JVC SERVICE MANUAL

No. 4099
May. 1973

Fig. 1

MODEL RD-1555

SERVICE MANUAL FOR TAPE DECK

Dimensions: 17" (H) x 16" (W) x 8-1/4"(D)
Weight: 34.1 lbs.

* ISO screws are used in this set.
* In this service manual, frequencies are given in Hz (Hertz)

SPECIFICATIONS

Power supply: AC 120V 60Hz
Power consumption: 110W
Recording system: AC bias (95 kHz)
Erasing system: AC erasing
Tape speed: 7-1/2 ips, 3-3/4 ips.
Wow and flutter: 0.12% RMS at 7-1/2 ips.
0.15% RMS at 3-3/4 ips.
Recording time: 1 hr. 30 min. (using LPT at 7-1/2 ips.)
3 hrs. (using LPT at 3-3/4 ips.)
Fast winding times: Forward 90 sec
Reverse 90 sec
Transistors: 12
Diodes: 18
Frequency response: 30 ~ 22,000 Hz (using low noise tape) at 7-1/2 ips.
40 ~ 18,000 Hz ±3dB (using low noise tape) at 7–1/2 ips.
S/N ratio: Better than 52 dB
Crosstalk: Better than 55 dB
Distortion: Better than 1.2% in normal recording/playback
Rec/Play compensation: JIS (NAB)
Input terminals: MIC terminal x 2 0.3mV 600Ω
AUX input terminal x 2 80mV 470kΩ
REC/PB connector (DIN):
Maximum sensitivity 15 mV
(Signal source impedance 80 kΩ)
Rated output 0.5 V (0 ~ 0.8 V variable)
(Output impedance 3.3 KΩ)
Output terminals: AUX output terminal x 2 (0 ~ 1 V variable)
(Output impedance 3.3 KΩ)
Headphone terminal x 1 (0 ~ 0.8 mW variable)
(Output impedance 8 Ω)

FEATURES

(a) 3 motors (1 hysteresis synchronous motor, 2 eddy current induction motors)
(b) Feather touch push-button operation
(c) Low noise/normal tape selector switch
(d) Sound on sound recording
(e) Easy tape loading
(f) Auto-stop (auto shutoff switch)
(g) Individual-track recording mechanism
(h) Pause button
(i) Auto reverse (mode selector switch)

PARTS NAMES

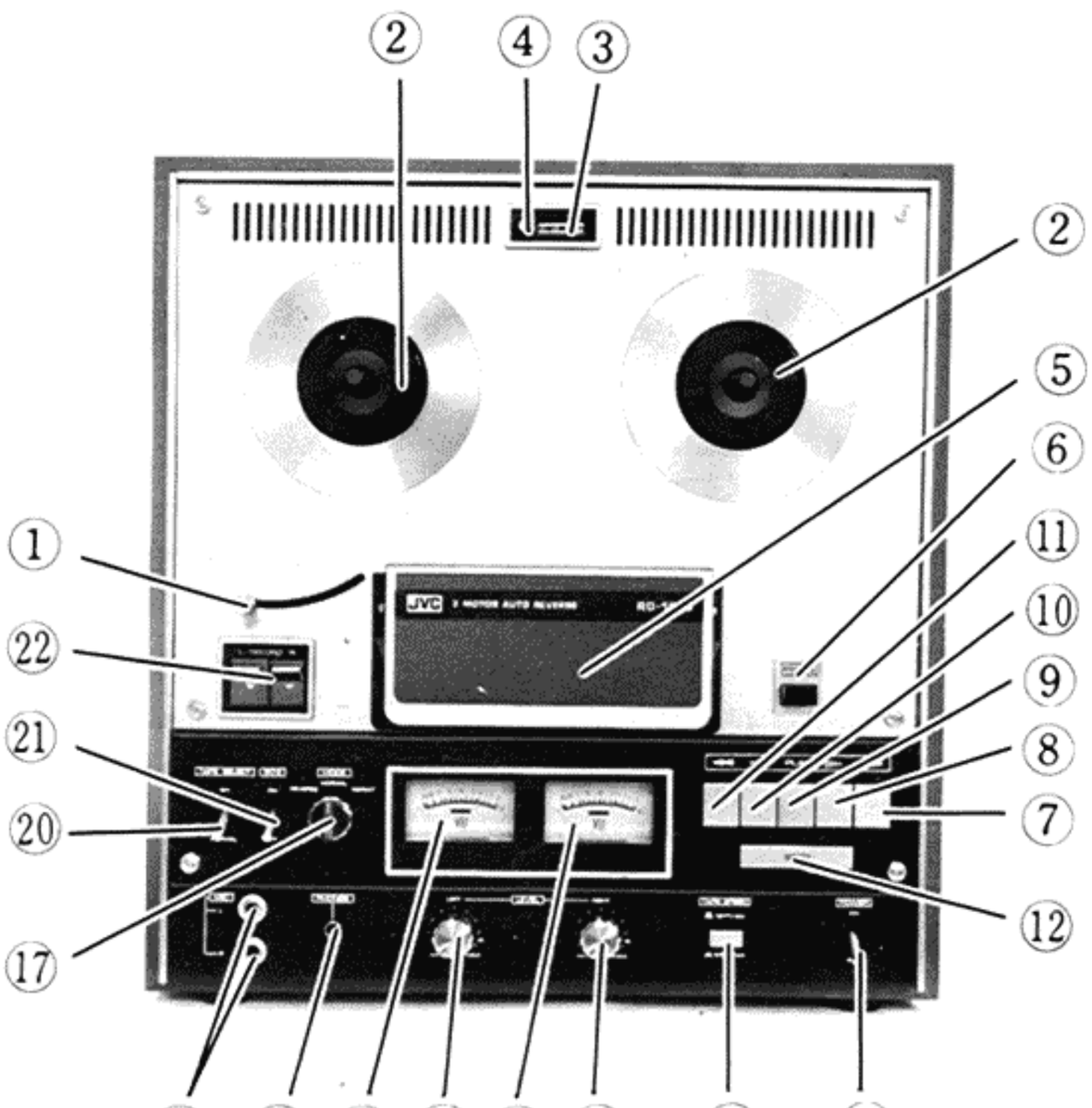


Fig. 2

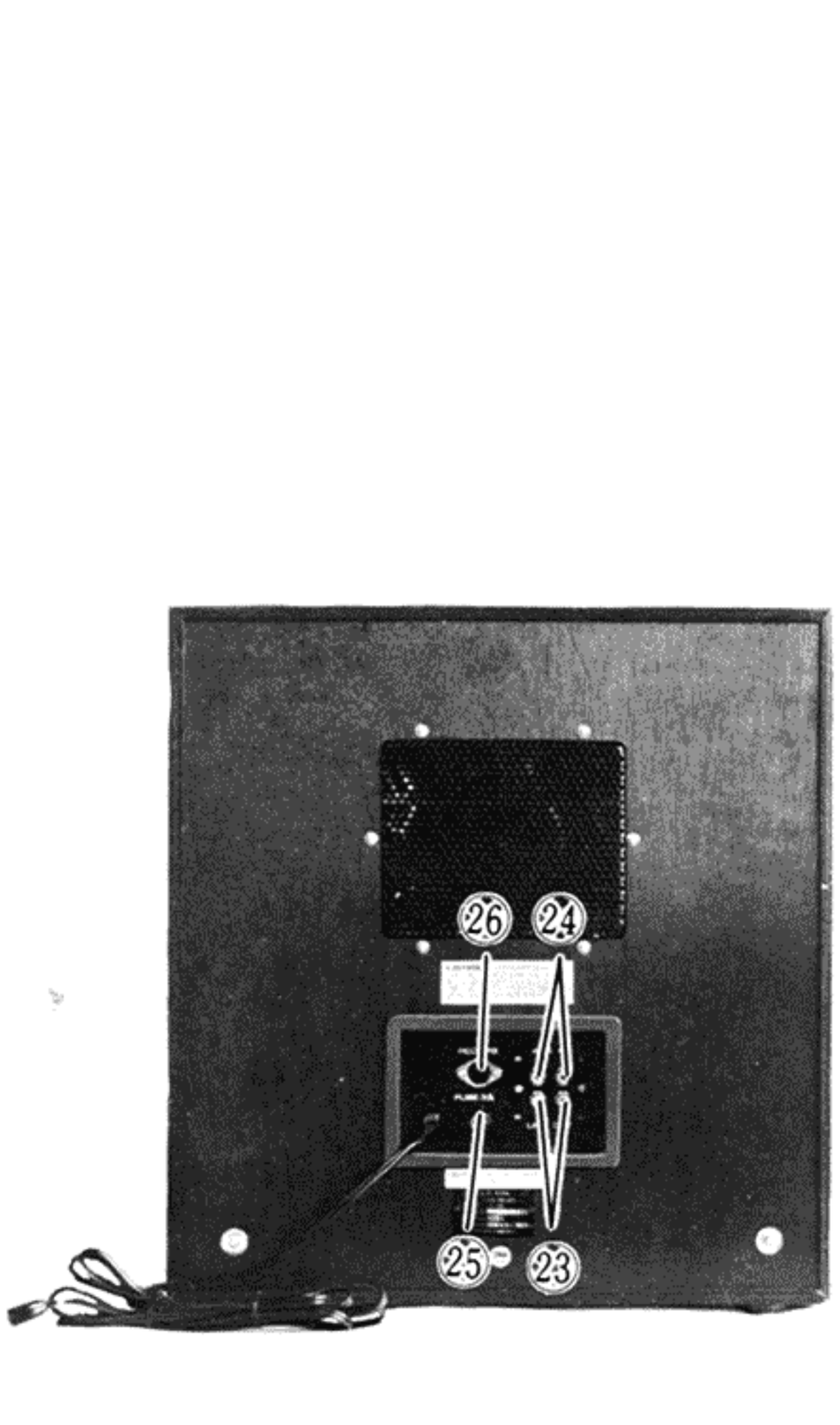


Fig. 3

1. Auto-stop switch
   When the tape ends of breaks, this switch is automatically activated and stops the deck.
2. Reel disk.
3. Tape counter
4 Reset button
   Press this button to reset the tape counter to "0000".
5. Head cover
6. Pause button (PAUSE)
   Press once to stop the tape. Press again to restart.
   Use to temporarily stop the tape during recording or palyback, for instance, for adjusting the recording or playback level. Can be used while fast winding the tape in either forward or reverse direction, but operation is the same as the STOP button so operation cannot be restarted by pressing a second time.
7. Fast wind button (normal direction) (▶▶)
   Operation possible from any mode.
8. Direction selector button (normal direction) (▶)
   Operation possible in recording, playback or stop mode.
9. Playback button (PLAY)
10. Direction selector button (reverse direction) (◀)
    Operation possible in recording, playback or stop mode.
11. Fast wind button (reverse direction) (◀◀)
    Operation possible from any mode.
12. Stop button (STOP)
    Operates from any mode. The pause button is NOT released with this button.
13. Power switch (POWER)
14. Tape speed selector switch (SPEED)
    Used to select 7-1/2 ips. or 3-3/4 ips. tape speed.
15. Volume control knobs (VOLUME)
    Used to adjust volume in recording or playback.
16. Level meters (VU meters)
    During recording, adjust the volume controls so the VU meters indicate "0" VU at maximum sound level.
17 Mode selector switch (MODE)
    Used to select reverse, normal or repeat. In reverse, the deck reverses at the sensing foil and shuts off at the end of the tape.
    In repeat, the deck continuously plays back between the two sensing foils. There is no automatic reverse in normal. Manual reverse is possible in any of these modes.
18. Microphone terminals (MIC)
    Plug microphones into these terminals for recording.
19. Headphone terminal (PHONES)
    Plug stereo headphones (JVC STH-2, etc.) into this terminal for individual listening or for monitoring while recording.
20. Tape selector switch (TAPE SELECT)
    When low-noise tape (JVC SH, etc.) is used for recording, set to SH; when normal tape is used, set to NORMAL. Either position is suitable for playback.
21. Sound on sound recording switch (SOS)
    When the switch is set to "ON", the sound of the opposite track is added to the track being recorded. Set the switch to "OFF" at all other times.
22. Recording button (REC)
    The recording button will not lock unless the PLAY button is also pushed.
23. External output terminals (LINE OUT)
24. External input terminals (AUX IN)
25. Fuse holder
    Use only 3 amp fuses.
26. Recording/playback connector (REC/PB)

DISASSEMBLING MAIN COMPONENTS AND MAINTENANCE

1. **Removing the top panel (Fig. 3)**

1) Remove the oval countersunk screw (1) of the actuator pin and loosen the setscrew below it with a hex wrench (ISO, M3). The actuator pin can then be removed with the fingers.

2) Next, remove the five screws (2) holding the top panel.

3) Grasp the head cover and raise it gently to remove the top panel.

Note:

The spin panels attached to the reel disks are fragile, so be careful not to strike them against the reel disks, etc.

Now the mechanical parts are readily visible for repairs, etc., as described below.

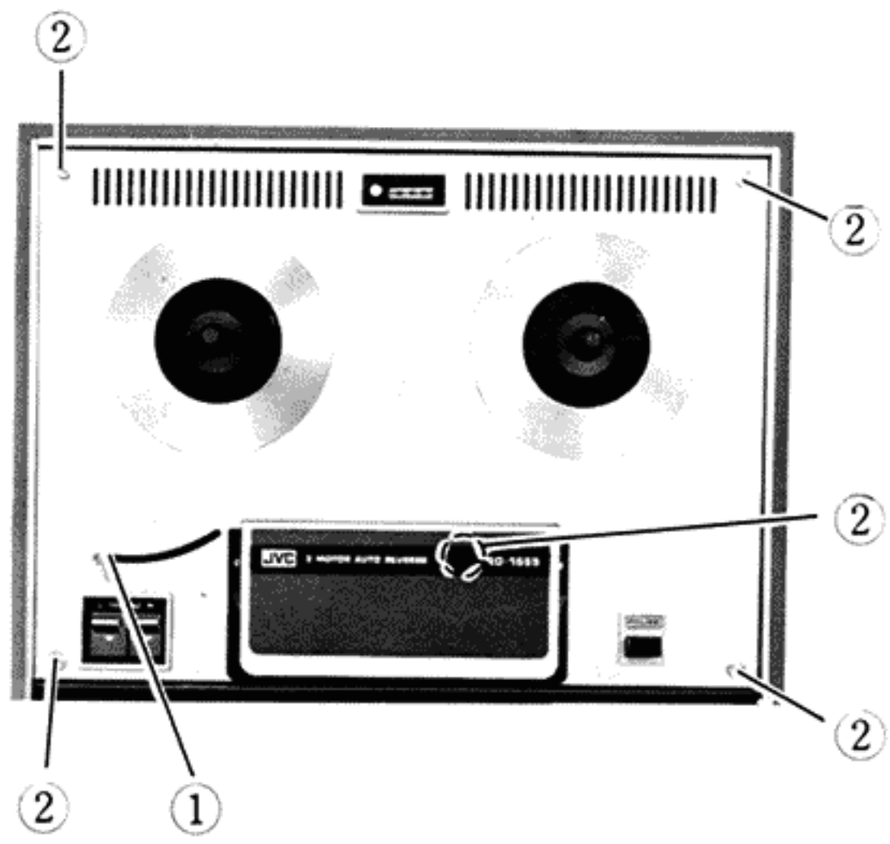


Fig. 4

2. **Lubricating the motors and other rotating parts (Fig. 5)**

1) Lubricate the motors with DTE Oillite at their oil tubes extending out of the chassis and at their lubricating holes through the spaces left around the lower side of the motor pulleys and though the openings in the brake drum.

2) Capstan piece (1) can be lubricated successfully at its upper part; however, if possible remove the capstan and wipe the capstan and inside the capstan piece with a lint-free dried cloth before putting oil into the capstan piece. (Fig. 5)

3) Remove the cap of the pinch roller (2) and add oil to the moltoprene of the upper part. Use DTE heavy medium for both the capstan piece and pinch roller.

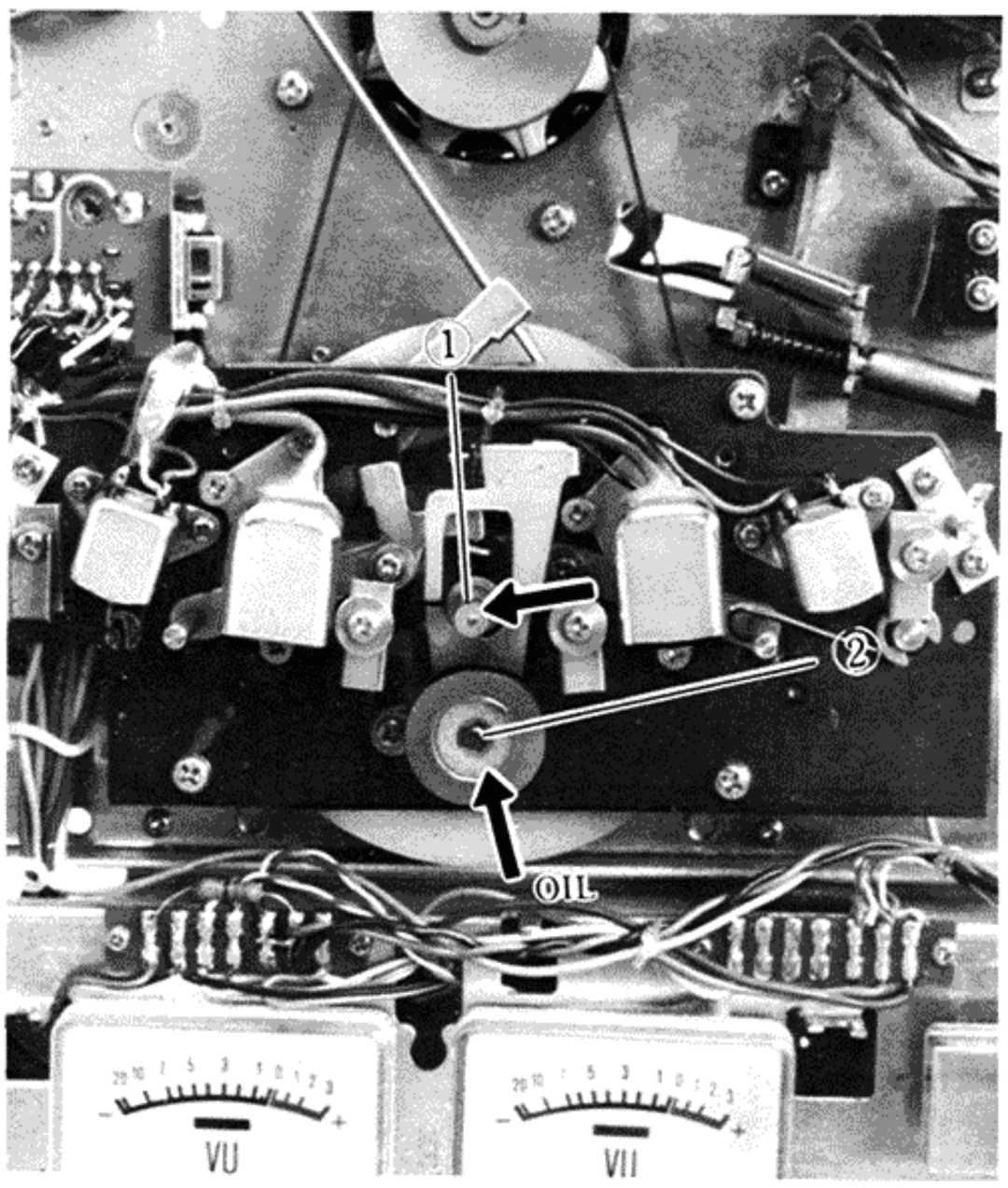


Fig. 5

Note:

Be careful not to lubricate excessively as damage may result. Do not use oils other than specified.

3. Replacing belts (Fig. 6)

1) Remove the belt ① on the motor pulley side.
2) Remove the five screws ③ from the mount plate ② .
3) Disconnect the spring ④ of the pinch roller arm, lift up the connect screw ⑤ and disconnect from the pinch roller arm ⑥ .
4) Lift up the mount plate 2mm and remove the pinch roller arm shaft from the hole in the chassis.
5) Next, slide the mount plate down and raise it up and replace the belt.

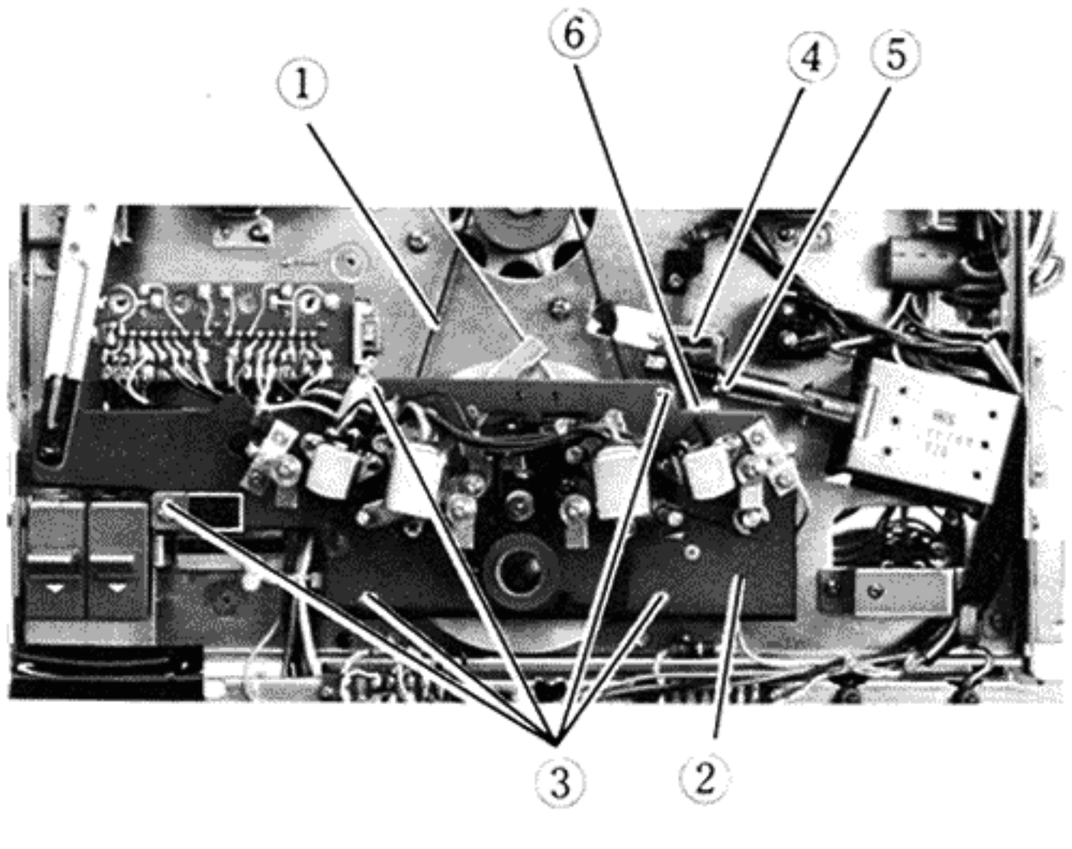


Fig. 6

4. Replacing the flywheel and metal plate (Fig. 7)

1) Complete steps 3. 1)-4).
2) Next, remove the flywheel.
3) Remove the three screws ② holding the metal clamp ① and replace the metal plate.

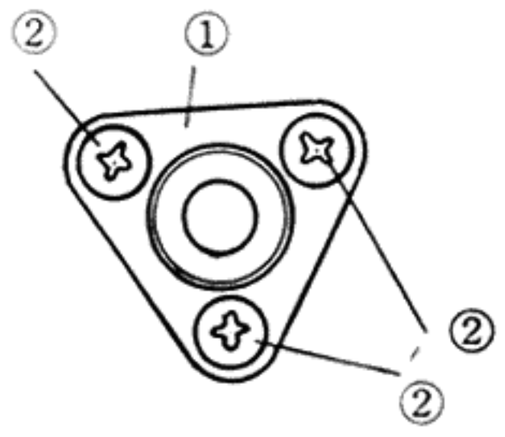


Fig. 7

5. Replacing the auto shut-off arm mechanism (Fig. 8)

1) Loosen the screws ① . Next, slide the bracket ② in the direction of the arrow and remove the shut-off arm mechanism from the chassis.
2) One side ④ of the shut-off switch ③ is fastened with a screw and nut. This is for adjusting the OFF position of the switch. Always adjust after replacing the switch.

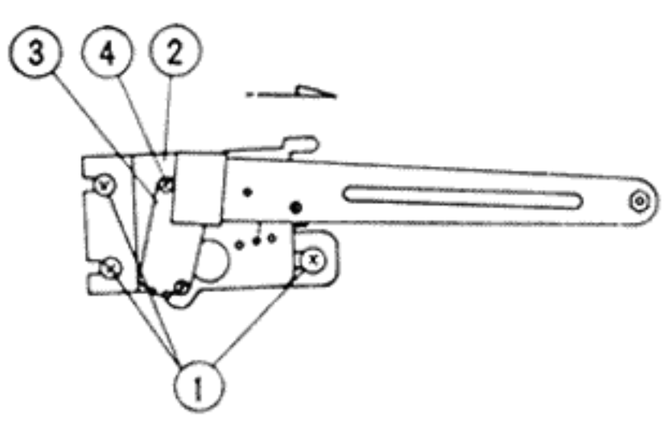


Fig. 8

6. Replacing other switches

When other switches are replaced it is very important that the operation position be carefully adjusted.
(Refer to Major Adjustments Section.)

7. Removing the control panel (Fig. 9)

1) Remove the two volume control knobs ② and the one mode switch knob ① .
2) Remove the two screws ③ holding the control panel and remove the control panel.

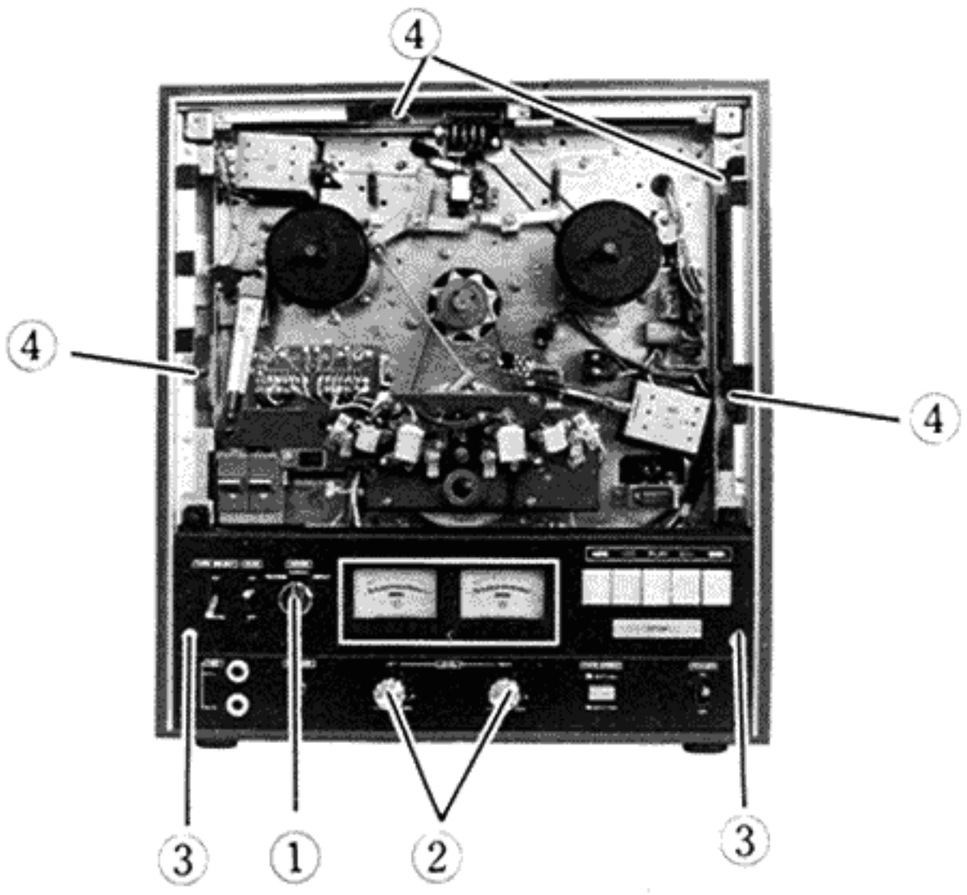


Fig. 9

8. Removing the set from the cabinet (Fig. 9)

1) Remove the top panel as described in 1. "Removing the top panel".
2) Remove the four sets of nuts and washers ④, remove the two screws from the corrugated washers at lower positions on the rear of the cabinet and remove the set from the cabinet.

9. Removing the amp circuit board (Fig. 10)

All circuits can be checked after removing the set from the cabinet.

1) Recording/playback amp circuit board (Fig. 10-1)
   Remove the six screws ① and take out the circuit board.
2) Oscillator circuit board (Fig. 10-2)
   Remove the two screws ②, disconnect the shield case ③, remove the screw ④ (inside the shield case) holding the circuit board and remove the circuit board from the shield case.
3) Equalizer circuit board (Fig. 10-3)
   Remove the button ⑤ attached to the tape speed selector switch. Next, remove the two screws ⑥ and remove the circuit board.
4) Jack bracket (Fig. 10-4)
   Loosen the four screws ⑦ and remove the jack bracket.
5) Microphone jack circuit board (Fig. 10-5)
   Remove the two screws ⑧ and take out the circuit board.
6) Pin jack circuit board (Fig. 10-6)
   Remove the solder holding the pin jack terminal ⑨ and remove the circuit board.

