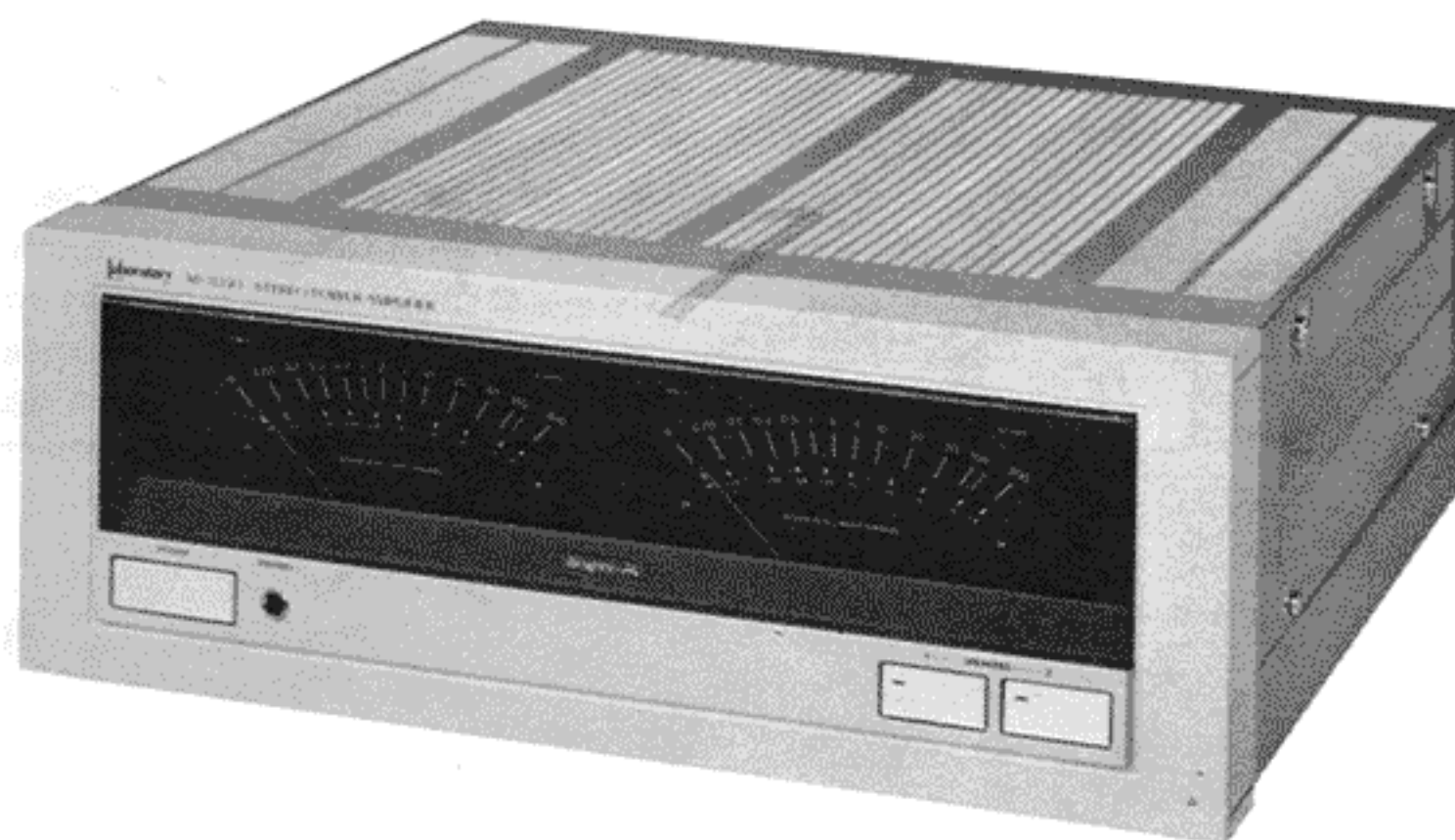




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# JVC | Instruction Book & Service Manual

## STEREO POWER AMPLIFIER M-7050



WARNING: TO PREVENT FIRE  
OR SHOCK HAZARD, DO NOT  
EXPOSE THIS APPLIANCE TO  
RAIN OR MOISTURE.

### For Customer Use:

Enter below the Model No. and Serial  
No. which is located either on the rear  
or bottom of the cabinet. Retain this  
information for future reference.

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

Service manual No. 2469

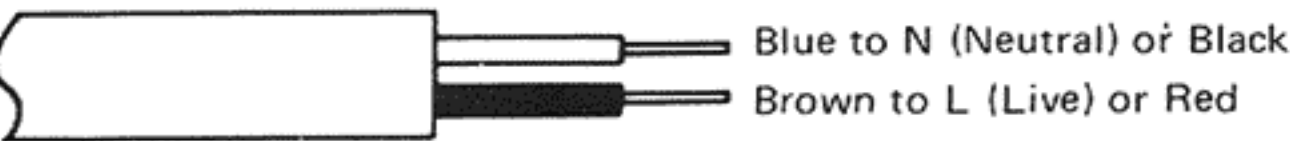
July, 1979

E30580-804A

**IMPORTANT (In the United Kingdom)**  
**Mains Supply (AC 240 V~, 50 Hz only)**

**IMPORTANT**

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:  
Blue wire to terminal coded N (Neutral) or coloured Black.  
Brown wire to terminal coded L (Live) or coloured Red.  
*If in doubt – consult a competent electrician.*

**Note**  
We recommend that you should disconnect the AC cord from the outlet.

**WARNING**  
Dangerous voltage inside

**CAUTION**  
To prevent electric shock, do not remove screws, covers or cabinet.  
No user-serviceable parts inside. Refer servicing to qualified service personnel.

**INTRODUCTION**

Thank you for purchasing the JVC M-7050 stereo Power Amplifier. You are now the owner of a truly sophisticated system component incorporating many advanced features.

“Super-A” high efficient 150W + 150W power output stage (is equal to class B operation) of extra low distortion (is superior to class A operation), high slew rate ( $\pm 300\text{V}/\mu\text{sec}$ ), unmeasurable TIM distortion, non magnetic aluminium chassis-base to eliminate the magnetostriction, and high capacitive power supply are just a few of the host of features which combine to produce the best possible sound.

JVC also manufactures the EQ-7070 Stereo Phono Equalizer, a matching preamplifier and the SEA-7070 Stereo Graphic Equalizer, a matching frequency characteristic controller for use with the M-7050 Power Amplifier. Before you begin using, please read the instructions carefully to be sure of getting the best possible performance from the new unit.

Wishing you memorably enjoyable listening.

**CONTENTS**

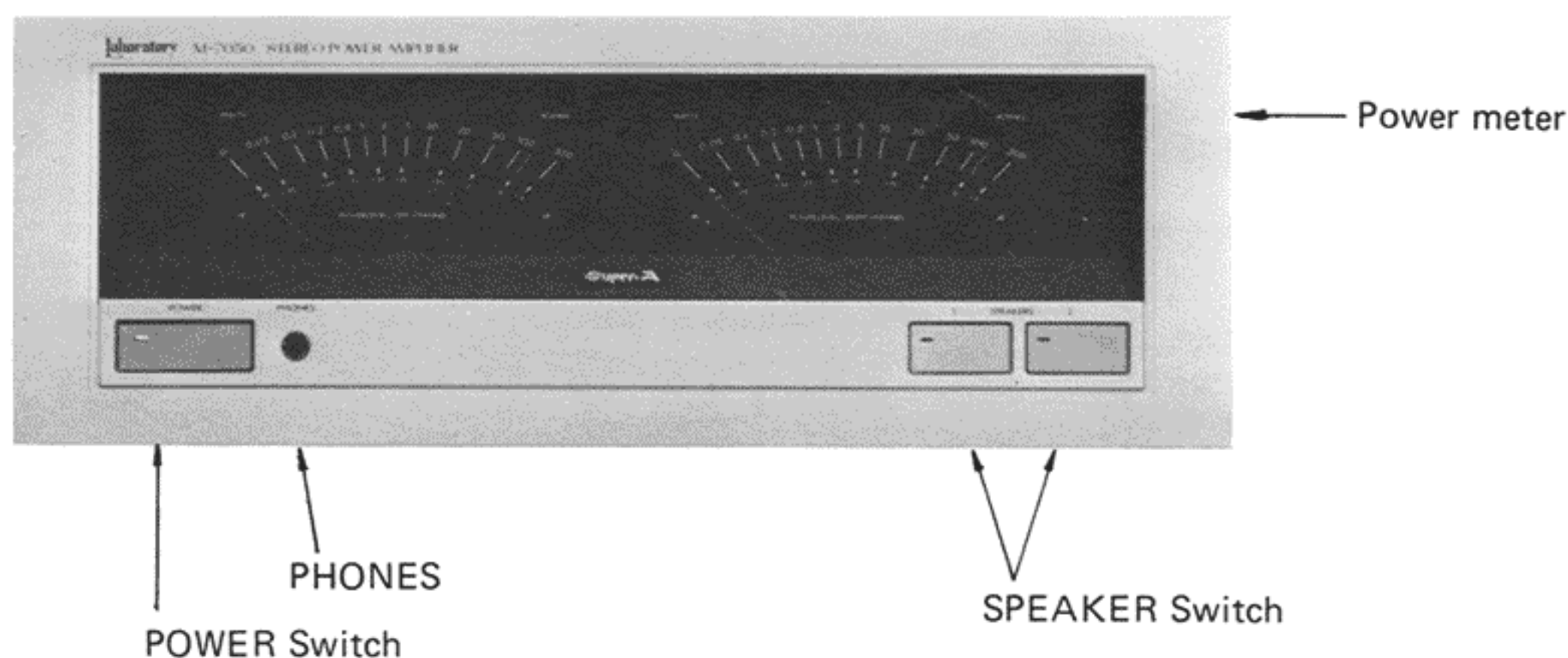
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Schematic Diagram  
(For only qualified service personnel)

# Instruction Manual

## FRONT PANEL



### Headphones jack (PHONES)

Exclusively for monitoring purposes.

Employ this facility in the following cases, for example:

1. To locate the beginning of a particular section of tape when no speaker sound is desirable.
2. To monitor the sound to be transmitted to a remote place when the amplifier is used as a public address system.

(Note) Plugging in the headphones does not switch off the speaker sound automatically. When you wish to listen to sound from the headphones only, set the SPEAKER switches to OFF.

### POWER switch

Press to turn the power on. The red indicator lamp in push knob will light and the POWER meters will be illuminated. To turn the power off, press the switch again to release.

### Panel Illumination:

For a period immediately after the POWER switch is turned ON, the illumination of the POWER meters is red. Wait for about 4 - 5 seconds until it changes to white. If it continues to be red for a longer span, the protection circuit is operating for some reason. Turn the POWER switch OFF and check the cause of malfunctioning.

### POWER meters

The output power is indicated in wattage on the compressed logarithmic scale in reference to the 8-ohm load impedance.

### SPEAKER switches

To listen to the speaker system connected to the rear panel SYSTEM-1 terminals, press the SYSTEM-1 switch.

To listen to the speaker system connected to the rear panel SYSTEM-2 terminals, press the SYSTEM-2 switch.

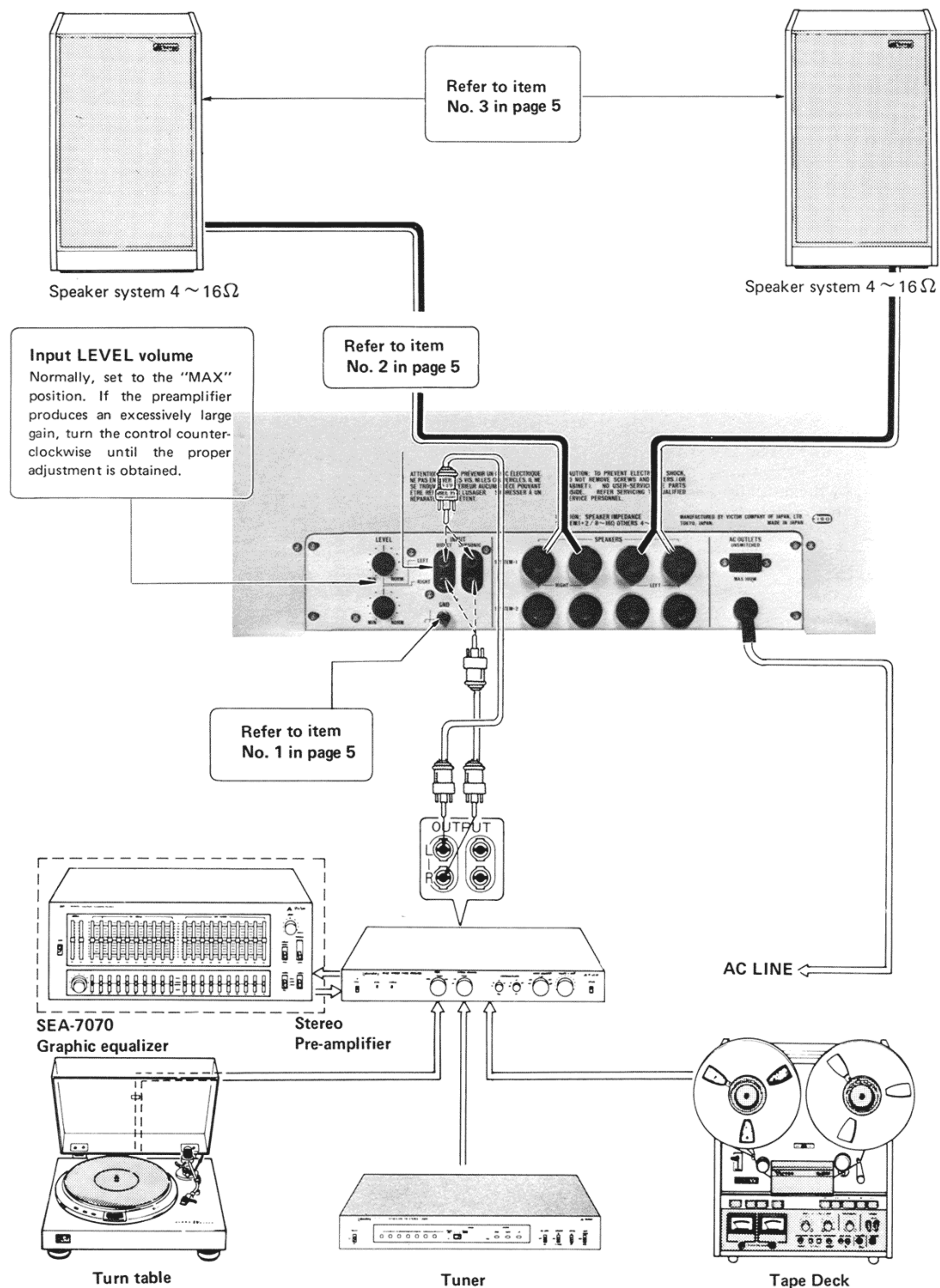
Both speaker systems can be heard by pressing both switches. When a SPEAKER switch is pressed, the green indicator lamp on the corresponding switch lights.

(Note) If the load impedance is lower than 4 ohms, the protection circuit is activated, resulting in intermittent sound.

1. If a single pair of speakers is to be driven at a time, the speaker impedance may be between 4 and 16 ohms.
2. If two pairs of speakers are to be driven simultaneously, the speaker impedance should be between 8 and 16 ohms.



# CONNECTION DIAGRAM



## IMPORTANT

### 1. Installation

- Select a dry, level place which is neither too hot nor too cold (between  $-5^{\circ}$  and  $40^{\circ}\text{C}/23^{\circ}\text{F}$  and  $104^{\circ}\text{F}$ ).
- Leave space between the power amplifier and the wall to provide good ventilation.
- Do not allow a curtain, table cloth, etc. to block the ventilation holes.
- Keep the power amplifier away from direct sunlight.
- Do not place close to a heater.
- Do not place in locations subject to vibrations.
- Do not place in locations subject to dust.
- Keep as far from a tuner and a preamplifier as possible to prevent noise.

### 2. Power cord

- Do not handle the power cord with wet hands.
- Do not bend the power cord double.
- When unplugging from the wall outlet, always pull the plug, not the power cord.

### 3. Malfunctions

- Do not insert any metallic object inside the unit.
- Do not allow water to get inside the unit.
- Do not employ thinner or benzine to clean the cabinet. First clean with a neutral cleaner and then wipe with a dry cloth.

### 4. Power switch

- Do not plug the power cord into an AC outlet until all connections are complete.
- Switch the power off when connecting other components to it.

## REAR PANEL

1. Connecting with other components may result in trouble, such as oscillation or hum. Connect ground terminals of this set and other components to each other.

### 2. SUBSONIC and DIRECT INPUT terminals

Do not connect different kinds of signals simultaneously to input terminals.

Input cannon connector (for professional use)  
(Unbalanced)

AC:

If these terminals are employed, the input signal passes through a filter having a cut-off frequency of 18 Hz and a slope of 6dB/oct, which results in a reduction of ultra-low frequency noise, such as that encountered with warped records, and prevents speaker intermodulation distortion.

The filter also eliminates the preamplifier DC leak voltage, thus protecting the speakers.

DIRECT:

These input terminals are directly connected to the power amplification circuit. Since the M-7050 employs DC amplifier circuitry, there is no coupling capacitor between the input circuit and the power amplification stages.

### 3. Protective circuit

When the protective circuit has been activated, switch off the power and determine the cause as follows:

The speaker load impedance

Using speakers with an impedance of less than 4 ohms (or a short circuit across the speaker terminals) activates the protective circuit and results in intermittent sound output. When the speaker switch is at the "1 and 2" position, use a pair of speakers having an impedance of 8 or higher, at "1" or "2" position, use a speaker of 4 or higher.

Input overload

The speaker produces intermittent sounds.

