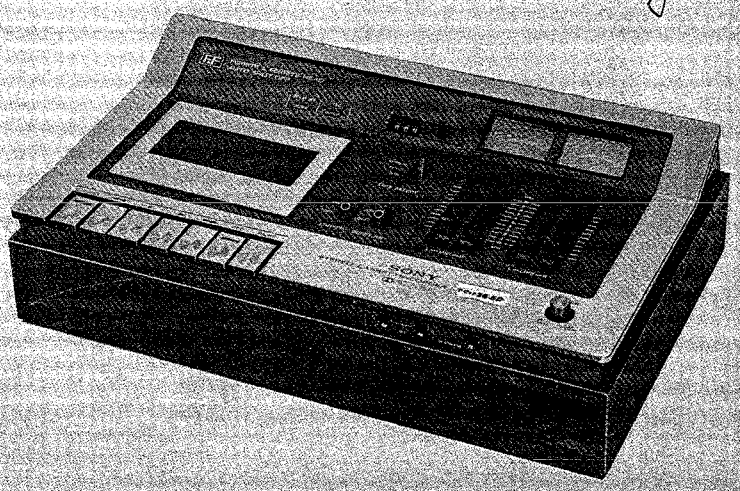
TC-136SD

439

= Wega 4310

AEP Model
Canada Model
E Model
USA Model
UK Model



STEREO CASSETTE-CORDER

SPECIFICATIONS

Power Requirements: AC 120 V, 60 Hz (USA and Canada Models)
110, 127, 220, 240 V, 50/60 Hz (AEP, UK Models)
100, 110, 120, 127, 220, 240 V, 50/60 Hz (E Model)

Power Consumption: 8 W (by IEC Standards)

Track System: 4-track, 2-channel stereo

Tape: SONY tape cassette or equivalent

Tape Speed: 4.8 cm/s (1⅞ ips)

Recording Time: (with C-120 tape cassette) 2 hrs

Frequency Response:
NORMAL: 30 ~ 14,000 Hz (NAB)
40 ~ 11,000 Hz (DIN)
Fe-Cr, CrO_2: 30 ~ 16,000 Hz (NAB)
40 ~ 14,000 Hz (DIN)

Wow and Flutter: 0.10 % (RMS) weighted (NAB)
± 0.2 % (DIN)

Overall Signal-to-Noise Ratio:
DOLBY* NR OFF: 53 dB (NORMAL)
54 dB (Fe-Cr, CrO_2)
DOLBY* NR ON: improved 5 dB at 1 kHz, 10 dB above 5 kHz

Record Bias Frequency: 105 kHz

Inputs:
MICROPHONE . . . 2
for low impedance microphone
Maximum sensitivity: −72 dB (0.19 mV)
LINE IN 2
Impedance: 100 kΩ
Maximum sensitivity: −22 dB (62 mV)

Outputs:
LINE OUT 2
Impedance: more than 10 kΩ
Normal level: −5 dB (0.44 V) with 100 kΩ load (LINE OUT maximum)
HEADPHONE 1
Impedance: 8 Ω
Normal level: −24 dB (49 mV)
REC/PB 1
Impedance: less than 10 kΩ
Normal level: −5 dB (0.44 V)

Record/playback Head: PF145-3602A1

Erase Head: EF135-36

Motor: D-009F

Dimensions: 386 (w) x 126 (h) x 240 (d) mm
15 3/16 (w) x 4 1/16 (h) x 9 1/16 (d) inches

Weight: 4.2 kg, 9 lb 4 oz

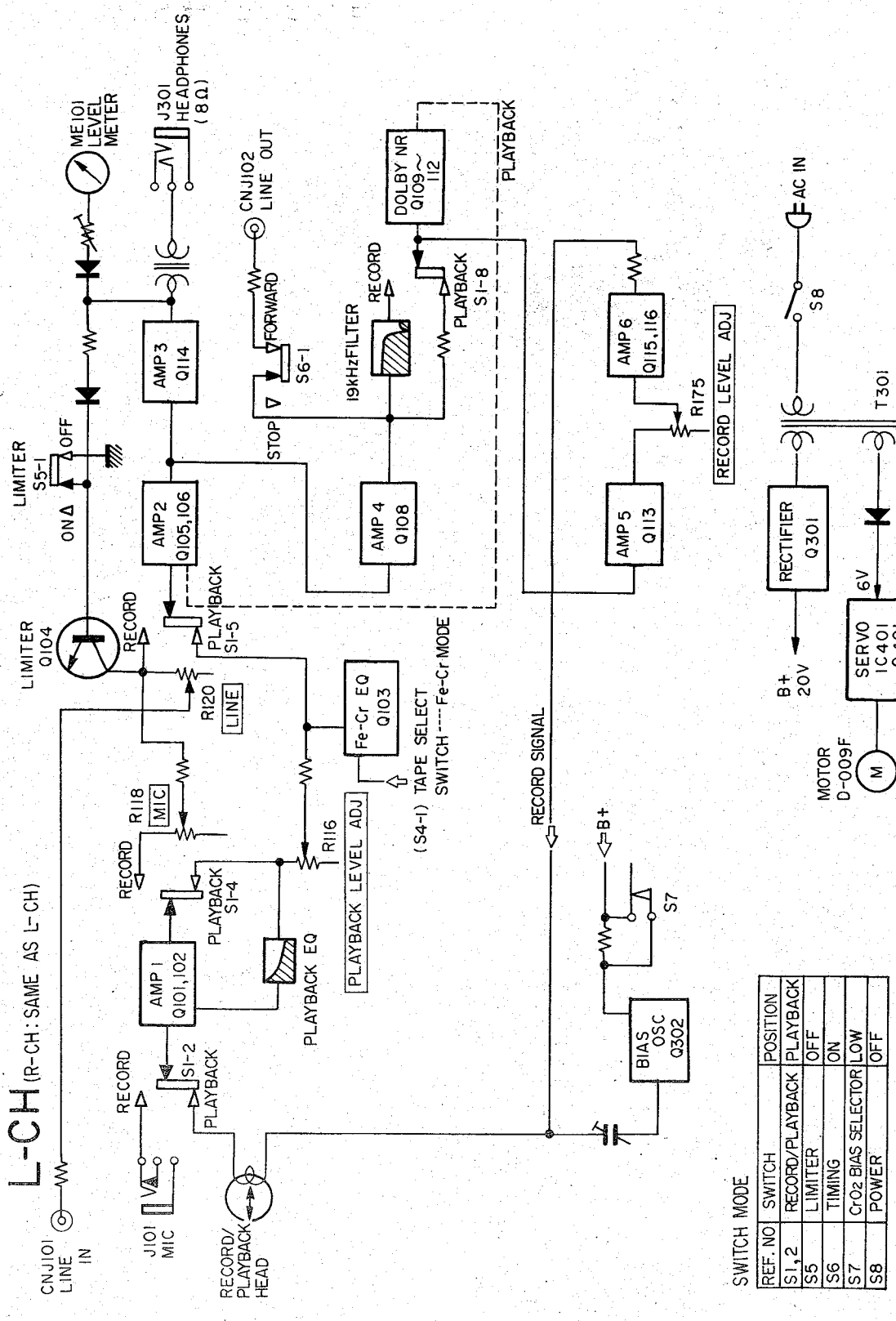
* 'Dolby' and the double-D symbol are the trade marks of Dolby Laboratory Inc. Noise reduction system manufactured under license from Dolby Laboratory Inc.

SONY®

SERVICE MANUAL

SECTION 1
OUTLINE

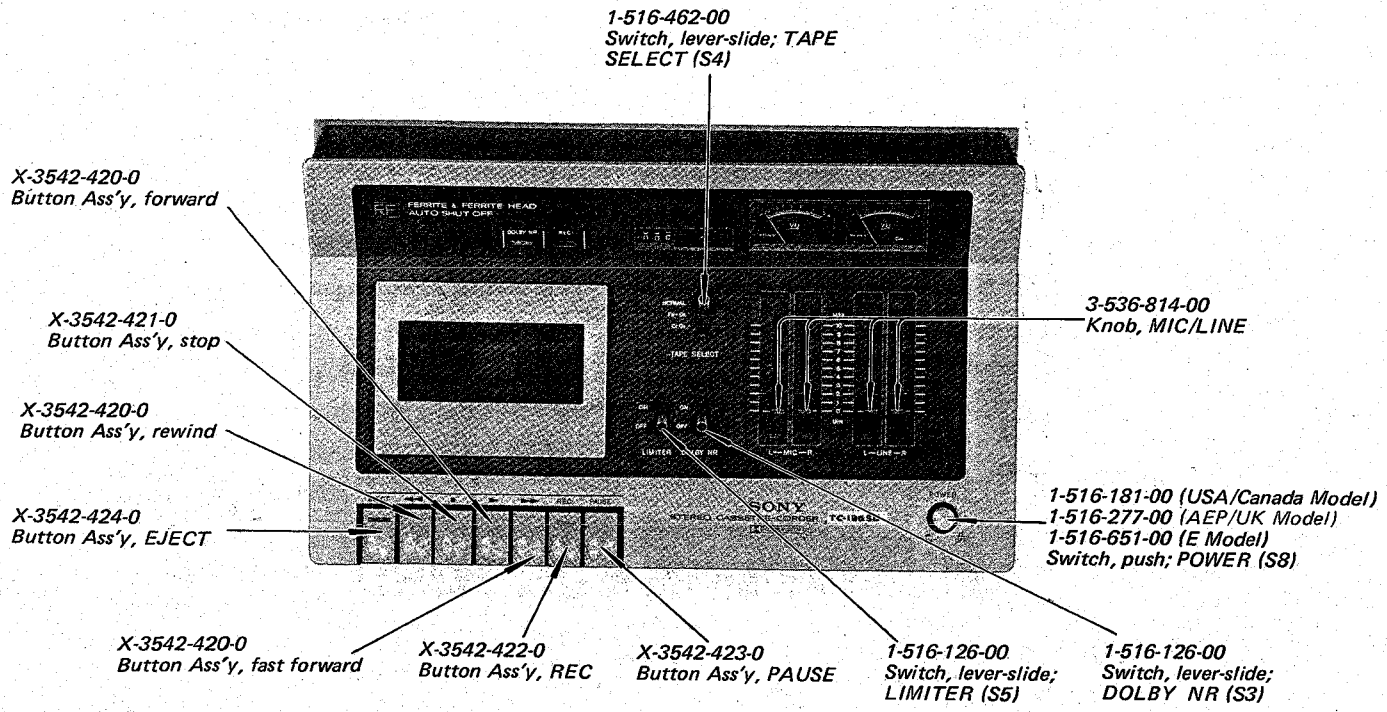
1-1. BLOCK DIAGRAM



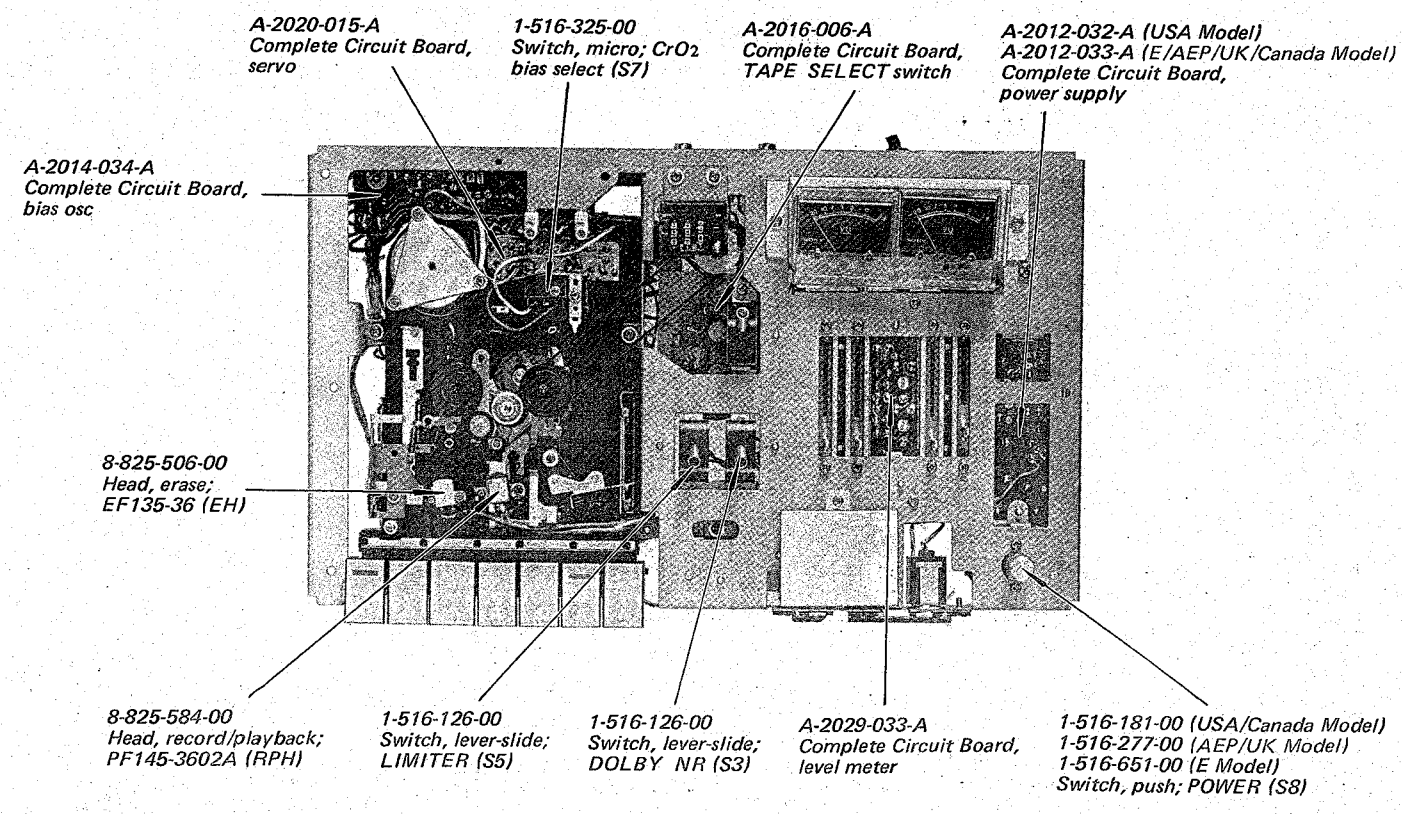
SWITCH MODE

REF. NO	SWITCH	POSITION
S1,2	RECORD/PLAYBACK	PLAYBACK
S5	LIMITER	OFF
S6	TIMING	ON
S7	CrO_2 BIAS SELECTOR	LOW
S8	POWER	OFF

