

TEAC[®]

SERVICE MANUAL

CTF683

FLAT 68CM CTV

SPECIFICATION

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

SYSTEM :	PAL - I / I	PAL - BG	PAL - I (UK)	PAL - SECAM - BG / DK	PAL - SECAM - BG / DK (HYPER)	PAL - BG (HYPER)	PAL - BG (CATV)	SECAM - L	L'	
CHANNEL L - VHF :		2 - 4		1 - 5	1 - 5	E2 - S10	E2 - S2		FB - FC	CH
H - VHF :	4 - 13	5 - 12		6 - 12	6 - 12	E5 - S41	E5 - S20	1 - Q		CH
UHF :	21 - 69	21 - 69	21 - 69	21 - 69	21 - 69	E21 - E69	E21 - E69	21 - 69		CH
VIF FREQUENCY :	38.9	38.9	39.5	38.0	38.9	38.9	38.9	38.9	32.7	MHZ
SIF FREQUENCY :	32.9	33.4	33.5	31.5 32.5	32.4 33.4	33.4	33.4	32.4	39.2	MHZ
CHROMA IF FREQUENCY :	34.47	34.47	35.07	33.57 33.57	34.47 34.47	34.47	34.47	34.47		MHZ
INTER-CARRIER FREQUENCY :	6.0	5.5	6	6.5 5.5	5.5 6.5	5.5	5.5	6.5	6.5	MHZ
SCANNING HORIZONTAL :	15625 LINE									
VERTICAL :	50 Hz									
ANTENNA INPUT IMPEDANCE :	75 OHM									
CRT :	25" 28" 29" 34"									

ITEMS OF MEASUREMENT	STANDARD		UNIT
	34"	38"	
VIDEO SENS. AT S/N 30db L - VHF H - VHF UHF	≤ 57		dbuv
	≤ 57		dbuv
	≤ 60		dbuv
SOUND SENS. AT S/N 30db L - VHF H - VHF UHF	≤ 42		dbuv
	≤ 42		dbuv
	≤ 48		dbuv
AGC CHARACTER	≥ 60		db
SELECTIVITY -1.5 MHz + 8 MHz	≥ 35		db
	≥ 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	≥ 100	≥ 70 ≥ 65	cd/m ²
MAX OUTPUT POWER	≥ 4.5	≥ 6.0	W
OUTPUT POWER AT 10% THD	≥ 3.5	≥ 4.5	W
BUZZ	≤ -40		db
AFC RANGE	$\geq +1$		MHz
	≥ -0.5		MHz
MIN. VOL HUM	≤ 20		mV
RESOLUTION HORIZONTAL VERTICAL	≥ 300		LINES
	≥ 400		LINES
LINEARITY DISTORTION VERTICAL HORIZONTAL	≤ 10		%
	≤ 10		%
RASTER DISTORTION	≤ 5		%
REMOTE CONTROL DISTANCE ANGLE	≥ 5		METER
	$\geq \pm 15$		DEGREE
POWER CONSUMPTION (AT NORMAL CONDITION)	≤ 120	≤ 150	WATTS
POWER CONSUMPTION (AT MAX. CONDITION)	≤ 150	≤ 180	WATTS
CONVERGENCE DISLOCATION AT AREA "A" AREA "B" (see fig.1)	≤ 0.4		%
	≤ 0.8		%

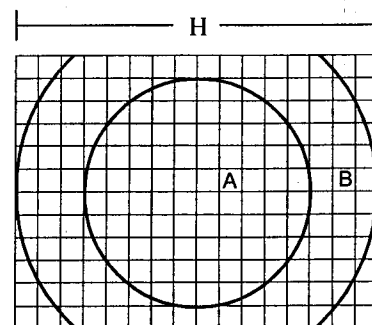


Fig.1

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

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. (Except IF, SYNC, COLOR, SECAM, B+, SOUND)

II. TEST EQUIPMENT

- | | |
|---|---|
| 1. VIF Sweep Generator | 7. Volt Ohmmeter |
| 2. SIF Sweep Generator | 8. High Voltage Meter |
| 3. Colour Bar, Dot, Cross Hatch Generator | 9. Ampere Meter (0.5 Class, DC 3mA Max) |
| 4. DC Power Supply | 10. Demagnetizing Coil |
| 5. Oscilloscope | 11. Philips Pattern Generator |
| 6. Vacuum Tube Voltmeter | 12. High Pot Tester |

