

JVC SERVICE MANUAL

No. 4077
April 1972



MODEL 4ED-1205 TAPE RECORDER

Dimensions: 117 (H) x 420 (W) x 278 (D) mm
(4-7/8" x 15-3/4" x 10-15/16")
Weight: 7.5 kg
(16.5 lbs.)

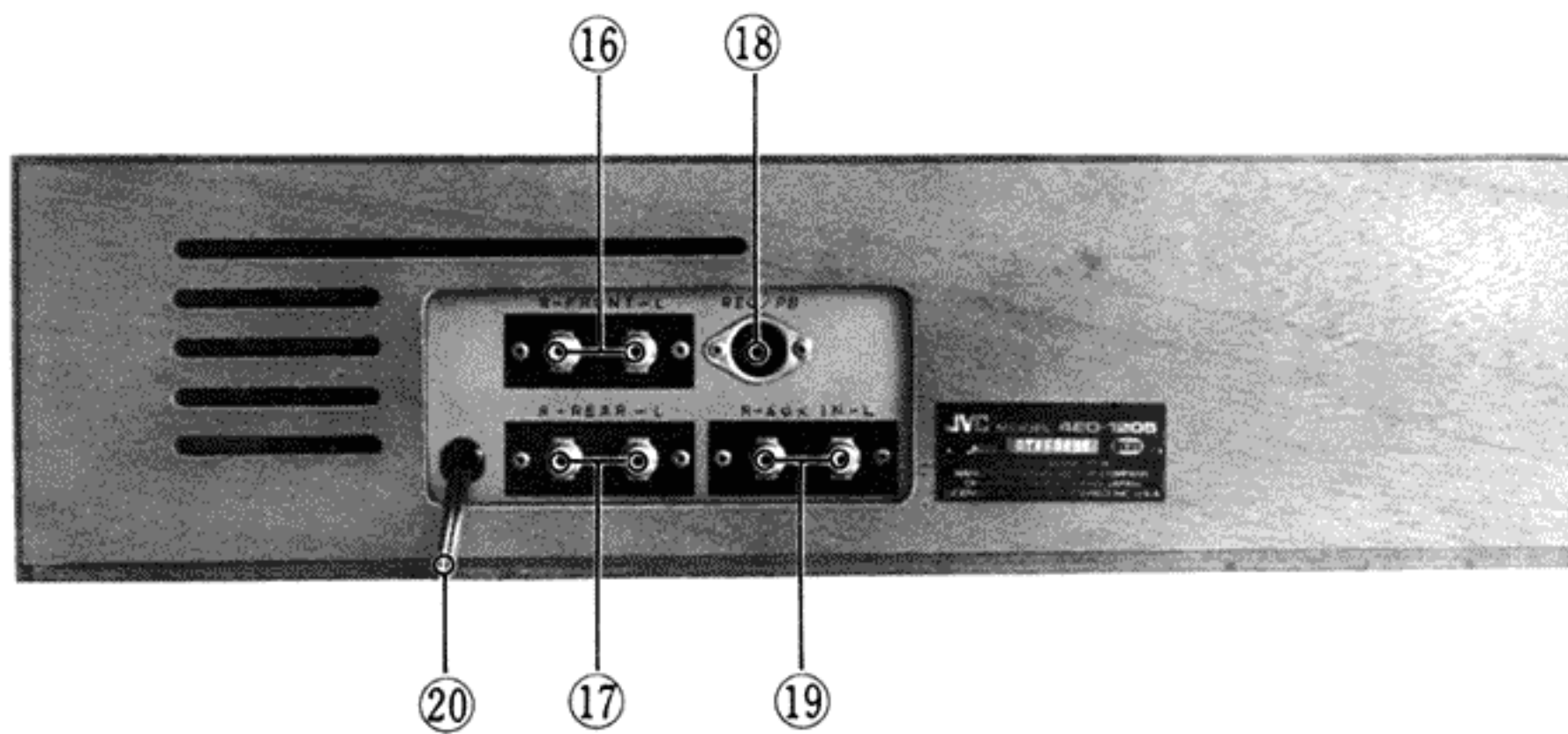
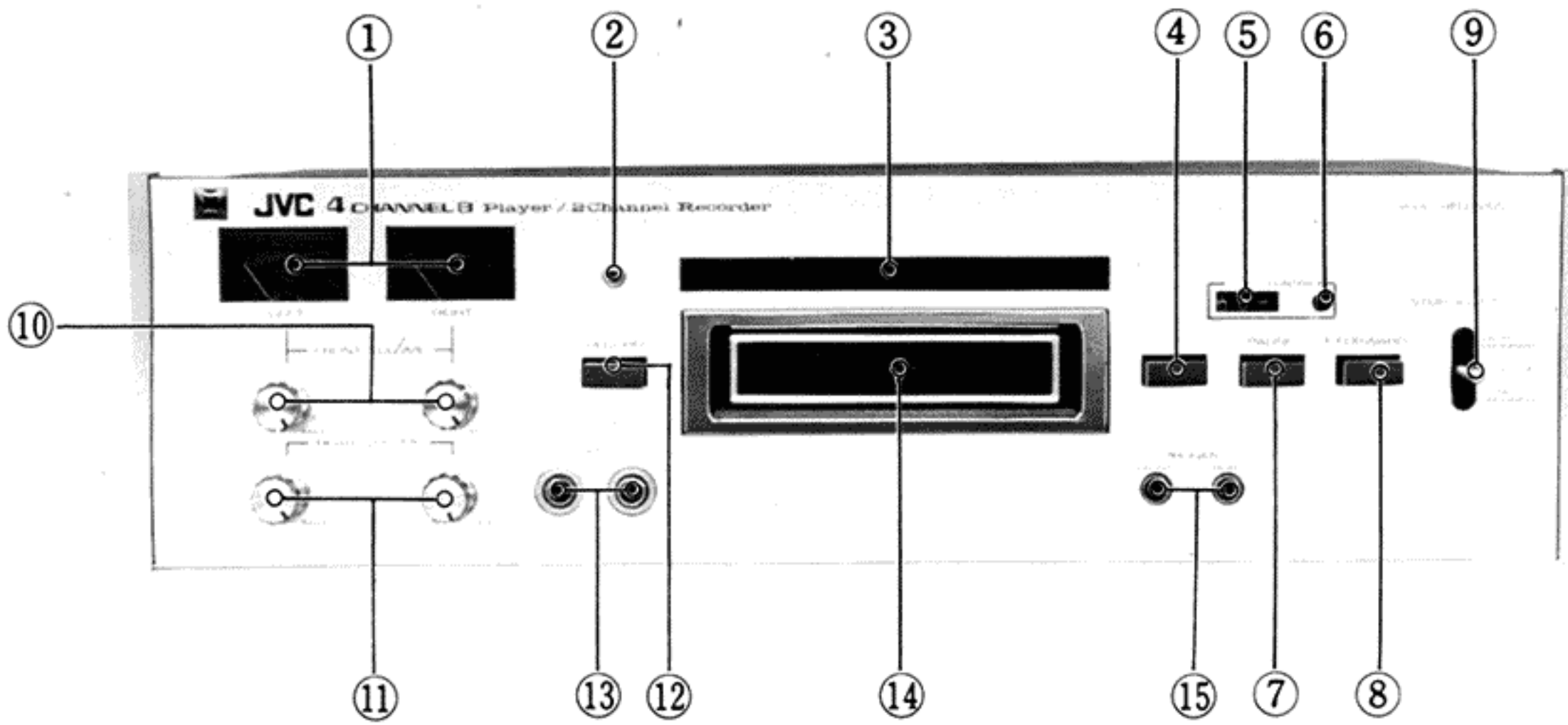
SPECIFICATION

Power source:	AC 117V, 60Hz	Motor:	Hysteresis synchronous motor
Power consumption:	35W	Fast forward speed:	Threefold
Track system:	8-track, 4-channel stereo, or 8-track, 2-channel stereo	Head:	3 in 1 head
Cartridge:	4-channel, 8-cartridge, or 2-channel, 8-cartridge (Rear jet type or equivalent)	Input jacks:	MIC jack x 2 0.8mV 10k Ω AUX. IN jack x 2 80mV 100k Ω
Tape speed:	9.5 cm/sec. (3-3/4 ips)	DIN jack:	Input sensitivity 15mV Input impedance 8.2k Ω Output level 0.5V Output impedance 6.6k Ω
Wow & flutter:	0.18% (WRMS) or less	Output jacks:	LINE OUT jack x 4 0 ~ 1.0V Output impedance 6.6k Ω Headphone jack output level 0 ~ 0.1mW 8 Ω
Frequency response:	30 ~ 15,000Hz	Transistors:	26 pcs.
S/N ratio:	50dB or more (refer to peak level)	Diodes:	9 pcs.
Crosstalk:	50dB or more		
Distortion ratio:	2.5% or less at reference level re- cording or playback		
Bias system:	AC bias (57kHz)		

1. FEATURES

- 2-channel 8-cartridge tape for both recording, and also 4-channel 8-cartridge tape for playback.
- Automatic stop device (AUTO STOP)
 1. Stop for each program
 2. Stop at the end of the second (4-channel 8) program, and stop at the end of the fourth (2-channel stereo 8)
- Fast forward device (F. FORWARD)
- Locating the beginning of recorded portion
- Automatic change from 2-channel to 4-channel and vice versa.
- Time counter
- 4-channel headphone jack
- Long-life synchronous motor
- Parallel head shift mechanism
- 3-in-1 head system
- Auto-stop device

2. DESCRIPTION OF PARTS



- 1. Level Meter (LEVEL)**

The volume control should be so adjusted that when the recording output is at maximum, the level meter needle swings to OVU.
- 2. Recording Indicator Lamp**

When the recording button is depressed, the recording indicator lamp lights up.
- 3. Indicator**

The indicator shows the program, channel and stopping of the tape in figures or in letters.
- 4. Program Selector Button (SELECT)**

Depressing the program selector button changes the program from one to another.
- 5. Time Counter**
- 6. Reset Button**

The counter indicates the recording time. When the reset button is depressed, the counter is reset to "0000".
- 7. Pause Button (PAUSE)**

When the pause button is depressed, the cartridge is pushed outward, and the tape stops running. When it is pressed again, the cartridge returns to its original position, and the tape starts travelling.
- 8. Fast Forward Button (F. FORWARD)**

When the fast forward button is depressed, the tape speed increases three fold. When it is freed, the tape speed becomes normal.
- 9. Stop Selector Switch (STOP SELECT)**

When the switch lever is set to EACH PROGRAM, the tape automatically stops at the end of each program.

With the switch lever in NON STOP, the playback operation continues without stopping from program to program.

On a 2-channel 8-cartridge tape, the tape automatically stops at the end of the second program.

On a 4-channel 8-cartridge tape, the tape automatically stops at the end of the second program.

The fast forward button can be used to locate the beginning of each program.
- 10. Volume Control Knobs VOLUME (FRONT)**

To record on a 2-channel 8-cartridge tape, the volume can be controlled with these two knobs.
- 11. Volume Control Knobs VOLUME (REAR)**

To playback a 4-channel 8-cartridge tape, the volume can be controlled with the four knobs, both front and rear.
- 12. Record Button (RECORD)**

To start recording, depress this record button until stopped, and insert the cartridge tape. With this operation, the 2-channel indicator lamp will light up.

If only the button is depressed, the recording level can be adjusted and the program can be changed, without inserting the cartridge tape.
- 13. Microphone Jacks (R and L)**

To record through two microphones, just insert the microphone plugs into their respective jacks.

When making recording through the AUX IN jack and REC/PB connector, the microphone cord plugs must be pulled off the jacks.
- 14. Cartridge Insertion Door**

As the cartridge tape is loaded with its label facing upward, the power switch is automatically turned on.

The cartridge should be inserted with the record button being depressed for the recording operation.

15. Headphone Jacks PHONES (FRONT, REAR)

The headphones are designed for the 4-channel system. When the headphones are used for 2-channel cartridges, the FRONT jack alone should be used.

