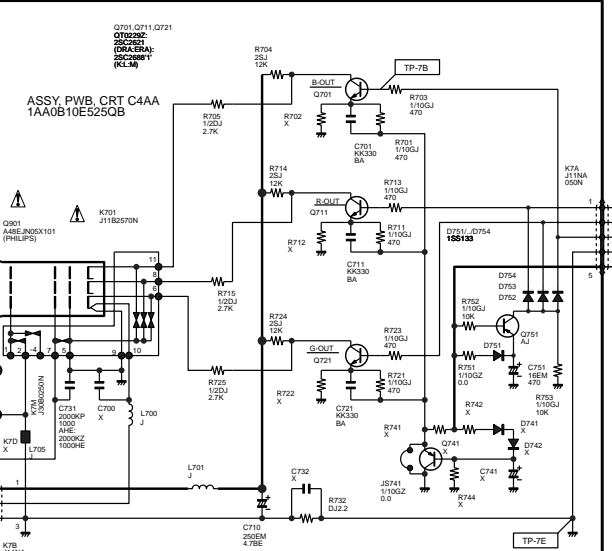


ASSY. PWB MAIN C4AA  
1AA0B10E525QA



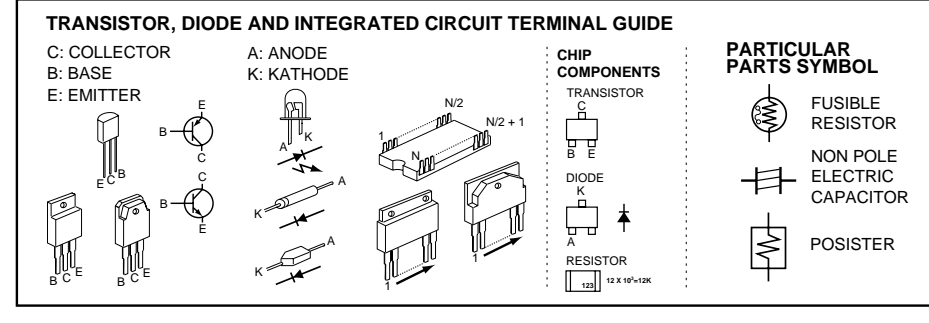
**THE SERVICE PRECAUTION:**  
The area enclosed by this line ( ) is directly connected with AC mains voltage. When servicing the area, connect an isolating transformer between TV receiver and AC line to eliminate hazard of electric shock.

**COLOUR TELEVISION**  
**LA4-A** CHASSIS SERIES  
SERVICE 20TC646-00/20TC646-01  
REF. NO. 20TC646-02

**PRODUCT SAFETY NOTICE:**  
Product safety should be considered when a component replacement is made in any area of a receiver.  
Components indicated by a mark in this circuit diagram show components whose values have special significance to product safety. It is particularly recommended that only parts specified on the part service manual be used for components replacement pointed out by the mark.

- CIRCUIT DIAGRAM NOTICE:**
- All resistance value are in ohms, K=1,000, M=1,000,000.
  - All resistance rated wattages are 1/6W unless otherwise noted.
  - Excepting electrolytic capacitors, all capacitance values of less than 1 are expressed in  $\mu$  F and more than 1 are pF.
  - All capacitance rated voltages are 50V unless otherwise noted.
  - All inductance values are in  $\mu$  H.
  - Voltage readings take with a "VTVM" are from point indicated chassis ground. Voltage readings taken by using PAL colour bar signal are with all controls at normal position. Some voltage may vary with signal strength.
  - Waveform were taken with PAL colour bar and controls adjusted for normal picture. Waveforms were taken by using a wide band oscilloscope and a low capacity probe.
  - This circuit diagram covers a basic or representative chassis only. There may be some components or partial circuit differences between the actual chassis and the circuit diagram.
  - Parts specified with "X" are not installed in this model.
  - Parts specified with "J" are just jumper wires.