III. VIF ALIGNMENT

A. Preparation step. (see fig.2a)

1. Connect Sweep Generator to tuner test point and Ground.
2. Connect 14V \pm 1V Bias Voltage to C429 (+) and Ground, CN904 PIN3 (PIN4 or CN905) and Ground.
3. Connect A. G. C. Bias Voltage to IC201 PIN48 and Ground.
*A.G.C. Bias Voltage can't over 5V. (see fig.2b)
4. Disconnect the soldering pads 'H'.

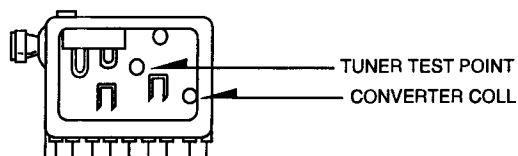
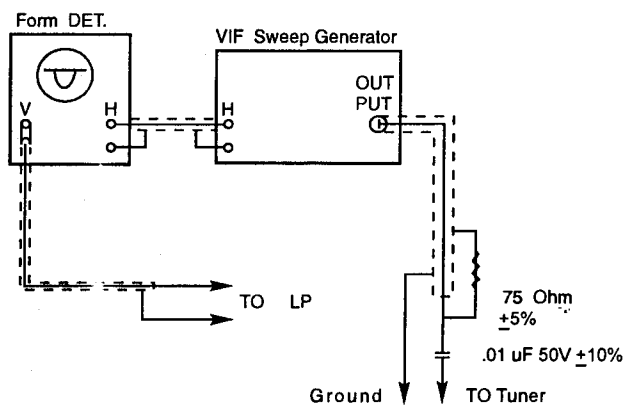


Fig. 2a

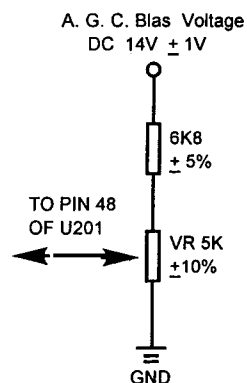


Fig. 2b

B. Alignment Step

1. Calibrate the division of Sweep Generator equal to 100mV per div.
2. The output of Sweep Generator should be -50dB \pm 10dB.
3. Connect the Waveform Detector to Pin7 of IC201 and Ground.
4. Connect 100ohm (\pm 5%) resistor between Q206 PINB and IC201 PIN10 (only for secam L/L' version).
5. Adjust A.G.C. Bias to maintain the waveform achieve 1V p-p \pm 10%.
6. Adjust T204 to obtain maximum amplitude of response cause at PC (BG = 38.9MHz, I = 39.5MHz, BG / DK = 38.0MHz).
7. Connect 100ohm (\pm 5%) resistor between TP201 and TP202.
8. Adjust tuner converter coil to obtain waveform as Fig.3.
9. Soldering the pads 'H' and disconnect the 100ohm resistors.

REMARK: No need to proceed step 7 and 8, when using Samsung or Telefunken Tuner.
Point (C.C) and point (P.C) have \pm 0.5div tolerance.

