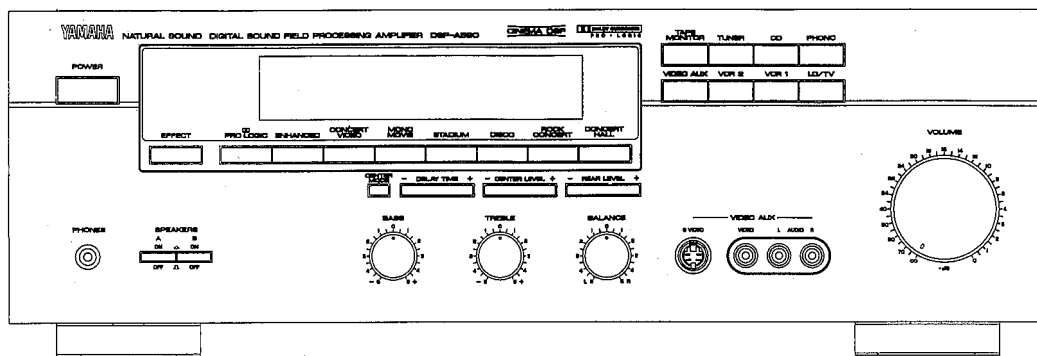
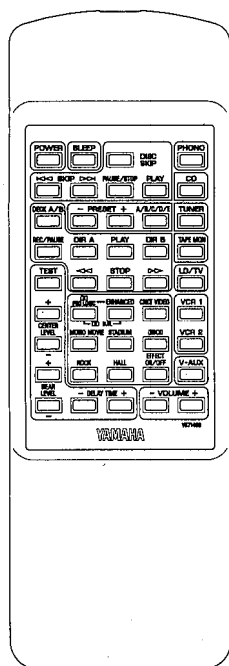


DIGITAL SOUND FIELD PROCESSING AMPLIFIER

DSP-A590

SERVICE MANUAL

DSP-A590



IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that all service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

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TO SERVICE PERSONNEL	1
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REMOTE CONTROL TRANSMITTER	40

100513

YAMAHA

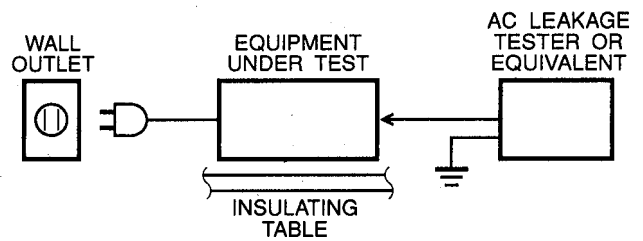
YAMAHA CORPORATION
P.O.Box 1, Hamamatsu, Japan

2.15K-384 ☐ Printed in Japan '95.3

■ TO SERVICE PERSONNEL

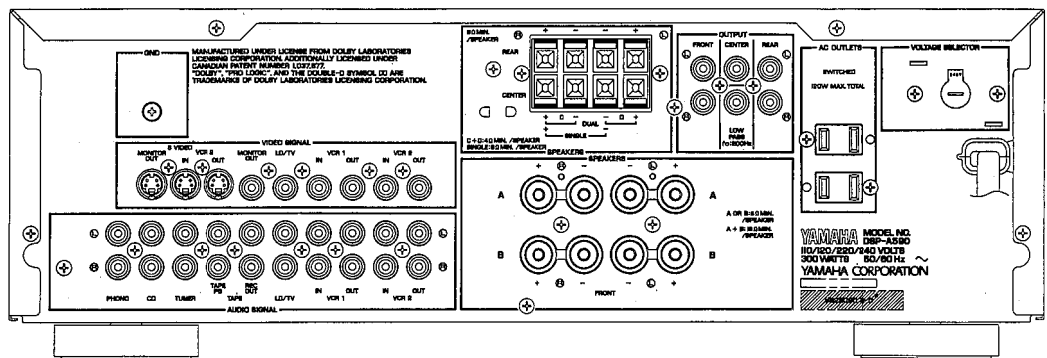
Critical Components Information.

Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.

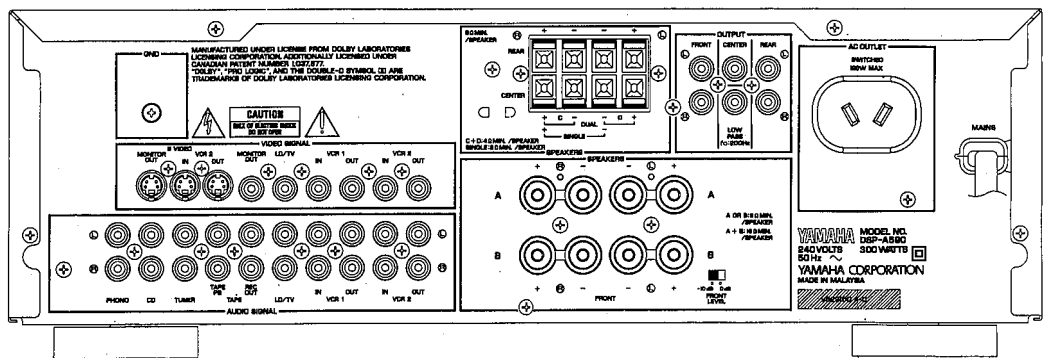


■ REAR PANELS

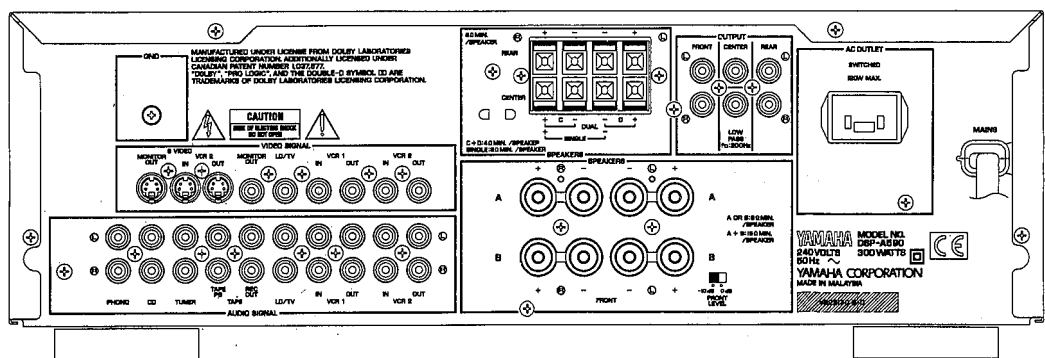
▼ R model



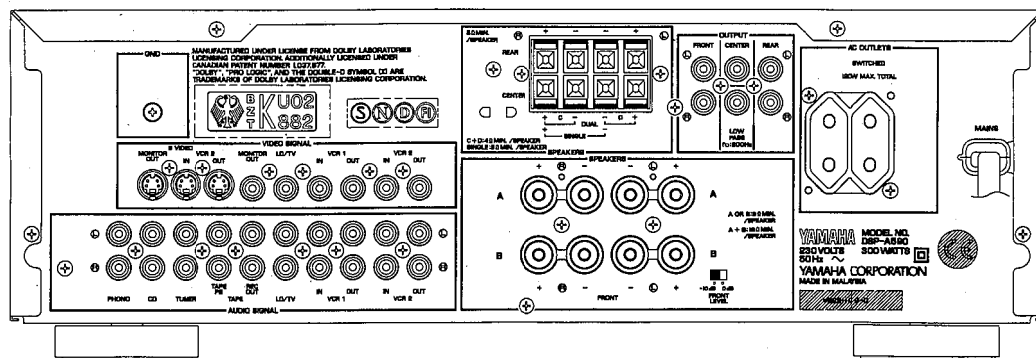
▼ A model



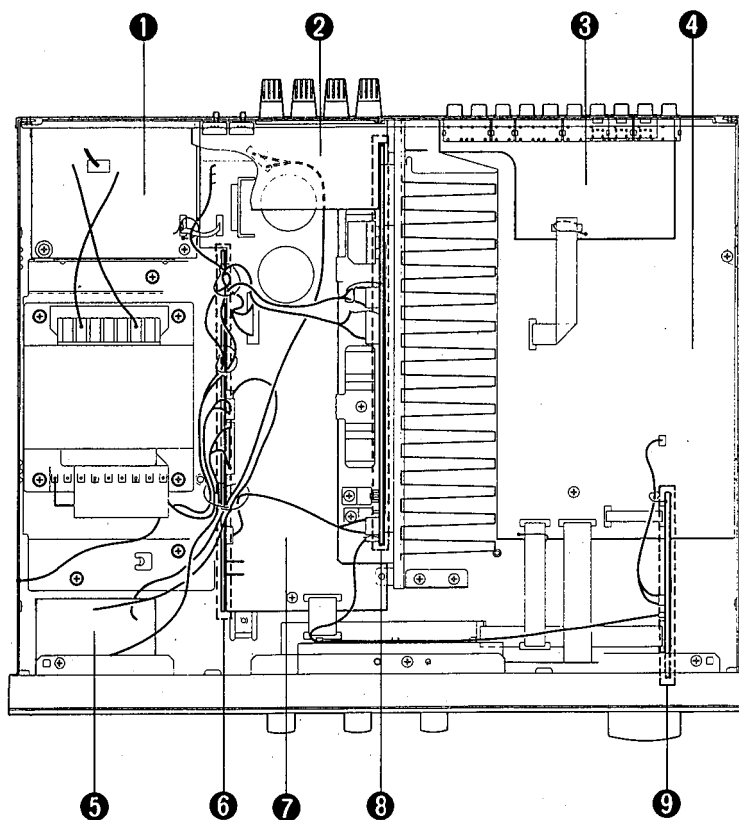
▼ B model



▼ G model



■ INTERNAL VIEW



- ① P. C. B. MAIN (6)
- ② P. C. B. MAIN (5)
- ③ P. C. B. DSP (3)
- ④ P. C. B. DSP (1)
- ⑤ P. C. B. MAIN (3)
- ⑥ P. C. B. MAIN (2)
- ⑦ P. C. B. MAIN (1)
- ⑧ P. C. B. MAIN (4)
- ⑨ P. C. B. DSP (2)

■ SPECIFICATIONS

Minimum RMS Output Power Per Channel	
FRONT (20Hz—20kHz, 0.04% THD, 8Ω)	70W
CENTER (20Hz—20kHz, 0.07% THD, 8Ω)	70W
REAR (1kHz, 0.3% THD, 8Ω)	20W
Maximum Power (R model)	
FRONT (1kHz, 10% THD, 8Ω)	105W
Dynamic Power Per Channel (by IHF Dynamic Headroom Measuring Method)	
FRONT (8Ω/6Ω/4Ω/2Ω)	95W/120W/150W/170W
DIN Standard Output Power Per Channel (G model)	
FRONT (1kHz, 0.7% THD, 4Ω)	100W
IEC Power (G model)	
FRONT (1kHz, 0.1% THD, 8Ω)	78W
Power Band Width	
FRONT (0.08% THD, 30W/8Ω)	10Hz—50kHz
Damping Factor	
FRONT (20Hz—20kHz, 8Ω)	80
Input Sensitivity/Impedance	
PHONO (MM)	2.5mV/47kΩ
CD etc	150mV/47kΩ
Maximum Input Signal (1kHz, 0.5% THD)	
PHONO (MM)	115mV
CD etc	2.2V
Output Level/Impedance (EFFECT OFF)	
REC OUT	150mV/1kΩ
PRE OUT (FRONT/CENTER/REAR)	2.2V/1.2kΩ
PRE OUT (LOW PASS)	3.5V/1.5kΩ
Headphone Jack Rated Output/Impedance	
Input 1kHz, 150mV, 8Ω	0.5V/390Ω
Frequency Response (20Hz—20kHz)	
CD etc. to FRONT L, R	0±0.5dB
RIAA Equalization Deviation(20Hz—20kHz)	
PHONO (MM)	0±0.5dB
Total Harmonic Distortion	
PHONO (MM) to REC OUT (20Hz—20kHz) 1V	0.02%
CD etc. to FRONT SP out	0.02%
20Hz—20kHz, 30W/8Ω (EFFECT OFF)	0.02%
CD etc. to REAR SP out (1kHz) 10W/8Ω	0.3%
Signal-to-Noise Ratio (IHF-A-Network)	
PHONO (MM), Input Shorted, (5mV), REC OUT	
R, A models	85dB
B, G models	82dB
CD etc, Input Shorted, EFFECT OFF, SP out	99dB
Residual Noise (IHF-A-Network)	
FRONT L, R SP out	140μV
Channel Separation (Vol -30dB, EFFECT OFF)	
PHONO (MM), Input Shorted, 1kHz/10kHz	60dB/50dB
CD etc, Input 5.1kΩ Shorted, 1kHz/10kHz	60dB/44dB
Tone Control Characteristics	
Bass Boost/Cut	±10dB (50Hz)
Turnover frequency	350Hz
Treble Boost/Cut	±10dB (20kHz)
Turnover frequency	3.5kHz
Filter Characteristics	
LPF	fc=200Hz, 6dB/oct
Gain Tracking Error (0dB to -60dB)	
	3dB

Video	
Video Signal Level	1Vp-p/75Ω
S-Video Signal Level	1Vp-p/75Ω
	0.286Vp-p/75Ω
Maximum Input Level	1.5Vp-p
S/N	50dB
Monitor Out Frequency Response	5Hz—10MHz, -3dB

Power Supply	
A, B models	AC240V 50Hz
G model	AC230V 50Hz
R model	AC110/120/220/240V 60/50Hz

Power Consumption	300W
--------------------------	------

AC Outlets	
2 Switched Outlets (R, G models)	120W max. total
1 Switched Outlet (A, B, models)	120W max.

Dimensions (W x H x D)	435 x 146 x 386mm (17-1/8" x 5-3/4" x 15-3/16")
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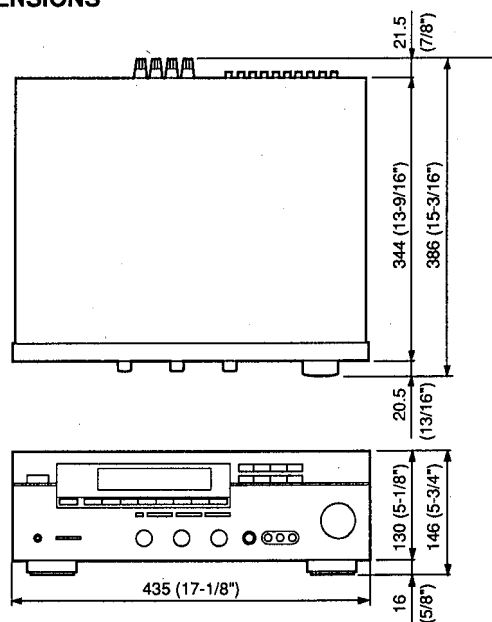
Weight	10.0kg (22 lbs.)
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*Specifications are subject to change without notice.

B *British model*
A *Australian model*
G *European model*
R *General model*

Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under Canadian patent number 1,037,877. "Dolby", "Pro Logic", and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

● DIMENSIONS



Unit : mm (inch)

■ DISASSEMBLY PROCEDURES (Remove parts in disassembly order as numbered.)

1. Removal of Top Cover

- a. Remove 4 screws (①) and 4 screws (②) in Fig. 1.

2. Removal of Bottom Cover

- a. Remove 6 screws (③) in Fig. 1.

3. Removal of Front Panel

- a. Remove 4 knobs.
b. Remove 6 screws (④) in Fig. 1.

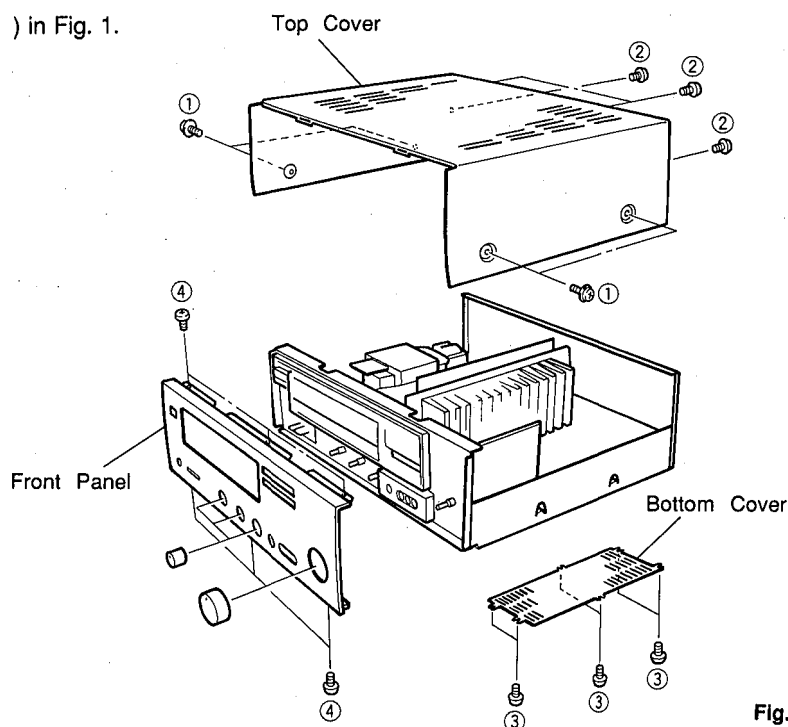


Fig. 1

■ SELF CHECK MODE

This model has the SELF CHECK MODE for facilitating measurement and inspection.

HOW TO START

Turn the POWER switch ON while pressing the DOLBY PRO LOGIC, ENHANCED, CONCERT VIDEO keys simultaneously, and then the unit enters the SELF CHECK MODE. (FL displays "1 SELF")

HOW TO EXIT

Turning the POWER switch OFF or pressing the CONCERT HALL key cancels the SELF CHECK MODE. (The unit enters normal mode)

CONTENTS OF SELF CHECK MODE

No.	Menu	Sub Menu	Select Key
1	MAIN BYPASS		☒ PRO LOGIC
2	FRONT EFFECT		ENHANCED
3	MAIN DSP		CONCERT VIDEO
4	DISPLAY CHECK and EFFECT OFF		MONO MOVIE
5	MANUAL TEST TONE	LEFT/CENTER/RIGHT/SURROUND	STADIUM
6	DOLBY PRO LOGIC		DISCO
7	KEEP DATA	FACTORY PRESET	ROCK CONCERT
(8)	The SELF CHECK MODE is cancelled and returns to the normal operation mode. (MODE EXIT)		CONCERT HALL

HOW TO USE SELF CHECK MODE

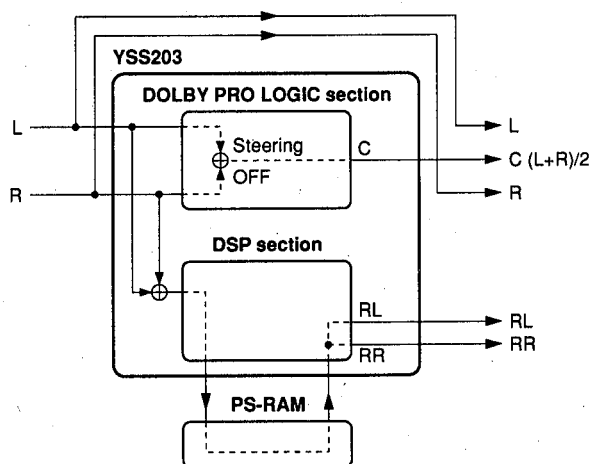
In order to confirm characteristics (specifications) listed in the table below, use SELF NO. 1, 3 and 4. (For specifications, refer to page 3.)

No.	Items
1	• Output Level/Impedance • Frequency Response • Total Harmonic Distortion (Rec Out & Front) • S/N
3	• Minimum RMS Output Power Per Channel (Center & Rear) • Total Harmonic Distortion (Rear)
4	• Minimum RMS Output Power Per Channel (Front) • Input Sensitivity/Impedance • Headphone Jack Rated Output/Impedance • Channel Separation • Tone Control Characteristics

DETAILS OF SELF CONTENT

SELF 1 MAIN BYPASS

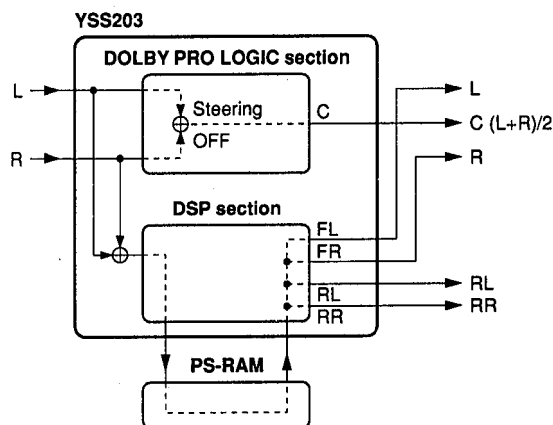
- L/R is output through the bypass.
- CENTER is output with the steering OFF and (L+R)/2.
- RL/RR passes through the PS-RAM and is output through the DSP.
- CENTER level and REAR level are 60 (-10dB).
- FL displays "1 SELF"



CD INPUT : 1kHz, -20dB
 VOLUME : MAX
 PRE OUT : FRONT +3.3dB±1dB
 : REAR -6.2dB±1dB
 : CENTER -6.2dB±1dB

SELF 2 FRONT EFFECT

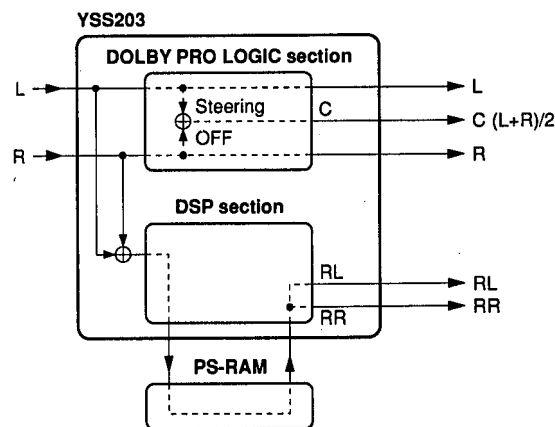
- L/R and RL/RR pass through the PS-RAM and are output through the DSP.
- CENTER is output with the steering OFF and (L+R)/2.
- CENTER level and REAR level are 60 (-10dB).
- FL displays "2 SELF"



CD INPUT : 1kHz, -20dB
 VOLUME : MAX
 PRE OUT : FRONT +3.3dB±1dB
 : REAR -6.2dB±1dB
 : CENTER -6.5dB±1dB

SELF 3 MAIN DSP

- L/R is output with the steering OFF.
- CENTER is output with the steering OFF and (L+R)/2.
- RL/RR passes through the PS-RAM and is output through the DSP.
- CENTER level and REAR level are 100 (+10dB).
- FL displays "3 SELF"



CD INPUT : 1kHz, -35dB
 VOLUME : MAX
 PRE OUT : FRONT -11.7dB±1dB
 : REAR -1.2dB±1dB
 : CENTER -1.2dB±1dB

SELF 4 DISPLAY CHECK and EFFECT OFF

- Every FL segment turns ON for 3 second.
- L/R is output through the bypass.
- FL displays "4 SELF"

CD INPUT : 1kHz, -35dB
 VOLUME : MAX
 PRE OUT : FRONT -11.6dB±1dB
 : REAR -∞dB
 : CENTER -∞dB

SELF 5 MANUAL TEST TONE

- Every time STADIUM key is pressed, the TEST TONE shifts in the order of $\rightarrow L \rightarrow C \rightarrow R \rightarrow S$ and is output.
- The FL displays "L", "C", "R", "S" respectively, the "5 SELF" and "TEST" indicators flash.

