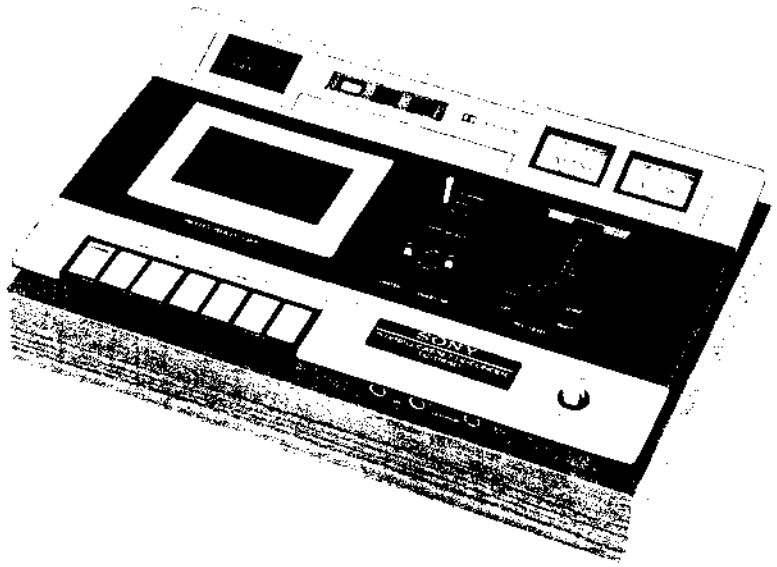
TC-118SD

AEP Model
UK Model
E Model



STEREO CASSETTE-CORDER

SPECIFICATIONS

Power Requirements: 110–120, 220–240 V ac, 50/60 Hz (E model)
240 V ac, 50 Hz (UK model)
220 V ac, 50 Hz (AEP model)

Power Consumption: 7 W

Tape Speed: 4.8 cm/s (1 7/8 ips)

Fast Forward and Rewind Time: Approx. 90 seconds (by C-60)

Recording System: 4-track 2-channel stereo

Record Bias Frequency: 80 kHz

Signal-to-Noise Ratio: DOLBY* NR OFF
With Ferri-Chrome Cassette
46 dB at peak level (NAB)
40 dB (DIN)
With chromium dioxide cassette
46 dB at peak level (NAB)

Total Harmonic Distortion: 3%

Frequency Response: DOLBY* NR OFF
With Ferri-Chrome Cassette and chromium dioxide cassette
40–13,000 Hz (NAB)
63–11,000 Hz (DIN)
With regular cassette
40–10,000 Hz (NAB)
63–8,500 Hz (DIN)

Wow and Flutter: 0.18% WRMS (NAB)

Inputs: MIC (phone jack) 2
sensitivity 0.2 mV (–72 dB)
for low-impedance microphone
LINE IN (phono jack) 2
sensitivity 0.06 V (–22 dB)
input impedance 100 kΩ
LINE OUT (phono jack) 2
output level 0.435 V (–5 dB)
at load impedance 100 kΩ
suitable load impedance more than 10 kΩ
HEADPHONES (binaural jack) 1
suitable load impedance 8Ω

Record/playback Jack: Input impedance less than 10 kΩ
Output impedance less than 10 kΩ

Dimensions: Approx. 362 (w) x 105 (h) x 238 (d) mm
14 1/4 (w) x 4 1/8 (h) x 9 3/8 (d) inches
Including projecting parts and controls

Weight: Approx. 3.6 kg, 7 lb 15 oz

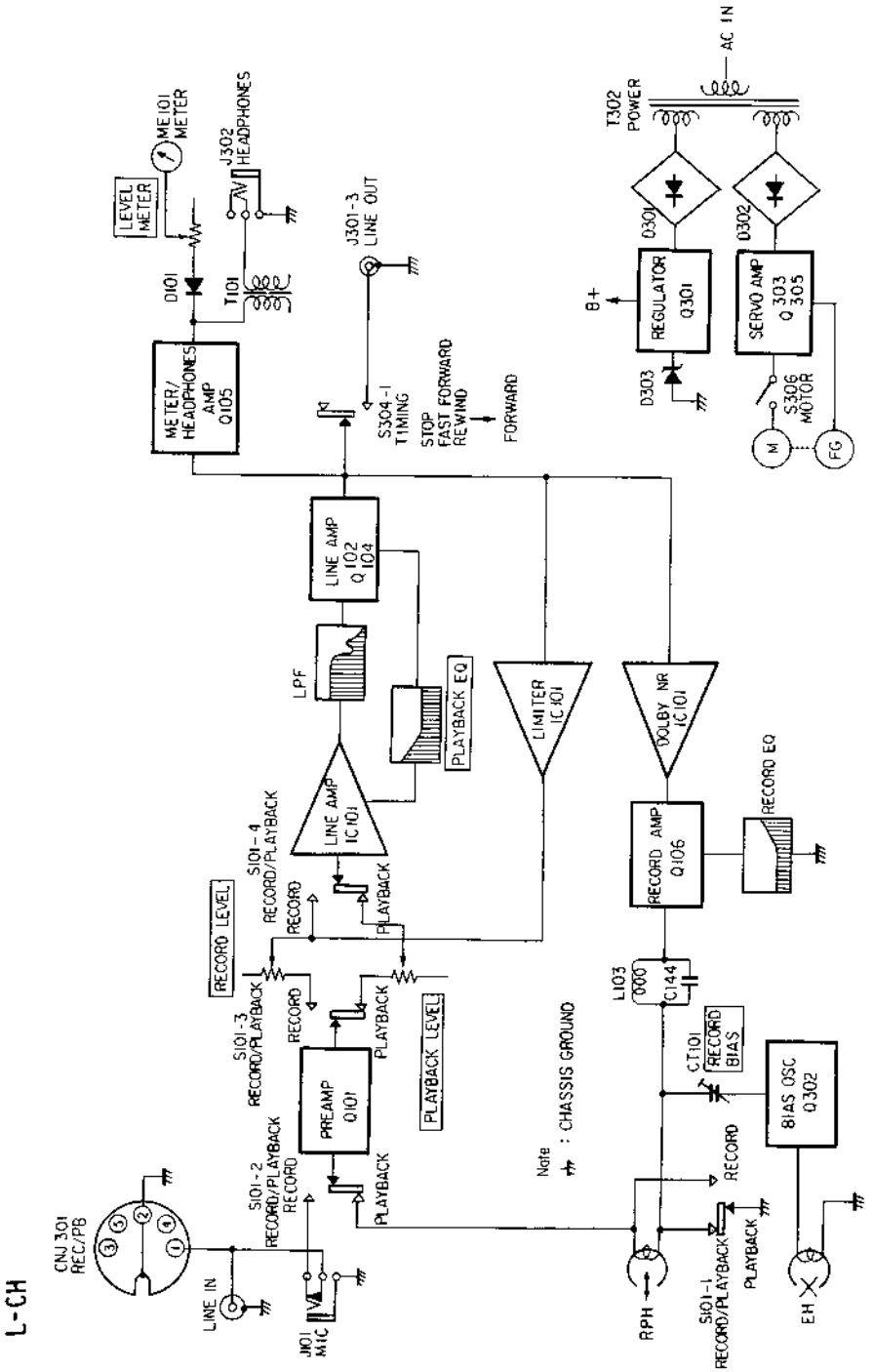
0 dB = 0.775 V

*'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

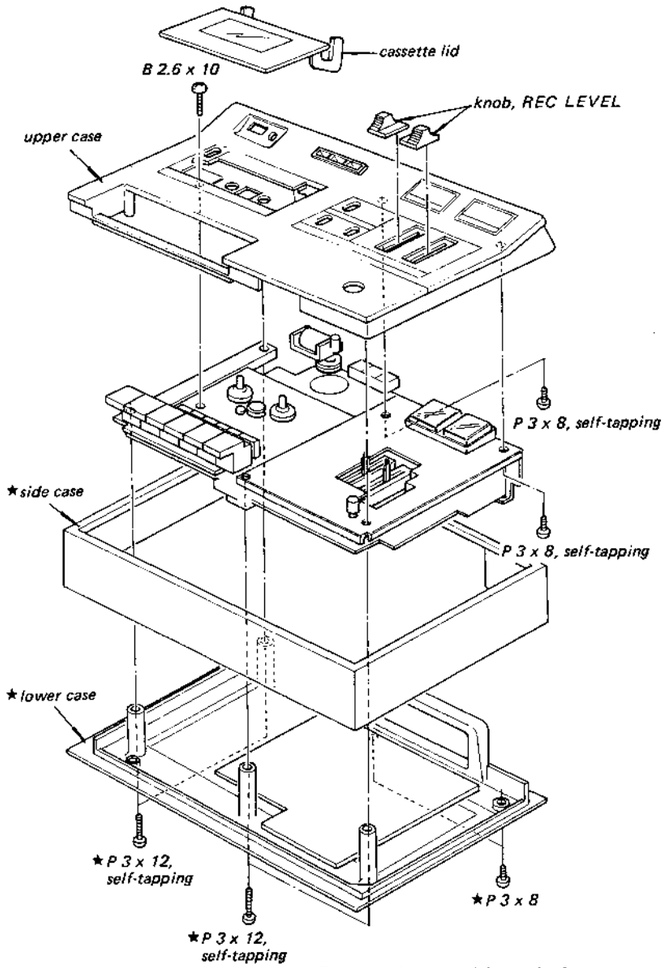
SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



1-2. DISASSEMBLY

Upper, Side and Lower Case



Remove the materials marked ★.

