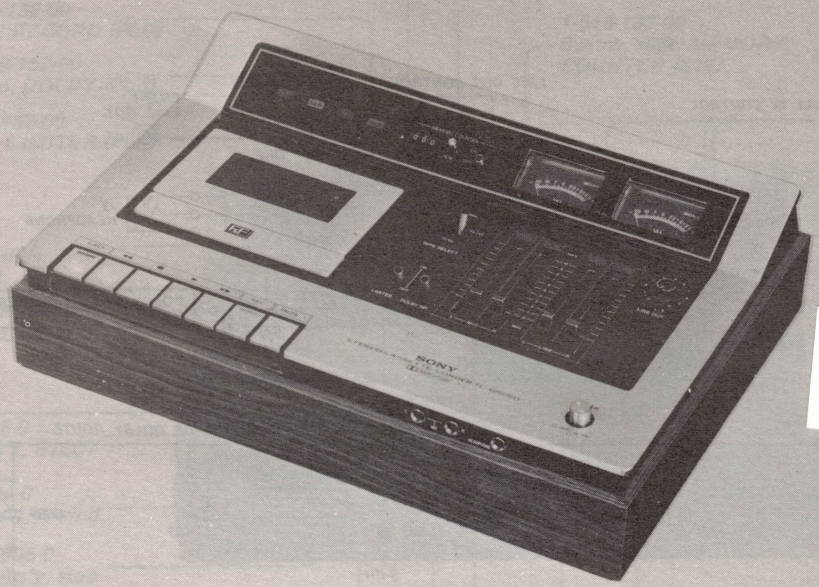
TC-138SD

USA Model
UK Model
Canada Model
E Model
AEP Model



CFNB Stone Cat

STEREO CASSETTE-CORDER

SPECIFICATIONS

Power Requirements: 120 V AC, 60 Hz, 21 W (Canada and USA Models)
110,127,220,240 V AC, 50/60 Hz, 22 W (UK and AEP Models)
100,110,120,127,220,240 V AC, 50/60 Hz, 22 W (E Model)

Track System: 4-track, 2-channel stereo

Frequency Response

Fe-Cr or CrO_2 tape cassette: 20 ~ 17,000 Hz (NAB)
30 ~ 15,000 Hz (DIN)

Ordinary tape cassette: 20 ~ 15,000 Hz (NAB)
30 ~ 13,000 Hz (DIN)

Record Bias Frequency: Approximately 105 kHz

Signal-to-Noise Ratio

DOLBY* NR: OFF

Fe-Cr or CrO_2 tape cassette: 55 dB
Ordinary tape cassette: 53 dB

DOLBY* NR: ON
improved 5 dB at 1 kHz, 10 dB above 5 kHz

Wow and Flutter: 0.07 % (RMS) weighted (NAB)
±0.18 % (DIN)

Inputs:
MIC (phone jack) 2
source impedance: low
normal level: −60 dB (0.77 mV)
maximum sensitivity: −72 dB (0.19 mV)
LINE IN (phone jack) 2
input impedance: 100 kΩ or more
normal level: −10 dB (0.25 V)
maximum sensitivity: −22 dB (62 mV)

Outputs:
LINE OUT (phone jack) . . . 2
load impedance: 10 kΩ or more
normal level: 0 dB (0.775 V) with 100 kΩ load
HEADPHONE (binaural jack). 1
load impedance: 8 Ω

Record/playback Head: PF145-3602

Erase Head: EF135-36

Motor: IC-516

Semiconductors: 39 transistors, 3 IC's, 32 diodes

Dimensions: 411 (w) x 137 (h) x 294 (d) mm
$16\frac{3}{16}$ (w) x $5\frac{7}{16}$ (h) x $11\frac{9}{16}$ (d) inches

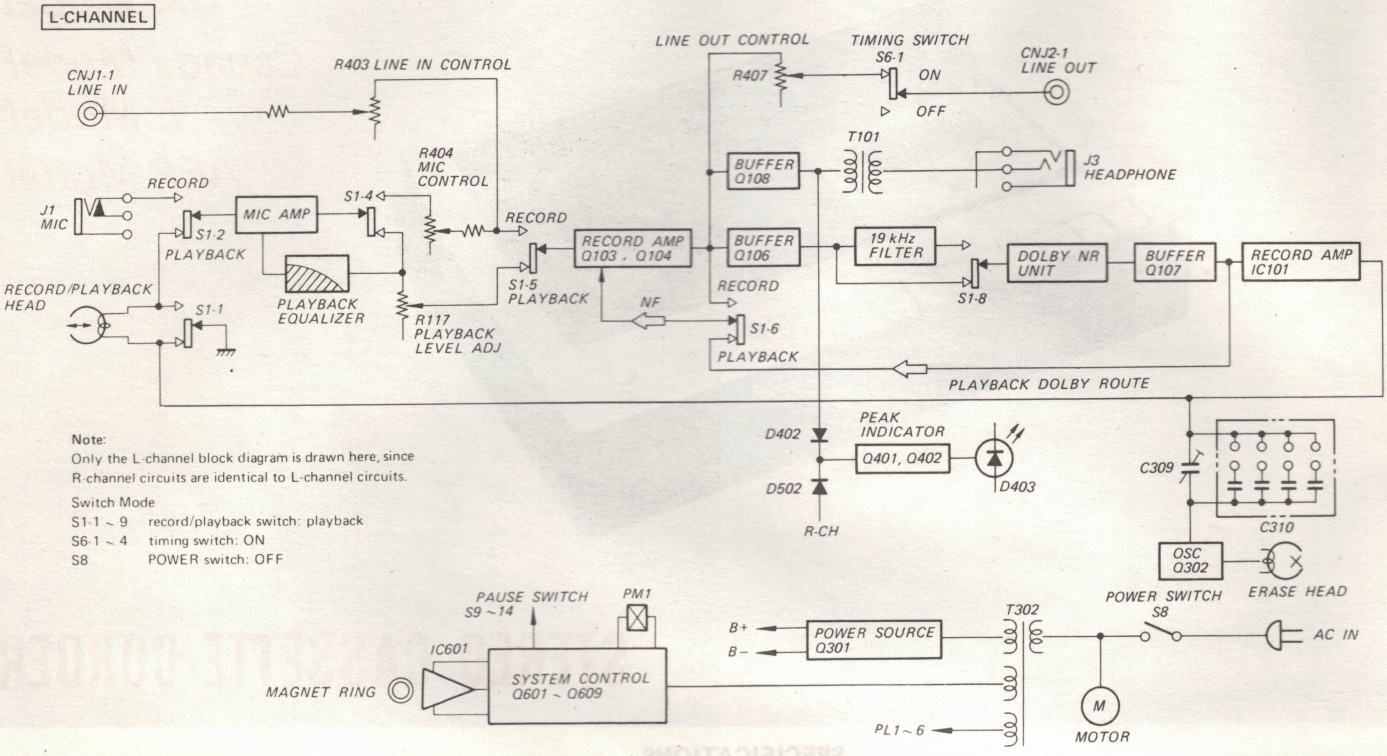
Weight: 7 kg, 15 lb 7 oz

* The word Dolby is the trademark of Dolby Laboratories, Inc.

SONY®
SERVICE MANUAL

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



Note:
Only the L-channel block diagram is drawn here, since R-channel circuits are identical to L-channel circuits.

Switch Mode

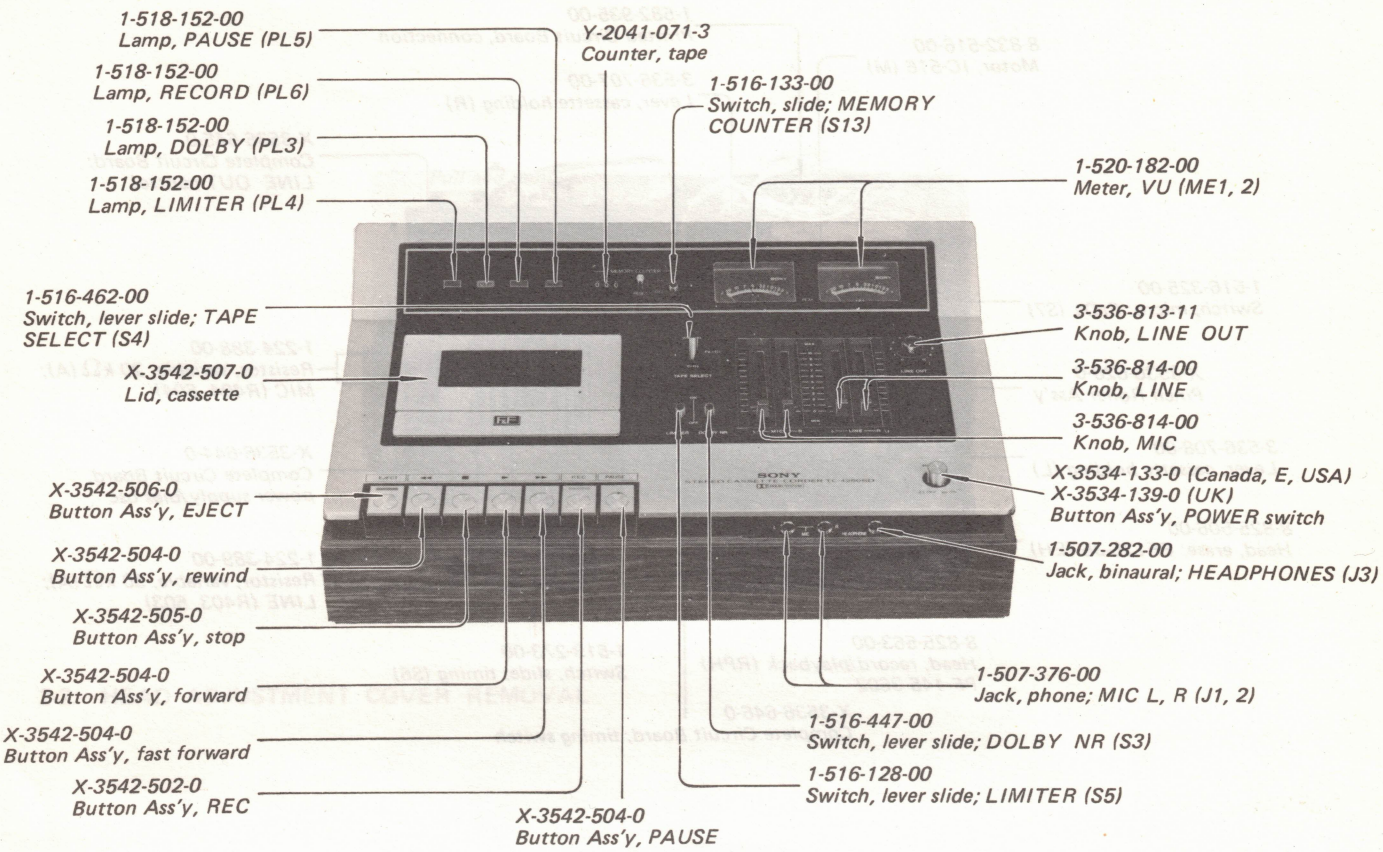
S1-1 ~ 9	record/playback switch: playback
S6-1 ~ 4	timing switch: ON
S8	POWER switch: OFF

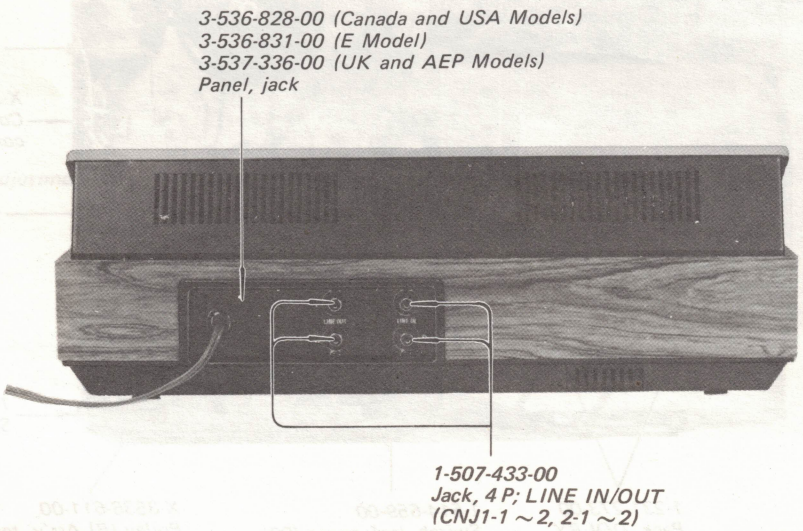
MODEL IDENTIFICATION

(See specification label)

Model	Identification on the specification label
USA	AC 120 V 60 Hz 21 W
UK,AEP	110, 127, 220, 240 ~ 50/60 Hz 22 W
Canada	AC 120 V 60 Hz 21 W
E	AC 100, 110, 127, 220, 240 50/60 Hz 22 W

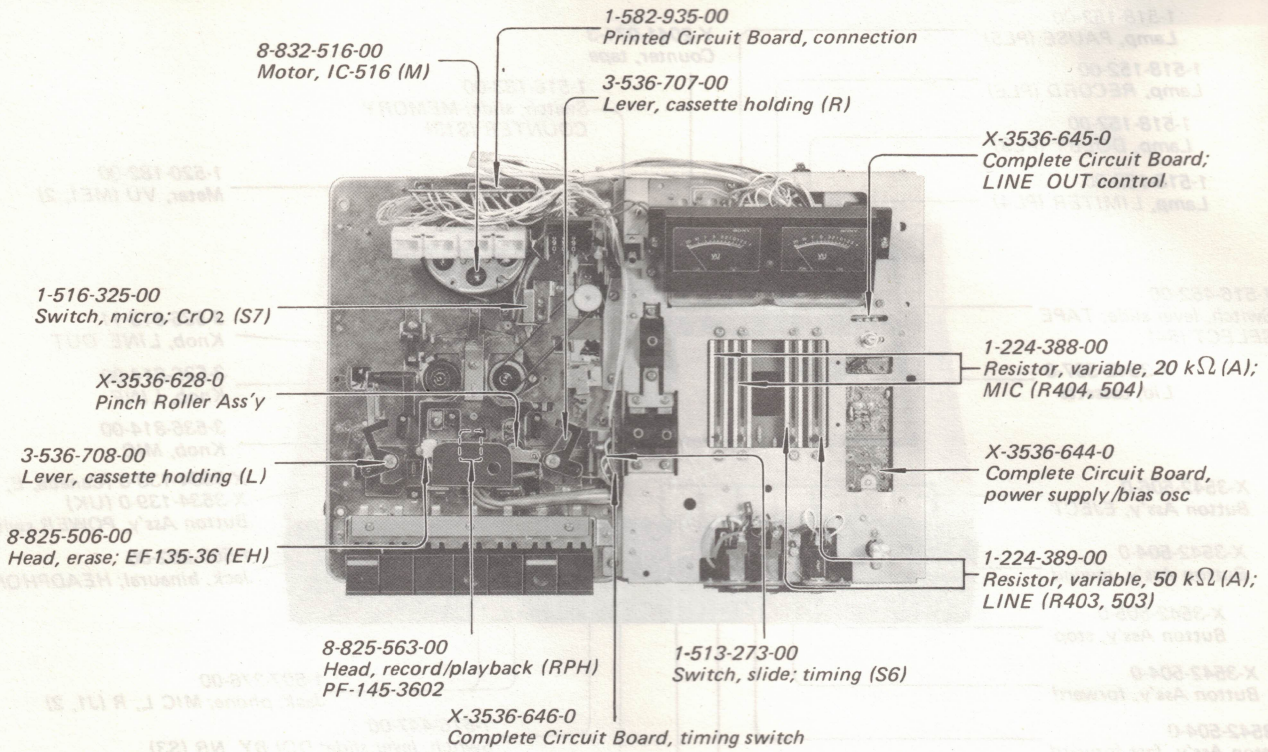
1-2. EXTERNAL VIEWS

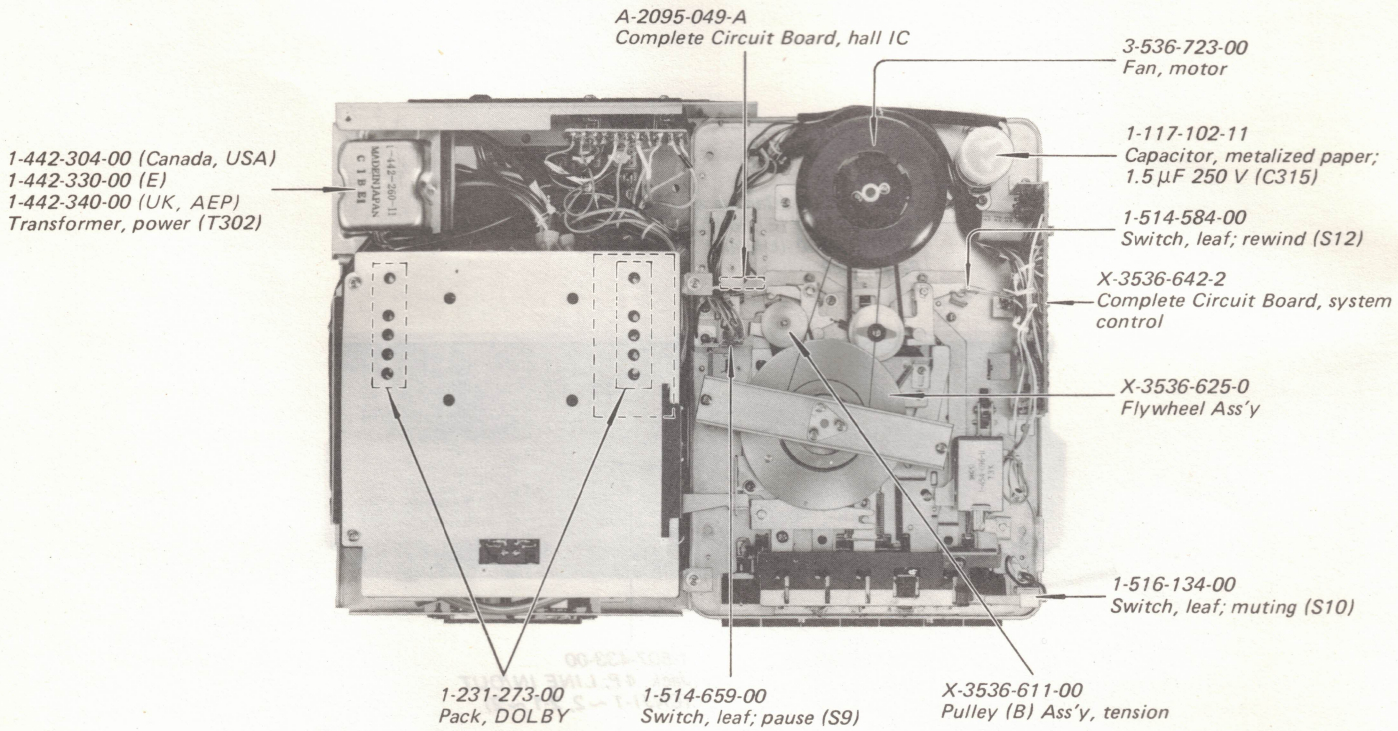




Note: Model for Canada and USA is shown.

