



# SERVICE MANUAL

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# CTM-489

CTV

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## SPECIFICATION

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

MODEL : 14"

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 : H - VHF : UHF :	4 - 13 21 - 69	2 - 4 5 - 12 21 - 69	21 - 69	1 - 5 6 - 12 21 - 69	1 - 5 6 - 12 21 - 69	E2 - S10 E5 - S41 E21 - E69	E2 - S2 E5 - S20 E21 - E69	1 - Q 21 - 69	FB - FC	CH CH 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	6.5 5.5	5.5	5.5	6.5	6.5	MHz
SCANNING HORIZONTAL : VERTICAL :	15625 LINE 50 Hz									
ANTENNA INPUT IMPEDANCE :	75 OHM									
CRT :	14"									

<u>ITEMS OF MEASUREMENT</u>	<u>STANDARD</u>	<u>UNIT</u>
VIDEO SENS. AT S/N 30db L - VHF	$\leq 57$	dbuv
H - VHF	$\leq 57$	dbuv
UHF	$\leq 60$	dbuv
SOUND SENS. AT S/N 30db L - VHF	$\leq 42$	dbuv
H - VHF	$\leq 42$	dbuv
UHF	$\leq 48$	dbuv
AGC CHARACTER	$\geq 60$	db
SELECTIVITY -1.5 MHz	$\geq 35$	db
+ 8 MHz	$\geq 40$	db
COLOR SENS.	$\leq 45$	dbuv
COLOR LOCK - IN RANGE	$\geq \pm 300$	Hz
VERTICAL LOCK - IN RANGE	$\geq 6$	Hz
HORIZONTAL LOCK - IN RANGE	$\geq 400$	Hz
MAX BRIGHTNESS	$\geq 140$	cd / m <sup>2</sup>
MAX OUTPUT POWER	$\geq 1$	W
OUTPUT POWER AT 10% THD	$\geq 0.7$	W
BUZZ	$\leq -40$	db
AFC RANGE	$\geq +1$	MHz
	$\geq -0.5$	MHz
MIN. VOL HUM	$\leq 20$	mV
RESOLUTION HORIZONTAL	$\geq 300$	LINES
VERTICAL	$\geq 400$	LINES
LINEARITY DISTORTION VERTICAL	$\leq 10$	%
HORIZONTAL	$\leq 10$	%
RASTER DISTORTION	$\leq 5$	%
REMOTE CONTROL DISTANCE	$\geq 5$	METER
ANGLE	$\geq \pm 15$	DEGREE
POWER CONSUMPTION (AT NORMAL CONDITION)	$\leq 60$	WATTS
POWER CONSUMPTION (AT MAX. CONDITION)	$\leq 70$	WATTS
CONVERGENCE DISLOCATION AT AREA "A"	$\leq 0.4$	%
AREA "B"	$\leq 0.8$	%
(see fig.1)		

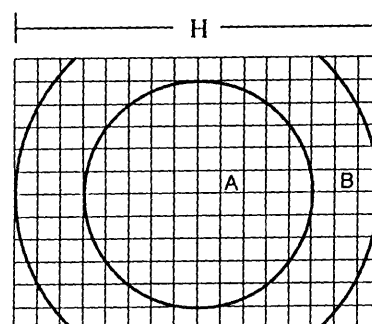


Fig.1

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

## SPECIFICATION

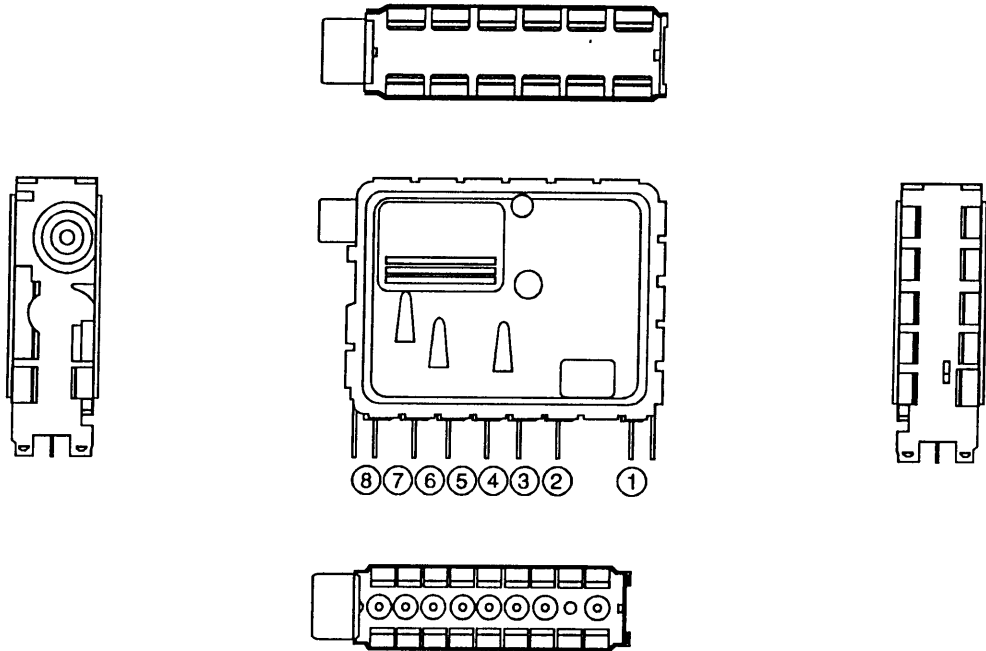
SUPPLY VOLTAGE : AC220V 50Hz  $\geq +10\%$  /  $-20\%$

MODEL : 20" - 21"

SYSTEM :	PAL - I'1	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 : H - VHF : UHF :	4 - 13 21 - 69	2 - 4 5 - 12 21 - 69	21 - 69	1 - 5 6 - 12 21 - 69	1 - 5 6 - 12 21 - 69	E2 - S10 E5 - S41 E21 - E69	E2 - S2 E5 - S20 E21 - E69	1 - Q 21 - 69	FB - FC	CH CH 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	6.5 6.5	5.5	5.5	6.5	6.5	MHz
SCANNING HORIZONTAL : VERTICAL :	15625 LINE 50 Hz									
ANTENNA INPUT IMPEDANCE :	75 OHM									
CRT :	20" - 21"									

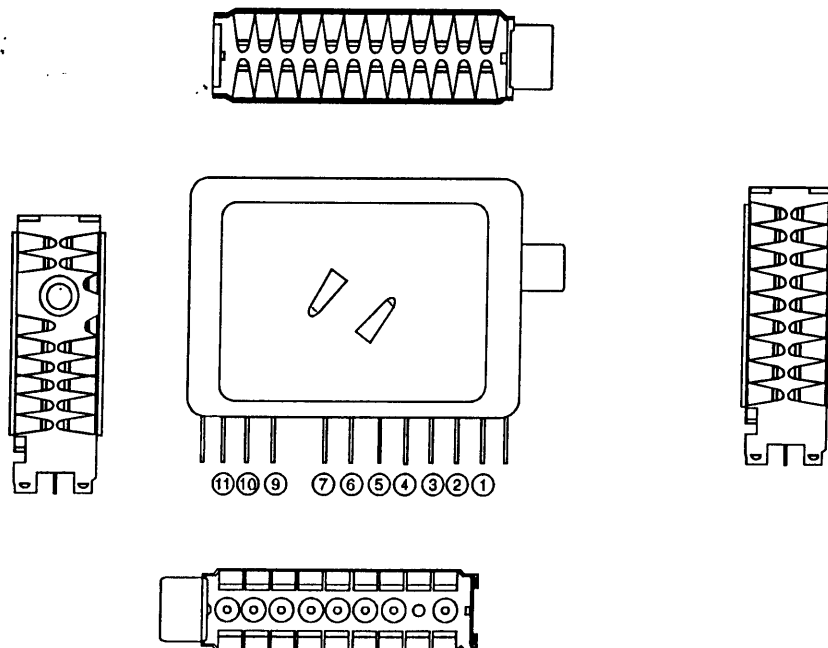
**PICTORIAL VIEW OF TUNER**

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+	-	-	-	IF GND	IF



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	≥ ±300	Hz
VERTICAL LOCK - IN RANGE	≥ 6	Hz
HORIZONTAL LOCK - IN RANGE	≥ 400	Hz
MAX BRIGHTNESS	≥ 120	cd/m2
MAX OUTPUT POWER	≥ 1.8	W
OUTPUT POWER AT 10% THD	≥ 1.3	W
BUZZ	≤ -40	db
AFC RANGE	≥ +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	≥ ±15	DEGREE
POWER CONSUMPTION (AT NORMAL CONDITION)	≤ 70	WATTS
POWER CONSUMPTION (AT MAX. CONDITION)	≤ 85	WATTS
CONVERGENCE DISLOCATION AT AREA "A"	≤ 0.4	%
AREA "B"	≤ 0.8	%
( see fig.2)		

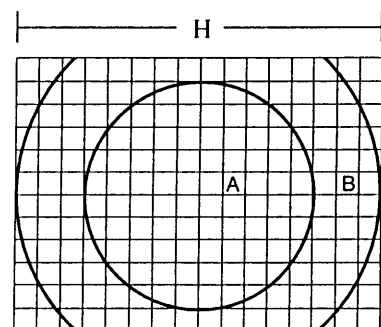


Fig.2

VIDEO INPUT LEVEL : 1.0V P-P ± 3dB  
 AUDIO INPUT LEVEL : 0.5V RMS ± 3dB  
 WOOFER AV INPUT LEVEL : 500 mV ± 50mV  
 FREQUENCY : 100Hz ± 10%

# 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)
6. An isolation transformer should be used during any dynamic service to avoid possible shock hazard.

## 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.3 )

1. Connect Sweep Generator to tuner test point and Ground.
2. Connect 14V  $\pm$ 1V B+ Bias Voltage to C404 (-) and Ground.
3. Connect 14V  $\pm$ 1V B+ Bias Voltage to PIN3 at CN904 and Ground.
4. Connect A.G.C. Bias Voltage to PIN10 at IC102, TP105 the DC supply should be turned off this time.

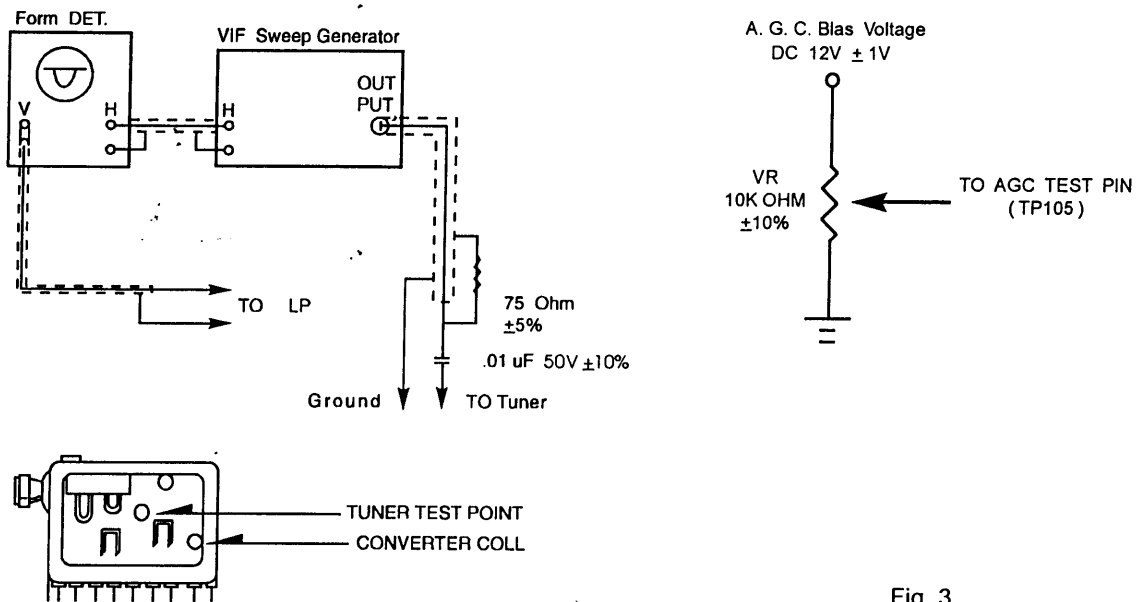


Fig. 3

## B. VIF ALIGNMENT

1. Connect waveform detector to TP102 and Ground.
2. Connect 100ohm  $\pm 5\%$  resistor between TP103 and TP104.
3. Reduce output level of sweep generator to  $-50\text{dB} \pm 20\text{dB}$ .
4. Adjust A.G.C. bias to maintain the waveform achieve 1V p-p  $\pm 10\%$ .
5. Adjust tuner covertor coil to obtain the waveform as Fig.4.
6. If the tuner haven,t converter coil V.I.F. alignment may be omitted.

Remark : All frequency of market point can have  $+0.2\%$  tolerance.  
 (point (CC) and point (PC) can have  $\pm 0.25\text{div}$  tolerance)

SYSTEM	BG / DK, DK / I	I (UK)	I / I, BG BG / DK (W / H.P)
P.C. (MHz)	38.0	39.5	38.9

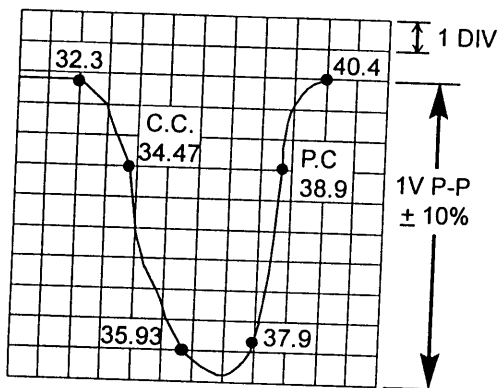


Fig.4

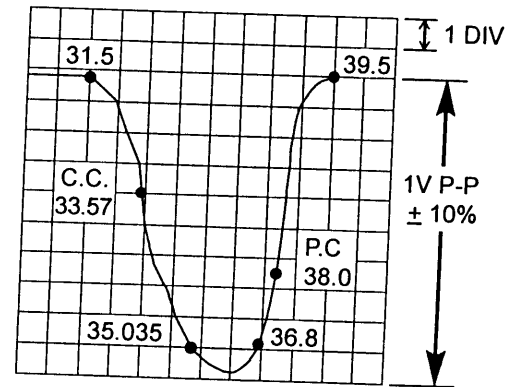


Fig.4

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

SYSTEM : PAL - DK / I

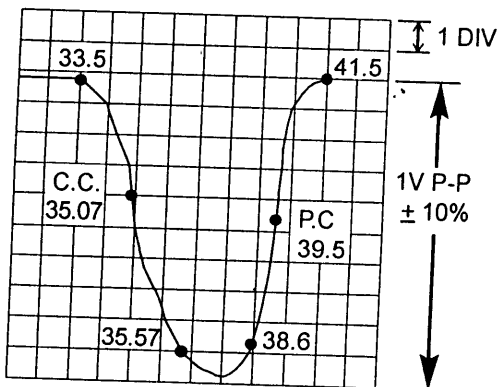


Fig.4

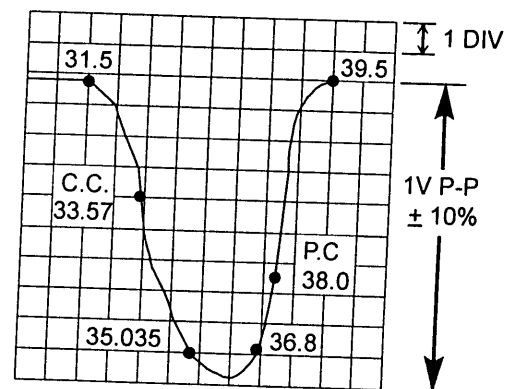


Fig.4

SYSTEM : PAL - I (UK)

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

REMARK : (C.C.) AND (P.C.) CAN HAVE  $\pm 1/4\text{DIV}$  TOLERANCE.