MIC Jack Board
1. Remove a screw (K 3 x 8).
2. Remove two Nuts with microphone jack.

Switch Board
Remove four screws (PSW 3 x 6).

Control Board
Remove four screws (PSW 3 x 6).

Input/output Board
Remove plastic rivets (four).

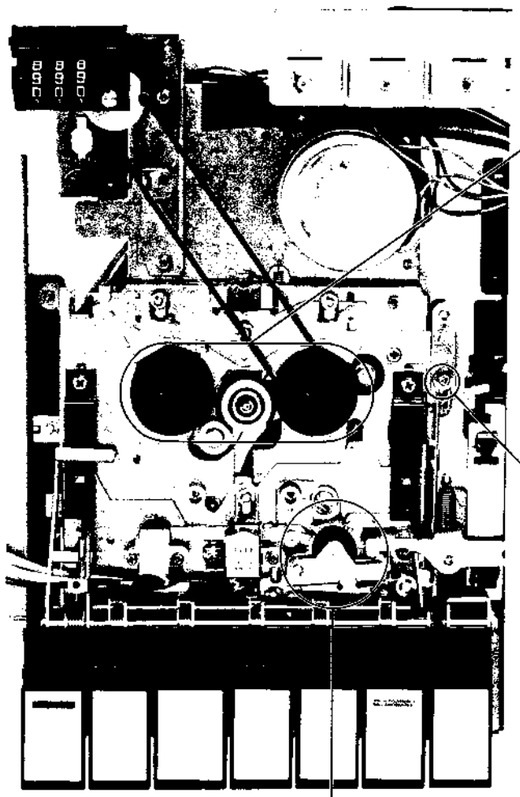
Timing Switch Board
Remove a screw (P 2.6 x 5).

Servo Amp Board
Remove two screws (P 2.6 x 6).

MEMO

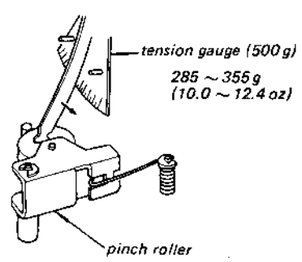
SECTION 2
ADJUSTMENTS

2-1. MECHANICAL ADJUSTMENTS



Pinch Roller Pressure Measurement
– playback mode –

Pull the pinch roller away from the capstan using a tension gauge as shown by the arrow. Make the pinch roller return to the capstan slowly. The pressure should be measured at the point where the pinch roller just contacts the capstan.



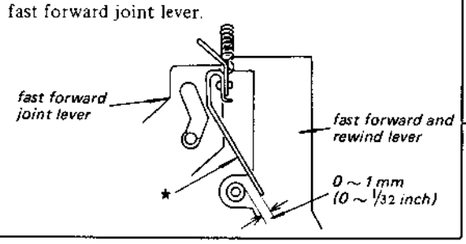
Torque Measurement

Specification:

Forward (CQ-101A, 102A, 103A) 30 ~ 60 g·cm (0.42 ~ 0.83 oz·inch)

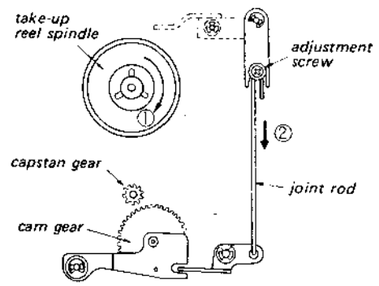
Fast forward and rewind (CQ-201A) 60 ~ 150 g·cm (0.83 ~ 2.1 oz·inch)

If fast forward and rewind torque deviate from the specified value, bend the potion (marked ★) of the fast forward joint lever.

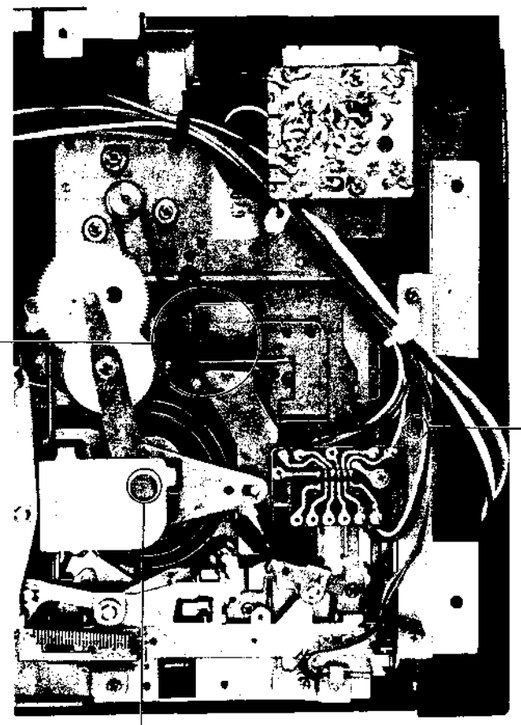


Automatic Shut-off Adjustment

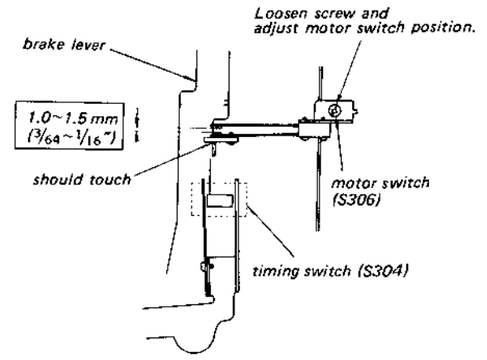
In playback or record mode and with the POWER switch OFF, turn the take-up reel spindle in the direction shown by the arrow ① until the joint rod moves to the full in the direction shown by the arrow ②.
At this time the cam gear and the capstan gear should completely mesh.
If necessary, adjust the joint rod length by the adjustment screw.



Note:
1. Just when the set is placed in playback or record mode, the clearance between the cam gear and the capstan gear should be more than 2 mm (5/64 inch).
2. Automatic Shut-off Mechanism should operate within 5 sec. at the tape end.
3. Automatic Shut-off Mechanism should not operate with mechanical shock during tape travel.
4. As soon as a tape cassette with no tape remaining on the supply side is loaded Automatic Shut-off Mechanism should operate.



Motor Switch (S306) Adjustment
– stop mode –

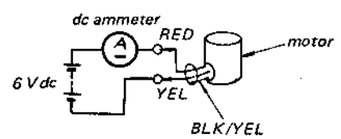


Slowly depress the forward button and make sure that the timing switch (S304) turns ON after the motor switch (S306) turns ON (closes).

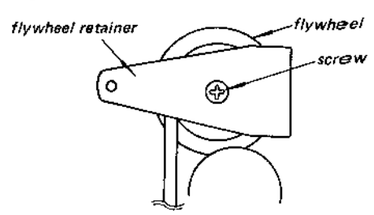
Flywheel Thrust Play Adjustment

Procedure:

1. Mode: Playback
   Disconnect the motor lead wire from the servo amp board and connect an external 6 V dc power supply and dc ammeter to the motor lead wire.



2. Loosen the screw until the screw tip is detached from the flywheel shaft.
3. Turn the screw clockwise gradually to the position where the motor current suddenly increases.
4. Then, loosen the screw about 1/8 turns from the position obtained in step 3.
5. Secure the screw with a suitable locking compound.



2-2. ELECTRICAL ADJUSTMENTS

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 a 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 given in this service manual.
6. The adjustments 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)
   2) test tapes
      SONY P-4-A81S (6.3 kHz, −10 dB)
      P-4-A82 (10 kHz, −10 dB)
      P-4-L81 (333 Hz, 0 dB)
      WS-48 (3 kHz, 0 dB)
9. The switches should be set as follows unless otherwise specified.
   LIMITER: OFF
   TAPE SELECT: NORMAL
   HIGH FILTER: OFF

Normal Input Level

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

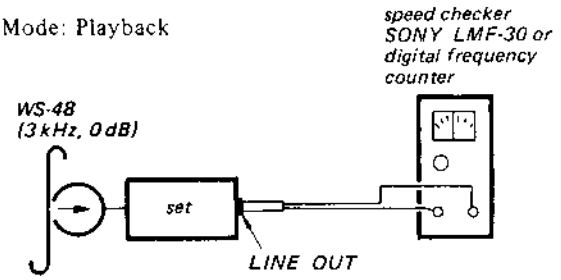
Normal Output Level

	LINE OUT
load impedance	100 kΩ
output level	0.44 V (−5 dB)

1. Tape Speed Adjustment

Procedure:

Mode: Playback



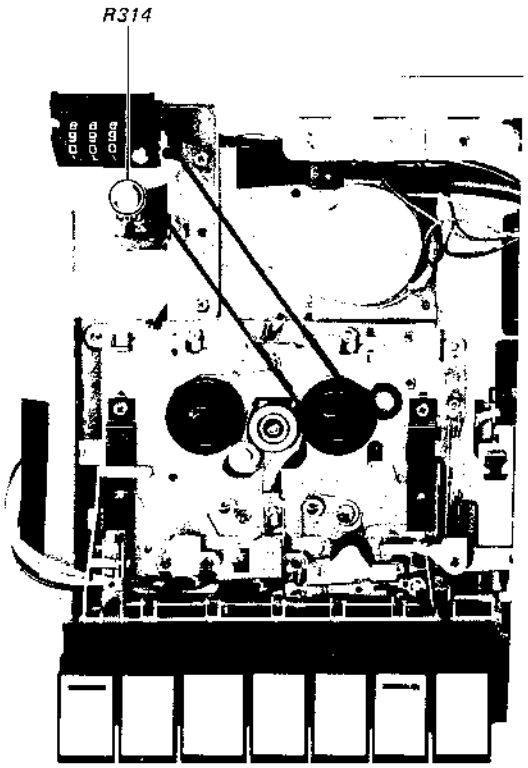
Adjust R314 to satisfy the specification.

