

# TC-FX310 /FX311

## SERVICE MANUAL

US Model  
Canadian Model  
AEP Model  
UK Model  
E Model



Free service manuals  
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### SPECIFICATIONS

Tape Transport Mechanism

TCM-130V12

Recording system 4-track 2-channel stereo

Fast-forward and rewind time

Approx. 100 sec. (with C-60 cassette)

Bias frequency 105 kHz

Signal-to-noise ratio (NAB, at peak level)

Cassette	Dolby NR switches	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METALLIC)		58 dB	65 dB	71 dB
TYPE II (Sony UCX)		56 dB	63 dB	69 dB
TYPE I (Sony BHF)		54 dB	61 dB	67 dB

Total harmonic distortion

1.0% (with Sony METALLIC cassettes)

Frequency response DOLBY NR OFF

• With TYPE IV cassette (Sony METALLIC)

20 - 17,000 Hz

30 - 16,000 Hz ( $\pm 3$  dB)

30 - 13,000 Hz ( $\pm 3$  dB, 0 VU recording)

30 - 16,000 Hz (DIN)

• With TYPE II cassette (Sony UCX)

20 - 17,000 Hz

30 - 15,000 Hz ( $\pm 3$  dB)

30 - 15,000 Hz (DIN)

Wow and flutter

• With TYPE I cassette (Sony BHF)

20 - 16,000 Hz

30 - 13,000 Hz (DIN)

0.05% WRMS (NAB)

$\pm 0.14$  % (DIN)

Inputs

Microphone inputs (phone jacks)

Sensitivity 0.25 mV ( $-70$  dB)

For a low-impedance microphone

Line inputs (phono jacks)

Sensitivity 77.5 mV ( $-20$  dB)

Input impedance 50 k ohms

Outputs

Line outputs (phono jacks)

Output level 0.44 V ( $-5$  dB) at load

impedance 50 k ohms

Load impedance over 10 k ohms

Headphone output

Output level  $-28$  dB at a

load impedance of 8 ohms

— Continued on page 2 —

### SAFETY-RELATED COMPONENT WARNING!!

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

ATTENTION AU COMPOSANT AYANT RAPPORT  
À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE  $\Delta$  SUR LES DIAGRAMMES SCHEMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.



# STEREO CASSETTE DECK SONY®



**General**

<b>Power requirements</b>	120 V ac, 60 Hz ... (US, Canadian model)
	220 V ac, 50/60 Hz (240 V ac adjustable by authorized Sony personal) ... (AEP, G-AEP model)
	240 V ac, 50/60 Hz (220 V ac adjustable by authorized Sony personnel) ... (UK model)
	110, 120, 220 or 240 V ac adjustable, 50/60 Hz ... (E model)
<b>Power consumption</b>	13 watts
<b>Dimensions</b>	Approx. 430 x 105 x 275 mm (w/h/d)
	(17 x 4 1/4 x 10 7/8 inches)
<b>Weight</b>	including projecting parts and controls
	Approx. 4.2 kg (9 lb 5 oz)

0 dB = 0.775 V

**FEATURES****Dolby NR C-type noise reduction system**

In addition to the conventional B-type Dolby NR system, this cassette deck employs the newly-developed C-type Dolby NR system which reduces tape noise twice as effective as the B-type system. The C-type system also incorporates an anti-saturation network to improve the high-frequency dynamic range by 4 dB at 10 kHz.

**Full-logic "feather-touch" operation**

At the slightest touch, the "feather-touch" function buttons enable you to switch directly from one mode to another without going through the stop mode.

**Cue and review functions**

The cue and review functions help you to locate the desired point on the tape by winding the tape ahead in the fast-forward mode, or rewinding it, with a chattering sound from the recorded part.

**Record muting function**

The record muting button enables you to automatically make a 4-second blank space between selections.

**Auto play**

The auto play function makes automatic replay possible promptly after the tape is rewound to the beginning.

**Remote control operation (for the TC-FX310 only)**

Using the optional RM-50 or RM-80 remote control unit, various operations—recording, playback, record muting operation, etc.—can be remotely controlled.

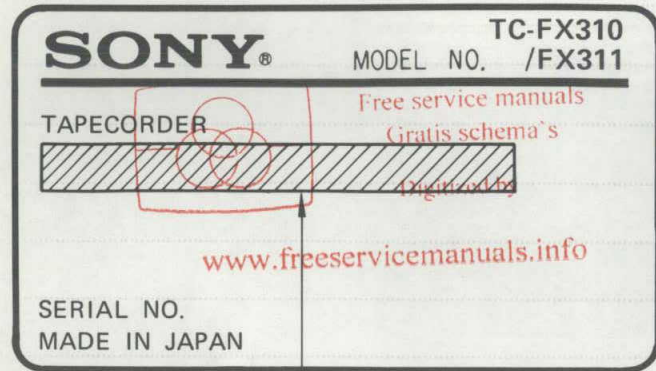
When the RM-65 synchro remote control unit is used to connect this cassette deck with a turntable equipped with a synchro remote control jack, the operation of the cassette deck and the turntable will be synchronized.

Cassette	Dolby NR switches	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METALLIC)		58 dB	55 dB	71 dB
TYPE II (Sony UDX)		58 dB	53 dB	59 dB
TYPE I (Sony BNF)		54 dB	51 dB	61 dB



MODEL IDENTIFICATION

— Specification Label —

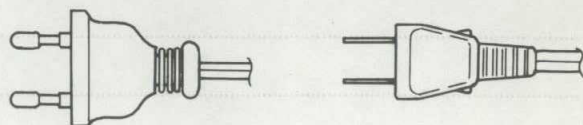


US, Canadian model: AC: 120 V 60 Hz 12W  
AEP, G-AEP model: AC: 220 V 50/60 Hz 13W  
UK model: AC: 240 V 50/60 Hz 13W  
E model: AC: 110, 120, 220, 240 V 50/60 Hz 13W

— Power Cord —

E3 model: euro-plug 1-555-734-00

E2 model: parallel-blade plug 1-551-472-23



SAFETY CHECK-OUT (US Model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer:  
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

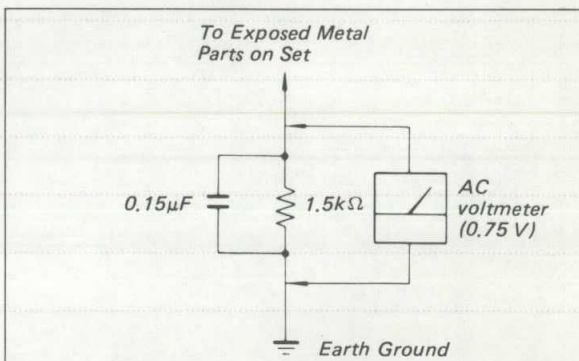


Fig. A. Using an AC voltmeter to check AC leakage.

FUNCTION AND LOCATION OF CONTROLS

Each number in the text on page 5 is keyed to that of the photo and illustration.

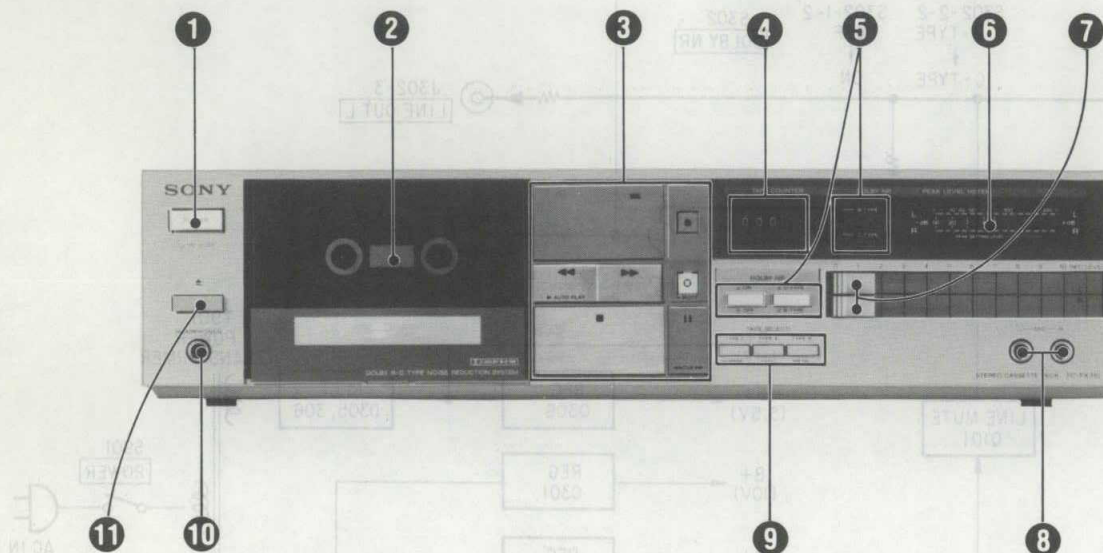


Photo: TC-FX310

Front panel

1 POWER switch

This turns the power on or off.

2 Cassette holder

3 Function buttons

It is possible to switch directly from one mode to another.

▷ (forward) button: Press this button to play the tape back. To record, press this button while holding the ● button down.

◀ (rewind) button: Press this button to rewind the tape.

▶▶ (fast-forward) button: Press this button to advance the tape rapidly.

■ (stop) button: To stop the tape, press this button.

● (record) button: Press this button together with the ▷ button to start recording.

○ (record muting) button: Press this button to eliminate unwanted material and to insert a blank space during recording.

|| (pause) button: To stop the tape running for a moment during recording or playback, press this button. This button is also used to control the start of recording more precisely, to release the record muting mode and for the cue and review functions.

9 TAPE COUNTER and RESET button

The tape counter provides a numerical reference point while recording which can be used to index a recorded cassette. To reset to zero, press the RESET button.

9 DOLBY NR switches and indicators

To record or play back using the Dolby NR system, depress the left ON/OFF switch (Δ ON), then select either the B-type or C-type Dolby NR system with the right switch. Depress the switch for the C-type system (Δ C-TYPE), or press to release it for the B-type system (Δ B-TYPE). The corresponding indicator lights up.

To record or play back without the Dolby NR process, press to release the ON/OFF switch (Δ OFF).

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9 LED PEAK LEVEL METERS

These meters show the peak input level of each channel during recording, and recorded levels in the playback mode. They follow the transient peaks of high-level inputs that are too brief to be followed by conventional VU meters so that the optimum recording level can be accurately set.

7 REC LEVEL (recording level) controls

These controls adjust the recording level.

12 MIC jacks (phone jack)

Any low-impedance microphone equipped with a phone plug may be used.

9 TAPE SELECT buttons

Depress one of the TAPE SELECT buttons, depending on which type of tape you use. The optimum bias current adjustment for recording and the optimum equalization adjustment for both recording and playback are set.

14 HEADPHONES jack (stereo phone jack)

Connect a pair of headphones either to monitor the input signals to be recorded or to listen to a recording in the playback mode.

11 (eject) button

Press this button to open the cassette holder.

Rear panel

13 LINE IN (line input) jacks (phono jack)

Accepts tape outputs from an amplifier for tape recording and line outputs from another tape deck when duplicating a tape from that unit.

13 LINE OUT (line output) jacks (phono jack)

Accepts tape inputs from an amplifier for playing back a tape and line inputs from another tape deck for duplicating a tape onto that unit.

14 REMOTE control connector (for the TC-FX310 only)

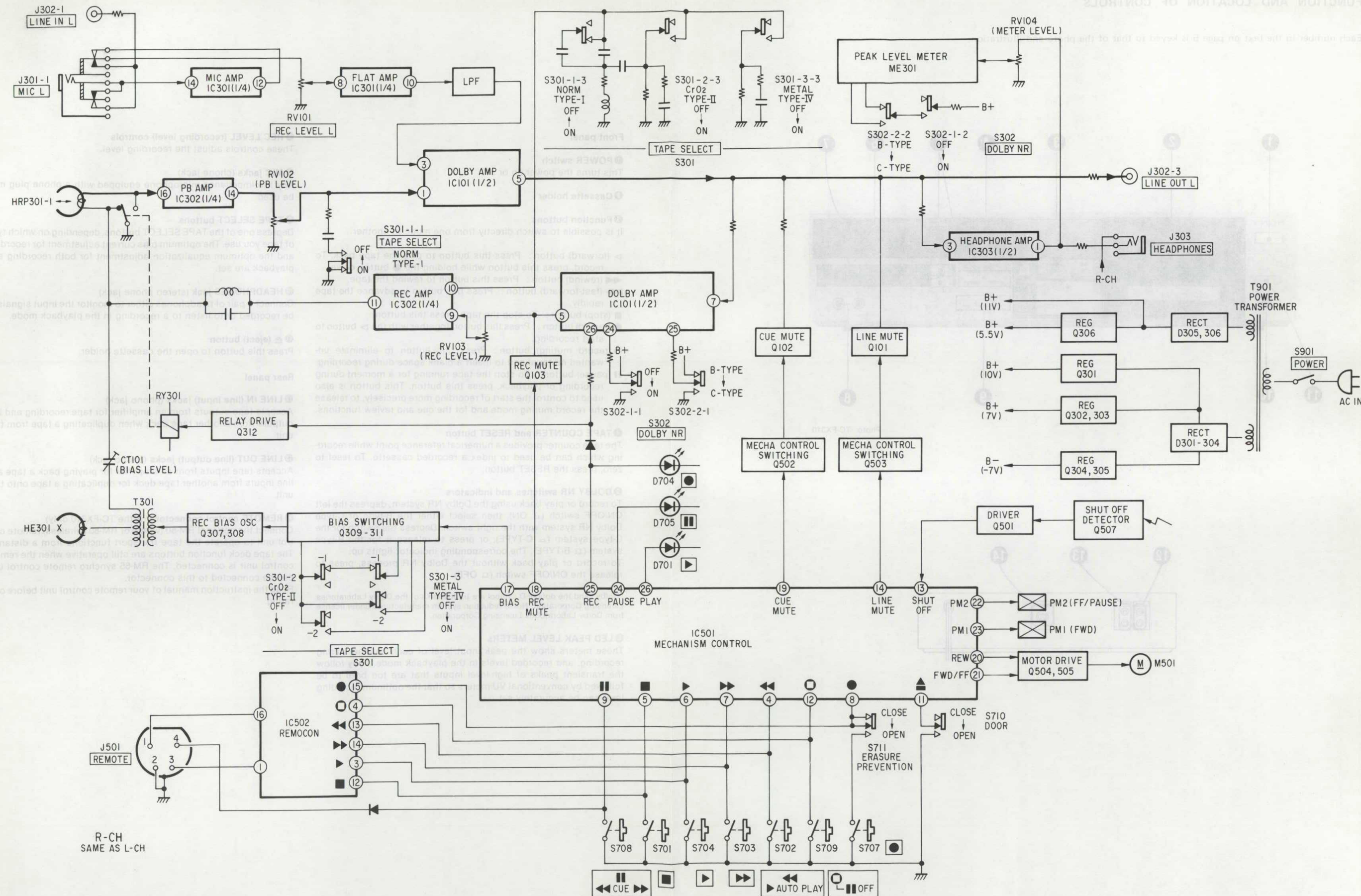
Connect the optional RM-50 (wired) or RM-80 (wireless) remote control unit to operate the tape transport functions from a distance. The tape deck function buttons are still operative when the remote control unit is connected. The RM-65 synchro remote control unit can be connected to this connector.

Read the instruction manual of your remote control unit before operating.



## SECTION 1

### BLOCK DIAGRAM



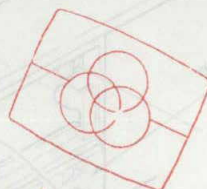
# MEMO



## SECTION 2 DISASSEMBLY

- Follow the disassembly procedure in the numerical order given.

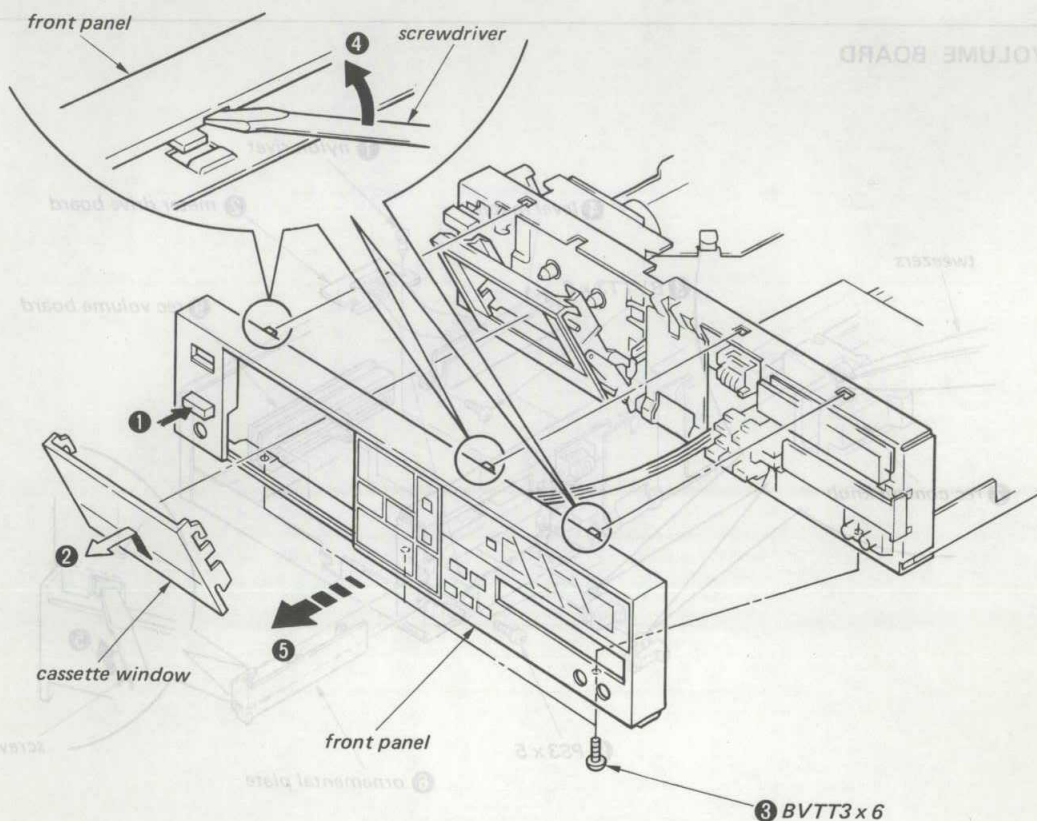
REMOVE THE TOP COVER AND THE BOTTOM PLATE.



