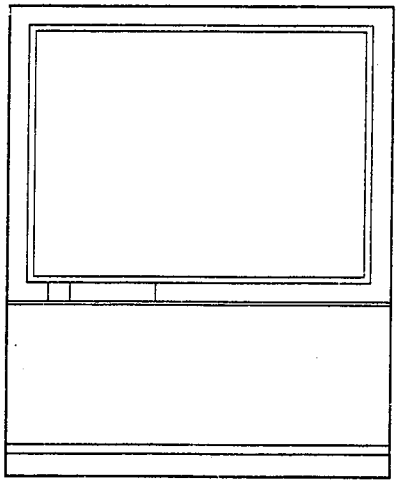
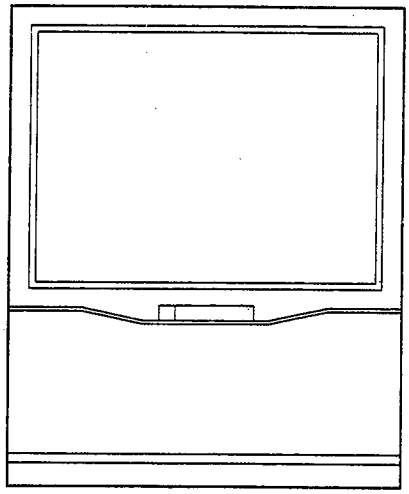
1996

MITSUBISHI Service Manual

PROJECTION TELEVISION
VZ3 CHASSIS



MODEL
VS-4543
VS-4544



MODEL
VS-5043
VS-5044
VS-6043

CAUTION
Before servicing this chassis, it is important that the service person reads the "SAFETY PRECAUTIONS" and "PRODUCT SAFETY NOTICE" in this service manual.

SPECIFICATIONS

- **Power Input** : AC 120V; 60Hz
- **Power Consumption** : 210W
- **Reception Frequency** : VHF 54~470MHz
  UHF 470~806MHz
- **Antenna Input** : VHF/UHF 75Ω unbalanced
  Single axis input
- **CRT** : [VS-4543, VS-4544, VS-6043]
  180DLB22-R
  180DLB22-G
  180DLB22-B
  [VS-5043, VS-5044]
  P16LHV08RJA(R)
  P16LHV08HKA(G)
  P16LHV08BMB(B)
- **High Voltage** : 31.0kV (at 0A)
- **Speaker** : 3.9" round type 2pcs.
- **Cabinet Dimensions** : [VS-4543, VS-4544]
  39.8"(W) X 48.2"(H) X 22.7"(D)
  [VS-5043, VS-5044]
  42.8"(W) X 50.4"(H) X 23.6"(D)
  [VS-6043]
  51.0"(W) X 59.8"(H) X 29.3"(D)
- **Weight** : [VS-4543, VS-4544]
  194.0lbs.
  [VS-5043, VS-5044]
  216.1lbs.
  [VS-6043]
  291.0lbs.
- **Input Level** : VIDEO IN JACK(RCA Type)
  1.0Vp-p 75Ω unbalanced
  AUDIO IN JACK(RCA Type)
  -4.7dBm 43kΩ unbalanced
  S-VIDEO IN JACK
  (Y/C separate type)
  Y:1.0Vp-p C:0.286Vp-p(BURST)
  75Ω unbalanced
- **Output Level** : VIDEO OUT JACK(RCA Type)
  1.0Vp-p 75Ω unbalanced
  AUDIO OUT JACK(RCA Type)
  -4.7dBm 4.7kΩ unbalanced

- Weight and dimensions shown are approximate.
- Design and specifications are subject to change without notice.

MITSUBISHI CONSUMER ELECTRONICS AMERICA, INC.

6100 Atlantic Blvd, Norcross, GA, 30071-1305

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PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the VSS have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, etc. Replacement parts which have these special safety characteristics are identified in this service manual. Electrical components having such features are identified by shading on the schematic diagram and the parts list of this service manual and by the supplementary sheet for this chassis to be issued subsequently.

SAFETY PRECAUTIONS

NOTICE: Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

WARNING

1. Operation of this receiver outside the cabinet or with the cover removed presents a shock hazard from the receiver power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment.
2. Do not install, remove or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.

X-RADIATION WARNING

The surface of the picture tube may generate X-Radiation. Take precautions when servicing and, if possible, the use of a lead apron is recommended for shielding while handling.

When replacing the picture tube, use only the designated replacement part since it is a critical component with regard to X-Radiation as noted above. No high-voltage adjustments are provided. The high-voltage specification is described on the cover page.

LEAKAGE CURRENT CHECK

Before returning the receiver to the customer, it is recommended that leakage current be measured according to the following methods.

1. Cold Check

With the AC plug removed from the AC source, place a jumper across the two AC plug prongs. Turn the receiver AC switch on. Using an ohm-meter, connect one lead to the AC plug and touch the other lead to each exposed metal part (antennas, handle bracket, metal cabinet, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistance reading of 1 megohm. Any resistance below this value indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

2. Hot Check

Use the circuit in Fig. 1 to perform this test.

(1) With switch S1 open, connect the receiver to the measuring circuit. Immediately after connection, measure the leakage current using both positions of switch S2, and with the switching devices in the receiver in all of their operating positions.

(2) Switch S1 is then closed, energizing the receiver. Immediately after closing the switch, measure the leakage current using both positions of switch S2, and with the switching devices in the receiver in all of their operating positions. Current measurements of items (1) and (2) are to be repeated after the receiver has reached thermal stabilization. The leakage current must not be more than 0.5 milliampere.

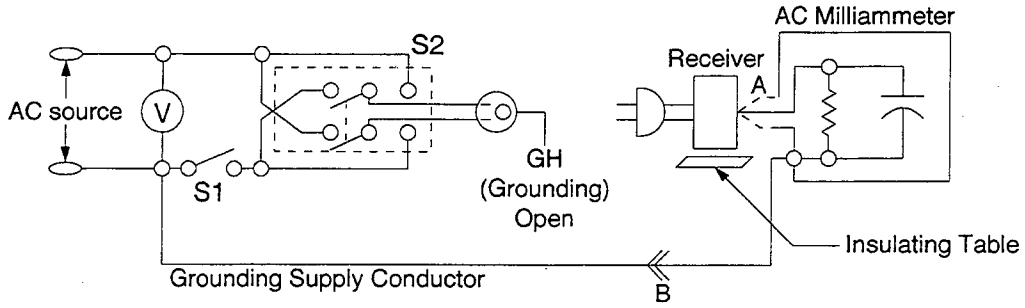
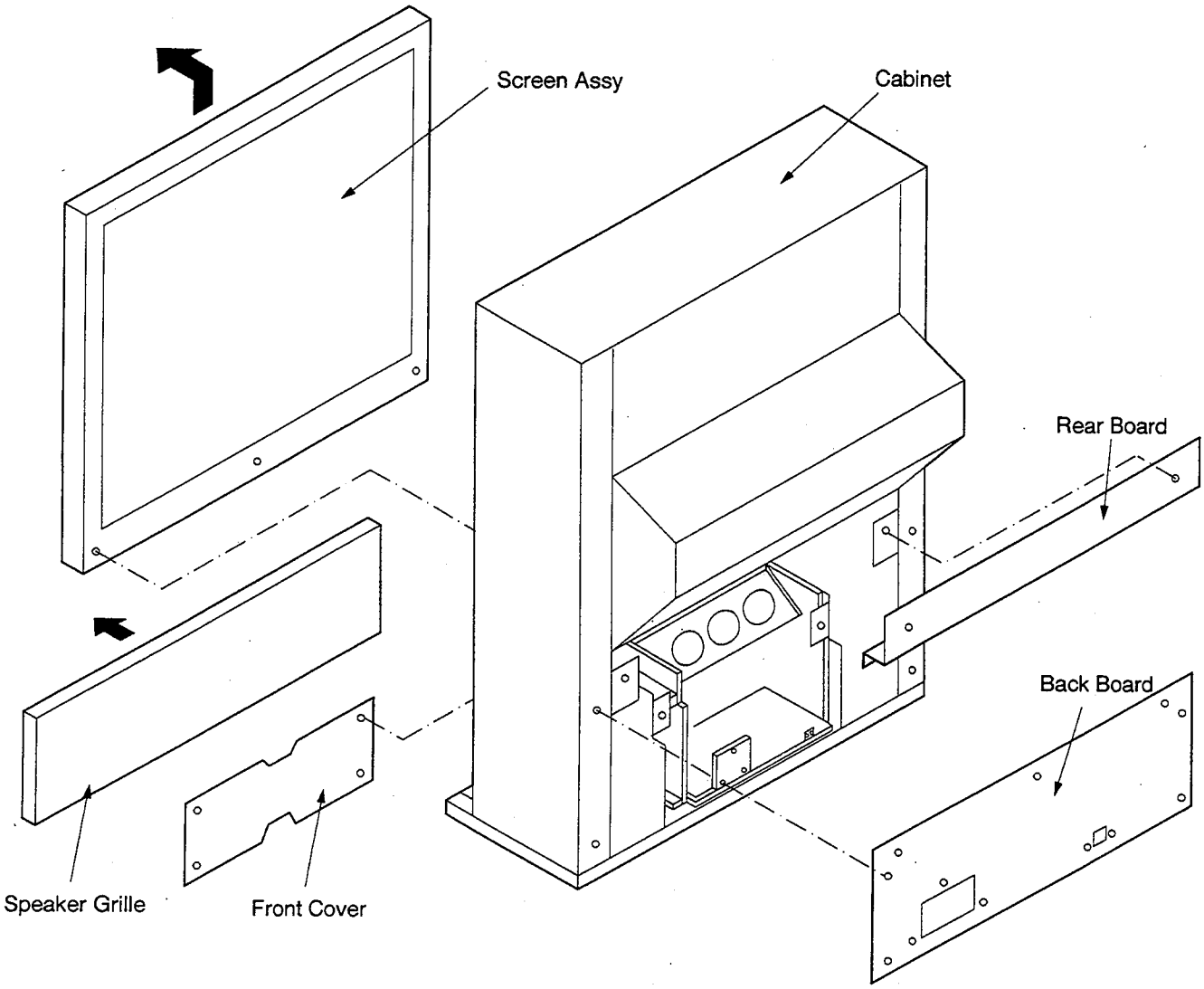


Fig. 1

REMOVING FRONT AND REAR CABINET COMPONENTS

[VS-4543, VS-4544]

Refer to PARTS LIST for Parts Number



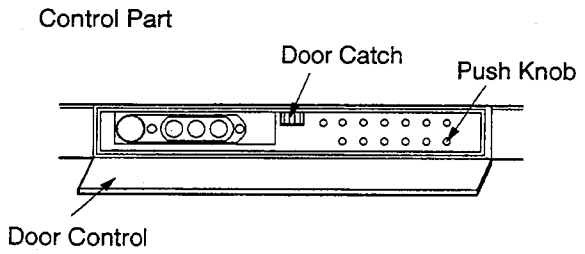


Fig. 2-1

Parts Name	Number of Screws
Screen Assy	3
Front Cover	4
Rear Board	2
Back Board	12

Number of Screws : The number of Screws holding Parts.

Table 1-1

[VS-5043, VS-5044, VS-6043]

Refer to PARTS LIST for Parts Number

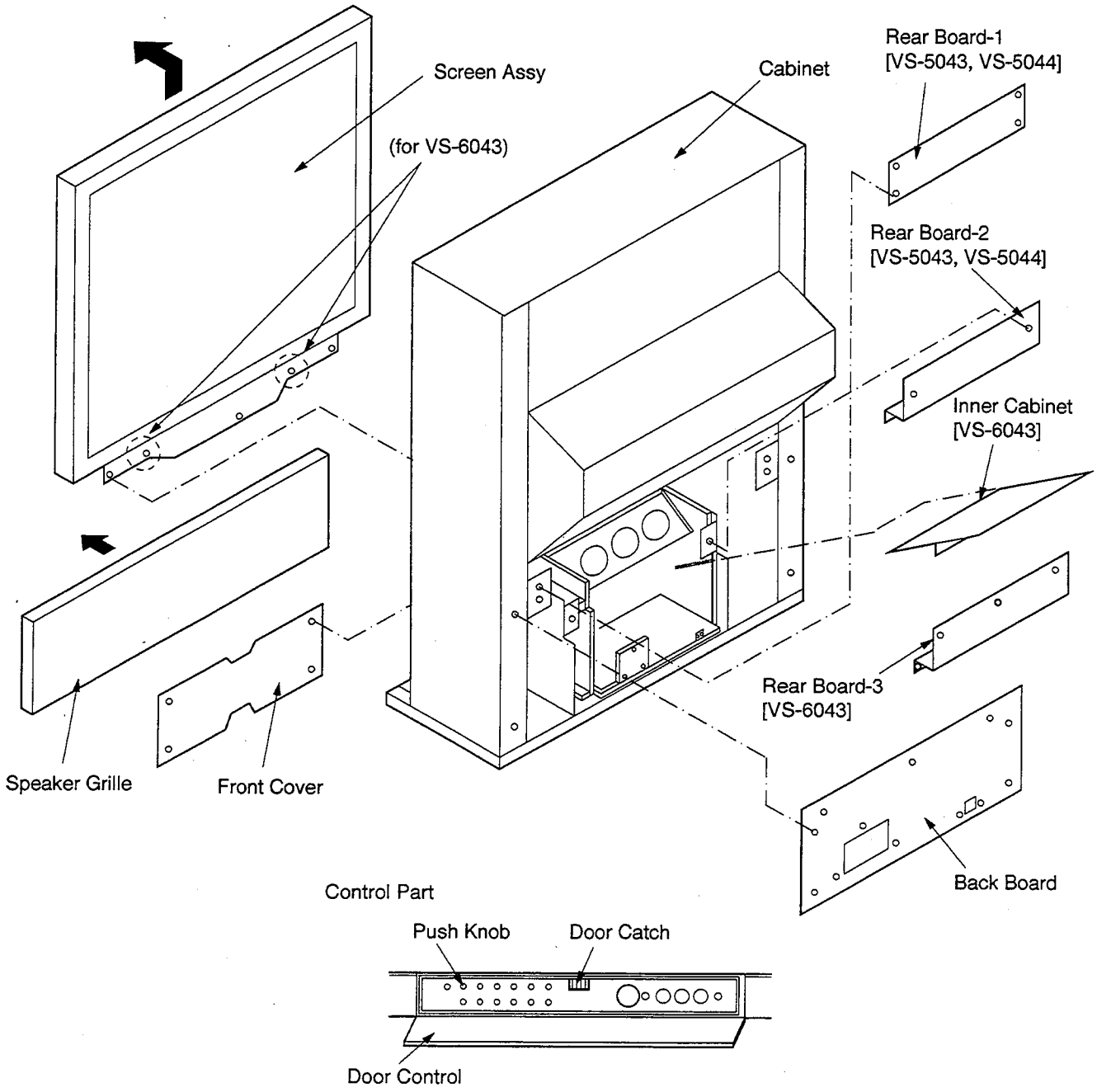


Fig. 2-2

[VS-5043, VS-5044]

Parts Name	Number of Screws
Screen Assy	3
Front Cover	4
Rear Board-1	4
Rear Board-2	2
Back Board	12

[VS-6043]

Parts Name	Number of Screws
Screen Assy	5
Front Cover	4
Rear Board-3	5
Back Board	12

Number of Screws : The number of Screws holding Parts.

Table 1-2

SERVICING PCBs

PCBs Location

[VS-4543, VS-4544]

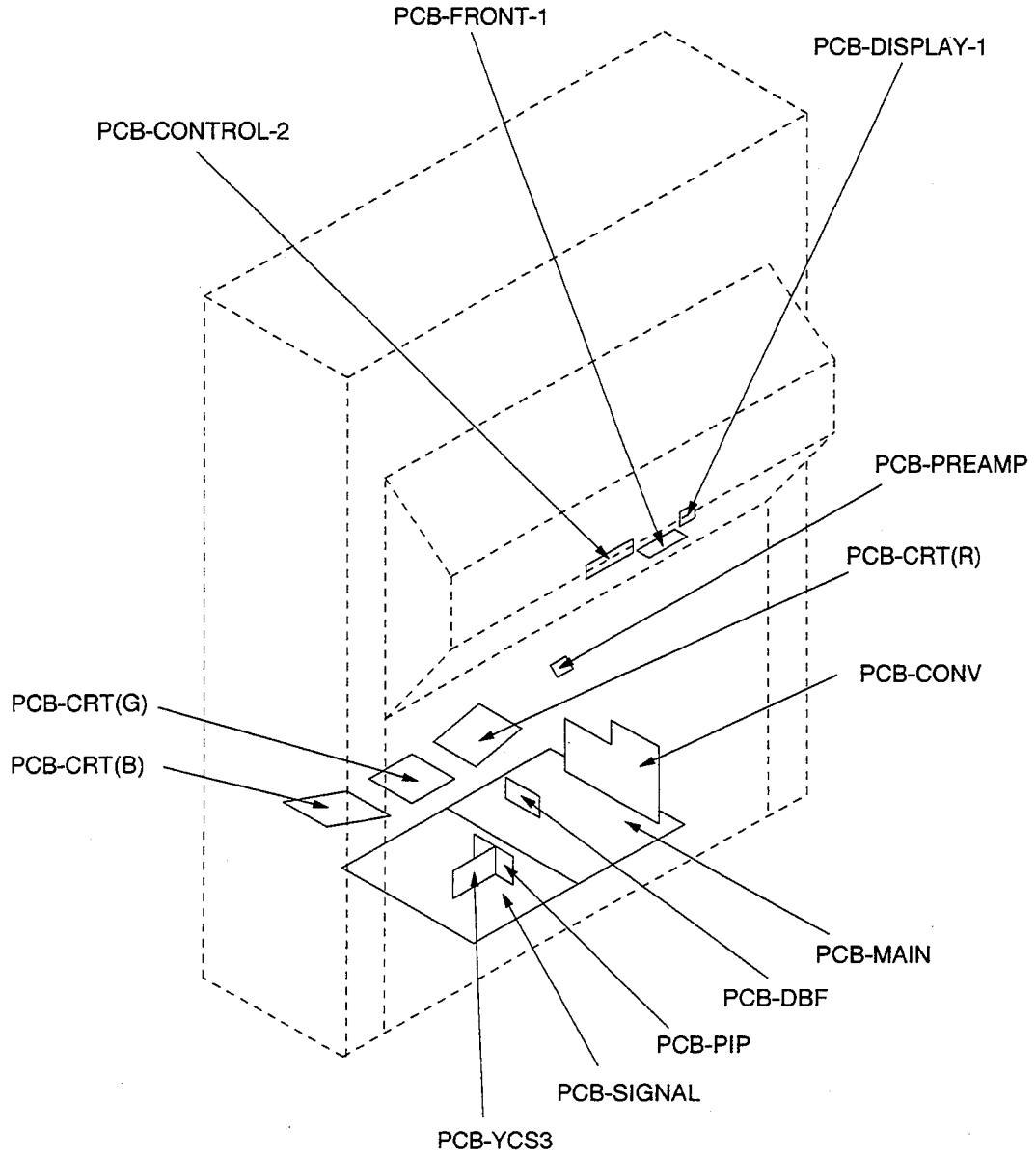


Fig. 3-1

Extension Cord Jigs Table

[VS-4543, VS-4544]

When servicing PCBs, use the Extension Cord Jigs for easier access.

PRINTED CIRCUIT BOARD	CONNECTOR	PARTS No.
DBF	DV(3pin)	859C431O60
DBF	DU(7pin)	859C431O70
CONV	GL(13pin), GM(13pin)	859C432O30
PIP	GE(13pin)	
YCS3	EX(13pin)	
PIP	GF(9pin)	859C432O50
DBF	DW(5pin)	859C432O60

Table 2-1

PCBs Location
[VS-5043, VS-5044, VS-6043]

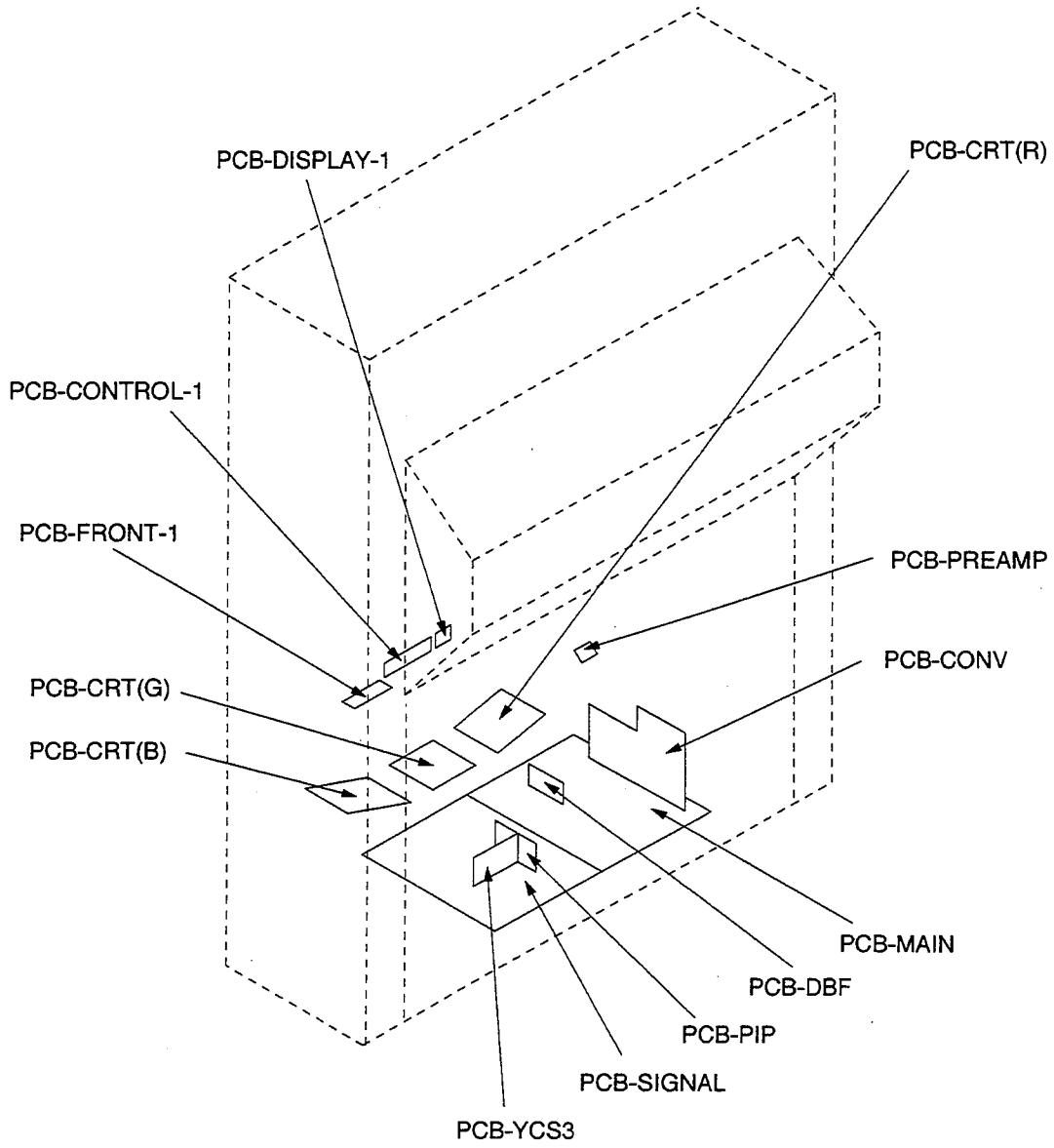


Fig. 3-2

Extension Cord Jigs Table
[VS-5043, VS-5044, VS-6044]

When servicing PCBs, use the Extension Cord Jigs for easier access.

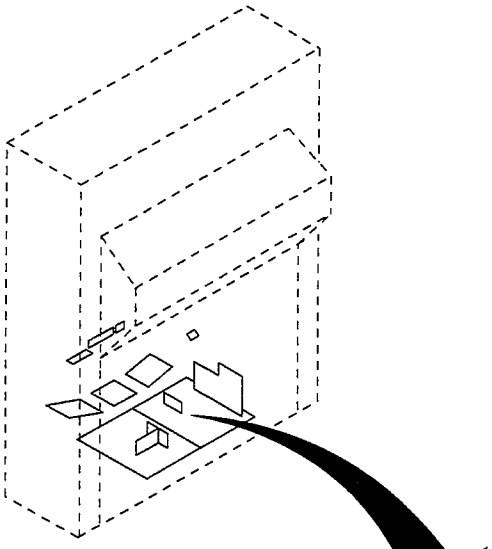
PRINTED CIRCUIT BOARD	CONNECTOR	PARTS No.
DBF	DV(3pin)	859C431O60
DBF	DU(7pin)	859C431O70
CONV	GL(13pin), GM(13pin)	859C432O30
PIP	GE(13pin)	
YCS3	EX(13pin)	
PIP	GF(9pin)	859C432O50
DBF	DW(5pin)	859C432O60

Table 2-2

LEAD DRESS

Note: The inner wires are clamped so that they do not come close to heat generating or high voltage parts. After servicing route all wires in their original position.

1. The Anode Lead Wires are routed so that no tensile strength is applied to the cap. If the route of the Anode Lead Wires are changed, return them to the initial route.
2. Clamp the Lead Wires along the Clamping Zone* shown in the figure below.
3. Take care so that the Lead Wires are not slack.



	Optical Unit
	Flyback Transformer
	HV Block
	Clamping Zone*
	Hidden Clamping Zone*
⊗	Aerial Clamp

* Clamping Zone shows the route of the Lead Wire bundle, the high voltage Lead Wire and the Lead Wire on the primary side.

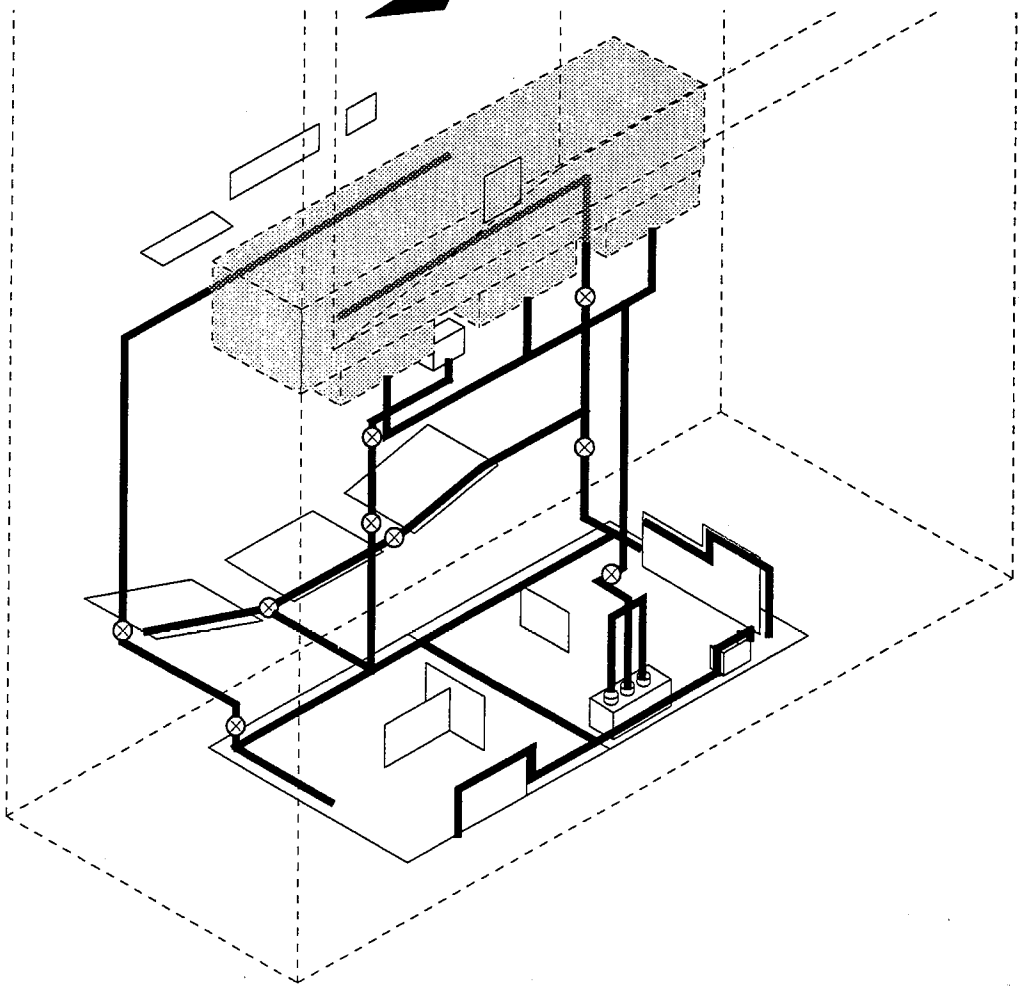


Fig. 4

SERVICING OF THE LENTICULAR SCREEN AND FRESNEL LENS

Removal of the Lenticular Screen and Fresnel Lens

[VS-4543, VS-4544]

Note: When separating the Lenticular Screen from the Fresnel Lens, pry the screens apart using a slot type screw driver, and remove the pressure sensitive Adhesive Double Coated Tape.

1. Remove the Screen Assy. [Fig. 2-1]
2. Remove 14 screws ⓐ retaining the Screen Holder. [Fig. 5-1]
3. Remove 4 screws ⓑ retaining the PCB-CONTROL Cover.
4. Remove 10 screws ⓒ retaining the Frame Cover.

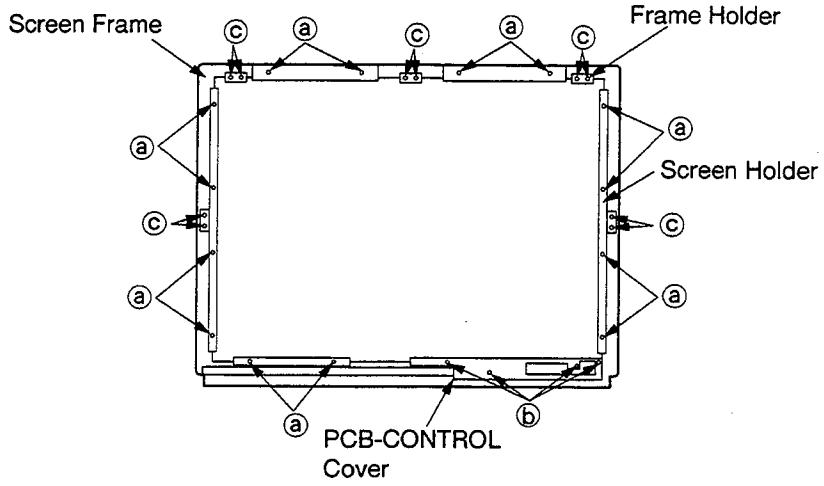


Fig. 5-1

Installation of the Lenticular Screen and Fresnel Lens

[VS-4543, VS-4544]

Note: 1) Wear gloves when handling the Lenticular Screen and the Fresnel Lens. This prevents cuts and finger prints.
2) Do not place the Fresnel Lens in the sun. This can cause fire and heat related injuries.
3) Store in a dry place. High humidity causes deformation of the Lenticular Screen and Fresnel Lens.

1. Apply Double Coated Tape(# 096Z465Y10) along the top front edge of the Fresnel Lens. [Fig. 5-2]
2. Set the Fresnel Lens on the top of the Lenticular Screen and apply pressure to the top edge, to join the screens together.

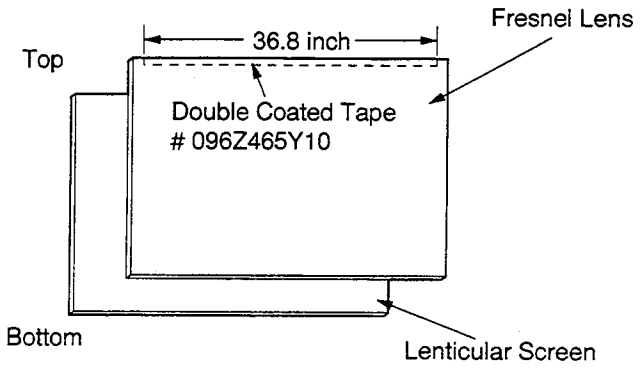


Fig. 5-2

Removal of the Lenticular Screen and Fresnel Lens

[VS-5043, VS-5044]

Note: When separating the Lenticular Screen from the Fresnel Lens, pry the screens apart using a slot type screw driver, and remove the pressure sensitive Adhesive Double Coated Tape.

1. Remove the Screen Assy. [Fig. 2-2]
2. Remove 23 screws ⓓ retaining the Screen Holder. [Fig. 5-3]
3. Remove 10 screws ⓔ retaining the Frame Holder.