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 % (30 Hz).

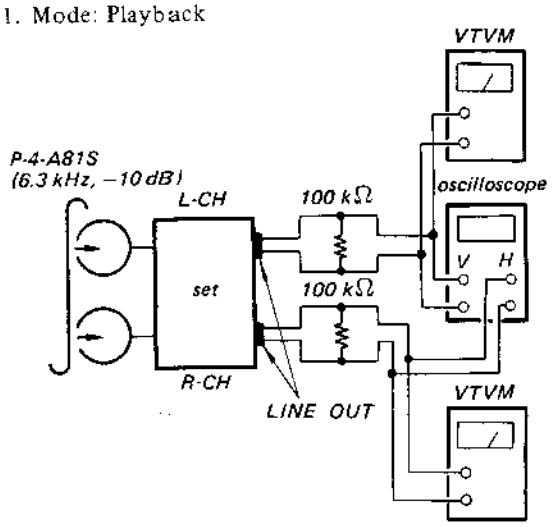
Adjustment Location:



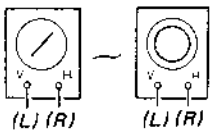
2. Record/playback Head Azimuth Adjustment

Procedure:

1. Mode: Playback



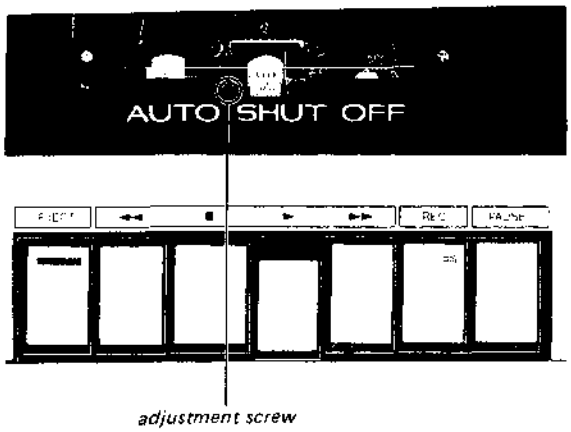
2.

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 does not change when the mode is changed from playback to stop several times.

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

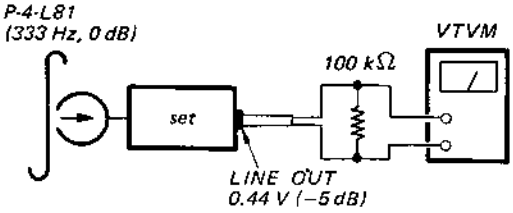
Adjustment Location:



3. Playback Level Adjustment

Procedure:

1. Mode: Playback



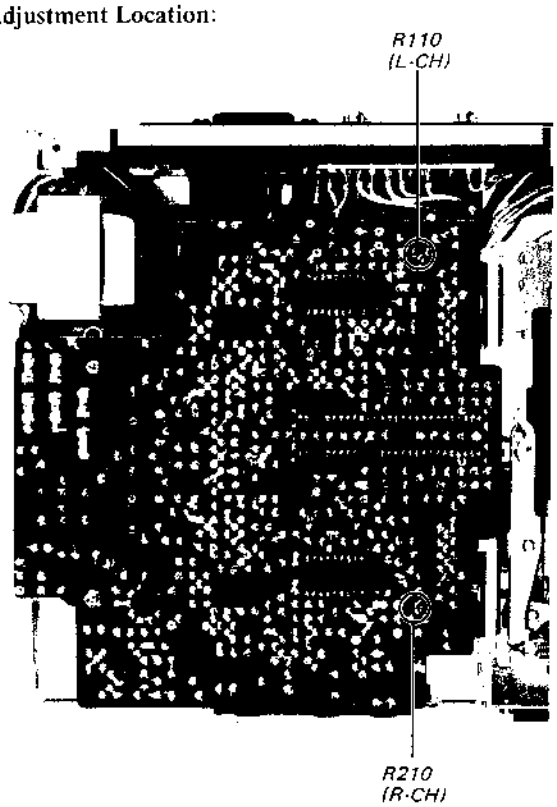
Adjust R110 (L-CH) and R210 (R-CH) to obtain the specified value.

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: 0.39 ~ 0.49 V
(−5 dB ± 0.5 dB)
Level difference between channels:
less than 0.5 dB

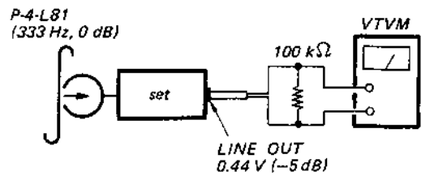
Adjustment Location:



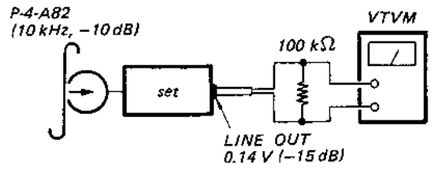
4. Playback Equalizer Adjustment

Procedure:

1. Mode: Playback

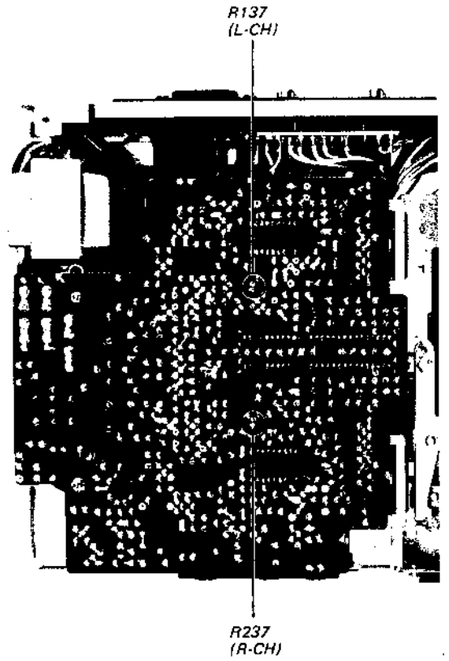


2. Mode: Playback



Adjust R137 (L-CH) and R237 (R-CH) to obtain the LINE OUT voltage 10 dB lower than that obtained in step 1 above.

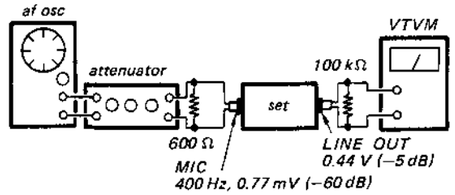
Adjustment Location:



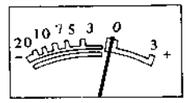
5. VU Meter Calibration

Procedure:

1. Mode: Record



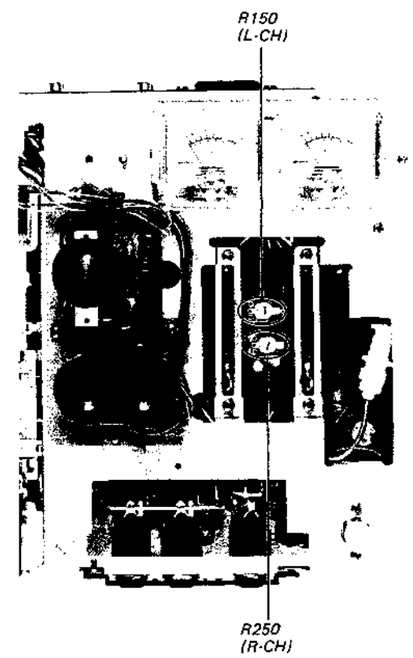
2.

Adjust	VU meter reading: 0 VU
R150 (L-CH) R250 (R-CH)	

Specification:

When adjusting the LINE IN level control to make 0 VU indication, VTVM reading should be 0.44 V (–5 dB).

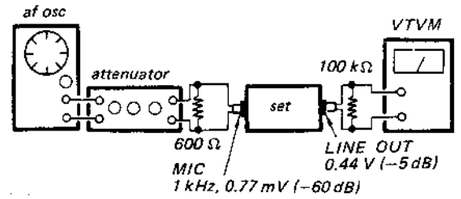
Adjustment Location:



6. Record Bias Adjustment

Procedure:

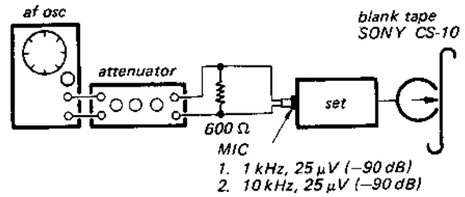
1. Mode: Record



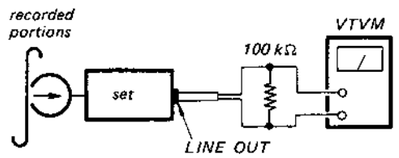
Adjust the REC LEVEL controls to obtain 0.44 V (–5 dB) VTVM reading.