16. LINE OUT FRONT (R AND L)

17. LINE OUT REAR (R AND L)

18. REC/PB Connector Jack

19. AUX IN Jack

20. Power Cord

3. FUNCTION OF MAIN PARTS

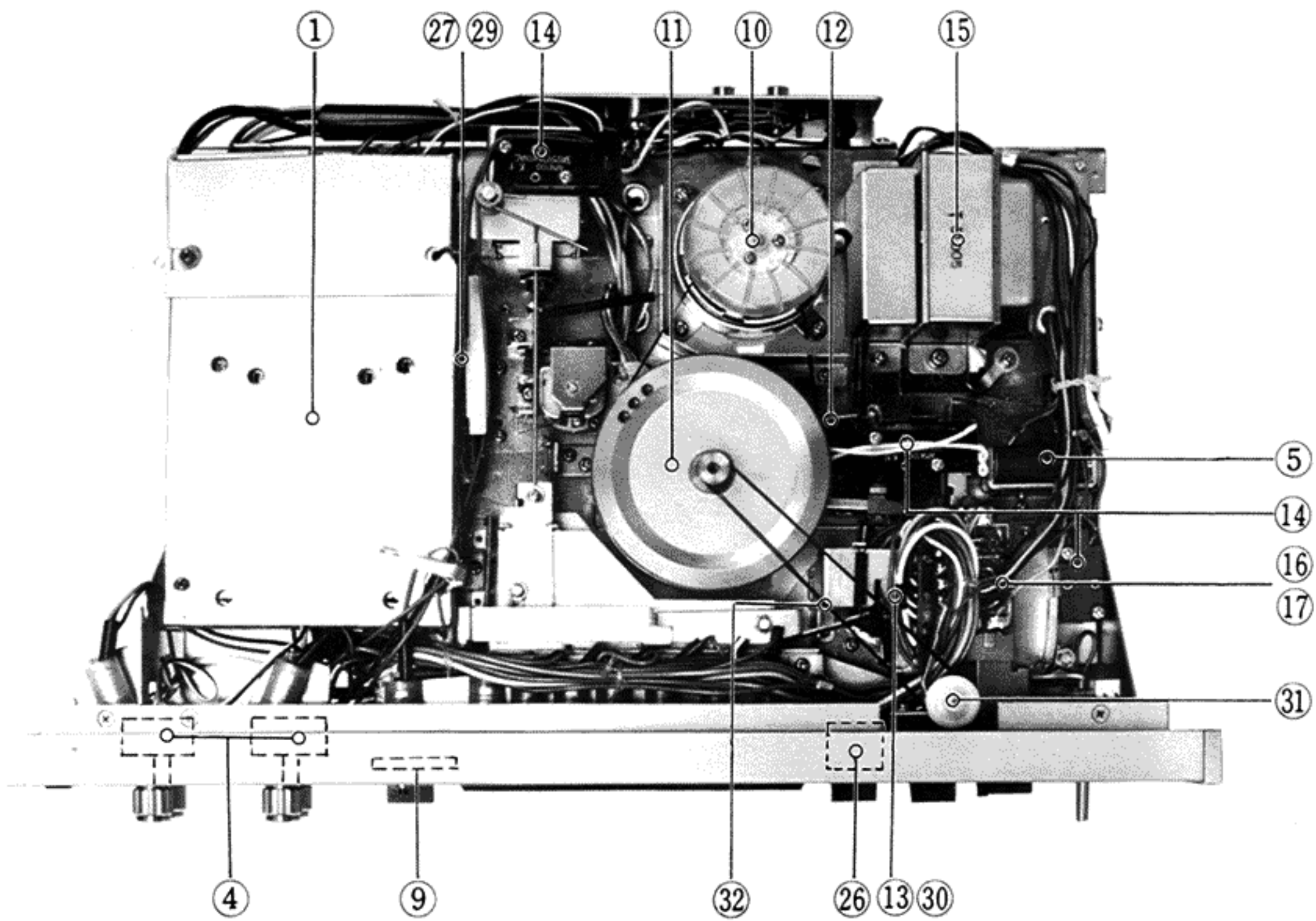


Fig. 3

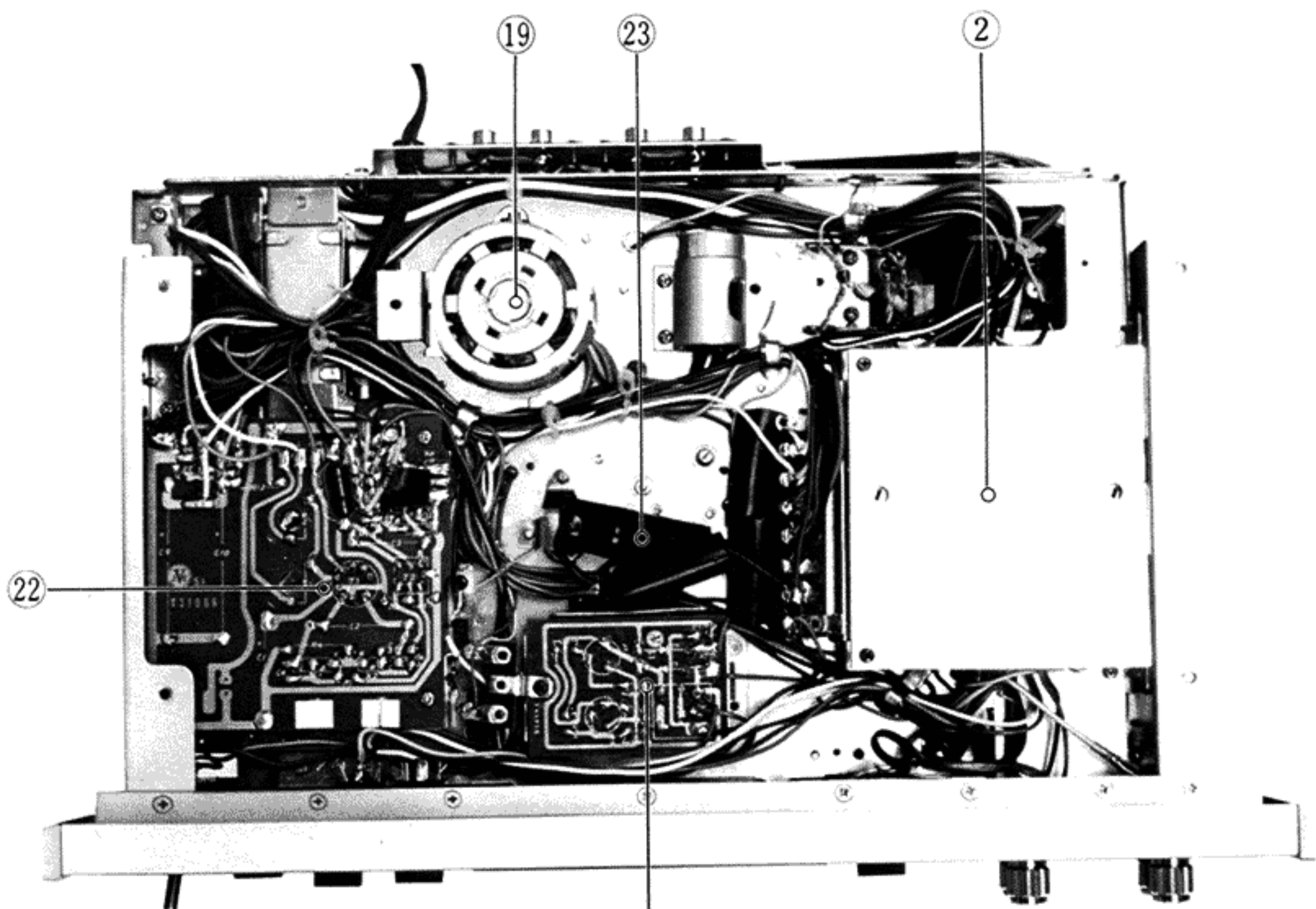


Fig. 4 28

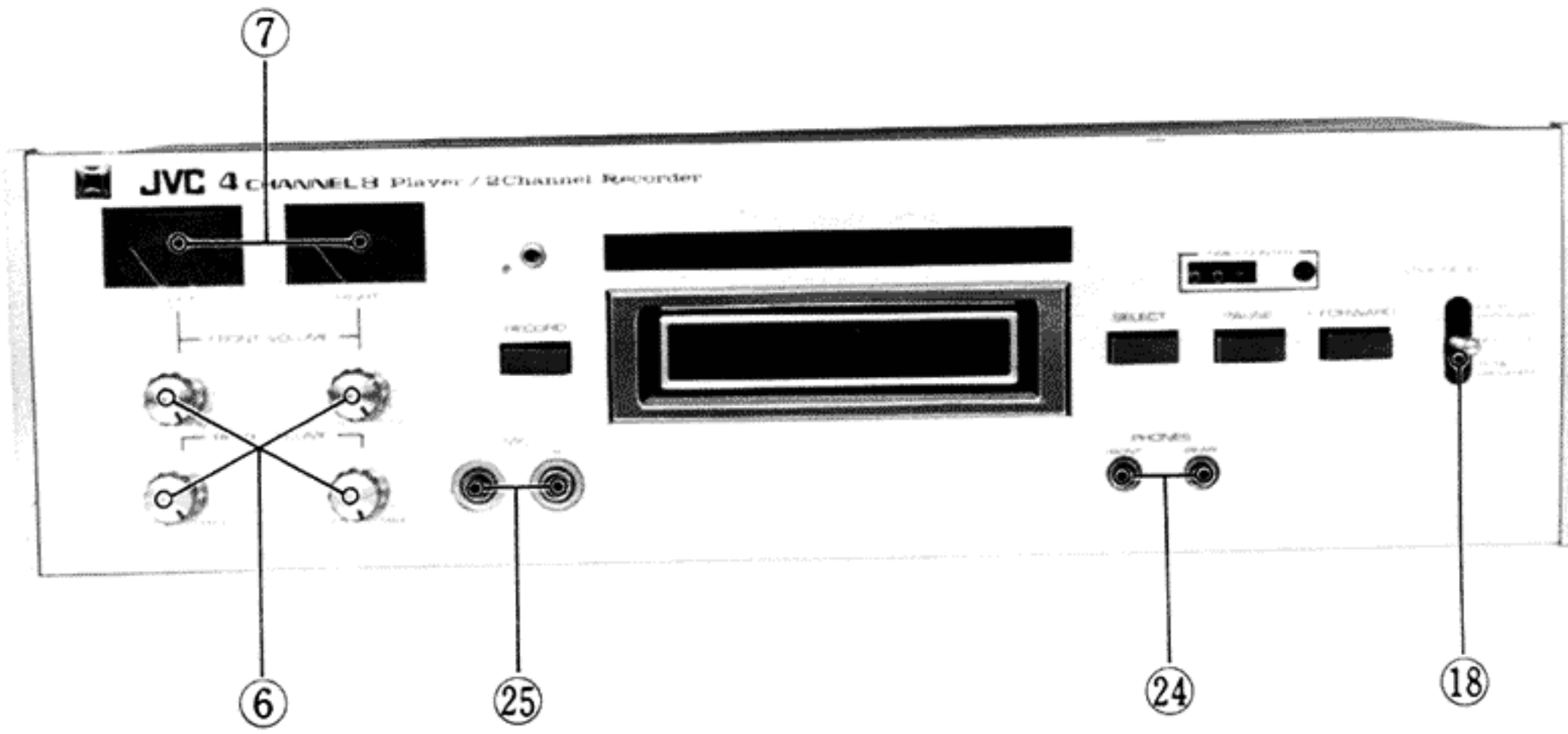


Fig. 5

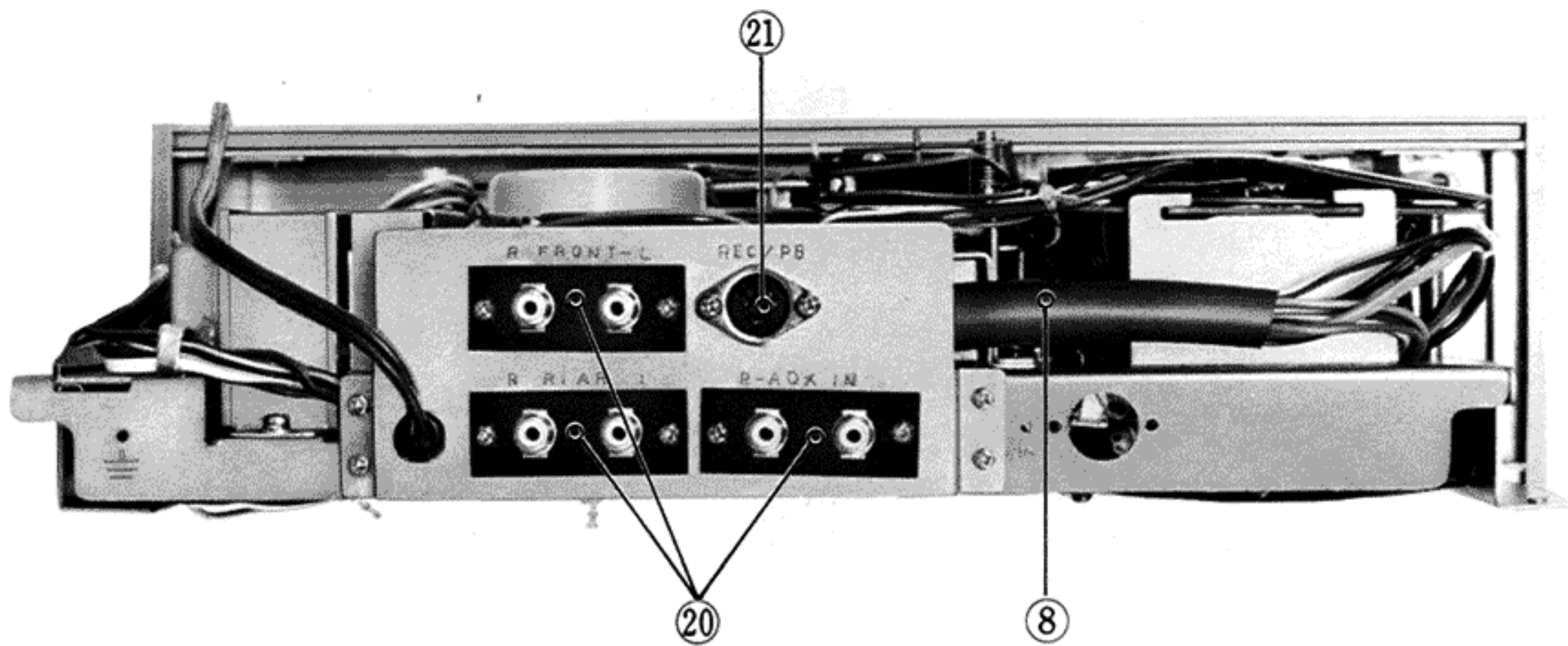


Fig. 6

PART NO.	PART NAME	PART NO.	PART NAME
1	T22735-001	17	QSP0008-002
2	T31065-001	18	Q30186-001
3	T45002-001	19	m-872-00B
4	Q04834-002	20	F4653-001
5	T30837-001	21	Q03967-001
6	E46025-001	22	T31239-001
7	T31208-001	23	F4896-005
8	T30543-001	24	Q03958-001
9	T45932-001	25	Q03961-001
10	T44991-001	26	T31236-00A
11	T45939-00A	27	Q30482-001
12	T45147-001	28	T45920-001
13	T38001-001	29	T45922-001
14	T30422-003	30	T45921-001
15	T31142-001	31	T31080-00A
16	T45923-001	32	T46105-001
	Front amplifier circuit board		Push switch (F.F)
	Rear amplifier circuit board		Lever switch (Auto-stop)
	Shield board		Motor
	Variable resistor		2P, PIN jack
	Solenoid (Auto-stop)		DIN jack
	Knob (Volume)		Power supply vibration board
	Level meter		MP capacitor
	Solenoid (Head shifting)		Headphone jack
	Microphone jack board		Jack (Mic)
	Microphone jack board (60Hz)		Program switch (SELECT)
	Flywheel assembly		Slide switch (Muting)
	Belt		Flip-flop circuit board
	Slide switch assembly (2ch-4ch change-over)		Muting circuit board
	Microswitch		2ch-4ch change-over circuit board
	Power supply transformer		Counter assembly
	F.F. circuit board		Counter belt

4. REMOVING AND REPLACEMENT OF MAJOR PARTS

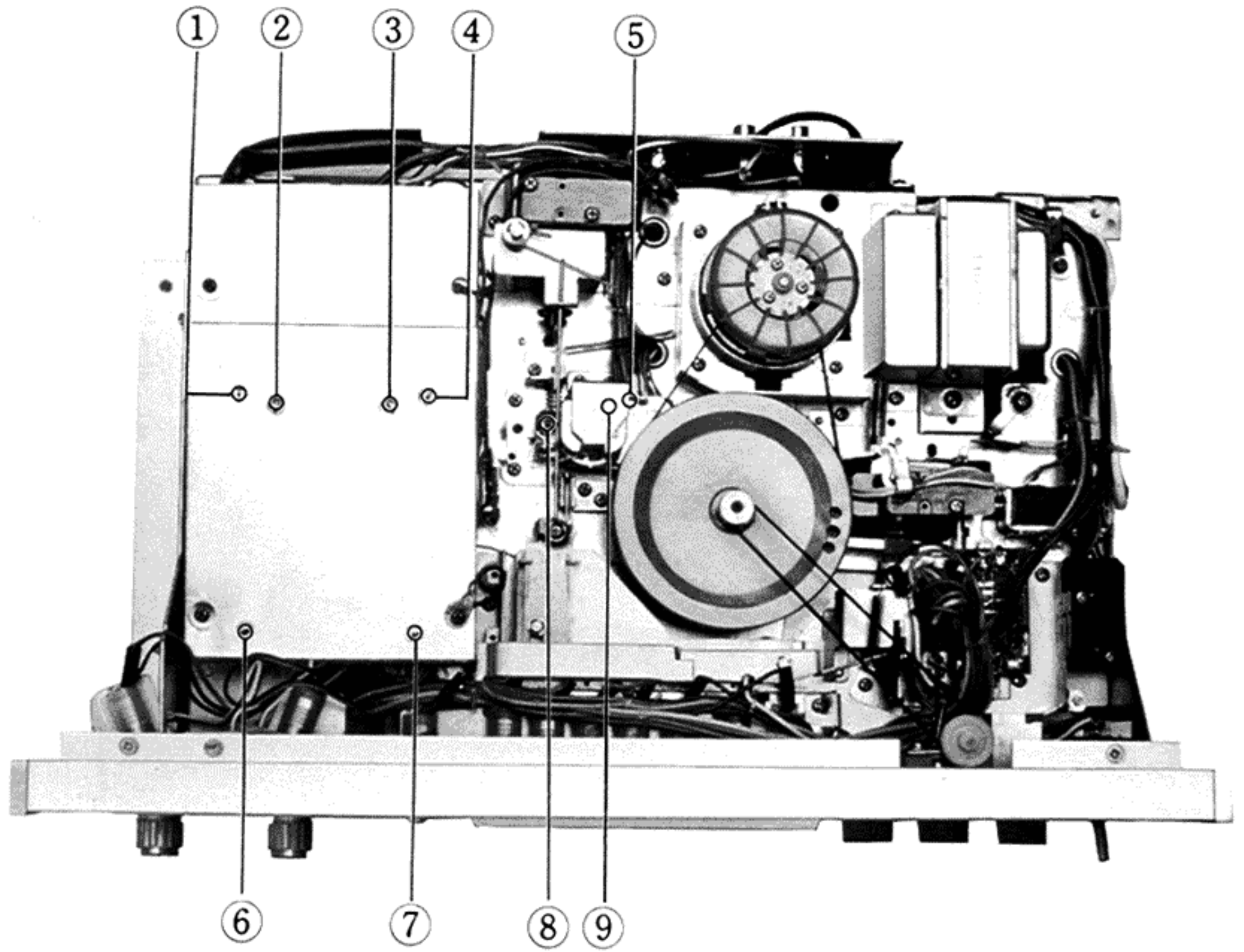


Fig. 7

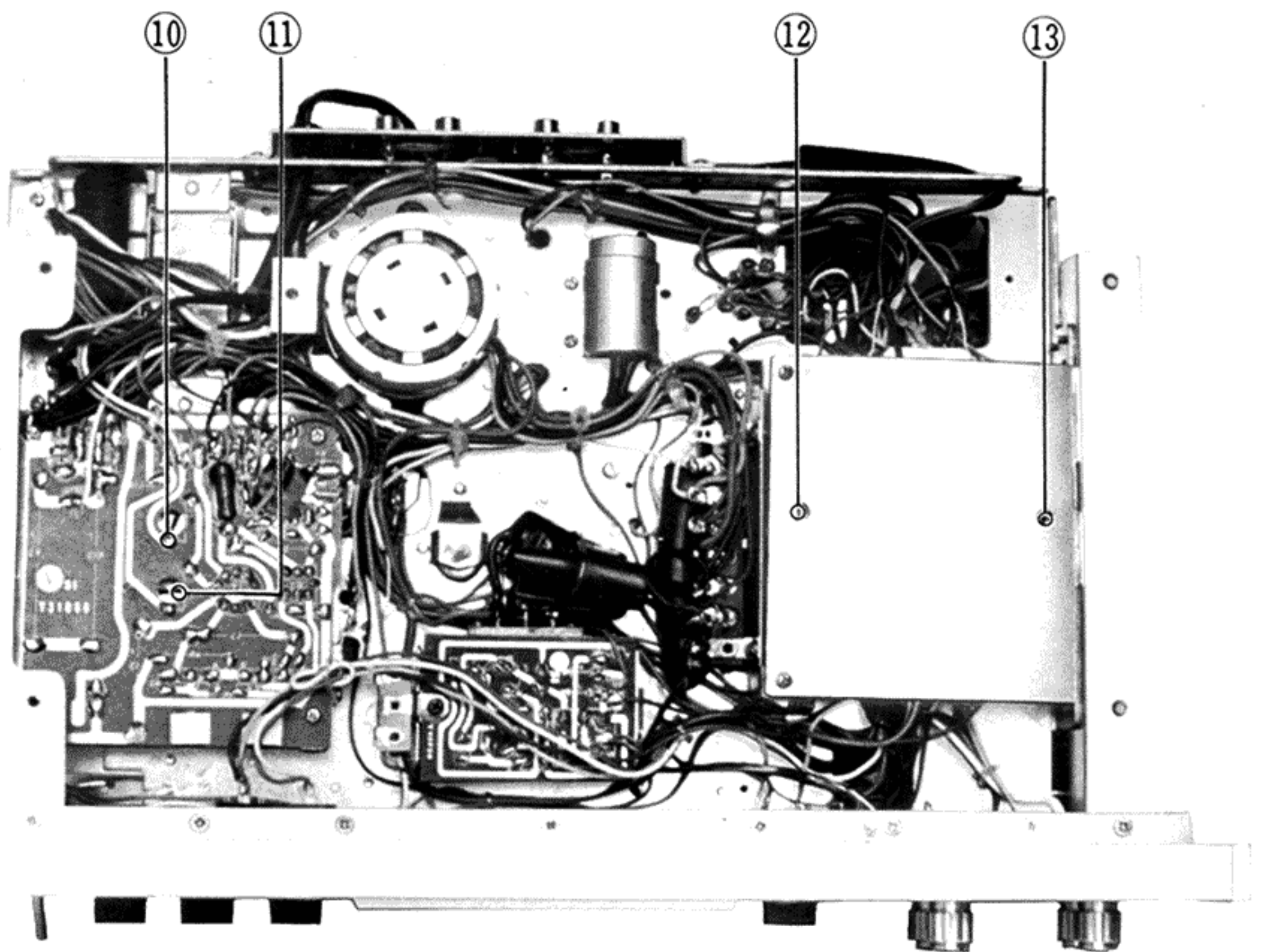


Fig. 8

- | | |
|-------------------------------------------------------------|------------------------------------------------------------|
| 1. Playback amplifier sensitivity adjustment (left front) | 7. Level meter adjustment (right front) |
| 2. Recording amplifier sensitivity adjustment (left front) | 8. Head azimuth adjustment |
| 3. Recording amplifier sensitivity adjustment (right front) | 9. Head height adjustment |
| 4. Playback amplifier sensitivity adjustment (right front) | 10. Erasing current adjustment |
| 5. Head inclination adjustment | 11. Erasing current adjustment |
| 6. Level meter adjustment (left front) | 12. Playback amplifier sensitivity adjustment (right rear) |
| | 13. Playback amplifier sensitivity adjustment (left rear) |

5. ADJUSTMENTS

1. Head Height Adjustment

Head height can be varied by turning the head height adjusting shaft. Turning the shaft clockwise lowers the head, while turning counterclockwise raises the head.

The shaft protrudes from the chassis bottom. By turning it with a screwdriver through the adjustment hole provided on the cabinet bottom, the head height can be adjusted with the head installed in the cabinet. Before starting the adjustment, the first program should be selected, and the head track upper end should be set almost on a level with the tape guide upper end. It makes the adjustment easier.

2. Recording Gain Adjustment

Apply a signal (1,000 Hz) from the MIC jack, and make adjustment so that the input may be -62 dBs (0.65 mV) when the level meter points zero.

Note that this adjustment must be made after "3. Level Meter Sensitivity Adjustment."

3. Level Meter Sensitivity Adjustment

Set the level meter sensitivity on the basis of the recording signal current at the time of recording. In this case, the erasing oscillator must be stopped before measurement. To adjust, insert a 100-ohm resistor between the recording head and earth. Apply a sine wave signal of 1 kHz to the the INPUT jack, and adjust the input so that the voltage across the 100-ohm resistor will be 5 mV ($50 \mu\text{A}$). At the same time, set the level meter sensitivity adjustor so that the level meter points OVU.

4. Head Inclination Adjustment

By turning the setting screw at the head arm center, the head inclination can be adjusted. Turn the setting screw so that the head front may be at right angles to the chassis.

5. Head Azimuth Adjustment

By turning the screw on the left end of the head arm, the head azimuth can be adjusted. If the head is set parallel to the base, it can correctly be adjusted by turning in or out the adjusting screw about one turn.

6. Playback Gain Adjustment

Set the volume at maximum, and play the test tape (VTT-907, or VTT-918); then adjust so that the output at LINE OUT is 1 V.

7. Erasing Current Adjustment

The head erasing current is adjusted by the semi-fixed volume control for adjustment. Adjust each of the head right and left channels by use of this semi-fixed volume control. The bias current should be adjusted by varying the erasing current.

To adjust the bias current, insert a 100-ohm resistor between the head record/playback winding (blue) and earth. Then, connect a vacuum tube voltmeter across the 100-ohm resistor to measure the bias current. Adjust the semi-fixed volume controls (R_2 and R_3) so that the voltmeter points $55 \text{ mV} \pm 5$ ($550 \mu\text{A} \pm 50$) when the recording input is zero. Be sure to make this adjustment when the head has been replaced.

8. Hum Backing Coil

Set the hum backing coil so that the hum during the playback operation is at minimum. Position the coil by changing its direction, distance from the motor, and angles to the motor, and when the hum becomes the minimum, set it. This adjustment must be made when the head has been replaced.

6. REPLACING THE MAJOR COMPONENTS

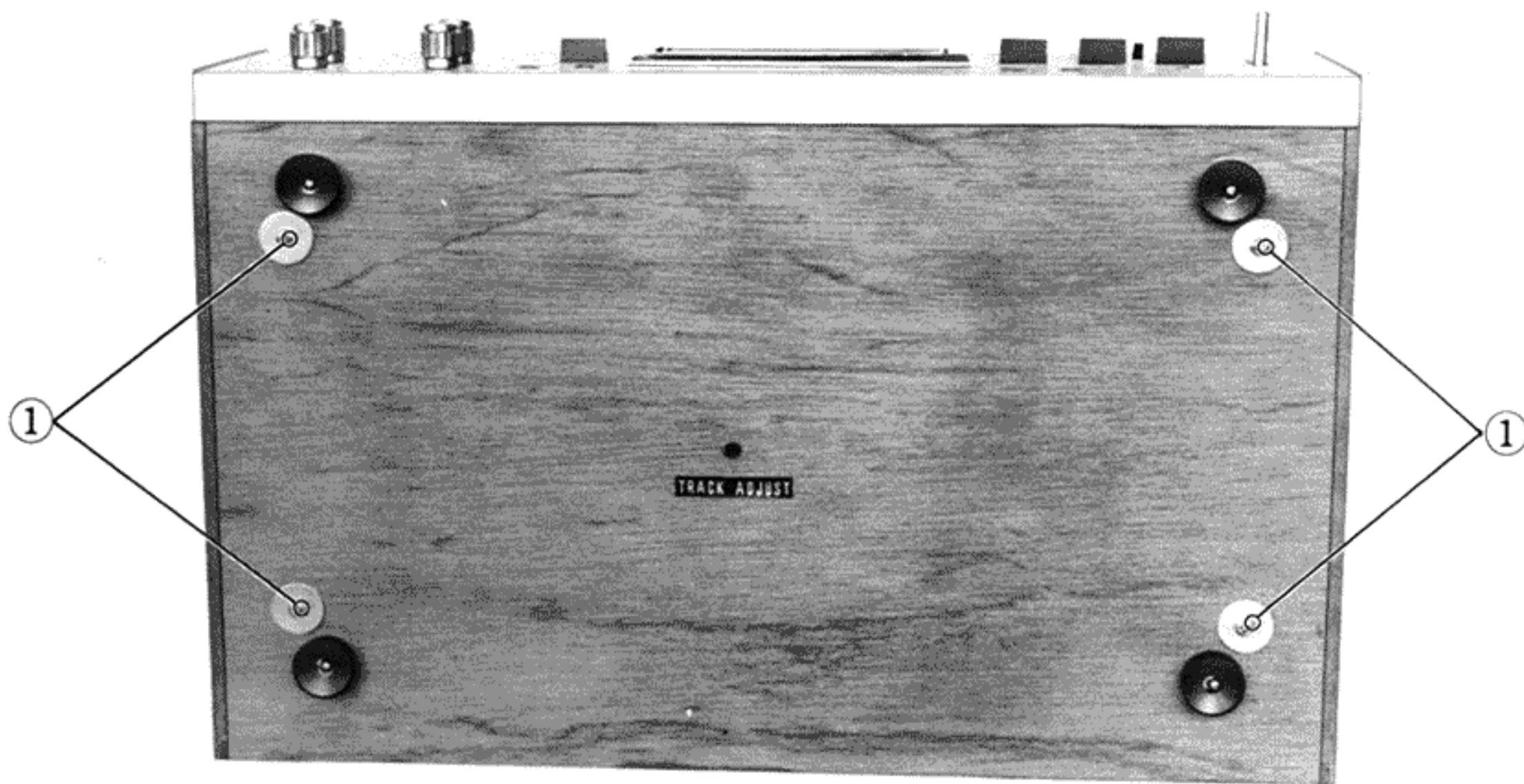


Fig. 9

Note that the specified screws (SPSP4014ZS) must be used at the positions ① shown in the photograph in order to secure the cabinet bottom plate.

