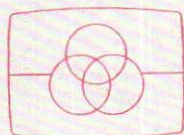


TC-U70

*AEP Model
UK Model
E Model
SCN Model
US Model*



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STEREO CASSETTE DECK

SPECIFICATIONS

GENERAL

Power Requirements: US, Canadian model:
120 V ac, 60 Hz
AEP, SCN model:
220 V ac ~, 50/60 Hz (or 240 V ac ~
adjustable by authorized Sony personnel)
UK model:
240 V ac ~, 50/60 Hz (or 220 V ac ~
adjustable by authorized Sony personnel)
E model:
110, 120, 220 or 240 V ac ~ adjustable,
50/60 Hz

Power Consumption: 30 W

Dimensions: Approx. 430 (w) x 130 (h) x 290 (d) mm
17 (w) x 5¹/₈ (h) x 11¹/₂ (d) inches
including projecting parts and controls

Weight: Approx. 5.7 kg, 12 lb 9 oz

TAPE RECORDER SECTION

Recording System: 4-track 2-channel stereo

**Fast-forward and
Rewind Time:** Approx. 80 sec. (with C-60)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS 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  SUR LES DIAGRAMMES SCHEMATIQUES, LES VUES EXPLODÉES 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.

— Continued on page 2 —

Tape Transport Mechanism Type		TCM-100V8
	Specification	Test Equipment
Forward Torque	28 – 50 g·cm (0.39 – 0.8 oz·inch)	Sony torque meter CQ-102C
Fast Forward Torque, Rewind Torque	80 – 140 g·cm (1.12 – 1.94 oz·inch)	Sony torque meter CQ-201B
Back Tension Torque	2.5 – 5 g·cm (0.04 – 0.08 oz·inch)	Sony torque meter CQ-102C
Pinch Roller Pressure	280 – 380 g (10 – 13 oz)	Spring scale or tension gauge

SONY
SERVICE MANUAL

Frequency Response:**DOLBY NR OFF**

US, Canadian model:

- With TYPE IV cassette (Sony METALLIC)
20 – 19,000 Hz
30 – 17,000 Hz (± 3 dB)
30 – 13,000 Hz (± 3 dB, 0 VU recording)
- With TYPE III cassette (Sony Fe-Cr)
20 – 19,000 Hz
30 – 17,000 Hz (± 3 dB)
- With TYPE II cassette (Sony EHF)
20 – 18,000 Hz
30 – 16,000 Hz (± 3 dB)
- With TYPE I cassette (Sony HFX)
20 – 17,000 Hz

AEP, UK, E, SCN model:

- With TYPE IV cassette (Sony METALLIC)
20 – 19,000 Hz
30 – 17,000 Hz (± 3 dB)
30 – 13,000 Hz (± 3 dB, 0 VU recording)
30 – 17,000 Hz (DIN)
- With TYPE III cassette (Sony Fe-Cr)
20 – 19,000 Hz
30 – 17,000 Hz (± 3 dB)
30 – 17,000 Hz (DIN)
- With TYPE II cassette (Sony CD- α)
20 – 18,000 Hz
30 – 16,000 Hz (± 3 dB)
30 – 16,000 Hz (DIN)
- With TYPE I cassette (Sony BHF)
20 – 17,000 Hz
30 – 15,000 Hz (DIN)

Wow and Flutter:

0.04 % WRMS (US, Canadian model)
0.04 % WRMS (NAB) } (AEP, UK, E, SCN model)
 ± 0.12 % (DIN)

S/N Ratio:**DOLBY NR OFF**

US, Canadian model:

- With TYPE III cassette (Sony Fe-Cr)
59 dB at peak level
- With TYPE II cassette (Sony EHF)
57 dB at peak level

AEP, UK, E, SCN model:

- With TYPE III cassette (Sony Fe-Cr)
59 dB at peak level (NAB)
57 dB (DIN, 1975 rev.)
- With TYPE II cassette (Sony CD- α)
57 dB at peak level (NAB)

DOLBY NR ON

Improved by 5 dB at 1 kHz,
10 dB above 5 kHz

Total Harmonic Distortion:

1.0 % (with Sony Fe-Cr cassette)

Record Bias Frequency:

105 kHz

Inputs:

MIC (two phone jacks)
sensitivity 0.25 mV (-70 dB) for
a low-impedance microphone
LINE IN (two phono jacks)
sensitivity 77.5 mV (-20 dB)
input impedance 50 k Ω

Outputs:

LINE OUT (two phono jacks)
output level 0.435 V (-5 dB)
at load impedance 50 k Ω
suitable load impedance more than 10 k Ω
HEADPHONES (binaural jack)
output level -28 dB (31 mV)
at load impedance 8 Ω

0 dB = 0.775 V

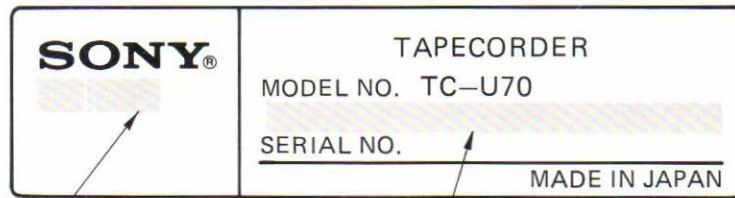
LED PEAK PROGRAM METERS**Response Range:** -40 dB to $+8$ dB**Response Time:** 1 millisecond

Decay Time
(from 0 dB to -20 dB): 750 milliseconds

Overshoot: None**Indicator Elements:** 16 elements for each channel

MODEL IDENTIFICATION

— Specification Label —



(S) (N) : SCN model only

US, Canadian model: AC 120 V 60 Hz 30 W

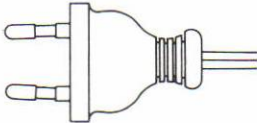
AEP, SCN model: AC 220 V ~50/60 Hz 30 W

UK model: AC 240 V ~50/60 Hz 30 W

E model: AC 110, 120, 220, 240 V ~50/60 Hz 30 W

— Power Cord —

E1 model: euro-plug 1-551-896-00



E2 model: parallel-blade plug 1-551-628-00

**SERVICING NOTE**

When the top cover is removed, the internal photo transistor may pick up stray light and shut the set off.

Handling Precautions for MOS ICs

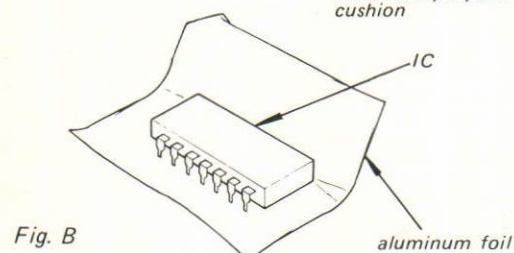
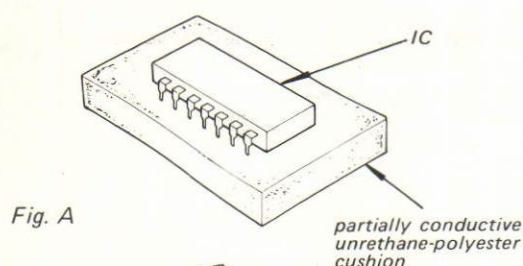
Generally, the insulation resistance of the oxide layer in MOS IC structures is very high, and the oxide layer is very thin. Because of this, it is possible that the static voltages usually present on clothes and the human body will be enough to generate a potential difference across the insulator, high enough to cause a breakdown of the insulating layer.

The following precautions should be taken while handling these ICs.

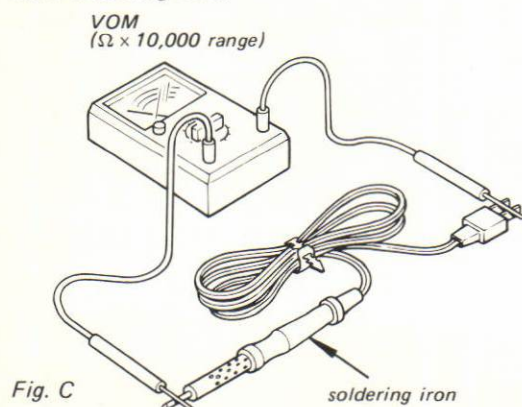
(Particular care should be taken under conditions of low humidity.)

Precautions in Replacing MOS ICs

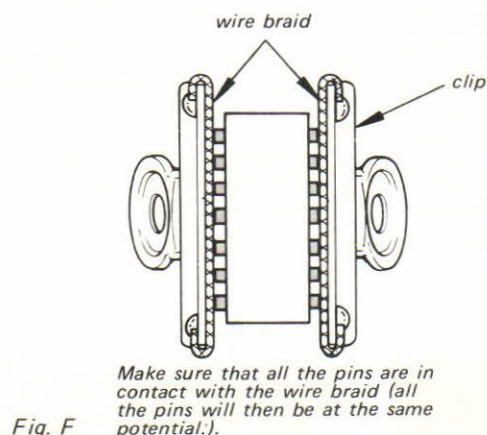
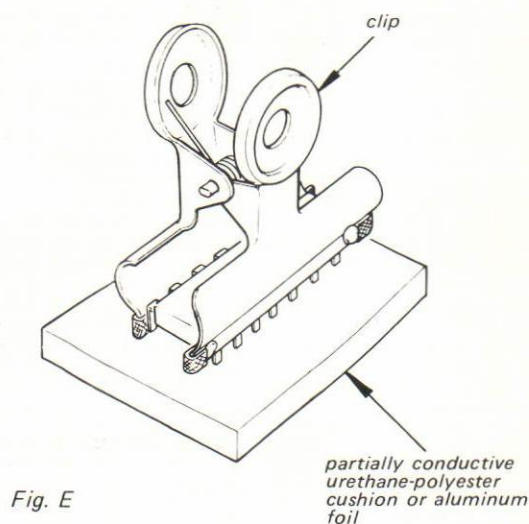
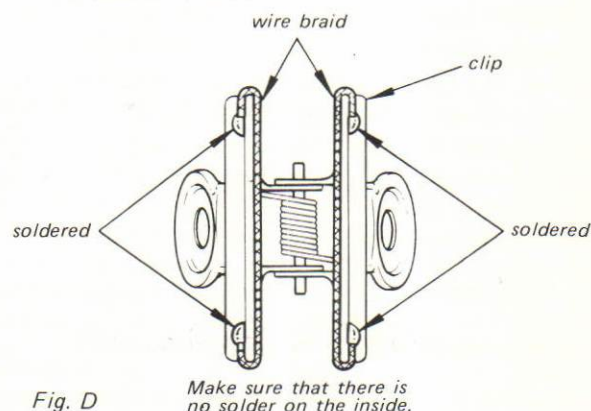
1. Store new ICs by inserting them into a urethane-polyester cushion (which is somewhat conductive), or wrapping it in aluminum foil, so that all the pins are at the same potential. (The ICs should be stored in that manner until mounted on the circuit board.)



2. Check the soldering iron for possible power-line leakage current. Make sure that there is no leakage path by connecting an ohmmeter to the tip of the soldering iron and the plug as shown in Fig. C. If there is a leakage path, use some other soldering iron.



3. Equalize any potential difference between the clothes, the tools in use, the work bench, the set being worked on, and the packaged IC by touching them all in succession with the hands or a conductive wire or tool.
4. The following are effective methods for handling ICs that remove the potential difference across the oxide layer.
 - Use a paper clip modified by soldering in a wire braid insert.



- Take a short length of fine bare wire and wind it around the IC so that it shorts all the pins of the IC, while it is still in the urethane-polyester cushion or aluminum foil. This ensures that all the pins are at the same potential.

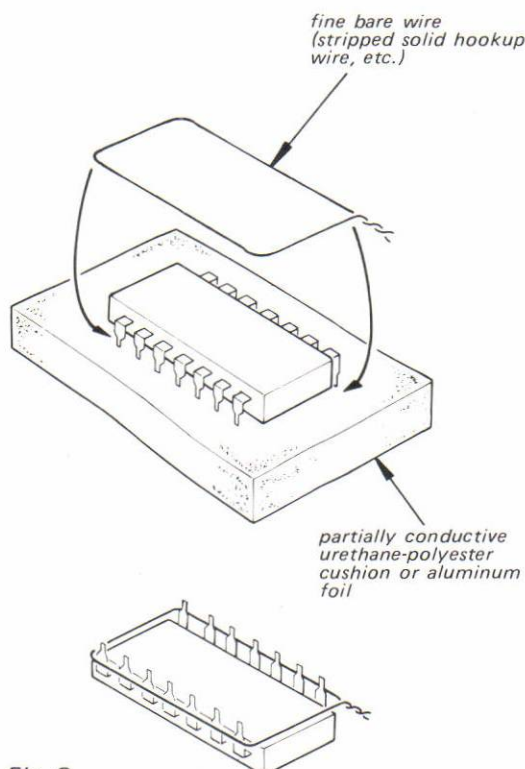


Fig. G

- When it is necessary to handle the IC with the fingers, do not touch any pin, and hold the IC at the ends of its plastic-package case as shown in Fig. H.

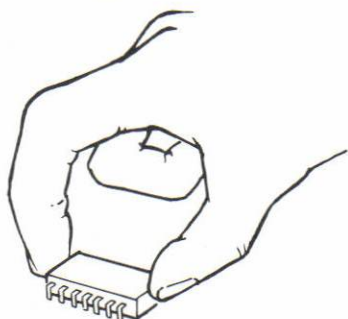


Fig. H

5. Method of Mounting

Insert the IC while holding it with the modified clip, and solder all the pins with the clip still shorting the pins. (Similarly, solder all the pins while the bare shorting wire is still wound around them.). Remove the clip or the bare shorting wire only after all the pins have been soldered.

Precaution while Checking C-MOS ICs

The C-MOS ICs (Complementary MOS) are MOS ICs that have their output sections made up of N-channel and P-channel push-pull stages to increase their speed of operation. If the output terminal of these ICs comes into contact with B+ or B- voltage, then the FET which is ON at that time will either become shorted or open.

This is valid for all the output sections that are connected together by the interconnections. Even the circuits that are physically separated (and not on the same board) can be destroyed simultaneously.

Example:

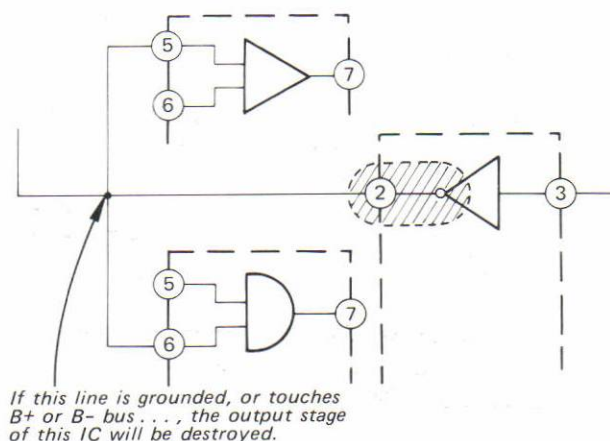


Fig. I

SECTION 1 OUTLINE

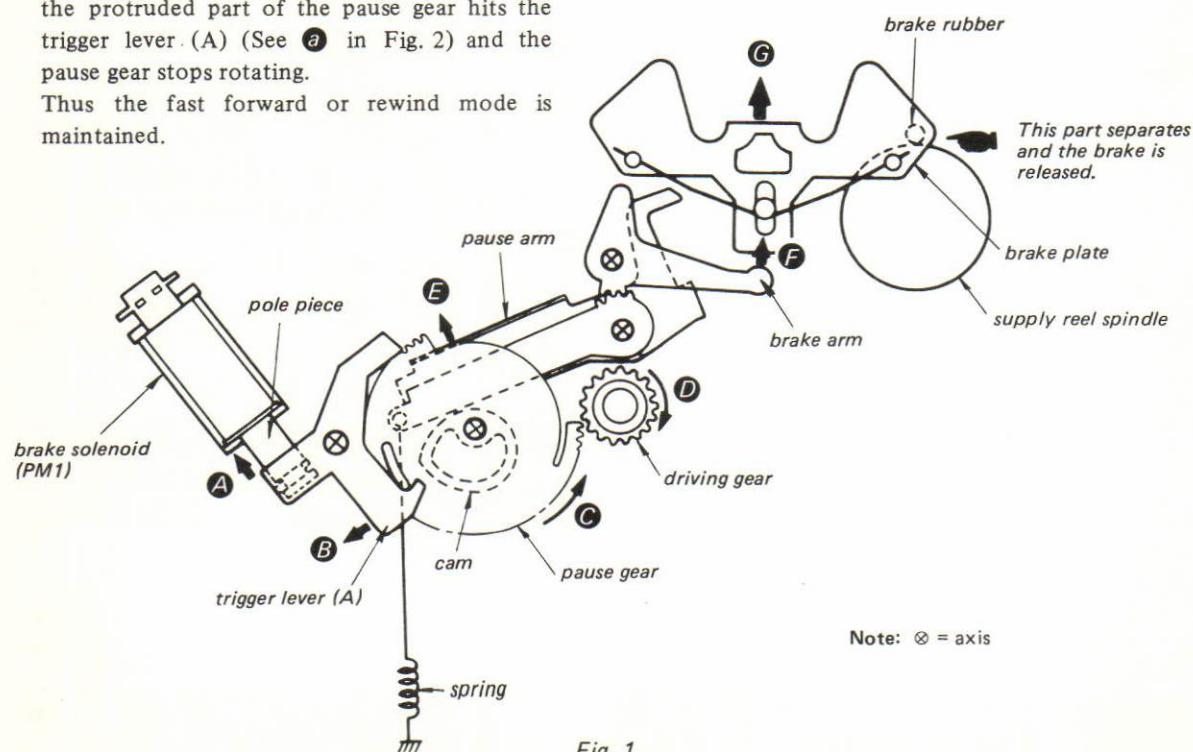
1-1. MECHANISM OPERATION

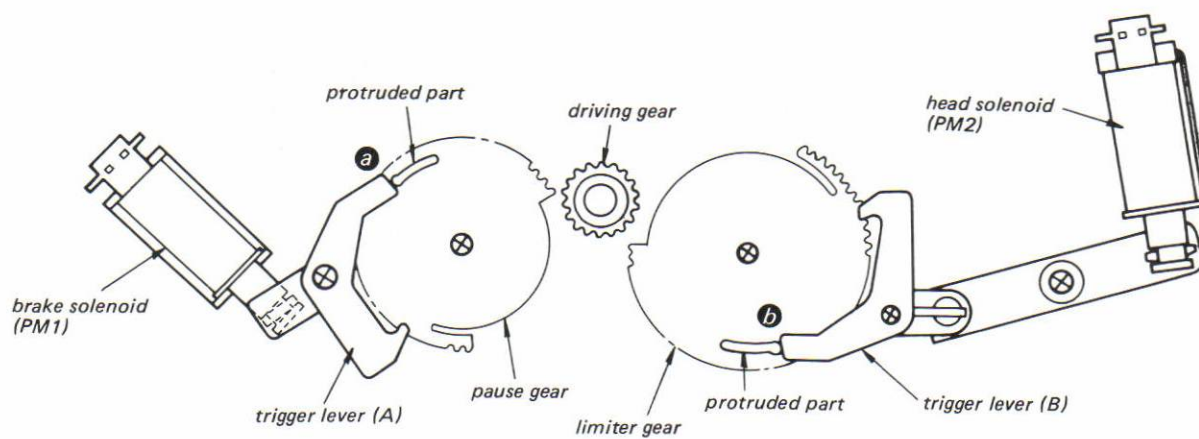
This set switches over the mode by the interlocking of the pause gear or the limiter gear with the driving gear (fixed on the flywheel).