C. TANK COIL ALIGNMENT STEP ( see Fig. 5 )

1. Calibrate the Division of waveform Detector equal to 1V per div.
2. The output of sweep generator should be 40dB  $\pm$ 20dB.
3. Connect the waveform detector between TP106 and ground.
4. Connect the sweep generator to tuner test point and Ground.
5. Connect a 47K  $\pm$ 5% resistor between PIN7 to PIN22 at IC102.
6. Connect a 4K7  $\pm$ 5% resistor between PIN23 to Ground at IC102.
7. Adjust A.G.C. bias until the waveform just saturate.
8. Adjust T101 to obtain the waveform as Fig.5.
9. If the tuner haven't converter coil. Apply PAL I.F. signal (38.9MHz or 39.5mhZ) modulated with a colour bar pattern to tuner I.F. point.

REMARK : All frequency of market point can have  $\pm$ 0.2% tolerance.

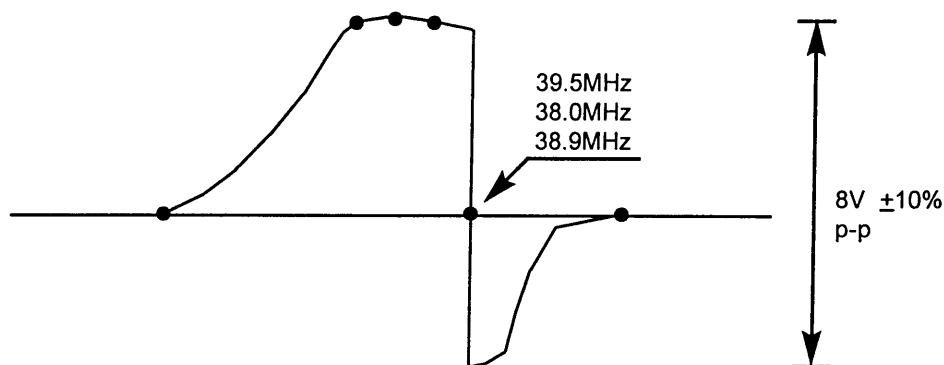


Fig. 5

SYSTEM	DK / I, BG / DK	I (UK)	BG, I / I, BG / DK (W / H.P.)
IF SIGNAL (MHz)	38.0	39.5	38.9

Remark : VIF can have  $\pm$ 0.25V tolerance.

D. SIF ALIGNMENT ( Excluding DK / I )

MIXER ALIGNMENT

1. Connect a 47K  $\pm$ 5% resistor between PIN7 to PIN22 at IC102.
2. Connect a 4K7  $\pm$ 5% resistor between PIN23 to Ground at IC102.
3. Connect the sweep generator to TP102.
4. Connect the circuit as Fig.6 to TP107 and waveform detector.

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

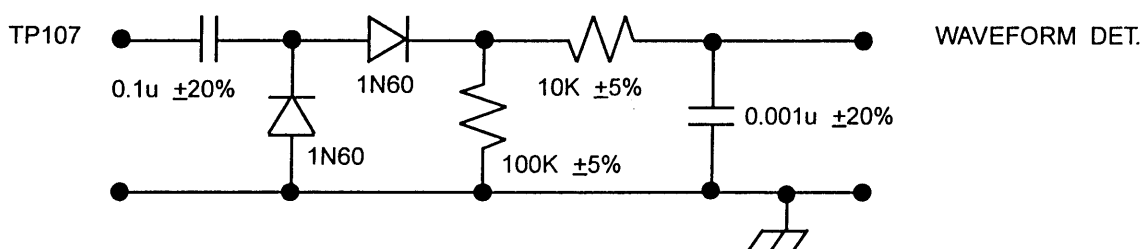
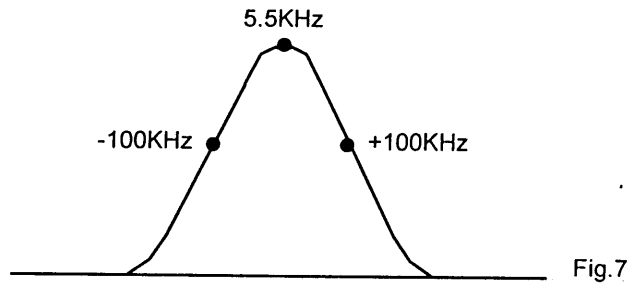


Fig.6

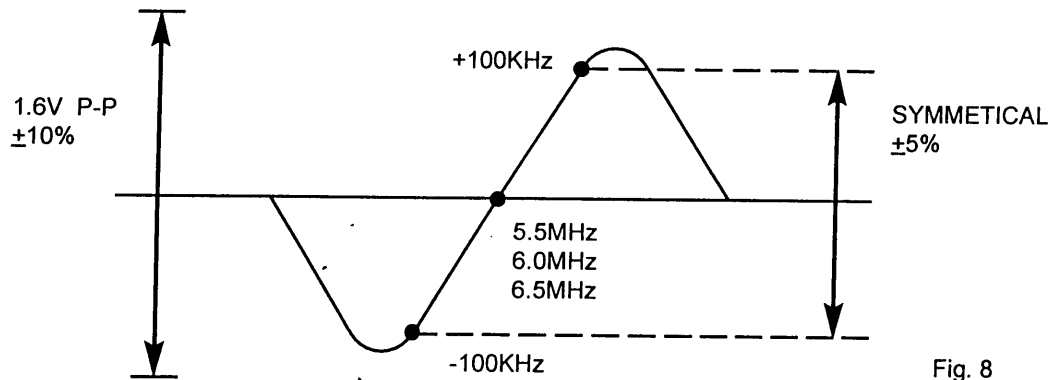
- Adjust the sweep generator output to obtain a maximum amplitude.
- Adjust T103 to obtain the waveform as Fig.7



### SIG ALIGNMENT

- Connect a 47K  $\pm 5\%$  resistor between PIN7 to PIN22 at IC102.
- Connect a 4K7  $\pm 5\%$  resistor between PIN23 to Ground at IC102.
- Connect the sweep generator to TP102.
- Connect waveform detect to TP101.
- The output of sweep generator should be -30dB  $\pm 5$ dB.
- Adjust T104 to obtain the waveform as Fig.8.

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



SYSTEM	DK / I	BG / DK	I / I	BG	DK
SIF (MHz)	6.0 6.5	5.5 6.5	6.0	5.5	6.5

### E. SIF ALIGNMENT (FOR STEREO)

1. Connect the sweep generator to TP105.
2. Connect waveform detect to PIN1 and PIN3 at CN306.
3. Connect A.G.C. Bias voltage to TP101.
4. The output of sweep generator should be  $-30\text{dB} \pm 5\text{dB}$ .
5. Adjust T104 and T102 to obtain the waveform as Fig.9.

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

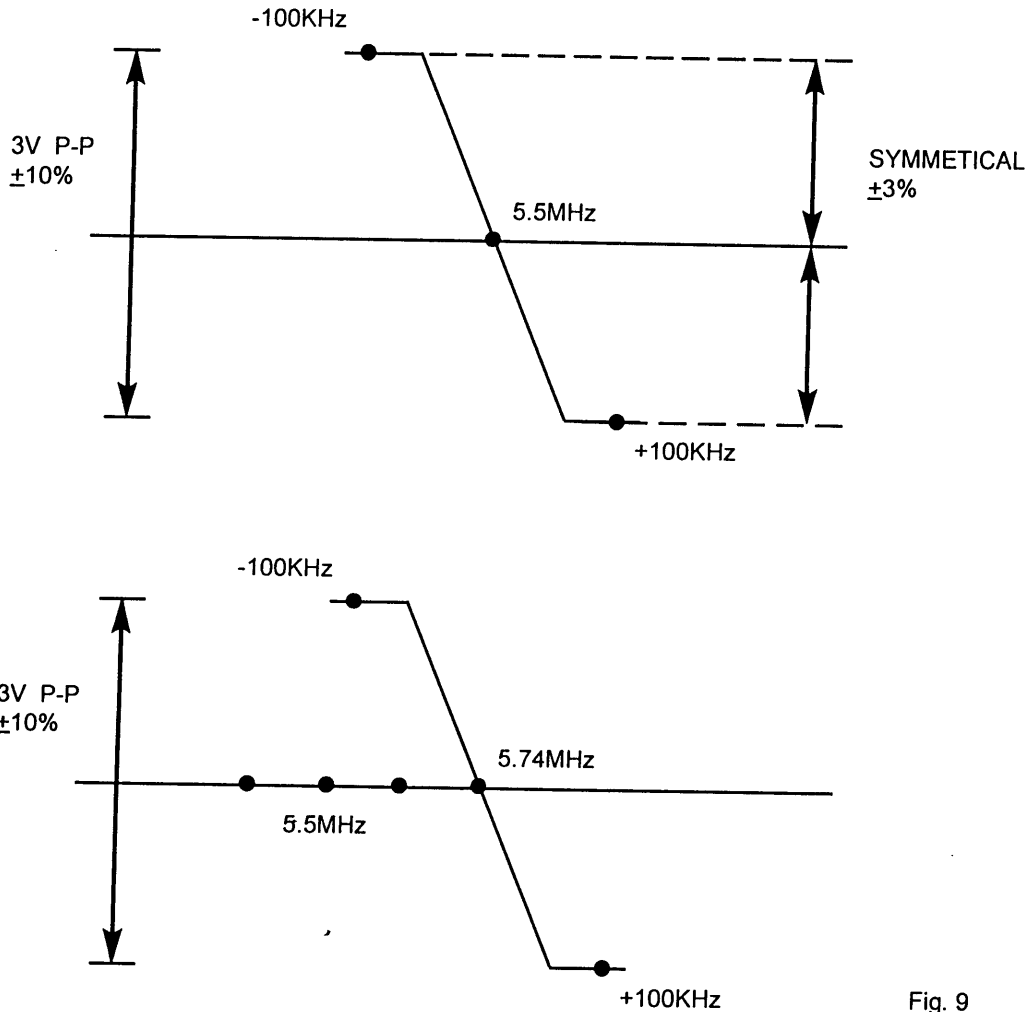


Fig. 9

### F. SOUND TANK COIL ALIGNMENT (FOR STEREO)

1. Connect Philips Pattern Generator to tuner test point and Ground. (Frequency is 38.9MHz color bar input signal is  $80\text{dB} \pm 3\text{dB}$ )
2. Connect Digital multimeter to PIN12 at IC101.
3. Adjust T103 to obtain a DC  $2.8\text{V} \pm 0.1\text{V}$ .

### AFC ALIGNMENT (WHEN IC102 USE TDA8305 FOR PAL - DK / I)

1. Connect Philips Pattern Generator to tuner IF out and Ground. (Frequency is 38MHz color bar)
2. The output of Philips Pattern Generator should be  $80\text{dB} \pm 3\text{dB}$ .
3. Connect Digital multimeter to PIN18 at IC102.
4. Adjust T101 to obtain a DC  $7\text{V} \pm 0.2\text{V}$ .

### G. PAL COLOUR ALIGNMENT

1. Receive Philips Pattern input signal 70dB  $\pm$ 10dB.
2. Connect Oscilloscope to TP305.
3. Set color control to middle position.
4. Adjust T301 and VR302 to obtain the waveform as Fig.10.

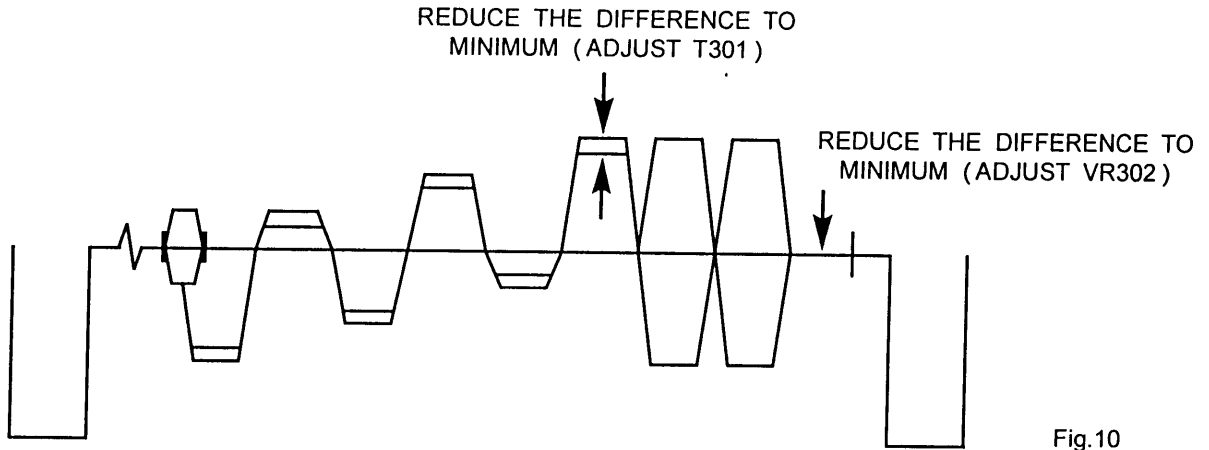


Fig.10

### COLOUR SYNC ADJUSTMENT

1. Receive Philips pattern (input signal is 70dB  $\pm$ 10dB).
2. Connect terminal IC302 PIN17 to GND and the earth with the short jumper wire.
3. Then the color striper appear on the screen when the adjustment is inconnect. Adjust the color sync (CT301) sothat the philips pattern stands till.

### NTSC TINT ALIGNMENT

1. Apply NTSC color bar to AV input.
2. Connect oscilloscope to TP302.
3. Set color control to middle position.
4. Adjust VR304 to obtain the waveform as Fig.11.