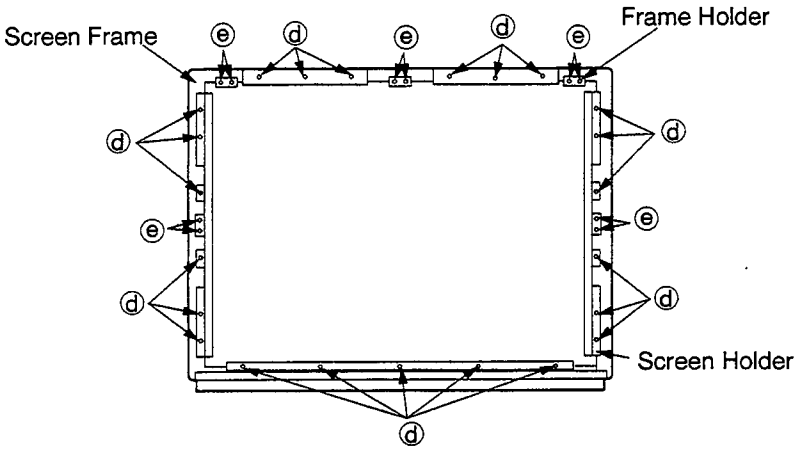


Fig. 5-3

Installation of the Lenticular Screen and Fresnel Lens

[VS-5043, VS-5044]

Note: 1) Wear gloves when handling the Lenticular Screen and the Fresnel Lens. This prevents cuts and finger prints.
2) Do not place the Fresnel Lens in the sun. This can cause fire and heat related injuries.
3) Store in a dry place. High humidity causes deformation of the Lenticular Screen and Fresnel Lens.

1. Apply Double Coated Tape(# 096Z465F10) along the top front edge of the Fresnel Lens. [Fig. 5-2]
2. Set the Fresnel Lens on the top of the Lenticular Screen and apply pressure to the top edge, to join the screens together.

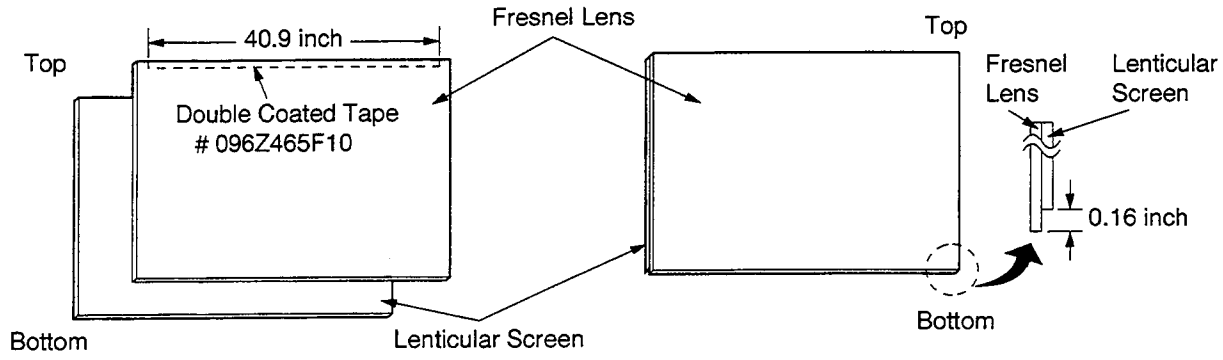


Fig. 5-4

Removal of the Lenticular Screen and Fresnel Lens

[VS-6043]

Note: When separating the Lenticular Screen from the Fresnel Lens, pry the screens apart using a slot type screw driver, and remove the pressure sensitive Adhesive Double Coated Tape.

1. Remove the Screen Assy. [Fig. 2-2]
2. Remove 5 screws ⓕ retaining the Screen Holder. [Fig. 5-5]
3. Remove 20 screws ⓖ retaining the Screen Frame.

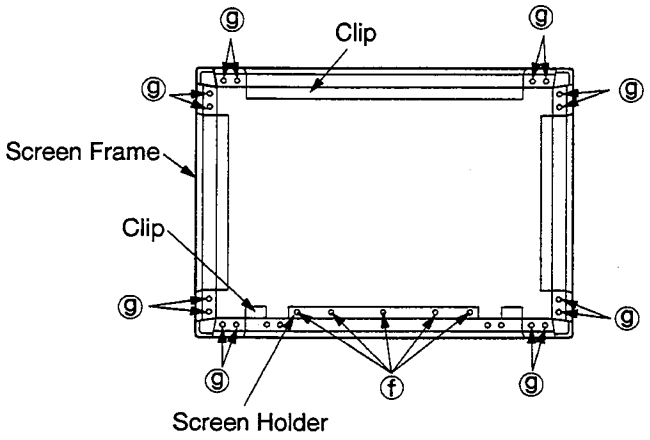


Fig. 5-5

Installation of the Lenticular Screen and Fresnel Lens

[VS-6043]

Note: 1) Wear gloves when handling the Lenticular Screen and the Fresnel Lens. This prevents cuts and finger prints.
2) Do not place the Fresnel Lens in the sun. This can cause fire and heat related injuries.
3) Store in a dry place. High humidity causes deformation of the Lenticular Screen and Fresnel Lens.

1. Apply Double Coated Tape(# 096Z465W10) along the top front edge of the Fresnel Lens. [Fig. 5-6]
2. Set the Fresnel Lens on the top of the Lenticular Screen and apply pressure to the top edge, to join the screens together.
3. Install Cushion(# 622D423O40) on the back of the Fresnel Lens of the Fresnel Lens at the Bottom.
4. Install Cushion(# 622D423O30) on the back of the Fresnel Lens of the Fresnel Lens at the Sides.
5. Apply Double Coated Tape(# 096Z465W10) along the top front edge of the Fresnel Lens.
6. Apply Double Coated Tape(# 096Z465W10) along the top front edge of the Lenticular Screen.

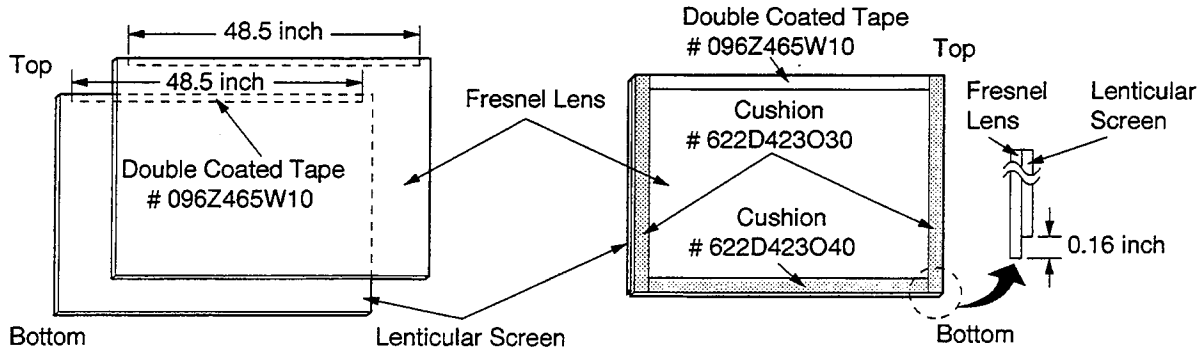


Fig. 5-6

CRT REPLACEMENT

Removal of the CRT

Caution! High voltage should be completely discharged prior to Anode Cap removal. Since all three CRTs receive high voltage from the Flyback Transformer, discharge simultaneously by shorting the open end of the high voltage cable to chassis ground.

[ALL]

1. Remove the Speaker Grille. [Fig. 2-1, 2-2]
2. Remove the Front Cover.
3. Remove the Screen Assy.
4. Remove the Back Board.

[VS-4543, VS-4544]

5. Remove the Rear Board. [Fig. 2-1]

[VS-5043, VS-5044]

6. Remove the Rear Board-1. [Fig. 2-2]
7. Remove the Rear Board-2.

[VS-6043]

8 Remove the Rear Board-3. [Fig. 2-2]
9 Remove the Inner Cabinet.

[ALL]

10. Remove the Anode Lead Wires from the Flyback Transformer.
11. Remove 3 PCB-CRTs.
12. Remove 4 hex-screws ⓐ retaining the Optical Unit. [Fig. 6-1]
13. Remove 4 screws ⓑ retaining the Lens.

Note: DO NOT Loosen RED screws.

14. Remove 4 screws ⓒ retaining the CRT. [Fig. 6-2]
15. Remove the Deflection Yoke from the neck of the CRT. [Fig. 6-7]

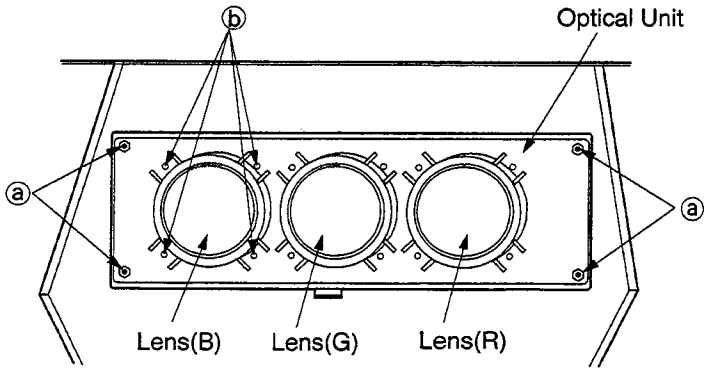


Fig. 6-1

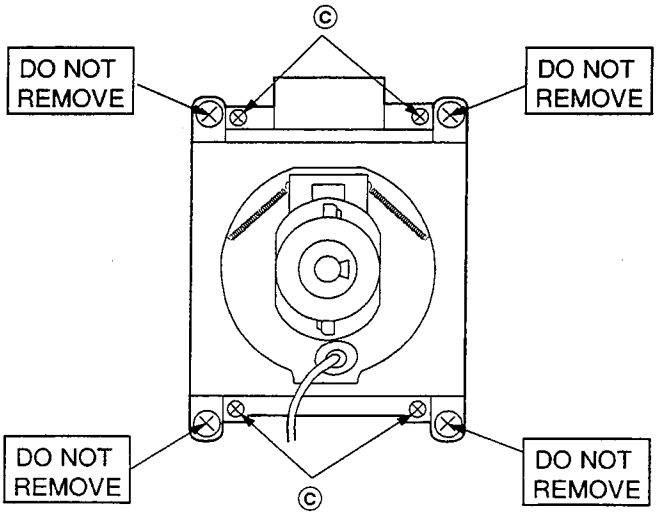


Fig. 6-2

Installation of the CRT

Note: The replacement CRT is supplied as an assembly, comprised of the CRT and the Inner Lens, with the space between them filled with ethylene glycol. Care should be taken during handling and installation to prevent shock from disrupting the seal or alignment between the CRT and Inner Lens. [Fig. 6-3]

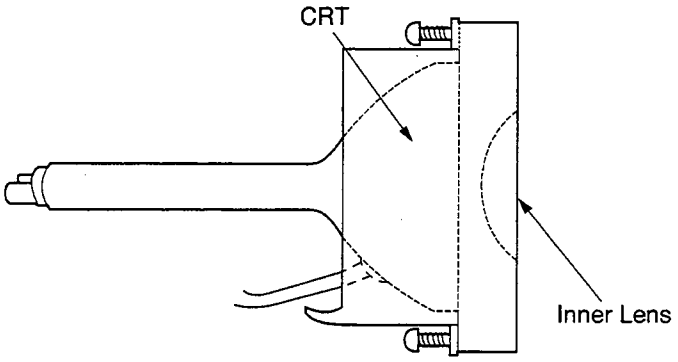


Fig. 6-3

Note: The CRT fixing screws should not be loosened nor should they be removed. [Fig. 6-4]

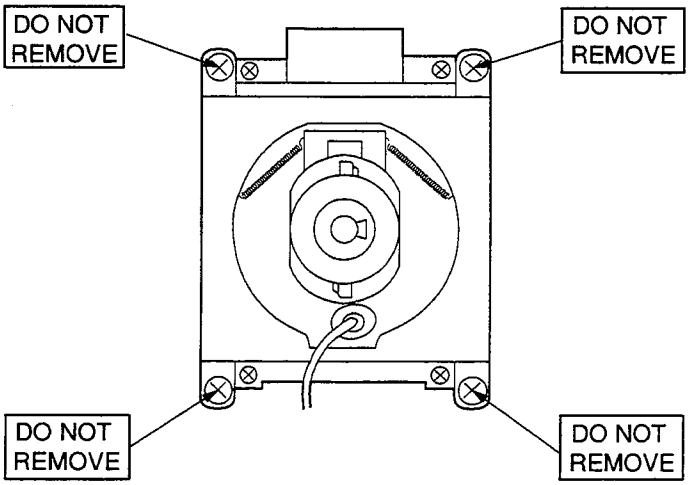


Fig. 6-4

1. Carefully position the replacement CRTs and fasten in place, using 4 screws ⓓ as shown in Figs. 6-5 and 6-6.

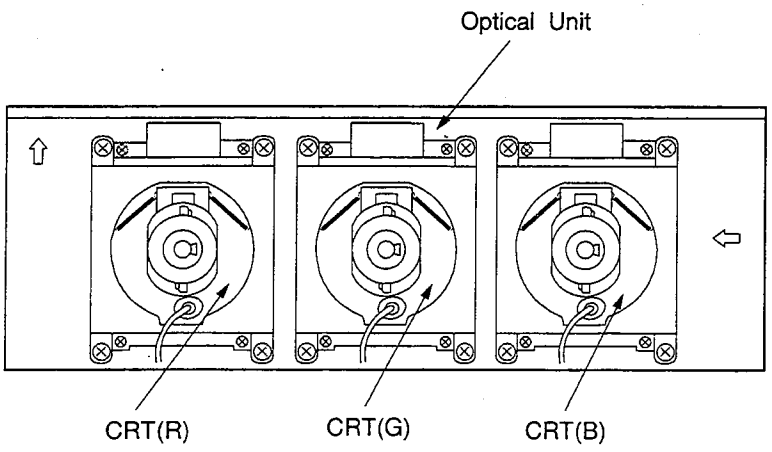


Fig.6-5

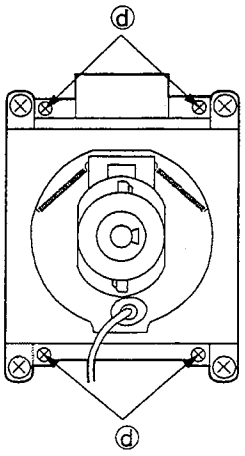


Fig.6-6

2. Install the Deflection Yoke on the CRT neck. [Fig. 6-7]
3. Install the Lens, removed in steps 13 and 14 of Removal of the CRT. [Figs. 6-1, 6-2]
    1) Position the Lens so that the Labels face the direction shown in Fig. 6-8.
    2) Install the mounting screws, refer to Fig. 6-1.
4. Install the PCB-CRTs.
5. Insert the Optical Unit in the Cabinet.
6. Insert the Anode Lead Wires into the Flyback Transformer.
7. Reclamp the Lead Wires in their original position.

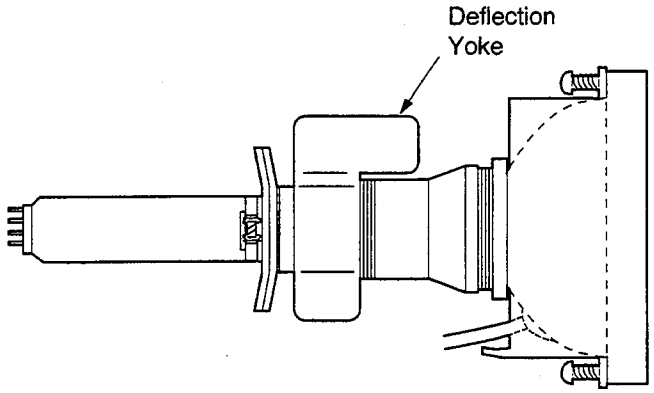


Fig. 6-7

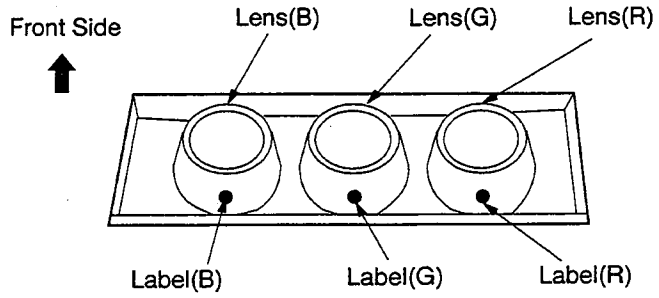


Fig. 6-8

Adjustment procedures after replacing the CRT

After replacing the CRT, perform the following adjustments.

- CRT Cut Off, White Adjustment
- Static Convergence Adjustment
- Dynamic Convergence Adjustment

ELECTRICAL ADJUSTMENTS

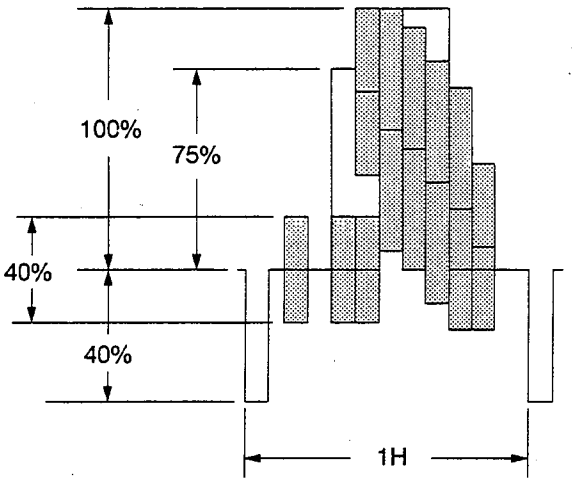
Perform only the adjustments required.
If proper equipment is not available, do not attempt an alignment.

❑Measuring equipment and Jigs

- Oscilloscope (Unless otherwise specified in particular, use 10:1 probes)
- Signal generator
- Frequency counter
- DC voltmeter
- Multiplex audio signal generator
- DC ampere meter
- Electrical tools
- Cable extension kits (Part No.859C431O60, 859C431O70 and 859C612O10)

❑Test signal

1. Monoscope signal
   When you have no monoscope signal source for adjustment, connect the unit to a VCR and play an alignment tape(Monoscope).
2. Color bar signal
   In this manual, unless otherwise specified, use the color bar signal specified below.

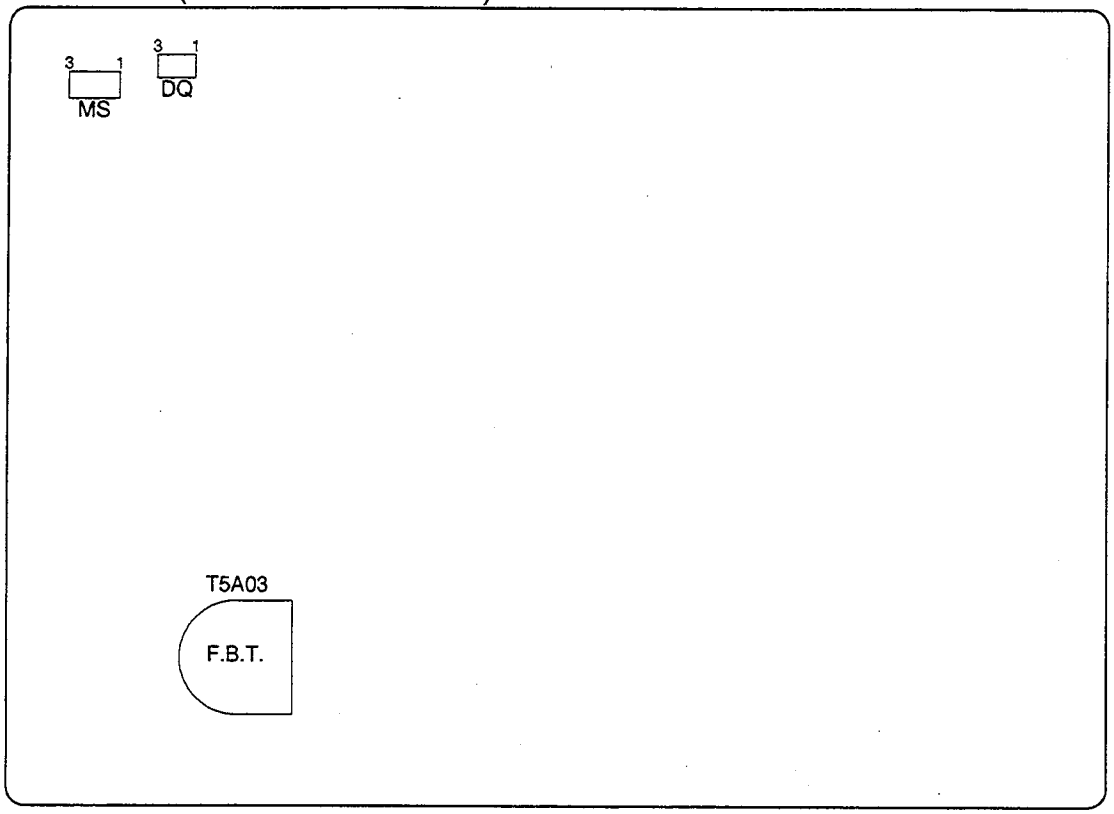


NTSC

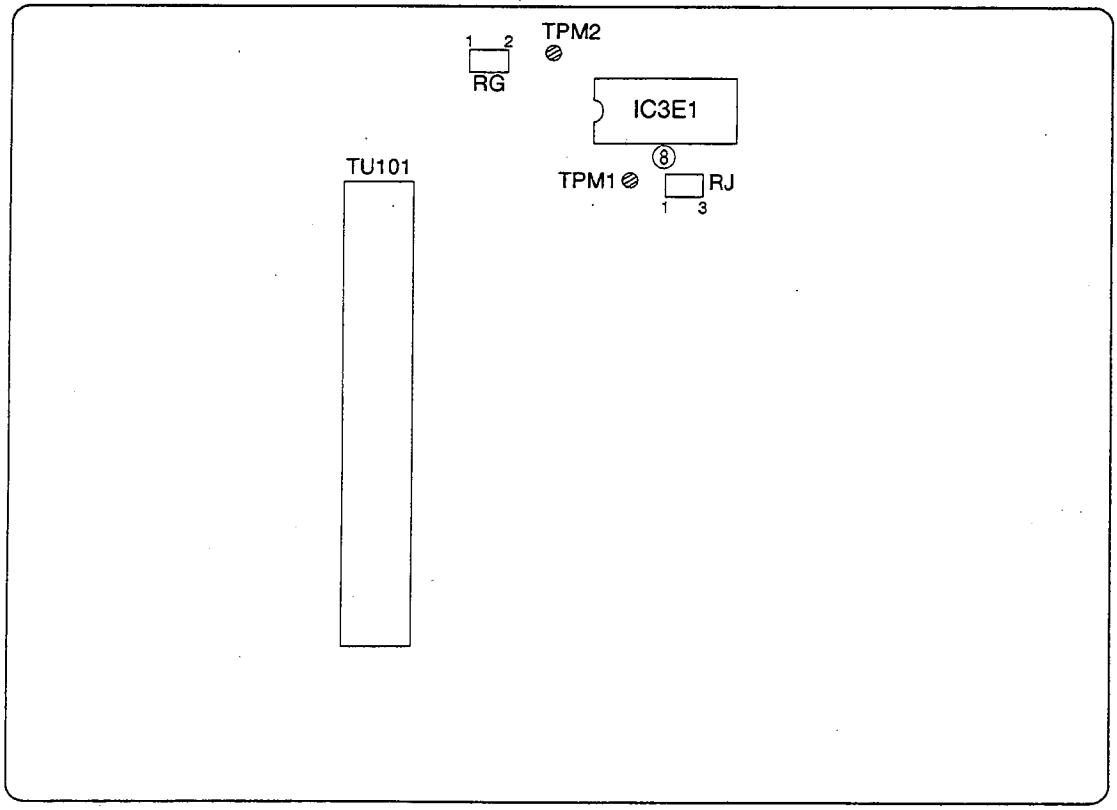
Split-Field Color Bars (with 100% window)

Location of Test Points and Adjustments

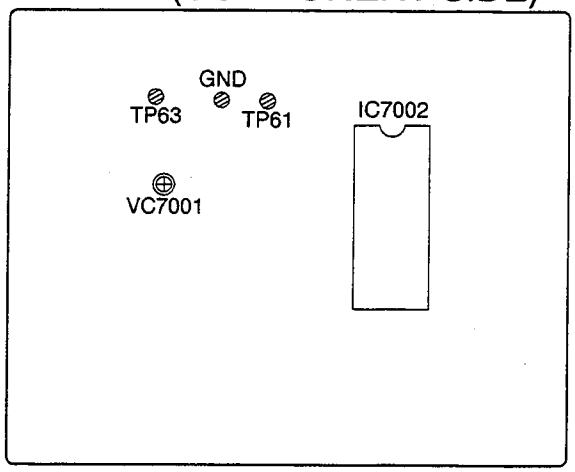
PCB-MAIN (COMPONENT SIDE) FRONT



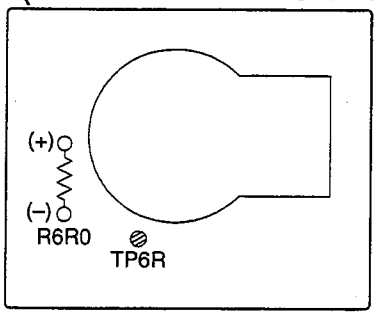
PCB-SIGNAL(COMPONENT SIDE) FRONT



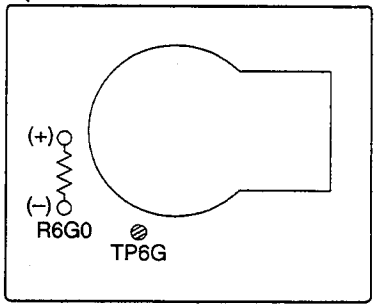
PCB-PIP (COMPONENT SIDE)



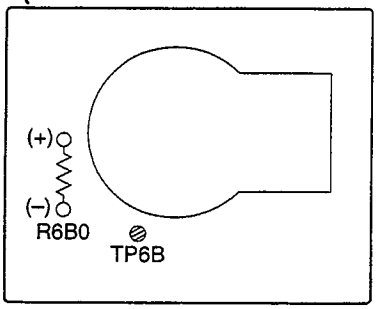
PCB-CRT(R)
(COMPONENT SIDE)



PCB-CRT(G)
(COMPONENT SIDE)



PCB-CRT(B)
(COMPONENT SIDE)



Initial Set Up

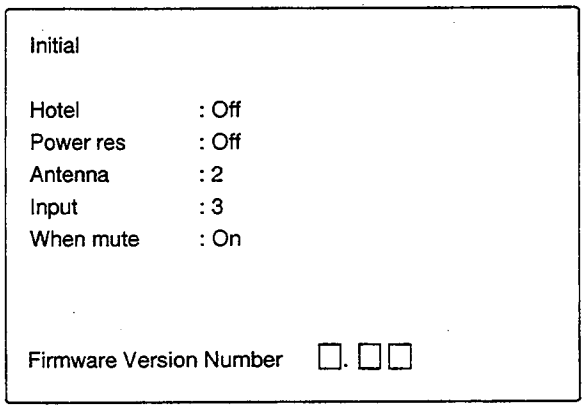
Follow the steps below for the initial set up.

1. Set the receiver to "TV mode".
2. Press the "MENU" button on a remote hand unit one time to select the "MENU" display.
3. Press the buttons "2", "3", "5" and "8" in sequence to select the "OPTION MENU" display.
4. Press the "ADJUST" button to select "Initial".
5. Press "ENTER".

Note: At this time, channel 3 is automatically selected.

6. Repeat steps 2 and 3 above to display "OPTION MENU" screen.
7. Use the "ADJUST" button and "ENTER" button to set "OPTION MENU" as shown below.
8. Press the "MENU" button twice to return to normal viewing.

OPTION MENU



Initial Conditions

Initial Item	Initial Condition	Initial Item	Initial Condition
INPUT	TV	PIP SOURCE	TV
RECEIVE CHANNEL	003 CH	PIP POSITION	Lower right side
TV/CATV	CATV	VIDEO MUTE	OFF
Q.V.	003CH	NAME THE INPUTS	ALL LABEL CLEAR
CHANNEL MEMORY	ALL CH(0.0)	S.Q.V	ALL CH CLEAR
Lock the TV	OFF	POWER RESTORE	OFF
Channel Lock	OFF	AUTO CLOCK	ON
LOCK CODE	FFFFH	A/V NETWORK	OFF
VOLUME	21HStep/64	SELECT LANGUAGE	English
AUDIO FUNCTIONS		NAME THE CHANNELS	ALL LABEL CLEAR
TV Listen to	STEREO	SELECT MENU TYPE	Standard menu
TV Bass	50%	Parental Lock	Cancel
TV Treble	50%	OPTION MENU	
TV Balance	50%	Initial	—
TV Surround	OFF	Hotel	OFF
TV Speaker	ON	Power Restore	OFF
TV Monitor out	Variable	Antenna	2
VIDEO FUNCTIONS		Input	3
TV Tint	50%	When muting	ON
TV Color	50%		
TV Contrast	50%		
TV Brightness	50%		
TV Sharpness	50%		
TV Color temp	HIGH		
TV CC	When muting		

Circuit Adjustment Mode

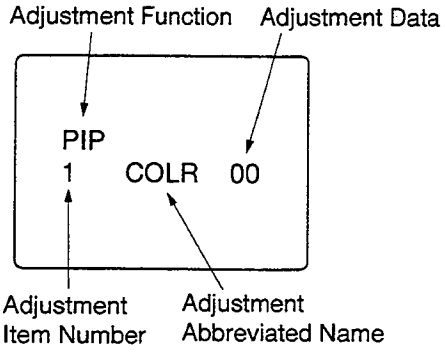
On these models, the following adjustments may only be performed using the remote hand unit.
1 (SAP VCO) ~ 7 (CRT Cut Off, White),
10 (Sub Cont) ~ 15 (Character Position),
17 (Dynamic Convergence)
To perform these adjustments, use the following procedure to activate the circuit adjustment mode.
Note: Follow the steps in the adjustment 17 (Dynamic Convergence) only for adjustment 17 (Dynamic Convergence).

1. Activating the circuit adjustment mode

1. Press the "MENU" button on a remote hand unit.
   (The "MENU" display will appear.)
2. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
   If not changed to the circuit adjustment mode, repeat steps 1 and 2.

2. Selection of adjustment functions and adjustment items

To select an adjustment item in the circuit adjustment mode, first select the adjustment function, that includes the specific adjustment item to be selected, and next select the adjustment item.
Refer to the following pages for the listing of adjustment functions and adjustment items.



1. Press the "AUDIO" button on a remote hand unit to select an adjustment function. Each time the button is pressed, the adjustment function changes in the following sequence.

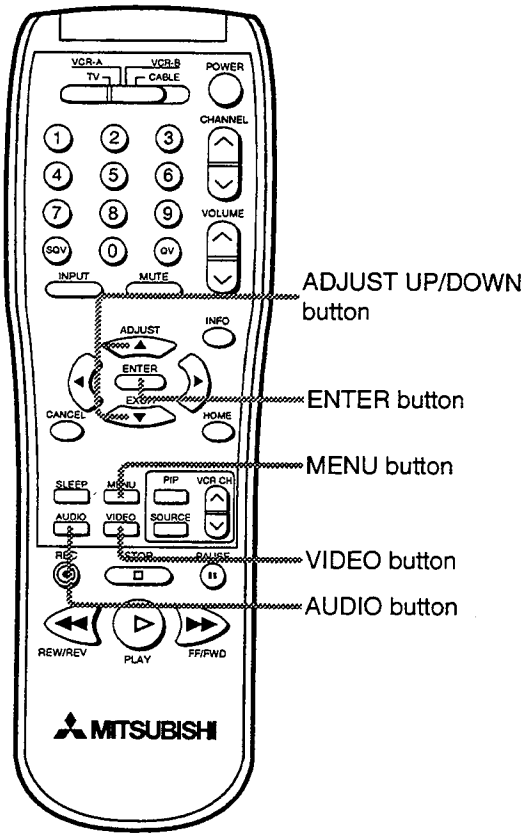
   VCH → MCS → PIP → HR
   CONV GEO ← HV ← VDRV

2. Press the "VIDEO" button to select a specific adjustment item. The adjustment item number increases, each time the "VIDEO" button is pressed.

3. Changing data

After selecting an adjustment item, use the "ADJUST UP/DOWN" button to change adjustment data.

- If the "ADJUST DOWN" button is pressed, the adjustment data decreases.
- If the "ADJUST UP" button is pressed, the adjustment data increases.



4. Saving data

Press "ENTER" to save the adjustment data in memory.
The display characters go red for approx. one second in this step.
Note: If the circuit adjustment mode is terminated without pressing "ENTER", changes in adjustment data are not saved.