1. Fast Forward/Rewind Operation

1) Brake Release (See Fig. 1)

- a) When the fast forward or the rewind button is pushed, the pole piece of PM1 (brake solenoid) is pulled in direction **A** by the driving signal from IC801.
- b) Pulled by the pole piece, the trigger lever (A) moves in direction **B** and releases the lock of the pause gear.
- c) As the pause arm is pulled by the spring, it pushes the cam and the pause gear rotates in direction **C**.
Then the pause gear interlocks with the driving gear. (The driving gear is fixed on the flywheel and rotates in direction **D**.)
- d) The cam pushes the pause arm in direction **E**, and the brake arm pushes the brake plate up in direction **G**.
- e) As the pause gear moves in direction **C**, the protruded part of the pause gear hits the trigger lever (A) (See **a** in Fig. 2) and the pause gear stops rotating.
Thus the fast forward or rewind mode is maintained.





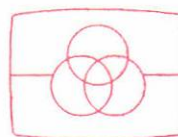
Note: ⊗ = axis

Fig. 2

2) Reel Spindle Driving (See Fig. 3)

a) When the fast forward or rewind button is pushed, the reel motor rotates in the following direction by the driving signal from IC801.

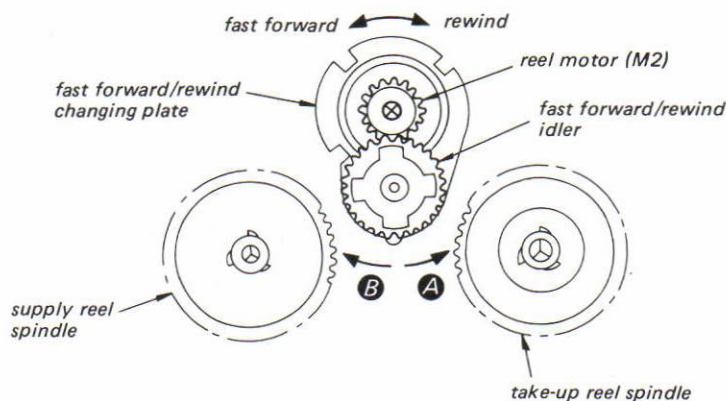
- clockwise in rewind mode
- counterclockwise in fast forward mode

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b) By the friction caused by the rotation of the fast forward/rewind idler, which is interlocked with the reel motor, the fast forward/rewind changing plate moves in either direction **A** (in fast forward mode) or direction **B** (in rewind mode). Then the reel spindle rotates.



Note: ⊗ = axis

Fig. 3

2. Forward Operation (See Figs. 4, 5)

- When the forward button is pushed, the pole piece of PM2 (head solenoid) is pulled in direction **A** by the driving signal from IC801.
- As the trigger driving lever is pulled by the pole piece, the trigger lever (B) is pulled in direction **B**.
- As the trigger lever (B) moves, the lock of the limiter gear is released. Because the limiter arm is pulled by the spring, the limiter gear rotates in direction **C** and interlocks with the driving gear.
(The driving gear is fixed on the flywheel and is rotating in direction **D**.)
- By the rotation of the cam, limiter arm is pushed in direction **E**. Then the limiter plate moves in direction **F** and pushes the brake plate up, releasing the brake.
- As the limiter plate moves, the head deck is pushed up, contacting the head and the tape.

- By the movement of the head deck, the take-up arm moves in direction **G** (See Fig. 5). Thus the rotation of the capstan motor is transmitted to the take-up reel spindle through the take-up idler.
- As the limiter gear rotates in direction **C**, the protruded part of the limiter gear hits the trigger lever (B) (See **b** in Fig. 2) and the gear stops rotating. Thus the forward mode is maintained.

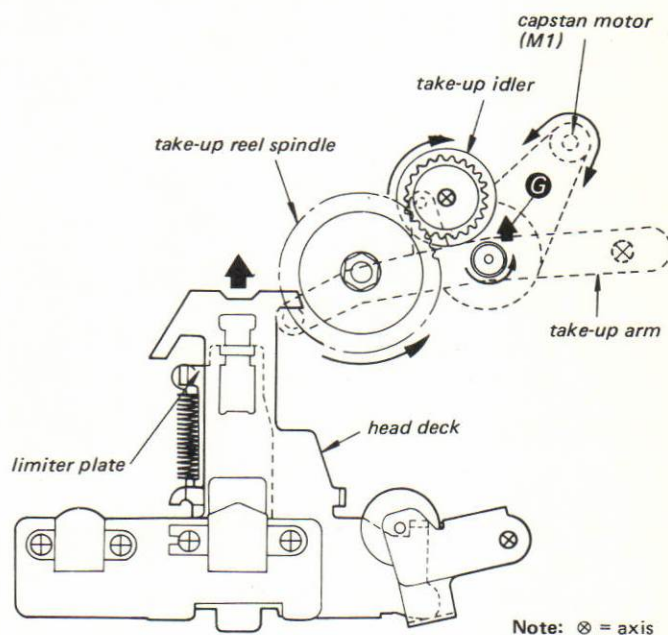


Fig. 5

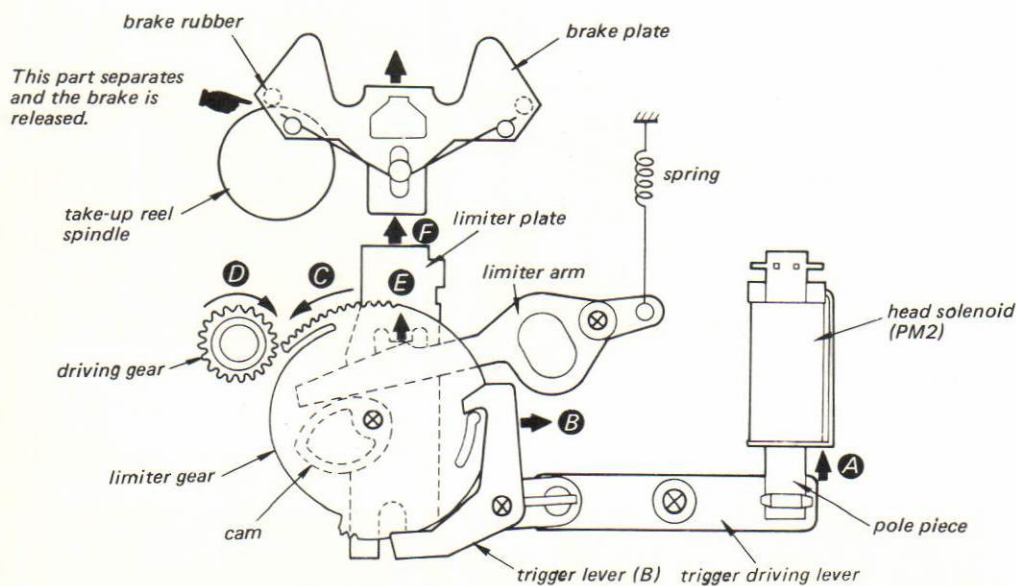


Fig. 4

3. Forward/Pause Operation (See Fig. 6)

- a) When the pause button is pushed in forward mode, the pole piece of PM1 (brake solenoid) is pulled. Then the pause arm moves in direction **A** as in fast forward or rewind mode.
- b) As the pause arm moves, shaft ① of the take-up arm is pushed downwards. Thus the take-up pulley and the take-up idler are separated, stopping the rotation of the take-up reel spindle.
- c) Because the head deck is also pushed downwards by the pause arm, the capstan and the pinch roller separate, changing the mode to pause.

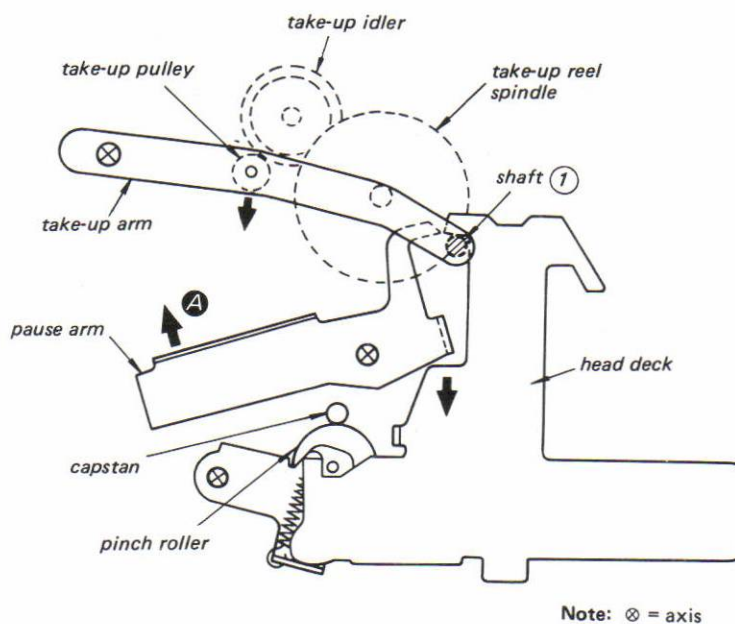


Fig. 6

1.2. CIRCUIT OPERATION

The system control board of this set is equipped with a chip micro-computer (μ PD547C-042). This micro-computer outputs the driving signals (such as for driving the solenoids, reel motor or mode indicating LED) according to the input signals from the switches and changes the mode.

The Function of the Terminals

No.	FUNCTION	No.	FUNCTION
1	Clock Generator	23	REC MUTE Output
2	Shut-off Input	24	AMS Drive Input
3	Timing Clock Input	25	Muting Output
4	AMS Input	26	Brake Solenoid (PM1) Drive Output
5	AMS (Forward) Input	27	Head Solenoid (PM2) Drive Output
6		28	Solenoid Kick Output
7	Reset Input	29	
8	Record Input	30	Fast Forward Reel Motor Drive Output
9	Pause Input	31	Rewind Reel Motor Drive Output
10	REC MUTE Input	32	
11	AMS Count Down Input	33	Rewind Input
12	Rewind Output	34	Stop Input
13	Fast Forward Output	35	Forward Input
14	Forward Output	36	Fast Forward Input
15	Record Output	37	Counter MEMORY Input
16		38	Timer PLAY Input
17		39	Timer REC Input
18	Bias Osc Output	40	Erase Safety Input
19	Pause Output	41	Ground
20		42	Clock Generator
21	B+ Voltage		
22			

The following descriptions explain the operation of each of the circuit blocks.

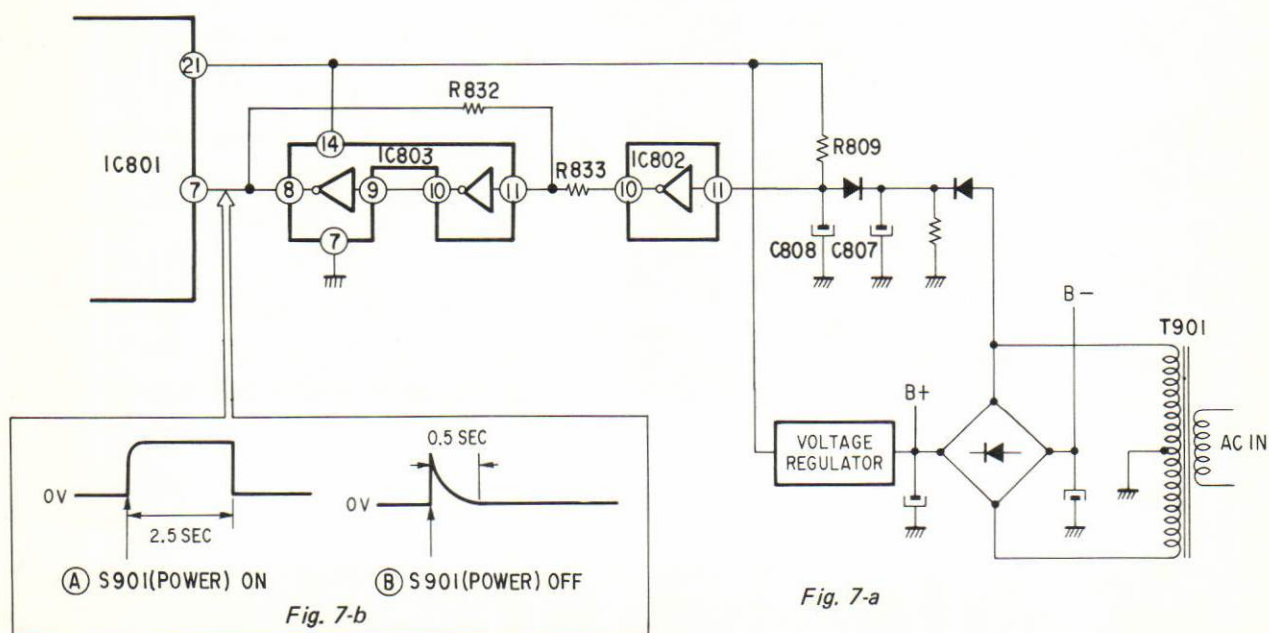
1. Reset Circuit (See Fig. 7)

1) When S901 (POWER) is turned ON;

Voltage from the power supply circuit $\rightarrow$ R809 $\rightarrow$ C808; recharged $\rightarrow$ Inverter (IC802) $\rightarrow$ Schmitt circuit (composed of IC803) operates for 2.5 seconds. $\rightarrow$ B+ voltage (See Fig. 7-b (A)) $\rightarrow$ IC801 (7) $\rightarrow$ IC801; reset. $\rightarrow$ The set does not operate for 2.5 seconds after S901 (POWER) is turned ON.

2) When S901 (POWER) is turned OFF;

B+ voltage drops. $\rightarrow$ C807, 808; discharged $\rightarrow$ Schmitt circuit operates. $\rightarrow$ B+ voltage (See Fig. 7-b (B)) $\rightarrow$ IC801 (7) $\rightarrow$ IC801 is reset. $\rightarrow$ The operation of the set stops.



2. Solenoid Drive Circuit (See Fig. 8)

1) PM1 (Brake Solenoid)

In fast forward or rewind mode
When the pause button is pushed in forward mode; }
→ IC801 (26), HIGH level → Q814, ON
→ PM1 is activated.

2) PM2 (Head Solenoid)

When forward button is pushed;
IC801 (27), HIGH level
→ Q813, ON → PM2 is activated.

3) Trigger Circuit

IC801 (28), HIGH level for 0.35 second
→ Q811, 812; ON
→ Solenoid is activated with high voltage for 0.35 second.

After the solenoid is activated, only a low voltage is applied in order to prevent overheating.

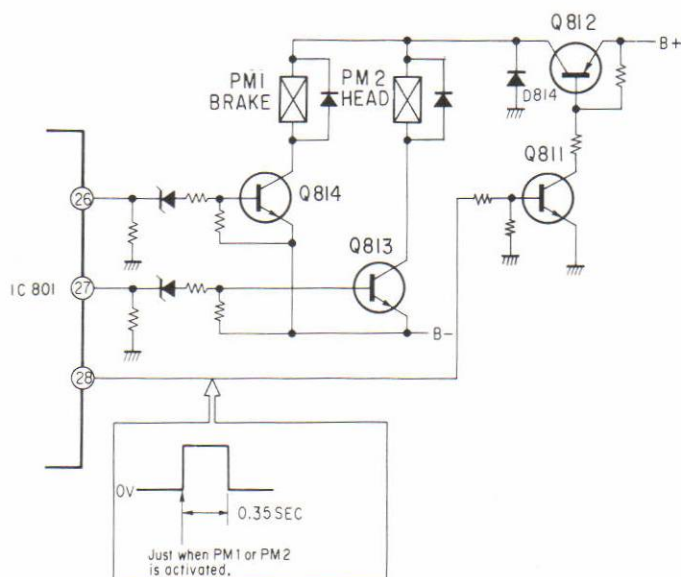


Fig. 8

3. Reel Motor Drive (See Fig. 9)

1) In rewind mode:

IC801 (31); HIGH level
→ D813, cathode; electrical potential rises.
→ Darlington circuit (Q806, 807), ON
→ B+ voltage is applied to the reel motor.

2) In fast forward mode:

IC801 (30); HIGH level
→ Q810, ON → D820, anode; electrical potential drops.
→ Darlington circuit (Q808, 809), ON
→ B- voltage is applied to the reel motor.
→ Motor rotates in the opposite direction to that of 1).