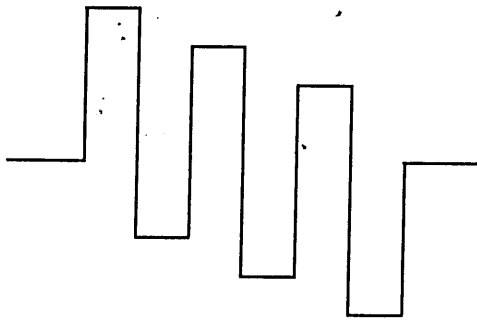


Fig.11

#### H. B+ ADJUSTMENT

1. Connect a digital volt meter to TPB+ and ground.
2. Set Brightness, contrast and colour to minimum.
3. Adjust VR901 and obtain a reading of 111V  $\pm$ 1V.

#### HORIZONTAL CIRCUIT ADJUSTMENT

1. Receive Monoscope Pattern input signal 70dB  $\pm$ 10dB.
2. Connect terminal 25 pin of IC102 and the ground with the Elect.Cap. 10 / 16  $\pm$ 20%.
3. Adjust VR103 to obtain the picture running at centre.
4. Adjust VR102 to obtain the picture at centre. ( specification show as below Fig.13 )

#### VERTICAL CIRCUIT ADJUSTMENT

1. Receive the Monoscope Pattern input signal 70dB  $\pm$ 10dB.
2. Adjust V - size ( VR401 ) to obtain a normal picture.

#### WHITE BALANCE ALIGNMENT STEP

( deguss the picture by deguassing coil if necessary )

1. Set the brightness, contrast, Screen and picture control to minimum value.
2. Set VR502, 504 to minimum position ( anti - clockwise ), set VR501, 503, 505 to middle position.
3. Receive a Monoscope or Philips Pattern input signal 70dB  $\pm$ 10dB.
4. Connect a digital meter between Red Gun and Ground on the CRT Board.
5. Adjust VR301 to obtain a CRT cut off voltage. ( 160V  $\pm$ 3V )
6. Adjust screen volume on FBT to brightest bar can just be screen.
7. Receive a black and white pattern input signal 70dB  $\pm$ 10dB or video input 1p-p  $\pm$ 3dB.
8. Set the brightness and contrast to middle position.
9. Adjust VR501, 502, 503, 504, 505 to obtain a uniformly white picture ( 9300°K ) +27M.P.C.D ( X=0.281, Y=0.311 ).

#### SUB - BRIGHTNESS ALIGNMENT

1. Receive a Monoscope or Philips Pattern input signal 70dB  $\pm$ 10dB.
2. Set the brightness, contrast and colour to minimum.
3. Adjust VR301 until the brightest bar can just be screen.

#### FOCUS ALIGNMENT

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

#### A.G.C. ALIGNMENT ( SEE FIG.12 )

1. Receive monoscope pattern at CH69 ( UHF ) and input field strength ( tuner input signal table show as below ).
2. Connect a digital meter between the tuner A.G.C. terminal and ground.
3. Adjust the A.G.C. 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±2dB	OSCAR 2900KKC	60±2dB
UVC6201-RC	57±2dB	HBC3300KHC	60±2dB
UVC8303-RW	57±2dB	TBD1CAB14	60±2dB
UVL1812-AW	57±2dB	TECC1986VA0618	60±2dB
UVC1401-EW	57±2dB	TBD1-HYPV15A	60±2dB
TDQ-5-32	57±3dB	UVE33-W24/R16-8649	60±2dB
TDQ 8-12	57±3dB	UVE50-AW04D	60±2dB
VISHZUZ51	60±2dB		

Fig. 12

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

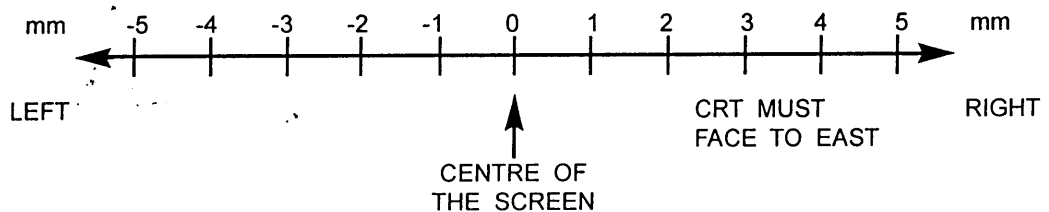


FIG. 13

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

## I. SECAM COLOUR ALIGNMENT

### BELL FILTER ALIGNMENT

1. Receive secam color bar pattern input signal 70dB  $\pm$ 10dB.
2. Connect oscilloscope to TP303 through a 3K9  $\pm$ 5% resistor.
3. Turn T305 to obtain waveform as Fig.14.

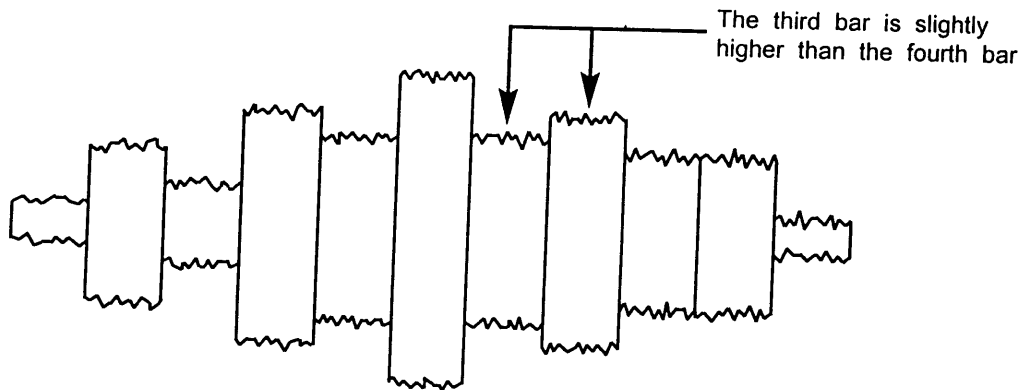


Fig.14

### SECAM COLOUR KILLER ALIGNMENT

1. Receive secam colour Bar signal input signal 70dB  $\pm$ 10dB.
2. Connect a DC digital meter to IC305 pin21.
3. Tune T304 to obtain a maximum voltage.  
" T302 ( FOR NICAM, STEREO PCB ) "

### DISCRIMINATOR ALIGNMENT

1. Receive secam colour Bar signal input signal 70dB  $\pm$ 10dB.
2. Connect the osillascope to TP301.
3. Turn T303 to obtain the Fig.15.  
" T304 ( FOR NICAM, STEREO PCB ) "
4. Connect the osillascope to TP302.
5. Turn T302 to obtain Fig.16.  
" T303 ( FOR NICAM, STEREO PCB ) "

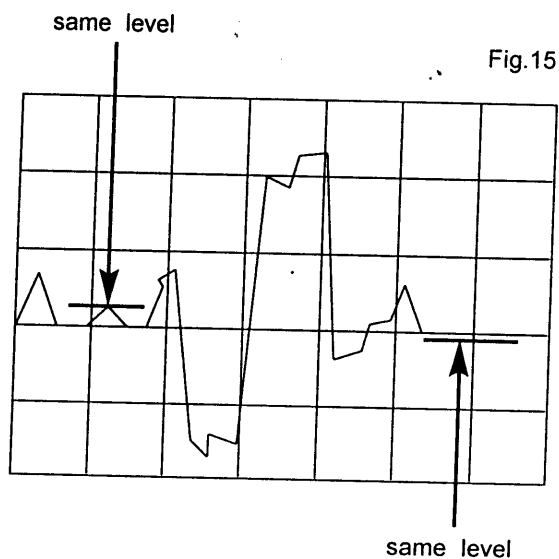


Fig.15

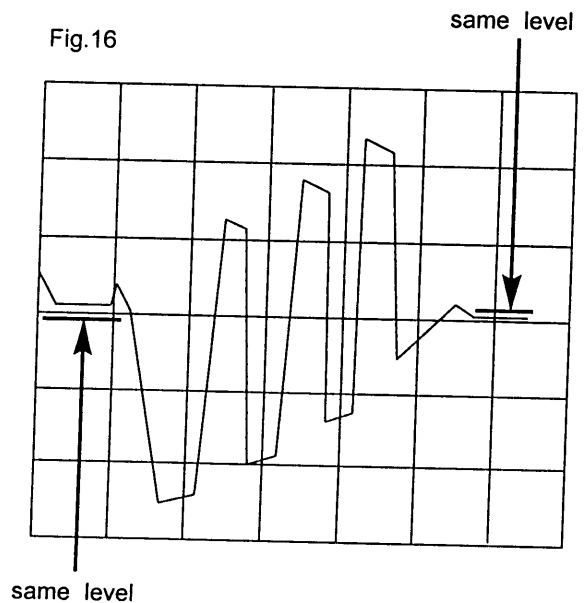


Fig.16

#### J. STEREO AND DUAL SOUND ALIGNMENT ( FOR STEREO )

1. Receive color bar pattern (with stereo and Dual Sound).
2. Connect oscilloscope to TP001 and TP002.
3. Adjust T001, VR001 and VR003 to obtain a maximum amplitude as Fig.17.

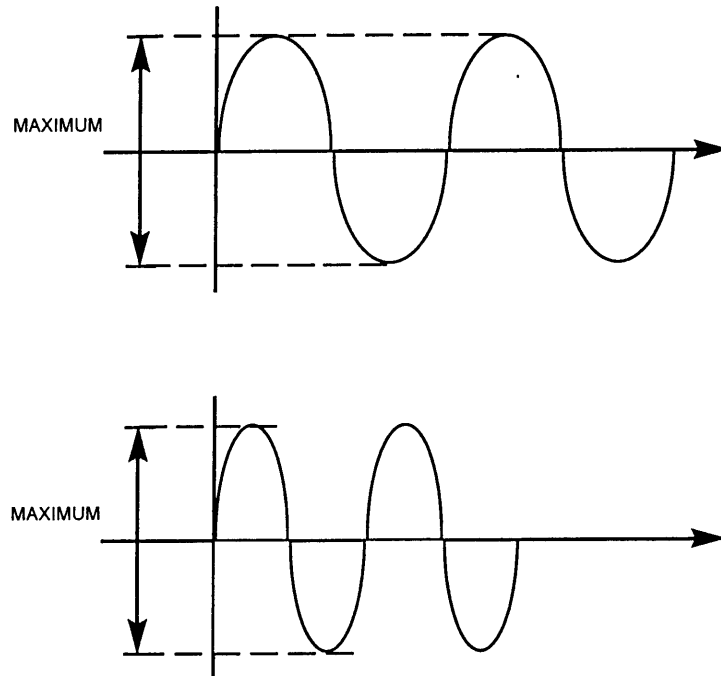


FIG.17

#### K. SEPARATION ALIGNMENT ( FOR STEREO )

1. Receive color bar pattern (with stereo sound, L3KHz R1KHz).
2. Connect oscilloscope to PIN1 at CN201 and ground.
3. Adjust volume control to maximum obtain a waveform no distortion.
4. Adjust VR002 to obtain a waveform as Fig.18.

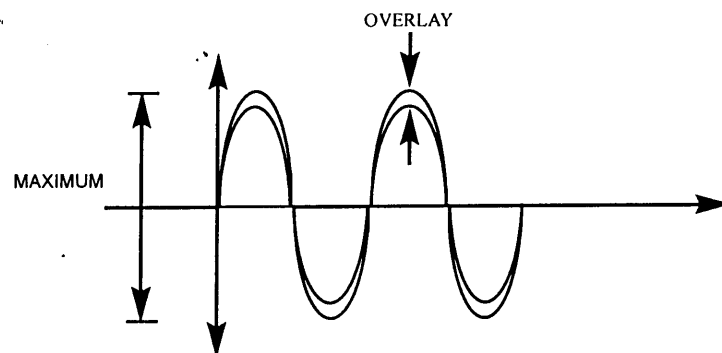


Fig.18



L. HIGH POT TESTING

1. Short the LINE CORD L - pole and N - pole.
2. Turn on the power switch of the TV set.
3. The High Pot Tester (-) connect to the L and N poly 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	$\geq 3.5KV \leq 10mA / \geq 10 \text{ SEC.}$
BS	4.0KV 10mA / 1MIN	$\geq 4.0KV \leq 10mA / \geq 10 \text{ SEC.}$
CHINA STANDARD	3.0KV 10mA / 1MIN	$\geq 3.3KV \leq 5mA / \geq 6 \text{ SEC.}$

M. CONVERGENCE ADJUSTMENT (SEE FIG.19) (IF NECESSARY)

1. Receive a dotted pattern input signal 70dB  $\pm 10dB$ .
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.

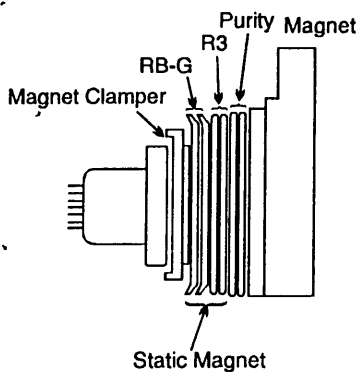


Fig. 19

VOLTAGE TABLE FOR TRANSISTOR ( ONLY FOR REFERENCE )									
LOCATION	TR	B (V)	C (V)	E (V)	LOCATION	TR	B (V)	C (V)	E (V)
Q101		12.2	0	12.2	Q602		0.7	0.06	0
Q102		11.4	12.1	12.2	Q603		9.2	12.2	8.7
Q103		0.02	12.2	0	Q604		0	0.24	0
Q104		0.65	0.05	0	Q605		0.3	1.1	0
Q105		1.13	8.5	0.4	Q901		9	19.7	8.4
					Q902		7.9	0.07	2.3
Q107		0.02	12.2	0	Q903		-0.07	2	0
Q108		12.2	0	12.2	Q904		-1.69	258	0.6
Q109					Q905		0.6	0.04	0
Q110		1.4	9.6	0.7	Q906		109.5	110	110.1
Q111		0.01	4.8	0	Q907		110	110.1	109.4
Q112					Q501		3.13	134.2	2.6
Q201		16.3	15.7	15.6	Q502		3.6	128.4	2.6
Q301		0	2.9	0	Q503		3.1	127.4	2.6
Q302		2.13	11.4	1.5					
Q303		0.06	6.28	0					
Q304		0.64	0.02	0					
Q305		0	1.9	0					
Q401		0.4	56.2	-0.01					
Q402		0.08	108.9	0					
Q601		0.6	2.01	0					

