

# STEREO RECEIVER RX-10

## SERVICE MANUAL

### 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 any 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 part replacement. Recheck all work before you apply power to the unit.

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**YAMAHA**  
YAMAHA CORPORATION  
P.O.Box1.Hamamatsu.Japan

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RX-10

## ■ TO SERVICE PERSONNEL

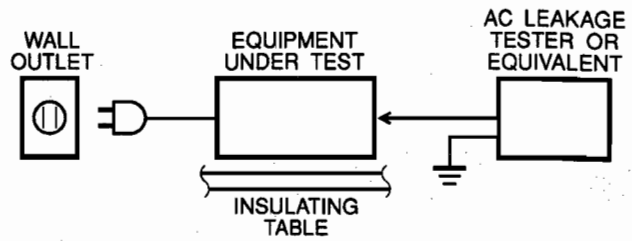
### 1. Critical Components information.

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

### 2. Leakage Current Measurement (For 120V Model only).

When service has been completed, it is imperative that you verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohm shunted by 0.15 $\mu$ F.
- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.



## WARNING: CHEMICAL CONTENT NOTICE!

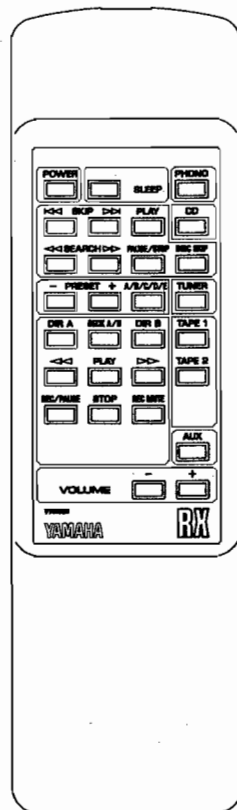
The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

**DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!**

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

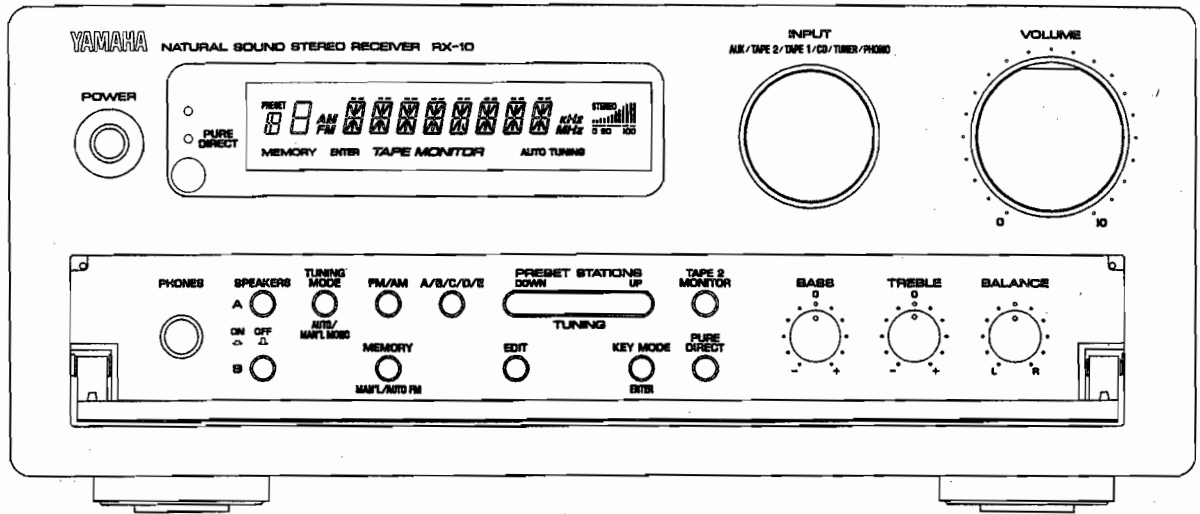
If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

## ■ REMOTE CONTROL PANEL

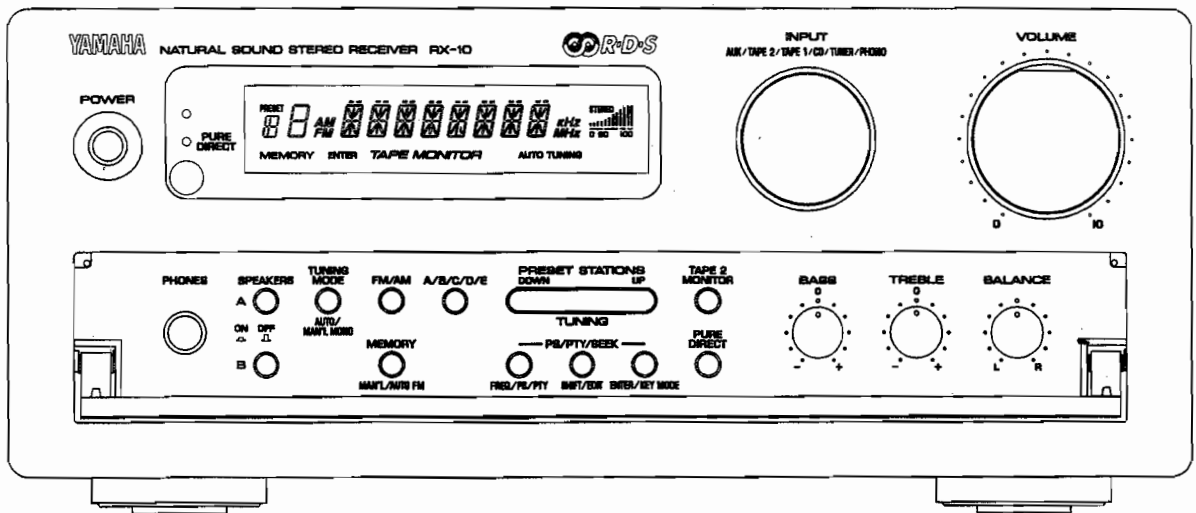


# FRONT PANELS

## ▼ R model



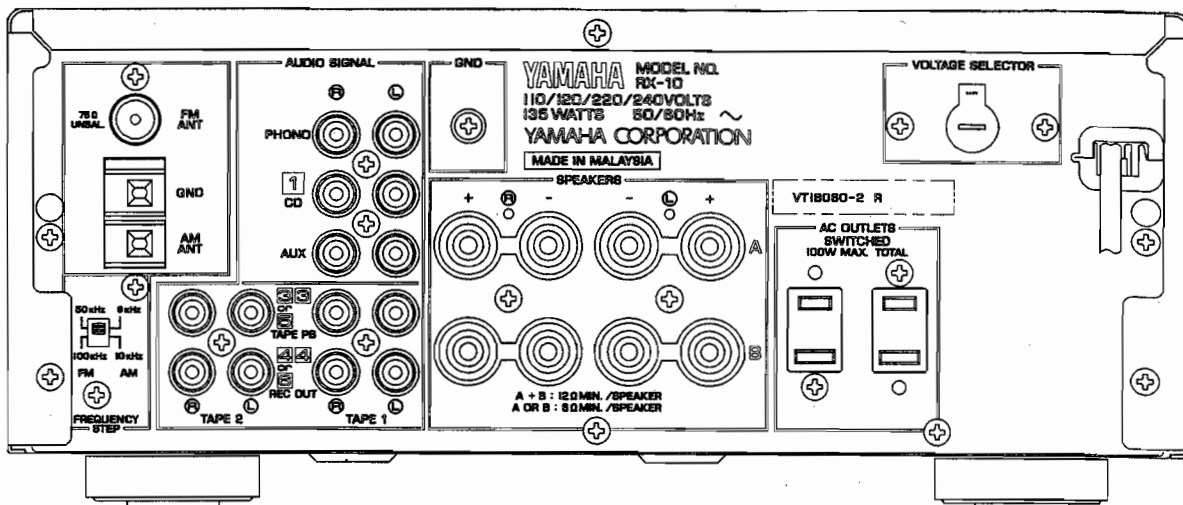
## ▼ B & G models



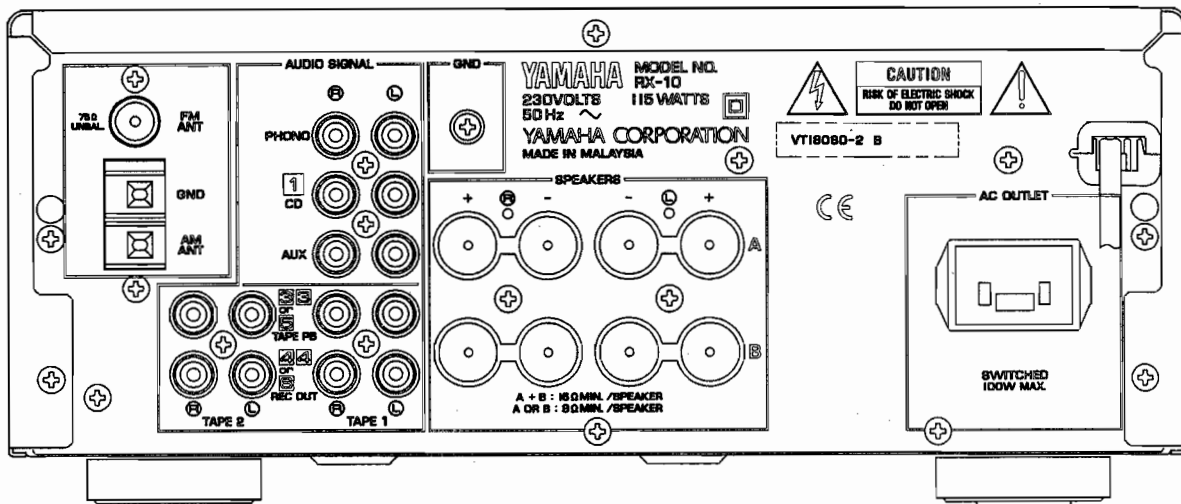
RX-10

## REAR PANELS

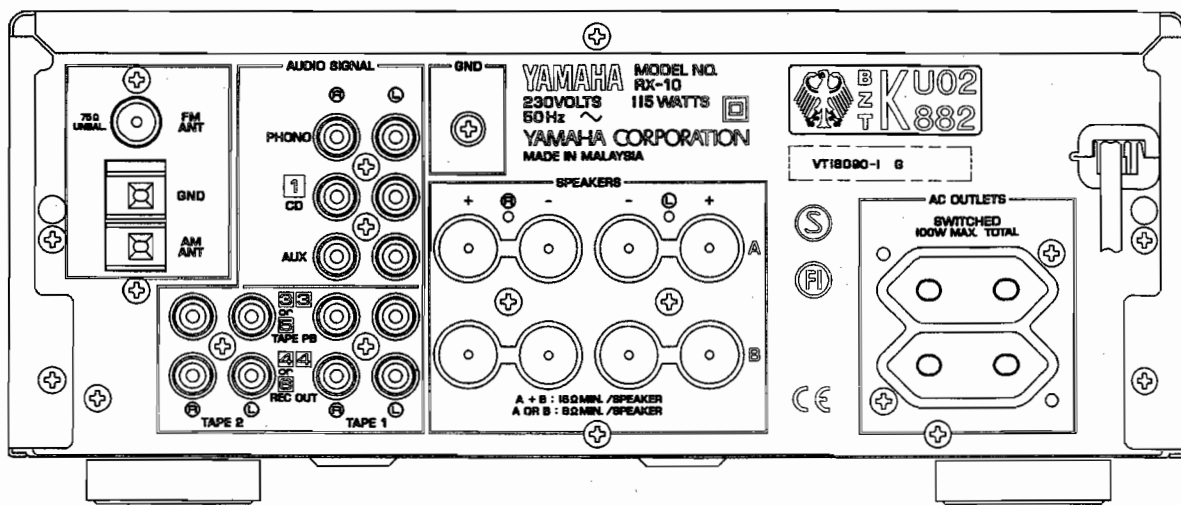
### ▼ R model



### ▼ B model



### ▼ G model



## ■ SPECIFICATIONS

### ■ AUDIO SECTION

<b>Minimum RMS output Power per Channel</b>	
R model	
20Hz to 20kHz, 0.03% THD, 8/6Ω	50/54W
B, G models	
20Hz to 20kHz, 0.03% THD, 8Ω	50W
<b>Dynamic Power Per Channel (IHF)</b>	
8/6/4/2Ω	78/88/100/112W
<b>DIN Standard Output Power Per Channel</b>	
G model only	
1kHz, 0.7% THD, 4Ω	65W
<b>IEC Power</b>	
G model only	
1kHz, 0.03% THD, 6Ω	60W
<b>Power Band Width</b>	
0.06% THD, 25W, 8Ω	10Hz to 50kHz
<b>Damping Factor</b>	
20Hz to 20kHz, 8Ω	90 or more
<b>Maximum Power (EIAJ)</b>	
R model only	
1kHz, 10% THD, 6Ω	72W
<b>Input Sensitivity/Impedance</b>	
PHONO MM	2.5mV/47kΩ
CD etc	150mV/47kΩ
<b>Maximum input Signal level</b>	
PHONO MM, 1kHz, 0.04% THD	90mV
<b>Output Level/Impedance</b>	
REC OUT	150mV /800Ω
<b>Headphone Jack Rated Output/Impedance</b>	
0.03% THD, RL=8Ω	0.40V/390Ω
<b>Frequency Response (20Hz to 20kHz)</b>	
CD etc	0±0.5dB
<b>RIAA Equalization Deviation (20Hz to 20kHz)</b>	
PHONO MM	0±0.5dB
<b>Total Harmonic Distortion (20Hz to 20kHz)</b>	
PHONO MM to RECOUT	0.02%
CD etc to SP OUT	0.02%
<b>Signal-to-Noise Ratio</b>	
PHONO MM, Input Shorted (5mV) REC OUT	82dB
CD etc, Input Shorted (150mV) Sp OUT	105dB
<b>Residual Noise (IHF-A-Network)</b>	
SP OUT	100μV
<b>Channel Separation (Vol.-30dB)</b>	
PHONO MM, Input Shorted, 1kHz	60dB
CD etc, Input 5.1kΩ terminated, 1kHz	60dB
<b>Tone Control Characteristics</b>	
BASS : Boost/Cut	±10dB (50Hz)
: Turnover Frequency	350Hz
TREBLE : Boost/Cut	±10dB (20kHz)
: Turnover Frequency	3.5kHz
<b>Tuner Output Level/Impedance (Fixed)</b>	
R model	
FM (100% mod, 1kHz)	500mV/2.2kΩ
AM (30% mode, 1kHz)	150mV/2.2kΩ
B, G models (FM 40kHz Dev)	
FM (100% mod, 1kHz)	400mV/2.2kΩ
AM (30% mode, 1kHz)	150mV/2.2kΩ

### ■ FM SECTION

<b>Tuning Range</b>	
R model	87.5 to 107.9/87.50 to 108.00MHz
B, G models	87.50 to 108.00MHz
<b>50dB Quieting Sensitivity (IHF, 75Ω)</b>	
Mono	1.55μV (15.1dBf)
Stereo	21μV(37.7dBf)
<b>Usable Sensitivity (75Ω)</b> (30dB S/N Quieting, 1kHz, 100% mod.)	
R model only	0.8μV (9.3dBf)
DIN, Mono (S/N 26dB)	0.9μV
DIN, Stereo (S/N 46dB)	24μV
<b>Image Response Ratio</b>	
R model	45dB
G, B models	80dB
<b>IF Response Ratio</b>	
80dB	
<b>Spurious Response Ratio</b>	
70dB	
<b>AM Suppression Ratio</b>	
55dB	
<b>Capture Ratio</b>	
1.5dB	
<b>Alternate Channel Selectivity</b>	
R model	85dB
Selectivity (two signals, 40kHz Dev.)	
G, B models	70dB
<b>Signal-to-Noise Ratio</b>	
Mono/Stereo (IHF)	
R model	80/75dB
Mono/Stereo (DIN-weighted, 40kHz Dev.)	
G, B models	74/69dB
<b>Harmonic Distortion (1kHz)</b>	
Mono/Stereo	
R model	0.1/0.2%
Mono/Stereo (40kHz Dev.)	
G, B models	0.1/0.2%
<b>Stereo Separation (1kHz)</b>	
R model	50dB
G, B models (40kHz Dev.)	50dB
<b>Frequency Response</b>	
20Hz to 15kHz/30Hz to 13kHz	0±1.5dB/0±0.5dB
<b>■ AM SECTION</b>	
<b>Tuning Range</b>	
R model	531 to 1611/530 to 1710kHz
B, G models	531 to 1611kHz
<b>Usable Sensitivity</b>	
100μV/m	
<b>Selectivity</b>	
32dB	
<b>Signal-to-Noise Ratio</b>	
50dB	
<b>Image Response Ratio</b>	
40dB	
<b>Spurious Response Ratio</b>	
50dB	
<b>Harmonic Distortion (1kHz)</b>	
0.3%	

■ GENERAL

**Power Supply**

R model AC 110/120/220/240V, 50/60Hz  
 B, G models AC 230V, 50Hz

**Power Consumption (IHF, 75Ω)**

R model 135W  
 B, G models 115W

**AC Outlets**

R, G models, Switched x 2 100W max (Total)  
 B model, Switched x 1 100W max

**Dimensions (W x H x D)** 280 x 118.5 x 388.5mm  
 (11" x 4-11/16" x 15 - 9/16")

**Weight** 6.3kg(14lbs)

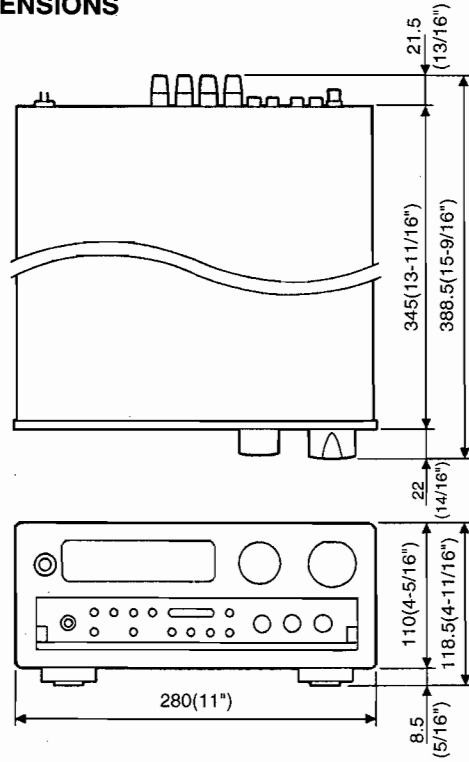
**Accessories**

AM loop antenna x 1  
 Indoor FM antennal x 1  
 Remote Control Transmitter x 1  
 Battery (size "AA", "R06) x2

\* Specifications subject to change without notice.

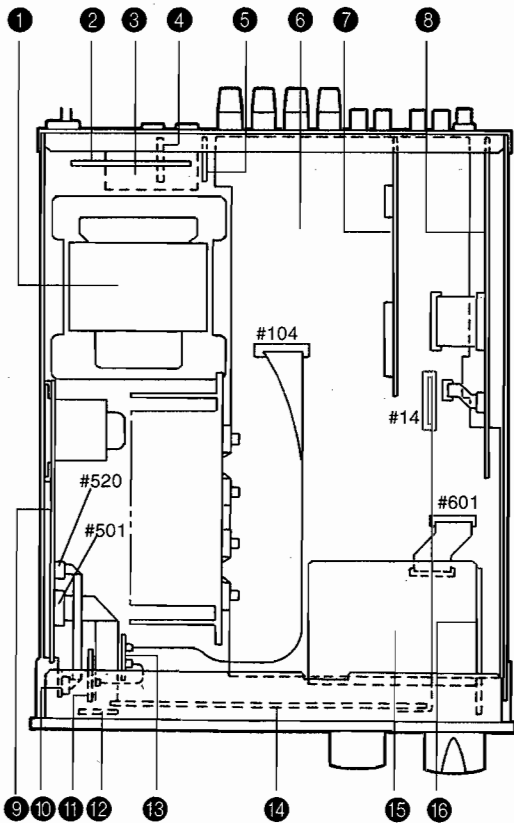
- G ..... European model
- B ..... British model
- R ..... General model

● DIMENSIONS



Unit : mm (inch)

■ INTERNAL VIEW



- ① POWER TRANSFORMER
- ② MAIN P.C.B. ASS'Y (6)
- ③ MAIN P.C.B. ASS'Y (4)
- ④ MAIN P.C.B. ASS'Y (5)
- ⑤ MAIN P.C.B. ASS'Y (3)
- ⑥ MAIN P.C.B. ASS'Y (1)
- ⑦ FUNCTION P.C.B. ASS'Y(3)
- ⑧ TUNER P.C.B. ASS'Y
- ⑨ MAIN P.C.B. ASS'Y (2)
- ⑩ FUNCTION P.C.B. ASS'Y(8)
- ⑪ FUNCTION P.C.B. ASS'Y(7)
- ⑫ FUNCTION P.C.B. ASS'Y(2)
- ⑬ FUNCTION P.C.B. ASS'Y(6)
- ⑭ FUNCTION P.C.B. ASS'Y(1)
- ⑮ FUNCTION P.C.B. ASS'Y(4)
- ⑯ FUNCTION P.C.B. ASS'Y(5)

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

**1. Removal of Top Cover**

Remove 2 screws ( ① ) and 3 screws ( ② ) in Fig. 1.

**2. Removal of Front Panel Unit**

- a. Detach 5 connectors (#14, #104, #501, #520, #601). (see page 5, INTERNAL VIEW)
- b. Remove 3 screws ( ③ ) and 2 plastic rivets ( ④ ) and then remove the Front Panel Unit in Fig.1.

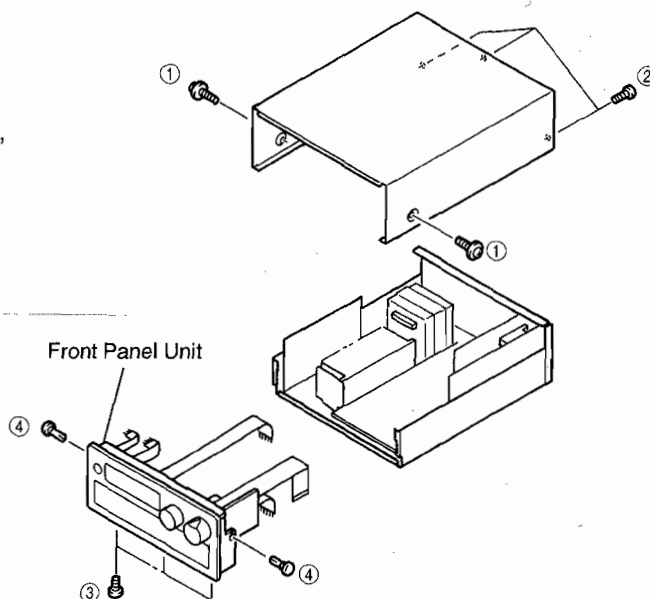


Fig. 1

**TEST MODE**

**CAUTION** :Before setting to the TEST mode, write down the existing preset memory content of the Tuner in a table as shown below. (This is because setting to the TEST mode will cause the memory content to be as factory set, i.e. all the preset memory by the user will be erased.)

Preset group	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8
A								
B								
C								
D								
E								

**How to start**

Turn the POWER switch ON while pressing the TUNING MODE, FM/AM and A/B/C/D/E keys simultaneously, and the unit enters the TEST mode for the display check, (All display segments light immediately.) At the same time, the factory preset memory is also restored.

After that, the DISPLAY mode switches by means of TUNING MODE, FM/AM, A/B/C/D/E key.

**Content of the TEST mode key**

TUNING MODE key :The DISPLAY light ON and OFF all segments rotatory when press.

FM/AM key :The DISPLAY shows "KEEPDATA" and "PRESET" rotatory when press.  
When FL shows "PRESET", by turning POWER OFF, Factory preset is set.

A/B/C/D/E key :The mode is switched to NORMAL mode and the TEST mode is cancelled.

**How to cancel**

Normal operation is restored when the POWER switch is turned OFF or the A/B/C/D/E key pressed. At the same teime, the factory preset memory is also restored.

**Factory preset memory content**

Preset group	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8
A, C, E	87.5MHz	90.1MHz	95.1MHz	98.1MHz	R :107.9MkHz R, B, G:108.0MkHz	88.1MHz	106.1MHz	R :107.9MkHz R, B, G:108.0MkHz
B, D	630kHz	1080kHz	1440kHz	R :530kHz R, B, G:531kHz	R :1710kHz R, B, G:1611kHz	900kHz	1350kHz	R :1400kHz R, B, G:1404kHz

All tuning modes are AUTO TUNINTG and AUTO STEREO.

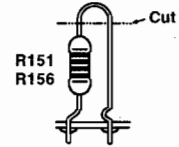
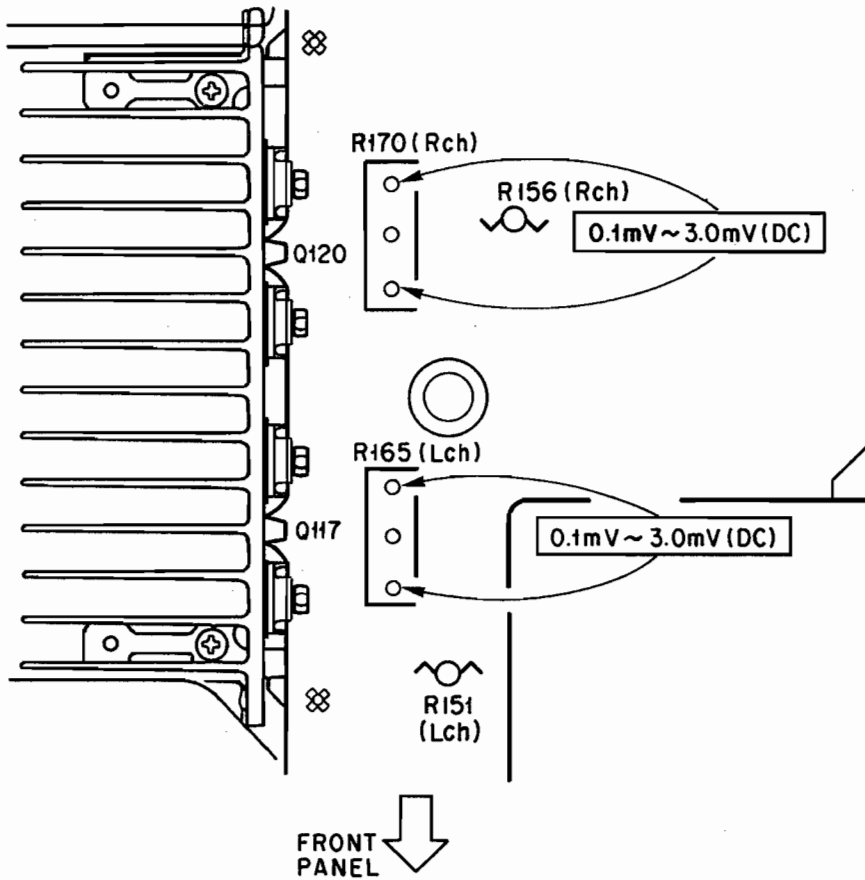
## ■ AMP ADJUSTMENT

### Confirmation and Adjustment of Idling Current.

Right after power is turned on, confirm that the voltage across R165 (L ch) and R170 (R ch) are between 0.1mV~.3.0mV.

If they exceed 3.0mV, open (cut off) R151 (Lch, In case of voltage of R165 is more than 3.0mV) or R156 (Rch, In case of R170) and reconfirm the voltage again.

After about 1 hour, confirm that the idling current (the voltage across R165 (Lch) and R170 (Rch) are between less than 5.0mV).



#### Note

- If R151 (L ch) and R156 (Rch) have already been cut off and idling current does not flow, reconnect R151 (L ch) and R156 (R ch).
- Q117 and Q120 are transistors for temperature correction. Apply silicone grease to contact surface with the heat sink.

