3963

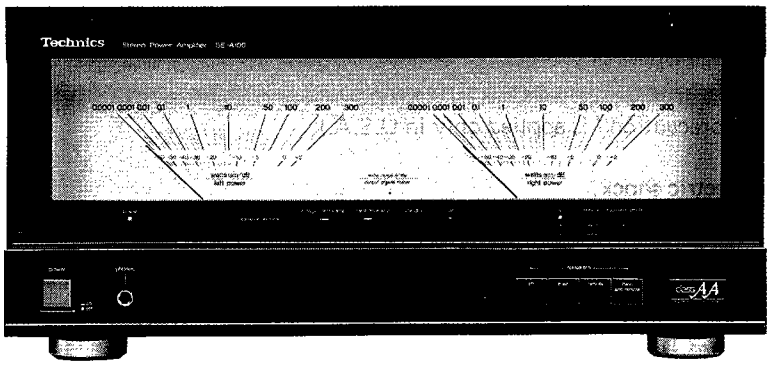
ORDER NO. HAD8603425C1
A3

Service Manual

Amplifier

SE-A100

Stereo Power Amplifier



Color

(K) . . . . Black Type

Color	Area
(K)	[M] . . . . U.S.A.
(K)	[MC] . . . Canada

SPECIFICATIONS

(IHF '78)

■ AMPLIFIER SECTION

Rated minimum sine wave RMS power output
20 Hz~20 kHz both channels driven
0.0007% total harmonic distortion
170W per channel (8 ohms)
20 Hz~20 kHz both channels driven
0.002% total harmonic distortion
240W per channel (4 ohms)

1 kHz continuous power output	
both channels driven	
0.0007% total harmonic distortion	170W per channel (8 ohms)
0.002% total harmonic distortion	240W per channel (4 ohms)
Dynamic headroom	0.7 dB (8 ohms)
	0.9 dB (4 ohms)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.0007% (8 ohms)
rated power at 20 Hz~20kHz	0.002% (4 ohms)
half power at 20 Hz~20 kHz	0.0007% (8 ohms)
half power at 1 kHz	[less than 0.0002% (8 ohms)]
Power bandwidth	
both channels driven, −3 dB T.H.D. 0.01%	5 Hz~100 kHz (8 ohms)
Transient intermodulation distortion	unmeasurably small
SMPTE intermodulation distortion	0.002% (8 ohms)
Frequency response	20 Hz~20 kHz (+0 dB, −0.1 dB)
	0.8 Hz~150 kHz (+0 dB, −3 dB)
Input sensitivity	75 mV (1V, IHF '66)
S/N (IHF, A)	97 dB (120 dB, IHF '66)
Residual hum and noise	0.3 mV
Input impedance	47 kilohms
Low frequency damping factor	120 (8 ohms)
	60 (4 ohms)
Load impedance	
MAIN or REMOTE	4~16 ohms
MAIN and REMOTE	8~16 ohms
Meter	
reading range	0.0001W~300W
	−60 dB~+2 dB
	(logarithmic compression)
frequency response (reading accuracy)	
	20 Hz~20 kHz ±3 dB (more than −40 dB)
	20 Hz~20 kHz ±5 dB (less than −40 dB)
attack time	100μ sec
recovery time (0dB → −20dB)	300msec

■ GENERAL

Power consumption	770W, 980 VA
Power supply	AC 120V, 60 Hz
Dimensions (W×H×D)	430 x 209 x 475 mm
	(16-15/16" x 8-1/4" x 18-11/16")
Weight	31.2 kg
	(68.64 lb.)

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

Specifications are subject to change without notice for further improvement.

Technics

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■ CONTENTS

■ SAFETY PRECAUTION

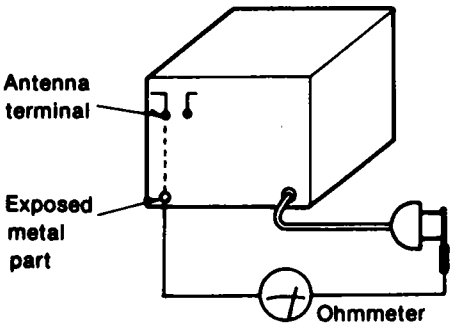
(This "safety precaution" is applied only in U.S.A.)

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

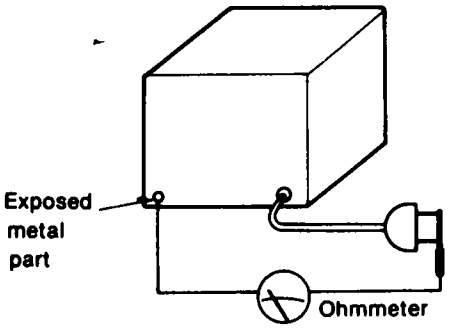
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ 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 = 3MΩ—5.2MΩ



(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.

Explanation on the New "class AA" Circuit Technology/Service hint

● Background of the "class AA" circuit development

A new approach to better characterisitics of an audio amplifier has been noted recently. It is shown as the measurement data where speakers may be used for the load of an amplifer instead of a conventional pure resistance load.

Some methods of evaluating the characteristics of an amplifier by changing the load conditions are being tried.

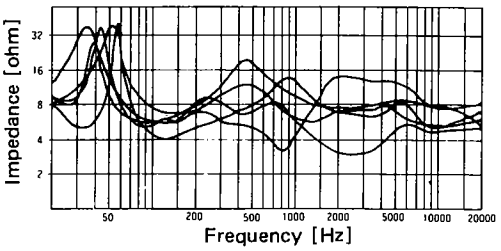
For instance, there are measurement data of the output (continuous output and instantaneous output) at load resistances of not only 8Ω but also 4Ω and 2Ω of lower resistance values.

There are also measurement data of the change of the output and distortion factor, when the phase of the drive voltage and current are changed by using a reactance load.

Furthermore, there are measurement data of the maximum drive power when various speakers are connected to an amplifier and a mixed signal of square wave and sine wave is applied to the input for sound reproduction by speakers.

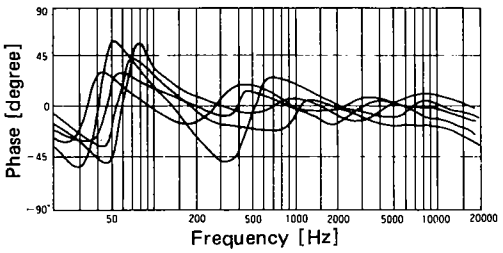
These methods are used because speakers used for reproducing music exhibit completely different characteristics from a pure resistance load which has been used for the measurement of amplifiers. That is, the impedance changes greatly according to the frequency (refer to Fig. 1), and therefore the phase difference between the drive voltage and the drive current changes complicatedly (refer to Fig. 2).

	Speaker	Pure Resistance
Impedance	The impedance change with the frequency (Fig. 1). There is a point of frequency where the impedance is considerably lower than the nominal impedance.	Does not change with the frequency.
Drive voltage-Drive current phase	Phase deviation occurs. The phase deviation changes with the frequency (Fig. 2).	No phase deviation occurs.
Drive voltage-Drive current waveform	Different (Fig. 4)	Same (Fig. 3)



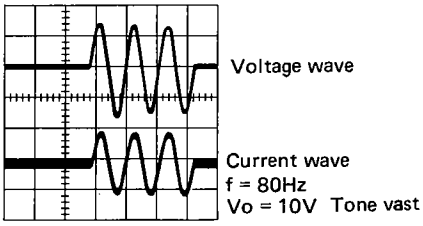
Frequency characteristic of speakers impedance

Fig. 1



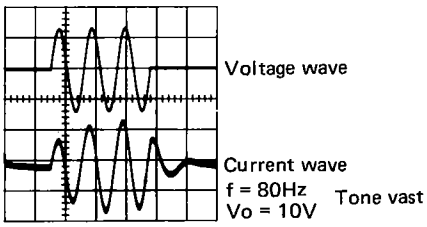
Frequency characteristic of phase of speaker

Fig. 2



Voltage and current wave-form at 8 ohms load

Fig. 3



Voltage and current wave-form at speaker load

Fig. 4

Also, the voltage waveform differs from the current waveform due to the inverse electromotive force of the speaker, thus the speaker is a very complex load to the amplifier (refer to Fig. 3 and Fig. 4). For the improvement of the reproducing performance, therefore, it is important to observe the characteristics of an amplifier under conditions closer to the actual operation by changing the load conditions.
Measurement data recently taken by such new methods show that there are differences in the capability of reproduction between amplifiers. This is because change of the output current according to the load condition influences the voltage amplification characteristics of the amplifier.
It is also because the degree of the influence of the voltage amplification characteristics, as well as the current supply capacity of the amplifier, on the output current differs according to the amplifier.
Also, for an class A amplifier, it is known that the output signal voltage distortion is minimum at no load, increasing as the output current increases by changing the resistance load to 16Ω, 8Ω and 4Ω. The change in the characteristic will be more complicated in the case of a speaker load which exhibits complex characteristics.
As a result, for the ideal power amplifier, it is most important that two necessary functions: distortionless voltage amplification and sufficiently large energy-supplying current amplification, be made co-existent under the condition of speaker operation.
The new "Class AA" circuit fully satisfies these condtions.

