

USA Model



SPECIFICATIONS

Power Requirements: AC 117V, 60 Hz, 50W (maximum)
DC 12V

Track System: Four-track stereo and mono

Reel Size: 7" (18 cm) maximum

Tape Speeds: 7½ ips, 3¾ ips and 1⅞ ips
(19 cm/s, 9.5 cm/s and 4.8 cm/s)

Recording Time: (with 1,800 ft tape)	4-track	
	stereo	mono
Tape speed		
7½ ips (19 cm/s)	1.5 hrs	3 hrs
3¾ ips (9.5 cm/s)	3 hrs	6 hrs
1⅞ ips (4.8 cm/s)	6 hrs	12 hrs

Frequency Response: 30 - 18,000 Hz at 7½ ips (19 cm/s)
30 - 14,000 Hz at 3¾ ips (9.5 cm/s)
30 - 10,000 Hz at 1⅞ ips (4.8 cm/s)

Signal-to-Noise Ratio: 52 dB or better

Flutter and Wow: Less than 0.07% at 7½ ips (19 cm/s)

Less than 0.1% at 3¾ ips (9.5 cm/s)

Less than 0.15% at 1⅞ ips (4.8 cm/s)

Recording Bias

Frequency: 85 kHz

Inputs: MIC inputs

Impedance; 250Ω

Maximum sensitivity; 0.2 mV (-72 dB)

AUX inputs

Impedance; 100kΩ

Maximum sensitivity; 25 mV (-30 dB)

TUNER inputs

Impedance; 100kΩ

Maximum sensitivity; 0.13V (-16 dB)

PHONO inputs

Impedance; 100kΩ

Maximum sensitivity; 2 mV (-52 dB)

REC/PB connector

Impedance; 7kΩ

Maximum sensitivity; 1.6 mV (-54 dB)

Outputs: LINE outputs

Impedance; 7kΩ

Output level; 0.6V (-2 dB)

EXT SP outputs

Load impedance; 8Ω

REC/PB connector

Impedance; 10kΩ

Maximum sensitivity; 0.6V (-2 dB)

HEADPHONE output

Load impedance; 10kΩ or 8Ω

Power Output: 5W per channel (maximum)

Speaker: 5" (12.7 cm), 8Ω

Semiconductors: 56 transistors and 26 diodes

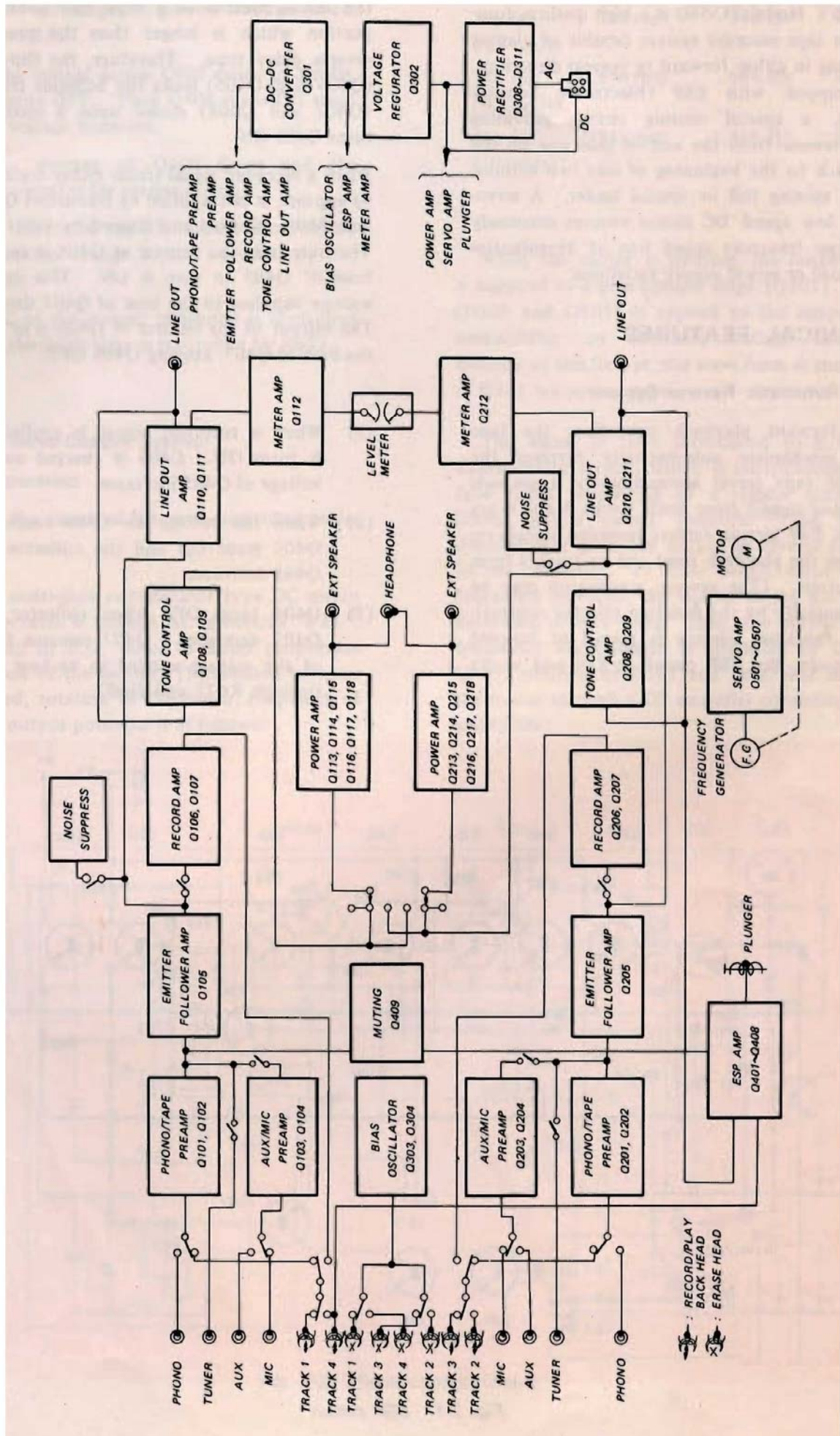
Dimensions: 20⅜" (W) x 11¼" (H) x 17½" (D)
(520 x 286 x 435 mm)

Weight: 50 lb (23 kg)

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1. BLOCK DIAGRAM



2. GENERAL DESCRIPTION

The SONY Model TC-560 is a high quality, four-track stereo tape recorder system capable of playing and recording in either forward or reverse directions. It is equipped with ESP (Electronic Sensory Perception), a special sensing circuit providing automatic reverse from the end of side one on the tape playback to the beginning of side two without the use of sensing foil or special leader. A servo-controlled, low speed DC motor ensures extremely accurate tape transport speed free of irregularities caused by load or power supply variations.

3. TECHNICAL FEATURES

3-1. ESP Automatic Reverse System:

During forward playback operation, the tape transport mechanism automatically reverses the direction of tape travel approximately 8 seconds after recorded signals from both tracks 3 and 4 are silent. The ESP circuit detects recorded signals on track 4 from the playback head and on track 3 from the line output. (The reverse mechanism may be operated manually by the function selector control). When the function selector is placed in forward playback mode, the ESP circuit is ON and works as follows.

When the recorder is turned on and starts to play, the initial portion of a tape may contain a silent portion which is longer than the pre-determined reverse delay time. Therefore, the flip-flop circuit (Q404 and Q405) locks the Schmidt trigger circuit (Q407 and Q408) closed until a recorded signal turns Q405 ON.

When a recorded signal (from either track 3 or track 4) appears, it is amplified by transistors Q401, Q402, and Q403, rectified and clipped by D401 and Q406. The output at the emitter of Q406 is applied to the base of Q405 to turn it ON. This decreases the voltage supplied to the base of Q407 through R623. The output of the emitter of Q406 is in turn fed to the base of Q407, keeping Q408 OFF.

- (1) When a recorded signal is applied to Q406, it turns ON. C409 is charged and the base voltage of Q405 increases.
- (2) When the voltage on C409 reaches 4 volts, Q405 turns ON and the collector voltage of Q405 decreases.
- (3) Q404 turns OFF when collector voltage of Q405 decreases. Q407 remains ON because of the voltage applied to its base from C409 through R622 and D402.

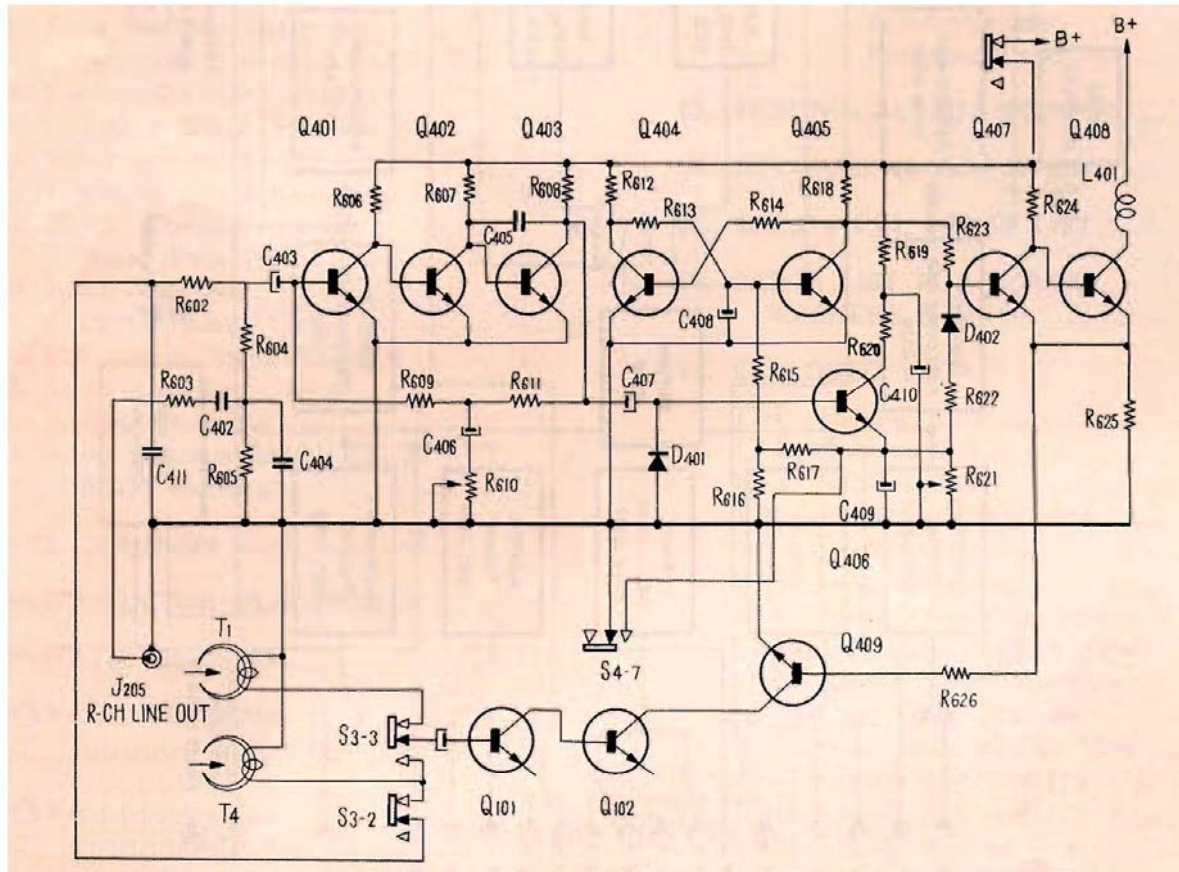


Fig. 3-1 ESP circuit

- (4) If the input signal dies to zero, Q406 goes OFF and C409 discharges to ground through R621, R622 and R625.
- (5) When the voltage across C409 drops to 2 volts, Q407 turns OFF. Then Q408 turns ON since its base voltage increases.
- (6) Collector current of Q408 flows and the plunger operates for reverse action.
- (7) The B+ supply of the ESP circuit is cut-off by the direction change switch operated by the plunger.

The threshold of the reverse triggering is controlled by R610 and the delay time is controlled by R621.

Tape Speed	Rotation	Frequency	Output
17/8 ips (4.8 cm/s)	228rpm	342 Hz	1.5V p-p
33/4 ips (9.5 cm/s)	456rpm	684 Hz	3.0V p-p
7 1/2 ips (19 cm/s)	912rpm	1,368 Hz	6.0V p-p

When the motor is rotating, the output of F.G. is supplied to a preamplifier stage (Q501). A limiter (D506 and Q507) is applied to the output of this preamplifier to eliminate voltage fluctuations. Because of this limiter, the wave form at the collector of Q501 is a square wave.

The signal is then introduced to a frequency discriminator circuit, which is independent for each tape speed, consisting of a regular time-constant circuit and a twin-T network. The frequency discriminator gives the output in inverse proportion to the frequency. In other words, when the input frequency increases, the output of the discriminator decreases, or vice versa. Then, the output from the frequency discriminator is amplified by Q502 and Q503, rectified by D501 and D502 and supplied to the motor through a DC amplifier consisting of Q504 and Q506.

3-2. SONY Servo-Control System:

Theory of operation

Fig. 3-2 is the circuit of the servo-controlled motor system:

"M" is a multi-pole commutator type DC motor which incorporates a coaxial AC generator "F.G.". The frequency of F.G. varies in direct proportion to the rotation of the motor. The relation between the tape speed, rotation of the motor, frequency of F.G. and the output potential is as follows:

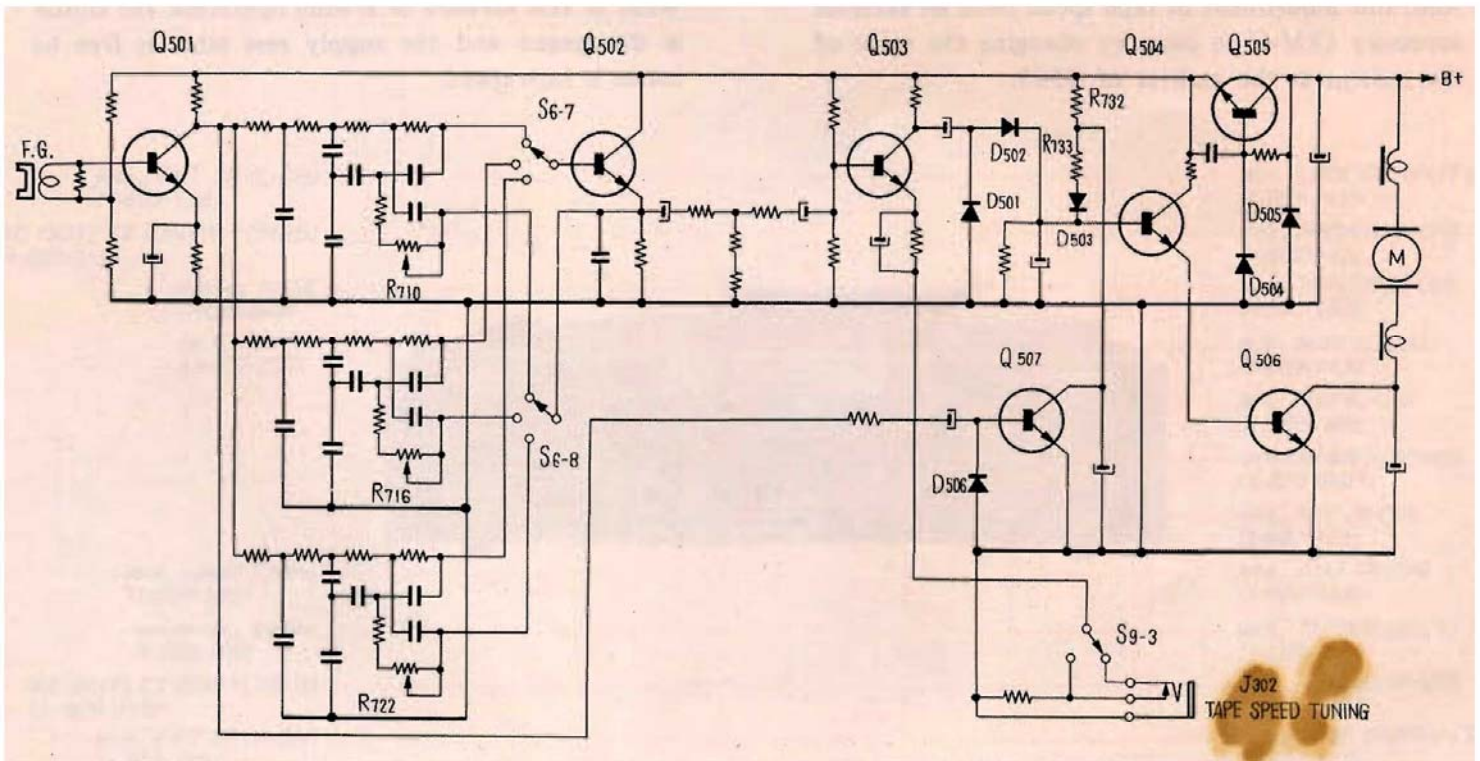


Fig. 3-2 Servo-control circuit

When the load to the motor causes the rotation of the motor to accelerate, the frequency of F.G. increases. The increase of the frequency causes a decrease of the DC voltage at the base of Q504, which will cause a decrease of potential at the base of Q506 to increase the impedance between collector and emitter of Q506 (2SD28) and decreases the current in the motor, thus decelerating the rotation of the motor to normal speed. When the rotation is decelerated, the entire operation is reversed.

Due to the fact that the output from the F.G. is not available when starting the motor, a separate starting circuit is provided. When the motor circuit is turned on, DC current flows into the base of Q504 through R732, R733 and D503, thus turning on the DC amplifier to start the motor. Once the motor starts to rotate, the output from F.G. is supplied to Q501. The signal amplified by Q501 is introduced to the frequency discriminator and also to D506 and Q507. The output voltage of Q501 is limited by D506 and Q507. The positive cycle of the signal at the base of Q507 induces current flow into collector of Q507 through R732. This increase of current in R732 results in decrease of voltage supplied to the base of Q504. When the voltage supplied through R732, R733, and D503, the entire system starts to function on the frequency supplied from the F.G.

Fine adjustment of speed for each individual tape speed is made by changing value R710, R716, or R722 variable resistors located in the twin-T circuit. And, fine adjustment of tape speed from an external accessory (RM-6) is done by changing the value of the resistor at the emitter of Q503.

Q505 and D505 (zener diode) function to stabilize the supply voltage to the servo-control circuit.

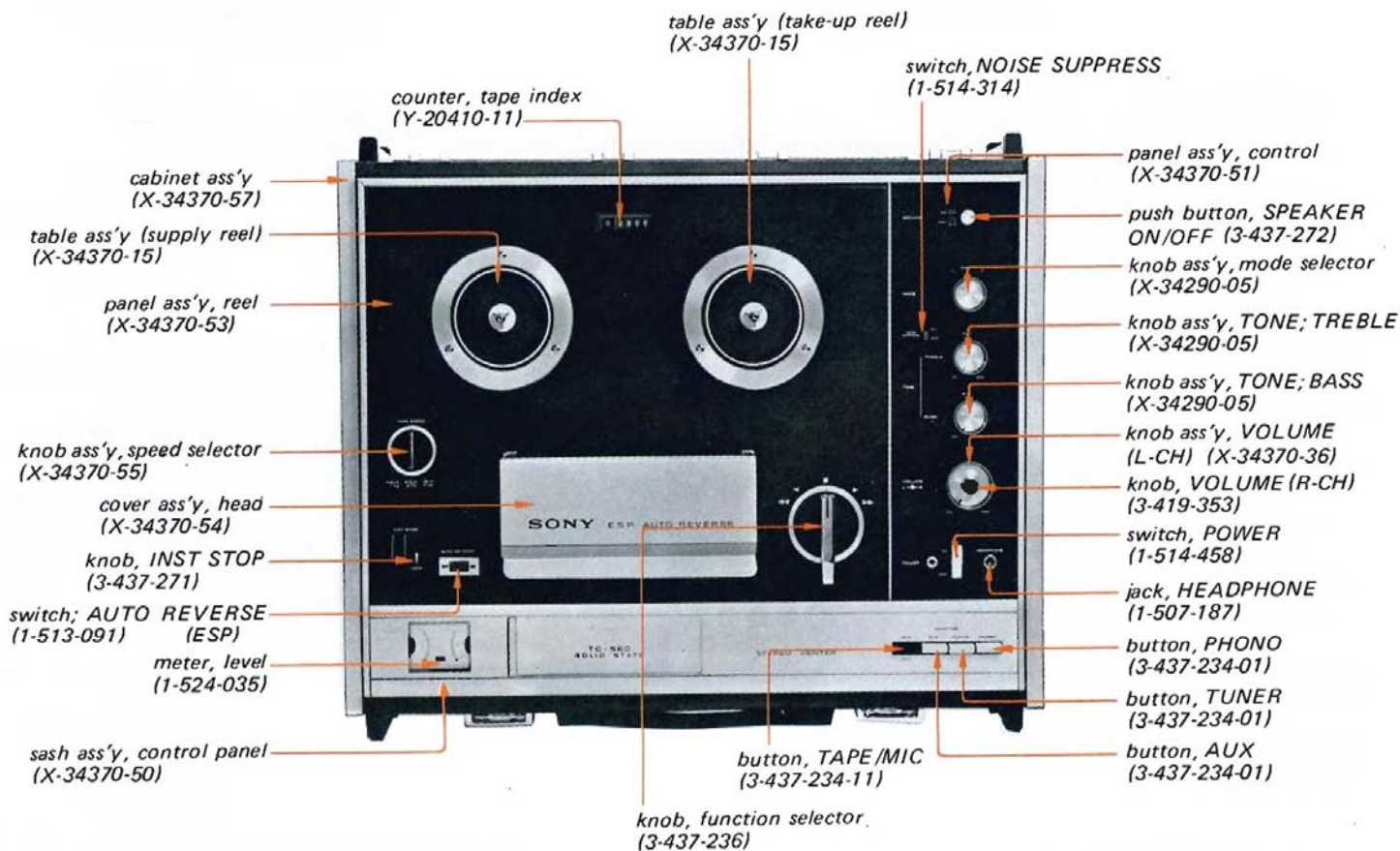
3-3. Motor:

The drive motor is a low-speed, DC operated motor equipped with a frequency generator. Pulses from this generator are constantly compared, through the servo circuitry, with the frequency of the servo-mechanism. The slightest deviation from frequency is detected and corrected instantly with great accuracy through the servo amplifier. In fast forward or rewind operation, the motor is isolated from the servo amplifier and runs freely at high speed. During playback modes, the speed may be varied from +5% to -10% by use of the accessory RM-6 Tape Speed Control.

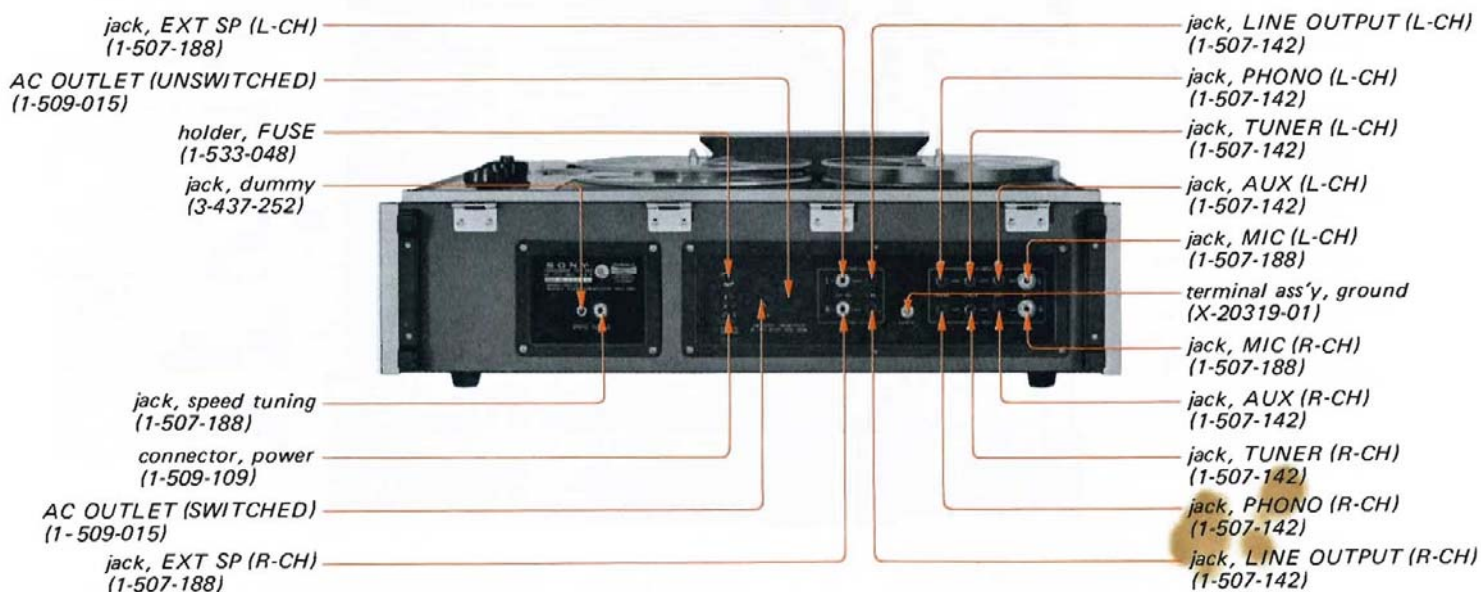
3-4. Tape Transport Mechanism:

The TC-560 employs TWO capstan-flywheel combinations, driven from the same belt but in opposite directions. One of two pinch rollers is moved against the appropriate capstan for drive in either direction. The reel tables are belt-driven and flywheel loaded for smooth operation. During forward (or reverse) mode, a felt friction-clutch applies correct back-tension to the supply reel table. When in fast forward or rewind operation, the clutch is disengaged and the supply reel table is free to rotate at high speed.