Fig. A

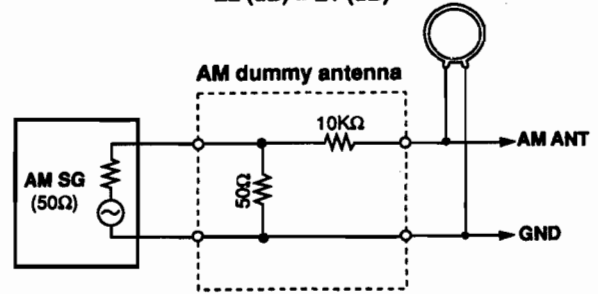
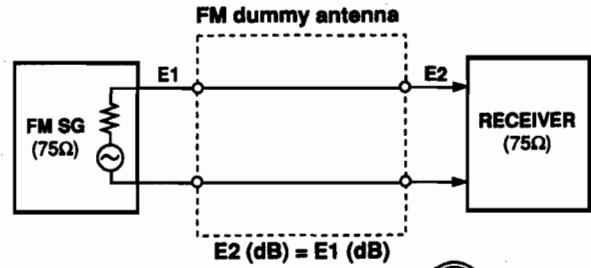
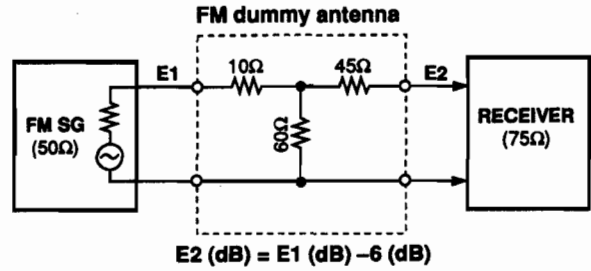


# TUNER ADJUSTMENTS

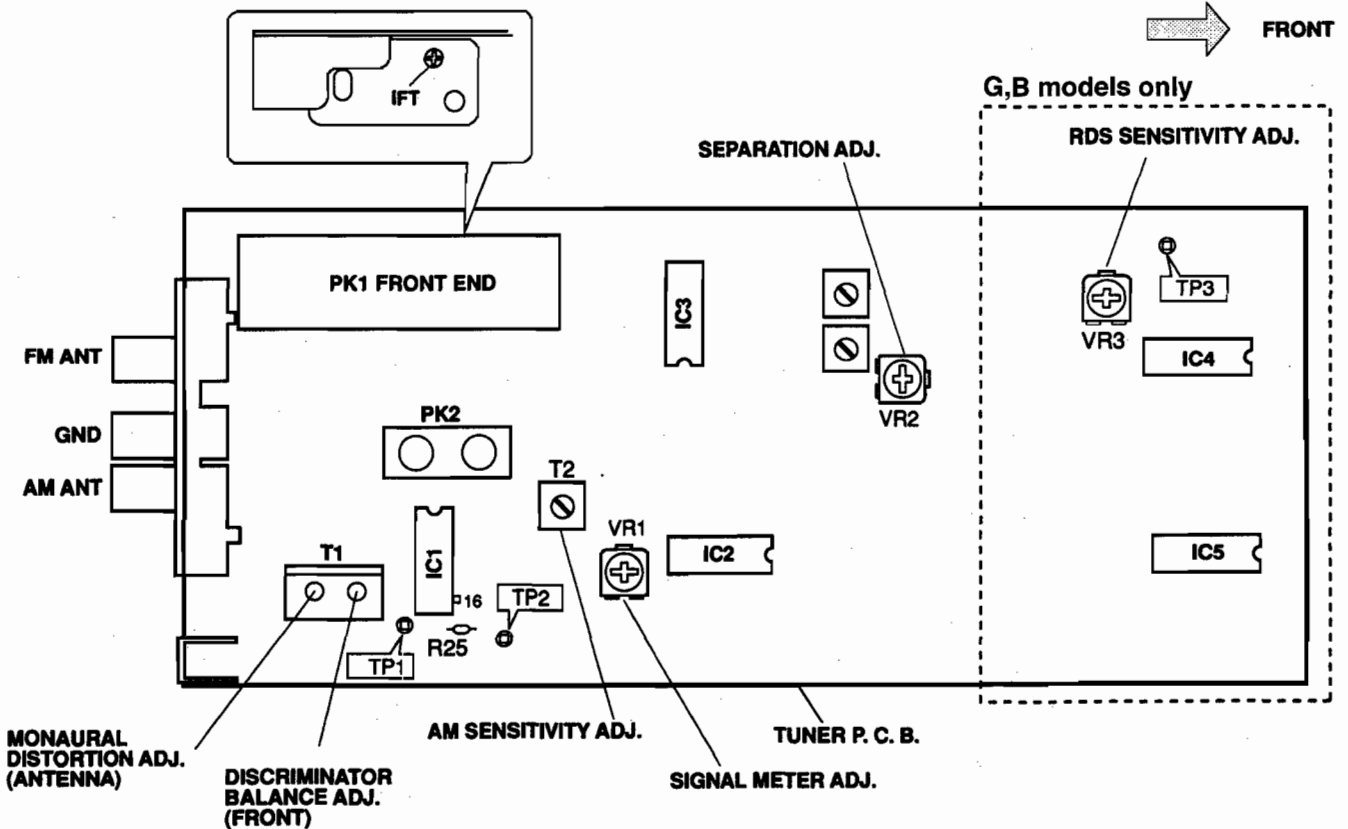
## 1. Measuring Instruments

- FM signal generator (FM SG)
- Stereo signal generator (SSG)
- AM signal generator (AM SG)
- Distortion meter (DIST. M)
- AC voltmeter (ACVM)
- DC voltmeter (DCVM)
- Oscilloscope
- Low pass filter (YLF-15,  $f_c=15\text{kHz}$ )
- Oscillator

## ● Dummy antenna



## ● TEST POINT



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# FM Adjustment

## 1. Before Adjustment

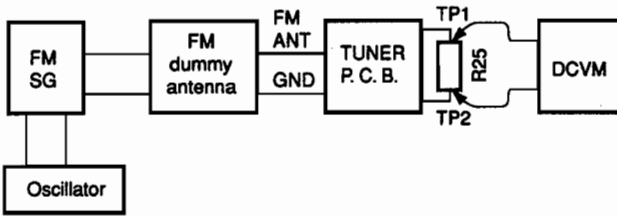
- For dB,  $1\mu V=0dB\mu$  applies.  
**Example** :  $60dB\mu=1mV$
- 100% modulation means that the frequency deviation is 75kHz.
- Install the Matching Transformer and connect FM SG.

- Set each switch to the following position unless otherwise specified.

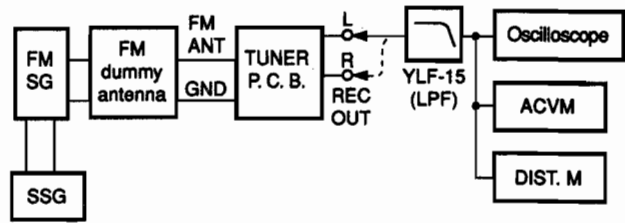
**INPUT SELECTOR ..... TUNER**  
**TUNING MODE ..... AUTO**

## 2. Connection diagram (Measuring instruments)

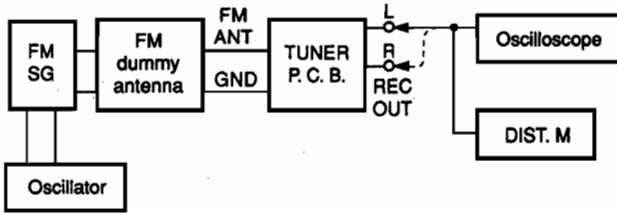
- Discriminator balance adjustment



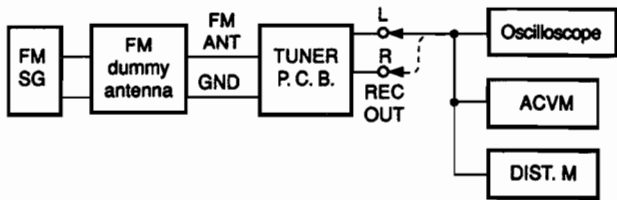
- Stereo distortion adjustment/separation adjustment



- Monaural distortion adjustment



- Sensitivity Verification



See page 7 for TP locations & adjustment points.

Step	Adjustment item	Signal (ANT IN)	Reception frequency	Adjustment point	Test point	Rating
1	Rough adjustment of discriminator balance	FM ANT (75Ω) 98.1MHz 70dBμ MONO 1kHz 100% modulation	98.1MHz * (A-4)	T1 (Front side core)	Both ends of R25 (Between TP1 and TP2)	DC 0V±100mV
2	Rough adjustment of monaural distortion	Seme as Step 1.	98.1MHz * (A-4)	T1 (Antenna side core)	REC OUT L, R	Minimize the distortion.
3	Fine adjustment of discriminator balance	Seme as Step 1.	98.1MHz * (A-4)	T1 (Front side core)	Both ends of R25 (Between TP1 and TP2)	DC 0V±50mV
4	Fine adjustment of monaural distortion	Seme as Step 1.	98.1MHz * (A-4)	T1 (Antenna side core)	REC OUT L, R	Minimize the distortion (to -44dB or less).
5	Verification of discriminator balance	Seme as Step 1.	98.1MHz * (A-4)	T1 (Front side core)	Both ends of R25 (Between TP1 and TP2)	DC 0±50mV

\* : Execution of FACTORY PRESET (Refer to page 6.) will facilitate setting reception frequency for adjustment.

Step	Adjustment item	Signal (ANT IN)	Reception frequency	Adjustment point	Test point	Rating
6	Adjustment of front end IFT	FM ANT (75Ω) 98.1MHz 30dBμ MONO 1kHz, 100% modulation	98.1MHz * (A-4)	Front end IFT	Pin 16 of IC1	Adjust so that the DC voltage is maximum. <b>CAUTION:</b> Over-adjustment of the IFT core will reduce the sensitivity. (Maximum±90°)
7	Verification of monaural distortion	FM ANT (75Ω) 98.1MHz 70dBμ MONO 1kHz 100% modulation	98.1MHz * (A-4)		REC OUT L, R	-43dB or less
8	Verification of stereo distortion	FM ANT (75Ω) 98.1MHz 70dBμ Stereo L or R 1kHz, 100% modulation	98.1MHz * (A-4) *Tuning mode should be AUTO		REC OUT L, R	-35dB or less •STEREO indicator should light.
9	Verification of sensitivity	FM ANT (75Ω) 88.1MHz 98.1MHz 106.1MHz	88.1MHz * (A-6) 98.1MHz * (A-4) 106.1MHz * (A-7)		ANT (75Ω)	1) Set the tuning mode to MAN'L MONO. 2) S/N should be 30dB at each frequency of 88.1MHz, 98.1MHz, and 106.1MHz 3) Check to ensure that the voltage at the ANT terminal is 4dBμ or less.
10	Adjustment of Separation	FM ANT (75Ω) 98.1MHz 70dBμ Stereo L or R 1kHz, 100% modulation	98.1MHz * (A-4)	VR2	REC OUT L, R	With SSG output at L or R, the signal leakage level at the other channel should be minimized. 4dBμ or more.
11	Adjustment of signal meter	FM ANT (75Ω) 98.1MHz 45dBμ MONO 1kHz, 30% modulation	98.1MHz * (A-4)	VR1		Adjust so that all signal meters light.
		-10dBμ or less				Check to ensure that signal meters turn OFF.
12	Verification of auto tuning	FM ANT (75Ω) 98.1MHz 23dBμ Stereo L or R 1kHz, 30% modulation	98.1MHz			<ul style="list-style-type: none"> <li>• Automatic reception should be available when the tuning key is moved UP and DOWN.</li> <li>• The stereo indicator should light.</li> <li>• Audio muting should be applied during tuning.</li> </ul>

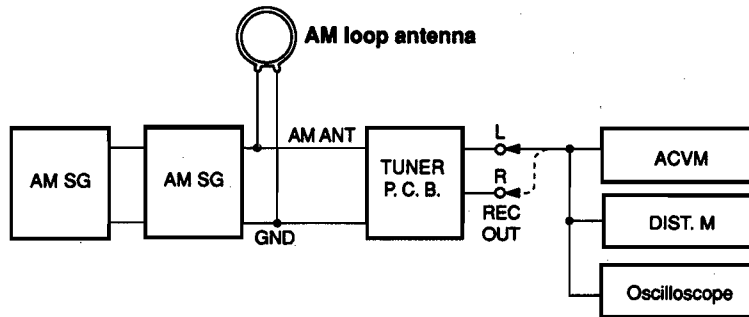
\* : Execution of FACTORY PRESET (Refer to page 6.) will facilitate setting reception frequency for adjustment.

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**AM Adjustment (This should be done after FM adjustment.)**

1. Connection DIAGRAM (Measuring instruments)

- Adjustment of sensitivity



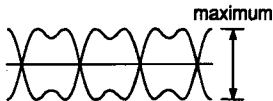
See page 7 for TP locations & adjustment points.

Step	Adjustment item	Signal (ANT IN)	Reception frequency	Adjustment point	Test point	Rating
1	Adjustment of sensitivity (1440Hz)	AM ANT 1440kHz 50dBμ 1kHz, 30% modulation	1440kHz *(B-3)	T2	REC OUT	Audio output should be maximized.
2	Verification of sensitivity (630kHz)	AM ANT 630kHz 50dBμ 1kHz, 30% modulation	630kHz * (B-4)	T2	REC OUT	Audio output should be maximized. Repeat steps 1 and 2.
3	Verification of sensitivity	AM ANT 630kHz 1080kHz 1440kHz 1kHz, 30% modulation	630kHz * (B-4) 1080kHz * (B-2) 1440kHz * (B-3)		AM ANT	Distortion should be 10% or less at each frequency. Check to ensure that the voltage at the ANT terminal is 54dBμ or less.
4	Verification of auto tuning	AM ANT 60dBμ				Auto reception should be available when the tuning key is moved UP and DOWN.

\* : Execution of FACTORY PRESET (Refer to page 6.) will facilitate setting reception frequency for adjustment.

**RDS Adjustment (G, B models ONLY) (This should be done after FM and AM adjustment).**

See page 7 for TP LOCATIONS & adjustment points.

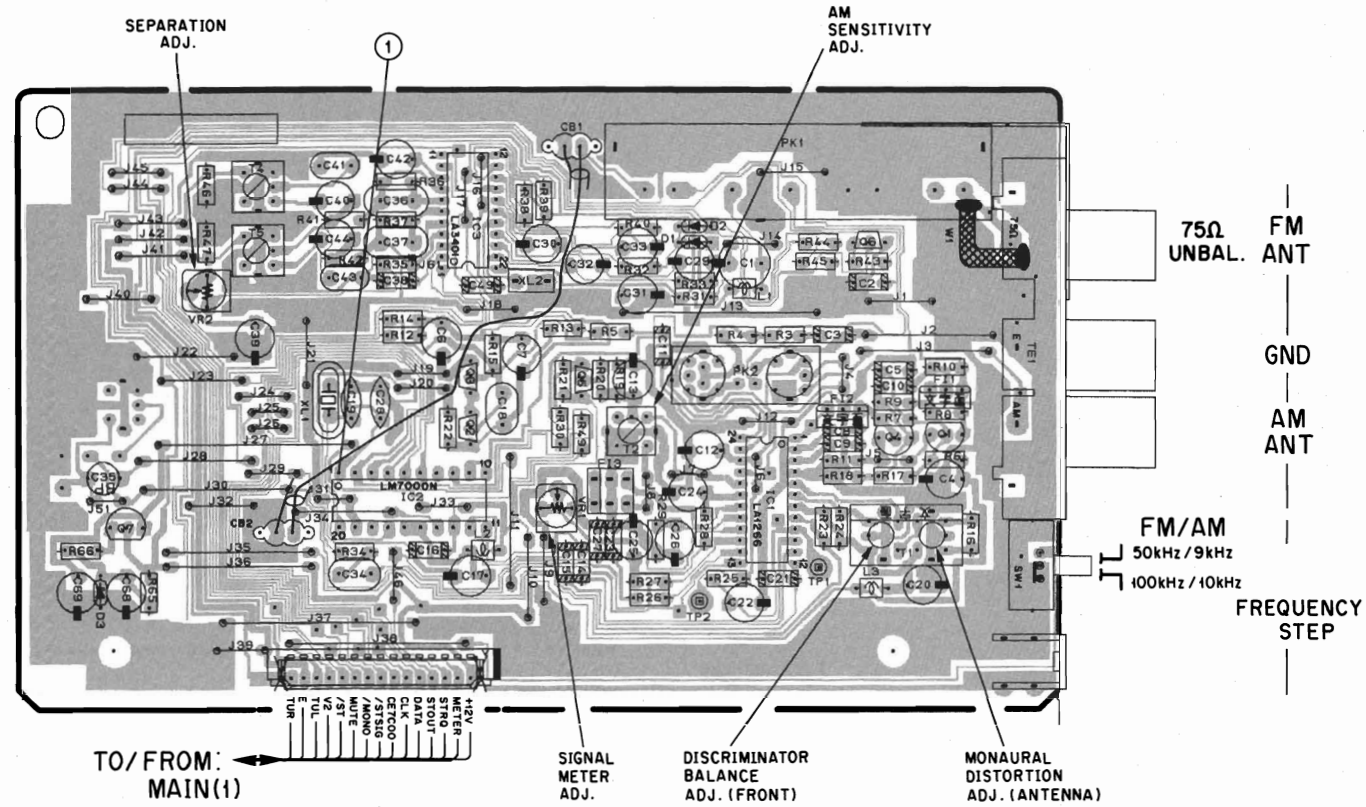
Step	Adjustment item	Signal (ANT IN)	Reception frequency	Adjustment point	Test point	Rating
1	Adjustment of RDS sensitivity		Receive RDS station.	VR3	Between TP3 and GND.	Adjust so that the AC voltage is maximum. 
2	Verification of auto PS (Program service name)					Confirm that the display automatically tunes to the PS when tuned again.

PRINTED CIRCUIT BOARD (Foil side)

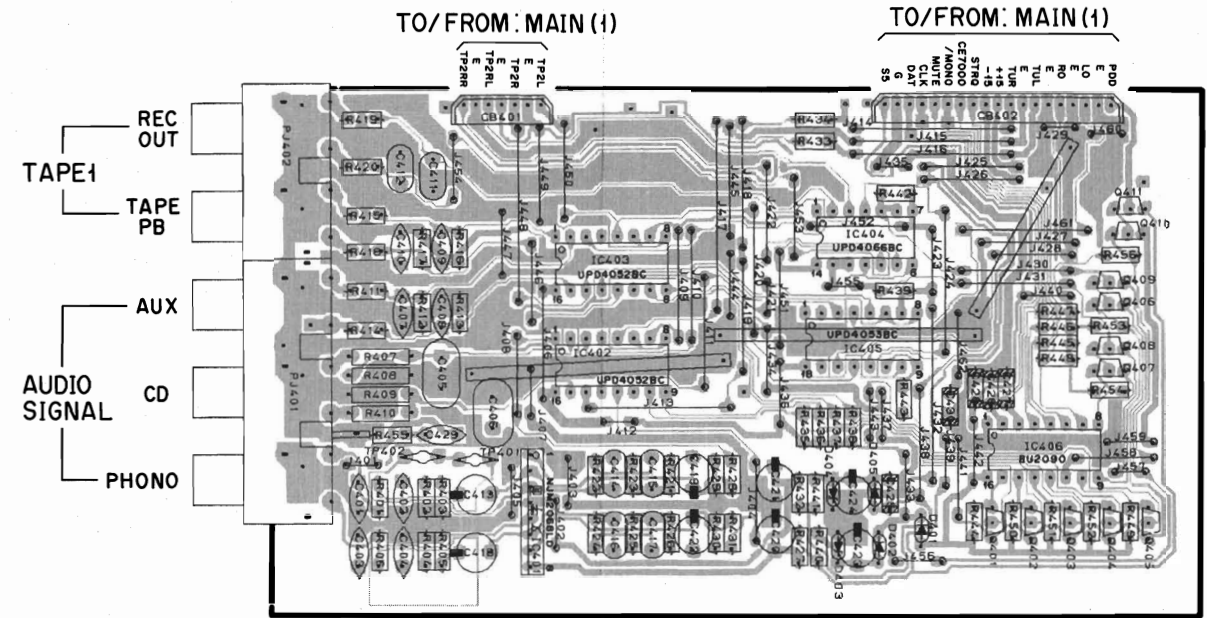
① to ③ : TEST POINT WAVEFORMS (See page 26)

R model

TUNER P. C. B.

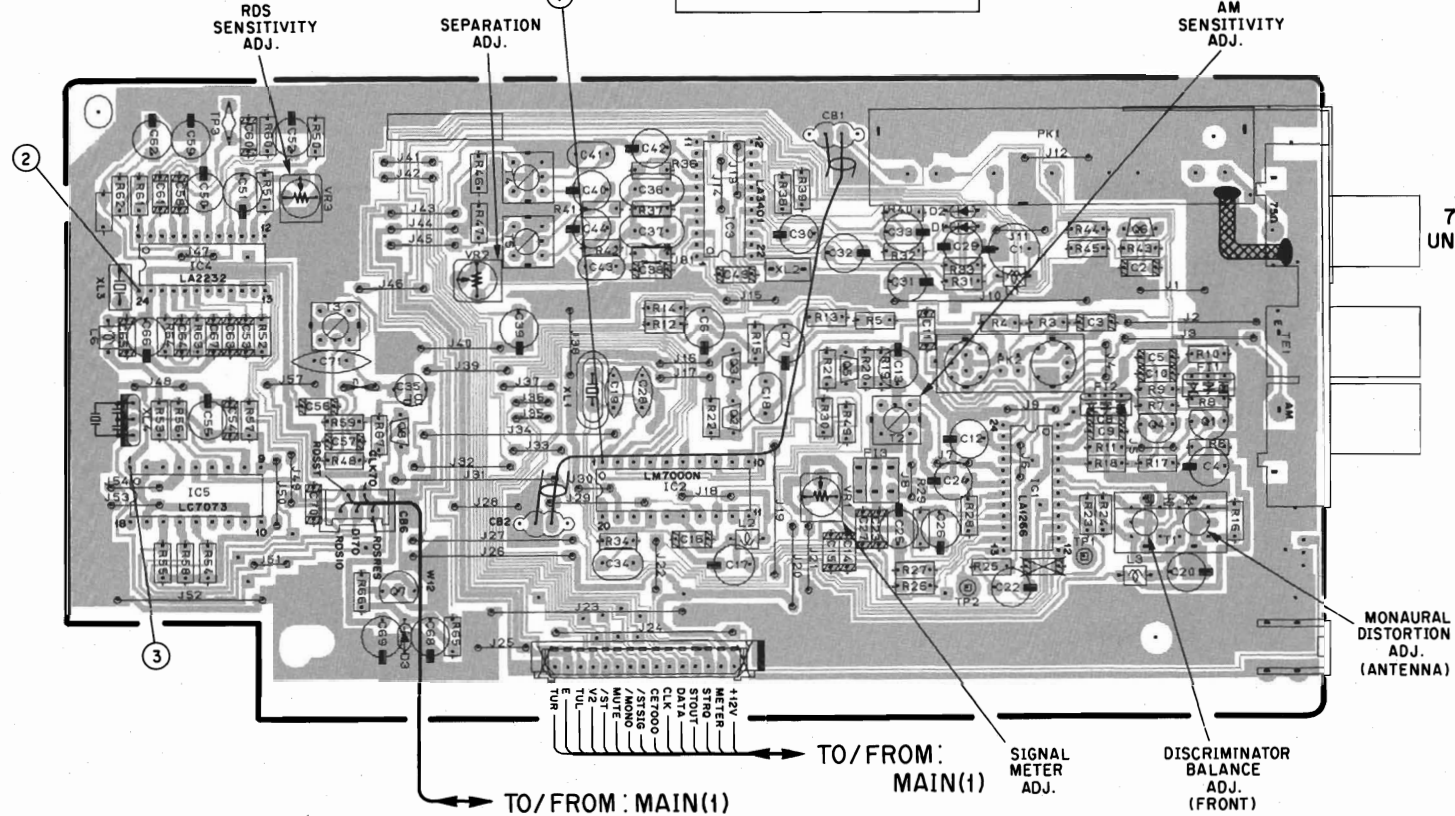


FUNCTION P. C. B. (3)



B & G models

TUNER P. C. B.



Semiconductor Location

R model  
TUNER P.C.B.

Ref. No.	Location
D1	C2
D2	C2
D3	A3
IC1	C3
IC2	B3
IC3	B2
Q1	C2
Q2	B2
Q3	B2
Q4	C2
Q5	B2
Q6	C2

Semiconductor Location  
FUNCTION P.C.B.

Ref. No.	Location	Ref. No.	Location
D401	G3	Q401	G3
D402	G3	Q402	G3
D403	G3	Q403	G3
D404	G3	Q404	H3
D405	G3	Q405	H3
IC401	F3	Q406	H2
IC402	F2	Q407	H2
IC403	F2	Q408	H2
IC404	G2	Q409	H2
IC405	G2	Q410	H2
IC406	G3	Q411	H2

B & G models  
TUNER P.C.B.