SELF 6 DOLBY PRO LOGIC

- The auto input balance which is ON in the normal mode is turned OFF.
- CENTER MODE is changed by pressing the DISCO key or the CENTER MODE key.
- The FL displays "6 SELF" and the center mode.

SELF 7 KEEP DATA and PRESET

- When the unit enters the SELF 7, "7 KEEP DATA" appears on the display. And by pressing again the ROCK CONCERT key, the unit enters the PRESET MODE. In this mode, by turning off the POWER, FACTORY PRESET will be done.

- **Factory Preset**

1) **SURROUND section**

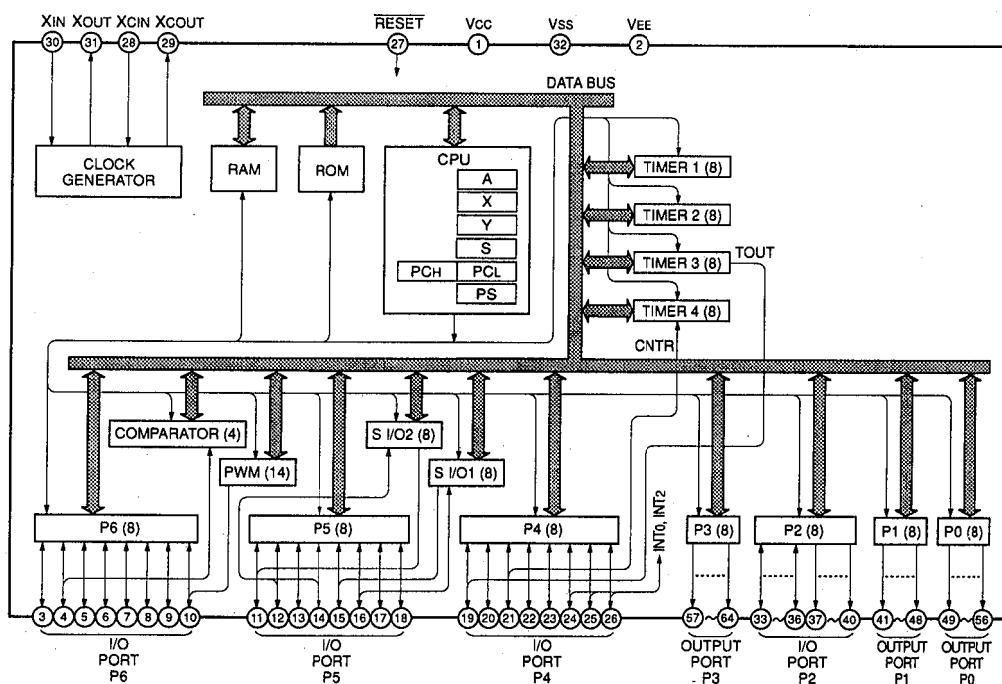
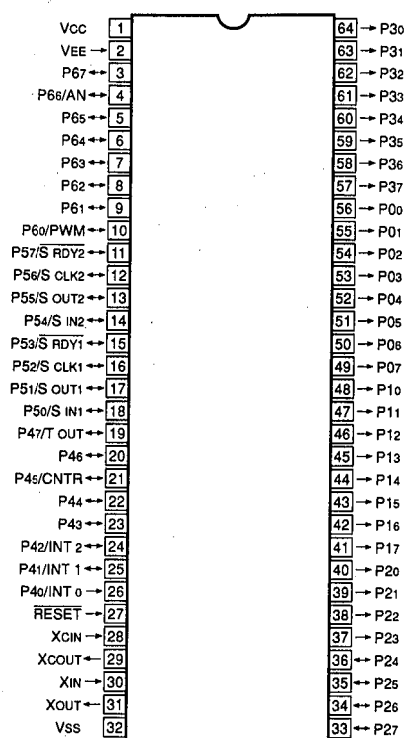
DELAY TIME	: ☐ PRO LOGIC	20ms
	ENHANCED	20ms
	CONCERT VIDEO	28ms
	MONO MOVIE	20ms
	STADIUM	45ms
	DISCO	14ms
	ROCK CONCERT	17ms
	CONCERT HALL	30ms

CENTER MODE	: NORMAL
VOLUME LEVEL	: CENTER 80
	REAR 80

2) **SELECTOR section**

INPUT	: CD
VIDEO (BGV)	: LD/TV

IC903 : M38102M4-621SP
8 bit μ -COM



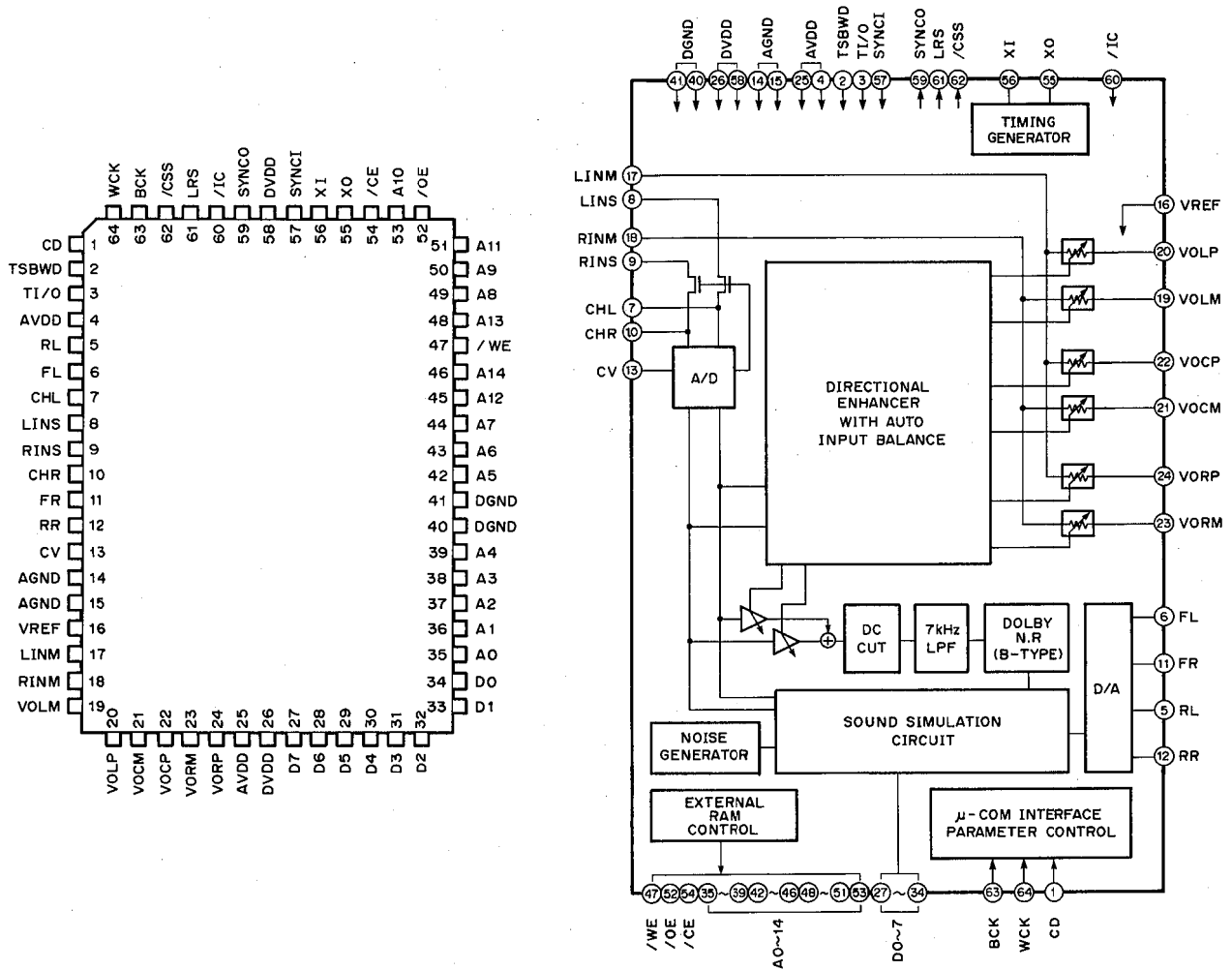
No.	Port	Name	I/O	Function	Logic
1	Vcc	VCC	—	+5V	
2	Vee	VEE	—	-V(-25V)	
3	P67	FMT	O	FULL MUTE out	L : ON
4	P66		—	N.C.	
5	P65	SPRY	O	Speaker relay out	H : ON
6	P64	PRY	O	Power relay out	H : ON
7	P63	PSW	I	Power switch in	H : ON
8	P62	PRT1	I	Protection 1 detect (The power turns OFF if "L" 2 seconds after the power is turned ON.)	L : PRT

No.	Port	Name	I/O	Function		Logic																																																														
9	P61	PRT2	I	Protection 2 detect (The power turns OFF if "H" after the power is turned ON.)		H : PRT																																																														
10	P60	PDET	I	Power down detect		L : DOWN																																																														
11	P57	STBY	I/O	Standby In : H (G model)	L : LED ON																																																															
12	P56	SCK	O	SCLK 2 serial clock																																																																
13	P55	SDT	O	SOUT 2 serial data																																																																
14	P54		—	N.C.																																																																
15	P53	RDSSEL(S16)	I/O	RDS select (H : RDS) GND																																																																
16	P52		—	N.C.																																																																
17	P51		—																																																																	
18	P50		—																																																																	
19	P47		—																																																																	
20	P46		—																																																																	
21	P45	CKB	O	BU2090 clock out																																																																
22	P44	DTB	O	BU2090 data out																																																																
23	P43	VOLU	O	VOL UP out																																																																
24	P42	VOLD	O	VOL DOWN out																																																																
25	P41	AVX/RX	I	Model select (H : AVX model)	+5V																																																															
26	P40	REM	I	Remote control signal input																																																																
27	RESET	RESET	I	Reset		L : Reset																																																														
28	XCI	XCIN	I	GND																																																																
29	XCO	XCOUT	O	N.C.																																																																
30	XIN	XIN	I	Clock (4MHz)																																																																
31	XOUT	XOUT	O																																																																	
32	VSS	VSS	—	GND																																																																
33	P27	K4	I	Key matrix in	<table><tr><td></td><td>K1</td><td>K2</td><td>K3</td><td>K4</td></tr><tr><td>D3</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>D4</td><td>PRO LOGIC</td><td>ENHANCED</td><td>CONCERT VIDEO</td><td>MONO MOVIE</td></tr><tr><td>D5</td><td>STADIUM</td><td>DISCO</td><td>ROCK CONCERT</td><td>CONCERT HALL</td></tr><tr><td>D6</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>D7</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>D8</td><td>EFFECT</td><td>CENTER MODE</td><td>DELAY TIME -</td><td>DELAY TIME +</td></tr><tr><td>D9</td><td>CENTER LEVEL -</td><td>CENTER LEVEL +</td><td>REAR LEVEL -</td><td>REAR LEVEL +</td></tr><tr><td>D10</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>D11</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>D12</td><td>V-AUX</td><td>VCR2</td><td>VCR1</td><td>LD/TV</td></tr><tr><td>D13</td><td>TAPE MONITOR</td><td>TUNER</td><td>CD</td><td>PHONO</td></tr></table>					K1	K2	K3	K4	D3	—	—	—	—	D4	PRO LOGIC	ENHANCED	CONCERT VIDEO	MONO MOVIE	D5	STADIUM	DISCO	ROCK CONCERT	CONCERT HALL	D6	—	—	—	—	D7	—	—	—	—	D8	EFFECT	CENTER MODE	DELAY TIME -	DELAY TIME +	D9	CENTER LEVEL -	CENTER LEVEL +	REAR LEVEL -	REAR LEVEL +	D10	—	—	—	—	D11	—	—	—	—	D12	V-AUX	VCR2	VCR1	LD/TV	D13	TAPE MONITOR	TUNER	CD	PHONO
	K1	K2	K3						K4																																																											
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D8	EFFECT	CENTER MODE	DELAY TIME -	DELAY TIME +																																																																
D9	CENTER LEVEL -	CENTER LEVEL +	REAR LEVEL -	REAR LEVEL +																																																																
D10	—	—	—	—																																																																
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34	P26	K3	I																																																																	
35	P25	K2	I																																																																	
36	P24	K1	I																																																																	
37	P23	D13	O	Fluorescent character display tube anode drive signal & Key scan digit																																																																
38	P22	D12	O																																																																	
39	P21	D11	O																																																																	
40	P20	D10	O																																																																	
41	P17	D9	O																																																																	
42	P16	D8	O																																																																	
43	P15	D7	O																																																																	
44	P14	D6	O																																																																	
45	P13	D5	O																																																																	
46	P12	D4	O																																																																	
47	P11	D3	O																																																																	
48	P10	D2	O																																																																	
49	P07	D1	O																																																																	
50	P06	S15	O	Fluorescent character display tube grid drive signal	H : ON																																																															
51	P05	S14	O		H : ON																																																															
52	P04	S13	O		H : ON																																																															
53	P03	S12	O		H : ON																																																															
54	P02	S11	O		H : ON																																																															
55	P01	S10	O		H : ON																																																															
56	P00	S9	O		H : ON																																																															
57	P37	S8	O		H : ON																																																															
58	P36	S7	O		H : ON																																																															
59	P35	S6	O		H : ON																																																															
60	P34	S5	O		H : ON																																																															
61	P33	S4	O		H : ON																																																															
62	P32	S3	O		H : ON																																																															
63	P31	S2	O		H : ON																																																															
64	P30	S1	O		H : ON																																																															

IC17 : YSS203B

Digital Dolby Pro Logic Decoder with Auto Input Balance

DSP-A590



No.	Name	I/O	Function
1	CD	I _{ts}	Serial data of parameter data input
2	TSBWD	I _c	LSI test terminal Normally connected to DVDD terminal
3	TI/O	I _c	LSI test terminal Normally connected to DVDD terminal
4	AVDD	A—	+5V power supply (D/A, A/D section)
5	RL	AO	RL channel D/A output
6	FL	AO	FL channel D/A output
7	CHL	A—	LINS input Sample/hold Capacitor external terminal
8	LINS	AI	L channel A/D input
9	RINS	AI	R channel A/D input
10	CHR	A—	RINS input Sample/hold Capacitor external terminal
11	FR	AO	FR channel D/A output
12	RR	AO	RR channel D/A output
13	CV	AO	A/D, multiplying DAC center voltage
14	AGND	A—	Ground (D/A, A/D section)
15	AGND	A—	Ground (Multiplying DAC section)
16	VREF	AI	Multiplying DAC reference voltage input
17	LINM	AI	L channel Multiplying DAC input
18	RINM	AI	R channel Multiplying DAC input
19	VOLM	AO	L channel operation amplifier, connected to (–) terminal
20	VOLP	AO	L channel operation amplifier, connected to (+) terminal

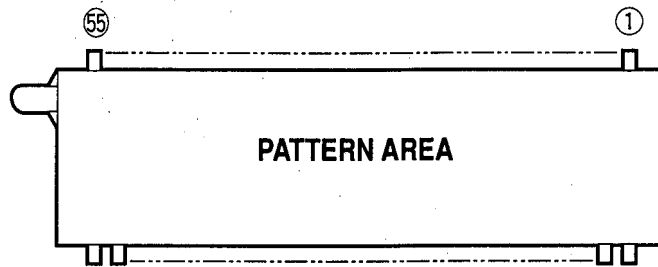
No.	Name	I/O	Function
21	VOCM	AO	C channel operation amplifier, connected to (–) terminal
22	VOCP	AO	C channel operation amplifier, connected to (+) terminal
23	VORM	AO	R channel operation amplifier, connected to (–) terminal
24	VORP	AO	R channel operation amplifier, connected to (+) terminal
25	AVDD	A—	+5V power supply (multiplying DAC section)
26	DVDD	—	+5V power supply (digital section)
27	D7	I/Ot	External delay RAM data terminal
28	D6	I/Ot	External delay RAM data terminal
29	D5	I/Ot	External delay RAM data terminal
30	D4	I/Ot	External delay RAM data terminal
31	D3	I/Ot	External delay RAM data terminal
32	D2	I/Ot	External delay RAM data terminal
33	D1	I/Ot	External delay RAM data terminal
34	D0	I/Ot	External delay RAM data terminal
35	A0	O	External data RAM address terminal
36	A1	O	External data RAM address terminal
37	A2	O	External data RAM address terminal
38	A3	O	External data RAM address terminal
39	A4	O	External data RAM address terminal
40	DGND	—	Ground (digital section)
41	DGND	—	Ground (digital section)
42	A5	O	External data RAM address terminal
43	A6	O	External data RAM address terminal
44	A7	O	External data RAM address terminal
45	A12	O	External data RAM address terminal
46	A14	O	External data RAM address terminal
47	/WE	O	External delay RAM write enable terminal
48	A13	O	External delay RAM address terminal
49	A8	O	External delay RAM address terminal
50	A9	O	External delay RAM address terminal
51	A11	O	External delay RAM address terminal
52	/OE	O	External delay RAM output enable terminal
53	A10	O	External delay RAM address terminal
54	/CE	O	External delay RAM chip enable terminal
55	XO	O	Crystal oscillator connecting terminal
56	XI	I	Crystal oscillator connecting terminal
57	SYNCI	It	Test terminal for system synchronization, normally connected to DVDD
58	DVDD	—	+5V power supply (digital section)
59	SYNCO	O	Test terminal for system synchronization, normally unconnected
60	/IC	Ics	Initial clear terminal (Power ON resetting is necessary)
61	LRS	O	External automatic input balance terminal, normally unconnected
62	/CSS	O	External automatic input balance terminal, normally unconnected
63	BCK	I _{ts}	Bit clock for parameter data input
64	WCK	I _{ts}	Word clock for parameter data input

Note : Letters used in the above I/O column represent as follows.

I : Input terminal O : Output terminal t : TTL level
c : CMOS level s : Schmitt input A : Analog terminal

■ DISPLAY DATA

● V901 : 13-BT-137(VS550600)

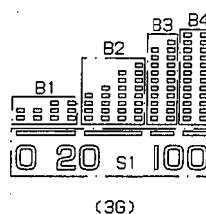
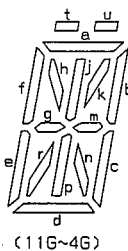
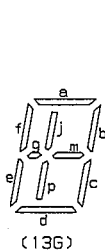
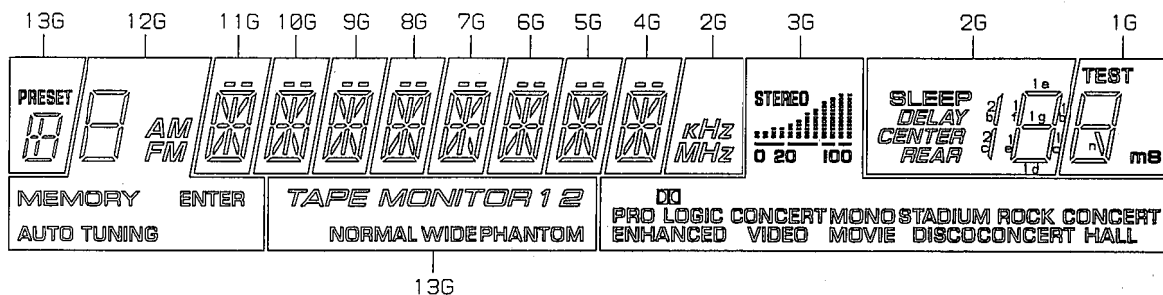


● PIN CONNECTION

Pin No.	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37
Connection	F2	F2	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15
Pin No.	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18
Connection	P16	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Pin No.	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
Connection	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	F1	F1		

Note 1) F1, F2 Filament 3) NC No Connection 5) 1G~13G Grid
 2) NP No Pin 4) P1~P16 Datum Line

● GRID ASSIGNMENT

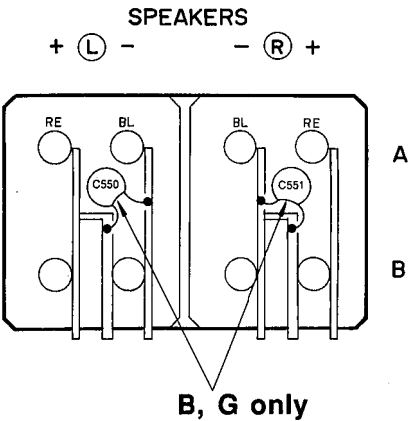
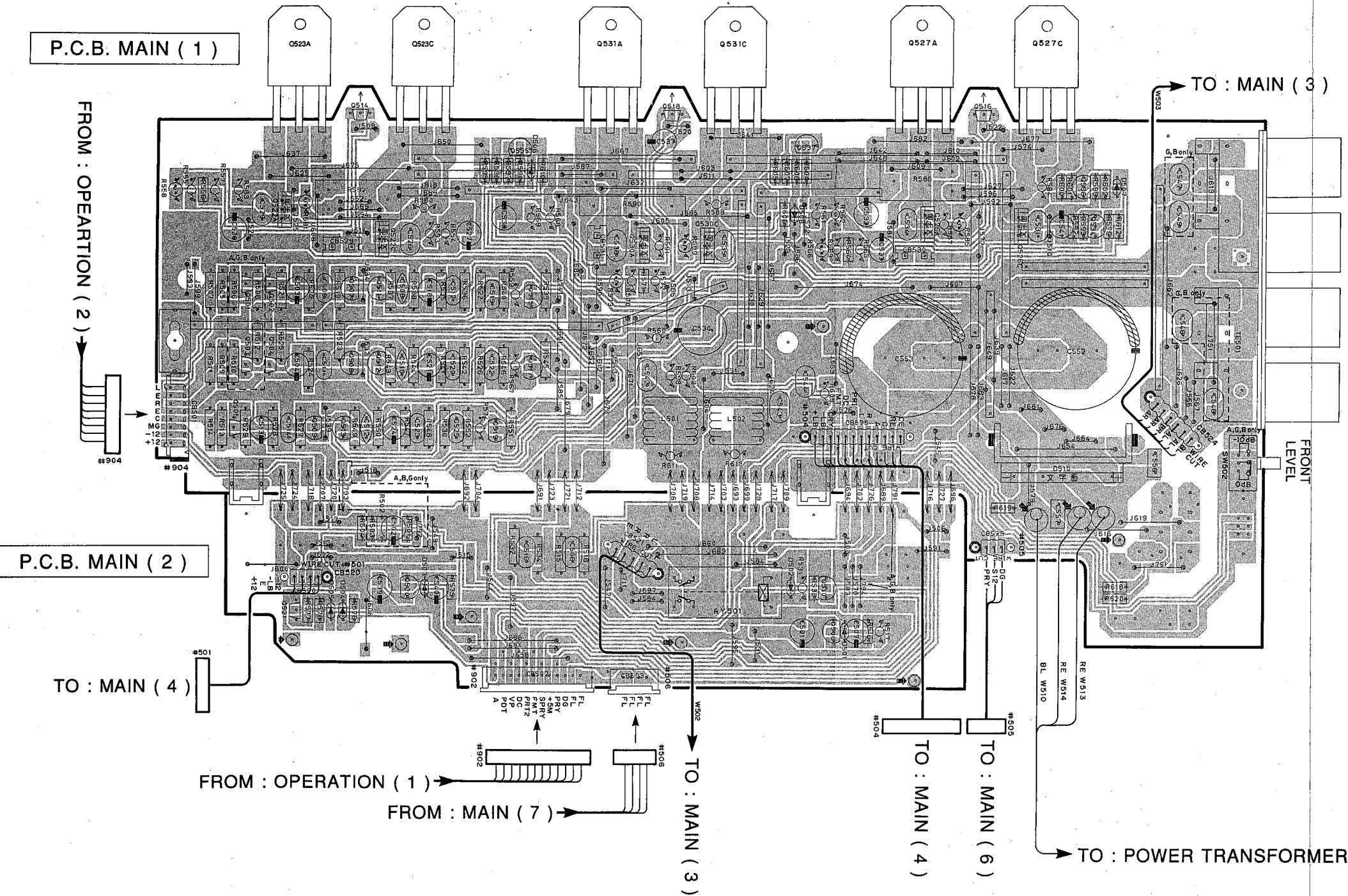