4. CABINET – TOP VIEW –



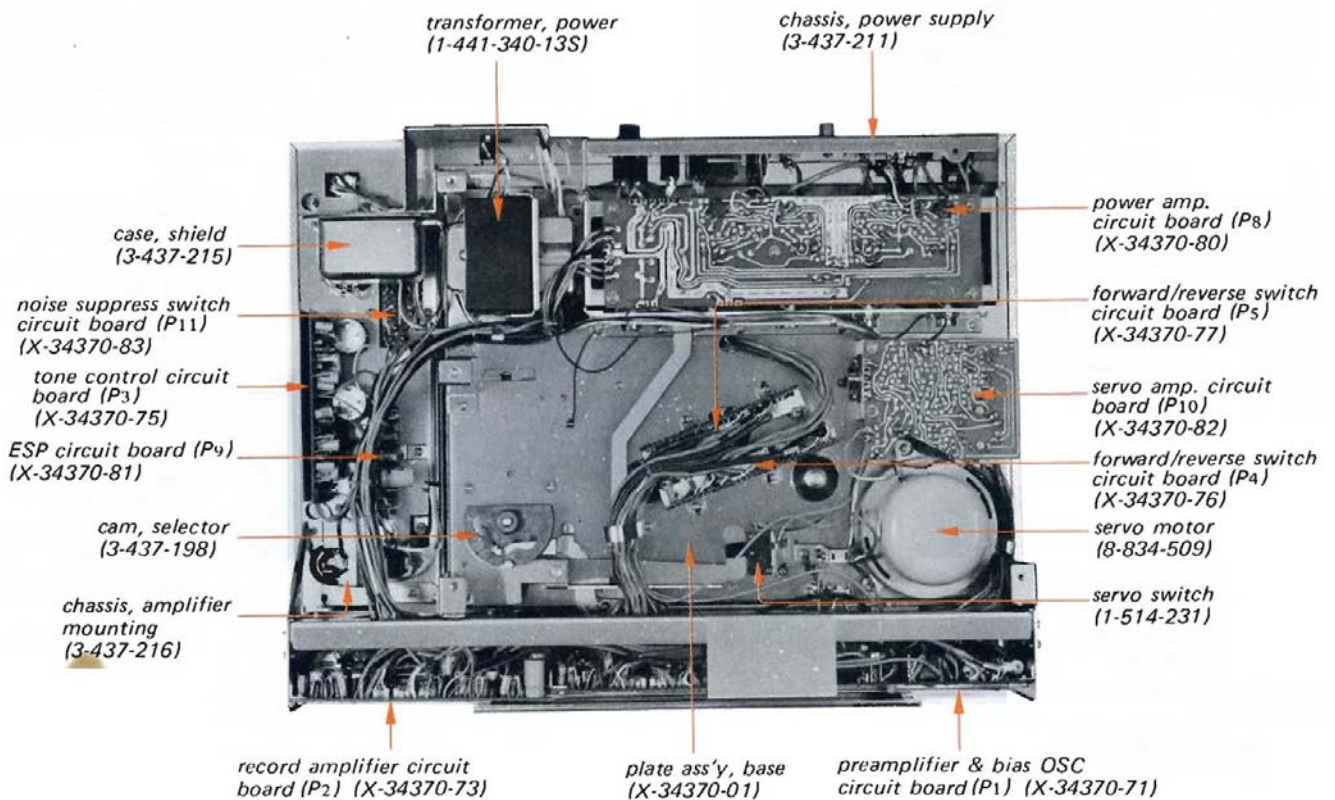
5. CABINET – BACK VIEW –



6. CHASSIS – TOP VIEW –



7. CHASSIS – BOTTOM VIEW –



8. DISASSEMBLY

8-1. Reel Panel Removal

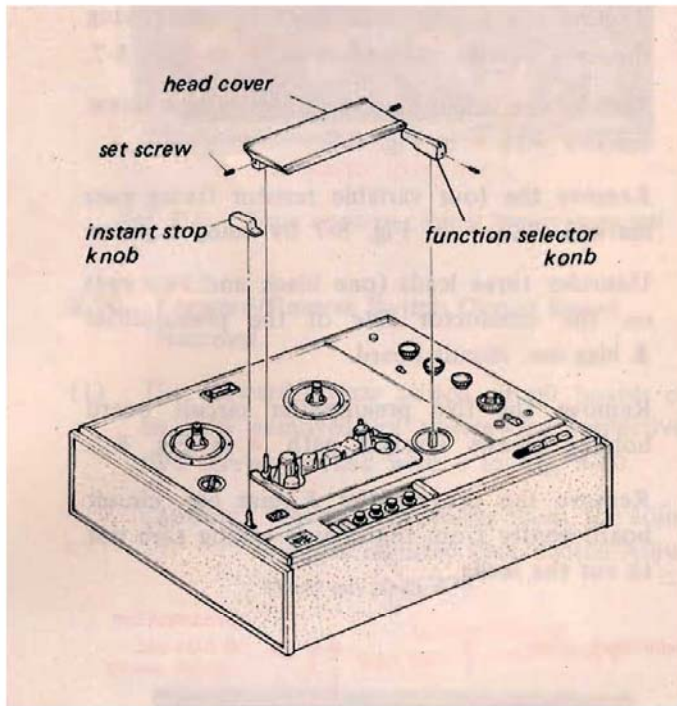


Fig. 8-1-1 Reel panel removal

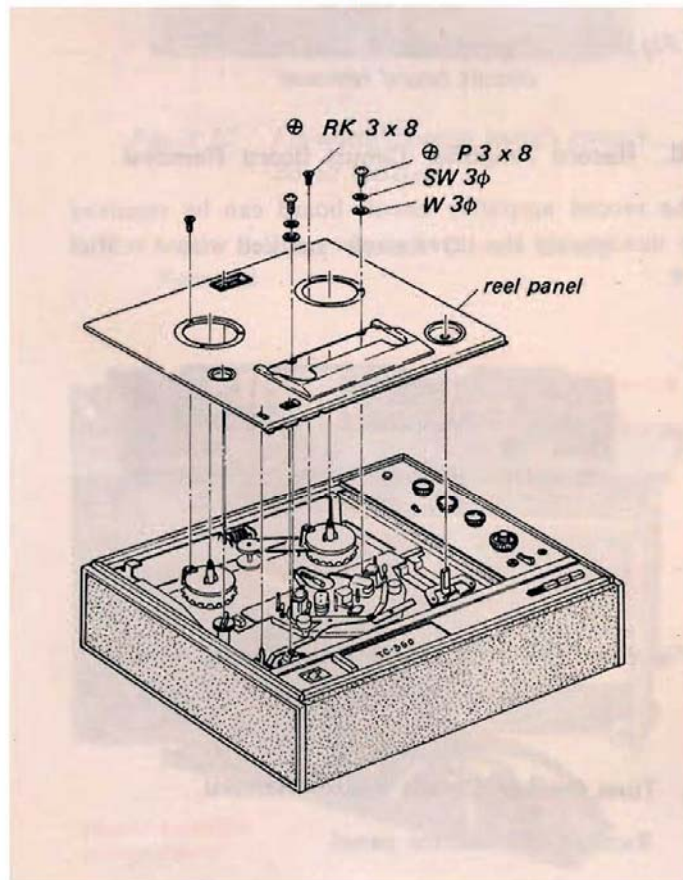


Fig. 8-1-2 Reel panel removal

8-2. Knob Removal

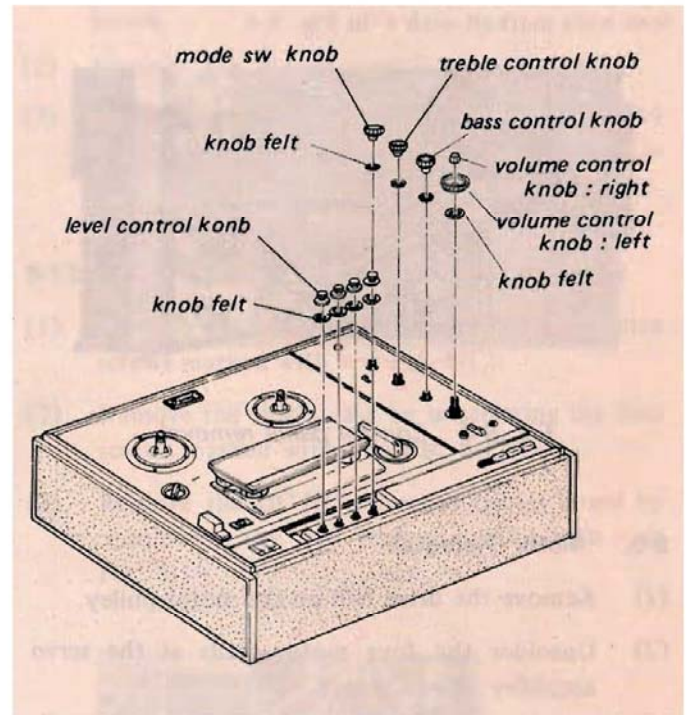


Fig. 8-2 Knob removal

8-3. Cabinet Removal

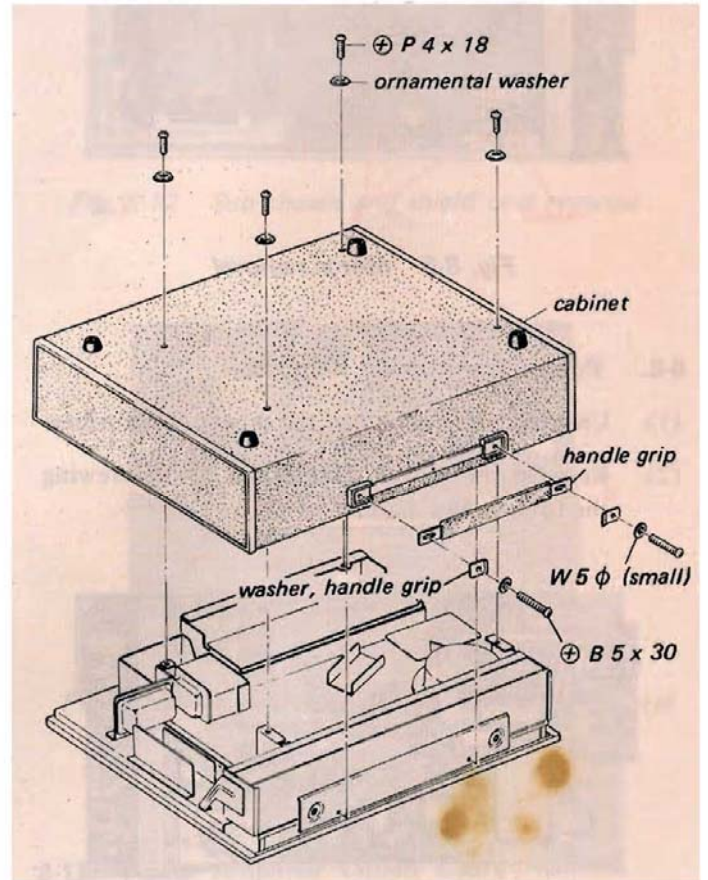


Fig. 8-3 Cabinet removal

8-4. Control Panel Removal

The control panel can be removed by removing the four nuts marked with ▲ in Fig. 8-4.

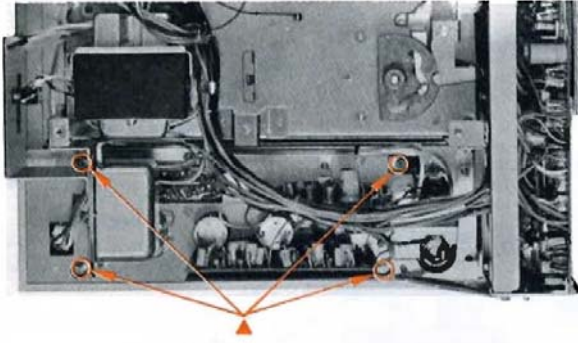


Fig. 8-4 Control panel removal

8-5. Motor Removal

- (1) Remove the drive belt on the motor pulley.
- (2) Unsolder the four motor leads at the servo amplifier circuit board.
- (3) Remove the three screws marked with ● in Fig. 8-5, and the motor can be removed completely from the chassis.

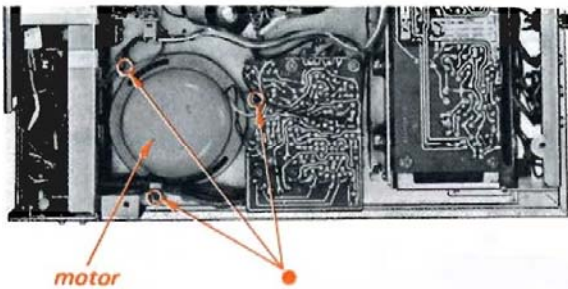


Fig. 8-5 Motor removal

8-6. Power Transformer Removal

- (1) Unsolder all the leads of the power transformer.
- (2) Remove the power transformer by unscrewing the four screws marked with ▲ in Fig. 8-6.

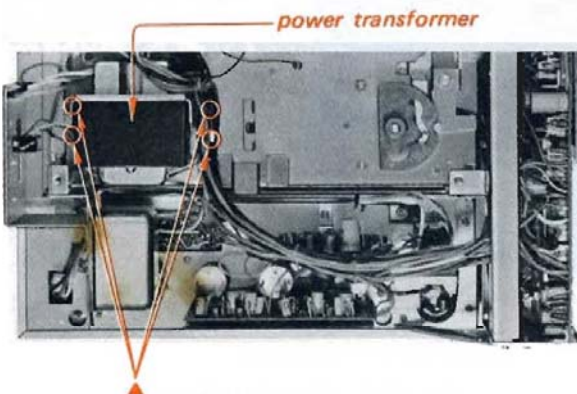


Fig. 8-6 Power transformer removal

8-7. Preampifier & Bias OSC Circuit Board Removal

- (1) Remove the handle back plate by unscrewing the two screws marked with ● in Fig. 8-7.
- (2) Remove the shield plate by unscrewing a screw marked with ■ in Fig. 8-7.
- (3) Remove the four variable resistor fixing nuts marked with ▲ in Fig. 8-7 by using a pliers.
- (4) Unsolder three leads (one black and two red) on the conductor side of the preampifier & bias osc. circuit board.
- (5) Remove the five preampifier circuit board holding screws marked with ★ in Fig. 8-7.
- (6) Remove the preampifier & bias osc. circuit board gently from the chassis taking care not to cut the leads.

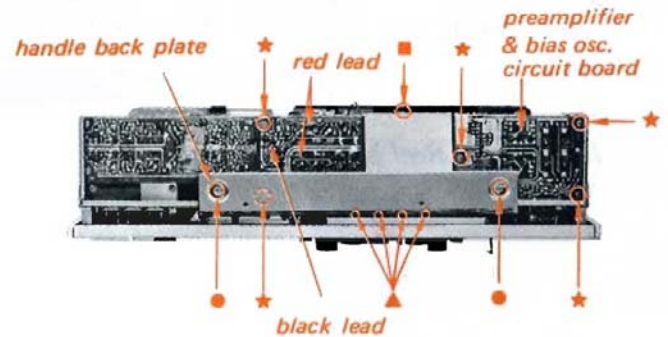


Fig. 8-7 Preampifier & bias osc. circuit board removal

8-8. Record Amplifier Circuit Board Removal

The record amplifier circuit board can be removed by unscrewing the three screws marked with ▲ in Fig. 8-8.

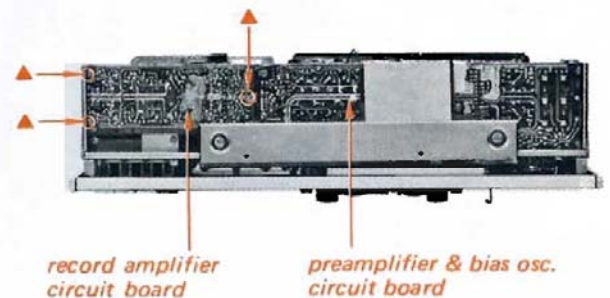
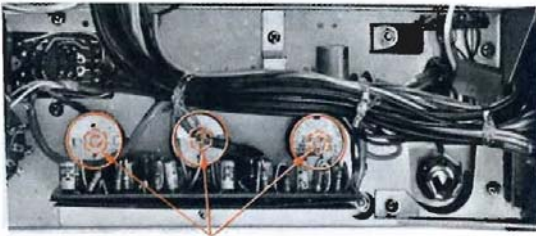


Fig. 8-8 Record amplifier circuit board removal

8-9. Tone Control Circuit Board Removal

- (1) Remove the control panel.
- (2) Remove the three nuts securing the three variable resistors to the amplifier mounting chassis, taking care not to cut the leads.



variable resistor fixing nut

Fig. 8-9 Tone control circuit board removal

8-10. Forward/Reverse Switch Circuit Board Removal

(1) The forward/reverse switch circuit boards can be now removed by unscrewing respectively two screws marked with ● in Fig. 8-10.

Caution: When re-assembling them, the adjustment is required (See Switch Adjustment on page 37).

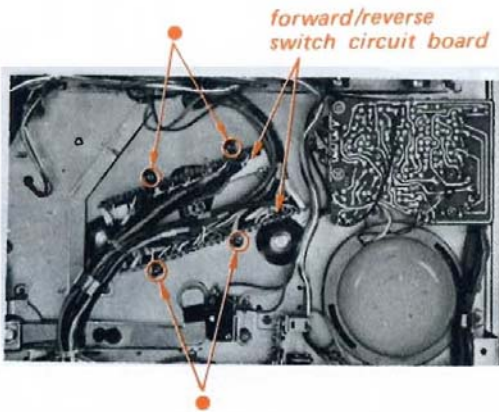


Fig. 8-10 Forward/Reverse switch circuit board removal

8-11. Input Selector Switch Circuit Board Removal

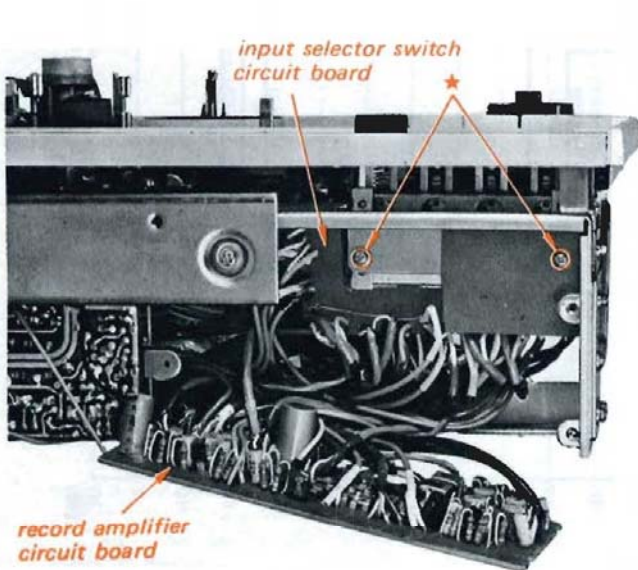


Fig. 8-11 Input selector switch circuit board removal

- (1) Unsolder the black lead, coming from the preamplifier & bias osc. circuit board on the conductor side of input selector switch circuit board.
- (2) Remove the record amplifier circuit board.
- (3) Remove the input selector switch circuit board by unscrewing two screws marked with ★ in Fig. 8-11, taking care not to cut the leads.

8-12. DC-DC Converter Circuit Board Removal

- (1) Remove the sub chassis by unscrewing the three screws marked with ● in Fig. 8-12.
- (2) Remove the shield case by unscrewing the four screws marked with ▲ in Fig. 8-12.
- (3) Remove the DC-DC converter circuit board by unscrewing the two screws marked with ■ in Fig. 8-13.

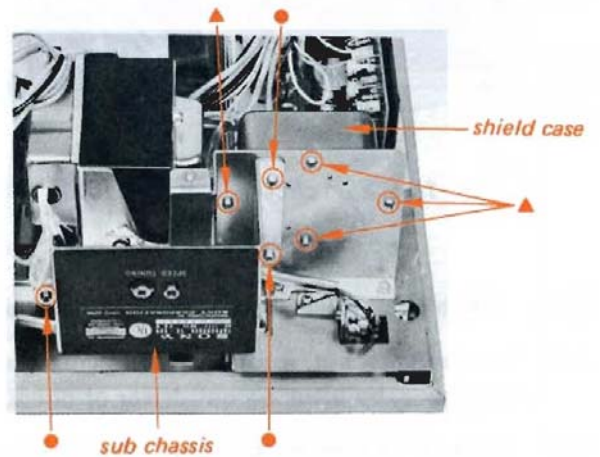


Fig. 8-12 Sub chassis and shield case removal

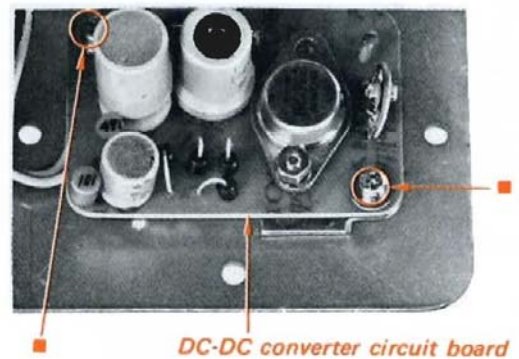


Fig. 8-13 DC-DC converter circuit board removal

8-13. Power Amplifier Circuit Board Removal

The power amplifier circuit board can be removed by unscrewing the five screws marked with ● in Fig. 8-14.

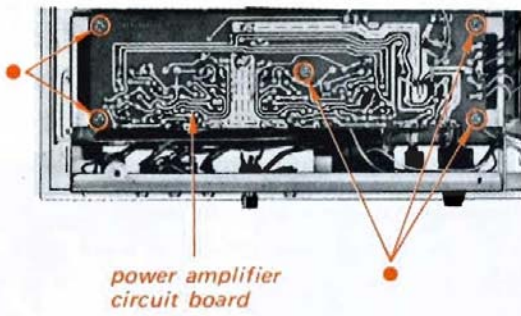


Fig. 14 Power amplifier circuit board removal

8-14. ESP Circuit Board Removal

The ESP circuit board can be removed by unscrewing a screw marked with ● in Fig. 8-15.

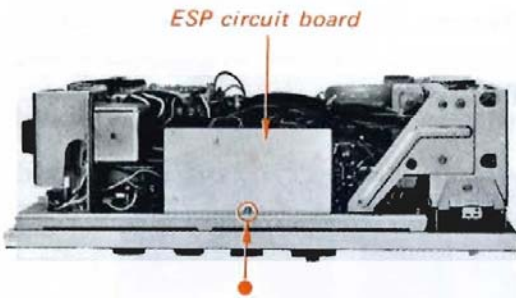


Fig. 15 ESP circuit board removal

8-15. Servo Amplifier Circuit Board Removal

- (1) Remove the nut securing the equalizer switch to chassis, by using 6φ nut driver or pliers.
- (2) Remove the servo amplifier circuit board by

unscrewing the two screws marked with ■ in Fig. 8-16, taking care not to cut the leads.

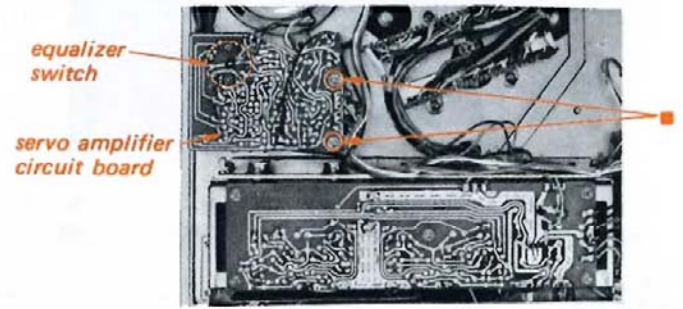


Fig. 8-16 Servo amplifier circuit board removal

8-16. Noise Suppress Switch Circuit Board Removal

The noise suppress circuit board can be removed by unscrewing the two screws marked with ★ in Fig. 8-17.