Ref. No.	Location
D1	C4
D2	C4
D3	B5
IC1	C5
IC2	B5
IC3	C4
IC4	A4
IC5	A5
Q1	D5
Q2	C5
Q3	C5
Q4	D5
Q5	C5
Q6	D4
Q7	B5
Q8	B5

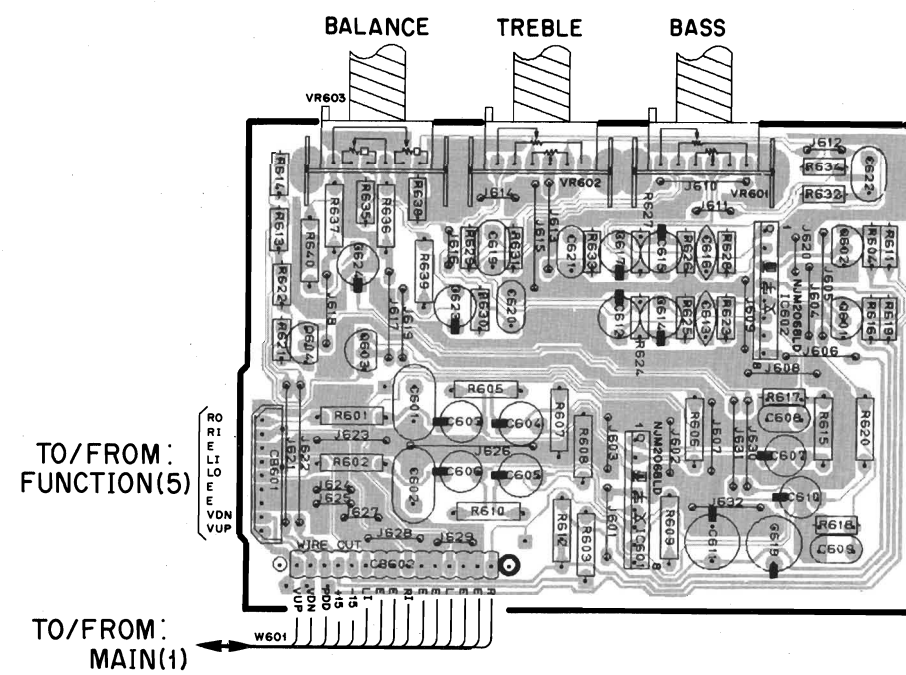
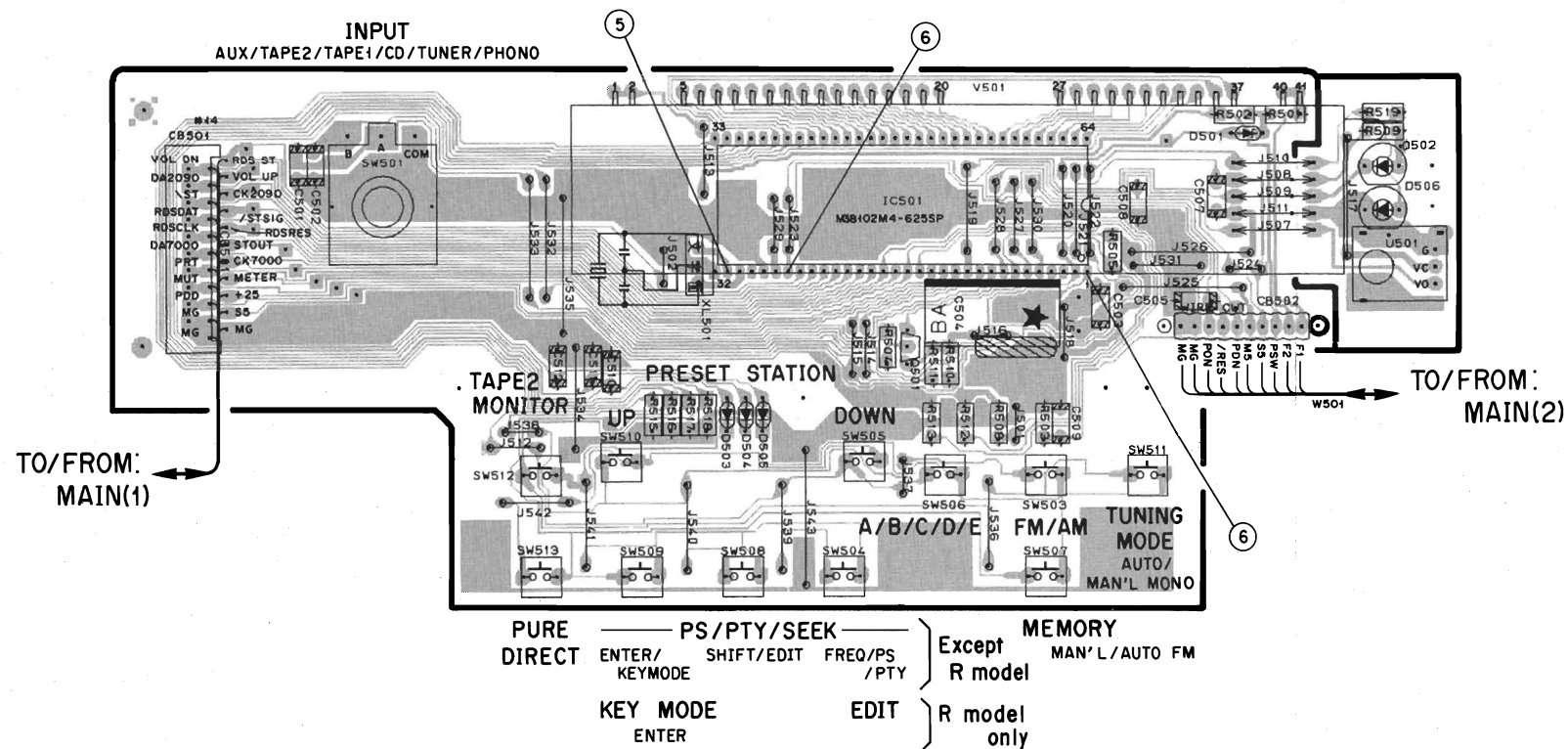
PRINTED CIRCUIT BOARD (Foil side)

⑤ and ⑥ : TEST POINT WAVEFORMS (See page 27)

FUNCTION P. C. B. ( 1 )

FUNCTION P. C. B. ( 2 )

FUNCTION P. C. B. ( 4 )



FUNCTION P. C. B. ( 5 )

FUNCTION P. C. B. ( 8 )

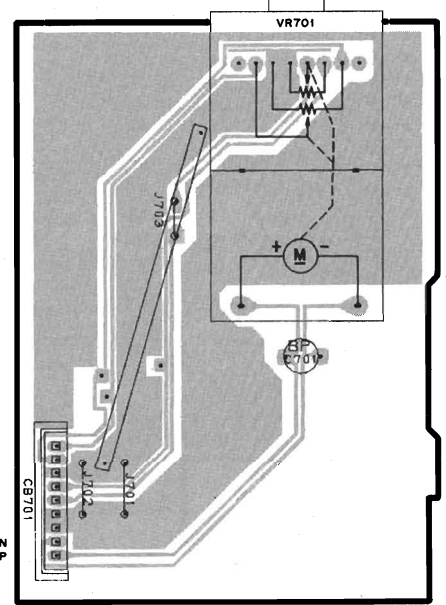
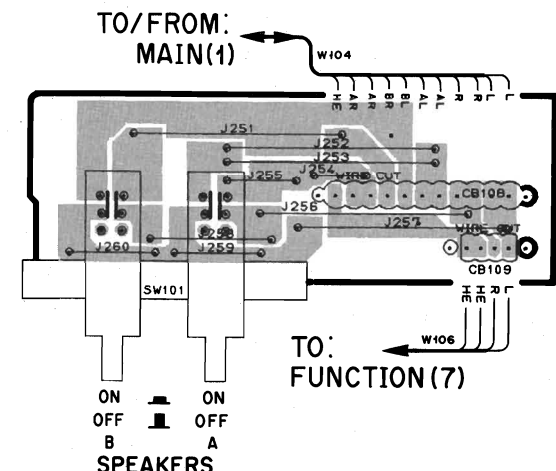
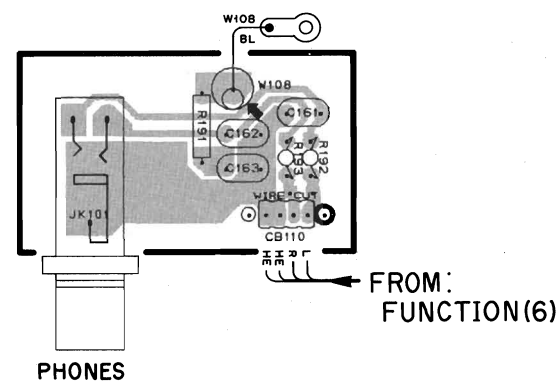
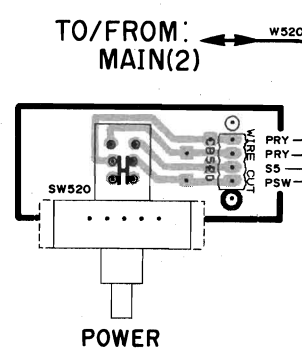
FUNCTION P. C. B. ( 7 )

FUNCTION P. C. B. ( 6 )

VOLUME

● Semiconductor Location

Ref. No.	Location
D501	D2
D503	C2
D504	C2
D505	C2
IC501	C2
IC601	G3
IC602	H2
Q501	C2
Q601	H2
Q602	H2
Q603	F2
Q604	F2

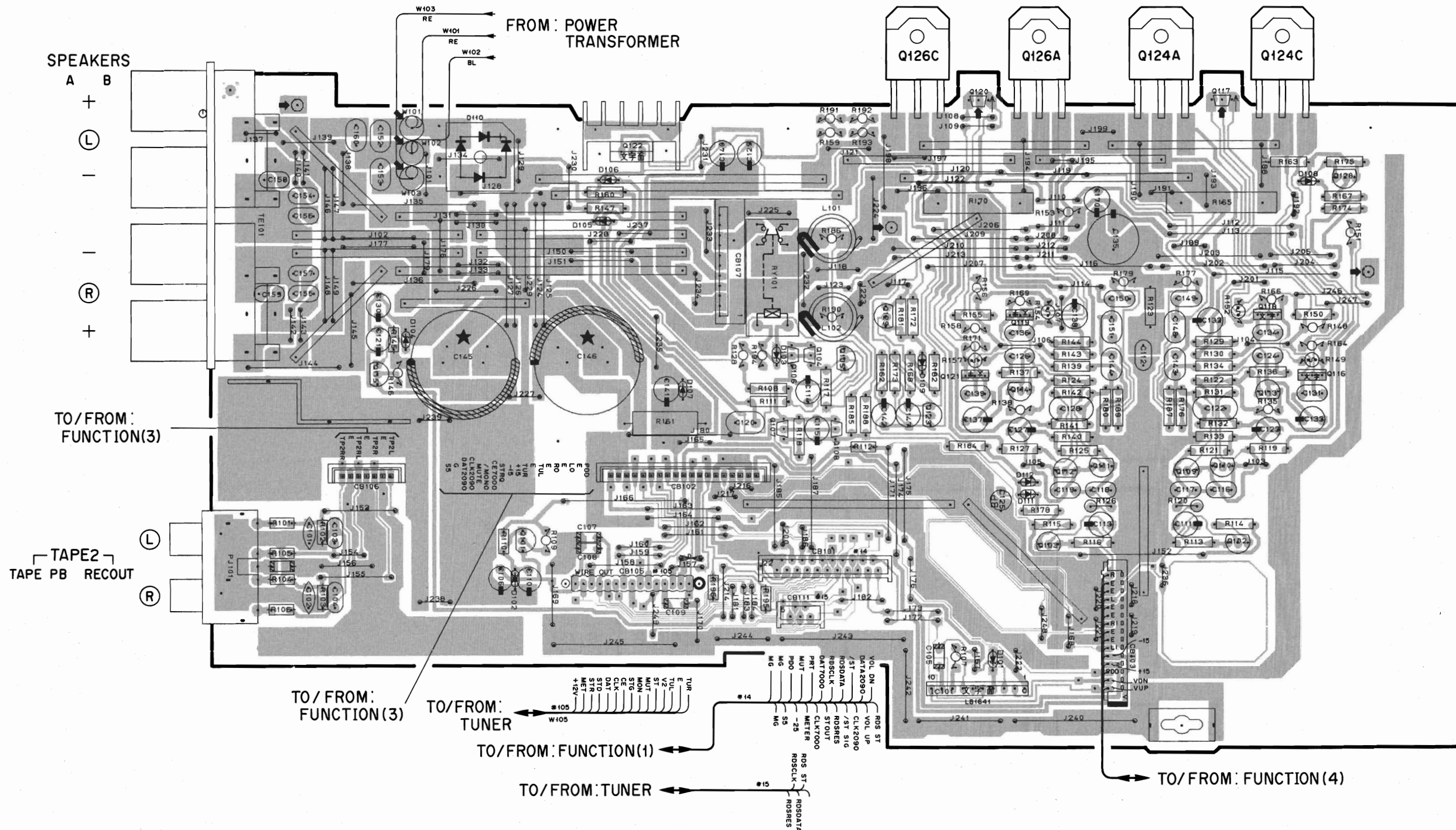


PRINTED CIRCUIT BOARD (Foil side)

MAIN P. C. B. (1)

● Semiconductor Location

Ref. No.	Location
D101	F4
D102	D4
D103	E3
D104	C3
D105	D2
D106	D2
D107	D3
D108	G2
D109	F3
D110	D2
D111	F4
D112	F3
IC101	F4
Q101	D4
Q102	G4
Q103	F4
Q104	E3
Q105	E3
Q106	E3
Q107	E3
Q108	E3
Q109	G3
Q110	G3
Q111	F3
Q112	F3
Q113	G3
Q114	F3
Q115	C3
Q116	G3
Q117	G2
Q118	G3
Q119	F3
Q120	F2
Q121	F3
Q122	D2
Q123	F3
Q124A	G2
Q124C	G2
Q126A	F2
Q126C	F2
Q128	G2
Q129	E3

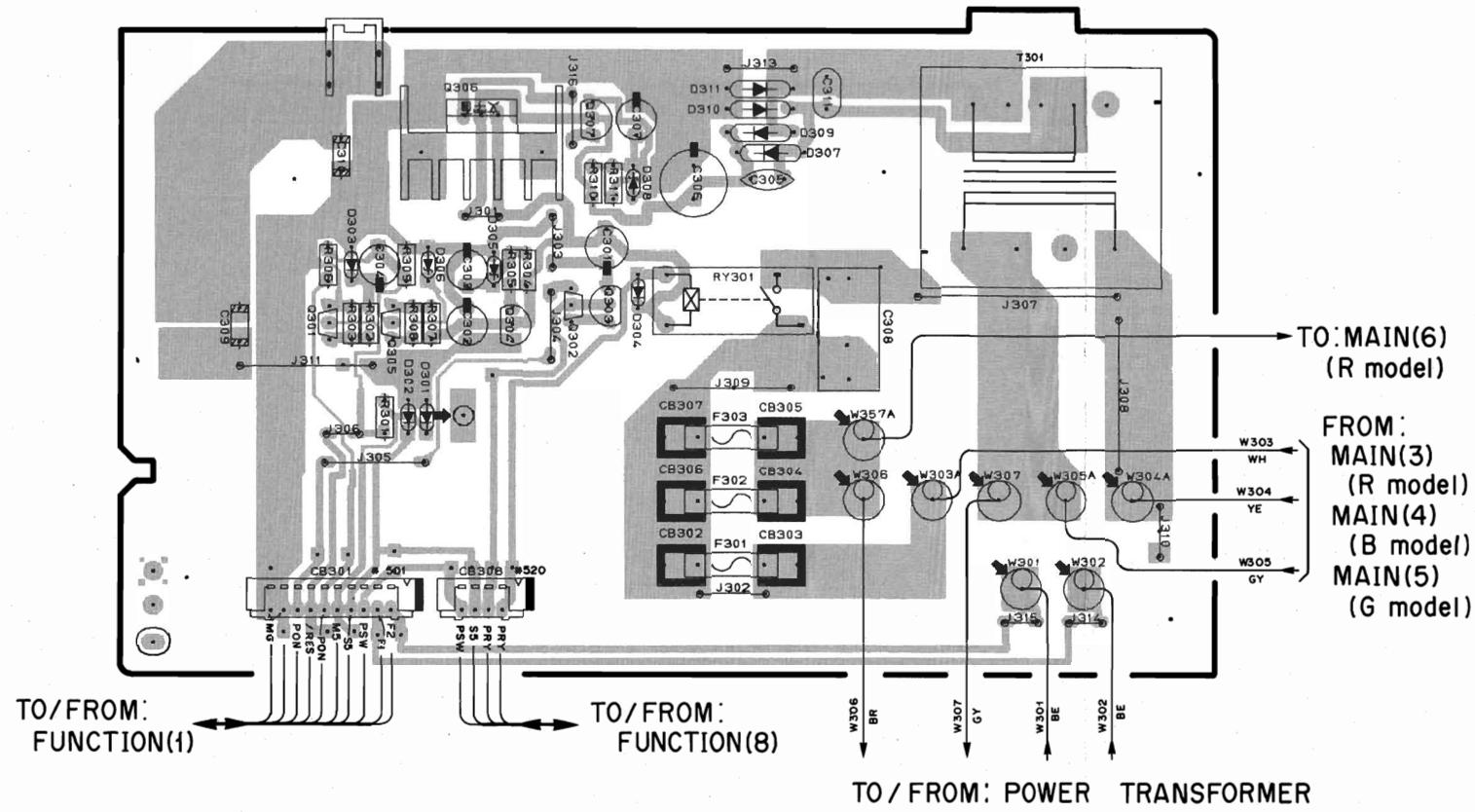


PRINTED CIRCUIT BOARD (Foil side)

● Semiconductor Location

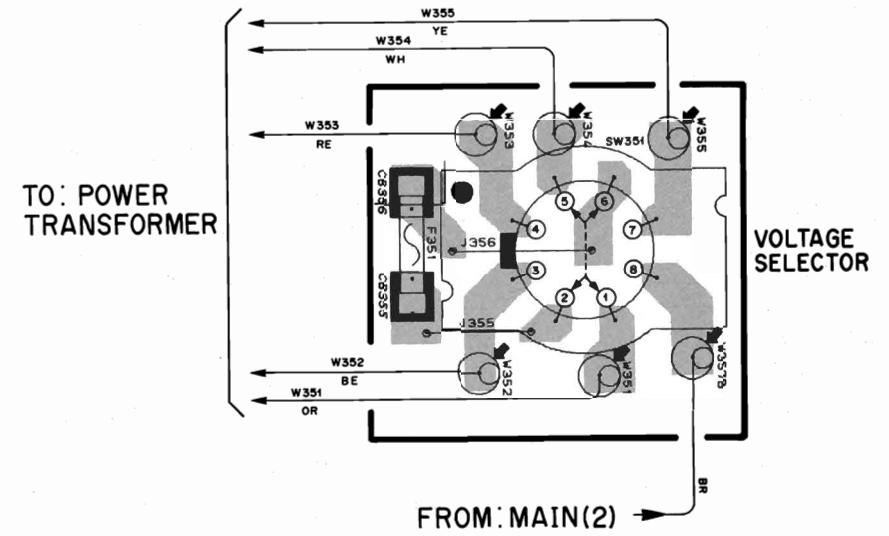
Ref. No.	Location
D301	C2
D302	C2
D303	B2
D304	C2
D305	C2
D306	C2
D307	D2
D308	C2
D309	D2
D310	C2
D311	C2
Q301	B2
Q302	C2
Q303	C2
Q304	C2
Q305	C2
Q306	C2
Q307	C2

MAIN P. C. B. (2)



● R model

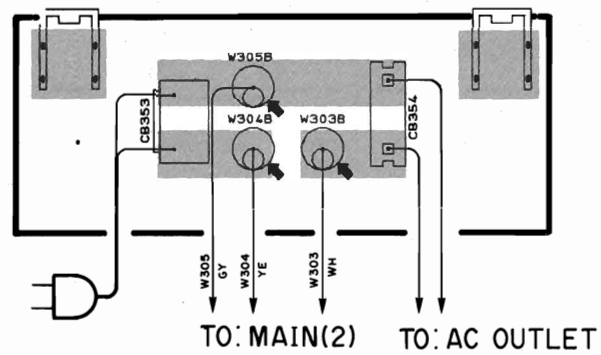
MAIN P. C. B. (6)



240V	1-2/5-6
220V	2-3/6-7
110V	3-4/7-8
120V	4-5/8-1

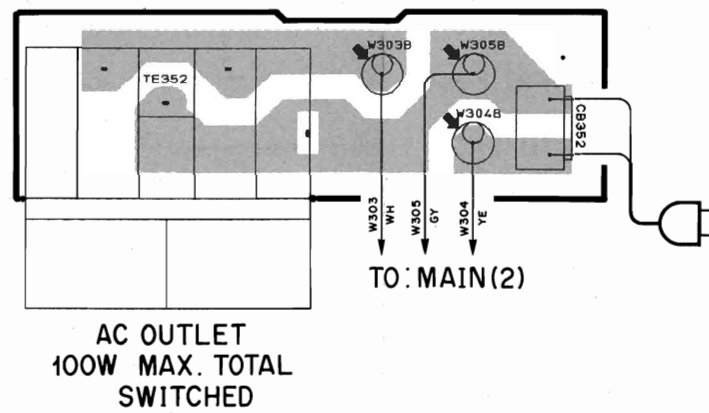
● B model

MAIN P. C. B. (4)



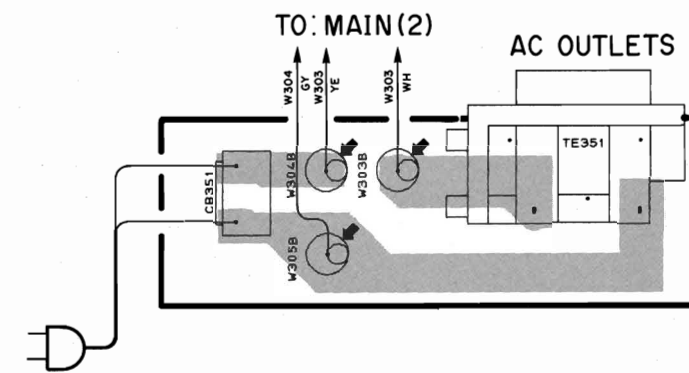
● G model

MAIN P. C. B. (5)



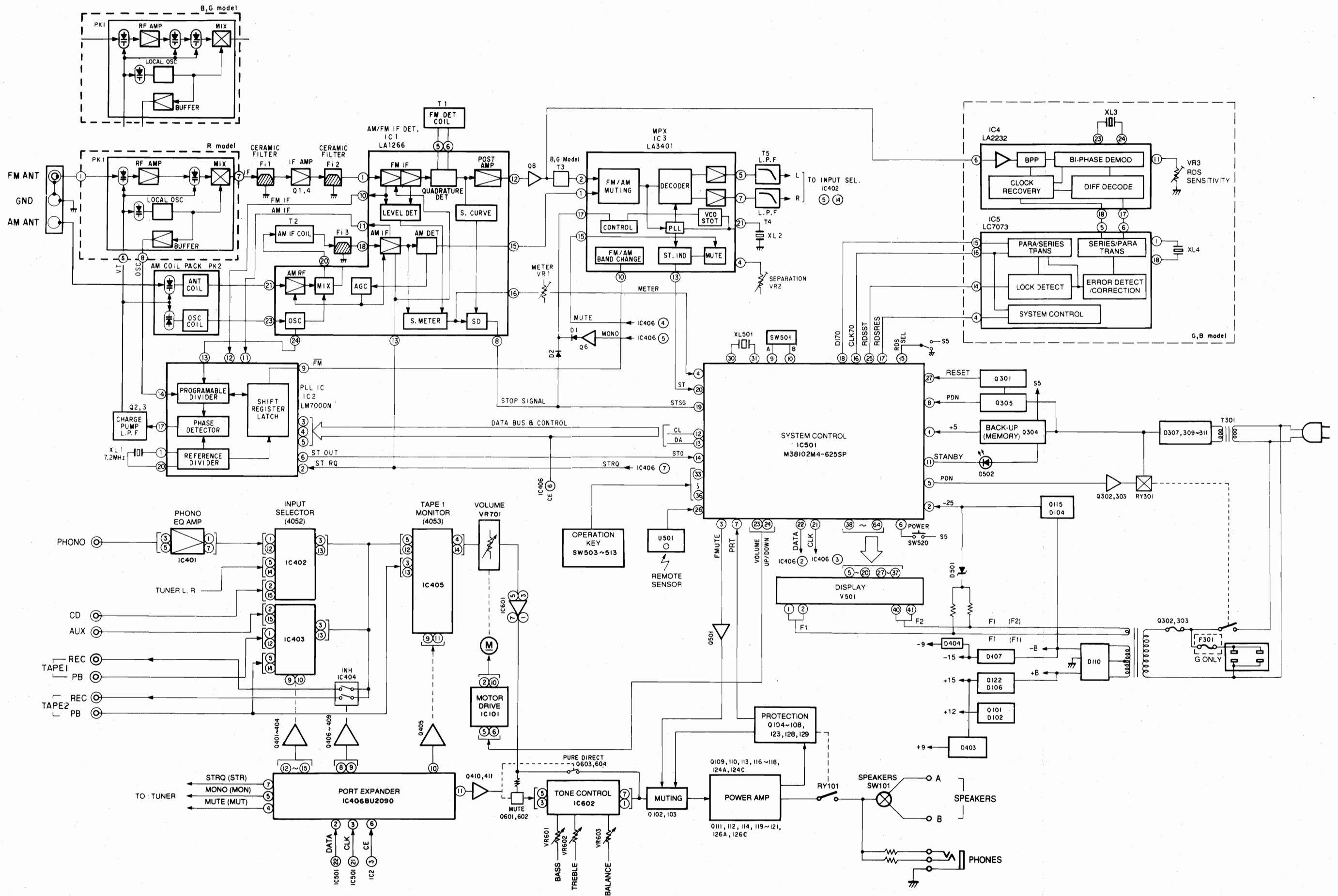
● R model

MAIN P. C. B. (3)



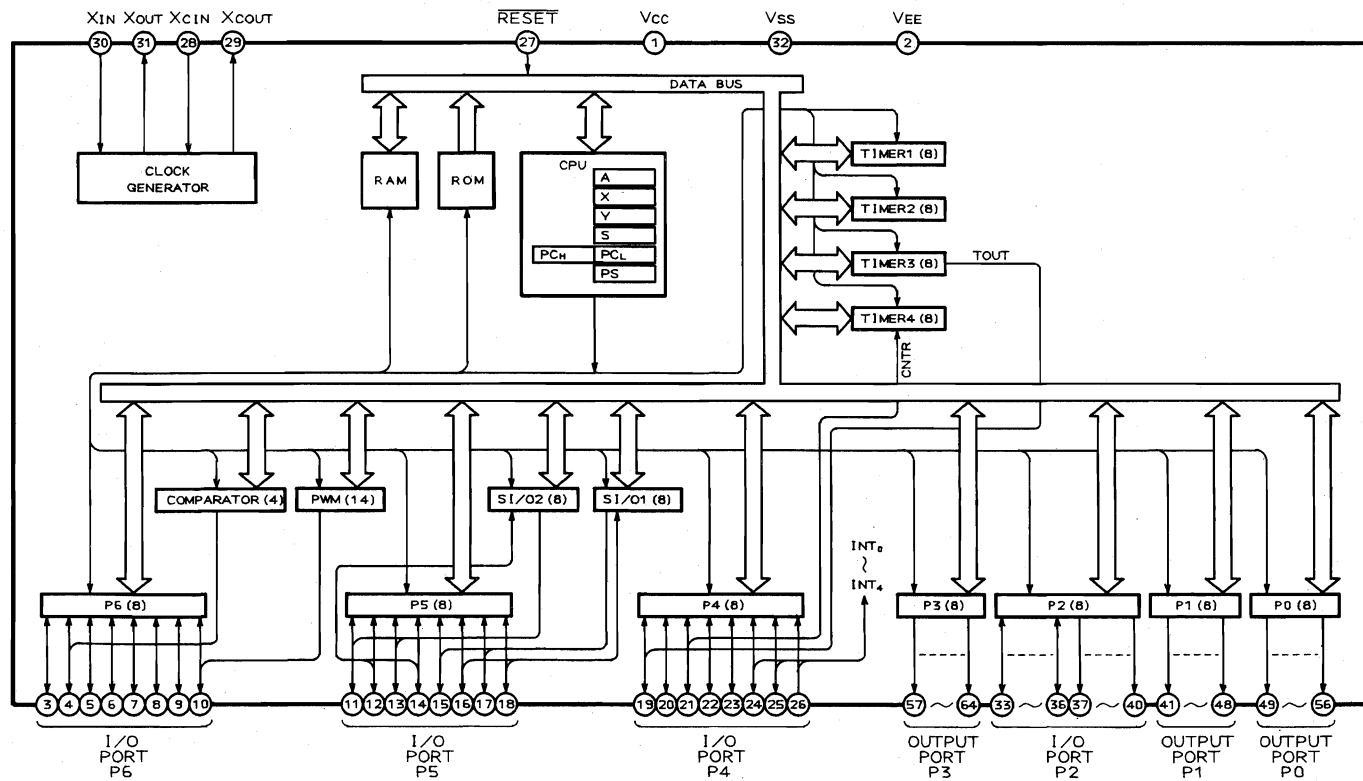
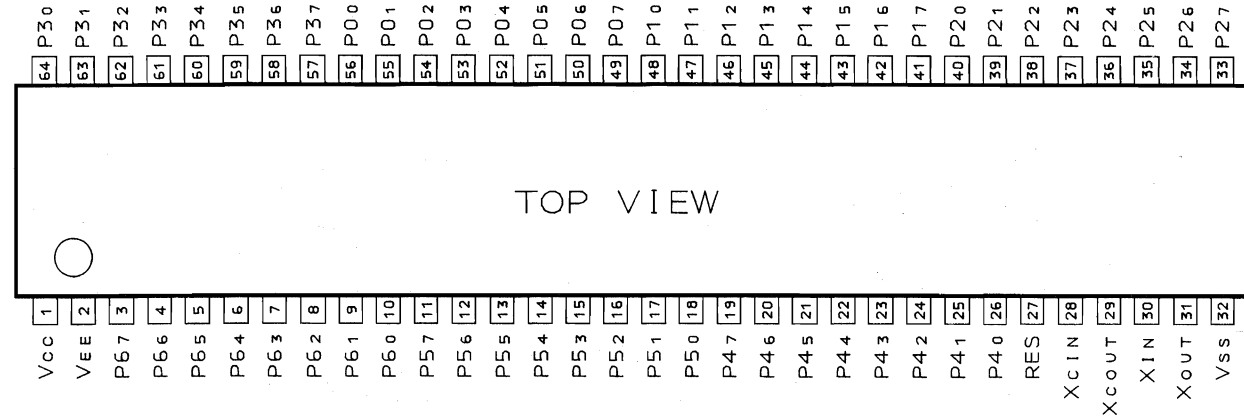


# ■ BLOCK DIAGRAM



■ μ-COM DATA

IC501 : M38102M-625SP  
8bit μ-COM



No.	Port	I/O	Function	Logic
1	V <sub>CC</sub>		+5V	
2	V <sub>EE</sub>		-V (-25V)	
3	P67	O	FULL MUTE	L:ON
4	P66	I	METER (Comparator)	
5	P65	O	POWER RELAY	H:ON
6	P64	I	POWER SW	H:ON
7	P63	I	PROTECTION detect	L:PRT
8	P62	I	POWER DOWN detect	L:DOWN
9	P61	I	Rotaly encoder A	
10	P60	I	Rotaly encoder B	
11	P57	I	*STAND BY : H (G model)	
12	P56	O	Selial CLOCK	
13	P55	O	Selial DATA	
14	P54	I	IF count OK	L:IFOK
15	P53	I	RDS Seclect	H:RDS
16	P52	I	SCLK from RDS (V1)	
17	P51	O	RESET to RDS	
18	P50	I	SDATA from RDS (V2)	
19	P47	I	STATION detector	L:SGIN
20	P46	I	STEREO detect	L:STEREO
21	P45	O	BU2090 CLOCK	
22	P44	O	BU2090 DATA	
23	P43	O	VOLUME UP	
24	P42	O	VOLUME DOWN	
25	P41	I	RDS Start	
26	P40	I	REMOTE CONTROL	
27	RES		RESET	L:RESET
28	X <sub>CIN</sub>		GND	
29	X <sub>COU</sub>		Not use	
30	X <sub>IN</sub>		4MHz	
31	X <sub>OUT</sub>		4MHz	
32	V <sub>SS</sub>		GND	

\*STAND BY : The standby mode is available if "H" when the microprocessor is reset.  
The LED is turn ON at "L" output.