● ANODE CONNECTION

	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	a	a	a	a	a	a	a	a	CONCERT HALL	1a	a
P2	b, c	b	b	b	b	b	b	b	b	b	ROCK CONCERT	1b	b
P3	d	c	c	c	c	c	c	c	c	c	DISCO	1c	c
P4	e, f	d	d	d	d	d	d	d	d	d	STADIUM	1d	d
P5	g	e	e	e	e	e	e	e	e	e	MONO MOVIE	1e	e
P6	j, p	f	f	f	f	f	f	f	f	f	CONCERT VIDEO	1f	f
P7	m	g	g	g	g	g	g	g	g	g	PRO LOGIC	1g	g
P8	PRESET	ENTER	h	h	h	h	h	h	h	h	ENHANCED	2b, 2c	n
P9	NORMAL	AM	j	j	j	j	j	j	j	j	STEREO	kHz	TEST
P10	WIDE	FM	k	k	k	k	k	k	k	k	S1	MHz	mS
P11	PHANTOM	MEMORY	m	m	m	m	m	m	m	m	B1	DELAY	—
P12	TAPE MONITOR	AUTO TUNING	n	n	n	n	n	n	n	n	B2	CENTER	—
P13	1	—	p	p	p	p	p	p	p	p	B3	REAR	—
P14	2	—	r	r	r	r	r	r	r	r	B4	SLEEP	—
P15	—	—	t	t	t	t	t	t	t	t	—	—	—
P16	—	—	u	u	u	u	u	u	u	u	—	—	—

PRINTED CIRCUIT BOARD (Foil side)

Note) Mounting of C550, 551 (B, G only) shown as below.



Semiconductor Location

Ref. No.	Location
Q501	B2
Q502	B2
Q503	B3
Q504	B3
Q505	B3
Q506	D4
Q507	B2
Q508	B3
Q509	B3
Q510	D3
Q511	B2
Q512	B3
Q513	B3
Q514	B1
Q515	C2
Q516	E1
Q517	C3
Q518	D1
Q519	C3
Q520	B3
Q521	B4
Q522A	B2
Q522C	B2
Q523A	B1
Q523C	B1
Q526A	E2
Q526C	E2
Q527A	E1
Q527C	E1
Q530A	C2
Q530C	D2
Q531A	C1
Q531C	D1
Q534	E2
Q535	C2
Q536	E2
Q537	D2

Confirmation of Idling Current

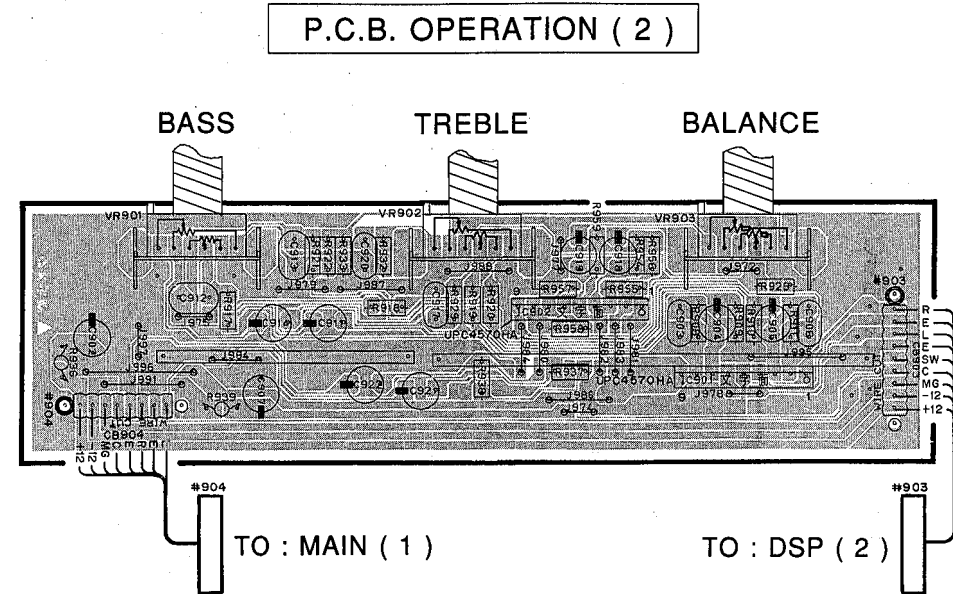
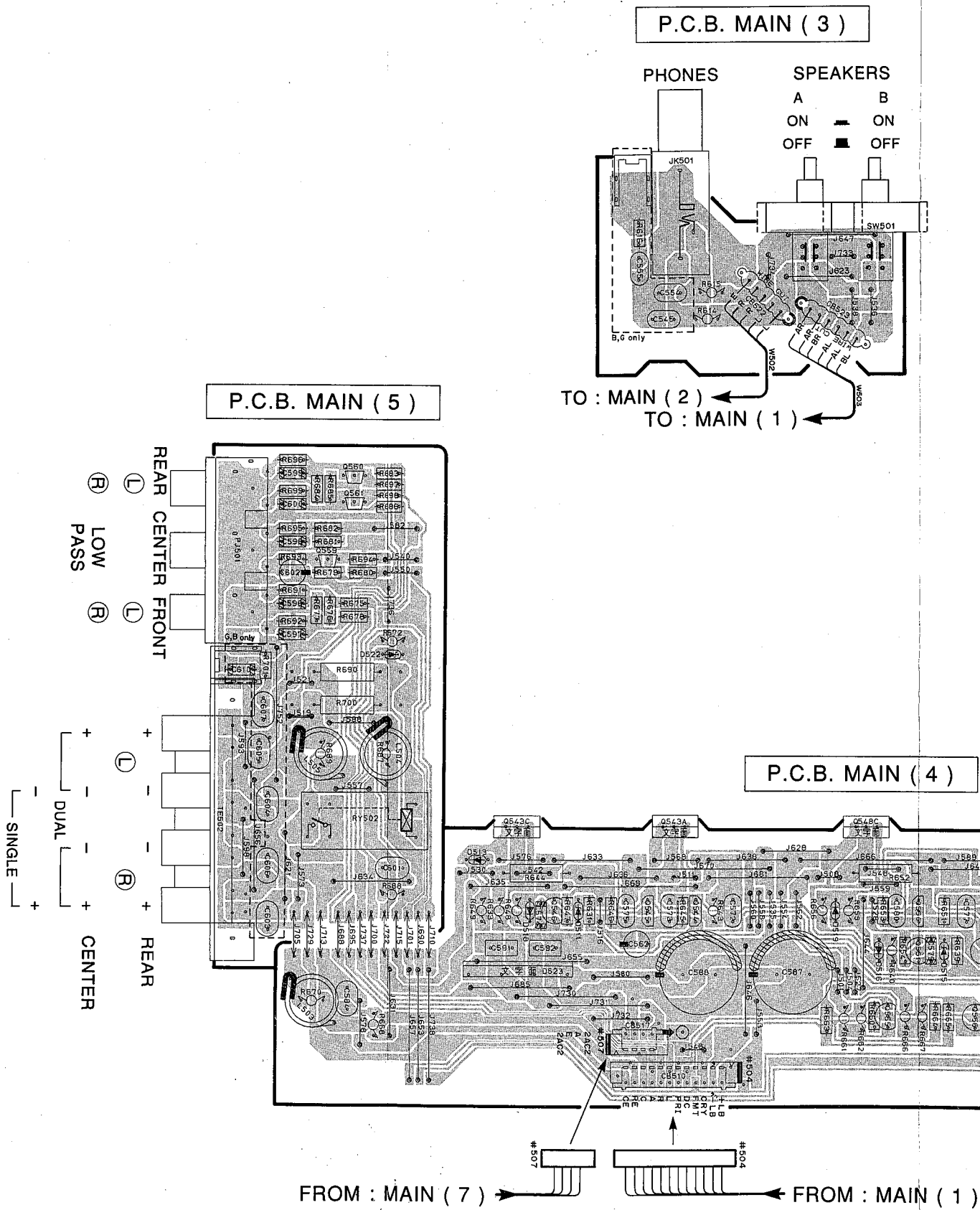
- 1) No signal applied.
- 2) Non-loaded condition.
- 3) Aging is not necessary.

Item	Test Point	Rating (DC)	Note
FRONT L	CB529	0.3mV~3mV	If the measured voltage exceeds 3.1mV, cut the lead wires of R557(L ch), R565(R ch) and R572(C ch) and then check again if each measured value satisfies the rating.
FRONT R	CB530		
CENTER	CB531		

Note)

- If R557(L ch), R565(R ch) and R572(C ch) have already been cut off and idling current does not flow, reconnect R557(L ch), R565(R ch) and R572(C ch).
- Q514, Q516 and Q518 are transistors for temperature correction.
- Apply silicone grease to contact surface with the heat sink.

PRINTED CIRCUIT BOARD (Foil side)



Semiconductor Location

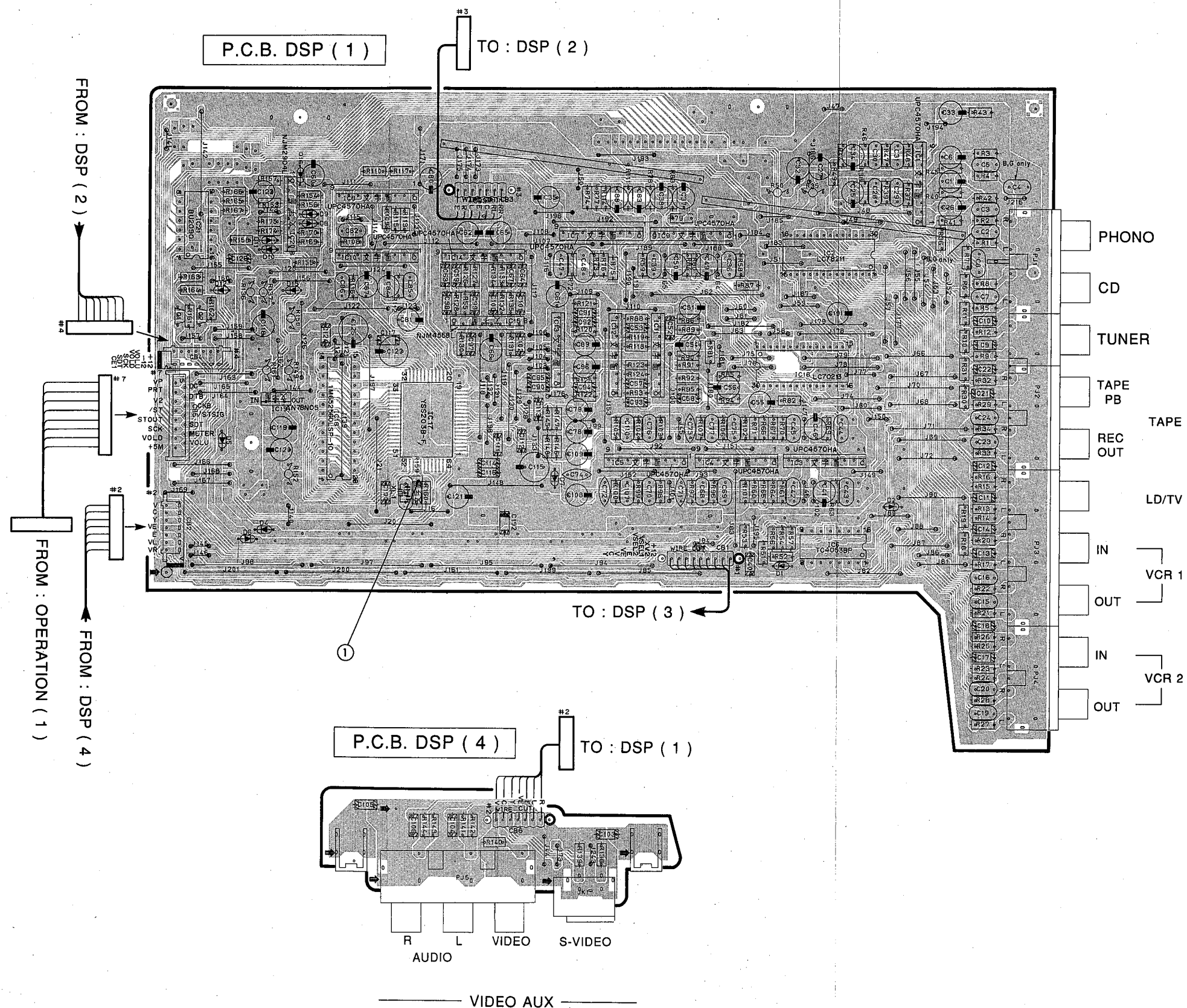
Ref. No.	Location
IC501	E5
IC502	E5
IC901	G2
IC902	G2
Q538	E5
Q539	E5
Q540	E5
Q541	E5
Q543A	D4
Q543C	C4
Q544	D5
Q545	C5
Q546	C5
Q548A	E4
Q548C	D4
Q549	E5
Q550	D5
Q551	D5
Q555	D5
Q556	E5
Q557	F4
Q558	F5
Q559	B3
Q560	B3
Q561	B3

■ PRINTED CIRCUIT BOARD (Foil side)

① : TEST POINT WAVEFORMS (See page 26)

● Semiconductor Location

Ref. No.	Location
IC 1	G2
IC 2	F2
IC 3	F3
IC 4	F3
IC 5	E3
IC 6	F3
IC 7	E2
IC 8	D2
IC 9	F2
IC 10	D2
IC 11	E3
IC 12	E3
IC 13	E3
IC 14	E2
IC 15	E2
IC 16	F3
IC 17	D3
IC 18	D3
IC 19	D3
IC 20	D2
IC 21	C2
Q 1	C2
Q 2	C2

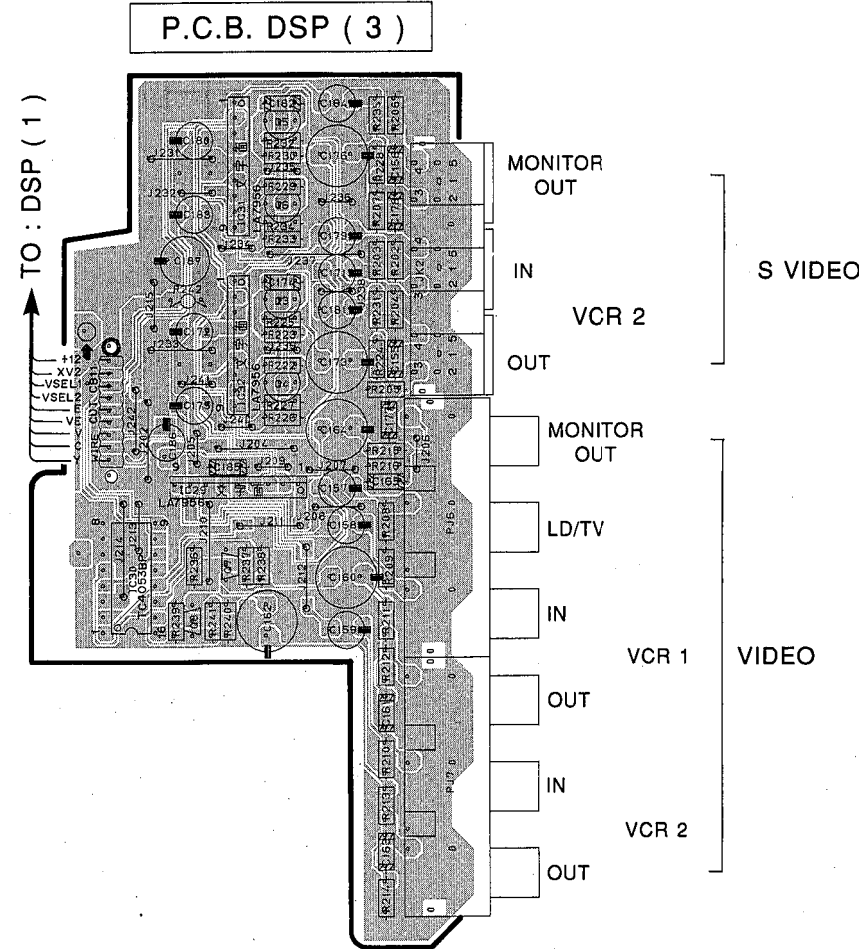
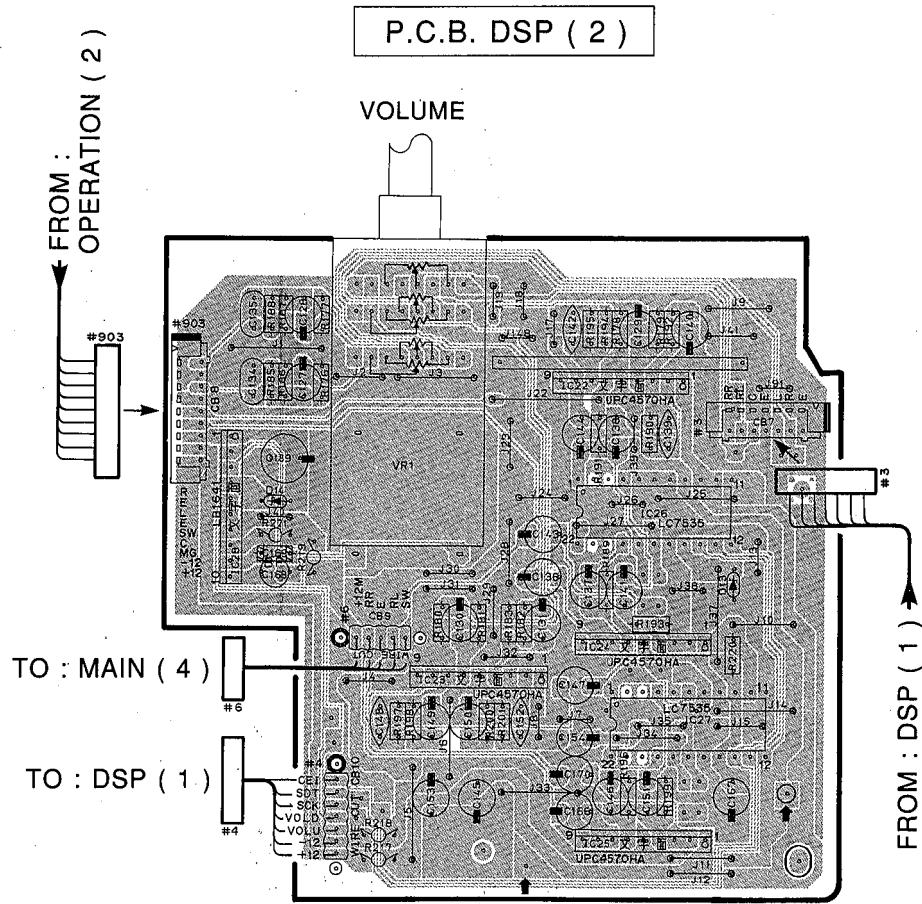
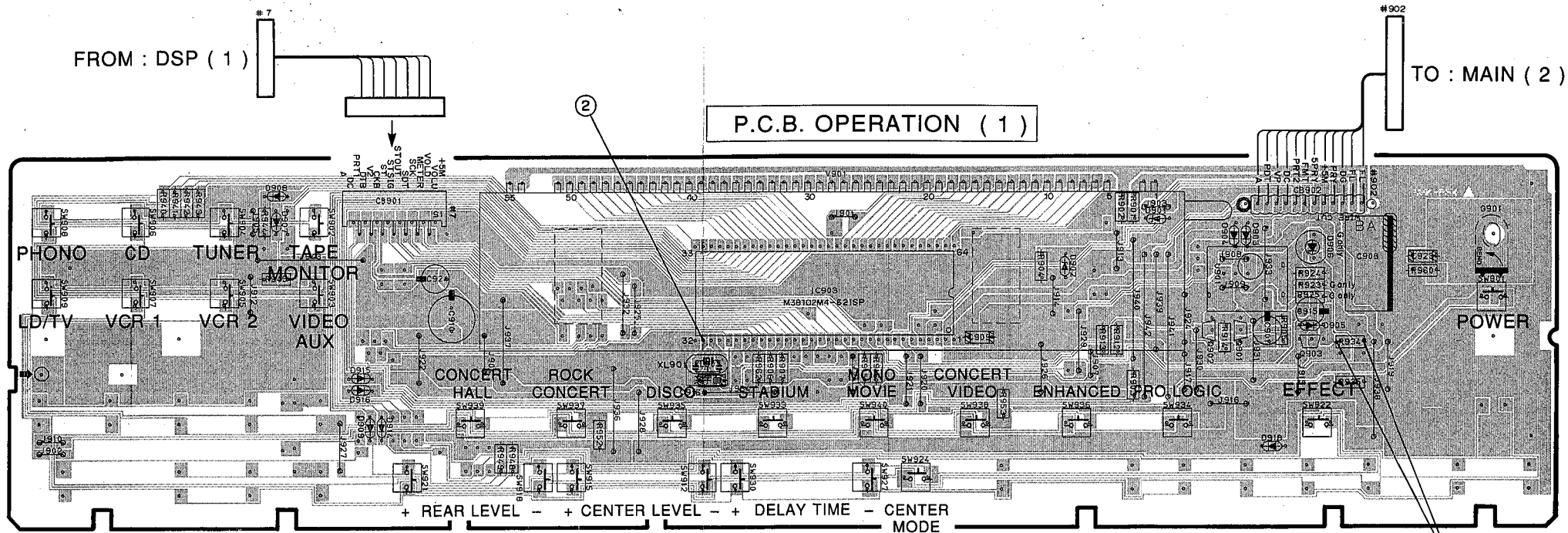


