

Service Manual

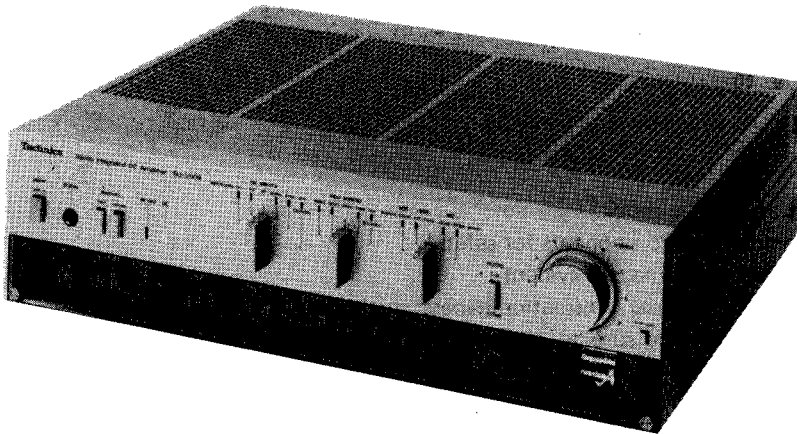
Stereo Integrated DC Amplifier

SU-V909

[XA],[PA],[PE],[PC]

SU-V909(K)

[PC]



- * The colors of this model include silver and black.
- * The black type model is provided with (K) in the Service Manual.

Areas

- * [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
- * [PA] is available in Far East PX.
- * [PE] is available in European Military.
- * [PC] is available in European Audio Club.

Specifications (Specifications are subject to change without notice for further improvement.)

(DIN 45 500)

■ AMPLIFIER SECTION

Rated minimum sine wave RMS power output	
20 Hz~20 kHz both channels driven	
0.003% total harmonic distortion	
120W per channel (8 ohms)	
20 Hz~20 kHz both channels driven	
0.007% total harmonic distortion	
120W per channel (4 ohms)	
1 kHz continuous power output	
both channels driven	
0.003% total harmonic distortion	
120W per channel (8 ohms)	
0.003% total harmonic distortion	
120W per channel (4 ohms)	
Dynamic headroom	
	0 dB (8 ohms)
	0 dB (4 ohms)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.003% (8 ohms)
half power at 20 Hz~20 kHz	0.003% (8 ohms)
half power at 1 kHz	0.0007% (8 ohms)
SMPT E intermodulation distortion	0.003% (8 ohms)
Frequency response	
PHONO	RIAA standard curve ± 0.2 dB
TUNER, AUX/CD/VIDEO, TAPE	20 Hz~20 kHz, +0 dB, -0.2 dB
Input sensitivity	
PHONO MM	0.1 mV (1 mV, IHF '66)
	0.25 mV (2.5 mV, IHF '66)
MC	10 μ V (100 μ V, IHF '66)
	25 μ V (250 μ V, IHF '66)
TUNER, AUX/CD/VIDEO, TAPE	15 mV (150 mV, IHF '66)
S/N (IHF, A)	
PHONO MM (2.5 mV)	75 dB (88 dB, IHF '66)
MC (250 μ V)	74 dB (71 dB, IHF '66)
TUNER, AUX/CD/VIDEO, TAPE	79 dB (103 dB, IHF '66)

Maximum input voltage	
PHONO MM (2.5 mV)	150 mV (170 mV, 1 kHz)
MC (250 μ V)	15 mV (17 mV, 1 kHz)
Input impedance	
PHONO MM	47 kilohms
MC	100/220 ohms
TUNER, AUX/CD/VIDEO, TAPE	33 kilohms
Tone controls	
BASS	50 Hz, +7 dB~ -7 dB
TREBLE	20 kHz, +10 dB~ -10 dB
Turnover frequency	75 Hz/150 Hz
SUPER BASS (12 dB/oct.)	20 Hz, 0 dB~ +10 dB
Subsonic filter	20 Hz, -12 dB/oct.
High filter	7 kHz, -6 dB/oct.
Loudness control (volume at -30 dB)	50 Hz, +7 dB
Muting	-20 dB
Output voltage	
TAPE 1, 2 REC OUT	150 mV
Low frequency damping factor	
	60 (8 ohms)
	30 (4 ohms)
Load impedance	
MAIN or REMOTE	4~16 ohms
MAIN and REMOTE	8~16 ohms

■ GENERAL

Power consumption	870W
Power supply	AC 50/60 Hz 110V/120V/220V/240V
Dimensions (W×H×D)	430 × 120 × 350 mm
	(16-15/16" × 4-23/32" × 13-25/32")
Weight	14.9 kg
	(32.8 lb.)

Note:

Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).

Technics

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Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shibakoen, Minato-ku, Tokyo 105 Japan

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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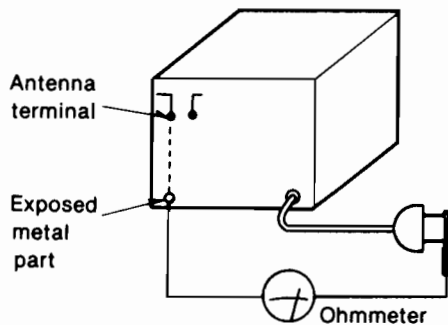
■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

● INSULATION RESISTANCE TEST

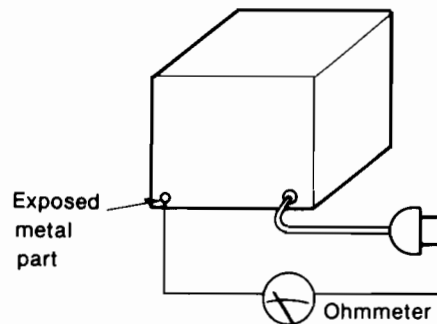
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between $3M\Omega$ and $5.2M\Omega$ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = $3M\Omega - 5.2M\Omega$



(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

- Este librito incluye las especificaciones y ajuste de Modelo SU-V909 (Pedido N^o. SD83072625C7) escritas en español.
- Guardar este librito juntamente con el manual de servicio de Modelo SU-V909.

ESPAÑOL

■ ESPECIFICACIONES (Estas especificaciones están sujetas a cualquier cambio sin previo aviso.)

(IHF '78)

■ SECCION DEL AMPLIFICADOR

Salida de potencia de régimen eficaz por onda sinusoidal mínima

20 Hz~20 kHz en ambos canales	
0,003% Distorsión armónica total	120W o canal (8Ω)
20 Hz~20 kHz en ambos canales	
0,007% Distorsión armónica total	120W o canal (4Ω)

Potencia continua de 1 kHz en ambos canales

Distorsión armónica total 0,003%	120W o canal (8Ω)
Distorsión armónica total 0,003%	120W o canal (4Ω)

Espacio libre dinámico

0 dB (8Ω)
0 dB (4Ω)

Distorsión armónica total

potencia de régimen a 20 Hz~20 kHz	0,003% (8Ω)
mitad de potencia a 20 Hz~20 kHz	0,003% (8Ω)
mitad de potencia a 1 kHz	0,0007% (8Ω)

Distorsión por intermodulación según SMPTE 0,003% (8Ω)

Respuesta de frecuencia

TOCADISC. (PHONO)	curva RIAA estándar ±0,2 dB
SINTON., AUX./CD/VIDEO, GRAB. (TUNER, AUX/CD/VIDEO, TAPE)	
	20 Hz~20 kHz, +0 dB, -0,2 dB

Sensibilidad de entrada

TOCADISC. I. M. (PHONO MM)	0,1 mV (1 mV, IHF '66)
	0,25 mV (2,5 mV, IHF '66)
TOCADISC. B. M. (PHONO MC)	10 μV (100 μV, IHF '66)
	25 μV (250 μV, IHF '66)

SINTON., AUX./CD/VIDEO, GRAB.

(TUNER, AUX/CD/VIDEO, TAPE)	15 mV (150 mV, IHF '66)
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Relación de señal a ruido (IHF, A)

TOCADISC. I. M. (PHONO MM) (2,5 mV)	75 dB (88 dB, IHF '66)
TOCADISC. B. M. (PHONO MC) (250 μV)	74 dB (71 dB, IHF '66)

SINTON., AUX./CD/VIDEO, GRAB.

(TUNER, AUX/CD/VIDEO, TAPE)	79 dB (103 dB, IHF '66)
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Voltaje máximo de entrada

TOCADISC. I. M. (PHONO MM) (2,5 mV)	150 mV (170 mV, 1 kHz)
TOCADISC. B. M. (PHONO MC) (250 μV)	15 mV (17 mV, 1 kHz)

Impedancia de entrada

TOCADISC. I. M. (PHONO MM)	47 kΩ
TOCADISC. B. M. (PHONO MC)	100/220Ω
SINTON., AUX./CD/VIDEO, GRAB. (TUNER, AUX/CD/VIDEO, TAPE)	33 kΩ

Controles de tono

BAJOS (BASS)	50 Hz, +7 dB~ -7 dB
AGUDOS (TREBLE)	20 kHz, +10 dB -10 dB

Frecuencia de Tránsito

SUPERBAJOS (12 dB/oct)	20 Hz, 0 dB~ +10 dB
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Filtro subsónico

20 Hz, -12 dB/oct.

Filtro de corte de altos

7 kHz, -6 dB/oct.

Control de sonoridad (volumen a -30 dB) 50 Hz, +7 dB

Silenciamiento -20 dB

Voltaje de salida

GRAB. 1, 2 SAL. GRAB. (TAPE 1, 2 REC OUT)	150 mV
---	--------

Factor de amortiguamiento

30 (4Ω), 60 (8Ω)

Impedancia de carga

MAIN o REMOTE	4Ω~16Ω
MAIN y REMOTE	8Ω~16Ω

■ GENERAL

Consumo de energía

870 W

Alimentación de energía

CA 50 Hz/60 Hz, 110V/120V/220V/240V

Dimensiones (An.×Al.=Prof.)

430 × 120 × 350 mm

Peso

14,9 kg

Nota:

La distorsión armónica total se mide con el analizador de espectro digital (sistema H.P. 3045).

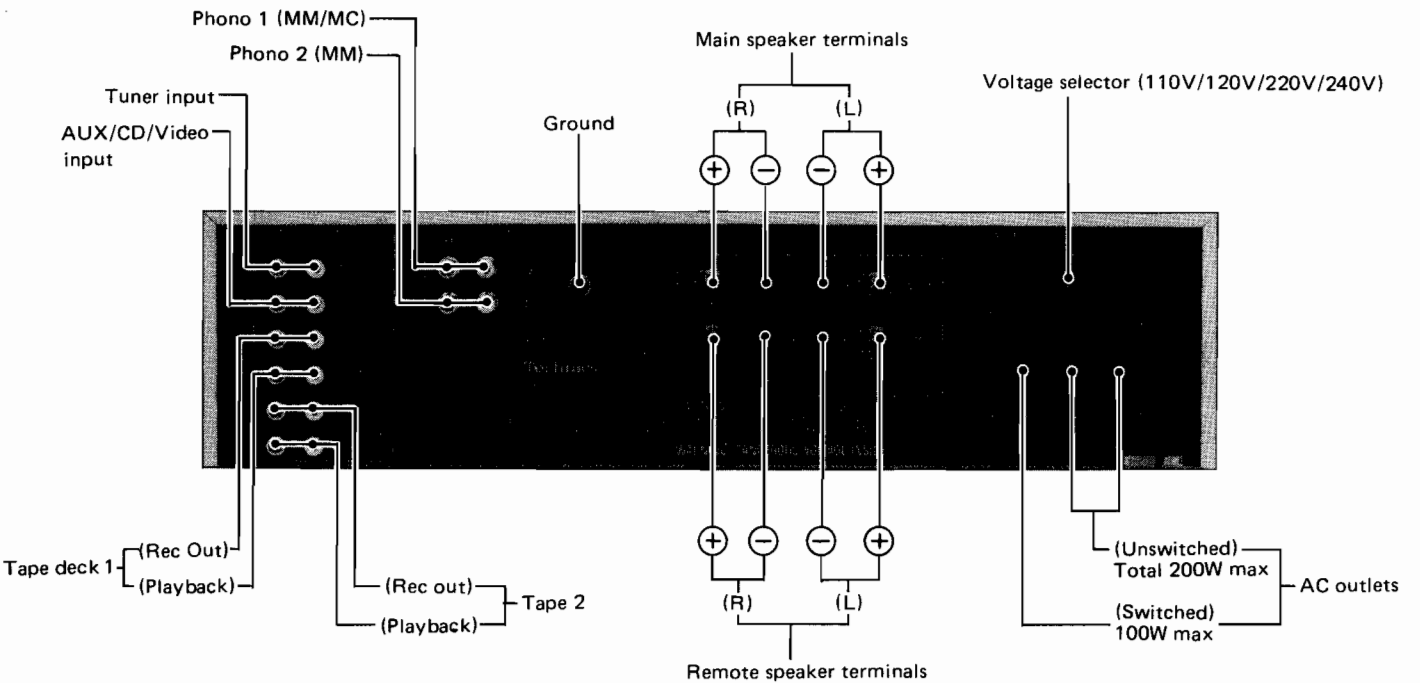
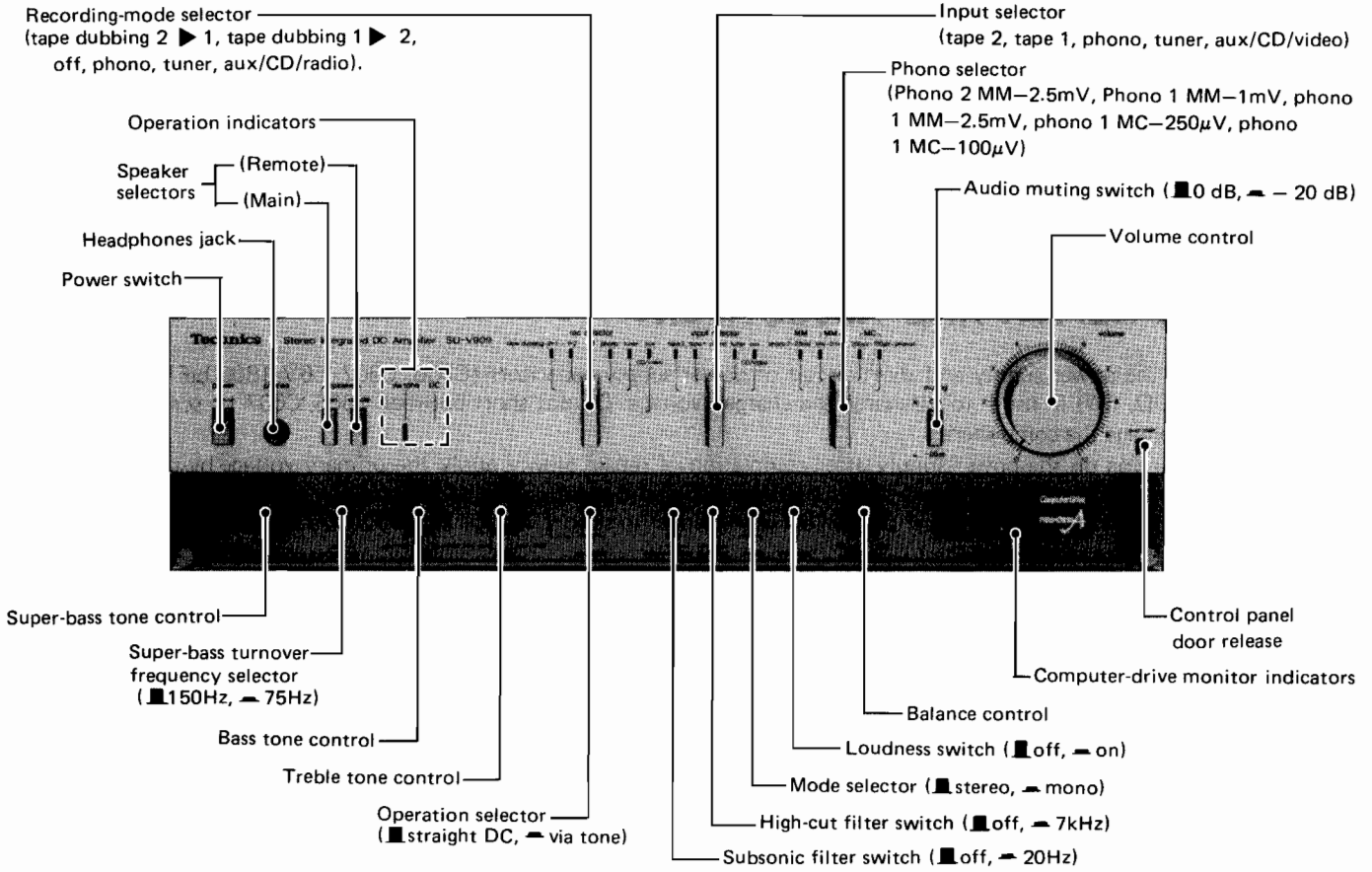
MEDICIONES Y AJUSTES

● **Puesta de controles e instrumentos a usarse**

1. Antes del ajuste, VR301, VR302 y VR601 deberán girarse hacia la izquierda; VR701, VR702 y VR901 deberán girarse hacia la posición del centro.
2. Volumen de sonido . . . O (mínimo)
3. Interruptor del altavoz principal . . . conectado (on)
4. Interruptor del altavoz remoto . . . desconectado (off)
5. Selector de operación . . . C.C. directa
6. Voltímetro de C.C. (capaz de medir 5mV)
7. Osciloscopio

