


SERVICE MANUAL

A315MDY6-A01
21A9MDY5BA01
2109MDY5DA01
21B8MDY5AA01


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This manual is the latest at the time of printing, and does not include the modification which may be made after the printing, by the constant improvement of product.


I. Safety Instructions




CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.



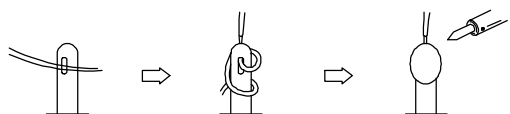
The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

PRECAUTIONS DURING SERVICING

1. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements. Examples: RF converters, tuner units, antenna selection switches, RF cables, noise-blocking capacitors, noise-blocking filters, etc.
2. Use specified internal Wiring. Note especially:
 - 1) Wires covered with PVC tubing
 - 2) Double insulated wires
 - 3) High voltage leads
3. Use specified insulating materials for hazardous live parts. Note especially:
 - 1) Insulating Tape
 - 2) PVC tubing
 - 3) Spacers (insulating barriers)
 - 4) Insulating sheets for transistors
 - 5) Plastic screws for fixing micro switches
4. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



5. Make sure that wires do not contact heat generating parts (heat sinks, oxide metal film resistors, fusible resistors, etc.)
6. Check if replaced wires do not contact sharply edged or pointed parts.
7. Make sure that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

Used batteries with the ISO symbol for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can.

Please leave them at an appropriate depot.



WARNING:

Before servicing this TV receiver, read the X-RAY RADIATION PRECAUTION, SAFETY INSTRUCTION and PRODUCT SAFETY NOTICE.

X-RAY RADIATION PRECAUTION

1. Excessively high can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not exceed the specified limit. The normal value of the high voltage of this TV receiver is 27 KV at zero beam current (minimum brightness). The high voltage must not exceed 30 KV under any circumstances. Each time when a receiver requires servicing, the high voltage should be checked. The reading of the high voltage is recommended to be recorded as a part of the service record, It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type as specified in the parts list.
3. Some parts in this TV receiver have special safety related characteristics for X-RADIATION protection. For continued safety, the parts replacement should be under taken only after referring the PRODUCT SAFETY NOTICE.

SAFETY INSTRUCTION

The service should not be attempted by anyone unfamiliar with the necessary instructions on this TV receiver. The following are the necessary instructions to be observed before servicing.

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.
2. Comply with all caution and safety related provided on the back of the cabinet, inside the cabinet, on the chassis or picture tube.

3. To avoid a shock hazard, always discharge the picture tube's anode to the chassis ground before removing the anode cap.
4. Completely discharge the high potential voltage of the picture tube before handling. The picture tube is a vacuum and if broken, the glass will explode.
5. When replacing a MAIN PCB in the cabinet, always be certain that all protective are installed properly such as control knobs, adjustment covers or shields, barriers, isolation resistor networks etc.
6. When servicing is required, observe the original lead dressing. Extra precaution should be given to assure correct lead dressing in the high voltage area.
7. Keep wires away from high voltage or high temperature components.
8. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screwheads, metal overlay, control shafts, etc., to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly to the AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5K ohms volt sensitivity or more in the following manner.

Connect a 1.5K ohm 10 watt resistor paralleled by a 0.15 μ F AC type capacitor, between a good earth ground (water pipe, conductor etc.,) and the exposed metallic parts, one at a time.

Measure the AC voltage across the combination of the 1.5K ohm resistor and 0.15 μ F capacitor. Reverse the AC plug at the AC outlet and repeat the AC voltage measurements for each exposed metallic part.

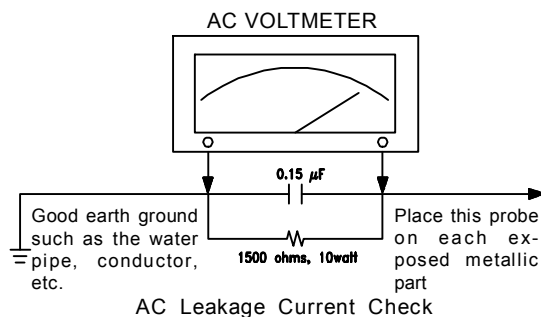
The measured voltage must not exceed 0.3V RMS.

This corresponds to 0.5mA AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

The resistance measurement should be done between accessible exposed metal parts and power cord plug prongs with the power switch "ON". The resistance should be more than 6M ohms.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this TV receiver have special safety-related characteristics. These characteristics are offer passed unnoticed by visual spection and the protection afforded by them cannot necessarily be obtained by using replacement components rates for a higher voltage, wattage, etc. The replacement parts which have these special safety characteristics are identified by \triangle marks on the schematic diagram and on the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire, X-RAY RADIATION or other hazards.



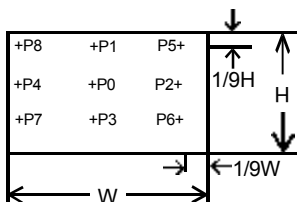
II. Specifications

1. Power supply TV: AC 220V, 50Hz
Remote control battery: 3V (UM-4X2)
2. TV system RF input: PAL BG/DK/I SECAM BG/DK, NTSC M
Video input: PAL/NTSC 3.58/NTSC 4.43/SECAM
3. Receiving channels 48.25MHz~588.25MHz
4. Intermediate frequencies Picture: 38.9MHz
5. Scanning Horizontal (Hz): 15625/15750
Vertical (Hz): 50/60
6. Color picture tube : 14" 90 degree N (1) hemisphere Bv=0.35G±0.2G
21" 90 degree N (3) hemisphere Bv=0.5G(+0.1G/-0.15G)
7. Operating temperature Fulfil all specifications: 15°C ~ 35°C
Accept picture/tone reproduction: 5°C ~ 45°C
8. Operating relative humidity Fulfil all specifications: 45% ~ 75%
Accept picture/tone reproduction: 15% ~ 90%
9. Electrical & Optical Specification:

No.	Items	Instruction		Typical	Limit	Unit
1	Video sensitivity	For 30dB S/N		≤45	≤51	dBuV
2	FM sound sensitivity	For 30dB S/N		30	≤35	dBuV
3	Synchronizing sensitivity	For RF transmission		30	≤35	dBuV
4	Color sensitivity	For RF transmission		32	≤40	dBuV
5	Teletext sensitivity	TV screen refreshes 40 times		N/A	N/A	dBu (for A315MDY6)
		number of mistakes ≤8		≤45	≤50	dBu (Except A315MDY6)
6	Minimum NICAM threshold	Without crackline noise		N/A	N/A	dBu (for A315MDY6)
				43	≤45	dBu (Except A315MDY6)
7	AGC static characteristic	Accept. Picture/tone repr.		103	≥100	dBu
8	Selectivity	Adjacent sound carrier		35	≥30	dB
		Below adjacent sound carrier		35	≥30	
		Adjacent picture carrier		50	≥40	
		Up adjacent picture carrier		45	≥30	
9	IF rejection			55	≥50	dB
10	Image rejection	VHF		55	≥50	dB
		UHF		50	≥45	
11	AFT pull-in range	MN		±1.0	≥ ±0.5	MHz
		DK//BG		+1.5 -1.0	≥ ±1.0 ≥ ±0.75	
12	Chroma sync pull-in range			±500	≥ ±200	Hz
13	Color killer function			-25	≤-16	dB
14	DC restoration			3	≤10	%
15	Resolution	Horizontal	PAL/SECAM	320	≥300	lines
			NTSC	270	≥250	
		Vertical	PAL/SECAM	410	≥400	
			NTSC	320	≥300	
16	Overscan	Cross hatch signal		94	92~97	% (for A315MDY6)
				93	92~97	% (Except A315MDY6)
17	Linearity	Horizontal		7	≤10	%
		Vertical		6	≤8	%
18	Pattern distortion			1.5	≤3	%
19	Picture position	In all direction		±3	≤ ±6	mm
20	Raster rotation	In all direction		4	≤6	mm
21	Convergence error			0.4	≤0.6	%
22	White balance (8700°K)	X		0.288	0.288±0.015	/
		Y		0.298	0.298±0.015	
23	Maximum full white	At picture tube center		140	≥100	cd/m ²
24	H sync pull-in range			±500	≥ ±200	Hz
25	V sync pull-in range			7	≥6	Hz
26	Anode voltage			22	≤27.5	KV (for A315MDY6)
				22	≤27.5	KV (Except A315MDY6)
27	Audio frequency response	±3dB ref. to 1KHz		0.1~8.2	0.2~8	KHz