If any other screws longer than specified are used, they may touch circuits inside.

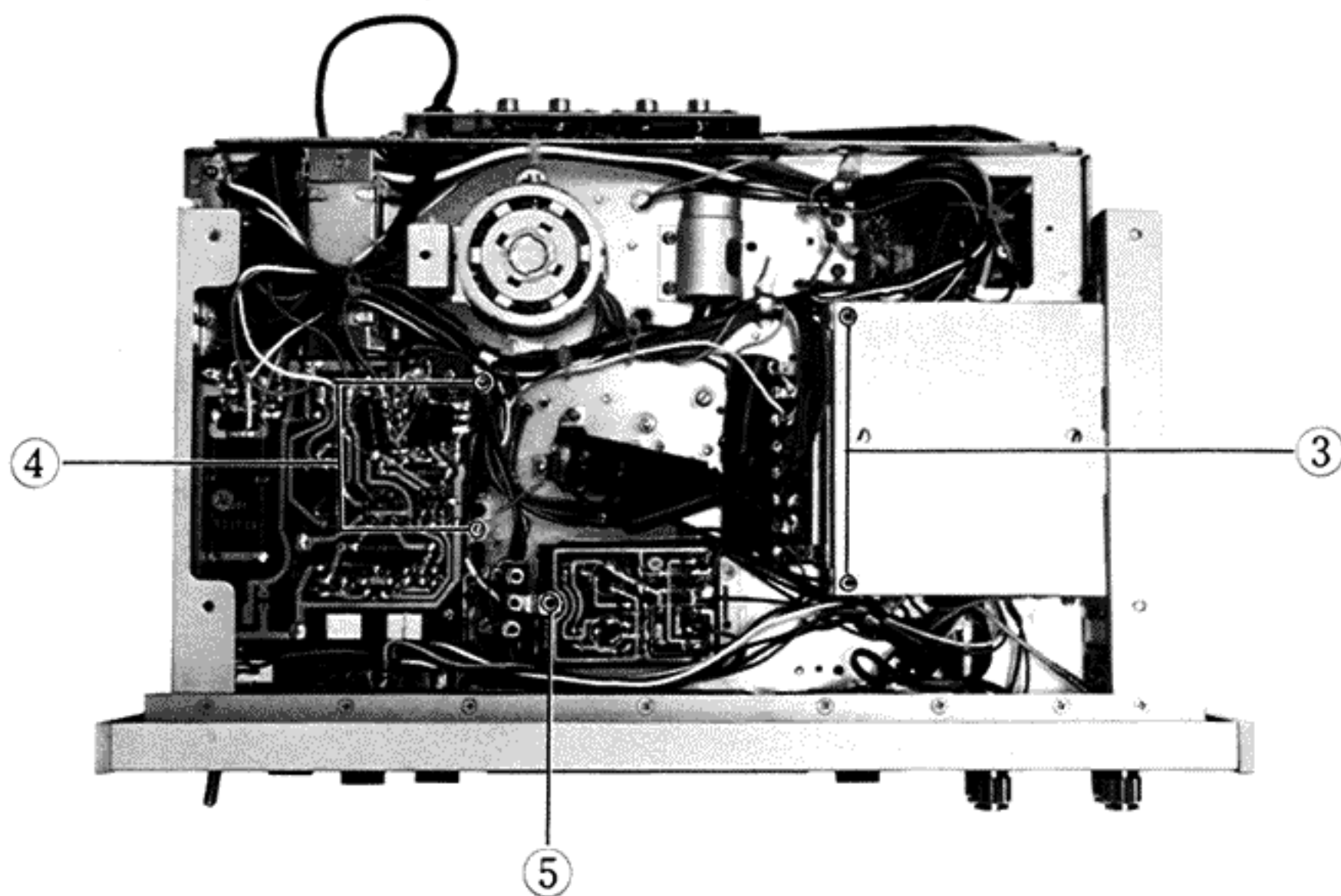


Fig. 10

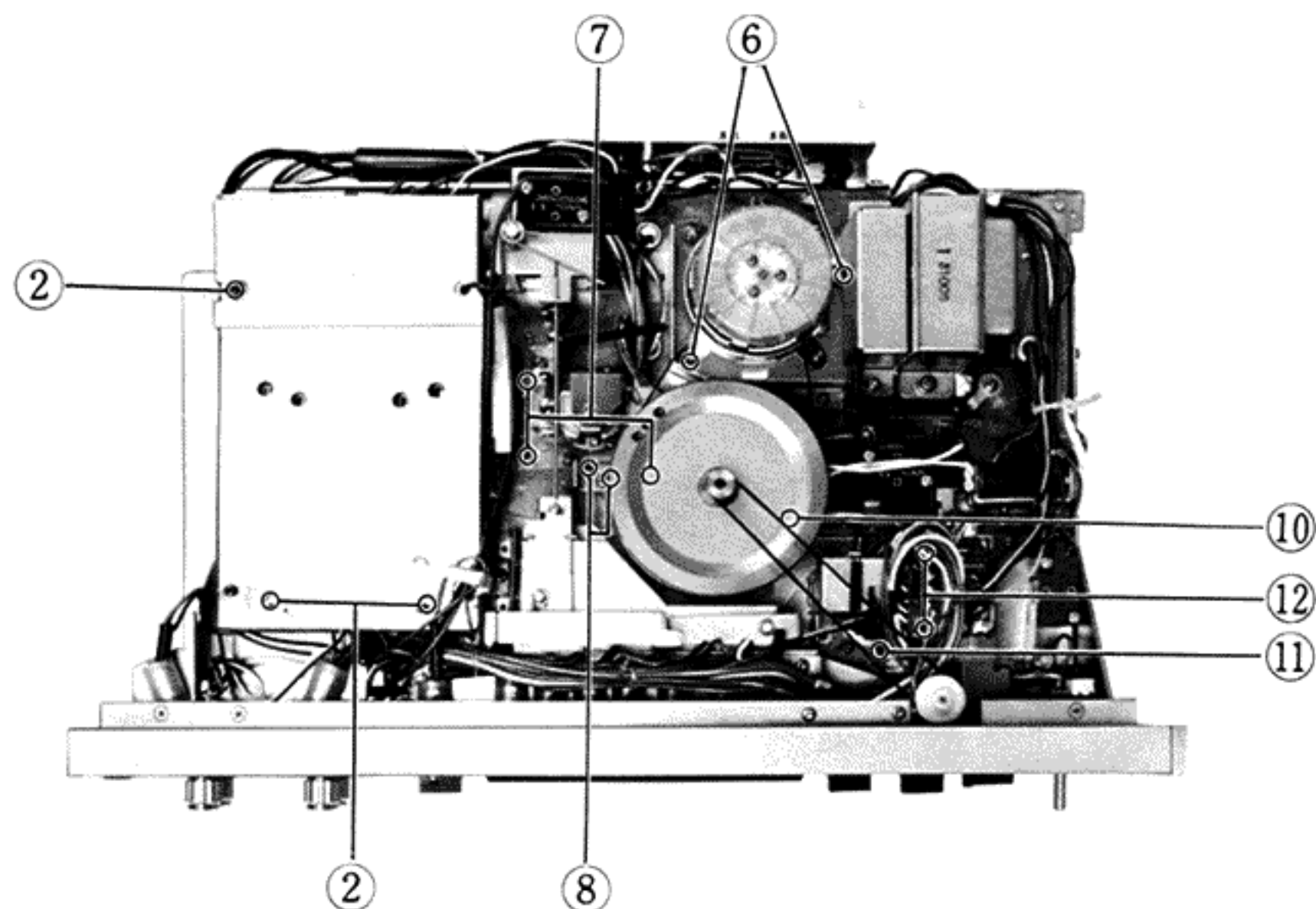


Fig. 11

1. Removing the Cabinet

Remove the four screws ① securing the cabinet bottom plate, and pull forward the main body. When installing the cabinet, there is a clearance between the chassis and the cabinet. For easier installation, place the cabinet upside down, and tighten the screws by holding the power cord.

2. Removing the Rear Amplifier Circuit Board

1) Removing the front amplifier circuit board

Remove the three screws ② securing the amplifier circuit board, and lift up the circuit board. When installing the amplifier circuit board or making adjustment on the circuit board, avoid operating the record/playback slide switch with the power switch turned on. If a cartridge tape is loaded, it will be erased.

2) Removing the rear amplifier circuit board

Remove the two screws ③ securing the amplifier circuit board, and lift up the circuit board.

3) Removing the power, oscillator circuit board

Remove the two screws ④ securing the circuit board, and it can be lifted up.

4) Removing the flip-flop circuit board

Remove the one screw ⑤ holding the circuit board, and it can be lifted up.

3. Removing the Motor

1) Desolder the motor wires.

2) Remove the capstan belt.

3) Remove the two screws ⑥ securing the motor, and remove the motor.

4. Removing the Magnetic Head

1) Remove the flywheel.

2) Remove the three screws ⑦ securing the head base to the chassis.

3) Remove the two screws ⑧ holding the sensor.

4) Lifting up the head base toward you, remove it from the chassis.

5) Remove the one screw ⑨ holding the head arm head, and lift up the head forward to remove it.

5. Removing the Time Counter

1) Remove the counter belt ⑩ .

2) Remove the two screws ⑪ holding the 2-ch-4-ch change-over circuit board, and remove the circuit board.

3) Remove the three screws ⑫ securing the counter bracket, and remove the counter.

7. CIRCUIT BOARD PARTS DIAGRAM

A. Front Amplifier Circuit Board Parts Diagram

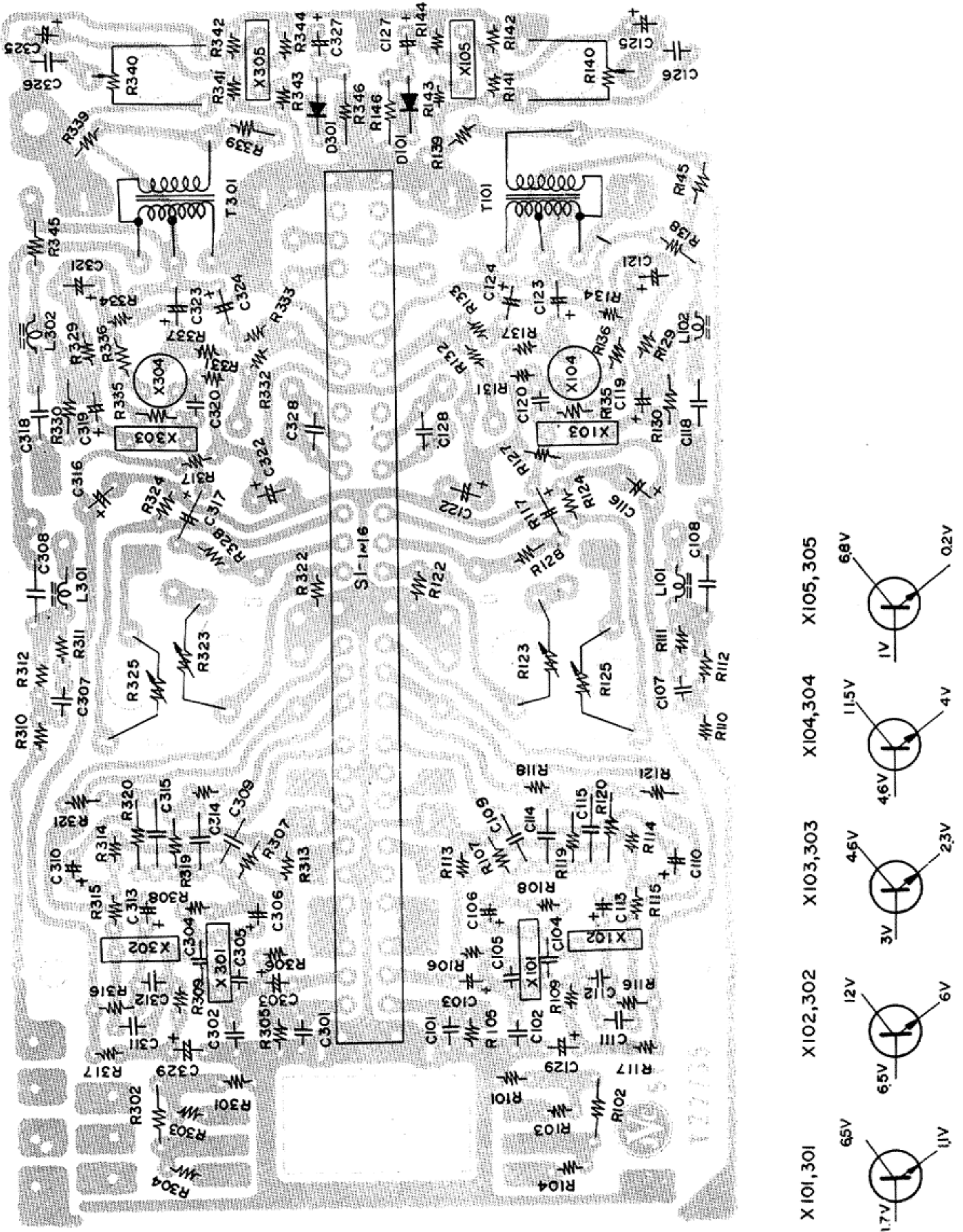


Fig. 12

B. Rear Amplifier Circuit Board Parts Diagram

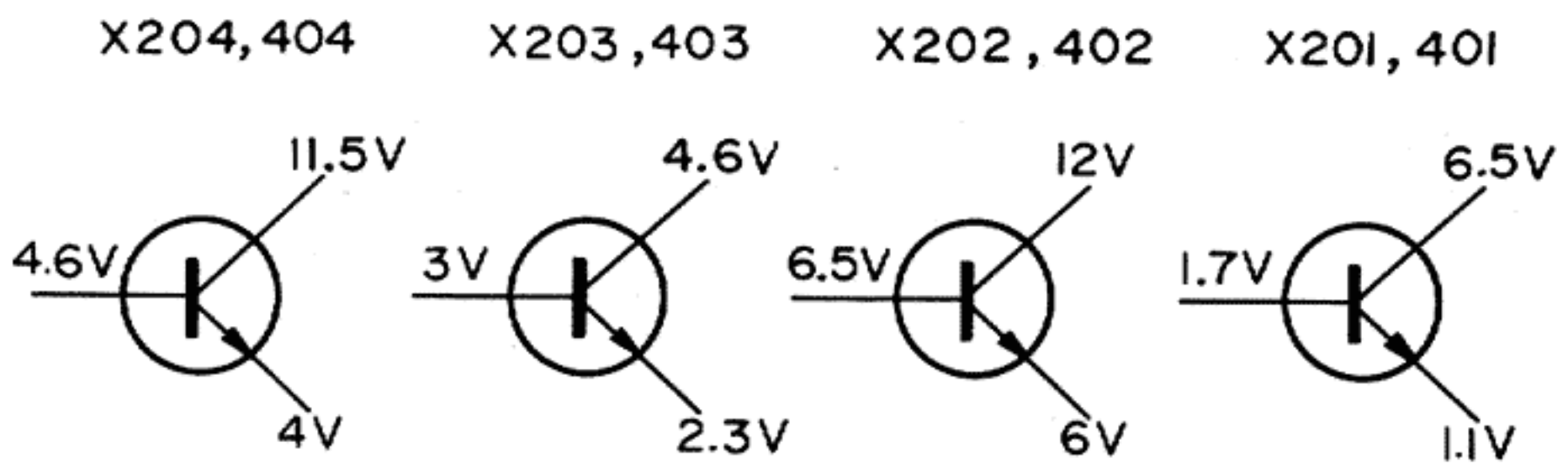
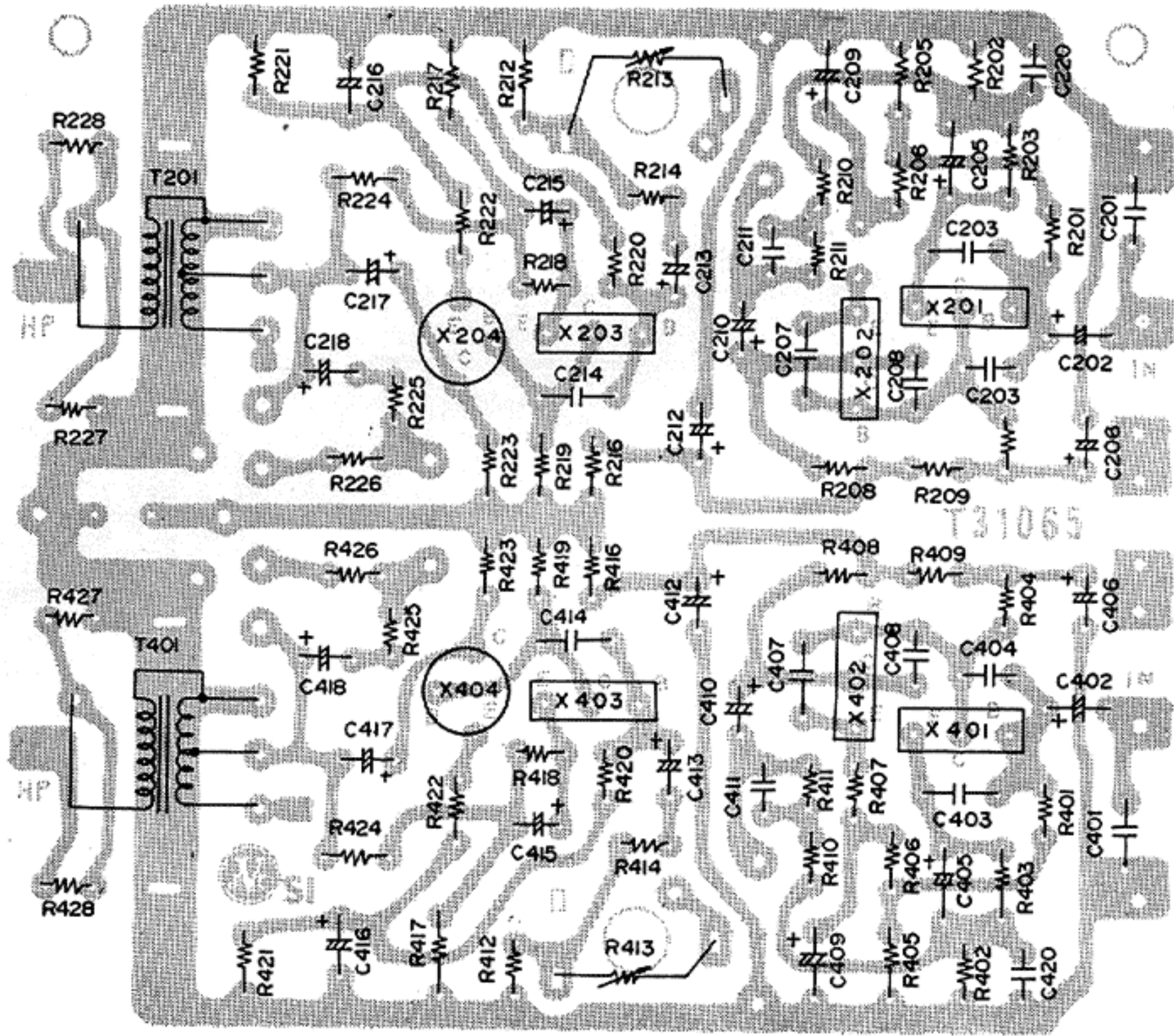


