

SERVICE MANUAL Colour Television

Model No. CM29FS2

(Saudi/Kuwait)

Service Ref. No. CM29FS2-00



Specifications

Power Source AC110-240V, 50/60Hz.
Colour System PAL, SECAM, NTSC4.43, NTSC, PAL 60Hz
Television System B/G, D/KK', I, M/M
Channel Coverage VHF: E2-E12, R1-R12, K1-K9, J1-J12, A2-A13
 UHF: 21-69, A14-A69, J13-J62
 CATV: S1-S41, X, Y, Z, Z+1, Z+2

Video IF 38.0 MHz

Aerial Input Impedance . 75Ω

Ext. Terminals

Video inputs: Phono jack × 2 (1.0Vp-p, impedance 75Ω)
 S-Video Input × 1 (Din 4 pin, Separate Y/C Signals Input)
 DVD Input: Component Video Jack-Y × 1 (1.0Vp-p, impedance 75Ω)
 Component Video Jack CB/CR × 1 (0.7Vp-p, impedance 75Ω)
 Audio inputs: Phono jack (R/L) × 3 (436mVrms, impedance more than 40KΩ)
 Video monitor output: Phono jack × 1 (1.0Vp-p, 75Ω)
 Audio monitor outputs: Phono jack(R/L) × 1(436mVrms, Impedance less than 600Ω)
 Headphone jack: Mini Stereo jack × 1

Speaker Main speaker: 6 cm × 12 cm × 2 pcs.
 Tweeter: Ø5 cm × 2 pcs.

Sound Output Main speaker: 7.5W + 7.5W (RMS)

Dimensions 803 (W) × 578 (H) × 418 (D)mm

Weight approx. 47.5 Kg

Specifications subject to change without notice

Product Code: 111379453

Original Version

Chassis Series: FB1-B

Give complete "SERVICE REF. NO." for parts order or servicing. It is shown on the rating plate at the cabinet back of the unit.

This T.V. receiver will not work properly in foreign countries where the television transmission system and power source differ from the design specifications. Refer to the specification table.

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Safety Notice

SAFETY PRECAUTIONS

- | | |
|--|--|
| 1: An isolation transformer should be connected in the power line between the receiver and the AC line when a service is performed on the primary of the converter transformer of the set. | 3: When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as, control knobs, adjustment covers or shields, barriers, isolation resistor-capacitor networks etc.. Before returning any television to the customer, the service technician must be sure that it is completely safe to operate without danger of electrical shock. |
| 2: Comply with all caution and safety-related notes provided on the cabinet back, inside the cabinet, on the chassis or the picture tube. | |

X-RADIATION PRECAUTION

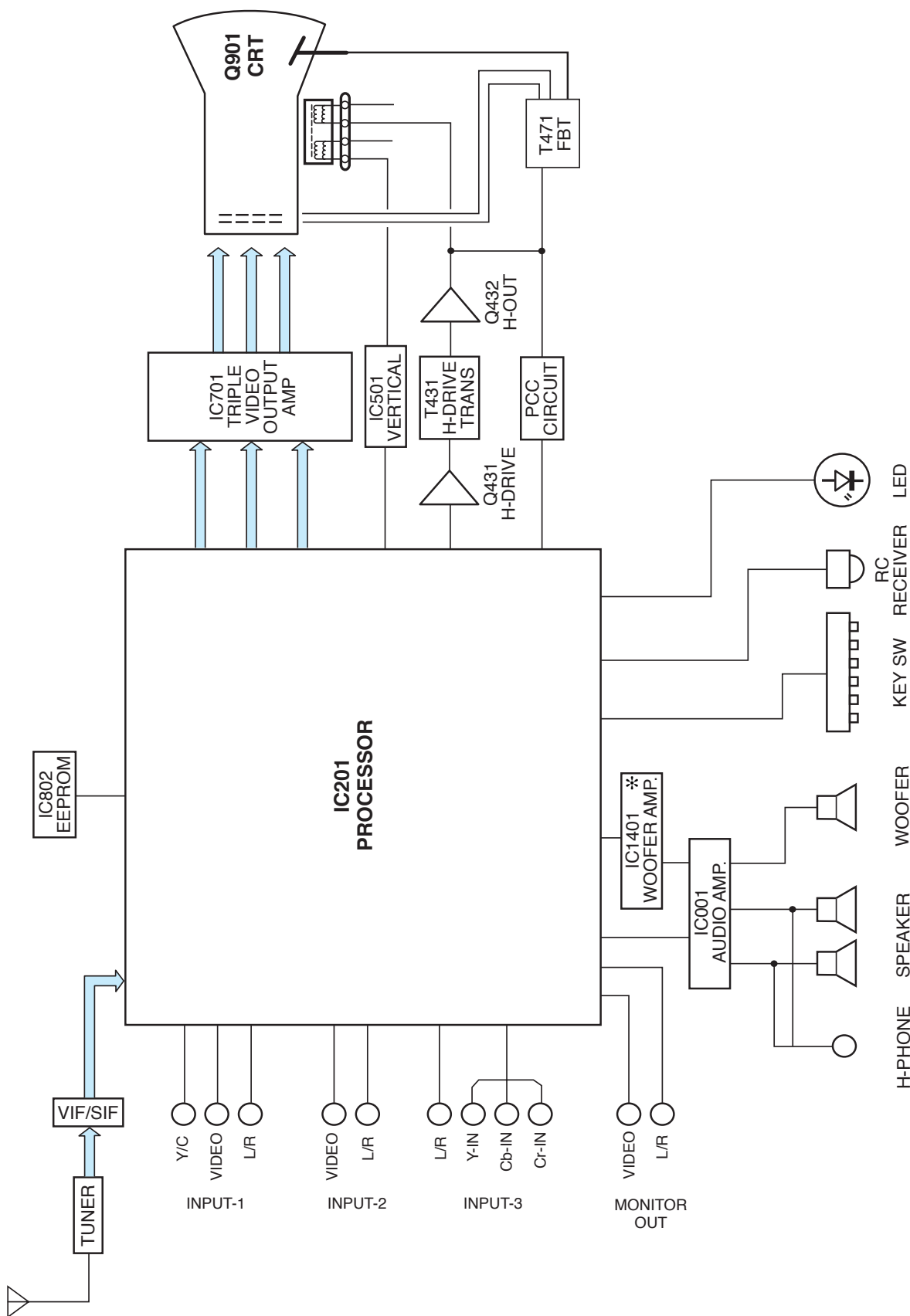
The primary source of X-RADIATION in television receiver is the picture tube. The picture tube is specially constructed to limit X-RADIATION emissions. For continued X-RADIATION protection, the replacement tube must be the same type as the original including suffix letter. Excessive high voltage may produce potentially hazardous X - RADIATION. To avoid such hazards, the high voltage must be maintained within specified limit. Refer to this service manual, high voltage adjustment for specific high voltage limit. If high voltage exceeds specified limits, take necessary corrective action. Carefully follow the instructions for + B1 volt power supply adjustment, and high voltage check to maintain the high voltage within the specified limits.

PRODUCT SAFETY NOTICE

Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by mark  in the parts list and the schematic diagram designate components in which safety can be of special significance. It is particularly recommended that only parts designated on the parts list in this manual be used for component replacement designated by mark . No deviations from resistance wattage or voltage ratings may be made for replacement items designated by mark .

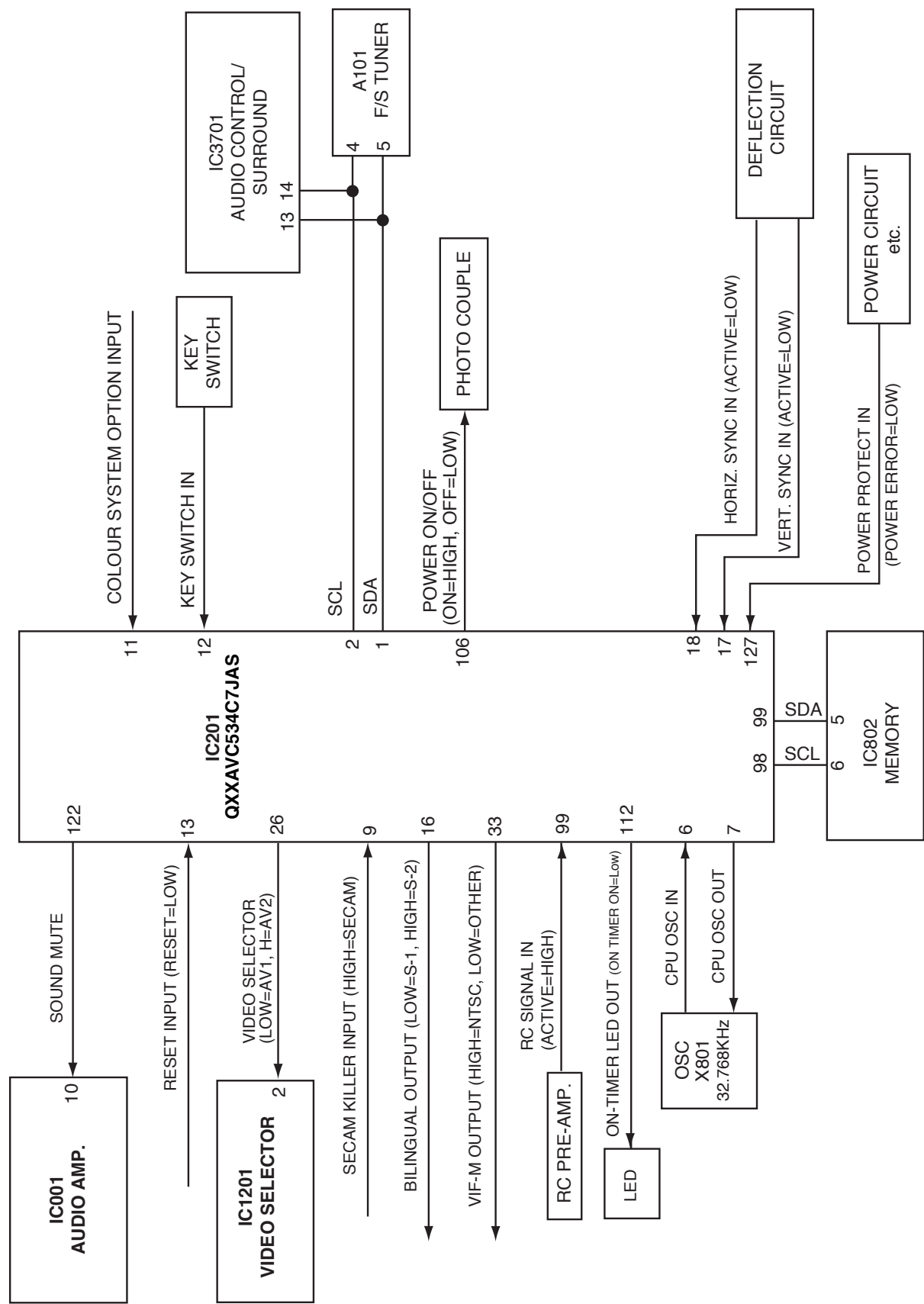
Chassis Block Diagrams

* IC1401<Woofer Pre-Amp. IC> is not used



IC Block Diagrams

System Control

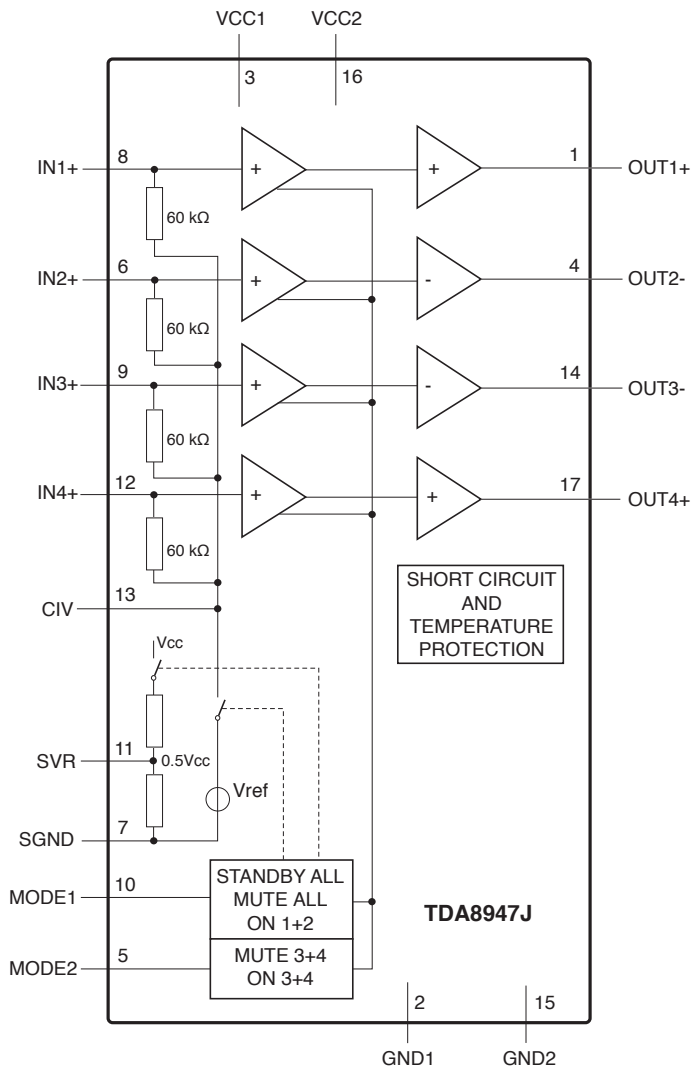


IC201 < CPU/IF/Video/Chroma/Def.> QXXAVC534C7JAS

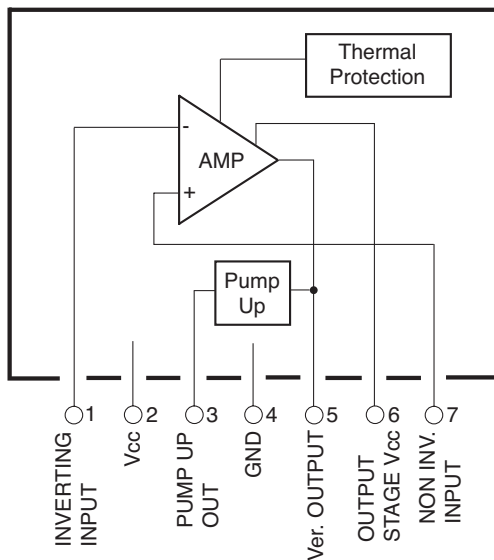


IC Block Diagrams

IC001 < Audio AMP.> TDA8947J/N3



IC501 < Vertical Output > LA78041



CPU Port Functions

Pin No.	Function Name	Function
1	VSSP2	Ground
2	VSSC4	Ground
3	VDDC4	Digital supply to SDACs (1.8V)
4	VDDA3(3.3V)	Supply (3.3V)
5	VREF_POS_LSL	Positive reference voltage SDAC (3.3V)
6	VREF_NEG_LSL+HPL	Negative reference voltage SDAC (0 V)
7	VREF_POS_LSR+HPR	Positive reference voltage SDAC (3.3 V)
8	VREF_NEG_HPL+HPR	Negative reference voltage SDAC (0 V)
9	VREF_POS_HPR	Positive reference voltage SDAC (3.3V)
10	XTALIN	Crystal oscillator input
11	XTALOUT	Crystal oscillator output
12	VSSA1	Ground
13	VGUARD/SWIO	V-guard input / I/O switch
14	DECDIG	Decoupling digital supply
15	VP1	1st supply voltage TV-processor (+5 V)
16	PH2LF	Phase-2 filter
17	PH1LF	Phase-1 filter
18	GND1	Ground 1 for TV-processor
19	SECPLL	SECAM PLL decoupling
20	DECBG	Bandgap decoupling
21	EWD/AVL ⁽¹⁾	East-West drive output or AVL capacitor
22	VDRB	Vertical drive B output
23	VDRA	Vertical drive A output
24	VIFIN1	IF Input 1
25	VIFIN2	IF Input 2
26	VSC	Vertical sawtooth capacitor
27	IREF	Reference current input
28	GNDIF	Ground connection for IF amplifier
29	SIFIN1/DVBIN1 (2)	SIF input 1 / DVB input 1
30	SIFIN2/DVBIN2 (2)	SIF input 2 / DVB input 2
31	AGCOUT	Tuner AGC output
32	EHTO	EHT/overvoltage protection input
33	AVL/SWO/SSIF/ REFO/REFIN ⁽²⁾⁽³⁾	Automatic Volume Levelling / swith output / sound IF input / subcarrier reference output / external reference signal input for I signal mixer for DVB operation
34	AUDIOIN5L	Audio-5 input (left signal)
35	AUDIOIN5R	Audio-5 input (right signal)
36	AUDOUTSL	Audio output for SCART/CINCH (left signal)
37	AUDOUTSR	Audio output for SCART/CINCH (right signal)
38	DECSDEM	Decoupling sound demodulator
39	QSSO/AMOUT /AUDEEM ⁽²⁾	QSS intercarrier output / AM output / deemphasis (front-end audio out)
40	GND2	Ground 2 for TV processor
41	PLLIF	IF-PLL loop filter
42	SIFAGC/DVBAGC ⁽²⁾	AGC sound IF / internal-external AGC for DVB applications

Pin No.	Function Name	Function
43	DVBO/IFVO/FMRO ⁽²⁾	Digital Video Broadcast output / IF video output / FM radio output
44	DVBO/FMRO ⁽²⁾	Digital Video Broadcast output / FM radio output
45	VCC8V	8 Volt supply for audio switches
46	AGC2SIF	AGC capacitor second sound IF
47	VP2	2 nd supply voltage TV processor (+5 V)
48	IFVO/SVO/CVBSI ⁽²⁾	IF video output / selected CVBS output / CVBS input
49	AUDIOIN4L	Audio-4 input (left signal)
50	AUDIOIN4R	Audio-4 input (right signal)
51	CVBS4/Y4	CVBS2/Y4 input
52	C4	Chroma-4 input
53	AUDIOIN2L/SSIF ⁽³⁾	Audio 2 input (left signal) / sound IF input
54	AUDIOIN2R	Audio 2 input (right signal)
55	CVBS2/Y2	CVBS2/Y2 input
56	AUDIOIN3L	Audio 3 input (left signal)
57	AUDIOIN3R	Audio 3 input (right signal)
58	CVBS3/Y3	CVBS3/Y3 input
59	C2/C3	Chroma-2/3 input
60	AUDOUTLSL	Audio output for audio power amplifier (left signal)
61	AUDOUTLSR	Audio output for audio power amplifier (left signal)
62	AUDOUTHPL	Audio output for headphone channel (left signal)
63	AUDOUTHPR	Audio output for headphone channel (Right signal)
64	CVBSO/PIP	CVBS / PIP output
65	SVM	Scan velocity modulation output
66	FBISO/CSY	Flyback input/sandcastle output or composite H/V timing output
67	HOUT	Horizontal output
68	VSScomb	Ground connection for comb filter
69	VDDcomb	Supply voltage for comb filter (5V)
70	VIN (R/P _R IN2/CX)	V-input for YUV interface (2 nd R input / PR input or C _x input)
71	UIN (B/PBIN2)	U-input for YUV interface (2 nd B input / PB input)
72	YIN (GYIN2/CVBS-Yx)	Y-input for YUV interface (2 nd G input / Y input or CVBS/Yx input)
73	YSYNC	Y-input for sync separator
74	YOUT	Y-output (for YUV interface)
75	UOUT (INSSW2)	U-output for YUV interface (2 nd RGB / YP _B P _R insertion input)
76	VOUT (SW01)	V-output for YUV interface (general purpose switch output)
77	INSSW3	3 rd RGB / YP _B P _R insertion input
78	R/P _R IN3	3 rd R input / P _R input

CPU Port Functions

Pin No.	Function Name	Function
79	G/YIN3	3 rd G input / Y input
80	B/P _B IN3	3 rd B input / P _B input
81	GND3	Ground 3 for TV-processor
82	VP3	3 rd supply for TV processor (5V)
83	BCLIN	Beam current limiter input
84	BKLIN	Black current input
85	RO	Red output
86	GO	Green output
87	BO	Blue output
88	VDDA1	Analog supply for TCG μ -Controller and digital supply for TV-processor (+3.3V)
89	VREFAD_NEG	Negative reference voltage (0 V)
90	VREFAD_POS	Positive reference voltage (3.3 V)
91	VREFAD	Reference voltage for audio ADCs (3.3/2 V)
92	GNDA	Ground
93	VDDA(1.8V)	Analogue supply for audio ADCs (1.8V)
94	VDDA2(3.3)	Supply voltage SDAC (3.3 V)
95	VSSadc	Ground for video ADC and PLL
96	VDDadc(1.8)	Supply voltage video ADC and PLL
97	INT0/P0.5	External interrupt 0 or port 0.5 (4 mA current sinking capability for direct drive of LEDs)
98	P1.0/INT1	Port 1.0 or external interrupt 1
99	P1.1/T0	Port 1.1 or Counter/Timer 0 input
100	VDDC2	Digital supply to core (1.8 V)
101	VSSC2	Ground
102	P0.4/I2SWS	Port 0.4 or I ² S word select
103	P0.3/I2SCLK	Port 0.3 or I ² S clock
104	P0.2/I2SDO2	Port 0.2 or I ² S digital output 2
105	P0.1/I2SDo1	Port 0.1 or I ² S digital output 1
106	P0.0/I2SDI1/O	Port 0.0 or I ² S digital input 1 or I ² S digital output
107	P1.3/T1	Port 1.3 or Counter/Timer 1 input
108	P1.6/SCL	Port 1.6 or I ² C-bus clock line
109	P1.7/SDA	Port 1.7 or I ² C-bus data line
110	VDDP(3.3V)	Supply to periphery and on-chip voltage regulator (3.3V)
111	P2.0/TPWM	Port 2.0 or Tuning PWM output
112	P2.1/PWM0	Port 2.1 or PWM0 output
113	P2.2/PWM1	Port 2.2 or PWM1 output
114	P2.3/PWM2	Port 2.3 or PWM2 output
115	P3.0/ADC0	Port 3.0 or ADC0 input
116	P3.1/ADC1	Port 3.1 or ADC1 input
117	VDDC1	Digital supply to core (+1.8V)
118	DECV1V8	Decoupling 1.8V supply
119	P3.2/ADC2	Port 3.2 or ADC2 input

Pin No.	Function Name	Function
120	P3.3/ADC3	Port 3.3 or ADC3 input
121	VSSC/P	Digital ground for μ -Controller core and periphery
122	P2.4/PWM3	Port 2.4 or PWM3 output
123	P2.5/PWM4	Port 2.5 or PWM4 output
124	VDDC3	Digital supply to core (1.8V)
125	VSSC3	Ground
126	P1.2/INT2	Port 1.2 or external interrupt 2
127	P1.4/RX	Port 1.4 or UART bus
128	P1.5/TX	Port 1.5 or UART bus

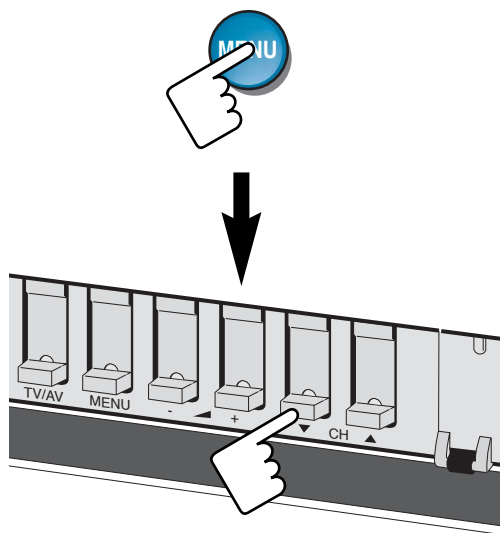
Option Setting

After replacing the Memory IC (IC802)

The memory IC (IC802), stores the option data of TV set and service adjustments data for each circuit, therefore, when the memory IC is replaced, it should be programmed to the following settings and “ SERVICE ADJUSTMENT” on pages 15 to 16.

