



CTV-1424XT

Service Manual - CTV-1424XT

SPECIFICATION

SUPPLY VOLTAGE : AC220V 50Hz $\pm$ 10% / -20%

[illegible]

ITEMS OF MEASUREMENT	STANDARD	UNIT
VIDEO SENS. AT S/N 30db L-VHF	≤ 57	dbuv
H-VHF	≤ 57	dbuv
UHF	≤ 60	dbuv
SOUND SENS. AT S/N 30db L-VHF	≤ 42	dbuv
H-VHF	≤ 42	dbuv
UHF	≤ 48	dbuv
AGC CHARACTER	≥ 60	db
SELECTIVITY -1.5 MHz	≥ 35	db
+8 MHz	≥ 40	db
COLOR SENS.	≤ 45	dbuv
COLOR LOCK-IN RANGE	$\geq \pm 300$	Hz
VERTICAL LOCK-IN RANGE	≥ 6	Hz
HORIZONTAL LOCK-IN RANGE	≥ 400	Hz
MAX BRIGHTNESS	≥ 140	cd/m ²
MAX OUTPUT POWER MONO	≥ 1.3	W
STEREO	≥ 1.5	
OUTPUT POWER AT 10% THD MONO	≥ 1	W
STEREO	≥ 1.2	
BUZZ	≤ -40	db
AFC RANGE	$\geq +1$	MHz
	≥ -0.5	MHz
MIN. VOL HUM	≤ 20	mV
RESOLUTION HORIZONTAL	≥ 300	LINES
VERTICAL	≥ 400	LINES
LINEARITY DISTORTION VERTICAL	≤ 10	%
HORIZONTAL	≤ 10	%
RASTER DISTORTION	≤ 5	%
REMOTE CONTROL DISTANCE	≥ 5	METER
ANGLE	$\geq \pm 15$	DEGREE
POWER CONSUMPTION (AT NORMAL CONDITION)	≤ 60	WATTS
POWER CONSUMPTION (AT MAX. CONDITION)	≤ 70	WATTS
CONVERGENCE DISLOCATION AT AREA "A"	≤ 0.4	%
AREA "B"	≤ 0.8	%
(see fig.1)		

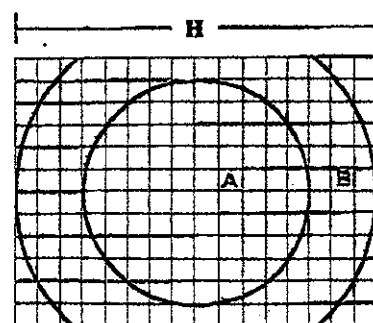
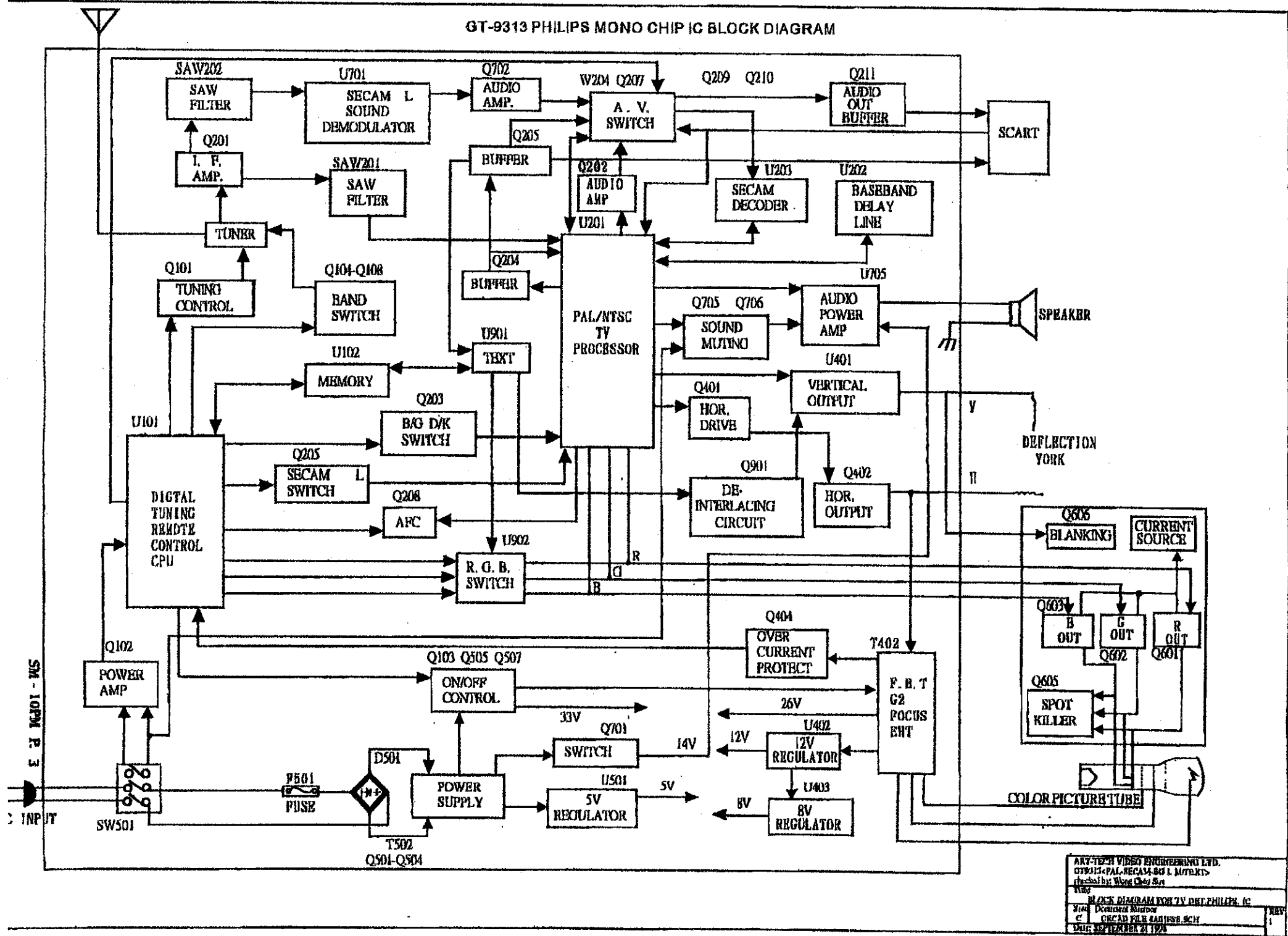


Fig.1

VIDEO INPUT LEVEL : 1.0V P-P $\pm$ 3dB
 AUDIO INPUT LEVEL : 0.5V RMS $\pm$ 3dB

GT-9313 PHILIPS MONO CHIP IC BLOCK DIAGRAM



ART-TECH VIDEO ENGINEERING LTD.
GT9313-PAL-SECAM-30 L. M/TEXT
checked by Wong Chee Sun
DATE: 30/12/88
BLOCK DIAGRAM FOR TV SET PHILIPS IC
W/44 Decoded Microchip
C' CIRCAD FILE 841758.8C1
DATE: 30/12/88

ALIGNMENT INSTRUCTION

I. PLEASE READ BEFORE ATTEMPTING SERVICE

1. Never disconnect any leads while receiver is in operation.
2. Disconnect all power before attempting any repairs.
3. Do not short any portion of the circuit while power is on.
4. For safety reasons, all parts replaced should be identical, (for parts and part numbers see parts list).
5. Before alignment the set must be pre-heated for 30 minutes or more and erase magnetism thoroughly from CRT front chassis frame by erase coil.
6. An isolation transformer should be used during any dynamic service to avoid possible shock hazard.

II. TEST EQUIPMENT

1. VIF Sweep Generator
2. SIF Sweep Generator
3. Colour Bar Dot Cross Hatch Generator
4. DC Power Supply
5. Oscilloscope
6. Vacuum Tube Voltmeter

7. Volt Ohmmeter
8. High Voltage Meter
9. Ampere Meter (0.5 Class, DC 3mA Max)
10. Demagnetizing Coil
11. Philips Pattern Generator
12. High Pot Tester

III. VIF ALIGNMENT

- A. Preparation step. (see fig.1a)
 1. Connect Sweep Generator to tuner test point and Ground.
 2. Connect $14V \pm 1V$ Bias Voltage to C406 (+) and Ground.
 3. Connect A.G.C. Bias Voltage to PIN 48 of U201
*A.G.C. Bias Voltage can't over 5V. (see fig.1b)
 4. Disconnect the soldering pads 'H' and 'I'.
 5. Connect $14V \pm 1V$ Bias Voltage to C514 (+).

