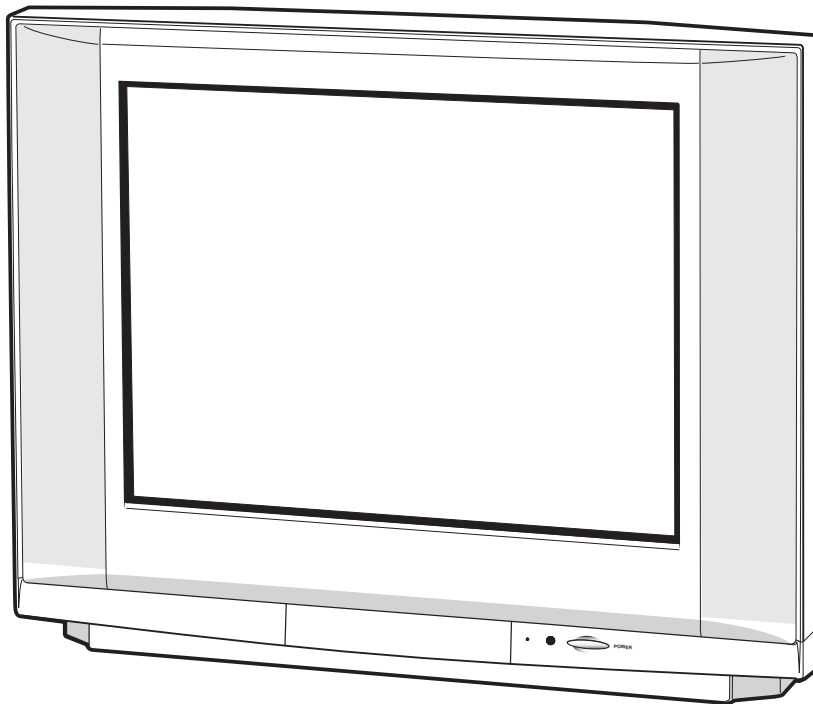


SERVICE MANUAL Colour Television

Model No. TS5121F

(Argentina)

Service Ref. No. TS5121F-00



Specifications

Power Source AC220V, 50Hz / 60Hz
Receiving System PAL (M/M, N/N), NTSC (M/M)
Channel Coverage
Antenna mode VHF: CH02-CH13, UHF: CH14-CH69
CATV mode VHF band: CH01-CH13, Mid band: CH14-CH22
Super band: CH23-CH36, Hyper band: CH37-CH64
Ultra band: CH65-CH94 and CH100-CH125
Low mid band: CH95-CH99
Video IF 45.75MHz
Aerial Input Impedance . . 75 Ω
Ext. Terminals
Video input: Phono jack X 2 (1Vp - p, 75 Ω)
Audio input: Phono jack (R/L) X 2 (436mVrms, more than 40K Ω)
Video monitor output: Phono jack X 1 (1Vp - p, 75 Ω)
Audio monitor output: Phono jack (L/R) X 1 (436mVrms, less than 600 Ω)
Headphone Jack: Mini stereo jack X 1
Sound Output (RMS) 3W + 3W
Speakers 5cm x 9cm x 2 pcs.
Dimensions 597(W) X 484(H) X 481(D)mm
Weight approx. 21.8Kg

Specifications subject to change without notice.

Product Code: 111376412

Original Version

Chassis Series: LA5-A

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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IC Block Diagrams	5-7
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Purity and Convergence Adjustment	17
Cabinet Parts List	18
Chassis Electrical Parts List	19-26

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.

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

X-RADIATION PRECAUTION

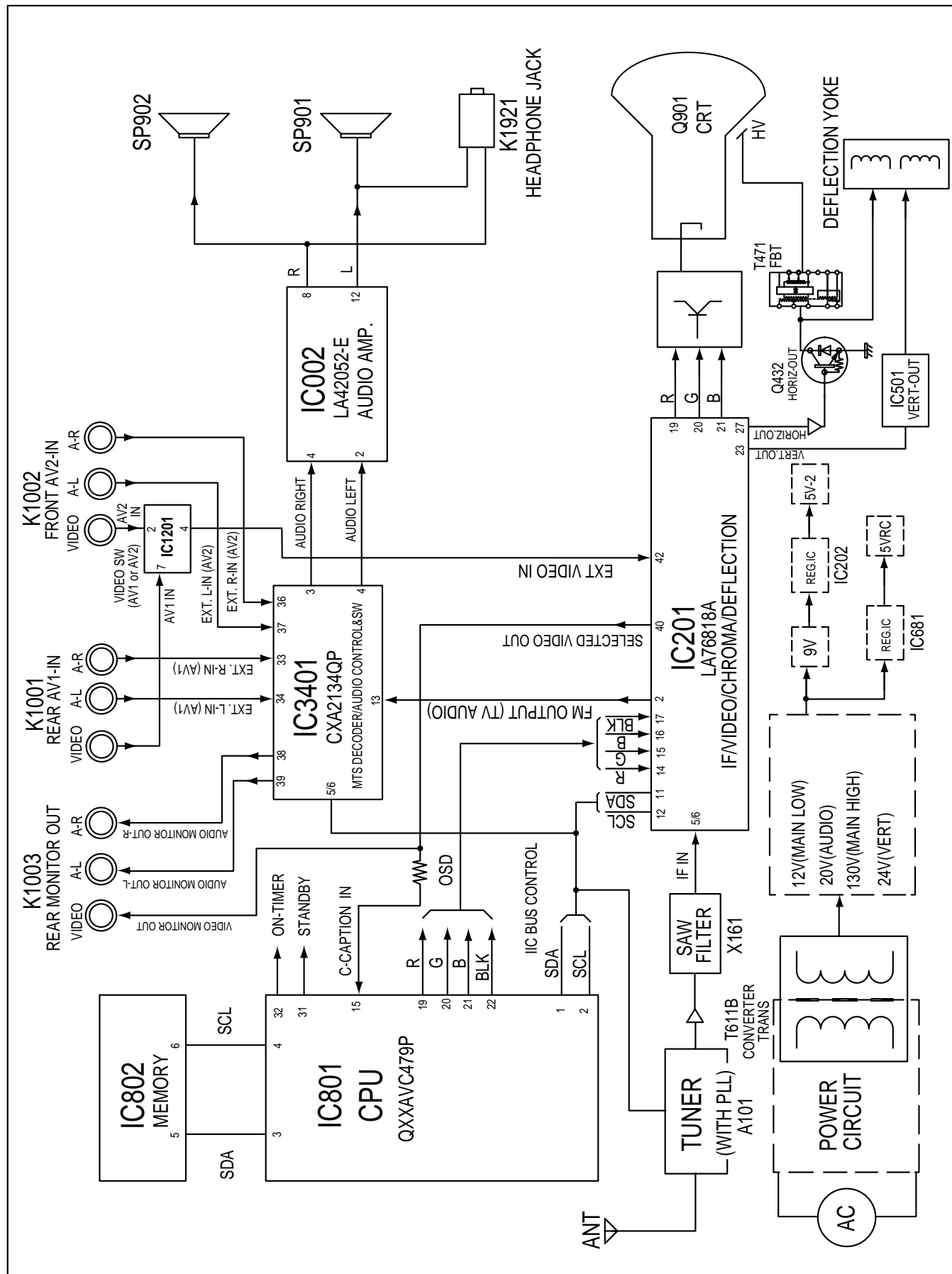
The primary source of X-RADIATION in television receiver is the picture tube. The picture tube is specially constructed to limit X-RADIATION emissions. For continued X-RADIATION protection, the replacement tube must be the same type as the original including suffix letter. Excessive high voltage may 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 .