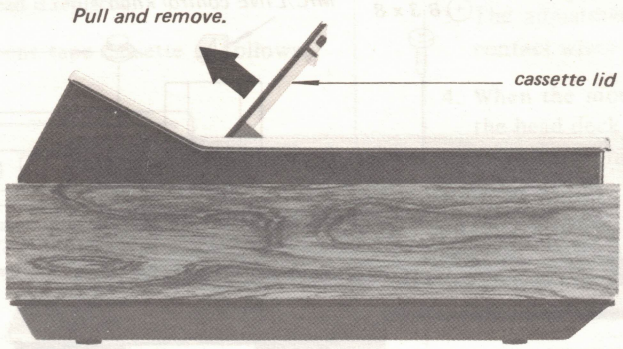
1-3. INTERNAL VIEWS



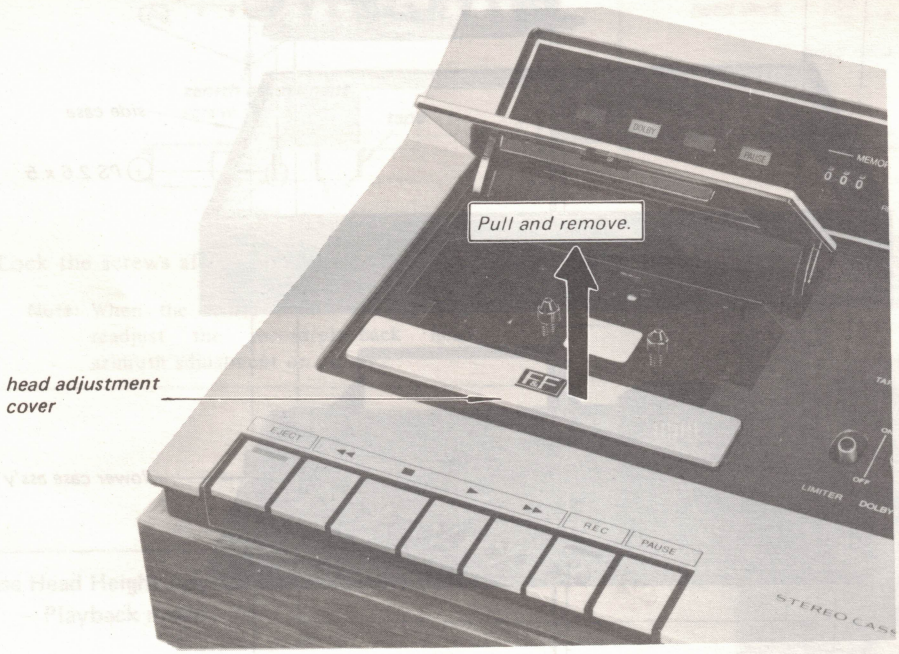


SECTION 2
DISASSEMBLY

2-1. CASSETTE LID REMOVAL

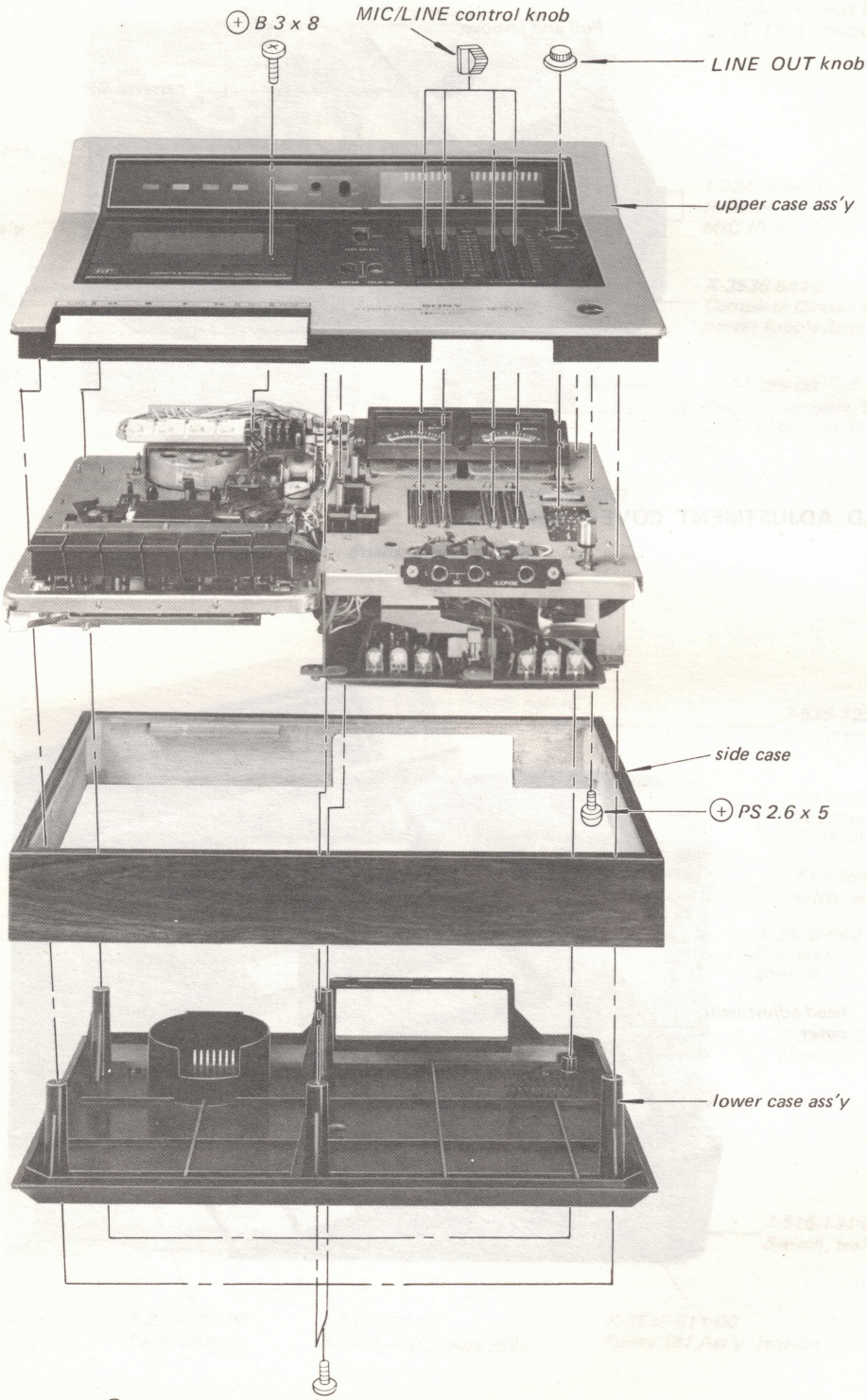


2-2. HEAD ADJUSTMENT COVER REMOVAL



2-3. CASE REMOVAL

② *Remove a screw ⊕ B 3 x 8, a screw ⊕ PS 2.6 x 5, a LINE OUT knob and four MIC/LINE control knobs, and remove upper case ass'y.*



① *Remove six screws ⊕ B 3 x 8, and remove lower case ass'y and side case.*

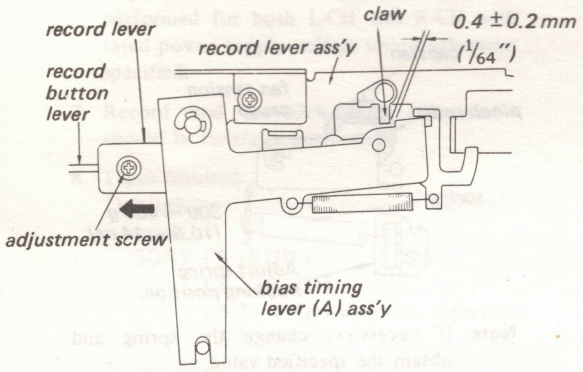
SECTION 3

ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENT (1)

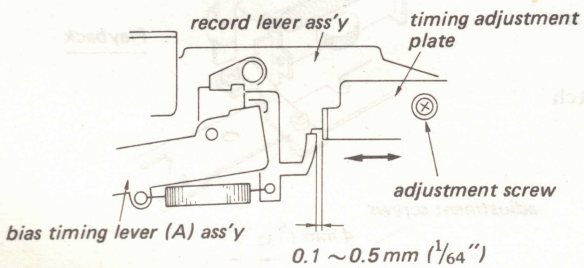
Record Lever Ass'y Adjustment (1)
– Playback mode –

1. Press the record lever against the record button lever.
2. Loosen the adjustment screw and adjust the clearance between the bias timing lever (A) ass'y and the claw of the record lever ass'y to become 0.4 ± 0.2 mm ($^1/_{64}$").
3. Slowly change the mode from stop to playback and assure that the bias timing lever (A) does not touch the claw.
4. Lock the screw after adjustment.



Record Lever Ass'y Adjustment (2)
– REC and Playback modes –

1. Loosen the adjustment screw and adjust the position of the timing adjustment plate so that the clearance becomes the specified value.
2. Lock the screw after adjustment.

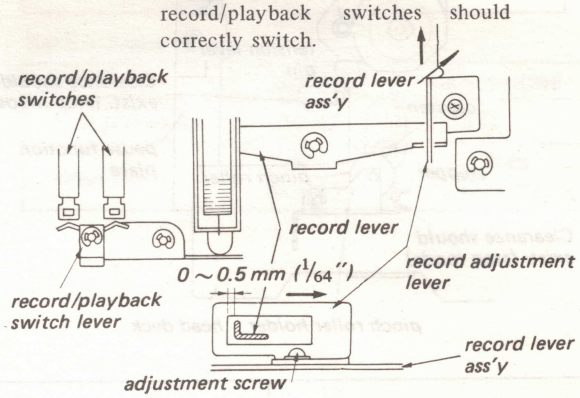


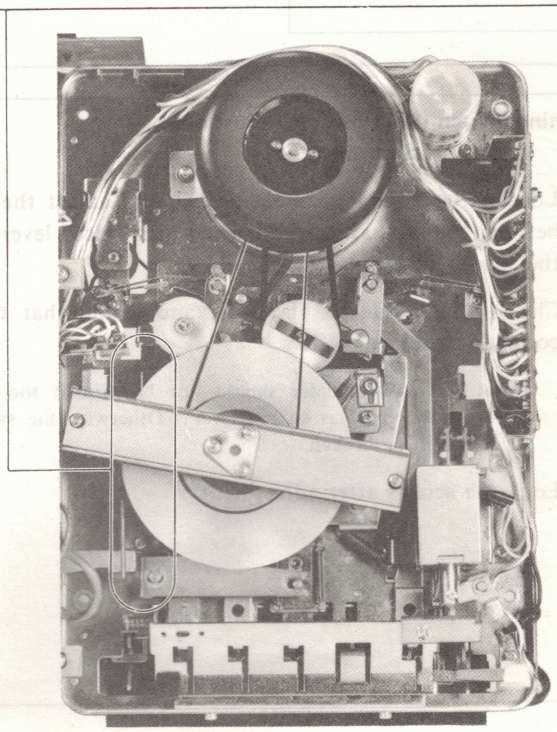
Record Lever Ass'y Adjustment (3)
– Stop mode –

1. Press the REC button until the record preventing lever contacts the erase-preventive lever.
2. Loosen the adjustment screw and adjust the position of the record adjustment lever so that the clearance between the record adjustment lever and record lever becomes the specified value.

   Note: The record adjustment lever should move only in the direction shown by the arrow.
3. Lock the screw after adjustment.

   Note: 1. When the REC button is pressed, the record/playback switch lever should not push the record/playback switches.
   2. When the REC button is locked, the record/playback switches should correctly switch.

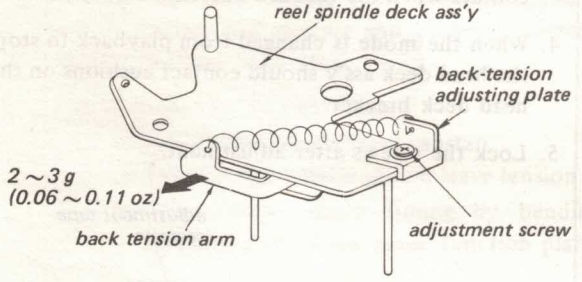




3-2. MECHANICAL ADJUSTMENT (2)

Back Tension Torque Adjustment
– Playback mode –

Loosen the adjustment screw and adjust the position of the back-tension adjusting plate to obtain the specified value.

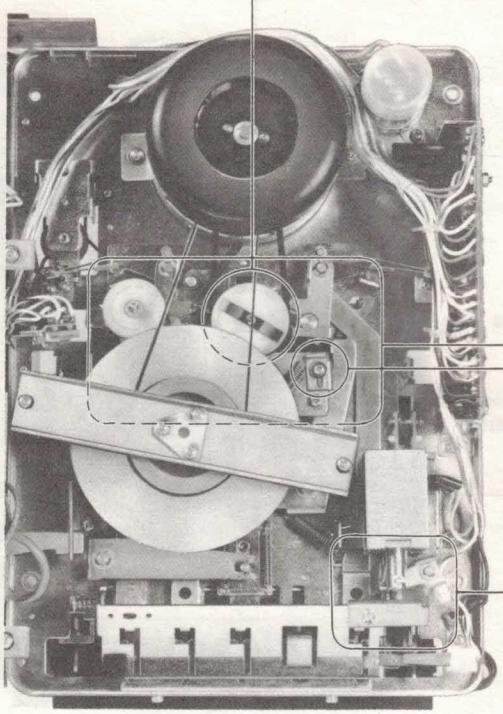


Take-up Torque Measurement
– Playback mode –

Take-up torque: 40 ~ 55 g·cm (0.55 ~ 0.76 oz·inch)
If not, change the reel spindle deck ass'y.

Fast Forward and Rewind Torque Measurement
– Fast Forward or Rewind mode –

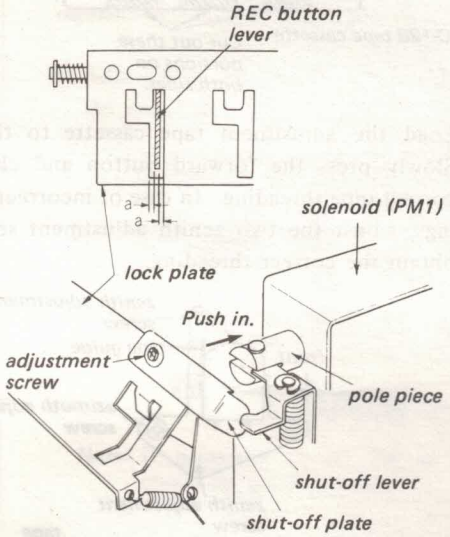
Torque: 70 ~ 110 g·cm (0.97 ~ 1.53 oz·inch)
If not, change the plate spring of the rewind roller arm ass'y.



Shut-off Adjustment
– Stop mode –

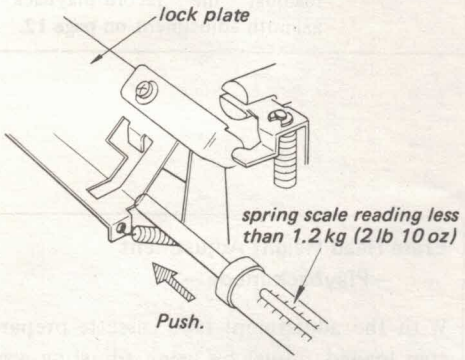
1. Fully push the pole piece into the solenoid.
2. Loosen the adjustment screw and adjust the position of the lock plate so that the REC button lever places at the center of the slot in the lock plate.
3. Lock the screw after adjustment.

Note: When the pole piece is pushed in, any locked function button should release.



Lock Plate Release Tension Measurement

Lock the REC and forward buttons and measure the lock plate release tension.

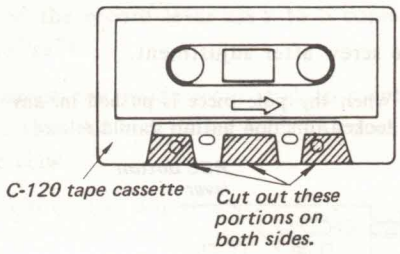


3-3. MECHANICAL ADJUSTMENT (3)

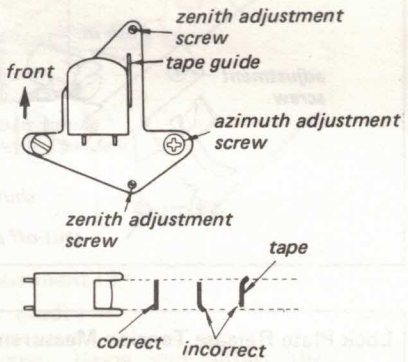
Record/Playback Head Height Adjustment

Note: Perform this adjustment before the record/playback head azimuth adjustment and when the record/playback head is replaced.

1. Prepare an adjustment tape cassette as follows.



2. Load the adjustment tape cassette to the unit. Slowly press the forward button and check for correct tape threading. In case of incorrect threadings, adjust the two zenith adjustment screws to obtain the correct threading.

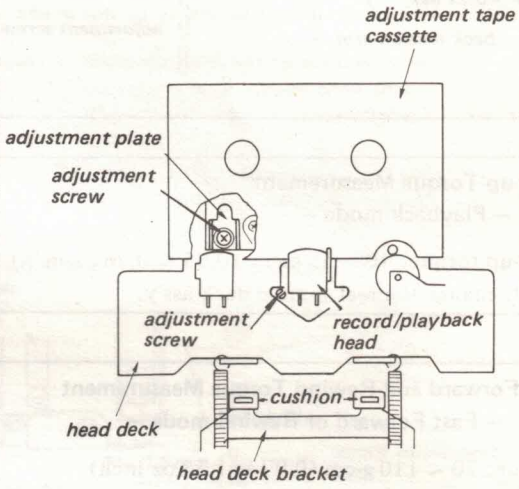


3. Lock the screws after adjustment.

Note: When the zenith screws are adjusted, readjust the record/playback head azimuth adjustment on page 12.