B. TANK COIL ALIGNMENT

1. Calibrate the division of Sweep Generator equal to 100mV per div.
2. Adjust the output of Sweep Generator to -40dB. $\pm 20dB$.
3. Connect the waveform detector to TP201 and Ground.
4. Adjust A.G.C. Bias Voltage to achieve 1V p-p $\pm 10\%$ output on oscilloscope.
5. Adjust L204 to obtain R.C. (38.9 MHz) at the lowest point (fig.2) ± 1 DIV.

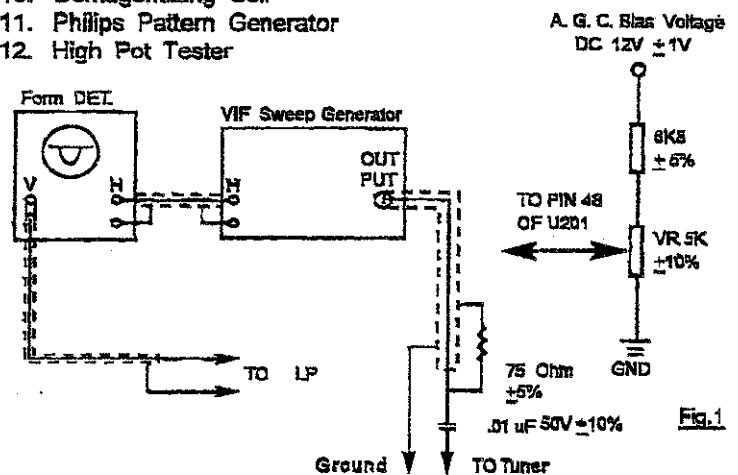


Fig.1

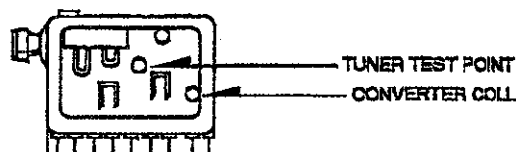


Fig. 1a

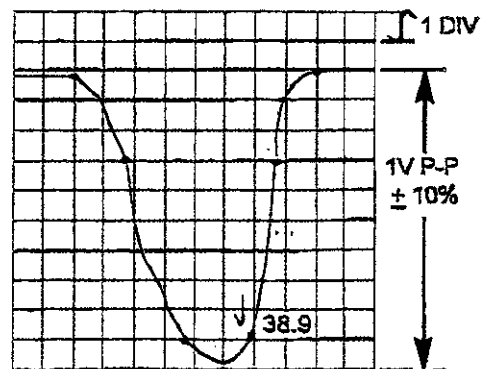


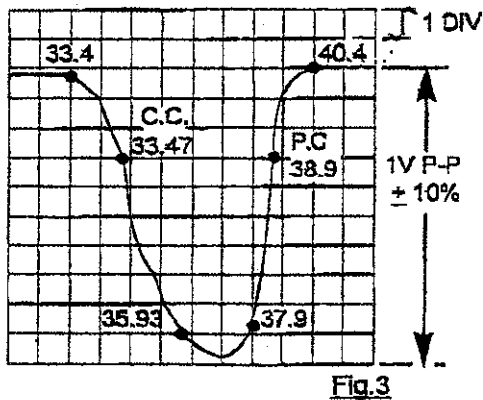
Fig. 2

		DK			
SYSTEM:	B/G	HYPER BAND	I/I	D/K	(UK)
P.C. (MHz)	38.9 MHz	38.0 MHz	39.5 MHz		

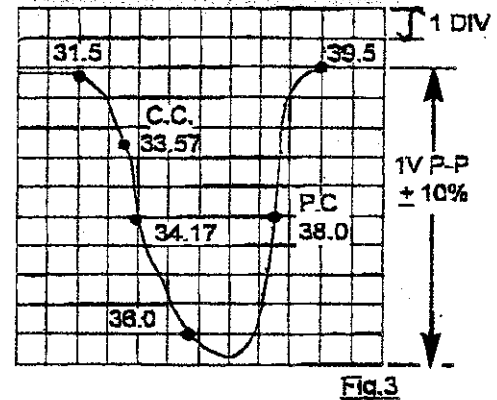
REMARK: ALL FREQUENCY OF MARKER POINTS ARE $\pm 0.2\%$ TOLERANCE.

C. V.I.F. ALIGNMENT

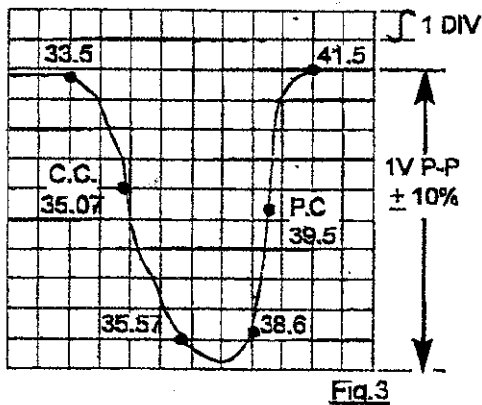
1. Connect $100\Omega \pm 5\%$ Res. parallel to R266
- 1a. (If the model is SECAM - L). Connect $100\Omega \pm 5\%$ Res. between Pin 10 of U201 and Q206 'B'
2. The output of Sweep Generator should be $-40\text{dB} \pm 20\text{dB}$
3. Adjust A.G.C. Bias to maintain the waveform achieve $\sim 1\text{V p-p} \pm 10\%$ (about 4V)
4. Adjust tuner converter coil to obtain waveform as Fig.3 (Point (C.C.) and point (P.C.) can have $\pm 0.5\text{div}$ tolerance)
5. If the tuner haven't converter coil V.I.F alignment may be omitted



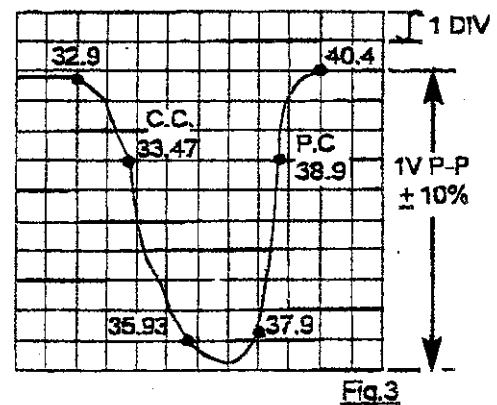
SYSTEM : PAL - BG / L - L'
 PAL - BG / L
 PAL - BG / DK
 (W / HYPER BAND)
 PAL - BG



SYSTEM : PAL - BG / DK
 (W / O HYPER BAND)



SYSTEM : PAL - I (UK)



SYSTEM : PAL - I / I

D. FINE AFC ALIGNMENT

- 1) Apply Pal I.F. signal (38.9 MHz) modulated with a colour bar pattern to tuner I.F. point.
- 2) The output of I.F. signal should be 80 dB. ± 3 dB.
- 3) Connect a digital voltmeter to TP203 and Ground.
- 4) Adjust L204 to obtain a reading of $3.75V \pm 0.25V$.
- 5) Soldering the pads 'H' and 'I'.

SYSTEM	BG/DK	BG/DK W/H.BAND	PAL-I	PAL-BG PAL-II PAL-BG/L
IF SIGNAL (MHz)	38.0	38.9	39.5	38.9

IV. B+ ADJUSTMENT

- 1) Connect a digital voltmeter to TP8+ and ground.
- 2) Set Brightness, Contrast and colour to minimum.
- 3) Adjust VR101 (Sub-brightness) to centre and FBT volume just be seen.
- 4) Adjust VR501 and obtain a reading of $111V \pm 1V$. (FOR CAIHONG CRT)

V. AGC ALIGNMENT

- 1) Receive monoscope pattern at CH 69 UHF. (Tuner input field strength table show as below)
- 2) Connect a digital meter between the Tuner AGC terminal and ground.
- 3) Adjust the AGC variable resistor (VR201) to the MAXIMUM position (clockwise), and then adjust the VR anti-clockwise until the voltage drop down $\geq 0.4V$.