The circuit has been developed by combining two amplifiers: a class A amplifier of no-load condition which can exhibit the ideal voltage characteristic and an amplifier which has great current drive power.

• Principle of the "class AA" operation

The "Class AA" system, as described previously, consists of two types of amplifiers: the voltage control amplifier of pure class A operation and the current supply amplifier to supply current to the speaker. The voltage control amplifier, being released from the heavy load of "current supply", controls the voltage exactly in accordance with the input signal, while the current drive amplifier supplies the required current with a margin, so that excellent transmission characteristics are obtained with a speaker load.

w, a detailed explanation will be given using Fig. 5 about
e principle of the "Class AA" operation.
e "Class AA" system consists of two amplifiers of different
eration modes: a constant voltage amplifier and a constant
rrent amplifier. They are combined by means of the "Class
' bridge network.
e constant current amplifier, which is called the current
ve amplifier, receives the input signal from the voltage
ross both ends of the network bridge, and supplies the output
rrent to the other end of the bridge. Therefore, it operates
the constant current source to output the current which is
portional to the speaker output current as shown by Equation
in Fig. 5.
e voltage control amplifier of pure class A operation works
the constant voltage source where NFB is applied from the
eaker output terminals by connecting the amplifier output

one end of the "Class AA" bridge. The conventional
olifier, which is shown in Fig. 6, uses the same circuit
r the output circuit to supply the output current and for
e circuit to control the output voltage. Therefore, the
rrent from the output circuit influences the voltage
olifying stage, causing deterioration of the transmission
aracteristics, such as occurrence of distortion in the
tput signal.
the "Class AA" operation, all the speaker driving current
supplied from the current drive amplifier when the bridge
balaced as shown by Equation (3) in Fig. 5. Accordingly,
e voltage control amplifier is released from the heavy
ad of current supply, so that it controls the voltage to
tain an output exactly in accordance with the input signal
der the condition of "Zero" output current.
e current drive amplifier, which has sufficient capacity
th a margin to supply current required for driving the
eaker, together with the voltage control amplifier which
erates in the ideal condition of pure class A operation,
s achieved excellent transmission characteristics of
iginal pure class A operation which have never been obtained
the conventional class A amplifier.

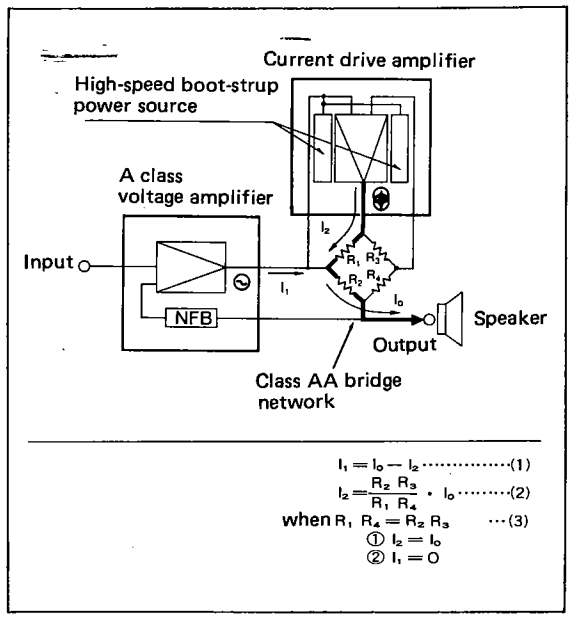
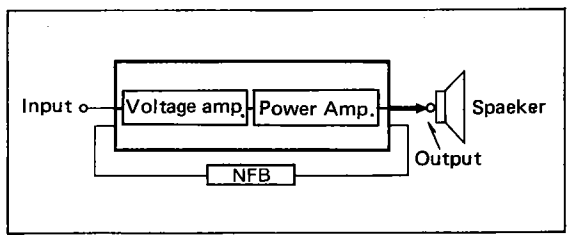
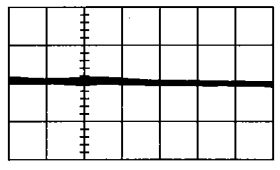


Fig. 5



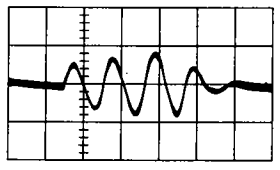
Conventional amplifier

Fig. 6



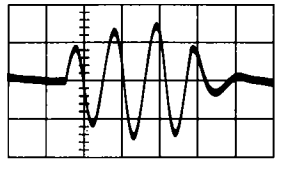
Class AA voltage amp.

Fig. 7



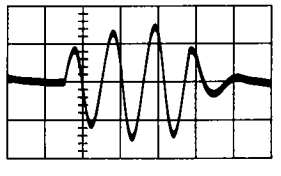
Conventional voltage amp.

Fig. 8



Class AA current drive amp.

Fig. 9



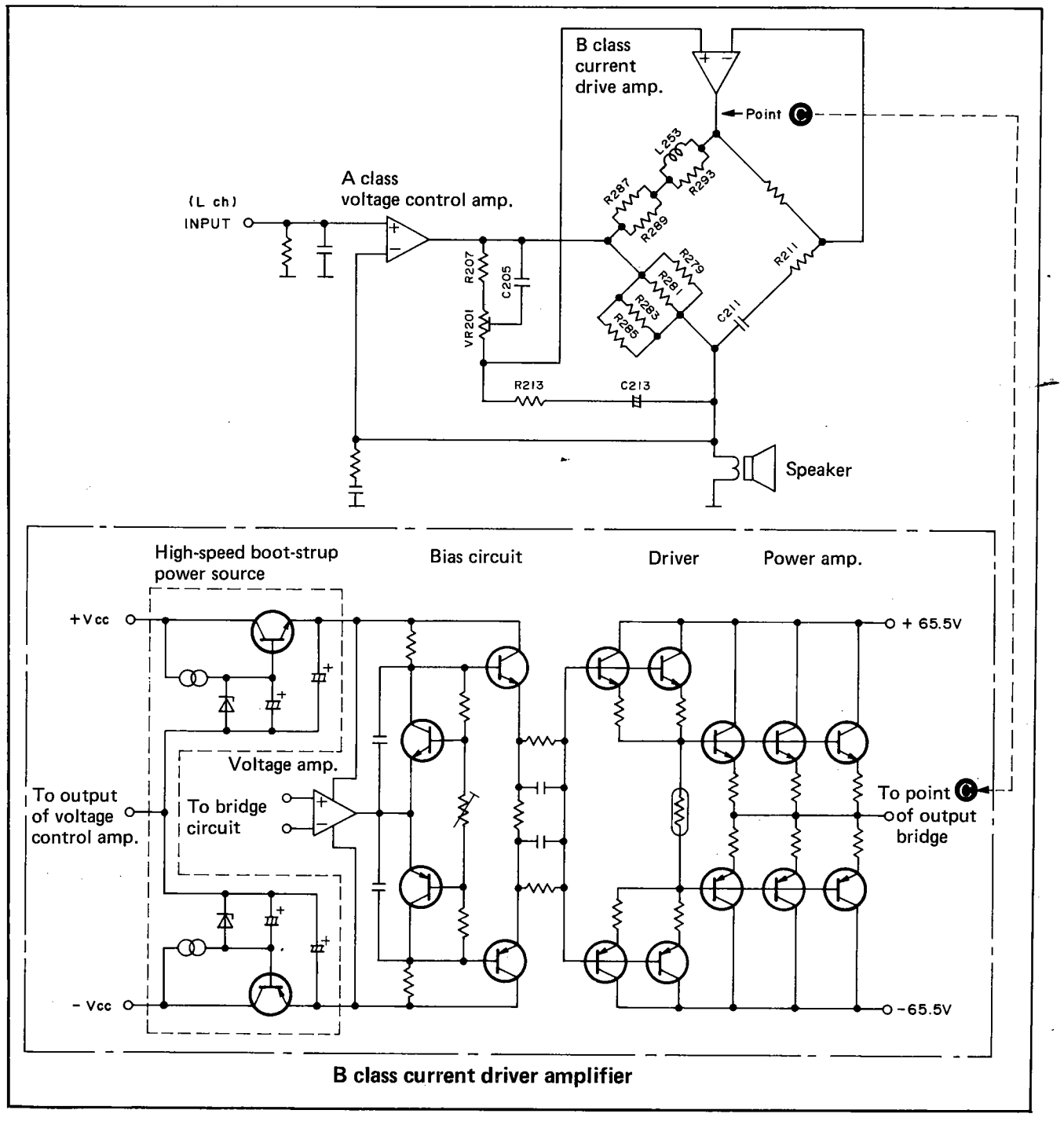
Conventional amp. output stage

Fig. 10

The SE-A100 amplifier has a current drive amplifier circuit consisting of a high through-rate input stage, a 4-stage Darlington output stage, and a newly developed feed-forward type bootstrap power source circuit. It is a high-power-output constant-current amplifier with 50A/μs high speed and ultra-low distortion.