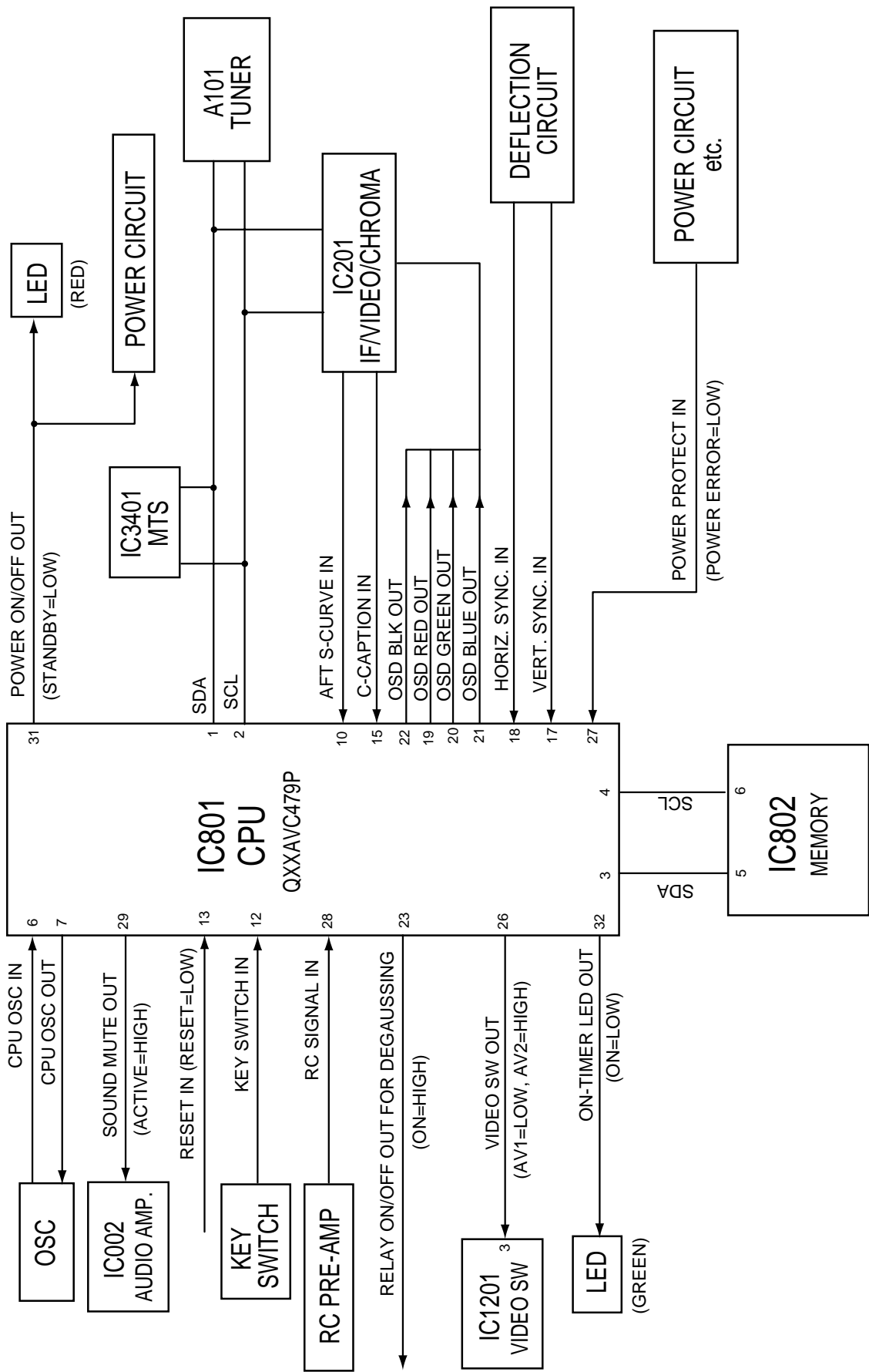
Chassis Block Diagrams

MAIN SIGNAL PROCESSING CIRCUIT



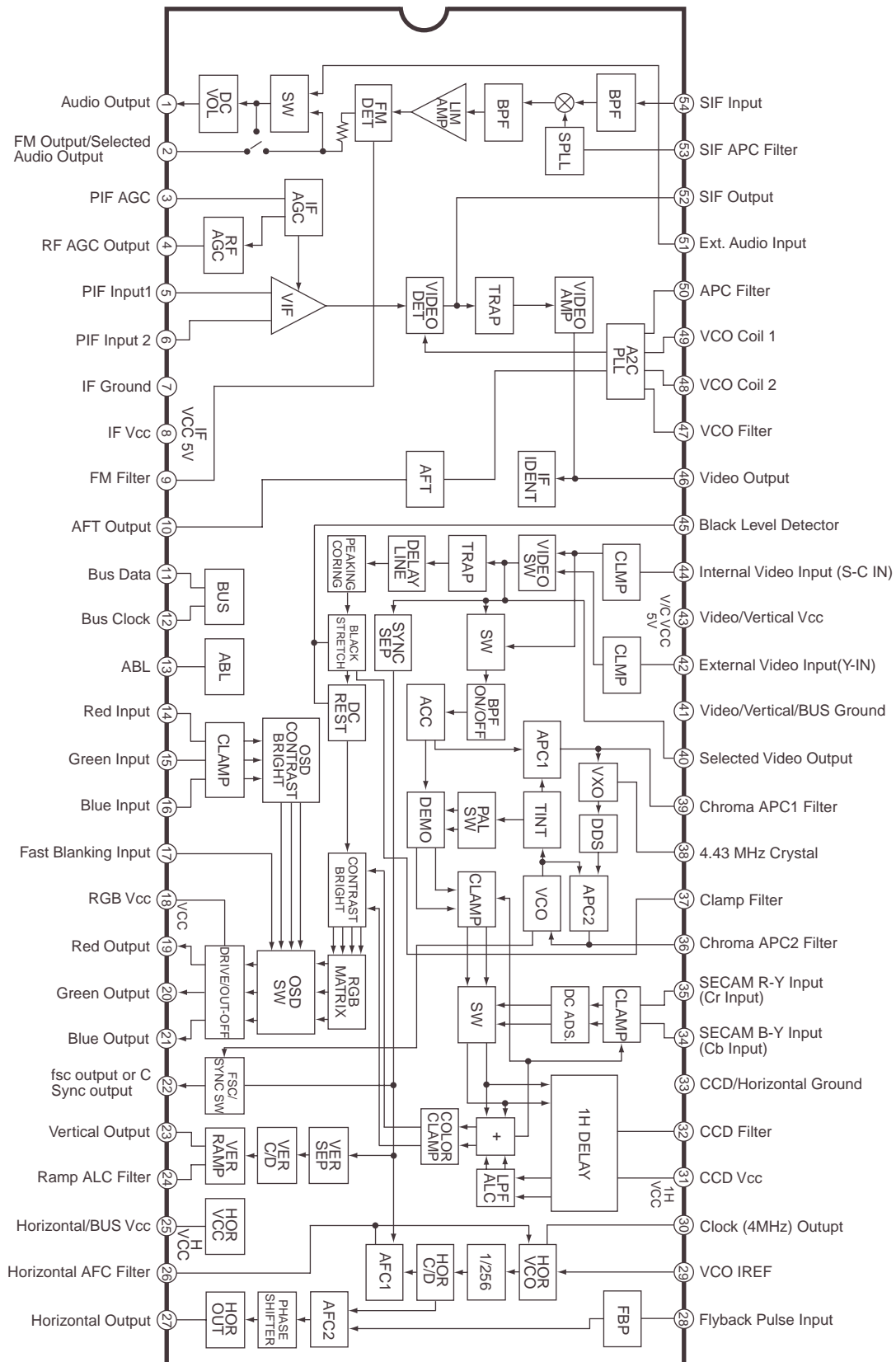
Chassis Block Diagrams

SYSTEM CONTROL

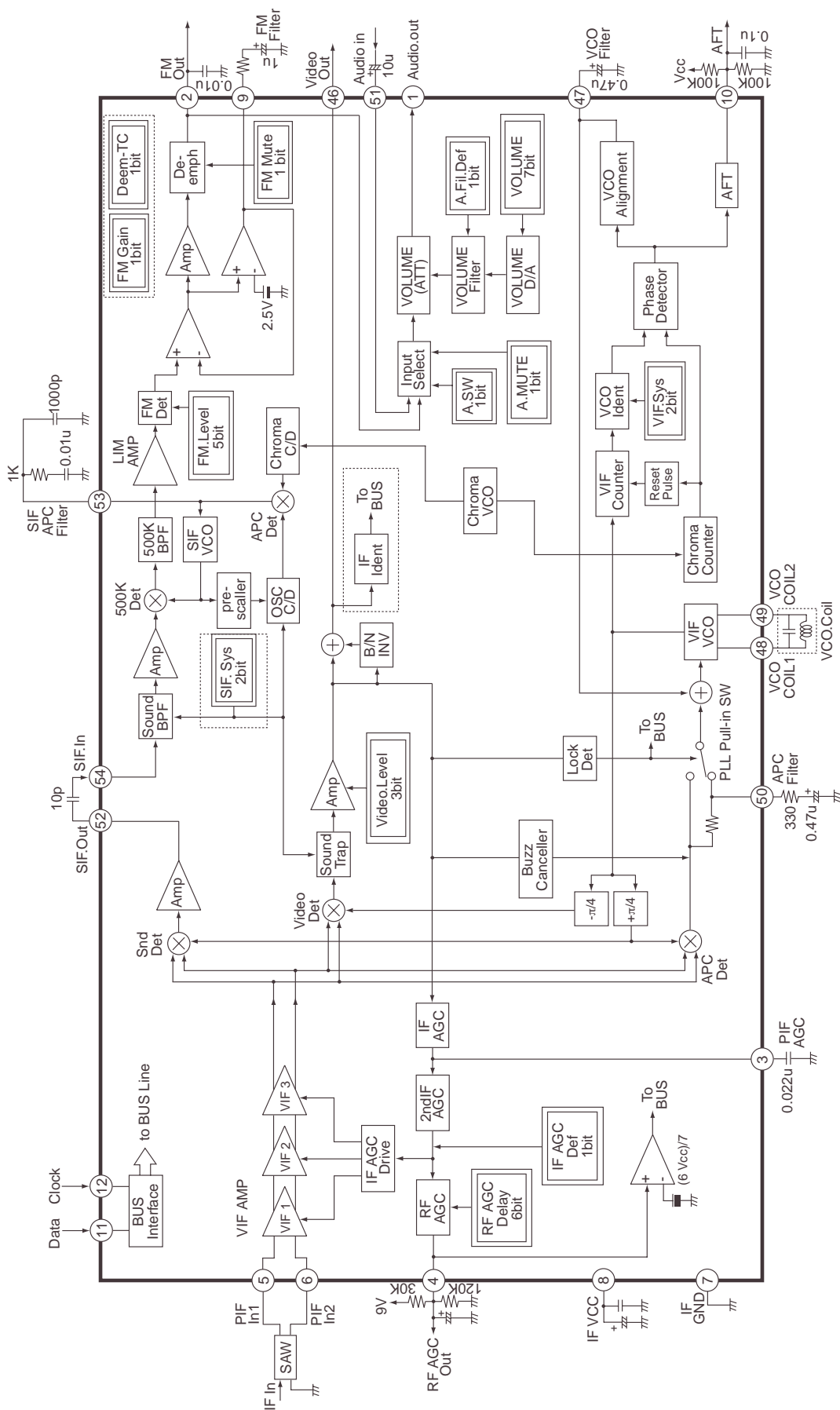


IC Block Diagrams

IC201 < IF/Video/Chroma/Def. > LA76818A

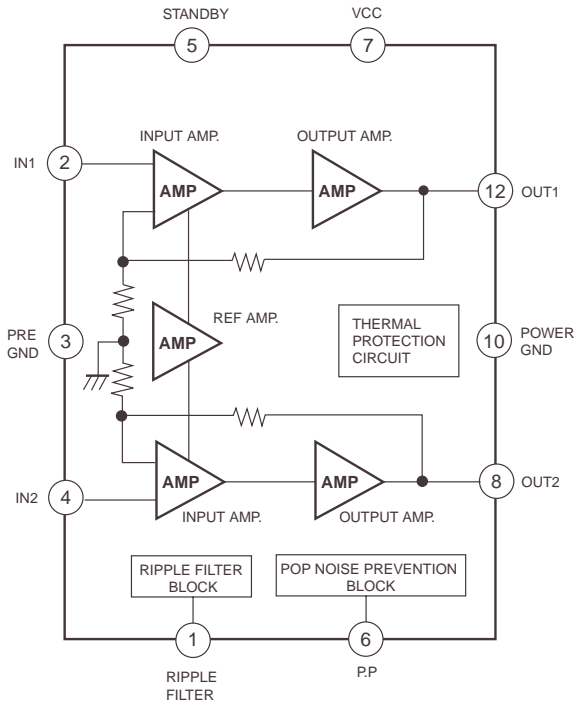


IC201 <IF System Block Diagram> LA76818A

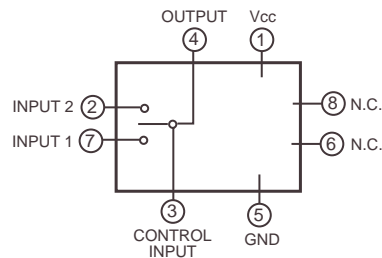


IC Block Diagrams

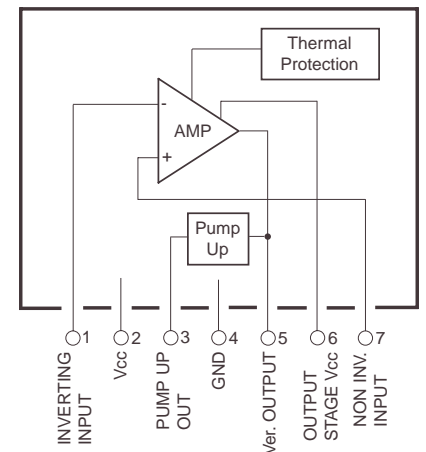
IC002 < Audio AMP. > LA42052-E



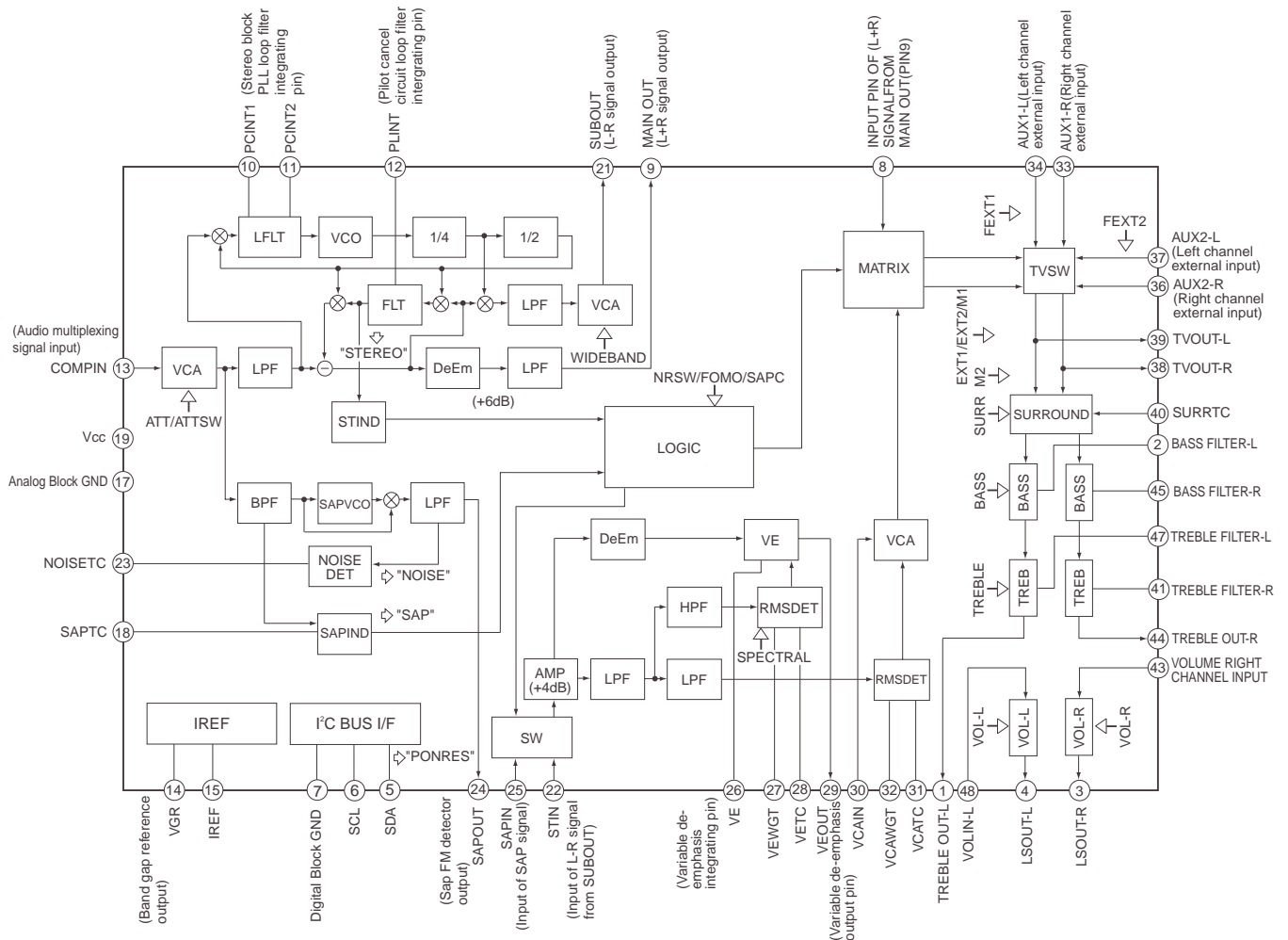
IC1201 <VIDEO SW > LA7016



IC501 < Vertical Output > LA78040N-E, TDA9302H



IC3401 < MTS Decoder, Audio Control & Switch > CXA2134Q-T6



Service Adjustments

General

This set has an On-screen Service Menu system included in the CPU that allows remote operation for most of the service adjustments.

IC802 (EEPROM) Replacement

When IC802 (EEPROM) is replaced, IC801 (CPU) will automatically write the initial reference data into IC802 for basic TV operation. However, the bus data should be checked and some bus data should be set up before attempting the service adjustments. (See pages 9 ~ 10 for detailed information.)

Initial Bus Data Setup

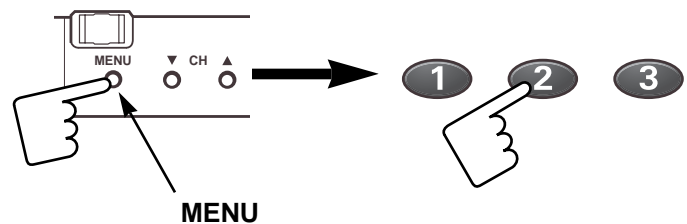
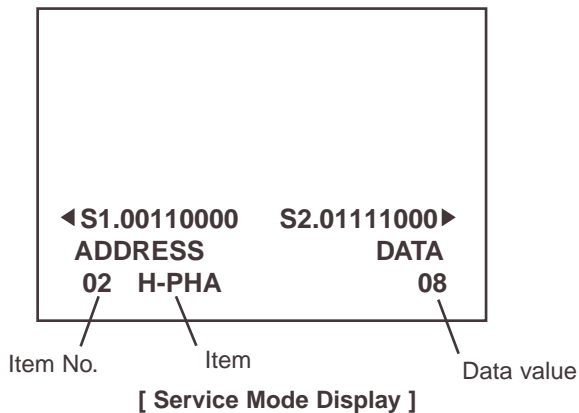
Note: When IC802 (EEPROM) is replaced, following Service Menu should be set up for proper TV operation before attempting the service adjustments.

NO.01 RFAGC (Adjust the data 06 to 10)	NO.82 CHMT (Adjust the data 12 to 05)	NO.308 R08 (Adjust the data FF to 21)
NO.05 V-SCO (Adjust the data 17 to 11)	NO.84 RELAY (Adjust the data 80 to 20)	NO.309 R09 (Adjust the data FF to 95)
NO.06 V-LIN (Adjust the data 15 to 16)	NO.85 CCD (Adjust the data 26 to 31)	NO.310 R10 (Adjust the data FF to 50)
NO.11 VLI60 (Adjust the data +1 to 0)	NO.300 R00 (Adjust the data FF to 93)	NO.311 R11 (Adjust the data FF to 00)
NO.19 RDRIV (Adjust the data 63 to 64)	NO.301 R01 (Adjust the data FF to 0E)	↓ ↓
NO.20 GDRIV (Adjust the data 07 to 08)	NO.302 R02 (Adjust the data FF to 00)	NO.371 R71 (Adjust the data FF to 00)
NO.21 BDRIV (Adjust the data 63 to 64)	NO.303 R03 (Adjust the data FF to 00)	NO.372 R72 (Adjust the data FF to A2)
NO.24 B-YD (Adjust the data 10 to 08)	NO.304 R04 (Adjust the data FF to 01)	
NO.25 R-YD (Adjust the data 10 to 08)	NO.305 R05 (Adjust the data FF to 00)	
NO.68 AFCAV (Adjust the data 00 to 01)	NO.306 R06 (Adjust the data FF to 00)	
NO.81 POMT (Adjust the data 12 to 08)	NO.307 R07 (Adjust the data FF to 00)	

Service Adjustment-1

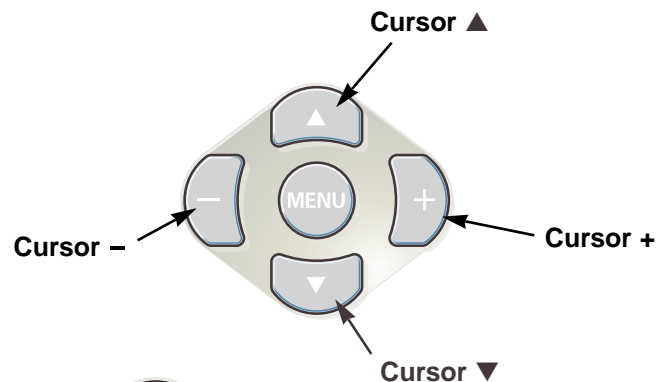
1. Enter the Service Menu

While pressing the **MENU** button on the television, press the Number Key **2** on the remote control unit.
The Service Menu now appear.



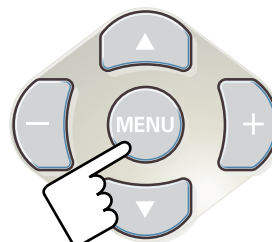
2. Service Adjustments:

Press the **Cursor ▲/▼** or **CHANNEL UP/DOWN** button on the remote control handset to select the desired service menu item you want to adjust.
Use the **Cursor + / -** or **VOLUME + / -** button to adjust the data. The **+** or **-** button will increase or decrease the data sequentially.



3. Exit from the Service Menu

Press the **MENU** button to turn off the Service Menu display.
The data which is set in the service mode is stored into the memory IC automatically.



Service Adjustments

On-screen Service Menu

Following table shows the initial values which have been stored in the CPU ROM, and items for the service adjustments. When IC802 (EEPROM) is replaced, check the bus data to confirm they are the same as below. The shaded menu should be checked and be set up or readjusted according to the procedures described in the following pages. Initial Setup Data marked with an * should be changed from Initial Value Data.

No.	Item	Initial value	Range	Description
01	RFAGC	06→10*	00~63	RF AGC adjustment
02	H-PHA	08	00~31	H-PHASE adjustment (50Hz)
03	V-POS	32	00~63	Vertical position adjustment (50Hz)
04	V-SIZ	54	00~127	Vertical size adjustment (50Hz)
05	V-SCO	17→11*	00~31	Vertical-S compensation (50Hz)
06	VLIN	15→16*	00~31	Vertical linearity adjustment (50Hz)
07	H-P60	+4	-16~+15	Difference value of H-PHASE adjustment (60Hz)
08	V-P60	0	-32~+31	Difference value of V-POSITION adjustment (60Hz)
09	V-S60	+1	-64~+63	Difference value of V-SIZE adjustment (60Hz)
10	VSC60	0	-16~+15	Difference value of Vertical-S compensation (60Hz)
11	VLI60	+1→0*	-16~+15	Difference value of Vertical linearity adjustment (60Hz)
12	OSDHP	30	01~255	OSD horizontal remark position
13	OSDC	50	00~127	OSD contrast
14	V-SCP	07	00~07	V-SIZE COMP (50Hz)
15	SBIAS	70	00~127	Sub Bias adjustment
16	RBIAS	00	00~255	Red Bias adjustment
17	GBIAS	00	00~255	Green Bias adjustment
18	BBIAS	00	00~255	Blue Bias adjustment
19	RDRIV	63→64*	00~127	Red Drive adjustment
20	GDRIV	07→08*	00~15	Green Drive adjustment
21	BDRIV	63→64*	00~127	Blue Drive adjustment
22	--	--	--	White balance (a lateral line)
23	DRV	--	--	Brightness and dark of White balance adjustment
24	B-YD	10→08*	00~15	B-Y DC Level
25	R-YD	10→08*	00~15	R-Y DC Level
26	B-YND	0	-16~+15	Difference value of NTSC B-Y DC Level
27	R-YND	0	-16~+15	Difference value of NTSC R-Y DC Level
28	G-YA	00	00,01	G-Y Angle
29	RBGB	08	00~15	R-Y/B-Y Gain Balance
30	RBAG	08	00~15	R-Y/B-Y Angle
31	G-YAN	00	00,01	Difference value of NTSC G-Y Angle
32	RBGBN	0	-8~+7	Difference value of NTSC R-Y/B-Y Gain Balance
33	RBABN	0	-8~+7	Difference value of NTSC R-Y/B-Y Angle
34	COGV	01	00~03	Coring gain
35	BLK	03	00~03	BLK. STR. Start (W/Defeat)
36	BLKG	03	00~03	BLK. STR. Gain
37	BRTA	00	00, 01	BRT. ABL Defeat
38	BRST	00	00, 01	Mid. Stp. Defeat
39	BRTH	00	00~07	Bright. ABL. Threshold
40	WPL	00	00~03	WPL Ope. Point (W/Defeat)
41	YGAM	00	00~03	Y Gamma Start
42	PORW	00	00, 01	AV Mode Pre/Over SW
43	PORS	02	00~03	AV Mode Pre/Over-shoot adjustment
44	RFCO	0	00~03	Difference Value of RF Corring Gain
45	PORWN	01	00, 01	RF Pre/Over SW
46	PORSN	03	00~03	RF Pre/Over-shoot adjustment
47	TINT	0	-16~+15	Tint
48	SHRF	0	-16~+15	Difference Value of RF Sharpness
49	TEXC	08	00~127	OSD Text Contrast
50	AUFL	00	00, 01	Auto. Fresh

Service Adjustments

No.	Item	Initial value	Range	Description
51	COOP	07	00~07	Colour Killer
52	Y-APF	01	00, 01	Y-APF Select
53	DEEM	00	00, 01	De-emphasis TC
54	V-LVL	04	00~07	Video Level
55	FMLVL	16	00~31	FM Level
56	TTEST	00	00~07	Trap Test
57	IFOM-S	00	00, 01	Over Mod. SW
58	IFMN-S	00	00, 01	Audio Monitor SW, Monitor/FM
59	IFTRPS	01	00, 01	IC Built-in SIF Trap ON/OFF
60	IFMLVL	136	00~255	Video Level Coarse Adjustment & Mod. Operating Dot Setting
61	VBSW	00	00, 01	VBLK SW
62	FBTS	00	00, 01	FBP Blanking SW
63	HBLKL	06	00~07	H-Blanking Control Left
64	HBLKR	04	00~07	H-Blanking Control Right
65	AFCRF	00	00, 01	Adjustment of AFC Gain & Gate (RF)
66	VSURF	00	00, 01	Adjustment of Vertical Sync. Separation Sensitivity (RF)
67	CDMRF	00	00~07	Vertical Count Down Loop Adjustment (RF)
68	AFCAV	00→01*	00, 01	Adjustment of AFC Gain & Gate (AV)
69	VSUAV	00	00, 01	Adjustment of Vertical Sync. Separation Sensitivity (AV)
70	CDMAV	00	00~07	Vertical Count Down Loop Adjustment (AV)
71	HLK-T	00	00, 01	H-lock, V-Det. (RF)
72	HLK-V	00	00, 01	H-lock, V-Det. (AV)
73	VCO-SW	00	00, 01	C. VCO Adjustment SW
74	VCOADJ	03	00~03	C. VCO Adjustment
75	GRAY	00	00, 01	Gray Mode
76	CROSS	00	00~03	Cross Black/White
77	HL-SW	01	00, 01	Half Tone ON/OFF
78	HL-TON	00	00~03	Half Tone Level
79	AVNCON	64	00~127	Contrast (No Signal in AV)
80	AVNBRI	64	00~127	Brightness (No Signal in AV)
81	POMT	12→08*	00~127	Power Mute Time
82	CHMT	12→05*	00~31	Channel Mute Time
83	SYST	03	00~255	System-N
84	RELAY	80→20*	00~255	Power Relay Time
85	CCD	26→31*	00~31	Horizontal Remark Position Compensation Register
86	TVAVTM	00	00~255	AV/TV Mute Time
300	R00	FF→93*	00~FF	ROM CORRECTION
301	R01	FF→0E*	00~FF	ROM CORRECTION
302	R02	FF→00*	00~FF	ROM CORRECTION
303	R03	FF→00*	00~FF	ROM CORRECTION
304	R04	FF→01*	00~FF	ROM CORRECTION
305	R05	FF→00*	00~FF	ROM CORRECTION
306	R06	FF→00*	00~FF	ROM CORRECTION
307	R07	FF→00*	00~FF	ROM CORRECTION
308	R08	FF→21*	00~FF	ROM CORRECTION
309	R09	FF→95*	00~FF	ROM CORRECTION
310	R10	FF→50*	00~FF	ROM CORRECTION
311	R12	FF→00*	00~FF	ROM CORRECTION
312	R13	FF→00*	00~FF	ROM CORRECTION
370	R72	FF→00*	00~FF	ROM CORRECTION
371	R72	FF→00*	00~FF	ROM CORRECTION
372	R72	FF→A2*	00~FF	ROM CORRECTION

Service Adjustments

Important Notice:

Do not attempt to adjust service adjustments not listed on below otherwise it may cause loss of performance and for correct operation.