1) To enter to the Option Mode

Press and hold the **MENU** on the remote control and **Programme down button (CH▼)** on the front panel of the TV. The option window will appear on the screen.



OPTION	
PLUG & PLAY	ON
WELCOME TEXT	OFF
AUTO VOLUME	OFF
TEXT NO SIGNAL	ON
AFC	ON

Option Mode

2) To set the Option Mode

Select the desired option item by pressing the **Programme down** or **up button**.
To switch the option mode, use the **Level up** or **down** button.
The data which is set in the option mode is stored into the memory IC automatically.

The following table shows the available option items and default setting mode.

Option Mode	Mode	Description & Note
PLUG & PLAY	ON or OFF	Plug & Play mode, default “ON”
WELCOME TEXT	ON or OFF	Display message when first set up, default “OFF”
AUTO VOLUME	ON or OFF	Auto volume, default “OFF”
TEXT NO SIGNAL	ON or OFF	When no received signal, execution, default “ON”
AFC	ON or OFF	Automatic Frequency Control (AFC) available, default “ON”

3) Exit from the Service Mode

Press the **Menu button** or turn off the TV set by using the mains switch.

Service Adjustments with Replacing Memory IC(IC802)

Note: The CPU (IC201) and memory IC (IC802) store the service adjustments data and controls data for each circuit. When the Memory IC (IC802) is replaced, some of the service adjustments should be readjusted to obtain the best performance. The necessary service adjustments are carried out by using the RC handset. Please set up the TV set with following steps [1] to [2].

[1] Initializing Procedure

1. Put a new memory IC.
2. Turn on the TV set.
3. Enter to the Service Mode as explanation on next page. Select “**002 INIT TV 0**” mode, then change to “**1**” by pressing **Volume + button** on Remote Control.
4. When initialised the memory IC are completed, TV set will in stand by mode, all of the setting data (option data and service adjustment data) stored in the IC are reset to the default value. It is necessary to set the option settings and readjust the service adjustments (listed on page 11-13) and to re-tune all the channels.

This completes the initialization of memory IC.

Following shows the initialized contents of memory data by this procedure.

- Plug & Play	: No executed
- Inhibit Data	: Cancelled
- Ch Skip Data	: Cancelled
- Swap Data	: Cancelled
- Surround	: OFF
- Woofer	: OFF
- Sound Volume Data	: 12/63 steps
- Bass Data	: 32/63 steps
- Treble Data	: 32/63 Steps
- Colour System	: AUTO
- Sound System	: BG

[2] Required Service Adjustments

Readjust the following service adjustments.

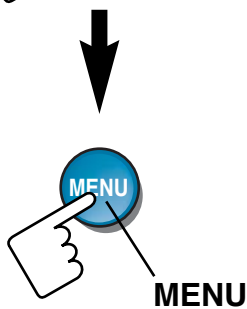
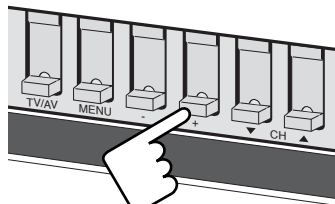
<u>Adjustments</u>	<u>Service Mode No. & Item</u>
Vertical slope	Item 015, Vert. Slope
Vertical shift	Item 016, Vert. Shift
Vertical amplitude	Item 017, Vert. Ampl.
Vertical-S correction	Item 018, S-Corr.
EW width	Item 021, EW Width
Horizontal shift	Item 022, Hor. Shift
- - -	- - -

Further adjustment please refer to page 12 ~ 14.

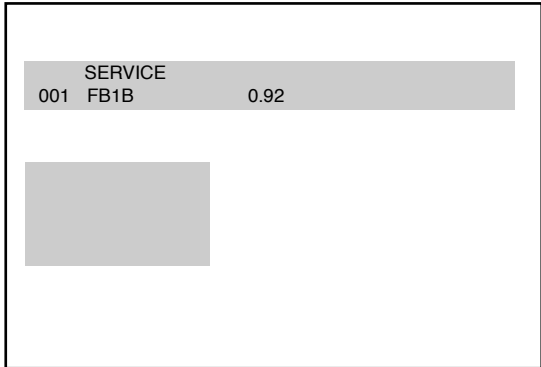
Service Adjustments with Replacing Memory IC(IC802)

1) To enter to the Service Mode

1. Press and hold the **Volume +** button on the front of TV set and press the **Menu** button on the Remote Control.



Display for Software Version Information



2. Press the **Programme up / down** button to select the mode required. Then press the **Volume +** button to adjust.



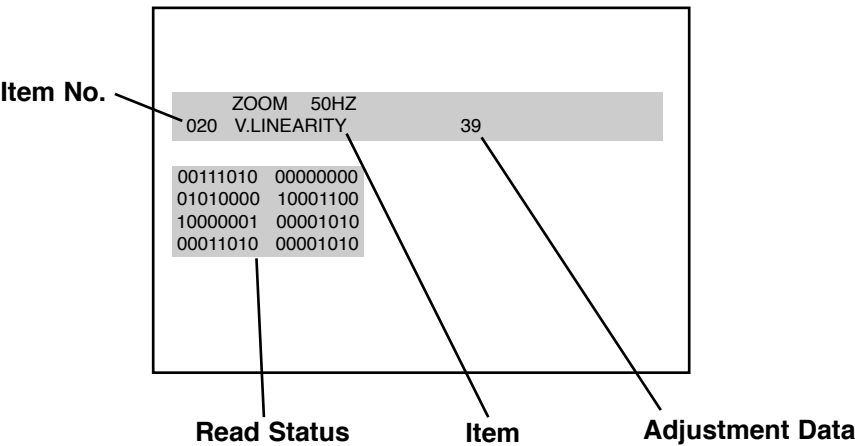
01→02→03→04→05....96..



96→95→94→93→92....01..

Example

Display for [V.Linearity] Vertical Linearity adjustment



3) Exit from the Service Mode

- Press the **Menu** button or turn off the TV set by using the mains switch.

Service Adjustments with Replacing Memory IC(IC802)

Following table shows the initial values which have been stored in the CPU ROM, and items for the service adjustments.

Service mode adjustments table in CPU ROM

No.	ITEM	DATA RANGE	INITIAL SETUP DATA	DESCRIPTION
01	FB1C/FB1B	x,y	0.3	Software version information
02	Init TV	0 - 1	0	Initialise NVM
03	ISP Mode	0 - 1	0	Set the TV in ISP mode
04	PWT	-	00000	Power on time
05	DDLE	0 - 1	1	
06	Cut Off	0 - 63	42	Cut off
07	VSD	On/Off	000	Vertical scan disable (1 line adj.)
08	VG2	On/Off	000	Adjustment Vg2 voltage
10	DCXO	0 - 127	48	DXCO adjustment
11	DXCO Auto	On/Off	000	Automatic DXCO adjustment (Adjust in NICAM)
12	TUBE-TYPE	0 - 1	1	Picture tube type (0=16:9, 1=4:3)
13	OP WIDE ZOOM	0 - 1	0	0=No Zoom mode, 1=with zoom mode
14	TRACK. MODE	0 - 1	0	Track. Mode (HCO)
15	VERT. ZOOM	0 - 63	27	Vertical Zoom
16	VERT. SLOPE	0 - 63	35	Vertical Slope
17	VERT. SHIFT	0 - 63	30	Vertical Shift
18	VERT. AMPL.	0 - 63	30	Vertical Amplitude
19	S-CORR	0 - 63	32	S-Correction
20	V.LIN.CTRL	0 - 2	0	Vertical Linearity Control
21	V. LINEARITY	0 - 63	30	Vertical Linearity
22	EW WIDTH	0 - 63	36	East West Width
23	HOR. SHIFT	0 - 63	30	Horizontal Shift
24	EW PARABOLA	0 - 63	35	East West Parabola Width
25	TRAPEZIUM	0 - 63	10	East West Trapezium
26	UC PARABOLA	0 - 63	40	East West Upper Corner Parabola
27	LC PARABOLA	0 - 63	45	East West Lower Corner Parabola
28	HOR. BOW	0 - 63	35	Horizontal Bow
29	PARALLEL	0 - 63	37	Horizontal Parallelogram
30	VERT. SCROLL	0 - 63	32	Vertical Scroll
31	H BLK SW	0 - 1	1	R G B Blanking Mode
32	WBF	0 - 15	7	Timing of wide blanking front(WBF)
33	WBR	0 - 15	10	Timing of wide blanking rear(WBR)
34	OSVE	0 - 1	0	Black current measuring lines in overscan
35	EVB	0 - 1	0	Extended Vertical Blanking
36	NA VX	0 - 255	4	Natural Vertical Zoom (50Hz)
37	NA EWW	0 - 255	6	Natural EW Width (50Hz)
38	NA HSH	0 - 255	0	Natural Horizontal Shift (50Hz)
39	NA PW	0 - 255	3	Natural Parabola/Width (50Hz)
40	NA TP	0 - 255	251	Natural Trapezium (50Hz)
41	NA UCP	0 - 255	4	Natural Upper Corner Parabola (50Hz)
42	NA LCP	0 - 255	1	Natural Lower Corner Parabola (50Hz)
43	NA HB	0 - 255	253	Natural Horizontal Bow (50Hz)
44	NA HP	0 - 255	0	Natural Horizontal Parallelogram (50Hz)
45	NA VSC	0 - 255	0	Natural Vertical Scroll (50Hz)

No.	ITEM	DATA RANGE	INITIAL SETUP DATA	DESCRIPTION
46	Z4 VX	0 - 255	11	Zoom 14:9 Vertical Zoom (50Hz)
47	Z4 PW	0 - 255	2	Zoom 14:9 Parabola/Width (50Hz)
48	Z4 UCP	0 - 255	4	Zoom 14:9 Upper Corner Parabola (50Hz)
49	Z4 LCP	0 - 255	255	Zoom 14:9 Lower Corner Parabola (50Hz)
50	Z4 VSC	0 - 255	248	Zoom 14:9 Vertical Scroll (50Hz)
51	T4 VX	0 - 255	0	Title In 14:9 Vertical Zoom (50Hz)
52	T4 VS	0 - 255	127	Title In 14:9 Vertical Slope (50Hz)
53	T4 PW	0 - 255	0	Title In 14:9 Parabola/Width (50Hz)
54	T4 UCP	0 - 255	2	Title In 14:9 Upper Corner Parabola (50Hz)
55	T4 LCP	0 - 255	252	Title In 14:9 Lower Corner Parabola (50Hz)
56	T4 VSC	0 - 255	7	Title In 14:9 Vertical Scroll (50Hz)
57	Z6 VX	0 - 255	21	Zoom 16:9 Vertical Zoom (50Hz)
58	Z6 PW	0 - 255	0	Zoom 16:9 Parabola/Width (50Hz)
59	Z6 UCP	0 - 255	0	Zoom 16:9 Upper Corner Parabola (50Hz)
60	Z6 LCP	0 - 255	253	Zoom 16:9 Lower Corner Parabola (50Hz)
61	Z6 VSC	0 - 255	0	Zoom 16:9 Vertical Scroll (50Hz)
62	T6 VX	0 - 255	8	Title In 16:9 Vertical Zoom (50Hz)
63	T6 VS	0 - 255	4	Title In 16:9 Vertical Scroll (50Hz)
64	T6 PW	0 - 255	0	Title In 16:9 Parabola/width (50Hz)
65	T6 UCP	0 - 255	2	Title In 16:9 Upper Corner Parabola (50Hz)
66	T6 LCP	0 - 255	253	Title In 16:9 Lower Corner Parabola (50Hz)
67	T6 VSC	0 - 255	7	Title In 16:9 Vertical Scroll (50Hz)
68	NO VX	0 - 255	0	Normal Vertical Zoom (50Hz)
69	NO EWW	0 - 255	241	Normal EW Width (50Hz)
70	NO HSH	0 - 255	2	Normal Horizontal Shift (50Hz)
71	NO PW	0 - 255	0	Normal Parabola/Width (50Hz)
72	NO UCP	0 - 255	255	Normal Upper Corner Parabola (50Hz)
73	NO LCP	0 - 255	252	Normal Lower Corner Parabola (50Hz)
74	NO VSC	0 - 255	0	Normal Vertical Scroll (50Hz)
75	NO HBL	0 - 1	1	Normal RGB Blanking Mode (50Hz)
76	NO WBF	0 - 255	0	Normal Timing of Wide Blanking Front (WBF) 50Hz
77	NO WBR	0 - 255	26	Normal Timing of Wide Blanking Front (WBF) 50Hz
78	SQ OSVE	0 - 1	0	Black Current Measuring Lines in Overscan (50Hz)
79	SQ EVB	0 - 1	0	Extended Vertical Blanking (50Hz)
80	I01 TRACK MODE	0 - 1	0	Track Mode(HCO)
81	I02 VERT.ZOOM	0 - 255	1	Vertical Zoom
82	I03 VERT.SLOPE	0 - 255	255	Vertical Slope
83	I04 VERT.SHIFT	0 - 255	5	Vertical Shift
84	I05 VERT.AMPL.	0 - 255	1	Vertical Amplitude
85	I06 S-CORR	0 - 255	0	S-Correction
86	I07 V.LIN.CTRL.	0 - 255	0	Vertical Linearity Control
87	I08 V. LINEARITY	0 - 255	8	Vertical Linearity
88	I09 EW WIDTH	0 - 255	1	East West Width

Service Adjustments with Replacing Memory IC(IC802)

Following table shows the initial values which have been stored in the CPU ROM, and items for the service adjustments.

Service mode adjustments table in CPU ROM

No.	ITEM	DATA RANGE	INITIAL SETUP DATA	DESCRIPTION
89	I10 HOR. SHIFT	0 - 255	5	Horizontal Shift
90	I11 EW PARABOLA	0 - 255	2	East West Parabola Width
91	I12 TRAPEZIUM	0 - 255	252	East West Trapezium
92	I13 UC PARABOLA	0 - 255	0	East West Upper Corner Parabola
93	I14 LC PARABOLA	0 - 255	0	East West Lower Corner Parabola
94	I15 HOR. BOW	0 - 255	3	Horizontal Bow
95	I16 PARALLEL	0 - 255	0	Horizontal Parallelogram
96	I17 VERT. SCROLL	0 - 255	0	Vertical Scroll
97	I18 H BLK SW	0 - 1	1	RGB Blanking Mode (60Hz)
98	I19 H BLK L	0 - 255	254	Timing of wide blanking front(WBF) 60Hz
99	I20 H BLK R	0 - 255	3	Timing of wide blankingRear(WBF) 60Hz
100	I21 OSVE	0 - 1	0	Black Current Measuring Lines in overscan (60Hz)
101	I22 EVB	0 - 1	1	Extended Vertical Blanking
102	NA VX	0 - 255	5	Natural Vertical Zoom (60Hz)
103	NA EWW	0 - 255	6	Natural EW Width (60Hz)
104	NA HSH	0 - 255	251	Natural Horizontal Shift (60Hz)
105	NA PW	0 - 255	1	Natural Parabola/Width (60Hz)
106	NA TP	0 - 255	1	Natural Trapezium (60Hz)
107	NA UCP	0 - 255	0	Natural Upper Corner Parabola (60Hz)
108	NA LCP	0 - 255	5	Natural Lower Corner Parabola (60Hz)
109	NA HB	0 - 255	0	Natural Horizontal Bow (60Hz)
110	NA HP	0 - 255	0	Natural Horizontal Parallelogram (60Hz)
111	NA VSC	0 - 255	0	Natural Vertical Scroll (60Hz)
112	Z4 VX	0 - 255	10	Zoom 14:9 Vertical Zoom (60Hz)
113	Z4 PW	0 - 255	0	Zoom 14:9 Parabola/Width (60Hz)
114	Z4 UCP	0 - 255	254	Zoom 14:9 Upper Corner Parabola (60Hz)
115	Z4 LCP	0 - 255	2	Zoom 14:9 Lower Corner Parabola (60Hz)
116	Z4 VSC	0 - 255	0	Zoom 14:9 Vertical Scroll (60Hz)
117	T4 VX	0 - 255	4	Title In 14:9 Vertical Zoom (60Hz)
118	T4 VS	0 - 255	3	Title In 14:9 Vertical Slope (60Hz)
119	T4 PW	0 - 255	1	Title In 14:9 Parabola/Width (60Hz)
120	T4 UCP	0 - 255	0	Title In 14:9 Upper Corner Parabola (60Hz)
121	T4 LCP	0 - 255	0	Title In 14:9 Lower Corner Parabola (60Hz)
122	T4 VSC	0 - 255	7	Title In 14:9 Vertical Scroll (60Hz)
123	Z6 VX	0 - 255	12	Zoom 16:9 Vertical Zoom (60Hz)
124	Z6 PW	0 - 255	0	Zoom 16:9 Parabola/Width (60Hz)
125	Z6 UCP	0 - 255	254	Zoom 16:9 Upper Corner Parabola (60Hz)
126	Z6 LCP	0 - 255	1	Zoom 16:9 Lower Corner Parabola (60Hz)
127	Z6 VSC	0 - 255	5	Zoom 16:9 Vertical Scroll (60Hz)
128	T6 VX	0 - 255	10	Title In 16:9 Vertical Zoom (60Hz)
129	T6 VS	0 - 255	1	Title In 16:9 Vertical Scroll (60Hz)
130	T6 PW	0 - 255	0	Title In 16:9 Parabola/width (60Hz)
131	T6 UCP	0 - 255	0	Title In 16:9 Upper Corner Parabola (60Hz)
132	T6 LCP	0 - 255	0	Title In 16:9 Lower Corner Parabola (60Hz) (WBF) 50Hz

No.	ITEM	DATA RANGE	INITIAL SETUP DATA	DESCRIPTION
133	T6 VSC	0 - 255	12	Title In 16:9 Vertical Scroll (50Hz)
134	NO VX	0 - 255	0	Normal Vertical Zoom (50Hz)
135	NO EWW	0 - 255	245	Normal EW Width (50Hz)
136	NO HSH	0 - 255	255	Normal Horizontal Shift (50Hz)
137	NO PW	0 - 255	3	Normal Parabola/Width (50Hz)
138	NO UCP	0 - 255	0	Normal Upper Corner Parabola (50Hz)
139	NO LCP	0 - 255	0	Normal Lower Corner Parabola (50Hz)
140	NO VSC	0 - 255	0	Normal Vertical Scroll (50Hz)
141	NO HBL	0 - 1	1	Normal RGB Blanking Mode (50Hz)
142	NO WBF	0 - 255	3	Normal Timing of Wide Blanking Front (WBF) 50Hz
143	NO WBR	0 - 255	1	Normal Timing of Wide Blanking Front (WBR) 50Hz
144	SQ OSVE	0 - 1	0	Black Current Measuring Lines in Overscan (50Hz)
145	SQ EVB	0 - 1	0	Extended Vertical Blanking (50Hz)
146	CL	0 - 15	13	Cathode Drive Level
148	EVG	On/Off	000	Enable vertical Guard
149	DFL	Active/Disable	000	Disable Flash Protection
150	FBC	0 - 1	0	Fixed Beam Current
151	XDT	Protection/Detection	000	X-Ray Detection
152	OP PICTROTATION	0 - 1	0	0=Picture Rot. N/A, 1=Pict. Rot. Available
153	RGB	0 - 15	10	OSD RGB Brightness For Normal Mode
154	WPR-N	0 - 63	20	White Point R For Normal (Not Secam)
155	WPG-N	0 - 63	20	White Point G For Normal (Not Secam)
156	WPB-N	0 - 63	20	White Point B For Normal (Not Secam)
157	BLOR-N	0 - 63	32	Black Level Offset R For Normal (Not Secam)
158	BLOG-N	0 - 63	32	Black Level Offset G For Normal (Not Secam)
159	WPR-S	0 - 255	0	White Point R For Secam
160	WPG-S	0 - 255	0	White Point G For Secam
161	WPB-S	0 - 255	0	White Point B For Secam
162	BLOR-S	0 - 255	0	Black Level Offset R For Secam
163	BLOG-S	0 - 255	0	Black Level Offset G For Secam
164	WPR-D	0 - 255	252	White Point R for DVD Input
165	WPG-D	0 - 255	252	White Point G for DVD Input
166	WPB-D	0 - 255	253	White Point B for DVD Input
167	BLOR-D	0 - 255	0	Black Level Offset R for DVD Input
168	BLOG-D	0 - 255	226	Black Level Offset G for DVD Input
169	BR RF PN	0 - 255	15	RF PAL/NTSC Offset
170	BR AV	0 - 255	16	AV PAL/NTSC Offset
171	BR DVD	0 - 255	10	DVD PAL/NTSC Offset
172	BR S	0 - 255	16	Secam Offset
173	CN RF PN	0 - 255	248	RF PAL/NTSC Offset
174	CN AV	0 - 255	255	AV PAL/NTSC Offset
175	CN DVD	0 - 255	255	DVD PAL/NTSC Offset
176	CN S	0 - 255	253	Secam Offset

Service Adjustments with Replacing Memory IC(IC802)

Following table shows the initial values which have been stored in the CPU ROM, and items for the service adjustments.