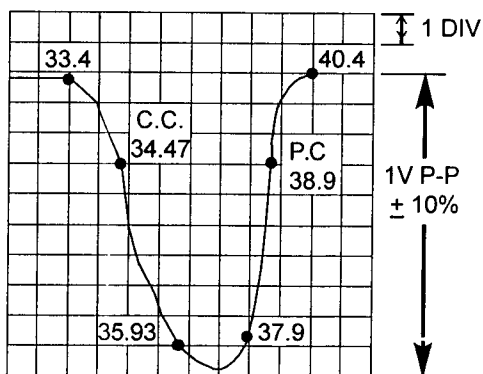


Fig.3

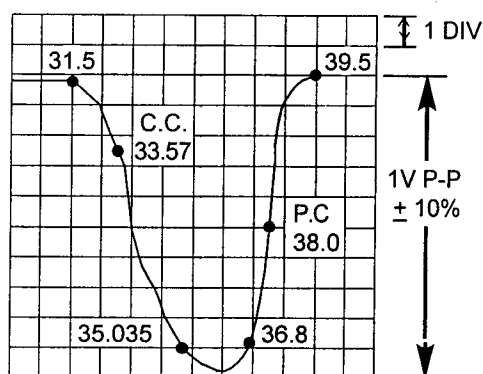


Fig.3

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

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

