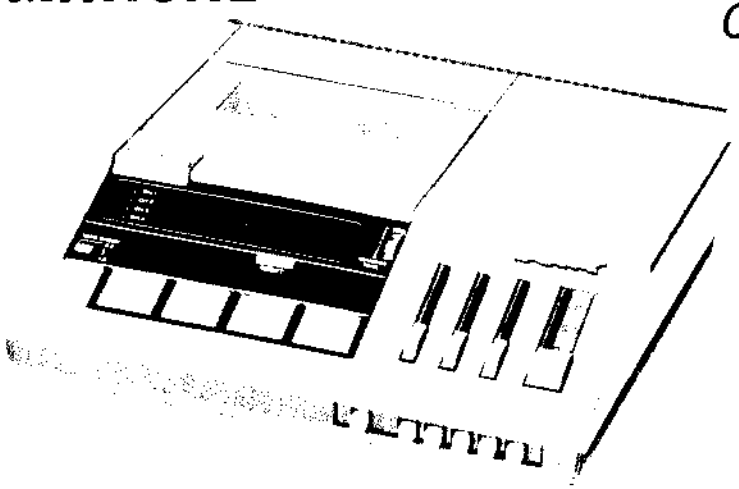
SERVICE MANUAL

US Model
Canadian Model



SPECIFICATIONS

Playback system	4 track 4 channel monaural
Fast winding time	Approx. 2 min. 20 sec. with Sony cassette C-90 at 2.4 cm/sec. Approx. 4 min. 40 sec. with Sony cassette C-90 at 1.2 cm/sec.
Frequency response	250-7000 Hz (2.4 cm/sec.) 250-4000 Hz (1.2 cm/sec.)
Speaker	Approx. 7 cm ($2^7/_8$ inches)
Power output	400 mW (at 10% harmonic distortion)
Output	Earphone jack (minijack) for 8-ohm earphone
Power requirements	120V AC, 60 Hz
Power consumption	200 mA
Dimensions	Approx. $224 \times 68 \times 232$ mm (w/h/d) ($8^7/_8 \times 2^3/_4 \times 9^1/_4$ inches) incl. projecting parts and controls
Weight	Approx. 2.5 kg (5 lb 9 oz)

Tape Transport Mechanism Type | MB-147-57

FEATURES

- Four channel transcriber for use with the BM-146 Sony court confer-corder.
- Selectable recorded tape speed: 1.2 or 2.4 cm/sec.
- Four digit tape counter compatible with Sony court confer-corder for locating recorded materials.
- Full remote control transcription by using the optional foot control unit.
- The tape speed and tone in playback mode can be controlled to keep pace with your transcribing speed.
- The REVERSE TIME control enables you to repeat a few words of dictated material as often as you like.
- All mode shut-off mechanism activates at the end of the tape in any operating mode.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ 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 ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES 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.

MICROFILM

TRANSCRIBER

SONY

TC

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 microampers). 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)

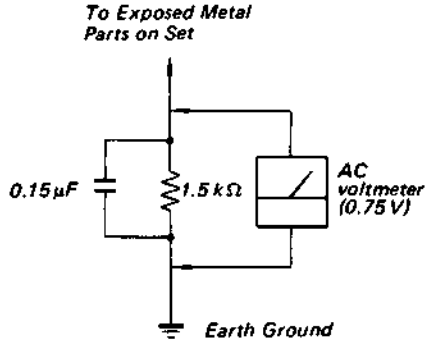
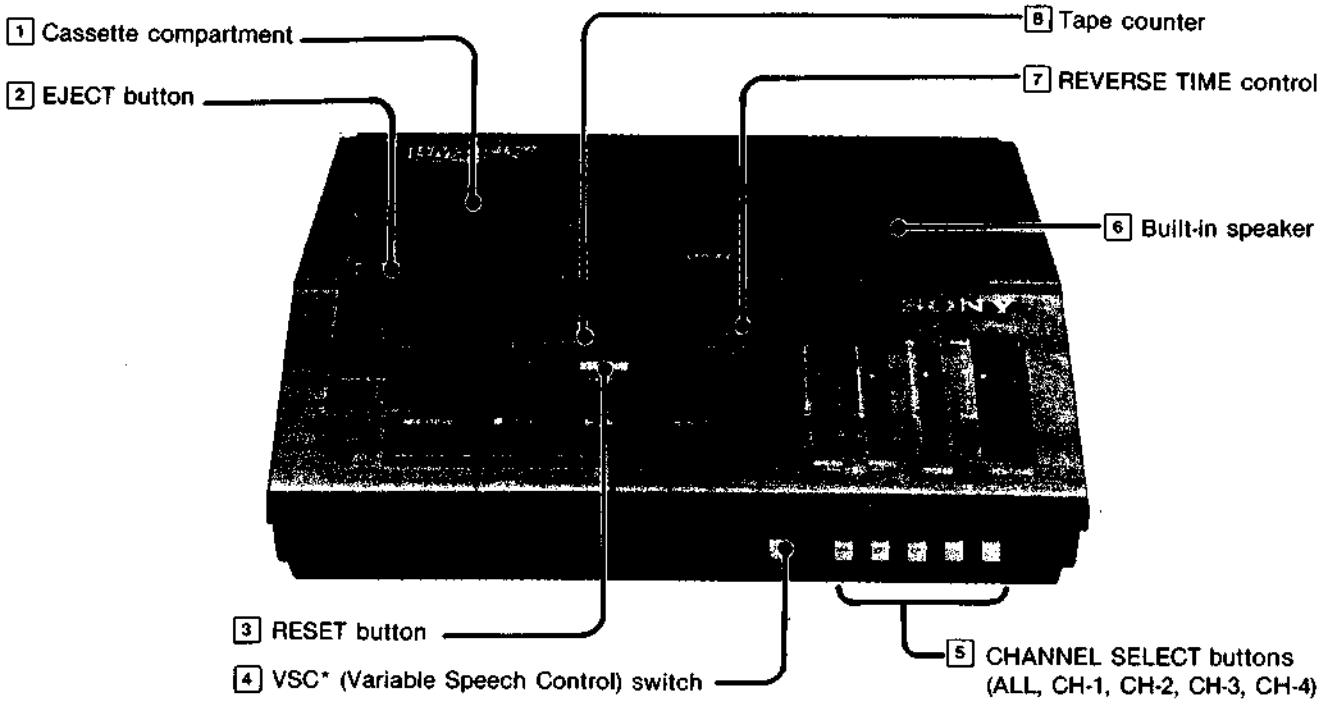


Fig. A. Using an AC voltmeter to check AC leakage.

LOCATION AND FUNCTION OF CONTROLS



For further details, refer to the page numbers next to each item.

1 Cassette compartment

2 ▲ EJECT button
Press to open the cassette compartment lid. Press again to pop up the cassette. When the tape is moving, this button activates only for opening the cassette compartment lid.

3 RESET button
Press the RESET at the tape beginning to return the counter readout to 0000 for proper indexing.

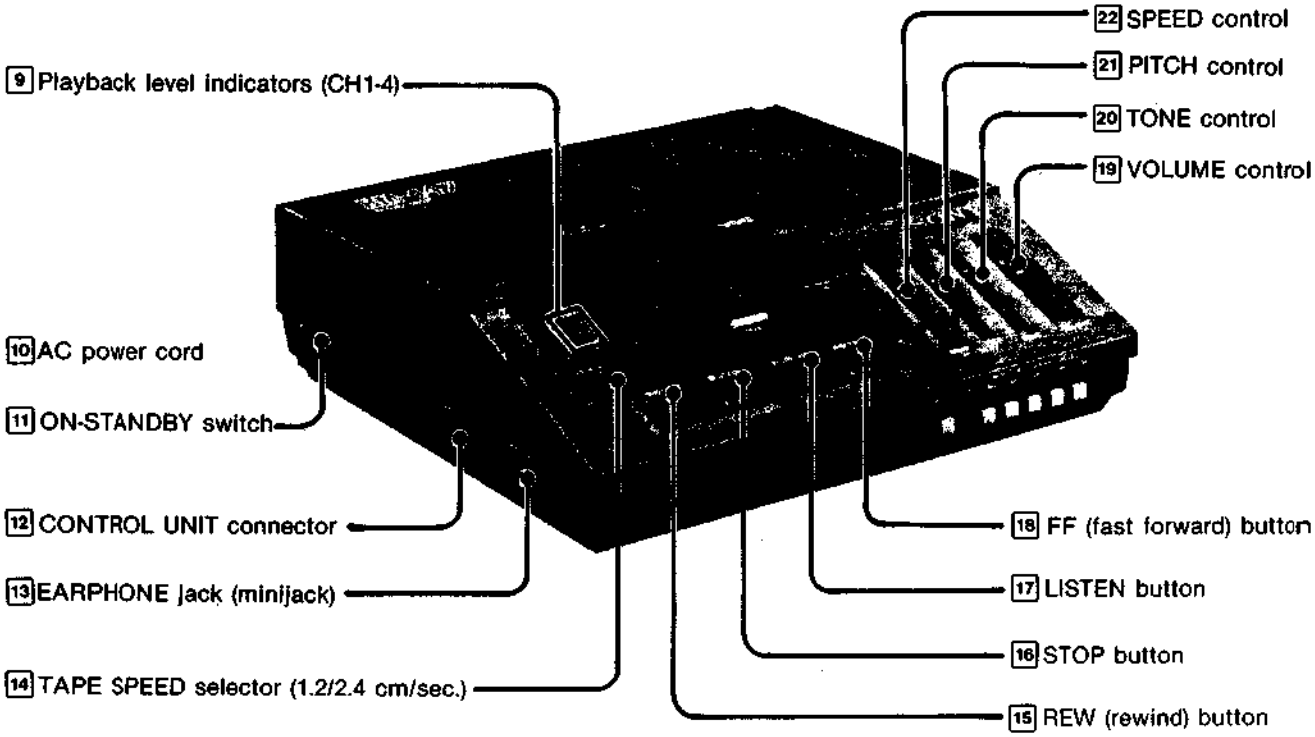
4 VSC* (Variable Speech Control) switch ❻
Set this switch to ON to activate this feature.
* VSC is a trade mark of VSC Limited.

5 CHANNEL SELECT buttons (ALL, CH-1, CH-2, CH-3, CH-4)
Press the buttons corresponding to the channels to be listened to.
Playback of more than one channel at the same time is possible, and all channels can be listened to by depressing the ALL button.

6 Built-in speaker

7 REVERSE TIME control ❻
Adjust the control to review the last few words each time you resume listening.

8 Tape counter
Use this four digit counter for locating the tape contents. Set the counter to 0000 by pressing the RESET button at the beginning of the tape. Using the ◄◄ REW or ►► FF button, or by using the Sony FS-75 foot control unit (optional), counter readouts noted on the Sony court confer-corder can be easily located.



9 Playback level indicators (CH1-4)
These indicators flicker in response to the level of the signals recorded on the tape, regardless of the volume setting or which channels are currently being selected.

10 AC power cord

11 ON-STANDBY switch
Set the switch to ON to turn on the power.

12 CONTROL UNIT connector
Connect the Sony FS-75 foot control unit (optional) for transcribing.

13 EARPHONE jack (minijack) ❻

14 TAPE SPEED selector (1.2/2.4 cm/sec.)
Select the desired tape speed for playback, 2.4 cm/sec. or 1.2 cm/sec., with this selector.

15 ◄◄ REW (rewind) button

16 ■ STOP button

17 ► LISTEN button

18 ►► FF (fast forward) button

❺

19 VOLUME control
Slide towards MAX for more volume.

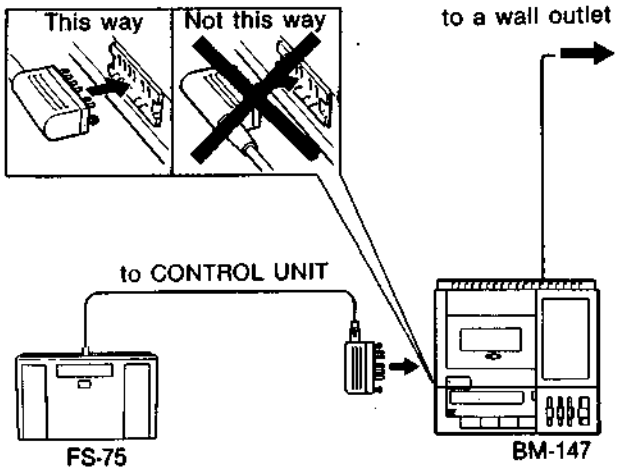
20 TONE control
Slide toward H for more treble, or L for less treble.

21 PITCH control ❻
Slide to adjust the tone of the playback sound. This switch functions only when the VSC* switch is set to ON.

22 SPEED control ❻
Slide to adjust the playback speed. This switch functions only when the VSC* switch is set to ON.

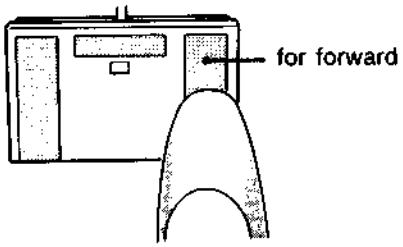
TRANSCRIPTION

To control the transcriber by foot, connect the Sony FS-75 foot control unit (optional).



OPERATION

1 Set ON-STANDBY switch to ON.
2 Insert the recorded cassette into the cassette compartment.
3 Rewind the tape to the beginning, then press RESET.
4 Set TAPE SPEED to select the tape speed of 2.4 cm/sec. or 1.2 cm/sec., at which the tape was originally recorded.
5 Press ► LISTEN of the transcriber, or step on the right side of the pedal of the foot control unit and keep it depressed to continue listening to the recorded material.

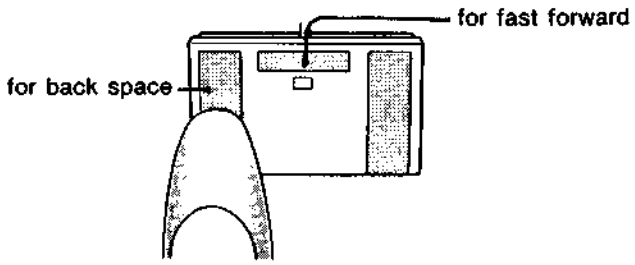


6 Adjust the volume and tone with VOLUME and TONE. Adjust SPEED, PITCH or REVERSE TIME, if necessary. (See next page.)
7 Press CHANNEL SELECT to select channels to be played back. Select a channel which is assigned to a particular person's voice. Press ALL to listen to all channels.
8 To stop the tape, press STOP, or release the pedal of the foot control unit.

Be sure to set ON-STANDBY of the transcriber to STANDBY after use. When the transcriber is not used for extended period of time, unplug the AC power cord. At the STANDBY position, a small amount of electricity is consumed to memory the tape counter readout.

• At the end of the tape, the automatic shut-off mechanism functions with an alarm sound (end alarm). Release the pedal of the foot control unit, press ▲ EJECT to take out the cassette.

Backspace function
When you step on the left side of the pedal, the tape will be rewound until the pedal is released or until you reach the beginning of the tape.



Fast forward function
When you step on the top center of the pedal, the tape will advance rapidly until the pedal is released or until you reach the end of the tape.

◄◄ REW and ►►FF buttons
For fast forward or rewind of the tape, press the ►► FF or ◄◄ REW button of the transcriber. To stop the fast forward or rewind mode, press ■ STOP.

• At the end of the tape in fast forward or rewind mode, the tape motion stops with an alarm sound.

VSC (Variable Speech Control)
The variable speech control feature makes it possible to play back the recorded tape faster than normal speed without distorting the voice. In order to activate this feature, turn the VSC switch on and adjust both the SPEED and PITCH controls so that the optimal sound quality is obtained.
Slide SPEED towards "+" (fast) **to increase the playback speed** up to as much as 80% faster than normal speed.
Slide PITCH towards "+" (low) **to lower the sound tone.**
When the VSC switch is turned off, the original speed is resumed regardless of the setting of SPEED and PITCH controls.

To change only the speed of the tape, slide PITCH to "0" and slide SPEED toward "+" to increase the speed up to as much as 80% faster than normal speed; toward "–" to decrease the speed up to as much as 20% slower.

REVERSE TIME control
To review the last few words each time you resume listening, adjust REVERSE TIME. When the control is turned upwards, the last portion of the tape will be reviewed by using the listen/stop function of the foot control unit.
The REVERSE TIME control operates only in conjunction with the foot control units.
The amount of time to be reviewed can be adjusted from 0 to approximately 10 seconds at 2.4 cm tape speed (approx. 20 second at 1.2 cm), with increment of about 1 second at 2.4 cm (2 seconds at 1.2 cm).

Use of earphone
Connect the Sony DE-35 or DE-36 dynamic earphone (optional) to EARPHONE.
Speaker sound will be disconnected.
The earphone level can be controlled by the VOLUME control.

ALARM SYSTEM

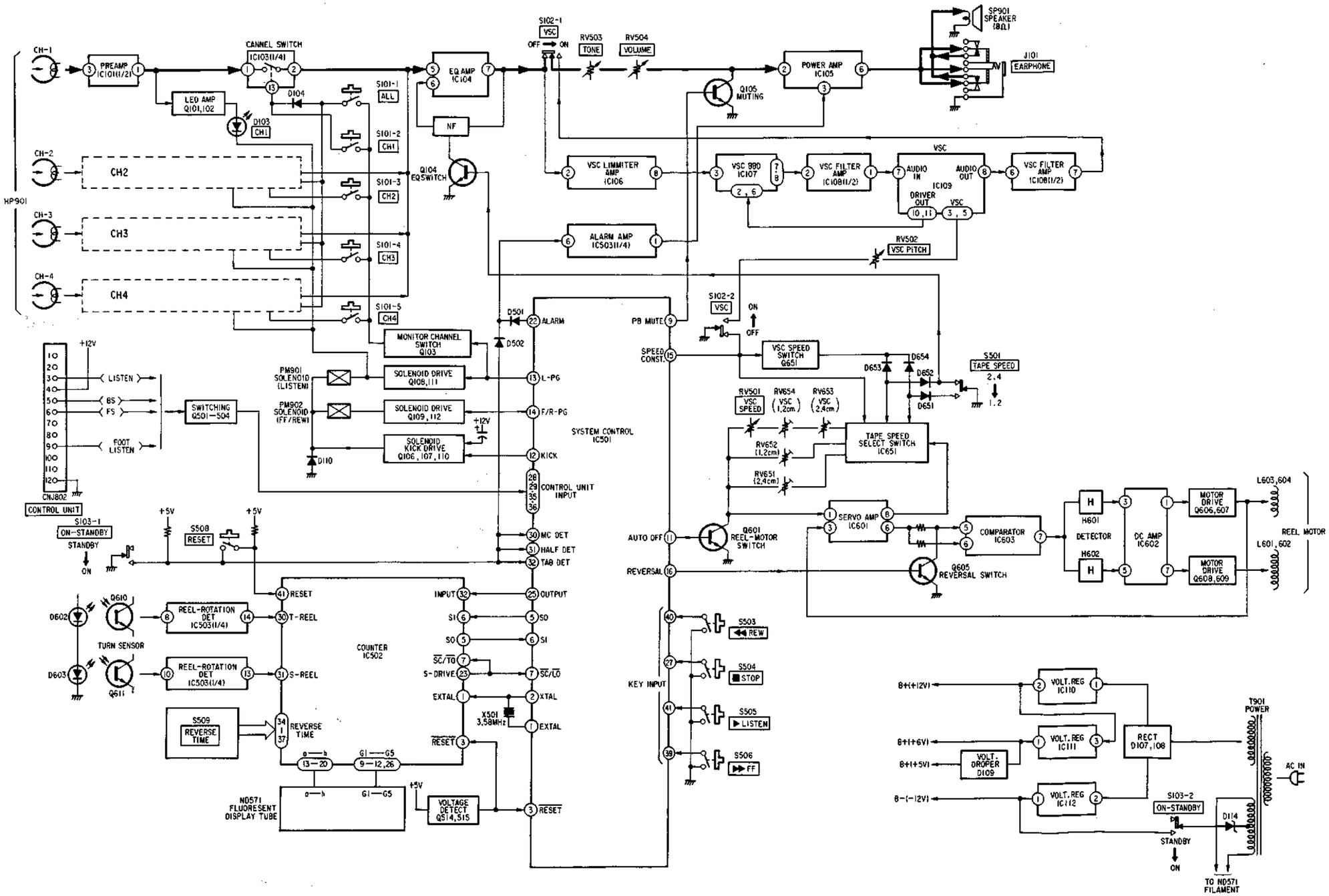
A continuous alarm sound will come on if the transcriber is set in operation in the cases listed below. To stop the alarm sounds, set each control to stop mode and proceed as described under "correction."