Fig. 13

C. Power, Oscillator Circuit Board Parts Diagram

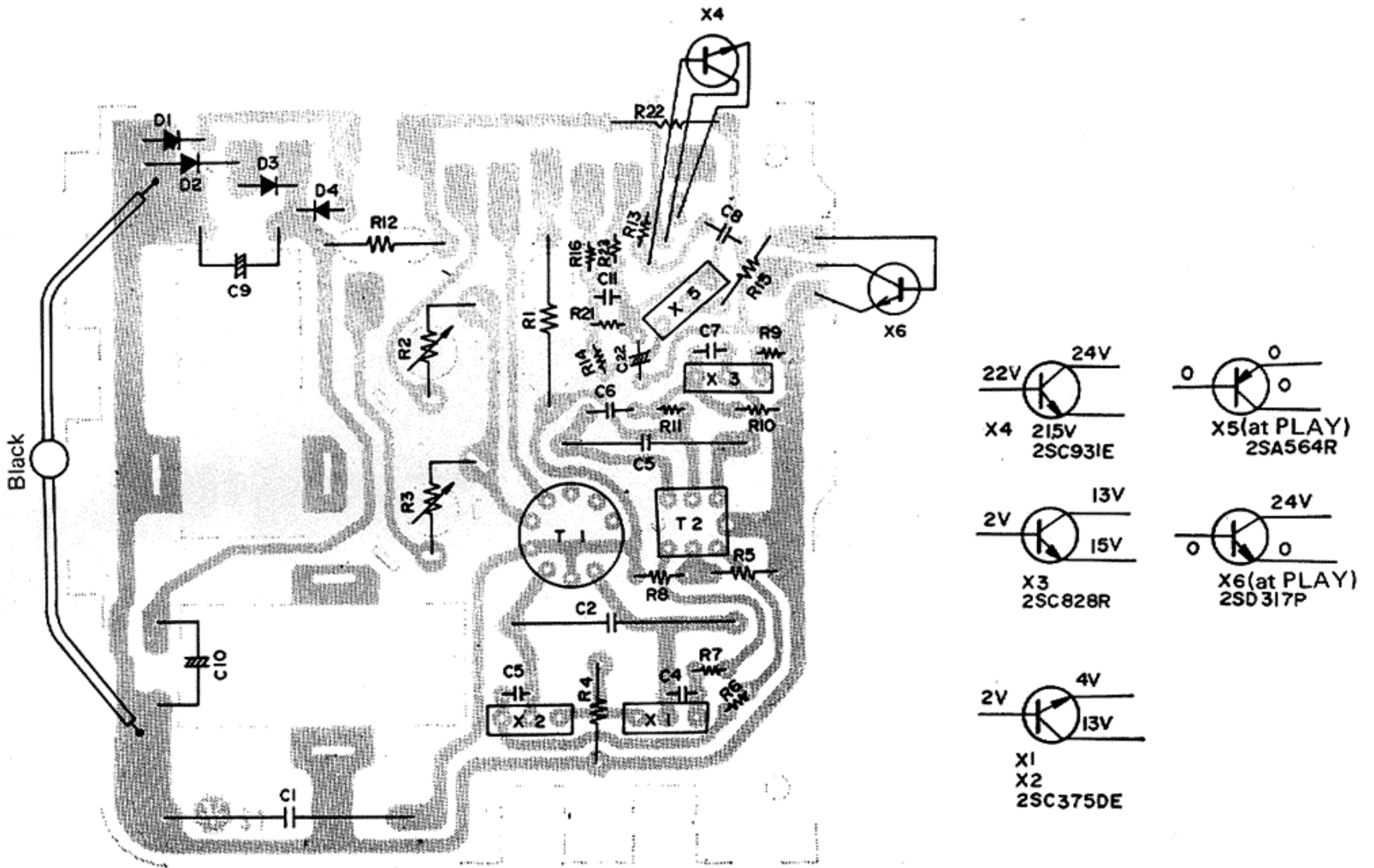


Fig. 14

D. Flip-flop Circuit Board Parts Diagram

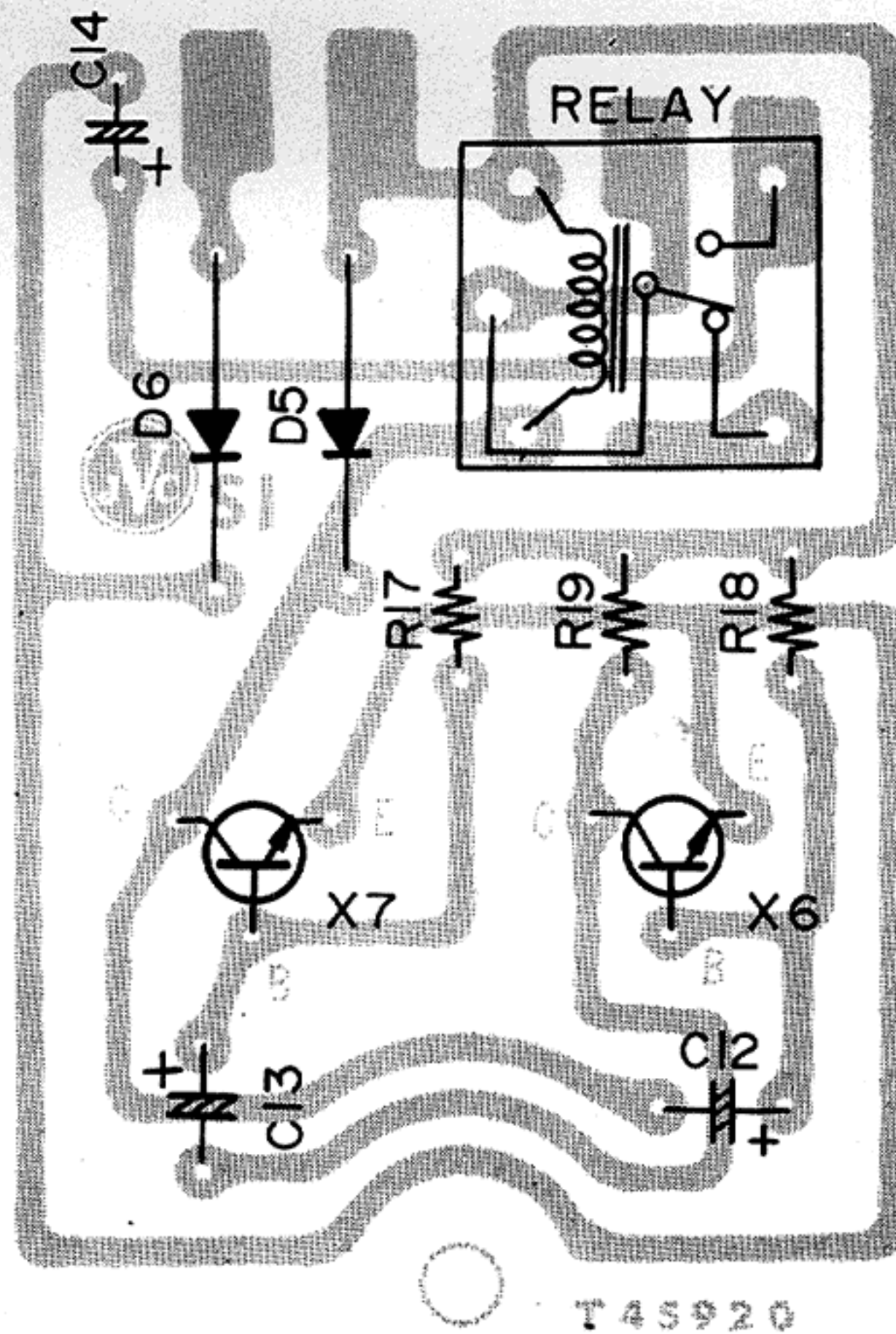


Fig. 15

8. WIRING DIAGRAM

A. Front Amplifier Circuit Board Wiring Diagram

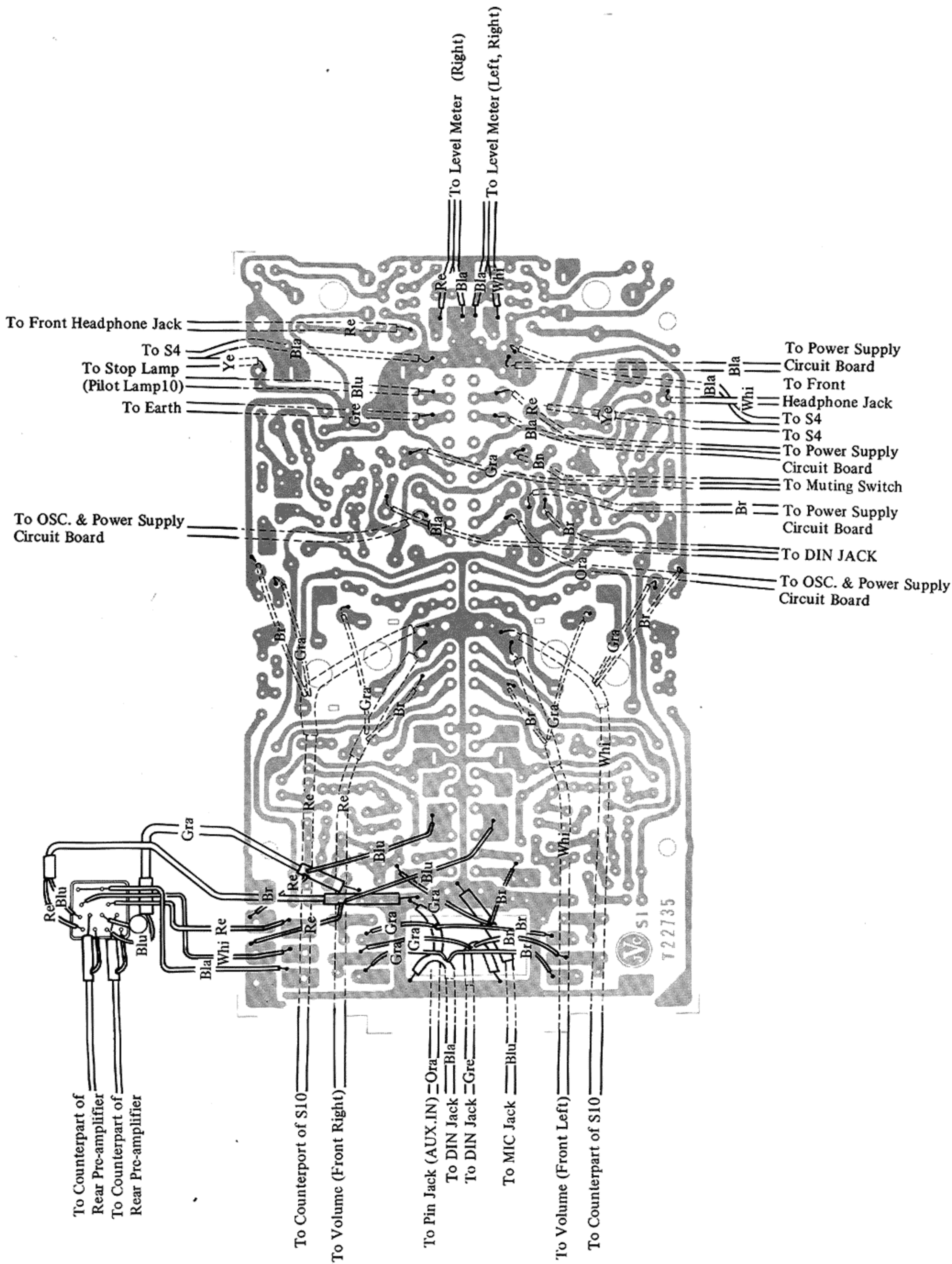


Fig. 16

B. Rear Amplifier Circuit Board Wiring Diagram

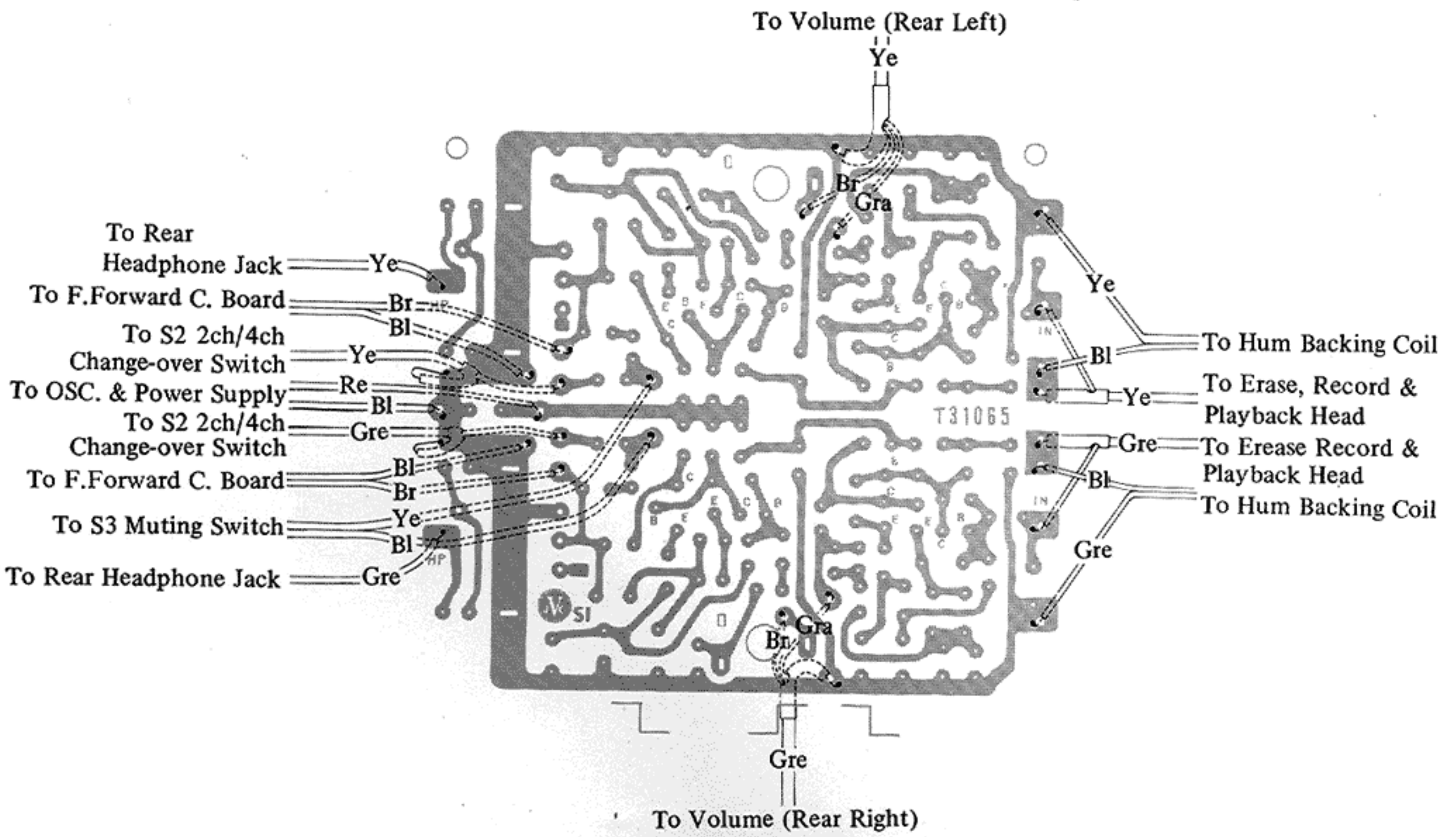


Fig. 17

C. Flip-flop Circuit Board Wiring Diagram

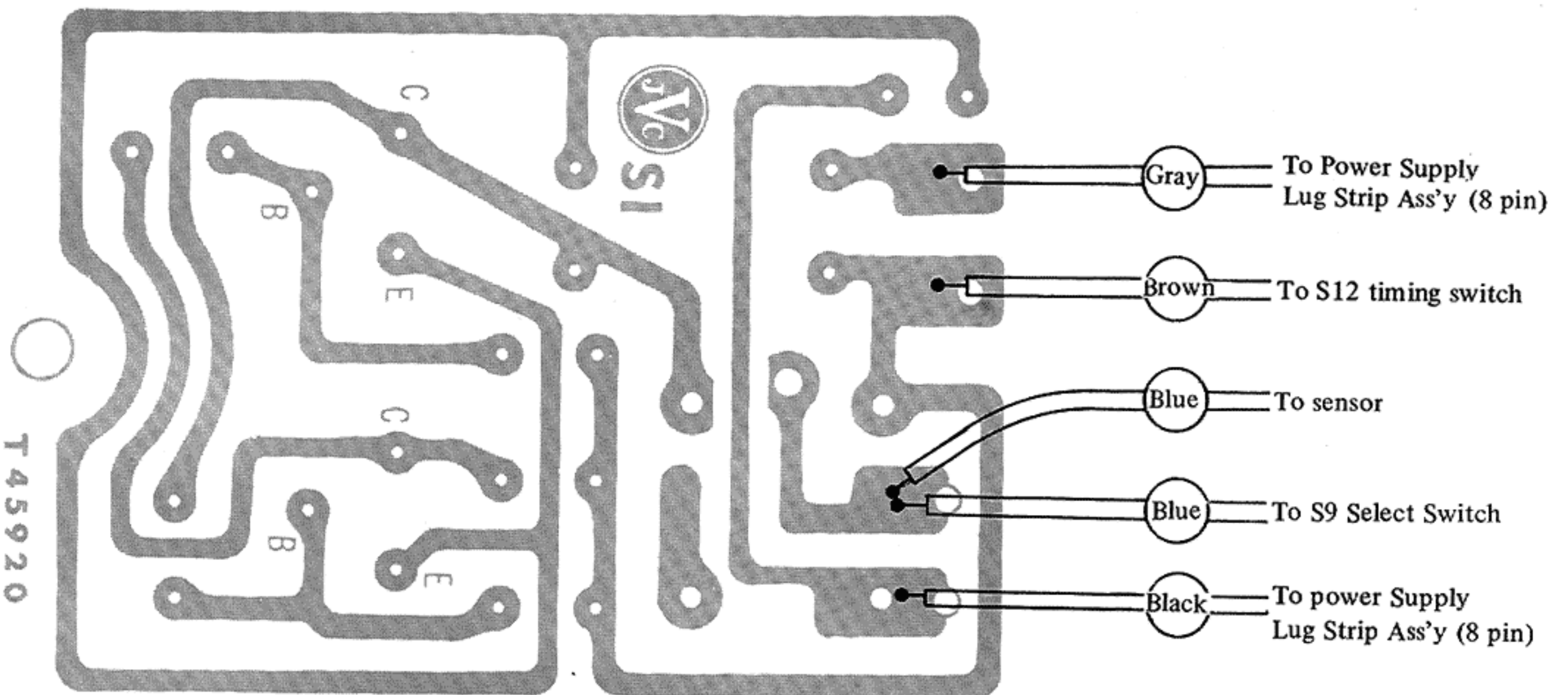


Fig. 18

D. Power, Oscillator Circuit Board Wiring Diagram

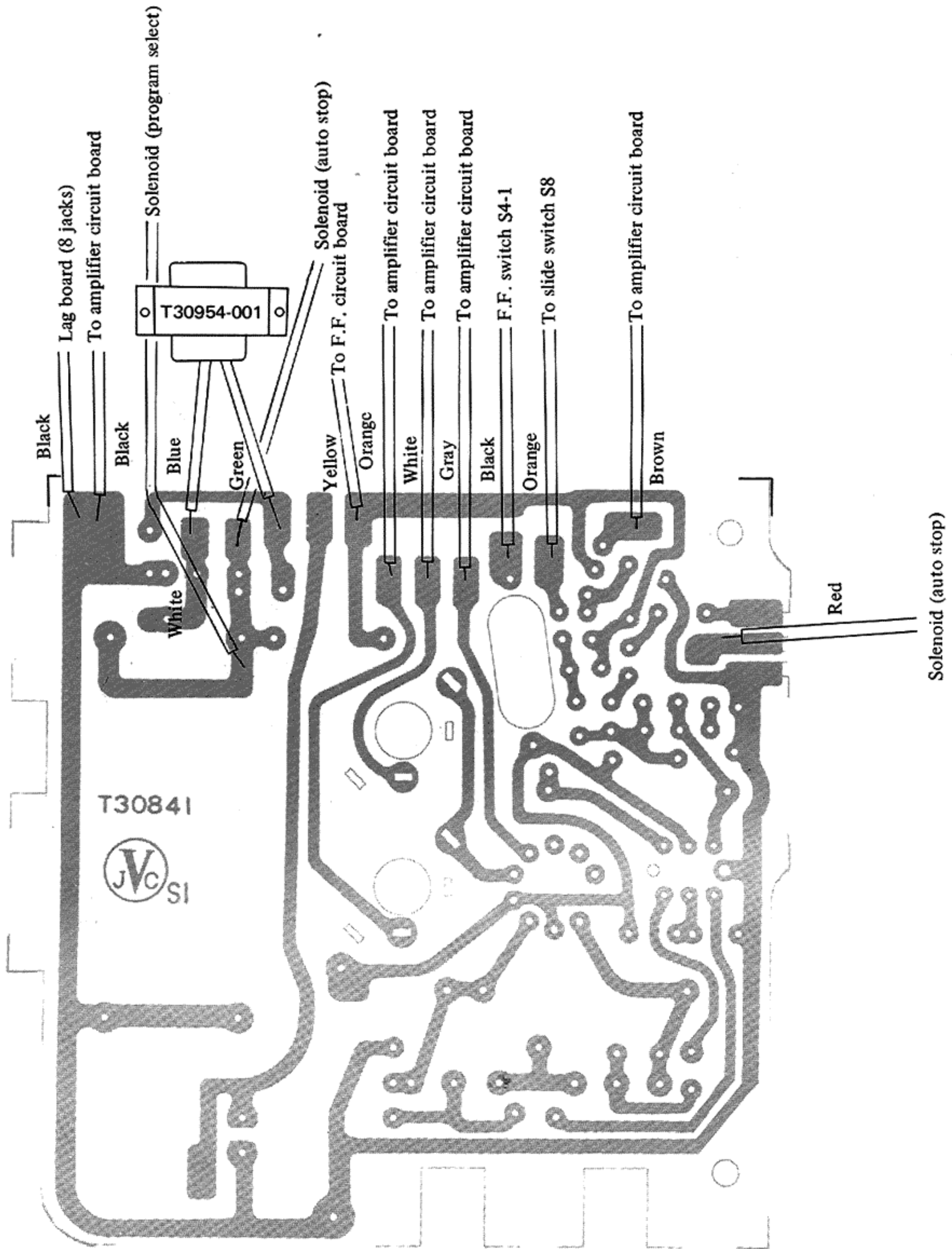
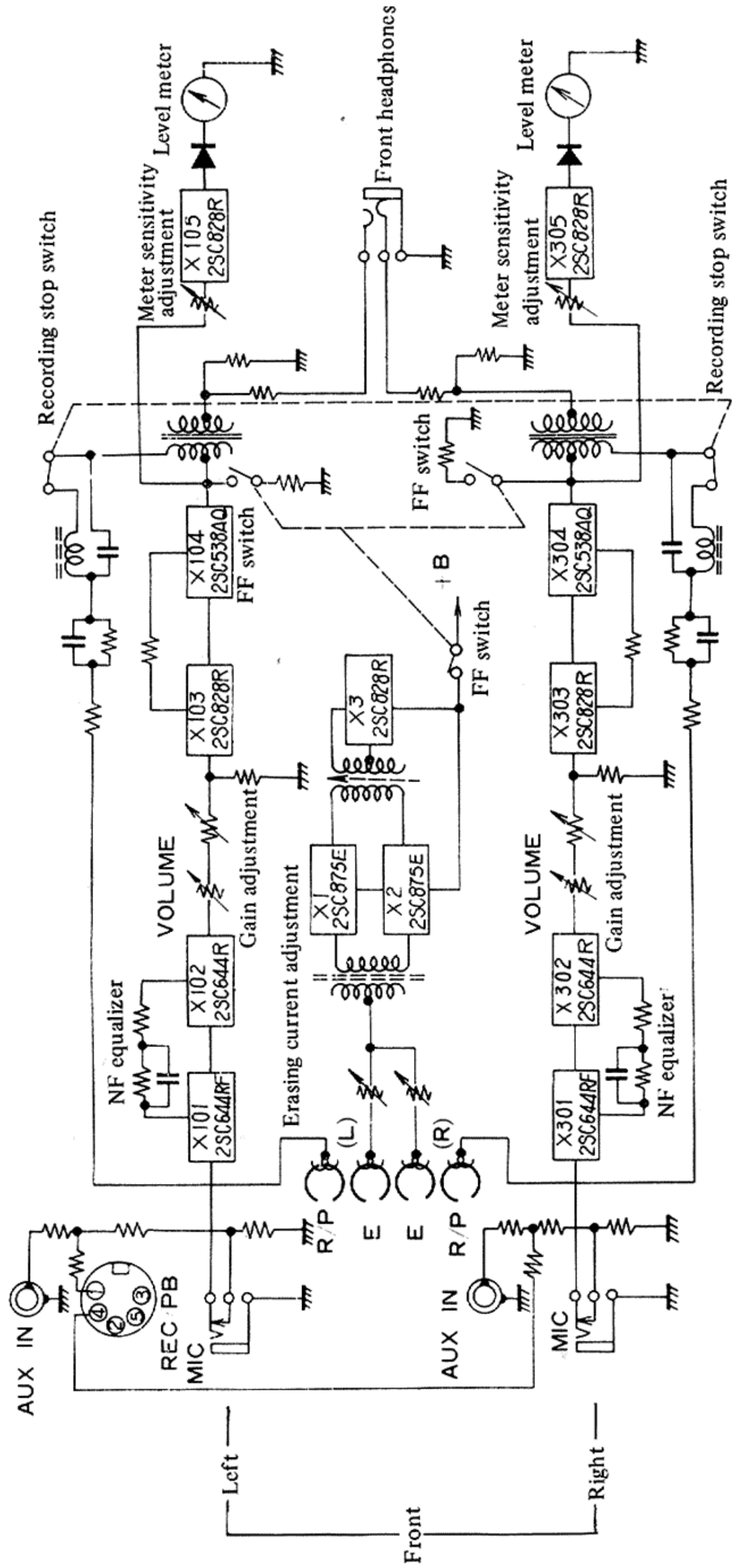


Fig. 19

9. BLOCK DIAGRAM

A. Recording System Block Diagram



NOTE: 1. During the recording operation, the 2-channel system on the front side alone is in operation. Therefore, the diagram of the rear side (exclusively for playback) is omitted.
 2. FF switches, both front and rear, are coupled.

Fig. 20

B. Playback System Block Diagram

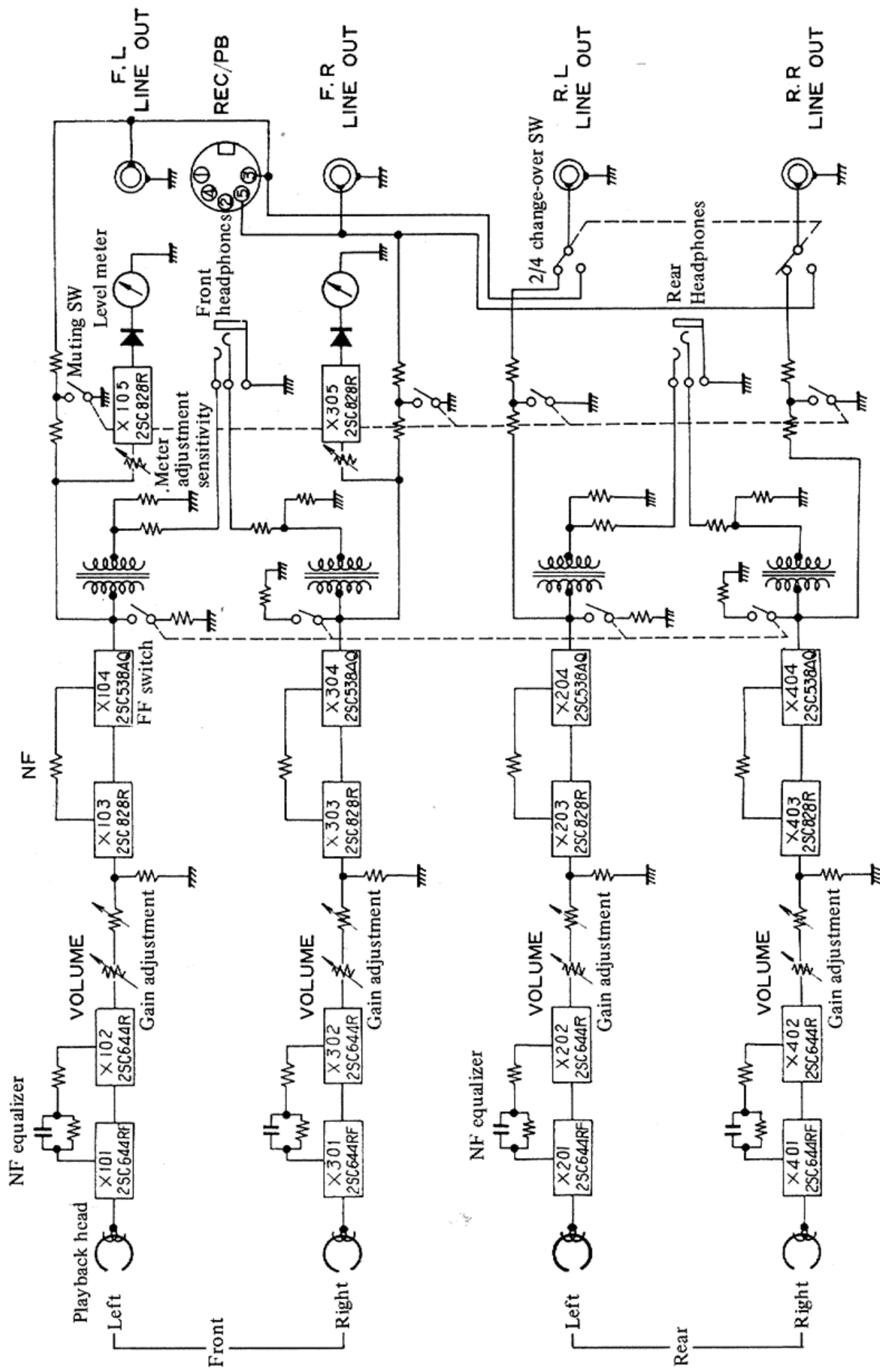


Fig. 21

10. TROUBLE SHOOTING

Symptom	Cause	Remedy
<p>No power is on.</p> <p>Indicator lamp will not light up.</p> <p>2ch-4ch change-over is impossible.</p> <p>Program changes when inserting 2-channel cartridge or when pulling it out.</p> <p>No sound is produced.</p>	<ul style="list-style-type: none"> • Microswitch is faulty. • Pilot lamp is burned out. • Pilot lamp is loose. • Both ratchet cam and disc contact points fail to contact. • 2ch-4ch change-over switch is faulty. • 2ch-4ch change-over slide switch is faulty. • Microswitch for flip-flop circuit is faulty. 	<p>Replace microswitch.</p> <p>Replace pilot lamp. Screw in pilot lamp.</p> <p>Clean both points with a cleaner.</p> <p>Adjust the angle of arm pushing the slide switch by bending it.</p> <p>Adjust by bending the arm pushing the slide switch.</p> <p>Apply a silicon grease (Toshiba #500) to contact area of wire with stud, because the wire returns too fast.</p>
<p>Channel will not change.</p>	<ul style="list-style-type: none"> • Motor is faulty. • Cartridge is defective. • Signal wire is broken. • Amplifier is faulty. • Solenoid is faulty. 	<p>Replace motor.</p> <p>Test by use of a new cartridge.</p> <p>Check head leads. Check soldered joints. Check connector and jack.</p> <p>Check amplifier. Measure voltage with a tester.</p> <p>Clean solenoid plunger with alcohol, and oil it sparingly. Straighten any bend of lever. Correct inclination of solenoid.</p>