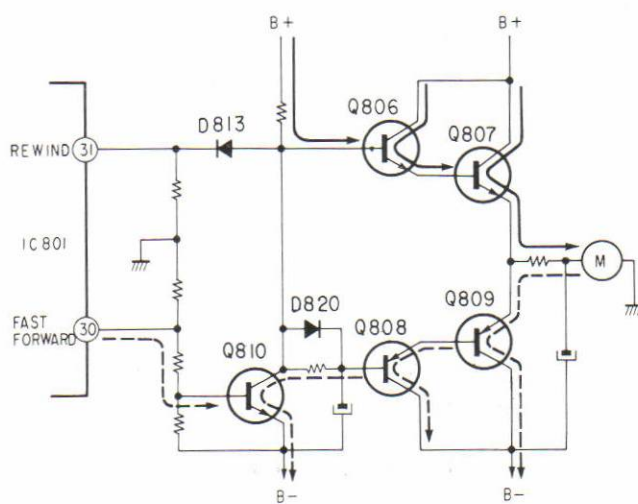


Fig. 9

4. Muting Circuit (See Fig. 10)

1) Line Output Muting

a) When stop button is pushed;

IC801 (25), LOW level → Q309, ON
 → Q112 (212), ON
 → The noise is muted.

b) When record or forward button is pushed;

IC801 (25), HIGH level → Q309, OFF
 → The line output muting is released.

2) Record Muting

a) When record and forward button is pushed at the same time;

IC801 (23), HIGH level
 → (Inverter IC803)
 → Q111 (211), base; low-level signal is applied.
 → Q111 (211), OFF
 → The muting of the record signal is released.

b) When REC MUTE or pause button is pushed in record mode;

IC801 (23), LOW level →
 (Inverter IC803) → Record muting signal; HIGH level
 → Q111 (211), ON
 → Record signal is muted.

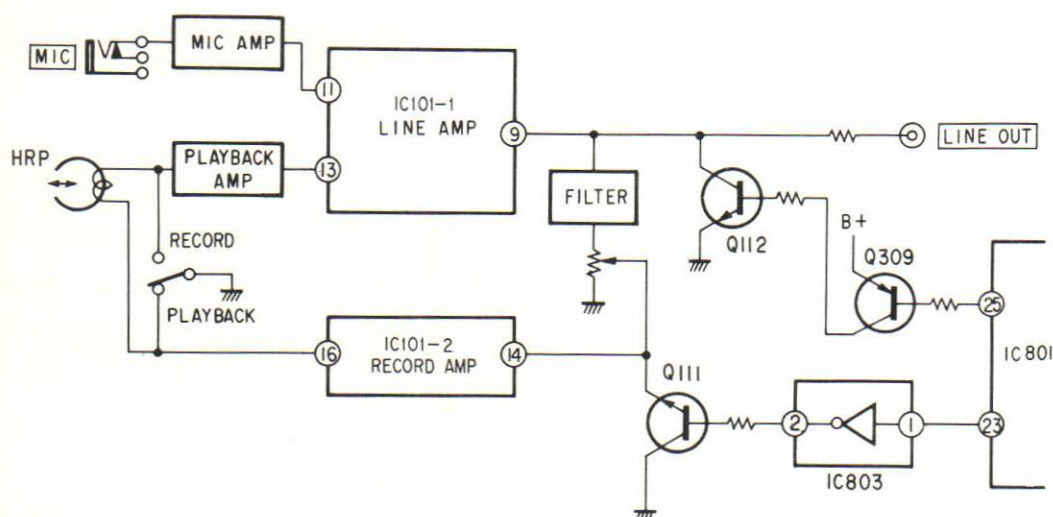


Fig. 10

5. Shut off Circuit (See Fig. 12)

1) When the take-up reel spindle is rotating:

As the take-up reel spindle rotates, the shutter fixed on the counter pulley rotates. In accordance with the operating of the shutter, the light from D827 switches the photo transistor (Q824) "on" and "off". The collector voltage passes through C835 and applied to the base of Q823, switches Q823 "on" and "off" repeatedly. In this case, the set does not shut off.

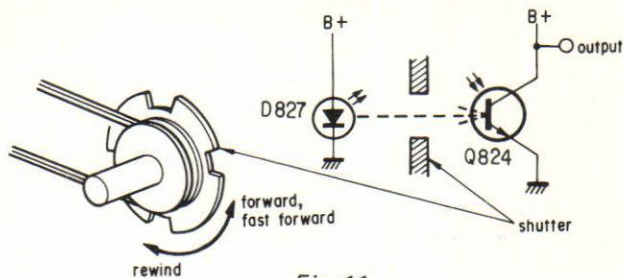


Fig. 11

2) At tape-end:

As the take-up reel spindle stops rotating, the shutter stops operating.

a) When photo transistor (Q824) is ON;

Q824, ON → Q823, base potential: LOW level

- Q823, OFF;
- IC801 ② is at HIGH level for a certain time.
- The set turns off.

b) When photo transistor (Q824) is OFF;

Q824, OFF → (C835 charged up) → Q823, OFF

- IC801 ② is at HIGH level for a certain time.
- The set turns off.

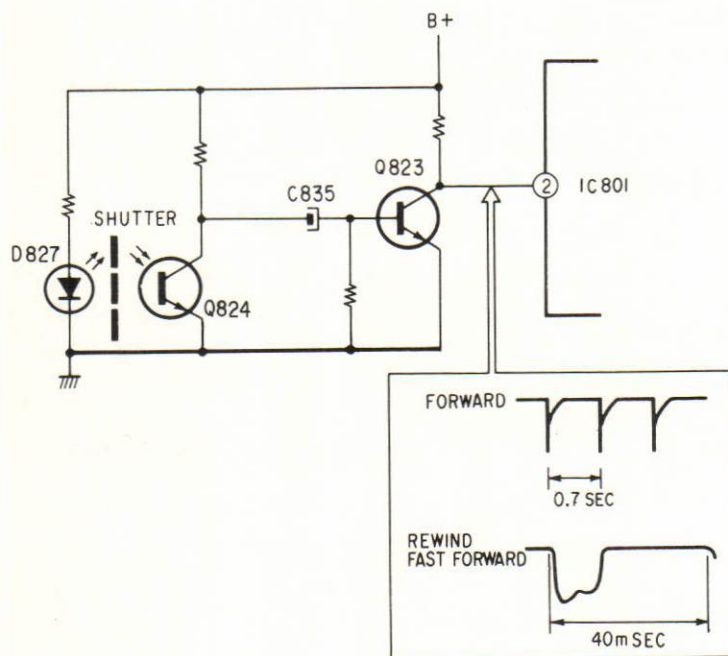


Fig. 12

6. LED Peak Program Meter (See Fig. 13, 14)

1) IC501 Input Circuit

Input signal **A** (waveform **A**) is applied to IC104 in the LOG converter circuit. By the characteristic of a diode, the input signal is logarithmically compressed and waveform **A** changes into waveform **B**.

This signal is rectified by D104, smoothed by C150 and becomes dc signal (waveform **C**).

The dc signal is applied to the terminal (11) of IC501 through Q114 and RV104. Q104 controls the signal as the current regulator circuit.

2) LED Indication Circuit

The LEDs turn on when the anode and the cathode signals drop to a LOW level at the same time.

ex) LINE OUT output -5dB

D, **F** : LOW level

↓
waveform **H** - **O** : anode, cathode: LOW level

↓
L-CH/R-CH : LEDs 1~8 turn on
(See Diagram 1.)

LED MATRIX DIAGRAM

anode signal cathode signal	L-CH		R-CH	
	D	E	F	G
H	1	9	1	9
I	2	10	2	10
J	3	11	3	11
K	4	12	4	12
L	5	13	5	13
M	6	14	6	14
N	7	15	7	15
O	8	16	8	16

Diagram 1.

(When either two of the signals **D** - **G** and of **H** - **O** drop to LOW level, the LEDs shown in the diagram turn on.)

Measuring Condition

LINE IN: 1 kHz, 0.25V (-10 dB)

LINE OUT: 0.44V (-5 dB)

Mode: record/forward

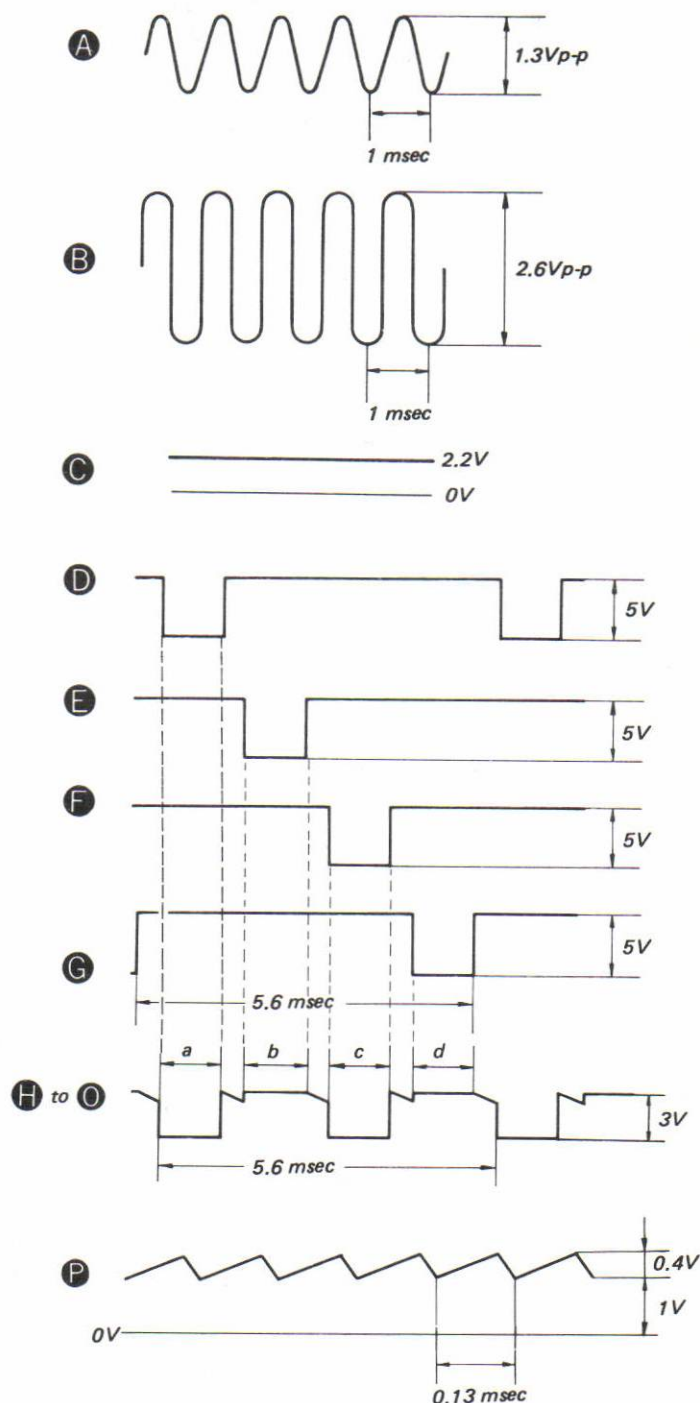


Fig. 13

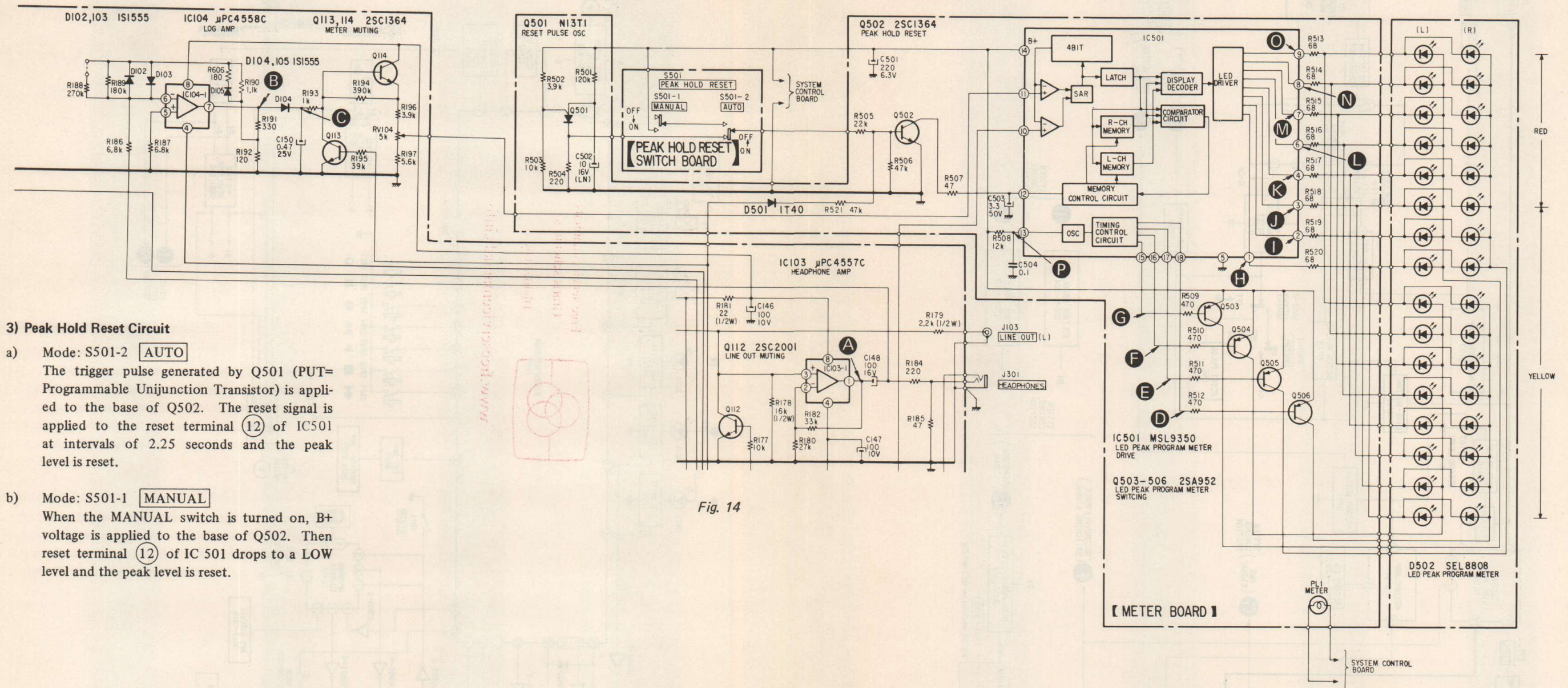
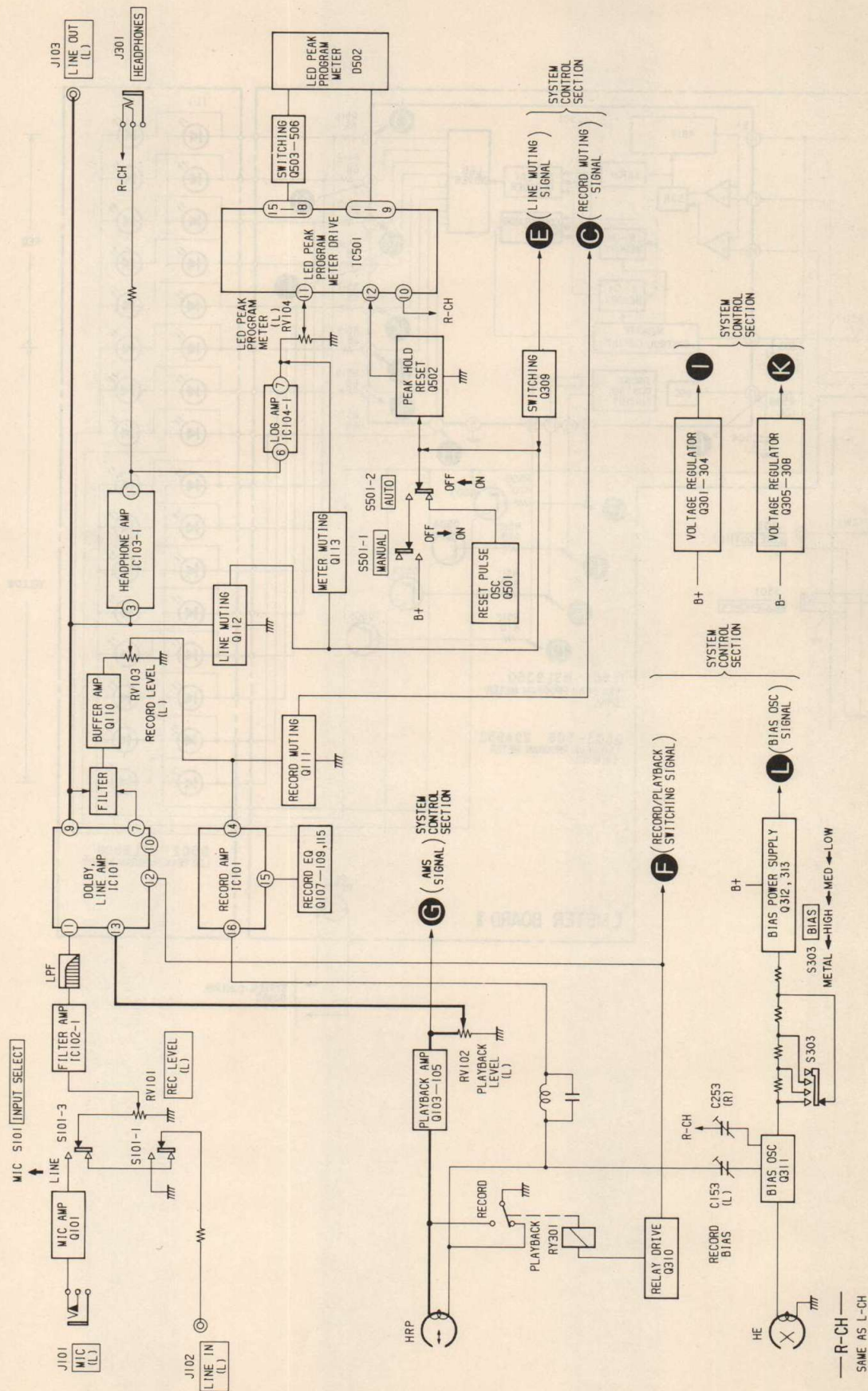