Head Depth Adjustment

1. In stop mode, load the adjustment tape cassette.
2. Loosen the two adjustment screws.
3. The adjustment plate and head deck ass'y should contact when the forward button is slowly pressed.
4. When the mode is changed from playback to stop, the head deck ass'y should contact cushions on the head deck bracket.
5. Lock the screws after adjustment.

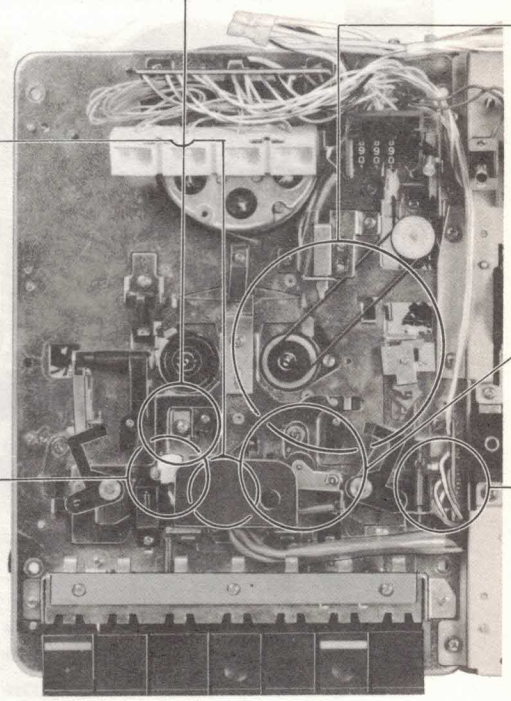


Erase Head Height Adjustment
– Playback mode –

With the adjustment tape cassette prepared in above step loaded, adjust by using adjusting washer.

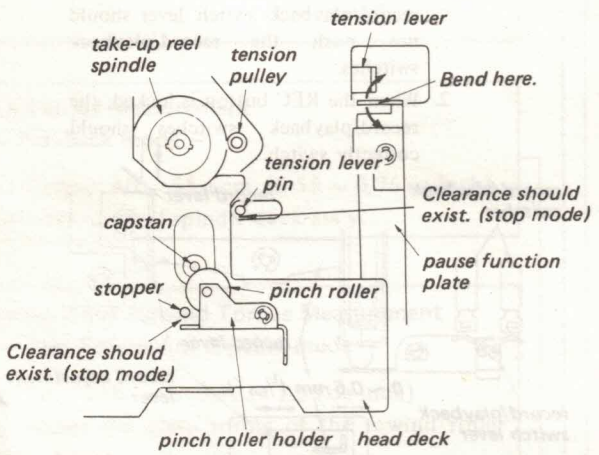
Adjusting washer:

Part No.	
3-513-237-01	t = 0.1 mm
3-513-237-11	t = 0.2 mm



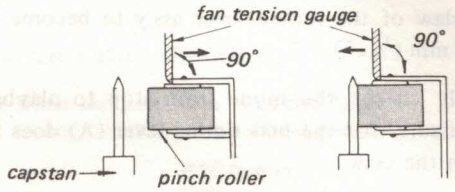
Timing Adjustments

1. Stop to Playback Mode:
   1) Tension pulley should contact take-up reel spindle.
   2) Pinch roller should contact capstan.
   3) Clearance should exist between pinch roller holder and stopper and between tension lever pin and head deck.
2. Playback to PAUSE Mode:
   1) Pinch roller should leave capstan.
   2) Take-up reel spindle should leave tension pulley.
   3) If necessary, adjust timing by bending the specified part of the pause function plate.

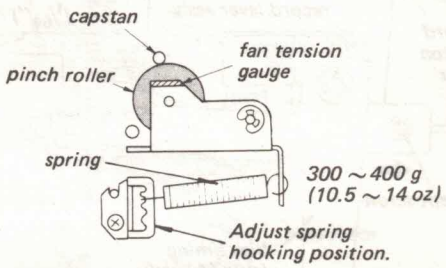


Pinch Roller Pressure Adjustment
– Playback mode –

1) Pull the pinch roller away from the capstan using a fan tension gauge.
2) Allow pinch roller to return slowly and measure the pressure just when the pinch roller contacts the capstan.



3) Adjust the spring hooking position to obtain the specified value.



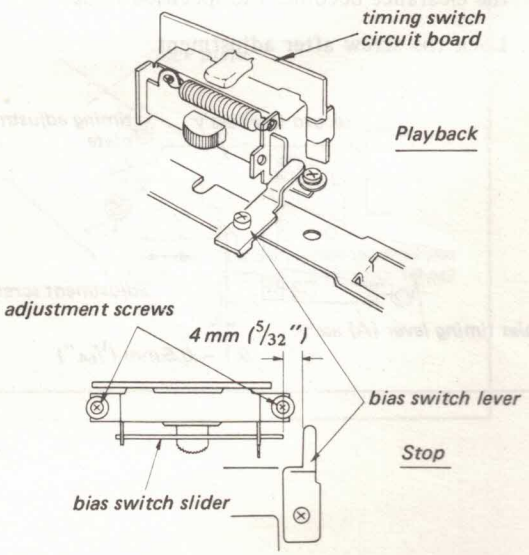
Note: If necessary, change the spring and obtain the specified value.

Timing Switch (S6) Position Adjustment
– Stop mode –

1. Loosen the two adjustment screws and adjust the clearance between the bias switch slider and bias switch lever to obtain the specified value.
2. Change the mode to playback, and assure that the switch correctly switches mode.

   Note: Bias switch slider should not be pushed too long stroke by bias switch lever. Otherwise the switch might be broken.

3. Lock the screws after adjustment.



3-4. 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 magnetized screwdriver for adjustments.
4. After adjustments, apply a small amount of locking compound to the parts adjusted.
5. Adjustments should be performed in the order arranged in this service manual.
6. Adjustments and measurements should be performed for both L-CH and R-CH with rated power supply voltage unless otherwise specified.
7. 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)
      CS-20 (CrO_2) with two extra holes
      CS-30 (Fe-Cr)
   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)
9. Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch:	OFF
LIMITER switch:	OFF
LINE OUT control:	10 (maximum)
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)

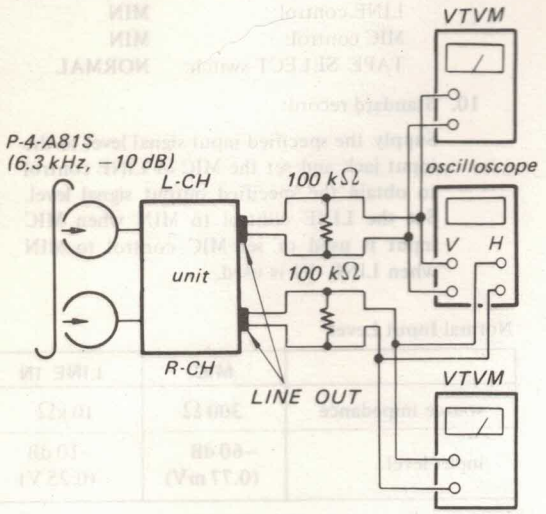
Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch:	OFF	LINE control:	MIN
LIMITER switch:	OFF	MIC control:	MIN
LINE OUT control:	10 (maximum)	TAPE SELECT switch:	NORMAL

1. Head Azimuth Adjustment

Procedure:

1. Mode: Playback

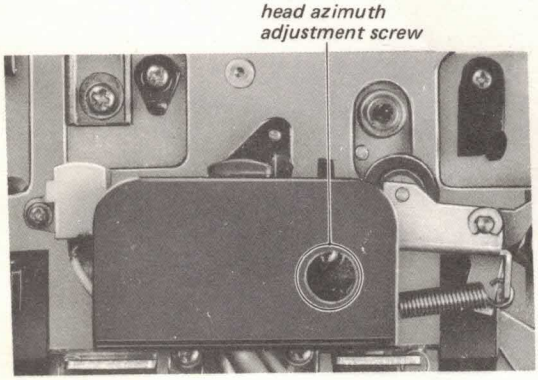


2.

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.

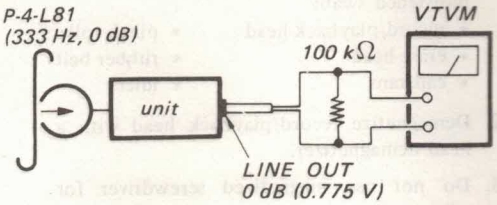
Adjustment Location:



2. Playback Level Adjustment

Procedure:

1. Mode: Playback



Adjust R117 (L-CH) and R217 (R-CH) to obtain 0 dB (0.775 V) VTVM reading.

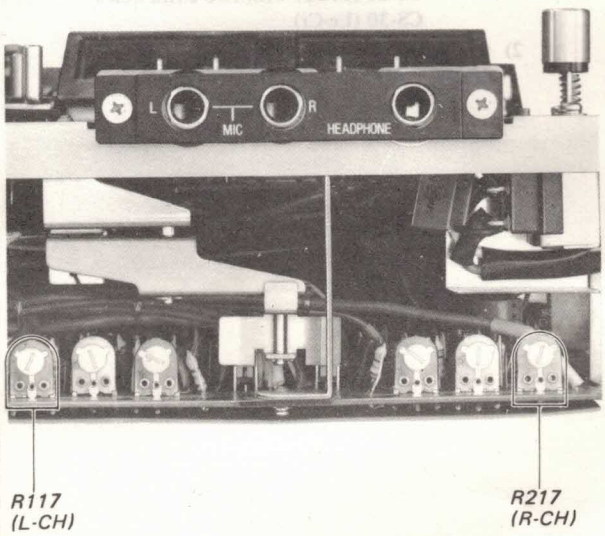
2. Assure that the LINE OUT level does not change when the mode is changed from playback to stop several times.

Specification:

LINE OUT level: 0 dB ± 0.5 dB (0.74 ~ 0.82 V)

Level difference between channels: less than 0.5 dB

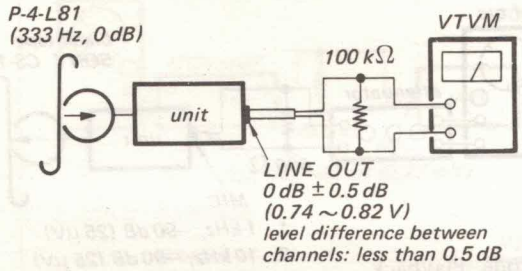
Adjustment Location:



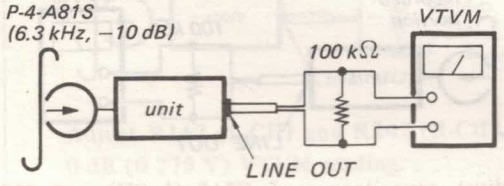
3. Playback Equalizer Adjustment

Procedure:

1. Mode: Playback



2. Mode: Playback



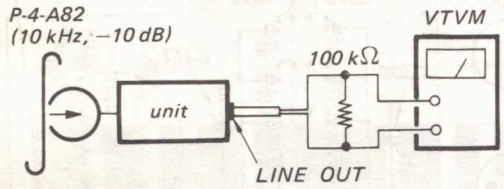
1) TAPE SELECT switch: CrO_2 or Fe-Cr
Adjust R115 (L-CH) and R215 (R-CH) to obtain the LINE OUT voltage 17.0 dB lower than that obtained in step 1 above.

Specification: 16.5 ~ 17.5 dB lower

2) TAPE SELECT switch: NORMAL
Adjust R116 (L-CH) and R216 (R-CH) to obtain the LINE OUT voltage 11.5 dB lower than that obtained in step 1 above.

Specification: 11.0 ~ 12.0 dB lower

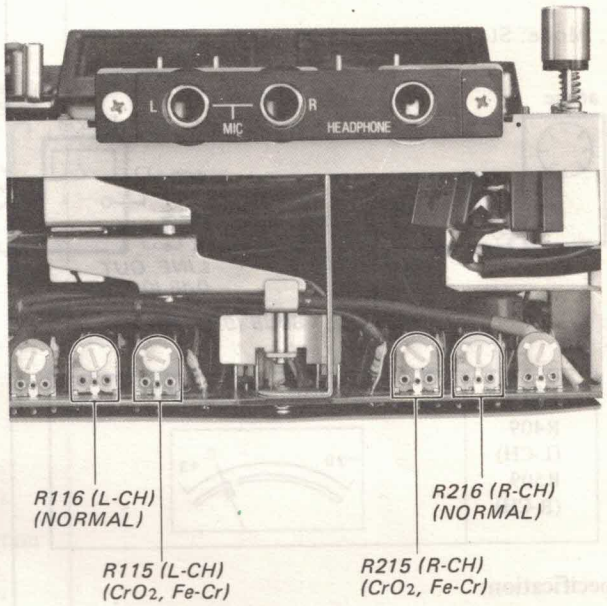
3. Mode: Playback



TAPE SELECT switch: NORMAL
Assure that the LINE OUT voltage is 11.0 dB lower than that obtained in step 1 above.

Specification: 8.0 ~ 14.0 dB lower

Adjustment Location:



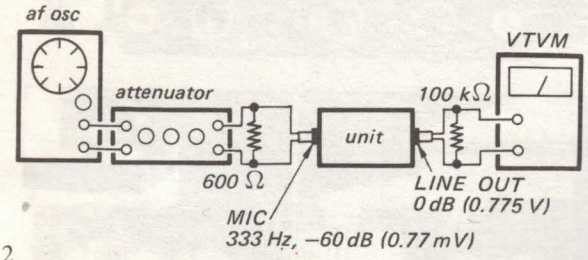
Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch:	OFF	LINE control:	MIN
LIMITER switch:	OFF	MIC control:	MIN
LINE OUT control:	10 (maximum)	TAPE SELECT switch:	NORMAL

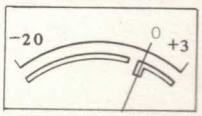
4. VU Meter Calibration

Procedure:

1. Mode: Standard record (See page 11.)



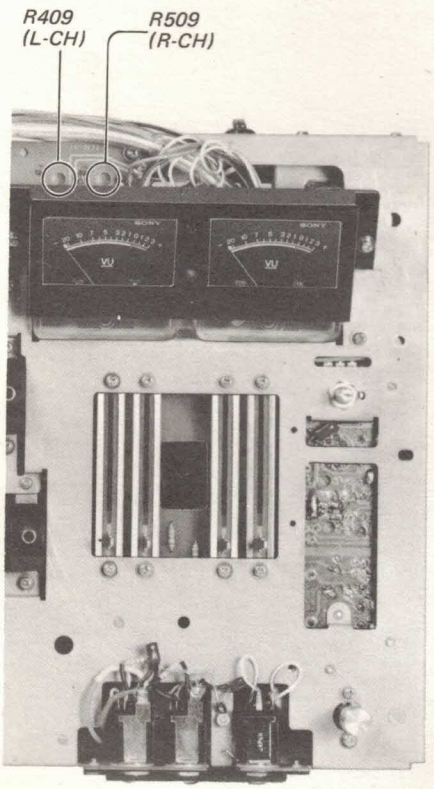
2.

Adjust	VU meter reading: 0 VU
R409 (L-CH) R509 (R-CH)	

Specification:

When the MIC input level is adjusted to make 0 VU indication, VTVM reading should be −0.5 ~ +0.5 dB (0.74 ~ 0.82 V).

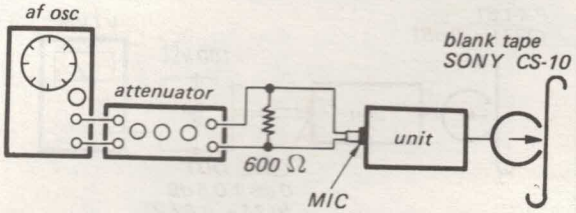
Adjustment Location:



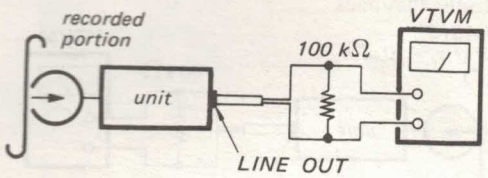
5. Record Bias Adjustment

Procedure:

1. Mode: Standard record
   MIC control: as set in 4. VU Meter Calibration.



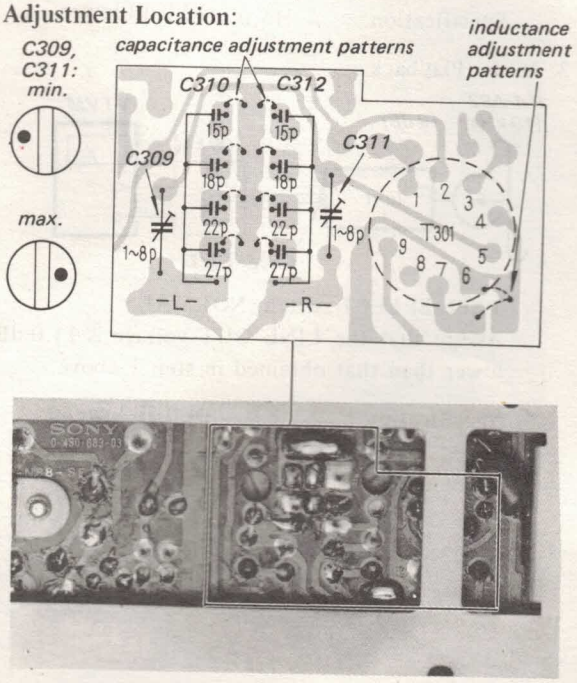
2. Mode: Playback



3. Adjust capacitances of C310 (L-CH) and C312 (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, further adjust with trimmers C309 (L-CH) and C311 (R-CH). If necessary, adjust inductance of bias osc transformer T301 by connecting patterns.