● OUTPUT EXPANDER IC (IC406 : BU2090)

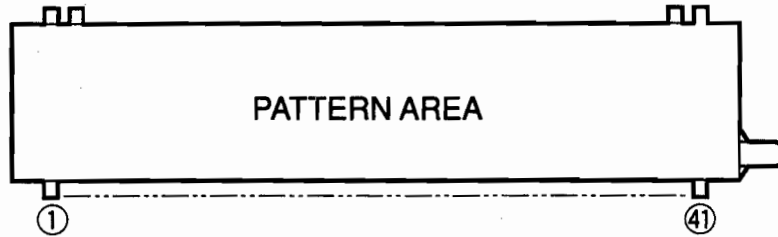
No.	Port	I/O	Function	Logic
1	V <sub>SS</sub>		GND	
2	DATA	I	DATA	
3	CLK	I	CLOCK	
4	Q0	O	TUNER MUTE	H:ON
5	Q1	O	MONO	L:MONO
6	Q2	I	LM7000N chip enable	
7	Q3	O	Stop request	
8	Q4	O	REC OUT inhibit B,C	

No.	Port	I/O	Function	Logic
64	P30	O	DIGIT 8	H:ON
63	P31	O	DIGIT 7	H:ON
62	P32	O	DIGIT 6	H:ON
61	P33	O	DIGIT 5	H:ON
60	P34	O	DIGIT 4	H:ON
59	P35	O	DIGIT 3	H:ON
58	P36	O	DIGIT 2	H:ON
57	P37	O	DIGIT 1	H:ON
56	P00	O	SEGMENT 16	H:ON
55	P01	O	SEGMENT 15	H:ON
54	P02	O	SEGMENT 14	H:ON
53	P03	O	SEGMENT 13	H:ON
52	P04	O	SEGMENT 12	H:ON
51	P05	O	SEGMENT 11	H:ON
50	P06	O	SEGMENT 10	H:ON
49	P07	O	SEGMENT 9	H:ON
48	P10	O	SEGMENT 8	H:ON
47	P11	O	SEGMENT 7	H:ON
46	P12	O	SEGMENT 6	H:ON
45	P13	O	SEGMENT 5	H:ON
44	P14	O	SEGMENT 4	H:ON
43	P15	O	SEGMENT 3	H:ON
42	P16	O	SEGMENT 2	H:ON
41	P17	O	SEGMENT 1	H:ON
40	P20	O	DIGIT 9	H:ON
39	P21	O	DIGIT 10	H:ON
38	P22	O	DIGIT 11	H:ON
37	P23	O	Not use	
36	P24	I	KEY MATRIX 1	H:ON
35	P25	I	KEY MATRIX 2	H:ON
34	P26	I	KEY MATRIX 3	H:ON
33	P27	I	KEY MATRIX 4	H:ON

No.	Port	I/O	Function	Logic
16	V <sub>DD</sub>		+5V	
15	Q11	O	INPUT selector A	
14	Q10	O	INPUT selector B	
13	Q9	O	TAPE/AUX selector A	
12	Q8	O	TAPE/AUX selector B	
11	Q7	O	Not use	
10	Q6	O	TAPE2 select A,C	
9	Q5	O	REC OUT inhibit A,D	

■ DISPLAY DATA (VR029500)

● V501 : 11-BT-120GK

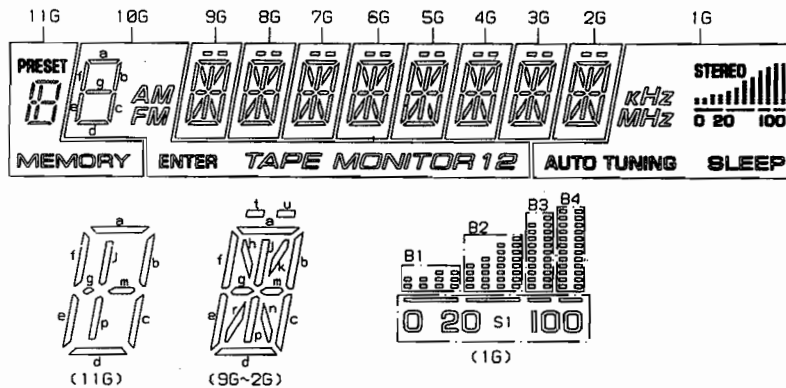


● PIN CONNECTION

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
CONNECTION	F1	F1	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	NX
PIN NO.	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
CONNECTION	NX	NX	NX	NX	NX	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	NP	NP	F2	F2	

NOTE 1) F1, F2.....Filament      4) NX.....No extend pin      7) Angle of visual field  
 2) NP.....No pin                      5) DL.....Datum Line                      .....31'min. on upper side  
 3) NC.....No connection              6) 1G~11G ..Grid                              .....24'min. on lower side

● GRID ASSIGNMENT



● ANODE CONNECTION

	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	a	a	a	a	a	a	a	a	STEREO
P2	b	b	b	b	b	b	b	b	b	b	—
P3	c	c	c	c	c	c	c	c	c	c	—
P4	d	d	d	d	d	d	d	d	d	d	S1
P5	e	e	e	e	e	e	e	e	e	e	B1
P6	f	f	f	f	f	f	f	f	f	f	B2
P7	g	g	g	g	g	g	g	g	g	g	B3
P8	—	—	h	h	h	h	h	h	h	h	B4
P9	j	ENTER	j	j	j	j	j	j	j	j	—
P10	—	TAPE MONITOR	k	k	k	k	k	k	k	k	kHz
P11	m	1	m	m	m	m	m	m	m	m	—
P12	—	2	n	n	n	n	n	n	n	n	MHz
P13	p	AM	p	p	p	p	p	p	p	p	SLEEP
P14	MEMORY	FM	r	r	r	r	r	r	r	r	AUTO TUNING
P15	PRESET	—	t	t	t	t	t	t	t	t	—
P16	—	—	u	u	u	u	u	u	u	u	—

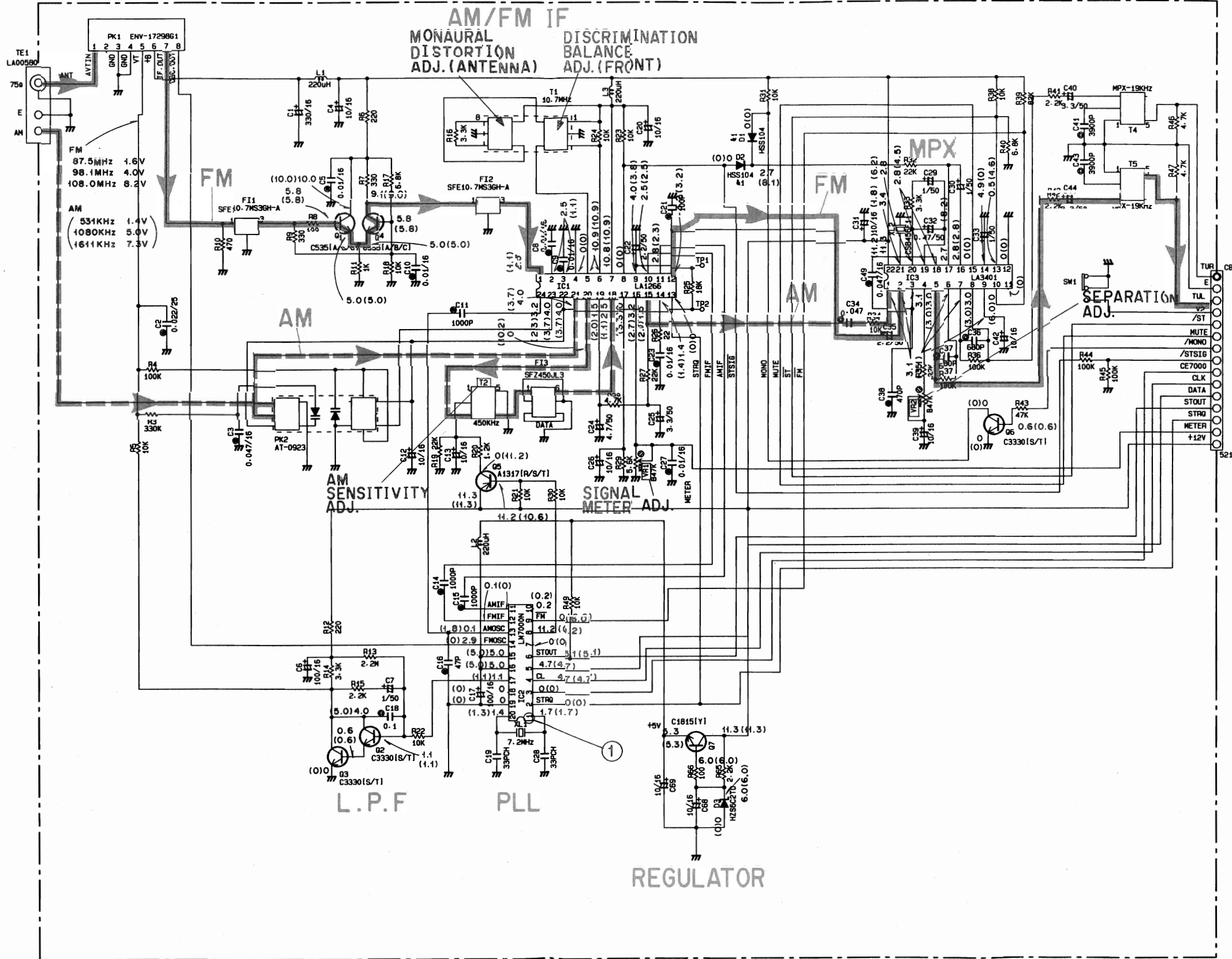
**MEMO**

A series of horizontal lines for writing a memo, starting from a thick header line and followed by many thinner lines.

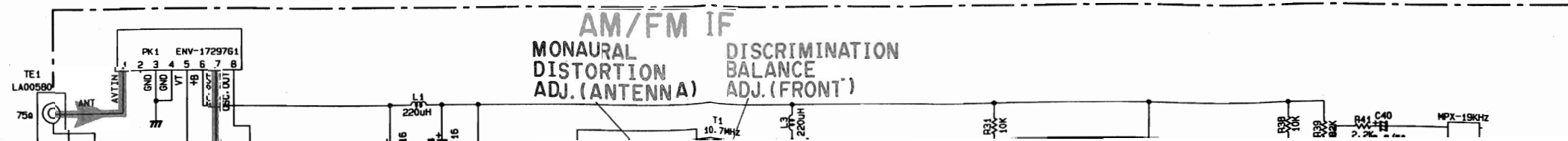
# SCHEMATIC DIAGRAM (TUNER)

Each voltage given here represents that in the FM (98.1MHz, STEREO) reception mode but the one in the parentheses ( ) is that in the AM (1080kHz, MAN'L) reception mode.

R model



B & G models

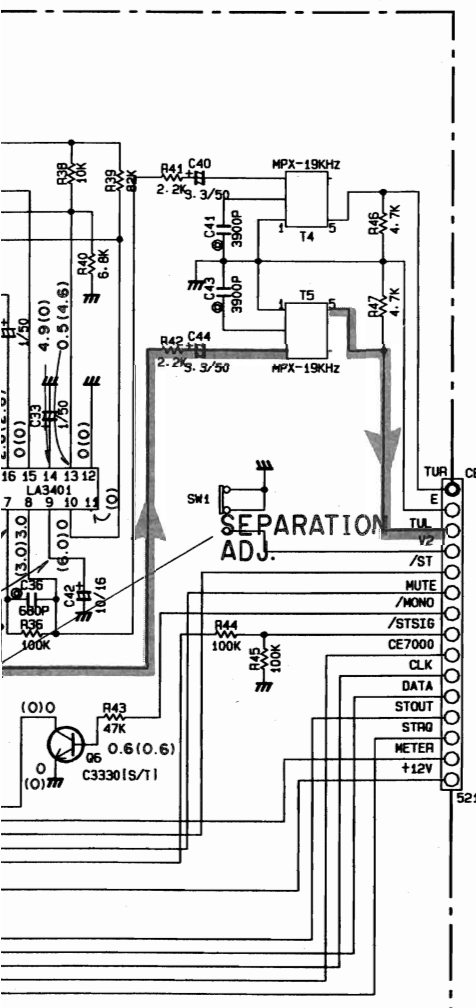


Mark	Reference Parts Number
41	D1-2

REMARKS	PARTS
NO MARK	ELECTROLYTIC CAP
⊗	TANTALUM CAPACIT
NO MARK	CERAMIC CAPACIT
⊙	CERAMIC TUBULAR
⊖	POLYESTER FILM
○	POLYSTYRENE FILM
⊕	MICA CAPACITOR
⊗	POLYPROPYLENE F
●	SEMICONDUCTIVE I

REMARKS	PARTS
NO MARK	CARBON FILM RES
⊠	CARBON FILM RES
△	METAL OXIDE FILM
▲	METAL FILM RES
⊠	METAL FILM RES
⊠	FIRE PROOF CARB
⊠	CEMENT MOLDED R
⊠	SEMI VARIABLE R
■	CHIP RESISTOR

**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



P28  
C-4  
MAIN (1)  
CB105

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
41	D1-2	HSS104 1SS133 1SS176

CAPACITOR

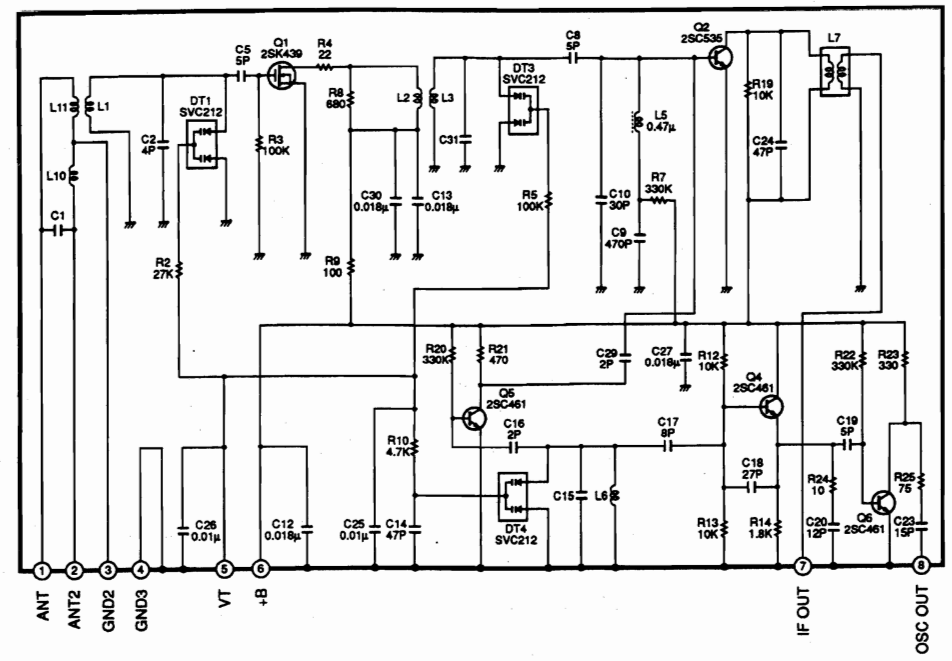
REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⊘
⊗	TANTALUM CAPACITOR	⊗
NO MARK	CERAMIC CAPACITOR	○
⊙	CERAMIC TUBULAR CAPACITOR	⊙
⊖	POLYESTER FILM CAPACITOR	⊖
⊕	POLYSTYRENE FILM CAPACITOR	⊕
Ⓜ	MICA CAPACITOR	Ⓜ
Ⓟ	POLYPROPYLENE FILM CAPACITOR	Ⓟ
●	SEMICONDUCTIVE CERAMIC CAPACITOR	●

RESISTOR

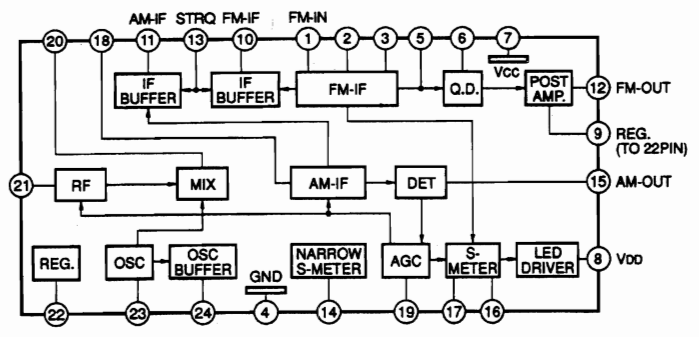
REMARKS	PARTS NAME	
NO MARK	CARBON FILM RESISTOR [P=5]	□
⊠	CARBON FILM RESISTOR [P=10]	⊠
△	METAL OXIDE FILM RESISTOR	△
▲	METAL FILM RESISTOR	▲
⊞	METAL PLATE RESISTOR	⊞
⊞	FIRE PROOF CARBON FILM RESISTOR	⊞
⊞	CEMENT MOLDED RESISTOR	⊞
⊞	SEMI VARIABLE RESISTOR	⊞
■	CHIP RESISTOR	■

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

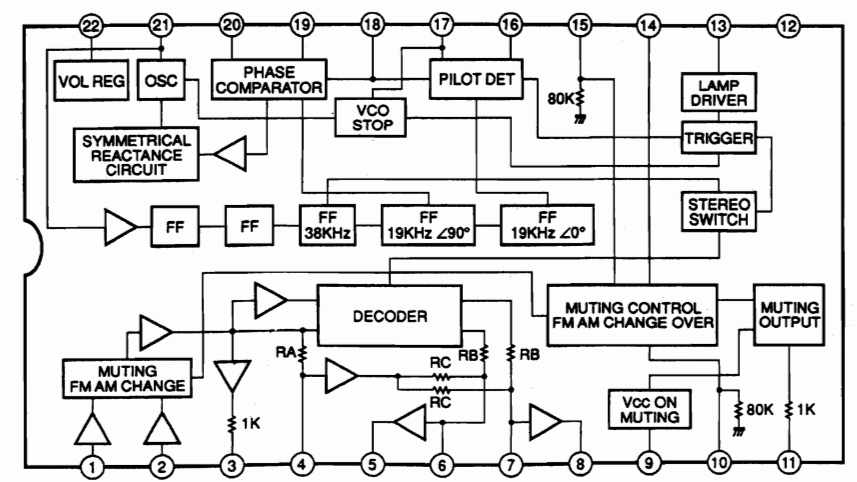
● R model  
PK1 : ENV-17298GI (VR24200)



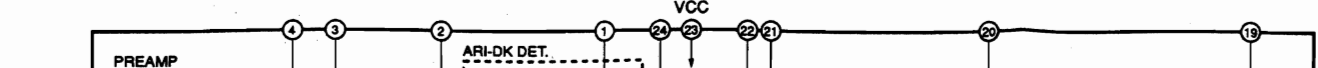
IC1 : LA1266  
AM/FM IF



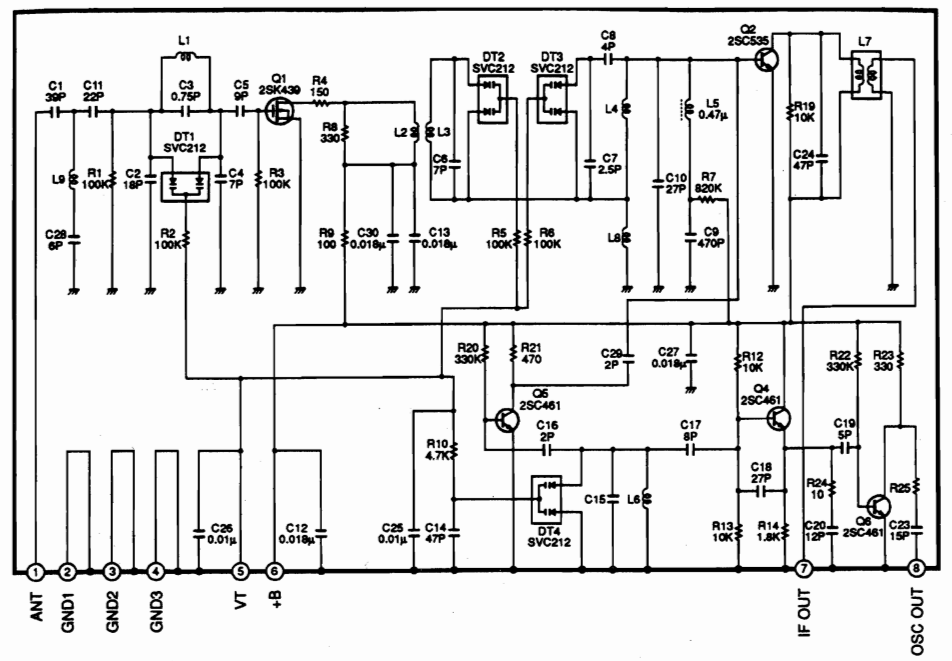
IC3 : LA3401  
MPX



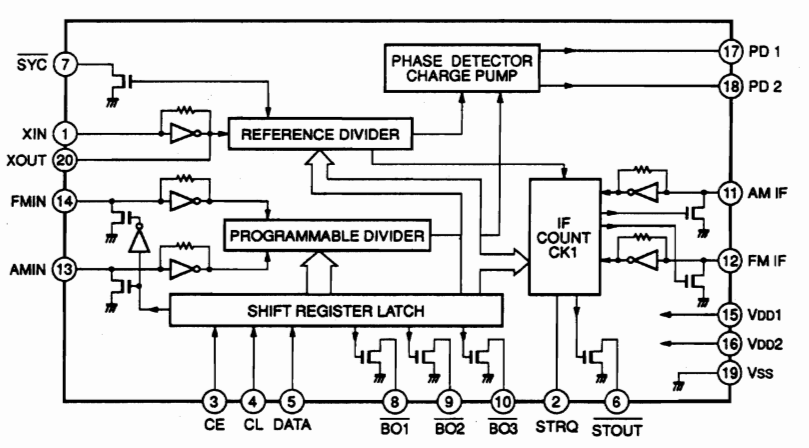
IC4 : LA2232  
RDS Decoder



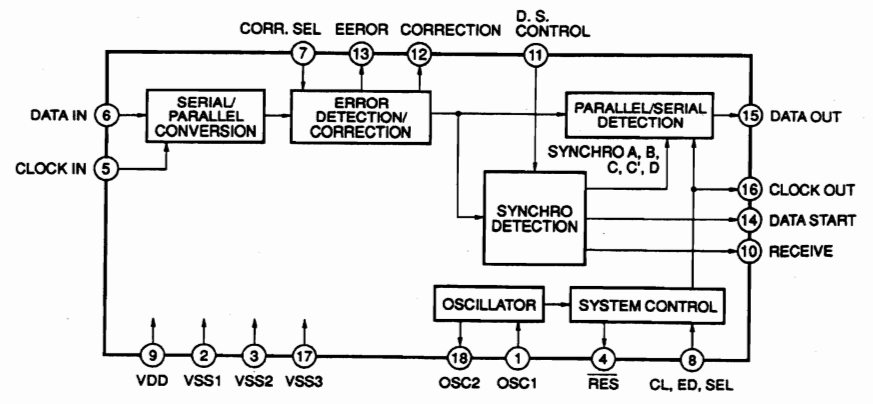
● B & G models  
PK1 : ENV-17298GI (VR24200)