Fig. 14

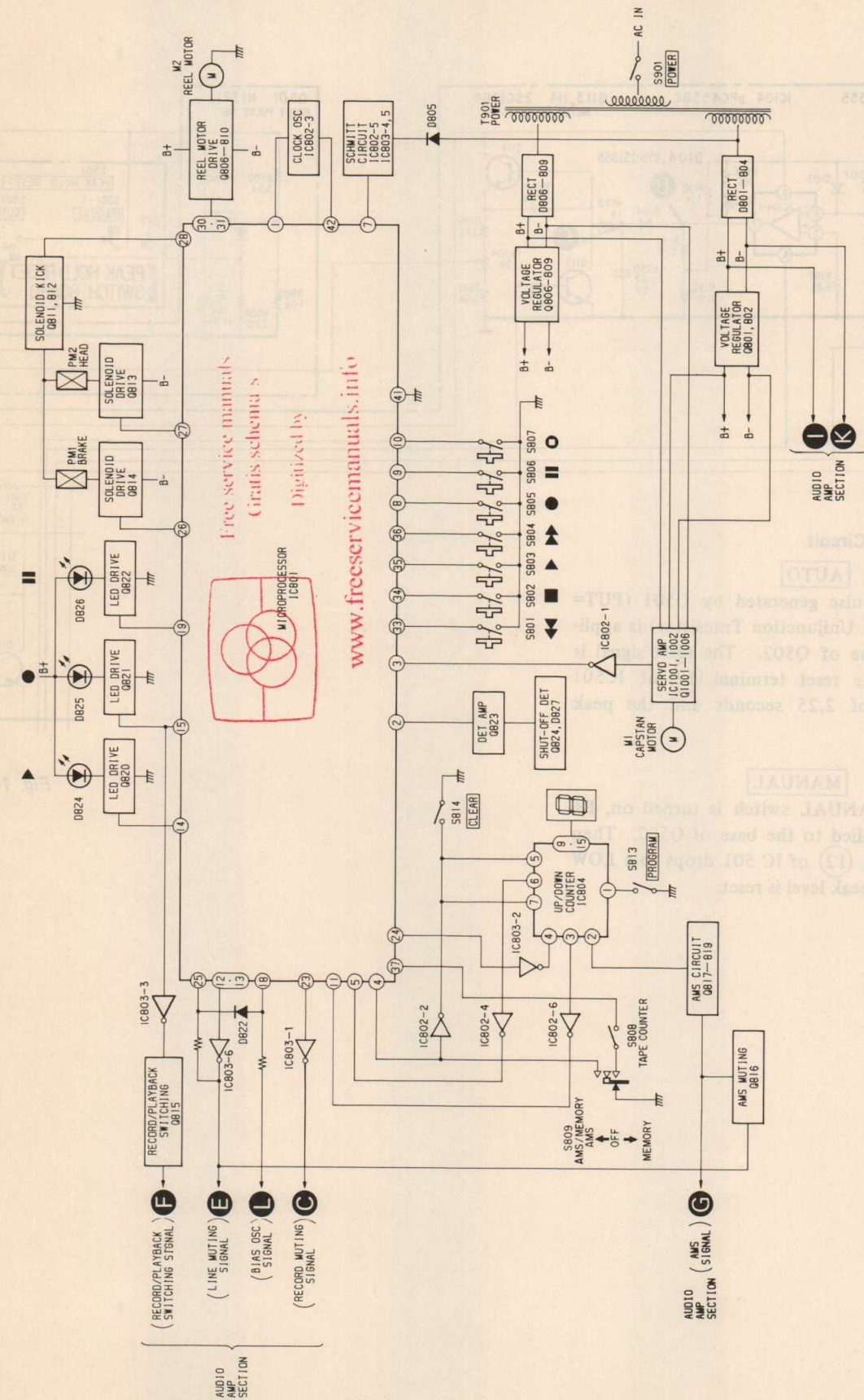
3) Peak Hold Reset Circuit

- a) Mode: S501-2 **AUTO**
- The trigger pulse generated by Q501 (PUT= Programmable Unijunction Transistor) is applied to the base of Q502. The reset signal is applied to the reset terminal (12) of IC501 at intervals of 2.25 seconds and the peak level is reset.
- b) Mode: S501-1 **MANUAL**
- When the MANUAL switch is turned on, B+ voltage is applied to the base of Q502. Then reset terminal (12) of IC 501 drops to a LOW level and the peak level is reset.

1-3. BLOCK DIAGRAM — Audio Amp Section —



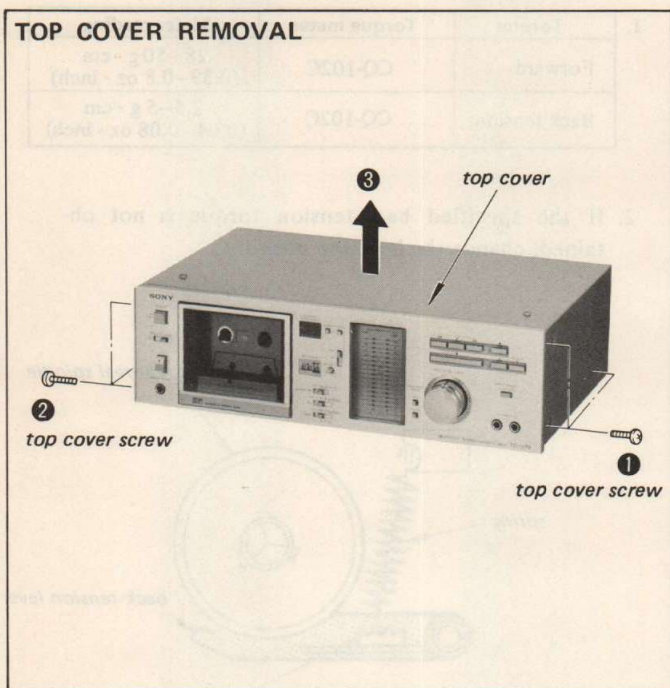
— System Control Section —



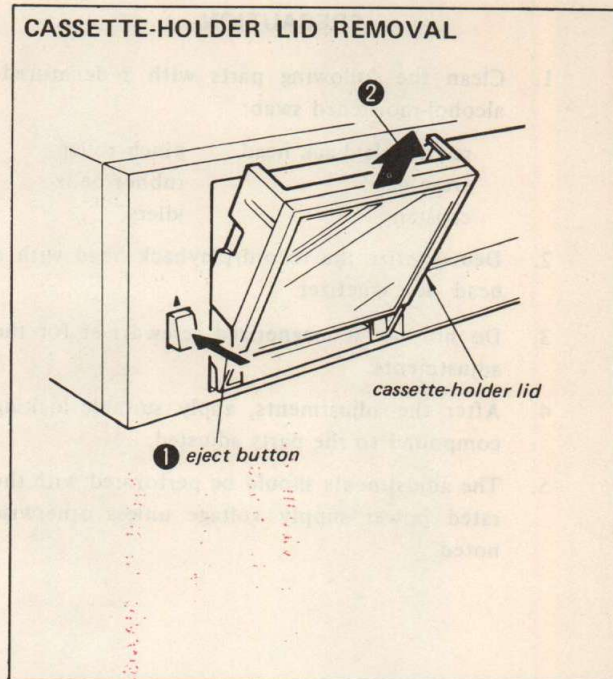
SECTION 2 DISASSEMBLY

- Follow the disassembly procedure in the numerical order given.

TOP COVER REMOVAL



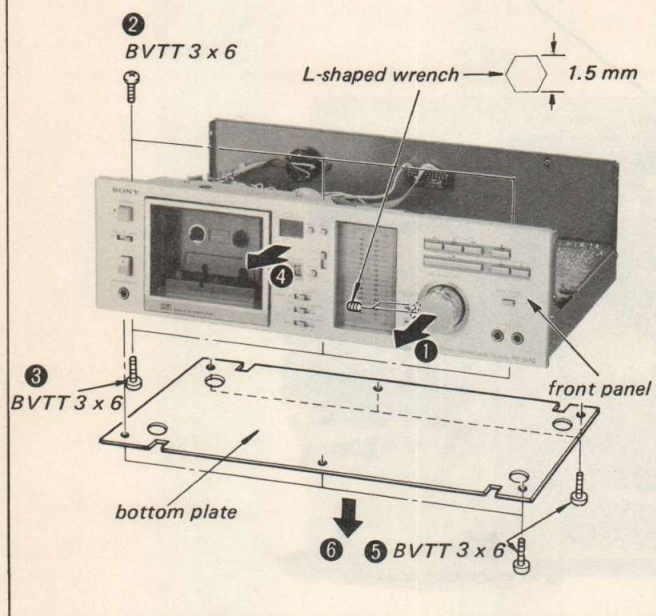
CASSETTE-HOLDER LID REMOVAL



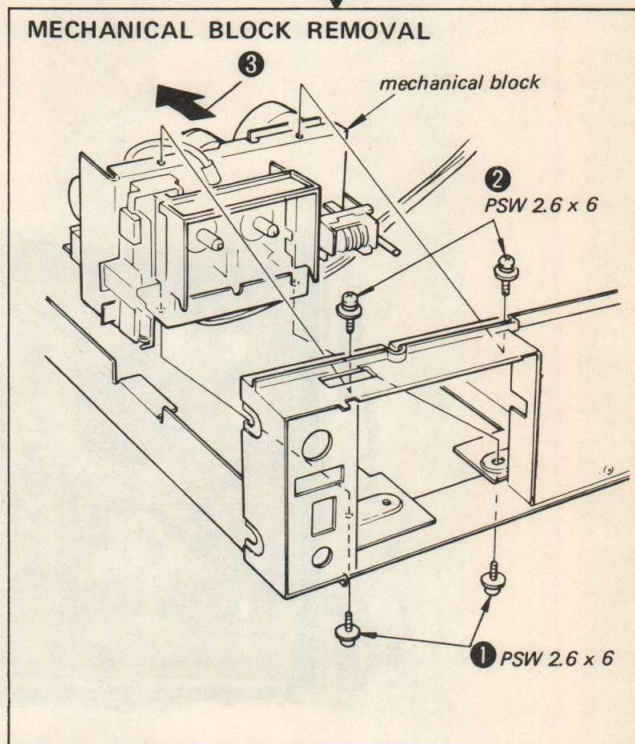
FRONT PANEL/BOTTOM PLATE REMOVAL

FRONT PANEL: ① to ④

BOTTOM PLATE: ⑤, ⑥



MECHANICAL BLOCK REMOVAL



SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

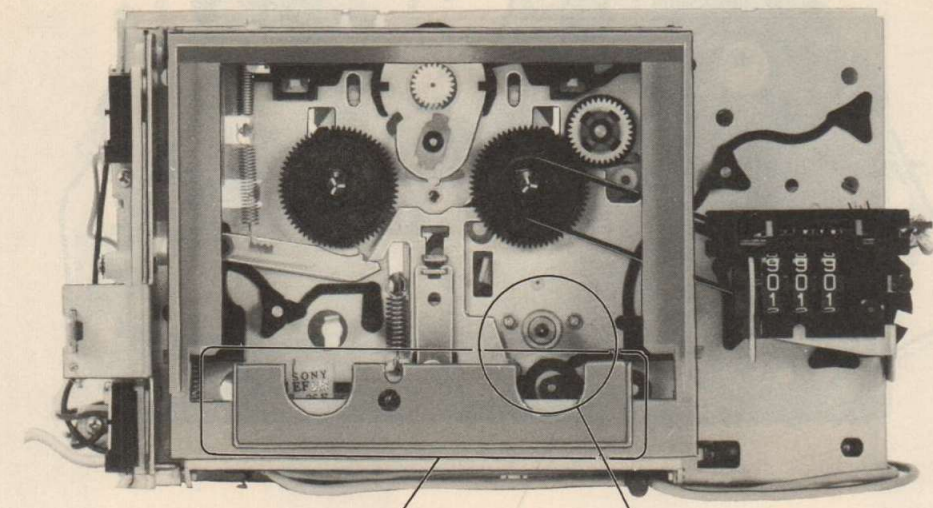
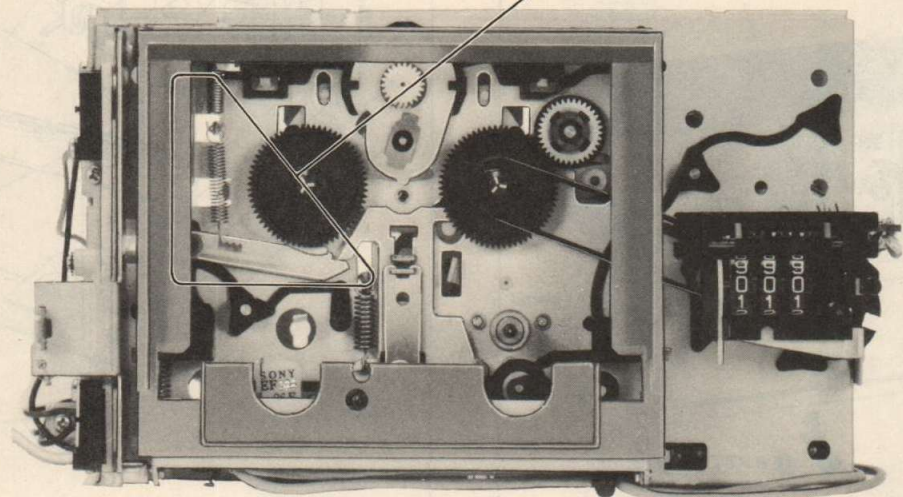
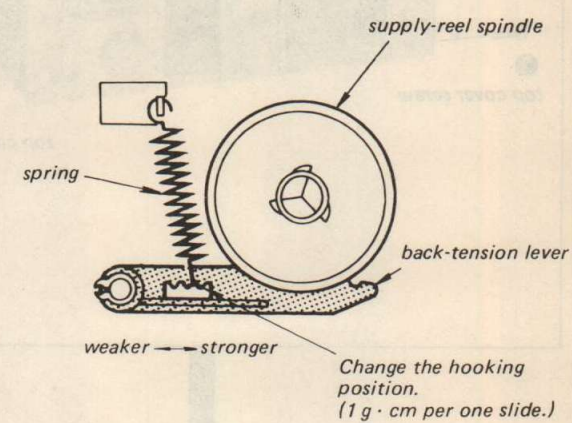
PRECAUTION

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.

Torque Measurement and Back Tension Torque Adjustment

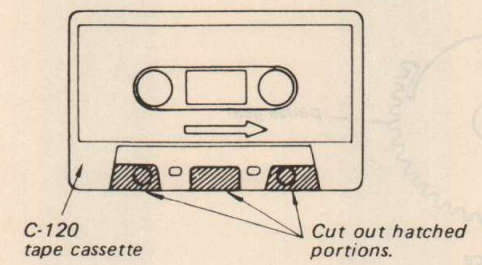
1.	Torque	Torque meter	Meter reading
	Forward	CQ-102C	28-50 g · cm (0.39-0.8 oz · inch)
	Back tension	CQ-102C	2.5-5 g · cm (0.04-0.08 oz · inch)

2. If the specified back-tension torque is not obtained, change the hooking position.

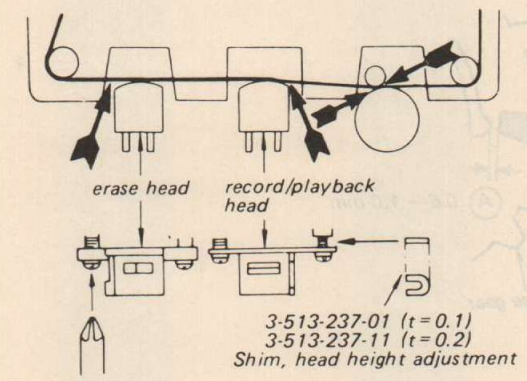


Head Height Adjustment

1. Prepare an adjustment cassette as shown below.

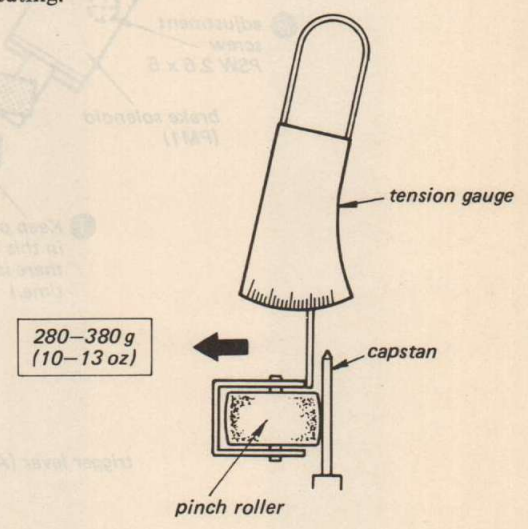


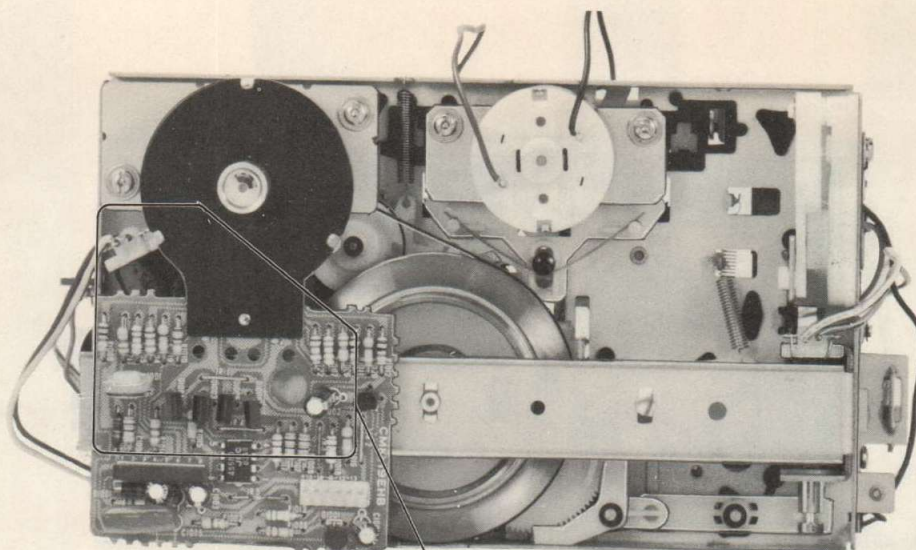
2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at portions shown by arrow.



Pinch Roller Pressure Measurement
— Forward Mode —

Slowly pull the pinch roller and read the tension gauge just when the pinch roller stops rotating.