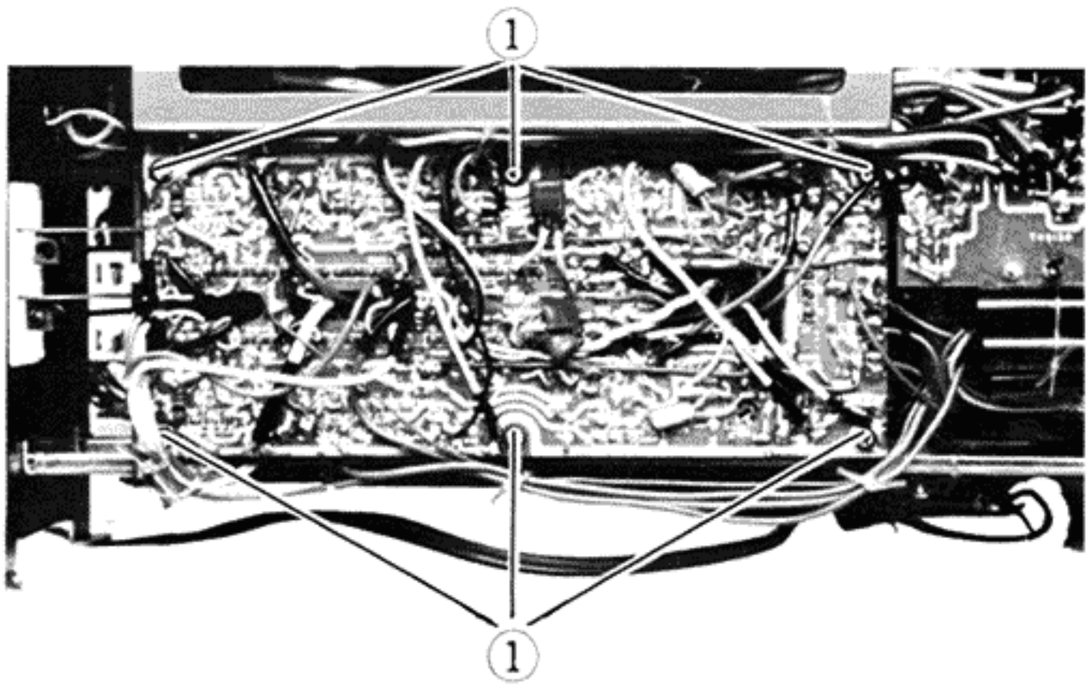


Fig. 10-1

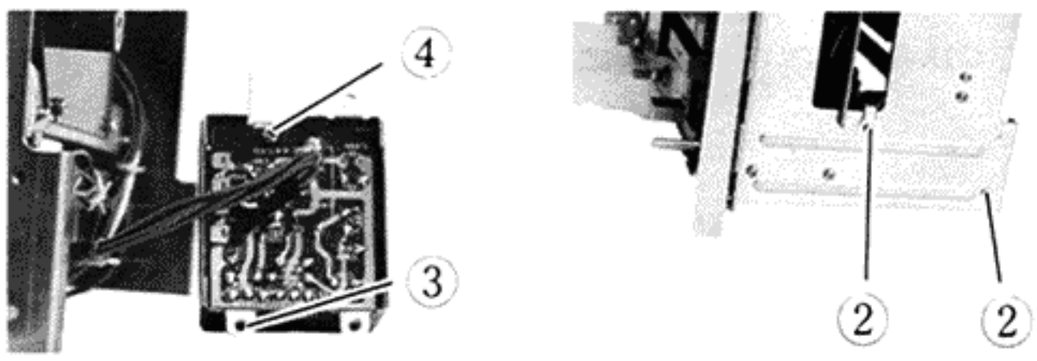


Fig. 10-2

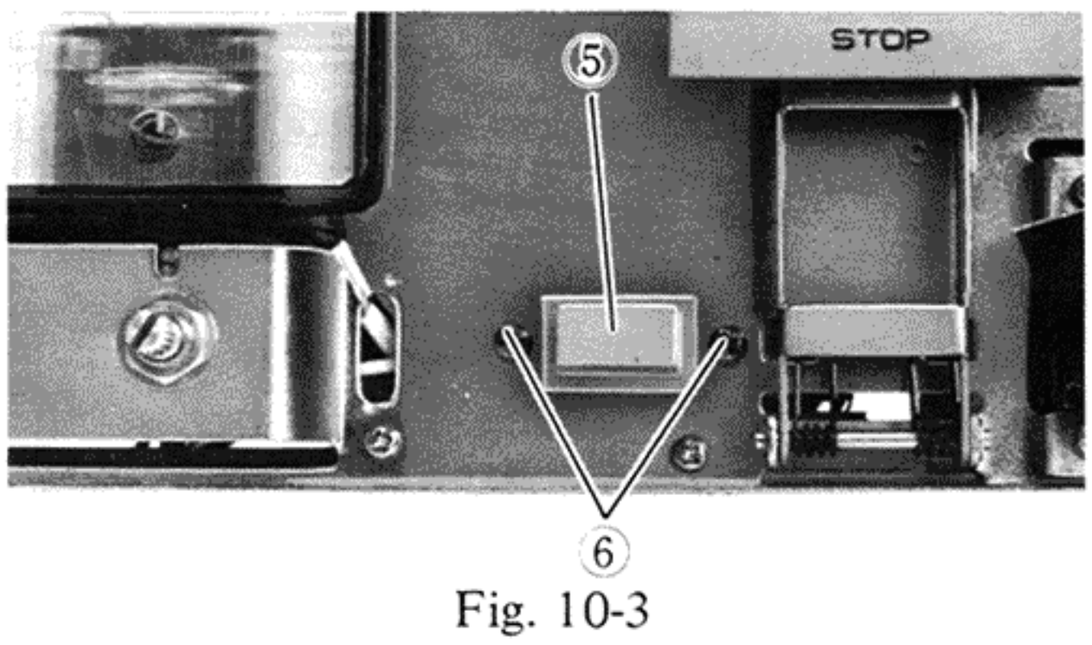


Fig. 10-3

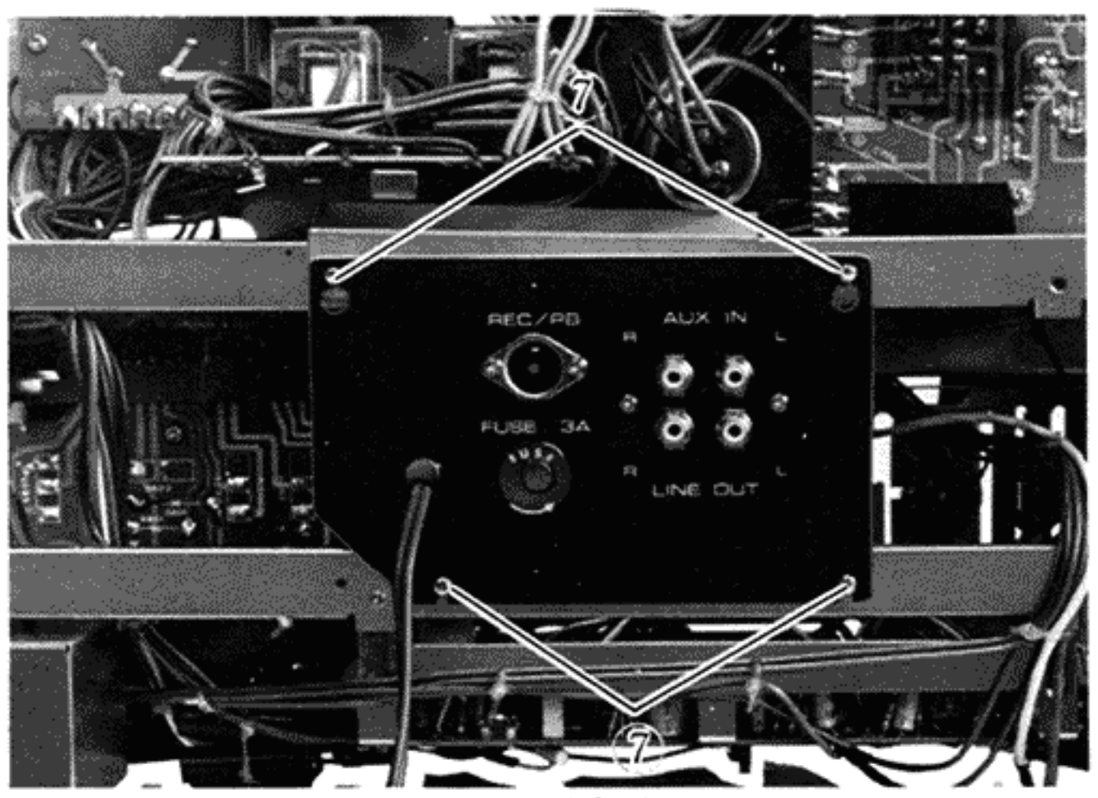


Fig. 10-4

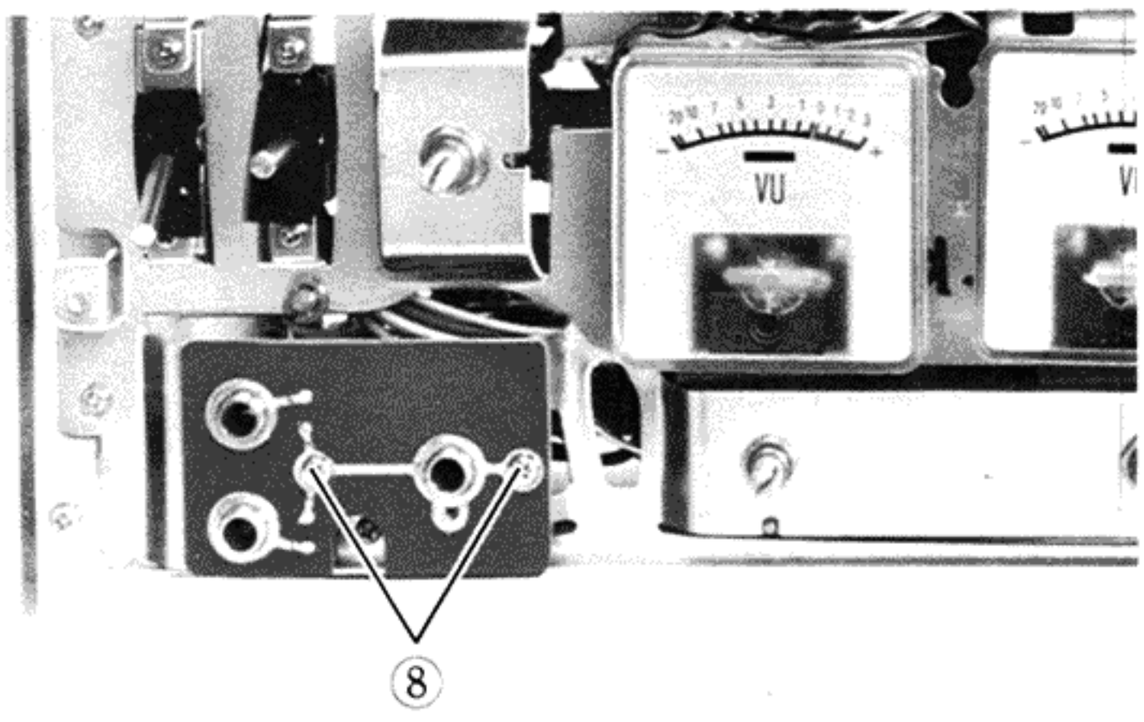


Fig. 10-5

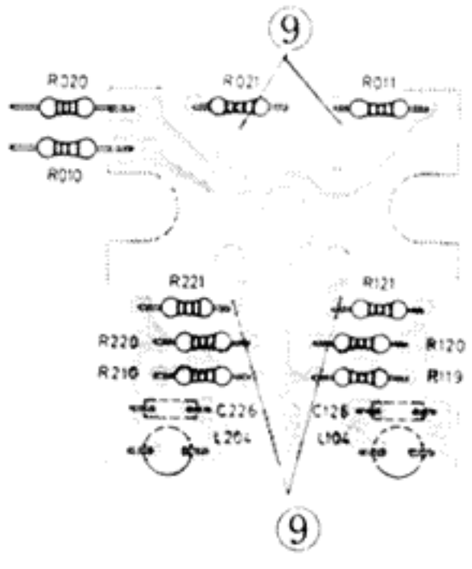


Fig. 10-6

10. Removing the control circuits (Fig. 11)

1) Power rectifier circuit board (Fig. 11-1)
Remove the one screw (1) and take out the circuit board by pulling it outward.

2) Direction selector circuit board (Fig. 11-2)
Remove the one screw (2) and remove the circuit board by pulling it to the amp side.

3) Head selector circuit board (Fig. 11-3)
Remove the one screw (3) and remove the circuit board by pulling it outward.

Fig. 11-1

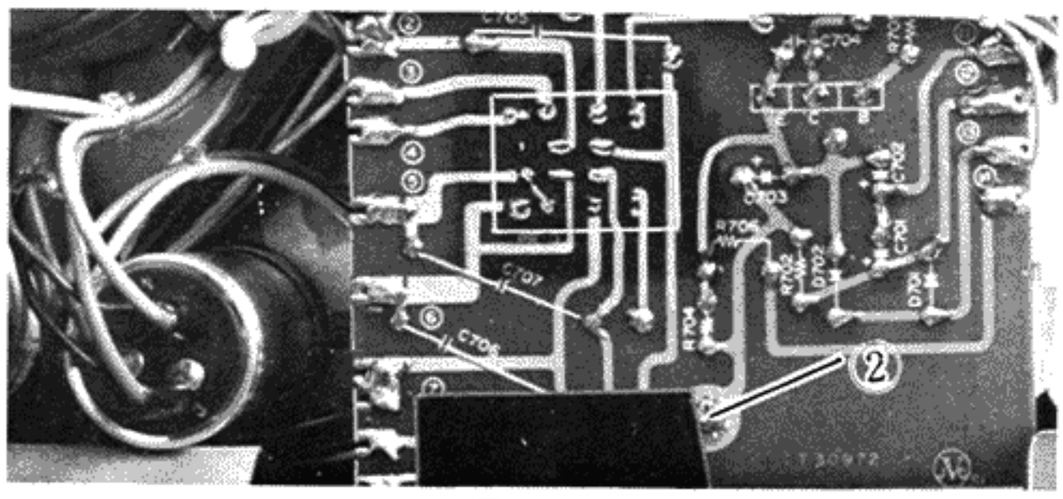


Fig. 11-2

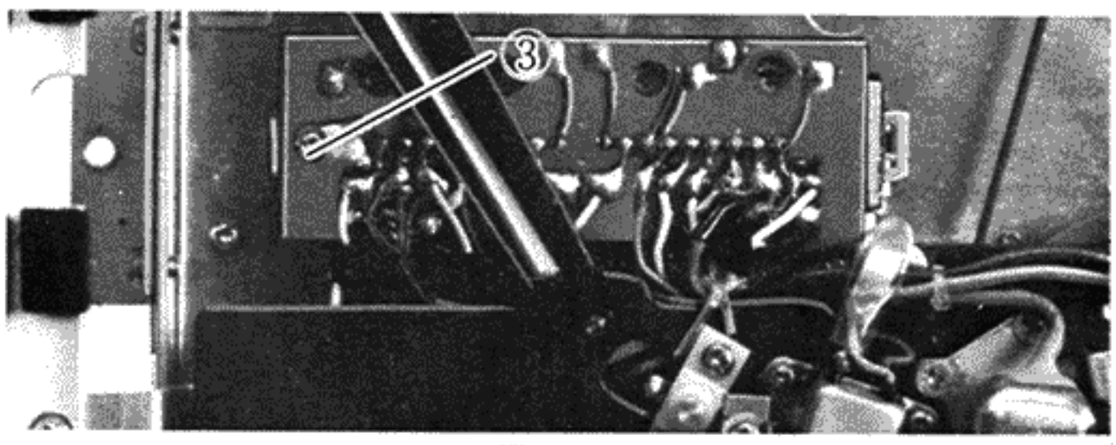


Fig. 11-3

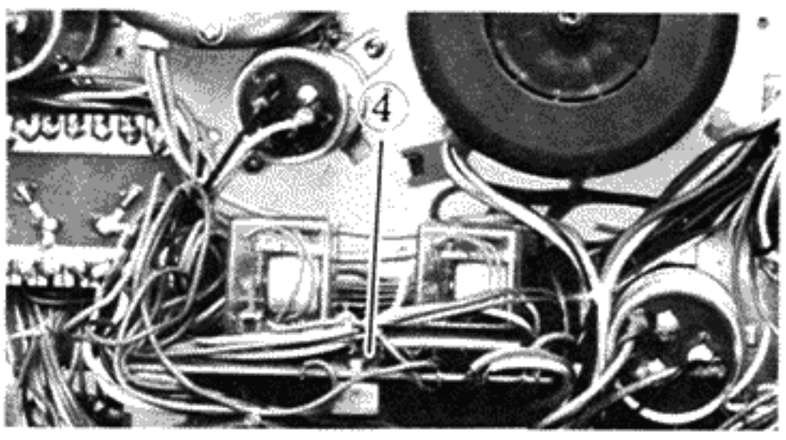


Fig. 11-4

4) Relay circuit board (Fig. 11-4)
Remove the one screw (4) and remove the circuit board by pulling it upward.

5) Operation circuit board (Fig. 11-5)
After removing the connector (5) inserted in the circuit board, loosen the three screws (6) and remove the circuit board.

6) Magnetic brake circuit board (Fig. 11-5)
Remove the two screws (7) and remove the circuit board.

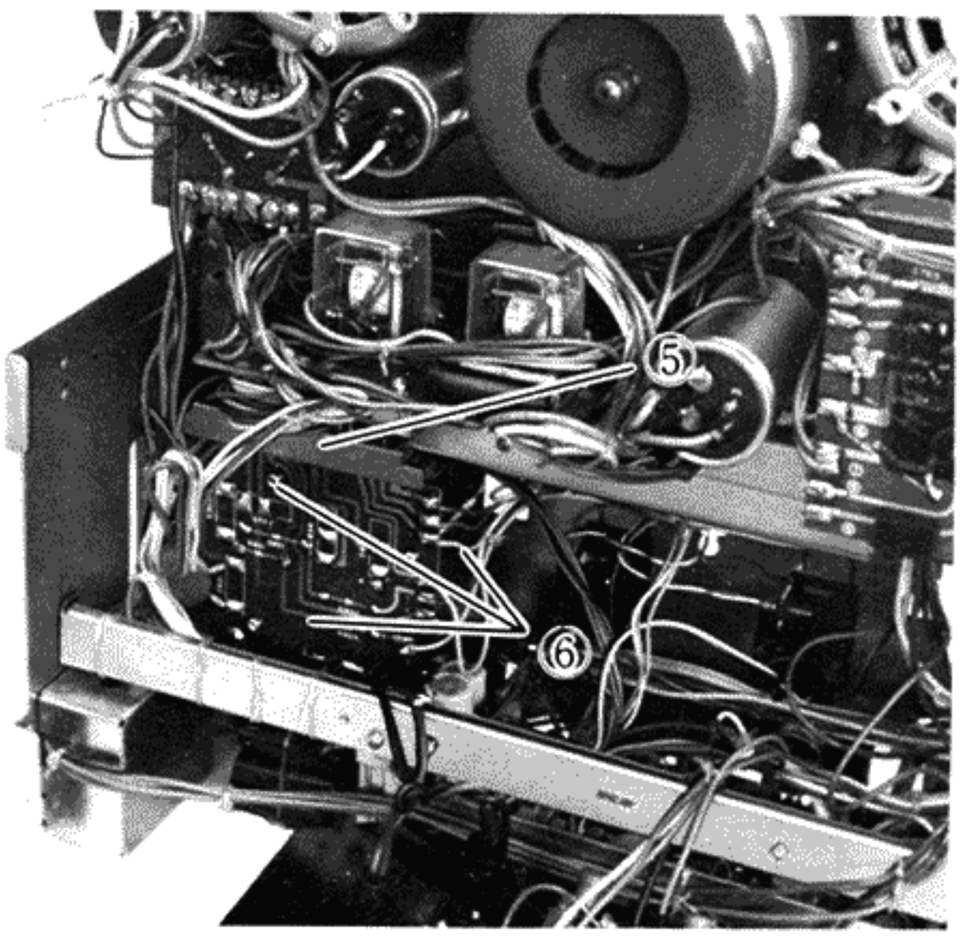


Fig. 11-5

Note:

This deck was made under the FCC Regulations; therefore, if any part coated with Solder Resist (painted green) is replaced, please coat the replaced part with Solder Resist, lacquer, etc. When replacing resistors and capacitors, always use a die to bend the terminals. Be careful as spacing will be incorrect if the pattern is not used.

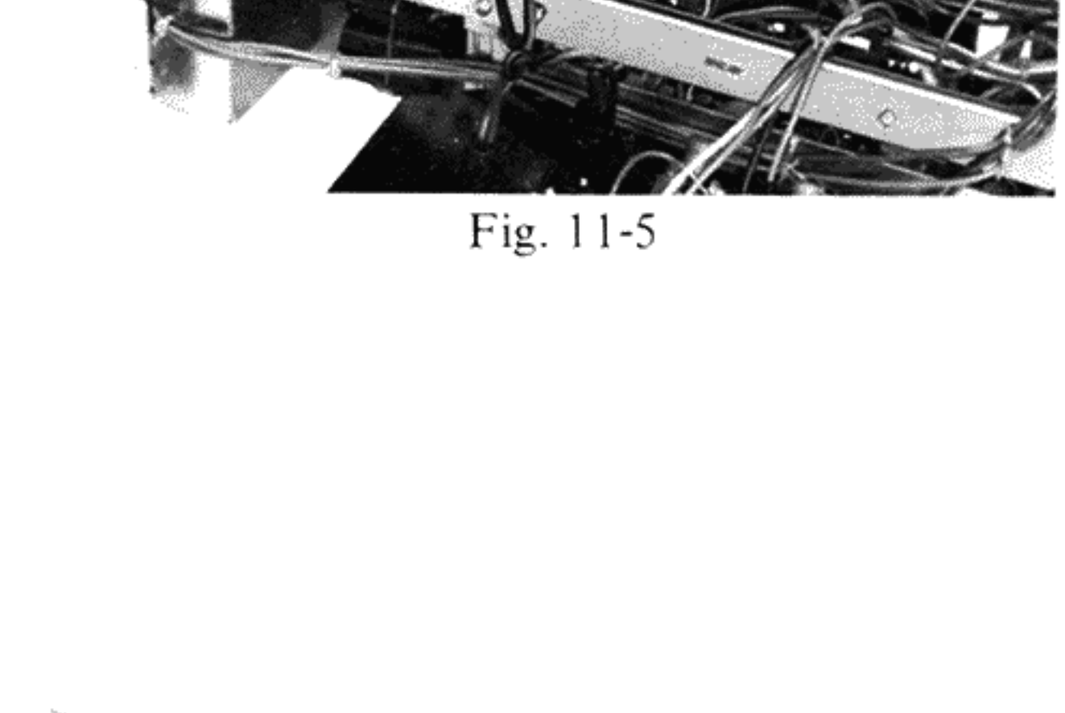


Fig. 11-6

11. **Removing the power transformer (Fig. 12)**

1) Remove the two screws ① holding the power transformer ② and remove it.

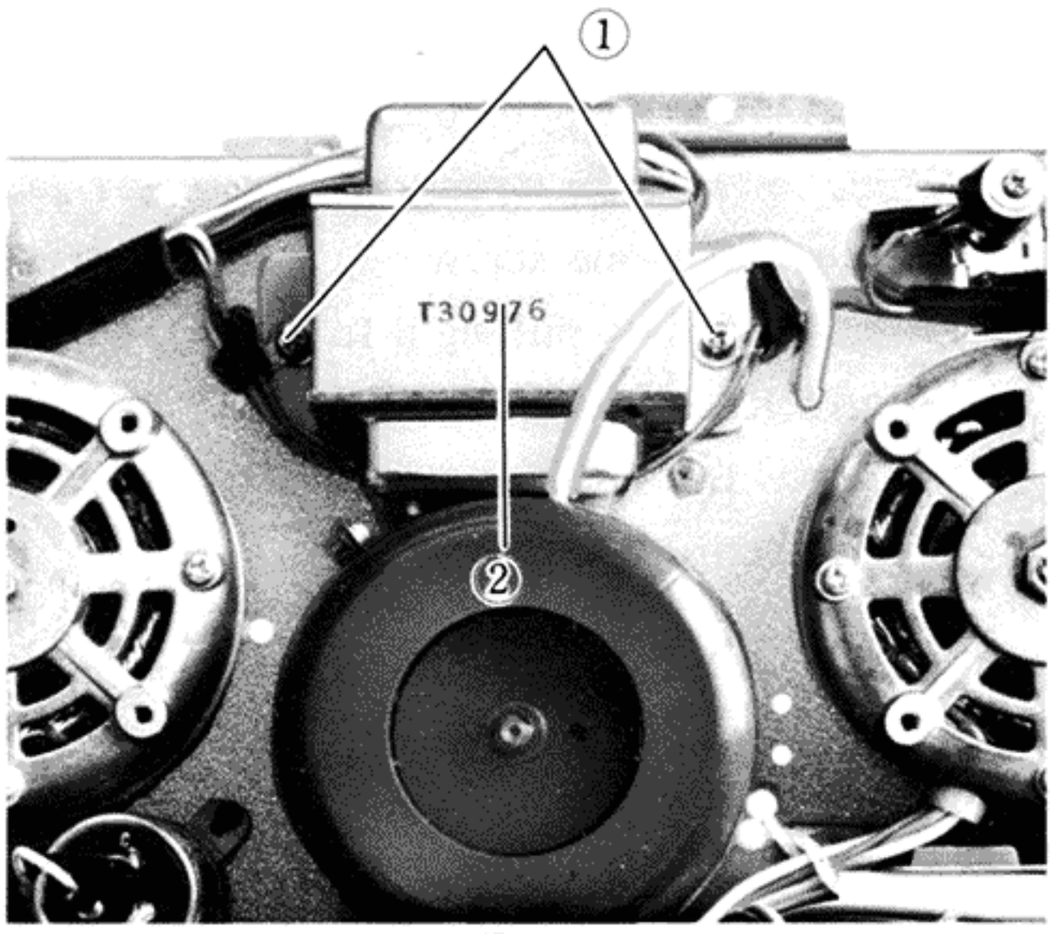


Fig. 12

12. **Removing motors (Fig. 13)**

1) Capstan motor

First, remove the belt ① , loosen the two setscrews using a hex wrench and remove the motor pulley. Next, remove the four screws ② and remove the motor from the chassis.

2) Reel motors

First, loosen the two setscrews holding the reel disks ③ using a hex wrench, remove the reel disks.

In the same manner remove the brake drums ④ . Next, remove the four screws ⑤ and remove the motors.

Note:

Disconnect the motor wiring first.

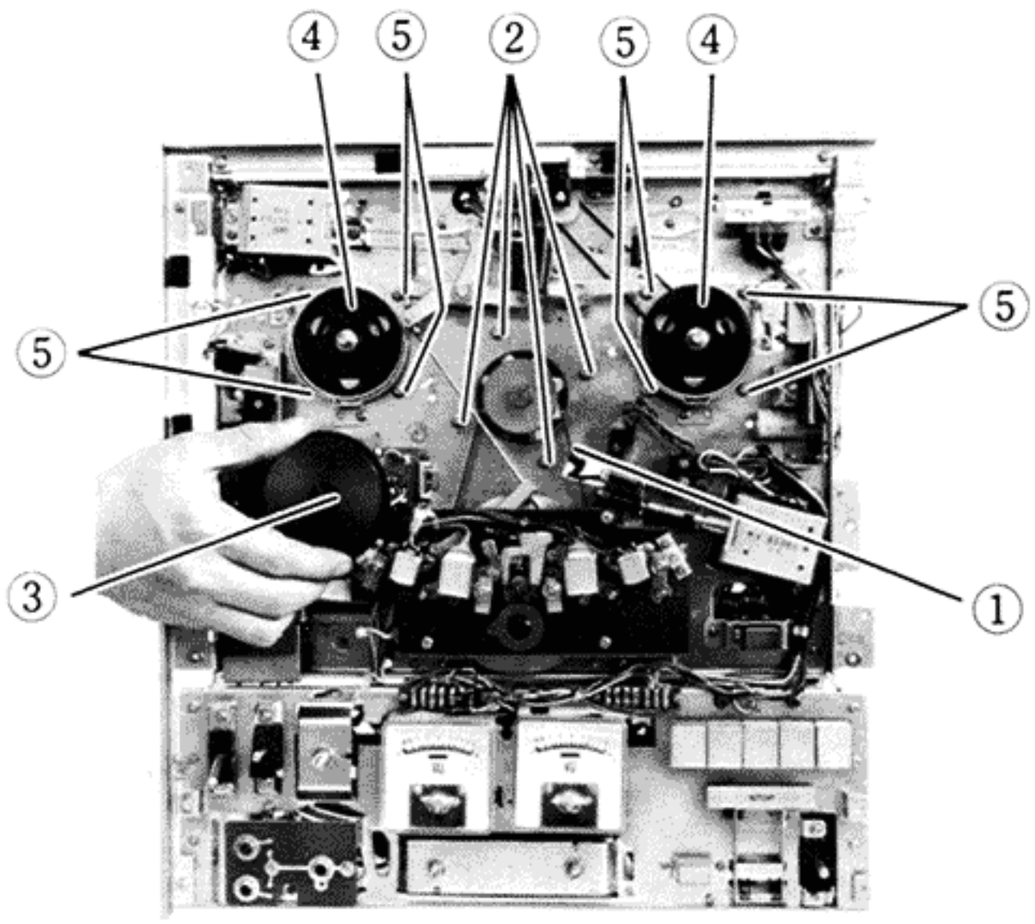


Fig. 13

MAJOR ADJUSTMENTS

1. Adjusting the switches (Fig. 14)

1) Adjusting the brake

Fig. 14 shows the auxiliary circuit selector switch ① for back tension during fast winding and braking while stopped. Switch ② is for adjusting the timing of the pinch roller contact. The timing of switch ② is very important, as the tape may be damaged if adjustment is improper. Adjust as follows.

(1) Set in the playback mode.

(2) Loosen the screws ③ in Fig. 14, adjust switches ① and ② to ON and temporarily stop.