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

VOLTAGE TABLE FOR TRANSISTOR (ONLY FOR REFERENCE) (FOR STEREO)												
LOCATION \ TR		B (V)	C (V)	E (V)	LOCATION \ TR		B (V)	C (V)	E (V)			
Q001		2.1	7.6	1.4	Q302		0	1.9	0			
Q002		3.5	11.4	2.8	Q303		3.05	0	3.75			
Q003		1.8	3.4	1.1	Q401		0.4	60.0	-0.01			
Q004		2.5	5.3	1.8	Q402		-0.1	110.0	0			
Q005		3.7	11.4	3.0	Q601		0.6	2.01	0			
Q006		5.2	5.2	4.5	Q602		0.7	0.06	0			
Q007		0.08	5.2	0.3	Q603		9.2	12.2	8.7			
Q008		0.65	0.01	0	Q604		0	0.24	0			
Q009		0.55	0.01	0	Q605		0.3	1.1	0			
Q010		0.01	5.6	0.01	Q901		9	15.3	8.4			
Q101		10.2	10.9	11.1	Q902		6.4	-0.02	2.1			
Q102		11.1	0	11.1	Q903		-0.02	1.55	0			
Q103		0.65	0.04	0	Q904		2.48	264	0.1			
Q104		0.04	11.1	0	Q905		0.6	0.04	0			
Q105		1.10	7.3	0.4	Q906		109.5	110	110.1			
Q106		0	2.4	0	Q907		110	110.1	109.4			
Q107		0.04	11.1	0	Q501		3.13	134.2	2.6			
Q108		11.1	0	11.1	Q502		3.6	128.4	2.6			
Q109		3.5	11.1	2.8	Q503		3.1	127.4	2.6			
Q201		16.3	15.7	15.6	Q701		0	3	0			
Q301		0.04	2.53	0	Q702		3	-0.8	3			

NOTE: VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

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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 )							
PIN NO.	SYMBOL	IC601 (V)	IC102 (V)	IC301 (V)	IC302 (V)	IC303 (V)	IC304 (V)
1		4.33	5.4	0.09	3.6	5.1	3.4
2		0.82	2.9	0	GND	0	11.2
3		4.85	2.8	0	3.6	3.8	8.4
4		4.85	3.5	0	3.6	0	8.3
5		4.85	3.2	0	3.6	3.9	8.2
6		NC	GND	0	3.6	3.5	0.86
7		0.04	11.6	0	3.6	GND	0.1
8		0.02	5.6	0	0.01	GND	4.1
9		2.5	5.6	0	0.14	3.3	4.1
10		4.1	2.4	GND	0.02	3.8	4.1
11		GND	1.85	0.1	3	0.8	2.7
12		4.5	NC	0	0.02	5.1	3.1
13		5	3	0.1	3	5.1	NC
14		5	1.5	0	11.2	NC	3.9
15		5	NC	0.1	0.02	4.4	3.9
16		5	GND	0	3.0	9.8	2.6
17		5	3.5	0.09		3.4	1.9
18		0.1	5.0	0		9.5	GND
19		5	6.6	0.09		NC	3.4
20		5	5.6	5		3.1	3.4
21		GND	5.6			NC	
22		0	9.5			4.4	
23		0	2.8			GND	
24		0	2.8			5.1	
25		0	4.6				
26		0.4	0.8				
27		-0.02	0.8				
28		5	3.3				
29		4.6					
30		GND					
31		2.4					
32		2.4					
33		5					
34		0.6					
35		4.9					
36		4.9					
37		0.02					
38		GND					
39		3.3					
40		2.8					
41		0.25					
42		5					
43							
44							
45							
46							
47							
48							
49							
50							
51							

PIN NO.	SYMBOL	IC305 (V)	IC201 (V)	IC401 (V)	IC901 (V)
1		7.4	1.2	1.2	10.6
2		7.4	0.01	GND	GND
3		GND	GND	1.3	5
4		2.2	15.3	GND	
5		2.3	0.01	12.6	
6		8.0	1.2	25	
7		11.4	14.2	NC	
8		5.6	7.9	5.7	
9		3.2	15.2	24.6	
10		7.8	8.0		
11		2.9	14.2		
12		7.6	GND		
13		2.1			
14		7.1			
15		0.9			
16		NC			
17					

NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

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

VOLTAGE TABLE FOR IC ( ONLY FOR REFERENCES ) ( FOR NICAM )					
PIN NO. \ SYMBOL	IC005 ( V )	IC006 ( V )	IC007, IC008 ( V )	IC009 ( V )	IC010 ( V )
1	2.1	2.0	5.2	2.6	5.2
2	0.78	GND	1.4	2.6	NC
3	0.61	2.3	1.4	2.6	NC
4	0.61	5.3	GND	GND	5.2
5	0.61	3.9	5.2	5.2	GND
6	GND	4.0	5.2	1.4	5.2
7	GND	4.0	5.2	1.4	GND
8	GND	3.9	11.4	1.4	2.6
9	3.1	1.2			2.6
10	7.1	2.1			2.6
11	0.61	4.2			GND
12	2.1	5.3			GND
13	0.78	4.2			5.2
14	0.78	GND			GND
15	0.78	2.3			4.8
16	11.3	2.6			2.3
17		NC			2.2
18		NC			5.2
19		GND			2.6
20		3.3			NC
21					2.3
22					NC
23					5.2
24					NC
25					GND
26					NC
27					0.03
28					5.2
29					
30					
31					
32					
33					
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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

VOLTAGE TABLE FOR IC ( ONLY FOR REFERENCES ) ( FOR STEREO )					
PIN NO.	SYMBOL	IC001 ( V )	IC002 ( V )		
1		5.6	NC		
2		5.6	NC		
3		7.4	NC		
4		11.1	NC		
5		7.3	NC		
6		7.3	GND		
7		7.3	GND		
8		7.3	GND		
9		0.06	9.3		
10		NC	9.3		
11		5.6	GND		
12		GND	GND		
13		11.2	0.01		
14		9.2	11.2		
15		9.2	11.2		
16		GND	11.2		
17		5.0			
18		GND			
19		5.0			
20		NC			
21		NC			
22		5.5			
23		5.5			
24		5.5			
25		5.5			
26		5.5			
27		5.5			
28		7.2			
29					
30					
31					
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NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

CONTRAST : Maximum Position  
 BRIGHINESS : 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 IC ( ONLY FOR REFERENCES ) ( FOR 1P.TEXT )					
PIN NO.	SYMBOL	IC801 ( V )			
1		5			
2		2.1			
3		3.56			
4		0.01			
5		GEN			
6		4.9			
7		2.2			
8		2.4			
9		2.5			
10		5.0			
11		GEN			
12		2.1			
13		5			
14		GEN			
15		0.42			
16		0.5			
17		0.4			
18		3.8			
19		4.5			
20		0			
21		NC			
22		NC			
23		NC			
24		3.2			
25		2.8			
26		NC			
27		NC			
28		NC			
29		NC			
30		NC			
31		NC			
32		NC			
33		NC			
34		NC			
35		NC			
36		NC			
37		NC			
38		NC			
39		NC			
40		NC			
41					
42					
43					
44					
45					
46					
47					
48					
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

VOLTAGE TABLE FOR IC ( ONLY FOR REFERENCES ) ( FOR F.TEXT, S.TEXT )						
PIN NO.	SYMBOL	IC801 (V)	IC802 (V)	IC804 (V)		
1		5	NC	GEN		
2		1.8	4.2	4.2		
3		1.9	2.2	4.3		
4		0.03	2.2	NC		
5		GEN	3.8	NC		
6		4.9	1.3	NC		
7		2.2	1.2	NC		
8		2.4	3.6	NC		
9		2.5	3.6	NC		
10		5.0	3.7	NC		
11		GEN	0	NC		
12		2.1	0.3	5.0		
13		5	4.2	GEN		
14		GEN	GND	GEN		
15		0.42	0.6	2.3		
16		0.5	0.5	2.0		
17		0.4	0.5	0		
18		3.8	0.3	GEN		
19		4.5	0.5	NC		
20		0.8	GND	NC		
21		2.5	4.2	NC		
22		NC	2.5	NC		
23		4.3	0.8	GEN		
24		4.3	0.8	NC		
25		GEN	0.8	NC		
26		0.5	5.0	GEN		
27		0.5	5.0	NC		
28		0.5	5.0	5.0		
29		0.3				
30		0.5				
31		4.2				
32		0.3				
33		0				
34		3.7				
35		3.6				
36		3.6				
37		1.2				
38		1.3				
39		3.8				
40		2.2				
41		2.2				
42		4.2				
43		4.2				
44		0.8				
45		0.8				
46		0.8				
47		2.5				
48		5.0				
49						
50						

NOTE : VOLTAGE ARE TAKEN UNDER TUNED CONDITION WITH

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



**MODEL NO: CT-M489ST**

**SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\\CPU322' (40P.)**

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
155-931307-00-05	HANDSET ASS'Y FOR R/C:9313 (G.ST./NICAM/ S.TXT) "TEAC DESIGN (RC-640)"	
180-942022-27-04	NON-COM PART ASS'Y PAL/BG W/SCART/1P.TXT /G.STEREO/H-PHONE `CPU 322' {TEAC} 40P.	
180-942022-27-CP	COMMON PART ASS'Y PAL/BG W/SCART/1P.TXT/ G.STEREO `CPU 322' {40 PROG.}	

**MODEL NO: CT-M489ST**

**SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\\CPU322' (40P.)**

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
155-931307-00-05	HANDSET ASS'Y FOR R/C:9313 (G.ST./NICAM/ S.TXT) "TEAC DESIGN (RC-640)"	
107-800455-46	455K HZ RESONATOR "KYOCERA" CF701	1
113-101005-17	CARBON FILM RESISTOR 100 OHM 1/16W +-5% R704,706	2
113-102005-17	CARBON FILM RESISTOR 1K OHM 1/16W +-5% R705	1
113-103005-17	CARBON FILM RESISTOR 10K OHM 1/16W +-5% R702	1
113-109005-17	CARBON FILM RESISTOR 1 OHM 1/16W +-5% R708,710	2
113-473005-17	CARBON FILM RESISTOR 47K OHM 1/16W +-5% R703	1
113-682005-17	CARBON FILM RESISTOR 6.8K OHM 1/16W +-5% R701	1
127-476042-03	ELECT. CAP. 47 MFD 16V +-20% C701	1
130-600101-00	INFRARED EMITTER EL-1L1 KODENSHI LED701	1
131-210719-29	TRANSISTOR 2SA719R/S MATSUSHITA Q702	1
131-230945-00	TRANSISTOR 2SC945 NEC Q701	1
133-803010-33	I.C. SAA3010T PHILIPS IC701	1
172-626006-42	UL 1007 TOP COAT WIRE AWG 26 60MM RED 10 X 10 MM FROM REMOTE PCB `3V' TO BATTERY CONTACT PLATE `+'	1
172-626008-40	UL 1007 TOP COAT WIRE AWG 26 80MM BLACK 10 X 10 MM FROM REMOTE PCB `GND' TO BATTERY CONTACT PLATE `-'	1
172-726000-99	BARE WIRE 54MM W701-702	0
190-931302-02	REMOTE P.C.B.	1
514-200407-10	SELF-TAPPING SCREW 2 X 7 B/T (HARDEN) FOR HANDSET	1
516-260408-10	SELF-TAPPING SCREW 2.6 X 8 P/T (HARDEN) FOR HANDSET	2
774-931301-00	BATTERY SPRING (+-)	1
774-931302-00	BATTERY SPRING (+)	1
774-931303-00	BATTERY SPRING (-)	1
810-041104-13	POLYBAG 4" X 11" X 0.04MM W/RE-CYCLING MARK FOR HANDSET	1
849-931303-00	CONTACT RUBBER KEY PAD (SHARP WELL)	1
889-931310-00	HANDSET COVER PLATE FOR W/O LCD REMOTE	1
892-931323-04	DIAL KEY PLATE - TEAC DESIGN (RC-640)	1
900-931311-01	HANDSET TOP CABINET - MOULDED BLACK	1
902-931311-01	HANDSET BOTTOM CABINET-MOULDED BLACK	1

**MODEL NO: CT-M489ST**

**SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\'CPU322\' (40P.)**

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
910-931301-01	BATTERY DOOR - BLACK MOULDED	1
964-931301-00	SENSOR LENS	1

**MODEL NO: CT-M489ST**

**SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\\CPU322' (40P.)**

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
180-942022-27-04	NON-COM PART ASS'Y PAL/BG W/SCART/1P.TXT /G. STEREO/H-PHONE `CPU 322' {TEAC} 40P.	
002-120001-46	CRT20" A48KRD82X09/A48KRD89X09 (SOUTH HEMISPHERE CRT) SAMSUNG	1
003-131372-07	TUNER OSCAR 2900KKC 3X1 772 "TELEFUNKEN" (HIGH TUNER JACK)	1
107-105500-66	SOUND TRAP CERAMIC FILTER 5.5MHZ WEI HAW CF103	1
107-305500-16	SOUND BYPASS CERAMIC FILTER 5.5MHZ WEI HAW CF102	1
107-305740-16	SOUND BYPASS CERAMIC FILTER 5.74MHZ SFE-5.74MC CF101 MURATA	1
107-733400-66	SAW FILTER 33.4 MHZ (MURATA) SA102	1
107-738916-00	SAW FILTER TSF-5316 SANYO SA101	1
113-101105-17	CARBON FILM RESISTOR 100 OHM 1/4W +-5% R212,213	2
113-153105-17	CARBON FILM RESISTOR 15K OHM 1/4W +-5% R116,610	2
113-223101-67	METAL FILM RESISTOR 22K OHM 1/4W +-1% R606	1
161-123802-20	3.5MM STEREO EARPHONE JACK W/ 2P2T SWITCH #UIC-38-067-03	1
171-550084-D0	84" AC LINE CORD W/SAA APP. 10A 250V	1
177-655103-05	5 PINS FLAT CABLE L=100MM CN205`1' TO CN206`1',`2' TO `2',`3' TO `3'	1
177-655103-05	5 PINS FLAT CABLE L=100MM `4' TO `4' ,`5' TO `5'	0
186-624500-11	HI-WATT SUPER HEAVY DUTY 1.5V 0% MERCURY 3A ER03X ALUM.CASE	2
610-942104-23	GIFT BOX - TEAC DESIGN (K+K) W/HANDEL	1
663-230422-96	SERIAL NO.LABEL - OC:GT-422/96 1PC STUCK ON CTN, 1PC STUCK ON RATING LABEL	2
669-942001-35	RATING LABEL - TEAC DESIGN (CT-M489ST)	1
670-942000-0U	I/M - TEAC DESIGN (CT-M489ST)	1
678-931315-02	TOTAL CARE LABEL - TEAC DESIGN (BLK & WHITE)	1
678-932007-01	EASY TUNER CARD (C) - TEAC DESIGN	1
678-942002-08	SCREEN STICKER - TEAC DESIGN (CT-M489ST)	1
690-922139-01	WARRANTY CARD- TEAC (A) DESIGN	1
693-942101-06	EAN CODE LABEL - 9313060007355	1
703-942110-00	SPEAKER GRILLE (B) -MATT BLACK SPRAY (BOTH SIDE)	2
800-942111-00	POLYFOAM (B) - TOP LEFT	1
800-942112-00	POLYFOAM (B) - TOP RIGHT	1

**MODEL NO: CT-M489ST**

**SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\'CPU322\' (40P.)**

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
800-942113-00	POLYFOAM (B) - BOTTOM LEFT	1
800-942114-00	POLYFOAM (B) - BOTTOM RIGHT	1
810-404004-14	POLYBAG 40"X40"X0.04MM W/PUNCH HOLE & RE-CYLING MARK P/O MAT	1
826-301605-00	FOAM SHEET 30" X 16" X 0.5MM THK. FOR TOP UNIT	1
884-882020-01	JACK COVER-W/WHITE SS. W/O A/V IN W/21 PIN SOCKET (HIGH JACK)	1
884-942037-01	PRESET PLATE-BLK W/L.GR.S.S.E. STD(14 KEY)W/CLEAR KEY (TEAC)	1
900-942011-03	FRONT CABINET (B) - SONY GREY	1
902-942111-U0	BACK CABINET W/O WOOFER (UL)	1
917-942110-10	REMOTE LENS - T.RED W/GOLD S.S & DUAL STEREO I/II (FOR TEAC)	1
919-942110-63	P/DOOR - TEAC DESIGN W/CABLE READY WORDING (CT-M489ST)	1
986-882801-0J	NAME PLATE - TEAC DESIGN (A) (SMALL SIZE)	1

MODEL NO: CT-M489ST

SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\'CPU322\' (40P.)