Brake Solenoid (PM1) Position Adjustment — Stop Mode —

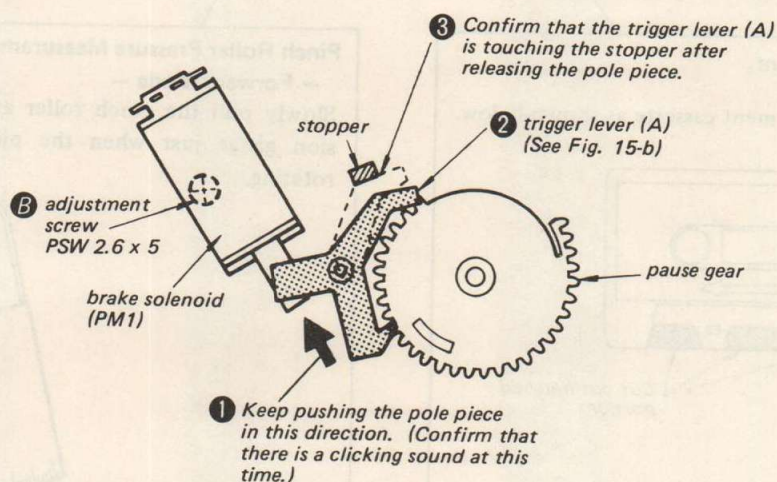


Fig. 15-a

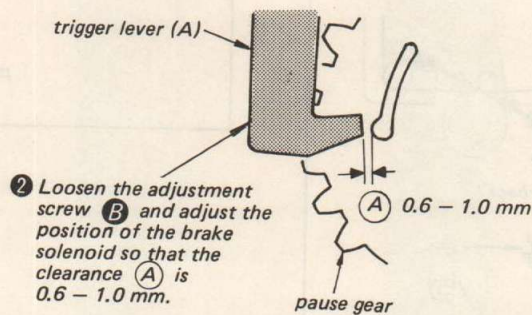
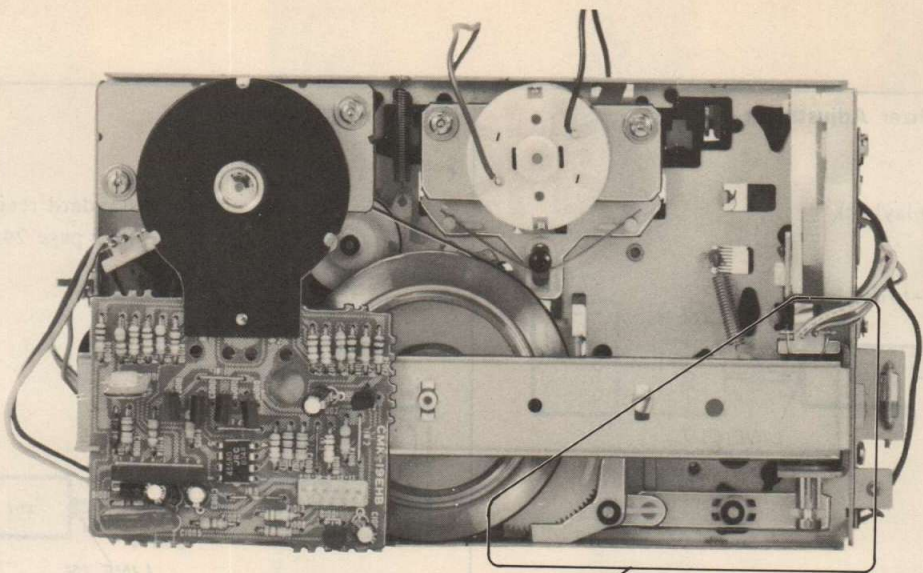


Fig. 15-b



Head Solenoid (PM2) Position Adjustment
— Stop Mode —

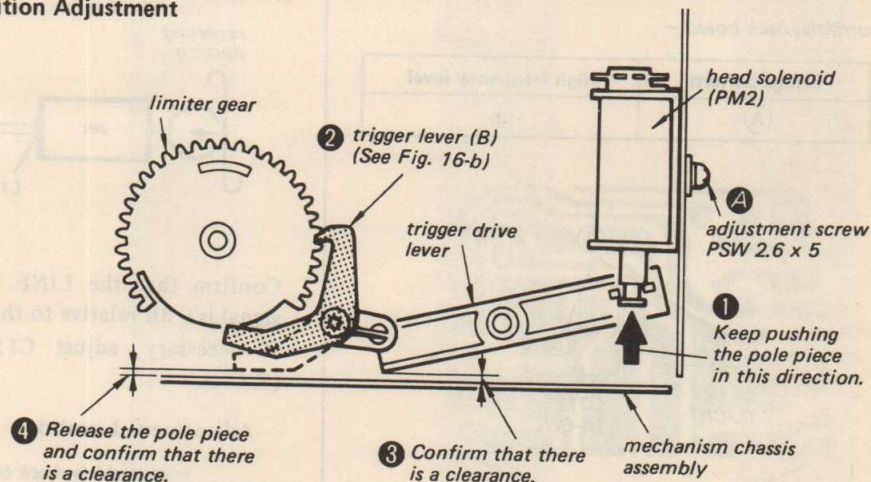


Fig. 16-a

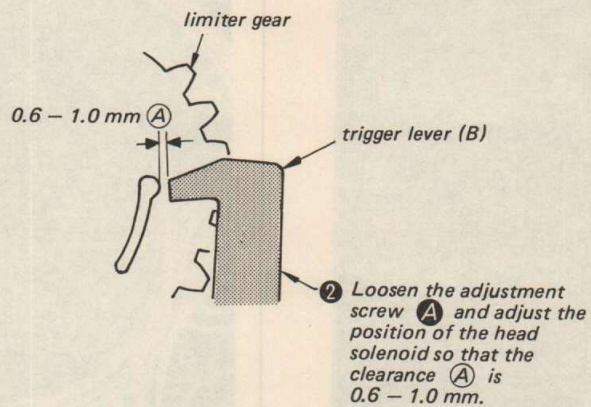


Fig. 16-b

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 BIAS and EQ switches according to the tape as follows.

Tape	BIAS switch	EQ switch
CS-10	MED	TYPE I
CS-25	HIGH	TYPE II
CS-30	MED	TYPE III
CS-40	METAL	TYPE IV

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

DOLBY NR switch:	OFF
EQ switch:	TYPE I
BIAS switch:	MED
REC MUTE switch:	OFF

- 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	300 Ω	10 k Ω
input level	0.77 mV (-60 dB)	0.25 V (-10 dB)

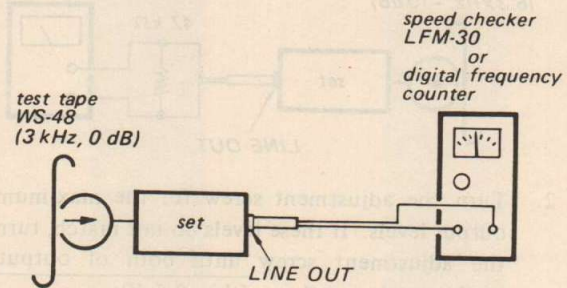
Standard Output Level

	LINE OUT	HEAD- PHONES
load impedance	47 k Ω	8 Ω
output level	0.44 V (-5 dB)	31 mV (-28 dB)

Tape Speed Adjustment

Procedure:

Mode: playback



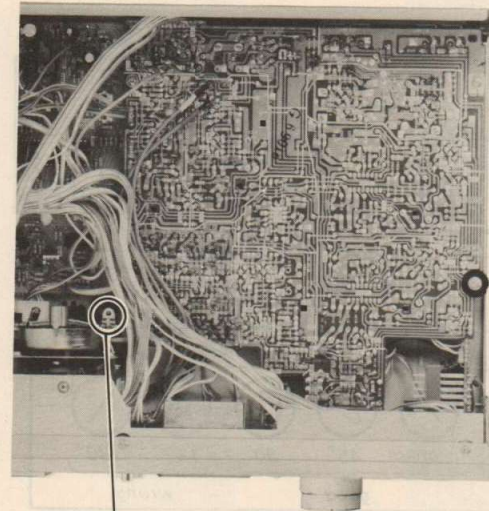
Specification:

Speed checker	Digital frequency counter
-0.7 - +0.7 %	2,980 - 3,020 Hz

Frequency difference between the beginning and the end of the tape should be within 0.7 % (20 Hz).

Adjustment Location:

— servo amp board —



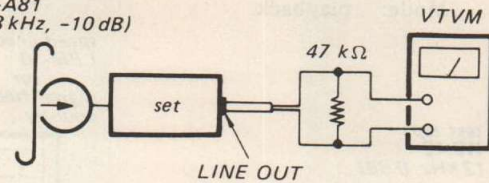
RV1001

Record/playback Head Azimuth Adjustment

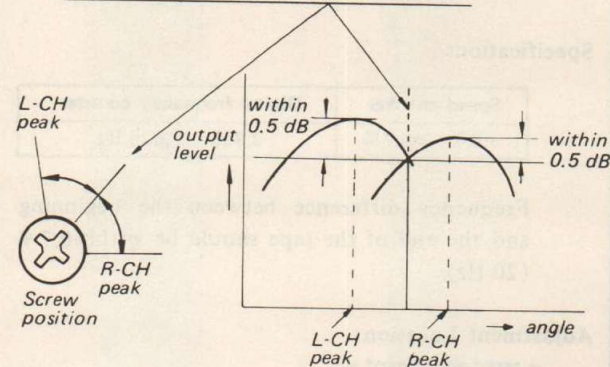
Procedure:

1. Mode: playback

test tape
P-4-A81
(6.3 kHz, -10 dB)

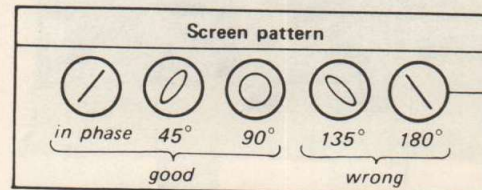
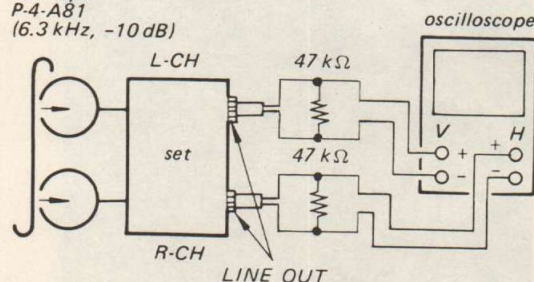


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.

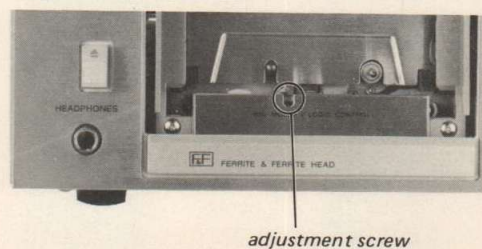


3. Phase Check
Mode: playback

test tape
P-4-A81
(6.3 kHz, -10 dB)



Adjustment Location:

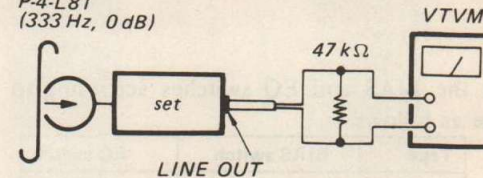


Playback Level Adjustment

Procedure:

- Mode: Playback

test tape
P-4-L81
(333 Hz, 0 dB)



Specification:

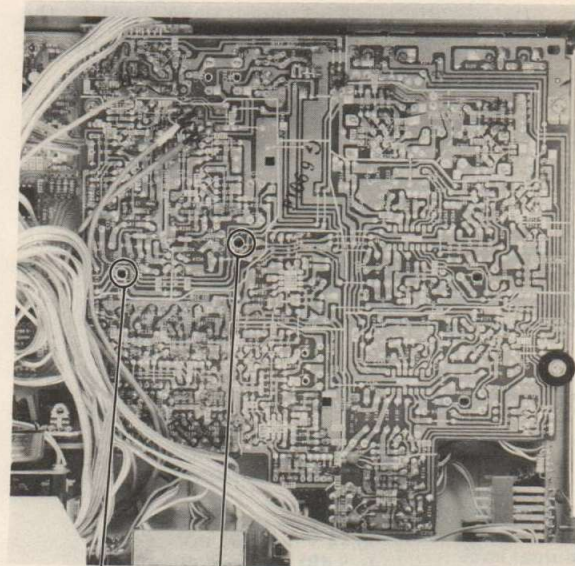
LINE OUT level: 0.52 – 0.59 V
(–3.5 to –2.5 dB)

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:

– record/playback board –



RV102
(L-CH)

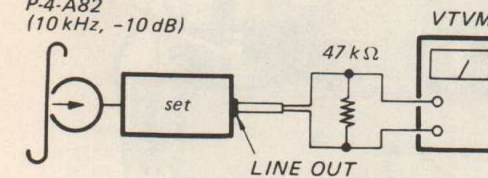
RV202
(R-CH)

Playback Equalizer Adjustment

Procedure:

- Mode: playback

test tape
P-4-A82
(10 kHz, -10 dB)



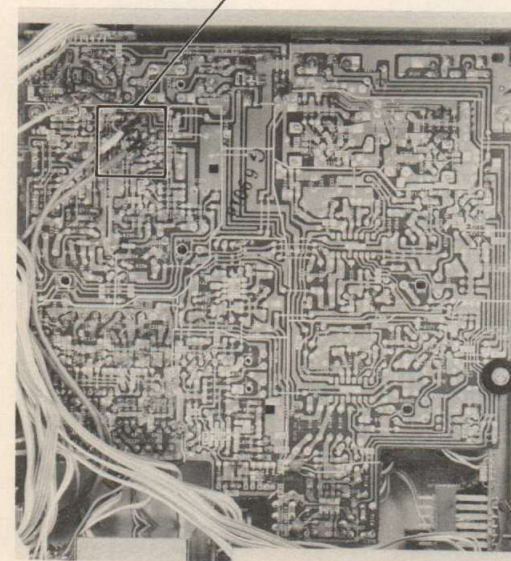
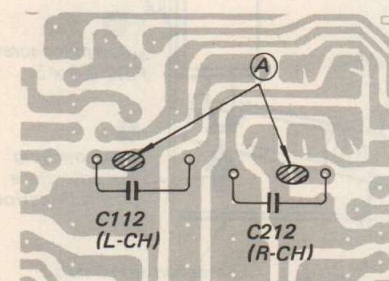
Specification:

LINE OUT level: 0.12 – 0.27 V
(–16 to –9 dB)

Adjustment Location:

– record/playback board –

Bridge pattern	High frequency level
(A)	up



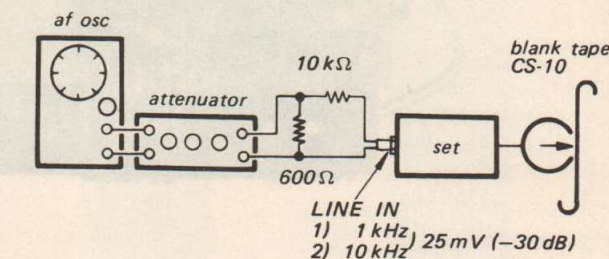
Record Bias Adjustment

Setting:

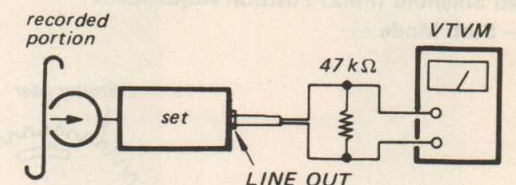
REC LEVEL control: standard record
(See page 24.)

Procedure:

1. Mode: record



2. Mode: playback



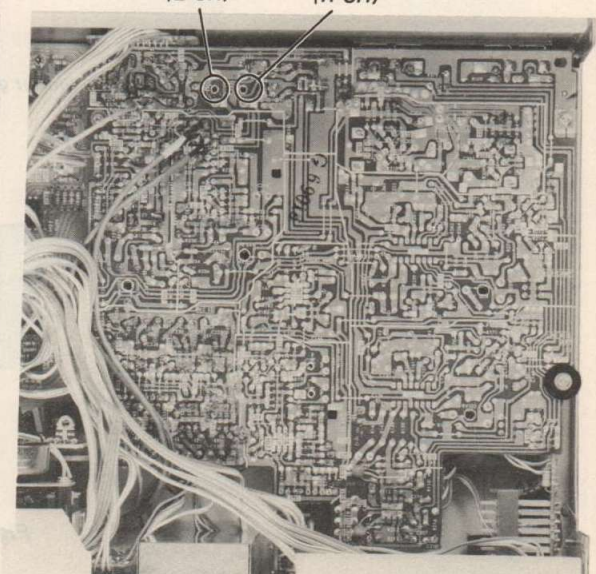
Confirm that the LINE OUT level of 10 kHz signal is 0 dB relative to that of 1 kHz.
If necessary, adjust C153 (L-CH) and C253 (R-CH).

Adjustment Location:

– record/playback board –

C153
(L-CH)

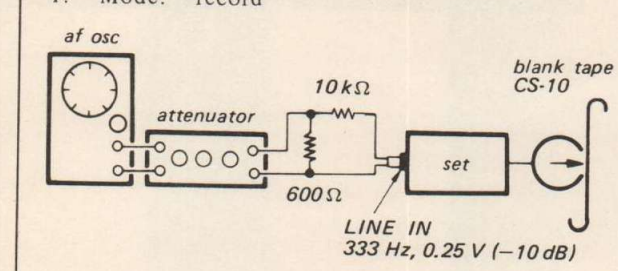
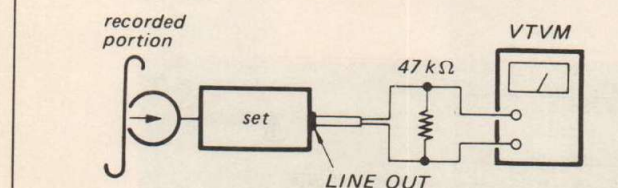
C253
(R-CH)



SECTION 4
DIAGRAMS

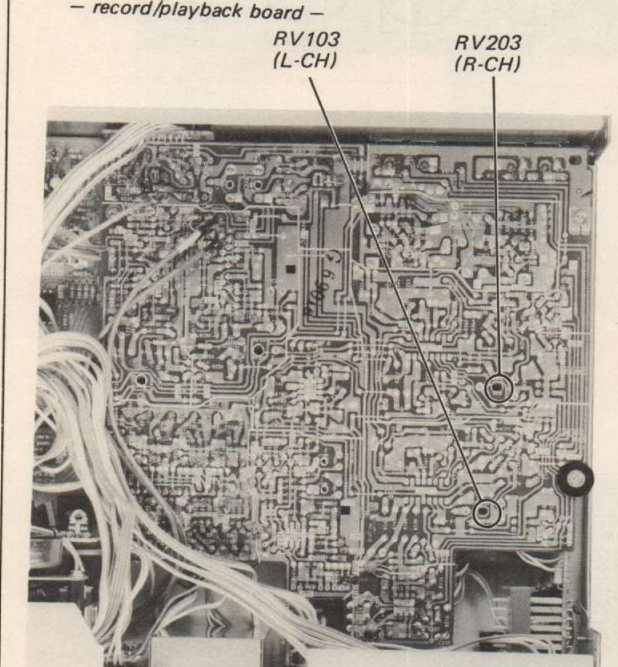
Record Level Adjustment

Setting:
REC LEVEL control: standard record
(See page 24.)