No.	Items	Instruction	Typical	Limit	Unit
28	Audio output power	1KHz 10% THD	1.9x1	$\geq 1.5x1$	W (for A315MDY6)
		50KHz DEV. (BG/DK/I) 25KHz DEV. (M/N)	1.9x2	$\geq 1.5x2$	W (Except A315MDY6)
29	THD	Po=0.5W 1KHz	1	≤ 3	%
30	Signal to buzz ratio TV/AV		42	≥ 40	dB
31	Minimum volume hum		6	≤ 10	mVrms
32	Maximum woofer output power		N/A	N/A	W
33	Woofer audio frequency response	± 3 dB ref. to 80Hz AV mode	N/A	N/A	Hz
34	Bass control range	100Hz ref. to 1KHz AV mode	N/A	N/A	dB (for A315MDY6)
			± 10	$\geq \pm 3 $	dB (Except A315MDY6)
35	Treble control range	10KHz ref. to 1KHz AV mode	N/A	N/A	dB (for A315MDY6)
			± 10	$\geq \pm 3 $	dB (Except A315MDY6)
36	Balance	Center	N/A	N/A	dB (for A315MDY6)
			0	$\geq \pm 2 $	dB (Except A315MDY6)
		Max.	N/A	N/A	dB (for A315MDY6)
			3	> 2	dB (Except A315MDY6)
		Min.	N/A	N/A	dB (for A315MDY6)
			-35	< -30	dB (Except A315MDY6)
37	Video input level		1.0	1 ± 0.2	Vpp
38	Audio input level		0.5	0.5 ± 0.3	Vrms
39	Video output level		1.0	1 ± 0.2	Vpp
40	Audio output level		0.5	0.5 ± 0.3	Vrms
41	Power consumption	Operating	65	≤ 80	W (for A315MDY6)
			75	≤ 95	W (Except A315MDY6)
		Stand by	6	≤ 10	W
42	IR receiving distance	$\pm 30^\circ$	6	≥ 4	m
43	X-ray radiation		< 0.1	≤ 0.5	mR/h
44	Dielectric strength	AC 3KVrms 1min.	3	≤ 5	mArms
45	Y input level		N/A	N/A	Vpp (for A315MDY6)
			1.0	1 ± 0.2	Vpp (Except A315MDY6)
46	Cr input level		N/A	N/A	Vpp (for A315MDY6)
			0.7	0.7 ± 0.15	Vpp (Except A315MDY6)
47	Cb input level		N/A	N/A	Vpp (for A315MDY6)
			0.7	0.7 ± 0.15	Vpp (Except A315MDY6)
48	White uniformity	L edge or angle/L center	47	≥ 45	%
49	Cross modulation interference	Receiving Kawa central system signals	No visible interference at 80dBuv		
50	The vibration noise from electromagnetic devices in TV set	The distance between the tester and the TV set is four times as many as the screen height	No obvious vibration noise can be heard		

