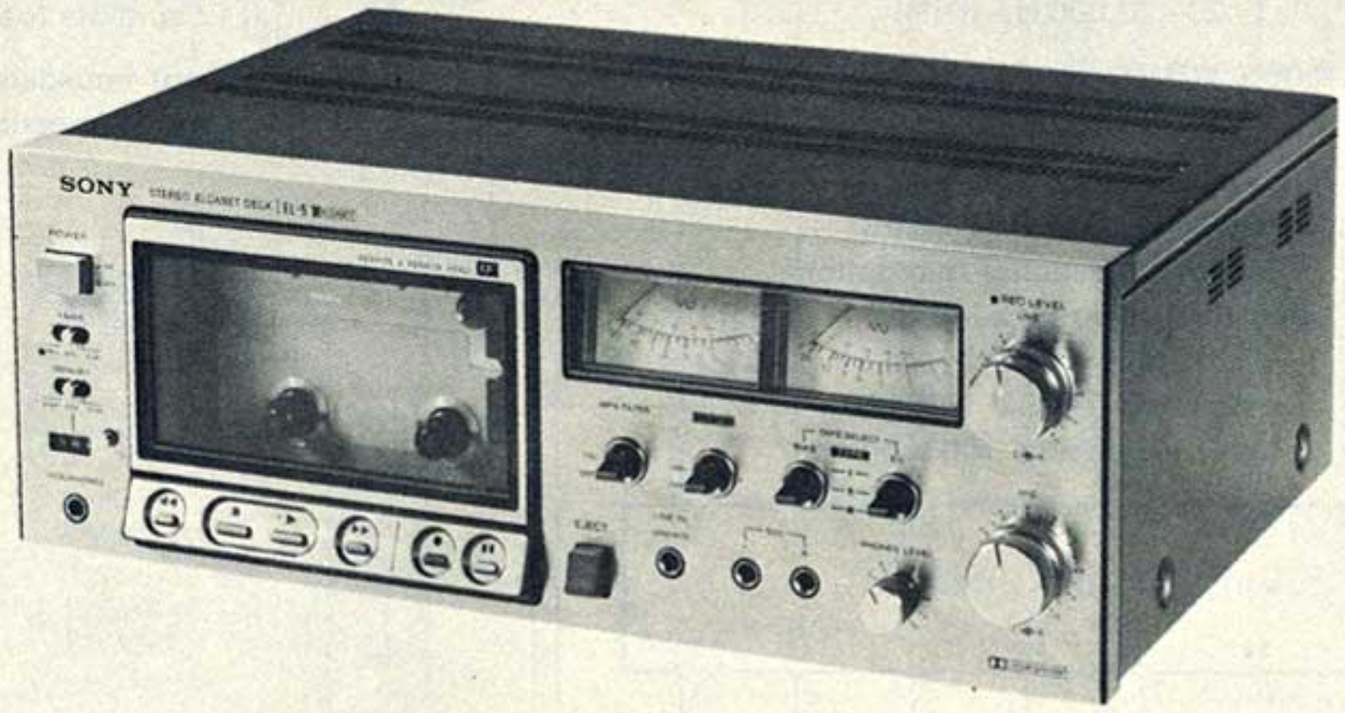
EL-5

UK Model
AEP Model



ELCASET **STEREO ELCASET DECK**

SPECIFICATIONS

Power Requirements: 110, 120, 220 or 240 V ac, 50/60 Hz

Power Consumption: 44W

Dimensions: Approx. 430 (w) × 170 (h) × 320 (d) mm
17 (w) × 6 3/4 (h) × 12 5/8 (d) inches
Including projecting parts and controls

Weight: Approx. 10.5 kg, 23 lbs 2 oz

Tape Speed: 9.5 cm/s (3 3/4 ips)

Fast Forward and Rewind Time: Approx. 75 seconds (by LC-60)

Recording System: 4-track 2-channel stereo

Bias Frequency: 160 kHz

Signal-to-noise Ratio: DOLBY NR OFF
With Type II ELCASET (FeCr)
62 dB at peak level (NAB)
62 dB (DIN, 1975 rev.)
54 dB (DIN, old)
With Type I ELCASET (SLH)
59 dB at peak level (NAB)
59 dB (DIN, 1975 rev.)
51 dB (DIN, old)
DOLBY NR ON
Improved by 5 dB at 1 kHz, 10 dB above 5 kHz

Total Harmonic Distortion: 0.8%

— Continued on page 2 —

*'Dolby' and the double-D symbol are the trade marks of Dolby Laboratory Inc. Noise reduction system manufactured under license from Dolby Laboratory Inc. *0 dB = 0.775 V

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ELCASET

Look for this mark on all products manufactured under the ELCASET standard.

SONY®

SERVICE MANUAL

Frequency Response: DOLBY NR OFF
With Type II ELCASET (FeCr)
15–25,000 Hz (NAB)
25–20,000 Hz ±3 dB (NAB)
20–22,000 Hz (DIN)
With Type I ELCASET (SLH)
15–23,000 Hz (NAB)
25–18,000 Hz ±3 dB (NAB)
20–20,000 Hz (DIN)

Wow and Flutter: 0.06% WRMS (NAB)
±0.12% (DIN)

Inputs: MIC (phone jacks) 2
sensitivity 0.3 mV (–68 dB)
for low impedance microphone
LINE IN (stereo binaural jack) 1
(phono jacks) 2
sensitivity 0.095 V (–18 dB)
input impedance 100 k ohms

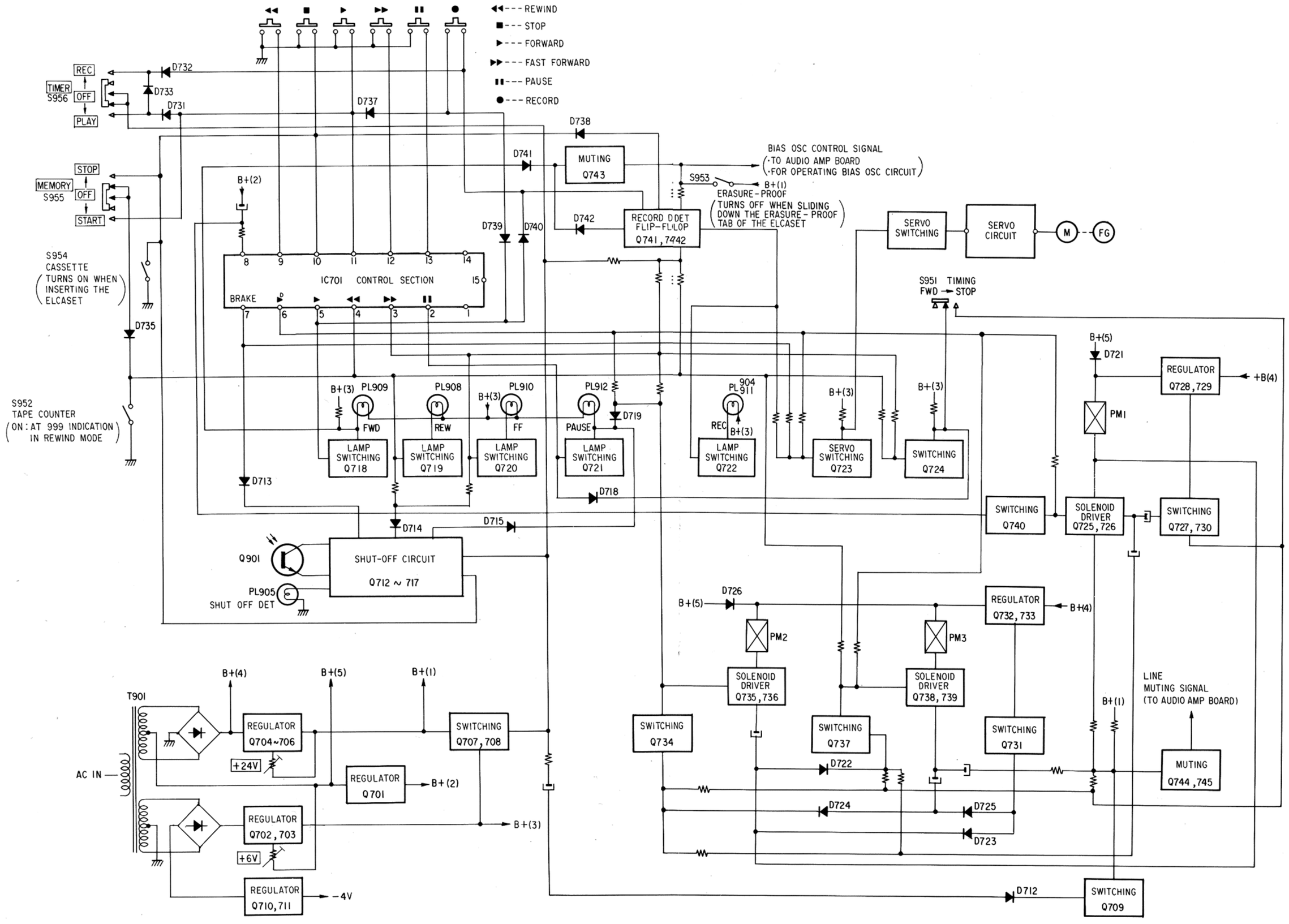
Outputs: LINE OUT (phono jacks) 2
output level 0.775 V (0 dB)
at load impedance 100 k ohms with LEVEL ADJUST control turned fully clockwise
suitable load impedance more than 10 k ohms
HEADPHONES 1
suitable load impedance 8–32 ohms

REC/PB Connector: Input impedance less than 10 k ohms
Output impedance less than 10 k ohms

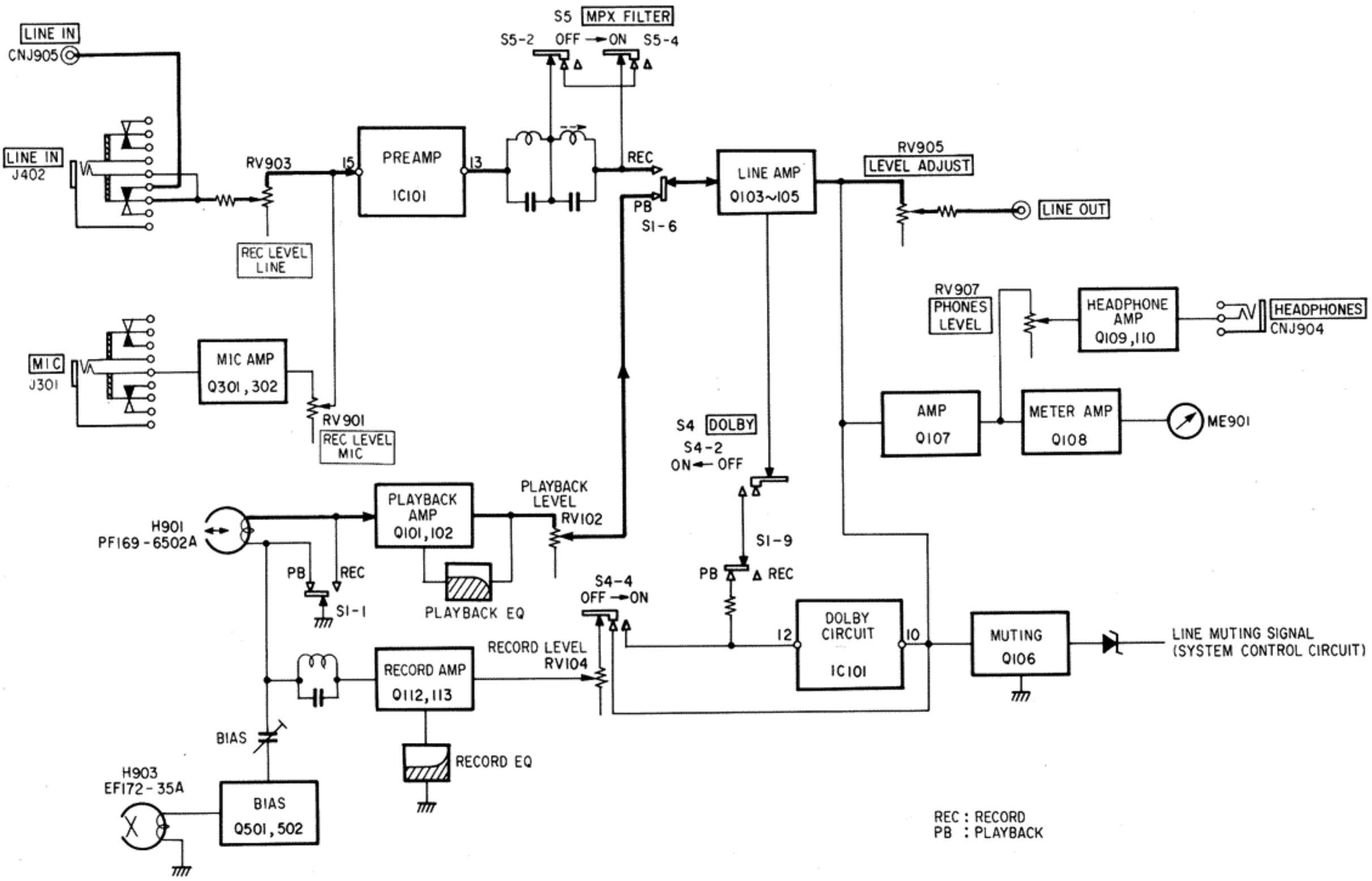
SECTION 1
OUTLINE

Note: REC: RECORD
FWD: FORWARD
FF: FAST FORWARD
REW: REWIND

1-1. BLOCK DIAGRAM – System Control Section –



1-2. BLOCK DIAGRAM – Amplifier Section –



1-3. CIRCUIT DESCRIPTION

The EL-5 system control circuit employes IC701 (CX738) which supplies six different output signals (PAUSE, forward, fast forward, rewind, delay-forward, and brake). (See the detailed circuit description of EL-7).

SOLENOID DRIVE CIRCUITS

The following table indicates each operation of the three solenoids for each mode.

Mode / Solenoid	Forward	Fast Forward	Rewind	PAUSE	Record	Record/PAUSE or Forward/PAUSE
PM1 (Shifter)	○	X	X	○	○	○
PM2 (Fast Forward)	○	○	X	X	○	X
PM3 (Rewind)	X	X	○	X	○	○

○: energized X: de-energized

1. STOP mode → forward mode (energized PM1 and PM2) (See Figs. 1-2 and 1-3)

1. When the delay forward signal is applied to the base of Q725 and Q735 from terminal 6 of IC701, Q725 and Q726 turn ON to energize PM1.
2. When Q725 and Q726 are both ON, C720 discharges, and the Q727's base voltage is decreased. Q727 turn OFF. So Q728 and Q729 turn ON, and PM1 is energized by the high voltage while C720 is discharged.
3. In this period, Q730 turns ON. Then Q734 turns ON by a base current flowing via R791. Therefore, the delay forward signal applied to the base of Q735 from terminal 6 of IC701 is grounded at Q734. Q735 and Q736 turn OFF, and PM2 is not energized.
4. The other base current is also applied to Q734 via S951 and R791 during forward mode to secure the mechanical operation.
5. After discharging C720, Q727 turns ON. (See Fig. 1-3). Consequently, Q728, Q729, Q730 and Q734 turn OFF, and Q735 and Q736 turn ON, so PM2 is energized. (Q731, Q732 and Q733 constitute the solenoid kick circuit. See the circuit description of EL-7).
6. Energized both solenoids, PM1 and PM2, place EL-5 in the forward mode.

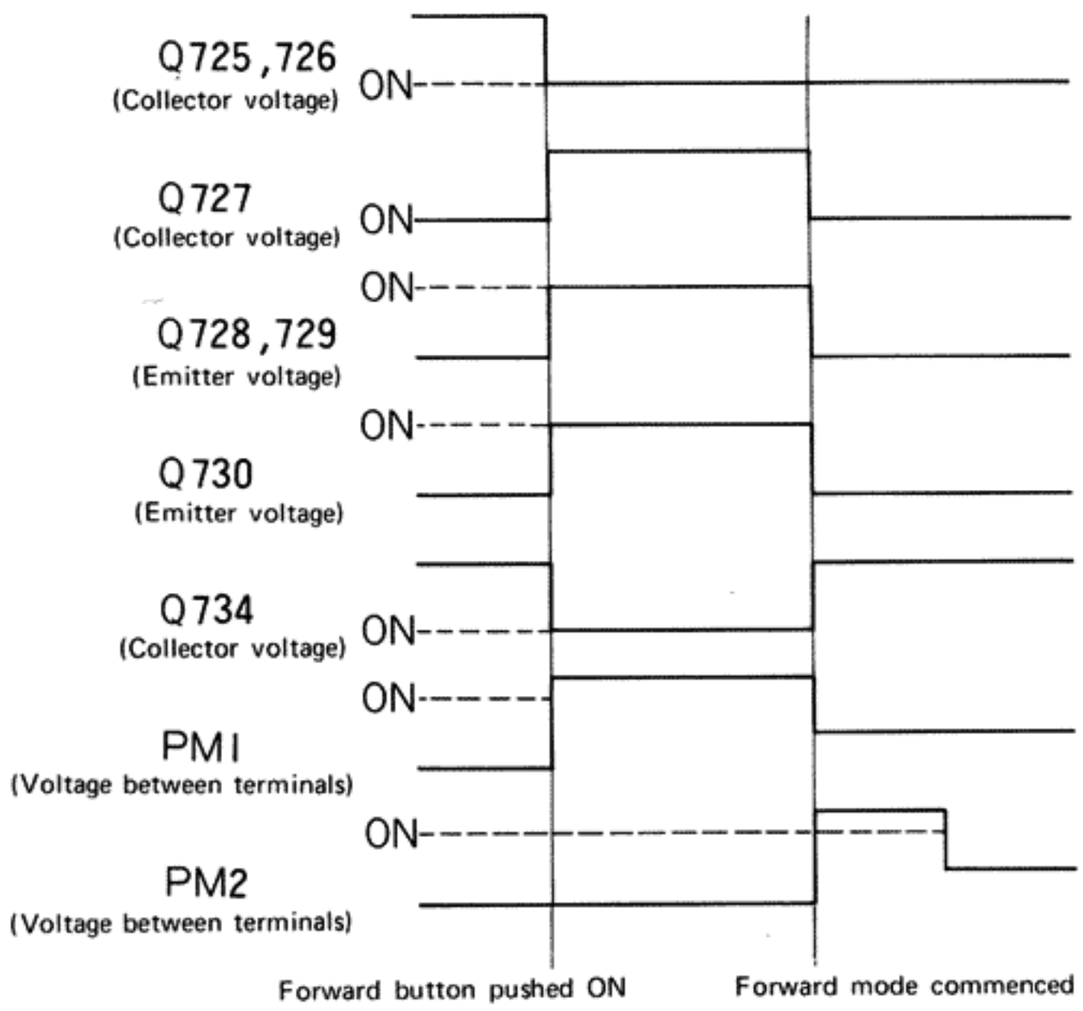


Fig. 1-1 Time Chart of Energizing PM1 and PM2

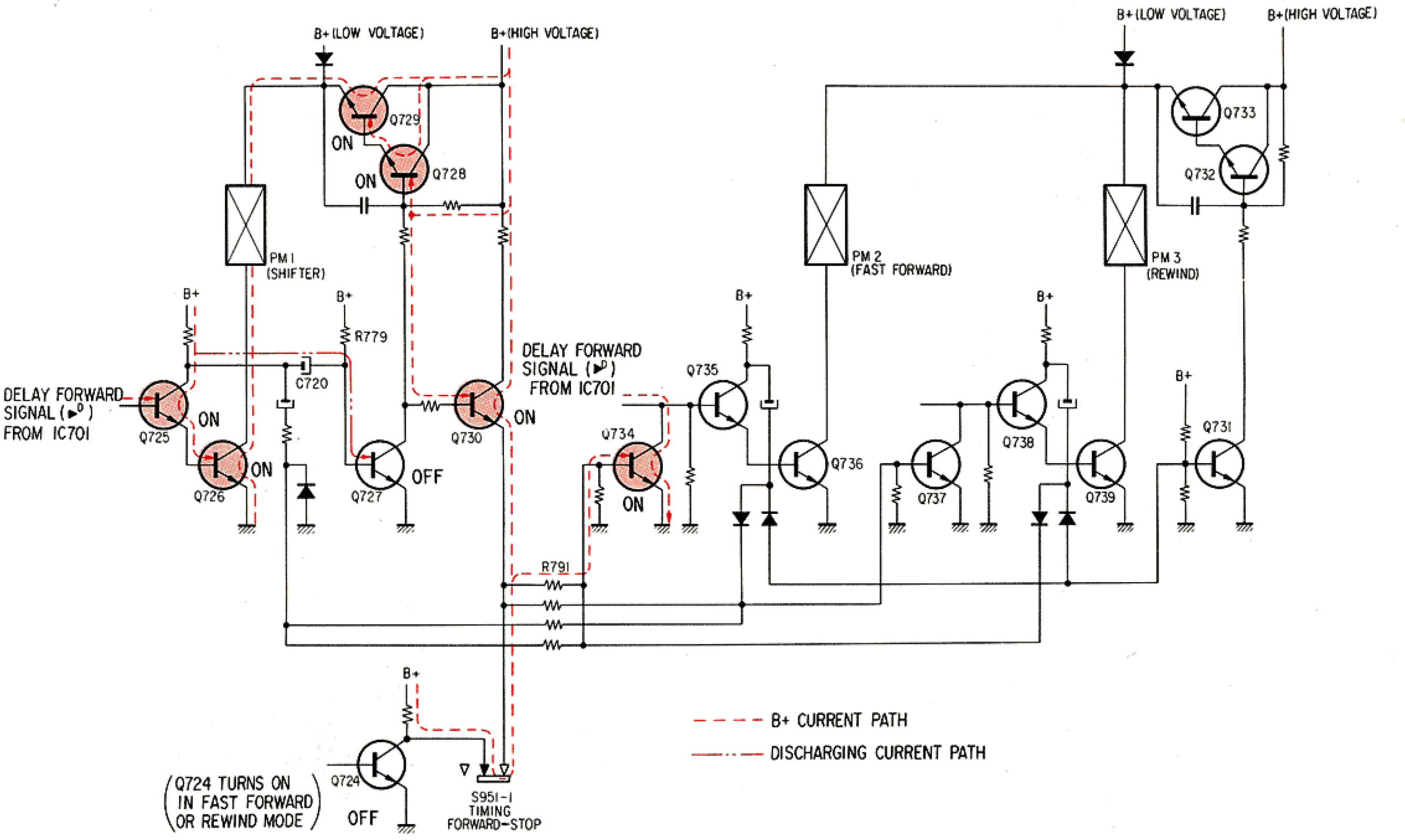


Fig. 1-2 Forward Button Pushed ON

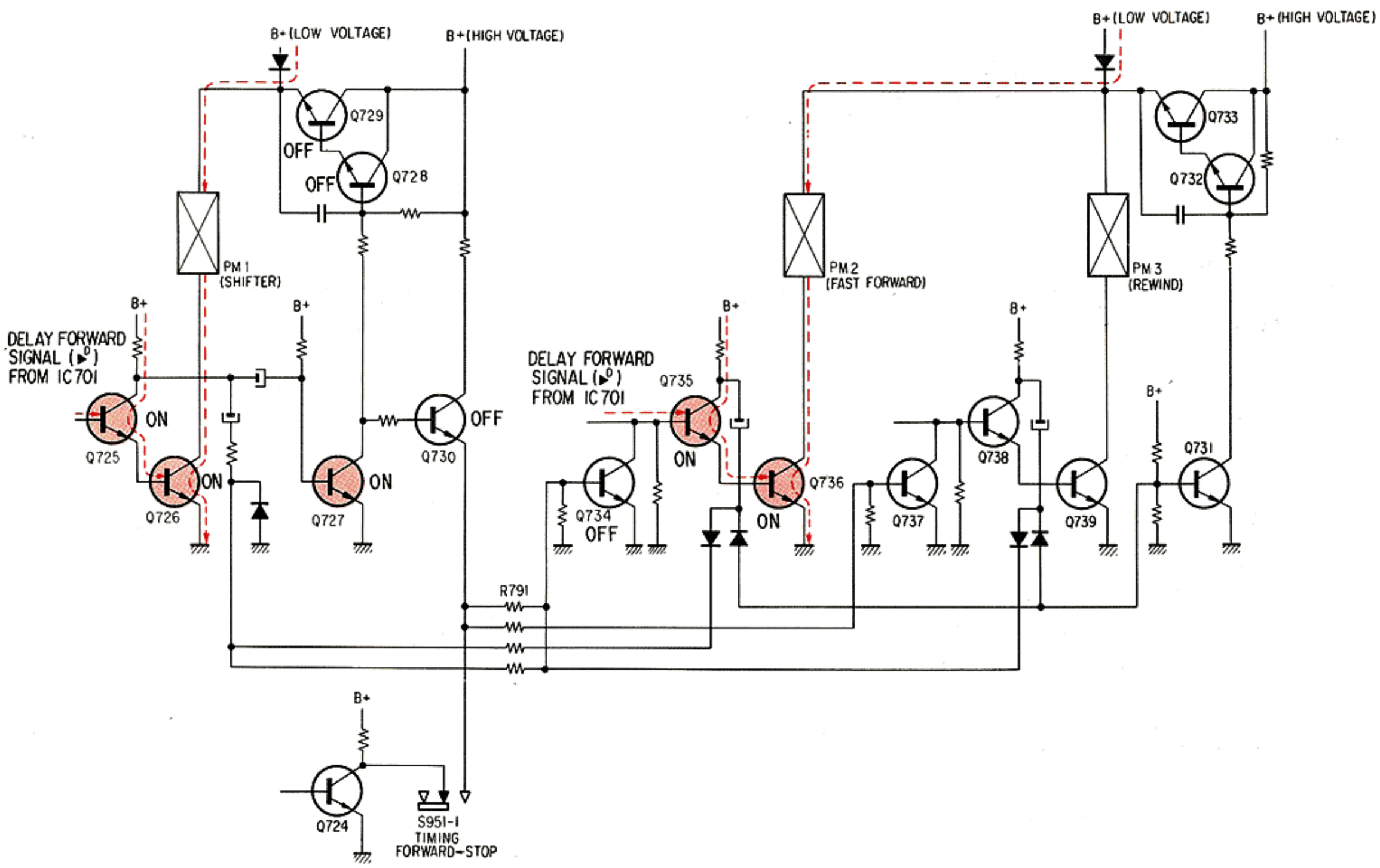


Fig. 1-3 Forward mode Commenced

2. STOP mode ➡ fast forward or rewind mode (energized PM2 or PM3) (See Fig. 1-4)

When the fast forward signal is applied to the base of Q735 from terminal 3 of IC701, Q735 and Q736 turn ON, and PM2 is energized. The energized PM2 places EL-5 in the fast forward mode. For rewind mode, Q738 and Q739 turn ON by the rewind signal from terminal 4 of IC701, and PM3 is energized. The energized PM3 places EL-5 in the rewind mode. (Q731, Q732 and Q733 constitute the solenoid kick circuit. See the circuit description of EL-7).

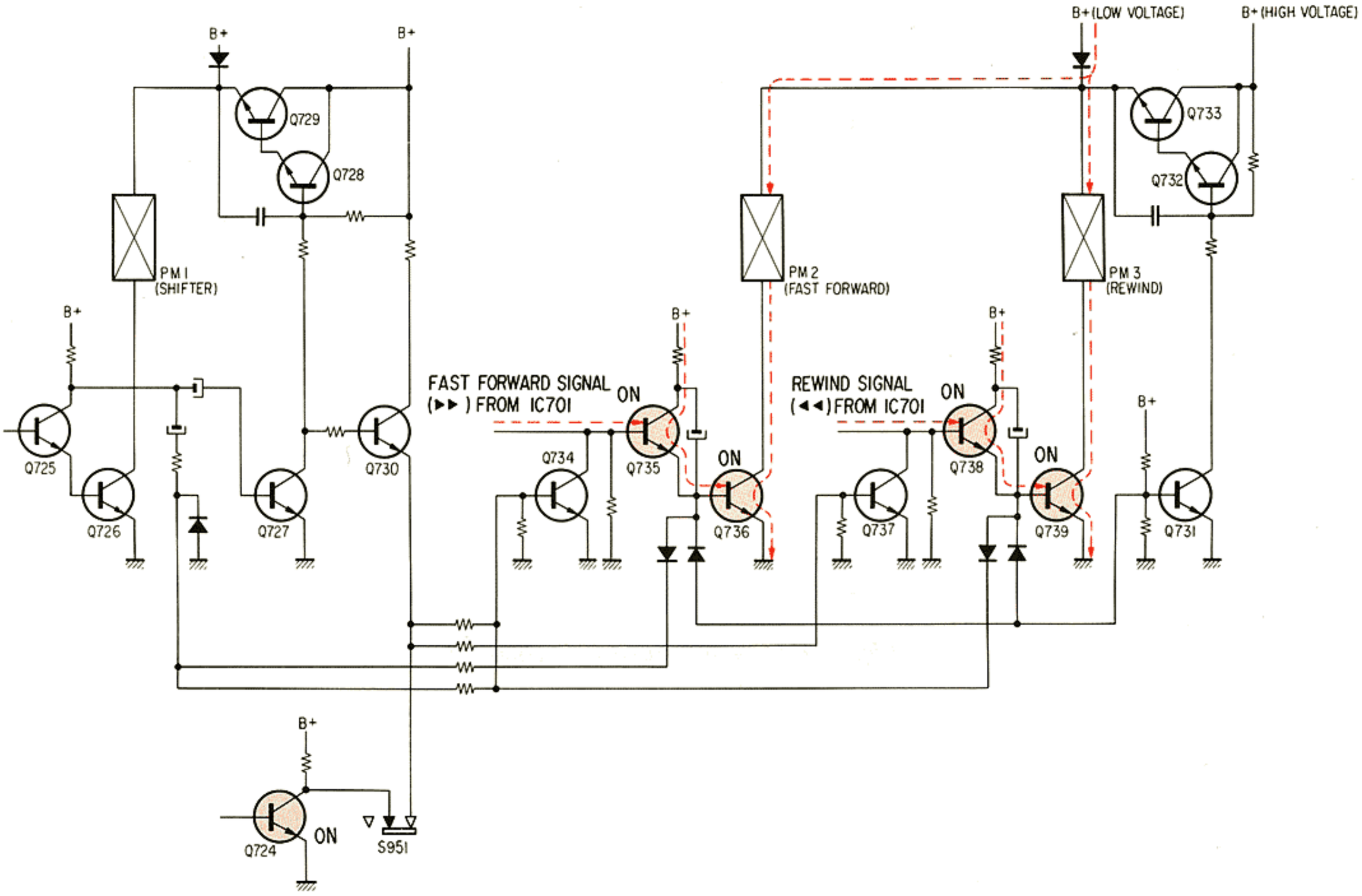


Fig. 1-4 Fast Forward or Rewind Mode

3. STOP mode ➡ record mode (energized PM1, PM2, PM3) (See Fig. 1-5)

1. When the record button is pushed, the record control signal is applied to the base of Q725 and Q738 from the flip-flop Q741/Q742. Then Q725 and Q726 turn ON, and PM1 is energized. According to the operation of Q737 (as same as the operation of Q734 described on section 1), Q738 and Q739 turn ON after PM1 is energized, and PM3 is energized. Energizing of these two solenoids places EL-5 in the record STAND BY mode.
2. Then when the forward button is pushed with the record button pushed, the delay forward ($\blacktriangleright^{D}$) signal from terminal 6 of IC701 is applied to the base of Q735, so Q735 and Q736 turn ON, and PM2 is energized to place EL-5 in record mode.