5. Terminating the circuit adjustment mode

Press the "MENU" button on the remote hand unit twice to terminate the circuit adjustment mode.
Note: The circuit adjustment mode can be also terminated by turning the power off.

When Replacing EEPROM(IC701)

The EEPROM(IC701) stores the adjustment data. After replacing the EEPROM, readjust the data to the values given in the following tables. If good performance is not obtained with these values, perform the Adjustment Procedure(s) given in the Note column.

List of Adjustment Items

Function Display		VCH			IC200
Item Number	Abbreviated Name	Adjustment Name	Range	Data	Note
0	CON	Picture Gain Control	0~63	42	
1	TNT	Tint Control 1	0~63	31	
2	COL	Color Gain Control 1	0~63	31	
3	BRT	Bright Level Control 1	0~63	31	
4	SHP	Sharpness Gain Control	0~15	5	
5	CTG	G-Cut Off ADJ	0~15	(12)	#7 (CRT Cut Off, White)
6	CTB	B-Cut Off ADJ	0~15	(7)	ditto
7	DRG	G Drive Gain ADJ	0~63	(42)	ditto
8	DRB	B Drive Gain ADJ	0~63	(42)	ditto
9	YDL	Chroma Trap of Y	0~1	0	
10	VM	Y Output for VM	0~1	0	
11	DCT	SW of DC Propagated Rate	0~1	0	
12	DPC	SW of Black Level Expansion	0~1	1	
13	TOT	SW of Chroma Tot Filter	0~1	0	
14	AXS	SW of R-Y, G-Y Axis	0~1	0	
15	DCO	SW of Dynamic Color	0~1	1	
16	ABL	SW of ABL Mode	0~1	0	
17	DL1	PRE/OVER Shoot Ratio	0~3	0	
18	DL2	Sharpness F0 Control	0~3	3	
19	SCN	Contrast Gain Control	0~15	12	
20	CTA	Chroma Trap F0 ADJ	0~15	7	
21	SCL	Color Gain Control 2	0~15	12	
22	SHU	Tint Control 2	0~15	13	
23	SBR	Bright Level Control 2	0~63	(30)	#11 (Black Level)
24	GMG	Gamma Control	0~3	2	
25	AG1	Aging Mode of White Output	0~1	0	
26	AG2	Aging Mode of Black Output	0~1	0	
27	RON	R Video Output	0~1	1	
28	GON	G Video Output	0~1	1	
29	BON	B Video Output	0~1	1	
30	PON	RBG Output	0~1	1	
31	VOF	SW of V-SAW Oscillation	0~1	1	
33	CMD	SW of V Countdown	0~1	0	
35	VHT	Vertical Height ADJ	0~63	(31)	#12 (Vertical Height and Linearity)
38	AFC	AFC Loop Gain	0~3	2	
39	VSC	ADJ of Vertical S Correction	0~15	7	
40	VLR	Vertical Linearity ADJ	0~15	(7)	#12 (Vertical Height and Linearity)
42	RPO	Reference Pulse Timing	0~3	3	
45	HPS	Horizontal Position ADJ	0~15	5	
49	ABW	Correction of Vertical Bow Dist	0~15	7	
50	AAG	Correction of Vertical Tilt	0~15	7	
53	HBL	H BLK on SOFT-FULL Mode	0~1	1	
59	LBK	H BLK of Left Side	0~15	9	
60	RBK	H BLK of Right Side	0~15	12	
67	SCT	Picture Control	0~63	(42)	#10 (Sub Cont)

Function Display	MCS			IC3E1
Item Number	Abbreviated Name	Adjustment Name	Range	Data	Note
0	PVC	SAP VCO	0~63	(32)	#1 (SAP VCO)
1	TVC	Stereo VCO	0~63	(32)	#2 (Stereo VCO)
2	INP	Input Level	0~63	(32)	#3 (Input Level)
3	FIL	Filter	0~63	(63)	#4 (Filter)
4	LSP	Low Sound Separation	0~63	(32)	#5 (Separation)
5	HSP	High Sound Separation	0~63	(32)	#5 (Separation)

Function Display	PIP			IC7002
Item Number	Abbreviated Name	Adjustment Name	Range	Data	Note
0	TINT	Tint	0~63	(20)	#20 (PIP Sub Tint)
1	COLR	Color Saturation	0~63	(32)	#19 (PIP Chroma Gain)
2	DECD	Color Reset	0~1	0	
3	SYNC	Sub Picture Sync Separation Threshold	0~7	3	
4	RVS	RVS	0~1	0	
5	BG-Y	Background Luminance Level	0~15	7	
6	BSTB	Burst with Background displayed	0~63	15	
7	MVW	Sub Picture Macro Vision	0~3	0	
8	CRTN	Sub Picture Tint Offset	0~3	1	
9	VXA	Sub Picture Vertical Position	91~255	110	
10	HXA0	Sub Picture Horizontal Position	17~139	123	
11	ADJ9	Delay between Sub Picture and Frame (1/9)	0~15	8	
12	YDL9	Sub Picture Y Delay (1/9)	8~29	14	
13	HPX9	Writing System Horizontal Position (1/9)	0~255	45	
14	VYA9	Sub Picture Height (1/9)	0~255	188	
15	HYA9	Sub Picture Width (1/9)	6~255	59	
16	ADJ6	Delay between Sub Picture and Frame (1/16)	0~15	8	
17	YDL6	Sub Picture Y Delay (1/16)	8~29	14	
18	HPX6	Writing System Horizontal Position (1/16)	0~255	104	
19	VYA6	Sub Picture Height (1/16)	0~255	206	
20	HYA6	Sub Picture Width (1/16)	6~255	44	
21	BGBY	Background Hue (B-Y) Setting	0~7	4	
22	BGRY	Background Hue (R-Y) Setting	0~7	4	

Function Display	HR		
Adjustment Name	Range	Data	Note
Character Position	0~25	(20)	#15 (Character Position)

Function Display	VDRV			IC870
Item Number	Abbreviated Name	Adjustment Name	Range	Data	Note
0	PCON	Convergence Phase	0~255	128	
1	PFOC	Focus Phase	0~255	0	Screen display only
2	WCON	Convergence Pulse Width	0~63	33	
3	WFOC	Focus Pulse Width	0~63	44	Screen display only
4	PLL	PLL Dividing Ratio	0~15	5	

Function Display	HV			IC8D00
Adjustment Name	Range	Data	Note
High Voltage Control	0~254	(150)	#6 (High Voltage Control)

Function Display		CONV GEO			IC8G00
Item Number	Abbreviated Name	Adjustment Name	Range	Data	Note
1	HWID	Horizontal Width	0~254	(127)	#13 (Horizontal Width)
2	TILT	Tilt	0~254	(127)	#14 (Raster Correction)
3	VBOW	Vertical Bow	0~254	(127)	ditto
4	SKEW	Skew	0~254	(127)	ditto
5	HBOW	Horizontal Bow	0~254	(127)	ditto
6	TBPC	Top Bottom Pin Cushion	0~254	(127)	ditto
7	EWPC	East West Pin Cushion	0~254	(127)	ditto
8	VIPC	Vertical Inside Pin Cushion	0~254	(127)	ditto
9	HIPC	Horizontal Inside Pin Cushion	0~254	(127)	ditto
10	HKEY	Horizontal Keystone	0~254	(127)	ditto
11	VKEY	Vertical Keystone	0~254	(127)	ditto
12	VSBW	Vertical Side Bow	0~254	(127)	ditto
13	VSTL	Vertical Side Tilt	0~254	(127)	ditto
14	V3RD	Vertical 3rd Correction	0~254	(127)	ditto
15	V4TH	Vertical 4th Correction	0~254	(127)	ditto
16	HSBW	Horizontal Side Bow	0~254	(127)	ditto
17	HSKW	Horizontal Side Skew	0~254	(127)	ditto
18	H3RD	Horizontal 3rd Correction	0~254	(127)	ditto
19	HSSS	Horizontal Side S Correction	0~254	(127)	ditto
20	HLIN	Horizontal Linearity	0~254	(127)	ditto
21	HSLN	Horizontal Side Linearity	0~254	(127)	ditto

* The selection of the convergence adjustment function "CONV", item selection and data changing are described in adjustment 17 (Dynamic Convergence).

Function Display			CONV			RED: IC8D00 BLUE: IC8E00
Item Number		Abbreviated Name	Adjustment Name	Range	Data	Note
RED	BLUE					
0	30	HSTA	Horizontal Static	0~254	(127)	#17 (Dynamic Convergence)
1	31	VSTA	Vertical Static	0~254	(127)	ditto
2	32	TILT	Vertical Tilt	0~254	(127)	ditto
3	33	BOW	Vertical Bow	0~254	(127)	ditto
4	34	SKEW	Skew	0~254	(127)	ditto
5	35	HBOW	Horizontal Bow	0~254	(127)	ditto
6	36	VWID	Vertical Height	0~254	(127)	ditto
7	37	VLIN	Vertical Linearity	0~254	(127)	ditto
8	38	HWID	Horizontal Width	0~254	(127)	ditto
9	39	HLIN	Horizontal Linearity	0~254	(127)	ditto
10	40	HSDL	Left Horizontal Side	0~254	(127)	ditto
11	41	HSDR	Right Horizontal Side	0~254	(127)	ditto
12	42	SLIN	Horizontal Linearity at the middle(1)	0~254	(127)	ditto
13	43	CLIN	Horizontal Linearity at the middle(2)	0~254	(127)	ditto
14	44	VKLU	Vertical Keystone	0~254	(127)	ditto
15	45	HKLU	Horizontal Keystone	0~254	(127)	ditto
16	46	VKLL	Vertical Keystone	0~254	(127)	ditto
17	47	HKLL	Horizontal Keystone	0~254	(127)	ditto
18	48	VKRL	Vertical Keystone	0~254	(127)	ditto
19	49	HKRL	Horizontal Keystone	0~254	(127)	ditto
20	50	VKRU	Vertical Keystone	0~254	(127)	ditto
21	51	HKRU	Horizontal Keystone	0~254	(127)	ditto
22	52	LHBW	Horizontal Sloping Ends	0~254	(127)	ditto
23	53	RHBW	Horizontal Sloping Ends	0~254	(127)	ditto
24	54	LVBW	Vertical Sloping Ends	0~254	(127)	ditto
25	55	RVBW	Vertical Sloping Ends	0~254	(127)	ditto
-	56	DA42	Keystone Offset	0~254	(127)	ditto
27	57	DA50	----	0~254	(127)	Screen display only
28	58	DA51	----	0~254	(127)	Screen display only
29	59	DA52	----	0~254	(127)	Screen display only

Adjustment Procedures

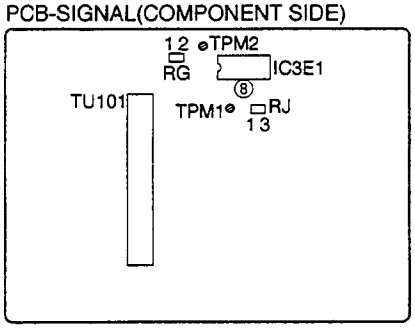
[Multi Channel Sound Circuit] 1. SAP VCO	**Adjustment purpose**	Set the reference frequency for the SAP detection circuit.
	Symptom when incorrectly adjusted	No reception of SAP broadcasting.

Measuring instrument	Frequency counter
Test point	TPM2
EXT trigger	—
Measurement range	—
Input signal	RF signal (monaural sound)
Input terminal	RF IN terminal

1. Supply an RF signal (monaural sound 400Hz 100%MOD).
2. Connect TPM1 (pin ① of connector RJ) to ground.
3. Connect pin ⑧ of IC3E1 (pin ③ of connector RJ) to ground through a resistor (820kW,1/4W).
4. Observe the frequency at TPM2 (pin ① of connector RG).
5. Press the "MENU" button on a remote hand unit.
6. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
7. Set the function to "MCS". ("AUDIO" button)
8. Set the items shown in the list below to the data value.
   ("VIDEO" and "ADJUST" buttons)
9. Select item "0 PVC". ("VIDEO" button)
10. Set the data so that the frequency is 78.67±0.40kHz.("ADJUST" button)
11. Write the data into memory. (Press "ENTER")
12. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note: Adjustment 2 (Stereo VCO) must be performed immediately after this adjustment.

PCB-SIGNAL(COMPONENT SIDE)



Abbreviated Name	Data
0 PVC	32
1 TVC	32
2 INP	32
3 FIL	63
4 LSP	32
5 HSP	32

[Multi Channel Sound Circuit] 2. Stereo VCO	**Adjustment purpose**	Set the reference frequency for the multiplex IC oscillator.
	Symptom when incorrectly adjusted	No STEREO reception.

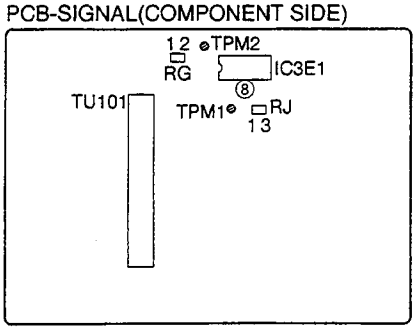
Measuring instrument	Frequency counter
Test point	TPM2
EXT trigger	—
Measurement range	—
Input signal	RF signal (monaural sound)
Input terminal	RF IN terminal

* This adjustment must follow adjustment 1 (SAP VCO).

1. Refer to the steps 1 through 7 in adjustment 1 (SAP VCO) for the connection and setting of measuring instruments, etc.
2. Select item "1 TVC". ("VIDEO" button)
3. Set the data so the frequency is 15.73±0.08kHz. ("ADJUST" button)
4. Write the data into memory. (Press "ENTER")
5. Terminate the circuit adjustment mode. (Press "MENU" twice)
6. Remove the resistor from pin ⑧ of IC3E1.
7. Open circuit TPM1 and ground.

Note: Adjustment 3 (Input Level) must be performed immediately after this adjustment.

PCB-SIGNAL(COMPONENT SIDE)



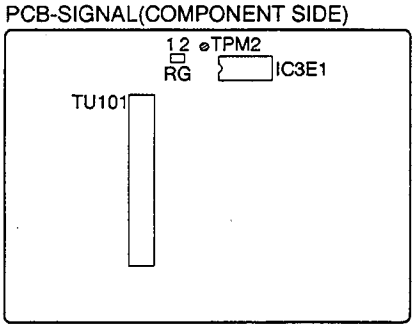
[Multi Channel Sound Circuit] 3. Input Level	**Adjustment purpose**	Set the level of the input signal for the multi channel sound circuit.
	Symptom when incorrectly adjusted	Distorted sound during an MCS broadcast.

Measuring instrument	Oscilloscope
Test point	TPM2
EXT trigger	—
Measurement range	DIV 50mV TIM 2ms
Input signal	RF signal (monaural sound)
Input terminal	RF IN terminal

* This adjustment must follow adjustment 2 (Stereo VCO).
1. Supply an RF signal (monaural sound 400Hz 100%MOD).
2. Observe the waveform at TPM2 (pin ① of connector RG).
3. Press the "MENU" button on a remote hand unit.
4. Press the buttons "2", "3", "5" and "7" in that order.
(The screen will change to the circuit adjustment mode.)
5. Set the function to "MCS". ("AUDIO" button)
6. Select item "2 INP". ("VIDEO" button)
7. Set the data so the amplitude of the waveform is 1.41±0.03Vp-p. ("ADJUST" button)
8. Write the data into memory. (Press "ENTER")
9. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note: Adjustment 4 (Filter) must be performed immediately after this adjustment.

PCB-SIGNAL(COMPONENT SIDE)



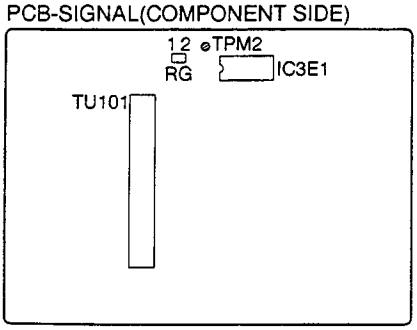
[Multi Channel Sound Circuit] 4. Filter	**Adjustment purpose**	Filter for the pilot signal.
	Symptom when incorrectly adjusted	Poor S/N ratio of signal in STEREO and SAP modes.

Measuring instrument	Oscilloscope
Test point	TPM2
EXT trigger	—
Measurement range	DIV 10mV TIM 2ms
Input signal	RF signal (stereo sound)
Input terminal	RF IN terminal

* This adjustment must follow adjustment 3 (Input Level).
1. Supply an RF signal (Stereo Pilot signal but no sound signal).
2. Observe the waveform at TPM2 (pin ① of connector RG).
3. Press the "MENU" button on a remote hand unit.
4. Press the buttons "2", "3", "5" and "7" in that order.
(The screen will change to the circuit adjustment mode.)
5. Set the function to "MCS". ("AUDIO" button)
6. Select item "3 FIL". ("VIDEO" button)
7. Set the data for minimum amplitude of the waveform.("ADJUST" button)
Decrease the data from 63, and set the data to the value where the first minimum amplitude is obtained.
8. Write the data into memory. (Press "ENTER")
9. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note: Adjustment 5 (Separation) must be performed immediately after this adjustment.

PCB-SIGNAL(COMPONENT SIDE)

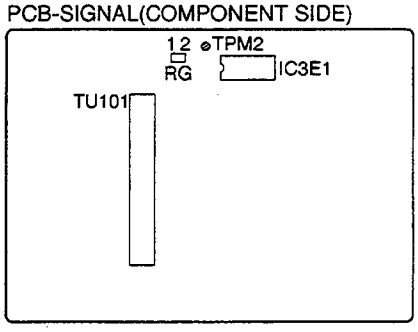


[Multi Channel Sound Circuit] 5. Separation	**Adjustment purpose**	Adjust right and left separation.
	Symptom when incorrectly adjusted	Poor or no stereo separation.

Measuring instrument	Oscilloscope
Test point	TPM2
EXT trigger	—
Measurement range	DIV 10mV TIM 2ms
Input signal	RF signal (stereo sound)
Input terminal	RF IN terminal

* This adjustment must follow adjustment 4 (Filter).
1. Supply an RF signal (L-CH only stereo sound 300Hz 30%MOD).
2. Observe the waveform at TPM2 (pin ① of connector RG).
3. Press the "MENU" button on a remote hand unit.
4. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
5. Set the function to "MCS". ("AUDIO" button)
6. Make sure that the data of "5 HSP" is "32".
7. Select item "4 LSP". ("VIDEO" button)
8. Set the data so that the amplitude of the waveform (300Hz) is minimum. ("ADJUST" button)
9. Change the modulating signal to 3kHz.
10. Select item "5 HSP". ("VIDEO" button)
11. Set the data so the amplitude of the waveform (3kHz) is minimum. ("ADJUST" button)
12. Repeat the steps 7 to 8.
13. Write the data into memory. (Press "ENTER")
14. Terminate the circuit adjustment mode. (Press "MENU" twice)

PCB-SIGNAL(COMPONENT SIDE)

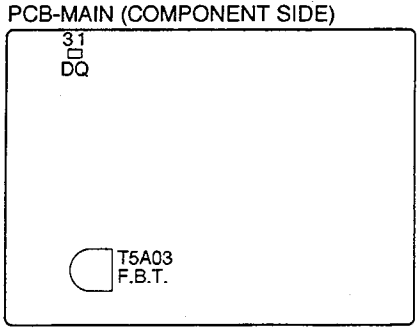


[High Voltage Circuit] 6. High Voltage Control	**Adjustment purpose**	CRT anode voltage.
	Symptom when incorrectly adjusted	Too dark picture.

Measuring instrument	DC voltmeter
Test point	+lead : pin ② of connector DQ - lead : pin ① of connector DQ
EXT trigger	—
Measurement range	—
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

* This adjustment must follow adjustment 7 (CRT Cut Off, White).
1. Supply a VIDEO signal (monoscope).
2. Set the CONTRAST control to maximum and BRIGHTNESS control to center position.
3. Observe the DC voltage between pins ① and ② of connector DQ.
   (plus lead to pin ②)
4. Press the "MENU" button on a remote hand unit.
5. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
6. Set the function to "HV". ("AUDIO" button)
   (The screen will change to the black picture.)
7. Set the data so the DC voltmeter reads 0.150±0.005V. ("ADJUST" button)
8. Write the data into memory. (Press "ENTER")
9. Terminate the circuit adjustment mode. (Press "MENU" twice)

PCB-MAIN (COMPONENT SIDE)

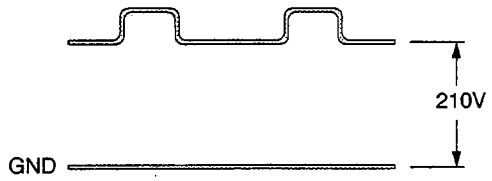


[CRT Circuit] 7. CRT Cut Off, White	**Adjustment purpose**	To set the cut off point of the three CRTs.
	Symptom when incorrectly adjusted	Monochrome with color tint, or incorrect brightness.

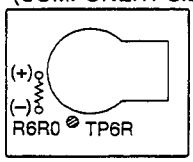
Measuring instrument	Oscilloscope, DC Ampere Meter
Test point	TP6R, TP6G, TP6B
EXT trigger	—
Measurement range	DIV 5V TIM 10μs
Input signal	—
Input terminal	—

1. Select the EXT-1 input with no signal supplied.
2. Press the "MENU" button on a remote hand unit.
3. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
4. Set the function to "VCH". ("AUDIO" button)
5. Set the items shown in the Table to the given data values.
6. Observe the waveform at TP6R.
7. Adjust the SCREEN control (R) so that the voltage is 210V.
8. Observe the waveform at TP6G
9. Adjust the SCREEN control (G) so that the voltage is 210V.
10. Observe the waveform at TP6B.
11. Adjust the SCREEN control (B) so that the voltage is 210V.

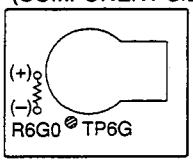
Abbreviated Name	Data
3 BRT	31
5 CTG	12
6 CTB	7
7 DRG	42
8 DRB	42
23 SBR	30



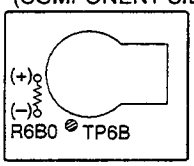
PCB-CRT(R)
(COMPONENT SIDE)

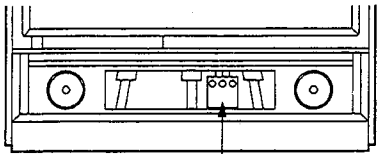


PCB-CRT(G)
(COMPONENT SIDE)



PCB-CRT(B)
(COMPONENT SIDE)





Focus Pack
(SCREEN control)

FRONT VIEW

12. Supply a VIDEO signal (white raster).
13. Set the data of "7 DRG" and "8 DRB" so that the white level is optimum at the center of the screen.
14. Observe the waveform at TP6G.
15. Set the data of "5 CTG" so that the voltage is 210V.
16. Observe the waveform at TP6B.
17. Set the data of "6 CTB" so that the voltage is 210V.
18. Measure the DC current as indicated in Table 1.

Note: The internal resistance of the ampere meter must be 30Ω or less, and the length of a lead wire should be 30cm or less.
Connect a resistor, with a value equal to the internal resistance of the ampere meter, to each of the two CRTs not being measured. This is so that the load on each CRT will be equal.
Make sure that the current in GREEN and BLUE CRTs does not exceed the values shown in Table 2.
If excessive, repeat steps 1 through 18 readjusting the current settings to under the values given in Table 2.

19. Write the data into memory. (Press "ENTER")
20. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note: Adjustment 10 (Sub Cont) must be performed immediately after this adjustment.

	Connections of Ampere Meter	
	Positive	**Negative**
R	R6R0 (+ side)	R6R0 (- side)
G	R6G0 (+ side)	R6G0 (- side)
B	R6B0 (+ side)	R6B0 (- side)

Table 1

	Maximum Current
G	580μA
B	530μA

Table 2

[Focus Circuit] 8. Lens Focus	**Adjustment purpose**	The best resolution of the picture.
	Symptom when incorrectly adjusted	Blurred picture.

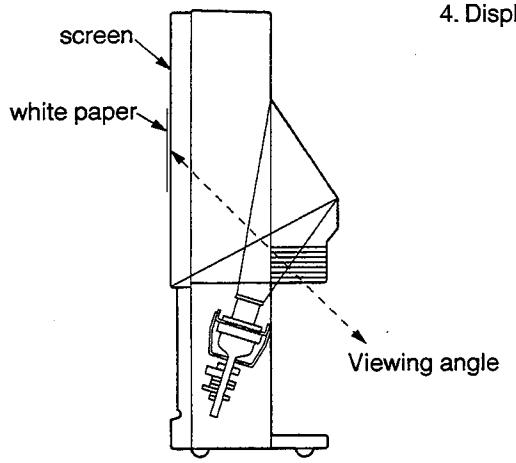
Measuring instrument	—
Test point	—
EXT trigger	—
Measurement range	—
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

* This adjustment must follow adjustment 9 (Electrostatic Focus).
* Perform this adjustment for RED, GREEN and BLUE monochrome pictures.

1. Supply a VIDEO signal (monoscope).
2. Produce a monochrome picture.
   1). Press the "MENU" button on a remote hand unit.
   2). Press the buttons "2", "3", "5", "9" and press the button specified in the table below to select each color.
3. Adjust the position of lens, for the best picture resolution.

Note: Attach a white paper to the screen center. During the adjustment, observe the picture on the screen from inside for easier adjustment.

4. Display the original picture. (Press "MENU" twice)



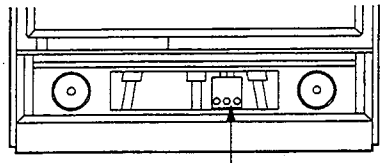
Monochrome Picture	Remote Hand Unit Button
RED	1
GREEN	2
BLUE	3

[Focus Circuit] 9. Electrostatic Focus	**Adjustment purpose**	For best resolution of the picture.
	Symptom when incorrectly adjusted	Out of focus picture.

Measuring instrument	—
Test point	—
EXT trigger	—
Measurement range	—
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

* This adjustment must follow adjustment 10 (Sub Cont).
* If you replace the CRT, this adjustment must follow adjustment 8 (Lens Focus).
* Perform this adjustment respectively for RED, GREEN and BLUE monochrome pictures.

1. Supply a VIDEO signal (monoscope).
2. Press the "A/V RESET" button in the control panel to reset the all VIDEO FUNCTIONS.
3. Produce a monochrome picture.
   1). Press the "MENU" button on a remote hand unit.
   2). Press the buttons "2", "3", "5", "9" and press the button specified in the table below to select each color.
4. Adjust the FOCUS control on the focus pack so the sharpness of the upper area of the screen is optimum.
5. Display the original picture. (Press "MENU" twice)



FRONT VIEW

Monochrome Picture	Remote Hand Unit Button
RED	1
GREEN	2
BLUE	3

[Video Circuit] 10. Sub Cont	**Adjustment purpose**	To set beam current to its optimum value.
	Symptom when incorrectly adjusted	Excessive or insufficient contrast.

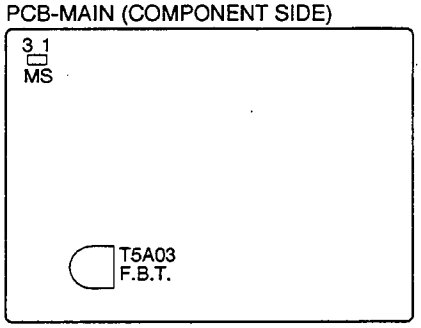
Measuring instrument	DC milliammeter
Test point	+lead : pin ① of connector MS - lead : pin ③ of connector MS
EXT trigger	—
Measurement range	3mA
Input signal	RF signal (gray scale 87.5%MOD)
Input terminal	RF IN terminal

* This adjustment must follow adjustment 7 (CRT Cut Off, White).
* Preheat the set for two minutes or more.

1. Supply an RF signal (gray scale 87.5% MOD).
2. Press the "MENU" button on a remote hand unit.
3. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
4. Set the function to "VCH". ("AUDIO" button)
5. Select item "67 SCT". ("VIDEO" button)
6. Measure the current at pins ① and ③ of connector MS (Plus lead to pin ①).
7. Set the data so the DC milliammeter reads 850± 25μA.
   ("ADJUST" button)
8. Write the data into memory. (Press "ENTER")
9. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note: Adjustment 11 (Black Level) must be performed immediately after this adjustment.

PCB-MAIN (COMPONENT SIDE)



[Video Circuit] 11. Black Level	**Adjustment purpose**	Picture luminance.
	Symptom when incorrectly adjusted	Excessive or insufficient brightness.

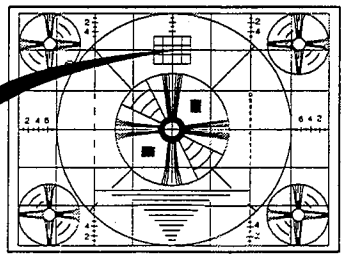
Measuring instrument	—
Test point	—
EXT trigger	—
Measurement range	—
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

* This adjustment must follow adjustment 10 (Sub Cont).

1. Supply a VIDEO signal (monoscope).
2. Press the "MENU" button on a remote hand unit.
3. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
4. Set the function to "VCH". ("AUDIO" button)
5. Select item "23 SBR". ("VIDEO" button)
6. Observe the gradation pattern inside a monoscope signal, and set the data so that both levels, at the 10% and 0% areas of the gradation pattern, are the same (black level 8%). ("ADJUST" button)
7. Write the data into memory. (Press "ENTER")
8. Terminate the circuit adjustment mode. (Press "MENU" twice)

gradation signal

40%	30%	20%	10%
50%	0%	0%	0%
60%	70%	80%	90%

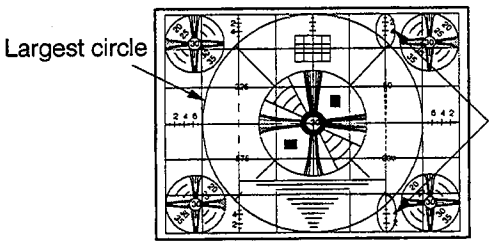


Monoscope signal

[Raster Correction Circuit] 12. Vertical Height and Linearity	**Adjustment purpose**	To set vertical height.and linearity
	Symptom when incorrectly adjusted	Incorrect vertical height and linearity.

Measuring instrument	—
Test point	—
EXT trigger	—
Measurement range	—
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

* This adjustment must follow adjustment 6 (High Voltage Control).
1. Supply a VIDEO signal (monoscope)
2. Press the "MENU" button on a remote hand unit.
3. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
4. Set the function to "VCH". ("AUDIO" button)
5. Select item "35 VHT"(Vertical Height). ("VIDEO" button)
6. Set the data so that the sum of the vertical markers is 3.6 (7.4% overscanning).
7. Select item "40 VLR" (Vertical Linearity).("VIDEO" button)
8. Set the data so that the largest circle is round.("ADJUST" button)
9. Write the data into memory. (Press "ENTER")
10. Terminate the circuit adjustment mode. (Press "MENU" twice)

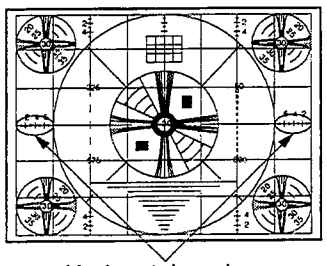


Monoscope signal

[Raster Correction Circuit] 13. Horizontal Width	**Adjustment purpose**	To set the width of picture.
	Symptom when incorrectly adjusted	Picture compressed or expanded horizontally.

Measuring instrument	—
Test point	—
EXT trigger	—
Measurement range	—
Input signal	VIDEO signal (monoscope)
Input terminal	VIDEO IN terminal

* This adjustment must follow adjustment 6 (High Voltage Control).
1. Supply a VIDEO signal (monoscope).
2. Cover the RED and BLUE lenses, producing a GREEN monochrome picture.
3. Press the "MENU" button on a remote hand unit.
4. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
5. Set the function to "CONV GEO". ("AUDIO" button)
6. Select item "1 HWID". ("VIDEO" button)
7. Set the data so that the sum of the horizontal width markers is 6.0.
   ("ADJUST" button)
8. Write the data into memory. (Press "ENTER")
9. Terminate the circuit adjustment mode. (Press "MENU" twice)



Monoscope signal

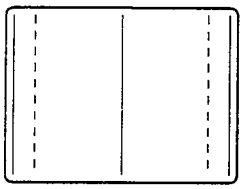
[Raster Correction Circuit] 14. Raster Correction	**Adjustment purpose**	To correct picture distortion.
	Symptom when incorrectly adjusted	Distorted picture.

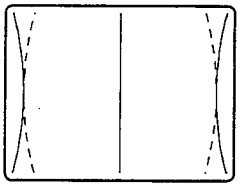
Measuring instrument	—
Test point	—
EXT trigger	—
Measurement range	—
Input signal	VIDEO signal (crosshatch)
Input terminal	VIDEO IN terminal

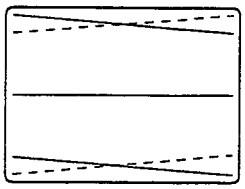
* This adjustment must follow adjustment 12 (Vertical Height and Linearity) and 13 (Horizontal Width).