Detecting the offset voltage

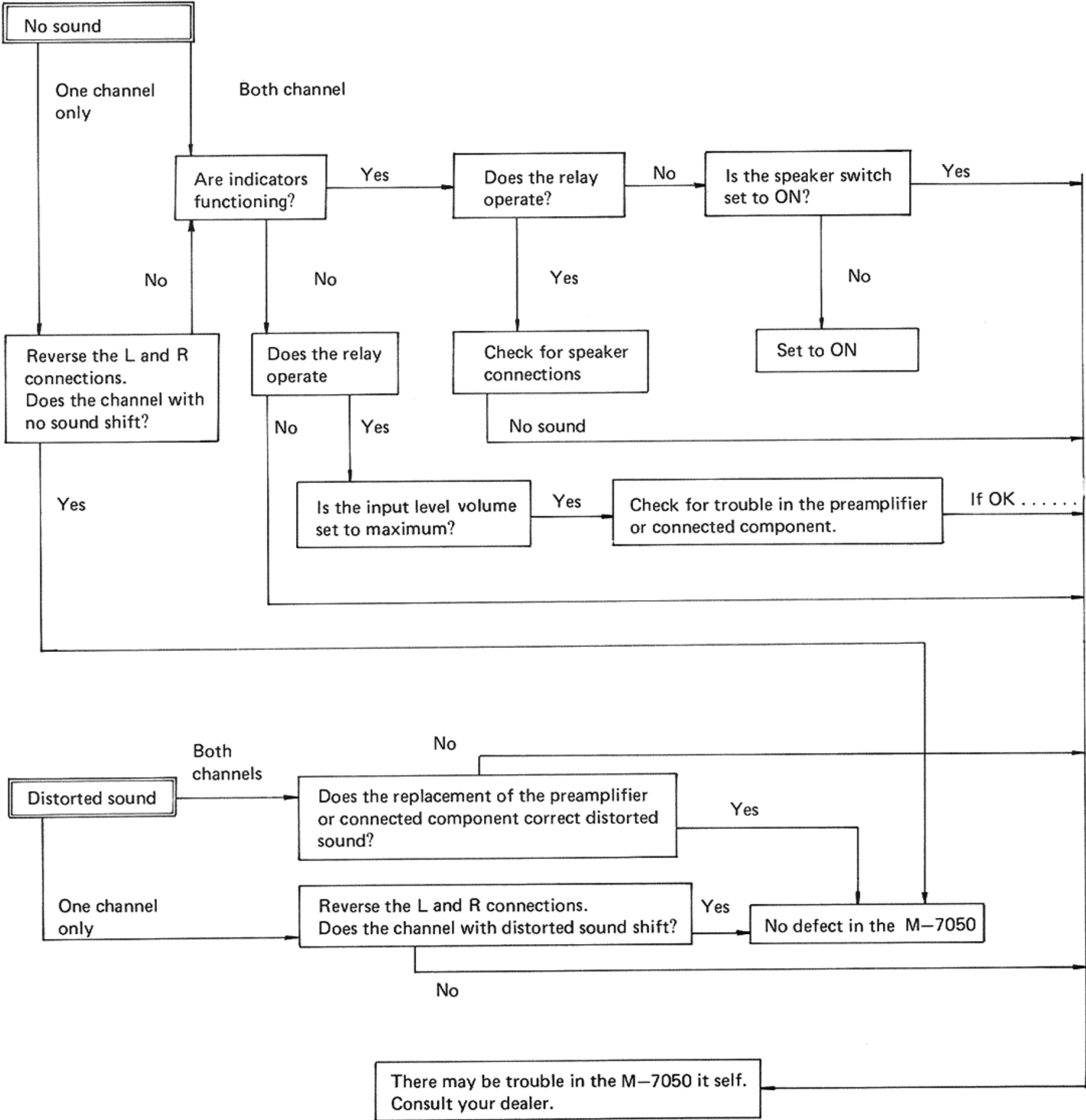
The offset voltage of  $\pm 2\text{ V}$  or more, activates the protective circuit and results in no sound output.

Caution indicator

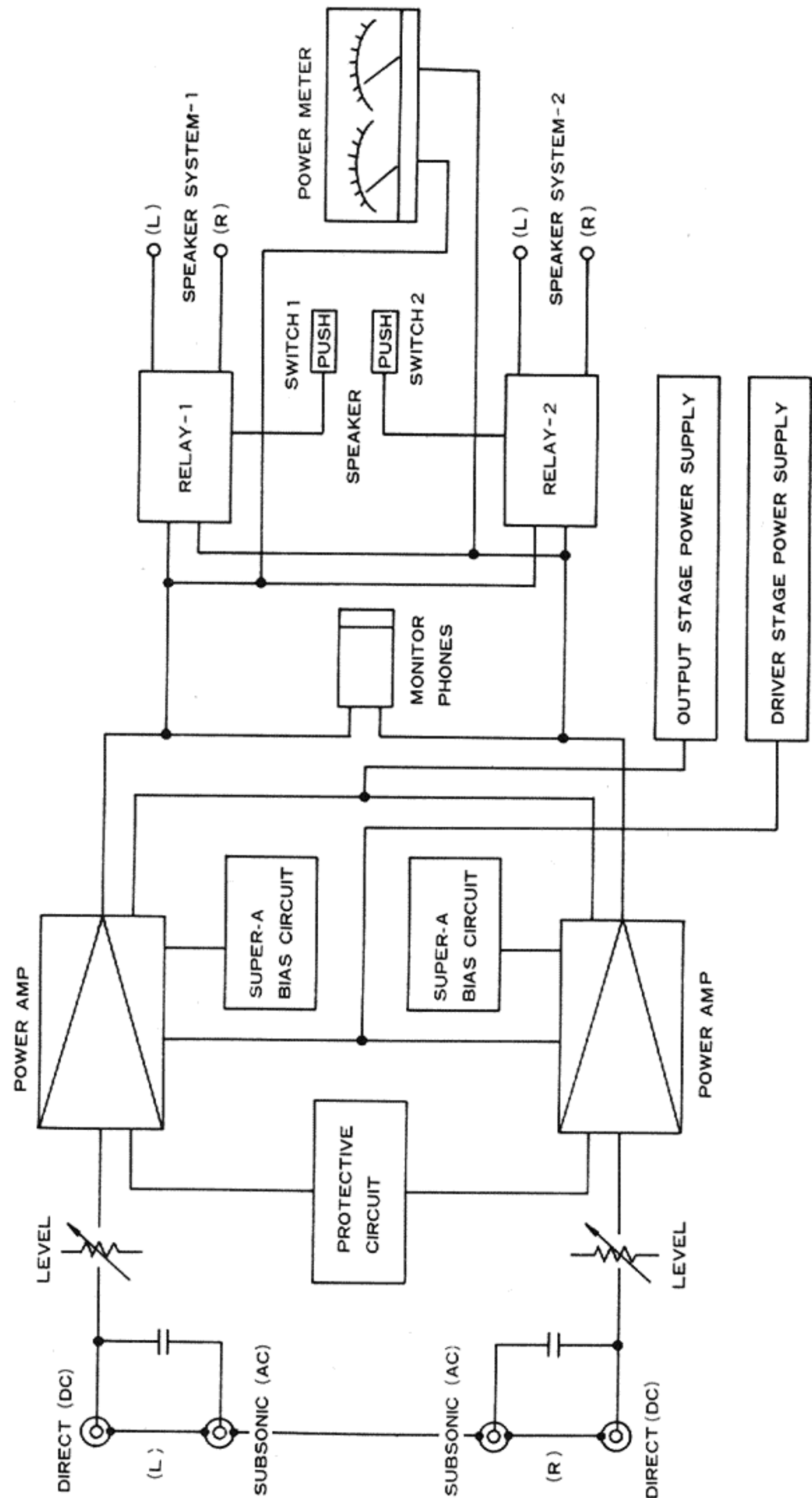
When the protective circuit has been activated, meter illumination changes to red.

# TROUBLE SHOOTING

What seems to be a trouble is not always real trouble.  
Make sure first.



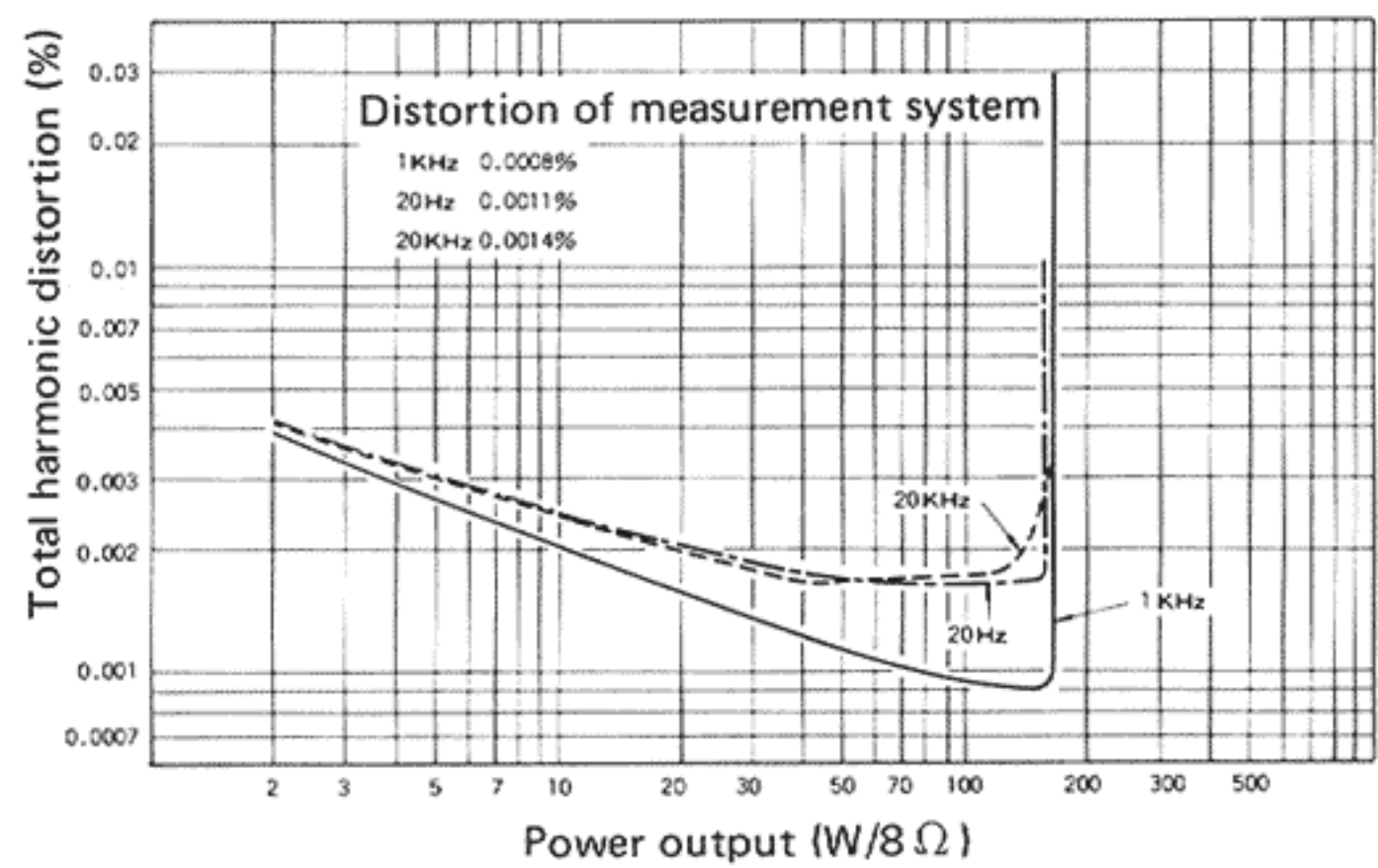
BLOCK DIAGRAM



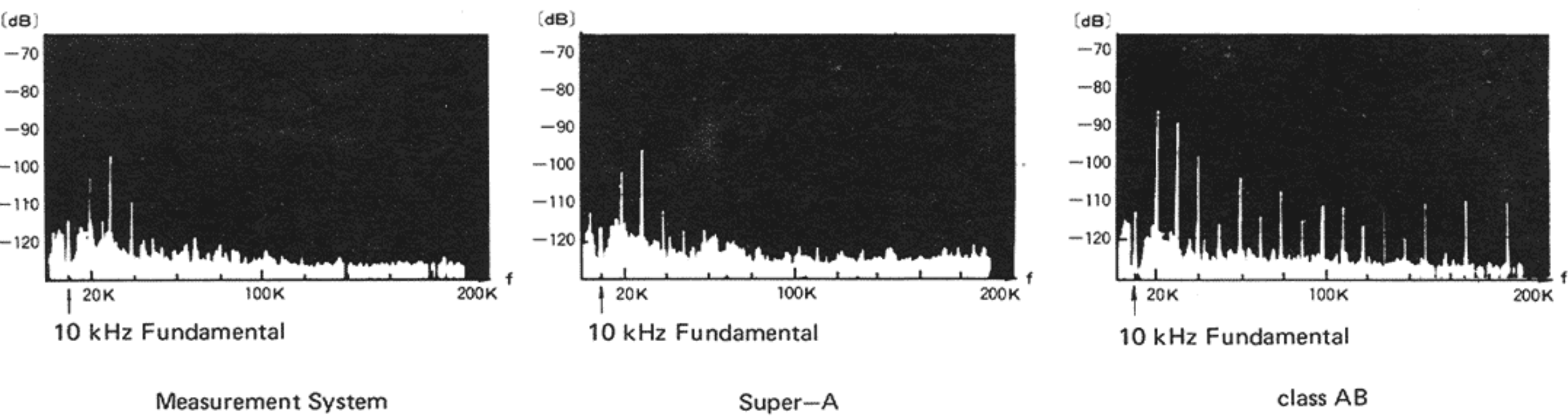


# PERFORMANCE GRAPHS

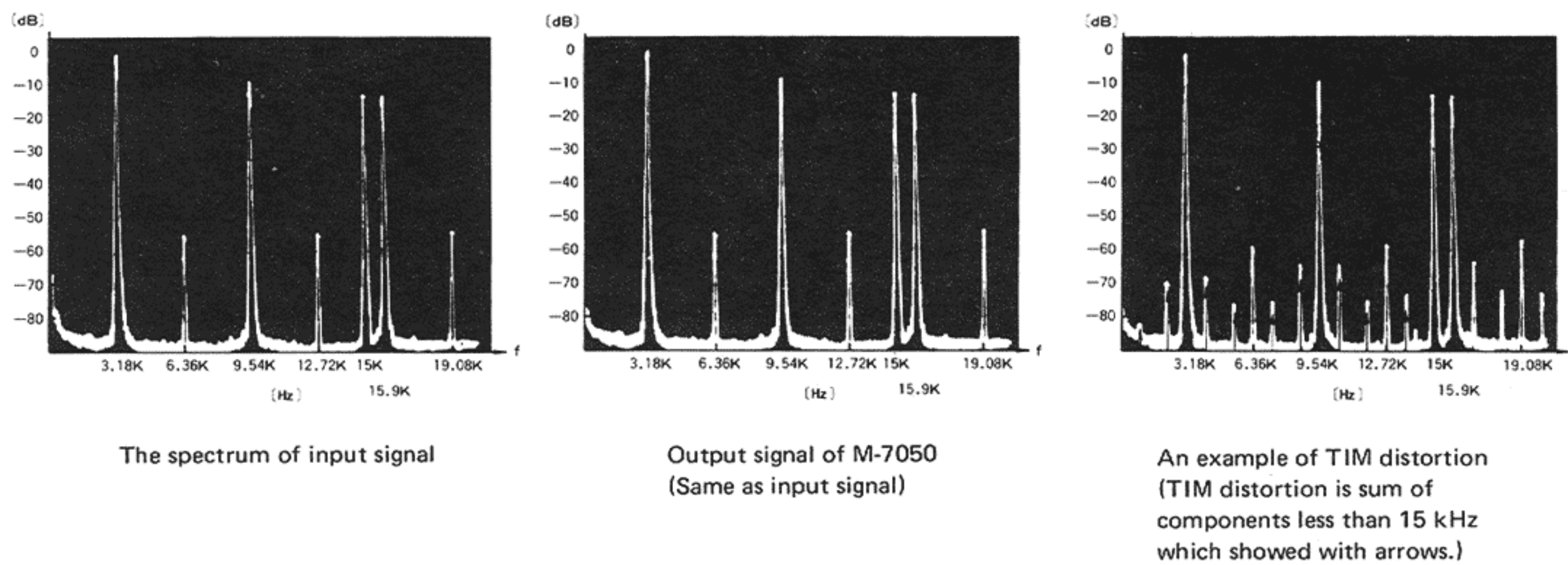
## THD vs. Output power



## Spectrum of harmonic distortion



## Characteristics of TIM distortion (Low pass filter $f_c = 100$ kHz)



# TECHNICAL DESCRIPTION

## Super A power amplifier

A big problem has remained unsolved in the progress regarding amplifier technology: how can class-A operation be made compatible with high power efficiency? The class-A operation is best in terms of low distortion; its critical drawback is such that its power loss is greater than the available output power. Because of this, class-B amplifiers have generally been applied for power amplification because they offer both acceptable distortion and power efficiency. However, as long as class-B amplifiers are employed, the occurrence of crossover distortion and switching distortion is inevitable. Although the improvements of circuit elements have realized fairly good class-B amplifiers, when their values of distortion are referred to, the "nature" of distortion is still detrimental to the reproduced sound quality. To solve this problem by improving circuit technology, JVC has developed its new "Super-A" power amplifier.

The Super-A power amplifier consists of a voltage amplifier stage whose distortion is minimized by compensating for the non-linearity of semiconductors, and a class-A power amplifier stage which includes a bias circuit for raising the power efficiency to such a degree as is comparable to that of a class-B amplifier. JVC's Super-A power amplifier offers the following features:

- 1) Power efficiency is extremely high despite the class-A operation, greatly reducing power loss and heat generation compared with conventional class-A amplifiers.
- 2) Switching distortion inherent in class-B operation is completely eliminated; it is perfectly zero.
- 3)  $\Delta V_{CE}$  distortion \*1,  $\Delta C_{ob}$  distortion \*2 and  $\Delta V_{BE}$  distortion \*3 are all extremely low because of the unique non-distortion circuit configuration.

\*1 Distortion caused by non-linear variations of current gain  $\beta$  due to variations of collector-emitter voltage  $V_{CE}$ .

\*2 Distortion caused by non-linear variations of amplifier gain which are caused by non-linear variations of feedback capacity  $C_{ob}$  due to variations of collector-emitter voltage  $V_{CE}$ .

\*3 Distortion caused by non-linear variations of base-emitter voltage  $V_{BE}$  of power transistor.

Fig. 1 Output and residual distortion waveforms of measuring instrument

Fig. 2 Output and distortion waveforms of Super-A amplifier

Fig. 3 Output and distortion waveforms of class-AB amplifier

## Voltage amplifier stage utilizing "Super-A" performance to the utmost

Fig. 4 shows operating characteristics of a common-emitter transistor;  $\beta$  varies as  $V_{CE}$  varies, resulting in  $\Delta V_{CE}$  distortion as described above.

Fig. 5 shows a variation of the feedback capacity  $C_{ob}$  in relation to  $V_{CE}$ . This non-linear variation of  $C_{ob}$  due to variations of  $V_{CE}$  causes a non-linear variation of the amplifier gain, leading to the  $\Delta C_{ob}$  distortion mentioned above. Fig. 6 shows operating characteristics of a common-base transistor. What is noteworthy about this type of operation is that, though its current gain is 0 dB, its output linearity in constant-current drive is fairly good since  $\alpha$  scarcely varies with variations of  $V_{CE}$  ( $\alpha = 1$ ) as shown by the equal distance between adjacent base current curves.

An example of the cascode-connected amplifier circuit is shown in Fig. 7. The features of this circuit are good frequency response (because of no mirror effect due to  $C_{ob}$ ) and high output impedance. This means that this circuit eliminates distortion by effectively combining the advantages of common-emitter and base-emitter configurations. The driver stage of the Super-A power amplifier employs an applied circuit of this kind and a drastic reduction in distortion is the result.