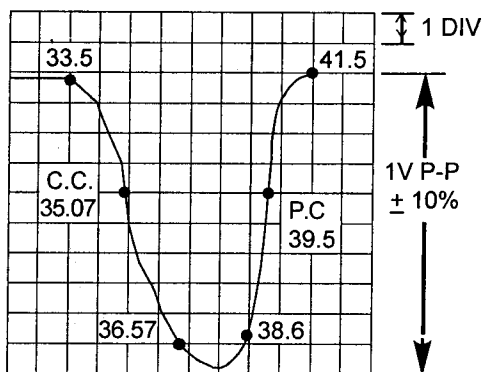


Fig.3

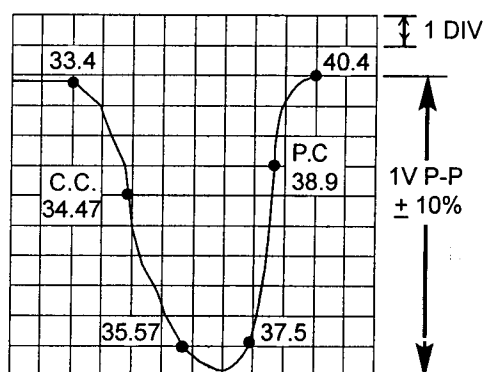


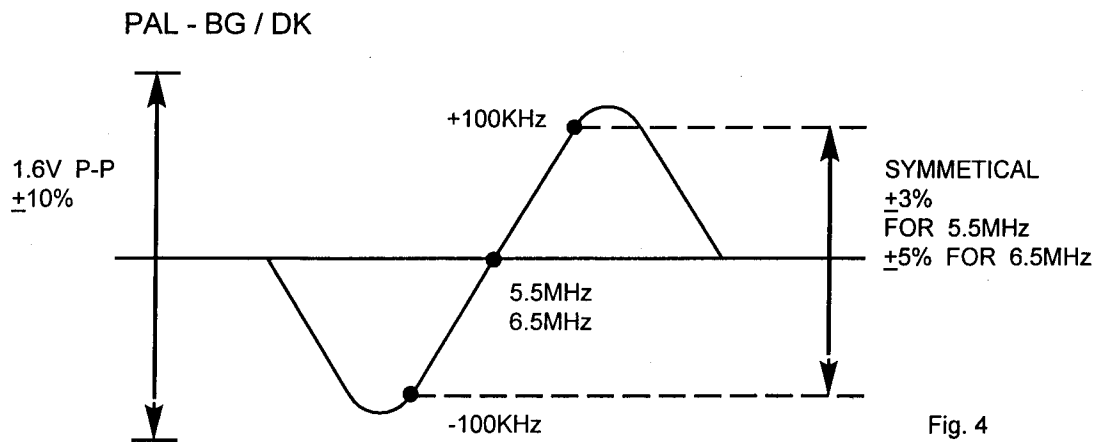
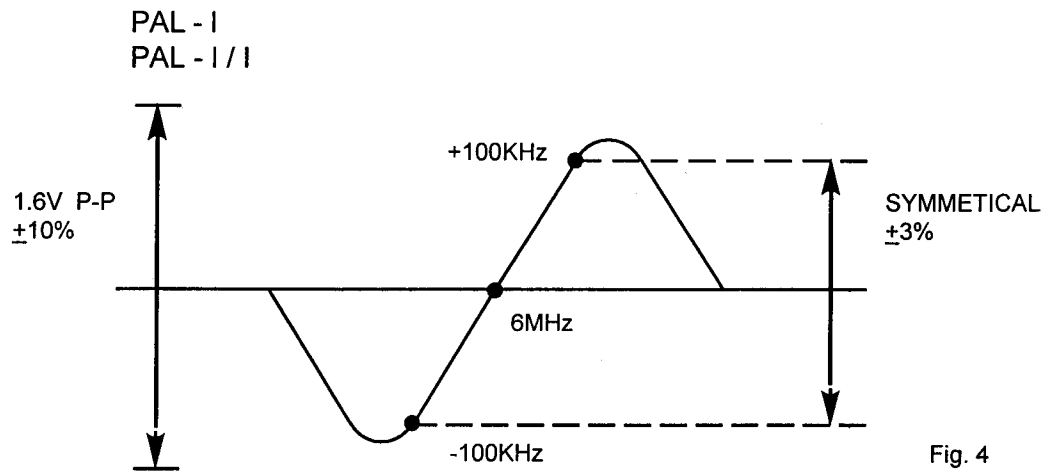
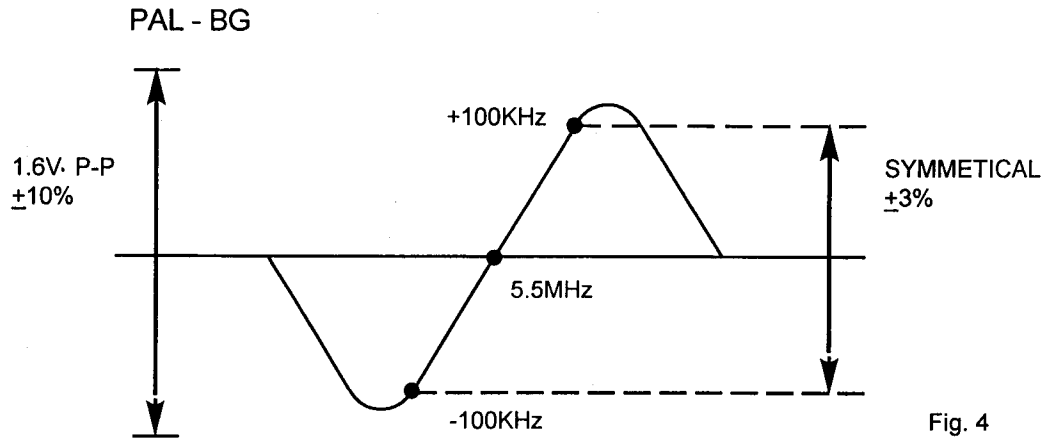
Fig.3