Fig. 7 to Fig. 10 show the output current of the voltage control amplifier and current drive amplifier.

• Bridge Circuit



B class current driver amplifier

SERVICE HINT

uipment used

cilloscope
ltage controller (Variable AC power supply)
dio frequency oscillator (AF OSC)
electronic voltmeter (EVM)
mmy resistor (8Ω, 100W)
sistor (10Ω, 10W)

Check Procedure when Output Signal is Not Delivered or orted

witch off the power supply. (Set the voltage controller o 0 V.)

emove the top and bottom boards.

emove the PCBs F, G, E, and H.

aise the primary power supply voltage gradually and heck voltages at the pins (314), (316), (317), (310), (320), and (22).

heck if voltages at the pin (314), (317), and (320) are about 3 V and those at the pins (316), (319), and (322) are about 33 V when the primary power supply voltage is 60 V.

f yes, the PCBs A, B, and C are normal.

f voltages at the pins (314) and (316) are not about ±33 V, heck the PCB A and the power source.

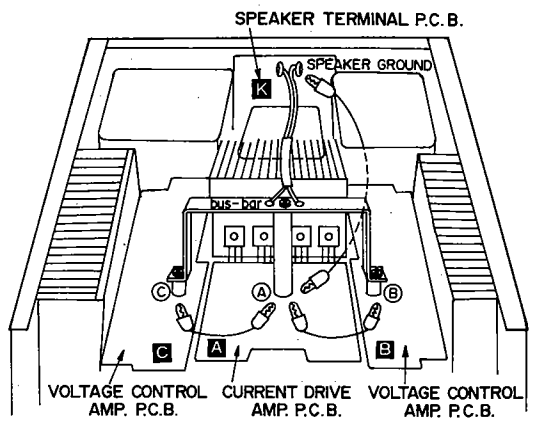
f voltages at the pins (317) and (319) are not about ±33 V, heck the PCB C and the power source.

f voltages at the pins (320) and (322) are not about ±33 V, heck the PCB B and the power source.

f the above step 5 check is satisfactory, set the rimary voltage to 0 V and discharge the capacitors C301 to C308, C309, and C310).

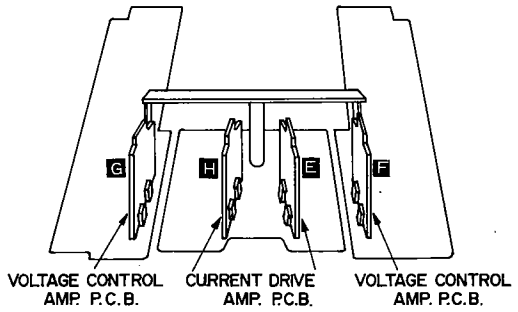
nstall the PCBs F and G.

aise the primary power supply voltage gradually to 60 V nd check voltages at the pins (314) and (316). If the voltages do not rise, check the PCBs E and A or G and A.

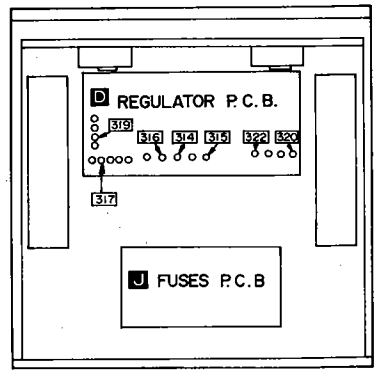


[Fig. 1]

Note: When the bus-bar is removed at checking, connect the Ⓐ, Ⓑ, Ⓒ, and the loudspeaker ground terminal with clips as shown in Fig. 1.



[Fig. 2]



[Fig. 3]

9. If the voltages at the pins (314) and (316) are about ±33 V, raise the primary power supply voltage to 120 V and apply a signal 1 kHz 0.3 V to the input terminal. Check waveforms at the loudspeaker terminals.
   (Output voltage: About 11 V)
   The PCBs A F and G are normal if the following waveforms are obtained.

   No load 

   8-ohm load 

10. Set the primary power supply voltage to 0 V and discharge the capacitors (C301 to C308, C309, and C310).
11. Instal the PCBs E and H.
12. Raise the primary power supply voltage gradually to 60 V, and check if the voltages at the pins (317) and (320) are about 33 V and those at the pins (310) and (322) are about -33 V. If the voltages do not rise, check the PCBs E and B or H and C.
13. If the step 12 check is satisfactory, apply a signal as in the step No. 9.
    The circuits are normal if the following waveforms are obtained.

    No load 

    8-ohm load 

    Check the PCBs E and B, or H and C again if the following waveform  is developed.

Cautions: •Be sure that the earth (grounding) line (bus-bar) is positively connected when conducting the above checks.
•Don't install the PCBs E and H when the PCBs F and G are removed.

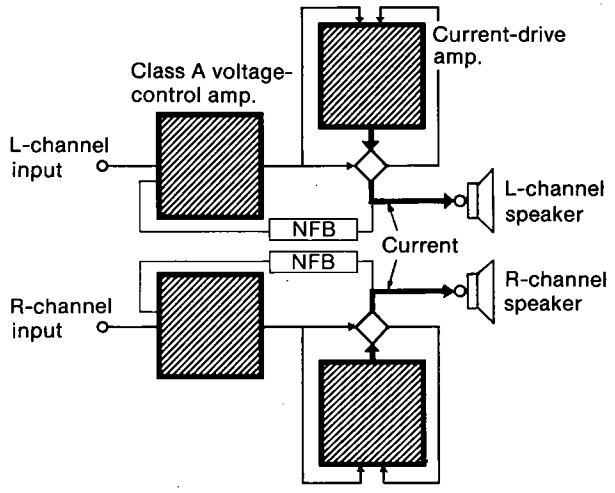
Printed in Japan
860301300 Ⓚ YY

■ FEATURE

The assigned mission of the power amplifier is to see that the speaker systems are driven exactly according to the input signals. This may seem simple, but in reality is all the more difficult for its seeming simplicity.
Moreover, this assignment has no real meaning unless it can be accomplished when sharp level fluctuations and various frequency components included in music signals are reproduced by speakers with various unstable elements.
Technics has cleared up these problems through the application of its vast technological resources and its new concepts.
The amazing answer is the class AA SE-A100 amplifier with its pure class A sound and its overwhelming speaker drive capacity.

VC4 amplifier composition. class AA equipped.

This unit has the VC4 amplifier composition ... with voltage-control amplification, class A operation in which the problems of switching distortion and crossover distortion are finally a thing of the past, plus current-drive amplification to supply the current necessary for dynamic drive of the connected speaker systems.
Thus, the voltage-control amplifier is freed of the burden of current supply, leaving it free to supply voltage faithful to incoming signals.
The characteristic of the amplification element is therefore displayed at its finest, and distortion is so low as to be virtually unmeasurable, even by highly precise instruments.
The current-drive amplifier is, on the other hand, free to supply all the current needed for speaker drive. Impedance fluctuations, phase shifts and reverse electromotive forces at every frequency point have no effect, all having been removed in order to assure a clear and stirring sound filled with high-fidelity power under any condition.