Fig. 4 Output characteristics of common-emitter amplifier

Fig. 5  $C_{ob}$  characteristic

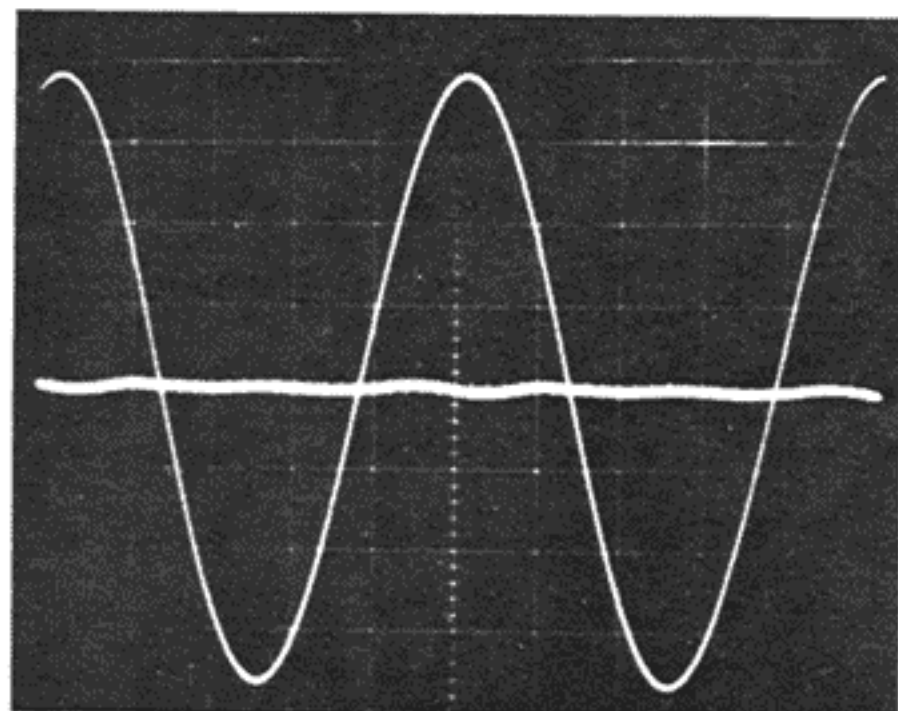
Fig. 6 Output characteristics of common-base amplifier

Fig. 7 Cascode amplifier

Distortion of measurement system

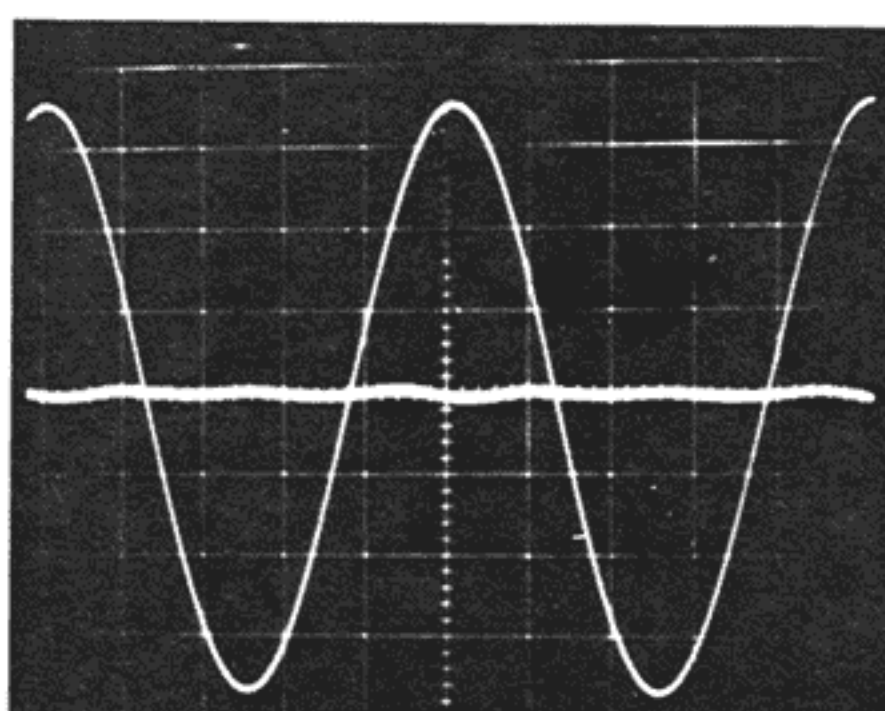
Distortion of "Super-A"

Distortion of "class AB"



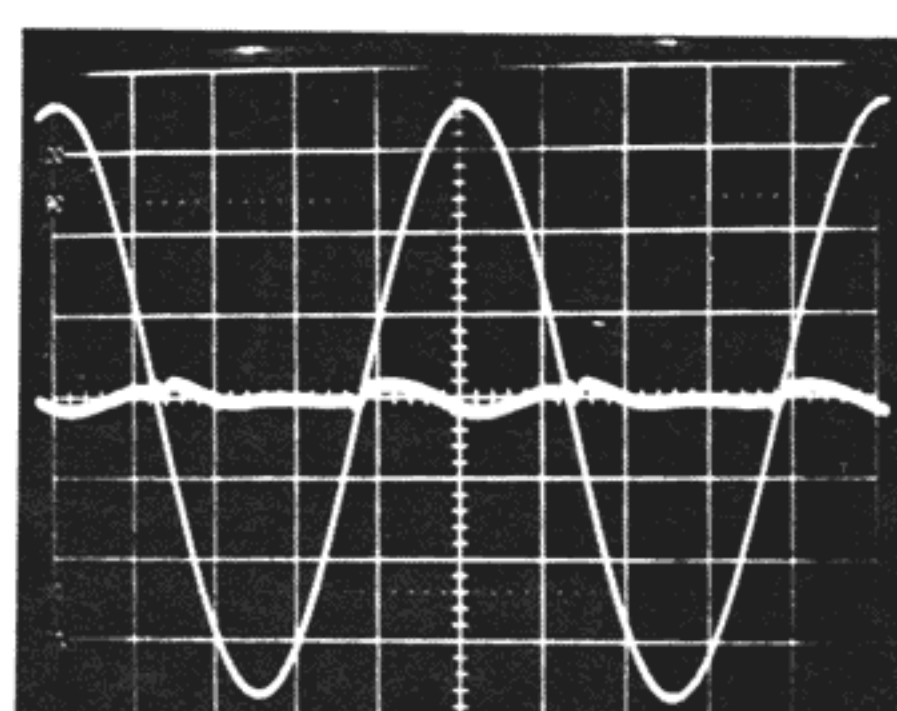
f=10 kHz, THD=0.0008%

Fig. 1.



f=10 kHz, Output power=100W/8  $\Omega$   
THD=0.0009%

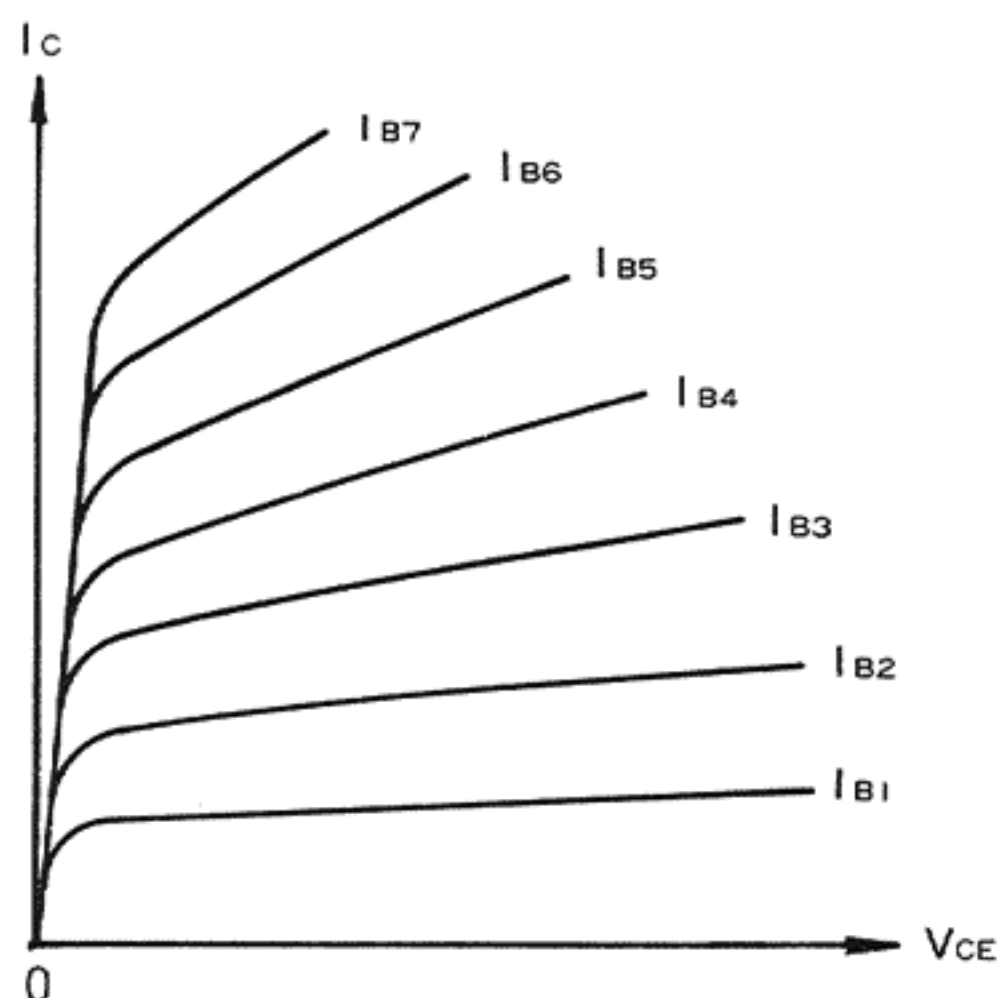
Fig. 2.



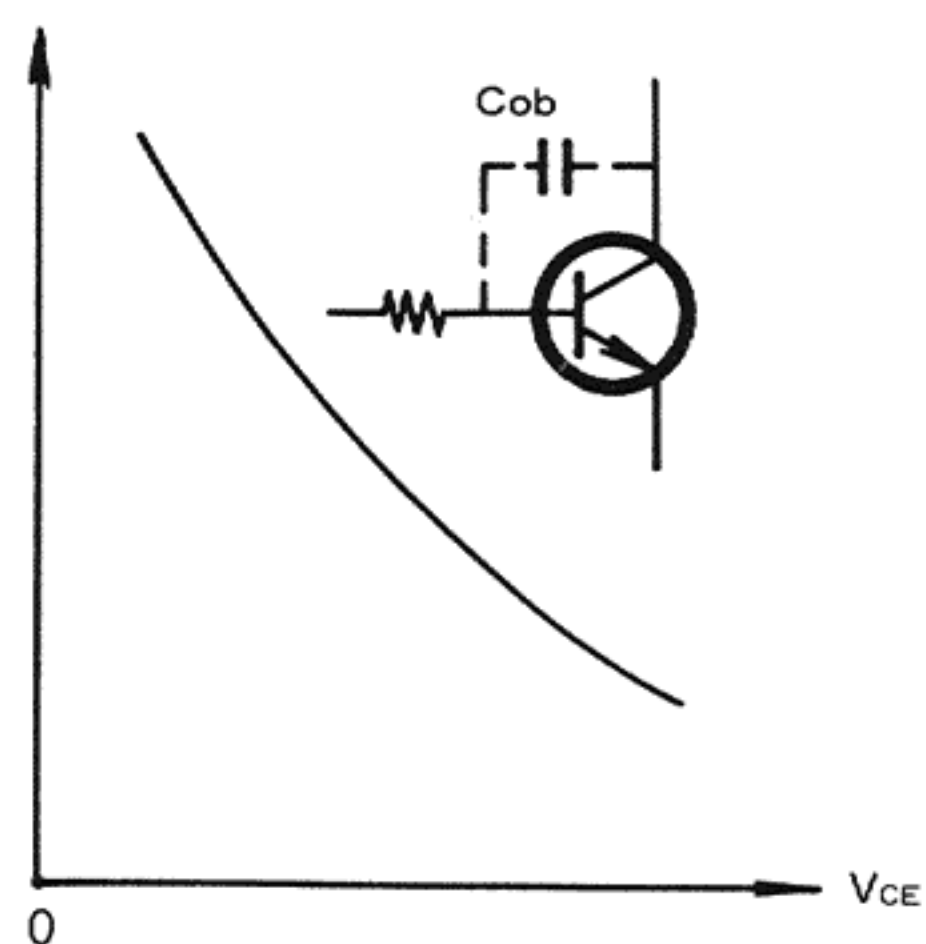
f=10 kHz, Output power=100W/8  $\Omega$   
THD=0.0022%

Fig. 3.

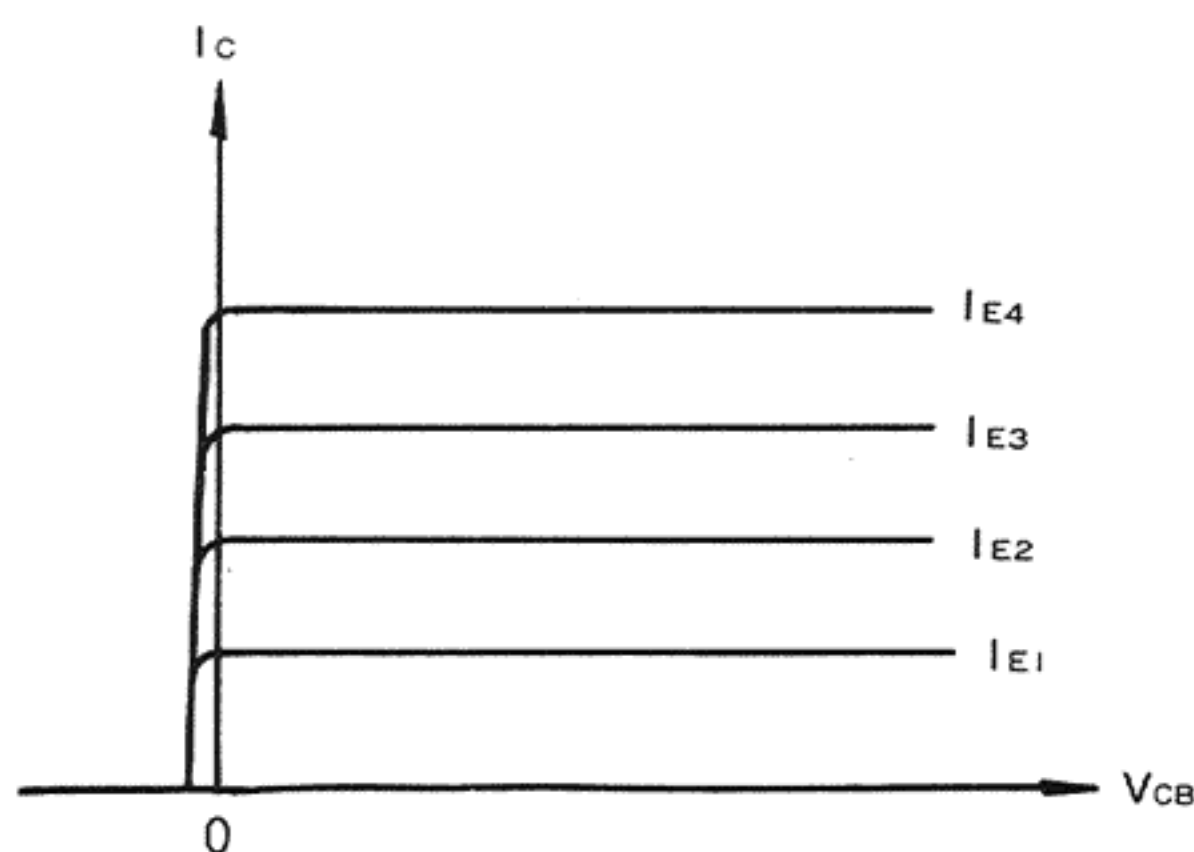




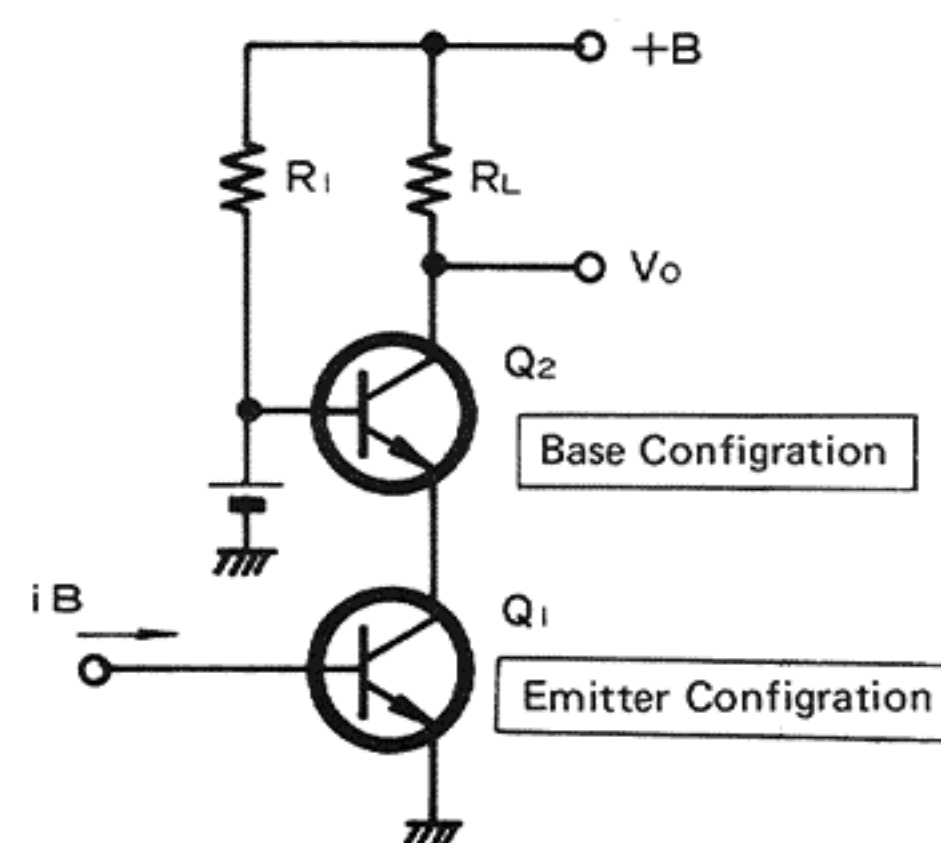
**Fig. 4.**  
Emitter Configuration



**Fig. 5.**  
Cob characteristic



**Fig. 6.**  
Base Configuration



**Fig. 7.**  
Cascode amplifier

## SPECIFICATIONS

Circuitry . . . . . Direct-coupled DC circuitry with  
F.E.T. cascode connected double  
differential input and parallel-push  
pull output SUPER-A

Output power . . . . . 150W + 150W 8Ω

Total harmonic  
distortion . . . . . 0.0004% (1KHz 150W 8Ω)  
(Mesured by Y.H.P. HP-1B)  
0.003% (20Hz ~ 20KHz, 150W 8Ω)  
0.03% (20Hz ~ 100KHz, 150W 8Ω)

Inter modulation  
distortion . . . . . 0.003% (60 Hz : 7 kHz = 4 : 1, 8 Ω)

Power bandwidth . . . . . 5 ~ 100KHz (0.02%, 8Ω, IHF)

TIM (Transient Intermodulation  
distortion) . . . . . unmeasurable

Slew Rate . . . . . ±300V/μ sec.

Switching distortion . . . . . 0

Hum & Noise . . . . . less than 200 μV (Short circuit)

Frequency charactor . . . . . DC ~ 100KHz, +0, -0.2dB

Subsonic Filter . . . . . 18Hz 6dB/oct

Input sensitivity/  
impedance . . . . . 1V (input level volume max)/47KΩ

S/N . . . . . more than 120dB (I.H.F.A)

Damping factor . . . . . 200(1KHz) 8Ω

Output . . . . . speaker-1 4Ω ~ 16Ω  
speaker-2 4Ω ~ 16Ω  
speaker 1+2 8Ω ~ 16Ω  
Monitor phone

Power suply . . . . . Refer to page 30

Power consumption . . . . . Refer to page 30

Dimensions . . . . . 160 m/m (H), 425 m/m (W),  
415 m/m (D)

Weight . . . . . 22.4 kg (49.3 lbs)

**Warning :** When replacing the parts marked with  $\Delta$  , be sure to designated parts to ensure safety.

# Service Manual

(For only qualified  
service personnel)

## PRECAUTION IN SERVICING

Show this manual to service personnel when servicing

### PRECAUTIONS FOR SERVICING AND REPAIRING

#### 1. Removal of power transformer (replacement of transistor and parts on circuit board)

Remove the power transformer before replacing the transistor mounted on a heat sink and parts mounted on the circuit board (TAP-279). Follow the procedure below.