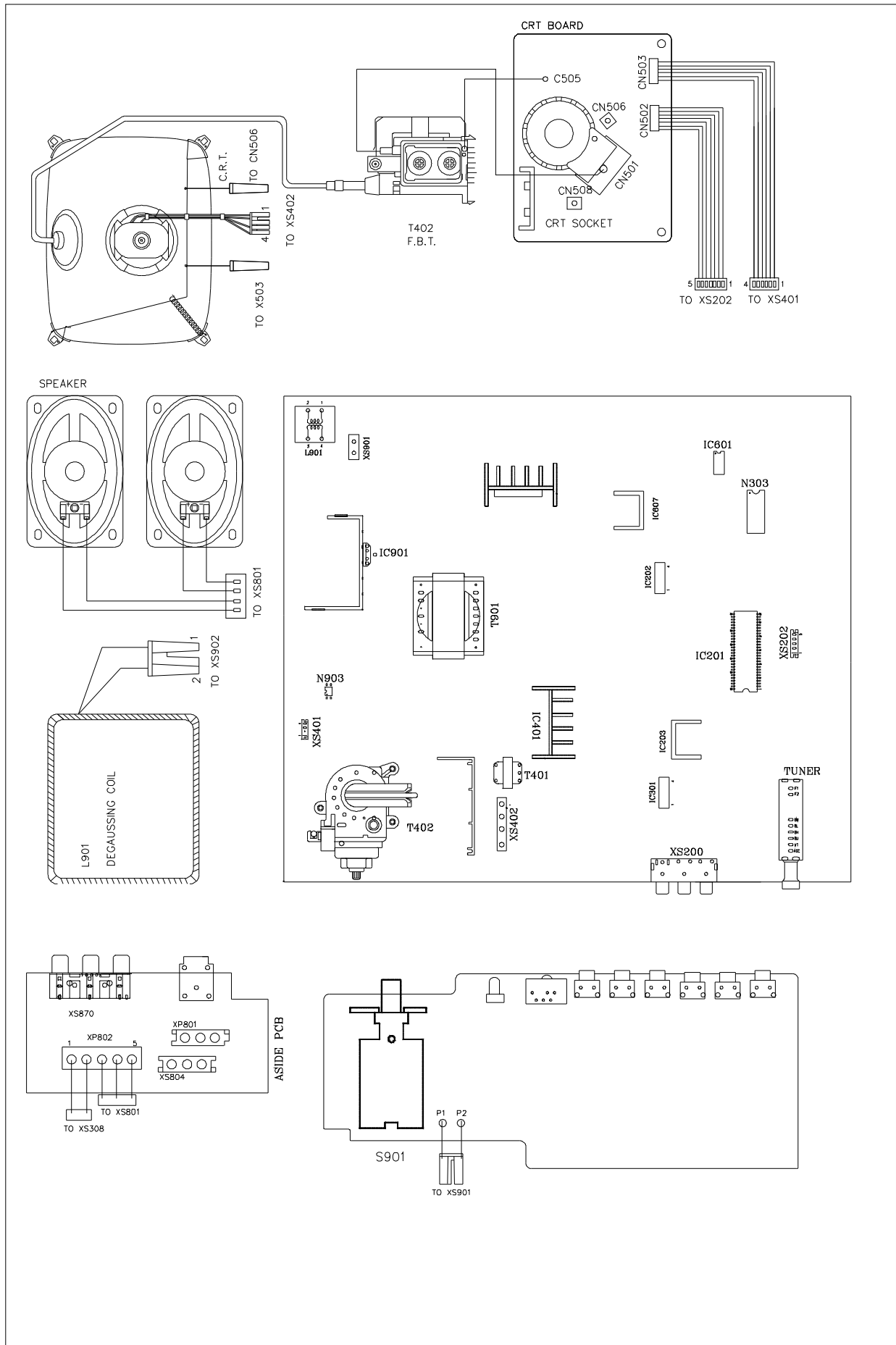
Test Condition

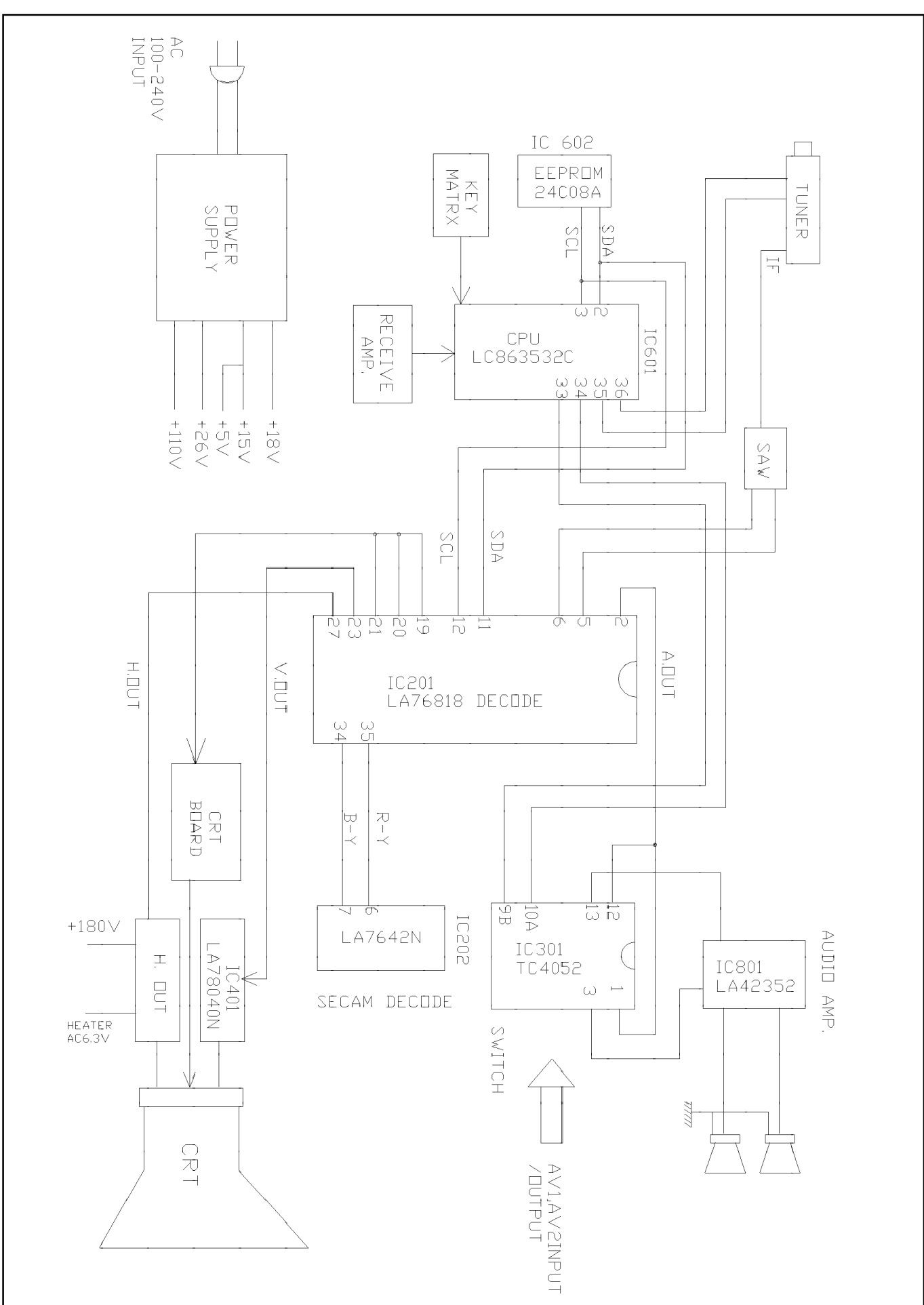
1	Picture Modulation	87.5%	 <p>Convergence error test point on screen</p>
2	Sound Modulation	27KHz Dev. For DK/I/BG 15KHz Dev. For M/N	
3	Picture to Sound Ration	10dB	
4	Sound Artificial Load Resistor	16 ohm	
5	Video signal	White and black (three white & two black)	
6	Audio signal	1KHz sine wave 0.5Vrms	
7	Conditions of the TV setting: A. Switch TV on and let it warm up for more than 30 minutes. B. Connect RMS volt meter to speaker terminals and adjust theTV volume to get 500mW RMS power at each terminal. C. Place the MINOLTA CA-100 test probe to white part of the screen,adjust the contrast until a reading of 80cd/m ² is obtained. D. Place the MINOLTA CA-100 test probe to black part of the screen,adjust the brightness until a reading of 2cd/m ² is obtained. E. Repeat step C & D until the exact luminance values is obtained or the nearest possible values you can get.then record the luminance values & R.G.B gun voltage values at the same time. and take the largest values for measurement referent. F. Input standard color bar(100/0/75/0),then adjust the colour.until the waveforms at the blue gun of same level is obtained.		

III. Level List of Equipments & Instruments Required for Production

No.	Designation	Requirement	Reference Model	Remark
1	Pattern Generator	System of output signal: PAL DK/I., NTSC 3.58/4.43	PHILIPS PM5518-TN/ PM5418-TN	
2	Digital voltmeter	Input Resistance $\geq 10\text{M}\Omega$	FLUKE 45	
3	Withstanding Voltage Tester	Withstanding Voltage:AC 1.5KV, 5KV/0-5KV $\pm 3\%$ Cut-off current:AC 0-2mA,20mA/ Continuously Adjustable	KIKUSUI TOS 8650 measurement	For Irresistible Voltage
4	Insulation Tester	Test voltage:1000V. 500V	KIKUSUI TOS 7100L	
5	Oscilloscope	Max Frequency of input signal: 20MHz or above		
6	CRT Color Analyzer		MINOLTA CA-100	For White Balance Adjustment
7	Oscillator	Frequency range of output signal: 20Hz-20kHz	KENWOOD AG-203A	For generating Audio Signal
8	HV Probe		FLUKE	For screen voltage adjustment

IV. Wiring Diagram

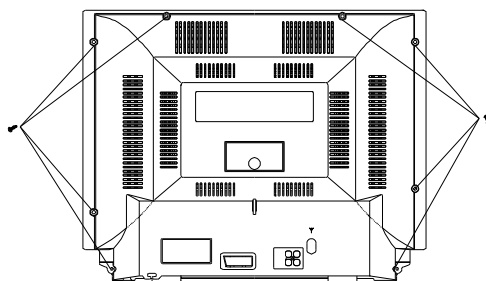




VI. Disassembly

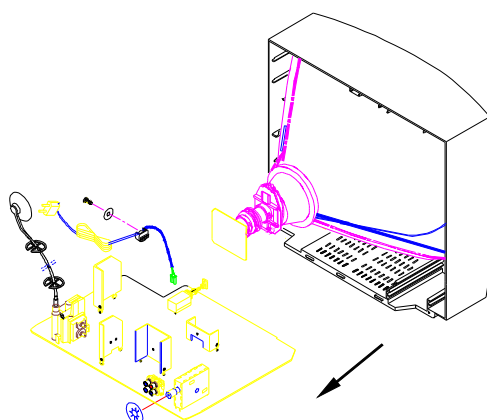
In case of trouble, etc., necessitating disassembly, please disassemble in the order shown in the illustrations. Reassemble in the reverse order.

1. Removal of the Back Cover



2. Removal of the MAIN PCB

- Remove the screws.
- Slide out the TV chassis slightly; pull up the connector of AC cord from PCB; pull up the CRT PCB from CRT.
- Remove the anode cap from the picture tube. To avoid a shock hazard, be sure to discharge the picture tube's anode to the chassis ground before removal.
- Take out the TV chassis.



VII. Input Signals & Equipments List for Alignment

1. Equipments for adjustment

- | | |
|---------------------------------------|---|
| a. Pattern generator(PHILIPS PM 5518) | b. Digital voltmeter |
| c. High voltage meter | d. Demagnetiser |
| e. Personal computer (486) | f. CRT colour analyzer (MINOLTA CA-100) |
| g. High voltage probe | |

2. Input signals

- | | |
|-------------------------|----------------------|
| a. Color bar | b. Cross hatch |
| c. Grey scale bar | d. Monoscope pattern |
| e. Circle cross pattern | |

VIII. EEPROM Setting

A. Factory debugging description

1. Enter/Exit factory debugging menu.
 - ★ working keys
 - ☆ Factory
 - * It can be enter to the factory menu directly.
 - * It can be turned over page after entering the factory debugging menu.
The content can be saved and exit the factory menu if pressing the key at the last pages of the factory debugging menu.
 - ☆ MENU
 - * Save the content and exit.
 - ☆ ENTER WITH PASSWORD
 - * Press "2483" to enter the factory menu at "system menu" and "channel exchange" items.
2. Turn over pages of the factory debugging menu
 - ★ working keys
 - ☆ MUTE, FACTORY: turn over page backward
 - ☆ CH.REV: turn over page forward
3. Change settings
 - ★ working keys
 - ☆ CH+/CH-: choose the items which going to be changed.
 - ☆ VOL+/VOL-: to change the items which selected.
4. TV/AV switch
 - ★ working keys
 - ☆ TV/AV: press this button to switch the horizontal brightness line to adjust the G2 voltage.