TUNER MODEL NO.	RF INPUT SIGNAL(dB)	TUNER MODEL NO.	RF INPUT SIGNAL(dB)
ENV598B7F2	62 ± 3 dB	OSCAR 2900KKC	60 ± 3 dB
UVC6201-RC	57 ± 3 dB	HBC3300KHC	60 ± 3 dB
UVC8303-RW	57 ± 3 dB	TBD1CAB14	60 ± 3 dB
UVL1812-AW	57 ± 3 dB	TECC1986VA0618	60 ± 3 dB
UVC1401-EW	57 ± 3 dB	TBD1-HYPV15A	60 ± 3 dB
TBQ-5-32	57 ± 3 dB	UVE33-W24/R16-8649	60 ± 3 dB
TBQ 8-12	57 ± 3 dB	UVE50-AW04D	60 ± 3 dB
VISHZUZ51	60 ± 3 dB		

Remark: a/. the voltage drop down must be close 0.4V
b/. no noise on the picture

VI. FOCUS ALIGNMENT

- 1) Set the brightness and contrast to middle position.
- 2) Receive Monoscope pattern input signal $70dB \pm 10dB$.
- 3) Adjust focus control to obtain sharpest picture.

VII. HORIZONTAL CIRCUIT ADJUSTMENT

- 1) Receive Monoscope Pattern input signal $70dB \pm 10dB$.
- 2) Adjust VR202 to obtain the picture at center.
(Specification show in FIG. 5)

VIII. VERTICAL CIRCUIT ADJUSTMENT

- 1) Receive the Monoscope Pattern input signal $70dB \pm 10dB$.
- 2) Adjust VR402 to obtain a normal picture.

IX. CUT-OFF VOLTAGE ALIGNMENT

- 1) Receive PHILIPS Pattern input signal $70dB \pm 10dB$.
- 2) Turn the contrast, brightness and colour to the minimum value.
- 3) Turn VR601, 602, 603, 604, and 605 to the middle position.
- 4) Adjust the middle point of Sub-brightness variable resistor (VR101) to $1.5V \pm 0.1V$.
- 5) Adjust the screen volume on FBT can just be seen.

DISTRICT	CENTRE (mm) POSITION	LIMIT (mm)	SCANNING SIZE (%)	SCANNING SIZE LIMIT (%)
THAILAND	-1	0 ~ -2	90	88 ~ 92
FRANCE	+3	0 ~ +5	90	88 ~ 94
GERMANY	+3	0 ~ +5	90	90 ~ 95
*GROUP A	-2	-5 ~ -1	90	88 ~ 94
*GROUP B	0	-2 ~ +2	90	88 ~ 94
*GROUP C	+3	0 ~ +5	90	88 ~ 94

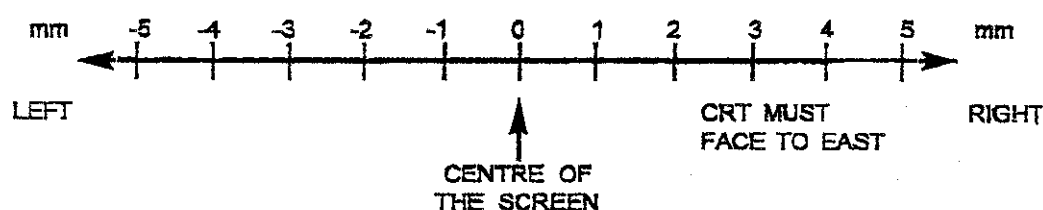


FIG. 5

- REMARK :
1. SUITABLE FOR 14" OR ABOVE TV.
 2. Adjust the centre position must take the upper side of monoscope pattern for standard.
 3. Group A : AUSTRALIA, NEW ZEALAND, TAHITI.
 4. Group B : HONG KONG, CHINA, AMERICA, CANADA, MALAYSIA, MEXICO.
 5. Group C : ENGLAND, ITALY, GERMANY, RUSSIA, SWITZERLAND, JUGOSLAVIA, SPANISH.
- If the above countries are not include, please consult to Engineering Dept.

VI - a. SIF ALIGNMENT (FOR NICAM & G. STEREO)

1. Connect the sweep generator to U701 Pin 15.
2. Connect waveform detect to PIN1 and PIN3 at CN704.
3. Connect A.G.C. Bias voltage to U701 Pin 2.
4. The output of sweep generator should be -30dB $\pm$ 5dB.
5. Adjust T702 and T701 to obtain the waveform as Fig.

Remark : All frequency of marker can have $\pm$ 0.2% tolerance.

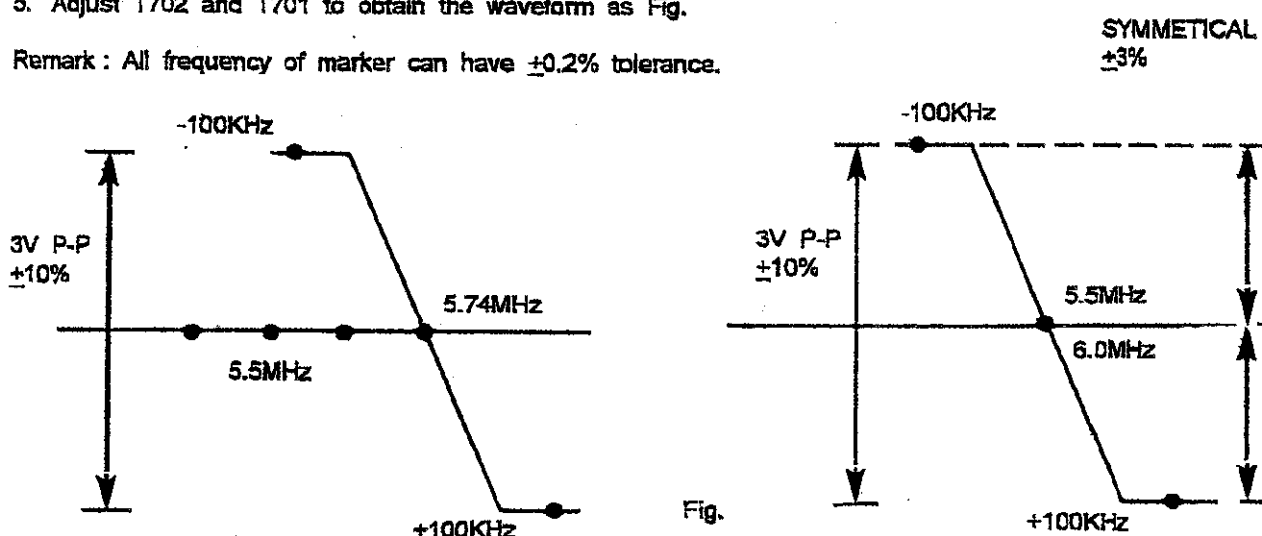


Fig.

VII - b. SOUND TANK COIL ALIGNMENT (FOR NICAM & G. STEREO)

1. Connect Philips Pattern Generator to tuner test point and Ground. (Frequency is (39.5) 38.9MHz color bar input signal is 80dB $\pm$ 3dB)
2. Connect Digital multimeter to PIN12 at U701.
3. Adjust T703 to obtain a DC 2.8V $\pm$ 0.1V.

X. WHITE BALANCE ALIGNMENT STEP

- 1) Degauss the picture by degaussing coil if necessary.
- 2) Receive a black and white pattern input signal $70\text{dB} \pm 10\text{dB}$ or video input $1\text{V p-p} \pm 3\text{dB}$.
- 3) Adjust VR801, 802, 803, 804, 805 to obtain uniformly white picture $9300^\circ\text{K} \pm 3\text{JND}$.

XI. SUB-BRIGHTNESS ALIGNMENT

- 1) Receive a PHILIPS bar pattern input signal $70\text{dB} \pm 10\text{dB}$.
- 2) Turn the brightness, contrast and colour to minimum.
- 3) Adjust VR101 until the brightest bar can just be seen.