Procedure:

2. Mode: Record

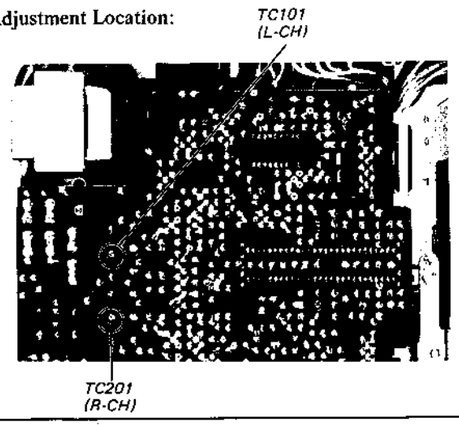


3. Mode: Playback



Adjust trimmers TC101 (L-CH) and TC201 (R-CH) so that 10 kHz output level is 0.5 dB lower than 1 kHz output level.

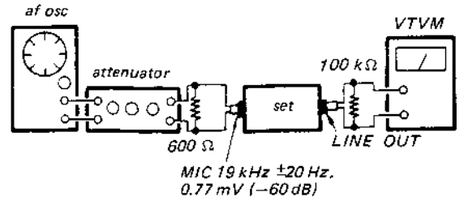
Adjustment Location:



7. 19 kHz Filter Adjustment

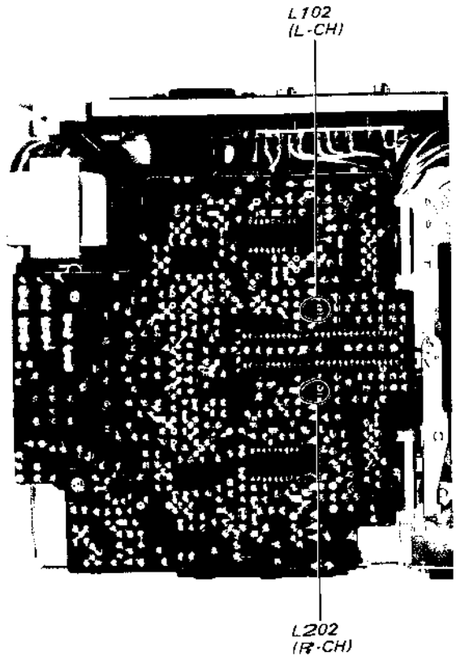
Procedure:

Mode: Record



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

Adjustment Location:

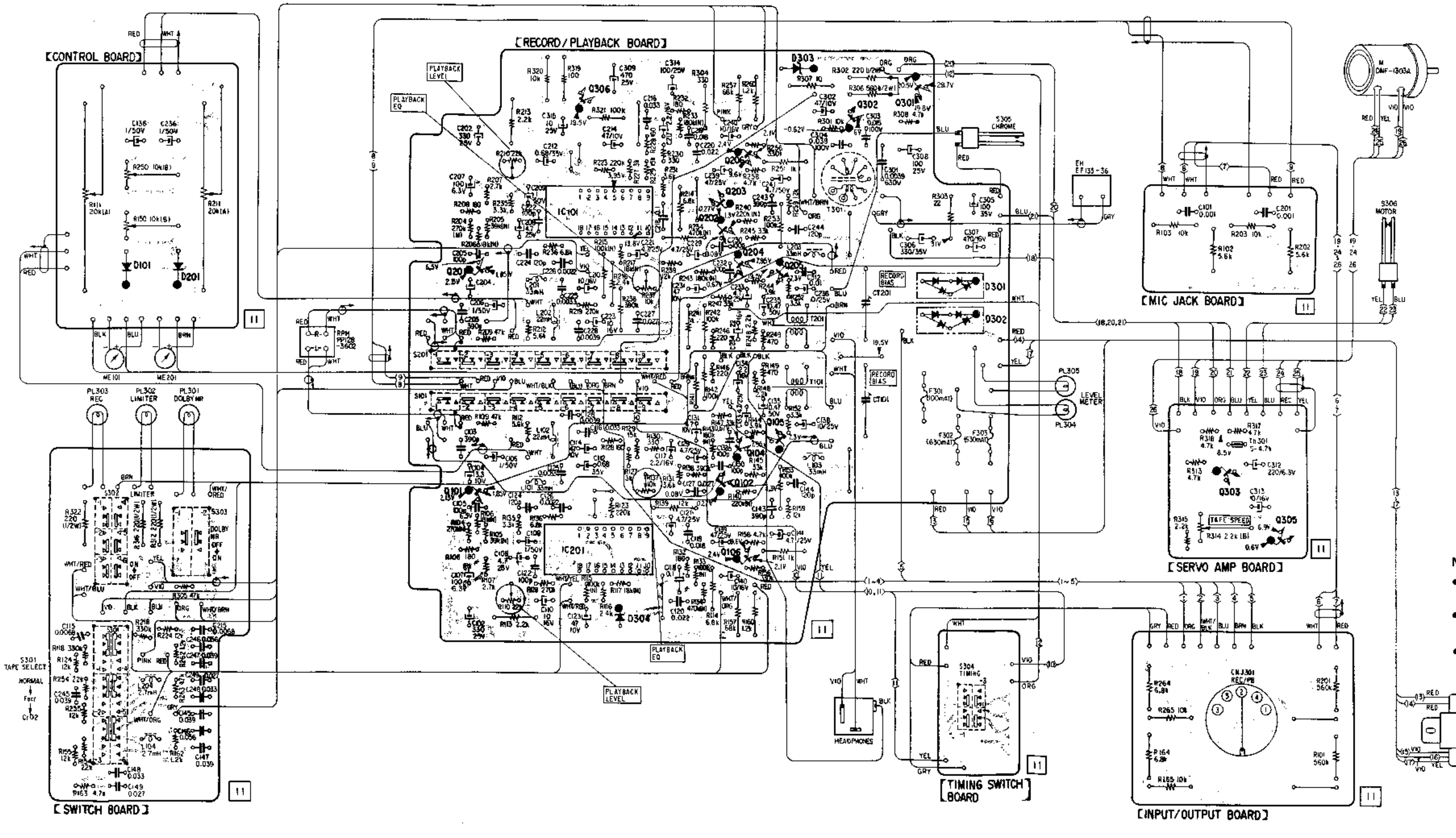


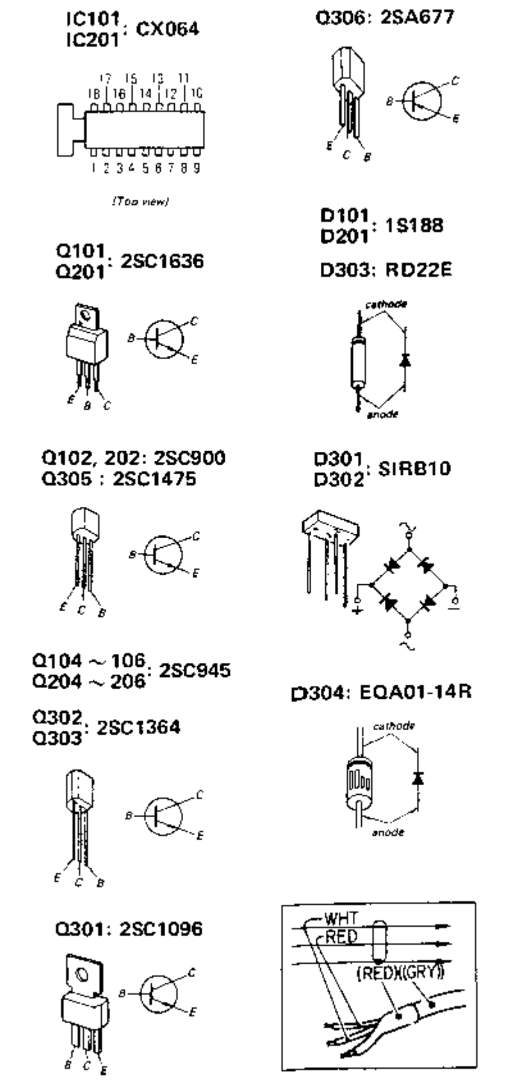
SECTION 3

DIAGRAMS

3-1. MOUNTING DIAGRAM

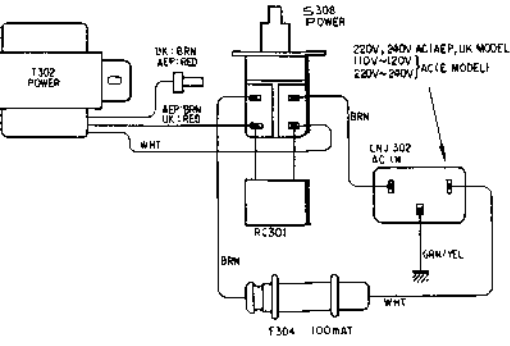
– Conductor Side –





Note:

- ●— indicates lead wire connection on the conductor side.
- ○— indicates lead wire connection through the component side.
- . . B+ pattern