VC4 amplifier composition

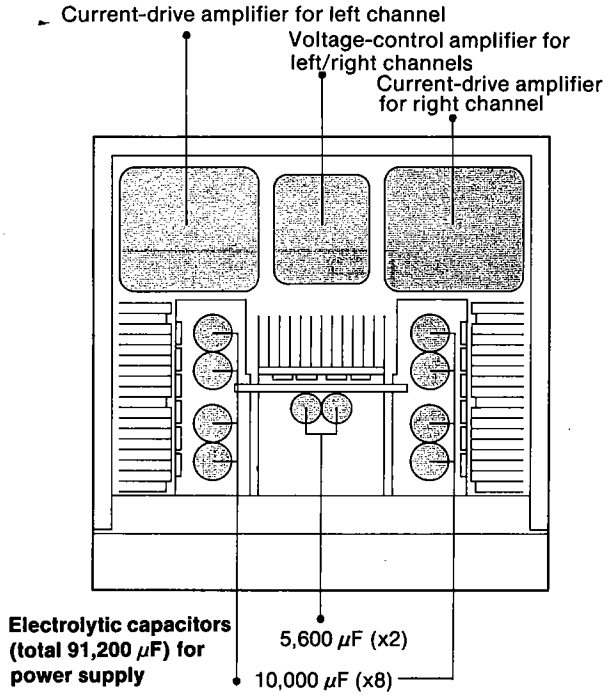
170W + 170W/0.0007% ... truly high performance

The high class AA performance is plainly expressed by the specs: high power of 170W + 170W (20 Hz ~ 20 kHz, 8Ω), and low distortion of 0.0007% (20 Hz ~ 20 kHz, 8Ω), an unrivalled rating that tells it all.
The dynamism of music can freely express itself until the whole body vibrates ... and the subtle nuances of music are expressed until covered by reverberations.

Luxuriously furnished as only the finest amplifiers would be

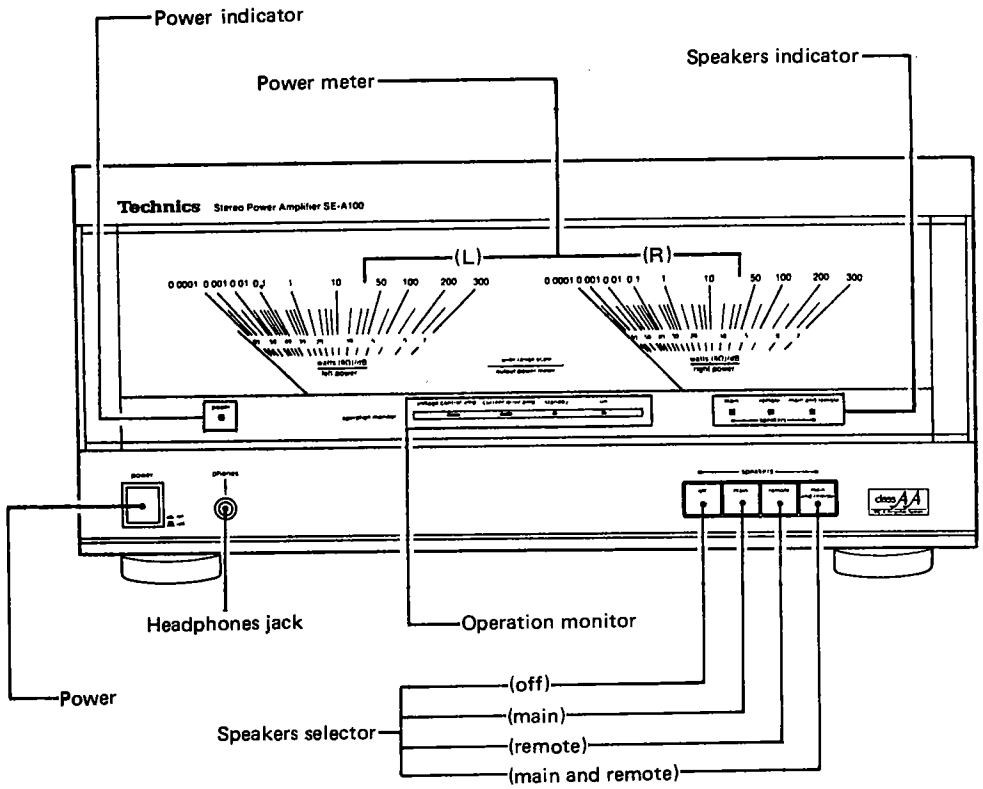
Beginning with the highly precise, large power meter traditional to Technics power amplifiers, and continuing with such features as the powerful power supply which uses three large transformers and high-capacity electrolytic capacitors, the LC-OFC internal wiring material, the gold clad contact relays for electronic speaker switching, and the heavy top panel for minimizing magnetic radiation and mechanical vibration ... every part of every circuit has been made to the finest possible specifications to make this the finest and most luxurious power amplifier you could want.

Three transformers

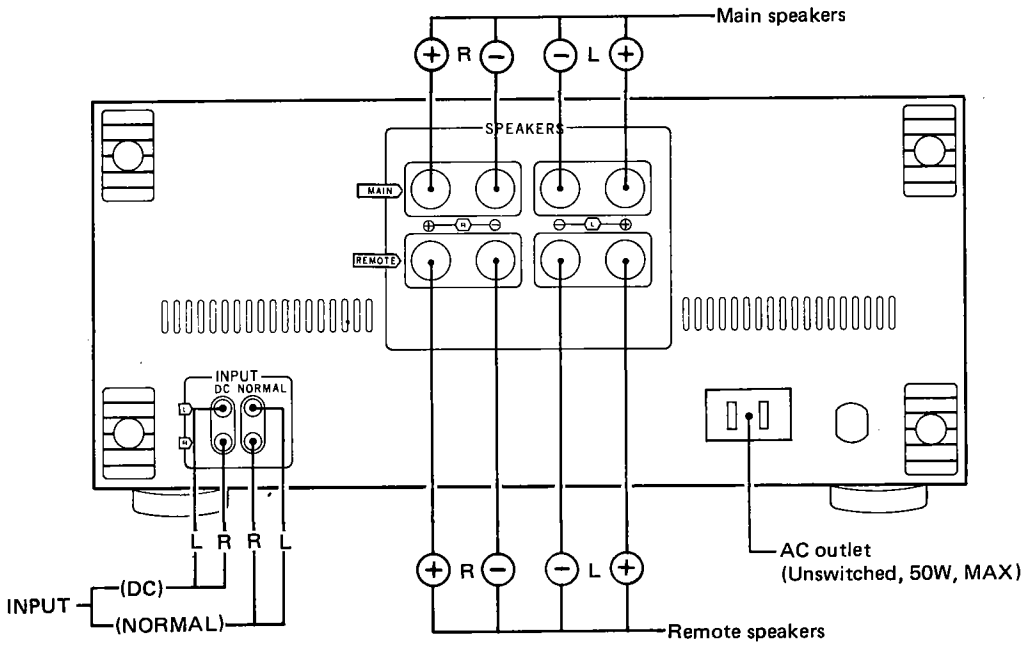


SE-A100 internal construction

■ LOCATION OF CONTROLS

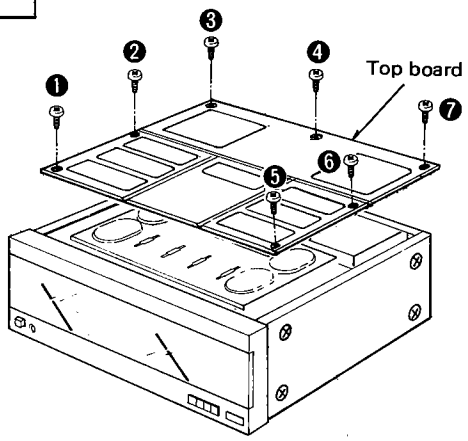


- If only the main or the remote speaker system is used (4 ~ 16Ω)
- If both the main and remote speaker system are used (8 ~ 16Ω)

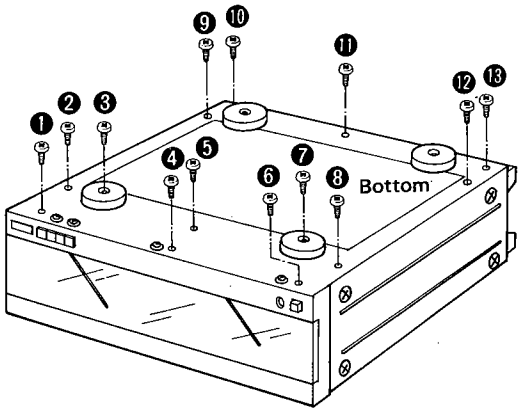


■ DISASSEMBLY INSTRUCTIONS

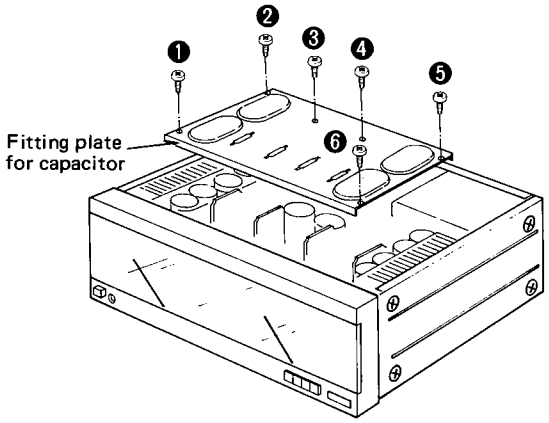
Ref. No. 1	How to remove the top boards
Procedure 1	• Remove the 7 setscrews (❶ ~ ❼).