SYSTEM : PAL - I

SYSTEM : PAL - I / I

IV. SIF ALIGNMENT

1. Connect the Sweep Generator to IC208 Pin17 and Ground.
2. Connect Waveform Detector to Pin9 of IC208 and Ground.
3. The output of Sweep Generator should be -10dB \pm 5dB.
4. Adjust T202 to obtain the waveform as Fig.4.



V. SIF ALIGNMENT (FOR G.STEREO)

1. Connect the Sweep Generator to IC208 Pin17 and Ground.
2. Connect Waveform Detector to Pin8 of IC208 and Ground.
3. The output of Sweep Generator should be $-10\text{dB} \pm 5\text{dB}$.
4. Adjust T203 to obtain the waveform as Fig.5.
(If haven't Waveform. Set the TACT - SWITCH S609 to SYS - 1 position)

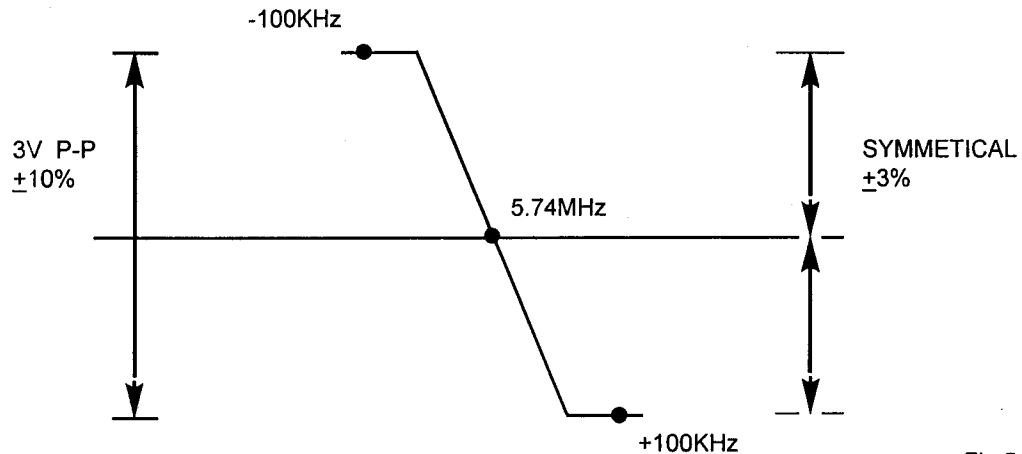


Fig.5

VI. AFC ALIGNMENT

1. Apply Pal IF signal modulated with a colour bar pattern to Tuner IF out and Ground.
(Field strength = $80 \pm 3\text{dB}$)
2. Connect digital voltmeter to Pin44 of IC201 and Ground.
3. Adjust T204 to obtain a reading of $3.75\text{V} \pm 0.25\text{V}$.

VII. SOUND TRACKING ALIGNMENT

1. Receive a gray scale pattern.
2. Connect a oscilloscope and monitor IC208 Pin17 and Ground.
3. Adjust T201 to obtain the waveform Fig.6.

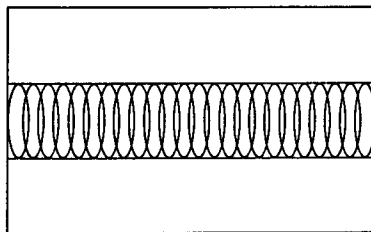


Fig.6

Remark: All frequency of Marker points are $\pm 0.2\%$ tolerance.

VIII. SEPARATION ALIGNMENT (FOR G.STEREO)

1. Receive color bar pattern (with stereo sound L 3KHz, R 1KHz)
2. Connect digital multimeter to PIN1 at CN302 and GND.
3. Adjust volume control to obtain a 0.89Vrms .
4. Switch off the left channel signal (3KHz) from the Signal Generator.
5. Adjust VR001 to make a minimum output level.

B+ ADJUSTMENT

1. Connect a digital voltmeter to B+ and Ground.
2. Set Brightness, Contrast and colour to minimum.
3. Adjust Screen Volume on FBT and VR101 until the picture can just be seen.
4. Adjust VR901 and obtain a reading of 140V \pm 1V. (143V For 28" THOMSON CRT)
(143V For 34" VIDEO COLOR CRT)

AGC ALIGNMENT

1. Receive CH69 (UHF) and input field strength. (see Fig.7).
2. Connect a digital voltmeter between the TUNER AGC TERMINAL and Ground.
3. Adjust the AGC variable resistor (VR201) to maximum position, and then adjust the VR until the AGC voltage drop down 0.4V.
(1/ The drop down voltage should be more than and tends to 0.4V)
(2/ No observable noise can be seen)

TUNER MODEL NO.	RF INPUT SIGNAL(dB)	TUNER MODEL NO.	RF INPUT SIGNAL(dB)
ENV598B7F2	62 \pm 3dB	OSCAR 2900KKC	58 \pm 3dB
UVC6201-RC	57 \pm 3dB	HBC3300KHC	58 \pm 3dB
UVC8303-RW	57 \pm 3dB	TBD1CAB14	60 \pm 3dB
UVL1812-AW	57 \pm 3dB	TECC1986VA0618	60 \pm 3dB
UVC1401-EW	57 \pm 3dB	TBD1-HYPV15A	60 \pm 3dB
TBQ-5-32	57 \pm 3dB	UVE50-AW04D	60 \pm 3dB
TBQ 8-32	57 \pm 3dB	UVE33-W24/R16-3649	58 \pm 3dB
TBQ 8-12	57 \pm 3dB	MTM4045N	57 \pm 3dB
VISHZUZ51	60 \pm 3dB	MTM4045	60 \pm 3dB
TEKE4-196	60 \pm 3dB		
TDQ-3V71(541)	57 \pm 3dB		
UVC1043-RW	57 \pm 3dB(用在1-CHIP)		
	60 \pm 3dB(用在PHILIPS)		

HORIZONTAL CIRCUIT ADJUSTMENT

Fig.7

1. Receive Monoscope Pattern input signal 70dB \pm 10dB.
2. Adjust VR202 to obtain the picture at center \pm 2mm.
(Specification show in Fig.8)