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### CASSETTE WINDOW/FRONT PANEL

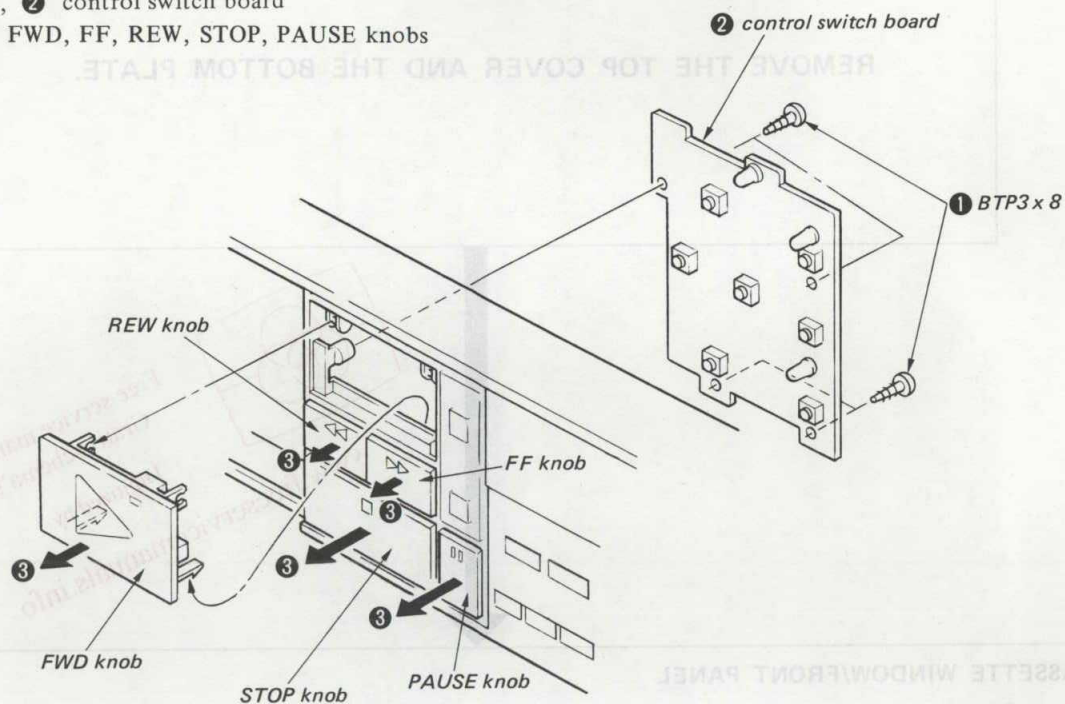
- ①, ② cassette window  
① - ⑤ front panel