Nº.	Ajustes	Conexión del voltímetro de C.C. o del osciloscopio	VR ajustada	Procedimiento de ajuste																		
1	Ajuste del circuito de detección de impedancia de carga (después de haber reparado el circuito de detección de impedancia del altavoz) (Fig. 19)	<ul style="list-style-type: none"> * Conectar la carga con $3,3\Omega$ y $3,3\Omega$ ($1/2W$, $\pm 5\%$) al terminal del altavoz marcado "main" (Tanto el canal der. (R) como el izq. (L)). * Conectar un voltímetro de C.C. entre TP701 y el chasis (canal izq. (L)). * Conectar un voltímetro de C.C. entre TP702 y el chasis (canal der. (R)). * Conectar TP703 y el chasis. 	VR701 (Canal izq.(L)) VR702 (Canal der (R))	<ol style="list-style-type: none"> 1. Girar VR701 totalmente hacia la derecha. 2. Regular VR702 de manera tal que el voltaje de TP702 resulte $+0,18V \sim -0,2V$. 3. Regular VR701 de manera tal que el voltaje de TP701 resulte $+0,18V \sim -0,2V$. 																		
2	Ajuste y revisión del voltaje de alimentación (después de haber reparado el circuito de alimentación de corriente,) (Fig. 20)	<ul style="list-style-type: none"> * Conectar el voltímetro a Q327 (colector) y a TP502. * Poner el selector del altavoz en "main" al medir el voltaje. * De estar encendida la alimentación de corriente del equipo, cambiando la impedancia de carga no se producirá alteración del voltaje de alimentación. Por lo tanto, apagar la alimentación de corriente o cambiar el selector del altavoz a otra posición. * Con el selector de altavoz puesto en "main" y "remote", el voltaje indicado será de $4\sim 6\Omega$. 	VR601	<ol style="list-style-type: none"> 1. Conectar una carga de 8Ω al terminal del altavoz marcado "main". 2. Regular VR601 de manera tal que el voltaje resulte $+54,5V$. 3. La resistencia de carga enviada al terminal del altavoz y el voltaje de salida de cada uno de los puntos de prueba se ilustran a continuación: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Carga</th> <th>Punto de prueba</th> <th>Especificación</th> </tr> </thead> <tbody> <tr> <td rowspan="2">$4\sim 6.5\Omega$</td> <td>Q327 (colector)</td> <td>$45.0\sim 47.0V$</td> </tr> <tr> <td>TP503</td> <td>$-45.5\sim -47.5V$</td> </tr> <tr> <td rowspan="2">$6.6\sim 16\Omega$</td> <td>Q327 (colector)</td> <td>$54.0\sim 55.0V$</td> </tr> <tr> <td>TP503</td> <td>$-54.5\sim 55.5V$</td> </tr> <tr> <td rowspan="2">Interruptor del altavoz en "off"</td> <td>Q327 (colector)</td> <td>$54.0\sim 56.0V$</td> </tr> <tr> <td>TP503</td> <td>$-54.5\sim -56.5V$</td> </tr> </tbody> </table>	Carga	Punto de prueba	Especificación	$4\sim 6.5\Omega$	Q327 (colector)	$45.0\sim 47.0V$	TP503	$-45.5\sim -47.5V$	$6.6\sim 16\Omega$	Q327 (colector)	$54.0\sim 55.0V$	TP503	$-54.5\sim 55.5V$	Interruptor del altavoz en "off"	Q327 (colector)	$54.0\sim 56.0V$	TP503	$-54.5\sim -56.5V$
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Interruptor del altavoz en "off"	Q327 (colector)	$54.0\sim 56.0V$																				
	TP503	$-54.5\sim -56.5V$																				
3	Ajuste de ICQ (después de haber reparado el amplificador principal) (Fig. 21)	(Canal izq. (L)) Entre A y B (probeta negativa) (Canal der. (R)) Entre C y D (probeta negativa)	VR301 (Canal izq. (L)) VR302 (Canal der. (R))	<ol style="list-style-type: none"> 1. Colocar los interruptor del altavoz "main" y del "remote" en la posición "off" (apagado). 2. Regular VR301 y VR302 de manera tal que el voltaje resulte $1mV$ aproximadamente un minuto después de haber encendido la alimentación de corriente. 																		
4	Ajuste del reloj (después de haber cambiado el micro-computador) (Fig. 22)	<ul style="list-style-type: none"> * Conectar el osciloscopio a TP1 	VR801	<ol style="list-style-type: none"> 1. Regular VR801 de manera tal que el tiempo de la forma de onda sea de $2,5\mu s$. 																		

LOCATION OF CONTROLS



* Phono input capacitance is about 150pF.

PROTECTION CIRCUITRY

The protection circuitry may have operated if either of the following conditions is noticed:

- No sound is heard when the power is turned on.
- Sound stops during performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker with an impedance less than the indicated rated impedance of the amplifier are used.

If this occurs, follow the procedure outlined below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again

Note:

When the protection circuitry functions the unit will not operate unless the power is first turned off and then on again.

BEFORE REPAIR AND ADJUSTMENT

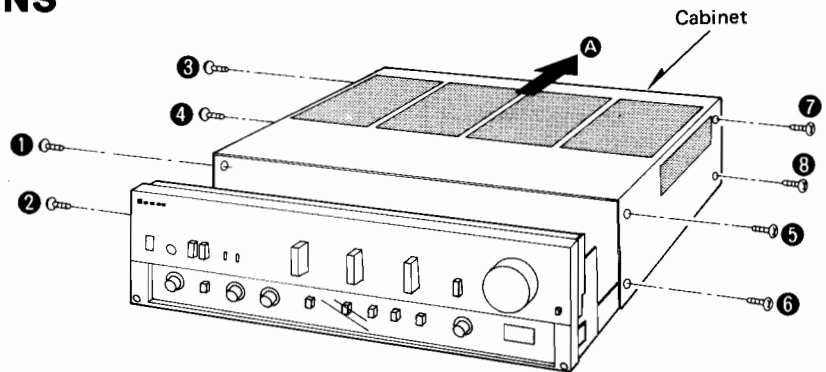
1. Turn off the power supply and short-circuit of power supply capacitors (C606, C607, 56V 18000 μ F) at resistance (about 10 Ω , 5W) in order to discharge the charged voltage. Do not short between C606, C607 by screwdriver. It may damage the component.
2. Before turning on the power supply after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current is free of abnormality. The consumed current at 60Hz/50Hz in no signal mode is shown below with respect to supply voltage 110V/120V/220V/240V.

Power supply voltage		AC110V	AC120V	AC220V	AC240V
Consumed current	50 Hz	400 ~ 800mA	370 ~ 740mA	190 ~ 380mA	170 ~ 350mA
	60 Hz	370 ~ 740mA	340 ~ 680mA	180 ~ 350mA	160 ~ 330mA

DISASSEMBLY INSTRUCTIONS

• **How to remove the cabinet [Fig. 1]**

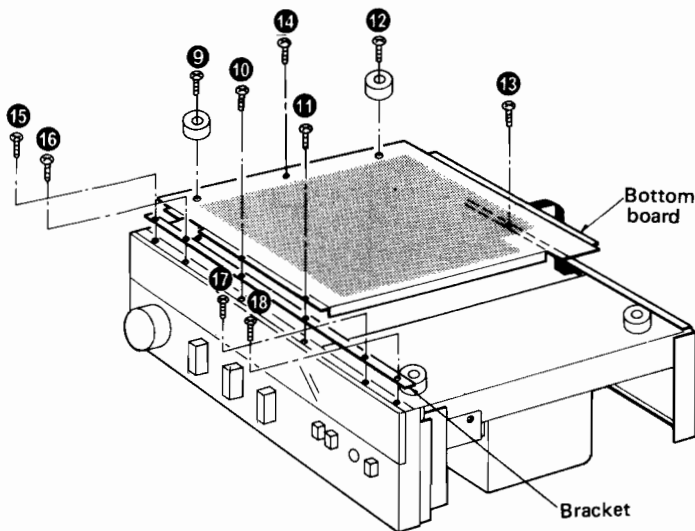
1. Remove the 8 setscrews (Fig. 1: ① ~ ⑧) on the side of the cabinet.
2. Remove the cabinet in the direction of arrow A (Fig. 1)



[Fig. 1]

• **How to remove the bottom board [Fig. 2]**

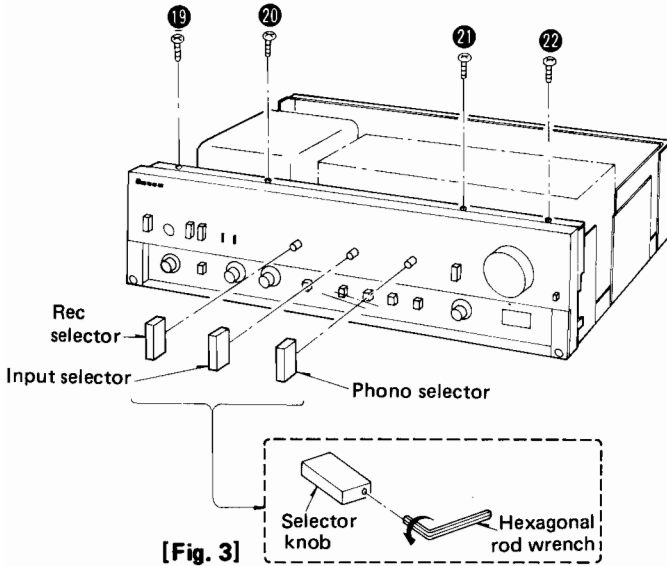
1. Remove the 6 setscrews (Fig. 2: ⑨ ~ ⑭) on the bottom board.



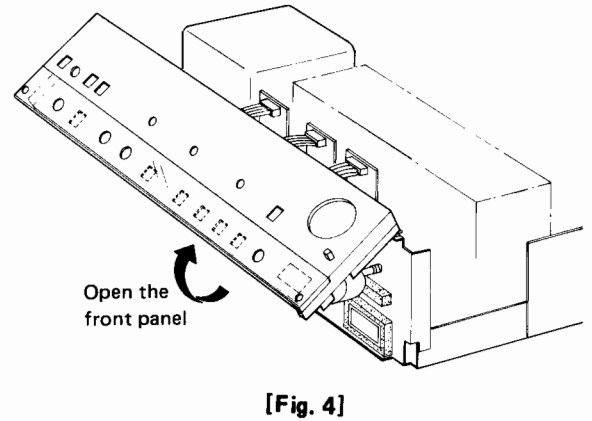
[Fig. 2]

● **How to remove the front panel [Fig. 3, 4]**

1. Remove the cabinet and bottom board.
2. Remove the 3 selector knobs. (Use hexagonal rod wrench for M3 screws.) Refer to Fig. 3.

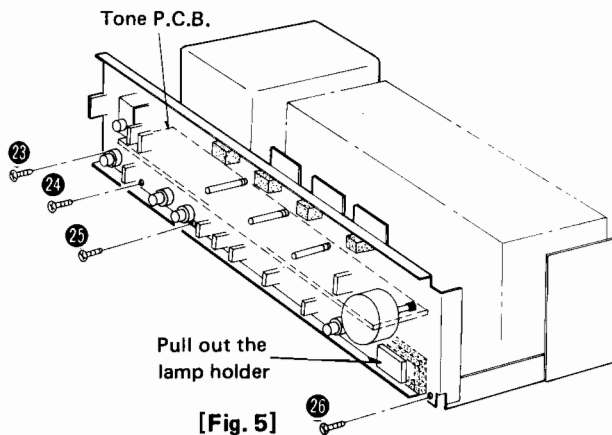


3. Remove the 8 setscrews (Fig. 2 15 ~ 18 and Fig. 3 19 ~ 23) of the front panel.
4. Remove the front panel refer to fig. 4.

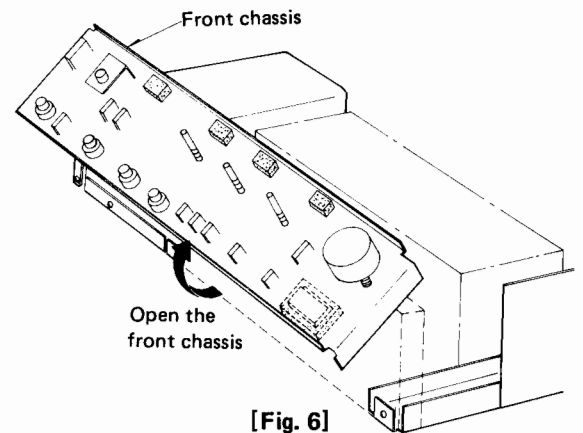


● **How to check the tone circuit P.C.B. [Fig. 5, 6]**

1. Remove the cabinet.
2. Remove the front panel and bottom board.
3. Remove the 4 setscrews (Fig. 5: 23 ~ 26)

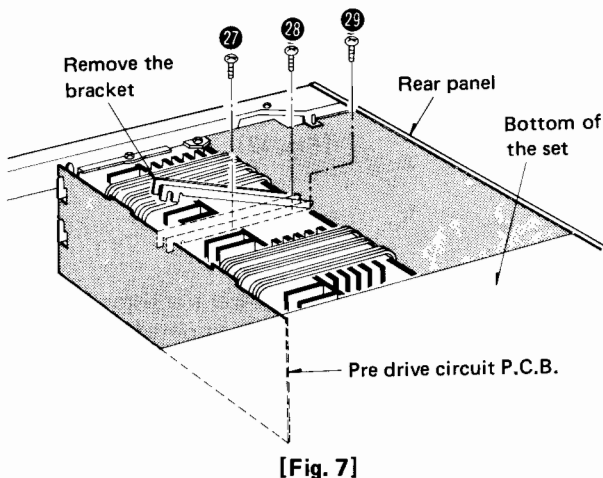


4. Open the front chassis in the direction of the arrow so that the tone control circuit P.C.B. can be checked. (see Fig. 6)

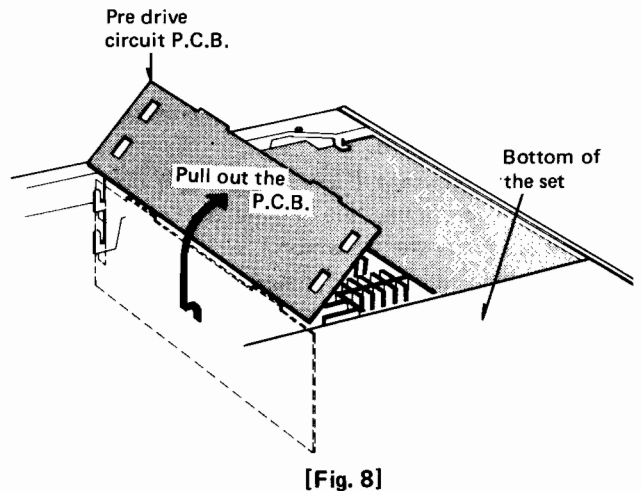


● **How to check the pre drive circuit P.C.B. [Fig. 7, 8]**

1. Remove the cabinet and bottom board.
2. Remove the 3 setscrews (Fig. 7: 27 ~ 29) of the bracket.

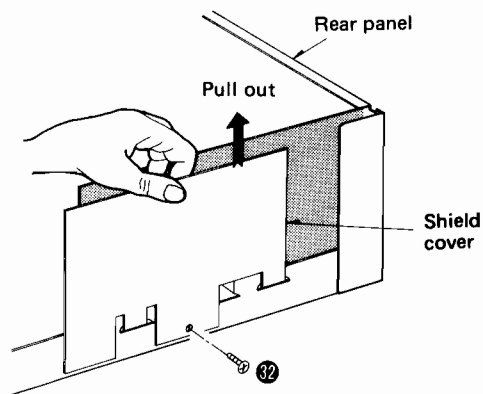


3. Pull out the pre drive circuit P.C.B. in the direction of the arrow (See. Fig. 8)



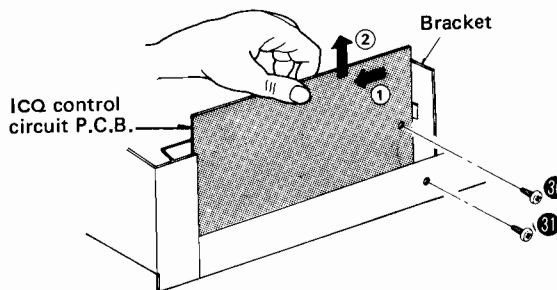
• How to remove the ICQ control circuit P.C.B. [Fig. 9, 10]

1. Remove the cabinet.
2. Remove the setscrew (Fig. 9: 32) of the shield cover.
3. Remove the shield cover.



[Fig. 9]

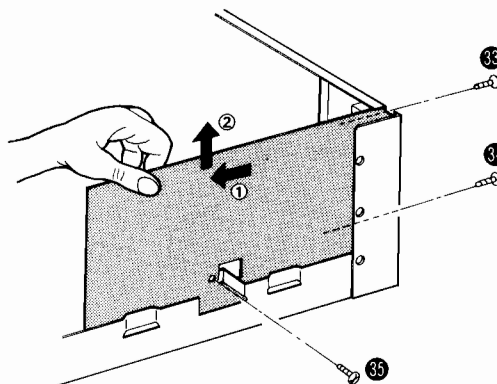
4. Remove the 2 setscrews (Fig. 10: 30, 31) and then pull out the ICQ control circuit P.C.B. from bracket in the direction of the arrow. (See Fig. 10.)