VERTICAL CIRCUIT ADJUSTMENT

1. Receive the Monoscope Pattern.
2. Adjust VR401 to obtain a normal picture.

WHITE BALANCE ALIGNMENT STEP

(Degauss the picture by degaussing coil if necessary)

1. Turn the Brightness, Contrast and Screen Volume to minimum value.
2. Turn VR603 to middle position. Turn VR601, 602, 604, and 605 to middle position.
3. Receive a black and white pattern.
4. Connect a digital meter between Red Gun and Ground on the CRT Board.
5. Adjust VR101 to obtain a ceufre voltage 1.5V \pm 0.1V.
6. Adjust Screen volume on FBT until the brightness bar can just be seen.
7. Adjust VR601, 602, 604 and 605 to obtain a uniform white picture (9300 K +27M.P.C.D) (X = 0.281, Y = 0.311).

SUB - BRIGHTNESS ALIGNMENT

1. Receive a colour bar pattern.
2. Turn the brightness, contrast and colour to minimum.
3. Adjust VR101 until the brightness bar can just be seen.

FOCUS ALIGNMENT

- 1) Set the Brightness and Contrast to middle position.
- 2) Receive a monoscope pattern.
- 3) Adjust focus control to obtain sharpest picture.

EAST - WEST CORRECTION ADJUSTMENT

- 1) Receive a crosshatch and centre cross pattern.
- 2) Turn the Brightness, Contrast to middle position.
- 3) Adjust VR402 to get normal regular picture.
- 4) Adjust VR403 to get a proper horizontal width. (90% +2%)

NTSC EAST WEST CORRECT ADJUSTMENT

- 1) Receive crosshatch pattern and center cross pattern, input signal.
- 2) Turn the brightness, contrast to middle position.
- 3) Adjust VR404 to get a normal regular picture.

HIGH POT TESTING

- 1) Short the L - pole and N - pole of AC line cord.
- 2) Switch on the power switch of the TV Set.
- 3) Connect The High Pot Tester (-) to L and N pole, (+) to the METAL PART of CABINET.

SAFETY STD. / CONDITION	TEST SYANDARD	TEST STANDARN FOR PRODUCTION
VDE, SAA	3.0KV 10mA / 1MIN	≥ 3.5 KV ≤ 10 mA / ≥ 10 SEC.
BS	4.0KV 10mA / 1MIN	≥ 4.0 KV ≤ 10 mA / ≥ 10 SEC.
CHINA STANDARD	3.0KV 10mA / 1MIN	≥ 3.3 KV ≤ 5 mA / ≥ 6 SEC.
UL	1.0KV 5mA / 1MIN	≥ 1.25 KV ≤ 5 mA / ≥ 1 SEC.

Remark:

- 1) If no other specify, the strength of input signal should be 70dB ± 10 dB.
- 2) The High Pot Tester can have $\leq \pm 5\%$ tolerance.

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

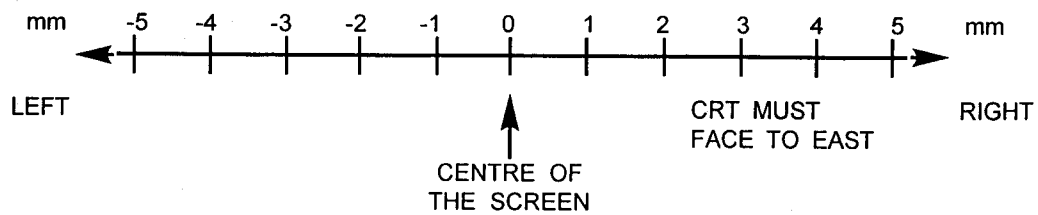


FIG. 8

- 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.