11. Expression of capacitance and resistance in circuit diagrams.
- Capacitance (Example)**  
1000 C M 2000 D
- C: Characteristic
  - M: Capacitance value (220pF)
  - D: Allowable error ( $\pm 20\%$ )
  - K: Kind (Ceramic)
  - N: Rated voltage (1,000V)
- Resistance (Example)**  
1/2 N J 1.2
- N: Resistance value (1.2 $\Omega$ )
  - J: Allowable error ( $\pm 5\%$ )
  - M: Kind (M.carbon)
  - W: Rated wattage (1/2W)



12. List of replaceable transistors and diodes.

(PNP TR)	2SA608	2SA644	2SA1015	2SA933	2SA935	KS7A33C
Z	E,F	Q,R	O,Y,G	Q,R	Q,R	
Y	E,F	Q,R	O,Y,G	Q,R		
W	F	R	Y,G	R		
V	E,F	Q,R	O,Y,G	Q,R		Y,G
U	F	R	Y,G	R		G

(DIODE)

	DIODE
M	1S5176, 1S5133, GMA01
P	1S1553, 1S2076A, 1S2471, 1N4148
R	1S1555, 1S2473, 1S2076, DS442, 1N4148

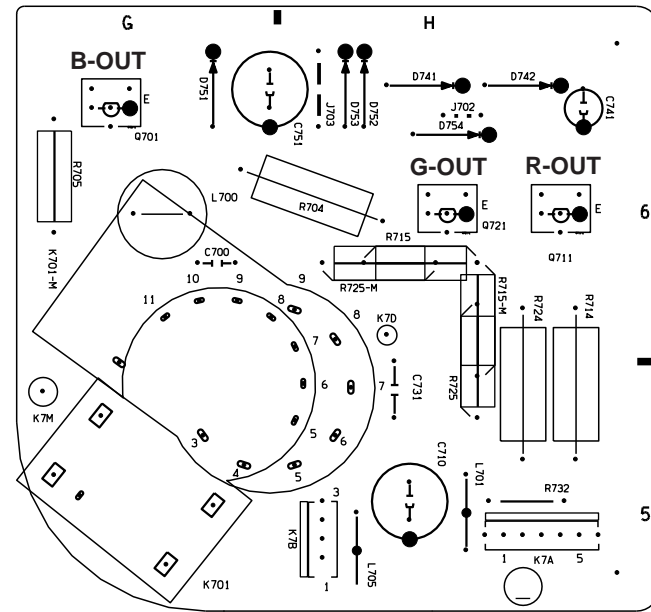
(NPN TR)

	2SC536	2SC945A	2SC1815	2SC1740	2SC1740S	KSC945C
A	E,F,G	P,Q,R	O,Y,G	Q,R,S	Q,R,S	
B	E,F,G	P,Q,R	O,Y,G	Q,R,S		
D	F,G	P,Q	Y,G	R,S		
F	F,G	P	G	R,S		
H	F,G	P,Q	Y,G	Q,R,S		Y,G
I	E,F,G	P,Q,R	O,Y,G	Q,R,S		Y,G
G	F,G	P	G	R,S		G