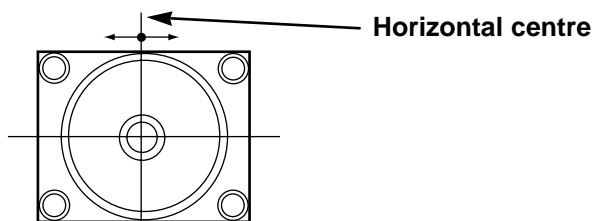
Item 01 [RFAGC] AGC

NOTE: Do not attempt this adjustment with weak signal.

1. Tune the receiver to most clearest (or strongest) VHF station in your area. Set the brightness and contrast to maximum. Set the colour control to minimum.
2. Select Item No. 01 [RFAGC] in the service mode.
3. Change value until the snow noise just disappears.
4. Exit from the service mode.

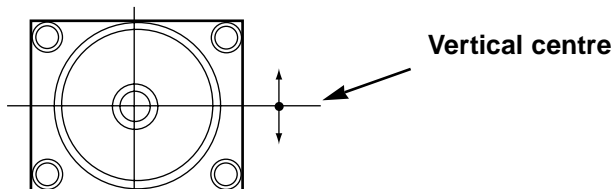
Item 02 [H-PHA] HORIZONTAL CENTRE

1. Receive a monochrome circular pattern.
2. Set the brightness and contrast to normal.
3. Select Item No. 02 [H-PHA] in the service mode.
4. Change value to be optimum horizontal centre position.
5. Exit from the service mode.



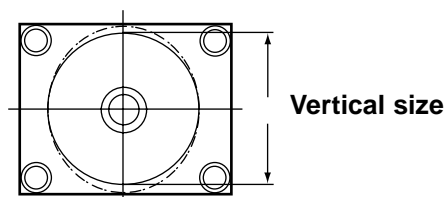
Item 03 [V-POS] VERTICAL CENTRE

1. Receive a monochrome circular pattern.
2. Set the brightness and contrast to maximum.
3. Select Item No. 03 [V-POS] in the service mode.
4. Change value to be optimum vertical centre position.
5. Exit from the service mode.



Item 04 [V-SIZ] VERTICAL SIZE

1. Receive a monochrome circular pattern.
2. Set the brightness and contrast to maximum.
3. Select Item No. 04 [V-SIZ] in the service mode.
4. Change value to be optimum vertical size.
5. Exit from the service mode.

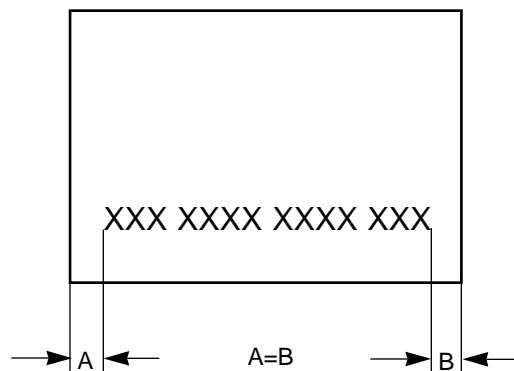


Item 12 [OSDHP] OSD POSITION

1. Receive a monochrome circular pattern.
2. Set the brightness and contrast to normal.
3. Select Item No. 12 [OSDHP] in the service mode.
4. Change value to be proper OSD position.
5. Exit from the service mode.

Item 85 [CCD] CAPTION H-POSITION ADJ.

1. Tune receiver to a caption channel.
2. Check that CAPTION position is in the horizontal center of the screen. If CAPTION center is too right or left, perform steps 3-6. (See figure below.)
3. Select Item No. 85 [CCD] in the service mode.
4. Adjust data with + or - key for proper horizontal center.
5. Exit from the service mode



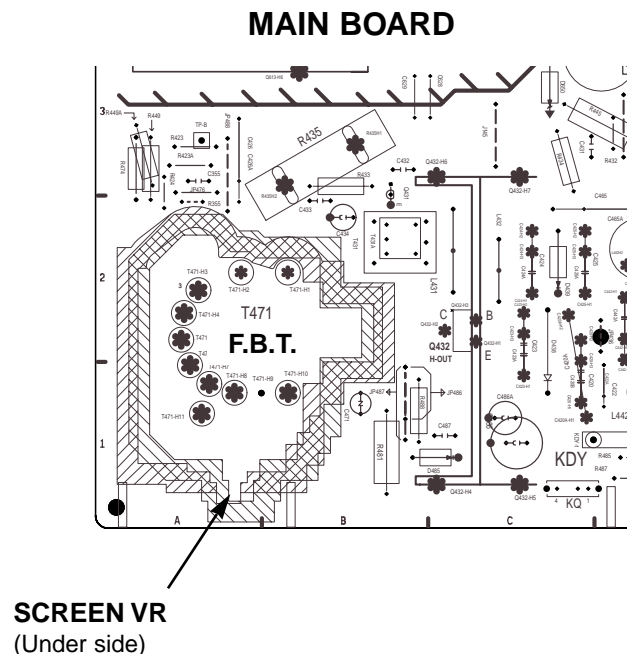
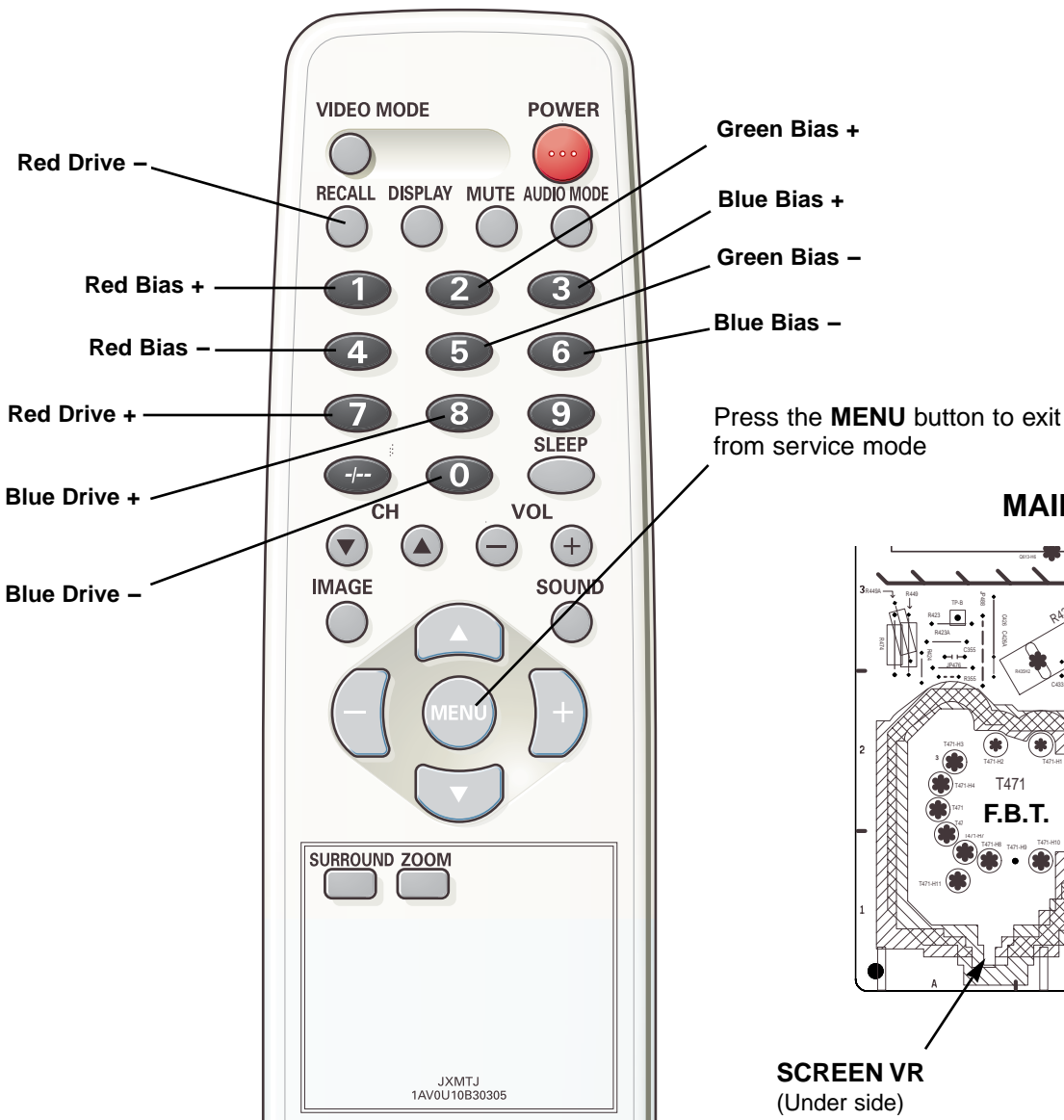
Caption H-position Adj.

Service Adjustments

Items 16-23 GREY SCALE

- (1) Receive a monochrome circular pattern.
- (2) Set the brightness and colour to normal, contrast to maximum.
- (3) Enter to the service mode.
- (4) Set each value of Item-16 **RBIAS**, 17 **GBIAS**, 18 **BBIAS** mode to 00. Set each value of Item-19 **RDRIV**, 21 **BDRIV** mode to 63, 20 **GDRIV** to 07.
- (5) Select Item-22 mode to be one horizontal scanning line and turn the screen volume on the FBT to obtain just visible one coloured line.
- (6) Press the **1 (Red Bias +)**, **4 (Red Bias -)**, **2 (Green Bias +)**, **5 (Green Bias -)**, **3 (Blue Bias +)** or **6 (Blue Bias -)** button to adjust the brightness of each colour until a dim white line produced. Please see the control button allocations in this mode.
- (7) Select Item-23 **DRV** mode to enter the white balance adjusting mode.
- (8) Press the **7 (Red Drive +)**, **RECALL (Red Drive -)**, **8 (Blue Drive +)** or **0 (Blue Drive -)** button alternately to produce normal black and white picture.
- (9) Exit from the service mode.
- (10) Check for proper grey scale tracking at all brightness levels.

NOTE: If the grey scale adjustment is made after picture tube replacement, check the high voltage.



Service Adjustments

Service Adjustment-2 (MTS Adjustment)

Following table shows the initial values of MTS Adjustment which have been stored in the CPU ROM.

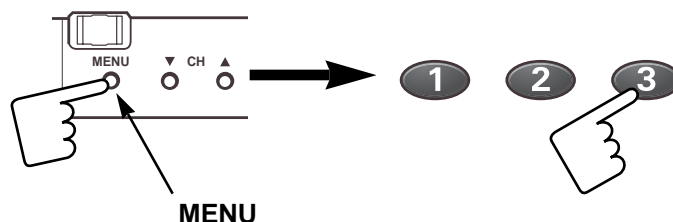
No.	Item	Initial value	Range
01	INPUT LEVEL	08	00~63
02	HIGH SEPARATION	21	00~63
03	LOW SEPARATION	34	00~63

1. Enter the Service Menu

While pressing the **MENU** button on the television, press the Number Key **3** on the remote control unit. The Service Menu now appear.

INPUT LEVEL	08
HI SEPARATION	21
LOW SEPARATION	34
ADJUST: -/+	
CHOOSE: ▲▼	
EXIT : MENU	

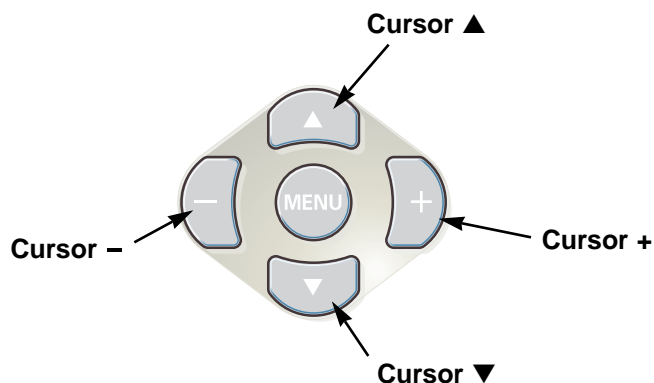
[MTS Adjustment Mode]



[Entering the Service Menu]

2. Service Adjustments:

Press the **Cursor ▲/▼** or **CHANNEL UP/DOWN** button on the remote control handset to select the desired service menu item you want to adjust. Use the **Cursor + / -** or **VOLUME + / -** button to adjust the data. The **+** or **-** button will increase or decrease the data sequentially.

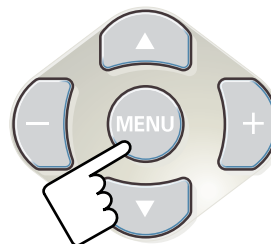


[Service Adjustment]

3. Exit from the Service Menu

Press the **MENU** button to turn off the Service Menu display.

The data which is set in the service mode is stored into the memory IC automatically.



[Exit from the Service Menu]

Service Adjustments

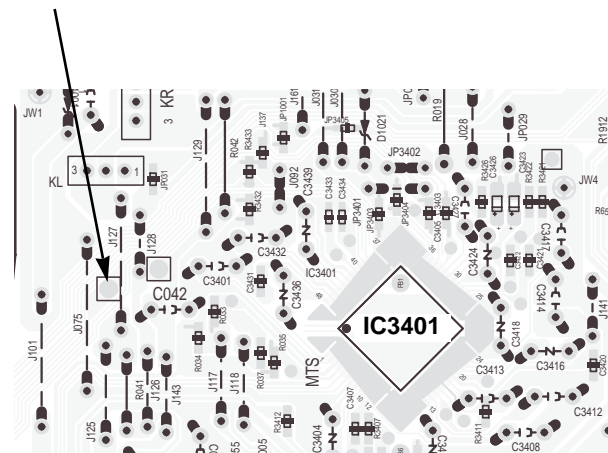
SOUND LEVEL ADJUSTMENT

1. Connect a signal to the antenna terminal with audio signal of 1KHz at 100% modulated.
2. Connect a DC Volt-Meter to **TP-317** (pin-38 of IC3401) and the ground.
3. Switch the TV set on, and set the Surround OFF.
Press and hold the **MENU** button on the TV set, and press "3" button on the remote control transmitter to enter to the service mode.

INPUT LEVEL 08
HI SEPARATION 21
LOW SEPARATION 34

ADJUST: -/+
CHOOSE: ▲▼
EXIT : MENU

TP-317(pin-38 of IC3401)



MAIN BOARD
(Solder side)

5. Adjust voltage to become DC 400mVrms±20mVrms at TP317 by pressing the **Cursor** (or **VOLUME**) + or - button on the remote control or TV set.
6. To exit from the service mode, press the **MENU** button.

STEREO SEPARATION ADJUSTMENT

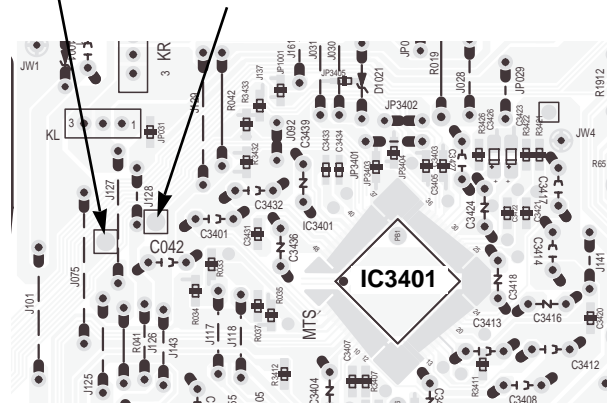
1. Connect an oscilloscope:
Probe-A to TP-317 (pin-38 of IC3401) and the ground.
Probe-B to TP-318 (pin-39 of IC3401) and the ground.
2. Turn on the TV set, and receive the multi sound programme.
3. Press and hold the **MENU** button on the TV set, and press "3" button on the remote control transmitter to enter the service mode.
4. Select "**LOW SEPARATION**" by pressing the CHANNEL UP/DOWN button on the remote control or TV set.

INPUT LEVEL 08
HI SEPARATION 21
LOW SEPARATION 34

ADJUST: -/+
CHOOSE: ▲▼
EXIT : MENU

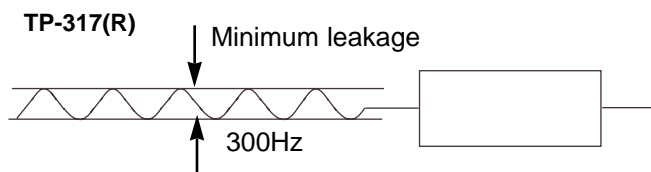
TP-317(pin-38 of IC3401)

TP-318 (pin-39 of IC3401)



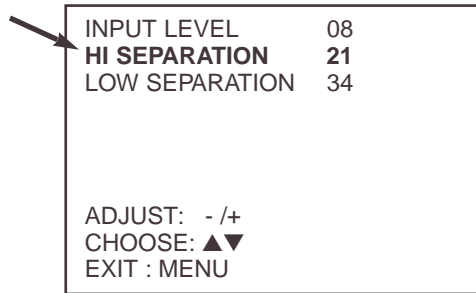
MAIN BOARD
(Solder side)

5. Adjust the level of 300Hz at TP-317 (pin-38 of IC3401) to become minimum level by pressing the **Cursor** + / - or **VOLUME** + / - button on the remote control or TV set.



