	SWITCH,SLIDE SS-22F16G7
⚠ SW501	0530102008	SWITCH,PUSH ESB-76937A
SW601	0510B22001	SWITCH,SLIDE SS-22F16G7
VARIABLE RESISTORS		
VR201	V1163Q3B02	VR,SEMIFIXED EVN-D4AA00BQ3
VR401	V1163Q4B03	VR,SEMIFIXED EVM4LGA00BQ4
VR402	V1163H2B02	VR,SEMIFIXED EVN-D4AA00BE2
VR501	V1263L5B01	VR,SEMIFIXED RH0615CN5J0F
VR601	V116313B02	VR,SEMIFIXED EVN-D4AA00B13
VR602	V1163H4B02	VR,SEMIFIXED EVN-D4AA00BE4
VR603	V1163H4B02	VR,SEMIFIXED EVN-D4AA00BE4
VR801	V175C53B01	VR,SEMIFIXED RVA0911H304-1-502M
VR802	V175C52B01	VR,SEMIFIXED RVA0911H304-1-501M
VR803	V175C53B02	VR,SEMIFIXED RVA0911H304-2-502M
VR804	V175C53B03	VR,SEMIFIXED RVA0911H304-3-502M
VR805	V175C52B03	VR,SEMIFIXED RVA0911H304-3-501M
P.C. BOARDS ASS'Y		
PCB001	A35490A01AC	PCB ASS'Y TM0155-C
PCB002	A35490A03A	PCB ASS'Y TE0517
PCB003	A35490A20A	PCB ASS'Y TE0518
PCB004	A35490A11A	PCB ASS'Y TC0128
PCB007	A35490A38A	PCB ASS'Y TE0357
PCB008	A35490A15A	PCB ASS'Y TE0479
MISCELLANEOUS		
⚠ ANT001	0637300013	ANT.UNIT ATCU-PS-26
B401	024JT03551	CORE,BEADS FBA04HA450AB-00
B402	024JT03551	CORE,BEADS FBA04HA450AB-00
BT101	141T003004	BATTERY,MANGAN UM-3 1.5V
BT102	141T003004	BATTERY,MANGAN UM-3 1.5V
CD006	068G32001A	CORD EIS CONNECTOR 8G32001A
CD021	068M12183A	CORD,JUMPER 8M12183A
CD101	0694260080	CONNECTOR PCB SIDE 174074-6
CD102	0694260080	CONNECTOR PCB SIDE 174074-6
CD103	122N091001	CORD,JUMPER 2N091001
CD104	122N091001	CORD,JUMPER 2N091001
CD105	0694290080	CONNECTOR PCB SIDE 174074-9
⚠ CD501	120S450024	CORD,AC 120S450024
CD503	068G01173A	CORD CONNECTOR 8G01173A
CD504	068G01174A	CORD CONNECTOR 8G01174A
CD801	1227053901	CORD,JUMPER 27053901
CD802	1227034003	CORD,JUMPER 27034003
CD803	068G43002A	CORD UX CONNECTOR 8G43002A
CF001	116F3TH4Z1	FILTER,EMI LTSTF223ZBTB
CF002	116F3TH4Z1	FILTER,EMI LTSTF223ZBTB
CF003	116F3TH4Z1	FILTER,EMI LTSTF223ZBTB
CF004	116F3TH4Z1	FILTER,EMI LTSTF223ZBTB
CF101	1003T4R001	CERAMIC OSCILLATOR KBR-4.0MSTF
CF201	1027036R91	FILTER,SAW F1034