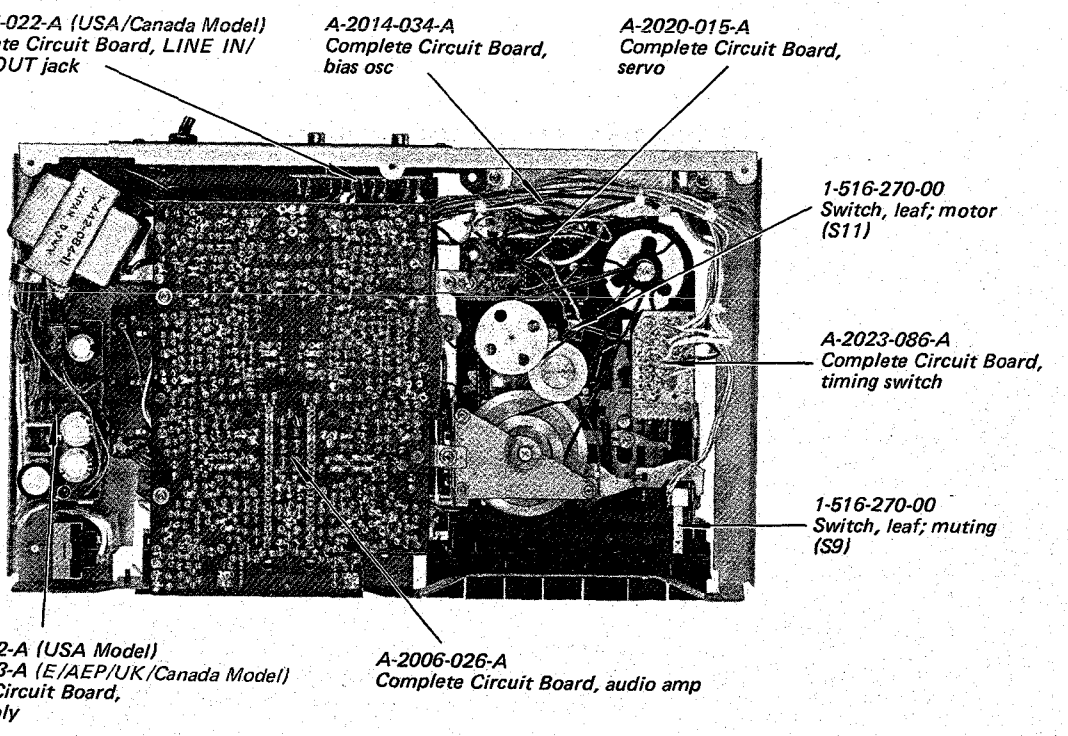
1-2. EXTERNAL VIEW



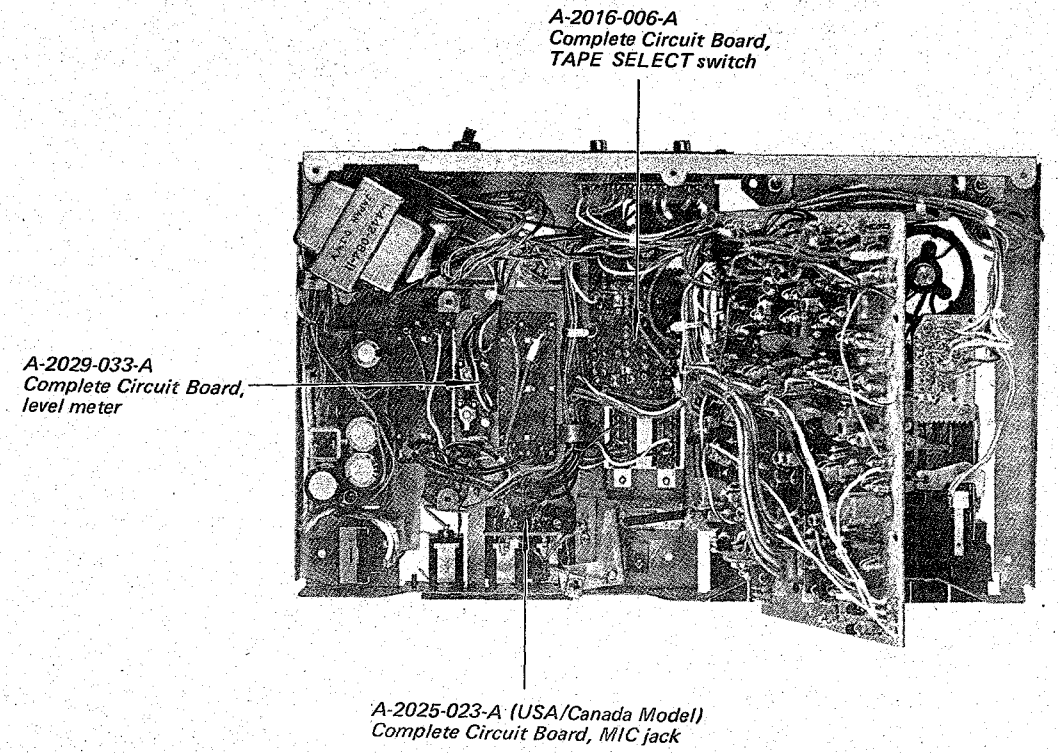
1-3. INTERNAL VIEW (1)



1-4. INTERNAL VIEW (2)



1-5. INTERNAL VIEW (3)



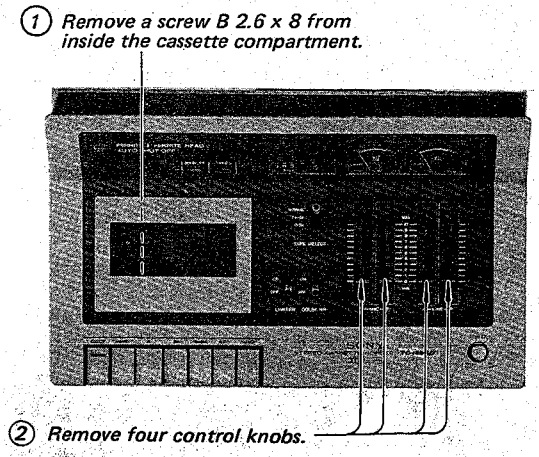
Note: Audio circuit board is swung up.

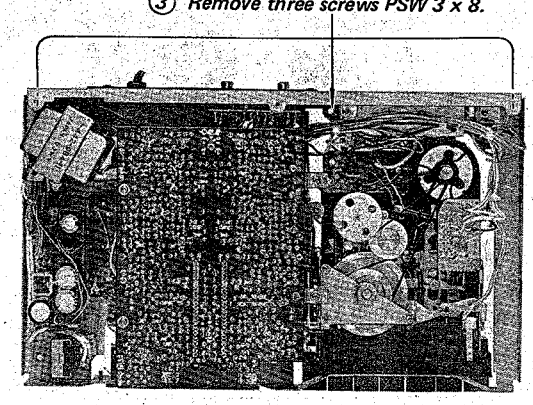
SECTION 2
DISASSEMBLY

2-1. LOWER CABINET AND SIDE CASE REMOVAL

Remove six screws B 3 x 8 from the bottom cabinet, and the lower cabinet and side case can be removed.

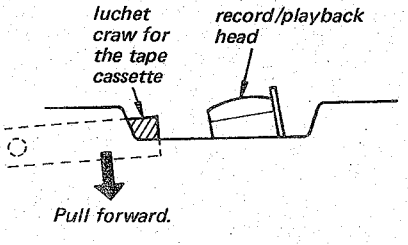
2-2. TOP CASE REMOVAL





Note: Reattaching the top case:

1) Fully pull the lachet craw for the tape cassette and reattach the top case.
2) Tighten screws after checking if the cassette lid opens when the EJECT button is depressed.



2-3. NOTES ON THE MOLDED MECHANISM

The TC-136SD uses a molded chassis. The use of a molded chassis in a stereo cassette-corder is for the first time.

The following notes should be taken in servicing the set.

1) Use the Diamond Oil No. 440 or equivalent.
2) Use the SONY Grease No. SG-101 or equivalent.
3) Do not tighten PTPWH washer-head self-tapping screws excessively. Use larger-size (one class) screws when the screw holes of the molded chassis becomes loose.
4) The spring which wind round the capstan-shaft bearing should contact between the reel-table frame and the pinch roller for the chassis-grounding purpose.

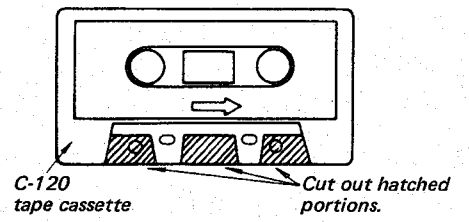
SECTION 3

ADJUSTMENTS

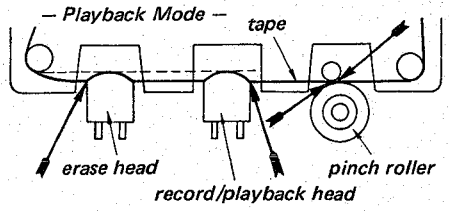
3-1. MECHANICAL ADJUSTMENTS

HEAD HEIGHT ADJUSTMENT

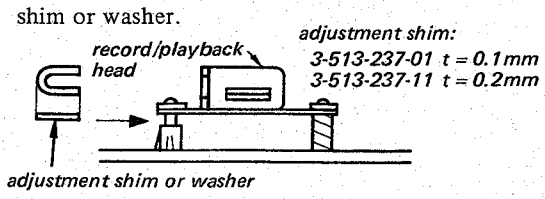
1. Make an adjustment cassette as shown below.



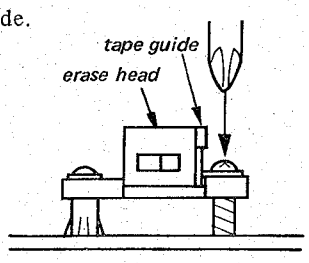
2. Viewing from the top, tape curl and tape bends should not exist at the arrowed portions.



3. When a tape curl exists at the record/playback head, adjust the head height by using adjustment shim or washer.



4. When a tape curl exists at the erase head, adjust the head height by adjusting the screw at the tape guide side.



5. After the adjustment, fix the adjusted screw.

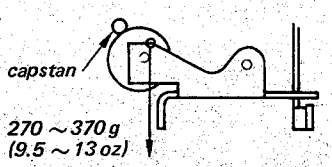
Reference Datum

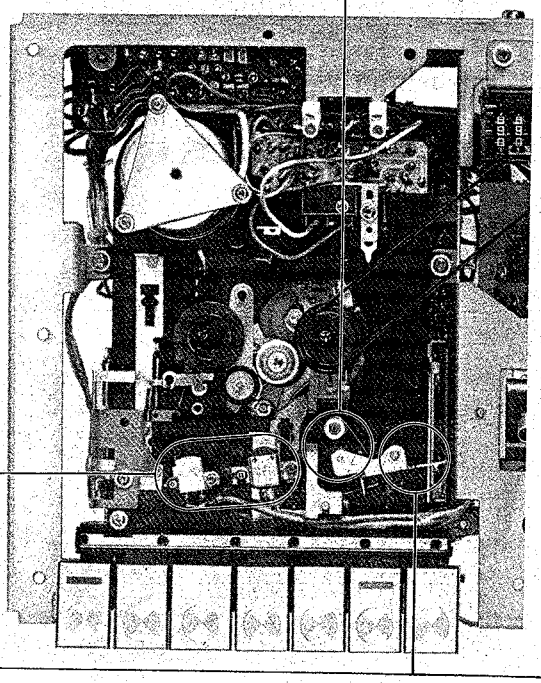
1. Fast forward torque:	35 ~ 50 g·cm	(0.49 ~ 0.69 oz·inch)
deviation:	less than 5 g·cm	(0.07 oz·inch)
2. Back tension torque:	2.0 ~ 3.0 g·cm	(0.028 ~ 0.042 oz·inch)
3. Fast forward and rewind torques:	55 ~ 95 g·cm	(0.77 ~ 1.32 oz·inch)

PINCH ROLLER PRESSURE MEASUREMENT

– Playback Mode –

With the set in the playback mode, pull the pinch roller away from the capstan using a spring scale, as shown in the figure. Allow pinch roller to return slowly. The pressure (spring scale tension) should be measured at the point where the pinch roller just contacts the capstan.

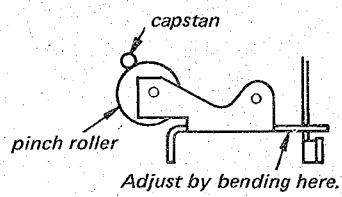




PAUSE TIMING ADJUSTMENT

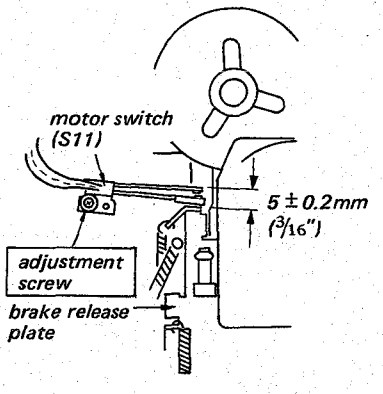
– Stop Mode –

1. The take-up reel should touch the tension pulley.
2. Slowly press PAUSE button. First, the pinch roller should release from the capstan. Next, the tension pulley should release from the take-up reel. Under this condition, adjust the position of the pinch roller by bending the specified part.



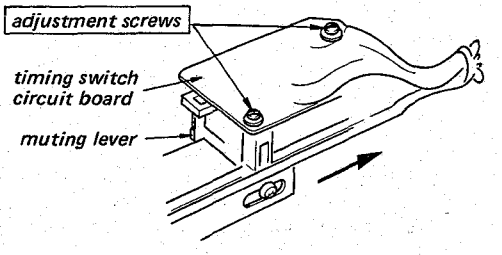
MOTOR SWITCH (S11) POSITION ADJUSTMENT
– Stop Mode –

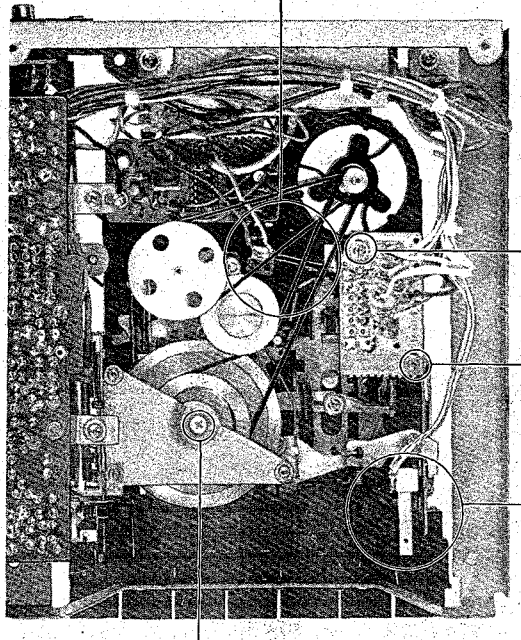
1. Loosen the adjustment screw and adjust the switch position so that the gap of the switch leafs becomes 5 ± 0.2 mm (3/16").
2. After the adjustment, secure the screw with a suitable looking compound.