## Difference Parts List

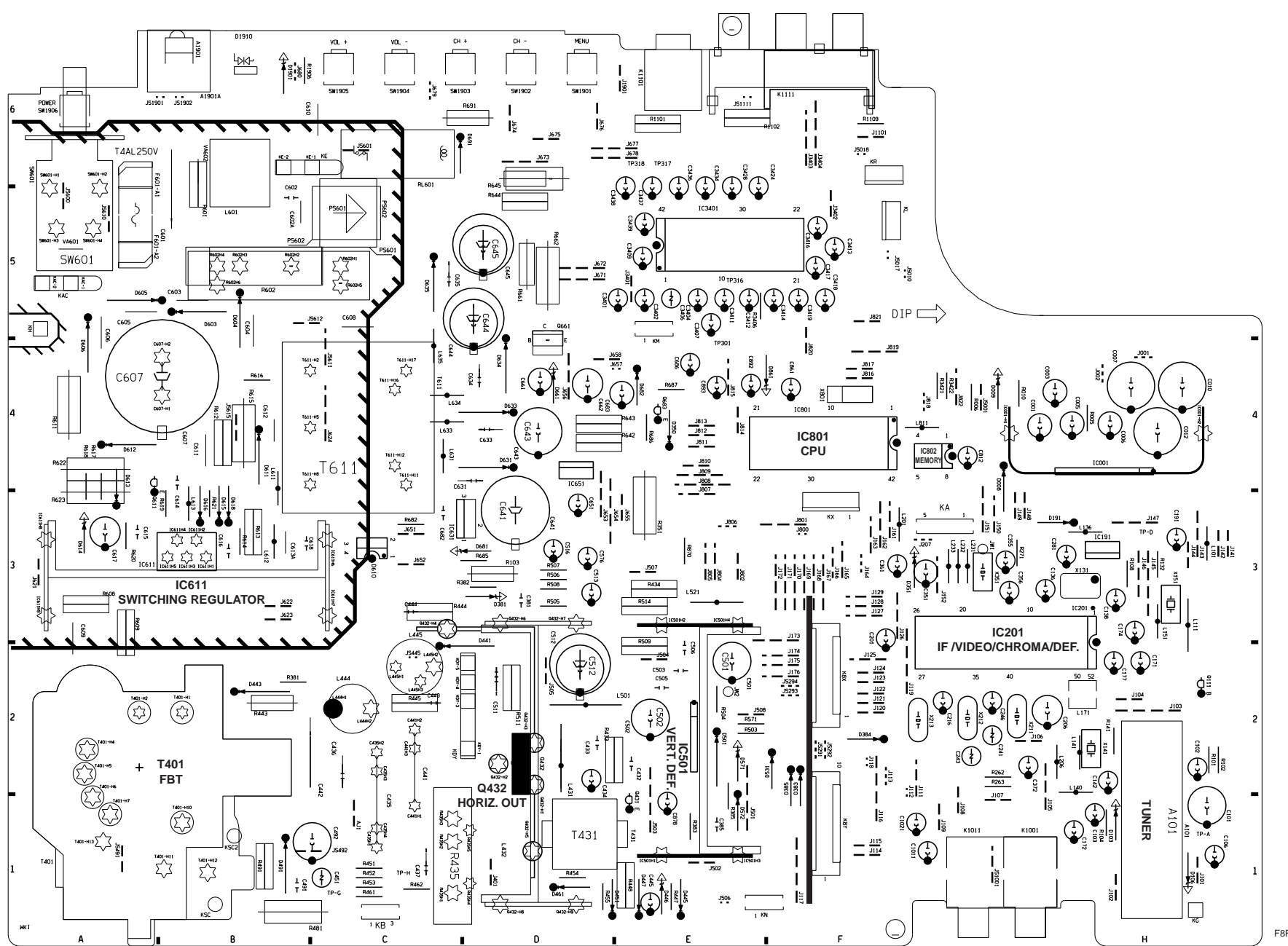
SERVICE REF. NO.	20TC646-00	20TC646-01	20TC646-02
LOCATION NO.	ASSY,PWB, MAIN C4AA 1AA0B10E525QA	ASSY,PWB, MAIN C4AAS 1AA0B10E525RA	ASSY,PWB, MAIN C4AAV 1AA0B10E525SA
C435	1500MH9600XK	1500MH8600XK	1500MH8200XH
C436	3000KK470NH; (CRD,CTB)	3000KK390NH; (CRD,CTB)	3000KK390NH; (CRD,CTB)
C441	200NJ0.47EAQ	200NJ0.36EAQ	200NJ0.33EAQ
C513	EM10	EM10	EK3.3AE
R435	7WK8.2I ; 7WK8.2V	7WK8.2I ; 7WK8.2V	7WK10I ; 7WJ10V
R481	1SJ3.9	2SJ1.5	2SJ1.5
R505	3.3K	2.7K	3.3K
R507	15K	15K	18K
R508	820	1.2K	1K
R509	1/2DJ1.8	1/2DJ2.2	1/2DJ2.2
R511	1SJ180	1SJ270	1SJ270
R514	1/2DJ1K	1/2DJ1.2K	1/2DJ1.2K
L444	L71B0270N	L71B0260N	AC0034 ; AC0034B
L445	AA0026;AA0026A	Not used	L1AA0042-
JS445	Not used	CUTTING WIRE	Not used
Q901	BXXAVB151BD-	BXXAVB122SCH-	BXXAVB032RCH-