■ PRINTED CIRCUIT BOARD (Foil side)

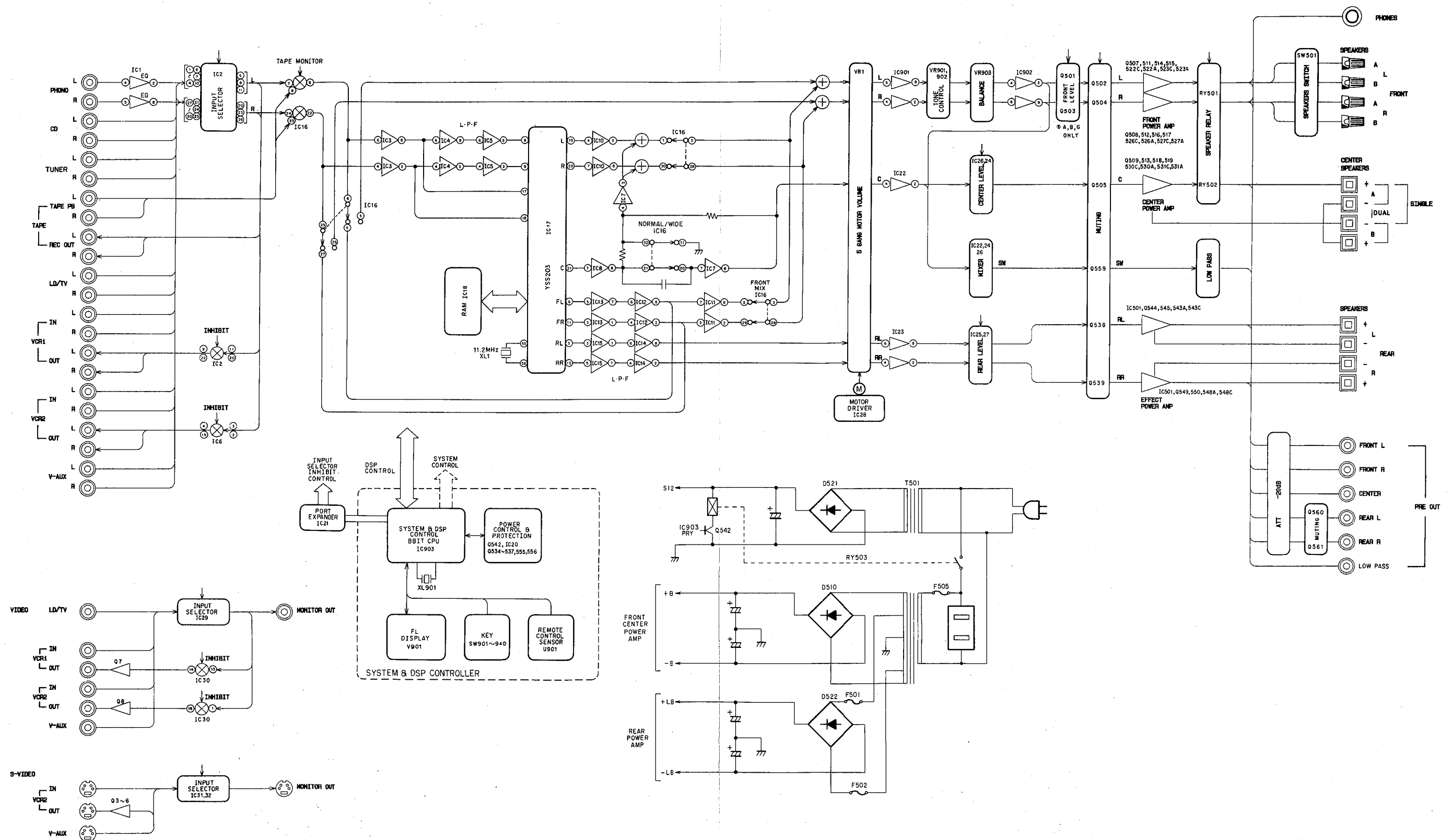
② and ③ : TEST POINT WAVEFORMS (See page 28)

● Semiconductor Location

Ref. No.	Location
IC 22	C4
IC 23	C5
IC 24	C5
IC 25	C6
IC 26	C5
IC 27	D5
IC 28	B5
IC 29	F5
IC 30	F5
IC 31	F4
IC 32	F4
IC903	E2
Q 3	F4
Q 4	F4
Q 5	F4
Q 6	F4
Q 7	F5
Q 8	F5



■ BLOCK DIAGRAM

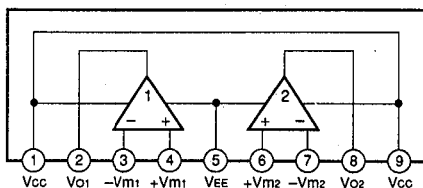


IC BLOCKS

IC1, 3~5, 7~12, 14, 22~25 : μ PC4570HA

IC901, 902 : μ PC4570HA

Dual OP-Amp

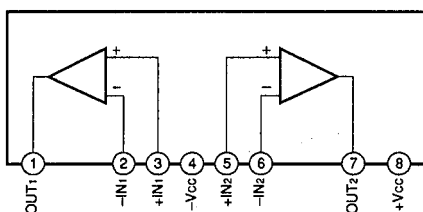


IC20 : NJM2904L

IC13, 15 : NJM4558L

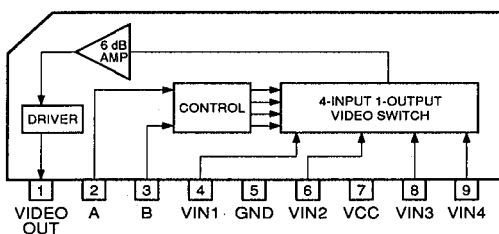
IC501 : M5220L

Dual OP-Amp



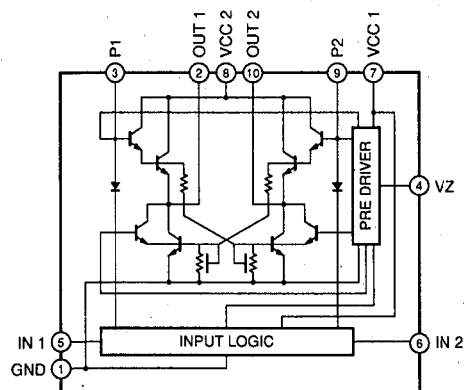
IC29, 31, 32 : LA7956

Video Switch



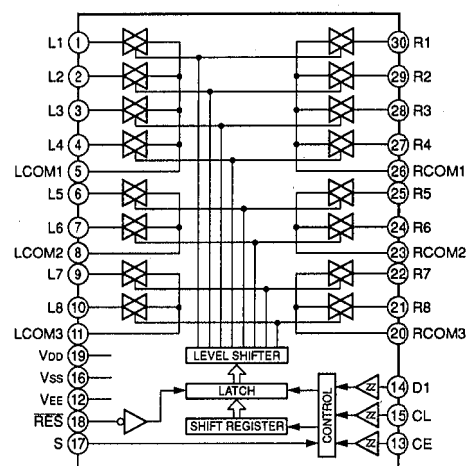
IC28 : LB1641

Motor Driver



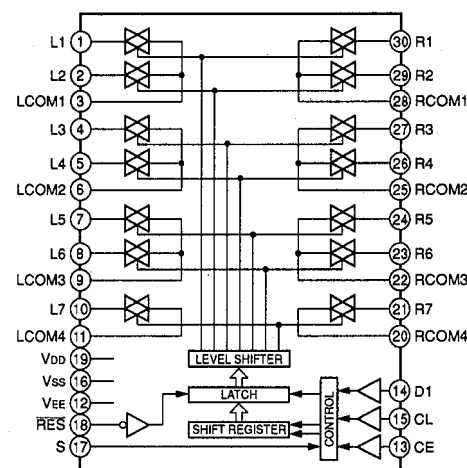
IC2 : LC78211

Analog Function Switch



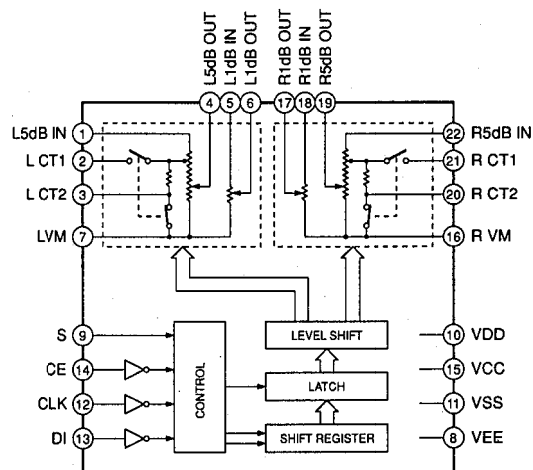
IC16 : LC78213

Analog Function Switch



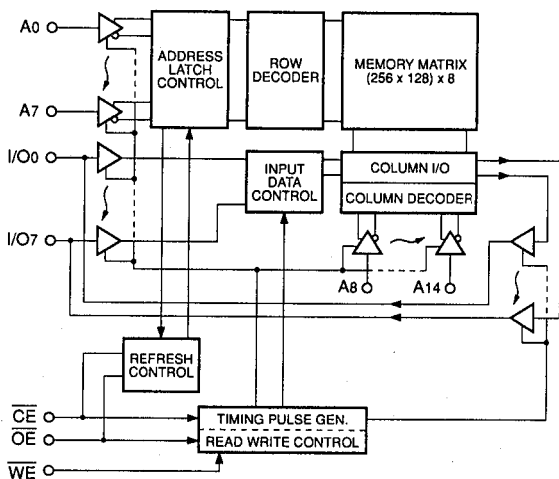
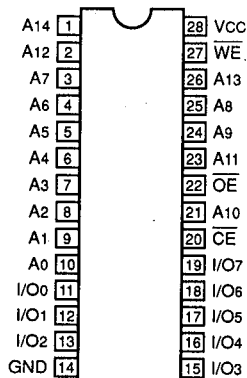
IC26, 27 : LC7535

Electric Controlled Volume



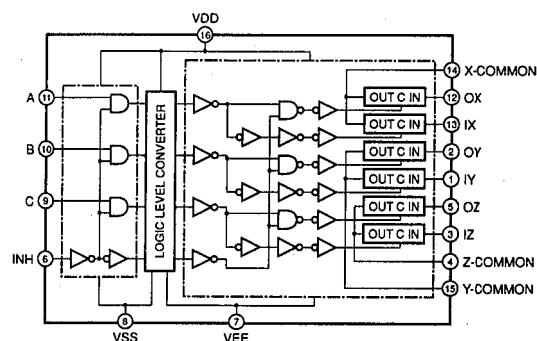
IC18 : HM65256BLSP-10

32768-word x 8 bit High Speed Pseudo Static RAM



IC6, 30 : TC4053BP

Triple 2-Channel Multiplexer/Demultiplexer

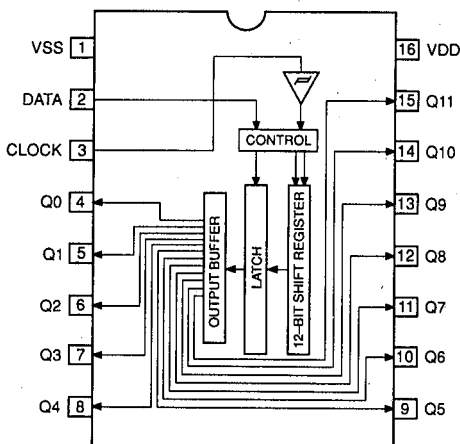


CONTROL INPUTS				"ON" CHANNEL		
INHIBIT (Pin 6)	C (Pin 9)	B (Pin 10)	A (Pin 11)	0X (Pin 12), 0Y (Pin 2), 0Z (Pin 5)	1X (Pin 13), 1Y (Pin 1), 1Z (Pin 3)	
L	L	L	L	0X, 0Y, 0Z		
L	L	L	H	1X, 0Y, 0Z		
L	L	H	L	0X, 1Y, 0Z		
L	L	H	H	1X, 1Y, 0Z		
L	H	L	L	0X, 0Y, 1Z		
L	H	L	H	1X, 0Y, 1Z		
L	H	H	L	0X, 1Y, 1Z		
L	H	H	H	1X, 1Y, 1Z		
H	*	*	*		NOTE	

* Don't Care

IC21 : BU2090

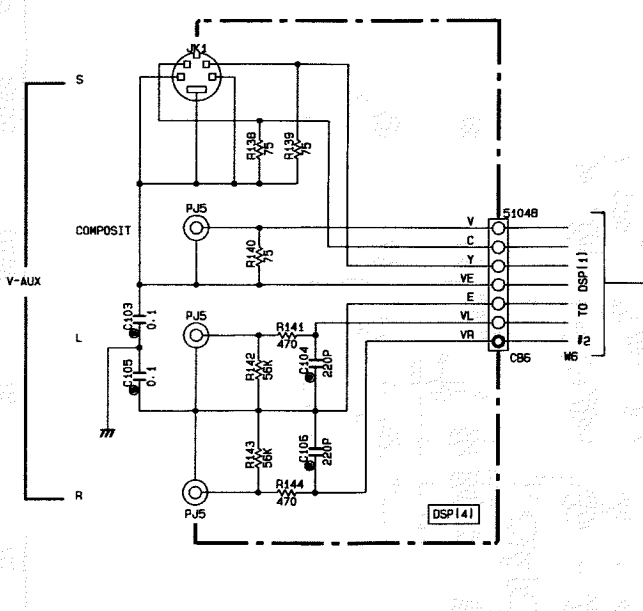
Serial In/Parallel Out Driver



No.	Port	Name	Function	Logic
1	VSS		GND	
2	DATA		Data in	
3	CLK		Clock in	
4	Q0	STREQ	Stop request (N.C.)	
5	Q1	CE7000	Chip enable LM7000 (N.C.)	
6	Q2	/MONO	Mono out (N.C.)	L:MONO
7	Q3	TMUTE	Tuner mute (N.C.)	H:ON
8	Q4		N.C.	
9	Q5	DSEL	DSP serial select	H:DSP
10	Q6	CEDSP	Chip enable DSP	H:ON
11	Q7	CEISL	Chip enable LC7821/LC7823/LC7535	H:ON
12	Q8		N.C.	
13	Q9	V2INH	VCR2 not select H : not VCR2	L:VCR2
14	Q10	VSELA	Video selector A (LA7956)	
15	Q11	VSELB	Video selector B (LA7956)	
16	VDD		+5V	

Other IC's

- IC903 : M38102M4-621SP→See page 7
- IC17 : YSS203B→See page 9

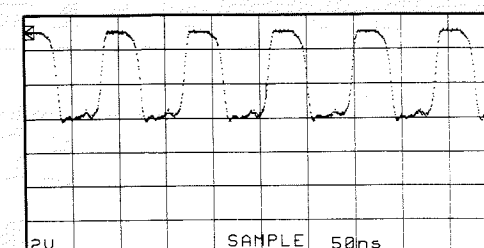


CAPACITOR		PARTS NAME
NO MARK		ELECTROLYTIC CAPACITOR
⊗		TANTALUM CAPACITOR
NO MARK		CERAMIC CAPACITOR
⊗		CERAMIC TUBULAR CAPACITOR
⊗		POLYESTER FILM CAPACITOR
○		POLYSTYRENE FILM CAPACITOR
①		NICA CAPACITOR
⊗		POLYPROPYLENE FILM CAPACITOR
⊗		SEMICONDUCTIVE CERAMIC CAPACITOR

RESISTOR		PARTS NAME
REMARKS		
NO MARK		CARBON FILM RESISTOR {P=5}
☒		CARBON FILM RESISTOR {P=10}
☐		METAL OXIDE FILM RESISTOR
☐		METAL FILM RESISTOR
☒		METAL PLATE RESISTOR
☒		FIRE PROOF CARBON FILM RESISTOR
☐		CEMENT MOLDED RESISTOR
☒		SEMI VARIABLE RESISTOR
☒		CHIP RESISTOR