TIMING SWITCH (S6) POSITION ADJUSTMENT
– Stop Mode –

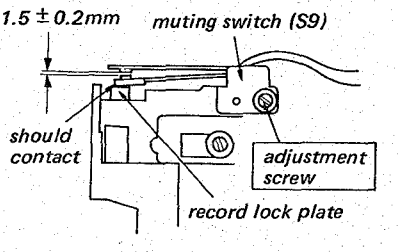
1. Loosen the adjustment screws and adjust the position of the timing switch circuit board in the arrowed direction so that the muting lever just contacts the switch hole and the switch starts to move.
2. After the adjustment, secure the screws with a locking compound.





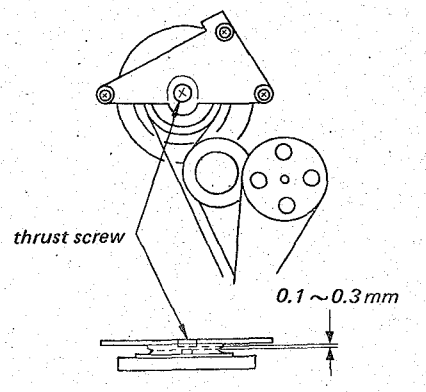
MUTING SWITCH (S9) POSITION ADJUSTMENT
– Stop Mode –

1. Loosen the adjustment screw and adjust the switch position so that the gap of the switch contacts becomes 1.5 ± 0.2 mm.



FLYWHEEL THRUST PLAY ADJUSTMENT

1. Carefully tighten the thrust screw until it touches the capstan shaft.
2. Loosen the thrust screw 1/5 to 3/5 turns so that the thrust play becomes 0.1 ~ 0.3 mm.
3. After the adjustment, secure the screw with a suitable locking compound.



3-2. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

PRECAUTION

1. Clean the following parts with an alcohol moistened swab:
   * record/playback head
   * erase head
   * capstans
   * pinch rollers
   * rubber belts
   * idlers
2. Demagnetize record/playback head with a head demagnetizer.
3. Do not use magnetized screwdriver for adjustments.
4. After the adjustments, apply a small amount of a locking compound to the parts adjusted.
5. The adjustments should be performed in the order arranged in this service manual.
6. The adjustments and the measurements should be performed for both L-CH and R-CH with rated power supply voltage unless otherwise specified.
7. The record and playback level adjustments should be carefully performed.
8. Tapes required:
   1) blank tapes (completely erased with bulk eraser)
      SONY CS-10 (HF)
      CS-20 (CrO_2) with two extra holes
      CS-30 (Fe-Cr)
   2) test tapes
      SONY P-4-A81 (6.3 kHz, −10 dB)
      P-4-L81 (333 Hz, 0 dB)
      WS-48 (3 kHz, 0 dB)
9. The switches and the controls should be set as follows unless otherwise specified.
   DOLBY NR switch: OFF
   LIMITER switch: OFF
   LINE control: MIN
   MIC control: MIN
   TAPE SELECT switch: NORMAL
10. Standard record:
    Supply the specified input signal level to the input jack and set the MIC or LINE control to obtain the specified output signal level. Set the LINE control to MIN when MIC input is used or set MIC control to MIN when LINE IN is used.

Normal Input Level

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

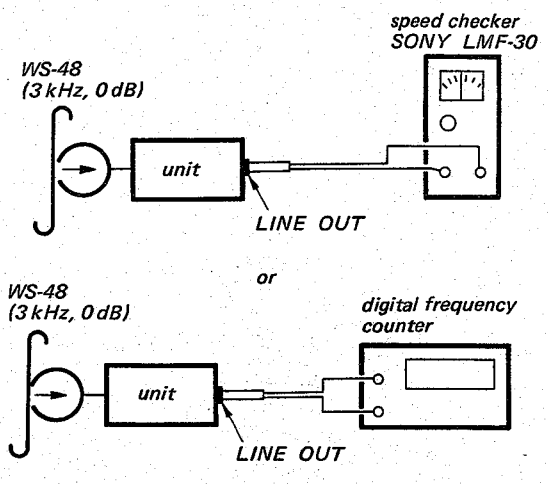
Normal Output Level

	LINE OUT	HEADPHONE
load impedance	100 kΩ	8 Ω
output level	0 dB (0.775 V)	−28 dB (31 mV)

1. Tape Speed Adjustment

Procedure:

Mode: Playback



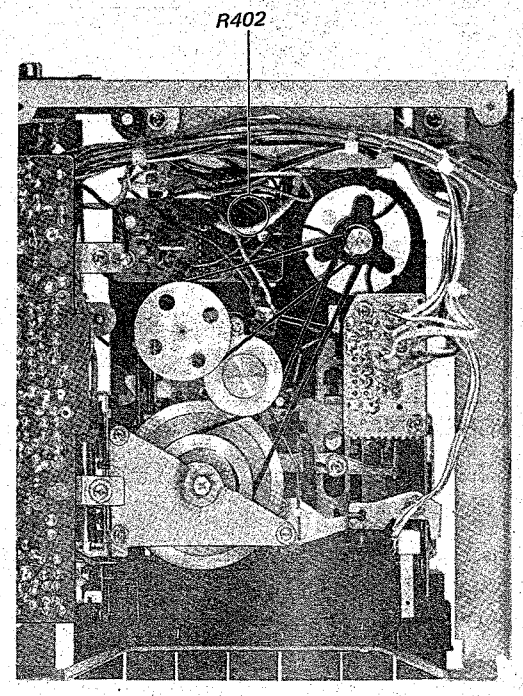
Adjust R402 to obtain 3 kHz checker or counter reading.

Specification:

speed checker	digital frequency counter
−1 ~ +1 %	2,970 ~ 3,030 Hz

Frequency difference between beginning and end of tape should be within 1 % (10 Hz).

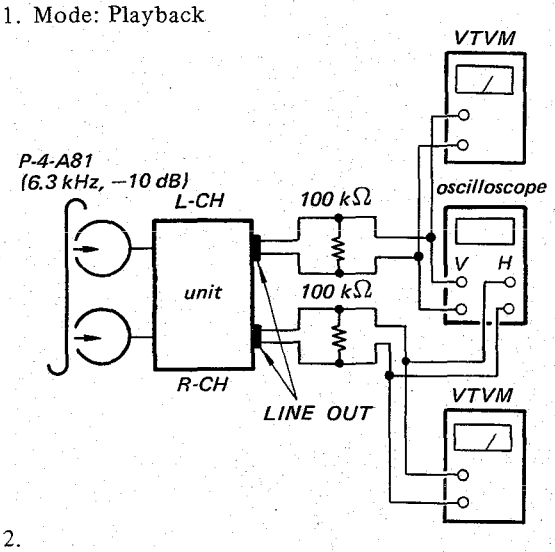
Adjustment Location:



2. Record/playback Head Azimuth Adjustment

Procedure:

1. Mode: Playback



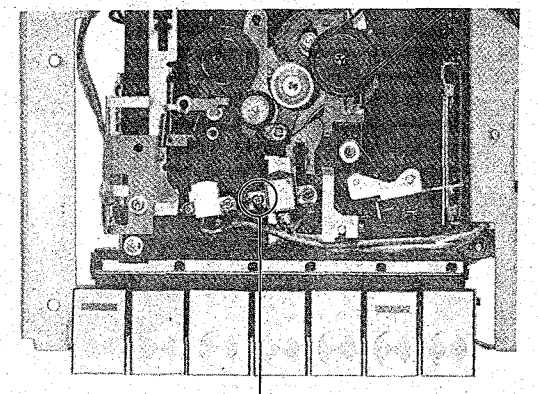
2.

Adjust	Oscilloscope patterns
azimuth adjustment screw to obtain the in-phase pattern around the highest VTVM readings.	[Allowance] in-phase ~ 90° out-of-phase (L) (R) (L) (R) Level drop should be within 0.5 dB.

3. Assure that LINE OUT level difference does not change when the mode is changed from playback to stop several times.

4. After adjustment, apply locking compound to the screw.

Adjustment Location:

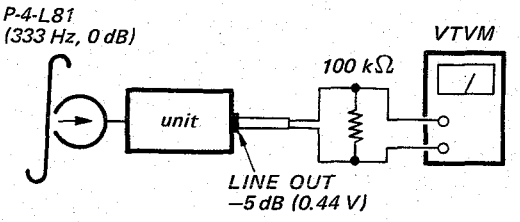


record/playback head azimuth adjustment screw

3. Playback Level Adjustment

Procedure:

1. Mode: Playback



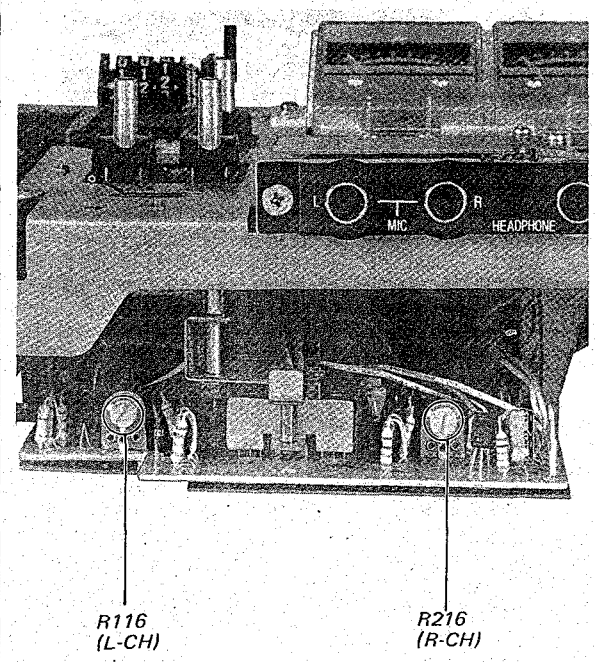
Adjust R116 (L-CH) and R216 (R-CH) to obtain −5 dB (0.44 V) VTVM reading.

2. Assure that the LINE OUT level does not change when the mode is changed from playback to stop several times.

Specification:

LINE OUT level: −5 dB ± 1 dB (0.39 ~ 0.49 V)
Level difference between channels: less than 1 dB

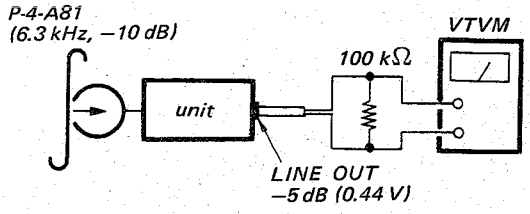
Adjustment Location:



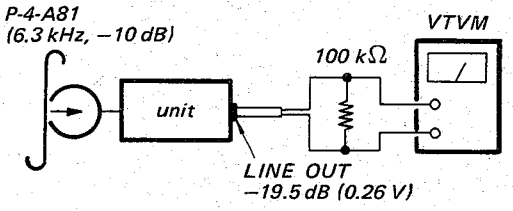
4. Playback Equalizer Adjustment

Procedure:

1. Mode: Playback



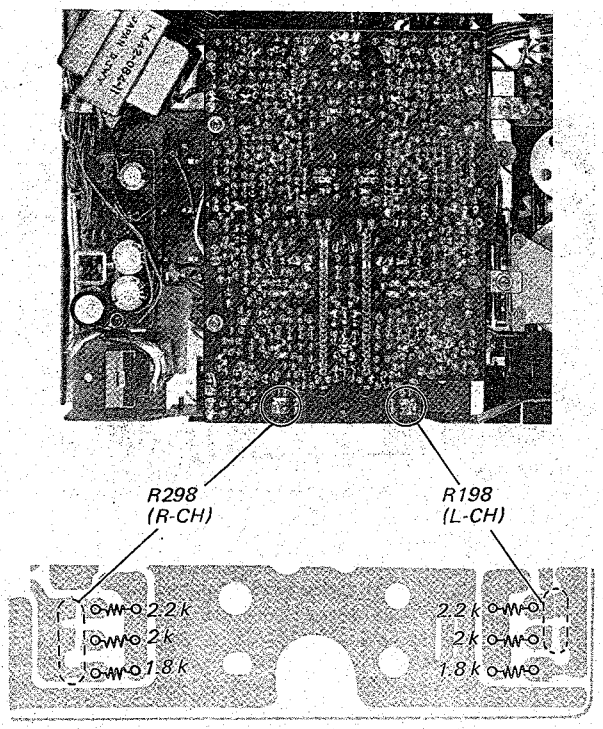
2. Mode: Playback



1) TAPE SELECT switch: CrO_2, Fe-Cr
Adjust R198 (L-CH) and R298 (R-CH) by bridging patterns to obtain the LINE OUT voltage 14.5 dB lower than that obtained in step 1 above.

Specification: −21.5 ~ −17.5 dB
(66 ~ 100 mV)

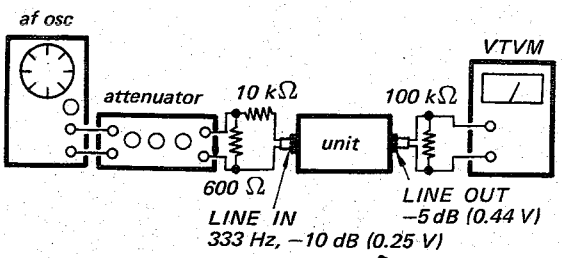
Adjustment Location:



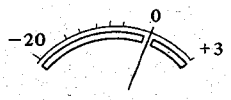
5. VU Meter Calibration

Procedure:

1. Mode: Standard record (See page 8.)



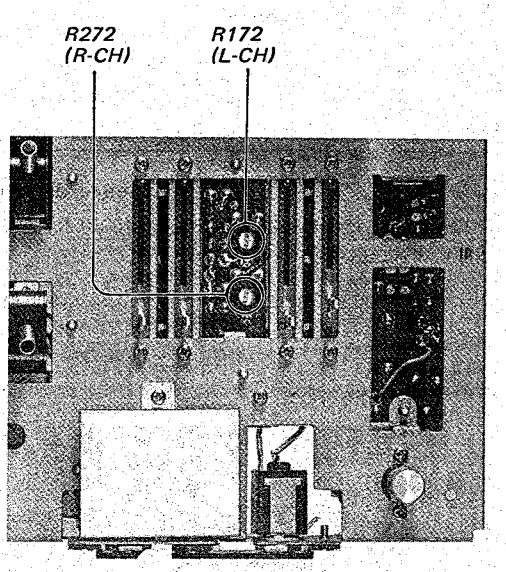
2.