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
180-942022-27-CP	COMMON PART ASS'Y PAL/BG W/SCART/1P.TXT/ G.STEREO 'CPU 322' {40 PROG.}	
001-220027-07	FLYBACK TRANSFORMER FCM20B027 SAMSUNG T402	1
008-551201-05	DEGAUSSING COIL 60T L=1410MM (5 LAYERS OF TAPE) L902	1
012-102340-06	ART-TECH SEMI-FIXED RESISTOR EVND8AA 03B13 1KB VR401,901	2
012-103340-06	SEMI-FIXED RESISTOR EVND8AA 03B14 10KB VR103,002	2
012-104340-06	SEMI-FIXED RESISTOR EVND8AA 03B15 100KB VR101	1
012-301330-06	SEMI-FIXED RESISTOR EVND2AA 03B32 300B VR503,505	2
012-501340-06	SEMI-FIXED RESISTOR EVND 8AA 03B52 500B VR302,003,001	3
012-502330-06	SEMI-FIXED RESISTOR EVND2AA 03B53 5KB VR502,504,501	3
012-503340-06	SEMI-FIXED RESISTOR EVND8AA 03B54 50KB VR102,301	2
013-100001-03	GLASS DELAY LINE YTS-8B WITTIS DLY302	1
013-200005-00	Y-DELAY LINE YBL50F18X DLY301	1
101-191005-96	HORIZONTAL DRIVE TRANSFORMER R1005 T401	1
101-288820-95	LINE FILTER 70MH L901	1
101-410214-94	SWITCHING POWER TRANSFORMER KB40C214D (HIGHLIGHT) T901	1
102-370600-02	TANK COIL / AFC COIL COILS 707851 T101,103	2
102-671300-02	SOUND IF COIL. COILS 710256 T102,104	2
102-770200-02	SECAM COLOR PAL DELAY LINE MATCHING COILS 707850 T301	1
102-871400-02	OSC COIL OD-814656 "COILS" T001	1
105-100103-08	FIXED INDUCTOR COIL 10 UH +-10% AXIAL L601	1
105-100103-08	FIXED INDUCTOR COIL 10 UH +-10% AXIAL L102	1
105-150103-08	FIXED INDUCTOR COIL 15 UH +-5% AXIAL L104	1
105-153106-02	CHOKE COIL 15MH 10% CW-710228-153K L001	1

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<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
105-181103-08	FIXED INDUCTOR COIL 180 UH +-10% AXIAL L501	1
105-201106-06	CHOKER COIL 200UH HIGHLIGHT L903	1
105-330103-08	FIXED INDUCTIVE COIL 33UH +-10% AXIAL L305	1
105-399103-08	FIXED INDUCTIVE COIL 3.9 UH +-10% (WITTIS) L801	1
105-479103-08	FIXED INDUCTIVE COIL 4.7 UH L60A	1
105-560103-08	FIXED INDUCTIVE COIL 56 UH +-10% AXIAL L002	1
105-650152-13	LINEARITY COIL 65UH "LI TONE" L401	1
105-689103-08	FIXED INDUCTOR COIL 6.8 UH +-10% AXIAL L103	1
105-828103-08	FIXED INDUCTIVE COIL 0.82 UH +-10% AXIAL L101	1
105-829103-08	FIXED CONDUCTOR COIL 8.2 UH +-10% AXIAL L301,302,303	3
105-829103-08	FIXED CONDUCTOR COIL 8.2 UH +-10% AXIAL L304	1
113-100105-17	CARBON FILM RESISTOR 10 OHM 1/4W +-5% R601,119,108,140,134,803	6
113-101105-17	CARBON FILM RESISTOR 100 OHM 1/4W +-5% R624,625,650,643,644,638,804-806,808,801,802	12
113-101105-17	CARBON FILM RESISTOR 100 OHM 1/4W +-5% R309,317,318,319,322,326,336,337,338,005	10
113-101305-75	METAL OXIDE FILM RESISTOR 100 OHM 1W +-5% R130	1
113-102105-17	CARBON FILM RESISTOR 1K OHM 1/4W +-5% R921,329,352,331,402,107,126,325,330,807,821,851	12
113-102105-17	CARBON FILM RESISTOR 1K OHM 1/4W +-5% R619,617,607,608,618,620,621,634,637,641,007,008	12
113-102105-17	CARBON FILM RESISTOR 1K OHM 1/4W +-5% R636,639,642,109,143,153,320,302,328,157	10
113-102305-75	METAL OXIDE FILM RESISTOR 1K OHM 1W +-5% R414	1
113-103101-67	METAL FILM RESISTOR 10K OHM 1/4W +-1% R609	1
113-103105-17	CARBON FILM RESISTOR 10K OHM 1/4W +-5% R605,612,623,635,649,632,103,110,113,104,852	11
113-103105-17	CARBON FILM RESISTOR 10K OHM 1/4W +-5% R303,304,315,354,407,006,010,012,908,403	10
113-103105-17	CARBON FILM RESISTOR 10K OHM 1/4W +-5% R154,321,339,927	4
113-103405-75	METAL OXIDE FILM RESISTOR 10K OHM 2W +-5% R137	1

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<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
113-104105-17	CARBON FILM RESISTOR 100K OHM 1/4W +-5% R136,355	2
113-104205-12	CARBON FILM RESISTOR 100K OHM 1/2W +-5% R920	1
113-104305-75	METAL OXIDE FILM RESISTOR 100K OHM 1W +-5% R925	1
113-105105-17	CARBON FILM RESISTOR 1M OHM 1/4W +-5% R138	1
113-120305-75	METAL OXIDE FILM RESISTOR 12 OHM 1W +-5% R911	1
113-120405-75	METAL OXIDE FILM RESISTOR 12 OHM 2W +-5% R924	1
113-122105-17	CARBON FILM RESISTOR 1.2K OHM 1/4W +-5% R121,122,323,602	4
113-123105-17	CARBON FILM RESISTOR 12K OHM 1/4W +-5% R132,615,001	3
113-124205-12	CARBON FILM RESISTOR 120K OHM 1/2W +-5% R421	1
113-152105-17	CARBON FILM RESISTOR 1.5K OHM 1/4W +-5% R150,152,850	3
113-153105-17	CARBON FILM RESISTOR 15K OHM 1/4W +-5% R604,616,401,016,017	5
113-153405-75	METAL OXIDE FILM RESISTOR 15K OHM 2W +-5% R510,511,505	3
113-154105-17	CARBON FILM RESISTOR 150K OHM 1/4W +-5% R133	1
113-158405-75	METAL OXIDE FILM RESISTOR 0.15 OHM 2W +-5% R914	1
113-159305-75	METAL OXIDE FILM RESISTOR 1.5 OHM 1W +-5% R410	1
113-159405-42	NON-FLAMMABLE FUSE RESISTOR 1.5 OHM 2W +-5% R501	1
113-181105-17	CARBON FILM RESISTOR 180 OHM 1/4W +-5% R135,305,307,310,313,340	6
113-182105-17	CARBON FILM RESISTOR 1.8K OHM 1/4W +-5% R907,628,629,630,631,148,335,334,814-817	12
113-182105-17	CARBON FILM RESISTOR 1.8K OHM 1/4W +-5% R306,308,311	3
113-183105-17	CARBON FILM RESISTOR 18K OHM 1/4W +-5% R408	1
113-184105-17	CARBON FILM RESISTOR 180K OHM 1/4W +-5% R151,156	2
113-202605-75	METAL OXIDE FILM RESISTOR 2K OHM 5W +-5% R416	1
113-221105-17	CARBON FILM RESISTOR 220 OHM 1/4W +-5% R411,112,106	3
113-221305-75	METAL OXIDE FILM RESISTOR 220 OHM 1W +-5% R413	1



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\\CPU322' (40P.)

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
113-222101-67	METAL FILM RESISTOR 2.2K OHM 1/4W +-1% R146	1
113-222105-17	CARBON FILM RESISTOR 2.2K OHM 1/4W +-5% R507,509,513,141,652,332,201,205,207,013,015	11
113-223105-17	CARBON FILM RESISTOR 22K OHM 1/4W +-5% R646,129,312,314,417,655,406,208,209,346,111,002	12
113-223105-17	CARBON FILM RESISTOR 22K OHM 1/4W +-5% R202,014	2
113-224105-17	CARBON FILM RESISTOR 220K OHM 1/4W +-5% R333,653,004,009	4
113-229105-17	CARBON FILM RESISTOR 2.2 OHM 1/4W +-5% R125,342,327	3
113-229205-12	CARBON FILM RESISTOR 2.2 OHM 1/2W +-5% R139,351	2
113-229405-75	METAL OXIDE FILM RESISTOR 2.2 OHM 2W +-5% R902	1
113-229605-51	WIRE WOUND CEMENT RESISTOR 2.2 OHM 5W +-5% R901	1
113-270105-17	CARBON FILM RESISTOR 27 OHM 1/4W +-5% R115	1
113-270405-75	METAL OXIDE FILM RESISTOR 27 OHM 2W +-5% R912	1
113-271105-17	CARBON FILM RESISTOR 270 OHM 1/4W +-5% R147,820	2
113-272105-17	CARBON FILM RESISTOR 2.7K OHM 1/4W +-5% R142	1
113-272205-12	CARBON FILM RESISTOR 2.7K OHM 1/2W +-5% R502,503,504,922,409,415	6
113-273105-17	CARBON FILM RESISTOR 27K OHM 1/4W +-5% R155,603,614,810	4
113-330105-17	CARBON FILM RESISTOR 33 OHM 1/4W +-5% R928	1
113-331105-17	CARBON FILM RESISTOR 330 OHM 1/4W +-5% R905,343,344,353	4
113-332102-17	CARBON FILM RESISTOR 3.3K OHM 1/4W +-2% R904	1
113-332105-17	CARBON FILM RESISTOR 3.3K OHM 1/4W +-5% R611,645,647,822,809, FOR L001	6
113-333105-17	CARBON FILM RESISTOR 33K OHM 1/4W +-5% R118,127,114,117,144	5
113-334105-17	CARBON FILM RESISTOR 330K OHM 1/4W +-5% R131	1
113-334305-75	METAL OXIDE FILM RESISTOR 330K OHM 1W +-5% R913	1
113-390505-75	METAL OXIDE FILM RESISTOR 39 OHM 3W +-5% R926	1
113-390605-75	METAL OXIDE FILM RESISTOR 39 OHM 5W +-5% R915	1

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<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
113-391105-17	CARBON FILM RESISTOR 390 OHM 1/4W +-5% R506,508,347,934,854	5
113-392105-17	CARBON FILM RESISTOR 3.9K OHM 1/4W +-5% R404,633	2
113-393105-17	CARBON FILM RESISTOR 39K OHM 1/4W +-5% R316	1
113-470105-17	CARBON FILM RESISTOR 47 OHM 1/4W +-5% R933,204,206,613	4
113-471105-17	CARBON FILM RESISTOR 470 OHM 1/4W +-5% R412,123,124	3
113-472105-17	CARBON FILM RESISTOR 4.7K OHM 1/4W +-5% R910,149,345,348,120,158,159,855,011	9
113-473105-17	CARBON FILM RESISTOR 47K OHM 1/4W +-5% R622,648,651,301,341,405	6
113-475105-17	CARBON FILM RESISTOR 4.7M OHM 1/4W +-5% FOR IC305 10 PIN TO GND	1
113-479105-17	CARBON FILM RESISTOR 4.7 OHM 1/4W +-5% R210,211	2
113-479505-75	METAL OXIDE FILM RESISTOR 4.7 OHM 3W +-5% R422	1
113-511105-17	CARBON FILM RESISTOR 510 OHM 1/4W +-5% R512	1
113-562105-17	CARBON FILM RESISTOR 5.6K OHM 1/4W +-5% R105,324,357,W002	5
113-563105-17	CARBON FILM RESISTOR 56K OHM 1/4W +-5% R003	1
113-565210-92	CARBON COMPOSITION RESISTOR 5.6M OHM 1/2W +-10% R916,917	2
113-629505-75	METAL OXIDE FILM RESISTOR 6.2 OHM 3W +-5% R203	1
113-681105-17	CARBON FILM RESISTOR 680 OHM 1/4W +-5% R853,654	2
113-682102-17	CARBON FILM RESISTOR 6.8K OHM 1/4W +-2% R903	1
113-682105-17	CARBON FILM RESISTOR 6.8K OHM 1/4W +-5% R909,419,349	3
113-688305-42	FUSING RESISTOR 0.68 OHM 1W +-5% R918,423,424,919	4
113-750105-17	CARBON FILM RESISTOR 75 OHM 1/4W +-5% R929,930,931,932	4
113-820105-17	CARBON FILM RESISTOR 82 OHM 1/4W +-5% R418,101	2
113-821105-17	CARBON FILM RESISTOR 820 OHM 1/4W +-5% R350,425	2
113-822105-17	CARBON FILM RESISTOR 8.2K OHM 1/4W +-5% R906,923,420,626	4
113-823105-17	CARBON FILM RESISTOR 82K OHM 1/4W +-5% R145	1