[Fig. 10]

• How to remove the equalizer circuit P.C.B. [Fig. 11]

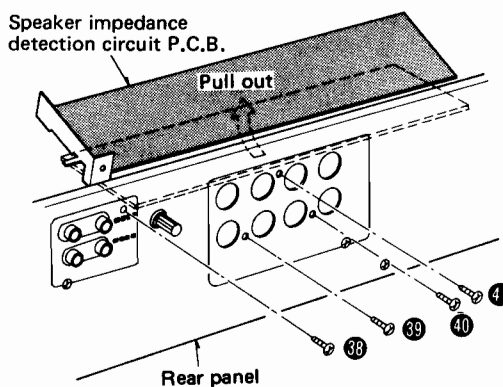
1. Remove the cabinet.
2. Remove the setscrew (Fig. 9: 32) of the shield cover.
3. Remove the shield cover.
4. Remove the 3 setscrews (Fig. 11: 33 ~ 35) and then pull out the equalizer circuit P.C.B. from rear panel in the direction of the arrows. (See Fig. 11)



[Fig. 11]

• How to remove the speaker impedance detection circuit P.C.B. [Fig. 12]

1. Remove the cabinet.
2. Remove the 4 setscrews (Fig. 12: 38 ~ 41) of the rear panel.
3. Remove the speaker impedance detection circuit P.C.B. in the direction of the arrow. (See Fig. 12)

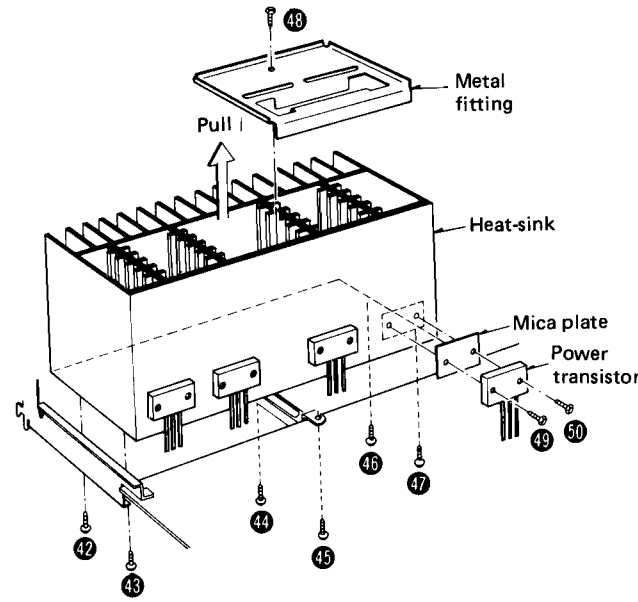


[Fig. 12]

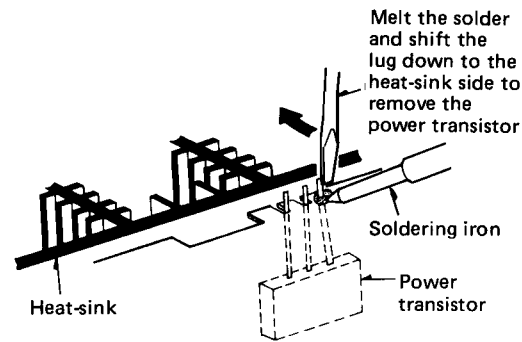
• How to remove the Power transistor [Fig. 13 ~ 15]

1. Remove the cabinet and bottom board.
2. Unsolder the 4 power transistors as shown in Fig. 13.
3. Remove the 6 setscrew (Fig. 14: 42 ~ 47) of the heat sink.
4. Remove the setscrew (Fig. 14: 48) of the metal fitting.
5. Remove the transistors along with the heat-sink from the printed circuit board.
6. Remove the 2 setscrews (Fig. 14: 49, 50) used to secure the power transistors on the heat-sink, and then pull out the power transistor.
7. When installing the power transistor, apply heat diffusing agent (silicon powder, etc.) to both sides of the mica plate, and secure it on the heat-sink with setscrews. Next, secure the heat-sink on the chassis and then solder the power transistor.

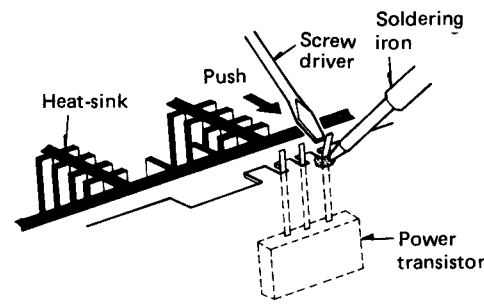
Note: When soldering the power transistor, press the transistor legs against the printed board. (See Fig. 15)



[Fig. 14]

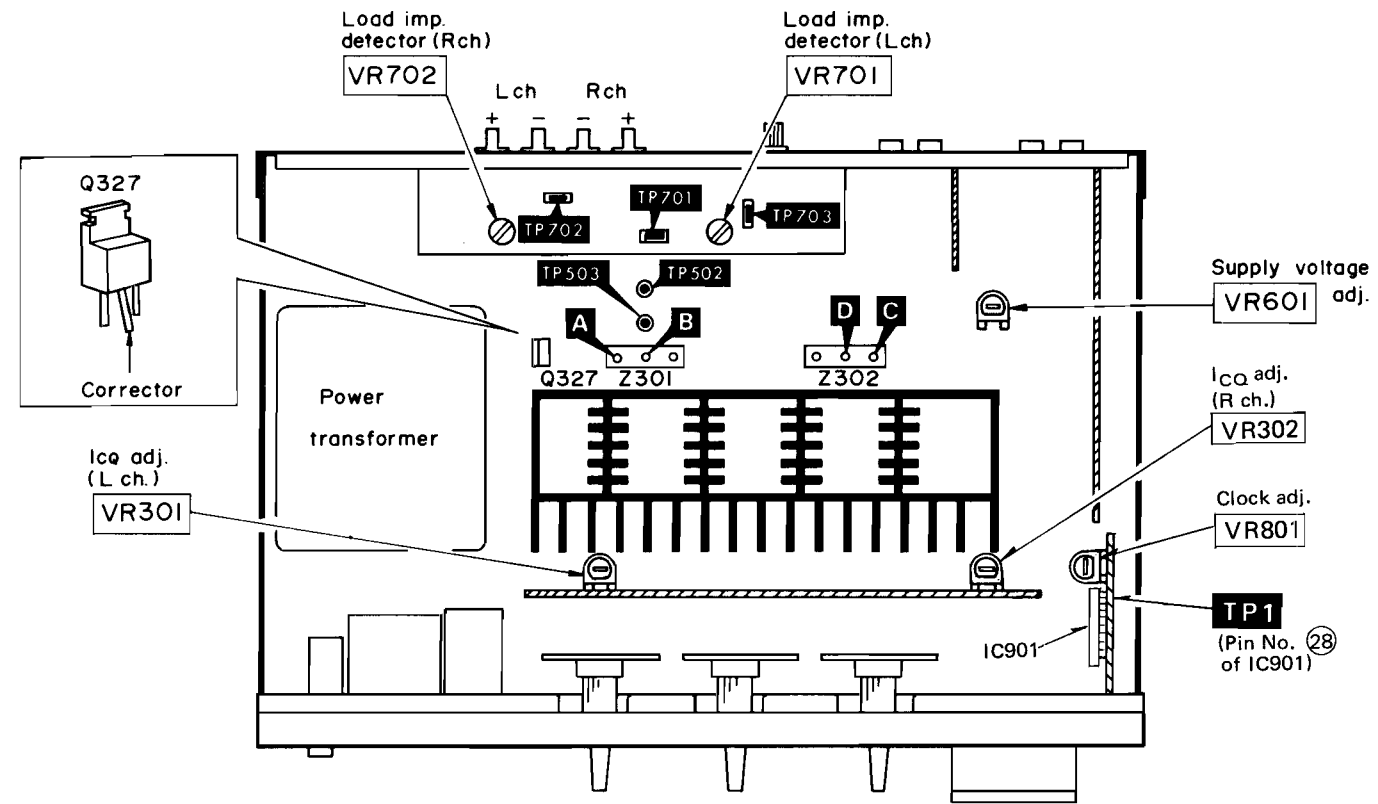


When unsolder the power transistor
[Fig. 13]



When soldering the power transistor
[Fig. 15]

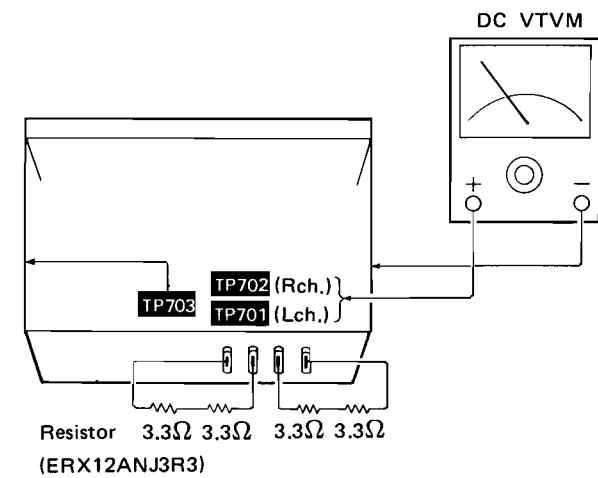
ADJUSTMENT POINTS



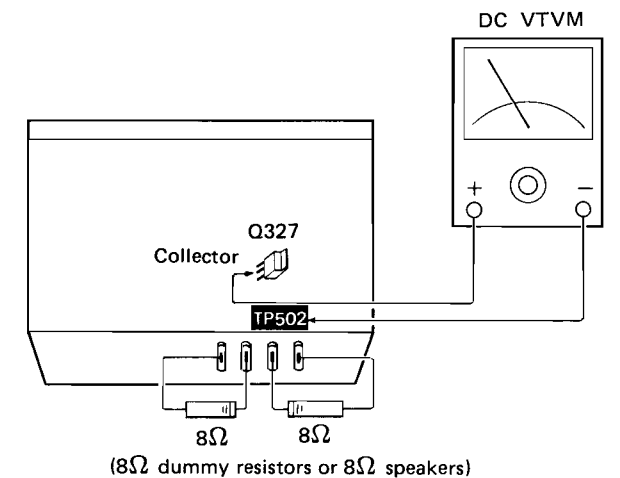
MEASUREMENTS AND ADJUSTMENTS

- Setting of controls and instruments to be used.
- Before the adjustment, VR301, VR302 and VR601 should be turned to counter-clockwise direction, VR701, VR702 and VR901 should be turned to center position.
- Sound volume ... 0 (minimum)
- Main speaker switch ... on
- Remote speaker switch ... off
- Operation selector ... straight DC
- DC voltmeter (capable to measure 5mV)
- Oscilloscope

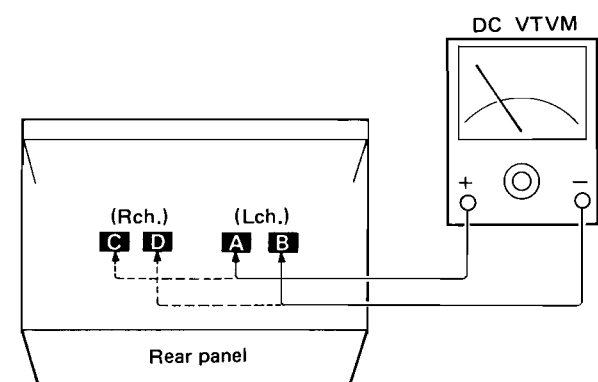
No.	Item	Connection of DC voltmeter or oscilloscope	VR adjusted	Adjustment																		
1	Adjustment of load impedance detection circuit (after repairing the speaker impedance detection circuit (Fig. 16))	<ul style="list-style-type: none"> Connect a load with series-connected 3.3Ω and 3.3Ω (1/2W, ±5%) to the "main" speaker terminal, (both L and R channel) Connect a DC voltmeter between TP701 and chassis. (L ch.) Connect a DC voltmeter between TP702 and chassis. (Rch.) Connect TP703 and chassis. 	VR701 (L channel) VR702 (R channel)	<ol style="list-style-type: none"> Completely turn VR701 clockwise. Adjust VR702 so that the voltage of TP702 is +0.18V ~ -0.2V Adjust VR701 so that the voltage of TP701 is +0.18V ~ -0.2V 																		
2	Supply voltage adjustment & check (after repairing the power supply circuit) (Fig. 17)	<ul style="list-style-type: none"> Connect voltmeter to Q327 (Collector) and TP502. Set the speaker selector to "main" when measuring the voltage. If power supply of the set is ON, changing the load impedance will not cause alteration of supply voltage. So, turn off power supply or shift the speaker selector to other position. With speaker selector set at main and remote, the voltage at 4 ~ 6Ω is indicated. 	VR601	<ol style="list-style-type: none"> Connect 8Ω load to main speaker terminal. Adjust VR601 so that voltage is +54.5V. Load resistance to speaker terminal and output voltage at each test point are shown below. <table border="1"> <thead> <tr> <th>Load</th> <th>Test point</th> <th>Specification</th> </tr> </thead> <tbody> <tr> <td rowspan="2">4~6.5Ω</td> <td>Q327 (collector)</td> <td>45.0 ~ 47.0V</td> </tr> <tr> <td>TP503</td> <td>-45.5 ~ -47.5V</td> </tr> <tr> <td rowspan="2">6.6~16Ω</td> <td>Q327 (collector)</td> <td>54.0 ~ 55.0V</td> </tr> <tr> <td>TP503</td> <td>-54.5 ~ -55.5V</td> </tr> <tr> <td rowspan="2">Speaker switch to "off"</td> <td>Q327 (collector)</td> <td>54.0 ~ 56.0V</td> </tr> <tr> <td>TP503</td> <td>-54.5 ~ -56.5V</td> </tr> </tbody> </table>	Load	Test point	Specification	4~6.5Ω	Q327 (collector)	45.0 ~ 47.0V	TP503	-45.5 ~ -47.5V	6.6~16Ω	Q327 (collector)	54.0 ~ 55.0V	TP503	-54.5 ~ -55.5V	Speaker switch to "off"	Q327 (collector)	54.0 ~ 56.0V	TP503	-54.5 ~ -56.5V
Load	Test point	Specification																				
4~6.5Ω	Q327 (collector)	45.0 ~ 47.0V																				
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	TP503	-54.5 ~ -55.5V																				
Speaker switch to "off"	Q327 (collector)	54.0 ~ 56.0V																				
	TP503	-54.5 ~ -56.5V																				
3	Adjustment of I _{CO} (after repairing the main amp) (Fig. 18)	<ul style="list-style-type: none"> (L channel) Between A and B (minus probe) (R channel) Between C and D (minus probe) 	VR301 (L channel) VR302 (R channel)	<ol style="list-style-type: none"> Set the main and remote speaker switches to "off" position. Adjust VR301 and VR302 so that the voltage is 1mV about 1 min. after power supply ON. 																		
4	Adjustment of clock (after replacing the micro-computer) (Fig. 19)	Connect the Oscilloscope to TP1	VR801	Adjust VR801 so that period of waveform is 2.5μsec.																		



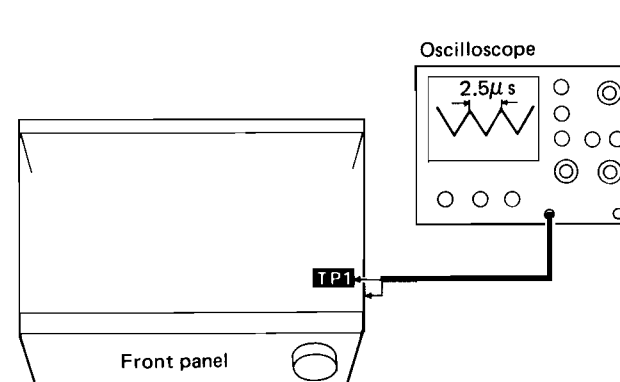
[Fig. 16] Adjustment of load impedance detection circuit



[Fig. 17] Supply voltage adjustment



[Fig. 18] Adjustment of I_{CO}

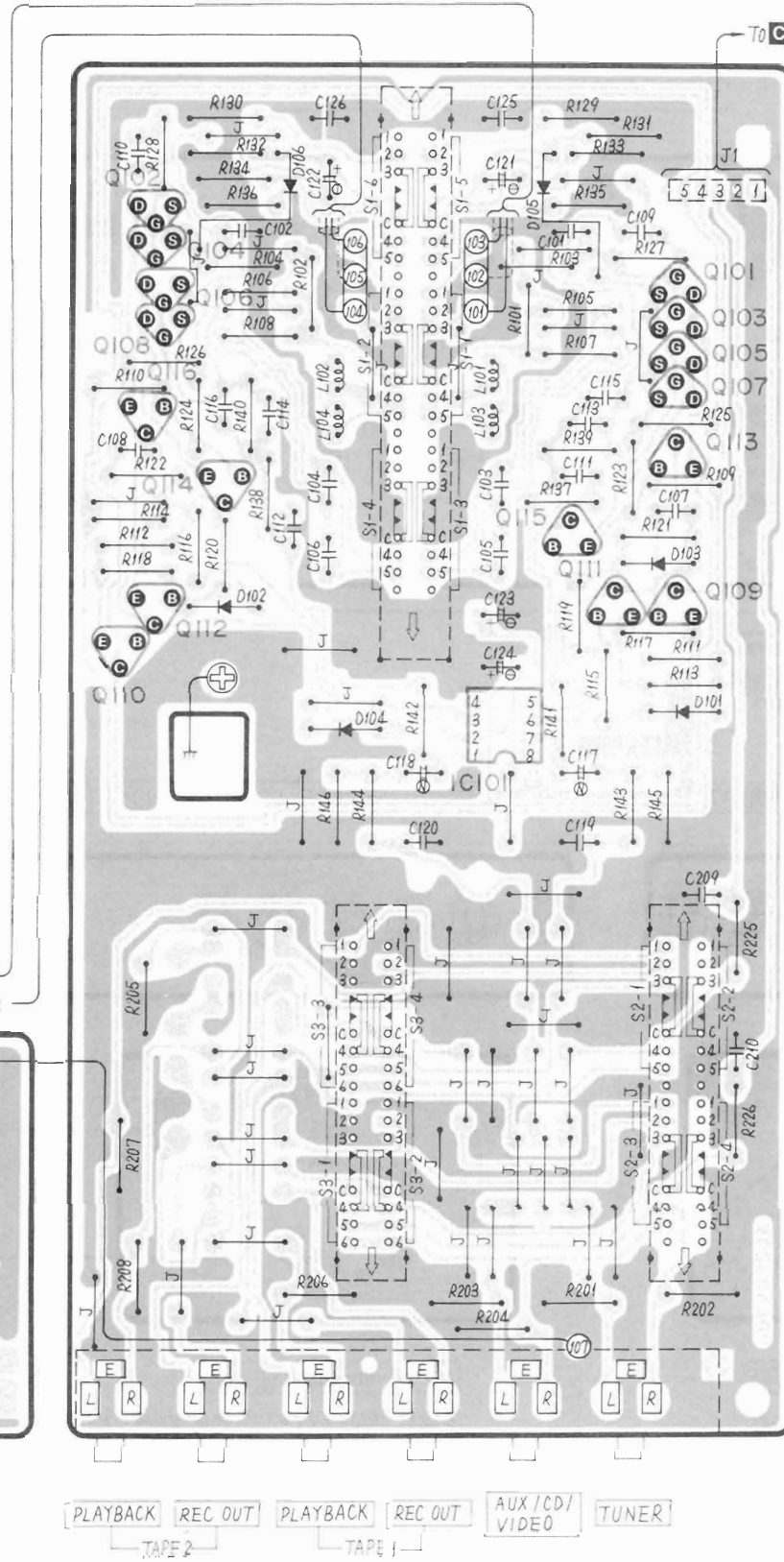


[Fig. 19] Adjustment of clock

PRINTED CIRCUIT BOARDS

Ground (Earth) lines

B Equalizer and input selector circuit



S1 PHONO SELECTOR

- ① phono 2 MM (2.5mV)
- ② phono 1 MM (1mV)
- ③ phono 1 MM (2.5mV)
- ④ PHONO 1 MC (250μV)
- ⑤ phono 1 MC (100μV)