Adjust	VU meter reading: 0 VU
R172 (L-CH) R272 (R-CH)	

Specification:

When the LINE IN level is adjusted to make 0 VU indication, VTVM reading should be −5.5 ~ −4.5 dB (0.42 ~ 0.46 V).

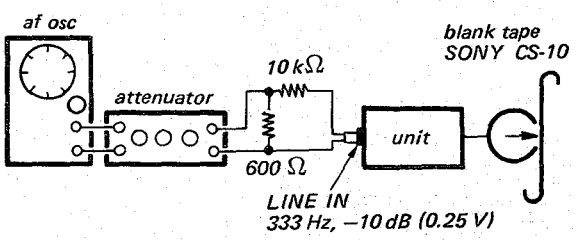
Adjustment Location:



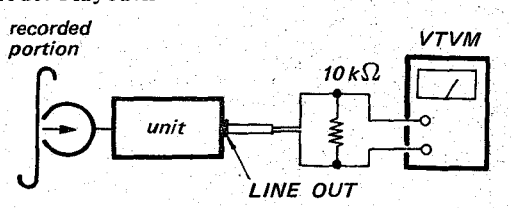
6. Record Level Adjustment

Procedure:

1. Mode: Standard record (See page 8 .)



2. Mode: Playback



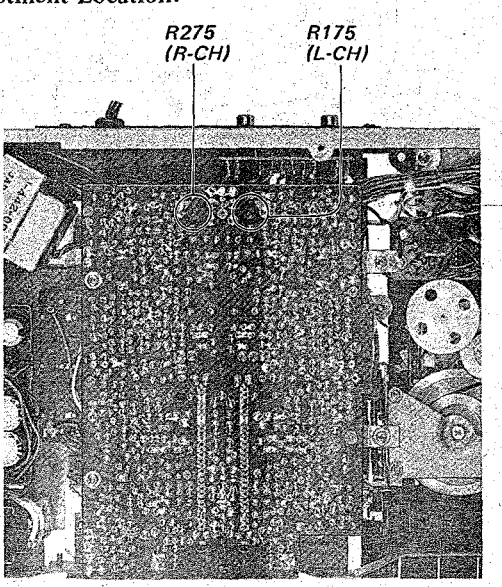
Adjust R175 (L-CH) and R275 (R-CH) to obtain −5 dB (0.44 V) VTVM reading.

3. Change the blank tape to CS-20 and CS-30, and perform the same record and playback procedure. Measure LINE OUT level.

Specification:

SONY tape	LINE OUT level
CS-10	−5 dB (0.44 V, reference)
CS-20	−7 ~ −4 dB (0.35 ~ 0.49 V)
CS-30	−6 ~ −4 dB (0.39 ~ 0.49 V)

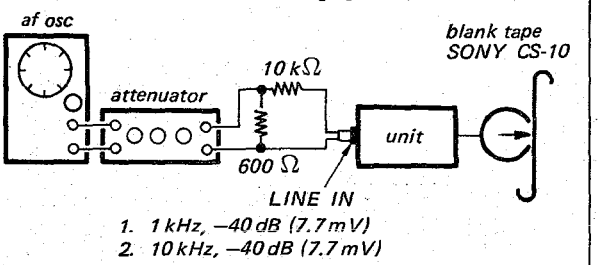
Adjustment Location:



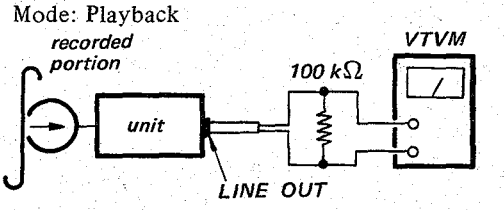
7. Record Bias Adjustment

Procedure:

1. Mode: Standard record (See page 8 .)



2. Mode: Playback

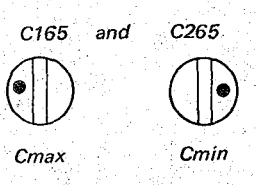


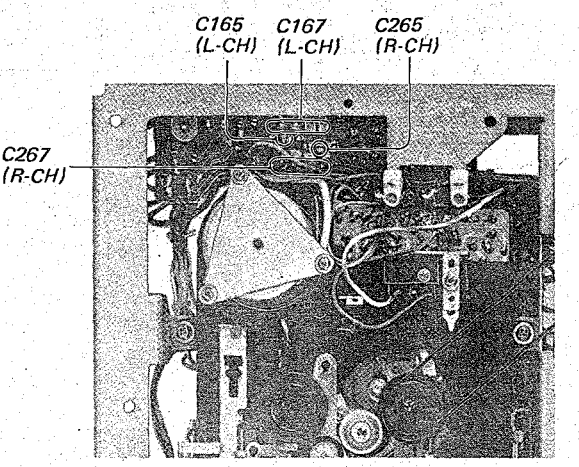
Adjust capacitances of C167 (L-CH) and C267 (R-CH) by connecting patterns to obtain 10 kHz-signal level 0.5 dB lower than that of 1 kHz. When the specification is not obtained, fine adjust with trimmers C165 (L-CH) and C265 (R-CH).

Note: When 10 kHz output level is too low, decrease capacitance.

Specification: 10 kHz signal level is 0.5 dB ± 0.5 dB lower than that of 1 kHz signal.

Adjustment Location:

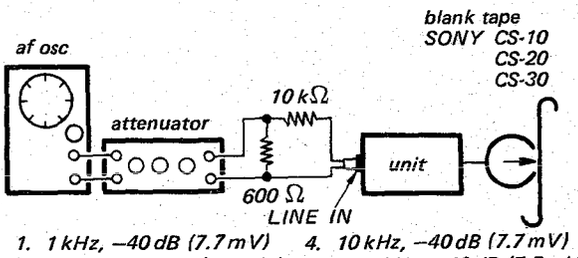




8. Overall Frequency Response Measurement

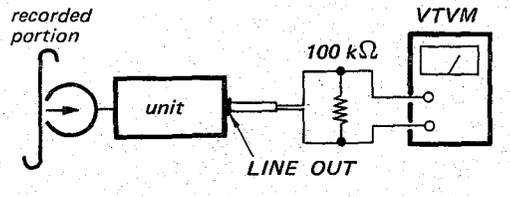
Procedure:

1. Mode: Standard record (See page 8.)
   TAPE SELECT switch: NORMAL (for CS-10)
   CrO_2 (for CS-20)
   Fe-Cr (for CS-30)



1. 1 kHz, −40 dB (7.7 mV)
2. 40 kHz, −40 dB (7.7 mV)
3. 7 kHz, −40 dB (7.7 mV)
4. 10 kHz, −40 dB (7.7 mV)
5. 12.5 kHz, −40 dB (7.7 mV)
6. 15 kHz, −40 dB (7.7 mV)

2. Mode: Playback



Measure LINE OUT level difference from that of 1 kHz output level.

Tape \ f	Level difference				
	40 Hz	7 kHz	10 kHz	12.5 kHz	15 kHz
CS-10	−2 ± 3 dB	± 3 dB	± 3 dB	$^{+3}_{-8}$ dB	
CS-20	−2 ± 3 dB	± 3 dB		± 3 dB	$^{+3}_{-10}$ dB
CS-30	−2 ± 3 dB	± 3 dB		± 3 dB	$^{+3}_{-10}$ dB

3. DOLBY NR switch: ON
   In the same manner, perform steps 1 and 2 with 7 kHz and 10 kHz signals, and measure LINE OUT level difference.

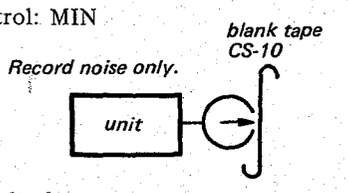
Tape \ f	Level difference	
	7 kHz	10 kHz
CS-10	± 4 dB	± 4 dB
CS-20	± 4 dB	± 4 dB
CS-30	± 4 dB	± 4 dB

4. When the above specified values are not obtained, adjust record bias slightly, and repeat the measurement.

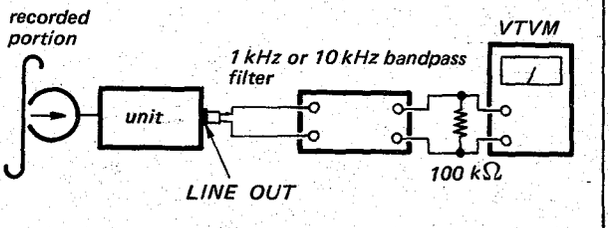
9. DOLBY Signal-to-Noise Ratio Measurement

Procedure:

1. Mode: Standard record (See page 8.)
   LINE control: MIN



2. Mode: Playback
   DOLBY NR switch: ON and OFF



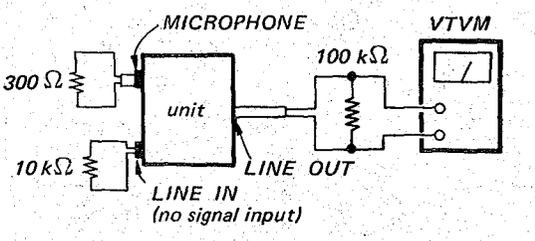
Measure level difference by switching the DOLBY NR switch ON and OFF.

bandpass filter	DOLBY signal-to-noise ratio improvement
1 kHz	more than 4 dB
10 kHz	more than 8 dB

10. Bias Leakage Measurement

Procedure:

1. Mode: Standard record (See page 8.)



Note: Be sure not to pick up hum noise at the dummy resistors and input jacks.
Do not use a shielded wire for VTVM connection.

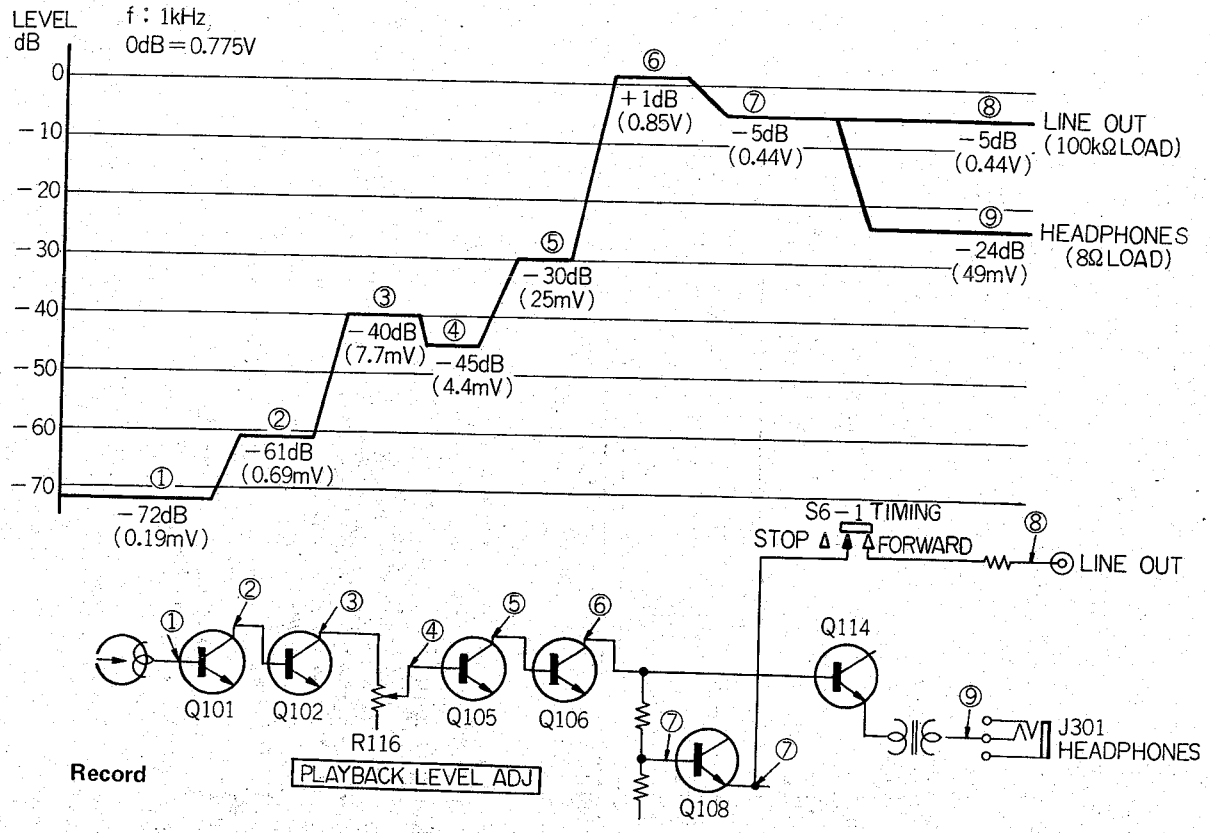
Measure the bias leakage level at LINE OUT.

