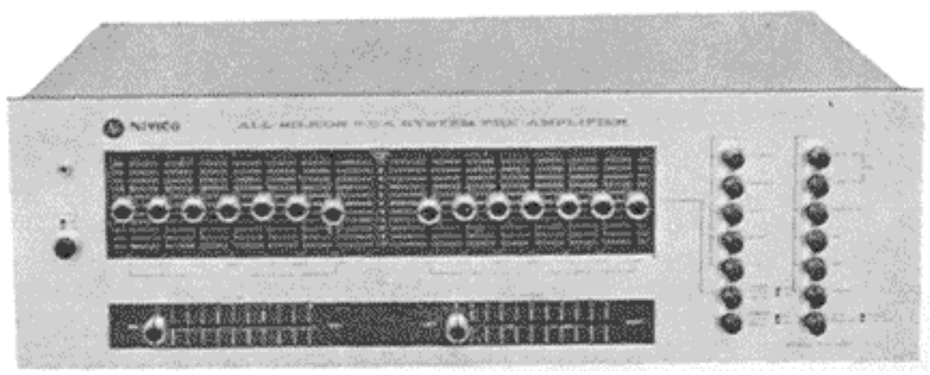
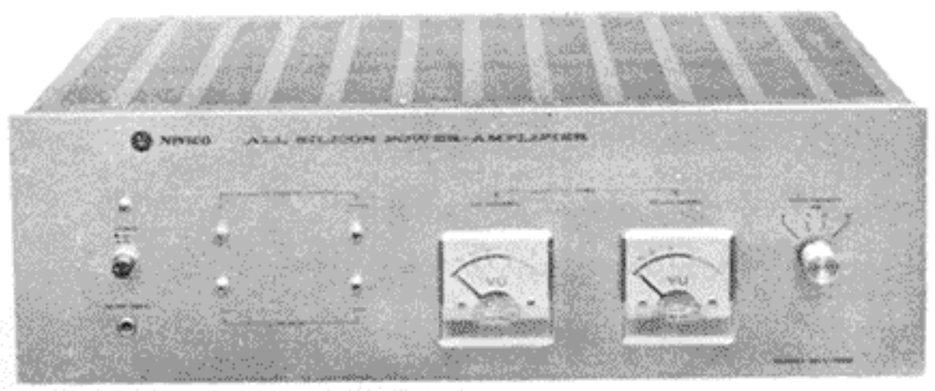
NIVICO

No. 2145

SERVICE MANUAL



5011/PST-1000E



5012/MST-1000E

MODEL 5011/PST-1000E

STEREO PRE-AMPLIFIER WITH S.E.A. SYSTEM

MODEL 5012/MST-1000E

ALL SILICON TRANSISTOR STEREO MAIN AMPLIFIER

DIMENSION :

	Height	Width	Depth
5011/PST-1000E	5-7/8″,	18-7/8″,	13-1/2″
5012/MST-1000E	5-7/8″,	18-7/8″,	13-1/2″

WEIGHT :

5011/PST-1000E	24.2 lbs.
5012/MST-1000E	35.6 lbs.

SPECIFICATIONS

■ MODEL 5011/PST-1000E

Type :	Stereo Pre-Amplifier with S.E.A. System
Output Voltage :	3V (Distortion ; Less Than 0.03%, 10Hz~70KHz) 5V (Non-clip ; 10Hz~50KHz)
Output Impedance :	1.1KΩ
Frequency Response :	Aux, Tuner ; 10Hz~100KHz +0 dB −0.5 dB, Phono (Low, High) ; RIAA Equalizer Response ±0.5 dB (Adjustable ±3 dB at 10KHz)
Sensitivity :	To Get 1.5V
(Input Impedance at	Aux, Tuner 170mV (100KΩ)
Input Terminals)	(Adjustable by 250KΩ Semi-Variable Resistor)

■ MODEL 5012/MST-1000E

Type :	All Silicon Transistor Stereo Main Amplifier
Circuit Type of	Semi-Complementary, SEPP Triple
Power Stage :	Push O.T.L. System
Transistors :	2SC693×6, 2SD24×5, 2SC614×2, 2SA535×2, 2SD67×13, 2SC615×3, 2SC536×3
Diodes :	SV-31×4, SZT-7×4, 1N60×8, DS-2M×4, FR-1M×1, SV-02×2
Output Power	
Music Power :	80W+80W (±0.5 dB, 8Ω Load)
Continuous Rated	60W+60W (±0.5dB, 8Ω Load)
Power :	40W+40W (±0.5dB, 16Ω Load)

VICTOR COMPANY OF JAPAN, LTD.

—— 5011/PST-1000E ——

	X'TAL	120mV (330KΩ)
	Phono-High	3.2mV (50KΩ)
	Phono-Low	1mV (50KΩ)
	Tape Head	1.2mV (350KΩ)
	MIC	2mV (350KΩ)
SEA Section :		
Impedance :	Input	50KΩ
	Load	50KΩ
Input Level :	Standard	0.2V
Output Level :	Standard	0.3V
	Max.	3V
Gain :	3 dB (0 dB : Flat Level)	
Frequency Response :	±0.5 dB (20Hz~20KHz)	
Harmonic Distortion :	Less Than 0.05% (20Hz~20KHz, 0.3V Output)	
S/N Ratio :	Better Than 100 dB	
Center Frequency :	60Hz, 150Hz, 400Hz, 1KHz,	
of S.E.A.	2.4KHz, 6KHz, 15KHz	
S.E.A. Control :	±10 dB (2dB Step)	
Ramble Filter :	f_C=30Hz, −30 dB/oct.	
Tape Terminals :	Rec. Out 160mV (Output 1.5V)	
Output at DIN Rec. :	Input Level 0.3V	
and Rep. Terminals	Output Level 22V	
Power Receptacles :	Switched ·····3	
	Uuswitch·····2	
Crosstalk :	Better Than 50 dB	
Transistors :	Ultra-Low Noise Transistor	32
Diodes :	Silicon Diode	4
Power Source :	Adjustable to AC 100V, 117V, 220V, 235V, 50Hz, 60Hz	
Power Consumption :	3 VA	

—— 5012/MST-1000E ——

Output Inpedance :	4Ω~32Ω
Distortion :	20Hz~15KHz
	Less Than 0.07% (Output 60W)
	〃 0.05% (〃 50W)
	〃 0.05% (〃 100mW)
	10Hz~70KHz
	Less Than 0.5% (Output 60W)
Harmonic Distortion :	Less Than 0.2% (Output 60W)
	〃 0.1% (〃 50W)
Frequency Response :	Power Output Stage
(Output)	10Hz~100KHz +0 −1 dB
	Over All (Cut off Below 30Hz by Ramble Filter.)
	40Hz~100KHz +0 −1 dB
S/N Retio :	Better Than 115 dB
Input Impedance :	100KΩ (At Signal Input Terminals)
Damping Factor :	50Hz~30KHz
	Better Than 80 (8Ω Load)
	〃 160 (16Ω Load)
Input Sensitivity :	1V (Output 60W)
Safety Circuit :	(1) Speaker Silent Circuit (CR Time-Constant Type)
	(2) Power Transistor Safety Circuit (One Shot Multi Type)
VU Meter :	Sensitivity is changeable by 4 Steps
Input terminals :	Signal Input (L, R) Gain is Adjustable by Semi Variable Resistor RAMBLE FILTER ; Below 30Hz, −18 dB/oct.
Output Terminals :	(1) Speaker Output (L, R)
	(2) Stereo Headphone Monitor Terminal
Power Receptacles :	Switched ·····2
	Unswitched·····1
Power Source :	Be able to select AC 100V, 117V, 220V, 240V, 50Hz, 60Hz
Power Consumption :	No Signal ; 45W (65VA)
	Output 60W ; 150W (190VA)
	〃 120W ; 250W (320VA)

HOW TO REMOVE THE CHASSIS ASS'Y & FRONT PANEL

When servicing chassis, remove the chassis assembly, referring to items shown below.

5011/PST-1000E

- Take off the case cover ②, removing 4 screws numbered ①.
- Take off the front panel in the direction of bold arrow, removing the parts in order of ③~⑧.