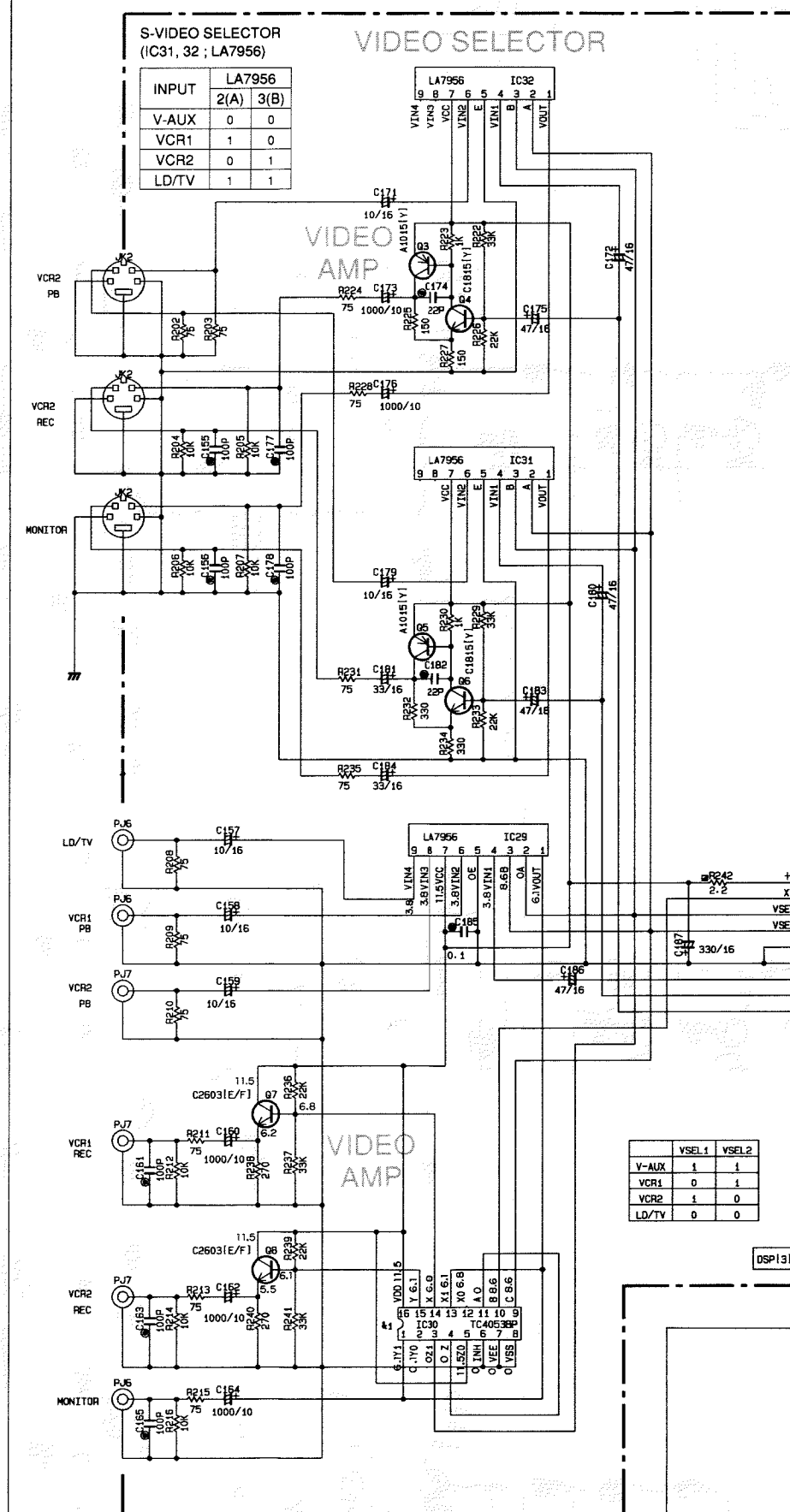
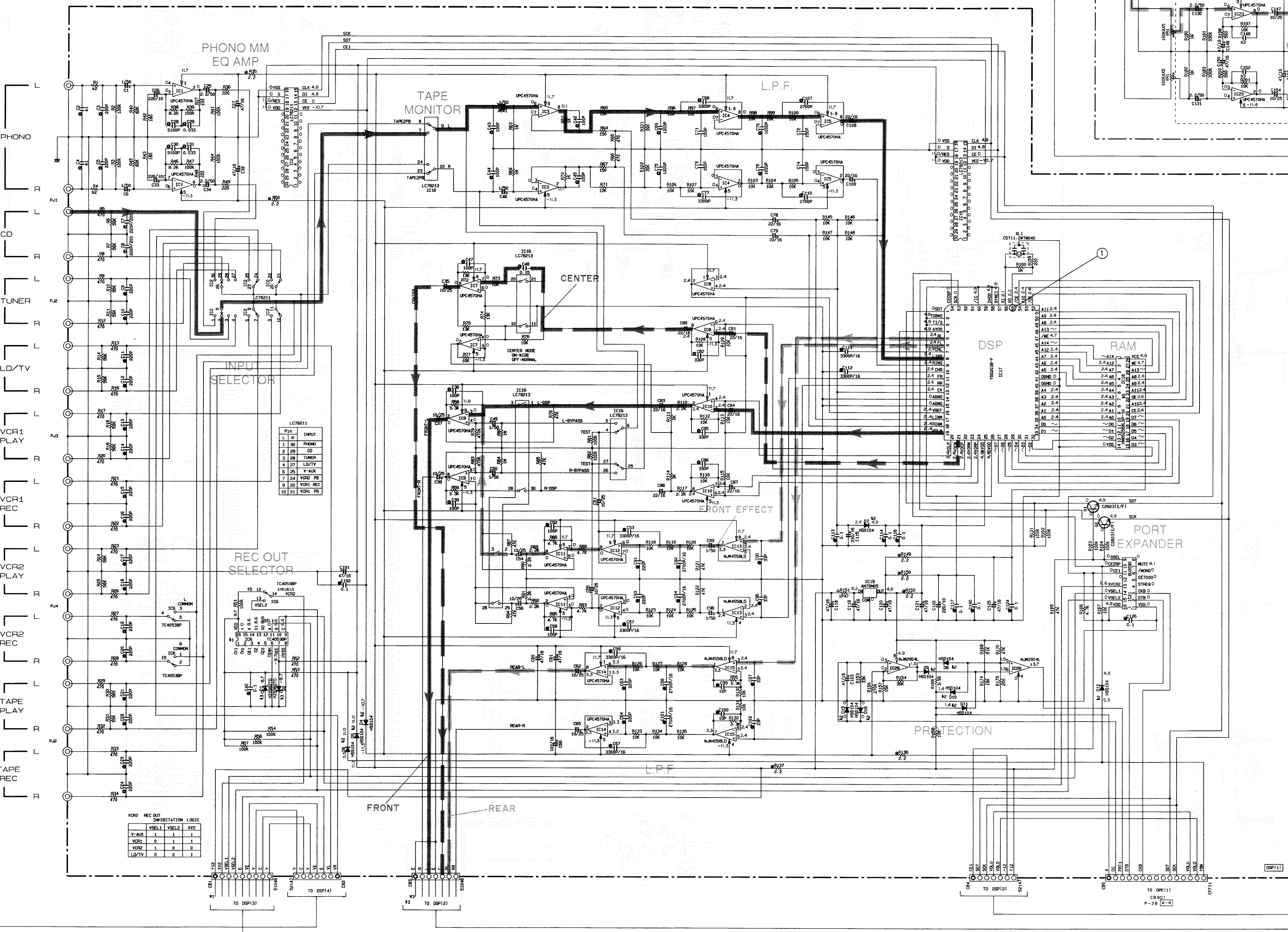
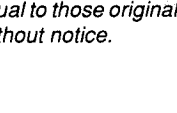
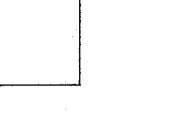
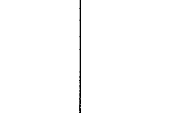
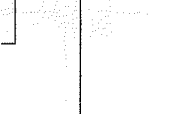
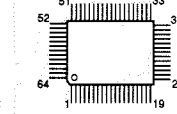
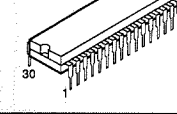
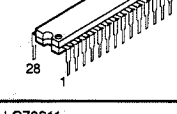
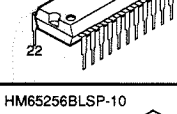
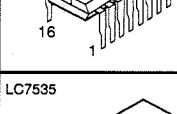
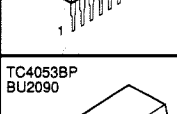
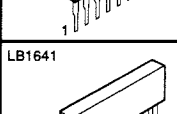
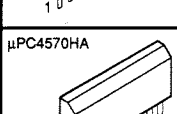
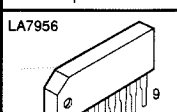
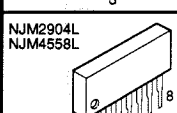
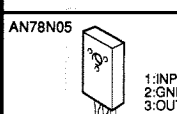
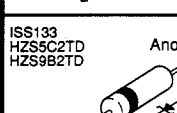
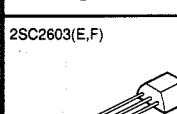
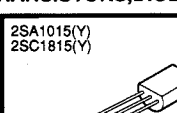
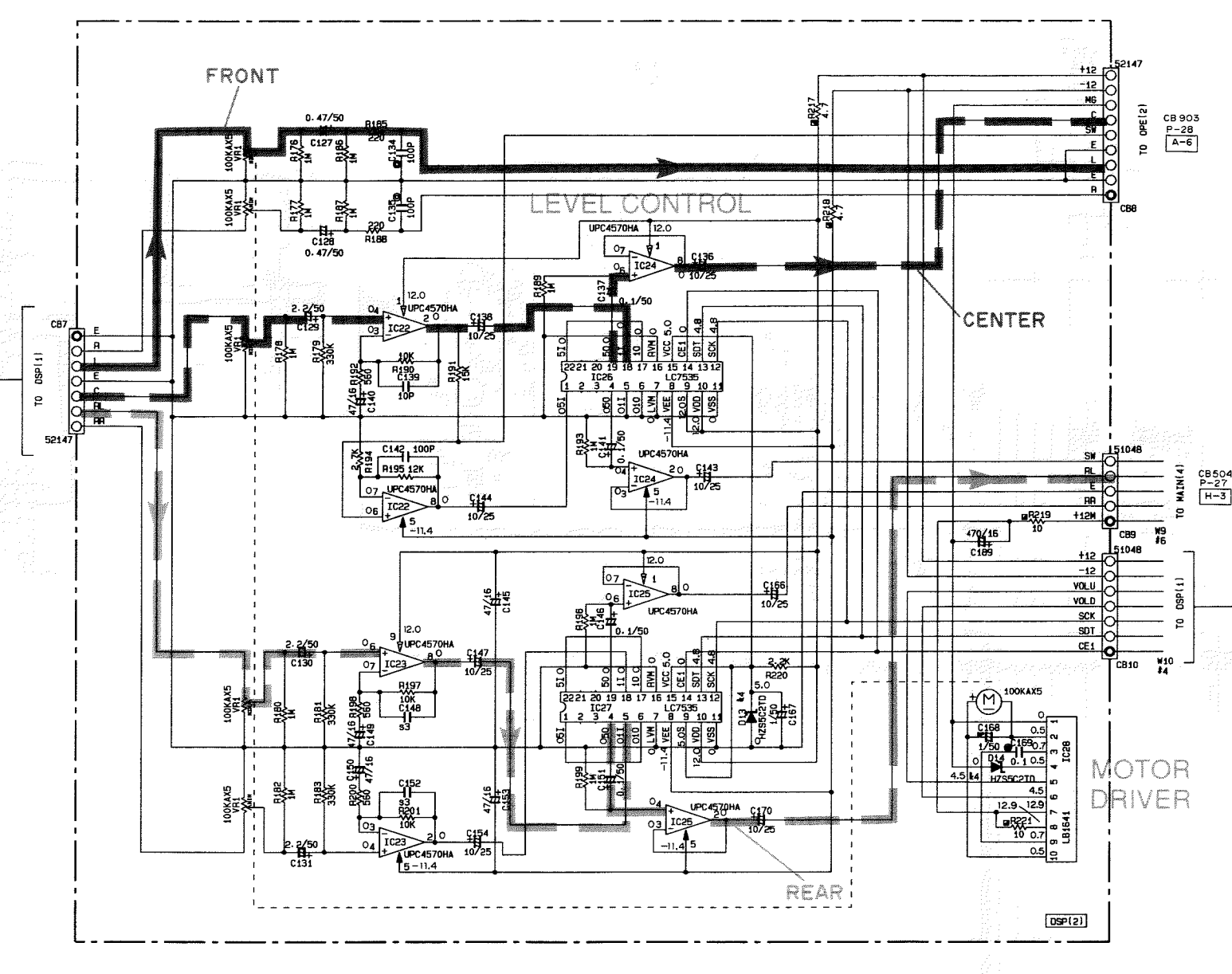
S	Circuit No.	J-R-A-B	G
1	C2-C4	X	100P
2	R1-R4	47	2-2K
3	C14B-152	10P	100P
	PCB	VS71130	VS71140
	PWB	X0054	X0054

Point ① (Pin 55 of IC 17)
V : 2V/div H : 50nsec/div
DC range 1 : 1 probe

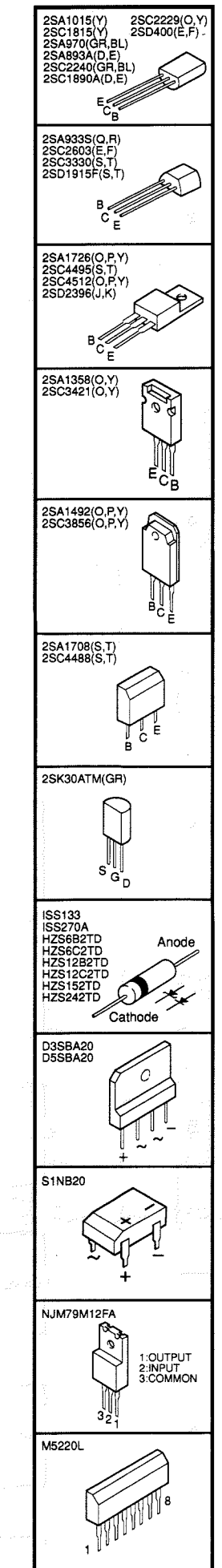


IC16 : LC78213

1, 30	MAIN DSP	MAIN, FRONT SELECT
2, 29	FRONT MIX	
4, 27	TEST	TEST, MAIN SELECT
5, 26	BYPASS	
7, 24	OTHER INPUT	TAPE MONITOR SELECT
8, 23	TAPE MONITOR	
10, 21	ON : WIDE ST : STEREO	CENTER MODE SELECT

[illegible]

- * All voltage are measured with a 10M Ω /V DC electric volt meter.
- * Components having special characteristics are marked $\triangle$ and must be replaced with parts having specifications equal to those originally installed.
- * Schematic diagram is subject to change without notice.

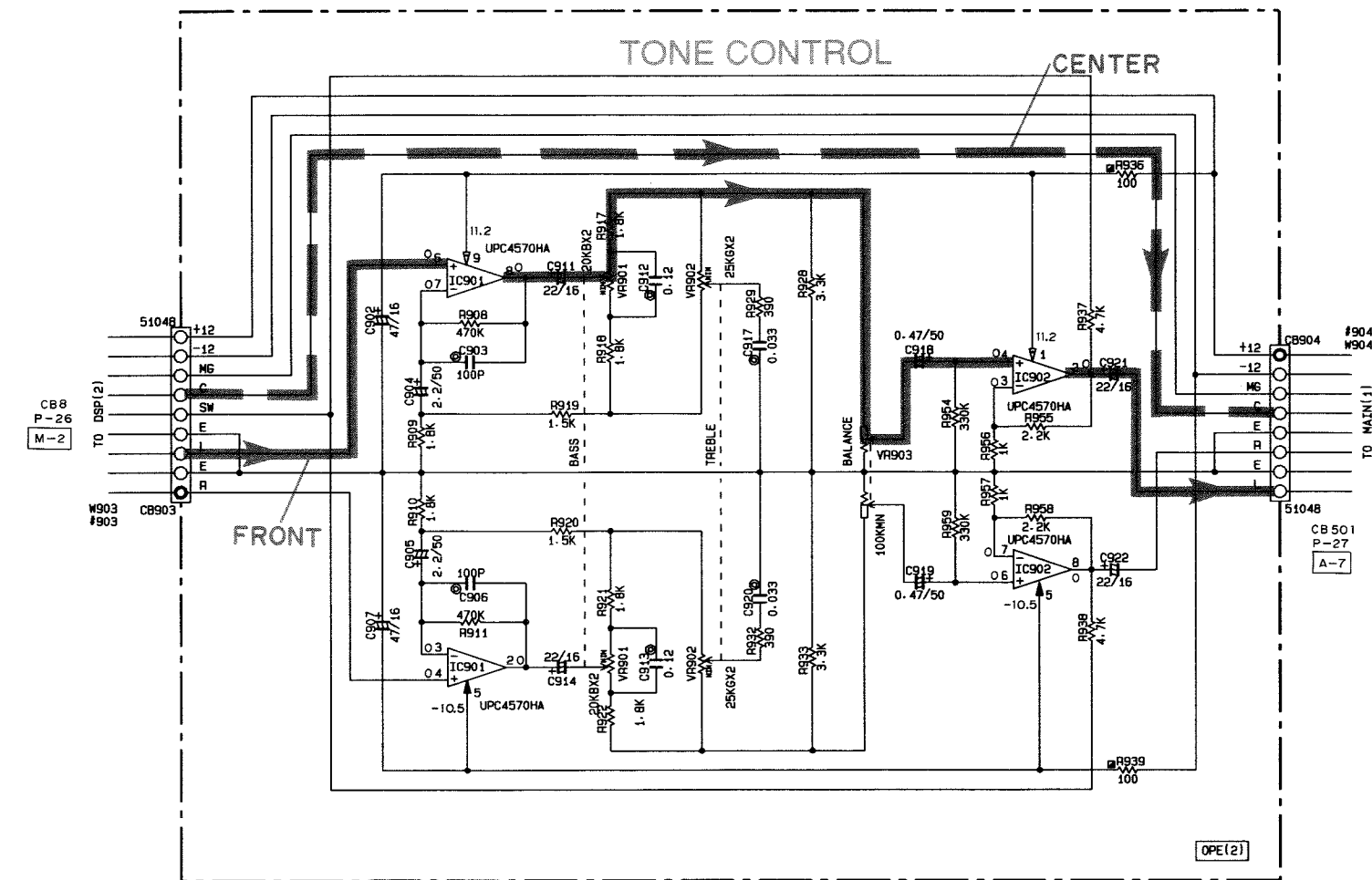
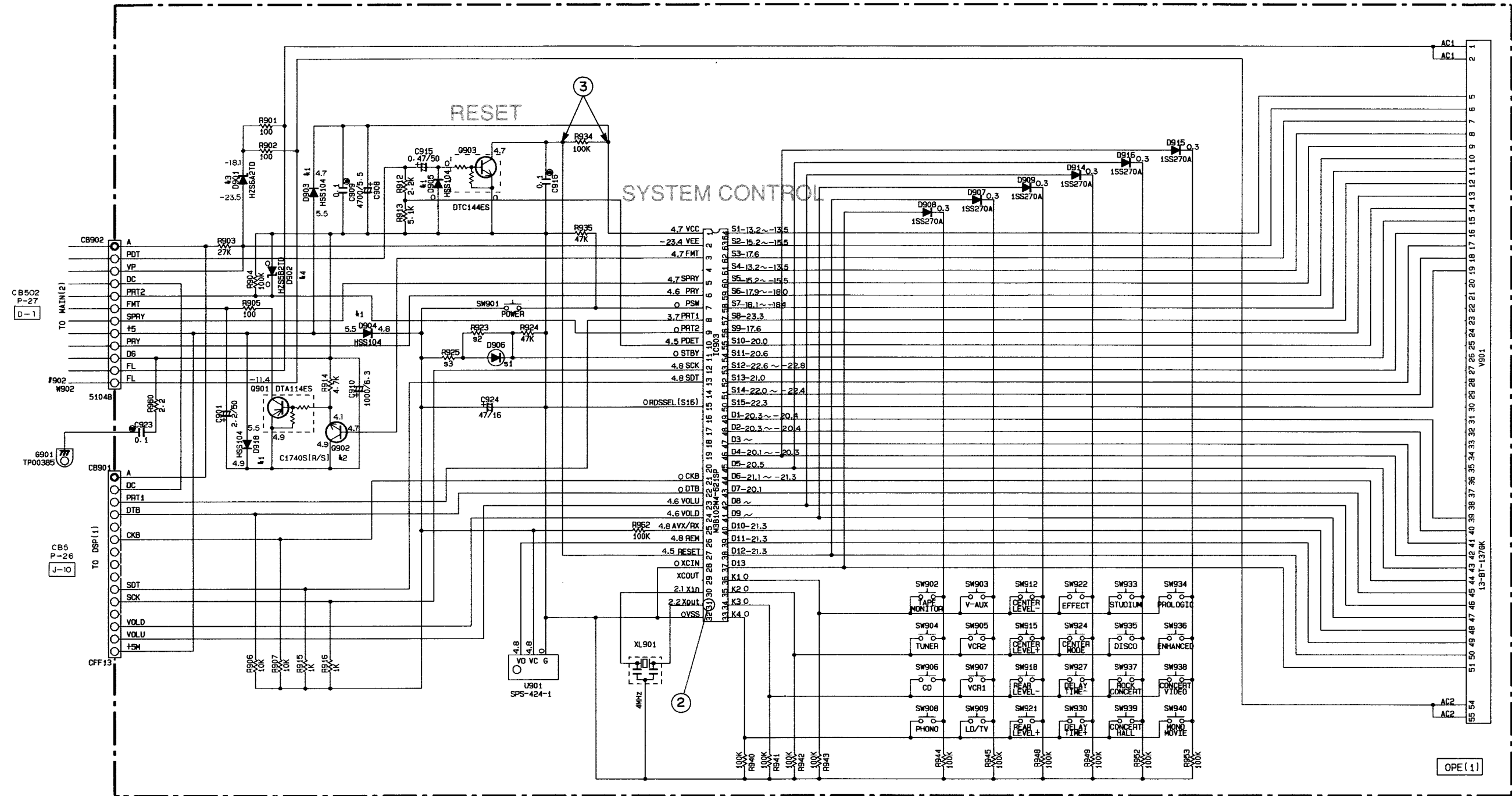


		U	C	R	A	B	G
81	R505_510	X	X	X	2_2K	2_2K	2_2K
82	R508_510	X	X	X	X	X	X
83	R501_503	X	X	X	D189F[S/T]	D189F[S/T]	D189F[S/T]
84	R508_512	X	X	X	10K	10K	X
85	C540_560_561_564_565	X	X	X	X	0.01	0.01
86	R515_701	X	X	X	X	2	2-2
87	W512	X	X	V575110	X	X	X
88	R5511_512	X	X	VP09550	X	X	X
89	C5514	V531370	V531370	V531370	V536260	V536260	V536260
90	V536260	X	X	X	V56260	V56260	V56260
91	W5303	X	V56260	X	X	X	X
92							
93	D509	X	HS5193 HS176 HS5104	X	X	X	X
94	R504	X	V724310	X	X	X	X
95	W511_501	X	V571500	X	X	X	X
96	F501_512	44125V	44125V	44125V	T44L250V	T44L250V	T44L250V
97	F509	0.1	0.1	X	0.1	0.1	0.1
98	R5111	X	X	V436180	X	X	X
99	C504	X	X	T3_154L250V	X	X	X
100	W520	X	X	VH41430	X	X	X
101	W525	X	X	V573110	X	X	X
102	W524	X	X	V573110	X	X	X
103	W523	X	X	V573110	X	X	X
104	W522	X	X	V573140	X	X	X
105	W521	X	X	V573110	X	X	X
106	W517	X	X	VG10540	VG10540	X	X
107	W516	X	X	VG10330	VG10330	X	X
108	W515	V571620	V571620	X	X	V571620	V571620
109	W520	V440505	V440505	V440505	X	X	V440570
110	J541	D	D	D	0	0	0
111	C503	X	X	X	X	X	T2.5AL250V
112	F5014_515	X	X	X	X	X	V575050
113	W515	T41L25V	T41L25V	T41L25V	T3_154L250V	T3_154L250V	X
114	T501	X2063	X2619	X2082	X2084	X2084	X2084
115	R569	1/2PZ_2M	1/2PZ_2M	2M	X	X	X
116	C561	X	47/25	47/63	X	X	X
117	R557_558	X	55	55	55	55	X
118	C550	X	X	H251282T0	X	X	X
119	W515	X	MT213A	MT213A	X	X	X
120	W515	X	V571590	X	X	X	X
121	W515_514	X	V571590	X	V571590	V571590	V571590
122	C562	X	1000P	1000P	X	X	X
123	W553	X	023961A(X)	023961A(X)	X	X	X
124	J501	X	X	X	0	0	0
125	W544	X	X	X	0	0	0
126	C503_605_606	X	X	X	X	0.01	0.01
127	C504_607	X	X	X	X	0.022	0.022
128	R551_502	X	X	4.7K	4.7K	4.7K	4.7K
129	C503	X	X	15K	15K	15K	15K
130	C502	X	X	1/50	1/50	1/50	1/50
131	C502_503	V557830	V557830	V557830	V557830	V557830	V557830
132	W515	D	X	X	X	X	X
133	W515	X	V579120	X	X	X	X
134	C610	X	X	X	X	0.1	0.1
135	C140-543	X	X	X	X	0.002	0.002
136	C140-543	33P	33P	33P	33P	33P/200	33P/200
137	C145-616	X	X	X	X	100P	100P
138	C555_566	22P	22P	22P	22P	5P	5P
139	C555_566	470P	470P	470P	470P	100P	100P

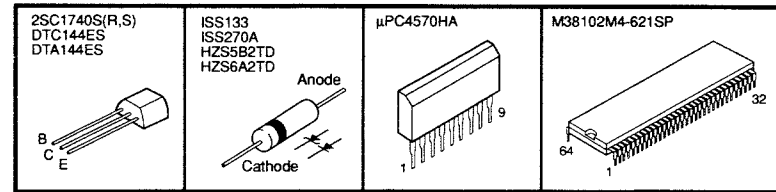
Interchangeable Parts at Manufacture-Stage				939	View		A
Mark	Reference	Parts Number	Parts Name				
K1	0501	2541308(E) 2541151(E/F) 2541309A(P/W/S)	46	05011-015		H25142T0 WZJ15C	
K2	0505	H25802T0 WZJL6C-6C	47	0501-502-512-514		H25142T0 WZJ24C	
K3	0504-513-516-519						
		H5S104 155132-155176					
K4	0503	H256C2T0 WZJL6C-2B					
K5	0504	H2516C2T0 WZJ410A					

- * All voltage are measured with a 10M Ω /V DC electric volt meter.
- * Components having special characteristics are marked $\triangle$ and must be replaced with parts having specifications equal to those originally installed.
- * Schematic diagram is subject to change without notice.

SCHEMATIC DIAGRAM (OPERATION)



PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.

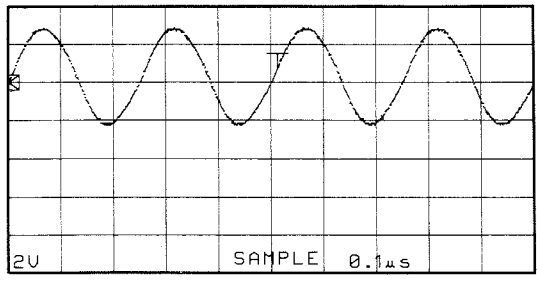


s	Circuit No.	J-R-A-B	G
1	D906	×	SLR-305VCA47
2	R923	×	33K
3	R925	×	220
PCB	V571090	V571100	
PWB	X0053	X0053	

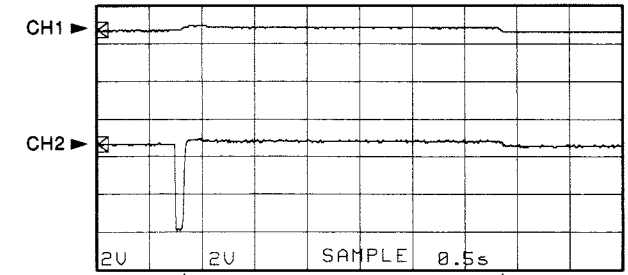
Mark	Reference Parts Number	Parts Name
41	D903-905-918	HSS104 ISS133 ISS176
42	D902	2SC1740S(R/S) 2SC2603(E/F) 2SC3311A(G/R/S)
43	D901	HZS5A2TD MTZJ5-6A
44	D902	HZS5B2TD MTZJ4-7C

NOTICE
(J)..... Japanese model
(U)..... U.S.A. model
(C)..... Canadian model
(A)..... Australian model
(G)..... European model
(B)..... British model
(R)..... General model
(P)..... RP model

Point ② (Pin 31 of IC903)
V : 2V/div H : 0.1μsec/div
DC range 1 : 1 probe



Point ③
CH 1 : Pin 1 of IC903
CH 2 : Pin 27 of IC903
V : 2V/div H : 0.5sec/div
DC range 1 : 1 probe



With the POWER switch turned ON, connect the power cord to the AC outlet.
Disconnect the power cord from the AC outlet.
* This waveform is not available by pushing the power switch ON and OFF.