Specification: −45 dB (4.4 mV) or lower

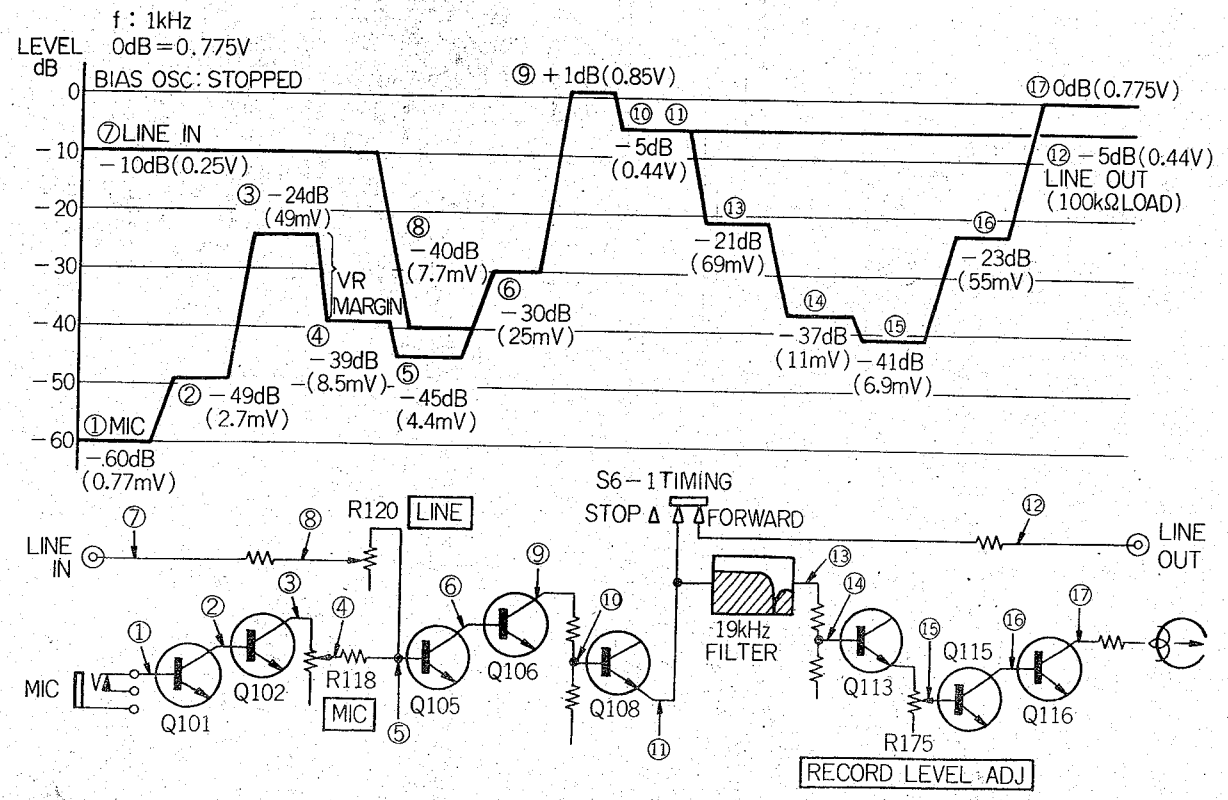
SECTION 4
DIAGRAMS

4-1. LEVEL DIAGRAMS

Playback



Record

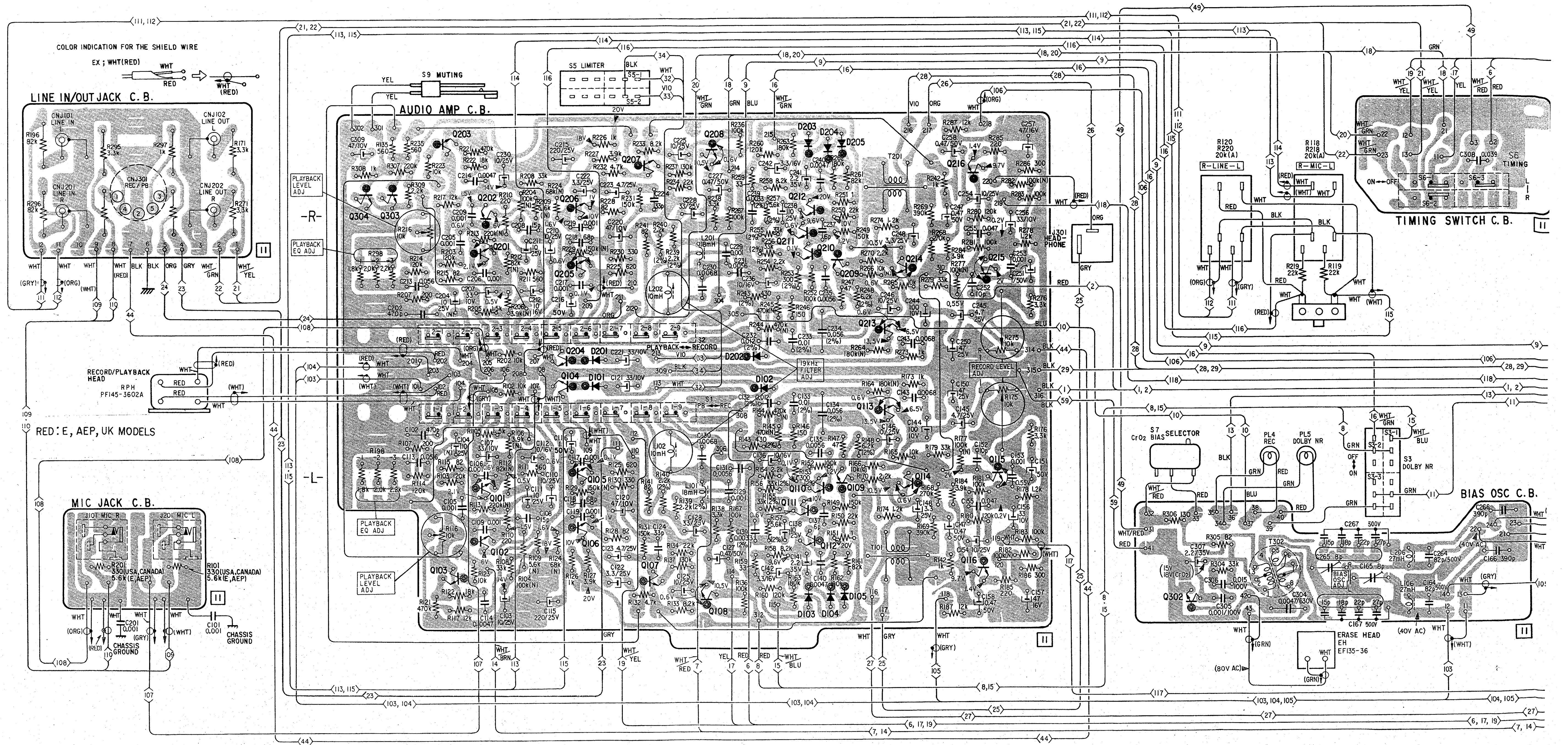


TC-136SD TC

4-2. MOUNTING DIAGRAM

– Conductor Side –

Q	Q304 Q303 Q203 Q202 Q201 Q206 Q204 Q205 Q207 Q208 Q212 Q211 Q210 Q209 Q213 Q214 Q216 Q215
IC	Q101 Q103 Q102 Q104 Q105 Q106 Q107 Q108 Q110 Q109 Q111 Q112 Q113 Q114 Q115 Q116 Q302
D	D201 D101 D202 D102 D203 D204 D205 D103 D104 D105



Q301, 401: 2SC1173

Q101, 201, 102, 202, 105, 205, 113, 213, 115, 215: 2SC1362
Q302: 2SC1384

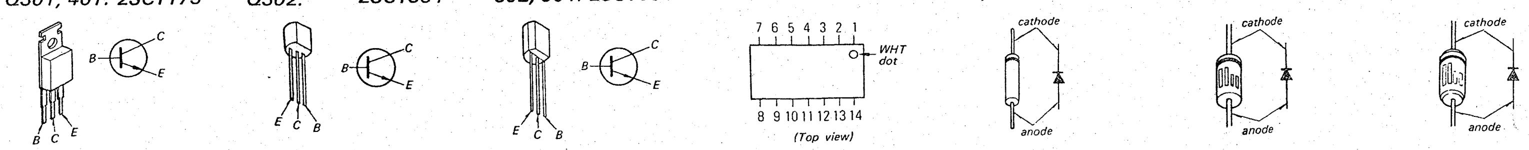
Q103, 203, 104, 204, 106, 206, 107, 207, 108, 208, 109, 209, 114, 214, 116, 216, 302, 304: 2SC1364

IC401: CX-032B

D101, 201, 105, 205: 1S1555
D106, 206: 1T22
D103, 203, 104, 204: 1T22A
D102, 202: 1T40

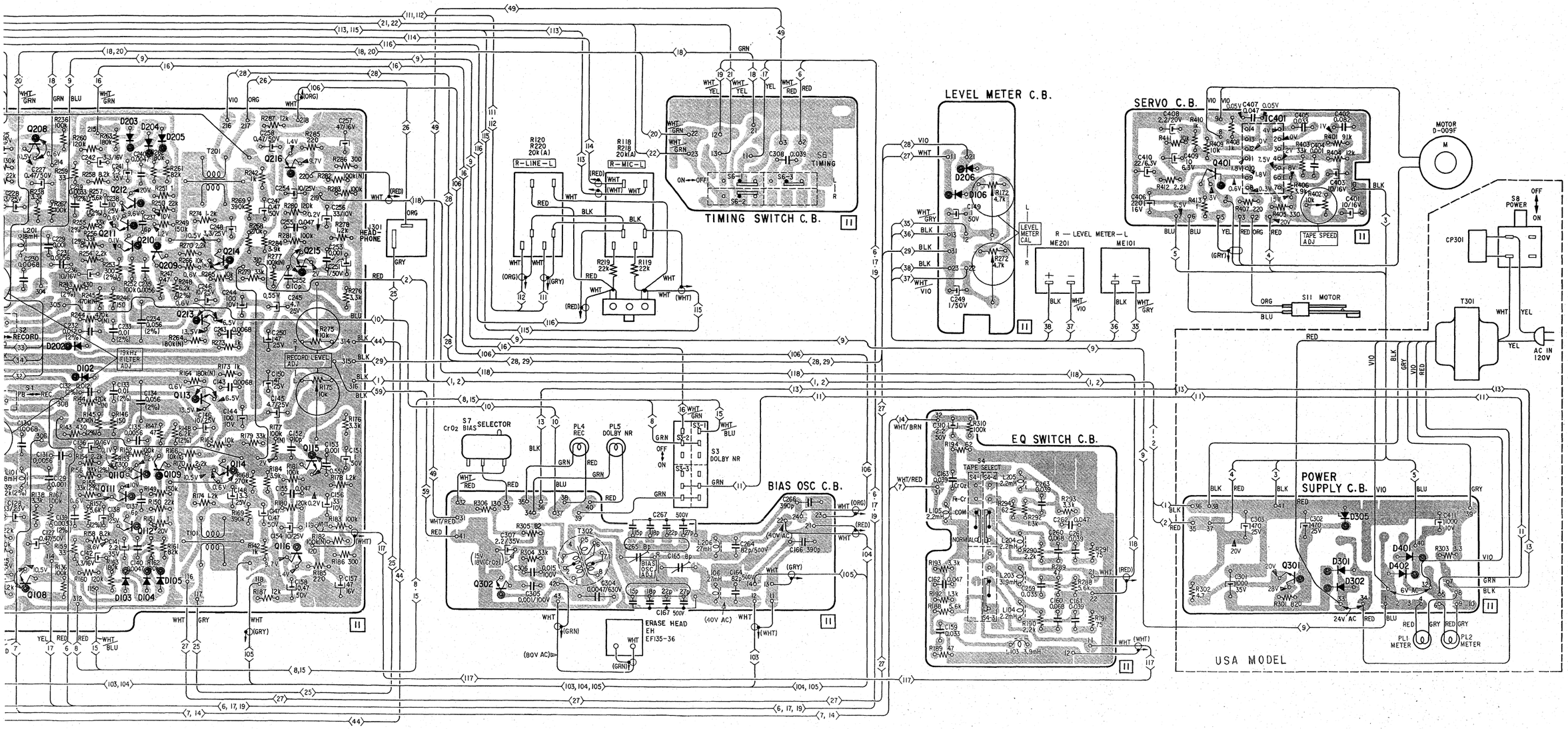
D301, 302, 305, 401, 402: SIB01-02

D305: EQA1-21R

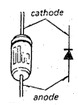


Q208 Q212 Q211 Q210 Q209 Q110 Q109 Q111 Q112 Q214 Q213 Q113 Q114 Q216 Q215 Q115 Q116 Q108 Q302 Q401 IC401 Q301 — Q / IC

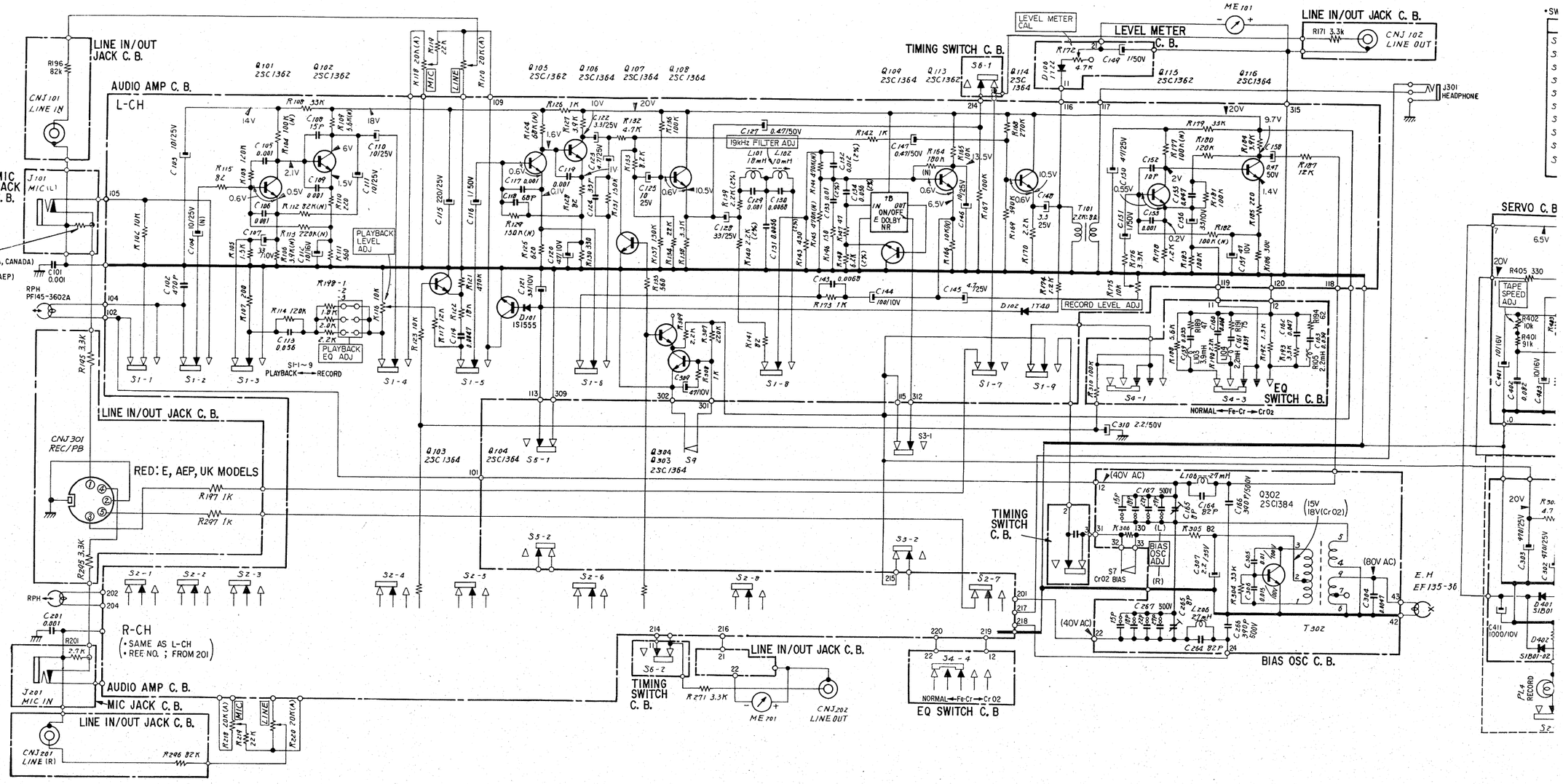
D202 D102 D203 D204 D205 D103 D104 D105 D206 D106 D305 D301 D302 D403 D401 D402 — D