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<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
113-824105-17	CARBON FILM RESISTOR 820K OHM 1/4W +-5% R180	1
114-210200-01	THERMISTOR (NICHICON ZPB53 BL 200C) TH901	1
123-100340-60	CERAMIC CAP. 10PF +-5% 50V (SL TYPE) C349	1
123-100340-93	CERAMIC CAP. 10 PF 50V +-5% (NPO) C802	1
123-101350-60	CERAMIC CAP. 100 PF 50V +-10% (SL TYPE) "SMART C612 GOOD"	1
123-102350-90	CERAMIC CAP. 0.001 MFD 50V +-10% (B TYPE) C138,614,110,148,103,801	6
123-102850-10	CERAMIC CAP. 0.001 MFD 2KV +-10% MATSUSHITA C501,419	2
123-103370-90	CERAMIC CAP. 0.01 MFD 50V +80 -20% C102,117,126,333,334,330,339,147,319,118,016,009	12
123-103370-90	CERAMIC CAP. 0.01 MFD 50V +80 -20% C352	1
123-104270-90	CERAMIC CAP. 0.1 MFD 25V +80 -20% C623,123,139,306,309,307,101,803,807,851	10
123-121350-60	CERAMIC CAP. 120 PF 50V +-10% (SL TYPE) C301,302,303	3
123-122551-90	CERAMIC CAP. 0.0012 MFD 500V +-10% (B TYPE) C415 MATSUSHITA	1
123-150340-93	CERAMIC CAP. 15 PF 50V +-5% (NPO) CT301,C808	2
123-151350-60	CERAMIC CAP 150 PF 50V +-10% (SL TYPE) C137	1
123-220340-60	CERAMIC CAP. 22 PF 50V +-5% (SL TYPE) C616,617,618,620	4
123-221350-60	CERAMIC CAP. 220 PF 50V +-10% (SL TYPE) C347,503,504,502	4
123-221551-90	CERAMIC CAP. 220 PF 500V +-10% MATSUSHITA C916	1
123-222350-90	CERAMIC CAP. 0.0022 MFD 50V +-10% (B TYPE) C017	1
123-222466-41	CERAMIC CAP. 0.0022 MFD 400V +-20% ECK-DNS222MEX C912 MATSUSHITA	1
123-222850-10	CERAMIC CAP. 0.0022 MFD 2KV +-10% MATSUSHITA C911	1
123-223370-90	CERAMIC CAP. 0.022 MFD 50V +80 -20% C109,131,124,122,128,129,135,331,332,343,335	11
123-223370-90	CERAMIC CAP. 0.022 MFD 50V +80 -20% C344,105,127,002	4

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<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
123-270340-60	CERAMIC CAP. 27 PF 50V +-5% (SL-TYPE) C114	1
123-270340-93	CERAMIC CAP. 27PF 50V +-5% (NPO) C613,628	2
123-390340-93	CERAMIC CAP. 39PF 50V +-5% (NPO) C630,C1	2
123-471350-60	CERAMIC CAP. 470 PF 50V +-10% (SL TYPE) C023,024	2
123-472350-90	CERAMIC CAP. 0.0047 MFD 50V +-10% (B TYPE) C918,920	2
123-472550-90	CERAMIC CAP. 0.0047 MFD 500V +-10% (B TYPE) C913,413,423	3
123-472552-90	CERAMIC CAP. 0.0047 MFD 500V +-10% (B TYPE) SMALL C903,904,907 SIZE	3
123-509340-93	CERAMIC CAP. 5 PF 50V +-5% (NPO) C345	1
123-681350-90	CERAMIC CAP. 680 PF 50V +-10% (B TYPE) C407	1
123-821850-10	CERAMIC CAP. 820 PF 2KV +-10% (SL TYPE) MATSUSHITA C914	1
125-361120-11	POLYSTYRENE CAP. 360PF 125V +-5% C150	1
125-391120-11	POLYSTYRENE CAP. 390 PF 125V +-5% C149	1
126-102071-01	MYLAR CAP. 0.001 MFD 50V +-10% C130,402,412,015	4
126-104071-01	MYLAR CAP. 0.1 MFD 50V +-10% C602,908,304,305,308,310,324,325,326,133,004,012	12
126-104071-01	MYLAR CAP. 0.1 MFD 50V +-10% C409,214,216,804,809,850	6
126-104101-31	POLYPROPYLENE CAP. 0.1 MFD 100V +-10% C425	1
126-222071-01	MYLAR CAP. 0.0022 MFD 50V +-10% C610,624	2
126-222161-41	METALIZED POLYPROPYLENE CAP. 0.0022 MFD 1600V +-10% C420	1
126-223071-01	MYLAR CAP. 0.022 MFD 50V +-10% C321,322,323,207,208,806	6
126-224071-01	MYLAR CAP 0.22 MFD 50V +-10% C140,348,006,007	4
126-224071-01	MYLAR CAP 0.22 MFD 50V +-10% C603,115	2
126-272070-31	POLYPROPYLENE CAP. 0.0027 MFD 50V +-5% C141	1
126-332161-41	METALIZED POLYPROPYLENE CAP. 0.0033 MFD 1600V C418 +-10%	1

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<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
126-333071-01	MYLAR CAP. 0.033 MFD 50V +-10% C906	1
126-334071-01	MYLAR CAP. 0.33 MFD 50V +-10% C143,145	2
126-472071-01	MYLAR CAP. 0.0047 MFD 50V +-10% C403,405	2
126-473071-01	MYLAR CAP. 0.047 MFD 50V +-10% C134,346,010	3
126-473211-41	METALLIZED POLYPROPYLENE CAP 0.047 MFD 250V +-10% C902 VDE	1
126-474071-01	MYLAR CAP. 0.47 MFD 50V +-10% C014	1
126-474201-31	POLYPROPYLENE CAP 0.47 MFD 200V +-10% C414	1
126-474211-41	METALLIZED POLYPROPYLENE CAP 0.47 MFD 250V +-10% C901 VDE	1
126-562071-01	MYLAR CAP. 0.0056 MFD 50V +-10% C020	1
127-105072-03	ELECT. CAP. 1 MFD 50V +-20% C107,142,341,350,132,W002	6
127-105132-03	ELECT. CAP. 1 MFD 160V +-20% C416	1
127-106041-05	ELECT. CAP. 10 MFD 16V +-10% (TIME CONSTANT) C404	1
127-106042-03	ELECT. CAP. 10 MFD 16V +-20% C202,627,621,601,615,619,626,622,351,011	10
127-106042-03	ELECT. CAP. 10 MFD 16V +-20% C203,312,328,329,327,316,317,315,340,314,318,338	12
127-106042-23	ELECT.CAP. BIPOLAR 10MFD 16V +-20% C018,019	2
127-106104-03	ELECT CAP. 10 MFD 100V +-20% 105øC C910	1
127-106252-03	ELECT. CAP. 10 MFD 250V +-20% C424	1
127-107042-03	ELECT. CAP. 100 MFD 16V +-20% C125,119,625,209,210,311,805,003	8
127-107062-03	ELECT. CAP. 100 MFD 35V +-20% C201,408	2
127-107132-03	ELECT. CAP. 100 MFD 160V +-20% "NICHICON" C417	1
127-108042-03	ELECT. CAP. 1000 MFD 16V +-20% C421	1
127-108052-03	ELECT. CAP. 1000 MFD 25V +-20% C217	1
127-157402-03	ELECT. CAP. 150 MFD 400V +-20% (25 x 30MM) C905	1

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<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
127-225072-03	ELECT. CAP 2.2 MFD 50V +-20% C106,108,111,113,116	5
127-226042-03	ELECT. CAP. 22 MFD 16V +-20% C609	1
127-227042-03	ELECT. CAP. 220 MFD 16V +-20% C320,121,205	3
127-227062-03	ELECT. CAP. 220 MFD 35V +-20% C917,410,411	3
127-228052-03	ELECT. CAP. 2200 MFD 25V +-20% C406	1
127-228052-03	ELECT. CAP. 2200 MFD 25V +-20% C422	1
127-336042-03	ELECT. CAP. 33 MFD 16V +-20% C144,921	2
127-474072-03	ELECT. CAP. 0.47 MFD 50V +-20% C013,342	2
127-475072-03	ELECT CAP 4.7 MFD 50V C607,608,604,136,337,211,212,001,021,022	10
127-476042-03	ELECT. CAP. 47 MFD 16V +-20% C401,204,206,005	4
127-476094-07	ELECT CAP. 47 MFD 63V +-20% 105°C "NICHICON" C909	1
127-476132-03	ELECT. CAP. 47 MFD 160V +-20% C915	1
127-477042-03	ELECT. CAP. 470 MFD 16V +-20% C146,922,120,313,336,919,818,008	8
127-477042-03	ELECT. CAP. 470 MFD 16V +-20% C213,215	2
130-134148-01	SILICON DIODE IN4148 D406,301,302,303,604,805	6
130-134148-01	SILICON DIODE IN4148 D601,602,606,607,608,609,610,611,603,103,104,105	12
130-240809-50	VERIABLE CAPACITANCE DIODE BB809 D102,101	2
130-310206-04	BRIDGE RECIFIER KBP206 "HIGHLAND" BR901	1
130-311541-60	RECTIFIER DOIDE 1R5JU41 D904	1
130-311545-60	RECTIFIER DIODE 1R5JH45 D404	1
130-311545-60	RECTIFIER DIODE 1R5JH45 D905	1
130-315295-00	RECTIFIER DIODE S5295G TOSHIBA D902,903,901,401,402,403,405,D90A,90B	9
130-410051-01	ZENER DIODE 5.1V 1/2W +-5% ZD102	1
130-410082-01	ZENER DIODE 8.2V ZD901	1

**MODEL NO: CT-M489ST**

**SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\\CPU322' (40P.)**

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
130-410100-01	ZENER DIODE 10V 1/2W ZD401	1
130-410574-00	ZENER DIODE UPC 574J NEC ZD101	1
130-411091-01	ZENER DIODE 9.1V ZD902	1
130-422120-00	ZENER DIODE 1W 12V ZD402	1
130-512044-00	LED 3MM RED 204HDC LED601,602,603	3
131-211013-18	TRANSISTOR 2SA1013 (R) TOSHIBA Q906	1
131-211015-00	TRANSISTOR 2SA1015 TOSHIBA Q101,102,108,303,802	5
131-220774-0A	TRANSISTOR 2SB774/Q/R/S MATSUSHITA Q902	1
131-231809-0A	TRANSISTOR 2SC1809 ROHM Q105	1
131-231815-0A	TRANSISTOR 2SC1815 TOSHIBA Q103,107,901,903,301,602,302,801	8
131-231815-0A	TRANSISTOR 2SC1815 TOSHIBA Q603,604,605,106,109	5
131-232230-00	NPN-TR 2SC2230A-Y (TOSHI) TO92 VCE=180V IC=.1A Q905 HFE=120-240	1
131-232335-30	TRANSISTOR 2SC2335 L/K NEC Q907	1
131-232482-0A	TRANSISTOR 2SC2482 TOSHIBA Q401,501,502,503	4
131-241761-00	TRANSISTOR 2SD1761(E) ROHM Q201	1
131-242498-13	TRANSISTOR 2SD2498(M) TOSHIBA Q904	1
131-242499-13	TRANSISTOR 2SD2499(M) TOSHIBA Q402	1
131-462369-0A	TRANSISTOR PH2369 PHILIPS Q601	1
133-102411-31	I.C. ST24C01B1 SGS IC602	1
133-103221-33	IC CTV322SV2.0/PCA84C641P/068 PHILIPS IC601	1
133-103504-33	I.C. TDA3504 PHILIPS IC304	1
133-103857-33	IC TDA3857 PHILIPS IC101	1
133-104505-33	I.C. TDA4505E PHILIPS IC102	1

**MODEL NO: CT-M489ST**

**SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\\CPU322' (40P.)**

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
133-104510-33	PHILIPS IC TDA4510 IC305	1
133-108628-14	IC TA8628N TOSHIBA IC303	1
133-115254-33	I.C. SAA5254P/T PHILIPS IC801	1
133-203653-33	I.C. TDA3653B PHILIPS IC401	1
133-203803-33	IC TDA3803A PHILIPS IC001	1
133-204445-16	I.C. LA4445 (SANYO) IC201	1
133-207812-31	IC L7812CV SGS-THOMSON IC103	1
133-304052-14	IC TC4052BP TOSHIBA IC002	1
133-304241-31	I.C. M74HCT241B1 SGS IC301	1
133-305114-31	I.C. TEA5114A SGS IC302	1
133-517805-61	I.C. KA7805 SAMSUNG IC901	1
136-504231-00	REMOTE CONTROL RECEIVER SPS-423-1G SANYO OPT601	1
137-100000-31	CRYSTAL 10 MHZ HOORAY X601	1
137-270000-33	CRYSTAL 27 MHZ 16PF "GIC" X801	1
137-886723-20	CRYSTAL 8.86 MHz KDS X301	1
146-100006-14	POWER SWITCH PS5E-B "CHINA LANDMARK" S612	1
146-104112-01	TACT SWITCH 4 PIN L=8.35 100G #1102VC-4 S602,603,604,605,601,608,609,606,607 "PROMOTION"	9
146-104112-03	TACT SWITCH 4 PIN L=3.85MM 100G #1102VA-4 S610,611,613,614 "PROMOTION"	4
160-101001-08	PIN CONNECTOR 1 PIN PLUG STRAIGHT 1-FOR CN501,2-FOR (X),(Y)	3
160-102255-27	PIN CONNECTOR 2 PINS PLUG STRAIGHT (UL) (S.H.S) CN201	1
160-102805-08	PIN CONNECTOR 2 PIN PLUG STRAIGHT CN903	1
160-103255-27	PIN CONNECTOR 3 PINS PLUG CN202,802,803,606,302,002,003,004,304,306	10
160-103805-08	PIN CONNECTOR 3 PIN PLUG STRAIGHT CN402	1



MODEL NO: CT-M489ST

SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\\CPU322' (40P.)