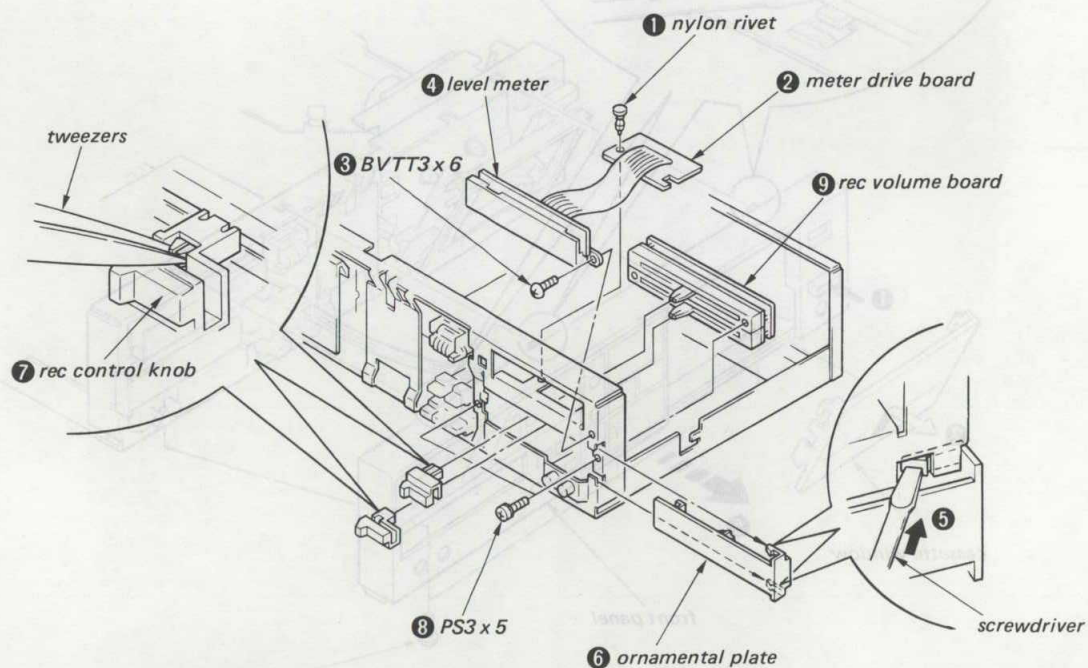


## CONTROL SW/FWD, FF, REW, STOP, PAUSE KNOBS

- ①, ② control switch board  
③ FWD, FF, REW, STOP, PAUSE knobs



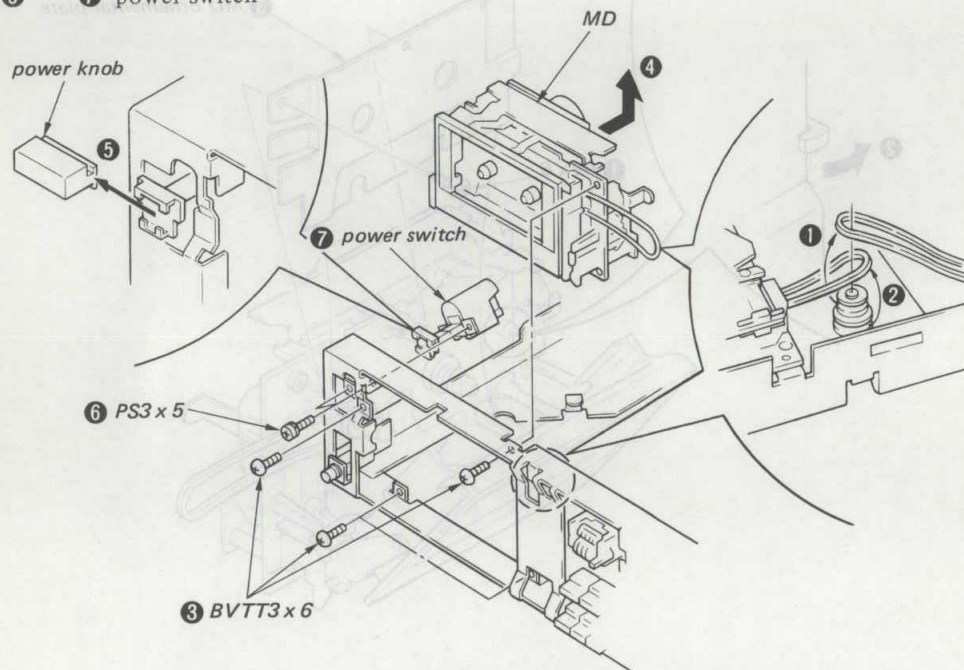
## REC VOLUME BOARD



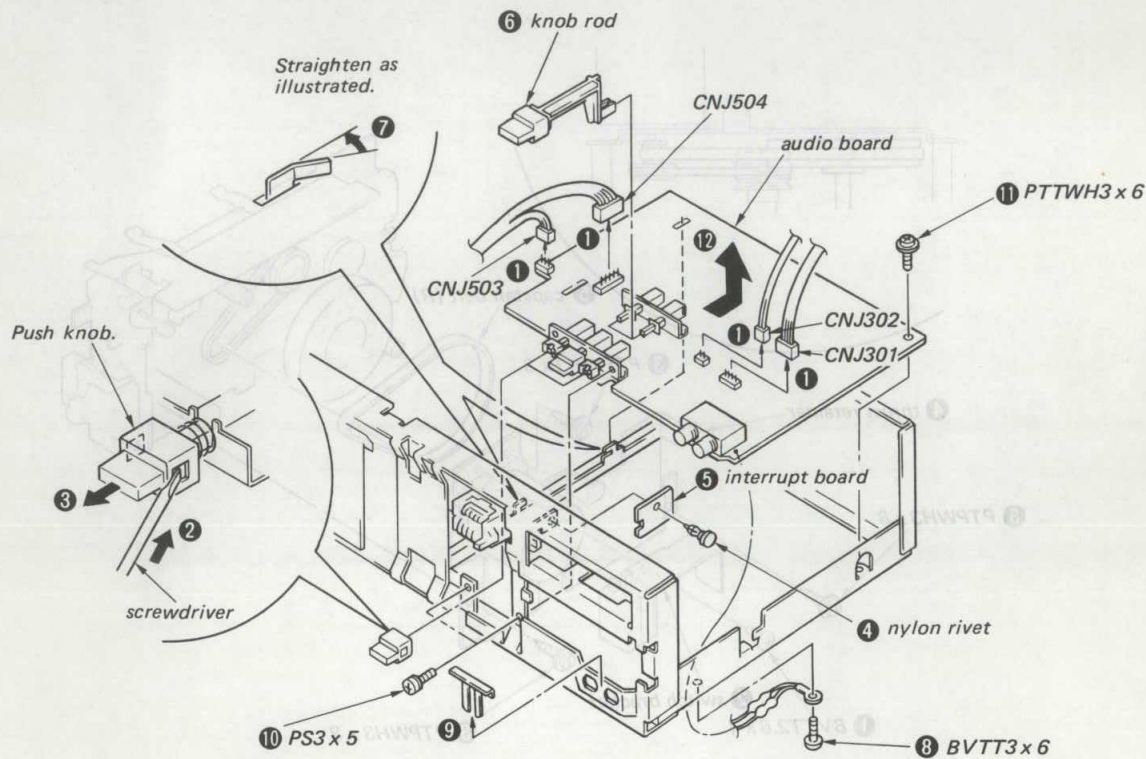


## MD/POWER SWITCH

- ① - ④ MD  
⑤ - ⑦ power switch

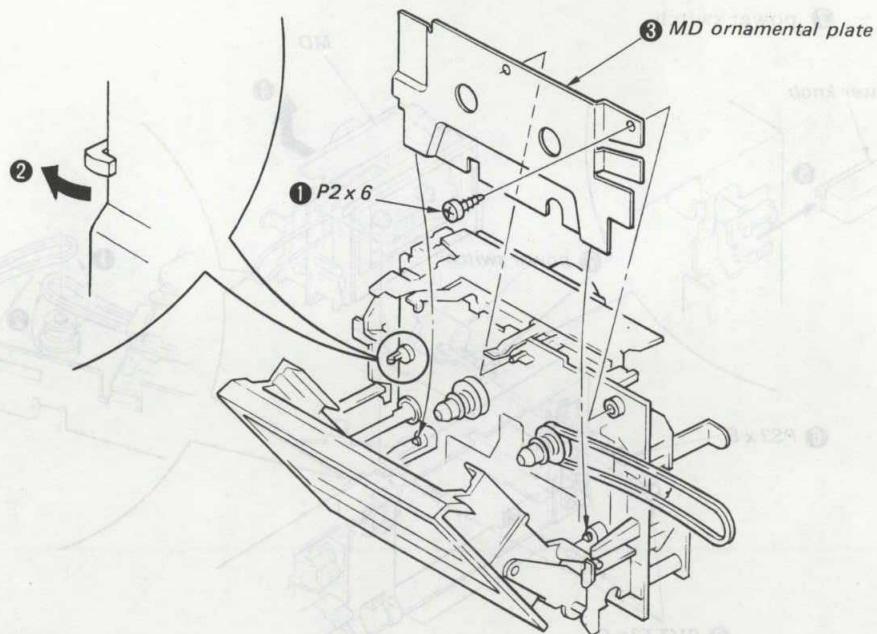


## AUDIO BOARD

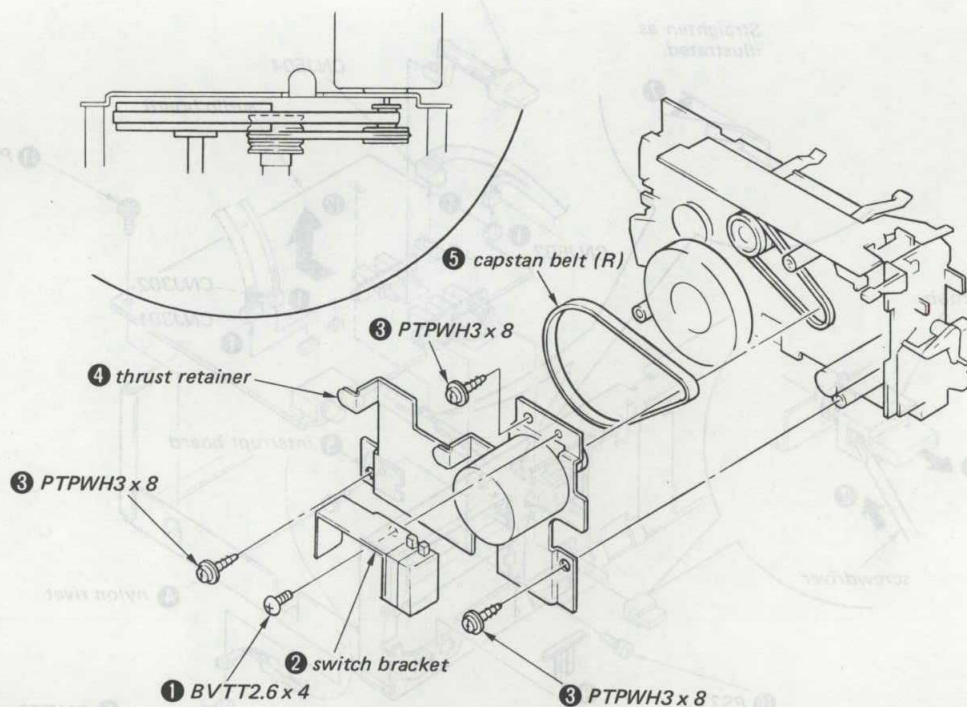




# MD ORNAMENTAL PLATE

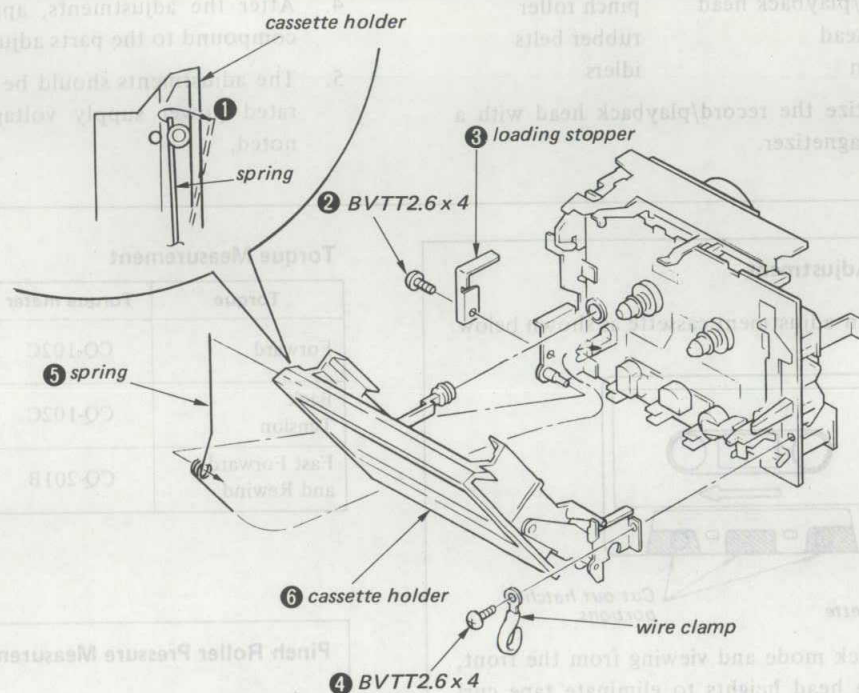


# CAPSTAN BELT (R)



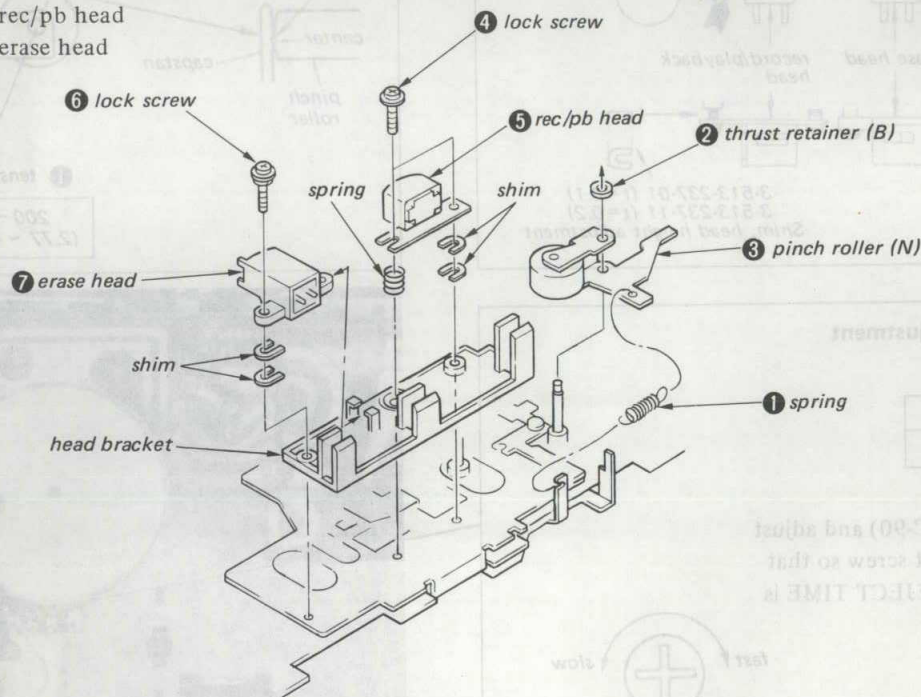


## CASSETTE HOLDER



## PINCH ROLLER (N)/HEAD

- 1 - 3 pinch roller (N)  
 4, 5 rec/pb head  
 6, 7 erase head





## SECTION 3 ADJUSTMENTS

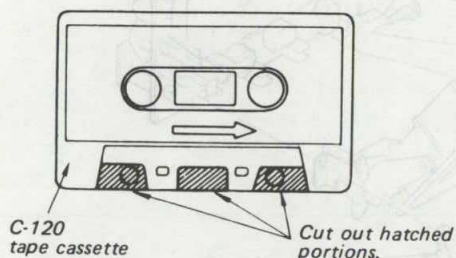
### 3-1. MECHANICAL ADJUSTMENTS

#### PRECAUTION

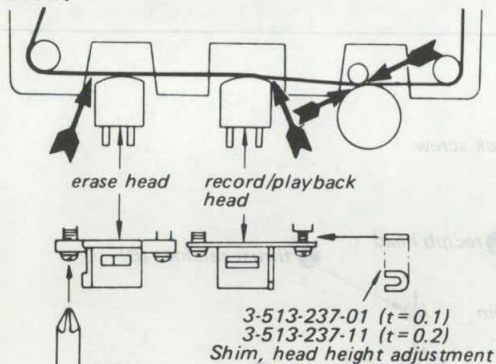
1. Clean the following parts with a denatured-alcohol-moistened swab:  
 record/playback head      pinch roller  
 erase head                      rubber belts  
 capstan                          idlers
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

#### Head Height Adjustment

1. Prepare an adjustment cassette as shown below.



2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at the portions shown by the arrow.



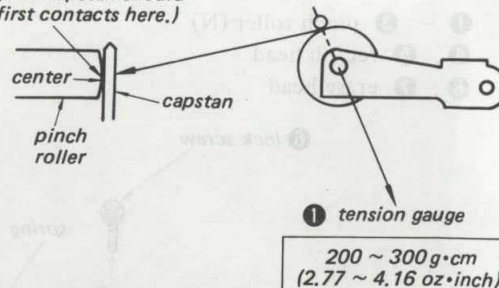
#### Torque Measurement

Torque	Torque meter	Meter reading
Forward	CQ-102C	28 – 60 g·cm (0.39 – 0.83 oz·inch)
Back Tension	CQ-102C	2.5 – 6 g·cm (0.03 – 0.08 oz·inch)
Fast Forward and Rewind	CQ-201B	80 – 165 g·cm (1.1 – 2.28 oz·inch)

#### Pinch Roller Pressure Measurement

##### – Playback Mode –

- 2 Slowly return the pinch roller and read the spring scale just when the pinch roller starts rotating. (The capstan should first contacts here.)

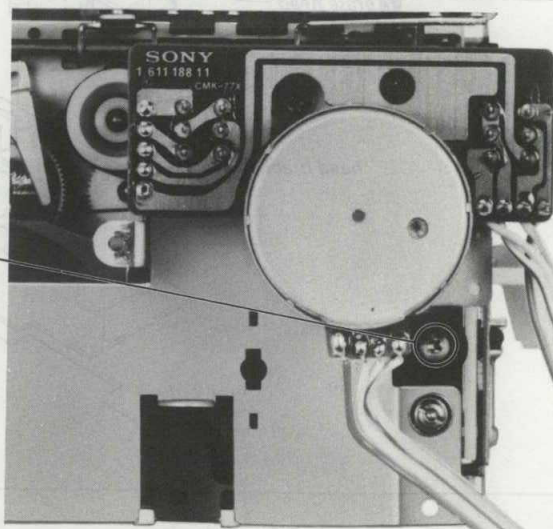


#### Soft Eject Adjustment

##### Specification

Eject time
0.4 – 1.5 sec.

Set the tape (C-90) and adjust the adjustment screw so that the specified EJECT TIME is obtained.





3-2. ELECTRICAL ADJUSTMENTS

**Note:** The adjustment should be performed in the order given in this service manual. The adjustments should be performed for both L-CH and R-CH.

- Set the TAPE switches according to the tape as follows.

Tape	TAPE SELECT switch
CS-15	TYPE I : NORM
CS-26	TYPE II : CrO <sub>2</sub>
CS-42	TYPE IV : METAL

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

DOLBY NR switch: OFF  
TAPE switch: TYPE I: NORM

- Standard Record:

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

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

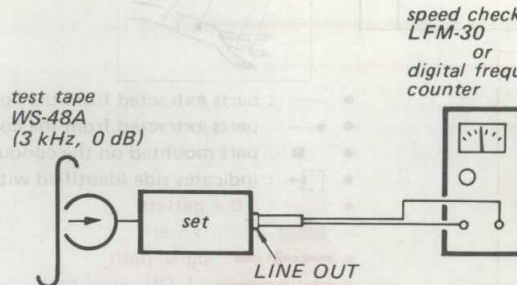
Standard Output Level

	HEADPHONES	LINE OUT
load impedance	8Ω	47 kΩ
output level	31 mV (-28 dB)	0.435 V (-5 dB)

Capstan motor Speed Adjustment

Procedure:

Mode: playback

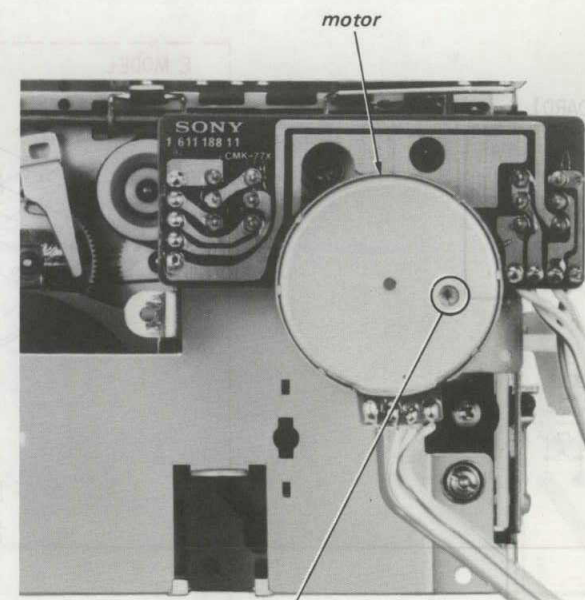


Specification:

Speed checker	Digital frequency counter
-0.5 - +0.5%	2,970 - 3,000 Hz

Frequency difference between the beginning and the end of the tape should be within 0.8% (25 Hz).

Adjustment Location:

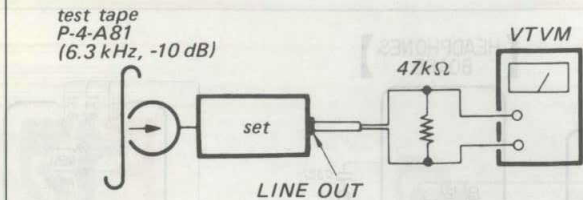


Adjust the speed by using screwdriver. When turning the screw clockwise, speed is faster.

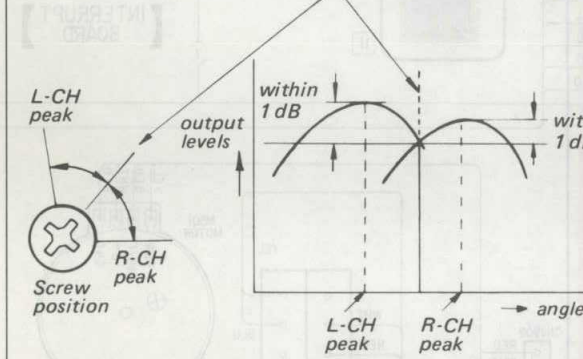
Record/playback Head Azimuth Adjustment

Procedure:

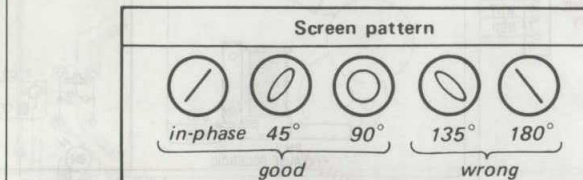
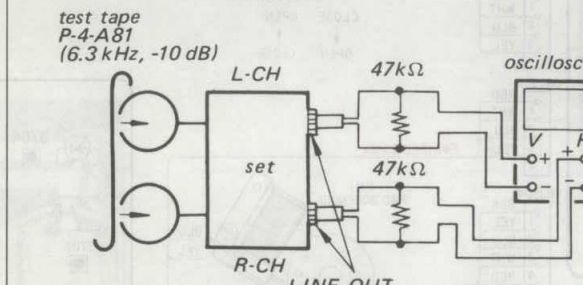
1. Mode: Playback



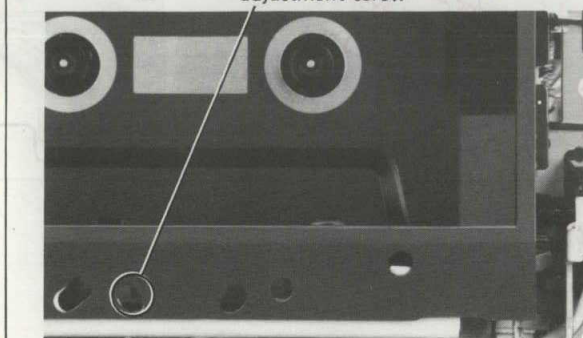
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1 dB.



3. Phase Check  
Mode: playback



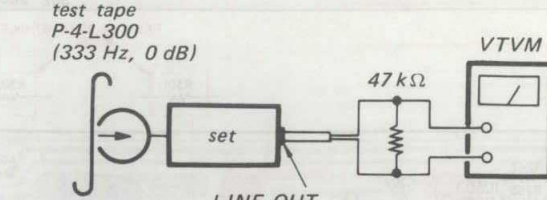
Adjustment Location:



Playback Level Adjustment

Procedure:

Mode: playback



Specification:

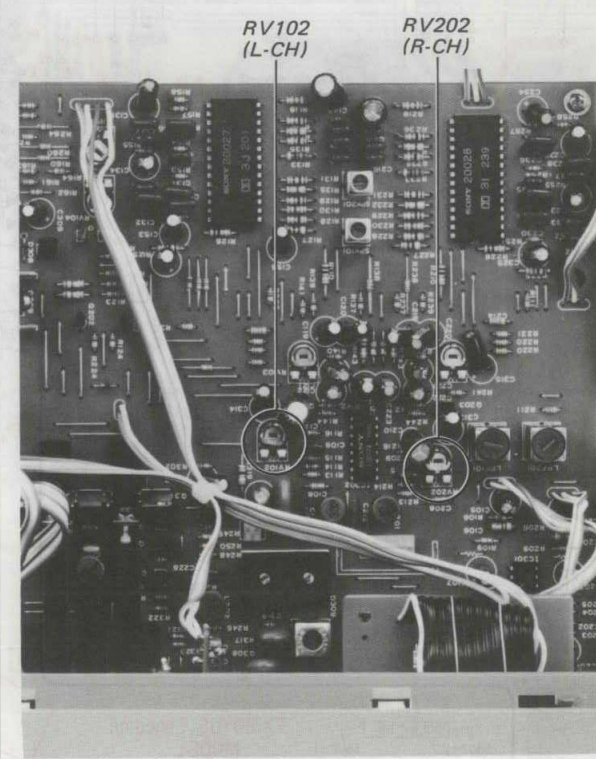
LINE OUT level: 0.45 - 0.50 V  
(-4.9 - -3.9 dB)

Level difference between channels:  
less than 0.5 dB

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

Adjustment Location:

- AUDIO board -



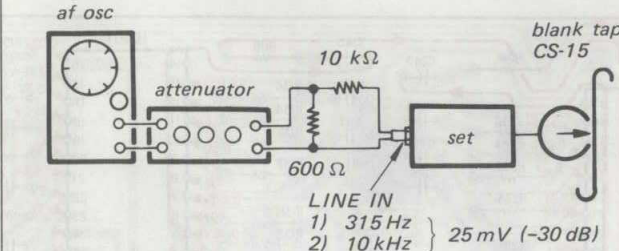
Record Bias Adjustment

Setting:

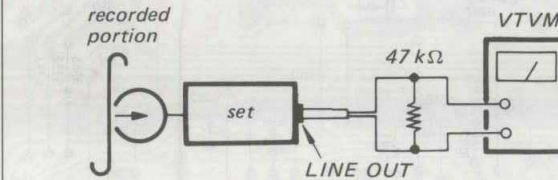
REC LEVEL control: standard record  
(See page 15)

Procedure:

1. Mode: record



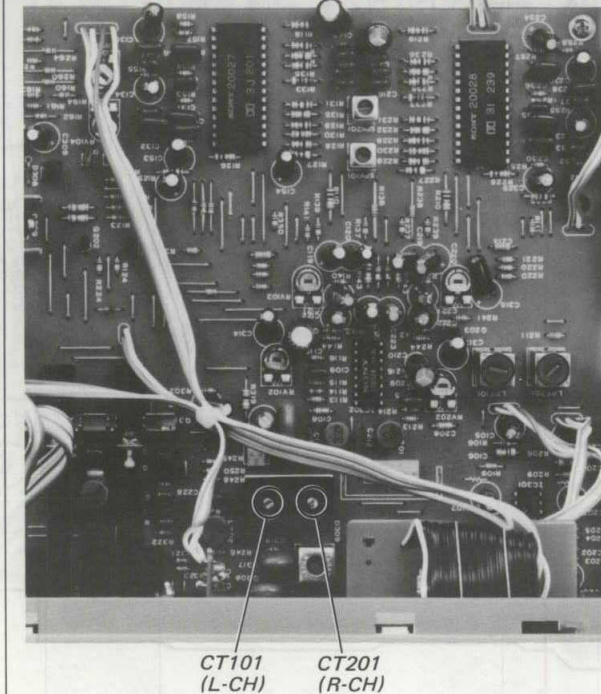
2. Mode: playback



Adjust CT101, CT201 so that the LINE OUT level of 10 kHz signal is 0 dB ±0.5 dB relative to that of 315 Hz.