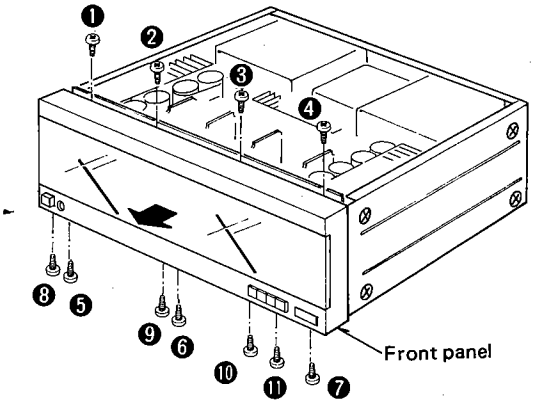
Ref. No. 2	How to remove the bottom board
Procedure 1 →2	• Remove the 13 screws (❶ ~ ⓭).



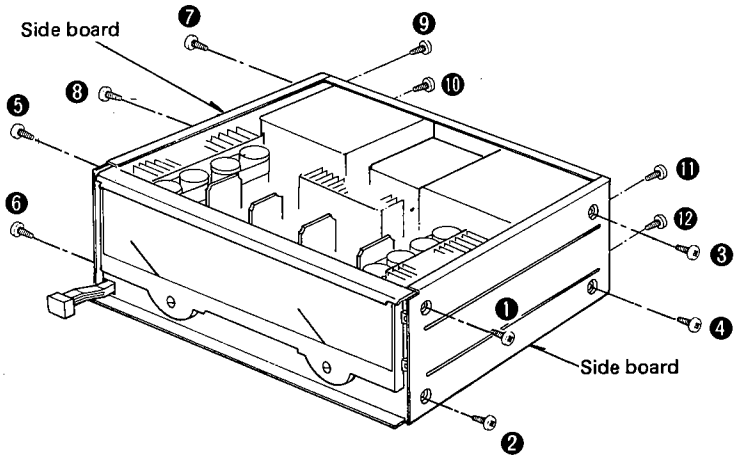
Ref. No. 3	How to remove the fitting plate for capacitor
Procedure 1 →2 →3	• Remove the 6 screws (❶ ~ ❻).

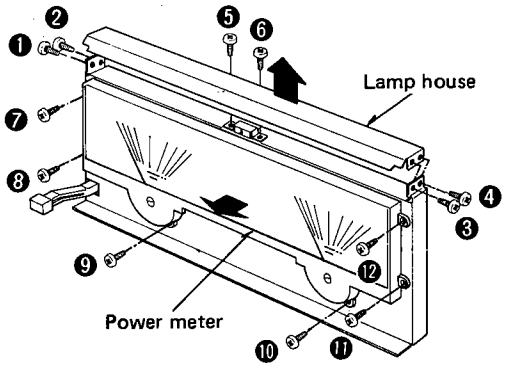


Ref. No. 4	How to remove the front panel
Procedure 1 →4	1. Remove the 11 screws (❶ ~ ⓫). 2. Remove the front panel.

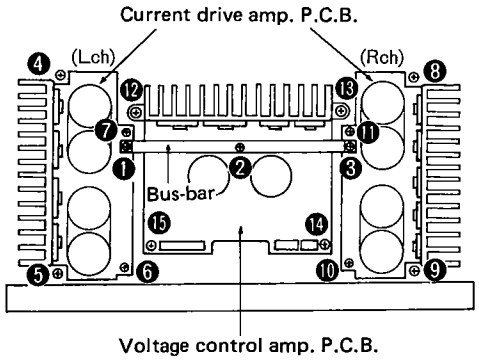


Ref. No. 5	How to remove the side board, lamp house and power meter
Procedure 1 →4 →5	1. Remove the 4 screws (❶ ~ ⓬). 2. Remove the 4 screws.(❶ ~ ❹). 3. Remove the lamp house. 4. Remove the 8 screws.(❺ ~ ⓬). 5. Remove the power meter.

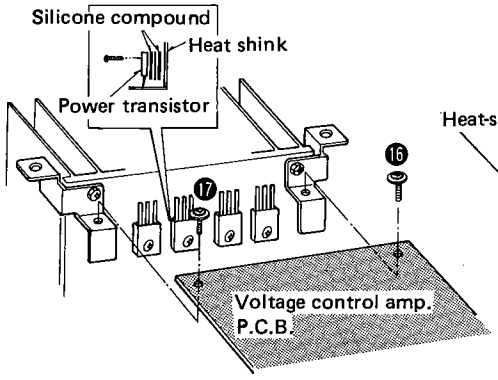




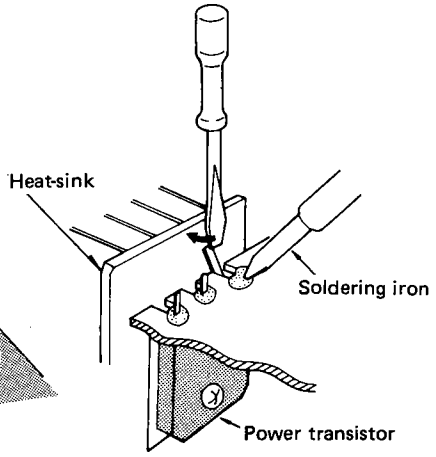
Ref. No. 6	How to remove the power transistor, voltage control amp. P.C.B. and current drive amp. P.C.B.
Procedure 1 →6	1. Remove the 3 screws. (❶ ~ ❸) 2. Remove the bus-bar. 3. Remove the 12 screws. (❹ ~ ⓯) 4. Remove the voltage control amp. block. and current drive amp. block. [Fig. 1] 5. Un solder the power transistor. [Fig. 3] 6. Remove the 2 screws. (⓰ ~ ⓱) 7. Remove the voltage control amp. P.C.B. 8. When mounting the power transistor apply silicone compound (SZZ0L15) to the rear side of power transistor.



[Fig. 1]



[Fig. 2]



[Fig. 3]

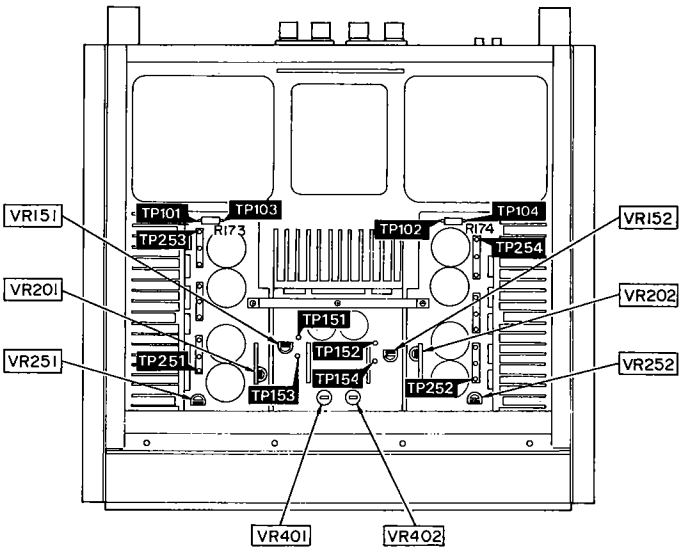
Note: When you check up with the bus bar disconnected, first connect ❶ , ❷ and ❸ to the ground point and turn on the machine.

■ BEFORE REPAIR AND ADJUSTMENT

(1) Turn off the power supply. Using a 10Ω, 10W resistor, shortcircuit both ends of power supply capacitors (C301~ C308, 10,000μF, C309, C310, 5600μF) in order to discharge the voltage.
(2) Before turning the power supply on, after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current at 120V, 60Hz in NO SIGNAL mode is 0.4 ~ 1.1A.

■ MEASUREMENTS AND ADJUSTMENTS

- **Adjustment points**



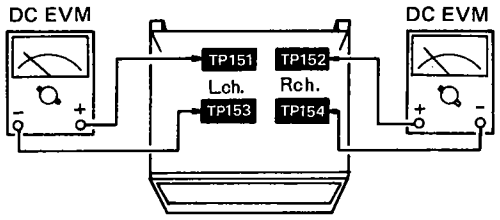
Adj. points	Adjustment
TP151, 153	Lch ICQ adj. of voltage control amp.
VR151	
TP152, 154	Rch ICQ adj. of voltage control amp.
VR152	
TP251, 253	Lch ICQ adj. of current drive amp.
VR251	
TP252, 254	Rch ICQ adj. of current drive amp.
VR252	
TP101, 103	Lch bridge-balance adj.
VR201	
TP102, 104	Rch bridge-balance adj.
VR202	
VR401	Lch power meter adj.
VR402	Rch power meter adj.