VOLTAGE TABLE FOR IC (ONLY FOR REFERENCES)						
SYMBOL PIN NO.	IC 201 TDA 8362	IC 101 CTV 350	IC001 SAA7282ZP	IC208 TDA3866	IC002 TDA8732	IC103 PC74HCT241P
1	3	4.3	2.5	0	0.3	0.085
2	5.8	0.1	5.1	0	GND	0.010
3	5.8	4.7	5	2.3	2.2	0.012
4	5.5	2.4	5	0.1	5.3	0.010
5	0	4.9	5	3	4	0.011
6	3.8	2.5	5.1	1.8	4.1	0.012
7	3	0	4.9	1.8	4.1	0.012
8	1.7	4.5	4.7	2.1	3.9	0.012
9	GND	1.6	GND	2.1	3	0.012
10	7.8	5	2.3	1.8	2.2	0.012
11	GND	0	2.3	1.8	4.4	0.085
12	3.1	5.6	2.3	5.7	5.3	0.012
13	4.3	5	2.3	5.7	4.5	0.12
14	3.3	5	2.3	1.9	GND	0.089
15	3.4	5	2.3	0	1.1	0.012
16	0	5	2.3	2.1	2.5	0.09
17	4.2	5	2.3	2.1	0.2	0.012
18	2.8	0.1	GND	1.8	4.6	0.095
19	2.8	5	2.3	0	GND	0.012
20	0	5	2.4	GND	3.3	0.085
21	0.3	0	2.3	6.7		
22	3.4	0	0.4	4.3		
23	3.4	0	2.3	1.7		
24	3.4	0	GND	1.7		
25	2.6	0	4.9			
26	1.7	0.3	4.9			
27	2.4	-0.3	5			
28	3.9	5	2.5			
29	3.8	5	GND			
30	1.4	0	2.1			
31	1.4	2.6	1.6			
32	1.6	2.1	1			
33	5.1	5				
34	1.3	5.4				
35	2	4.8				
36	7.7	0				
37	0.5	0				
38	0.6	0				
39	2.4	3				
40	3.7	2.7				
41	2.3	0				
42	2.8	5				
43	5					
44	3.9					
45	4					
46	4					
47	8.1					
48	4.5					
49	0.8					
50	3.3					
51	4.3					
52	6.5					

SYMBOL PIN NO.	IC403	IC404	IC102
1	16.03	11.9	11
2	0	0	0
3	11.9	7.9	5

IC601 TDA6103Q	
1	1.144V
2	1.144V
3	1.144V
4	0V
5	1.144V
6	205V
7	99V
8	99V
9	99V

NOTE: VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST : Maximum Position
 BRIGHTNESS : Maximum Position
 COLOR : Maximum Position
 SIGNAL INPUT : 70dB ±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.	IC402 HEF4538BP	IC204 TDA8395	IC205 TDA4661	IC203 TDA8440
Q108	11.7	0	11.8	1	0	4.4	5.2	2.7
Q107	11	11.7	11.8	2	4.9	1.3	0	GND
Q111	9.9	11.8	10.6	3	11.9	7.9	0	2.8
Q112	2.7	11.1	10.6	4	1	0	0	GND
Q113	0.2	2.7	0	5	11.9	0	1.4	5.6
Q101	0.7	1.5	0	6	11.5	0	0	11.9
Q104	0	11.7	0	7	0.3	3.3	0	5.6
Q105	0.6	0	0	8	GND	4.2	0	5.6
Q103	0.02	4.6	0.02	9	0	3	5.2	5.6
Q208	3.3	8	2.7	10	11.9	3	0	5.6
Q201	2.3	11.6	1.7	11	11.9	0	2.9	11.9
Q206	8.5	3	8	12	0.3	0	2.9	5.7
Q205	2.1	7.8	1.5	13	11.9	0	0	11.9
Q204	3	7.4	2.3	14	3.4	0	1.3	5.7
Q117	5	0	0	15	0	1.2	0	11.9
Q116	0.6	0	0	16	11.9	0.6	1.3	2.5
Q002	2	3	1.3	17				0
Q001	2	5.3	2.6	18				0
Q003	0.3	11.8	0					
Q118	0.6	0	0					
Q331	2.3	5.3	1.7					
Q332	2.3	5.3	1.7					
Q401	0.4	38.2	0					
Q114	0.7	2.7	0					
Q404	11.2	0.5	11.7					
Q405	0.5	14.2	0					
Q410	2	10.1	1.4					
Q406	0	2	1.6					
Q402	0	113.6	0					
Q106	11.5	0.4	11.8					
Q151	0.02	10.6	0					
Q601	3.1	118.3	2.5					
Q602	3	119.7	2.5					
Q603	3.2	113	2.6					
Q604	3.7	0	4.1					
Q605	0	173.8	0.15					
Q606	0.1	11.2	0					