Service mode adjustments table in CPU ROM

No.	ITEM	DATA RANGE	INITIAL SETUP DATA	DESCRIPTION
177	CN 43	0 - 255	250	Wide Mode 4:3 Offset
178	SH RF PN	0 - 255	10	RF PAL/NTSC Offset
179	SH AV	0 - 255	10	AV PAL/NTSC Offset
180	SH DVD	0 - 255	10	DVD PAL/NTSC Offset
181	SH S	0 - 255	10	Secam Offset
182	CL RF P	0 - 255	5	RF PAL/NTSC Offset
183	CL AVP	0 - 255	5	AV PAL Offset
184	CL N	0 - 255	0	NTSC RF/Video Offset
185	CL S	0 - 255	0	Secam Offset
186	CL DVD	0 - 255	7	DVD PAL/NTSC Offset
187	CL 43	0 - 255	0	Wide Mode 4:3 Offset
188	PV-BR-DY	0 - 63	31	Preset Video Dynamic Brightness
189	PV-CT-DY	0 - 63	63	Preset Video Dynamic Contrast
190	PV-CL-DY	0 - 63	36	Preset Video Dynamic Colour
191	PV-SH-DY	0 - 63	54	Preset Video Dynamic Sharpness
192	PV-BR-ST	0 - 63	32	Preset Video Standard Brightness
193	PV-CT-ST	0 - 63	50	Preset Video Standard Contrast
194	PV-CL-ST	0 - 63	32	Preset Video Standard Colour
195	PV-SH-ST	0 - 63	35	Preset Video Standard Sharpness
196	PV-BR-EC	0 - 63	31	Preset Video Eco Brightness
197	PV-CT-EC	0 - 63	40	Preset Video Eco Contrast
198	PV-CL-EC	0 - 63	26	Preset Video Eco Colour
199	PV-SH-EC	0 - 63	31	Preset Video Eco Sharpness
200	PV-BR-GA	0 - 63	36	Preset Video Game Brightness
201	PV-CT-GA	0 - 63	25	Preset Video Game Contrast
202	PV-CL-GA	0 - 63	36	Preset Video Game Colour
203	PV-SH-GA	0 - 63	31	Preset Video Game Sharpness
204	CLO S	0 - 1	0	
205	DTR S	0 - 1	0	
206	Y-SECAM	0 - 15	11	Y-Delay Adjusment for SECAM
207	YNTSC	0 - 15	6	Y-Delay Adjusment for NTSC
208	YPAL	0 - 15	4	Y-Delay Adjustment for PAL
209	YAV	0 - 15	4	Y-Delay Adjustment for AV
211	YSVHS	0 - 15	4	Y-Delay Adjustment for S-VHS
212	ACL	On/Off	000	Automatic Colour Limiting
213	MUS	Japan	1	NTSC Matrix
214	PWL CONTROL	On/Off	0	Peak White Limiting On/Off Control
215	PWL	0 - 15	8	Peak White Limiting DAC Control
216	CB	On/Off	1	Chroma Bandpass Centre Freq.
217	CB RF P	On/Off	0	CB Setting for RF PAL
218	CB AV N	On/Off	0	CB Setting for AV NTSC
219	CBS	On/Off	1	Control Sequence Beam Current Limiting
220	BSD	On/Off	1	Black Stretch Depth
221	BPS	On/Off	000	Bypass Chroma Base-Band
222	FCO	On/Off	000	Forced Colour On

No.	ITEM	DATA RANGE	INITIAL SETUP DATA	DESCRIPTION
223	SVMA	0 - 1	1	Scavem Output Signal
224	SVM	00 ns 25 ns 50 ns 75 ns 100 ns 125 ns 150 ns 175 ns	00	Delay of RGB output to SVM output
225	VMA	Off 0.8 Vp-p 1.2 Vp-p 1.8 Vp-p	2	Amplitude of SVM output
226	SMD	Off Video TXT/OSD Video/OSD	1	Scan Velocity Modulation Mode
227	SVM-OSD-PW	0 - 3	3	OSD Scavem Pulse Width
228	SMD-OSD-TM	0 -7	2	OSD Scavem Time
229	PeakFreq PAL443	0 - 3	3	No Function. Peaking Centre Frequency
230	PeakFreqAV	0 -3	3	Peaking Centre Frequency Default
231	SoftClipevel	0% above PWL 5% above PWL 10% above PWL Off	000	Soft Clipping Level
232	BLUE BACK MUTE	0=Off 1=Black Back 2=Blue Back	0	Blue Back Mute
233	TXT MAX	0 - 15	15	OSD RGB Brightness for TEXT BRIGHTNESS MAX
234	TXT CEN	0 - 15	8	OSD RGB Brightness for TEXT BRIGHTNESS CENTER
235	TXT MIN	0 - 15	0	OSD RGB Brightness for TEXT BRIGHTNESS MIN
236	Blackstretch	0 - 1	1	Black Stretch Functionality (0=Disable, 1=Enable)
237	Bluestretch	0 - 1	000	Blue Stretch Functionality (0=Disable, 1=Enable)
238	Whitestretch	0 - 3	3	White Stretch Setting (0=cold, 1=normal, 2=warm, 3=)
239	SoftClipper	0 - 3	000	Set Soft Clipper
240	PeakRatio0VShot	0 - 3	3	Set Peaking Ratio
241	Tint Def	0 - 63	32	Default Tint Value
242	Tint NT	0 - 255	0	
243	OSO	On/Off	1	Switch-Off in Vertical Overscan
244	FSL	Noise Detector 60%	000	Forced Slicing Level for Vertical sync
245	HP2	0 - 1	000	Synchronisation of OSD/TEXT display (0=Phi 1, 1=Phi 2)
246	MR VOL L	0 - 255	52	Master Volume Lower 8 bits
247	MR VOL H	0 - 7	4	Master Volume Upper 3 bits
248	EQU_SUB_BASS	0 - 63	31	Equalizer Adjustment for Bass
249	EQU_SUB_TREBLE	0 - 63	38	Equalizer Adjustment for Treble
250	OP AUDIO CONFIG	0 - 2	2	0=Mono only functions. 1=No Audio SSD available Audio SSD functions available but no stereo decoder. 2=Full Audio SSD
253	OP MONOURAL	0 - 1	0	0=AV Stereo, 1=Mono.
254	OP BASS EXP	0 - 1	1	0=No Bass Exp./Woofer, 1=with Bass Exp./Woofer
255	OP WOOFER	0 - 1	0	Activated/Deactivated Bass Expander Feature Menu. (0=Bass Expander, 1=Woofer)

Service Adjustments with Replacing Memory IC(IC802)

Following table shows the initial values which have been stored in the CPU ROM, and items for the service adjustments.

Service mode adjustments table in CPU ROM

No.	ITEM	DATA RANGE	INITIAL SETUP DATA	DESCRIPTION
256	OP SURROUND	0 - 1	1	Activated / Deactivated Surround feature. (0=No Surround, 1=with Surround.)
257	OP MPP	0 - 1	0	Activated / Deactivated MPP feature. (0=No MPP, 1=with MPP.)
258	OP EQUALIZER	0 - 1	1	Activated / Deactivated Equalizer Menu. (0=No Equalizer, 1=with Equalizer.)
260	AVL-LRF	0 - 15	9	
261	AVL-LAV	0 - 15	5	
262	AVL-WGT	0 - 1	1	AVL Weight
263	AVL-MOD	0 - 5	2	AVL Delay Time
264	DVB-CA	0 - 255	000	
265	DVB-CL	0 - 255	000	
266	DVB-CH	0 - 15	8	
267	OP-CLIP	0 - 4	000	Clip Management
268	DEC-LEV	0 - 31	15	FM Stereo decoder output level adjust
269	MONO-LEV	0 - 31	15	Mono Output Level Adjust
270	NIC-LEV	0 - 31	16	Nicam Output Level Adjust
271	ADC-AM-L	0 - 31	15	External AM Level Adjust
272	ADC-AV-L	0 - 31	15	External AV Level Adjust
273	E2D	FE AV	000	Selection of Audio Output Signal on AUDEEM pin
274	FFI	0 - 1	000	Fast Filter IF-PLL
275	PA-BA-MU	0 - 63	56	Preset Audio Bass Music
276	PA-TR-MU	0 - 63	46	Preset Audio Treble Music
277	PA-B1-MU	0 - 63	63	Preset Audio Equalizer Band 1 (100Hz) Music
278	PA-B2-MU	0 - 63	47	Preset Audio Equalizer Band 2 (300Hz) Music
279	PA-B3-MU	0 - 63	32	Preset Audio Equalizer Band 3 (1000Hz) Music
280	PA-B4-MU	0 - 63	47	Preset Audio Equalizer Band 4 (3000Hz) Music
281	PA-B5-MU	0 - 63	63	Preset Audio Equalizer Band 5 (8000Hz) Music
282	PA-BA-TA	0 - 63	20	Preset Audio Bass Talk
283	PA-TR-TA	0 - 63	56	Preset Audio Treble Talk
284	PA-B1-TA	0 - 63	32	Preset Audio Equalizer Band 1 (100Hz) Talk
285	PA-B2-TA	0 - 63	42	Preset Audio Equalizer Band 2 (300Hz) Talk
286	PA-B3-TA	0 - 63	52	Preset Audio Equalizer Band 3 (1000Hz) Talk
287	PA-B4-TA	0 - 63	42	Preset Audio Equalizer Band 4 (3000Hz) Talk
288	PA-B5-TA	0 - 63	32	Preset Audio Equalizer Band 5 (8000Hz) Talk
289	PA-BA-NO	0 - 63	32	Preset Audio Bass Normal
290	PA-TR-NO	0 - 63	32	Preset Audio Treble Normal
291	PA-B1-NO	0 - 63	32	Preset Audio Equalizer Band 1 (100Hz) Normal
292	PA-B2-NO	0 - 63	32	Preset Audio Equalizer Band 2 (300Hz) Normal
293	PA-B3-NO	0 - 63	32	Preset Audio Equalizer Band 3 (1000Hz) Normal
294	PA-B4-NO	0 - 63	32	Preset Audio Equalizer Band 4 (3000Hz) Normal
295	PA-B5-NO	0 - 63	32	Preset Audio Equalizer Band 5 (8000Hz) Normal
296	DSG	0 - 1	1	Gain Audio --> Out
297	FMWS	0 - 3	1	Window Size for FM Demodulator
298	AGN	0 - 1	000	FM Sound Output Gain
299	CV2	0 - 1	0	
300	OVMADAPT	0 - 1	1	
301	OVMTHR	0 - 15	3	
302	ASD SC1 THR	0 - 31	0	Threshold for detection of first sound carrier (SC1)
303	CHSE	0 - 3	3	

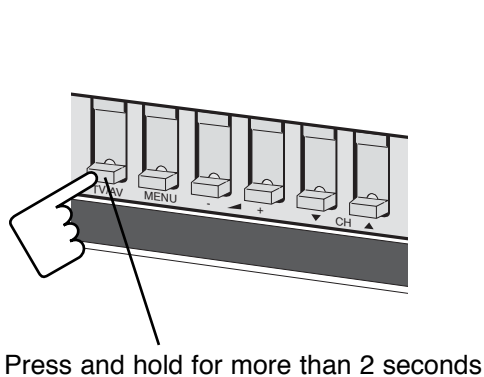
No.	ITEM	DATA RANGE	INITIAL SETUP DATA	DESCRIPTION
305	AGC Speed	0 - 3	1	IF AGC Speed
306	AGC Take Over	0 - 63	26	AGC Take Over also used as TOP when an internal AGC tuner is used.
307	OIF	0 - 63	32	Correction for DC Offset in the IF-PLL
308	IF	0 - 7	3	PLL Demodulator Frequency
309	GD	0 - 1	0	Group Delay CVBS1
310	IFO	0 - 7	0	Set Condition IFV0 Pin4344
314	AKB	On/Off	000	Black Current Stabilisation
315	OP TELETEXT	0 - 1	1	Activated / Deactivated Teletext features (0=No Teletext, 1=with.)
327	PMUTE AKB	0 - 255	40	
328	PMUTE DEF	0 - 255	15	
329	SVO	IF / CVBS	1	Selected Video Output
330	BPB	0 - 1	000	Bypass Internal Sound Bandpass Filter
331	OP DVD INPUT	0 - 1	1	(0=No DVD Input, 1=with DVD Input.)
332	OP WSS 4:3 MODE	0 - 1	1	Option Zoom Mode (Auto Position) if there is no WSS or no scart middle voltage. (0=No WSS, Natural Wide, 1=No WSS, Normal Wide.)
333	OP SCART INPUT	0 - 2	0	(0=No Scart Input, 1=with 1 Scart Input, 2=with 2 Scart Input.)
334	TXT-H-POS	0 - 63	6	Option Zoom Mode (Auto Position) if there is no WSS or no Scart middle Voltage
338	OSVE AV	0 - 1	0	OSVE AV
347	NLEL	0 - 255	100	Nicam Lower Error Limit
348	NUEL	0 - 255	200	Nicam Upper Error Limit
349	L HI CUT	0 - 63	26	
350	TEXT EW OFFSET	0 - 255	4	
351	INH EW OFFSET	0 - 255	5	
352	OPTION SVM MENU	0 - 1	1	

Dealer Mode

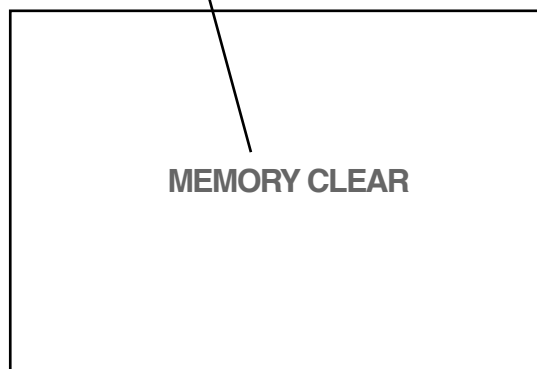
Cautions to the dealer!!

When the TV will distributed to the market, it should be reset all received channel by following these procedure.

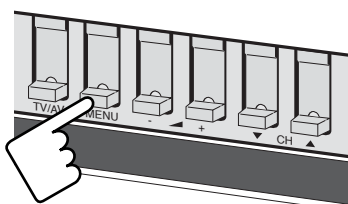
1. Press the **TV/AV button** on the TV set for a about 2 seconds until “MEMORY CLEAR” is displayed.



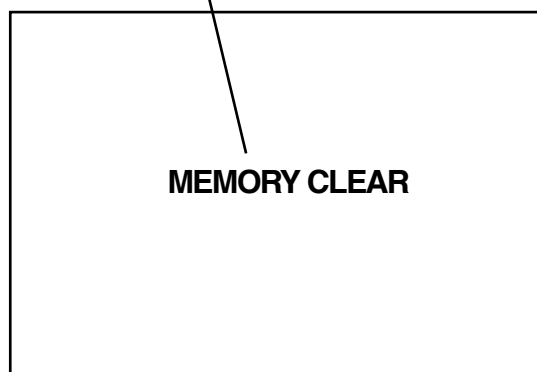
(displayed in yellow colour)



2. Press the **Menu button** on the TV set while the above On-Screen Display is still on the screen to reset all received channel. The display will changed in red colour.



(displayed in red colour)



3. Wait for a view seconds until the TV is not receive the broadcasting signal. Then turn off the TV.

Note: When the dealer mode is executed, all received channels, picture settings and audio settings will be reset.

Adjustments

IMPORTANT NOTICE

Do not attempt to adjust the following service adjustments except when adjustments are required in servicing otherwise it may cause loss of performance and product safety.

+B VOLTAGE ADJUSTMENT

- (1) Connect a DC voltmeter to TP-B and the ground.
- (2) Tune the receiver to an active channel and synchronized picture. Select NATURAL picture mode by pressing the **Picture mode selection** button on the remote control.
- (3) Adjust voltage to $140 \pm 0.5V$ DC by using VR641.

AGC ADJUSTMENT

NOTE: Do not attempt this adjustment with weak signal.

- (1) connect digital voltmeter to TP-A and GND.
- (2) Tune the receiver to most clearest (or strongest) VHF station in your area. Set the brightness and contrast controls to maximum. Set the colour control to minimum.
- (3) Enter to the service mode item No. 188 "AGC TAKE OVER"
- (4) Press the **Volume (+)** or **Volume (-)** button to adjust voltage to be $3.25 \pm 0.25V$ DC.

FOCUS ADJUSTMENT

- (1) Receive a monochrome circular pattern.
- (2) Set the brightness to normal and contrast to maximum.
- (3) By using FOCUS VR on the F.B.T., adjust focus control for well defined canning lines.

GREY SCALE ADJUSTMENT

SCREEN ADJUSTMENT

- (1) Receive cross hatch pattern.
- (2) Set the picture mode to Dynamic.
- (3) Enter to the service mode item No. 08 "VG2".
- (4) Turn screen VR on F.B.T. from min. to max., then the display will change from below to above. Turn back the screen VR to min. side, appear below with OK is displayed then stop turning.

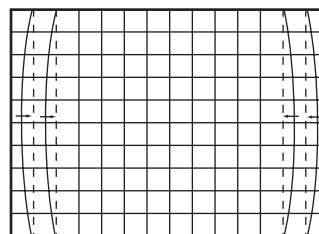
WHITE ADJUSTMENT

- (1) Receive circular pattern.
- (2) Set the picture mode to Dynamic.
- (3) Enter to the service mode "Red" item No. 64 "WPR-N".
- (4) Adjust white balance by **Volume (+)** or **Volume (-)** button.
- (5) Enter to the service mode "Green" in item No. 65 "WPG-N".
- (6) Adjust white balance by **Volume (+)** or **Volume (-)** button.
- (7) Enter to the service mode "Blue" in item No. 66 "WPB-N".
- (8) Adjust white balance by **Volume (+)** or **Volume (-)** button.

PCC ADJUSTMENT

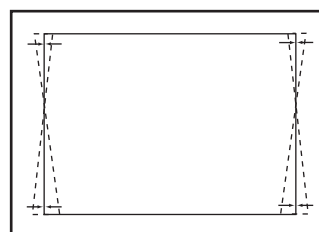
PCC ADJUSTMENT

- (1) Receive cross hatch pattern, set the picture mode to Natural.
- (2) Enter to the service mode item No. 23 "EW PARABOLA".
- (3) Press the **Volume (+)** or **Volume (-)** button to adjust the vertical line to be straight.



TRAPEZOID ADJUSTMENT

- (1) Receive cross hatch pattern, set the picture mode to Natural.
- (2) Enter to the service mode item No. 24 "TRAPEZIUM" for frequens.
- (3) Press the **Volume (+)** or **Volume (-)** button to correct the trapezium distortion of the vertical line.



CORNER ADJUSTMENT

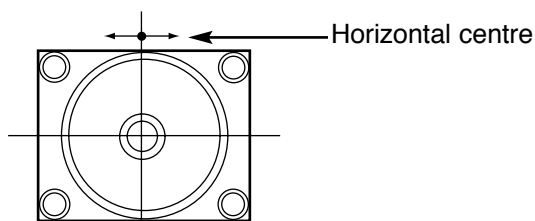
- (1) Receive cross hatch pattern, set the picture mode to Natural.
- (2) Enter to the service mode item No. 25 "UC PARABOLA" for top corner adjustment or item No. 26 "LC PARABOLA" for bottom corner adjustment.
- (3) Press the **Volume (+)** or **Volume (-)** button to correct the distortion of the vertical line around the corners..

Adjustments

HORIZONTAL ADJUSTMENT

HORIZONTAL CENTRING ADJUSTMENT

- (1) Receive circular pattern and set picture mode to "Dynamic".
- (2) Enter to the service mode item No. 22 "HOR.SHIFT".
- (3) Press the **Volume (+)** or **Volume (-)** button to adjust the horizontal centre.



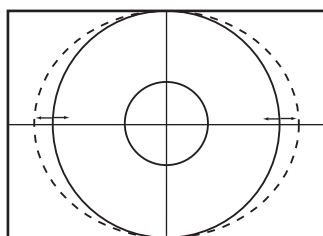
OSD POSITIONING ADJUSTMENT

- (1) Receive circular pattern and set bright and Contrast to Dynamic.
- (2) Enter to the service mode and select item No. 216 "TXT-H-POS".
- (3) Press the **Volume (+)** or **Volume (-)** button to adjust proper OSD positioning. ($A=B \pm 10\text{mm.}$)



HORIZONTAL WIDTH ADJUSTMENT

- (1) Receive circular pattern and set picture mode to "Dynamic".
- (2) Enter to the service mode item No. 21 "EW WIDTH".
- (3) Press the **Volume (+)** or **Volume (-)** button to adjust the horizontal width.