Equipment used

- AC and DC electronic voltmeter (EVM)
- Audio frequency oscillator (AF OSC)
- Dummy resistor or speaker (8Ω, 100W)

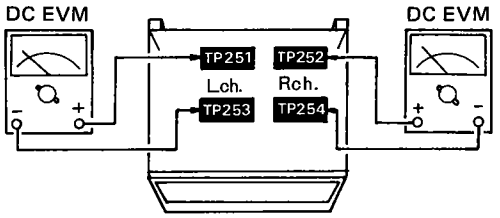
VOLTAGE CONTROL (V) AMP. IDLING (ICQ) ADJUSTMENT

1. Test equipment connection is shown in figure. (Connect the DC EVM. on both channels.)
2. Completely turn the (V) amp. adjusting volumes (**VR151, VR152**) counter-clockwise.
3. Turn ON the set when it is cold, and 30 sec. later, adjust **VR151** and **VR152** so that the voltage is **3mV**. Also, check that the voltage is **10 — 18mV** (standard: **12mV**) after lapse of **10 — 15 minutes.** (Below **50mV** after lapse of **60 min.**)



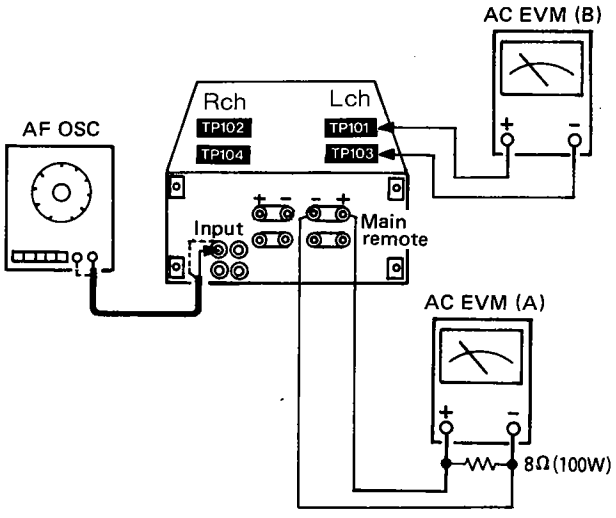
CURRENT DRIVE (C) AMP. IDLING (ICQ) ADJUSTMENT

1. Test equipment connection is shown in figure. (Connect the DC EVM. on both channels.)
2. Completely turn the (C) amp. adjusting volumes (**VR251, VR252**) counterclockwise.
3. Turn ON the set when it is cold, and 30 sec. later, adjust **VR251** and **VR252** so that the voltage is **0.7mV**.
   Also, check that the voltage is **2 — 4mV** (standard: **2.5mV**) after lapse of **10 — 15 minutes.** (Below **20mA** after lapse of **60 min.**)



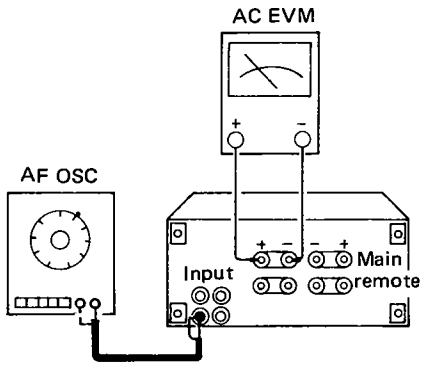
BRIDGE-BALANCE ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Turn the **VR201** (Lch) and **VR202** (Rch) to the central positions before turning ON the set.
3. Apply 1kHz signal to the input terminal so that the output voltage of speaker terminal is **10V .**(It can be chenged by the attenuator of the AF OSC)
4. Adjust **VR201** so that the voltage is minimum in the 3mV range of AC EVM (B).
5. Also for **R** channel, change the connection and make the same adjustment by **VR202.**



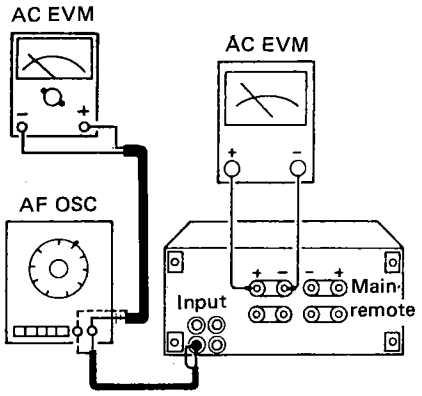
POWER METER ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Turn the **VR401** (Lch) and **VR402** (Rch) to the central positions before turning **ON** the set.
3. Before adjusting make sure that the power meter is mechanically adjusted to **0** point.
4. Apply 1kHz signal to the input terminal so that the output voltage of speaker terminal is **28.3V** (It can be changed by the attenuator of the AF OSC.)
5. Adjust the **VR401** (Lch) and **VR402** (Rch) so that the power meter indicates **100W.**



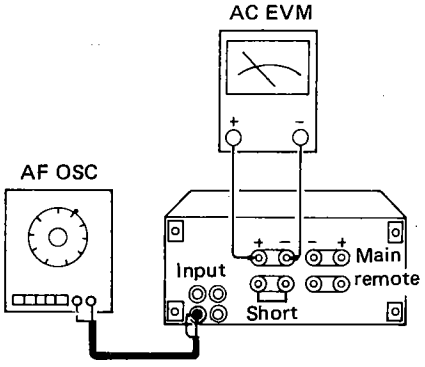
CHECK OF MUTING CIRCUIT DURING POWER "ON" – "OFF" OPERATION

1. Test equipment connection is shown in figure.
2. Apply **1kHz, 0.5V** signal to the input terminal.
3. Check that the output is given **7 – 8.5 sec.** after power **ON,** and that the output goes out immediately with power **OFF.**



CHECK OF OVERLOAD DETECTION AND PROTECTION CIRCUIT

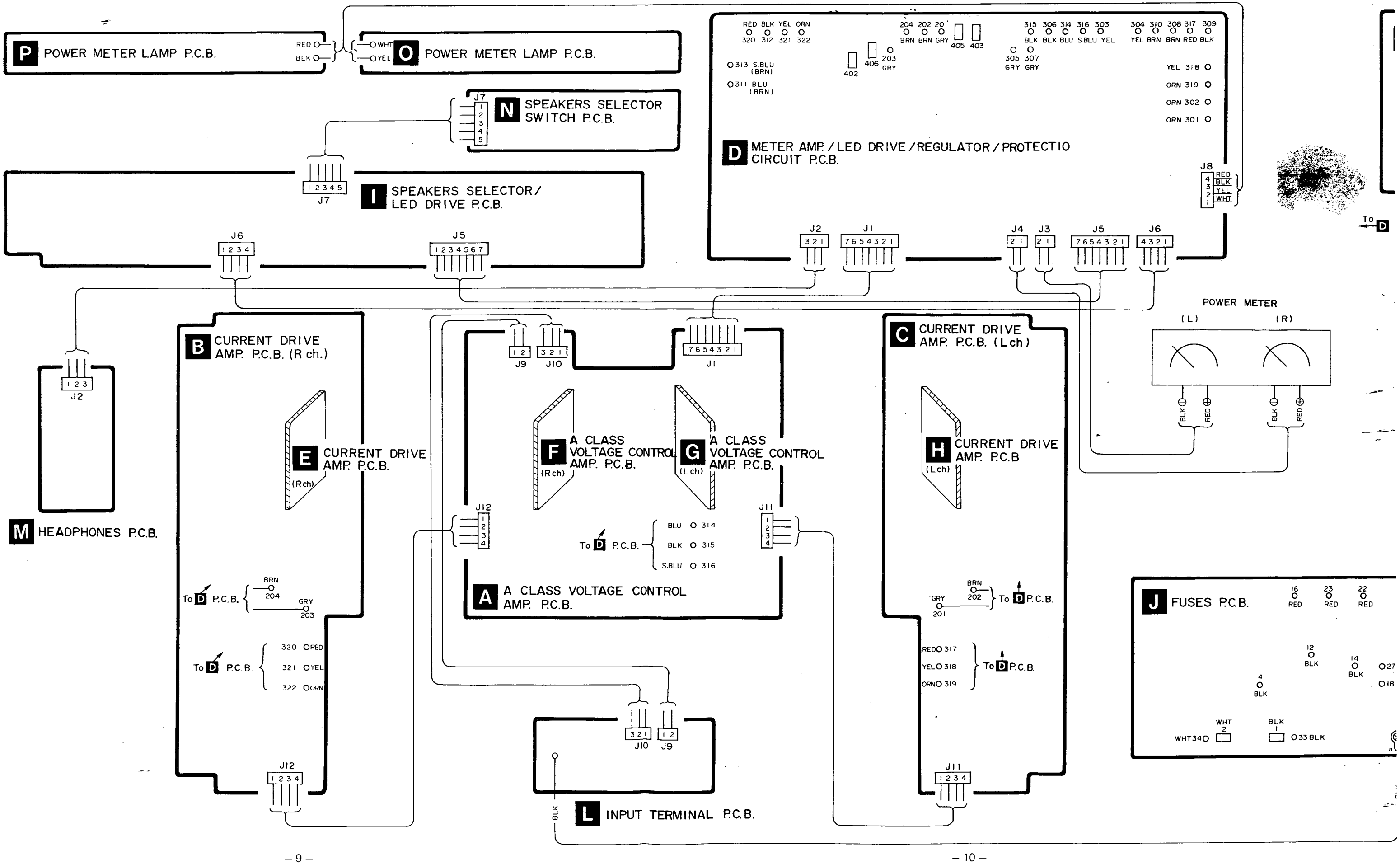
1. Test equipment connection is shown in figure.
2. Set the speaker select switch to **"main"**.
3. Short-circuit the speaker terminals on the **"remote"** side.
4. Apply 1kHz signal to the input terminal so that the output voltage of speaker terminal is **1.2V.**
   (It can be changed by the attenuator of the AF OSC.)
5. Check that the relay turns off and the output stops when the speaker select switch is shifted to **"remote",** and that the condition is held even with the speaker select switch is set to **"OFF".**
6. Perform the same check on **L** channel.