Mode of Operation		Occasion	Correction
BM-147	FS-75		
Listen FF	Listen Fast Forward	No cassette in the cassette compartment.	Insert a cassette.
		The cassette inserted is not firmly locked.	Press the cassette until it locks into place with a click.
		The tape of the cassette inserted has been completely wound onto the right reel.	Press the ◄◄ REW button to rewind the tape or turn the cassette over.
REW	Back-space	No cassette in the cassette compartment.	Insert a cassette.
		The cassette inserted is not firmly locked.	Press the cassette until it locks into place with a click.
		The tape has been completely wound onto the left reel.	Advance the tape.

When you operate the transcriber on its panel, the alarm sounds at the end of the tape, the auto shut-off mechanism functions and the alarm stops automatically.

SECTION 1
OUTLINE

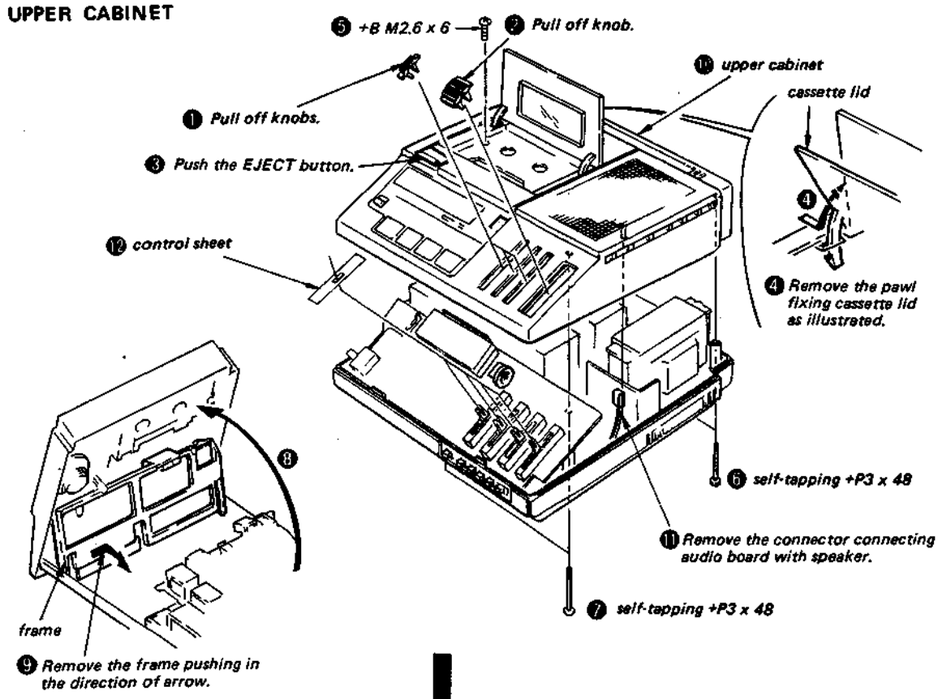
1-1. BLOCK DIAGRAM



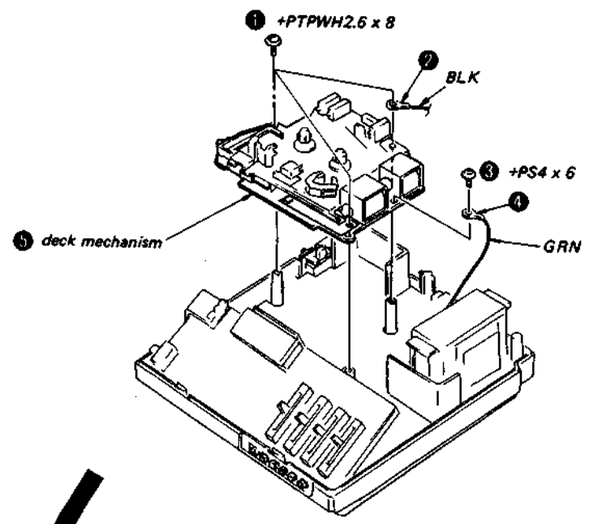
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

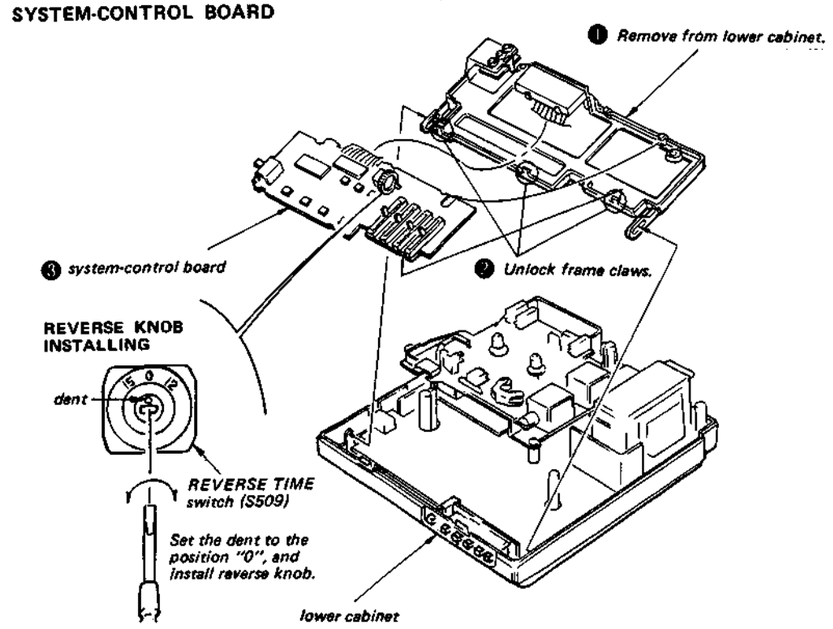
UPPER CABINET



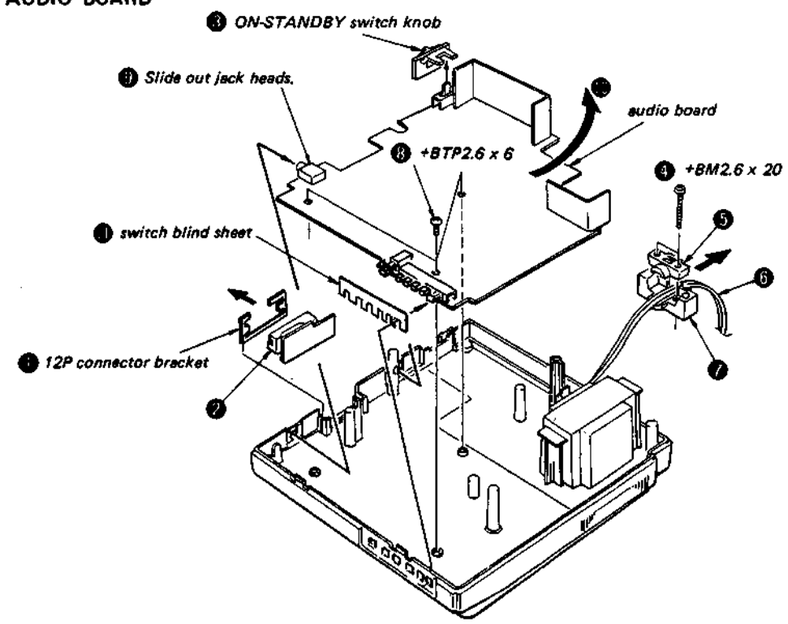
DECK MECHANISM



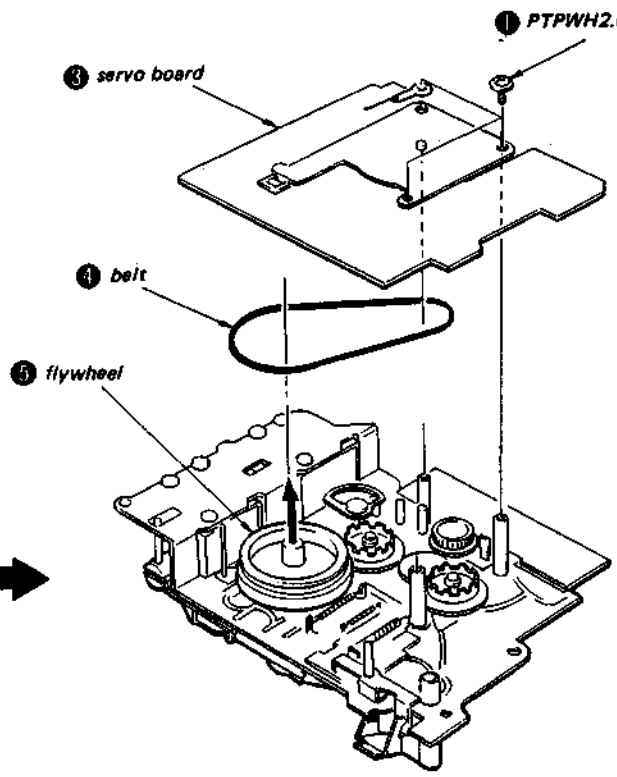
SYSTEM-CONTROL BOARD



AUDIO BOARD

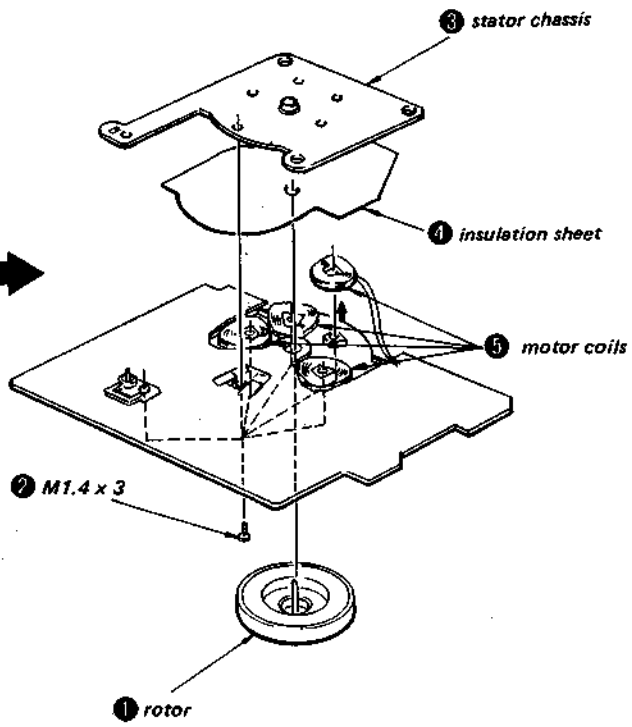


SERVO BOARD, BELT AND FLYWHEEL



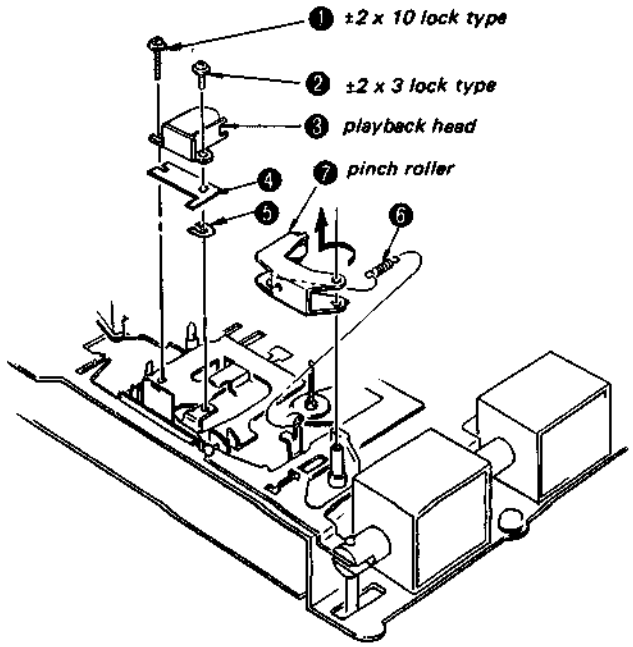
MOTOR ROTOR AND MOTOR COILS

Removable and replaceable BSL motor coils are used (new design).



PLAYBACK HEAD AND PINCH ROLLER

❶–❺: *playback head*
❻ ❼: *pinch roller*



SECTION 3
ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   playback head — pinch roller
   tape guide — rubber belts
   capstan
2. Demagnetize the 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.

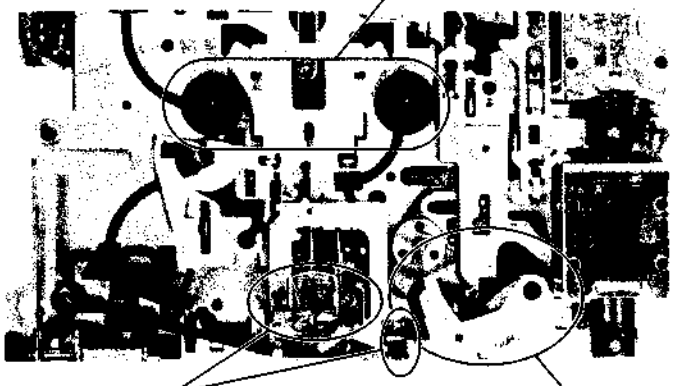
Tape Tension Measurement

Meter	Meter reading
CQ-403A	more than 100 g

Torque Measurement

Mode	Cassette type torque meter	Torque
LISTEN	CQ-102C	20 – 65 g-cm (0.28 – 0.9 oz-inch)
Fast Forward	CQ-201B	70 – 160 g-cm (1.0 – 2.2 oz-inch)
Rewind	CQ-201B	70 – 160 g-cm (1.0 – 2.2 oz-inch)
Back Tension	CQ-102C	1.5 – 4.5 g-cm (0.02 – 0.06 oz-inch)

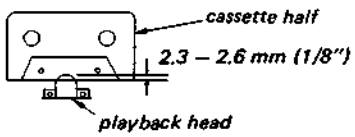
3-1. MECHANICAL ADJUSTMENTS



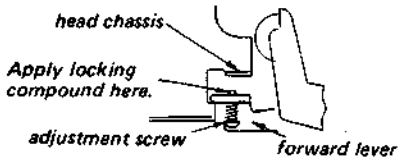
Head Stroke/Position Adjustment

– Stop and LISTEN modes –

1. Stop mode:
   Adjust head position so that head tip positions 2.3 – 2.6 mm (1/8") inside from the edge of cassette half.



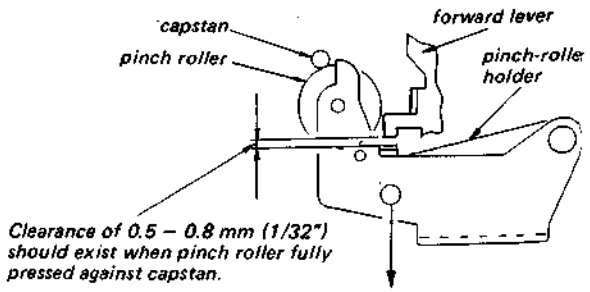
2. LISTEN mode:
   a) In LISTEN mode, adjust the screw so that head tip positions 3.3 – 3.4 mm (5/32") inside from the edge of cassette half.
   b) Repeat stop and LISTEN modes alternately a few times and finally, in LISTEN mode, check if position of head is not changed from that mode in step a).
   c) After adjustment, lock adjustment screw.



Pinch Roller Pressure Measurement

– LISTEN mode –

❷ *Slowly return the pinch roller and read the spring scale just when the pinch roller starts rotating.*

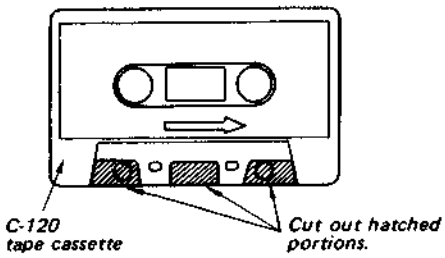


❶ *tension gauge*

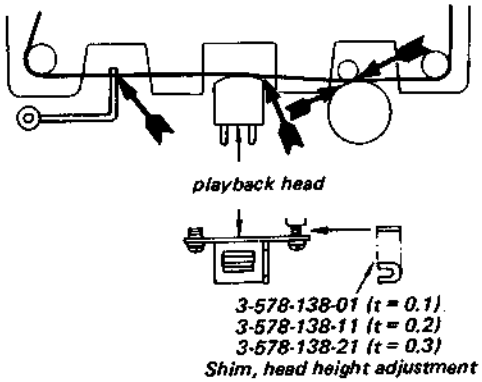
260 – 310 g (0.58 – 0.68 lb.)

Head Height Adjustment

1. Prepare an adjustment cassette as shown below.



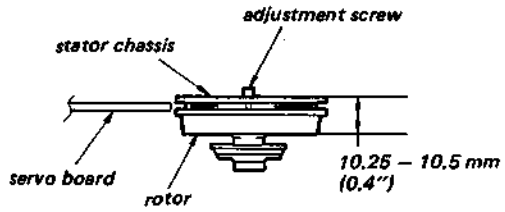
2. In LISTEN mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at portions shown by arrows.