Procedure:
1. Mode: record

2. Mode: playback


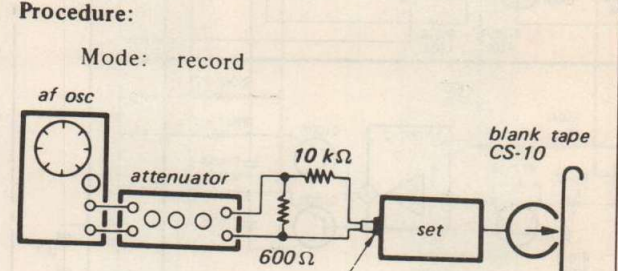
Specification:

LINE OUT level: 0.41 – 0.46 V
(–5.5 to –4.5 dB)

Adjustment Location:
– record/playback board –


LED Peak Program Meter Calibration

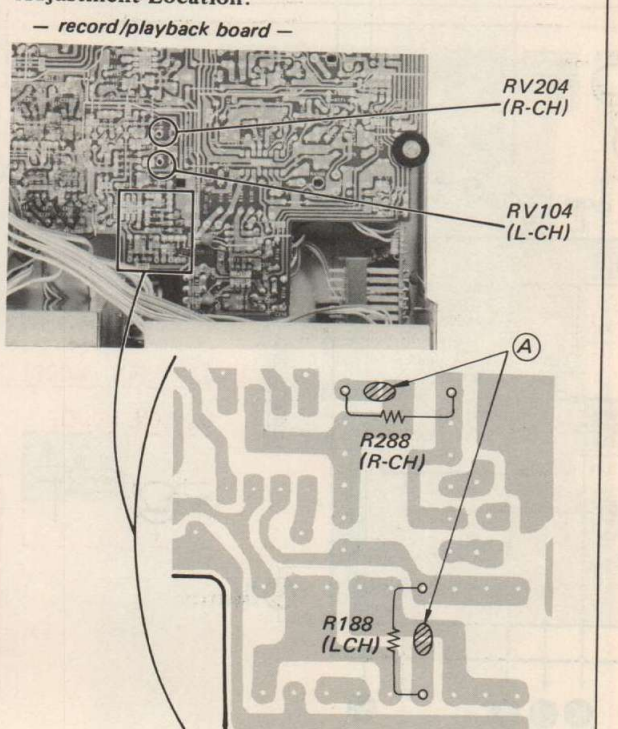
Setting:
REC LEVEL control: standard record
(See page 24.)

Procedure:
Mode: record


Specification:

LINE IN level	Indication
0.85 – 0.69 V (+1 to –1 dB)	The top segment lights.
2.7 – 5.5 mV (–49 to –43 dB)	The second segment from the bottom goes out.

If the second segment from the bottom lights when the 2.7 mV (–49 dB) LINE IN signal is applied, solder (A).

Adjustment Location:
– record/playback board –


Replacement Semiconductors

For replacement, use semiconductors except in ().

Q801 : 2SC1061 (2SC1419)
(UK, SCN MODEL)

Q1001, 1002: 2SC1364

(2SC634A)

Q802, 808) : 2SA1027R (2SA1015)
Q815, 819

Q1003, 1005: 2SC1474

(2SD471)

Q803, 805) : 2SB548
Q809

IC801: μ PD547C-042

D801–809) : 10E2
D814, 821

D810, 811
D816, 818
D819 } : HZ11B2L

D812, 813
D815, 817
D820, 822 } : 1S1555 (1T40)
D823
D1001: HZ6B2L (HZ6B1L)

Q804, 806
Q810, 811
Q816–818
Q820–823 } : 2SC1364 (2SC1815)

Q813, 814 : 2SC1475

IC804: MSM5953

D824: GL9NG21
D825: GL9PR21
D826: GL9HY21

Q807: 2SD414
Q801: 2SD809 (US, Canadian,
AEP, E MODEL)

IC1001: CX069

D827: SR110

Q812, 1004
Q1006) : 2SB564

IC1002: μ PC4558C

D828: GL9NO3D

Q824: PH103

Voltages and Waveforms at the Terminals of IC801.

Terminal No.	Waveform or Voltage	Terminal No.	Waveform or Voltage	Terminal No.	Waveform or Voltage
①		⑭		②⑨	10 Vdc
②	 • Forward Mode • Fast Forward or Rewind Mode • When pause button is pushed in forward mode: 10 Vdc • Tape End: 10 Vdc	⑮		③⑩	 Fast Forward Mode 10V –2.2V 0.3 sec. Fast Forward button is pushed.
③		⑯		③①	 Rewind Mode 10V 0V 0.3 sec Rewind button is pushed.
④		⑰	 Forward Mode 10V 0V 0.5 sec Forward button is pushed.	③②	10 Vdc
⑤		⑱		③③	
⑥		⑲		③④	
⑦	 S901 (POWER): ON 2.5 sec 10Vp.p. S901 (POWER): OFF 0.5 sec 10Vp.p.	⑳ to ②②	10 Vdc	③⑤	
⑧		②③		③⑥	
⑨		②④		③⑦	
⑩		②⑤		③⑧	
⑪		②⑥		③⑨	
⑫ ⑬		②⑦		④①	0 Vdc
		②⑧		④②	

– 27 –

– 28 –

– 29 –

4-1. SCHEMATIC DIAGRAM

— System Control Section —

See page 35 for the notes.

See page 29 for voltages and waveforms at the terminals of IC801.

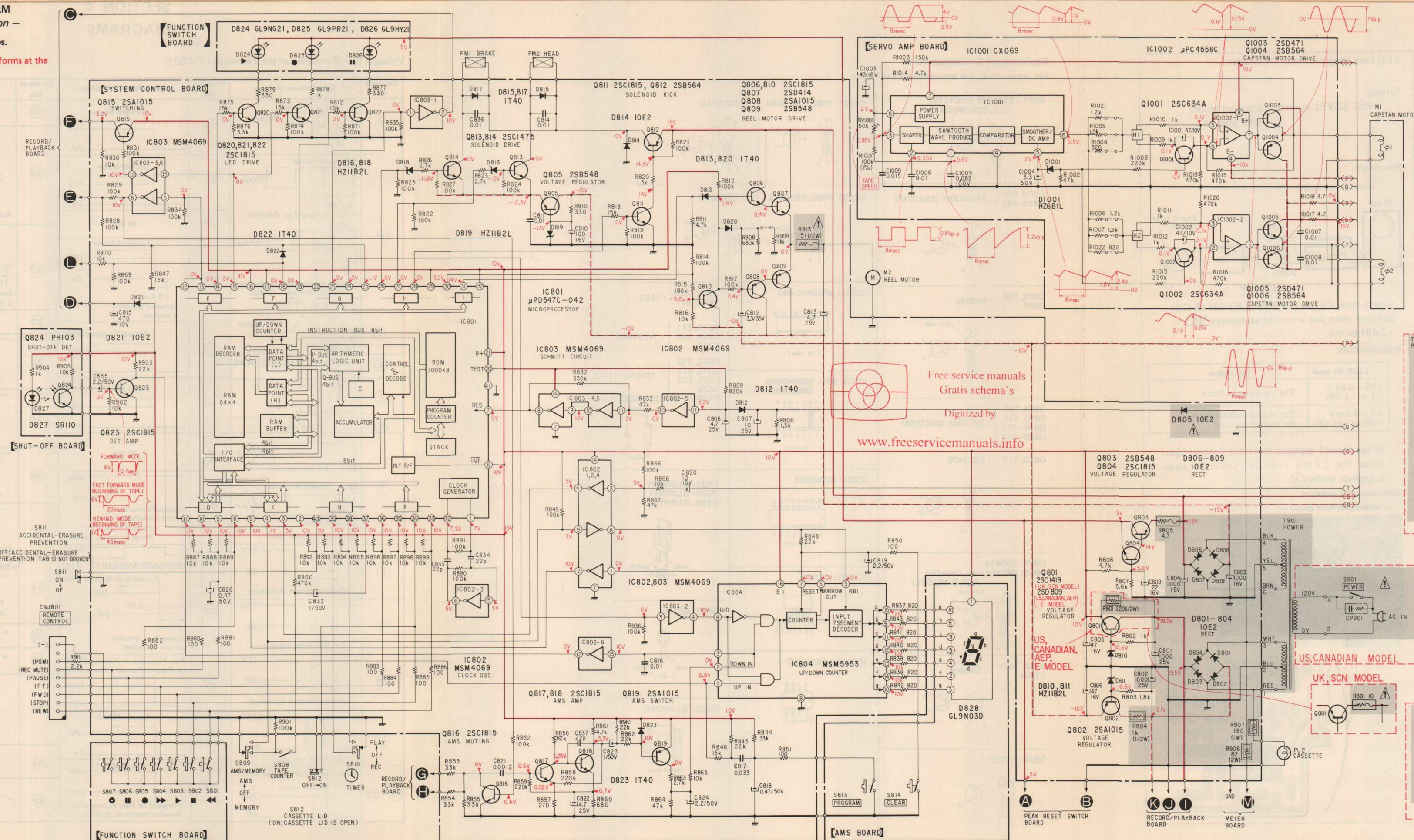
1

2

3

4

5



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

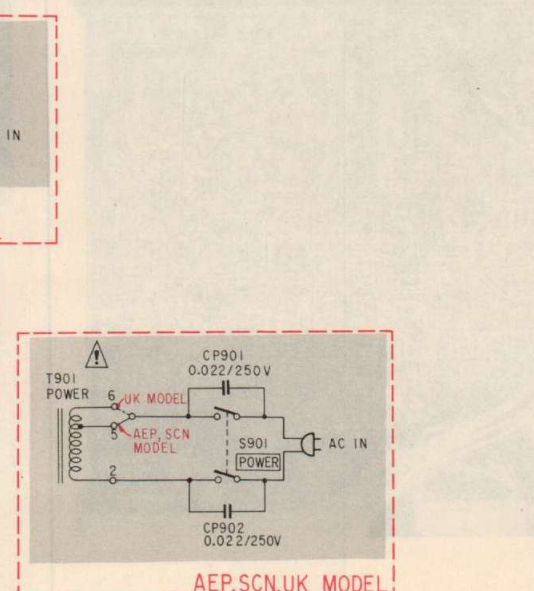
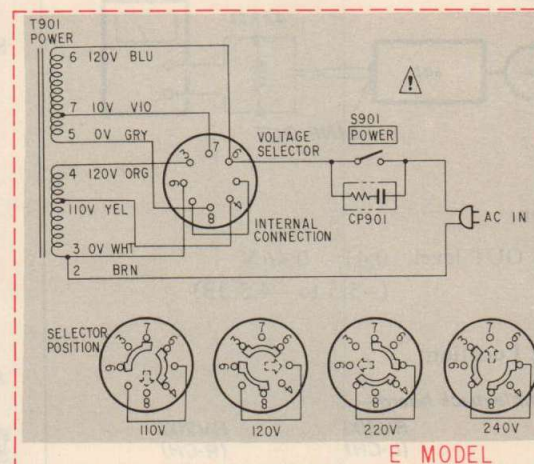
Note: Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

2

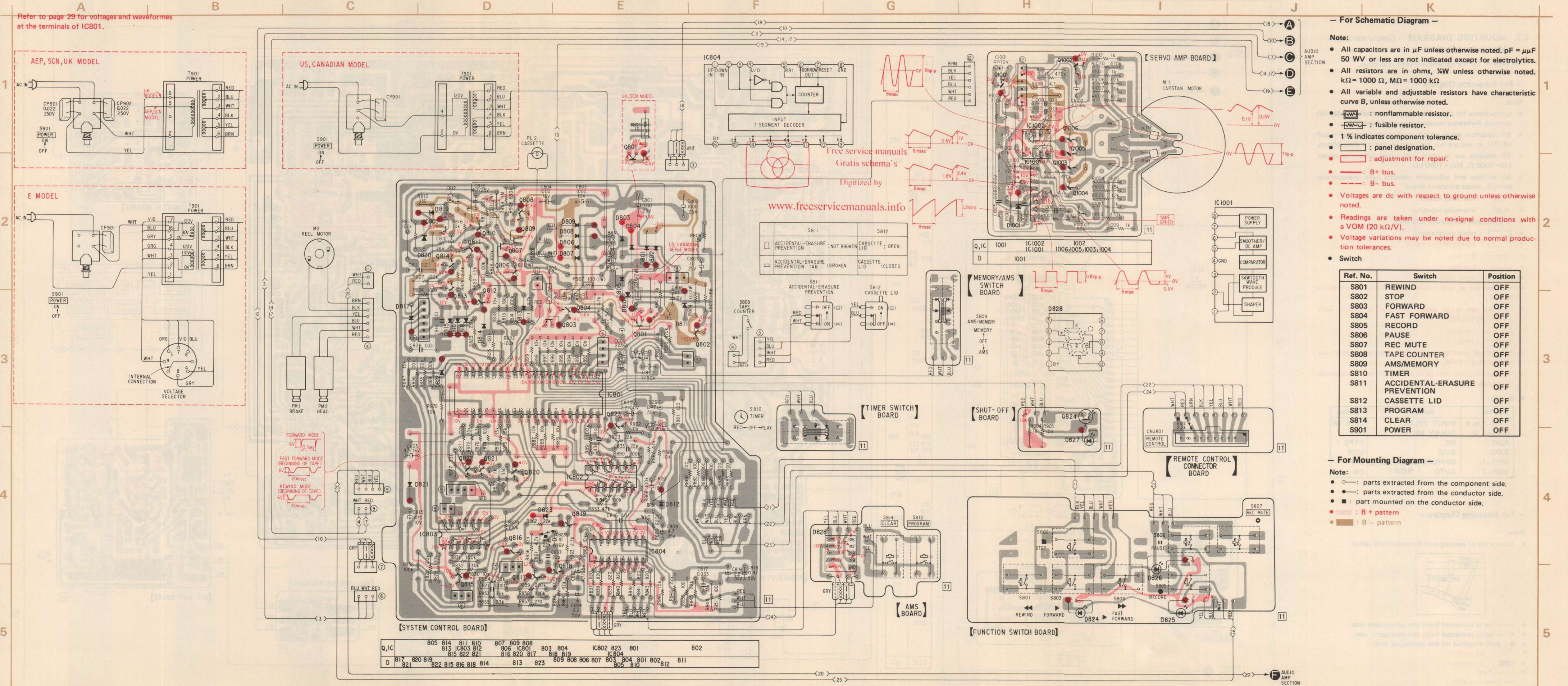
3

4

5



4-2. MOUNTING DIAGRAM — Conductor Side —
(System Control Section) See page 28 for the replacement semiconductors.



4-3. MOUNTING DIAGRAM – Conductor Side – (Audio Amp Section)

See page 42 for the replacement semiconductors.

– For Schematic Diagram –

Note:

- Components for right channel have same values as for left channel. Reference numbers are coded from 201.
- All capacitors are in μF unless otherwise noted. $\text{pF} = \mu\text{F}$ 50 WV or less are not indicated except for electrolytics.
- All resistors are in ohms, $\frac{1}{2}\text{W}$ unless otherwise noted. $\text{k}\Omega = 1000 \Omega$, $\text{M}\Omega = 1000 \text{k}\Omega$
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- (N) : low-noise resistor.
- (LN) : low-noise capacitor.
- 1 % indicates component tolerance.
- : panel designation.
- : adjustment for repair.
- : B + bus.
- - - : B - bus.
- : signal path.
- Voltagess are dc with respect to ground unless otherwise noted.
- Readings are taken under no signal conditions with a VOM (20 $\text{k}\Omega/\text{V}$).
- () : record.
- no mark : stop
- AC voltage readings in the bias oscillator circuit are taken with a VTVM.
- Voltage variations may be noted due to normal production tolerances.