PARTS LIST

■ ELECTRICAL PARTS

■ WARNING

Components having special characteristics are marked $\triangle$ and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistors, refer to last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP	L.EMIT	: LIGHT EMITTING MODULE
C.CE	: CERAMIC CAP	LED.DSPLY	: LED DISPLAY
C.CE.ARRAY	: CERAMIC CAP ARRAY	LED.INFRD	: LED, INFRARED
C.CE.CHP	: CHIP CERAMIC CAP	MODUL.RF	: MODULATOR, RF
C.CE.ML	: MULTILAYER CERAMIC CAP	PHOT.CPL	: PHOTO COUPLER
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP	PHOT.INTR	: PHOTO INTERRUPTER
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP	PHOT.RFLCT	: PHOTO REFLECTOR
C.CE.TUBLR	: CERAMIC TUBULAR CAP	PIN.TEST	: PIN, TEST POINT
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP	PLST.RIVET	: PLASTIC RIVET
C.EL	: ELECTROLYTIC CAP	R.ARRAY	: RESISTOR ARRAY
C.MICA	: MICA CAP	R.CAR	: CARBON RESISTOR
C.ML.FLM	: MULTILAYER FILM CAP	R.CAR.CHP	: CHIP RESISTOR
C.MP	: METALLIZED PAPER CAP	R.CAR.FP	: FLAME PROOF CARBON RESISTOR
C.MYLAR	: MYLAR FILM CAP	R.FUS	: FUSABLE RESISTOR
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP	R.MTL.CHP	: CHIP METAL FILM RESISTOR
C.PAPER	: PAPER CAPACITOR	R.MTL.FLM	: METAL FILM RESISTOR
C.PLS	: POLYSTYRENE FILM CAP	R.MTL.OXD	: METAL OXIDE FILM RESISTOR
C.POL	: POLYESTER FILM CAP	R.MTL.PLAT	: METAL PLATE RESISTOR
C.POLY	: POLYETHYLENE FILM CAP	RSNR.CE	: CERAMIC RESONATOR
C.PP	: POLYPROPYLENE FILM CAP	RSNR.CRYS	: CRYSTAL RESONATOR
C.TNTL	: TANTALUM CAP	R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
C.TNTL.CHP	: CHIP TANTALUM CAP	R.WW	: WIRE WOUND RESISTOR
C.TRIM	: TRIMMER CAP	SCR.BND.HD	: BIND HEAD B-TITE SCREW
CN	: CONNECTOR	SCR.BW.HD	: BW HEAD TAPPING SCREW
CN.BS.PIN	: CONNECTOR, BASE PIN	SCR.CUP	: CUP TITE SCREW
CN.CANNON	: CONNECTOR, CANNON	SCR.TERM	: SCREW TERMINAL
CN.DIN	: CONNECTOR, DIN	SCR.TR	: SCREW, TRANSISTOR
CN.FLAT	: CONNECTOR, FLAT CABLE	SUPRT.PCB	: SUPPORT, P.C.B.
CN.POST	: CONNECTOR, BASE POST	SURG.PRTCT	: SURGE PROTECTOR
COIL.MX.AM	: COIL, AM MIX	SW.TACT	: TACT SWITCH
COIL.AT.FM	: COIL, FM ANTENNA	SW.LEAF	: LEAF SWITCH
COIL.DT.FM	: COIL, FM DETECT	SW.LEVER	: LEVER SWITCH
COIL.MX.FM	: COIL, FM MIX	SW.MICRO	: MICRO SWITCH
COIL.OUTPT	: OUTPUT COIL	SW.PUSH	: PUSH SWITCH
DIOD.ARRAY	: DIODE ARRAY	SW.RT.ENC	: ROTARY ENCODER
DIODE.BRG	: DIODE BRIDGE	SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
DIODE.CHP	: CHIP DIODE	SW.RT	: ROTARY SWITCH
DIODE.VAR	: VARACTOR DIODE	SW.SLIDE	: SLIDE SWITCH
DIOD.Z.CHP	: CHIP ZENER DIODE	TERM.SP	: SPEAKER TERMINAL
DIODE.ZENR	: ZENER DIODE	TERM.WRAP	: WRAPPING TERMINAL
DSCR.CE	: CERAMIC DISCRIMINATOR	THRMST.CHP	: CHIP THERMISTOR
FER.BEAD	: FERRITE BEADS	TR.CHP	: CHIP TRANSISTOR
FER.CORE	: FERRITE CORE	TR.DGT	: DIGITAL TRANSISTOR
FET.CHP	: CHIP FET	TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
FL.DSPLY	: FLUORESCENT DISPLAY	TRANS	: TRANSFORMER
FLTR.CE	: CERAMIC FILTER	TRANS.PULS	: PULSE TRANSFORMER
FLTR.COMB	: COMB FILTER MODULE	TRANS.PWR	: POWER TRANSFORMER ASS'y
FLTR.LC.RF	: LC FILTER, EMI	TUNER.AM	: TUNER PACK, AM
GND.MTL	: GROUND PLATE	TUNER.FM	: TUNER PACK, FM
GND.TERM	: GROUND TERMINAL	TUNER.PK	: FRONT-END TUNER PACK
HOLDER.FUS	: FUSE HOLDER	VR	: ROTARY POTENTIOMETER
IC.PRTCT	: IC PROTECTOR	VR.MTR	: POTENTIOMETER WITH MOTOR
JUMPER.CN	: JUMPER CONNECTOR	VR.SW	: POTENTIOMETER WITH ROTARY SW
JUMPER.TST	: JUMPER, TEST POINT	VR.SLIDE	: SLIDE POTENTIOMETER
L.DTCT	: LIGHT DETECTING MODULE	VR.TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with "#" are not included in the P.C.B. ass'y.

P.C.B. DSP

DSP-A590

Schm Ref.	PART NO.	Description
* VS711300	P. C. B.	DSP (JRA)
* VS711400	P. C. B.	DSP (BG)
CB1	Vi878700	CN. BS. PIN 9P
CB2	VK025100	CN. BS. PIN 7P
CB3	Vi878500	CN. BS. PIN 7P
CB4	VK025100	CN. BS. PIN 7P
* CB5	VR358600	CN. BS. PIN 15P
CB6	Vi878500	CN. BS. PIN 7P
CB7	VK025100	CN. BS. PIN 7P
CB8	VK025300	CN. BS. PIN 9P
CB9	Vi878300	CN. BS. PIN 5P
CB10	Vi878500	CN. BS. PIN 7P
CB11	Vi878700	CN. BS. PIN 9P
C1	VJ839100	C. EL 1uF 50V
C2	UA652100	C. MYLAR 100pF 50V (BG)
C3	UA652220	C. MYLAR 220pF 50V
C4	UA652100	C. MYLAR 100pF 50V (BG)
C5	UA652220	C. MYLAR 220pF 50V
C6	VJ839100	C. EL 1uF 50V
C7	VK534000	C. PP 220pF 200V
C8	VK534000	C. PP 220pF 200V
C9	VG278400	C. CE. TUBLR 220pF 50V
C10	VG278400	C. CE. TUBLR 220pF 50V
C11	VG278400	C. CE. TUBLR 220pF 50V
C12	VG278400	C. CE. TUBLR 220pF 50V
C13	VG278400	C. CE. TUBLR 220pF 50V
C14	VG278400	C. CE. TUBLR 220pF 50V
C15	UA652220	C. MYLAR 220pF 50V
C16	UA652220	C. MYLAR 220pF 50V
C17	VG278400	C. CE. TUBLR 220pF 50V
C18	VG278400	C. CE. TUBLR 220pF 50V
C19	UA652220	C. MYLAR 220pF 50V
C20	UA652220	C. MYLAR 220pF 50V
C21	VG278400	C. CE. TUBLR 220pF 50V
C22	VG278400	C. CE. TUBLR 220pF 50V
C23	UA652220	C. MYLAR 220pF 50V
C24	UA652220	C. MYLAR 220pF 50V
C25	VJ839200	C. EL 2.2uF 50V
C26	VE117600	C. EL 220uF 10V
C27	VJ837200	C. EL 47uF 16V
C28	UA653910	C. MYLAR 9100pF 50V
C29	UA654330	C. MYLAR 0.033uF 50V
C30	UA653910	C. MYLAR 9100pF 50V
C31	UA654330	C. MYLAR 0.033uF 50V
C32	VJ837200	C. EL 47uF 16V
C33	VE117600	C. EL 220uF 10V
C34	VJ839200	C. EL 2.2uF 50V
C35	UM417100	C. EL 10uF 50V
C36	UA652100	C. MYLAR 100pF 50V
C37	UM417100	C. EL 10uF 50V
C38	UM417100	C. EL 10uF 50V
C39	UA652100	C. MYLAR 100pF 50V
C40	VH053100	C. CE. TUBLR 0.1uF 50V

* New Parts

Schm Ref.	PART NO.	Description
C41	VJ839100	C. EL 1uF 50V
C42	UA652100	C. MYLAR 100pF 50V
C43	UA652100	C. MYLAR 100pF 50V
C44	UA652100	C. MYLAR 100pF 50V
C45	UA652100	C. MYLAR 100pF 50V
C46	VJ839100	C. EL 1uF 50V
C47	UA652100	C. MYLAR 100pF 50V
C48	UA655150	C. MYLAR 0.15uF 50V
C49	VJ839100	C. EL 1uF 50V
C50	VJ839100	C. EL 1uF 50V
C51	UM417100	C. EL 10uF 50V
C52	VF466800	C. CE. TUBLR 100pF 50V
C53	VG279600	C. CE. TUBLR 3300pF 16V
C54	UM417100	C. EL 10uF 50V
C55	UM417100	C. EL 10uF 50V
C56	UM417100	C. EL 10uF 50V
C57	VG279600	C. CE. TUBLR 3300pF 16V
C58	VF466800	C. CE. TUBLR 100pF 50V
C59	VG279600	C. CE. TUBLR 3300pF 16V
C60	VJ837200	C. EL 47uF 16V
C61	VJ837200	C. EL 47uF 16V
C62	UM417100	C. EL 10uF 50V
C63	VG278400	C. CE. TUBLR 220pF 50V
C64	VG278400	C. CE. TUBLR 220pF 50V
C65	UM417100	C. EL 10uF 50V
C66	VF964800	C. EL 100uF 16V
C67	VG279600	C. CE. TUBLR 3300pF 16V
C68	UA253330	C. MYLAR 3300pF 50V
C69	UA253120	C. MYLAR 1200pF 50V
C70	UA253100	C. MYLAR 1000pF 50V
C71	FG212150	C. CE 150pF 50V
C72	FG212150	C. CE 150pF 50V
C73	FG212150	C. CE 150pF 50V
C74	FG212150	C. CE 150pF 50V
C75	UA253120	C. MYLAR 1200pF 50V
C76	UA253100	C. MYLAR 1000pF 50V
C77	UA253330	C. MYLAR 3300pF 50V
C78	UM407220	C. EL 22uF 25V
C79	UM407220	C. EL 22uF 25V
C80	UM407220	C. EL 22uF 25V
C81	UM407220	C. EL 22uF 25V
C82	UA652330	C. MYLAR 330pF 50V
C83	UM407220	C. EL 22uF 25V
C84	UM407220	C. EL 22uF 25V
C85	UA652330	C. MYLAR 330pF 50V
C86	UA652330	C. MYLAR 330pF 50V
C87	UM407220	C. EL 22uF 25V
C88	UM407220	C. EL 22uF 25V
C89	VJ839100	C. EL 1uF 50V
C90	VG277000	C. CE. TUBLR 33pF 50V
C91	VG278400	C. CE. TUBLR 220pF 50V
C92	VG279500	C. CE. TUBLR 2700pF 16V
C93	VG278400	C. CE. TUBLR 220pF 50V

* New Parts

P.C.B. DSP

Schm Ref.	PART NO.	Description
C94	VG279500	C. CE. TUBLR 2700pF 16V
C95	VG277000	C. CE. TUBLR 33pF 50V
C96	VJ839100	C. EL 1uF 50V
C97	VG277000	C. CE. TUBLR 33pF 50V
C98	VG279500	C. CE. TUBLR 2700pF 16V
C99	VF466600	C. CE. TUBLR 10pF 50V
C100	VF466600	C. CE. TUBLR 10pF 50V
C101	VG279500	C. CE. TUBLR 2700pF 16V
C102	VG277000	C. CE. TUBLR 33pF 50V
C103	VH053100	C. CE. TUBLR 0.1uF 50V
C104	VG278400	C. CE. TUBLR 220pF 50V
C105	VH053100	C. CE. TUBLR 0.1uF 50V
C106	VG278400	C. CE. TUBLR 220pF 50V
C107	UA653270	C. MYLAR 2700pF 50V
C108	UM407220	C. EL 22uF 25V
C109	UM407220	C. EL 22uF 25V
C110	UA653270	C. MYLAR 2700pF 50V
C111	VG279600	C. CE. TUBLR 3300pF 16V
C112	VG279600	C. CE. TUBLR 3300pF 16V
C113	VH053100	C. CE. TUBLR 0.1uF 50V
C114	VH053100	C. CE. TUBLR 0.1uF 50V
C115	UJ638330	C. EL 330uF 16V
C116	VH053100	C. CE. TUBLR 0.1uF 50V
C117	VH053100	C. CE. TUBLR 0.1uF 50V
C118	VJ837200	C. EL 47uF 16V
C119	VJ837200	C. EL 47uF 16V
C120	VJ837200	C. EL 47uF 16V
C121	VJ837200	C. EL 47uF 16V
C122	VE117600	C. EL 220uF 10V
C123	VJ837200	C. EL 47uF 16V
C124	VH053100	C. CE. TUBLR 0.1uF 50V
C125	VJ837200	C. EL 47uF 16V
C126	VH053100	C. CE. TUBLR 0.1uF 50V
C127	VJ839000	C. EL 0.47uF 50V
C128	VJ839000	C. EL 0.47uF 50V
C129	VJ839200	C. EL 2.2uF 50V
C130	VJ839200	C. EL 2.2uF 50V
C131	VJ839200	C. EL 2.2uF 50V
C134	UA652100	C. MYLAR 100pF 50V
C135	UA652100	C. MYLAR 100pF 50V
C136	UM417100	C. EL 10uF 50V
C137	UM215100	C. EL 0.1uF 50V
C138	UM417100	C. EL 10uF 50V
C139	FG211100	C. CE 10pF 50V
C140	VJ837200	C. EL 47uF 16V
C141	UM215100	C. EL 0.1uF 50V
C142	FG212100	C. CE 100pF 50V
C143	UM417100	C. EL 10uF 50V
C144	UM417100	C. EL 10uF 50V
C145	VJ837200	C. EL 47uF 16V
C146	UM215100	C. EL 0.1uF 50V
C147	UM417100	C. EL 10uF 50V
C148	FG211100	C. CE 10pF 50V

* New Parts

Schm Ref.	PART NO.	Description
C148	FG211100	C. CE 10pF 50V (JRA)
C148	FG212100	C. CE 100pF 50V (BG)
C149	VJ837200	C. EL 47uF 16V
C150	VJ837200	C. EL 47uF 16V
C151	UM215100	C. EL 0.1uF 50V
C152	FG211100	C. CE 10pF 50V
C152	FG212100	C. CE 10pF 50V (JRA)
C152	FG212100	C. CE 100pF 50V (BG)
C153	VJ837200	C. EL 47uF 16V
C154	UM417100	C. EL 10uF 50V
C155	VF466800	C. CE. TUBLR 100pF 50V
C156	VF466800	C. CE. TUBLR 100pF 50V
C157	VJ836900	C. EL 10uF 16V
C158	VJ836900	C. EL 10uF 16V
C159	VJ836900	C. EL 10uF 16V
C160	VF637900	C. EL 1000uF 10V
C161	VF466800	C. CE. TUBLR 100pF 50V
C162	VF637900	C. EL 1000uF 10V
C163	VF466800	C. CE. TUBLR 100pF 50V
C164	VF637900	C. EL 1000uF 10V
C165	VF466800	C. CE. TUBLR 100pF 50V
C166	UM417100	C. EL 10uF 50V
C167	VJ839100	C. EL 1uF 50V
* C168	VG722100	C. EL 1uF 50V
C169	VH053100	C. CE. TUBLR 0.1uF 50V
C170	UM417100	C. EL 10uF 50V
C171	VJ836900	C. EL 10uF 16V
C172	VJ837200	C. EL 47uF 16V
C173	VF637900	C. EL 1000uF 10V
C174	VG276600	C. CE. TUBLR 22pF 50V
C175	VJ837200	C. EL 47uF 16V
C176	VF637900	C. EL 1000uF 10V
C177	VF466800	C. CE. TUBLR 100pF 50V
C178	VF466800	C. CE. TUBLR 100pF 50V
C179	VJ836900	C. EL 10uF 16V
C180	VJ837200	C. EL 47uF 16V
C181	UM397330	C. EL 33uF 16V
C182	VG276600	C. CE. TUBLR 22pF 50V
C183	VJ837200	C. EL 47uF 16V
C184	UM397330	C. EL 33uF 16V
C185	VH053100	C. CE. TUBLR 0.1uF 50V
C186	VJ837200	C. EL 47uF 16V
C187	UJ638330	C. EL 330uF 16V
C189	UJ638470	C. EL 470uF 16V
C190	VH053100	C. CE. TUBLR 0.1uF 50V
C191	VJ837200	C. EL 47uF 16V
C192	VH053100	C. CE. TUBLR 0.1uF 50V
D1	VM975000	DIODE. ZENR HZS9B2TD 9.0V
D2	VM975000	DIODE. ZENR HZS9B2TD 9.0V
D4	VD631600	DIODE 1SS133, 176, HSS104
D5	VD631600	DIODE 1SS133, 176, HSS104
D6	VD631600	DIODE 1SS133, 176, HSS104
D7	VD631600	DIODE 1SS133, 176, HSS104

* New Parts

P.C.B. DSP & MAIN

DSP-A590

Schm Ref.	PART NO.	Description
D8	VD631600	DIODE 1SS133, 176, HSS104
D9	VD631600	DIODE 1SS133, 176, HSS104
D10	VD631600	DIODE 1SS133, 176, HSS104
D11	VD631600	DIODE 1SS133, 176, HSS104
D12	VD631600	DIODE 1SS133, 176, HSS104
D13	VM974200	DIODE. ZENR HZS5C2TD 5.0V
D14	VM974200	DIODE. ZENR HZS5C2TD 5.0V
D15	VD631600	DIODE 1SS133, 176, HSS104
D16	VD631600	DIODE 1SS133, 176, HSS104
IC1	XB247301	IC uPC4570HA
* IC2	XP894A00	IC LC78211
IC3	XB247301	IC uPC4570HA
IC4	XB247301	IC uPC4570HA
IC5	XB247301	IC uPC4570HA
IC6	iG055100	IC TC4053BP
IC7	XB247301	IC uPC4570HA
IC8	XB247301	IC uPC4570HA
IC9	XB247301	IC uPC4570HA
IC10	XB247301	IC uPC4570HA
IC11	XB247301	IC uPC4570HA
IC12	XB247301	IC uPC4570HA
IC13	XQ212A00	IC NJM4558LD
IC14	XB247301	IC uPC4570HA
IC15	XQ212A00	IC NJM4558LD
* IC16	XP896A00	IC LC78213
IC17	Xi022B00	IC YSS203B-F
IC18	XK358A00	IC HM65256BLSP-10
IC19	XA507A00	IC AN78N05
IC20	Xi358A00	IC NJM2904L
* IC21	XP265A00	IC BU2090
IC22	XB247301	IC uPC4570HA
IC23	XB247301	IC uPC4570HA
IC24	XB247301	IC uPC4570HA
IC25	XB247301	IC uPC4570HA
IC26	XE536001	IC LC7535
IC27	XE536001	IC LC7535
IC28	XF494A00	IC LB1641
IC29	XH436A00	IC LA7956
IC30	iG055100	IC TC4053BP
IC31	XH436A00	IC LA7956
IC32	XH436A00	IC LA7956
JK1	VS867300	CN 4P YKF51-5501
JK2	VN938100	CN. DIN 3P S
PJ1	VK421600	JACK. PIN 4P
PJ2	VJ794600	JACK. PIN 6P
PJ3	VJ794600	JACK. PIN 6P
PJ4	VT029100	JACK. PIN 4P
* PJ5	VS549000	JACK. PIN 3P
PJ6	VJ695900	JACK. PIN 3P
PJ7	VJ695900	JACK. PIN 3P
Q1	iC260320	TR 2SC2603 E, F
Q2	iC260320	TR 2SC2603 E, F
Q3	iA101521	TR 2SA1015 Y