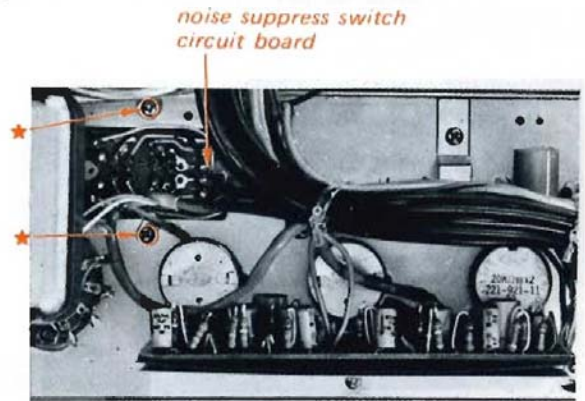
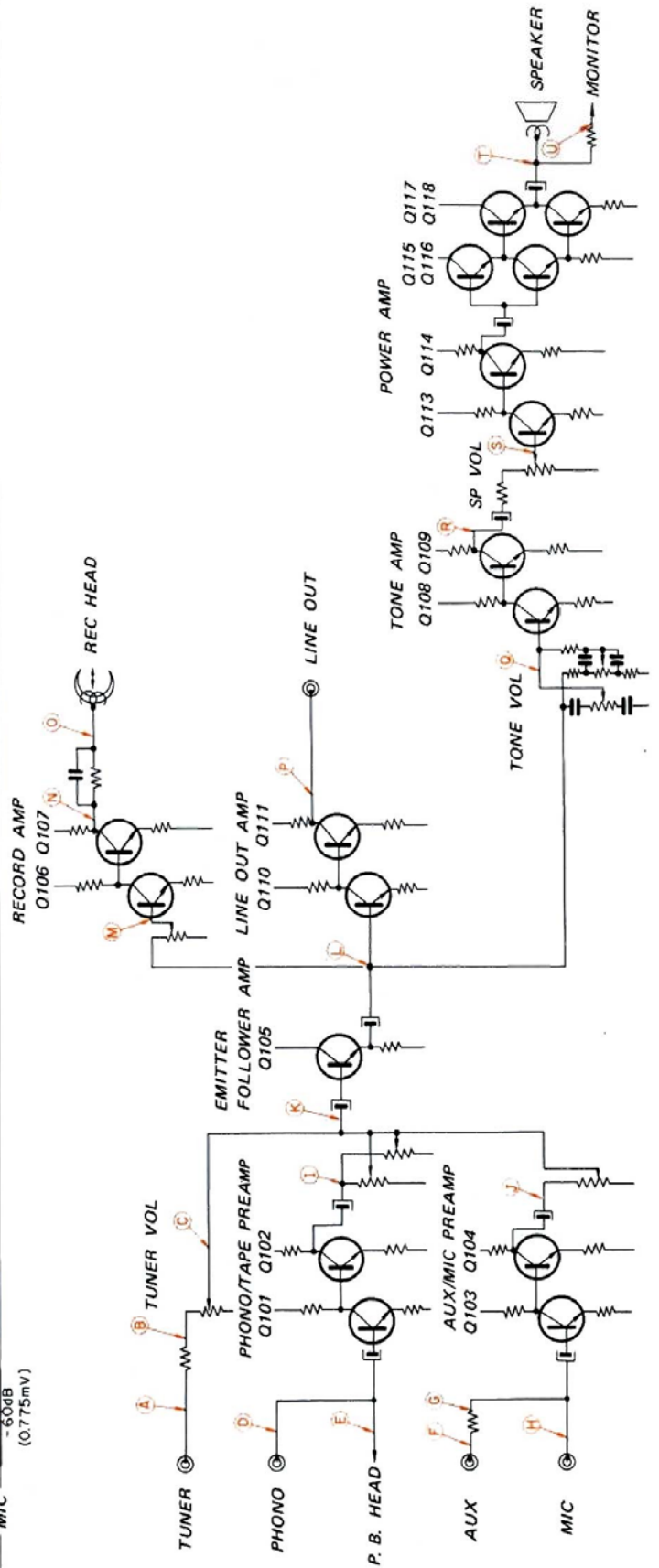
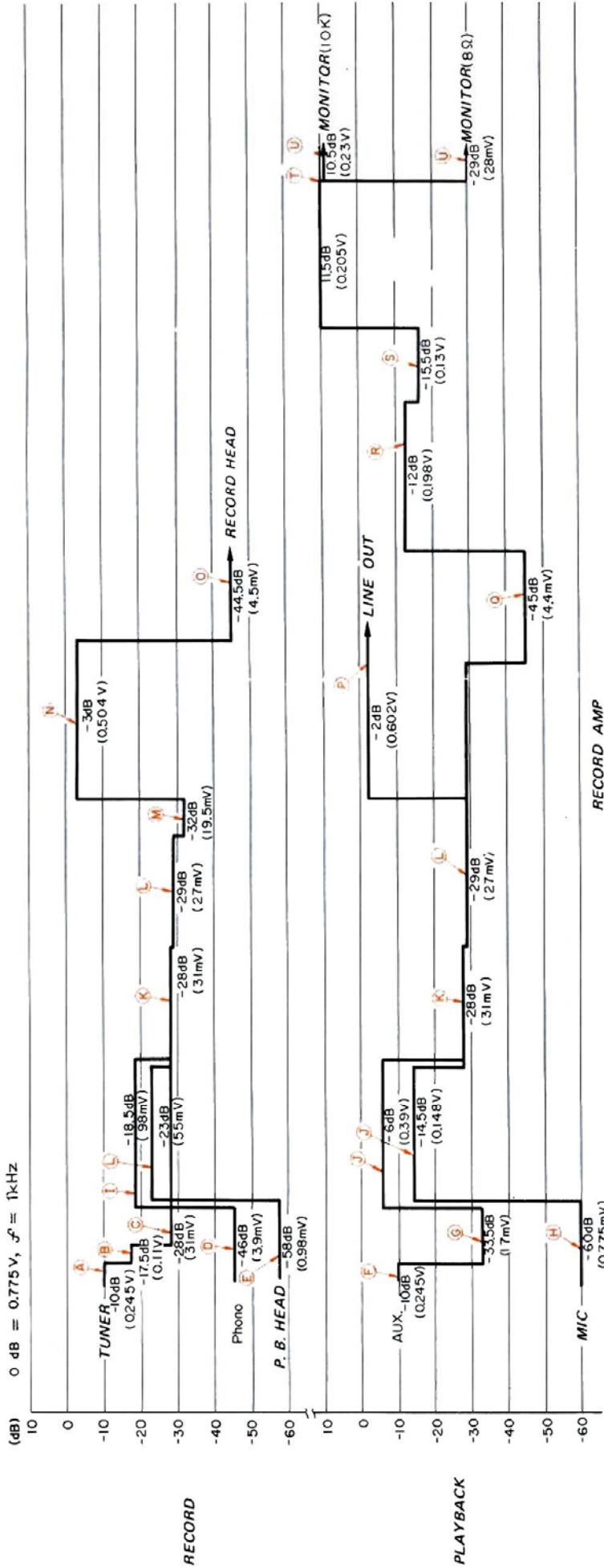
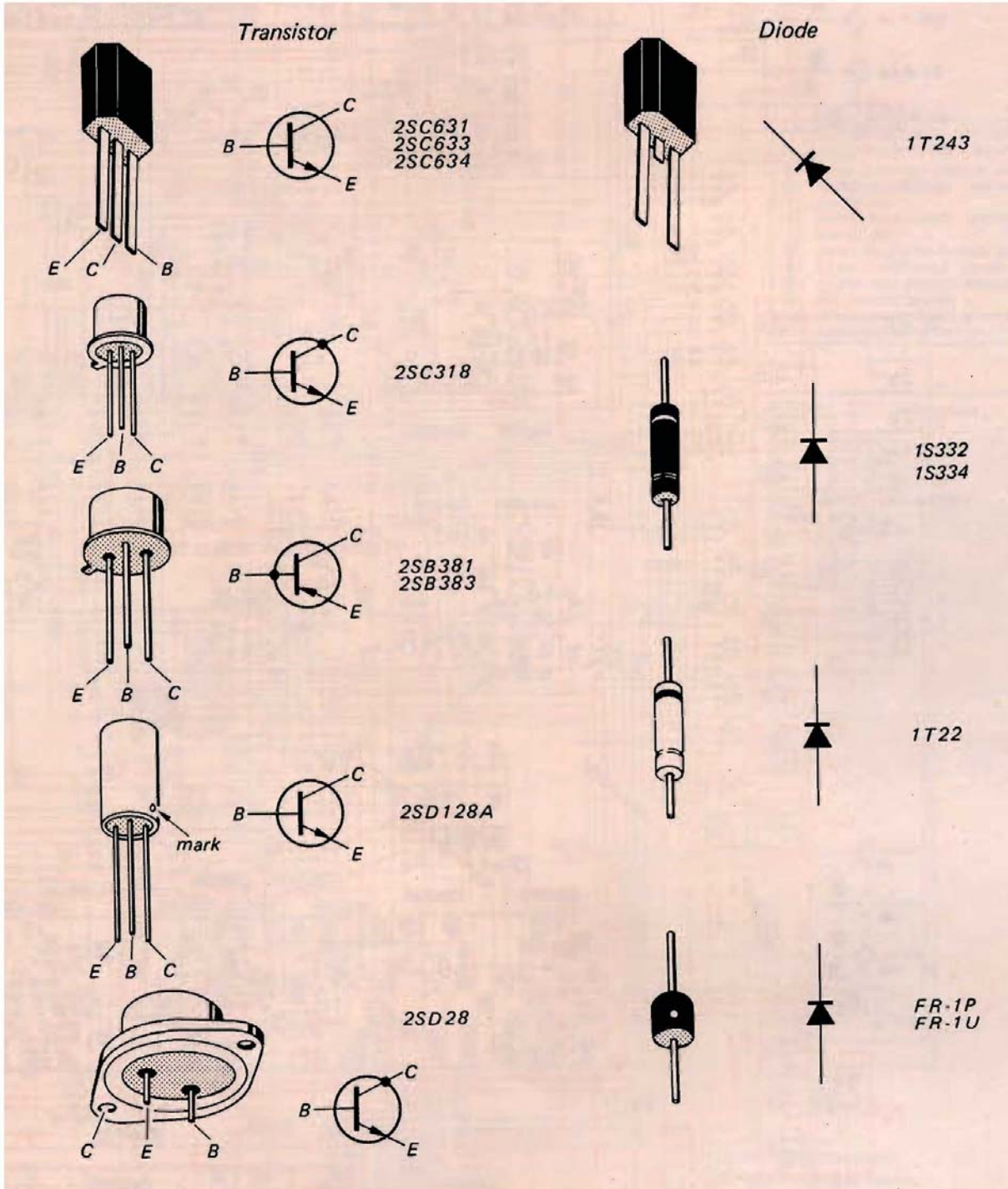


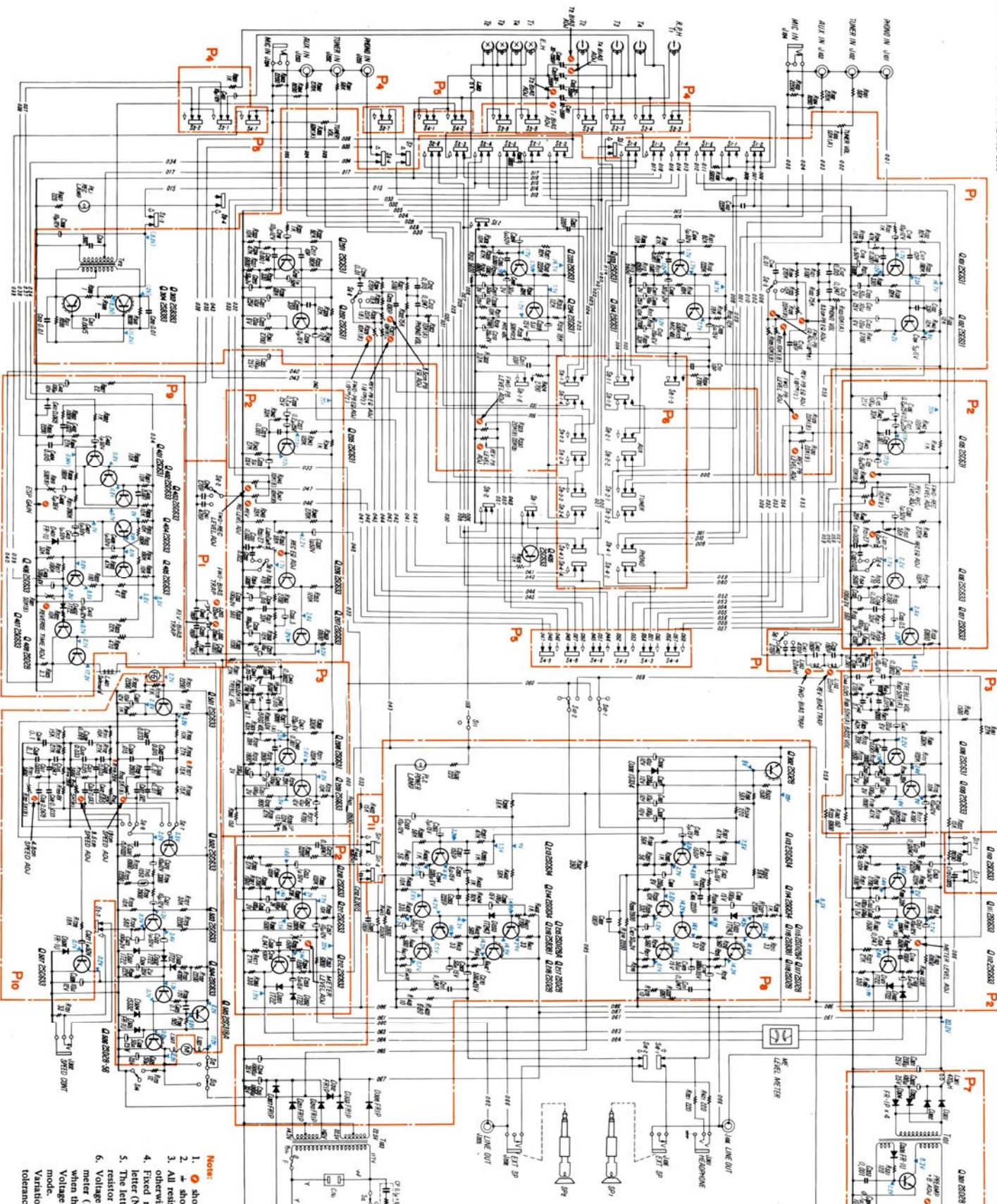
Fig. 8-17 Noise suppress switch circuit board removal

9. LEVEL DIAGRAM



10. SEMICONDUCTOR ELECTRODES





SWITCH NO.	DESCRIPTION	POSITION
S1-1-4	RECORD/PLAYBACK SWITCH	PLAYBACK
S1-1-5	RECORD/PLAYBACK SWITCH	PLAYBACK
S1-1-6	DIRECTION SWITCH	FORWARD
S1-1-7	DIRECTION SWITCH	FORWARD
S1-1-8	MUTING, BIAS & ESR SWITCH	PLAY
S1-1-9	SPEED & EQUALIZER SWITCH	19 cm/sec (7 1/2, 105)
S1-1-10	ESR SWITCH	ON
S1-1-11	RECORD/STOP SWITCH	RECORD
S1-1-12	RECORD/PLAYBACK SWITCH	PLAYBACK
S1-1-13	MODE SWITCH	STEREO
S1-1-14	INSTANT STOP SWITCH	OFF
S1-1-15	AUTO SHUT-OFF SWITCH	ON
S1-1-16	FAST FORWARD/REWIND SWITCH	OFF
S1-1-17	POWER SWITCH	ON
S1-1-18	SPEAKER ON/OFF SWITCH	ON
S1-1-19	NOISE SUPPRESS SWITCH	OFF



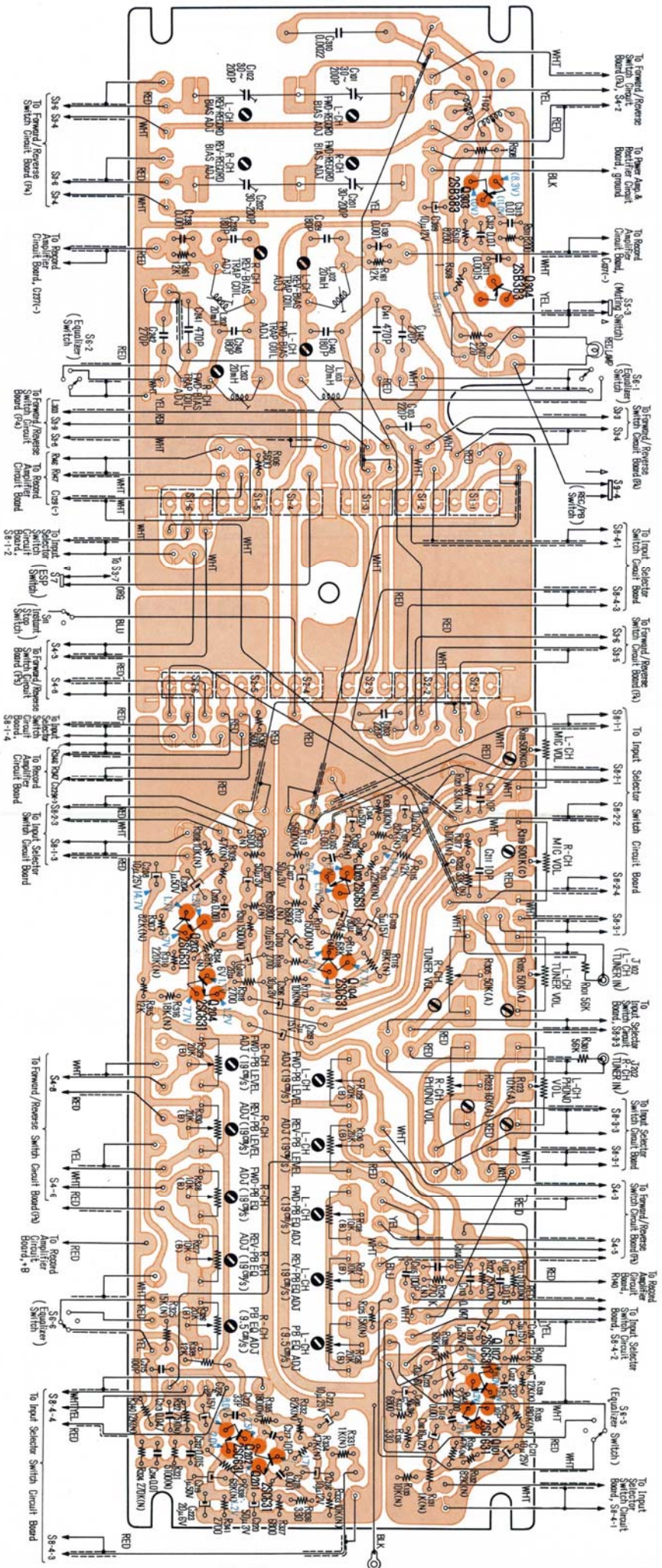
Note:

1. R shows adjustable resistor.
2. G shows grounding to chassis.
3. All resistors and capacitors are rated in Ω and μF unless otherwise specified.
4. Fixed resistor whose rating value is suffixed with the letter (N) is low-noise resistor.
5. The letter (A), (B), (C) or (S) suffixed to rating value of resistor indicates its characteristics.
6. Voltage values are measured to ground circuit with a voltmeter (20 k Ω/V) in playback mode at 7% rms (19 cm/s) when the power output is 1 watt without input signal. Voltage values in parentheses are measured in record mode. Variations may be noted because of normal production tolerances.

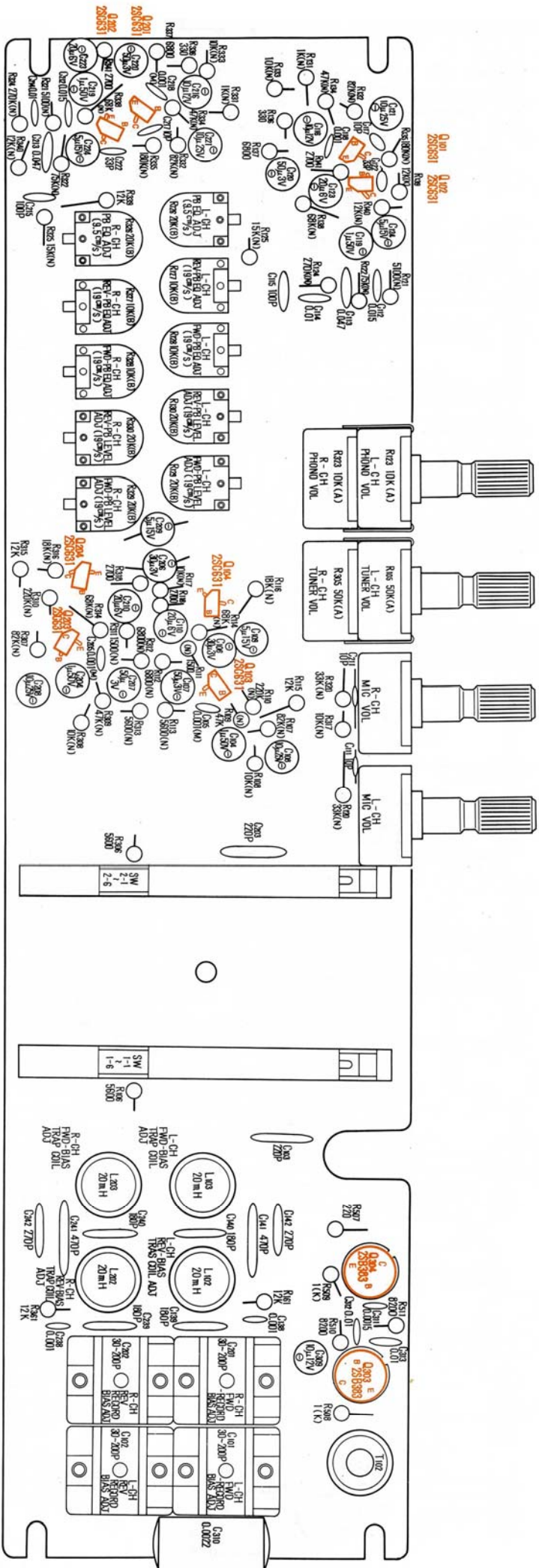
12. MOUNTING DIAGRAM

12-1. Preamplifier & Bias OSC Circuit Board (P1)

— Conductor side —

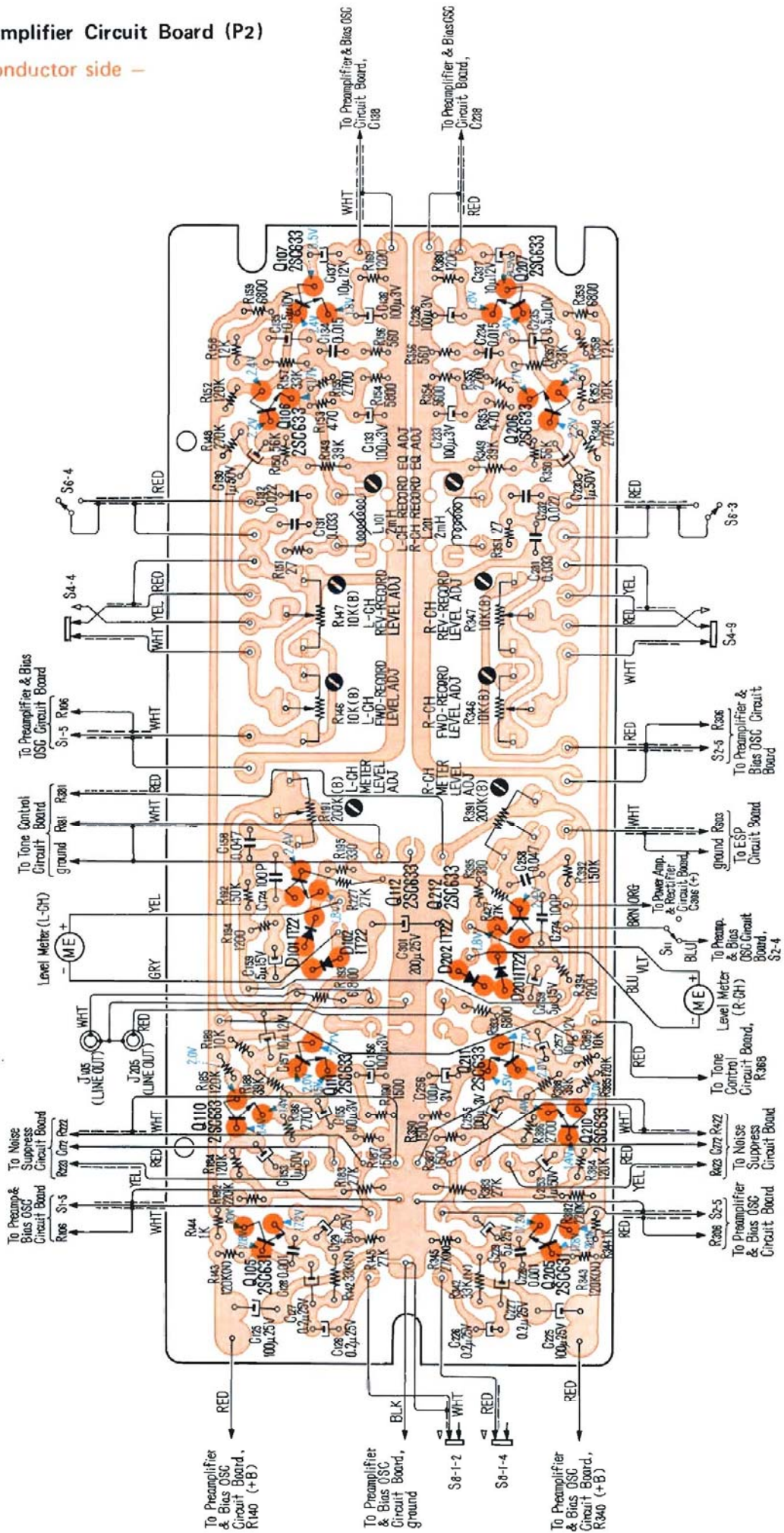


Printed circuit board
Part No.: 1-538-651-11



12-2. Record Amplifier Circuit Board (P2)

— Conductor side —

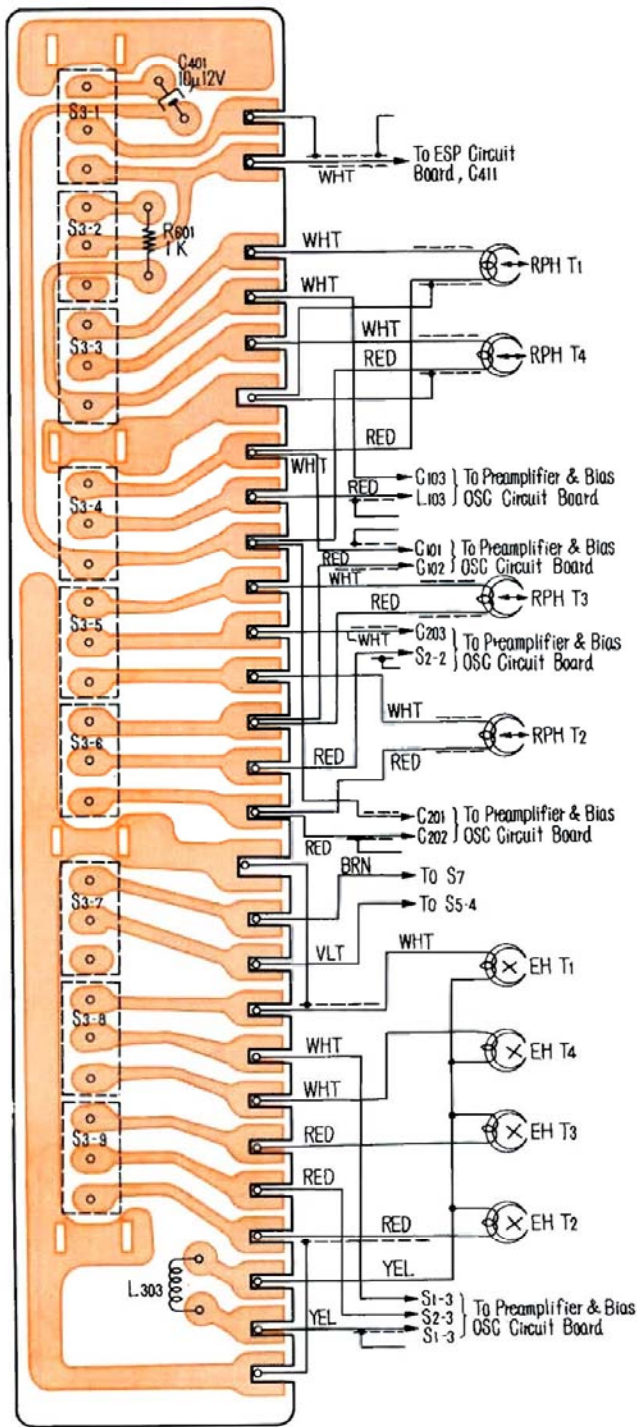


Printed circuit board
Part No.: 1-538-652-13

12-4. Forward/Reverse Switch Circuit Boards (P4, P5)