(3) Set in the stop mode, then set in the playback mode to check the operation of the pinch roller.

(4) Set in the stop mode. Then while pushing the brake lever with the fingers, set in the playback mode. Slowly releasing the finger pressure, check the pressure of the pinch roller. (Refer to Fig. 16) If the pinch roller rises as shown in (A) of Fig. 16, the operation of switch ② is too fast. Consequently, it is necessary to delay the timing so the switch ② operates just before the brake completely releases. Adjust by moving the switch ② in the direction of arrow A in Fig. 15. Adjust the pinch roller so it is 22mm or more above the mount plate just before contact.

Note:

Be careful as damage may be caused if there is not a slight amount of play in the movement of the switch. The movement (overstroke) of the actuator after the switch has operated must be at least 0.2~0.3mm.

(5) Adjust switch ① so it works when the brake is released. Fine adjustment is not necessary. The switch overstroke is actually related to the life of the switch. Be careful to adjust the overstroke of the switch actuator to 0.5mm.

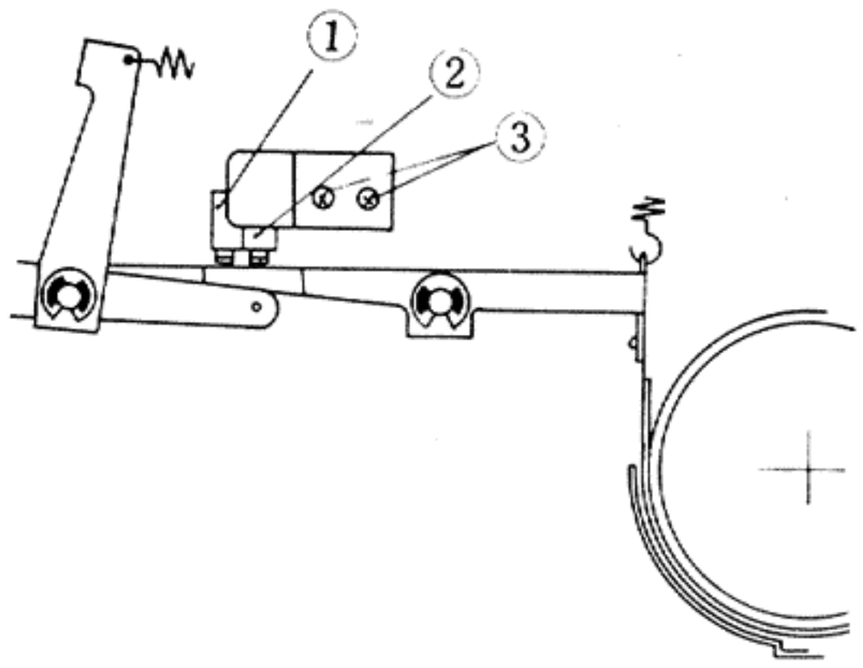


Fig. 14

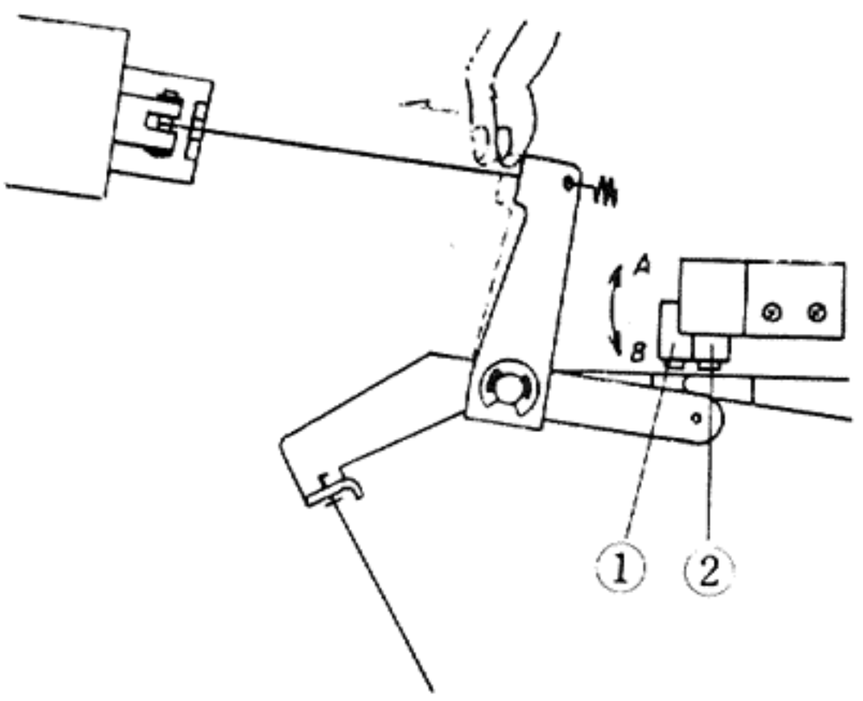


Fig. 15

Fig. 16

2) Auto shut-off switch (Fig. 17)

Adjust so the deck does not shut-off because of slack in the tape when operation is stopped. Adjust so the deck shuts-off when the space between the bracket stopper ① and the arm stopper pin ② is 0.5mm (0.3mm is the minimum permissible gap). Adjust the switch with the screw and nut holding the switch.

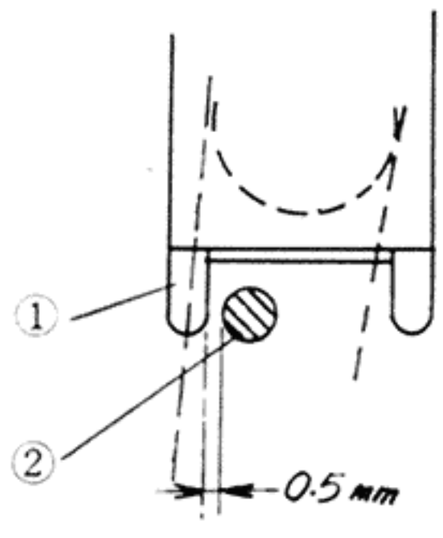


Fig. 17

3) Other switches

(1) Pinch roller arm assembly

Adjust so that this assembly operates with some play in the recording or playback mode.

(2) Direction assembly

Adjust so that the assembly operate with some play when selecting direction (FOD-REV).

(3) Recording lock assembly

Adjust so that this assembly operates with some play when operating the recording button.

Note:

"Operates with some play" refers to the overstroke after the switch has moved. If the overstroke is more than 0.5mm (switch actuator movement), the life of the switch is reduced.

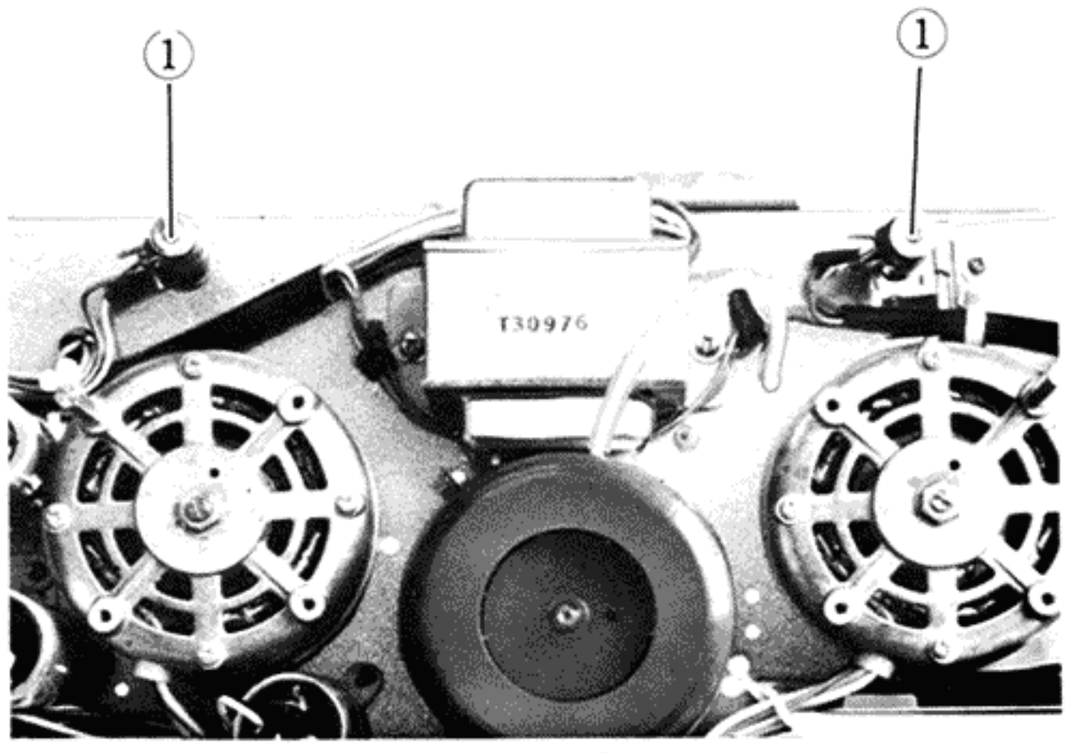


Fig. 18

2. Back tension

Adjust with the wire-wound resistor ① shown in Fig. 18.

	Range
Back tension	190 ~ 240 g/cm

Note:

If torque is excessive, tape squeak, etc., may be caused. If torque is too low, sensing miss may be caused.

3. Pinch roller pressure (Fig. 19)

Adjust to within 1.5~2.0 kg. Excessive pressure will cause poor operation. Adjust with nut ① shown in Fig. 19.

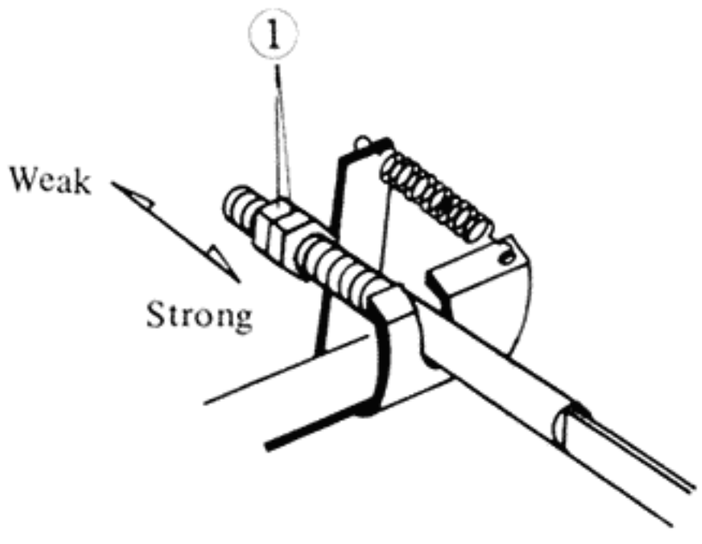


Fig. 19

4. Adjusting tape speed

Tape speed may change when a motor, etc., is replaced. In this case, the speed can be adjusted by replacing the motor pulley. Refer to Fig. 20 when replacing the motor pulley and adjust the speed according to the "Motor Pulley Selection" chart.

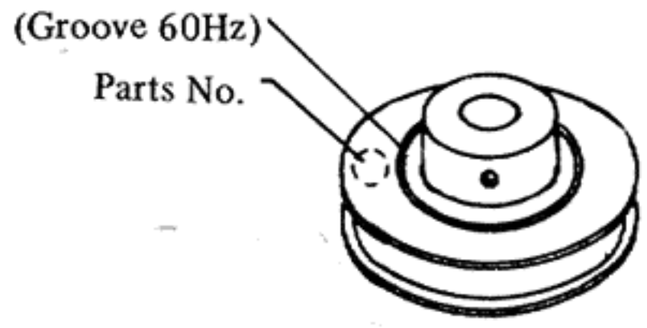


Fig. 20

Motor Pulley Selection

		Part No.	Diam. (cm)	Remarks
60 Hz	When tape speed is too high	T44866-601	29.5	V groove (Stamped) 1
	Standard	T44866-602	29.65	" 2
	When tape speed is too low	T44866-603	29.8	" 3

5. Adjusting the brake and pinch roller elevation position (Fig. 21)

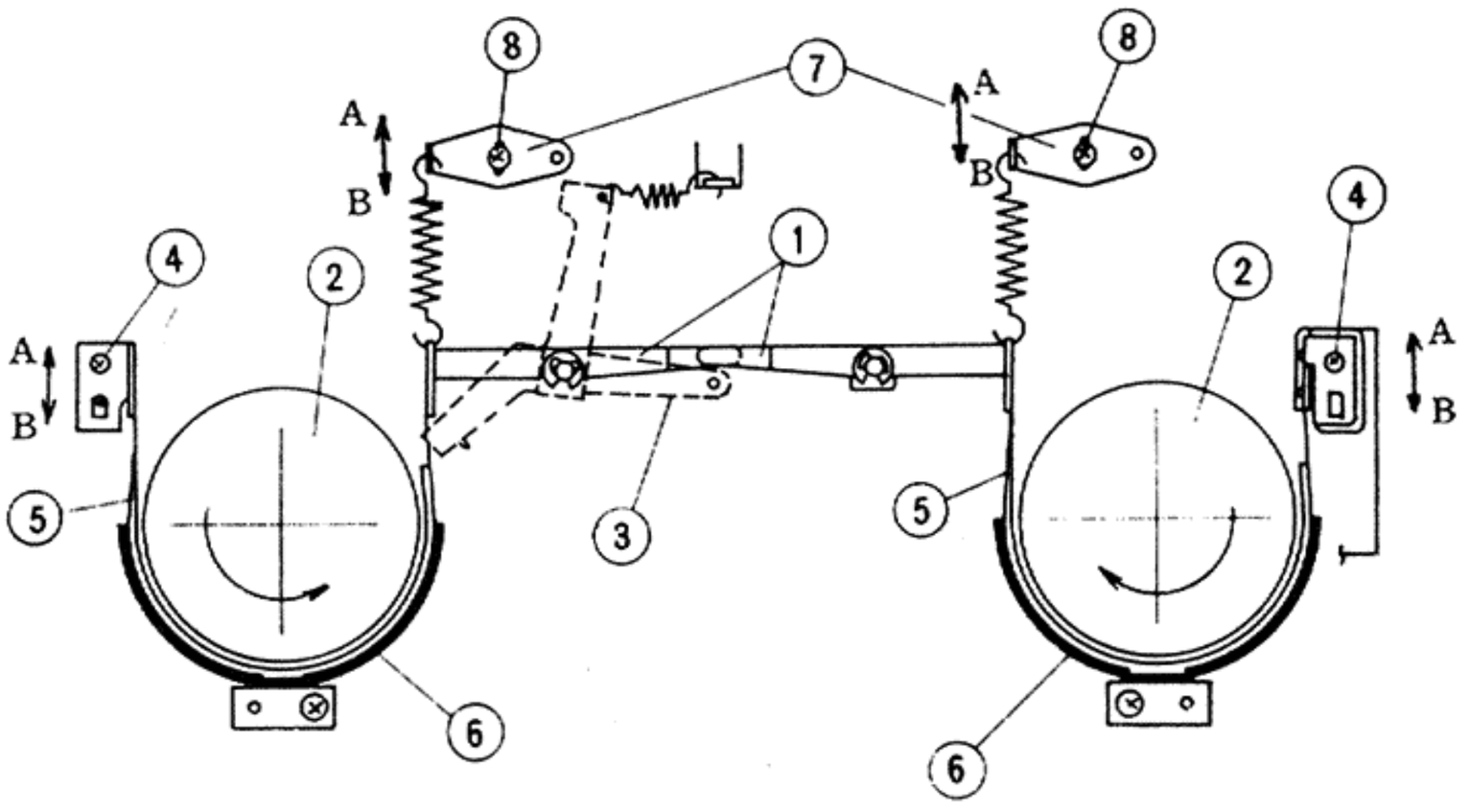


Fig. 21

Adjust carefully as follows as the brake is one of the most important mechanisms in a tape recorder.

1) Check and adjust the position of the brake liner and brake drum (Fig. 22).
The condition shown in Ⓑ is often caused when lever ①, etc., is bent. Bend the lever and repair as shown in Ⓒ. Next, loosen the two setscrews of brake drum ② using a hex wrench (ISO M3) and adjust the position of the brake drum to that shown in Ⓐ (Fig. 21). In some cases, adjustment to the condition shown in Ⓐ can be done by bending the lever in the direction of the arrows.

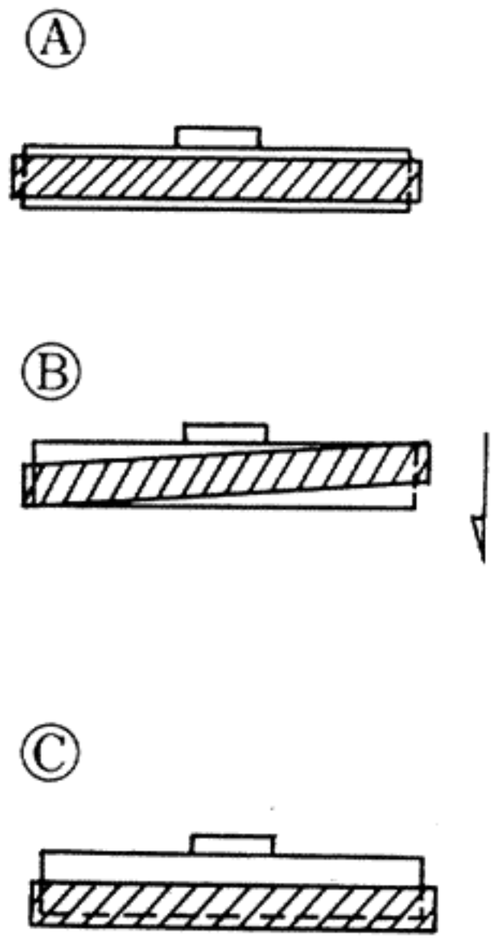


Fig. 22

2) When adjustment 1) is completed, adjust the spaces between the stud of lever ③ and the right and left brake arms ① . The spaces must be equal with each other as shown in Fig. 23 Ⓐ . Loosen screws ④ shown in Fig. 21. If the spaces are zero, move the brake liner in the direction of arrow Ⓐ in Fig. 21; if the spaces are excessive, move the liner in the direction of arrow Ⓑ .

Note:

When the spaces between the lever stud and the right and left brake arms are zero, the brake becomes ineffective. Be careful.

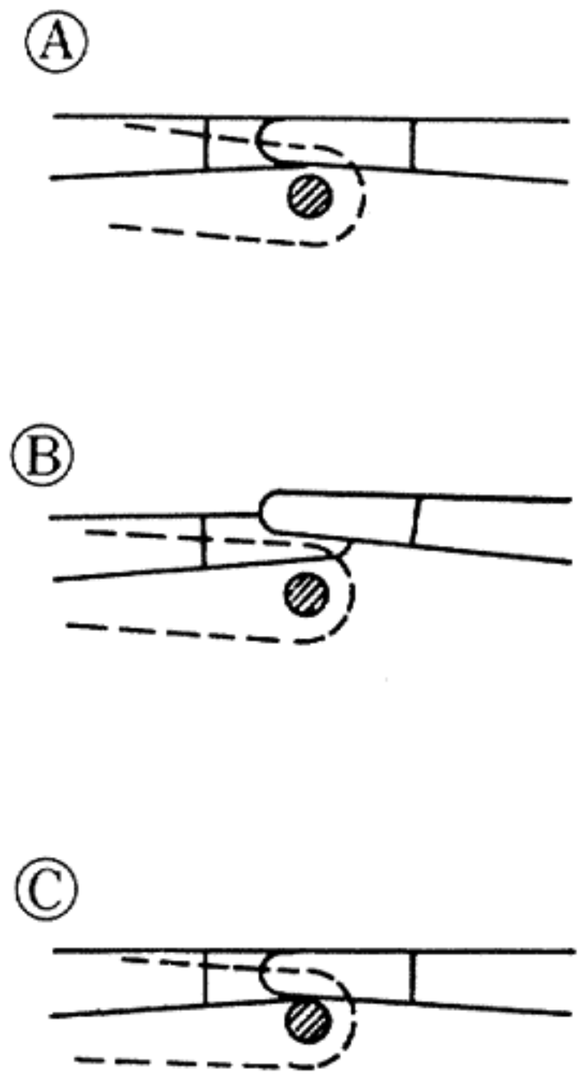


Fig. 23

3) Adjusting brake liner and brake guide

Set in fast wind or playback mode.

Adjust the position of the brake guide ⑥ so the space between the brake liner ⑤ and brake drum ② are even, as shown in Ⓐ of Fig. 24.

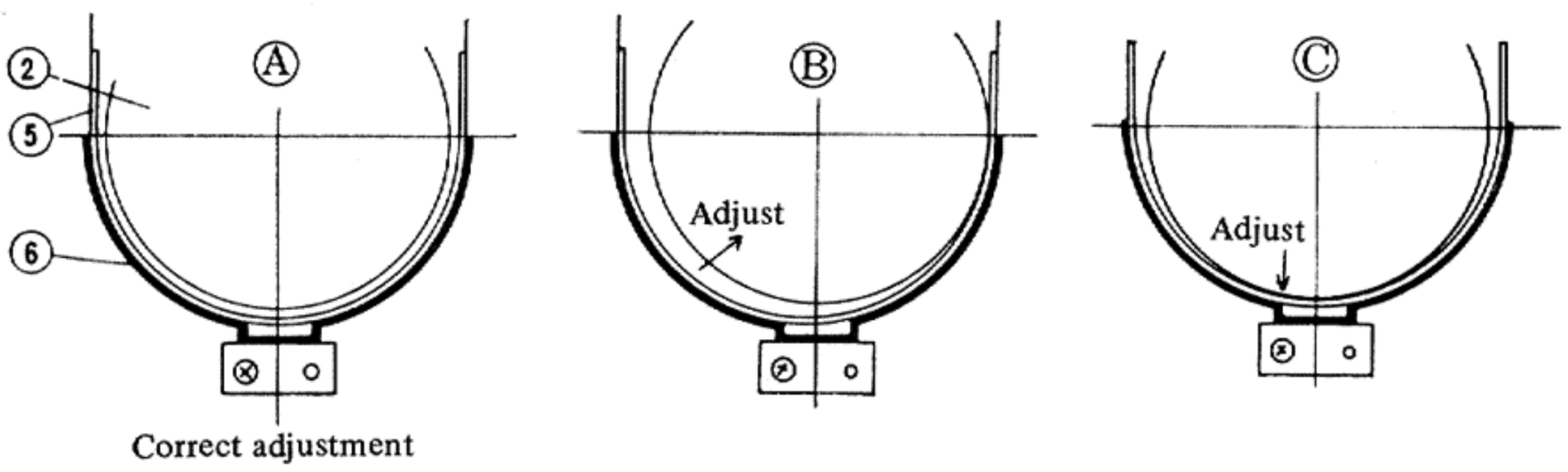


Fig. 24

4) Adjusting the brake torque

Generally the torque is measured with a torque gauge. If a torque gauge is not available, measure as shown in Fig. 25. Adjustment range 450~600g/cm.

Loosen screws ⑧ holding lever ⑦ shown in Fig. 21 and adjust. The torque is increased with levers ⑦ moved in the direction of arrow Ⓐ in Fig. 21; the torque is decreased with levers ⑦ moved in the direction of arrow Ⓑ.

Fig. 25

5) Adjusting pinch roller elevation position
Adjust so the tape runs along the center of the pinch roller, as shown in Fig. 26 Ⓐ. In the case shown in Ⓑ, adjust nut ⑨ should be moved in the direction of arrowⒶ. In the case shown in Ⓒ, move the adjust nut in the direction of arrow Ⓑ.

Note:
When adjustment is completed, tighten the nut and coat with screw lock paint.

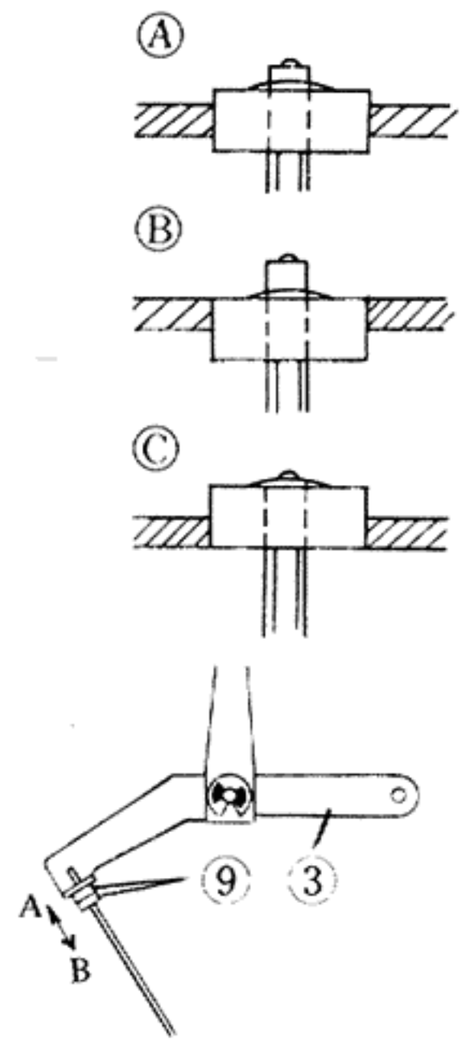


Fig. 26

3. Reel motor torque adjustment and specifications (Fig. 27)

When a reel motor is replaced, adjust the back tension and measure the takeup torque.

Specifications (PLAY)

	FOD side	REV side
Takeup torque	350±50g/cm	350±50g/cm
Back tension	210±30g/cm	210±30g/cm

Adjust the back tension with the wire-wound resistor shown in the drawing. The takeup torque cannot be adjusted, but please check.

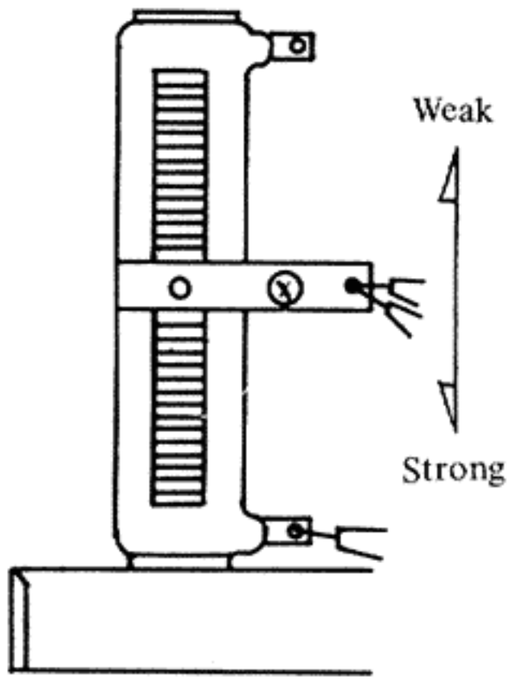


Fig. 27

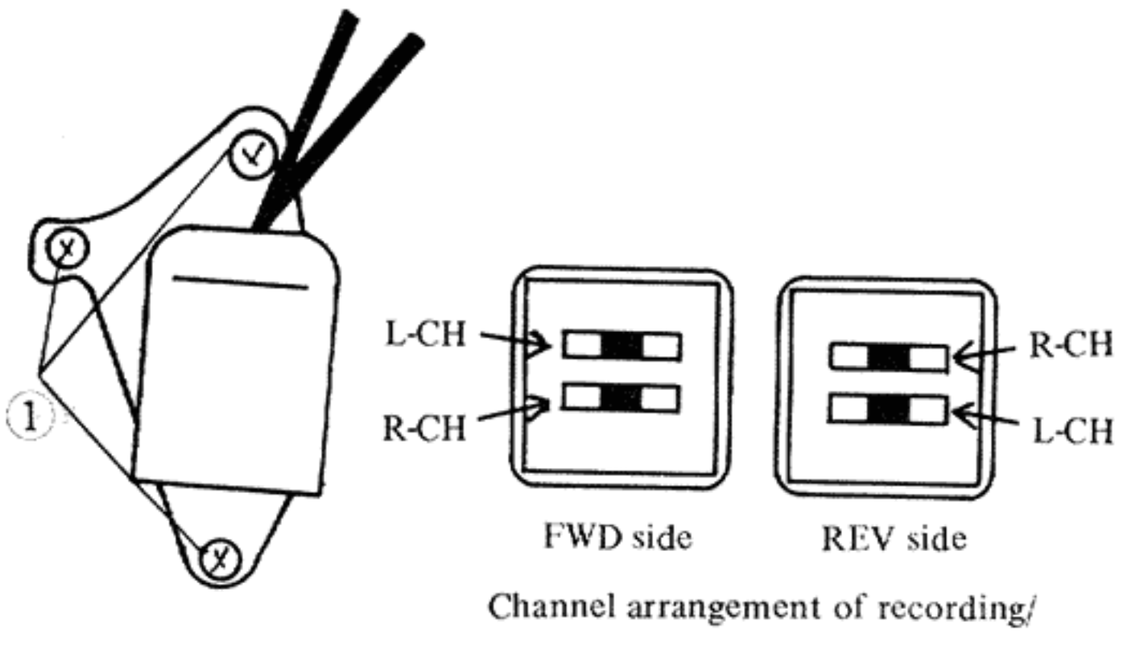
REPLACING AND ADJUSTING THE HEADS

1. Replacing and adjusting the heads

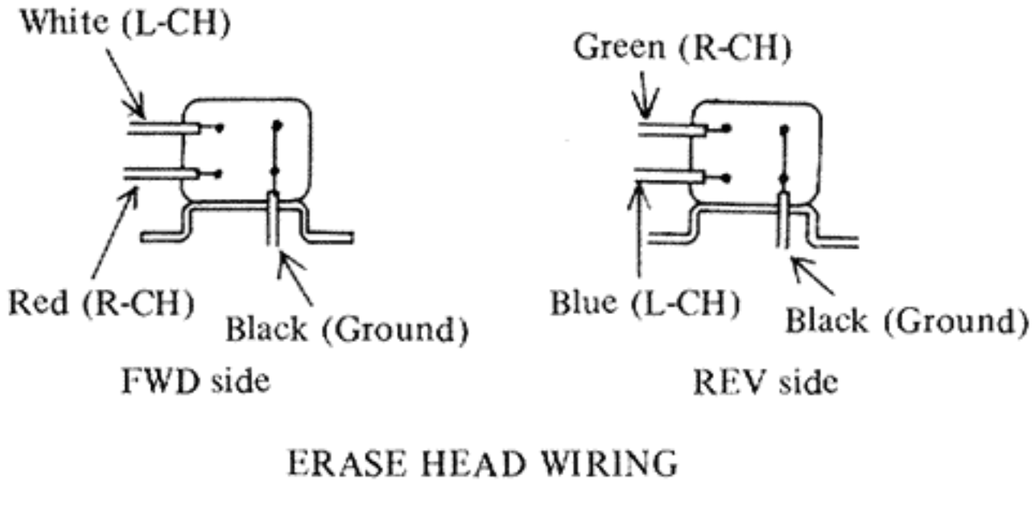
Replace the recording/playback head and erase head when excessively worn, excessively magnetized or internally disconnected and cannot provide specified performance.