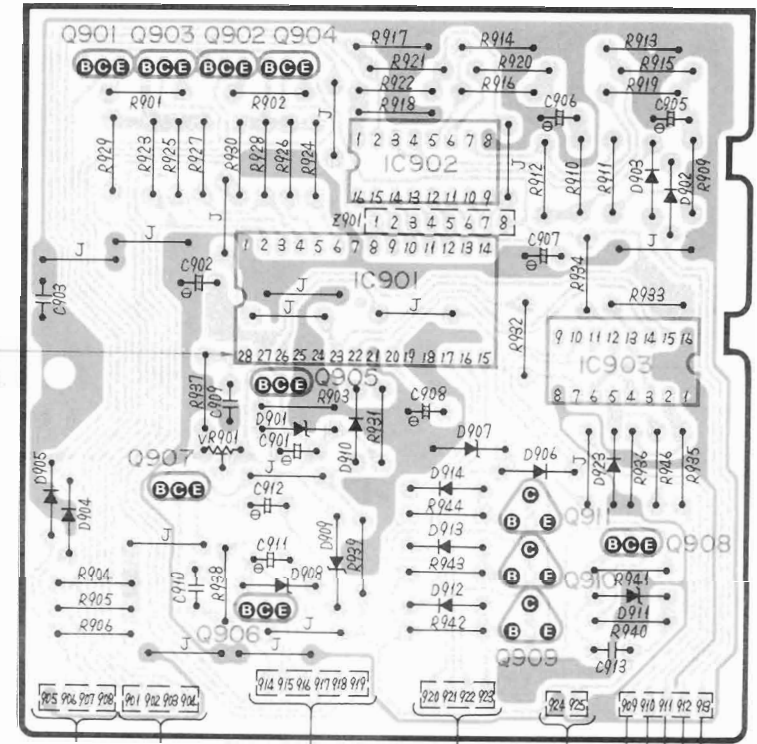
S3 RECORDING-MODE SELECTOR

- ① tape dubbing 2 → 1
- ② tape dubbing 1 → 2
- ③ off ④ phono
- ⑤ tuner ⑥ aux

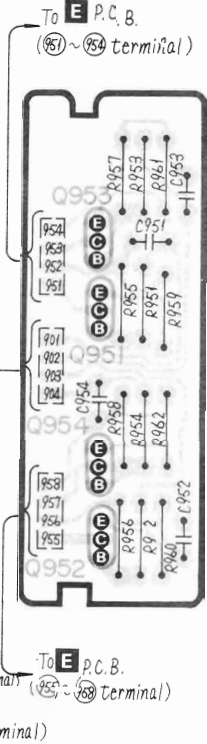
S2 INPUT SELECTOR

- ① tape 2 ② tape 1
- ③ phono ④ tuner
- ⑤ aux

G ICQ control circuit

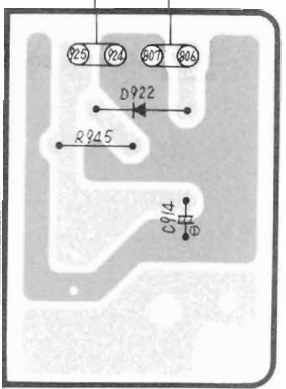
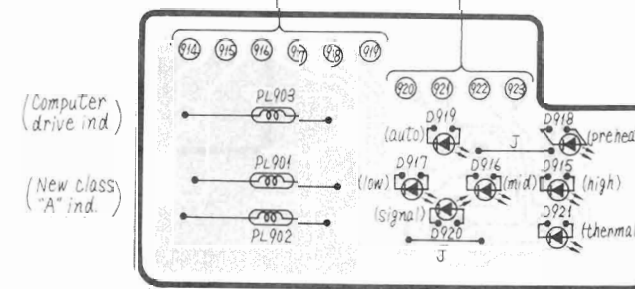


F

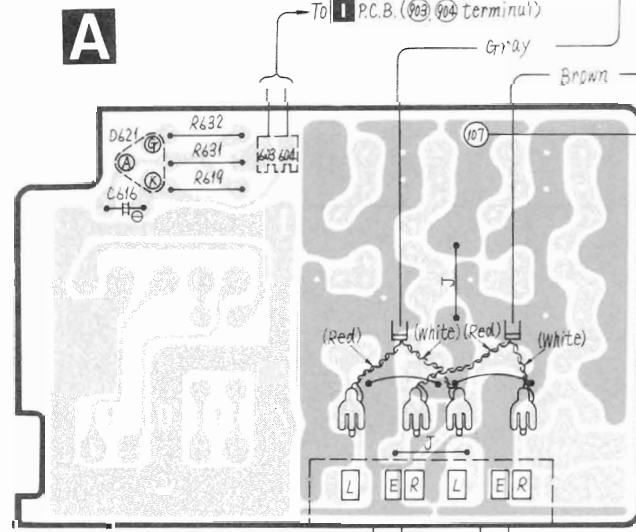


To I.P.C.B. (963) terminal

H Computer drive ind. circuit



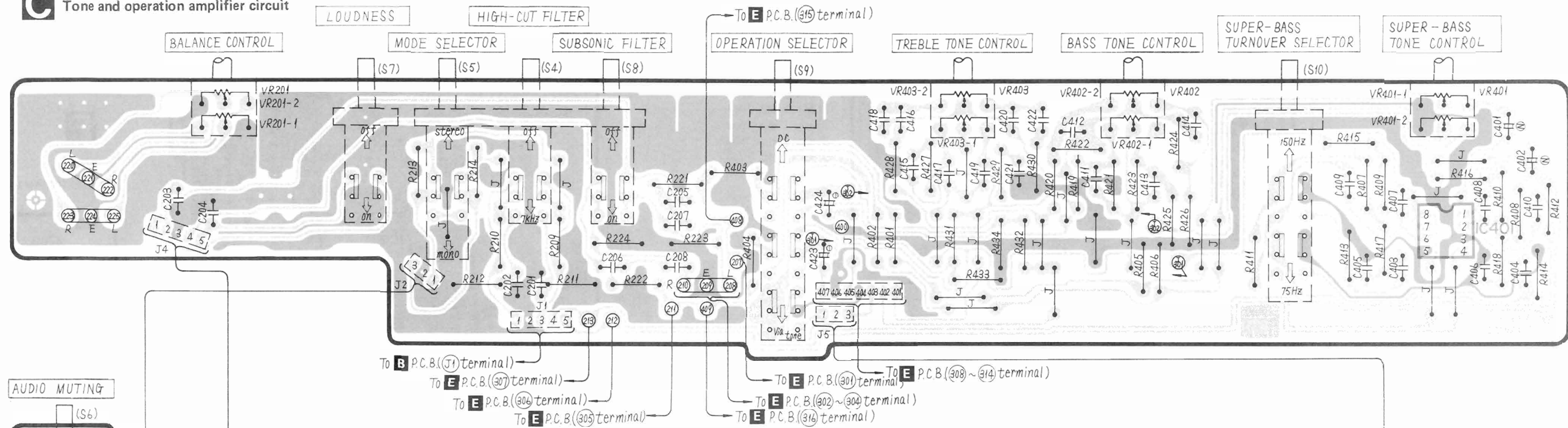
L



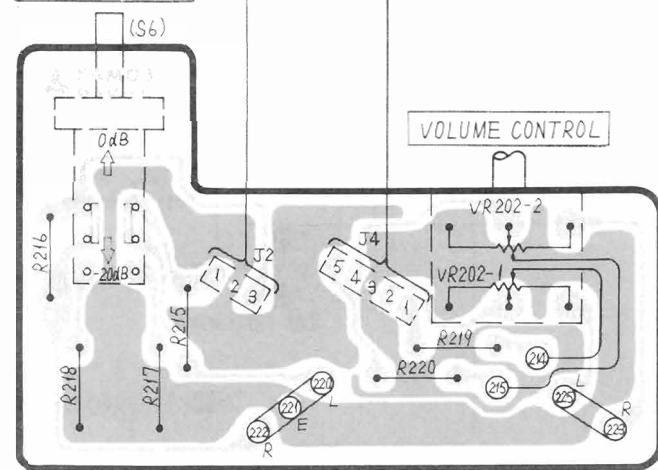
PHONO 2 (MM) PHONO 1 (MM/MC)

PLAYBACK REC OUT PLAYBACK REC OUT AUX/CD/VIDEO TUNER TAPE 2 TAPE 1

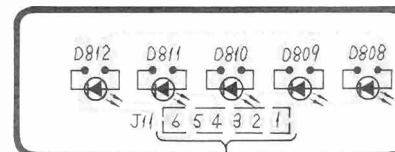
C Tone and operation amplifier circuit



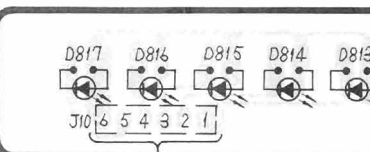
D Volume control circuit



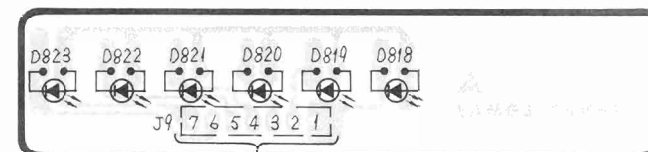
PHONO SELECTOR INDICATOR



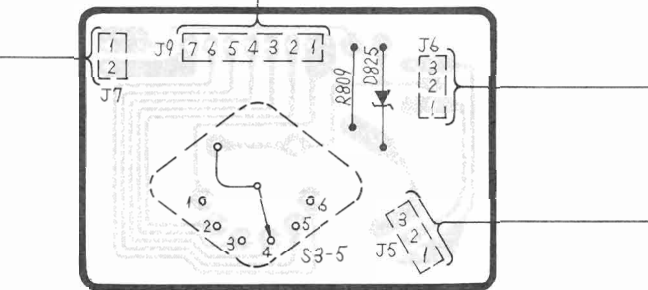
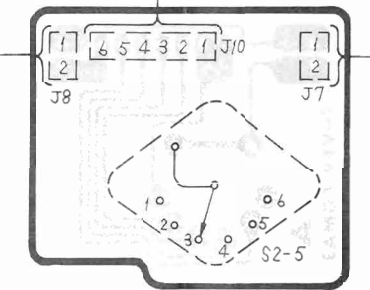
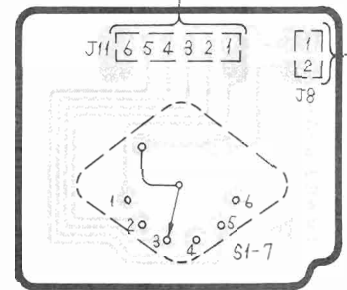
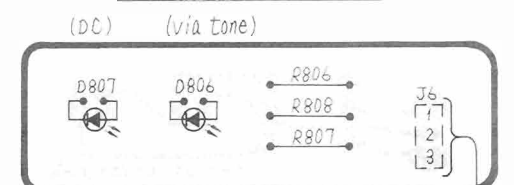
INPUT SELECTOR INDICATOR



RECORDING-MODE SELECTOR INDICATORS



OPERATION INDICATORS



PHONO SELECTOR

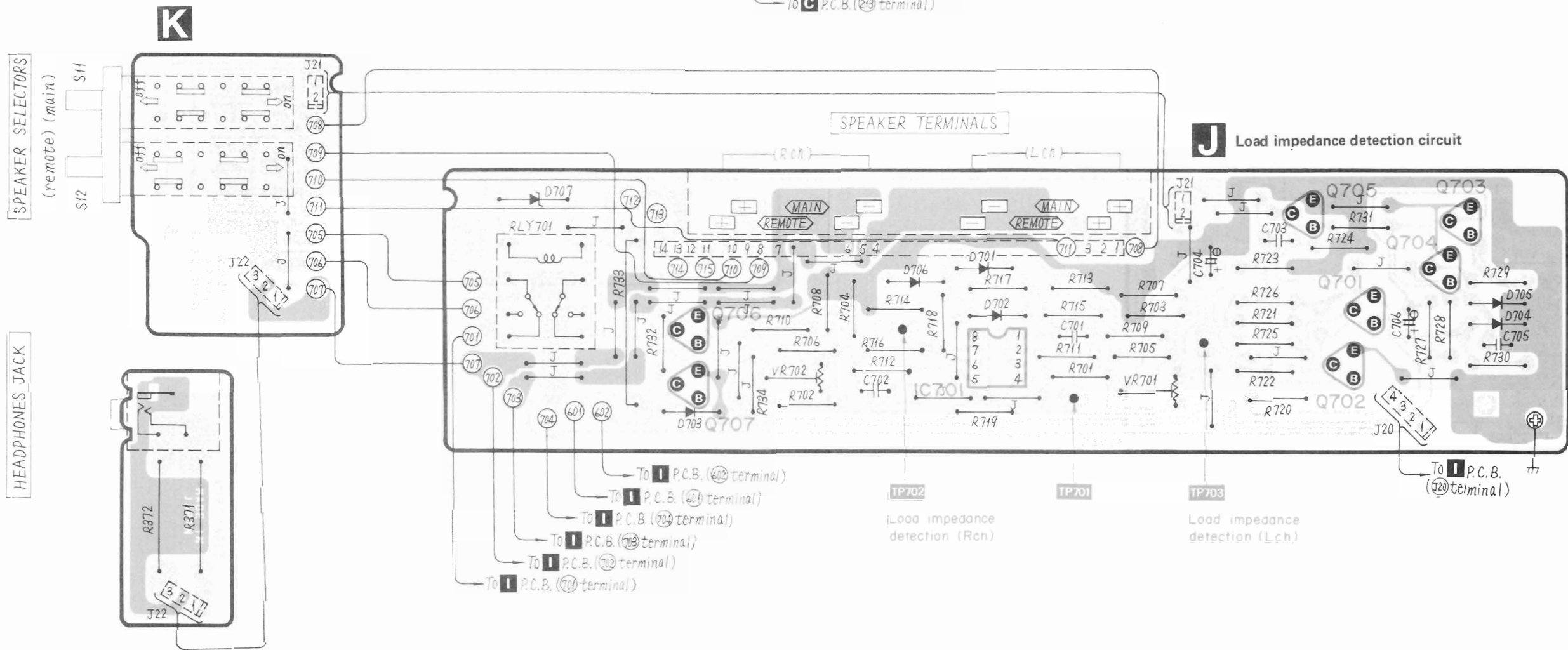
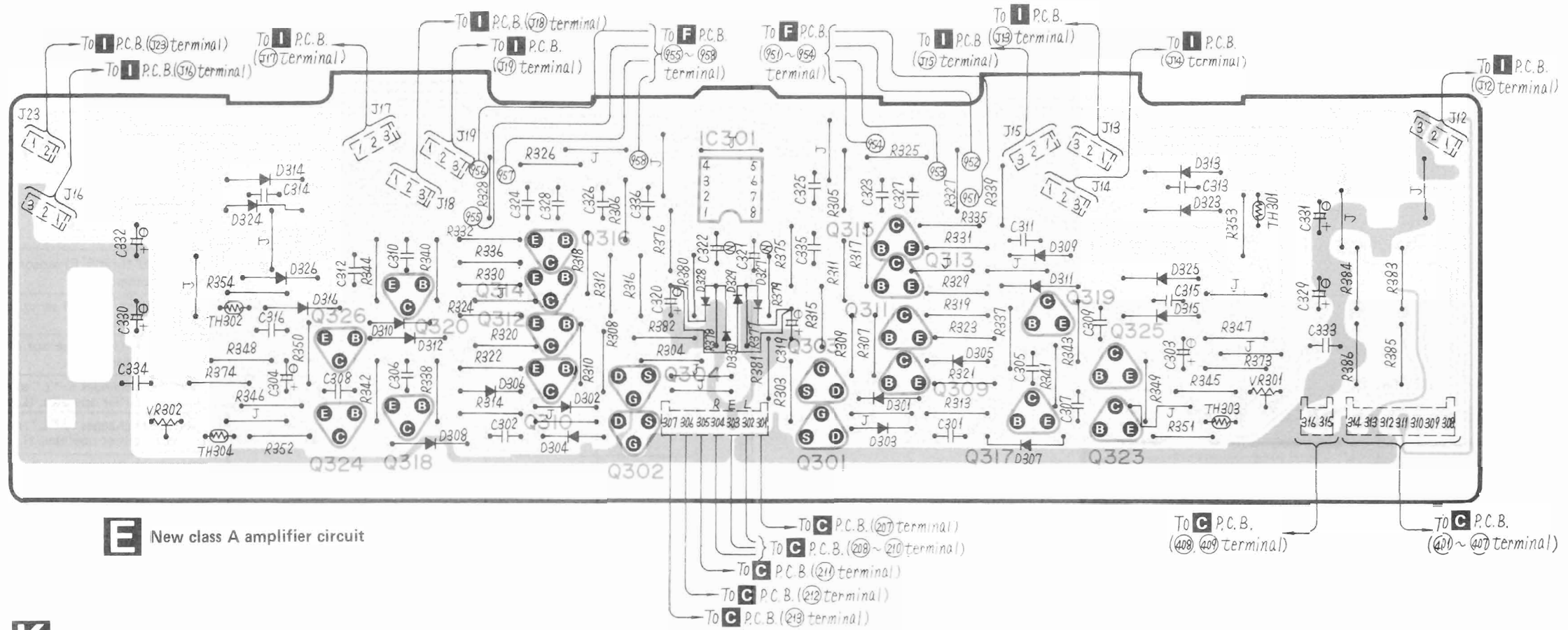
- ① phono 2 MM (25mV)
- ② phono 1 MM (1mV)
- ③ phono 1 MM (25mV)
- ④ phono 1 MC (250μV)
- ⑤ phono 1 MC (100μV)