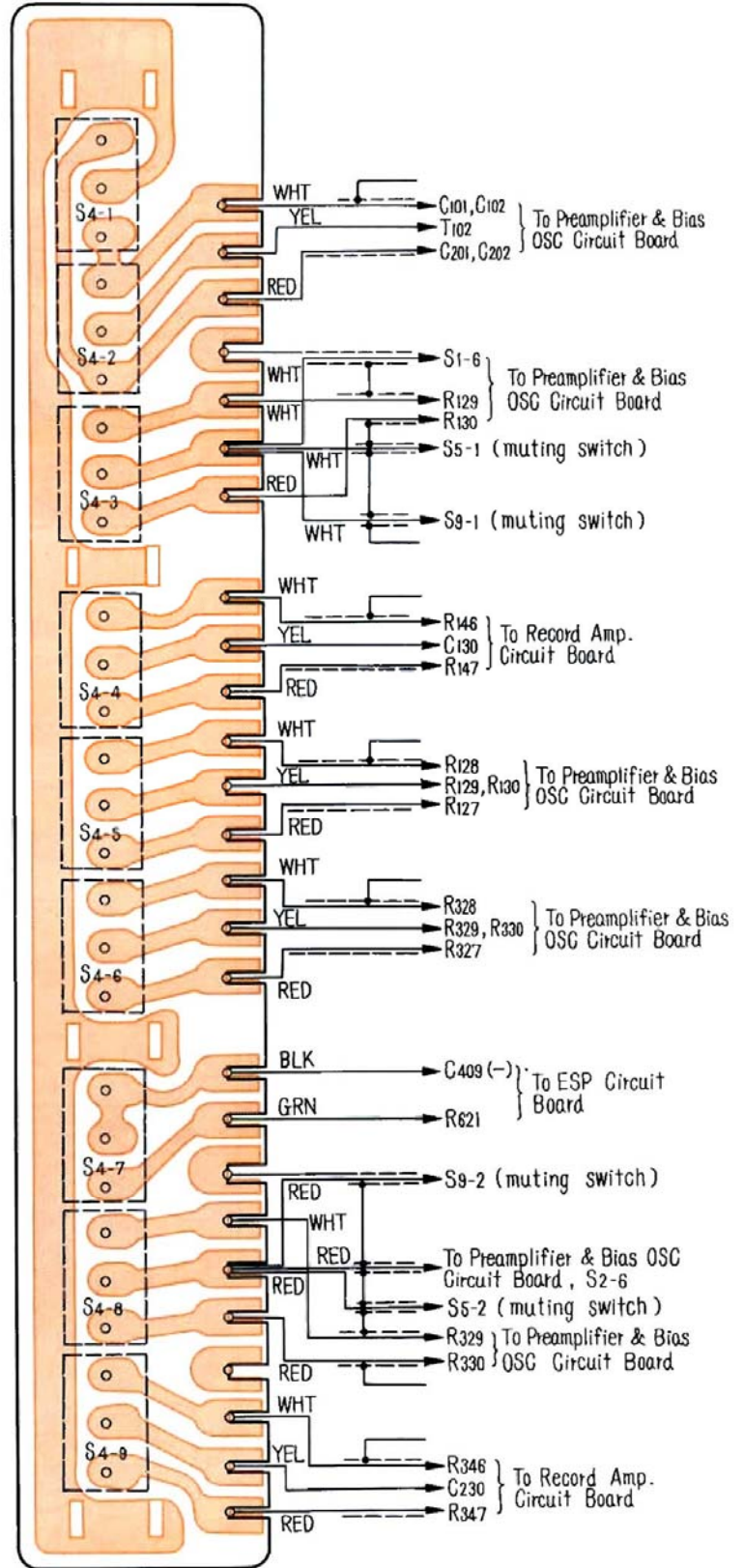
— Conductor side —

(P4)



Printed circuit board
Part No.: 1-538-654-11

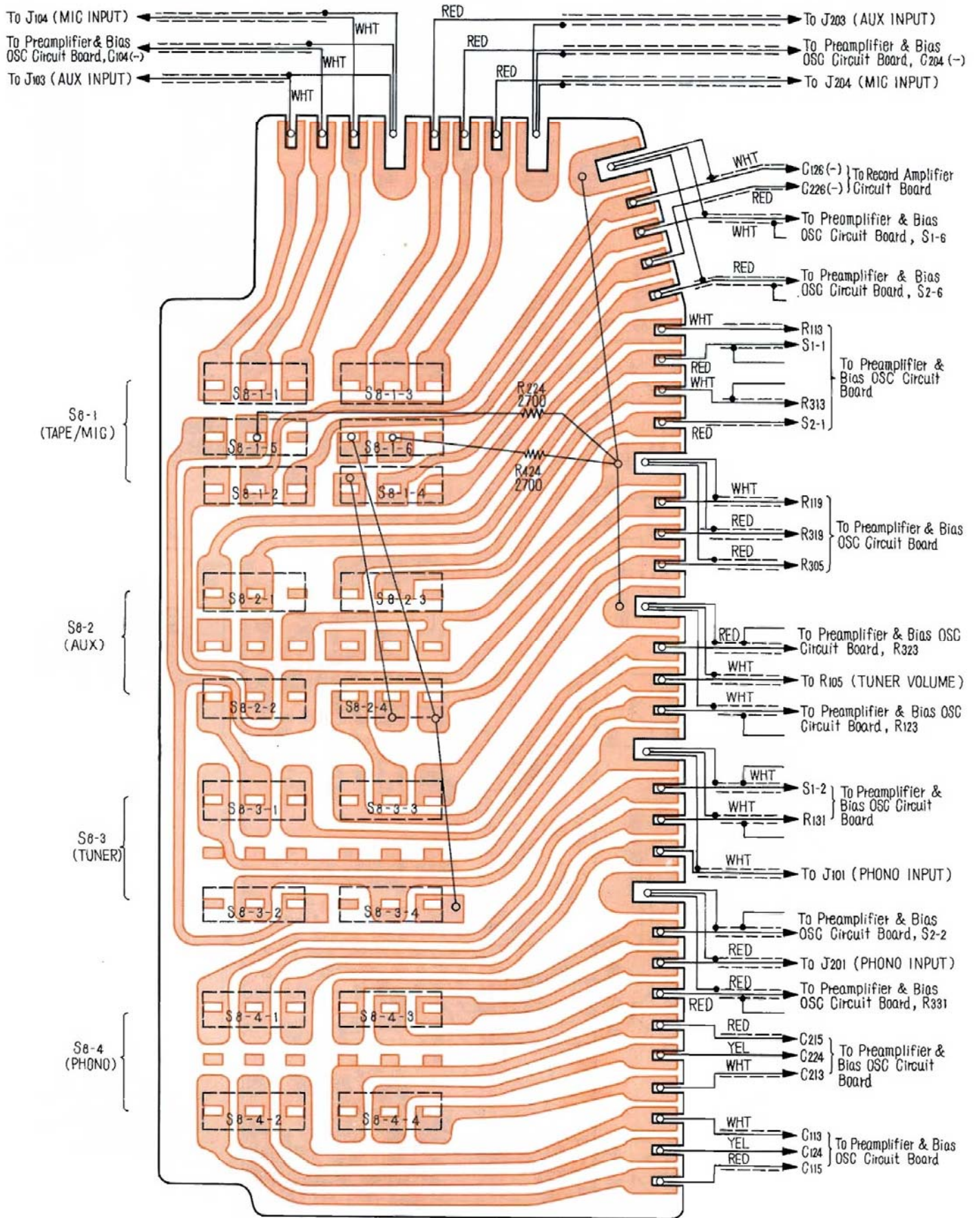
(P5)



Printed circuit board
Part No.: 1-538-655-11

12-5. Input Selector Switch Circuit Board (P6)

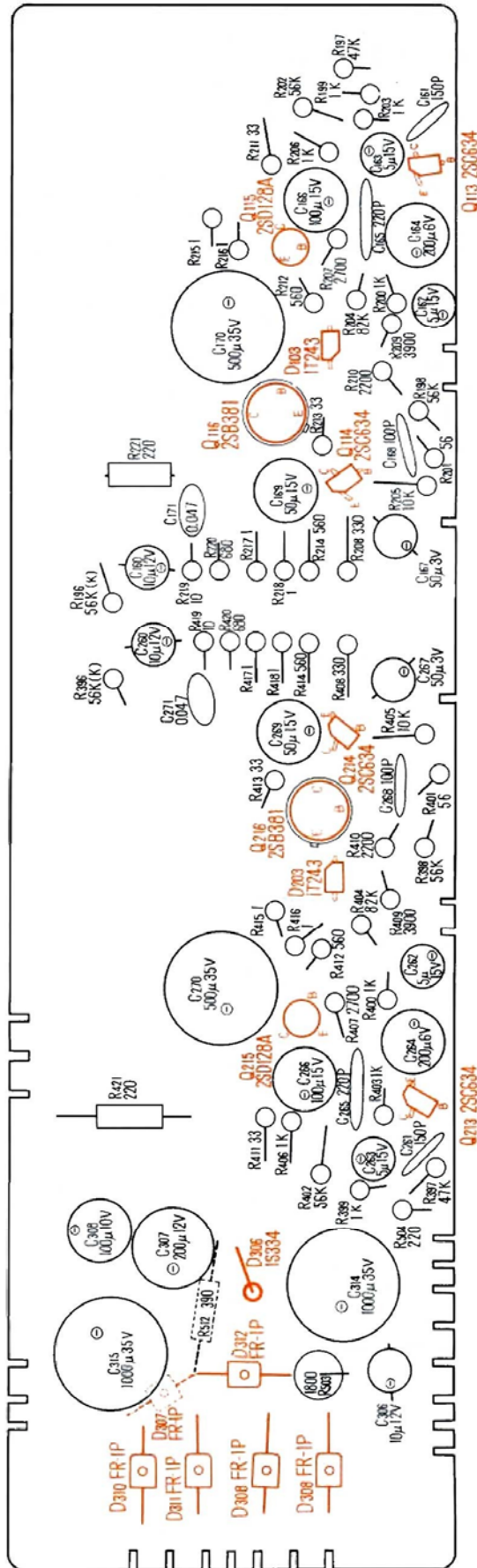
— Conductor side —



Printed circuit board
Part No.: 1-538-656-12

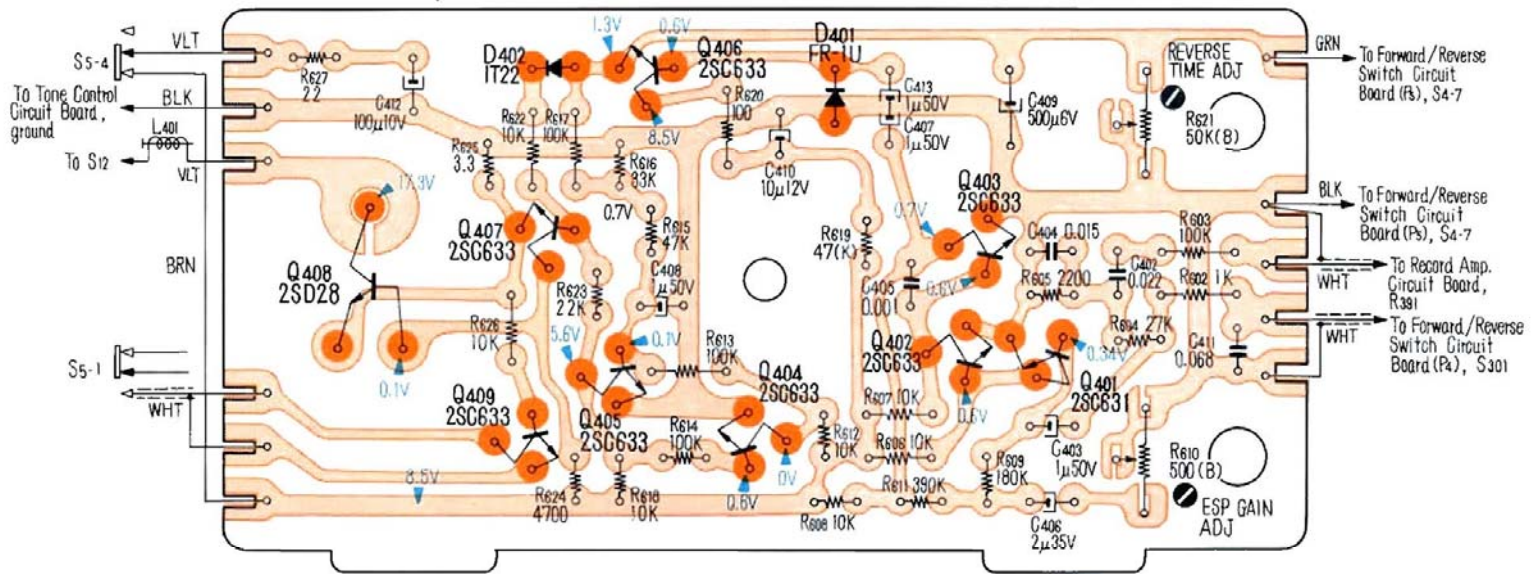
12-6. Power Amplifier Circuit Board (P8)

— Component side —



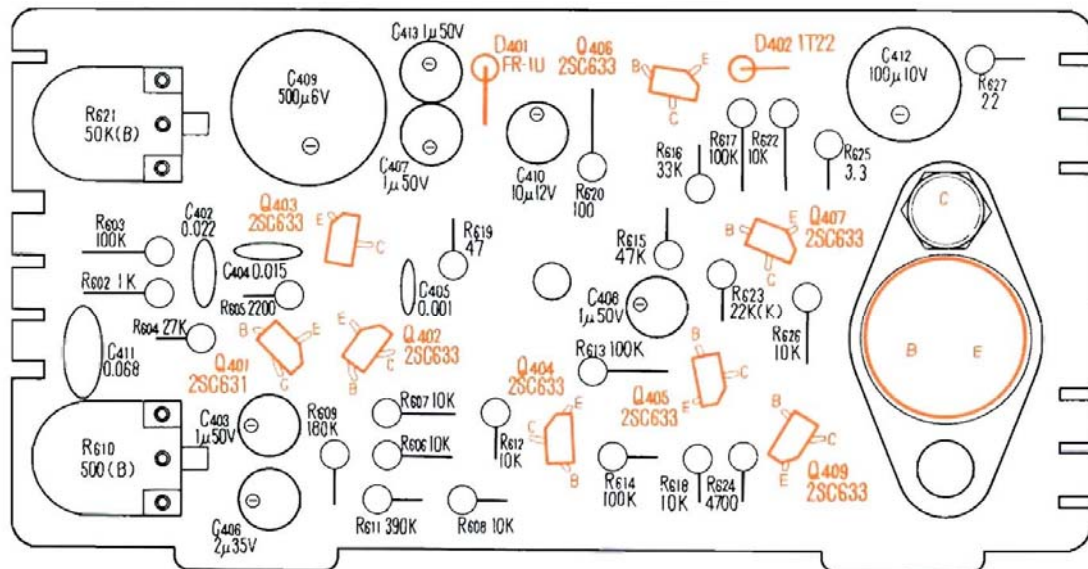
12-7. ESP Circuit Board (P9)

— Conductor side —



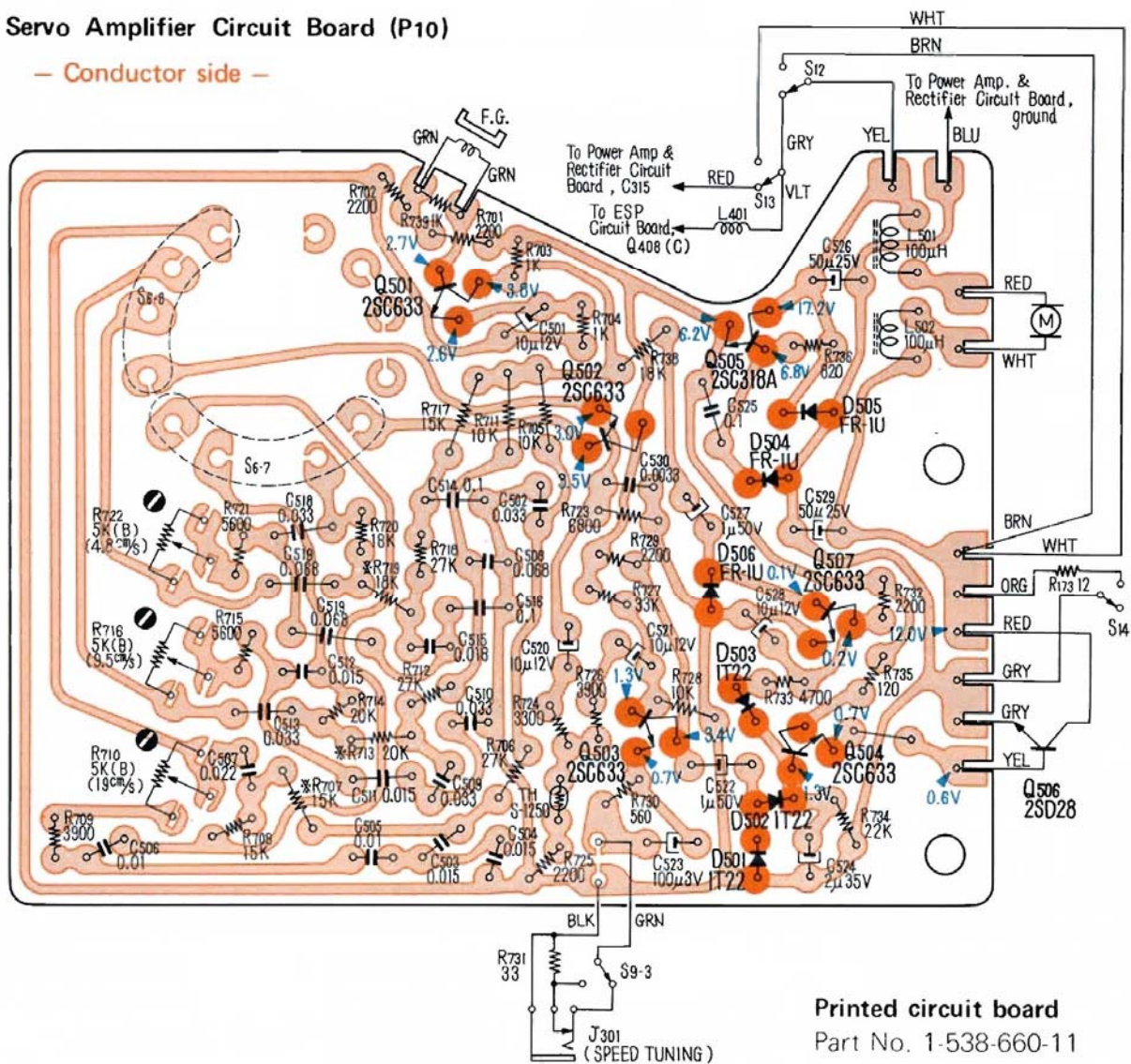
Printed circuit board
Part No.: 1-538-832-11

— Component side —

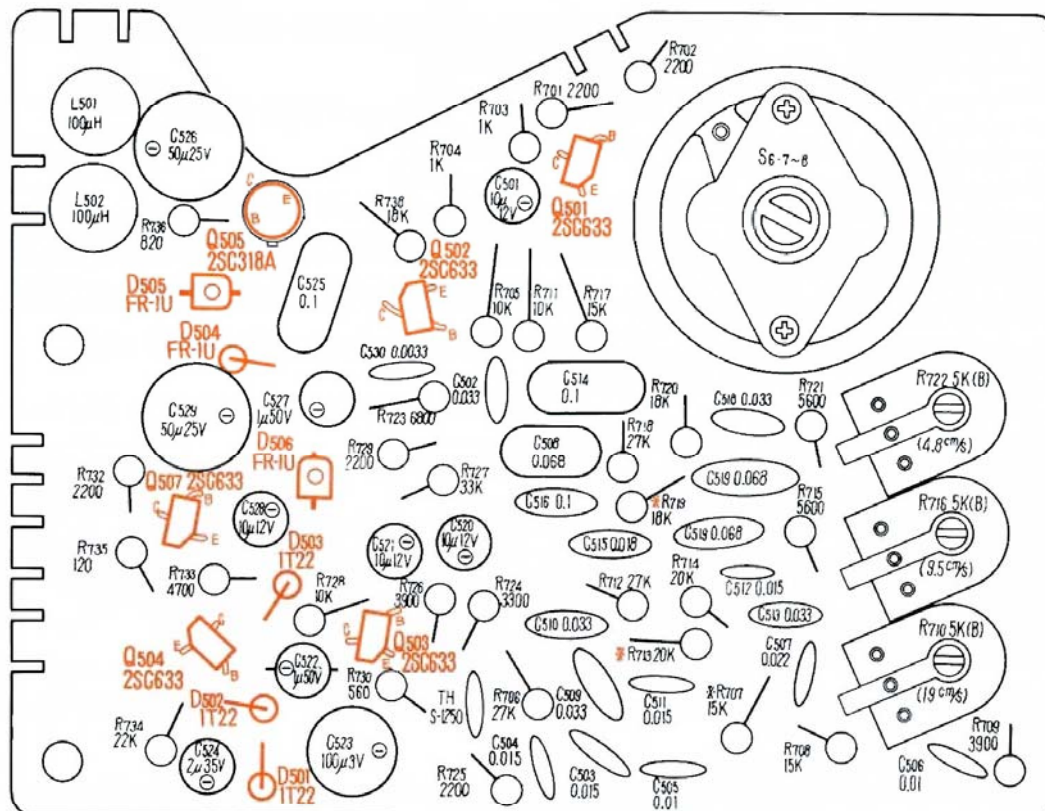


12-8. Servo Amplifier Circuit Board (P10)

— Conductor side —

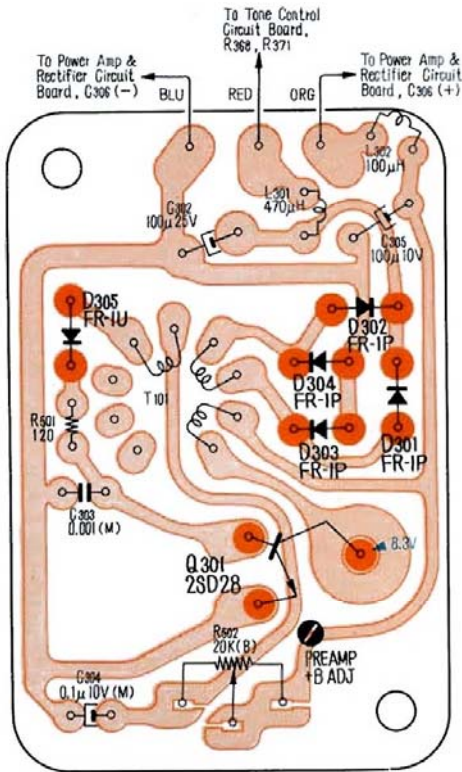


— Component side —



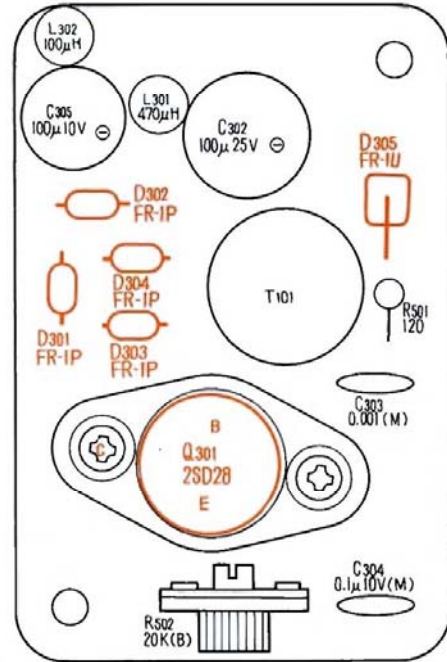
12-9. DC-DC Converter Circuit Board (P7)

— Conductor side —



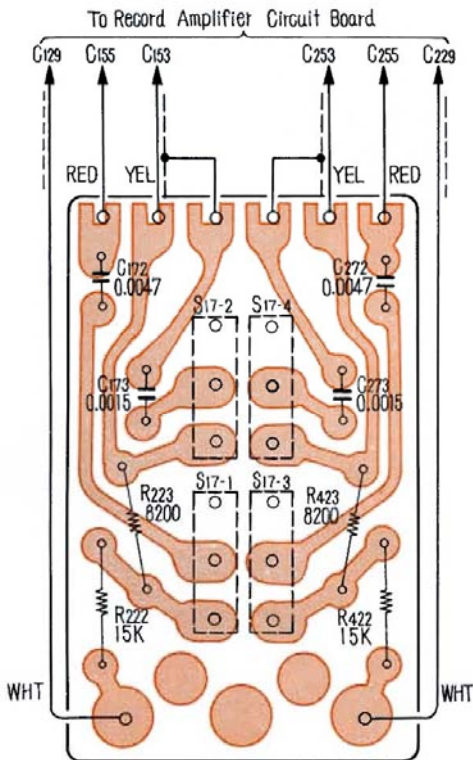
Printed circuit board
Part No.: 1-538-657-11

— Component side —



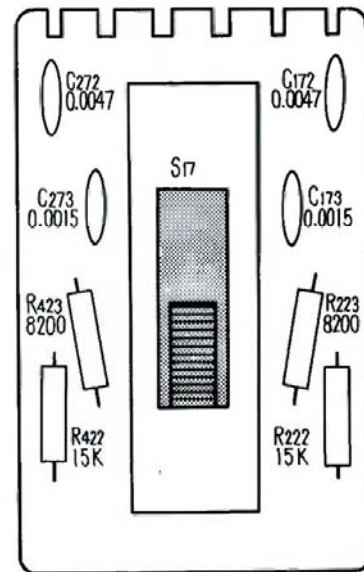
12-10. Noise Suppress Switch Circuit Board (P11)