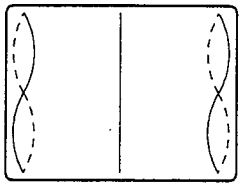
1. Supply a VIDEO signal (crosshatch).
2. Cover the RED and BLUE lenses, producing a GREEN crosshatch picture.
3. Press the "MENU" button on a remote hand unit.
4. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
5. Set the function to "CONV GEO". ("AUDIO" button)
6. Set the data of the items below so that all the green horizontal and vertical lines are straight and spacing is linear.
7. Write the data into memory. (Press "ENTER")
8. Terminate the circuit adjustment mode. (Press "MENU" twice)

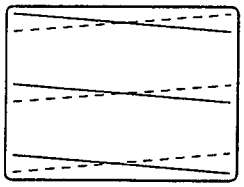
Note: Adjustment 17 (Dynamic Convergence) must be performed immediately after this adjustment.

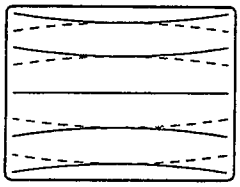

1 HWID


7 EWPC


13 VSTL


19 HSSS


2 TILT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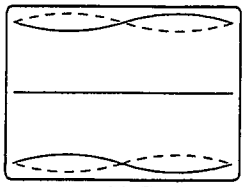
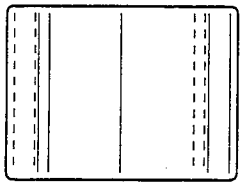

14 V3RD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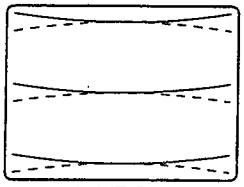
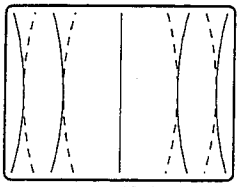
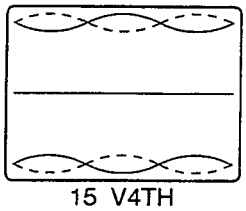
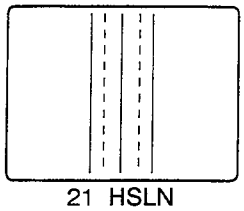
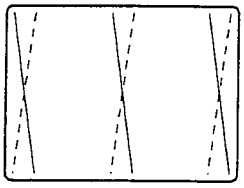
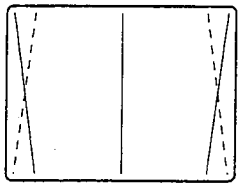

3 VBOW

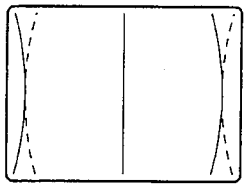

9 HIPC

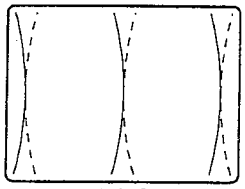

15 V4TH

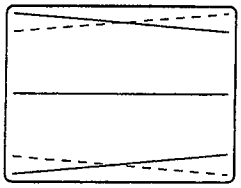

21 HSLN

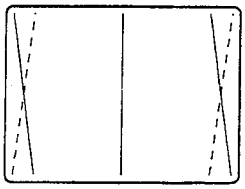

4 SKEW

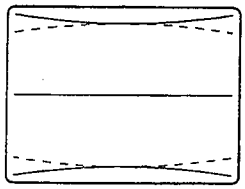

10 HKEY

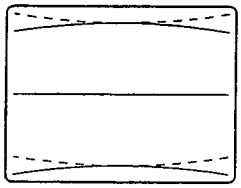

16 HSBW

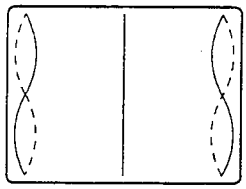

5 HBOW


11 VKEY


17 HSKW


6 TBPC

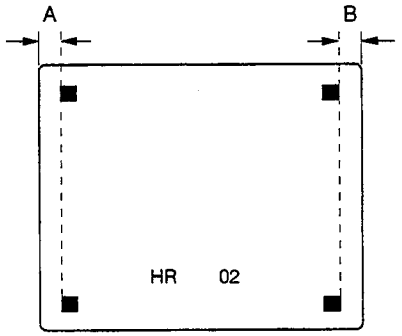

12 VSBW


18 H3RD

[Screen Character Circuit] 15. Character Position	**Adjustment purpose** To position the character display. **Symptom when incorrectly adjusted** Incorrect character position.

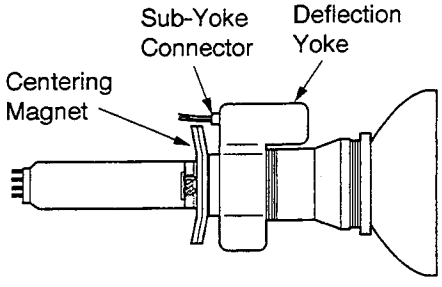
Measuring instrument	—
Test point	—
EXT trigger	—
Measurement range	—
Input signal	RF signal (standard broadcast)
Input terminal	RF IN terminal

1. Supply an RF signal (standard broadcast).
2. Press the "MENU" button on a remote hand unit.
3. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
4 Set the function to "HR". ("AUDIO" button)
5 Adjust the data so that spaces A and B are the same width.
   ("ADJUST" button)
6 Terminate the circuit adjustment mode. (Press "MENU" twice)



[Convergence Circuit] 16. Static Convergence	**Adjustment purpose** To correct color convergence caused by installation direction. **Symptom when incorrectly adjusted** Color edging.

Measuring instrument	—
Test point	—
EXT trigger	—
Measurement range	—
Input signal	VIDEO signal (crosshatch)
Input terminal	VIDEO IN terminal



1. Degauss the shield cover and bracket unit of the CRT assembly and chassis sheet metal.
2. Supply a VIDEO signal (crosshatch).
3 Make sure that the vertical linearity is generally correct.
   If not, correct the linearity following the adjustment 12 (Vertical Height and Linearity).
4. Remove the Sub-Yoke connector from the Deflection Yoke for GREEN.

Note: Connect the Sub-Yoke connector within 30 seconds after disconnected to avoid possible damage.

5. Rotate the Deflection Yoke attached on the GREEN CRT so that the center horizontal line is parallel (to the screen edge).
6. Connect the Sub-Yoke connector for GREEN to the Deflection Yoke on the GREEN CRT again.
7. Rotate the Centering Magnet attached on the GREEN CRT so that the center of the displayed crosshatch signal is set at the screen center.
8. Remove the Sub-Yoke connector from the Deflection Yoke for RED.

Note: Connect the Sub-Yoke connector within 30 seconds after disconnected to avoid possible damage.

9. Rotate the Deflection Yoke attached on the RED CRT so that the center horizontal line is parallel (to the screen edge).
10. Connect the Sub-Yoke connector for RED to the Deflection Yoke on the RED CRT again.
11. Rotate the Centering Magnet attached on the RED CRT so that the center of the displayed RED crosshatch signal is converged on the GREEN signal.
12. To adjust BLUE, perform the steps 8 through 11 above for the BLUE CRT.

[Convergence Circuit] 17. Dynamic Convergence	**Adjustment purpose**	To correct color misconvergence in RED, GREEN and BLUE.
	Symptom when incorrectly adjusted	Colors misconverged.

Measuring instrument	—
Test point	—
EXT trigger	—
Measurement range	—
Input signal	VIDEO signal (crosshatch)
Input terminal	VIDEO IN terminal

* This adjustment must follow adjustment 16 (Static Convergence).
* Dynamic convergence should not be attempted until the Static convergence has been properly adjusted. (including centering adjustment, if required.)
* Cover the RED or BLUE lens with a lens cover, and adjusts the color convergence in GREEN and RED or in GREEN and BLUE.

1. Supply a VIDEO signal (crosshatch).
2. Activate the Dynamic Convergence adjustment mode.
   1). Press the "MENU" button on a remote hand unit.
   (The "MENU" display will appear.)
   2). Press the buttons "2", "3", "5" and "9" in that order.
   (The screen will change to the adjustment mode.)
3. Adjust the convergence according to the steps below.
   1). Press the "VIDEO" button to select a specific item.

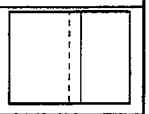
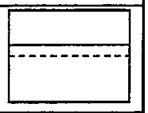
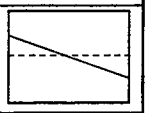
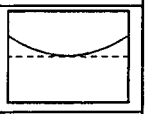
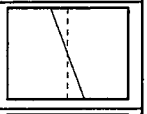
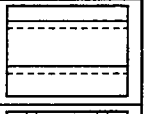
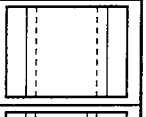
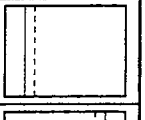
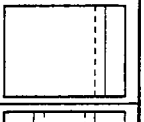
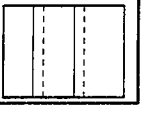
Note: Use the "ENTER" button to switch between RED and BLUE.

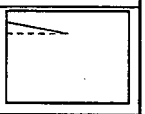
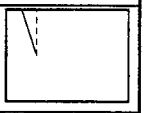
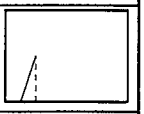
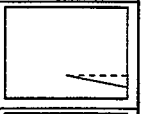
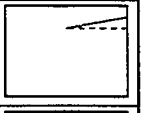
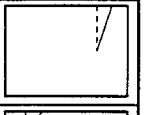
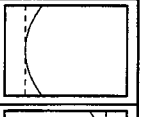
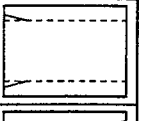
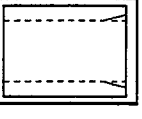
   2). Press the "ADJUST UP/DOWN" buttons to change data.

Note: The newly entered data is automatically recorded.

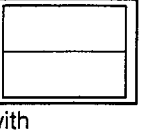
4. Display a red raster and a blue raster. Confirm no black or bright horizontal line appears on the middle of the screen. If any line appears, set the data of the item "56 DA42" so that the line disappears.
5. Confirm no misconvergence occurs at the center of the screen.
   Use one of the following methods to correct center screen misconvergence.
   - Use the customer convergence adjustment functions.
   - While in the Dynamic Convergence adjustment mode, select the items "0, 30 HSTA" and "1, 31 VSTA" to converge RED and BLUE at the center of the screen.
6. Terminate the Dynamic Convergence adjustment mode. (Press "MENU" twice.)

Continued on next page.

ADJ. NO		ABBREV.	DESCRIPTION	PICTURE
RED	BLUE			
0	30	HSTA	Horizontal Static	
1	31	VSTA	Vertical Static	
2	32	TILT	Vertical Tilt	
3	33	BOW	Vertical Bow	
4	34	SKEW	Skew	
5	35	HBOW	Horizontal Bow	
6	36	VWID	Vertical Height	
7	37	VLIN	Vertical Linearity	
8	38	HWID	Horizontal Width	
9	39	HLIN	Horizontal Linearity	
10	40	HSDL	Left Horizontal Side	
11	41	HSDR	Right Horizontal Side	
12	42	SLIN	Horiz. Width(Middle)	
13	43	CLIN	Horiz.Linearity(Middle)	

ADJ. NO		ABBREV.	DESCRIPTION	PICTURE
RED	BLUE			
14	44	VKLU	Vertical Keystone(A)	
15	45	HKLU	Horizontal Keystone(A)	
16	46	VKLL	Vertical Keystone(B)	
17	47	HKLL	Horizontal Keystone(B)	
18	48	VKRL	Vertical Keystone(C)	
19	49	HKRL	Horizontal Keystone(C)	
20	50	VKRU	Vertical Keystone(D)	
21	51	HKRU	Horizontal Keystone(D)	
22	52	LHBW	Left Horiz. Sloping Ends	
23	53	RHBW	Right Horiz. Sloping Ends	
24	54	LVBW	Left Vert. Sloping Ends	
25	55	RVBW	Right Vert. Sloping Ends	

* Adjust after completing convergence.

56	DA42	Keystone Offset	

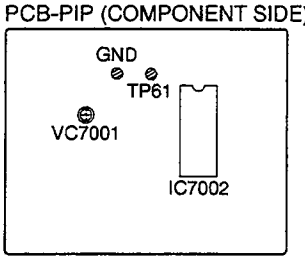
No horizontal line should be visible with either a red or blue raster displayed.

[PIP Circuit] 18. PIP fsc	**Adjustment purpose**	Set the clock frequency for PIP.
	Symptom when incorrectly adjusted	Interference or no color in the sub picture.

Measuring instrument	Frequency counter
Test point	TP61
EXT trigger	—
Measurement range	—
Input signal	RF signal (standard broadcast)
Input terminal	RF IN terminal

1. Supply an RF signal (standard broadcast).
2. Display the standard broadcast in the sub picture screen.
   Supply no signal for the main screen.
3. Observe the frequency at TP61.
4. Adjust VC7001 so that the frequency is 3.579545±0.000050MHz.

PCB-PIP (COMPONENT SIDE)



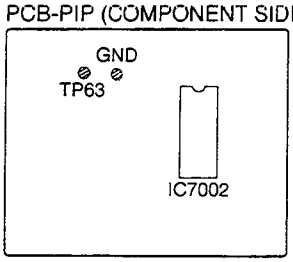
[PIP Circuit] 19. PIP Chroma Gain	**Adjustment purpose**	To set the color level between the main and sub pictures.
	Symptom when incorrectly adjusted	Different the color level between the main and sub pictures.

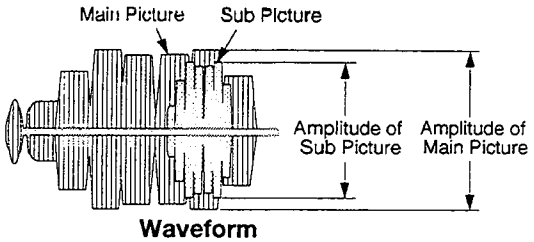
Measuring instrument	Oscilloscope
Test point	TP63
EXT trigger	—
Measurement range	DIV 5mV TIM 10µs
Input signal	VIDEO signal (color bar)
Input terminal	VIDEO IN terminal

* Preheat the set for one minute or more.
1. Supply a VIDEO signal (color bar).
2. Press the "MENU" button on a remote hand unit.
3. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
4. Set the function to "PIP". ("AUDIO" button)
5. Set all the items in function "PIP" to the data values given on page 19.("VIDEO" and "ADJUST" buttons)
6. Observe the waveform at TP63.
7. Select item "1 COLR". ("VIDEO" button)
8. Set the data so that the chroma signal amplitude of sub picture is 90±5% of main picture. ("ADJUST" button)
9. Write the data into memory. (Press "ENTER")
10. Terminate the circuit adjustment mode. (Press "MENU" twice)

Note: Adjustment 20 (PIP Sub Tint) must be performed immediately after this adjustment.

PCB-PIP (COMPONENT SIDE)





Waveform

[PIP Circuit] 20. PIP Sub Tint	**Adjustment purpose**	To obtain the same hue in the main and sub pictures.
	Symptom when incorrectly adjusted	Different hue between the main and sub pictures, and color smear.

Measuring instrument	—
Test point	—
EXT trigger	—
Measurement range	—
Input signal	VIDEO signal (color bar)
Input terminal	VIDEO IN terminal

* Preheat the set for one minute or more.
* This adjustment must follow adjustment 19 (PIP Chroma Gain).

1. Supply a VIDEO signal (color bar).
2. Activate PIP and display the same picture on the main picture screen and sub pictures.
3. Press the "MENU" button on a remote hand unit.
4. Press the buttons "2", "3", "5" and "7" in that order.
   (The screen will change to the circuit adjustment mode.)
5. Set the function to "PIP". ("AUDIO" button)
6. Select item "0 TINT". ("VIDEO" button)
7. Set the data so that the hue in the sub picture corresponds to the hue in the main picture. ("ADJUST" button)
8. Write the data into memory. (Press "ENTER")
9. Terminate the circuit adjustment mode. (Press "MENU" twice)

CHIP PARTS REPLACEMENT

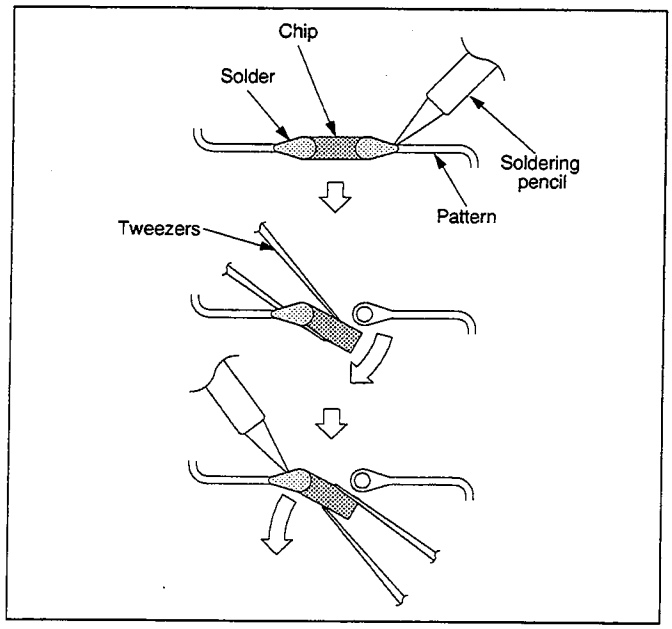
Some resistors, shorting jumpers (0Ω resistor), ceramic capacitors, transistors and diodes are chip parts. When replacing these parts, note the following cautions.

Cautions:

A. Use fine tipped, well insulated soldering pencil (iron) about 30 watts and tweezers.
B. Melt the solder and remove the Chip Parts carefully so not to tear off the copper foil from the printed circuit board.
C. Discard removed chips, do not reuse them.
D. Do not apply heat for more than 3 seconds to new Chip Parts.
E. Avoid using a rubbing stroke when soldering.
F. Take care not to scratch or damage the Chip Parts when soldering.
G. Supplementary cementing is not required.

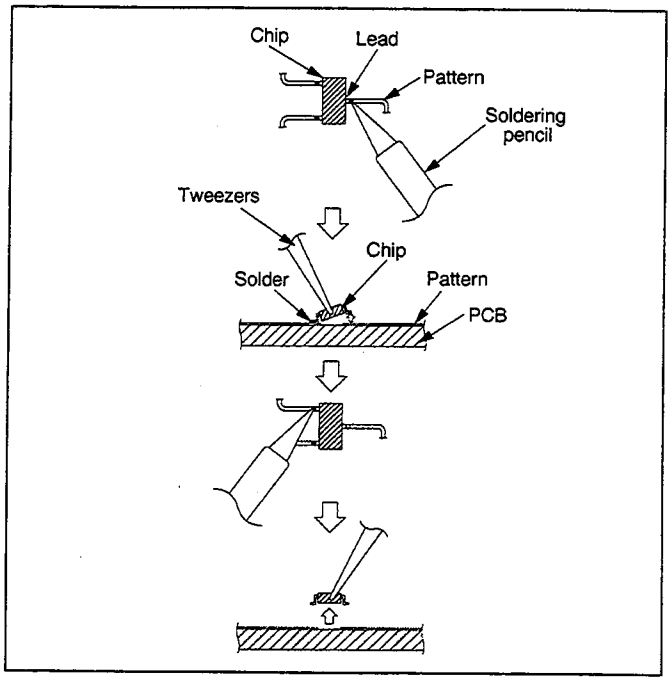
1 Removal of Chip Parts (Resistors, capacitors, etc.)

A. Grasp the part with tweezers. Melt the solder at both sides alternately and remove one side of the part with a twisting motion.
B. Melt the solder at the other side and remove the part.



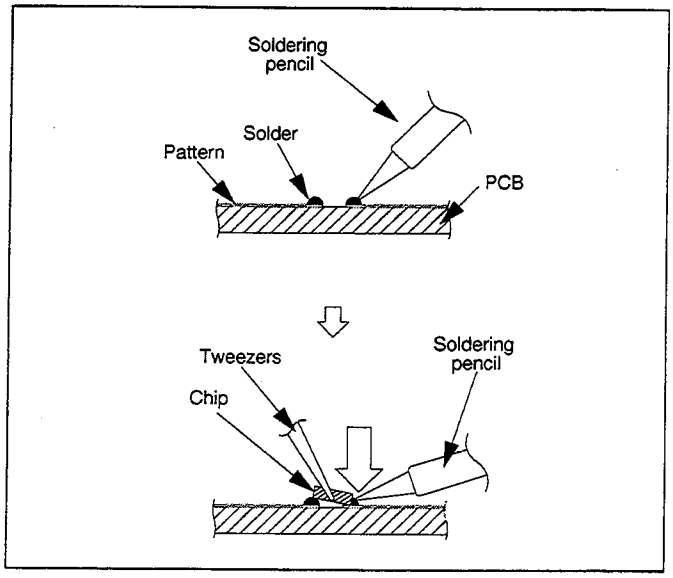
2 Removal of Chip Parts (Transistors)

A. Melt the solder of one lead, and lift the side of that lead upward.
B. Simultaneously melt the solder of the two remaining leads and lift the part from the PCB.



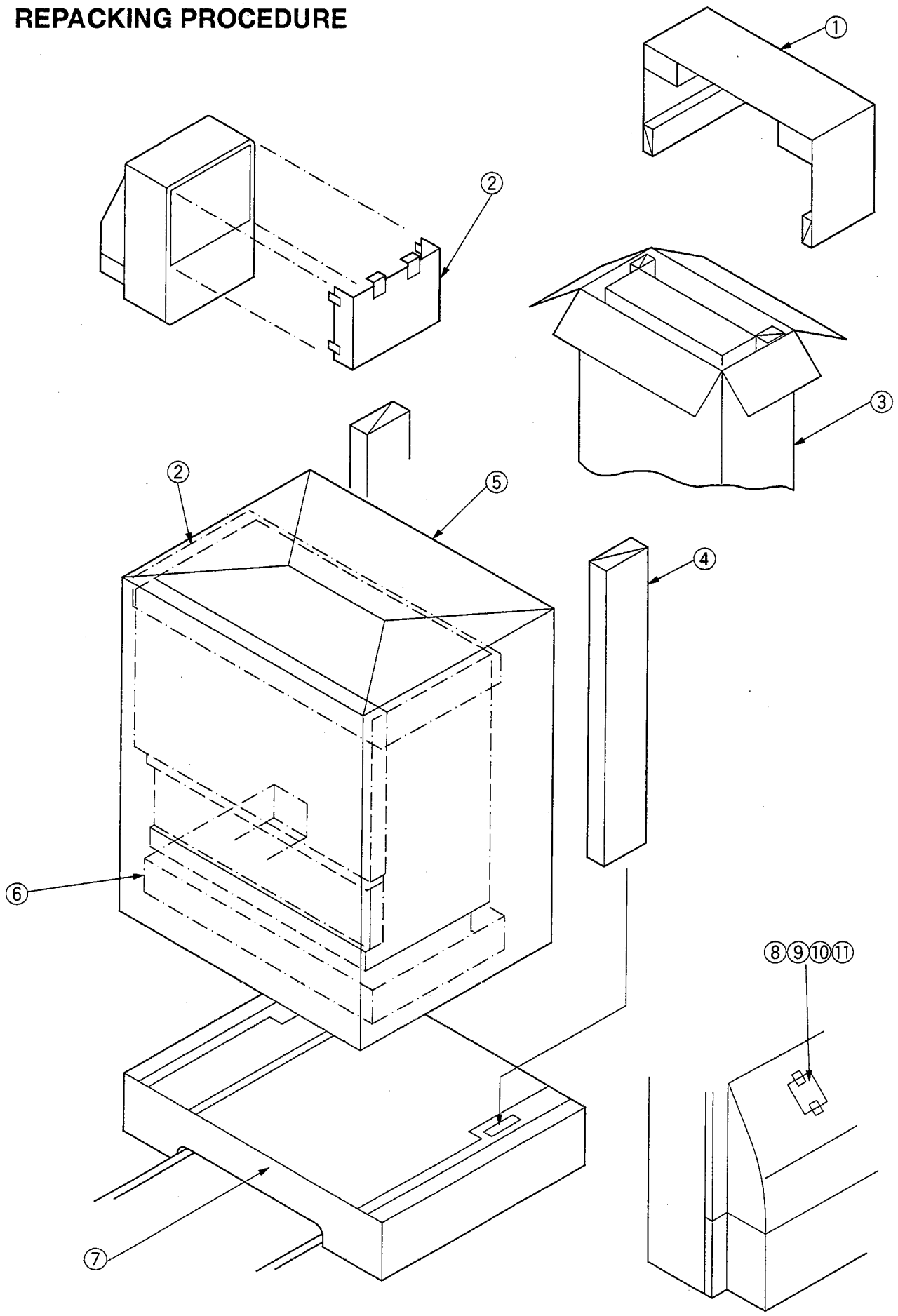
3 Replacement

A. Presolder the contact points on the circuit pattern.
B. Press the part downward with tweezers and apply the soldering pencil as shown in the figure.



PARTS LIST

REPACKING PROCEDURE



ELECTRICAL PARTS AND OTHERS

MODEL : VS-4543/VS-4544/VS-5043/VS-5044/VS-6043

In order to expedite delivery of replacement part orders.

Specify : 1.Model number/Serial number
2.Part number and Description
3.Quantity

Unless full information is supplied,delay in execution of orders will result.

* : Warranty return items
▒▒ : Critical components

MARK	B	C	D	F	G	J	K
TOLERANCE (%)	±0.1	±0.25	±0.5	±1	±2	±5	±10

MARK	M	N	V	X	Z	P	Q
TOLERANCE (%)	±20	±30	+10 -10	+40 -20	+80 -20	+100 -0	+30 -10

MARK	B	C	D	F	G
TOLERANCE (pF)	±0.1	±0.25	±0.5	±1	±2

ABBREVIATION

[4543] : VS-4543
[4544] : VS-4544
[5043] : VS-5043
[5044] : VS-5044
[6043] : VS-6043

[4543] : VS-4543 [4544] : VS-4544 [5043] : VS-5043 [5044] : VS-5044 [6043] : VS-6043

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
	TUBES		
	251C077O40	CRT ASSY	RED-MONOCHROME [4543,4544]
	251C077O50	CRT ASSY	GREEN-MONOCHROME [4543,4544]
	251C077O60	CRT ASSY	BLUE-MONOCHROME [4543,4544]
	251C077O10	CRT ASSY	RED-MONOCHROME [5043,5044]
	251C077O20	CRT ASSY	GREEN-MONOCHROME [5043,5044]
	251C077O30	CRT ASSY	BLUE-MONOCHROME [5043,5044]
	251C078O70	CRT ASSY	RED MONOCHROME [6043]
	251C078O80	CRT ASSY	GREEN MONOCHROME [6043]
	251C078O90	CRT ASSY	BLUE MONOCHROME [6043]
	INTEGRATED CIRCUITS		
IC200	270P347O10	IC	CXA2025S
IC201	272P302O10	IC	PA0030
IC202	266P932O10	IC	AN7805
IC203	270P210O10	IC	AN7809F
IC204	267P076O20	IC	SI-3090C
IC2001	274P596O10	IC	TC9089AN
IC2002	272P658O10	IC	MM1031XS
IC301	272P942O10	IC	TA8776N
IC3A1	272P440O10	IC	LA4282
IC3E1	270P188O10	IC	µPC1852BCT
IC401	270P064O20	IC	LA7845
IC5A00	272P106O30	IC	µPC4570HA
IC5A01	266P154O10	IC	µPC393C
IC700	274P762O30	IC	M37270MF-102SP
IC701	274P333O10	IC	24C04A
IC702	266P130O30	IC	PST520E
IC703	272P601O10	IC	LM341T-5.0/NJM78M05A
IC7001	270P187O10	IC	M52694P
IC7002	274P553O10	IC	M65607SP
IC7003	263P548O10	IC	HM53461ZP-12
IC7601	270P321O20	IC	CXA1855S
IC800	270P203O20	IC	M52336ASP
IC870	274P713O10	IC	CD0006BD
IC8C00	266P154O10	IC	µPC393C
IC8D00	270P202O10	IC	CM0001AS
IC8E00	270P202O10	IC	CM0001AS
IC8F00	272P106O20	IC	µPC4574C
IC8G00	270P357O10	IC	PM0002B
IC8W00	267P077O20	IC	STK391-020
IC8W01	267P077O20	IC	STK391-020
IC8W02	267P077O20	IC	STK391-020
IC900	267P129O10	IC	STR-M6811
IC901	267P126O10	IC	SE130N
IC902	267P076O10	IC	SI-3120C
	TRANSISTORS		
Q 101	260P560O40	TRANSISTOR	2SA933S-S
Q 102	260P560O40	TRANSISTOR	2SA933S-S
Q 103	260P559O30	TRANSISTOR	2SC1740S-S
Q 104	260P560O40	TRANSISTOR	2SA933S-S
Q 105	260P560O40	TRANSISTOR	2SA933S-S
Q 106	260P632O10	TRANSISTOR	DTC124ES
Q 201	260P559O30	TRANSISTOR	2SC1740S-S
Q 202	260P560O40	TRANSISTOR	2SA933S-S
Q 203	260P559O30	TRANSISTOR	2SC1740S-S
Q 204	260P559O30	TRANSISTOR	2SC1740S-S
Q 205	260P559O30	TRANSISTOR	2SC1740S-S
Q 206	260P559O30	TRANSISTOR	2SC1740S-S
Q 207	260P559O30	TRANSISTOR	2SC1740S-S
Q 208	260P559O30	TRANSISTOR	2SC1740S-S
Q 209	260P559O30	TRANSISTOR	2SC1740S-S
Q 210	260P560O40	TRANSISTOR	2SA933S-S
Q 211	260P559O30	TRANSISTOR	2SC1740S-S
Q 212	260P559O30	TRANSISTOR	2SC1740S-S
Q 213	260P559O30	TRANSISTOR	2SC1740S-S
Q 214	260P559O30	TRANSISTOR	2SC1740S-S
Q 215	260P559O30	TRANSISTOR	2SC1740S-S
Q 216	260P560O40	TRANSISTOR	2SA933S-S
Q 217	260P559O30	TRANSISTOR	2SC1740S-S
Q 218	260P560O40	TRANSISTOR	2SA933S-S
Q 220	260P385O20	TRANSISTOR	2SC2229-Y
Q 221	260P385O20	TRANSISTOR	2SC2229-Y
Q 222	260P385O20	TRANSISTOR	2SC2229-Y
Q 224	260P560O40	TRANSISTOR	2SA933S-S
Q 225	260P559O30	TRANSISTOR	2SC1740S-S
Q 2030	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 2040	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 2050	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 2051	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 2052	260P818O30	CHIP TRANSISTOR	2SC2412KS
Q 3A1	260P559O30	TRANSISTOR	2SC1740S-S
Q 3A2	260P559O30	TRANSISTOR	2SC1740S-S
Q 3A3	260P559O30	TRANSISTOR	2SC1740S-S
Q 3A4	260P560O40	TRANSISTOR	2SA933S-S
Q 3E1	260P559O30	TRANSISTOR	2SC1740S-S
Q 3E2	260P559O30	TRANSISTOR	2SC1740S-S
Q 5A00	260P797O20	TRANSISTOR	2SD2349
Q 5A01	260P422O10	TRANSISTOR	2SC2482
Q 5A02	260P797O20	TRANSISTOR	2SD2349
Q 5A03	260P559O50	TRANSISTOR	2SC1740S-E
Q 5A04	260P559O50	TRANSISTOR	2SC1740S-E
Q 5A05	260P559O30	TRANSISTOR	2SC1740S-S
Q 5A06	260P560O40	TRANSISTOR	2SA933S-S
Q 5A07	260P422O10	TRANSISTOR	2SC2482
Q 5A08	260P420O20	TRANSISTOR	2SC2073-B,C
Q 5K00	260P664O30	TRANSISTOR	2SC4636
Q 5K01	260P664O30	TRANSISTOR	2SC4636
Q 5K02	260P559O50	TRANSISTOR	2SC1740S-E
Q 5K03	260P560O40	TRANSISTOR	2SA933S-S
Q 5K04	260P559O50	TRANSISTOR	2SC1740S-E
Q 6B0	261P004O10	TRANSISTOR	2SC3271F-N,P
Q 6B1	260P627O20	TRANSISTOR	2SA1480-D
Q 6G0	261P004O10	TRANSISTOR	2SC3271F-N,P
Q 6G1	260P627O20	TRANSISTOR	2SA1480-D
Q 6R0	261P004O10	TRANSISTOR	2SC3271F-N,P
Q 6R1	260P627O20	TRANSISTOR	2SA1480-D
Q 6R5	260P560O40	TRANSISTOR	2SA933S-S
Q 701	260P559O30	TRANSISTOR	2SC1740S-S
Q 702	260P521O10	TRANSISTOR	2SC2878-B
Q 703	260P559O30	TRANSISTOR	2SC1740S-S
Q 704	260P560O40	TRANSISTOR	2SA933S-S