IC2 : LM7000  
PLL Controller



IC5 : LC7073  
RDS Converter & Controller



5

6

7

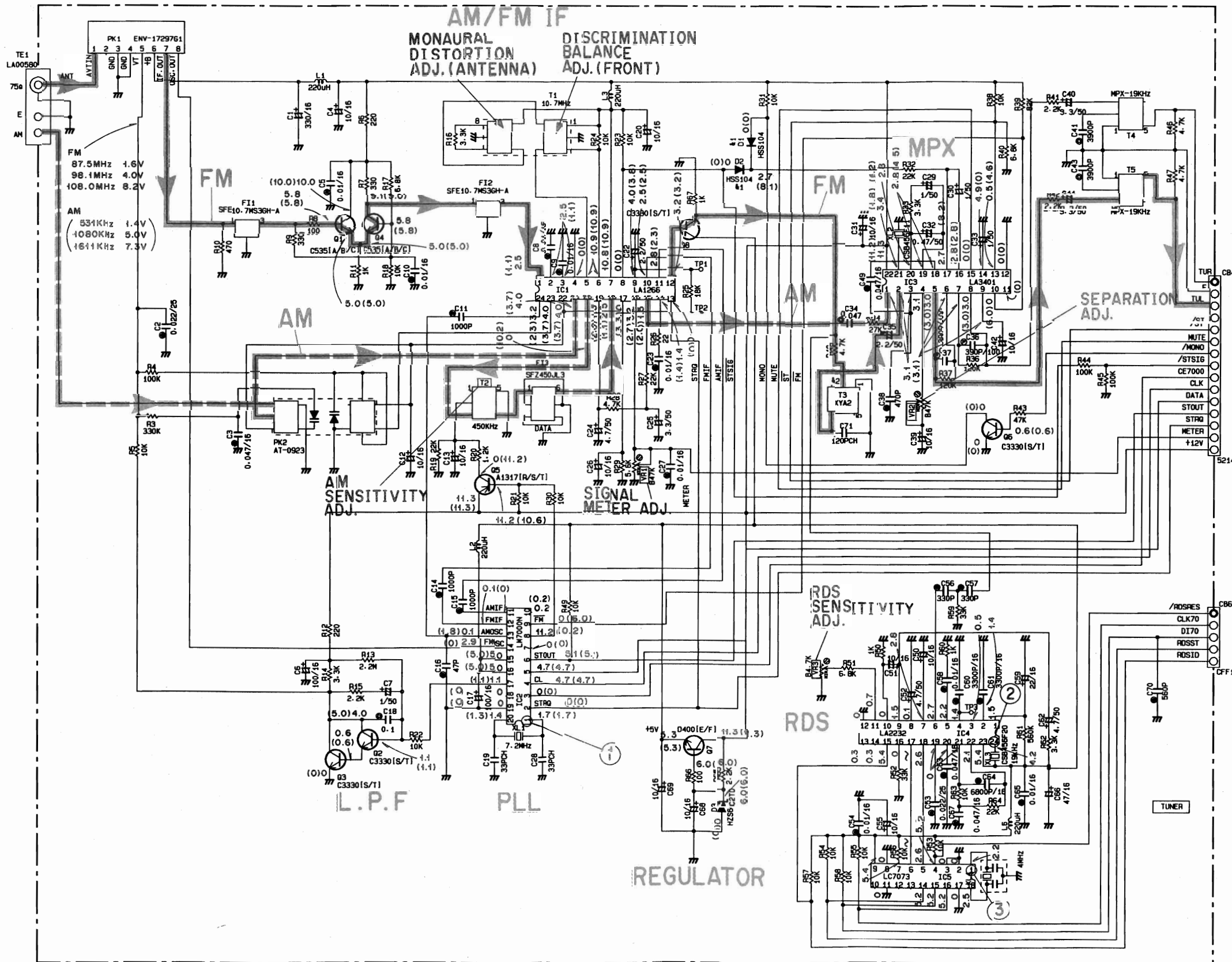
8

9

10

B & G models

REGULATOR



Interchangeable Parts at M

Mark	Reference Parts Number
k1	D1-2
k2	T3

CAPACITOR

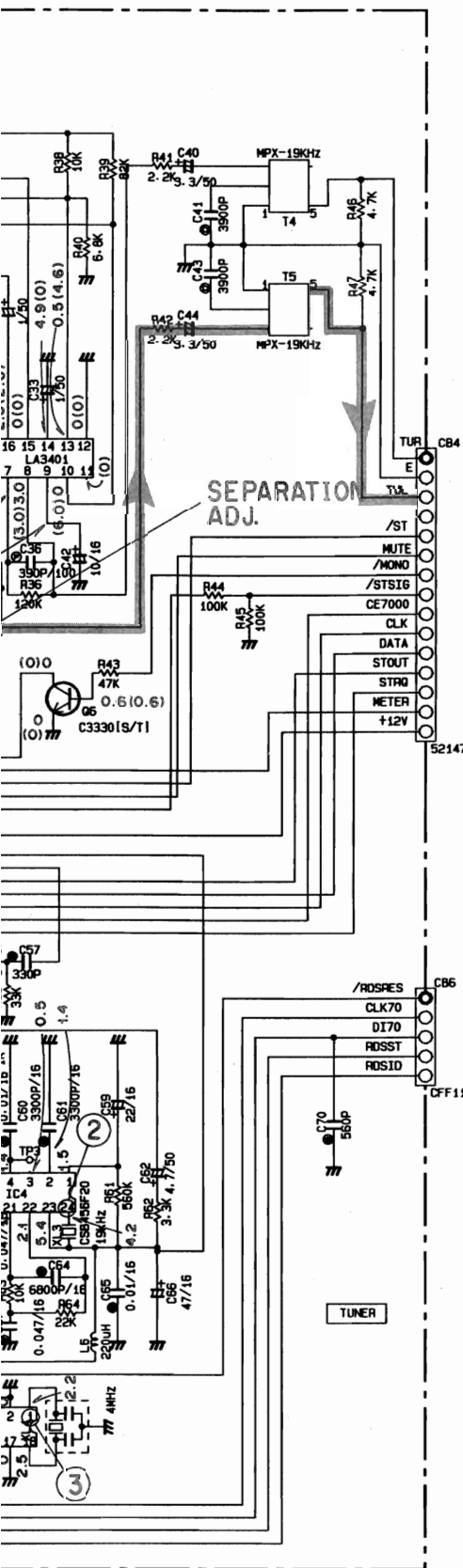
REMARKS	PARTS
NO MARK	ELECTROLYTIC CAP.
⊗	TANTALUM CAPAC.
NO MARK	CERAMIC CAPACIT.
⊙	CERAMIC TUBULAR
⊖	POLYESTER FILM
⊕	POLYSTYRENE FILM
⊗	MICA CAPACITOR
⊙	POLYPROPYLENE
⊖	SEMICONDUCTIVE

RESISTOR

REMARKS	PARTS
NO MARK	CARBON FILM RES.
⊗	CARBON FILM RES.
△	METAL OXIDE FILM
▲	METAL FILM RES.
⊗	METAL PLATE RES.
⊖	FIRE PROOF CARB.
⊕	CEMENT MOLDED I.
⊗	SEMI VARIABLE
⊖	CHIP RESISTOR

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

PIN  
 1S  
 1S  
 HS  
 HZ



P28  
C-4  
MAIN (1)  
CB105

P28  
B-4  
MAIN (1)  
CB111

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
41	D1-2	HSS104 ISS133 ISS176
42	T3	XYA2 114KHZ

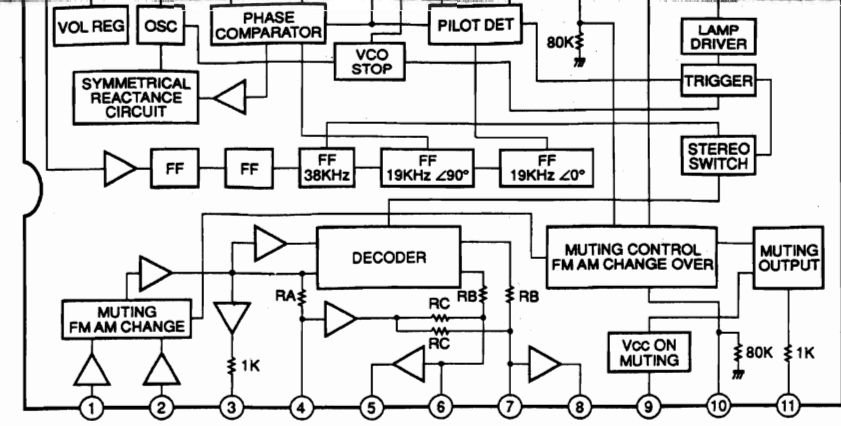
CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	#
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	
⊙	CERAMIC TUBULAR CAPACITOR	
⊖	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
⊕	MICA CAPACITOR	
⊖	POLYPROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

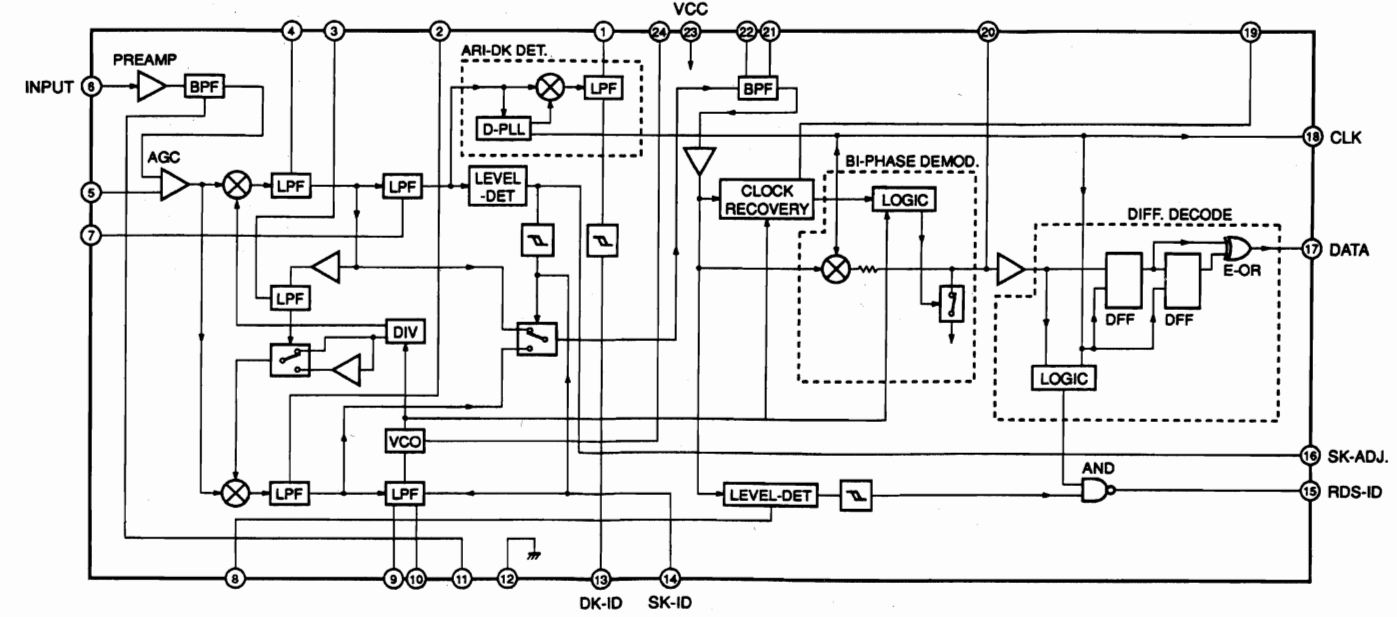
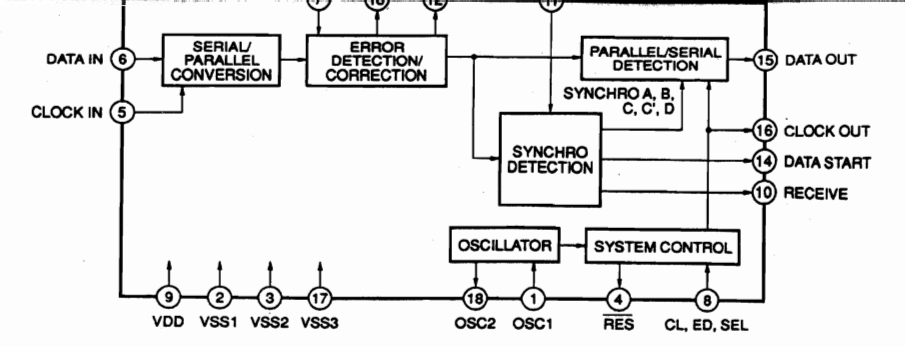
RESISTOR

REMARKS	PARTS NAME	
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	

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

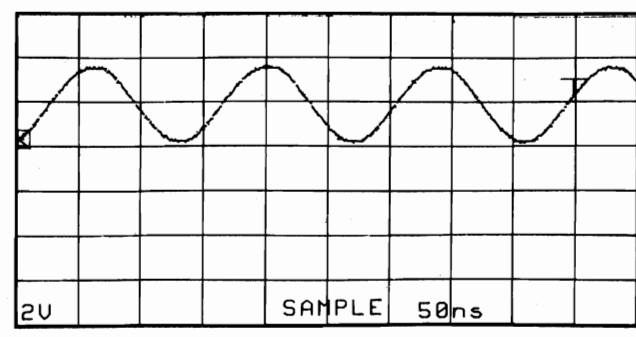


IC4 : LA2232  
RDS Decoder

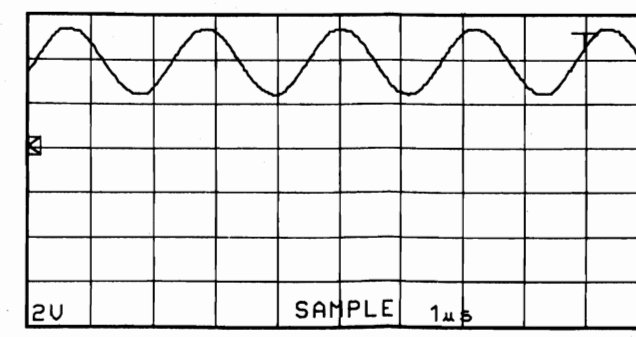


● TEST POINT WAVEFORMS

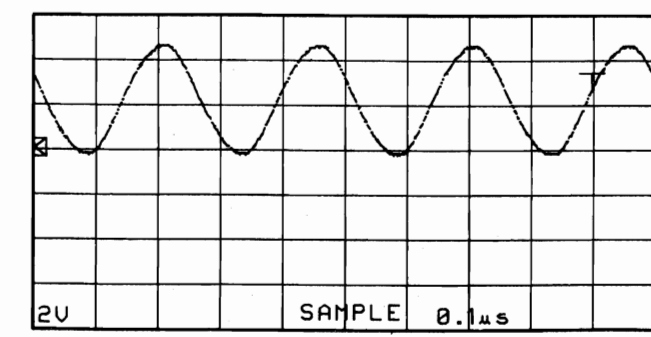
Point ①  
 (Pin 1 of IC2)  
 V: 2V/div H: 50nsec/div  
 DC range 1: 1 probe



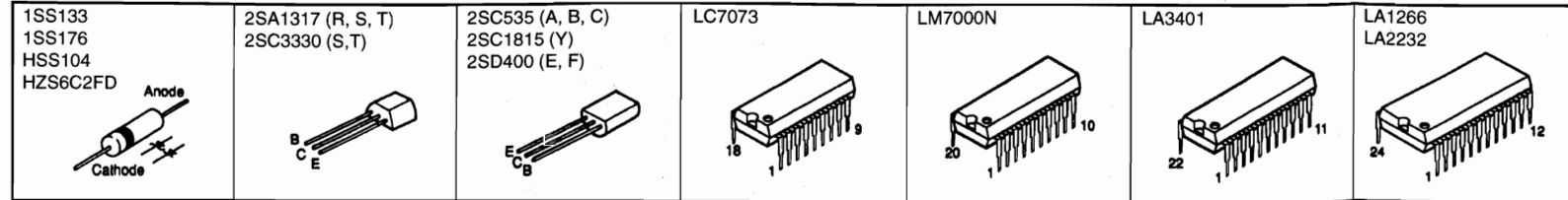
Point ②  
 (Pin 24 of IC4)  
 V: 2V/div H: 1μsec/div  
 DC range 1: 1 probe



Point ③  
 (Pin 1 of IC5)  
 V: 2V/div H: 0.1μsec/div  
 DC range 1: 1 probe



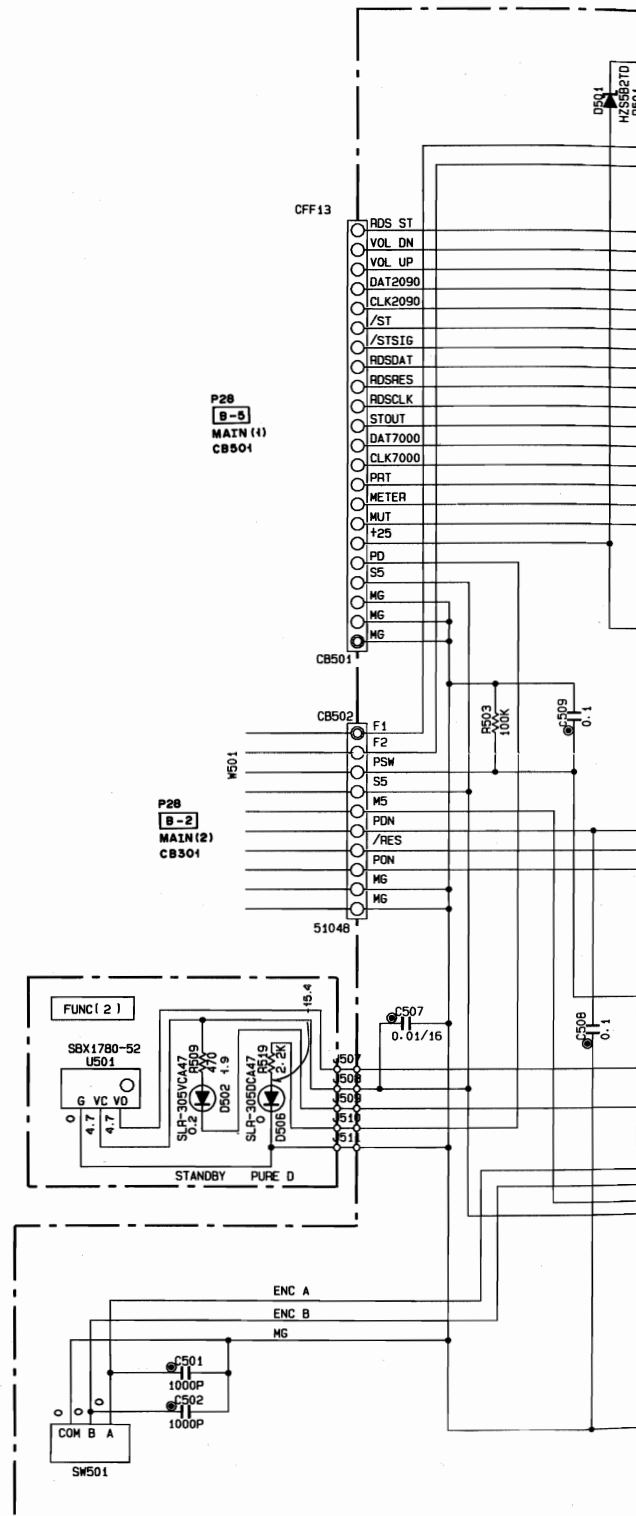
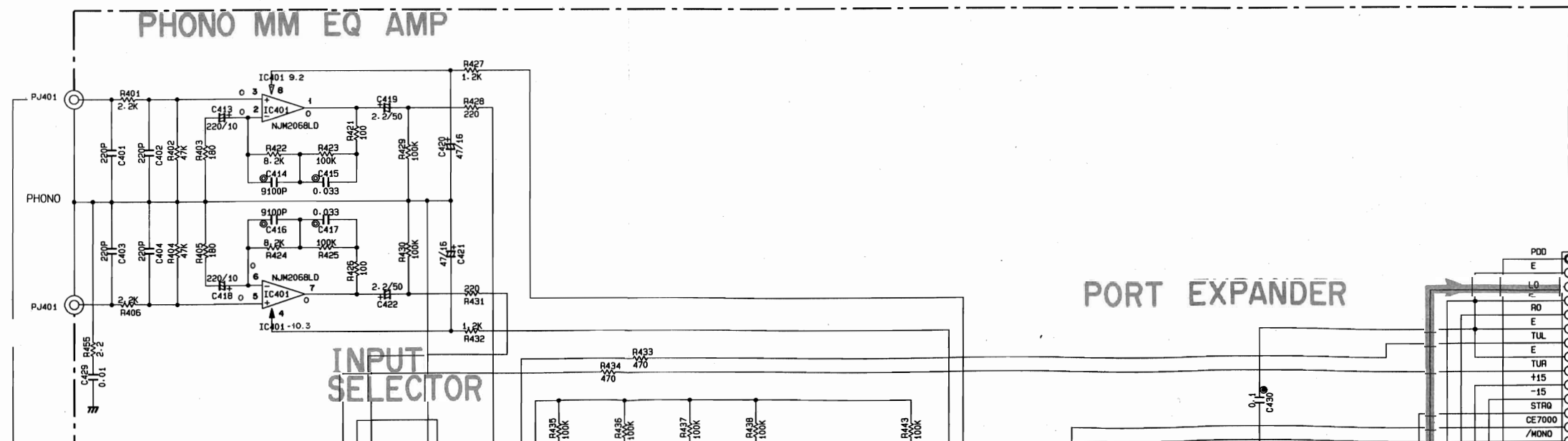
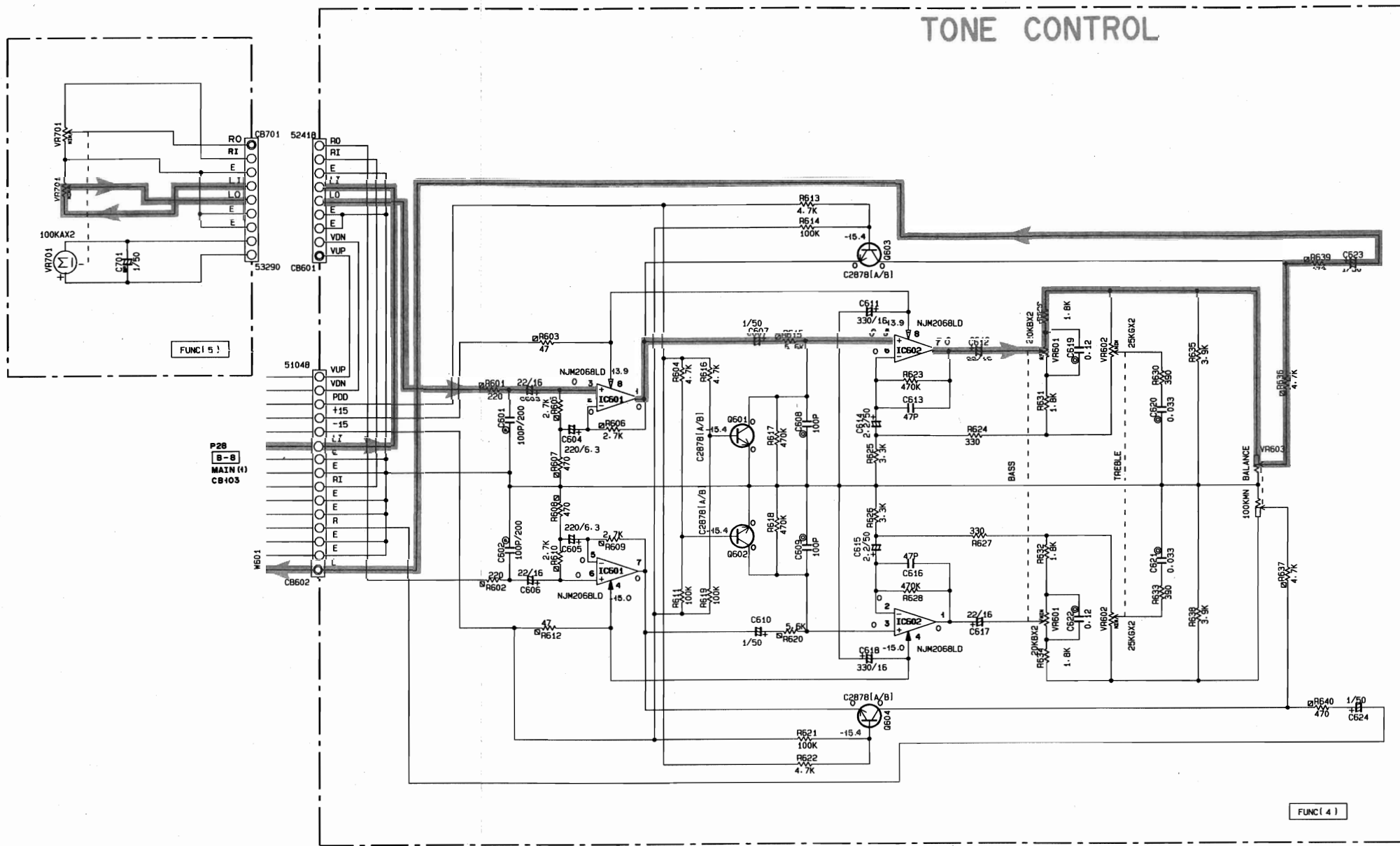
PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.



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



SCHEMATIC DIAGRAM

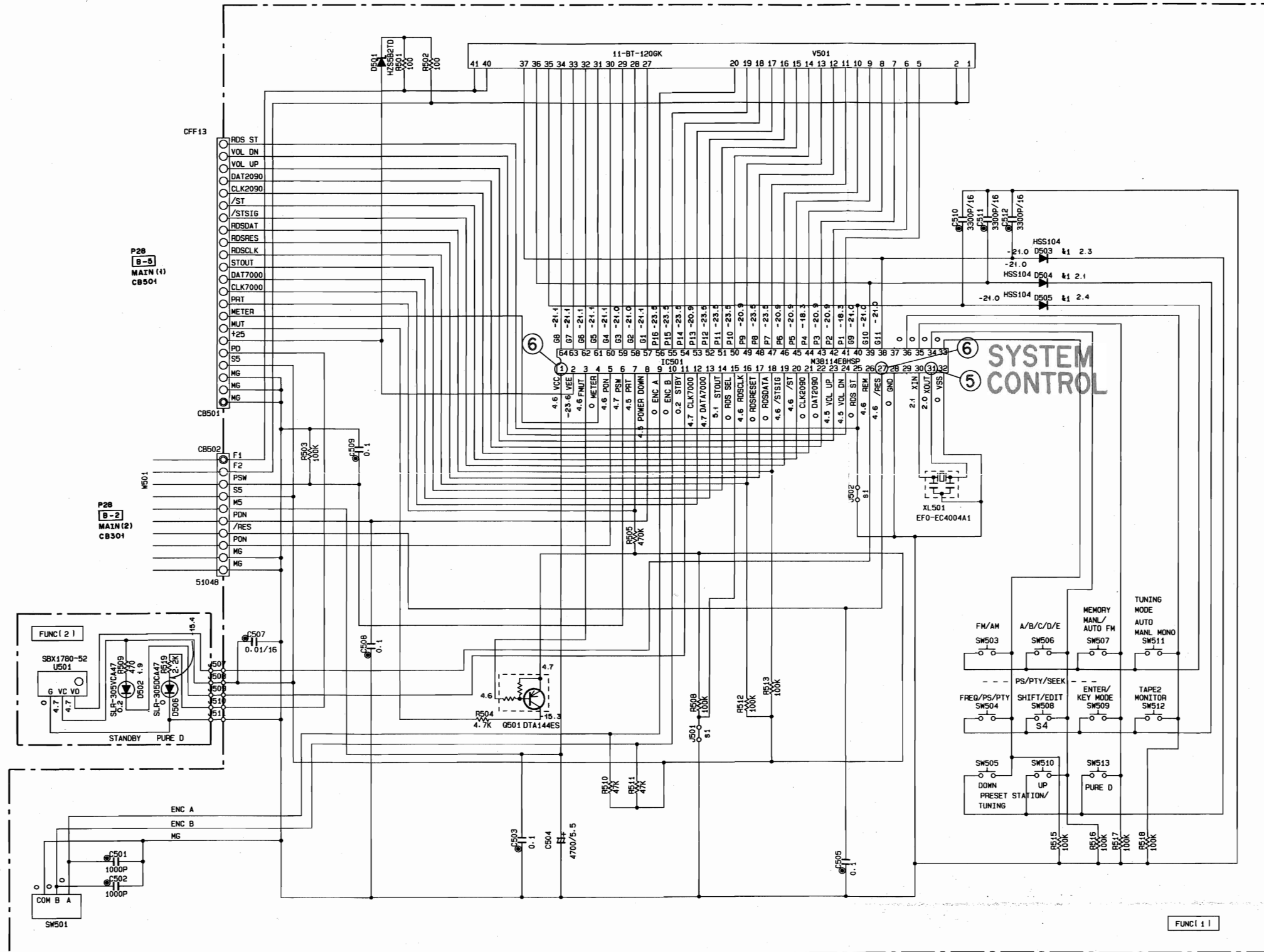


REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR [P=5]
☑	CARBON FILM RESISTOR [P=10]
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
☒	METAL PLATE RESISTOR
☑	FIRE PROOF CARBON FILM RESISTOR
☐	CEMENT MOLDED RESISTOR
⊗	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

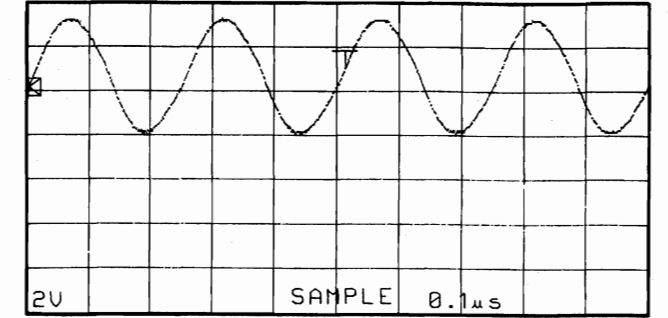
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR

FUNC	REMARKS	PARTS NAME
1	J501.502	
2		
3		
4	SW508	
5		
6		
7		
8		
9		

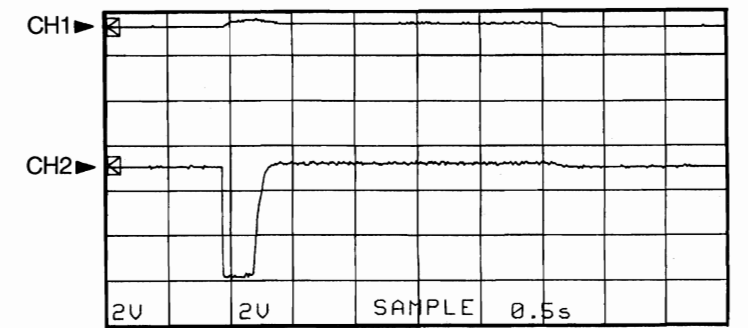


● TEST POINT WAVEFORMS

Point ⑤  
(Pin 31 of IC501)  
V: 2V/div H: 0.1μsec/div  
DC range 1: 1 probe



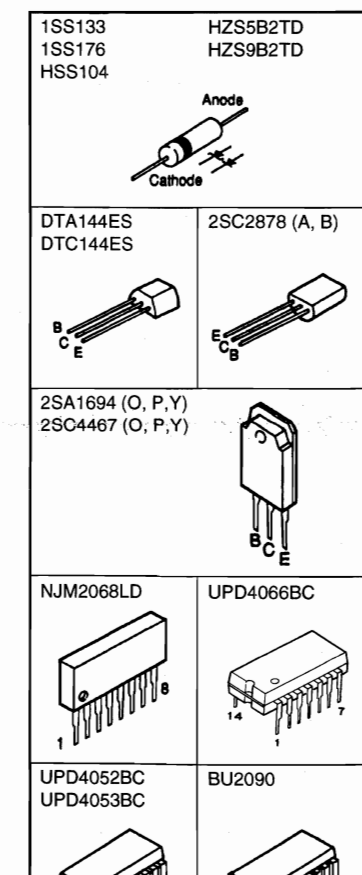
Point ⑥  
(CH1 : Pin 1 of ic501  
CH2 : Pin 27 of IC501)  
V: 2V/div H: 0.1μsec/div  
DC range 1: 1 probe



With the POWER switch turned ON, connect the power cord to the AC outlet.