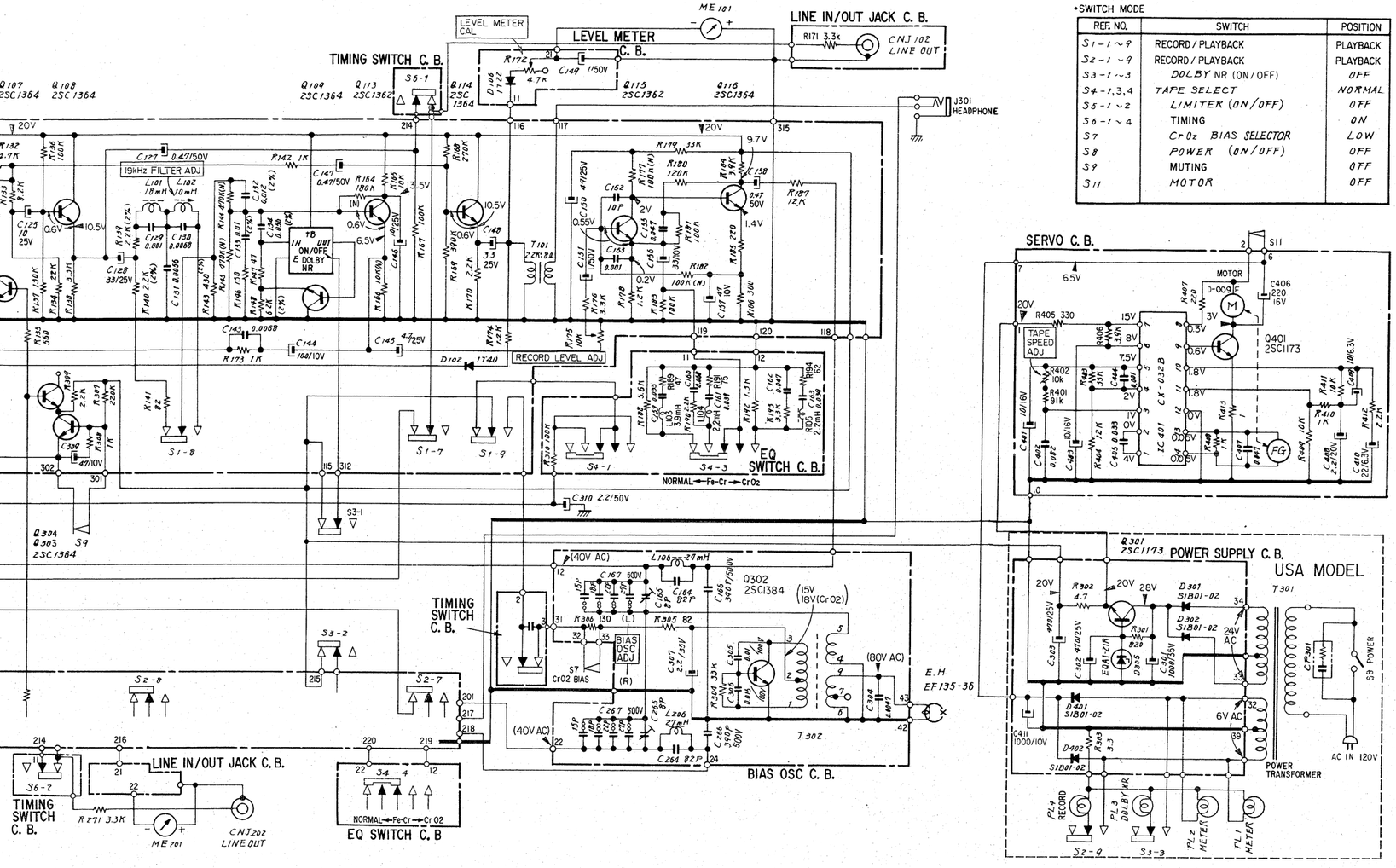


301-02 D305: EQA1-21R



4-3. SCHEMATIC DIAGRAM (1)

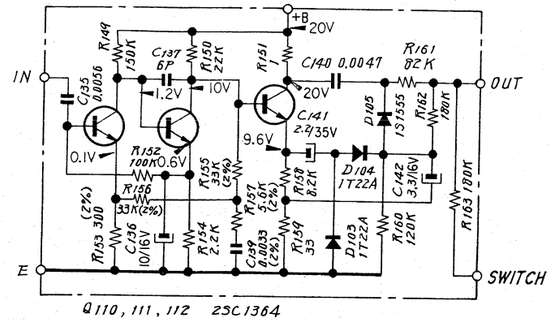




•SWITCH MODE

REF. NO.	SWITCH	POSITION
S1-1~9	RECORD / PLAYBACK	PLAYBACK
S2-1~9	RECORD / PLAYBACK	PLAYBACK
S3-1~3	DOLBY NR (ON/OFF)	OFF
S4-1,3,4	TAPE SELECT	NORMAL
S5-1~2	LIMITER (ON/OFF)	OFF
S6-1~4	TIMING	ON
S7	CrO2 BIAS SELECTOR	LOW
S8	POWER (ON/OFF)	OFF
S9	MUTING	OFF
S11	MOTOR	OFF

DOLBY SCHEMATIC DIAGRAM



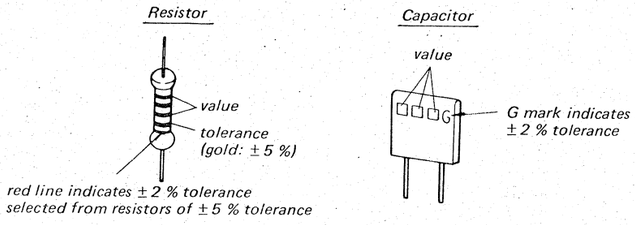
Note:

- All capacitors are in μF unless otherwise noted. p = μμF
- All resistors are in Ω, ¼W, unless otherwise noted. k = 1,000 M = 1,000k
- ⏚ indicates chassis ground.
- (N) indicates a low-noise resistor.
- C.B. : Circuit Board
- Voltages are DC with respect to chassis ground unless otherwise noted. Readings taken under no-signal conditions with a VOM (20kΩ/V). Readings in ( ) are in record mode. Voltage variations may be noted due to normal production tolerances.
- AC voltage readings on bias oscillator circuit taken with a VTVM.
- Circuit shown with red colour is for the E and AEP models.

Record and playback level adjustments should be carefully made. The levels must be as specified for correct DOLBY circuit operation.

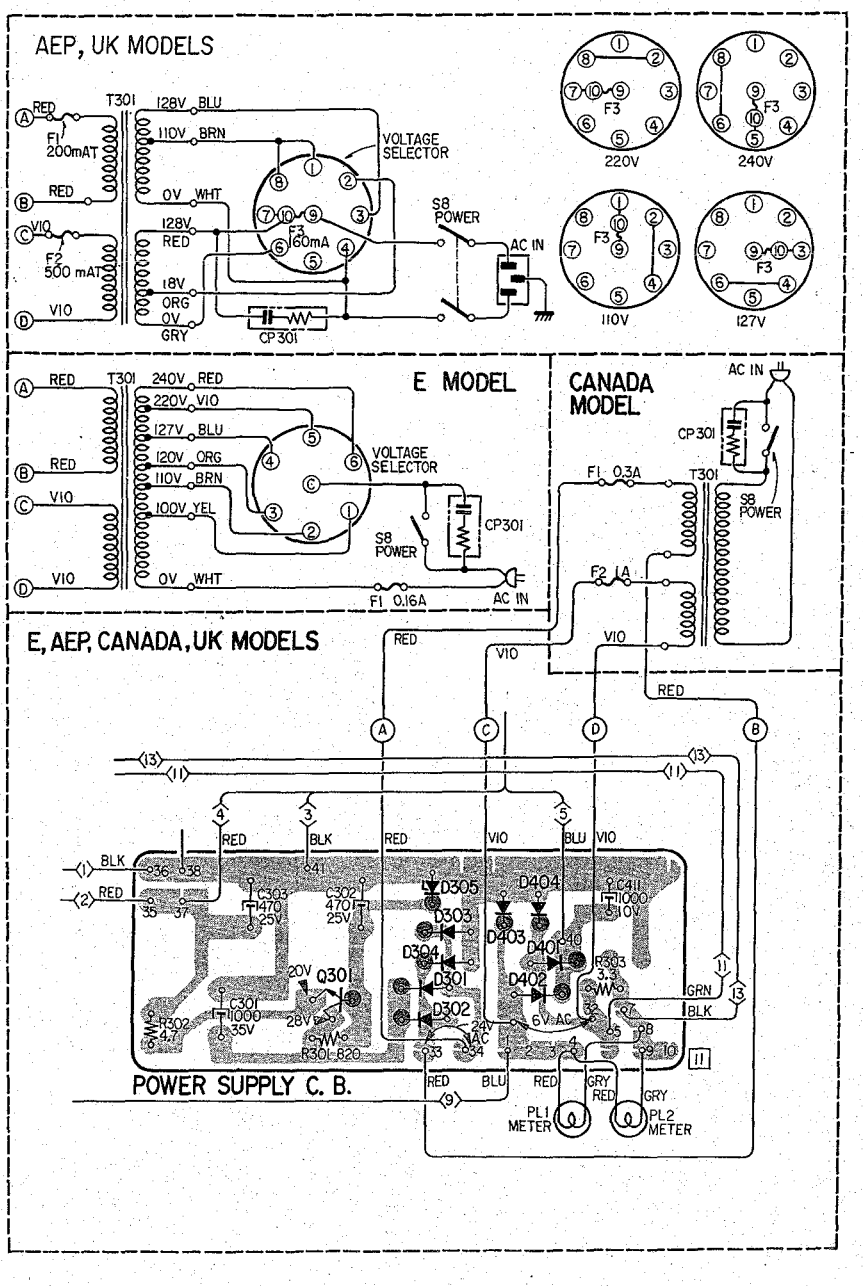
When replacing resistors and capacitors needing ± 2 % tolerance, use only those with red line or G mark, as DOLBY system requires precise circuit operation.