* New Parts

Schm Ref.	PART NO.	Description
Q4	iC1815C0	TR 2SC1815 Y
Q5	iA101521	TR 2SA1015 Y
Q6	iC1815C0	TR 2SC1815 Y
Q7	iC260320	TR 2SC2603 E, F
Q8	iC260320	TR 2SC2603 E, F
R35	HV453220	R. CAR. FP 2.2 Ω 1/4W
R50	HV453220	R. CAR. FP 2.2 Ω 1/4W
R136	HV453220	R. CAR. FP 2.2 Ω 1/4W
R137	HV453220	R. CAR. FP 2.2 Ω 1/4W
R149	HV453220	R. CAR. FP 2.2 Ω 1/4W
R150	HV453220	R. CAR. FP 2.2 Ω 1/4W
R151	HL314470	R. MTL. OXD 47 Ω 1W
R152	HV453220	R. CAR. FP 2.2 Ω 1/4W
R217	HV453470	R. CAR. FP 4.7 Ω 1/4W
R218	HV453470	R. CAR. FP 4.7 Ω 1/4W
R219	HV454100	R. CAR. FP 10 Ω 1/4W
R221	HV454100	R. CAR. FP 10 Ω 1/4W
R242	HV453220	R. CAR. FP 2.2 Ω 1/4W
VR1	VS868300	VR. MTR A100K Ω
XL1	VK175200	RSNR. CE 11.28MHz
	VB966900	CN IMSA-6024
	VJ828000	PIN IMSA-6024-03E
	BB071360	SCR. TERM 8.3x13
*	VS709600	P. C. B. MAIN(R)
*	VS709700	P. C. B. MAIN(A)
*	VS710000	P. C. B. MAIN(G)
*	VT208900	P. C. B. MAIN(B)
CB501	VK025200	CN 8P
* CB502	VK027100	CN 12P
CB503	VK026300	CN 4P
CB504	VK024900	CN 5P
CB505	VK024700	CN 3P
CB506	VP206500	HOLDER. FUS EYF-52BC
CB507	VP206500	HOLDER. FUS EYF-52BC
CB508	VP206500	HOLDER. FUS EYF-52BC
CB509	VP206500	HOLDER. FUS EYF-52BC
CB510	VK025600	CN 12P
CB511	VP206500	HOLDER. FUS EYF-52BC(R)
CB512	VP206500	HOLDER. FUS EYF-52BC(R)
CB513	VP206500	HOLDER. FUS EYF-52BC
CB514	VP206500	HOLDER. FUS EYF-52BC(G)
CB515	VP206500	HOLDER. FUS EYF-52BC(G)
CB516	VG879900	CN. BS. PIN 2P
* CB517	VL766100	CN. JUMPER 4P
CB518	VK024800	CN 4P
CB519	VP206500	HOLDER. FUS EYF-52BC
CB520	Vi878200	CN. BS. PIN 4P
* CB521	VQ584700	CN. BS. PIN 5P
* CB522	VQ584700	CN. BS. PIN 5P
* CB523	VQ584800	CN. BS. PIN 6P

* New Parts

P.C.B. MAIN

Schm Ref.	PART NO.	Description
* CB524	VQ584800	CN. BS. PIN 6P
CB525	Vi879000	CN. BS. PIN 12P
CB526	Vi878100	CN. BS. PIN 3P
CB527	Vi878200	CN. BS. PIN 4P
CB528	Vi878200	CN. BS. PIN 4P
CB529	LA002110	TERM. WRAP 2P
CB530	LA002110	TERM. WRAP 2P
CB531	LA002110	TERM. WRAP 2P
C501	UM416470	C. EL 4.7uF 50V
C502	VJ839100	C. EL 1uF 50V (AGB)
C503	UM417100	C. EL 10uF 50V
C504	UM417100	C. EL 10uF 50V
C506	VK399200	C. MYLAR. ML 0.39uF 50V
C507	UM416470	C. EL 4.7uF 50V
C508	FG251330	C. CE 33pF 50V
C509	UA652100	C. MYLAR 100pF 50V
C510	FG251330	C. CE 33pF 50V
C511	UA652100	C. MYLAR 100pF 50V
C512	FG251330	C. CE 33pF 50V
C513	UM417100	C. EL 10uF 50V
C514	UA652100	C. MYLAR 100pF 50V
C516	VK399200	C. MYLAR. ML 0.39uF 50V
C517	VQ245400	C. PP 33pF 200V (GB)
* C517	VS696700	C. CE 33pF 500V (RA)
C518	VJ837200	C. EL 47uF 16V
C519	UA253100	C. MYLAR 1000pF 50V
C520	VQ245400	C. PP 33pF 200V (GB)
* C520	VS696700	C. CE 33pF 500V (RA)
C521	VJ837200	C. EL 47uF 16V
C522	UA253100	C. MYLAR 1000pF 50V
C523	VQ245400	C. PP 33pF 200V (GB)
* C523	VS696700	C. CE 33pF 500V (RA)
C524	VJ837200	C. EL 47uF 16V
C525	UA253100	C. MYLAR 1000pF 50V
* C526	VR325000	C. MYLAR 100pF 100V
C527	UJ667470	C. EL 47uF 50V
C528	UJ667470	C. EL 47uF 50V
* C529	VR325000	C. MYLAR 100pF 100V
C530	VK699400	C. EL 330uF 63V
* C531	VR325000	C. MYLAR 100pF 100V
C532	UJ667470	C. EL 47uF 50V
C533	UJ667470	C. EL 47uF 50V
* C534	VR325000	C. MYLAR 100pF 100V
* C535	VR325000	C. MYLAR 100pF 100V
C536	UJ667470	C. EL 47uF 50V
C537	UJ667470	C. EL 47uF 50V
* C538	VR325000	C. MYLAR 100pF 100V
C539	VJ836900	C. EL 10uF 16V
C540	VJ839200	C. EL 2.2uF 50V
C541	VJ839100	C. EL 1uF 50V
C542	UA654680	C. MYLAR 0.068uF 50V
C543	UA654680	C. MYLAR 0.068uF 50V
C544	UA654680	C. MYLAR 0.068uF 50V

* New Parts

Schm Ref.	PART NO.	Description
C545	UA654100	C. MYLAR 0.01uF 50V (GB)
C546	UA654220	C. MYLAR 0.022uF 50V (GB)
C547	UA654220	C. MYLAR 0.022uF 50V (GB)
C548	UA654220	C. MYLAR 0.022uF 50V (GB)
C549	UA654220	C. MYLAR 0.022uF 50V (GB)
C550	UA654100	C. MYLAR 0.01uF 50V (GB)
C551	UA654100	C. MYLAR 0.01uF 50V (GB)
* C552	VS529200	C. EL 10000uF 63V (GB)
* C552	VS578300	C. EL 10000uF 63V (RA)
* C553	VS529200	C. EL 10000uF 63V (GB)
* C553	VS578300	C. EL 10000uF 63V (RA)
C554	UA654100	C. MYLAR 0.01uF 50V (GB)
C555	UA654100	C. MYLAR 0.01uF 50V (GB)
* C556	VS745400	C. POL. MT 0.1uF 100V
* C557	VS745400	C. POL. MT 0.1uF 100V
C558	VJ837200	C. EL 47uF 16V
C559	FG210500	C. CE 5pF 50V (GB)
C559	FG251220	C. CE 22pF 50V (RA)
C560	UA253100	C. MYLAR 1000pF 50V (GB)
C560	UA652470	C. MYLAR 470pF 50V (RA)
C561	VJ837200	C. EL 47uF 16V
C562	UM417100	C. EL 10uF 50V
C563	UM417100	C. EL 10uF 50V
C564	VJ839000	C. EL 0.47uF 50V
C565	VJ839000	C. EL 0.47uF 50V
C566	UM417100	C. EL 10uF 50V
C567	VJ837200	C. EL 47uF 16V
C568	FG210500	C. CE 5pF 50V (GB)
C568	FG251220	C. CE 22pF 50V (RA)
C569	UA253100	C. MYLAR 1000pF 50V (GB)
C569	UA652470	C. MYLAR 470pF 50V (RA)
C570	VJ837200	C. EL 47uF 16V
C571	UJ648470	C. EL 470uF 25V
* C572	VR325000	C. MYLAR 100pF 100V
C573	UA654100	C. MYLAR 0.01uF 50V
C574	VF466800	C. CE. TUBLR 100pF 50V
* C575	VR325000	C. MYLAR 100pF 100V
* C576	VR325000	C. MYLAR 100pF 100V
C577	UA654100	C. MYLAR 0.01uF 50V
C578	UM417100	C. EL 10uF 50V
C579	VF466800	C. CE. TUBLR 100pF 50V
* C580	VR325000	C. MYLAR 100pF 100V
C581	Ui377470	C. EL 47uF 63V (R)
C582	FG213100	C. CE 1000pF 50V (R)
C583	UA655100	C. MYLAR 0.1uF 50V (GB)
C584	UA654470	C. MYLAR 0.047uF 50V
C585	FG214100	C. CE 0.01uF 50V
C586	UA654100	C. MYLAR 0.01uF 50V
C587	VL544800	C. EL 3300uF 35V
C588	VG289900	C. EL 2200uF 35V
C589	UM416470	C. EL 4.7uF 50V
C590	VS741700	C. CE. SAFTY 0.01uF 275V
* C591	VS745400	C. POL. MT 0.1uF 100V

* New Parts

P.C.B. MAIN

DSP-A590

Schm Ref.	PART NO.	Description
* C592	VS745400	C. POL. MT 0.1uF 100V
C593	UJ667470	C. EL 47uF 50V
C594	VJ839000	C. EL 0.47uF 50V
C595	VJ837200	C. EL 47uF 16V
C596	VF466900	C. CE. TUBLR 470pF 50V
C597	VF466900	C. CE. TUBLR 470pF 50V
C598	VF466900	C. CE. TUBLR 470pF 50V
C599	VF466900	C. CE. TUBLR 470pF 50V
C600	VF466900	C. CE. TUBLR 470pF 50V
C601	UA654470	C. MYLAR 0.047uF 50V
C602	VJ839000	C. EL 0.47uF 50V
C603	UA654100	C. MYLAR 0.01uF 50V (GB)
C604	UA654220	C. MYLAR 0.022uF 50V (GB)
C605	UA654100	C. MYLAR 0.01uF 50V (GB)
C606	UA654100	C. MYLAR 0.01uF 50V (GB)
C607	UA654220	C. MYLAR 0.022uF 50V (GB)
C610	VH053100	C. CE. TUBLR 0.1uF 50V (GB)
C615	VF466800	C. CE. TUBLR 100pF 50V (GB)
C616	VF466800	C. CE. TUBLR 100pF 50V (GB)
C620	FG244220	C. CE 0.022uF 50V (GB)
D501	VM976300	DIODE. ZENR HZS242TD 24V
D502	VM976300	DIODE. ZENR HZS242TD 24V
D503	VM974500	DIODE. ZENR HZS6C2TD 6.0V
D504	VD631600	DIODE 1SS133, 176, HSS104
D505	VM974400	DIODE. ZENR HZS6B2TD 6.0V
D506	VN008700	DIODE 1SS270A
D507	VN008700	DIODE 1SS270A
D508	VN008700	DIODE 1SS270A
△ D510	VN011400	DIODE. BRG D5SB20 5A 200V
D511	VM975800	DIODE. ZENR HZS152TD 15V
D512	VM976300	DIODE. ZENR HZS242TD 24V
D513	VD631600	DIODE 1SS133, 176, HSS104
D514	VM976300	DIODE. ZENR HZS242TD 24V
D515	VM975800	DIODE. ZENR HZS152TD 15V
D516	VD631600	DIODE 1SS133, 176, HSS104
D517	VD631600	DIODE 1SS133, 176, HSS104
D518	VD631600	DIODE 1SS133, 176, HSS104
D519	VD631600	DIODE 1SS133, 176, HSS104
D520	VM975600	DIODE. ZENR HZS12B2TD 12V (R)
△ D521	VR253700	DIODE. BRG S1NB20 1.0A 200V
D522	VM976300	DIODE. ZENR HZS242TD 24V
△ D523	VN011300	DIODE. BRG D3SBA20 4A 200V
D524	VM975700	DIODE. ZENR HZS12C2TD 12V
△ F501	KB000790	FUSE T4. 0A 250V (RGB)
△ F501	VS822900	FUSE T4. 0A 125V (R)
△ F502	KB000790	FUSE T4. 0A 250V (AGB)
△ F502	VS822900	FUSE T4. 0A 125V (R)
△ F503	KB002980	FUSE T2. 5A 250V (G)
△ F504	KB000760	FUSE T3. 15A 250V (R)
△ F505	KB000760	FUSE T3. 15A 250V (AGB)
△ F505	VP909900	FUSE T7. 0A 125V (R)
IC501	iG092000	IC M5220L
IC502	XD343A00	IC NJM79M12FA

* New Parts

Schm Ref.	PART NO.	Description
JK501	LB301720	JACK. PHONE
△ JK502	VK480600	CN. OUTLET (R)
△ JK502	VK480700	CN. OUTLET (G)
* L501	VR906600	COIL 0.95uH
* L502	VR906600	COIL 0.95uH
* L503	VP575600	COIL 1.5uH
* L504	VP575600	COIL 1.5uH
* L505	VP575600	COIL 1.5uH
PJ501	VR245000	JACK. PIN 6P
Q501	VK432900	TR 2SD1915F S, T (AGB)
Q502	VK432900	TR 2SD1915F S, T
Q503	VK432900	TR 2SD1915F S, T (AGB)
Q504	VK432900	TR 2SD1915F S, T
Q505	VK432900	TR 2SD1915F S, T
Q506	iA101521	TR 2SA1015 Y
* Q507	VP883000	TR 2SA893A D, E
* Q508	VP883000	TR 2SA893A D, E
* Q509	VP883000	TR 2SA893A D, E
Q510	iC224030	TR 2SC2240 GR, BL
* Q511	VP883000	TR 2SA893A D, E
* Q512	VP883000	TR 2SA893A D, E
* Q513	VP883000	TR 2SA893A D, E
Q514	VC218900	TR 2SC3330 R, S, T
* Q515	VR325600	TR 2SC2229 O, Y
Q516	VC218900	TR 2SC3330 R, S, T
* Q517	VR325600	TR 2SC2229 O, Y
Q518	VC218900	TR 2SC3330 R, S, T
* Q519	VR325600	TR 2SC2229 O, Y
Q520	iD040040	TR 2SD400
Q521	iA093320	TR 2SA933S Q, R
Q522	iX603580	TR 2SA1358
# Q523A	iX606460	TR 2SA1492 O, P, Y
# Q523C	iX606470	TR 2SC3856 O, P, Y
Q526	iX603580	TR 2SA1358
# Q527A	iX606460	TR 2SA1492 O, P, Y
# Q527C	iX606470	TR 2SC3856 O, P, Y
Q530	iX603580	TR 2SA1358
# Q531A	iX633340	TR 2SA1695 O, P, Y
# Q531C	iX633350	TR 2SC4468 O, P, Y
Q534	iA097000	TR 2SA970 GR, BL
* Q535	VP883100	TR 2SC1890A D, E
* Q536	VP883100	TR 2SC1890A D, E
* Q537	VP883100	TR 2SC1890A D, E
Q538	VK432900	TR 2SD1915F S, T
Q539	VK432900	TR 2SD1915F S, T
Q540	iC1815C0	TR 2SC1815 Y
Q541	iA101521	TR 2SA1015 Y
Q542	VC218900	TR 2SC3330 R, S, T
Q543	iX619590	TR 2SA1726 O, P, Y
* Q544	VP872700	TR 2SC4488 S, T
* Q545	VP872600	TR 2SA1708 S, T
Q546	iC224030	TR 2SC2240 GR, BL
Q548	iX619590	TR 2SA1726 O, P, Y

* New Parts

P.C.B. MAIN & OPERATION

Schm Ref.	PART NO.	Description
* Q549	VP872700	TR 2SC4488 S,T
* Q550	VP872600	TR 2SA1708 S,T
Q551	iC224030	TR 2SC2240 GR,BL
Q553	VR510800	TR 2SD2396 J,K(R)
Q555	iC224030	TR 2SC2240 GR,BL
Q556	iC224030	TR 2SC2240 GR,BL
Q557	VN996900	TR 2SC4495
Q558	iE000020	FET 2SK30ATM GR
Q559	VK432900	TR 2SD1915F S,T
Q560	VK432900	TR 2SD1915F S,T
Q561	VK432900	TR 2SD1915F S,T
R517	HV456100	R. CAR. FP 1K Ω 1/4W
R531	HV455150	R. CAR. FP 150 Ω 1/4W
* R553	HL316560	R. MTL. OXD 5.6K Ω 1W
* R554	HL316560	R. MTL. OXD 5.6K Ω 1W
R555	HV456270	R. CAR. FP 2.7K Ω 1/4W
R557	HV455820	R. CAR. FP 820 Ω 1/4W
R558	VK189000	R. FUS 1K Ω 1/4W
R559	HV454470	R. CAR. FP 47 Ω 1/4W
R560	HL314100	R. MTL. OXD 10 Ω 1W
* R561	HL316560	R. MTL. OXD 5.6K Ω 1W
* R562	HL316560	R. MTL. OXD 5.6K Ω 1W
R563	HV456270	R. CAR. FP 2.7K Ω 1/4W
R565	HV455820	R. CAR. FP 820 Ω 1/4W
R566	VK189000	R. FUS 1K Ω 1/4W
R567	HV454470	R. CAR. FP 47 Ω 1/4W
* R568	HL316560	R. MTL. OXD 5.6K Ω 1W
* R569	HL316560	R. MTL. OXD 5.6K Ω 1W
R570	HV456270	R. CAR. FP 2.7K Ω 1/4W
R572	HV455820	R. CAR. FP 820 Ω 1/4W
R573	VK189000	R. FUS 1K Ω 1/4W
R574	HV454470	R. CAR. FP 47 Ω 1/4W
R580	HV453470	R. CAR. FP 4.7 Ω 1/4W
R581	VK188400	R. FUS 330 Ω 1/4W
R582	VJ695400	R. WW 0.22 Ω x2 3W
R583	HV453470	R. CAR. FP 4.7 Ω 1/4W
R584	HV453470	R. CAR. FP 4.7 Ω 1/4W
R585	VK188400	R. FUS 330 Ω 1/4W
R586	VJ695400	R. WW 0.22 Ω x2 3W
R587	HV453470	R. CAR. FP 4.7 Ω 1/4W
R588	HV453470	R. CAR. FP 4.7 Ω 1/4W
R589	VK188400	R. FUS 330 Ω 1/4W
* R590	HZ003780	R. MTL. PLAT 0.22 Ω +0.22 5W
R591	HV453470	R. CAR. FP 4.7 Ω 1/4W
R598	HL314100	R. MTL. OXD 10 Ω 1W
R603	HL314100	R. MTL. OXD 10 Ω 1W
R609	HL314100	R. MTL. OXD 10 Ω 1W
R611	HV454100	R. CAR. FP 10 Ω 1/4W
R613	HV454100	R. CAR. FP 10 Ω 1/4W
R614	VP944500	R. MTL. OXD 390 Ω 1W
R615	VP944500	R. MTL. OXD 390 Ω 1W
R633	HV455390	R. CAR. FP 390 Ω 1/4W
R640	HV455390	R. CAR. FP 390 Ω 1/4W

* New Parts

Schm Ref.	PART NO.	Description
R643	HV455330	R. CAR. FP 330 Ω 1/4W
R644	VE869300	R. MTL. OXD 0.1 Ω 2W
R648	HV454220	R. CAR. FP 22 Ω 1/4W
R649	HV454470	R. CAR. FP 47 Ω 1/4W
R650	HV455330	R. CAR. FP 330 Ω 1/4W
R652	VE869300	R. MTL. OXD 0.1 Ω 2W
R655	HV454220	R. CAR. FP 22 Ω 1/4W
R656	HV454470	R. CAR. FP 47 Ω 1/4W
R657	HV456560	R. CAR. FP 5.6K Ω 1/4W(R)
R658	HV456560	R. CAR. FP 5.6K Ω 1/4W(R)
R661	HV456150	R. CAR. FP 1.5K Ω 1/4W
R662	HV456220	R. CAR. FP 2.2K Ω 1/4W
R666	HV456150	R. CAR. FP 1.5K Ω 1/4W
R667	HV456220	R. CAR. FP 2.2K Ω 1/4W
R668	HV453220	R. CAR. FP 2.2 Ω 1/4W
R670	HV454100	R. CAR. FP 10 Ω 1/4W
R671	HL313220	R. MTL. FLM 2.2 Ω 1W
R672	HV455150	R. CAR. FP 150 Ω 1/4W
R673	HL313220	R. MTL. FLM 2.2 Ω 1W
R674	HV453220	R. CAR. FP 2.2 Ω 1/4W
R687	HV454100	R. CAR. FP 10 Ω 1/4W
R688	HV453220	R. CAR. FP 2.2 Ω 1/4W
R689	HV454100	R. CAR. FP 10 Ω 1/4W
R690	HL325470	R. MTL. OXD 470 Ω 2W
R700	HL325470	R. MTL. OXD 470 Ω 2W
RY501	VK438300	RELAY DH24D2-OTM-
RY502	VS533600	RELAY DC DH24D2-OS(M) II
RY503	VH230800	RELAY G5P-1-DC12V
SW501	VJ850200	SW. PUSH PSE021A2KP 2
SW502	VS602600	SW. SLIDE SS070-P022 A(AGB)
SW511	VA961800	VOLT. SELCT ESE-37247-F(R)
T501	XC082A00	TRANS. PWR (R)
T501	XC084A00	TRANS. PWR (AGB)
TE501	VC313700	TERM. SP 8P(R)
TE501	VK506200	TERM. SP 8P(AGB)
TE502	VS578600	TERM. SP 8P
	VJ828000	PIN IMSA-6024-03E
	VS605900	HEAT. SINK DPS15-45(R)
	VS606000	HEAT. SINK DPS35-45
	BB071360	SCR. TERM 8.3x13
	VR264300	GND. MTL
	EP630280	SCR. BND. HD 3x10 FCRM3-BL
	LA000280	TERM. LUG 1P(GB)
	VS710900	P. C. B. OPERATION(JRA)
	VS711000	P. C. B. OPERATION(BG)
CB901	VR362200	CN. BS. PIN 15P
CB902	Vi879000	CN. BS. PIN 12P
CB903	Vi878700	CN. BS. PIN 9P
CB904	Vi878600	CN. BS. PIN 8P
C901	VJ839200	C. EL 2.2 μ F 50V