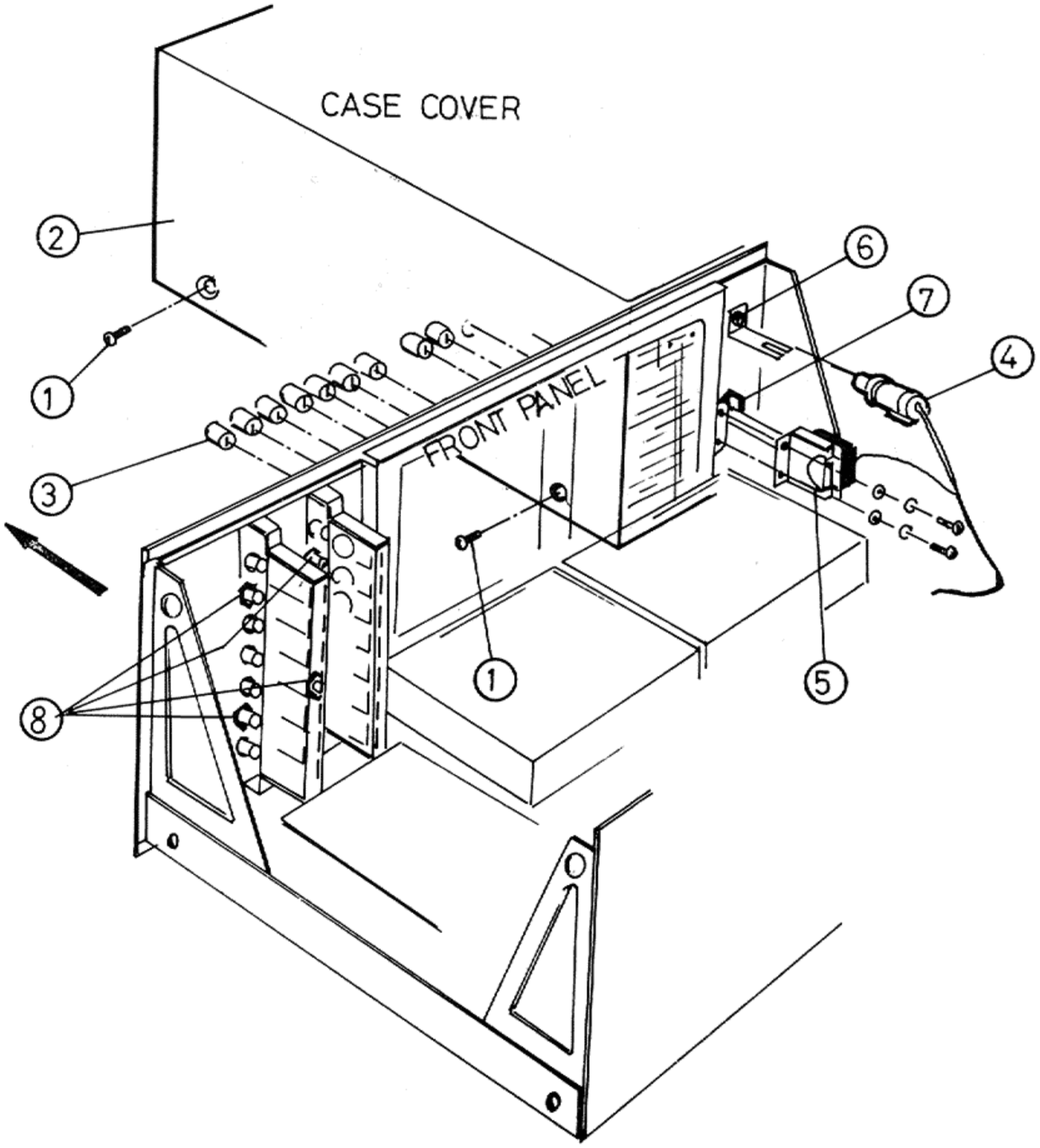


Fig. 1

5012/MST-1000E

- Take off the case cover ②, removing 4 screws numbered ①.
- Take off the front panel in the direction bold screw, removing in sequence of ③~⑨.

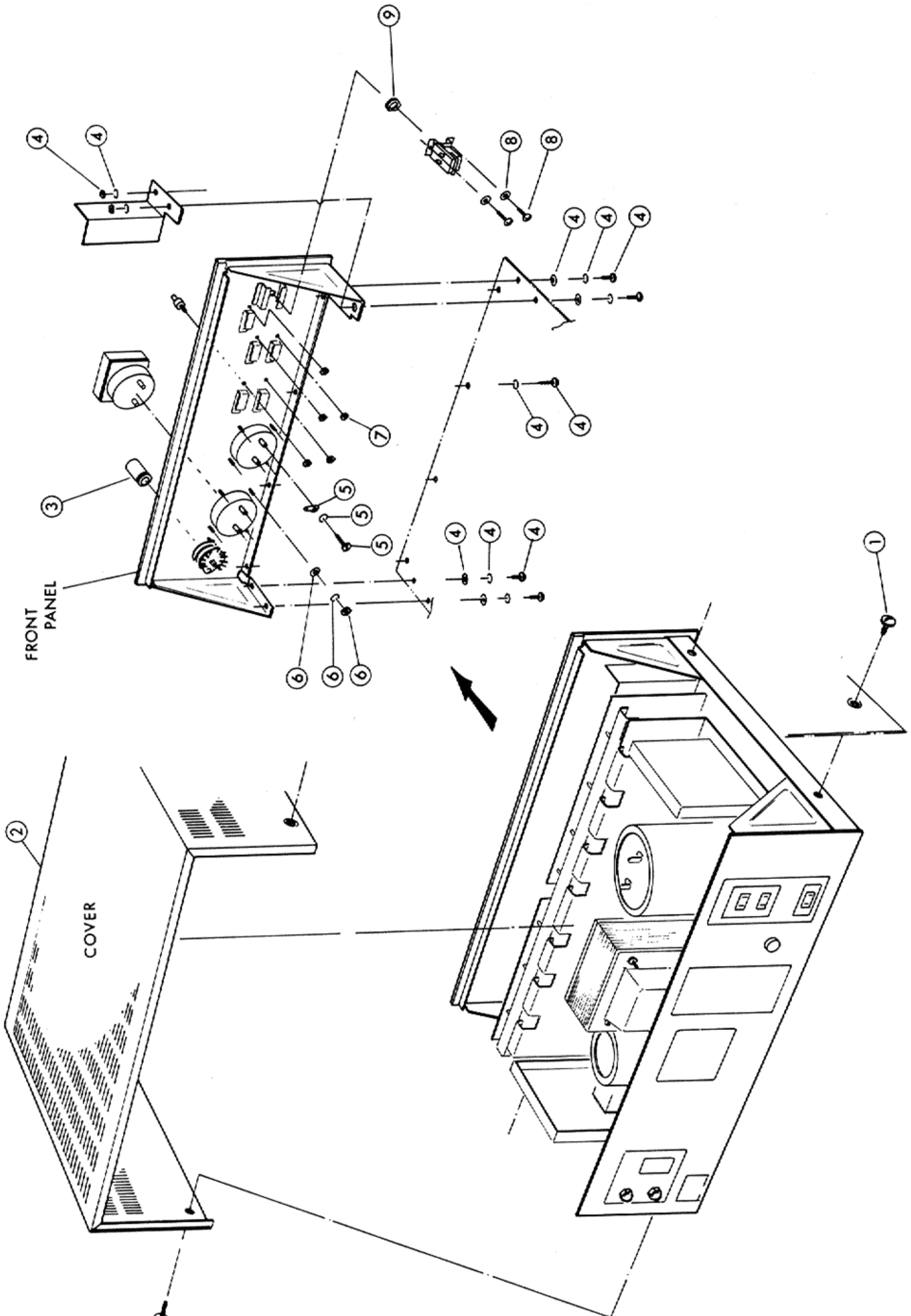


Fig. 2

MAIN PARTS ARRANGEMENT

5011/PST-1000E

PARTS ARRANGEMENT OF FRONT VIEW

Front Panel (5011/PST-1000E)