Replacing the recording/playback head

1) Disconnect the brown and grey shielded wires connected to the direction selection circuit board.
2) Next, remove the three screws ① holding the head and remove the head.
3) Attach the new head in reverse the above order.
4) Forward and reverse heads are replaced in the same manner.



Channel arrangement of recording/playback heads.



ERASE HEAD WIRING

Fig. 28

Head adjustment

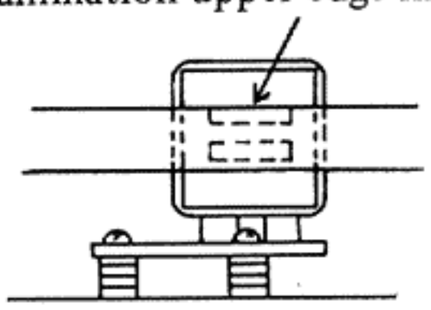
After replacing the head, adjust the head height, azimuth and bias.

1) Adjusting height

Never fail to adjust the head height precisely. If this is neglected, sound will enter from the opposite channel, causing excessive crosstalk. Adjust as shown in the drawing. The height of the recording/playback heads is adjusted by using the two head plate height adjusting screws. While making the adjustment, use the tape leader or remove the magnetic coating from ordinary tape so it is transparent, so the head laminations are visible.

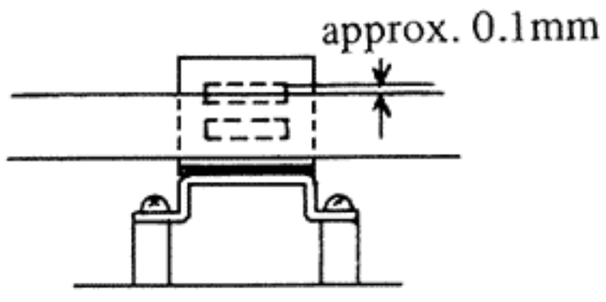
FOD side heads

The tape upper edge and the lamination upper edge match.



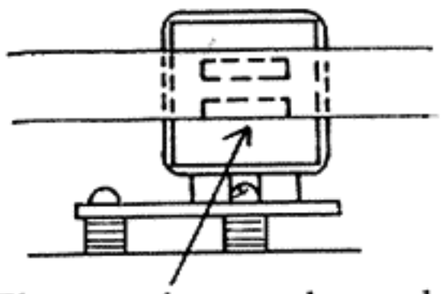
Recording/playback head

The lamination is slightly visible above the tape upper edge.



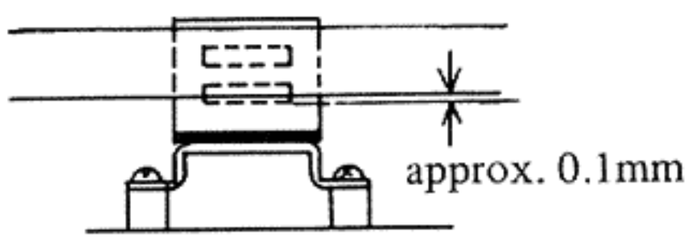
Erase head

REV side heads



The tape lower edge and the lamination lower edge match.

Recording/playback head



The lamination is slightly visible below the tape lower edge.

Erase head

Fig. 29

2) Adjusting azimuth

When adjusting the azimuth of the recording/playback heads, connect a VTVM to the external output terminal (LINE OUT). While playing back the azimuth adjusting 15 kHz signal of a standard tape (01-31321-04 or 01-31321-01) at the tape speed of 7-1/2 ips. rotate the left side screw holding the head until output is maximum and secure in that position. Perform this adjustment for both the left and right channels. If there is variation of the angle between the channels, set in the center. After completing the adjustment fix the adjust screws with point, etc.

3) Bias adjustment

Adjust the bias using the semi-fixed resistor attached to the circuit board below the shut-off arm (Fig. 30-1).

Connect a 100Ω resistor as shown in the drawing. Connect a VTVM across the resistor and adjust so the VTVM indicates 44mV. Repeat the adjustment 2~3 times.

4) Adjusting the recording level (Fig. 30-2)

When adjusting the recording level, connect a 100Ω resistor and a VTVM as when adjusting the bias. Feed a 1 kHz, approx. 50~50dB into the microphone terminal and put the set in the recording mode. After adjusting the volumes R106 (L-CH) and R206 (R-CH) so the voltage across the 100Ω resistor is −46dB, adjust R131 (L-CH) and R231 (R-CH) of the amp circuit board until the level meter indicates zero. At this time, shut off the power to the oscillator circuit to stop oscillation.