— Conductor side —



Printed circuit board
Part No.: 1-538-679-13

— Component side —



13. ELECTRICAL ADJUSTMENT

Item	Signal Source	Output Connection	Mode	Adjust	Remarks																								
1. playback azimuth alignment	3rd section (10 KHz) of SONY alignment tape, J-19-F2	VTVM and 100 k Ω resistor in parallel to line output	playback (forward & reverse)	azimuth alignment screws See Fig. 13-3	Adjust to obtain maximum reading on VTVM. Adjust to obtain the frequency shown below. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>tape speed</td> <td>reading</td> </tr> <tr> <td>17$\frac{1}{2}$ ips (4.8 cm/s)</td> <td>1000\pm5 Hz</td> </tr> <tr> <td>3$\frac{3}{4}$ ips (9.5 cm/s)</td> <td>2000\pm8 Hz</td> </tr> <tr> <td>7$\frac{1}{2}$ ips (19 cm/s)</td> <td>4000\pm15 Hz</td> </tr> </table> Note: Each speed adjustment should be performed after 30 sec. from starting.	tape speed	reading	17 $\frac{1}{2}$ ips (4.8 cm/s)	1000 \pm 5 Hz	3 $\frac{3}{4}$ ips (9.5 cm/s)	2000 \pm 8 Hz	7 $\frac{1}{2}$ ips (19 cm/s)	4000 \pm 15 Hz																
tape speed	reading																												
17 $\frac{1}{2}$ ips (4.8 cm/s)	1000 \pm 5 Hz																												
3 $\frac{3}{4}$ ips (9.5 cm/s)	2000 \pm 8 Hz																												
7 $\frac{1}{2}$ ips (19 cm/s)	4000 \pm 15 Hz																												
2. tape speed adjustment	SONY speed check tape, SPC-47	frequency counter & 100 k Ω resistor in parallel to line output	playback (forward & reverse)	R ₂₂₂ ... for 1 $\frac{1}{2}$ ips (4.8cm/s) R ₁₆ ... for 3 $\frac{3}{4}$ ips (9.5cm/s) R ₁₀ ... for 7 $\frac{1}{2}$ ips (19cm/s) See Fig. 13-3																									
3. playback level adjustment	1st section (1 KHz) of SONY alignment tape, J-19-F2	VTVM and 100 k Ω resistor in parallel to line output	playback (forward & reverse)	R ₁₂₉ (L), R ₃₂₉ (R) ...forward R ₁₃₀ (L), R ₃₃₀ (R) ...reverse See Fig. 13-4	Adjust to obtain -2 dB (0.6 V) on VTVM. Deviation against 1 kHz of 2nd section <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>tape section</td> <td>3rd</td> <td>4th</td> <td>5th</td> <td>6th</td> <td>7th</td> </tr> <tr> <td>frequency</td> <td>10 KHz</td> <td>12.5 KHz</td> <td>7 KHz</td> <td>100 Hz</td> <td>50 Hz</td> </tr> <tr> <td>L-CH</td> <td>0 \pm 2 dB</td> <td>0 \pm 2 dB</td> <td>0 \pm 2 dB</td> <td>1.5\pm2 dB</td> <td>0\pm2 dB</td> </tr> <tr> <td>R-CH</td> <td></td> <td></td> <td></td> <td>2\pm2 dB</td> <td>0\pm2 dB</td> </tr> </table>	tape section	3rd	4th	5th	6th	7th	frequency	10 KHz	12.5 KHz	7 KHz	100 Hz	50 Hz	L-CH	0 \pm 2 dB	0 \pm 2 dB	0 \pm 2 dB	1.5 \pm 2 dB	0 \pm 2 dB	R-CH				2 \pm 2 dB	0 \pm 2 dB
tape section	3rd	4th	5th	6th	7th																								
frequency	10 KHz	12.5 KHz	7 KHz	100 Hz	50 Hz																								
L-CH	0 \pm 2 dB	0 \pm 2 dB	0 \pm 2 dB	1.5 \pm 2 dB	0 \pm 2 dB																								
R-CH				2 \pm 2 dB	0 \pm 2 dB																								
4. playback equalizer adjustment	SONY alignment tape, J-19-F2	VTVM and 100 k Ω resistor in parallel to line output	playback (forward & reverse)	R ₁₂₈ (L), R ₃₂₈ (R) ...forward R ₁₂₇ (L), R ₃₂₇ (R) ...reverse See Fig. 13-4	1. Adjust to obtain the response shown above. 2. Repeat playback level adjustment again.																								
5. meter level adjustment	1 KHz, -60 dB (0.78 mV) to mic. input	VTVM and 100 k Ω resistor in parallel to line output	record (forward)	R ₁₉₁ (L), R ₃₉₁ (R) See Fig. 13-4.	1. Set headphone level switch to "HIGH". 2. Adjust mic. volume control (R ₁₁₉ & R ₃₁₉) to obtain -2 dB (0.6 V) on VTVM. 3. Adjust R ₁₉₁ & R ₃₉₁ so that the pointers of level meter indicate 100 on the scale.																								
6. trap coil adjustment	no signal input (input selector: tuner)	VTVM between collector of Q ₁₀₇ (Q ₂₀₇) and ground	record (forward & reverse)	L ₁₀₃ (L), L ₂₀₃ (R) ...forward L ₁₀₂ (L), L ₂₀₂ (R) ...reverse See Fig. 13-4	1. Set tuner volume controls to minimum position. 2. Connect VTVM across forward rec. head. 3. Set the machine in forward mode. 4. Adjust C ₁₀₁ (C ₂₀₁) to obtain 50 V on VTVM across forward rec. head. 5. Adjust L ₁₀₂ (L ₂₀₂) to obtain minimum reading on VTVM connected to collector of Q ₁₀₇ (Q ₂₀₇). 6. Connect VTVM across reverse rec. head. 7. Set the machine in reverse mode. 8. Adjust C ₁₀₂ (C ₂₀₂) to obtain 50 V on VTVM across reverse rec. head. 9. Adjust L ₁₀₂ (L ₂₀₂) to obtain minimum reading on VTVM connected to collector of Q ₁₀₇ (Q ₂₀₇).																								
7. record bias adjustment	1 KHz, -60 dB (0.78 mV) to mic. input	VTVM and 100 k Ω resistor in parallel to line output of another tape recorder	record (forward & reverse)	C ₁₀₁ (L), C ₂₀₁ (R) ...forward C ₁₀₂ (L), C ₂₀₂ (R) ...reverse See Fig. 13-4	1. In making adjustment, it is recommendable to use another tape recorder besides TC-560. 2. Make height of their reel panels even and thread a blank tape. (See Fig. 13-1) 3. Deliver 1 KHz signal of -60 dB to mic. jack of TC-560. 4. Adjust mic. volume controls R ₁₁₉ (R ₃₁₉) so that the pointers of level meters indicate 100 on the scale. 5. Set TC-560 in forward-record mode and other in playback mode. 6. Set both channels to 7 $\frac{1}{2}$ ips (19 cm/s) or 3 $\frac{3}{4}$ ips (9.5 cm/s). 7. Adjust trimmer capacitors C ₁₀₁ (C ₂₀₁) by turning it slowly so that reading on VTVM is maximum. 8. Change places of machine and thread a blank tape as shown in Fig. 13-2. 9. Set TC-560 to reverse mode. 10. Adjust by turning trimmer capacitors C ₁₀₂ (C ₂₀₂) in the same way as forward direction. If you do not have any other tape recorder, adjust trimmer capacitors to obtain 40V on VTVM connected across rec./p.b. head.																								
8. record level adjustment	1 KHz, -60 dB (0.78 mV) to mic. input (input selector: tuner)	VTVM and 100 k Ω resistor to line output	record & playback (forward & reverse)	R ₁₄₆ (L), R ₃₄₆ (R) ...forward R ₁₄₇ (L), R ₃₄₇ (R) ...reverse See Fig. 13-4	1. Set mic. volume controls R ₁₁₉ (R ₃₁₉) so that the pointers of level meters indicate 100 on the scale. 2. Record signal on blank tape and playback it. 3. Repeating step 2, adjust adjustable resistors in record mode to obtain -2dB(0.6V) on VTVM in playback mode.																								
9. ESP gain adjustment	1 KHz, -47.5 dB (1.32 mV) to tuner input (input selector: tuner)		playback (forward)	R ₆₁₀ See Fig. 13-5	1. Deliver 1 KHz signal of -10 dB (0.25V) to tuner input of R-CH and turn tuner volume control so that the pointer of level meter (R) indicates 100 on the scale. 2. Turn adjustable resistor R ₆₁₀ fully clockwise and adjustable resistor R ₆₂₁ to mechanical mid position. 3. Deliver 1 KHz signal of -47.5 dB (1.32 mV) to tuner input. 4. Place the machine in forward-playback mode. 5. After 5 seconds, feed off input signal. 6. At 12 seconds after that, turn R ₆₁₀ counterclockwise extremely slowly until machine reverses.																								
10. reverse time adjustment	1 KHz, -20 dB (0.078 V) to tuner input of R-CH (input selector: tuner)		playback (forward) auto-reverse switch: ON	R ₆₂₁	1. Deliver 1 KHz signal of -20 dB (0.078V) to tuner input of R-CH (tuner volume control: same as Item 9). 2. Place the machine in forward-playback mode. 3. After 5 seconds, feed off input signal. 4. Adjust adjustable resistor R ₆₂₁ so that the machine reverses at 8 seconds after input signal feeds off.																								

Notes:

- (1) The adjustments should be made in numerical order.
- (2) The adjustments should be performed in the tape speed of 19 cm/sec. (7½ ips), unless otherwise specified.
- (3) After adjustments, apply lock paint to the adjusted parts.
- (4) The following test equipments are to be provided for these adjustments.

Audio Generator, Attenuator (600Ω), VTVM, 100 kΩ Resistor, SONY Alignment Tape J-19-F2, SONY Speed Check Tape SPC-47, Digital Frequency Counter, Blank Tape.

- (5) Bias voltage across Heads shall be measured with the following values on VTVM in RECORD mode.

Rec./P.B. Head approx. 40 volts
Erase Head: approx. 120 volts

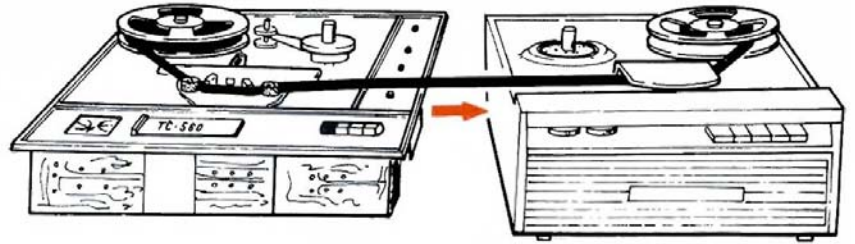


Fig. 13-1

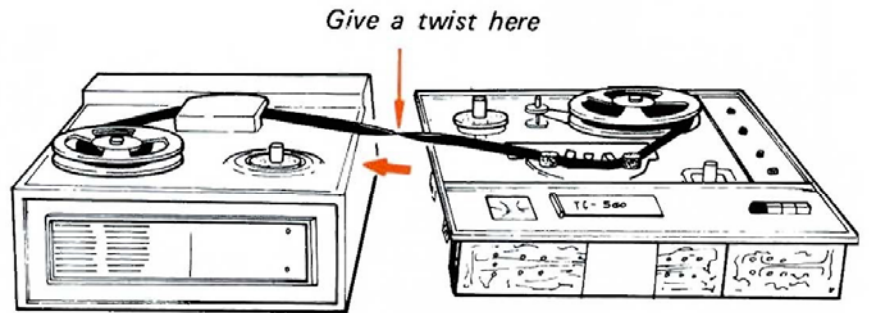


Fig. 13-2

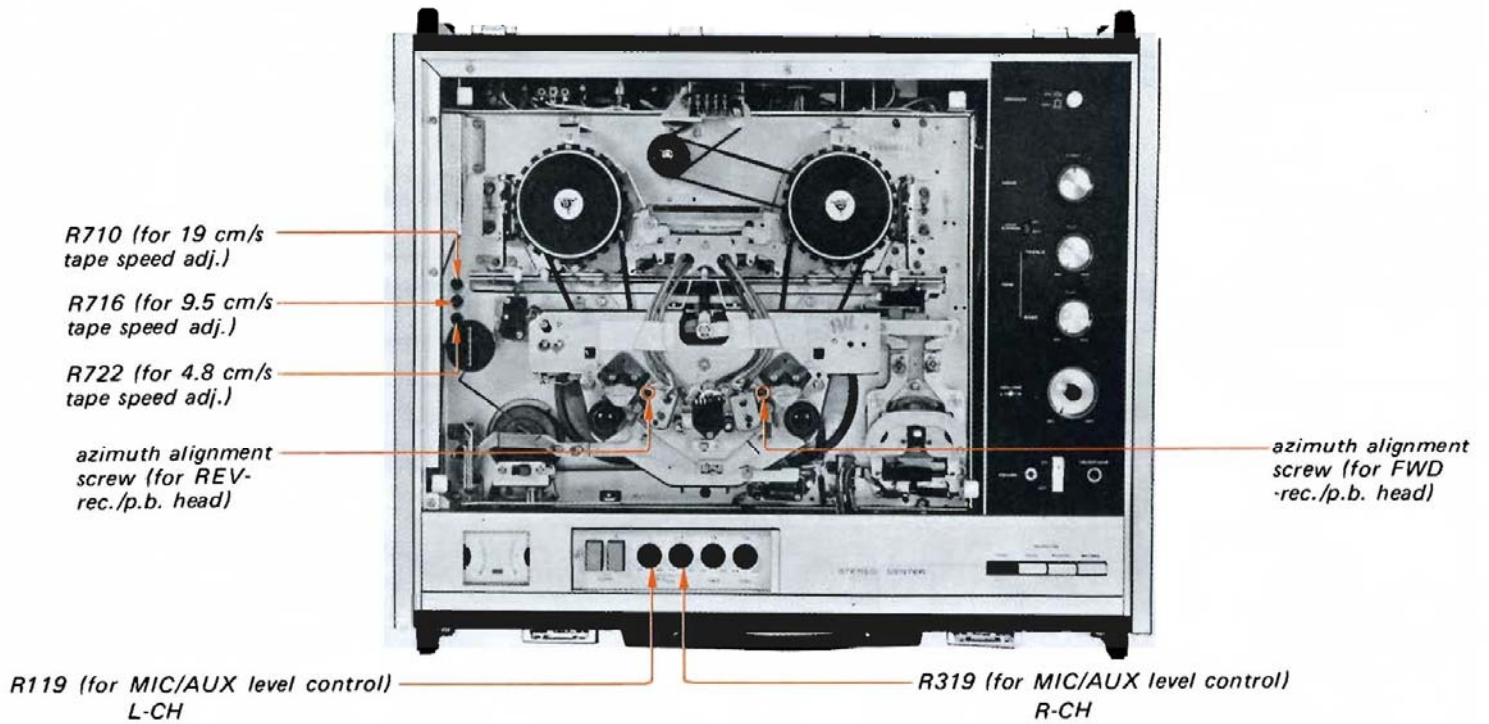


Fig. 13-3 Adjusting parts locations

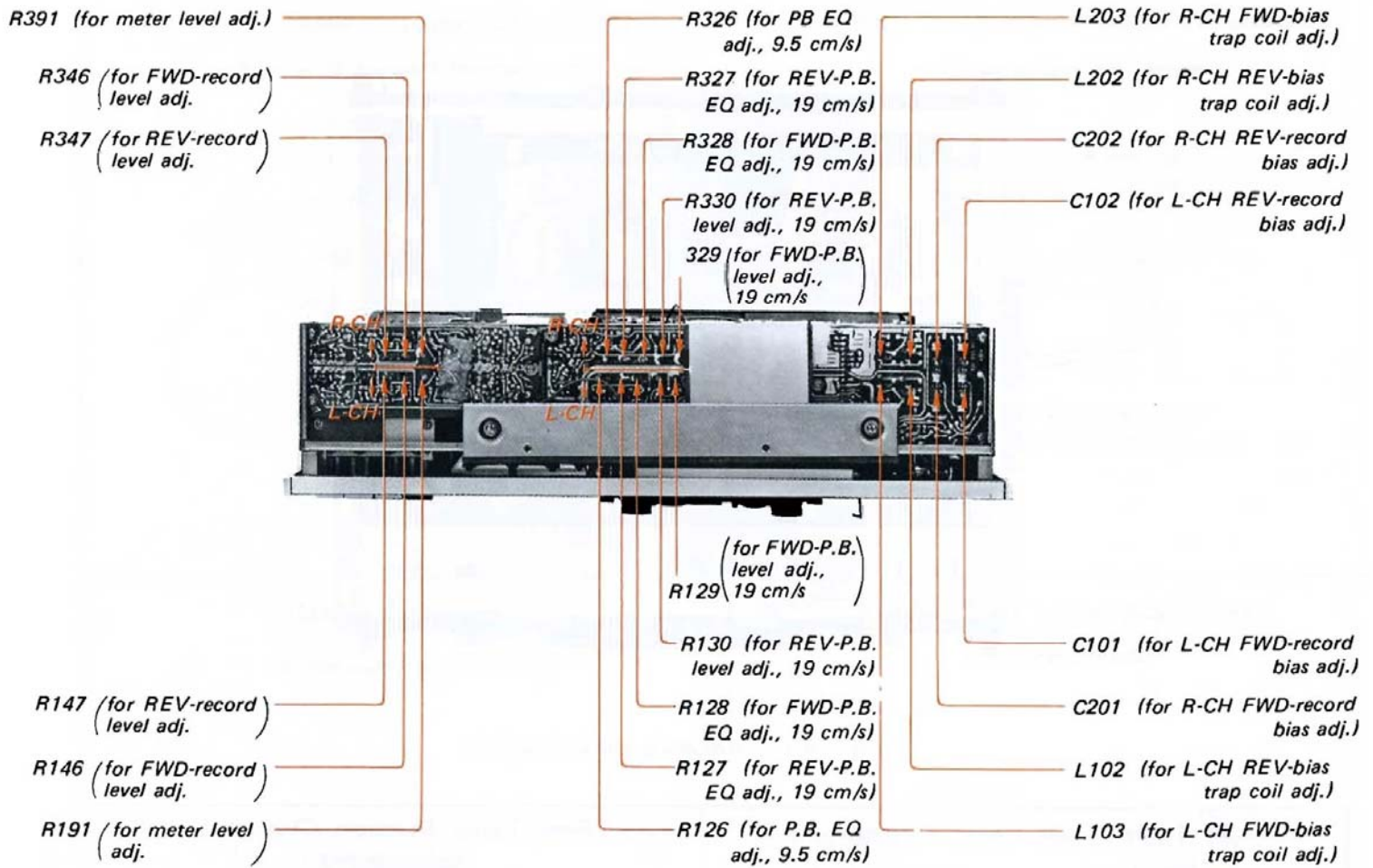


Fig. 13-4 Adjusting parts locations

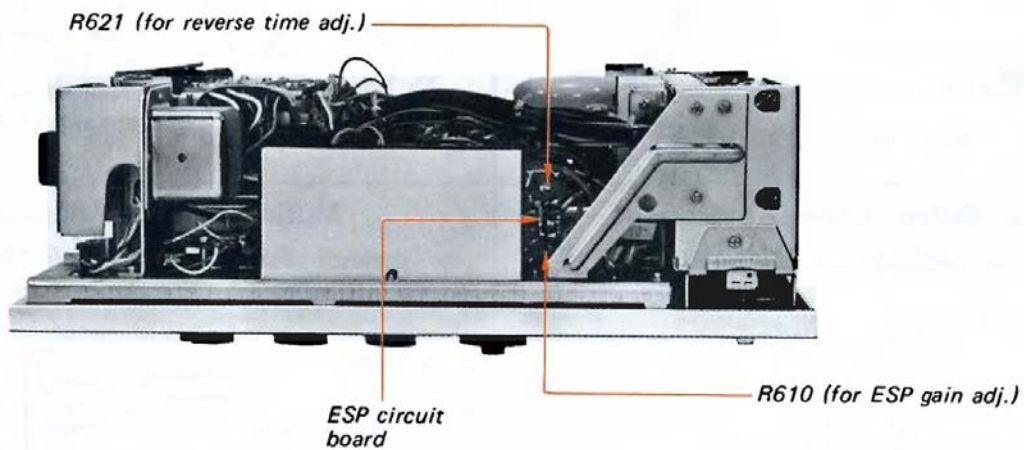


Fig. 13-5 Adjusting parts locations

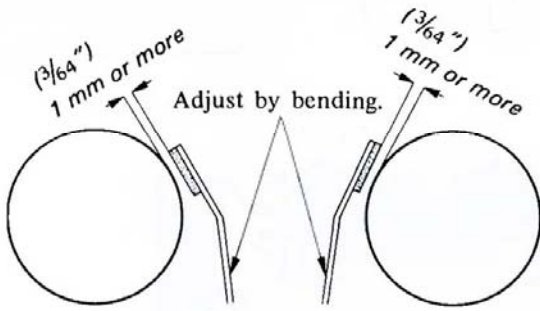
14. MECHANICAL ADJUSTMENT



Fig. 14-1 Adjusting parts locations

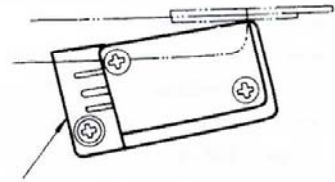
<p>1 Reel Table Lock Lever Adjustment</p> <ul style="list-style-type: none"> supply side in forward mode take-up side in forward mode both sides in fast forward/fast reverse mode <p>adjust by bending.</p> <p>2~2.5 mm (3/64~3/32")</p> <p>1~1.5 mm (3/64~1/16")</p>	<p>3 Reel Table Friction Change Lever Adjustment</p> <p>lever B</p> <p>lever A</p> <p>In case supply reel table does not stop moving in fast forward/fast reverse mode, bend tabs of the lever B downwards as shown.</p> <p>In case take-up belt still moves while holding take-up reel table in fast forward/fast reverse mode, bend tabs of the lever A upwards as shown.</p>
<p>2 Brake Shifter Lever Adjustment in forward/reverse mode</p> <p>1~1.5 mm (3/64~1/16")</p> <p>Adjust by bending.</p>	<p>4 Muting Switch Adjustment in forward/reverse mode</p> <p>lever</p> <p>1~2 mm (3/64~5/64")</p> <p>adjusting screws</p> <p>bracket, switch holder</p> <p>Loosen the screws and adjust the position of the muting switch.</p>

5 Back Tension Lever Adjustment
in stop & forward/reverse mode



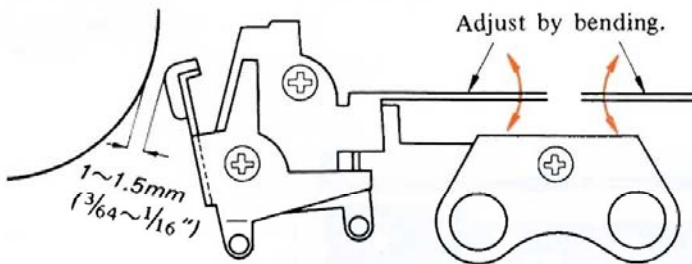
8 Instant Stop Microswitch Adjustment
in forward/reverse mode

When INST STOP lever pulls, the microswitch is pushed.

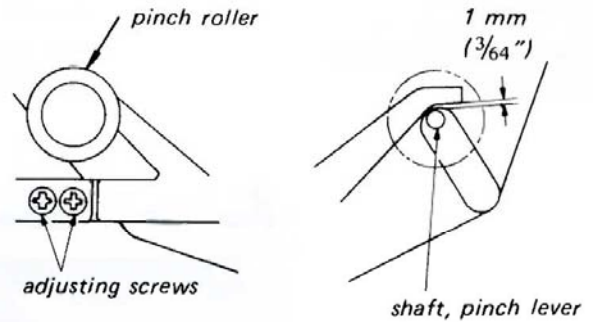


Loosen this screw and adjust the position of the switch.

6 Brake Adjustment
in forward/reverse mode



9 Instant Stop Lever Adjustment
in forward mode

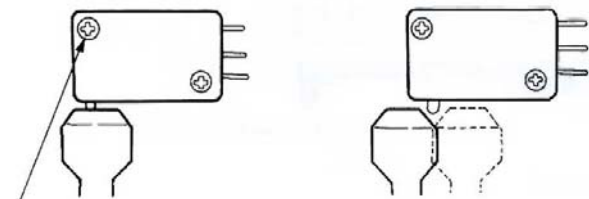


Loosen the screws and adjust so that the clearance is $\frac{3}{64}$ " (1 mm).

7 F.F. Microswitch Adjustment

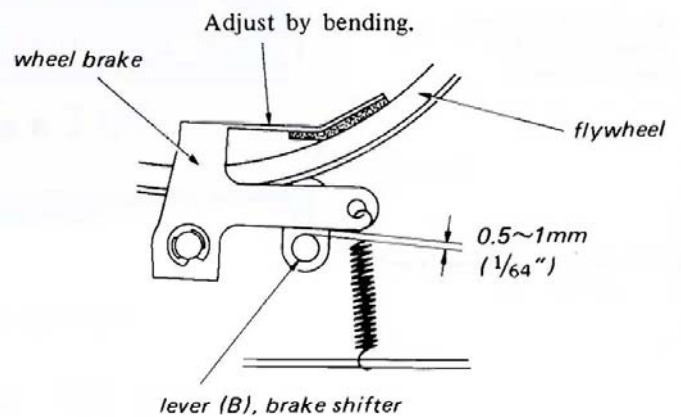
in stop mode

in fast forward/fast reverse mode



Loosen the screws and adjust the position of the switch.

10 Flywheel Brake Adjustment
in stop mode



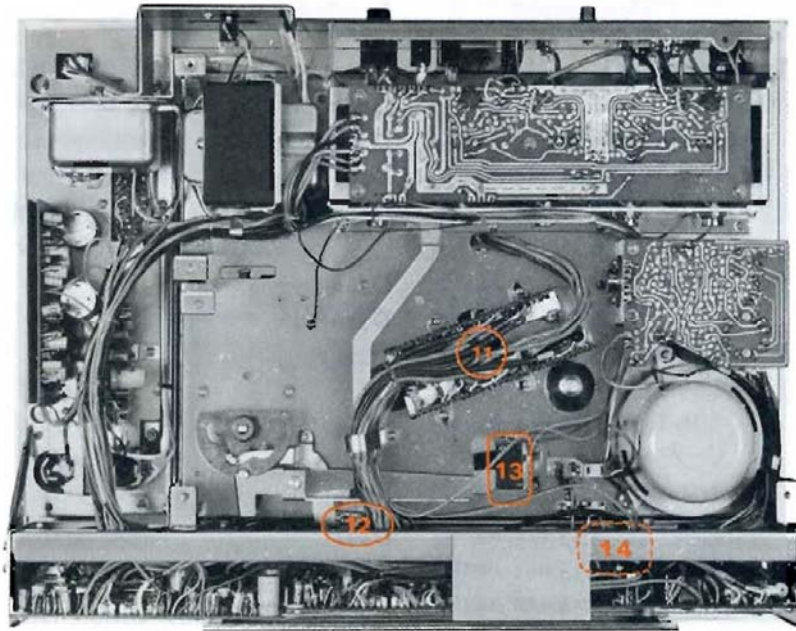
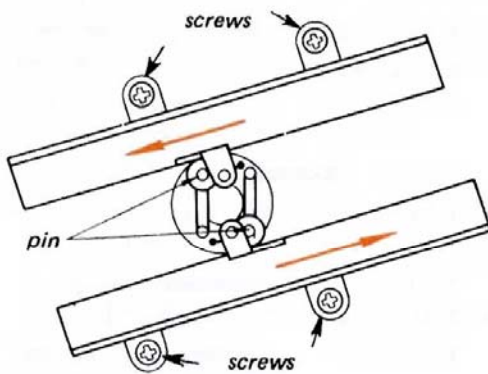


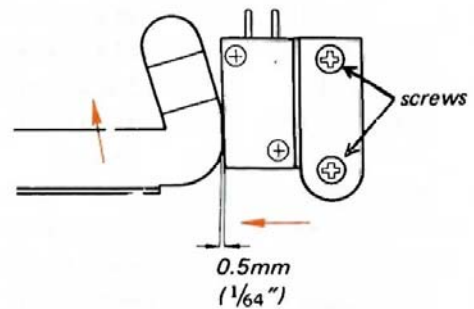
Fig. 14-2 Adjusting parts locations

11 Forward/Reverse Switch Adjustment
in forward mode



Loosen the screws, and pushing the switch boards in the directions shown with the arrows, fix the screws.