HIGH-VOLTAGE CONFIRMATION

Note: +B (+140V) Voltage Check and Grayscale Adjustment must be completed before attempting High Voltage Check.

- (1) Connect high-voltage meter to the anode of CRT and the ground.
- (2) Receive circular pattern and set brightness and contrast to max..
- (3) Set controls for brightness and contrast to maximum.
- (4) Confirm high voltage is within 28.0 KV and 30.0 KV at maximum beam current.
- (5) Eliminate the beam current by adjusting the contrast and brightness controls to minimum. Confirm high voltage does not exceed 32 KV at zero beam current.

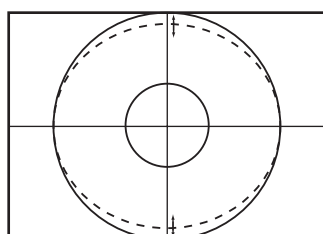
VERTICAL ADJUSTMENT

VERTICAL CENTRING ADJUSTMENT

- (1) Receive circular pattern and set picture mode to "Dynamic".
- (2) Enter to the service mode item No. 16 "VERT.SHIFT".
- (3) Press the **Volume (+)** or **Volume (-)** button to adjust the vertical centre.

VERTICAL HEIGHT ADJUSTMENT

- (1) Receive circular pattern and set picture mode to "Dynamic".
- (2) Enter to the service mode item No. 17 "VERT.AMPL".
- (3) Press the **Volume (+)** or **Volume (-)** button to adjust the vertical height.



Purity and Convergence Adjustment

CAUTION: The Convergence and Purity adjustments have been made at the factory. Readjustment should be made only after picture tube or deflection yoke replacement, following the steps below:

Signals: Use a pattern generator which can output red, green, blue and white raster and crosshatch pattern signals.

Procedure: Carry out purity adjustment first, and then carry out convergence adjustment.

Preparation: The deflection yoke may have several correction magnets attached to its outer edge. If replacing the picture tube, the positions of the magnets can be changed and they can be re-used, so remove these magnets and keep them safely so that they do not get lost.

PURITY ADJUSTMENTS

1. Place the picture so that its front faces west.
2. Insert the power plug into a wall outlet, and then turn on the power for the TV and de-magnetize the TV using its own degaussing circuit.
3. Loosen the screw which is holding the deflection yoke (with integrated purity magnets), and then move the deflection yoke forward as far as it will go. Remove the rubber wedge at this time.
4. Turn off the red and blue raster so that only the green raster is on.
5. Adjust the angle between the tabs (wings) on purity magnets to centre the vertical green belt in the picture tube screen. (See Figures 2 and 3.)

NOTE: This adjustment can only be carried out by changing the angle, not by rotating the tabs up and down.

6. Gently move the deflection yoke back to the position where the green band fills the whole of the picture tube screen, and then tighten the screw to secure the deflection yoke in place.
7. If there is any colour distortion around the edges, correct it by attaching magnets to the outer edge of the deflection yoke. The magnets should be attached so that the line running from the position of the distortion to the centre of the picture tube intersects the deflection yoke. The colours on the magnets indicate the north and south poles of the magnets. Attach the magnets in whichever direction causes the distortion to disappear. (See Figures 1 and 4. The south and north pole positions are shown as a guide.)
8. Switch the screen to red and blue raster and check that there is no colour distortion. If there is any distortion, adjust the angles of purity magnets tabs or the forward-back position of the deflection yoke, or change the attachment positions of the correction magnets.

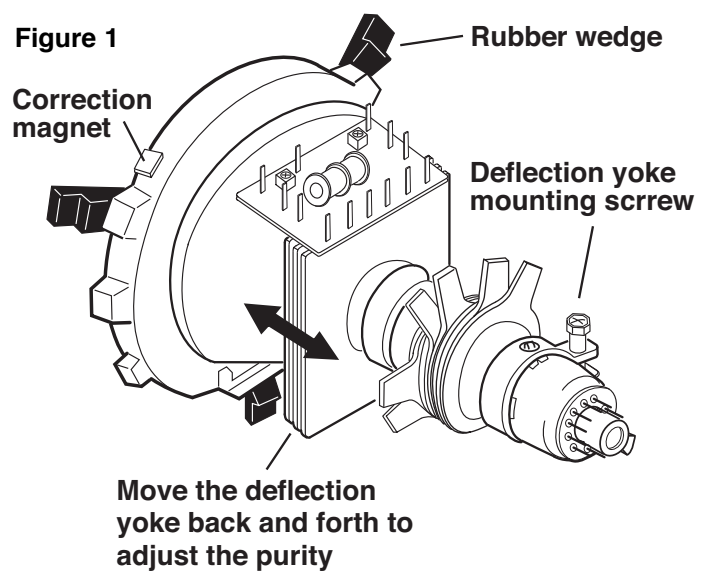
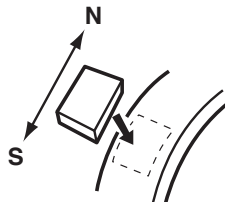


Figure 2

Change the angle to adjust the green band so that it is centred in the screen.

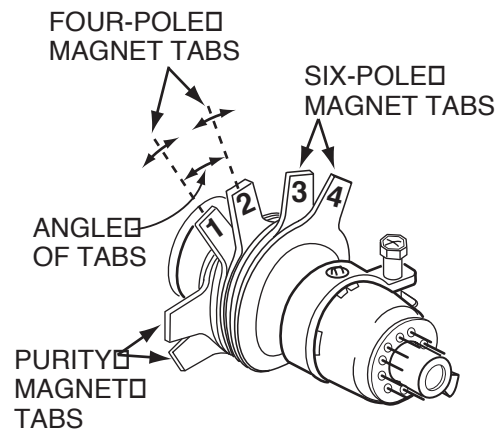


Figure 3

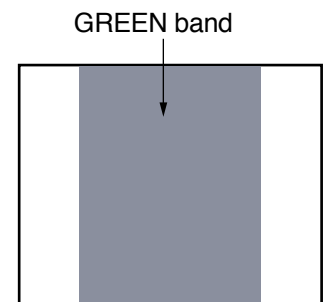
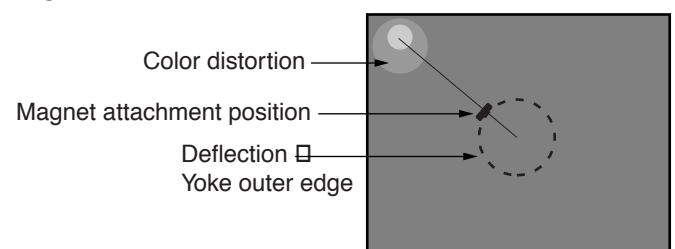


Figure 4



Purity and Convergence Adjustment

CONVERGENCE ADJUSTMENT

Preparation: After carrying out purity adjustment and before proceeding to convergence adjustment, provisionally insert the rubber wedge so that there is no vertical or sideways play in the deflection yoke.

Signals: Display a crosshatch pattern.

1. Red/blue centre adjustment

Adjust the angle between the tabs (1) and (2) in Figure 5 and rotate them together until the lines of the red and blue crosshatch patterns (vertical and horizontal lines) are superimposed in the centre of the screen.

2. Green and red/blue centre adjustment

Adjust the angle between the tabs (3) and (4) in Figure 5 and rotate them together until the lines of the green crosshatch pattern are superimposed with the red/blue crosshatch pattern (vertical and horizontal lines) which were superimposed in step 1).

3. Vertical lines at screen centre (Red and Blue)

Use the VR2 control (see Figure 8) at the top of the deflection yoke to correct the vertical line convergence at the centre of the screen. (See Figure 9.)

4. Vertical lines at screen top and bottom

Use the VR1 control (see Figure 8) at the top of the deflection yoke to correct the vertical line convergence at the top and bottom of the screen. (See Figure 10.)

5. Horizontal lines at screen top and bottom

Rotate the Deflection yoke to the left or right to correct the horizontal line convergence at the top and bottom of the screen. (See Figure 11.)

If vertical lines are intersecting at the top and bottom, use a screwdriver to adjust the Balance coil at the top of the deflection yoke. (See Figure 12.)

Figure 8

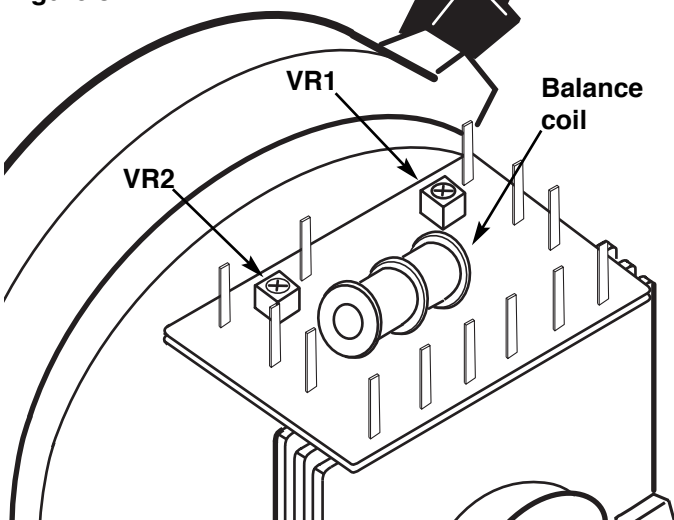


Figure 5

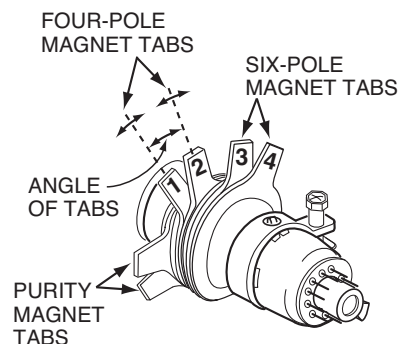
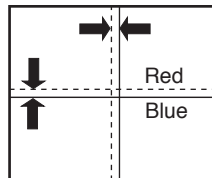
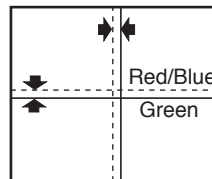


Figure 6



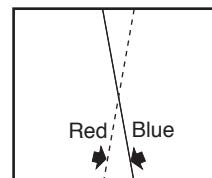
Adjust the angle rotation of tabs (1) and (2) to align the vertical and horizontal lines.

Figure 7



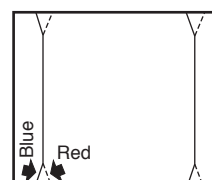
Adjust the angle and rotation of tabs (3) and (4) to align the vertical and horizontal lines.

Figure 9



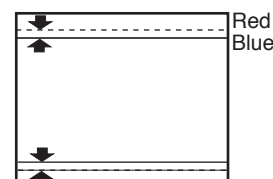
Use the VR2 control to correct.

Figure 10



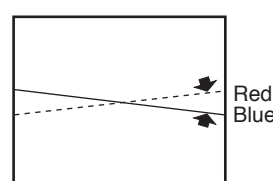
Use the VR1 control to correct.

Figure 11



Rotate the DY to correct.

Figure 12



Use the Balance coil to correct

Mechanical Disassembly

CABINET BACK REMOVAL

1. Refer to Figure 1, remove 14 screws.
2. Pull off cabinet back and remove.

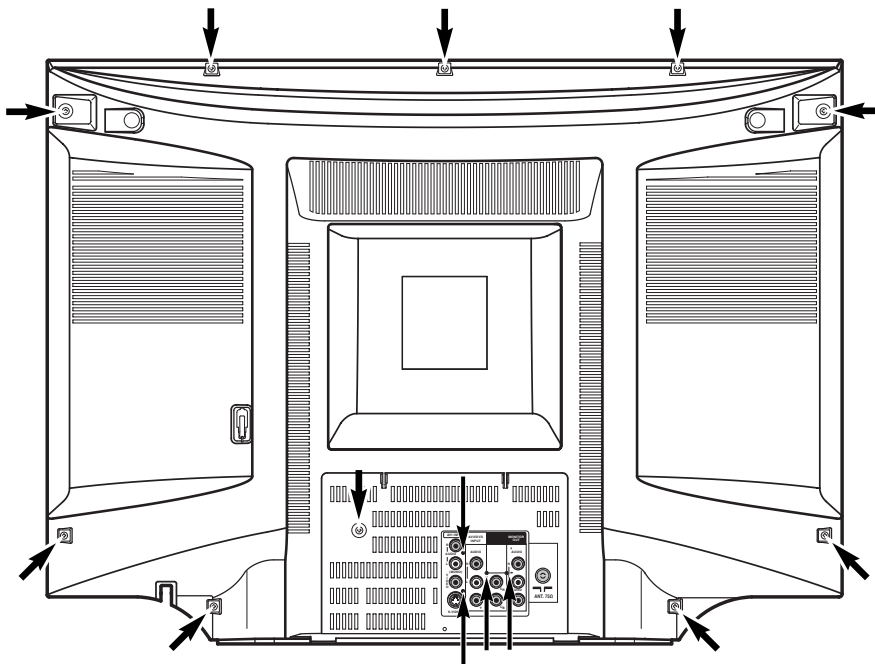


Figure 1. Cabinet Back Removal

Protection Circuit

This TV set has a built-in power supply protection circuit.

It is provided to protect the TV set in case of a power supply circuit malfunctions. When something abnormality occurs during TV reception, the TV set goes to the stand-by mode.

When an abnormality occurs during TV reception, it causes pin 127 of the CPU to go continually Low (less than 2.0V) for about 2 second. The CPU detects that this has occurred and outputs the signal from pin 107 to switch off the power supply lines.

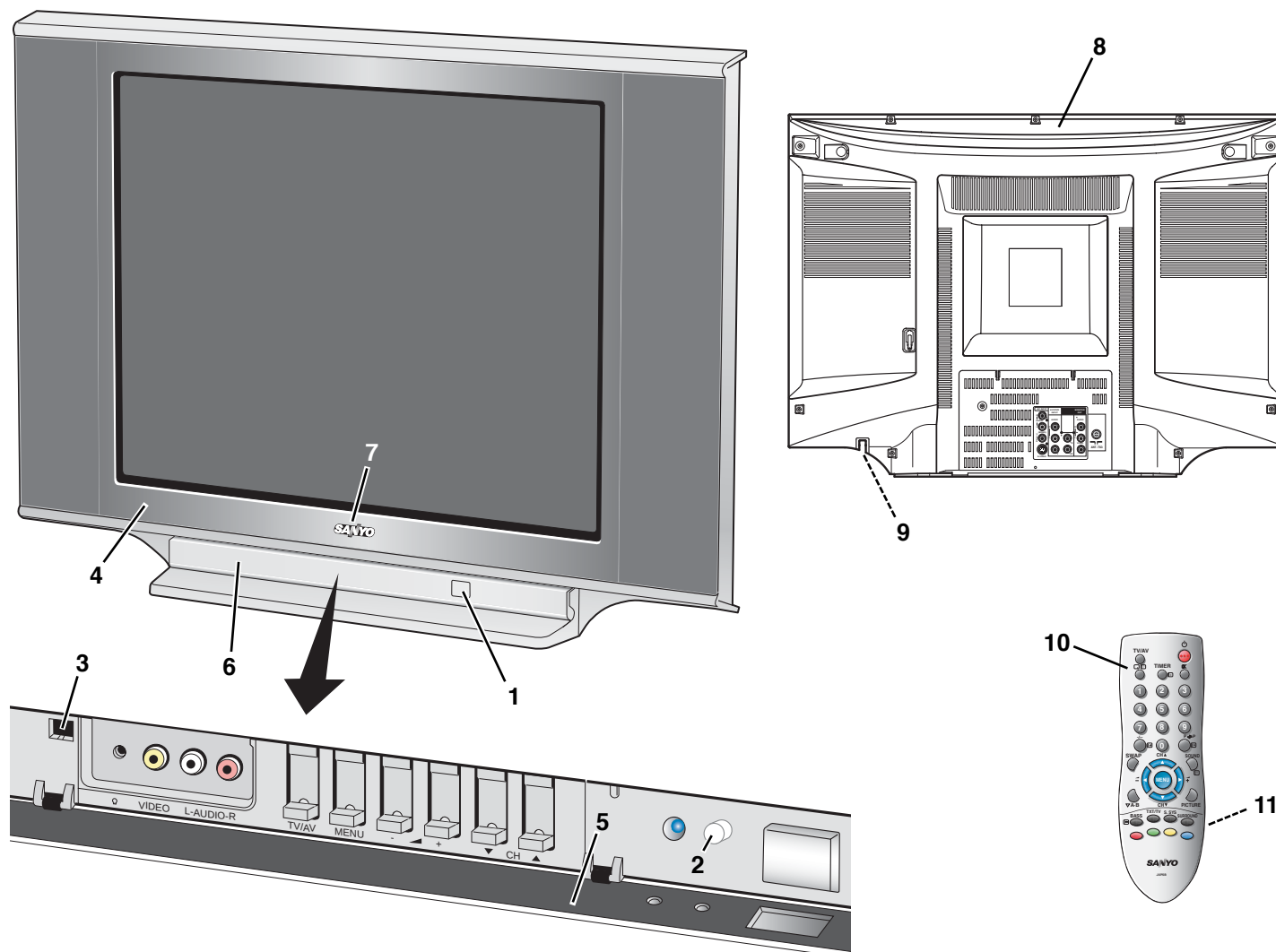
■ Releasing the protective circuit and restoring power supply

To release the protective circuit and restore power supply, turn the power to the TV set OFF and then ON again via either the main power switch or the ON-OFF button on the remote control. This will work only if the power supply trouble was temporary. If there is permanent trouble such as a damaged circuit, power cannot be restored and the circuit will have to be repaired.

Cabinet Parts List

C8ZRL

Note: Parts order must contain Service Ref. No., Part No., and descriptions.



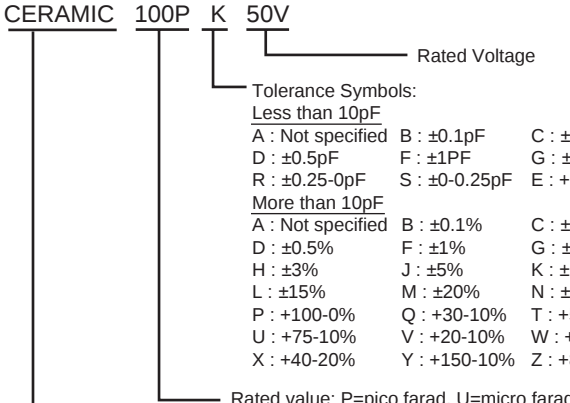
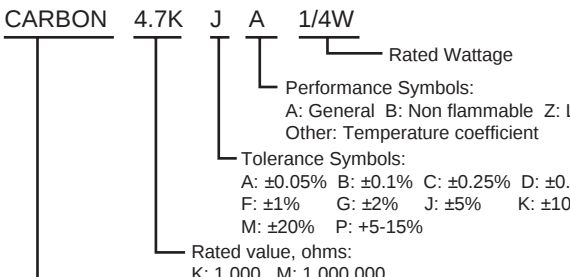
Key No.	Part No.	Description	Key No.	Part No.	Description
1	610 324 7779	BUTTON POWER-C8ZA			
	610 229 8406	SPRING-E3HA (for POWER BUTTON)			
2	610 324 7878	DEC IND-C8ZA			
3	610 104 2505	LATCH PUSH, 7.9X6.9BK			
or	645 019 2449	LATCH PUSH, 7.9X6.9BK			
4	610 323 8609	CABINET FRONT-C8ZA			
5	610 323 8616	DOOR-C8ZA			
6	610 324 7922	DOOR COVER SHEET-C8ZA			
7	645 040 4672	BADGE, SANYO*43.5X10L43.5			
or	645 041 7269	BADGE, SANYO*43.5X10L43.5			
8	610 323 9057	CABINET BACK-C8ZA			
9	610 256 7670	HOLDER AC CORD-SGP-D4VA			
10	645 071 1121	ASSY, REMOCON JXPSB			
11	610 313 3393	RC-BATTERY LID-JXPLA			
	610 326 0105	INSTRUCTION MANUAL-C8ZRL (English)			
	610 326 0563	SIMPLIFIED MANUAL-C8ZRL (Russia+Spanish)			
	610 326 9290	INST. MANUAL ARABIC-C8ZRL			

Chassis Electrical Parts List

C8ZRL

Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by a Δ mark in this parts list and the circuit diagram show components whose value have special significance to product safety. It is particularly recommended that only parts specified on the following parts list be used for components replacement pointed out by the mark.