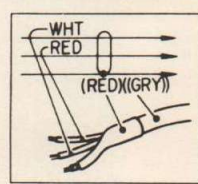
Switch

Ref. No.	Switch	Position
S101-1 to 4	INPUT SELECT	LINE IN
S301-1, 2	DOLBY NR	OFF
S302	EQ	TYPE I
S303	BIAS	LOW
S501-1	MANUAL PEAK HOLD	OFF
S501-2	AUTO RESET	ON

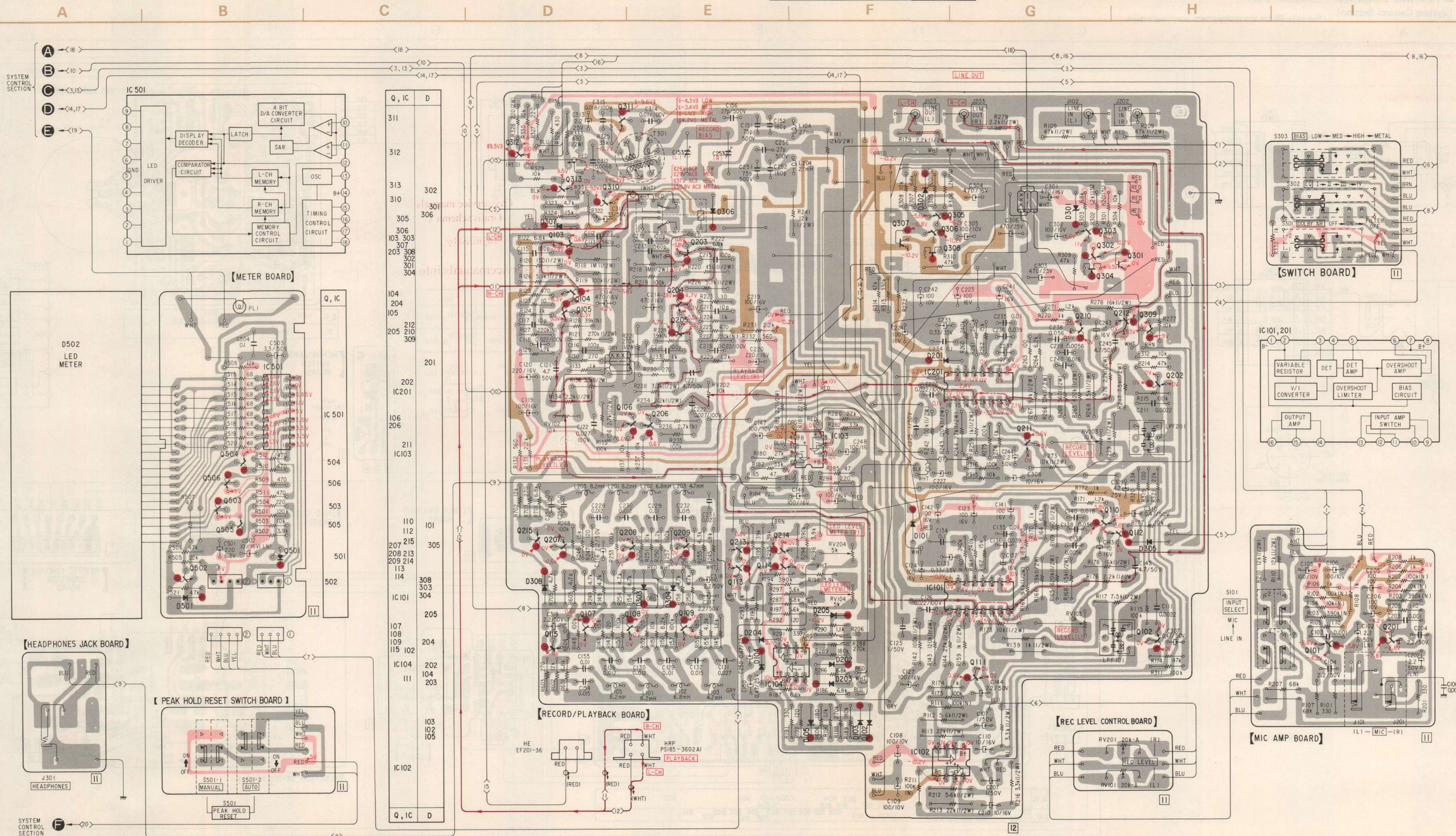
– For Mounting Diagram –

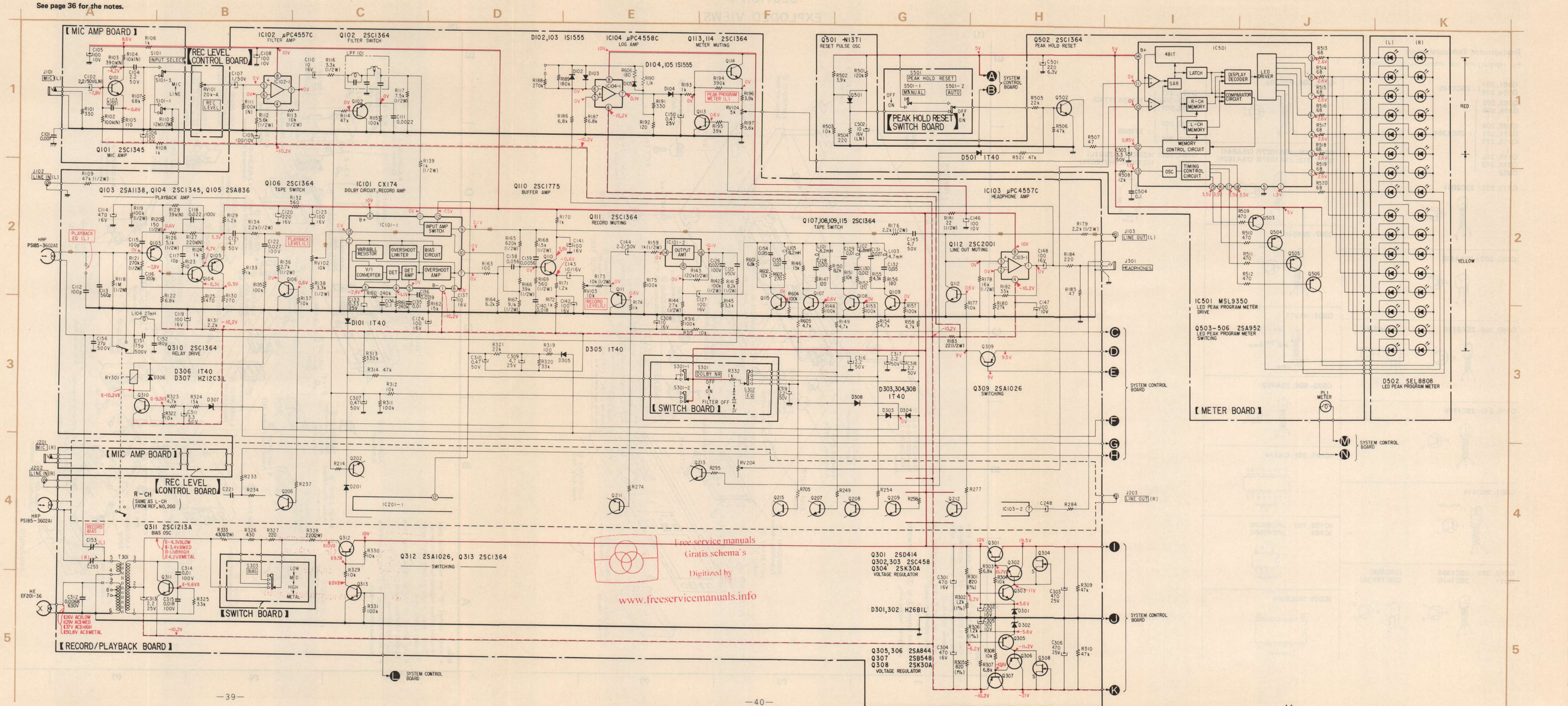
Note:

- Color code of sleeving over the end of the jacket.



- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : part mounted on the conductor side.
- : B+ pattern
- - - : B- pattern
- Signal Path
- : L-CH
- - - : R-CH
- : L-CH or R-CH

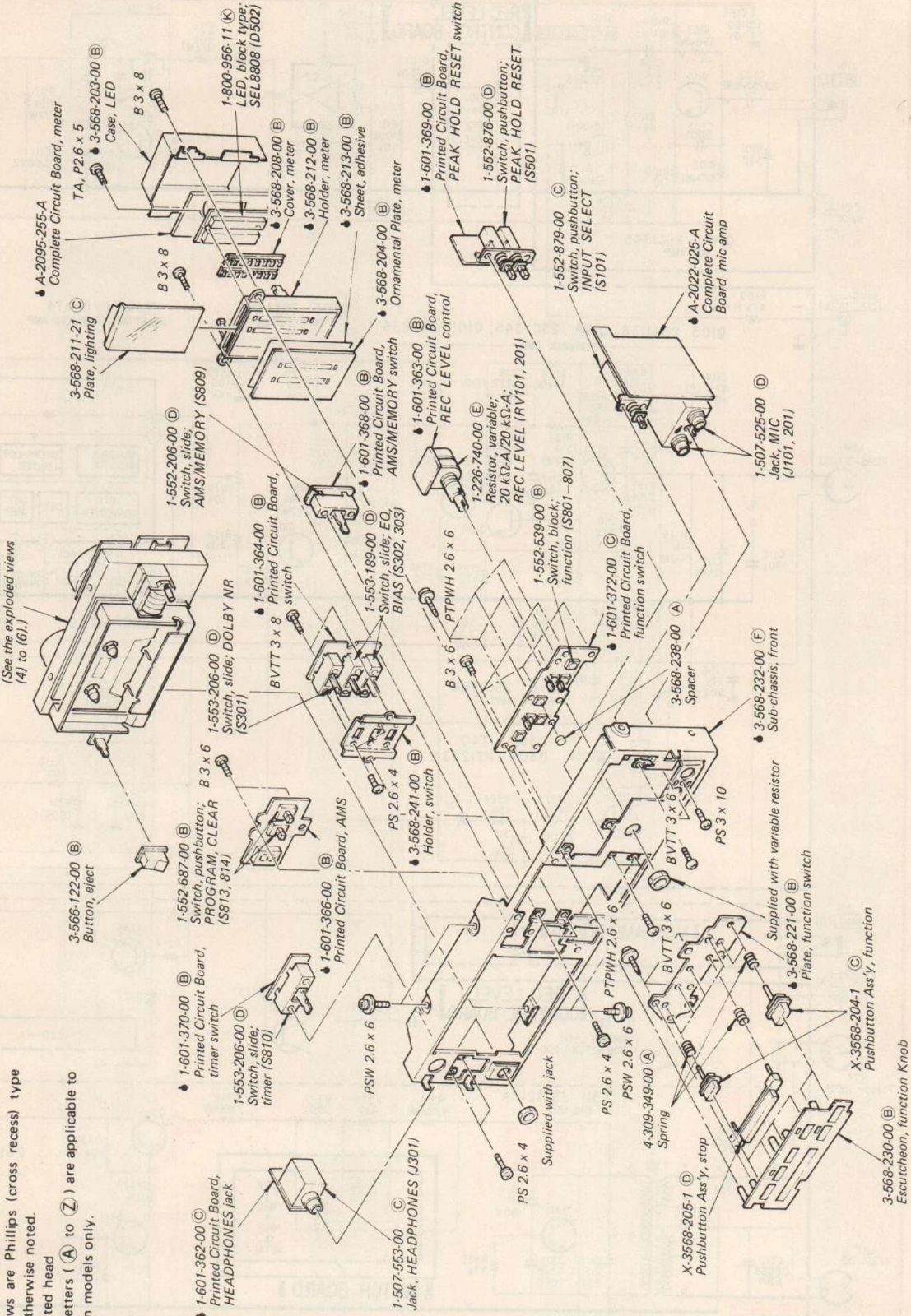




(1)

(2)

Note:



SECTION 6

ELECTRICAL PARTS LIST **Note:** Circled letters (A) to (Z) are applicable to European models only.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
SEMICONDUCTORS		
Transistors		
Q101, 201	8-729-334-58 (B)	2SC1345
Q102, 202	8-729-663-47 (B)	2SC1364
Q103, 203	8-729-113-82 (B)	2SA1138
Q104, 204	8-729-334-58 (B)	2SC1345
⇒ Q105, 205	8-729-387-28 (B)	2SA872E
Q106-109 Q206-209)	8-729-663-47 (B)	2SC1364
Q110, 210	8-729-377-58 (B)	2SC1775
Q111, 211	8-729-663-47 (B)	2SC1364
Q112, 212	8-729-100-13 (B)	2SC2001
Q113-115 Q213-215)	8-729-663-47 (B)	2SC1364
Q301	8-729-141-43 (B)	2SD414
⇒ Q302, 303	8-729-663-47 (B)	2SC1364
Q304	8-729-203-04 (B)	2SK30A
⇒ Q305, 306	8-729-612-77 (B)	2SA1027R
Q307	8-729-154-83 (C)	2SB548
Q308	8-729-203-04 (B)	2SK30A
⇒ Q309	8-729-612-77 (B)	2SA1027R
Q310	8-729-663-47 (B)	2SC1364
⇒ Q311	8-760-413-10 (B)	2SC1475
⇒ Q312	8-729-612-77 (B)	2SA1027R
Q313	8-729-663-47 (B)	2SC1364
Q501	8-729-101-31 (B)	N13T1
Q502	8-729-663-47 (B)	2SC1364
Q503-506	8-729-195-23 (B)	2SA952
⇒ Q801	8-729-316-12 (D) 2SC1061 (UK, SCN model) 8-729-180-93 (B) 2SD809	(US, Canadian, AEP, E model)
⇒ Q802	8-729-612-77 (B)	2SA1027R
Q803	8-729-154-83 (C)	2SB548
⇒ Q804	8-729-663-47 (B)	2SC1364
Q805	8-729-154-83 (C)	2SB548
⇒ Q806	8-729-663-47 (B)	2SC1364
Q807	8-729-141-43 (B)	2SD414

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

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

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
⇒ Q808	8-729-612-77 (B)	2SA1027R
Q809	8-729-154-83 (C)	2SB548
⇒ Q810, 811	8-729-663-47 (B)	2SC1364
Q812	8-729-156-43 (B)	2SB564
Q813, 814	8-760-413-10 (B)	2SC1475
⇒ Q815	8-729-612-77 (B)	2SA1027R
⇒ Q816-818	8-729-663-47 (B)	2SC1364
⇒ Q819	8-729-612-77 (B)	2SA1027R
⇒ Q820-823	8-729-663-47 (B)	2SC1364
Q824	8-729-101-13 (C)	PH103
⇒ Q1001, ⇒ Q1002)	8-729-663-47 (B)	2SC1364
⇒ Q1003	8-760-335-10 (B)	2SC1474
Q1004	8-729-156-43 (B)	2SB564
⇒ Q1005	8-760-335-10 (B)	2SC1474
Q1006	8-729-156-43 (B)	2SB564
ICs		
IC101, 201	8-759-101-74 (H)	CX174
IC102, 103	8-759-145-57 (D)	μPC4557C
IC104	8-759-145-58 (D)	μPC4558C
IC501	8-759-993-50 (K)	MSL9350
IC801	8-759-147-42 (K)	μPD547C-042
⇒ IC802, 803	8-759-904-69 (C)	MSM4069B
IC804	8-759-959-53 (J)	MSM5953
IC1001	8-750-690-00 (D)	CX069
IC1002	8-759-145-58 (D)	μPC4558C
Diodes		
⇒ D101, 201	8-719-815-55 (B)	1S1555
D102-105 D202-205)	8-719-815-55 (B)	1S1555
⇒ D301, 302	8-719-910-65 (B)	HZ6B2L
⇒ D303-306	8-719-815-55 (B)	1S1555
⇒ D307	8-719-910-28 (B)	HZ12C2L
⇒ D308, 501	8-719-815-55 (B)	1S1555
D502	1-800-956-11 (K)	SEL8808
D801-809 	8-719-200-02 (B)	10E2
D810, 811	8-719-910-15 (B)	HZ11B2L

Note: 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.

Note: Circled letters (**A** to **Z**) are applicable to European models only.

Ref. No.	Part No.	Description
⇒ D812, 813	8-719-815-55 (B)	1S1555
D814	8-719-200-02 (B)	10E2
⇒ D815	8-719-815-55 (B)	1S1555
D816	8-719-910-15 (B)	HZ11B2L
⇒ D817	8-719-815-55 (B)	1S1555
D818, 819	8-719-910-15 (B)	HZ11B2L
⇒ D820	8-719-815-55 (B)	1S1555
D821	8-719-200-02 (B)	10E2
⇒ D822, 823	8-719-815-55 (B)	1S1555
D824	8-719-909-22 (B)	GL9NG21
D825	8-719-909-21 (B)	GL9PR21
D826	8-719-909-23 (B)	GL9HY21
D827	8-719-101-11 (B)	SR110
D828	8-719-909-03 (F)	GL9NO3D
⇒ D1001	8-719-910-65 (B)	HZ6B2L
CAPACITORS		
All capacitors are in μ F and electrolytics unless otherwise noted. 50 WV or less are not indicated except for electrolytics. Common capacitors are omitted. Refer to the lists on pages 53 and 54 for their part numbers. $p = \mu\mu F$		
C103, 203	1-161-323-00 (A)	0.001 ceramic
C104, 204	1-123-230-00 (B)	2.2 50 V (nonpolarized)
C118, 218	1-130-305-00 (B)	0.022 100 V polyethylene
C121, 221	1-123-232-00 (B)	4.7 50 V (nonpolarized)
C122, 222	1-130-307-00 (B)	0.027 100 V polyethylene
C125, 225	1-123-228-00 (B)	1 50 V (nonpolarized)
C126, 226	1-130-305-00 (B)	0.022 100 V polyethylene
C145, 245	1-123-232-00 (B)	4.7 50 V (nonpolarized)
C153, 253	1-141-225-00 (C)	Trimmer
C314	1-130-297-00 (B)	0.01 100 V polyethylene
C315	1-130-303-00 (B)	0.018 100 V polyethylene
C502	1-121-651-00 (B)	10 16 V (low noise)
C801, 802	1-123-337-00 (B)	1000 25 V
C803, 804	1-123-324-00 (B)	1000 16 V
C1001	1-123-306-00 (B)	47 10 V
C1002		
C1003		