B. Data Setting

Following data should be preset into the E²PROM IC before they are inserted to PCB.

P1

Name	Adjust Range	Advise value
*H.PHASE	0~31	13
*V.SIZE	0~127	52
*V.POS	0~63	27
*V.LIN	0~31	14
*V.SC	0~31	12
*NT.H.PHASE	0~7	6
*NT.V.SIZE	0~31	17
*NT.V.POS	0~31	25
*NT.V.LIN	0~7	4

1. Prss ' DISP ' button to display the internal signal
2. When the " + " singal active
 - ★ If select 50HZ of the item, the displaying frequence will force to 50HZ.
 - ★ If select 60HZ of the item, the displaying frequence will force to 60HZ.

P2

Name	Adjust Range	Advise value
*R.B	0~255	100
*G.B	0~255	100
*B.B	0~255	100
*R.D	0~127	52
*G.D	0~15	12
*B.D	0~127	88
*S.B	0~127	63
V.K	0~1	0

1. While balance brightness line
 - ★ Special working keys
 - ☆ TV/AV button can turn on/off the white balance brightness line
2. Red, Green, Blue deflection voltage
 - ★ Special working keys
 - ☆ '1'/4': key can change the data of red deflection voltage.
 - ☆ '2'/5': key can change the data of green deflection voltage.
 - ☆ '3'/6': key can change the data of blue deflection voltage.
 - ☆ '7'/8': key can change the data of accessory brightness.

3. Auto while balance debugging

★ Enter to the debugging mode.

☆ Connect the MCU pin 25 to 0V under the factory menu.

★ After entering to the debugging mode, MCU will not control the IIC general line. Auto while balance control program can change the data of ' picture decode COMS chip ' and ' 24C04/24C08 ' freely.

★ About the while balance data's relative address of the ' picture decode COMS chip ' and 24C04/24C08.

Name	Picture decode COMS chip address(HEX)	Location	24C04/24C08 address(HEX)	Location
RED BIAS	07	7~0	1E	7~0
GREEN BIAS	08	7~0	1F	7~0
BLUE BIAS	09	7~0	20	7~0
RED DRIVE	0A	6~0	21	6~0
GREEN DRIVE	0B	3~0	22	3~0
BLUE DRIVE	0C	6~0	23	6~0
R-Y DC	1B	3~0	2C	3~0
B-Y DC	1B	7~4	2C	7~4
YUV R-Y DC	1B	3~0	2A	3~0
YUV B-Y DC	1B	7~4	2A	7~4
SECAM R-Y DC	1B	3~0	0D	5~2
SECAM B-Y DC	1B	7~4	09	6~3

P3

Name	Adjust Range	Advise value
SUB.CONT	0~31	10
SUB.COL	0~3	1
SUB.SHP	0~15	8
OSD.CONT	0~127	30
*OSD.POS	0~127	26
H.BLK.L	0~7	7
H.BLK.R	0~7	2
VIDEO.LVL	0~7	4

P4

Name	Adjust Range	Description	Advise value
ENGLISH	0~1	ENGLISH OSD 0: NO; 1: YES	1
RUSSIAN	0~1	RUSSIAN OSD 0: NO; 1: YES	1
TURKISH	0~1	TURKISH OSD 0: NO; 1: YES	0
FRENCH	0~1	FRENCH OSD 0: NO; 1: YES	0
ARABIC	0~1	ARABIC OSD 0: NO; 1: YES	1
PERSIAN	0~1	PERSIAN OSD 0: NO; 1: YES	0
SPANISH	0~1	SPANISH OSD 0: NO; 1: YES	0
GERMAN	0~1	GERMAN OSD 0: NO; 1: YES	0
ITALIAN	0~1	ITALIAN OSD 0: NO; 1: YES	0

P5

Name	Adjust Range	Description	Advise value
VS/FS	0~1	0:Voltage synthesize high frequency cobbra 1:Frequency synthesize high frequency cobbra	0
VL/VH FREQ	0~255	Frequency: [(VL/VH FREQ.) + 100.25] MHZ	64
VH/UHF FREQ	0~255	Frequency: [(VH/UHF FREQ.) + 300.25] MHZ	164
AT.SCH.SIF	0~3	0: 6.5MHZ 1: 4.5MHZ 2: 5.5MHZ 3: 6.0MHZ	0
WOOFER	0~1	0: OFF 1: ON	0
INT.DVD	0~1	0: OFF 1: ON	0
DVD BLK. TIME	0~1	DVD and black screen time switch control	1
*VOL.CHANGE	0~1		0
*SEARCHSPEED	0~3		2

* Because of the port conflict, you can only select one between WOOFER and INT.DVD function, when one of it set to 1, another will be set to 0 compulsively.

P6

Name	Adjust Range	Description	Advise value
1-CHIP	LA76818	Select decode IC	LA76818
E2 CLEAR	0~1	1: Power on time, E2PROM data rewrite.	0
V-L	0~7		2
V-H	0~7		1
UHF	0~7		3
P.ONRESET	0~1	0: OFF mode 1: The mode before power off	1
H.TONE.MENU	0~1	1: Translucent user menu	1
V. MUTE.P.OFF	0~1	1: Turn off discharge	0
TEXTMENU	0~1	0: Picture menu title 1: teletext menu title	1

P7

Name	Adjust Range	Advise value
TV	0~1	1
AV1	0~1	1
AV2	0~1	1
DVD	0~1	0
TV.VLT	0~3	0
AV1.VLT	0~3	1
AV2.VLT	0~3	2
DVD.VLT	0~3	3
*INT.DVD.CH	0~2	0

P8

Name	Adjust Range	Advise value
ST.BRI	0~15	9
ST.CONT	0~15	9
ST.COL	0~15	7
ST.SHP	0~15	7
L.BRI	0~15	10
L.CONT	0~15	11
L.COL	0~15	9
L.SHP	0~15	7

P9

Name	Adjust Range	Advise value
V.BRI	0~15	10
V.CONT	0~15	13
V.COL	0~15	11
V.SHP	0~15	7
SO.BRI	0~15	5
SO.CONT	0~15	7
SO.COL	0~15	5
SO.SHP	0~15	1

- * P8, P9 for debugging each preparing value of four special picture mode, you can press P.P button directly at this two pages to switch different picture mode and observe the effect.

P10

Name	Adjust Range	Description	Advise value
VIF.SYS	0~3	0=38.0MHZ 1=38.9MHZ 2=45.75MHZ 3=39.5MHZ	1
PAL	0~1	0:NO PAL COLOR DEMODULATION 1:PAL COLOR DEMODULATION	1
N3.58	0~1	0: NO NTSC3.58 COLOR DEMODULATION 1:NTSC3.58 COLOR DEMODULATION	1
N4.43	0~1	0: NO NTSC4.43 COLOR DEMODULATION 1:NTSC4.43 COLOR DEMODULATION	1
SECAM	0~1	0: NO SECAM COLOR DEMODULATION 1: SECAM COLOR DEMODULATION	1
DK	0~1	0:NO 6.5M SOUND DEMODULATION 1: 6.5M SOUND DEMODULATION	1
BG	0~1	0: NO 5.5M SOUND DEMODULATION 1: 5.5M SOUND DEMODULATION	1
I	0~1	0: NO 6.0M SOUND DEMODULATION 1: 6.0M SOUND DEMODULATION	1
MN	0~1	0: NO 4.5M SOUND DEMODULATION 1: 4.5M SOUND DEMODULATION	1

P11

Name	Adjust Range	Description	Advise value
BG	0~3	No singal background 0: bule 1: black 2: red 3: yellow	0
BG.BRI	0~15	No singal background brightness	8
LOGO	0~1	0: No logo 1: personal logo	1
M.SCR.POS	0~31	openning center adjustment	0
M.SCR.TIME	0~3	0: 4s 2: 6s 1: 5s 3: 7s	1
TV ON EFF	0~2	0: Black screen > turn on 1: Black screen> opening>turn on 2: Black screen> logo> turn on	1
TV. OFF.SCR	0~1	TV OFF SCREEN 0:No TV off screen; 1:TV off screen	1

- * When the cursor mark stay at item 'BG', 'BG.BRI', the 'no singal backgroud' effect which you have selected would open automatically, the ' no singal backgroud brightness' will also active at the same time.