Note: Parts order must contain Service Ref. No., Part No., and descriptions. The main PCB unit will be supplied without tuner and flyback transformer. They should be ordered separately.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
NOTES: Read description in the Capacitor and Resistor as follows: CAPACITOR CERAMIC 100P K 50V  Tolerance Symbols: Less than 10pF A : Not specified B : ± 0.1pF C : ± 0.25pF D : ± 0.5pF F : ± 1pF G : ± 2pF R : ± 0.25-0pF S : ± 0-0.25pF E : ± 0-1pF More than 10pF A : Not specified B : $\pm 0.1\%$ C : $\pm 0.25\%$ D : $\pm 0.5\%$ F : $\pm 1\%$ G : $\pm 2\%$ H : $\pm 3\%$ J : $\pm 5\%$ K : $\pm 10\%$ L : $\pm 15\%$ M : $\pm 20\%$ N : $\pm 30\%$ P : ± 100-0% Q : ± 30-10% T : ± 50-10% U : ± 75-10% V : ± 20-10% W : ± 100-10% X : ± 40-20% Y : ± 150-10% Z : ± 80-20% Rated value: P=pico farad, U=micro farad Material: CERAMIC..... Ceramic MT-PAPER..... Metallized Paper POLYESTER..... Polyester MT-POLYEST..... Metallized Polyester POLYPRO..... Polypropylene MT-POLYPRO..... Metallized Polypropylene COMPO FILM..... Composite film MT-COMPO..... Metallized Composite STYRENE..... Styrene TA-SOLID..... Tantalum Solid AL-SOLID..... Aluminium Solid ELECT..... Electrolytic NP-ELECT..... Non-polarised Electrolytic OS-SOLID..... Aluminium Solid with Organic Semiconductive Electrolytic DL-ELECT..... Double Layered Electrolytic RESISTOR CARBON 4.7K J A 1/4W  Performance Symbols: A: General B: Non flammable Z: Low noise Other: Temperature coefficient Tolerance Symbols: A : $\pm 0.05\%$ B : $\pm 0.1\%$ C : $\pm 0.25\%$ D : $\pm 0.5\%$ F : $\pm 1\%$ G : $\pm 2\%$ J : $\pm 5\%$ K : $\pm 10\%$ M : $\pm 20\%$ P : ± 5-15% Rated value, ohms: K: 1,000, M: 1,000,000 Material: CARBON..... Carbon MT-FILM..... Metal Film OXIDE-MT..... Oxide Metal Film SOLID..... Composition MT-GLAZE..... Metal Glaze WIRE WOUND... Wire Wound CERAMIC RES.. Ceramic FUSIBLE RES.... Fusible			OUT OF CIRCUIT BOARD PICTURE TUBE Δ Q901 4140140404 CRT ASSY A68ERS870X01QSEM Δ A100 4140140206 CRT A68ERS870X00QSED Δ A200 6450841699 YOKE, DEFLECTION COIL Δ L901 6450552168 COIL, DEGAUSSING MISCELLANEOUS SP901 6450024313 SPEAKER, 8 6450543050 SPEAKER, 8 SP902 6450024313 SPEAKER, 8 6450543050 SPEAKER, 8 SP903 6520014855 SPEAKER ASSY 6102348224 SPEAKER ASSY SP904 6520014855 SPEAKER ASSY 6102348224 SPEAKER ASSY Δ W901 6450677861 CORD, POWER-2.0MK-A5003 W903 6103052182 ASSY, WIRE GND CONNECTOR C 6103274775 ASSY,PWB,MAIN C8ZA 1AA0B10S20900 TRANSISTOR Q003 4050144519 TR 2SC2412K T146 R 4050144618 TR 2SC2412K T146 S 4050158724 TR 2SC2812-L6-TB 4050158922 TR 2SC2812-L7-TB 4051739813 TR 2SC3928A1R 4051739912 TR 2SC3928A1S Q004 4050144519 TR 2SC2412K T146 R 4050144618 TR 2SC2412K T146 S 4050158724 TR 2SC2812-L6-TB 4050158922 TR 2SC2812-L7-TB 4051739813 TR 2SC3928A1R 4051739912 TR 2SC3928A1S Q006 4050144519 TR 2SC2412K T146 R 4050144618 TR 2SC2412K T146 S 4050158724 TR 2SC2812-L6-TB 4050158922 TR 2SC2812-L7-TB 4051739813 TR 2SC3928A1R 4051739912 TR 2SC3928A1S Q007 4050144410 TR 2SC2412K T146 Q 4050144519 TR 2SC2412K T146 R 4050158427 TR 2SC2812-L5-TB 4050158922 TR 2SC2812-L7-TB 4051739813 TR 2SC3928A1R 4051739912 TR 2SC3928A1S Q008 4051648016 TR KTA1504S-GR-RTK 4051345925 TR 2SA1037AK-T146-R 4051472215 TR 2SA1037AK-S-T146 4050020318 TR 2SA1037K T146 R 4050020417 TR 2SA1037K T146 S		

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
Q009	4050026726	TR 2SA1179-M6-TB	Q204	4051739813	TR 2SC3928A1R
	4050026924	TR 2SA1179-M7-TB		4051739912	TR 2SC3928A1S
	4051739615	TR 2SA1235A1E		4051648016	TR KTA1504S-GR-RTK
	4051739714	TR 2SA1235A1F		4051345925	TR 2SA1037AK-T146-R
	4050144410	TR 2SC2412K T146 Q		4051472215	TR 2SA1037AK-S-T146
	4050144519	TR 2SC2412K T146 R	Q205	4050020318	TR 2SA1037K T146 R
Q010	4050158427	TR 2SC2812-L5-TB		4050020417	TR 2SA1037K T146 S
	4050158922	TR 2SC2812-L7-TB		4050026726	TR 2SA1179-M6-TB
	4051739813	TR 2SC3928A1R		4050026924	TR 2SA1179-M7-TB
	4051739912	TR 2SC3928A1S		4051739615	TR 2SA1235A1E
	4050144410	TR 2SC2412K T146 Q		4051739714	TR 2SA1235A1F
Q1005	4050144519	TR 2SC2412K T146 R	Q208	4051648016	TR KTA1504S-GR-RTK
	4050144618	TR 2SC2412K T146 S		4051345925	TR 2SA1037AK-T146-R
	4050158724	TR 2SC2812-L6-TB		4051472215	TR 2SA1037AK-S-T146
	4050158922	TR 2SC2812-L7-TB		4050020318	TR 2SA1037K T146 R
	4051739813	TR 2SC3928A1R		4050020417	TR 2SA1037K T146 S
	4051739912	TR 2SC3928A1S	Q401	4050026726	TR 2SA1179-M6-TB
Q1006	4050144519	TR 2SC2412K T146 R		4050026924	TR 2SA1179-M7-TB
	4050144618	TR 2SC2412K T146 S		4051739615	TR 2SA1235A1E
	4050158724	TR 2SC2812-L6-TB		4051739714	TR 2SA1235A1F
	4050158922	TR 2SC2812-L7-TB		4050039013	TR 2SA1371-D
	4051739813	TR 2SC3928A1R	Q402	4050039112	TR 2SA1371-E
Q111	4051739912	TR 2SC3928A1S		4050297116	TR 2SC2271-D
	4051648016	TR KTA1504S-GR-RTK		4050136217	TR 2SC2271-D-CTV
	4051345925	TR 2SA1037AK-T146-R		4050297215	TR 2SC2271-E
	4051472215	TR 2SA1037AK-S-T146	Q403	4050136316	TR 2SC2271-E-CTV
	4050020318	TR 2SA1037K T146 R		4050144519	TR 2SC2412K T146 R
	4050020417	TR 2SA1037K T146 S		4050144618	TR 2SC2412K T146 S
Q112	4050026726	TR 2SA1179-M6-TB		4050158724	TR 2SC2812-L6-TB
	4050026924	TR 2SA1179-M7-TB		4050158922	TR 2SC2812-L7-TB
	4051739615	TR 2SA1235A1E	Q404	4051739813	TR 2SC3928A1R
	4051739714	TR 2SA1235A1F		4051739912	TR 2SC3928A1S
	4050144519	TR 2SC2412K T146 R		4050144519	TR 2SC2412K T146 R
	4050144618	TR 2SC2412K T146 S		4050144618	TR 2SC2412K T146 S
Q113	4050158724	TR 2SC2812-L6-TB		4050158724	TR 2SC2812-L6-TB
	4050158922	TR 2SC2812-L7-TB	Q405	4050158922	TR 2SC2812-L7-TB
	4051739813	TR 2SC3928A1R		4051739813	TR 2SC3928A1R
	4051739912	TR 2SC3928A1S		4051739912	TR 2SC3928A1S
	4050159721	TR 2SC2814-F4-TB		4050405610	TR 2SC2228-D
	4050159721	TR 2SC2814-F4-TB	Q406	4050039013	TR 2SA1371-D
Q1602	4050118411	TR 2SC1740S-Q		4050039112	TR 2SA1371-E
	4050118510	TR 2SC1740S-R	Q424	4050144519	TR 2SC2412K T146 R
	4050118619	TR 2SC1740S-S		4050144618	TR 2SC2412K T146 S
	4050122012	TR 2SC1815-GR		4050158724	TR 2SC2812-L6-TB
	4050122111	TR 2SC1815-O		4050158922	TR 2SC2812-L7-TB
	4050122319	TR 2SC1815-Y	Q425	4051739813	TR 2SC3928A1R
Q201	4050207511	TR 2SC945A-PA		4051739912	TR 2SC3928A1S
	4050207719	TR 2SC945A-QA		4060121408	TR 2SK2010-CTV-YA14
	4050207917	TR 2SC945A-RA	Q431	4050180517	TR 2SC3332-R
	4050144519	TR 2SC2412K T146 R		4050180616	TR 2SC3332-S
	4050144618	TR 2SC2412K T146 S		4051571304	TR 2SD2634-YB
Q202	4050158724	TR 2SC2812-L6-TB		4050144519	TR 2SC2412K T146 R
	4050158922	TR 2SC2812-L7-TB	Q432	4050144618	TR 2SC2412K T146 S
	4051739813	TR 2SC3928A1R		4050158724	TR 2SC2812-L6-TB
	4051739912	TR 2SC3928A1S		4050158922	TR 2SC2812-L7-TB
	4051648016	TR KTA1504S-GR-RTK		4051631612	TR 2SC2812N-L6-TB0
	4051345925	TR 2SA1037AK-T146-R	Q439	4051631711	TR 2SC2812N-L7-TB0
Q203	4051472215	TR 2SA1037AK-S-T146		4051739813	TR 2SC3928A1R
	4050020318	TR 2SA1037K T146 R		4051739912	TR 2SC3928A1S
	4050020417	TR 2SA1037K T146 S		4060121408	TR 2SK2010-CTV-YA14
	4050026726	TR 2SA1179-M6-TB		4050180517	TR 2SC3332-R
	4050026924	TR 2SA1179-M7-TB		4050180616	TR 2SC3332-S
	4051739615	TR 2SA1235A1E		4051571304	TR 2SD2634-YB
Q203	4051739714	TR 2SA1235A1F		4050144519	TR 2SC2412K T146 R
	4050144519	TR 2SC2412K T146 R		4050144618	TR 2SC2412K T146 S
	4050144618	TR 2SC2412K T146 S		4050158724	TR 2SC2812-L6-TB
	4050158724	TR 2SC2812-L6-TB		4050158922	TR 2SC2812-L7-TB
	4050158922	TR 2SC2812-L7-TB		4051631612	TR 2SC2812N-L6-TB0

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
Q461 Q462	4051631711	TR 2SC2812N-L7-TB0	Q886	4050026726	TR 2SA1179-M6-TB
	4051739813	TR 2SC3928A1R		4050026924	TR 2SA1179-M7-TB
	4051739912	TR 2SC3928A1S		4051739615	TR 2SA1235A1E
	4050296307	TR 2SB817-E		4051739714	TR 2SA1235A1F
	4050118411	TR 2SC1740S-Q		4050144519	TR 2SC2412K T146 R
	4050118510	TR 2SC1740S-R		4050144618	TR 2SC2412K T146 S
	4050118619	TR 2SC1740S-S		4050158724	TR 2SC2812-L6-TB
	4050122012	TR 2SC1815-GR		4050158922	TR 2SC2812-L7-TB
	4050122111	TR 2SC1815-O		4051631612	TR 2SC2812N-L6-TB0
	4050122319	TR 2SC1815-Y		4051631711	TR 2SC2812N-L7-TB0
Q491	4050207511	TR 2SC945A-PA	4051739813	TR 2SC3928A1R	
	4050207719	TR 2SC945A-QA	4051739912	TR 2SC3928A1S	
	4050207917	TR 2SC945A-RA	INTEGRATED CIRCUIT		
	4051648016	TR KTA1504S-GR-RTK	IC001	4096216208	IC TDA8947J/N3
	4051345925	TR 2SA1037AK-T146-R	IC201	4105986405	IC QXXAVC534C8ZA
	4051472215	TR 2SA1037AK-S-T146	IC501	4093740607	IC LA7846N
	4050020318	TR 2SA1037K T146 R	IC601	4095631002	IC STR-X6757
	4050020417	TR 2SA1037K T146 S	IC641	4096596607	IC KIA78R05API
	4050026726	TR 2SA1179-M6-TB		4094143001	IC PQ05RD11
	4050026924	TR 2SA1179-M7-TB		4091925907	IC PQ05RF11
Q641	4051739615	TR 2SA1235A1E	IC666	4094291207	IC BA033T
	4051739714	TR 2SA1235A1F		4096596706	IC KIA78D33PI
	4050144519	TR 2SC2412K T146 R	IC802	4104958007	IC AT24C16A-10PI-2.7
	4050144618	TR 2SC2412K T146 S		4094594506	IC 24LC16B/P
	4050158724	TR 2SC2812-L6-TB	CAPACITOR		
	4050158922	TR 2SC2812-L7-TB	C001	4030533606	ELECT 2200U M 35V
	4051739813	TR 2SC3928A1R	C004	4040848004	ELECT 220U M 16V
	4051739912	TR 2SC3928A1S		4030430222	ELECT 220U M 16V
	4050893011	TR 2SC4487-S	C008	4040849308	ELECT 47U M 50V
	4050893110	TR 2SC4487-T		4030513123	ELECT 47U M 50V
Q643	4050222514	TR 2SD1347-S	C009	4031499218	CERAMIC 0.01U Z 50V
	4050222613	TR 2SD1347-T		C011	4032377941
	4051413515	TR KTA1266-Y-T	C012	4032377941	MT-COMPO 0.22U J 50V
	4060087407	TR 2SA1015-G(SAN)-TPE2	C013	4031791718	POLYESTER 0.033U J 50V
	4050017417	TR 2SA1015-O(SAN)	C016	4040848905	ELECT 10U M 50V
	4050017615	TR 2SA1015-Y(SAN)		4030494224	ELECT 10U M 50V
	4050043119	TR 2SA564A-Q(CU)	C019	4040848905	ELECT 10U M 50V
	4050043218	TR 2SA564A-R(CU)		4030494224	ELECT 10U M 50V
	4050061717	TR 2SA933S-Q	C021	4032377941	MT-COMPO 0.22U J 50V
	4050061816	TR 2SA933S-R		C022	4032377941
Q645	4050144519	TR 2SC2412K T146 R	C023	4031791718	POLYESTER 0.033U J 50V
	4050144618	TR 2SC2412K T146 S		C027	4040847809
	4050158724	TR 2SC2812-L6-TB		4030422425	ELECT 100U M 16V
	4050158922	TR 2SC2812-L7-TB	C031TM	4040848905	ELECT 10U M 50V
	4051739813	TR 2SC3928A1R		4030494224	ELECT 10U M 50V
	4051739912	TR 2SC3928A1S	C032	4040848905	ELECT 10U M 50V
	4050890010	TR 2SA1707-S		4030494224	ELECT 10U M 50V
	4050890119	TR 2SA1707-T	C056	4031576711	CERAMIC 560P K 50V
	4050096917	TR 2SB985-S		C1001	4031573611
	Q682	4050097013	TR 2SB985-T	C1002	4031573611
4050144519		TR 2SC2412K T146 R	C1003		4031573611
4050144618		TR 2SC2412K T146 S	C1004	4031573611	CERAMIC 100P J 50V
4050158724		TR 2SC2812-L6-TB		C1005	4040848202
4050158922		TR 2SC2812-L7-TB		4030439136	ELECT 47U M 16V
4051739813		TR 2SC3928A1R	C1006	4032653213	CERAMIC 1000P J 50V
4051739912		TR 2SC3928A1S		C1007	4032653213
4050144519		TR 2SC2412K T146 R	C1008	4032653213	CERAMIC 1000P J 50V
4050144618		TR 2SC2412K T146 S		C1009	4032653213
Q683		4050158724	TR 2SC2812-L6-TB	C101	4040875406
	4050158922	TR 2SC2812-L7-TB	4030502810		ELECT 22U M 50V
	4051739813	TR 2SC3928A1R	C102	4040848301	ELECT 470U M 16V
	4051739912	TR 2SC3928A1S		4030441773	ELECT 470U M 16V
	4050144519	TR 2SC2412K T146 R	C1025	4032070317	CERAMIC 1U Z 16
	4050144618	TR 2SC2412K T146 S		4032789615	CERAMIC 1U Z 16V
	4050158724	TR 2SC2812-L6-TB	C104	4040849308	ELECT 47U M 50V
	4050158922	TR 2SC2812-L7-TB			
	4051739813	TR 2SC3928A1R			
	Q866	4051739912	TR 2SC3928A1S		
4051648016		TR KTA1504S-GR-RTK			
4051345925		TR 2SA1037AK-T146-R			
4051472215		TR 2SA1037AK-S-T146			
4050020318		TR 2SA1037K T146 R			
4050020417		TR 2SA1037K T146 S			

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	4030513123	ELECT 47U M 50V		4030494224	ELECT 10U M 50V
C107	4032152211	CERAMIC 0.01U K 50V	C257	4031640214	CERAMIC 0.1U Z 25V
C1103	4032070317	CERAMIC 1U Z 16V	C258	4031640214	CERAMIC 0.1U Z 25V
	4032789615	CERAMIC 1U Z 16V	C259	4031640214	CERAMIC 0.1U Z 25V
C121	4032602330	MT-COMPO 0.15U J 50V	C260	4033670417	CERAMIC 0.1U K 50V
C122	4032152211	CERAMIC 0.01U K 50V	C261	4031640214	CERAMIC 0.1U Z 25V
C123	4031133815	CERAMIC 1000P K 50V	C262	4031640214	CERAMIC 0.1U Z 25V
C126	4032152211	CERAMIC 0.01U K 50V	C263	4031640214	CERAMIC 0.1U Z 25V
C127	4032152211	CERAMIC 0.01U K 50V	C264	4031640214	CERAMIC 0.1U Z 25V
C1902	4040875406	ELECT 22U M 50V	C265	4031640214	CERAMIC 0.1U Z 25V
	4030502810	ELECT 22U M 50V	C266	4031640214	CERAMIC 0.1U Z 25V
C200	4032152211	CERAMIC 0.01U K 50V	C267	4031552418	CERAMIC 5600P K 50V
C201	4032695916	CERAMIC 0.22U K 16V	C268	4040848905	ELECT 10U M 50V
C202	4032695916	CERAMIC 0.22U K 16V		4030494224	ELECT 10U M 50V
C203	4030383439	ELECT 1000U M 6.3V	C269	4031640214	CERAMIC 0.1U Z 25V
C204	4031640214	CERAMIC 0.1U Z 25V	C270	4033145915	CERAMIC 0.47U K 16V
C205	4040848004	ELECT 220U M 16V	C271	4040897804	ELECT 33U M 16V
	4030430222	ELECT 220U M 16V		4030433926	ELECT 33U M 16V
C206	4040848004	ELECT 220U M 16V	C272	4032152211	CERAMIC 0.01U K 50V
	4030430222	ELECT 220U M 16V	C280	4032695916	CERAMIC 0.22U K 16V
C207	4032695916	CERAMIC 0.22U K 16V	C281	4040847809	ELECT 100U M 16V
C208	4033238815	CERAMIC 2.2U Z 16V		4030422425	ELECT 100U M 16V
C209	4040847809	ELECT 100U M 16V	C282	4032695916	CERAMIC 0.22U K 16V
	4030422425	ELECT 100U M 16V	C283	4040847809	ELECT 100U M 16V
C210	4040848004	ELECT 220U M 16V		4030422425	ELECT 100U M 16V
	4030430222	ELECT 220U M 16V	C284	4031640214	CERAMIC 0.1U Z 25V
C211	4031640214	CERAMIC 0.1U Z 25V	C286	4032695916	CERAMIC 0.22U K 16V
C212	4032152211	CERAMIC 0.01U K 50V	C287	4031640214	CERAMIC 0.1U Z 25V
C213	4031577312	CERAMIC 6800P K 50V	C288	4040847809	ELECT 100U M 16V
C214	4040848806	ELECT 1U M 50V		4030422425	ELECT 100U M 16V
	4030490018	ELECT 1U M 50V	C289	4032695916	CERAMIC 0.22U K 16V
C216	4032695916	CERAMIC 0.22U K 16V	C294	4033670417	CERAMIC 0.1U K 50V
C217	4032844314	CERAMIC 0.022U K 50V	C295	4011057919	MT-GLAZE 0.000 ZA 1/16W
C218	4033238815	CERAMIC 2.2U Z 16V	C401	4032152211	CERAMIC 0.01U K 50V
C219	4031133815	CERAMIC 1000P K 50V	C420	4040774907	MT-POLYPRO 8200P H 1.5K
C221	4031133815	CERAMIC 1000P K 50V		4040958703	MT-POLYPRO 8200P H 1.5K
C222	4033238815	CERAMIC 2.2U Z 16V		4033438413	MT-POLYPRO 8200P H 1.5K
C223	4033145915	CERAMIC 0.47U K 16V	C422	4030834911	POLYPRO 0.027U J 400V
C224	4033145915	CERAMIC 0.47U K 16V	C423	4040775003	MT-POLYPRO 8600P H 1.5K
C228	4031640214	CERAMIC 0.1U Z 25V		4041020300	MT-POLYPRO 8600P H 1.5K
C229	4040848905	ELECT 10U M 50V		4033438512	MT-POLYPRO 8600P H 1.5K
	4030494224	ELECT 10U M 50V	C424	4033439410	POLYPRO 0.02U J 400V
C231	4031552210	CERAMIC 3300P K 50V	C426	4031801605	MT-POLYEST 0.1U K 400V
C232	4031640214	CERAMIC 0.1U Z 25V	C427	4033466822	MT-POLYPRO 0.2U J 250V
C233	4040849001	ELECT 2.2U M 50V		4033710618	MT-POLYPRO 0.2U J 250V
	4030499823	ELECT 2.2U M 50V		4033726510	MT-POLYPRO 0.2U J 250V
C234	4031640214	CERAMIC 0.1U Z 25V	C428	4030757121	CERAMIC 1000P K 500V
C235	4031573611	CERAMIC 100P J 50V		4031149519	CERAMIC 1000P K 500V
C236	4040848905	ELECT 10U M 50V		4034171814	CERAMIC 1000P K 500V
	4030494224	ELECT 10U M 50V	C429	4040848905	ELECT 10U M 50V
C237	4033238815	CERAMIC 2.2U Z 16V		4030494224	ELECT 10U M 50V
C238	4031640214	CERAMIC 0.1U Z 25V	C432	4030761425	CERAMIC 2700P K 500V
C239	4040848905	ELECT 10U M 50V		4034164519	CERAMIC 2700P K 500V
	4030494224	ELECT 10U M 50V		4034172712	CERAMIC 2700P K 500V
C240	4031573611	CERAMIC 100P J 50V	C433	4030763122	CERAMIC 3900P K 500V
C241	4033145915	CERAMIC 0.47U K 16V		4032753329	CERAMIC 3900P K 500V
C242	4033145915	CERAMIC 0.47U K 16V		4034172910	CERAMIC 3900P K 500V
C243	4033238815	CERAMIC 2.2U Z 16V	C434	4040876007	ELECT 47U M 35V
C244	4033145915	CERAMIC 0.47U K 16V		4030540713	ELECT 47U M 35V
C245	4031573611	CERAMIC 100P J 50V	C437	4031879703	MT-POLYEST 2.2U J 250V
C246	4033145915	CERAMIC 0.47U K 16V		4031589206	MT-POLYEST 2.2U K 250V
C247	4033238815	CERAMIC 2.2U Z 16V	C439	4011057919	MT-GLAZE 0.000 ZA 1/16W
C251	4033238815	CERAMIC 2.2U Z 16V	C441	4030790910	MT-POLYPRO 0.15U J 400V
C252	4032152211	CERAMIC 0.01U K 50V		4034189611	MT-POLYPRO 0.15U J 400V
C254	4033363517	CERAMIC 0.47U K 16V	C463	4030617534	POLYESTER 4700P J 50V
C255	4033363517	CERAMIC 0.47U K 16V		4031791213	POLYESTER 4700P J 50V
C256	4040848905	ELECT 10U M 50V	C465	4030660104	MT-POLYEST 2.2U K 100V