4. Record mode ➡ PAUSE mode (energized PM1, PM2, PM3 ➡ de-energized PM2) (See Fig. 1-5)

When the PAUSE button is pushed in forward mode, the PAUSE signal from terminal 2 of IC701 is applied to the base of Q721, so Q721 turns ON. The base of Q735 is grounded, then Q735 and Q736 turn OFF, PM2 is de-energized to place EL-5 in the PAUSE mode.

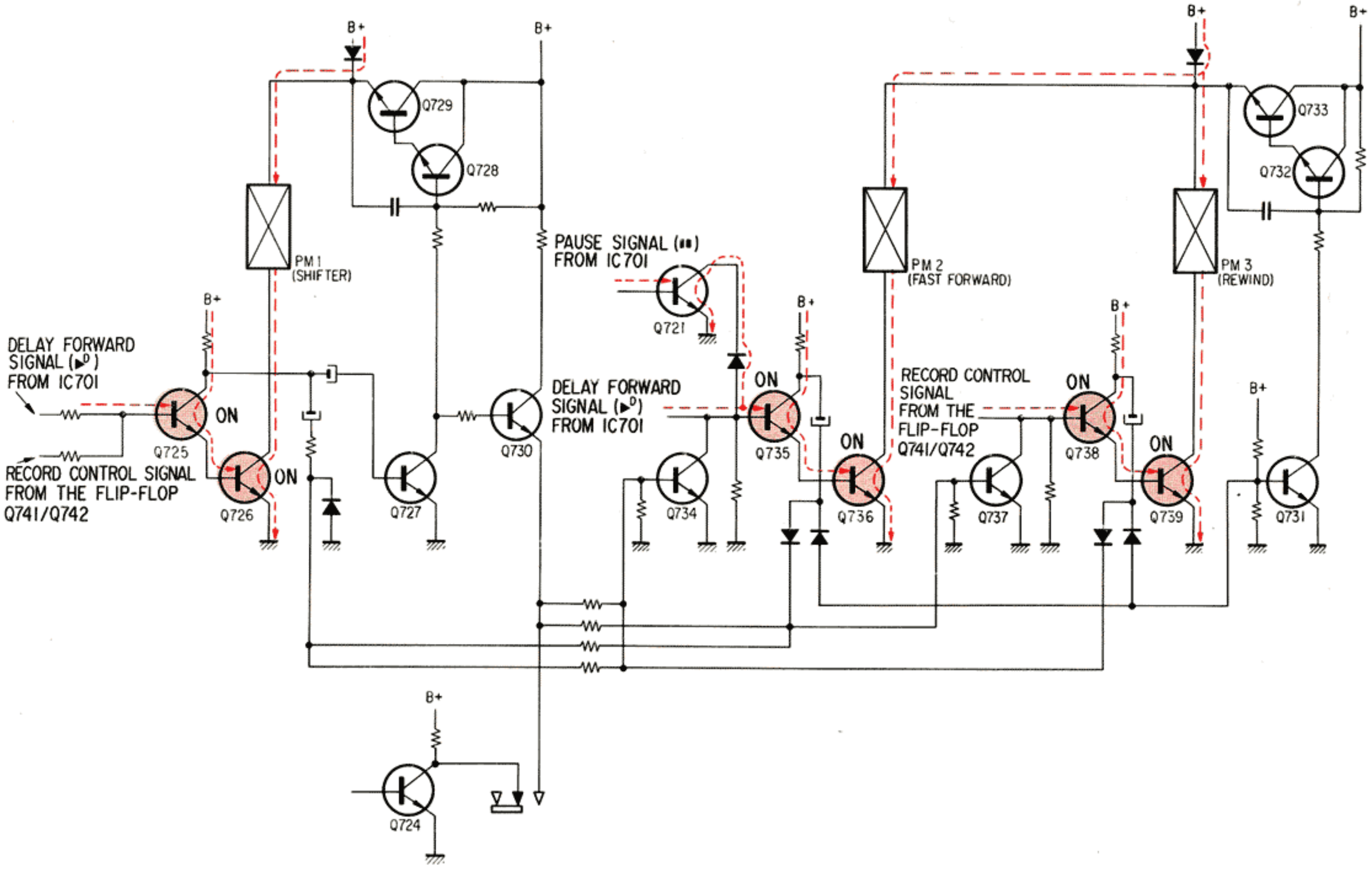


Fig. 1-5 Record/PAUSE Mode

5. Record mode → fast forward or rewind mode (via temporary STOP mode) (See Fig. 1-7)

When changing directly to the fast forward mode from the record mode, Q725 and Q726 turn OFF and the charge-up current of C721 is applied to the base of Q734 via R778 and R790 while C721 is charged up. Q734 turns ON, and the fast forward (▶▶) signal from IC701 is temporarily grounded. Q734 turns OFF after C721 is fully charged, so the fast forward signal from IC701 energizes PM2 to place EL-5 in the fast forward mode. When changing directly to the rewind mode from the record mode, a similar chain of events, including the switching of Q737, places EL-5 in rewind mode. Switching of Q737 makes a temporary STOP during the rewind signal is momentarily grounded.

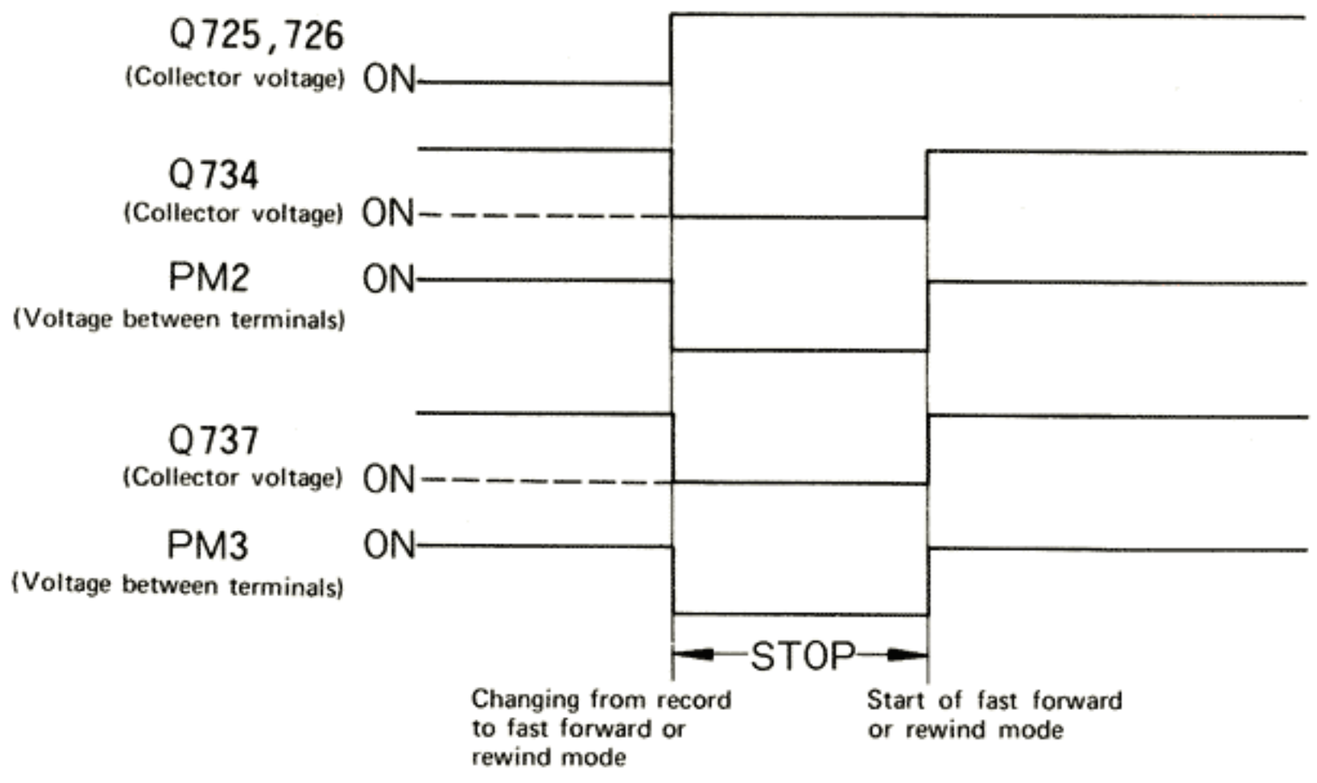


Fig. 1-6 Time Chart

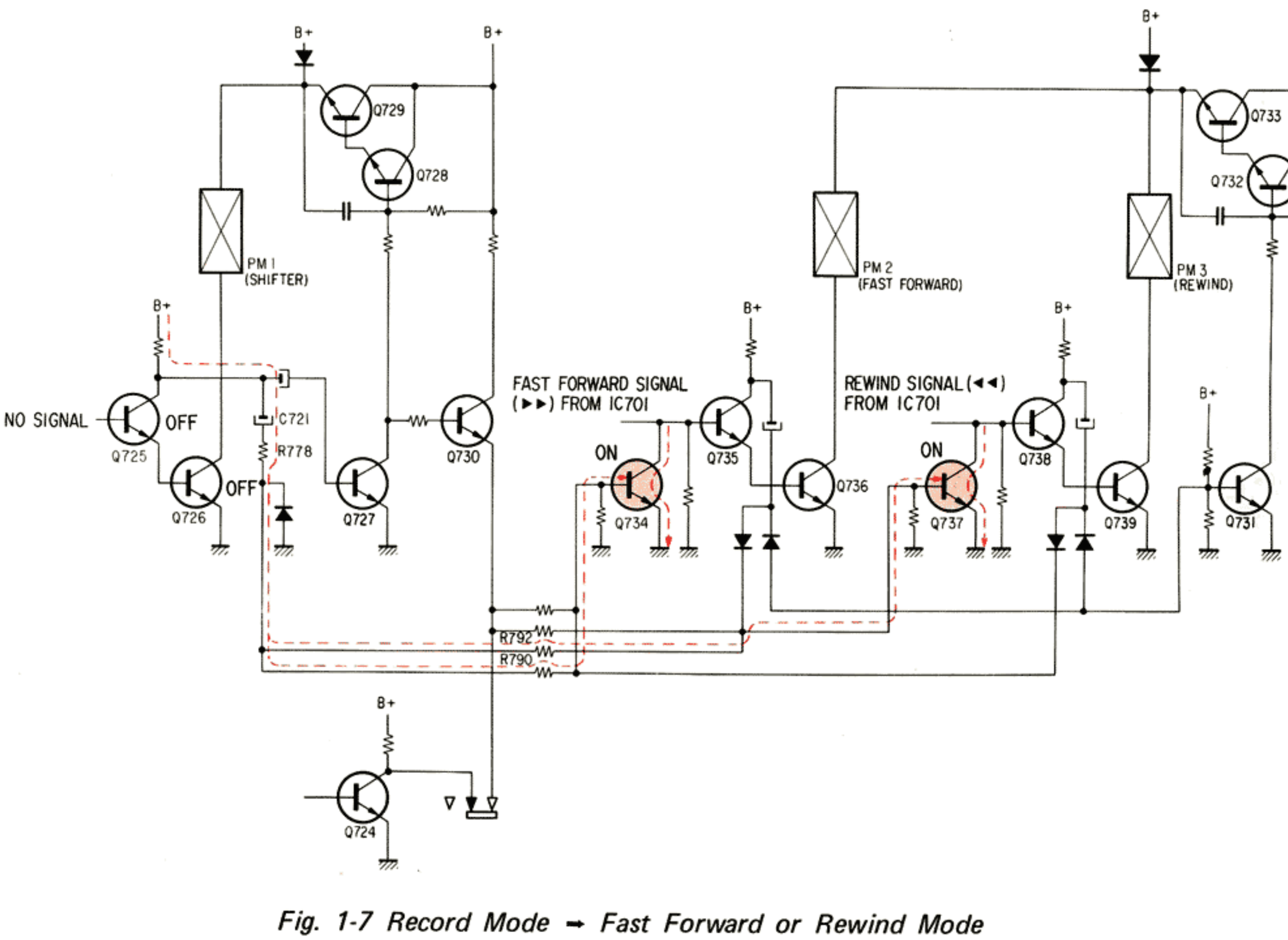


Fig. 1-7 Record Mode → Fast Forward or Rewind Mode

MUTING CIRCUIT

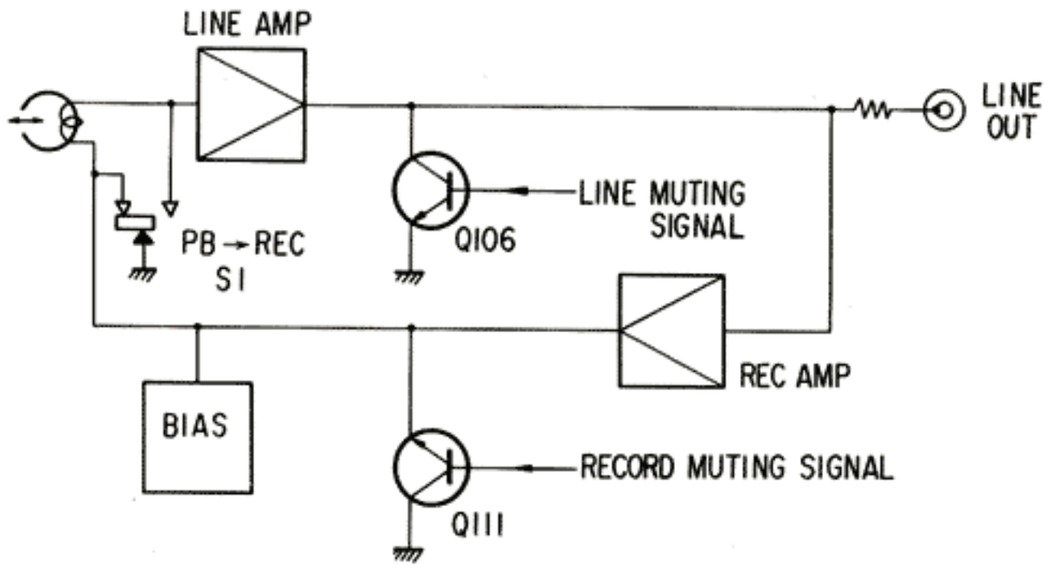


Fig. 1-8 Muting Signal

1. Q707 and Q708 turn ON after 2 seconds from turning the power switch to ON. C713 discharges when Q707 and Q708 turn ON, thus Q709's base voltage is decreased and Q709 turns OFF.
2. Q744 turns ON by a base current flowing via R727 and R772, and then Q745 turns OFF. So the record muting signal (via R835, R951 and D952), and the LINE muting signal (via R835 and D951) are applied to the audio circuit.

1. When power switch turned ON (See Fig. 1-9)

Stop signals are generated at Q707 and Q708 by the start-up of the power supply voltage. (See the circuit description of EL-7 for the details on stop signals).

2. STOP mode (See Fig. 1-10)

Q724 is OFF in STOP mode. And Q744 turns ON by the base current flowing via R770, S951-1 and R771. Thus Q745 turns OFF, so the LINE muting and record muting signals are applied to the audio circuit.

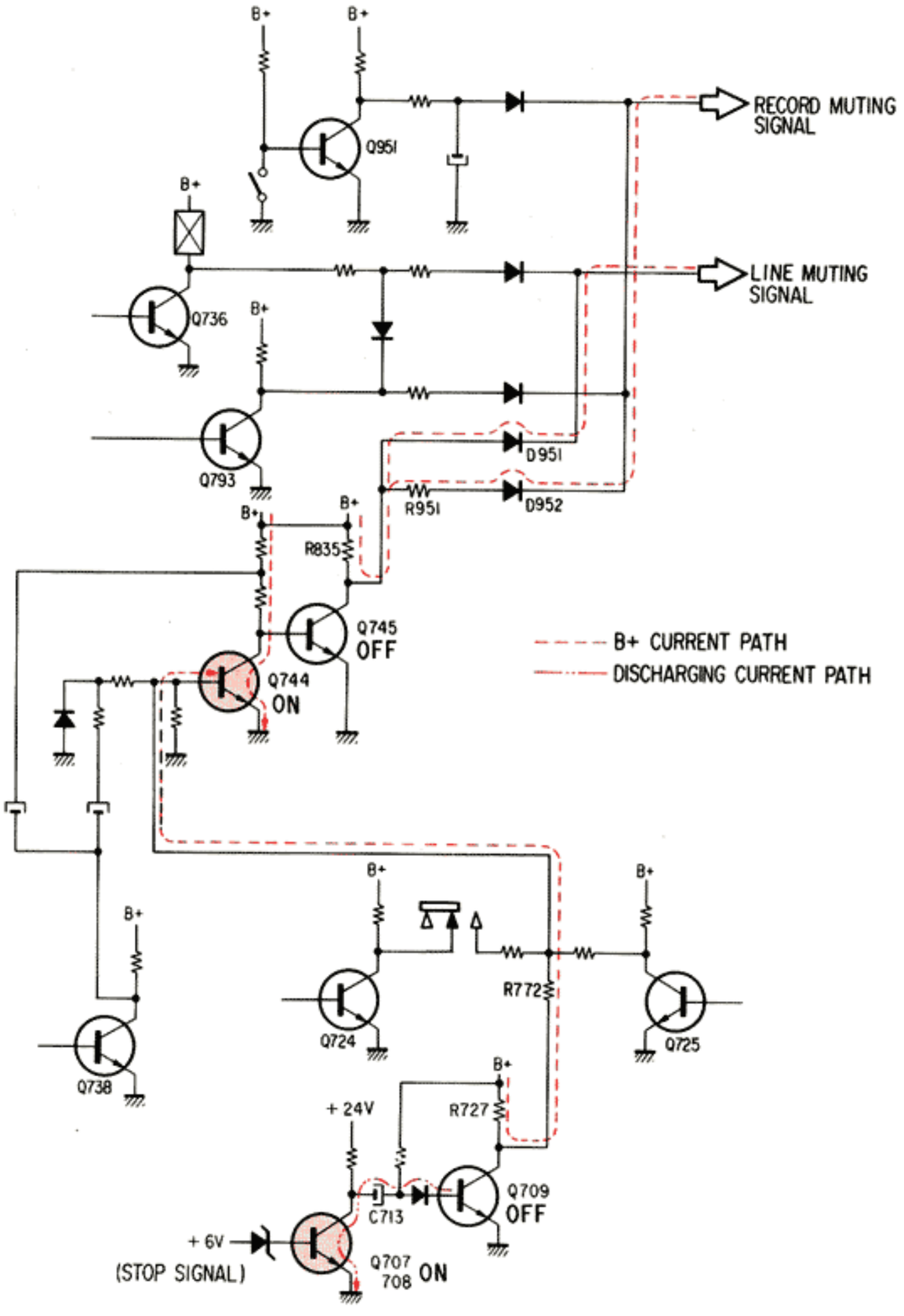


Fig. 1-9 Power Switch Turning ON

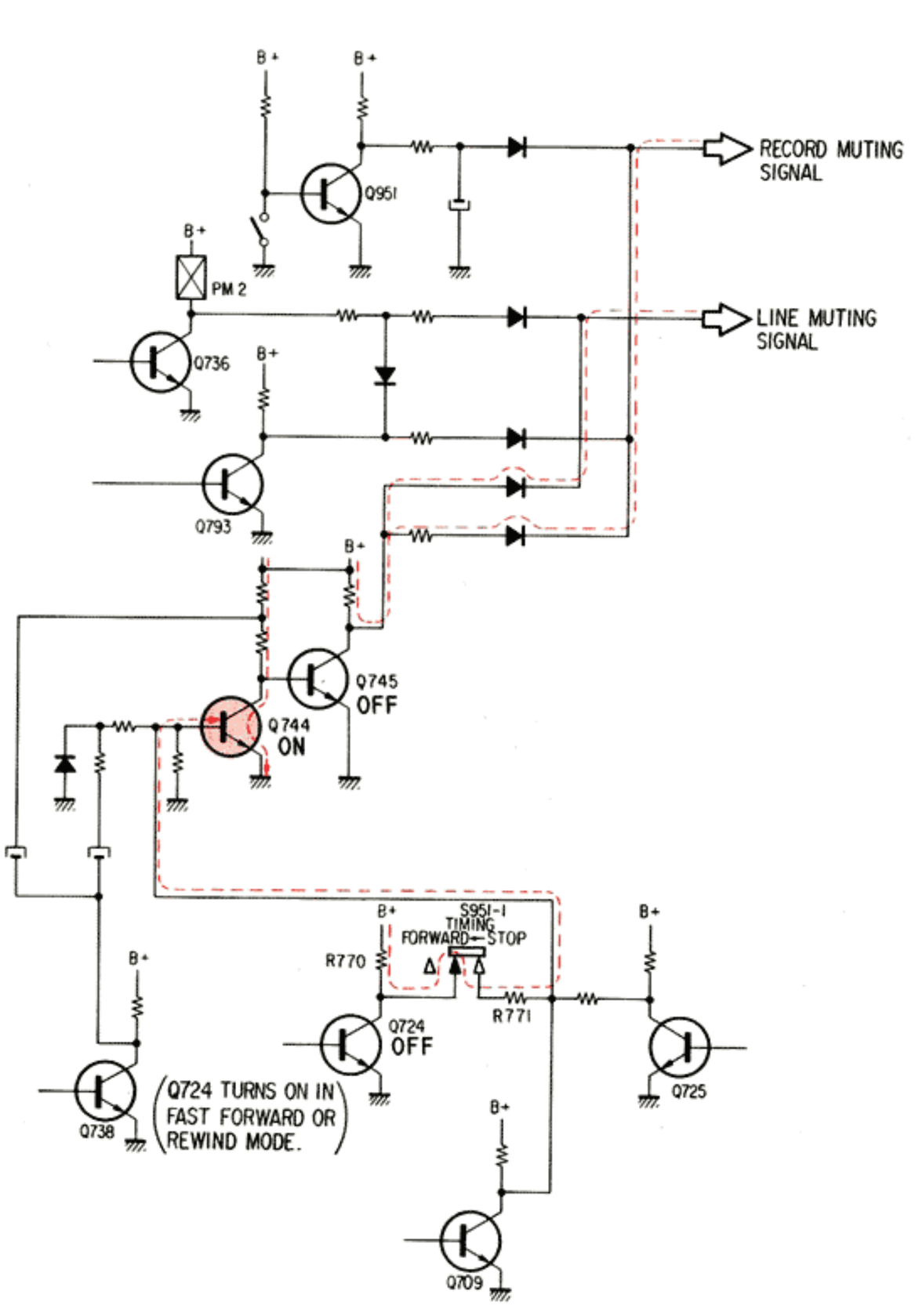


Fig. 1-10 Stop Mode

3. Forward mode (See Fig. 1-11)

Q739 is OFF in forward mode, so only the record muting signal is applied to the audio circuit via PM3, R957, and D955.

4. Fast forward or rewind mode (See Fig. 1-12)

Q725 is OFF in fast forward or rewind mode, so Q744 turns ON by the base current flowing via R776 and R733. Consequently, Q745 turns OFF, and the LINE muting and record muting signals are applied to the audio circuit.

5. STOP mode → record mode, or record mode → STOP mode (See Fig. 1-13)

1. When the record button is pushed in STOP mode, Q738 turns ON. Consequently Q745 turns OFF by the discharging current of C738. So the LINE muting and record muting signals are applied to audio circuit.
2. When the STOP button is pushed in record mode, Q738 turns OFF. Then Q744 turns ON by the charging current of C739, and Q745 turns OFF. So the LINE muting and record muting signals are applied to the audio circuit.

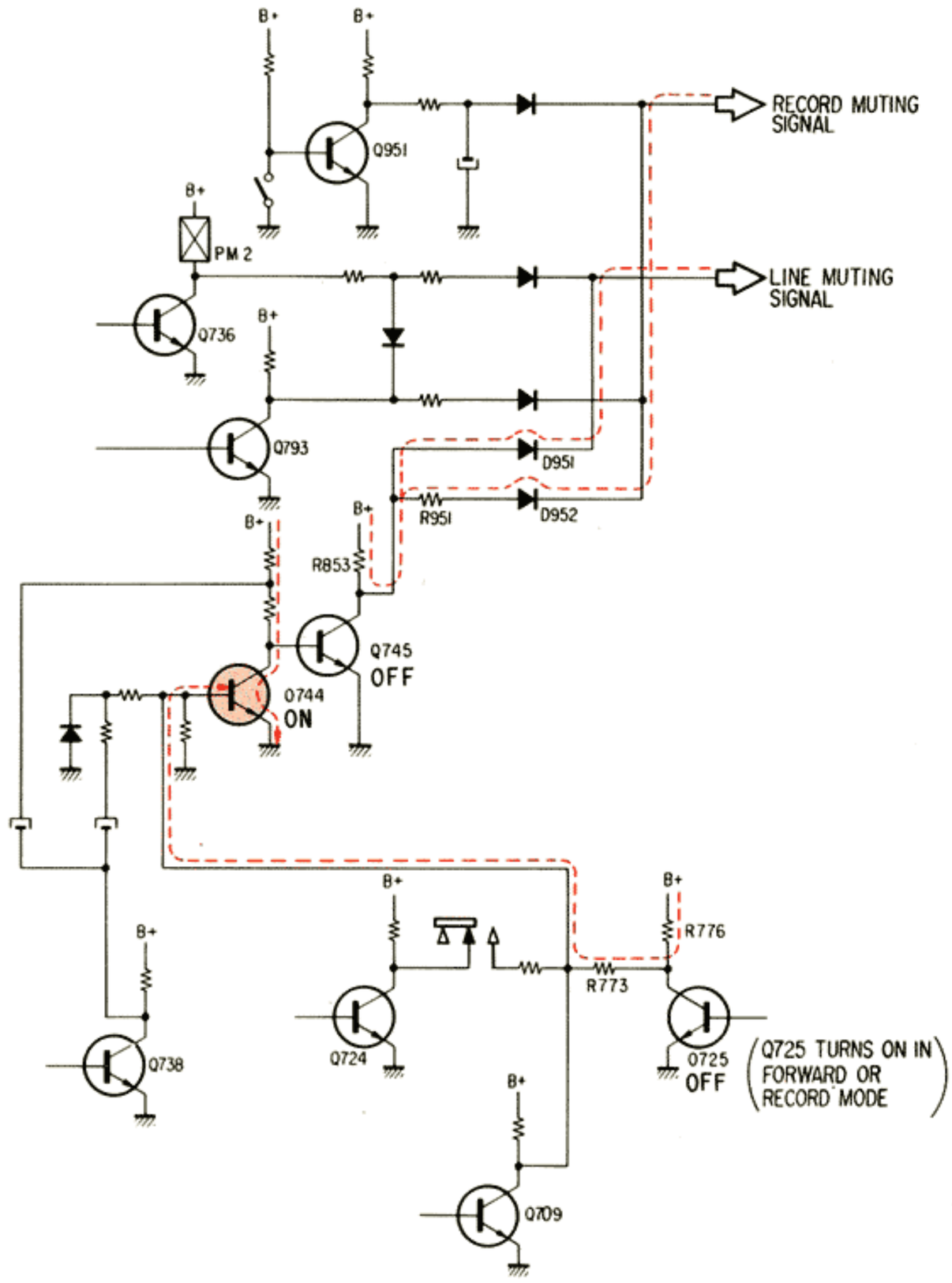


Fig. 1-12 Fast Forward or Rewind Mode

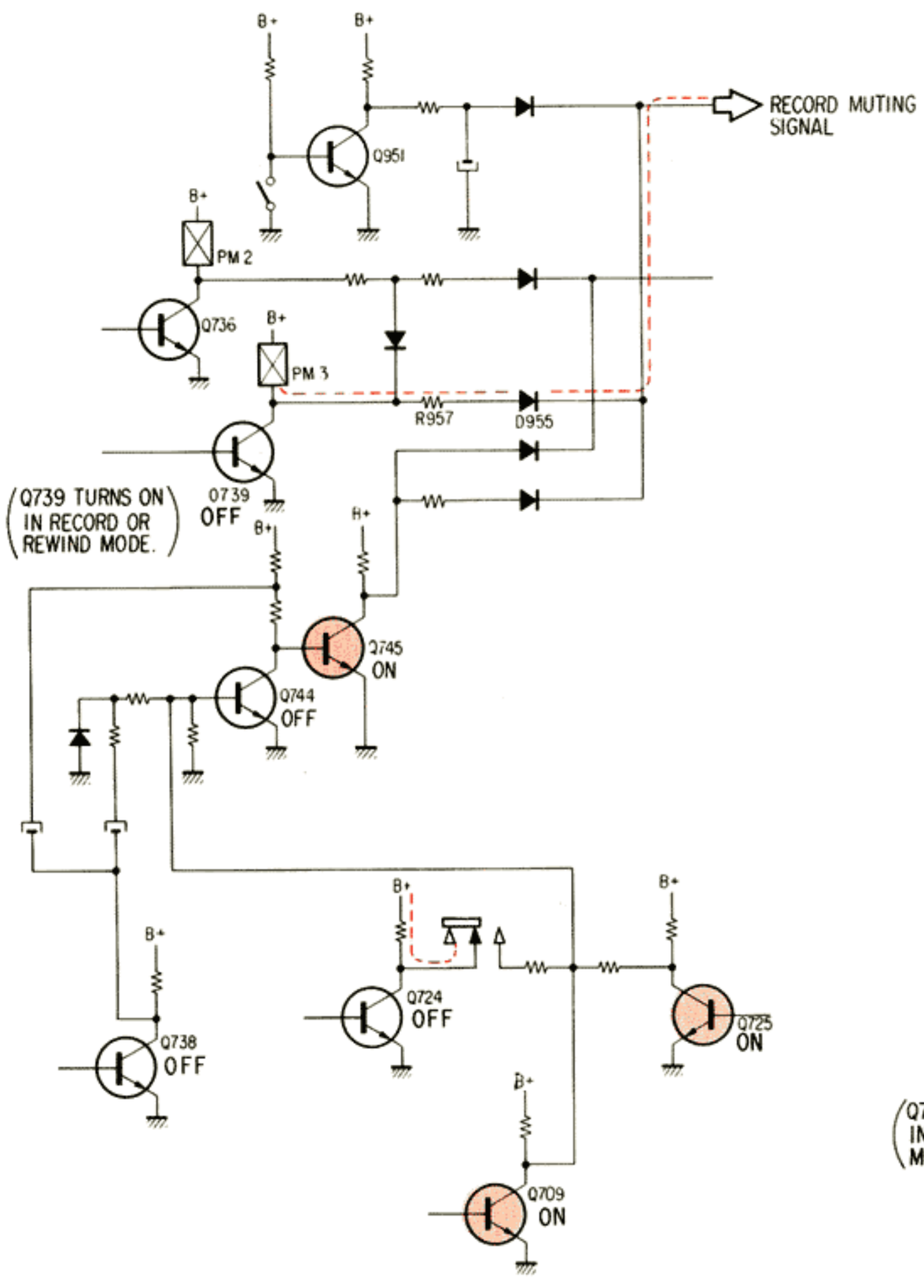


Fig. 1-11 Forward Mode

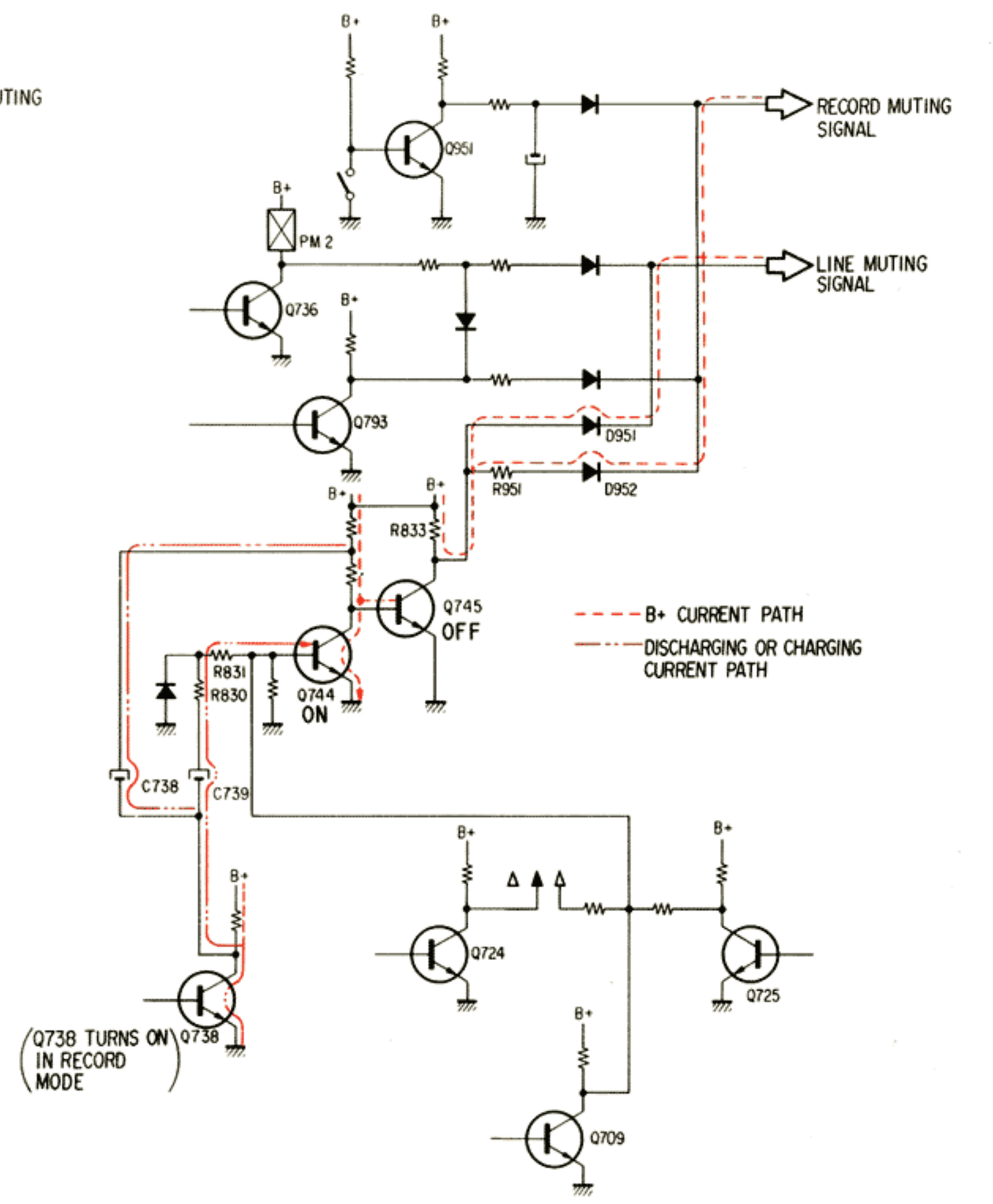


Fig. 1-13 Stop Mode → Record Mode or Record Mode → Stop Mode

6. PAUSE mode (See Fig. 1-14)

In the forward/PAUSE mode, Q721 is ON, and Q736 is OFF. Therefore, the LINE muting signal is applied to the audio circuit via PM2, R956, R955, and D954, and the record muting signal is applied via D956, R957, and D955. But in record/PAUSE mode Q739 is ON. So these signals are not applied.