XII. CONVERGENCE ADJUSTMENT (IF NECESSARY) (SEE FIG.5)

- 1) Receive a dotted pattern input signal $70\text{dB} \pm 10\text{dB}$.
- 2) Unfix the convergence magnet clamber and align red with blue dots at the center of the screen by rotating (R,B) static convergence magnets.
- 3) Align Red / Blue with green dots at the center of the screen by rotating (RB-G) static convergence magnet.
- 4) Fix the convergence magnets by turning the clamber.
- 5) Remove the DY wedges and slightly tilt the deflection yoke horizontally and vertically to obtain the good overall convergence.
- 6) Fix the deflection yoke by wedges.
- 7) If purity error is found, follow "PURITY ADJUSTMENT" INSTRUCTIONS.

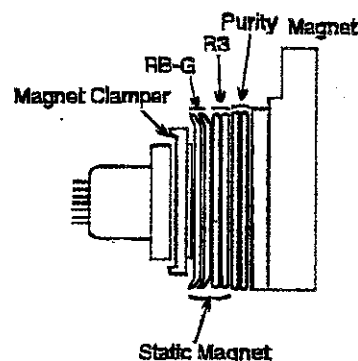


Fig. 5

XIII. HIGH POT TESTING

- 1) Short the LINE CORD L-pole and N-pole.
- 2) Switch on the power switch of the TV set.
- 3) The High Pot Tester (-) connect to the L and N pole and (+) connect to the metal parts of cabinet.

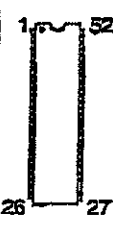
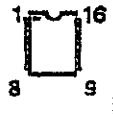
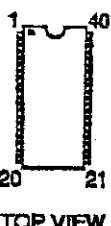
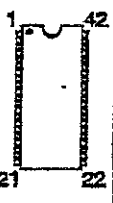
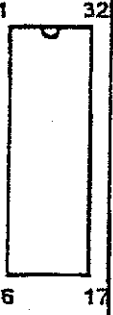
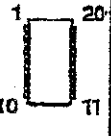
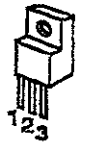
REMARK: The High Pot Tester can have $\leq \pm 5\%$ tolerance.

CONDITION SAFETY STD.	TEST SYANDARD	TEST STANDARN FOR PRODUCTION
VDE, SAA	3.0KV 10mA / 1MIN	$\geq 3.5\text{KV}$ $\leq 10\text{mA}$ / ≥ 10 SEC.
BS	4.0KV 10mA / 1MIN	$\geq 4.0\text{KV}$ $\leq 10\text{mA}$ / ≥ 10 SEC.
CHINA STANDARD	3.0KV 10mA / 1MIN	$\geq 3.3\text{KV}$ $\leq 5\text{mA}$ / ≥ 6 SEC.

XIII. RIGHT and LEFT SOUND BANLANCE FOR AUDIO STEREO

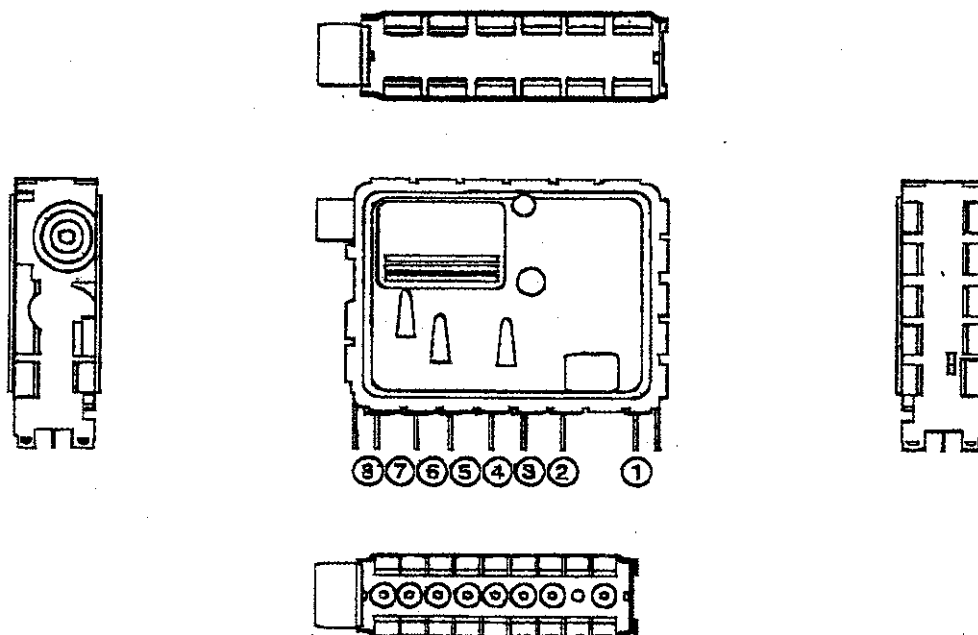
- 1) Receive a colour bar pattern input signal $70\text{dB} \pm 10\text{dB}$.
- 2) Turn the volume level to middle position.
- 3) Connect a digital meter between CN001 Pin1 and Gnd, CN002 Pin1 and Gnd.
- 4) Adjust VR001 to obtain the same level.

TRANSISTOR AND IC IDENTIFY

				FOR SECAM		FOR TELETEXT	
 TOP VIEW	TDA8362 TDA8361K SAA 5290 SAA 7284	 TOP VIEW	HCF4053BF TDA4665	 C B E	 TOP VIEW	 TOP VIEW	SAA5254 P/H SAA5254 P/T
 TOP VIEW	CTV222S CTV222 PRC-1 CTV322S CTV350G W-2	 B C E	BU2508DF 2SD1545	 E C B	 TOP VIEW	 TOP VIEW	PC74HCT 241P TDA 3857 TDA 8425 TDA 8416 TDA 8732
 TOP VIEW	ST24C01B1 ST24C0AB1	 1 2 3	LM7805 LM7808 LM7812	 E C B	 TOP VIEW	 TOP VIEW	2SC1815
		 1 9	TDA3653B TDA1013B	 B C E			