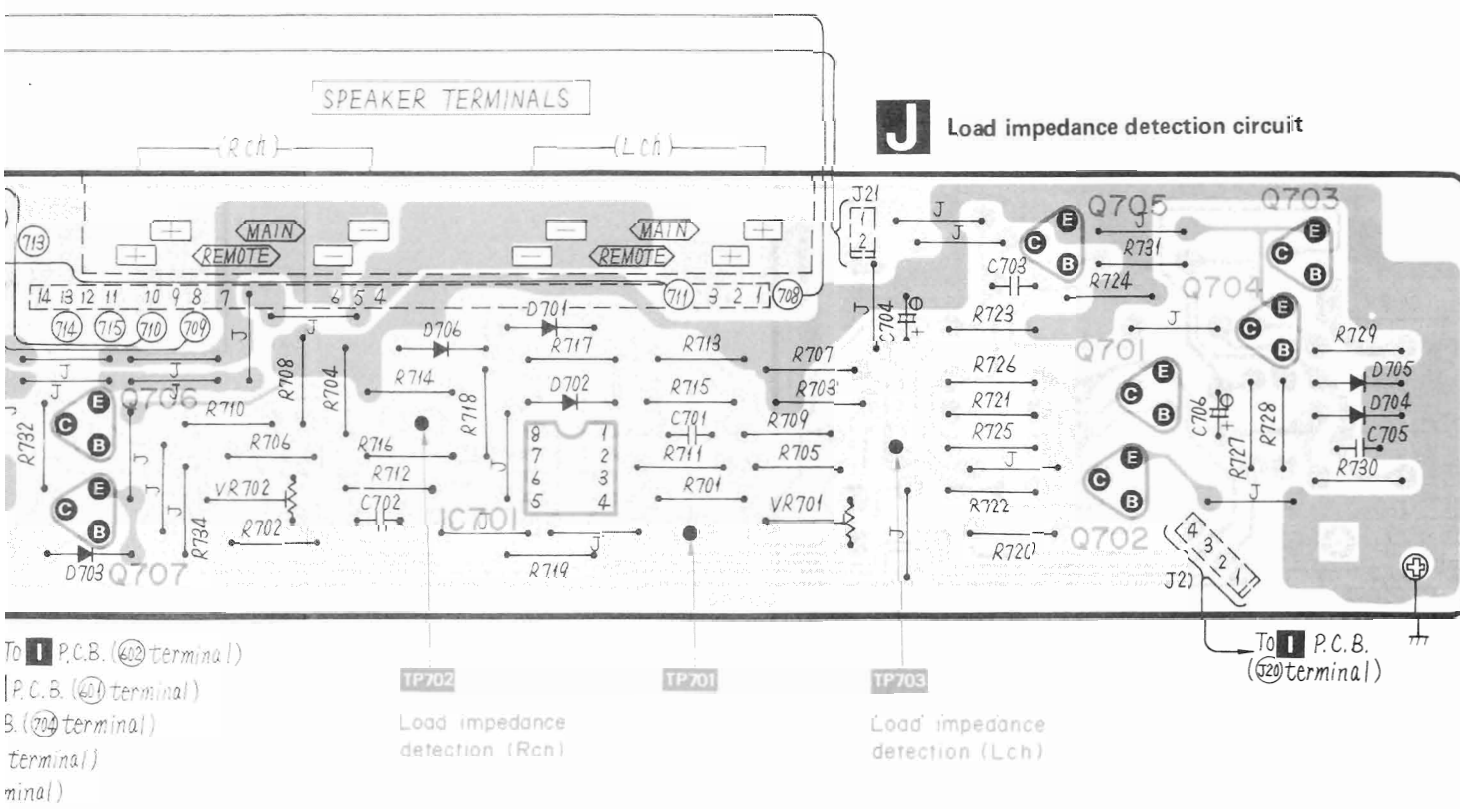
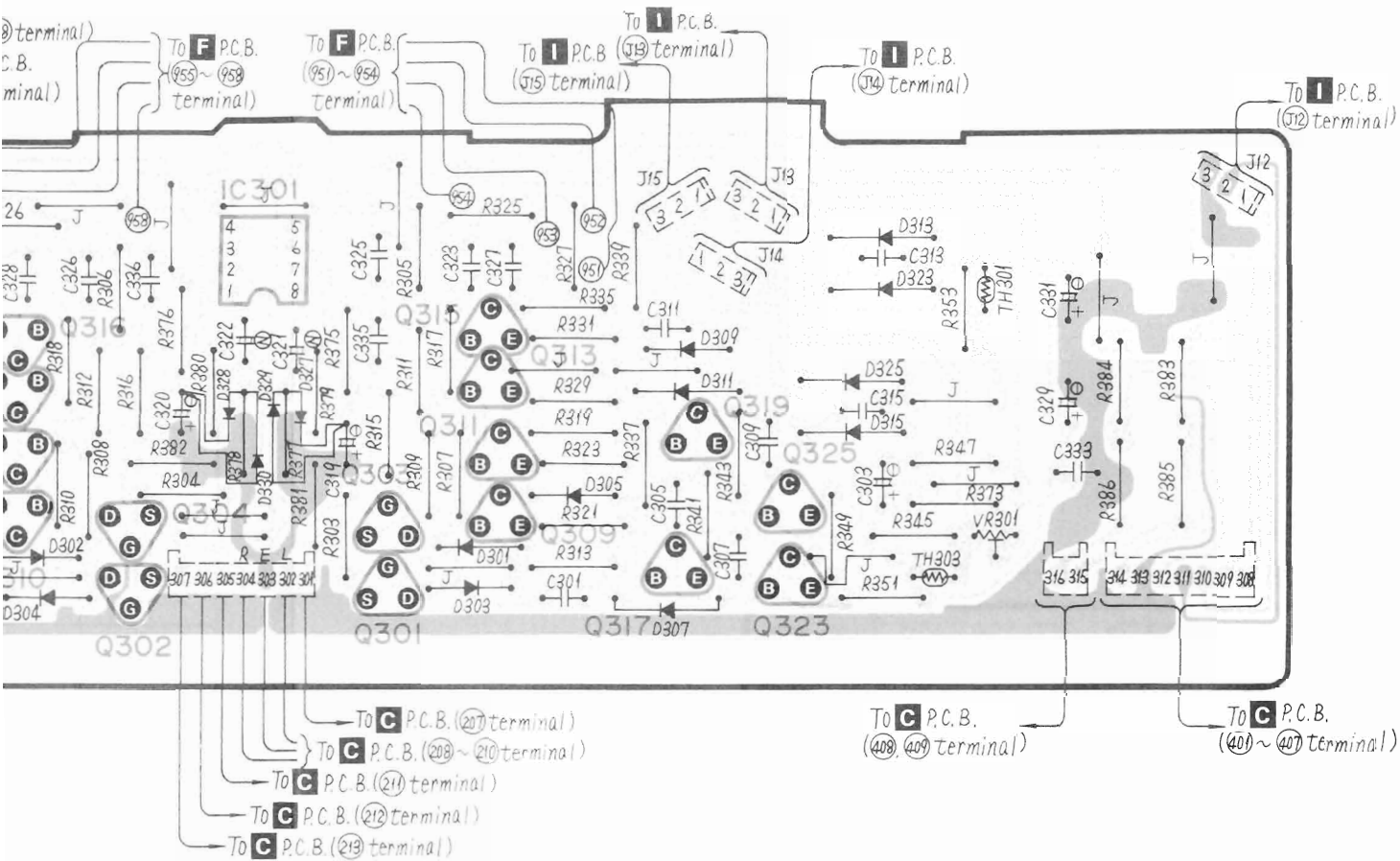
INPUT SELECTOR

- ① tape 2
- ② tape 1
- ③ phono
- ④ tuner
- ⑤ aux

RECORDING-MODE SELECTOR

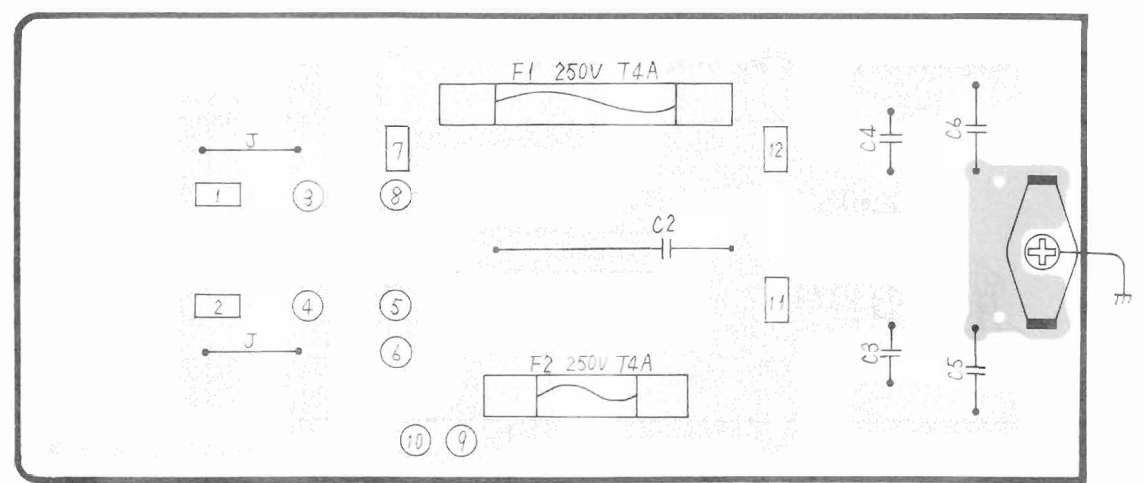
- ① tape dubbing 2 → 1
- ② tape dubbing 1 → 2
- ③ off
- ④ phono
- ⑤ tuner
- ⑥ aux



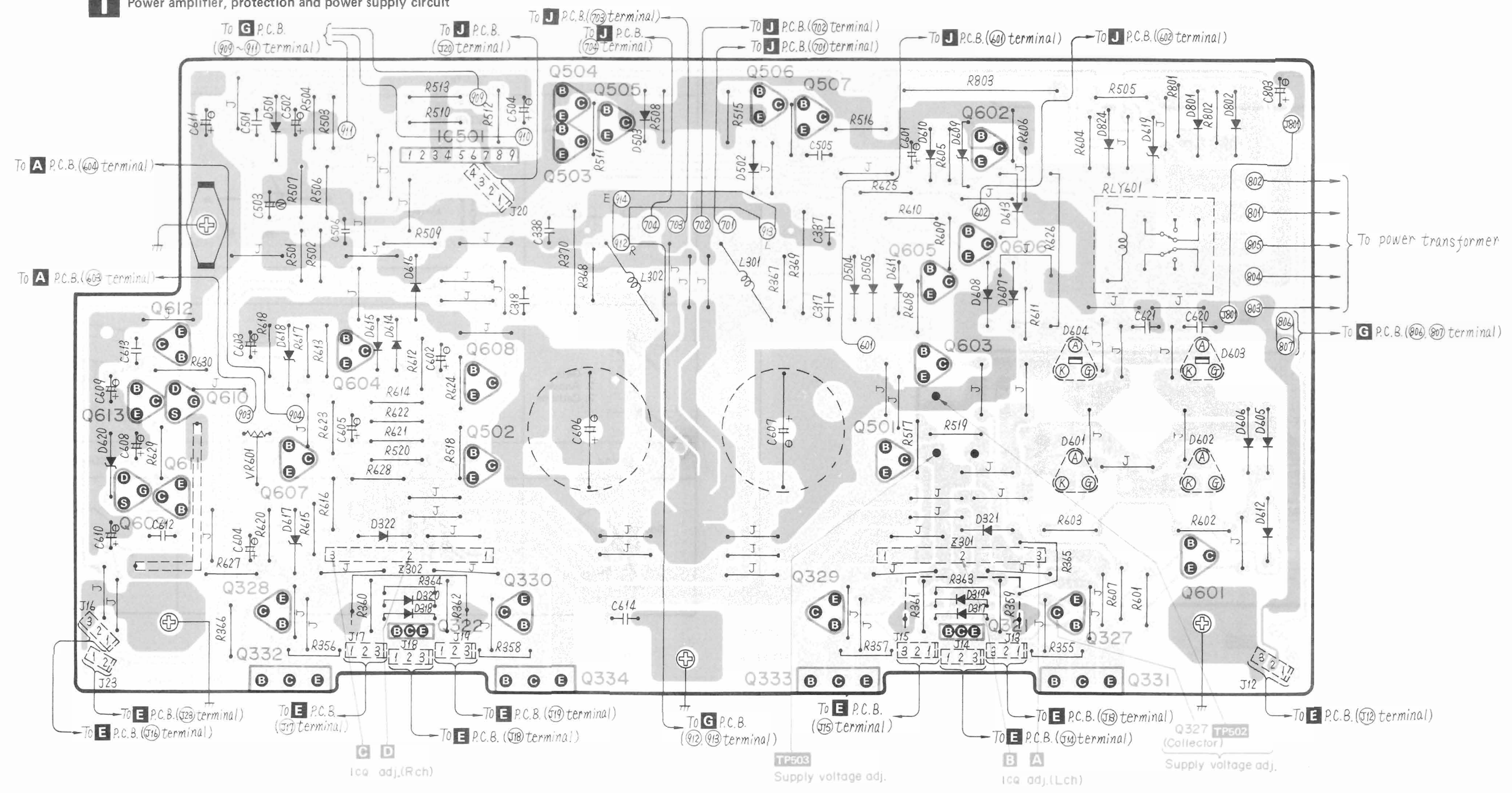


Terminal guide of transistors, diodes and IC's

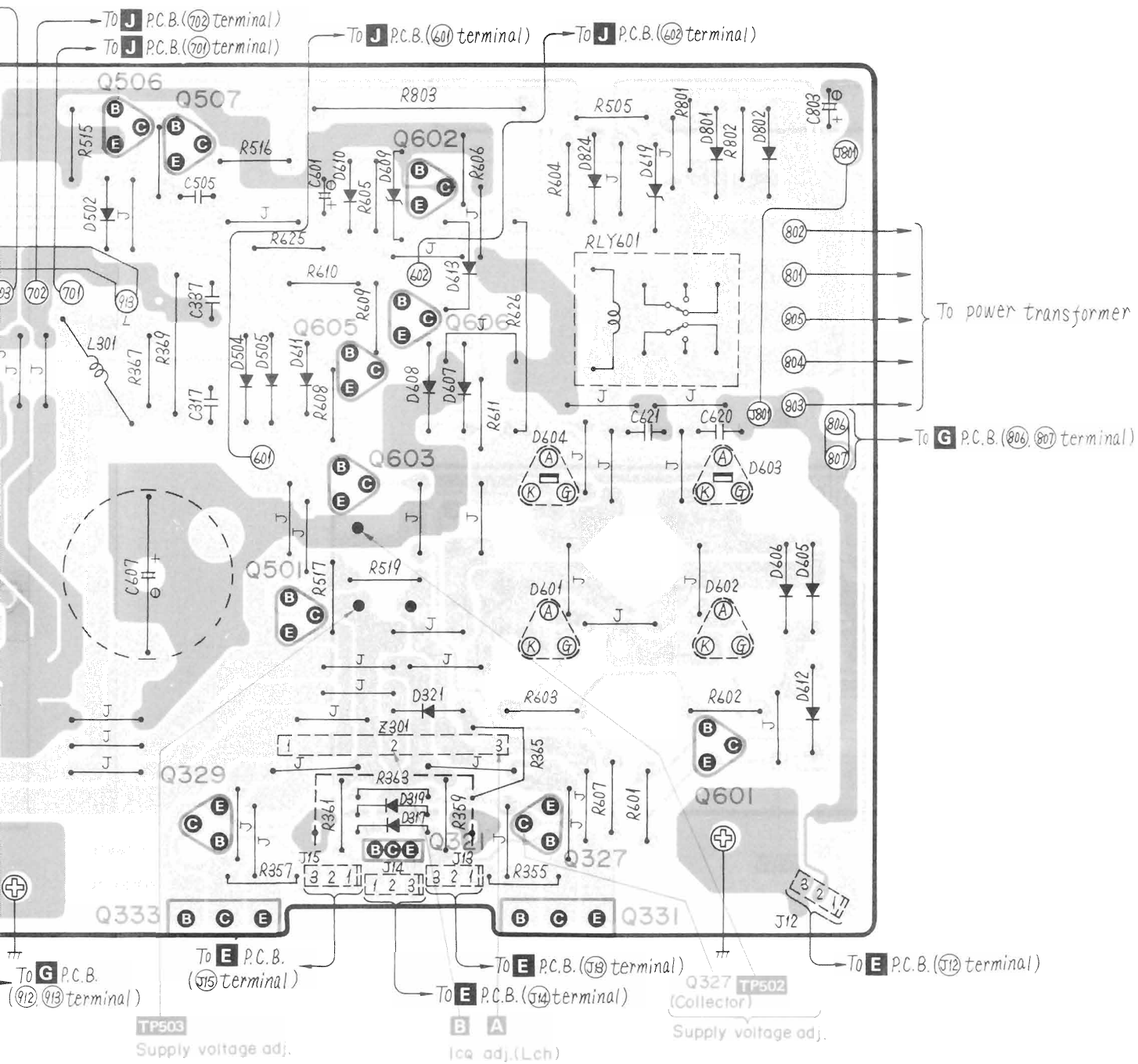
		<table border="1"> <tr> <td>28 Pin</td> <td>MN1421STA</td> </tr> <tr> <td>18 Pin</td> <td>AN6552</td> </tr> <tr> <td>18 Pin</td> <td>SVITD62501P</td> </tr> <tr> <td>8 Pin</td> <td>SVINJ4559DSM</td> </tr> </table>	28 Pin	MN1421STA	18 Pin	AN6552	18 Pin	SVITD62501P	8 Pin	SVINJ4559DSM	<table border="1"> <tr> <td>2SA721</td> <td>2SC1815</td> </tr> <tr> <td>2SC1980</td> <td>2SC1980</td> </tr> <tr> <td>2SA921</td> <td>2SA1123</td> </tr> <tr> <td>2SC2631</td> <td>2SC2632</td> </tr> <tr> <td>2SA1124</td> <td>2SA774</td> </tr> <tr> <td>2SC1509</td> <td>2SA722</td> </tr> <tr> <td>2SC1815</td> <td>2SA1015</td> </tr> <tr> <td>2SA777NCR</td> <td></td> </tr> </table>	2SA721	2SC1815	2SC1980	2SC1980	2SA921	2SA1123	2SC2631	2SC2632	2SA1124	2SA774	2SC1509	2SA722	2SC1815	2SA1015	2SA777NCR	
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2SA1124	2SA774																										
2SC1509	2SA722																										
2SC1815	2SA1015																										
2SA777NCR																											