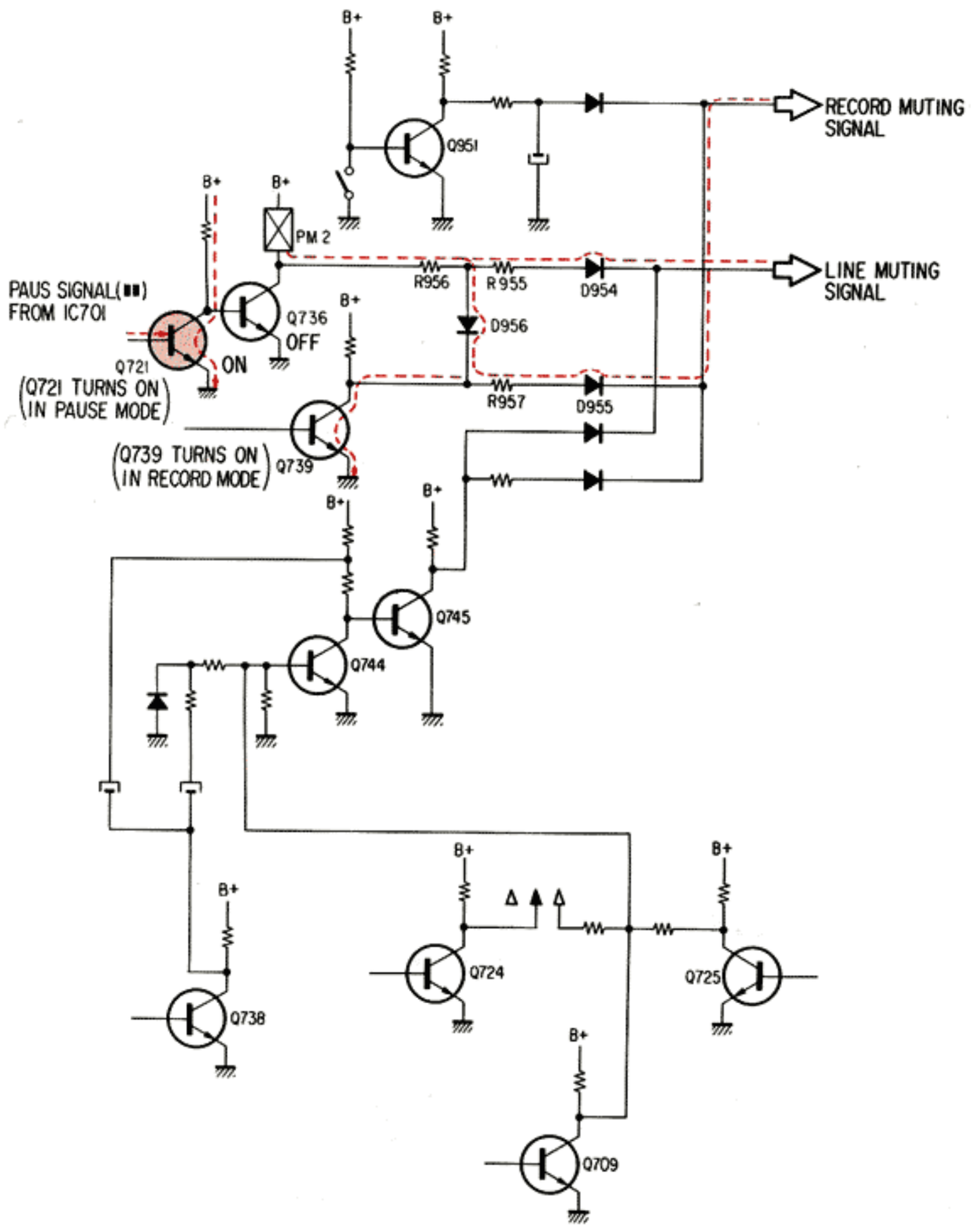


Fig. 1-14 PAUSE Mode

7. REC MUTING (operated by remote control RM-30) (See Fig. 1-15)

When the REC MUTING button of RM-30 is pushed, Q951 turns OFF since its base is grounded. Consequently, only the record muting signal is applied to the audio circuit via R953, R954, and D953.

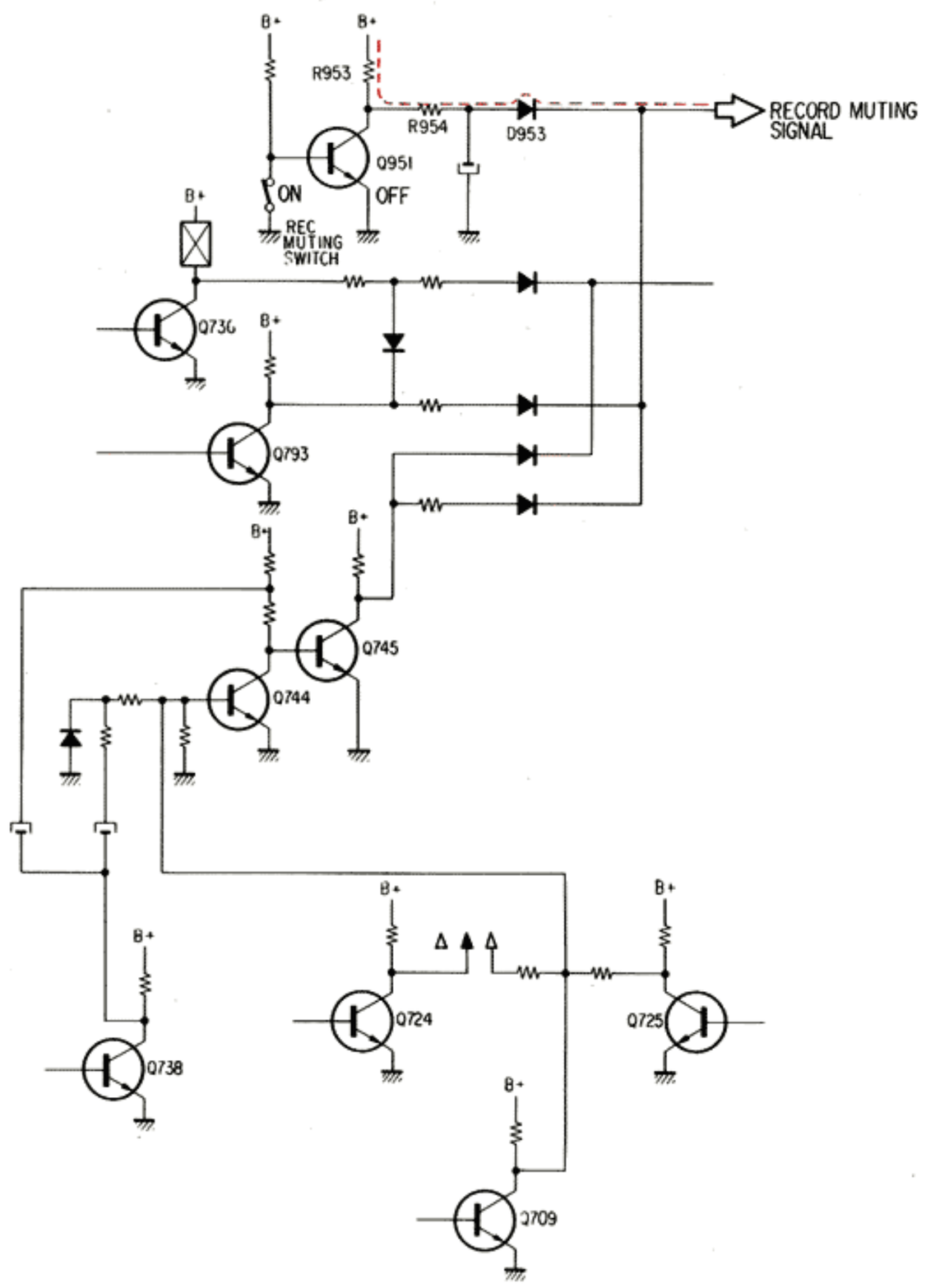
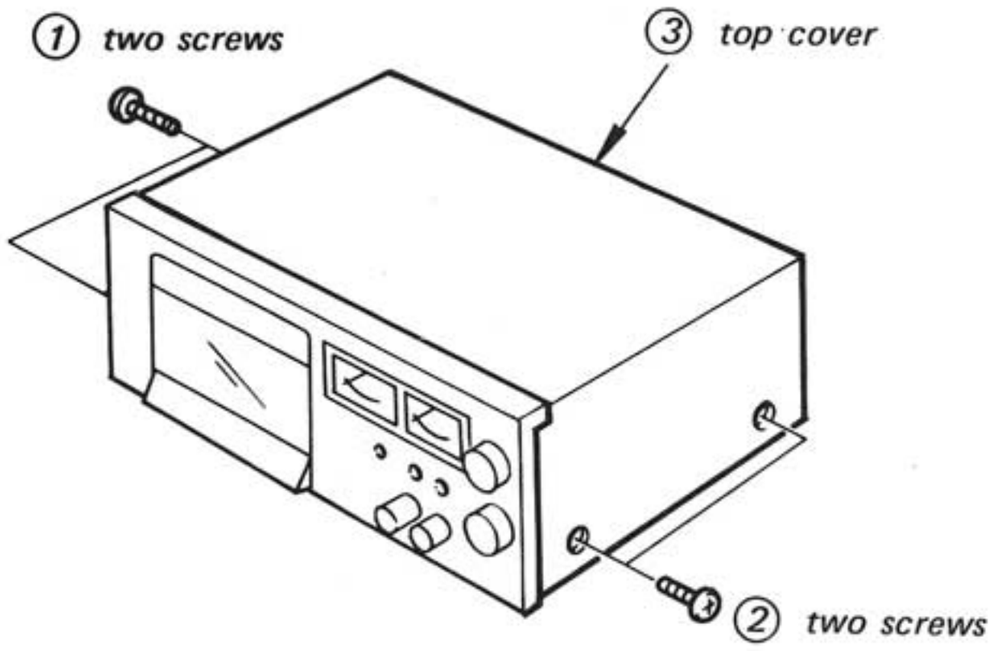


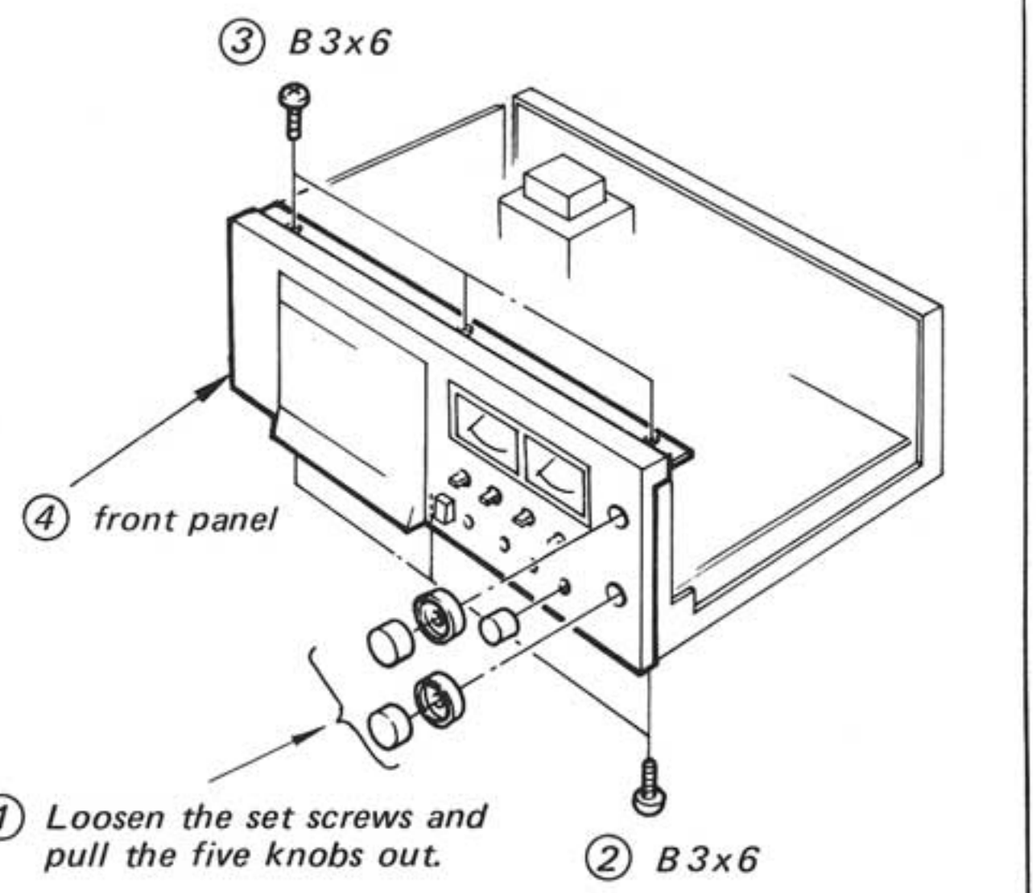
Fig. 1-15 REC MUTING

SECTION 2
DISASSEMBLY

Top Cover Removal

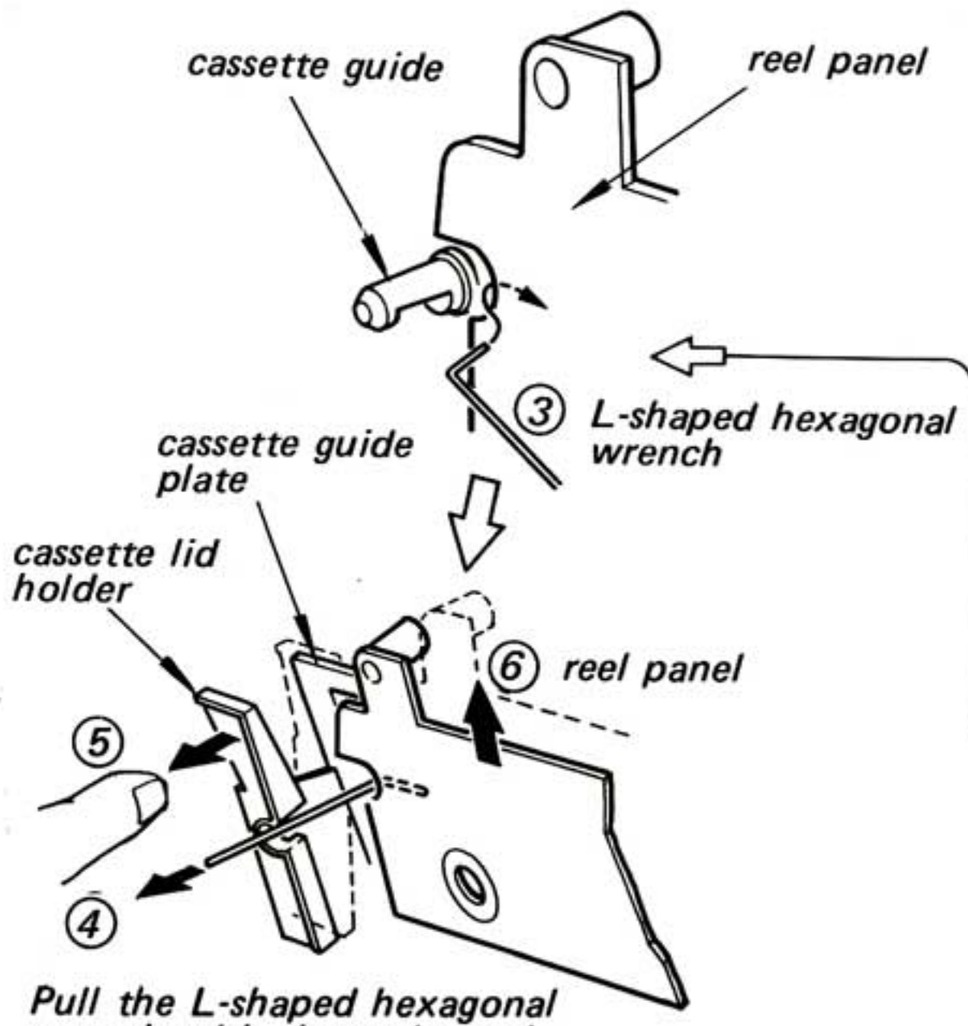


Front Panel Removal

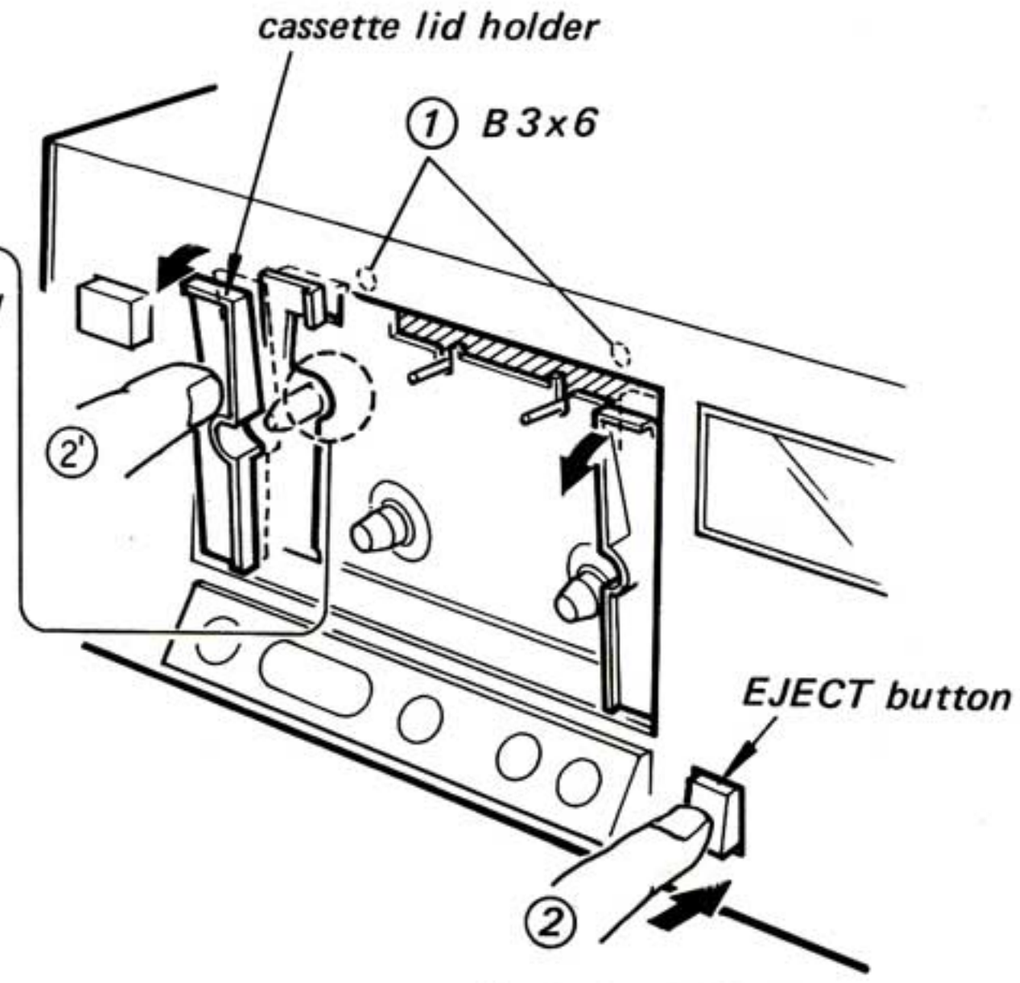


Cassette Lid Removal

Reel Panel Removal



Pull the L-shaped hexagonal wrench with the reel panel.

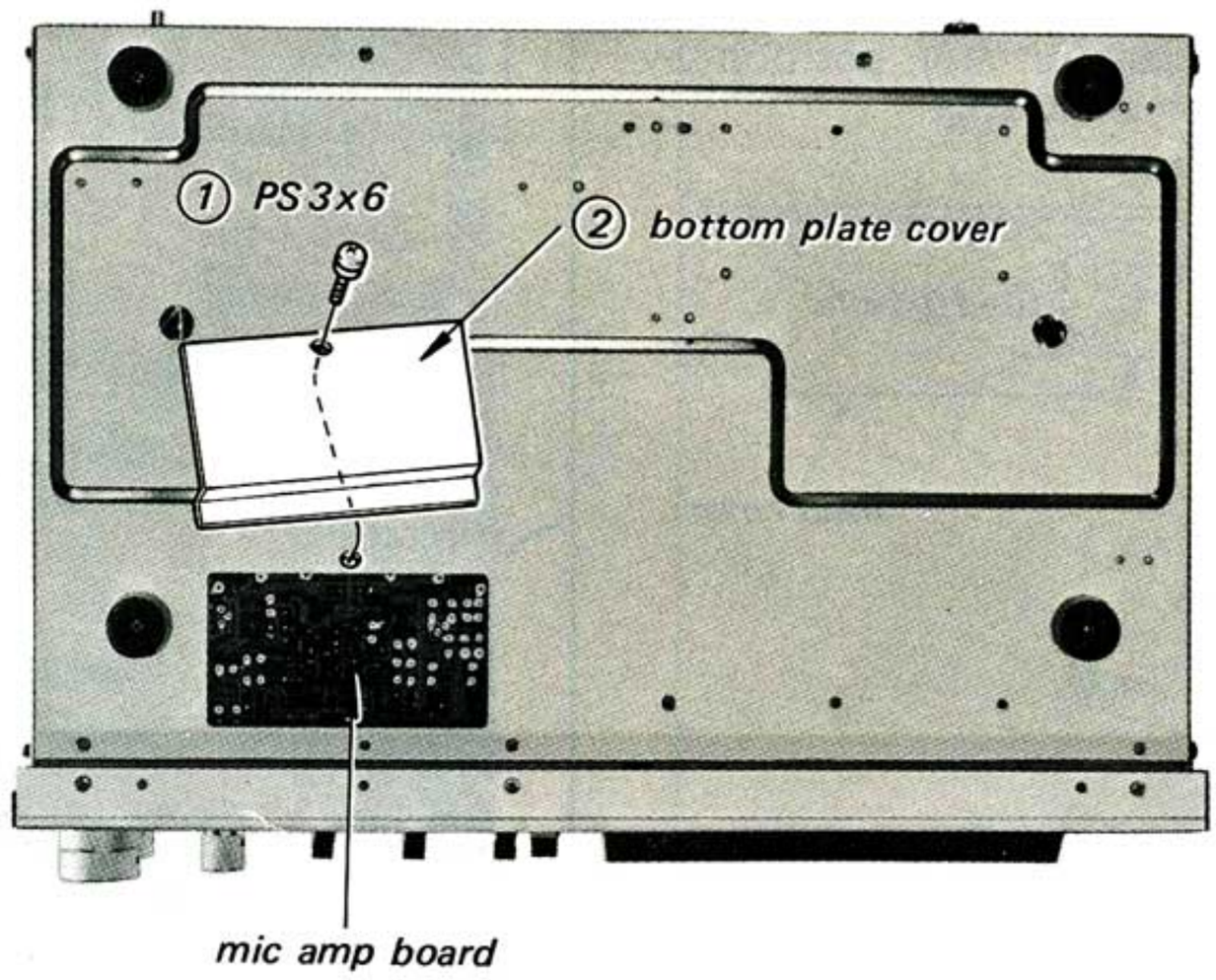


Push the EJECT button and stop the cassette lid holder at ② before completely open.

⑤ *Open the cassette lid holder while keeping the reel panel between the cassette guide plate and the cassette lid holder.*

Bottom Plate Cover Removal

(The voltage on the mic amp board can be checked.)



SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

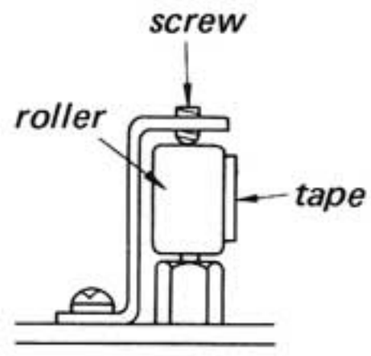
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply a suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

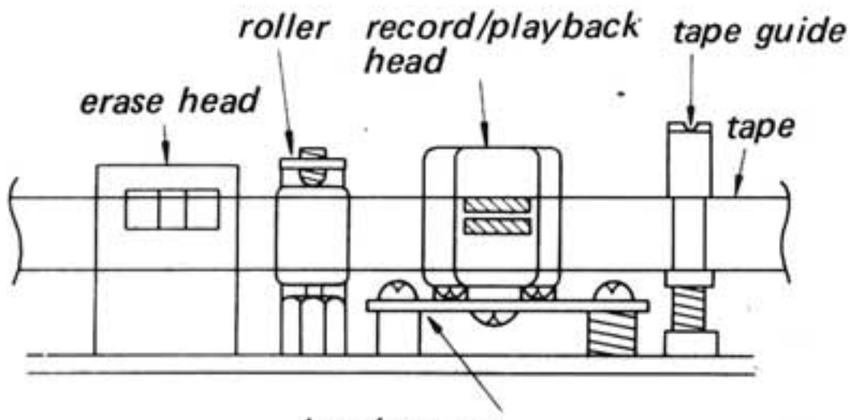
Test Tape L-9-MR (with a mirror) 8-918-064-15

section	1	2	3	4
frequency	315 Hz	7 kHz	12.5 kHz	3 kHz
level	0 dB	–10 dB	–10 dB	0 dB
time	40 sec.	60 sec.	40 sec.	180 sec.

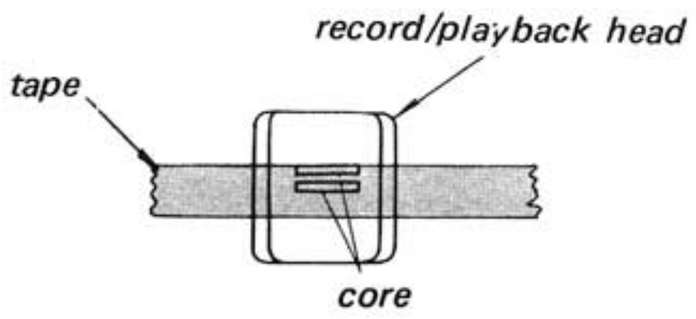
Tape Path Adjustment (Use the test tape L-9-MR)
– Playback mode –

1. Adjust the roller height by turning the screw so that the tape runs through the middle of the roller, and make sure that the roller smoothly rotates.