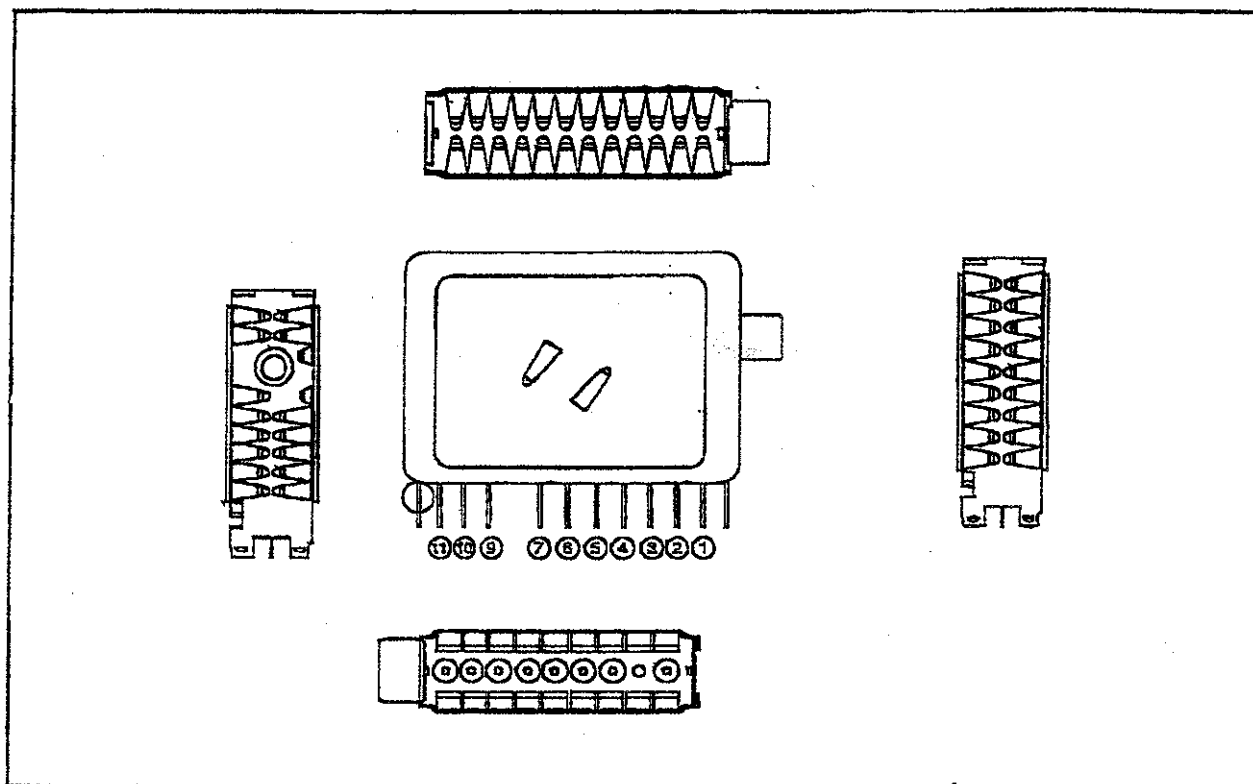
PICTORIAL VIEW OF TUNER

TERMINAL NO.	1	2	3	4	5	6	7	8
TERMINAL NAME	IF	B+	AFT	LB	AGC	HB	VT	UB



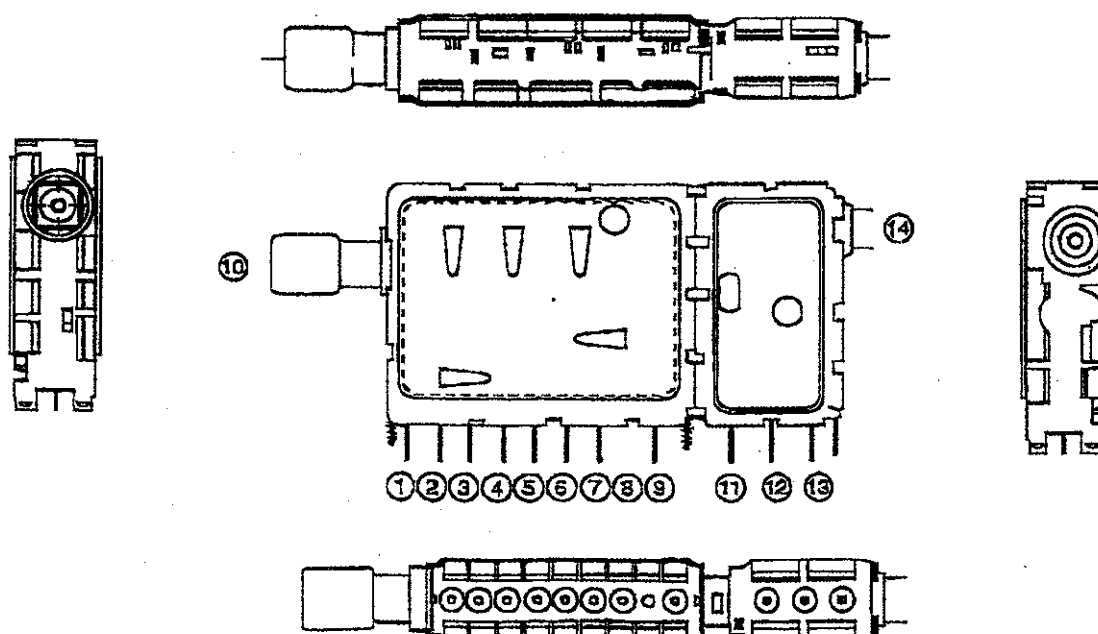
PICTORIAL VIEW OF TUNER (WSP TUNER)

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11
TERMINAL NAME	AGC	VT	BU	BH	BL	B+5V	-	-	-	IF GND	IF



PICTORIAL VIEW OF TUNER (Only For L')

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
TERMINAL NAME	BU	VT	BH	AGC	BL	AFT	B	EMPTY	IF OUT	UV IN	IF 1	L1	B+	IF2



VOLTAGE TABLE FOR IC (ONLY FOR REFERENCES)							
SYMBOL PIN NO.	U 201 TDA 8362	U 101 SAA5290	U 101 CTV 322	U 202 TDA 4661	U 203 TDA 8395		
1	3	0.54	4.4	5.2	4.4		
2	5.8	3.16	0.9	0.2	1.3		
3	5.8	0	4.9	GND	7.9		
4	5.4	4.2	4.9	GND	0		
5	8.0	4.4	4.9	1.0	0		
6	3.8	0.1	2.5	0	0		
7	3.4	4.4	0	0.4	3.3		
8	1.7	1.3	4.5	GND	4.2		
9	GND	3.13	2.9	5.2	3		
10	7.8	5	5	0	3		
11	GND	0.01	GND	3.2	0		
12	3.3	5.68	5.6	3.2	0		
13	4.5	0	5	0	0		
14	4.0	0.03	5	1.4	0		
15	3.4	4.85	5	0	1.2		
16	0.1	4.39	5	1.4	0.6		
17	4.8	4.39	5				
18	2.4	5	0.1				
19	2.4	0.02	5				
20	2.4	1	5				
21	0.4	4.6	GND				
22	3.3	0	0				
23	3.3	2.3	0				
24	3.3	0.06	0				
25	1.2	2.06	0				
26	2.7	2.48	0.3				
27	5.5	0.02	-0.3				
28	3.8	0	5				
29	3.8	2.4	5				
30	1.5	-0.25	GND	SYMBOL	U 401	U102	U 705
31	1.6	4.56	2.4	PIN NO.	TDA 3653	24C01B1	TDA 1013B
32	4.6	0.02	2.0	1	1.1	0	GND
33	5.1	0.02	5	2	GND	5	7.7
34	1.4	0.02	5.4	3	1.3	0	18
35	2	0.02	4.8	4	GND	0	15.6
36	7.6	4.14	0	5	12.7	2.8	1.2
37	0.5	4.7	0	6	24.5	3.2	8.7
38	0.8	5	0	7	0.4	5	2.4
39	2.8	5	3.2	8	3.9	5	2.8
40	3.7	0	2.6	9	24.1		GND
41	2.3	2.4	0				
42	2.8	2.42	5				
43	4.3	0.01					
44	4.0	5					
45	4.0	5.8					
46	4.0	0.01					
47	4.1	5					
48	4.5	2					
49	1.2	4					
50	3.8	3.7					
51	4.8	0.01					
52	6.5	5.68					
			SYMBOL	U 405	U501	U402	
			PIN NO.	7808	7805	7812	
			1	12	9.7	13.7	
			2	GND	GND	GND	
			3	8	5	12	

NOTE: VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST	:	Maximum Position
BRIGHTNESS	:	Maximum Position
COLOR	:	Maximum Position
SIGNAL INPUT	:	70dB μ V $\pm$ 10dB
CHANNEL SETTING	:	The Last Channel of UHF High
SIGNAL PATTERN	:	Colour Bar

VOLTAGE TABLE FOR TRANSISTOR (ONLY FOR REFERENCE)								
LOCATION \ TR	B (V)	C (V)	E (V)	SYMBOL	B (V)	C (V)	E (V)	
Q101	0.6	1.2	0	Q402	-0.1	112.5	0	
Q102	0	0	0	Q501	9.1	12.8	8.4	
Q103	0	4.6	0	Q502	5.4	0	1.7	
Q104	0	11.9	0	Q503	0	1.2	0	
Q105	0.6	0	0	Q504	-2.6	293	0.07	
Q106	12	0	12	Q505	0.6	0.06	0	
Q107	12	0	12	Q506	113.1	113.7	113.8	
Q108	11.1	11.7	12	Q507	113.7	113.8	113	
Q201	2.3	11.7	1.6	Q601	2.6	129.2	2.1	
Q202	1.4	4.8	0.8	Q602	2.5	128.3	1.9	
				Q603	2.5	128.4	1.9	
Q204	3.1	7.3	2.4	Q604	3.7	0	3.9	
Q205	2.3	7.7	1.7	Q605	0	175	0	
				Q606	-0.2	11.3	0	
Q207	0	6.3	0	Q701	16.7	16.1	16.1	
Q208	3.6	7.9	2.9	Q702	2	5	1.3	
Q209	0	6.3	0	Q705	0.2	8.1	0	
Q210	0.7	0	0	Q706	0	8.1	0	
Q211	4.8	12	4.1	Q109	0.2	12.6	0	
				Q110	0.7	0	0	
Q401	0.5	0	0	Q111	-6.4	4.2	0	
				Q112	-7.4	4.7	0	