Adjustment Location:

- AUDIO board -



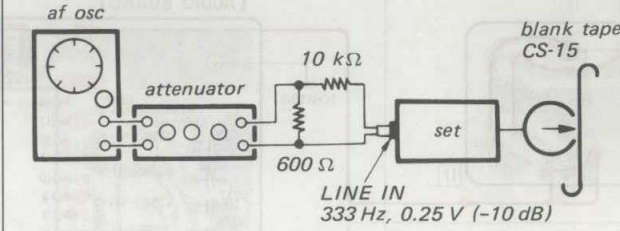
Record Level Adjustment

Setting:

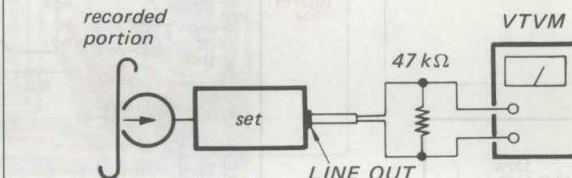
REC LEVEL control: standard record  
(See page 15)

Procedure:

1. Mode: record



2. Mode: playback

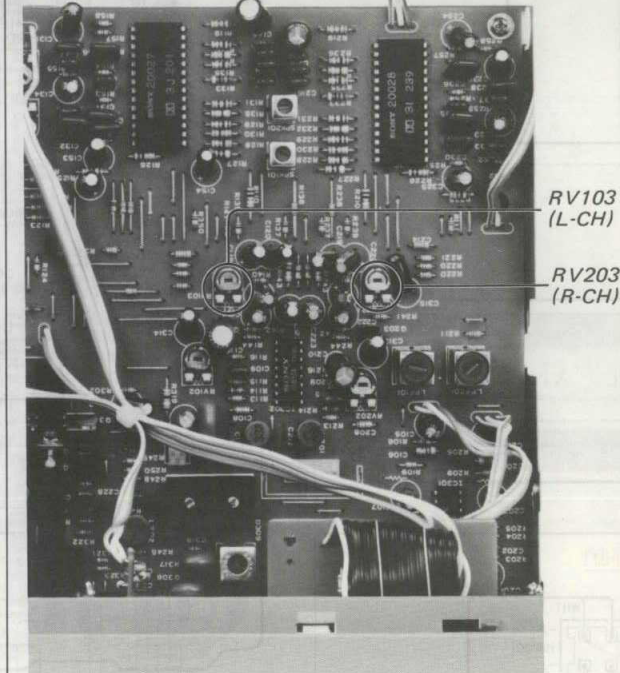


Specification:

LINE OUT level: 0.39 - 0.49 V  
(-6 - -4 dB)

Adjustment Location:

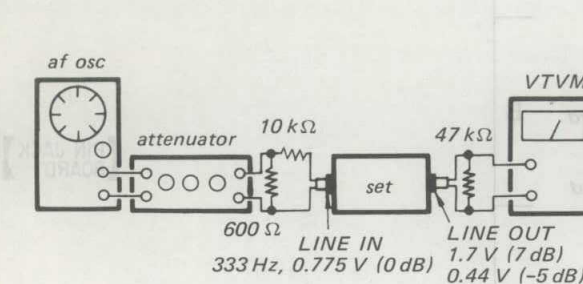
- AUDIO board -



Level Meter Calibration

Procedure:

1. Mode: record



2. Set the REC LEVEL control so that the LINE OUT level is 0.44 V (-5 dB).

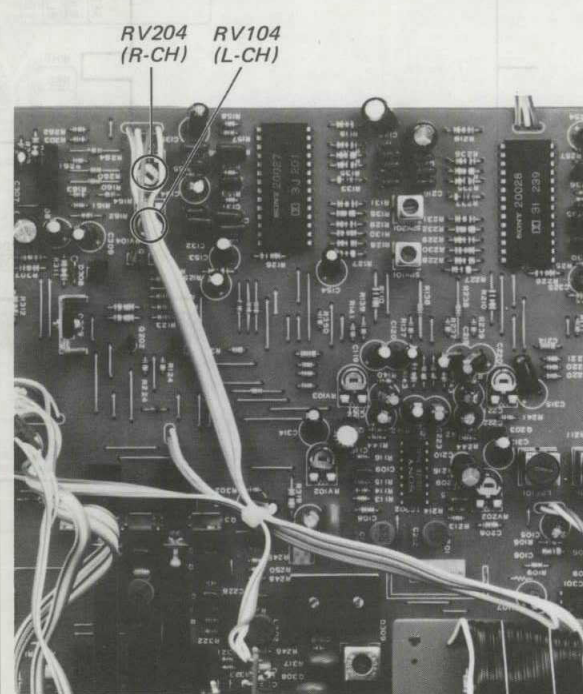
3. Adjust RV104 and RV204 so that the 4th segment from the left of the LED meter goes on.

4. Set the REC LEVEL control so that the LINE OUT level is 1.9 V (8 dB). Make sure that all the segments go on.

**Note:** Slide the REC LEVEL control rightward slowly.

Adjustment Location:

- METER DRIVE board -



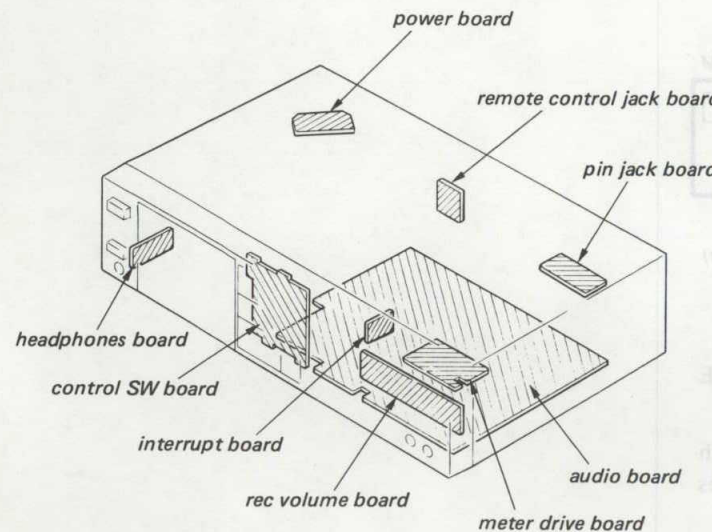


SECTION 4  
DIAGRAMS

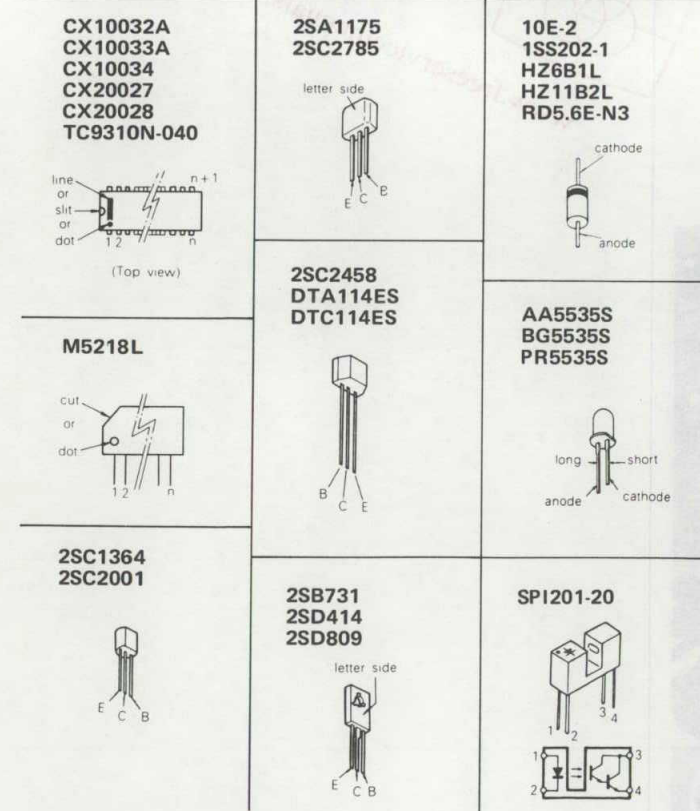
TC-FX310/FX311 TC-FX310/FX311

TC-FX310/FX311 TC-FX310/FX311

Circuit Boards Location

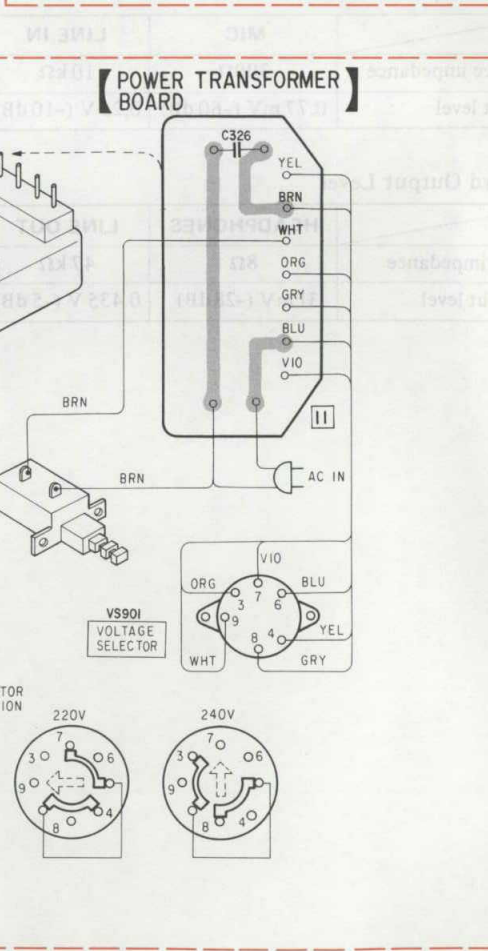
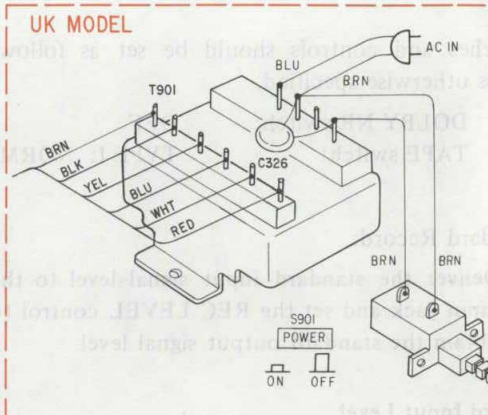
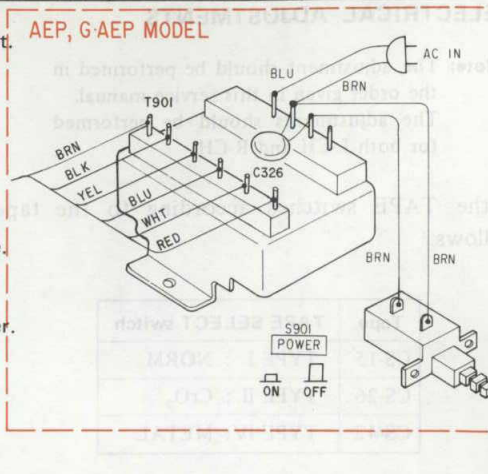
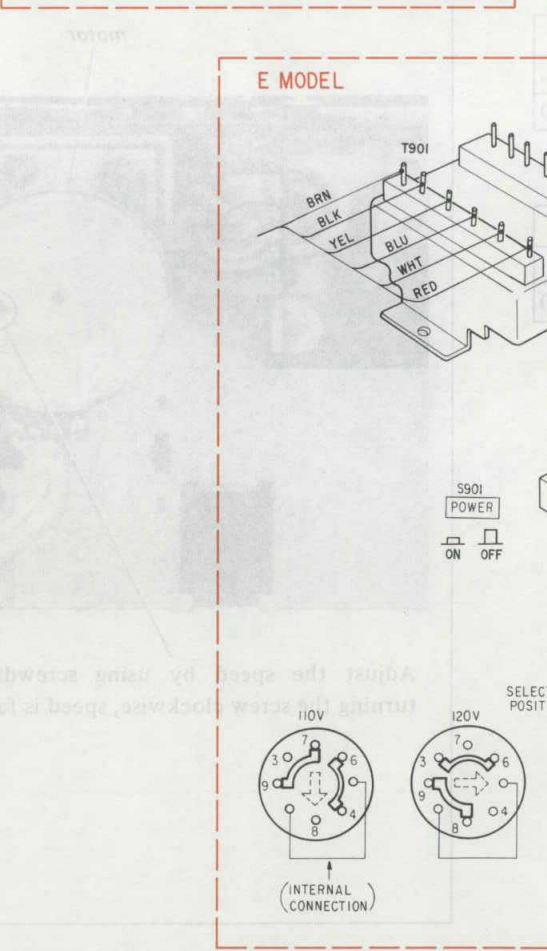
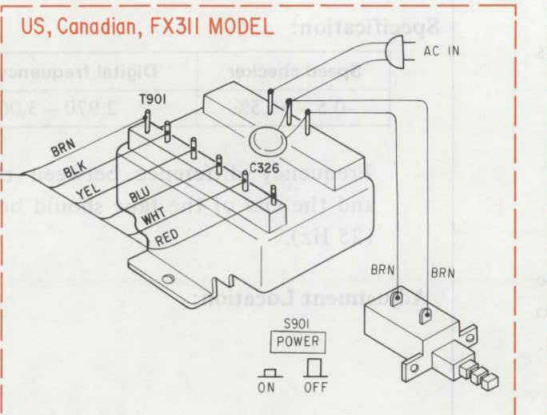
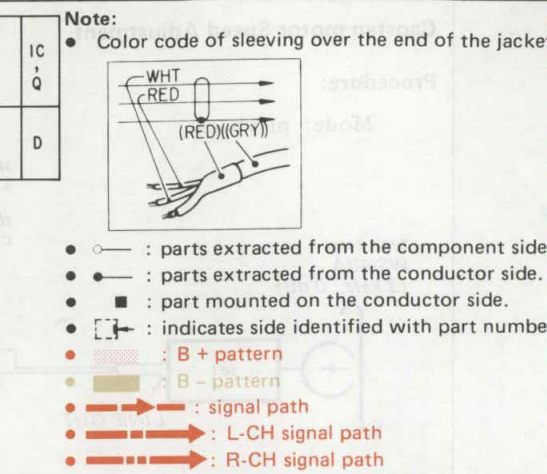
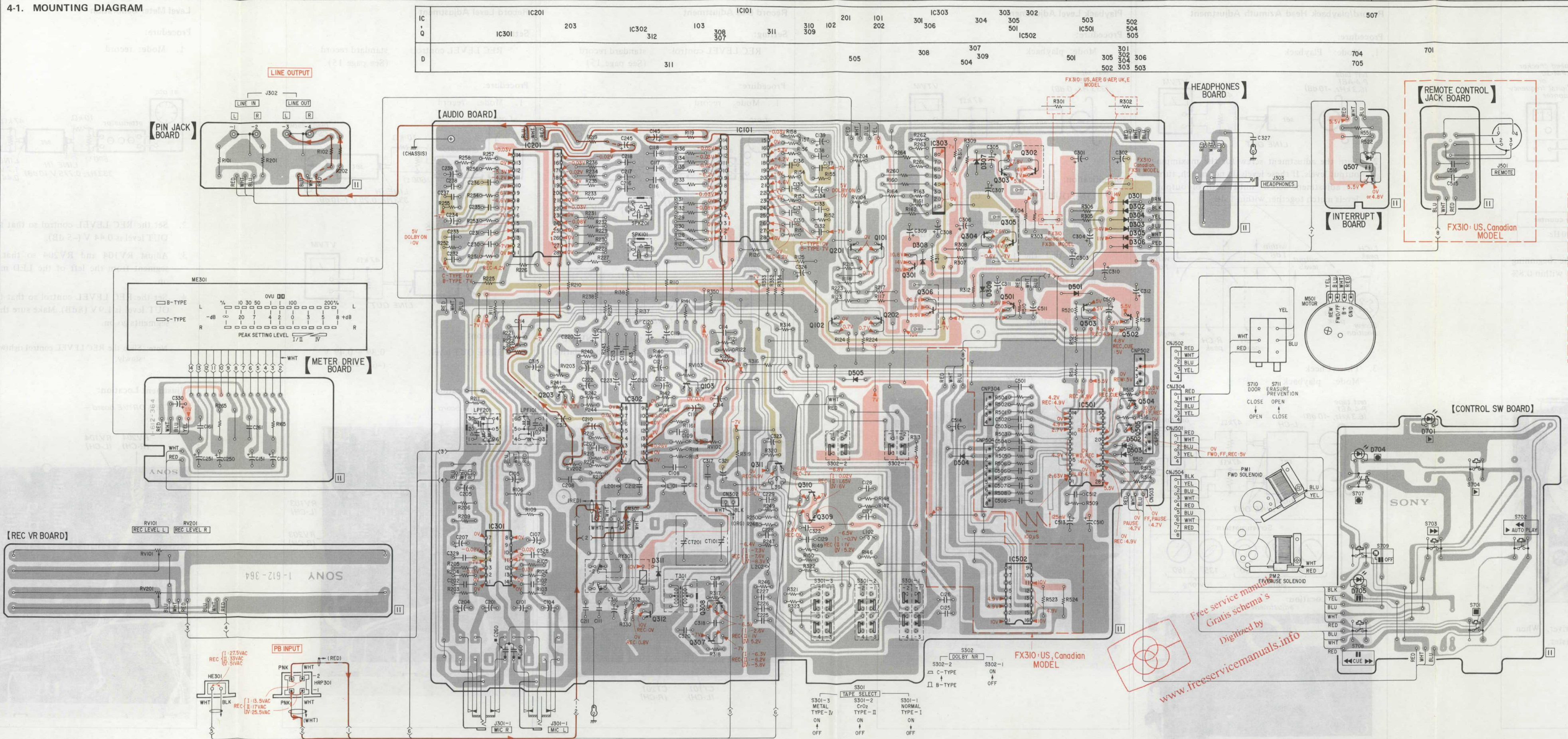