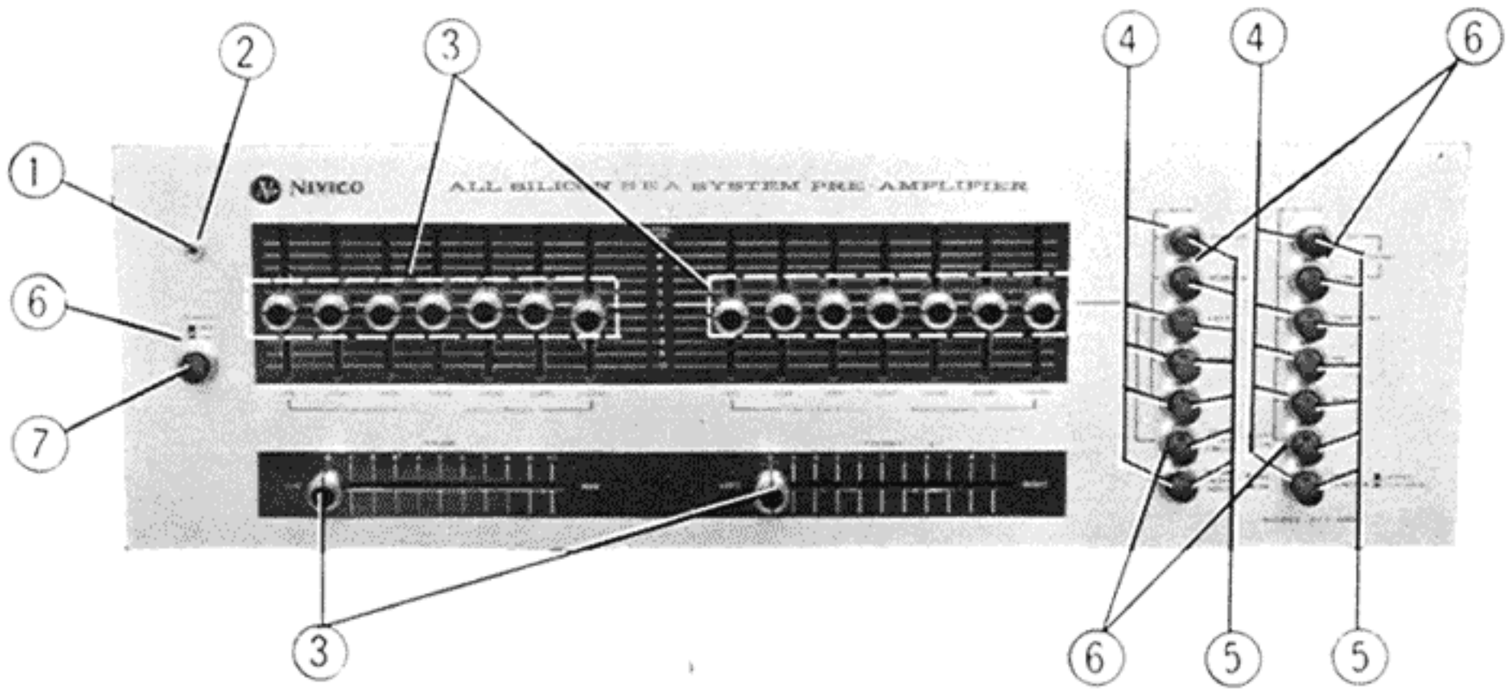


Fig. 3

Dwg. No.	Parts No.	Parts Name	Dwg. No.	Parts No.	Parts Name
1	E50573	Rabbit Eye	5	E40885	Push Button Knob
2	E50572	Escutcheon Ring	6	E50570	Escutcheon Ring
3	E40736	Slide Knob	7	E40886	Push Button Knob
4	E50570-1	Escutcheon Ring			

PARTS ARRANGEMENT OF BACK VIEW

Back Panel (5011/PST-1000E)

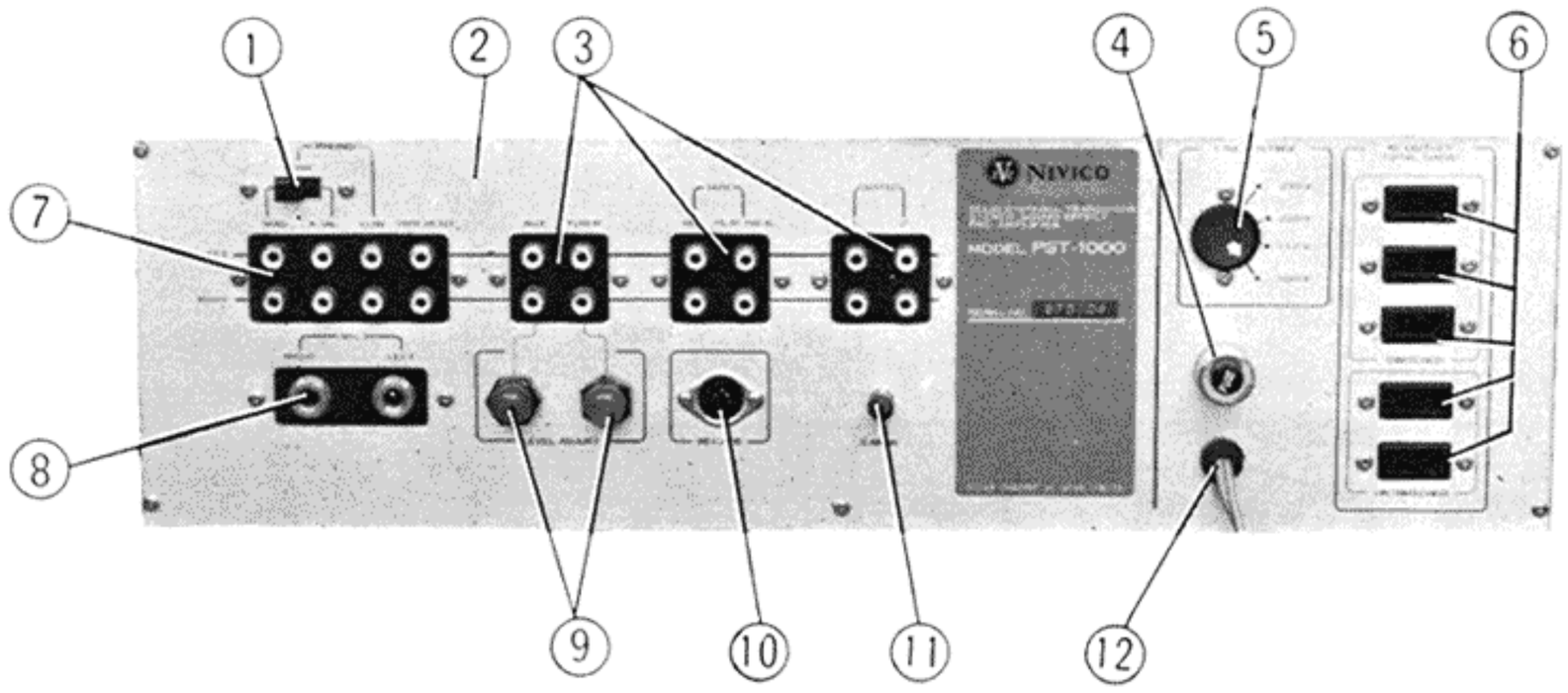


Fig. 4

Dwg. No.	Parts No.	Parts Name	Dwg. No.	Parts No.	Parts Name
1	Q03749-1	Slide Switch	7	E03043-80	Pin Jack Ass'y
2	E2794	Back Panel	8	Q03961-1	Mic. Jack Ass'y
3	E03043-40	Pin Jack Ass'y	9	E50573	Cap
4	E04035-C	Fuse Socket Ass'y	10	Q03967	DIN Socket Ass'y
5	Q30050-1	2 Pin Plug Ass'y	11	E04069	Push Terminal
6	Q30044-2	AC Socket Ass'y	12	E40922	Power Cord Stopper

PARTS ARRANGEMENT OF UPSIDE VIEW (5011/PST-1000E)