Note

* Check the protection circuit separately on each of the channels.
* The protection relay, if operated, will not reset itself. So, turn off the power supply and again turn it on.
* When the protection circuit is in operation, the indicator "stand by" is blinking.

■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



METER LAMP P.C.B.

N SPEAKERS SELECTOR SWITCH P.C.B.

ELECTOR/
P.C.B.

D METER AMP./LED DRIVE/REGULATOR/PROTECTIO CIRCUIT P.C.B.

RED BLK YEL ORN
320 312 321 322

313 S.BLU (BRN)

311 BLU (BRN)

402 406 203 GRY

204 202 201
BRN BRN GRY
405 403

315 306 314 316 303
BLK BLK BLU S.BLU YEL

305 307
GRY GRY

304 310 308 317 309
YEL BRN BRN RED BLK

YEL 318
ORN 319
ORN 302
ORN 301

J8 4 RED 3 BLK 2 YEL 1 WHT

J2 3 2 1 | J1 7 6 5 4 3 2 1 | J4 2 1 | J3 2 1 | J5 7 6 5 4 3 2 1 | J6 4 3 2 1

J9 1 2 | J10 3 2 1 | J1 7 6 5 4 3 2 1

F A CLASS VOLTAGE CONTROL AMP. P.C.B. (Rch)

G A CLASS VOLTAGE CONTROL AMP. P.C.B. (Lch)

J12 1 2 3 4

To D P.C.B. — BLU 314 / BLK 315 / S.BLU 316

J11 1 2 3 4

A A CLASS VOLTAGE CONTROL AMP. P.C.B.

C CURRENT DRIVE AMP. P.C.B. (Lch)

H CURRENT DRIVE AMP. P.C.B (Lch)

GRY 201 — BRN 202 — To D P.C.B.

RED 317
YEL 318
ORN 319
To D P.C.B.

J11 1 2 3 4

POWER METER
(L) (R)
BLK RED BLK RED

K SPEAKER TERMINAL P.C.B.

GRY BRN BLK — 405 403 404
BLU ORN RED — 401 406 402

To D P.C.B.

To J P.C.B. — 23 RED / 27 (SHORT) BLK
To D P.C.B. — 308 BRN / 310 BRN / 309 BLK

FOR CURRENT DRIVE AMP. POWER TRANSFORMER

FOR VOLTAGE CONTROL AMP. POWER TRANSFORMER

To D P.C.B. — 303 YEL / 304 YEL / 305 GRY / 307 GRY / 306 BLK

To J P.C.B. — RED 16 / BLK 14 / ORN 301 / ORN 302
To D P.C.B.

J FUSES P.C.B.

16 RED | 23 RED | 22 RED
12 BLK | 14 BLK | 27 BLK | 18 BLK
4 BLK
WHT 2 — WHT 340
BLK 1 — 33 BLK

To J P.C.B — 22 RED / 18 (SHORT) BLK
To D P.C.B. — 311 BRN / 313 BRN / 312 BLK

FOR CURRENT DRIVE AMP. POWER TRANSFORMER

L INPUT TERMINAL P.C.B.