Disconnect the power cord from the AC outlet.

PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.

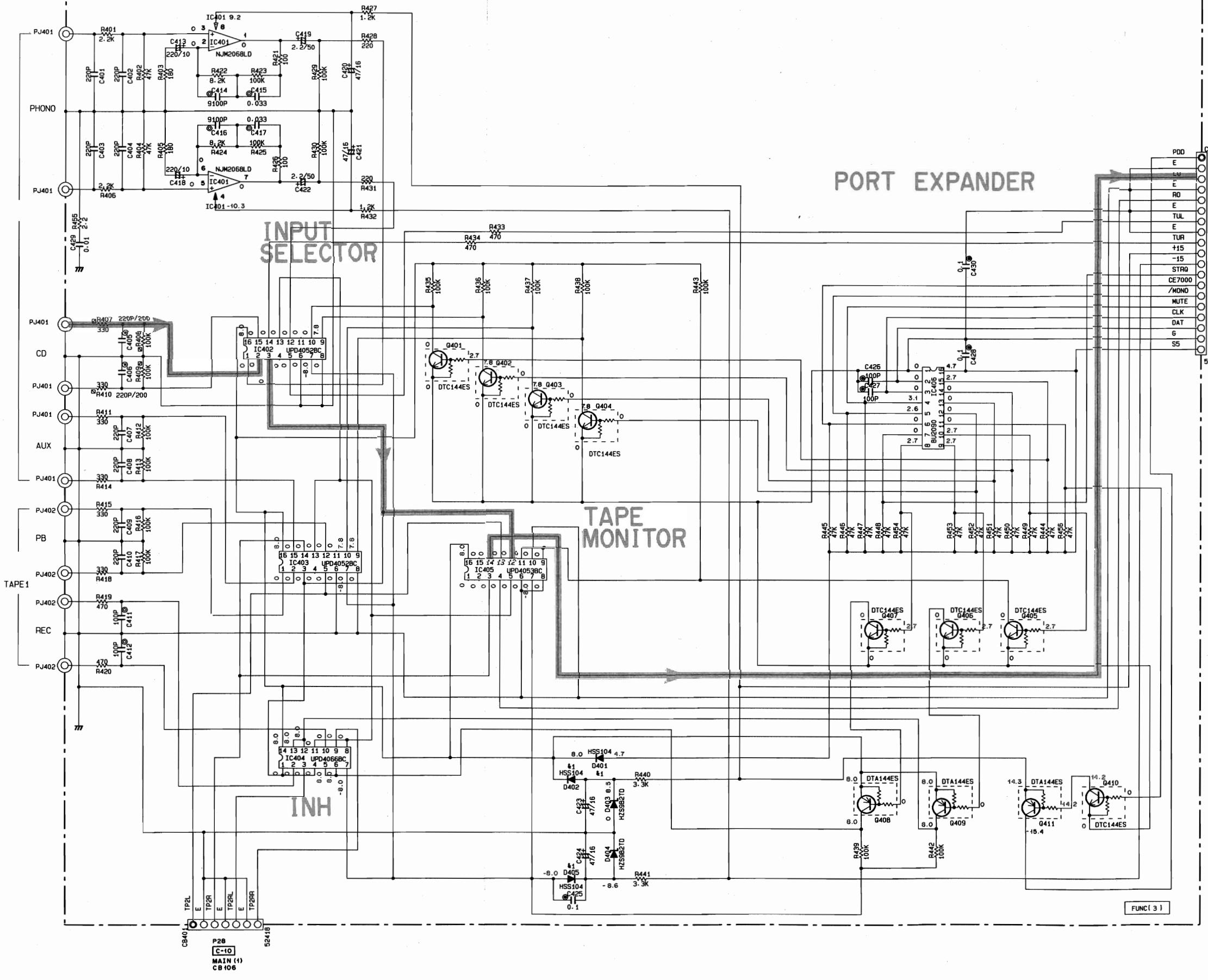


REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
□	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
⊞	FIRE PROOF CARBON FILM RESISTOR
⊞	CEMENT MOLDED RESISTOR
⊞	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊕	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR

FUNC	Interchangeable Parts at Manufacture-Stage		
	R	B	G
1	J501-502	0	X
2			
3			
4	SW508	X	V639290
5			
6			
7			
8			
9			

Mark	Reference Parts Number	Parts Name
k1	D401, 402, 405 503-505	HSS104 1SS133 1SS176
k2		



RESISTOR

REMARKS	PARTS NAME
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

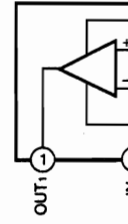
FUNC

NO	MARK	PARTS NAME
1	J501-502	
2		
3		
4	SW506	
5		
6		
7		
8		
9		
10		

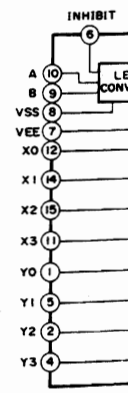
CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊙	CERAMIC TUBULAR CAPACITOR
⊙	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
⊙	MICA CAPACITOR
⊙	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

IC401, 601  
Dual OP-A

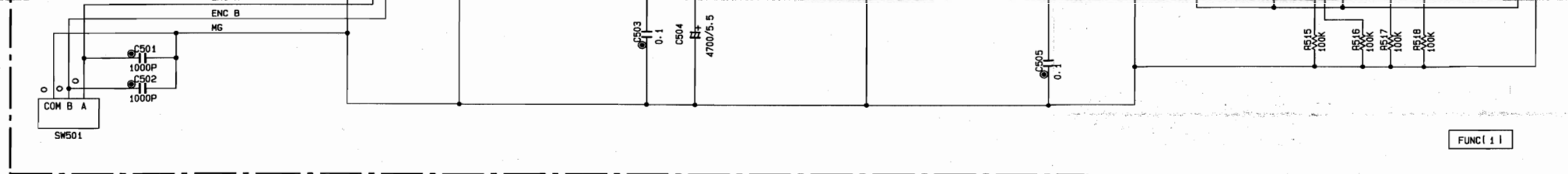


IC402, 403  
Dual 4 Ch  
Multiplexe



INHIBIT

0
0
0
0
1

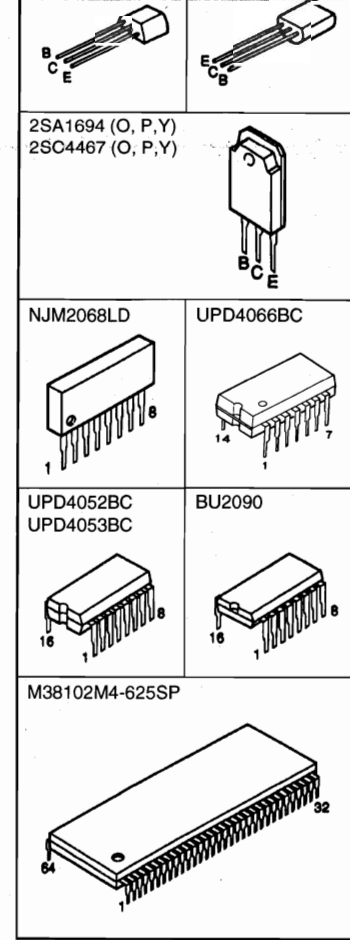


REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR [P=5]
□	CARBON FILM RESISTOR [P=10]
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
▣	FIRE PROOF CARBON FILM RESISTOR
■	CEMENT MOLDED RESISTOR
⊙	SEMI VARIABLE RESISTOR
●	CHIP RESISTOR

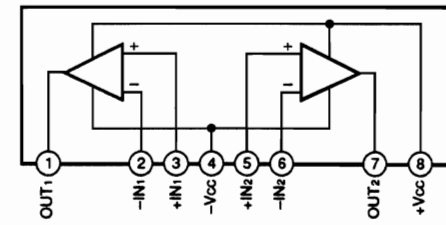
FUNC	R	B	G
1	J501-502	0	X
2			
3			
4	SW508	X	V639290
5			
6			
7			
8			
9			
10			

Mark	Reference Parts Number	Parts Name
k1	D401-402-405 503-505	HSS104 ISS133 ISS176
k2		

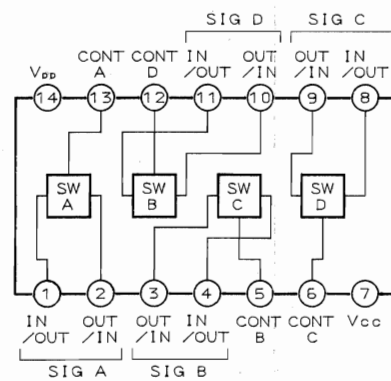
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊙	CERAMIC TUBULAR CAPACITOR
⊚	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
⊖	MICA CAPACITOR
⊕	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR



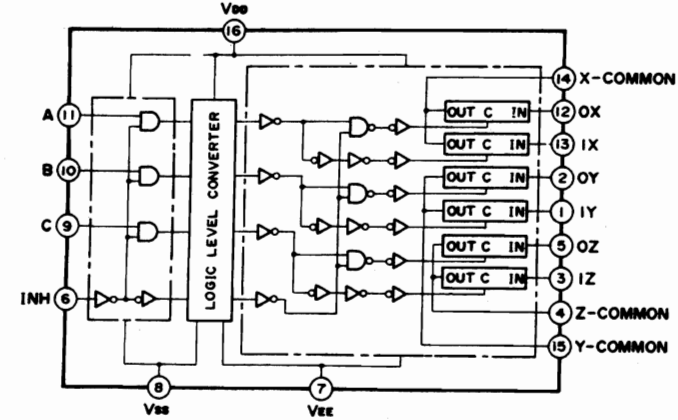
IC401, 601, 602 : NJM2068LD  
Dual OP-Amp



IC404 : UPD4066BC  
Quad Analog Switch Multiplexer

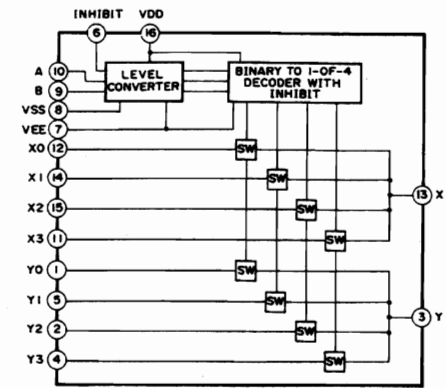


IC405 : UPD4053BC  
Triple 2 Channel Analog Multiplexers/Demultiplexers



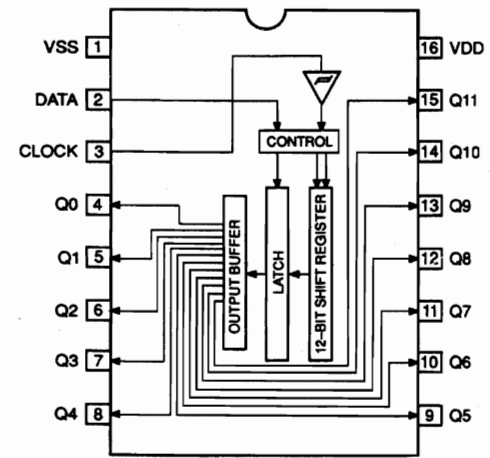
CONTROL INPUTS				"ON" CHANNEL		
INHIBIT (Pin 6)	C (Pin 9)	B (Pin 10)	A (Pin 11)	OX (Pin 12)	OY (Pin 2)	OZ (Pin 5)
L	L	L	L	OX, OY, OZ		
L	L	L	H	1X, OY, OZ		
L	L	H	L	OX, 1Y, OZ		
L	L	H	H	1X, 1Y, OZ		
L	H	L	L	OX, OY, 1Z		
L	H	L	H	1X, OY, 1Z		
L	H	H	L	OX, 1Y, 1Z		
L	H	H	H	1X, 1Y, 1Z		
H	.	.	.	NONE		

IC402, 403 : UPD4052BC  
Dual 4 Channel Analog Multiplexers/Demultiplexers



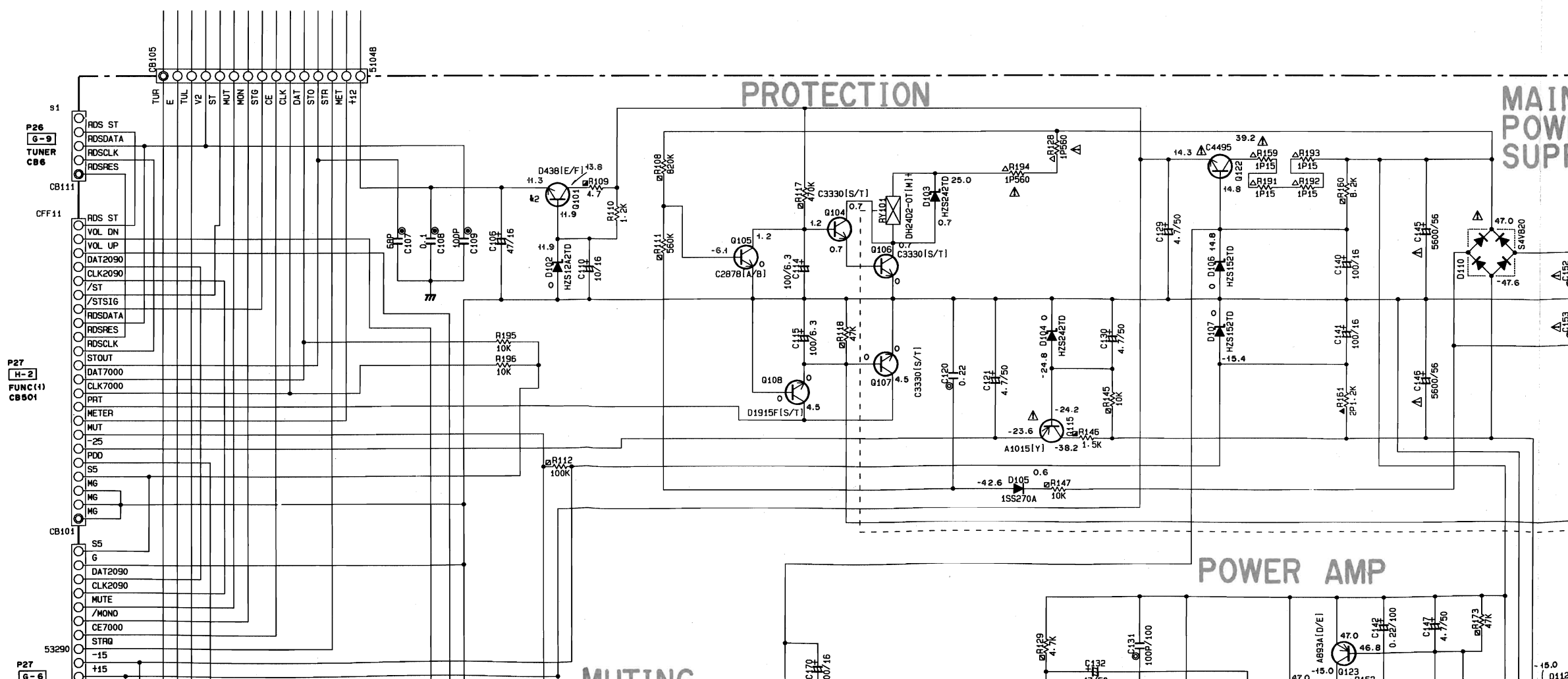
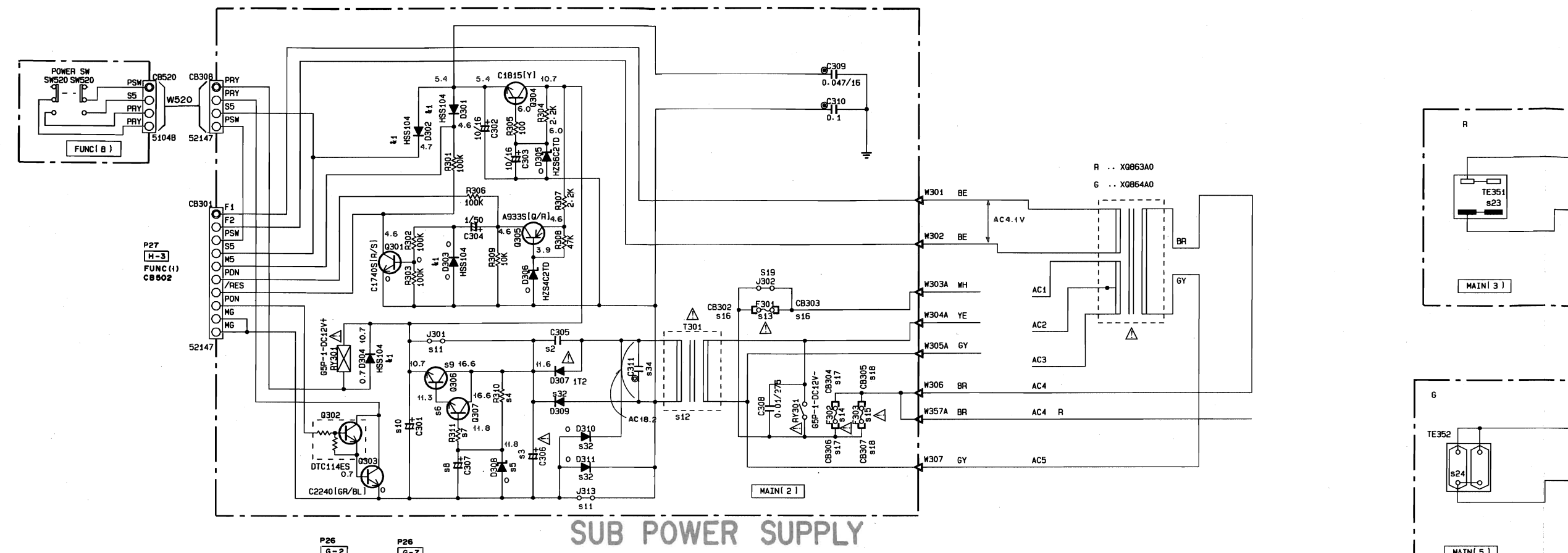
INHIBIT	B	A	
0	0	0	0x, 0y
0	0	1	1x, 1y
0	1	0	2x, 2y
0	1	1	3x, 3y
1	X	X	NONE

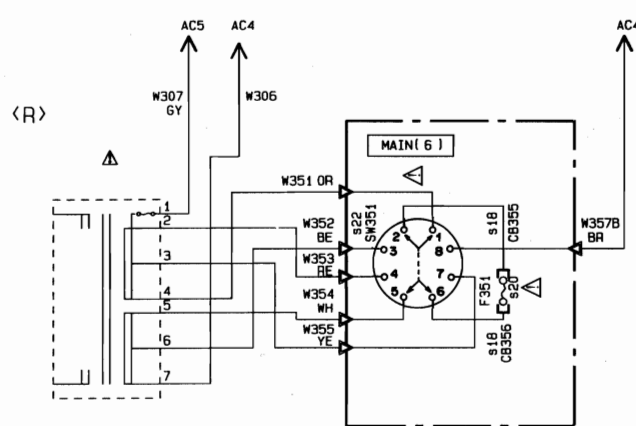
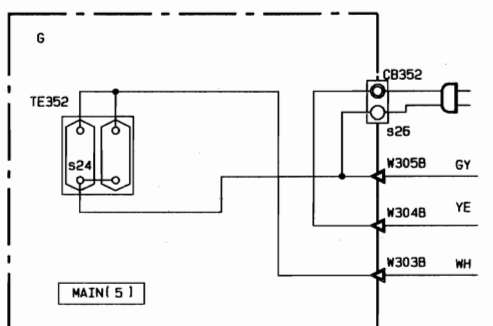
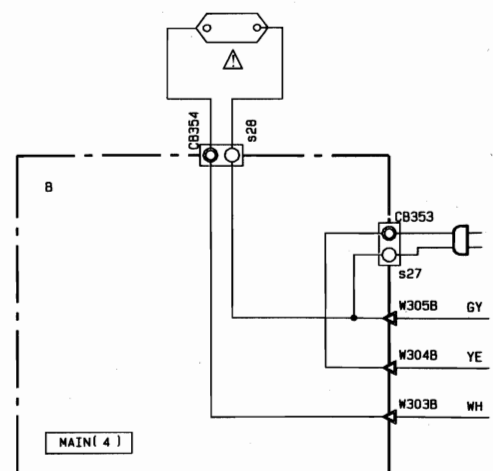
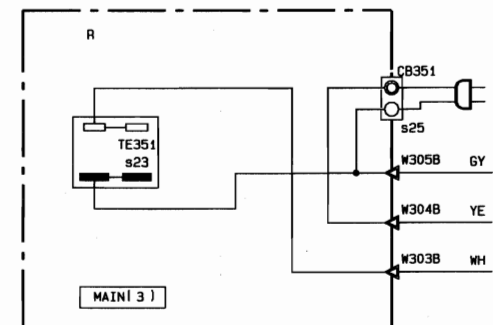
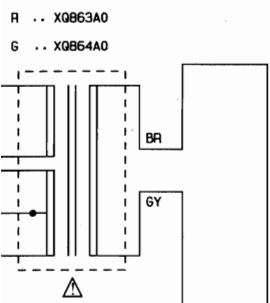
IC406 : BU2090  
Serial In/Paraller out Driver



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

# SCHEMATIC DIAGRAM





**CAPACITOR**

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⊘
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	□
⊙	CERAMIC TUBULAR CAPACITOR	
⊖	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
⊕	MICA CAPACITOR	
⊗	POLYPROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

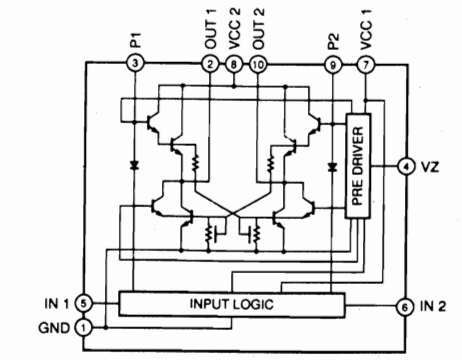
**RESISTOR**

REMARKS	PARTS NAME	
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	

Interchangeable Parts at Manufacture-Stage

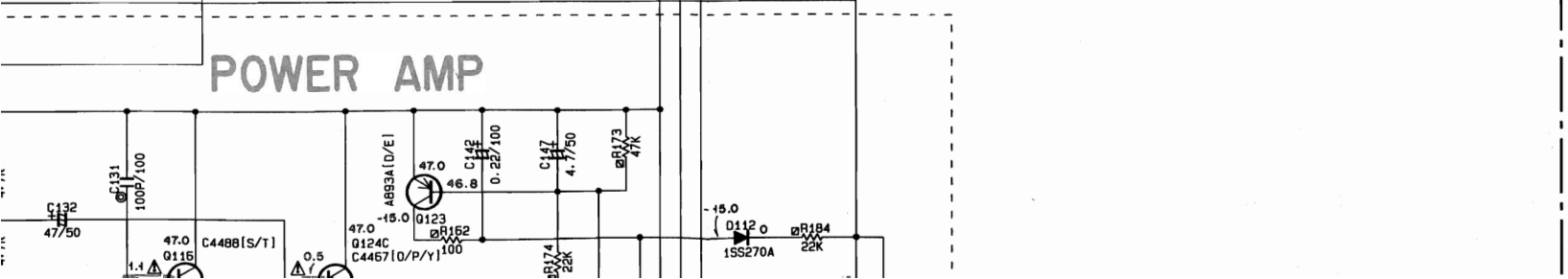
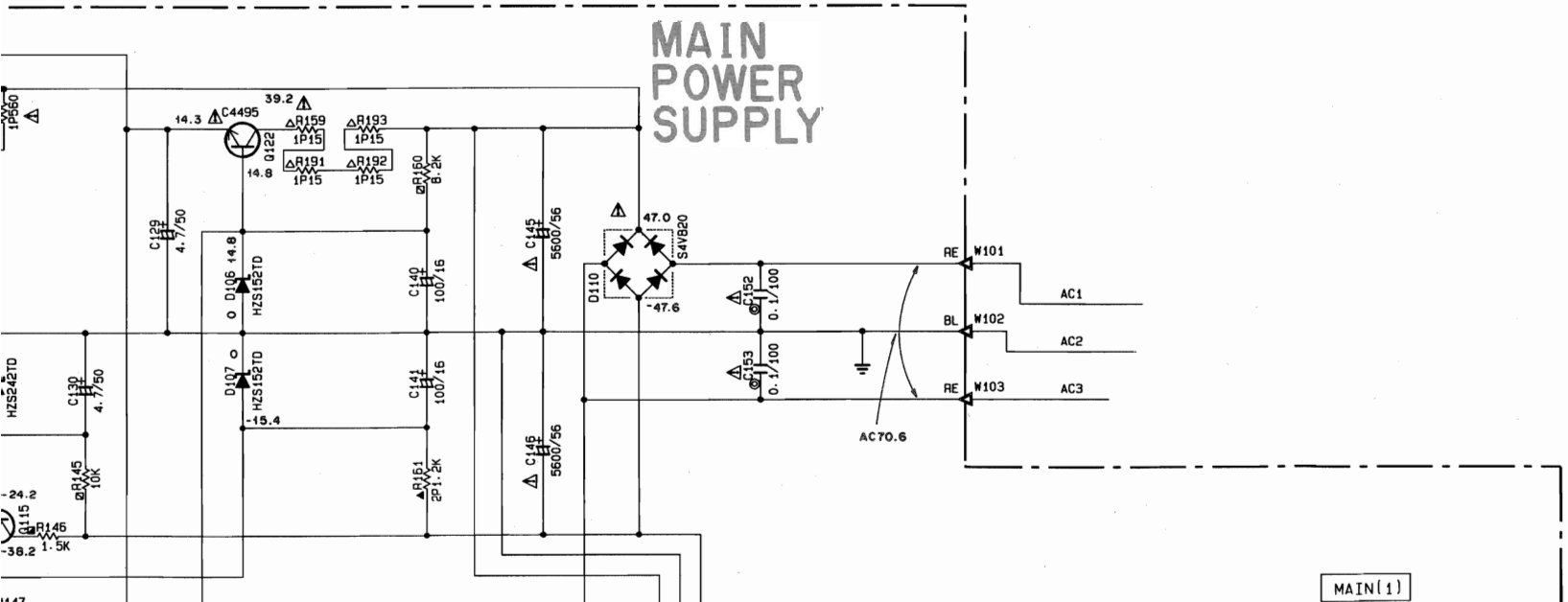
Mark	Reference Parts Number	Parts Name
#1	D301-304	HSS104 1SS133 1SS176
#2	Q101	2SD438(E/F) 2SC2061(P/Q/R)