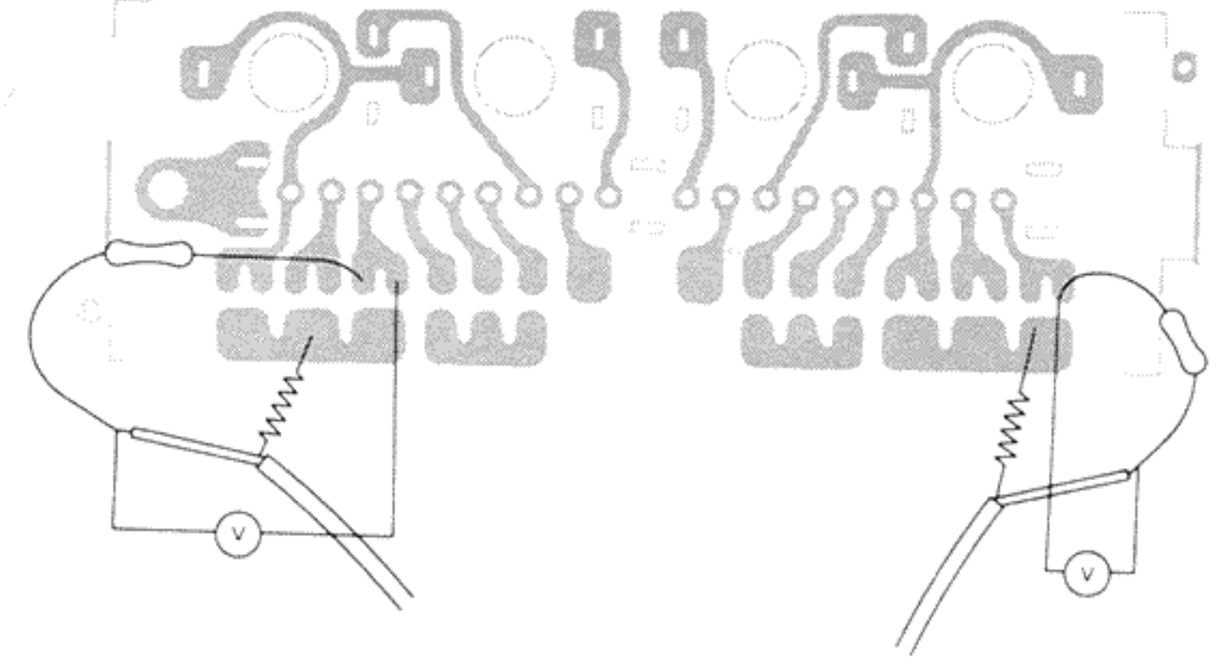


Fig. 30-1

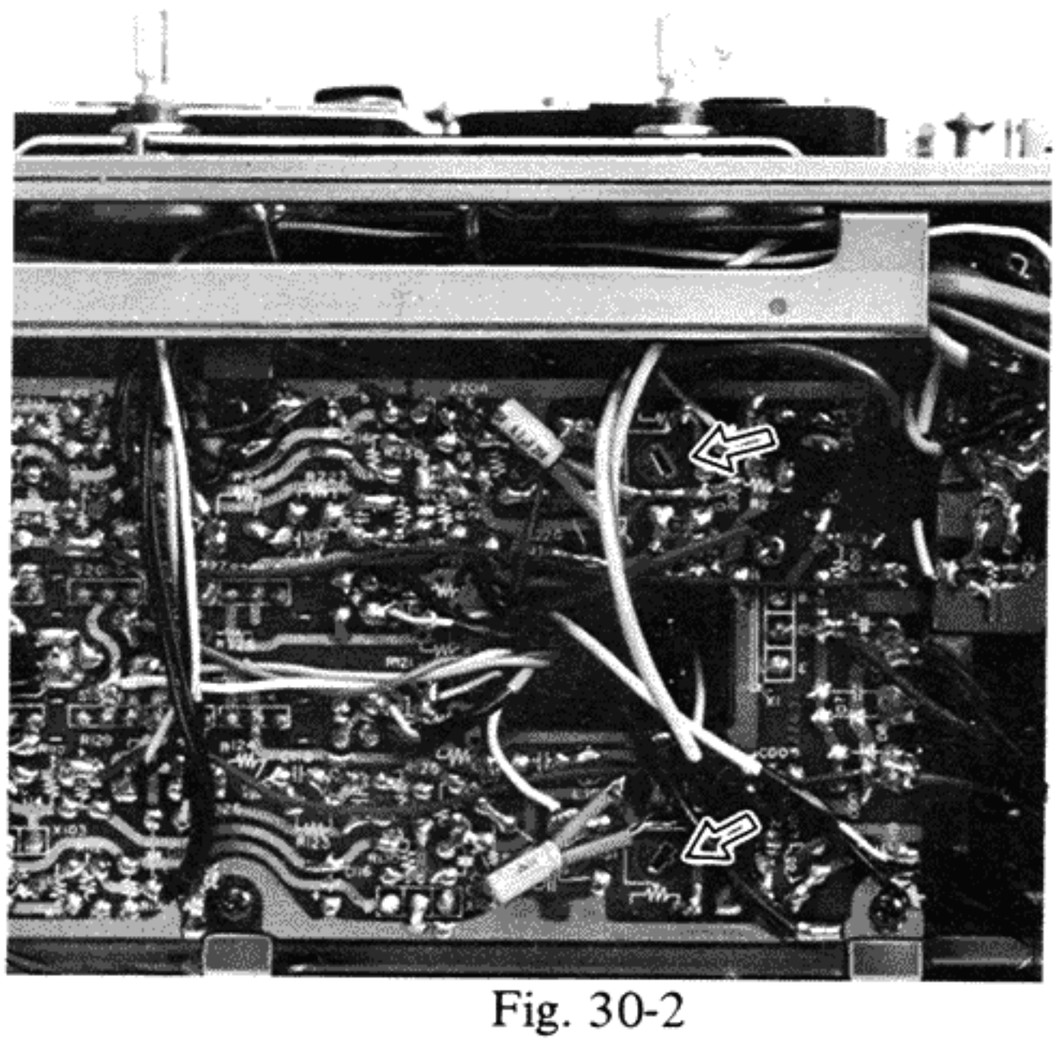


Fig. 30-2

WIRING DIAGRAMS

1) Amp circuit board

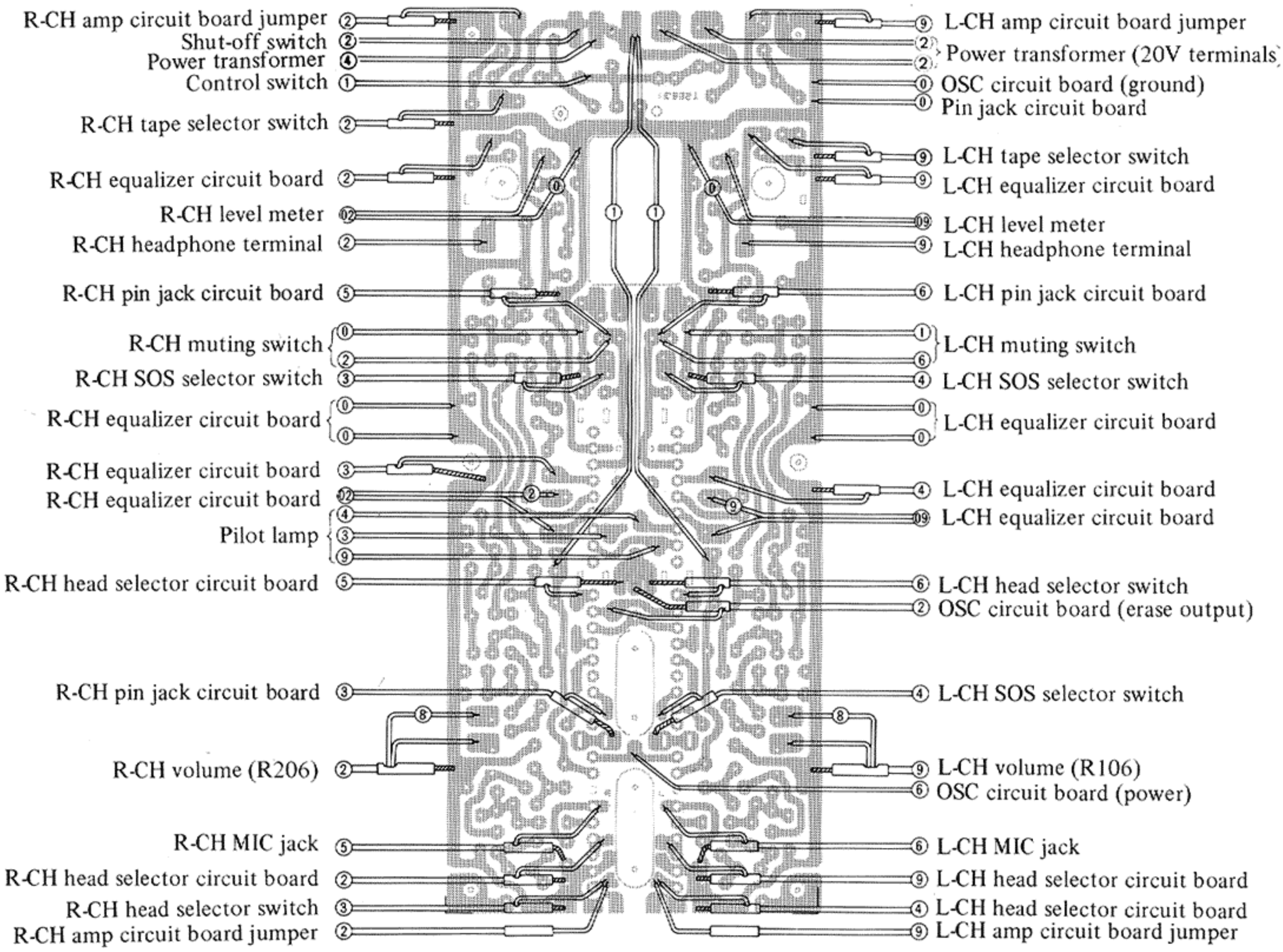


Fig. 31

2) Pin jack circuit board

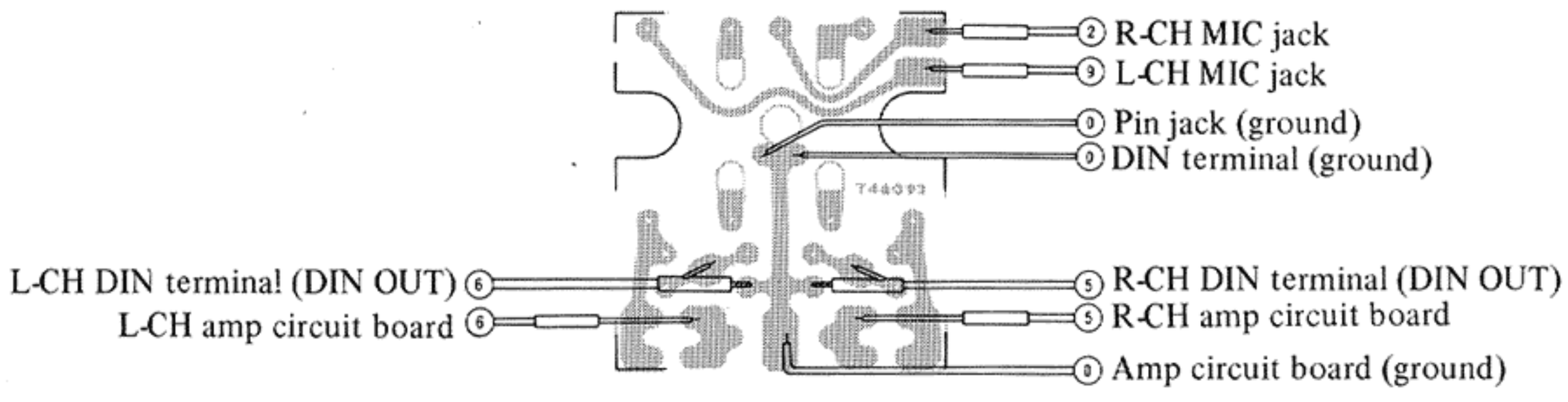


Fig. 32

3) Equalizer circuit board

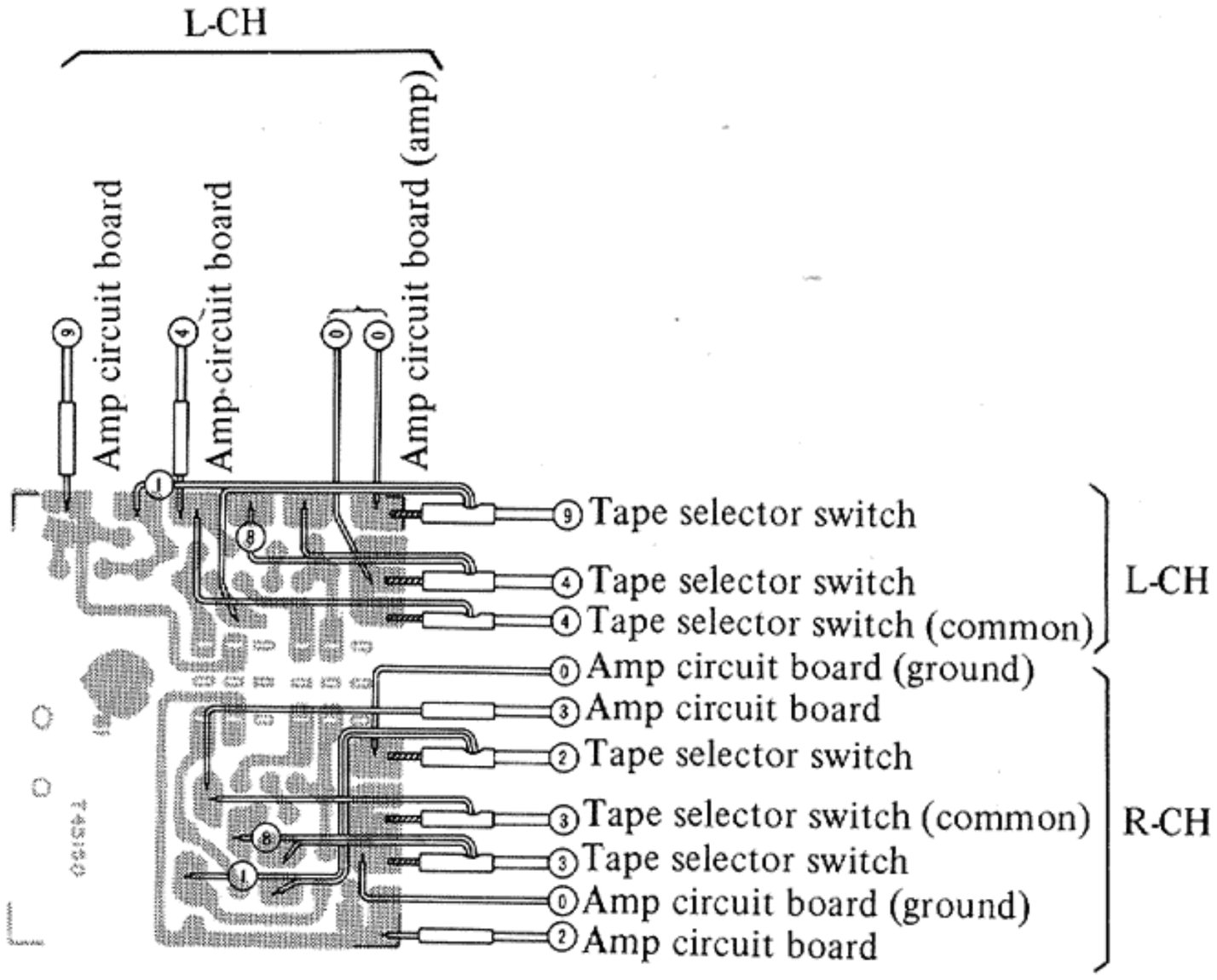


Fig. 33

4) Head selector circuit board

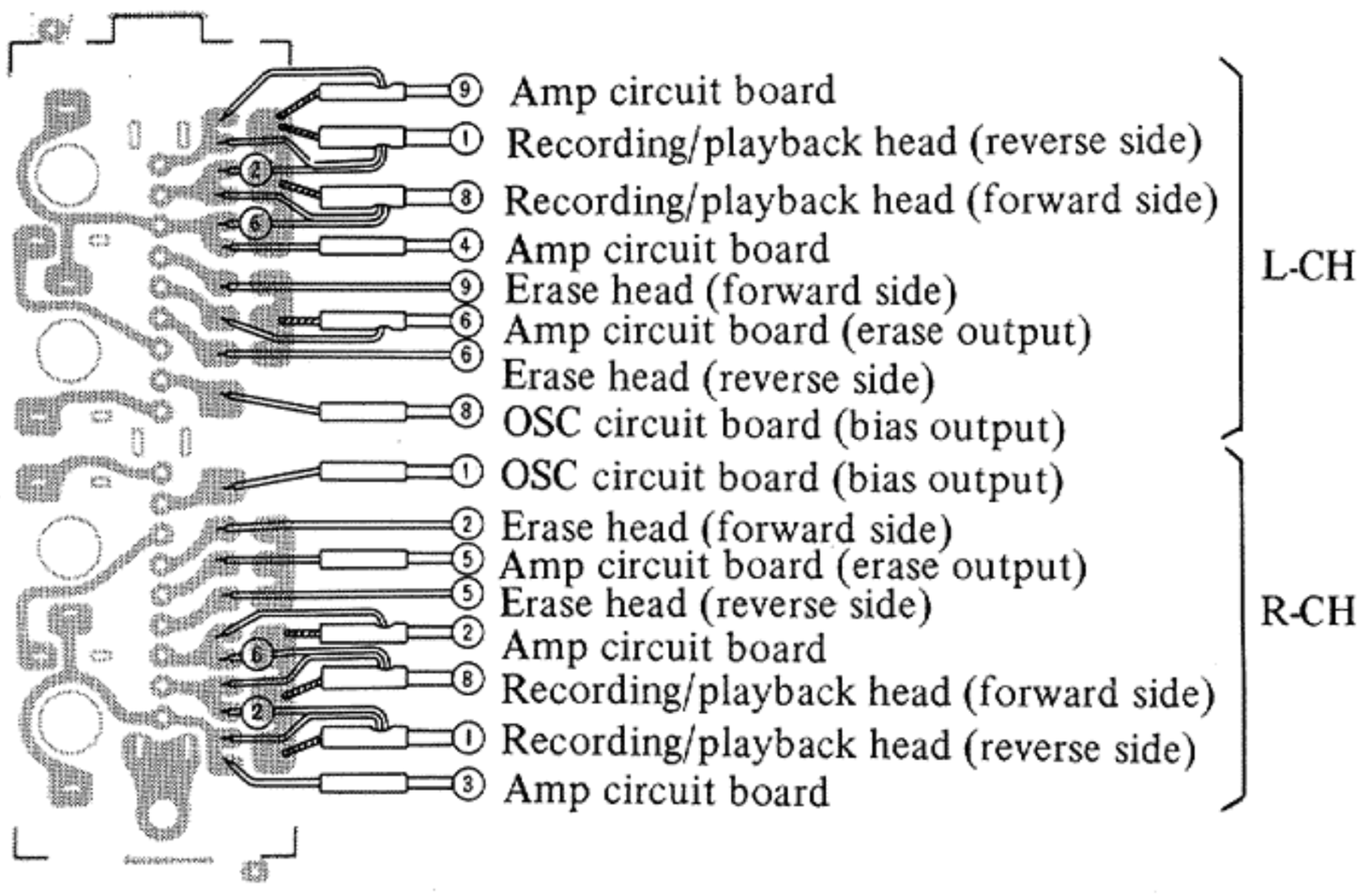


Fig. 34

5) Oscillator circuit board

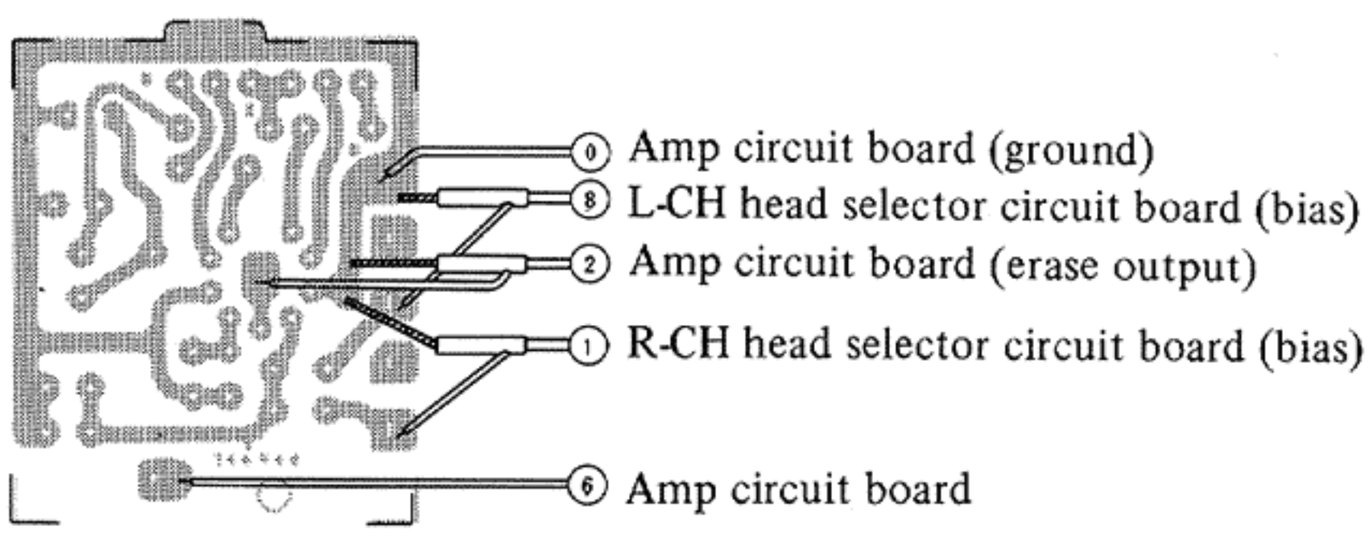


Fig. 35

6) Relay circuit board

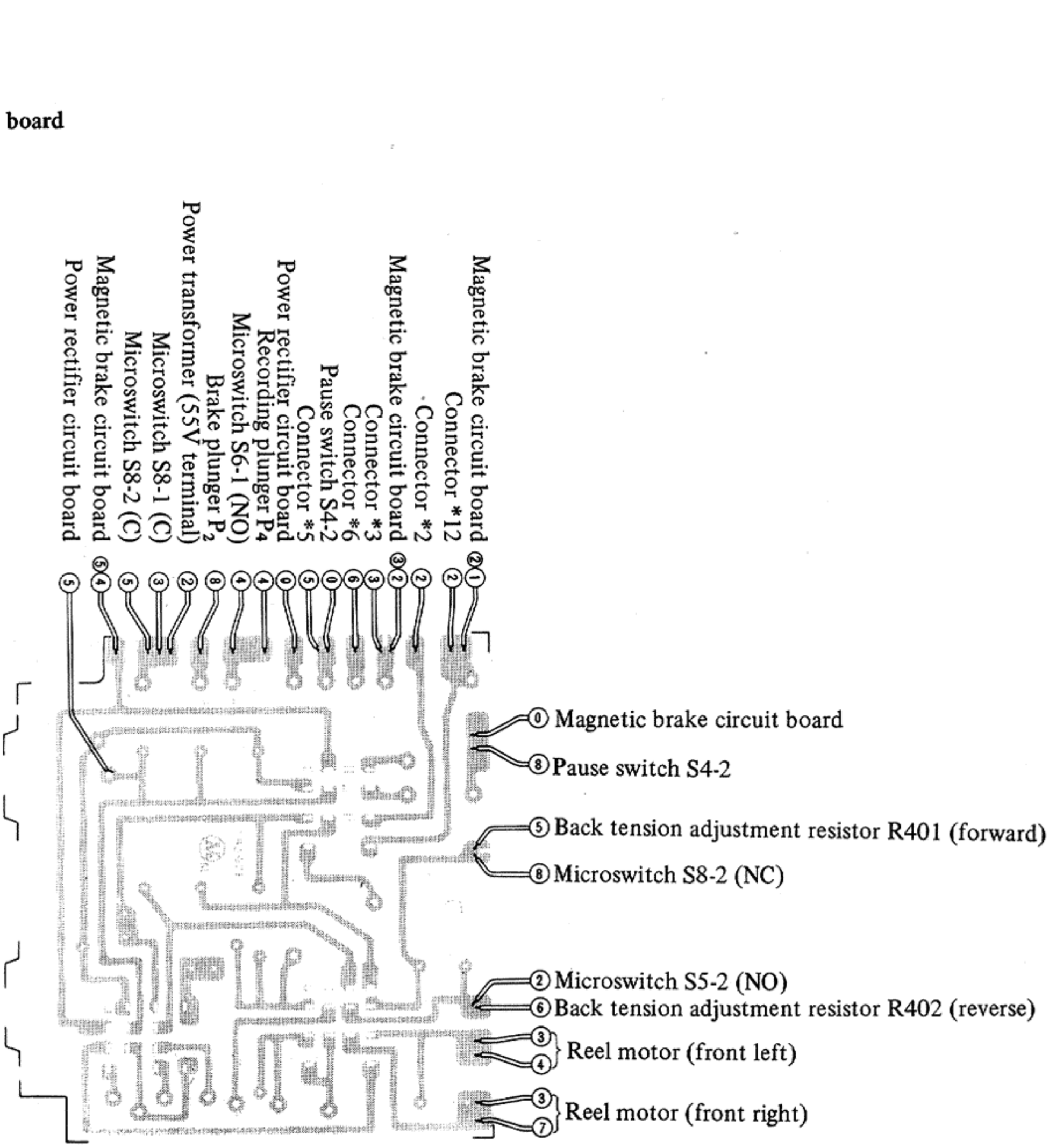


Fig. 36

7) Power brake circuit board

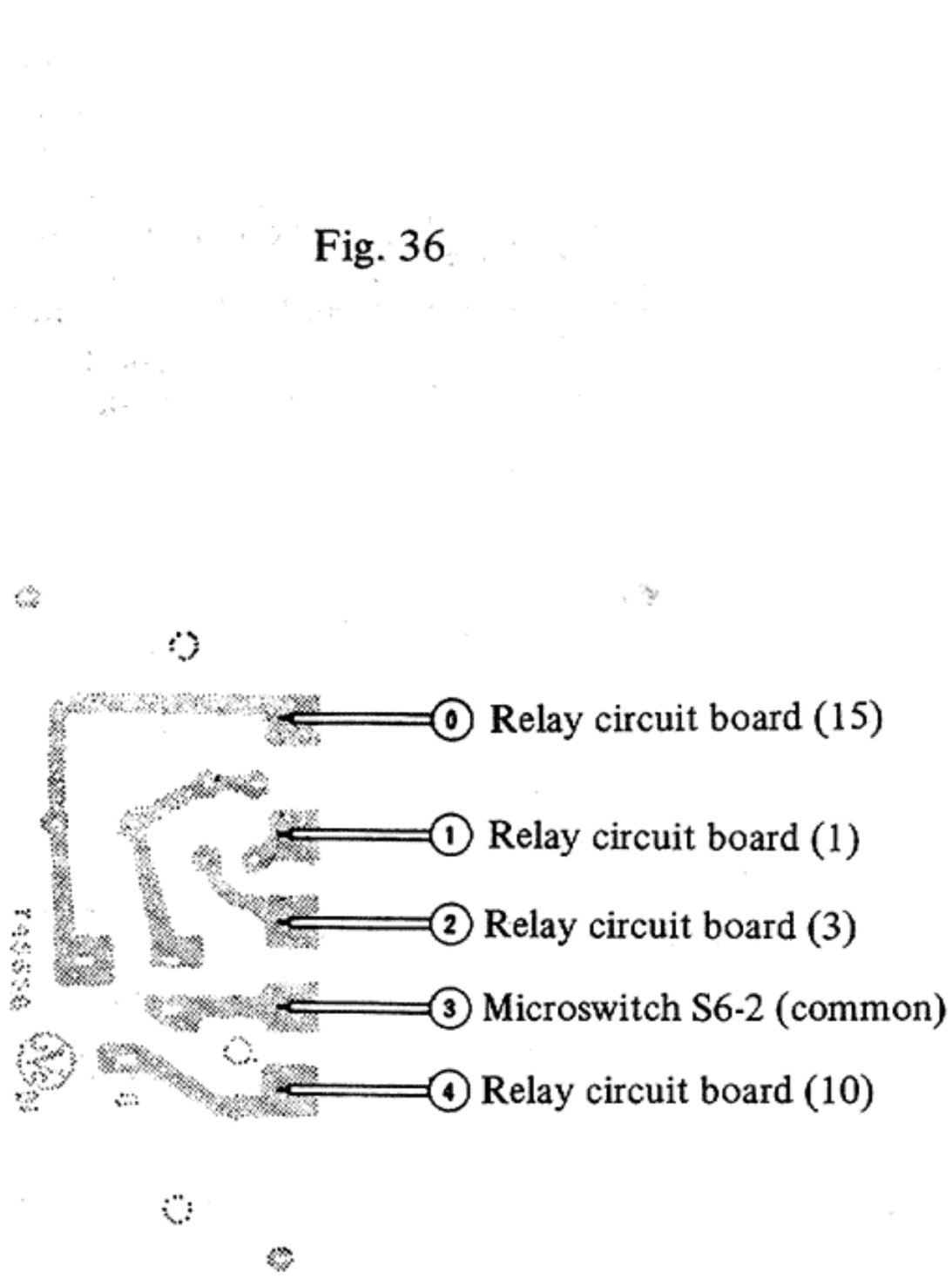


Fig. 37

8) Operation circuit board

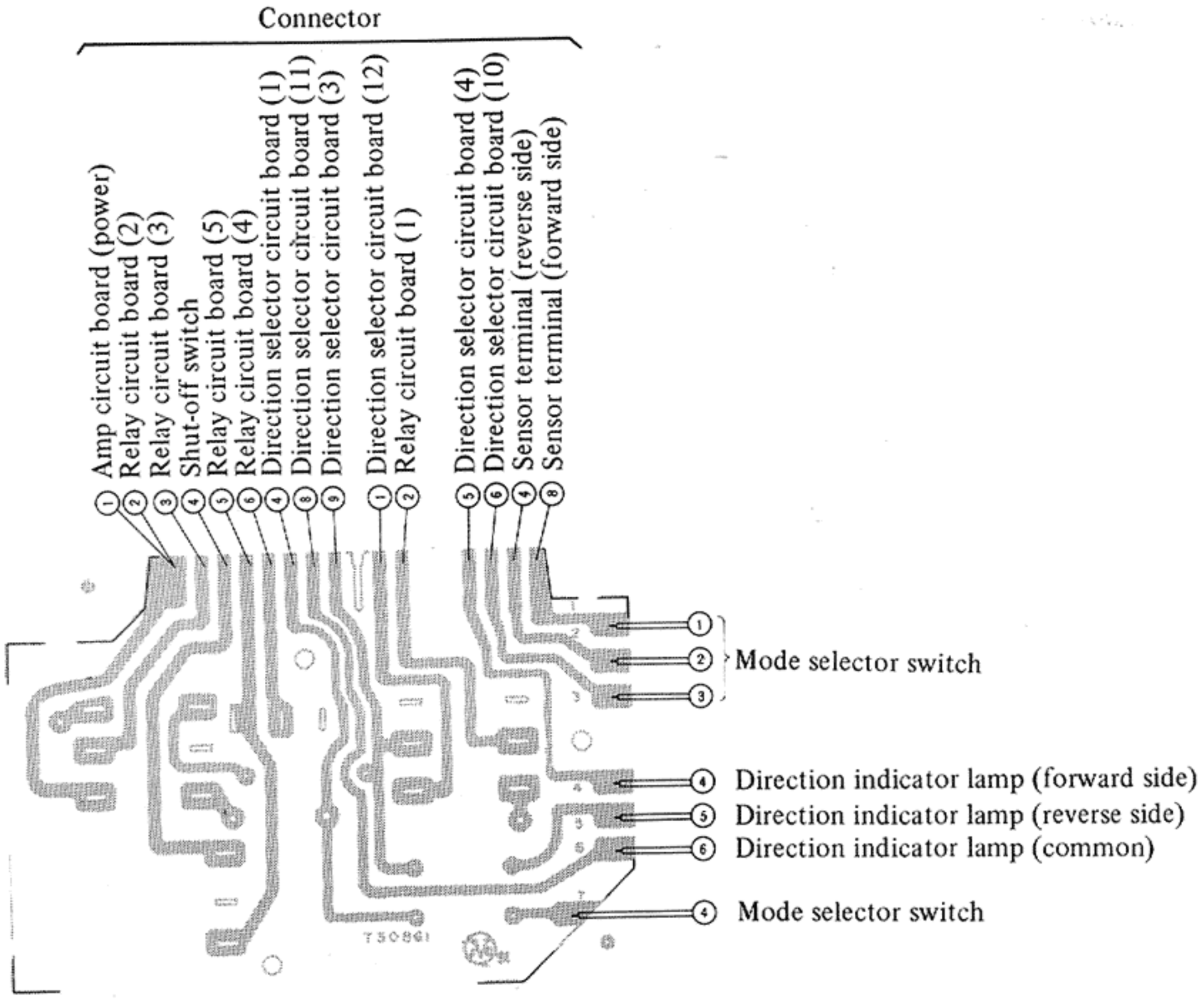


Fig. 38

9) Direction selector circuit board

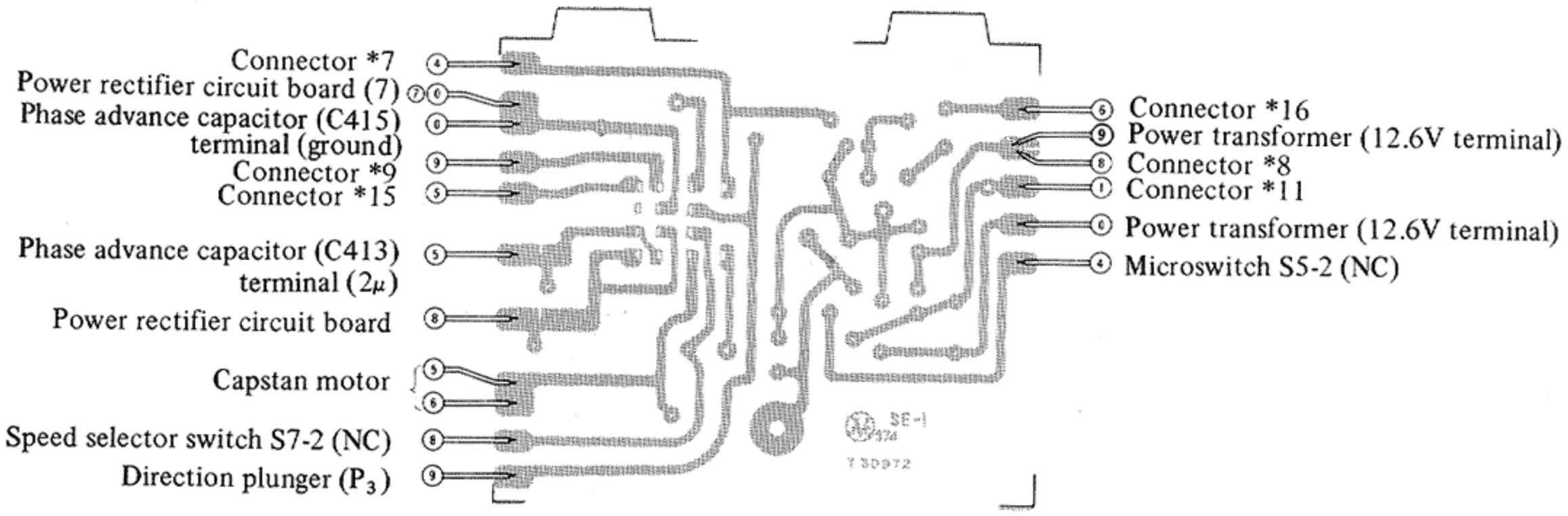
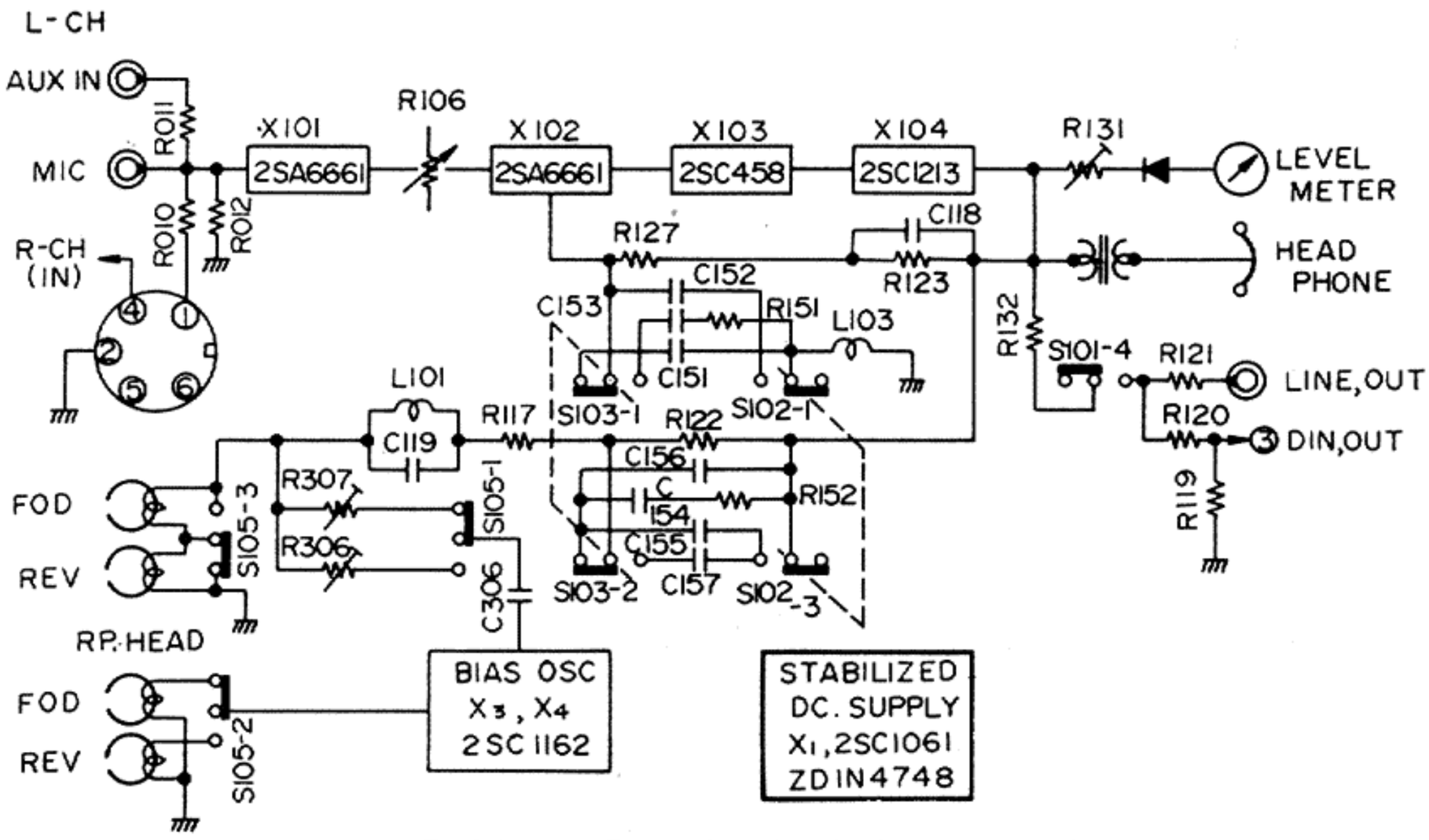


Fig. 39

BLOCK DIAGRAMS

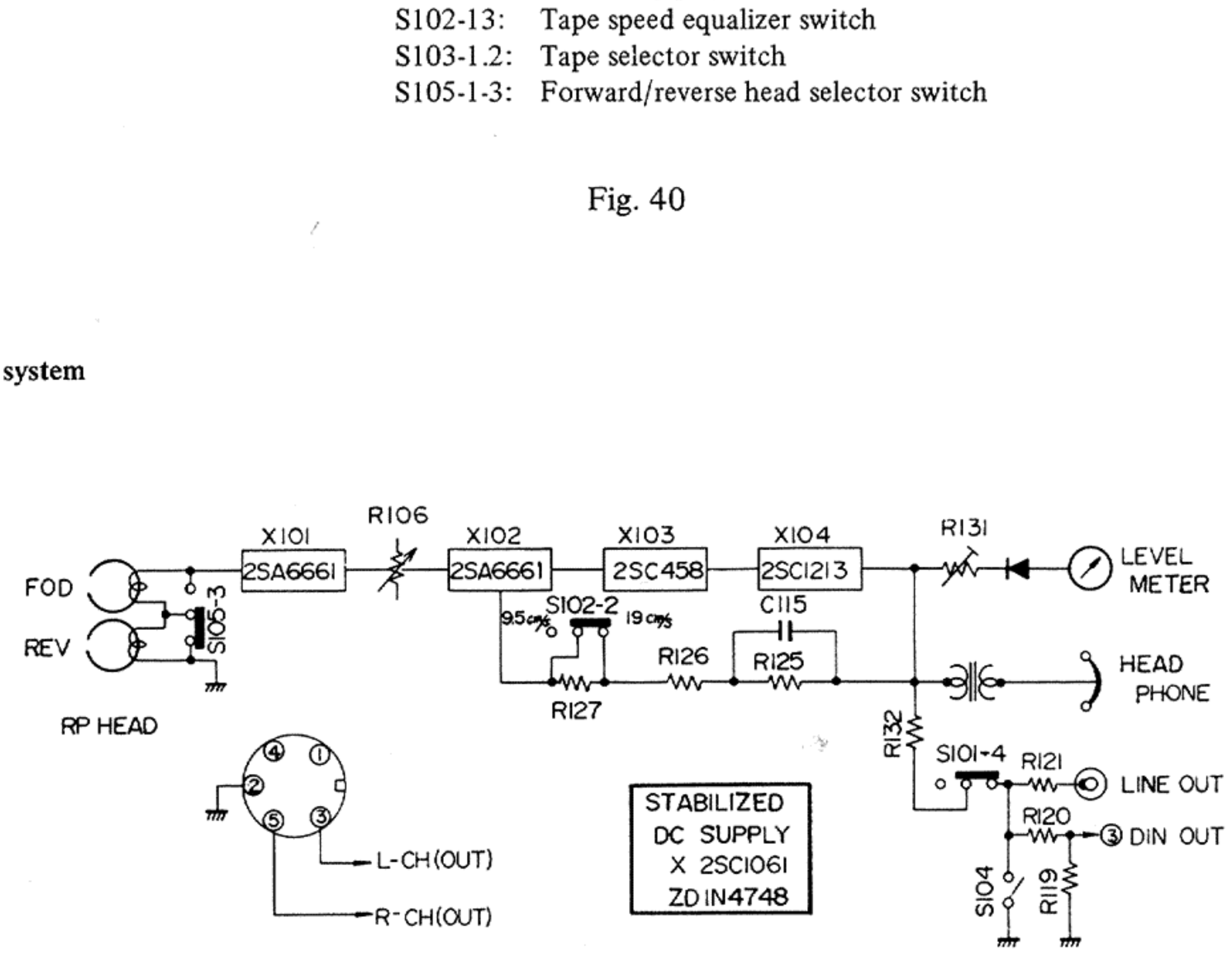
Recording system



R106: Recording level adjustment volume
R131: Level meter adjustment semi-fixed resistor
S101-4: Recording/playback selector switch
S102-13: Tape speed equalizer switch
S103-1.2: Tape selector switch
S105-1-3: Forward/reverse head selector switch

Fig. 40

Playback system



R106: Playback level adjustment volume
R131: Level meter adjustment semi-fixed resistor
S101-4: Recording/playback selector switch
S102-2: Tape speed equalizer switch
S104: Muting switch
S105-3: Forward/reverse head selector switch

Fig. 41

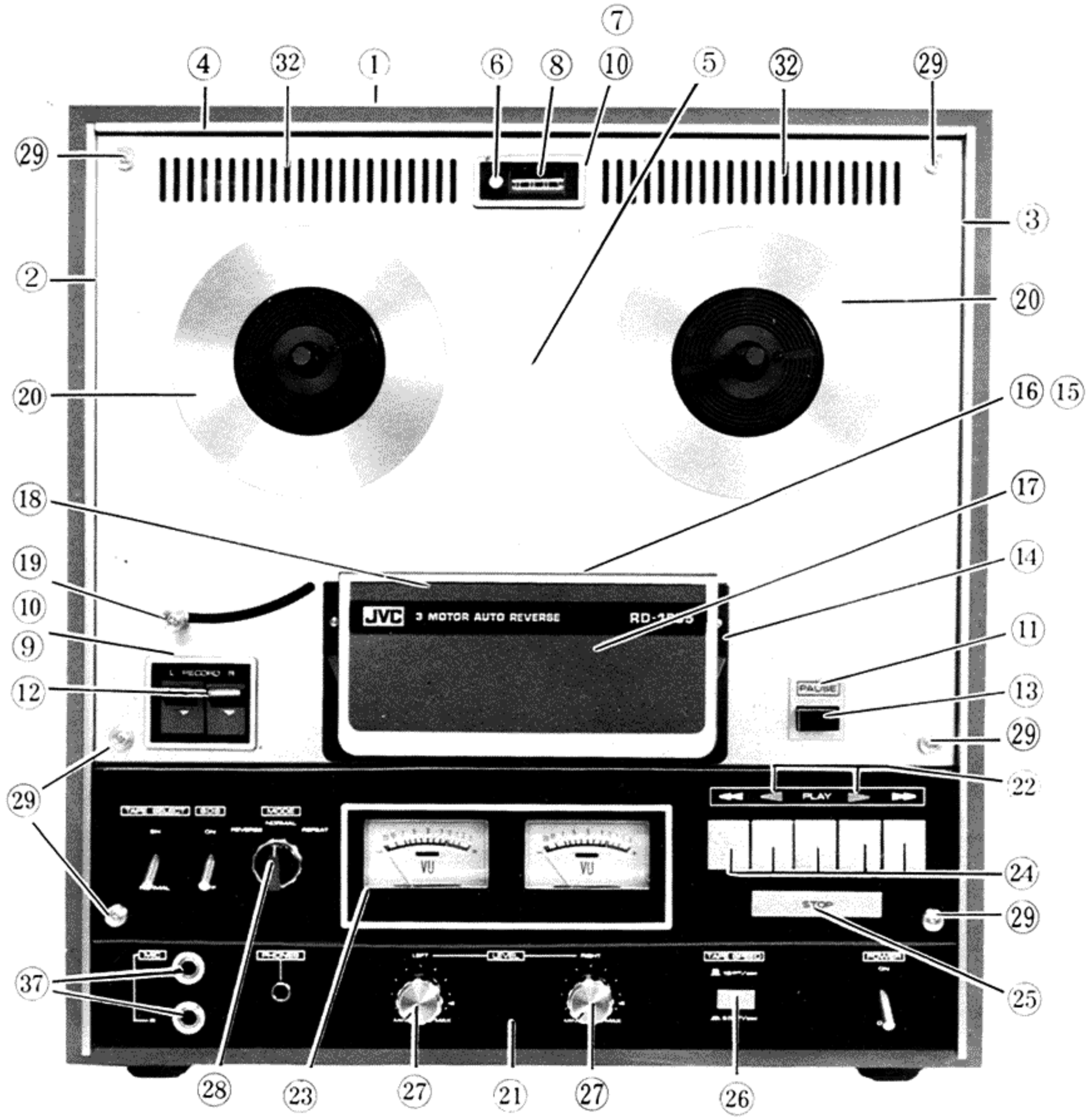


Fig. 42

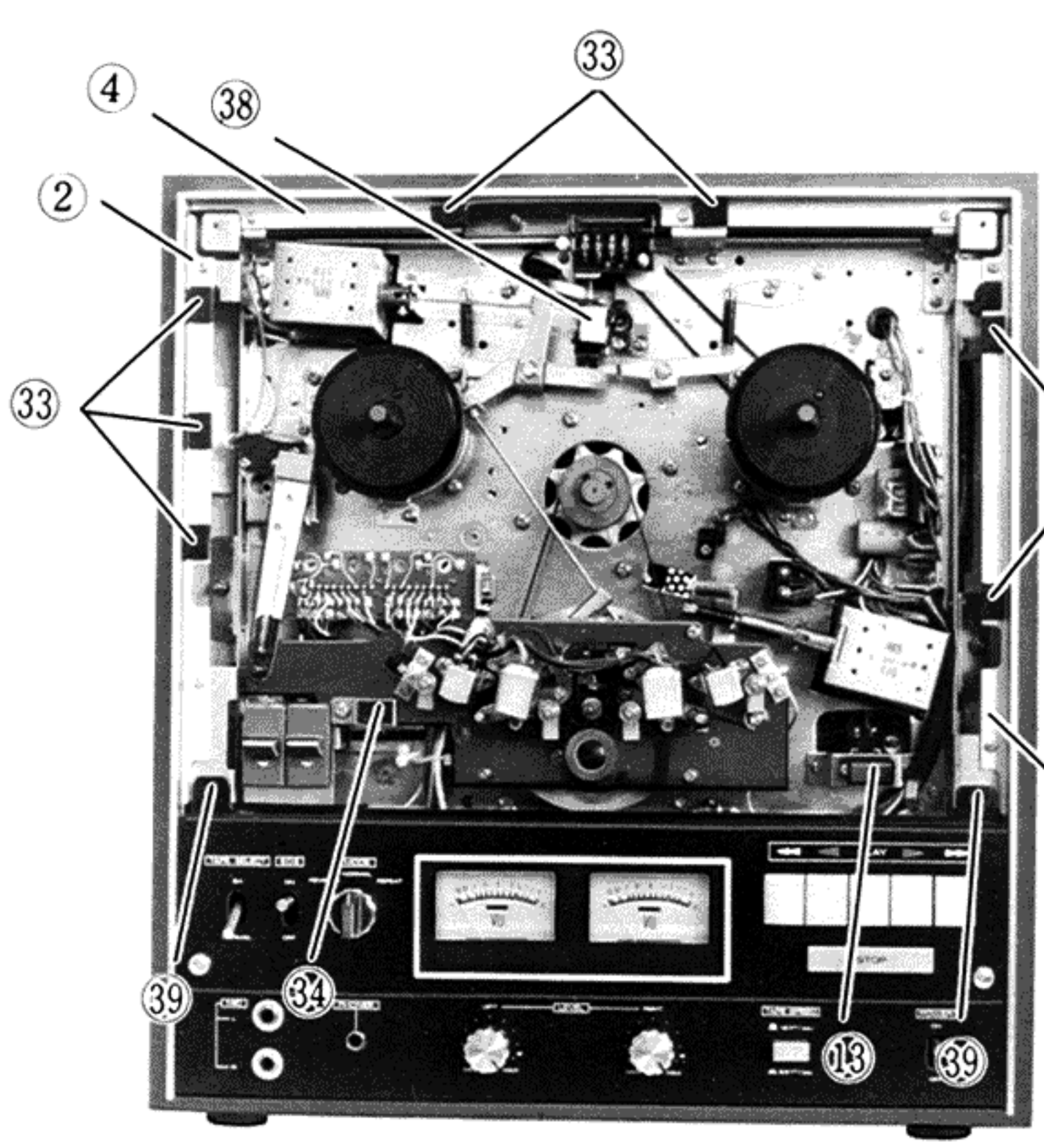
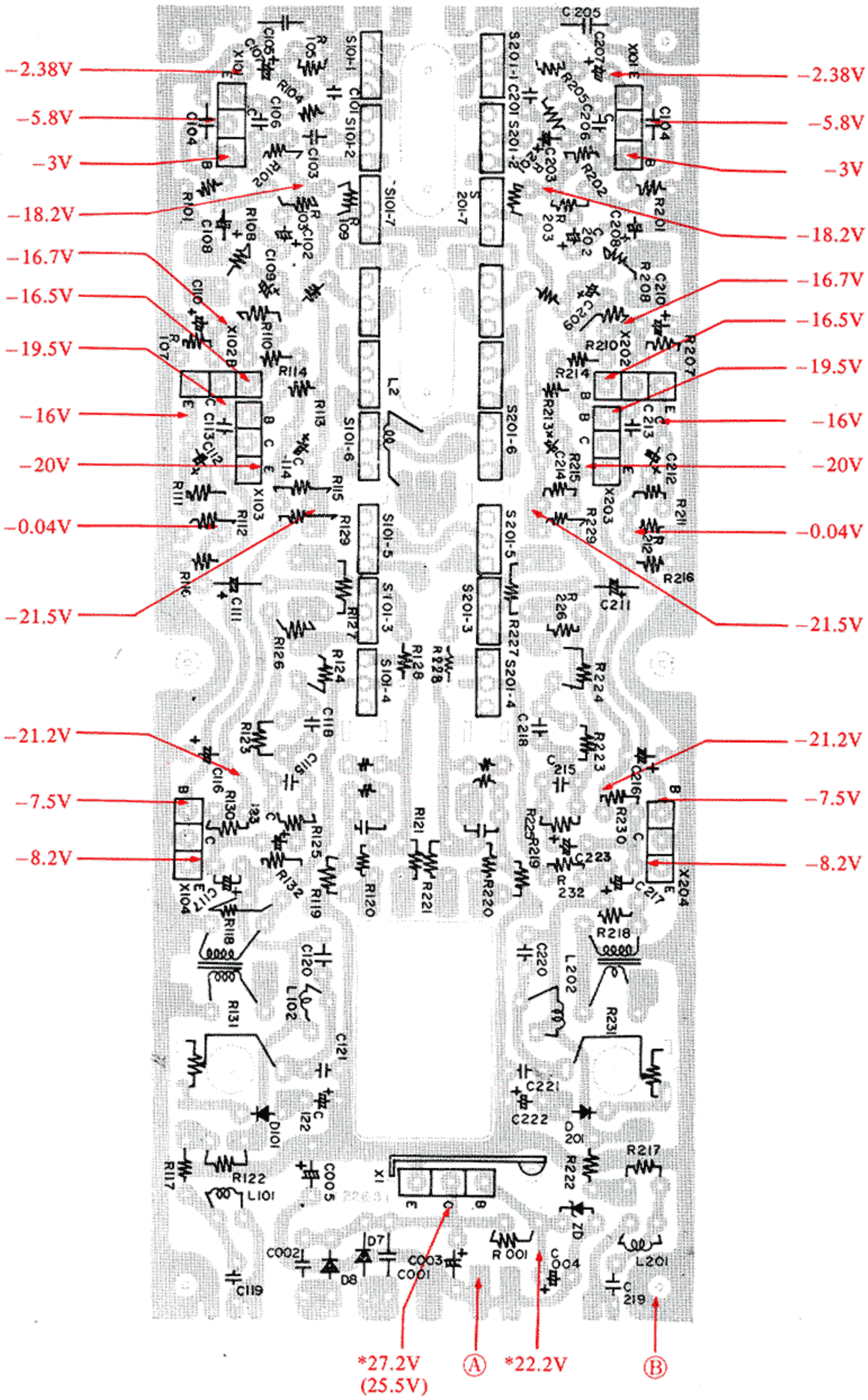


Fig. 43

Ident No.	Parts No.	Parts Name	Remarks	Q'ty
1	T11385-00A	Cabinet		1
2	T30854-001	Fitting (A)		1
3	T30855-001	Fitting (B)		1
4	T30800-001	Fitting (C)		1
5	T22644-001	Top panel		1
6	T45020-001	Counter button		1
7	T45031-001	Counter escutcheon		1
8	T41413-001	Counter lens		1
9	T45030-001	Recording ass'y escutcheon		1
10	T45665-001	Escutcheon nail	For fixing the escutcheon	4
11	T45028-001	Pause escutcheon		1
12	T42242-002	Record button		1
13	T41411-003	Switch button		1
14	T30845-001	Loading base		1
15	T30846-001	Head cover (A)	Screwed to the top panel	1
16	T30847-001	Head cover (B)		1
17	T30870-001	Head cover plate		1
18	T46723-001	Name plate		1
19	T45422-001	Actuater pin		1
20	T44343-002	Spin plate		2
21	T22643-001	Control panel		1
22	T45026-001	Direction eye		2
23	T30801-001	Meter escutcheon		1
24	T45021-001	Control button		5
25	T45022-001	Stop button		1
26	T45023-001	Switch button		1
27	T45034-001	Volume knob		2
28	E46021-001	Select knob		1
29	T46078-001	Special washer		6
30	T42986-005	Name plate	Serial No. plate	1
31	T5096-001	Wave washer		2
32	T45403-001	Ventillation grille	For top panel	2
33	T42275-001	Spacer	Stuck on fitting	6
34	T42275-003	Spacer	Stuck on panel spacer	1
35	F6130-001	Tube	As a lamp shade	2
36	T45272-001	Bracket	For meter escutcheon	1
37	T44585-001	Spacer	For jack	2
38	T45553-001	Panel cushion		1
39	T44589-001	Spacer		2
40	T44338-001	Bracket	For head cover	1
41	T44338-002	Bracket	For head cover	1
42	PSE2012	Spring pin	For head cover	2
43	T46080-001	Blind sheet	For control panel	1
44	T41897-001	Nail	For T42986-005	2
45	T44772-001	Spacer	For lever switch	3
46	T44337-001	Spring	For head cover	1
47	T44337-002	Spring	For head cover	1
48	LPSP3006ZS	Spring		10
49	SHBP3010NS	Screw		1
50	SHBP3008NS	Screw		4
51	SHBP3016NS	Screw		2
52	SBSB3008Z	Tap screw	For head cover	3
53	SPSP3010ZS	Screw		2
54	SPSP2004Z	Screw		2
55	NTB3000S	Nut		5
56	NTB2000	Nut		2
57	NNS4000ZS	Nut		4
58	Q03093-115	Washer		6
59	WSB3000N	Washer		4
60	WNB4000N	Washer		4
61	WLS4000	Lock washer		

1. Amp printed circuit board



NOTE:
Voltage marked with "*" are based or POINT Ⓐ.
The others are based or POINT Ⓑ.
( ): at "REC".