## CRT BOARD (Component Location)



F8FE

## MAIN BOARD (Component Location)



F8FE

## Waveforms & Voltages

(On the Main Board)

IC201																				
Pin-1	0V	2 4.6V	3 0.8V	4 4.7V	5 2.7V	6 1.5V	7 1.5V	8 4.9V	9 2.4V											
10	4.6V	11 0.8V	12 2.7V	13 0V	14 4.7V	15 6.2V	16 6.1V	17 4.8V	18 2.6V											
19	2.4V	20 2.7V	21 4.7V	22 9.5V	23 2.6V	24 2.9V	25 5.8V	26 4.8V	27 1.0V											
28	2.6V	29 2.1V	30 2.6V	31 2.5V	32 3.2V	33 3.8V	34 1.6V	35 3.0V	36 2.1V											
37	0V	38 1.9V	39 3.1V	40 3.2V	41 1.4V	42 9.2V	43 2.2V	44 2.2V	45 3.4V											
46	2.8V	47 2.4V	48 2.4V	49 4.0V	50 4.0V	51 3.1V	52 5.8V													

IC191						IC611					
Pin-1	9.2V	2 0V	3 5.0V			Pin-1	0V	2 0V	3 323V	4 18.6V	5 0V

IC501							
Pin-1	0V	2 13.6V	3 26.1V	4 4.8V	5 4.8V	6 25.3V	7 3.1V

IC001									
Pin-1	7.8V	2 0V	3 7.6V	4 15.8V	5 7.8V	6 10.8V	7 1.5V	8 1.3V	9 0V
10	0V								

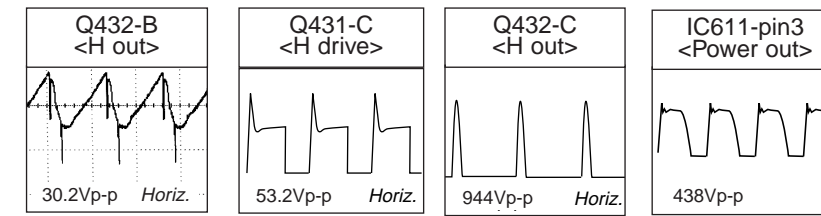
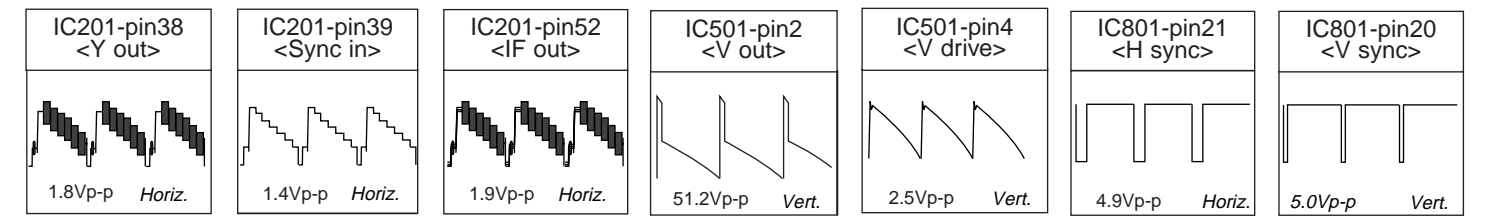
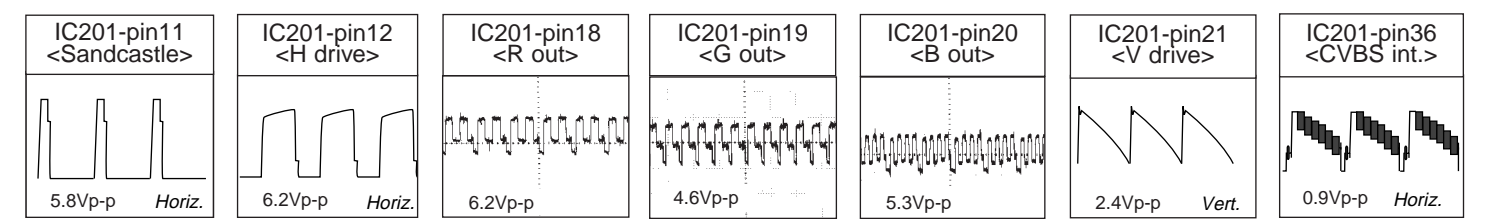
IC802								
Pin-1	0V	2 0V	3 0V	4 0V	5 5.0V	6 5.0V	7 0V	8 5.0V

IC801																		