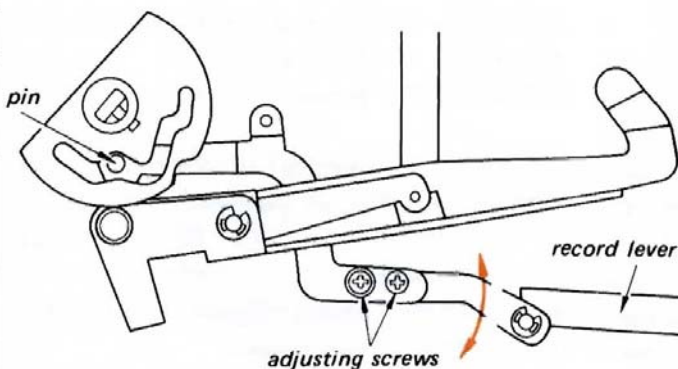
13 Power ON/OFF Microswitch Adjustment
in stop mode



Loosen the screws shown and adjust the position of the switch.

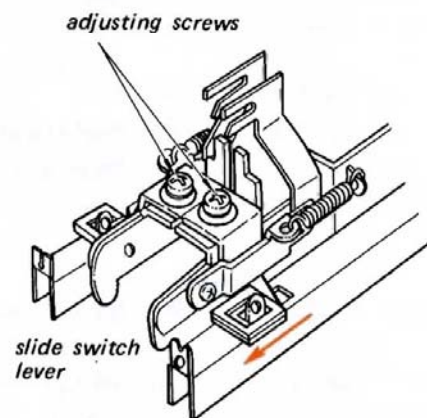
12 Record Shifter Lever Adjustment

in forward/reverse mode: Record buttons should not be pushed.
in stop mode: Record buttons should be pushed and locked.



If not, adjust the adjusting screws shown above.

14 Record Slide Switch Adjustment
in record mode



Fix the screws so that slide switch levers are pushed in the direction shown with the arrow.

15. ELECTRICAL PARTS LIST

<u>Symbol</u>	<u>Part No.</u>	<u>Description</u>	<u>Symbol</u>	<u>Part No.</u>	<u>Description</u>
Transistors			D304		FR-1P
Q101, 201		2SC631	D305		10D-05
Q102, 202		2SC631	D306		1S334
Q103, 203		2SC631	D307		FR-1P
Q104, 204		2SC631	D308		FR-1P
Q105, 205		2SC631			
Q106, 206		2SC633	D309		FR-1P
Q107, 207		2SC633	D310		FR-1P
Q108, 208		2SC631	D311		FR-1P
Q109, 209		2SC633	D312		FR-1P
Q110, 210		2SC633	D401		FR-1U
Q111, 211		2SC633			
Q112, 212		2SC633	D402		1T22
Q113, 213		2SC634	D501		1T22
Q114, 214		2SC634	D502		1T22
Q115, 215		2SD128A	D503		1T22
Q116, 216		2SB381	D504		1S332
Q117, 217		2SD28			
Q118, 218		2SD28	D505		10D-2
Q301		2SD28	D506		FR-1U
Q302		2SD28			
Q303		2SB383	TH		Thermistor S-1250
Q304		2SB383	RPH _{T2, 4}	8-822-542-25	Head, rec./p.b. ; PP77-4202A
Q401		2SC631	RPH _{T1, 3}	8-822-542-26	" , " ; PP77-4202B
Q402		2SC633	EH _{T1 - 4}	8-828-429-41	" , erase ; EF72-2904H
Q403		2SC633	Switches		
Q404		2SC633	S1-1-6	1-513-231-	rec./p.b.
Q405		2SC633	S2-1-6	1-513-231-	"
Q406		2SC633	S3-1-9	1-513-220-	direction change
Q407		2SC633	S4-1-9	1-513-220-	"
Q408		2SD28	S5-1-4	1-514-232-	muting, bias & ESP
Q409		2SC633	S6-1-8	1-513-362-	speed & equalizer
Q501		2SC633	S7	1-513-091-	ESP
Q502		2SC633	S8-1-4	1-514-305-12S	input selector
Q503		2SC633	S9-1-3	1-514-232-	muting
Q504		2SC633	S10-1-2	1-514-227-	mode
Q505		2SC318A	S11	1-514-057-	instant stop
Q506		2SD28	S12	1-514-231-	servo
Q507		2SC633	S13	1-514-231-	automatic shut-off
Diodes			S14	1-514-057-	f.f./rew.
D101, 201		1T22	S15	1-514-458-25S	power
D102, 202		1T22	S16-1-2	1-513-149-	speaker ON/OFF
D103, 203		1T243	S17-1-4	1-514-314-	noise suppress
D301		FR-1P	Jacks		
D302		FR-1P	J101, 201	1-507-142-13	phono input
D303		FR-1P	J102, 202	1-507-142-13	tuner input
			J103, 203	1-507-142-13	auxiliary input
			J104, 204	1-507-188-12	microphone

Symbol	Part No.	Description	Symbol	Part No.	Description
J 105, 205	1-507-142-13	line output	R118, 318	1-242-683-	2700Ω 1/4 W , carbon
J 106, 206	1-507-188-12	external speaker	R119, 319	1-221-914-	500kΩ (C) variable
J 301	1-507-187-21	headphone	R120, 320	1-242-709-	33kΩ (N) 1/4 W , carbon
J 302	1-507-188-12	speed tuning	R121, 321	1-242-690-	5100Ω (N) " , "
Miscellaneous			R122, 322	1-242-718-	75kΩ (N) " , "
CN1	1-509-015-	Connector, ac outlet	R123, 323	1-221-915-	10kΩ (A) variable
CN2	1-509-015-	" , "	R124, 324	1-242-731-	270kΩ (N) 1/4 W , carbon
CN3	1-509-109-	" , power	R125, 325	1-242-701-	15kΩ (N) " , "
SP1	1-502-175-	Speaker	R126, 326	1-221-952-	20kΩ (B) adjustable
SP2	1-502-175-	"	R127, 327	1-221-401-	10kΩ (B) "
PL1	1-518-007-03	Lamp, record	R128, 328	1-221-401-	10kΩ (B) "
PL2	1-518-007-03	" , power	R129, 329	1-221-952-	20kΩ (B) "
ME	1-524-051-13	Meter, level	R130, 330	1-221-952-	20kΩ (B) "
M	8-834-509-01	Motor (servo), D-509F	R131, 331	1-242-673-	1 kΩ (N) 1/4 W , carbon
T 101	1-441-339-	Transformer, converter	R132, 332	1-242-719-	82kΩ (N) " , "
T 102	1-433-116-	" , oscillator	R133, 333	1-242-697-	10kΩ (N) " , "
T 103	1-441-340-13	" , power	R134, 334	1-242-713-	47kΩ (N) " , "
L 101, 201	1-409-130-	Coil, equalizer ; 1.6~2.4mH	R135, 335	1-242-727-	180kΩ (N) " , "
L 102, 202	1-407-240-	" , trap ; 16~24mH	R136, 336	1-242-661-	330Ω " , "
L 103, 203	1-407-240-	" , " ; 16~24mH	R137, 337	1-242-693-	6800Ω " , "
L 301	1-407-177-	Inductor, micro ; 470μH	R138, 338	1-242-717-	68kΩ (N) " , "
L 302	1-407-169-	" , " ; 100μH	R139, 339	1-242-699-	12kΩ " , "
L 303	1-431-038-	Coil, dummy	R140, 340	1-242-699-	12kΩ (N) " , "
L 401	1-452-021-	Solenoid, plunger	R141, 341	1-242-683-	2700Ω " , "
L 501	1-407-098-	Inductor, micro ; 100μH	R142, 342	1-242-709-	33kΩ (N) " , "
L 502	1-407-098-	" , " ; 100μH	R143, 343	1-242-723-	120kΩ (N) " , "
CP	1-231-534-12	Component, encapsulated	R144, 344	1-242-673-	1 kΩ " , "
Resistors			R145, 345	1-242-707-	27kΩ (N) " , "
R 101, 301	1-244-715-	56kΩ (N) 1/4 W , carbon	R146, 346	1-221-401-	10kΩ (B) adjustable
R 102, 302	1-244-731-	270kΩ (N) " , "	R147, 347	1-221-401-	10kΩ (B) "
R 103, 303	1-244-681-	2200Ω (N) " , "	R148, 348	1-242-731-	270kΩ 1/4 W , carbon
R 104, 304	1-244-695-	8200Ω (N) " , "	R149, 349	1-242-711-	39kΩ " , "
R 105, 305	1-221-916-	50kΩ (A) variable	R150, 350	1-242-715-	56kΩ " , "
R 106, 306	1-242-691-	5600Ω 1/4 W , carbon	R151, 351	1-242-635-	27Ω " , "
R 107, 307	1-242-719-	82kΩ (N) " , "	R152, 352	1-242-723-	120kΩ " , "
R 108, 308	1-242-697-	10kΩ (N) " , "	R153, 353	1-242-665-	470Ω " , "
R 109, 309	1-242-713-	47kΩ (N) " , "	R154, 354	1-242-691-	5600Ω " , "
R 110, 310	1-242-729-	220kΩ (N) " , "	R155, 355	1-242-683-	2700Ω " , "
R 111, 311	1-242-677-	1500Ω (N) " , "	R156, 356	1-242-667-	560Ω " , "
R 112, 312	1-242-693-	6800Ω (N) " , "	R157, 357	1-242-709-	33kΩ " , "
R 113, 313	1-242-691-	5600Ω (N) " , "	R158, 358	1-242-699-	12kΩ " , "
R 114, 314	1-242-717-	68kΩ (N) " , "	R159, 359	1-242-693-	6.8kΩ " , "
R 115, 315	1-242-699-	12kΩ " , "	R160, 360	1-242-675-	1200Ω " , "
R 116, 316	1-242-703-	18kΩ (N) " , "	R161, 361	1-242-699-	12kΩ " , "
R 117, 317	1-242-697-	10kΩ (N) " , "	R162, 362	1-242-677-	1500Ω " , "
			R163, 363	1-221-917-	50kΩ (A) variable

Symbol	Part No.	Description	Symbol	Part No.	Description
R164, 364	1-242-615-	8200Ω (N) 1/4 W , carbon	R210, 410	1-242-681-	2200Ω 1/4 W , carbon
R165, 365	1-221-917-	50kΩ (A) variable	R211, 411	1-242-637-	33Ω " , "
R166, 366	1-242-683-	2700Ω (N) 1/4 W , carbon	R212, 412	1-242-667-	560Ω " , "
R167, 367	1-242-693-	6800Ω (N) " , "	R213, 413	1-242-637-	33Ω " , "
R168, 368	1-242-733-	330kΩ (N) " , "	R214, 414	1-242-667-	560Ω " , "
R169, 369	1-242-712-	43kΩ (N) " , "	R215, 415	1-242-601-	1 Ω " , "
R170, 370	1-242-711-	39kΩ (N) " , "	R216, 416	1-242-601-	1 Ω " , "
R171, 371	1-242-723-	120kΩ (N) " , "	R217, 417	1-242-601-	1 Ω " , "
R172, 372	1-242-687-	3900Ω " , "	R218, 418	1-242-601-	1 Ω " , "
R173, 373	1-242-679-	1800Ω (N) " , "	R219, 419	1-242-625-	10Ω " , "
R174, 374	1-242-711-	39kΩ " , "	R220, 420	1-242-669-	680Ω " , "
R175, 375	1-242-697-	10kΩ " , "	R221, 421	1-202-557-	220Ω 1/2 W , composition
R176, 376	1-242-679-	1800Ω " , "	R222, 422	1-202-054-	15kΩ 1/8 W , "
R177, 377	1-242-689-	4700Ω " , "	R223, 423	1-202-037-	8200Ω " , "
R178, 378	1-242-713-	47kΩ " , "	R224, 424	1-244-683-	2700Ω 1/4 W , carbon
R179, 379	1-221-921-	20kΩ (S) variable	R225, 425	1-242-693-	6800Ω " , "
R180, 380	1-242-653-	150Ω 1/4 W , carbon	R226, 426		- deleted -
R181, 381	1-242-707-	27kΩ " , "	R227, 427	1-242-707-	27kΩ 1/4 W , carbon
R182, 382	1-242-729-	220kΩ " , "	R501	1-242-651-	120Ω " , "
R183, 383	1-242-707-	27kΩ " , "	R502	1-221-630-	20kΩ (B) adjustable
R184, 384	1-242-723-	120kΩ " , "	R503	1-209-225-	1500Ω 1/4 W , carbon
R185, 385	1-242-723-	120kΩ " , "	R504	1-242-657-	220Ω " , "
R186, 386	1-242-683-	2700Ω " , "	R505		- deleted -
R187, 387	1-242-677-	1500Ω " , "	R506	1-244-657-	220Ω 1/4 W , carbon
R188, 388	1-242-711-	39kΩ " , "	R507	1-242-657-	220Ω " , "
R189, 389	1-242-697-	10kΩ " , "	R508	1-242-601-	1 Ω " , "
R190, 390	1-242-677-	1500Ω " , "	R509	1-242-601-	1 Ω " , "
R191, 391	1-221-954-	200kΩ (B) adjustable	R510	1-242-695-	8200Ω " , "
R192, 392	1-242-725-	150kΩ 1/4 W , carbon	R511	1-242-695-	8200Ω " , "
R193, 393	1-242-693-	6800Ω " , "	R512	1-244-863-	390Ω 1/2 W , "
R194, 394	1-242-675-	1200Ω " , "	R601	1-242-673-	1 kΩ 1/4 W , "
R195, 395	1-242-661-	330Ω " , "	R602	1-242-673-	1 kΩ " , "
R196, 396	1-242-715-	56kΩ " , "	R603	1-242-721-	100kΩ " , "
R197, 397	1-242-713-	47kΩ " , "	R604	1-242-707-	27kΩ " , "
R198, 398	1-242-715-	56kΩ " , "	R605	1-242-681-	2200Ω " , "
R199, 399	1-242-673-	1 kΩ " , "	R606	1-242-697-	10kΩ " , "
R200, 400	1-242-673-	1 kΩ " , "	R607	1-242-697-	10kΩ " , "
R201, 401	1-242-643-	56Ω " , "	R608	1-242-697-	10kΩ " , "
R202, 402	1-242-715-	56kΩ " , "	R609	1-242-727-	180kΩ " , "
R203, 403	1-242-673-	1 kΩ " , "	R610	1-221-465-	500Ω (B) adjustable
R204, 404	1-242-719-	82kΩ " , "	R611	1-242-735-	390kΩ 1/4 W , carbon
R205, 405	1-242-697-	10kΩ " , "	R612	1-242-697-	10kΩ " , "
R206, 406	1-242-673-	1 kΩ " , "	R613	1-242-721-	100kΩ " , "
R207, 407	1-242-683-	2700Ω " , "	R614	1-242-721-	100kΩ " , "
R208, 408	1-242-661-	330Ω " , "	R615	1-242-713-	47kΩ " , "
R209, 409	1-242-687-	3900Ω " , "	R616	1-242-709-	33kΩ " , "

Symbol	Part No.	Description		Symbol	Part No.	Description	
R617	1-242-721-	100k Ω	1/4 W , carbon	R736	1-242-671-	820 Ω	1/4 W , carbon
R618	1-242-697-	10k Ω	" , "	R737			- deleted -
R619	1-242-641-	47 Ω	" , "	R738	1-242-703-	18k Ω	1/4 W , carbon
R620	1-242-649-	100 Ω	" , "	R739	1-244-673-	1 k Ω	" , "
R621	1-221-953-	50k Ω	(B) adjustable	R740	1-207-175-	12 Ω	3 W , wire wound
R622	1-242-697-	10k Ω	1/4 W , carbon	Capacitors			
R623	1-242-705-	22k Ω	" , "	C101, 201	1-141-034-	30 ~ 200pF	, trimmer
R624	1-242-665-	470 Ω	" , "	C102, 202	1-141-034-	30 ~ 200pF	, "
R625	1-242-613-	3.3 Ω	" , "	C103, 203	1-107-005-	220pF	, silvered mica
R626	1-242-697-	10k Ω	" , "	C104, 204	1-121-442-	1 μ F	50V, electrolytic
R627	1-242-633-	22 Ω	" , "	C105, 205	1-106-115-12	0.001 μ F	, mylar
R701	1-242-681-	2200 Ω	" , "	C106, 206	1-121-481-	30 μ F	3V , electrolytic
R702	1-242-681-	2200 Ω	" , "	C107, 207	1-121-486-	50 μ F	3V , "
R703	1-242-673-	1 k Ω	" , "	C108, 208	1-121-472-	10 μ F	25V , "
R704	1-242-673-	1 k Ω	" , "	C109, 209	1-121-463-	5 μ F	15V , "
R705	1-242-697-	10k Ω	" , "	C110, 210	1-121-476-	20 μ F	6V , "
R706	1-242-707-	27k Ω	" , "	C111, 211	1-107-027-	10pF	, silvered mica
R707 *	1-242-703-	18k Ω	" , "	C112, 212	1-106-086-12	0.015 μ F	, mylar
R708	1-242-701-	15k Ω	" , "	C113, 213	1-106-098-12	0.047 μ F	, "
R709	1-242-687-	3900 Ω	" , "	C114, 214	1-106-082-12	0.01 μ F	, "
R710	1-221-371-	5k Ω	(B) adjustable	C115, 215	1-107-004-	100pF	, silvered mica
R711	1-242-697-	10k Ω	1/4 W , carbon	C116, 216	1-121-470-	10 μ F	12V , electrolytic
R712	1-242-707-	27k Ω	" , "	C117, 217	1-107-027-	10pF	, silvered mica
R713 *	1-242-703-	20k Ω	" , "	C118, 218	1-106-115-12	0.001 μ F	, mylar
R714	1-242-703-	20k Ω	" , "	C119, 219	1-121-442-	1 μ F	50V, electrolytic
R715	1-242-691-	5600 Ω	" , "	C120, 220	1-121-486-	50 μ F	3V , "
R716	1-221-371-	5k Ω	(B) adjustable	C121, 221	1-121-472-	10 μ F	25V , "
R717	1-242-701-	15k Ω	1/4 W , carbon	C122, 222	1-107-054-	33pF	, silvered mica
R718	1-242-707-	27k Ω	" , "	C123, 223	1-121-476-	20 μ F	6V, electrolytic
R719 *	1-242-703-	18k Ω	" , "	C124, 224	1-121-463-	5 μ F	15V , "
R720	1-242-703-	18k Ω	" , "	C125, 225	1-121-377-	100 μ F	25V , "
R721	1-242-691-	5600 Ω	" , "	C126, 226	1-127-091-	0.2 μ F	25V , "
R722	1-221-371-	5k Ω	(B) adjustable	C127, 227	1-127-091-	0.2 μ F	25V , "
R723	1-242-693-	6800 Ω	1/4 W , carbon	C128, 228	1-106-115-12	0.001 μ F	, mylar
R724	1-242-685-	3300 Ω	" , "	C129, 229	1-121-464-	5 μ F	25V, electrolytic
R725	1-242-681-	2200 Ω	" , "	C130, 230	1-121-442-	1 μ F	50V , "
R726	1-242-687-	3900 Ω	" , "	C131, 231	1-106-094-12	0.033 μ F	, mylar
R727	1-242-709-	33k Ω	" , "	C132, 232	1-106-090-12	0.022 μ F	, "
R728	1-242-697-	10k Ω	" , "	C133, 233	1-121-314-	100 μ F	3V, electrolytic
R729	1-242-681-	2200 Ω	" , "	C134, 234	1-106-082-12	0.01 μ F	, mylar
R730	1-242-667-	560 Ω	" , "	C135, 235	1-127-022-	0.5 μ F	10V , "
R731	1-244-637-	33 Ω	" , "	C136, 236	1-121-314-	100 μ F	3V , "
R732	1-242-681-	2200 Ω	" , "	C137, 237	1-121-470-	10 μ F	12V , "
R733	1-242-689-	4700 Ω	" , "	C138, 238	1-106-058-12	0.001 μ F	, mylar
R734	1-242-705-	22k Ω	" , "	C139, 239	1-107-059-	180pF	, silvered mica
R735	1-242-651-	120 Ω	" , "	C140, 240	1-107-059-	180pF	, "

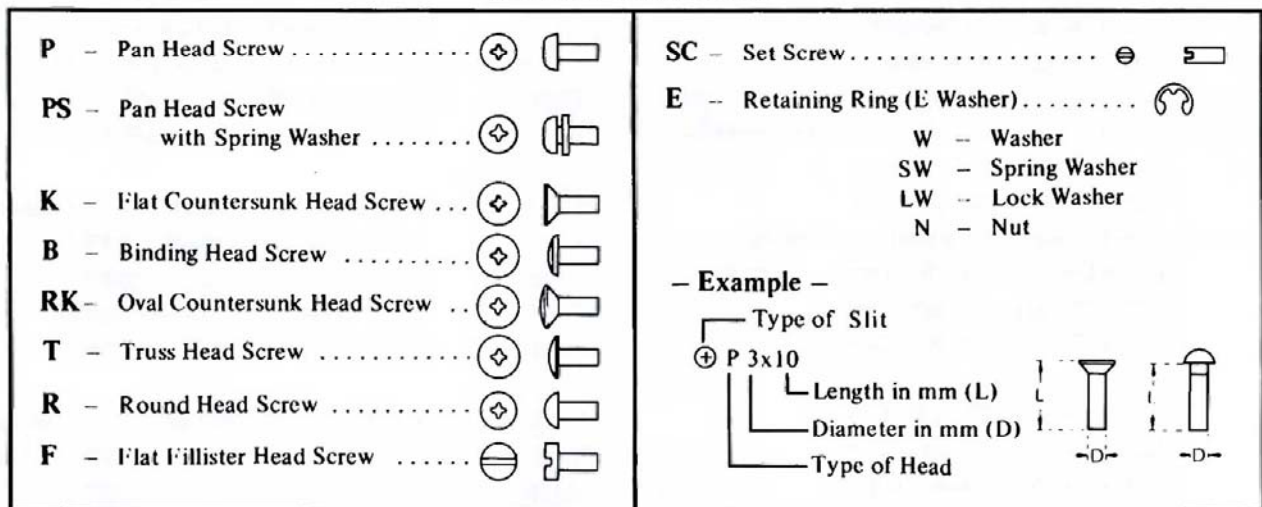
* To be selected

Symbol	Part No.	Description	Symbol	Part No.	Description
C141, 241	1-107-016-	470pF , silvered mica	C313	1-106-082-12	0.01 μ F , mylar
C142, 242	1-107-018-	270pF , "	C314	1-121-388-	1000 μ F 35V, electrolytic
C143, 243	1-106-066-12	0.0022 μ F , mylar	C315	1-121-388-	1000 μ F 35V, "
C144, 244	1-106-086-12	0.015 μ F , "	C401	1-121-470-	10 μ F 12V, "
C145, 245	1-106-086-12	0.015 μ F , "	C402	1-106-090-12	0.022 μ F , mylar
C146, 246	1-106-106-12	0.1 μ F , "	C403	1-106-442-	1 μ F 50V, electrolytic
C147, 247	1-121-476-	20 μ F 6V, electrolytic	C404	1-106-086-12	0.015 μ F , mylar
C148, 248	1-106-115-12	0.001 μ F , mylar	C405	1-106-058-12	0.001 μ F , "
C149, 249	1-121-314-	100 μ F 3V, electrolytic	C406	1-121-449-	2 μ F 35V, electrolytic
C150, 250	1-121-317-	200 μ F 3V, "	C407	1-121-442-	1 μ F 50V, "
C151, 251	1-121-314-	100 μ F 3V, "	C408	1-121-442-	1 μ F 50V, "
C152, 252	1-121-470-	10 μ F 12V, "	C409	1-121-342-	500 μ F 6V, "
C153, 253	1-121-442-	1 μ F 50V, "	C410	1-121-470-	10 μ F 12V, "
C154, 254		- deleted -	C411	1-106-102-12	0.068 μ F , mylar
C155, 255	1-121-314-	100 μ F 3V, electrolytic	C412	1-121-339-	100 μ F 10V, electrolytic
C156, 256	1-121-314-	100 μ F 3V, "	C413	1-121-442-	1 μ F 50V, "
C157, 257	1-121-470-	10 μ F 12V, "	C501	1-121-307-	10 μ F 12V, "
C158, 258	1-106-155-12	0.047 μ F , mylar	C502	1-106-094-12	0.033 μ F , mylar
C159, 259	1-121-463-	5 μ F 15V, electrolytic	C503	1-106-086-12	0.015 μ F , "
C160, 260	1-121-470-	10 μ F 12V, "	C504	1-106-086-12	0.015 μ F , "
C161, 261	1-107-008-	150pF , silvered mica	C505	1-106-082-12	0.01 μ F , "
C162, 262	1-121-463-	5 μ F 15V, electrolytic	C506	1-106-082-12	0.01 μ F , "
C163, 263	1-121-463-	5 μ F 15V, "	C507	1-106-090-12	0.022 μ F , "
C164, 264	1-121-318-	200 μ F 6V, "	C508	1-106-102-12	0.068 μ F , "
C165, 265	1-107-005-	220pF , silvered mica	C509	1-106-094-12	0.033 μ F , "
C166, 266	1-121-340-	100 μ F 15V, electrolytic	C510	1-106-094-12	0.033 μ F , "
C167, 267	1-121-311-	50 μ F 3V, "	C511	1-106-086-12	0.015 μ F , "
C168, 268	1-107-004-	100pF , silvered mica	C512	1-106-086-12	0.015 μ F , "
C169, 269	1-121-338-	50 μ F 15V, electrolytic	C513	1-106-094-12	0.033 μ F , "
C170, 270	1-121-361-	500 μ F 35V, "	C514	1-106-106-12	0.1 μ F , "
C171, 271	1-106-155-12	0.047 μ F , mylar	C515	1-106-088-12	0.018 μ F , "
C172, 272	1-106-074-12	0.0047 μ F , "	C516	1-106-100-12	0.1 μ F , "
C173, 273	1-106-062-12	0.0015 μ F , "	C517	1-106-094-12	0.033 μ F , "
C174, 274	1-107-004-	100pF , silvered mica	C518	1-106-094-12	0.033 μ F , "
C301	1-121-379-	200 μ F 25V, electrolytic	C519	1-106-102-12	0.068 μ F , "
C302	1-121-377-	100 μ F 25V, "	C520	1-121-307-	10 μ F 12V, electrolytic
C303	1-106-115-12	0.001 μ F , mylar	C521	1-121-307-	10 μ F 12V, " "
C304	1-127-019-	0.1 μ F 10V, electrolytic	C522	1-121-442-	1 μ F 50V, "
C305	1-121-339-	100 μ F 10V, "	C523	1-121-490-	100 μ F 3V, "
C306	1-121-470-	10 μ F 12V, "	C524	1-121-449-	2 μ F 35V, "
C307	1-121-319-	200 μ F 12V, "	C525	1-106-163-12	0.1 μ F , mylar
C308	1-121-339-	100 μ F 10V, "	C526	1-121-410-	50 μ F 25V, electrolytic
C309	1-121-470-	10 μ F 12V, "	C527	1-121-442-	1 μ F 50V, "
C310	1-129-370-	0.0022 μ F , polyethylene	C528	1-121-307-	10 μ F 12V, "
C311	1-106-062-12	0.0015 μ F , mylar	C529	1-121-410-	50 μ F 25V, "
C312	1-106-082-12	0.01 μ F , "	C530	1-106-013-12	0.0033 μ F , mylar