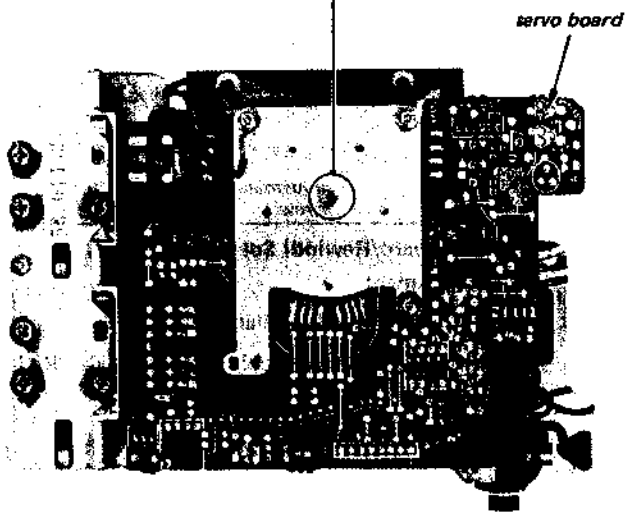


Rotor Thrust Adjustment

– Stop mode –

Adjust thrust screw so that the specified clearance is obtained.





Forward-Solenoid Position Adjustment

1. Unplug CNJ111 for PM901 at audio board.
2. Apply 17 V dc voltage to solenoid terminals. Red lead is positive side.
3. Loosen adjustment screws.
4. Move solenoid and tighten adjustmnt screws retaining the position of S cam as shown in Fig. A.
5. Plug CNJ111 to audio board and put the unit in listen mode. At this time, clearance should exit between forward lever and pinch lever as illustrated.
6. After adjustment, apply suitable locking compound to adjustment screws.

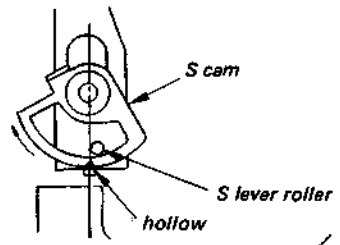
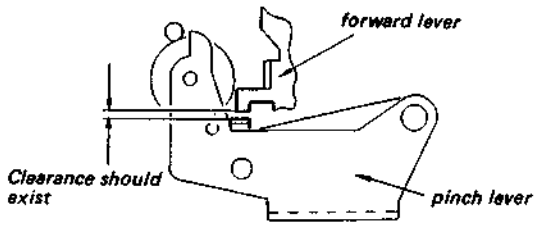
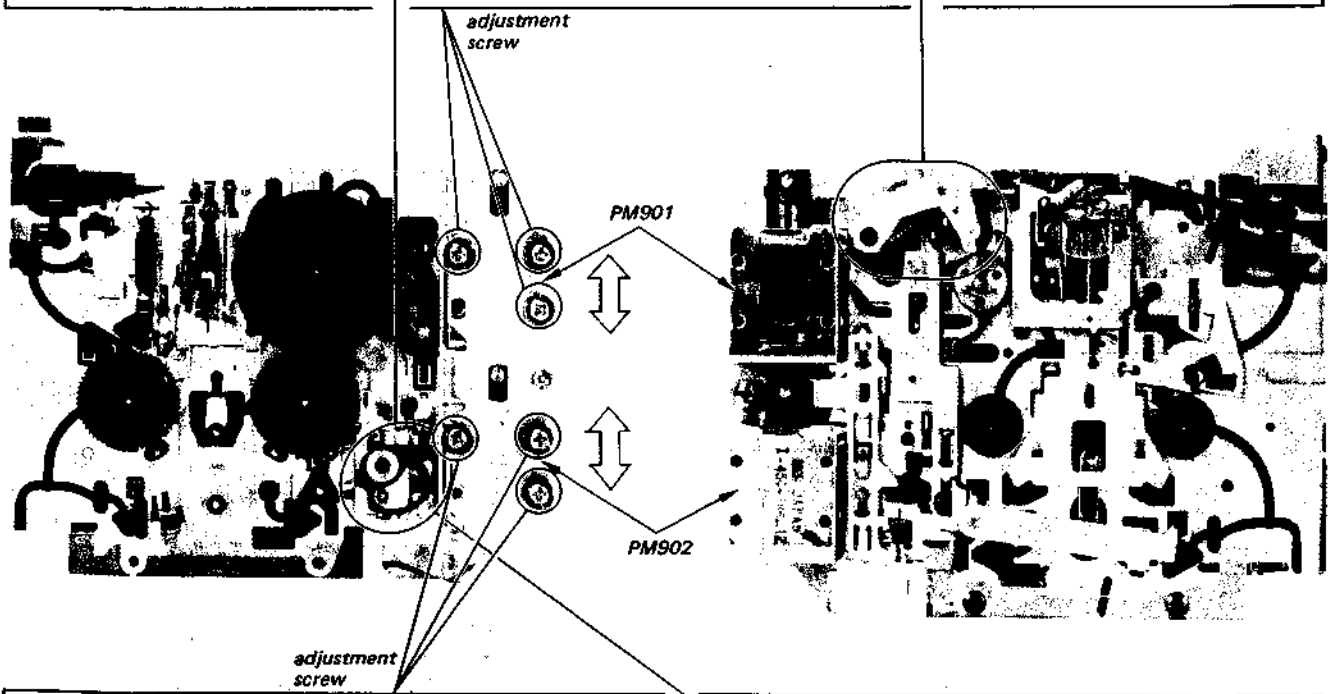


Fig. A Solenoid attracted





F/R (Fast-Forward/Rewind) Solenoid (PM902) Position Adjustment

1. Unplug CNJ112 for PM902 at audio board.
2. Apply 17 V dc voltage to solenoid terminals. Red lead is positive side.
3. Loosen adjustment screws.
4. Move solenoid and tighten adjustment screws retaining the position of S cam as shown in Fig. B.
5. After adjustment, apply suitable locking compound to adjustment screw.

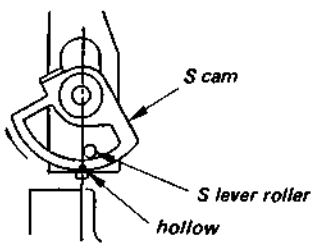
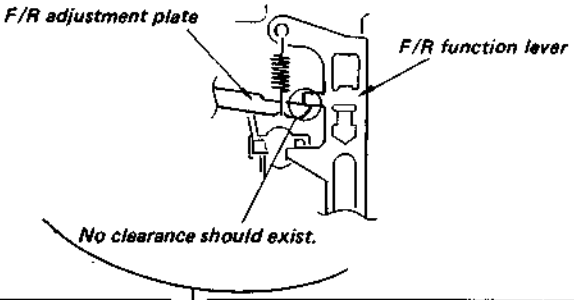


Fig. B Solenoid attracted

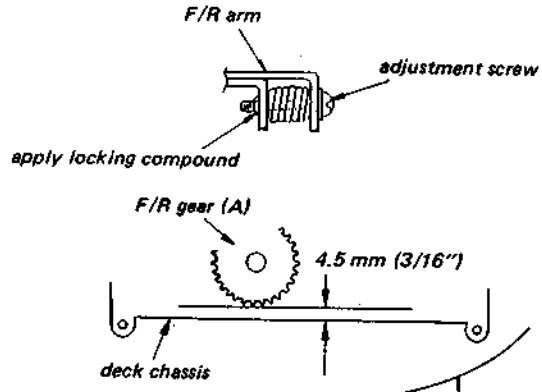
F/R Arm Position Adjustment

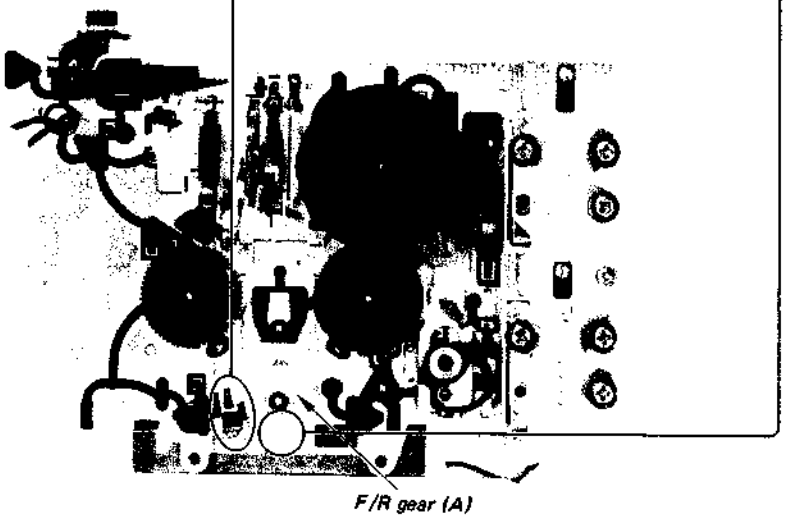
Note: This adjustment should be made after F/R solenoid (PM902) position adjustment.

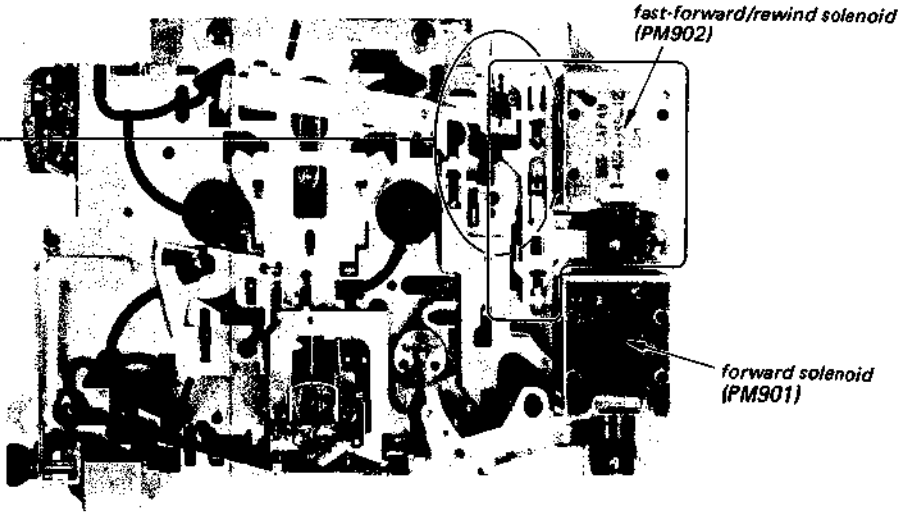
1. Put the unit in stop mode, and loosen adjustment screw.
2. Turn the adjustment screw clockwise so that F/R gear (A) positions 4.5 mm (3/16") inside from edge of deck chassis.



3. In fast-forward or rewind mode, clearance should not exist between F/R adjustment plate and F/R function lever.
4. After adjustment, lock adjustment screw with locking compound.







3-2. ELECTRICAL ADJUSTMENTS

Note:

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

  ON-STANDBY switch: ON
  VSC switch: OFF
  TAPE SPEED switch: 2.4 cm/sec.
  CHANNEL SELECT switch: CH-2
  TONE control: max. H
  VSC PITCH control: 0
  VSC SPEED control: minimum (--)
  VOLUME control: mechanical mid

- Standard Output Level:

	Speaker	Earphone
Load impedance	8 Ω	10 kΩ
Output level	0.775 V (0 dB)	0.775 V (0 dB)

- VSC PITCH, VSC Ramp Rate and VSC Noise Level Adjustments for the VSC chain interract each other. When one of them is readjusted, be sure to perform two other adjustments.

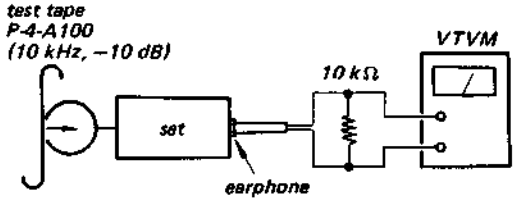
Playback Head Azimuth Adjustment

Setting:

CHANNEL SELECT switch: CH-2
VOLUME control: mechanical mid

Procedure:

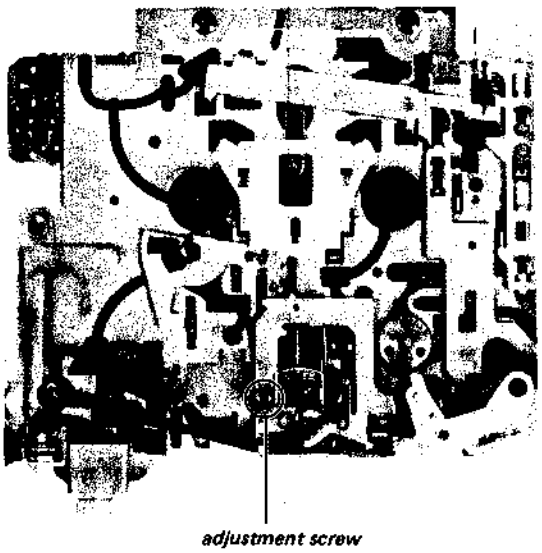
1. Mode: playback (LISTEN)



2. Turn the adjustment screw to obtain the maximum reading on VTVM.
   Adjustment should be finished with the screw in tightening direction.
3. After the adjustment, lock the adjustment screw with suitable locking compound.

Adjustment Location

– playback head –



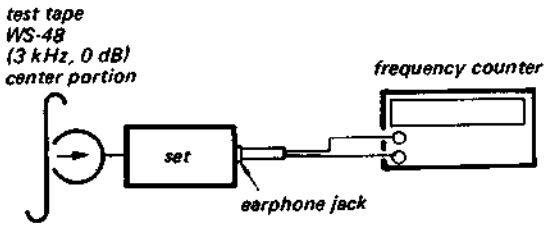
Tape Speed Adjustment

Setting:

CHANNEL SELECT swtich: CH-2
VSC PITCH control: 0

Setup:

Mode: playback (LISTEN)



Procedure:

1. VSC switch: OFF
   TAPE SPEED switch: 2.4 cm/sec.
   Adjust RV651 so that the reading on frequency counter is 1,500 ±4 Hz.
2. VSC switch: OFF
   TAPE SPEED switch: 1.2 cm/sec.
   Adjust RV652 so that the reading on frequency counter is 750 ±4 Hz.
3. VSC switch: ON
   TAPE SPEED switch: 2.4 cm/sec.
   VSC SPEED control: max. (+)
   Adjust RV653 so that the reading on frequency counter is 2,900 ±15 Hz.
4. VSC switch: ON
   TAPE SPEED switch: 1.2 cm/sec.
   VSC SPEED control: min. (–)
   Adjust RV654 so that the reading on frequency counter is 640 ±4 Hz.
5. VSC switch: ON
   TAPE SPEED switch: 1.2 cm/sec.
   VSC SPEED control: max. (+)
   Confirm that the reading on frequency counter is more than 1,350 Hz.
6. VSC switch: ON
   TAPE SPEED switch: 2.4 cm/sec.
   VSC SPEED control: min. (–)
   Confirm that the reading on frequency counter is less than 1,350 Hz.

VSC BBD Bias Adjustment

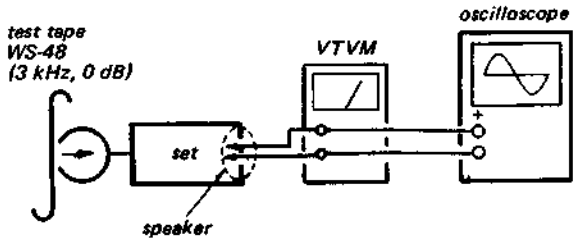
Note: Adjustments to the VSC chain should be made in this order.

Setting:

VSC switch: ON
VSC PITCH control: 0
VOLUME control: mechanical mid

Setup:

Mode: playback (LISTEN)

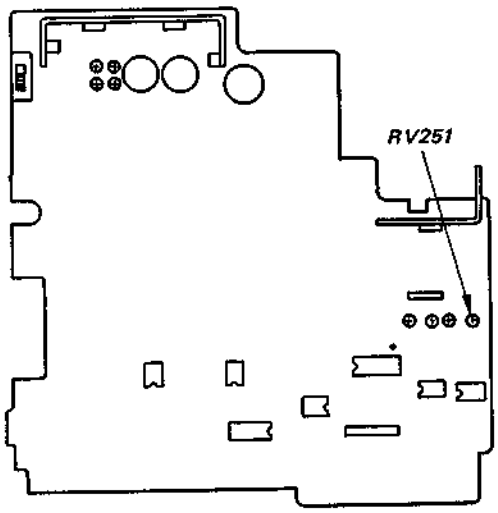


Procedure:

Adjust RV251 to obtain a maximum sinewave output signal.

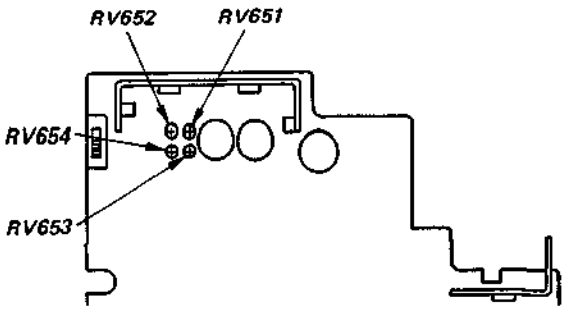
Adjustment Location

– audio board –



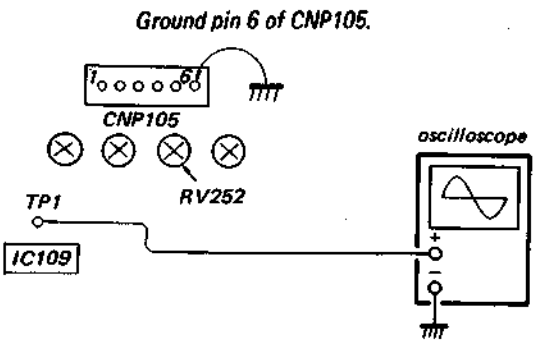
Adjustment Location:

– audio board –



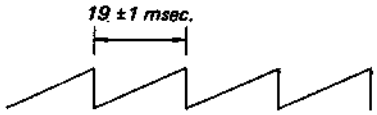
VSC Ramp Rate Adjustment

Setup:



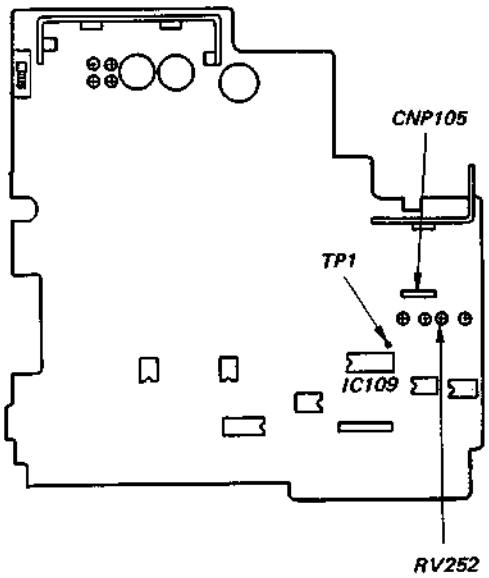
Procedure:

Adjust RV252 to obtain a sawtooth wave as shown below.