• Semiconductor Lead Layouts



4-1. MOUNTING DIAGRAM

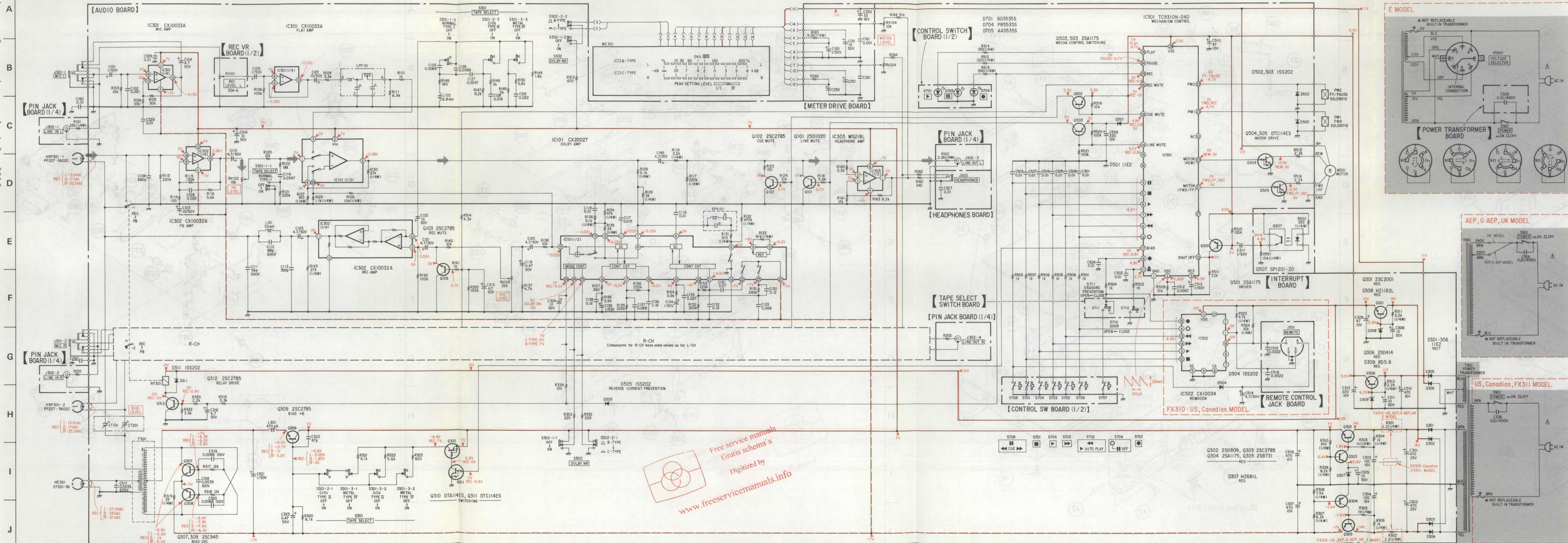
A  
B  
C  
D  
E  
F  
G  
H  
I  
J





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4-2. SCHEMATIC DIAGRAM



- Note:**
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.
  - All resistors are in ohms,  $\frac{1}{2}\text{W}$  unless otherwise noted.
  - $\Delta$ : internal component.
  - $\square$ : panel designation.
  - $\square$ : adjustment for repair.
  - $\bullet$ : B+ bus.
  - $\text{---}$ : B- bus.
  - Voltages are dc with respect to ground unless otherwise noted.
  - Readings are taken under no-signal conditions with a VOM (50k $\Omega$ /V).
  - Voltage variations may be noted due to normal production tolerances.
  - AC voltage readings in the bias oscillator with a VTVM.
  - Switches

Ref. No.	Switch	Position
S301-1	(TAPE SELECT TYPE-I NORM	ON
S301-2	(TAPE SELECT TYPE-II CrO <sub>2</sub>	OFF
S301-3	(TAPE SELECT TYPE-IV METAL	OFF
S302-1	(DOLBY NR	OFF
S302-2	(DOLBY NR	B-TYPE
S701	(DOOR	OFF
S702	(DOOR	OFF
S703	(DOOR	OFF
S704	(DOOR	OFF
S707	(DOOR	OFF
S708	(DOOR	OFF
S709	(DOOR	OFF
S710	(DOOR	OFF
S711	(DOOR	OFF
S901	(ERASURE PREVENTION POWER	OFF

•  $\rightarrow$ : signal path

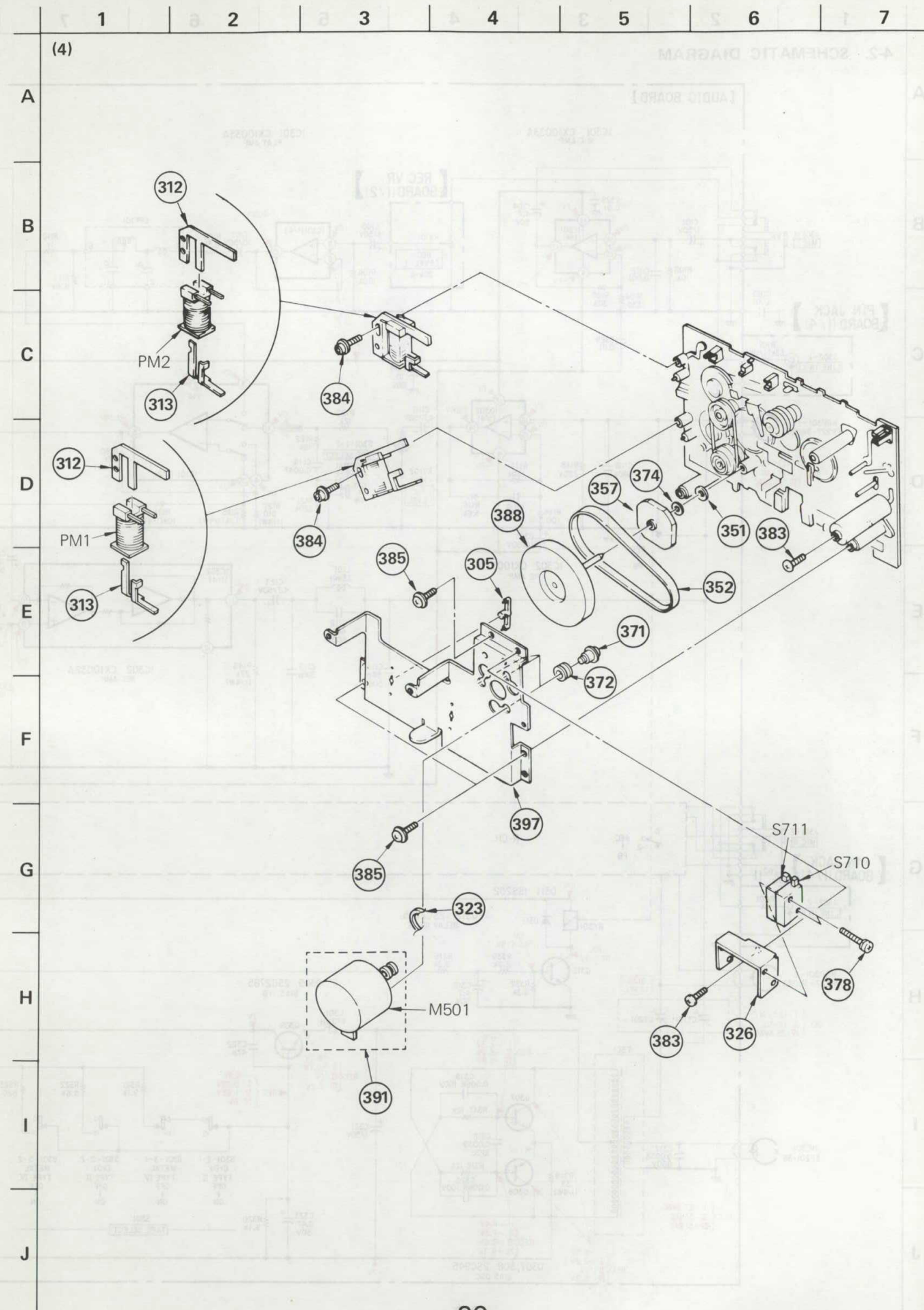
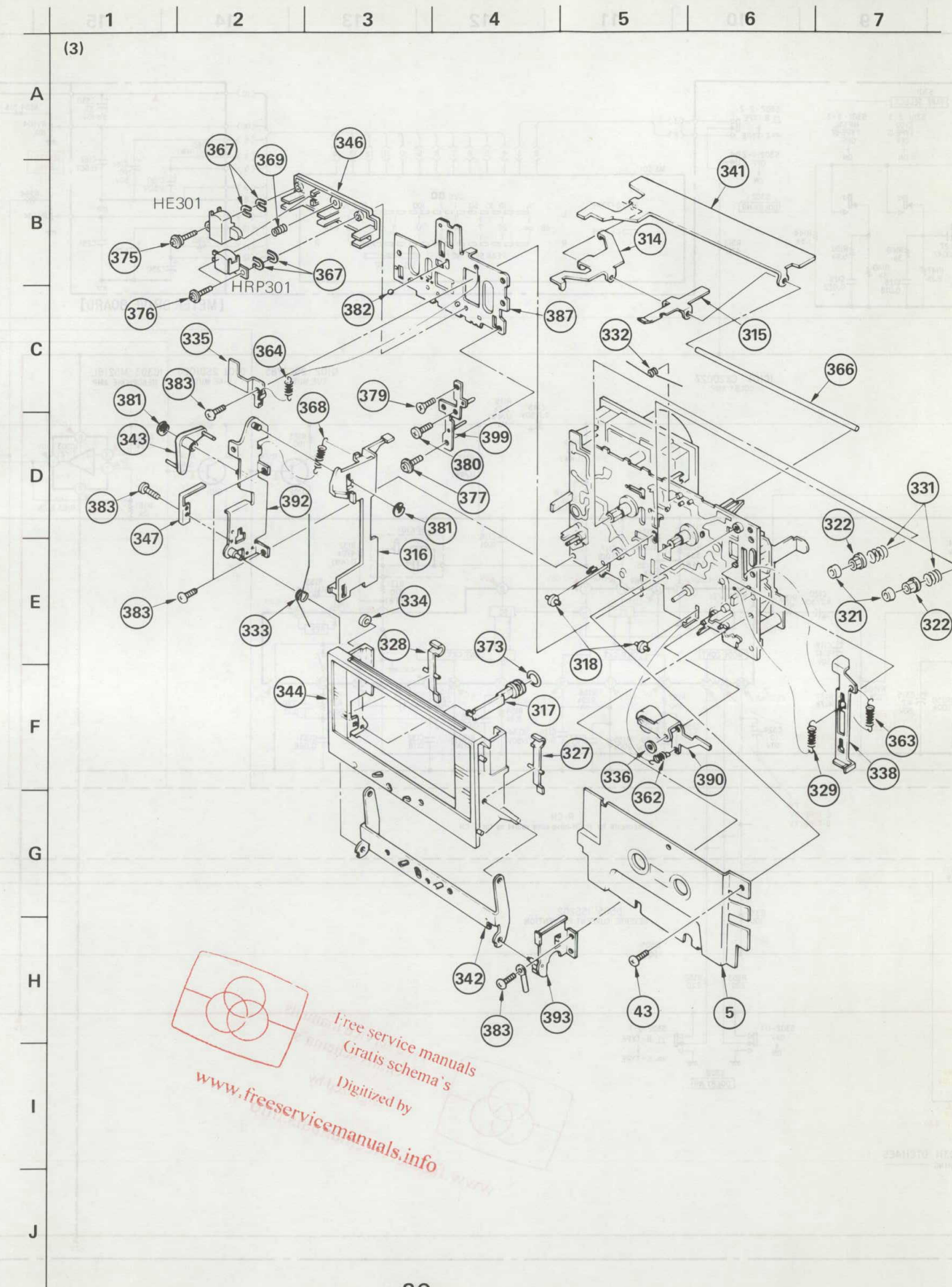
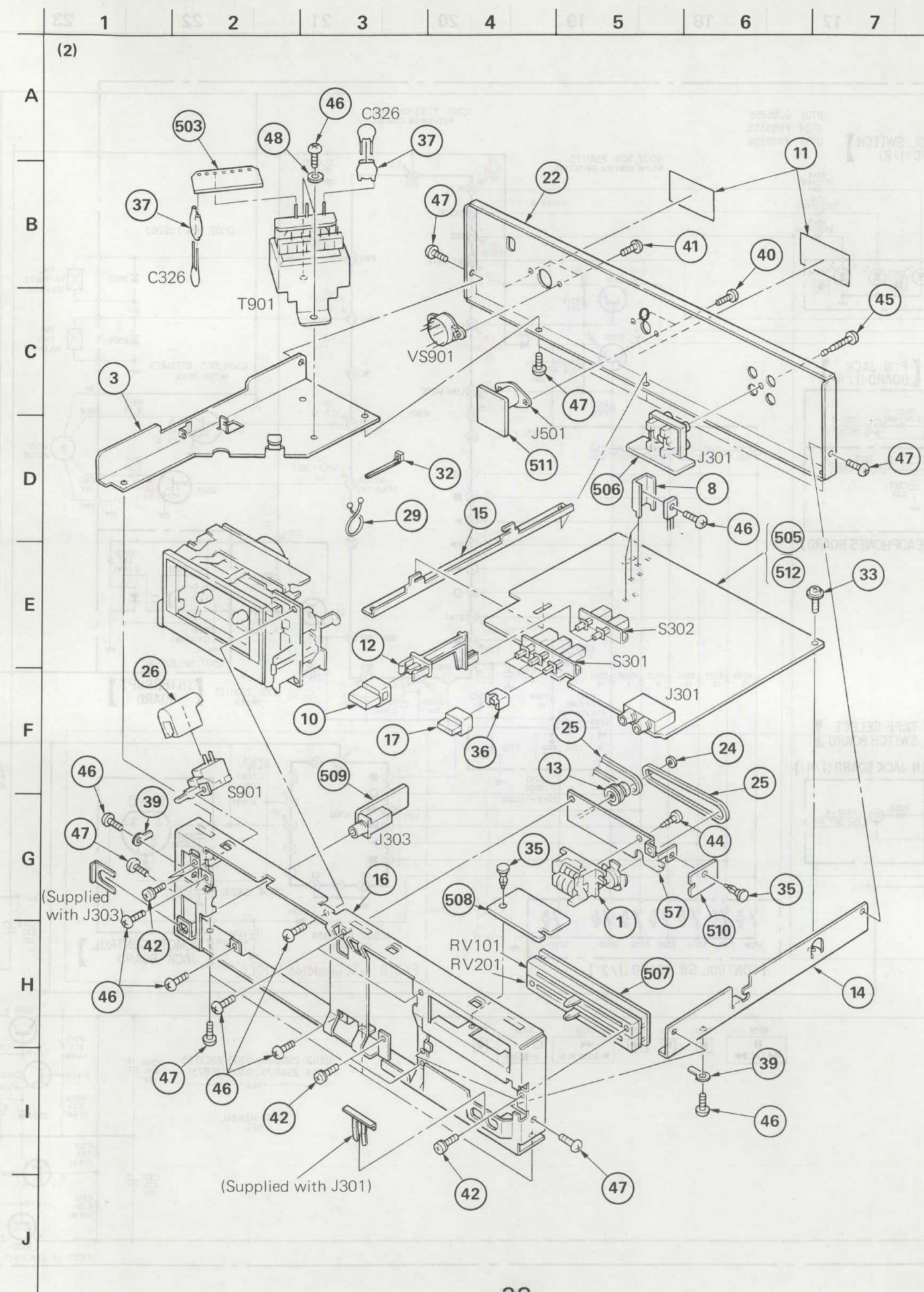
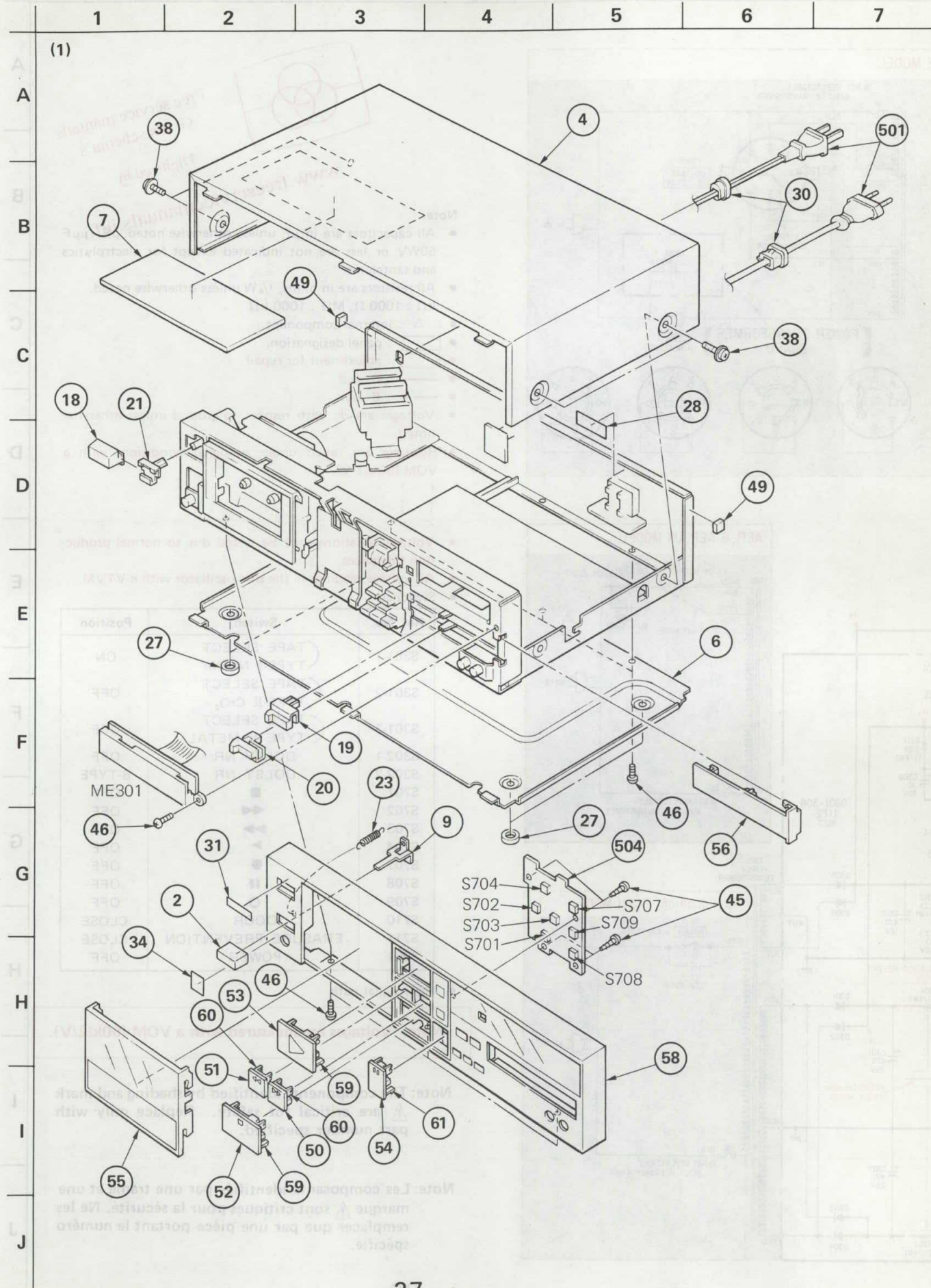
**Note:** Voltages are measured with a VOM (50k $\Omega$ /V).