[4543] : VS-4543 [4544] : VS-4544 [5043] : VS-5043 [5044] : VS-5044 [6043] : VS-6043

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
Q 705	260P559O30	TRANSISTOR	2SC1740S-S
Q 706	260P559O30	TRANSISTOR	2SC1740S-S
Q 707	260P559O30	TRANSISTOR	2SC1740S-S
Q 708	260P560O40	TRANSISTOR	2SA933S-S
Q 710	260P560O40	TRANSISTOR	2SA933S-S
Q 711	260P560O40	TRANSISTOR	2SA933S-S
Q 712	260P560O40	TRANSISTOR	2SA933S-S
Q 7001	260P560O40	TRANSISTOR	2SA933S-S
Q 7002	260P560O40	TRANSISTOR	2SA933S-S
Q 7003	260P560O40	TRANSISTOR	2SA933S-S
Q 7004	260P560O40	TRANSISTOR	2SA933S-S
Q 7005	260P559O30	TRANSISTOR	2SC1740S-S
Q 7006	260P560O40	TRANSISTOR	2SA933S-S
Q 7007	260P559O30	TRANSISTOR	2SC1740S-S
Q 7008	260P559O30	TRANSISTOR	2SC1740S-S
Q 7009	260P560O40	TRANSISTOR	2SA933S-S
Q 7601	260P559O30	TRANSISTOR	2SC1740S-S
Q 7602	260P559O30	TRANSISTOR	2SC1740S-S
Q 7603	260P560O40	TRANSISTOR	2SA933S-S
Q 800	260P559O30	TRANSISTOR	2SC1740S-S
Q 8F00	260P559O30	TRANSISTOR	2SC1740S-S
Q 900	260P559O50	TRANSISTOR	2SC1740S-E
Q 904	260P651O20	TRANSISTOR	2SC4511
	DIODES		
D 101	264P488O30	DIODE	RD13FB2
D 102	264P470O40	DIODE	RD33EB1
D 210	264P486O50	DIODE	RD9.1FB2
D 211	264P045O40	DIODE	1S2471OM
D 216	264P483O70	DIODE	RD5.1FB1
D 217	264P502O20	DIODE	HZ5BLL
D 218	264P045O40	DIODE	1S2471OM
D 219	264P045O40	DIODE	1S2471OM
D 220	264P483O80	DIODE	RD5.1FB2
D 221	264P045O40	DIODE	1S2471OM
D 222	264P045O40	DIODE	1S2471OM
D 223	264P045O40	DIODE	1S2471OM
D 224	264P045O40	DIODE	1S2471OM
D 225	264P045O40	DIODE	1S2471OM
D 226	264P501O10	DIODE	HZ2ALL
D 227	264P045O40	DIODE	1S2471OM
D 3A3	264P501O40	DIODE	HZ3ALL
D 3A4	264P045O40	DIODE	1S2471OM
D 3A5	264P045O40	DIODE	1S2471OM
D 3A6	264P045O40	DIODE	1S2471OM
D 401	264D056O20	DIODE	ERB12-02RK
D 402	264D056O20	DIODE	ERB12-02RK
D 403	264D056O20	DIODE	ERB12-02RK
D 5A00	264P045O40	DIODE	1S2471OM
D 5A02	264P045O40	DIODE	1S2471OM
D 5A03	264P045O40	DIODE	1S2471OM
D 5A04	264P045O40	DIODE	1S2471OM
D 5A06	264P045O40	DIODE	1S2471OM
D 5A07	264P045O40	DIODE	1S2471OM
D 5A09	264P244O30	DIODE	HZT22-02
D 5A11	264P045O40	DIODE	1S2471OM

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
D 5A20	264P469O70	DIODE	RD27EB4
D 5A21	264P045O40	DIODE	1S2471OM
D 5A22	264P045O40	DIODE	1S2471OM
D 5A23	264P045O40	DIODE	1S2471OM
D 5K01	264P528O30	DIODE	RP 1H
D 5K02	264P543O10	DIODE	EG01
D 5K03	264P543O10	DIODE	EG01
D 5K10	264P528O30	DIODE	RP 1H
D 600	264P457O80	DIODE	RD3.3EB1
D 6B0	264P045O40	DIODE	1S2471OM
D 6B1	264D056O20	DIODE	ERB12-02RK
D 6B3	264P045O40	DIODE	1S2471OM
D 6G0	264P045O40	DIODE	1S2471OM
D 6G1	264D056O20	DIODE	ERB12-02RK
D 6G2	264P045O40	DIODE	1S2471OM
D 6G3	264P045O40	DIODE	1S2471OM
D 6R0	264P045O40	DIODE	1S2471OM
D 6R1	264D056O20	DIODE	ERB12-02RK
D 6R3	264P045O40	DIODE	1S2471OM
D 701	264P483O70	DIODE	RD5.1FB1
D 705	264D056O20	DIODE	ERB12-02RK
D 706	264P486O20	DIODE	RD8.2FB3
D 707	264P045O40	DIODE	1S2471OM
D 709	264P045O40	DIODE	1S2471OM
D 710	264P045O40	DIODE	1S2471OM
D 711	264P045O40	DIODE	1S2471OM
D 712	264P045O40	DIODE	1S2471OM
D 713	264P045O40	DIODE	1S2471OM
D 714	264P045O40	DIODE	1S2471OM
D 716	264P484O70	DIODE	RD6.2FB2
D 7001	264P045O40	DIODE	1S2471OM
D 7002	264P045O40	DIODE	1S2471OM
D 7601	264P485O60	DIODE	RD7.5FB2
D 7602	264P485O60	DIODE	RD7.5FB2
D 7603	264P485O60	DIODE	RD7.5FB2
D 7604	264P486O60	DIODE	RD9.1FB3
D 7605	264P486O60	DIODE	RD9.1FB3
D 7606	264P045O40	DIODE	1S2471OM
D 7607	264P045O40	DIODE	1S2471OM
D 78A0	264P572O20	LIGHT EMITTING DIODE	SEL2410E
D 800	264P483O80	DIODE	RD5.1FB2
D 8C01	264P045O40	DIODE	1S2471OM
D 8C02	264P425O10	DIODE	ISS88
D 900	264P535O10	DIODE	RBV-608
D 901	264P487O80	DIODE	RD12FB2
D 903	264P522O10	DIODE	RU 1P
D 904	264P622O10	DIODE	AL01Z
D 906	264P578O10	DIODE	RG 2A
D 907	264P588O10	DIODE	FML-G16S
D 908	264P566O10	DIODE	FMP-G12S
D 909	264P358O90	DIODE	RU 4YX
D 910	264P566O10	DIODE	FMP-G12S
D 911	264P508O40	DIODE	S1WB(A)60
D 912	264P622O10	DIODE	AL01Z
D 913	264P566O10	DIODE	FMP-G12S
D 914	264P358O90	DIODE	RU 4YX

[4543] : VS-4543 [4544] : VS-4544 [5043] : VS-5043 [5044] : VS-5044 [6043] : VS-6043

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION	
		FILTERS		
CF200	299P128O10	CERAMIC RESONATOR	CSB500F2	
		DELAY LINES		
DL201	337P134O10	DELAY LINE	SDL-4256	
		COILS		
	330P209O40	DEFLECTION YOKE COIL	VZ3-7-90	
L 101	325C166O70	PEAKING COIL	22μH-J	
L 102	325C121O30	PEAKING COIL	10μH-K	
L 103	325C166O30	PEAKING COIL	10μH-J	
L 104	325C166O30	PEAKING COIL	10μH-J	
L 105	321C114O10	RF COIL	2200μH-J	
L 201	325C121O30	PEAKING COIL	10μH-K	
L 202	325C167O40	PEAKING COIL	82μH-J	
L 203	325C166O30	PEAKING COIL	10μH-J	
L 204	325C166O30	PEAKING COIL	10μH-J	
L 208	325C121O80	PEAKING COIL	27μH-K	
L 210	325C122O50	PEAKING COIL	100μH-K	
L 211	325C402O50	PEAKING COIL	100μH-J	
L 212	325C166O30	PEAKING COIL	10μH-J	
L 213	325C166O70	PEAKING COIL	22μH-J	
L 214	325C166O70	PEAKING COIL	22μH-J	
L 215	325C121O90	PEAKING COIL	33μH-K	
L 2010	325C120O10	PEAKING COIL	1.0μH-M	
L 2011	325C120O10	PEAKING COIL	1.0μH-M	
L 2012	325C120O10	PEAKING COIL	1.0μH-M	
L 2031	325C121O80	PEAKING COIL	27μH-K	
L 2040	325C121O80	PEAKING COIL	27μH-K	
L 2050	325C121O80	PEAKING COIL	27μH-K	
L 2060	325C121O90	PEAKING COIL	33μH-K	
L 301	325C167O90	PEAKING COIL	220μH-J	
L 302	325C166O30	PEAKING COIL	10μH-J	
L 3E1	325C166O30	PEAKING COIL	10μH-J	
L 401	321C130O10	RF COIL	2.0MH +-15%	
L 402	351P070O10	FILTER COIL	300μH-M	
L 411	325C401O30	PEAKING COIL	10μH-J	
L 5A00	351P138O20	CHOKE COIL	2.0MHz	
L 5A01	351P138O10	CHOKE COIL	3.0MHz	
L 5A02	333P040O60	H-LIN.COIL		
L 5A03	411P001O10	LEAD FERRITE		
L 5A04	411P001O10	LEAD FERRITE		
L 5A05	321C030O70	RF COIL	3.3μH-K	
L 5A06	411P001O10	LEAD FERRITE		
L 5K00	411P001O40	LEAD FERRITE		
L 6B0	325C402O20	PEAKING COIL	56μH-J	
L 6B1	325C402O20	PEAKING COIL	56μH-J	
L 6B2	325C402O50	PEAKING COIL	100μH-J	[4543,5043]
L 6G0	325C402O20	PEAKING COIL	56μH-J	
L 6G1	325C402O20	PEAKING COIL	56μH-J	
L 6G2	325C402O50	PEAKING COIL	100μH-J	[4543,5043]
L 6R0	325C402O20	PEAKING COIL	56μH-J	
L 6R1	325C402O20	PEAKING COIL	56μH-J	
L 6R2	325C402O50	PEAKING COIL	100μH-J	[4543,5043]
L 701	325C166O30	PEAKING COIL	10μH-J	
L 702	325C121O30	PEAKING COIL	10μH-K	
L 703	325C166O30	PEAKING COIL	10μH-J	
L 704	325C167O50	PEAKING COIL	100μH-J	
L 705	325C166O30	PEAKING COIL	10μH-J	
L 706	325C166O30	PEAKING COIL	10μH-J	
L 707	325C166O30	PEAKING COIL	10μH-J	
L 708	325C121O30	PEAKING COIL	10μH-K	
L 709	325C121O30	PEAKING COIL	10μH-K	
L 710	325C121O30	PEAKING COIL	10μH-K	
L 711	325C401O00	PEAKING COIL	5.6μH-J	
L 712	321C114O70	RF COIL	6800μH-J	
L 713	325C121O30	PEAKING COIL	10μH-K	
L 714	411P012O10	BEAD FERRITE	B-6-31A1-A	[6043]
L 7001	325C166O30	PEAKING COIL	10μH-J	
L 7002	325C166O30	PEAKING COIL	10μH-J	
L 7004	325C166O30	PEAKING COIL	10μH-J	
L 7005	325C166O30	PEAKING COIL	10μH-J	
L 7007	325C167O20	PEAKING COIL	56μH-J	
L 7008	325C166O30	PEAKING COIL	10μH-J	
L 7601	325C166O30	PEAKING COIL	10μH-J	
L 7602	325C121O30	PEAKING COIL	10μH-K	
L 77A1	325C121O30	PEAKING COIL	10μH-K	
L 800	321C031O40	RF COIL	10μH-K	
L 802	325C401O30	PEAKING COIL	10μH-J	
L 803	325C401O30	PEAKING COIL	10μH-J	
L 8D01	325C401O30	PEAKING COIL	10μH-J	
L 8E01	325C401O30	PEAKING COIL	10μH-J	
L 8F01	325C401O30	PEAKING COIL	10μH-J	
L 8F02	325C401O30	PEAKING COIL	10μH-J	
L 8W01	321C031O40	RF COIL	10μH-K	
L 8W02	321C031O40	RF COIL	10μH-K	
L 8W03	321C031O40	RF COIL	10μH-K	
L 8W04	321C031O40	RF COIL	10μH-K	
L 8W05	321C031O40	RF COIL	10μH-K	
L 8W06	321C031O40	RF COIL	10μH-K	
L 900	351P139O10	LINE FILTER	SS35V-30082	
L 901	351P070O10	FILTER COIL	300μH-M	
L 902	351P070O10	FILTER COIL	300μH-M	
L 903	351P070O10	FILTER COIL	300μH-M	
L 904	351P070O10	FILTER COIL	300μH-M	
L 905	351P070O10	FILTER COIL	300μH-M	
L 906	321C142O30	RF COIL	68μH-K 9X9.5	
L 907	321C142O30	RF COIL	68μH-K 9X9.5	
L 908	321C142O30	RF COIL	68μH-K 9X9.5	
L 909	411P001O10	LEAD FERRITE		
L 910	411P001O10	LEAD FERRITE		
L 911	411P001O10	LEAD FERRITE		
L 912	411P001O60	LEAD FERRITE		
L 913	411D009O20	FERRITE CORE FILTER		
L 914	411D009O20	FERRITE CORE FILTER		
L 925	411D009O20	FERRITE CORE FILTER		
LC2091	409P402O30	EMI FILTER	FZ103N100	
LC2092	409P402O30	EMI FILTER	FZ103N100	
LC2095	409P402O10	EMI FILTER	B101M100	
LC701	409P402O10	EMI FILTER	B101M100	
LC702	409P402O10	EMI FILTER	B101M100	
LC703	409P402O10	EMI FILTER	B101M100	

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
LC704	409P402O10	EMI FILTER	B101M100
LC7001	409P402O30	EMI FILTER	FZ103N100
LC7002	409P402O10	EMI FILTER	B101M100
LC7003	409P402O10	EMI FILTER	B101M100
LC7004	409P402O10	EMI FILTER	B101M100
LC7005	409P402O10	EMI FILTER	B101M100
LC7006	409P402O30	EMI FILTER	FZ103N100
LC7007	409P402O10	EMI FILTER	B101M100
LC7008	409P402O10	EMI FILTER	B101M100
T 5A01	336P031O10	HORI-DRIVE COIL	
T 5A02	336P031O10	HORI-DRIVE COIL	
		TRANSFORMERS	
T 5A00	349P122O80	SIDE PCC	
T 5A03	334P246O10	FLYBACK	
T 900	350P681O10	POWER	
T 901	350P405O50	POWER	
		VARIABLE RESISTORS	
	129P059O30	VR-FOCUS	MHF116-50
		RESISTORS	
R 2010	103P479O00	CHIP METAL	1/10W 510kΩ-F
R 2011	103P403O10	CHIP RESISTOR	1/10W 3.3kΩ-J
R 2012	103P403O10	CHIP RESISTOR	1/10W 3.3kΩ-J
R 2013	103P402O40	CHIP RESISTOR	1/10W 820Ω-J
R 2017	103P403O10	CHIP RESISTOR	1/10W 3.3kΩ-J
R 2018	103P474O70	CHIP RESISTOR	1/10W 8.2kΩ-F
R 2019	103P473O70	CHIP RESISTOR	1/10W 3.3kΩ-F
R 2031	103P402O10	CHIP RESISTOR	1/10W 470Ω-J
R 2032	103P473O00	CHIP RESISTOR	1/10W 1.6kΩ-F
R 2033	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 2034	103P403O70	CHIP RESISTOR	1/10W 10kΩ-J
R 2040	103P472O20	CHIP RESISTOR	1/10W 750Ω-F
R 2041	103P472O40	CHIP RESISTOR	1/10W 910Ω-F
R 2043	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 2044	103P406O90	CHIP METAL	1/10W 4.7MΩ-K
R 2046	103P401O30	CHIP RESISTOR	1/10W 100Ω-J
R 2050	103P472O20	CHIP RESISTOR	1/10W 750Ω-F
R 2051	103P472O40	CHIP RESISTOR	1/10W 910Ω-F
R 2053	103P404O60	CHIP RESISTOR	1/10W 56kΩ-J
R 2054	103P404O20	CHIP RESISTOR	1/10W 27kΩ-J
R 2055	103P403O30	CHIP RESISTOR	1/10W 4.7kΩ-J
R 2056	103P402O90	CHIP RESISTOR	1/10W 2.2kΩ-J
R 2057	103P403O40	CHIP RESISTOR	1/10W 5.6kΩ-J
R 2058	103P472O40	CHIP RESISTOR	1/10W 910Ω-F
R 2075	103P409O50	CHIP RESISTOR	0.1W 0Ω(2125)
R 2080	103P409O50	CHIP RESISTOR	0.1W 0Ω(2125)
R 2082	103P409O50	CHIP RESISTOR	0.1W 0Ω(2125)
R 2083	103P409O50	CHIP RESISTOR	0.1W 0Ω(2125)
R 2084	103P409O50	CHIP RESISTOR	0.1W 0Ω(2125)
R 3B8	103P378O40	FUSE	1/4W 2.2Ω-J
R 3B9	103P378O40	FUSE	1/4W 2.2Ω-J
R 5A10	109D074O20	CEMENT METAL	5W 6.8kΩ-K/J
R 5A47	109D074O20	CEMENT METAL	5W 6.8kΩ-K/J
R 5A50	103P438O40	FUSE METAL	2W 2.2Ω-K/J
R 5K09	103P392O20	FUSE	1/2W 560Ω-J
R 5K12	103P390O60	FUSE	1/2W 27Ω-J
R 5K34	103P390O60	FUSE	1/2W 27Ω-J
R 7024	103P544O10	NETWORK	1/8W 22kΩ-JX4
R 901	109D077O80	CEMENT WIRE	15W 0.56Ω-K
R 902	109D077O80	CEMENT WIRE	15W 0.56Ω-K
R 909	102P107O30	WIRE	2W 0.27Ω-K
R 910	102P106O80	WIRE	2W 0.1Ω-J
R 918	109D094O30	CEMENT METAL	7W 22kΩ-K
R 922	103P398O90	FUSE	1/2W 5.6Ω-J
R 931	109D021O70	SOLID	1/2W 1.5MΩ-K [4544,5044,6043]
		CAPACITORS AND TRIMMERS	
C 2010	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 2011	141P133O80	CHIP CAPACITOR	F50V 0.01μF-Z
C 2013	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 2015	141P131O70	CHIP CAPACITOR	B50V 4700pF-K
C 2016	154P334O10	CHIP CAPACITOR	CH50V 180pF-J
C 2017	172P391O30	CHIP C-FILM	16V 0.01μF
C 2018	141P133O80	CHIP CAPACITOR	F50V 0.01μF-Z
C 2020	141P133O80	CHIP CAPACITOR	F50V 0.01μF-Z
C 2022	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 2023	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 2024	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 2026	141P133O80	CHIP CAPACITOR	F50V 0.01μF-Z
C 2027	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 2028	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 2030	154P333O30	CHIP CAPACITOR	CH50V 82pF-J
C 2032	154P331O10	CHIP CAPACITOR	CH50V 10pF-C
C 2040	154P331O30	CHIP CAPACITOR	CH50V 12pF-J
C 2041	154P332O30	CHIP CAPACITOR	CH50V 33pF-J
C 2043	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 2050	154P331O30	CHIP CAPACITOR	CH50V 12pF-J
C 2051	154P332O30	CHIP CAPACITOR	CH50V 33pF-J
C 2052	141P132O10	CHIP CAPACITOR	B50V 0.01μF-K
C 2054	141P133O80	CHIP CAPACITOR	F50V 0.01μF-Z
C 2055	154P332O10	CHIP CAPACITOR	CH50V 27pF-J
C 2060	154P332O90	CHIP CAPACITOR	CH50V 56pF-J
C 2061	154P333O50	CHIP CAPACITOR	CH50V 100pF-J
C 3E2	189D028O10	C-TANT	16V 10μF-K
C 3E3	189D058O30	C-TANT	16V 3.3μF-K
C 408	189P071O50	C-M-PP	200V 0.33μF-J
C 5A04	172P172O70	C-M-PP	1600V 4300pF-J
C 5A05	172P172O70	C-M-PP	1600V 4300pF-J
C 5A13	172P170O90	C-M-PP	1600V 4700pF-J
C 5A14	172P170O90	C-M-PP	1600V 4700pF-J
C 5A16	189P081O60	C-M-PP	200V 0.15μF-J
C 5A17	189P081O60	C-M-PP	200V 0.15μF-J
C 5A27	189P071O80	C-M-PP	200V 0.47μF-J
C 5K00	172P171O60	C-M-PP	1600V 0.018μF-J
C 5K01	172P171O60	C-M-PP	1600V 0.018μF-J
C 900	189P033O50	C-PP-AC	AC125V 0.1μF-M
C 901	189P067O60	C-CERAMIC-AC	B VA1 1000pF-M
C 902	189P067O60	C-CERAMIC-AC	B VA1 1000pF-M
C 903	189P134O80	C-CERAMIC-AC	F VA1 2200pF-M
C 904	189P134O80	C-CERAMIC-AC	F VA1 2200pF-M
C 905	189P134O80	C-CERAMIC-AC	F VA1 2200pF-M

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION	
C 906	189P134O80	C-CERAMIC-AC	F VA1 2200pF-M	
C 907	185D063O30	ELECTROLYTIC-C	H180V 820µF-M 105C	
C 908	185D063O30	ELECTROLYTIC-C	H180V 820µF-M 105C	
C 917	185D063O20	ELECTROLYTIC-C	H180V 470µF-M 105C	
C 920	185D062O50	ELECTROLYTIC-C	H50V 4700µF-M	
C 928	185D062O50	ELECTROLYTIC-C	H50V 4700µF-M	
C 931	189P033O50	C-PP-AC	AC125V 0.1µF-M	
C 938	189P033O70	C-PP-AC	AC125 4700pF-M	
C 944	189P033O70	C-PP-AC	AC125 4700pF-M	
C 952	189P134O80	C-CERAMIC-AC	F VA1 2200pF-M	
C 953	189P134O80	C-CERAMIC-AC	F VA1 2200pF-M	
VC7001	202P109O30	TRIMMER CAPACITOR	5.5pF-30pF	
		SWITCHES		
S 7800	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7801	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7802	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7803	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7804	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7805	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7806	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7807	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7808	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7809	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7810	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7811	432P100O10	KEY BOARD SWITCH		[5043,5044,6043]
S 7A00	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A01	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A02	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A03	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A04	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A05	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A06	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A07	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A08	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A09	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A10	432P100O10	KEY BOARD SWITCH		[4543,4544]
S 7A11	432P100O10	KEY BOARD SWITCH		[4543,4544]
TU102	295P403O10	ANTENNA SWITCH	WITH RELAY	
		MISCELLANEOUS		
	453B027O10	CAP ANODE		
	453B027O20	CAP ANODE		
	767D043O60	MIRROR		[4543,4544]
	767D043O30	MIRROR		[5043,5044]
	767D043O80	MIRROR		[6043]
	449C134O10	SOCKET CRT		
	480P405O10	SPEAKER	SL-4A017B	
AG5K00	224D019O40	AIR GAP	2KV	
AG900	224D019O40	AIR GAP	2KV	
F 900	283D060O20	FUSE	S5A	
F 901	283D038O70	FUSE	S4A	
F 902	283D038O70	FUSE	S4A	
K 900	287P049O70	RELAY POWER	DJ12D1-0(M)	
PC900	268P033O10	PHOTO COUPLER	ON3161-R	
PJ7601	440C272O40	PIN JACK BOARD		

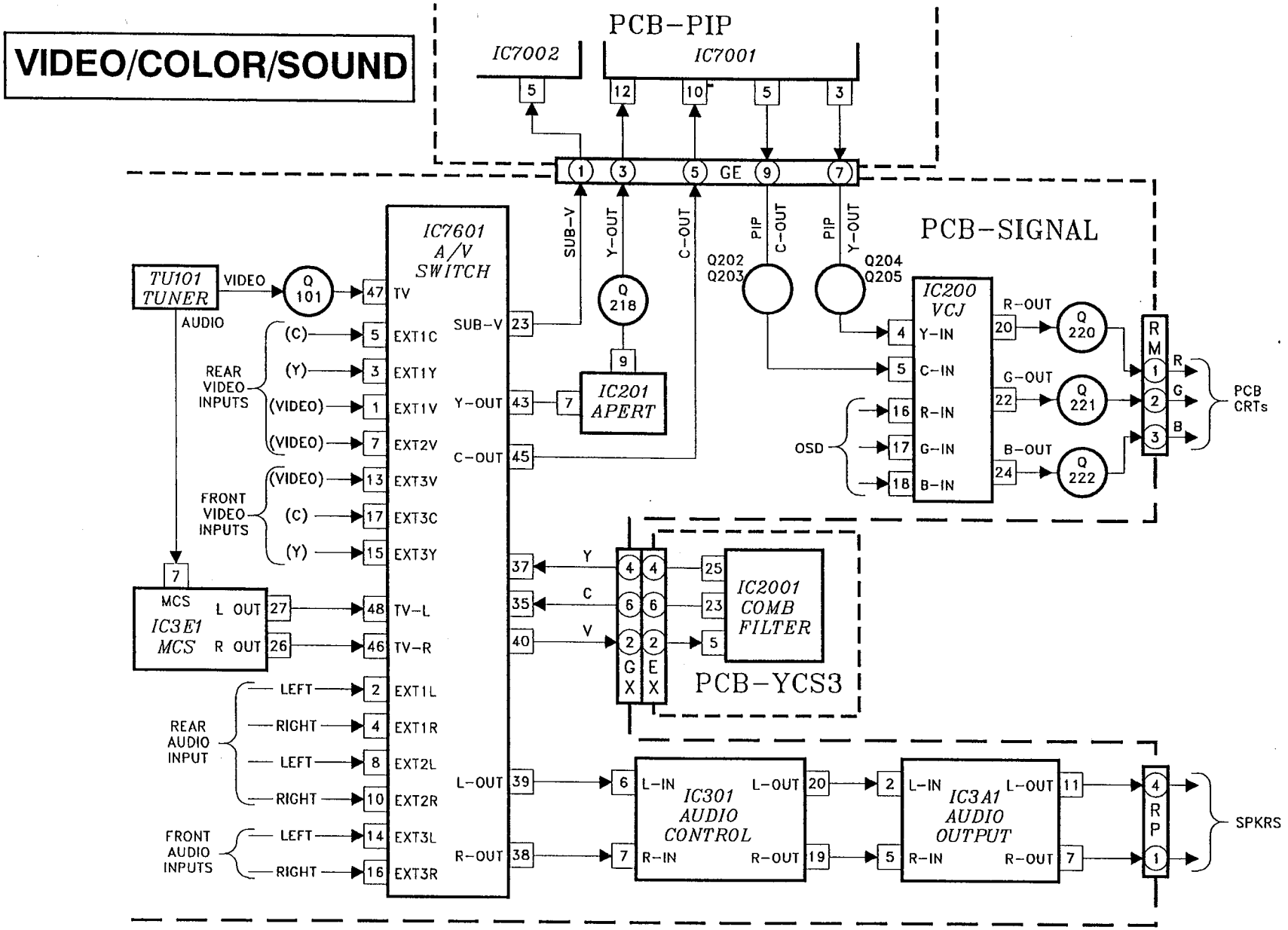
SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION	
PJ7602	449C121O20	SOCKET DIN MINI	YKF515503	
PJ7603	451C129O10	JACK MICROPHONE		
PJ79A0	440C181O10	JACK BOARD	PINX3 & DINX1	
RV900	265P100O10	VARISTOR	ERZV10D271	
* TU101	295P420O30	TUNER	ENG26104G	
X 200	285P066O10	CRYSTAL RESONATOR	3.5795MHz	
X 701	285P039O20	CRYSTAL RESONATOR	8.00MHz	[4543,5043]
X 701	285P278O10	CRYSTAL RESONATOR	8.000MHz	[4544,5044,6043]
X 7001	285P069O20	CRYSTAL RESONATOR	HC-49/U	
Z 7706	939P296O60	PREAMP UNIT	HC-437ME	
Z 900	283P039O20	FUSE	SSFR 6.3A	
Z 901	283P039O20	FUSE	SSFR 6.3A	
Z 902	283P030O90	FUSE	SSFR 4A	
Z 903	283P039O20	FUSE	SSFR 6.3A	
		PRINTED CIRCUIT BOARD ASSY'S		
*	935D247O02	CONTROL PCB ASSY		[4543,4544]
*	935D237O02	CONTROL PCB ASSY		[5043,5044,6043]
*	935D285O03	CONV PCB ASSY		[4543,4544]
*	935D285O01	CONV PCB ASSY		[5043,5044]
*	935D285O04	CONV PCB ASSY		[6043]
*	935C657O01	CRT PCB ASSY		
*	935D266O03	DBF PCB ASSY		[4543,4544]
*	935D266O02	DBF PCB ASSY		[5043,5044,6043]
*	935D238O02	DISPLAY PCB ASSY		
*	935D239O02	FRONT PCB ASSY		
*	935C653O03	MAIN PCB ASSY		[4543,4544]
*	935C653O01	MAIN PCB ASSY		[5043,5044]
*	935C653O04	MAIN PCB ASSY		[6043]
*	935D286O01	PIP PCB ASSY		
*	935D236O03	PREAMP PCB ASSY		
*	935C654O01	SIGNAL PCB ASSY		
*	930C983O06	YCS3 PCB ASSY		
		MECHANICAL PARTS		
	669D220O30	SCREW	3X10 46LA005	
	669D220O60	SCREW	3X16 46LA005	
	669D221O40	SCREW	4X12 46LA005	
	669D220O40	SCREW	3X12 46LA005	[except 6043]
	669D212O10	SCREW	3X12	
		COSMETIC PARTS		
	246C160O20	AC POWER CORD		
	975D113O40	CABINET ASSY		[4543]
	975D113O50	CABINET ASSY		[4544]
	975D113O30	CABINET ASSY		[5043]
	740A355O20	CABINET ASSY		[5044]
	740A359O10	CABINET ASSY		[6043]
	975B083O07	SCREEN ASSY		[4543,4544]
	975B082O08	SCREEN ASSY		[5043,5044]
	975B094O03	SCREEN ASSY		[6043]
	975C140O80	BAFFLE BOARD ASSY		[4544]
	975C140O90	BAFFLE BOARD ASSY		[5044]
	700C244O20	BACK BOARD		[4543]
	700C244O30	BACK BOARD		[4544]
	700C244O10	BACK BOARD		[5043]
	700C244O80	BACK BOARD		[5044]