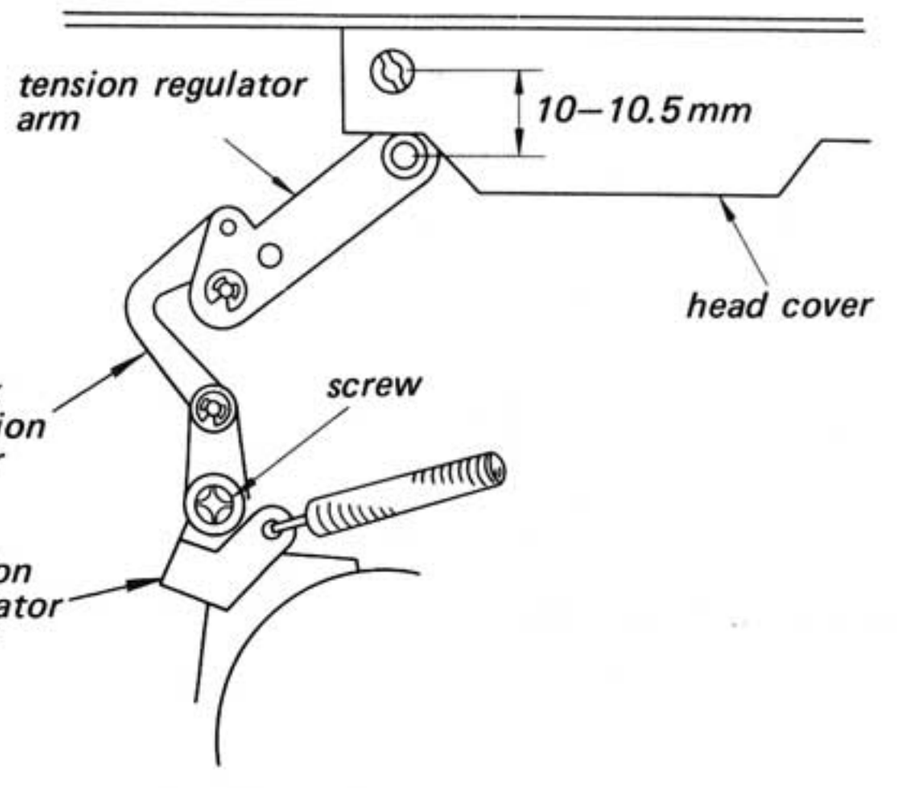


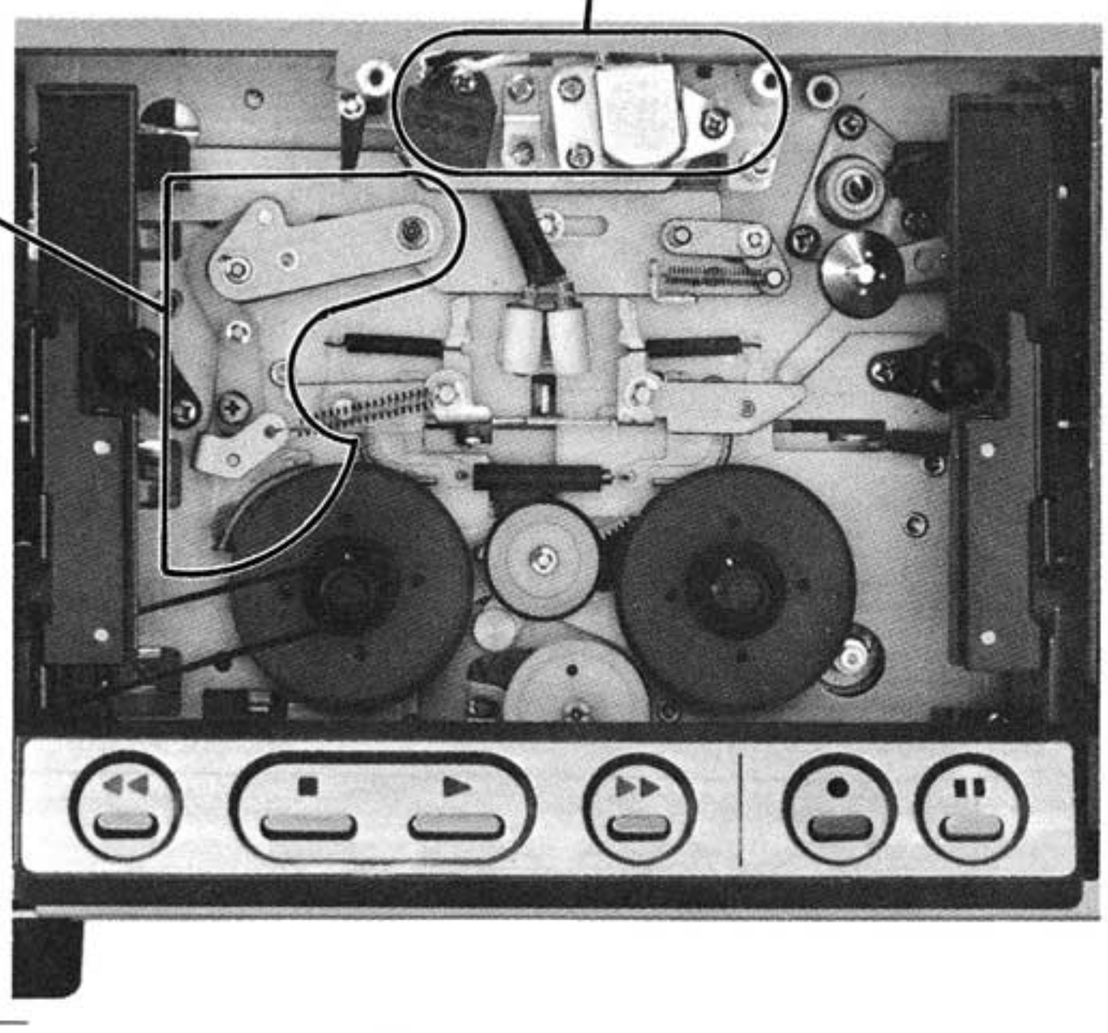
2. Adjust the tape guide height without tape curl.
3. Adjust the record/playback head height by head spacer so that the upper end of tape touches the upper end of core as shown below.



Tension Regulator Arm Position Adjustment
– Playback mode –

Adjust the tension regulator arm position by loosing the screw.

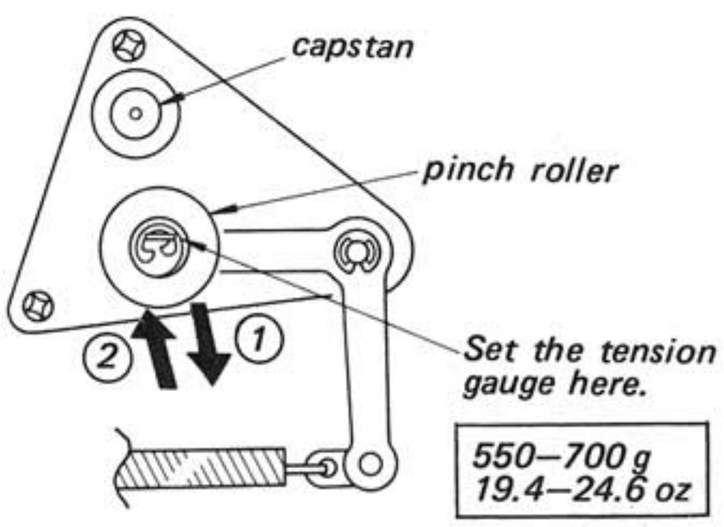


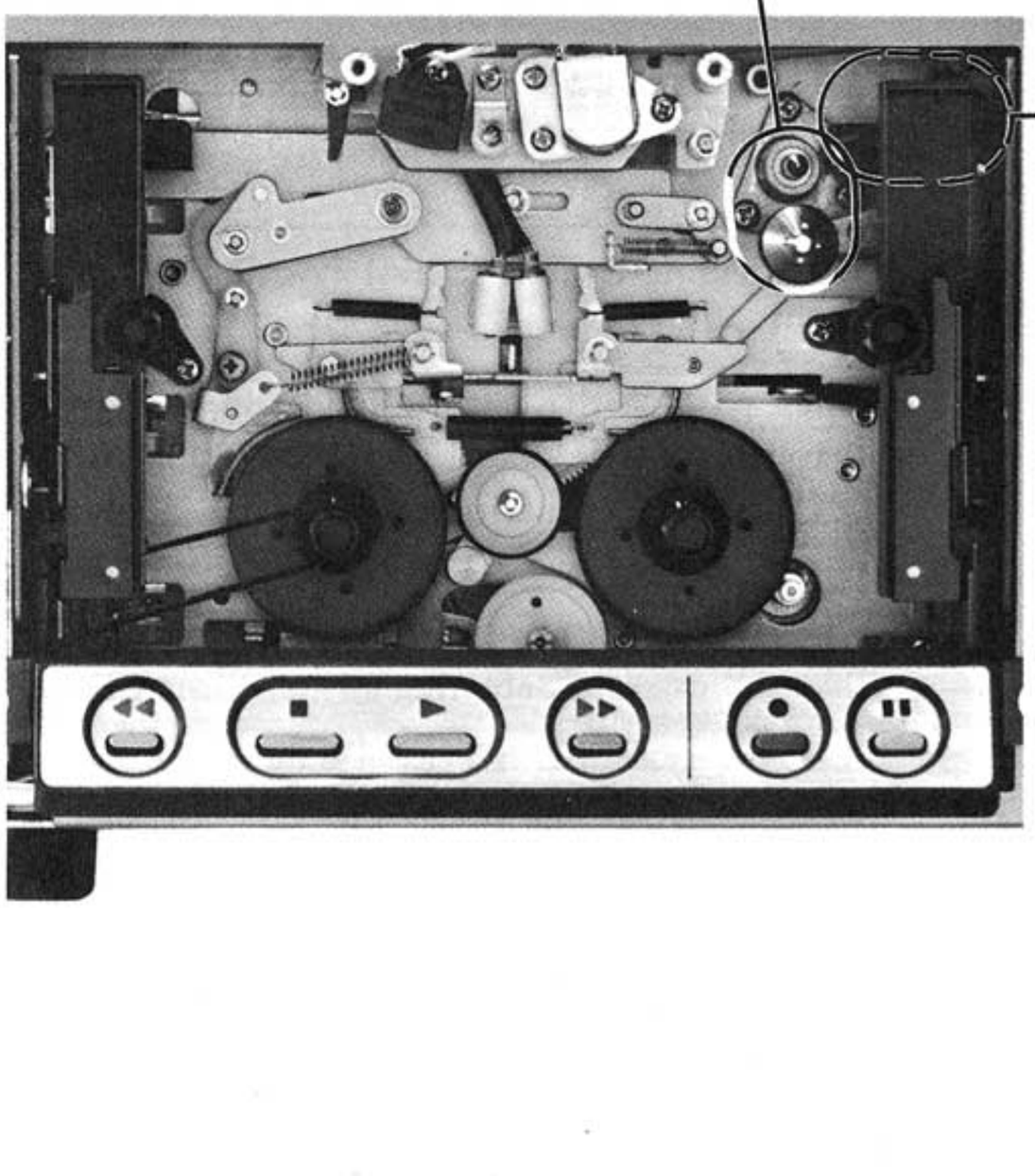


Pinch Roller Pressure Measurement

— Playback mode —

1. Set the tension gauge.
2. Push the tension gauge.
3. Slowly return the pinch roller and read the tension gauge just when the pinch roller starts to rotate.





Tape Retaining Cam Position Adjustment

1. Insert the ELCASET into the cassette holder and press the cassette holder to position the tape retainer as shown in Fig. A.
   Then, loosen the screws in Fig. C and adjust the tape retaining cam position to obtain the specified clearances *1 and *2 in Fig. B.

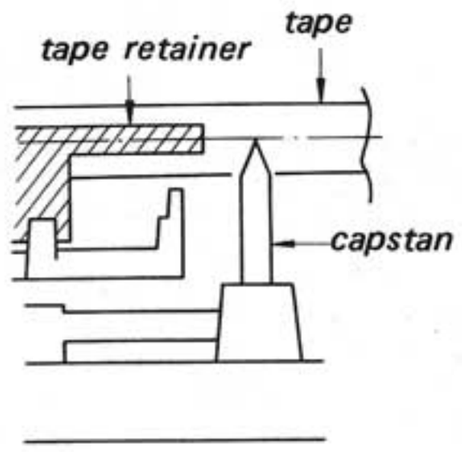


Fig. A

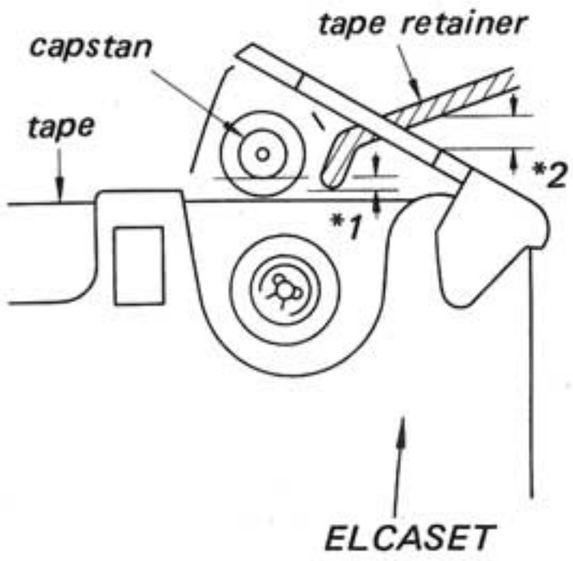


Fig. B

Specification:
clearance *1: 1–1.5 mm
clearance *2: more than 1 mm

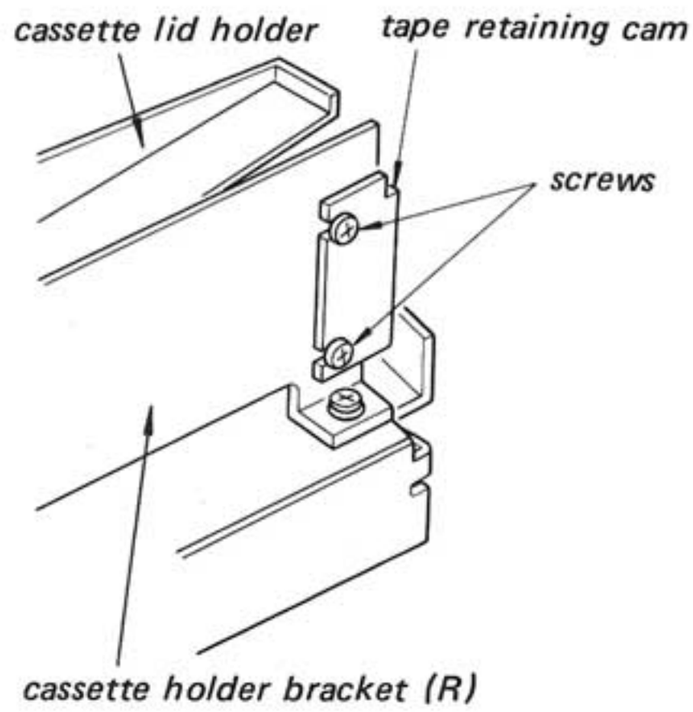
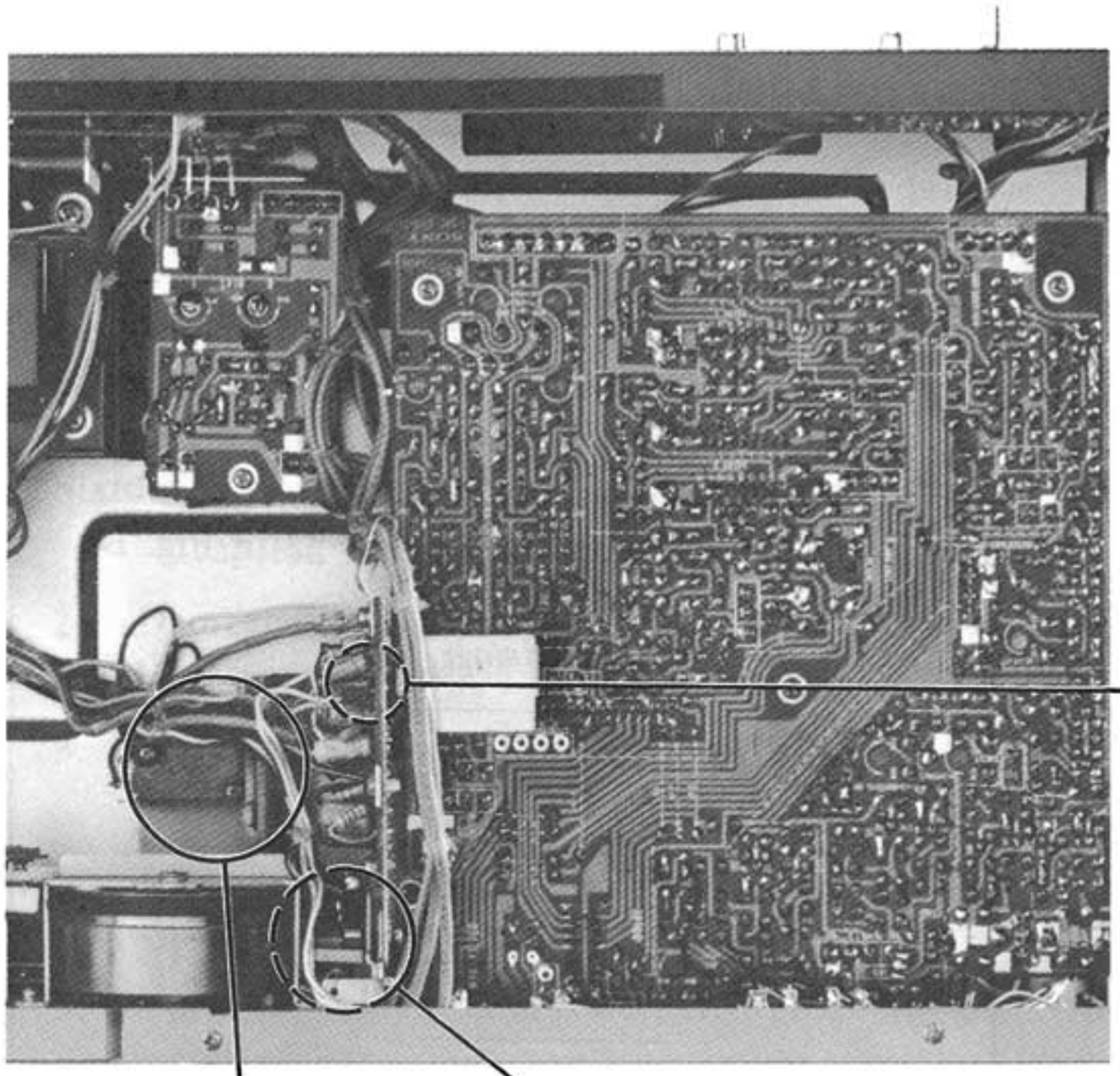


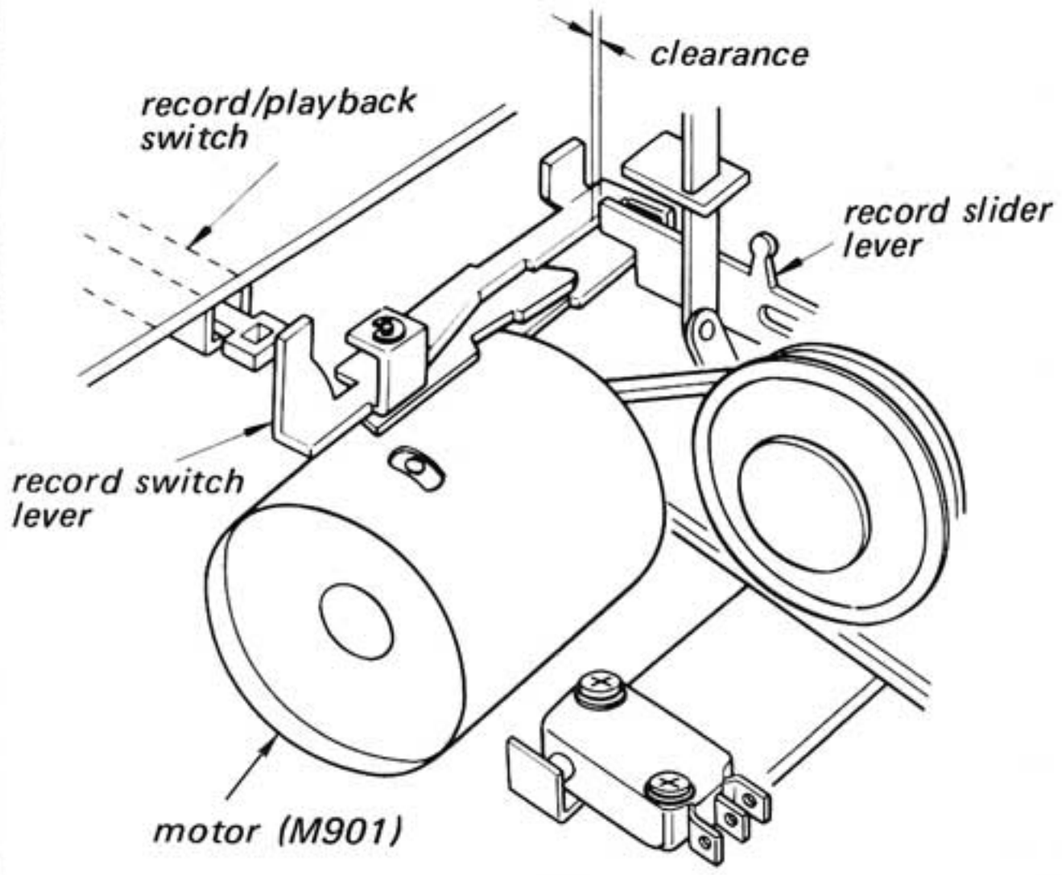
Fig. C

2. Push and lock the cassette holder in and make sure that the tape retainer does not touch the tape.



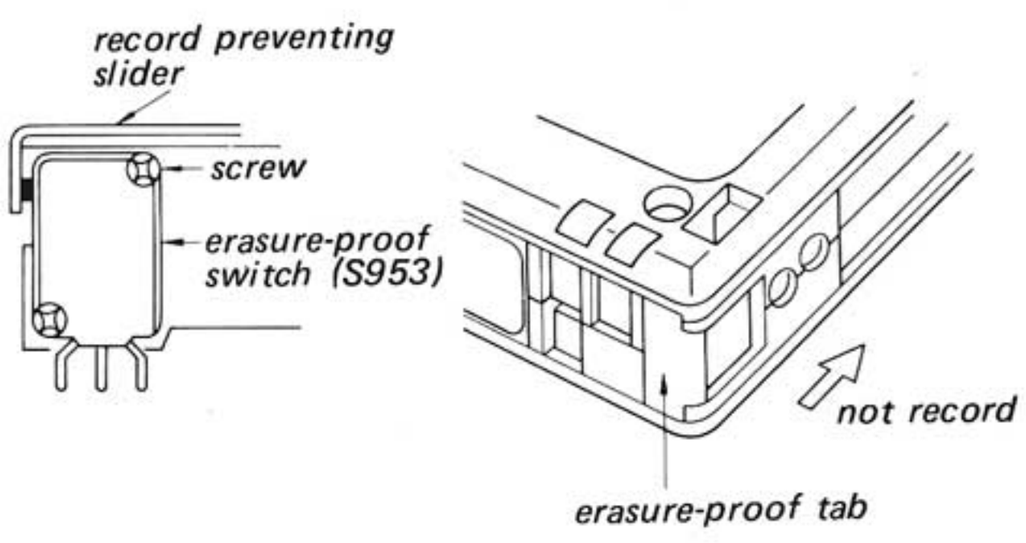
Record Slider Position Check

1. Install the ELCASET.
2. When pushing the record and forward buttons, make sure that the record switch lever completely pushes the record/playback switch (S1).
3. Make sure that the clearance exists between the record switch lever and the record slider.



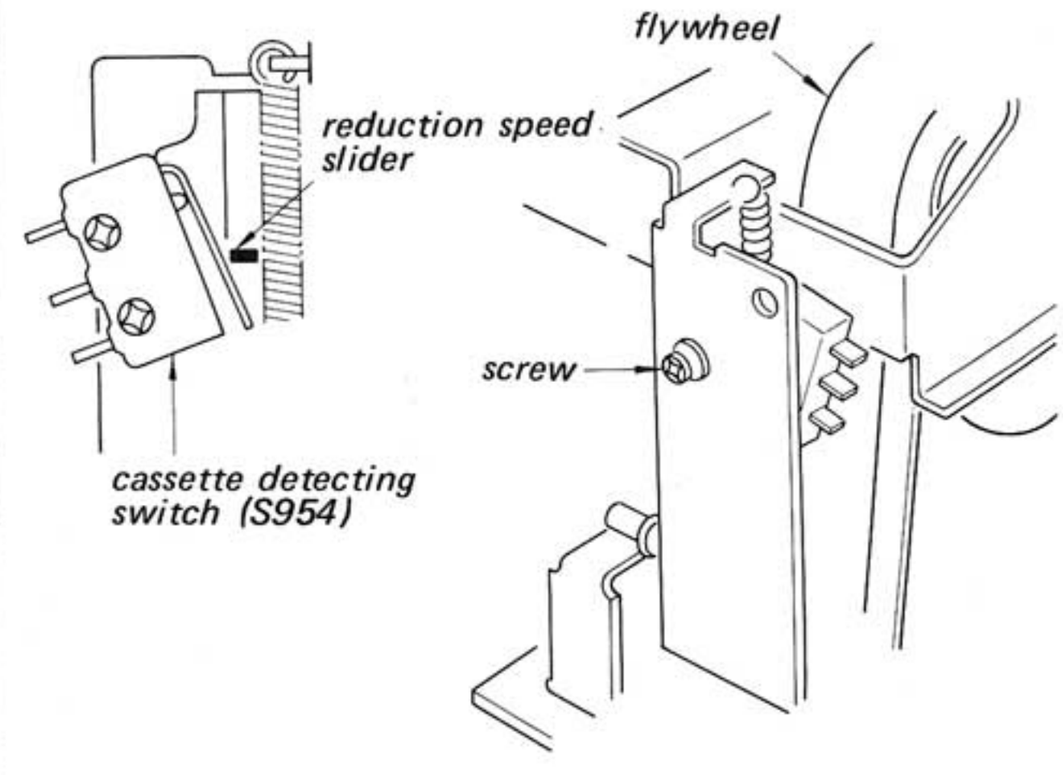
Erasure-proof Switch (S953) Position Adjustment

1. When installing the ELCASET whose erasure-proof tab does not slide in, make sure that the erasure-proof switch (S953) is ON.
2. When installing the ELCASET whose erasure-proof tab slides in, make sure that the erasure-proof switch (S953) is OFF.
3. If necessary, adjust the erasure-proof switch position by loosing the screw.



Cassette Detecting Switch (S954) Position Adjustment

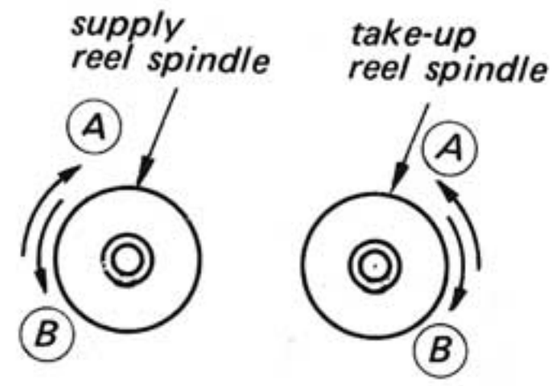
1. When pushing the cassette holder in, make sure that the cassette detecting switch (S954) turns ON and the reduction speed slider does not cross the cassette detecting switch over.
2. When ejecting the cassette holder, make sure that the cassette detecting switch turns OFF.
3. If necessary, adjust the cassette detecting switch position by loosing the screw.



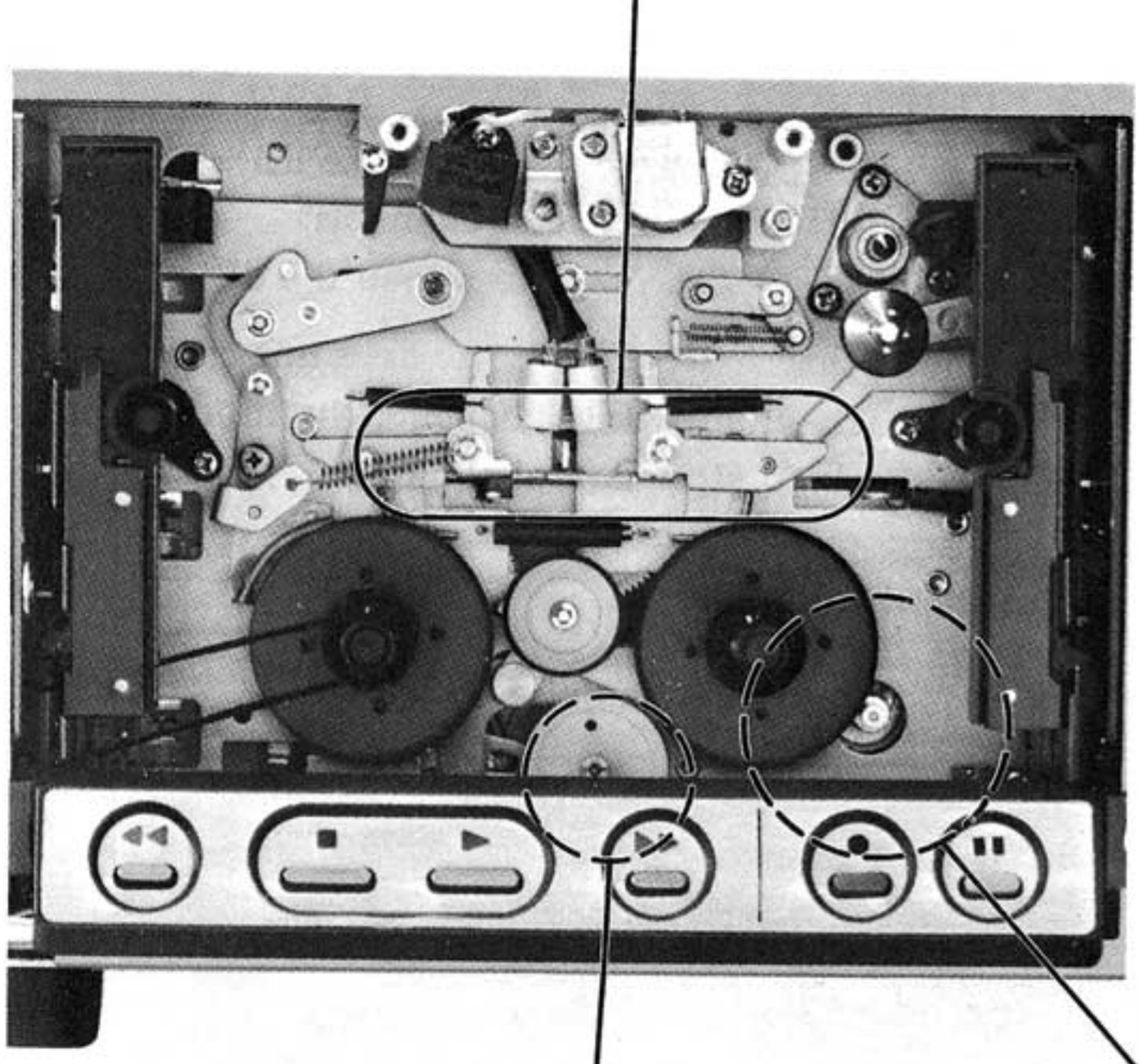
Brake Torque Adjustment

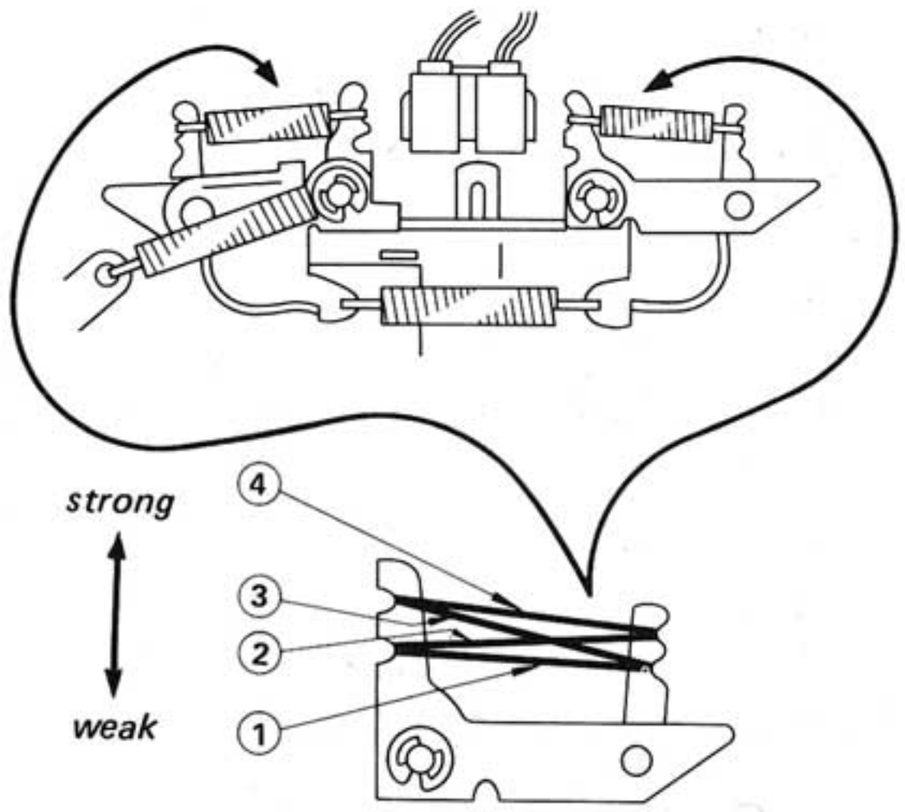
– Stop mode –

Direction	Torque meter reading
(A)	250–300 g.cm (3.5–4.1 oz.in)
(B)	30–40 g.cm (0.42–0.55 oz.in)



If necessary, change the spring position.