**Note:** The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

**Note:** Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

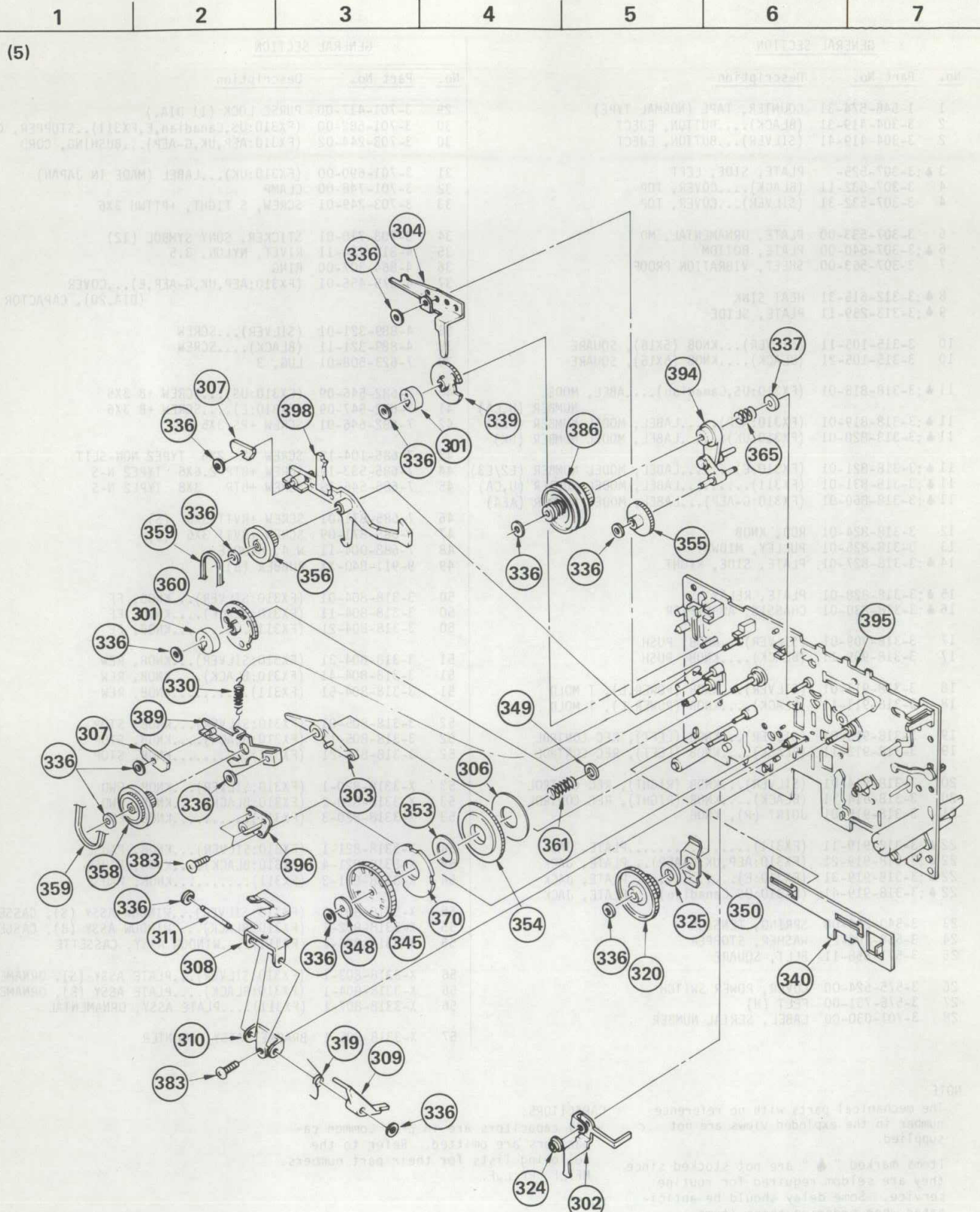


## EXPLODED VIEWS AND PARTS LIST





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## GENERAL SECTION

No.	Part No.	Description
1	1-548-574-31	COUNTER, TAPE (NORMAL TYPE)
2	3-304-419-31	(BLACK)....BUTTON, EJECT
2	3-304-419-41	(SILVER)....BUTTON, EJECT
3	3-307-525-11	PLATE, SIDE, LEFT
4	3-307-532-11	(BLACK)....COVER, TOP
4	3-307-532-31	(SILVER)....COVER, TOP
5	3-307-533-00	PLATE, ORNAMENTAL, MD
6	3-307-540-00	PLATE, BOTTOM
7	3-307-563-00	SHEET, VIBRATION PROOF
8	3-312-615-31	HEAT SINK
9	3-313-259-11	PLATE, SLIDE
10	3-315-105-11	(SILVER)....KNOB (5X16), SQUARE
10	3-315-105-21	(BLACK)....KNOB (5X16), SQUARE
11	3-318-818-01	(FX310:US,Canadian)....LABEL, MODEL NUMBER (U,CA)
11	3-318-819-01	(FX310:AEP)....LABEL, MODEL NUMBER (AE1)
11	3-318-820-01	(FX310:UK)....LABEL, MODEL NUMBER (UK)
11	3-318-821-01	(FX310:E)....LABEL, MODEL NUMBER (E2/E3)
11	3-318-831-01	(FX311)....LABEL, MODEL NUMBER (U,CA)
11	3-318-860-01	(FX310:G-AEP)....LABEL, MODEL NUMBER (AE4)
12	3-318-824-01	ROD, KNOB
13	3-318-825-01	PULLEY, MIDWAY
14	3-318-827-01	PLATE, SIDE, RIGHT
15	3-318-828-01	PLATE, RELAY
16	3-318-830-01	CHASSIS, AMPLIFIER
17	3-318-909-01	(SILVER)....KNOB, PUSH
17	3-318-909-11	(BLACK)....KNOB, PUSH
18	3-318-911-01	(SILVER)....KNOB (POWER.L), T MOLD
18	3-318-911-11	(BLACK)....KNOB (POWER.L), T MOLD
19	3-318-913-01	(SILVER)....KNOB (LEFT), REC CONTROL
19	3-318-913-11	(BLACK)....KNOB (LEFT), REC CONTROL
20	3-318-914-01	(SILVER)....KNOB (RIGHT), REC CONTROL
20	3-318-914-11	(BLACK)....KNOB (RIGHT), REC CONTROL
21	3-318-915-01	JOINT (P), KNOB
22	3-318-919-11	(FX311)....PLATE, JACK
22	3-318-919-21	(FX310:AEP,UK,G-AEP)....PLATE, JACK
22	3-318-919-31	(FX310:E)....PLATE, JACK
22	3-318-919-41	(FX310:US,Canadian)....PLATE, JACK
23	3-540-244-00	SPRING, TENSION
24	3-558-708-21	WASHER, STOPPER
25	3-571-858-11	BELT, SQUARE
26	3-575-524-00	COVER, POWER SWITCH
27	3-576-731-00	FELT (H)
28	3-701-030-00	LABEL, SERIAL NUMBER

## NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (△-△△△-△△△-XX or △-△△△△-△△△-X) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

## GENERAL SECTION

No.	Part No.	Description
29	3-701-417-00	PURSE LOCK (11 DIA.)
30	3-701-682-00	(FX310:US,Canadian,E,FX311)....STOPPER, CORD
30	3-703-244-02	(FX310:AEP,UK,G-AEP)....BUSHING, CORD
31	3-701-690-00	(FX310:UK)....LABEL (MADE IN JAPAN)
32	3-701-748-00	CLAMP
33	3-703-249-01	SCREW, S TIGHT, +PTTW 3X6
34	3-703-710-01	STICKER, SONY SYMBOL (12)
35	4-812-134-11	RIVET, NYLON, 3.5
36	4-864-307-00	RING
37	4-875-455-01	(FX310:AEP,UK,G-AEP,E)....COVER (DIA.20), CAPACITOR
38	4-889-321-01	(SILVER)....SCREW
38	4-889-321-11	(BLACK)....SCREW
39	7-623-508-01	LUG, 3
40	7-682-546-09	(FX310:US)....SCREW +B 3X5
41	7-682-547-09	(FX310:E)....SCREW +B 3X6
42	7-682-646-01	SCREW +PS 3X5
43	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT
44	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S
45	7-685-546-19	SCREW +BTP 3X8 TYPE2 N-S
46	7-685-871-01	SCREW +BVTT 3X6 (S)
47	7-685-871-09	SCREW +BVTT 3X6 (S)
48	7-688-004-11	W 4, MIDDLE
49	9-911-840-XX	RUBBER (B)
50	3-318-804-01	(FX310:SILVER)....KNOB, FF
50	3-318-804-11	(FX310:BLACK)....KNOB, FF
50	3-318-804-21	(FX311)....KNOB, FF
51	3-318-804-31	(FX310:SILVER)....KNOB, REW
51	3-318-804-41	(FX310:BLACK)....KNOB, REW
51	3-318-804-51	(FX311)....KNOB, REW
52	3-318-805-01	(FX310:SILVER)....KNOB, STOP
52	3-318-805-11	(FX310:BLACK)....KNOB, STOP
52	3-318-805-21	(FX311)....KNOB, STOP
53	X-3318-820-1	(FX310:SILVER)....KNOB, FWD
53	X-3318-820-2	(FX310:BLACK)....KNOB, FWD
53	X-3318-820-3	(FX311)....KNOB, FWD
54	X-3318-821-1	(FX310:SILVER)....KNOB, PAUSE
54	X-3318-821-4	(FX310:BLACK)....KNOB, PAUSE
54	X-3318-821-3	(FX311)....KNOB, PAUSE
55	X-3318-801-1	(FX310:SILVER)....WINDOW ASSY (S), CASSETTE
55	X-3318-802-1	(FX310:BLACK)....WINDOW ASSY (B), CASSETTE
55	X-3318-806-1	(FX311)....WINDOW ASSY, CASSETTE
56	X-3318-803-1	(FX310:SILVER)....PLATE ASSY (S), ORNAMENTAL
56	X-3318-804-1	(FX310:BLACK)....PLATE ASSY (B), ORNAMENTAL
56	X-3318-807-1	(FX311)....PLATE ASSY, ORNAMENTAL
57	X-3318-805-1	BRACKET ASSY, COUNTER

## CAPACITORS:

- All capacitors are in  $\mu\text{F}$ . Common capacitors are omitted. Refer to the following lists for their part numbers.
- MF:  $\mu\text{F}$ , PF:  $\mu\text{pF}$ .

## COILS

- MMH : mH, UH :  $\mu\text{H}$

## SEMICONDUCTORS

- In each case, U :  $\mu$ , for example:  
UA....:  $\mu\text{A}$ ..., UPA....:  $\mu\text{PA}$ ..., UPC....:  $\mu\text{PC}$ ,  
UPD....:  $\mu\text{PD}$ ...



## GENERAL SECTION

No.	Part No.	Description
58	X-3318-810-1	(FX310:SILVER)...PANEL ASSY (S), FRONT
58	X-3318-811-1	(FX310:BLACK)...PANEL ASSY (B), FRONT
58	X-3318-812-1	(FX311)...PANEL ASSY, FRONT
59	3-318-814-01	MOLD, KNOB, FWD
60	3-318-815-01	MOLD, KNOB, FF/REW
61	3-318-816-01	MOLD, KNOB, PAUSE

## ACCESSORY &amp; PACKING MATERIAL

No.	Part No.	Description
101	1-551-734-11	CORD, CONNECTION (RK-74A)
102	3-312-976-00	(FX311)...SHEET, PROTECTION, PANEL
103	3-315-149-00	CUSHION (LEFT), LOWER
104	3-315-150-00	CUSHION (RIGHT), LOWER
105	3-315-151-00	CUSHION (LEFT), UPPER
106	3-315-152-00	CUSHION (RIGHT), UPPER
107	3-318-854-00	(FX310:UK,E)...INDIVIDUAL CARTON
107	3-318-858-00	(FX310:US,Canadian,AEP,G-AEP) ...INDIVIDUAL CARTON
107	3-318-859-00	(FX311)...INDIVIDUAL CARTON
108	3-573-625-00	SHEET, POLYETHYLENE
109	3-701-328-00	(FX310:US,Canadian,AEP,G-AEP) ...LABEL, PRODUCT COLOR
110	3-701-630-00	BAG, POLYETHYLENE
111	3-773-854-11	(FX310:Canadian,AEP,UK,E)...MANUAL, INSTRUCTION
111	3-773-854-21	(FX310:US,FX311)...MANUAL, INSTRUCTION
111	3-773-854-41	(FX310:AEP,G-AEP)...MANUAL, INSTRUCTION
112	3-793-828-11	QUESTIONNAIRE
113	4-876-352-00	SHEET, PROTECTION
114	X-3701-105-0	ROD ASSY, CLEANING, HEAD

## MECHANISM SECTION

No.	Part No.	Description
301	1-452-202-00	MAGNET
302	3-307-301-00	LEVER (RELAY), FWD SELECT
303	3-307-307-00	LEVER, FWD
304	3-307-308-00	LEVER, FF
305	3-307-309-00	RETAINER (A), THRUST
306	3-307-313-00	PLATE, YOKE
307	3-307-315-01	ARBOR, MOVABLE
308	3-307-319-00	RETAINER, TAKE-UP GEAR
309	3-307-328-00	LEVER, TAKE-UP SELECTION
310	3-307-329-00	PLATE, FULCRUM, SELECTION LEVER
311	3-307-330-00	PIN, FULCRUM PLATE
312	3-307-332-00	ARBOR, FIXED
313	3-307-333-00	ARBOR, TRIGGER
314	3-307-337-00	LEVER, REC DETECTION
315	3-307-344-00	LEVER, HALF RETAINER
316	3-307-345-00	SLIDER, EJECT
317	3-307-347-00	PISTON
318	3-307-348-00	ROLLER
319	3-307-355-00	SPRING
320	3-307-360-00	GEAR (S), REEL
321	3-307-362-00	CAP, REEL
322	3-307-363-00	CLAW (N), REEL
323	3-307-366-00	BELT, FAST FORWARD
324	3-307-367-00	BUSHING, SELECT LEVER
325	3-307-369-00	FELT, LIMITER
326	3-307-370-00	BRACKET, SWITCH
327	3-307-371-00	SPRING (LEFT)
328	3-307-372-00	SPRING (RIGHT)
329	3-307-374-00	SPRING, TENSION
330	3-307-378-00	SPRING, TENSION
331	3-307-380-00	SPRING, COMPRESSION
332	3-307-382-00	SPRING
333	3-307-383-00	SPRING
334	3-307-390-00	BUSHING, LOADING SPRING
335	3-307-391-00	SPRING
336	3-307-394-00	RETAINER (B), THRUST
337	3-307-395-00	RETAINER, SPRING
338	3-307-397-00	SLIDER, PAUSE
339	3-307-401-00	GEAR, FF CAM
340	3-307-403-00	SLIDER, FWD
341	3-307-404-00	RETAINER, DETECTION SWITCH
342	3-307-405-00	PLATE, FULCRUM, CASSETTE HOLDER
343	3-307-406-00	LEVER, EJECT
344	3-307-407-31	HOLDER, CASSETTE
345	3-307-412-00	GEAR, TAKE-UP REEL

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## CAPACITORS:

All capacitors are in  $\mu\text{F}$ . Common capacitors are omitted. Refer to the following lists for their part numbers.  
MF: $\mu\text{F}$ , PF: $\mu\mu\text{F}$ .

## COILS

MMH : mH, UH :  $\mu\text{H}$

## SEMICONDUCTORS

In each case, U :  $\mu$ , for example:  
UA...:  $\mu\text{A}$ ..., UPA...:  $\mu\text{PA}$ ..., UPC...:  $\mu\text{PC}$ ,  
UPD...:  $\mu\text{PD}$ ...