REF.NO	PART NO	DESCRIPTION
MISCELLANEOUS (CONT)		
CF202	1012106R51	FILTER,CERAMIC TRAP TPS5.5MB
CF301	101225R501	FILTER,CERAMIC CDA5.5MC24B
CF302	1012005R52	FILTER,CERAMIC SFE5.5MC2
CF351	116F3TH4Z1	FILTER,EMI LTSTF223ZBTB
CP006	069Z320016	CONNECTOR PCB SIDE RTB-2.36-2TV
CP008	069Z340018	CONNECTOR PCB SIDE RTB-2.36-4TV
CP101	0694260090	CONNECTOR PCB SIDE 174161-6
CP102	0694260090	CONNECTOR PCB SIDE 174161-6
CP105	0694290260	CONNECTOR PCB SIDE 175544-9
CP503	069Z420039	CONNECTOR PCB SIDE 069Z420039
CP803	0694430100	CORD UX CONNECTOR 2-173270-3
CP851	069Q180179	CONNECTOR PCB SIDE CPB1808-0101
CP852	069H170209	CONNECTOR PCB SIDE ILG7P-S3L-PCB-S
DL601	104114R43G	DELAY LINE GLASS EFDEN645A31F
DL602	103S000402	DELAY LINE ELT10Z204M
EAR351	074U130009	EARPHONE 4U130009
⚠ F501	0806T2R502	FUSE T 2.5A 250V
⚠ FB401	0432200121	TRANSFORMER,FLYBACK 3220012
FH501	067M0T0004	HOLDER,FUSE H0451
FH502	067M0T0005	HOLDER,FUSE H0452
⚠ ICP401	084E00R301	IC PROTECTOR PRF-315
MS002	128B000017	MICA,SHEET STR-50103MICA
NR101	110E447301	R,NETWORK RN3H5A473J01
OS101	077M006004	REMOTE RECEIVER KEY-C00SV2
S001	128F100003	SPACER BUSH-M
SP351	0708043001	SPEAKER C100A21K2453
TC851	0100514001	C,CERAMIC TRIMMER TZ03R300E
TH501	D810M180H0	DEGAUSS ELEMENT ERP-F580M180H
TM101	0761000006	TRANSMITTER EUR-53862
⚠ TU001	0145P11004	TUNER,UHF-VHF VTSA1SZV
⚠ V801	098G200438	TUBE,CATHODE RAY 510UFB22-TC21
X401	1002R50301	CERAMIC,OSCILLATOR CSB503F2
X601	10064R4382	CRYSTAL HC-49/U 4.43361875MHZ
X850	100613R801	CRYSTAL HC-49/U 13.875MHZ
X851	10026R0004	SERALOCK CSA6.00MT

RESISTOR
RC.....CARBON RESISTOR

CAPACITORS
CC.....CERAMIC CAPACITOR
CE.....ALUMI ELECTROLYTIC CAPACITOR
CP.....POLYESTER CAPACITOR
CPP.....POLYPROPYLENE CAPACITOR
CPL.....PLASTIC CAPACITOR
CMP.....METAL POLYESTER CAPACITOR
CMPL.....METAL PLASTIC CAPACITOR
CMPP.....METAL POLYPROPYLENE CAPACITOR
CST.....STYROL CAPACITOR

INTERCHANGEABLE PARTS LIST

NOTE:THE FOLLOWING PART(S) MAY BE SUBSTITUTED FOR PARTS INDICATED IN THE BASIC PART(S) LIST (WITH THE SAME REF.NO.). THESE PARTS SHARE THE SAME ELECTRICAL CHARACTERISTICS AND OTHER ELEMENTS FOR COMMON USAGE.
EITHER PART NUMBER MAY BE USED IN THIS UNIT.

REF.NO	DESCRIPTION (PART NO)	DESCRIPTION (PART NO)
CD021	8M12183A (068M12183A)	8G12183A (068G12183A)
CD802	27034003 (1227034003)	2Q034002 (122Q034002)
EAR351	4U130009 (074U130009)	SE100-335 (074N130007)
IC102	CXK1006L (130S1006L0)	CXK1008L (130S1008L0)
⚠ L502	8Y200008 (028Y200008)	8J200008 (028J200008)
SP351	C100A21K2453 (0708043001)	CP100001-01 (070R143004)
T501	8133010T (048133010T)	8133010 (0481330105)
⚠ TU001	VTSA1SZV (0145P11004)	VTSA1SZV (0145J11004)

THE LISTED PARTS ARE INTERCHANGEABLE WITH ONE COMPLETE BLOCK AS FOLLOWS.

REF.NO	DESCRIPTION (PART NO)	DESCRIPTION (PART NO)
D102	SLZ136-14-AB-T1 (002132Q030)	LN81RCPH-(C) (0021121050)
D103	SLZ136-14-AB-T1 (002132Q030)	LN81RCPH-(C) (0021121050)
D104	SLZ136-14-AB-T1 (002132Q030)	LN81RCPH-(C) (0021121050)
D108	SLZ-136C-11-AB-T1 (002132Q020)	LN81RCPH-(C) (0021121050)
D109	SLZ-136C-11-AB-T1 (002132Q020)	LN81RCPH-(C) (0021121050)
D110	SLZ-136C-11-AB-T1 (002132Q020)	LN81RCPH-(C) (0021121050)
D111	SLZ-136C-11-AB-T1 (002132Q020)	LN81RCPH-(C) (0021121050)