- 1) Remove four screws (1) and then cover (2). (See Fig. 16.)
- 2) Remove three screws (3) from the back.
- 3) Remove three screws (4) from the top.
- 4) Remove four screws (5) from each side.
- 5) Disconnect all connectors of the power transformer wiring. (See Fig. 8 for how to disconnect the connector of the power switch wiring.)
- 6) Remove the power transformer from the chassis carefully since it is very heavy. (Do not let it bump on the circuit board underneath.)

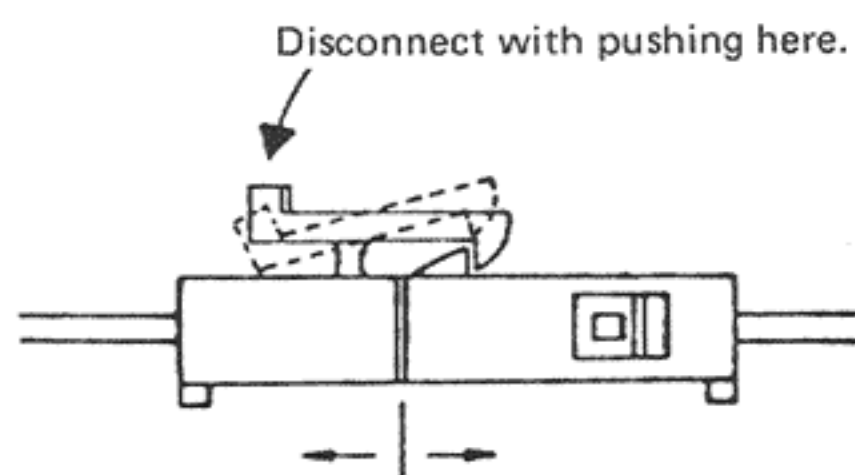


Fig. 8.

#### 2. Disassembly of front panel

- 1) Disconnect all connectors of the front panel wiring from the circuit board. (See Fig. 8. for how to disconnect the connector of the power switch-transformer wiring.)
- 2) Remove four screws (6). Screws (7) need not be removed.
- 3) Remove four screws (7) to disassemble the front panel assembly into the meter and the glass panel.
- 4) Holding the meter vertically, adjust its zero point.
- 5) Replace the wire plugs into the circuit board sockets, paying attention to their direction. Follow the indication on direction marked on the circuit board. (See Fig. 9.)

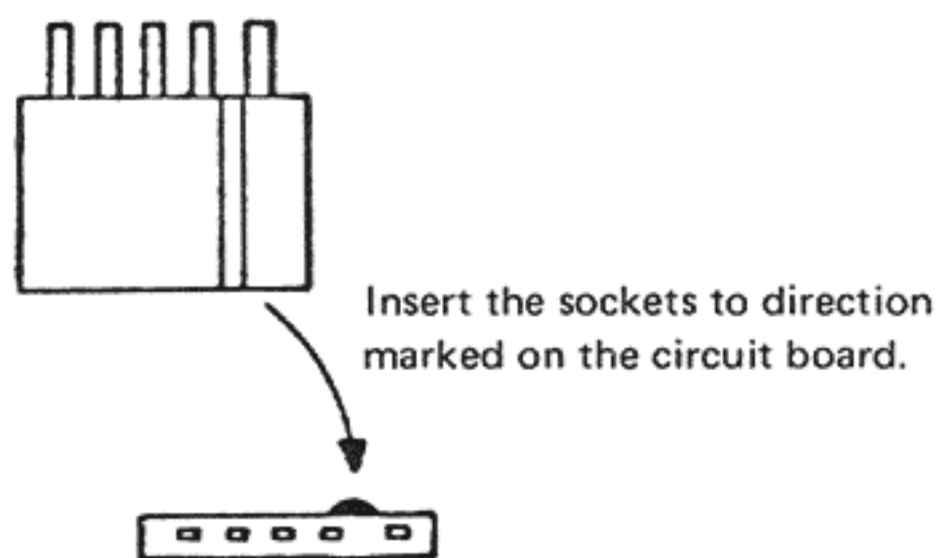


Fig. 9.

#### 3. SUPER-A block

The SUPER-A bias circuit is made into a single block to maintain performance including temperature characteristics. Trouble occurring in the SUPER-A block is rarely independent of other stages. Defects of a stage usually affects the preceding stage adversely and finally the SUPER-A block suffers. Starting from the final stage, replace defective transistors. When the stages work well, check the SUPER-A block by the following procedure. (Refer to "4. Check after repair" for the sequence of turning on power.)

- 1) Measure the voltage developing between terminals 701 and 709 (X013's collector and test point F) or terminals 705 and 709 (X013's emitter and test point F) using a multimeter set in the "1V AC" range. Normally it reads 0V when no signal is delivered and about 0.6V for the 1kHz rated output (into an 8-ohm load). The SUPER-A block is in trouble if the reading is greater than 1V. Check the R-channel in the same way. (In the R-channel, check voltage between X014 and test point A.)
- 2) Setting the multimeter in a DC range, check voltage between terminals 703 and 707 (X805's emitter and X807's emitter). Normally the reading varies from 3.8V to 4.3V when the level of 1kHz input signal is varied from zero to the rated output (into 8-ohm load). The SUPER-A block is in trouble if the reading does not vary. Replace the SUPER-A block as a unit in that case. Check the R-Channel in the same way. (In the R-channel, check voltage between X806 and X808.)

#### 4. Check after repair

- 1) Unplug the red, white, and black wires of TPS-226. (The wires connect to a large electrolytic capacitor.) Now the final stage is not supplied with power.
- 2) Apply 1-kHz signal of approximately -30dB (30mV) to the input terminal. Connect an oscilloscope to test points A and F to monitor waveform.
- 3) Start supplying power. (If a varying-voltage power transformer is available, you can raise the voltage gradually while watching the waveform on the oscilloscope to secure safety.)
- 4) If you see the waveform shown in Fig. 10, the stages up to the driver work well. (At this time no voltage is applied to the final stage and the power transistor is working as a diode.)

Up to now we assume that the final-stage power transistor is intact. Confirm in advance that the power transistor is not defective after disconnecting it from the circuit board. If the power transistor is shorted between its base and emitter, the drive stage will be shorted and damaged (you will see no waveform).

**Caution:** Never connect a dummy load up to step 4: the drive stage will be overloaded and damaged.



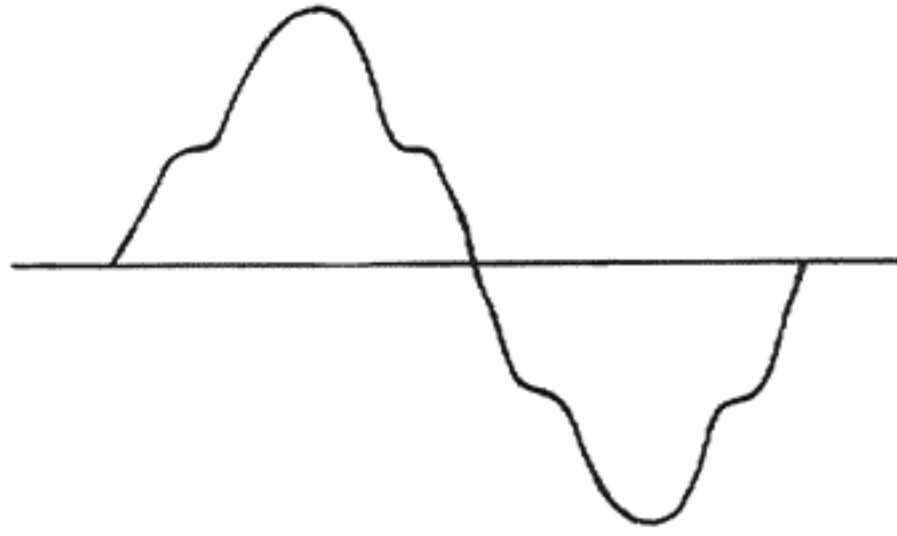


Fig. 10.

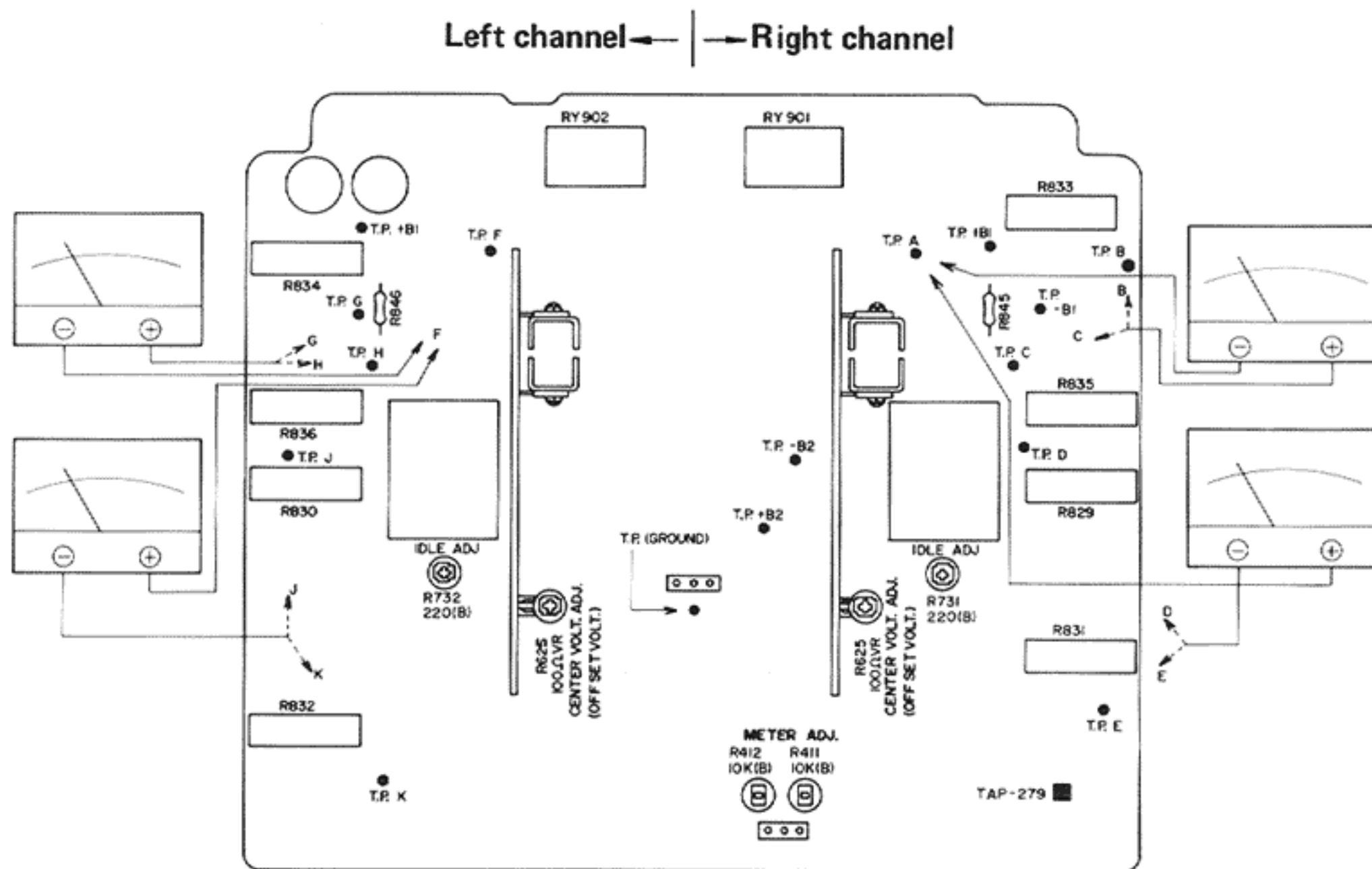
- 5) If the wrong waveform is detected, vary the input voltage from 0V up gradually and check waveform in varying voltage ranges of the oscilloscope. If the right waveform is not obtained yet, check transistors and resistors in the circuits using a multimeter. The resistors marked with  $\Delta$  in the circuit diagram are liable to disconnection.

- 6) When the waveform of Fig. 10 is detected, stop supplying power and plug the wires into the sockets of TPS-226. Then start supplying power while you monitor waveform at the test points with the input voltage kept applied.  
Do not connect any dummy load yet. Normally you will see sine waves on the oscilloscope. Carry out the above steps for both channels. At this time the output voltage exceeds 35V. For safety, you can raise the voltage gradually, if a varying-voltage power transformer is available, while you watch the waveform.
- 7) Connect a dummy load. Normally the output level is approximately 35V over an 8-ohm load (150W) when both channels are driven with 1-kHz input signal.
- 8) Even if the SUPER-A block is defective, the amplifier will operate in class B. In this case, check the SUPER-A block referring to "3. SUPER-A block".
- 9) Referring to "Adjustment" (page 13), check idling current, voltages at test points, voltage gain, and frequency response, etc.

#### MEMORUNDOM

# ADJUSTMENT PROCEDURE OF AMPLIFIER

## Adjustment procedures



**Note:** Before turning on the power, turn R625 of left and right channels to middle point and R411, 412, R732, R732 fully counter-clockwise.

Fig. 11.

### Idling current adjustment of the power amplifier (TAD-279C)

As illustrated in Fig. 11. take voltage readings between the testpoints of A - B, A - C, A - D, A - E, F - G, F - H, F - J, F - K with DC millivoltmeters. (Turn on the power switch and wait for 5 minutes and then start the adjustment) First, turn R731 fully counterclockwise and then turn it clockwise slowly while watching the DC millivoltmeter connected between A - B in order to adjust the current value to 50 mV. Similarly, connect the DC millivoltmeters between A - C, A - D, A - E, F - G, F - H, F - J, F - K and confirm that these meter read 40–60 mV. (The idling current becomes 80–120 mA). If the millivoltmeters do not read 80 – 120 mA, turn R731 slightly for adjustment.

### Adjustment of the power output meter

Before turning on the power, set R411, 412 to middle point. Adjust R411(left), R412(right) so that the output power meter shows 150 W point when output power is 34.7 V on speaker terminal.

### Adjustment of the offset voltage of the power amplifier (TAD-279C)

Before turning on the power, turn R625 of left and right channels to middle point.

As shown in Fig. 11. connect the DC millivoltmeter between the testpoints of A-ground, and then turn R625 slowly so that the meter shows as low a value as possible, (if possible "0"). On completion of the adjustment, wait for 5–6 minutes, and confirm whether or not the adjusted voltage varies greatly.

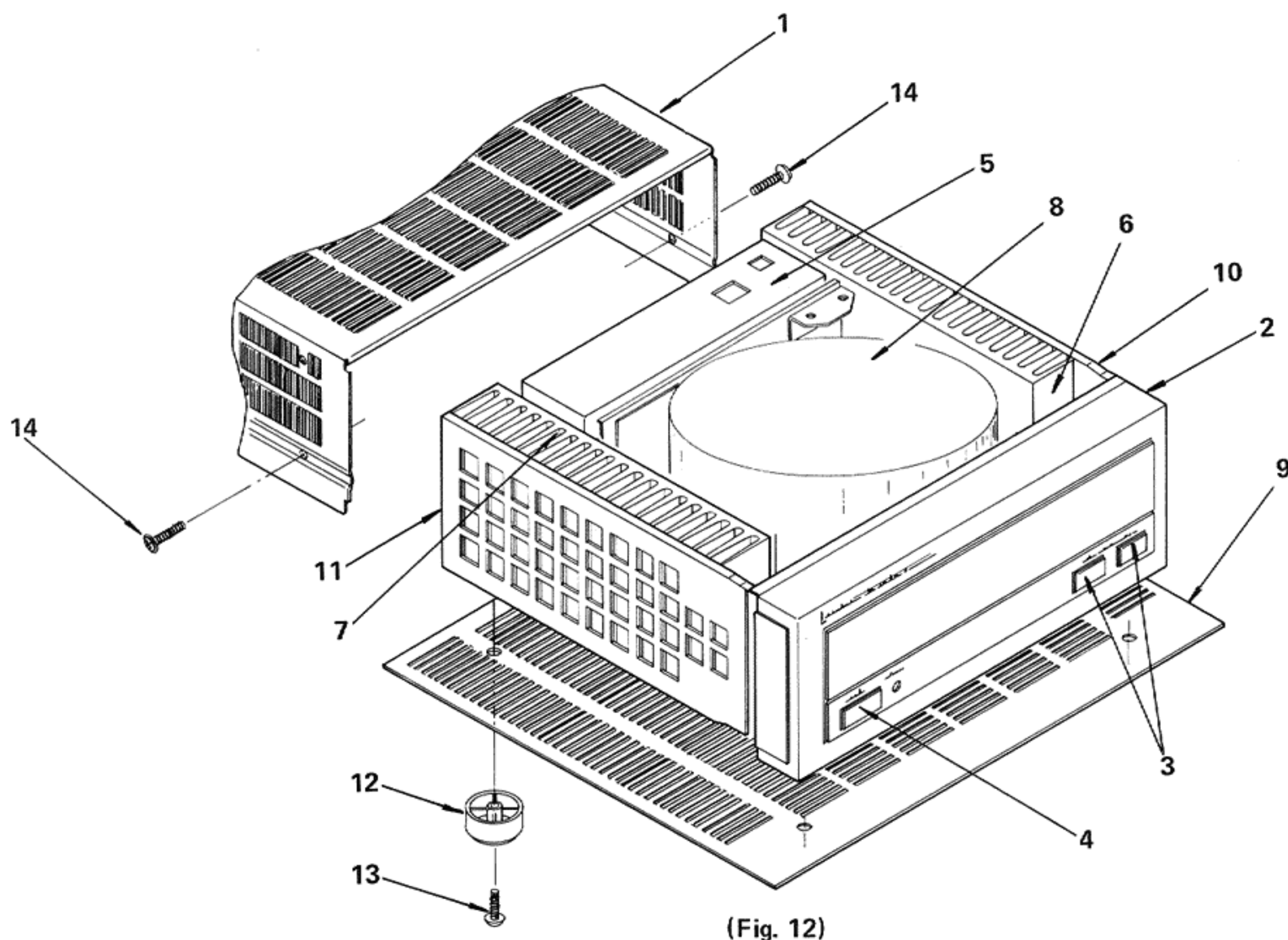
### Precautions

A nonpolar DC millivoltmeter is preferable for the above adjustments. If polar millivoltmeters are used, pay careful attention to their plus (+) and minus (–) polarities. Start the measurements using the highest meter range.


# CHECK AFTER SERVICING

1. Gain : 31dB (20 — 100kHz) at output level of 0dB (0.77V).
2. Hum & Noise : Below 0.2mV (Short circuit).
3. Check the output power according to specification.