IC101 : LB1641  
Motor Drive



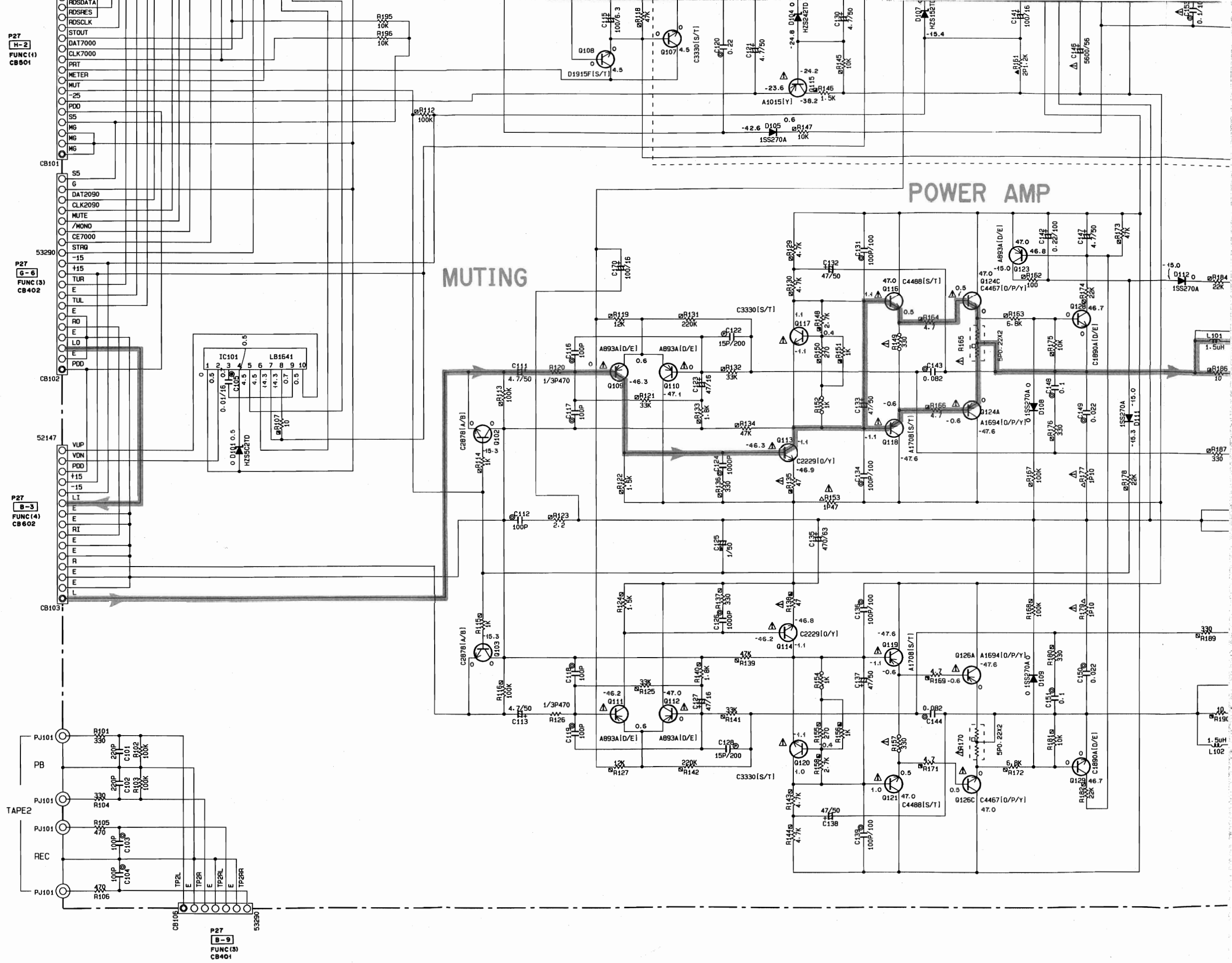
PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.

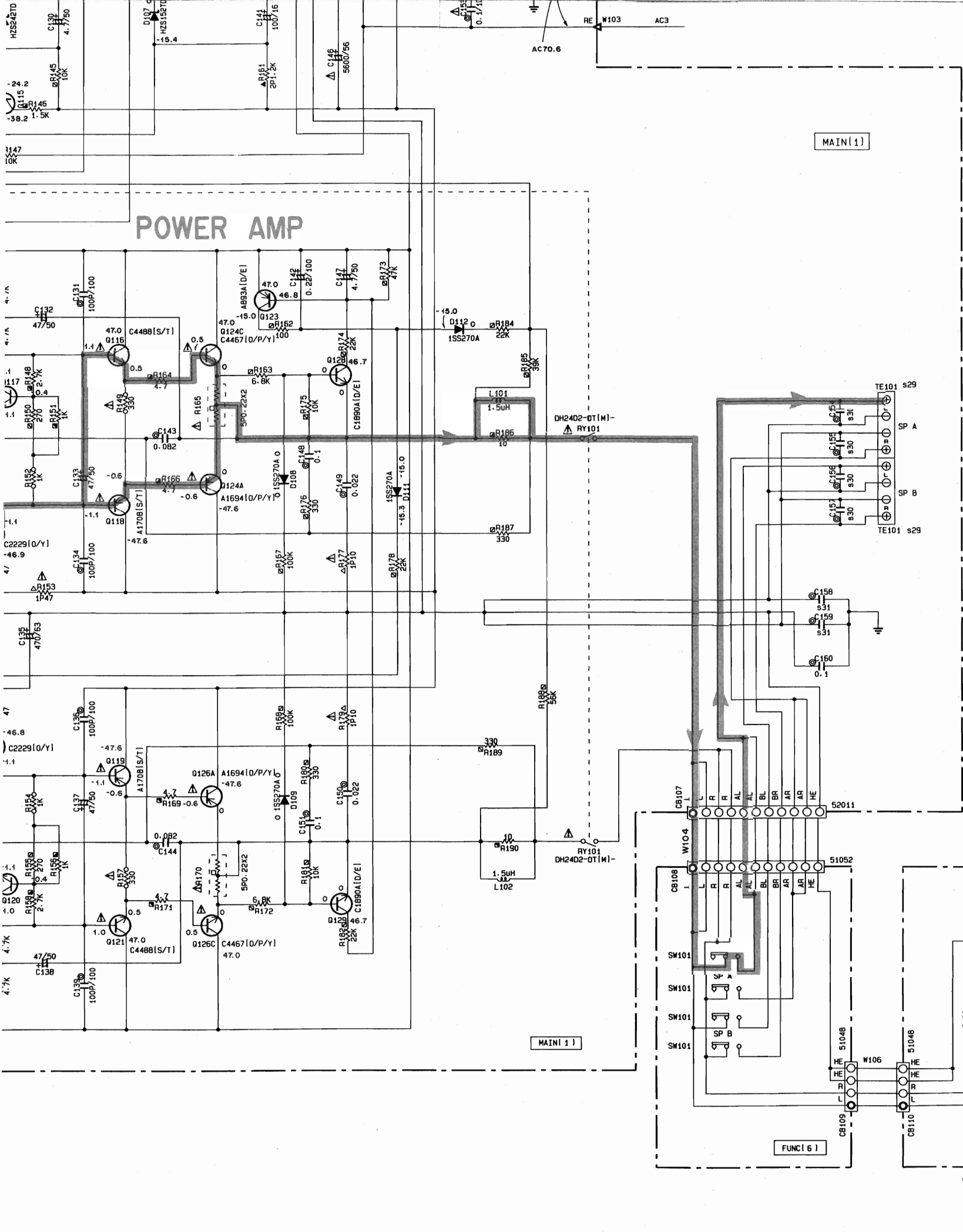
1T2	HZS9B2TD	
1SS133	HZS12B2TD	
1SS176	HZS152TD	
HSS104	HZS242TD	
1SS270A		
HZS4C2TD		
HZS5B2TD		
HZS5C2TD		
HZS6C2TD		
S4VB20		
2SC933S (Q,R)		
2SC1740S (R,S)		
2SC3330 (S,T)		
2SD1915F (S,T)		
DTC114ES		
2SA893A (D, E)		
2SA1015 (Y)		
2SC1815 (Y)		
2SC1890A (D, E)		
2SC2229 (O, Y)		
2SC2240 (GR, BL)		
2SC2878 (A, B)		
2SD438 (E, F)		
2SA1708 (S, T)	2SC4495	
2SC4488 (S, T)		
2SA1694 (O, P, Y)		
2SC4467 (O, P, Y)		
2SD2375 (Q, P)		
LB1641		



**MAIN**

S		R	B	G
1	CB111	X	VR35760	VR35760
2	C305	X	1000P	1000P
3	C306	330/63	330/25	330/25
4	R310	18K	X	X
5	D308	HZS12A2TD	X	X
6	Q307	C1815(Y)	X	X
7	R311	100	X	X
8	C307	10/16	X	X
9	Q306	D2375(Q/P)	X	X
10	C301	100/16	X	X
11	J301-313	X	0	0
12	T301	XC082	XC084	XC084
13	F301	X	X	T2-5A250V
14	F302	X	T1-25AL250V	T1-25AL250V
15	F303	4A125V	X	X
16	CB302-303	X	X	VP20650
17	CB304-306		VP20650	VP20650
18	CB305-307	VP20650	X	X
19	J302	0	0	X





3	C306			
4	R310	18K	X	X
5	D308	HZS12A2TD	X	X
6	Q307	C1B15[Y]	X	X
7	R311	100	X	X
8	C307	10/16	X	X
9	Q306	D2375[Q/P]	X	X
10	C301	100/16	X	X
11	J301-313	X	0	0
12	T301	XC082	XC084	XC084
13	F301	X	X	T2-5A250V
14	F302	X	T1-25AL250V	T1-25AL250V
15	F303	4A125V	X	X
16	CB302-303	X	X	VP20650
17	CB304-306 355-356		VP20650	VP20650
18	CB305-307	VP20650	X	X
19	J302	0	0	X
20	F351	T1-25AL250V	X	X
21				
22	SW351	VA96180	X	X
23	TE351	VK48060	X	X
24	TE352	X	X	VK48070
25	CB351	V687990	X	X
26	CB352	X	X	V687990
27	CB353	X	V687990	X
28	CB354	X	LA00214	X
29	TE101	VC31370	VK50620	VK50620
30	C154-157	X	UA65410 0.01	UA65410 0.01
31	C158-159	X	V171670 0.01	V171670 0.01
32	D309-311	VS99780 1T2	X	X
33				
34	C311	VR32510 0.01/100	X	X

FUNC				
S		R	B	G
2	C161 - 163	X	0.01	0.01
3	R191	X	2.2	2.2
5	W108	X	VT55020	VT55020

2SA1708 (S,T)  
2SC4488 (S,T)

2SC4495

2SA1694 (O, P, Y)  
2SC4467 (O, P, Y)  
2SD2375 (Q, P)

LB1641

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



# 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.

<b>TUNER P. C. B.</b>
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Schm No.	PART NO.	Description
* *	VT558900	P. C. B. TUNER(R)
	VT559000	P. C. B. TUNER(BG)
CB1	VR428700	CN. BS. PIN 2P
CB2	VR428700	CN. BS. PIN 2P
CB4	VF667600	CN 15P
CB6	VR357600	CN. BS. PIN 5P(BG)
C1	UJ638330	C. EL 330uF 16V
C2	VG280100	C. CE. TUBLR 0. 022uF 25V
C3	VJ599000	C. CE. TUBLR 0. 047uF 16V
C4	VJ836900	C. EL 10uF 16V
C5	VF467300	C. CE. TUBLR 0. 01uF 16V
C6	VF964800	C. EL 100uF 16V
C7	VJ839100	C. EL 1uF 50V
C8	VF467300	C. CE. TUBLR 0. 01uF 16V
C9	VF467300	C. CE. TUBLR 0. 01uF 16V
C10	VF467300	C. CE. TUBLR 0. 01uF 16V
C11	VF467000	C. CE. TUBLR 1000pF 50V
C12	VJ836900	C. EL 10uF 16V
C13	VJ836900	C. EL 10uF 16V
C14	VF467000	C. CE. TUBLR 1000pF 50V
C15	VF467000	C. CE. TUBLR 1000pF 50V
C16	VF466700	C. CE. TUBLR 47pF 50V
C17	VF964800	C. EL 100uF 16V
C18	UA655100	C. MYLAR 0. 1uF 50V
C19	VA761200	C. CE 33pF 50V
C20	VJ836900	C. EL 10uF 16V
C21	VF466800	C. CE. TUBLR 100pF 50V(R)
C22	VJ839200	C. EL 2. 2uF 50V
C23	VF467300	C. CE. TUBLR 0. 01uF 16V
C24	UM416470	C. EL 4. 7uF 50V
C25	UM216330	C. EL 3. 3uF 50V
C26	VJ836900	C. EL 10uF 16V
C27	VF467300	C. CE. TUBLR 0. 01uF 16V
C28	VA761200	C. CE 33pF 50V
C29	VJ839100	C. EL 1uF 50V
C30	VJ839100	C. EL 1uF 50V
C31	VJ836900	C. EL 10uF 16V
C32	VJ839000	C. EL 0. 47uF 50V
C33	VJ839100	C. EL 1uF 50V
C34	UA654470	C. MYLAR 0. 047uF 50V
C35	VD916400	C. EL 2. 2uF 50V
C36	UA652680	C. MYLAR 680pF 50V(R)
C36	UT452390	C. PP 390pF 100V(BG)
C37	UA652680	C. MYLAR 680pF 50V(R)
C37	UT452390	C. PP 390pF 100V(BG)
C38	VF466900	C. CE. TUBLR 470pF 50V
C39	VJ836900	C. EL 10uF 16V
C40	UM216330	C. EL 3. 3uF 50V
C41	UA653390	C. MYLAR 3900pF 50V
C42	VJ836900	C. EL 10uF 16V
C43	UA653390	C. MYLAR 3900pF 50V
C44	UM216330	C. EL 3. 3uF 50V
C49	VJ599000	C. CE. TUBLR 0. 047uF 16V

\*New Parts

Schm No.	PART NO.	Description
C50	VJ836900	C. EL 10uF 16V(BG)
C51	VJ836900	C. EL 10uF 16V(BG)
C52	UM416470	C. EL 4. 7uF 50V(BG)
C53	VG280100	C. CE. TUBLR 0. 022uF 25V(BG)
C54	VF467300	C. CE. TUBLR 0. 01uF 16V(BG)
C55	VJ836900	C. EL 10uF 16V(BG)
C56	VG278600	C. CE. TUBLR 330pF 50V(BG)
C57	VG278600	C. CE. TUBLR 330pF 50V(BG)
C58	VF467300	C. CE. TUBLR 0. 01uF 16V(BG)
C59	UM407220	C. EL 22uF 25V(BG)
C60	VG279600	C. CE. TUBLR 3300pF 16V(BG)
C61	VG279600	C. CE. TUBLR 3300pF 16V(BG)
C62	UM416470	C. EL 4. 7uF 50V(BG)
C63	VJ599000	C. CE. TUBLR 0. 047uF 16V(BG)
C64	VG279900	C. CE. TUBLR 6800pF 16V(BG)
C65	VF467300	C. CE. TUBLR 0. 01uF 16V(BG)
C66	VJ837200	C. EL 47uF 16V(BG)
C67	VJ599000	C. CE. TUBLR 0. 047uF 16V(BG)
C68	VJ836900	C. EL 10uF 16V
C69	VJ836900	C. EL 10uF 16V
C70	VG278800	C. CE. TUBLR 560pF 50V(BG)
C71	VA777400	C. CE 120pF 50V(BG)
D1	VD631600	DIODE 1SS133, 176, HSS104
D2	VD631600	DIODE 1SS133, 176, HSS104
D3	VM974500	DIODE. ZENR HZS6C2TD 6. 0V
F11	GG000560	FLTR. CE SFE10. 7MS3GHY-A
F12	GG000560	FLTR. CE SFE10. 7MS3GHY-A
F13	VC219000	FLTR. CE SFZ450JL3
IC1	XB760A00	IC LA1266
IC2	XB818A00	IC LM7000N
IC3	IG158100	IC LA3401
IC4	XL801A00	IC LA2232(BG)
IC5	XL802A00	IC LC7073(BG)
L1	VI546100	COIL 220uH
L2	VI546100	COIL 220uH
L3	VI546100	COIL 220uH
L6	VI546100	COIL 220uH(BG)
PK1	VQ987600	TUNER. PK EXV-17296G1(BG)
PK1	VR242200	TUNER. PK EXV-17296G1(R)
PK2	VI027300	COIL. AM
Q1	IC053540	TR 2SC535 A, B, C
Q2	VC218900	TR 2SC3330 R, S, T
Q3	VC218900	TR 2SC3330 R, S, T
Q4	IC053540	TR 2SC535 A, B, C
Q5	VC218700	TR 2SA1317 R, S, T
Q6	VC218900	TR 2SC3330 R, S, T
Q7	IC1815C0	TR 2SC1815 Y(R)
Q7	ID040040	TR 2SD400(BG)
Q8	VC218900	TR 2SC3330 R, S, T(BG)
SW1	VF541200	SW. SLIDE SSSF11(R)
T1	VC218600	COIL. DT. FM 10. 7MHz
T2	GE100470	COIL. IF. AM 450KHz
* T3	VT486800	COIL XYA2(BG)

\*New Parts

**TUNER P. C. B. & MAIN P. C. B.**

Schm No.	PART NO.	Description	
T4	VQ138200	FLTR. LC	19KHz
T5	VQ138200	FLTR. LC	19KHz
TE1	LA005800	TERM. ANT	YKD31-0215
TP1	LA004120	PIN. TEST	
TP2	LA004120	PIN. TEST	
TP3	VL448600	JUMPER. TST	(BG)
VR1	VJ694000	VR. TRIM	B47KΩ
VR2	VJ694000	VR. TRIM	B47KΩ
VR3	VJ693400	VR. TRIM	B4.7KΩ(BG)
XL1	QU003800	RSNR. CRYST	7.2MHz
XL2	GG000750	RSNR. CE	18.95MHz
XL3	VP602300	RSNR. CE	19KHz(BG)
XL4	VE906000	RSNR. CE	4MHz(BG)
	BB071360	SCR. TERM	8.3x13
	VR282500	PLATE	ANT.
*	VT559100	P. C. B.	MAIN(R)
*	VT559200	P. C. B.	MAIN(B)
*	VT559300	P. C. B.	MAIN(G)
*	CB101	VR359300	CN. BS. PIN 22P
*	CB102	VQ964000	CN. BS. PIN 19P
	CB103	VF667600	CN 15P
	CB105	VI879300	CN. BS. PIN 15P
	CB106	VQ962800	CN. BS. PIN 7P
*	CB107	VQ586100	CN. JUMPER 11P
	CB111	VR357600	CN. BS. PIN 5P(BG)
	CB301	VF728200	CN. BS. PIN 10P
	CB302	VP206500	HOLDER. FUS EYF-52BC(G)
	CB303	VP206500	HOLDER. FUS EYF-52BC(G)
	CB304	VP206500	HOLDER. FUS EYF-52BC(BG)
	CB305	VP206500	HOLDER. FUS EYF-52BC(R)
	CB306	VP206500	HOLDER. FUS EYF-52BC(BG)
	CB307	VP206500	HOLDER. FUS EYF-52BC(R)
	CB308	VK024800	CN. BS. PIN 4P
	CB351	VG879900	CN. BS. PIN 2P(R)
	CB352	VG879900	CN. BS. PIN 2P(G)
	CB353	VG879900	CN. BS. PIN 2P(B)
	CB354	LA002140	TERM. WRAP 2P(B)
	CB355	VP206500	HOLDER. FUS EYF-52BC(R)
	CB356	VP206500	HOLDER. FUS EYF-52BC(R)
	C101	FG212220	C. CE 220pF 50V
	C102	FG212220	C. CE 220pF 50V
	C103	UA652100	C. MYLAR 100pF 50V
	C104	UA652100	C. MYLAR 100pF 50V
	C105	VF467300	C. CE. TUBLR 0.01uF 16V
	C106	VG291200	C. EL 47uF 50V
	C107	VG277700	C. CE. TUBLR 68pF 50V
	C108	VH053100	C. CE. TUBLR 0.1uF 50V
	C109	VF466800	C. CE. TUBLR 100pF 50V
	C110	VG290900	C. EL 10uF 50V
*	C111	VQ523600	C. EL 4.7uF 50V

\*New Parts

Schm No.	PART NO.	Description		
* C112	UA652100	C. MYLAR	100pF	50V
* C113	VQ523600	C. EL	4.7uF	50V
C114	VF760000	C. EL	100uF	10V
C115	VF760000	C. EL	100uF	10V
C116	UA652100	C. MYLAR	100pF	50V
C117	UA652100	C. MYLAR	100pF	50V
C118	UA652100	C. MYLAR	100pF	50V
C119	UA652100	C. MYLAR	100pF	50V
C120	UA655220	C. MYLAR	0.22uF	50V
C121	VI377400	C. EL	4.7uF	63V
C122	VM645500	C. PP	15uF	200V
C123	VG291200	C. EL	47uF	50V
C124	UA653100	C. MYLAR	1000pF	50V
C125	VG722100	C. EL	1uF	50V
C126	UA653100	C. MYLAR	1000pF	50V
C127	VG291200	C. EL	47uF	50V
C128	VM645500	C. PP	15uF	200V
C129	VI377400	C. EL	4.7uF	63V
C130	VI377400	C. EL	4.7uF	63V
C131	VR325000	C. MYLAR	100pF	100V
C132	VG291200	C. EL	47uF	50V
C133	VG291200	C. EL	47uF	50V
C134	VR325000	C. MYLAR	100pF	100V
C135	VK347900	C. EL	470uF	63V
C136	VR325000	C. MYLAR	100pF	100V
C137	VG291200	C. EL	47uF	50V
C138	VG291200	C. EL	47uF	50V
C139	VR325000	C. MYLAR	100pF	100V
C140	VG288900	C. EL	100uF	25V
C141	VG288900	C. EL	100uF	25V
C142	UJ895220	C. EL	0.22uF	100V
C143	VE325900	C. MYLAR. ML	0.082uF	50V
C144	VE325900	C. MYLAR. ML	0.082uF	50V
△ C145	VR023900	C. EL	5600uF	56V
△ C146	VR023900	C. EL	5600uF	56V
C147	VI377400	C. EL	4.7uF	63V
C148	VE326000	C. MYLAR. ML	0.1uF	50V
C149	VE325200	C. MYLAR. ML	0.022uF	50V
C150	VE325200	C. MYLAR. ML	0.022uF	50V
C151	VE326000	C. MYLAR. ML	0.1uF	50V
△ C152	VR325400	C. MYLAR	0.1uF	100V
△ C153	VR325400	C. MYLAR	0.1uF	100V
C154	UA654100	C. MYLAR	0.01uF	50V(BG)
C155	UA654100	C. MYLAR	0.01uF	50V(BG)
C156	UA654100	C. MYLAR	0.01uF	50V(BG)
C157	UA654100	C. MYLAR	0.01uF	50V(BG)
C158	VI716700	C. MYLAR	0.01uF	50V(BG)
C159	VI716700	C. MYLAR	0.01uF	50V(BG)
C160	VE326000	C. MYLAR. ML	0.1uF	50V
C161	VF467300	C. CE. TUBLR	0.01uF	16V
C170	VG288900	C. EL	100uF	25V
C301	VF964800	C. EL	100uF	16V(R)
C302	VJ836900	C. EL	10uF	16V

\*New Parts

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**MAIN P. C. B.**

Schm No.	PART NO.	Description
C303	VJ836900	C. EL 10uF 16V
C304	VJ839100	C. EL 1uF 50V
C305	FG213100	C. CE 1000pF 50V(BG)
C306	VK182500	C. EL 330uF 63V(R)
C306	VK457600	C. EL 330uF 25V(BG)
C307	VJ836900	C. EL 10uF 16V(R)
C308	VS741700	C. CE. SAFTY 0. 01uF 275V
C309	VJ599000	C. CE. TUBLR 0. 047uF 16V
C310	VH053100	C. CE. TUBLR 0. 1uF 50V
C311	VR325100	C. MYLAR 0. 01uF 100V(R)
D101	VM974200	DIODE. ZENR HZS5C2TD 5. 0V
D102	VM975500	DIODE. ZENR HZS12A2TD 12V
D103	VM976300	DIODE. ZENR HZS242TD 24V
D104	VM976300	DIODE. ZENR HZS242TD 24V
D105	VN008700	DIODE 1SS270A
D106	VM975800	DIODE. ZENR HZS152TD 15V
D107	VM975800	DIODE. ZENR HZS152TD 15V
D108	VN008700	DIODE 1SS270A
D109	VN008700	DIODE 1SS270A
D110	IH001090	DIODE. BRG S4VB20 2. 6A 200V
D111	VN008700	DIODE 1SS270A
D112	VN008700	DIODE 1SS270A
D301	VD631600	DIODE 1SS133, 176, HSS104
D302	VD631600	DIODE 1SS133, 176, HSS104
D303	VD631600	DIODE 1SS133, 176, HSS104
D304	VD631600	DIODE 1SS133, 176, HSS104
D305	VM974500	DIODE. ZENR HZS6C2TD 6. 0V
D306	VM973900	DIODE. ZENR HZS4C2TD 4. 0V
D307	VS997800	DIODE 1T2
D308	VM975500	DIODE. ZENR HZS12A2TD 12V(R)
D309	VS997800	DIODE 1T2(R)
D310	VS997800	DIODE 1T2(R)
D311	VS997800	DIODE 1T2(R)
F301	KB000690	FUSE T2. 5A 250V(G)
F302	KB000680	FUSE 1. 25A 250V(BG)
F303	VS822900	FUSE T4. 0A 125V(R)
F351	KB000680	FUSE 1. 25A 250V(R)
IC101	XF494A00	IC LB1641
L101	VP575600	COIL 1. 5uH
L102	VP575600	COIL 1. 5uH
PJ101	VP345400	JACK. PIN 4P
Q101	ID043820	TR 2SD438 E, F
Q102	IC287820	TR 2SC2878 A, B
Q103	IC287820	TR 2SC2878 A, B
Q104	VC218900	TR 2SC3330 R, S, T
Q105	IC287820	TR 2SC2878 A, B
Q106	VC218900	TR 2SC3330 R, S, T
Q107	VC218900	TR 2SC3330 R, S, T
Q108	VK432900	TR 2SD1915F S, T
Q109	VP883000	TR 2SA893A D, E
Q110	VP883000	TR 2SA893A D, E
Q111	VP883000	TR 2SA893A D, E
Q112	VP883000	TR 2SA893A D, E