NOTE: VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

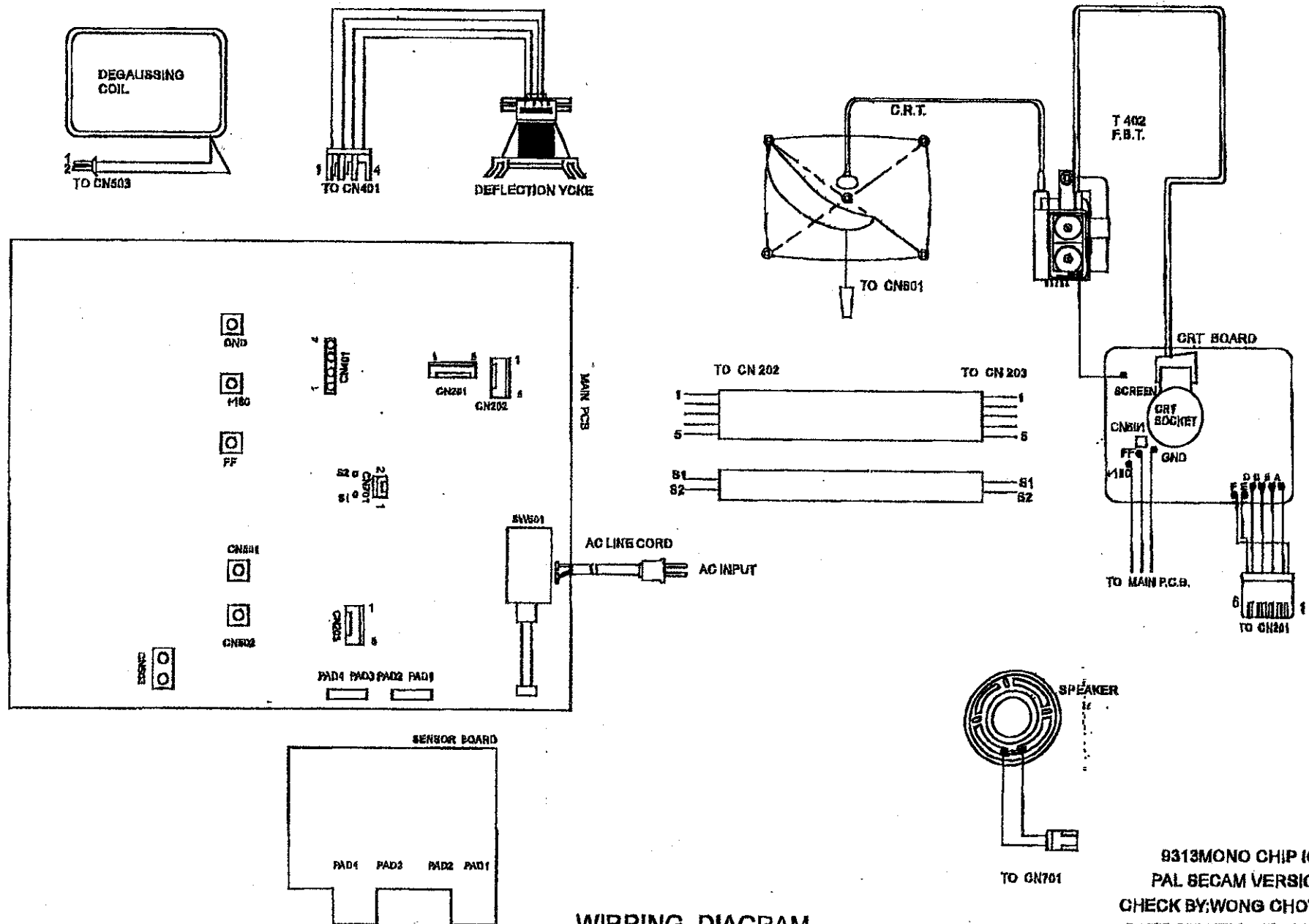
CONTRAST	:	Maximum Position
BRIGHTNESS	:	Maximum Position
COLOR	:	Maximum Position
SIGNAL INPUT	:	70dBuV ± 10dB
CHANNEL SETTING	:	The Last Channel of UHF High
SIGNAL PATTERN	:	Colour Bar

VOLTAGE TABLE FOR TRANSISTOR (ONLY FOR REFERENCE)				VOLTAGE TABLE FOR IC		
SYMBOL	B (V)	C (V)	E (V)	SYMBOL PIN NO.	U 901 SAA5254P / T SAA5254P / H	U 902 PC74HC T241P
Q101	0.6	1.2	0	1	5	0
Q102	0	0	0	2	2.1	0
Q103	0	4.6	0	3	3.5	0
Q104	0	11.9	0	4	0	0
Q105	0.6	0	0	5	0	0
Q106	12	0	12	6	5	0
Q107	12	0	12	7	2	0
Q108	11.1	11.7	12	8	2.2	0
Q201	2.3	11.7	1.6	9	2.5	0
Q202	1.4	4.8	0.8	10	5	0
Q204	3.1	7.3	2.4	11	5	0
Q205	2.3	7.7	1.7	12	1.8	0
Q207	0	6.3	0	13	5	0
Q208	3.6	7.9	2.9	14	0	0
Q209	0	6.3	0	15	0	0
Q210	0.7	0	0	16	0	0
Q211	4.8	12	4.1	17	0	0
Q401	0.5	0	0	18	4.1	0
Q402	-0.1	112.5	0	19	0	0
Q501	9.1	12.8	8.4	20	0	5
Q502	5.4	0	1.7	21	0.7	
Q503	0	1.2	0	22	0	
Q504	-2.6	293	0.7	23	0	
Q505	0.6	0.06	0	24	3	
Q506	113.1	113.7	113.8	25	2.6	
Q507	113.7	113.8	113	26	0.7	
Q601	2.6	129.2	2.1	27	0.7	
Q602	2.5	128.3	1.9	28	0.8	
Q603	2.5	128.4	1.9	29	0	
Q604	3.7	0	3.9	30	0	
Q605	0	175	0	31	0.8	
Q606	-0.2	11.3	0	32	0.7	
Q701	16.7	16.1	16.1	33	0.7	
Q702	2	5	1.3	34	0.8	
Q705	0.2	8.1	0	35	0.7	
Q706	0	8.1	0	36	0.8	
Q901	0.3	6	0	37	0.7	
				38	0.8	
				39	0.8	
				40	0.7	