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

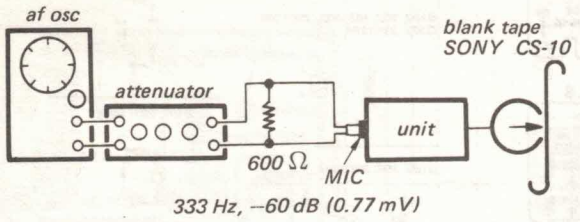
Adjustment Location:



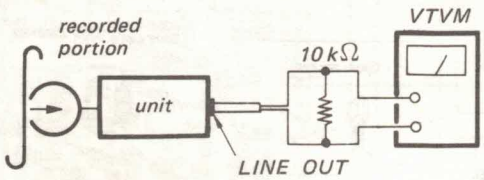
6. Record Level Adjustment

Procedure:

1. Mode: Standard record (See page 11.)



2. Mode: Playback



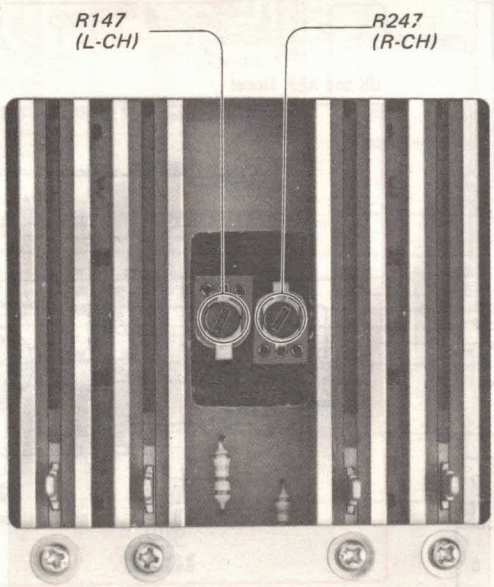
Adjust R147 (L-CH) and R247 (R-CH) to obtain 0 dB (0.775 V) VTVM reading.

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	0 dB (0.775 V, reference)
CS-20	–2 ~ +1 dB (0.62 ~ 0.85 V)
CS-30	–1 ~ +1 dB (0.69 ~ 0.85 V)

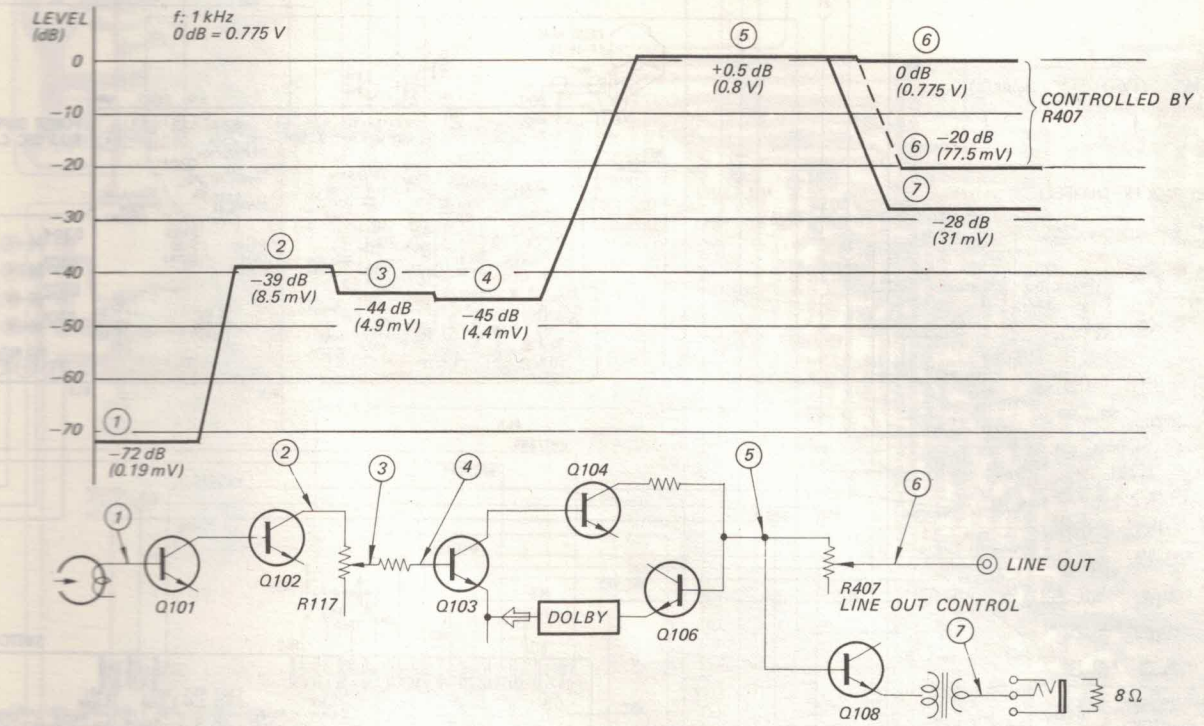
Adjustment Location:



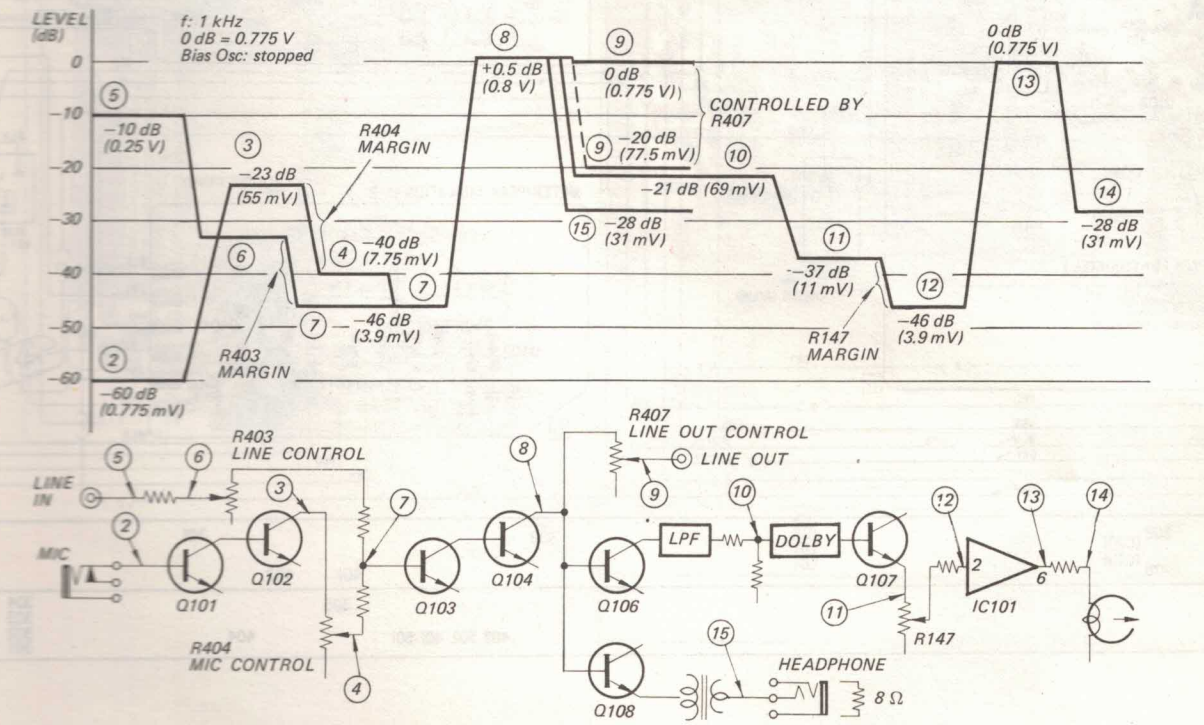
SECTION 4
DIAGRAMS

4-1. LEVEL DIAGRAMS

Playback

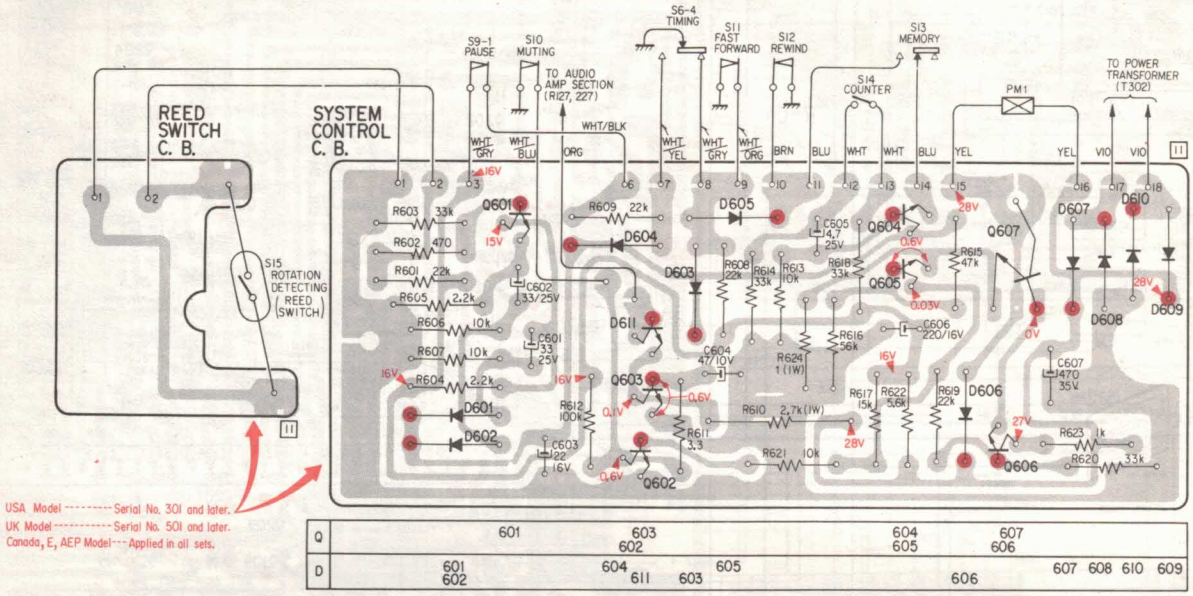


Record



4-2. MOUNTING DIAGRAMS

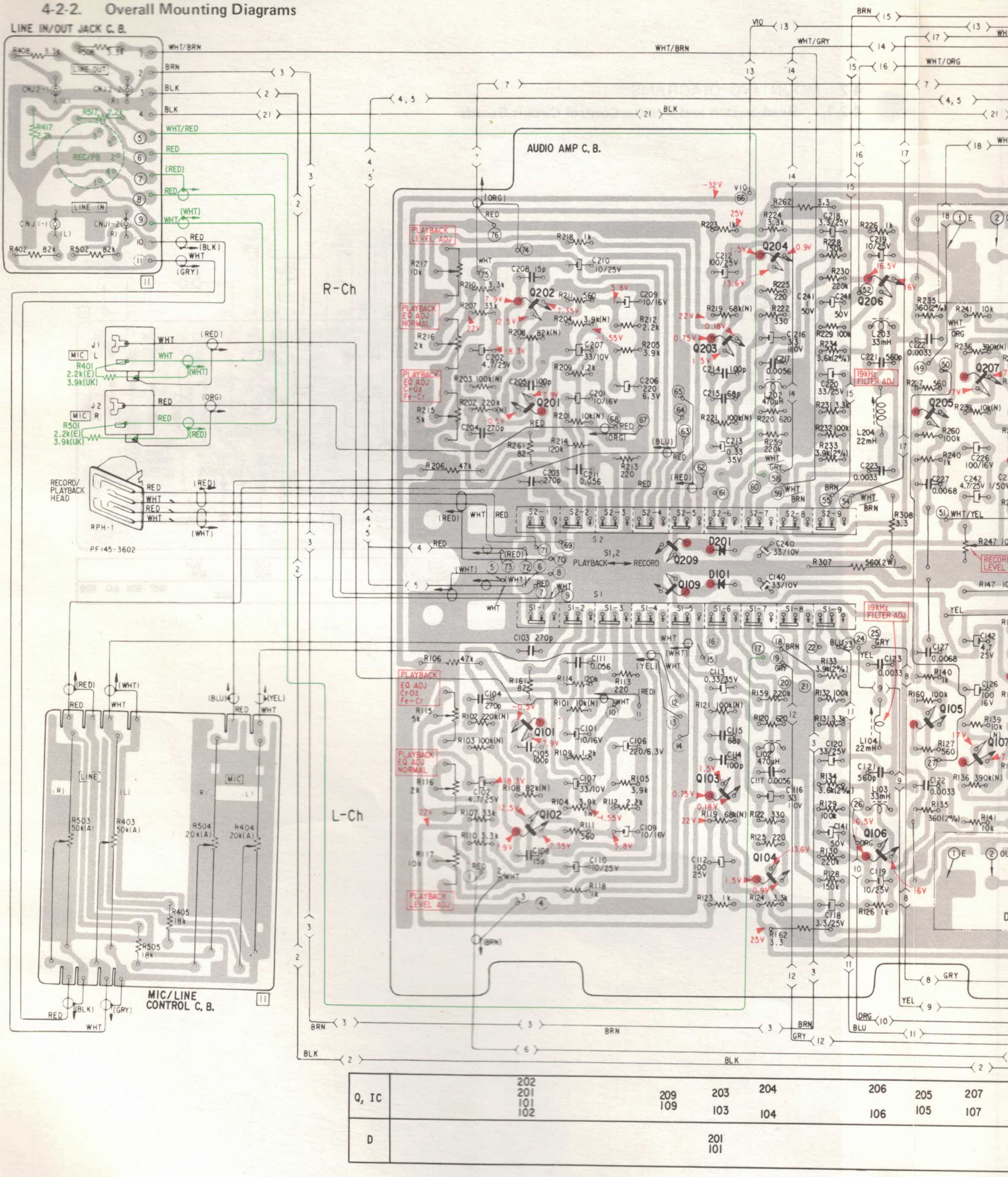
4-2-1. Reed Switch and System Control Circuit Boards



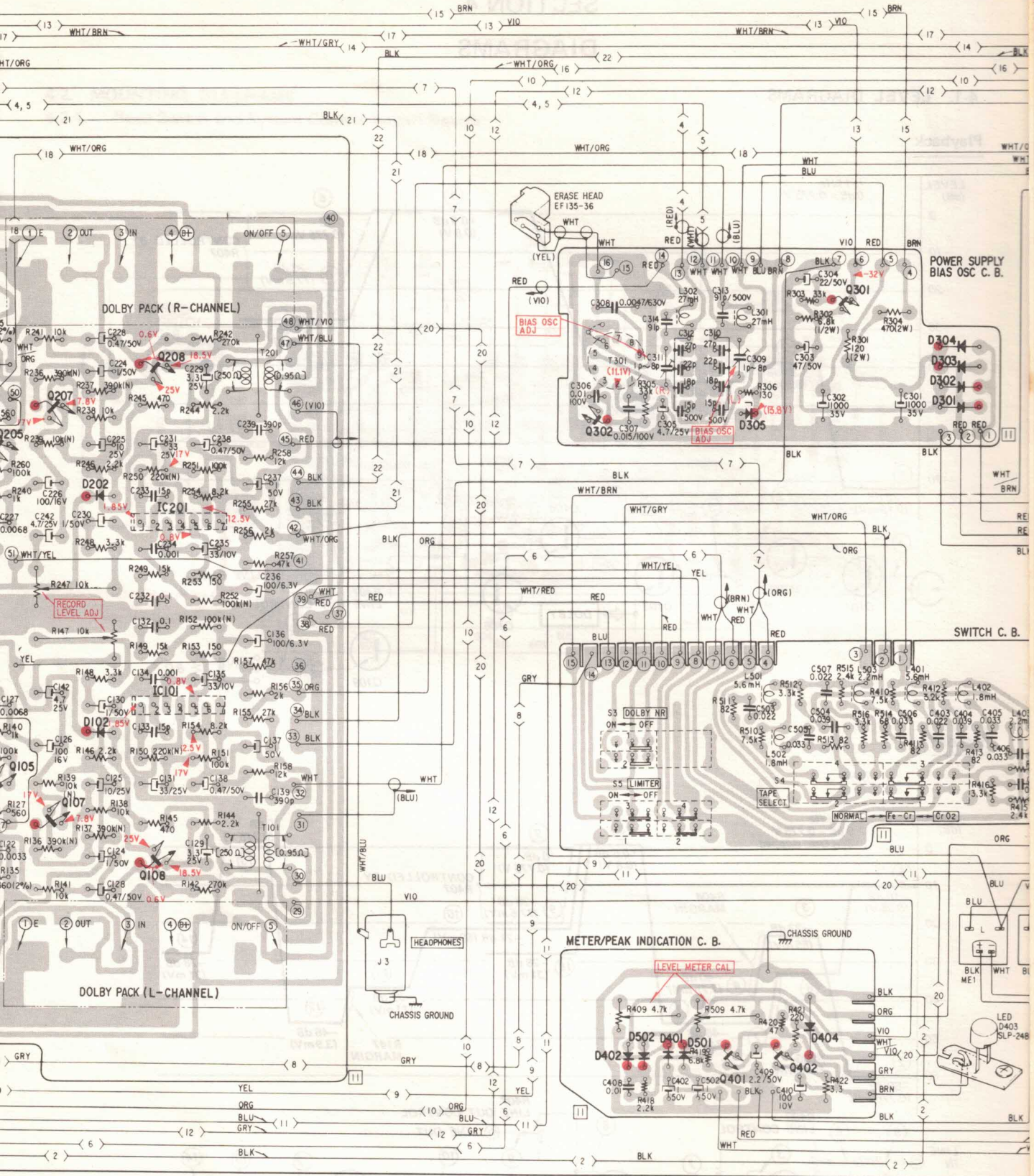
USA Model --------- Serial No. 301 and later.
UK Model ---------- Serial No. 501 and later.
Canada, E, AEP Model--- Applied in all sets.