Fig. 44

Ident No.	Part No.	Part Name	Remarks	Q'ty
	T22631-001	Amp. printed circuit board		1
$R_{107, 125, 207, 225}$	Q04802-330K	Carbon resistor		4
$R_{102, 202}$	Q04802-470K	Carbon resistor		2
$R_{135, 235}$	Q04802-180K	Carbon resistor		2
$R_{111, 133, 211, 233}$	Q04802-150K	Carbon resistor		4
$R_{101, 201}$	Q04802-100K	Carbon resistor		2
$R_{114, 123, 214, 223}$	Q04802-68K	Carbon resistor		4
$R_{124, 224,}$	Q04802-56K	Carbon resistor		2
$R_{110, 210}$	Q04802-47K	Carbon resistor		2
$R_{103, 108, 113, 122}$	Q04802-22K	Carbon resistor		8
$203, 208, 213, 222$				
$R_{134, 234,}$	Q04802-10K	Carbon resistor		2
$R_{109, 209}$	Q04802-5.6K	Carbon resistor		2
$R_{104, 116, 204, 216}$	Q04802-3.9K	Carbon resistor		4
$R_{126, 226}$	Q04802-3.3K	Carbon resistor		2
$R_{117, 217}$	Q04802-2.2K	Carbon resistor		2
$R_{127,,227}$	Q04802-1.8K	Carbon resistor		2
$R_{115, 215}$	Q04802-820	Carbon resistor		2
$R_{130, 230}$	Q04802-560	Carbon resistor		2
$R_{112, 212}$	Q04802-330	Carbon resistor		2
$R_{105, 205}$	Q04802-270	Carbon resistor		2
$R_{132, 232}$	Q04802-10	Carbon resistor		2
$R_{118, 218}$	Q04802-47	Carbon resistor		2
$R_{136, 236}$	Q04800-100K	Carbon resistor		2
R_{001}	Q04090-820	Composition resistor		1
$R_{129, 229}$	Q04090-22	Composition resistor		2
C_{003}	Q03138-500	Electrolytic capacitor		1
C_{005}	Q03110-1000	Electrolytic capacitor		1
$C_{116, 216}$	Q03110-200	Electrolytic capacitor		2
C_{004}	Q03110-470	Electrolytic capacitor		1
$C_{102, 202}$	Q03110-30	Electrolytic capacitor		2
$C_{110, 112, 210, 212}$	Q03110-10	Electrolytic capacitor		4
$C_{125, 225}$	Q03110-4.7	Electrolytic capacitor		2
$C_{117, 217}$	Q03108-30	Electrolytic capacitor		2
$C_{103, 111, 123, 203, 211, 223}$	Q03108-10	Electrolytic capacitor		6
$C_{122, 222}$	Q03108-3	Electrolytic capacitor		2
$C_{114, 214}$	Q03104-500	Electrolytic capacitor		2
$C_{107, 207}$	Q03104-30	Electrolytic capacitor		2
$C_{101, 106, 121, 201, 206, 221}$	Q44353-470	Ceramic capacitor		6
$C_{113, 213}$	Q04305-33	Ceramic capacitor		2
$C_{001, 002}$	Q42309-02	Ceramic capacitor		2
$C_{105, 205}$	Q03287-361	Film mica capacitor		2
$C_{104, 119, 120, 204, 219, 220}$	Q03287-151	Film mica capacitor		6
$C_{108, 109, 208, 209}$	Q03244-104	Mylar capacitor		4
$C_{118, 218}$	Q03244-333	Mylar capacitor		2
$C_{115, 215}$	Q03244-153	Mylar capacitor		2
$C_{124, 224}$	Q03244-682	Mylar capacitor		2
$L_{101, 102, 201, 202}$	T40442-001	Inductor		4
L_2	T30606-001	Inductor		1
	Q03778-002	Slide switch		2
	T30300-048	Spring		2
	T44944-001	Headphone transformer		2
$R_{131, 231}$	Q04844-006	Variable resistor		2
$X_{101, 102, 201, 202}$	2SA6661	Transistor (R, S)		4
$X_{103, 203}$	2SC458	Transistor (D)		2
$X_{104, 204}$	2SC1213	Transistor (C)		2
X_1	2SC1061	Transistor (A, B, C)		1
$D_{101, 201}$	1N34A	Diode		2
	1N4748	Zener diode		1
$D_{7, 8}$	T30155-001	Silicon diode	(10D1)	2
	T44945-001	Heat sink		1

2. Oscillator printed circuit board

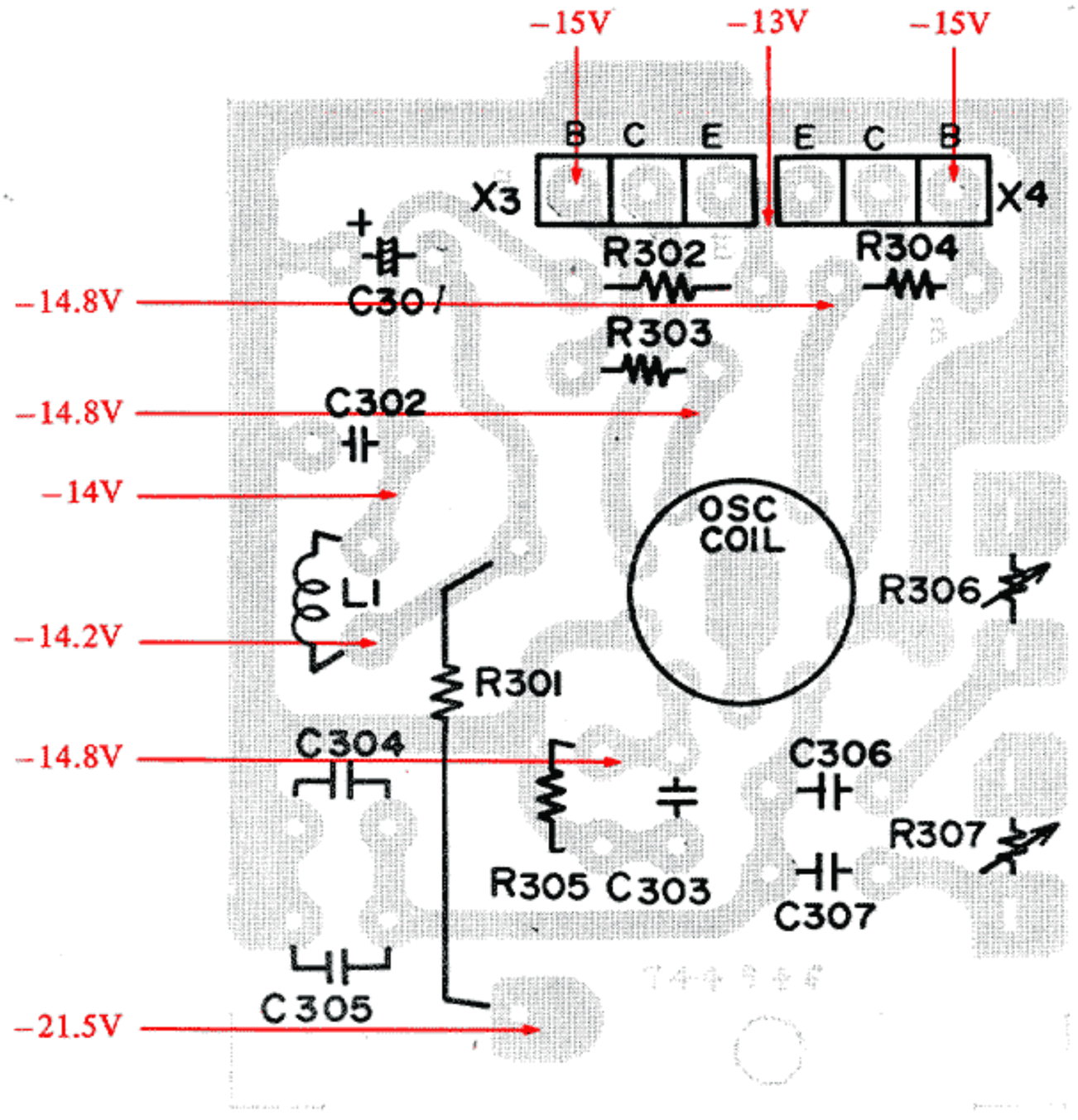


Fig. 45

3. Equalizer printed circuit board

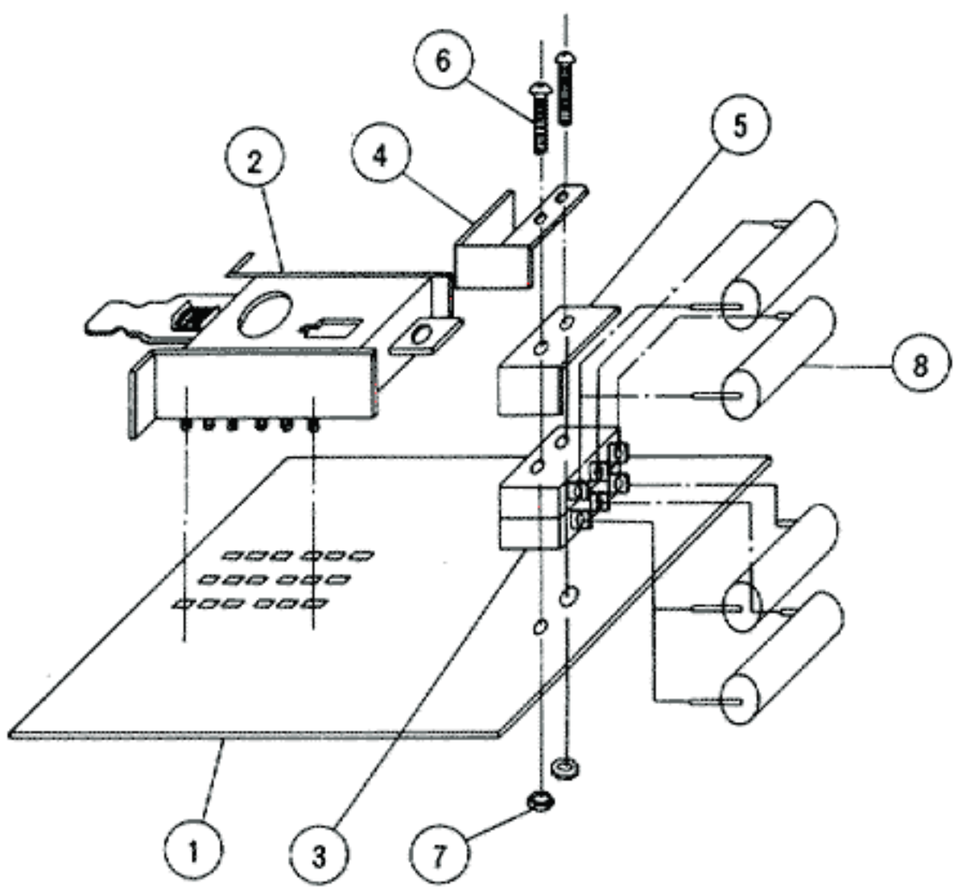


Fig. 46-1

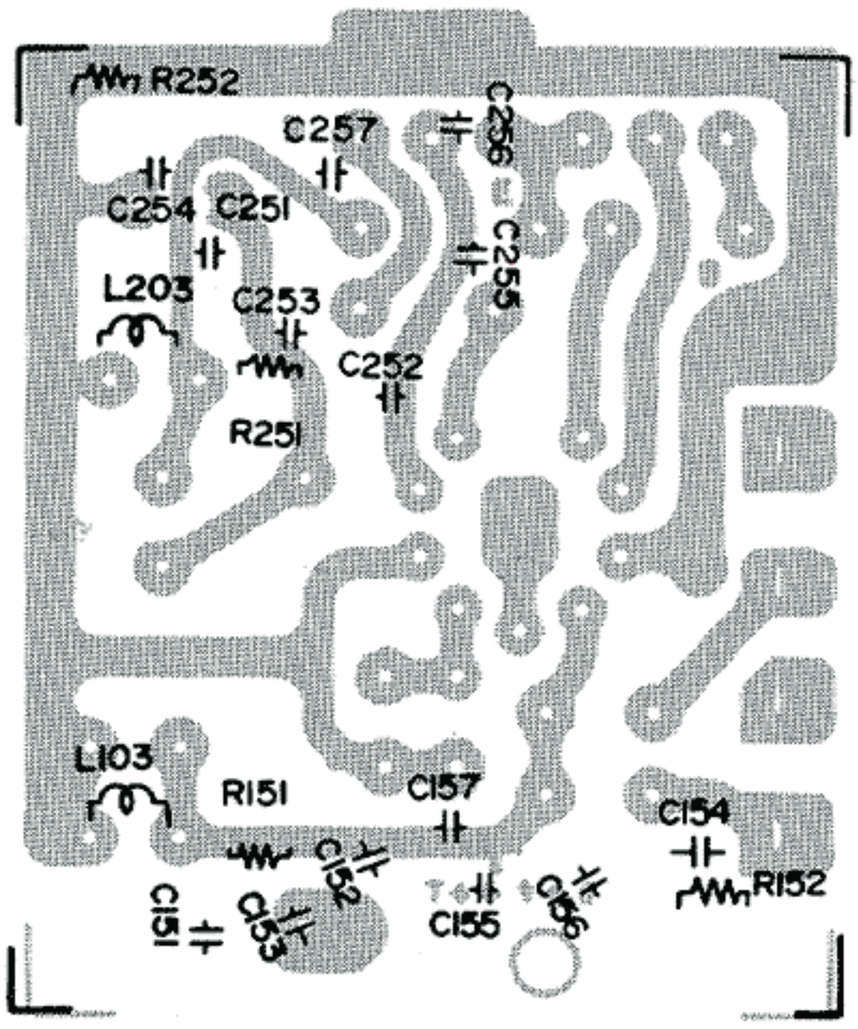


Fig. 46-2

2. Oscillator printed circuit board

Ident No.	Part No.	Part Name	Remarks	Q'ty
	T44946-001	Oscillator printed circuit board		1
	T30554-001	Oscillator coil		1
R_{305}	Q04802-5.6K	Carbon resistor		1
$R_{303, 304}$	Q04802-220	Carbon resistor		2
R_{302}	Q04802-10	Carbon resistor		1
R_{301}	Q04781-68	Coil resistor		1
$C_{301,}$	Q03108-200	Electrolytic capacitor		1
$C_{302, 303}$	Q04062-01	Ceramic capacitor		2
C_{304}	Q44353-680	Ceramic capacitor		1
C_{305}	Q03287-101	Film mica capacitor		1
$C_{306, 307}$	Q03287-361	Film mica capacitor		2
X_3, X_4	2SC-1162	Transistor (B, C)		2
L_1	T30606-002	Inductor		1

3. Equalizer printed circuit board

Ident No.	Part No.	Part Name	Remarks	Q'ty
1	T45150-001	Equalizer printed circuit board		1
$L_{103, 203}$	T40442-005	Inductor		2
$R_{151, 251}$	Q04802-22	Carbon resistor		2
$R_{152, 252}$	Q04802-68K	Carbon resistor		2
$Q_{151, 251}$	Q03244-333	Mylar capacitor		2
$C_{152, 153, 252, 253}$	Q03244-223	Mylar capacitor		4
$C_{155, 255}$	Q03244-152	Mylar capacitor		2
$C_{154, 156, 254, 256}$	Q44353-680	Ceramic capacitor		4
$C_{157, 257}$	Q44353-560	Ceramic capacitor		2
2	Q02700-001	Push switch		1
3	FP4114-001	Micro switch		2
4	T45241-001	Switch actuater		1
5	T45432-001	Spacer		1
6	SPSP2020Z	Screw		2
7	NTB2000	Nut		2
8	Q03206-473	O.F.T. capacitor		4

4. Pin jack printed circuit board

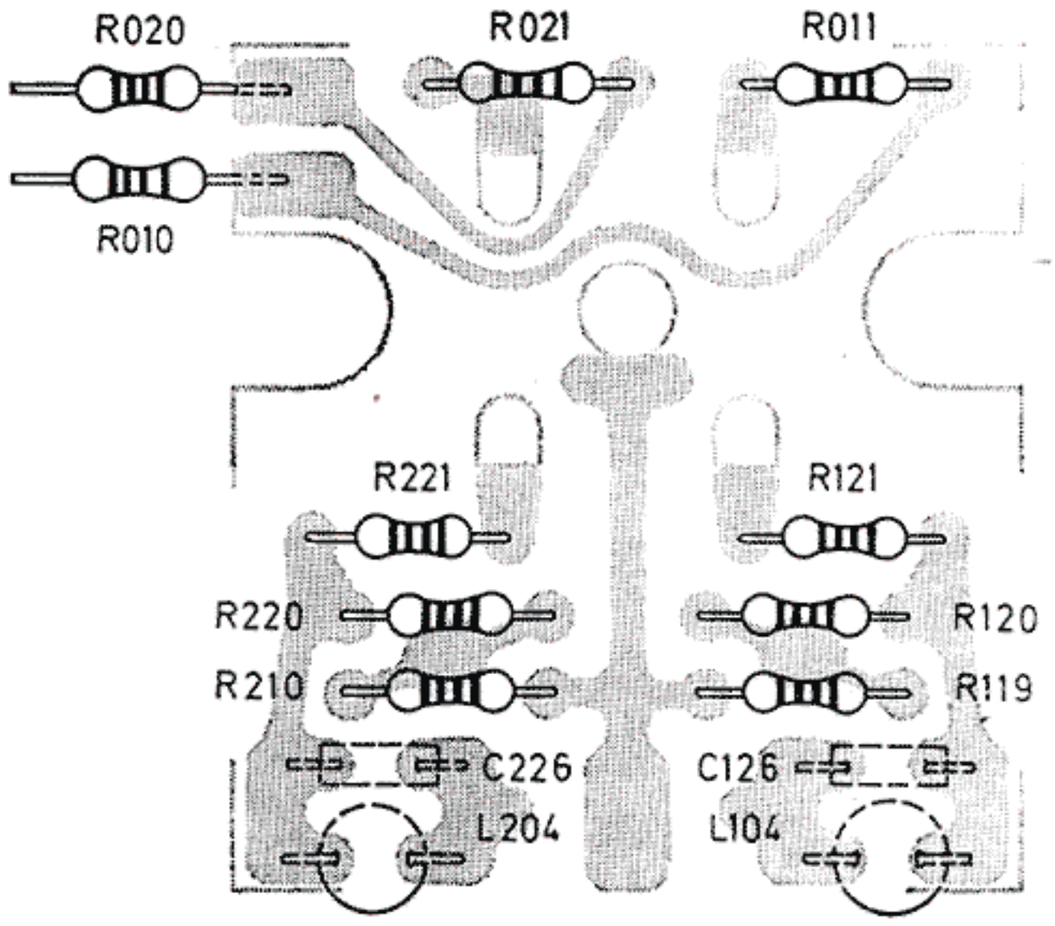


Fig. 47

5. Relay printed circuit board

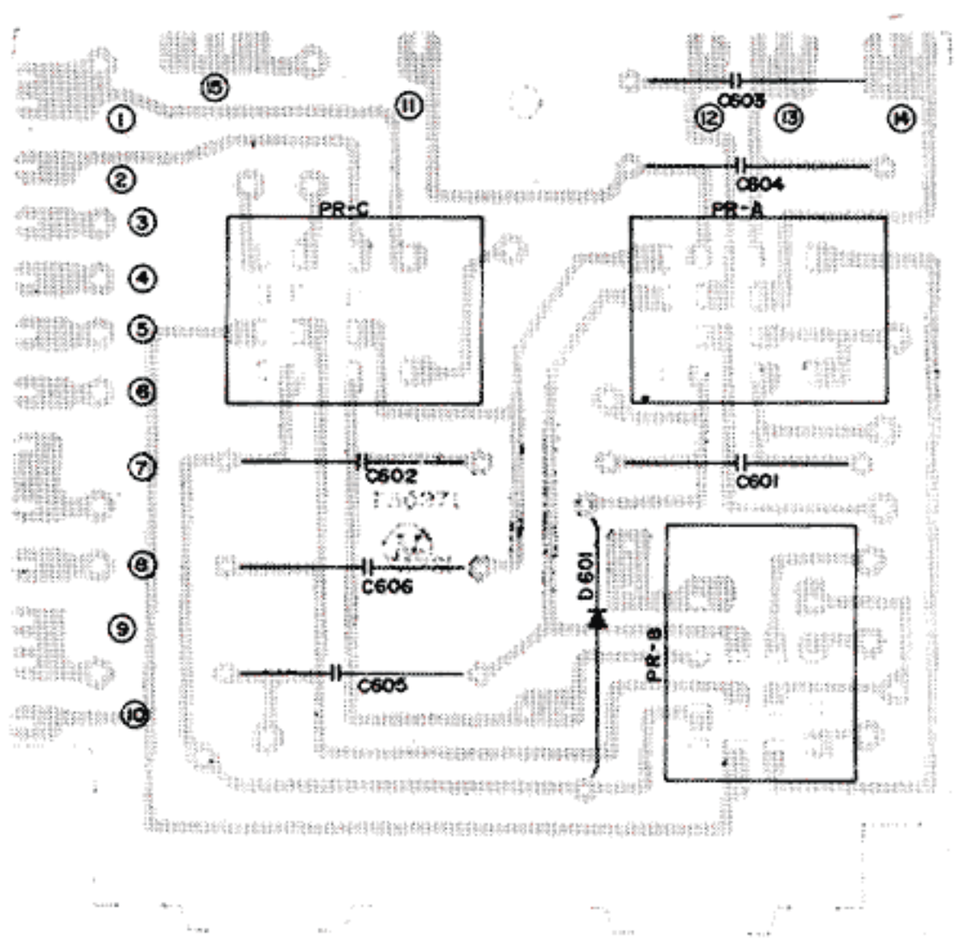


Fig. 48

6. Direction selector printed circuit board

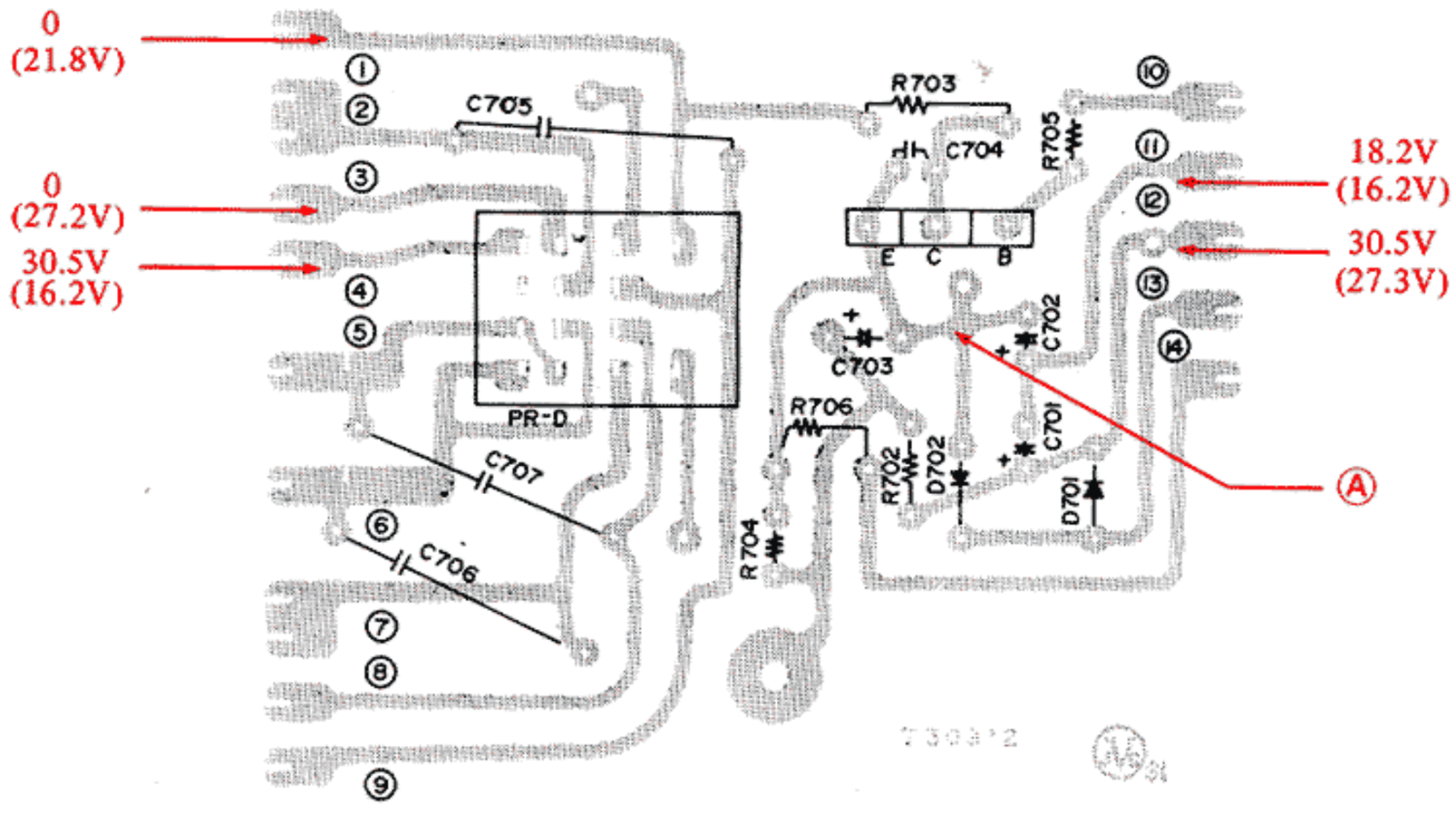


Fig. 49

4. Pin jack printed circuit board

Ident No.	Part No.	Part Name	Remarks	Q'ty
	T46092-001	Pin jack printed circuit board		1
$L_{104, 204}$	T40442-001	Inductor		2
$R_{120, 121, 220, 221}$	Q04800-3.3K	Carbon resistor		4
$R_{119, 219}$	Q04800-6.8K	Carbon resistor		2
$R_{010, 020}$	Q04800-18K	Carbon resistor		2
$R_{011, 021}$	Q04800-470K	Carbon resistor		2
$C_{126, 226}$	Q03287-151	Film mica capacitor		2