Pin-1	4.9V	2 4.9V	3 4.9V	4 0V	5 0V	6 0V	7 5.0V	8 4.6V	9 0V									
10	1.3V	11 2.3V	12 5V	13 0V	14 2.5V	15 1.4V	16 0.1V	17 4.9V	18 2.9V									
19	2.7V	20 4.8V	21 4.0V	22 0V	23 0V	24 0V	25 0V	26 0V	27 4.9V									
28	4.9V	29 4.6V	30 4.5V	31 4.8V	32 5.0V	33 5.0V	34 4.4V	35 0V	36 0V									
37	4.9V	38 0V	39 0V	40 0V	41 0V	42 0V												

IC631				IC651			
Pin-1	130.1V	2 10.1V	3 0V	Pin-1	11.7V	2 0V	3 5.0V

Q001	Q1021	Q111	Q140	Q141	Q171	Q212	Q213	Q261	Q431	Q432	Q576	Q611
B 0V	B 4.7V	B 1.1V	B 5.8V	B 6.0V	B 3.7V	B 0.6V	B 0V	B 1.8V	B 0.4V	B 2.9V	B 0V	B 10.9V
C 8.1V	C 9.2V	C 0.4V	C 0V	C 0V	C 9.2V	C 0V	C 0V	C 4.7V	C 11.4V	C 133.3V	C 5V	C 11.5V
E 0V	E 4.0V	E 6.2V	E 6.4V	E 6.6V	E 2.8V	E 0V	E 0V	E 2.5V	E 0V	E 2.9V	E 0V	E 11.5V

Q661	Q681	Q682	Q684	Q861	Q871	Q881	Q886	Q887
B 9.9V	B 0V	B 0V	B 0.7V	B 4.4V	B -0.1V	B -6V	B 0.7V	B 4.9V
C 10V	C 9.9V	C 5.3V	C 0V	C 4.9V	C 4.7V	C 4.0V	C 0V	C -1V
E 9.3V	E 0V	E 0V	E 0V	E 5.0V	E 0V	E 0V	E 0V	E 5V



(On the CRT Board)

Q701	Q711	Q721	Q751
B 2.1V	B 2.1V	B 1.9V	B 9.4V
C 135.5V	C 135.6V	C 139.6V	C 0V
E 1.7V	E 1.7V	E 1.5V	E 9.1V