± 2 % Tolerance Identification

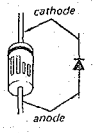


4-4. MOUNTING DIAGRAM (2) – Power Supply –

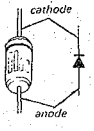
– Conductor Side –



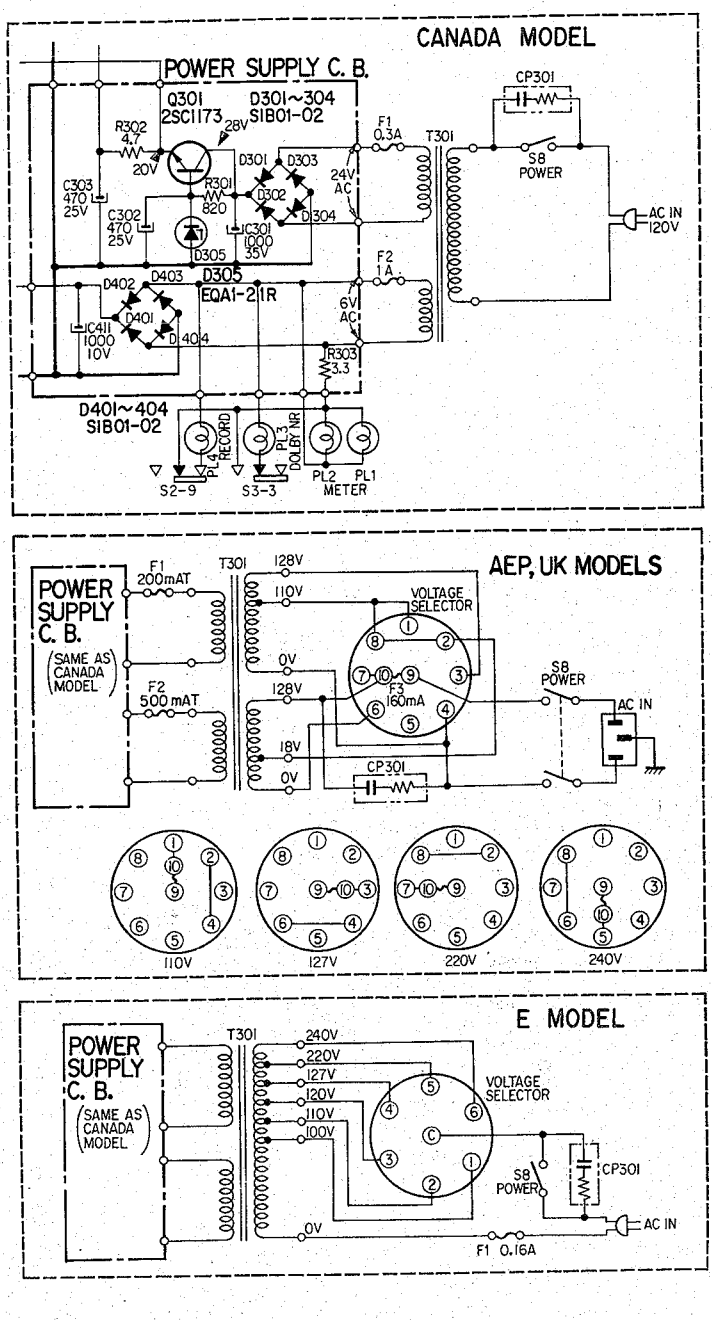
D301 ~ 304,
401 ~ 404: SIB01-02



D305: EQA1-21R

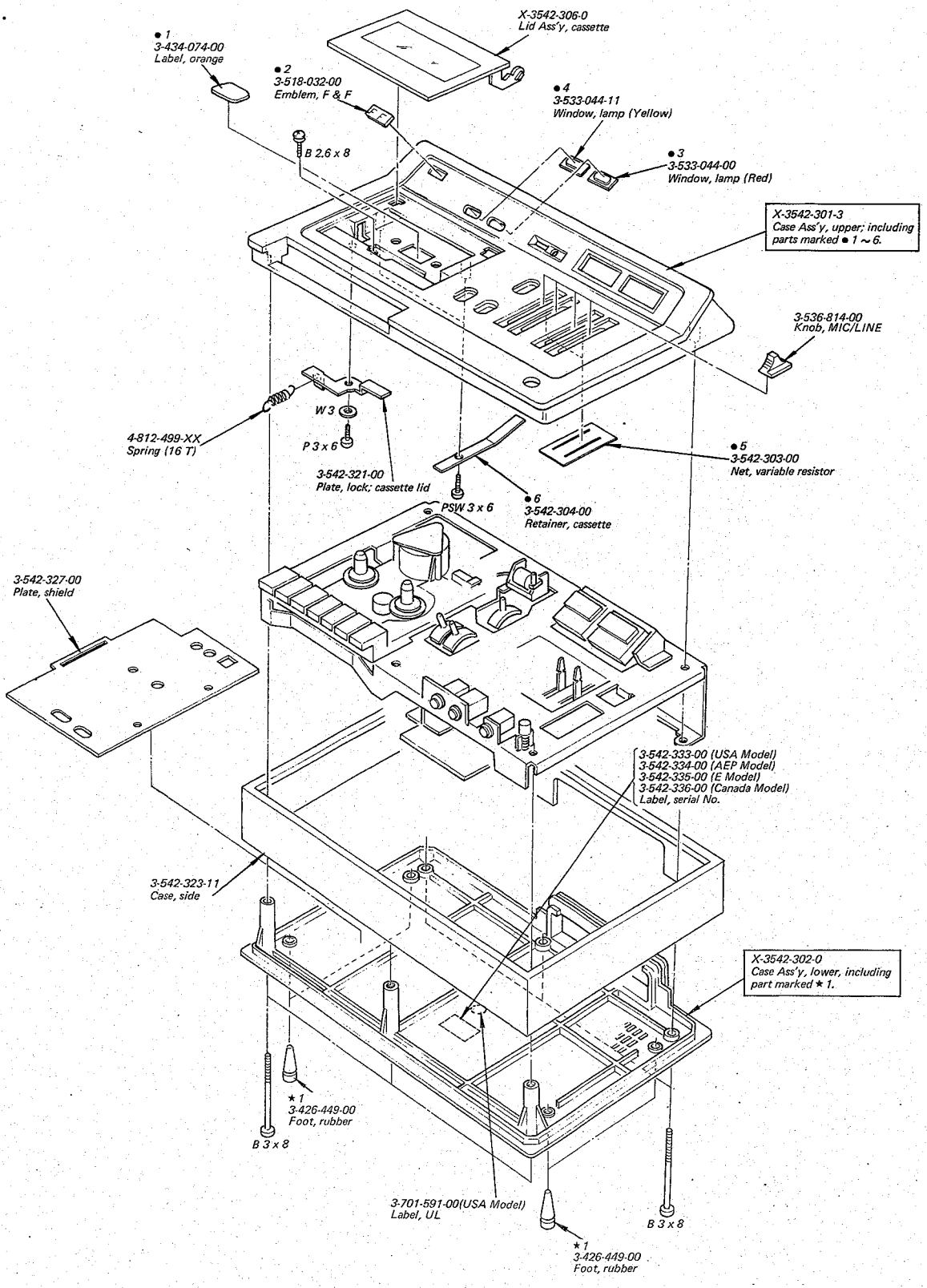


4-5. SCHEMATIC DIAGRAM (2) – Power Supply –



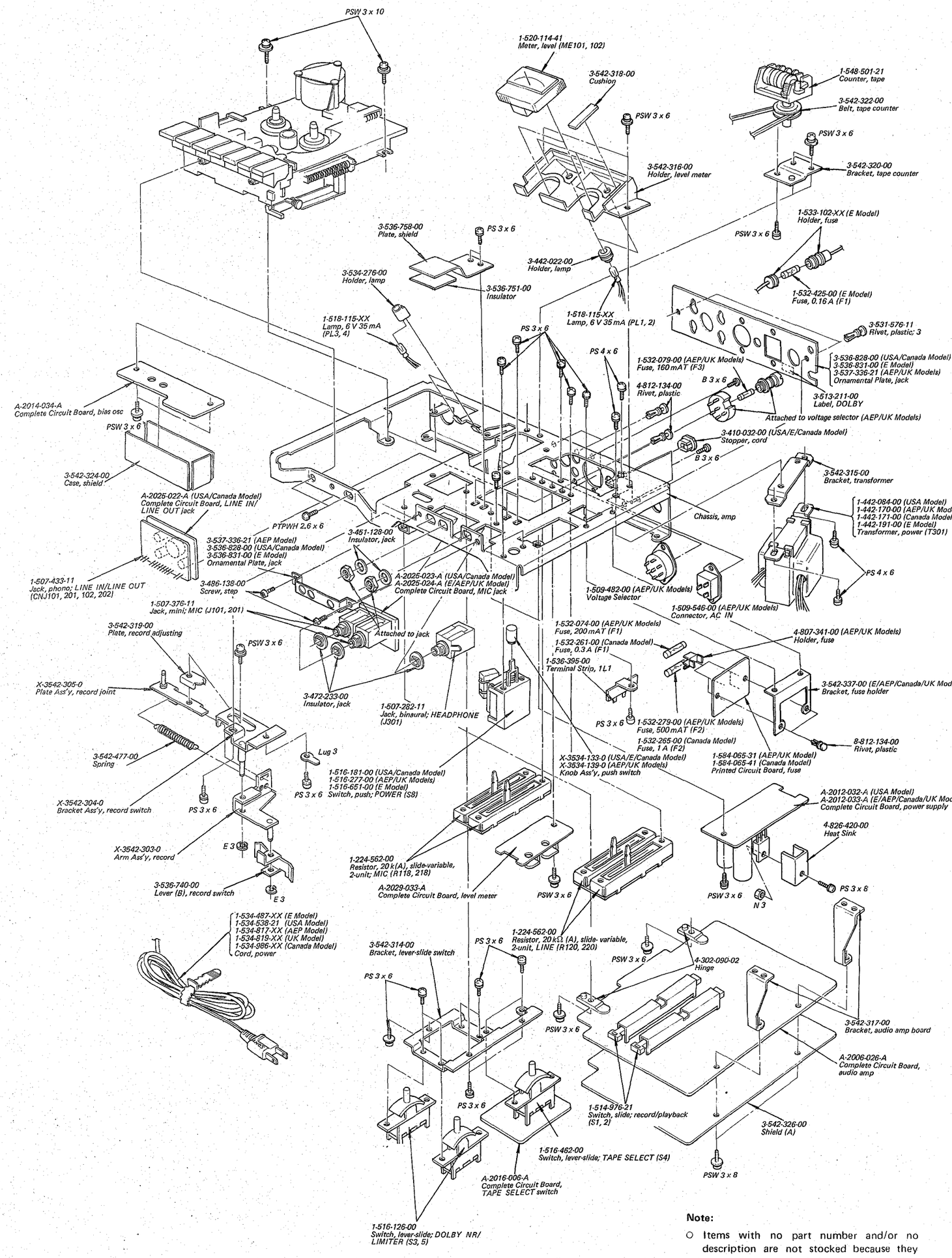
SECTION 5
EXPLODED VIEWS

5-1.



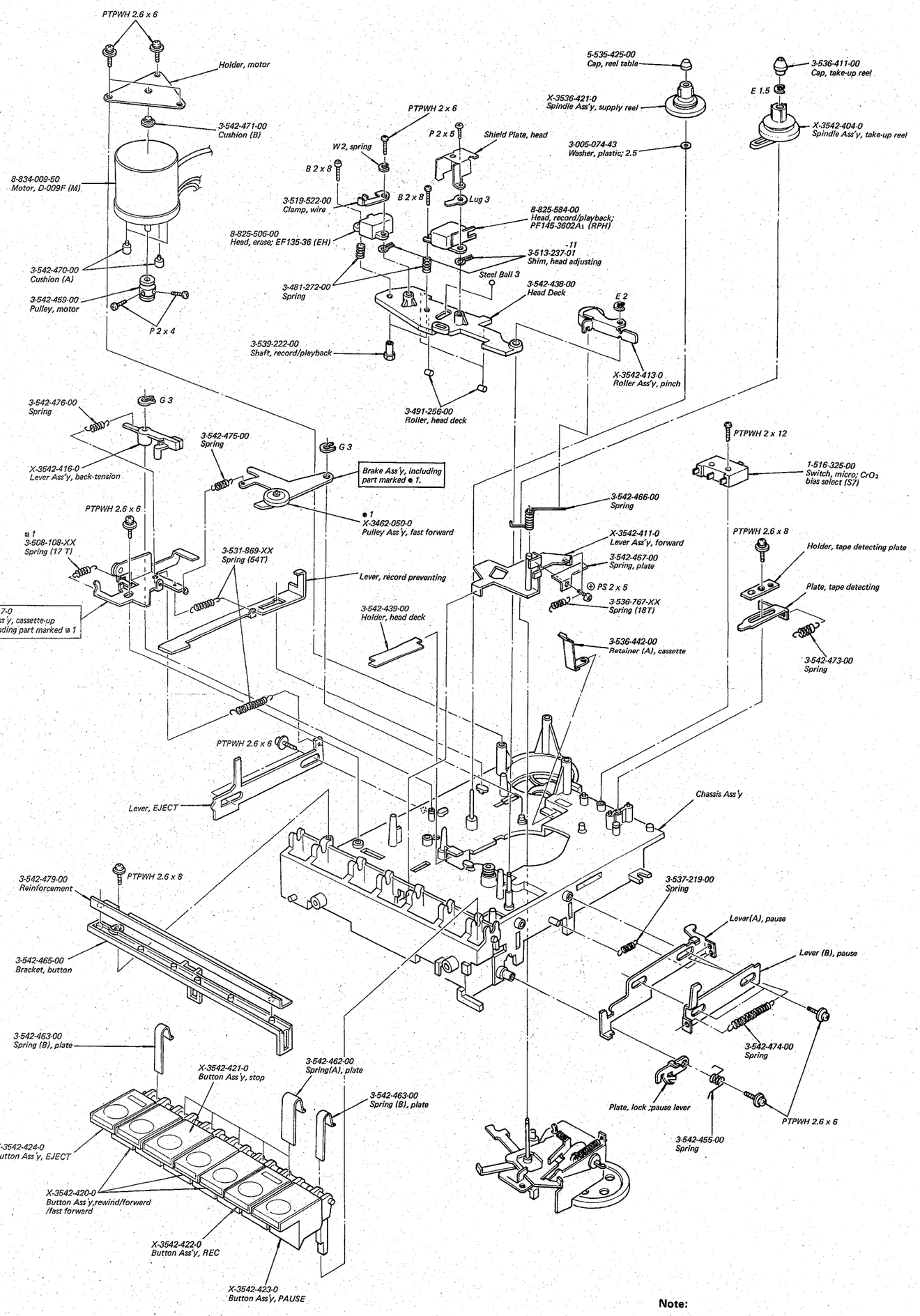
Note:

- 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



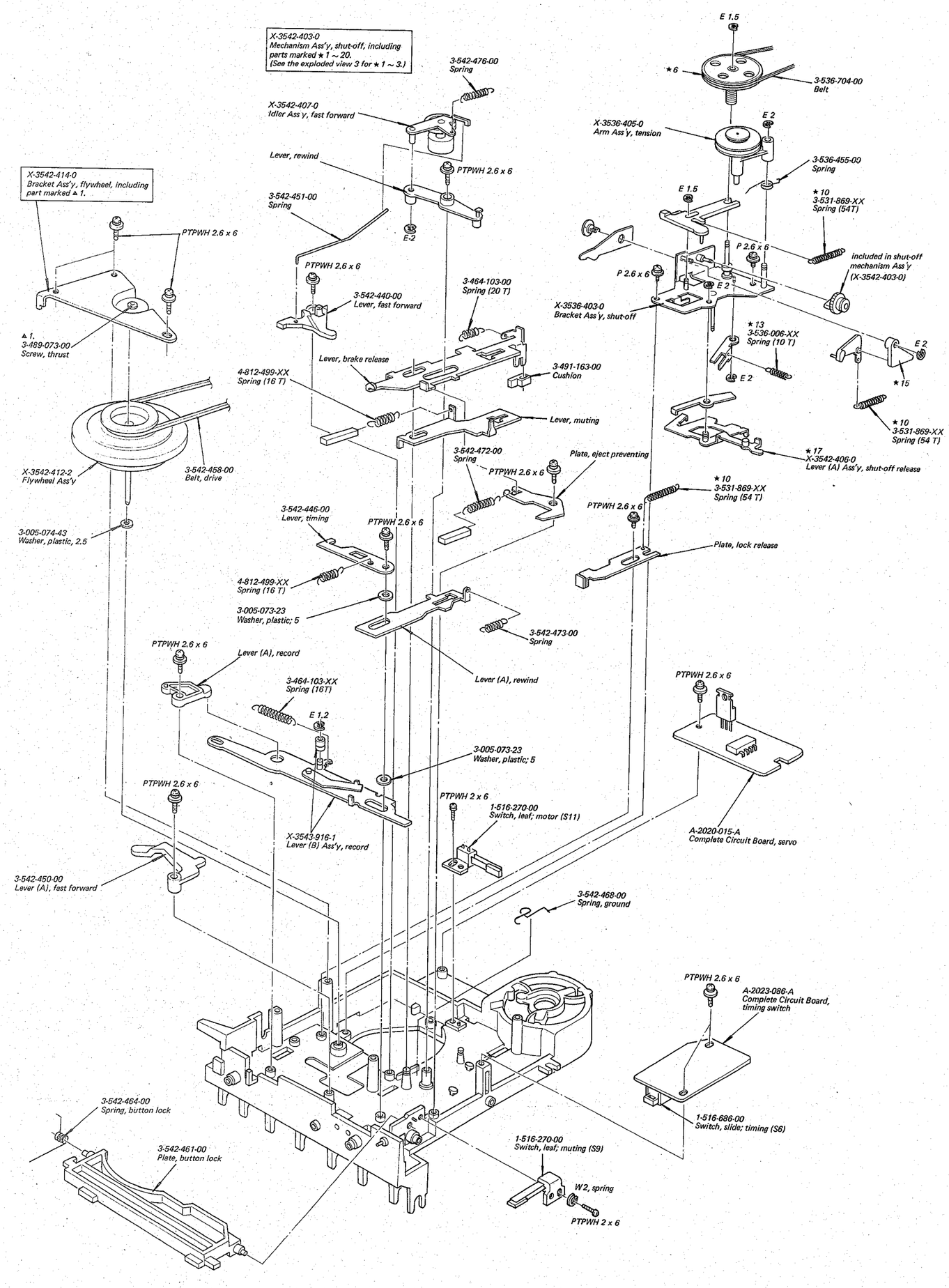
Note:

- 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
- (□□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
- (□□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
- (□□T) shows the number of coils in spring.

SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
		COMPLETE CIRCUIT BOARDS
	A-2006-026-A	Audio Amp
	A-2012-032-A	Power Supply (USA Model)
	A-2012-033-A	Power Supply (E/AEP/UK/Canada Model)
	A-2014-034-A	Bias Osc
	A-2016-006-A	TAPE SELECT switch
	A-2020-015-A	Servo
	A-2023-086-A	Timing Switch
	A-2025-022-A	LINE IN/LINE OUT Jack (USA/Canada Model)
	A-2025-023-A	MIC Jack (USA/Canada Model)
	A-2025-024-A	MIC Jack (E/AEP/UK Model)
	A-2029-033-A	Level Meter
		PRINTED CIRCUIT BOARDS
	1-584-065-31	Fuse (AEP/UK Model)
	1-584-065-41	Fuse (Canada Model)
		SEMICONDUCTORS
		Transistors
Q101, 201	2SC1361	
Q102 ~ 104, Q202 ~ 204	2SC1363	
Q105, 205	2SC1361	
Q106 ~ 108, Q206 ~ 208	2SC1363	
Q109, 209	2SC1363	
Q110 ~ 112, Q210 ~ 212	2SC1364	
Q113, 213	2SC1361	
Q114, 214	2SC1363	
Q115, 215	2SC1361	
Q116, 216	2SC1363	
Q301	2SC1173	
Q302	2SC1384	
Q303, 304	2SC1363	
		Diodes
D101, 201, D102, 202	1S1555	
D103, 203, D104, 204	1T22A	
D105, 205	1S1555	
D106, 206	1T22A	
D301, 302, D401, 402	SIB01-02 (USA Model)	
D301 ~ D304, D401 ~ D404	SIB01-02 (E/AEP/UK/Canada Model)	
D305	EQA01-21R	

Ref. No.	Part No.	Description
		COILS
L101, 201	1-407-507-21	18 mH microinductor
L102, 202	1-407-290-11	10 mH variable inductor
L103, 203	1-407-201-21	3.9 mH microinductor
L104, 204, L105, 205	1-407-198-21	2.2 mH microinductor
L106, 206	1-407-509-21	27 mH microinductor
		TRANSFORMERS
T101, 201	1-427-284-11	Output, headphone
T301	1-442-084-00	Power (USA Model)
	1-442-170-00	Power (AEP/UK Model)
	1-442-171-00	Power (Canada Model)
	1-442-191-00	Power (E Model)
T302	1-433-132-11	Bias Osc
		CAPACITORS

All capacitors are in μF and ceramic type unless otherwise indicated. 50 or less working volts are omitted except for electrolytic type. (elect = electrolytic, p = μμF)

Ref. No.	Part No.	Description
C101, 201	1-101-455-11	1000 p
C102, 202	1-102-114-11	470 p
C103, 203	1-121-398-11	10 25 V elect
C104, 204	1-121-748-11	10 25 V elect
C105, 205, C106, 206	1-102-074-11	1000 p
C107, 207	1-121-402-11	33 10 V elect
C108, 208	1-102-956-11	15 p
C109, 209	1-102-074-11	1000 p
C110, 210, C111, 211	1-121-398-11	10 25 V elect
C112, 212	1-121-651-11	10 16 V elect
C113, 213	1-105-522-12	0.056 mylar
C114, 214	1-105-509-12	0.0047 mylar
C115, 215	1-121-422-11	220 25 V elect
C116, 216	1-121-391-11	1 50 V elect
C117, 217	1-102-074-11	1000 p
C118, 218	1-102-889-11	68 p
C119, 219	1-102-074-11	1000 p
C120, 220	1-121-352-11	47 10 V elect
C121, 221	1-121-402-11	33 10 V elect
C122, 222	1-121-392-11	3.3 25 V elect
C123, 223	1-121-395-11	4.7 25 V elect
C124, 224	1-102-969-11	33 p
C125, 225	1-121-398-11	10 25 V elect
C126, 226		----------
C127, 227	1-121-726-11	0.47 50 V elect
C128, 228	1-121-404-11	33 25 V elect
C129, 229	1-105-501-12	0.001 mylar
C130, 230	1-105-511-12	0.0068 mylar
C131, 231	1-105-510-12	0.0056 mylar
C132, 232	1-129-896-11	0.012 100 V plastic
C133, 233	1-129-701-11	0.01 100 V plastic
C134, 234	1-129-899-11	0.056 100 V plastic
C135, 235	1-102-126-11	5600 p
C136, 236	1-121-651-11	10 16 V elect
C137, 237	1-102-943-11	6 p
C138, 238		----------
C139, 239	1-129-794-11	0.0033 100 V plastic
C140, 240	1-102-125-11	4700 p
C141, 241	1-121-986-11	2.2 50 V elect
C142, 242	1-131-197-11	3.3 16 V solid tantalum
C143, 243	1-105-511-12	0.0068 mylar
C144, 244	1-121-141-11	100 10 V elect
C145, 245	1-121-395-11	4.7 25 V elect
C146, 246	1-121-398-11	10 25 V elect
C147, 247	1-121-726-11	0.47 50 V elect
C148, 248	1-121-392-11	3.3 25 V elect
C149, 249	1-121-391-11	1 50 V elect
C150, 250	1-121-410-11	47 25 V elect
C151, 251	1-121-391-11	1 50 V elect
C152, 252	1-102-954-11	10 p
C153, 253	1-102-074-11	1000 p
C154, 254	1-121-398-11	10 25 V elect
C155, 255	1-105-521-12	0.047 mylar
C156, 256	1-121-402-11	33 10 V elect
C157, 257	1-121-352-11	47 10 V elect
C158, 258	1-121-726-11	0.47 50 V elect
C159, 259	1-105-519-12	0.033 mylar
C160, 260	1-105-523-12	0.068 mylar
C161, 261	1-105-520-12	0.039 mylar
C162, 262	1-105-521-12	0.047 mylar
C163, 263	1-105-520-12	0.039 mylar
C164, 264	1-107-037-11	82 p 500 V silvered mica
C165, 265	1-141-140-11	1 ~ 8 p trimmer
C166, 266	1-102-113-11	390 p
C167, 267	1-107-253-11	15 + 18 + 22 + 27 p 500 V silvered mica
C301	1-121-388-11	1000 10 V elect
C302, 303	1-121-733-11	470 25 V elect
C304	1-129-710-11	0.0047 630 V plastic
C305	1-105-713-12	0.01 100 V mylar
C306	1-105-715-12	0.015 100 V mylar
C307	1-131-217-11	2.2 35 V solid tantalum
C308		----------
C309	1-121-352-11	47 10 V elect
C310	1-121-450-11	2.2 50 V elect
C401	1-121-651-11	10 16 V elect
C402	1-108-550-12	0.082 mylar
C403	1-121-651-11	10 16 V elect
C404	1-108-227-12	0.001 mylar
C405	1-108-591-12	0.033 mylar
C406	1-121-420-11	220 16 V elect
C407	1-108-595-12	0.047 mylar
C408	1-131-196-21	2.2 20 V solid tantalum
C409	1-131-228-21	10 6.3 V solid tantalum
C410	1-131-190-21	22 6.3 V solid tantalum
C411	1-121-736-11	1000 10 V elect
		RESISTORS

All resistors are in Ω. ¼ W ± 5 %, carbon type resistors (except special type) are omitted, check schematic diagram for the resistance values. k = 1000, M = 1000 k.

Ref. No.	Part No.	Description
R116, 216	1-221-383-11	10 k
R118, 218, R120, 220	1-224-562-00	20 k (A), slide-variable, 2-unit; MIC, LINE
R139, 239, R140, 240	1-210-862-11	2.2 k ± 2 %
R143, 243	1-210-873-11	430 ± 2 %
R148, 248	1-210-853-11	6.2 k ± 2 %

Ref. No.	Part No.	Description		
R153, 253	1-210-850-11	300	±2%	
R155, 255, R156, 256	1-210-855-11	33 k	±2%	
R157, 257	1-210-852-11	5.6 k	±2%	
R172, 272	1-224-215-11	4.7 k		
R175, 275	1-222-774-11	10 k		adjustable

SWITCHES

S1, 2	1-514-976-21	Slide; record/playback
S3	1-516-126-00	Lever-slide; DOLBY NR
S4	1-516-462-00	Lever-slide; TAPE SELECT
S5	1-516-126-00	Lever-slide; LIMITER
S6	1-516-686-00	Slide; timing
S7	1-516-325-00	Micro; CrO_2 bias select
S8	1-516-181-00	Push; POWER (USA/Canada Model)
	1-516-277-00	Push; POWER (AEP/UK Model)
	1-516-651-00	Push; POWER (E Model)
S9, 11	1-516-270-00	Leaf; muting, motor

JACKS

J101, 201	1-507-376-11	Mini; MIC
J301	1-507-282-11	Binaural; HEADPHONE
CNJ101, 201, CNJ102, 202	1-507-433-11	Phono; LINE IN/LINE OUT
CNJ301	1-509-549-11	Connector, REC/PB (E/AEP/UK Model)

Ref. No.	Part No.	Description	
		FUSES	
F1	1-532-074-00	200 mAT	(AEP/UK Model)
	1-532-261-00	0.3 A	(Canada Model)
	1-532-425-00	0.16 A	(E Model)
F2	1-532-279-00	500 mAT	(AEP/UK Model)
	1-532-265-00	1 A	(Canada Model)
F3	1-532-079-00	160 mAT	(AEP/UK Model)
		MISCELLANEOUS	
CP301	1-231-057-31	Encapsulated Component, C-R	
EH	8-825-506-00	Head, erase; EF135-36	
M	8-834-009-50	Motor, D-009F	
ME101, 102	1-520-114-41	Meter, level	
PL1, 2	1-518-115-XX	Lamp, 6 V 35 mA	
PL3, 4	1-518-115-XX	Lamp, 6 V 35 mA	
RPH	8-825-584-00	Head, record/playback; PF145-3602A1	
	1-509-427-00	Voltage Selector	(E Model)
	1-509-482-00	Voltage Selector	(AEP/UK Model)
	1-509-546-00	Connector, AC IN	(AEP/UK Model)
	1-533-102-XX	Holder, fuse	(E Model)
	1-534-487-XX	Cord, power	(E Model)
	1-534-538-21	Cord, power	(USA Model)
	1-534-817-XX	Cord, power	(AEP Model)
	1-534-819-XX	Cord, power	(UK Model)
	1-534-986-XX	Cord, power	(Canada Model)
	1-536-395-00	Terminal Strip, 1L1	

ACCESSORIES

Part No.	Description	Part No.	Description
X-3701-018-2	Tip Ass'y, head cleaning (AEP/E/Canada/UK Model)	3-780-691-11	Manual, instruction (AEP/E/Canada Model)
1-526-565-00	Adaptor, AC plug	3-780-691-21	Manual, instruction (USA Model)
1-534-049-00	Cord, connection; RK-74	3-780-691-61	Manual, instruction (UK Model)
3-533-397-00	Bag, plastic	3-793-044-21	Label, important (USA Model)
3-542-338-00	Carton (USA Model)	3-793-105-08	List, warranty station (Canada Model)
3-542-340-00	Carton (Canada/E/AEP Model)		
3-542-342-00	Cushion	3-793-106-03	Card, guarantee (Canada Model)
3-793-711-11	Card, caution	3-793-359-12	Card, voltage (E Model)
3-793-749-11	Card, DOLBY (AEP Model)	3-793-408-11	Leaflet
8-890-060-00	Tape, C-60 (AEP/E/Canada Model)	3-793-506-11	Label, voltage (AEP Model)
8-890-062-00	Tape, C-60 (USA Model)	3-793-010-20	Leaflet, tapetalk

TC-136SD

SECTION 7
HARDWARE

Part No.	*Description*
	SCREWS
All screws are Phillips (cross recess head) type unless otherwise indicated. (–): slotted head	
7-621-255-15	P 2 x 3
7-627-505-69	P 2 x 4
7-682-527-04	B 2 x 8
7-682-548-05	B 3 x 8
7-682-647-01	PS 3 x 6
7-682-648-01	PS 3 x 8
7-682-660-01	PS 4 x 6
7-682-947-01	PSW 3 x 6
7-682-948-01	PSW 3 x 8
7-682-949-01	PSW 3 x 10
7-685-133-21	PTP 2.6 x 6
7-685-145-01	P 3 x 6
7-687-204-21	PTPWH 2 x 6
7-687-205-21	PTPWH 2 x 8
7-687-207-21	PTPWH 2 x 10
7-687-208-21	PTPWH 2 x 12
7-687-233-21	PTPWH 2.6 x 6
7-687-234-21	PTPWH 2.6 x 8
	RETAINING RINGS
7-624-101-01	E 1.2
7-624-102-01	E 1.5
7-624-103-01	E 2
7-624-104-01	E 2
7-624-106-01	E 3
7-624-171-51	G 3
	MISCELLANEOUS
7-623-108-15	Washer 3
7-623-205-05	Washer 2, spring
7-623-508-01	Lug 3
7-684-013-01	Nut 3

When ordering replacement parts, use PART NUMBERS listed in Parts List or shown in EXPLODED VIEW. Parts List reference numbers should not be used.

Hardware Nomenclature

P – Pan Head Screw

PS – Pan Head Screw with Spring Washer

K – Flat Countersunk Head Screw

B – Binding Head Screw

RK – Oval Countersunk Head Screw

T – Truss Head Screw

R – Round Head Screw

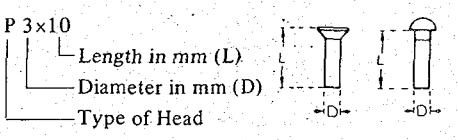
F – Flat Fillister Head Screw

SC – Set Screw

E – Retaining Ring (E Washer)

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

– Example –



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