Q			201 101	306		203 202 102 103	204 104	206 106	205 105		302	301		303	305	Q
D	101	201			304					303			301 302			D

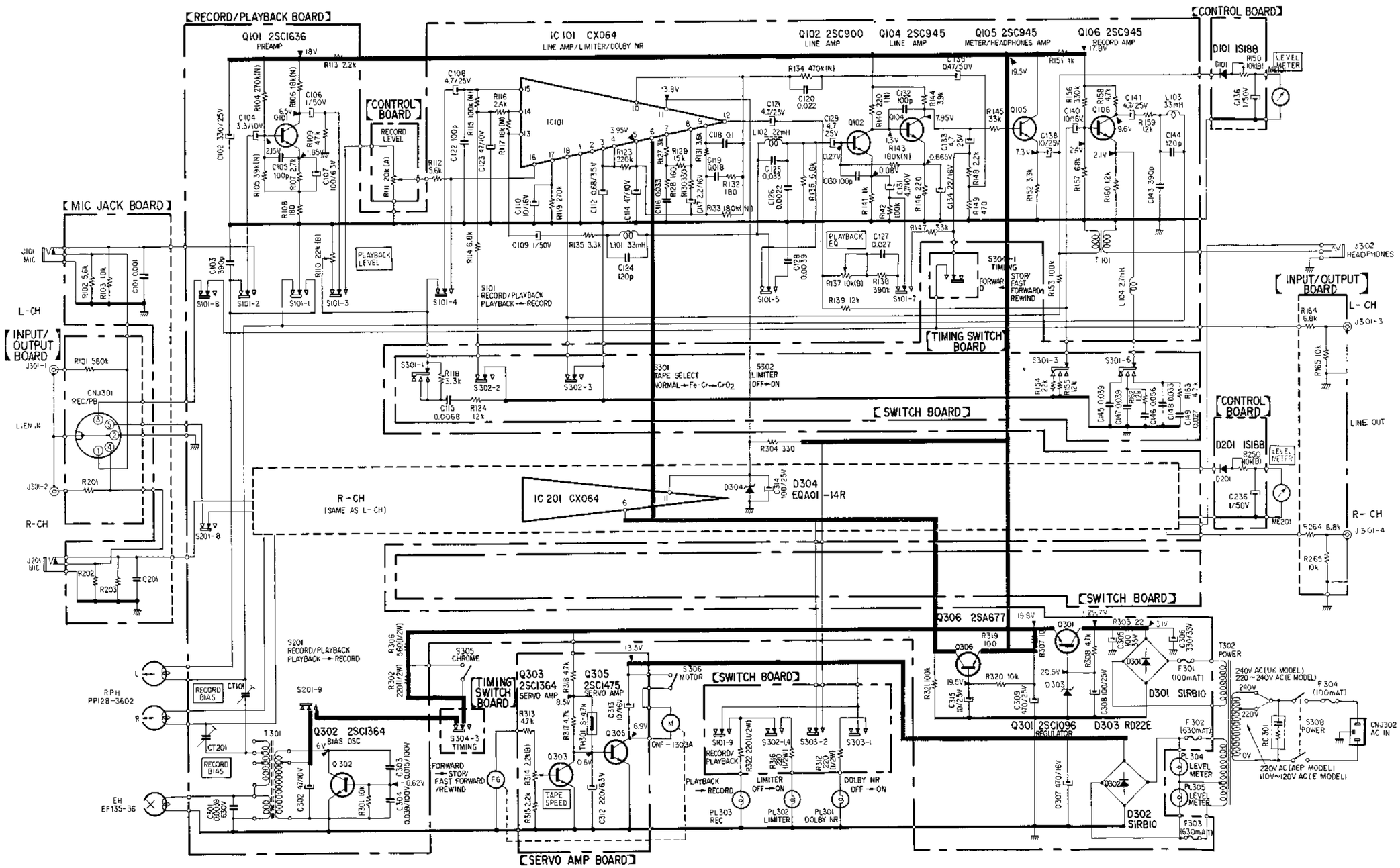
3-2. SCHEMATIC DIAGRAM

Note:

- All capacitors are in μF unless otherwise noted. 50 or less working voltages are not indicated except for electrolytic type. p = μμF
- All resistors are in Ω, ¼W, unless otherwise noted. k = 1,000 M = 1,000k
- ⏚ indicates chassis ground.
- ▬ indicates B+ circuit.
- Voltages are DC with respect to ground unless otherwise noted. Readings are taken under no-signal conditions with a VOM (20kΩ/V).
  no mark: common
- Voltage variations may be noted due to normal production tolerances.

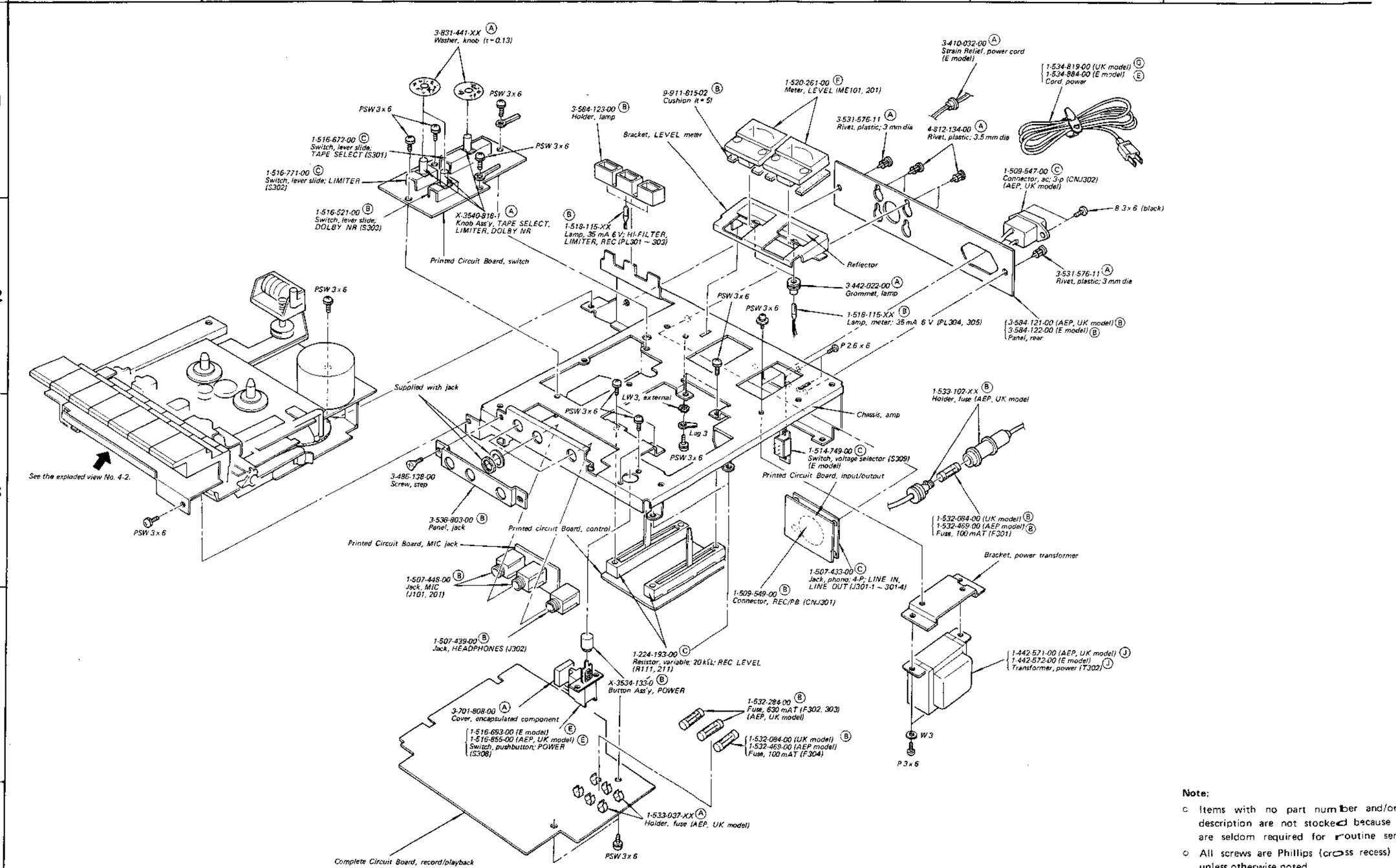
- Switch Mode:

Ref. No.	Switch	Position
S101-1 ~ 9	REC/PB	PB
S201-1 ~ 9	REC/PB	PB
S301	TAPE SELECT	NOR
S302	LIMITER	OFF
S303	DOLBY NR	OFF
S304	TIMING	STOP
S305	CHROME	OFF
S306	MOTOR	OFF
S308	POWER	OFF