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
C467	4032602043	MT-COMPO 1U J 50V	C630	4032321102	CERAMIC 1000P K 2K
C468	4040874706	ELECT 22U M 25V		4034132914	CERAMIC 1000P K 2K
	4030455829	ELECT 22U M 25V	C631	4031480424	ELECT 1000U M 25V
C469	4040848905	ELECT 10U M 50V	C633	4032321102	CERAMIC 1000P K 2K
	4030494224	ELECT 10U M 50V		4034132914	CERAMIC 1000P K 2K
C470	4032462221	MT-COMPO 0.01U J 50V	C634	4031133815	CERAMIC 1000P K 50V
C471	4040565208	NP-ELECT 2.2U M 100V	C635	4032321102	CERAMIC 1000P K 2K
	4040849902	NP-ELECT 2.2U M 100V		4034132914	CERAMIC 1000P K 2K
C482	4032598811	ELECT 0.47U M 160V	C637	4030538304	ELECT 3300U M 35V
C486	4032600722	ELECT 33U M 250V	C639	4032321102	CERAMIC 1000P K 2K
C491	4030765324	CERAMIC 680P K 500V		4034132914	CERAMIC 1000P K 2K
	4034164915	CERAMIC 680P K 500V	C640	4031580500	ELECT 3300U M 16V
	4034173115	CERAMIC 680P K 500V		4033683100	ELECT 3300U M 25V
C501	4030459867	ELECT 2200U M 25V	C641	4032321102	CERAMIC 1000P K 2K
C502	4030459867	ELECT 2200U M 25V		4034132914	CERAMIC 1000P K 2K
C503	4040849407	ELECT 220U M 35V	C642	4040559801	ELECT 220U M 200V
	4030532134	ELECT 220U M 35V	C643	4031198111	ELECT 1000U M 35V
C505	4030689026	CERAMIC 100P K 50V	C647	4040915409	ELECT 1000U M 10V
	4031032257	CERAMIC 100P K 50V		4030399064	ELECT 1000U M 10V
	4034162921	CERAMIC 100P K 50V	C648	4034132914	CERAMIC 1000P K 2K
C506	4032560848	MT-COMPO 0.47U J 50V	C655	4040848806	ELECT 1U M 50V
C507	4031792210	POLYESTER 2700P K 50V		4030490018	ELECT 1U M 50V
C521	4031134119	CERAMIC 2200P K 50V	C667	4040847908	ELECT 1000U M 16V
C529	4040848905	ELECT 10U M 50V		4030424875	ELECT 1000U M 16V
	4030494224	ELECT 10U M 50V	C682	4040847908	ELECT 1000U M 16V
C531	4031134119	CERAMIC 2200P K 50V		4030424835	ELECT 1000U M 16V
△ C601	4040888802	MT-POLYEST 0.22U M 275V	C685	4040848004	ELECT 220U M 16V
	4040941804	MT-POLYEST 0.22U K 275V		4030430222	ELECT 220U M 16V
△ C602	4040727903	MT-POLYEST 0.068U K 250V	C686	4031480424	ELECT 1000U M 25V
	4040726104	MT-POLYEST 0.068U M 250V	C801	4032695916	CERAMIC 0.22U K 16V
	4040796503	MT-POLYEST 0.068U M 250V	C802	4032695916	CERAMIC 0.22U K 16V
	4040737506	MT-POLYEST 0.068U M 275V	C803	4040847809	ELECT 100U M 16V
C608	4030766707	CERAMIC 1000P K 1K		4030422425	ELECT 100U M 16V
	4032719622	CERAMIC 1000P K 1K	C804	4032695916	CERAMIC 0.22U K 16V
	4033991017	CERAMIC 1000P K 1K	C806	4031640214	CERAMIC 0.1U Z 25V
C609	4040961901	ELECT 270U M 400V	C809	4032695916	CERAMIC 0.22U K 16V
C610	4030689026	CERAMIC 100P K 50V	C810	4031552210	CERAMIC 3300P K 50V
	4031032257	CERAMIC 100P K 50V	C811	4031552319	CERAMIC 4700P K 50V
	4034162921	CERAMIC 100P K 50V	C812	4031640214	CERAMIC 0.1U Z 25V
C611	4040848806	ELECT 1U M 50V	C850	4040848905	ELECT 10U M 50V
	4030490018	ELECT 1U M 50V		4030494224	ELECT 10U M 50V
C612	4030573137	POLYESTER 0.1U K 50V	RESISTOR		
	4031818217	POLYESTER 0.1U K 50V			
C613	4031792715	POLYESTER 2200P J 50V	R001	4011050613	MT-GLAZE 10K JA 1/16W
C614	4033486612	POLYPRO 0.02U J 630V	R004	4011050613	MT-GLAZE 10K JA 1/16W
C615	4040876007	ELECT 47U M 35V	R005	4011054215	MT-GLAZE 33K JA 1/16W
	4030540713	ELECT 47U M 35V	R009	4011050613	MT-GLAZE 10K JA 1/16W
C616	4032470008	CERAMIC 1500P K 2K	R010	4011057414	MT-GLAZE 8.2K JA 1/16W
	4032636622	CERAMIC 1500P K 2K	R011	4032794312	CERAMIC 0.33U K 16V
	4032321300	CERAMIC 1500P K 2K	R012	4011056011	MT-GLAZE 5.6K JA 1/16W
	4034140018	CERAMIC 1500P K 2K	R013	4011050613	MT-GLAZE 10K JA 1/16W
C617	4032475607	CERAMIC 560P K 2K	R014	4011053416	MT-GLAZE 27K JA 1/16W
	4034140513	CERAMIC 560P K 2K	R015	4011057919	MT-GLAZE 0.000 ZA 1/16W
	4033242921	CERAMIC 560P K 3K	R017	4011057315	MT-GLAZE 820 JA 1/16W
	4032873720	CERAMIC 560P K 3K	R018	4011057919	MT-GLAZE 0.000 ZA 1/16W
△ C626	4040735106	CERAMIC 470P K 250V	R019	4011054710	MT-GLAZE 39K JA 1/16W
	4040733300	CERAMIC 470P M 250V	R020	4011056110	MT-GLAZE 560K JA 1/16W
	4040714507	CERAMIC 470P K 400V	R021	4032794312	CERAMIC 0.33U K 16V
	4040978909	CERAMIC 470P K 400V	R022	4011056011	MT-GLAZE 5.6K JA 1/16W
△ C627	4040735106	CERAMIC 470P K 250V	R024	4011054314	MT-GLAZE 330K JA 1/16W
	4040733300	CERAMIC 470P M 250V	R025	4011054314	MT-GLAZE 330K JA 1/16W
	4040714507	CERAMIC 470P K 400V	R031	4010249731	CARBON 12K JA 1/6W
	4040978909	CERAMIC 470P K 400V	R032	4010249731	CARBON 12K JA 1/6W
△ C629	4040734505	CERAMIC 2200P K 250V	R034	4011057919	MT-GLAZE 0.000 ZA 1/16W
	4040732907	CERAMIC 2200P M 250V	R035	4011051115	MT-GLAZE 12K JA 1/16W
	4040714101	CERAMIC 2200P M 400V	R036	4011052112	MT-GLAZE 18K JA 1/16W
	4040978800	CERAMIC 2200P K 400V	R037	4011050514	MT-GLAZE 1K JA 1/16W

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R038	4011051719	MT-GLAZE 150K JA 1/16W	R224	4010246730	CARBON 100 JA 1/6W
R1002	4011134412	MT-GLAZE 75 JA 1/16W	R225	4011056516	MT-GLAZE 680 JA 1/16W
R1004	4011134412	MT-GLAZE 75 JA 1/16W	R226	4010246730	CARBON 100 JA 1/6W
R1005	4011134412	MT-GLAZE 75 JA 1/16W	R229	4010246730	CARBON 100 JA 1/6W
R1006	4011050514	MT-GLAZE 1K JA 1/16W	R246	4010246730	CARBON 100 JA 1/6W
R1007	4011050514	MT-GLAZE 1K JA 1/16W	R247	4010246730	CARBON 100 JA 1/6W
R1008	4010161459	CARBON 22 JA 1/4W	R248	4010246730	CARBON 100 JA 1/6W
R1008	4010161548	CARBON 22 JA 1/4W	R249	4010246730	CARBON 100 JA 1/6W
R1009	4011052815	MT-GLAZE 2.2K JA 1/16W	R251	4011050415	MT-GLAZE 100 JA 1/16W
R101	4011057919	MT-GLAZE 0.000 ZA 1/16W	R252	4011050415	MT-GLAZE 100 JA 1/16W
R1011	4011052815	MT-GLAZE 2.2K JA 1/16W	R253	4010249731	CARBON 12K JA 1/6W
R1013	4011052815	MT-GLAZE 2.2K JA 1/16W	R254	4011050514	MT-GLAZE 1K JA 1/16W
R1014	4011052815	MT-GLAZE 2.2K JA 1/16W	R256	4011050415	MT-GLAZE 100 JA 1/16W
R1015	4011052716	MT-GLAZE 220 JA 1/16W	R257	4011050613	MT-GLAZE 10K JA 1/16W
R1017	4011052815	MT-GLAZE 2.2K JA 1/16W	R258	4011053218	MT-GLAZE 270 JA 1/16W
R1019	4011052815	MT-GLAZE 2.2K JA 1/16W	R259	4011053218	MT-GLAZE 270 JA 1/16W
R102	4011051115	MT-GLAZE 12K JA 1/16W	R261	4011050514	MT-GLAZE 1K JA 1/16W
R1025	4011052716	MT-GLAZE 220 JA 1/16W	R262	4011050415	MT-GLAZE 100 JA 1/16W
R103	4011050415	MT-GLAZE 100 JA 1/16W	R263	4011050415	MT-GLAZE 100 JA 1/16W
R104	4011050415	MT-GLAZE 100 JA 1/16W	R264	4011050415	MT-GLAZE 100 JA 1/16W
R106	4010618101	OXIDE-MT 39K JA 1W	R266	4011052013	MT-GLAZE 1.8K JA 1/16W
R1081	4011134412	MT-GLAZE 75 JA 1/16W	R267	4011054314	MT-GLAZE 330K JA 1/16W
R1082	4011134412	MT-GLAZE 75 JA 1/16W	R268	4010258733	CARBON 220K JA 1/6W
R1101	4011134412	MT-GLAZE 75 JA 1/16W	R269	4011051115	MT-GLAZE 12K JA 1/16W
R1103	4011134412	MT-GLAZE 75 JA 1/16W	R271	4011055410	MT-GLAZE 47K JA 1/16W
R1105	4011134412	MT-GLAZE 75 JA 1/16W	R272	4011057513	MT-GLAZE 82K JA 1/16W
R1106	4010077641	CARBON 150 JA 1/2W	R273	4010246730	CARBON 100 JA 1/6W
R1107	4010077641	CARBON 150 JA 1/2W	R274	4010246730	CARBON 100 JA 1/6W
R111	4010261337	CARBON 27K JA 1/6W	R275	4010246730	CARBON 100 JA 1/6W
R112	4011053416	MT-GLAZE 27K JA 1/16W	R284	4011055311	MT-GLAZE 4.7K JA 1/16W
R121	4010267339	CARBON 39K GA 1/6W	R285	4011055311	MT-GLAZE 4.7K JA 1/16W
R122	4010275235	CARBON 680 JA 1/6W	R355	4010126953	CARBON 10K JA 1/4W
R123	4010246730	CARBON 100 JA 1/6W		4010127059	CARBON 10K JA 1/4W
R126	4011055816	MT-GLAZE 56 JA 1/16W	R401	4010275532	CARBON 6.8K JA 1/6W
R127	4011056615	MT-GLAZE 6.8K JA 1/16W	R402	4010270537	CARBON 470K JA 1/6W
R128	4011052716	MT-GLAZE 220 JA 1/16W	R403	4011054314	MT-GLAZE 330K JA 1/16W
R129	4011056011	MT-GLAZE 5.6K JA 1/16W	R404	4010247440	CARBON 10K JA 1/6W
R130	4011050613	MT-GLAZE 10K JA 1/16W	R405	4010272630	CARBON 5.6K JA 1/6W
R132	4010247440	CARBON 10K JA 1/6W	R406	4010247440	CARBON 10K JA 1/6W
R135	4011052716	MT-GLAZE 220 JA 1/16W	R407	4011050613	MT-GLAZE 10K JA 1/16W
R136	4011054116	MT-GLAZE 3.3K JA 1/16W	R408	4010272630	CARBON 5.6K JA 1/6W
R137	4011050910	MT-GLAZE 120 JA 1/16W	R409	4011055410	MT-GLAZE 47K JA 1/16W
R138	4011052815	MT-GLAZE 2.2K JA 1/16W	R410	4010623006	OXIDE-MT 47K JA 1W
R1604	4010278632	CARBON 8.2K JA 1/6W	R411	4010247737	CARBON 100K JA 1/6W
R1901	4011057315	MT-GLAZE 820 JA 1/16W	R421	4010486849	MT-FILM 4.7K FA 1/4W
R1902	4011055212	MT-GLAZE 470 JA 1/16W	R422	4010153751	CARBON 18K JA 1/4W
R1903	4011054017	MT-GLAZE 330 JA 1/16W		4010153850	CARBON 18K JA 1/4W
R1904	4011052716	MT-GLAZE 220 JA 1/16W	R423	4010192958	CARBON 39K JA 1/4W
R1905	4011051917	MT-GLAZE 180 JA 1/16W		4010193054	CARBON 39K JA 1/4W
R1906	4011057919	MT-GLAZE 0.000 ZA 1/16W	R424	4010247034	CARBON 1K JA 1/6W
R1907	4011050415	MT-GLAZE 100 JA 1/16W	R426	4011050613	MT-GLAZE 10K JA 1/16W
R1908	4011052716	MT-GLAZE 220 JA 1/16W	R427	4010275532	CARBON 6.8K JA 1/6W
R1911	4011052716	MT-GLAZE 220 JA 1/16W	R431	4011050514	MT-GLAZE 1K JA 1/16W
R1912	4011054512	MT-GLAZE 390 JA 1/16W	R432	4011055212	MT-GLAZE 470 JA 1/16W
R1913	4011052716	MT-GLAZE 220 JA 1/16W	R433	4010071134	CARBON 1K JA 1/2W
R201	4011055410	MT-GLAZE 47K JA 1/16W	R434	4010691708	OXIDE-MT 68 JA 2W
R202	4011057919	MT-GLAZE 0.000 ZA 1/16W	R435	4020803702	OXIDE-MT 6.8 JB 7W
R203	4011055410	MT-GLAZE 47K JA 1/16W	R437	4010247034	CARBON 1K JA 1/6W
R204	4011057919	MT-GLAZE 0.000 ZA 1/16W	R439	4010182751	CARBON 330 JA 1/4W
R207	4011057919	MT-GLAZE 0.000 ZA 1/16W		4010182850	CARBON 330 JA 1/4W
R209	4011051115	MT-GLAZE 12K JA 1/16W	R441	4010657704	OXIDE-MT 1.5K JA 2W
R211	4011050415	MT-GLAZE 100 JA 1/16W	R450	4010251932	CARBON 15K JA 1/6W
R212	4010246730	CARBON 100 JA 1/6W	R459	4010270537	CARBON 470K JA 1/6W
R213	4010246730	CARBON 100 JA 1/6W	R460	4010247440	CARBON 10K JA 1/6W
R221	4010246730	CARBON 100 JA 1/6W	R461	4010072319	CARBON 100K JA 1/2W
R222	4010246730	CARBON 100 JA 1/6W	R462	4010264635	CARBON 33K JA 1/6W
R223	4011054512	MT-GLAZE 390 JA 1/16W	R467	4010275235	CARBON 680 JA 1/6W