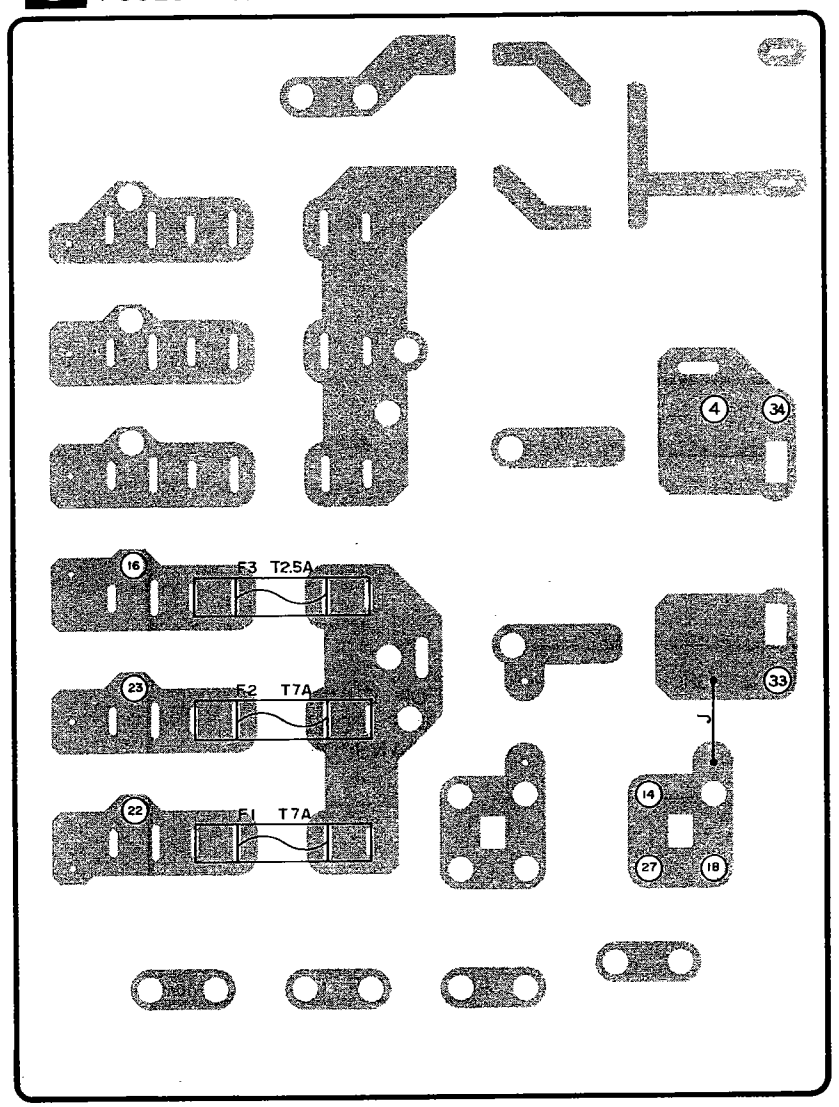
J10 3 2 1 | J9 1 2

BLK

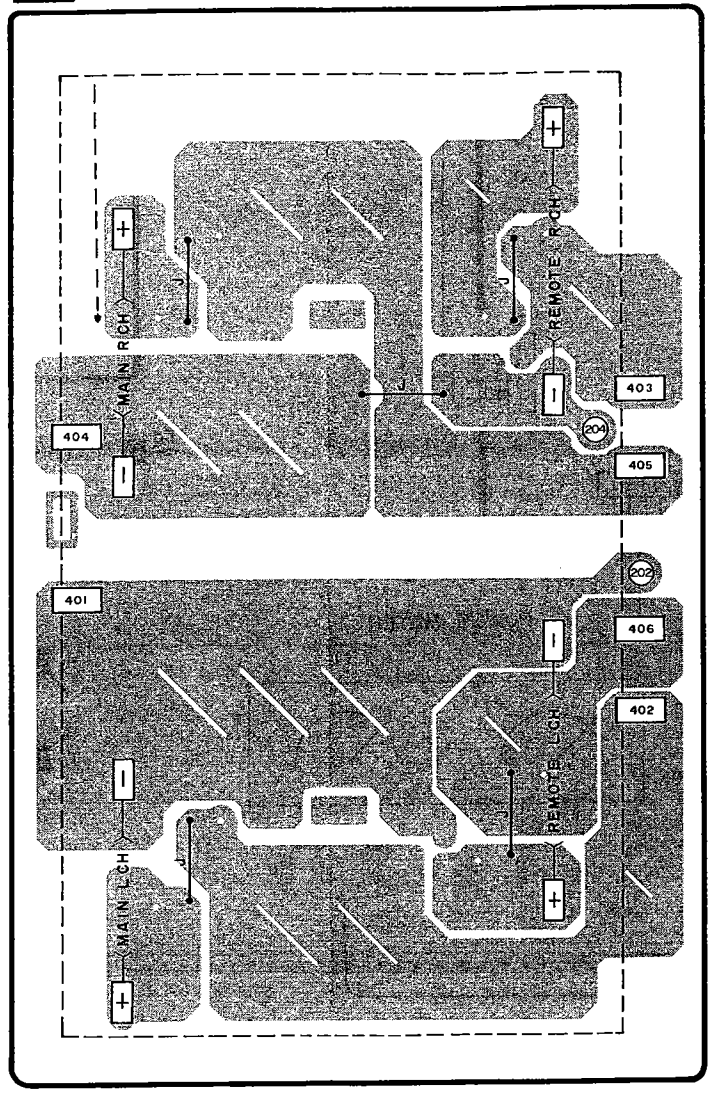
SE-A100 SE-A100

■ PRINTED CIRCUIT BOARDS

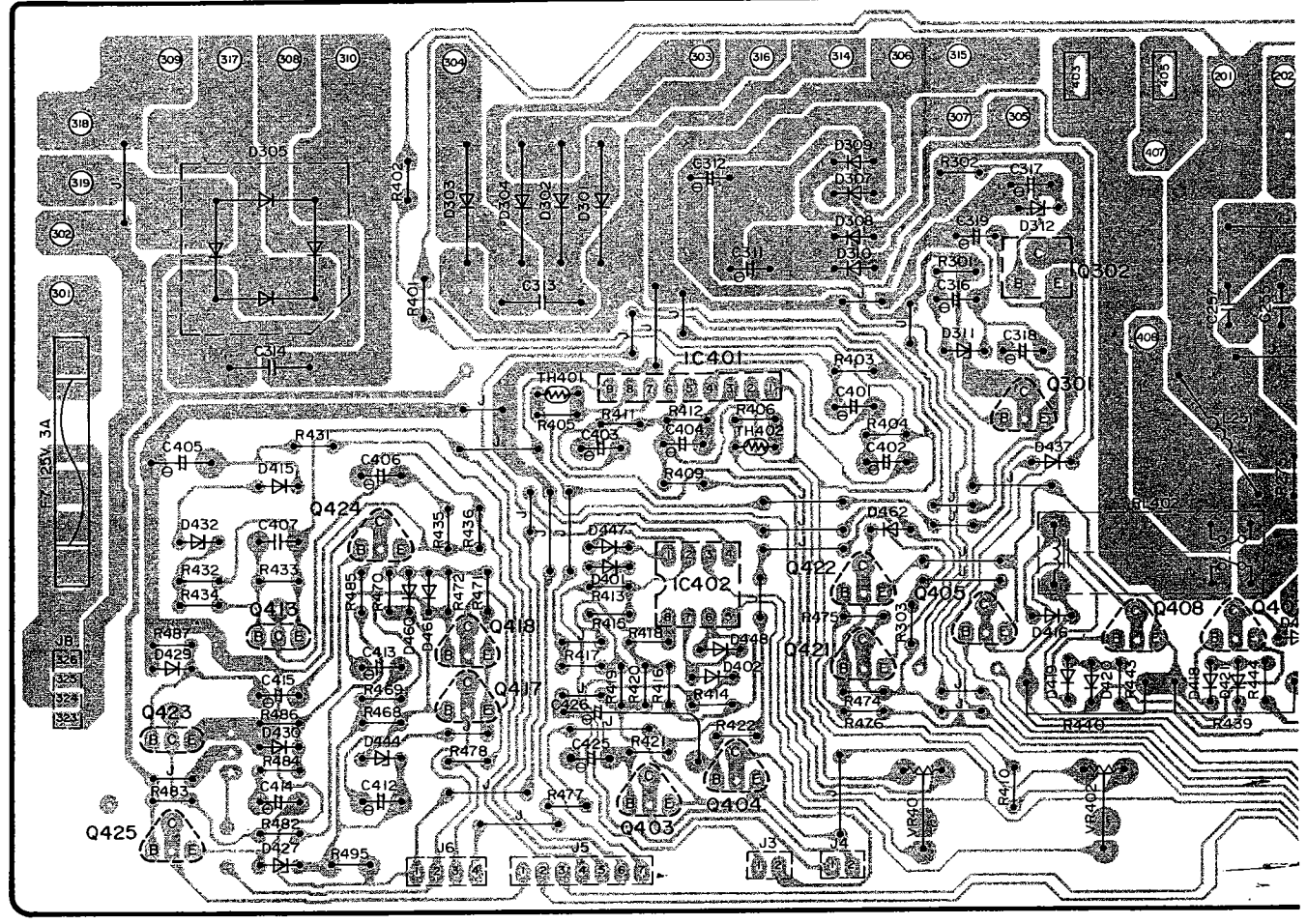
J FUSES P.C.B.



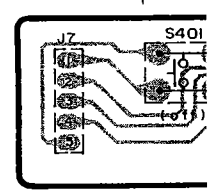
K SPEAKER TERMINAL P.C.B



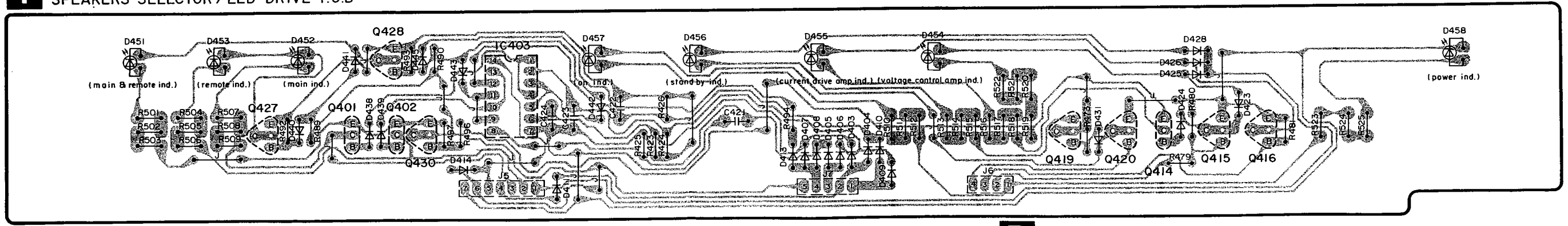
D METER AMP. / LED DRIVE / REGULATOR / PROTECTION CIRCUIT P.C.B.



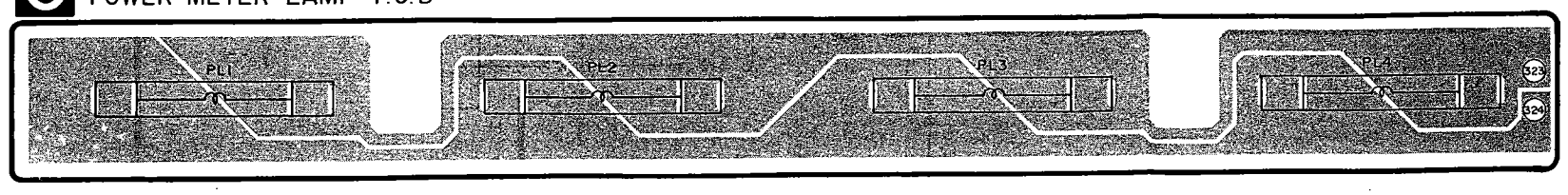
N SPEAKER



I SPEAKERS SELECTOR / LED DRIVE P.C.B



O POWER METER LAMP P.C.B



P POWER METER LAMP P.C.B