| | | |

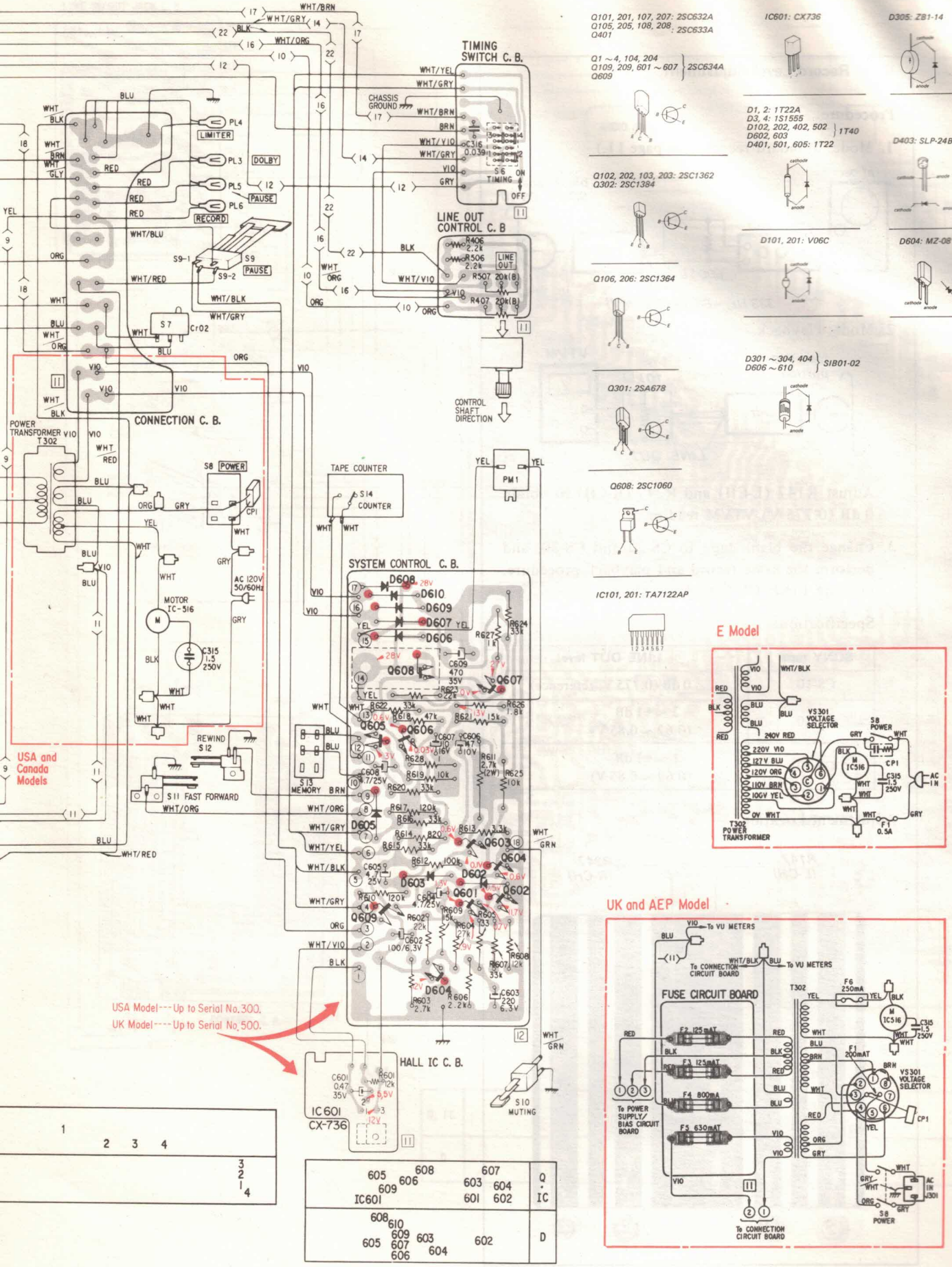
4-2-2. Overall Mounting Diagrams



Q, IC	202 201 101 102	209 109	203 103	204 104	206 106	205 105	207 107
D			201 101				



207 208 IC201
107 IC101
108
202
102
302
301
401 402
305
304
303
302
301 403
402 502 401 501
404



Q101, 201, 107, 207: 2SC632A
Q105, 205, 108, 208, Q401: 2SC633A

Q1 ~ 4, 104, 204
Q109, 209, 601 ~ 607
Q609 } 2SC634A

Q102, 202, 103, 203: 2SC1362
Q302: 2SC1384

Q106, 206: 2SC1364

Q301: 2SA678

Q608: 2SC1060

IC101, 201: TA7122AP

IC601: CX736

D1, 2: 1T22A
D3, 4: 1S1555
D102, 202, 402, 502
D602, 603
D401, 501, 605: 1T22 } 1T40

D101, 201: V06C

D301 ~ 304, 404
D606 ~ 610 } SIB01-02

D305: ZB1-14

D403: SLP-24B

D604: MZ-08

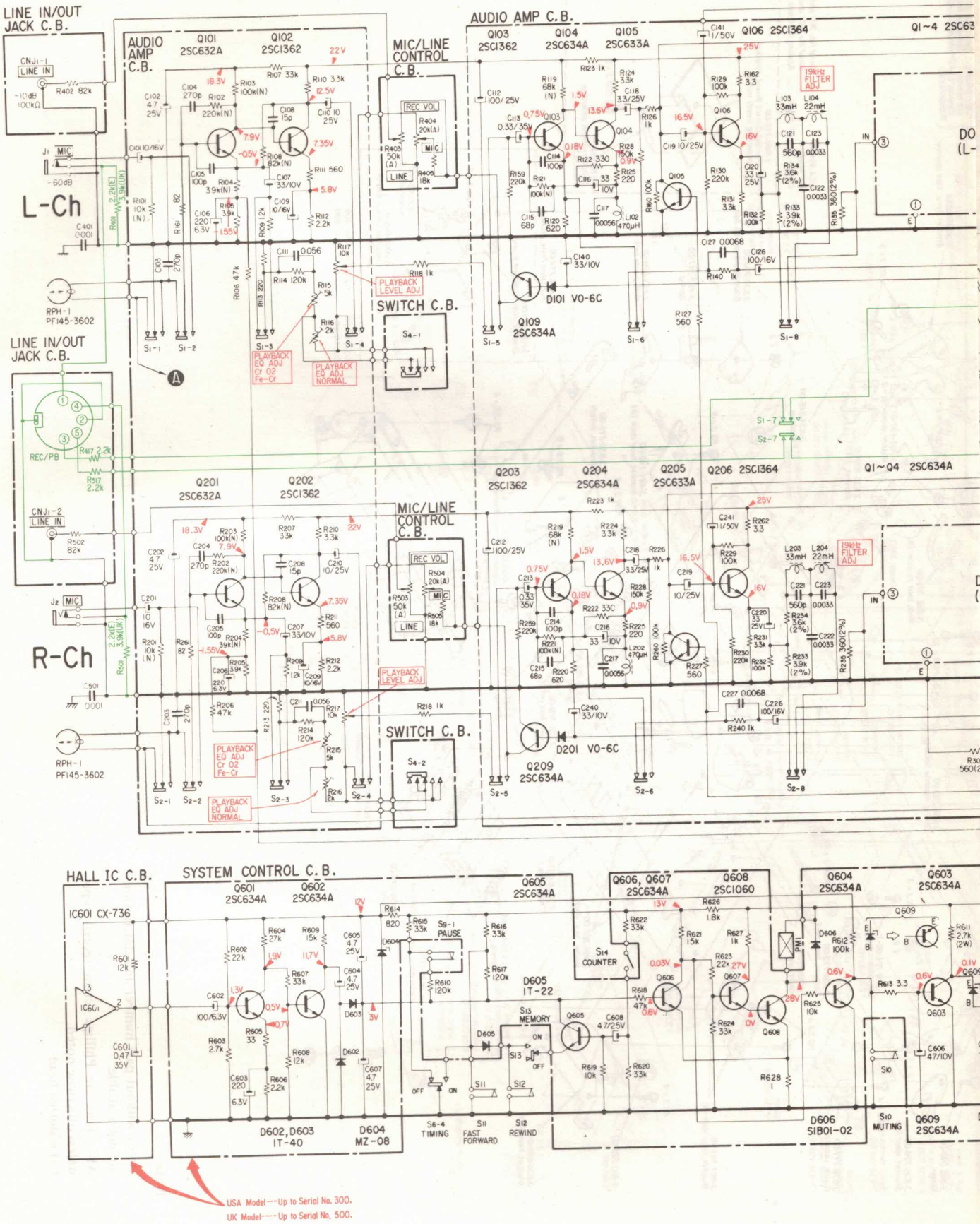
E Model

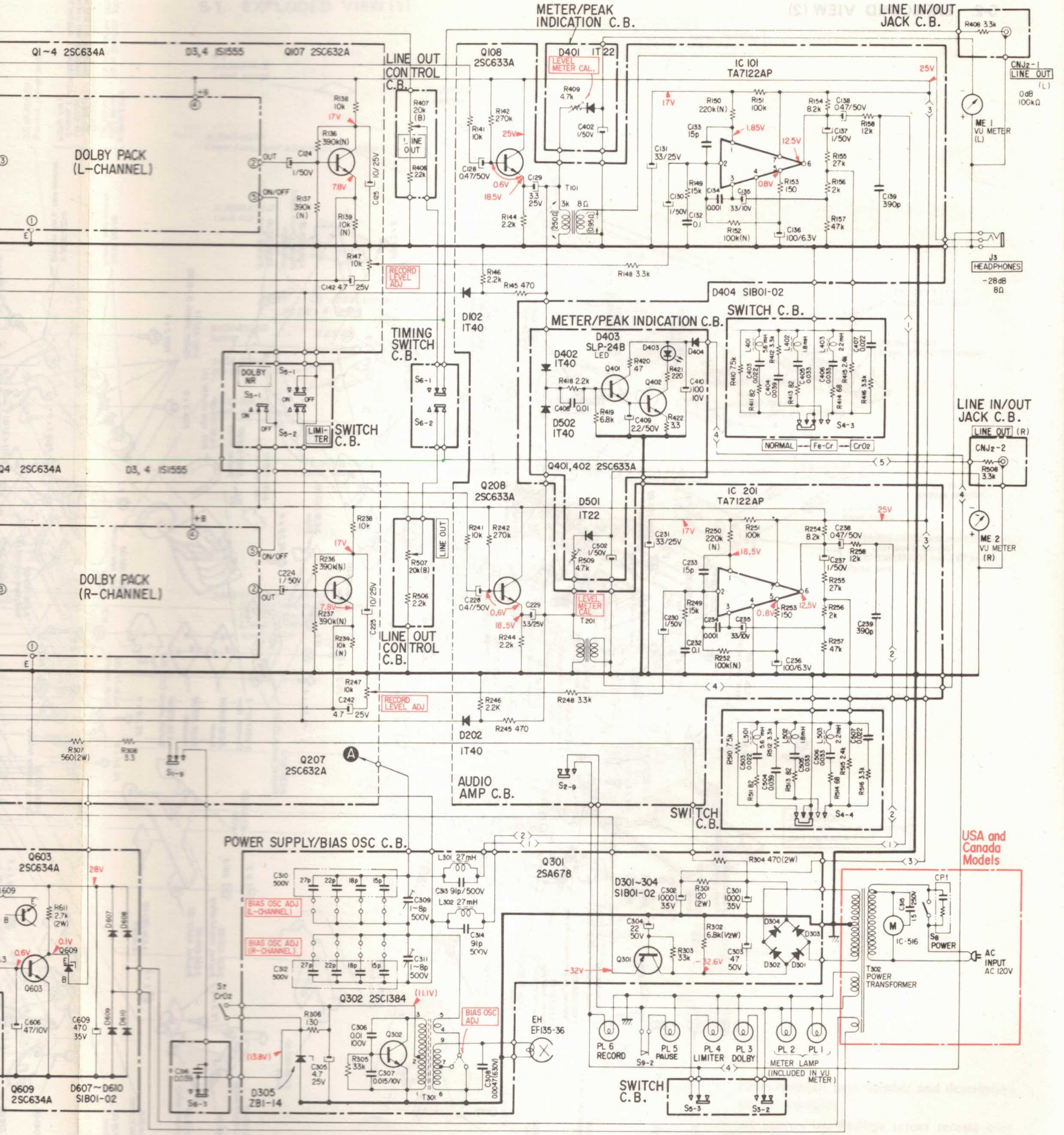
UK and AEP Model

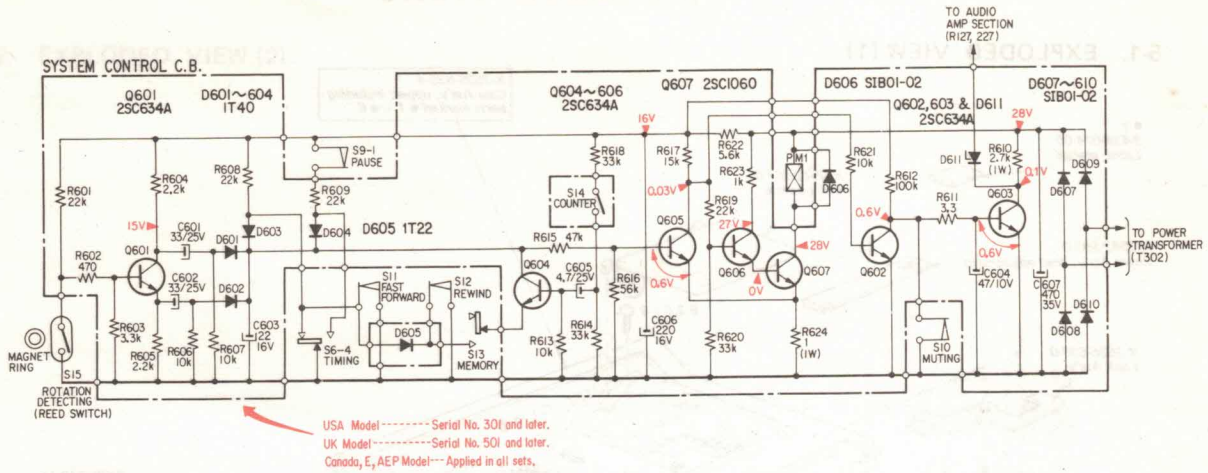
1 2 3 4	3 2 1 4
605 608 609 606 IC601	607 603 604 601 602
608 610 609 605 607 606 603 604	602

Note: Circuit shown with green colour is for the AEP, UK and E Models.

4-3. SCHEMATIC DIAGRAM




METER/PEAK INDICATION C.B.
LINE IN/OUT JACK C.B.
Q1~4 2SC634A
D3,4 1SI555
Q107 2SC632A
LINE OUT CONTROL C.B.
Q108 2SC633A
D401 IT22
LEVEL METER CAL.
IC 101 TA7122AP
DOLBY PACK (L-CHANNEL)
RECORD LEVEL ADJ
D102 IT40
TIMING SWITCH C.B.
METER/PEAK INDICATION C.B.
D403 SLP-24B LED
D402 IT40
D502 IT40
D404 SIB01-02
SWITCH C.B.
NORMAL
Fe-Cr
CrO2
LIMITER
DOLBY NR
LINE OUT (L)
LINE OUT (R)
CNJ2-1
CNJ2-2
ME 1 VU METER (L)
ME 2 VU METER (R)
J3 HEADPHONES
-28dB 8Ω
DOLBY PACK (R-CHANNEL)
Q4 2SC634A
D3, 4 1SI555
Q401,402 2SC633A
Q208 2SC633A
D501 IT22
IC 201 TA7122AP
D202 IT40
Q207 2SC632A
AUDIO AMP C.B.
POWER SUPPLY/BIAS OSC C.B.
Q603 2SC634A
Q609 2SC634A
D607~D610 SIB01-02
Q301 2SA678
D301~304 SIB01-02
Q302 2SC1384
BIAS OSC ADJ (L-CHANNEL)
BIAS OSC ADJ (R-CHANNEL)
BIAS OSC ADJ
D305 ZB1-14
EH EF135-36
PL 6 RECORD
PL 5 PAUSE
PL 4 LIMITER
PL 3 DOLBY
PL 2
PL 1
METER LAMP (INCLUDED IN VU METER)
USA and Canada Models
T302 POWER TRANSFORMER
IC-516
S8 POWER
AC INPUT AC 120V
T101
T201
T301



Note:

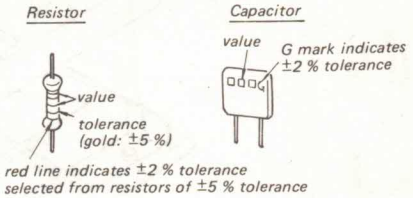
- Circuit shown with green colour is for the AEP, UK and E Models.
- All capacitors are in μF unless otherwise noted. p = μμF
- All resistors are in Ω, ¼ W, unless otherwise noted. k = 1,000 M = 1,000k
- Coil resistances are out-of-circuit values.
- ⏚ indicates chassis ground.
- (N) indicates a low-noise resistor.
- C.B.: Circuit Board
- Transistors are used for D611 and Q609 instead of diode.
- Voltages are DC with respect to ground unless otherwise noted. Readings taken under no-signal conditions with a VOM (20 kΩ/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.