16. PARTS LIST FOR SCREWS, WASHERS & NUTS

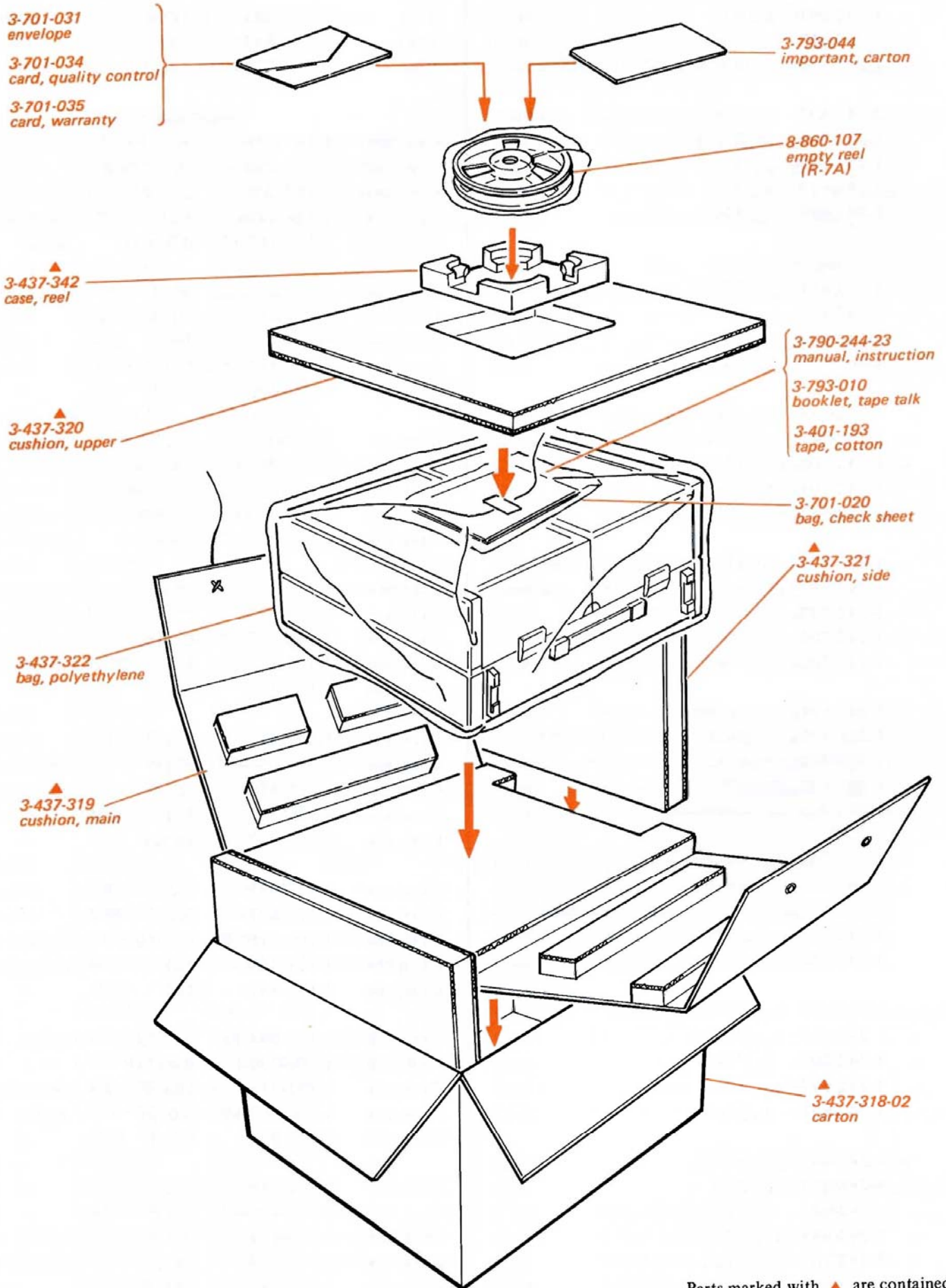
Part No.	Description	Part No.	Description	Part No.	Description
Screws				Lock Washers	
7-621-255-25	⊕ P 2 x 4	7-621-773-63	⊕ B 5 x 30	7-623-407-05	LW 2.6φ
7-621-255-35	⊕ P 2 x 5	7-621-459-15	⊕ T 2.6 x 3	7-623-408-05	LW 3φ
7-621-255-45	⊕ P 2 x 6	7-621-459-25	⊕ T 2.6 x 4	Nuts	
7-621-255-55	⊕ P 2 x 8	Wood Screws		7-622-108-02	N 3φ
7-621-259-25	⊕ P 2.6 x 4	7-621-852-30	⊕ K 2.7 x 10	7-622-308-02	LN 3φ
7-621-259-35	⊕ P 2.6 x 5	7-621-843-56	⊕ R 3.1 x 20	7-622-110-02	N 4φ
7-621-259-55	⊕ P 2.6 x 8	Screws with Spring Washer		7-622-310-22	LN 4φ
7-621-259-65	⊕ P 2.6 x 10	7-628-251-25	⊕ PS 3 x 6	Retaining Rings	
7-621-259-85	⊕ P 2.6 x 14	7-628-251-32	⊕ PS 3 x 8	7-624-102-01	E-1.5
7-621-260-05	⊕ P 2.6 x 16	7-628-254-02	⊕ PS 2.6 x 5	7-624-104-01	E-2
7-621-261-25	⊕ P 3 x 4	7-628-251-12	⊕ PS 3 x 5	7-624-105-01	E-3
7-621-261-35	⊕ P 3 x 5	7-628-251-42	⊕ PS 3 x 10	7-624-108-01	E-4
7-621-261-43	⊕ P 3 x 6	7-628-257-22	⊕ PS 4 x 8	7-624-109-01	E-5
7-621-261-55	⊕ P 3 x 8	Spring Washers		7-624-110-01	E-6
7-621-261-57	⊕ P 3 x 8	7-623-205-22	SW 2φ	Set Screw	
7-621-261-65	⊕ P 3 x 10	7-623-207-22	SW 2.6φ	7-621-713-65	SC 3x 10
7-621-261-75	⊕ P 3 x 12	7-623-208-22	SW 3φ	Lug	
7-621-262-05	⊕ P 3 x 16	7-623-210-22	SW 4φ	7-623-508-01	3φ
7-621-261-62	⊕ P 3 x 10	Washers		Speed Nut	
7-621-268-45	⊕ P 4 x 6	7-623-105-12	W 2φ	7-622-408-21	3φ
7-621-268-55	⊕ P 4 x 8	7-623-105-02	W 2φ (small)	Hexagon Bolt	
7-621-268-65	⊕ P 4 x 10	7-623-107-12	W 2.6φ	7-621-999-83	4 x 8
7-621-269-15	⊕ P 4 x 18	7-623-107-02	W 2.6φ (small)	Steel Ball	
7-621-269-13	⊕ P 4 x 18	7-623-108-12	W 3φ	7-671-112-01	2φ
7-621-655-25	⊕ RK 2 x 4	7-623-108-02	W 3φ (small)		
7-621-655-65	⊕ RK 2 x 10	7-623-110-12	W 4φ		
7-621-661-57	⊕ RK 3 x 8	7-623-110-02	W 4φ (small)		
7-621-559-45	⊕ K 2.6 x 6	7-623-112-22	W 5φ (large)		
7-621-561-55	⊕ K 3 x 8	7-623-112-02	W 5φ (small)		
7-621-770-37	⊕ B 2 x 4	7-623-113-02	W 6φ (small)		
7-621-773-62	⊕ B 3 x 5				

Hardware Nomenclature



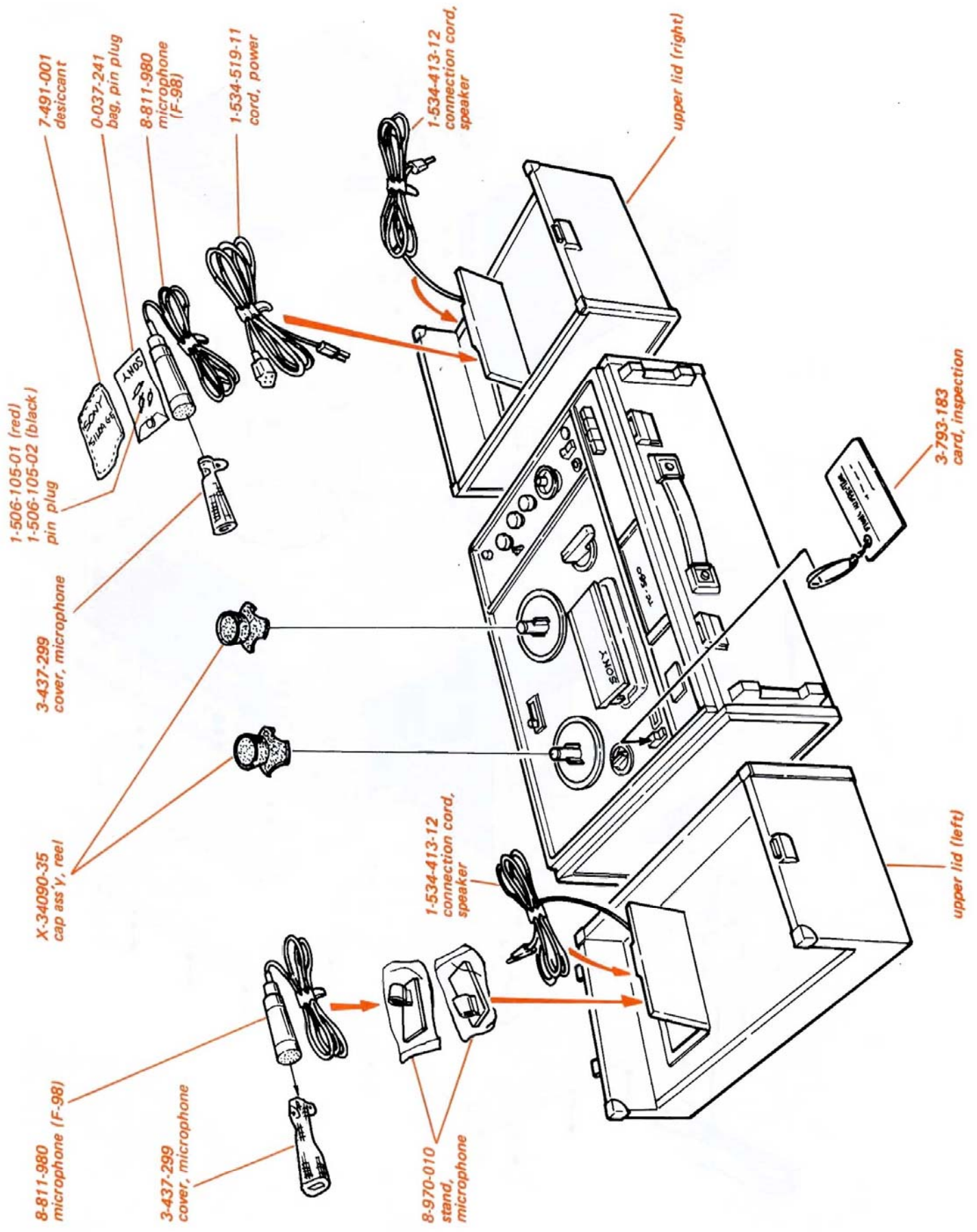
17. EXPLODED VIEW

17-1. Packing

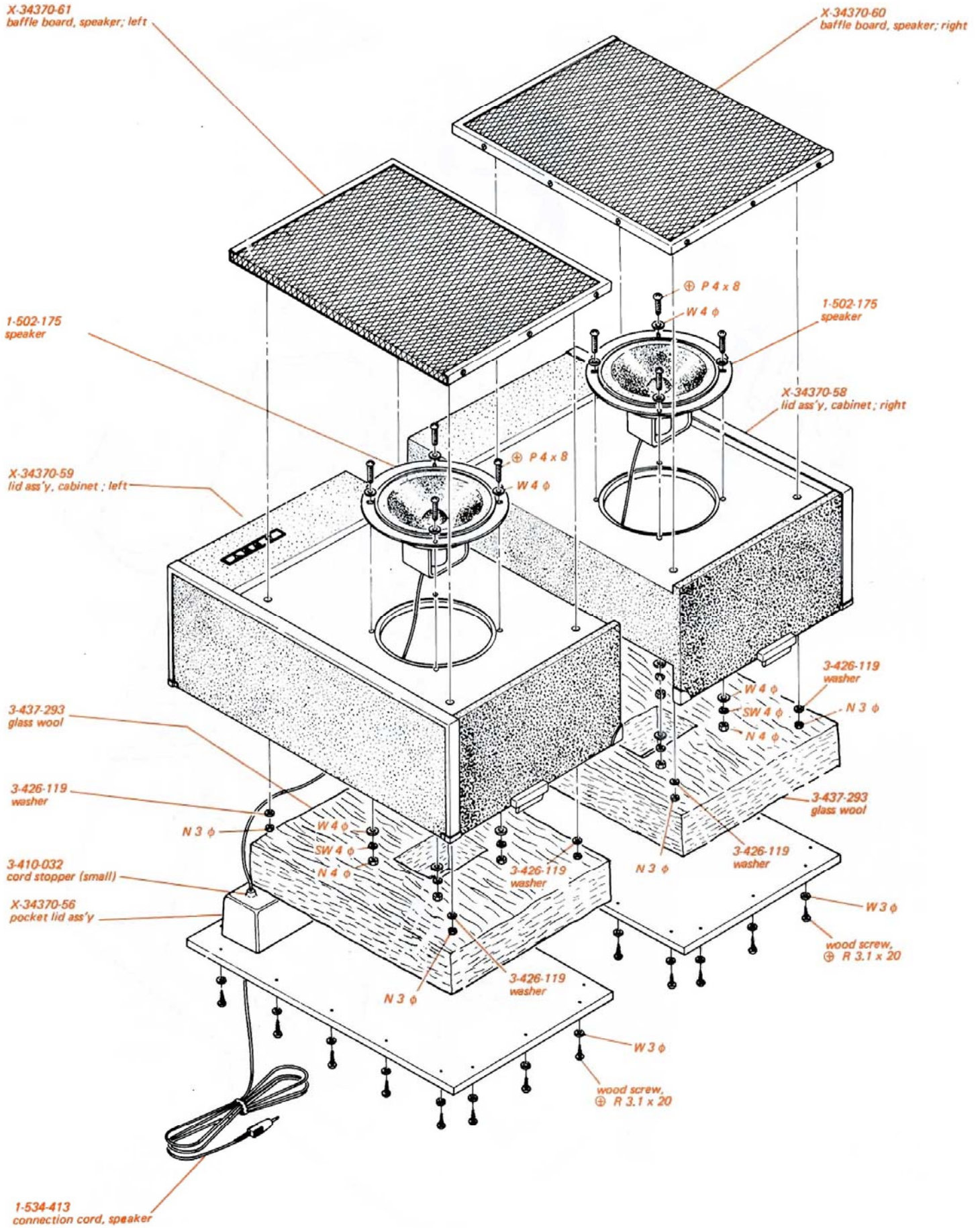


Parts marked with ▲ are contained in carton ass'y (X-34370-64-2).