## MECHANISM SECTION

No.	Part No.	Description
346	3-307-414-00	BRACKET, HEAD
347	3-307-416-00	STOPPER, LOADING
348	3-307-465-00	RETAINER, T SIDE
349	3-307-467-00	RETAINER, SPRING
350	3-307-475-00	PLATE, TENSION, BACK
351	3-307-482-00	WASHER, LUMILER
352	3-307-483-00	BELT (R), CAPSTAN
353	3-307-493-01	SPACER (t=0.1)
353	3-307-493-11	SPACER (t=0.15)
353	3-307-493-21	SPACER (t=0.2)
353	3-307-493-31	SPACER (t=0.25)
353	3-307-493-41	SPACER (t=0.3)
353	3-307-493-51	SPACER (t=0.35)
354	3-307-953-00	MAGNET, REEL TABLE
355	3-307-970-00	GEAR, FR
356	3-312-405-00	PULLEY, DRIVING
357	3-312-406-00	GEAR (T), PINION
358	3-312-408-00	GEAR (B), CONVERSION
359	3-312-409-00	BELT, DRIVING
360	3-312-412-00	GEAR (B), CAM, FWD
361	3-312-429-00	SPRING, COMPRESSION
362	3-312-432-00	SPRING, TENSION
363	3-312-448-00	SPRING, TENSION
364	3-312-451-00	SPRING, TENSION
365	3-312-452-00	SPRING, COMPRESSION
366	3-312-455-01	SHAFT, DETECTION LEVER
367	3-513-237-01	PLATE (t=0.1)
367	3-513-237-11	PLATE (t=0.2)
368	3-531-541-00	SPRING, TENSION
369	3-539-237-00	SPRING (3), COMPRESSION
370	3-561-827-00	PLATE (A), HYSTERESIS
371	3-570-027-00	SCREW, MOTOR
372	3-570-118-00	CUSHION, MOTOR
373	3-575-392-00	RING, PISTON
374	3-701-438-11	WASHER, 2.5
375	3-701-465-00	SCREW, LOCK
376	3-701-466-00	SCREW, LOCK
377	3-701-467-00	SCREW, LOCK
378	7-621-760-05	+PSW, 2.6X16
379	7-621-770-20	SCREW +B 2X5
380	7-621-772-00	SCREW +B 2X3
381	7-624-105-04	STOP RING 2.3, TYPE -E
382	7-671-111-11	STEEL BALL 1.5MM
383	7-685-860-04	SCREW +BVTT 2.6X4 (S)
384	7-687-204-21	TOTSU PTPWH 2X6 NON-SLIT, TYPE2
385	7-687-246-21	SCREW, TOTSU PTPWH 3X8, TYPE2

## MECHANISM SECTION

No.	Part No.	Description
386	A-2142-022-A	PULLEY ASSY, FR
387	X-3307-301-0	CHASSIS (N) ASSY, HEAD
388	X-3307-302-5	FLYWHEEL (N) ASSY
389	X-3307-305-0	LEVER ASSY, FWD LOCK
390	X-3307-307-0	PINCH ROLLER (N) ASSY
391	X-3307-308-0	MOTOR (N) ASSY
392	X-3307-309-0	PLATE (LEFT) ASSY, SIDE
393	X-3307-310-0	PLATE (RIGHT) ASSY, SIDE
394	X-3307-312-4	LEVER ASSY, FR
395	X-3307-330-1	CHASSIS (N) ASSY, MECHANICAL
396	X-3307-338-0	BEARING ASSY, CAPSTAN
397	X-3307-345-0	RETAINER, THRUST
398	X-3307-348-0	LEVER ASSY, FF LOCK
399	X-3307-920-0	PLATE ASSY, ADJUSTMENT

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## CAPACITORS:

- All capacitors are in  $\mu\text{F}$ . Common capacitors are omitted. Refer to the following lists for their part numbers.
- MF:  $\mu\text{F}$ , PF:  $\mu\text{pF}$ .

## COILS

- MMH : mH, UH :  $\mu\text{H}$

## SEMICONDUCTORS

- In each case, U :  $\mu$ , for example:  
UA... :  $\mu\text{A}$ ..., UPA... :  $\mu\text{PA}$ ..., UPC... :  $\mu\text{PC}$ ,  
UPD... :  $\mu\text{PD}$ ...



## ELECTRICAL PARTS

Ref No.	Part No.	Description
501	1-534-817-XX	(FX310:AEP,G-AEP)...CORD, POWER, EURO PLUG
501	1-551-472-00	(FX310:E).....CORD, POWER
501	1-551-628-00	(FX310:US,Canadian:FX311)..CORD, POWER
501	1-555-734-00	(FX310:E).....CORD, POWER
501	1-556-562-00	(FX310:UK).....CORD, POWER
502	1-535-139-00	(FX310:E)...BASE POST 19MM (10MM PITCH)
503	1-605-860-00	(FX310:E)...PC BOARD, POWER
504	1-612-104-11	PC BOARD, CONTROL SW (8)
505	1-612-364-11	PC BOARD, AUDIO
506	1-612-364-11	PC BOARD, PIN JACK
507	1-612-364-11	PC BOARD, REC VOLUME
508	1-612-364-11	PC BOARD, METER DRIVE
509	1-612-364-11	PC BOARD, HEADPHONES
510	1-612-364-11	PC BOARD, INTERRUPT
511	1-612-364-11	PC BOARD, REMOTE CONTROL JACK
512	A-2056-224-A	(FX310:AEP,UK,G-AEP,E)... PC BOARD ASSY, AUDIO
512	A-2056-225-A	(FX310:US,Canadian)..... PC BOARD ASSY, AUDIO
512	A-2056-226-A	(FX311).....PC BOARD ASSY, AUDIO
C101	1-123-380-00	ELECT 1MF 20% 50V
C102	1-162-110-00	CERAMIC 0.001MF 10% 50V
C104	1-123-369-00	ELECT 4.7MF 20% 50V
C105	1-123-380-00	ELECT 1MF 20% 50V
C107	1-123-356-00	ELECT 10MF 20% 50V
C108	1-162-108-00	CERAMIC 680PF 10% 50V
C109	1-136-157-00	FILM 0.022MF 5% 50V
C110	1-123-369-00	ELECT 4.7MF 20% 50V
C111	1-107-165-00	MICA 56PF 5% 500V
C112	1-107-036-00	MICA 68PF 5% 500V
C113	1-162-105-00	CERAMIC 390PF 10% 50V
C114	1-162-112-00	CERAMIC 0.0047MF 30% 25V
C116	1-136-153-00	FILM 0.01MF 5% 50V
C117	1-136-155-00	FILM 0.015MF 5% 50V
C118	1-136-153-00	FILM 0.01MF 5% 50V
C119	1-123-379-00	ELECT 0.47MF 20% 50V
C120	1-123-369-00	ELECT 4.7MF 20% 50V
C121	1-123-369-00	ELECT 4.7MF 20% 50V
C122	1-123-356-00	ELECT 10MF 20% 50V
C123	1-123-369-00	ELECT 4.7MF 20% 50V
C125	1-108-575-00	MYLAR 0.0068MF 5% 50V
C126	1-108-575-00	MYLAR 0.0068MF 5% 50V
C127	1-108-571-00	MYLAR 0.0047MF 5% 50V
C128	1-136-156-00	FILM 0.018MF 5% 50V
C129	1-136-157-00	FILM 0.022MF 5% 50V
C130	1-136-166-00	FILM 0.12MF 5% 50V
C131	1-136-170-00	FILM 0.27MF 5% 50V

## ELECTRICAL PARTS

Ref No.	Part No.	Description
C132	1-136-168-00	FILM 0.18MF 5% 50V
C133	1-136-163-00	FILM 0.068MF 5% 50V
C134	1-123-380-00	ELECT 1MF 20% 50V
C135	1-136-158-00	FILM 0.027MF 5% 50V
C136	1-136-168-00	FILM 0.18MF 5% 50V
C137	1-136-163-00	FILM 0.068MF 5% 50V
C138	1-136-166-00	FILM 0.12MF 5% 50V
C139	1-123-380-00	ELECT 1MF 20% 50V
C145	1-123-369-00	ELECT 4.7MF 20% 50V
C150	1-123-380-00	ELECT 1MF 20% 50V
C151	1-123-356-00	ELECT 10MF 20% 50V
C160	1-162-113-00	CERAMIC 0.01MF 30% 16V
C161	1-162-110-00	CERAMIC 0.001MF 10% 50V
C201	1-123-380-00	ELECT 1MF 20% 50V
C202	1-162-110-00	CERAMIC 0.001MF 10% 50V
C204	1-123-369-00	ELECT 4.7MF 20% 50V
C205	1-123-380-00	ELECT 1MF 20% 50V
C207	1-123-356-00	ELECT 10MF 20% 50V
C208	1-162-108-00	CERAMIC 680PF 10% 50V
C209	1-136-157-00	FILM 0.022MF 5% 50V
C210	1-123-369-00	ELECT 4.7MF 20% 50V
C211	1-107-165-00	MICA 56PF 5% 500V
C212	1-107-036-00	MICA 68PF 5% 500V
C213	1-162-105-00	CERAMIC 390PF 10% 50V
C214	1-162-112-00	CERAMIC 0.0047MF 30% 25V
C216	1-136-153-00	FILM 0.01MF 5% 50V
C217	1-136-155-00	FILM 0.015MF 5% 50V
C218	1-136-153-00	FILM 0.01MF 5% 50V
C219	1-123-379-00	ELECT 0.47MF 20% 50V
C220	1-123-369-00	ELECT 4.7MF 20% 50V
C221	1-123-369-00	ELECT 4.7MF 20% 50V
C222	1-123-356-00	ELECT 10MF 20% 50V
C223	1-123-369-00	ELECT 4.7MF 20% 50V
C225	1-108-575-00	MYLAR 0.0068MF 5% 50V
C226	1-108-575-00	MYLAR 0.0068MF 5% 50V
C227	1-108-571-00	MYLAR 0.0047MF 5% 50V
C228	1-136-156-00	FILM 0.018MF 5% 50V
C229	1-136-157-00	FILM 0.022MF 5% 50V
C230	1-136-166-00	FILM 0.12MF 5% 50V
C231	1-136-170-00	FILM 0.27MF 5% 50V
C232	1-136-168-00	FILM 0.18MF 5% 50V
C233	1-136-163-00	FILM 0.068MF 5% 50V
C234	1-123-380-00	ELECT 1MF 20% 50V
C235	1-136-158-00	FILM 0.027MF 5% 50V
C236	1-136-168-00	FILM 0.18MF 5% 50V

## NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

## CAPACITORS:

- All capacitors are in  $\mu\text{F}$ . Common capacitors are omitted. Refer to the following lists for their part numbers.
- MF:  $\mu\text{F}$ , PF:  $\mu\text{pF}$ .

## COILS

- MMH : mH, UH :  $\mu\text{H}$

## SEMICONDUCTORS

- In each case, U :  $\mu$ , for example:  
UA....:  $\mu\text{A}$ ..., UPA....:  $\mu\text{PA}$ ..., UPC....:  $\mu\text{PC}$ ,  
UPD....:  $\mu\text{PD}$ ...

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



## ELECTRICAL PARTS

Ref No.	Part No.	Description			
C237	1-136-163-00	FILM	0.068MF	5%	50V
C238	1-136-166-00	FILM	0.12MF	5%	50V
C239	1-123-380-00	ELECT	1MF	20%	50V
C245	1-123-369-00	ELECT	4.7MF	20%	50V
C250	1-123-380-00	ELECT	1MF	20%	50V
C251	1-123-356-00	ELECT	10MF	20%	50V
C260	1-162-113-00	CERAMIC	0.01MF	30%	16V
C261	1-162-110-00	CERAMIC	0.001MF	10%	50V
C301	1-123-336-00	ELECT	470MF	20%	25V
C302	1-123-336-00	ELECT	470MF	20%	25V
C303	1-123-320-00	ELECT	100MF	20%	16V
C304	1-123-320-00	ELECT	100MF	20%	16V
C305	1-123-356-00	ELECT	10MF	20%	50V
C306	1-123-310-00	ELECT	470MF	20%	10V
C307	1-123-310-00	ELECT	470MF	20%	10V
C308	1-123-356-00	ELECT	10MF	20%	50V
C309	1-123-306-00	ELECT	47MF	20%	10V
C310	1-123-323-00	ELECT	470MF	20%	16V
C311	1-123-356-00	ELECT	10MF	20%	50V
C312	1-123-308-00	ELECT	220MF	20%	10V
C313	1-123-356-00	ELECT	10MF	20%	50V
C314	1-123-356-00	ELECT	10MF	20%	50V
C315	1-123-369-00	ELECT	4.7MF	20%	50V
C316	1-123-369-00	ELECT	4.7MF	20%	50V
C317	1-129-708-00	FILM	0.0033MF	10%	630V
C318	1-130-287-00	FILM	0.0039MF	5%	100V
C319	1-130-293-00	FILM	0.0068MF	5%	100V
C320	1-130-293-00	FILM	0.0068MF	5%	100V
C321	1-123-380-00	ELECT	1MF	20%	50V
C322	1-162-029-00	CERAMIC	47PF	5%	50V
C323	1-123-379-00	ELECT	0.47MF	20%	50V
C324	1-123-356-00	ELECT	10MF	20%	50V
C326	1-161-744-00	CAP, CERAMIC	0.01MF	FZ	
C327	1-162-113-00	CERAMIC	0.01MF	30%	16V
C328	1-162-113-00	CERAMIC	0.01MF	30%	16V
C329	1-162-113-00	CERAMIC	0.01MF	30%	16V
C330	1-123-318-00	ELECT	33MF	20%	16V
C501	1-162-113-00	CERAMIC	0.01MF	30%	16V
C502	1-162-113-00	CERAMIC	0.01MF	30%	16V
C503	1-162-113-00	CERAMIC	0.01MF	30%	16V
C504	1-162-113-00	CERAMIC	0.01MF	30%	16V
C505	1-162-113-00	CERAMIC	0.01MF	30%	16V
C506	1-162-113-00	CERAMIC	0.01MF	30%	16V
C507	1-162-113-00	CERAMIC	0.01MF	30%	16V
C508	1-162-113-00	CERAMIC	0.01MF	30%	16V

## ELECTRICAL PARTS

Ref No.	Part No.	Description			
C509	1-123-308-00	ELECT	220MF	20%	10V
C510	1-123-306-00	ELECT	47MF	20%	10V
C511	1-123-380-00	ELECT	1MF	20%	50V
C512	1-108-571-00	MYLAR	0.0047MF	5%	50V
C513	1-123-380-00	ELECT	1MF	20%	50V
C515	1-161-326-00	(FX310:US,Canadian)...CERAMIC	0.022MF	30%	50V
C516	1-161-326-00	(FX310:US,Canadian)...CERAMIC	0.0022MF	30%	50V
▲CNP301	1-560-064-00	PIN, CONNECTOR	6P		
▲CNP302	1-560-060-00	PIN, CONNECTOR	2P		
▲CNP304	1-560-062-00	PIN, CONNECTOR	4P		
▲CNP501	1-560-062-00	PIN, CONNECTOR	4P		
▲CNP502	1-560-062-00	PIN, CONNECTOR	4P		
▲CNP503	1-560-061-00	PIN, CONNECTOR	3P		
▲CNP504	1-560-065-00	PIN, CONNECTOR	8P		
CT101	1-141-225-00	CAP, TUNING, TRIMAR			
CT201	1-141-225-00	CAP, TUNING, TRIMAR			
D301	8-719-200-02	DIODE	10E2		
D302	8-719-200-02	DIODE	10E2		
D303	8-719-200-02	DIODE	10E2		
D304	8-719-200-02	DIODE	10E2		
D305	8-719-200-02	DIODE	10E2		
D306	8-719-200-02	DIODE	10E2		
D307	8-719-910-64	DIODE	HZ6B1L		
D308	8-719-910-15	DIODE	HZ1182L		
D309	8-719-102-72	DIODE	R05.6EN3		
D311	8-719-107-94	DIODE	1SS202-1		
D501	8-719-200-02	DIODE	10E2		
D502	8-719-107-94	DIODE	1SS202-1		
D503	8-719-107-94	DIODE	1SS202-1		
D504	8-719-107-94	DIODE	1SS202-1		
D505	8-719-107-94	DIODE	1SS202-1		
D701	8-719-907-81	DIODE	BG5535S (FWD)		
D704	8-719-907-84	DIODE	PR5535S (REC)		
D705	8-719-907-80	DIODE	AA5535S (PAUSE)		
HE301	8-825-724-00	HEAD, ERASE	EF201-36		
HRP301	8-825-507-50	HEAD, REC/PB	(PP227-3602C)		
IC101	8-752-002-70	IC	CX20027		
IC201	8-752-002-80	IC	CX20028		
IC301	8-759-101-56	IC	CX10033A		
IC302	8-759-101-55	IC	CX10032A		
IC303	8-759-600-02	IC	M5218L		
IC501	8-759-202-05	IC	TC9310N-040		
IC502	8-759-700-46	(FX310:US,Canadian)...IC	CX10034		

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## CAPACITORS:

- All capacitors are in  $\mu\text{F}$ . Common capacitors are omitted. Refer to the following lists for their part numbers.
- MF:  $\mu\text{F}$ , PF:  $\mu\text{F}$ .

## COILS

- MMH : mH, UH :  $\mu\text{H}$

## SEMICONDUCTORS

- In each case, U :  $\mu$ , for example:  
UA...:  $\mu\text{A}$ ..., UPA...:  $\mu\text{PA}$ ..., UPC...:  $\mu\text{PC}$ ,  
UPD...:  $\mu\text{PD}$ ...