SECTION 4
EXPLODED VIEWS

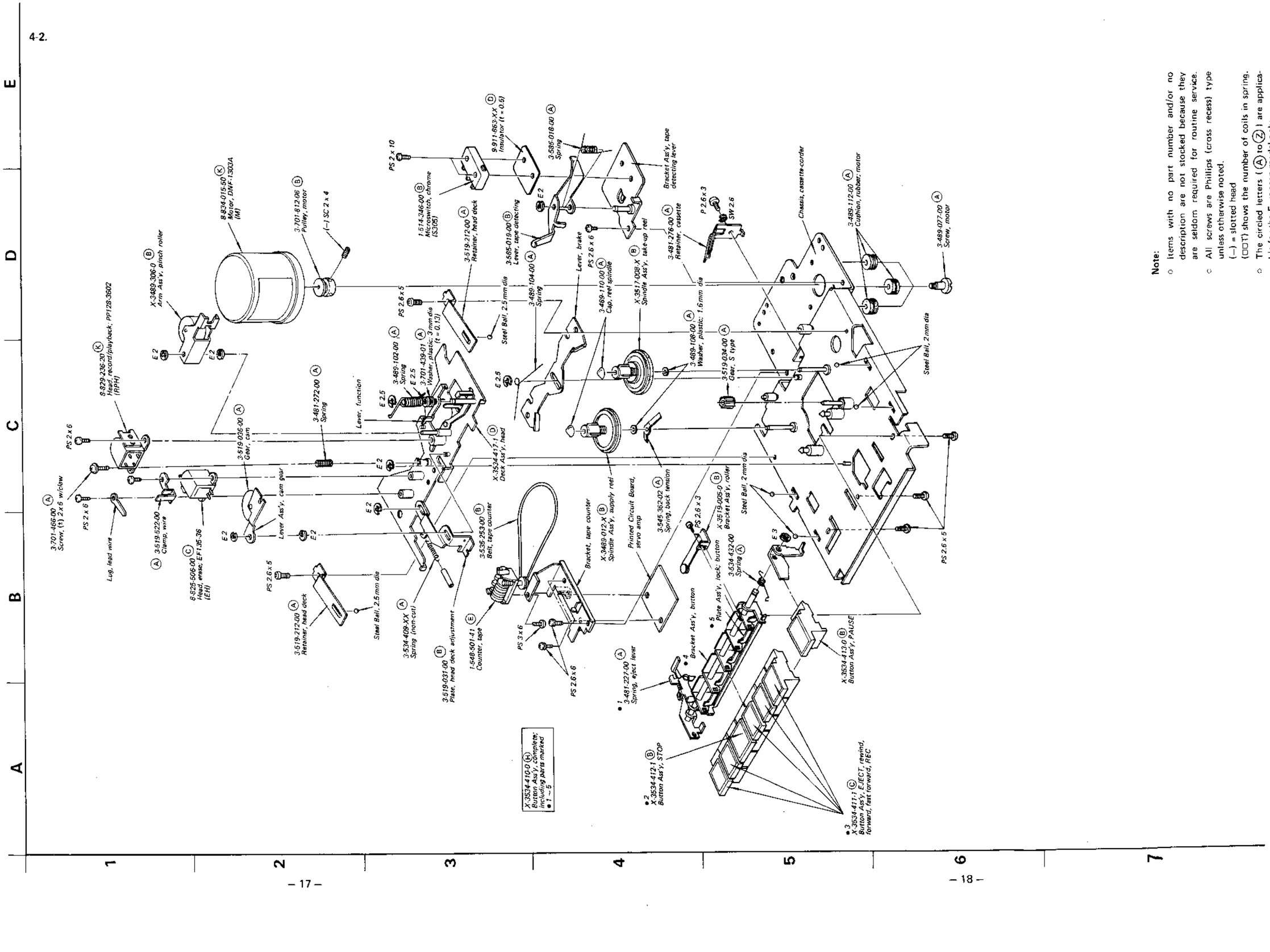
4-1.



Note:

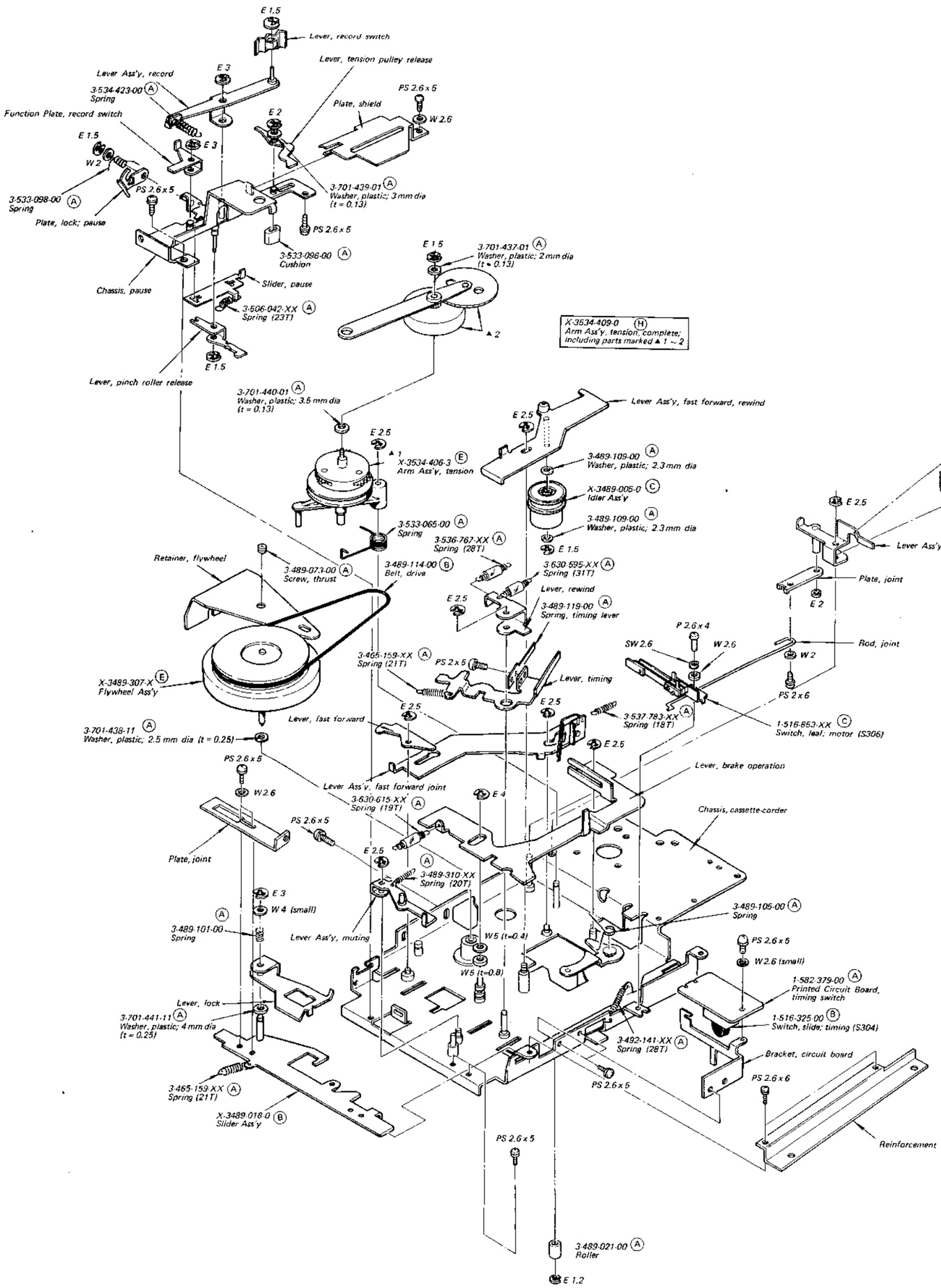
- c Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- o All screws are Phillips (cross recess) type unless otherwise noted.
  (—) = slotted head
  (□□T) shows the number of coils in spring.
- o The circled letters ((A) to (Z)) are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

4-2.



Note:

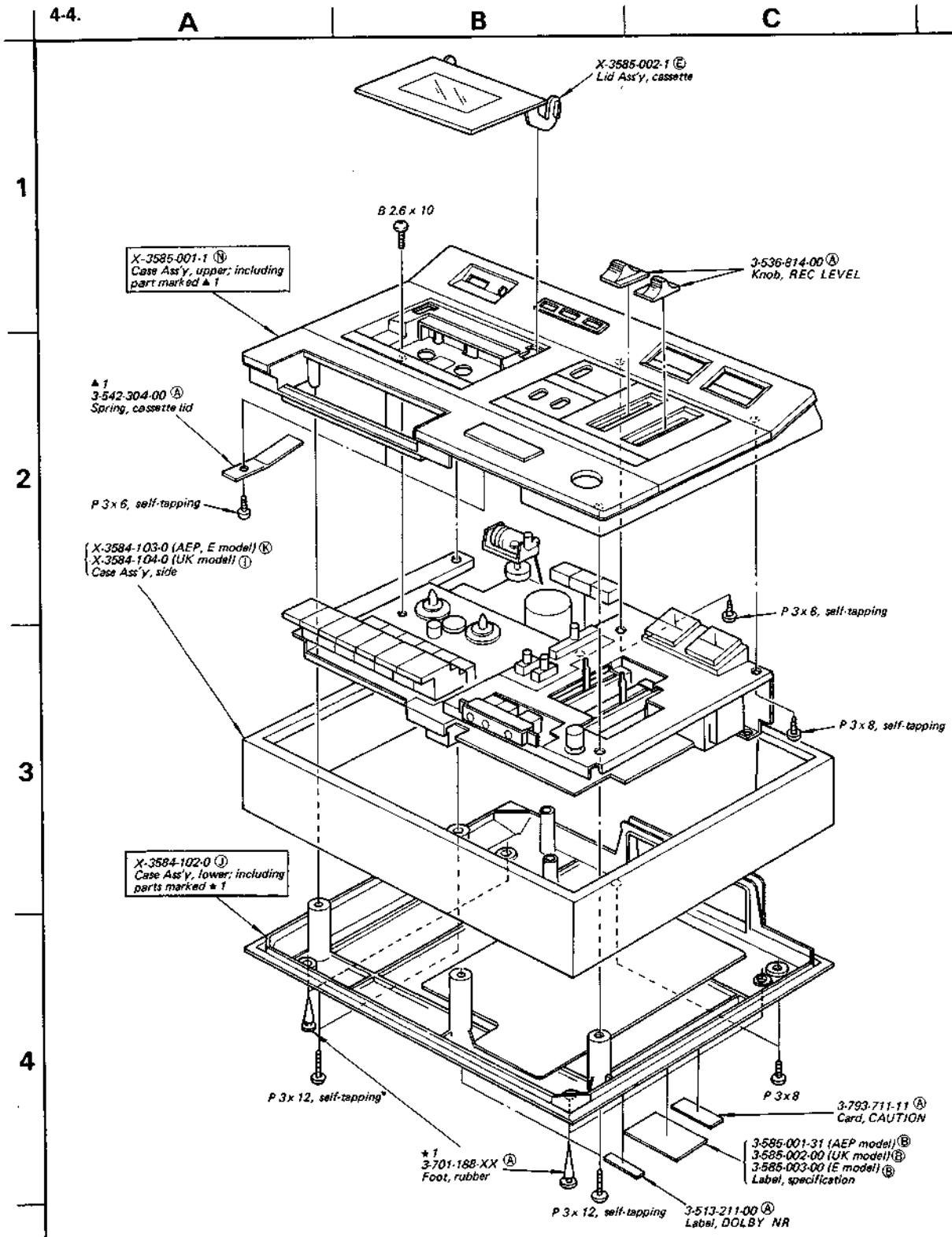
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
  (□□) shows the number of coils in spring.
- The circled letters ((A) to (Z)) are applicable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



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.
- The circled letters ((A) to (Z)) are applicable for the European model only.

4-4.



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.
- The circled letters (Ⓐ to Ⓩ) are applicable for the European model only.

SECTION 5

ELECTRICAL PARTS LIST

Note: The circled letters (Ⓐ to Ⓩ) are applicable for the European model only.

Ref. No.	*Part No.*	*Description*
		PRINTED CIRCUIT BOARD
	1-582-379-00	Ⓐ Timing Switch
		SEMICONDUCTORS
		Transistors
Q101, 201		Ⓑ 2SC1636
⇒ Q102, 202		Ⓑ 2SC1362
⇒ Q104 ~ 106, ⇒ Q204 ~ 206		Ⓑ 2SC1364
⇒ Q301		Ⓒ 2SC1384
⇒ Q302, 303		Ⓑ 2SC634A
⇒ Q305		Ⓒ 2SC1384
Q306		Ⓒ 2SA677
		ICs
IC101, 201		Ⓘ CX064
		Diodes
⇒ D101, 201		Ⓐ 1T22A
D301, 302		Ⓒ SIRB10
⇒ D303		Ⓑ EQA01-22R
⇒ D304		Ⓑ EQB01-14
		Thermistor
Th301	1-800-070-XX	Ⓐ S-4.7 k
		COILS
L101, 201	1-407-561-00	Ⓑ Microinductor, 33 mH
L102, 202	1-407-240-00	Ⓑ Microinductor, 22 mH
L103, 203	1-407-212-XX	Ⓑ Microinductor, 33 mH
L104, 204	1-407-196-XX	Ⓑ Microinductor, 2.7 mH
		TRANSFORMERS
T101, 201	1-427-284-00	Ⓑ Output
T301	1-433-132-11	Ⓒ Bias Osc
T302	1-442-571-00	Ⓙ Power (AEP, UK model)
	1-442-572-00	Ⓕ Power (E model)

Ref. No.	*Part No.*	*Description*		
		CAPACITORS		
All capacitors are in μF and of electrolytic unless otherwise noted. (p = μμF) 50 or less working volts are omitted except for electrolytic type.				
C101, 201	1-108-227-12	Ⓐ 0.001		mylar
C102, 202	1-121-719-11	Ⓑ 330	25 V	
C103, 203	1-102-822-11	Ⓐ 390 p		ceramic
C104, 204	1-121-402-11	Ⓐ 3.3	10 V	
C105, 205	1-102-106-11	Ⓐ 100 p		ceramic
C106, 206	1-121-391-11	Ⓐ 1	50 V	
C107, 207	1-121-413-11	Ⓑ 100	10 V	
C108, 208	1-121-395-11	Ⓐ 4.7	25 V	
C109, 209, C110, 210	1-121-391-11	Ⓐ 1	50 V	
C112, 212	1-131-214-11	Ⓑ 0.68	35 V	tantalum
C114, 214	1-121-352-11	Ⓐ 47	10 V	
C115, 215	1-108-237-12	Ⓐ 0.0068		mylar
C116, 216	1-108-244-12	Ⓐ 0.033		mylar
C117, 217	1-131-205-11	Ⓑ 2.2	50 V	tantalum
C118, 218	1-108-251-12	Ⓑ 0.1		mylar
C119, 219	1-108-358-12	Ⓐ 0.018		mylar
C120, 220	1-108-587-12	Ⓐ 0.022		mylar
C121, 221	1-121-395-11	Ⓐ 4.7	25 V	
C122, 222	1-102-106-11	Ⓐ 100 p		ceramic
C123, 223	1-121-410-11	Ⓐ 47	25 V	
C124, 224	1-102-107-11	Ⓐ 120 p		ceramic
C125, 225	1-108-232-12	Ⓐ 0.0033		mylar
C126, 226	1-108-230-12	Ⓐ 0.0022		mylar
C127, 227	1-108-353-12	Ⓐ 0.027		mylar
C128, 228	1-108-354-12	Ⓐ 0.0039		mylar
C129, 229	1-121-395-11	Ⓐ 4.7	25 V	
C130, 230	1-102-106-11	Ⓐ 100 p		ceramic
C131, 231	1-121-352-11	Ⓐ 47	10 V	
C132, 232	1-102-106-11	Ⓐ 100 p		ceramic
C133, 233	1-121-395-11	Ⓐ 4.7	25 V	
C134, 234	1-121-419-11	Ⓑ 22	16 V	
C135, 235	1-121-726-11	Ⓐ 0.47	50 V	

⇒: Due to replacement parts, the descriptions are different from the diagrams.

Note: The circled letters (Ⓐ to Ⓩ) are applicable for the European model only.

Ref. No.	*Part No.*	*Description*		
C136, 236	1-121-391-11	Ⓐ 1	50 V	
C138, 238	1-121-398-11	Ⓐ 10	25 V	
C139, 239	1-121-410-11	Ⓑ 47	25 V	
C140, 240	1-121-651-11	Ⓐ 10	16 V	
C141, 241	1-121-395-11	Ⓐ 4.7	25 V	
C143, 243	1-102-822-11	Ⓐ 390 p		ceramic
C144, 244	1-107-133-11	Ⓐ 120 p	100 V	silvered mica
C145, 245	1-108-360-12	Ⓐ 0.039		mylar
C146, 246	1-108-361-12	Ⓐ 0.056		mylar
C147, 247	1-108-360-12	Ⓐ 0.039		mylar
C148, 248	1-108-589-12	Ⓐ 0.033		mylar
C149, 249	1-108-587-12	Ⓐ 0.027		mylar
C301	1-127-709-11	Ⓑ 0.0039	630 V	solid aluminum
C302	1-121-410-11	Ⓑ 47	10 V	
C303	1-108-379-12	Ⓐ 0.015	100 V	mylar
C304	1-108-384-12	Ⓑ 0.039	100 V	mylar
C305	1-121-357-11	Ⓑ 100	35 V	
C306	1-121-655-11	Ⓑ 330	35 V	
C307	1-121-426-11	Ⓑ 470	16 V	
C308	1-121-935-11	Ⓑ 100	25 V	
C309	1-121-940-11	Ⓑ 470	25 V	
C312	1-121-419-11	Ⓑ 220	6.3 V	
C313	1-121-654-11	Ⓑ 10	16 V	
C314	1-121-935-11	Ⓑ 100	25 V	
C315	1-121-398-11	Ⓑ 10	25 V	
TC101, 201	1-141-010-XX	Ⓑ Trimmer		

RESISTORS

All resistors are in ohms. Regular-type ¼W carbon resistors are omitted. Check the schematic diagram for the resistance values. (k = 1,000)

R110, 210	1-224-253-XX	Ⓒ 22 k	adjustable	
R111, 211	1-224-193-00	Ⓒ 20 k	variable, REC LEVEL	
R137, 237	1-224-252-XX	Ⓒ 10 k	adjustable	
R150, 250	1-224-645-XX	Ⓑ 10 k	adjustable	
R302	1-224-357-11	Ⓐ 220	½W	carbon
R306	1-244-867-11	Ⓐ 560	½W	carbon
R312, 316, R322	1-244-857-11	Ⓐ 220	½W	carbon
R314	1-224-643-XX	Ⓑ 2.2 k	adjustable	