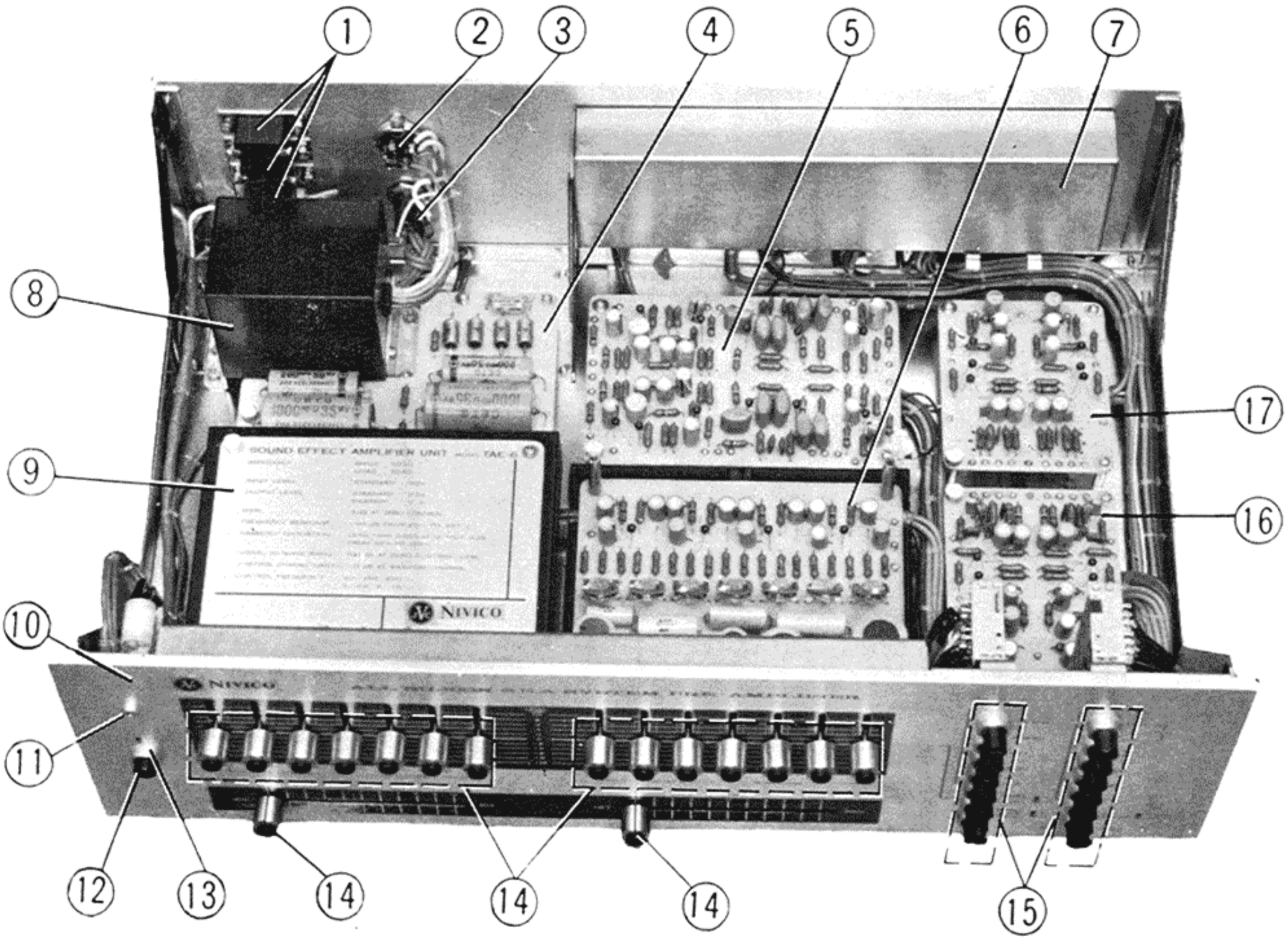


Fig. 5

Dwg. No.	Parts No.	Parts Name	Dwg. No.	Parts No.	Parts Name
1	Q30044-2	AC Socket Ass'y	10	E2793-2	Front Panel
2	Q04933-1E	9-Pin Socket Ass'y	11	E50573	Rabbit Eye
3	E04035-C	Fuse Socket Ass'y		E50572	Escutcheon Ring
4	——	Power Circuit Board	12	E40886	Push Button Knob
5	(TAC-9)	Control Amp. Circuit Board	13	E50570-2	Escutcheon Ring
6	(TAE-6)	S. E. A. Circuit Board	14	E40736	Slide Knob
7	E30625	Shield Cover	15	E40885	Push Button Knob
8	E03045	Power Transformer	16	(TAE-5)	Equalizer Amp. Circuit Board
9	E30630-2	Name Plate	17	(TAE-4)	Equalizer Amp. Circuit Board

PARTS ARRANGEMENT OF UPSIDE VIEW (5011/PST-1000E)

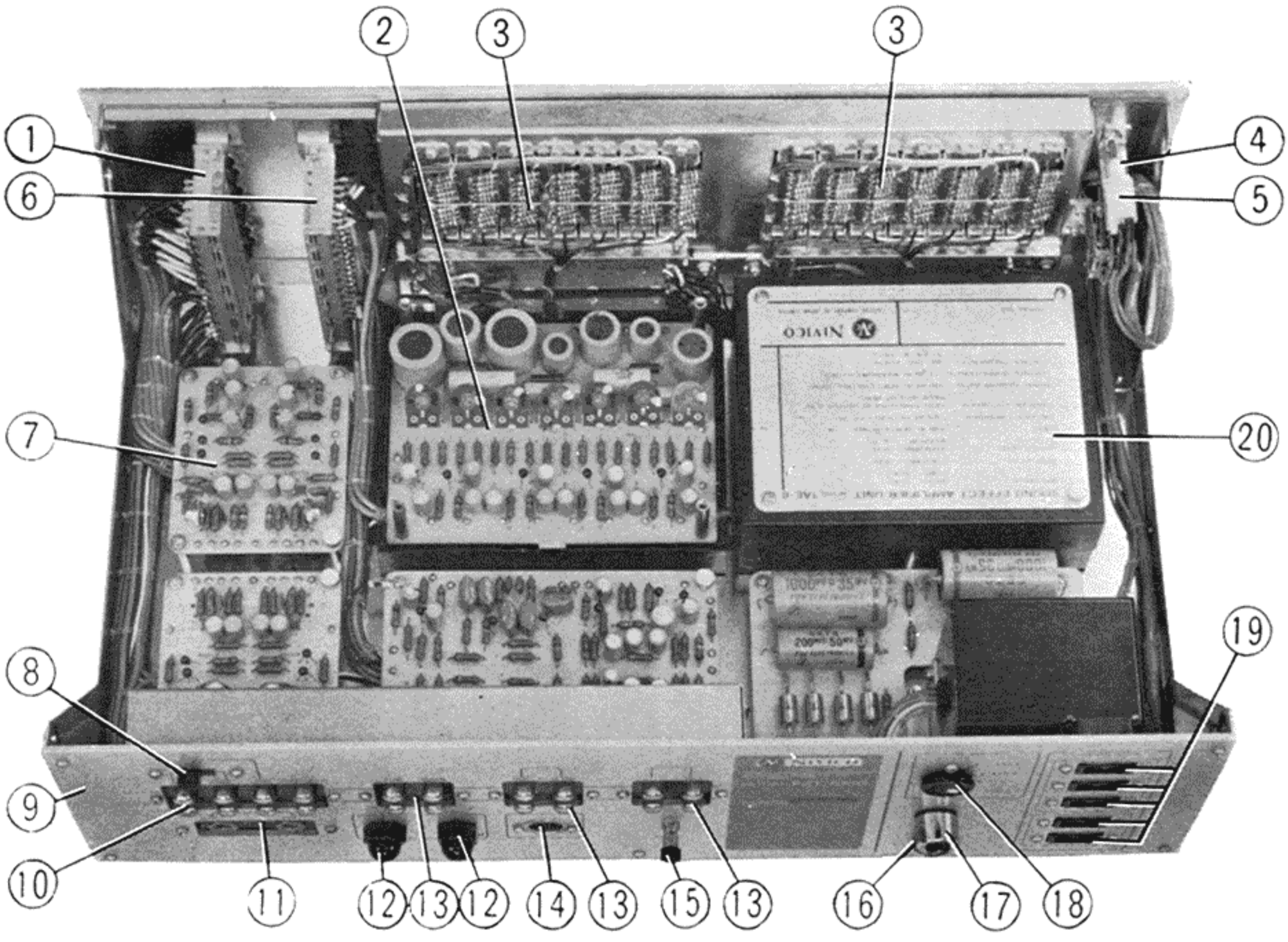


Fig. 6

Dwg. No.	Parts No.	Parts Name	Dwg. No.	Parts No.	Parts Name
1	Q02726-1	7 Key Push Switch	11	Q03961-1	Mic Jack Ass'y
2	(TAE-6)	S. E. A. Circuit Board	12	E50576	Cap
3	E03051	Slide Switch	13	E03043-40	Pin Jack Ass'y
4	Q04967-3	Pilot Lamp	14	Q03967	DIN Socket Ass'y
5	A30668-B	Pilot Lamp Socket	15	E04069	Push Terminal
6	Q02725-1	7 Key Push Switch	16	E40922	Power Cord Stopper
7	(TAE-5)	Equalizer Amp. Circuit Board	17	E04035-C	Fuse Socket Ass'y
8	Q03749-1	Slide Switch	18	Q30050-1	2-Pin Plug
9	E2794-2	Back Panel	19	Q30044-2	AC Socket Ass'y
10	E03043-80	Pin Jack Ass'y	20	E30630-2	Name Plate

PARTS ARRANGEMENT OF FRONT VIEW

Front Panel (5012/MST-1000E)