* New Parts

P.C.B. OPERATION

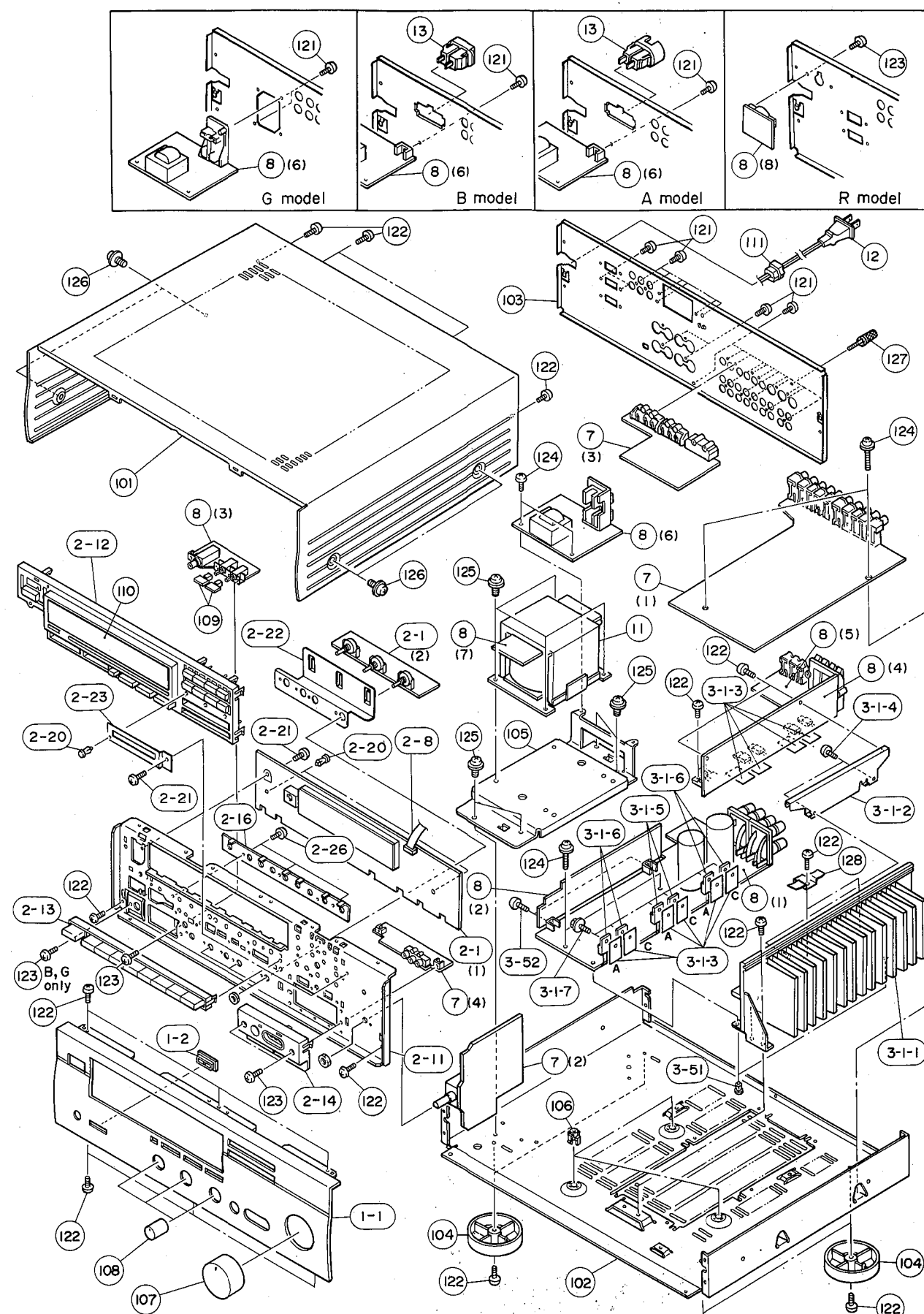
Schm Ref.	PART NO.	Description
C902	VJ837200	C. EL 47 μ F 16V
C903	UA652100	C. MYLAR 100pF 50V
C904	VJ839200	C. EL 2.2 μ F 50V
C905	VJ839200	C. EL 2.2 μ F 50V
C906	UA652100	C. MYLAR 100pF 50V
C907	VJ837200	C. EL 47 μ F 16V
C908	VR357400	C. EL 4700 μ F 5.5V
C909	VH053100	C. CE. TUBLR 0.1 μ F 50V
C910	VF637900	C. EL 1000 μ F 10V
C911	UM407220	C. EL 22 μ F 25V
C912	UA655120	C. MYLAR 0.12 μ F 50V
C913	UA655120	C. MYLAR 0.12 μ F 50V
C914	UM407220	C. EL 22 μ F 25V
C915	VJ839000	C. EL 0.47 μ F 50V
C916	VH053100	C. CE. TUBLR 0.1 μ F 50V
C917	UA654330	C. MYLAR 0.033 μ F 50V
C918	VJ839000	C. EL 0.47 μ F 50V
C919	VJ839000	C. EL 0.47 μ F 50V
C920	UA654330	C. MYLAR 0.033 μ F 50V
C921	UM407220	C. EL 22 μ F 25V
C922	UM407220	C. EL 22 μ F 25V
C923	VH053100	C. CE. TUBLR 0.1 μ F 50V
C924	VJ837200	C. EL 47 μ F 16V
D901	VM974300	DIODE. ZENR HZS6A2TD 6.0V
D902	VM974100	DIODE. ZENR HZS5B2TD 5.0V
D903	VD631600	DIODE 1SS133, 176, HSS104
D904	VD631600	DIODE 1SS133, 176, HSS104
D905	VD631600	DIODE 1SS133, 176, HSS104
D906	VP594000	LED(re) SLR-305VCA47(BG)
D907	VN008700	DIODE 1SS270A
D908	VN008700	DIODE 1SS270A
D909	VN008700	DIODE 1SS270A
D914	VN008700	DIODE 1SS270A
D915	VN008700	DIODE 1SS270A
D916	VN008700	DIODE 1SS270A
D918	VD631600	DIODE 1SS133, 176, HSS104
G901	VR463400	TERM. GND D3.5 TP00385
IC901	XB247301	IC μ PC4570HA
IC902	XB247301	IC μ PC4570HA
IC903	XQ087A00	IC M38102M4-621SP
Q901	VD678500	TR. DGT DTA114ES
Q902	iC174020	TR 2SC1740S R,S
Q903	VG722000	TR. DGT DTC144ES
R936	HV455100	R. CAR. FP 100 Ω 1/4W
R939	HV455100	R. CAR. FP 100 Ω 1/4W
SW901	VG392900	SW. TACT SKHVAA
SW902	VG392900	SW. TACT SKHVAA
SW903	VG392900	SW. TACT SKHVAA
SW904	VG392900	SW. TACT SKHVAA
SW905	VG392900	SW. TACT SKHVAA
SW906	VG392900	SW. TACT SKHVAA
SW907	VG392900	SW. TACT SKHVAA
SW908	VG392900	SW. TACT SKHVAA

* New Parts

Schm Ref.	PART NO.	Description
SW909	VG392900	SW. TACT SKHVAA
SW912	VG392900	SW. TACT SKHVAA
SW915	VG392900	SW. TACT SKHVAA
SW918	VG392900	SW. TACT SKHVAA
SW921	VG392900	SW. TACT SKHVAA
SW922	VG392900	SW. TACT SKHVAA
SW924	VG392900	SW. TACT SKHVAA
SW927	VG392900	SW. TACT SKHVAA
SW930	VG392900	SW. TACT SKHVAA
SW933	VG392900	SW. TACT SKHVAA
SW934	VG392900	SW. TACT SKHVAA
SW935	VG392900	SW. TACT SKHVAA
SW936	VG392900	SW. TACT SKHVAA
SW937	VG392900	SW. TACT SKHVAA
SW938	VG392900	SW. TACT SKHVAA
SW939	VG392900	SW. TACT SKHVAA
SW940	VG392900	SW. TACT SKHVAA
* U901	VR023400	L. DETCT SPS-424-1
* V901	VS550600	FL. DSPLY 13-BT-137GK
* VR901	VP741800	VR B20K Ω
* VR902	VP741900	VR G25K Ω
* VR903	VP742000	VR MN50K Ω
XL901	VE906000	RSNR. CE 4MHz
	VJ828000	PIN IMSA-6024-03E
	VR380100	SPACER FL-T6
	VR011400	SHEET. FL

* New Parts

EXPLODED VIEW



MECHANICAL PARTS

Ref. No.	PART NO.	Description	Remarks	Markets
* 1-1	VT004200	FRONT PANEL	TI	
* 1-1	VT004300	FRONT PANEL	BL	
* 1-2	VQ793400	BUTTON GUIDE	BL	
* 1-2	VQ793500	BUTTON GUIDE	TI	
* 2-1	VS710900	P.C.B. ASS'Y	OPERATION	(RA)
* 2-1	VS711000	P.C.B. ASS'Y	OPERATION	(BG)
* 2-8	VS756900	CONNECTOR, FLAT CABLE	15P 250mm	
* 2-11	VS003200	SUB CHASSIS		
* 2-12	VS003400	BUTTON, CASE	BL	
* 2-12	VS324500	BUTTON, CASE	TI	
* 2-13	VS003500	BUTTON, T	BL	
* 2-13	VS414400	BUTTON, T	TI	
* 2-14	VS195900	ESCUTCHEON	BL	
* 2-14	VS196000	ESCUTCHEON	TI	
* 2-16	VT305900	SUPPORT, T		
* 2-20	VQ368600	PUSH RIVET	P3555-B	
* 2-21	Ei330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
* 2-22	VS865700	SHIELD PLATE		
* 2-23	VS906800	HOLDER		
* 2-26	Ei330066	BIND HEAD B-TITE SCREW	3x6 FCRM3-BL	
* 3-1-1	VS002400	HEAT SINK ASS'Y		
* 3-1-2	VQ796100	SUPPORT, PCB		
* 3-1-3	VK195900	SHEET	19x24	
* 3-1-4	Ei330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
* 3-1-5	iX633340	TRANSISTOR	2SA1695 O,P,Y	Q531A
* 3-1-5	iX633350	TRANSISTOR	2SC4468 O,P,Y	Q531C
* 3-1-6	iX606460	TRANSISTOR	2SA1492 O,P,Y	Q523A, Q527A
* 3-1-6	iX606470	TRANSISTOR	2SC3856 O,P,Y	Q523C, Q527C
* 3-1-7	VK173200	SCREW, TRANSISTOR	3x15 SP FCM3	
* 3-51	VQ368600	PUSH RIVET	P3555-B	
* 3-52	ED330066	BIND HEAD SCREW	3x6 FCRM3-BL	
* 7	VS711300	P.C.B. ASS'Y	DSP	(RA)
* 7	VS711400	P.C.B. ASS'Y	DSP	(BG)
* 8	VS709600	P.C.B. ASS'Y	MAIN	(R)
* 8	VS709700	P.C.B. ASS'Y	MAIN	(A)
* 8	VS710000	P.C.B. ASS'Y	MAIN	(G)
* 8	VT208900	P.C.B. ASS'Y	MAIN	(B)
* 11	XP965B00	POWER TRANSFORMER		(R)
* 11	XP966B00	POWER TRANSFORMER		(AB)
* 11	XP967B00	POWER TRANSFORMER		(G)
* 12	VQ508500	POWER CORD ASS'Y		(R)
* 12	VQ508600	POWER CORD ASS'Y		(A)
* 12	VS168400	POWER CORD ASS'Y		(G)
* 12	VS680700	POWER CORD ASS'Y		(B)
* 13	VJ775000	AC OUTLET	2P	(B)
* 13	VP418700	AC OUTLET	2P	(A)
* 101	VS001200	TOP COVER	BL	
* 101	VS001300	TOP COVER	TI	
* 102	VS001400	CHASSIS		
* 103	VS220900	REAR PANEL		(R)
* 103	VS221100	REAR PANEL		(G)
* 103	VS221700	REAR PANEL		(AB)
* 104	VQ780300	LEG	D60xH16	

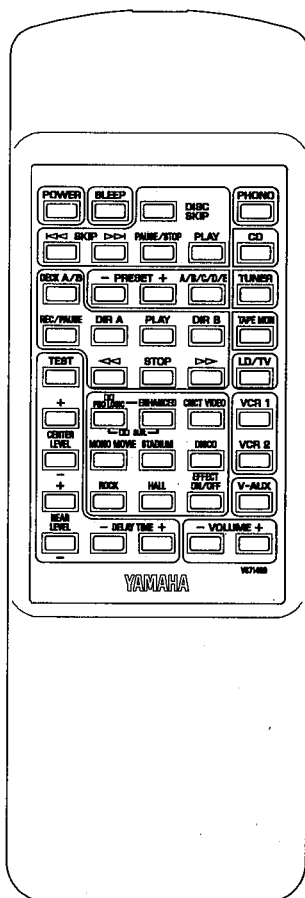
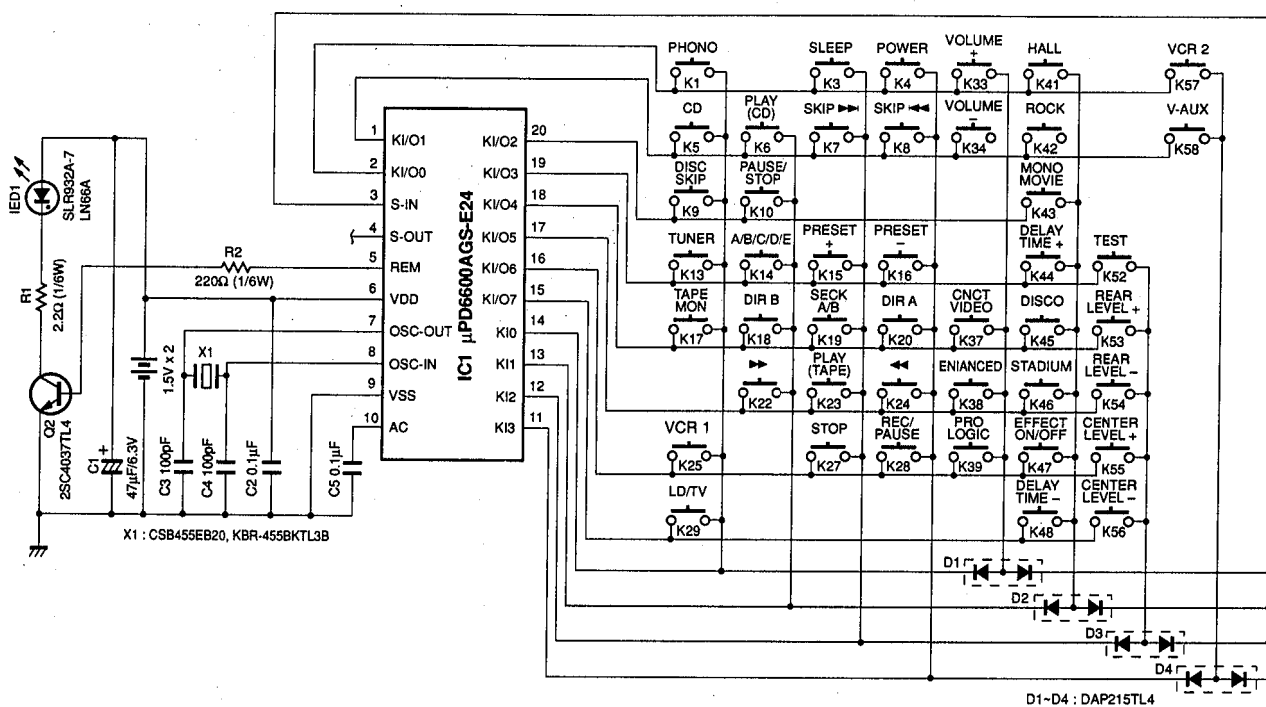
* New Parts

Ref. No.	PART NO.	Description	Remarks	Markets
* 105	VS001900	FRAME, PCB		
* 106	VR264400	SPACER, H8		
107	VQ945600	KNOB	D42	VOLUME TI
107	VR021500	KNOB	D42	VOLUME BL
* 108	VS409600	KNOB	D18	BASS, TREBLE BL
* 108	VS409800	KNOB	D18	BASS, TREBLE TI
* 109	VQ779000	BUTTON	3x14	SPEAKERS BL
* 109	VQ779100	BUTTON	3x14	SPEAKERS TI
* 110	VS540900	SHEET, F		(RA)
* 110	VS541000	SHEET, F		(BG)
111	VN158600	CORD STOPPER	No. 2104	
121	EN301010	BIND HEAD BONDING TAP. SCREW	3x8 FCRM3-BL	
122	Ei330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
123	ED330066	BIND HEAD SCREW	3x6 FCRM3-BL	
124	EL300480	BW HEAD B-TITE SCREW	3x15-8 FCRM3-BL	
125	EL300470	BW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	
126	EL300470	BW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	BL
126	EX601150	BW HEAD S-TITE SCREW	4x8-10 FNM3-BL	TI
127	AA627310	GROUND TERMINAL		
* 128	VS349300	SUPPORT	TR	
		ACCESSORIES		
* 200	VS714000	REMOTE CONTROL TRANSMITTER		(7A, 7C)
200-1	CX675150	LID	54x32.9BLALPS	
		BATTERY, MANGANESE	SUM-3, AA, R06	

* New Parts

REMOTE CONTROL TRANSMITTER

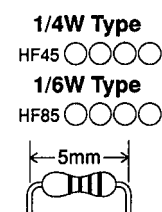
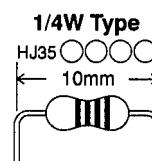
■ SCHEMATIC DIAGRAM



KEY No.	FUNCTION	CUSTOM CODE (HEX)	SUB CUSTOM CODE (HEX)	DATA CODE (HEX)	C0	C7	C0	C7	D0	D7	D0	D7
1	PHONO	7A	85	14	0101	1110	1010	0001	0010	1000	1101	0111
3	SLEEP	7A	85	57	0101	1110	1010	0001	1110	1010	0001	0101
4	POWER	7A	85	1F	0101	1110	1010	0001	1111	1000	0000	0111
5	CD	7A	85	15	0101	1110	1010	0001	1010	1000	0101	0111
6	PLAY (CD)	7A	85	08	0101	1110	1010	0001	0001	0000	1110	1111
7	SKIP →	7A	85	0A	0101	1110	1010	0001	0101	0000	1010	1111
8	SKIP ←	7A	85	0B	0101	1110	1010	0001	0101	0001	1101	1111
9	DISC SKIP	7A	85	4F	0101	1110	1010	0001	1111	0101	0000	1101
10	PAUSE/STOP (CD)	7A	85	09	0101	1110	1010	0001	1001	0000	0110	1111
13	TUNER	7A	85	16	0101	1110	1010	0001	0110	1000	1001	0111
14	A/B/C/D/E	7A	85	12	0101	1110	1010	0001	0100	1000	1011	0111
15	PRESET +	7A	85	10	0101	1110	1010	0001	0000	1000	1111	0111
16	PRESET -	7A	85	11	0101	1110	1010	0001	1000	1000	0111	0111
17	TAPE MON	7A	85	18	0101	1110	1010	0001	0001	1000	1111	0111
18	DIR B	7A	85	40	0101	1110	1010	0001	0000	0010	1111	1101
19	DECK A/B	7A	85	06	0101	1110	1010	0001	0110	0000	1001	1111
20	DIR A	7A	85	07	0101	1110	1010	0001	1110	0000	0001	1111
22	→	7A	85	02	0101	1110	1010	0001	0100	0000	1011	1111
23	PLAY (TAPE)	7A	85	00	0101	1110	1010	0001	0000	0000	1111	1111
24	←	7A	85	01	0101	1110	1010	0001	1000	0000	0111	1111
25	VCR 1	7A	85	0F	0101	1110	1010	0001	1111	0000	0000	1111
27	STOP (TAPE)	7A	85	03	0101	1110	1010	0001	1100	0000	0011	1111
28	REC/PAUSE	7A	85	04	0101	1110	1010	0001	0010	0000	1101	1111
29	LD/TV	7A	85	17	0101	1110	1010	0001	1110	1000	0001	0111
33	VOLUME +	7A	85	1A	0101	1110	1010	0001	0101	1000	1010	0111
34	VOLUME -	7A	85	1B	0101	1110	1010	0001	1101	1000	0010	0111
37	CONCERT VIDEO	7A	85	8A	0101	1110	1010	0001	0101	0001	1010	1110
38	ENHANCED	7A	85	89	0101	1110	1010	0001	1001	0001	0110	1110
39	PRO LOGIC	7A	85	88	0101	1110	1010	0001	0001	0001	1110	1110
41	CONCERT HALL	7A	85	8D	0101	1110	1010	0001	1011	0001	0100	1110
42	ROCK CONCERT	7A	85	8C	0101	1110	1010	0001	0011	0001	1100	1110
43	MONO MOVIE	7A	85	8B	0101	1110	1010	0001	1101	0001	0010	1110
44	DELAY TIME +	7A	85	52	0101	1110	1010	0001	0100	1010	1011	0101
45	DISCO	7A	85	8F	0101	1110	1010	0001	1111	0001	0000	1110
46	STADIUM	7A	85	8E	0101	1110	1010	0001	0111	0001	1000	1110
47	EFFECT ON/OFF	7A	85	56	0101	1110	1010	0001	0110	1010	1001	0101
48	DELAY TIME -	7A	85	53	0101	1110	1010	0001	1100	1010	0011	0101
52	TEST	7A	85	85	0101	1110	1010	0001	1010	0001	0101	1110
53	REAR LEVEL +	7A	85	5E	0101	1110	1010	0001	0111	1010	1000	0101
54	REAR LEVEL -	7A	85	5F	0101	1110	1010	0001	1111	1010	0000	0101
55	CENTER LEVEL +	7A	85	82	0101	1110	1010	0001	0100	0001	1011	1110
56	CENTER LEVEL -	7A	85	83	0101	1110	1010	0001	1100	0001	0011	1110
57	VCR 2	7A	85	13	0101	1110	1010	0001	1100	1000	0011	0111
58	V-AUX	7A	85	55	0101	1110	1010	0001	1010	1010	0101	0101

Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 k Ω	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	*	11 k Ω	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 k Ω	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 k Ω	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 k Ω	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 k Ω	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 k Ω	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 k Ω	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 k Ω	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 k Ω	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 k Ω	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 k Ω	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 k Ω	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 k Ω	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 k Ω	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 k Ω	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 k Ω	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 k Ω	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 k Ω	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 k Ω	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 k Ω	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 k Ω	HF45 8110	HF45 8110
160 Ω	HJ35 5160	*	120 k Ω	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 k Ω	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 k Ω	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 k Ω	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 k Ω	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 k Ω	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 k Ω	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 k Ω	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 k Ω	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 k Ω	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 k Ω	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 k Ω	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 M Ω	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 M Ω	HJ35 9120	*
1.0 k Ω	HF45 6100	HF45 6100	1.5 M Ω	HJ35 9150	HF85 9150
1.2 k Ω	HF45 6120	HF45 6120	1.8 M Ω	HJ35 9180	HF85 9180
1.5 k Ω	HF45 6150	HF45 6150	2.2 M Ω	HJ35 9220	HF85 9220
1.8 k Ω	HF45 6180	HF45 6180	3.3 M Ω	HJ35 9330	HF85 9330
2.0 k Ω	HJ35 6200	HF85 6200	3.9 M Ω	HJ35 9390	*
2.2 k Ω	HF45 6220	HF45 6220	4.7 M Ω	HJ35 9470	HF85 9470
2.4 k Ω	HJ35 6240	HF85 6240			
2.7 k Ω	HF45 6270	HF45 6270			
3.0 k Ω	HF45 6300	HF45 6300			
3.3 k Ω	HF45 6330	HF45 6330			
3.6 k Ω	HJ35 6360	HF85 6360			
3.9 k Ω	HF45 6390	HF45 6390			
4.7 k Ω	HF45 6470	HF45 6470			
5.1 k Ω	HF45 6510	HF45 6510			
5.6 k Ω	HF45 6560	HF45 6560			
6.8 k Ω	HF45 6680	HF45 6680			
8.2 k Ω	HF45 6820	HF45 6820			
9.1 k Ω	HF45 6910	HF45 6910			



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