[4543] : VS-4543 [4544] : VS-4544 [5043] : VS-5043 [5044] : VS-5044 [6043] : VS-6043

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION	
	700C244O60	BACK BOARD		[6043]
	589C052O10	CASTER		
	641D173O10	CLIP	AC-POWER-CORD	
	761C273O10	DOOR CATCH	LSEQ0003	
	702B712O30	CONTROL DOOR ASSY		[4543,4544]
	702B887O10	CONTROL DOOR ASSY		[5043,5044]
	702B943O10	CONTROL DOOR ASSY		[6043]
	771D090O10	FOOT	(S)	[except 6043]
	761A093O30	SPEAKER GRILLE		[4543]
	761A102O30	SPEAKER GRILLE		[5043]
	761A124O20	SPEAKER GRILLE		[6043]
	490P138O10	LENS UNIT	DELTA77-RCU	[except 6043]
	490P138O20	LENS UNIT	DELTA77-GCU	[except 6043]
	490P138O30	LENS UNIT	DELTA77-CU	[except 6043]
	490P154O10	LENS UNIT	DELTA78-ABU	[except 6043]
	490P139O40	LENS UNIT	5217-RN-H-B	[6043]
	490P139O50	LENS UNIT	5217-GN-H-B	[6043]
	490P139O60	LENS UNIT	5217-B-H-B	[6043]
*	491P044O50	FRESNEL LENS		[4543]
*	491P044O60	FRESNEL LENS		[4544]
*	491P043O40	FRESNEL LENS		[5043]
*	491P043O70	FRESNEL LENS		[5044]
*	491P039O10	FRESNEL LENS		[6043]
	760C652O10	PANEL INDICATOR		[5043,5044]
	760C652O30	PANEL INDICATOR		[6043]
*	491P035O30	LENTICULAR SCREEN		[4543,4544]
*	491P031O20	LENTICULAR SCREEN		[5043]
*	491P031O60	LENTICULAR SCREEN		[5044]
*	491P038O40	LENTICULAR SCREEN		[6043]
		PACKING PARTS AND ACCESSORY		
1	802B557O20	PACKING CASE		[4543,4544]
1	802B535O20	PACKING CASE		[5043,5044]
1	802B564O20	PACKING CASE		[6043]
2	829C045O20	PACKING SHEET	TOP/FRONT	[except 6043]
2	829C047O10	PACKING SHEET	TOP	[6043]
3	802B557O60	PACKING CASE		[4543]
3	802B557O50	PACKING CASE		[4544]
3	802B535O60	PACKING CASE		[5043]
3	802B535O50	PACKING CASE		[5044]
3	802B564O40	PACKING CASE		[6043]
4	802B564O30	PACKING CASE		[6043]
5	831C060O40	PACKING BAG	1900X2200X2.0	[except 6043]
5	831C060O60	PACKING BAG	2500X2300X2.0	[6043]
6	829D126O90	PACKING SHEET	2600X600X.5	
7	802B557O10	PACKING CASE		[4543,4544]
7	802B535O10	PACKING CASE		[5043,5044]
7	802B564O10	PACKING CASE		[6043]
8	831D191O30	PACKING BAG	266.7X381	
9	871D198O70	INSTRUCTION BOOK		
10	242D266O40	CABLE	PLUG-PLUG(3.5)	
* 11	290P066O10	REMOTE HAND UNIT		
		OTHER CRITICAL COMPONENTS		
C 5A35	154P264O60	C-CERAMIC	R3.15KV 470pF-K	
R 106	103P331O80	R-CARBON-25	1/4W 270Ω-J	
R 927	109D036O30	R-COMPOSITION	1/2 1.0MΩ-K	
R 928	109D036O30	R-COMPOSITION	1/2 1.0MΩ-K	

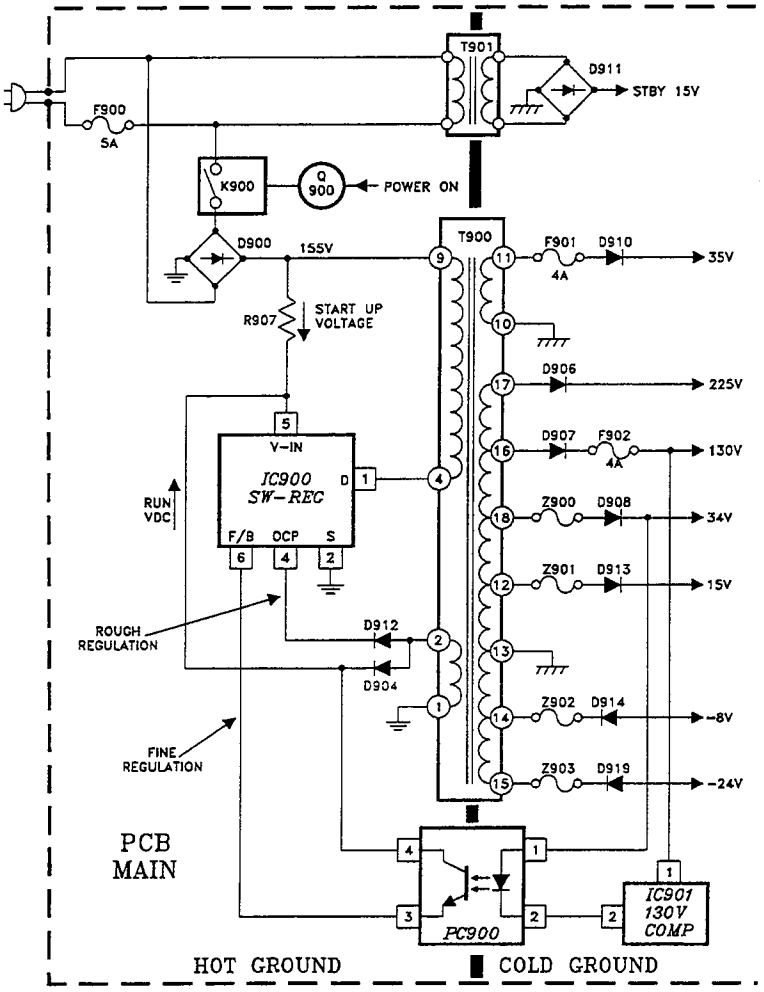
VZ3 CHASSIS BLOCK DIAGRAM

VIDEO/COLOR/SOUND

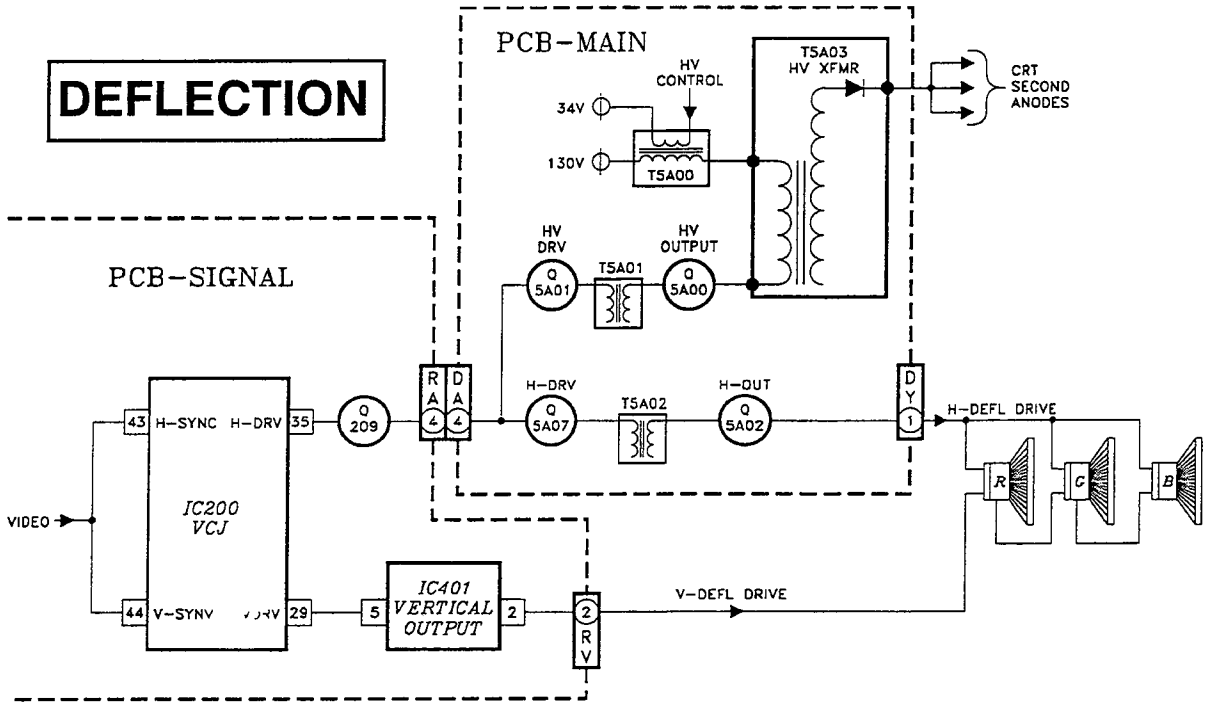


VZ3 CHASSIS BLOCK DIAGRAM

POWER



DEFLECTION



IC BLOCK DIAGRAMS

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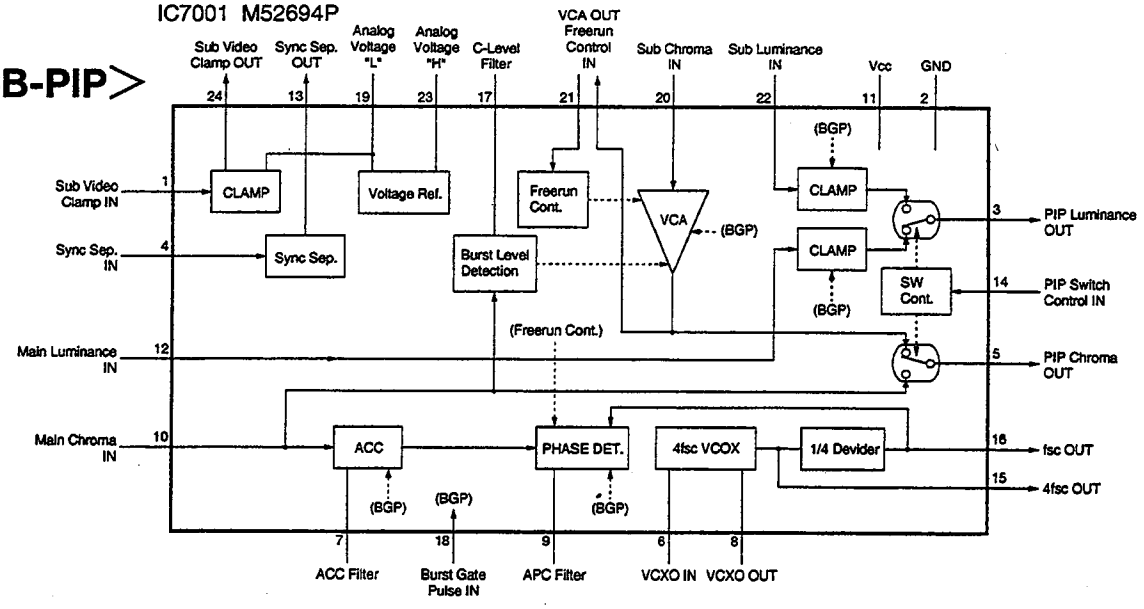

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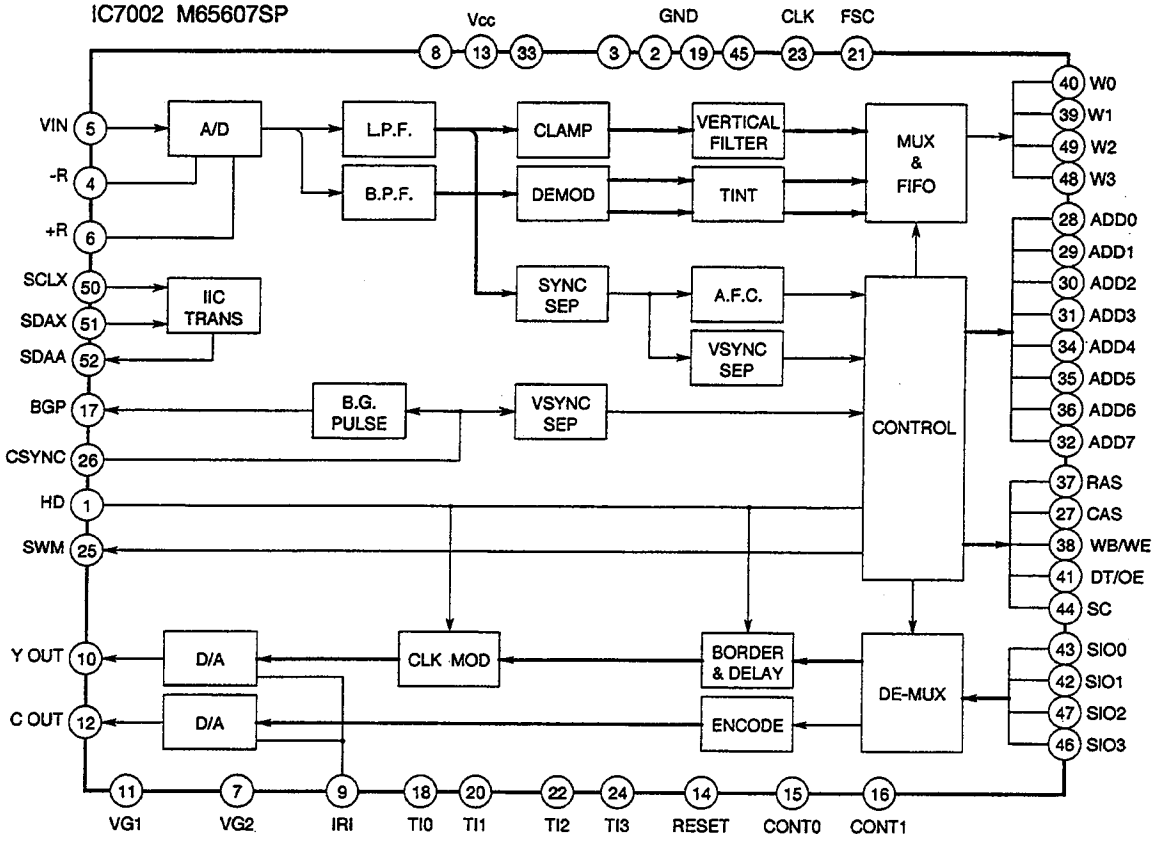

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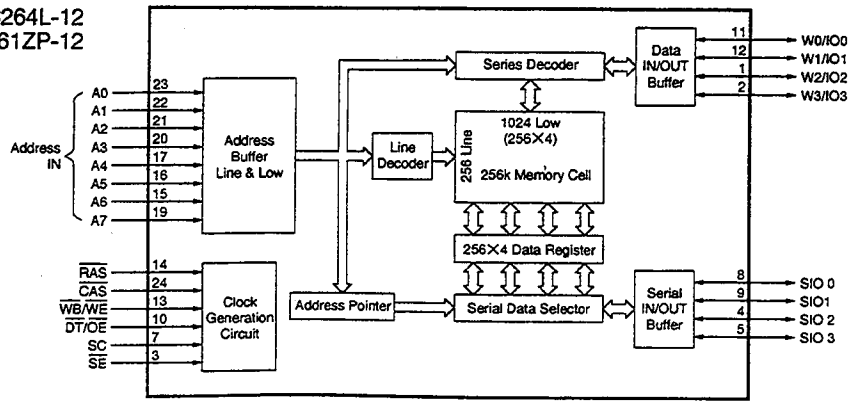
HM53461ZP-12



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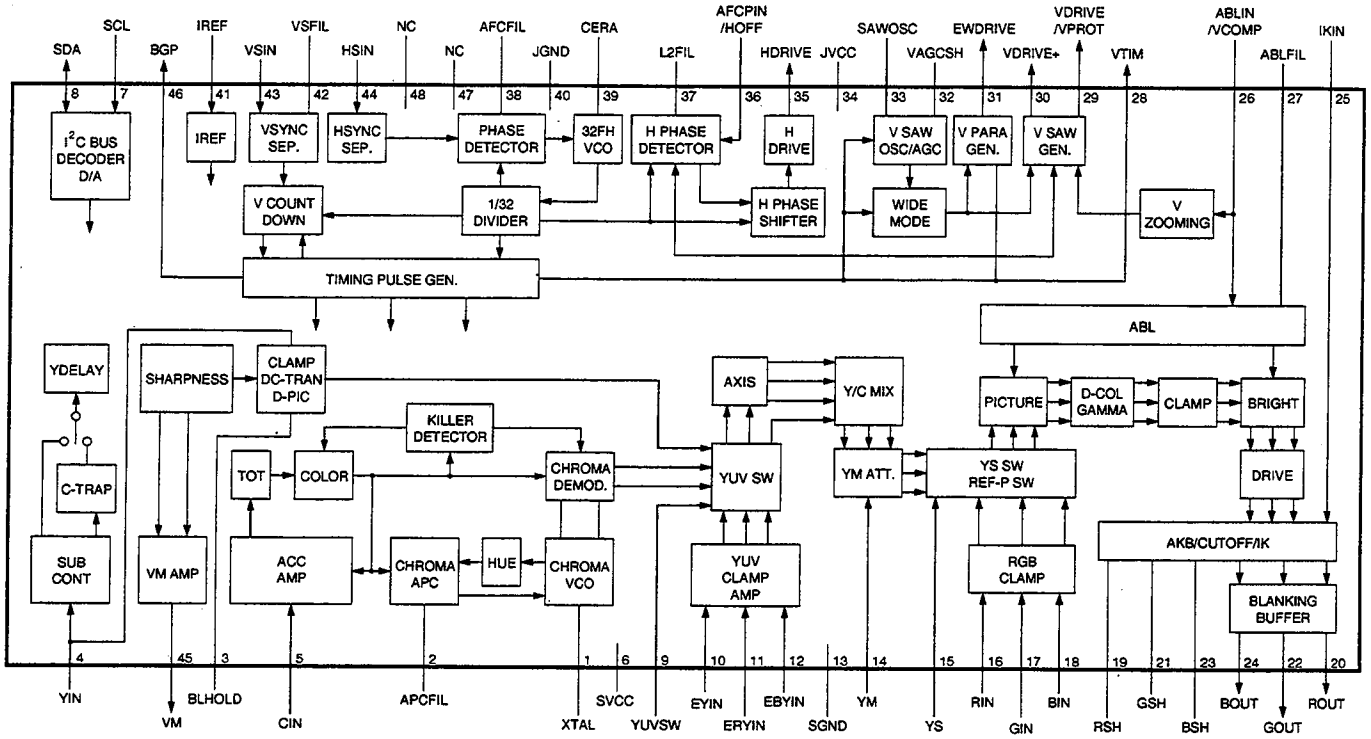
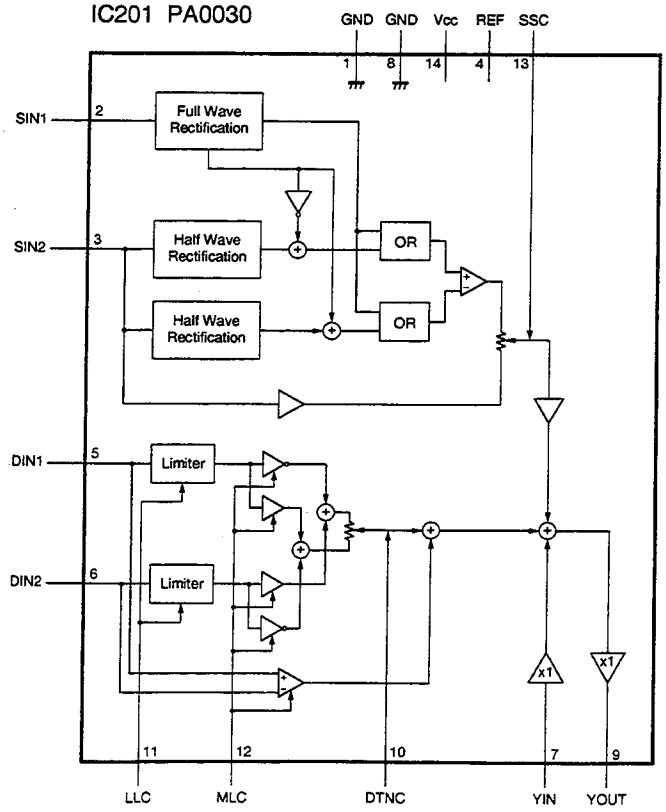
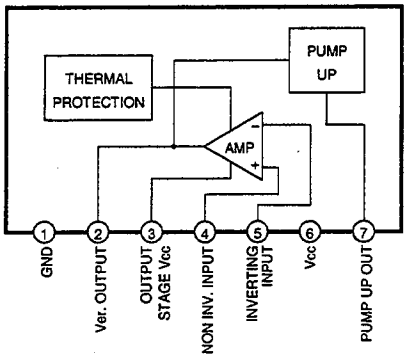


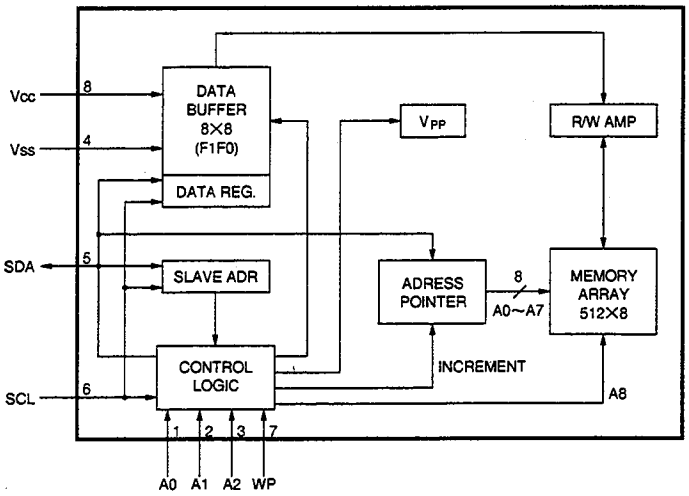
IC201 PA0030



IC401 LA7845



IC701 24C04A*P



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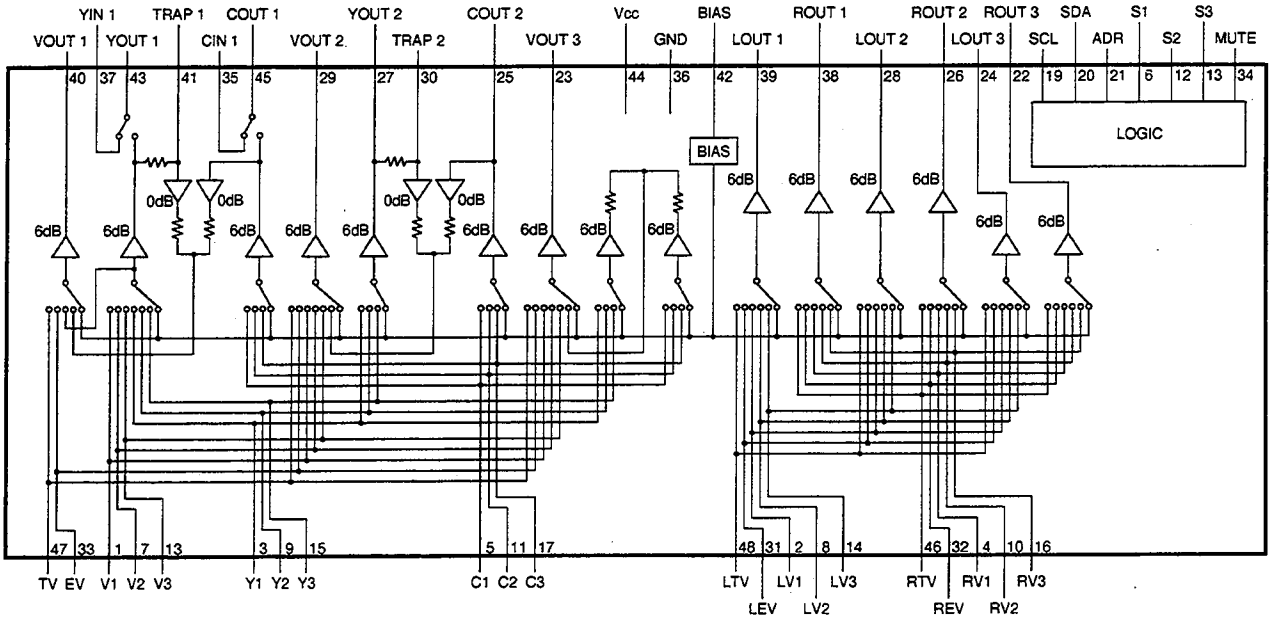

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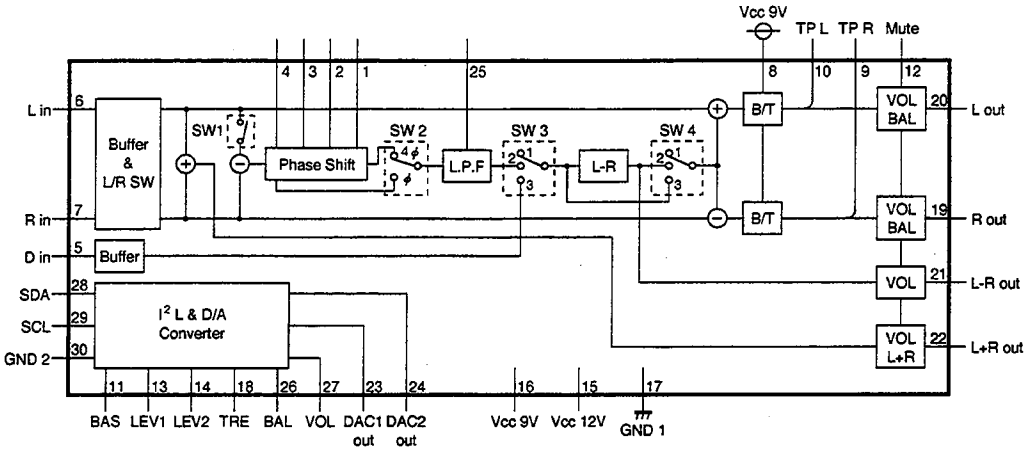

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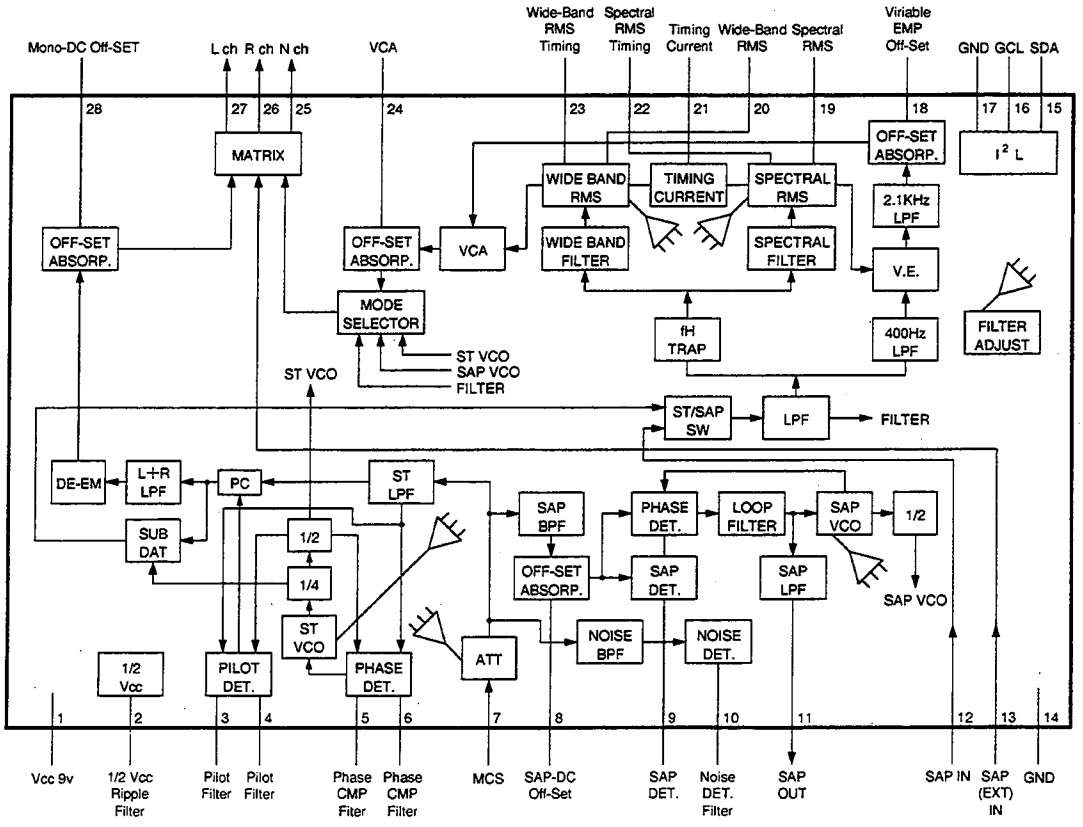

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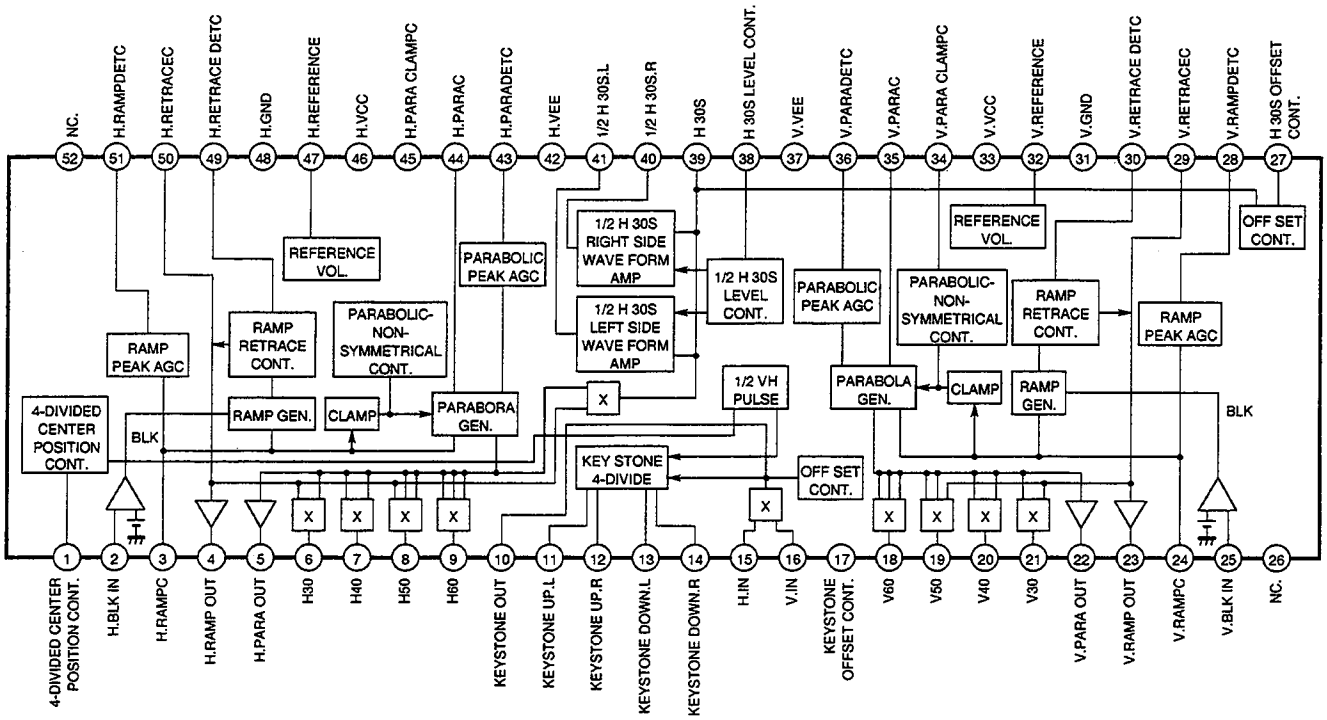
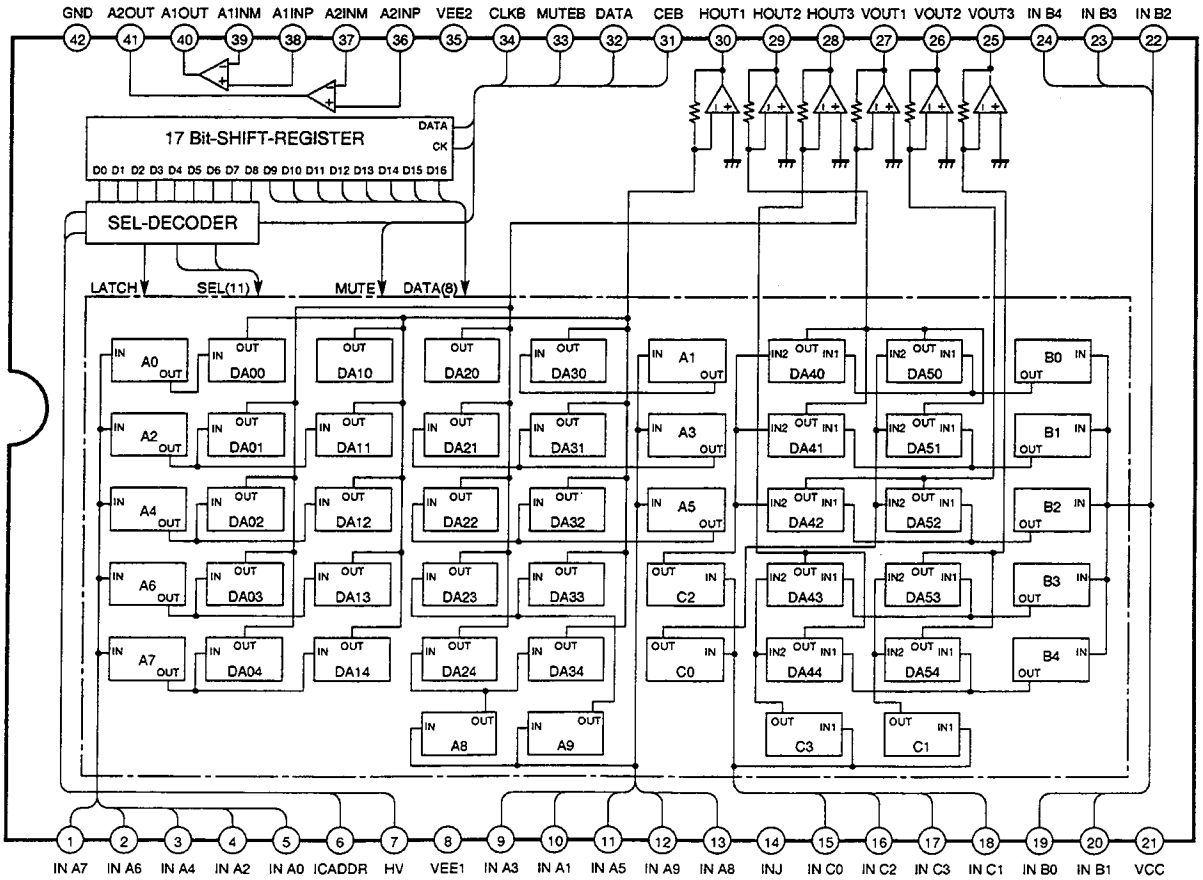
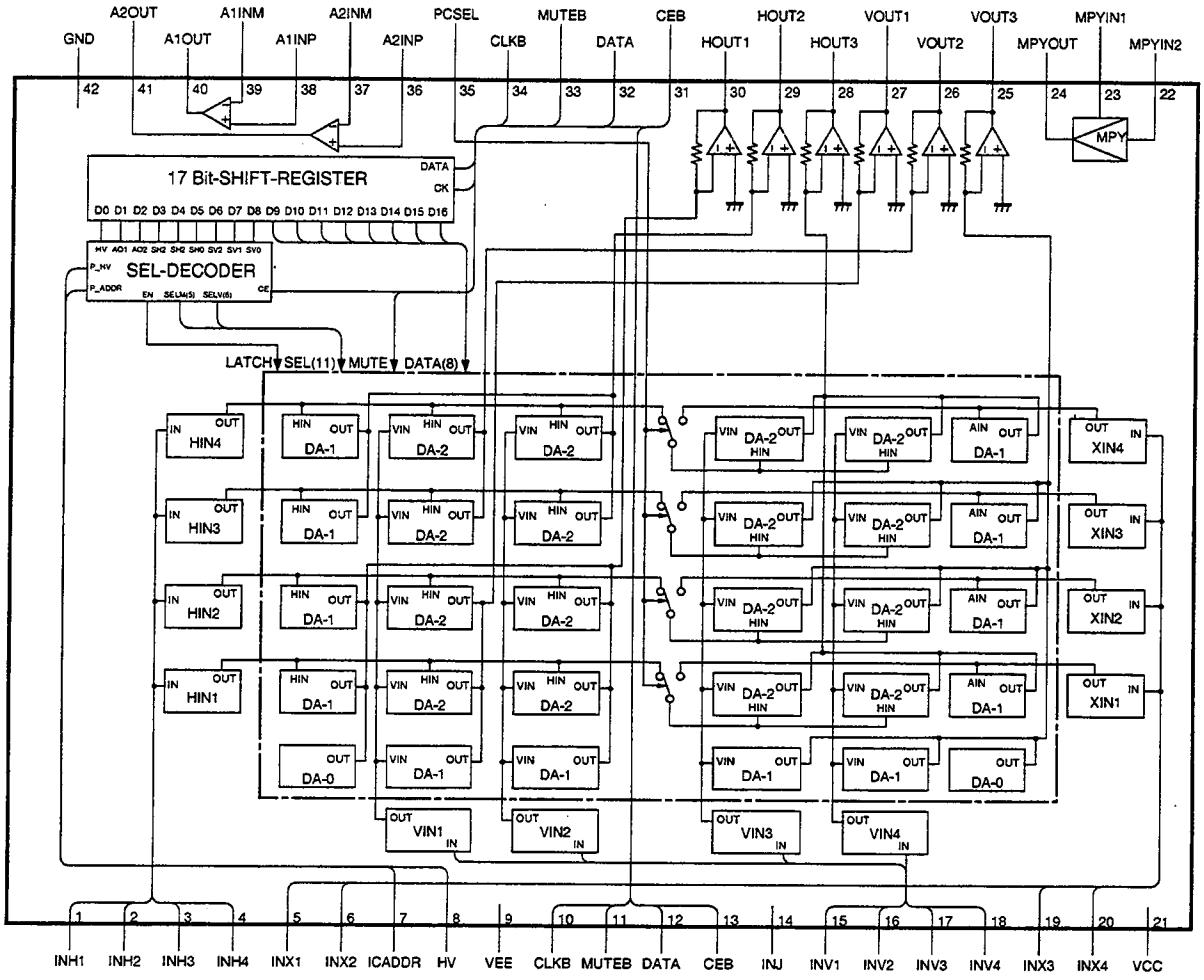
IC800 M52336ASP