- Switch mode:

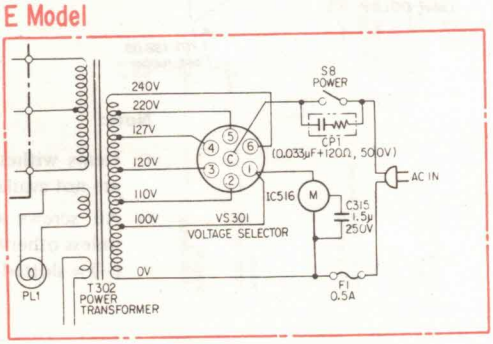
Ref. No.	Switch	Position
S1, 2	record/playback	playback
S3	DOLBY NR	OFF
S4	TAPE SELECT	NORMAL
S5	LIMITER	OFF
S6	timing	ON
S7	CrO2 select	OFF
S8	POWER	OFF
S9	pause	OFF
S10	muting	OFF
S11	fast forward	OFF
S12	rewind	OFF
S13	MEMORY	OFF
S14	counter	OFF
S15	rotation detecting(reed)	OFF

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

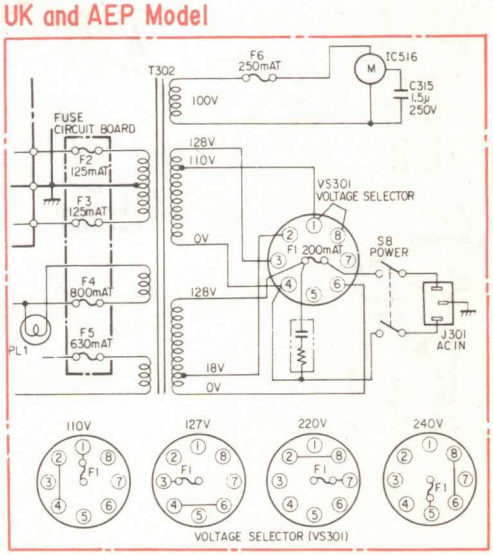
2 % Tolerance Identification



E Model



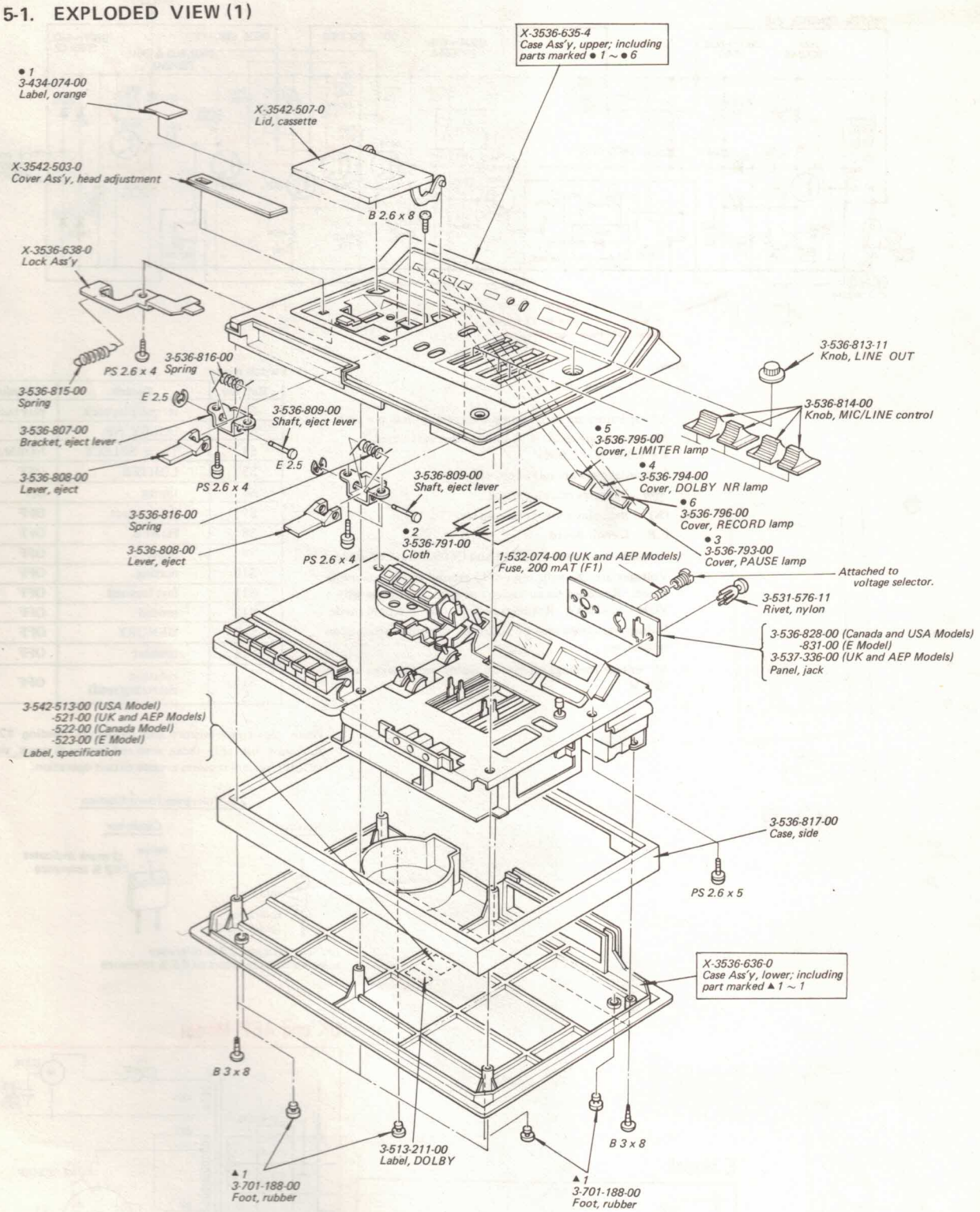
UK and AEP Model



SECTION 5

EXPLODED VIEWS

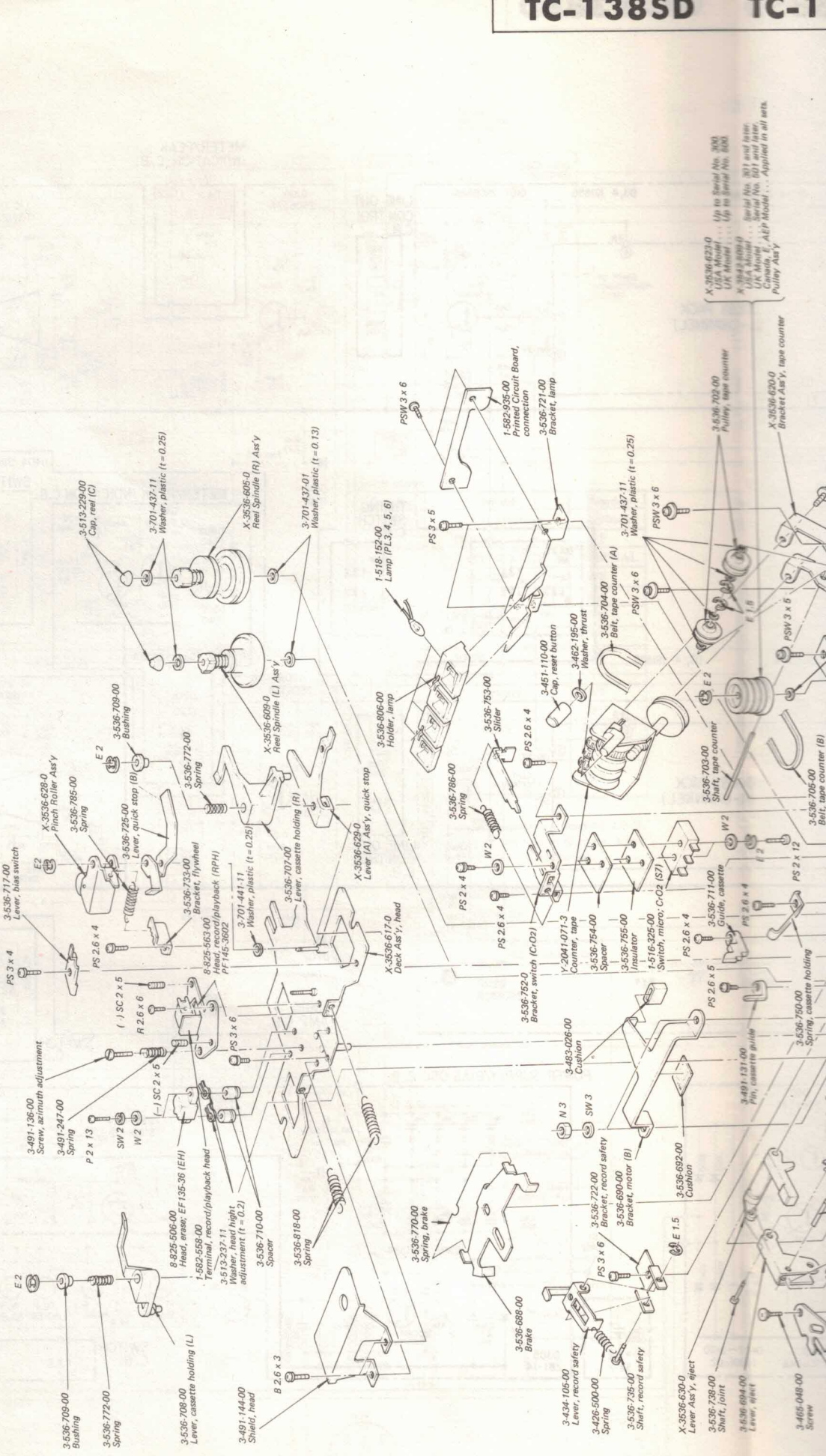
5-1. EXPLODED VIEW (1)

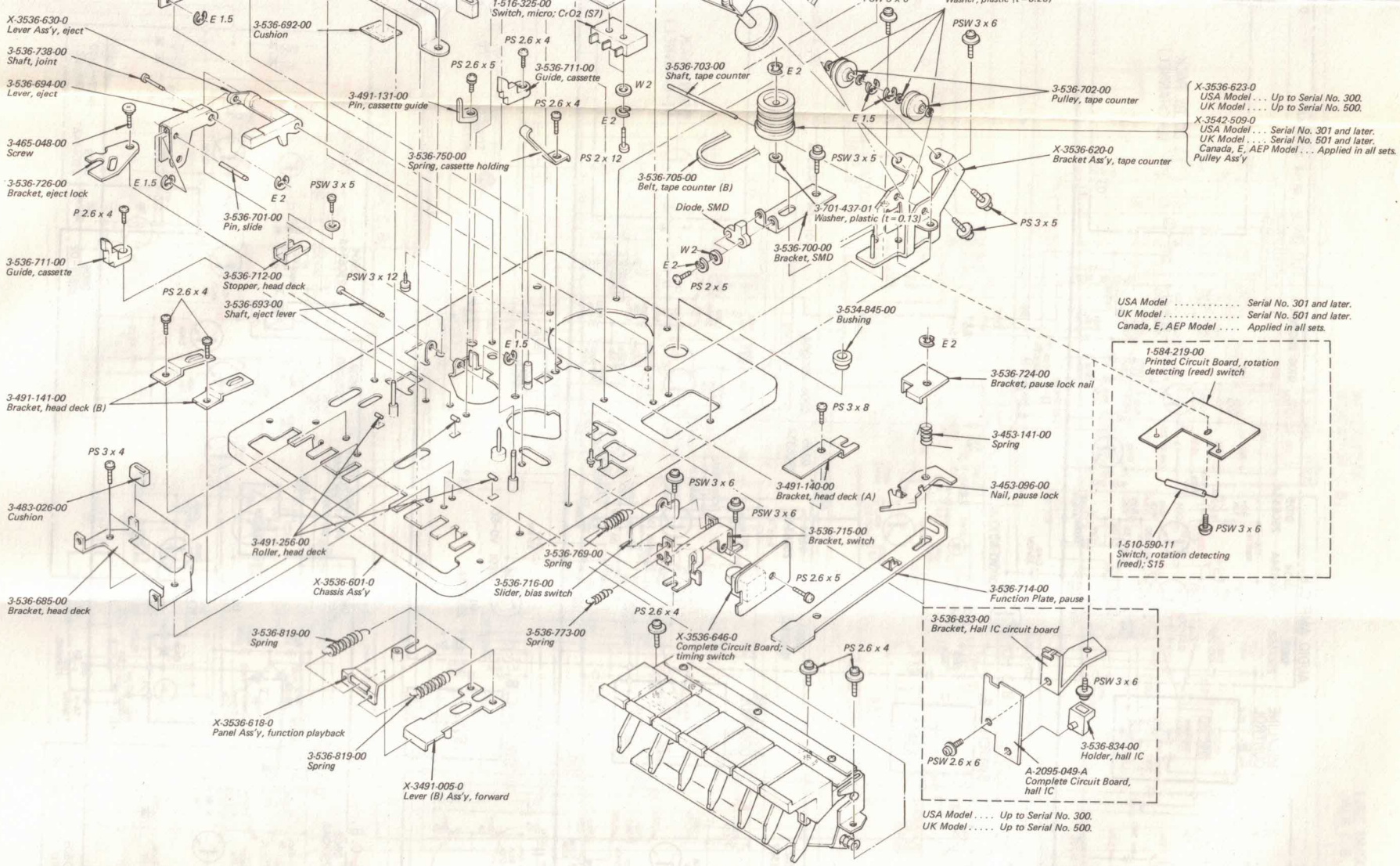


Note:

- ○ Items without part number and description are not available.
- ○ All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

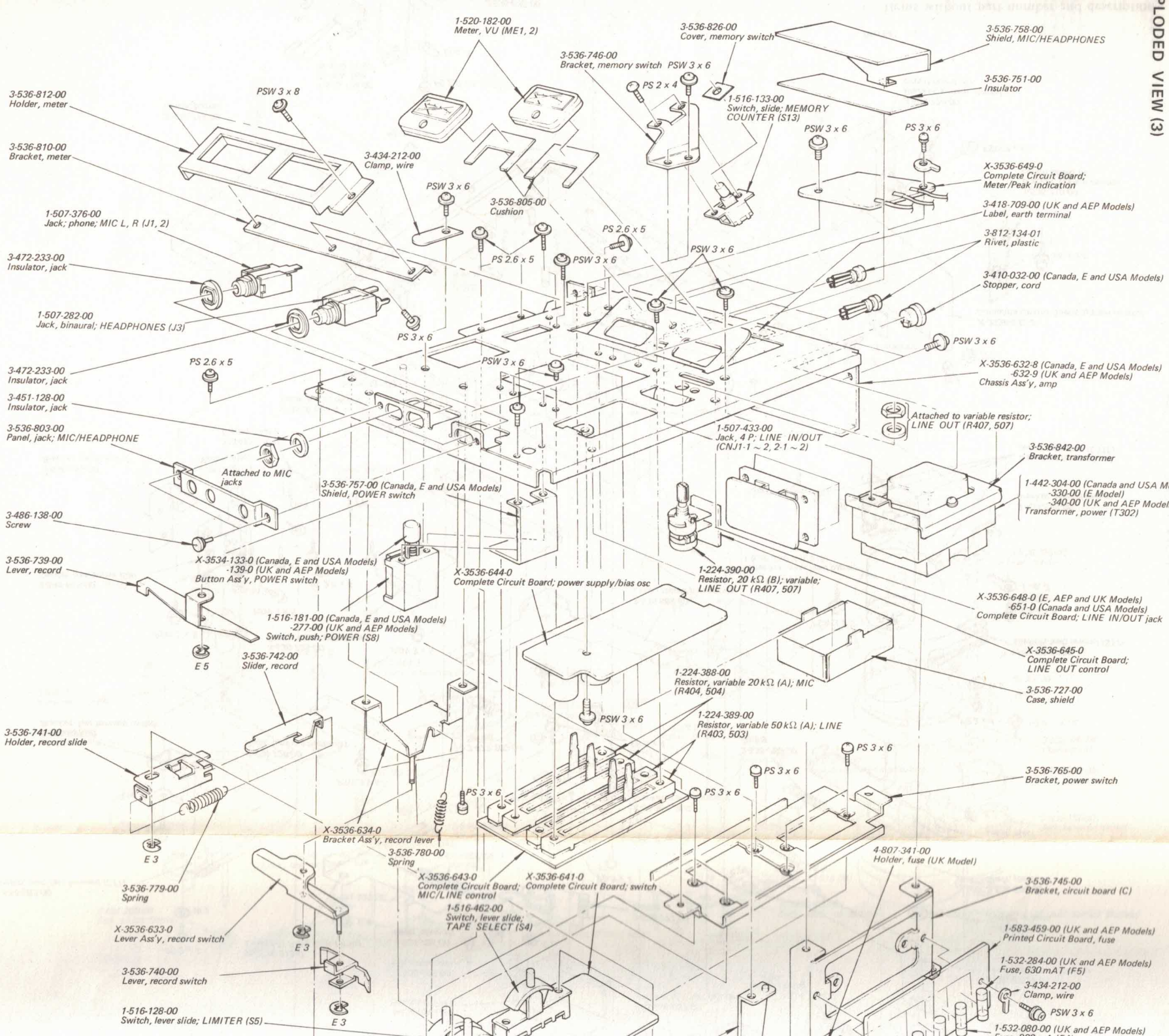
5-2. EXPLODED VIEW (2)

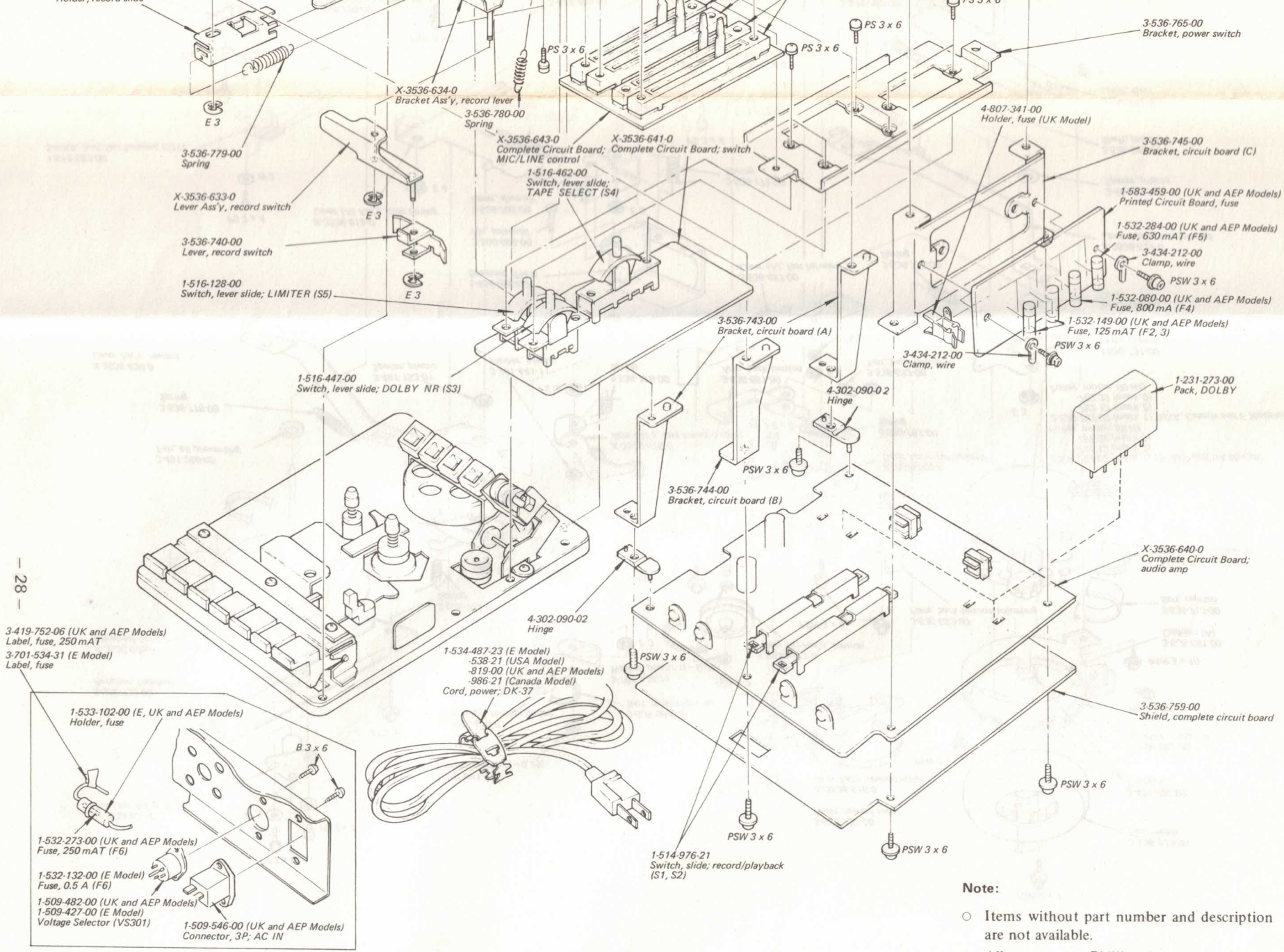




Note:

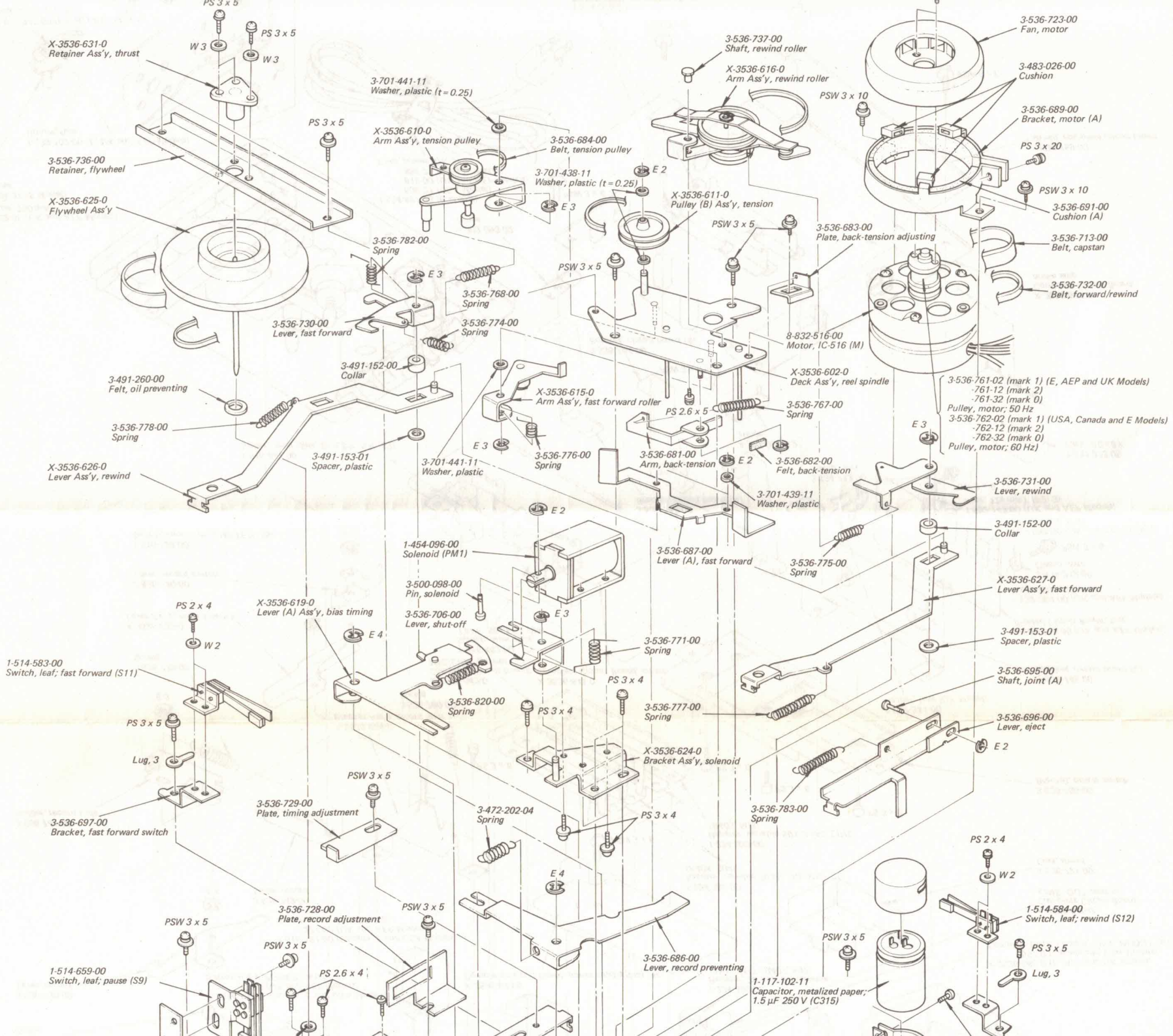
- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (−) = slotted head

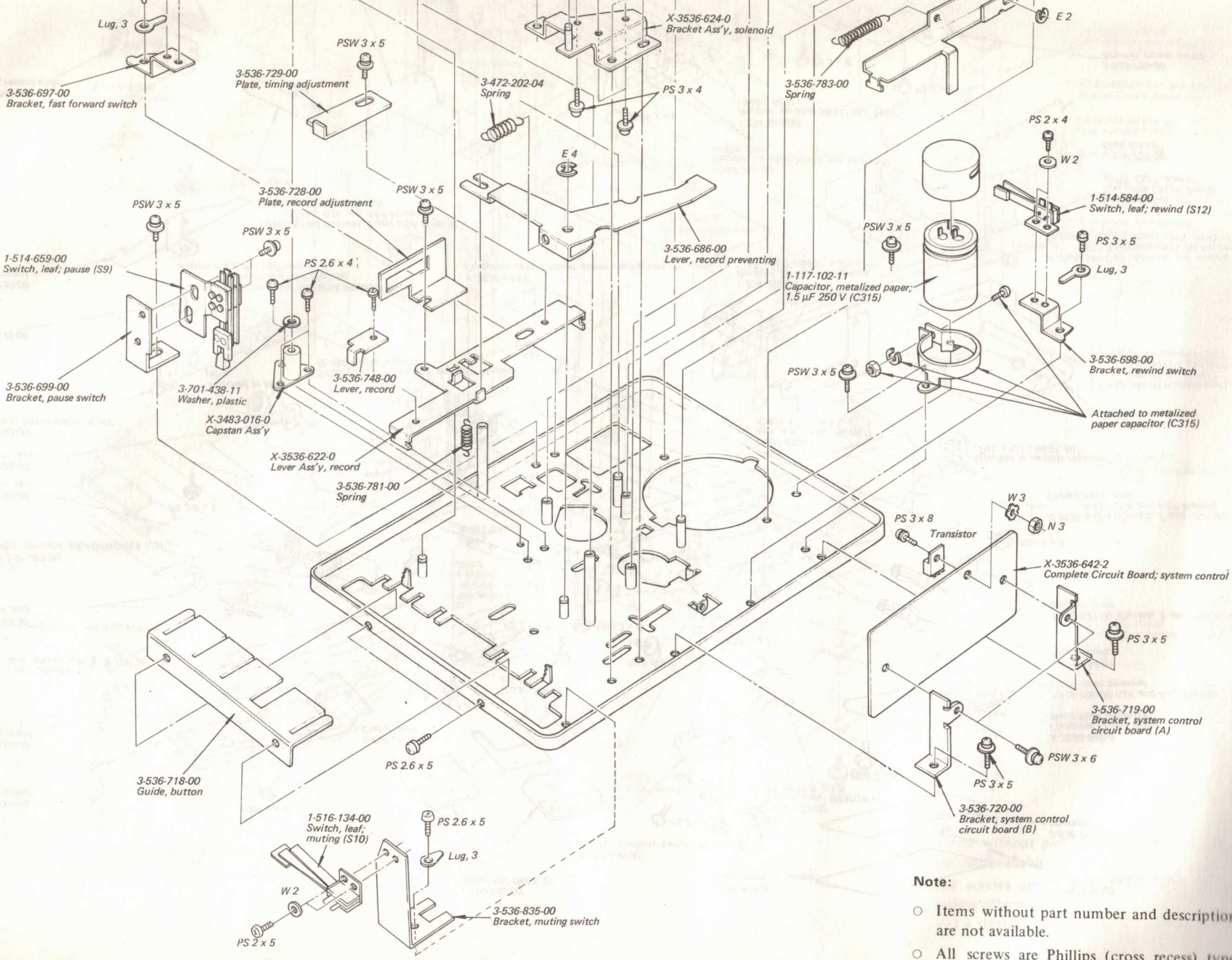

1-520-182-00
Meter, VU (ME1, 2)
3-536-826-00
Cover, memory switch
3-536-758-00
Shield, MIC/HEADPHONES
3-536-746-00
Bracket, memory switch
PSW 3 x 6
PS 2 x 4
3-536-751-00
Insulator
1-516-133-00
Switch, slide; MEMORY COUNTER (S13)
3-536-812-00
Holder, meter
PSW 3 x 8
PSW 3 x 6
PS 3 x 6
3-536-810-00
Bracket, meter
3-434-212-00
Clamp, wire
X-3536-649-0
Complete Circuit Board; Meter/Peak indication
PSW 3 x 6
3-536-805-00
Cushion
3-418-709-00 (UK and AEP Models)
Label, earth terminal
1-507-376-00
Jack; phone; MIC L, R (J1, 2)
PS 2.6 x 5
3-812-134-01
Rivet, plastic
PS 2.6 x 5
PSW 3 x 6
PSW 3 x 6
3-472-233-00
Insulator, jack
3-410-032-00 (Canada, E and USA Models)
Stopper, cord
1-507-282-00
Jack, binaural; HEADPHONES (J3)
PS 3 x 6
PSW 3 x 6
PS 2.6 x 5
PSW 3 x 6
X-3536-632-8 (Canada, E and USA Models)
-632-9 (UK and AEP Models)
Chassis Ass'y, amp
3-472-233-00
Insulator, jack
3-451-128-00
Insulator, jack
Attached to variable resistor; LINE OUT (R407, 507)
1-507-433-00
Jack, 4 P; LINE IN/OUT (CNJ1-1 ~ 2, 2-1 ~ 2)
3-536-803-00
Panel, jack; MIC/HEADPHONE
3-536-842-00
Bracket, transformer
Attached to MIC jacks
3-536-757-00 (Canada, E and USA Models)
Shield, POWER switch
1-442-304-00 (Canada and USA Models)
-330-00 (E Model)
-340-00 (UK and AEP Models)
Transformer, power (T302)
3-486-138-00
Screw
X-3534-133-0 (Canada, E and USA Models)
-139-0 (UK and AEP Models)
Button Ass'y, POWER switch
3-536-739-00
Lever, record
X-3536-644-0
Complete Circuit Board; power supply/bias osc
1-224-390-00
Resistor, 20 kΩ (B); variable; LINE OUT (R407, 507)
X-3536-648-0 (E, AEP and UK Models)
-651-0 (Canada and USA Models)
Complete Circuit Board; LINE IN/OUT jack
1-516-181-00 (Canada, E and USA Models)
-277-00 (UK and AEP Models)
Switch, push; POWER (S8)
E 5
3-536-742-00
Slider, record
X-3536-645-0
Complete Circuit Board; LINE OUT control
1-224-388-00
Resistor, variable 20 kΩ (A); MIC (R404, 504)
3-536-727-00
Case, shield
PSW 3 x 6
1-224-389-00
Resistor, variable 50 kΩ (A); LINE (R403, 503)
3-536-741-00
Holder, record slide
PS 3 x 6
PS 3 x 6
3-536-765-00
Bracket, power switch
PS 3 x 6
PS 3 x 6
X-3536-634-0
Bracket Ass'y, record lever
E 3
3-536-780-00
Spring
4-807-341-00
Holder, fuse (UK Model)
3-536-779-00
Spring
X-3536-643-0
Complete Circuit Board; MIC/LINE control
X-3536-641-0
Complete Circuit Board; switch
3-536-745-00
Bracket, circuit board (C)
1-516-462-00
Switch, lever slide; TAPE SELECT (S4)
X-3536-633-0
Lever Ass'y, record switch
E 3
1-583-459-00 (UK and AEP Models)
Printed Circuit Board, fuse
1-532-284-00 (UK and AEP Models)
Fuse, 630 mAT (F5)
3-536-740-00
Lever, record switch
3-434-212-00
Clamp, wire
E 3
PSW 3 x 6
1-516-128-00
Switch, lever slide; LIMITER (S5)
E 3
1-532-080-00 (UK and AEP Models)



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (−) = slotted head

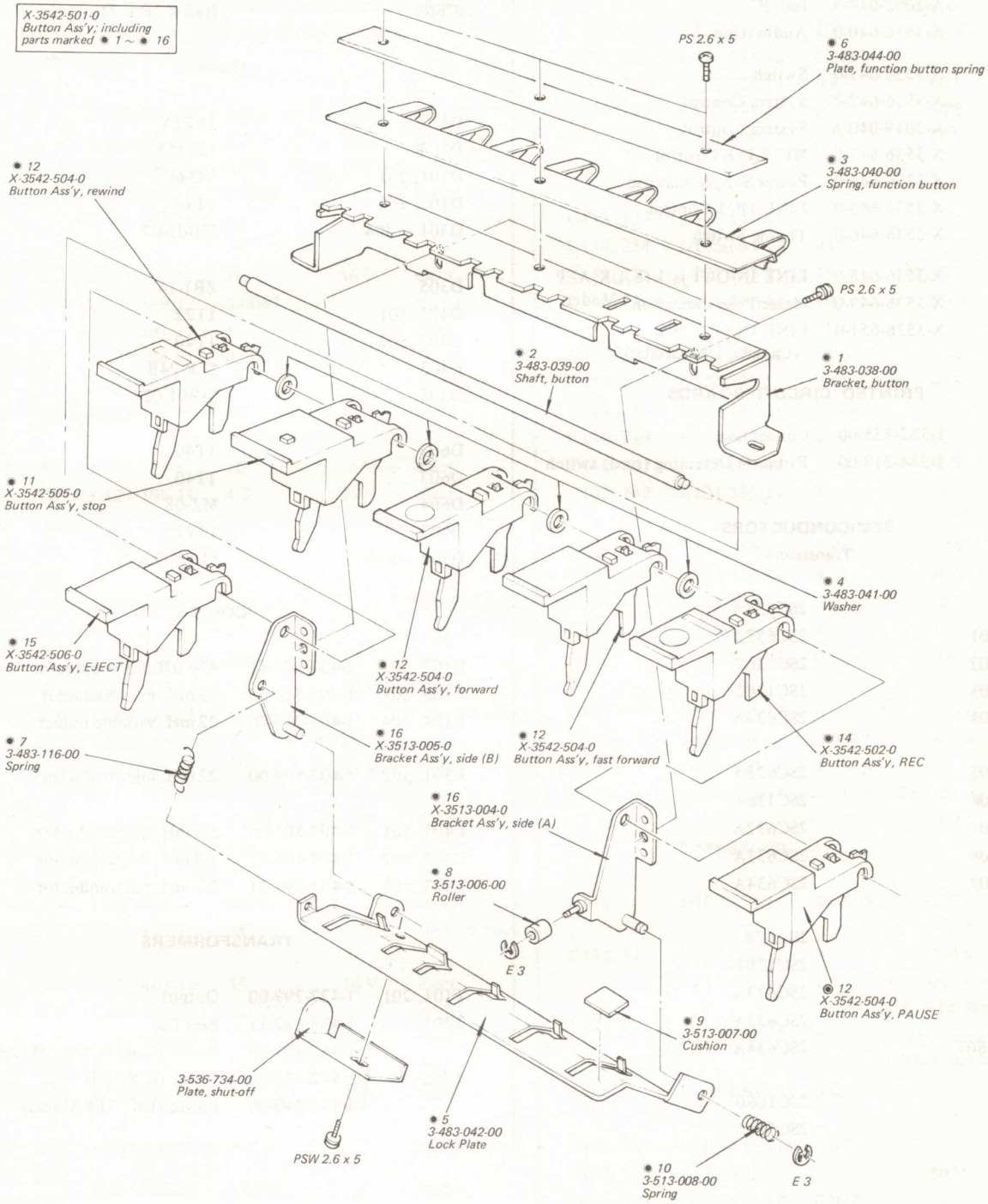

PS 3 x 5
X-3536-631-0
Retainer Ass'y, thrust
W 3
PS 3 x 5
W 3
3-536-736-00
Retainer, flywheel
X-3536-625-0
Flywheel Ass'y
3-701-441-11
Washer, plastic (t = 0.25)
PS 3 x 5
X-3536-610-0
Arm Ass'y, tension pulley
3-536-684-00
Belt, tension pulley
3-701-438-11
Washer, plastic (t = 0.25)
E 3
E 2
X-3536-611-0
Pulley (B) Ass'y, tension
3-536-737-00
Shaft, rewind roller
X-3536-616-0
Arm Ass'y, rewind roller
PSW 3 x 10
3-536-723-00
Fan, motor
3-483-026-00
Cushion
3-536-689-00
Bracket, motor (A)
PS 3 x 20
PSW 3 x 10
3-536-691-00
Cushion (A)
3-536-713-00
Belt, capstan
3-536-732-00
Belt, forward/rewind
PSW 3 x 5
3-536-683-00
Plate, back-tension adjusting
3-536-782-00
Spring
E 3
3-536-768-00
Spring
PSW 3 x 5
3-536-730-00
Lever, fast forward
3-536-774-00
Spring
8-832-516-00
Motor, IC-516 (M)
3-491-152-00
Collar
X-3536-602-0
Deck Ass'y, reel spindle
3-491-260-00
Felt, oil preventing
X-3536-615-0
Arm Ass'y, fast forward roller
3-536-761-02 (mark 1) (E, AEP and UK Models)
-761-12 (mark 2)
-761-32 (mark 0)
Pulley, motor; 50 Hz
3-536-762-02 (mark 1) (USA, Canada and E Models)
-762-12 (mark 2)
-762-32 (mark 0)
Pulley, motor; 60 Hz)
PS 2.6 x 5
3-536-767-00
Spring
3-536-778-00
Spring
E 3
3-536-776-00
Spring
3-536-681-00
Arm, back-tension
E 2
3-536-682-00
Felt, back-tension
E 3
3-491-153-01
Spacer, plastic
3-701-441-11
Washer, plastic
X-3536-626-0
Lever Ass'y, rewind
3-701-439-11
Washer, plastic
3-536-731-00
Lever, rewind
E 2
3-491-152-00
Collar
1-454-096-00
Solenoid (PM1)
3-536-687-00
Lever (A), fast forward
3-536-775-00
Spring
3-500-098-00
Pin, solenoid
X-3536-627-0
Lever Ass'y, fast forward
PS 2 x 4
X-3536-619-0
Lever (A) Ass'y, bias timing
E 3
3-536-706-00
Lever, shut-off
W 2
E 4
3-536-771-00
Spring
3-491-153-01
Spacer, plastic
1-514-583-00
Switch, leaf; fast forward (S11)
PS 3 x 4
3-536-695-00
Shaft, joint (A)
3-536-820-00
Spring
PS 3 x 4
3-536-777-00
Spring
3-536-696-00
Lever, eject
PS 3 x 5
E 2
Lug, 3
X-3536-624-0
Bracket Ass'y, solenoid
PSW 3 x 5
3-536-729-00
Plate, timing adjustment
3-536-783-00
Spring
3-536-697-00
Bracket, fast forward switch
3-472-202-04
Spring
PS 3 x 4
PS 2 x 4
E 4
W 2
1-514-584-00
Switch, leaf; rewind (S12)
3-536-728-00
Plate, record adjustment
PSW 3 x 5
PSW 3 x 5
PSW 3 x 5
PS 3 x 5
Lug, 3
3-536-686-00
Lever, record preventing
1-514-659-00
Switch, leaf; pause (S9)
PS 2.6 x 4
1-117-102-11
Capacitor, metalized paper;
1.5 µF 250 V (C315)