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



## ELECTRICAL PARTS

Ref No.	Part No.	Description
J301	1-507-797-21	JACK, LARGE TYPE (MIC)
J302	1-507-908-11	JACK, PIN 4P (LINE IN/LINE OUT)
J303	1-507-796-21	JACK (HEADPHONES)
J501	1-562-544-11	(FX310:US,Canadian)...SOCKET, CONNECTOR (REMOTE)
L101	1-408-930-00	MICRO INDUCTOR 33MMH
L102	1-408-922-00	MICRO INDUCTOR 6.8MMH
L201	1-408-930-00	MICRO INDUCTOR 33MMH
L202	1-408-922-00	MICRO INDUCTOR 6.8MMH
L301	1-407-177-XX	MICRO INDUCTOR 470UH
LPF101	1-231-388-00	FILTER, LOW PASS
LPF201	1-231-388-00	FILTER, LOW PASS
M501	1-541-201-00	MOTOR
ME301	1-520-466-11	(FX310)...METER, LEVEL
ME301	1-520-473-11	(FX311)...METER, LEVEL
PM1	1-454-316-00	SOLENOID, PLUNGER (FF, PAUSE)
PM2	1-454-316-00	SOLENOID, PLUNGER (FWD)
Q101	8-729-100-13	TRANSISTOR 2SC2001
Q102	8-729-245-83	TRANSISTOR 2SC2458
Q103	8-729-245-83	TRANSISTOR 2SC2458
Q201	8-729-100-13	TRANSISTOR 2SC2001
Q202	8-729-245-83	TRANSISTOR 2SC2458
Q203	8-729-245-83	TRANSISTOR 2SC2458
Q301	8-729-100-13	TRANSISTOR 2SC2001
Q302	8-729-180-93	TRANSISTOR 2SD809
Q303	8-729-245-83	TRANSISTOR 2SC2458
Q304	8-729-117-54	TRANSISTOR 2SA1175
Q305	8-729-173-13	TRANSISTOR 2SB731
Q306	8-729-141-43	TRANSISTOR 2SD414
Q307	8-729-663-47	TRANSISTOR 2SC1364
Q308	8-729-663-47	TRANSISTOR 2SC1364
Q309	8-729-178-54	TRANSISTOR 2SC2785
Q310	8-729-900-61	TRANSISTOR DTA114ES
Q311	8-729-900-80	TRANSISTOR DTC114ES
Q312	8-729-178-54	TRANSISTOR 2SC2785
Q501	8-729-117-54	TRANSISTOR 2SA1175
Q502	8-729-117-54	TRANSISTOR 2SA1175
Q503	8-729-117-54	TRANSISTOR 2SA1175
Q504	8-729-900-80	TRANSISTOR DTC114ES
Q505	8-729-900-80	TRANSISTOR DTC114ES
Q507	8-719-902-90	PHOTO INTERRUPTOR SPI201-20
R101	1-247-167-00	CARBON 33K 5% 1/4W
R102	1-247-139-00	CARBON 2.2K 5% 1/4W
R103	1-247-855-00	CARBON 10K 5% 1/6W

## ELECTRICAL PARTS

Ref No.	Part No.	Description
R104	1-247-819-00	CARBON 330 5% 1/6W
R105	1-247-866-00	CARBON 30K 5% 1/6W
R106	1-247-879-00	CARBON 100K 5% 1/6W
R109	1-247-843-00	CARBON 3.3K 5% 1/6W
R110	1-247-831-00	CARBON 1K 5% 1/6W
R111	1-247-851-00	CARBON 6.8K 5% 1/6W
R113	1-247-887-00	CARBON 220K 5% 1/6W
R114	1-247-807-00	CARBON 100 5% 1/6W
R115	1-247-882-00	CARBON 130K 5% 1/6W
R116	1-247-849-00	CARBON 5.6K 5% 1/6W
R117	1-246-529-00	CARBON 220K 5% 1/4W
R118	1-247-849-00	CARBON 5.6K 5% 1/6W
R119	1-247-139-00	CARBON 2.2K 5% 1/4W
R120	1-247-857-00	CARBON 12K 5% 1/6W
R121	1-247-887-00	CARBON 220K 5% 1/6W
R122	1-247-861-00	CARBON 18K 5% 1/6W
R123	1-247-811-00	CARBON 150 5% 1/6W
R124	1-247-855-00	CARBON 10K 5% 1/6W
R125	1-246-474-00	CARBON 1.1K 5% 1/4W
R126	1-247-155-00	CARBON 10K 5% 1/4W
R127	1-246-472-00	CARBON 910 5% 1/4W
R128	1-246-484-00	CARBON 3K 5% 1/4W
R129	1-246-490-00	CARBON 5.1K 5% 1/4W
R130	1-247-165-00	CARBON 27K 5% 1/4W
R131	1-246-466-00	CARBON 510 5% 1/4W
R132	1-246-537-00	CARBON 470K 5% 1/4W
R133	1-214-776-00	METAL 91K 1% 1/4W
R134	1-247-171-00	CARBON 47K 5% 1/4W
R135	1-246-480-00	CARBON 2K 5% 1/4W
R136	1-246-490-00	CARBON 5.1K 5% 1/4W
R137	1-247-847-00	CARBON 4.7K 5% 1/6W
R138	1-247-855-00	CARBON 10K 5% 1/6W
R140	1-247-855-00	CARBON 10K 5% 1/6W
R141	1-247-831-00	CARBON 1K 5% 1/6W
R142	1-247-879-00	CARBON 100K 5% 1/6W
R143	1-247-165-00	CARBON 27K 5% 1/4W
R144	1-247-837-00	CARBON 1.8K 5% 1/6W
R146	1-247-813-00	CARBON 180 5% 1/6W
R147	1-247-853-00	CARBON 8.2K 5% 1/6W
R148	1-247-842-00	CARBON 3K 5% 1/6W
R149	1-247-842-00	CARBON 3K 5% 1/6W
R150	1-247-849-00	CARBON 5.6K 5% 1/6W
R151	1-247-888-00	CARBON 240K 5% 1/6W
R152	1-247-886-00	CARBON 200K 5% 1/6W
R153	1-247-887-00	CARBON 220K 5% 1/6W

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- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (△-△△△-△△△-XX or △-△△△△-△△△-X) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

## CAPACITORS:

All capacitors are in  $\mu\text{F}$ . Common capacitors are omitted. Refer to the following lists for their part numbers.  
MF:  $\mu\text{F}$ , PF:  $\mu\text{F}$ .

## COILS

MMH : mH, UH :  $\mu\text{H}$

## SEMICONDUCTORS

In each case, U :  $\mu$ , for example:

UA....:  $\mu\text{A}$ ..., UPA....:  $\mu\text{PA}$ ..., UPC....:  $\mu\text{PC}$ ,

UPD....:  $\mu\text{PD}$ ...



## ELECTRICAL PARTS

Ref No.	Part No.	Description				
R154	1-247-845-00	CARBON	3.9K	5%	1/6W	
R155	1-247-886-00	CARBON	200K	5%	1/6W	
R156	1-247-887-00	CARBON	220K	5%	1/6W	
R157	1-247-820-00	CARBON	360	5%	1/6W	
R158	1-247-845-00	CARBON	3.9K	5%	1/6W	
R160	1-247-843-00	CARBON	3.3K	5%	1/6W	
R161	1-247-857-00	CARBON	12K	5%	1/6W	
R162	1-247-816-00	CARBON	240	5%	1/6W	
R163	1-247-853-00	CARBON	8.2K	5%	1/6W	
R164	1-247-872-00	CARBON	51K	5%	1/6W	
R165	1-247-145-00	CARBON	4.3K	5%	1/4W	
R201	1-247-167-00	CARBON	33K	5%	1/4W	
R202	1-247-139-00	CARBON	2.2K	5%	1/4W	
R203	1-247-855-00	CARBON	10K	5%	1/6W	
R204	1-247-819-00	CARBON	330	5%	1/6W	
R205	1-247-866-00	CARBON	30K	5%	1/6W	
R206	1-247-879-00	CARBON	100K	5%	1/6W	
R209	1-247-843-00	CARBON	3.3K	5%	1/6W	
R210	1-247-831-00	CARBON	1K	5%	1/6W	
R211	1-247-851-00	CARBON	6.8K	5%	1/6W	
R213	1-247-887-00	CARBON	220K	5%	1/6W	
R214	1-247-807-00	CARBON	100	5%	1/6W	
R215	1-247-882-00	CARBON	130K	5%	1/6W	
R216	1-247-849-00	CARBON	5.6K	5%	1/6W	
R217	1-246-529-00	CARBON	220K	5%	1/4W	
R218	1-247-849-00	CARBON	5.6K	5%	1/6W	
R219	1-247-139-00	CARBON	2.2K	5%	1/4W	
R220	1-247-857-00	CARBON	12K	5%	1/6W	
R221	1-247-887-00	CARBON	220K	5%	1/6W	
R222	1-247-861-00	CARBON	18K	5%	1/6W	
R223	1-247-811-00	CARBON	150	5%	1/6W	
R224	1-247-855-00	CARBON	10K	5%	1/6W	
R225	1-246-474-00	CARBON	1.1K	5%	1/4W	
R226	1-247-155-00	CARBON	10K	5%	1/4W	
R227	1-246-472-00	CARBON	910	5%	1/4W	
R228	1-246-484-00	CARBON	3K	5%	1/4W	
R229	1-246-490-00	CARBON	5.1K	5%	1/4W	
R230	1-247-165-00	CARBON	27K	5%	1/4W	
R231	1-246-466-00	CARBON	510	5%	1/4W	
R232	1-246-537-00	CARBON	470K	5%	1/4W	
R233	1-214-776-00	METAL	91K	1%	1/4W	
R234	1-247-171-00	CARBON	47K	5%	1/4W	
R235	1-246-480-00	CARBON	2K	5%	1/4W	
R236	1-246-490-00	CARBON	5.1K	5%	1/4W	
R237	1-247-847-00	CARBON	4.7K	5%	1/6W	

## ELECTRICAL PARTS

Ref No.	Part No.	Description				
R238	1-247-855-00	CARBON	10K	5%	1/6W	
R240	1-247-855-00	CARBON	10K	5%	1/6W	
R241	1-247-831-00	CARBON	1K	5%	1/6W	
R242	1-247-879-00	CARBON	100K	5%	1/6W	
R243	1-247-165-00	CARBON	27K	5%	1/4W	
R244	1-247-837-00	CARBON	1.8K	5%	1/6W	
R246	1-247-813-00	CARBON	180	5%	1/6W	
R247	1-247-853-00	CARBON	8.2K	5%	1/6W	
R248	1-247-842-00	CARBON	3K	5%	1/6W	
R249	1-247-842-00	CARBON	3K	5%	1/6W	
R250	1-247-849-00	CARBON	5.6K	5%	1/6W	
R251	1-247-888-00	CARBON	240K	5%	1/6W	
R252	1-247-886-00	CARBON	200K	5%	1/6W	
R253	1-247-887-00	CARBON	220K	5%	1/6W	
R254	1-247-845-00	CARBON	3.9K	5%	1/6W	
R255	1-247-886-00	CARBON	200K	5%	1/6W	
R256	1-247-887-00	CARBON	220K	5%	1/6W	
R257	1-247-820-00	CARBON	360	5%	1/6W	
R258	1-247-845-00	CARBON	3.9K	5%	1/6W	
R260	1-247-843-00	CARBON	3.3K	5%	1/6W	
R261	1-247-857-00	CARBON	12K	5%	1/6W	
R262	1-247-816-00	CARBON	240	5%	1/6W	
R263	1-247-853-00	CARBON	8.2K	5%	1/6W	
R264	1-247-872-00	CARBON	51K	5%	1/6W	
R265	1-247-145-00	CARBON	4.3K	5%	1/4W	
R301	1-202-850-00	(FX310:AEP,UK,G-AEP,E)...	RES SOLID	2.2 Y%	1/4W	
R302	1-202-850-00	(FX310:AEP,UK,G-AEP,E)...	RES SOLID	2.2 Y%	1/4W	
R303	1-247-131-00	CARBON	1K	5%	1/4W	
R304	1-247-131-00	CARBON	1K	5%	1/4W	
R305	1-247-131-00	CARBON	1K	5%	1/4W	
R306	1-247-131-00	CARBON	1K	5%	1/4W	
R307	1-246-492-00	CARBON	6.2K	5%	1/4W	
R308	1-246-494-00	CARBON	7.5K	5%	1/4W	
R309	1-246-495-00	CARBON	8.2K	5%	1/4W	
R310	1-246-472-00	CARBON	910	5%	1/4W	
R311	1-247-139-00	CARBON	2.2K	5%	1/4W	
R312	1-247-139-00	CARBON	2.2K	5%	1/4W	
R313	1-247-823-00	CARBON	470	5%	1/6W	
R314	1-247-846-00	CARBON	4.3K	5%	1/6W	
R316	1-247-843-00	CARBON	3.3K	5%	1/6W	
R317	1-247-857-00	CARBON	12K	5%	1/6W	
R318	1-247-857-00	CARBON	12K	5%	1/6W	
R319	1-246-437-00	CARBON	33	5%	1/4W	
R320	1-247-854-00	CARBON	9.1K	5%	1/6W	
R321	1-247-854-00	CARBON	9.1K	5%	1/6W	

## NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (△-△△△-△△△-XX or △-△△△△-△△△-X) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

## CAPACITORS:

All capacitors are in  $\mu\text{F}$ . Common capacitors are omitted. Refer to the following lists for their part numbers.  
MF: $\mu\text{F}$ , PF: $\mu\text{pF}$ .

## COILS

MMH : mH, UH :  $\mu\text{H}$

## SEMICONDUCTORS

In each case, U :  $\mu$ , for example:  
UA... :  $\mu\text{A}$ ..., UPA... :  $\mu\text{PA}$ ..., UPC... :  $\mu\text{PC}$ ,  
UPD... :  $\mu\text{PD}$ ...



## ELECTRICAL PARTS

Ref No.	Part No.	Description			
R322	1-247-849-00	CARBON	5.6K	5%	1/6W
R323	1-247-829-00	CARBON	820	5%	1/6W
R330	1-247-839-00	CARBON	2.2K	5%	1/6W
R332	1-247-843-00	CARBON	3.3K	5%	1/6W
R334	1-247-807-00	CARBON	100	5%	1/6W
R350	1-247-879-00	CARBON	100K	5%	1/6W
R352	1-247-815-00	CARBON	220	5%	1/6W
R353	1-247-815-00	CARBON	220	5%	1/6W
R501	1-247-831-00	CARBON	1K	5%	1/6W
R502	1-247-831-00	CARBON	1K	5%	1/6W
R503	1-247-831-00	CARBON	1K	5%	1/6W
R504	1-247-831-00	CARBON	1K	5%	1/6W
R505	1-247-831-00	CARBON	1K	5%	1/6W
R506	1-247-831-00	CARBON	1K	5%	1/6W
R507	1-247-831-00	CARBON	1K	5%	1/6W
R508	1-247-831-00	CARBON	1K	5%	1/6W
R509	1-247-872-00	CARBON	51K	5%	1/6W
R510	1-247-879-00	CARBON	100K	5%	1/6W
R511	1-247-863-00	CARBON	22K	5%	1/6W
R512	1-247-115-00	CARBON	220	5%	1/4W
R513	1-247-121-00	CARBON	390	5%	1/4W
R514	1-247-111-00	CARBON	150	5%	1/4W
R515	1-247-839-00	CARBON	2.2K	5%	1/6W
R516	1-247-839-00	CARBON	2.2K	5%	1/6W
R519	1-247-855-00	CARBON	10K	5%	1/6W
R520	1-247-879-00	CARBON	100K	5%	1/6W
R521	1-247-879-00	CARBON	100K	5%	1/6W
R522	1-247-119-00	CARBON	330	5%	1/4W
R523	1-247-147-00	CARBON	4.7K	5%	1/4W
R524	1-247-155-00	(FX310:US,Canadian)..CARBON 10K 5%	10K	5%	1/4W
R551	1-247-155-00	(FX310:US,Canadian)..CARBON 10K 5%	10K	5%	1/4W
RV101	1-226-991-00	RES, VAR, SLIDE 20K/20K (REC LEVEL-L)			
RV102	1-226-236-00	RES, ADJ, CARBON 10K			
RV103	1-226-852-00	RES, ADJ, CARBON 22K			
RV104	1-226-236-00	RES, ADJ, CARBON 10K			
RV201	1-226-991-00	RES, VAR, SLIDE 20K/20K (REC LEVEL-R)			
RV202	1-226-236-00	RES, ADJ, CARBON 10K			
RV203	1-226-852-00	RES, ADJ, CARBON 22K			
RV204	1-226-236-00	RES, ADJ, CARBON 10K			
RY201	1-515-473-00	RELAY			
RY301	1-515-473-00	RELAY			

## ELECTRICAL PARTS

Ref No.	Part No.	Description
S301	1-554-822-00	SWITCH, PUSH (3 KEY)(TAPE SELECT)
S302	1-554-821-00	SWITCH, PUSH (2 KEY)(DOLBY NR)
S701	1-554-303-00	SWITCH, KEY BOARD (STOP)
S702	1-554-303-00	SWITCH, KEY BOARD (REW)
S703	1-554-303-00	SWITCH, KEY BOARD (FF)
S704	1-554-303-00	SWITCH, KEY BOARD (FWD)
S707	1-554-303-00	SWITCH, KEY BOARD (REC)
S708	1-554-303-00	SWITCH, KEY BOARD (PAUSE)
S709	1-554-303-00	SWITCH, KEY BOARD (REC MUTE)
S710	1-554-422-00	SWITCH, PUSH (1 KEY)(DOOR)
S711	1-554-422-00	SWITCH, PUSH (1 KEY)(ERASURE PREVENTION)
S901	1-553-318-00	SWITCH, PUSH (AC POWER)(1 KEY)
SPK101	1-235-186-00	ENCAPSULATED COMPONENT
SPK201	1-235-186-00	ENCAPSULATED COMPONENT
T301	1-433-267-00	TRANSFORMER, OSCILLATOR
T901	1-447-356-00	(FX310:US,Canadian,FX311)... TRANSFORMER, POWER
T901	1-447-357-00	(FX310:E).....TRANSFORMER, POWER
T901	1-447-358-00	(FX310:AEP,UK,G-AEP)..TRANSFORMER, POWER
AVS901	1-526-576-51	(FX310:E)...SELECTOR, POWER VOLTAGE

## NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

## CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers.
- MF: μF, PF: μμF.

## COILS

- MMH : mH, UH : μH

## SEMICONDUCTORS

- In each case, U : μ, for example:  
UA....: μA..., UPA....: μPA..., UPC....: μPC,  
UPD....: μPD....

The components identified by shading and mark **Δ** are critical for safety. Replace only with part number specified.

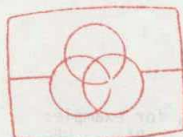
Les composants identifiés par une trame et une marque **Δ** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



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