Adjustment Location

– audio board –



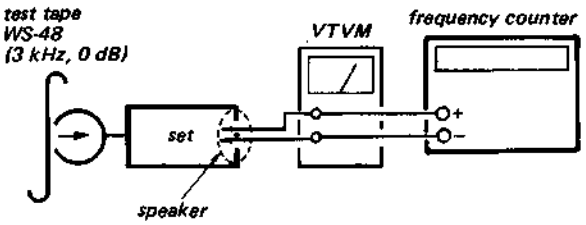
VSC PITCH Adjustment

Setting:

CHANNEL SELECT switch: CH-2
VSC switch: ON
VSC SPEED control: max. (+)
VSC PITCH control: max. (+)
VOLUME control: mechanical mid

Setup:

Mode: Playback (LISTEN)

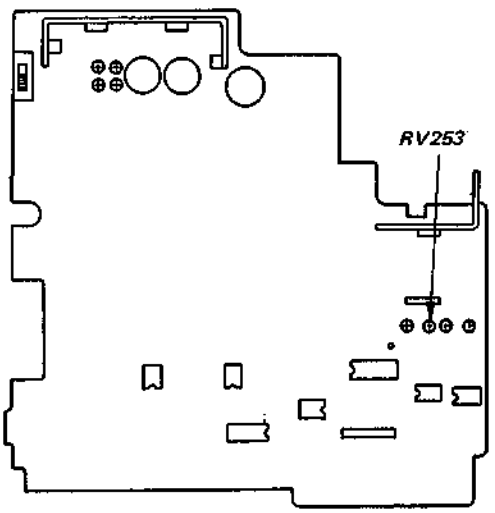


Procedure:

1. Set VSC PITCH control maximum (+).
2. Adjust RV253 so that the reading on frequency counter is 1,425 ±75 Hz.

Adjustment Location:

– audio board –



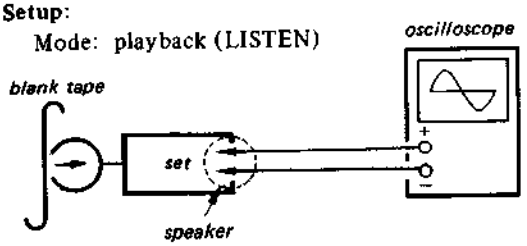
VSC Noise Level Adjustment

Setting:

VSC: switch: ON
VSC PITCH control: max. (+)

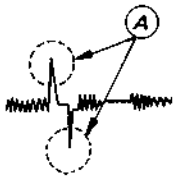
Setup:

Mode: playback (LISTEN)



Procedure:

Adjust RV254 so that the waveform at the point (A) on the oscilloscope becames minimum (minimum noise output level).

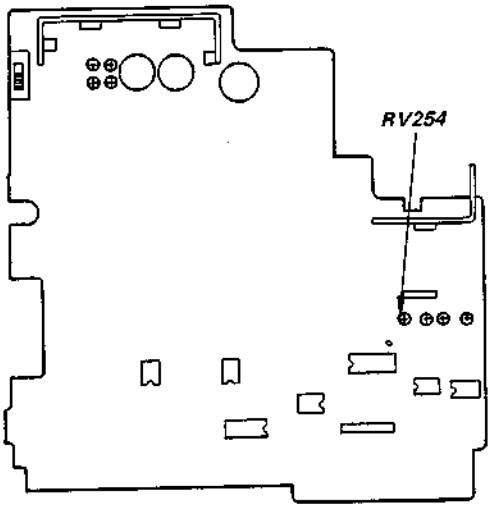


Simple Method:

Listen to the noise from the speaker and adjust RV254 for a minimum noise output level.

Adjustment Location:

– audio board –



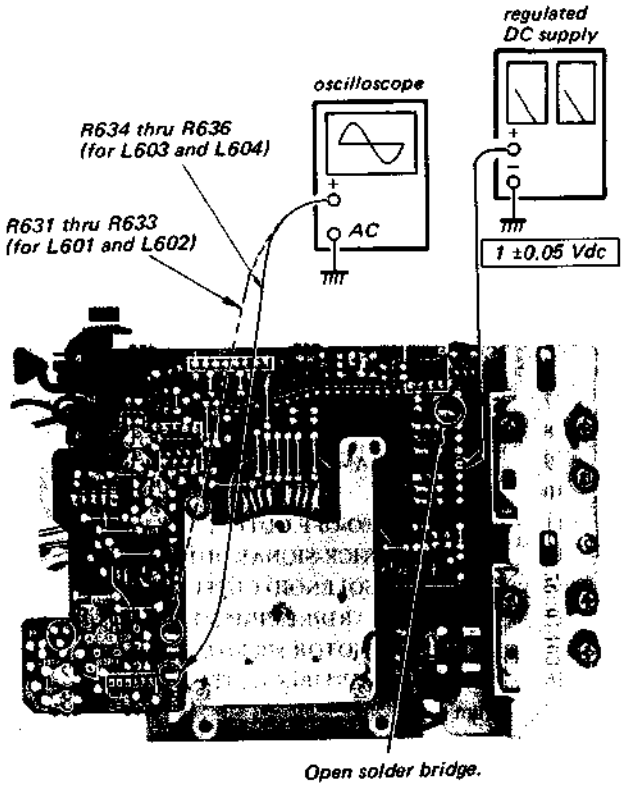
Motor Output Level Adjustment

Setting:

TAPE SPEED switch: 2.4 cm/sce.

Setup:

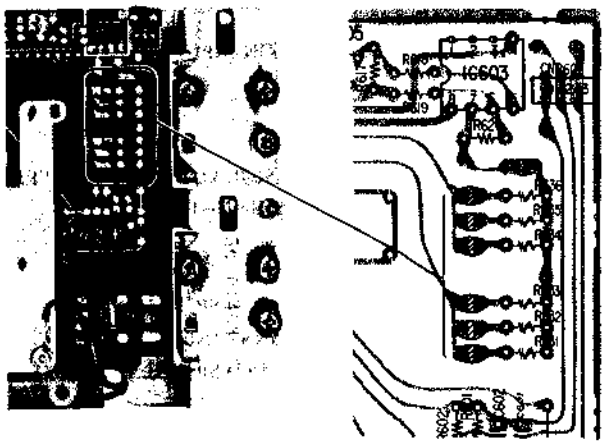
Mode: playback (LISTEN)



Procedure:

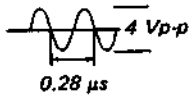
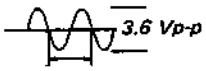
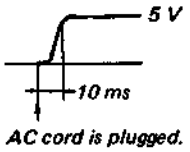
1. Adjust output voltage by selecting solder bridge for R631 through R633 for L601 and L602, and R634 through R636 for L603 and L604, to obtain an 8 ± 1 Vp-p level.
2. After the adjustment, remove external dc supply, and make a solder bridge again to the patterns opened at the setup above.

Adjustment Location

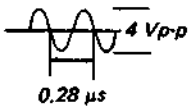


3-3. VOLTAGES AND WAVEFORMS

A. IC501 (Microcomputer for System Control)

Pin	Function	Voltages			
1	EXTAL (CRYSTAL OSCILLATOR)	 MICROCOMPUTER CLOCK			
2	XTAL (CRYSTAL OSCILLATOR)				
3	RESET	Reset microcomputer at the moment AC cord is plugged. 			
4	(not used)	5.2 V			
5	SO SERIAL OUTPUTS	SEE C. THRU E.			
6	SI SERIAL INPUTS	SEE C. THRU E.			
7	SC/TO SERIAL-PORT TIMING PULSE	SEE C. THRU E.			
8	(not used)	5.2 V			
9	PLAYBACK AMP MUTING OUTPUT	MUTING ON:	3.7 V	MUTING OFF:	0 V
10	(not used)				
11	MOTOR AUTO-OFF OUTPUT	MOTOR ON:	0.01 V	MOTOR STOP:	0.7 V
12	SOLENOID KICK-SIGNAL OUTPUT	SEE F.			
13	FORWARD SOLENOID OUTPUT	PM901 ON:	0.02 V	PM901 OFF:	4.3 V
14	FAST-FORWARD/REWIND SOLENOID OUTPUT	PM902 ON:	0.02 V	PM902 OFF:	5 V
15	CONSTANT MOTOR SPEED OUTPUT	CONSTANT SPEED:	0 V	VARIABLE SPEED:	4.7 V
16	MOTOR REVERSIBLE OUTPUT	FORWARD:	0.01 V	REVERSE:	0.7 V
17	(not used)				
18	(not used)				
19	(not used)	0 V			
20	(not used)				
21	Vss	0 V			
22	ALARM OUTPUT	ALARM ON:	0 V	ALARM OFF:	4 V
23	(not used)	5.2 V			
24	(not used)				
25	TIMING SIGNAL OUTPUT FOR IC502	SEE G.			
26	(not used)	5.2 V			
27	STOP SWITCH INPUT	S504 ON:	0 V	S504 OFF:	4.8 V
28	FOOT SWITCH INPUT FROM "FS-75"	SWITCH ON:	0.8 V	SWITCH OFF:	4.2 V
29	HAND UNIT (HU-70) LISTEN MODE INPUT	LISTEN ON:	0.8 V	LISTEN OFF:	4.2 V
30 31 32	STANDBY DETECTION INPUT	S103 ON:	0 V	S103 OFF:	4.5 V
33	(not used)	5.2 V			
34	(not used)	5.2 V			
35	FOOT-LISTEN MODE SIGNAL INPUT FROM "FS-75"	FOOT LISTEN ON:	0.7 V	STOP:	4.2 V
36	BACK-SPACE MODE SIGNAL INPUT	BACK SPACE ON:	0.6 V	STOP:	4.2 V
37	(not used)	5.2 V			
38	(not used)	5.2 V			
39	FAST-FORWARD BUTTON SIGNAL INPUT	S506 ON:	0.01 V	S506 OFF:	4.8 V
40	REWIND BUTTON SIGNAL INPUT	S503 ON:	0.01 V	S503 OFF:	4.8 V
41	LISTEN-BUTTON (BM-147) SIGNAL INPUT	S505 ON:	0.01 V	S505 OFF:	4.8 V
42	Vcc	5.2 V			

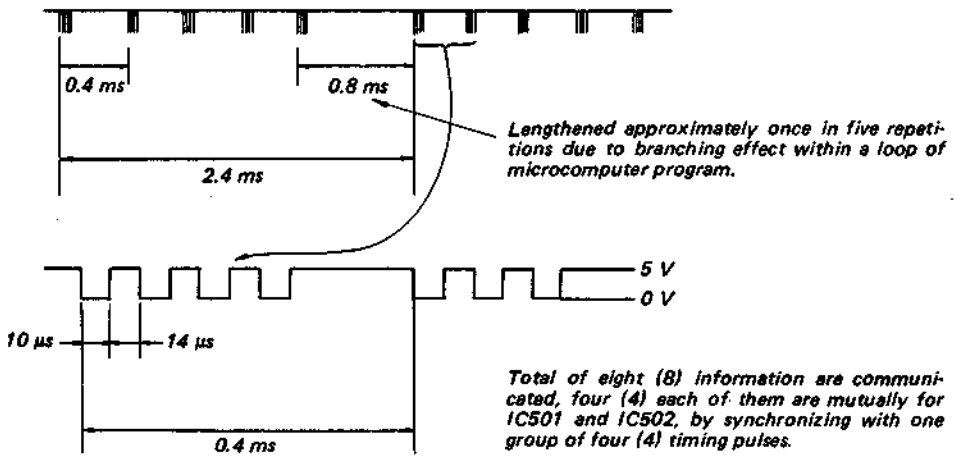
B. IC502 (Microcomputer for Display and Counter)

Pin	Function	Voltages
1	EXTAL (CRYSTAL OSILLATOR)	 4 Vp-p MICROCOMPUTER CLOCK
2	(not used)	0.28 μs
3	$\overline{\text{RESET}}$	Same as pin 3 of IC501.
4	(not used)	5.2 V
5	SO SERIAL OUTPUTS	SEE C. THRU E.
6	SI SERIAL INPUTS	SEE C. THRU E.
7	$\overline{\text{SC}}$/$\overline{\text{TO}}$ SERIAL PORT TIMING PULSE	SEE C. THRU E.
8	(not used)	5.2 V
9		
|	FLUORESCENT DISPLAY DRIVE	SEE H.
20		
21	Vss	0 V
22	(not used)	0 V
23	SERIAL-DRIVE SIGNAL OUTPUT	SEE C. THRU E.
24	(not used)	0 V
25	(not used)	5.2 V
26	FLUORESCENT DISPLAY DRIVE	SEE H.
27	(not used)	5.2 V
28	(not used)	5.2 V
29	(not used)	5.2 V
30	TAKE-UP REEL SIGNAL INPUT	SEE I.
31	SUPPLY REEL SIGNAL INPUT	SEE I.
32	TIMING-SIGNAL INPUT FROM IC501	SEE G.
33	(not used)	0 V
34	PARTIAL REVERSE AMOUNT CONTROL	
|	SIGNAL INPUT	SEE J.
37		
38	(not used)	5.2 V
39	(not used)	5.2 V
40	(not used)	5.2 V
41	RESET BUTTON SIGNAL INPUT	S508 (RESET) ON: 0 V S508 (RESET) OFF: 4.9 V
42	Vcc	5.2 V

C. Serial-port Timing Pulses

IC501 pin 7 $\overline{SC/TO}$
IC502 pin 23 SERIAL-DRIVE SIGNAL OUTPUT
IC502 pin 7 $\overline{SC/TO}$

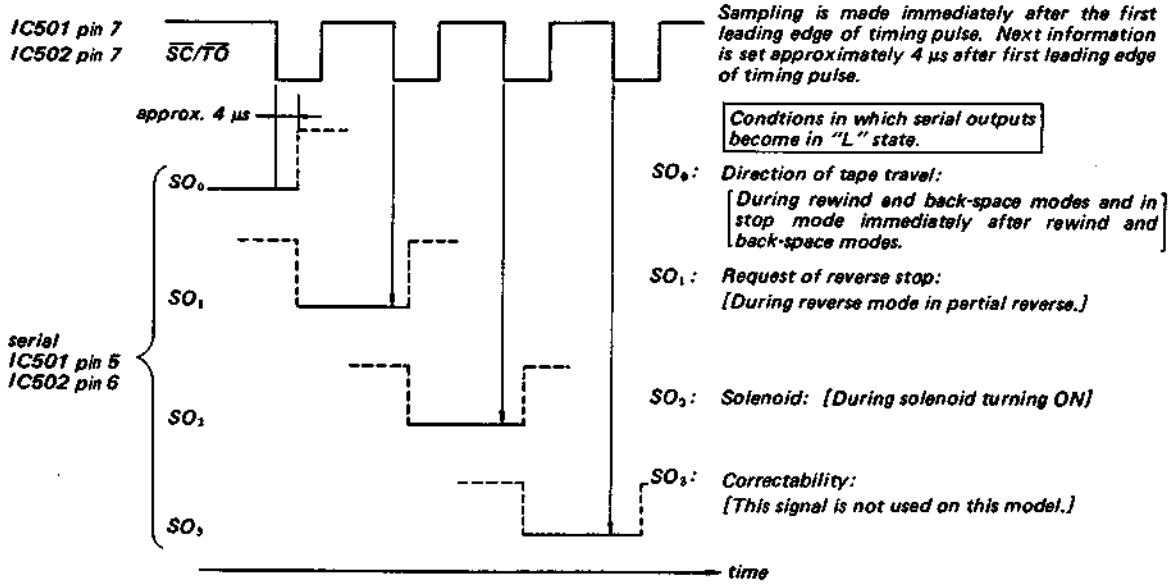
Serial-port timing pulses are sent from pin 23 of IC502 to pins 7 of IC501 and IC502.



D. Serial-port

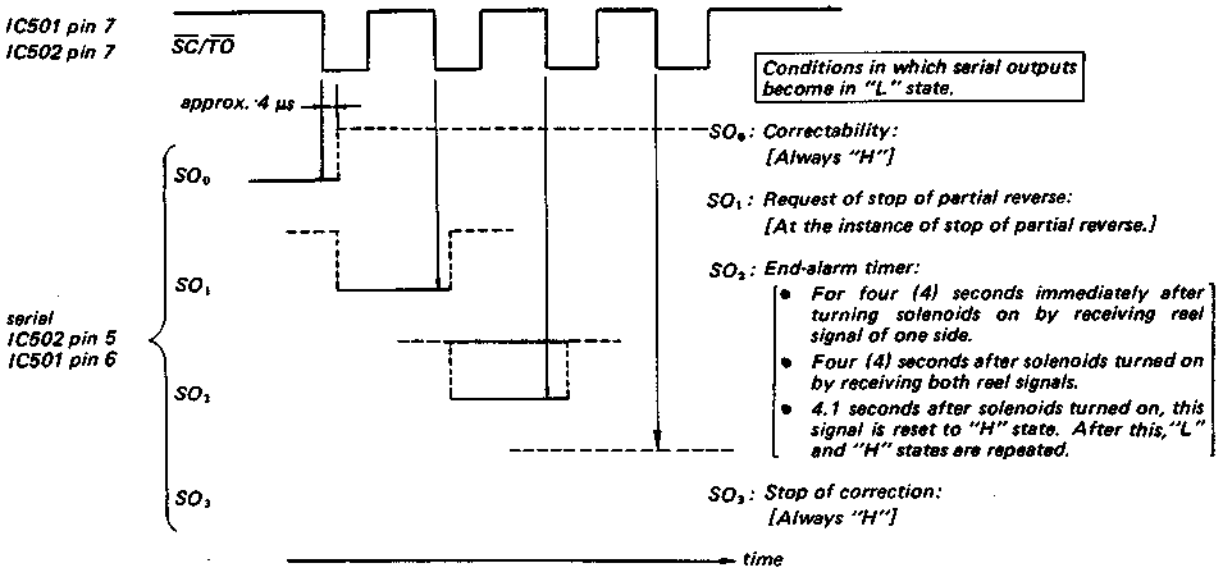
IC501 pin 5 SO SERIAL OUTPUTS
IC502 pin 6 SI SERIAL INPUTS

Information are transmitted from IC501 to IC502 by synchronizing with serial-port timing pulses.

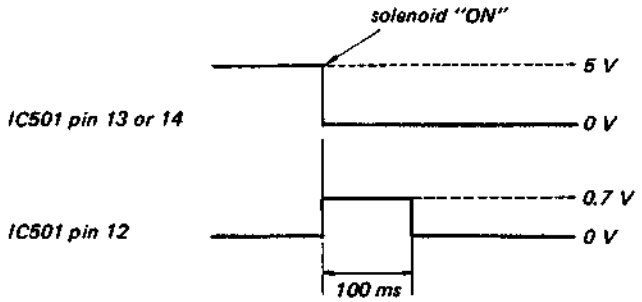


E. Serial Port

IC502 pin 5 SO SERIAL OUTPUTS
IC501 pin 6 SI SERIAL INPUTS
} Information are transmitted from IC502 to IC501 by synchronizing with serial-port timing pulses.



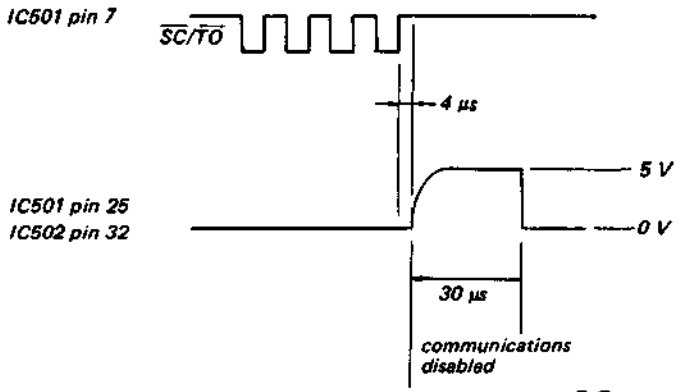
F. IC501 Pin 12 Solenoid Kick Output Signal



For about 100 ms, solenoid kick signal turns "ON" immediately after forward or fast-forward/rewind solenoid turned ON.