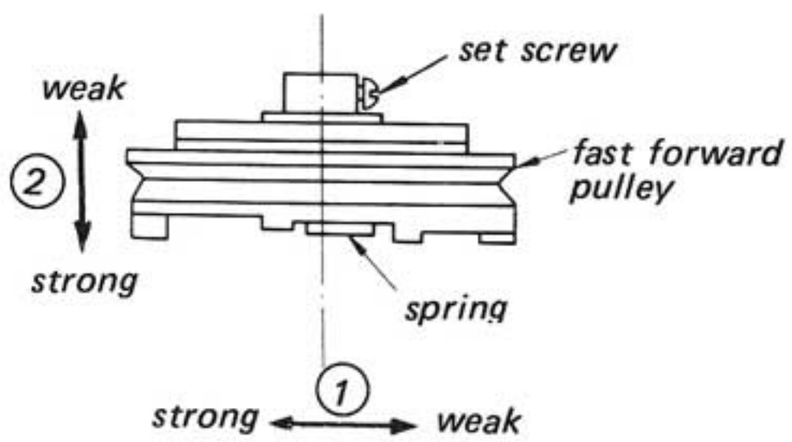


Fast Forward and Rewind Torque Adjustment

– Fast forward or rewind mode –

Torque meter	Meter reading
CQ-201L	200–250 g.cm (2.8–3.4 oz.in)

1. Change the spring position.
2. If necessary, change the fast forward pulley height.

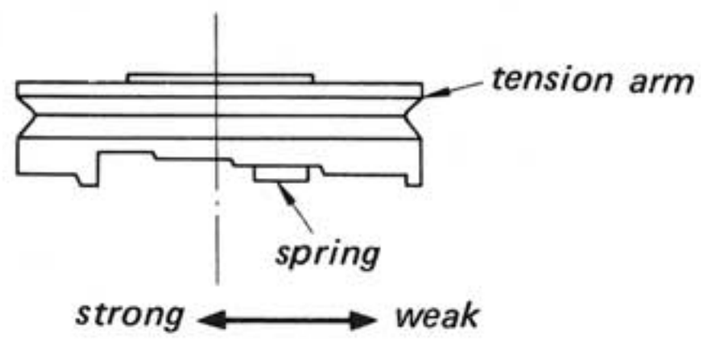


Forward Torque Adjustment

– Playback mode –

Torque meter	Meter reading
CQ-101L	90–120 g.cm (1.25–1.66 oz.in)

If necessary, change the spring position.



Back Tension Torque Measurement

– Playback mode –

Torque meter	Meter reading
CQ-101L	65–100 g.cm (0.91–1.38 oz.in)

3-2. ELECTRICAL ADJUSTMENTS

Note: The adjustments should be performed in the order given in this service manual.

The adjustments should be performed for both L-CH and R-CH.

Switches and controls should be set as follows unless otherwise specified.

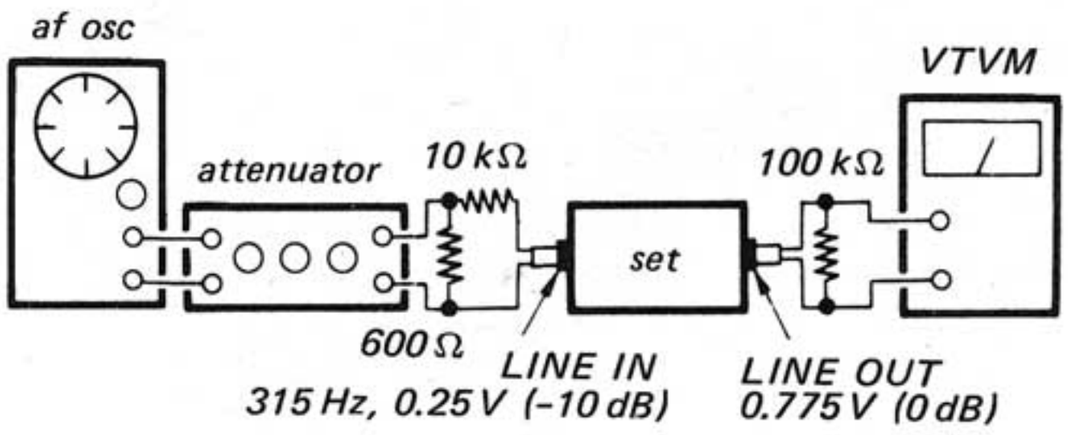
POWER switch:	ON
TIMER switch:	OFF
MEMORY switch:	OFF
DOLBY NR switch:	OFF
MPX FILTER switch:	OFF
TAPE SELECT EQ switch:	TYPE I
TAPE SELECT BIAS switch:	TYPE I
LEVEL ADJUST control: (on the rear panel)	fully clockwise

BIAS and EQ switch settings in accordance with tape used are as follows.

Blank Tape	EQ switch	BIAS switch
CS-60 (SLH)	TYPE I	TYPE I
CS-70 (DUAD)	TYPE II	TYPE II

Standard Record

Set the REC LEVEL-LINE control for the specified output level. (REC LEVEL-MIC control: 0 position).



Standard Input Level

	MIC	LINE IN
source impedance	300 Ω	10 kΩ
input level	0.77 mV (–60 dB)	0.25 V (–10 dB)

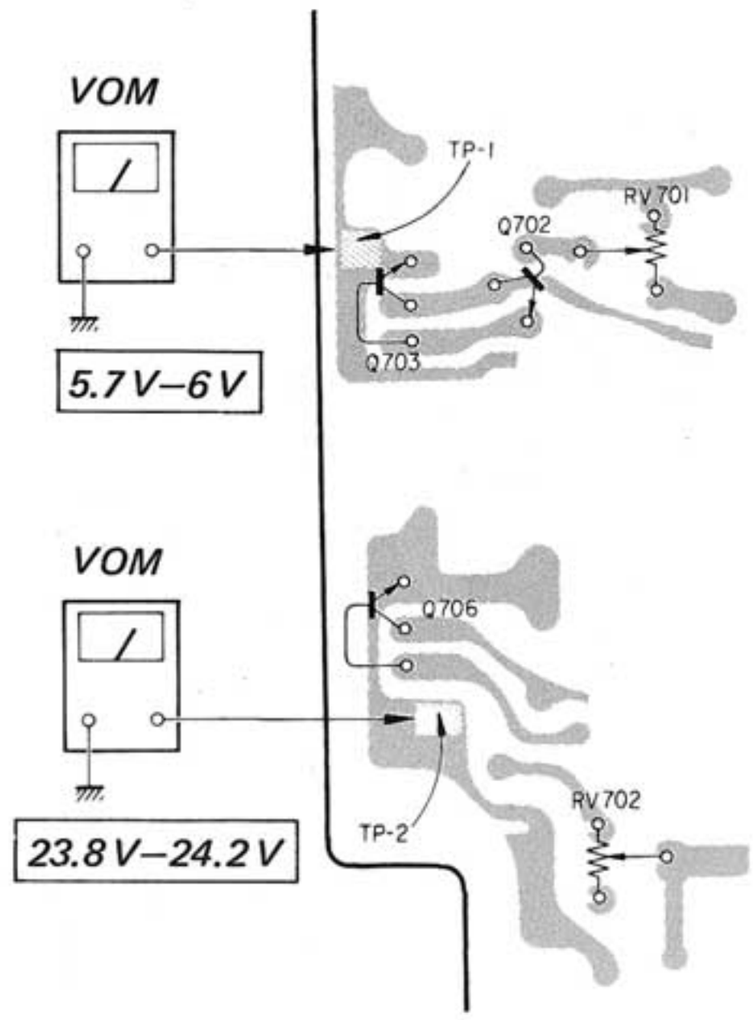
Standard Output Level

	LINE OUT	HEADPHONES
load impedance	100 kΩ	8 Ω
output level	0.775 V (0 dB)	0.12 V (–16 dB) (PHONES LEVEL: fully clockwise)

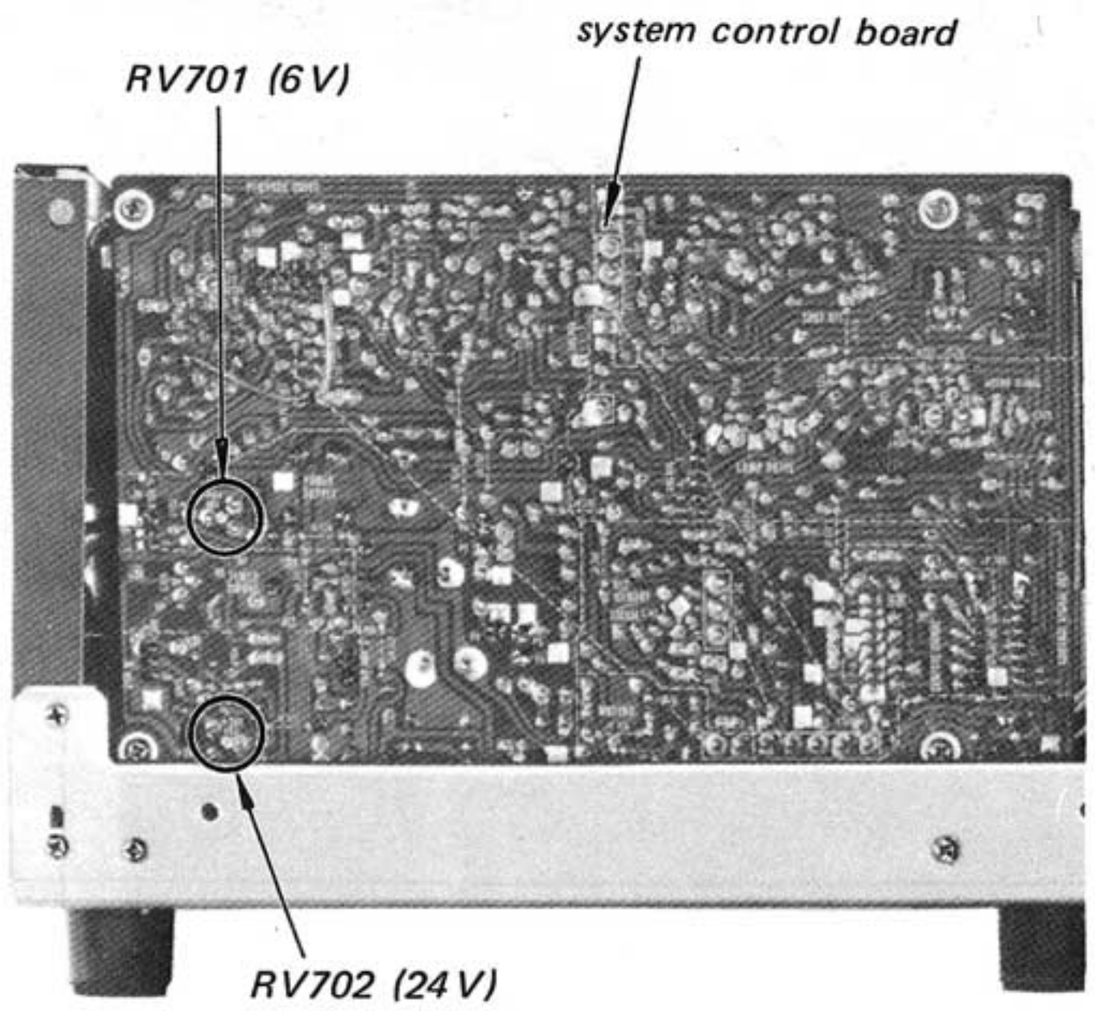
DC Voltage Adjustment

Procedure:

Adjust RV701 and RV702 for specifid VOM readings.



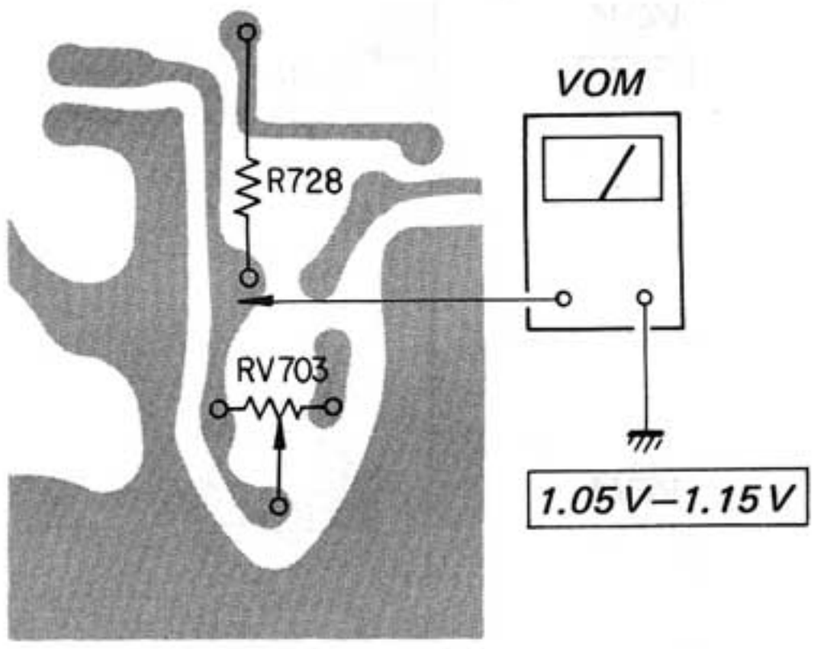
Adjustment Location:

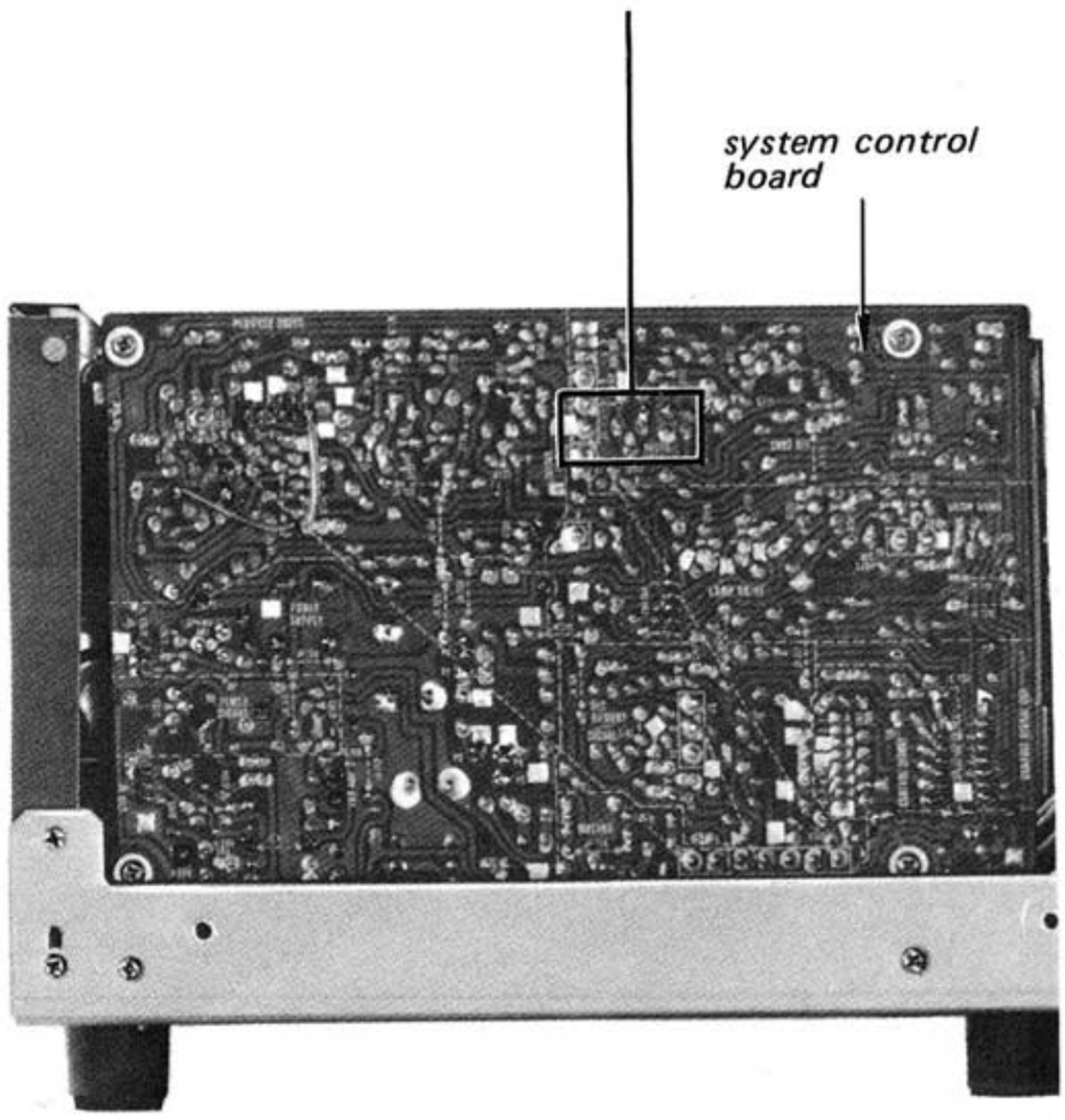


Auto Shut-off Voltage Adjustment

Procedure:

1. Play back the leader tape portion of test tape.
2. Adjust RV703 for the specified VOM reading.

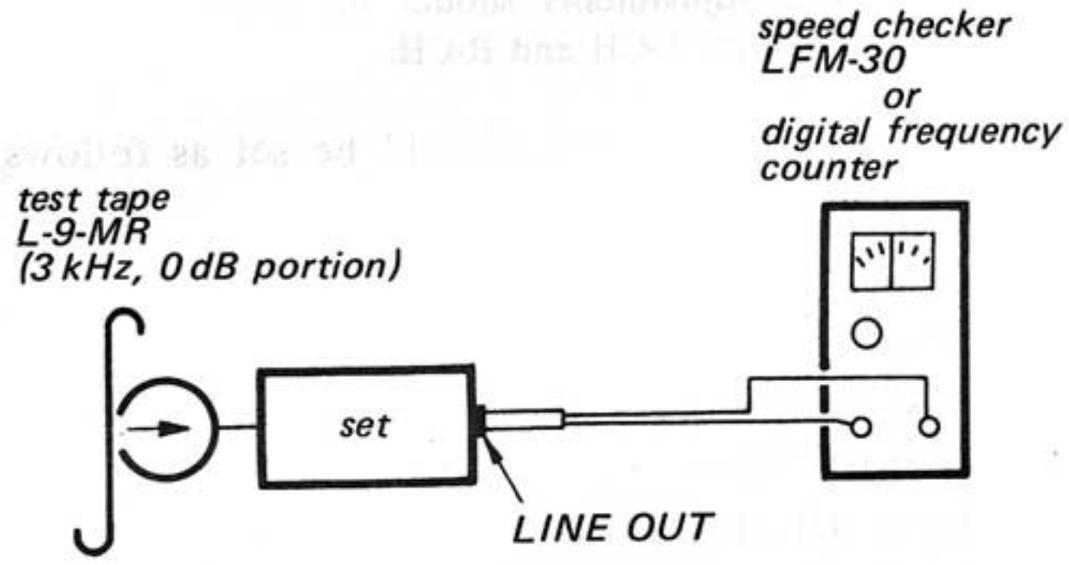




Tape Speed Adjustment

Procedure:

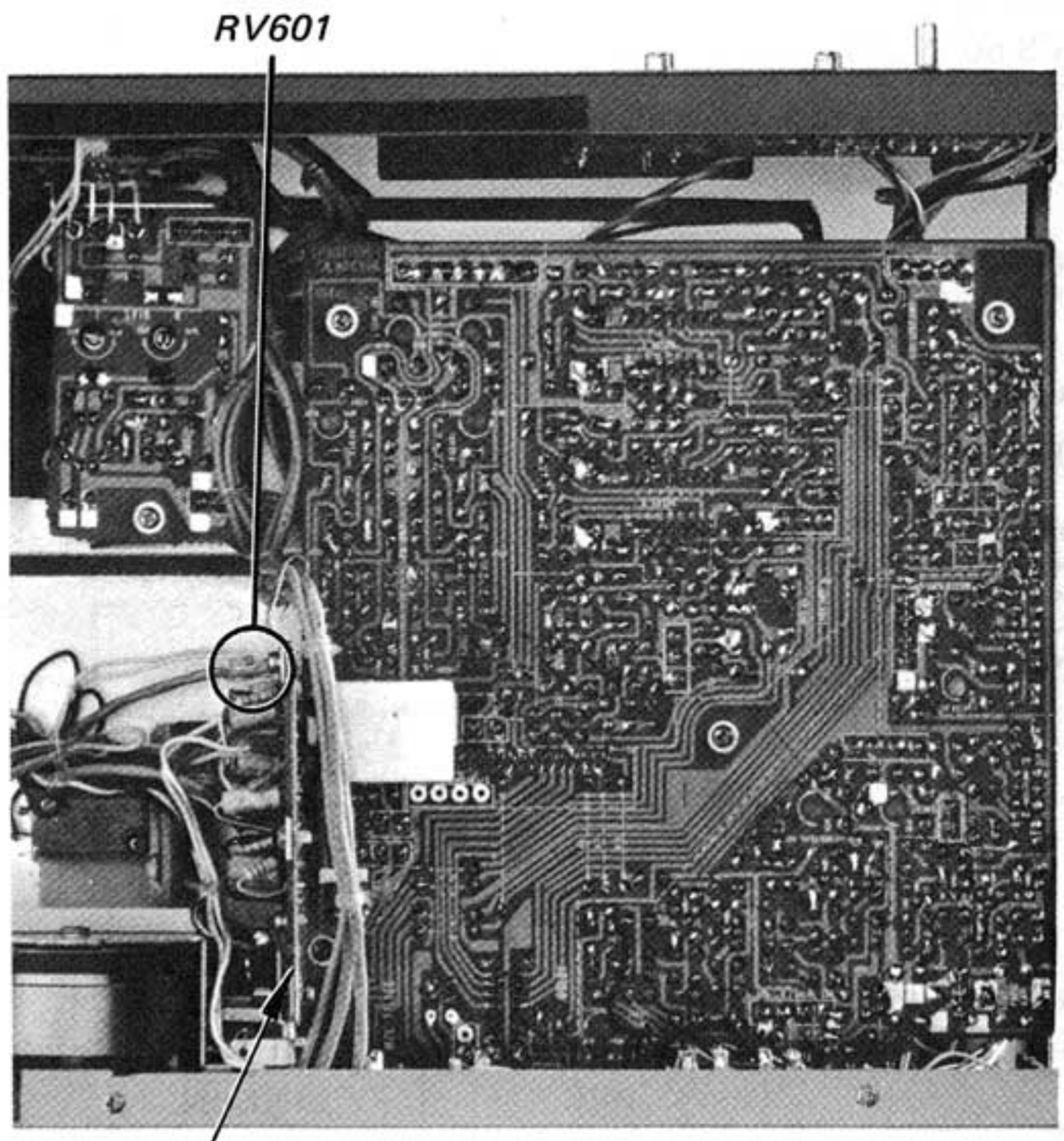
Mode: playback



Specification:

Speed checker	Digital frequency counter
±0.65%	2,980–3,020 Hz

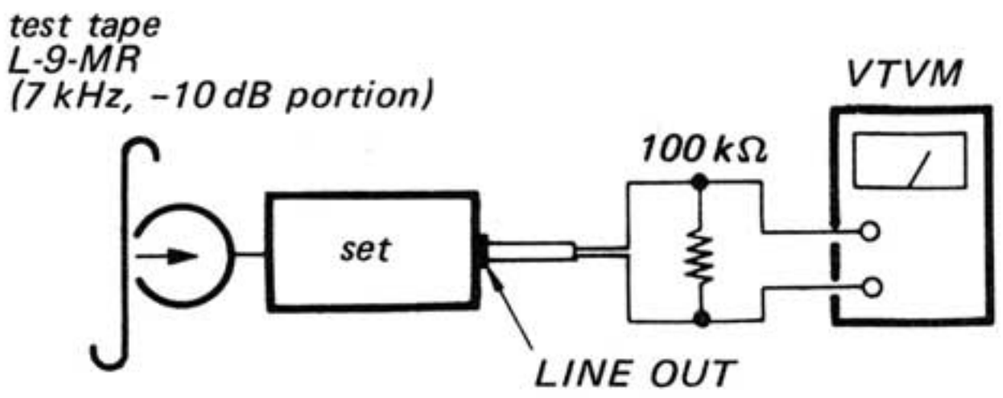
Adjustment Location:



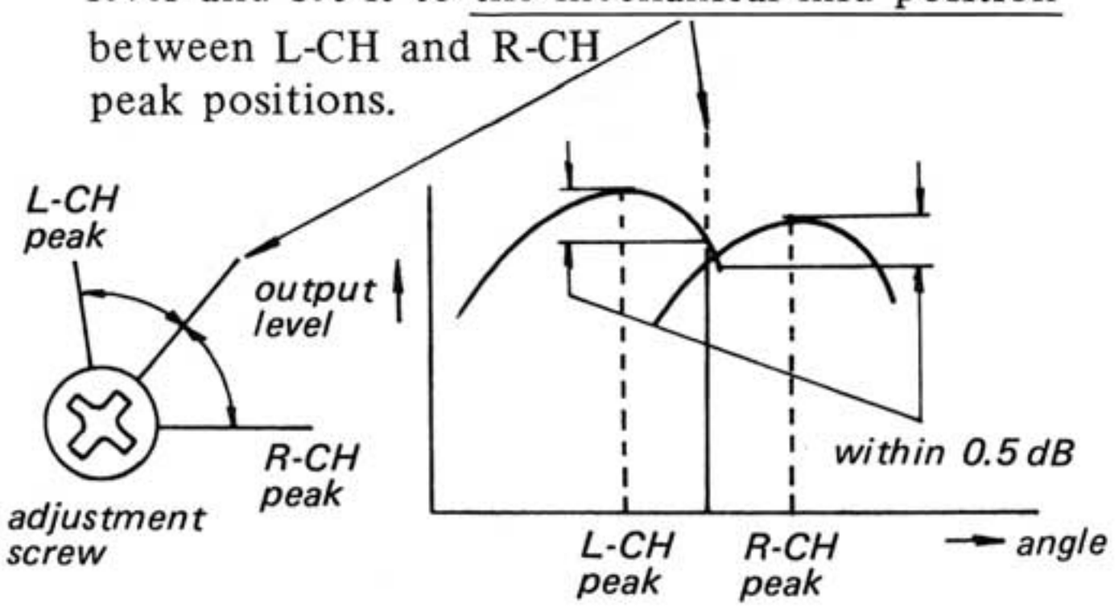
Record/playback Head Azimuth Adjustment

Procedure:

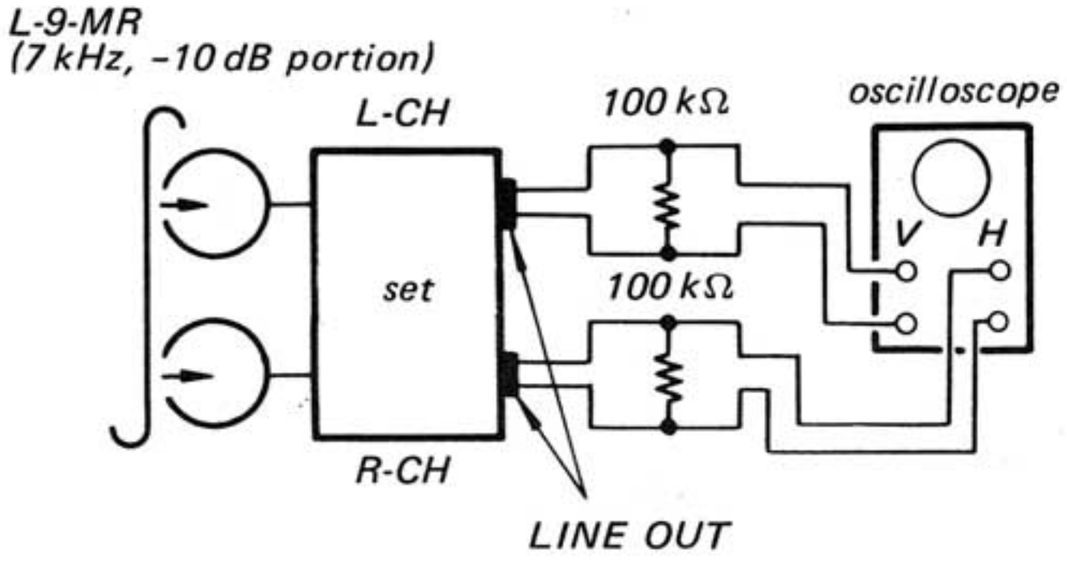
1. Mode: playback



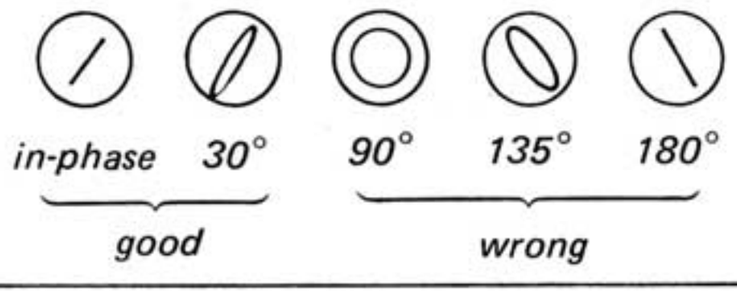
2. Turn the adjustment screw for the maximum level and set it to the mechanical mid position between L-CH and R-CH peak positions.