5. Relay printed circuit board

Ident No.	Part No.	Part Name	Remarks	Q'ty
	T30971-001	Relay printed circuit board		1
PR-A.B.C	T30863-001	Power relay		3
D601	T30155-002	Diode	(10D10)	1
$C_{601, 602, 603, 604}$ $_{605, 606}$	Q03206-473	O.F.T. capacitor		6

6. Direction selector printed circuit board

Ident No.	Part No.	Part Name	Remarks	Q'ty
	T30972-001	Direction selector printed circuit board		1
PR-D	T30863-001	Power relay		1
X_{701}	2SC1162	Transistor		1
$D_{701, 702}$	T30155-001	Diode		2
R_{703}	Q04781-10	Coil resistor		1
R_{706}	Q04802-100	Carbon resistor		1
R_{705}	Q04802-10K	Carbon resistor		1
R_{702}	Q04802-27K	Carbon resistor		1
R_{704}	Q04802-220K	Carbon resistor		1
$C_{701, 702}$	Q03110-100	Electrolytic capacitor		2
C_{703}	Q03138-470	Electrolytic capacitor		1
C_{704}	Q03244-103	Mylar capacitor		1
$C_{705, 706, 707}$	Q03206-473	O.F.T. capacitor		3

7. Operation printed circuit board

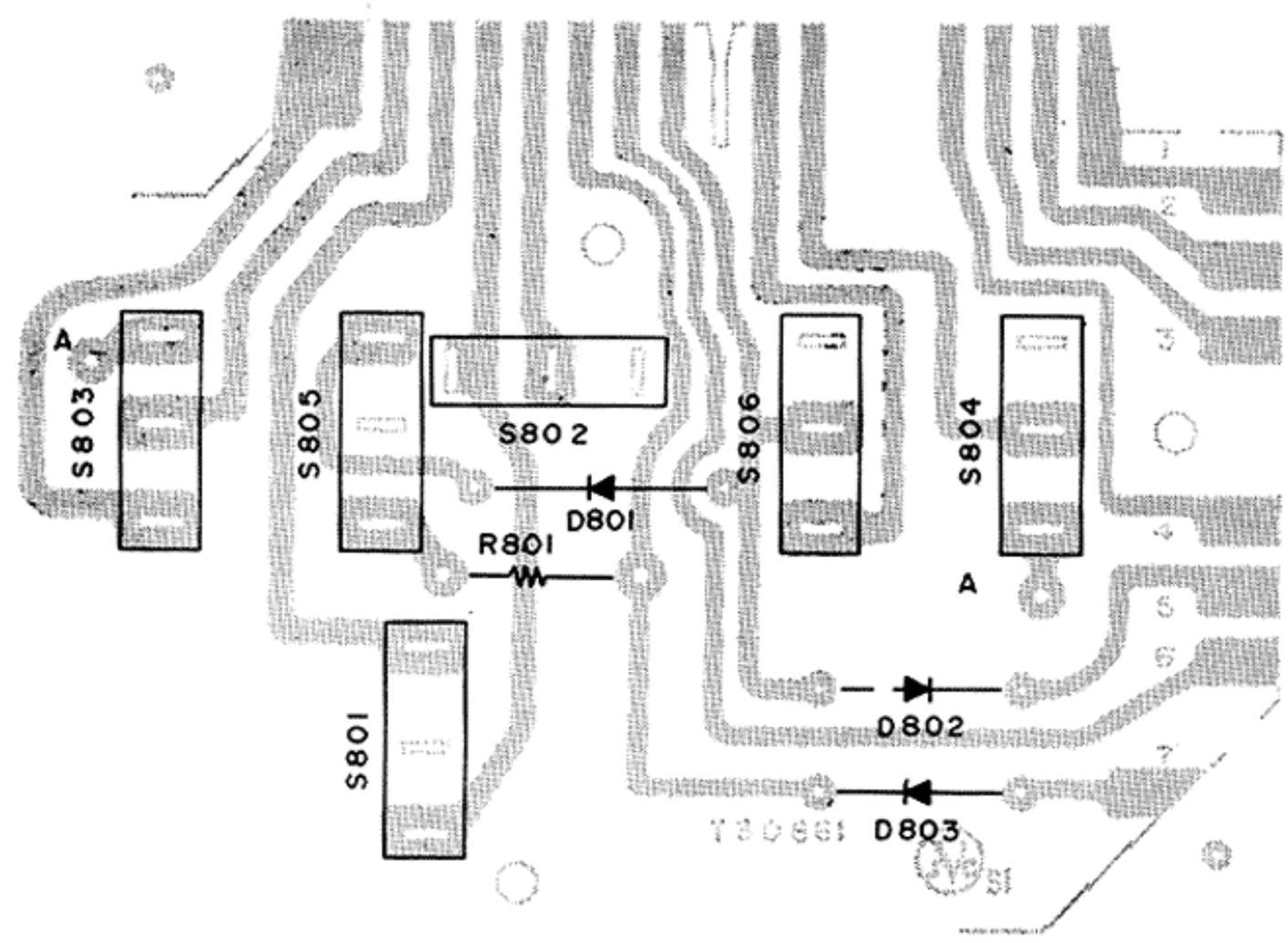


Fig. 50

8. Power rectifier printed circuit board

Fig. 51

9. Head selector printed circuit board

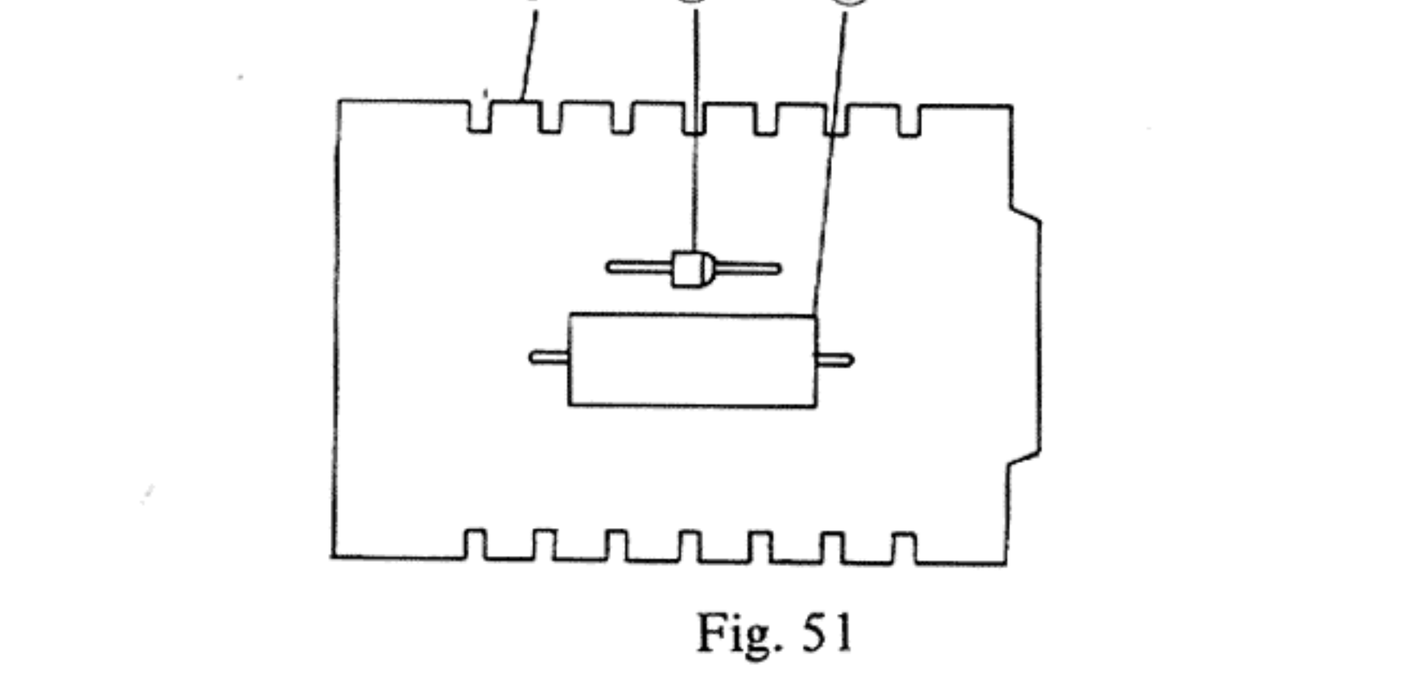


Fig. 52

10. Electromagnetic brake printed circuit board

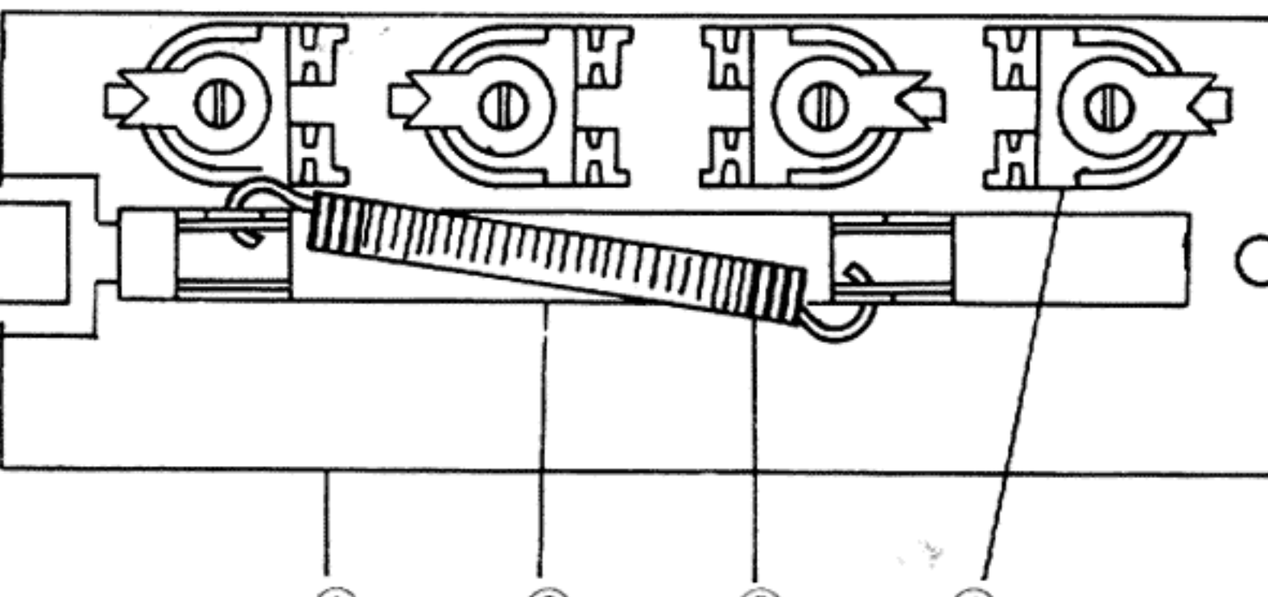


Fig. 53

7. Operation printed circuit board

Ident No.	Part No.	Part Name	Remarks	Q'ty
	T30861-001	Operation printed circuit board		1
$S_{801} \sim S_{806}$	FP4114-001	Micro switch		6
$D_{801} \sim D_{803}$	T30155-001	Diode		3
R_{801}	Q04781-150	Coil resistor		1
C_{801}	Q42309-02	Fixed ceramic capacitor		1

8. Power rectifier printed circuit board

Ident No.	Part No.	Part Name	Remarks	Q'ty
1	T45572-001	Power rectifier printed circuit board		1
2	T30155-002	Diode		1
3	Q03206-473	O.F.T. capacitor		1

9. Head selector printed circuit board

Ident No.	Part No.	Part Name	Remarks	Q'ty
1	T45192-001	Head selector printed circuit board		1
2	Q03777-001	Slide switch		1
3	T30300-037	Spring		1
4	Q04849-007	Variable resistor		4

10. Electromagnetic brake printed circuit board

Ident No.	Part No.	Part Name	Remarks	Q'ty
	T45656-001	Electromagnetic brake printed circuit board		1
PR-E	T31064-001	Power relay		1
$D_{901, 902}$	T30155-001	Diode		2
C_{901}	Q03138-470	Electrolytic capacitor		1
C_{419}	Q03206-473	O.F.T. capacitor		1

20. Other electrical parts

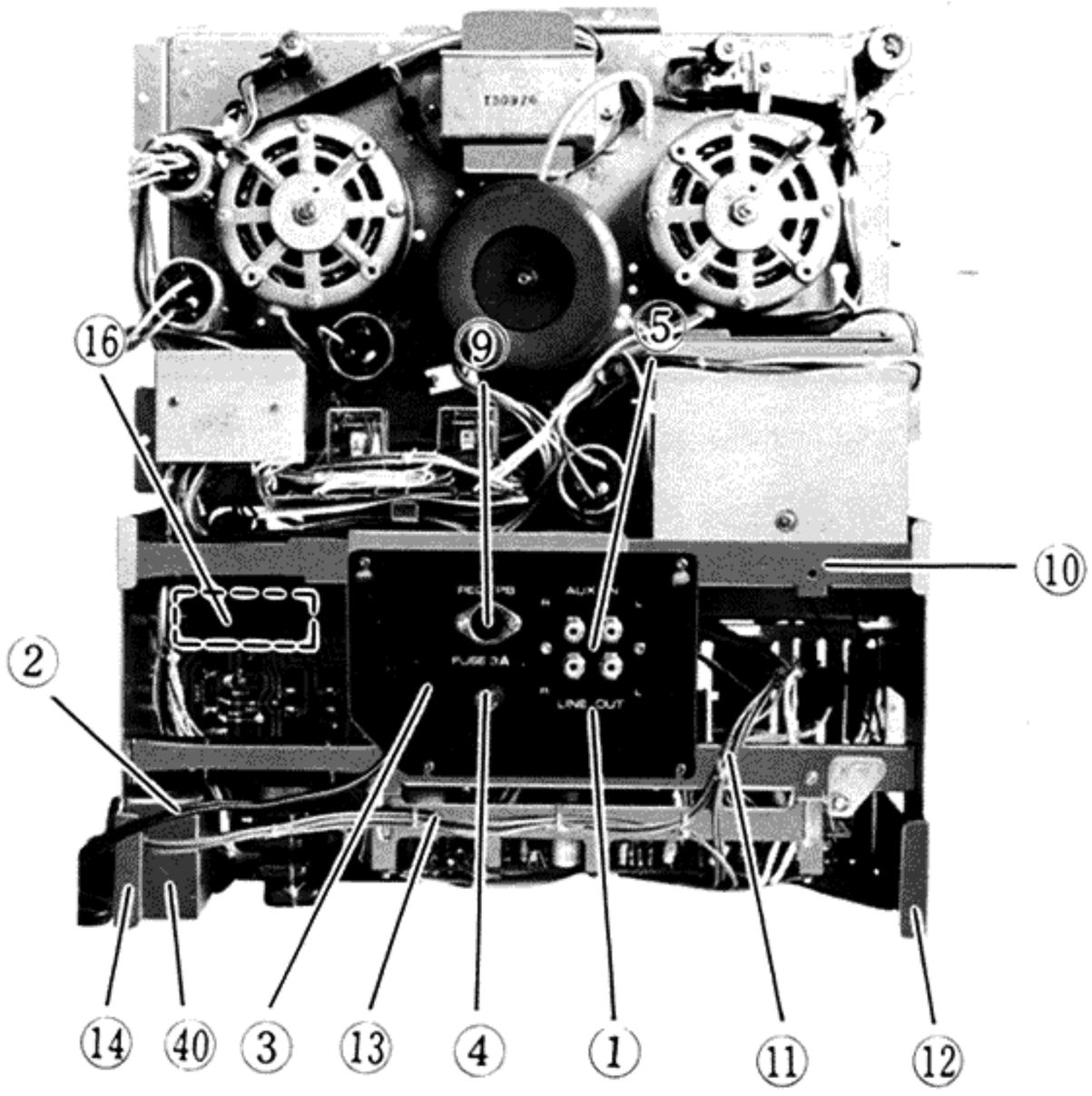


Fig. 54-1

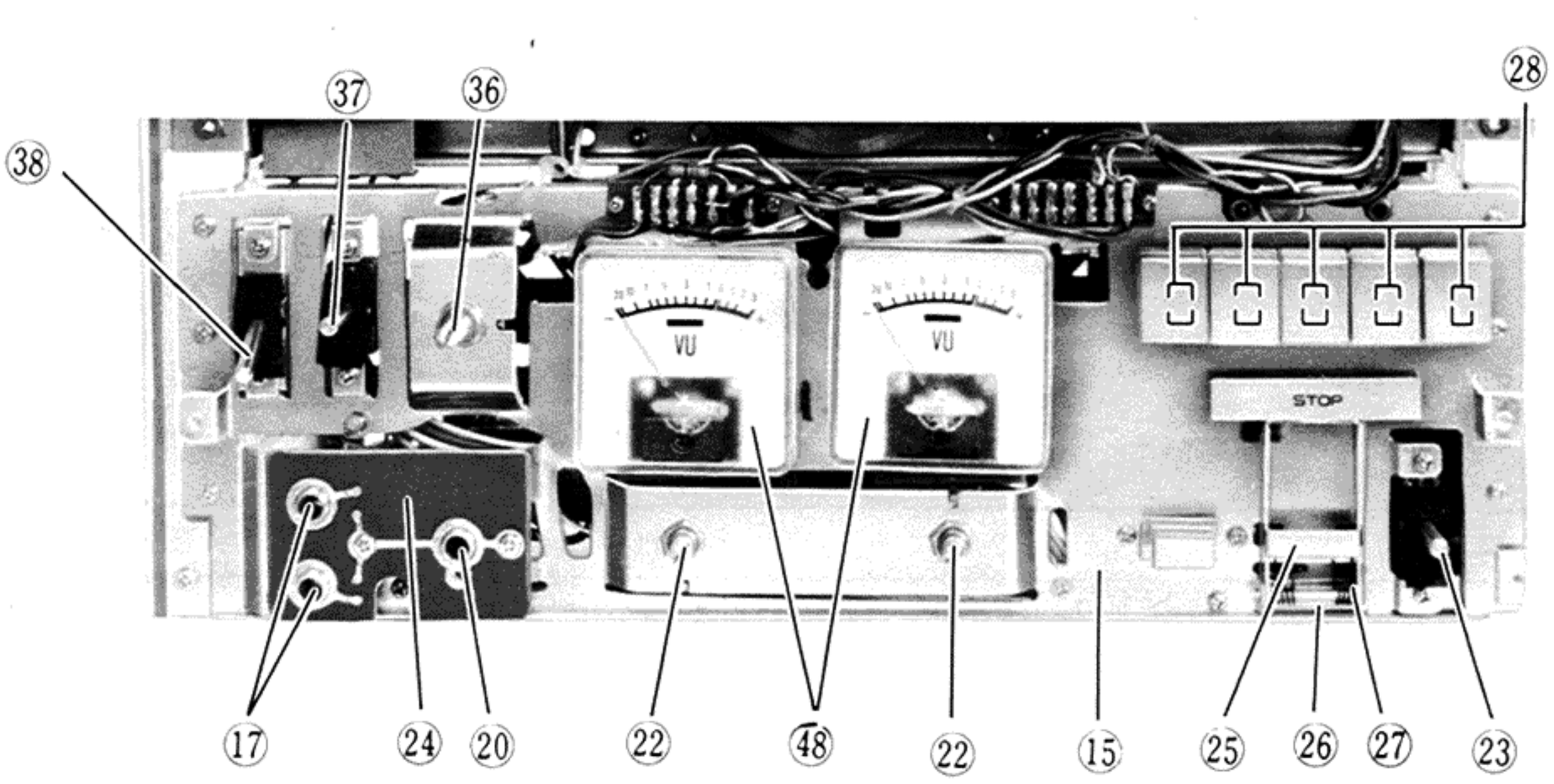


Fig. 54-2

Fig. 54-3

Ident No.	Parts No.	Parts Name	Remarks	Q'ty
1	T30925-002	Jack board bracket		1
2	Q03056-14	Power cord		1
3	T41336-001	Cord clamp		1
4	QMG0201-002	Fuse holder ass'y		1
5	T30233-001	Pin jack ass'y		1
6	Q03007-053	Lug strip ass'y		2
7	Q04800-220K	Carbon resistor	R_{010}, R_{020}	2
8	Q04800-22K	Carbon resistor	R_{011}, R_{021}	2
9	Q03967-001	DIN socket ass'y		1
10	T45427-00A	Connector ass'y		1
11	T30826-001	Bracket connector		1
12	T30824-001	Side bracket (L)		1
13	T30924-001	Circuit board hanger (2)		1
14	T30825-001	Side bracket		1
15	T22663-00A	Control deck ass'y		1
16	T45063 001	Control button bracket		1
17	Q03961-001	Jack ass'y	For MIC jack	1
18	Q04800-560	Carbon resistor	R_{012}, R_{022}	2
19	Q04062-01	Ceramic capacitor	C_{010}, C_{020}	2
20	Q03958-001	Jack ass'y	For headphone jack	1
21	Q04800-10	Carbon resistor	R_{013}, R_{023}	2
22	Q4067-015	Variable resistor		2
23	QSU10	Lever switch		1
24	T45131-001	Jack board		1
25	T45066-001	Stop button arm		1
26	T45029-001	Stop button shaft		1
27	T45065-001	Stop button spring		1
28	T45064-001	Control button bar	Direction indicator	5
29	F6040-001	Pilot lamp		2
30	53492-001	Rubber bushing		2
31	T46386-001	Deck angle member		1
32	T44943-001	Cushion		4
33	T44430-001	Pilot lamp		5
34	53492-001	Rubber bushing		5
35	T46387-001	Deck angle member		1
36	Q03701-011	Rotary switch	MODE	1
37	Q03082-003	Lever switch	SOS	1
38	Q30187-001	Lever switch		1
39	T30854-001	Circuit board hanger		1
40	T30355-001	Shield cover		1
41	T45432-001	Spacer		1
42	T30911-00A	Leaf switch		1
43	T45025-001	Shaft		1
44	T45024-001	Record rod		1
45	T45024-002	Record rod		1
46	T45105-001	Record lever (R)		1
47	T45106-001	Record lever (L)		1
48	T31122-001	VU meter		2
49	T45609-001	VU meter spring		2
50	T30301-005	Spring	For record lever	2
51	REE4000	E-ring		2
52	NTB2000	Nut		8
53	Q03093-610	Washer		2
54	WNS2600N	Washer		4

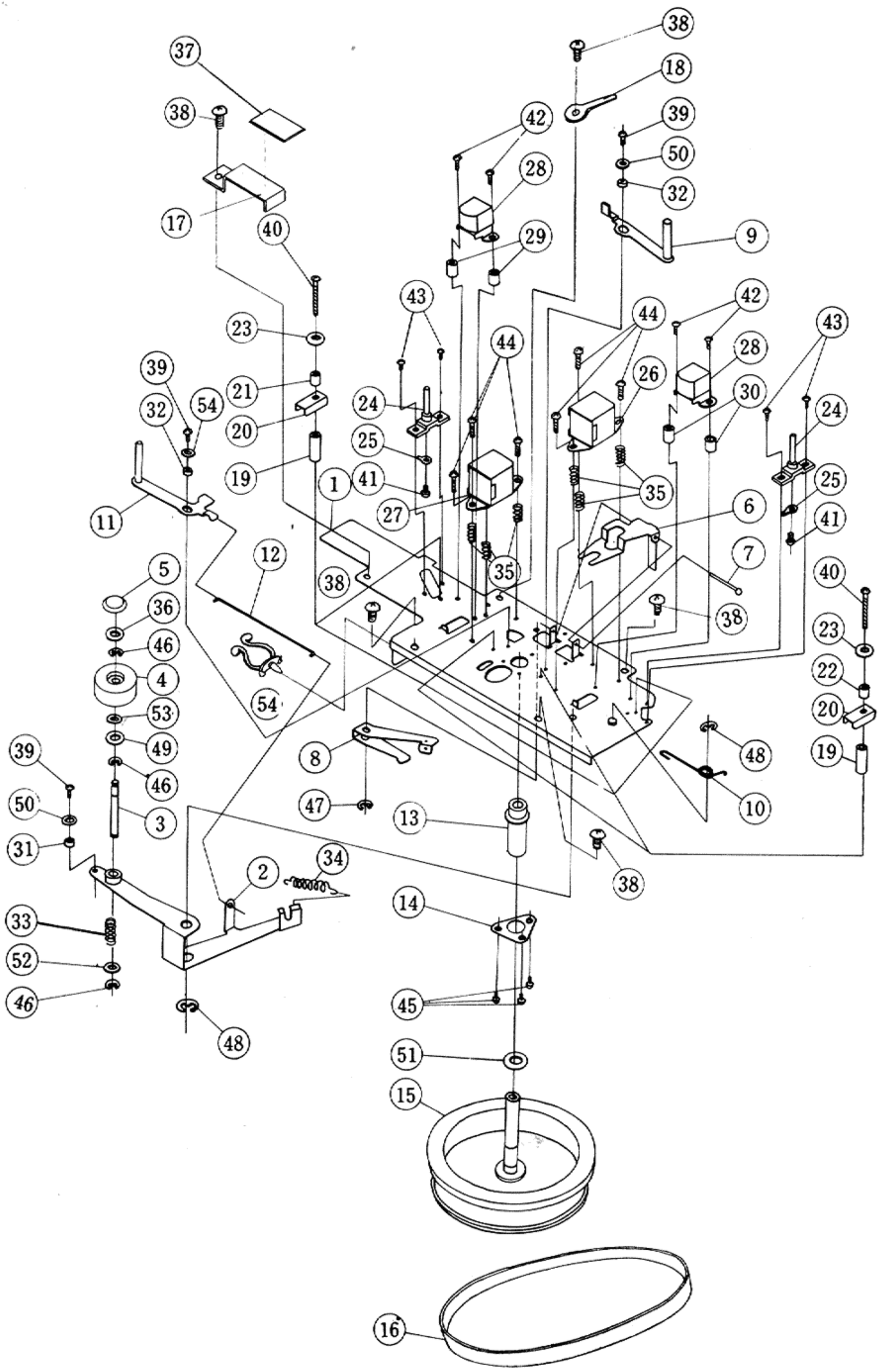

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Fig. 55

Ident No.	Parts No.	Parts Name	Remarks	Q'ty
1	T30766 001	Mount plate ass'y		1
2	T44854-00A	Pinch roller arm ass'y		1
3	T43443-001	Pinch roller shaft		1
4	T42832-00A	Pinch roller ass'y		1
5	T42834-001	Pinch roller cap		1
6	T44836-001	Elevation arm		1
7	T42830-001	Guide rod		1
8	T44837-001	Elevation lever		1
9	T44842-00A	Shifter ass'y		1
10	T44855-001	Shifter spring		1
11	T44843-00A	Shifter ass'y		1
12	T44844-001	Shifter wire		
13	T42795-001	Captor metal		1
14	T42796-001	Clamp		1
15	T44846-00A	Flywheel ass'y		1
16	T44848-001	Drive belt		1
17	T46081-001	Panel spacer		1
18	S-4709-001	Wire clamp		1
19	T44856-001	Tape guide collar		2
20	T45589-001	Guide plate		8
21	T45590-001	Tape guide		2
22	T45590-002	Tape guide		2
23	T45593 001	Guide cap		4
24	T44864-00A	Sensing post ass'y		2
25	50242-005	Terminal lug		2
26	T400099-28A	Record/play head ass'y		1
27	T400099-28B	Record/play head ass'y		1
28	T40052-00A	Erase head ass'y		2
29	T44857-001	Collar	For erase head	2
30	T44857-002	Collar	For erase head	2
31	T30302-008	Collar	For pinch roller arm	1
32	T30302-025	Collar	For shifter	2
33	T30301-019	Spring	For pinch roller shaft	1
34	T30300-024	Spring	For pinch roller arm	1
35	T7159-001	Spring	For record/play head	6
36	T5312-001	Ring	For pinch roller	1
37	T42275-003	Spacer	For panel spacer	1
38	LPSP4006ZS	Screw		5
39	LPSP3006ZS	Screw		6
40	SPSP3030ZS	Screw		4
41	SPSP2604Z	Screw		2
42	SPSP2610Z	Screw		4
43	SPSP3004ZS	Screw		4
44	SSSP3014ZS	Screw		6
45	SPSP4006ZS	Screw		3
46	R E E 3000	E-ring		3
47	R E E 4000	E-ring		1
48	R E E 5000	E-ring		1
49	WNS4000N	Washer	For pinch roller shaft	1
50	Q03091-138	Washer	For shifter	2
51	Q03093-407	Washer	For flywheel	2
52	Q03093-301	Washer	For pinch roller shaft	1
53	Q03093-406	Washer	For pinch roller shaft	1
54	T45744-001	Nylon tie		1

Mechanical parts (2)