<p>Speed is incorrect, with undue wow.</p>	<ul style="list-style-type: none"> • Ratchet cam is faulty. • Stop cam back "L" spring is faulty. • Motor is faulty. • Belt is faulty. • Cartridge is defective. • Pressure is low. 	<p>Clean ratchet cam surfaces with alcohol, and coat with silicon grease. Adjust angle of stop cam back "L" spring.</p> <p>Replace motor.</p> <p>Replace belt, or clean it with trichloroethylene.</p> <p>Test with a new cartridge.</p> <p>Measure pressure, and readjust.</p>
<p>Crosstalk is heard.</p> <p>Treble loss is noticeable.</p> <p>Neither recording nor playback is impossible.</p> <p>Treble loss is noticeable during recording and playback.</p> <p>Erasing is incomplete.</p>	<ul style="list-style-type: none"> • Head height is incorrect. • Head is dirty. • Head azimuth is incorrect. • Recording change-over slide switch stroke is incorrect. • Head is faulty. • Bias current is incorrect. • Erasing current is insufficient. 	<p>Adjust with adjust screw.</p> <p>Clean head</p> <p>Adjust with adjust screw.</p> <p>Adjust record spring position.</p> <p>Replace head.</p> <p>Adjust erasing current.</p> <p>Adjust erasing current.</p>

11. REPAIR NOTE

1. The level meter wires should be connected as follows:
 - White and black leads to the left side.
 - Red and black leads to the right side.
2. Take care not to install the stop selector switch upside down.

12. EXTERIOR PARTS

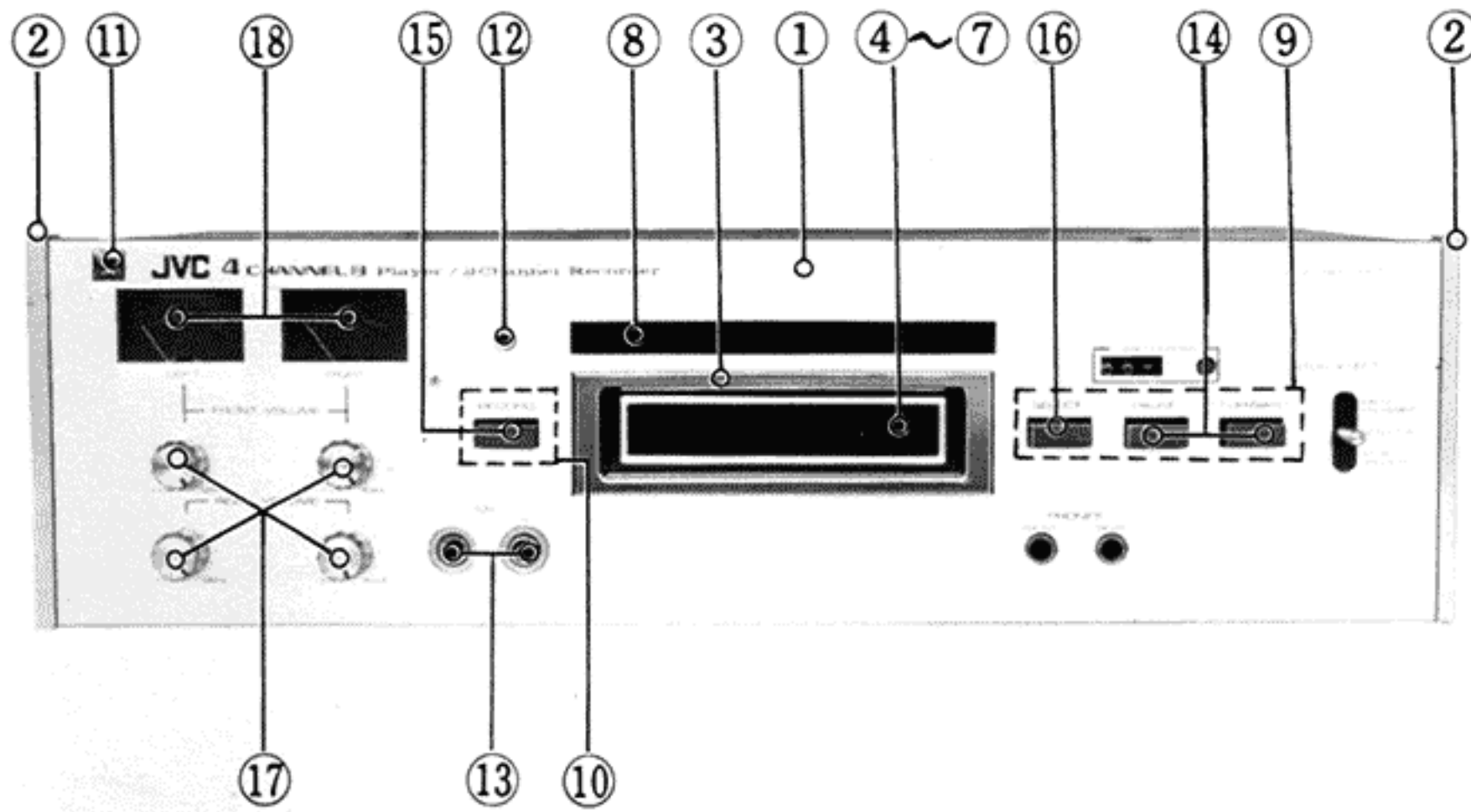


Fig. 22

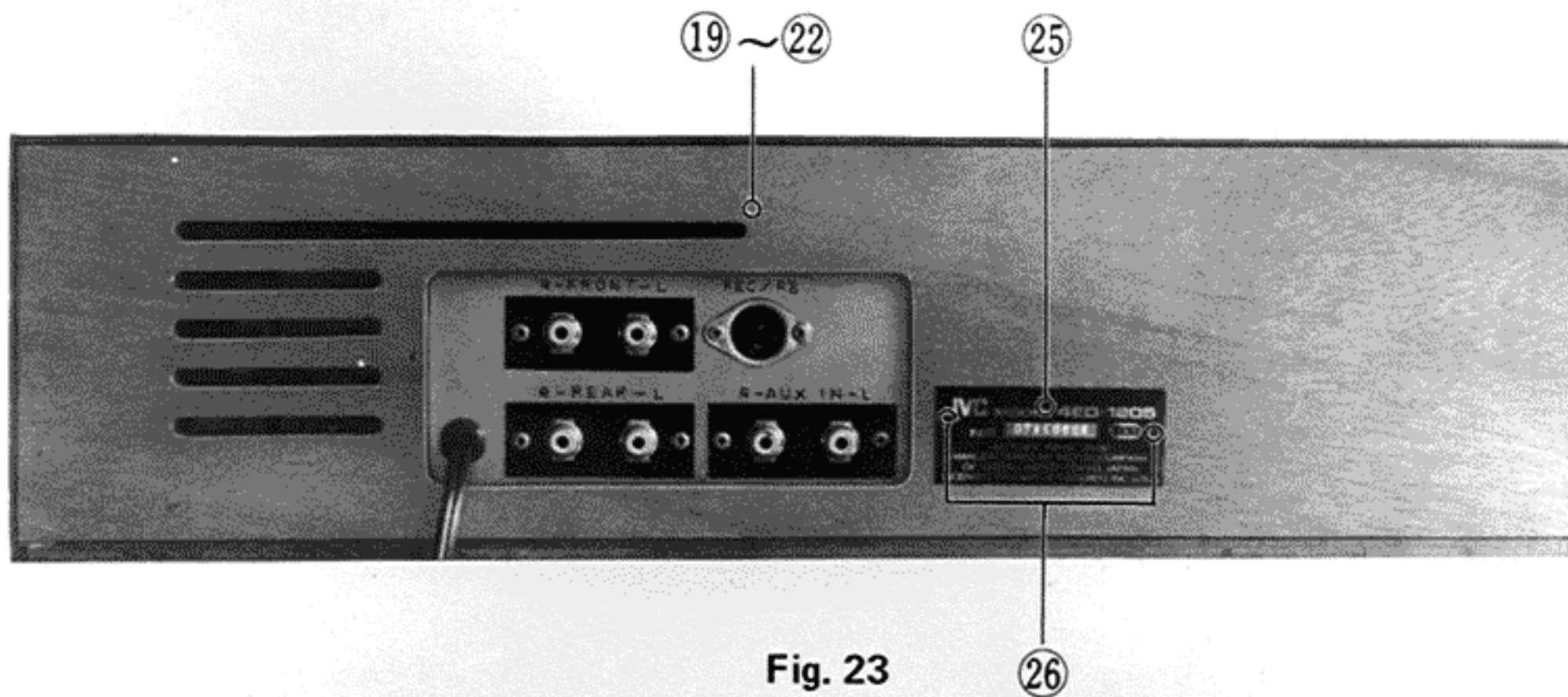


Fig. 23

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
1	*T22762-001	Front panel		1
2	*T45927-002	Side panel		2
3	E32630-002	Window escutcheon		1
4	E32628-001	Window plate		1
5	*T46353-001	Window spring		1
6	F4643-001	Wire		1
7	EYB1605	Eyelet		1
8	*T31048-002	Indicator		1
9	*T45928-001	Button guide		1
10	*T45929-001	Button guide		1
11	E46116-001	4CH mark		1
12	T42244-00A	Lamp cover assembly		1
13	T44585-001	Spacer		2
14	*T45849-003	Button	Instant stop, F.F. Recording	2
15	*T45849-002	Button		1
16	*T45930-002	Select button		1
17	E46025-002	Knob		4
18	*T31208-001	Level meter		2
19	*T22738-002	Cabinet		1
20	F4651-001	Foot		4
21	MRBP2713N	Wooden screw		4
22	WNS3000N	Washer		4
23	SPSP4014ZS	Screw		4
24	Q03091-114	Washer		4
25	T46140-001	Name plate		1
26	#18-7B	Nail		2
27	T44389-001	Label		1