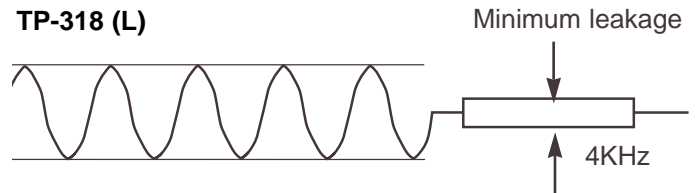
Service Adjustments

6. Select "HI SEPARATION" by pressing the **Cursor ▲/▼** or **CHANNEL UP/DOWN** button on the remote control or TV set.



7. Adjust the level of 4KHz at TP-318 (pin-39 of IC3401) to become minimum level by pressing the **Cursor + / -** or **VOLUME + / -** button on the remote control or TV set.

8. To exit from the service mode, press the **MENU** button.



Service Adjustment-3

FINE TUNING

This adjustment is used to do a fine tuning of the channels with poor reception after they have been stored by the automatic tuning.

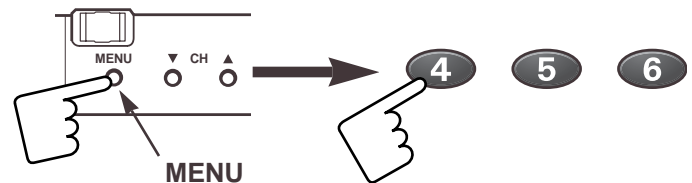
This function is available for one channel only and the fine-tuned channel is memorized into IC802 (EEPROM).

1. Enter the Service Menu

While pressing the **MENU** button on the television, press the "4" or **MENU** button on the remote control unit. The Service Menu now appear.



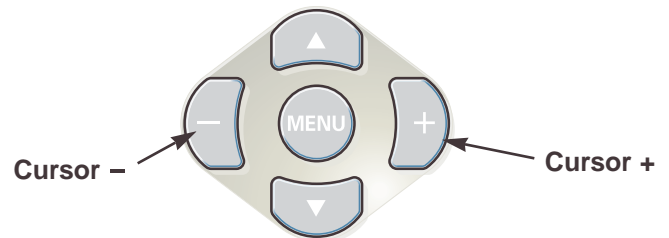
Fine tuning service mode



[Entering the Service Menu]

2. Service Adjustments:

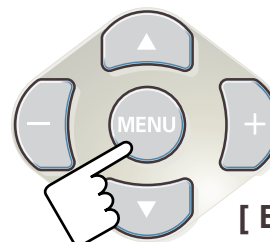
Press and hold the **Cursor + / -** or **VOLUME + / -** button on the remote control handset or TV set to make fine tuning adjustment. Press and hold the **+** button for higher frequency tuning, and press and hold the **-** for lower frequency tuning.



[Service Adjustment]

Fine tuning data value will be automatically stored in memory.

To return to normal TV mode, press the **MENU** button on the TV set or remote control handset. (Or will automatically return to normal TV mode after 5 seconds.)



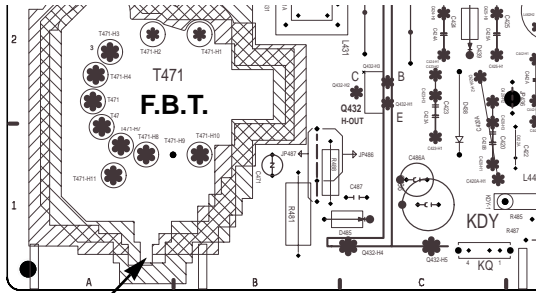
[Exit from the Service Menu]

Service Adjustments

Service Adjustment-4

FOCUS ADJUSTMENT

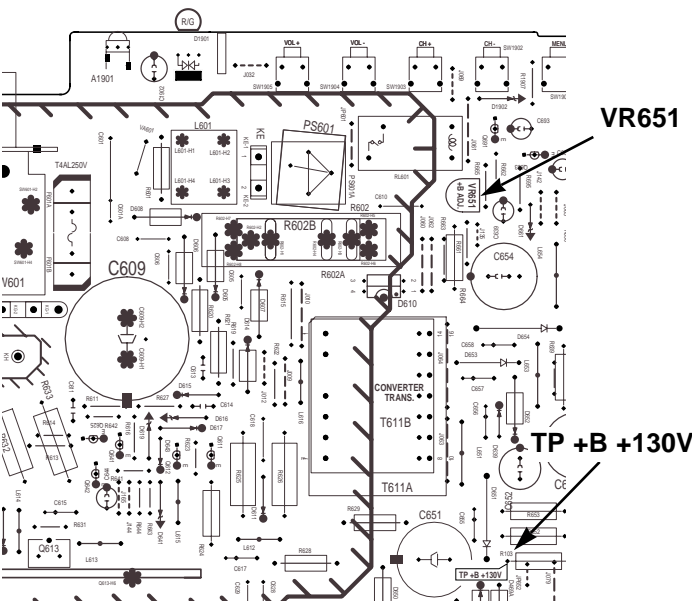
1. Receive the monochrome circular pattern.
2. Set the brightness to normal and contrast to maximum.
3. Adjust the focus control on the F.B.T. for the best focus on the screen centre.



FOCUS VR (Upper side)

+B POWER SUPPLY ADJUSTMENT

1. Connect a DC voltmeter to TP-" +B +130V" and the ground. Set the +B adjustment control (VR651) to middle range.
2. Set the brightness to normal and contrast to maximum.
3. Tune the receiver to an active channel and synchronized picture.
4. Adjust +B voltage to 130 ± 0.5 volt DC by using VR651.



VR651

TP +B +130V

HORIZ. WIDTH AND HIGH VOLTAGE CHECK

Horizontal Width Adjustment

1. Receive a monochrome circular pattern.
2. Set the brightness and contrast to maximum.
3. If the picture is too wide, or narrow, cut or short "JP436" on the main unit. When JP436 is shorted, the horizontal width increase. When JP436 is cut, the horizontal width decrease.

Important note: When the JP436 is cut, it's gap must be more than 5mm to prevent sparks.



High Voltage Check

Note: +B (+130V) Voltage Adj. and Grayscale Adjustment must be completed before attempting High Voltage Check.

4. Connect high voltage voltmeter negative lead to ground, and connect + lead to anode of picture tube.
5. Tune receiver to an active channel and confirm TV is operating properly.
6. The high voltage must be $25KV \pm 1KV$ and less than 28KV at 0 beam current (Brightness and contrast minimum setting).

Note: If the picture tube is replaced, check the high voltage. The horiz. width adjustment affects the high voltage. Therefore, re-check the high voltage.

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 27 of the CPU to go continually Low voltage for about one second. The CPU detects that this has occurred and outputs the signal from pin 31 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.

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:

PURITY ADJUSTMENT

1. Demagnetize the picture tube and receiver using an external degaussing coil. When replacing picture tube or deflection yoke, mount deflection yoke and purity-convergence magnets assembly properly, see figures 1 and 4.
2. Turn Red and Blue guns on and provide only Green raster. Rotate Screen control to fully counterclockwise. Rotate Red and Blue Bias controls fully counterclockwise. Slowly rotate Green Bias control clockwise to produce Green raster.
3. Loosen the screw holding the Deflection Yoke and remove the 3 Rubber Wedges, and slide the Deflection Yoke fully forward.
4. Rotate and spread the Tabs of the two Purity Magnets to centre the vertical green belt in the picture screen. The Purity Magnets are also adjusted to obtain vertical centring of the raster.
5. Slowly slide the Deflection Yoke backward until a uniform green screen is obtained.
6. Check the purity of the red and blue screens for uniformity, turn off other colours to check this (use bias controls). Readjust the yoke position if necessary until all screens are pure.
7. Adjust each Bias control and screen control to obtain white raster. Refer to Gray Scale Adjustment. If part of the picture screen is coloured, adjust the Deflection Yoke position forward or backward slightly.

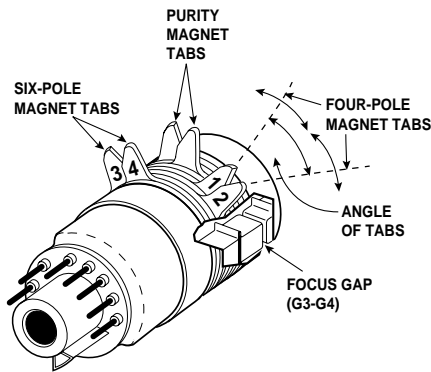


Figure 1. Purity and Convergence Magnets

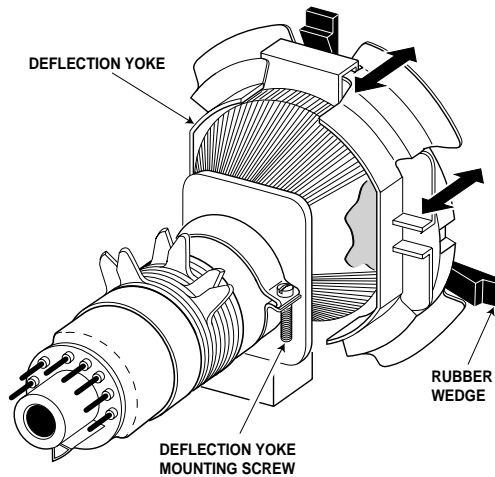


Figure 4. Deflection Yoke Movement

8. Tighten the mounting screw of the Deflection Yoke. Adjust Convergence next.

CENTRE CONVERGENCE ADJUSTMENT

1. Use a dot crosshatch pattern signal.
2. Turn Red and Blue guns on and turn off Green gun. Adjust the angle between the Tabs of the Four Pole Magnet 1 and 2, and superimpose the Red and Blue vertical lines in the centre area of the picture screen. Refer to figure 2.
3. Keeping the mutual angle of the Tabs of the Four Pole Magnet turn them together to superimpose the Blue and Red horizontal lines in the centre area of the picture screen. Refer to figure 2.
4. Turn Green gun on and adjust Six Pole Magnet 3 and 4 that the Green line superimposed on the Red/Blue lines. This is the same procedure used in steps 2 and 3. Refer to figure 3.

OUTER AREA CONVERGENCE ADJUSTMENT

Slightly loosen the screw holding the Deflection Yoke. Adjust the Deflection Yoke to converge the detail in the outer area (left side and right side) of the picture screen by orbital movement of the front of the Yoke, then secure the Deflection Yoke in appropriate position by putting the wedges as illustrated. Tighten screw holding the Deflection Yoke.

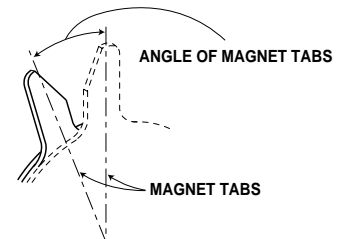


Figure 5. Adjusting Magnet

Adjust tabs angle to superimpose blue and red vertical line.

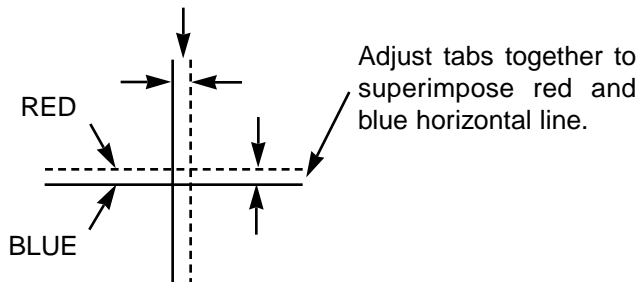


Figure- 2 BLUE AND RED LINE MOVEMENT

Adjust tabs angle to superimpose red/blue and green vertical line.

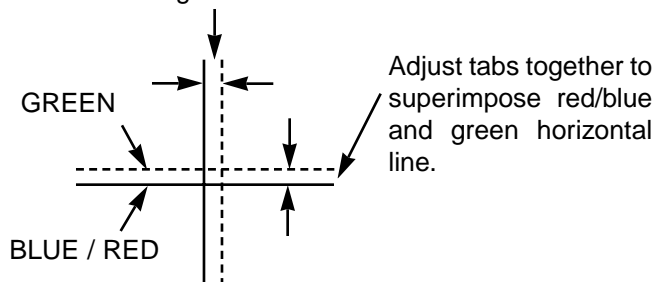
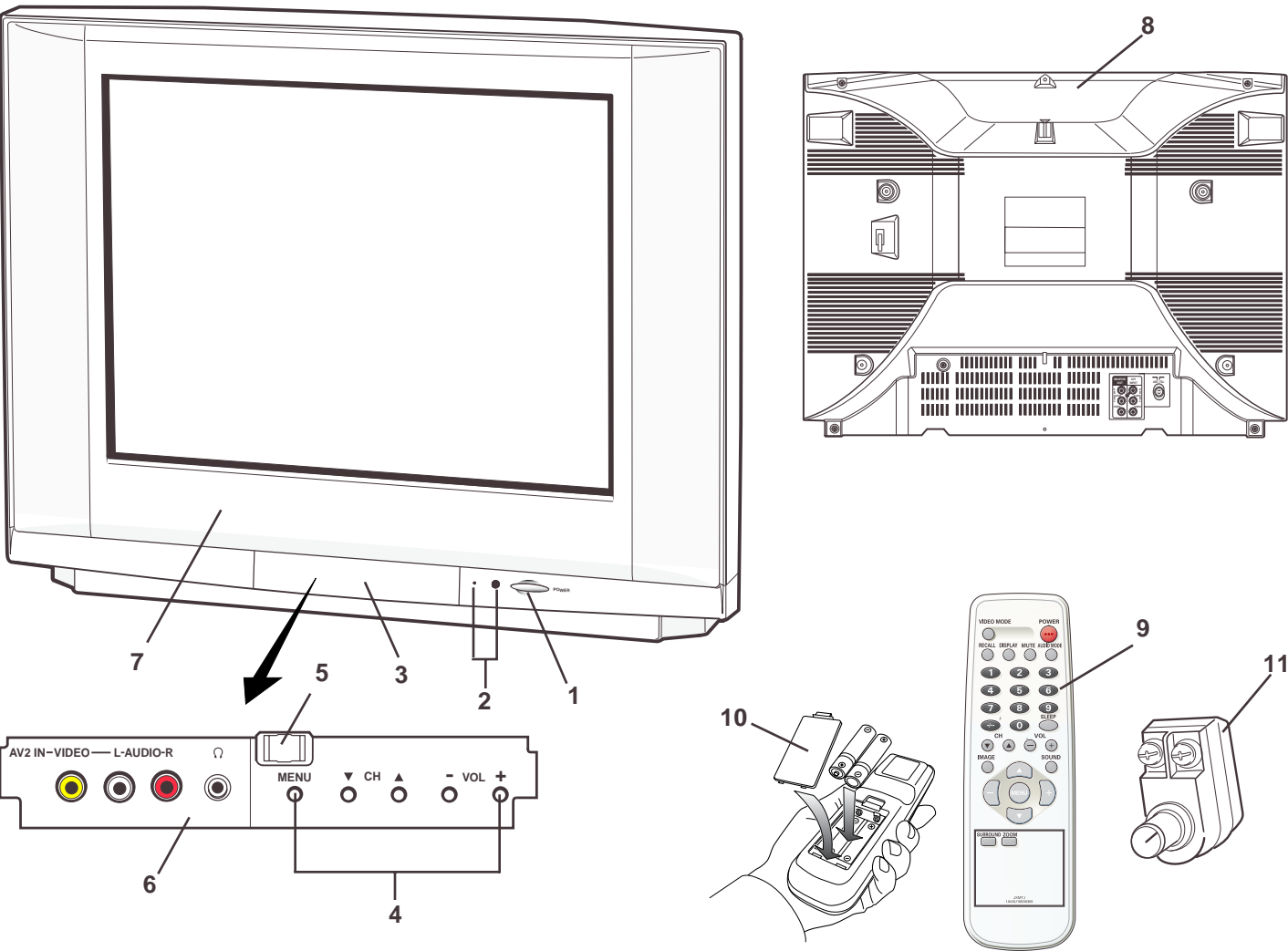


Figure- 3 BLUE/RED AND GREEN MOVEMENT

Cabinet Parts List

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



Key No.	Part No.	Description	Key No.	Part No.	Description
1	610 319 9320	ASSY,BUTTON POWER-C7SP			
	610 210 7302	COIL SPRING-D8HA			
2	610 319 2802	DEC IND-C7SA			
3	610 319 2772	DOOR-C7SP			
4	610 290 0422	BUTTON UNITED-C4CA			
5	610 104 2505	LATCH PUSH,7.9X6.9BK			
or	655 000 6936	LATCH PUSH,7.9X6.9BK			
6	610 319 9597	DEC SHEET-C7SE			
7	610 319 2697	CABINET FRONT-C7SP			
8	610 319 2741	CABINET BACK-C7SA			
9	645 072 9812	ASSY,REMOCON JXMTJ			
10	610 297 9879	RC-BATTERY LID-JXMTA			
11	645 004 3925	ANTENNA CONVERTER			
	645 005 0251	ANTENNA CONVERTER			
	610 319 1904	INSTRUCTION MANUAL-C7SP			