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

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

Ref. No.	Part No.	Description
C1004	1-123-354-00 (B)	3.3 50 V
C1005	1-130-134-00 (B)	0.082 100 V polyethylene
RESISTORS		
All resistors are in ohms and carbon unless otherwise noted. Common $\frac{1}{4}$ W carbon resistors are omitted. Refer to the list on page 55 for their part numbers. $k\Omega$: 1000 Ω , $M\Omega$: 1000 $k\Omega$.		
R109, 209	1-244-913-00 (A)	47 k $\frac{1}{2}$ W
R110, 210	1-244-899-00 (A)	12 k $\frac{1}{2}$ W
R112, 212	1-244-891-00 (A)	5.6 k $\frac{1}{2}$ W
R113, 213	1-244-897-00 (A)	10 k $\frac{1}{2}$ W
R116, 216	1-244-885-00 (A)	3.3 k $\frac{1}{2}$ W
R117, 217	1-244-894-00 (A)	7.5 k $\frac{1}{2}$ W
R118, 218	1-244-945-00 (A)	1 M $\frac{1}{2}$ W
R119, 219	1-244-921-00 (A)	100 k $\frac{1}{2}$ W
R120, 220	1-244-853-00 (A)	150 $\frac{1}{2}$ W
R121, 221	1-244-931-00 (A)	270 k $\frac{1}{2}$ W
R126, 226	1-244-890-00 (A)	5.1 k $\frac{1}{2}$ W
R134, 234	1-244-881-00 (A)	2.2 k $\frac{1}{2}$ W
R136, 236	1-244-883-00 (A)	2.7 k $\frac{1}{2}$ W
R138, 238	1-244-885-00 (A)	3.3 k $\frac{1}{2}$ W
R139, 239	1-244-873-00 (A)	1 k $\frac{1}{2}$ W
R141, 241	1-244-895-00 (A)	8.2 k $\frac{1}{2}$ W
R142, 242	1-244-921-00 (A)	100 k $\frac{1}{2}$ W
R143, 243	1-244-923-00 (A)	120 k $\frac{1}{2}$ W
R144, 244	1-244-907-00 (A)	27 k $\frac{1}{2}$ W
R159, 259	1-244-873-00 (A)	1 k $\frac{1}{2}$ W
R165, 265	1-244-940-00 (A)	620 k $\frac{1}{2}$ W
R166, 266	1-244-911-00 (A)	39 k $\frac{1}{2}$ W
R167, 267	1-244-896-00 (A)	9.1 k $\frac{1}{2}$ W
R168, 268	1-244-877-00 (A)	1.5 k $\frac{1}{2}$ W
R169, 269	1-244-867-00 (A)	560 $\frac{1}{2}$ W
R173, 273	1-244-897-00 (A)	10 k $\frac{1}{2}$ W
R176, 276	1-244-881-00 (A)	2.2 k $\frac{1}{2}$ W
R178, 278	1-244-902-00 (A)	16 k $\frac{1}{2}$ W
R179, 279	1-244-881-00 (A)	2.2 k $\frac{1}{2}$ W
R181, 183	1-244-833-00 (A)	22 $\frac{1}{2}$ W

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

Ref. No.	Part No.	Description
R301	1-214-727-00 (A)	820 $\frac{1}{4}$ W metal-oxide (1 %)
R302	1-214-731-00 (A)	1.2 k $\frac{1}{4}$ W metal-oxide (1 %)
R305	1-214-727-00 (A)	820 $\frac{1}{4}$ W metal-oxide (1 %)
R306	1-214-731-00 (A)	1.2 k $\frac{1}{4}$ W metal-oxide (1 %)
R328	1-206-648-00	220 2 W metal-oxide
R333	1-244-864-00 (A)	430 $\frac{1}{2}$ W
R334	1-244-857-00 (A)	220 $\frac{1}{2}$ W
R801	1-212-857-00 (A)	10 $\frac{1}{4}$ W fusible (UK, SCN model)
	1-247-224-00 (A)	220 $\frac{1}{2}$ W (nonflammable) (US, Canadian, AEP, E model)
R804	1-247-240-00 (A)	1 k $\frac{1}{2}$ W (nonflammable)
R805	1-212-849-00 (A)	4.7 $\frac{1}{4}$ W fusible
R813	1-212-962-00 (B)	15 $\frac{1}{2}$ W fusible
R906	1-206-485-00 (B)	82 2 W metal-oxide (nonflammable)
R907	1-213-134-00 (A)	180 1 W metal-oxide (nonflammable)
R909	1-246-545-00 (A)	1 M $\frac{1}{4}$ W
R1001	1-214-777-00 (A)	100 k $\frac{1}{4}$ W metal-oxide (1 %)
RV101, 201	1-226-740-00 (E)	20 k-A/20 k-A, variable; REC LEVEL
RV102, 202	1-224-645-XX (B)	10 k-B, adjustable; playback level
RV103, 203	1-224-645-XX (B)	10 k-B, adjustable; record level
RV104, 204	1-226-235-00 (B)	5 k-B, adjustable; peak program meter
RV1001	1-226-759-00 (B)	50 k-B, adjustable; tape speed
MISCELLANEOUS		
CNJ501	1-508-879-00 (B)	Connector Base Pin
CNJ502	1-508-878-00 (B)	Connector Base Post
CNJ801	1-560-263-00 (B)	Connector Pin, 9p; REMOTE CONTROL
CP901	1-231-326-11	Encapsulated Component (US model)
	1-231-341-00	Encapsulated Component (E model)
	1-231-341-00	Encapsulated Component (Canadian model)

• Items marked “**A**” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

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

Note: Circled letters (**A** to **Z**) are applicable to European models only.

Ref. No.	Part No.	Description
CP901, 902	1-130-267-00 (C)	Capacitor, film; 0.022 μ F 250 V (AEP, UK, SCN model)
HE	8-825-724-00 (D)	Head, erase; EF-201-36
HRP	8-825-712-10 (O)	Head, record/playback; PS185-3602A1
J101, 201	1-507-525-00 (D)	Jack, MIC
J102, 202	1-507-531-00 (D)	Jack
J103, 203		LINE IN, LINE OUT
J301	1-507-553-00 (C)	Jack, HEADPHONES
L101, 201	1-408-256-00 (B)	Coil, microinductor; 8.2 mH
L102, 202	1-408-255-00 (B)	Coil, microinductor; 6.8 mH
L103, 203	1-408-253-00 (B)	Coil, microinductor; 4.7 mH
L104, 204	1-408-262-00 (B)	Coil, microinductor; 27 mH
L105, 205	1-408-256-00 (B)	Coil, microinductor; 8.2 mH
LPF101, 201	1-231-388-00 (D)	Filter, low-pass
M1	X-3564-017-0 (K)	Motor Ass'y, capstan (including servo amp board)
M2	X-3564-015-0 (I)	Motor Ass'y, reel
PL1	1-518-351-00 (B)	Lamp, meter
PL2	1-518-340-71 (B)	Lamp, cassette; 8 V 50 mA
PM1	1-454-222-11 (D)	Solenoid, brake
PM2	1-454-222-21 (D)	Solenoid, head
RY301	1-515-323-00 (G)	Relay
S101	1-552-879-00 (C)	Switch, pushbutton; INPUT SELECT
S301	1-553-206-00 (D)	Switch, slide; DOLBY NR
S302, 303	1-553-189-00 (D)	Switch, slide, EQ, BIAS
S501	1-552-876-00 (D)	Switch, pushbutton; PEAK HOLD RESET
S801-807	1-552-539-00 (B)	Switch, block; function
S808	1-548-537-31 (F)	Tape Counter
S809	1-553-206-00 (D)	Switch, slide; AMS/MEMORY
S810	1-553-206-00 (D)	Switch, slide; timer
S811, 812	1-552-268-00 (B)	Switch, slide; accidental-erasure prevention, cassette lid
S813, 814	1-552-687-00 (B)	Switch, pushbutton; PROGRAM, CLEAR

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

Note: Circled letters (**A** to **Z**) are applicable to European models only.

Ref. No.	Part No.	Description
S901	1-552-903-00 (D)	Switch, pushbutton POWER (AEP, UK, SCN, E model)
	1-552-530-00	Switch, pushbutton POWER (US, Canadian model)
T301	1-433-132-11 (C)	Transformer, OSC
T901	1-446-351-00 (M)	Transformer, power (AEP, UK, SCN model)
	1-446-350-00	Transformer, power (US, Canadian model)
	1-446-518-00	Transformer, power (E model)
	1-526-576-21	Voltage Selector (E model)
	1-535-116-00 (A)	Terminal, 3p
	1-551-628-00	Cord, power; parrale-blade plug (US, Canadian, E2 model)
	1-551-896-00 (E)	Cord, power; euro-plug (AEP, E1 model)
	1-551-908-00 (E)	Cord, power (SCN model)
	1-551-962-00 (E)	Cord, power (UK model)
	1-560-060-00 (A)	Connector Pin
	1-560-062-00 (B)	Connector Pin
	1-560-064-00 (B)	Connector Pin
	1-561-378-00 (B)	Connector Socket, 3p
	1-561-379-00 (B)	Connector Socket, 4p
	1-561-380-00 (B)	Connector Socket, 5p
COMPLETE CIRCUIT BOARD		
	A-2010-156-A	Record/Playback
	A-2019-098-A	System Control (US, Canadian, E model)
	A-2019-109-A	System Control (AEP, UK, SCN model)
	A-2022-025-A (H)	Mic Amp
	A-2095-255-A (M)	Meter
PRINTED CIRCUIT BOARD		
	1-600-393-00 (B)	Servo Amp

• Items marked “**A**” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

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

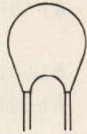
Ref. No.	Part No.	Description
	1-601-362-00 (C)	HEADPHONES jack
	1-601-363-00 (B)	REC LEVEL control
	1-601-364-00 (B)	Switch
	1-601-366-00 (B)	AMS
	1-601-367-00 (B)	Shut-off
	1-601-368-00 (B)	AMS/MEMORY switch
	1-601-369-00 (B)	PEAK HOLD RESET switch
	1-601-370-00 (B)	Timer Switch
	1-601-371-00 (B)	Remote Control Connector
	1-601-372-00 (C)	Function Switch
ACCESSORIES & PACKING MATERIALS		
Part No.	Description	
X-3701-105-0	(A)	Tips Ass'y, head cleaning
1-551-734-11	(C)	Cord, connection; RK-74 A
1-551-966-00	(G)	Adaptor, power cord (AEP, E1 model)
1-551-967-00	(E)	Adaptor, power cord (UK model)
3-566-148-00	(B)	Cushion, upper-front
3-566-149-00	(B)	Cushion, upper-rear
3-566-150-00	(B)	Cushion, bottom-right
3-566-151-00	(B)	Cushion, bottom-left
3-572-607-00		Carton
3-701-630-00	(A)	Bag, plastic; instruction manual
3-783-173-11		Manual, instruction (AEP,UK,SCN,E model)
3-783-173-21		Manual, instruction (US, Canadian model)
3-793-828-11	(B)	Card, caution; cassette
4-818-924-00	(B)	Bag, plastic; set

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

MYLAR CAPACITORS (A)

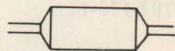
Note: Circled letters (A to Z) are applicable to European models only.

RATING											
CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	—	—
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	—	—
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	—	—
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	—	—
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				



TANTALUM CAPACITORS

RATING → : Use the high voltage rated one.							
CAP. (μF)	3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
0.01					→	→	1-131-396-00 (B)
0.015						→	1-131-397-00 (B)
0.022						→	1-131-398-00 (B)
0.033						→	1-131-399-00 (B)
0.047						→	1-131-400-00 (B)
0.068					→	→	1-131-401-00 (B)
0.1					→	→	1-131-402-00 (B)
0.15					→	→	1-131-403-00 (B)
0.22					→	→	1-131-404-00 (B)
0.33					→	→	1-131-405-00 (B)
0.47	—	—	—	—	1-131-412-00 (B)	→	1-131-406-00 (B)
0.68	—	—	—	1-131-415-00 (B)	→	→	1-131-407-00 (B)
1.0	—	—	1-131-418-00 (B)	—	1-131-413-00 (B)	→	1-131-408-00 (B)
1.5	—	1-131-421-00 (B)	—	1-131-416-00 (B)	→	→	1-131-409-00 (B)
2.2	1-131-424-00 (B)	—	1-131-419-00 (B)	—	1-131-414-00 (B)	1-131-355-00 (B)	1-131-349-00 (B)
3.3	—	1-131-422-00 (B)	—	1-131-417-00 (B)	1-131-362-00 (B)	1-131-356-00 (B)	1-131-350-00 (B)
4.7	1-131-425-00 (B)	—	1-131-420-00 (B)	1-131-369-00 (B)	1-131-363-00 (B)	1-131-357-00 (B)	1-131-351-00 (C)
6.8	—	1-131-423-00 (B)	1-131-376-00 (B)	1-131-370-00 (B)	1-131-364-00 (B)	1-131-358-00 (C)	1-131-352-00 (C)
10	1-131-426-00 (B)	1-131-383-00 (B)	1-131-377-00 (B)	1-131-371-00 (B)	1-131-365-00 (C)	1-131-359-00 (C)	1-131-353-00 (D)
15	1-131-390-00 (B)	1-131-384-00 (B)	1-131-378-00 (B)	1-131-372-00 (B)	1-131-366-00 (C)	1-131-360-00 (D)	—
22	1-131-391-00 (B)	1-131-385-00 (B)	1-131-379-00 (C)	1-131-373-00 (C)	1-131-367-00 (D)		
33	1-131-392-00 (B)	1-131-386-00 (C)	1-131-380-00 (C)	1-131-374-00 (D)			
47	1-131-393-00 (C)	1-131-387-00 (C)	1-131-381-00 (D)				
68	1-131-394-00 (B)	1-131-388-00 (C)	—	—	—		
100	1-131-395-00 (D)	—	—	—	—		



TANTALUM CAPACITORS

RATING						
CAP. (μF)	3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00 (E)
0.047						1-131-274-00 (E)
0.068						1-131-275-00 (E)
0.1						1-131-276-00 (D)
0.15						1-131-277-00 (D)
0.22			—	—	1-131-262-00 (D)	1-131-278-00 (D)
0.33			—	—	1-131-263-00 (D)	1-131-279-00 (D)
0.47			1-131-169-00 (D)	—	1-131-264-00 (D)	1-131-280-00 (D)
0.68			—	1-131-258-00 (D)	1-131-265-00 (D)	1-131-281-00 (D)
1.0			1-131-254-00 (D)	—	1-131-266-00 (D)	1-131-282-00 (D)
1.5		1-131-250-00 (D)	—	—	1-131-267-00 (D)	1-131-283-00 (E)
2.2		—	—	1-131-259-00 (D)	1-131-268-00 (D)	1-131-284-00 (E)
3.3		—	1-131-255-00 (D)	—	1-131-269-00 (D)	—
4.7		1-131-251-00 (E)	1-131-171-00 (D)	—	1-131-270-00 (D)	—
6.8		—	—	1-131-260-00 (D)	1-131-271-00 (E)	—
10	—	—	1-131-256-00 (D)	—	1-131-272-00 (E)	—
15	—	1-131-252-00 (D)	—	1-131-261-00 (E)	—	—
22	—	—	1-131-257-00 (E)	—	—	—
33	1-131-176-00 (D)	1-131-253-00 (E)	1-131-173-00 (C)	—	—	—
47	1-131-288-00 (F)	1-131-174-00 (D)	—	—	—	—
100	1-131-177-00 (D)	—	—	—	—	—

ELECTROLYTIC CAPACITORS

Note: Circled letter (A to Z) are applicable to European models only.

RATING → : Use the high voltage rated one.						
CAP. (μF)	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.	50 VOLT. PART No.
0.47					→	1-121-726-00 (A)
1.0					→	1-121-391-00 (A)
2.2					→	1-121-450-00 (A)
3.3	→	→	→	1-121-392-00 (A)	→	1-121-393-00 (A)
4.7	→	→	→	1-121-395-00 (A)	→	1-121-396-00 (A)
10	→	→	1-121-651-00 (A)	1-121-398-00 (A)	→	1-121-738-00 (A)
22	→	→	1-121-479-00 (A)	1-121-480-00 (A)	1-121-662-00 (A)	1-121-152-00 (A)
33	→	→	1-121-403-00 (A)	1-121-404-00 (A)	1-121-652-00 (B)	1-121-405-00 (A)
47	→	1-121-352-00 (A)	1-121-409-00 (A)	1-121-410-00 (A)	1-121-653-00 (B)	1-121-411-00 (A)
100	→	1-121-414-00 (A)	1-121-415-00 (A)	1-121-416-00 (A)	1-121-357-00 (B)	1-121-417-00 (B)
220	1-121-419-00 (B)	1-121-420-00 (B)	1-121-421-00 (A)	1-121-422-00 (B)	1-121-261-00 (C)	1-121-423-00 (B)
330	1-121-751-00 (B)	1-121-805-00 (B)	1-121-521-00 (C)	1-121-654-00 (B)	1-121-655-00 (D)	1-121-656-00 (C)
470	1-121-424-00 (B)	1-121-425-00 (C)	1-121-426-00 (C)	1-121-733-00 (B)	1-121-361-00 (E)	1-121-810-00 (D)
1000	—	1-121-736-00 (C)	1-121-245-00 (D)	1-121-657-00 (D)	1-121-388-00 (E)	1-123-061-00 (F)
2200	1-121-658-00 (B)	1-121-659-00 (C)	1-121-660-00 (D)	1-123-067-00 (F)	1-121-984-00 (F)	—
3300	1-121-661-00 (D)	1-123-075-00 (E)	1-123-071-00 (F)	—	—	—

CAP. (μF)	100 VOLT. PART No.	160 VOLT. PART No.	250 VOLT. PART No.	350 VOLT. PART No.
0.47	—	—	—	—
1.0	1-123-249-00 (A)	1-123-252-00 (A)	1-123-003-00 (B)	1-121-168-00 (B)
2.2	1-123-250-00 (A)	1-123-026-00 (B)	—	1-123-028-00 (B)
3.3	1-121-995-00 (A)	—	1-123-004-00 (B)	1-123-006-00 (C)
4.7	1-123-255-00 (A)	1-121-246-00 (B)	1-121-759-00 (B)	1-123-007-00 (D)
10	1-121-126-00 (B)	1-121-999-00 (B)	1-123-254-00 (C)	1-123-008-00 (D)
22	1-121-996-00 (C)	1-123-253-00 (C)	1-123-005-00 (D)	1-123-022-00 (D)
33	1-121-997-00 (C)	1-121-757-00 (C)	—	—
47	1-123-251-00 (C)	1-121-919-00 (C)	—	—
100	1-123-084-00 (E)	—	—	—

CERAMIC CAPACITORS (A)

RATING							
CAP. (pF)	50 VOLT. PART No.	CAP. (pF)	50 VOLT. PART No.	CAP. (pF)	50 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS (A)

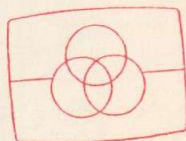
RATING → : Use the high voltage rated one.					
CAP. (μF)	25 VOLT. PART No.	50 VOLT. PART No.	CAP. (μF)	25 VOLT. PART No.	50 VOLT. PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060

1/4 WATT CARBON RESISTORS (A)

Note: Circled letter (A) is applicable to European models only.

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-576-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-577-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-578-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-579-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-582-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

Table with multiple columns and rows, likely a technical specification or parts list. The text is faint and mostly illegible due to low contrast and scan quality. Headers appear to include part numbers and descriptions.



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