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R470	4010422520	MT-FILM 120K FA 1/4W	R659	4011056011	MT-GLAZE 5.6K JA 1/16W
R471	4010251635	CARBON 1.5K JA 1/6W	R660	4011054611	MT-GLAZE 3.9K JA 1/16W
R473	4010275235	CARBON 680 JA 1/6W	R667	4010663705	OXIDE-MT 2.7 JA 2W
R474	4010071134	CARBON 1K JA 1/2W	R668	4011057414	MT-GLAZE 8.2K JA 1/16W
R475	4010095843	CARBON 330 JA 1/2W	R669	4010142854	CARBON 150 JA 1/4W
R476	4010254230	CARBON 1.8K JA 1/6W		4010142943	CARBON 150 JA 1/4W
R477	4010623006	OXIDE-MT 47K JA 1W	R677	4010253837	CARBON 180 JA 1/6W
R478	4010246730	CARBON 100 JA 1/6W	R681	4011056011	MT-GLAZE 5.6K JA 1/16W
R479	4010257835	CARBON 2.2K JA 1/6W	R683	4011050613	MT-GLAZE 10K JA 1/16W
R481	4010690404	OXIDE-MT 6.8 JA 2W	R684	4011050514	MT-GLAZE 1K JA 1/16W
R481A	4010111127	CARBON 68 JA 1/2W	R685	4011056011	MT-GLAZE 5.6K JA 1/16W
R482	4010117218	CARBON 820K JA 1/2W	R801	4011054116	MT-GLAZE 3.3K JA 1/16W
R488	4020222008	FUSIBLE RES 1.0 J- 1/2W	R802	4011054116	MT-GLAZE 3.3K JA 1/16W
R489	4011058015	MT-GLAZE 1M JA 1/16W	R803	4011050613	MT-GLAZE 10K JA 1/16W
R491	4011055311	MT-GLAZE 4.7K JA 1/16W	R804	4011051016	MT-GLAZE 1.2K JA 1/16W
R492	4011051115	MT-GLAZE 12K JA 1/16W	R807	4010246433	CARBON 10 JA 1/6W
R493	4011055212	MT-GLAZE 470 JA 1/16W	R808	4011054116	MT-GLAZE 3.3K JA 1/16W
R494	4011055212	MT-GLAZE 470 JA 1/16W	R809	4010246433	CARBON 10 JA 1/6W
R501	4010690404	OXIDE-MT 6.8 JA 2W	R810	4010246730	CARBON 100 JA 1/6W
R502	4020222008	FUSIBLE RES 1.0 J- 1/2W	R811	4011054116	MT-GLAZE 3.3K JA 1/16W
R503	4011050514	MT-GLAZE 1K JA 1/16W	R812	4010246730	CARBON 100 JA 1/6W
R504	4010276133	CARBON 680K JA 1/6W	R813	4011054116	MT-GLAZE 3.3K JA 1/16W
R505	4010665204	OXIDE-MT 22 JA 2W	R815	4010246730	CARBON 100 JA 1/6W
R510	4012691508	OXIDE-MT 0.56 JA 2W	R816	4010246730	CARBON 100 JA 1/6W
R511	4010114326	CARBON 8.2 JA 1/2W	R817	4011050712	MT-GLAZE 100K JA 1/16W
R512	4010660506	OXIDE-MT 180 JA 2W	R826	4011054710	MT-GLAZE 39K JA 1/16W
R515	4010669103	OXIDE-MT 27 JA 2W	R829	4010247034	CARBON 1K JA 1/6W
R516	4010275532	CARBON 6.8K JA 1/6W	R832	4011054611	MT-GLAZE 3.9K JA 1/16W
R517	4011050613	MT-GLAZE 10K JA 1/16W	R866	4011050613	MT-GLAZE 10K JA 1/16W
R522	4010838321	MT-FILM 1.2K FA 1/6W	R867	4011050613	MT-GLAZE 10K JA 1/16W
R531	4010272630	CARBON 5.6K JA 1/6W	R886	4010258238	CARBON 22K JA 1/6W
R533	4010247034	CARBON 1K JA 1/6W			
R534	4010838321	MT-FILM 1.2K FA 1/6W			
R535	4010266639	CARBON 390 JA 1/6W			
R602	4020976406	WIRE WOUND 1.0 KA 15W			
R603	4011007706	OXIDE-MT 0.22 JA 2W			
R604	4012280405	OXIDE-MT 0.27 JA 2W			
R606	4010632909	OXIDE-MT 68K JA 1W			
R607	4010269333	CARBON 47 JA 1/6W			
R608	4010585908	OXIDE-MT 100K JA 1W			
R609	4010246730	CARBON 100 JA 1/6W			
R610	4010247034	CARBON 1K JA 1/6W			
R611	4010251635	CARBON 1.5K JA 1/6W			
△ R628	4020008602	SOLID 5.6M KA 1/2W			
	4020976604	CARBON 5.6M KA 1/2W			
△ R629	4020008602	SOLID 5.6M KA 1/2W			
	4020976604	CARBON 5.6M KA 1/2W			
R636	4011050613	MT-GLAZE 10K JA 1/16W			
R641	4010267032	CARBON 3.9K JA 1/6W			
R642	4010072319	CARBON 100K JA 1/2W			
R644	4010645701	OXIDE-MT 1.8 JA 2W			
R646	4010145132	CARBON 15K JA 1/4W			
	4010145251	CARBON 15K JA 1/4W			
R647	4010191852	CARBON 3.9K JA 1/4W			
	4010191951	CARBON 3.9K JA 1/4W			
R648	4010247440	CARBON 10K JA 1/6W			
R649	4011050712	MT-GLAZE 100K JA 1/16W			
R650	4011050712	MT-GLAZE 100K JA 1/16W			
R651	4010191852	CARBON 3.9K JA 1/4W			
	4010191951	CARBON 3.9K JA 1/4W			
R652	4010152655	CARBON 1.8K JA 1/4W			
	4010152754	CARBON 1.8K JA 1/4W			
R653	4010258238	CARBON 22K JA 1/6W			
R654	4010275532	CARBON 6.8K JA 1/6W			
R655	4010163750	CARBON 2.2K JA 1/4W			
	4010163859	CARBON 2.2K JA 1/4W			
R658	4010247440	CARBON 10K JA 1/6W			
VARIABLE RESISTOR					
	VR641	6450035579	VR, SEMI, 2.2K N		
		6450172601	VR, SEMI, 2K N		
TRANSFORMER					
	T431	6100001077	DRIVE TRANS		
		6102231656	DRIVE TRANS		
		6450473371	TRANS, DRIVE		
		6520000704	TRANS, DRIVE		
	△ T471	6520016644	TRANS, FLYBACK		
	△ T611	6450833977	TRANS, POWER, PULSE		
COIL					
	LD642A	6450332272	CORE, PIPE		
	LD642B	6450332272	CORE, PIPE		
	L201	6450082887	INDUCTOR, 5.6U K		
	L202	4010275037	CARBON 68 JA 1/6W		
	L203	6450082887	INDUCTOR, 5.6U K		
	L206	6450082887	INDUCTOR, 5.6U K		
	L207	6450082887	INDUCTOR, 5.6U K		
	L208	6450082887	INDUCTOR, 5.6U K		
	L209	6450082887	INDUCTOR, 5.6U K		
	L211	6450082887	INDUCTOR, 5.6U K		
	L212	6450082887	INDUCTOR, 5.6U K		
	L213	4010275037	CARBON 68 JA 1/6W		
	L214	6450082887	INDUCTOR, 5.6U K		
	L216	6450082887	INDUCTOR, 5.6U K		
	L217	6450082887	INDUCTOR, 5.6U K		
	L431	6100325821	FILTER COIL		
		6450085628	INDUCTOR, 1U M		
	L432	6100319998	PIPE CORE		
		6450187025	CORE, PIPE		
		6520010475	PIPE CORE		
	L441	6450642654	COIL, LINEARITY		
	L461	6100311367	INDUCTOR 202J		

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	6102113488	INDUCTOR		4070567916	ZENER DIODE RD5.1EB1
	6450055645	INDUCTOR, 2200U K		4080476403	ZENER DIODE MTZJ5.1A
L462	6450169120	INDUCTOR, 420UH	D231	4072065618	ZENER DIODE UDZS-TE-1710B
	6450472541	INDUCTOR, 420U	D261	4072065618	ZENER DIODE UDZS-TE-1710B
△ L601	6450834318	LINE FILTER	D262	4072065618	ZENER DIODE UDZS-TE-1710B
L630	6100785946	PIPE CORE	D263	4072065618	ZENER DIODE UDZS-TE-1710B
	6100785953	PIPE CORE	D353	4070995224	ZENER DIODE MTZJ5.1B
	6520010123	CORE, PIPE		4070568012	ZENER DIODE RD5.1EB2
	6520010147	CORE, PIPE		4080476700	ZENER DIODE MTZJ5.1B
L633	6100785946	PIPE CORE	D421	4070997228	ZENER DIODE MTZJ16A
	6100785953	PIPE CORE		4070547027	ZENER DIODE RD16EB1
	6520010123	CORE, PIPE	D422	4070995026	ZENER DIODE MTZJ4.7A
	6520010147	CORE, PIPE	D423	4070996627	ZENER DIODE MTZJ-T-7212B
L635	6100319998	PIPE CORE		4080482305	ZENER DIODE MTZJ12B
	6450187025	CORE, PIPE	D438	4070958001	DIODE ERD07-15L
	6520010475	PIPE CORE	D439	4070064128	DIODE ERB44-04V1
L639	6100319998	PIPE CORE	D462	4080093204	DIODE 1N4148
	6450187025	CORE, PIPE		4070124426	DIODE 1SS133
	6520010475	PIPE CORE		4070134336	DIODE 1S2076A
L642	6100319998	PIPE CORE		4070137129	DIODE 1S2473
	6450187025	CORE, PIPE	D464	4070995828	ZENER DIODE MTZJ7.5A
	6520010475	PIPE CORE		4080478803	ZENER DIODE MTZJ7.5A
L643	6100319998	PIPE CORE	D465	4080093204	DIODE 1N4148
	6450187025	CORE, PIPE		4070124426	DIODE 1SS133
	6520010475	PIPE CORE		4070134336	DIODE 1S2076A
L648	6100319998	PIPE CORE		4070137129	DIODE 1S2473
	6450187025	CORE, PIPE	D466	4070997822	ZENER DIODE MTZJ20A
	6520010475	PIPE CORE		4070551717	ZENER DIODE RD20EB1
L801	6450082887	INDUCTOR, 5.6U K	D467	4080093204	DIODE 1N4148
L802	6450082887	INDUCTOR, 5.6U K		4070134336	DIODE 1S2076A
L803	6450082887	INDUCTOR, 5.6U K		4070136528	DIODE 1S2471
L804	6450082887	INDUCTOR, 5.6U K	D468	4080093204	DIODE 1N4148
				4070124426	DIODE 1SS133
				4070134336	DIODE 1S2076A
				4070137129	DIODE 1S2473
DIODE					
D001	4071490817	DIODE 1SS355-TE-17		4070077415	DIODE EU1
D002	4071490817	DIODE 1SS355-TE-17	D469	4070638329	ZENER DIODE MTZJ11C
D003	4071490817	DIODE 1SS355-TE-17	D476	4070541827	ZENER DIODE RD11EB3
D009	4071490817	DIODE 1SS355-TE-17		4070077415	DIODE EU1
D1001	4070639722	ZENER DIODE MTZJ9.1C	D485	4070057328	DIODE EM01Z
	4070579820	ZENER DIODE RD9.1EB3	D501	4070058632	DIODE ERA15-02-V1
	4080480301	ZENER DIODE MTZJ9.1C-52		4071490817	DIODE 1SS355-TE-17
D1005	4072065618	ZENER DIODE UDZS-TE-1710B	D502	4070639128	ZENER DIODE MTZJ6.8B
D1010	4070054525	DIODE DS442X	D503	4070054525	DIODE DS442X
	4080093204	DIODE 1N4148	D504	4080093204	DIODE 1N4148
	4070124426	DIODE 1SS133		4070124426	DIODE 1SS133
	4070134336	DIODE 1S2076A		4070134336	DIODE 1S2076A
	4070137129	DIODE 1S2473		4070137129	DIODE 1S2473
D1015	4072065618	ZENER DIODE UDZS-TE-1710B		4070057328	DIODE EM01Z
D102	4071000224	ZENER DIODE MTZJ36A	D506	4070058632	DIODE ERA15-02-V1
D1025	4072065618	ZENER DIODE UDZS-TE-1710B		4072513000	DIODE ERC01-10E
D121	4071661118	DIODE 1SS356-TW11	D605	4072513000	DIODE ERC01-10E
D1601	4070054525	DIODE DS442X	D606	4072513000	DIODE ERC01-10E
	4080093204	DIODE 1N4148	D607	4072513000	DIODE ERC01-10E
	4070124426	DIODE 1SS133	D608	4072513000	DIODE ERC01-10E
	4070134336	DIODE 1S2076A	D609	4070054525	DIODE DS442X
	4070137129	DIODE 1S2473		4080093204	DIODE 1N4148
D1901	4072455003	LED SLR343BCT		4070124426	DIODE 1SS133
D1901A	6102737929	HOLDER LED-S4KF		4070134336	DIODE 1S2076A
	6103039954	HOLDER LED-C4LA		4070137129	DIODE 1S2473
D1902	4070054525	DIODE DS442X	△ D610	4072348701	PHOTO COUPLE PC123X5YFZ
	4080093204	DIODE 1N4148		4072303908	PHOTO COUPLE PC123Y52
	4070124426	DIODE 1SS133		4072317707	PC TLP421F(D4-BL)
	4070134336	DIODE 1S2076A		4071468113	DIODE EG01C
	4070137129	DIODE 1S2473	D611	4070077415	DIODE EU1
D1907	4071490817	DIODE 1SS355-TE-17	D612	4070077415	DIODE EU1
D1908	4071490817	DIODE 1SS355-TE-17	D613	4070077415	DIODE EU1
D1909	4070638626	ZENER DIODE MTZJ5.1A	D614	4070995422	ZENER DIODE MTZJ6.2B
			D633	4071542704	DIODE YG901C2-LB

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
D635	4070098816	DIODE RU3AM		4050122111	TR 2SC1815-0
D637	4070124426	DIODE 1SS133		4050122319	TR 2SC1815-Y
D641	4070124426	DIODE 1SS133		4050207511	TR 2SC945A-PA
D642	4070098816	DIODE RU3AM		4050207719	TR 2SC945A-QA
D645	4070995422	ZENER DIODE MTZJ6.2B		4050207917	TR 2SC945A-RA
D671	4070113014	DIODE S5277B	Q1706	4050118411	TR 2SC1740S-Q
D681	4071490817	DIODE 1SS355-TE-17		4050118510	TR 2SC1740S-R
D682	4071490817	DIODE 1SS355-TE-17		4050118619	TR 2SC1740S-S
D801	4070124426	DIODE 1SS133		4050122012	TR 2SC1815-GR
D802	4070124426	DIODE 1SS133		4050122111	TR 2SC1815-0
				4050122319	TR 2SC1815-Y
				4050207511	TR 2SC945A-PA
				4050207719	TR 2SC945A-QA
				4050207917	TR 2SC945A-RA
			Q1707	4050118411	TR 2SC1740S-Q
				4050118510	TR 2SC1740S-R
				4050118619	TR 2SC1740S-S
				4050122012	TR 2SC1815-GR
				4050122111	TR 2SC1815-0
				4050122319	TR 2SC1815-Y
				4051570515	TR 2SC536NF-NPA
				4051518725	TR 2SC536NG-NPA
				4050207511	TR 2SC945A-PA
				4050207719	TR 2SC945A-QA
				4050207917	TR 2SC945A-RA
			Q1708	4051413515	TR KTA1266-Y-T
				4060087407	TR 2SA1015-G(SAN)-TPE2
				4050017417	TR 2SA1015-0(SAN)
				4050017615	TR 2SA1015-Y(SAN)
				4050043119	TR 2SA564A-Q(CU)
				4050043218	TR 2SA564A-R(CU)
				4051513324	TR 2SA608NF-NPA
				4050061717	TR 2SA933S-Q
				4050061816	TR 2SA933S-R
			Q1709	4051084903	TR 2SA1837-LB
			Q1711	4051085009	TR 2SC4793-LB
			Q1712	4050118411	TR 2SC1740S-Q
				4050118510	TR 2SC1740S-R
				4050118619	TR 2SC1740S-S
				4050122012	TR 2SC1815-GR
				4050122111	TR 2SC1815-0
				4050122319	TR 2SC1815-Y
				4050207511	TR 2SC945A-PA
				4050207719	TR 2SC945A-QA
				4050207917	TR 2SC945A-RA
			INTEGRATED CIRCUIT		
			IC701	4095920205	IC TDA6107AJF/N1B
			CAPACITOR		
			C1705	4040847809	ELECT 100U M 16V
				4030422425	ELECT 100U M 16V
			C1711	4030573137	POLYESTER 0.1U K 50V
				4031818217	POLYESTER 0.1U K 50V
			C1712	4030620524	POLYESTER 0.047U K 50V
				4031790919	POLYESTER 0.047U K 50V
			C1714	4030754229	CERAMIC 820P K 50V
			C1715	4030651419	POLYESTER 4700P K 200V
				4032072004	POLYESTER 4700P K 200V
				4031019218	POLYESTER 4700P K 200V
				4033451115	POLYESTER 4700P K 200V
			C1716	4030754229	CERAMIC 820P K 50V
			C1717	4030618333	POLYESTER 4700P K 50V
				4031791114	POLYESTER 4700P K 50V
			C1718	4040874904	ELECT 47U M 25V
				4030473120	ELECT 47U M 25V
			C1722	4032220633	ELECT 22U M 160V
6103274768 ASSY,PWB,CRT C8ZA					
1AA0B10S208AB					
TRANSISTOR					
Q1702	4050118411	TR 2SC1740S-Q			
	4050118510	TR 2SC1740S-R			
	4050118619	TR 2SC1740S-S			
	4050122012	TR 2SC1815-GR			

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
C1724	4030724420	CERAMIC 270P K 50V			
C1740	4040848806	ELECT 1U M 50V			
	4030490018	ELECT 1U M 50V			
C1748	4030698325	CERAMIC 0.01U Z 50V			
C1749	4040847809	ELECT 100U M 16V			
	4030422425	ELECT 100U M 16V			
C710	4032819302	ELECT 10U M 250V			
C741	4032636820	CERAMIC 2200P K 2K			
	4034140216	CERAMIC 2200P K 2K			
RESISTOR					
R1701	4010246730	CARBON 100 JA 1/6W			
R1707	4010251635	CARBON 1.5K JA 1/6W			
R1708	4010199551	CARBON 47 JA 1/4W			
	4010199650	CARBON 47 JA 1/4W			
R1709	4010199551	CARBON 47 JA 1/4W			
	4010199650	CARBON 47 JA 1/4W			
R1711	4010272135	CARBON 56 JA 1/6W			
R1716	4010249335	CARBON 1.2K JA 1/6W			
R1720	4010247440	CARBON 10K JA 1/6W			
R1722	4010250034	CARBON 120K JA 1/6W			
R1723	4010267438	CARBON 39K JA 1/6W			
R1724	4010267438	CARBON 39K JA 1/6W			
R1727	4010123358	CARBON 10 JA 1/4W			
	4010123457	CARBON 10 JA 1/4W			
R1728	4010230640	CARBON 82 JA 1/4W			
	4010230749	CARBON 82 JA 1/4W			
R1730	4010653706	OXIDE-MT 1.2K JA 2W			
R1732	4010249335	CARBON 1.2K JA 1/6W			
R1733	4010247737	CARBON 100K JA 1/6W			
R1734	4010247737	CARBON 100K JA 1/6W			
R1735	4010249335	CARBON 1.2K JA 1/6W			
R1736	4010249731	CARBON 12K JA 1/6W			
R1737	4010073613	CARBON 12 JA 1/2W			
R1738	4010651801	OXIDE-MT 12 JA 2W			
R1742	4010652808	OXIDE-MT 120 JA 2W			
R1744	4010249335	CARBON 1.2K JA 1/6W			
R1749	4020380708	FUSIBLE RES 1K J- 1W			
R701	4011051412	MT-GLAZE 150 JA 1/16W			
R704	4010246730	CARBON 100 JA 1/6W			
R705	4010071134	CARBON 1K JA 1/2W			
R711	4011051412	MT-GLAZE 150 JA 1/16W			
R714	4010246730	CARBON 100 JA 1/6W			
R715	4010071134	CARBON 1K JA 1/2W			
R721	4011051412	MT-GLAZE 150 JA 1/16W			
R724	4010246730	CARBON 100 JA 1/6W			
R725	4010071134	CARBON 1K JA 1/2W			
R731	4011050514	MT-GLAZE 1K JA 1/16W			
R732	4011058213	MT-GLAZE 68K JA 1/16W			
COIL					
L1708	4010257132	CARBON 22 JA 1/6W			
DIODE					
D1705	4071085310	DIODE SB07-03N			
D1707	4071085310	DIODE SB07-03N			
D1708	4070124426	DIODE 1SS133			
D702	4070076616	DIODE ES1			
D712	4070076616	DIODE ES1			
D722	4070076616	DIODE ES1			
MISCELLANEOUS					
△ K701	6450262005	SOCKET, CRT 8P			
	6450317699	SOCKET, CRT 8P			

Main Board (Parts Side)



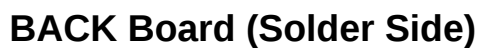
CRT Board (Parts Side)



MAIN Board (Solder Side)



CRT Board (Solder Side)

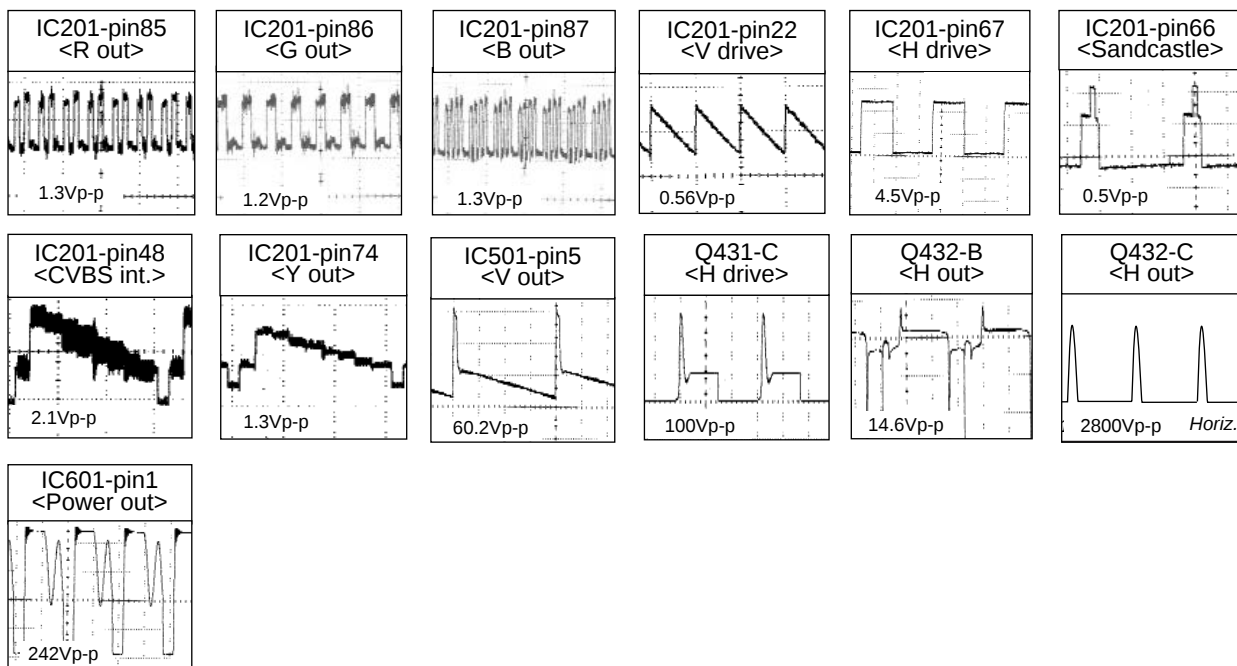


Voltages and Waveforms Charts

Note: Voltages and waveforms were measured with colour bar signal and controls adjusted for normal picture.