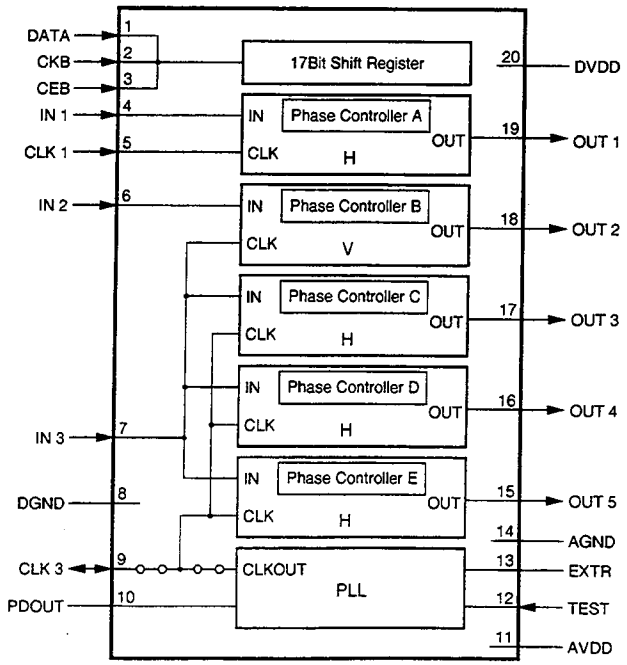
IC8D00,IC8E00 CM0001AS



IC8G00 PM0002B

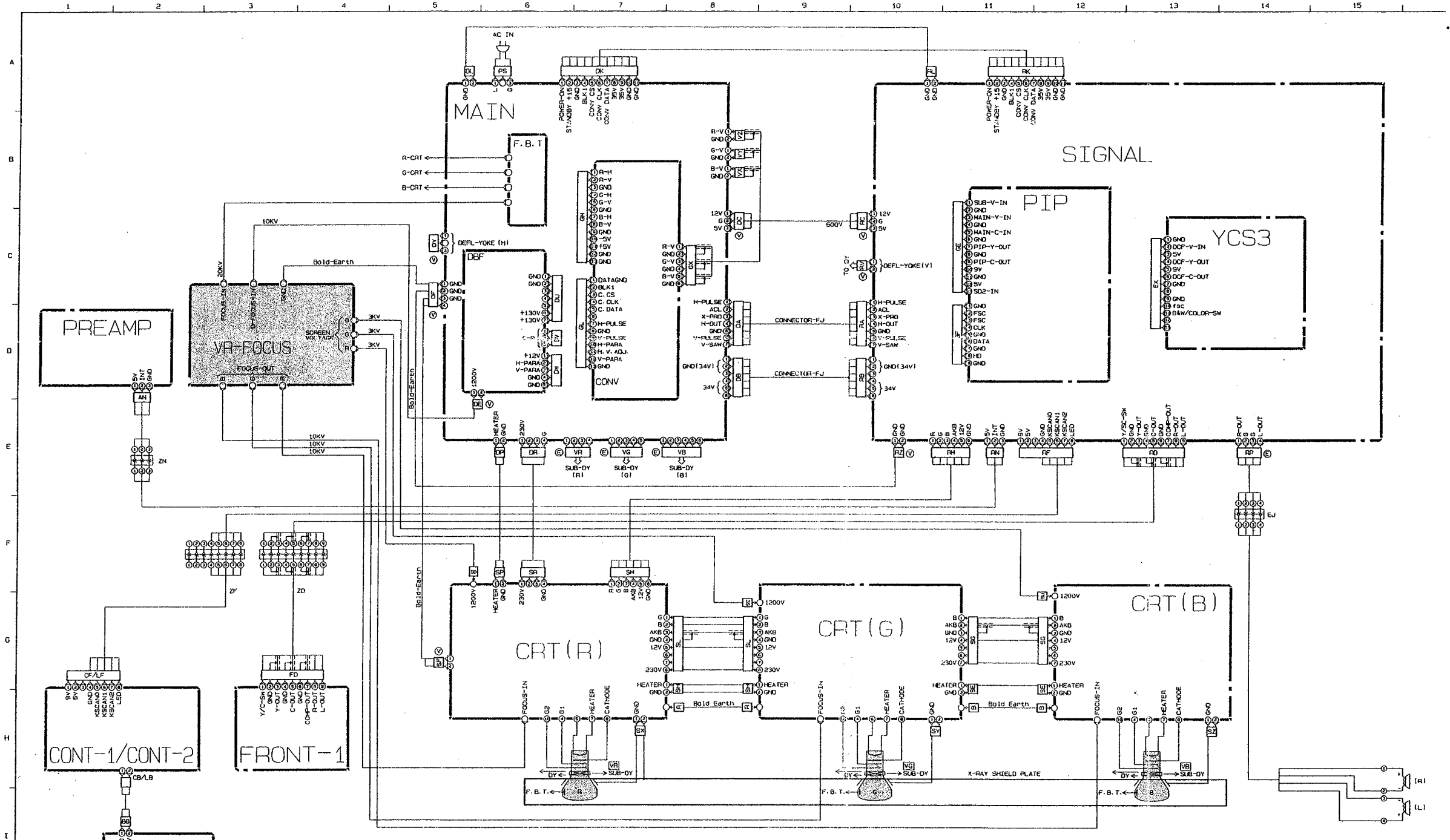


IC870 CD006BD



SCHEMATIC DIAGRAM

MODELS : VS-4543/VS-4544
VS-5043/VS-5044
VS-6043



MODELS	VS-4543/VS-4544	VS-5043/VS-5044 VS-6044
PCB	CONT-2	CONT-1
CONNECTOR	LF, LB	CF, CB

SCHEMATIC DIAGRAM : VS-4543/VS-4544
VS-5043/VS-5044
VS-6043

CONTENTS

p1 ..... BLOCK DIAGRAM
p2 ..... PIP
p3 ..... MAIN
p4 ..... SIGNAL
p5 ..... DBF,YCS3,CONT-1,CONT-2 FRONT-1,DISPLAY-1 PREAMP,CRT(R)(G)(B)
p6 ..... CONV

• NOTE

1. DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
2. Waveforms were taken with standard colour bar signal.
3. TP6A, etc. show Test Points.
4. CAPACITORS

Value	Not indicated	PF, for numbers more than 1 μF, for numbers less than 1
Dielectric Strength	Not indicated :50V	
Tolerance	Not indicated ±±10%	No Tolerance is indicated for electrolytic capacitors and ±20%
	G ±2% J ±5% K ±10% M ±20%	P +100% −0% Z +80% −20% Q +30% −10% T +200% −0% C ±0.25PF D ±0.5PF F ±1PF G ±2PF
Sort	I Parts except for chips	Not indicated : Ceramic capacitor (MP) : Polyester capacitor (PP) : Polypropylene film capacitor (ALM) : Aluminus electrolytic capacitor (TF) : Twin film capacitor (SC) : Semiconductor ceramic capacitor (MP) : Metalized paper (MPP) : Metalized plastic film capacitor (MMF) : Metalized polyester capacitor (MF,PP) : Polyester polypropylene film capacitor (PS) : Styrol capacitor (TAN) or (TANT) : Tantalum capacitor (E) : Electrolytic capacitor (BP) or (NP) : Non polarized electrolytic capacitor
	II Chips	Not indicated : Ceramic capacitor chip (E) : Electrolytic capacitor (BP) or (NP) : Non polarized electrolytic capacitor chip
Characteristic (only ceramic capacitor)	Not indicated : F or B(high dielectric percentage) CH,SL,etc. : Temperature compensating types	

5. Resistors

Value	Not indicated = Ω K = kΩ(1000Ω) M = MΩ(1000kΩ)	
Wattage	Parts except for chips	Not indicated = 1/4W or 1/6W
	Chips	Not indicated = 1/10W
Tolerance	Not indicated ±5% D ±0.5% J ±5% F ±1% K ±10%	
Short	I Parts except for chips	Not indicated : Carbon resistor (S) : Fixed composition resistor (MG) : Metal oxide film resistor(type B) (CE) : Cemented resistor (W) : Wire wound resistor (M) : Metal film resistor (MPC) : Metal plate cement resistor (ML) : Metal liner resistor
	II Chip	Not indicated : Chip resistor

6. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

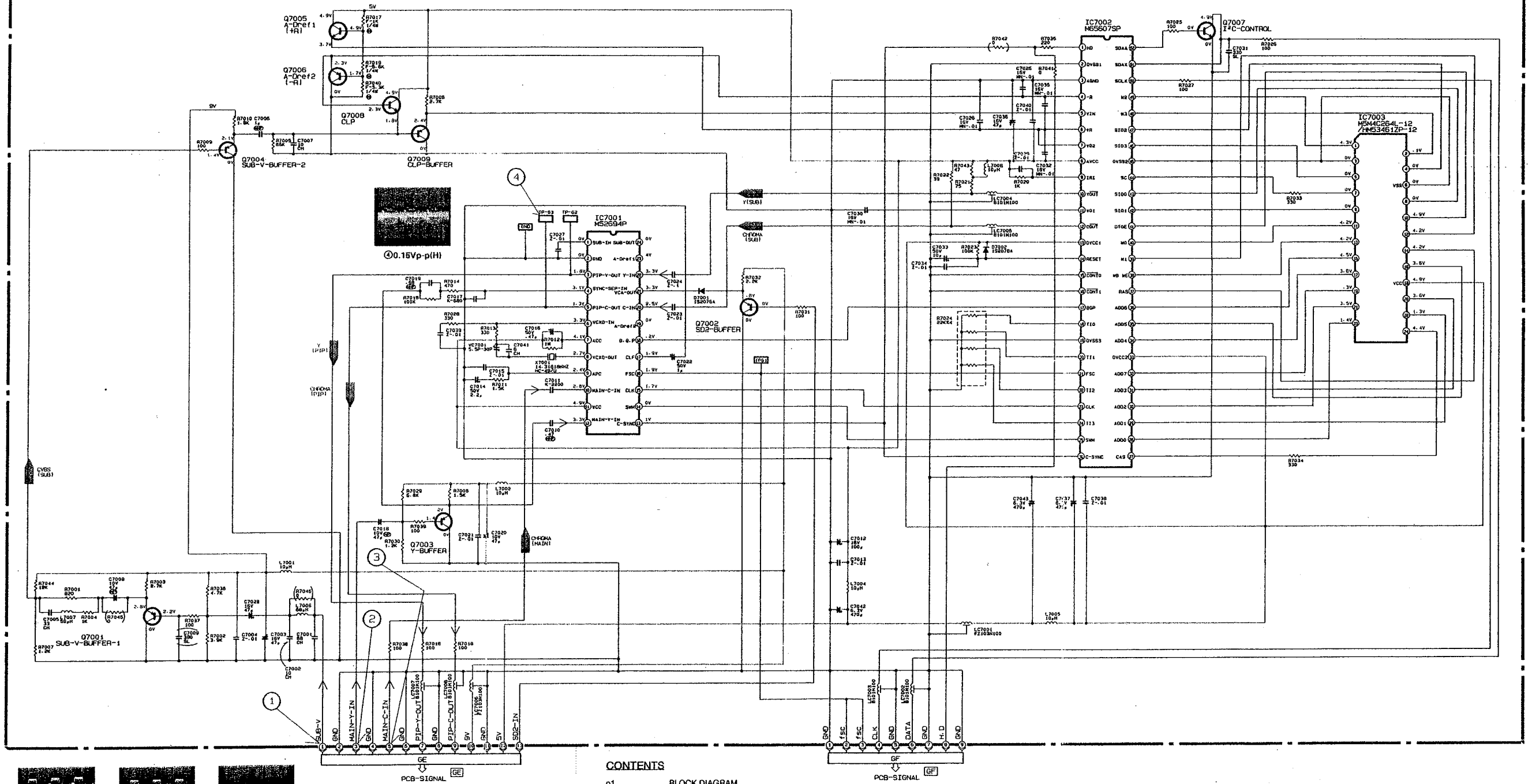
SPECIFIC SYMBOL

Zener Diode	Crystal unit
Varicap	Air Gap
Posistor	Part(resistor) attached on the copper-foil side of PCB
Thermistor	Ceramic filter
Fusible Resistor	

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THE SERVICE MANUAL. DON'T DEGRADE THE SAFETY OF THE RECEIVER THROUGH IMPROPER SERVICING.

SERVICE MAN WARNING
X-RADIATION PRECAUTION
THIS PRODUCT INCLUDES CRITICAL ELECTRICAL AND MECHANICAL PARTS ESSENTIAL FOR X-RADIATION PROTECTION.
TO AVOID POSSIBLE EXPOSURE TO X-RADIATION TAKE X-RADIATION PROTECTIVE MEASURES FOR PERSONNEL DURING SERVICING.
SEE SERVICE INSTRUCTIONS FOR SPECIFIED REPLACEMENT PARTS AND SERVICE ADJUSTMENTS.

PCB-PIP



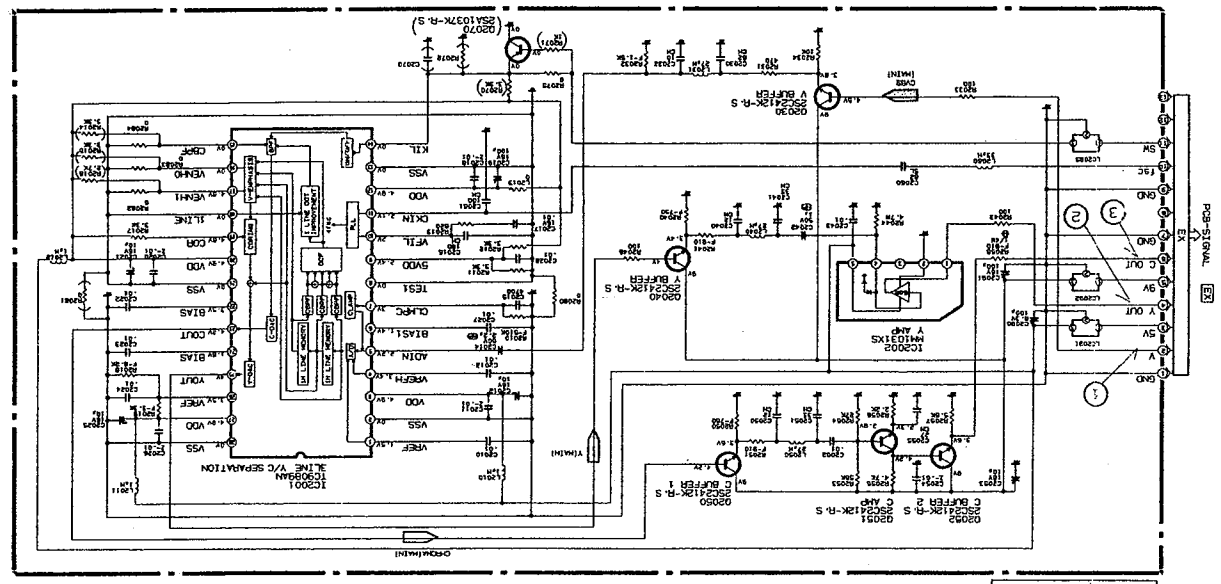
CONTENTS

p1 ..... BLOCK DIAGRAM
p2 ..... PIP
p3 ..... MAIN
p4 ..... SIGNAL
p5 ..... DBF,YCS3,CONT-1,CONT-2
FRONT-1,DISPLAY-1
PREAMP,CRT(R)(G)(B)
p6 ..... CONV

TRANSISTOR NOT REMARKED
PNP : 2SA1115-E,F/2SA933S-R
NPN : 2SC2603-E,F/2SC1740S-R

DIODE NOT REMARKED
1S2076A/1S2471M

VS-4643
VS-4644
VS-5043
VS-5044

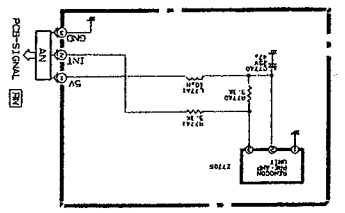


CONTENTS

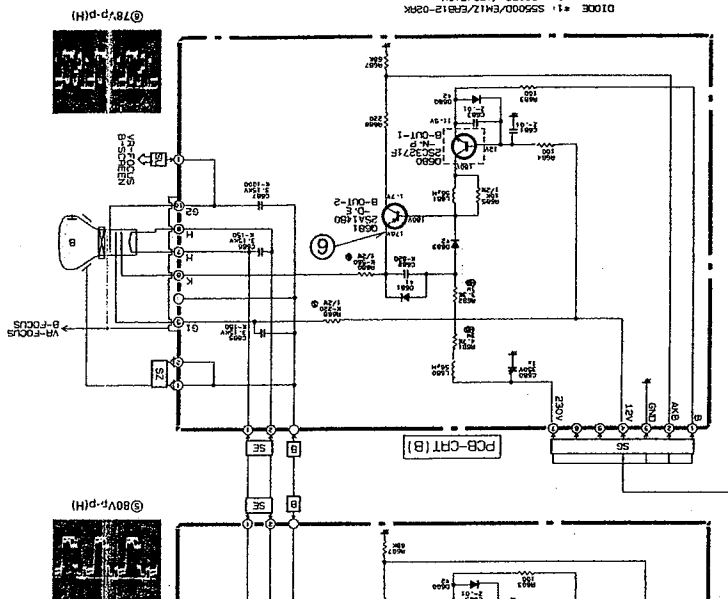
BLOCK DIAGRAM p1
PIP p2
MAIN p3
SIGNAL p4
DBF,YCS3,CONT-1,CONT-2 ..... p5
FRONT-1,DISPLAY-1 ..... p5
PREAMP,CRT(R)(G)(B) p5
CONV p6

VS-4643/VS-4644
VS-5043/VS-5044
VS-6043

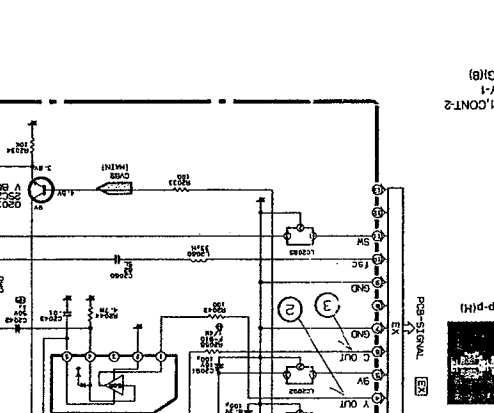
PCB-DISPLAY-1



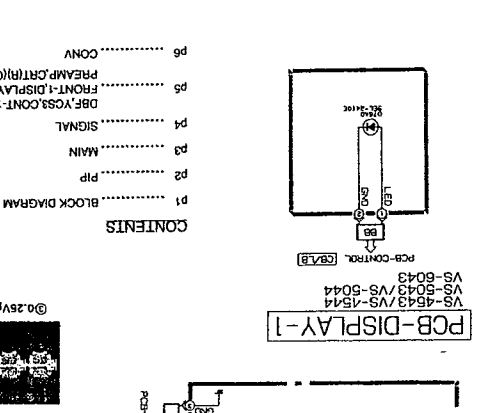
PCB-PREAMP ALL MODELS



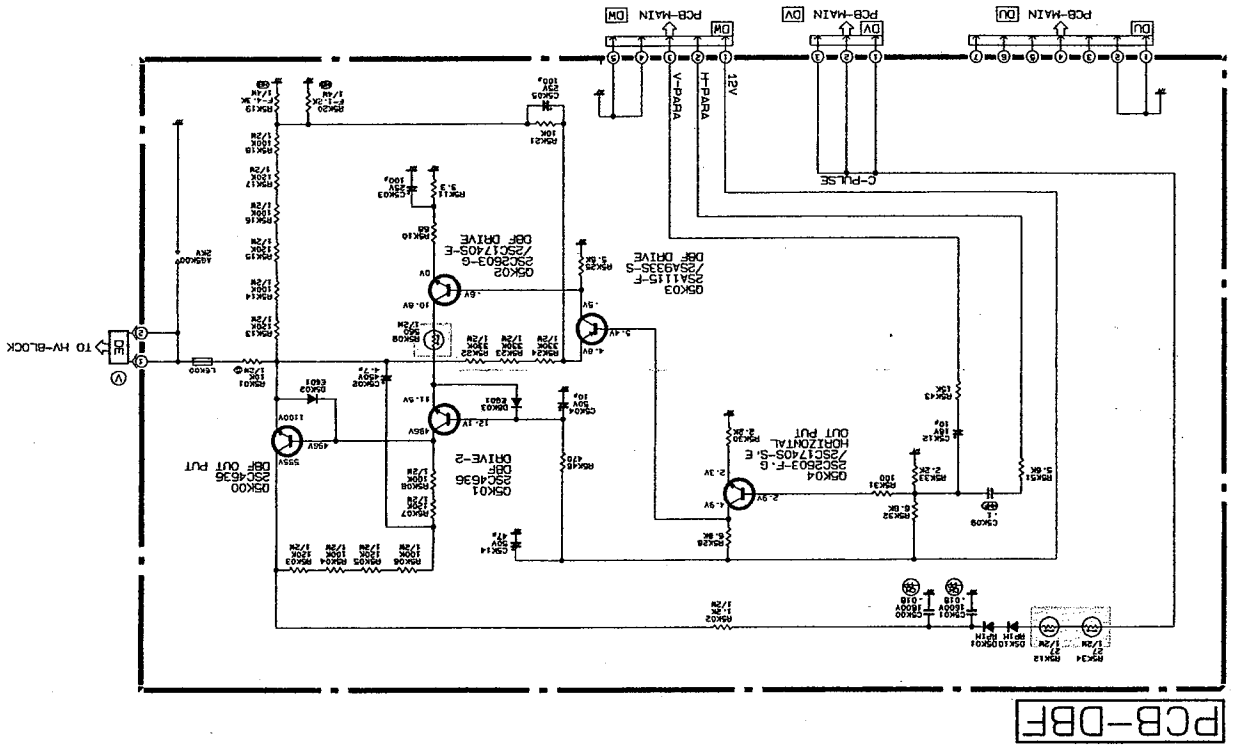
PCB-FRONT-1
VS-4543/VS-4544
VS-5043/VS-5044
VS-6043



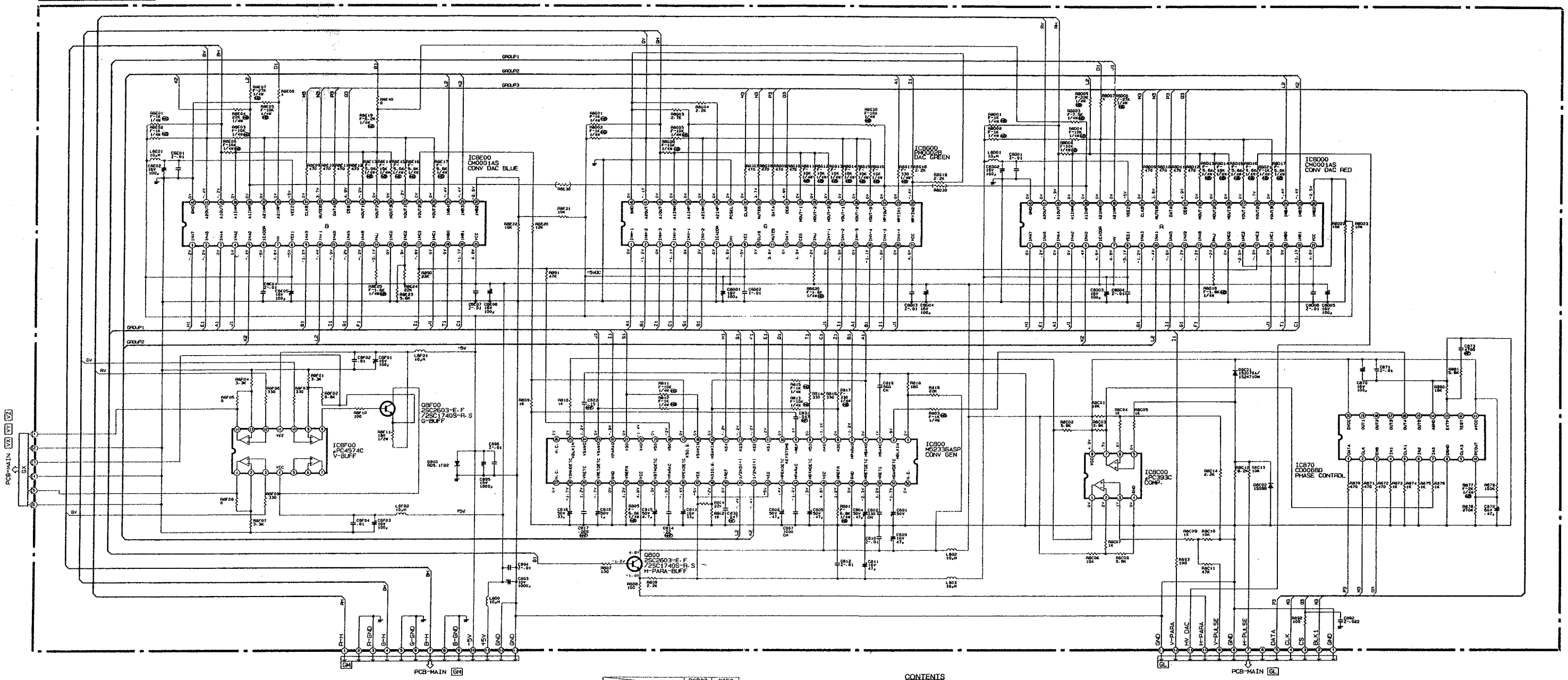
PCB-CONT-2
VS-4543/VS-4544



PCB-CONT-1
VS-5043/VS-5044
VS-6043



PCB-CONV



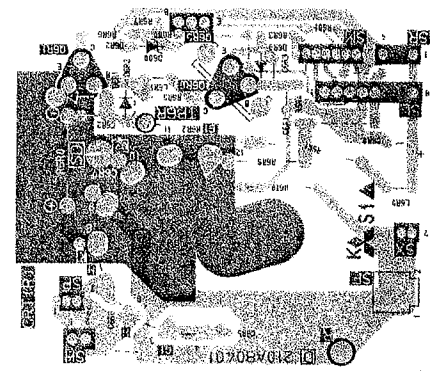
	R8D07	R8E8
VS-4543,VS-4544	F-5.1K 1/4W(MB)	F-5.1K 1/4W(MB)
VS-5043,VS-5044	F-5.1K 1/4W(MB)	F-5.1K 1/4W(MB)
VS-6043	F-9.1K 1/4W(MB)	F-7.5K 1/4W(MB)
TS-4545	F-5.1K 1/4W(MB)	F-5.1K 1/4W(MB)
TS-5045,TS-5545,VS-5047	F-5.1K 1/4W(MB)	F-5.1K 1/4W(MB)
VS-6047	F-6.2K 1/4W(MB)	F-5.6K 1/4W(MB)

CONTENTS

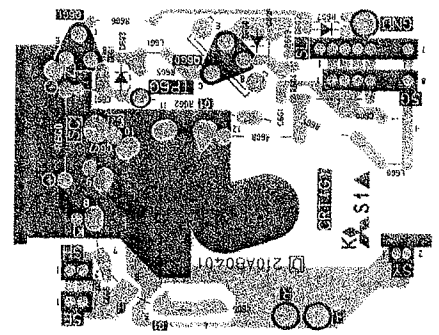
p1 ..... BLOCK DIAGRAM
p2 ..... PIP
p3 ..... MAIN
p4 ..... SIGNAL
p5 ..... DBF,YCS3,CONT-1,CONT-2 FRONT-1,DISPLAY-1 PREAMP,CRT(R)(G)(B)
p6 ..... CONV

VS-4543
VS-4544
VS-5043
VS-5044
VS-6043

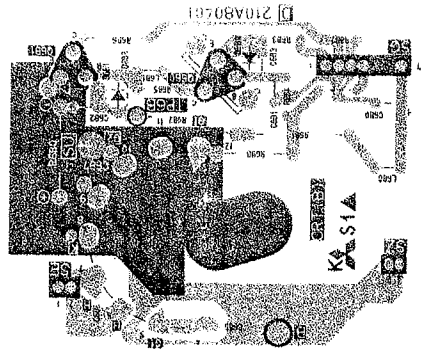
PCB-CRT(R)



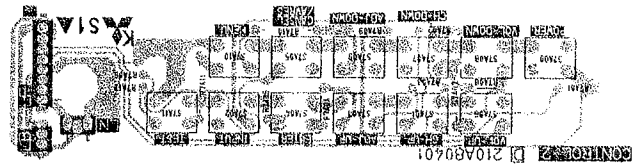
PCB-CRT(G)