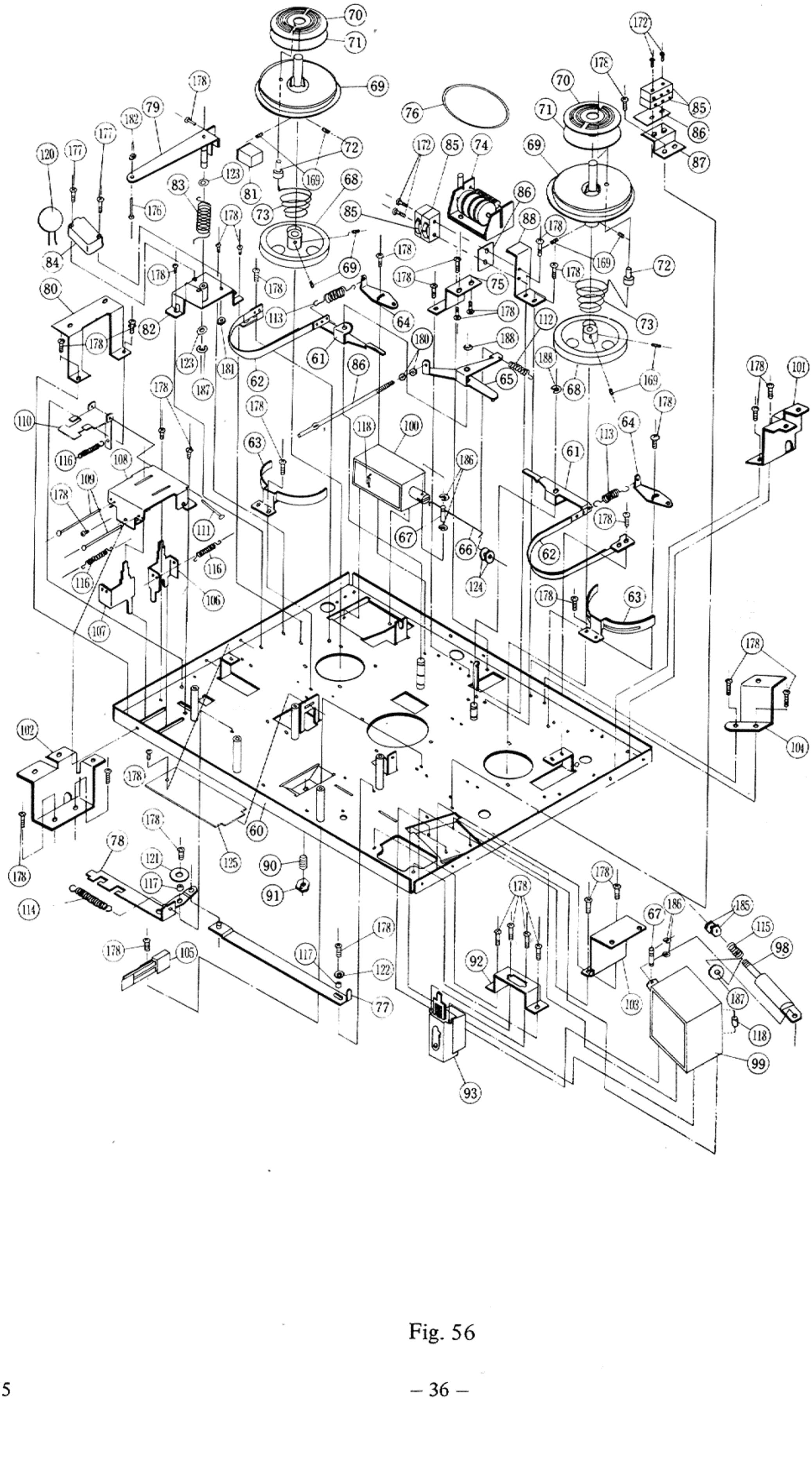


Fig. 56

Ident No.	Parts No.	Parts Name	Remarks	Q'ty
60	T11371-00A	Chassis base ass'y		1
61	T44825-00A	Brake ass'y		2
62	T44826001	Brake liner		2
63	T45576-001	Brake guide		2
64	T44831-001	Brake adjust lever		2
65	T44829-00A	Brake lever ass'y		1
66	T44830-001	Connection wire		1
67	T44810-001	Connection pin		2
68	T44869-00A	Brake drum ass'y		2
69	T30770-00B	Reel disk		2
70	T41106 003	Reel disk decoration		2
71	T41529-002	Cement seat		2
72	T46310-001	Ground pin		2
73	T46317-001	Ground spring		2
74	T30028-002S	Counter ass'y		1
75	T44876-001	Counter bracket		1
76	T6693-005	Counter belt		1
77	T44874-00A	Record lever ass'y		1
78	T44876-00A	Record cam ass'y		1
79	T45418-00A	Shut-off arm ass'y		1
80	T45166-001	Bracket		1
81	T45417-001	Counter weight		1
82	T45421-00A	Shut-off bracket ass'y		1
83	T45414-001	Shut-off arm spring		1
84	T30973-001	Micro switch		1
85	F P4114-001	Micro switch		4
86	T45191-001	Insulater		2
87	T45190-001	Switch bracket		1
88	T45575-001	Brake switch bracket		1
89	T45554-001	Elevation rod		1
90	T45587-001	Thrust screw		1
91	T45588-001	Thrust nut		1
92	T45189-001	Switch bracket		1
93	Q03792-002	Push switch		1
94				
95				
96				
97				
98	T45555-001	Connection screw		1
99	T30768-001	Solenoid ass'y	For pinch roller	1
100	T30764-001	Solenoid ass'y	For brake	1
101	T45163-001	Bracket		1
102	T45164-001	Bracket		1
103	T45165-001	Bracket		1
104	T45167-001	Bracket		1
105	T30911-00A	Muting switch		1
106	T44878-00A	Record knob/lever ass'y		1
107	T44879-00A	Record knob/lever ass'y		1
108	T44880-001	Record bracket		1
109	T42208-001	Guide rod		2
110	T44871-001	Record lock arm		1
111	T42830-001	Guide rod		1
112	T40300-034	Spring	For brake lever	1
113	T30300-015	Spring	For brake adjust lever	2
114	T30300-085	Spring	For record cam	1
115	T30300-045	Spring	For pressing pinch roller	1
116	T30300-047	Spring		3
117	T30302-024	Collar		2
118	T30155-002	Silicon diode		2
119	Q03206-473	O.F.T. capacitor		3
120	Q43209-002	Ceramic capacitor	For record cam	1
121	Q03091-103	Washer	For record bar	1
122	Q03091 138	Washer	For shut-off arm	1
123	Q03093-505	Washer	For brake connection wire	2
124	Q03095-201	Washer		2
125	T45192-00A	Printed circuit board	For head selector	1

Mechanical parts (3)

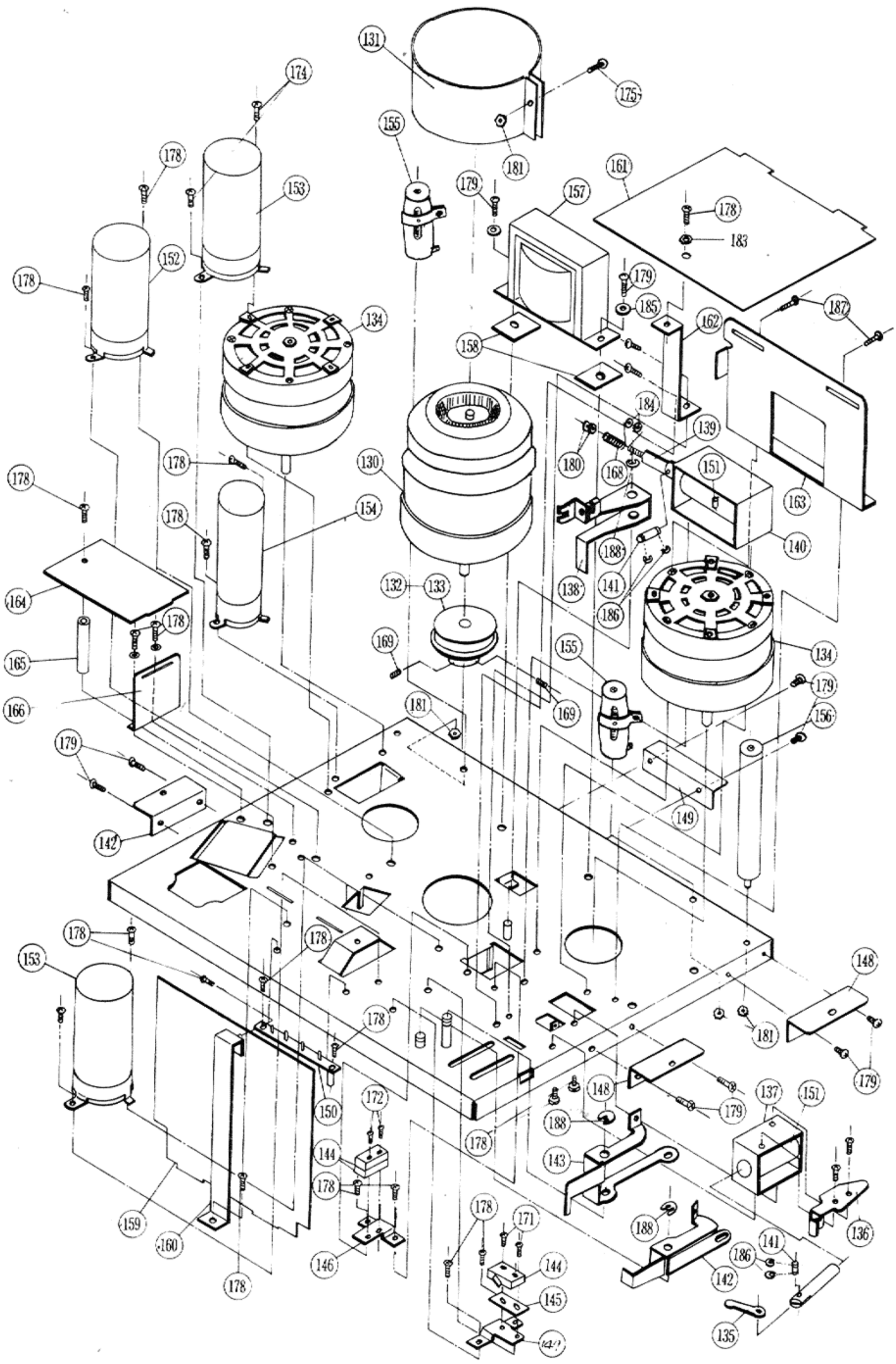


Fig. 57

Ident No.	Parts No.	Parts Name	Remarks	Q'ty
130	m871-00A	Motor ass'y	For capstan	1
131	T30941-001	Motor shield		1
132		Motor pulley	For 60Hz	1
133				
134	m571-00A	Motor ass'y	For reels	2
135	T45551-001	Lock arm	For record lock	1
136	T45552-001	Lock arm bracket		1
137	T30977-001	Solenoid ass'y		1
138	T45602-00A	Head switch lever		1
139	T45596-001	Connection lever		1
140	T30772-001	Solenoid ass'y	For head selector	1
141	T44810-001	Connector pin		2
142	T44886-001	Record arm (R)		1
143	T44888-001	Record arm (L)		1
144	F P4114-001	Micro switch		3
145	T45191-001	Insulator		1
146	T45574-001	Switch bracket		1
147	T45188-001	Switch bracket		1
148	T45161-001	Bracket		1
149	T45162-001	Bracket		1
150	T41479 005	Terminal board		1
151	T30155-002	Silicon diode		2
152		MP capacitor	For m871	1
153		MP capacitor	For m561	2
154	Q E Y1804 011	Electrolytic capacitor	For B power supply	1
155	Q R W107 J-007	Coil resistor	For adjusting torque	2
156	T45586-001	Coil resistor	For pinch roller solenoid	1
157		Power transformer		1
158	T46117-001	Spacer		2
159	T30971-001	Printed circuit board (1)	Relay board	1
160	T45577-001	Circuit board holder (1)		1
161	T30972-001	Printed circuit board (2)	For direction selector	1
162	T45578-001	Circuit board holder (2)		1
163	T30970-001	Circuit board bracket (2)		1
164	T44572-001	Printed circuit board (3)	For power rectifier	1
165	T45580-001	Circuit board stud		1
166	T45581-001	Circuit board bracket		1
167	51739-002	(1) Ground lug		1
168	T30300 047	Spring	For head selector	1
169	YRS3004BS	Set screw		10
170	SPKP3008S	Resin screw	For terminal board	2
171	SPSP2008Z	Screw		2
172	SPSP2016Z	Screw		2
173	SPSP3004ZS	Screw		2
174	SPSP3010ZS	Screw		2
175	SPSP3012ZS	Screw		1
176	SPSP3014BS	Screw		1
177	SPSP3014ZS	Screw	For shut-off arm	1
178	LPSP3006ZS	Screw	For shut-off switch	2
179	LPSP4008ZS	Screw		55
180	N N S200Z	Nut		4
181	N N S3000ZS	Nut		4
182	N T B3000BS	Nut	For shut-off arm	1
183	W B S3000N	Nut		1
184	W N S2000N	Nut		2
185	W N S4000N	Washer		2
186	R E E2500	E-ring		8
187	R E E4000	E-ring		2
188	R E E5000	E-ring		8

PACKING MATERIALS

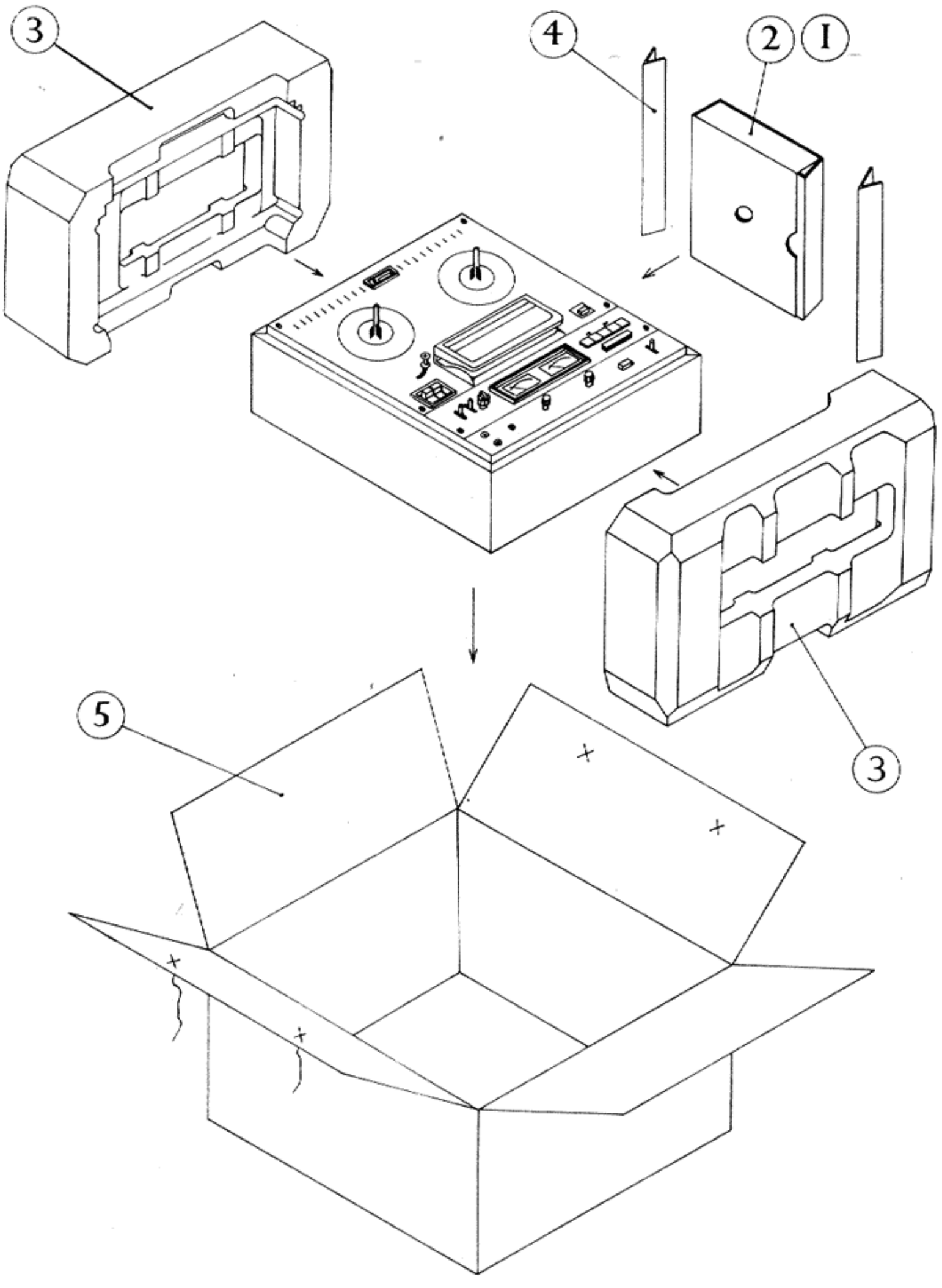


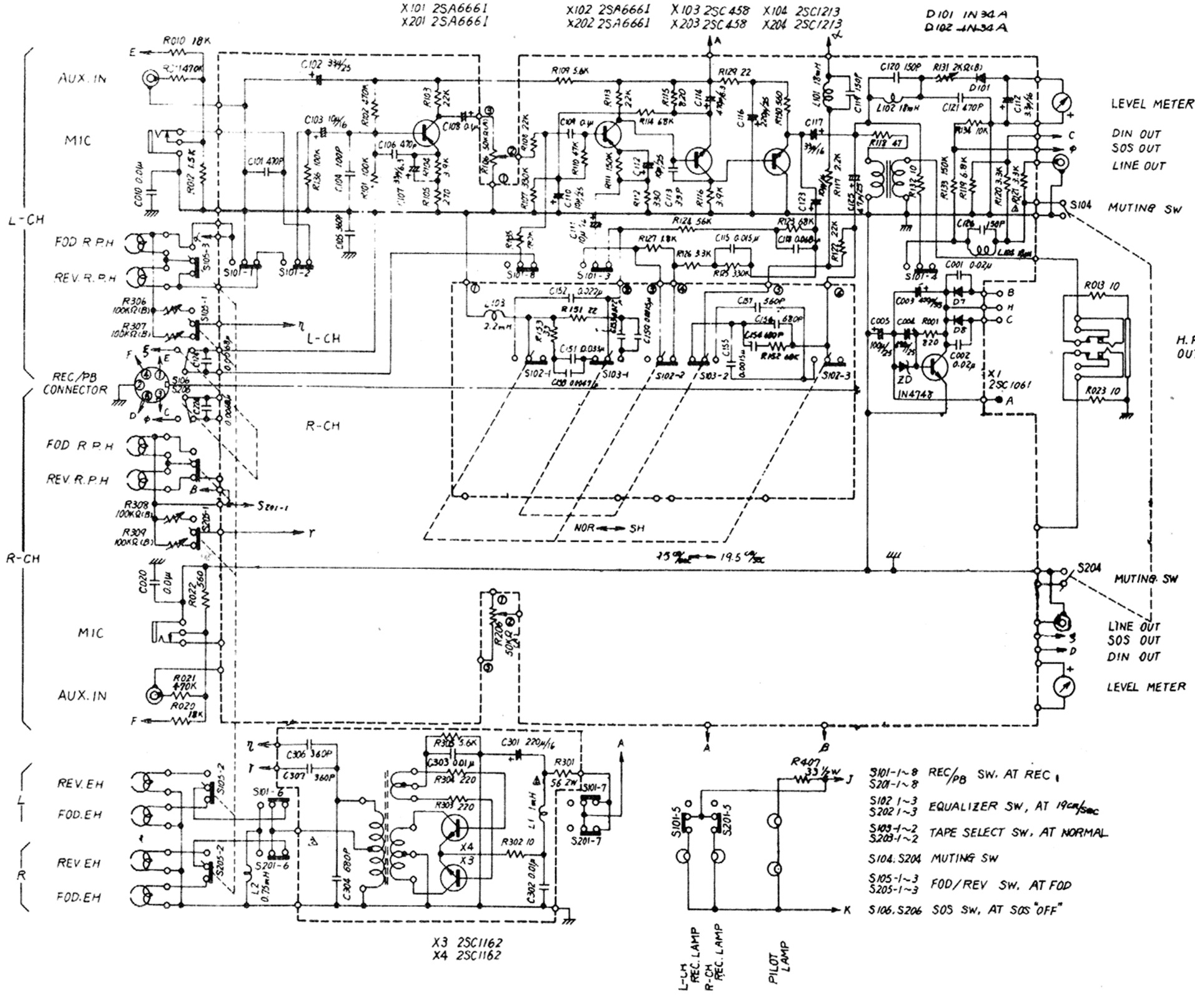
Fig. 58

Ident No.	Parts No.	Parts Name	Remarks	Q'ty
1	T30889-003	Platè		1
2	T30889-002	Reel case		1
3	T11416-001	Cushion		2
4	T30889-013	Spacer		2
5	T30889-035	Case		1
1 ~ 5	T30889-0AF	Packing case ass'y		1
6	AP4056A-034	Envelope	For power cord	1
7	AP4056A-036	Envelope	For pin cord	1
8	AP4056A-077	Envelope	For instruction book	1
9	T41703-006	Envelope	For main body	1

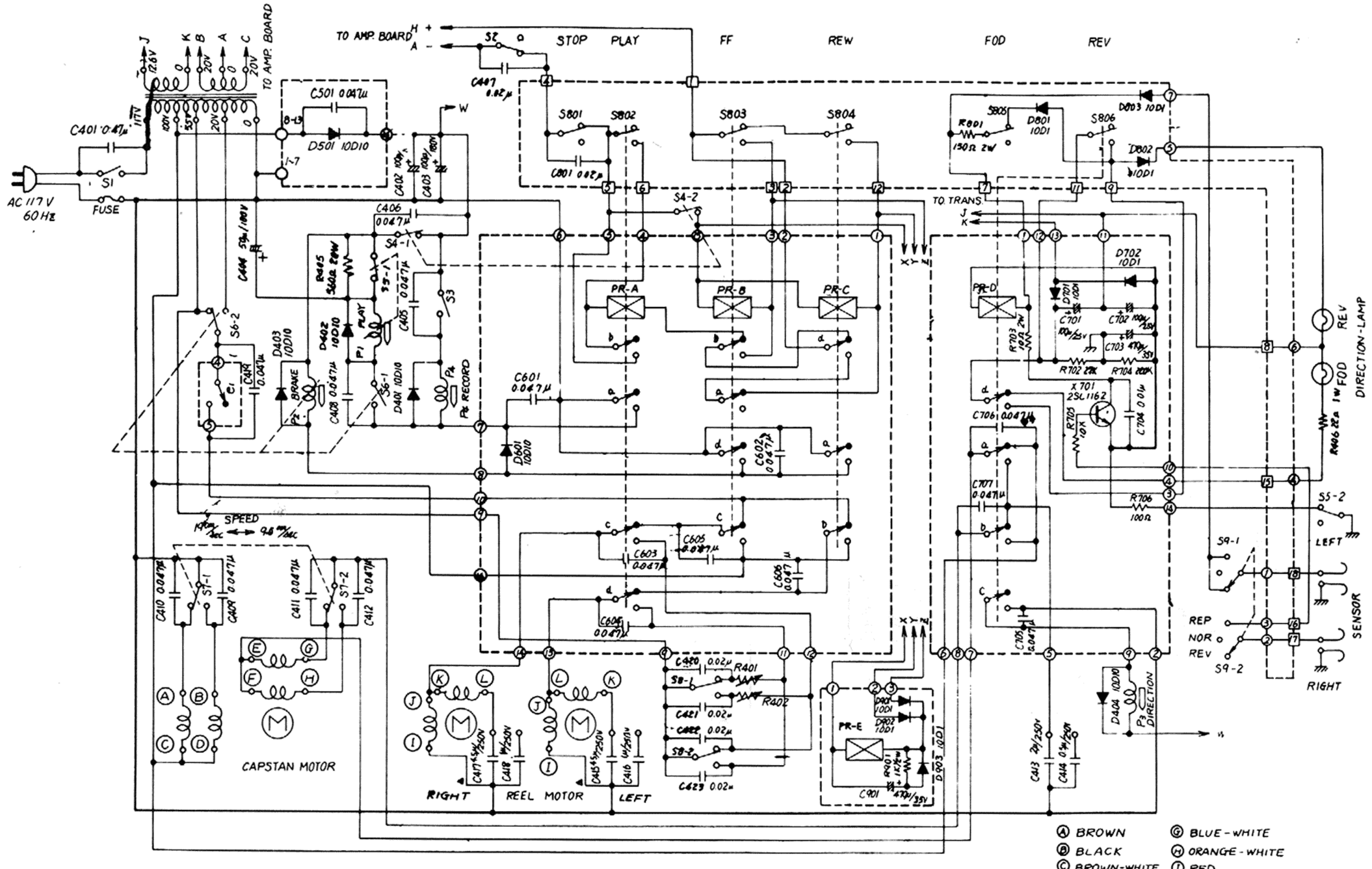
ACCESSORIES AND ATTACHMENTS

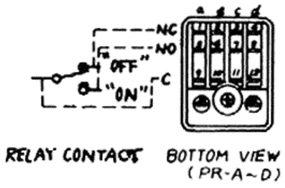
Ident No.	Parts No.	Parts Name	Remarks	Q'ty
1	D T-410	Demo tape		1
2	T3312-032	Reel		1
3	T44186-001	Reel clamp		2
4	F4705-00A	Pin cord ass'y		2
5	T40734-00B	Sensing tape ass'y		1
6	T45562-00B	Head cleaning bar		1
7	RD-1555IB	Instruction book		1
8	BT-20001	Warranty card		1
9	BT-10001	JVC service station list		1
10	T30994-0ZZ	Feature tag		1
11	T43758-003	Serial ticket	60Hz	2

SCHEMATIC DIAGRAM (1)



SCHEMATIC DIAGRAM (2)





RELAY CONTACTS BOTTOM VIEW (PR-A~D)

CAPACITOR (BLOCK)

a) C402 + C403 + C404

b) C413 + C414

c) C415 + C416

d) C417 + C418

TORQUE ADJUSTMENT (150Ω 10W)

FOD DIRECTION

R401 BACK TENSION ADJUST REV DIRECTION

R402 BACK TENSION ADJUST.

S1	POWER SW AT POWER "OFF"
S2	SHUT-OFF SW, AT SW "ON"
S3	REC BUTTON SW. AT PB MODE
S4-1.2	PAUSE SW, AT PAUSE OFF
S5-1.2	SW. OPERATED BY PLAY PLUNGER "P1", AT P1 "OFF"
S6-1.2.	SW. OPERATED BY BRAKE PLUNGER "P2", AT P2 "OFF"
S7-1.2	SPEED CHANGE SW. AT 19cm/sec
S8-1.2	DIRECTION SW, AT FOD
S9-1.2	MODE SW. AT REV MODE
S801~6	OPERATION SW.

A BROWN	G BLUE-WHITE
B BLACK	H ORANGE-WHITE
C BROWN-WHITE	I RED
D BLACK-WHITE	J ORANGE
E BLUE	K VIOLET
F ORANGE	L YELLOW

THE LIST OF JVC NIVICO SERVICE MANUAL

(TELEVISION)

No.	Model	No.	Model	No.	Model	No.	Model
3051	11-7049	3068	7020A, 7023A	3085	3220SC	3100	HB-2001
3052	F-505S	3069	10-7050, 10-7060	3086	122-2002CT	3101	3240
3053	F-597ANC	3070	2810MU, 2820MU	3087	2850AN	3102	HB1201
3054	9T-223FJU		2830MU	3088	2450AB	3103	122-2001
3055	F-507HU	3071	2841HU		2450ABT	3104	122-2010, 122-2009
3056	7026A	3072	F-506AB	3089	3210MU	3105	16-1252A
3057	7062A	3073	2630MU	3090	2450MU, 2460MU	3106	122-2000
3058	2840HU	3074	7055A		2461MU	3107	122-2003
3059	F-597CQC	3075	122-1010CT	3091	2850AB	3108	2453AB
	F-597CQ	3076	P8008U, P8050U	3092	2870CQ, 2870CQC	3109	3240GH
3060	F-442ANC	3077	2841HUB	3093	2640		3240SW
3061	2810AB	3078	3220GM	3094	2861, 2862		3240SC
3062	F-506CQDC	3079	2690CQ	3095	2451, 2462	3110	2900CQD
3063	122-1008CT	3080	3220FL	3096	BTV/1272		2900CQDC
3064	2450, 2460	3081	2690CQC	3097	2850MU, 2860MU		
3065	2850, 2860	3082	3220SW #3		2861MU		
3066	3220SW	3083	3220SW #4	3098	3230		
3067	122-1005CT	3084	122-2008CT	3099	2863AB		

(TAPE RECORDER)

No.	Model	No.	Model	No.	Model	No.	Model
4001	TR-403	4016	TD-684U	4032	CHR-250UPX	4049	505UL
4002	TR-711	4017	STR-25G, H	4033	TR-1035U	4050	1605
4003	STR-20	4018	STR-26E	4034	1624	4051	1710
4004	TR-611	4019 (B)	TR-351U (333)	4035	CAR-310E/1310	4052	—
4005	TR-411			4036	1001	4053	1604U
4006	TR-111U	4020	TR-551U	4037	TR-1040U	4054	1602U
4007	TR-311U	4021	CHR-100U (H)	4038	TD-694U	4055	1350, 1350E
4008	TR-511	4022	CAR-300E	4039	TR-224U	4056	1400, 1400U
4009	JV-1	4023	CCR-624U	4040	TR-171F	4057	1690, 1690U
4010	MAYFAIR 400 & 600	4024	CCR-600E/1600	4041	TR-171US	4058	1625U, M, UD
		4025	1694	4042	TR-175CAT 14-1974	4059	1202, 1202UH
4011	NIVICO-500	4026	CCR-620R			4060	1450, 1450U
4012 (B)	TR-541U (505)	4027	TR-545U/1545	4043	1224	4061	1661U, 1661F, 1660 Run 2
		4028 (B)	1100	4044	TD-344U		
4013	TR-671U			4045	CCR-601U	4062	1260U
4014	TR-161U	4029	CCP-630E/1630	4046	CCR-660U, 1660	4063	1695U, RD-1695
4015 (B)	TR-171U (555)	4030	TR-561U	4047	TR-1049U	4064	CP-1602
		4031	CCR-620RE/1620	4048	TR-8, CAT14-912	4065	—
						4066	1101E

VICTOR COMPANY OF JAPAN, LTD.