P12

Name	Adjust Range	Advise value
BY	0~15	8
RY	0~15	9
YUV.BY	0~15	8
YUV.RY	0~15	8
SCM.BY	0~15	5
SCM.RY	0~15	6

P13

Name	Adjust Range	Description	Advise value
PWM. VOL	0~1	PWM volume control 0: no PWM volume control 1: pin 29,30 PWM volume control	1
PWM.2CH	0~1	0: pin29, 30 PWM volume can not control single. 1: pin29, 30 PWM volume can control single	0
1- CHIP VOL	0~127	PWM volume control, bring to front and zoom in output control	127
RF.AGC	0~31	loudspeaker AGC	30
AV.OUT.OPT	0~1	AV output singal selection 0: AV output watching picture 1: AV output the TV signal	0
CH.OSD.BLACK	0~1	1: Channel exchange OSD black screen	1
CH.TURN.MUTE	0~1	0: No black screen 1: Black screen	1
A.PMUTE	0~1	MCU 24pin exchange channel mute 0: Mute ; 1: No mute	0

P14

Name	Adjust Range	Description	Advise value
AFC.G.G	0~1	AFC Stronger	0
VSEPUP	0~1	0: Normal; 1: Stronger	0
CD.MODE	0~7		3
DIGITAL. OSD	0~1	0: simulate; 1: Digital	0
V.OFFSET	0~3	0: min.; 3: max.	3
FM.LVL	0~31		31

P15

Name	Adjust Range	Description	Advise value
BRT.ABL.DEF	0~1	0: ON; 1: OFF	0
MID.STP.DEF	0~1	0: ON; 1: OFF	0
BRT.ABL.TH	0~5		3
RB. GAIN.BAL	0~15		8
RB.ANG	0~15		8
AT. FLESH	0~1		0
VOL. FIL	0~1		0

-Factory debugging menu 818/828 P1

Name	Adjust Range	Description	Advise value
V.R.TIME	0~1	0: Normal; 1:0.25 horizontal windage	0
A.M.SW	0~1	0: Normal; 1: External sound	1
WPL	0~3		0
Y.APF	0~1		1
Y.GAM.ST	0~3		0
VCO.SW	0~1	0: debugging backward; 1: debugging forward	0
VCO.ADJ	0~3	0: 0HZ 1: 30HZ 2: 60HZ 3: 90HZ	2
PAL.COL.SW	0~1		1
PAL.COL	0~15		7

-Factory debugging menu 818/828 P2

Name	Adjust Range	Description	Advise value
H.TONE	0~3	0: Darkness; 3: lightness	3
GRAY. MODE	0~1	0:100% White singal 1: 60% White singal	0
CROSS	0~3	Internal singal 0: undisplay the internal signal 1: Black singal 2: While singal 3: Cross singal	0
GY.ANG	0~1	0: 240 angle; 1:253 angle	1
C.KILL.OPE	0~7	0: -30dB 7: -40Db	7

-Factory debugging menu 818/828 P3

Name	Adjust Range	Description	Advise value
VBLK.SW	0~1	0: Normal; 1: stronger	0
FBPBLK.SW	0~1	0: LA76818 control 1: Internal/External control	1
P/O.SW	0~3	0: Debugging forward 1: Debugging backward	1
P/O.SHOOT	0~1	Signal forward and backward debugging	3
DC.REST	0~3	0: 100% 1: 107% 2: 113% 3: 129%	0
BLK.STR.ST	0~3	0: black electricity extend=OFF 1: black electricity extend=ON(40IRE) 2: black electricity extend=ON(60IRE) 3: black electricity extend=OFF	1
BLK.STR.GN	0~3	0: Min.; 2: Max.	2
RGB.TEMP.SW	0~1	0: -1VBE 1: Normal	0
CORING.GN	0~3	0: Min. ; 3: Max.	2

- * When the cursor mark stay at ' BLK.STR.ST', 'BLK.STR.GN' , the customer ' picture stronger' function will open automatically in order to adjust the function effect expediently.
- * when the cursor mark stay at ' CORING.GN' , the customer' decrease noise' function will open automatically in order to adjust the function effect expediently.

- Input the LOGO: “ERISSON”

- ★ This page will not appear unless the E2PROM set to 24C08
- ★ working key:
 - ☆ '0' / '1': LOGO up/move down
 - ☆ '2' / '3': LOGO left/move right
 - ☆ '4': to change the LOGO color
 - ☆ '5': to change the LOGO size
 - ☆ '6': to switch the rows of the LOGO
 - ☆ '7': reset
- ★ MENU: save and exit
- ★ CH+ / CH-: to change the letter position which need to be changed.
- ★ VOL+ / VOL-: to change the letter
- ★ aging debugging page
- ★ The TV will not Off automatically without signal

The chassis address which require from the white balance debugging as below:

	LA76818 Sub Address	AT24C08 Sub Address	
Device Address	BAH	A0H	Bit Map
Red Bias	07H	16H+08H=1EH	0FFH
Green Bias	08H	17H+08H=1FH	0FFH
Blue Bias	09H	18H+08H=20H	0FFH
Red Drive	0AH	19H+08H=21H	07FH
Green Drive	0BH	1AH+08H=22H	00FH
Blue Drive	0CH	1BH+08H=23H	07FH
Sub Bright	0DH	1CH+08H=24H	07FH

“ * ” means that the data can be changed during the production or debugging.

IX. Electrical Adjustment

A. +B Voltage Alignment

a. Preparation Procedure

- 1). Receive standard colour bar signal.
- 2). Press key "P.MODE." to select "STANDARD" mode.
- 3). Connect digital voltmeter between \oplus of C917 and GND.
- 4). Adjustment Step

Adjust RP901 to make the read-out on the Voltmeter to be as follows:

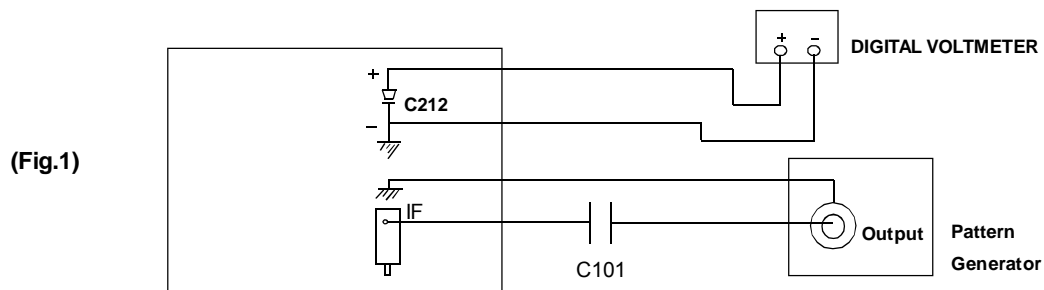
MODEL	CRT	CRT TYPE NO	+B
A315MDY6	E6101-020001	37SX110Y22-DC05N1 IRICO	108V
21A9MDY5	E6101-073004	A51JSY63X139(C) N3 SEG	109V
2109MDY5			
21B8MDY3	E6120-027006	A51MAT70X5S(C) N3 SEG	110V

B. Adjustment for AFC

a. Preparation procedure

1. Turn on the main power switch.
2. Set digital voltmeter at DC, then connect it's probe across of IC201 PIN47 and GND.
3.
 - a. To set the pattern generator under the color bar and pal system. Apply 100dB μ V 38.9 MHz IF signal between IF input pin and GND of the TUNER on main PCB board





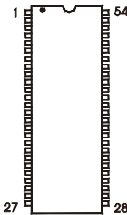
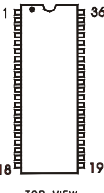
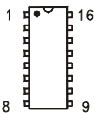
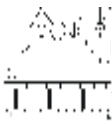
b. (see Fig.1).



b. Adjust the IFT coil T202 until the meter indicates **3.6V \pm 0.05V**.