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
160-104255-27	PIN CONNECTOR 4 PINS PLUG (SHS) CN001,303	2
160-104805-08	PIN CONNECTOR 4 PIN PLUG STRAIGHT CN401	1
160-105255-27	PIN CONNECTOR 5 PINS WAFER 2.5 PITCH CN203	1
160-106255-27	PIN CONNECTOR 6 PINS WAFER (SHS) S11-W CN801,301	2
161-540004-01	CRT SOCKET ISH-01 IN CHANG	1
161-682102-22	21 PIN SCART SOCKET J901	1
166-463023-4E	SPEAKER 2" X 3-1/2" 16 OHM 3W K.T.	2
172-620007-40	UL 1007 TOP COAT WIRE #20 70MM BLACK 5 X 5 MM 1 FOR MAIN PCB `Q' TO `Q',1 FOR IC401 GND TO GND	2
172-620012-40	UL 1007 TOP COAT WIRE AWG 20 120MM BLACK 10 X 10 MIAN P.C.B. `J' TO `J' MM	1
172-620014-40	UL 1007 TOP COAT WIRE AWG 20 140MM BLACK 10 X 10 MAIN P.C.B. `E' TO `E' MM	1
172-620020-40	UL 1007 TOP COAT WIRE AWG 20 200MM BLACK 10 X 10 `G,H' GND TO `G,H' GND MM	1
172-622004-40	UL 1007 TOP COAT WIRE #22 40MM BLACK 5 X 5 MM FOR CRT SOCKET PIN 12 TO GND	1
172-626006-42	UL 1007 TOP COAT WIRE AWG 26 60MM RED 10 X 10 MM MAIN PCB `9A' TO `9A'	1
172-626006-44	UL 1007 TOP COAT WIRE AWG 26 60 MM YELLOW 10 X 10 MAIN P.C.B. `V4' TO LED P.C.B. `4' MM	1
172-626008-40	UL 1007 TOP COAT WIRE AWG 26 80MM BLACK 10 X 10 MM Q904 LUG TO MAIN PCB `L',IC401 LUG TO MAIN PCB `M'	3
172-626008-40	UL 1007 TOP COAT WIRE AWG 26 80MM BLACK 10 X 10 MM Q402 LUG TO MAIN P.C.B. `K'	0
172-626012-44	UL 1007 TOP COAT WIRE AWG 26 120MM YELLOW 10 X 10 MAIN P.C.B. `F' TO `F' MM	1
172-626014-40	UL 1007 TOP COAT WIRE AWG 26 140MM BLACK 10 X 10 `A2' TO `A2' MM	1
172-626014-42	UL 1007 TOP COAT WIRE AWG 26 140MM RED 10 X 10 MM `2' TO `2'	1
172-626020-42	UL 1007 TOP COAT WIRE AWG 26 200MM RED 10 X 10 MM IC001 18 PIN TO IC601 25 PIN	1
172-626022-45	UL 1007 TOP COAT WIRE AWG 26 220MM PINK 10 X 10 MM MAIN P.C.B. `N' TO `N'	1
172-626022-46	UL 1007 TOP COAT WIRE AWG 26 220MM BLUE 10 X 10 MM MAIN P.C.B. `P' TO `P',`I' TO `I'	2

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SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\\CPU322' (40P.)

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
172-726000-99	BARE WIRE 54MM W001-005,007-035,037-072,074-083,085-087,W1,W2	5
172-726000-99	BARE WIRE 54MM W091-093,096,808-809,812,815,818,901,FOR TH902	0
172-726000-99	BARE WIRE 54MM W001,004-006 FOR STEREO BOARD,WA04-A06,`H4'TO`H5'	0
172-830120-99	FLAT BRIDED WIRE CRT GROUND	1
173-622014-30	SINGLE SHIELD WIRE AWG 26 140MM BLACK MAIN P.C.B. `O' TO `O'	1
174-611017-50	DOUBLE SHIELD WIRE AWG 26 180MM BLACK MAIN P.C.B. `A.B' TO `A.B'	1
177-655053-02	2 PIN FLAT CABLE WIRE AWG 26 50MM MAIN P.C.B. `C.D' TO `C.D.'	1
179-001010-00	OIL SLEEVING 1 mm DIA. L=60MM,20MM FOR D904,20MM FOR BR901,20MM-C150,149	0
179-001010-00	OIL SLEEVING 1 mm DIA. 20MM FOR R349,20MM FOR R926,50MM FOR `N'TO`N'	0
179-001010-00	OIL SLEEVING 1 mm DIA. 10MM FOR C1	0
179-001020-00	OIL SLEEVING 2MM DIA. 60MM FOR `9A' TO `9A'	0
179-105000-00	UL PVC TUBE 5mm DIA 120MM FOR AC LINE CORD,120MM FOR PW.SW.(X)(Y)	0
179-105000-00	UL PVC TUBE 5mm DIA L=950mm, 400mm FOR SPK `L', 550mm FOR SPK `R'	0
179-107300-00	UL PVC TUBE 7.3MM DIA. 250MM FOR (X)(Y)	0
179-110500-00	UL PVC TUBE 11MM DIA. L=50MM FOR AC LINE CORD	0
179-405030-00	5 mm DIA SHRINKABLE TUBE 60MM FOR AC LINE CORD,60MM FOR PW.SW.(X)(Y) WIRE	0
182-233150-03	FUSE T3.15A 250V F901	1
190-882000-09	STEREO P.C.B. (060696)	1
190-882004-00	P.C. BOARD CRT (150395)	1
190-882005-05	TELETEXT P.C.B. (160393)	1
190-942002-01	MAIN P.C.B. BOARD (300798) L/SENSOR,R/LED	1
190-942100-10	LED BOARD (LED X3) (190994)	1
191-100030-09	1 PIN SOCKET ASSM'Y L=300MM CRT GND TO CN501	1
191-101016-07	1 PIN DOUBLE INSOLATION WIRE AWG 18 L=340MM BLUE MAIN P.C.B. `X' TO `X'	1
191-101017-07	1 PIN DOUBLE INSOLATION WIRE AWG 18 L=340MM BROWN MAIN P.C.B. `Y' TO `Y'	1
191-200044-09	2 PIN SOCKET ASSM'Y L=440MM CN201 `2' TO SPEAKER L `-', `1' TO SPEAKER L `+'	1

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**SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\\CPU322' (40P.)**

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
191-300040-09	3 PIN SOCKET ASSM'Y (PIN 1 L= 460MM, PIN 2,3 CN402 `1' TO CRT PCB `J' L=400MM)	1
191-300040-09	3 PIN SOCKET ASSM'Y (PIN 1 L= 460MM, PIN 2,3 CN402 `2' TO CRT PCB `I' L=400MM)	0
191-300040-09	3 PIN SOCKET ASSM'Y (PIN 1 L= 460MM, PIN 2,3 CN402 `3' TO CRT PCB `H' L=400MM)	0
191-301005-07	3 PINS SOCKET ASS'Y (2 WIRE) L=560MM CN202 `2' TO SPEAKER R `-', `1' TO SPEAKER R `+'	1
191-301021-07	3 PIN SOCKET ASSM'Y L=180MM CN003 `1' TO LED P.C.B. `2' `2' TO `1' `3' TO `3'	1
191-301204-07	3 PIN SOCKET ASSM'Y CN004 `1' TO CN306 `1', `2' TO `2', `3' TO `3'	1
191-301205-07	3 PINS SOCKET ASS'Y L=100MM CN002 `1' TO CN304 `1', `2' TO `2', `3' TO `3'	1
191-301214-07	3 PIN SOCKET ASS'Y L=240MM CN606 TO CN803	1
191-301215-07	3 PIN SOCKET ASS'Y L=460MM CN302 TO CN802	1
191-401201-07	4 PINS SOCKET ASS'Y L=60MM CN303 `1' TO CN001 `1', `2' TO `2', `3' TO `3', `4' TO `4'	1
191-500048-09	5 PIN SOCKET ASSM'Y L=480MM CN203 `1' TO CRT PCB `A'	1
191-500048-09	5 PIN SOCKET ASSM'Y L=480MM CN203 `2' TO CRT PCB `B'	0
191-500048-09	5 PIN SOCKET ASSM'Y L=480MM CN203 `3' TO CRT PCB `C'	0
191-500048-09	5 PIN SOCKET ASSM'Y L=480MM CN203 `4' TO CRT PCB `D'	0
191-500048-09	5 PIN SOCKET ASSM'Y L=480MM CN203 `5' TO CRT PCB `E'	0
191-601203-07	6 PIN SOCKET ASS'Y L=460MM CN301 TO CN801	1
504-305006-10	MACHINE SCREW 3 X 6 B/M (WHITE) 1 FOR IC901, 2 FOR IC201, 1 FOR IC103	4
514-400312-10	SELF-TAPPING SCREW 4 X 12 B/A (HARDEN) FOR FBT MTG	1
514-400425-10	SELF-TAPPING SCREW 4 X 25 B/T (HARDEN) FOR CAB. MTG.	2
515-303408-10	SELF-TAPPING SCREW 3 X 8 W/B/T (HARDEN) 8-FOR SPEAKER MTG., 2 FOR TELETEXT BOARD MTG.	10
515-303410-10	SELF-TAPPING SCREW 3 X 10 W/B/T (HARDEN) FOR PUSH BUTTOM	2
516-500435-10	SEIF-TAPPING SCREW 5X35 P/T (HARDEN) HEAD DIA. FOR CAB MTG 9.5MM MAX	4

MODEL NO: CT-M489ST

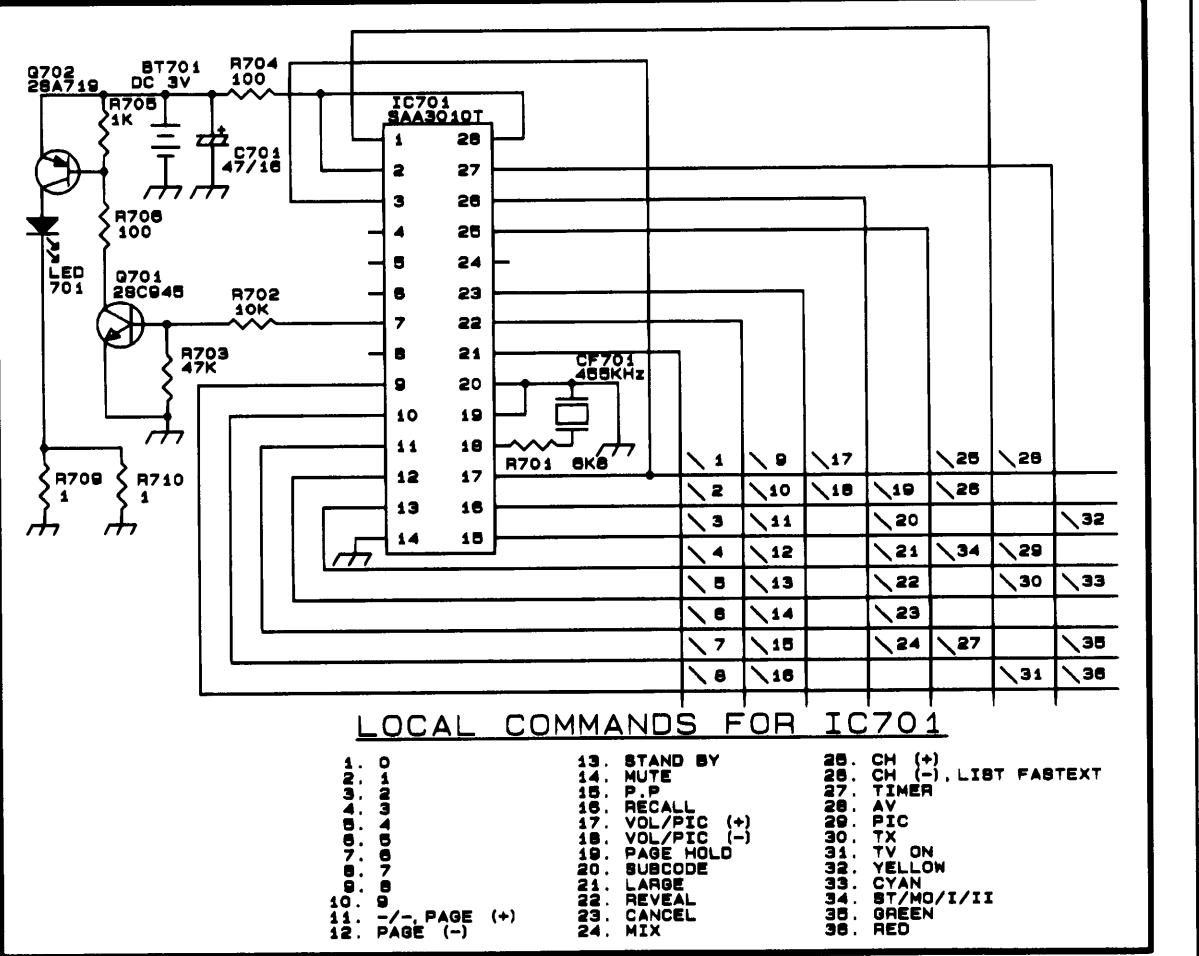
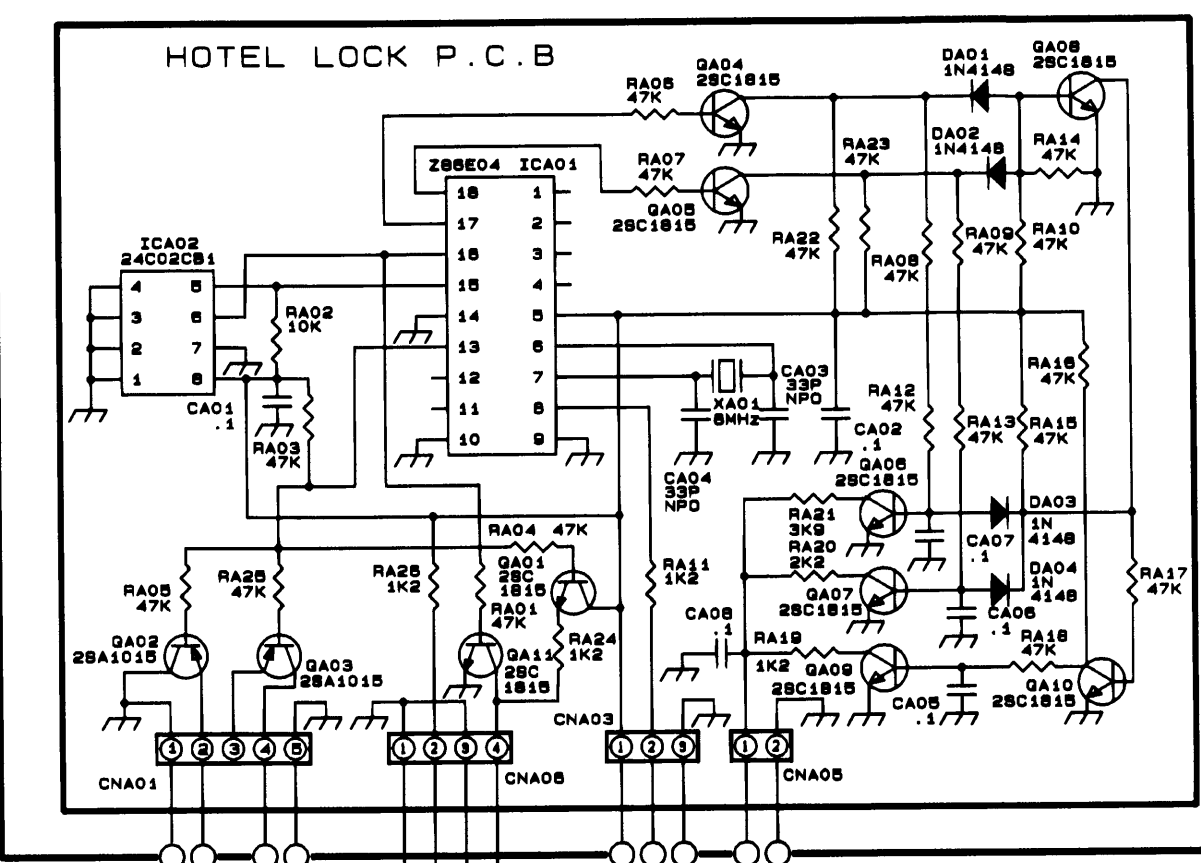
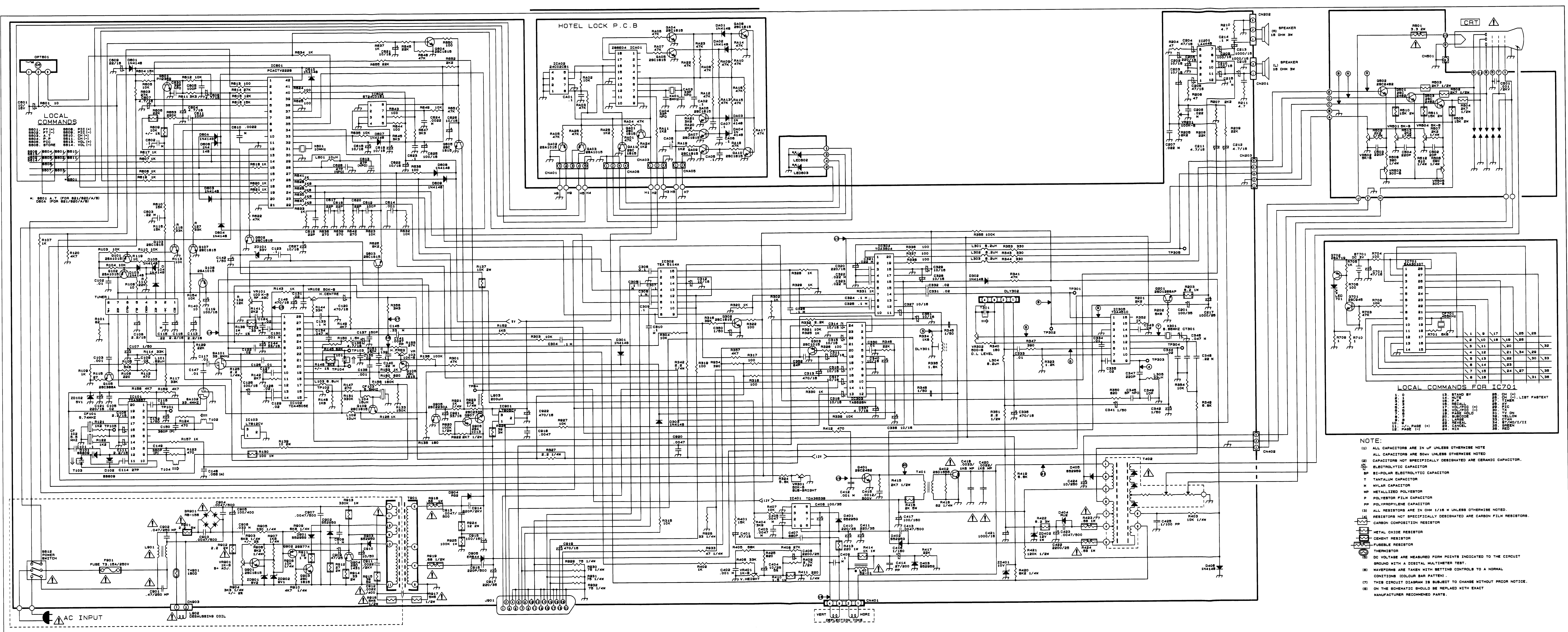
SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\\CPU322' (40P.)