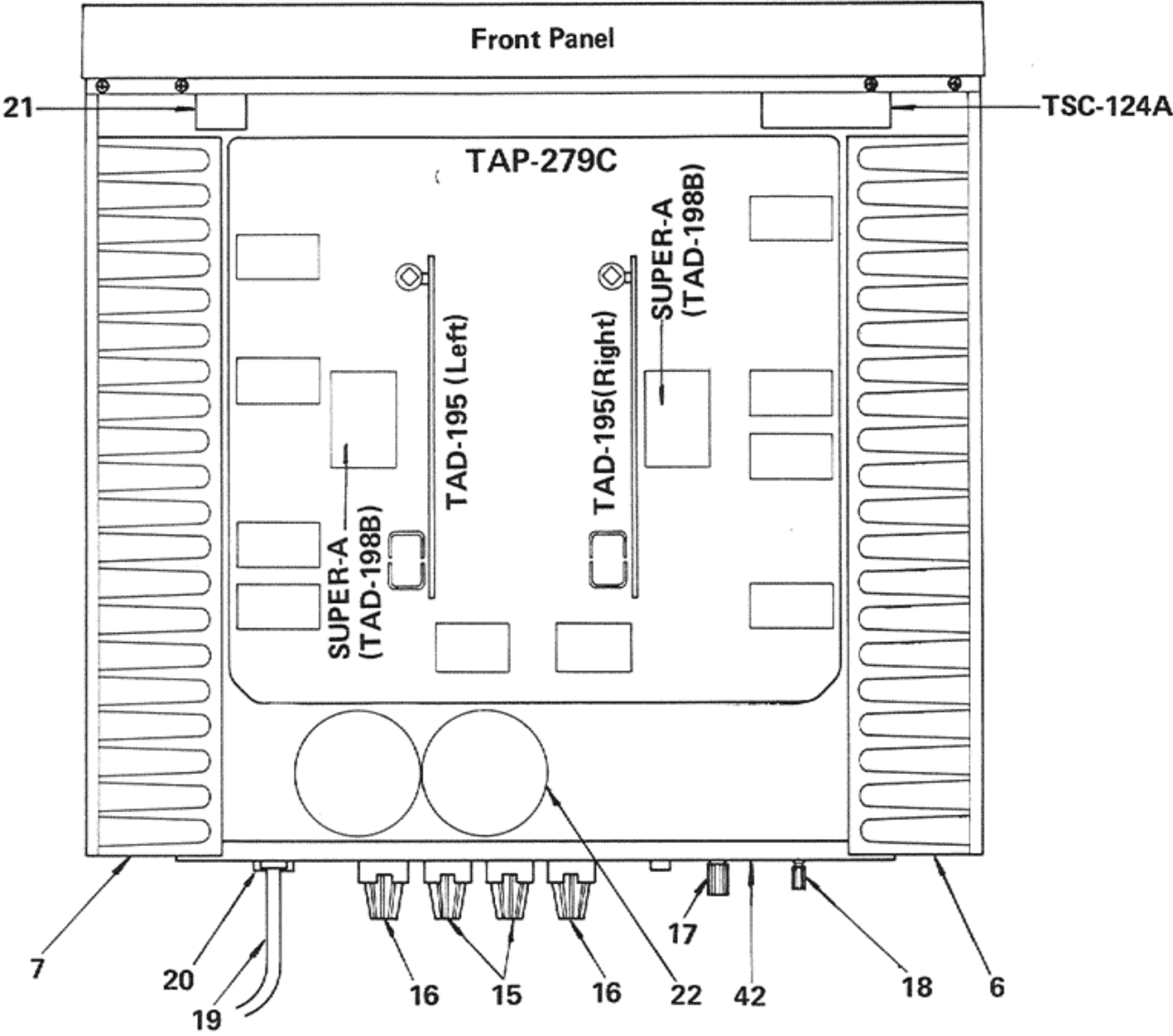
## EXPLODED VIEW



Parts List (Fig. 12.)

Item No.	Parts Number	Rating, Description	Parts Name	Q'ty
1	*E10342-002		Metal cover	1
2	*E23224-001		Front panel ass'y	1
3	*E66097-001		Push knob ass'y	2
4	*E66096-001		Push knob ass'y	1
5	*E23106-002		Cover	1
6	*E23035-005	Right	Heat sink	1
7	*E23035-006	Left	Heat sink	1
8	*E03617-16 		Power transformer	1
9	*E10343-001		Bottom cover	1
10	*E23082-001	Right	Side bracket	1
11	*E23082-002	Left	Side bracket	1
12	E47227-007		Foot	4
13	SBSB4016M		Tapping screw	4
14	E61660-001		Special screw	4

EXPLODED VIEW



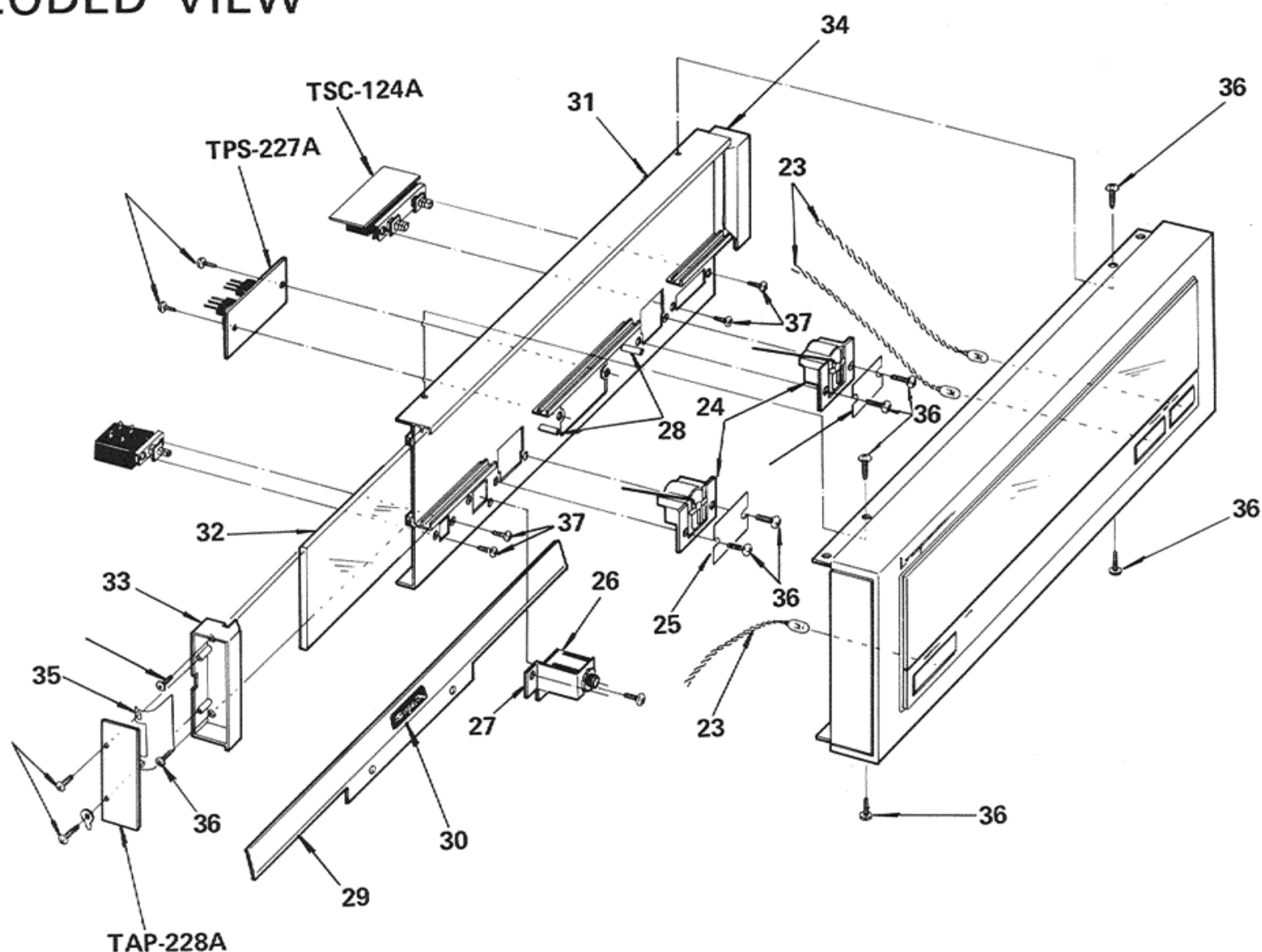
(Fig. 13)

Parts List (Fig. 13)

Item No.	Parts Number	Rating, Description	Parts Name	Q'ty
15	EL80056	Black	Speaker terminal	2
16	EL80055	Red	Speaker terminal	2
17	E03619-001		Grand terminal	1
18	E61212-001		Knob	1
19	Refer to page 30 ⚠		Power cord	1
20	Refer to page 30 ⚠		Cord stopper	1
21	Refer to page 30 ⚠		Push switch (power)	1
22 -1	EL80051	18000 $\mu$ /80 V	Electrolytic capacitor	2



# EXPLODED VIEW

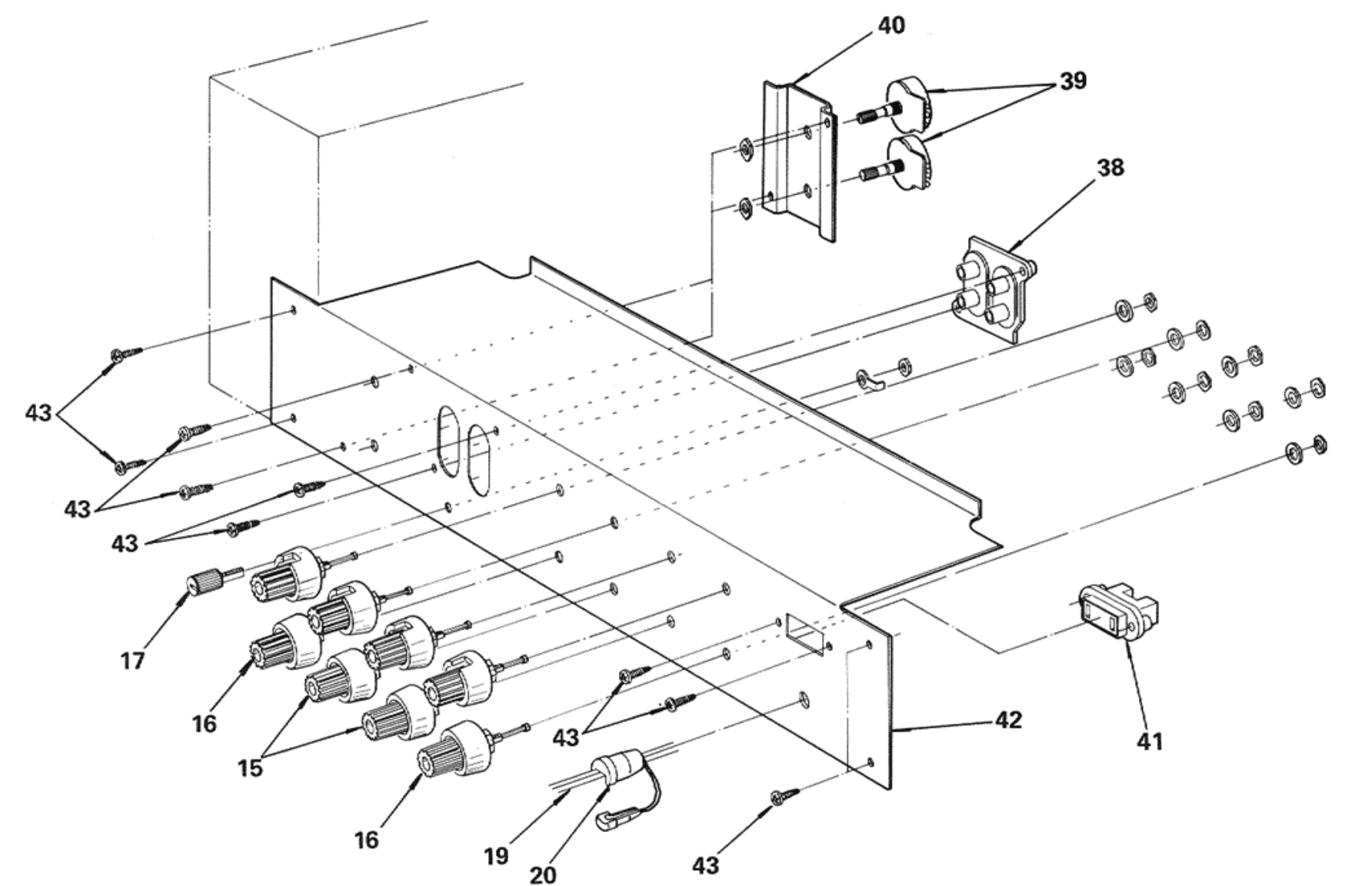


(Fig. 14)

Parts List (Fig. 14)

Item No.	Part Number	Rating, Description	Parts Name	Q'ty
23	QLP3101-322		Pilot lamp	3
24	EL80052		Meter assembly	2
25	E66102-002		Plate	2
26	E03468-007		Headphone jack	1
27	E66136-001		Jack holder	1
28	E66150-002		Stud	2
29	E23041-001		Mask plate	1
30	E66228-001		Mark	1
31	E23042-001		Dial back panel	1
32	E23044-001		Meter scale	1
33	E300124-002	Right	Holder	1
34	E300125-002	Left	Holder	1
35	E66476-001		Reflector	2
36	SBSB3008M		Tapping screw	
37	LPSP3008MS		Assembly screw	
	TAP-228A		Lamp circuit board	2
	TPS-227A		Relay circuit board	1
	TSC-124A		Switch circuit board	1

EXPLODED VIEW

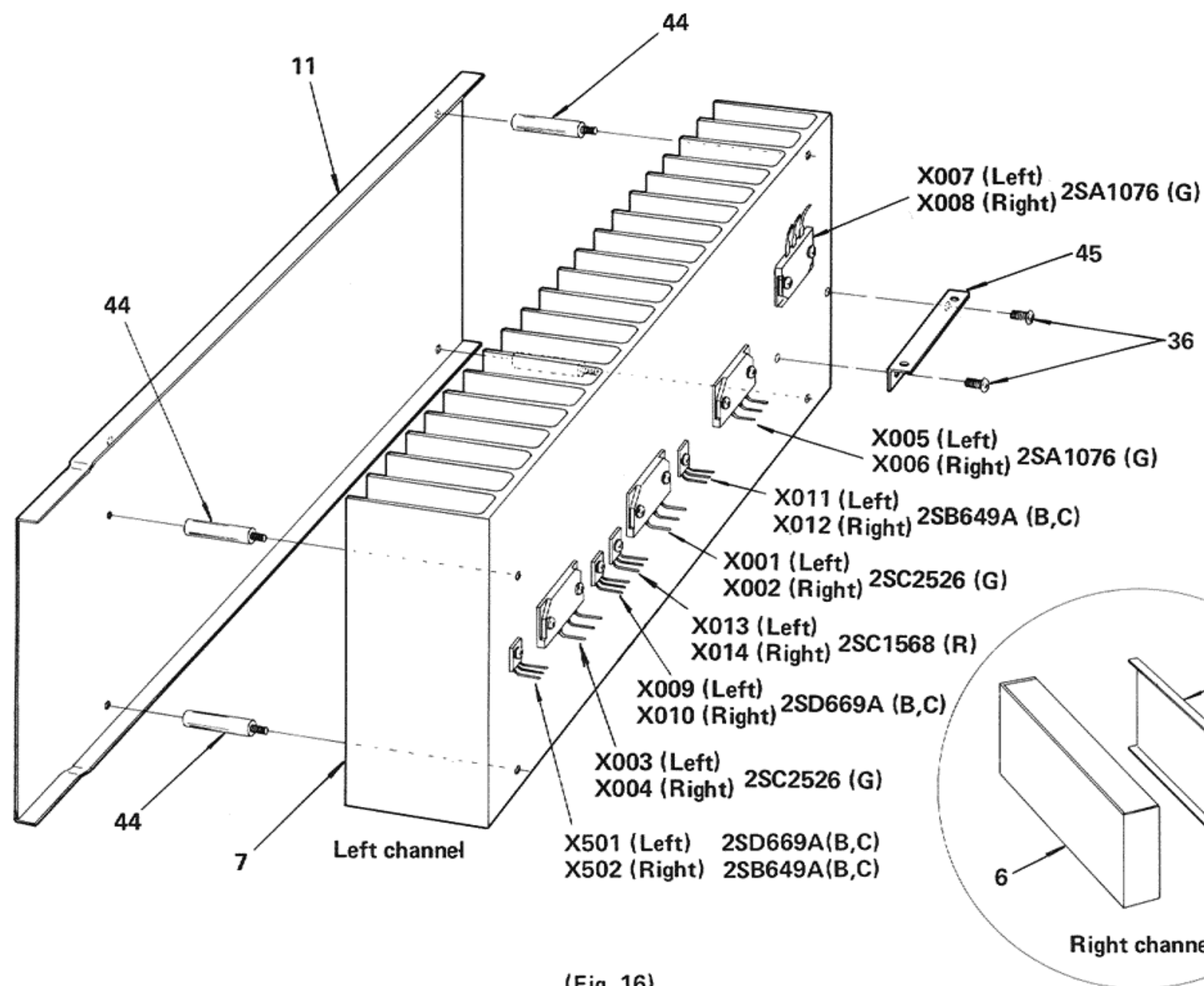


(Fig. 15)

Parts List (Fig. 15)

Item No.	Part Number	Rating, Description	Parts Name	Q'ty
38	EL80059	Input	Pin jack	1
39	EL80049	Input level adjust	Variable resistor	2
40	E66086-001	"	Volume holder	1
41	Refer to page 30 ▲		AC Outlet	1
42	E23036-002		Rear panel	1
43	SASB3008N		Screw	

# EXPLODED VIEW



(Fig. 16)

Parts List Fig. 16)

Item No.	Parts Number	Rating, Description	Parts Name	Q'ty
44	E66150-001	Right 4 Pcs, Left 4 Pcs.	Stud	8
45	E66088-001		L-Bracket	2

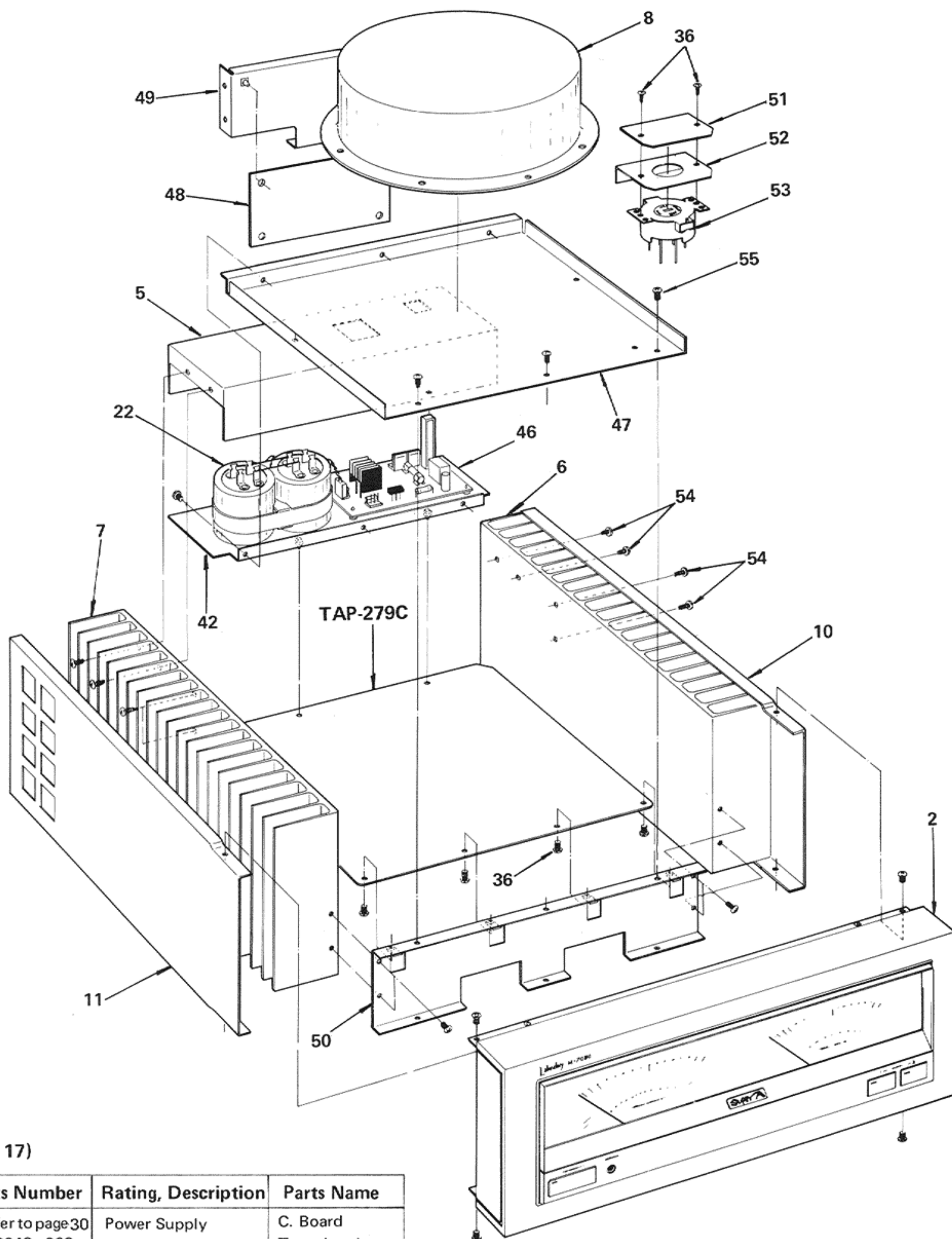
Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X001	2SC2526 (G)	120 W	80 MHz		Fujitsu
X002	2SC2526 (G)	120W	80 MHz		"
X003	2SC2526 (G)	120 W	80 MHz		"
X004	2SC2526 (G)	120 W	80 MHz		"
X005	2SA1076 (G)	120 W	80 MHz		"
X006	2SA1076 (G)	120 W	80 MHz		"
X007	2SA1076 (G)	120 W	80 MHz		"
X008	2SA1076 (G)	120 W	80 MHz		"

Item No.	Part Number	Rating		Description	
		Pc	fT		Maker
X009	2SD669A (B,C)	1 W	140 MHz		Hitachi
X010	2SD669A (B,C)	1 W	140 MHz		"
X011	2SB649A (B,C)	1 W	140 MHz		"
X012	2SB649A (B,C)	1 W	140 MHz		"
X013	2SC1568 (R)	4 W	150 MHz		Matsushita
X014	2SC1568 (R)	4 W	150 MHz		"
X501	2SD669A (B,C)	1 W	140 MHz		Hitachi
X502	2SB649A (B,C)	1 W	140 MHz		Hitachi

Note.