X. Transistor and IC Identification

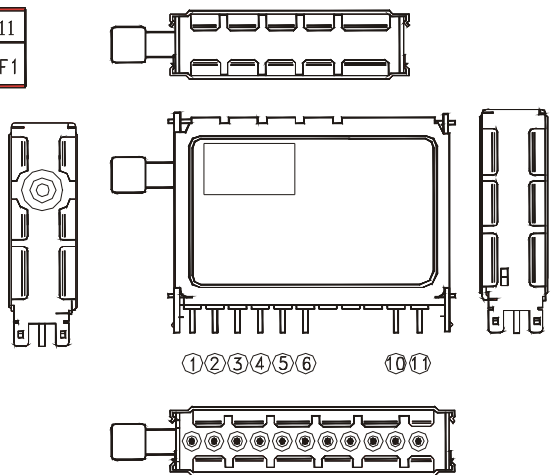
A. Main Unit:

 TOP VIEW HT24LC08 KS24C08 S524A60X81	 E C B 2SC2482 2SA1013 2SC1320 2SD400	 E C B 2SA1246 2SA1015 2SC1815Y 2SC388A	 B C E 2SD2498 2SD2499
 TOP VIEW LA76818	 TOP VIEW LC863532 -567-7 LC863532 -56F8	 TOP VIEW 74HC4052N HCF4052BE TC4052BP LA7642	 LA7642

PICTORIAL VIEW OF TUNER

TERMINAL NO.	1	2	3	4	5	6	10	11
TERMINAL NAME	AGC	VT	BU	BH	BL	BM	IF2	IF1

SUPPLY VOLTAGE (V)				
TERM.	ch.	VHF LO	VHF HI	UHF
3	BU	0	0	5
4	BH	0	5	0
5	BL	5	0	0
6	BM	5	5	5



XI. Schematic Diagram

i.(Please refer to A315-004.pdf)

XII. Component Diagrams

i. Main & CRT PCB component diagram (Top/Bottom view) (For 21A9MDY5BA01/2109MDY5DA01 models)

(Please refer to E3701-054080A/B pdf)

i. Main PCB component diagram (Top/Bottom view) (For A315MDY6-A01 model)

(Please refer to E3701-054070A pdf)

i. Main PCB component diagram (Top/Bottom view) (For 21B8MDY5AA01 model)

(Please refer to E3701-054060 pdf)

ii. CRT ERISSON PCB component diagram (Top/Bottom view)

(Please refer to E3701-021080-10 pdf)

iii. KEY&POWER&ASIDE PCB component diagram (Top/Bottom view)
(For 21B8MDY5AA01 model)

(Please refer to E3701-054050A/B/C .pdf)

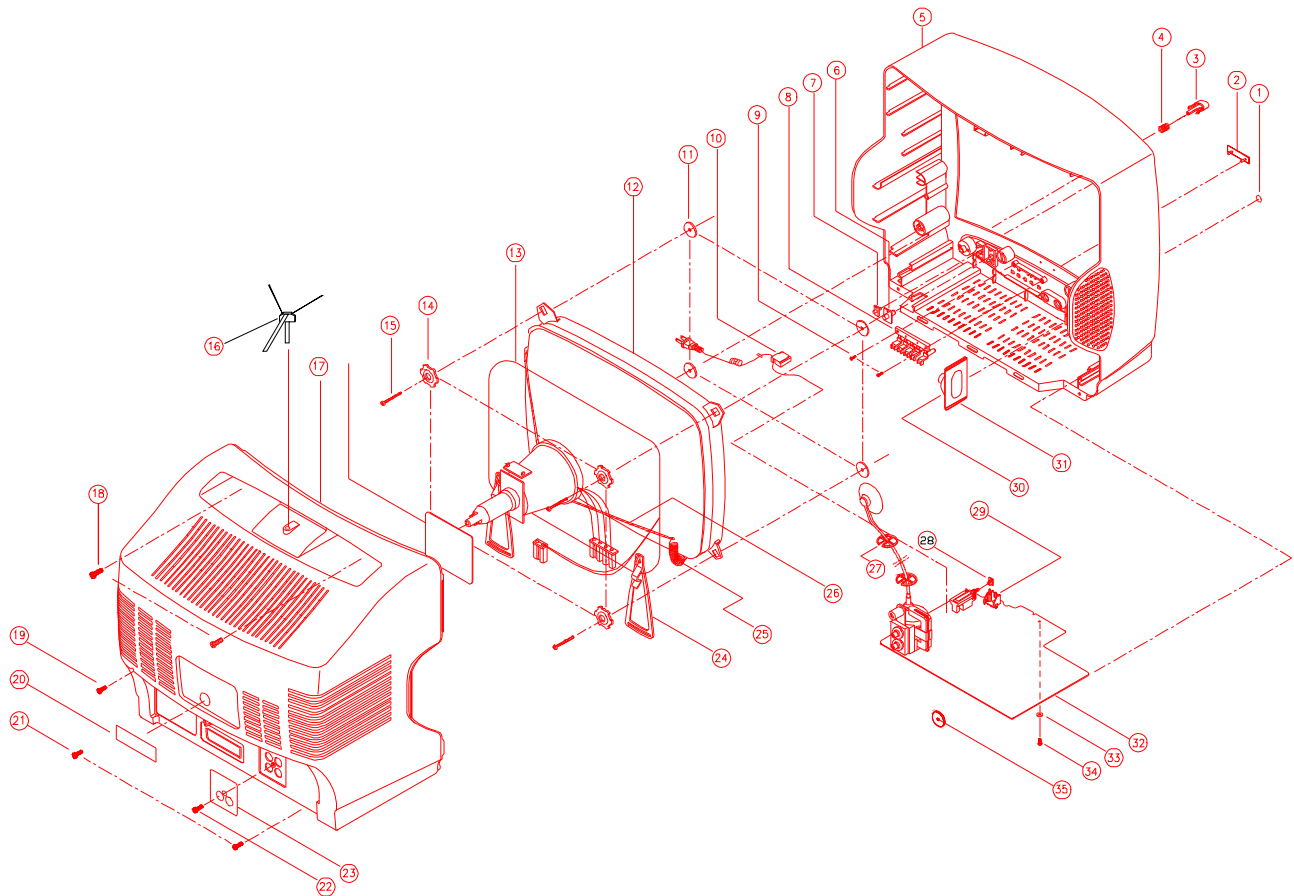
iv. ASIDE PCB component diagram (Top/Bottom view)
(For 21A9MDY5BA01/2109MDY5DA01 models)

(Please refer to E3701-054090 .pdf)