G.

IC501 pin 25 Timing signal output for IC502
IC502 pin 32 Timing signal input from IC501
} Disables communications, between IC501 and IC502, made by serial-port timing pulses SC/TO.

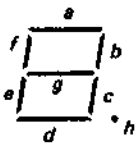


Immediately after completion of communications between IC501 and IC502 by SC/TO, pin 25 of IC501 and pin 32 of IC502 become in "H" state during which communications between them is disabled, and internal data processing is made in IC501. After internal data processing in IC501, this link recovers its "L" state, i.e. release of disabled communications.

H. Fluorescent Display Drive (Dynamic)

H-1) SEGMENTS

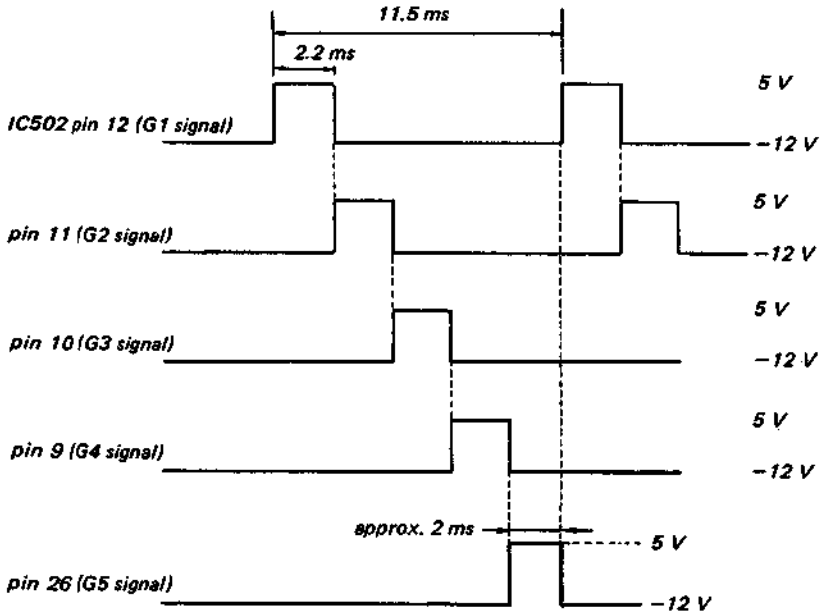
	IC502 Pin No.							
	13	14	15	16	17	18	19	20
Segment	a	b	c	d	e	f	g	h



H-2) GRIDS

Grid	G5	G4	G3	G2	G1
IC502 Pin No.	26	9	10	11	12

H-3) Relationship of Grid-drive Signals

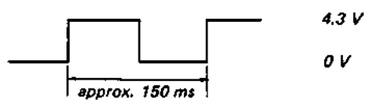


I. Detections of Take-up Reel and Supply Reel Signals

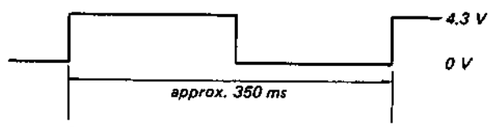
IC502 pin 30 TAKE-UP REEL
IC502 pin 31 SUPPLY REEL

- **Forward**

Take-up reel signal at start of tape and supply reel signal at end of tape, C-90.



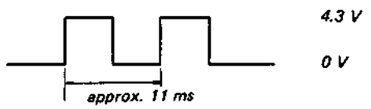
Supply reel signal at start of tape and take-up reel signal at end of tape, C-90.



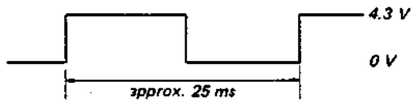
Repetition rate changes according to tape position.

- **Fast-forward and Rewind**

Take-up reel signal at start of tape and supply reel signal at end of tape, C-90.



Supply reel signal at start of tape and take-up reel signal at end of tape, C-90.



Repetition rate changes according to tape position.

J. Partial-reverse Amount Control-signal Inputs

Pin of IC502	REVERSE TIME (Digital) Switch S509	Position of S509									
		0	1	2	3	4	5	6	7	8	9
34	pin 1	H	L	H	L	H	L	H	L	H	L
35	pin 2	H	H	L	L	H	H	L	L	H	H
36	pin 3	H	H	H	H	L	L	L	L	H	H
37	pin 4	H	H	H	H	H	H	H	H	L	L

H = 5.25 V
L = 0 V

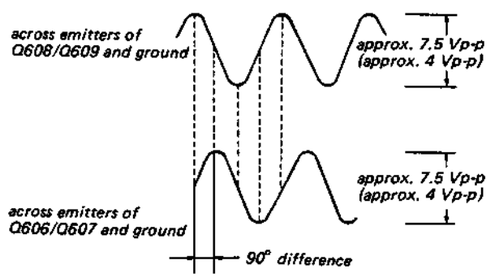
K. IC601 (Servo Controller)

CONDITIONS:
TAPE SPEED selector:
no mark: 2.4 cm/sec.
( ): 1.2 cm/sec.
VSC SWITCH: OFF
MODE: FORWARD
TAPE: DC-90 put in

Pin	Function	
1	TIME CONSTANT	approx. 12 ms (approx. 25 ms); 1.1 V (1 V); 0 V
2	TIME CONSTANT	0.8 V; 0.1 V
3	FREQUENCY GENERATOR INPUT	0.4 V; −0.6 V
4	GND	0 V
5	TIME CONSTANT	approx. 11 ms; 1.9 V (1.7 V); 1.5 V (0.9 V)
6	OUTPUT	0.9 V (0.7 V); 0.5 V (0.3 V)
7	Vcc	6.5 V
8	REGULATED VOLTAGE OUTPUT	2.2 V

L. Q606 thru Q609 (Servo Output or Motor Driver)

CONDITIONS:
TAPE SPEED selector:
no mark: 2.4 cm/sec.
( ): 1.2 cm/sec.



M. IC603 (Comparator)

Pin 7: About the same as pin 6 of IC603.

N. IC503 (Alarm Amp/Cue Detector Amp/Reel-rotation Detector)

Pin	Function	
1	ALARM OUTPUT	approx. 0.6 ms; 1 V; 0 V
6	ALARM CIRCUIT	ALARM OFF: 4.0 V; ALARM ON: 0.7 V / 0.3 V
7	ALARM CIRCUIT	ALARM OFF: 0.35 V
8	TAKE-UP REEL SIGNAL INPUT	5.2 V; 0 V
9	TAKE-UP REEL CIRCUIT	4.2 V; 0.9 V
14	TAKE-UP REEL SIGNAL OUTPUT	4.3 V; 0 V
		See I. detections of take-up reel and supply reel signals for repetition rates.
10	SUPPLY REEL SIGNAL INPUT	Same as pin 8 of IC503.
11	SUPPLY REEL CIRCUIT	Same as pin 9 of IC503.
13	SUPPLY REEL SIGNAL OUTPUT	Same as pin 14 of IC503.
3	B+	5.3 V
12	GND	0 V

K. IC601 (Servo Controller)

CONDITIONS:
TAPE SPEED selector:
no mark: 2.4 cm/sec.
( ): 1.2 cm/sec.
VSC SWITCH: OFF
MODE: FORWARD
TAPE: DC-90 put in

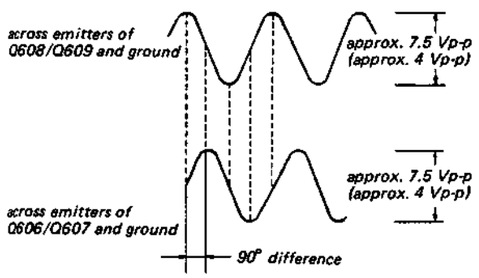
Pin	Function	
1	TIME CONSTANT	approx. 12 ms (approx. 25 ms); 1.1 V (1 V); 0 V
2	TIME CONSTANT	0.8 V; 0.1 V
3	FREQUENCY GENERATOR INPUT	0.4 V; −0.6 V
4	GND	0 V
5	TIME CONSTANT	approx. 11 ms; 1.9 V (1.7 V); 1.5 V (0.9 V)
6	OUTPUT	0.9 V (0.7 V); 0.5 V (0.3 V)
7	Vcc	6.5 V
8	REGULATED VOLTAGE OUTPUT	2.2 V

N. IC503 (Alarm Amp/Cue Detector Amp/Reel-rotation Detector)

Pin	Function	
1	ALARM OUTPUT	approx. 0.6 ms; 1 V; 0 V
6	ALARM CIRCUIT	ALARM OFF: 4.0 V; ALARM ON: 0.7 V; 0.3 V
7	ALARM CIRCUIT	ALARM OFF: 0.35 V
8	TAKE-UP REEL SIGNAL INPUT	5.2 V; 0 V
9	TAKE-UP REEL CIRCUIT	4.2 V; 0.9 V
14	TAKE-UP REEL SIGNAL OUTPUT	4.3 V; 0 V
		See i. detections of take-up reel and supply reel signals for repetition rates.
10	SUPPLY REEL SIGNAL INPUT	Same as pin 8 of IC503.
11	SUPPLY REEL CIRCUIT	Same as pin 9 of IC503.
13	SUPPLY REEL SIGNAL OUTPUT	Same as pin 14 of IC503.
3	B+	5.3 V
12	GND	0 V

L. Q606 thru Q609 (Servo Output or Motor Driver)

CONDITIONS:
TAPE SPEED selector:
no mark: 2.4 cm/sec.
( ): 1.2 cm/sec.



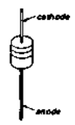
M. IC603 (Comparator)

Pin 7: About the same as pin 6 of IC603.

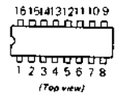
SECTION 4
DIAGRAMS

• Semiconductor Lead Layouts

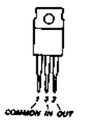
1SS119
HZS9.1NB2



BA1701

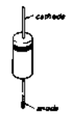


NJM79M12A

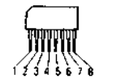


2SC1475-13

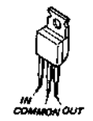
1T22A



CX069A

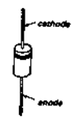


TA78012AP



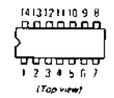
2SC2458
DTA114ES
DTC124ES

10E-2
RD3.9E-B

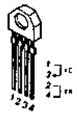


L78M06

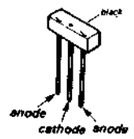
TC4066BP
μPC339C



THS103A



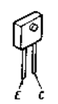
S3VC40



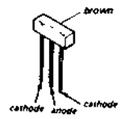
LA3210ALC
LA4140

2SA1175
2SD1020

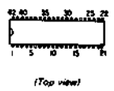
PH104



S3VC40R

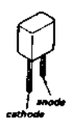


MB8851-587L
MB8851B-668L



2SB734

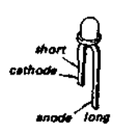
SE304-K



MN3204
NJM4560D-D
μPC4558C

2SB1013
2SD1387

SG205D



4-1. MOUNTING DIAGRAM

– Conductor Side –

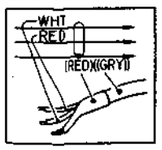
● Refer to page 27 Semiconductor Lead Layouts.

● SEMICONDUCTOR LOCATION

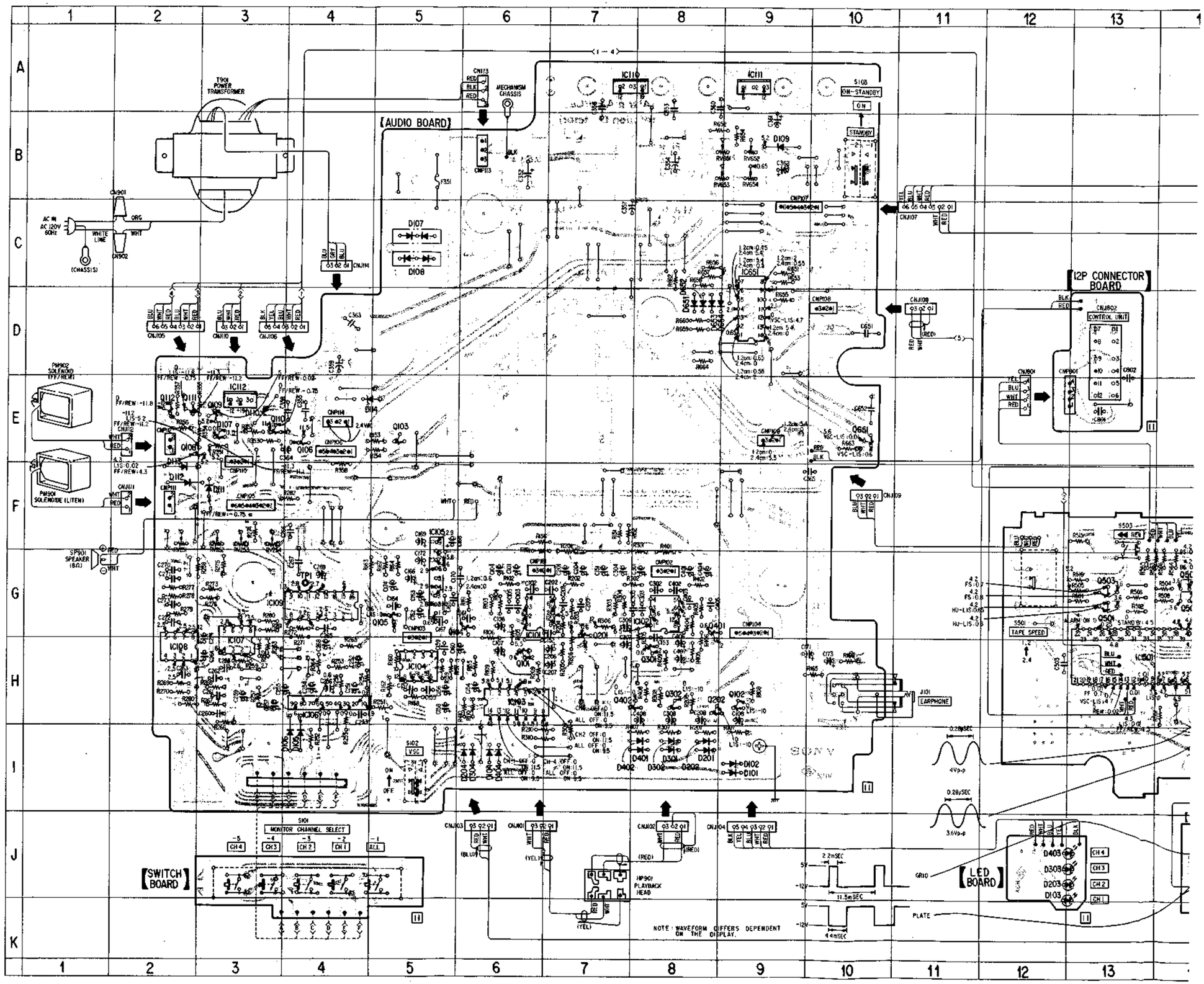
Ref. No.	Location	Ref. No.	Location
D101	I-9	Q101	H-6
D102	I-9	Q102	H-9
D103	J-12	Q103	E-5
D104	I-6	Q104	G-6
D105	I-4	Q105	G-5
D106	I-4	Q106	E-4
D107	C-5	Q107	E-3
D108	C-5	Q108	E-2
D109	B-9	Q109	E-3
D110	E-3	Q110	E-3
D111	F-3	Q111	E-2
D112	F-2	Q112	E-2
D113	F-2	Q201	G-7
D114	E-4	Q202	H-8
D201	I-8	Q301	H-8
D202	I-8	Q302	H-8
D203	J-12	Q401	G-8
D204	I-6	Q402	H-8
D301	I-8	Q501	G-13
D302	I-8	Q502	G-14
D303	J-12	Q503	G-13
D304	I-6	Q504	G-14
D401	I-8	Q514	I-17
D402	I-8	Q515	H-17
D403	J-12	Q601	E-15
D404	I-6	Q605	A-18
D501	G-16	Q606	B-16
D502	G-17	Q607	B-16
D601	B-16	Q608	C-16
D602	C-19	Q609	C-16
D603	C-16	Q610	C-18
D651	D-8	Q611	C-16
D652	D-8	Q651	E-10
D653	D-8		
D654	D-9		
IC101	G-6		
IC102	G-8		
IC103	H-6		
IC104	H-5		
IC105	F-5		
IC106	H-4		
IC107	H-3		
IC108	H-2		
IC109	G-4		
IC110	A-7		
IC111	A-9		
IC112	E-3		
IC501	H-13		
IC502	H-15		
IC503	G-16		
IC601	A-17		
IC602	B-16		
IC603	A-19		
IC651	C-9		

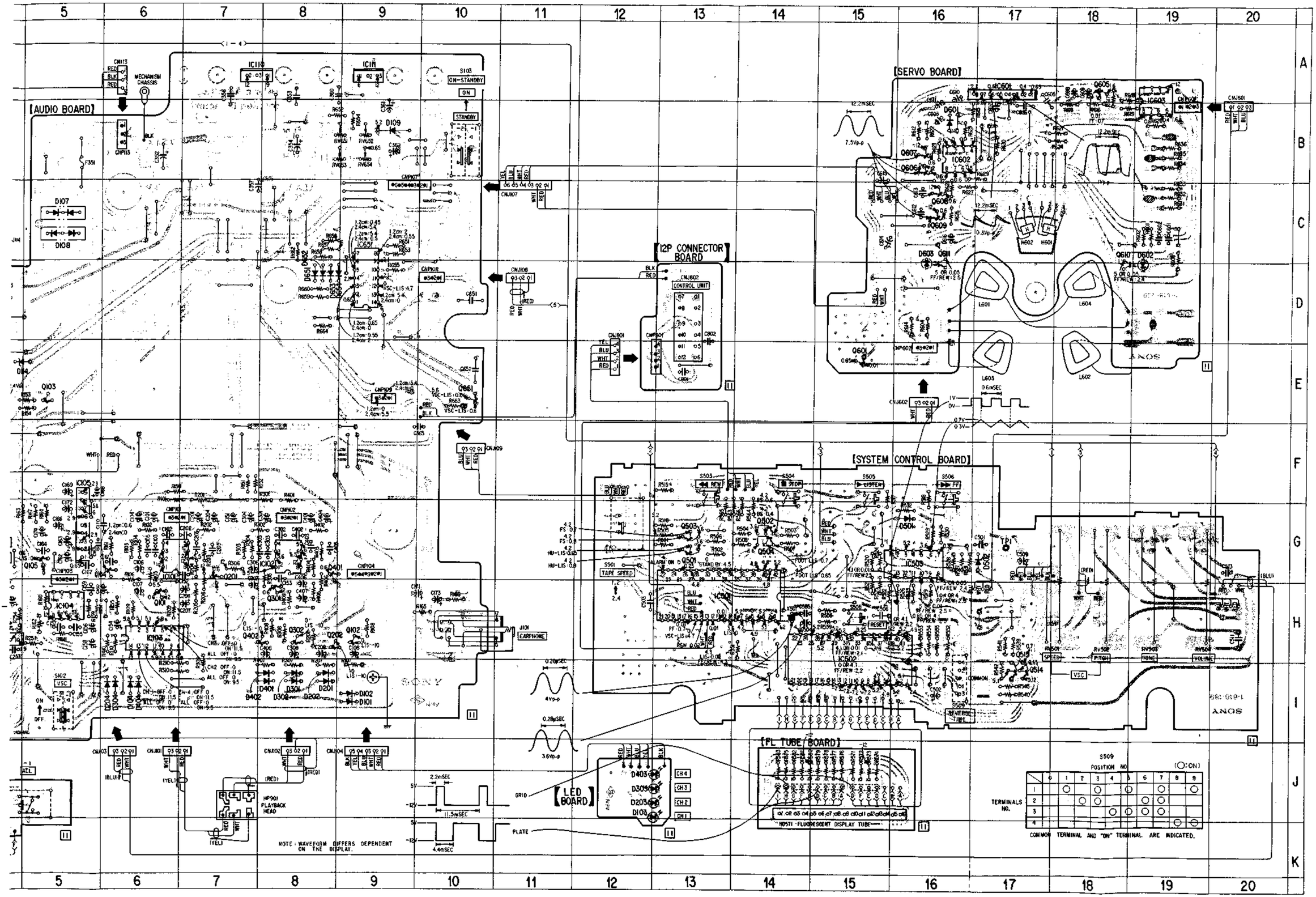
Note:

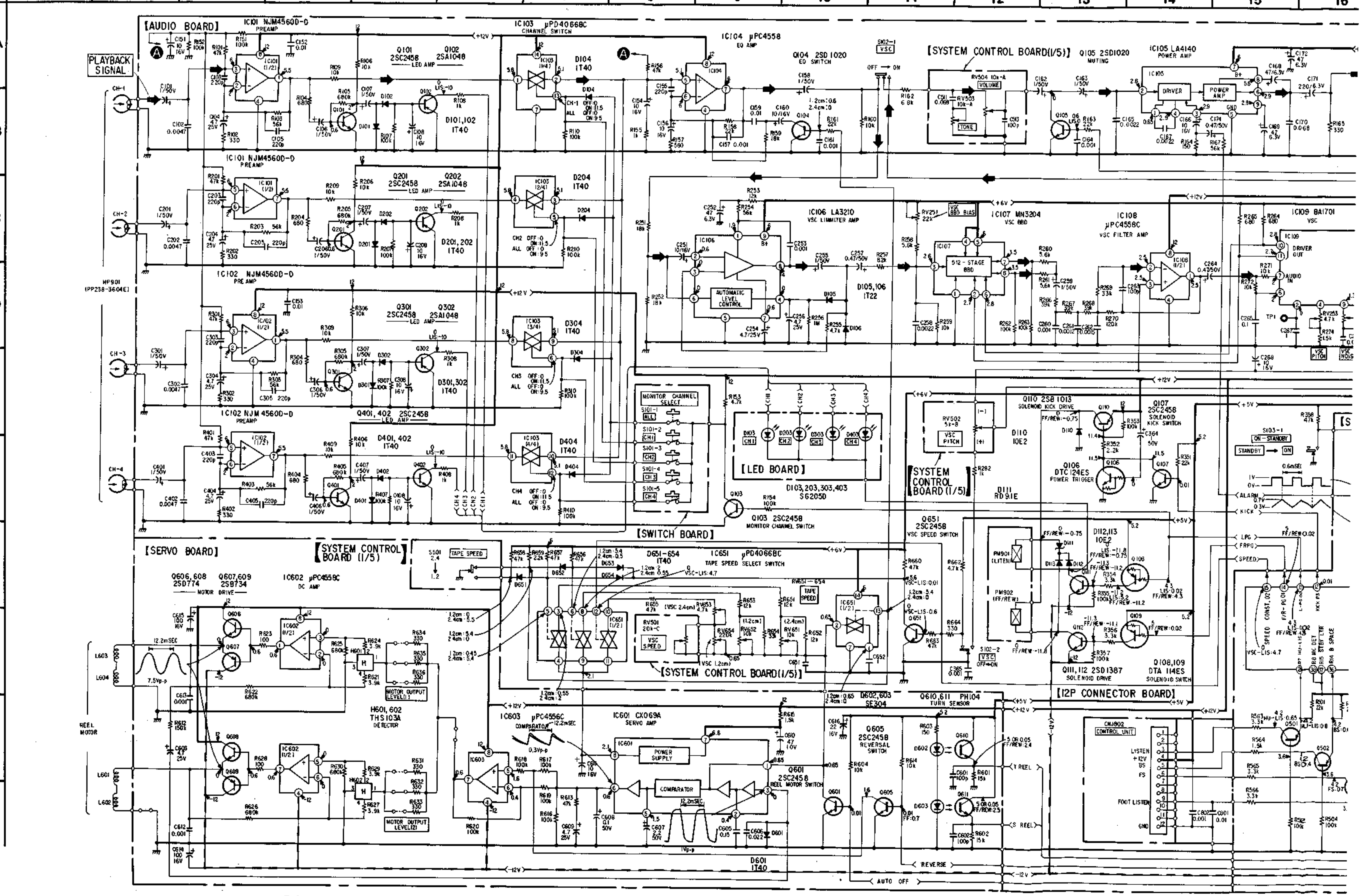
- Color code or sleeving over the end of the jacket

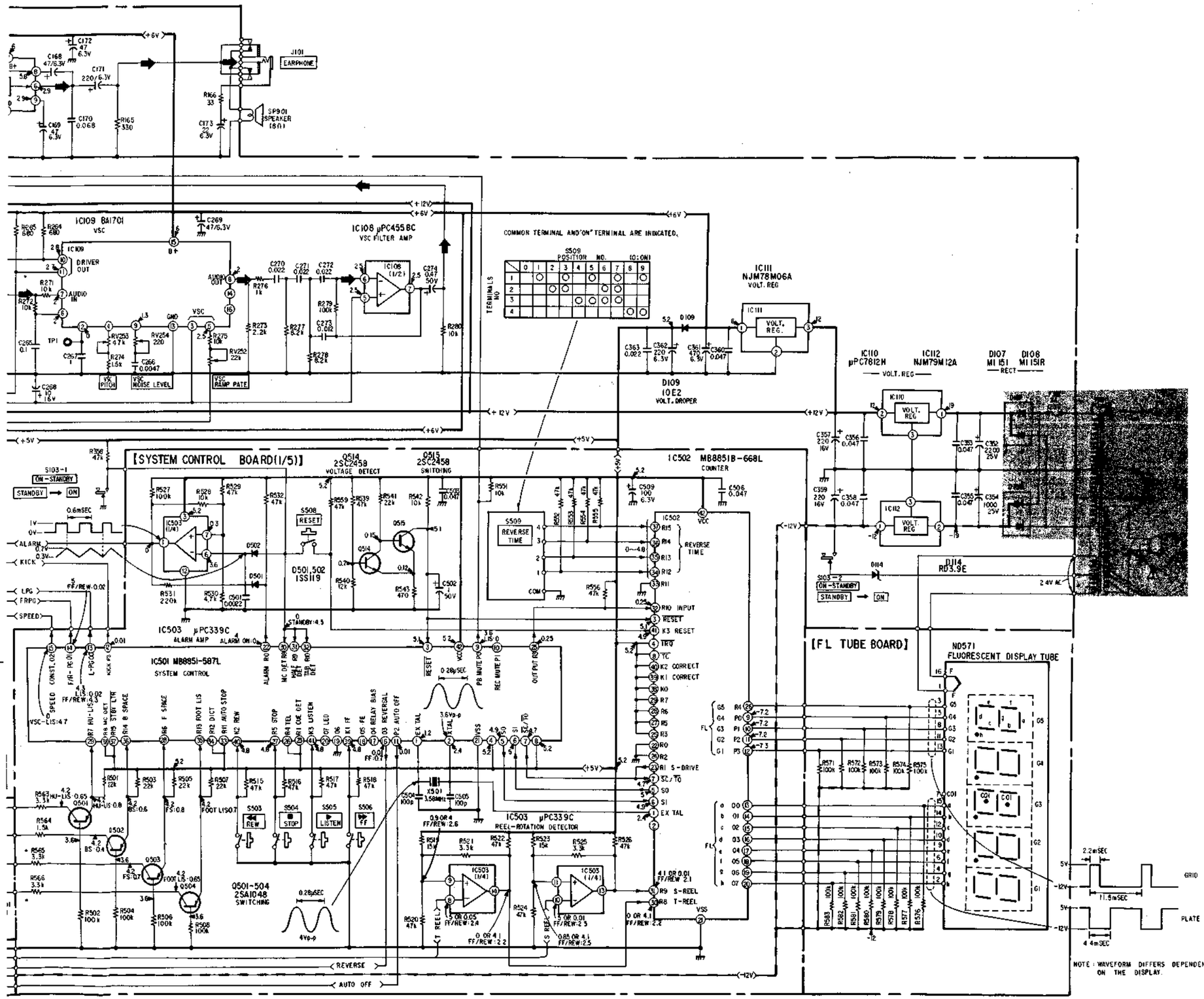


- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.




[AUDIO BOARD]
[SERVO BOARD]
[I2P CONNECTOR BOARD]
[SYSTEM CONTROL BOARD]
[FL TUBE BOARD]
[LED BOARD]
MECHANISM CHASSIS
HP901 PLAYBACK HEAD
NOTE : WAVEFORM DIFFERS DEPENDENT ON THE DISPLAY.
S509
POSITION NO. (O:ON)
TERMINALS NO.
COMMON TERMINAL AND "ON" TERMINAL ARE INDICATED.


[AUDIO BOARD]
PLAYBACK SIGNAL
IC101 NJM4560D-D PREAMP
IC102 NJM4560D-D PREAMP
IC103 μPD4066BC CHANNEL SWITCH
IC104 μPC4558 EQ AMP
Q104 2SD1020 EQ SWITCH
[SYSTEM CONTROL BOARD(1/5)]
Q105 2SD1020 MUTING
IC105 LA4140 POWER AMP
IC106 LA3210 VSC LIMMITER AMP
IC107 MN3204 VSC BBD
IC108 μPC4558C VSC FILTER AMP
IC109 BA1701 VSC
MONITOR CHANNEL SELECT
[LED BOARD]
D103,203,303,403 SG205D
Q103 2SC2458 MONITOR CHANNEL SWITCH
[SWITCH BOARD]
[SERVO BOARD]
IC602 μPC4558C DC AMP
Q606,608 2SD774 Q607,609 2SB734 MOTOR DRIVE
H601,602 THS103A DETECTOR
IC603 μPC4556C COMPARATOR
IC601 CX069A SERVO AMP
IC651 μPD4066BC TAPE SPEED SELECT SWITCH
Q651 2SC2458 VSC SPEED SWITCH
Q601 2SC2458 REEL MOTOR SWITCH
D601 1T40
Q602,603 SE304
Q605 2SC2458 REVERSAL SWITCH
Q610,611 PH104 TURN SENSOR
Q110 2SB1013 SOLENOID KICK DRIVE
Q107 2SC2458 SOLENOID KICK SWITCH
Q106 DTC124ES POWER TRIGGER
Q111,112 2SD1387 SOLENOID DRIVE
Q108,109 DTA114ES SOLENOID SWITCH
[12P CONNECTOR BOARD]
CNJ802 CONTROL UNIT
REEL MOTOR



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ➡ : signal path.
- ▬▬ : B+ bus.
- ▬▬ : B– bus.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 kΩ/V).

no mark	: STOP
1.2 cm	: STOP (TAPE SPEED switch: 1.2 cm position)
2.4 cm	: STOP (TAPE SPEED switch: 2.4 cm position)
LIS	: LISTEN
VSC-LIS	: LISTEN (VSC switch: ON)
HU-LIS	: LISTEN (with HU-70)
FOOT LIS	: LISTEN (with LS-75)
FF	: FAST FORWARD
REW	: REWIND
BS	: BACK SPACE (with HU-70 or FS-75)
FS	: F SPACE (with HU-70 or FS-75)

- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken to ground in STOP mode by using oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S101	MONITOR CHANNEL SELECT	OFF
S102	VSC	OFF
S103	ON-STANDBY	STANDBY
S501	TAPE SPEED	2.4
S503	◀◀ : REW	OFF
S504	■ : STOP	OFF
S505	▶ : LISTEN	OFF
S506	▶▶ : FF	OFF
S508	RESET	OFF
S509	REVERSE TIME	0

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

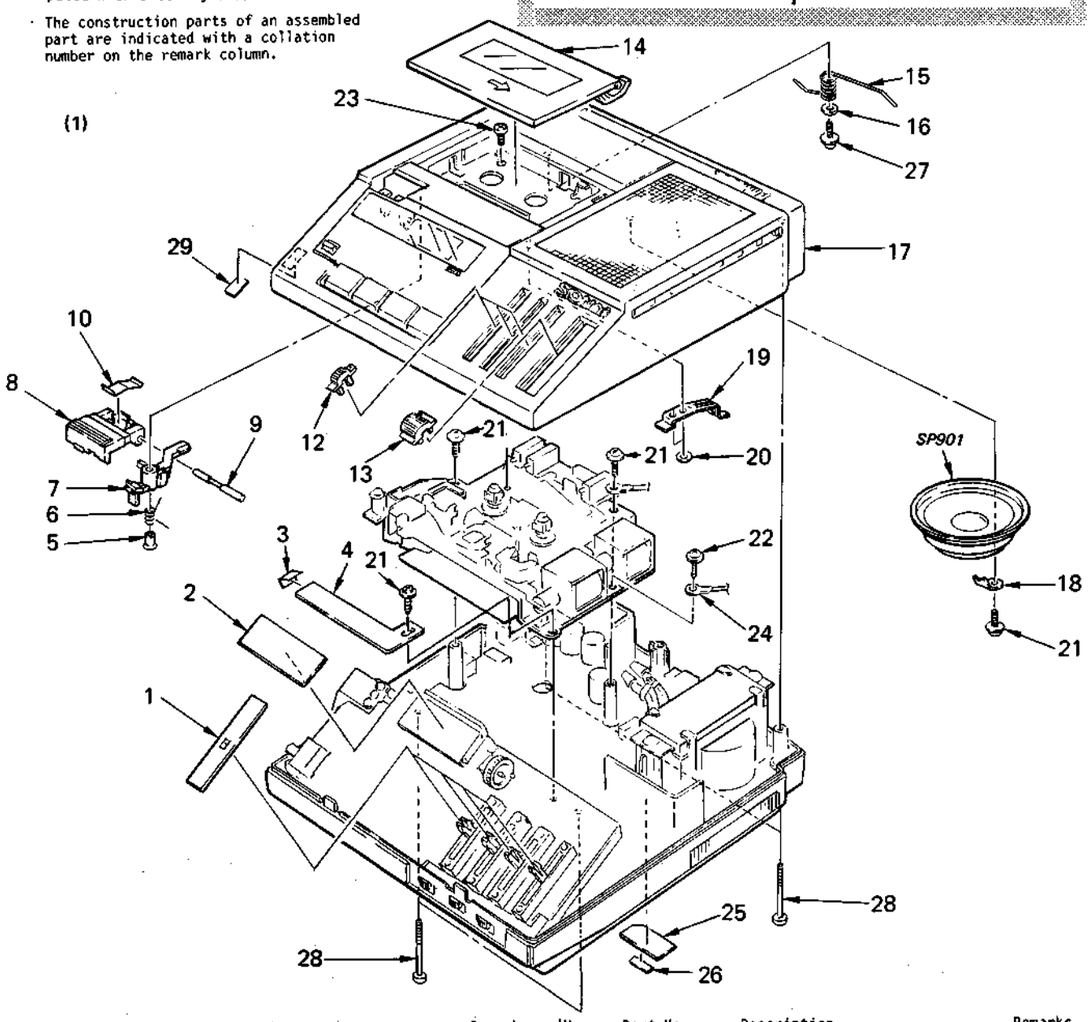
Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 5
EXPLODED VIEWS AND PARTS LIST

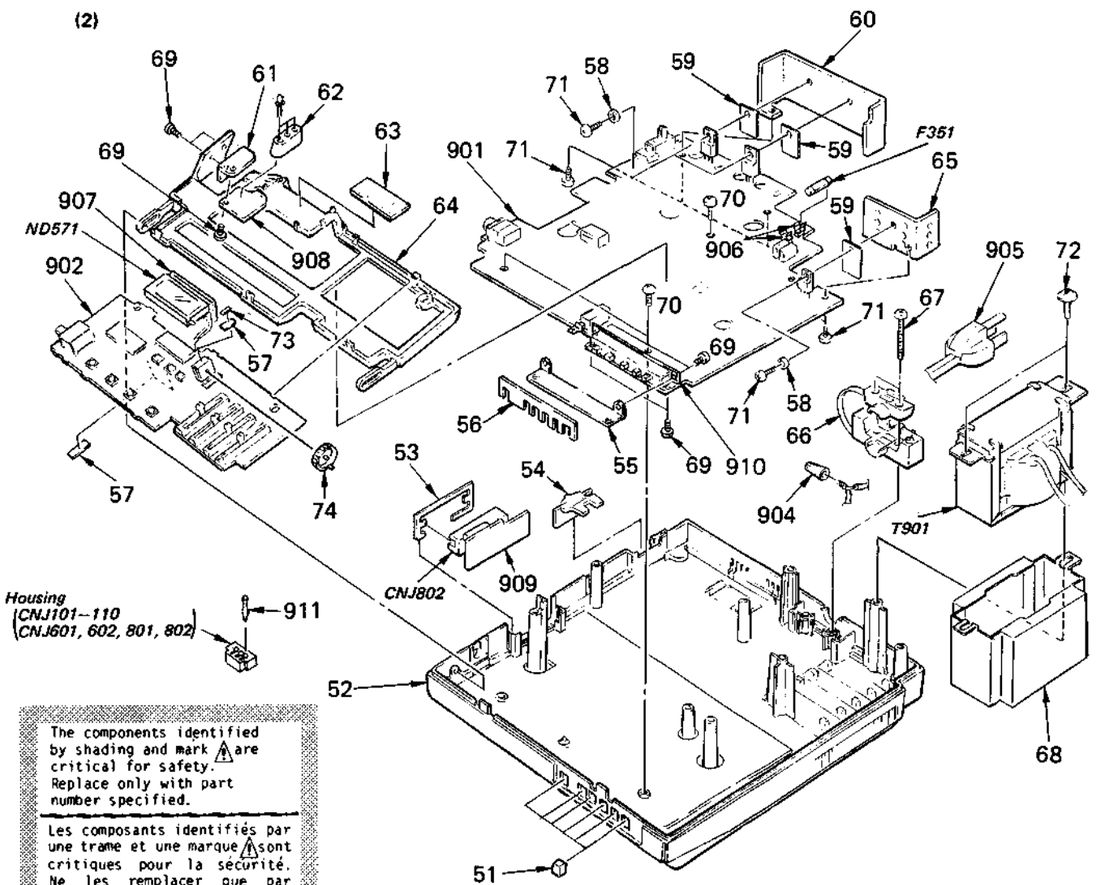
NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number on the remark column.