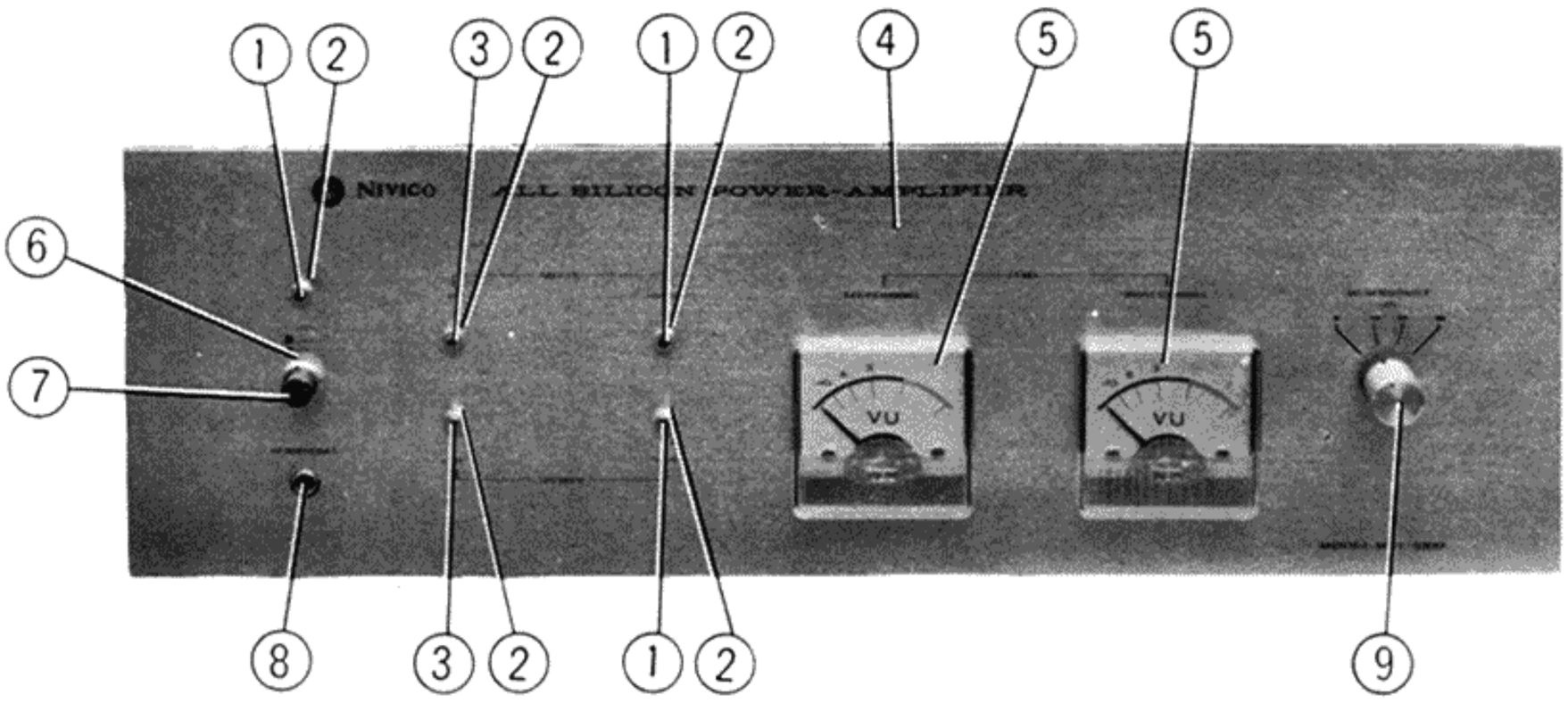


Fig. 7

Dwg. No.	Parts No.	Parts Name	Dwg. No.	Parts No.	Parts Name
1	E50573-1	Rabbit Eye	6	E50570-2	Escutcheon Ring
2	E50572	Escutcheon Ring	7	E40886	Push Button Knob
3	E50573-2	Rabbit Eye	8	Q03964-1	Head Phone Jack Ass'y
4	E2766-2	Front Panel	9	E40693-1	Knob
5	E03055	VU Meter			

PARTS ARRANGEMENT OF BACK VIEW

Back Panel (5012/MST-1000E)

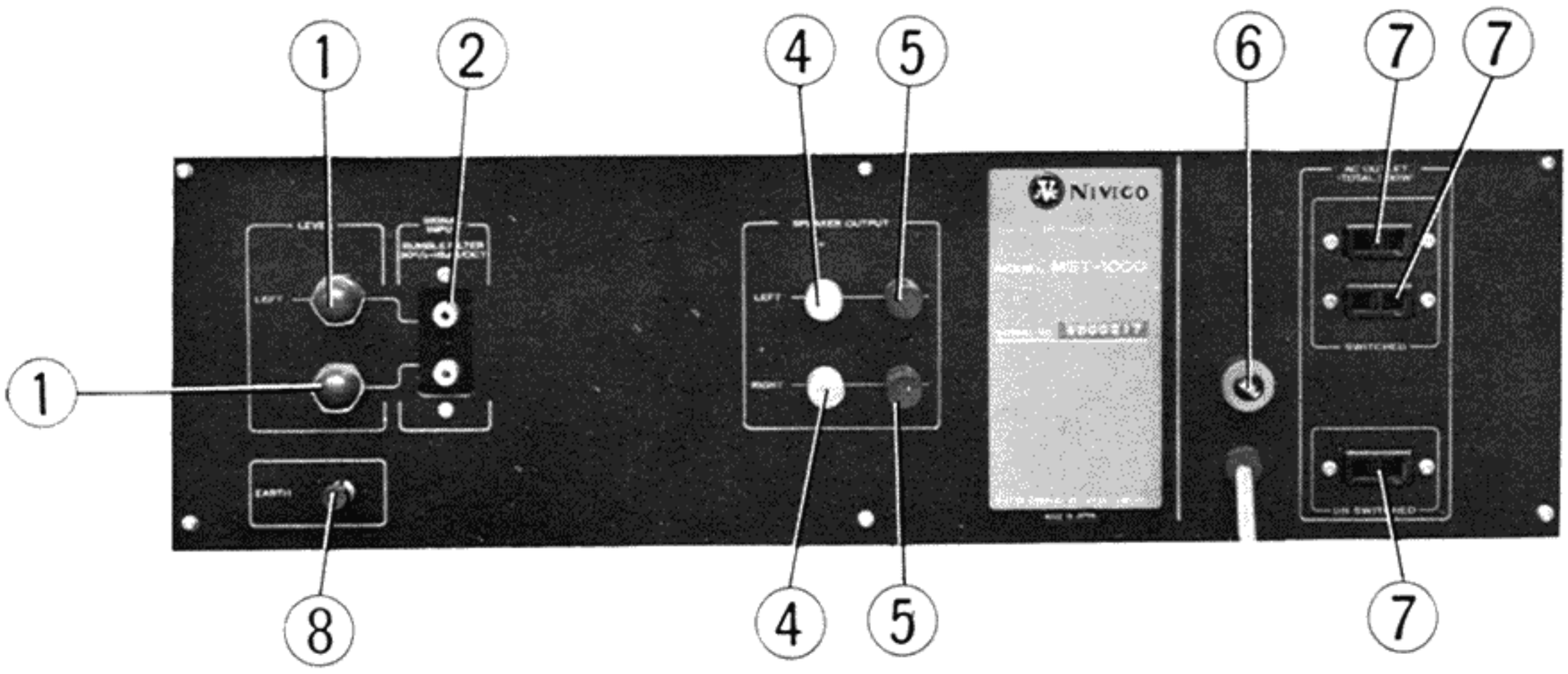


Fig. 8

Dwg. No.	Parts No.	Parts Name	Dwg. No.	Parts No.	Parts Name
1	E50576	Cap	6	E04035-C	Fuse Socket Ass'y
2	E04083	Pin Jack Ass'y	7	Q30044-2	AC Socket Ass'y
4	E04087-B	One Touch Terminal	8	E04069	Push Terminal
5	E04087-A	One Touch Terminal			

PARTS ARRANGEMENT OF UPSIDE VIEW (5012/MST-1000E)