XIII. Exploded View Diagram

Main Unit

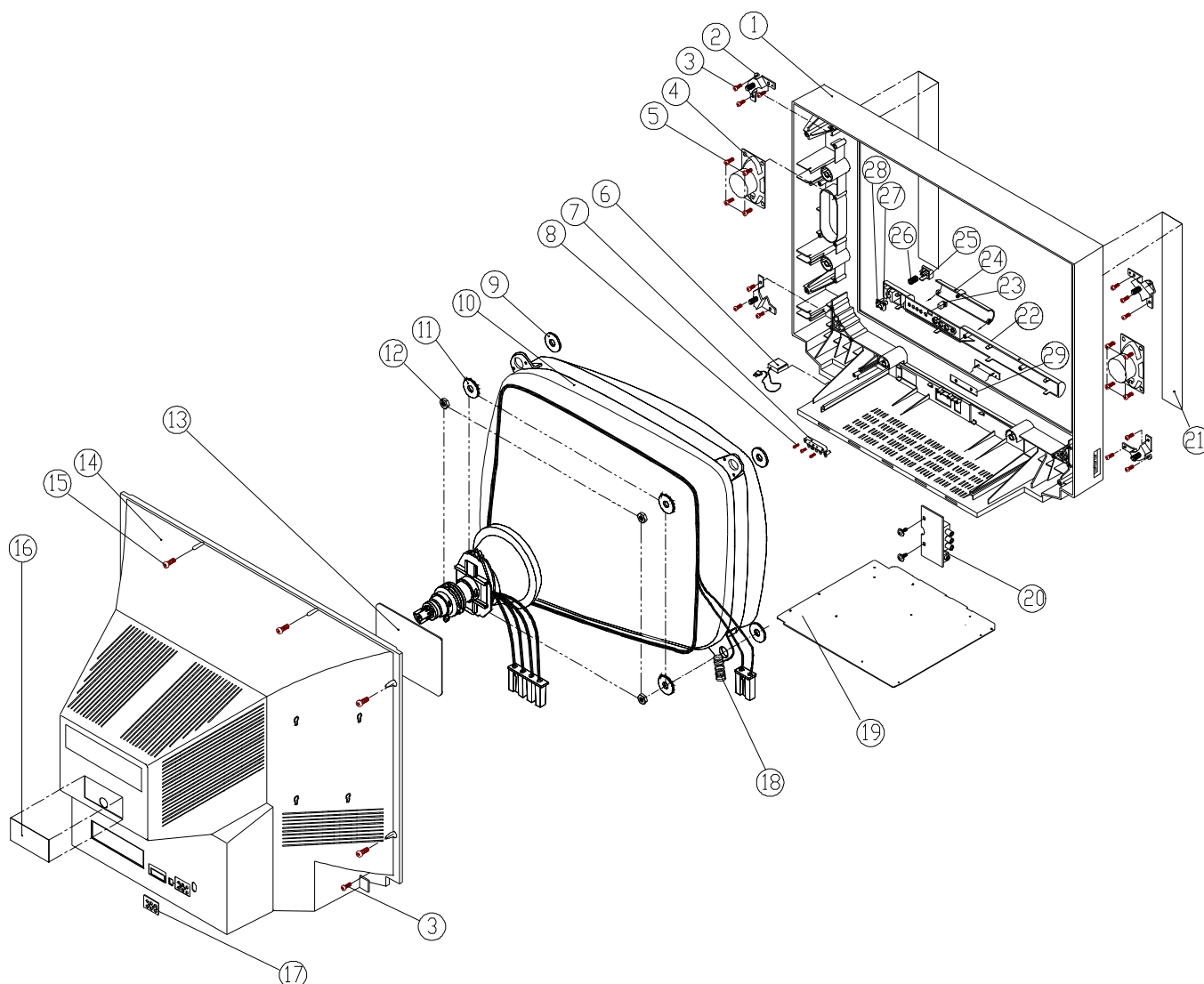
i. For A315MDY6-A01 model



Parts List For Exploded View Diagram

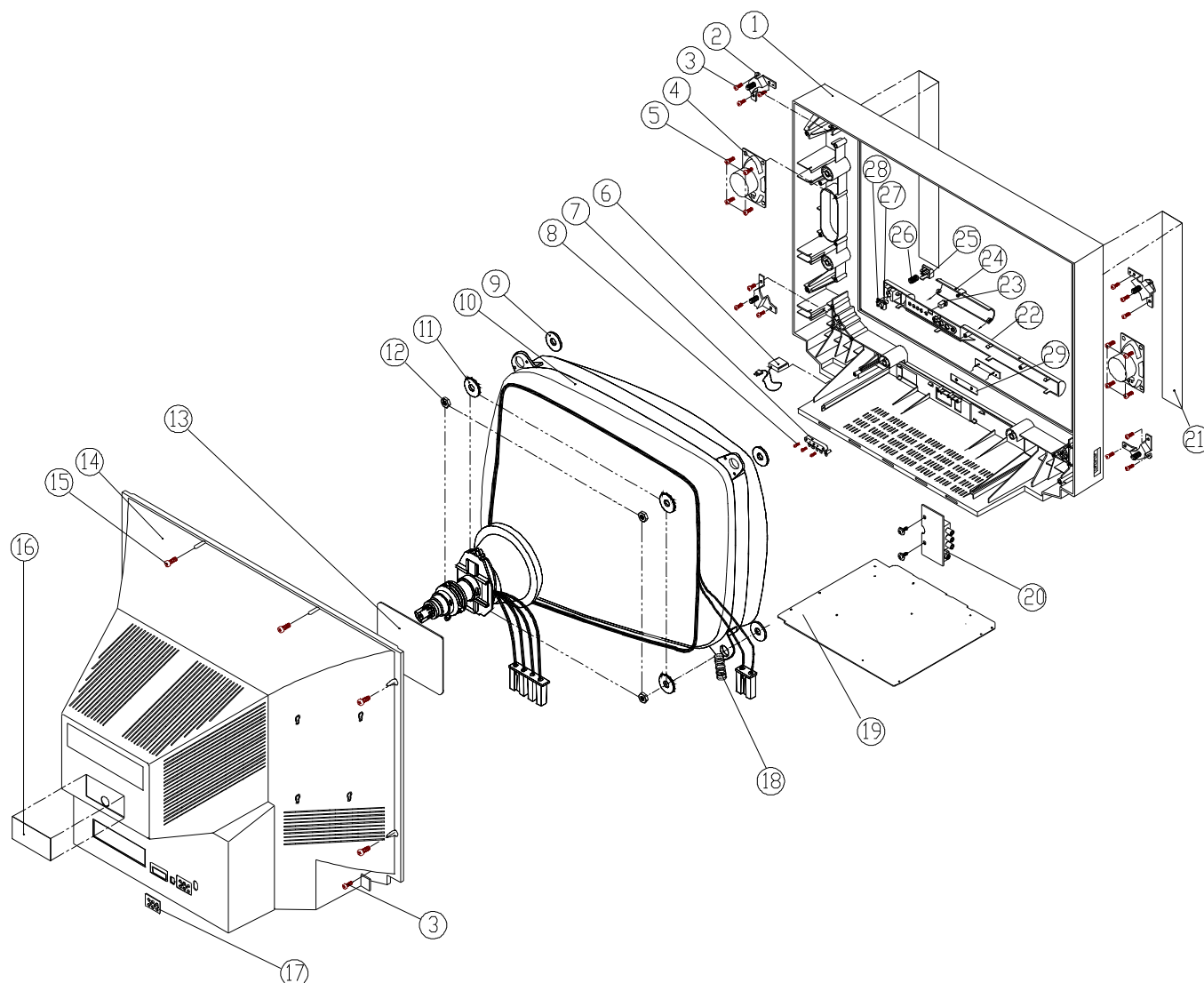
Item	Part No.	Description	QTY.	Item	Part No.	Description	QTY.
1	389-	Phone Cover Sheet	1	19	614-	Self-tapping screw	1
2	486-	NPM	1	20	560-	Model Lable	1
3	279-	Power Knob	1	21	614-	Self-tapping screw	2
4	477-	Spring Wire CMP	1	22	611-	Self-tapping screw	1
5	200-	Cabinet Front	1	23	389-	Cover Plate	1
6	269-	Lens SNSR RCN	1	24	249-	Special Plastic Clip DC	2
7	269-	Lens LED	1	25	477-	CRT Spring	1
8	277-	Function Knob	1	26	E3421-	Wire Ass'y	1
9	612-	Self-tapping screw	2	27	289-	Plastic Ring Protective	2
10	254-	AC Line Cord Clip	1	28	241-	Adaptor for power switch	1
11	376-	Rubber Ring	4	29	250-	Led and sensor holder	1
12	102-	14" CRT	1	30	774-	1 Chip Speaker Ass'y	1
13	E1115-	Coil Degauss	1	31	521-	Felt Paper	2
14	639-	Special Washer CRT	4	32	771-	Main PCB Ass'y	1
15	614-	Self-tapping screw	4	33	530-	Fire Paper Washer	1
16	779-	CRT PCB Ass'y	1	34	612-	Self-tapping screw	1
17	202-	Cabinet Back	1	35	389-	Plate Tuner	1
18	614-	Self-tapping screw	2				