13. ELECTRICAL COMPONENTS OTHER THAN CIRCUIT BOARD

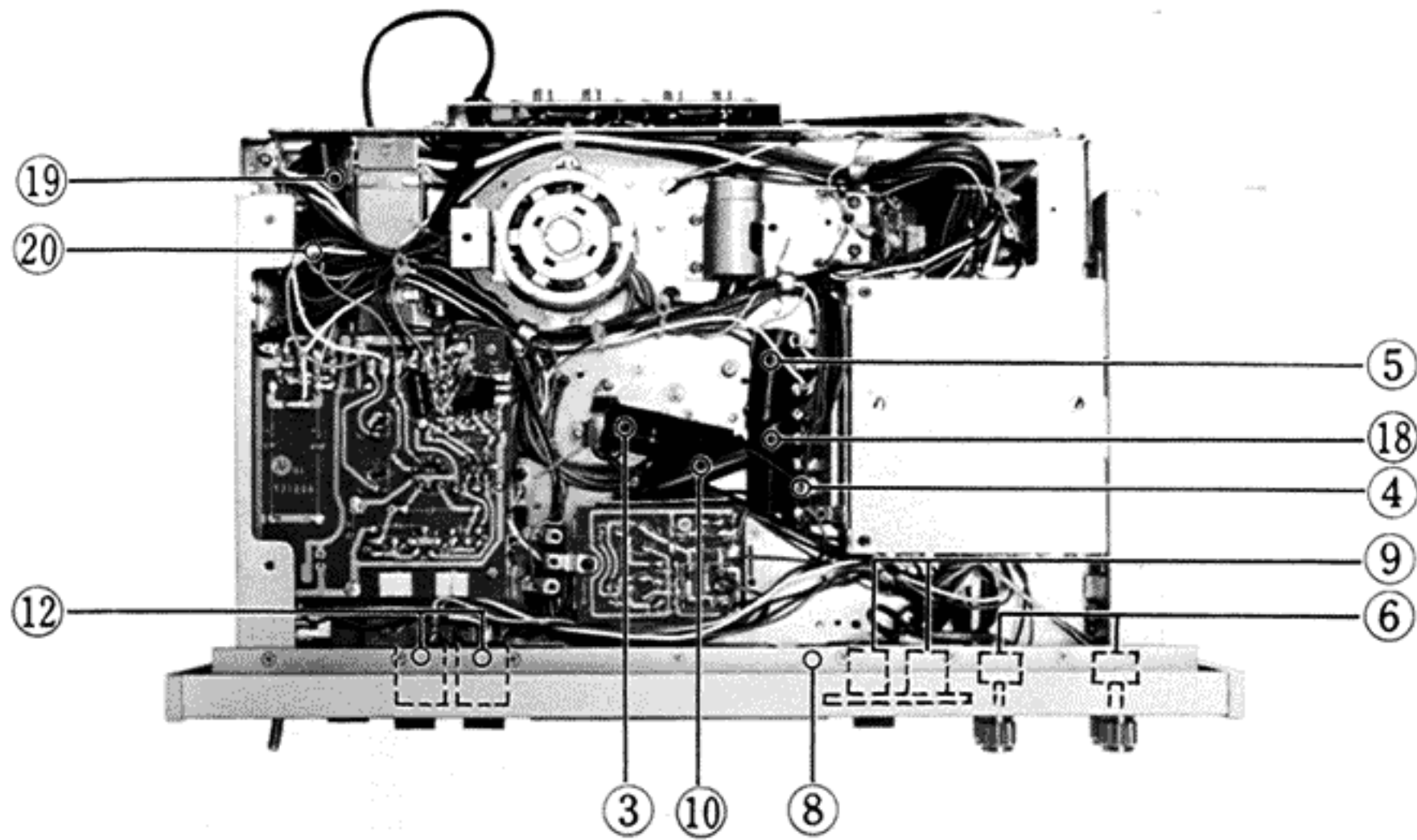


Fig. 24

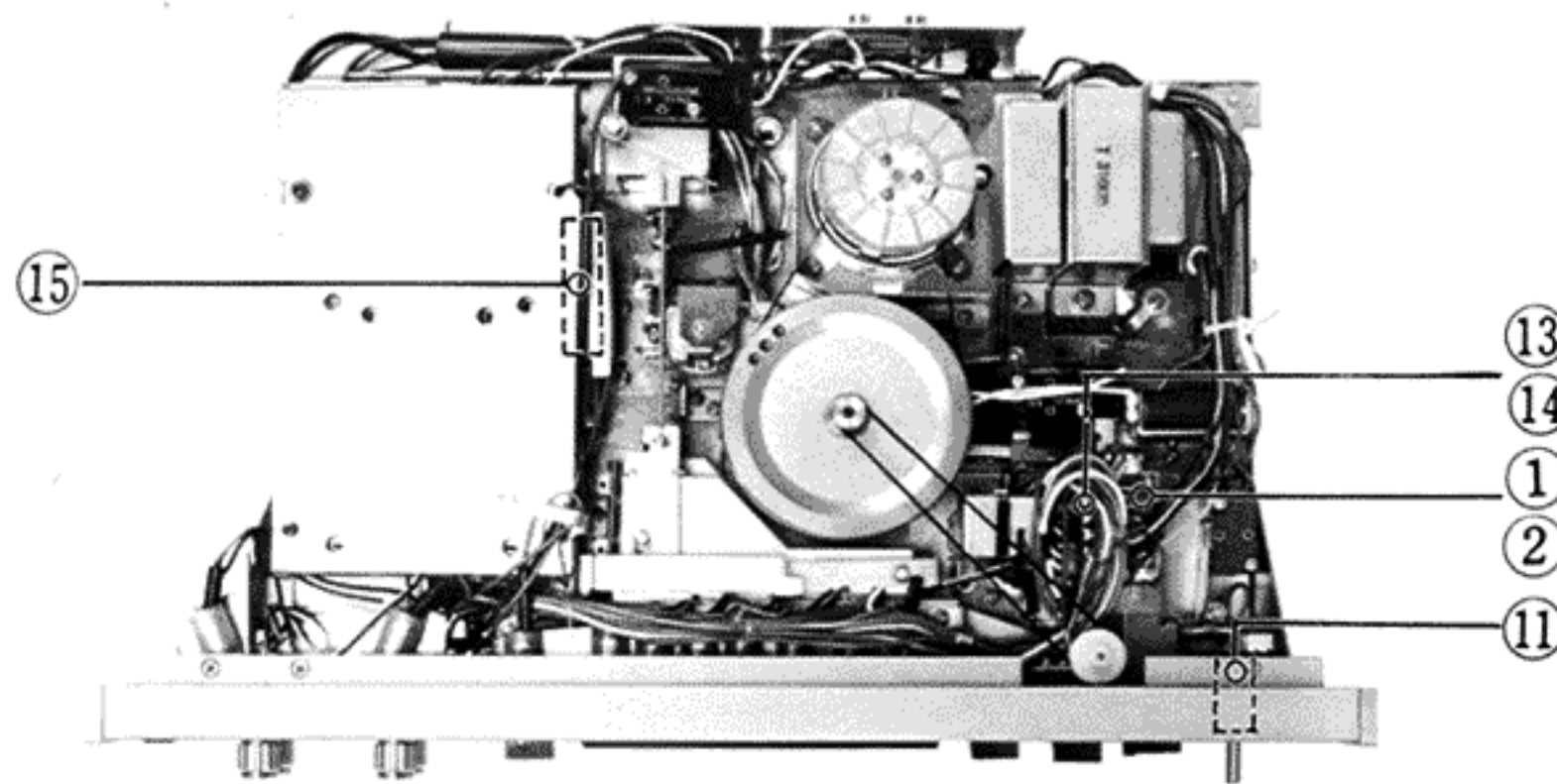


Fig. 25

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
1	*T45923-001	Circuit board	For fast forward	1
2	Q04800-4.7	Carbon resistor	R _{147, 347, 229, 429}	4
3	QF20003-504	MP capacitor	C ₁₉	1
4	Q03012-81	Lug strip assembly		2
5	Q03212-473	OFT capacitor	C ₁₇	1
6	Q04834-002	Variable resistor	R _{126, 326, 215, 415}	4
7	*T45932-001	Circuit board	For microphone jack	1
8	Q44353-470	Ceramic capacitor	C _{130, 330}	2
9	Q03961-001	Jack assembly	For microphone jack	2
10	Q04782-33T	Wound resistor	R ₂₀ 2 watts	1
11	Q30186-001	Lever switch	For stop select switch S ₈	1
12	Q03958-001	Jack assembly	For headphones	2
13	*T45921-001	Circuit board	For 2-4CH change-over switch	1
14	T38001-001	Slide switch	For 2-4CH change-over switch S _{2 -1 ~ 5}	1
15	Q30482-001	Slide switch	For muting S _{3 -1 ~ 4}	1
16	Q30110-00B	Lamp socket		10
17	Q04968-001	Lamp		10
18	Q03212-223	OFT capacitor	C _{18, 20, 21}	3
19	Q03203-103	OFT capacitor	C ₁₅	1
20	Q03212-223	OFT capacitor	C ₁₆	1

14. CIRCUIT BOARD PARTS

A-1 FRONT AMPLIFIER CIRCUIT BOARD

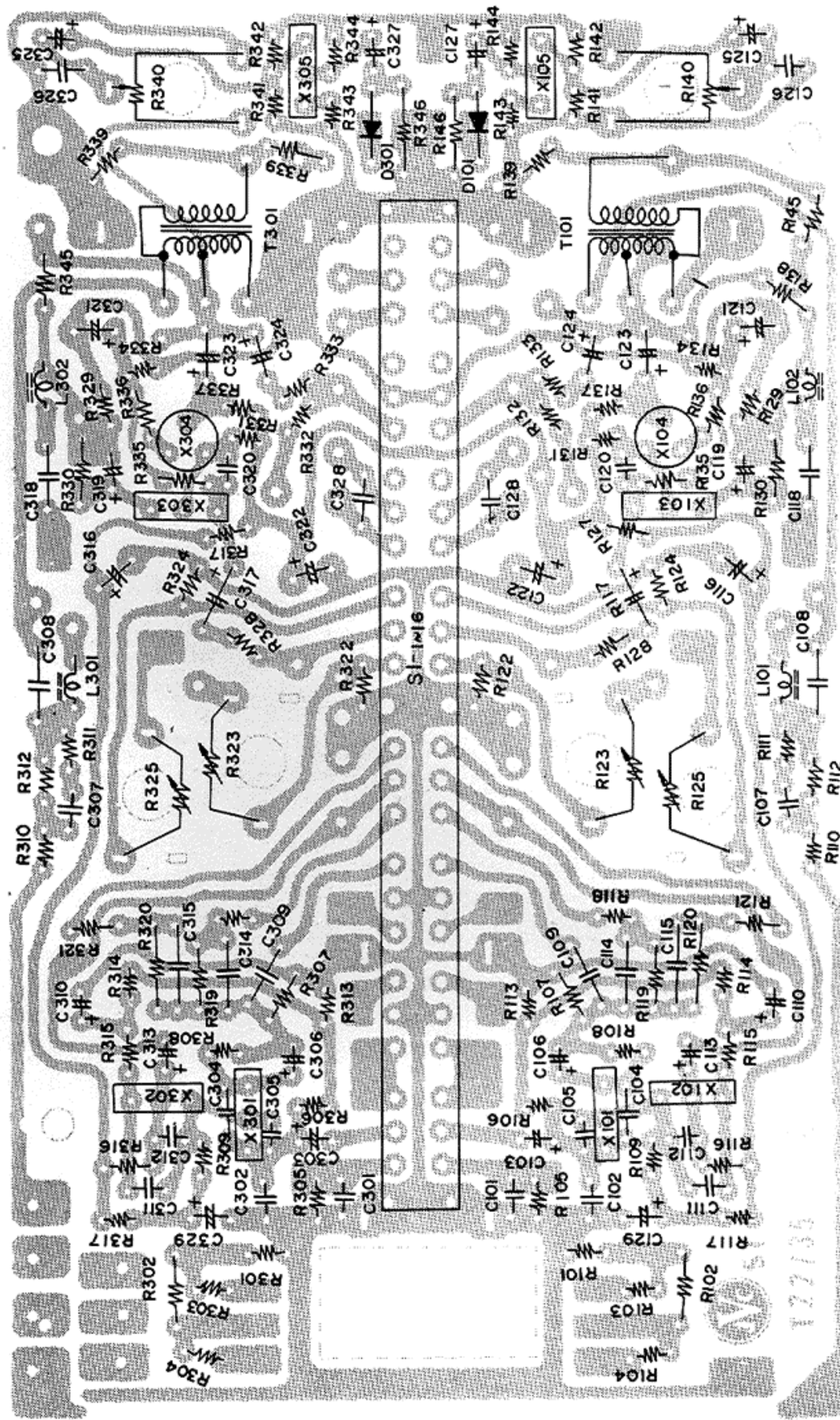


Fig. 26

A-2 FRONT AMPLIFIER CIRCUIT BOARD PARTS LIST

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
	*T22735-001	Circuit board		1
R139, 339, 145, 345	Q04802-15	Carbon resistor		4
R136, 336	Q04802-33	Carbon resistor		2
R115, 315	Q04802-100	Carbon resistor		2
R129, 329	Q04802-120	Carbon resistor		2
R134, 334	Q04802-330	Carbon resistor		2
R107, 307, 127, 327	Q04802-470	Carbon resistor		4
R101, 301, 130, 330	Q04802-1K	Carbon resistor		4
R113, 313	Q04802-1.2K	Carbon resistor		2
R114, 314, 128, 328	Q04802-2.2K	Carbon resistor		4

A-2 FRONT AMPLIFIER CIRCUIT BOARD PARTS LIST (cont.)

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
R102, 302, 110, 310 132, 332, 133, 333	Q04802-3.3K	Carbon resistor		8
R108, 308, 111, 311 122, 322	Q04802-4.7K	Carbon resistor		6
R116, 316, 104, 304	Q04802-5.6K	Carbon resistor		2
R117, 317, 131, 331	Q04802-8.2K	Carbon resistor		6
R124, 324	Q04802-10K	Carbon resistor		2
R121, 321, 138, 338	Q04802-12K	Carbon resistor		4
R118, 318, 135, 335	Q04802-33K	Carbon resistor		4
R119, 319	Q04802-47K	Carbon resistor		2
R109, 309	Q04802-56K	Carbon resistor		2
R105, 305, 112, 312	Q04802-68K	Carbon resistor		4
R103, 303	Q04802-100K	Carbon resistor		2
R106, 306	Q04802-220K	Carbon resistor		2
R120, 320	Q04802-330K	Carbon resistor		2
R137, 337	Q04804-1K	Carbon resistor		2
R146, 346	Q04800-2.2K	Carbon resistor		2
R143, 343	04090-68	Composition resistor		2
R144, 344	04090-3.3K	Composition resistor		2
R141, 341	04090-12K	Composition resistor		2
R142, 342	04090-220K	Composition resistor		2
R121, 321	Q03104-200	Electrolytic capacitor	6V/220 μ F	2
C119, 319	Q03106-50	Electrolytic capacitor	10V/47 μ F	2
C106, 306, 110, 310	Q03108-30	Electrolytic capacitor	16V/33 μ F	4
C125, 325, 127, 327	Q03110-1	Electrolytic capacitor	25V/1 μ F	4
C103, 303	Q03110-3	Electrolytic capacitor	25V/3 μ F	2
C124, 324	Q03110-4.7	Electrolytic capacitor	25V/4.7 μ F	2
C117, 313, 117, 317	Q03110-10	Electrolytic capacitor	25V/10 μ F	4
C129, 329	Q03110-30	Electrolytic capacitor	25V/33 μ F	2
C123, 323	Q03110-50	Electrolytic capacitor	25V/47 μ F	2
C116, 316, 122, 322	Q03110-200	Electrolytic capacitor	25V/220 μ F	4
C105, 305, 111, 311	Q04305-33	Ceramic capacitor		4
C112, 312	Q04305-47	Ceramic capacitor		2
C104, 304	Q04305-100	Ceramic capacitor		2
C101, 301	Q44353-270	Ceramic capacitor		2
C103, 302	Q44353-470	Ceramic capacitor		2
C107, 307	Q44353-680	Ceramic capacitor		2
C128, 328	Q46962-04	Ceramic capacitor		2
C120, 320	Q03286-151	FM capacitor		2
C108, 308	Q03286-431	FM capacitor		2
C115, 315, 126, 326	Q03244-682	Mylar capacitor		4
C109, 309	Q03244-153	Mylar capacitor		2
C118, 318	Q03244-104	Mylar capacitor		2
C114, 314	Q03190-0.1	Aluminum solid capacitor		2
L101, 301	T40442-1	Inductor		2
L102, 302	T40442-3	Inductor		2
R123, 323	Q04848-7	Semi-fixed variable resistor		2
R125, 325, 140, 340	Q04847-5	Semi-fixed variable resistor		4
T101, 301	*T46501-001	Output transformer		2
S1-1 ~ 16	T30490-001	Slide switch		1
X101, 301	2SC644RF	Transistor	h _{FE} R (low-noise)	2
X102, 302	2SC644R	Transistor	h _{FE} R (low-noise)	2
X103, 303, 105, 305	2SC828R	Transistor	h _{FE} R (low-noise)	4
X104, 304	2SC538AQ	Transistor	h _{FE} Q (low-noise)	2
D101, 301	M8489	Diode		2