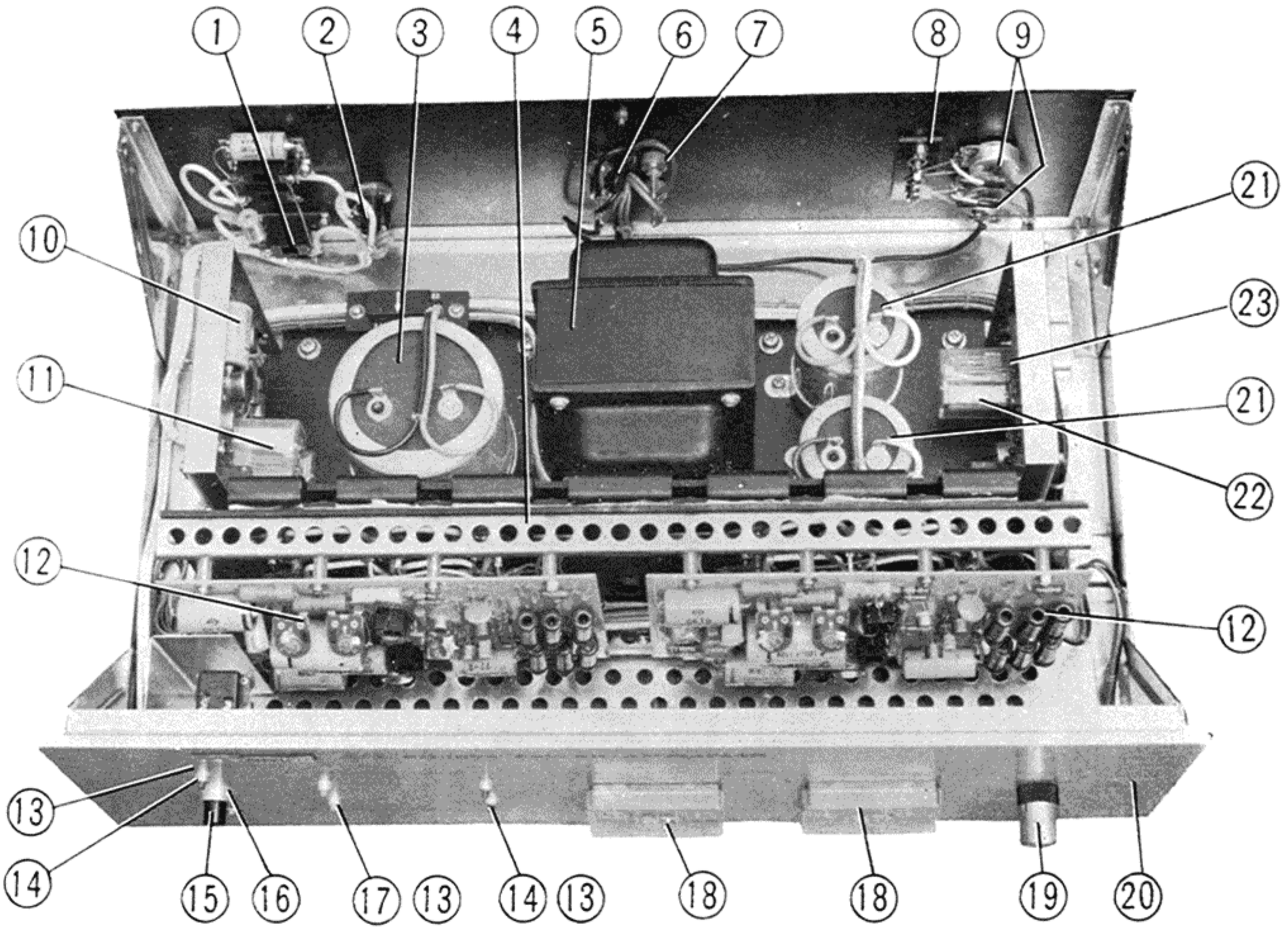


Fig. 9

Dwg. No.	Parts No.	Parts Name	Dwg. No.	Parts No.	Parts Name
1	Q30044-2	AC Socket Ass'y	13	E50572	Escutcheon Ring
2	E04035-C	Fuse Socket Ass'y	14	E50573-1	Rabbit Eye
3	E03052	Electrolytic Capacitor	15	E40886	Push Button Knob
4	E2940	Radiation Plate	16	E50570-2	Escutcheon Ring
5	E03077-1	Power Transformer	17	E50573-2	Rabbit Eye
6	E04087-A	One Touch Terminal	18	E03055	VU Meter
7	E04087-B	One Touch Terminal	19	E40693-1	Knob
8	E04083	Pin Jack Ass'y	20	E2766-2	Front Panel
9	E03060	Variable Resistor	21	E03053	Electrolytic Capacitor
10	(TAP-12)	DC Power Source Circuit Board	22	E03018-5	Relay
			23	(TAC-23)	Safety Circuit Board
11	E03018-4	Relay			
12	(TAD-10)	Power Drive Amp. Circuit Board			

PARTS ARRANGEMENT OF UPSIDE VIEW (5012/MST-1000E)

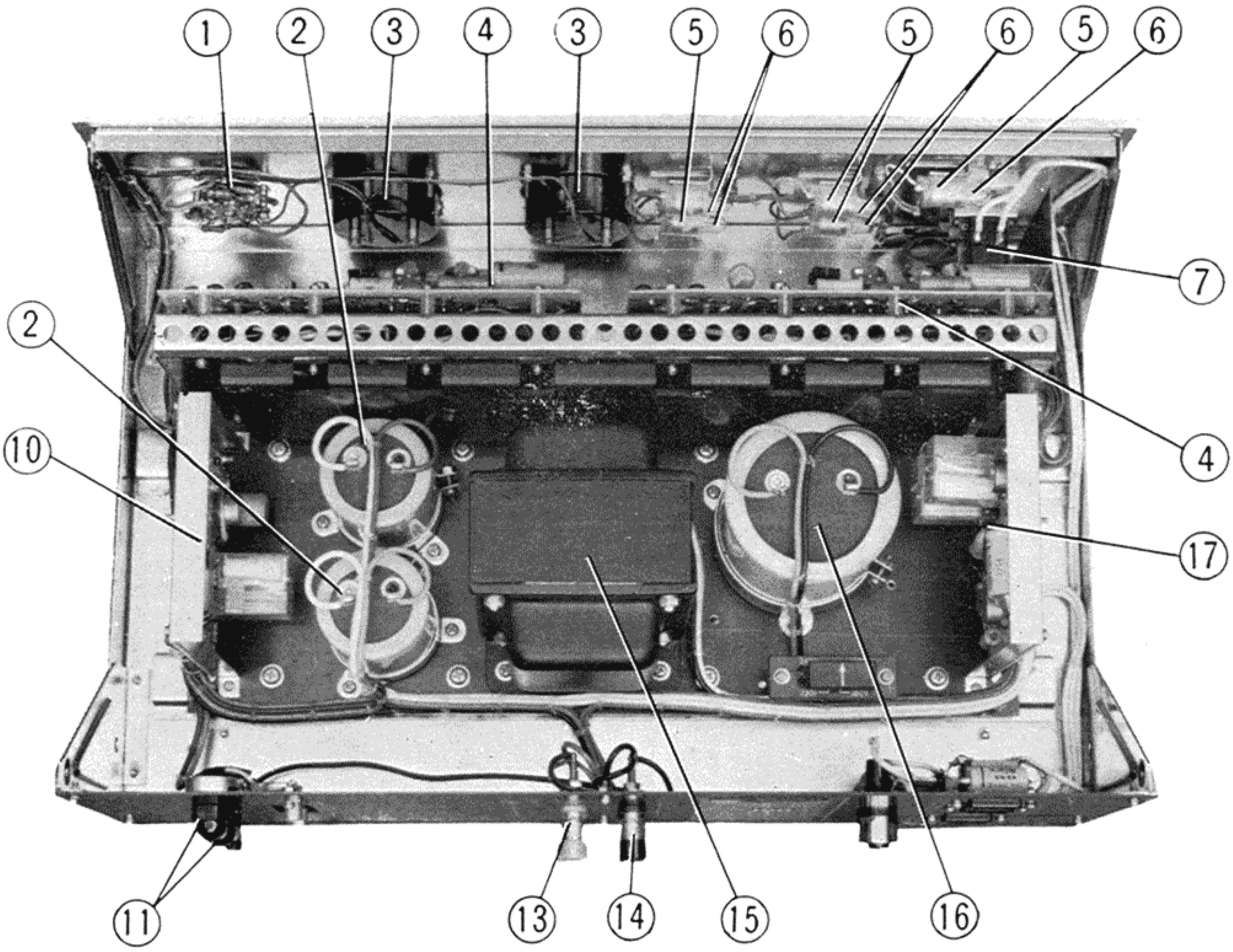


Fig. 10

Dwg. No.	Parts No.	Parts Name	Dwg. No.	Parts No.	Parts Name
1	Q03714-1	Rotary Switch	10	(TAC-23)	Safely Circuit Board
2	E03053	Electrolytic Capacitor	11	E50576	Cap
3	E03055	VU Meter	13	E04087-B	Push Terminal
4	(TAD-10)	Power Drive Amp. Circuit Board	14	E04087-A	Push Terminal
			15	E03077-1	Power Transformer
5	Q30110-A	Pilot Lamp Socket	16	E03052	Electrolytic Capacitor
6	Q04767-2	Pilot Lamp	17	(TAP-12)	DC Power Source Circuit
7	Q03783-1	Power Switch			Board

ALIGNMENT INSTRUCTION

5011/PST-1000E

1. When adjusting the semi-variable resistors (100Ω) R_{627}~$_{633}$ on the circuit board of SEA (TAE-6), follow the order shown below.

   • Using an ohmmeter, adjust resistance between the points indicated by the arrows as in Fig. 11 for 100Ω.

   • After adjusting, lock the shafts of the resistors with lacquer paint.