Chassis Electrical Parts List

C7SP

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 <div style="margin-left: 100px;"> <div style="display: inline-block; width: 100px; border-left: 1px solid black; height: 100px; margin-right: 10px;"></div> <div> <p>Rated Voltage</p> <p>Tolerance Symbols: Less than 10pF A : Not specified B : $\pm 0.1\text{pF}$ C : $\pm 0.25\text{pF}$ D : $\pm 0.5\text{pF}$ F : $\pm 1\text{pF}$ G : $\pm 2\text{pF}$ R : $\pm 0.25\text{-}0\text{pF}$ S : $\pm 0\text{-}0.25\text{pF}$ E : $\pm 0\text{-}1\text{pF}$ 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 : $\pm 100\text{-}0\%$ Q : $\pm 30\text{-}10\%$ T : $\pm 50\text{-}10\%$ U : $\pm 75\text{-}10\%$ V : $\pm 20\text{-}10\%$ W : $\pm 100\text{-}10\%$ X : $\pm 40\text{-}20\%$ Y : $\pm 150\text{-}10\%$ Z : $\pm 80\text{-}20\%$</p> </div> </div> <p>Rated value: P=pico farad, U=micro farad</p> <p>Material:</p> <p>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</p> RESISTOR CARBON 4.7K J A 1/4W <div style="margin-left: 100px;"> <div style="display: inline-block; width: 100px; border-left: 1px solid black; height: 100px; margin-right: 10px;"></div> <div> <p>Rated Wattage</p> <p>Performance Symbols: A: General B: Non flammable Z: Low noise Other: Temperature coefficient</p> <p>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 : $\pm 5\text{-}15\%$</p> <p>Rated value, ohms: K: 1,000, M: 1,000,000</p> </div> </div> <p>Material:</p> <p>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</p>			OUT OF CIRCUIT BOARD PICTURE TUBE Δ Q901 414 013 3109 CRT A51ELD031X003 COIL Δ L901 652 001 5234 COIL,DEGAUSSING MISCELLANEOUS SP901 652 001 0628 SPEAKER, 8 652 001 4466 SPEAKER, 8 SP902 652 001 0628 SPEAKER, 8 652 001 4466 SPEAKER, 8 Δ W901 645 037 2490 CORD,POWER-2.4MK-A5102 W902 652 001 0291 ASSY,WIRE GND CONNECTOR 652 001 3681 ASSY,WIRE GND CONNECTOR 610 319 1546 ASSY,PWB,MAIN C7SE 1AA0B10E6980A TRANSISTOR Q111 405 015 9721 TR 2SC2814-F4-TB Q171 405 134 5925 TR 2SA1037AK-T146-R 405 147 2215 TR 2SA1037AK-S-T146 405 002 0318 TR 2SA1037K T146 R 405 002 0417 TR 2SA1037K T146 S 405 002 6726 TR 2SA1179-M6-TB 405 002 6924 TR 2SA1179-M7-TB 405 163 1513 TR 2SA1179N-M6-TB 405 163 2718 TR 2SA1179N-M7-TB 405 173 9615 TR 2SA1235A1E 405 173 9714 TR 2SA1235A1F Q1902 405 134 5925 TR 2SA1037AK-T146-R 405 147 2215 TR 2SA1037AK-S-T146 405 002 0318 TR 2SA1037K T146 R 405 002 0417 TR 2SA1037K T146 S 405 002 6726 TR 2SA1179-M6-TB 405 002 6924 TR 2SA1179-M7-TB 405 163 1513 TR 2SA1179N-M6-TB 405 163 2718 TR 2SA1179N-M7-TB 405 173 9615 TR 2SA1235A1E 405 173 9714 TR 2SA1235A1F Q261 405 134 5925 TR 2SA1037AK-T146-R 405 147 2215 TR 2SA1037AK-S-T146 405 002 0318 TR 2SA1037K T146 R 405 002 0417 TR 2SA1037K T146 S 405 002 6726 TR 2SA1179-M6-TB 405 002 6924 TR 2SA1179-M7-TB 405 163 1513 TR 2SA1179N-M6-TB 405 163 2718 TR 2SA1179N-M7-TB 405 173 9615 TR 2SA1235A1E 405 173 9714 TR 2SA1235A1F Q431 405 018 0517 TR 2SC3332-R-AA 405 018 0616 TR 2SC3332-S-AA Q432 406 017 1908 TR TT2140LS-YB11 Q527 405 014 4519 TR 2SC2412K T146 R		

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
Q611	405 014 4618	TR 2SC2412K T146 S	Q681	405 163 1612	TR 2SC2812N-L6-TB0
	405 015 8724	TR 2SC2812-L6-TB		405 163 1711	TR 2SC2812N-L7-TB0
	405 015 8922	TR 2SC2812-L7-TB		405 173 9813	TR 2SC3928A1R
	405 163 1612	TR 2SC2812N-L6-TB0		405 173 9912	TR 2SC3928A1S
	405 163 1711	TR 2SC2812N-L7-TB0		405 011 8411	TR 2SC1740S-TP-Q
	405 173 9813	TR 2SC3928A1R		405 011 8510	TR 2SC1740S-TP-R
	405 173 9912	TR 2SC3928A1S		405 011 8619	TR 2SC1740S-TP-S
	405 013 6811	TR 2SC2274-E-AA		405 012 2012	TR 2SC1815-GR-TPE2
	405 013 7016	TR 2SC2274-F-AA		405 012 2111	TR 2SC1815-O-TPE2
	405 006 6514	TR 2SA984-E-AA		405 012 2319	TR 2SC1815-Y-TPE2
Q612	405 006 6712	TR 2SA984-F-AA	Q693	405 157 0515	TR 2SC536NF-NPA-AT
Q613	405 171 4107	TR 2SK2647		405 151 8725	TR 2SC536NG-NPA-AT
Q625	405 013 6811	TR 2SC2274-E-AA		405 020 7511	TR 2SC945A-PA-T
Q641	405 013 7016	TR 2SC2274-F-AA		405 020 7719	TR 2SC945A-QA-T
	405 001 7615	TR 2SA1015-Y(SAN)-TPE2		405 020 7917	TR 2SC945A-RA-T
	405 004 3218	TR 2SA564A-R(CU)-TA		405 011 8411	TR 2SC1740S-TP-Q
Q642	405 151 3324	TR 2SA608NF-NPA-AT		405 011 8510	TR 2SC1740S-TP-R
	405 006 1816	TR 2SA933S-TP-R		405 011 8619	TR 2SC1740S-TP-S
	406 000 6804	TR 2SA1015-GR(SAN)		405 012 2012	TR 2SC1815-GR-TPE2
	405 011 8411	TR 2SC1740S-TP-Q		405 012 2319	TR 2SC1815-Y-TPE2
	405 011 8510	TR 2SC1740S-TP-R		405 157 0515	TR 2SC536NF-NPA-AT
	405 011 8619	TR 2SC1740S-TP-S		405 151 8725	TR 2SC536NG-NPA-AT
	405 012 2012	TR 2SC1815-GR-TPE2	Q818	405 020 7511	TR 2SC945A-PA-T
	405 012 2319	TR 2SC1815-Y-TPE2		405 020 7719	TR 2SC945A-QA-T
	405 157 0515	TR 2SC536NF-NPA-AT		405 011 8411	TR 2SC1740S-TP-Q
	405 151 8725	TR 2SC536NG-NPA-AT		405 011 8510	TR 2SC1740S-TP-R
Q651	405 020 7511	TR 2SC945A-PA-T		405 011 8619	TR 2SC1740S-TP-S
	405 020 7719	TR 2SC945A-QA-T		405 012 2012	TR 2SC1815-GR-TPE2
	405 011 8411	TR 2SC1740S-TP-Q		405 012 2111	TR 2SC1815-O-TPE2
	405 011 8510	TR 2SC1740S-TP-R		405 012 2319	TR 2SC1815-Y-TPE2
	405 011 8619	TR 2SC1740S-TP-S		405 157 0515	TR 2SC536NF-NPA-AT
	405 012 2012	TR 2SC1815-GR-TPE2		405 151 8725	TR 2SC536NG-NPA-AT
	405 012 2111	TR 2SC1815-O-TPE2	Q861	405 020 7511	TR 2SC945A-PA-T
	405 012 2319	TR 2SC1815-Y-TPE2		405 020 7719	TR 2SC945A-QA-T
	405 157 0515	TR 2SC536NF-NPA-AT		405 020 7917	TR 2SC945A-RA-T
	405 151 8725	TR 2SC536NG-NPA-AT		405 089 0010	TR 2SA1707-S-AN
Q652	405 020 7511	TR 2SC945A-PA-T		405 089 0119	TR 2SA1707-T-AN
	405 020 7719	TR 2SC945A-QA-T		405 009 6917	TR 2SB985-S-AE
	405 020 7917	TR 2SC945A-RA-T		405 009 7013	TR 2SB985-T-AE
	405 089 0010	TR 2SA1707-S-AN	Q654	405 059 9804	TR 2SD1913-Q-RA
	405 089 0119	TR 2SA1707-T-AN		405 059 9903	TR 2SD1913-R-RA
	405 009 6917	TR 2SB985-S-AE	Q661	405 014 4519	TR 2SC2412K T146 R
	405 009 7013	TR 2SB985-T-AE		405 014 4618	TR 2SC2412K T146 S
	405 059 9804	TR 2SD1913-Q-RA		405 015 8724	TR 2SC2812-L6-TB
Q661	405 014 4519	TR 2SC2412K T146 R	Q871	405 015 8922	TR 2SC2812-L7-TB
	405 014 4618	TR 2SC2412K T146 S		405 163 1612	TR 2SC2812N-L6-TB0
	405 015 8724	TR 2SC2812-L6-TB		405 163 1711	TR 2SC2812N-L7-TB0
	405 015 8922	TR 2SC2812-L7-TB		405 173 9813	TR 2SC3928A1R
	405 163 1612	TR 2SC2812N-L6-TB0		405 173 9912	TR 2SC3928A1S
	405 163 1711	TR 2SC2812N-L7-TB0	Q881	405 014 4519	TR 2SC2412K T146 R
	405 173 9813	TR 2SC3928A1R		405 014 4618	TR 2SC2412K T146 S
	405 173 9912	TR 2SC3928A1S		405 015 8724	TR 2SC2812-L6-TB
Q662	405 134 5925	TR 2SA1037AK-T146-R		405 015 8922	TR 2SC2812-L7-TB
	405 147 2215	TR 2SA1037AK-S-T146		405 163 1612	TR 2SC2812N-L6-TB0
	405 002 0318	TR 2SA1037K T146 R		405 163 1711	TR 2SC2812N-L7-TB0
	405 002 0417	TR 2SA1037K T146 S		405 173 9813	TR 2SC3928A1R
	405 002 6726	TR 2SA1179-M6-TB		405 173 9912	TR 2SC3928A1S
	405 002 6924	TR 2SA1179-M7-TB	Q886	405 014 4519	TR 2SC2412K T146 R
	405 163 1513	TR 2SA1179N-M6-TB		405 014 4618	TR 2SC2412K T146 S
	405 163 2718	TR 2SA1179N-M7-TB		405 015 8724	TR 2SC2812-L6-TB
	405 173 9615	TR 2SA1235A1E		405 015 8922	TR 2SC2812-L7-TB
	405 173 9714	TR 2SA1235A1F		405 163 1612	TR 2SC2812N-L6-TB0
Q663	405 014 4519	TR 2SC2412K T146 R		405 163 1711	TR 2SC2812N-L7-TB0
	405 014 4618	TR 2SC2412K T146 S		405 173 9813	TR 2SC3928A1R
	405 015 8724	TR 2SC2812-L6-TB		405 173 9912	TR 2SC3928A1S
	405 015 8922	TR 2SC2812-L7-TB			

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUIT					
IC002	409 569 1907	IC LA42052-E		404 084 8707	ELECT 0.47U M 50V
IC1201	409 018 7603	IC LA7016	C138	403 284 4324	CERAMIC 0.022U K 50V
IC201	409 517 5912	IC LA76818A	C171	403 155 2131	CERAMIC 1500P K 50V
IC202	409 265 4806	IC L78M05CV	C172	403 215 2231	CERAMIC 0.01U K 50V
	409 172 1509	IC MC78M05CT	C174	403 157 1934	CERAMIC 10P D 50V
	409 320 5700	IC UPC78M05AHF	C1902	403 050 2810	ELECT 22U M 50V
IC3401	409 467 1118	IC CXA2134Q-T6		404 087 5406	ELECT 22U M 50V
IC501	409 507 0900	IC LA78040N-E	C201	403 086 2617	NP-ELECT 1U M 50V
	409 510 1109	IC TDA9302H	C202	403 058 2634	POLYESTER 0.015U J 50V
IC681	409 265 4806	IC L78M05CV		403 179 3217	POLYESTER 0.015U J 50V
	409 172 1509	IC MC78M05CT	C203	403 215 2231	CERAMIC 0.01U K 50V
	409 320 5700	IC UPC78M05AHF	C204	403 049 4224	ELECT 10U M 50V
IC801	410 527 1907	IC LC863440W-53Z0-TLM-E		404 084 8905	ELECT 10U M 50V
IC802	409 495 7004	IC CAT24WC04P	C205	403 049 4224	ELECT 10U M 50V
	409 470 3403	IC KS24C041C		404 084 8905	ELECT 10U M 50V
	409 427 4705	IC M24C04-BN6	C209	403 048 6328	ELECT 0.47U M 50V
	410 499 0908	IC AT24C04-10PI-2.7		404 084 8707	ELECT 0.47U M 50V
CAPACITOR			C210	403 047 5035	ELECT 470U M 25V
C007	403 342 3320	CERAMIC 0.1U K 25V	C212	403 155 4234	CERAMIC 15P J 50V
C008	403 342 3320	CERAMIC 0.1U K 25V	C221	403 342 3320	CERAMIC 0.1U K 25V
C031	404 089 7200	ELECT 100U M 25V	C222	403 342 3320	CERAMIC 0.1U K 25V
C032	403 049 0018	ELECT 1U M 50V	C223	403 342 3320	CERAMIC 0.1U K 25V
	404 084 8806	ELECT 1U M 50V	C224	403 342 3320	CERAMIC 0.1U K 25V
C033	403 049 0018	ELECT 1U M 50V	C225	403 049 0018	ELECT 1U M 50V
	404 084 8806	ELECT 1U M 50V		404 084 8806	ELECT 1U M 50V
C034	403 051 0627	ELECT 4.7U M 50V	C226	403 086 2617	NP-ELECT 1U M 50V
	404 084 9209	ELECT 4.7U M 50V	C227	404 099 1106	NP-ELECT 2.2U M 50V
C035	403 045 1564	ELECT 1000U M 25V		404 086 4509	NP-ELECT 2.2U M 50V
C037	403 342 3320	CERAMIC 0.1U K 25V	C230	403 215 2231	CERAMIC 0.01U K 50V
C038	403 342 3320	CERAMIC 0.1U K 25V	C231	403 260 2944	MT-COMPO 0.33U J 50V
C041	403 047 5035	ELECT 470U M 25V	C232	403 260 2944	MT-COMPO 0.33U J 50V
C042	403 047 5035	ELECT 470U M 25V	C233	403 045 1564	ELECT 1000U M 25V
C1001	403 049 4224	ELECT 10U M 50V	C240	403 215 2231	CERAMIC 0.01U K 50V
	404 084 8905	ELECT 10U M 50V	C243	403 215 2231	CERAMIC 0.01U K 50V
C1003	403 049 4224	ELECT 10U M 50V	C244	403 051 3123	ELECT 47U M 50V
	404 084 8905	ELECT 10U M 50V		404 084 9308	ELECT 47U M 50V
C1005	403 049 4224	ELECT 10U M 50V	C245	403 086 2617	NP-ELECT 1U M 50V
	404 084 8905	ELECT 10U M 50V	C246	403 049 0018	ELECT 1U M 50V
C101	403 044 1743	ELECT 470U M 16V		404 084 8806	ELECT 1U M 50V
	404 084 8301	ELECT 470U M 16V	C247	403 049 9823	ELECT 2.2U M 50V
C1011	403 049 4224	ELECT 10U M 50V		404 084 9001	ELECT 2.2U M 50V
	404 084 8905	ELECT 10U M 50V	C273	403 342 3320	CERAMIC 0.1U K 25V
C1013	403 049 4224	ELECT 10U M 50V	C3401	404 087 1606	ELECT 0.1U M 50V
	404 084 8905	ELECT 10U M 50V	C3404	404 089 6401	NP-ELECT 4.7U M 50V
C1015	403 049 4224	ELECT 10U M 50V	C3406	403 215 2330	CERAMIC 0.012U K 50V
	404 084 8905	ELECT 10U M 50V	C3407	403 155 2438	CERAMIC 5600P K 50V
C1021	403 049 4224	ELECT 10U M 50V	C3408	404 084 8707	ELECT 0.47U M 50V
	404 084 8905	ELECT 10U M 50V	C3411	404 089 6807	NP-ELECT 0.47U M 50V
C1023	403 049 4224	ELECT 10U M 50V	C3412	404 084 8202	ELECT 47U M 16V
	404 084 8905	ELECT 10U M 50V	C3413	404 084 9209	ELECT 4.7U M 50V
C1025	403 049 4224	ELECT 10U M 50V	C3414	403 042 2425	ELECT 100U M 16V
	404 084 8905	ELECT 10U M 50V		404 084 7809	ELECT 100U M 16V
C106	403 050 2810	ELECT 22U M 50V	C3416	404 089 6401	NP-ELECT 4.7U M 50V
	404 087 5406	ELECT 22U M 50V	C3417	404 084 9209	ELECT 4.7U M 50V
C107	403 051 3123	ELECT 47U M 50V	C3418	404 089 6401	NP-ELECT 4.7U M 50V
	404 084 9308	ELECT 47U M 50V	C3420	403 215 2231	CERAMIC 0.01U K 50V
C111	403 215 2231	CERAMIC 0.01U K 50V	C3421	403 157 7134	CERAMIC 2700P K 50V
C112	403 215 2231	CERAMIC 0.01U K 50V	C3422	403 205 2838	CERAMIC 0.047U K 25V
C113	403 215 2231	CERAMIC 0.01U K 50V	C3423	403 342 9213	TA-SOLID 3.3U K 10V
C121	403 215 2231	CERAMIC 0.01U K 50V	C3424	404 089 6401	NP-ELECT 4.7U M 50V
C122	403 042 2425	ELECT 100U M 16V	C3426	403 299 1820	TA-SOLID 10U K 10V
	404 084 7809	ELECT 100U M 16V	C3427	404 084 8806	ELECT 1U M 50V
C132	403 048 6328	ELECT 0.47U M 50V	C3431	403 155 2339	CERAMIC 4700P K 50V
	404 084 8707	ELECT 0.47U M 50V	C3432	404 087 1606	ELECT 0.1U M 50V
C135	403 048 6328	ELECT 0.47U M 50V	C3433	403 155 2339	CERAMIC 4700P K 50V
			C3434	403 284 4324	CERAMIC 0.022U K 50V
			C3436	404 089 6401	NP-ELECT 4.7U M 50V