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.



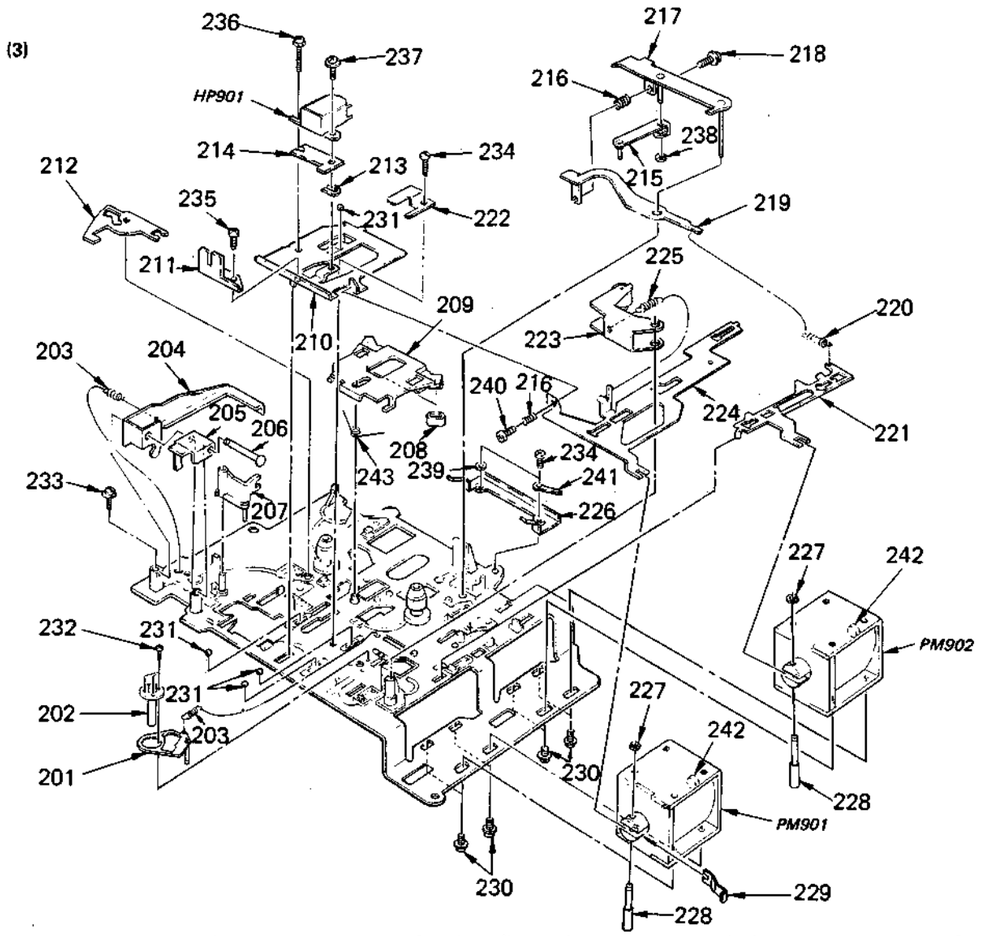
No.	Part No.	Description	Remarks
1	3-323-568-01	SHEET, CONTROL	
2	*3-323-576-01	SHEET, PANEL	
3	3-831-441-11	CUSHION (B)	
4	*3-323-635-01	PAPER, SHIELD, FL	
5	*3-323-598-01	SLEEVE	
6	3-323-605-01	SPRING	
7	3-323-607-01	CLAW, CASSETTE LID	
8	3-323-583-11	BUTTON, EJECT	
9	*3-323-622-01	SHAFT, BUTTON	
10	3-323-623-01	SPRING	
12	3-323-562-11	KNOB (B)	
13	3-323-561-11	KNOB (A)	
14	X-3323-523-1	LID ASSY, CASSETTE	
15	3-323-567-01	SPRING	
16	3-669-117-61	SPACER, MOTOR	
17	X-3323-526-1	CABINET (UPPER) ASSY	
18	3-845-110-00	RETAINER, SPEAKER	
19	*3-323-589-01	SPRING, LEAF, ELECTROSTATIC	
20	7-624-200-11	NUT, PUSH 2	
21	7-687-234-21	SCREW, TOTSU PTPWH 2.6X8, TYPE2	
22	7-682-660-01	SCREW +PS 4X6	
23	7-621-770-67	SCREW +B 2.6X6	
24	7-623-510-01	LUG, 4	
25	*3-323-631-01	(US).....LABEL, MODEL NUMBER (U)	
	*3-323-653-01	(Canadian)...LABEL, MODEL NUMBER (CA)	
26	*3-701-999-00	LABEL, SERIAL NUMBER	
27	7-687-246-21	SCREW, TOTSU PTPWH 2.6X8, TYPE	
28	3-846-072-00	SCREW, TAPPING, +P 3X48	
29	9-911-863-XX	SPACER	
SP901	1-503-393-11	SPEAKER	



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

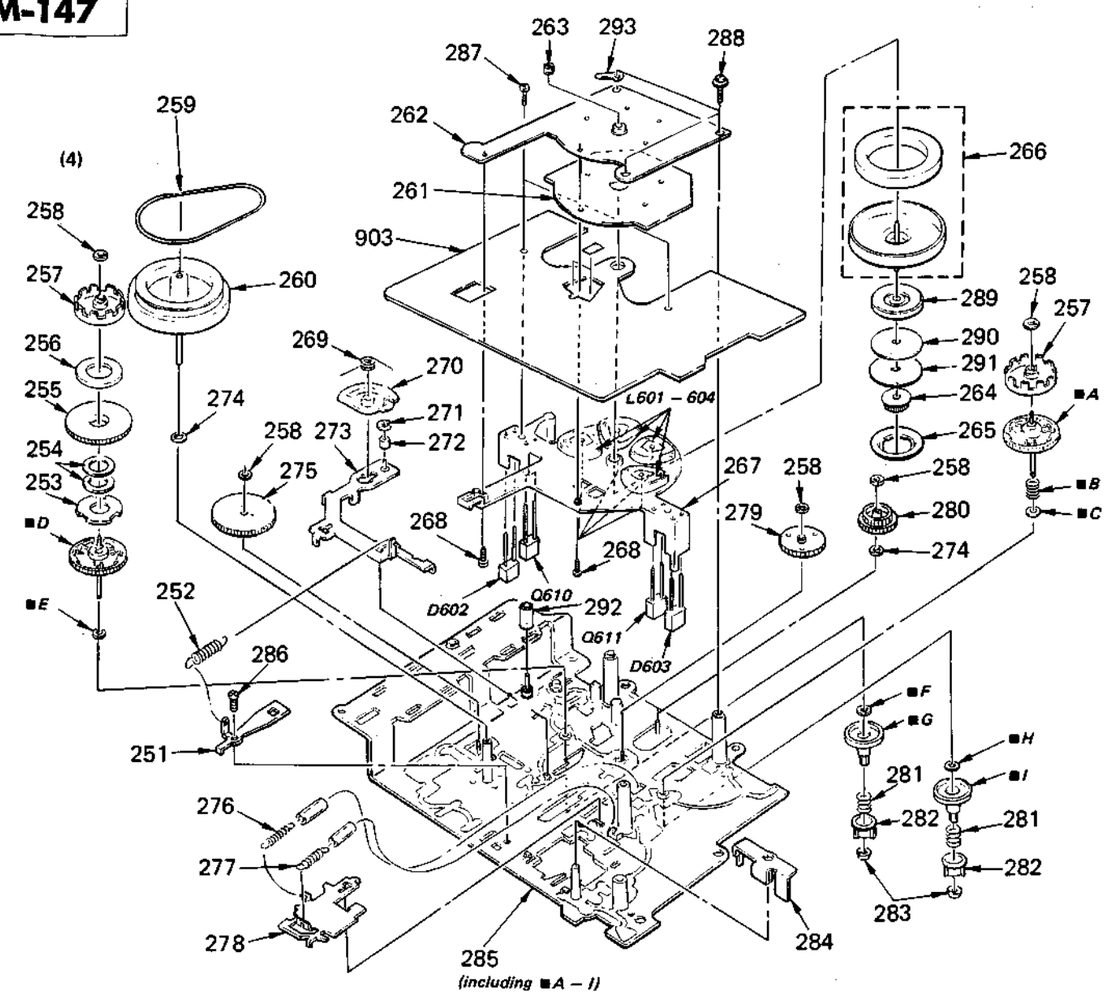
Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remarks
51	3-323-638-01	SELECTOR, CH	
52	A-3040-626-A	CABINET (LOWER) ASSY	
53	*3-323-566-01	BRACKET, 12P CONNECTOR	
54	3-323-573-01	KNOB, POWER SWITCH	
55	*3-323-639-01	PLATE, SELECTOR, CH	
56	*3-323-632-01	SHEET, CH	
57	3-831-441-11	CUSHION (B)	
58	2-832-007-00	BUSHING (K), INSULATING	
59	4-875-726-00	SHEET, INSULATING	
60	*3-323-577-01	HEAT SINK (A)	
61	*3-323-637-01	BRACKET, LED	
62	*3-323-634-01	COVER, LED	
63	9-911-815-01	CUSHION	
64	*3-323-641-01	FRAME	
65	*3-323-578-01	HEAT SINK (B)	
66	3-556-081-00	RETAINER (B), CORD	
67	3-323-594-01	SCREW, TAPPING, (M2.6X20)	
68	*3-323-597-01	COVER, TR	
69	7-621-771-06	SCREW +B 2X5	
70	7-685-133-14	SCREW +BTP 2.6X6 TYPE2 N-S	
71	7-621-770-67	SCREW +B 2.6X6	
72	7-687-264-21	SCREW, TOTSU PTPWH 4X10, TYPE2	
73	3-485-330-21	FELT	
74	3-323-559-01	KNOB, REVERSE	
901	*A-3060-038-A	MOUNTED PCB, AUDIO	
902	*A-3089-166-A	MOUNTED PCB, SYSTEM CONTROL	
904	1-535-507-11	CONNECTOR (TRANSRATION)	
905	⚠ 1-551-780-00	CORD, POWE	
906	1-533-037-XX	HOLDER, FUSE	
907	*1-618-190-11	PC BOARD, FL TUBE	
908	*1-618-191-11	PC BOARD, LED	
909	*1-618-193-11	PC BOARD, 12P	
910	*1-618-194-11	PC BOARD, SW	
911	*1-564-026-00	CONTACT, RECEPTACLE	
CNJ802	*1-561-533-00	SOCKET, CONNECTOR 12P (CONTROL UNIT)	
F351	⚠ 1-532-743-11	FUSE, GLASS TUBE	
ND571	1-519-328-11	INDICATOR TUBE, FLUORESCENT	
T901	⚠ 1-447-918-11	TRANSFORMER, POWE	



No.	Part No.	Description	Remarks
201	X-3323-501-1	LEVER ASSY, F.I	
202	3-323-654-01	BEARING, CAPSTAN	
203	3-509-127-00	SPRING, TENSION	
204	3-323-525-01	LEVER (B), EJECT	
205	*3-323-550-01	LEVER (C), EJECT	
206	3-323-551-01	SHAFT, FULCRUM, EJECT	
207	3-323-521-01	GUIDE, TAPE	
208	3-323-596-01	RUBBER, BRAKE	
209	*3-323-511-01	LEVER, BRAKE	
210	*3-323-617-01	CHASSIS (R/P), HEAD	
211	*3-323-618-01	CLAMP (R/P)	
212	*3-323-518-01	PLATE, PREVENTION, EJECT	
213	3-578-138-01	SEAM (t=0.1)	
	3-578-138-11	SEAM (t=0.2)	
	3-578-138-21	SEAM (t=0.3)	
214	*3-323-620-01	SPRING	
215	X-3323-507-1	LEVER ASSY, F/R	
216	3-308-534-00	SPRING, COMPRESSION	
217	*X-3323-509-1	ARM ASSY, F/R	
218	3-701-465-00	SCREW, LOCK	
219	*3-323-512-01	PLATE, ADJUSTMENT, F/R	
220	3-305-652-00	SPRING, TENSION	
221	3-323-542-01	LEVER, FUNCTION, F/R	

No.	Part No.	Description	Remarks
222	3-323-520-01	SPRING	
223	X-3323-503-1	PINCH LEVER ASSY	
224	3-323-553-01	LEVER, FWD	
225	3-527-189-00	SPRING, TENSION	
226	*3-323-647-01	RETAINER (A), CASSETTE	
227	3-307-948-21	WASHER, NYLON	
228	*3-323-535-01	SHAFT, JOINT	
229	3-323-606-01	SPRING	
230	7-682-947-01	SCREW +PSW 3X6	
231	7-671-111-11	STEEL, BOWL 1.5MM	
232	7-627-551-58	SCREW, PRECISION +P 1.4X3	
233	7-687-233-21	SCREW, TOTSU PTPWH 2.6X6, TYPE2	
234	7-621-775-10	SCREW +B 2.6X4	
235	7-627-553-27	SCREW, PRECISION +P 2X2.5	
236	7-627-553-77	SCREW, PRECISION +P 2X10	
237	7-627-554-17	SCREW, PRECISION +P 2X3.5	
238	7-624-102-04	STOP RING 1.5, TYPE -E	
239	7-688-002-01	W 2.6, SMALL	
240	7-621-772-30	SCREW +B 2X6	
241	7-623-507-01	LUG, 2.6	
242	3-323-645-01	STOPPER	
243	3-323-508-01	SPRING	
HP901	1-543-334-11	HEAD, MAGNETIC (PP238-3604E)	
PM901	1-454-385-11	SOLENOID, PLUNGER (FWD)	
PM902	1-454-385-11	SOLENOID, PLUNGER (FF/REW)	



No.	Part No.	Description	Remarks
251	X-3323-504-1	SPRING ASSY, LOCK	
252	4-858-478-00	SPRING, TENSION	
253	3-561-827-00	PLATE (A), HYSTERESIS	
254	3-307-493-11	SPACER (T=0.15)	
	3-307-493-21	SPACER (T=0.2)	
	3-307-493-31	SPACER (T=0.25)	
	3-307-493-41	SPACER (T=0.3)	
	3-307-493-51	SPACER (T=0.35)	
255	3-307-953-00	MAGNET, REEL TABLE	
256	3-307-313-00	PLATE, YOKE	
257	3-323-541-01	PLATE	
258	3-307-948-01	WASHER, NYLON	
259	3-323-651-01	BELT	
260	3-323-504-01	FLYWHEEL	
261	3-323-601-01	SHEET, INSULATING, COIL	
262	*X-3323-502-1	CHASSIS ASSY, STATOR	
263	3-547-625-00	SCREW, THRUST ADJUST	
264	3-323-515-01	GEAR, M	
265	3-323-538-01	PLATE, CLUTCH	
266	X-3323-525-1	MAGNET ASSY, ROTOR	
267	*3-323-552-01	BRACKET, COIL	
268	3-323-501-01	SCREW (M1.4X3)	
269	3-323-587-01	SPRING	
270	X-3323-506-1	CAM ASSY, S	
271	3-570-615-00	POLY-WASHER (DIA.1.2)	

No.	Part No.	Description	Remarks
272	3-323-534-01	ROLLER (S LEVER)	
273	X-3323-510-1	LEVER ASSY, S	
274	3-701-437-01	WASHER	
275	3-323-540-01	IDLER, FWD	
276	3-305-903-00	SPRING, TENSION	
277	3-701-788-XX	SPRING, TENSION	
278	*3-323-506-01	CHASSIS (E), HEAD	
279	3-323-539-01	GEAR (B), F/R	
280	3-323-516-01	GEAR (A), F/R	
281	3-307-380-00	SPRING, COMPRESSION	
282	3-307-363-00	CLAW (N), REEL	
283	3-307-362-00	CAP, REEL	
284	3-323-524-01	LEVER (A), EJECT	
285	X-3323-515-1	CHASSIS ASSY, MECHANISM	
286	3-703-502-01	SCREW	
287	7-685-104-14	SCREW +P 2X6 TYPE2 NON-SLIT	
288	7-687-233-21	SCREW, TOTSU PTPWH 2.6X6, TYPE2	
289	3-310-071-21	TABLE (M), REEL	
290	3-323-523-01	WASHER	
291	3-323-652-01	WASHER (A)	
292	3-319-662-01	RUBBER, BRAKE	
293	7-623-501-01	LUG, 2.6	
903	*A-3065-056-A	MOUNTED PCB, SERVO	
L601	1-462-196-21	COIL, MOTOR (STATOR)	
L602	1-462-196-21	COIL, MOTOR (STATOR)	
L603	1-462-196-21	COIL, MOTOR (STATOR)	
L604	1-462-196-21	COIL, MOTOR (STATOR)	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin 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:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