3. Mode: playback

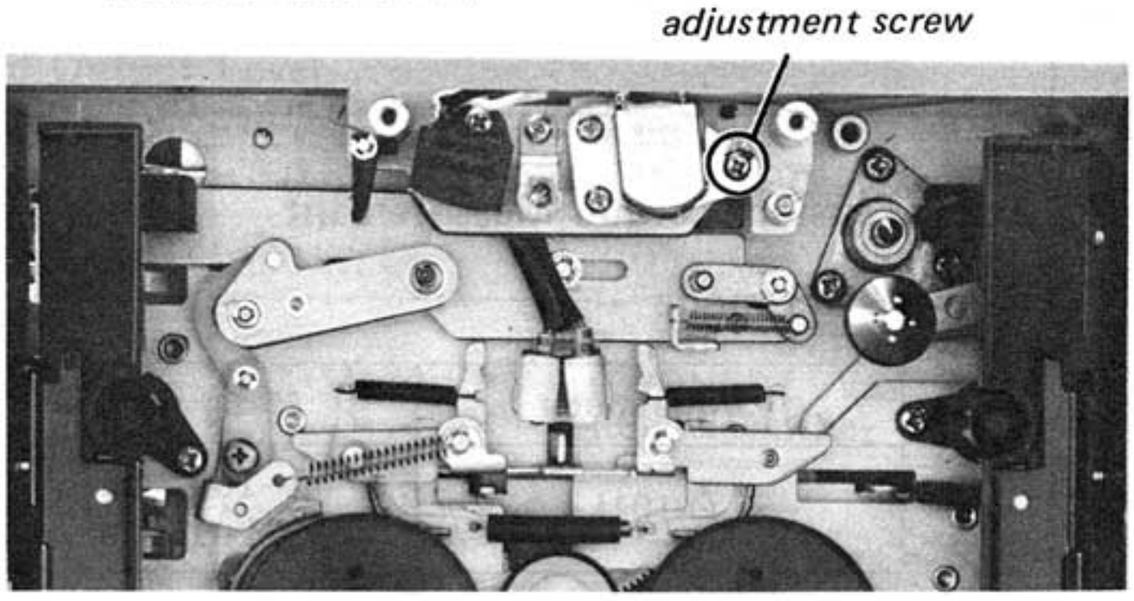


Screen pattern



Adjustment Location:

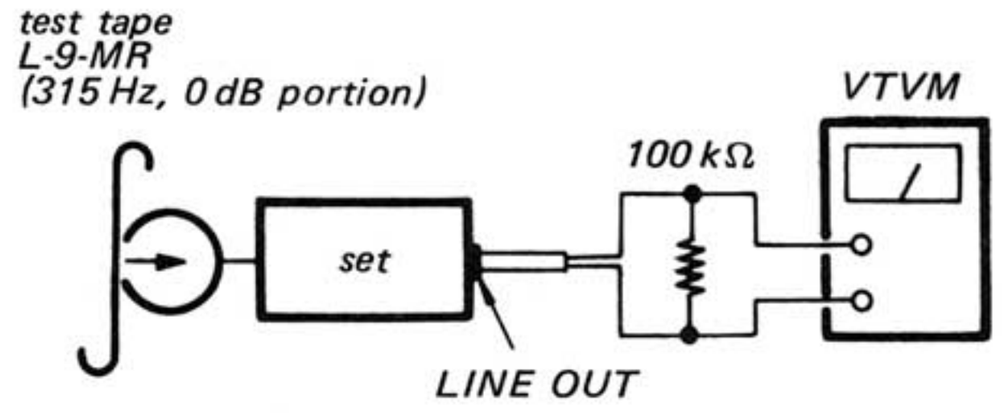
(without head cover)



Playback Level Adjustment

Procedure:

Mode: playback



Specification:

LINE OUT Level: 0.73 V–0.89 V
(0 dB ± 0.5 dB)

Level difference between channels:
less than 0.5 dB

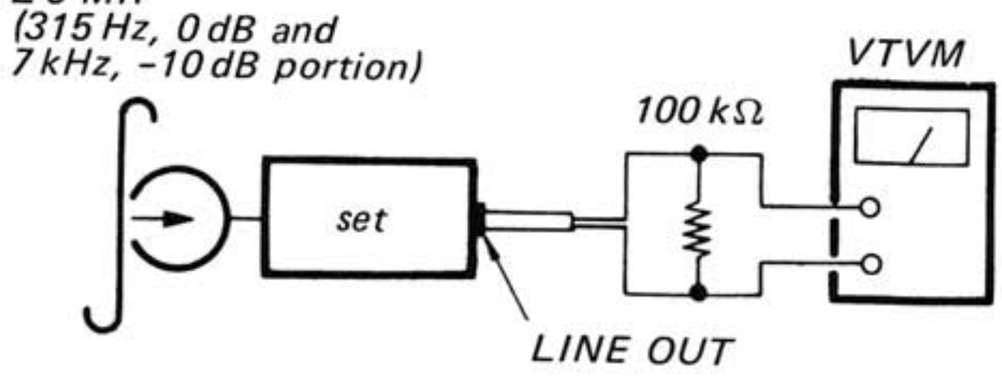
Check that LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location:

Playback Equalizer Adjustment

Procedure:

Mode: playback

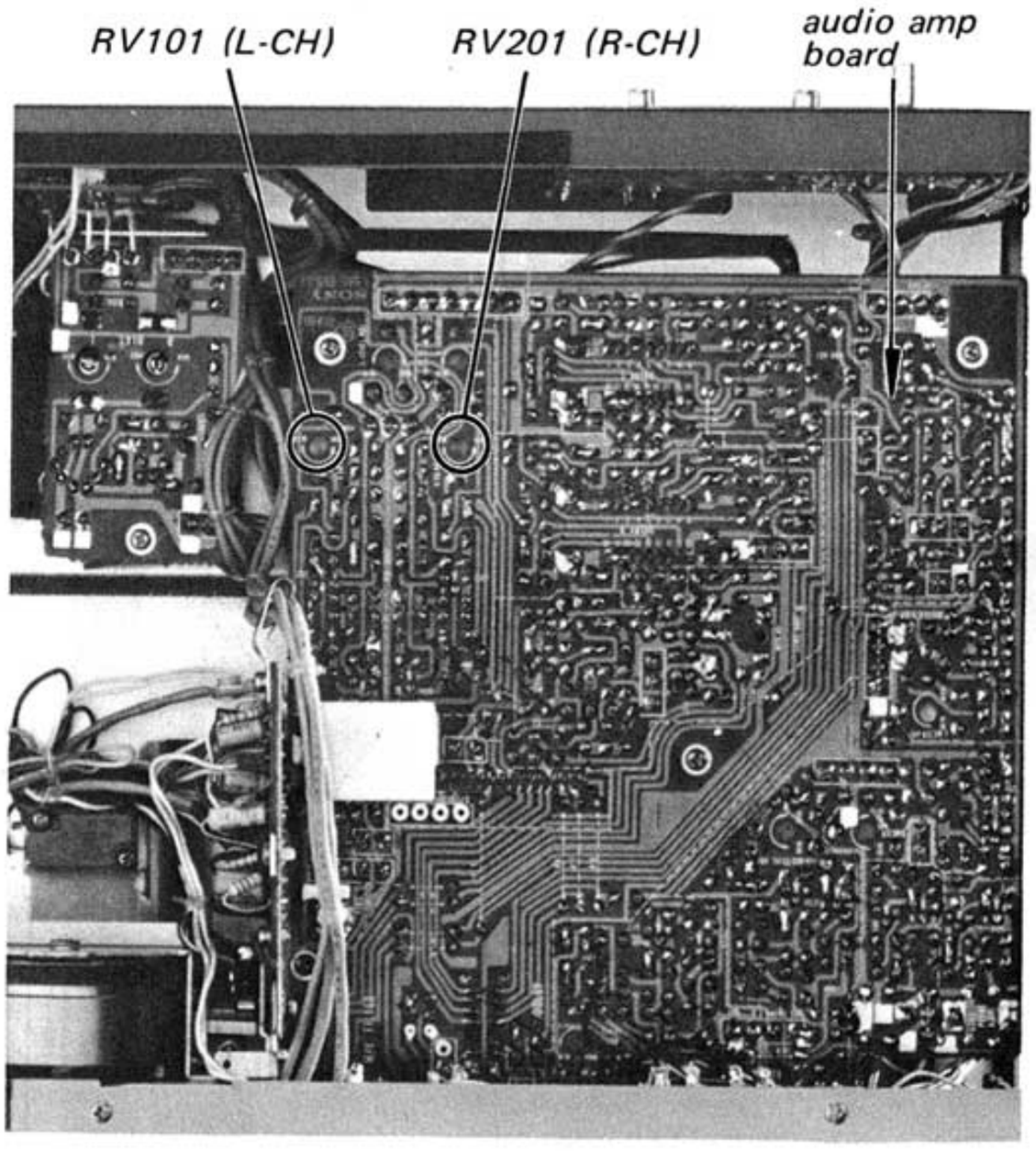


Specification:

7 kHz level difference from 315 Hz:
−10 dB ± 0.5 dB

Note: After the playback equalizer adjustment make sure that 315 Hz level is between 0.73 V and 0.89 V (0 dB ± 0.5 dB).

Adjustment Location:



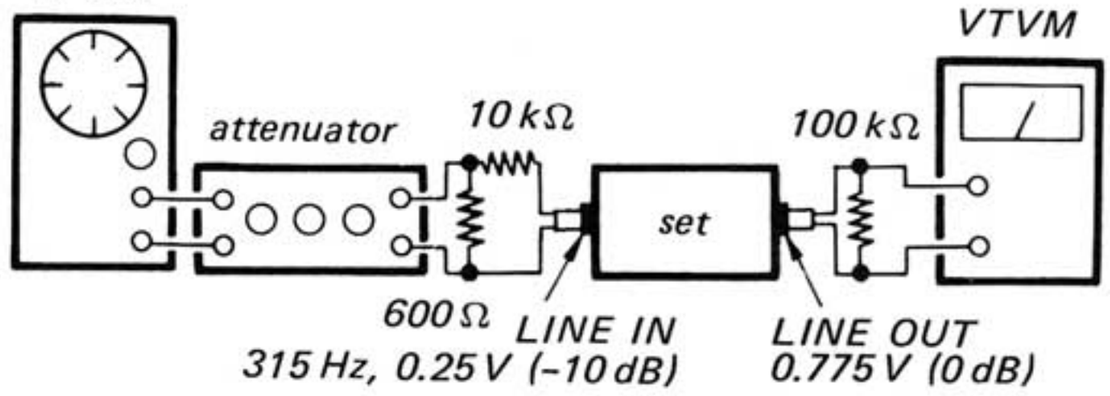
Level Meter Calibration

Setting:

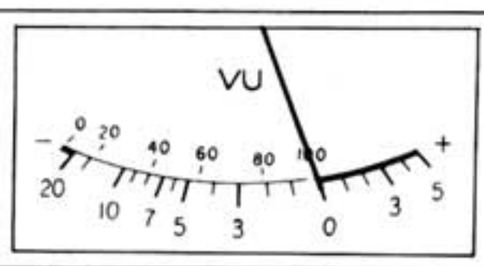
REC LEVEL-LINE control: standard record
(See page 20)

Procedure:

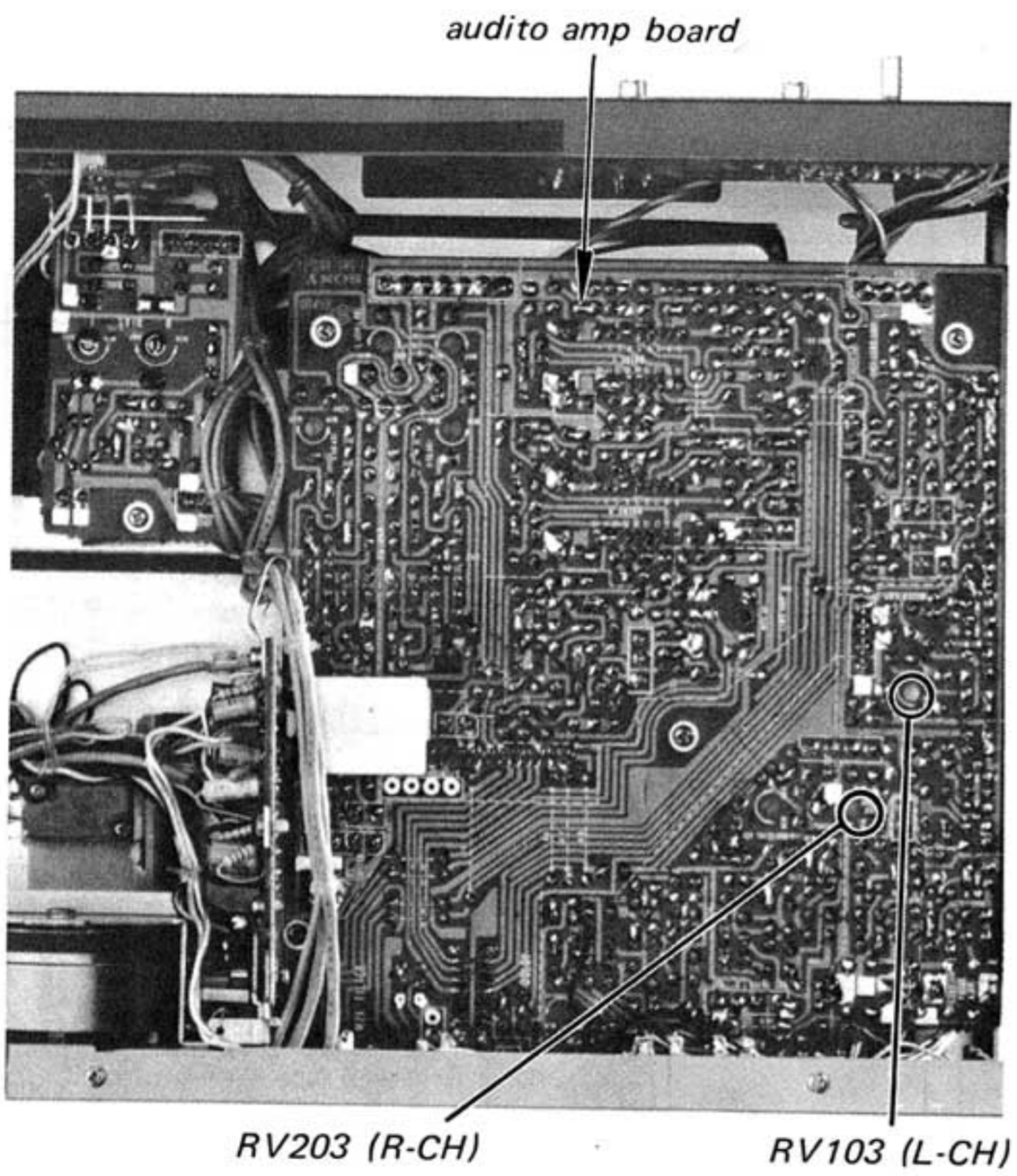
1. Mode: record



2.

Adjust	VU Meter indication
RV103 (L-CH) RV203 (R-CH)	

Adjustment Location:



Note: The pointer should move smoothly.

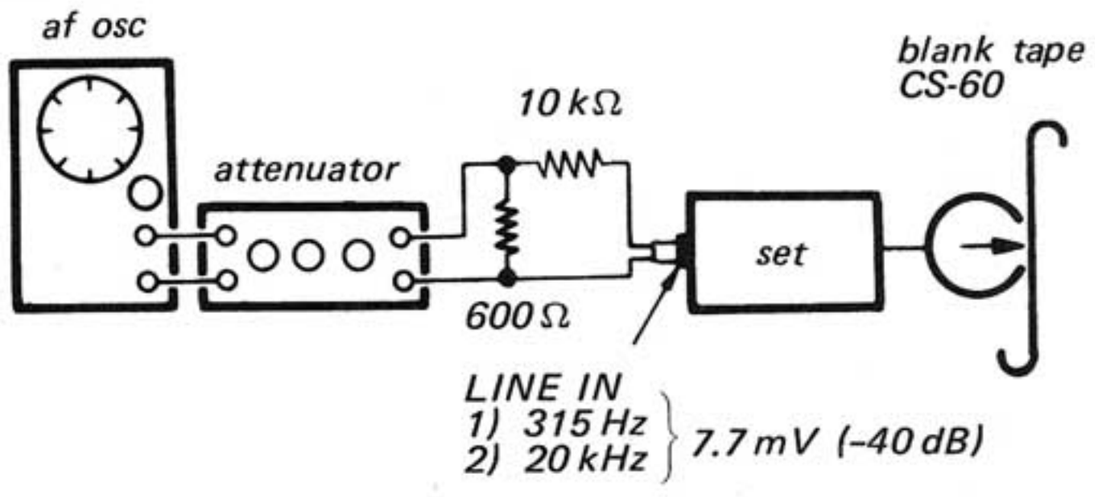
Record Bias Adjustment

Setting:

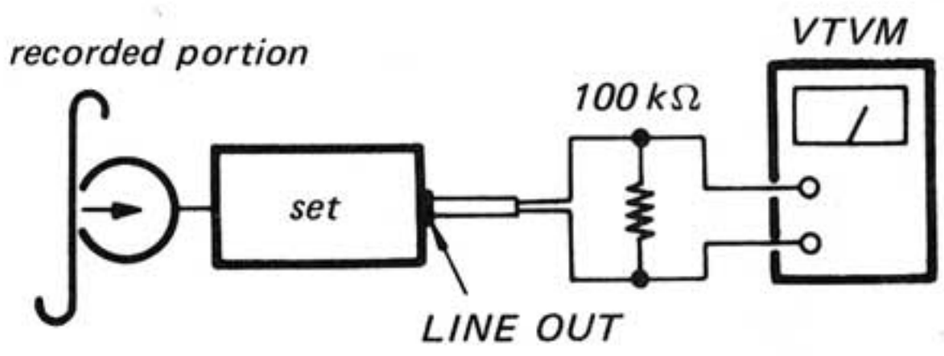
REC LEVEL-LINE control: standard record
(See page 20.)

Procedure:

1. Mode: record

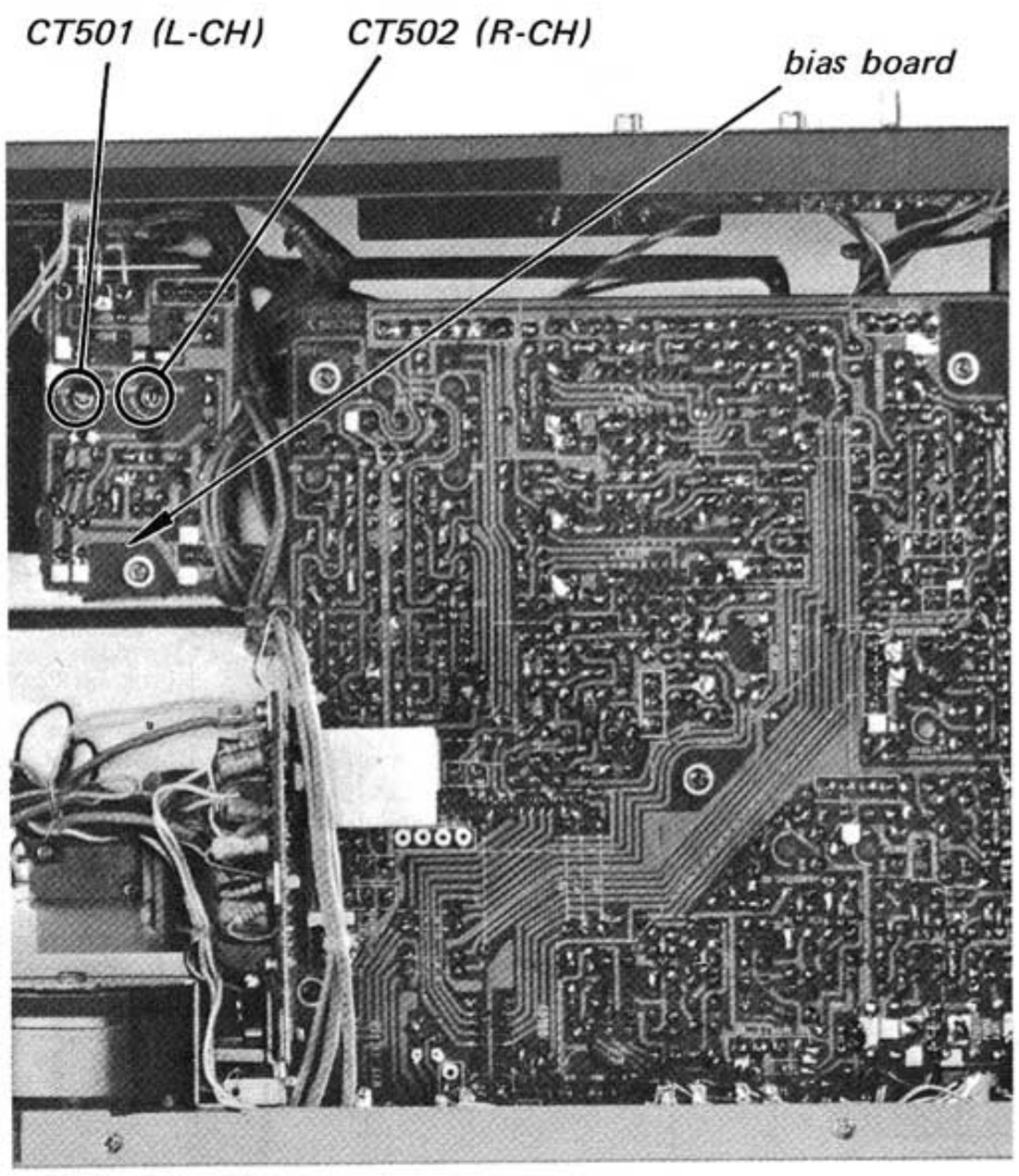


2. Mode: playback



3. Repeating above steps, adjust CT501 (L-CH) and CT502 (R-CH) to make 20 kHz and 315 Hz signal output levels equal.

Adjustment Location:



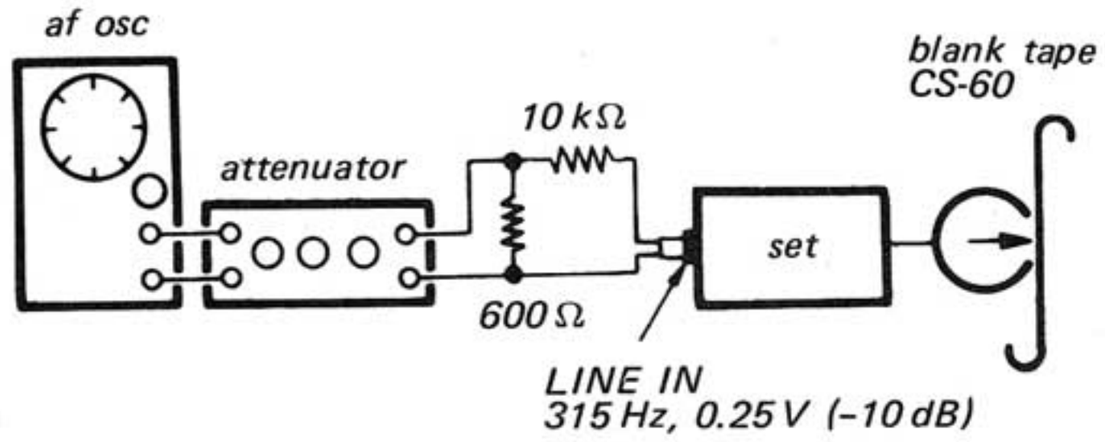
Record Level Adjustment

Setting:

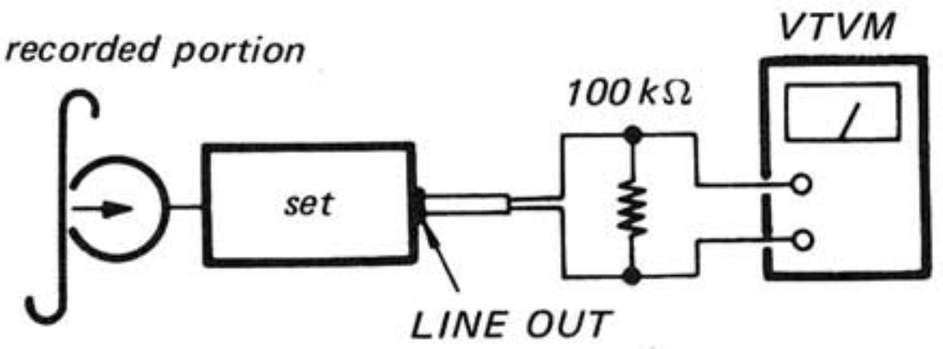
REC LEVEL-LINE control: standard record
(See page 20.)

Procedure:

1. Mode: record

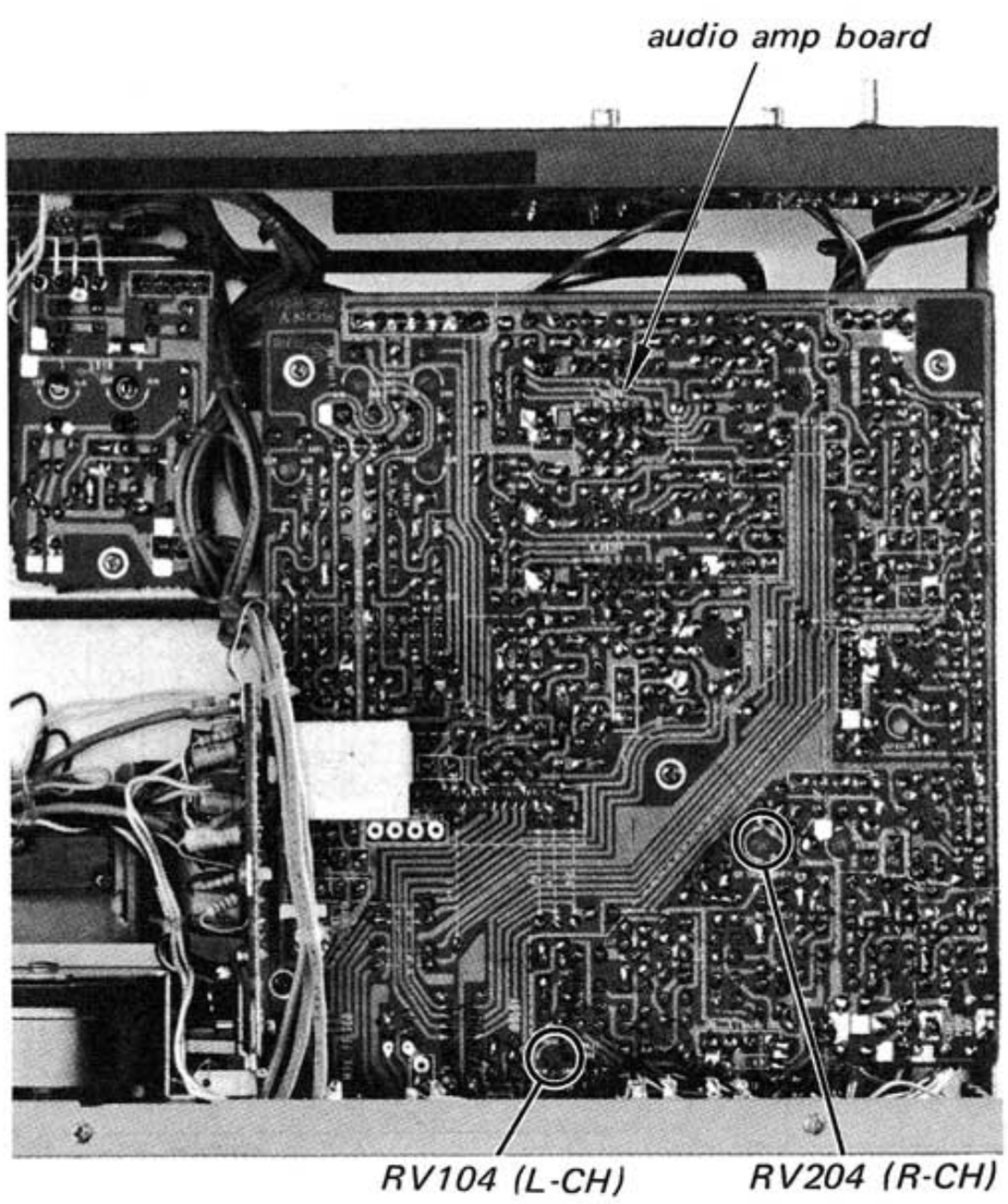


2. Mode: playback



3. Repeating above steps, adjust RV104 (L-CH) and RV204 (R-CH) to obtain 0.69 V–0.85 V (0 dB ± 1 dB) reading son VTVM.

Adjustment Location:

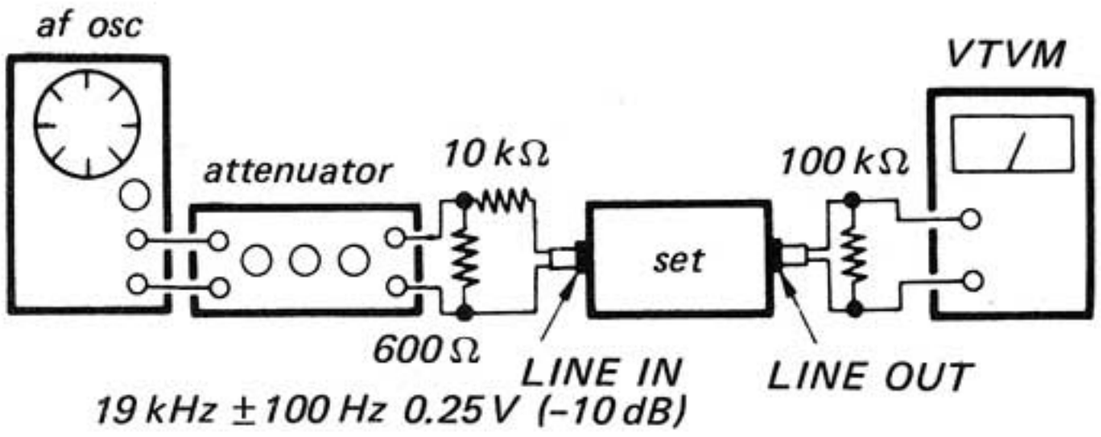


MPX Filter Adjustment

Setting:

MPX FILTER switch: ON
REC LEVEL-LINE control: Standard record
(See page 20.)