Main Board

Q003 E 0V C 19.7V B 0V	Q004 E 0V C 19.7V B 0V	Q006 E 0V C 0V B 0.6V	Q007 E 5.6V C 13.9V B 6.2V	Q008 E 0V C 0V B 2.8V	Q1005 E 1.7V C 4.6V B 2.2V	Q111 E 0V C 0V B 0.6V	Q112 E 0.5V C 2.8V B 1.3V	Q113 E 0.4V C 0.3V B 0V	Q202 E 3.3V C 2V B 2.5V	Q203 E 2V C 2.5V B 2.6V	Q204 E 3.3V C 2V B 2.5V
Q1602 E 0V C 4.9V B 0V	Q201 E 1.9V C 2.3V B 2.6V	Q202 E 3.1V C 1.9V B 2.3V	Q203 E 1.9V C 2.3V E 2.5V	Q204 B 3.1V C 1.9V E 2.3V	Q205 E 2.7V C 0V B 2.1V	Q208 E 3.3V C 0V B 2.9V	Q401 E 194V C 193.7V B 193.2V	Q402 E 0V C 0V B 0.5V	Q403 E 0V C 2.2V B 0V	Q404 E 0V C 2.9V B 0V	Q405 E 0V C 0V B 0.6V
Q406 E 145V C 145.7V B 145.1V	Q424 E 0V C 3.2V B 0V	Q425 S 1.7V D 3.8V G 3.2V	Q431 E 0V C 3.5V B 0.4V	Q432 E 0V C 363V B 1.5V	Q439 E 1.8V C 4.8V B 2.4V	Q461 E 14.6V C 0V B 14.1V	Q462 E 0V C 13.8V B 0.6V	Q491 E 2.9V C 0V B 2.2V	Q641 E 6.1V C 25.2V B 6.7V	Q642 E 20.3V C 20.2V B 19.6V	Q643 E 0V C 0V B 0.6V
Q645 B 0V C 0V B 0.6V	Q651 E 20.2V C 20.1V B 19.5V	Q682 S 0V D 0V G 0.6V	Q683 E 0V C 0V B 0V	Q866 E 3.1V C 0V B 4.5V	Q886 E 0V C 0V B 0.7V						



IC001 (AUDIO AMP.)									
Pin-1 10.2V	2 GND	3 20.9V	4 10.3V	5 19.7V	6 3.1V	7 GND	8 3.1V	9 3.1V	
10 19.7V	11 11.8V	12 3.1V	13 3.1V	14 10.3V	15 GND	16 20.9V	17 10.3V		

IC501 (VERT. OUT)									
Pin-1 1.6V	2 1.6V	3 14.7V	4 30.5V	5 15.8V	6 16.0V	7 30V	8 GND	9 GND	
10 GND									

IC601 (POWER)							
Pin-1348V~	2 0V	3 0V	4 19.2V	5 0V	6 1.2V	7 0.5V	

IC641				
Pin-1 6.8V	2 4.9V	3 GND	4 2.6V	

IC666			
Pin-1 5.8V	2 GND	3 3.3V	

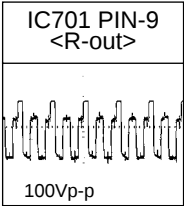
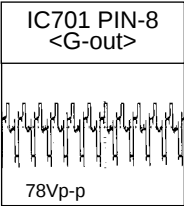
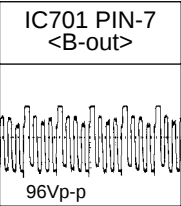
IC802 (MEMORY)								
Pin-1 0V	2 0V	3 0V	4 0V	5 3.2V	6 3.2V	7 0V	8 3.2V	

Voltages and Waveforms Charts

CRT Board

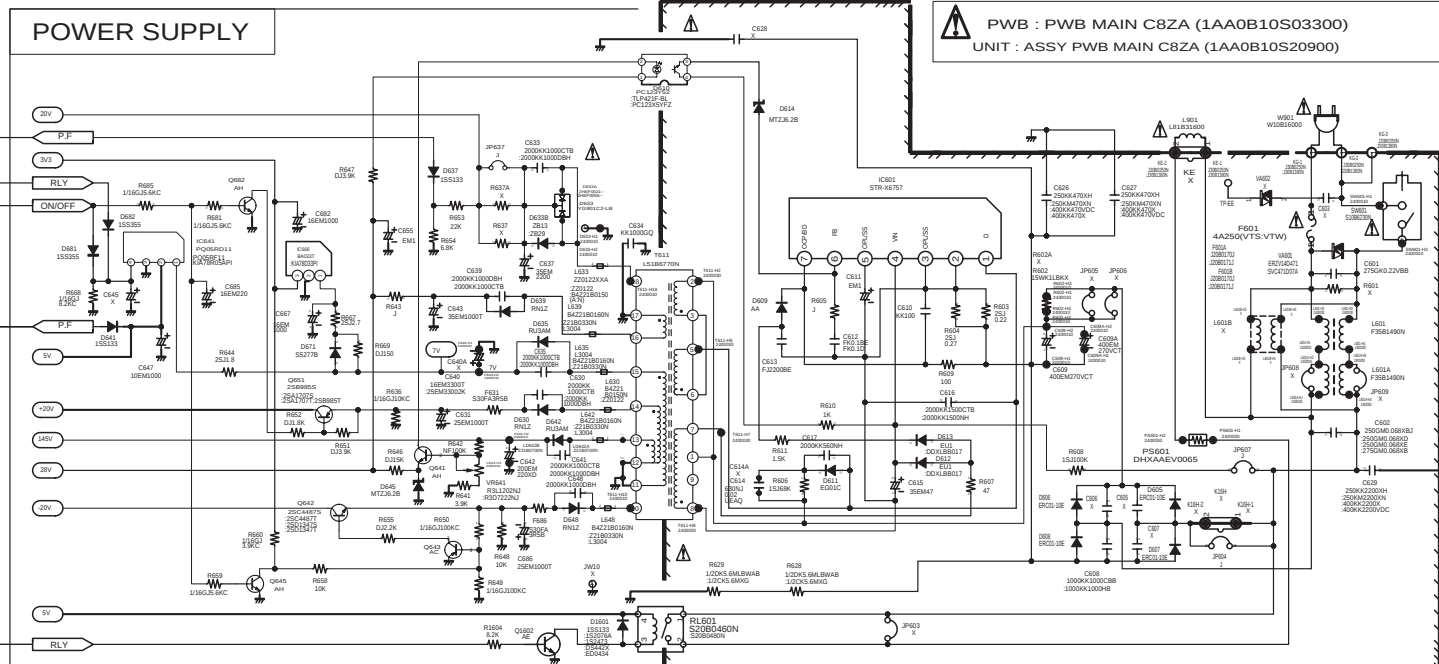
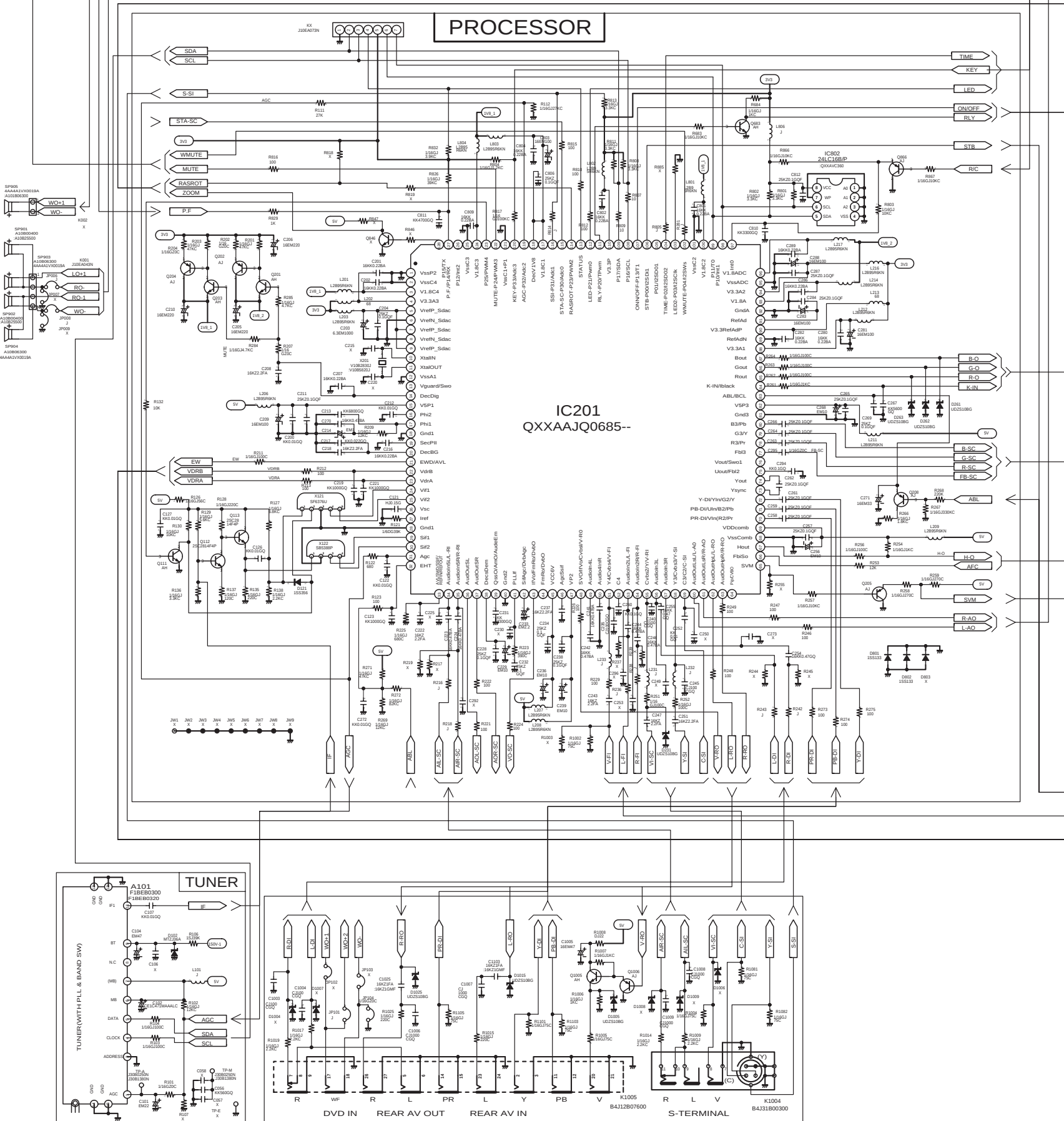
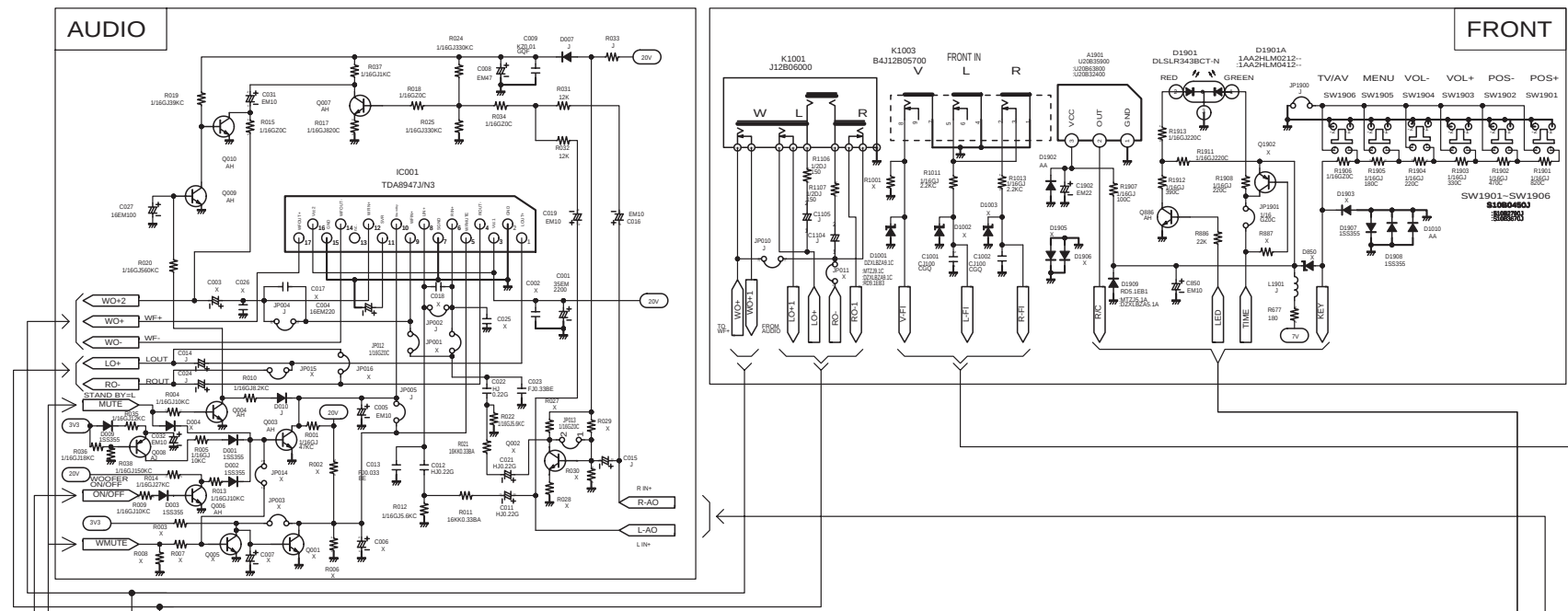
Q1702 E 3.1V C 19.7V B 3.7V	Q1706 E 0.6V C 10.6V B 1.2V	Q1707 E 10.8V C 19.7V B 10.66V	Q1708 E 10.8V C 0V E 10.6V	Q1709 B 141.2V C 71.2V E 140.5V	Q1711 E 0V C 71.2V B 0.8V	Q1712 E 0V C 0V B 0V
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IC701 (Triple Video Output Amp.)																	
Pin-1	2.2V	2	2.2V	3	2.2V	4	GND	5	5.1V	6	194V	7	10V	8	15.5V	9	18V





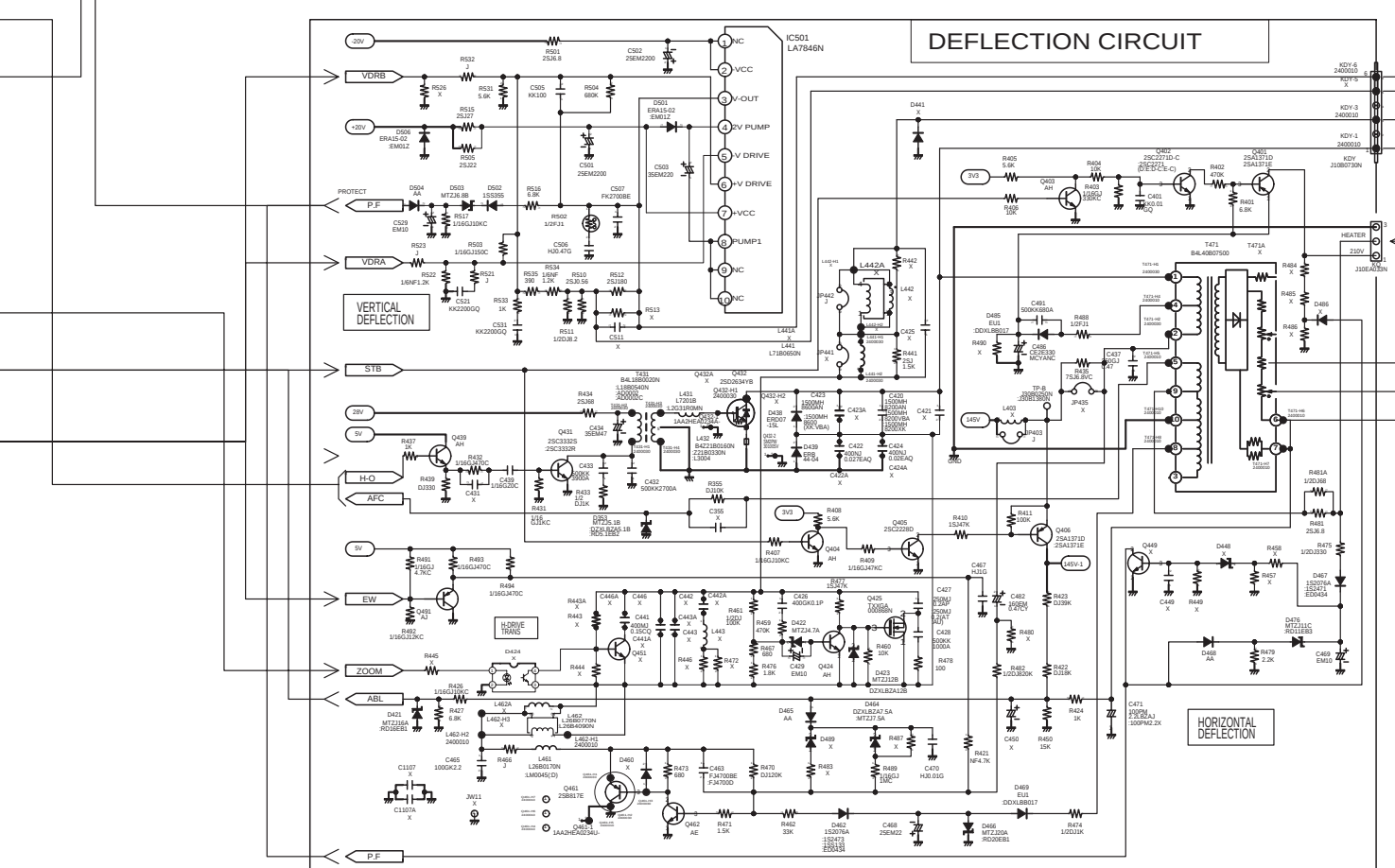
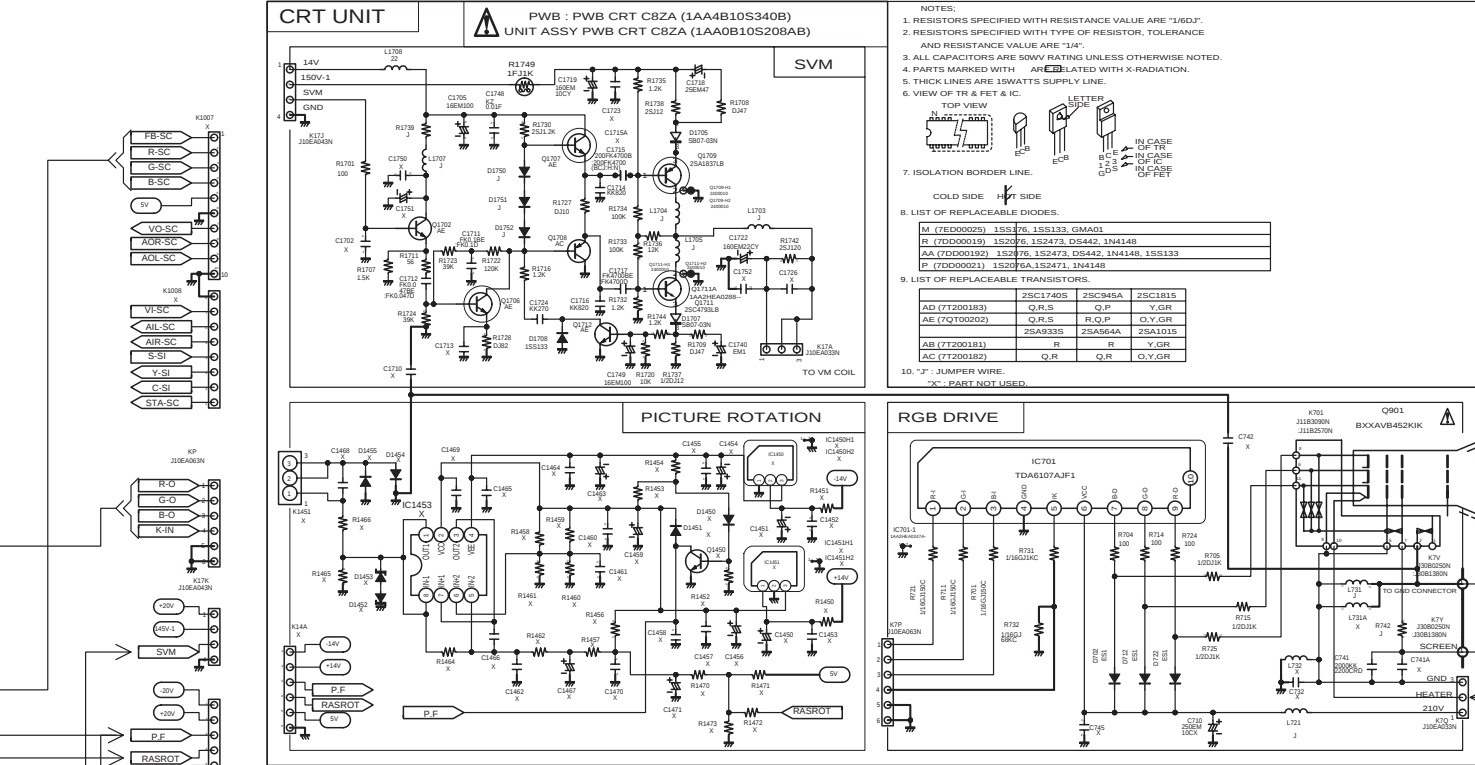
SANYO Electric Co., Ltd.
Printed In Indonesia



DIFFERENCES PARTS LIST :

MODEL	SL	MAIN UNIT	CRT UNIT
KB21	033CBA	LA40B10S20900	LA40B10S20900
CB2D	033C2D	LA40B10S20900	LA40B10S20900
CB2FA	033C2D	LA40B10S20900	LA40B10S20900
CB2N	033C2N	LA40B10S20900	LA40B10S20900
CB2R	033C2R	LA40B10S20900	LA40B10S20900

LOC	033CBA	033C2D	033C2N
W001	LA40B10S20900	LA40B10S20900	LA40B10S20900
W001	LA40B10S20900	LA40B10S20900	LA40B10S20900



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

SANYO

FB1-B

CHASSIS SERIES

SERVICE REF. NO. CM29FS2-00

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 Δ 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 μF and more than 1 are pF.
- All capacitance rated voltages are 50V unless otherwise noted.
- All inductance values are in μH .
- 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 diagram.

Capacitance (Example)

1000 C M 2000 D

Resistance (Example)

1/2 N 1 1.2

Characteristic
Capacitance value (220pF)
Capacitance error (-20%)
Rated voltage (1,000V)

J= - 5%
K= -10%
M= -20%

T, A, U, D: Electrolytic
C, K, B: Ceramic
F: Mylar film
M, N: Polypropylene
Z: Metalized paper

D: Carbon
N: Metalized carbon
S: Oxid metalized
W: Wire winding
C: Solid