1. Transistor 2SC2526 (G) (X001, 002, 003, 004) can be replaced with 2SC2565 (O) (Toshiba),  
2SC1076 (G) (X005, 006, 007, 008) can be replaced with 2SA1095(O) (Toshiba).

# EXPLODED VIEW



Parts List (Fig. 17)

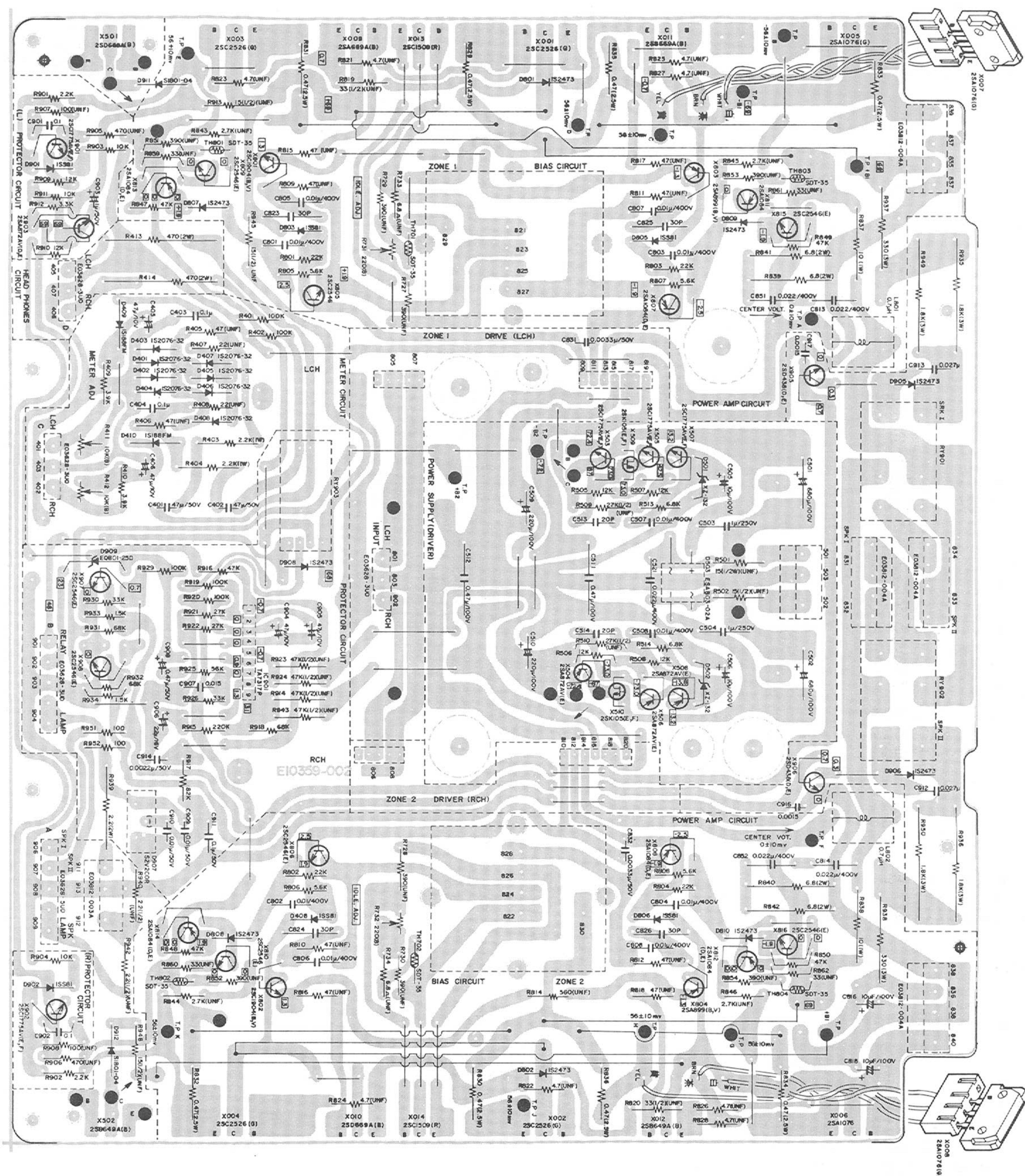
Item No.	Parts Number	Rating, Description	Parts Name
46	Refer to page 30	Power Supply	C. Board
47	E23043-003		Trans bracket
48	Refer to page 30		Fuse C. Board
49	E300400-005		Holder
50	E300115-002		H.sink holder
51	Refer to page 30	100 V 0.68 $\mu$ F	Plate
52	E66557-001		L-Bracket
53	Refer to page 30		V. Selector
54	SBSB3016M		Tap. screw
55	SBSB4008M		Tap. screw
22-2	EFZ-0079-684		M.M. Capacitor

(Fig. 17)



# CIRCUIT BOARD (BOTTOM VIEW)

## TAP-279C (Base circuit board)



(Fig. 18)



# PARTS LIST OF CIRCUIT BOARD (TAP-279C)—1

## Transistors

Item No.	Part Number	Rating		Description	
		Pc	f <sub>T</sub>		Maker
X501	—				
X502	—				
X503	2SC1775AV(E,F)	0.3 W	200 MHz	Silicon	Hitachi
X504	2SA872AV(E)	0.3 W	200 MHz	"	"
X505	2SC1775AV(E,F)	0.3 W	200 MHz	"	"
X506	2SA872AV(E)	0.3 W	120 MHz	"	"
X507	2SC1775AV(E,F)	0.3 W	200 MHz	"	"
X508	2SA872AV(E)	0.3 W	120 MHz	"	"
X509	2SK105(E,F)			F.E.T.	NEC
X510	2SK105(E,F)			"	"
X801	2SC1904(B,V)	1 W	100 MHz	Silicon	Fujitsu
X802	2SC1904(B,V)	1 W	100 MHz	"	"
X803	2SA899(B,V)	1 W	100 MHz	"	"
X804	2SA899(B,V)	1 W	100 MHz	"	"
X805	2SC2546(E)	400 mW	90 MHz	"	Hitachi
X806	2SC2546(E)	"	"	"	"
X807	2SA1084(D,E)	"	"	"	"
X808	2SA1084(D,E)	"	"	"	"
X809	2SC2546(E)	"	"	"	"
X810	2SC2546(E)	"	"	"	"
X811	2SA1084(D,E)	"	"	"	"
X812	2SA1084(D,E)	"	"	"	"
X813	2SA1084(D,E)	"	"	"	"
X814	2SA1084(D,E)	"	"	"	"
X815	2SC2546(E)	"	"	"	"
X816	2SC2546(E)	"	"	"	"
X901	2SC1775AV(E,F)	0.3 W	200MHz	"	"
X902	2SC1775AV(E,F)	0.3 W	200 MHz	"	"
X903	2SA872AV(D,E)	0.3 W	120 MHz	"	"
X905	2SD438(D,E)	750 mW	100 MHz	"	Sanyo
X906	2SD438(D,E)	"	"	"	"
X907	2SC2546(E)	400 mW	90 MHz	"	Hitachi
X908	2SC2546(E)	"	"	"	"

## Integrated Circuits

Item No.	Part Number	Rating		Description	
		Pc			Maker
IC901	TA7317P	0.5 W		I.C. Protective circuit	Toshiba

## Note:

The specific symbols ( 赤・黒・白 . . . etc.) on a surface of above P.C. Board are actually unrelated to the repair service and are significant denotement in order to process the proper assembly of P.C. Board at the factory.

## Diodes

Item No.	Part Number	Rating	Description	
				Maker
D401	1S2076-32		Silicon	Hitachi
D402	1S2076-32		"	"
D403	1S2076-32		"	"
D404	1S2076-32		"	"
D405	1S2076-32		"	"
D406	1S2076-32		"	"
D407	1S2076-32		"	"
D408	1S2076-32		"	"
D409	1S188FM		Germanium	Sanyo
D410	1S188FM		"	"
D501	XZ-132	13V Zenor	Silicon	JRC
D502	XZ-132	13V Zenor	"	"
D503	ESAB03-02A	1A	"	Fujitsu
D801	1S2473		"	Hitachi
D802	1S2473		"	"
D803	1SS81		"	"
D804	1SS81		"	"
D805	1SS81		"	"
D806	1SS81		"	"
D807	1S2473		"	Toyodengu
D808	1S2473		"	"
D809	1S2473		"	"
D810	1S2473		"	"
D901	1SS81		"	Hitachi
D902	1SS81		"	"
D905	1S2473		"	Toyodengu
D906	1S2473		"	"
D907	S2VC20R		"	Shindengen
D908	1S2473		"	Hitachi
D909	EQB01-22Z	22V Zenor	"	Fuji

## Coils & Transformers

Item No.	Part Number	Rating	Description
L801	E04059-R68	0.68 H	Sagami Musen
L802	E04059-R68	0.68 H	"

# PARTS LIST OF CIRCUIT BOARD (TAP279C)–2

## Capacitors

Item No.	Part Number	Rating		Description
C401	QEZ0046-476	47 F	50 V	Electrolytic
C402	QEZ0046-476	47 F	50 V	"
C403	QFM31HJ-104	0.1 F	50 V	Mylar
C404	QFM31HJ-104	0.1 F	50 V	"
C405	QFW51AA-476	47 F	10 V	Electrolytic
C406	QEW51AA-476	47 F	10 V	"
C501	EEW82AM-687	680 F	100 V	"
C502	EEW82AM-687	680 F	100 V	"
C503	QFZ0077-105	1 F	250 V	Metalized Mylar
C504	QFZ0077-105	1 F	250 V	"
C505	EEW82AM-106	10 F	100 V	Electrolytic
C506	EEW82AM-106	10 F	100 V	"
C507	QFZ0075-103	0.1 F	400 V	Metalized Mylar
C508	QFZ0075-103	0.1 F	400 V	"
C509	EEW82AM-227	220 F	100 V	Electrolytic
C510	EEW82AM-227	220 F	100 V	"
C511	EFZ0079-474	2.2 F	250 V	Metalized Mylar
C512	EFZ0079-474	2.2 F	250 V	"
C513	QFS22HK-200	20 pF	125 V	Polystyrol
C514	QFS22HK-200	20 pF	125 V	"
C521	QFZ0075-223	0.022 F		Mylar
C801	QFZ0075-103	0.01 F	400 V	Metalized Mylar
C802	QFZ0075-103	0.01 F	400 V	"
C803	QFZ0075-103	0.01 F	400 V	"
C804	QFZ0075-103	0.01 F	400 V	"
C805	QFZ0075-103	0.01 F	400 V	Metalized Mylar
C806	QFZ0075-103	0.01 F	400 V	"
C807	QFZ0075-103	0.01 F	400 V	"
C808	QFZ0075-103	0.01 F	400 V	"
C813	QFZ0075-223	0.022 F	400 V	Metalized Mylar
C814	QFZ0075-223	0.022 F	400 V	"
C815	EEW82AM-106	10 F	100 V	Electrolytic
C816	EEW82AM-106	10 F	100 V	"
C817	EEW82AM-106	10 F	100 V	"
C818	EEW82AM-106	10 F	100 V	"
C823	QFS22HK-300	30 pF	125 V	"
C824	QFS22HK-300	30 pF	125 V	"
C825	QFS22HK-300	30 pF	125 V	"
C826	QFS22HK-300	30 pF	125 V	"
C831	QFM31HJ-332	3300 pF	50 V	Mylar
C832	QFM31HJ-332	3300 pF	50 V	"
C901	QFM31HJ-104	0.1 F	50 V	"
C902	QFM31HJ-104	0.1 F	50 V	"
C903	QEW51HA-105	1 F	50 V	Electrolytic
C904	QEW51AA-476	47 F	10 V	"
C905	QEW51AA-476	47 F	10 V	"
C906	QEW51CA-226	22 F	16 V	"
C907	QFM31HJ-153	0.015 F	50 V	Mylar
C908	QEW51HA-474	0.47 F	50 V	Electrolytic
C909	QFM31HJ-103	0.01 F	50 V	Mylar
C910	QFM31HJ-103	0.01 F	50 V	"
C911	QFM31HJ-104	0.1 F	50 V	"
C912	QFM41HJ-273	0.027 F	50 V	"
C913	QFM41HJ-273	0.027 F	50 V	"
C914	QFM31HJ-222	2200 pF	50 V	"

## Resistors

Item No.	Part Number	Rating		Description
R401	QRD148J-104S	100k	1/4 W	Carbon
R402	QRD148J-104S	100k	1/4 W	"
R403	QRG017J-222S	2.2k	1 W	Oxide metal film
R404	QRG017J-222S	2.2k	1 W	"
R405	QRD149J-470S	47	1/4 W	Carbon
R406	QRD149J-470S	47	1/4 W	"
R407	QRD149J-220S	22	1/4 W	"
R408	QRD149J-220S	22	1/4 W	"
R409	QRD148J-392S	3.9k	1/4 W	"
R410	QRD148J-392S	3.9k	1/4 W	"
R411	QVZ3501-103	10k		(B)Semi-fix V. Resistor
R412	QVZ3501-103	10k		"
R413	QRG027J-471	470	2 W	Oxide metal film
R414	QRG027J-471	470	2 W	"
R501	QRG129J-150	15	1/2 W	"
R502	QRG129J-150	15	1/2 W	"
R505	QRD148J-123S	12k	1/2 W	"
R506	QRD148J-123S	12k	1/2 W	"
R507	QRD148J-123S	12k	1/2 W	"
R508	QRD148J-123S	12k	1/2 W	"
R509	QRG129J-273	12k	1/2 W	"
R510	QRG129J-273	12k	1/2 W	"
R513	QRD149J-682S	3.9k	1/2 W	"
R514	QRD149J-682S	3.9k	1/2 W	"
R727	QRD149J-391S	390	1/2 W	"
R728	QRD149J-391S	390	1/2 W	"
R729	QRD149J-391S	390	1/2 W	"
R730	QRD149J-391S	390	1/2 W	"
R731	QVZ3501-221	220		(B)Semi-fix V. Resistor
R732	QVZ3051-221	220		"
R733	QRD149J-6R8S	6.8	1/4 W	Carbon
R734	QRD149J-6R8S	6.8	1/4 W	"
R801	QRD148J-223S	22k	1/4 W	"
R802	QRD148J-223S	22k	1/4 W	"
R803	QRD148J-223S	22k	1/4 W	"
R804	QRD148J-223S	22k	1/4 W	"
R805	QRD148J-562S	5.6k	1/4 W	"
R806	QRD148J-562S	5.6k	1/4 W	"
R807	QRD148J-562S	5.6k	1/4 W	"
R808	QRD148J-562S	5.6k	1/4 W	"
R809	QRZ0052-470S	47	1/4 W	"
R810	QRZ0052-470S	47	1/4 W	"
R811	QRZ0052-470S	47	1/4 W	"
R812	QRZ0052-470S	47	1/4 W	"
R813	QRZ0052-561S	560	1/4 W	"
R814	QRZ0052-561S	560	1/4 W	"
R815	△ QRZ0052-470S	47	1/4 W	Fusible carbon
R816	△ QRZ0052-470S	47	1/4 W	"
R817	△ QRZ0052-470S	47	1/4 W	"
R818	△ QRZ0052-470	47	1/4 W	"
R819	△ QRD129J-330	33	1/2 W	Uninflamable carbon
R820	△ QRD129J-330	33	1/2 W	"
R821	QRD149J-4R7S	4.7	1/4 W	Carbon
R822	QRD149J-4R7S	4.7	1/4 W	"
R823	QRD149J-4R7S	4.7	1/4 W	"



# PARTS LIST OF CIRCUIT BOARD (TAP-279C)–3

## Resistors

Item No.	Part Number	Rating		Description
R824	QRD149J-4R7S	4.7	1/4 W	"
R825	QRD149J-4R7S	4.7	1/4 W	"
R826	QRD149J-4R7S	4.7	1/4 W	"
R827	QRD149J-4R7S	4.7	1/4 W	"
R828	QRD149J-4R7S	4.7	1/4 W	"
R829	R9-007 $\Delta$	0.47	2.5 W	Uninflamable cement
R830	R9-007 $\Delta$	0.47	2.5 W	"
R831	R9-007 $\Delta$	0.47	2.5 W	"
R832	R9-007 $\Delta$	0.47	2.5 W	"
R833	R9-007 $\Delta$	0.47	2.5 W	"
R834	R9-007	0.47	2.5 W	"
R835	R9-007	0.47	2.5 W	"
R836	R9-007	0.47	2.5 W	"
R837	QRX017J-100S	10	1 W	Oxide metal film
R838	QRX017J-100S	10	1 W	"
R839	QRG027J-6R8	6.8	2 W	"
R840	QRG027J-6R8	6.8	2 W	"
R841	QRG027J-6R8	6.8	2 W	"
R842	QRG027J-6R8	6.8	2 W	"
R843	QRD149J-272S	2.7k	1/4 W	Carbon
R844	QRD149J-272S	2.7k	1/4 W	"
R845	QRD149J-272S	2.7k	1/4 W	"
R846	QRD149J-272S	2.7k	1/4 W	"
R847	QRD148J-473S	47	1/4 W	"
R848	QRD148J-473S	47	1/4 W	"
R849	QRD148J-473S	47	1/4 W	"
R850 $\Delta$	QRD148J-473S	47	1/4 W	Fusible carbon
R851 $\Delta$	QRZ0052-391	390	1/4 W	"
R852 $\Delta$	QRZ0052-391	390	1/4 W	"
R853 $\Delta$	QRZ0052-391	390	1/4 W	"
R854 $\Delta$	QRZ0052-391	390	1/4 W	"
R859	QRD129J-330	33	1/2 W	Carbon
R860	QRD129J-330	33	1/2 W	"
R861	QRD129J-330	33	1/2 W	"
R862	QRD129J-330	33	1/2 W	"
R901	QRD148J-222S	2.2k	1/4 W	"
R902	QRD148J-222S	2.2k	1/4 W	"
R903	QRD148J-103S	10k	1/4 W	"
R904	QRD148J-103S	10k	1/4 W	"
R905	QRD149J-471S	470	1/4 W	"
R906	QRD149J-471S	470	1/4 W	"
R907	QRD149J-101S	100	1/4 W	"
R908	QRD149J-101S	100	1/4 W	"
R909	QRD148J-123S	12k	1/4 W	"
R910	QRD148J-123S	12k	1/4 W	"
R911	QRD148J-103S	10k	1/4 W	"
R912	QRD148J-332S	3.3k	1/4 W	"
R913	QRD129J-150	15	1/2 W	"
R914	QRD149J-473S	47k	1/4 W	"
R915	QRD148J-224S	220k	1/4 W	"
R916	QRD148J-473S	47	1/4 W	"
R917	QRD148J-823S	82k	1/4 W	"
R918	QRD148J-683S	68k	1/4 W	"
R919	QRD148J-104S	100k	1/4 W	"
R920	QRD148J-104S	100k	1/4 W	"