B-1 REAR AMPLIFIER CIRCUIT BOARD

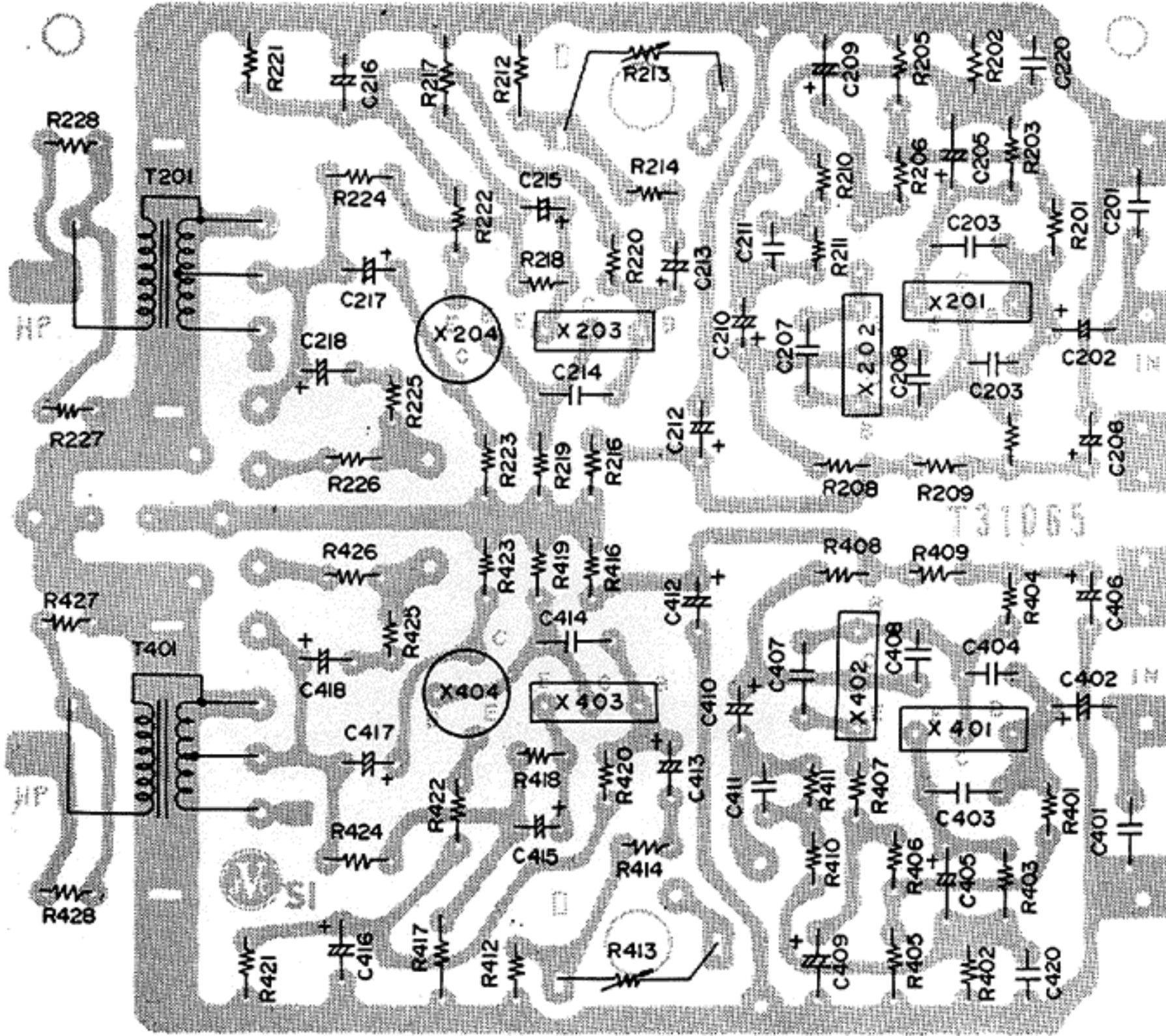


Fig. 27

B-2 REAR AMPLIFIER CIRCUIT BOARD PARTS LIST

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
R227, 427, 227, 428	*T31065-001	Circuit board		1
R222, 422,	Q04802-15	Carbon resistor		4
R207, 407	Q04802-33	Carbon resistor		2
R217, 417	Q04802-100	Carbon resistor		2
	Q04802-120	Carbon resistor		2
R221, 421	Q04802-330	Carbon resistor		2
R202, 402, 216, 416	Q04802-470	Carbon resistor		4
R218, 418	Q04802-1K	Carbon resistor		2
R205, 405	Q04802-1.2K	Carbon resistor		2
R206, 406, 214, 414	Q04802-2.2K	Carbon resistor		4
R225, 425, 226, 426	Q04802-3.3K	Carbon resistor		4
R203, 403	Q04802-4.7K	Carbon resistor		2
R208, 408	Q04802-5.6K	Carbon resistor		2
R209, 409, 219, 419	Q04802-8.2K	Carbon resistor		4
R212, 412	Q04802-10K	Carbon resistor		2
R210, 410, 224, 424	Q04802-12K	Carbon resistor		4
R220, 420	Q04802-33K	Carbon resistor		2
R201, 401	Q04802-47K	Carbon resistor		2
R204, 404	Q04802-56K	Carbon resistor		2
R211, 411	Q04802-330K	Carbon resistor		2
R224, 423	Q04804-1K	Carbon resistor		2
R216, 416	Q03104-200	Electrolytic capacitor		2
C215, 415	Q03106-50	Electrolytic capacitor		2
C205, 405, 209, 409	Q03108-30	Electrolytic capacitor		2
C202, 402	Q03110-3	Electrolytic capacitor		2
C218, 418	Q03110-4.7	Electrolytic capacitor		2
C210, 410, 213, 413	Q03110-10	Electrolytic capacitor		4
C206, 406	Q03110-30	Electrolytic capacitor		2
C217, 417	Q03110-50	Electrolytic capacitor		2
C212, 412, 219, 419	Q03110-200	Electrolytic capacitor		4
C204, 404, 207, 407	Q04305-33	Ceramic capacitor		4
C208, 408	Q04305-47	Ceramic capacitor		2
C203, 403	Q04305-100	Ceramic capacitor		2
C201, 401	Q44353-680	Ceramic capacitor		2
C214, 414	Q03286-151	FM capacitor		2
C211, 411	Q03244-682	Mylar capacitor		2
C220, 420	Q03244-153	Mylar capacitor		2
R213, 413	Q04847-5	Semi-fixed variable resistor		2
T201, 401	*T46501-001	Output transformer		2
X201, 401	2SC644RF	Transistor	h _{FE} R (low-noise)	2
X202, 402	2SC644R	Transistor	h _{FE} R (low-noise)	2
X203, 403	2SC828R	Transistor	h _{FE} R (low-noise)	2
X204, 404	2SC538AQ	Transistor	h _{FE} Q (low-noise)	2

C-1 OSCILLATOR, POWER CIRCUIT BOARD DIAGRAM

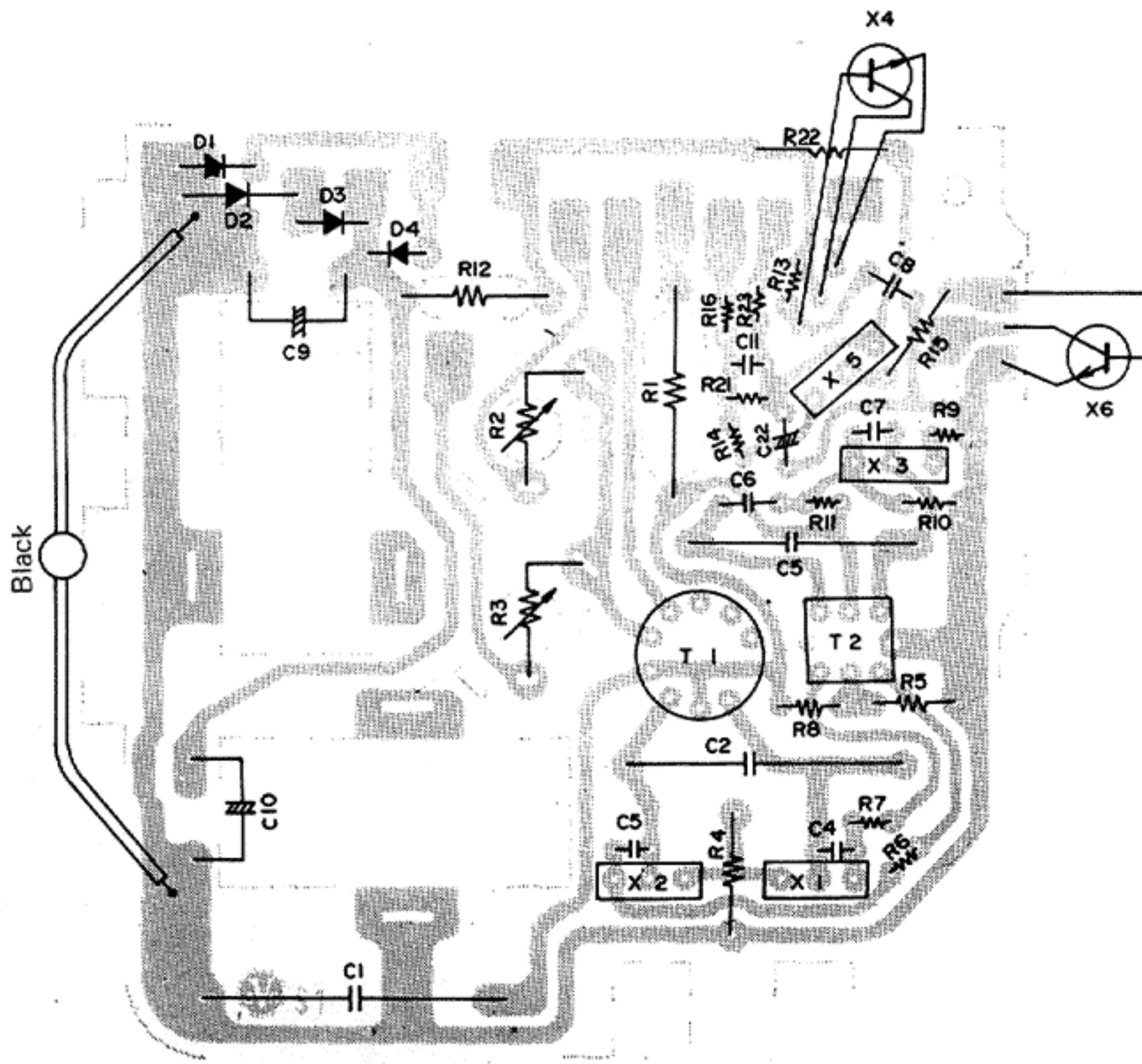


Fig. 28

D-1 FLIP-FLOP CIRCUIT BOARD DIAGRAM

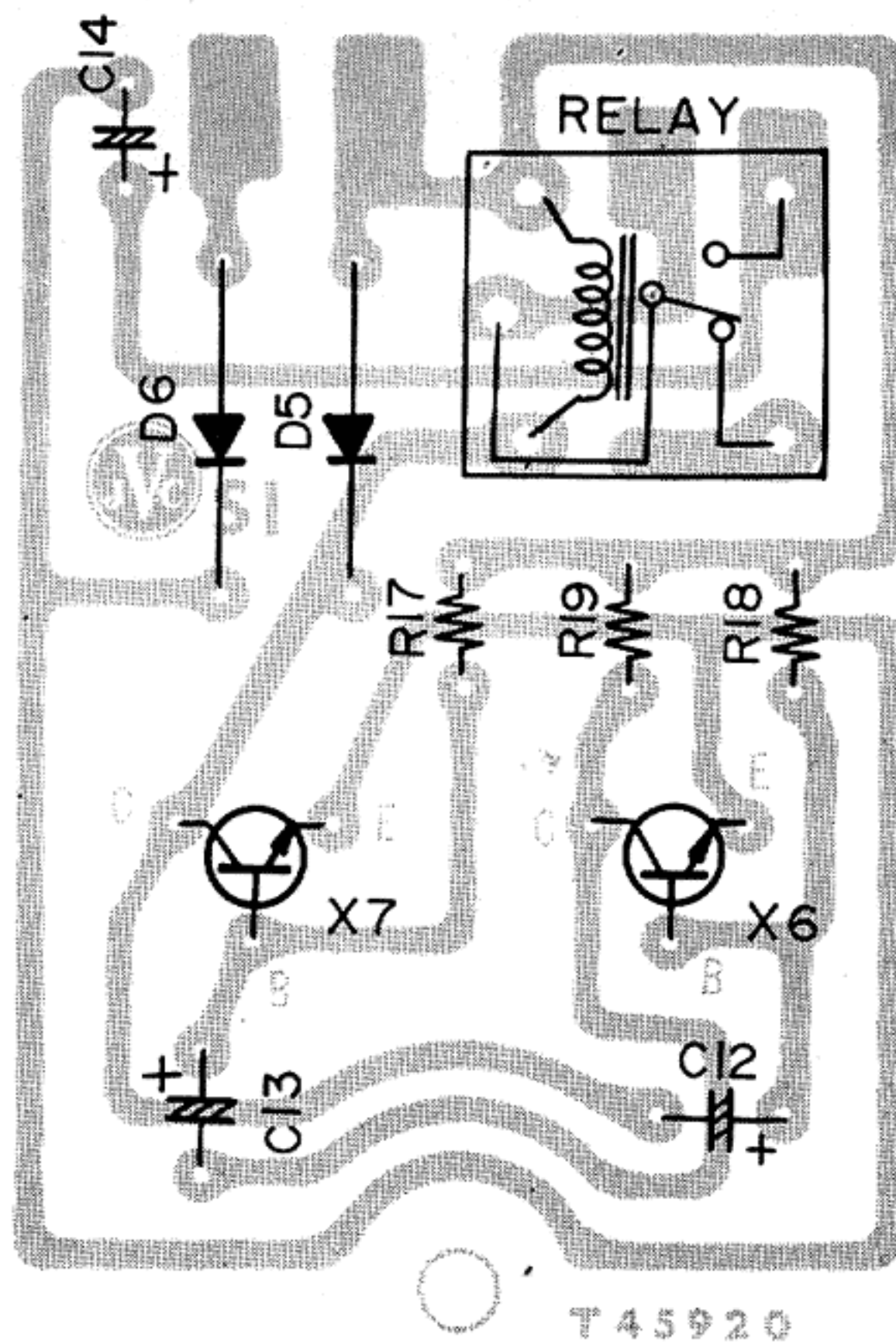


Fig. 29

C-2 OSCILLATOR, POWER CIRCUIT BOARD PARTS LIST

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
R ₅	*T31239-001	Circuit board		1
R ₉	Q04802-47	Carbon resistor		1
R _{6, 7}	Q04802-68	Carbon resistor		1
R ₁₀	Q04802-220	Carbon resistor		2
	Q04802-1.5K	Carbon resistor		1
R ₁₅	Q04802-2.2K	Carbon resistor		1
R ₈	Q04802-4.7K	Carbon resistor		1
R ₁₃	Q04802-1K	Carbon resistor		1
R ₁₁	Q04802-33K	Carbon resistor		1
R ₁₄	Q04802-47K	Carbon resistor		1
R ₂₁	Q04802-10K	Carbon resistor		1
R ₄	Q04804-15	Carbon resistor		1
R ₁₆	Q04804-1K	Carbon resistor		1
R ₁	Q04772-82	Wound resistor		1
R ₁₂	Q04804-4.7	Carbon resistor		1
R ₂₂	Q04802-56K	Carbon resistor		1
R ₂₃	Q04802-2.2K	Carbon resistor		1
C _{3, 4}	Q03258-152	Mylar capacitor		2
C ₆	Q03258-682	Mylar capacitor		1
C ₇	Q44353-220	Ceramic capacitor		1
C ₁₁	Q03110-1	Electrolytic capacitor		1
C ₈	Q03110-200	Electrolytic capacitor		1
C ₂₂	Q03110-10	Electrolytic capacitor		1
C ₁	Q03109-220	Electrolytic capacitor		1
C ₅	Q03205-153	OFT capacitor		1
C ₂	Q03205-333	OFT capacitor		1
C _{9, 10}	Q03138-1000	Electrolytic capacitor		2
R _{2, 3}	Q04875-002	Semi-fixed variable resistor		2
T ₁	F3227-003	Oscillator coil		1
T ₂	T44137-001	Oscillator coil		1
D _{1, 2, 3, 4}	T30155-001	Diode		4
X ₅	2SA564R	Transistor	h _{FE} R	1
X _{1, 2}	2SC875DE	Transistor	h _{FE} DorE	2
X ₃	2SC828R	Transistor	h _{FE} R	1
X ₆	2SD317P	Transistor	h _{FE} P	1
X ₄	2SC931E	Transistor	h _{FE} E	1
	203D820	Heat sink	For X _{1, 2}	2
	*T45948-001	Bracket		1

D-2 FLIP-FLOP CIRCUIT BOARD PARTS LIST

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
D _{5, 6}	*T45920-001	Circuit board		1
	T30155-001	Silicon diode		2
	T30646-001	Relay		2
C _{12, 13}	Q03108-100	Electrolytic capacitor		1
C ₁₄	Q03110-100	Electrolytic capacitor		1
R ₁₉	Q04802-1.5K	Carbon resistor		1
R _{17, 18}	Q04802-3.9K	Carbon resistor		2
X _{6, 7}	2SB324	Transistor	h _{FE} G or H	2

15. MECHANISM PARTS

A-1 EXPLOSION DIAGRAM OF MECHANISM PARTS (1)

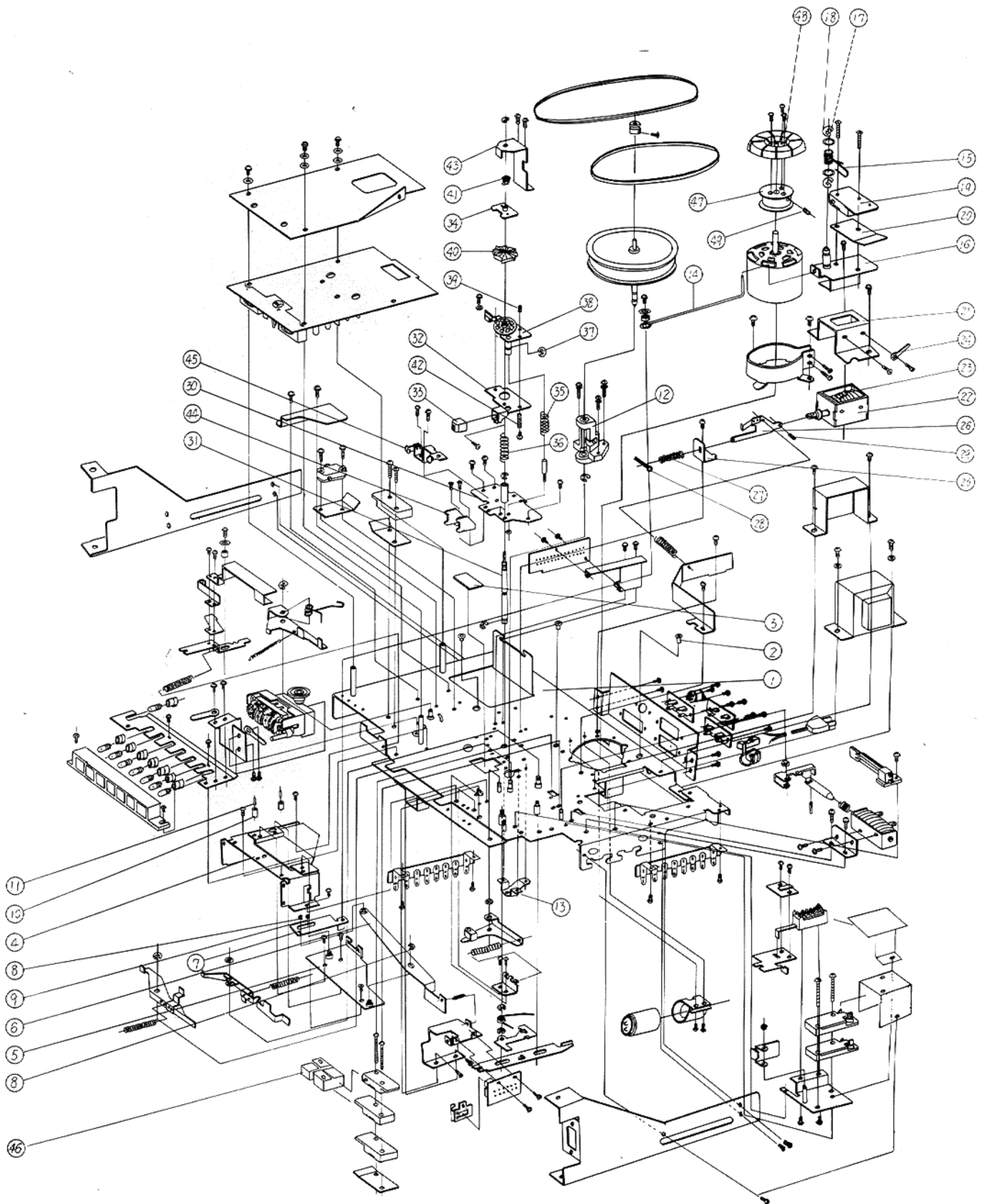


Fig. 30

A-2 MECHANISM PARTS LIST (1)

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
1	*T22741-00A	Chassis base assembly		1
2	52190	Eyelet		3
3	F4788-001	Plate		1
4	*T31074-00A	Guide bracket assembly		1
5	*T45943-00A	Bracket assembly		1
6	*T45944-00A	Arm assembly		1
7	*T45758-001	Slide arm		1
8	REE3000	"E" washer		9
9	REE2000	"E" washer		1
10	F4609-001	Roller		1
11	PSE2018	Spring pin		2
12	T43786-00A	Bearing stand assembly		1
13	F4629-00BS	Bearing bracket assembly		1
14	*T46076-001	Rod		1
15	*T46073-001	Wire		1
16	*T46104-00A	SW bracket assembly		1
17	Q03093-504	Nylon washer		1
18	REE4000	"E" washer		2
19	T30422-003	Microswitch		2
20	T42819-001	Insulator		2
21	T43714-001	Bracket		1
22	T30543-002	Solenoid	For head shifting	1
23	T30155-001	Silicon diode		1
24	S4709-002	Wire clamp		1
25	T43311-001	Guide		1
26	T43349-00A	Lever assembly		1
27	F6032-001	Spring		1
28	F6033-001	Wire		1
29	PSE-1608	Spring pin		1
30	T43351-00B	Head base assembly		1
31	T43315-001	Shaft (1)	For head height adjustment	1
32	T43350-00B	Head arm assembly		1
33	*T400151-00A	Playback/erase head		1
34	T43352-00A	Point bracket assembly		1
35	T30301-041	Spring	For head shifting	1
36	T30301-042	Spring	For head shifting	1
37	REE6000	"E" washer		1
38	T43354-00A	Disc contact bracket assembly		1
39	TFS3008ZS	Set screw		1
40	F6019-00A	Ratchet cam assembly		1
41	T30301-050	Spring	For point bracket	1
42	T30301-045	Spring	For azimuth adjustment	1
43	T43309-001	Bracket		1
44	T31274-001	Tape guide		1
45	T43369-00A	Pressure roller assembly	For sensor installation	1
46	T46818-001	Insulator		1
47	T44991-001	Insulator	For 60 Hz	1
48	T45376-001	Fan		1
49	YRS3008ZS	Set screw		1