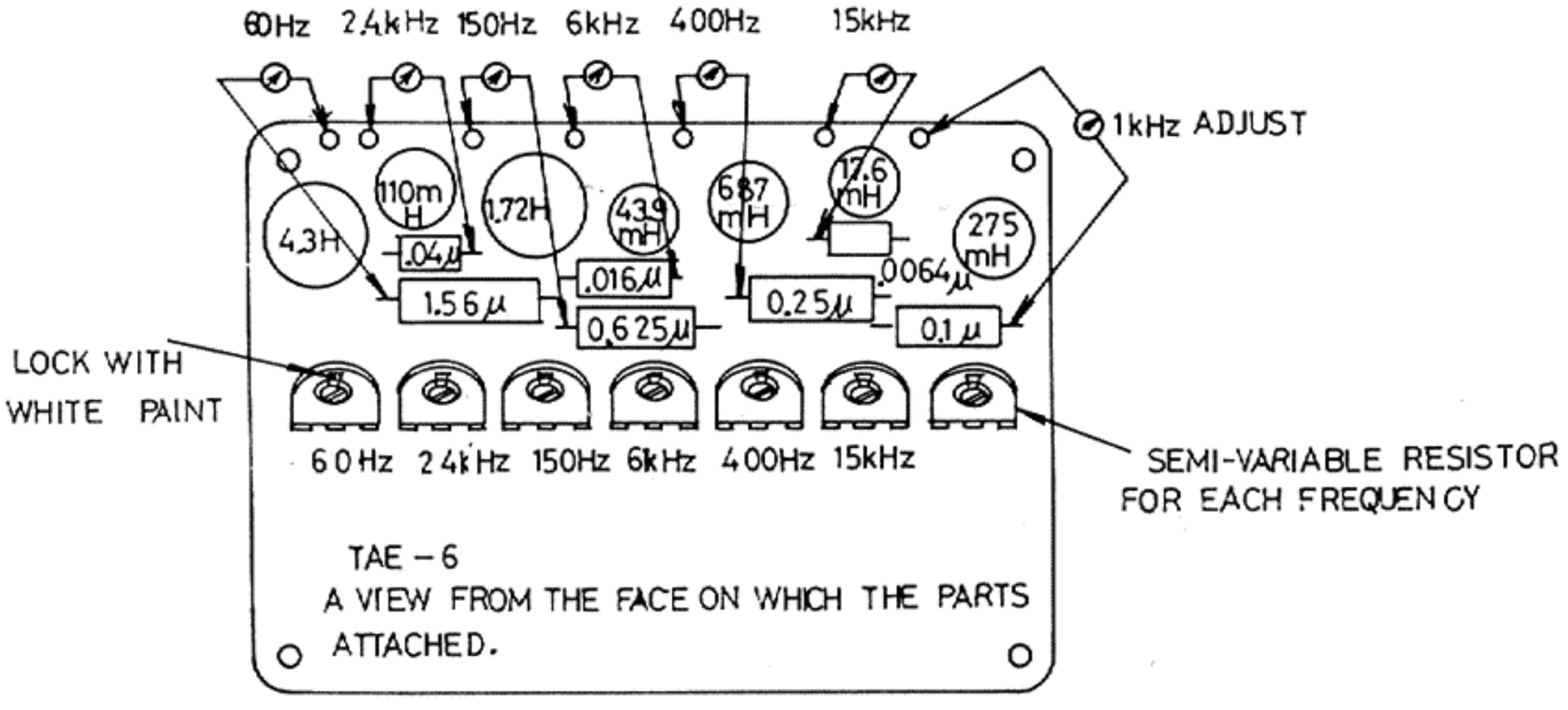


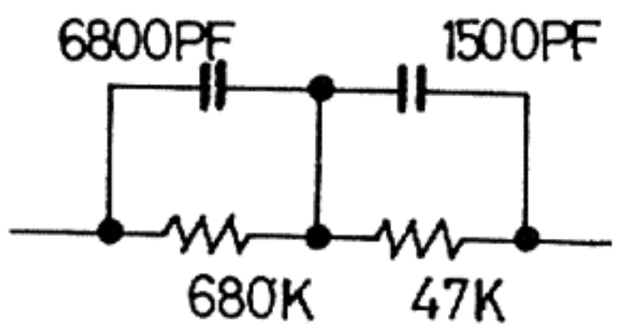
Fig. 11

2. Selection of C., R. on equalizer circuit board (TAE-4).

   • $R_{423,424}$ 47KΩ

   (1) Divide the resistors into two groups: a group of 0~+5% and a group of 0~−5%.

   (2) If you use a resistor from a group of 0~+5% for one channel, use a resistor from the same group for the other channel on the same circuit board, and if you use a resistor from a group of 0~−5% for one channel, use a resistor from a group of 0~−5% for the other channel.



SELECT FROM { R ; Q04803 (±5%) / C ; Q03244 (±10%) }
PHONO HIGH LEVEL RIAA

Fig. 12

   • $R_{421,422}$ 680KΩ

   Use the resistors from a group of 0~−5% only for R. and L. channel on the same circuit board.

   • $C_{411,412}$ 1500pF

   (1) Divide the capacitors into two groups: a group of +6~−1% and a group of −1~−6%.

   (2) Seleet and use the capacitors as described in item "$R_{423,424}$ (2)".

   • $C_{409,410}$ 6800pF

   (1) Divide the capacitors into two groups: a group of +3~−1% and group of −1~−6%.

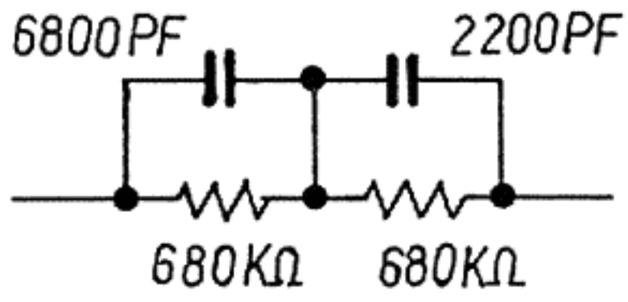
   (2) Select and use the capacitors as described in the item "$R_{423,424}$ 47KΩ, (2)".

3. Selection of C. R. on equalizer circuit board (TAE-5).

- $R_{529,530}$ 33KΩ, $R_{527,528}$ 680KΩ (Refer to Fig. 13)
  Select and use as described in the item "$R_{423,424}$ 47KΩ, (1) and (2)".
- $C_{511,512}$ 680pF (Refer to Fig. 13)
  (1) Divide the capacitors into two groups: a group of +12~+6% and a group of +6~+2%.
  (2) Select and use the capacitors as described in item "$R_{423,424}$ 47KΩ, (2)".
- $C_{513,514}$ 2200pF (Refer to Fig. 13)
  Select and use as described in the item "$R_{423,424}$ 47KΩ (1) and (2)".
- $R_{523,524}$ 1.2MΩ (Refer to Fig. 14)

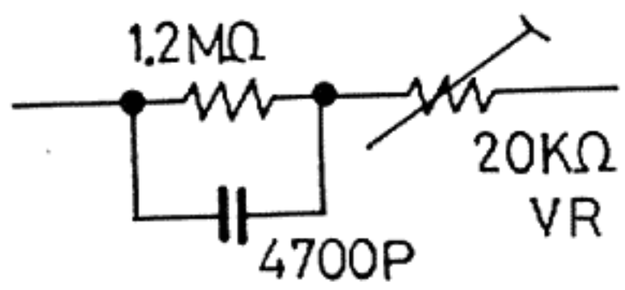
—— ditto ——

- $C_{509,510}$ 4700pF (Refer to Fig. 14)
  Select and use as described in the item "$C_{411,412}$".
- $R_{525,526}$ 20KΩ Semi-Variable Resistor, Adjust to 10KΩ.
- $R_{521,522}$ 22KΩ (Q04803) — Mic Flat Amp.
  Select and use as described in item "$R_{423,424}$ 47KΩ (1) and (2)."



SELECT FROM
R : Q04803 (±5%)
2200pF : Q03244 (±10%)
6800pF : Q03244 (±10%), Q03246 (±20%)
PHONO LOW LEVEL RIAA

Fig. 13



SELECT FROM
1.2MΩ : Q04803 (±5%)
4700pF : Q03244 (±10%)
TAPE HEAD NAB

Fig. 14

5012/MST-1000

1. Check before turnning the power on.
   - Check and confirm that the collector of power transistor is not touching the ground.
   - Check that the varistor and the thermistor are not snapped.
2. Steps after check.
   - Connect speaker loads of 8~16Ω to each speaker terminal.
   - Connect an 1A D. C. amperemeter [AL], [AR] in series with B_1 wirings for L. channel and R. channel respectively as shown in Fig. 16.
   - Set the shaft of semi-variable resistors on the circuit board (TAD-10) as shown in Fig. 17.
     ·····both L. and R. channel.
   - Connect a 150V D.C. voltmeter in parallel to C_3 5000μF/125SV electrolytic capacitor as shown in Fig. 18.