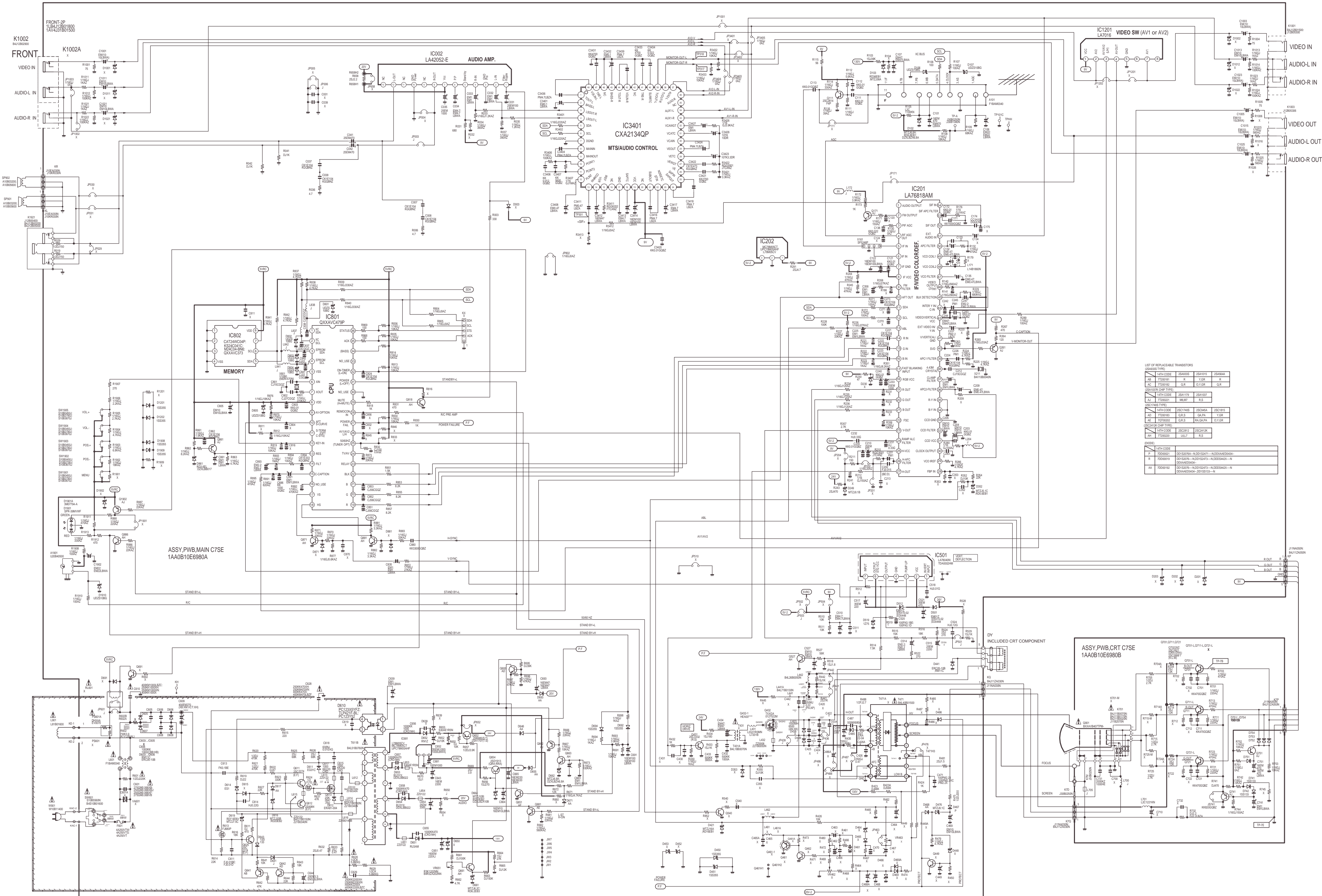
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
C3439	404 089 6401	NP-ELECT 4.7U M 50V	C652	403 052 8523	ELECT 1000U M 35V
C358	403 049 0018	ELECT 1U M 50V		404 088 6709	ELECT 1000U M 35V
	404 084 8806	ELECT 1U M 50V	C654	403 046 8037	ELECT 3300U M 25V
C423	403 353 4214	MT-POLYPRO 6500P H 1.5K	C655	403 247 5023	CERAMIC 470P K 1K
	404 076 5509	MT-POLYPRO 6500P H 1.5K		403 269 1829	CERAMIC 470P K 1K
C426	403 066 6126	MT-POLYEST 0.47U J 250V	C656	403 222 1323	CERAMIC 1000P K 1K
C432	403 075 7131	CERAMIC 1000P K 500V		403 271 9622	CERAMIC 1000P K 1K
C433	403 076 3142	CERAMIC 3900P K 500V	C657	403 247 5023	CERAMIC 470P K 1K
C434	403 051 3123	ELECT 47U M 50V		403 269 1829	CERAMIC 470P K 1K
	404 084 9308	ELECT 47U M 50V	C658	403 247 5023	CERAMIC 470P K 1K
C441	403 346 6921	MT-POLYPRO 0.22U J 250V		403 269 1829	CERAMIC 470P K 1K
	403 346 6911	MT-POLYPRO 0.22U J 250V	C663	403 049 0018	ELECT 1U M 50V
C469	403 049 4224	ELECT 10U M 50V		404 084 8806	ELECT 1U M 50V
	404 084 8905	ELECT 10U M 50V	C664	403 041 8824	ELECT 10U M 16V
C471	404 056 5208	NP-ELECT 2.2U M 100V		404 084 7700	ELECT 10U M 16V
	404 056 5208	NP-ELECT 2.2U M 100V	C665	403 043 0222	ELECT 220U M 16V
	404 045 7701	NP-ELECT 2.2U M 50V		404 084 8004	ELECT 220U M 16V
C486	403 055 8421	ELECT 22U M 250V	C681	403 039 9064	ELECT 1000U M 10V
C487	403 076 5324	CERAMIC 680P K 500V	C691	403 039 6528	ELECT 100U M 10V
C510	403 051 0627	ELECT 4.7U M 50V		404 087 4300	ELECT 100U M 10V
	404 084 9209	ELECT 4.7U M 50V	C693	403 043 9136	ELECT 47U M 16V
C514	403 049 9823	ELECT 2.2U M 50V		404 084 8202	ELECT 47U M 16V
	404 084 9001	ELECT 2.2U M 50V	C801	403 155 4234	CERAMIC 15P J 50V
C515	403 045 9827	ELECT 2200U M 25V	C802	403 157 2535	CERAMIC 27P J 50V
C517	403 053 2134	ELECT 220U M 35V	C803	403 215 2231	CERAMIC 0.01U K 50V
C518	403 246 2221	MT-COMPO 0.01U J 50V	C805	403 049 4224	ELECT 10U M 50V
C520	403 064 1212	POLYESTER 0.1U K 100V		404 084 8905	ELECT 10U M 50V
	403 276 9706	POLYESTER 0.1U K 100V	C824	403 342 3320	CERAMIC 0.1U K 25V
C521	403 054 1542	ELECT 470U M 35V	C835	403 049 0018	ELECT 1U M 50V
C524	403 260 2132	MT-COMPO 0.12U J 50V		404 084 8806	ELECT 1U M 50V
C527	403 049 4224	ELECT 10U M 50V	C837	403 145 9935	CERAMIC 22P J 50V
	404 084 8905	ELECT 10U M 50V	C838	403 145 9935	CERAMIC 22P J 50V
△ C601	404 073 7506	MT-POLYEST 0.068U M 275V	C841	403 145 9935	CERAMIC 22P J 50V
	404 072 7705	MT-POLYEST 0.068U M 250V	C842	403 145 9935	CERAMIC 22P J 50V
	404 079 6503	MT-POLYEST 0.068U M 250V	C851	403 157 3136	CERAMIC 56P J 50V
	404 092 0700	MT-POLYEST 0.068U M 275V	C852	403 157 3136	CERAMIC 56P J 50V
C608	403 076 6727	CERAMIC 1000P K 1K	C853	403 157 3136	CERAMIC 56P J 50V
	403 312 8225	CERAMIC 1000P K 1K	C861	403 049 0018	ELECT 1U M 50V
C609	404 047 1608	ELECT 270U M 400V		404 084 8806	ELECT 1U M 50V
	404 072 8405	ELECT 270U M 400V	C862	403 342 3320	CERAMIC 0.1U K 25V
	404 078 7600	ELECT 270U M 400V	C880	403 155 2230	CERAMIC 3300P K 50V
	404 096 1901	ELECT 270U M 400V	C891	403 049 0018	ELECT 1U M 50V
△ C610	404 073 3904	CERAMIC 1000P K 250V		404 084 8806	ELECT 1U M 50V
	404 073 2105	CERAMIC 1000P M 250V	C893	403 049 9823	ELECT 2.2U M 50V
	404 071 3302	CERAMIC 1000P M 400V		404 084 9001	ELECT 2.2U M 50V
	404 086 0907	CERAMIC 1000P M 400V	C894	403 281 5037	CERAMIC 0.033U K 25V
C611	403 056 9734	POLYESTER 0.01U J 50V	C896	403 113 3835	CERAMIC 1000P K 50V
	403 178 9319	POLYESTER 0.01U J 50V	RESISTOR		
C613	403 181 8217	POLYESTER 0.1U K 50V	R003	401 026 3925	CARBON 330 JA 1/6W
C614	403 237 7941	MT-COMPO 0.22U J 50V	R006	401 026 8128	CARBON 4.7 JA 1/6W
C615	403 325 5139	CERAMIC 220P K 1K	R019	401 007 7641	CARBON 150 JA 1/2W
C617	403 325 5139	CERAMIC 220P K 1K	R029	401 007 7641	CARBON 150 JA 1/2W
C618	403 083 8117	POLYPRO 0.01U J 630V	R031	401 027 5225	CARBON 680 JA 1/6W
△ C628	404 073 5106	CERAMIC 470P K 250V	R033	401 105 1026	MT-GLAZE 1.2K JA 1/16W
	404 073 3300	CERAMIC 470P M 250V	R034	401 105 4522	MT-GLAZE 390 JA 1/16W
	404 071 4507	CERAMIC 470P K 400V	R035	401 105 1026	MT-GLAZE 1.2K JA 1/16W
	404 087 0302	CERAMIC 470P M 400V	R036	401 026 8128	CARBON 4.7 JA 1/6W
△ C629	404 073 4505	CERAMIC 2200P K 250V	R037	401 105 4522	MT-GLAZE 390 JA 1/16W
	404 073 2907	CERAMIC 2200P M 250V	R041	401 012 5748	CARBON 1K JA 1/4W
	404 071 4101	CERAMIC 2200P M 400V	R042	401 012 5748	CARBON 1K JA 1/4W
	404 084 5904	CERAMIC 2200P M 400V	R1001	401 027 6628	CARBON 75 JA 1/6W
C639	403 049 0018	ELECT 1U M 50V	R1004	401 027 6628	CARBON 75 JA 1/6W
	404 084 8806	ELECT 1U M 50V	R1005	401 027 6628	CARBON 75 JA 1/6W
C643	403 043 1922	ELECT 2200U M 16V	R1011	401 105 0534	MT-GLAZE 1K JA 1/16W
C644	403 046 1602	ELECT 3.3U M 25V	R1012	401 105 0732	MT-GLAZE 100K JA 1/16W
	404 084 9100	ELECT 3.3U M 50V	R1013	401 105 0534	MT-GLAZE 1K JA 1/16W
C651	404 074 9103	ELECT 220U M 160V			


Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R1014	401 105 0732	MT-GLAZE 100K JA 1/16W	R3402	401 105 2726	MT-GLAZE 220 JA 1/16W
R1015	401 105 5925	MT-GLAZE 560 JA 1/16W	R3406	401 105 0732	MT-GLAZE 100K JA 1/16W
R1021	401 105 0534	MT-GLAZE 1K JA 1/16W	R3407	401 105 8025	MT-GLAZE 1M JA 1/16W
R1022	401 105 0732	MT-GLAZE 100K JA 1/16W	R3411	401 236 4323	MT-GLAZE 62K FA 1/16W
R1023	401 105 0534	MT-GLAZE 1K JA 1/16W	R3412	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
R1024	401 105 0732	MT-GLAZE 100K JA 1/16W	R3421	401 105 4136	MT-GLAZE 3.3K JA 1/16W
R1025	401 105 5925	MT-GLAZE 560 JA 1/16W	R3422	401 105 3723	MT-GLAZE 3K JA 1/16W
R103	401 061 8418	OXIDE-MT 39K JA 1W	R3426	401 105 4621	MT-GLAZE 3.9K JA 1/16W
R105	645 007 9450	INDUCTOR, 10U K	R3432	401 105 0633	MT-GLAZE 10K JA 1/16W
R106	401 024 6720	CARBON 100 JA 1/6W	R3433	401 105 0633	MT-GLAZE 10K JA 1/16W
R107	401 105 0425	MT-GLAZE 100 JA 1/16W	R351	401 105 7424	MT-GLAZE 8.2K JA 1/16W
R108	401 105 2132	MT-GLAZE 18K JA 1/16W	R352	401 012 7049	CARBON 10K JA 1/4W
R109	401 105 8223	MT-GLAZE 68K JA 1/16W	R354	401 025 8228	CARBON 22K JA 1/6W
R111	401 105 0534	MT-GLAZE 1K JA 1/16W	R355	401 012 7049	CARBON 10K JA 1/4W
R112	401 105 6021	MT-GLAZE 5.6K JA 1/16W	R356	401 105 0633	MT-GLAZE 10K JA 1/16W
R114	401 105 4027	MT-GLAZE 330 JA 1/16W	R357	401 026 1020	CARBON 2.7K JA 1/6W
R115	401 027 2125	CARBON 56 JA 1/6W	R358	401 105 3436	MT-GLAZE 27K JA 1/16W
R116	401 105 4423	MT-GLAZE 39 JA 1/16W	R423	401 022 4144	CARBON 68K JA 1/4W
R130	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	R423A	401 021 4145	CARBON 56K JA 1/4W
R132	401 105 5222	MT-GLAZE 470 JA 1/16W	R424	401 024 7024	CARBON 1K JA 1/6W
R140	401 105 5925	MT-GLAZE 560 JA 1/16W	R426	401 024 7430	CARBON 10K JA 1/6W
R141	401 105 5925	MT-GLAZE 560 JA 1/16W	R430	401 105 0534	MT-GLAZE 1K JA 1/16W
R171	401 105 1422	MT-GLAZE 150 JA 1/16W	R432	401 024 7024	CARBON 1K JA 1/6W
R172	401 105 4621	MT-GLAZE 3.9K JA 1/16W	R433	401 058 4426	OXIDE-MT 1K JA 1W
R173	401 024 7024	CARBON 1K JA 1/6W	R434	401 059 7218	OXIDE-MT 180 JA 1W
R176	401 105 0534	MT-GLAZE 1K JA 1/16W	R435	402 069 8704	WIRE WOUND 8.2 KA 7W
R1902	401 105 2132	MT-GLAZE 18K JA 1/16W		402 074 5309	WIRE WOUND 8.2 KA 7W
R1903	401 105 6625	MT-GLAZE 6.8K JA 1/16W		402 098 0700	WIRE WOUND 8.2 KA 7W
R1904	401 105 5331	MT-GLAZE 4.7K JA 1/16W	R441	401 064 9214	OXIDE-MT 1K JA 2W
R1905	401 105 3337	MT-GLAZE 2.7K JA 1/16W	R442	401 058 4426	OXIDE-MT 1K JA 1W
R1906	401 105 2835	MT-GLAZE 2.2K JA 1/16W	R475	401 009 5843	CARBON 330 JA 1/2W
R1907	401 026 0627	CARBON 270 JA 1/6W	R479	401 105 5331	MT-GLAZE 4.7K JA 1/16W
R1908	401 105 0425	MT-GLAZE 100 JA 1/16W	R481	401 064 5513	OXIDE-MT 1.5 JA 2W
R1910	401 105 0425	MT-GLAZE 100 JA 1/16W	△R488	402 070 5907	FUSIBLE RES 2.7 J- 1/2W
R1911	401 105 5222	MT-GLAZE 470 JA 1/16W	R510	401 024 7430	CARBON 10K JA 1/6W
R1912	401 026 9620	CARBON 470 JA 1/6W	R511	401 024 7430	CARBON 10K JA 1/6W
R1913	401 105 4027	MT-GLAZE 330 JA 1/16W	R514	401 027 7229	CARBON 7.5K JA 1/6W
R210	401 105 3723	MT-GLAZE 3K JA 1/16W	R515	401 025 1922	CARBON 15K JA 1/6W
R211	401 025 1328	CARBON 150 JA 1/6W	R516	401 025 4626	CARBON 18K JA 1/6W
R212	401 105 1422	MT-GLAZE 150 JA 1/16W	R518	401 058 0913	OXIDE-MT 1.8 JA 1W
R221	401 105 0534	MT-GLAZE 1K JA 1/16W	R519	401 024 5624	CARBON 1 JA 1/6W
R222	401 105 0534	MT-GLAZE 1K JA 1/16W	R522	401 026 0627	CARBON 270 JA 1/6W
R223	401 105 0534	MT-GLAZE 1K JA 1/16W	R524	401 067 0416	OXIDE-MT 270 JA 2W
R224	401 105 5331	MT-GLAZE 4.7K JA 1/16W	R527	401 027 3023	CARBON 56K JA 1/6W
R225	401 105 5331	MT-GLAZE 4.7K JA 1/16W	R529	401 058 4426	OXIDE-MT 1K JA 1W
R226	401 105 3436	MT-GLAZE 27K JA 1/16W	R601	401 008 8627	CARBON 220K JA 1/2W
R227	401 105 4235	MT-GLAZE 33K JA 1/16W	R602	402 071 1205	WIRE WOUND 3.9 KA 7W
R228	401 024 7727	CARBON 100K JA 1/6W		402 072 4304	WIRE WOUND 3.9 KA 7W
R229	401 105 6724	MT-GLAZE 680K JA 1/16W		402 098 0601	WIRE WOUND 3.9 KA 7W
R230	401 026 9323	CARBON 47 JA 1/6W	R611	401 020 0841	CARBON 470 JA 1/4W
R234	401 105 0920	MT-GLAZE 120 JA 1/16W	△R613	402 061 3004	FUSIBLE RES 680 J- 1/4W
R235	401 105 0920	MT-GLAZE 120 JA 1/16W	R614	401 025 8228	CARBON 22K JA 1/6W
R236	401 105 0920	MT-GLAZE 120 JA 1/16W	R615	401 025 7429	CARBON 220 JA 1/6W
R243	401 068 4116	OXIDE-MT 470 JA 2W	R616	401 025 4626	CARBON 18K JA 1/6W
R244	401 105 5430	MT-GLAZE 47K JA 1/16W	R619	401 016 1538	CARBON 22 JA 1/4W
R245	401 105 5430	MT-GLAZE 47K JA 1/16W	R620	401 010 4812	CARBON 470K JA 1/2W
R263	401 105 0633	MT-GLAZE 10K JA 1/16W	R621	401 010 4812	CARBON 470K JA 1/2W
R264	401 024 9028	CARBON 120 JA 1/6W	R622	401 019 9640	CARBON 47 JA 1/4W
R265	401 105 3921	MT-GLAZE 33 JA 1/16W	R623	401 026 4922	CARBON 330K JA 1/6W
R267	401 026 9620	CARBON 470 JA 1/6W	△R624	402 060 9403	FUSIBLE RES 10 J- 1/2W
R271	401 105 0425	MT-GLAZE 100 JA 1/16W	R625	401 069 4818	OXIDE-MT 68K JA 2W
R272	401 105 0425	MT-GLAZE 100 JA 1/16W	R626	401 069 4818	OXIDE-MT 68K JA 2W
R280	401 105 0425	MT-GLAZE 100 JA 1/16W	R627	401 025 8228	CARBON 22K JA 1/6W
R286	401 203 9924	MT-GLAZE 4.7K FA 1/16W	△R628	402 000 8602	SOLID 5.6M KA 1/2W
R289	401 105 0425	MT-GLAZE 100 JA 1/16W	△R629	402 000 8602	SOLID 5.6M KA 1/2W
R291	401 068 2013	OXIDE-MT 4.7 JA 2W	R631	401 027 0329	CARBON 47K JA 1/6W
R3401	401 105 2726	MT-GLAZE 220 JA 1/16W	R632	401 064 1614	OXIDE-MT 0.33 JA 2W