## Resistors

Item No.	Part Number	Rating		Description
R921	QRD148J-273S	27k	1/4 W	"
R922	QRD148J-273S	27k	1/4 W	"
R923	QRG129J-393S	39k	1/4 W	Oxide metal film
R924	QRD148J-393S	39k	1/4 W	"
R925	QRD148J-563S	56k	1/4 W	"
R926	QRD148J-333S	33k	1/4 W	"
R927	QRD148J-822S	8.2k	1/4 W	"
R929	QRD148J-104S	100k	1/4 W	"
R930	QRD148J-333S	33k	1/4 W	"
R931	QRD148J-683S	68k	1/4 W	"
R932	QRD148J-393S	68k	1/4 W	"
R933	QRD149J-152S	1.5k	1/4 W	"
R934	QRD149J-561S	1.5k	1/4 W	"
R935	QRG037J-182	1.8k	3 W	Oxide metal film
R936	QRG027J-182	1.8k	3 W	"
R937	QRG027J-331	330	2 W	"
R938	QRG027J-331	330	2 W	"
R939	QRX027J-2R2	2.2	2 W	"
R940	QRX027J-2R2	2.2	2 W	"
R942	QRX129J-2R2	2.2	1/2 W	Oxide film
R943	QRG129J-473	47k	1/2 W	Oxide metal film
R945	QRG129J-150	15	1/2 W	"
R946	QRG129J-150	15	1/2 W	"
R949	QRX037J-182	1.8k	1/2 W	Oxide film
R951	QRG129J-101	100	1/2 W	Oxide metal film
R952	QRG129J-101	100	1/2 W	"

## Others

Item No.	Part Number	Rating	Description
	E03628-3UD E03628-3UD E03628-3UD E03628-5UD E03686-005F		
	E03686-007F E03812-003A E03812-003A E03812-003A E03812-004A		
RY901 RY902 RY903 TH701	E61537-002 ESK5D24-214 ESK5D24-214 ESK2D24-221 SDT-35	24 V 24 V 24 V 350 $\Omega$	Heat Sink  Miniature Relay Thermistor
TH702 TH801 TH802 TH803 TH804	SDT-35 SDT-35 SDT-35 SDT-35 SDT-35	350 $\Omega$ 350 $\Omega$ 350 $\Omega$ 350 $\Omega$ 350 $\Omega$	" " " " "
	TAD-198B		Super-A block

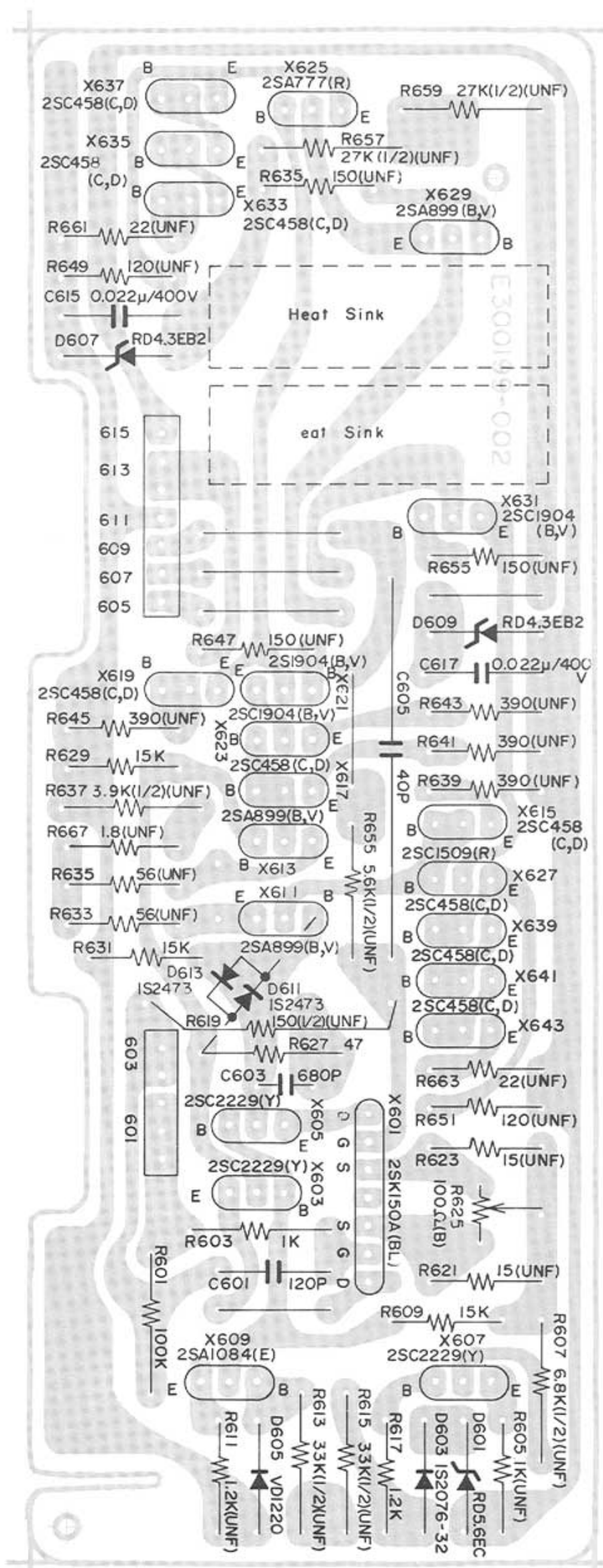


# CIRCUIT BOARD (BOTTOM VIEW)

TAD-195A

(Driver circuit board)

X601 S 7.5V D G 0V	X623 E -70.5V C -0.6V B -69.9V
X603 E 7.5V C 33.5V B 8.1V	X625 E 70.5V C 66.8 B 69.9
X605 E 7.5V C 33.5V B 8.1V	X627 E -70.5V C -66.8V B -69.9V
X607 E -66.2V C -37.5V B -65.6V	X629 E 66.8V C 4.8V B 66.2V
X609 E C B 70.6V	X631 E -66.8V C -4.8V B
X611 E 34.1V C -69.9V B 33.5V	X633 E C B
X613 E 34.1V C -66.9V B 33.5V	X635 E C B
X615 E C -69.9V B -69.9V	X637 E 70.5V C B
X617 E C -69.9V B -69.9V	X639 E C -70.5V B -70.5V
X619 E 69.9V C B	X641 E C B
X621 E C 69.9V B 0V	X643 E C B



# PARTS LIST OF CIRCUIT BOARD (TAD-195A)

## Transistors

ItemNo.	Part Number	Rating		Description	
		Pc	fT		Maker
X601	2SK150A(BL)	0.8W 400 mW	120 MHz 90 MHz	Dual F.E.T.	Toshiba
X603	2SC2229(Y)				"
X605	2SC2229(Y)				"
X607	2SC2229(Y)				"
X609	2SA1084(E)				Hitachi
X611	2SA899(B,V)	1 W	100 MHz	Silicon	Fujitsu
X613	2SA899(B,V)	1 W	100 MHz	"	"
X615	2SC458(C,D)	200 mW	230MHz	"	Hitachi
X617	2SC458(C,D)	"	"	"	"
X619	2SC458(C,D)	"	"	"	"
X621	2SC1904(B,V)	1 W	130 MHz	"	Fujitsu
X623	2SC1904(B,V)	"	"	"	"
X625	2SA777(R)	750 mW	120 MHz	"	Matsushita
X627	2SC1509(R)	"	"	"	"
X629	2SB649A(B,C)	1 W	140 MHz	"	Hitachi
X631	2SD669A(B,C)	1 W	140 MHz	Silicon	Hitachi
X633	2SC458(C,D)	200 mW	230 MHz	"	"
X635	2SC458(C,D)	"	"	"	"
X637	2SC458(C,D)	"	"	"	"
X639	2SC458(C,D)	"	"	"	"
X641	2SC458(C,D)	"	"	"	"
X643	2SC458(C,D)	"	"	"	"

## Diodes

Item No.	Part Number	Rating	Description	
				Maker
D601	RD5.6EC	5.6 V	Zenor	NEC
D603	1S2076-32			Hitachi
D605	VD1220			Sanyo
D607	RD4-3EB2	4.3 V	Zenor	NEC
D609	RD4-3EB2	4.3 V	"	"
D611	1S2473			Toyodengu
D613	1S2473			"

## Capacitors

ItemNo.	Part Number	Rating		Description
C601	QFS42BJ-121	120 pF	125 V	Polystyrol
C603	QFS42BJ-681	680 pF	125 V	"
C605	QFS22HK-180	18 pF	500 V	"
C615	QFZ0075-103	0.022 $\mu$ F	400 V	Film
C617	QFZ0075-103	0.022 $\mu$ F	400 V	"

## Resistors

Item No.	Part Number	Rating		Description
R601	ERD121J-104	100k	1/4 W	Carbon
R603	ERD121J-102	1k	1/4 W	"
R605	QRD149J-102S	1k	1/4 W	"
R607	QRD129J-682	6.8k	1/2 W	"
R609	QRD148J-153S	15k	1/4 W	"
R611	QRD149J-122S	1.2k	1/4 W	"
R613	QRD129J-333	33k	1/2 W	"
R615	QRD129J-333	33k	1/2 W	"
R617	QRD148J-122S	1.2k	1/4 W	"
R619	R9-006	330	1/2 W	"
R621	QRD149J-150S	15	1/4 W	"
R623	QRD149J-150S	15	1/4 W	"
R625	QVP9A0B-101	100		V. Resistor
R627	ERD121J-470	47	1/4W	Carbon
R629	QRD148J-153S	15k	1/4 W	"
R631	QRD148J-153S	15k	1/4 W	"
R633	QRZ0052-560	56	1/4 W	(Fusible)
R635	QRD149J-560S	56	1/4 W	"
R637	QRD129J-92	3.9k	1/2 W	"
R639	QRZ0052-391	390	1/4 W	"
R641	QRZ0052-391	390	1/4 W	"
R643	QRZ0052-391	390	1/4 W	"
R645	QRZ0052-391	390	1/4 W	"
R647	QRZ0052-151	150	1/4 W	"
R649	QRZ0052-121	120	1/4 W	"
R651	QRZ0052-121	120	1/4 W	"
R653	QRZ0052-151	150	1/4 W	"
R655	QRZ0052-151	150	1/4 W	"
R657	QRD129J-273	27k	1/2 W	"
R659	QRD129J-273	27k	1/2 W	"
R661	QRZ0052-220	22	1/4 W	"
R663	QRZ0052-220	22	1/4 W	"
R665	QRD129J-562	5.6k	1/2 W	"

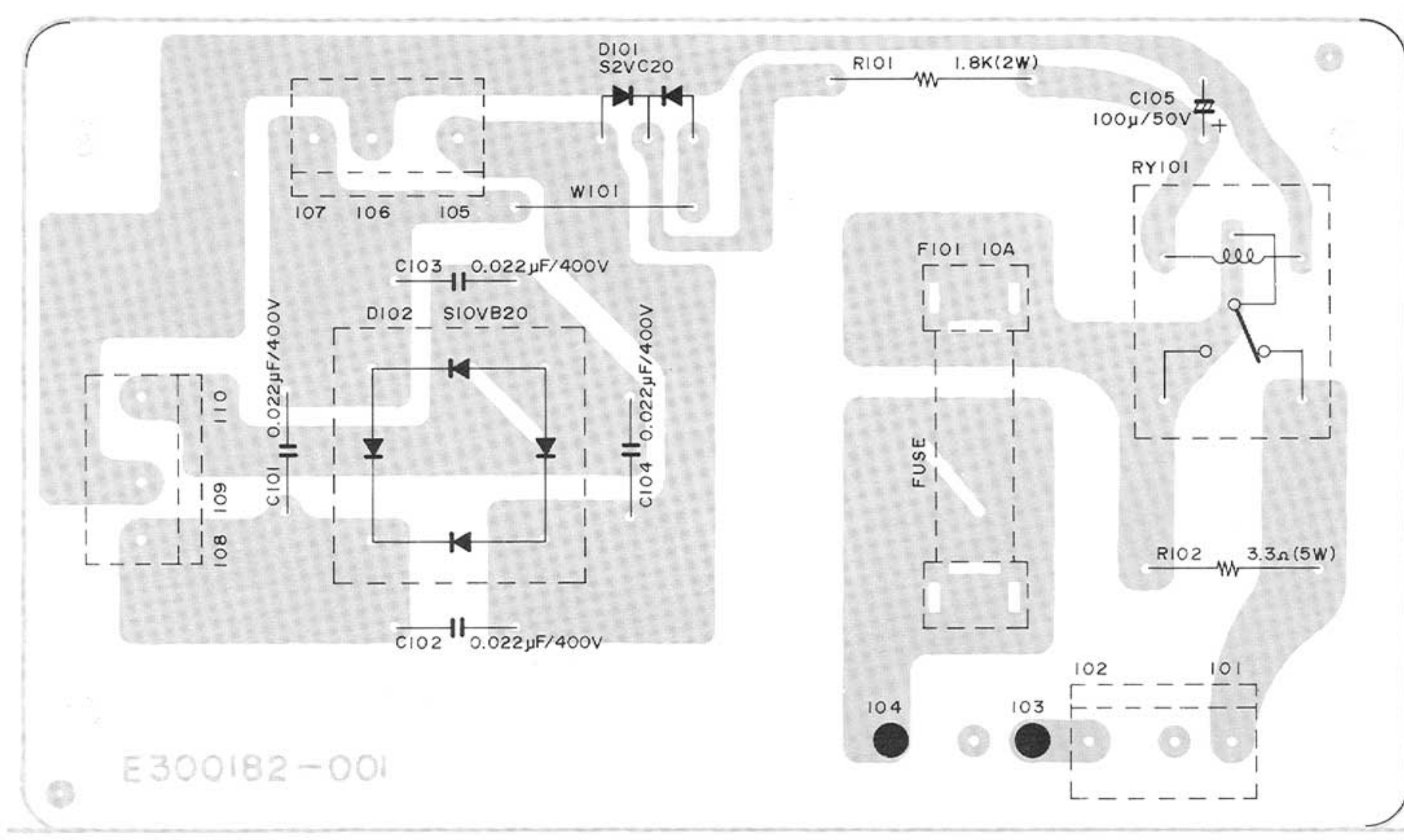
## Others

Item No.	Part Number	Rating	Description
	E03708-005A E03708-007A E60171-005	4Pin Socket 7Pin Socket	Heat Sink



# CIRCUIT BOARD (BOTTOM VIEW)

## TPS-226A (Power Supply Circuit Board)



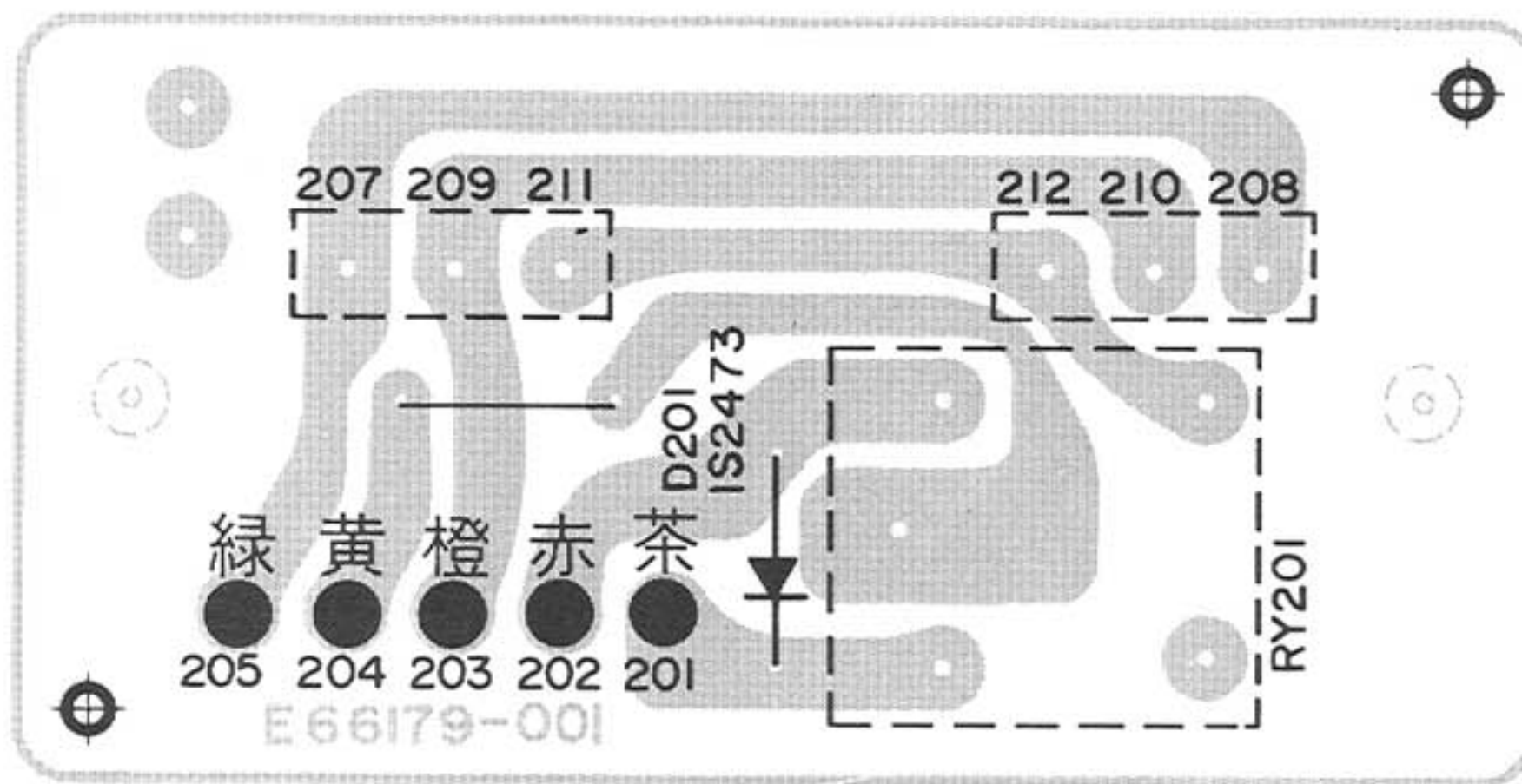
(Fig. 20)