Power amplifier, protection and power supply circuit



Pin No.	Ma
1	V
2	CO
3	CO
4	CO
5	CO
6	CO
7	AI
8	A
9	A
10	A
11	B
12	B
13	B
14	B
15	EQ
16	EQ
17	EQ
18	EQ
19	TS
20	RS
21	SN
22	SN
23	DC
24	DC
25	DC
26	DC
27	VD
28	OS



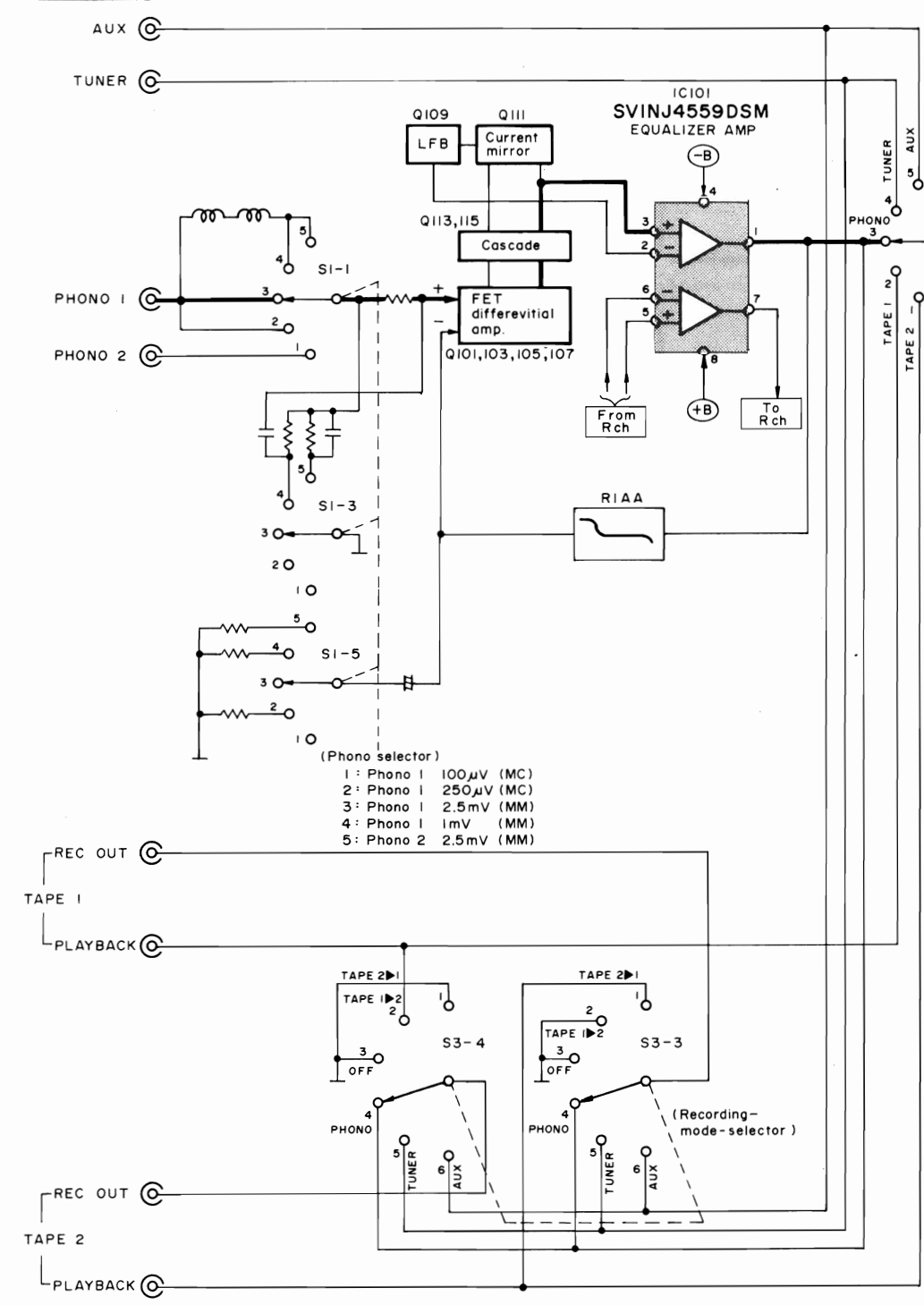
FUNCTION OF TERMINAL (I_{CC} CONTROLLER IC901)

Pin No.	Mark	Name of block	Description of terminal
1	V _{SS}	Power supply input terminal	Grounded (0V)
2	CO ₉	Output port C	It delivers I _{CC} control signal through input port A (thermal sensor) and input port B (signal sensor). [Output "L"]
3	CO ₈		
4	CO ₇		
5	CO ₆		
6	CO ₅		
7	AI ₃	Input port A	Not used in this unit.
8	AI ₂		When 130°C (266°F) sensor of power amplifier operates, the input level becomes "H".
9	AI ₁		When 100°C (212°F) sensor of power amplifier operates, the input level becomes "L".
10	AI ₀		When 60°C (122°F) sensor of power amplifier operates, the input level becomes "L".
11	BI ₃	Input port B	Input level changes to "L" as effective output 2V signal sensor of power amplifier operates. (L ch.)
12	BI ₂		Input level changes to "L" as effective output 5V signal sensor of power amplifier operates. (L ch.)
13	BI ₁		Input level changes to "L" as effective output 2V signal sensor of power amplifier operates. (R ch.)
14	BI ₀		Input level changes to "L" as effective output 5V signal sensor of power amplifier operates. (R ch.)
15	EO ₀	Output port E	Indicator "thermal" lights up at "L" output.
16	EO ₁		Indicator "signal" lights up at "L" output.
17	EO ₂		Indicator "auto" lights up at "L" output.
18	EO ₃		Not used in this unit.
19	TST	Test input terminal	Terminal for testing LSI (Grounded)
20	RST	Reset input terminal	All outputs are cleared or reset with input at "L". (It is connected to power supply circuit)
21	SNS ₀	Sensor input terminal	Conditional transfer (branch) is performed according to the input level.
22	SNS ₁		Input level changes to "H" as power amplifier output short-circuit operates.
23	DO ₀	Output port D	Output terminal for indicator "preheat" and preheating circuit operation. [Output "L"]
24	DO ₁		Not used in this unit.
25	DO ₂		Output relay turns ON with output at "H"
26	DO ₃		
27	V _{DD}	Power supply input terminal	Apply 5V.
28	OSC	OSC input terminal	Clock signal (about 400 kHz) can be obtained by internal oscillation circuit.

■ BLOCK DIAGRAM

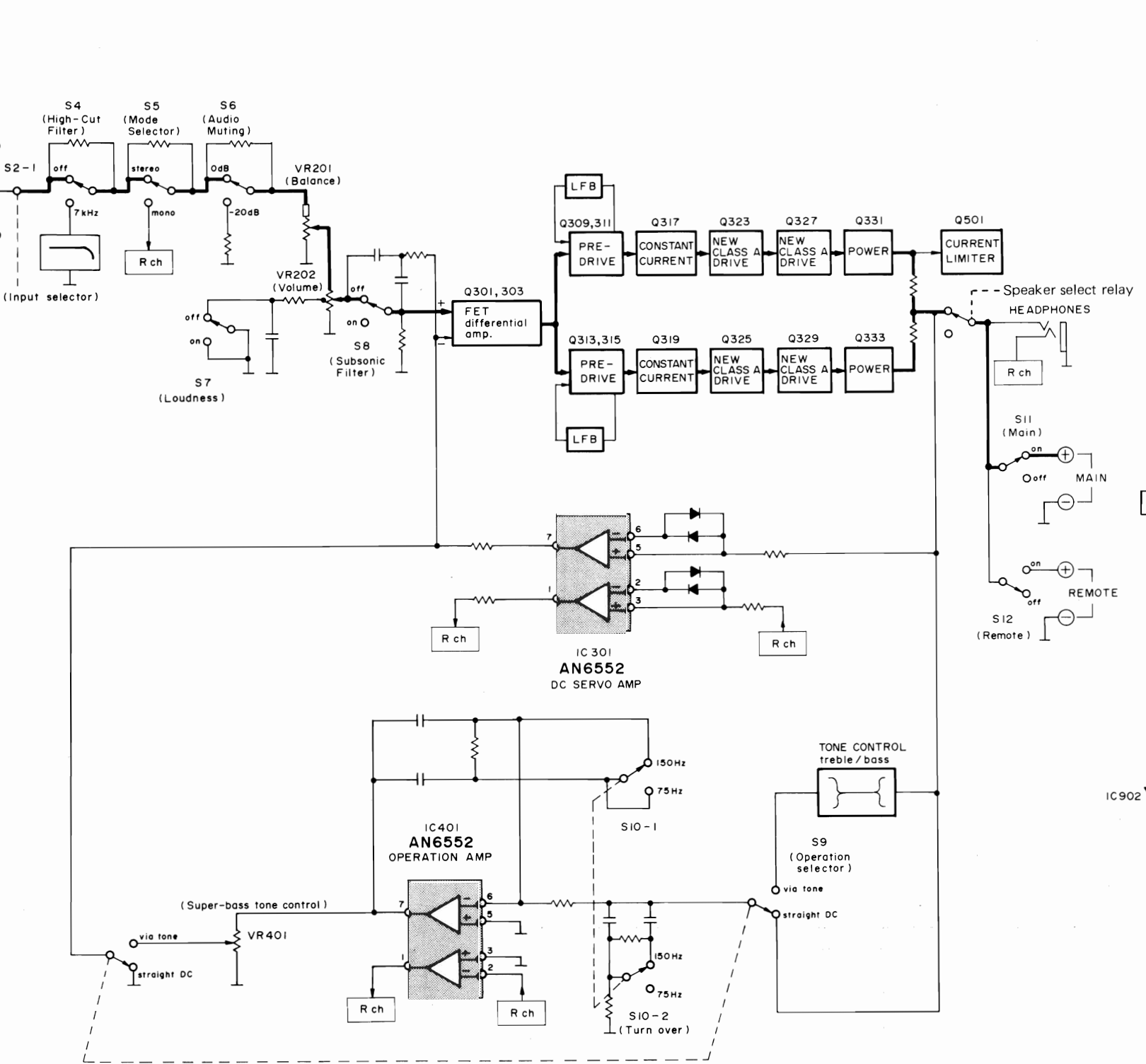
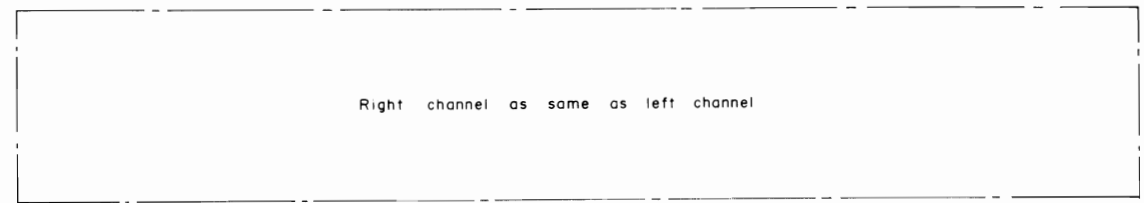
● Equalizer, Input selector and Power amplifier circuit

L CHANNEL

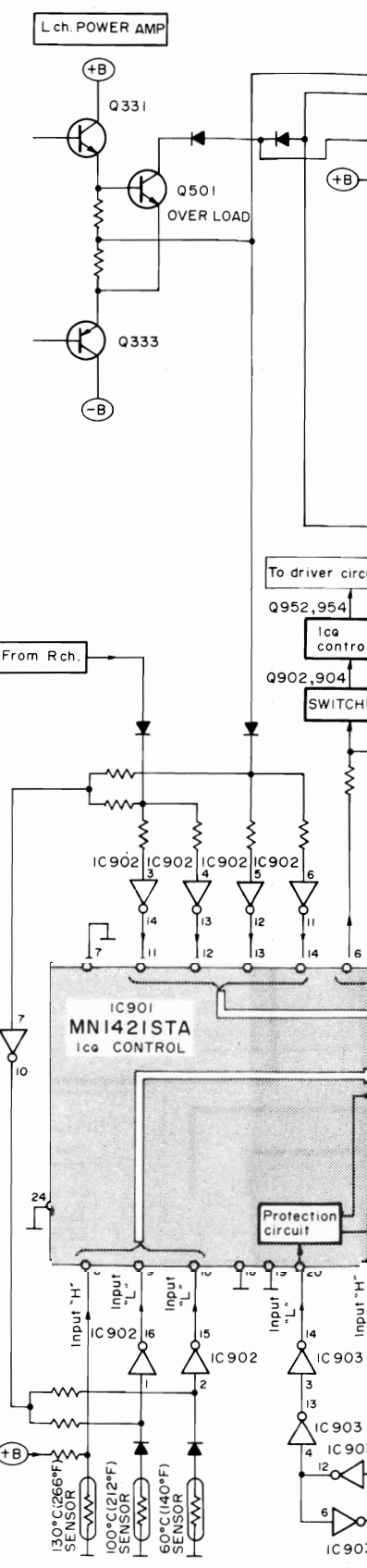


- (Phono selector)
- 1: Phono 1 100µV (MC)
 - 2: Phono 1 250µV (MC)
 - 3: Phono 1 2.5mV (MM)
 - 4: Phono 1 1mV (MM)
 - 5: Phono 2 2.5mV (MM)

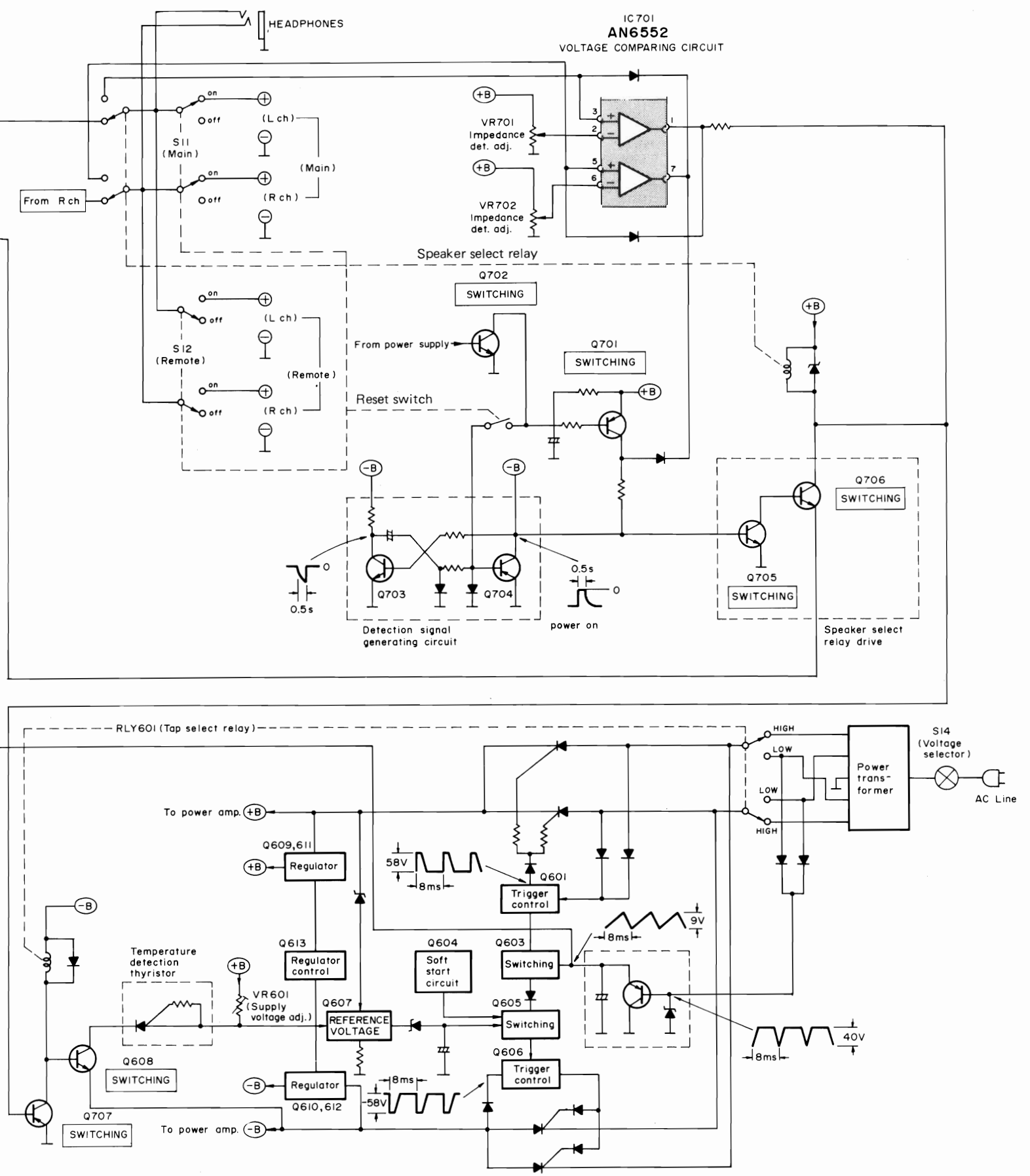
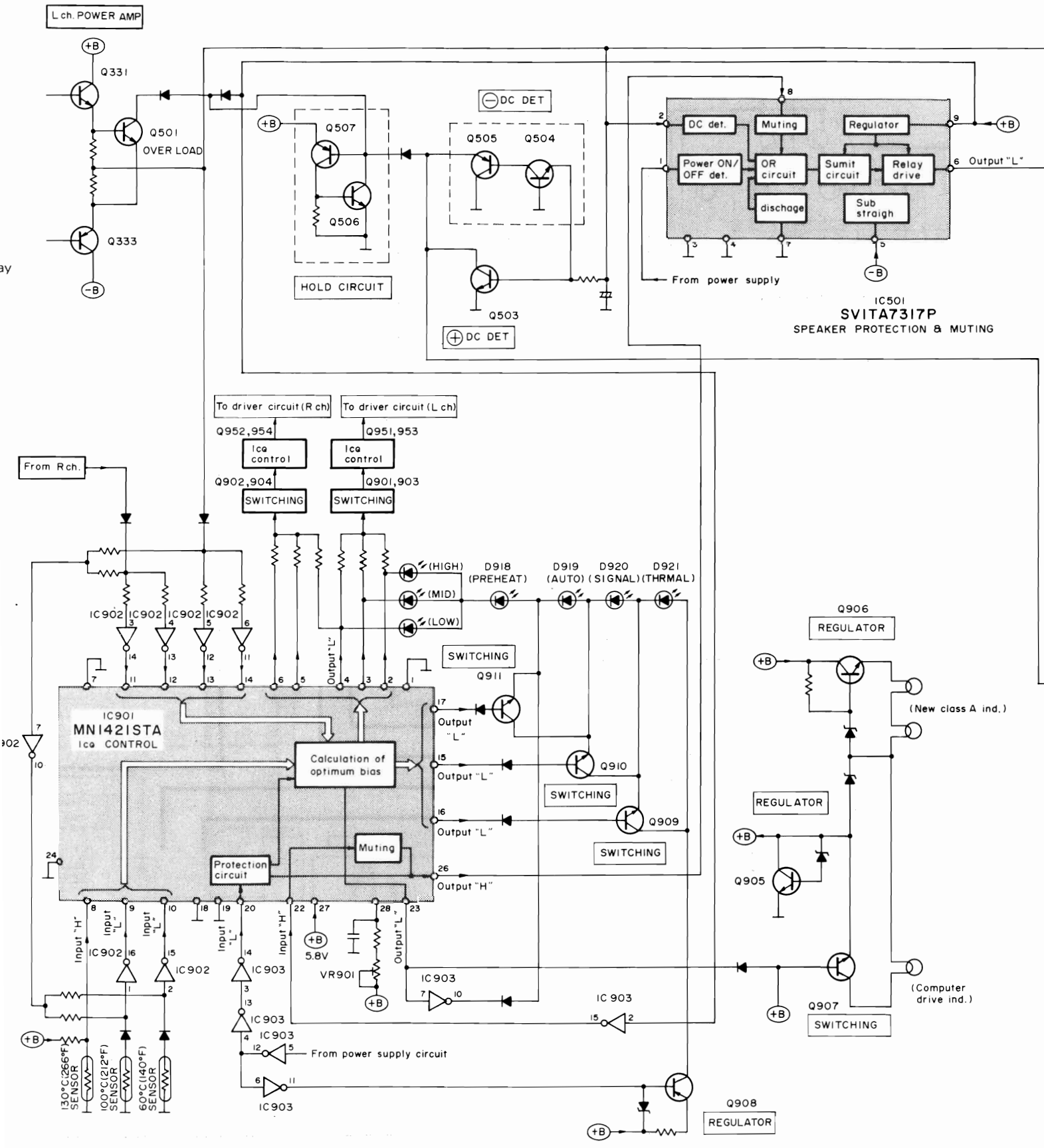
R CHANNEL