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R641	401 024 7430	CARBON 10K JA 1/6W	R881	401 105 4136	MT-GLAZE 3.3K JA 1/16W
R642	401 027 0329	CARBON 47K JA 1/6W	R882	401 105 4136	MT-GLAZE 3.3K JA 1/16W
R643	401 025 4626	CARBON 18K JA 1/6W	R883	401 105 4235	MT-GLAZE 33K JA 1/16W
R644	401 025 8228	CARBON 22K JA 1/6W	R886	401 105 2934	MT-GLAZE 22K JA 1/16W
R652	401 012 7049	CARBON 10K JA 1/4W	R887	401 105 2934	MT-GLAZE 22K JA 1/16W
△ R653	645 017 6944	PROTECTOR, 1.5A 125V	R888	401 105 2726	MT-GLAZE 220 JA 1/16W
R655	401 012 7049	CARBON 10K JA 1/4W	R891	401 105 7325	MT-GLAZE 820 JA 1/16W
R656	401 060 7917	OXIDE-MT 270 JA 1W	R892	401 105 5529	MT-GLAZE 470K JA 1/16W
R657	401 009 9811	CARBON 3.9K JA 1/2W	R893	401 105 8025	MT-GLAZE 1M JA 1/16W
R658	401 066 3210	OXIDE-MT 2.2 JA 2W	R894	401 105 0425	MT-GLAZE 100 JA 1/16W
R661	401 012 8145	CARBON 100K JA 1/4W	R895	401 105 5222	MT-GLAZE 470 JA 1/16W
R662	401 026 9927	CARBON 4.7K JA 1/6W	VARIABLE RESISTOR		
R663	401 014 6149	CARBON 150K JA 1/4W	VR651	645 006 5125	VR, SEMI, 2K N
R664	401 060 9515	OXIDE-MT 27K JA 1W		652 000 0100	VR, SEMI, 2K N
R665	401 013 6447	CARBON 12K JA 1/4W	TRANSFORMER		
R666	401 105 2934	MT-GLAZE 22K JA 1/16W	T431A	652 001 1144	TRANS, DRIVE
R667	401 105 0633	MT-GLAZE 10K JA 1/16W	△ T471	652 001 0383	TRANS, FLYBACK
R669	401 067 3318	OXIDE-MT 3.9 JA 2W	△ T611B	652 001 5296	TRANS, POWER, PULSE
R670	401 057 8316	OXIDE-MT 1 JA 1W	COIL		
R671	401 105 5331	MT-GLAZE 4.7K JA 1/16W	L171	645 053 9015	TRANS, OSC, 45.75MHZ
R672	401 024 9721	CARBON 12K JA 1/6W	L431	645 008 5628	INDUCTOR, 1U M
R673	401 105 0732	MT-GLAZE 100K JA 1/16W		610 032 5821	FILTER COIL
R681	401 105 2934	MT-GLAZE 22K JA 1/16W	L432	645 002 2364	CORE, PIPE
R682	401 105 6120	MT-GLAZE 560K JA 1/16W	L441A	652 001 1083	COIL, LINEARITY
R691	401 105 0633	MT-GLAZE 10K JA 1/16W	L442	652 000 1299	INDUCTOR, 82UH
R693	401 105 4621	MT-GLAZE 3.9K JA 1/16W	△ L601	645 057 2791	LINE FILTER
R694	401 105 0534	MT-GLAZE 1K JA 1/16W	L612	645 018 9722	CORE, PIPE
R695	401 019 3044	CARBON 39K JA 1/4W		652 001 0147	CORE, PIPE
R696	401 105 5430	MT-GLAZE 47K JA 1/16W		610 078 5953	PIPE CORE
R697	401 105 5430	MT-GLAZE 47K JA 1/16W	L613	610 078 5953	PIPE CORE
R698	401 105 0534	MT-GLAZE 1K JA 1/16W	L614	645 018 9722	CORE, PIPE
R801	401 105 3525	MT-GLAZE 270K JA 1/16W		652 001 0147	CORE, PIPE
R804	401 105 7939	MT-GLAZE 0.000 ZA 1/16W		610 078 5953	PIPE CORE
R805	401 105 7939	MT-GLAZE 0.000 ZA 1/16W	L615	645 018 9722	CORE, PIPE
R812	401 105 0633	MT-GLAZE 10K JA 1/16W		652 001 0147	CORE, PIPE
R813	401 105 0633	MT-GLAZE 10K JA 1/16W		610 078 5953	PIPE CORE
R814	401 105 0633	MT-GLAZE 10K JA 1/16W		645 018 9722	CORE, PIPE
R818	401 024 7024	CARBON 1K JA 1/6W		652 001 0147	CORE, PIPE
R819	401 105 0633	MT-GLAZE 10K JA 1/16W		610 078 5953	PIPE CORE
R830	401 024 7024	CARBON 1K JA 1/6W	L616	645 005 0763	CORE, PIPE
R831	401 026 9620	CARBON 470 JA 1/6W	L651	610 078 5953	PIPE CORE
R832	403 157 3631	CERAMIC 100P J 50V	L653	645 017 6944	PROTECTOR, 1.5A 125V
R834	401 105 0633	MT-GLAZE 10K JA 1/16W	L654	610 078 5953	PIPE CORE
R835	401 105 0633	MT-GLAZE 10K JA 1/16W	DIODE		
R836	401 105 0633	MT-GLAZE 10K JA 1/16W	D102	407 099 5610	ZENER DIODE MTZJ6.8A-T-77
R837	401 105 5331	MT-GLAZE 4.7K JA 1/16W		407 057 4023	ZENER DIODE RD6.8EB1-T1
R838	401 105 5331	MT-GLAZE 4.7K JA 1/16W		408 047 8506	ZENER DIODE MTZJ6.8A-52
R839	401 105 4027	MT-GLAZE 330 JA 1/16W	D103	407 100 0214	ZENER DIODE MTZJ36A-T-77
R840	401 105 4027	MT-GLAZE 330 JA 1/16W		407 056 2317	ZENER DIODE RD36EB1-T4
R841	401 105 5331	MT-GLAZE 4.7K JA 1/16W	D106	407 206 5618	ZENER DIODE UDZS-TE-1710B
R842	401 105 5331	MT-GLAZE 4.7K JA 1/16W	D107	407 206 5618	ZENER DIODE UDZS-TE-1710B
R851	401 025 1625	CARBON 1.5K JA 1/6W	D1201	407 149 0817	DIODE 1SS355-TE-17
R853	401 027 8622	CARBON 8.2K JA 1/6W	D1202	407 149 0817	DIODE 1SS355-TE-17
R855	401 027 8622	CARBON 8.2K JA 1/6W	D1901	407 158 9204	LED SPR-39MVWF
R857	401 027 8622	CARBON 8.2K JA 1/6W	D1908	407 149 0817	DIODE 1SS355-TE-17
R861	401 105 1521	MT-GLAZE 1.5K JA 1/16W	D1909	407 149 0817	DIODE 1SS355-TE-17
R862	401 105 7424	MT-GLAZE 8.2K JA 1/16W	D1910	407 206 5618	ZENER DIODE UDZS-TE-1710B
R863	401 105 5331	MT-GLAZE 4.7K JA 1/16W	D249	407 099 6013	ZENER DIODE MTZJ-T-779.1B
R866	401 024 6720	CARBON 100 JA 1/6W	D352	407 063 8715	ZENER DIODE MTZJ-T-775.1C
R869	401 024 6720	CARBON 100 JA 1/6W		407 056 9831	ZENER DIODE RD5.6EB1-T1
R870	401 105 2934	MT-GLAZE 22K JA 1/16W	D421	407 099 7218	ZENER DIODE MTZJ16A-T-77
R871	401 105 0633	MT-GLAZE 10K JA 1/16W		407 054 7027	ZENER DIODE RD16EB1-T4
R872	401 105 3436	MT-GLAZE 27K JA 1/16W	D441	407 006 6310	DIODE ERC05-10BV1
R873	401 105 4235	MT-GLAZE 33K JA 1/16W		407 009 6921	DIODE RM11CV1
R875	401 105 0633	MT-GLAZE 10K JA 1/16W	D450	407 149 0817	DIODE 1SS355-TE-17
R876	401 105 2132	MT-GLAZE 18K JA 1/16W	D451	407 149 0817	DIODE 1SS355-TE-17
R877	401 105 6021	MT-GLAZE 5.6K JA 1/16W			

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
D467	407 013 4326	DIODE 1S2076A-TD		407 012 4416	DIODE 1SS133 T-77
	408 009 3204	DIODE 1N4148 TP		408 009 3204	DIODE 1N4148 TP
D468	407 013 4326	DIODE 1S2076A-TD	D694	407 149 0817	DIODE 1SS355-TE-17
	407 013 7109	DIODE 1S2473	D801	407 206 5618	ZENER DIODE UDZS-TE-1710B
	407 012 4416	DIODE 1SS133 T-77	D802	407 206 5618	ZENER DIODE UDZS-TE-1710B
	408 009 3204	DIODE 1N4148 TP	D803	407 206 5618	ZENER DIODE UDZS-TE-1710B
D476	407 063 9712	ZENER DIODE MTZJ9.1C-T-77	D804	407 206 5618	ZENER DIODE UDZS-TE-1710B
D485	407 005 9629	DIODE ERA22-04-V1	D805	407 206 5618	ZENER DIODE UDZS-TE-1710B
	407 007 7415	DIODE EU1-V1	D861	407 055 7927	ZENER DIODE RD3.6EL-T1
D501	407 005 7318	DIODE EM01Z-V0		408 041 2005	ZENER DIODE RD3.6EL
	407 005 8612	DIODE ERA15-02-V5	MISCELLANEOUS		
	408 010 0506	DIODE BYD33D TP	△ F601	423 028 8603	FUSE 250V 4A
D512	407 005 7318	DIODE EM01Z-V0		423 024 8409	FUSE 250V 4A
	407 005 8612	DIODE ERA15-02-V5		423 007 2103	FUSE 250V 4A
	408 010 0506	DIODE BYD33D TP	A101	645 064 2777	TUNER,U/V
D519	407 118 2207	ZENER DIODE 1Z75	A1901	645 047 6228	UNIT,REMOCON RECEIVER
D605	407 006 6310	DIODE ERC05-10BV1	J133	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
	407 009 6921	DIODE RM11CV1	J134	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
D606	407 006 6310	DIODE ERC05-10BV1	J137	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
	407 009 6921	DIODE RM11CV1	J138	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
D607	407 006 6310	DIODE ERC05-10BV1	JP1003	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
	407 009 6921	DIODE RM11CV1	JP202	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
D608	407 006 6310	DIODE ERC05-10BV1	JP3403	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
	407 009 6921	DIODE RM11CV1	JP3404	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
△ D610	407 234 8701	PHOTO COUPLE PC123X5YFZ	JP3405	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
	407 230 3908	PHOTO COUPLE PC123Y52	JP802	401 105 7939	MT-GLAZE 0.000 ZA 1/16W
	407 231 7707	PC TLP421F(D4-BL)	K1001	645 006 3787	JACK,RCA-3
D611	407 146 8113	DIODE EG01C		652 000 1916	JACK,RCA-3
D612	407 005 9837	DIODE ERA81-004-V1	K1002	652 001 1380	JACK,RCA-3
D614	407 007 6626	DIODE ES1V0	K1003	645 050 8295	JACK,RCA-3
D616	407 099 7911	ZENER DIODE MTZJ20B-T-77	K1921	645 006 4708	JACK,PHONE D3.6
	407 055 1816	ZENER DIODE RD20EB2		652 000 0155	JACK,PHONE D3.5
D617	407 013 4326	DIODE 1S2076A-TD		652 001 2882	JACK,PHONE D3.6
	407 013 7109	DIODE 1S2473	△ PS601A	408 046 5407	TH PTDCA1BF4R5Q200
	407 012 4416	DIODE 1SS133 T-77	SW1901	645 003 4701	SWITCH,PUSH 1P-1TX1
	408 009 3204	DIODE 1N4148 TP		645 019 4887	SWITCH,PUSH 1P-1TX1
D619	407 063 9316	ZENER DIODE MTZJ7.5C		645 027 7382	SWITCH,PUSH 1P-1TX1
	407 057 6512	ZENER DIODE RD7.5EB3	SW1902	645 003 4701	SWITCH,PUSH 1P-1TX1
D643	407 012 4416	DIODE 1SS133 T-77		645 019 4887	SWITCH,PUSH 1P-1TX1
D646	407 013 4326	DIODE 1S2076A-TD		645 027 7382	SWITCH,PUSH 1P-1TX1
	407 013 7109	DIODE 1S2473	SW1903	645 003 4701	SWITCH,PUSH 1P-1TX1
	407 012 4416	DIODE 1SS133 T-77		645 019 4887	SWITCH,PUSH 1P-1TX1
	408 009 3204	DIODE 1N4148 TP		645 027 7382	SWITCH,PUSH 1P-1TX1
D651	407 009 8816	DIODE RU3AM-V1	SW1904	645 003 4701	SWITCH,PUSH 1P-1TX1
D652	407 210 5700	DIODE RN1Z		645 019 4887	SWITCH,PUSH 1P-1TX1
D653	407 106 2806	DIODE RU3YX		645 027 7382	SWITCH,PUSH 1P-1TX1
	408 053 7609	DIODE RU3YX	SW1905	645 003 4701	SWITCH,PUSH 1P-1TX1
D654	407 106 2806	DIODE RU3YX		645 019 4887	SWITCH,PUSH 1P-1TX1
	408 053 7609	DIODE RU3YX		645 027 7382	SWITCH,PUSH 1P-1TX1
D655	407 013 4326	DIODE 1S2076A-TD	△ SW601	645 050 4129	SWITCH,PUSH POWER 2P-2T
	407 013 7109	DIODE 1S2473		652 001 4565	SWITCH,PUSH POWER 2P-2T
	407 012 4416	DIODE 1SS133 T-77	X161	421 009 9403	SAW F TSF5246P
	408 009 3204	DIODE 1N4148 TP	X211	652 001 0154	OSC,CRYSTAL 4.433619MHZ
D661	407 099 5511	ZENER DIODE MTZJ6.2C-T-77	X801	645 004 1938	OSC,CRYSTAL 32.768KHZ
	407 057 2821	ZENER DIODE RD6.2EB3-T1		645 004 1945	OSC,CRYSTAL 32.768KHZ
D662	407 099 5610	ZENER DIODE MTZJ6.8A-T-77	610 319 1553 ASSY,PWB,CRT C7SE		
	408 047 8506	ZENER DIODE MTZJ6.8A-52	1AA0B10E6980B		
D664	407 099 6112	ZENER DIODE MTZJ10B-T-77	TRANSISTOR		
	407 054 0038	ZENER DIODE RD10EB2	Q701	405 041 6507	TR 2SC2621-D-RA
	408 047 2207	ZENER DIODE MTZJ10B-52		405 041 6705	TR 2SC2621-E-RA
D671	407 013 4326	DIODE 1S2076A-TD			TR 2SC2688(1)-K
	407 013 7109	DIODE 1S2473			TR 2SC2688(1)-L
	407 012 4416	DIODE 1SS133 T-77			TR 2SC2688(1)-M
	408 009 3204	DIODE 1N4148 TP			
D692	407 149 0817	DIODE 1SS355-TE-17			
D693	407 013 4326	DIODE 1S2076A-TD			
	407 013 7109	DIODE 1S2473			