Procedure:

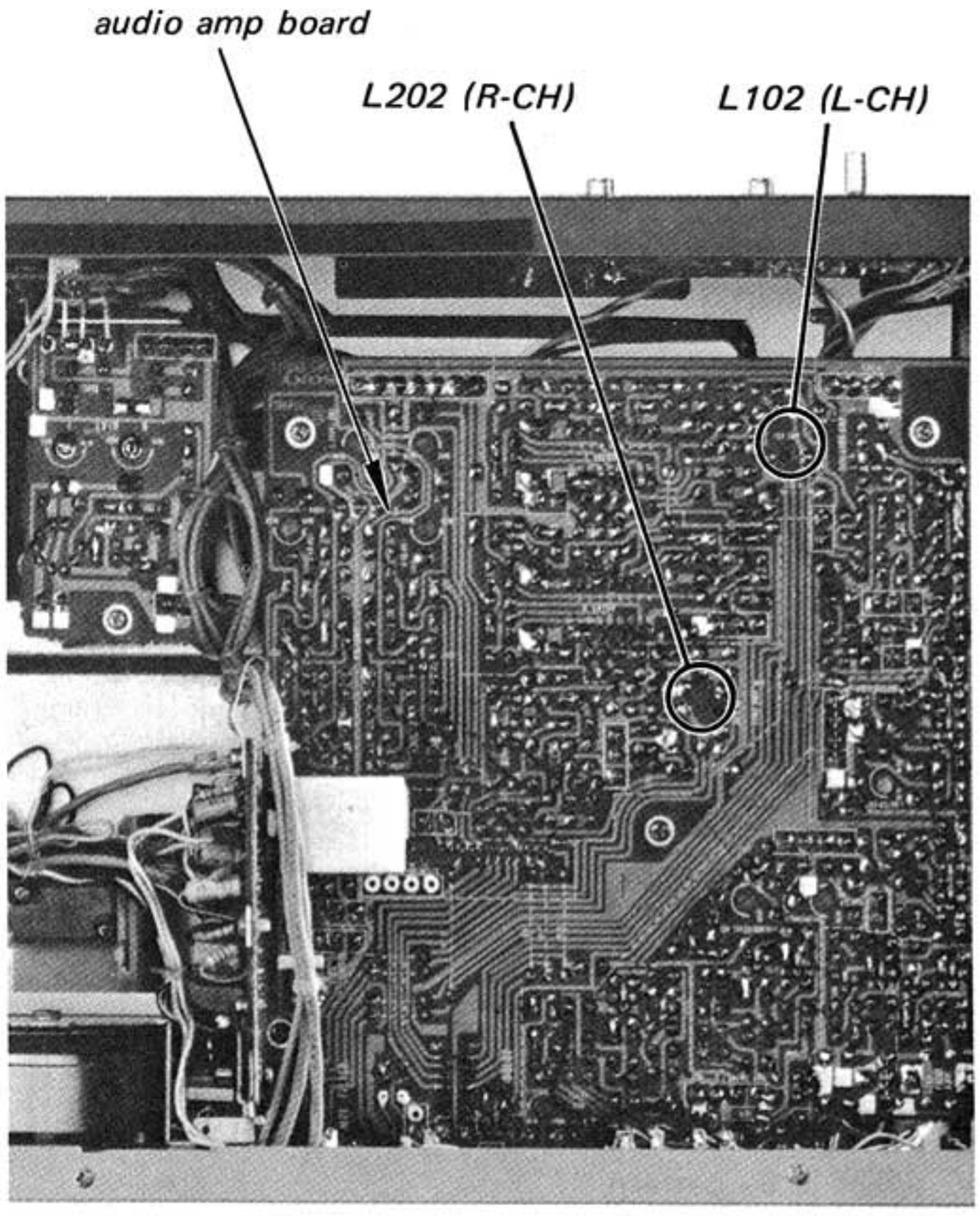


Adjust L102 (L-CH) and L202 (R-CH) for a minimum reading on VTVM.

Specification:

LINE OUT level: less than 22 mV (–32 dB)

Adjustment Location:



SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM — Amplifier Section —

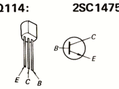
— Conductor Side —

Note: ( ) : Replacement Semiconductors.

Q102, 103
Q202, 203
Q301, 302
Q401, 402 : 2SC632A

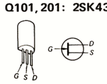
Q104, 105
Q204, 205
Q107–110
Q207–210
Q112, 113
Q212, 213
Q115
Q501, 502 : 2SC634A

Q106, 111
Q206, 211 : 2SC1474
Q114: 2SC1475



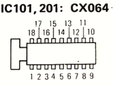
Q116: 2SA678

Q101, 201: 2SK43

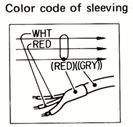


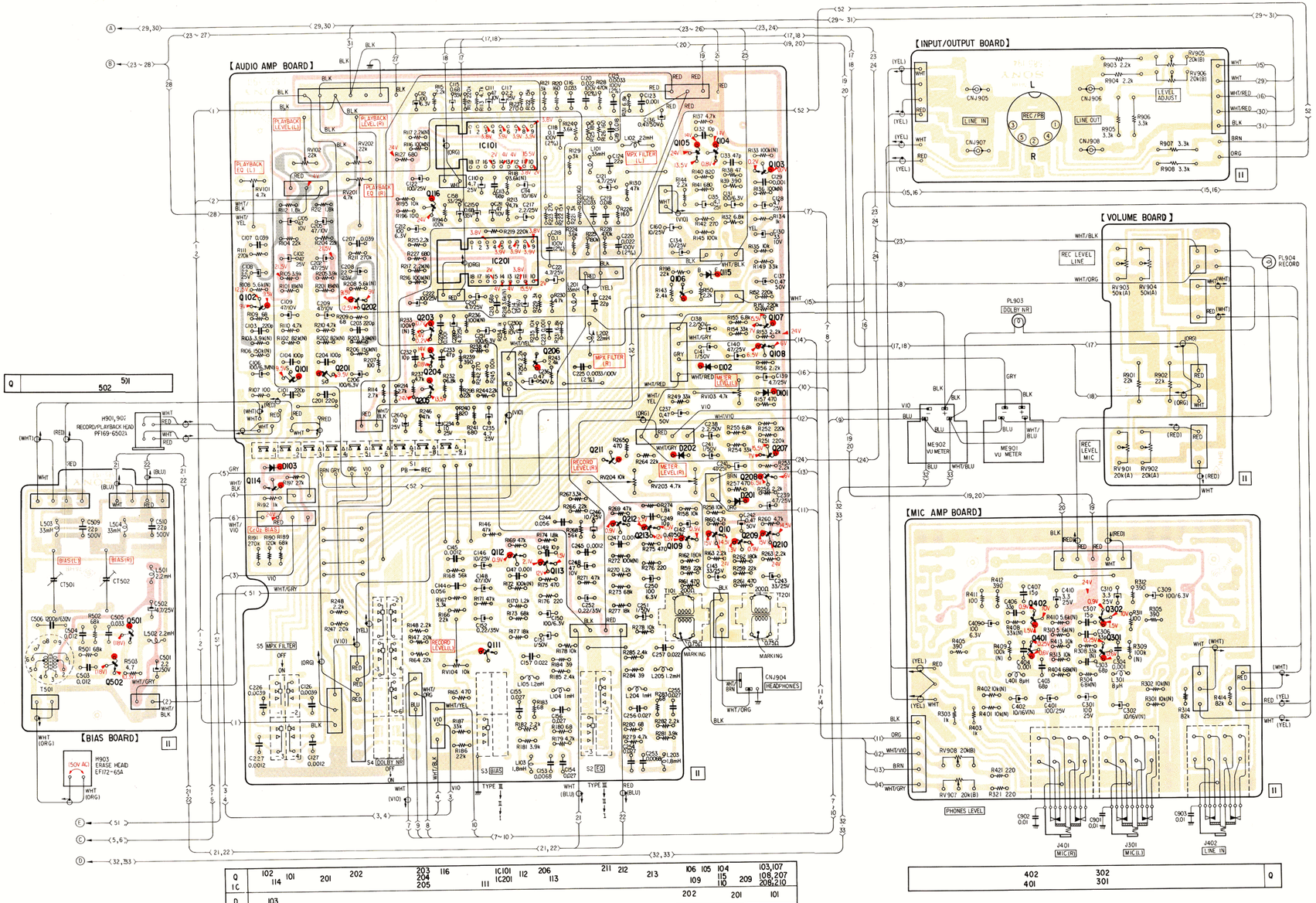
D101, 201
D102, 202 : 1T22 (1T22A)

IC101, 201: CX064

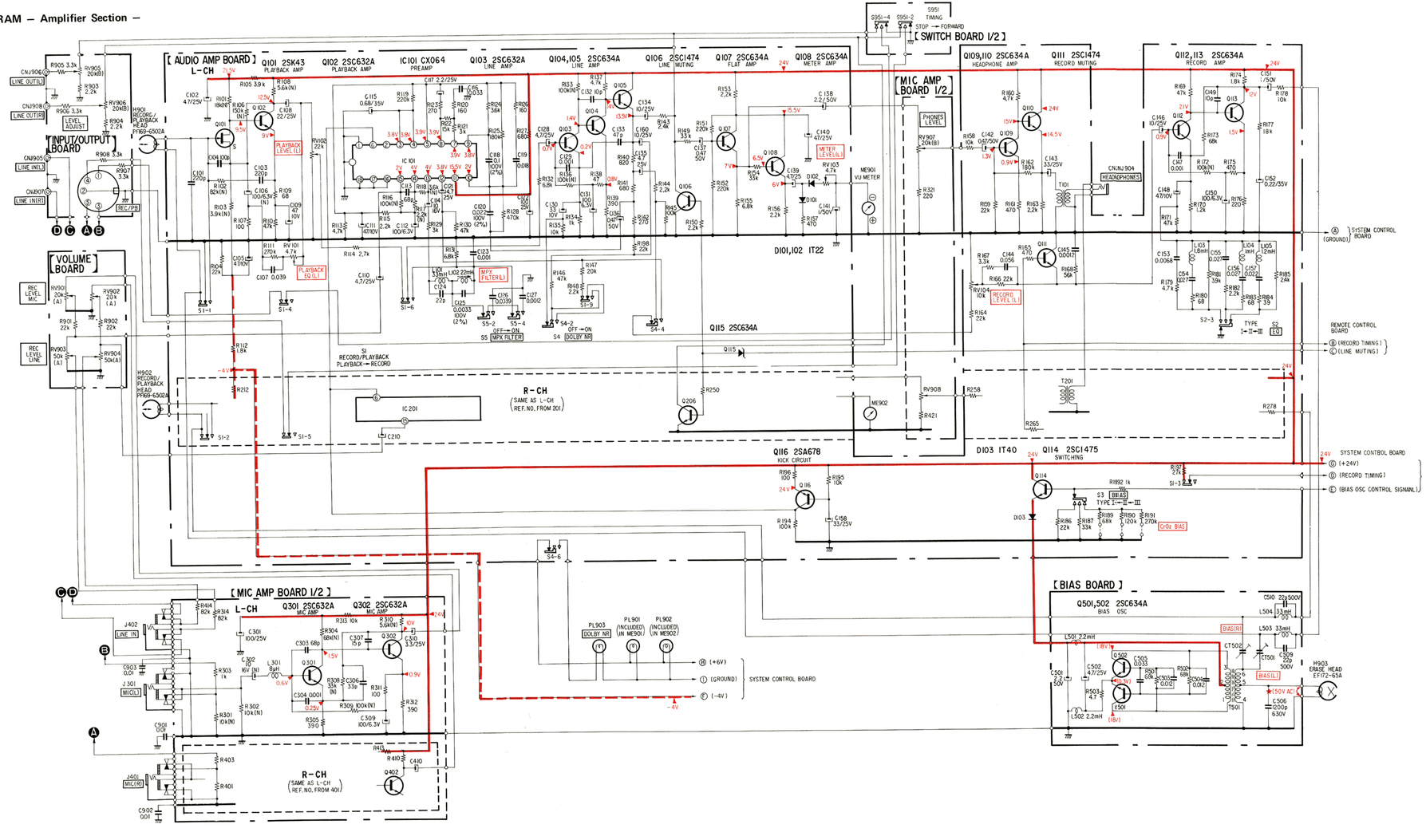


Note:
- : B+ pattern
- : B– pattern
- Color code of sleeving over the end of the jacket.





4-2. SCHEMATIC DIAGRAM — Amplifier Section —



Note:

- Components for right channel have the same values as for left channel.
- All capacitors are in μF unless otherwise noted. pF = μμF. 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ = 1000Ω, MΩ = 1000 kΩ
- All adjustable resistors have characteristic curve B, unless otherwise noted.
- (N) : low-noise capacitor and resistor.
- 2% indicates component tolerance.
- Transistor is used for Q115.
- ——— : B+ bus.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ⏚ : chassis ground.
- - - - : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions in stop mode with a VOM (20 kΩ/V).
  ( ) : record
- AC voltage readings indicated by * in the bias oscillator circuit are taken with a VTVM.
- Voltage variations may be noted due to normal production tolerances.
- Switch:

Ref. No.	Switch	Position
S1	RECORD/PLAYBACK	PLAYBACK
S2	EQ	TYPE III
S3	BIAS	TYPE III
S4	DOLBY NR	OFF
S5	MPX FILTER	OFF
S951	TIMING	STOP

4-3. MOUNTING DIAGRAM — System Control Section —

— Conductor Side —

Note: ( ) : Replacement Semiconductors.

Q601,602
Q701,702,704,705
Q707–709,712–721
Q723–725,727,728 : 2SC634A
Q730–732,734,735
Q737,738,740–745
Q951

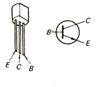
D602,718,719,734
D736,739
D601,712–717,
D723–725,720
D731–733,735
D737,738,740–743
D951–956 : 1T40 (1S1555)

Q603, 733: 2SC1173
Q703, 706: 2SC1061

D701–708,721
D726–730 : SIB01-02 (10E2)
D710: : EQA01-07S (EQB01-07)
D711: : EQA01-12R (EQB01-12Z)

(10E-2)

Q722: 2SC1318 (2SC1475)
Q726, 729
Q736, 739 : 2SC1384 (2SC1475)



D603, 722: MV203V

Q710, 711: 2SA678

D709: VD1222

IC601: CX065

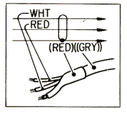
Q901: TPS603

IC701: CX738

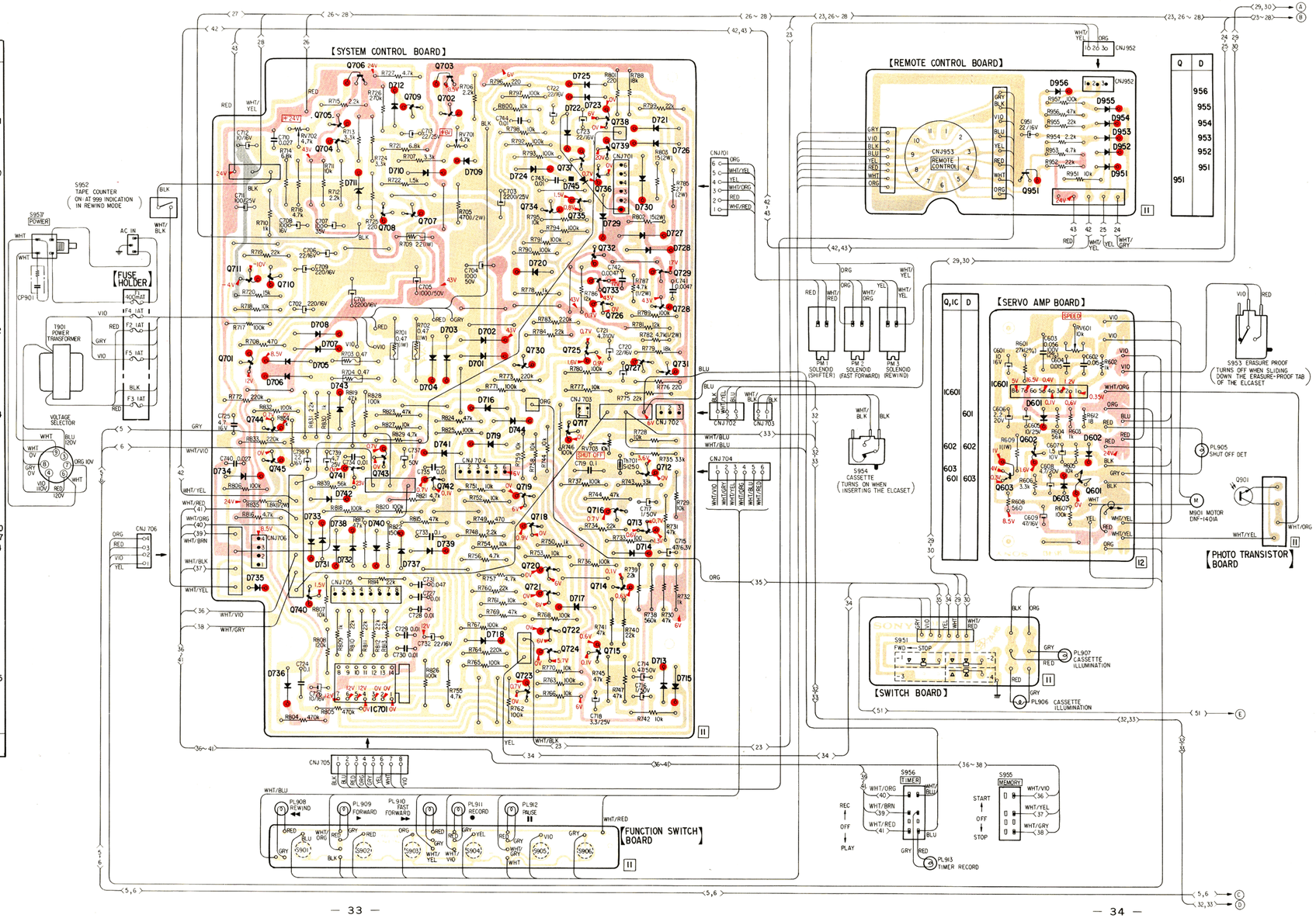
(Top view)

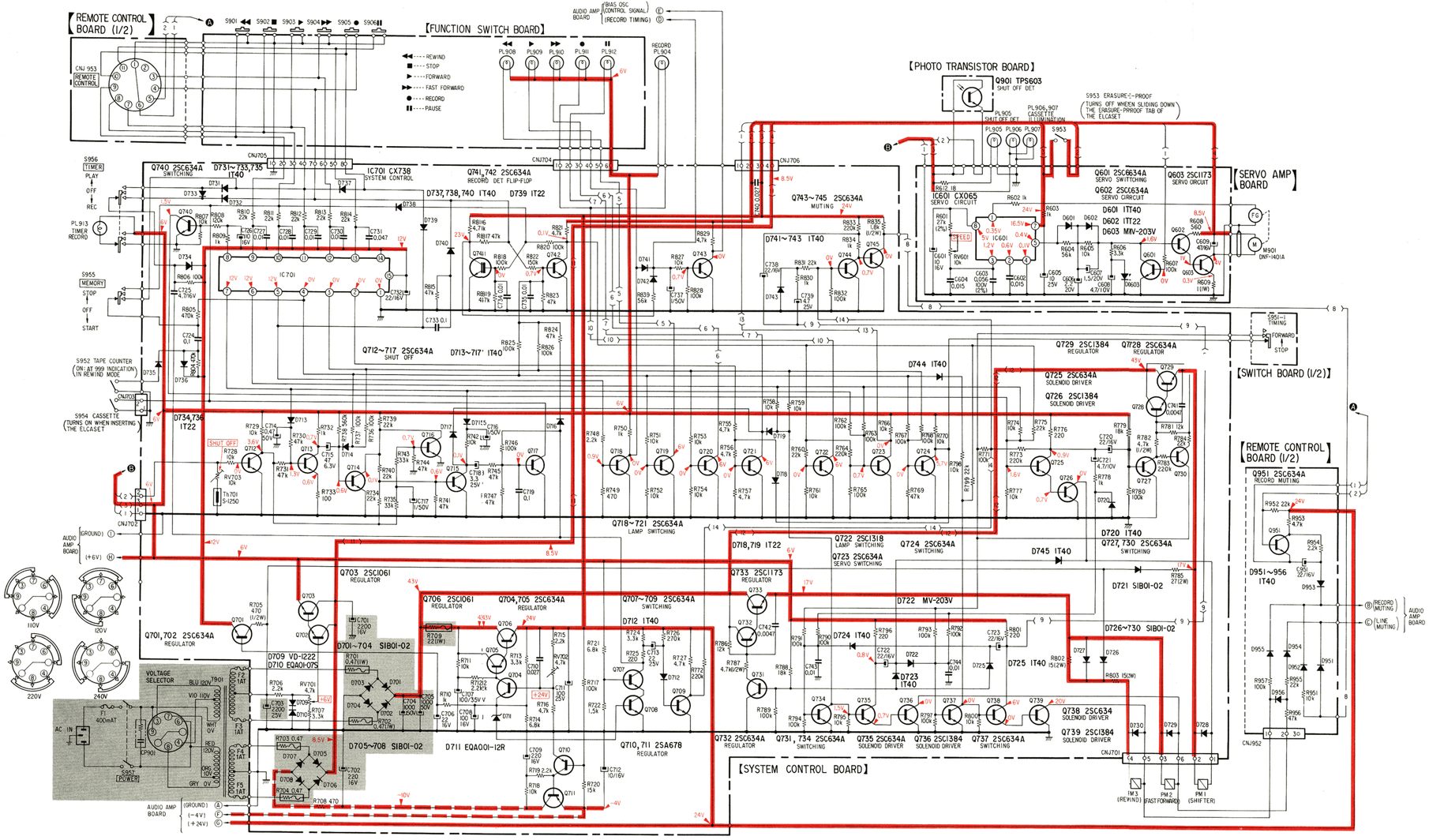
Note:

- : B+ pattern
- : B– pattern
- Color code of sleeving over the end of the jacket.



Q, IC	D
706,703	725
	723
709,702	712
705 738	722,721
704 739	726
737	709
736	710 ,724
	730
711	745
735	
734	729
708,707	
	727
732	728
729	720
711,710 733	
726,728	
	708 702
725	707
730,727	705, 703
701 731	704, 701
	706
	743 716
	744
744 717	
	719
743	741
745 712	
741 742	734
719	
716	742
718 713	
	733,738,740
	731,732,737
	739, 714
720	
714	
721	735
740	
	717
722	
724	718
715	
IC701	736,713,715
723	
Q, IC	D





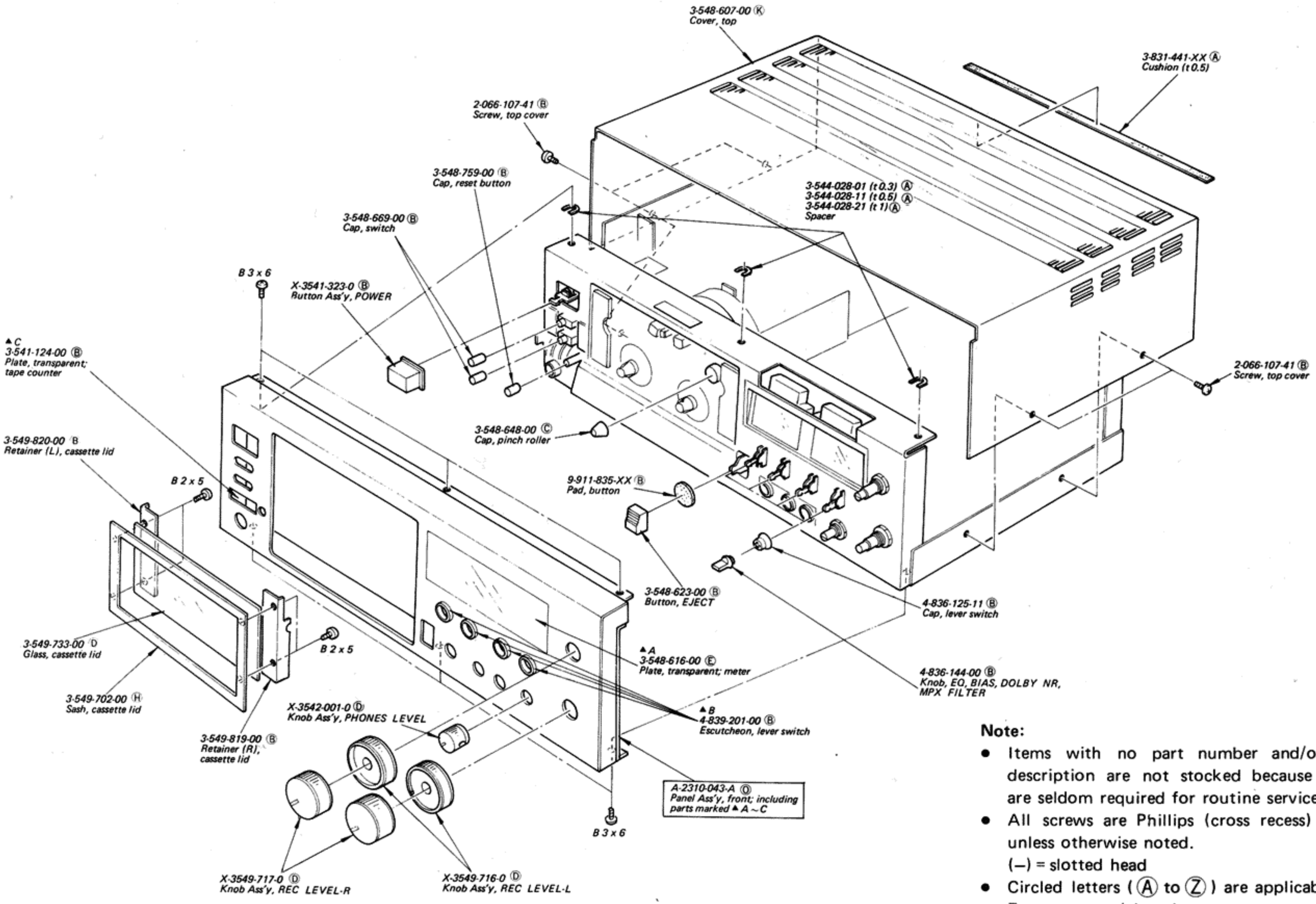
Note:

- All capacitors are in μF unless otherwise noted. pF = μμF. 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ = 1000Ω, MΩ = 1000 kΩ
- All adjustable resistors have characteristic curve B, unless otherwise noted.
- ⏦: fusible resistor.
- (N): low-noise capacitor and resistor.
- 2% indicates component tolerance.
- ▬▬: B+ bus.
- ▭: panel designation.
- ▭: adjustment for repair.
- ⏚: direct connection to points marked ⏚ on the chassis.
- - - -: B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions in forward mode with a VOM (20 kΩ/V).
- Voltage variations may be noted due to normal production tolerances.
- Switch:

Ref. No.	Switch	Position
S901	REWIND	OFF
S902	STOP	OFF
S903	FORWARD	OFF
S904	FAST FORWARD	OFF
S905	RECORD	OFF
S906	PAUSE	OFF
S951	TIMING	STOP
S952	TAPE COUNTER	OFF
S953	ERASURE-PROOF	OFF
S954	CASSETTE	OFF
S955	MEMORY	OFF
S956	TIMER	OFF
S957	POWER	OFF

Note: The components identified by shading are critical for safety. Replace only with part number specified.

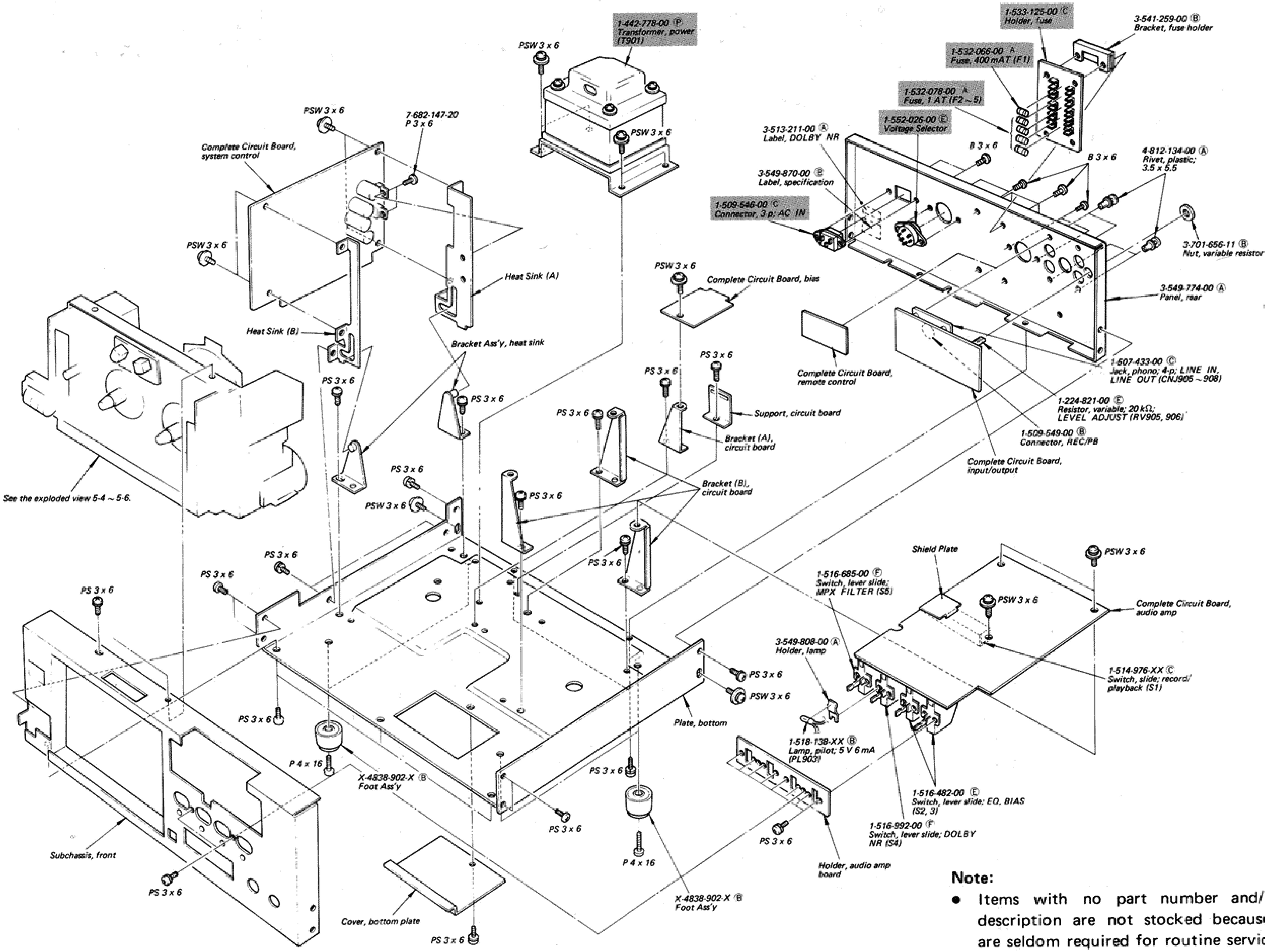
SECTION 5
EXPLODED VIEWS



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

5-2.



Note: The components identified by shading are critical for safety. Replace only with part number specified.