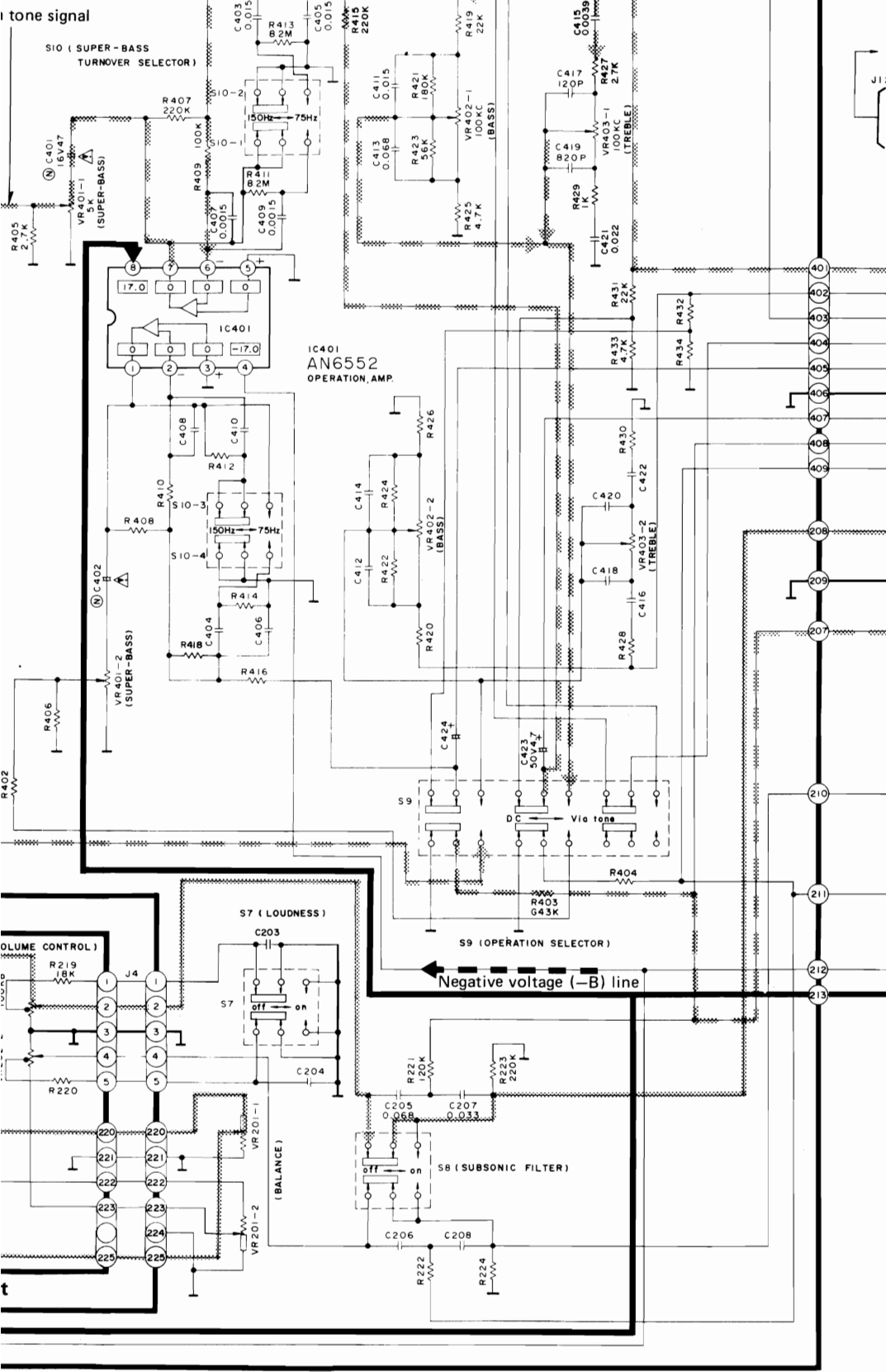
● ICQ control, Speaker protection



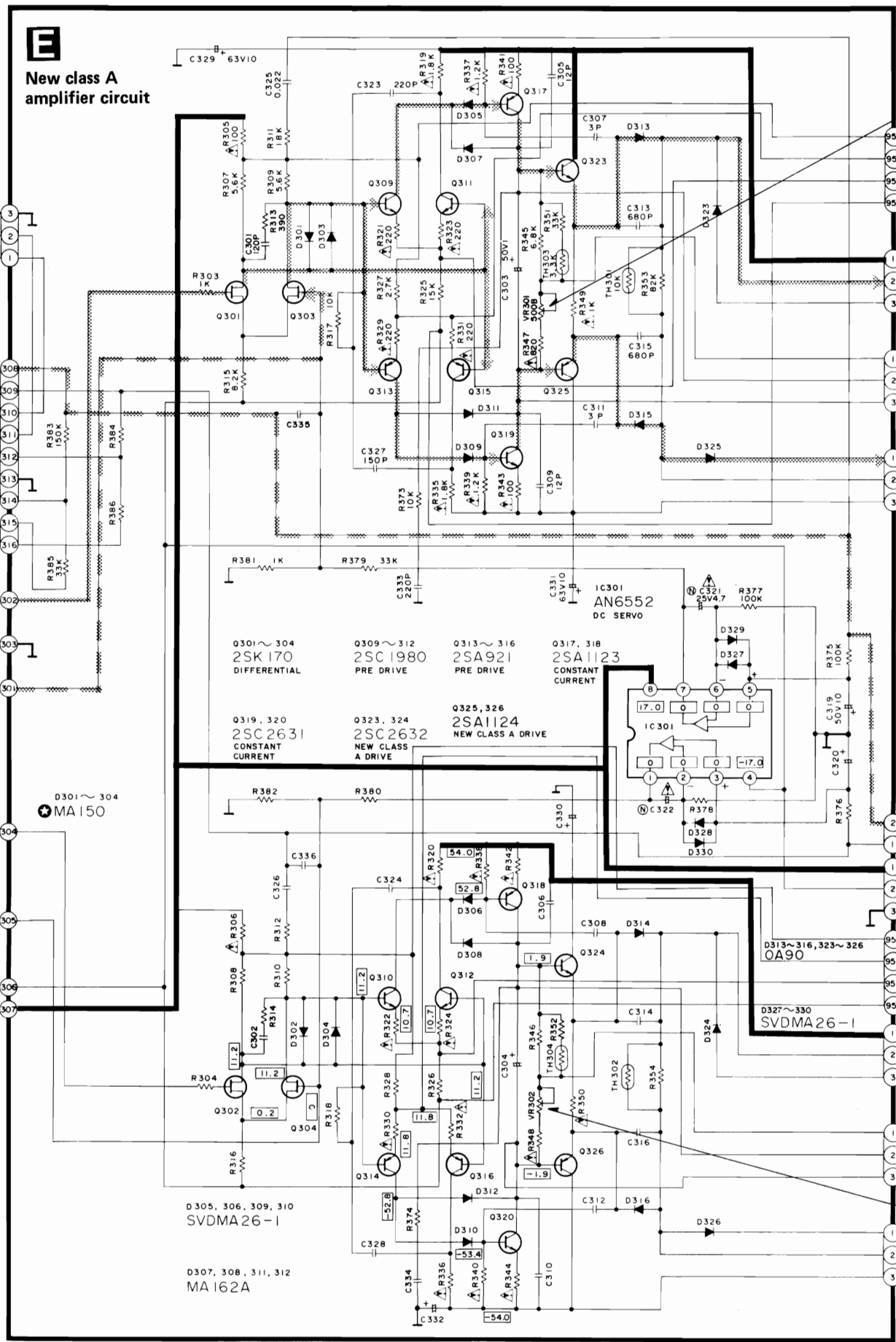
• ICQ control, Speaker protection, Speaker impedance detection and Power supply circuit



Tone and operation amplifier circuit



New class A amplifier circuit



ICQ adjustment (L ch.)

J13

J14

J15

J16

J17

J18

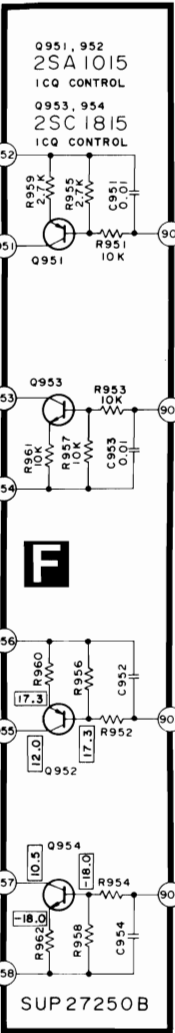
J19

J20

J21

J22

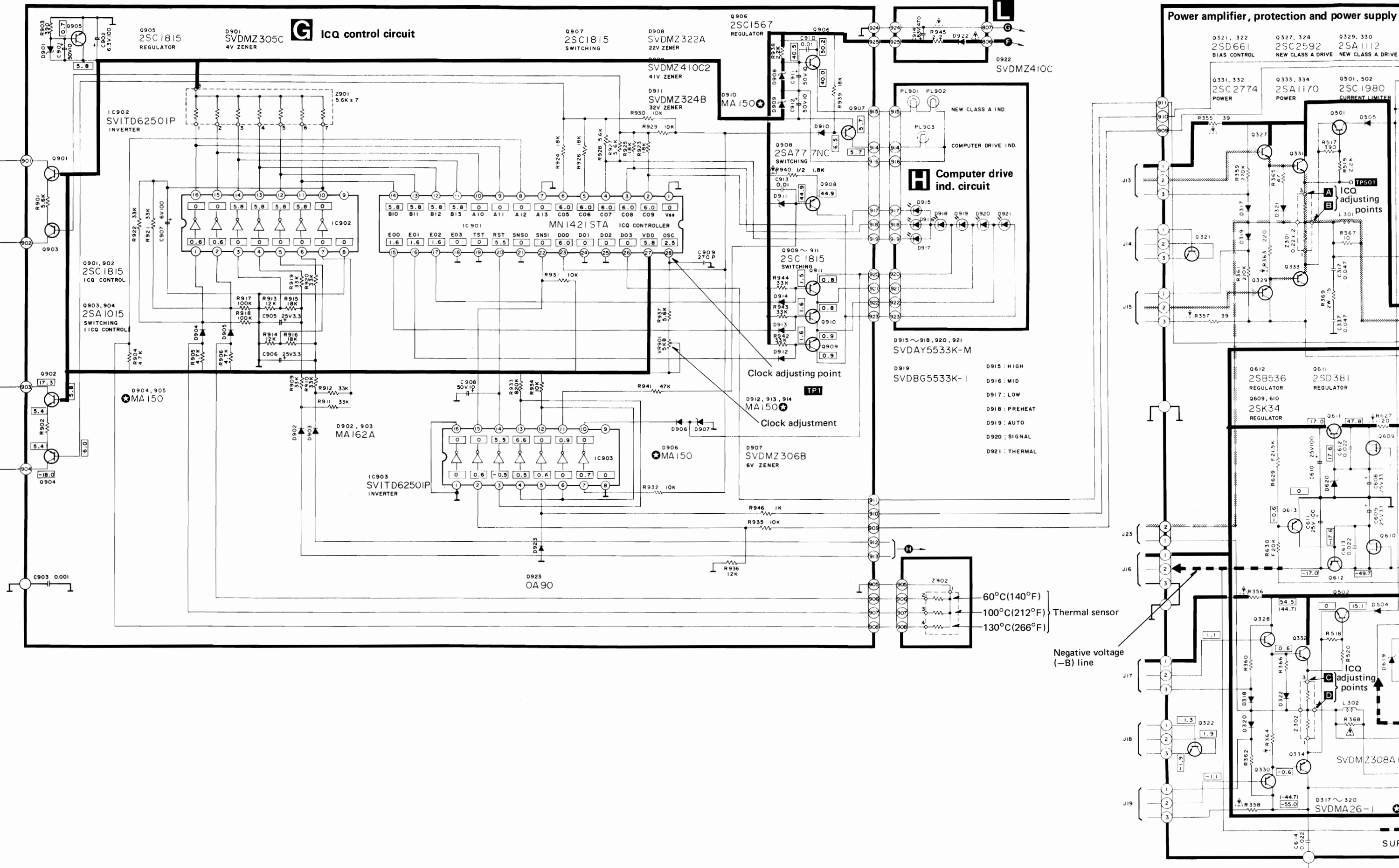
J23



SUP27250B

ICQ adjustment (R ch.)

F



ICQ control circuit

Computer drive ind. circuit

Power amplifier, protection and power supply

Clock adjusting point
TP1

Clock adjustment

Thermal sensor

Negative voltage (-B) line

ICQ adjusting points

ICQ adjusting points

RESISTORS & CAPACITORS

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders. 2. Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

3. The "S" mark is service standard parts and may differ from production parts. 4. The unit of resistance is Ω(ohm), K = 1000Ω, M = 1000kΩ. 5. The unit of capacitance is μF (microfarad). P = 10⁻⁶ μF. 6. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Table with 3 columns: Resistor Type, Wattage, Tolerance. Lists types like Carbon, Metal Oxide, Metal Film, Solid with their respective wattage and tolerance values.

Table with 4 columns: Capacitor Type, Voltage, Tolerance. Lists types like Electrolytic, Ceramic, Polyester, Non Polar Electrolytic with their voltage and tolerance specifications.

Table with 3 columns: Ref. No., Part No., Value. Lists resistor parts such as ERD25FJ150, ERD25TJ473, ERD25FJ221, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists resistor parts such as ERD25FJ182, ERD25FJ122, ERD25FJ122, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists resistor parts such as ERD25FJ562, ERD25FJ222, ERD25TJ224, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists resistor parts such as ERD25TJ223, ERD25TJ823, ERD25TJ563, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists capacitor parts such as ECQE2A473MW, ECKDKC472MF, ECKDKC472MF, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists capacitor parts such as ECCD2H120K, ECCD2H030D, ECCD2H120K, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists capacitor parts such as ECQM1H683KV, ECQM1H392JK, ECQM1H121K, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists capacitor parts such as ECQM1H473KV, ECQM1H683KV, ECEA5021, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists relay parts such as SSH1021, SSH1037, SSH159, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists relay parts such as RLY601, RLY701, SSY103-1, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists cabinet and chassis parts such as SGWUV909-SE, SGWUV909-SX, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists cabinet and chassis parts such as SHG6063-1, SUE25-1, SUB59, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists cabinet and chassis parts such as SUB53, SUW1849, SHR9575, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists cabinet and chassis parts such as SUB51, SUE23-1, SUB57, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists cabinet and chassis parts such as SUB55, SUS223, SBC339, etc.

Table with 3 columns: Ref. No., Part No., Value. Lists cabinet and chassis parts such as SBN1071, SHP9337, SDH545, etc.