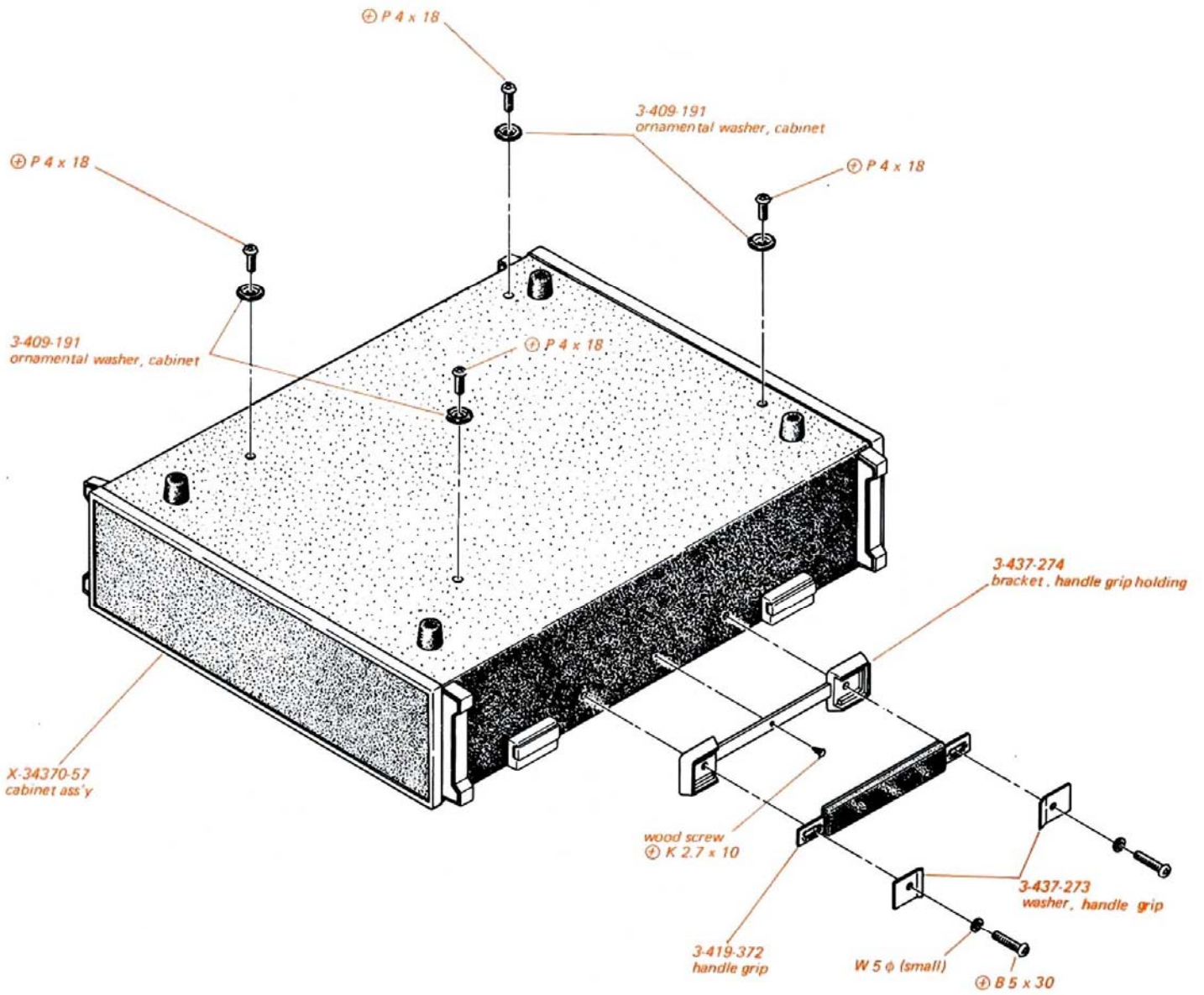
17-2. Accessories



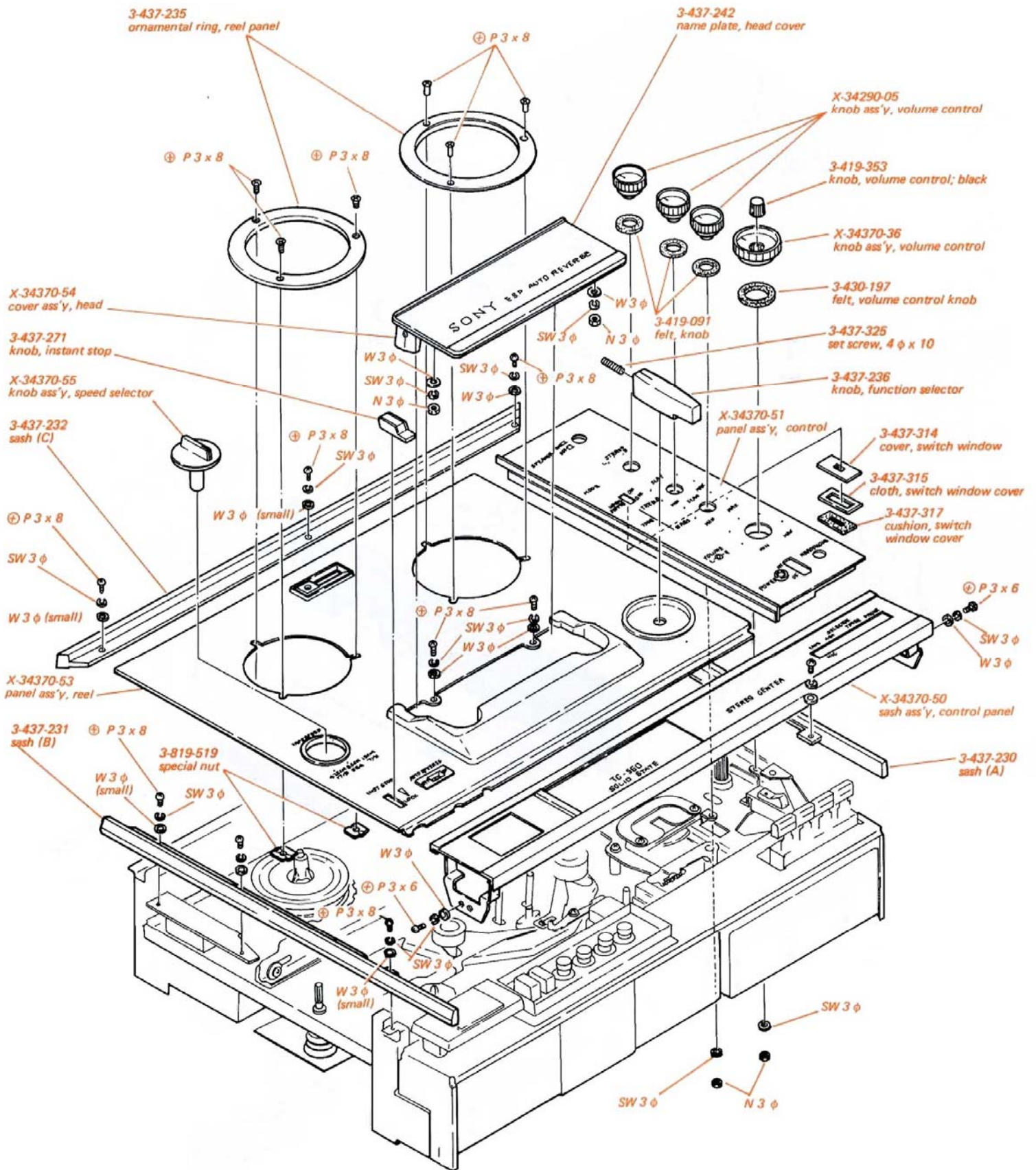
17-3. Speaker Box



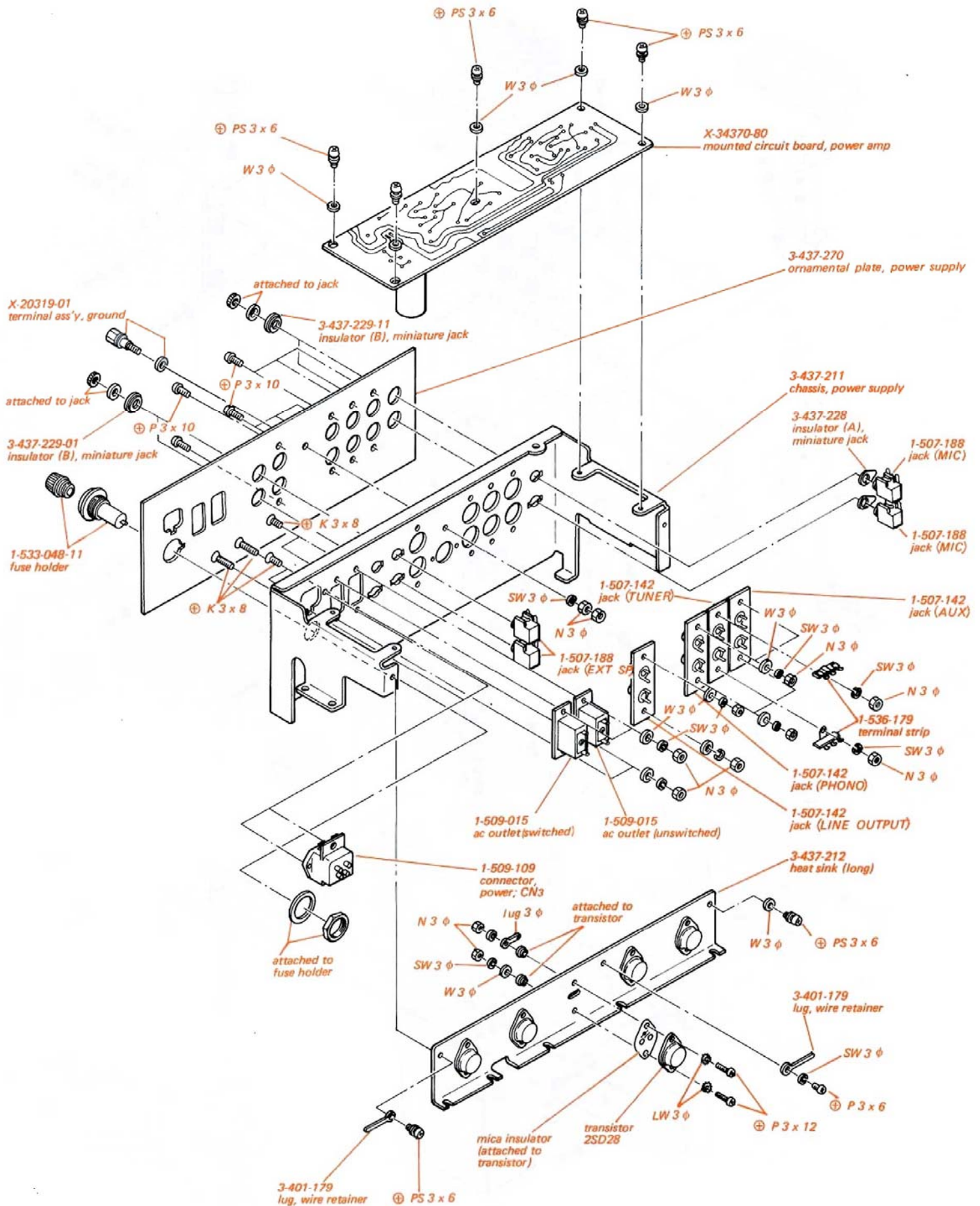
17-4. Cabinet – bottom view –



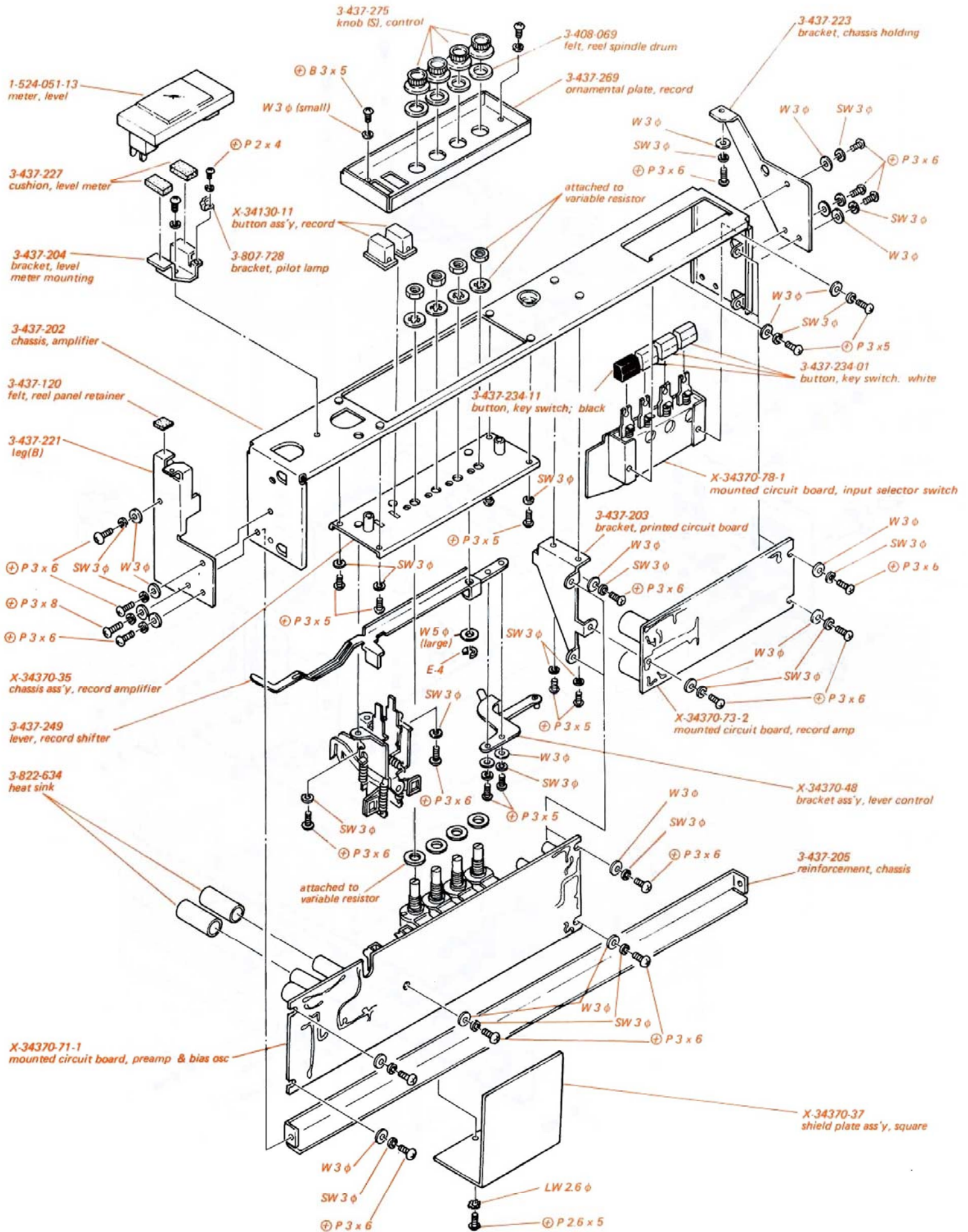
17-5. Cabinet — top view —



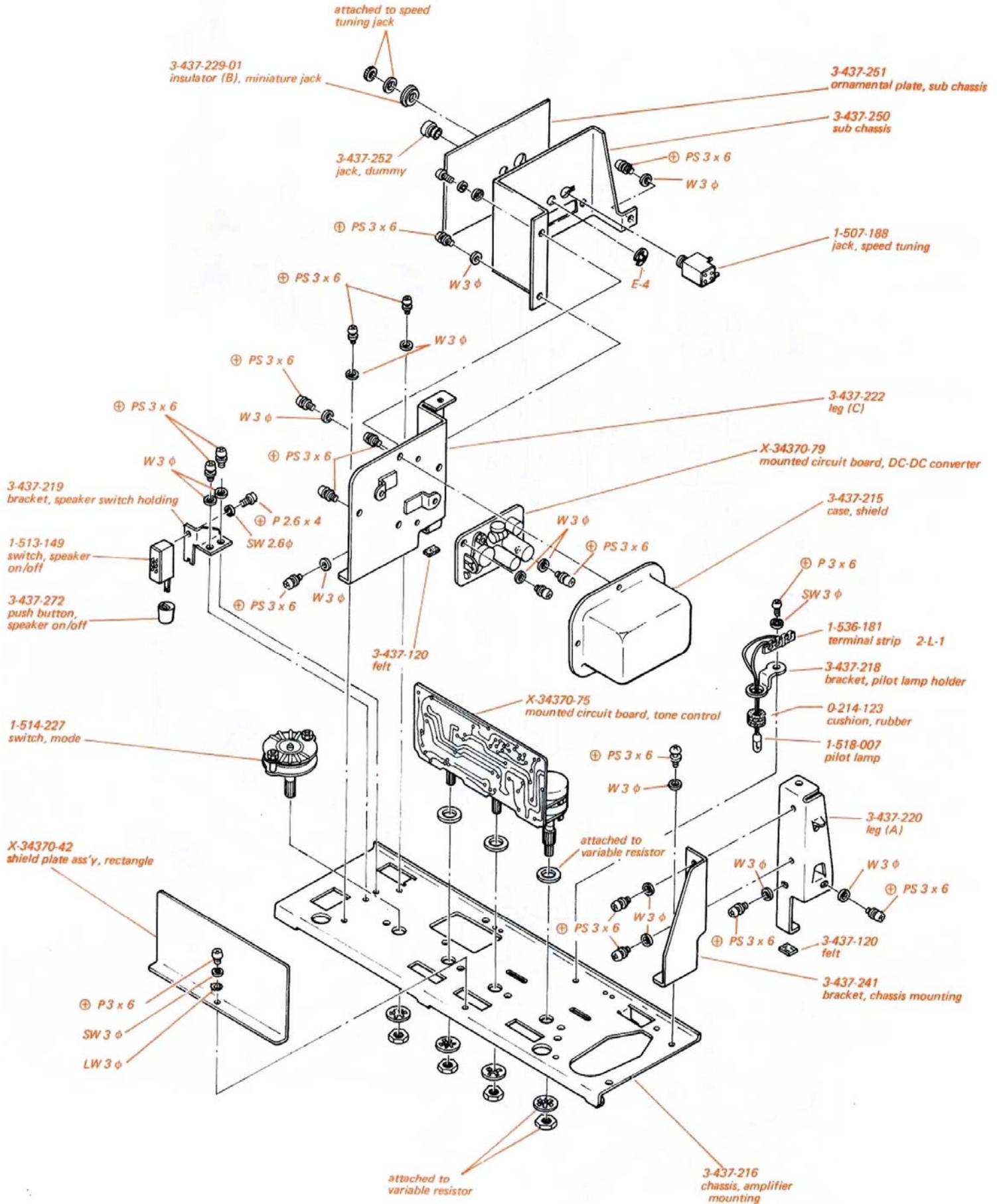
17-6. Jack Panel — top view —



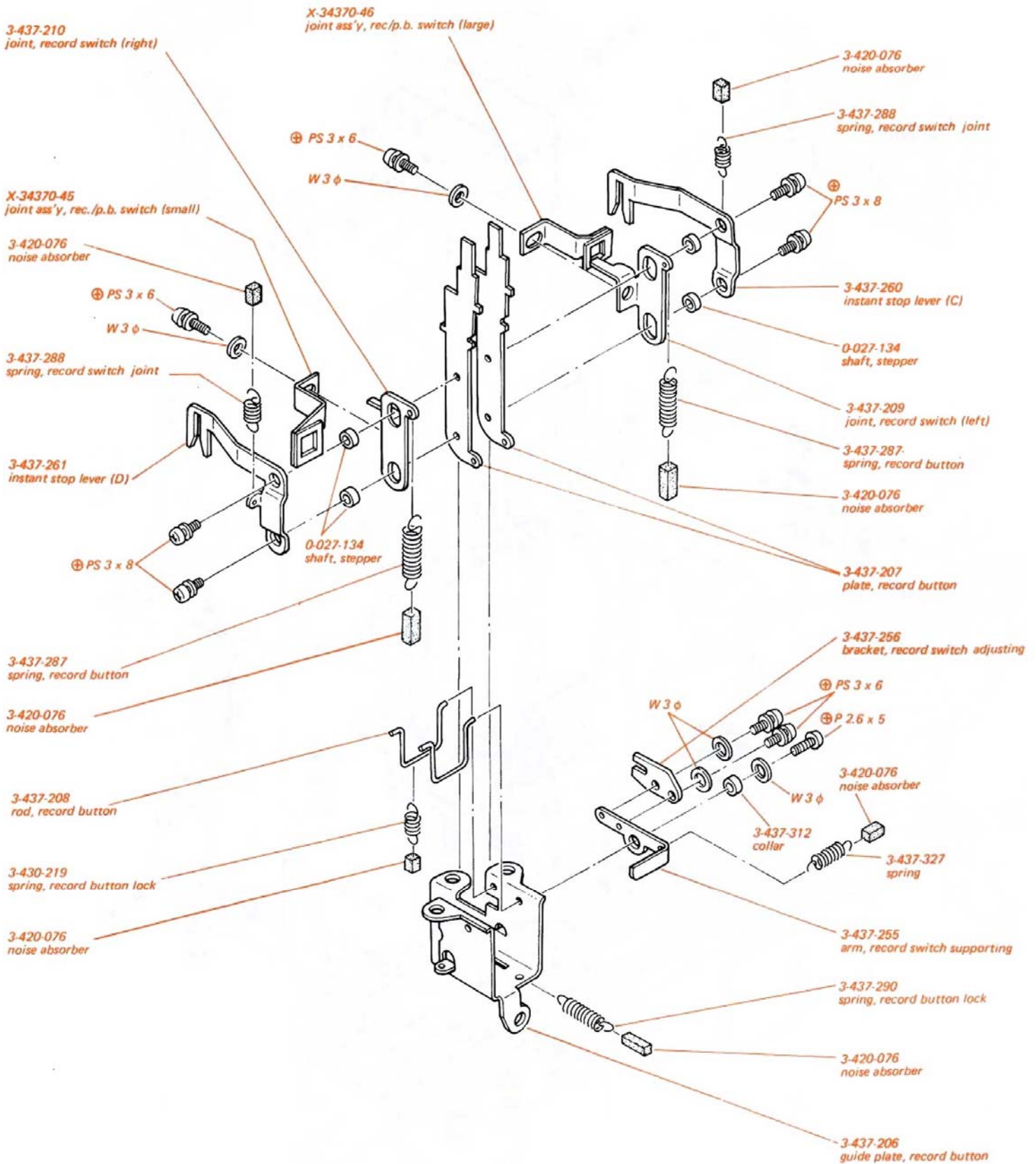
17-7. Front Panel – top view –



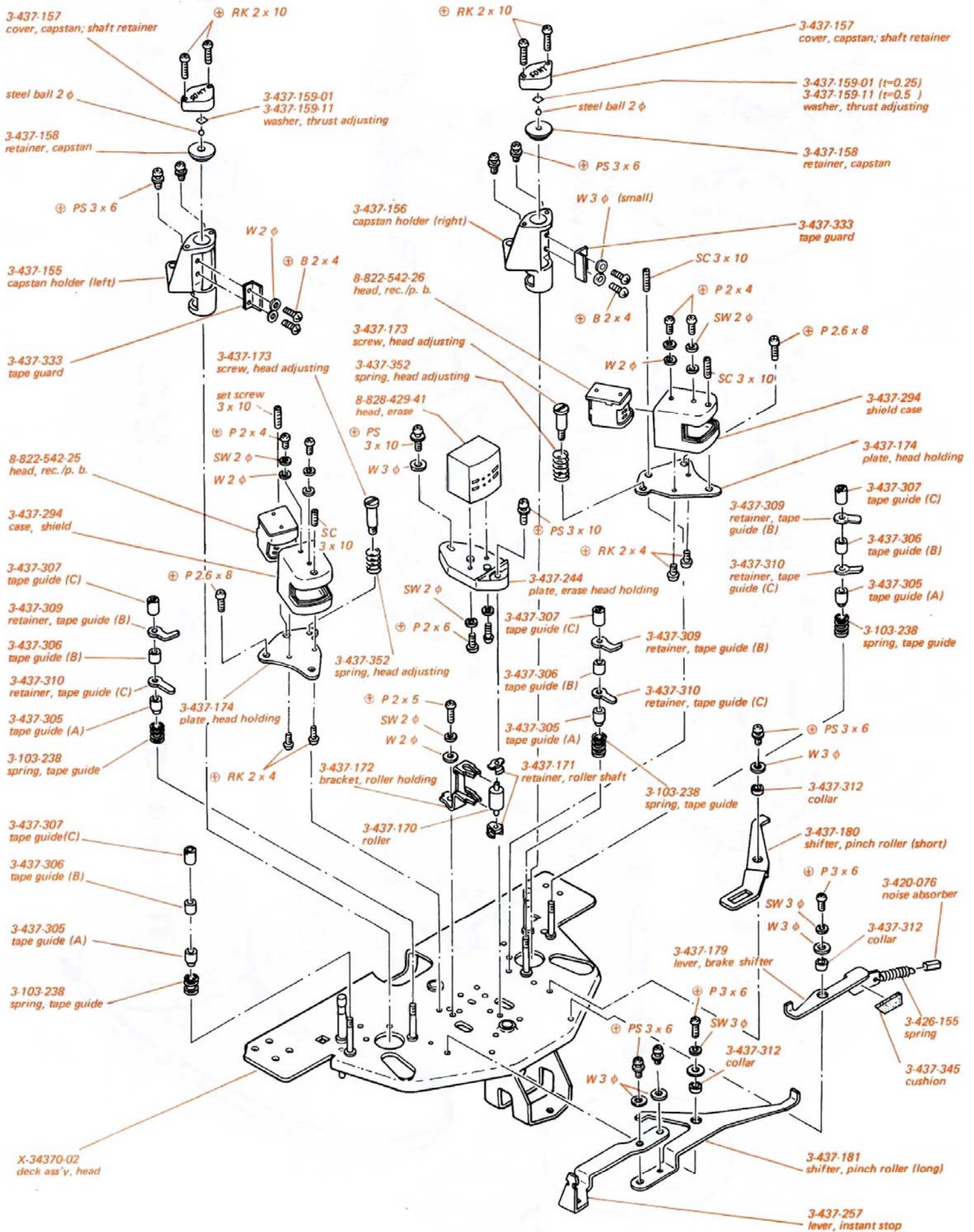
17-8. Side Panel – bottom view –



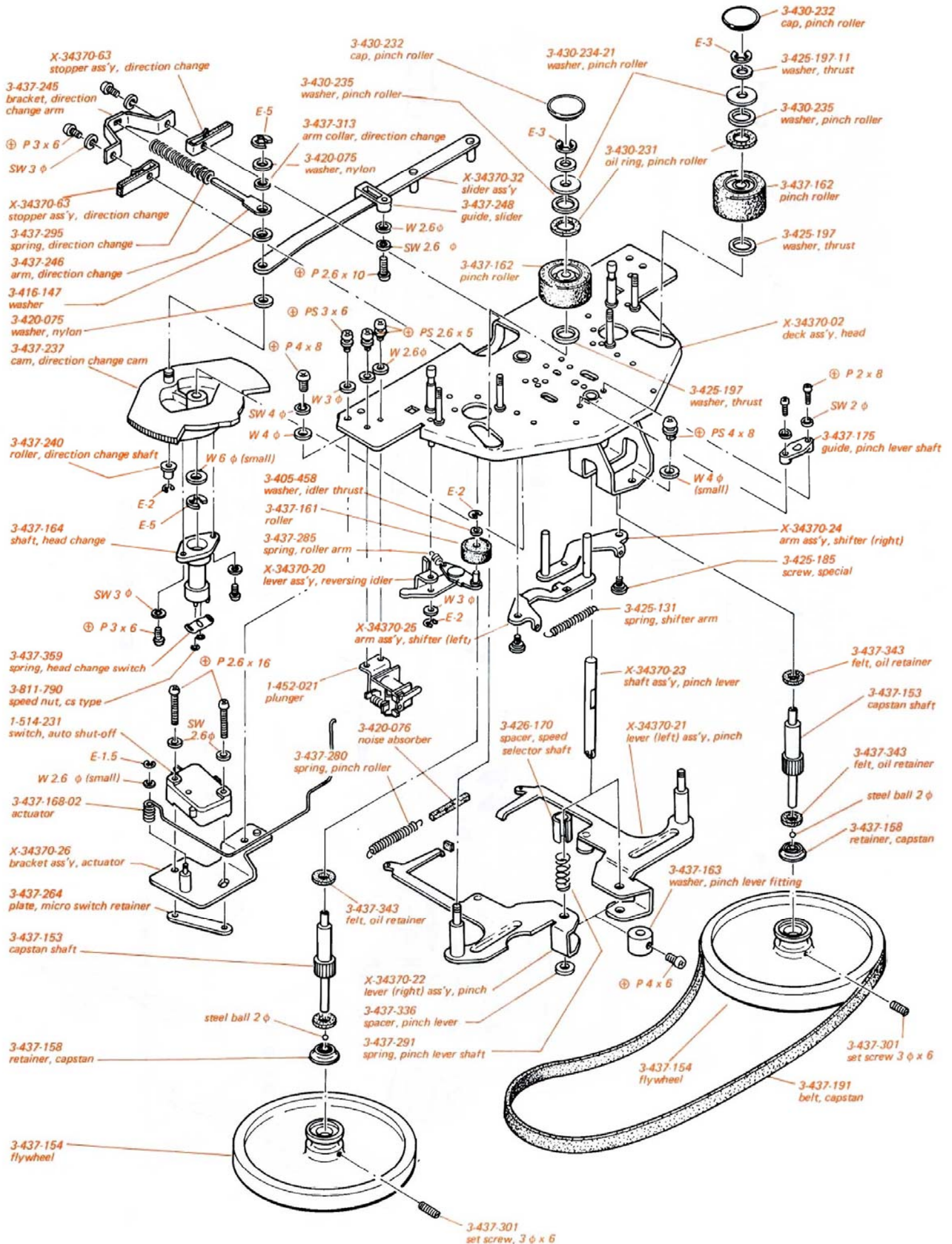
17-9. Record Switch – top view –



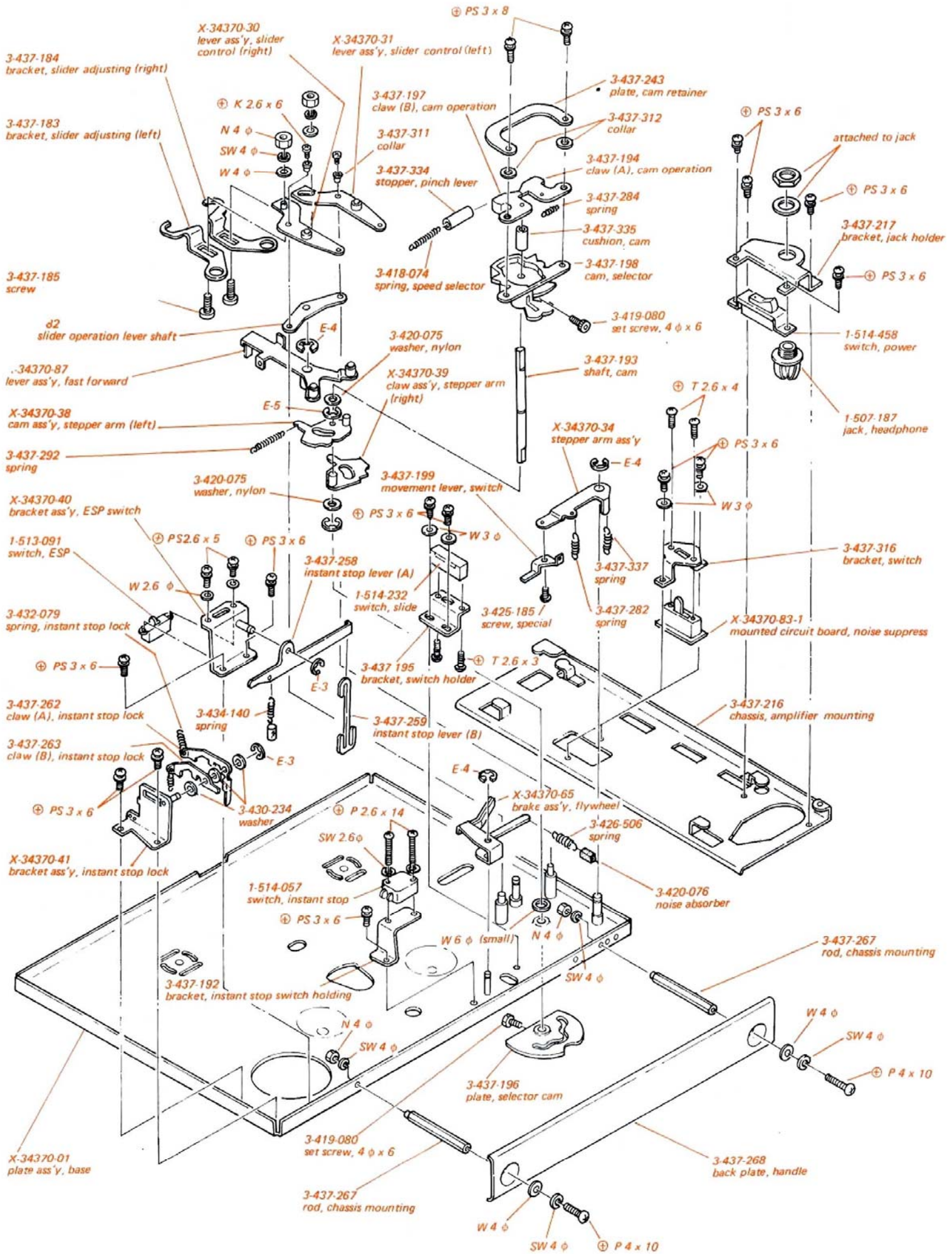
17-10. Head Deck — top view —

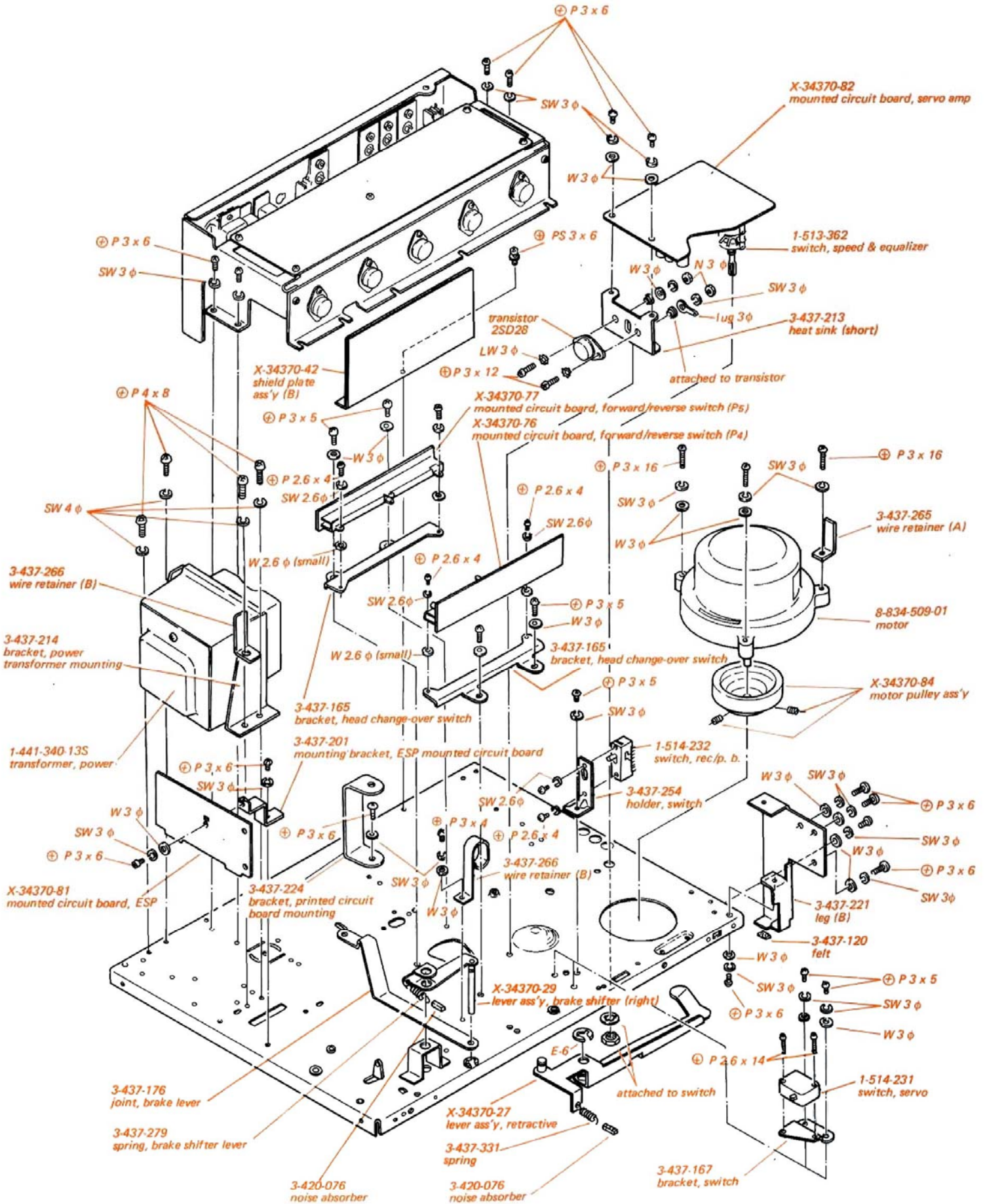


17-11. Head Deck – bottom view –



17-13. Chassis – top view – (2)





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