SYMBOL PIN NO.	IC401 TDA3654	IC202 TA7347P	IC104 24C01B2	IC901 ST6309
1	1.1	8.3	0	0.7
2	0	GND	5	0.2
3	1.2	8.3	0	0.1
4	0	GND	0	0.3
5	15.6	0	2.6	0.7
6	25.6	7.5	3	0.1
7	1.2	11.9	5	0.2
8	5.8		5	0.5
9	25.4			10

SYMBOL PIN NO.	IC102 L7805	IC403 L7812	IC404 L7808
1	10	14	12
2	GND	GND	GND
3	5	12	8

NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST : Maximum Position
 BRIGHTNESS : Maximum Position
 COLOR : Maximum Position
 SIGNAL INPUT : 70dB \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)	LOCATION \ TR	B (V)	C (V)	E (V)	
Q108	11.7	0	11.8	Q332	2.3	5.3	1.7	
Q107	11	11.7	11.8	Q401	0.4	38.2	0	
Q111	9.9	11.8	10.6	Q114	0.7	2.7	0	
Q112	2.7	11.1	10.6	Q404	11.2	0.5	11.7	
Q113	0.2	2.7	0	Q405	0.5	14.2	0	
Q101	0.7	1.5	0	Q410	2	10.1	1.4	
Q104	0	11.7	0	Q406	0	2	1.6	
Q105	0.6	0	0	Q402	0	113.6	0	
Q103	0.02	4.6	0.02	Q106	11.5	0.4	11.8	
Q208	3.3	8	2.7	Q151	0.02	10.6	0	
Q201	2.3	11.6	1.7	Q601	3.1	118.3	2.5	
Q206	8.5	3	8	Q602	3	119.7	2.5	
Q205	2.1	7.8	1.5	Q603	3.2	113	2.6	
Q204	3	7.4	2.3	Q604	3.7	0	4.1	
Q117	5	0	0	Q605	0	173.8	0.15	
Q116	0.6	0	0	Q606	0.1	11.2	0	
Q002	2	3	1.3					
Q001	2	5.3	2.6					
Q003	0.3	11.8	0					
Q118	0.6	0	0					
Q331	2.3	5.3	1.7					

NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

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

VOLTAGE TABLE FOR IC (ONLY FOR REFERENCES) (FOR TEXT. IC VOLTAGE)						
PIN NO.	SYMBOL	IC 801 SAA5246	IC 801 SAA5254PT	IC 802 GM76C88AL-15		
1		5.1	5.1	0		
2		2.17	2.2	4.38		
3		3.64	3.7	2.5		
4		0.04	0.044	2.2		
5		GND	GND	4.24		
6		5.09	5.1	1.4		
7		2.1	2.2	1.07		
8		2.09	2.4	3.65		
9		2.55	2.56	3.63		
10		5.1	5.1	3.74		
11		GND	GND	0.03		
12		2.18	2.4	0.82		
13		5.1	5.1	2.5		
14		GND	GND	GND		
15		0.28	0.12	1.2		
16		0.2	0.12	1.5		
17		0.28	0.11	1.6		
18		3.92	3.93	1.3		
19		4.85	0.11	1.08		
20		0.048	GND	GND		
21		2.56	0.08	4.32		
22		0.045	0.05	2.55		
23		2.87	0.05	0.85		
24		2.56	3.11	0.87		
25		GND	2.84	0.83		
26		1.2	5.09	5.1		
27		1.62	5.09	5.07		
28		1.7	5.09	5.1		
29		1.5	5.09			
30		1.1	5.09			
31		2.5	5.09			
32		0.8	0.058			
33		0.036	5.09			
34		3.74	5.09			
35		3.63	5.09			
36		3.65	0.057			
37		1.07	5.09			
38		1.4	5.09			
39		4.24	0.056			
40		2.1	0.06			
41		2.5				
42		4.38				
43		4.33				
44		0.8				
45		0.88				
46		0.83				
47		2.55				
48		5.07				
49						
50						

NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

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