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
517-303312-10	SELF-TAPPING SCREW 3 X 12 W/A W/H=7MM (HARDEN) FOR HEAT SINK (A) , (B) & (C)	3
524-932901-01	CRT MOUNTING SCREW 7 X 40 VP (HARDEN) FOR CRT MTG	4
540-020030-01	EYELET 2 X 3 MM 2-(X) (Y) ,2-L401,2-R414	16
540-020030-01	EYELET 2 X 3 MM 2-R416,1-Q402`C',2-FBT`1',`2',1-Q904`C',4-L901	0
580-101004-00	STAND OFF TWIST TIE #ST-3 FOR 2 DOUBLE INSULATION WIRE	1
580-101261-01	CABLE TIE L=100MM 5-CRT BOARD,2-DY,2-SPK.WIRE,2-FBT,3-PW.SW.	29
580-101261-01	CABLE TIE L=100MM 3-MAIN PCB WIRE,1-CN003,CN002,2-CN301,CN302	0
580-101261-01	CABLE TIE L=100MM 9-DEGAUSSING COIL MTG.	0
580-102261-00	CABLE TIE L=200MM W=3.5MM FOR DEGAUSSING COIL MTG.	4
580-103261-00	CABLE TIE L=300MM W=3.5MM FOR DEGAUSSING COIL MTG.	4
622-882802-00	FELT L240 X W17 X T0.5MM W/TAPE FOR REAR CABINET	5
630-115512-00	FIBRE WASHER 11 X 5.5 X 1.2 mm FOR STEREO BOARD	4
631-881301-00	FIBRE (FOR SHIELD PLATE)	1
744-881301-00	SPRING FOR C.R.T. MOUNTING 5.2 X 42 X 0.6MM	1
746-063101-00	TEST PIN:TOTAL LENGTH 18.6mm THK:0.8mm TP104,103	2
746-063101-01	AC LINE CORD PIN 2-AC LINE CORD,2-POWER SWITCH (X)(Y)	4
750-063101-00	SOLDERING LUG LEG:8X4MM FOR IC401,Q402,Q904	3
762-932001-00	MOUNTING CLIP FOR TELETEXT BOARD MTG.	2
766-686801-00	FUSE HOLDER	2
777-942101-00	SPRING IN 8.4 X L18 FOR POWER KNOB	1
779-921301-00	HEAT SINK FOR NICAM FOR IC901,IC103	1
779-932902-02	IRON HEAT SINK FOR IC201	1
781-882001-02	ALUMINIUM HEAT SINK (B) FOR Q402	1
781-942101-03	HEAT SINK (A) FOR Q904	1
781-942105-00	HEAT SINK (C) ASS'Y FOR IC401	1
783-881303-00	SHIELD PLATE #L-299	1

**MODEL NO: CT-M489ST**

**SYSTEM: P/B W/SC/1P.TT/G. STEREO/H-PHONE 240V SAA  
\'CPU322\' (40P.)**

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
783-881306-02	SHIELD CAN COVER (OUT DATE)	1
783-881313-01	SHIELD CAN	1
810-052204-14	POLYBAG 5" X 22" X 0.04MM W/RE-CYCLING MARK {P/O FOR AC LINE CORD MAT}	1
810-091504-13	POLYBAG 9" X 15" X 0.04MM W/ RE-CYCLING P.E.MARK FOR INSTRUCTION MANUAL	1
834-230802-00	RUBBER WASHER OD=23, ID=8, T=2 FOR CRT MTG	4
834-230805-00	RUBBER WASHER OD=23 ID=8 T=0.5 FOR CRT MTG (LOW)	2
840-011024-21	PAD CORD L240 X W10 X T1 MM W/TAPE FOR FRONT CABINET	6
840-051020-11	RUBBER PAD (UL 94VO) 1-FBT.,1-TRANSFORMER,1-BETWEEN FBT & HEAT SINK	3
929-942103-00	LED HOLDER BKT FOR LED 601,602,603	1
938-882001-00	SECAM BOARD HOLDER FOR STEREO BOARD	4
939-942101-00	POWER KNOB ADAPTOR	1
954-882100-00	AC LINE CORD CLIP	1
954-892001-00	HIGH VOLTAGE SPACER FOR CRT	1
977-882001-01	PUSH BUTTON - BLACK MOULDED	1
991-942110-01	POWER KNOB(B)ABS BLACK MOULDED	1



- NOTE:**
- ALL CAPACITORS ARE IN uF UNLESS OTHERWISE NOTED
  - CAPACITORS NOT SPECIFICALLY DESIGNATED ARE CERAMIC CAPACITORS
  - RESISTORS NOT SPECIFICALLY DESIGNATED ARE CARBON FILM RESISTORS
  - RESISTORS NOT SPECIFICALLY DESIGNATED ARE CARBON FILM RESISTORS
  - CARBON COMPOSITION RESISTOR
  - METAL OXIDE RESISTOR
  - CEMENT RESISTOR
  - FUSIBLE RESISTOR
  - THERMISTOR
  - DC VOLTAGE ARE MEASURED FROM POINTS INDICATED TO THE CIRCUIT GROUND WITH A DIGITAL MULTIMETER TEST.
  - WAVEFORMS ARE TAKEN WITH SETTING CONTROLS TO A NORMAL CONDITION (COLOUR BAR PATTERN).
  - THIS CIRCUIT DIAGRAM IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.
  - ON THE SCHEMATIC SHOULD BE REPLACED WITH EXACT MANUFACTURER RECOMMENDED PARTS.

<p><b>IC601 PACTV222S</b></p> <p>VTUNN 1 42 VDD VOL 2 41 STDBY BRI 3 40 BDA COLOUR 4 39 BCL CONTR 5 38 BYSTEN BAL/TOR/HUE 6 37 SOUND EFFECT BAND 0 7 36 SOUND OUTPUT BAND 1 8 35 RHOT APC 9 34 IDENT BND 10 33 RESET VTR 11 32 XTAL2 AV 12 31 XTAL1 KEYB0 13 30 DR1 KEYB1 14 29 DR0C1 KEYB2 15 28 DR0C2 KEYB3 16 27 VSYNC KEYB4 17 26 HSYNC KEYB5 18 25 PUL KEYB6 19 24 BLUE KEYB7 20 23 GREEN KEYB8 21 22 RED</p>	<p><b>IC701 SAA3010T</b></p> <p>X7 1 28 VDD B8H 2 27 X8 B8V 3 26 X8 Z1 4 25 X4 B8 5 24 X2 Z3 6 23 X2 XO DATA 7 22 X1 Data 8 21 X0 DR7 9 20 TP1 DR8 10 19 TP2 DR9 11 18 DRc DR4 12 17 DRD DR3 13 16 DR1 VBS 14 15 DR2</p>	<p><b>IC102 TDA4505E</b></p> <p>ABC TAKE OVER 1 28 DEP1 DEPENDANT OUTPUT/ FLYBACK INPUT VERT. DRIVE 2 27 HOR. DRIVE 3 26 VERT. FEEDBACK 4 25 TUNER AGC 5 24 GND 6 23 SUPPLY 7 22 VIF INPUT 8 21 VIF INPUT 9 20 DECODING CAPACITOR 10 19 APC OUTPUT 11 18 START HOR. DRc 12 17 AUDIO OUTPUT 13 16 SIF DECOUPLING 14 15</p>	<p><b>IC001 TDA3803A</b></p> <p>Wep 1 28 Pilot celller input signal AM identification signal Identification threshold Cmp bandpass filter bandpass filter Identification threshold Cmp external AP input Vref 11 18 Vref 12 17 Vp 13 16 mode indication output 14 15</p>	<p><b>IC303 TAB52EN</b></p> <p>AUG18 TV IN (L) 1 24 MUTE (L) 2 23 AUDIO TV OUT (L) 3 22 TV/EXT. SWITCHING 4 21 VIDEO TV IN (P) 5 20 VIDEO TV IN (L) 6 19 GND 7 18 GND 8 17 AUDIO TV OUT (R) 9 16 GND 10 15 VOL. 11 14 GND 12 13</p>	<p><b>IC101 TDA3857</b></p> <p>PH1P1 1 20 CABD 2 19 HATR 3 18 PHMR1 4 17 PHMR2 5 16 AP2 6 15 AP1 7 14 PH1R1 8 13 PH1R2 9 12 VC-R1 10 11</p>	<p><b>IC201 LA4445</b></p> <p>IN 1 1 IN 2 2 IN 3 3 GND 4 IN 5 5 IN 6 6 IN 7 7 OUT 8 8 VCC 9 OUT 1 10 B.S 11 GND 12</p>	<p><b>IC401 TDA3655B</b></p> <p>INPUT 1 GND 2 INPUT 3 GND 4 INPUT 5 NC 6 VP 7 Pwdback 8 VP 9</p>	<p><b>IC304 TDA3504</b></p> <p>BLUE OUTPUT 1 20 POSITIVE SUPPLY VOLT. (LEVEL) 2 19 BLUE STORAGE FOR BR1 3 18 GREEN STORAGE FOR BR1 4 17 SHOOTING PULSE INPUT 5 16 SHOOTING PULSE INPUT 6 15 PABT SWITCH FOR RBG INPUT 7 14 BLUE INPUT (EXT. SIGNAL) 8 13 GREEN INPUT (EXT. SIGNAL) 9 12 RED INPUT (EXT. SIGNAL) 10 11</p>	<p><b>IC901 L7805CV</b></p> <p>OUTPUT 2 GROUND 3 INPUT 1</p>	<p><b>IC103 L7812CV</b></p> <p>OUTPUT 2 GROUND 3 INPUT 1</p>	<p><b>IC602 ST24C01B1</b></p> <p>AO 1 8 AS 2 7 AR 3 6 VBS 4 5</p>	<p><b>IC305 TDA4510</b></p> <p>(-R-V) 1 18 (-B-V) 2 10 GND 3 14 DELAY LINE IN 4 13 DC 5 12 GND 6 11 VP 7 10 STABILIZATION 8 9</p>	<p><b>IC302 TEA5114A</b></p> <p>R1 INPUT 1 18 GND 2 15 R2 INPUT 3 14 GND 4 13 R3 INPUT 5 12 GND 6 11 R4 INPUT 7 10 R5 INPUT 8 9</p>	<p><b>IC002 TC4052BF</b></p> <p>OY 1 18 RY 2 18 Y-COM 3 14 Y-CK 4 13 Y 5 12 IN 6 11 YEE 7 10 YBB 8 9</p>	<p><b>GREEN OUTPUT</b></p> <p>GREEN OUTPUT 1 RED OUTPUT 2 GND (O V) 3 SBI CONTROL INPUT 4 CONTRAST CONTROL INPUT 5 COLOR DIFFERENCE INPUT-18V 6 COLOR DIFFERENCE INPUT-18V 7 NOT CONNECTED 8 SATURATION CONTROL INPUT 9 LUMINANCE INPUT 10</p>
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**CTM489**  
SAFETY CRITICAL DEVICE

ART-TECH VIDEO ENGINEERING LTD.  
 FILE: 07-0421/81/82/73  
 SCHEMATIC DIAGRAM: 48973  
 PAK PLANS: PAK  
 FILE NUMBER: 48973  
 PA: 2/2  
 REV: 1  
 DATE: 01/08/81