W/TEXT

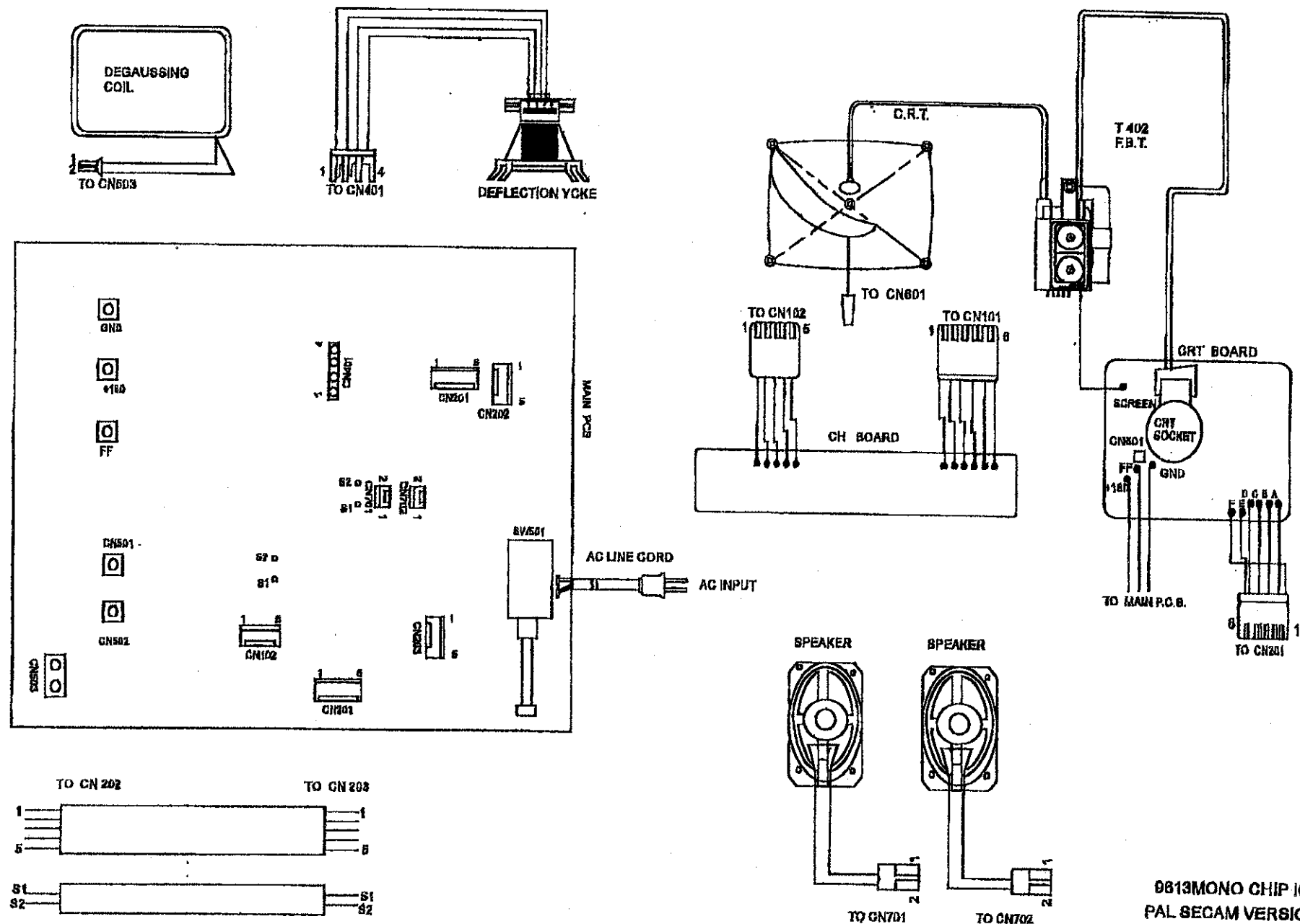
NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST : Maximum Position
 BRIGHTNESS : Maximum Position
 COLOR : Maximum Position
 SIGNAL INPUT : 70dB μ v $\pm$ 10dB
 CHANNEL SETTING : The Last Channel of UHF High
 SIGNAL PATTERN : Colour Bar