ii. For 21A9MDY5BA01 model



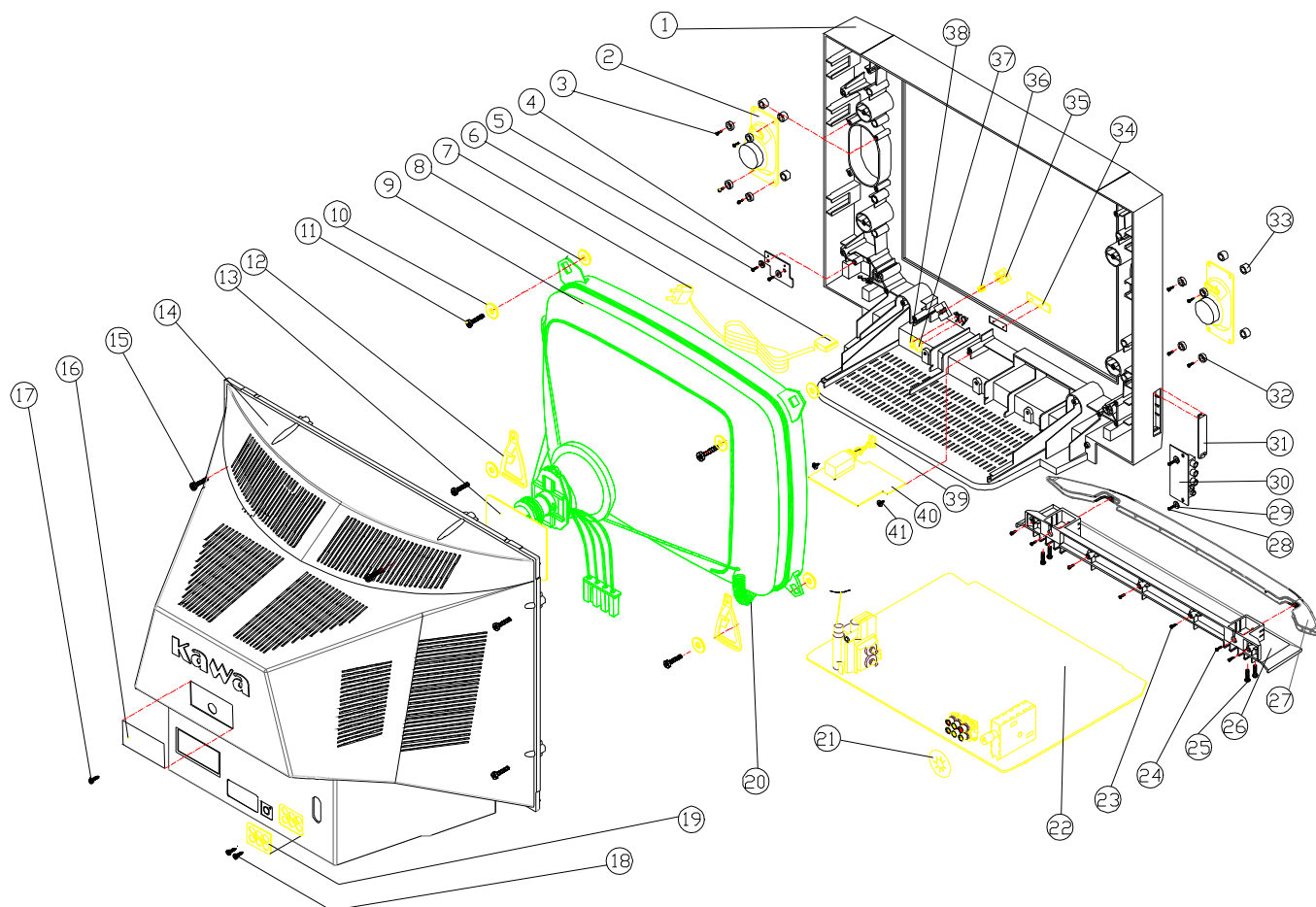
Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	200-	Front CAB.	1	16	389-	Model Plate	1
2	423-	MTB. CRT	4	17	389-	Cover Plate	1
3	614-	S-TAP Screw 5X16MM	14	18	477-	SPG+CRT	2
4	E4801-	SPeaker	2	19		Main PCB ASS'Y	1
5	614-	S-TAP Screw BID 4X8	8	20		RCA PCB	1
6	254-	CLP CRD PWR	1	21	832-	Speaker Net	2
7	277-	Function Key	1	22	230-	Front Panel	1
8	612-	S-TAP Screw WHR 3X10	3	23	702-	Door Lock	1
9	376-	Ring	4	24	237-	Push Door	1
10	102-	CRT	1	25	279-	Power Knob	1
11	639-	WHR+CRT 4D	4	26	477-	Compressing Spring	1
12	620-	Nut 6x10x5 4D	4	27	269-	Sensor Lens	1
13		CRT PCB ASS'Y	1	28	269-	Power Lens	1
14	202-	Cabinet Back	1	29	486-	Name Plate	1
15	614-	S-TAP Screw WHR 5X25	6				

iii. For 2109MDY5DA01 model



Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	200-	Front CAB.	1	16	389-	Model Plate	1
2		MTB. CRT	4	17	389-	Cover Plate	1
3	614-	S-TAP Screw 5x16mm	14	18	477-	SPG+CRT	2
4	E4801-	SPeaker	2	19	E3701-	Main PCB ASS'Y	1
5	614-	S-TAP Screw BID	8	20	E3701-	RCA PCB	1
6	254-	CLP CRD PWR	1	21	832-	Speaker Net	2
7	277-	Function Key	1	22	230-	Front Panel	1
8	612-	S-TAP Screw WHR	3	23	702-	Door Lock	1
9	376-	Ring	4	24	237-	Push Door	1
10	102-	CRT	1	25	279-	Power Knob	1
11	639-	WHR+CRT 4D	4	26	477-	Compressing Spring	1
12	620-	Nut 6x10x5 4D	4	27	269-	Sensor Lens	1
13	E3701-	CRT PCB ASS'Y	1	28	269-	Power Lens	1
14	202-	Cabinet Back	1	29	486-	Name Plate	1
15	614-	S-TAP Screw WHR 5X25	6				

iv. For 21B8MDY5AA01 model



Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	200-	CAB. Front Blk	1	21	389-	Protect Ring	1
2		Speaker	2	22	E3701-	Mian PCB	1
3	615-	S-TAP Screw BWH 4x14	8	23	614-	S-TAP Screw BID 4x16	3
4	E3701-	KEY PCB Ass'y	1	24	614-	S-TAP Screw BID 4x10	4
5	614-	S-TAP Screw BID 4x10	2	25	614-	S-TAP Screw BID 5x20	4
6	254-	CLP CRD PER 8714	1	26	230-	Front Panel (B)	1
7		AC Power Line	1	27	234-	SUB Panel	1
8	376-	Rubber Ring (T=2.0mm)	4	28	614-	S-TAP Screw BID 4x10	2
9		21" Colour CRT	1	29	530-	Fiber Paper	4
10	639-	Special Washer CRT	4	30	E3701-	AV PCB	1
11	614-	S-TAP Screw BID 4x30	4	31	237-	AV Cover Plate	1
12	249-	Special Plastic Part	2	32	379-	Special Rubber Parts SPK	8
13	E3701-	CRT PCB	1	33	379-	Special Rubber Parts SPK	8
14	202-	Back Cabinet Black HI-PS	1	34	486-	Name Plate	1
15	614-	S-TAP Screw B/T 5x25mm Black	6	35	279-	Power Knob	1
16	560-	Model Label	1	36	477-	SPG+ CRT	1
17	614-	S-TAP Screw B/T 4x12mm White	1	37	269-	Sensor Lens	1
18	611-	S-TAP Screw FLT 3x10	2	38	269-	Led Lens	1
19	389-	RCA Plate	1	39	241-	Power Adapter	1
20	477-	SPG+CRT	1	40	E3701-	Power PCB	1