B-1 EXPLOSION DIAGRAM OF MECHANISM PARTS (2)

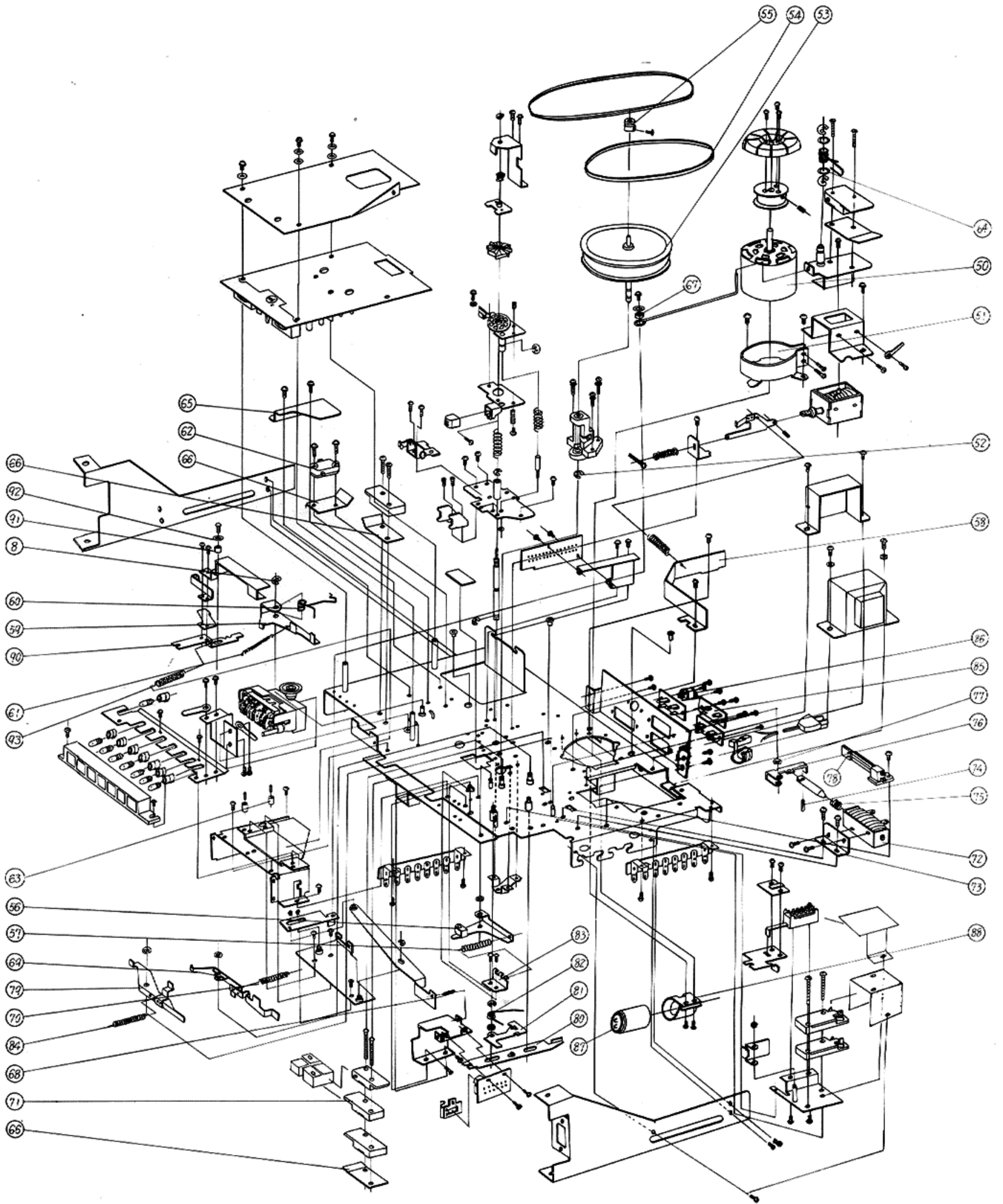


Fig. 31

B-2 MECHANISM PARTS LIST (2)

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
50	m-872-00B	Motor assembly		1
51	T46558-001	Motor band		1
52	REE5000	"E" washer		1
53	*T45939-00A	Flywheel assembly		1
54	T45938-001	Belt		1
55	*T45938-001	Counter pulley	For pressure lever	1
56	T45005-00A	Pressure lever assembly		1
57	T30300-032	Spring		1
58	T44118-002	Sealed bracket		1
59	T46509-00A	Lock lever assembly		1
60	T43326-003	Rod		1
61	T30300-039	Spring		1
62	T3428-007	Microswitch		1
63	T46465-001	Roller		1
64	Q03093-505	Nylon washer		1
65	T43339-001	Sealed bracket	For auto stop lever	1
66	T42819-001	Insulator		1
67	T30302-039	Collar		1
68	*T30300-087	Spring		1
69	T45001-00A	Arm assembly		1
70	T30300-007	Spring		1
71	T30422-003	Microswitch		5
72	T30837-001	Solenoid		1
73	T44986-001	Bracket		1
74	PSE2010	Spring pin		1
75	T30301-056	Spring		1
76	T44977-001	Lock arm		1
77	REE3000	"E" washer		7
78	T30838-00A	Switch assembly		1
79	*T45946-00A	Lever assembly		1
80	T44981-00A	Slide plate assembly		1
81	T44984-001	Lock plate		1
82	T44985-001	Spring		1
83	T44982-001	Spring holder		1
84	T30300-037	Spring		1
85	F4653-001	2P pin jack	For phase advancer motor	3
86	Q03967-001	DIN jack		1
87	F4896-005	M.P. capacitor	For phase advancer motor	1
88	T46351-001	Band		1
89	QF20003-504	M.P. capacitor		1
90	T43341-002	Recording lever		1
91	T30302-004	Collar		1
92	Q03091-105	Washer		1
93	T30300-007	Spring		1

C-1 EXPLOSION DIAGRAM OF MECHANISM PARTS (3)

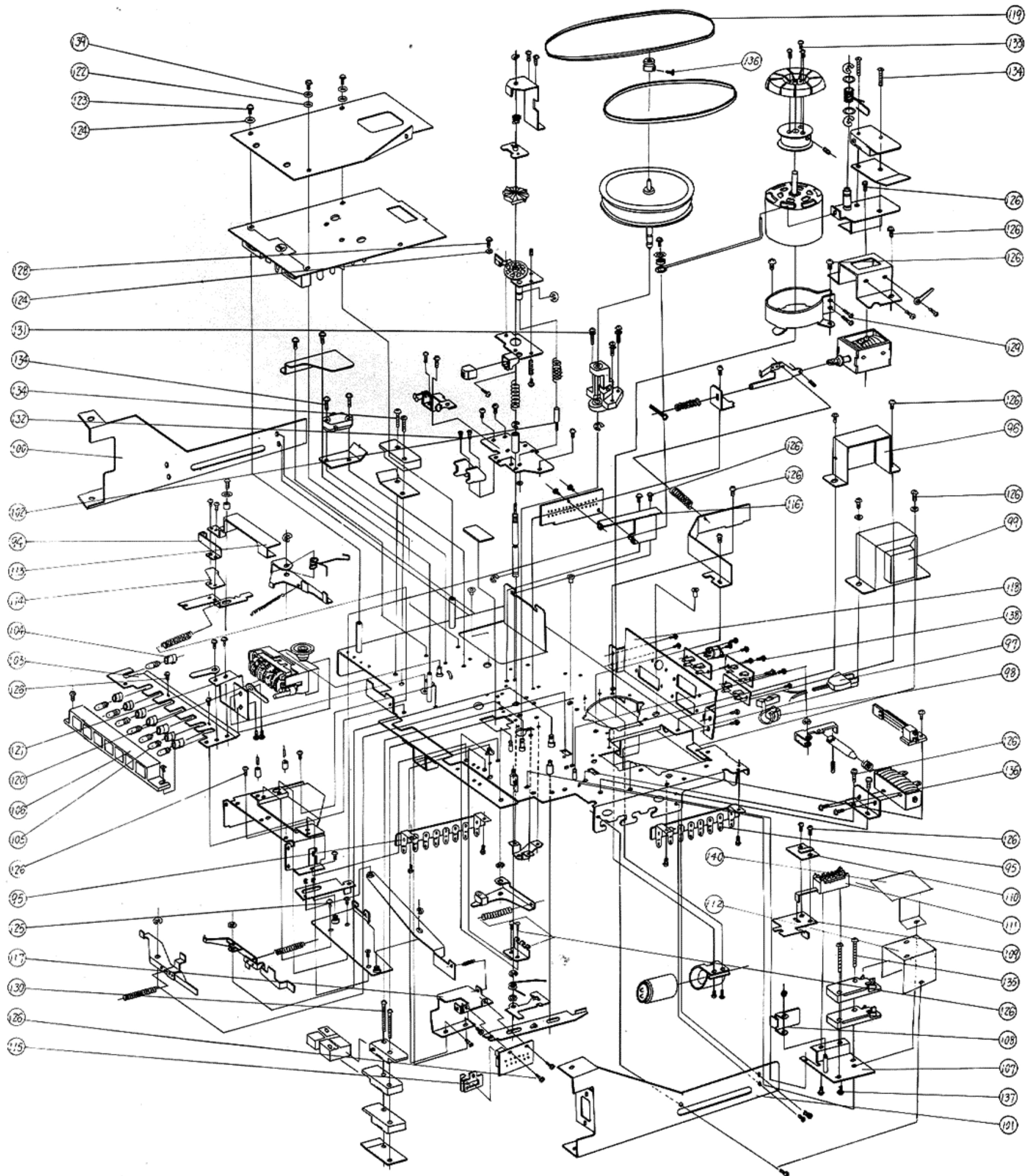


Fig. 32

C-2 MECHANISM PARTS LIST (3)

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
94	T43325-001	Recording spring	For recording	1
95	Q03001-33	Lug strip assembly		2
96	T43345-002	Sealed cover		1
97	F3147-004	Power cord		1
98	T41336-001	Cord stopper		1
99	*T31142-001	Power transformer		1
100	*T31075-001	Side bracket		1
101	*T31076-001	Side bracket		1
102	T43316-001	Shaft (2)		1
103	T31072-001	Lamp bracket		1
104	Q30110-00B	Lamp socket		10
105	Q04968-001	Lamp		8
106	*T45850-001	Lamp shadow		1
107	*T46123-00A	Switch bracket assembly		1
108	*T46125-001	Actuator		1
109	*T46126-001	Push lever		1
110	T43932-001	Bracket		1
111	*QSP008-002	Push switch assembly		1
112	T46670-001	Insulator		1
113	*T46075-001	Recording arm		1
114	*T45997-001	Actuator	For muting For 2ch-4ch change-over switch	1
115	*T46685-00A	Switch holder assembly		1
116	*T45757-001	Switch bracket		1
117	*T45753-001	Switch bracket		1
118	*T45913-001	Jack board bracket		1
119	*T46105-001	Counter belt	For counter	1
120	*T31080-00A	Counter		1
121	*T45950-001	Bracket		1
122	WAS3000	Toothed lock washer		1
123	LPSP3006VS	Screw		8
124	WNS3000N	Washer		5
125	LPSP3005ZS	Screw		6
126	LPSP3006ZS	Screw		52
127	LPSP3008ZS	Screw		2
128	LPSP3006ZS	Screw		1
129	SPSP3014ZS	Screw		1
130	SPSP3035ZS	Screw		2
131	LPSP3012ZS	Screw		3
132	SSSP3006ZS	Screw		2
133	SPSP2006Z	Screw		3
134	LPSP3014ZS	Screw		6
135	LPSP3024ZS	Screw		2
136	LPSP2605Z	Screw		4
137	SPSP2603Z	Screw		2
138	SBSB3006Z	Tapping screw		8
139	Q03091-201	Washer		2
140	T46819-001	Insulator		1

16. PACKING MATERIALS

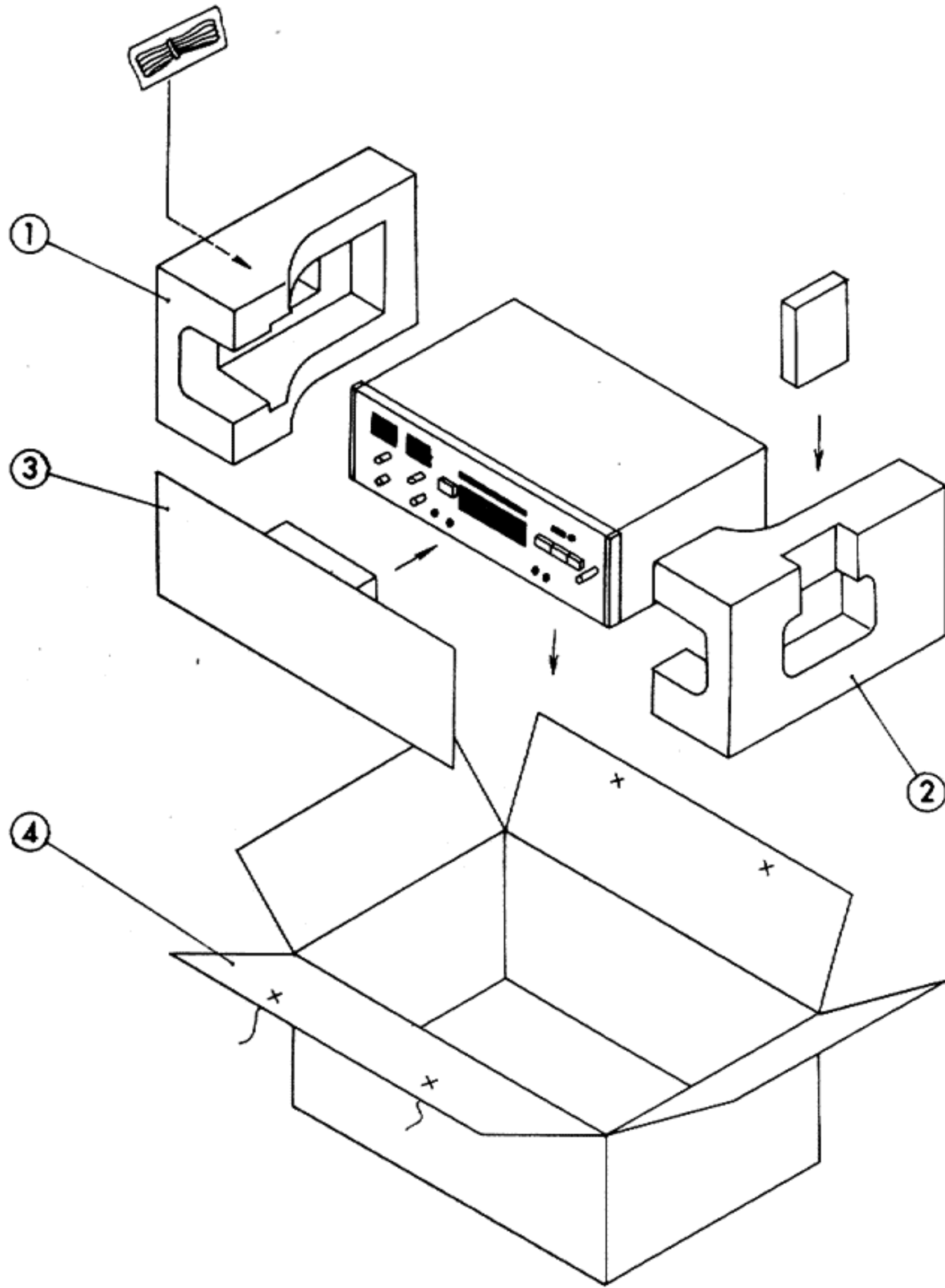


Fig. 33

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
1	T11405-001	Cushion (Left)		1
2	T11437-001	Cushion (Right)		1
3	T30969-009	Front cushion		1
4	T30969-010	Case		1
1 ~ 4	T30969-00E	Packing assembly	Set	1
	T6800-00L	Envelope	For main body	1
	AP4056A-025	Envelope	For power cord	1
	AP4056A-066	Envelope	For manual, etc.	1

17. ATTACHMENTS AND ACCESSORIES

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
	DT-903	Demo. tape	4CH. Demo.	1
	T30815-00A	Pin cord assembly		2
	4ED-1205-IB	Instruction book		1
	T22715-001	Warranty card		1
	T22457-001	Service station list		1
	T30994-003	Features tag		1

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16. PACKING MATERIALS

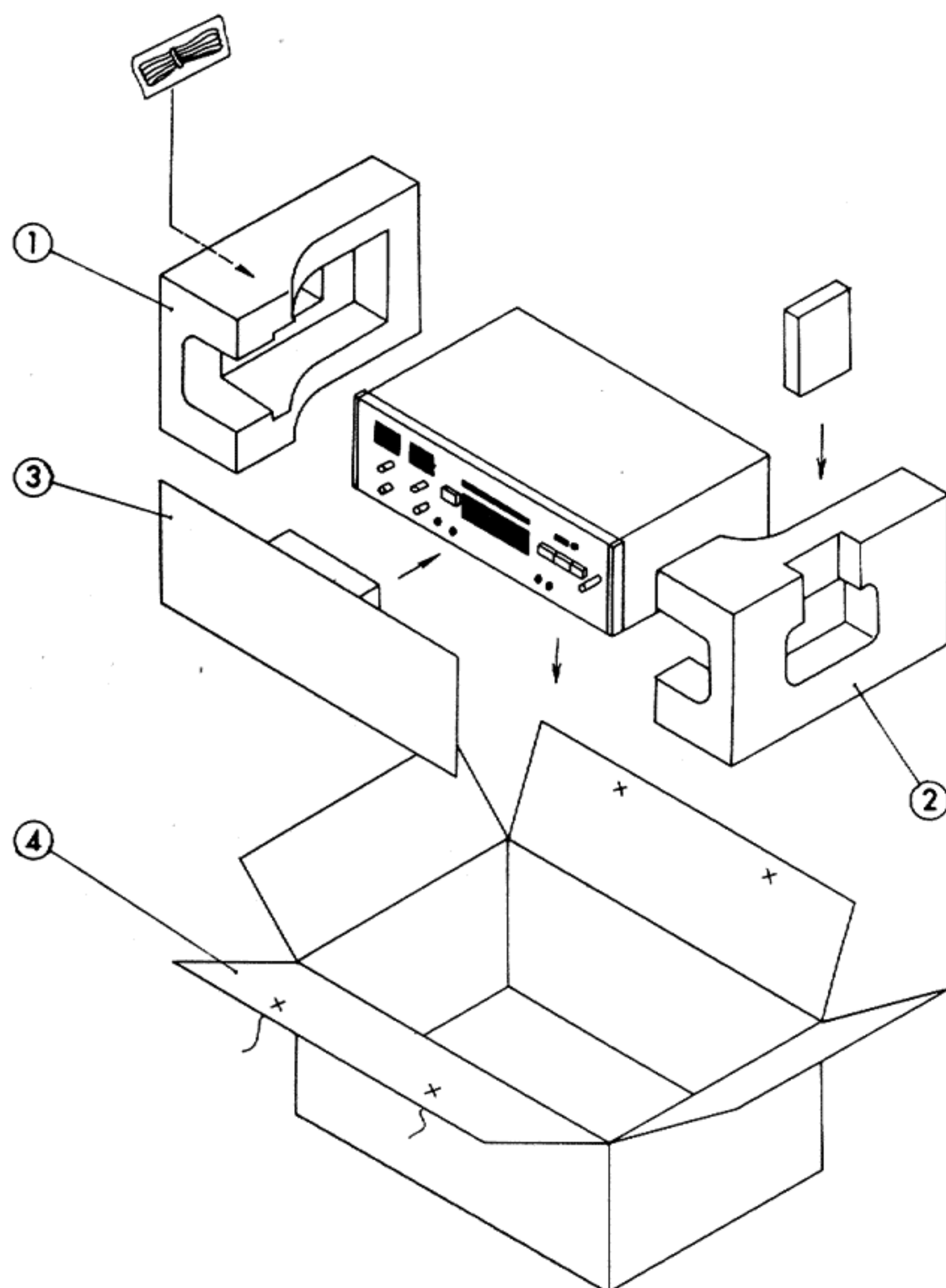


Fig. 33

REF. NO.	PART NO.	PART NAME	REMARKS	Q'TY
1	T11405-001	Cushion (Left)		1
2	T11437-001	Cushion (Right)		1
3	T30969-009	Front cushion		1
4	T30969-010	Case		1
1 ~ 4	T30969-00E	Packing assembly	Set	1
	T6800-00L	Envelope	For main body	1
	AP4056A-025	Envelope	For power cord	1
	AP4056A-066	Envelope	For manual, etc.	1

4ED-1205 SCHEMATIC DIAGRAM