WIRING DIAGRAM

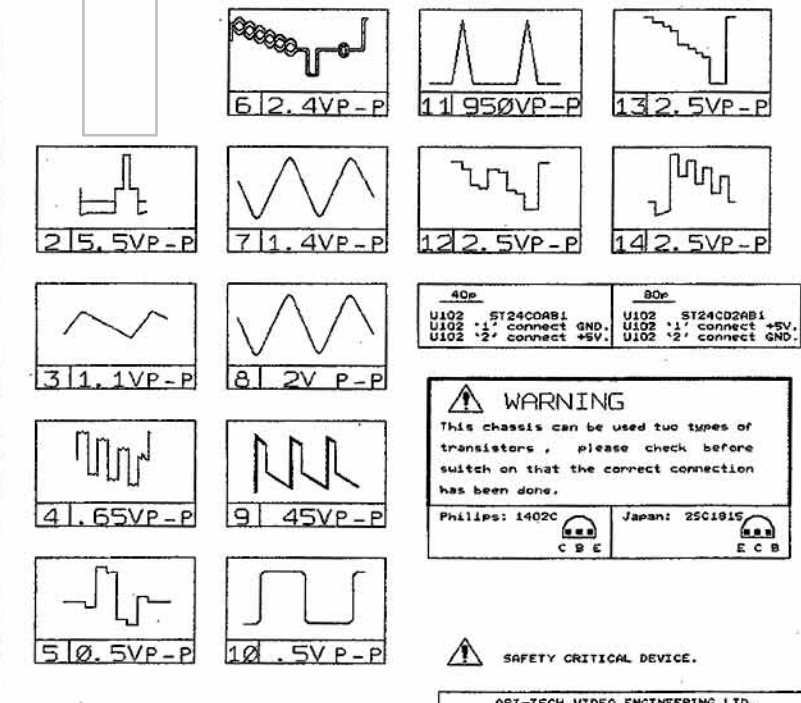
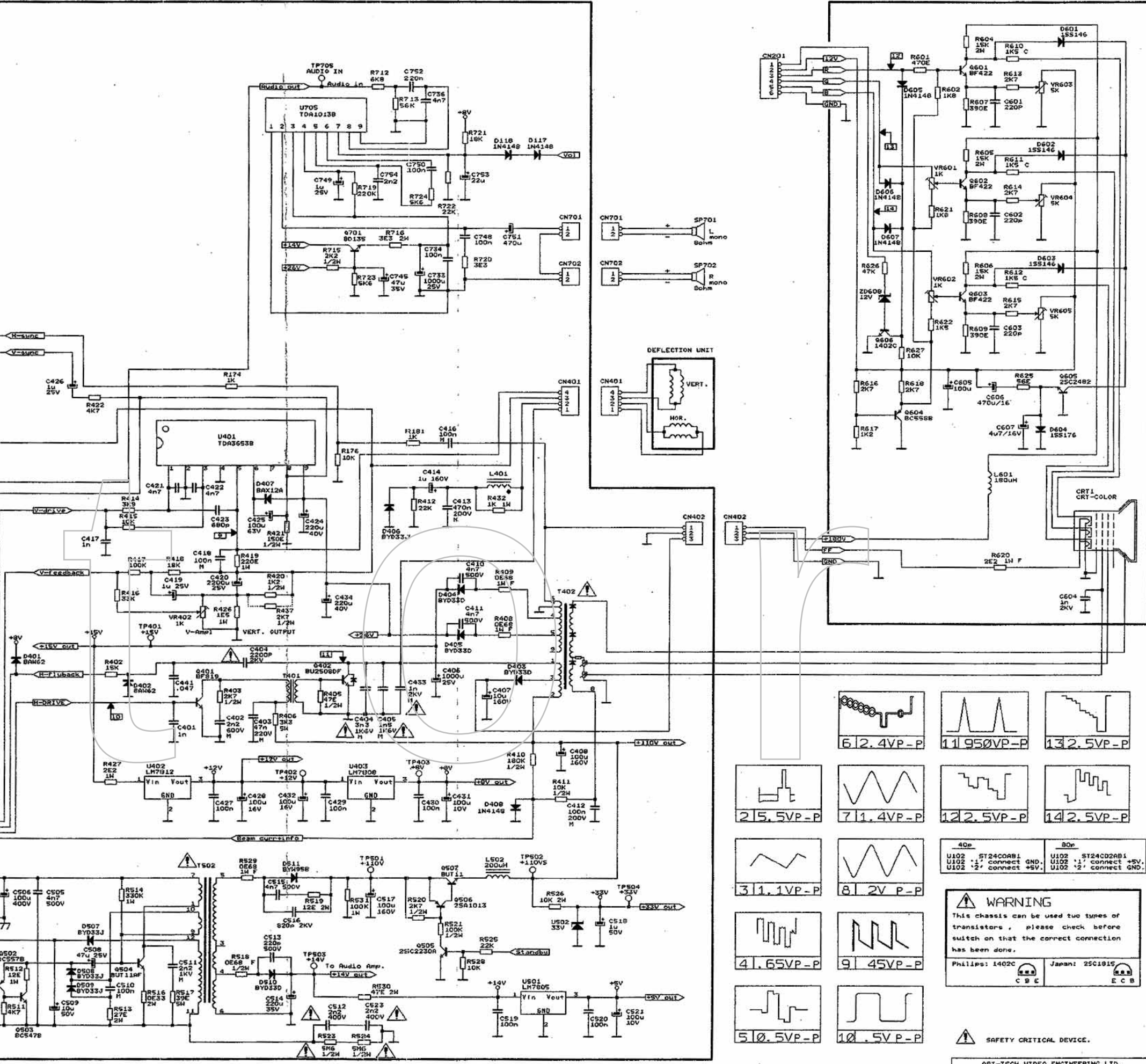
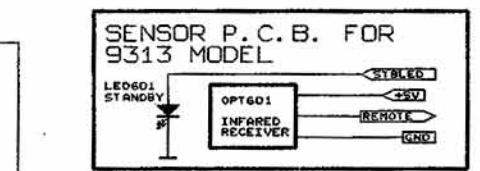
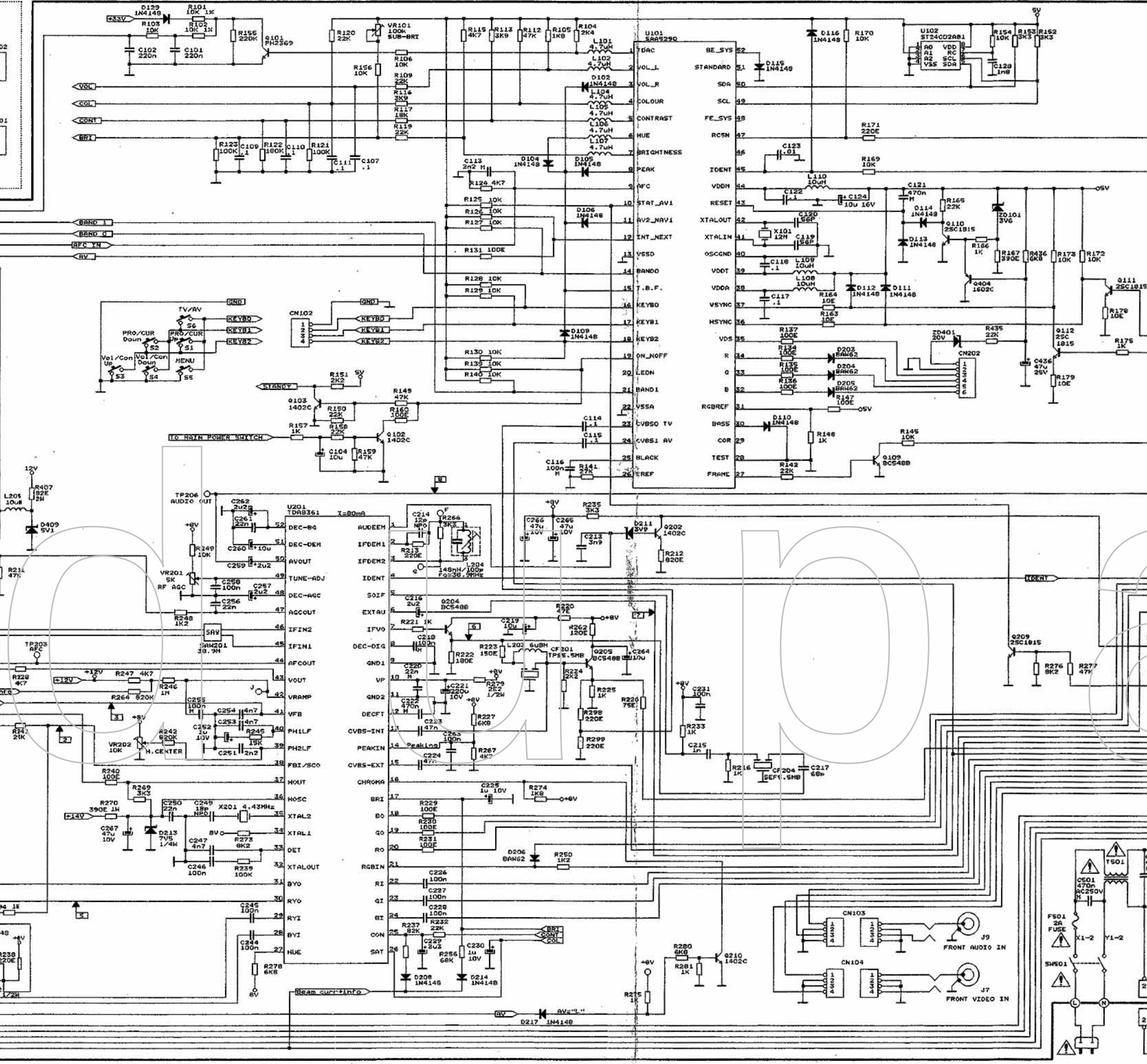
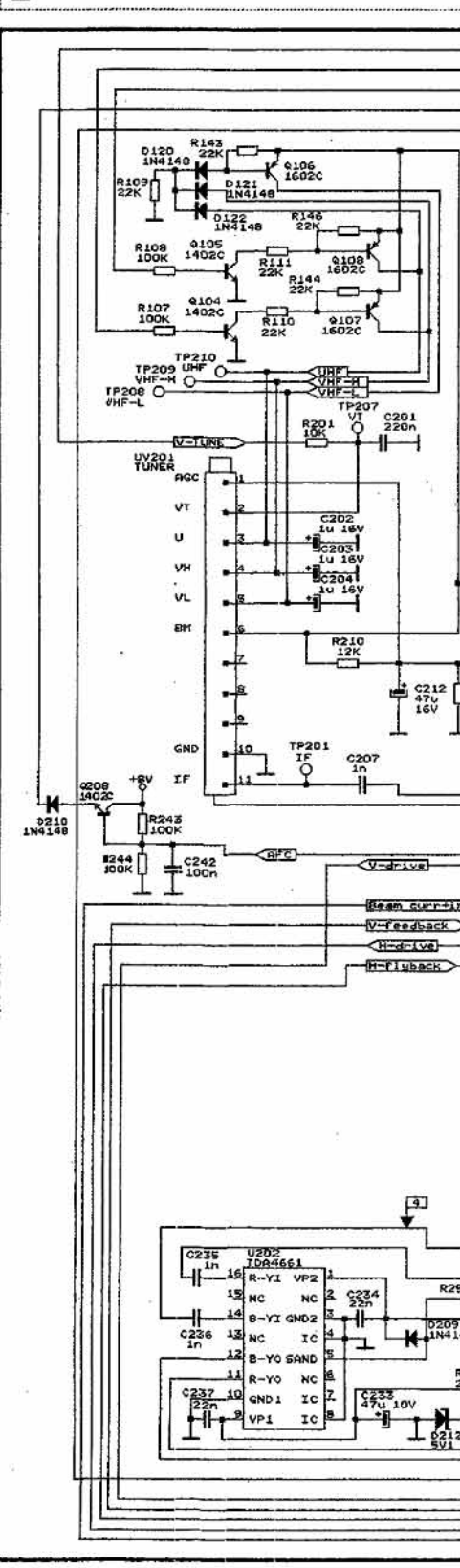
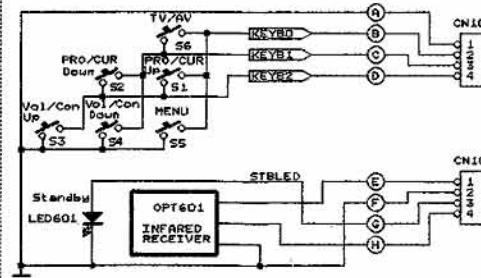
9313MONO CHIP IC
PAL SECAM VERSION
CHECK BY: WONG CHOY SUN
DATE: SEPTEMBER, 24, 1998



WIRING DIAGRAM

9813MONO CHIP IC
PAL SECAM VERSION
CHECK BY: WONG CHOY SUM
DATE: SEPTEMBER, 24, 1998

FUNCTION P.C.B. FOR 613/813 MODEL



WARNING
This chassis can be used two types of transistors, please check before switch on that the correct connection has been done.
Philips 1402C Japan 25C1915
C 9 C E C B

SAFETY CRITICAL DEVICE.