Note:

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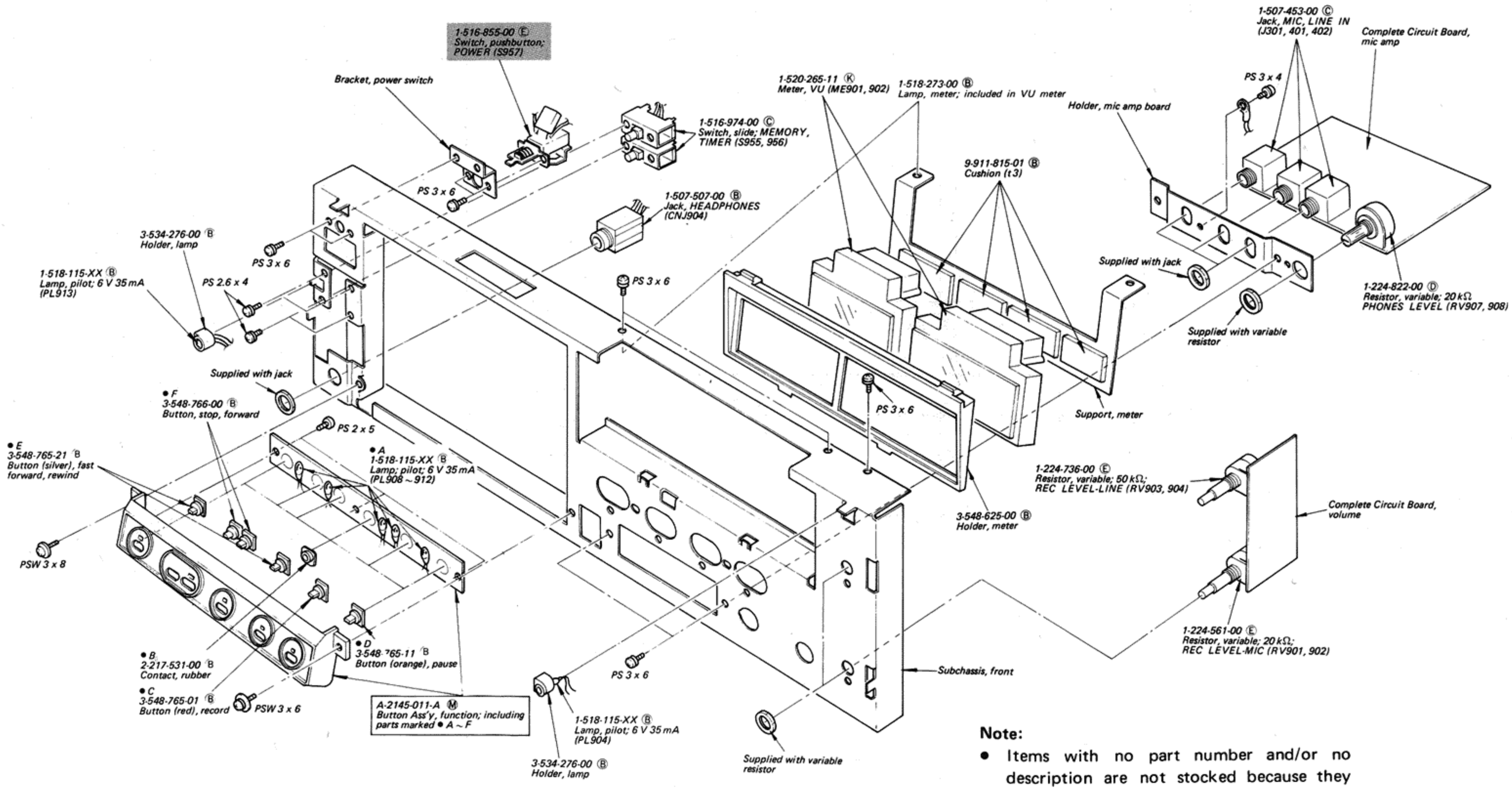
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.



Note: The components identified by shading are critical for safety. Replace only with part number specified.

Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
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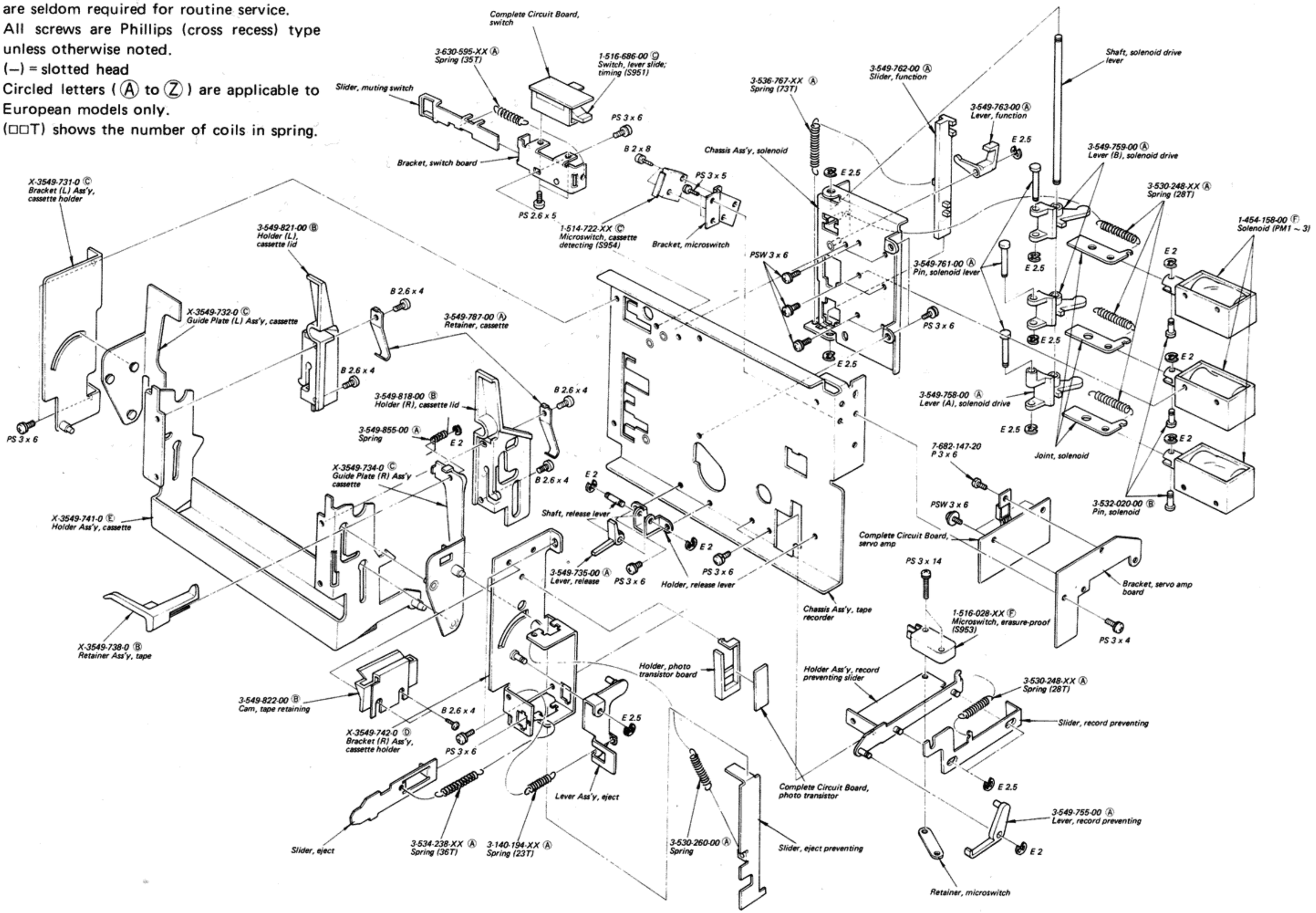
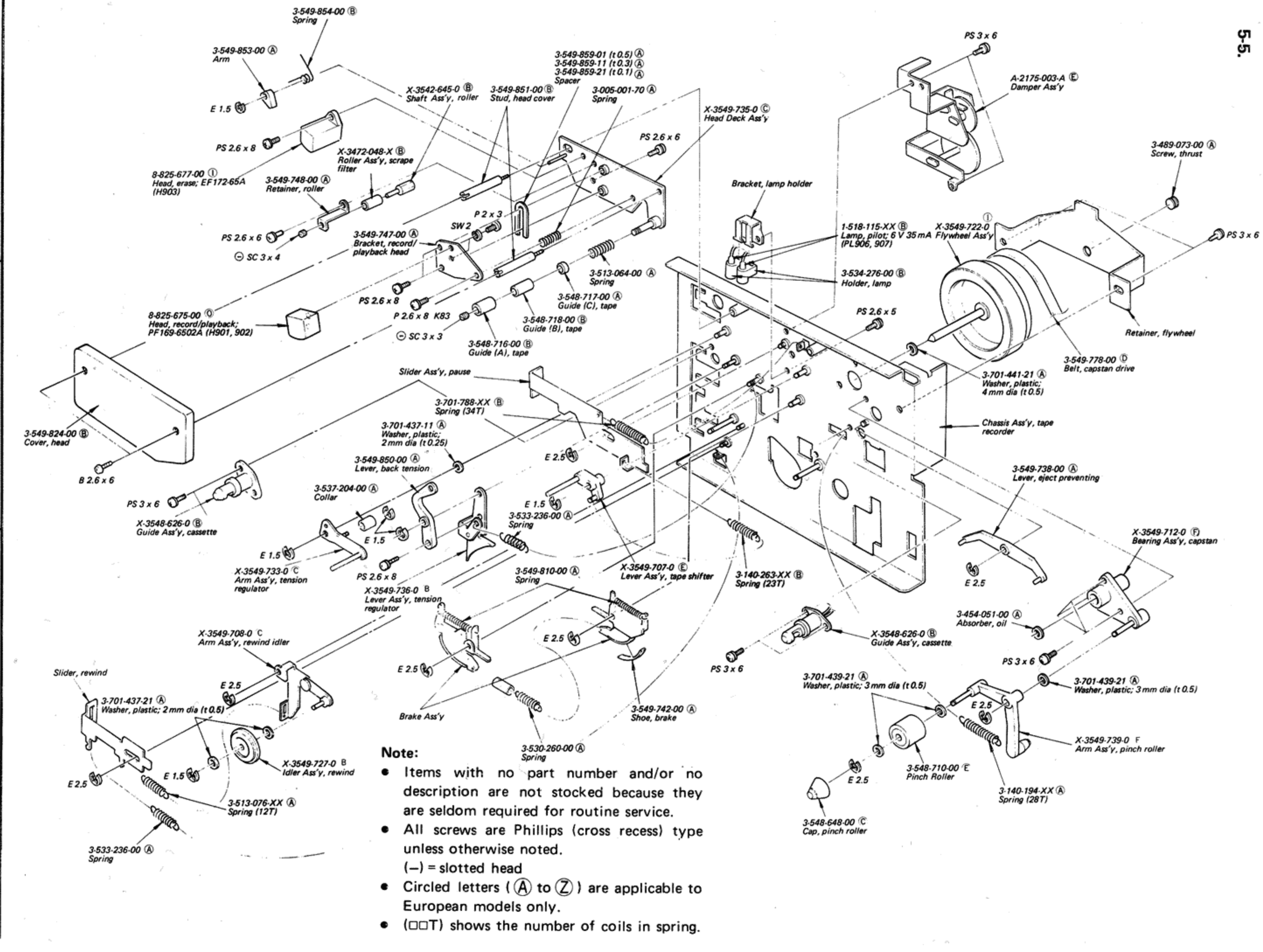
Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.
- (□□T) shows the number of coils in spring.





Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.
- (□□T) shows the number of coils in spring.

Note:

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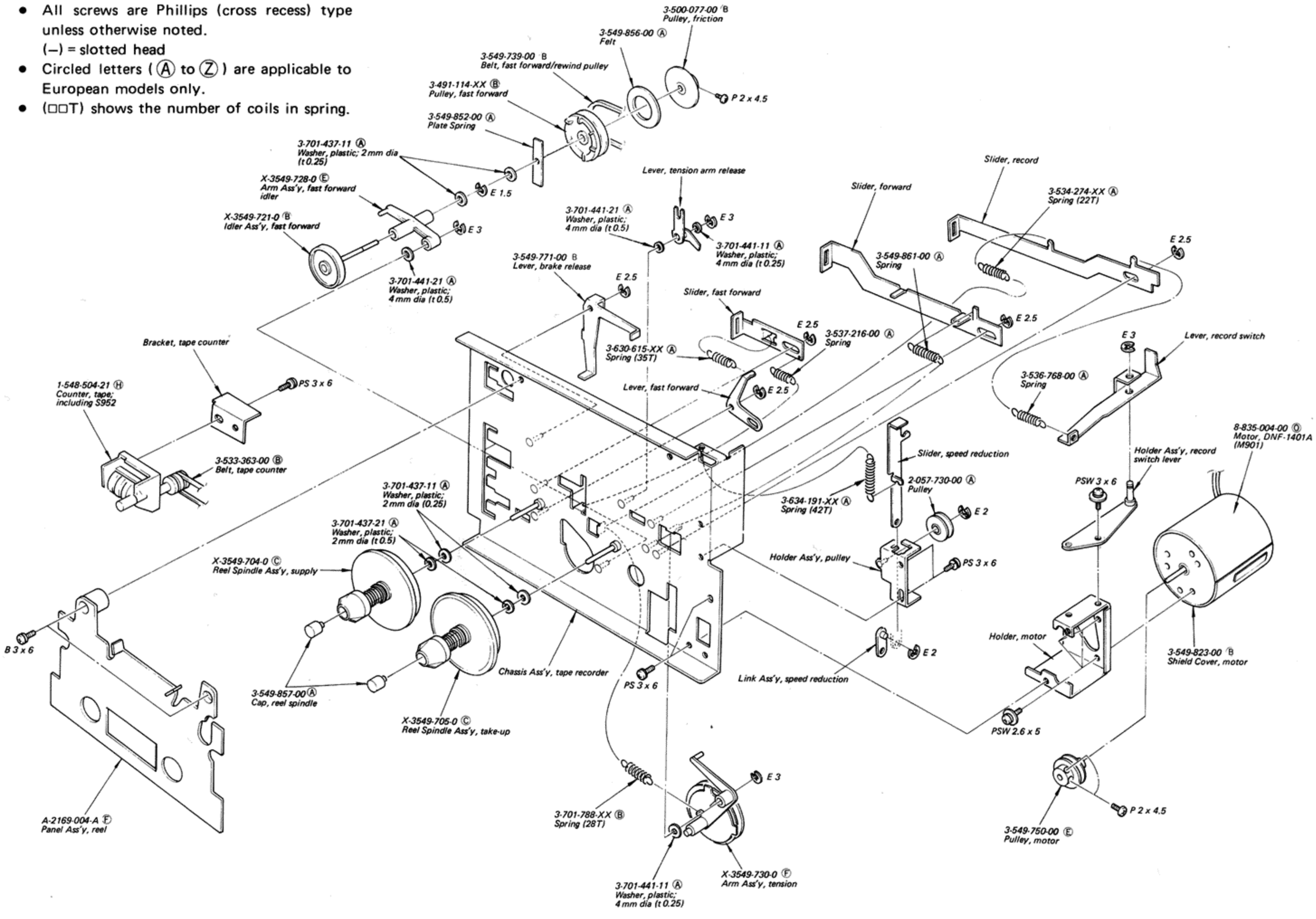
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.
- (□□T) shows the number of coils in spring.



SECTION 6
ELECTRICAL PARTS LIST

- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*	*Description*
		SEMICONDUCTORS
		Transistors
Q101,201		Ⓕ 2SK43
Q102,202 Q103,203		Ⓑ 2SC632A
Q104,204 Q105,205		Ⓑ 2SC634A
Q106,206		Ⓑ 2SC1474
Q107~110 Q207~210		Ⓑ 2SC634A
Q111,211		Ⓑ 2SC1474
Q112,212 Q113,213		Ⓑ 2SC634A
Q114		Ⓒ 2SC1475
Q115		Ⓑ 2SC634A
Q116		Ⓒ 2SA678
Q301,401 Q302,402		Ⓑ 2SC632A
Q501,502		Ⓑ 2SC634A
Q601,602		Ⓑ 2SC634A
Q603		Ⓒ 2SC1173
Q701~702		Ⓑ 2SC634A
Q703		Ⓓ 2SC1061
Q704,705		Ⓑ 2SC634A
Q706		Ⓓ 2SC1061
Q707~709		Ⓑ 2SC634A
Q710,711		Ⓒ 2SA678
Q712~721		Ⓑ 2SC634A
⇒ Q722		Ⓒ 2SC1475
Q723~725		Ⓑ 2SC634A
⇒ Q726		Ⓒ 2SC1475
Q727,728		Ⓑ 2SC634A
⇒ Q729		Ⓒ 2SC1475
Q730~732		Ⓑ 2SC634A
Q733		Ⓒ 2SC1173
Q734,735		Ⓑ 2SC634A
⇒ Q736		Ⓒ 2SC1475
Q737,738		Ⓑ 2SC634A
⇒ Q739		Ⓒ 2SC1475
Q740~745		Ⓑ 2SC634A
Q901		Ⓔ TPS603
Q951		Ⓑ 2SC634A
		ICs
IC101,201		Ⓘ CX064
IC601		Ⓕ CX065
IC701		Ⓚ CX738
		Diodes
⇒ D601		Ⓑ 1S1555
⇒ D602		Ⓑ 1T22A
D603		Ⓑ MV203V
⇒ D701~708		Ⓑ 10E2
D709		Ⓑ VD1222
⇒ D710		Ⓑ EQB01-07
⇒ D711		Ⓑ EQB01-12Z
⇒ D712~717		Ⓑ 1S1555
⇒ D718,719		Ⓑ 1T22A
⇒ D720		Ⓑ 1S1555
⇒ D721		Ⓑ 10E2
D722		Ⓑ MV203V
⇒ D723~725		Ⓑ 1S1555
⇒ D726~730		Ⓑ 10E2
⇒ D731~733 D735		Ⓑ 1S1555
⇒ D736		Ⓑ 1T22A
⇒ D737,738		Ⓑ 1S1555
⇒ D739		Ⓑ 1T22A
⇒ D740~743		Ⓑ 1S1555
⇒ D951~956		Ⓑ 1S1555
		Thermistor
Th701	1-800-198-XX	Ⓐ S-1250

- ⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note: The components identified by shading are critical for safety. Replace only with part number specified.

- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*		*Description*		
			COILS		
	All coils are microinductors unless otherwise noted.				
L101,201	1-407-879-00	Ⓑ	33 mH		
L102,202	1-407-240-00	Ⓑ	22 mH, variable inductor		
L103,203	1-407-197-XX	Ⓐ	1.8 mH		
L104,204	1-407-195-XX	Ⓐ	1 mH		
L105,205	1-407-196-XX	Ⓑ	1.2 mH		
L301,401	1-407-519-00	Ⓑ	8μH		
L501,502	1-407-198-XX	Ⓑ	2.2 mH		
L503,504	1-407-879-00	Ⓑ	33 mH		
			TRANSFORMERS		
T101,201	1-427-284-00	Ⓑ	Output		
T501	1-433-193-00	Ⓒ	Bias Osc		
T901	1-442-778-00	Ⓟ	Power		
			CAPACITORS		
	All capacitors are in μF and electrolytic unless otherwise noted. 50WV or less are not indicated except for electrolytics. pF = μμF				
C101,201	1-107-093-11	Ⓐ	220p		silvered mica
C102,202	1-121-410-11	Ⓑ	47	25V	
C103,203	1-107-093-11	Ⓐ	220p		silvered mica
C104,204	1-107-085-11	Ⓐ	100p		silvered mica
C105,205	1-121-409-11	Ⓐ	47	10V	
C106,206	1-123-180-11	Ⓑ	100	6.3V	
C107,207	1-108-593-12	Ⓑ	0.039		mylar
C108,208	1-121-480-11	Ⓐ	22	25V	
C109,209	1-121-409-11	Ⓐ	47	10V	
C110,210	1-121-395-11	Ⓐ	4.7	25V	
C111,211	1-121-409-11	Ⓐ	47	10V	
C112,212	1-121-413-11	Ⓐ	100	6.3V	
C113,213	1-107-081-11	Ⓐ	68p		silvered mica
C114,214	1-121-471-11	Ⓐ	10	16V	
C115,215	1-131-214-11	Ⓑ	0.68	35V	tantalum
C116,216	1-108-591-12	Ⓑ	0.033		mylar
C117,217	1-131-205-11	Ⓑ	2.2	25V	tantalum
C118,218	1-130-071-11	Ⓑ	0.1 ± 2%	100V	film
C119,219	1-108-585-12	Ⓑ	0.018		mylar
C120,220	1-130-072-11	Ⓑ	0.022 ± 2%	100V	film
C121,221	1-121-395-11	Ⓐ	4.7	25V	
C122,222	1-121-416-11	Ⓐ	100	25V	
C123,223	1-108-227-12	Ⓐ	0.001		mylar
C124,224	1-107-069-11	Ⓐ	22p		silvered mica
C125,225	1-129-794-21	Ⓑ	0.0033 ± 2%	100V	film
C126,226	1-108-569-12	Ⓑ	0.0039		mylar
C127,227	1-108-557-12	Ⓑ	0.0012		mylar
C128,228	1-121-395-11	Ⓐ	4.7	25V	
C129,229	1-108-227-12	Ⓐ	0.001		mylar
C130,230	1-121-402-11	Ⓐ	33	10V	
C131,231	1-121-413-11	Ⓐ	100	6.3V	
C132,232	1-107-061-11	Ⓐ	10p		silvered mica
C133,233	1-107-077-11	Ⓐ	4.7p		silvered mica
C134,234	1-121-398-11	Ⓐ	10	25V	
C135,235	1-121-395-11	Ⓐ	4.7	25V	
C136,236 C137,237	1-121-726-11	Ⓐ	0.47	50V	
C138,238	1-121-450-11	Ⓐ	2.2	50V	
C139,239	1-121-395-11	Ⓐ	4.7	25V	
C140,240	1-121-410-11	Ⓑ	47	25V	
C141,241	1-121-391-11	Ⓐ	1	50V	
C142,242	1-121-726-11	Ⓐ	0.47	50V	
C143,243	1-121-404-11	Ⓐ	33	25V	
C144,244	1-108-597-12	Ⓐ	0.056		mylar
C145,245	1-108-557-12	Ⓐ	0.0012		mylar
C146,246	1-121-398-11	Ⓐ	10	25V	
C147,247	1-108-227-12	Ⓐ	0.001		mylar
C148,248	1-121-409-11	Ⓐ	47	10V	
C149,249	1-107-061-11	Ⓐ	10p		silvered mica
C150,250	1-121-413-11	Ⓐ	100	6.3V	
C151,251	1-121-391-11	Ⓐ	1	50V	
C152,252	1-131-211-11	Ⓑ	0.22	35V	tantalum
C153,253	1-108-575-12	Ⓑ	0.0068		mylar
C154~156 C254~256	1-108-589-12	Ⓐ	0.027		mylar

Note: The components identified by shading are critical for safety. Replace only with part number specified.

- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*				*Description*
C157,257	1-108-587-12	Ⓑ	0.022		mylar
C158	1-121-404-11	Ⓐ	33	25V	
C160,260	1-121-398-11	Ⓐ	10	25V	
C301,401	1-121-416-11	Ⓐ	100	25V	
C302,402	1-121-916-11	Ⓑ	10	16V	
C303,403	1-107-081-11	Ⓐ	68p		silvered mica
C304,404	1-108-227-11	Ⓐ	0.001		mylar
C306,406	1-107-073-11	Ⓐ	33p		silvered mica
C307,407	1-107-065-11	Ⓐ	15p		silvered mica
C309,409	1-121-413-11	Ⓐ	100	6.3V	
C310-410	1-121-392-11	Ⓐ	3.3	25V	
C501	1-121-450-11	Ⓐ	2.2	50V	
C502	1-121-395-11	Ⓐ	4.7	25V	
C503,504	1-108-581-12	Ⓑ	0.012		mylar
C505	1-108-591-12	Ⓑ	0.033		mylar
C506	1-129-800-11	Ⓑ	0.0012	630V	plastic
C509,510	1-107-210-11	Ⓐ	22p	500V	silvered mica
C601	1-121-471-11	Ⓐ	10	16V	
C602	1-108-912-11	Ⓑ	0.015		mylar
C603	1-129-899-11	Ⓑ	0.056 ±2%	100V	plastic
C604	1-108-583-12	Ⓑ	0.015		mylar
C605	1-121-398-11	Ⓐ	10	25V	
C606	1-131-196-21	Ⓑ	2.2	20V	tantalum
C607	1-131-202-21	Ⓑ	1.5	20V	tantalum
C608	1-131-192-21	Ⓑ	4.7	10V	tantalum
C609	1-121-409-11	Ⓐ	4.7	16V	
C701	1-123-070-11	Ⓒ	2200	16V	
C702	1-123-068-11	Ⓑ	220	16V	
C703	1-123-067-11	Ⓓ	2200	25V	
C704,705	1-123-061-11	Ⓒ	1000	50V	
C706	1-121-479-11	Ⓐ	22	16V	
C707	1-123-062-11	Ⓑ	100	35V	
C708	1-121-415-11	Ⓑ	100	16V	
C709	1-121-421-11	Ⓑ	220	16V	
C710	1-108-359-12	Ⓐ	0.027		mylar
C711	1-121-416-11	Ⓐ	100	25V	
C712	1-121-471-11	Ⓐ	10	16V	
C713	1-121-988-11	Ⓑ	22	25V	
C714	1-121-726-11	Ⓐ	0.47	50V	
C715	1-131-191-21	Ⓒ	47	6.3V	tantalum
C716,717	1-121-391-11	Ⓐ	1	50V	
C718	1-121-392-11	Ⓐ	3.3	25V	
C719	1-108-290-12	Ⓑ	0.1		mylar
C720	1-131-201-21	Ⓑ	22	16V	tantalum
C721	1-131-192-21	Ⓑ	4.7	10V	tantalum
C722,723	1-121-990-11	Ⓐ	22	16V	
C724	1-108-290-12	Ⓑ	0.1		mylar
C725	1-121-257-11	Ⓐ	4.7	16V	(nonpolarized)
C726	1-121-968-11	Ⓑ	10	16V	
C727~730	1-161-136-11	Ⓐ	0.01		ceramic
C731	1-161-140-11	Ⓐ	0.047		ceramic
C732	1-121-479-11	Ⓐ	22	16V	
C733	1-108-290-12	Ⓑ	0.1		mylar
C734,735	1-161-136-11	Ⓐ	0.01		ceramic
C737	1-121-391-11	Ⓐ	1	50V	
C738	1-121-479-11	Ⓐ	22	16V	
C739	1-121-395-11	Ⓐ	4.7	25V	
C740	1-108-359-12	Ⓐ	0.027		mylar
C741,742	1-161-166-11	Ⓐ	0.0047		ceramic
C743,744	1-161-136-11	Ⓐ	0.01		ceramic
C901~903	1-161-136-11	Ⓐ	0.01		ceramic
C951	1-121-479-11	Ⓐ	22	16V	
CT501,502	1-141-010-XX	Ⓑ	Trimmer		

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted.
Check schematic diagram for values.

R601	1-212-688-11	Ⓑ	27 k ±2%	¼W	metal-oxide
R609	1-212-385-11	Ⓐ	1	1W	metal-oxide
R701,702	1-217-465-11	Ⓑ	0.47	1W	fusible
R703,704	1-217-371-11	Ⓑ	0.47	¼W	fusible
R705	1-244-865-11	Ⓐ	470	½W	carbon
R709	1-217-485-11	Ⓑ	22	1W	fusible
R782	1-244-889-11	Ⓐ	4.7 k	½W	carbon
R785	1-206-473-11	Ⓐ	27	2W	metal-oxide
R787	1-244-889-11	Ⓐ	4.7 k	½W	carbon

Note: The components identified by shading are critical for safety. Replace only with part number specified.

Ref. No.	*Part No.*		*Description*		
R802,803	1-206-467-11	Ⓐ	15	2W	metal-oxide
R835	1-244-879-11	Ⓐ	1.8 k	½W	carbon
RV101,201	1-224-644-XX	Ⓑ	4.7 k, adjustable		
RV102,202	1-224-646-XX	Ⓑ	22 k, adjustable		
RV103,203	1-224-644-XX	Ⓑ	4.7 k, adjustable		
RV104,204	1-224-645-XX	Ⓑ	10 k, adjustable		
RV601	1-224-493-00	Ⓑ	10 k, adjustable		
RV701,702	1-224-251-XX	Ⓒ	4.7 k, adjustable		
RV703	1-224-252-XX	Ⓒ	10 k, adjustable		
RV901,902	1-224-561-00	Ⓔ	20 k, variable; REC LEVEL-MIC		
RV903,904	1-224-736-00	Ⓔ	50 k, variable; REC LEVEL-LINE		
RV905,906	1-224-821-00	Ⓔ	20 k, variable; LEVEL ADJUST		
RV907,908	1-224-822-00	Ⓓ	20 k, variable; PHONES LEVEL		

SWITCHES

S1	1-514-976-XX	Ⓒ	Slide, record/playback
S2,3	1-516-482-00	Ⓔ	Lever Slide, EQ, BIAS
S4	1-516-992-00	Ⓕ	Lever Slide, DOLBY NR
S5	1-516-685-00	Ⓕ	Lever Slide, MPX FILTER
S951	1-516-686-00	Ⓒ	Lever Slide, timing
S952			Included in tape counter
S953	1-516-028-XX	Ⓕ	Micro, erasure-proof
S954	1-514-722-XX	Ⓒ	Micro, cassette detecting
S955,956	1-516-974-00	Ⓒ	Slide, MEMORY, TIMER
S957	1-516-855-00	Ⓔ	Pushbutton, POWER

JACKS

CNJ904	1-507-507-00	Ⓑ	HEADPHONES
CNJ905~908	1-507-433-00	Ⓒ	Phono, 4-p; LINE IN, LINE OUT
J301,401	1-507-453-00	Ⓒ	MIC
J402	1-507-453-00	Ⓒ	LINE IN (STEREO)

MISCELLANEOUS

CP901	1-231-057-31	Ⓑ	Encapsulated Component
F1	1-532-066-00	Ⓐ	Fuse, 400 mAT
F2~5	1-532-078-00	Ⓐ	Fuse, 1 AT

- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

Ref. No.	*Part No.*		*Description*
H901,902	8-825-675-00	Ⓞ	Head, record/playback; PF169-6502A
H903	8-825-677-00	Ⓘ	Head, erase; EF172-65A
M901	8-835-004-00	Ⓞ	Motor, DNF-1401A
ME901,902	1-520-265-11	Ⓚ	Meter, VU
PL901,902	1-518-273-00	Ⓑ	Lamp, meter
PL903	1-518-138-XX	Ⓑ	Lamp, pilot; 5V 6 mA
PL904 PL906~913	1-518-115-XX	Ⓑ	Lamp, pilot; 6V 35 mA
PM1~3	1-454-158-00	Ⓕ	Solenoid
1-509-546-00		Ⓒ	Connector, 3-p; AC IN
1-509-549-00		Ⓑ	Connector, REC/PB
1-533-125-00		Ⓒ	Holder, fuse
1-552-026-00		Ⓔ	Voltage Selector

ACCESSORIES AND PACKING MATERIALS

Part No.		*Description*
X-3545-408-0	Ⓑ	Cushion Ass'y, upper (UK model)
X-3549-744-0	Ⓖ	Carton Ass'y (AEP model)
X-3549-745-0	Ⓒ	Cushion Ass'y, upper (AEP model)
X-3701-018-3	Ⓐ	Tips Ass'y, head cleaning
1-534-049-31	Ⓓ	Cord, connection; RK-74H
1-534-819-00	Ⓑ	Cord, power (UK model)
3-429-126-00	Ⓑ	Bag, plastic; set
3-548-768-00	Ⓑ	Cushion, lower (front) (UK model)
3-548-769-00	Ⓑ	Cushion, lower (back) (UK model)
3-548-770-00	Ⓐ	Spacer, cassette lid
3-548-780-00	Ⓒ	Cushion, lower (front) (AEP model)
3-548-781-00	Ⓒ	Cushion, lower (back) (AEP model)
3-549-860-00	Ⓔ	Carton (UK model)
3-701-985-00	Ⓑ	Tape Driver
3-780-962-11	Ⓒ	Manual, instruction
8-893-508-10	Ⓤ	Tape, demonstration

Note: The components identified by shading are critical for safety. Replace only with part number specified.

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