## PARTS LIST OF CIRCUIT BOARD (TPS-226A)

Item No.	Part Number	Part Name	Rating	
<b>Diodes</b>				
D101 ⚠	S2VC20	Diode	Silicon	Shindengen
D102 ⚠	S10VB20	Diode	"	"
<b>Capacitors</b>				
C101	QFZ0075-223	Metalized Mylar	0.022 μF/400V	
C102	QFZ0075-223	"	0.022 μF/400V	
C103	QFZ0075-223	"	0.022 μF/400V	
C104	QFZ0075-223	"	0.022 μF/400 V	
C105	QEW51HA-107	Electrolytic	100 μF/50 V	
<b>Resistors</b>				
R101 ⚠	QRG027J-182	Oxide metalized film	1.8 k	/2 W
R102 ⚠	ERF051K-3R3	Uninflammable	3.3 Ω	/5 W
<b>Others</b>				
RY101 ⚠	ESK1D24-112	Relay	24 V	
⚠	E65420-001	Heat sink		
⚠	E45524-002	Fuse clip		
	E03812-003A	3P plug		
	LPSP3012MS	Assy screw		

# CIRCUIT BOARD (BOTTOM VIEW)

## TPS-227A (Relay Circuit Board)



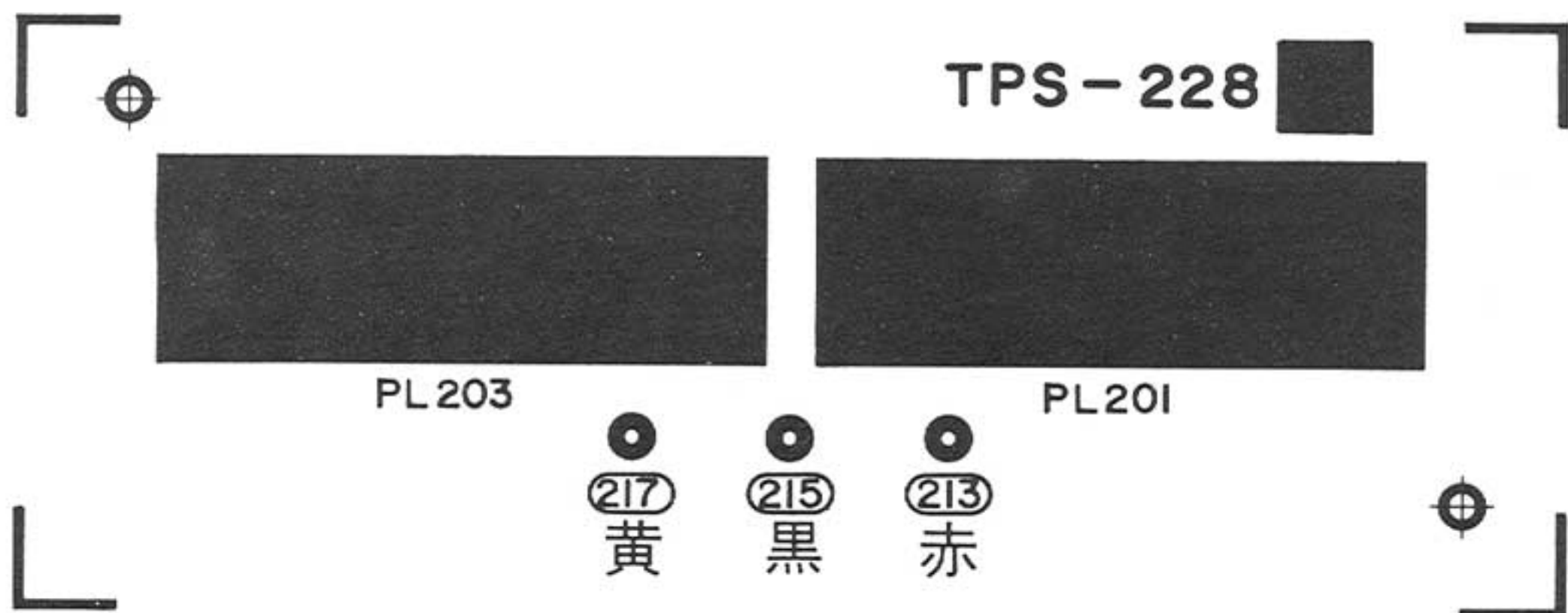
(Fig. 21)

Item No.	Part Number	Rating	Description
D201	1S2473		Silicon
RY201	ESK1D24-114	24 V	
	E03628-3UD		3P Plug

**Note:**  
 The specific symbols ( 赤, 黒, 白 . . . etc.) on a surface of above P.C. Board are actually unrelated to the repair service and are significant denotement in order to process the proper assembly of P.C. Board at the factory.

# CIRCUIT BOARD

## TPS-228A (Fuse lamp Circuit Board)



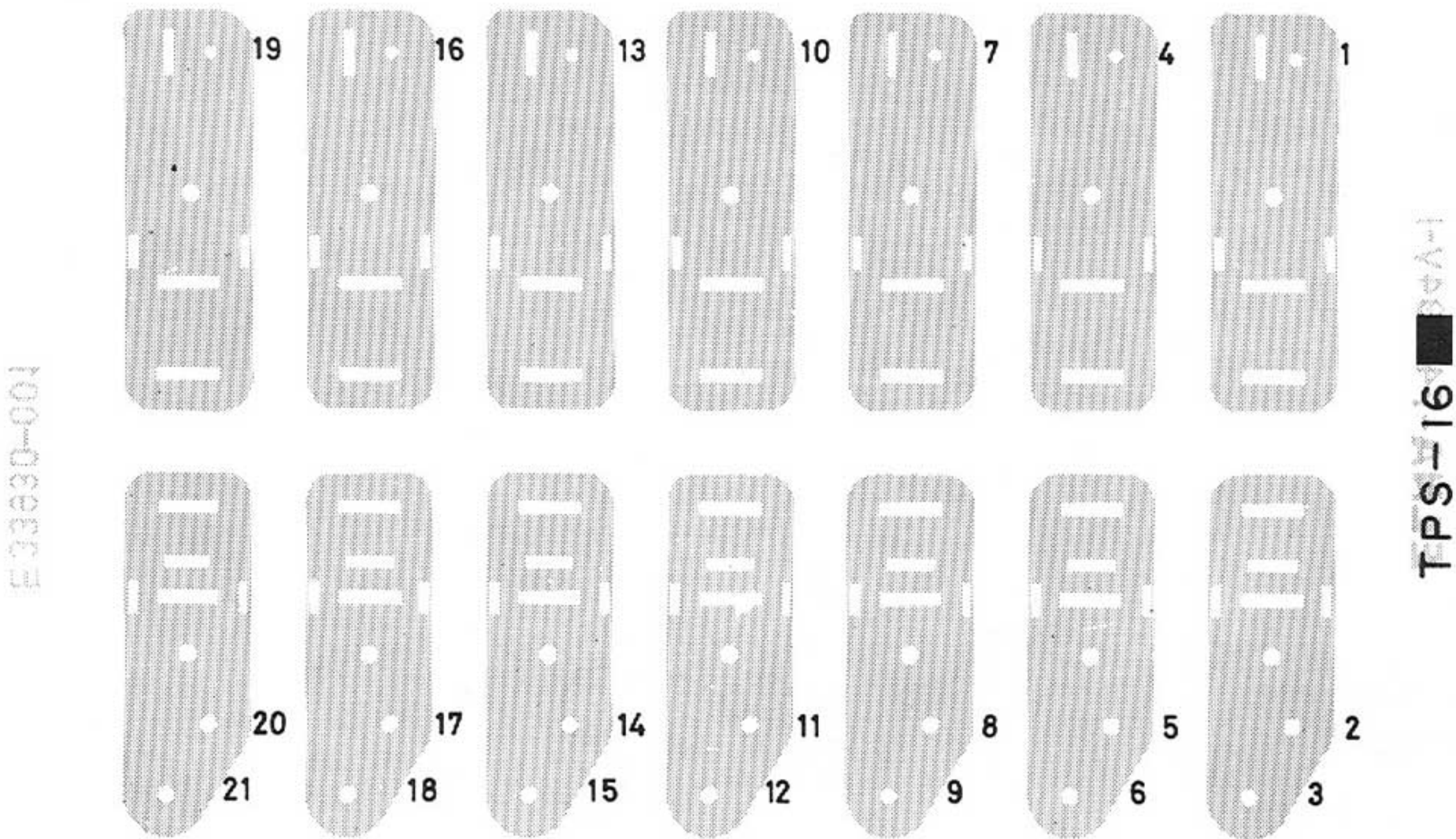
(Fig. 22)

Item No.	Part Number	Part Name	Rating
	E45524-002	Fuse clip	

**Note:**  
 The specific symbols ( 赤, 黒, 白 . . . etc.) on a surface of above P.C. Board are actually unrelated to the repair service and are significant denotement in order to process the proper assembly of P.C. Board at the factory.



CIRCUIT BOARD (BOTTOM VIEW)  
TPS-16 (Fuse Circuit Board)

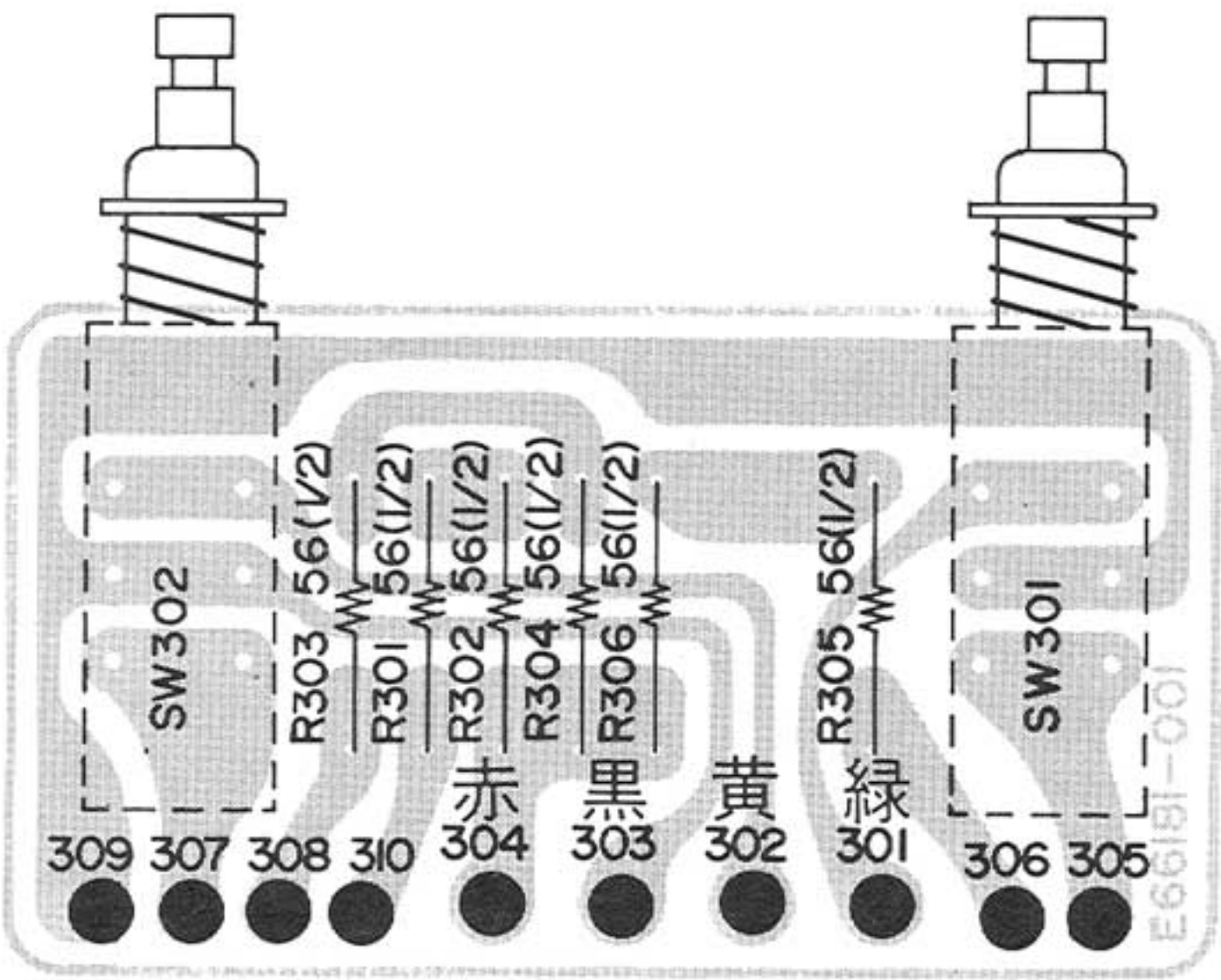


(Fig. 23)

Item No.	Part Number	Rating	Description
	△E45524-002	for F1, F2	Fuse clip
	Refer to page 30	for F3, 4, 5, 6	Fuse clip

# CIRCUIT BOARD (BOTTOM VIEW)

## TSC-124A (Push Switch Circuit Board)



(Fig. 24)

Resistors

Item No.	Part Number	Rating		Description
R301	QRG129J-560	56	1/2 W	Oxide metalized film
R302	QRG129J-560	56	1/2 W	"
R303	QRG129J-560	56	1/2 W	"
R304	QRG129J-560	56	1/2 W	"
R305	QRG129J-560	56	1/2 W	"
R306	QRG129J-560	56	1/2 W	"

**Note:**  
 The specific symbols ( 赤, 黒, 白 . . . etc.) on a surface of above P.C. Board are actually unrelated to the repair service and are significant denotement in order to process the proper assembly of P.C. Board at the factory.

Switches

Item No.	Part Number	Rating	Description
SW301	QSP0239-106		Speaker switch
SW302	QSP0239-106		"

## Parts list with specified numbers for designated areas


Page	Item	Description	U.S.A. & Canada	Europe, U.K. & Australia	For other countries
15	19	△ Power cord	△ QMP1700-244	△ QMP4400-200 (Swiss) △ QMP4100-200 (Others)	△ QMP1700-244
15	20	△ Cord stopper	△ QHS4194-323	△ QHS4194-323	△ QHS4194-323
15	21	△ Push switch	△ QSP2111-031	△ QSP2111-031	△ QSP2111-031
17	41	△ AC outlet	△ QMC0231-003	Not included	△ QMC0231-003
19	46	△ Power supply C. Board	△ TPS-226A	△ TPS-226B	△ TPS-226A
	F101	△ Fuse (Primary)	△ QMF0003-100S	△ QMF51A2-5ROS	△ 110V/120V QMF0003-100S △ 220/240V QMF61U1-5R0
19	53	Voltage Selector	Not included	Not included	△ QSR0085-001
19	48	△ Fuse Circuit Board	△ TPS-16E	△ TPS-16F	△ TPS-16E
28		△ Fuse clip	△ E45524-002	△ E48965-002	△ E45524-002
19	51	Plate (V. Select)	E66576-001	E66576-001	Not included
	F1, 2	△ Fuse (Secondary)	△ QMF0003-100S	△ QMF0003-100S	△ QMF0003-100S
	F3, 4	△ "	△ QMF61U1-R50	△ QMF51A2-R50L	△ QMF51A2-R50L
	F5, 6	△ "	△ QMF61U1-1R0	△ QMF51A2-1R0L	△ QMF51A2-1R0L

## Power Supply & Power Consumption

Areas	Line Voltage & Frequency	Power Consumption
U.S.A.	AC 120 V 60 Hz	330 W
Canada	AC 120 V 60 Hz	610 W 750 VA
Europe	AC 220 V ~ 50 Hz	1100 W
U.K. & Australia	AC 240 V ~ 50 Hz	1100 W
Other Areas	AC 110/120/220/240 V ~ Selectable, 50/60 Hz	1100 W

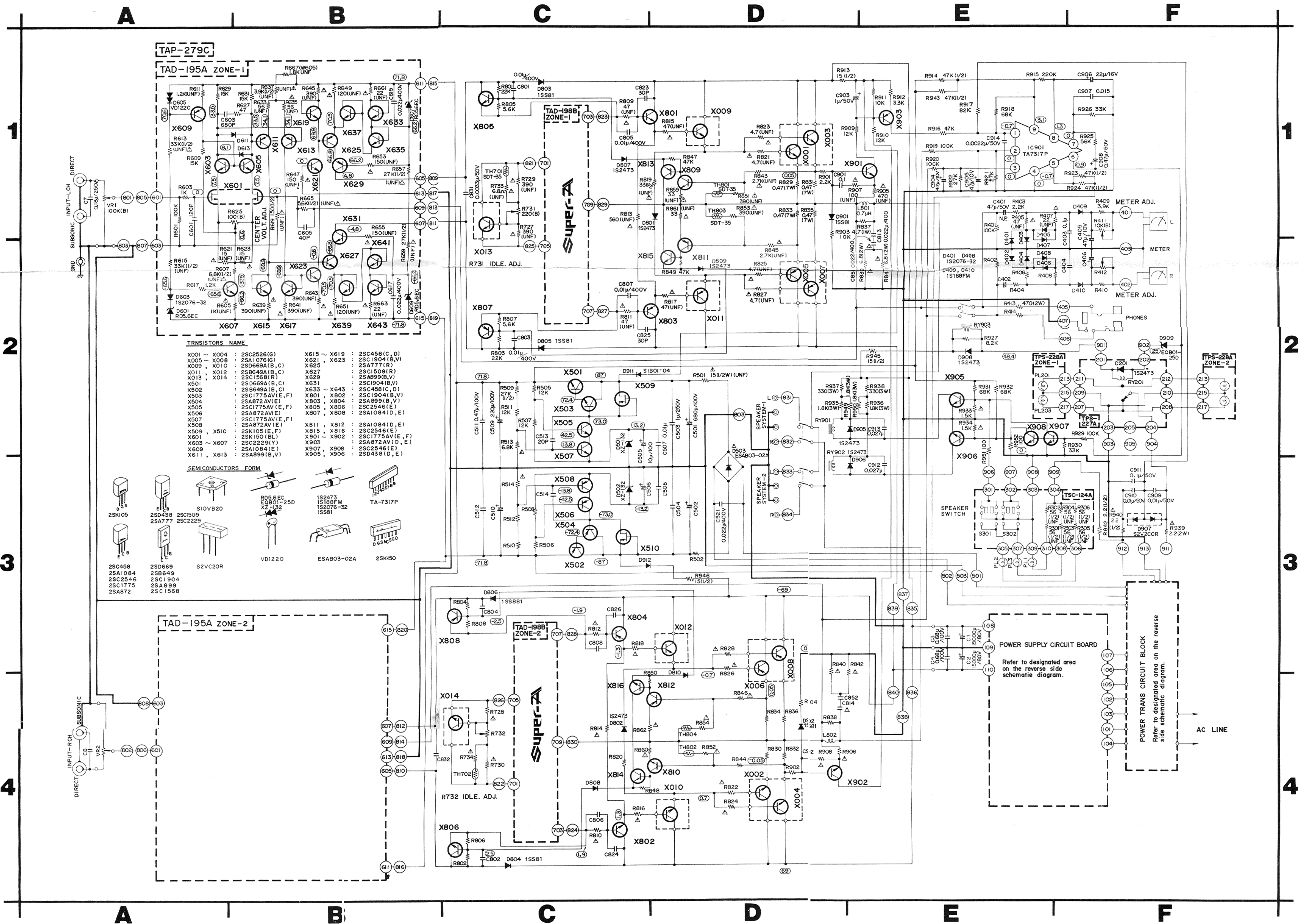


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M-7050 Schematic Diagram (For only qualified service personnel)



Notes:

- About the part of "POWER SUPPLY CIRCUIT BOARD" and "POWER TRANS CIRCUIT BLOCK", refer to Schematic Diagram of each designated area on the reverse side.
- When replacing the parts marked with  $\Delta$ , be sure to use the designated parts to ensure safety.
- This is the standard circuit diagram.

The design and contents are subject to change without notice.



(J), (C)

For U.S.A. & CANADA