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
Q711	406 000 3605	TR 2SC3620(LB-SAN-1)	COIL L701	645 007 9863	INDUCTOR,220U K
	405 041 6507	TR 2SC2621-D-RA			
	405 041 6705	TR 2SC2621-E-RA			
Q721		TR 2SC2688(1)-K	DIODE D741	407 012 4416	DIODE 1SS133 T-77
		TR 2SC2688(1)-L		D742	407 012 4416 DIODE 1SS133 T-77
		TR 2SC2688(1)-M		D751	407 012 4416 DIODE 1SS133 T-77
	406 000 3605	TR 2SC3620(LB-SAN-1)		D752	407 012 4416 DIODE 1SS133 T-77
	405 041 6507	TR 2SC2621-D-RA		D753	407 012 4416 DIODE 1SS133 T-77
	405 041 6705	TR 2SC2621-E-RA		D754	407 012 4416 DIODE 1SS133 T-77
Q741		TR 2SC2688(1)-K	MISCELLANEOUS JS741	403 157 6939	CERAMIC 820P K 50V
		TR 2SC2688(1)-L		△K701	645 026 2005 SOCKET,CRT 8P
		TR 2SC2688(1)-M			652 001 0321 SOCKET,CRT 8P
	406 000 3605	TR 2SC3620(LB-SAN-1)			652 001 1465 SOCKET,CRT 8P
	405 134 5925	TR 2SA1037AK-T146-R			652 001 3247 SOCKET,CRT 12P
	405 147 2215	TR 2SA1037AK-S-T146			
	405 002 0318	TR 2SA1037K T146 R			
	405 002 0417	TR 2SA1037K T146 S			
	405 002 6726	TR 2SA1179-M6-TB			
	405 002 6924	TR 2SA1179-M7-TB			
	405 163 1513	TR 2SA1179N-M6-TB			
	405 163 2718	TR 2SA1179N-M7-TB			
	405 173 9615	TR 2SA1235A1E			
	405 173 9714	TR 2SA1235A1F			
	405 134 5925	TR 2SA1037AK-T146-R			
Q751	405 147 2215	TR 2SA1037AK-S-T146			
	405 002 0318	TR 2SA1037K T146 R			
	405 002 0417	TR 2SA1037K T146 S			
	405 002 6726	TR 2SA1179-M6-TB			
	405 002 6924	TR 2SA1179-M7-TB			
	405 163 1513	TR 2SA1179N-M6-TB			
	405 163 2718	TR 2SA1179N-M7-TB			
	405 173 9615	TR 2SA1235A1E			
	405 173 9714	TR 2SA1235A1F			
CAPACITOR					
C701	403 157 6632	CERAMIC 470P K 50V			
C711	403 157 6632	CERAMIC 470P K 50V			
C721	403 157 6632	CERAMIC 470P K 50V			
C731	403 077 2817	CERAMIC 1000P Z 2K			
C741	403 049 0018	ELECT 1U M 50V			
	404 084 8806	ELECT 1U M 50V			
C751	403 044 1743	ELECT 470U M 16V			
	404 084 8301	ELECT 470U M 16V			
RESISTOR					
R701	401 105 2726	MT-GLAZE 220 JA 1/16W			
R703	401 105 5222	MT-GLAZE 470 JA 1/16W			
R704	401 065 4911	OXIDE-MT 12K JA 2W			
R705	401 009 1528	CARBON 2.7K JA 1/2W			
R711	401 105 2726	MT-GLAZE 220 JA 1/16W			
R713	401 105 5222	MT-GLAZE 470 JA 1/16W			
R714	401 065 4911	OXIDE-MT 12K JA 2W			
R715	401 009 1528	CARBON 2.7K JA 1/2W			
R721	401 105 2726	MT-GLAZE 220 JA 1/16W			
R723	401 105 5222	MT-GLAZE 470 JA 1/16W			
R724	401 065 4911	OXIDE-MT 12K JA 2W			
R725	401 009 1528	CARBON 2.7K JA 1/2W			
R732	401 015 6534	CARBON 2.2 JA 1/4W			
	402 086 3904	CARBON 2.2 JA 1/4W			
R741	401 020 0841	CARBON 470 JA 1/4W			
R742	401 105 1521	MT-GLAZE 1.5K JA 1/16W			
R744	401 105 1422	MT-GLAZE 150 JA 1/16W			
R751	401 105 7939	MT-GLAZE 0.000 ZA 1/16W			
R752	401 105 0633	MT-GLAZE 10K JA 1/16W			
R753	401 105 0633	MT-GLAZE 10K JA 1/16W			



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

LA5-A

CHASSIS SERIES

SERVICE REF. NO. TS5121F-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  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 μ F and more than 1 are pF.
 - All capacitance rated voltages are 50V unless otherwise noted.
 - All inductance values are in μ H.
 - Voltage readings take with a "VTVM" are from point indicated chassis ground. Voltage readings taken by using NTSC colour bar signal are with all controls at normal position. Some voltage may vary with signal strength.
 - Waveform were taken with NTSC 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 J 1.2

Characteristic Capacitance value (220pF)
Allowable error (\pm 20%)
Kind (Ceramic)
Rated voltage (1,000V)

Resistance value (1.2 Ω)
Allowable error (\pm 5%)
Kind (Metal carbon)
Rated wattage (1/2W)

J = \pm 5%
K = \pm 10%
M = \pm 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: Oxidized metalized
W: Wire winding
C: Solid

TRANSISTOR, DIODE AND INTEGRATED CIRCUIT TERMINAL GUIDE

C: COLLECTOR
B: BASE
E: EMITTER

A: ANODE
K: KATHODE

CHIP COMPONENTS

TRANSISTOR

DOCK K

RESISTOR

10 \times 10 \times 10 \times

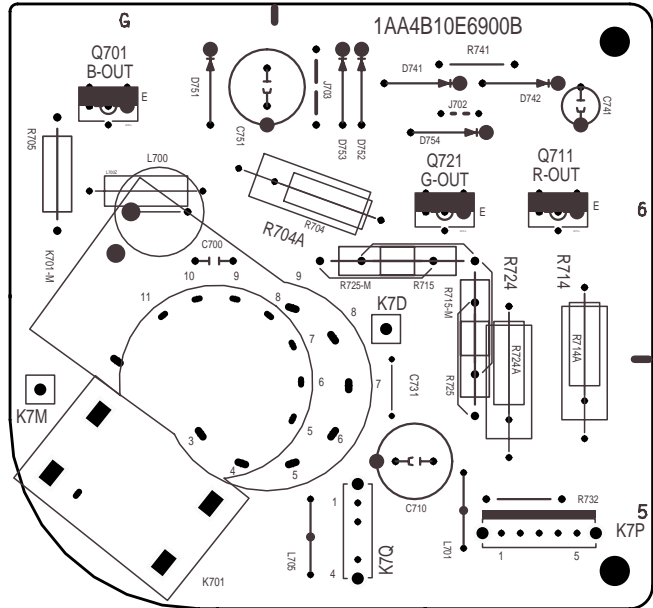
PARTICULAR PARTS SYMBOL

FUSIBLE RESISTOR

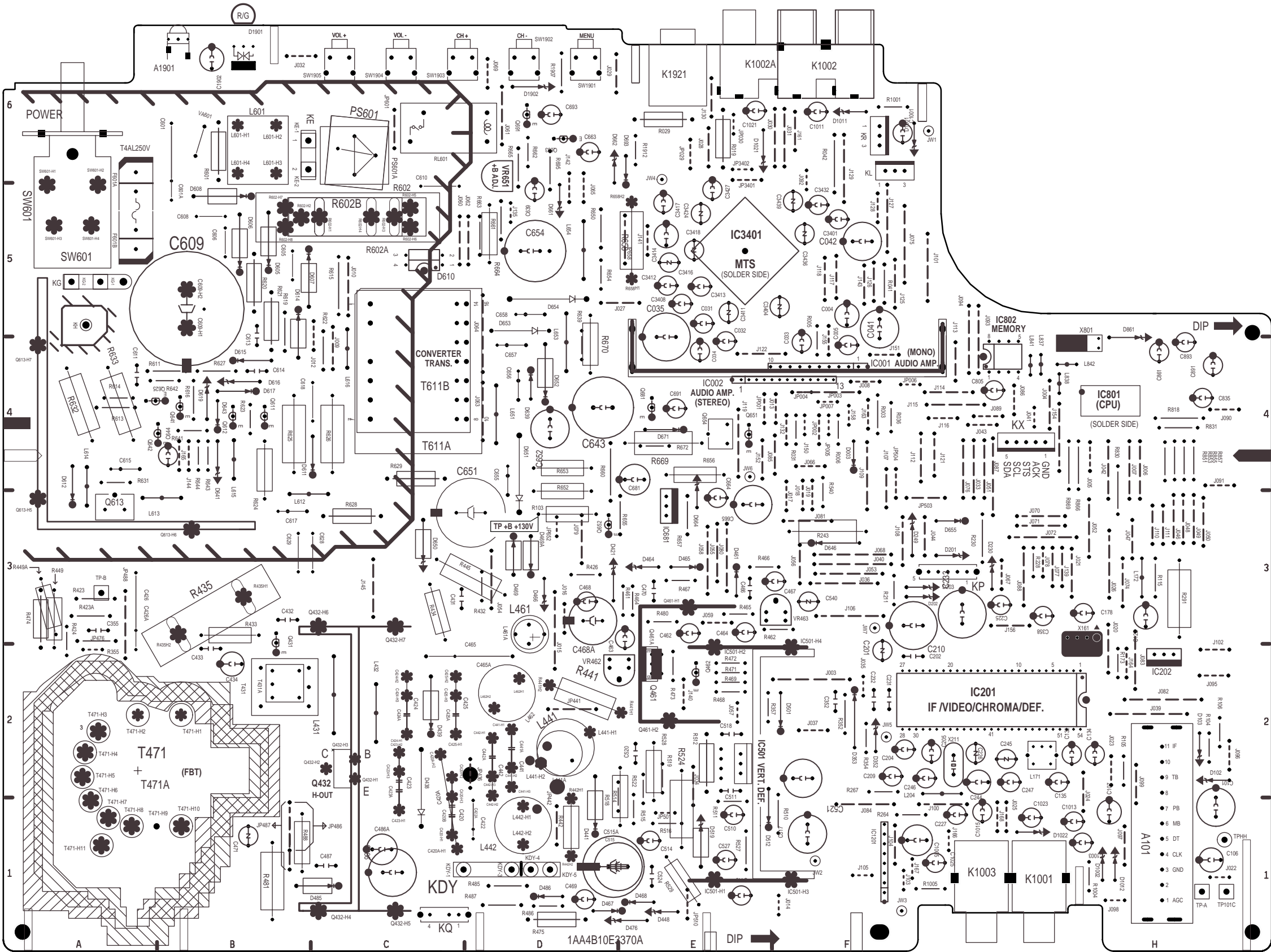
NON POLE ELECTRIC CAPACITOR

POSISTER

CRT BOARD (Component Location)



MAIN BOARD (Component Location)



Waveforms & Voltages

(On the Main Board)

IC002 (AUDIO AMP.)											
Pin-1	8.9V	2	1.6V	3	GND	4	1.6V	5	5.8V	6	11.7V
10	GND	11	N.C.	12	9.0V	13	N.C.	7	17.7V	8	9.0V
								9	N.C.		

IC1201 (VIDEO SW)							
Pin-1	9.1V	2	4.2V	3	0V	4	3.5V
5	GND	6	N.C.	7	4.1V	8	N.C.

IC201 (IF/VIDEO/CHROMA)																	
Pin-1	2.3V	2	2.2V	3	2.7V	4	1.8V	5	2.9V	6	2.9V	7	0V	8	5.0V	9	2.3V
10	2.5V	11	4.5V	12	4.4V	13	4.4V	14	1.6V	15	1.7V	16	1.6V	17	0V	18	8.3V
19	2.6V	20	2.6V	21	2.7V	22	2.0V	23	2.4V	24	2.5V	25	5.1V	26	2.7V	27	0.9V
28	1.2V	29	1.7V	30	0.9V	31	4.5V	32	8.4V	33	GND	34	GND	35	GND	36	3.3V
37	1.8V	38	2.9V	39	3.5V	40	2.5V	41	GND	42	2.6V	43	5.0V	44	2.8V	45	2.6V
46	2.5V	47	3.8V	48	4.2V	49	4.2V	50	2.5V	51	2.2V	52	1.9V	53	2.4V	54	3.2V

IC202 (REG.)			IC681 (REG.)		
Pin-1	7.8V	2	GND	3	5.0V
Pin-1	11.0V	2	GND	3	5.0V

IC3401 (MTS/AUDIO CONTROL)																	
Pin-1	4.2V	2	4.2V	3	4.1V	4	4.1V	5	4.5 V	6	4.4V	7	GND	8	4.1V	9	4.0V
10	4.1V	11	4.0V	12	5.3V	13	4.1V	14	1.3V	15	1.3V	16	NC	17	GND	18	4.5V
19	9.2V	20	NC	21	4.0V	22	4.1V	23	3.5V	24	4.0V	25	4.1V	26	4.1V	27	4.1V
28	1.7V	29	4.1V	30	4.1V	31	1.7V	32	4.0V	33	4.1V	34	4.1V	35	NC	36	4.1V
37	4.1V	38	0V	39	4.1V	40	4.1V	41	4.2V	42	NC	43	4.1V	44	4.1V	45	4.2V
46	NC	47	4.2V	48	4.1V												

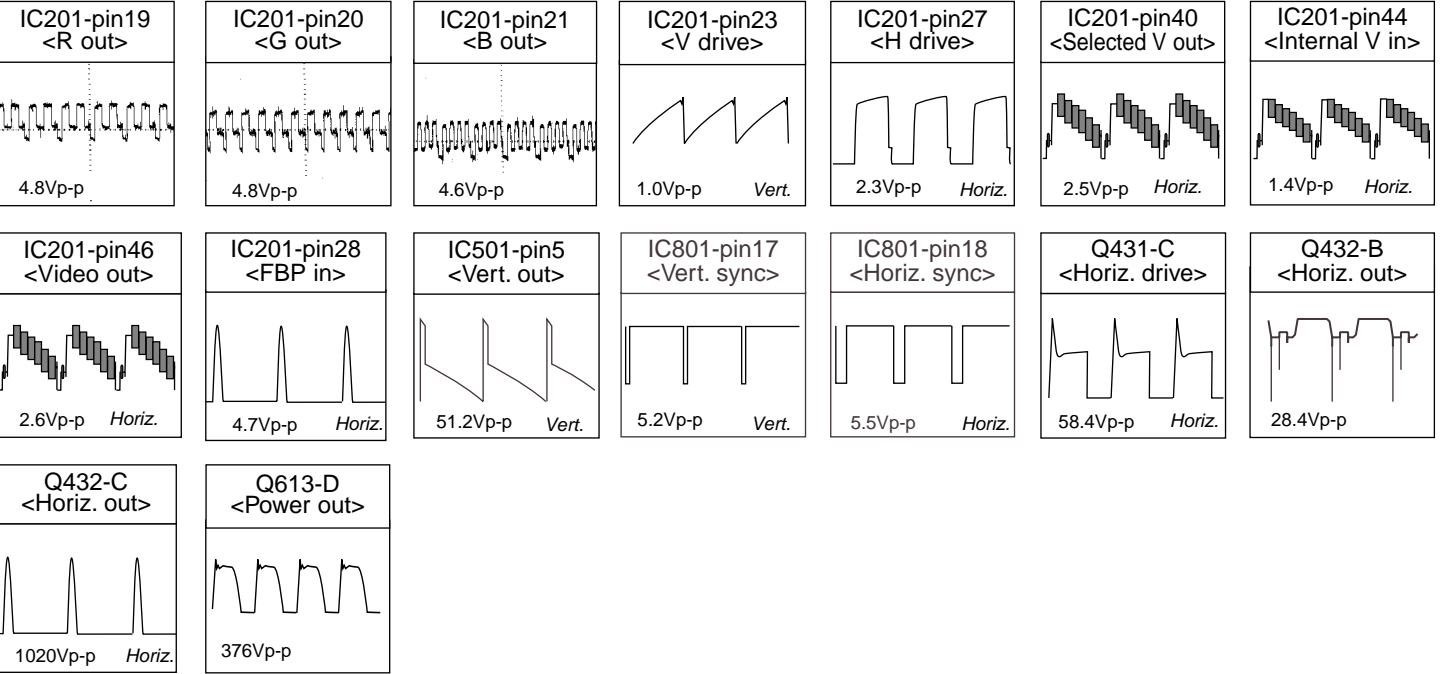
IC501 (VERT. OUT)													
Pin-1	2.5V	2	28.5V	3	2.2V	4	GND	5	14.7V	6	26.7V	7	2.5V

IC801 (CPU)																	
Pin-1	4.5V	2	4.4V	3	5.0V	4	5.0V	5	GND	6	1.9V	7	2.7V	8	5.0V	9	4.2V
10	2.5V	11	0V	12	0V	13	5.0V	14	3.5V	15	2.8V	16	0V	17	4.8V	18	4.1V
19	0V	20	0V	21	0V	22	0V	23	0V	24	0V	25	0V	26	0V	27	4.9V
28	4.8V	29	0V	30	GND	31	4.8V	32	4.9V	33	NC	34	0V	35	5.0V	36	5.0V

IC802 (MEMORY)							
Pin-1	GND	2	GND	3	GND	4	GND
5	5.0V	6	5.0V	7	GND	8	5.0V

Q111	Q171	Q1902	Q261	Q431	Q432	Q527	Q611	Q612	Q613	Q625	Q641	Q642
B 1.2V C 4.5V E 0.5V	B 2.2V C 0V E 2.8V	B 4.9V C -0.1V E 5.0V	B 2.5V C 0V E 3.1V	B 0.3V C 19.5V E 0V	B -0.1V C 130.3V E 0V	B 0V C 4.8V E 0V	B 3.9V C 29.7V E 4.3V	B 3.9V C 0V E 4.3V	G 4.3V D 325.0V S 0V	B 0.4V C 3.9V E 0V	B 0V C 0.3V E 0.1V	B 0.7V C 0V E 0V

Q651	Q652	Q654	Q661	Q662	Q663	Q681	Q693	Q818	Q861	Q871	Q881	Q886
B 0V C 9.9V E 0V	B 26.4V C 27.0 V E 27.1 V	B 9.9V C 9.3V E 9.2V	B 6.9 V C 30.2 V E 6.3V	B 30.2 V C 0V E 30.3V	B 0.6V C 30.2V E 0.4 V	B 0.7V C 0.1V E 0V	B 17.3V C 30.2V E 17.2 V	B 0V C 8.9V E 0V	B 4.4V C 4.4V E 5.0V	B -0.2V C 4.8V E 0V	B -0.4V C 4.1V E 0V	B 0V C 0.1V E 0V



(On the CRT Board)

Q701	Q711	Q721	Q741	Q751
B 2.6V C 148.8V E 2.5V	B 2.6V C 147.6V E 2.5V	B 2.7V C 144.5V E 2.6V	B 0.7V C 0V E 1.4V	B 9.0V C 0V E 8.9V
Q701-C <B-out>	Q701-B <B drive>	Q711-C <R-out>	Q711-B <R drive>	Q721-C <G-out>
88.0Vp-p	4.5Vp-p	94.0Vp-p	4.6Vp-p	118.0Vp-p
Q721-B <G drive>				
4.9Vp-p				