Schm No.	PART NO.	Description
Q113	VR325600	TR 2SC2229 O, Y
Q114	VR325600	TR 2SC2229 O, Y
Q115	IA101521	TR 2SA1015 Y
Q116	VP872700	TR 2SC4488 S, T
Q117	VC218900	TR 2SC3330 R, S, T
Q118	VP872600	TR 2SA1708 S, T
Q119	VP872600	TR 2SA1708 S, T
Q120	VC218900	TR 2SC3330 R, S, T
Q121	VP872700	TR 2SC4488 S, T
Q122	VN996900	TR 2SC4495
Q123	VP883000	TR 2SA893A D, E
Q124A	IX615750	TR 2SA1694 O, P, Y
Q124C	IX615760	TR 2SC4467 O, P, Y
Q126A	IX615750	TR 2SA1694 O, P, Y
Q126C	IX615760	TR 2SC4467 O, P, Y
Q128	VP883100	TR 2SC1890A D, E
Q129	VP883100	TR 2SC1890A D, E
Q301	IC174020	TR 2SC1740S R, S
Q302	VD678700	TR. DGT DTC114ES
Q303	IC224030	TR 2SC2240 GR, BL
Q304	IC1815C0	TR 2SC1815 Y
Q305	IA093320	TR 2SA933S Q, R
Q306	VS826900	TR 2SD2375 Q, P(R)
Q307	IC1815C0	TR 2SC1815 Y(R)
R107	HV454100	R. CAR. FP 10Ω 1/4W
R109	HV453470	R. CAR. FP 4. 7Ω 1/4W
R128	HL315560	R. MTL. OXD 560Ω 1W
R135	HV454470	R. CAR. FP 47Ω 1/4W
R138	HV454470	R. CAR. FP 47Ω 1/4W
R146	HV456150	R. CAR. FP 1. 5KΩ 1/4W
R148	HV456270	R. CAR. FP 2. 7KΩ 1/4W
R149	VK188400	R. FUS 330Ω 1/4W
R151	HV456100	R. CAR. FP 1KΩ 1/4W
R152	VK189000	R. FUS 1KΩ 1/4W
R153	HL314470	R. MTL. OXD 47Ω 1W
R154	VK189000	R. FUS 1KΩ 1/4W
R156	HV456100	R. CAR. FP 1KΩ 1/4W
R157	VK188400	R. FUS 330Ω 1/4W
R158	HV456270	R. CAR. FP 2. 7KΩ 1/4W
R159	VP939900	R. MTL. OXD 15Ω 1W
R161	HL326120	R. MTL. OXD 1. 2KΩ 2W
R164	HV453470	R. CAR. FP 4. 7Ω 1/4W
R165	HZ003780	R. MTL. PLAT 0. 22Ω+0. 22 5W
R166	HV453470	R. CAR. FP 4. 7Ω 1/4W
R169	HV453470	R. CAR. FP 4. 7Ω 1/4W
R170	HZ003780	R. MTL. PLAT 0. 22Ω+0. 22 5W
R171	HV453470	R. CAR. FP 4. 7Ω 1/4W
R177	HL314100	R. MTL. OXD 10Ω 1W
R179	HL314100	R. MTL. OXD 10Ω 1W
R186	HV454100	R. CAR. FP 10Ω 1/4W
R190	HV454100	R. CAR. FP 10Ω 1/4W
R191	VP939900	R. MTL. OXD 15Ω 1W
R192	VP939900	R. MTL. OXD 15Ω 1W

\*New Parts

\*New Parts

**MAIN P. C. B. & FUNCTION P.C.B.**

**FUNCTION P. C. B.**

Schm No.	PART NO.	Description
R193	VP939900	R. MTL. OXD 15Ω 1W
R194	HL315560	R. MTL. OXD 560Ω 1W
RY101	VK438300	RELAY DH24D2-OTM- II
RY301	VH230800	RELAY G5P-1-DC12V
SW351	VA961800	VOLT. SELCT ESE-37247-F(R)
T301	XC082A00	TRANS. PWR (R)
T301	XC084A00	TRANS. PWR (BG)
TE101	VC313700	TERM. SP 8P(R)
TE101	VK506200	TERM. SP 8P(BG)
TE351	VK480600	OUTLET. AC (R)
TE352	VK480700	OUTLET. AC (G)
TE352	VK480700	OUTLET. AC (G)
	VJ828000	PIN IMSA-6024-03E
	BB071360	SCR. TERM 8. 3x13
	BB069510	GND. MTL No. 6951
	VL391100	RADIATOR OSH-2440-SPL
	ED330066	SCR. BND. HD 3x6 FCRM3-BL
	BA092970	RADIATOR (R)
	VT765200	PLATE

\*New Parts

Schm No.	PART NO.	Description
* VT558700	P. C. B.	FUNCTION(R)
* VT558800	P. C. B.	FUNCTION(BG)
CB108	VQ585300	CN. BS. PIN 11P
CB109	VI878200	CN. BS. PIN 4P
CB110	VI878200	CN. BS. PIN 4P
CB401	VQ961000	CN. BS. PIN 7P
* CB402	VQ962200	CN. BS. PIN 19P
CB501	VR362900	CN. BS. PIN 22P
CB502	VI878800	CN. BS. PIN 10P
CB520	VI878200	CN. BS. PIN 4P
CB601	VQ961200	CN. BS. PIN 9P
CB602	VI879300	CN. BS. PIN 15P
CB701	VQ963000	CN. BS. PIN 9P
C161	UA654100	C. MYLAR 0. 01uF 50V(BG)
C162	UA654100	C. MYLAR 0. 01uF 50V(BG)
C163	UA654100	C. MYLAR 0. 01uF 50V(BG)
C401	FG212220	C. CE 220pF 50V
C402	FG212220	C. CE 220pF 50V
C403	FG212220	C. CE 220pF 50V
C404	FG212220	C. CE 220pF 50V
C405	FK534000	C. PP 220pF 200V
C406	VK534000	C. PP 220pF 200V
C407	FG212220	C. CE 220pF 50V
C408	FG212220	C. CE 220pF 50V
C409	FG212220	C. CE 220pF 50V
C410	FG212220	C. CE 220pF 50V
C411	UA652100	C. MYLAR 100pF 50V
C412	UA652100	C. MYLAR 100pF 50V
C413	VE117600	C. EL 220uF 10V
C414	UA653910	C. MYLAR 9100pF 50V
C415	UA654330	C. MYLAR 0. 033uF 50V
C416	UA653910	C. MYLAR 9100pF 50V
C417	UA654330	C. MYLAR 0. 033uF 50V
C418	VE117600	C. EL 220uF 10V
C419	VJ839200	C. EL 2. 2uF 50V
C420	VJ837200	C. EL 47uF 16V
C421	VJ837200	C. EL 47uF 16V
C422	VJ839200	C. EL 2. 2uF 50V
C423	VJ837200	C. EL 47uF 16V
C424	VJ837200	C. EL 47uF 16V
C425	VH053100	C. CE. TUBLR 0. 1uF 50V
C426	VF467000	C. CE. TUBLR 1000pF 50V
C427	VF467000	C. CE. TUBLR 1000pF 50V
C428	VH053100	C. CE. TUBLR 0. 1uF 50V
C429	FG214100	C. CE 0. 01uF 50V
C430	VH053100	C. CE. TUBLR 0. 1uF 50V
C501	VF467000	C. CE. TUBLR 1000pF 50V
C502	VF467000	C. CE. TUBLR 1000pF 50V
C503	VH053100	C. CE. TUBLR 0. 1uF 50V
C504	VS672200	C. EL 4700uF 5. 5V
C505	VH053100	C. CE. TUBLR 0. 1uF 50V
C507	VF467300	C. CE. TUBLR 0. 01uF 16V
C508	VH053100	C. CE. TUBLR 0. 1uF 50V

\*New Parts

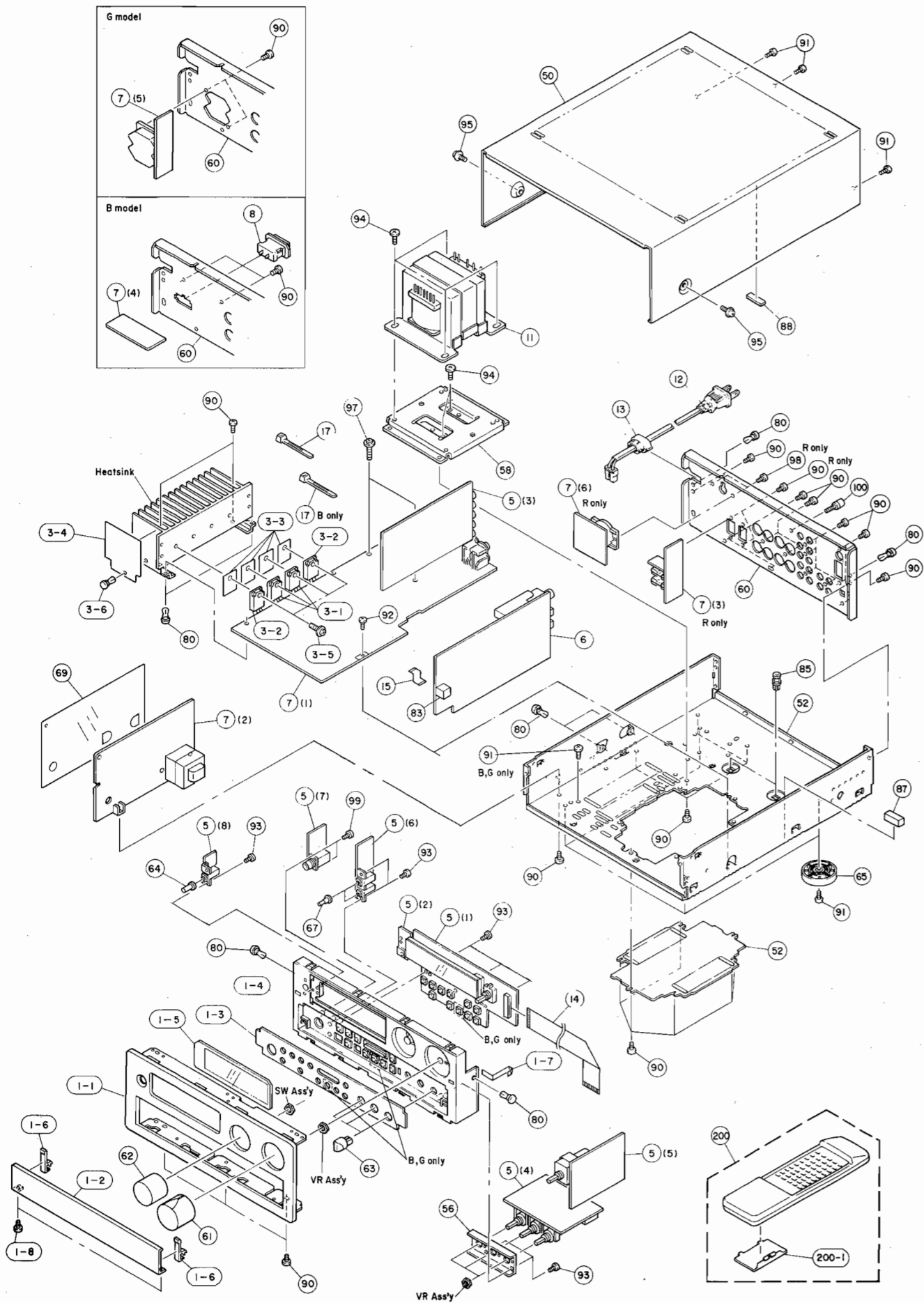
Schm No.	PART NO.	Description
C509	VH053100	C. CE. TUBLR 0. 1uF 50V
C601	VK533900	C. PP 100pF 200V
C602	VK533900	C. PP 100pF 200V
C603	VE020300	C. EL 22uF 50V
C604	VG286900	C. EL 220uF 10V
C605	VG286900	C. EL 220uF 10V
C606	VE020300	C. EL 22uF 50V
C607	VG290500	C. EL 1uF 50V
C608	UA652100	C. MYLAR 100pF 50V
C609	UA652100	C. MYLAR 100pF 50V
C610	VG290500	C. EL 1uF 50V
C611	VG287800	C. EL 330uF 16V
C612	VG291000	C. EL 22uF 50V
C613	FG211470	C. CE 47pF 50V
C614	VG290600	C. EL 2. 2uF 50V
C615	VG290600	C. EL 2. 2uF 50V
C616	FG211470	C. CE 47pF 50V
C617	VG291000	C. EL 22uF 50V
C618	VG287800	C. EL 330uF 16V
C619	UA655120	C. MYLAR 0. 12uF 50V
C620	UA654330	C. MYLAR 0. 033uF 50V
C621	UA654330	C. MYLAR 0. 033uF 50V
C622	UA655120	C. MYLAR 0. 12uF 50V
C623	VG290500	C. EL 1uF 50V
C624	VG290500	C. EL 1uF 50V
C701	VG722100	C. EL 1uF 50V
D401	VD631600	DIODE 1SS133, 176, HSS104
D402	VD631600	DIODE 1SS133, 176, HSS104
D403	VM975000	DIODE. ZENR HZS9B2TD 9. 0V
D404	VM975000	DIODE. ZENR HZS9B2TD 9. 0V
D405	VD631600	DIODE 1SS133, 176, HSS104
D501	VM974100	DIODE. ZENR HZS5B2TD 5. 0V
D502	VP594000	LED(re) SLR-305VCA47
D503	VD631600	DIODE 1SS133, 176, HSS104
D504	VD631600	DIODE 1SS133, 176, HSS104
D505	VD631600	DIODE 1SS133, 176, HSS104
D506	VP593800	LED(or) SLR-305DCA47
IC401	XM356A00	IC NJM2068LD
IC402	XA070A00	IC uPD4052BC
IC403	XA070A00	IC uPD4052BC
IC404	IG037400	IC uPD4066BC
IC405	IG105900	IC uPD4053BC
IC406	XP265A00	IC BU2090
* IC501	XQ871A00	IC M38102M4-625SP
IC601	XM356A00	IC NJM2068LD
IC602	XM356A00	IC NJM2068LD
JK101	VS899700	JACK. PHONE JY-6317-02-030
PJ401	VN308700	JACK. PIN 6P
PJ402	VT029000	JACK. PIN 4P
Q401	VG722000	TR. DGT DTC144ES
Q402	VG722000	TR. DGT DTC144ES
Q403	VG722000	TR. DGT DTC144ES
Q404	VG722000	TR. DGT DTC144ES

\*New Parts

Schm No.	PART NO.	Description
Q405	VG722000	TR. DGT DTC144ES
Q406	VG722000	TR. DGT DTC144ES
Q407	VG722000	TR. DGT DTC144ES
Q408	VG721700	TR. DGT DTA144ES
Q409	VG721700	TR. DGT DTA144ES
Q410	VG722000	TR. DGT DTC144ES
Q411	VG721700	TR. DGT DTA144ES
Q501	VG721700	TR. DGT DTA144ES
Q601	IC287820	TR 2SC2878 A, B
Q602	IC287820	TR 2SC2878 A, B
Q603	IC287820	TR 2SC2878 A, B
Q604	IC287820	TR 2SC2878 A, B
R192	VP944500	R. MTL. OXD 390Ω 1W
R193	VP944500	R. MTL. OXD 390Ω 1W
* SW101	VT544700	SW. PUSH PSE021A2KP
SW501	VT140300	SW. RT. ENC EC16B12204
SW503	VG392900	SW. TACT SKHVAA
SW504	VG392900	SW. TACT SKHVAA
SW505	VG392900	SW. TACT SKHVAA
SW506	VG392900	SW. TACT SKHVAA
SW507	VG392900	SW. TACT SKHVAA
SW508	VG392900	SW. TACT SKHVAA
SW508	VG392900	SW. TACT SKHVAA(BG)
SW509	VG392900	SW. TACT SKHVAA
SW510	VG392900	SW. TACT SKHVAA
SW511	VG392900	SW. TACT SKHVAA
SW512	VG392900	SW. TACT SKHVAA
SW513	VG392900	SW. TACT SKHVAA
SW520	VS262300	SW. PUSH PSE01-A4KPX
TP401	VL448600	JUMPER. TST
TP402	VL448600	JUMPER. TST
U501	VQ395300	L. DETCT SBX1780-52
V501	VR029500	FL. DSPLY 11-BT-120GK
VR601	VP741800	VR B20KΩ
VR602	VP741900	VR G25KΩ
VR603	VP742000	VR MN100KΩ
VR701	VR262000	VR. MTR A100KΩ
XL501	VD827600	RSNR. CE 4MHz
	VR519500	SHEET
	VR380100	SPACER FL-T6

\*New Parts

1 ■ EXPLODED VIEW



■ MECHANICAL PARTS

Ref. No.	PART NO.	Description	Remarks	Markets
* 1-1	VT209500	FRONT PANEL	BL	
* 1-1	VT209600	FRONT PANEL	TI	BG
* 1-1	VT209800	FRONT PANEL	TI	R
1-2	VS347700	PANEL, LID	BL	
1-2	VS347800	PANEL, LID	TI	
* 1-3	VT183000	PLATE, SP	TI	R
* 1-3	VT183200	PLATE, SP	BL	
* 1-3	VT183300	PLATE, SP	TI	BG
* 1-4	VT183500	SUB PANEL	BL	
* 1-4	VT183600	SUB PANEL	TI	
* 1-5	VT187200	WINDOW PANEL		
1-6	VQ859300	HINGE, LID	BL	
1-6	VQ958500	HINGE, LID	TI	
* 1-7	VT842700	TAPE, GND	FM8100	
1-8	EX601590	BIND HEAD P-TITE SCREW	2. 6x8 FCRM3-BL	
3-1	IX615750	TRANSISTOR	2SA1694 O, P, Y	Q124A, Q126A
3-2	IX615760	TRANSISTOR	2SC4467 O, P, Y	Q124C, Q126C
3-3	VK195900	SHEET	19x24	
* 3-4	VT612000	SHEET	BARRIER	
3-5	VK173200	SCREW, TRANSISTOR	3x15 SP FCM3	
3-6	VQ368500	PUSH RIVET	P3545-B	
* 5	VT558700	P. C. B. ASS' Y	FUNCTION	(R)
* 5	VT558800	P. C. B. ASS' Y	FUNCTION	(BG)
* 6	VT558900	P. C. B. ASS' Y	TUNER	(R)
* 6	VT559000	P. C. B. ASS' Y	TUNER	(BG)
* 7	VT559100	P. C. B. ASS' Y	MAIN	(R)
* 7	VT559200	P. C. B. ASS' Y	MAIN	(B)
* 7	VT559300	P. C. B. ASS' Y	MAIN	(G)
△ 8	VS538300	AC OUTLET ASS' Y		(B)
△* 11	XQ863A00	POWER TRANSFORMER		(R)
△* 11	XQ864A00	POWER TRANSFORMER		(BG)
△ 12	VQ508500	POWER CORD ASS' Y		(R)
△ 12	VS168400	POWER CORD ASS' Y		(G)
△ 12	VS680700	POWER CORD ASS' Y		(B)
13	VN158600	CORD STOPPER	No. 2104	
* 14	VT837600	CONNECTOR, FLAT CABLE	22P 250mm	
* 15	VT837800	CONNECTOR, FLAT CABLE	5P 110mm	(BG)
17	CB069250	BINDING TIE	BK-1	
50	VS043600	TOP COVER		BL
50	VS043700	TOP COVER		TI
52	VS044200	CHASSIS		
* 56	VT181700	SUPPORT, VR		
58	VS185000	FRAME, PT		
* 60	VT180600	REAR PANEL		(R)
* 60	VT180800	REAR PANEL		(B)
* 60	VT180900	REAR PANEL		(G)
* 61	VT454100	KNOB	D35	BL
* 61	VT454200	KNOB	D35	TI
* 62	VT184700	KNOB	D31	BL
* 62	VT184800	KNOB	D31	TI
63	VS185200	KNOB, S	D12	BL
63	VS185300	KNOB, S	D12	TI
64	VS048300	BUTTON	D7	BL

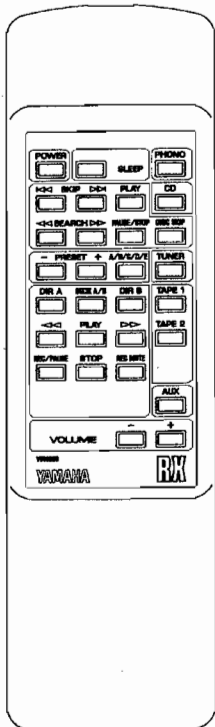
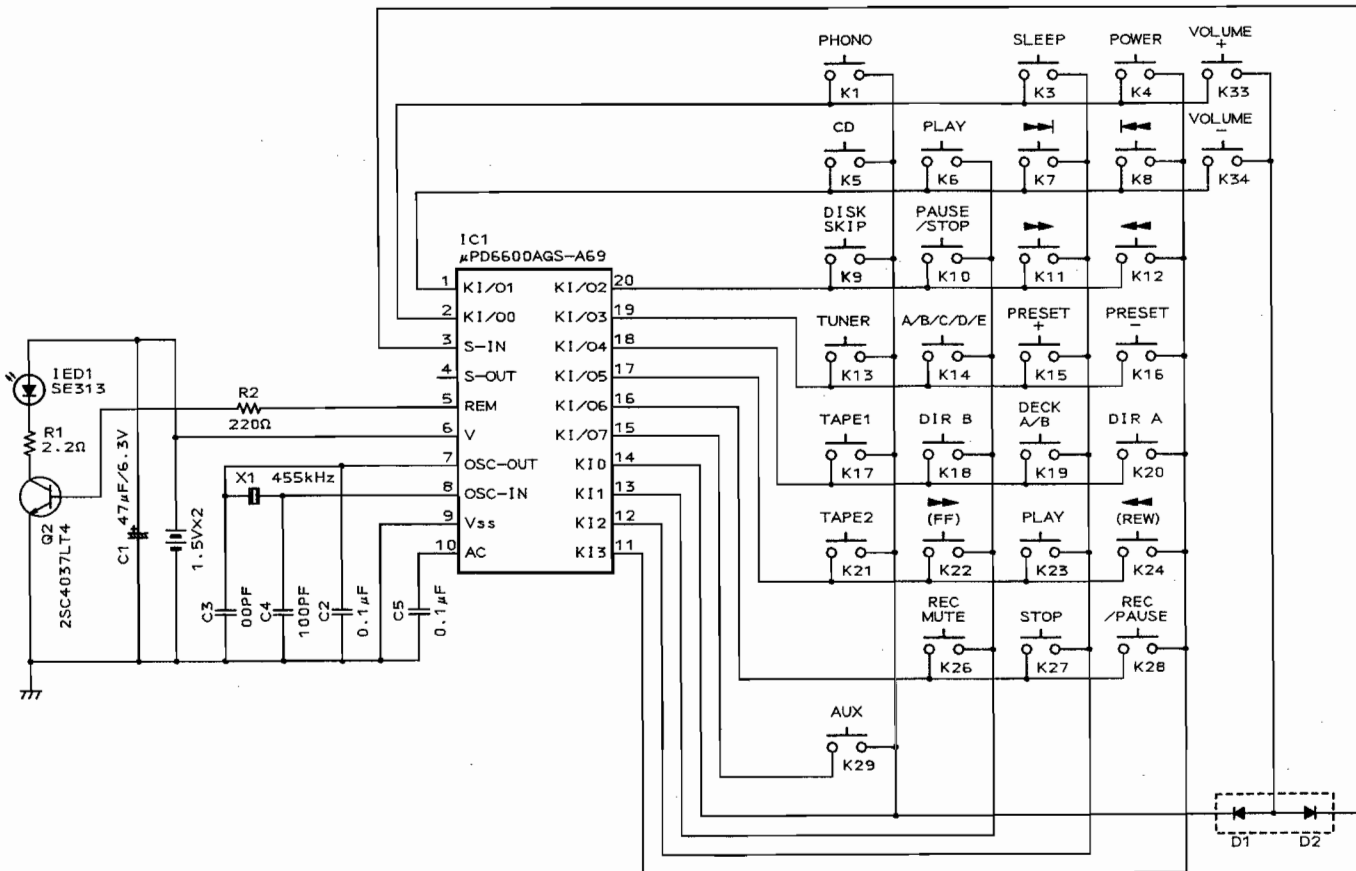
\*New Parts

Ref. No.	PART NO.	Description	Remarks	Markets
64	VS048400	BUTTON	D7	TI
65	VP984800	LEG	D41xH12.5	
* 67	VT184300	BUTTON	D5	BL
* 67	VT184400	BUTTON	D5	TI
69	VS190600	SHIELD PLATE		
80	VQ368500	PUSH RIVET	P3545-B	
83	VQ861500	CUSHION	SHEET	
85	VI048500	SUPPORT, P. C. B.		
* 87	VT593600	CUSHION	8x10x20	
* 88	VT593700	CUSHION	2x8x25	
90	EN301010	BIND HEAD BONDING TAP. SCREW	3x8 FCRM3-BL	
91	EI330086	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
92	VT669300	SCREW+PWH BT	3x8-8 MFC2	
93	EX600310	BIND HEAD P-TITE SCREW	3x8 FCRM3-BL	
94	EK396010	BIND HEAD S-TITE SCREW	4x8 FCRM3-BL	
95	EL300470	BW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	BL
95	EX601150	BW HEAD S-TITE SCREW	4x8-10 FNM3-BL	TI
97	EX602560	BW HEAD P-TITE SCREW	3x20-8 FCRM3-BL	
98	ED330066	BIND HEAD SCREW	3x6 FCRM3-BL	(R)
99	EX601280	BW HEAD P-TITE SCREW	3x8-8 FCRM3-BL	
100	AA627310	GROUND TERMINAL		
		ACCESSORIES		
* 200	VT480300	REMOTE CONTROL TRANSMITTER	SBAR	
200-1	CX675150	LID	54x32.9BLALPS	
	VQ147100	ANTENNA, FM	1P 1.4m	
	VR248500	ANTENNA, AM LOOP	1P 1.0m	
		BATTERY, MANGANESE	SUM-3, AA, R06	

\*New Parts

# REMOTE CONTROL TRANSMITTER

## ■ SCHEMATIC DIAGRAM

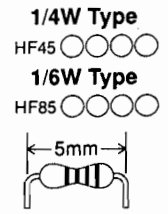
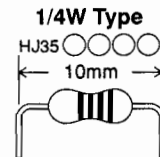


KEY No.	FUNCTION	CUSTOM CODE (HEX)	SUB CUSTOM CODE (HEX)	DATA CODE (HEX)	DATA	
					D0	D7
1	PHONO	7A	85	14	0010	1000
3	SLEEP	7A	85	57	1110	1010
4	POWER	7A	85	1F	1111	1000
5	CD	7A	85	15	1010	1000
6	PLAY	7A	85	08	0001	0000
7	SKIP →→	7A	85	0A	0101	0000
8	SKIP ←←	7A	85	0B	1101	0000
9	DISC SKIP	7A	85	4F	1111	0010
10	PAUSE/STOP	7A	85	09	1001	0000
11	SEARCH →→	7A	85	0C	0011	0000
12	SEARCH ←←	7A	85	0D	1011	0000
13	TUNER	7A	85	16	0110	1000
14	A/B/C/D/E	7A	85	12	0100	1000
15	PRESET +	7A	85	10	0000	1000
16	PRESET -	7A	85	11	1000	1000
17	TAPE1	7A	85	18	0001	1000
18	DIR B	7A	85	40	0000	0010
19	DECK A/B	7A	85	06	0110	0000
20	DIR A	7A	85	07	1110	0000
21	TAPE2	7A	85	19	1001	1000
22	→→ (FF)	7A	85	02	0100	0000
23	PLAY	7A	85	00	0000	0000
24	←← (REW)	7A	85	01	1000	0000
26	REC MUTE	7A	85	05	1010	0000
27	STOP	7A	85	03	1100	0000
28	REC/PAUSE	7A	85	04	0010	0000
29	AUX	7A	85	17	1110	1000
33	VOLUME +	7A	85	1A	0101	1000
34	VOLUME -	7A	85	1B	1101	1000



# 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 kΩ	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	*	11 kΩ	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 kΩ	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 kΩ	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 kΩ	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 kΩ	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 kΩ	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 kΩ	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 kΩ	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 kΩ	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 kΩ	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 kΩ	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 kΩ	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 kΩ	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 kΩ	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 kΩ	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 kΩ	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 kΩ	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 kΩ	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 kΩ	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 kΩ	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 kΩ	HF45 8110	HF45 8110
160 Ω	HJ35 5160	*	120 kΩ	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	*
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	*
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			



\* : Not available

RX-10