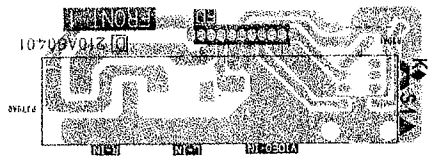
PCB-CRT(B)



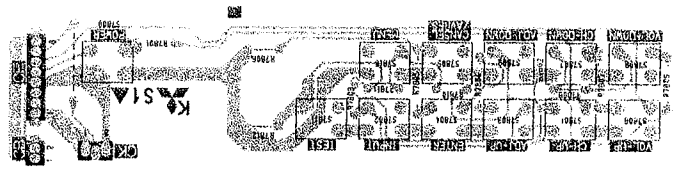
PCB-CONTROL-2 (for VS-4543,VS-4544)



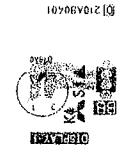
PCB-FRONT-1



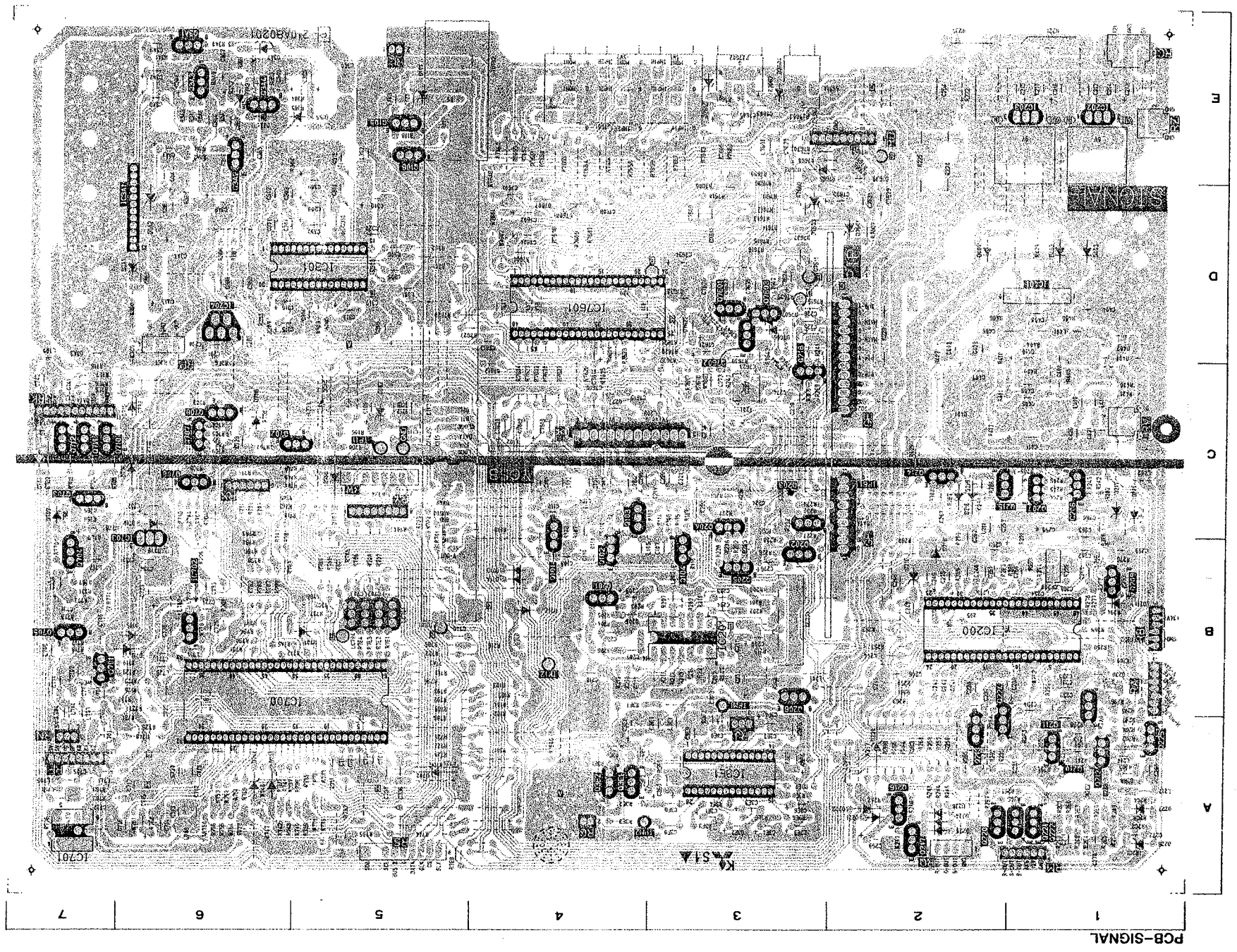
PCB-CONTROL-1 (for VS-5043,VS-5044,VS-6043)



PCB-DISPLAY-1



PCB-SIGNAL



SYMBOL NO.	ADDRESS
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D101	E-5
D102	C-5
D201	E-2
D210	B-2
D211	B-1
D216	B-2
D217	C-1
D218	C-2
D219	C-2
D220	A-2
D221	A-2
D222	A-2
D223	A-2
D224	A-2
D225	A-2
D226	A-1
D227	A-1
D341	D-6
D342	D-6
D343	E-6
D344	E-6
D345	E-5
D346	C-5
D347	E-6
D401	D-2
D402	D-1
D403	D-1
D701	B-5
D702	A-5
D703	A-6
D704	A-6
D705	B-6
D706	C-6
D707	C-5
D708	C-6
D709	C-7
D710	C-6
D711	B-6
D712	B-4
D713	B-4
D714	B-4
D715	C-6
D716	C-7
D7601	D-2
D7602	E-3
D7603	D-3
D7604	E-3
D7605	E-3
D7606	D-3
D7607	D-3
DL201	3-3
IC200	3-2
IC201	3-3
IC202	E-1
IC203	E-1
IC204	D-6

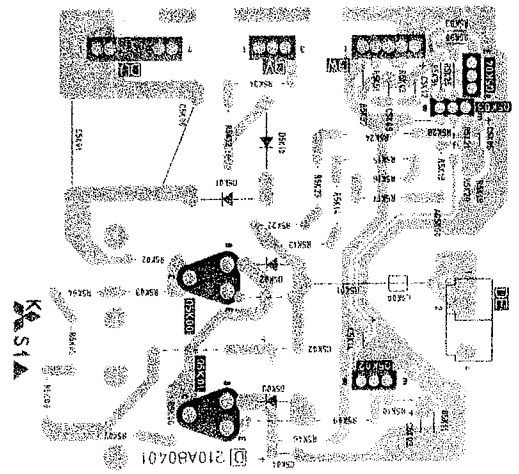
SYMBOL NO.	ADDRESS
IC301	D-5
IC341	D-6
IC3E1	A-3
IC401	D-1
IC601	D-4
IC700	B-6
IC701	A-7
IC702	B-6
IC703	B-6
IC7601	B-6
L101	C-4
L102	C-4
L103	E-5
L104	C-4
L105	B-4
L201	B-3
L202	B-3
L203	C-4
L204	C-4
L207	A-2
L208	C-4
L210	A-2
L211	C-2
L212	A-1
L213	A-1
L214	A-1
L215	B-2
L216	B-1
L301	D-5
L302	E-5
L3E1	A-3
L401	D-1
L402	C-1
L410	C-1
L411	C-1
L701	A-7
L702	B-7
L703	B-7
L704	B-7
L705	A-7
L706	B-7
L708	A-6
L709	B-6
L710	B-6
L711	B-6
L712	B-7
L713	A-7
L714	B-7
L7601	E-3
L7602	D-3
PJ7601	E-4
PJ7602	E-3
PJ7603	E-3

SYMBOL NO.	ADDRESS
Q101	B-4
Q102	B-4
Q103	C-4
Q104	B-3
Q105	E-5
Q201	B-4
Q202	B-3
Q203	C-3
Q204	C-3
Q205	B-3
Q206	C-1
Q207	C-1
Q208	B-3
Q209	B-1
Q210	A-1
Q211	A-1
Q212	A-1
Q213	A-2
Q214	C-2
Q215	C-2
Q216	A-2
Q217	A-2
Q218	D-3
Q220	A-2
Q222	A-1
Q224	B-2
Q225	A-1
Q3A1	E-6
Q3A2	E-6
Q3A3	E-6
Q3A4	E-6
Q3E1	A-4
Q701	B-7
Q702	C-6
Q703	C-7
Q704	B-7
Q705	B-7
Q706	C-6
Q707	C-6
Q708	C-6
Q710	C-7
Q711	C-7
Q712	C-7
Q7601	D-3
Q7602	D-3
Q7603	D-3
TP11	C-5
TP12	B-4
TP61	C-2
TPM2	A-4
TU101	B-5
TU102	E-4
TZ01	C-3

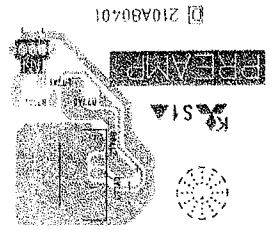
SYMBOL NO.	ADDRESS
X200	B-1
X701	A-6

VS-4543
VS-4544
VS-5043

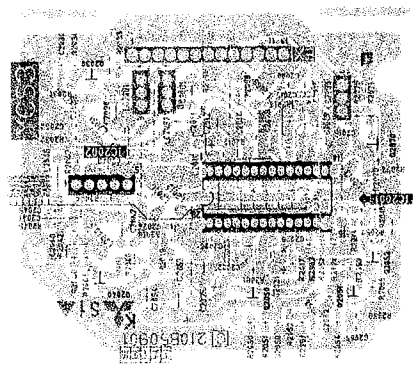
PCB-DBF



PCB-PREAMP



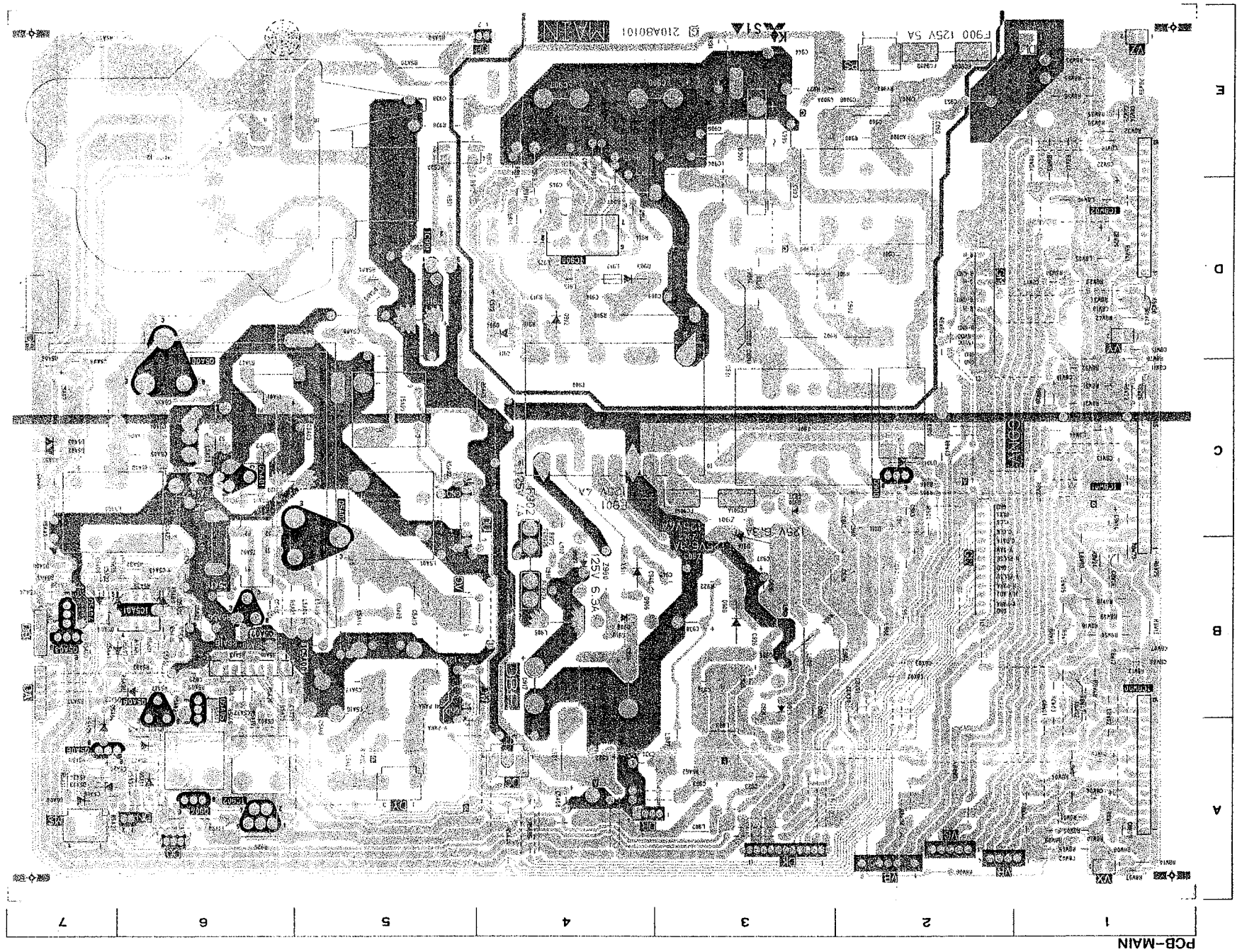
PCB-YC:S3



PCB-MAIN

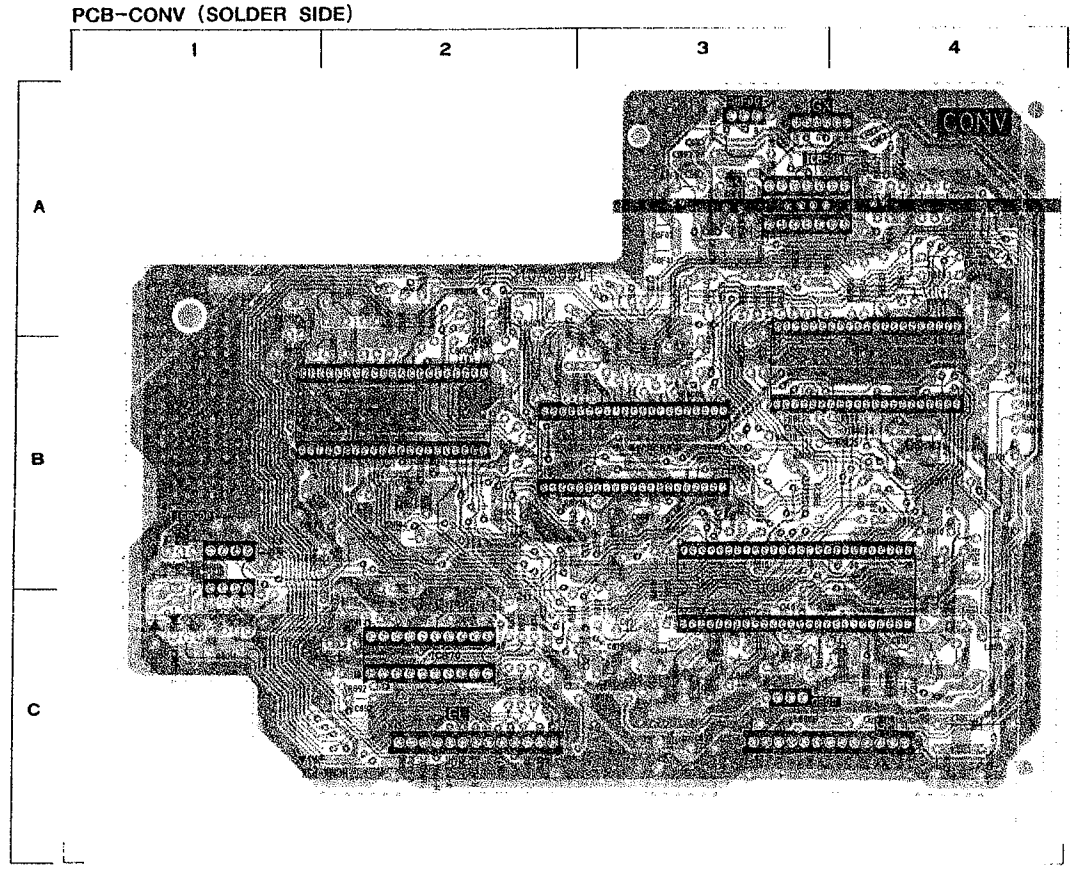
SYMBOL NO.	ADDRESS
A6900	E-2
D5A00	A-7
D5A02	C-7
D5A03	C-7
D5A04	B-7
D5A05	B-7
D5A06	B-7
D5A07	B-6
D5A09	B-7
D5A11	A-6
D5A20	B-6
D5A21	A-6
D5A22	B-6
D5A23	A-7
D900	E-3
D901	C-2
D903	D-4
D904	D-4
D906	B-4
D907	B-4
D908	B-4
D909	B-3
D910	C-3
D911	C-2
D912	D-4
D913	B-3
D914	B-3
F900	E-2
F901	C-4
F902	C-4
FC900A	E-2
FC900B	E-2
FC901A	C-3
FC901B	C-3
FC902A	B-4
FC902B	C-4
T5A01	B-6
T5A00	B-5
IC5A01	B-6
IC5A00	B-5
IC5A07	C-6
IC5A06	B-5
IC5A05	B-5
IC5A04	B-5
IC5A03	C-6
IC5A02	A-5
IC5A01	B-5
IC5A00	C-6
K900	C-2
IC902	A-6
IC901	D-5
IC900	D-4
IC8W02	D-1
IC8W01	C-1
IC8W00	B-1
L8W01	A-1
L8W02	A-1

SYMBOL NO.	ADDRESS
L8W03	B-1
L8W04	C-1
L8W05	D-1
L8W06	D-1
L900	D-3
L901	A-4
L902	A-3
L903	A-3
L904	B-2
L905	B-4
L906	B-2
L907	A-3
L908	B-3
L909	B-3
L910	B-4
L911	B-4
L912	D-4
L913	D-4
L914	D-4
L925	D-4
PC900	E-5
Q5A00	D-6
Q5A01	C-6
Q5A02	C-5
Q5A03	B-7
Q5A04	B-7
Q5A05	B-6
Q5A06	A-7
Q5A07	B-6
Q5A08	B-6
Q904	A-6
RV900	E-2
T5A00	C-5
T5A01	C-6
T5A02	B-6
T5A03	D-6
T900	C-4
T901	C-3
Z900	B-4
Z901	C-3
Z902	C-3
Z903	B-3



PCB-MAIN

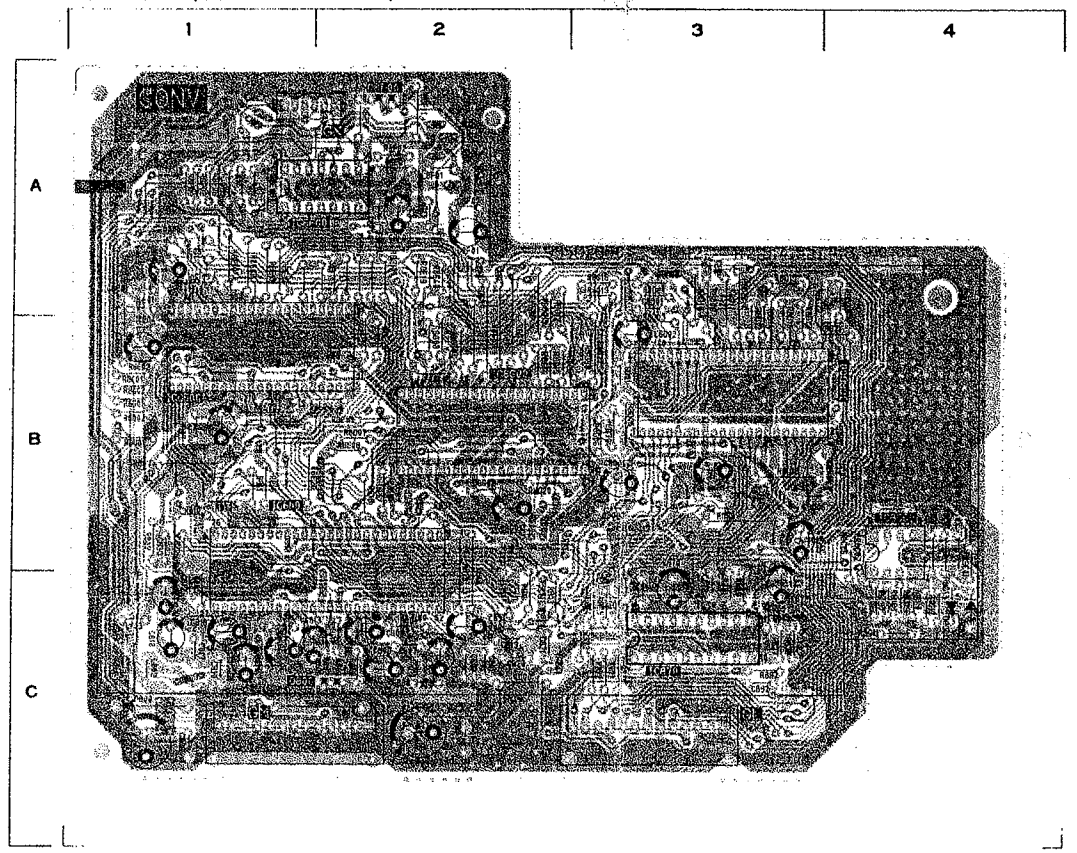
PCB-CONV (SOLDER SIDE)



PCB-CONV (SOLDER SIDE)

SYMBOL NO.	ADDRESS
D800	C-4
D8C01	C-1
D8C02	C-1
IC800	B-3
IC870	C-2
IC8C00	B-1
IC8D00	B-2
IC8E00	B-4
IC8F00	A-3
IC8G00	B-3
L800	C-3
L802	C-4
L803	C-4
L8D01	B-2
L8E01	A-4
L8F01	A-3
L8F02	A-3
Q800	C-3
Q8F00	A-3

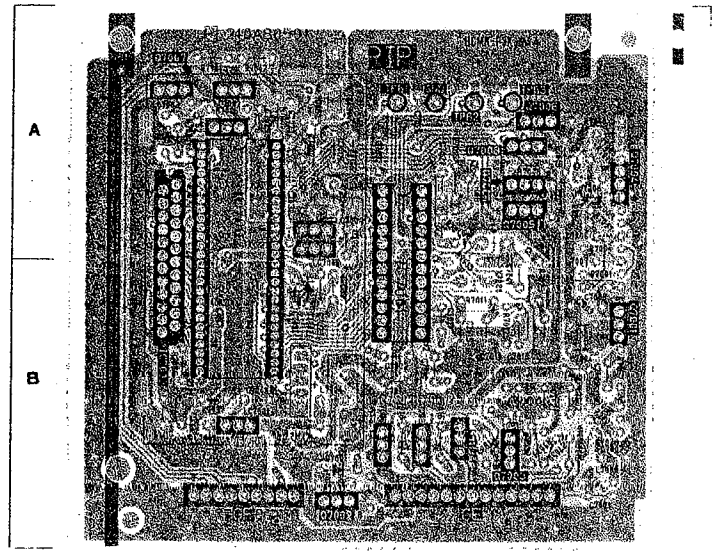
PCB-CONV (COMPONENT SIDE)



PCB-CONV (COMPONENT SIDE)

SYMBOL NO.	ADDRESS
D800	C-1
D8C01	C-4
D8C02	C-4
IC800	B-1
IC870	C-3
IC8C00	B-4
IC8D00	B-4
IC8E00	B-1
IC8F00	A-1
IC8G00	B-2
L800	C-2
L802	C-1
L803	C-1
L8D01	B-3
L8E01	A-1
L8F01	A-2
L8F02	A-2
Q800	C-1
Q8F00	A-2

PCB-PIP (SOLDER SIDE)

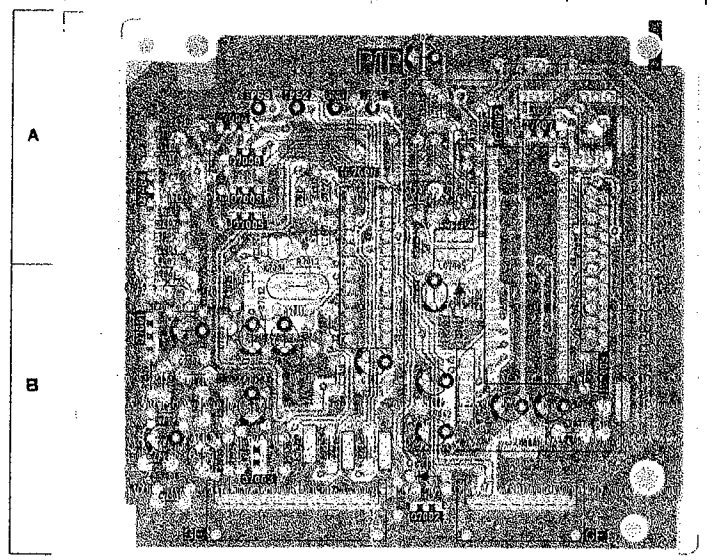


PCB-PIP (SOLDER SIDE)

SYMBOL NO.	ADDRESS
D7001	B-2
D7002	B-1
IC7001	B-2
IC7002	A-1
IC7003	B-1
L7001	B-2
L7002	B-2
L7004	B-2
L7005	B-1
L7006	B-3
L7007	B-2
L7008	A-1
LC7001	B-1
LC7002	A-1
LC7003	A-1
LC7004	A-2
LC7005	B-1
LC7006	B-2
LC7007	B-2
LC7008	B-2

SYMBOL NO.	ADDRESS
Q7001	B-3
Q7002	B-2
Q7003	B-2
Q7004	A-3
Q7005	A-2
Q7006	A-2
Q7007	A-1
Q7008	A-2
Q7009	A-2
TP61	A-2
TP62	A-2
TP63	A-2
VC7001	A-2
X7001	B-2

PCB-PIP (COMPONENT SIDE)

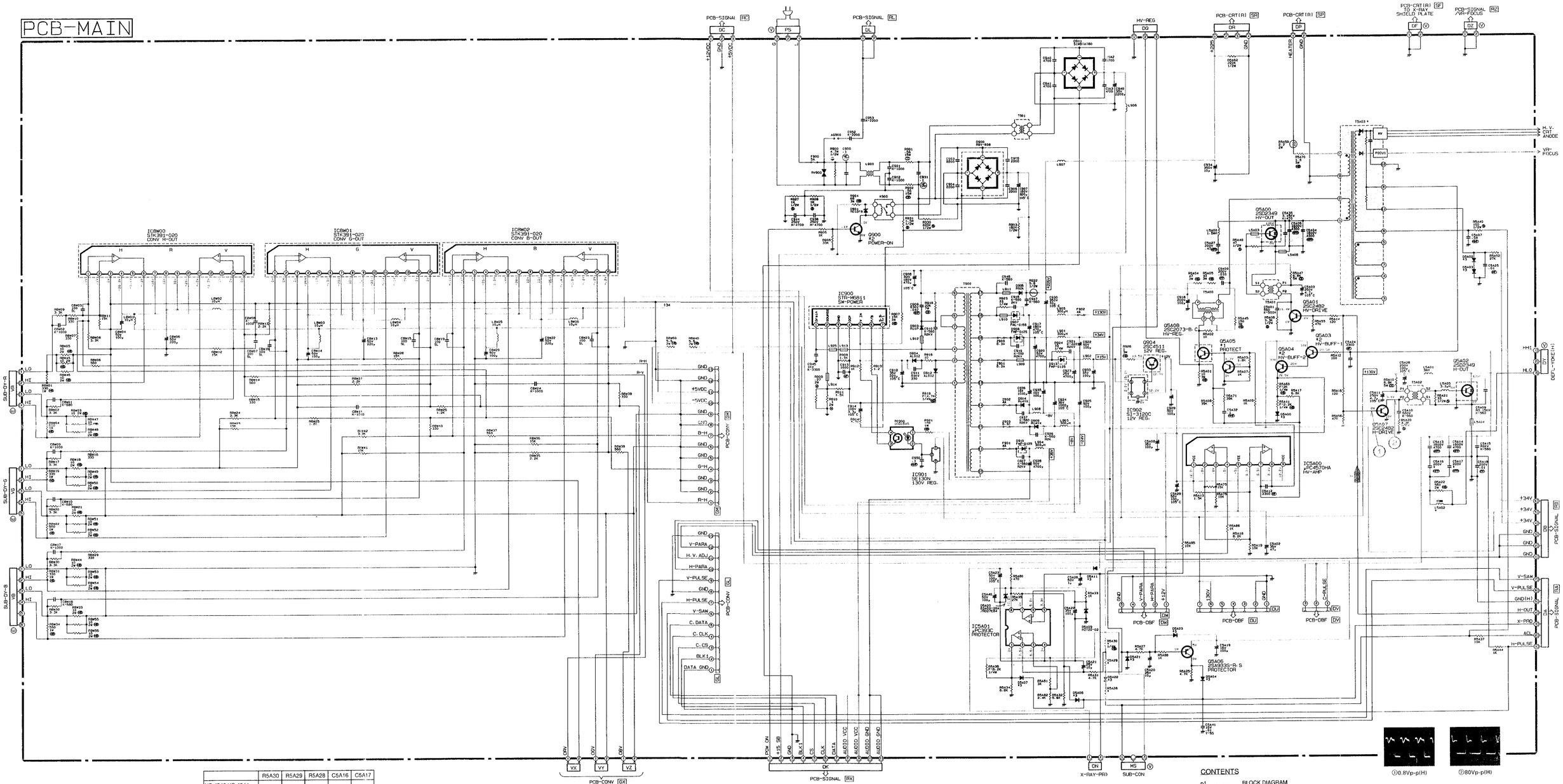


PCB-PIP (COMPONENT SIDE)

SYMBOL NO.	ADDRESS
D7001	B-2
D7002	B-2
IC7001	A-2
IC7002	A-2
IC7003	B-3
L7001	B-1
L7002	B-1
L7004	B-2
L7005	B-3
L7006	B-1
L7007	A-1
L7008	A-2
LC7001	B-2
LC7002	A-2
LC7003	A-3
LC7004	A-2
LC7005	B-2
LC7006	B-2
LC7007	B-1
LC7008	B-2

SYMBOL NO.	ADDRESS
Q7001	B-1
Q7002	B-2
Q7003	B-1
Q7004	A-1
Q7005	A-1
Q7006	A-1
Q7007	A-2
Q7008	A-1
Q7009	A-1
TP61	A-2
TP62	A-1
TP63	A-1
VC7001	A-1
X7001	A-1

PCB-MAIN



*1: 2SC2603-E·F/2SC1740S-R·S
*2: 2SC2603-G/2SC1740S-E
*3: 1S2471/1S2076A

	R5A30	R5A29	R5A28	C5A16	C5A17
VS-4543,VS-4544	F-3.6K	F-220	F-2.4K	0.15	0.15
VS-5043,VS-5044					
VS-6043					
TS-5045,TS-5545					
VS-5047,VS-6047					
TS-4545	F-3.6K	F-330	F-3.9K	0.22	0.22

CONTENTS

p1 ..... BLOCK DIAGRAM
p2 ..... PIP
p3 ..... MAIN
p4 ..... SIGNAL
p5 ..... DBF,YCS3,CONT-1,CONT-2 FRONT-1,DISPLAY-1 PREAMP,CRT(R)(G)(B)
p6 ..... CONV

PCB--SIGNAL

for I²C BUS ADJUSTMENT

FOR ADJUSTMENT

CONTENTS

p1 ..... BLOCK DIAGRAM
p2 ..... PIP
p3 ..... MAIN
p4 ..... SIGNAL
p5 ..... DBF,YCS3,CON-1,CONT-2 FRONT-1,DISPLY-1 PREAMP,CRT(H-(G)B)
p6 ..... CONV

DIODE NOT REMARKED: 1S2076A/1S2471DM

TRANSISTOR NOT REMARKED: PNP 2SA1115-E,F/2SA933S-R,S
NPN 2SC2603-E,F/2SC1740S-R,S

	R406	R401	R402	R421
VS-4543,VS-4544 VS-5043,VS-5044 VS-6043 TS-5045,TS-5545 VS-5047,VS-6047	6.8K	2W 2.2 (MB)	2W 2.7 (MB)	68
TS-4545	10K	2W 1.5 (MB)	2W 1.8 (MB)	100

①0.9Vp-p(H) ②3.0Vp-p(H) ③3.0Vp-p(H) ④3.5Vp-p(H) ⑤0.7Vp-p(H) ⑥2.0Vp-p(H) ⑦0.1Vp-p(V) ⑧2.5Vp-p(V)

VS-4543
VS-4544
VS-5043
VS-5044
VS-6043

④