REPLACEMENT PARTS LIST

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order. 2. Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts. 3. ⊗ -marked parts are used for black only, while ○ -marked parts are for silver type only. 4. Part other than ⊗ - and ○ -marked are used for both black and silver type. 5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas. 6. The ⊙ mark is service standard parts and may differ from production parts. 7. The parenthesized numbers in the column of description stand for the quantity per set. Black type model No. : SU-V909(K)

Table with 3 columns: Ref. No., Part No., Part Name & Description. Lists integrated circuits such as SVINJ4559DSM AN6552F, SVITA7317P MNI421STA, SVITD62501P, etc.

Table with 3 columns: Ref. No., Part No., Part Name & Description. Lists diodes and transistors such as 2SA1015-Y, 2SC1567-Q, 2SA777NC-R, etc.

Table with 3 columns: Ref. No., Part No., Part Name & Description. Lists coils and transformers, variable resistors, thermistors, lamps, fuses, and component combinations.

Part No.	Value
S	
ECQM1H473KV	0.047
ECQM1H683KV	0.068
ECEA50Z1	1
ECKD1H102ZF	0.001
ECEA25Z4R7	4.7
ECEA1ES101	100
ECEA1HS100	100
ECEA1AS101	100
ECKD1H102ZF	0.001
ECEA50Z3R3	3.3
ECEA1AS101	100
ECEA1HS100	10
ECCD1H271K	270P
ECKD1H103ZF	0.01
ECEA1HS100	10
ECKD1H103ZF	0.01
ECEA1JU471	470
ECKD1H103ZF	0.01
ECKD1H103ZF	0.01
ECKDKC103PF2	0.01

No. : SU-V909(K)

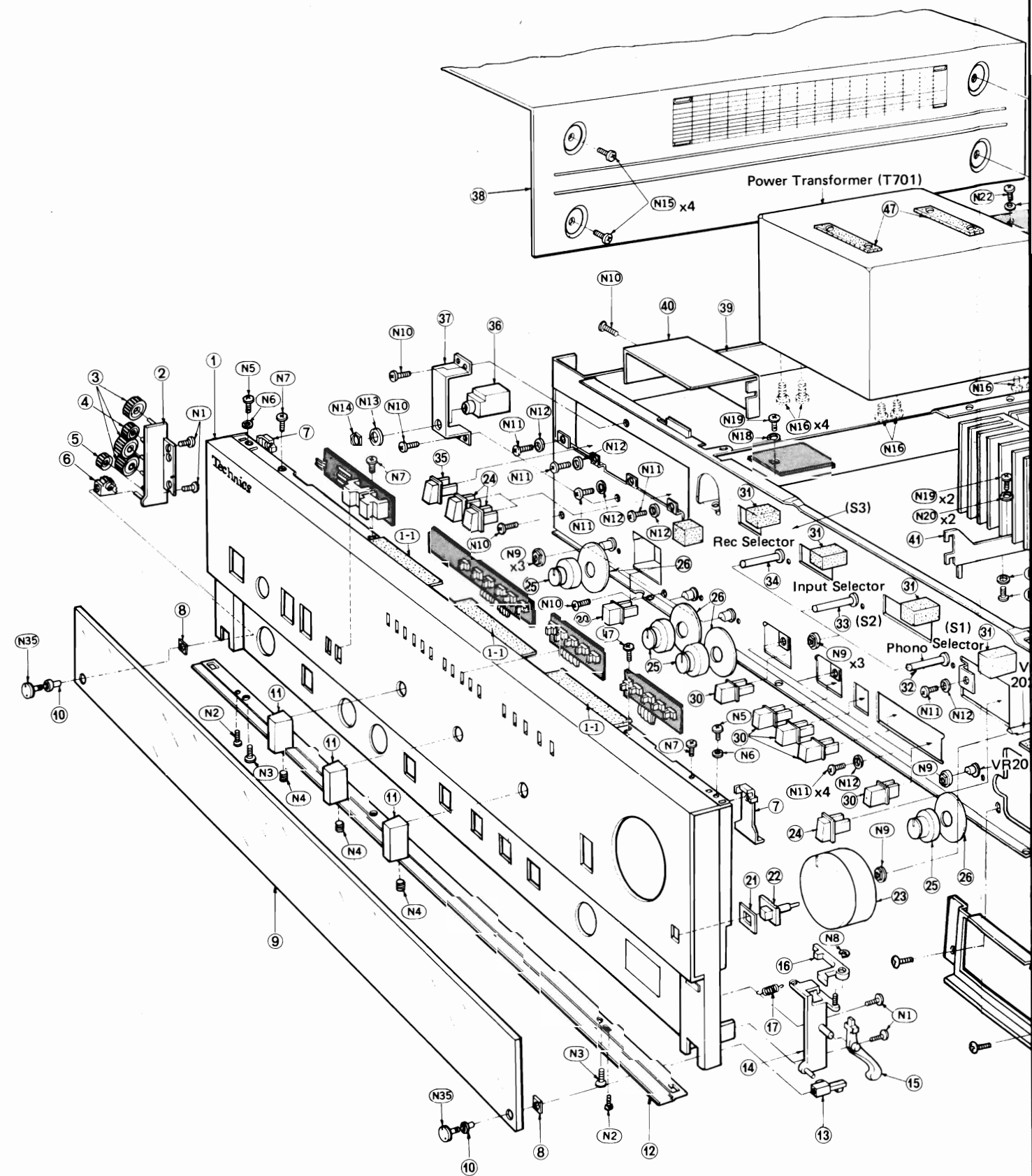
Part Name & Description
LED, Auto Ind. Rectifier
Choke Choke Power Source
Balance, 100kΩ (BH) Main, 10kΩ (B) ICQ Adj, 500Ω (B) Super Bass, 5kΩ Bass, 100kΩ (C) Treble, 100kΩ (C) Voltage Adj, 5kΩ (B) Load Detector, 10kΩ (B) Clock Adj, 5kΩ (B)
10kΩ 3.3kΩ
New Class A, 12V, 0.055A
250V, T4A
3W, 0.22Ω (×2) 5.6kΩ (×7) Temperature Det. (60°C, 100°C, 130°C)
Phono Selector Input, Rec Selector High Filter, Mode, Loudness and Subsonic Filter

Ref. No.	Part No.	Part Name & Description
S6	SSH1021	Muting Operation
S9	SSH1037	Operation Turn Over
S10	SSH159	Speaker
S11,12	SSH2027-2	Power Source
S13	ESB90227S	Voltage Selector
S14	ESE37200	
RELAYS		
RLY601	SSY103-1	Tap Select
RLY701	SSY99-1	Speaker Protection
CABINET and CHASSIS PARTS		
1	SGWUV909-SE	Front Panel Ass'y (1)
[PA, PE]		
1	SGWUV909-SX	Front Panel Ass'y (1)
[XA, PC]		
1	SGWUV909-KC	Front Panel Ass'y (Black) (1)
[K-PC]		
1-1	SHG6063-1	Spacer, Front Panel Ass'y (2)
2	SUE25-1	Holder, Gear (1)
3	SUB59	Gear (3)
4	SUB65	Gear (1)
5	SUB63	Gear (1)
6	SUB53-2	Hinge, Tinted Class (1)
6	SUB53	Hinge, Tinted Class (1)
7	SUW1849	Bracket, Front Panel Ass'y (2)
8	SHR9575	Spacer, Tinted Class (2)
9	SGU247	Tinted Class (1)
10	SHG6131	Spacer, Latch (2)
11	SBN1151	Knob, Selector Switch (3)
12	SGX915	Ornament, Bottom (1)
12	SGX915-1	Ornament, Bottom (1)
13	SUB51-2	Hinge, Operation Lever (1)
13	SUB51	Hinge, Operation Lever (1)
14	SUE23-1	Holder, Operation Lever (1)
15	SUB57	Operation Lever, Tinted Class (1)
16	SUB55	Operation Lever, Tinted Class (1)
17	SUS223	Spring, Operation Lever (1)
18	SJT347	Crip, Fuse (3)
19	SUW2081	Bracket (1)
20	SUW2079	Bracket (1)
21	SHG6129	Spacer, Button (1)
22	SBC421	Button, Operation (1)
23	SBN1149	Knob, Volume (1)
24	SBC339	Button, Muting, Speaker Selector (3)
25	SBN1071	Knob, Super Bass, Bass, Treble, Blance (4)
26	SHP9337	Spacer, Knob (4)
27	SDH545	Reflector Plate (1)
28	SHG6127-2	Cushion Rubber (1)
29	SHP9299	Spacer, Volume Knob (1)
30	SBC409	Button, Push Switch (6)
31	SHG6199	Cushion Rubber (5)
32	ESA3398B	Remote Control, Phono Selector (S1) (1)
33	ESA3397B	Remote Control, Input Selector (S2) (1)
34	ESA3396B	Remote Control, Rec Selector (S3) (1)
35	SBC337-1	Button, Power (1)
36	XCJ6P21B-A1	Jack, Headphone (1)
37	SUW1847	Bracket, Headphone (1)
38	SKC850S1	Cabinet Cover (1)
38	SKC850B1	Cabinet Cover (Black) (1)
39	SML107-3	Bracket, Power Transformer (1)
40	SMC947	Shield Cover (1)
41	SUW1851-1	Bracket, Heat Sink (1)
42	SUW1857	Bracket, Heat Sink (1)
43	SUW1851	Bracket, Heat Sink (1)

Ref. No.	Part No.	Description & Pcs.
44	SMX513	Spacer, Transistor (4)
45	SUW1855	Bracket, Electrolytic Capacitor (1)
46	SUW1975	Bracket, PCB Holder (1)
47	SHG6087-1	Rubber, Power Transformer (2)
48	SHG6343	Spacer (1)
49	SGP2850-7A	Rear Panel (1)
50	SMX387	Spacer, Rear Panel (2)
51	SHR127	Bushing, AC Cord (1)
52	RJA52Z	AC Cord (1)
[PA, PE]		
52	SJA111	AC Cord (1)
[XA, PC]		
53	SJS601-2	Socket, AC Outlet (1)
54	SJF4101	Terminal, GND (1)
55	SJF4813-2	Terminal Board, Speaker Bracket, PCB Holder (1)
56	SUW1853	Terminal Board, Input(1) (Phono)
57	SJF3431-6SA	Terminal Board, Input(1) and Output
58	SJF3049-2N	Terminal Board, Input(1) and Output
59	SKU8990-1	Bottom Board (1)
60	SKL227-2	Foot (4)
61	SMC939-2	Shield Plate (1)
62	SHG6229	Rubber, Right Side (2)
63	SMX507	Insulation Sheet (1)
64	SHR301	Lead Clamper (10)
65	SMX685	Cover (2)
SCREWS, NUTS and WASHERS		
N1	XTB3+5BFZ	Screw, Tapping (4)
N2	XTB3+8BFN	Screw, Tapping (2)
N3	XTB3+8BFZ	Screw, Tapping with Detent (2)
N4	XXE4D5FZ	Screw, Knob (Selector Switch) (4)
N5	XSN3+6S	Screw, (3x6) (2)
N6	XWA3B	Washer, Spring φ3 (2)
N7	XTB3+8BFZ	Screw, Tapping (4)
N8	XUC3FT	Circlip, φ3 (1)
N9	SNE4021	Nut, (Volume and Switch) (8)
N10	XTB3+8BFZ	Screw, Tapping with Detent (7)
N11	XSN3+6S	Screw, (3x6) (9)
N12	XWA3B	Washer, Spring φ3 (9)
N13	SNE59-1	Washer, Wave (1)
N14	XNS12	Nut, φ12 (1)
N15	XTB4+8BFN	Screw, Tapping (8)
N15	XTB4+8BFZ	Screw, Tapping (8)
N16	XTB4+10BFN	Screw, Tapping (8)
N17	XTN3+10B	Screw, Tapping (1)
N18	XWG3	Washer, Plain φ3 (1)
N19	XTN3+10BFZ	Screw, Tapping (13)
N20	XWG3FZ	Washer, Plain φ3 (13)
N21	XTB3+8BFZ	Screw, Tapping with Detent + 3x8 (4)
N22	XTN3+10B	Screw, Tapping (1)
N23	XWG3	Washer, Plain φ3 (1)
N24	XTB3+8BFZ	Screw, Tapping (13)
N25	XTN3+12BFZ	Screw, Tapping (8)
N26	XWG3FZ	Washer, Plain φ3 (8)
N27	XSN3+10BNS	Screw, (3x10) (5)
N28	XWA3BFN	Washer, Spring φ3 (5)
N29	XWG3FN	Washer, Plain φ3 (5)
N30	XWC6B	Washer, External (1)
N31	XNG6E	Nut, φ6 (1)
N32	XTB3+10BFZ	Screw, Tapping (4)
N33	XTB3+8BFZ	Screw, Tapping (1)

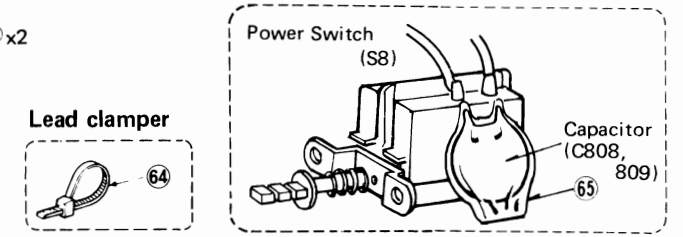
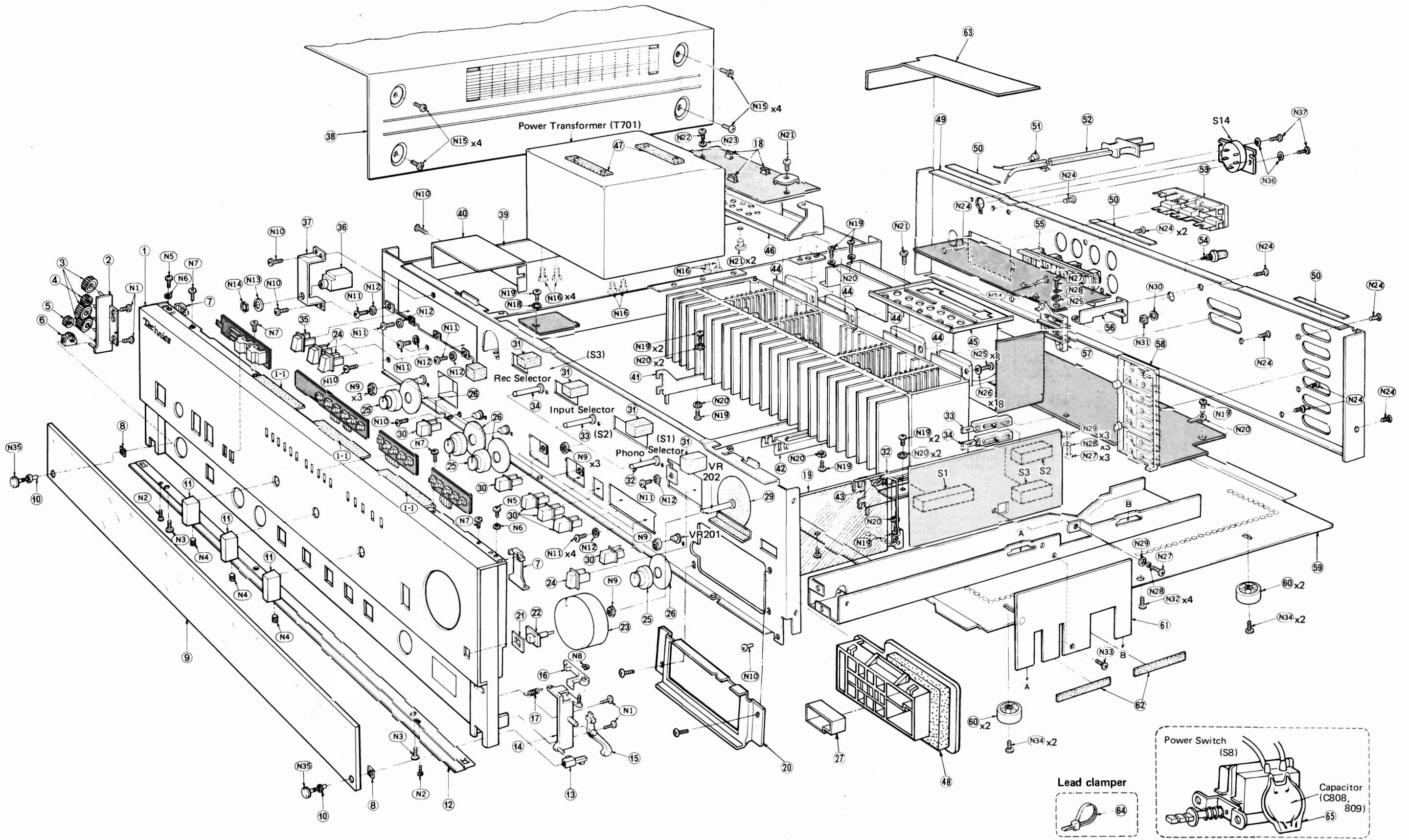
Ref. No.	Part No.	Description & Pcs.
N34	XTB3+12BFZ	Screw, Tapping (4)
		⊕ 3x12
N35	SNE2083-1	Screw, Tinted Class (2)
N35	SNE2083	Screw, Tinted Class (2)
N36	XWA3BFZ	Washer, Spring φ3 (2)
N37	XSN3+6BVS	Screw, (3x6) (2)
ACCESSORIES		
A1 [XA, PC] only	SJP5213-1	Plug Adaptor, AC Power (1)
A2 [XA, PC] only	SJP5215	Plug Adaptor, AC Power (1)
A3 [PA, PE]	SGF11753	Instruction Book, Printed Matter (1)
A3 [XA, PC]	SGF11755	Instruction Book, Printed Matter (1)
PACKING PARTS		
P1	SPP701	Polyethylene Bag (1)
P1	SPP689	Polyethylene Bag (1)
P2	SPS3327	Pad, Left Side (1)
P3	SPS3329	Pad, Right Side (1)
P4	SPG4465	Carton Box (1)
P5	SGK1413	Label, Carton Box (Black) (1)
P6	SPS3467	Pad, Front (1)

EXPLODED VIEW



EXPLODED VIEW

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