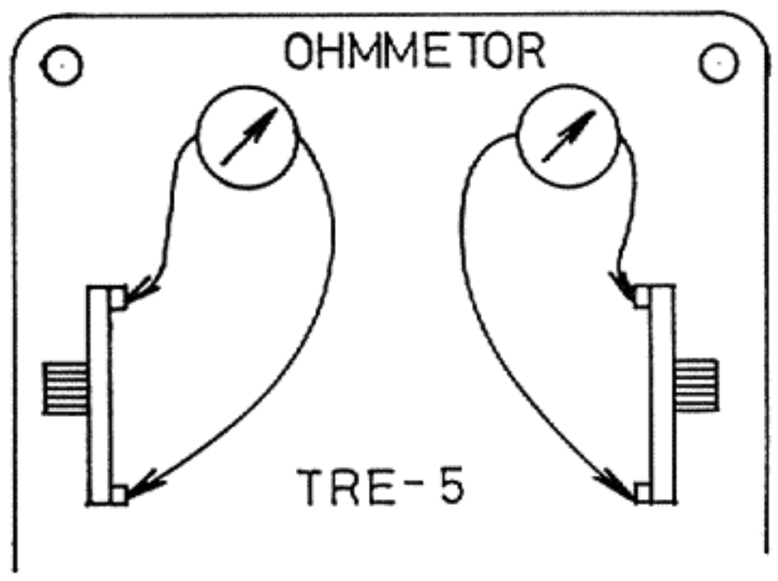


Fig. 15

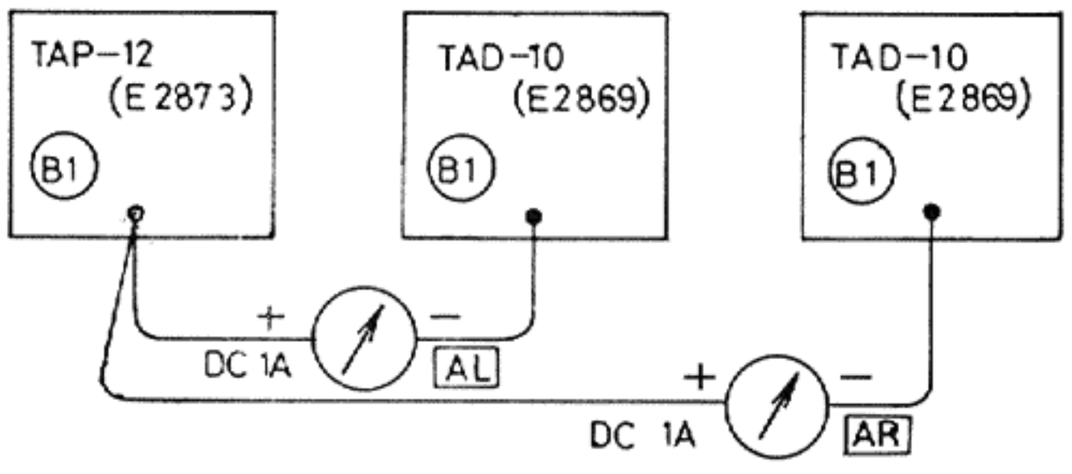


Fig. 16

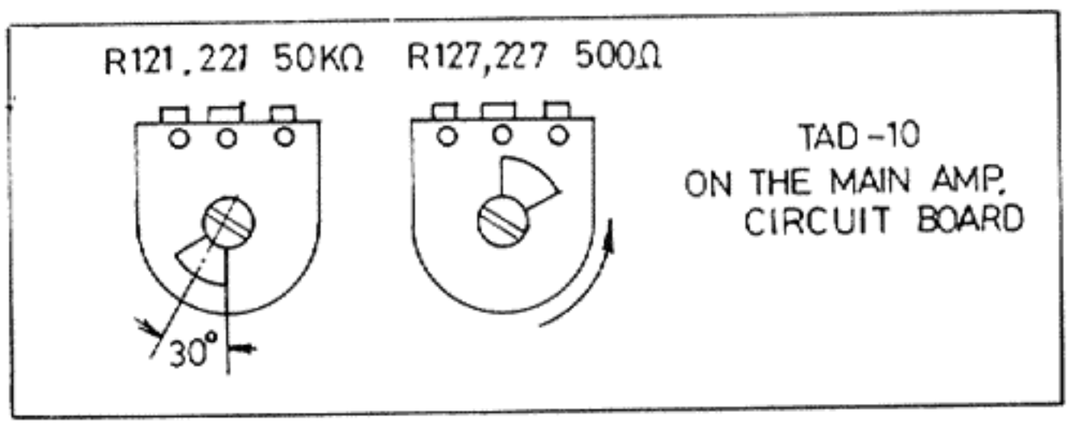


Fig. 17

- Prepare a variable transformer and set its output voltage to zero. Connect the power cord plug of 5012/PST-1000E to the variable transformer.
- Increase the voltage across C_3 to 5V~10V. If then the current through [AL] or [AR] exceeds 200mA, something may be out of order.
- Increase the voltage across C_3 from 10V to 50V.
  If nothing occurs, again increase the voltage to 98V (now AC voltage will be 100V). Then the current through [AL] and [AR] should be 10mA respectively.
- Check the voltage between the ⊕ terminal of output coupling capacitor (C_{410} 2000μF/1000SV) to speaker and the ground is 98/2=49 (V).
- Cut the power switch on the front panel off, if nothing is wrong up to this step. And again turn on and check that there is nothing wrong. Then a very faint noise can be heard after 8~10 seconds, because of function of the speaker silent circuit.

(CAUTION)

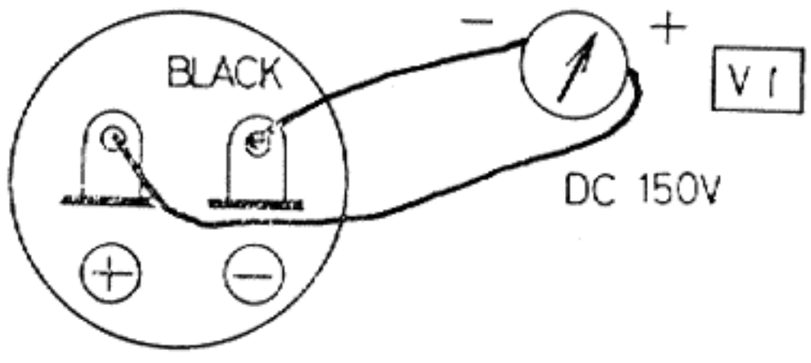
1) Use the amperemeter and the voltmeter of 0.5% tolerance.
2) Do not turn the seesaw switches on the back panel within 1 minute after turnning on the power, or the power transistors might be damaged.

How to adjust the bias of power amplifier stage (semi-variable resistor 500Ω (R_{127}) on the circuit board TAD-10)

- Adjust at a normal room temperature with no signal input.
- Use speaker load.
- Switch on the power.
- Adjust semi-variable resistor (R_{127}) of 500Ω turning it clockwise for 20mA current through [AL], [AR].
- Turn off the power and take off [AL], [AR].
  Then restore the wiring to the original condition.

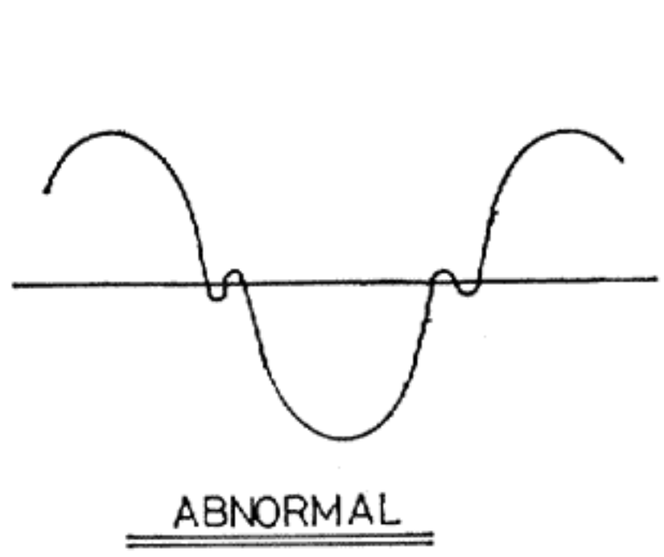
How to adjust the bias of driver amplifier stage (Semi-variable resistor R_{127} 50KΩ on the circuit board TAD-10).

- Connect 100W, 8Ω dummy resistors to output terminal of L. and R. channels respectively.
- Connect an oscilloscope and a V. T. V. M. to output terminals to observe the output wave form.
- Connect an audio oscillator to signal input terminal and apply 1 KHz.
- If the appliance operates normally, the output wave form will be clipped around 22V as the input increases. Adjust the semi-variable resistors 50KΩ (R_{121}), so that the clips of wave becomes symmetrical at the same time.



C_3 5000μF/125V
ELECTROLYTIC CAPACITOR

Fig. 18



UP : CROSSOVER DISTORTION
CAUSED BY UNSUITED BIAS

Fig. 19

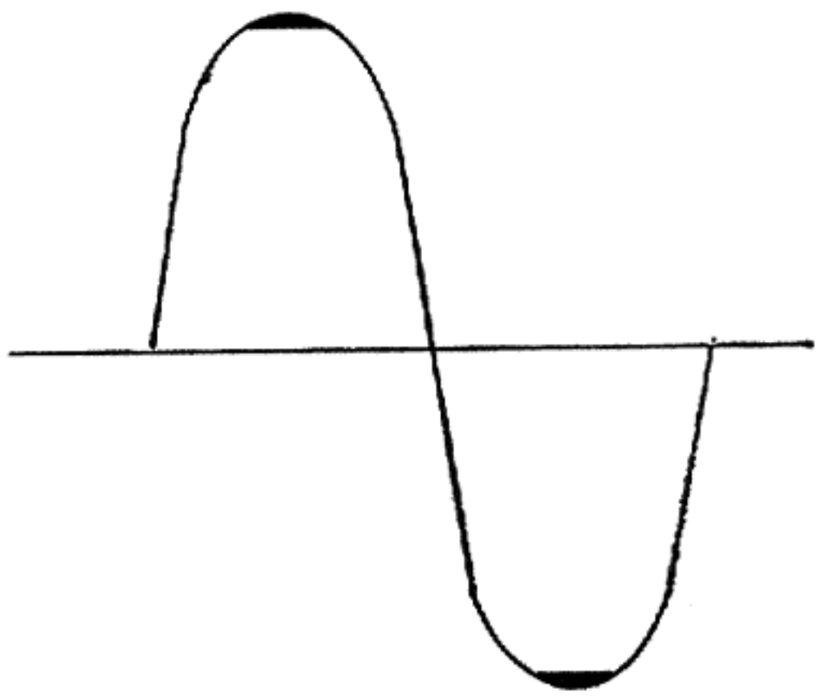


Fig. 20

- Switching the oscillator frequency, check that the non-clipped output exceeds 20V at 100Hz, 1KHz, 10KHz, and 100KHz.
- Turn off the power and lock the shafts of $R_{121,127}$ lacquer paint.

5. Check of protecting circuit (safety circuit).
   - Apply 1KHz signal at the input signal terminal to produce output of 3V at the output terminal, and confirm that the illumination of pilot lamp switches to "SAFETY-CAUTION, SPEAKER-SILENT", when the output terminal is short circuited.
   - Check both L. and R. channel.

6. How to adjust the interval of speaker silent.
   - Adjust 330KΩ R_{307} on the circuit board of TAC-23 after operating for 8~10 minuts.
   - Increase the resistance of R_{307} when the interval is too short.
   - Decrease the resistance of R_{307} when the interval is too low.