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (−) = slotted head

5-5. EXPLODED VIEW (5)



Note:

- ○ Items without part number and description are not available.
- ○ All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
		COMPLETE CIRCUIT BOARDS
△	A-2095-049-A	Hall IC
	X-3536-640-0	Audio Amp
	X-3536-641-0	Switch
△	X-3536-642-0	System Control
○	A-2019-040-A	System Control
	X-3536-643-0	MIC/LINE Control
	X-3536-644-0	Power Supply/bias osc
	X-3536-645-0	LINE OUT Control
	X-3536-646-0	Timing Switch
	X-3536-648-0	LINE IN/OUT jack (E, UK, AEP Model)
	X-3536-649-0	Meter/Peak indication
	X-3536-651-0	LINE IN/OUT jack (Canada, USA Model)
		PRINTED CIRCUIT BOARDS
	1-582-935-00	Connection
○	1-584-219-00	Rotation Detecting (reed) switch
		SEMICONDUCTORS
		Transistors
Q1 ~ 4		2SC634A
Q101, 201		2SC632A
Q102, 202		2SC1362
Q103, 203		2SC1362
Q104, 204		2SC634A
Q105, 205		2SC633A
Q106, 206		2SC1364
Q107, 207		2SC632A
Q108, 208		2SC633A
Q109, 209		2SC634A
Q301		2SA678
Q302		2SC1384
Q401		2SC633A
Q402		2SC633A
Q601 ~ 607		2SC634A
Q608		2SC1060
Q609		2SC634A

Ref. No.	Part No.	Description
IC101, 201		Integrated Circuit, TA7122AP
△ IC601		Hall IC, CX-736
		Diodes
D1, 2		1T22A
D3, 4		1S1555
D101, 201		VO-6C
D102, 202		1T40
D301 ~ 304		SIB01-02
D305		ZB1-14
D401, 501		1T22
D402, 502		1T40
D403		SLP-24B
D404		SIB01-02
D602		1T40
D603		1T40
D604		MZ-08
D605		1T22
D606 ~ 610		SIB01-02
		COILS
L102, 202	1-407-177-41	470 μH, microinductor
L103, 203	1-407-510-00	33 mH, microinductor
L104, 204	1-407-240-00	22 mH, variable inductor
L301, 302	1-407-509-00	22 mH, microinductor
L401, 501	1-407-501-00	5.6 mH, microinductor
L402, 502	1-407-495-21	1.8 mH, microinductor
L403, 503	1-407-396-21	2.2 mH, microinductor
		TRANSFORMERS
T101, 201	1-427-299-00	Output
T301	1-433-132-11	Bias Osc
T302	1-442-304-00	Power (Canada, USA Model)
	1-442-330-00	Power (E Model)
	1-442-340-00	Power (UK, AEP Model)

Note:

△: USA Model . . . . . Up to Serial No. 300.
UK Model . . . . . Up to Serial No. 500.
○: USA Model . . . . . Serial No. 301 and later.
UK Model . . . . . Serial No. 501 and later.
Canada, E, AEP Model . . Applied in all sets.

CAPACITORS

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

Ref. No.	Part No.	Description
C1	1-129-896-21	0.012 (2%) 100 V plastic
C2	1-129-701-21	0.01 (2%) 100 V plastic
C3	1-129-899-11	0.056 (2%) 100 V plastic
C4	1-105-510-12	0.0056 mylar
C5	1-107-103-11	6 p silvered mica
C6	1-121-651-11	10 16 V elect
C7	1-105-669-12	0.0047 mylar
C8	1-121-391-11	1 50 V elect
C9	1-129-794-21	0.0033 (2%) 100 V plastic
C10	1-131-197-11	3.3 tantalum
C11	1-121-398-11	10 25 V elect
C101, 201	1-121-651-11	10 16 V elect
C102, 202	1-121-395-11	4.7 25 V elect (low noise)
C103, 203 C104, 204	1-107-095-11	270 p silvered mica
C105, 205	1-107-085-11	100 p silvered mica
C106, 206	1-121-419-11	220 6.3 V elect
C107, 207	1-121-402-11	33 10 V elect
C108, 208	1-107-111-11	15 p silvered mica
C109, 209	1-121-651-11	10 16 V elect
C110, 210	1-121-398-11	10 25 V elect
C111, 211	1-105-522-12	0.056 mylar
C112, 212	1-121-376-11	100 25 V elect
C113, 213	1-131-212-11	0.33 tantalum
C114, 214	1-107-085-11	100 p silvered mica
C115, 215	1-107-127-11	68 p silvered mica
C116, 216	1-121-402-11	33 10 V elect
C117, 217	1-105-510-12	0.0056 mylar
C118, 218	1-121-392-11	3.3 25 V elect
C119, 219	1-121-398-11	10 25 V elect
C120, 220	1-121-404-11	33 25 V elect
C121, 221	1-107-236-11	560 p silvered mica
C122, 222 C123, 223	1-105-507-12	0.0033 mylar

Ref. No.	Part No.	Description
C124, 224	1-121-391-11	1 50 V elect
C125, 225	1-121-398-11	10 25 V elect
C126, 226	1-121-415-11	100 16 V elect
C127, 227	1-105-511-12	0.0068 mylar
C128, 228	1-121-726-11	0.47 50 V elect
C130, 230	1-121-391-11	1 50 V elect
C131, 231	1-121-404-11	33 25 V elect
C132, 232	1-105-685-12	0.1 mylar
C133, 233	1-107-111-11	15 p silvered mica
C134, 234	1-105-661-12	0.001 mylar
C135, 235	1-121-402-11	33 10 V elect
C136, 236	1-121-413-11	100 6.3 V elect
C137, 237	1-121-391-11	1 50 V elect
C138, 238	1-121-726-11	0.47 50 V elect
C139, 239	1-107-242-11	390 p silvered mica
C140, 240	1-121-402-11	33 10 V elect
C141, 241	1-121-391-11	1 50 V elect
C142, 242	1-121-395-11	4.7 25 V elect
C301, 302	1-121-388-11	1000 35 V elect
C303	1-121-411-11	47 50 V elect
C304	1-121-152-11	22 50 V elect
C305	1-121-395-11	4.7 25 V elect
C306	1-105-713-12	0.01 100 V mylar
C307	1-105-715-12	0.015 100 V mylar
C308	1-129-701-11	0.0047 630 V plastic
C309	1-141-140-00	1 ~ 8 p trimmer
C310	1-107-253-11	15 + 18 + 22 + 27 p 500 V silvered mica
C311	1-141-140-00	1 ~ 8 p trimmer
C312	1-107-253-11	15 + 18 + 22 + 27 p 500 V silvered mica
C313, 314	1-107-168-11	91 p 500 V silvered mica
C315	1-117-102-11	1.5 250 p metalized paper (UK, AEP Model)
	1-117-102-12	1.5 250 p metalized paper (USA, Canada, E Model)
C316	1-105-680-12	0.039 mylar
C401, 501	1-101-455-11	0.001 ceramic
C402, 502	1-121-391-11	1 50 V elect
C403, 503	1-105-517-12	0.022 mylar

Ref. No.	Part No.	Description		
C404, 504	1-105-680-12	0.039		mylar
C405, 505 C406, 506	1-105-519-12	0.033		mylar
C407, 507	1-105-517-12	0.022		mylar
C408	1-105-673-12	0.01		mylar
C409	1-121-450-11	2.2	50 V	elect
C410	1-121-414-11	100	10 V	elect
C601	△ 1-121-352-11	47	10 V	elect
	○ 1-121-404-11	33	25 V	elect
C602	△ 1-121-413-11	100	6.3 V	elect
	○ 1-121-404-11	33	25 V	elect
C603	△ 1-121-419-11	220	6.3 V	elect
	○ 1-131-201-11	22	16 V	tantalum
C604	△ 1-121-395-11	4.7	25 V	elect
	○ 1-121-352-11	47	10 V	elect
C605	1-121-395-11	4.7	25 V	elect
C606	△ 1-121-352-11	47	16 V	elect
	○ 1-121-421-11	220	16 V	elect
C607	△ 1-121-651-11	10	16 V	elect
	○ 1-121-361-11	470	35 V	elect
C608	1-121-395-11	4.7	25 V	elect
C609	1-121-361-11	470	35 V	elect

RESISTORS

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

R1, 2	1-242-737-09	470 k		low noise
R5	1-210-853-11	6.2 k	(± 2 %)	
R7	1-210-850-11	300	(± 2 %)	
R11, 12	1-210-855-11	33 k	(± 2 %)	
R13	1-210-852-11	5.6 k	(± 2 %)	
R101, 201	1-242-697-09	10 k		low noise
R102, 202	1-242-729-09	220 k		low noise
R103, 203	1-242-721-09	100 k		low noise
R104, 204	1-242-687-09	3.9 k		low noise
R108, 208	1-242-719-09	82 k		low noise
R115, 215	1-221-311-00	5 k (B), adjustable		
R116, 216	1-221-663-00	2 k (B), adjustable		
R117, 217	1-221-383-00	10 k (B), adjustable		
R119, 219	1-242-717-09	68 k		low noise
R121, 221	1-242-721-09	100 k		low noise

Ref. No.	Part No.	Description		
R133, 233	1-210-872-11	3.9 k	(± 2%)	
R134, 234	1-210-871-11	3.6 k	(± 2%)	
R135, 235	1-210-870-11	360	(± 2%)	
R136, 236 R137, 237	1-242-735-09	390 k		low noise
R139, 239	1-242-697-09	10 k		low noise
R147, 247	1-222-752-00	10 k (B), adjustable		
R150, 250	1-242-729-09	220 k		low noise
R152, 252	1-242-721-09	100 k		low noise
R301	1-206-082-11	120	2 W	metal oxide
R302	1-202-593-11	6.8 k	½W	composition
R304	1-206-127-11	470	2 W	metal oxide
R307	1-206-043-11	560	2 W	metal oxide
R403, 503	1-224-389-00	50 k (A), variable; LINE		
R404, 504	1-224-388-00	20 k (A), variable; MIC		
R407, 507	1-224-390-00	20 k (B), variable; LINE OUT		
R409, 509	1-222-773-00	4.7 k (B), adjustable		
○ R610	1-213-148-11	2.7 k	1 W	metal oxide
R611	1-206-098-11	2.7 k	2 W	
○ R624	1-212-360-11	1	1 W	metal oxide

SWITCHES

S1, 2	1-514-976-21	Slide, record/playback
S3	1-516-447-00	Lever-slide; DOLBY NR
S4	1-516-462-00	Lever-slide, TAPE SELECT
S5	1-516-128-00	Lever-slide, LIMITER
S6	1-513-273-00	Slide, timing
S7	1-516-325-00	Micro, CrO_2 select
S8	1-516-181-00	Push, POWER (Canada, E, USA Model)
	1-516-277-00	Push, POWER (UK, AEP Model)
S9	1-514-659-00	Leaf, pause
S10	1-516-134-00	Leaf, muting
S11	1-514-583-00	Leaf, fast forward
S12	1-514-584-00	Leaf, rewind
S13	1-516-133-00	Slide, MEMORY
S14		Slide, counter (Attached to tape counter)
○ S15	1-516-590-00	Rotation Detecting (reed)

Note:

△: USA Model ..... Up to Serial No. 300.
UK Model ..... Up to Serial No. 500.
○: USA Model ..... Serial No. 301 and later.
UK Model ..... Serial No. 501 and later.
Canada, E, AEP Model ... Applied in all sets.

Ref. No.	Part No.	Description
		JACKS
CNJ1-1～2, 2-1～2	1-507-433-00	4 p, LINE IN/OUT
CNJ3	1-509-549-00	Connector, REC/PB (E, UK, AEP Model)
J1, 2	1-507-376-00	Phone, MIC L, R
J3	1-507-282-00	Binaural, HEADPHONES
J301	1-509-546-00	Connector, 3 P; AC IN (UK, AEP Model)
VS301	1-509-427-00	Voltage Selector (E Model)
	1-509-482-00	Voltage Selector (UK, AEP Model)
		Fuses
F1	1-532-074-00	200 mAT (UK, AEP Model)
F2, 3	1-532-149-00	125 mAT (UK, AEP Model)
F4	1-532-080-00	800 mA (UK, AEP Model)
F5	1-532-284-00	630 mAT (UK, AEP Model)
F6	1-532-132-00	0.5 A (E Model)
	1-532-273-00	250 mAT (UK, AEP Model)

Ref. No.	Part No.	Description
		MISCELLANEOUS
CP1	1-231-057-12	Encapsulated Component, C-R; 0.033 μF + 120 Ω, 500 V (E, UK, AEP Model)
	1-231-057-31	Encapsulated Component, C-R; 0.033 μF + 120 Ω, 500 V (Canada, USA Model)
EH	8-825-506-00	Head, erase; EF135-36
M	8-834-516-00	Motor, IC-516
ME1, 2	1-520-182-00	Meter, VU
PL1, 2		Lamp, included in meter (ME1, 2)
PL3～6	1-518-152-00	Lamp
PM1	1-454-096-00	Solenoid
RPH	8-825-563-00	Head, record/playback; PF145-3602
	1-231-273-00	Pack, DOLBY
	1-534-487-23	Cord, power (E Model)
	1-534-538-21	Cord, power (USA Model)
	1-534-819-00	Cord, power (UK, AEP Model)
	1-534-986-21	Cord, power (Canada Model)
	1-582-558-00	Terminal, record/playback head

ACCESSORIES & PACKING MATERIALS

Part No.	Description
X-2211-301-0	Protector Ass'y, dust (USA, E Model)
X-3701-018-2	Head Cleaner Ass'y (Canada, E, UK, AEP Model)
1-534-049-31	Cord, connection; RK-74
1-534-819-11	Cord, power; DK-37 (UK, AEP Model)
3-536-761-12	Pulley, motor; 50 Hz (mark 2) (E Model)
3-536-762-12	Pulley, motor; 60 Hz (mark 2) (E Model)
3-536-823-00	Cushion (R)
3-536-824-00	Cushion (L)
3-542-514-00	Carton (USA Model)
3-536-841-00	Case, dust cover (USA, E Model)
3-542-514-00	Carton (USA Model)
3-542-515-00	Carton (AEP Model)
3-542-516-00	Carton (Canada, E, UK Model)
3-701-046-00	Label, home entertainment (Canada Model)
3-701-355-00	Label, tack (USA Model)
3-701-356-00	Label, tack (Canada Model)
3-701-360-00	Label, tack (AEP Model)
3-701-362-00	Label, tack (E Model)

Part No.	Description
3-701-389-00	Label, tack (UK, AEP Model)
3-701-395-00	Label, earth caution (UK, AEP Model)
3-701-534-00	Label, fuse (E Model)
3-701-618-00	Bag, plastic
3-701-630-00	Bag, plastic (USA Model)
3-701-763-00	Label, UL (USA Model)
3-701-825-00	Bag, plastic
3-780-697-12	Manual, instruction (Canada, E, UK, AEP Model)
3-780-697-21	Manual, instruction (USA Model)
3-793-010-20	Booklet, tape talk
3-793-044-21	Label, carton important (USA Model)
3-793-359-00	Label, voltage (E Model)
3-793-408-11	Leaflet (USA, Canada, UK, AEP Model)
3-793-506-00	Label, local line voltage indication (AEP Model)
3-793-711-11	Card, CAUTION
8-890-060-00	Tape, cassette: Fe-cr; C-60 (Canada Model)

SECTION 7

HARDWARE

Part No.	*Description*
	SCREWS
	All screws are Phillips (cross recess) type unless otherwise indicated. (–) : slotted head.
7-621-257-15	P 2 x 13
7-621-259-01	PS 2.6 x 4
7-621-259-25	P 2.6 x 4
7-621-259-35	P 2.6 x 5
7-621-710-46	(–) SC 2 x 5
7-621-716-68	(–) SC 2.6 x 4 w/hexagon socket
7-621-721-69	P 2.6 x 5, self-tapping
7-621-759-35	PSW 2.6 x 5
7-621-773-61	B 2.6 x 3
7-621-773-89	B 2.6 x 8
7-628-154-12	R 2.6 x 6
7-628-254-05	PS 2.6 x 5
7-628-254-15	PS 2.6 x 6
7-681-229-01	P 2 x 12
7-681-325-04	RK 2 x 5
7-682-548-04	B 3 x 8
7-682-624-01	PS 2 x 4
7-682-625-01	PS 2 x 5
7-682-629-01	PS 2 x 12
7-682-645-01	PS 3 x 4
7-682-646-01	PS 3 x 5
7-682-647-01	PS 3 x 6
7-682-648-01	PS 3 x 8
7-682-653-01	PS 3 x 20
7-682-946-01	PSW 3 x 5
7-682-947-01	PSW 3 x 6
7-682-948-01	PSW 3 x 8
7-682-949-01	PSW 3 x 10
7-682-950-01	PSW 3 x 12
7-682-980-01	PSW 3 x 5 (small)
	WASHERS
7-623-105-02	2 (small)
7-623-105-12	2 (medium)
7-623-107-02	2.6
7-623-108-02	3 (small)
7-623-108-12	3 (medium)
7-623-108-22	3 (large)
7-623-205-11	2, spring
7-623-208-22	3, spring
	RETAINING RINGS
7-624-102-01	E 1.5
7-624-104-01	E 2
7-624-106-01	E 3
7-624-108-01	E 4
7-624-118-01	E 2.5
7-624-109-01	E 5
	MISCELLANEOUS
7-623-508-01	Lug 3
7-671-112-01	Steel Ball 2
7-684-013-01	Nut 3

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