SWITCHES

S101, 201	1-514-976-XX	Ⓒ Slide, record/playback
S301	1-516-672-00	Ⓒ Lever Slide, TAPE SELECT
S302	1-516-771-00	Ⓒ Lever Slide, LIMITER
S303	1-516-521-00	Ⓑ Lever Slide, DOLBY NR
S304	1-516-325-00	Ⓑ Slide, timing
S305	1-514-346-00	Ⓑ Micro, chrome
S306	1-516-853-XX	Ⓒ Leaf, motor
S307	1-514-749-00	Ⓒ Voltage Selector (E model)
S308	1-516-693-00	Ⓔ Pushbutton, POWER (E model)
	1-516-855-00	Ⓔ Pushbutton, POWER (AEP, UK model)

FUSES

F301, 304	1-532-084-00	Ⓑ 100 mAT (UK model)
	1-532-469-00	Ⓑ 100 mAT (AEP model)
F302, 303	1-532-284-00	Ⓑ 630 mAT (AEP, UK model)

JACKS

J101, 201	1-507-448-00	Ⓑ MIC
J301-1 ~ 301-4	1-507-433-00	Ⓒ Phono, 4-p; LINE IN, LINE OUT
J302	1-507-439-00	Ⓑ HEADPHONES

MISCELLANEOUS

CNJ301	1-509-549-00	Ⓑ Connector, REC/PB
CNJ302	1-509-547-00	Ⓒ Connector, ac; 3-p (AEP, UK model)
EH	8-825-506-00	Ⓒ Head, erase; EF135-36
M	8-834-015-50	Ⓚ Motor, DNF-1303A
ME101, 201	1-520-261-00	Ⓕ Meter, LEVEL
PL301 ~ 305	1-518-115-XX	Ⓑ Lamp, 6 V 35 mA; HI-FILTER, LIMITER, REC, meter
RC301	1-231-057-31	Ⓑ Encapsulated Component
RPH	8-829-236-20	Ⓚ Head, record/playback; PP128-3602
	1-533-037-XX	Ⓐ Holder, fuse (AEP, UK model)
	1-533-102-XX	Ⓑ Holder, fuse (AEP, UK model)
	1-534-819-00	Ⓖ Cord, power (UK model)
	1-534-884-00	Ⓔ Cord, power (E model)
	1-548-501-41	Ⓔ Counter, tape

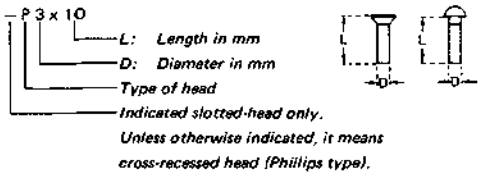
Note: The circled letters (Ⓐ to Ⓩ) are applicable for the European model only.

ACCESSORIES

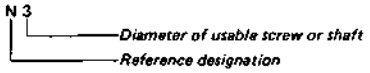
Part No.	*Description*
1-534-049-31	Ⓕ Cord, connection; RK-74H
1-534-819-00	Ⓖ Cord, power; DK-37 (UK model)
3-585-013-11	Ⓒ Manual, instruction (AEP, UK model)
3-585-013-51	Ⓒ Manual, instruction (E model)

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

Sony Corporation

9-954-410-01

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Printed in Japan

STEREO
CASSETTE-CORDER

TC-118SD

AEP Model
UK Model
E Model

SUPPLEMENT

No. 1
January, 1977

This supplement updates the service manual to include the production change to the models bearing serial number 403001 and later.
File this supplement with the service manual.

1. ELECTRICAL PARTS LIST CHANGE

1)

Former			New	
Ref. No.	Part No.	Description	Part No.	Description
C102, 202	1-121-719-11	Ⓑ 330 25 V	1-121-416-11	Ⓑ 100 25 V
C110, 210	1-121-391-11	Ⓐ 1 50 V	1-121-651-11	Ⓐ 10 16 V
C123, 223	1-121-410-11	Ⓐ 47 25 V	1-121-352-11	Ⓐ 47 10 V
C130, 230	1-102-106-11	Ⓐ 100 p ceramic	1-102-833-11	Ⓐ 0.01 ceramic
C139, 239	1-121-410-11	Ⓑ 47 25 V	——	——
C314	1-121-935-11	Ⓑ 100 25 V	1-123-065-11	Ⓐ 330 25 V

2) Record/playback printed circuit board is changed.

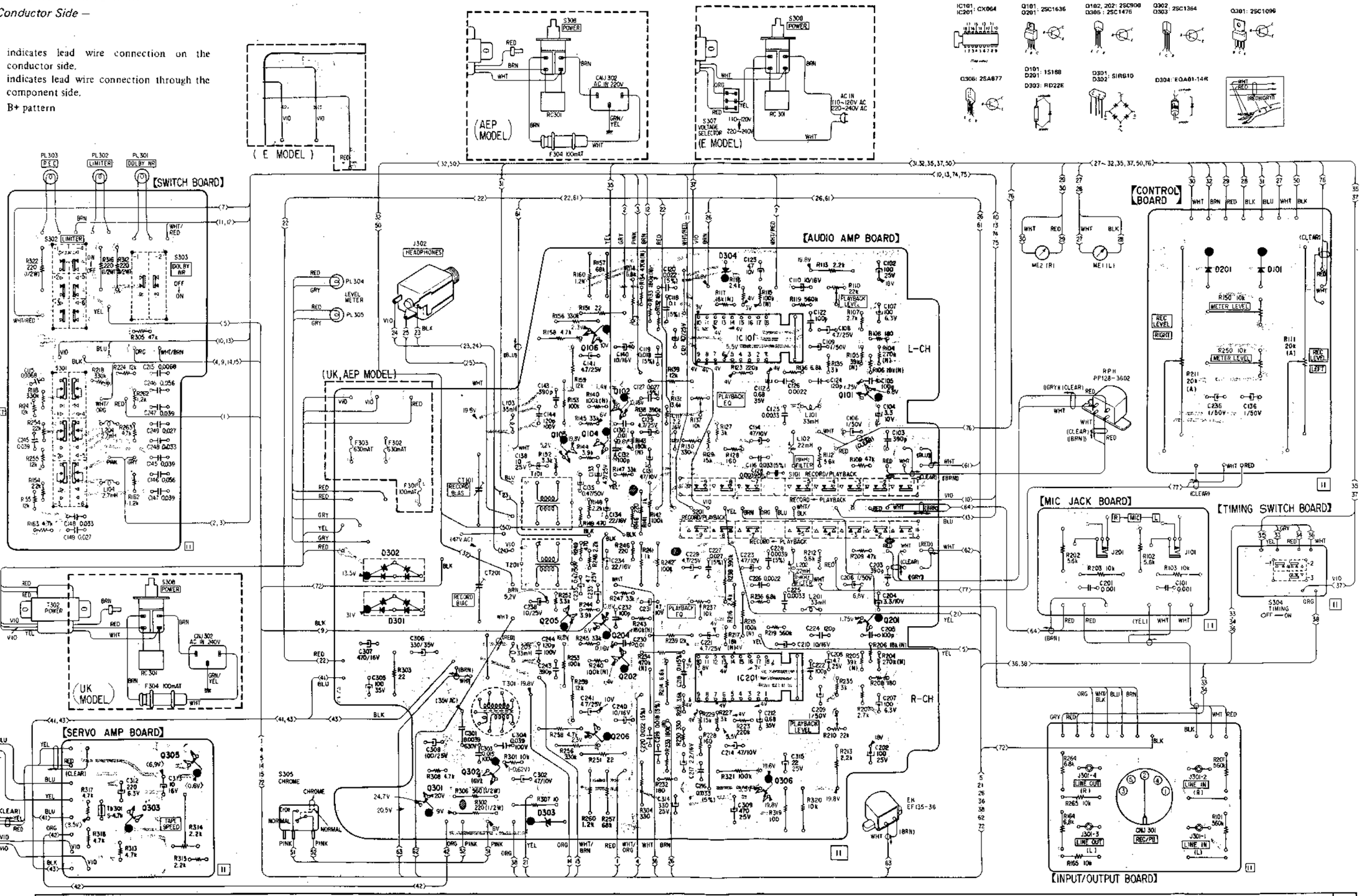
SONY®
SERVICE MANUAL

2. MOUNTING DIAGRAM

– Conductor Side –

Note:

- ●— indicates lead wire connection on the conductor side.
- ○— indicates lead wire connection through the component side.
- ▨ B+ pattern



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3. SCHEMATIC DIAGRAM

Note:

- All capacitors are in μF unless otherwise noted. 50 or less working voltages are not indicated except for electrolytic type. p = μμF
- All resistors are in Ω, ¼W, unless otherwise noted. k = 1,000 M = 1,000k
- ⏚ indicates chassis ground.
- ▬ indicates B+ circuit.
- Voltages are DC with respect to ground unless otherwise noted. Readings are taken under no-signal conditions with a VOM (20 kΩ/V).
  no mark: common
- Voltage variations may be noted due to normal production tolerances.

- Switch Mode:

Ref. No.	Switch	Position
S101-1 ~ 9	REC/PB	PB
S201-1 ~ 9	REC/PB	PB
S301	TAPE SELECT	NOR
S302	LIMITER	OFF
S303	DOLBY NR	OFF
S304	TIMING	STOP
S305	CHROME	OFF
S306	MOTOR	OFF
S308	POWER	OFF