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 ⚠ 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			
901	*A-3060-038-A	MOUNTED PCB, AUDIO			
902	*A-3089-166-A	MOUNTED PCB, SYSTEM CONTROL			
903	*A-3065-056-A	MOUNTED PCB, SERVO			
904	1-535-507-11	CONNECTOR (TRANSRATION)			
905 ⚠	1-551-780-00	CORD, POWER			
906	1-533-037-XX	HOLDER, FUSE			
907	*1-618-190-11	PC BOARD, FL TUBE			
908	*1-618-191-11	PC BOARD, LED			
909	*1-618-193-11	PC BOARD, 12P			
910	*1-618-194-11	PC BOARD, SW			
911	*1-564-026-00	CONTACT, RECEPTACLE			
C101	1-123-611-00	ELECT	1MF	20%	50V
C102	1-161-047-00	CERAMIC	0.0047MF	10%	25V
C103	1-102-110-00	CERAMIC	220PF	10%	50V
C104	1-123-616-00	ELECT	4.7MF	20%	25V
C105	1-102-110-00	CERAMIC	220PF	10%	50V
C106	1-123-611-00	ELECT	1MF	20%	50V
C107	1-123-611-00	ELECT	1MF	20%	50V
C108	1-123-617-00	ELECT	10MF	20%	16V
C151	1-123-617-00	ELECT	10MF	20%	16V
C152	1-161-013-00	CERAMIC	0.01MF	10%	25V
C153	1-161-013-00	CERAMIC	0.01MF	10%	25V
C154	1-123-617-00	ELECT	10MF	20%	16V
C155	1-102-110-00	CERAMIC	220PF	10%	50V
C156	1-123-617-00	ELECT	10MF	20%	16V
C157	1-102-074-00	CERAMIC	0.001MF	10%	50V
C158	1-123-611-00	ELECT	1MF	20%	50V
C159	1-161-013-00	CERAMIC	0.01MF	10%	25V
C160	1-123-617-00	ELECT	10MF	20%	16V
C161	1-102-074-00	CERAMIC	0.001MF	10%	50V
C162	1-123-611-00	ELECT	1MF	20%	50V
C163	1-123-611-00	ELECT	1MF	20%	50V
C164	1-102-074-00	CERAMIC	0.001MF	10%	50V
C165	1-161-043-00	CERAMIC	0.0022MF	10%	25V
C166	1-123-617-00	ELECT	10MF	20%	16V
C167	1-161-043-00	CERAMIC	0.0022MF	10%	25V
C168	1-123-647-00	ELECT	47MF	20%	6.3V
C169	1-123-647-00	ELECT	47MF	20%	6.3V
C170	1-136-163-00	MYLAR	0.068MF	10%	50V
C171	1-124-444-00	ELECT	220MF	20%	6.3V
C172	1-123-647-00	ELECT	47MF	20%	6.3V
C173	1-123-618-00	ELECT	22MF	20%	6.3V
C174	1-123-610-00	ELECT	0.47MF	20%	50V
C201	1-123-611-00	ELECT	1MF	20%	50V
C202	1-161-047-00	CERAMIC	0.0047MF	10%	25V
C203	1-102-110-00	CERAMIC	220PF	10%	50V
C204	1-123-616-00	ELECT	4.7MF	20%	25V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C205	1-102-110-00	CERAMIC	220PF	10%	50V
C206	1-123-611-00	ELECT	1MF	20%	50V
C207	1-123-611-00	ELECT	1MF	20%	50V
C208	1-123-617-00	ELECT	10MF	20%	16V
C251	1-123-617-00	ELECT	10MF	20%	16V
C252	1-123-647-00	ELECT	47MF	20%	6.3V
C253	1-102-074-00	CERAMIC	0.001MF	10%	50V
C254	1-123-616-00	ELECT	4.7MF	20%	25V
C255	1-123-611-00	ELECT	1MF	20%	50V
C256	1-123-616-00	ELECT	4.7MF	20%	25V
C257	1-123-610-00	ELECT	0.47MF	20%	50V
C258	1-161-043-00	CERAMIC	0.0022MF	10%	25V
C259	1-123-611-00	ELECT	1MF	20%	50V
C260	1-136-141-00	MYLAR	0.001MF	10%	50V
C261	1-130-505-00	MYLAR	0.0012MF	10%	50V
C262	1-130-506-00	MYLAR	0.0015MF	10%	50V
C263	1-102-106-00	CERAMIC	100PF	10%	50V
C264	1-123-610-00	ELECT	0.47MF	20%	50V
C265	1-161-025-00	CERAMIC	0.1MF	10%	25V
C266	1-136-149-00	MYLAR	0.0047MF	10%	50V
C267	1-136-177-00	FILM	1MF	5%	50V
C268	1-123-617-00	ELECT	10MF	20%	16V
C269	1-123-647-00	ELECT	47MF	20%	6.3V
C270	1-136-157-00	MYLAR	0.022MF	10%	50V
C271	1-136-157-00	MYLAR	0.022MF	10%	50V
C272	1-136-157-00	MYLAR	0.022MF	10%	50V
C273	1-136-154-00	MYLAR	0.012MF	10%	50V
C274	1-123-610-00	ELECT	0.47MF	20%	50V
C301	1-123-611-00	ELECT	1MF	20%	50V
C302	1-161-047-00	CERAMIC	0.0047MF	10%	25V
C303	1-102-110-00	CERAMIC	220PF	10%	50V
C304	1-123-616-00	ELECT	4.7MF	20%	25V
C305	1-102-110-00	CERAMIC	220PF	10%	50V
C306	1-123-611-00	ELECT	1MF	20%	50V
C307	1-123-611-00	ELECT	1MF	20%	50V
C308	1-123-617-00	ELECT	10MF	20%	16V
C352	1-124-563-11	ELECT	2200MF	20%	25V
C353	1-136-161-00	MYLAR	0.047MF	10%	50V
C354	1-124-557-11	ELECT	1000MF	20%	25V
C355	1-136-161-00	MYLAR	0.047MF	10%	50V
C356	1-136-161-00	MYLAR	0.047MF	10%	50V
C357	1-123-321-00	ELECT	220MF	20%	16V
C358	1-136-161-00	MYLAR	0.047MF	10%	50V
C359	1-123-321-00	ELECT	220MF	20%	16V
C360	1-136-161-00	MYLAR	0.047MF	10%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C361	1-124-470-11	ELECT	470MF	20%	6.3V
C362	1-124-444-00	ELECT	220MF	20%	6.3V
C363	1-125-333-00	DOLBLE LAYERS	0.022MF		5.5V
C364	1-123-611-00	ELECT	1MF	20%	50V
C365	1-102-074-00	CERAMIC	0.001MF	10%	50V
C401	1-123-611-00	ELECT	1MF	20%	50V
C402	1-161-047-00	CERAMIC	0.0047MF	10%	25V
C403	1-102-110-00	CERAMIC	220PF	10%	50V
C404	1-123-616-00	ELECT	4.7MF	20%	25V
C405	1-102-110-00	CERAMIC	220PF	10%	50V
C406	1-123-611-00	ELECT	1MF	20%	50V
C407	1-123-611-00	ELECT	1MF	20%	50V
C408	1-123-617-00	ELECT	10MF	20%	16V
C501	1-136-145-00	MYLAR	0.0022MF	10%	50V
C502	1-123-611-00	ELECT	1MF	20%	50V
C503	1-161-059-00	CERAMIC	0.047MF	20%	25V
C504	1-102-106-00	CERAMIC	100PF	10%	50V
C505	1-102-106-00	CERAMIC	100PF	10%	50V
C506	1-161-059-00	CERAMIC	0.047MF	20%	25V
C509	1-123-661-00	ELECT	100MF	20%	6.3V
C511	1-161-061-00	CERAMIC	0.068MF	20%	25V
C513	1-102-106-00	CERAMIC	100PF	10%	50V
C601	1-102-106-00	CERAMIC	100PF	10%	50V
C602	1-102-106-00	CERAMIC	100PF	10%	50V
C603	1-123-616-00	ELECT	4.7MF	20%	25V
C605	1-130-497-00	MYLAR	0.15MF	10%	50V
C606	1-161-055-00	CERAMIC	0.022MF	20%	25V
C607	1-123-612-00	ELECT	2.2MF	20%	50V
C608	1-123-607-00	ELECT	0.1MF	20%	50V
C609	1-123-616-00	ELECT	4.7MF	20%	25V
C610	1-124-236-00	ELECT	47MF	20%	10V
C611	1-123-617-00	ELECT	10MF	20%	16V
C612	1-102-074-00	CERAMIC	0.001MF	10%	50V
C613	1-102-074-00	CERAMIC	0.001MF	10%	50V
C614	1-123-333-00	ELECT	100MF	20%	16V
C615	1-123-333-00	ELECT	100MF	20%	16V
C616	1-123-622-00	ELECT	22MF	20%	16V
C651	1-136-177-00	FILM	1MF	5%	50V
C652	1-136-177-00	FILM	1MF	5%	50V
C801	1-161-013-00	CERAMIC	0.01MF	20%	25V
C802	1-102-074-00	CERAMIC	0.001MF	10%	50V

CNJ101*1-562-148-11	HOUSING, CONNECTOR 3P	
CNJ102*1-562-148-11	HOUSING, CONNECTOR 3P	
CNJ103*1-562-148-11	HOUSING, CONNECTOR 3P	
CNJ104*1-562-150-11	HOUSING, CONNECTOR 5P	
CNJ105*1-562-151-11	HOUSING, CONNECTOR 6P	
CNJ106*1-562-150-11	HOUSING, CONNECTOR 5P	
CNJ107*1-562-151-11	HOUSING, CONNECTOR 6P	
CNJ108*1-562-148-11	HOUSING, CONNECTOR 3P	
CNJ109*1-562-148-11	HOUSING, CONNECTOR 3P	
CNJ110*1-562-148-11	HOUSING, CONNECTOR 3P	
CNJ601*1-562-148-11	HOUSING, CONNECTOR 3P	
CNJ602*1-562-148-11	HOUSING, CONNECTOR 3P	
CNJ801*1-562-149-11	HOUSING, CONNECTOR 4P	
CNJ802*1-561-533-00	SOCKET, CONNECTOR 12P (CONTROL UNIT)	

ELECTRICAL PARTS

Ref.No.	Part No.	Description
CNP101*1-564-002-00		PIN, CONNECTOR 3P
CNP102*1-564-002-00		PIN, CONNECTOR 3P
CNP103*1-564-002-00		PIN, CONNECTOR 3P
CNP104*1-564-004-00		PIN, CONNECTOR 5P
CNP105*1-564-005-00		PIN, CONNECTOR 6P
CNP106*1-564-004-00		PIN, CONNECTOR 5P
CNP107*1-564-016-00		PIN, CONNECTOR 6P
CNP108*1-564-013-00		PIN, CONNECTOR 3P
CNP109*1-564-013-00		PIN, CONNECTOR 3P
CNP110*1-564-002-00		PIN, CONNECTOR 3P
CNP111*1-564-001-11		PIN, CONNECTOR 2P
CNP112*1-564-001-11		PIN, CONNECTOR 2P
CNP113*1-508-742-00		PIN, CONNECTOR 3P
CNP114*1-508-742-00		PIN, CONNECTOR 3P
CNP601*1-564-013-00		PIN, CONNECTOR 3P
CNP602*1-564-013-00		PIN, CONNECTOR 3P
CNP801*1-564-003-00		PIN, CONNECTOR 4P
D101	8-719-911-19	DIODE 1SS119
D102	8-719-911-19	DIODE 1SS119
D103	8-719-102-05	DIODE SG205D
D104	8-719-911-19	DIODE 1SS119
D105	8-719-022-11	DIODE 1T22A
D106	8-719-022-11	DIODE 1T22A
[illegible]		
D109	8-719-200-02	DIODE 10E-2
D110	8-719-200-02	DIODE 10E-2
D111	8-719-929-15	DIODE HZS9.1NB2
D112	8-719-200-02	DIODE 10E-2
D113	8-719-200-02	DIODE 10E-2
D114	8-719-139-07	DIODE RD3.9E-B
D201	8-719-911-19	DIODE 1SS119
D202	8-719-911-19	DIODE 1SS119
D203	8-719-102-05	DIODE SG205D
D204	8-719-911-19	DIODE 1SS119
D301	8-719-911-19	DIODE 1SS119
D302	8-719-911-19	DIODE 1SS119
D303	8-719-102-05	DIODE SG205D
D304	8-719-911-19	DIODE 1SS119
D401	8-719-911-19	DIODE 1SS119
D402	8-719-911-19	DIODE 1SS119
D403	8-719-102-05	DIODE SG205D
D404	8-719-911-19	DIODE 1SS119
D501	8-719-911-19	DIODE 1SS119
D502	8-719-911-19	DIODE 1SS119
D601	8-719-911-19	DIODE 1SS119
D602	8-719-103-15	DIODE SE304-K
D603	8-719-103-15	DIODE SE304-K
D651	8-719-911-19	DIODE 1SS119
D652	8-719-911-19	DIODE 1SS119
D653	8-719-911-19	DIODE 1SS119
D654	8-719-911-19	DIODE 1SS119
[illegible]		
H601	8-719-800-18	DIODE THS103A
H602	8-719-800-18	DIODE THS103A
HP901	1-543-334-11	HEAD, MAGNETIC (PP238-3604E)

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
IC101	8-759-745-61	IC NJM4560D-D
IC102	8-759-745-61	IC NJM4560D-D
IC103	8-759-240-66	IC TC4066BP
IC104	8-759-145-58	IC UPC4558C
IC105	8-759-841-40	IC LA4140
IC106	8-759-832-10	IC LA3210ALC
IC107	8-759-400-87	IC MN3204
IC108	8-759-145-58	IC UPC4558C
IC109	8-759-912-78	IC BA1701
IC110	8-759-280-12	IC TA78012AP
IC111	8-759-801-26	IC L78M06
IC112	8-759-700-24	IC NJM79M12A
IC501	8-759-920-88	IC MB8851-587L
IC502	8-759-924-78	IC MB8851B-668L
IC503	8-759-133-90	IC UPC339C
IC601	8-759-600-69	IC CX-069A
IC602	8-759-145-58	IC UPC4558C
IC603	8-759-145-58	IC UPC4558C
IC651	8-759-240-66	IC TC4066BP
J101	1-507-806-41	JACK (EARPHONES)
L601	1-462-196-21	COIL, MOTOR (STATOR)
L602	1-462-196-21	COIL, MOTOR (STATOR)
L603	1-462-196-21	COIL, MOTOR (STATOR)
L604	1-462-196-21	COIL, MOTOR (STATOR)
ND571	1-519-328-11	INDICATOR TUBE, FLUORESCENT
PM901	1-454-385-11	SOLENOID, PLUNGER
PM902	1-454-385-11	SOLENOID, PLUNGER
Q101	8-729-245-83	TRANSISTOR 2SC2458
Q102	8-729-117-54	TRANSISTOR 2SA1175
Q103	8-729-245-83	TRANSISTOR 2SC2458
Q104	8-729-102-03	TRANSISTOR 2SD1020
Q105	8-729-102-03	TRANSISTOR 2SD1020
Q106	8-729-900-36	TRANSISTOR DTC124ES
Q107	8-729-245-83	TRANSISTOR 2SC2458
Q108	8-729-900-61	TRANSISTOR DTA114ES
Q109	8-729-900-61	TRANSISTOR DTA114ES
Q110	8-729-801-83	TRANSISTOR 2SB1013
Q111	8-729-801-93	TRANSISTOR 2SD1387
Q112	8-729-801-93	TRANSISTOR 2SD1387
Q201	8-729-245-83	TRANSISTOR 2SC2458
Q202	8-729-117-54	TRANSISTOR 2SA1175
Q301	8-729-245-83	TRANSISTOR 2SC2458
Q302	8-729-117-54	TRANSISTOR 2SA1175
Q401	8-729-245-83	TRANSISTOR 2SC2458
Q402	8-729-117-54	TRANSISTOR 2SA1175
Q501	8-729-117-54	TRANSISTOR 2SA1175
Q502	8-729-117-54	TRANSISTOR 2SA1175
Q503	8-729-117-54	TRANSISTOR 2SA1175
Q504	8-729-117-54	TRANSISTOR 2SA1175
Q514	8-729-245-83	TRANSISTOR 2SC2458
Q515	8-729-245-83	TRANSISTOR 2SC2458
Q601	8-729-245-83	TRANSISTOR 2SC2458
Q605	8-729-245-83	TRANSISTOR 2SC2458
Q606	8-729-805-13	TRANSISTOR 2SC1475-13
Q607	8-729-103-43	TRANSISTOR 2SB734
Q608	8-729-805-13	TRANSISTOR 2SC1475-13
Q609	8-729-103-43	TRANSISTOR 2SB734

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
Q610	8-729-102-10	TRANSISTOR PH104			
Q611	8-729-102-10	TRANSISTOR PH104			
Q651	8-729-245-83	TRANSISTOR 2SC2458			
R101	1-249-437-11	CARBON	47K	5%	1/6W
R102	1-247-819-00	CARBON	330	5%	1/6W
R103	1-247-873-00	CARBON	56K	5%	1/6W
R104	1-247-827-00	CARBON	680	5%	1/6W
R105	1-247-899-00	CARBON	680K	5%	1/6W
R106	1-249-429-11	CARBON	10K	5%	1/6W
R107	1-247-879-00	CARBON	100K	5%	1/6W
R108	1-247-831-00	CARBON	1K	5%	1/6W
R109	1-249-429-11	CARBON	10K	5%	1/6W
R110	1-247-879-00	CARBON	100K	5%	1/6W
R151	1-247-879-00	CARBON	100K	5%	1/6W
R152	1-247-879-00	CARBON	100K	5%	1/6W
R153	1-249-425-11	CARBON	4.7K	5%	1/6W
R154	1-247-879-00	CARBON	100K	5%	1/6W
R155	1-247-831-00	CARBON	1K	5%	1/6W
R156	1-249-437-11	CARBON	47K	5%	1/6W
R157	1-249-414-11	CARBON	560	5%	1/6W
R158	1-249-433-11	CARBON	22K	5%	1/6W
R159	1-249-432-11	CARBON	18K	5%	1/6W
R160	1-249-429-11	CARBON	10K	5%	1/6W
R161	1-249-433-11	CARBON	22K	5%	1/6W
R162	1-247-851-00	CARBON	6.8K	5%	1/6W
R163	1-249-433-11	CARBON	22K	5%	1/6W
R164	1-247-811-00	CARBON	150	5%	1/6W
R165	1-247-819-00	CARBON	330	5%	1/6W
R166	1-247-795-00	CARBON	33	5%	1/6W
R167	1-247-873-00	CARBON	56K	5%	1/6W
R201	1-249-437-11	CARBON	47K	5%	1/6W
R202	1-247-819-00	CARBON	330	5%	1/6W
R203	1-247-873-00	CARBON	56K	5%	1/6W
R204	1-247-827-00	CARBON	680	5%	1/6W
R205	1-247-899-00	CARBON	680K	5%	1/6W
R206	1-249-429-11	CARBON	10K	5%	1/6W
R207	1-247-879-00	CARBON	100K	5%	1/6W
R208	1-247-831-00	CARBON	1K	5%	1/6W
R209	1-249-429-11	CARBON	10K	5%	1/6W
R210	1-247-879-00	CARBON	100K	5%	1/6W
R251	1-249-432-11	CARBON	18K	5%	1/6W
R252	1-249-432-11	CARBON	18K	5%	1/6W
R253	1-247-857-00	CARBON	12K	5%	1/6W
R254	1-247-873-00	CARBON	56K	5%	1/6W
R255	1-249-425-11	CARBON	4.7K	5%	1/6W
R256	1-247-903-00	CARBON	1M	5%	1/6W
R257	1-247-853-00	CARBON	8.2K	5%	1/6W
R258	1-247-849-00	CARBON	5.6K	5%	1/6W
R259	1-249-429-11	CARBON	10K	5%	1/6W
R260	1-247-849-00	CARBON	5.6K	5%	1/6W
R261	1-247-849-00	CARBON	5.6K	5%	1/6W
R262	1-247-879-00	CARBON	100K	5%	1/6W
R263	1-247-879-00	CARBON	100K	5%	1/6W
R264	1-247-827-00	CARBON	680	5%	1/6W
R265	1-247-827-00	CARBON	680	5%	1/6W
R266	1-247-869-00	CARBON	39K	5%	1/6W
R267	1-247-869-00	CARBON	39K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R268	1-247-869-00	CARBON	39K	5%	1/6W
R269	1-247-867-00	CARBON	33K	5%	1/6W
R270	1-247-881-00	CARBON	120K	5%	1/6W
R271	1-249-429-11	CARBON	10K	5%	1/6W
R272	1-249-429-11	CARBON	10K	5%	1/6W
R273	1-249-421-11	CARBON	2.2K	5%	1/6W
R274	1-249-419-11	CARBON	1.5K	5%	1/6W
R275	1-249-429-11	CARBON	10K	5%	1/6W
R276	1-247-831-00	CARBON	1K	5%	1/6W
R277	1-247-853-00	CARBON	8.2K	5%	1/6W
R278	1-247-853-00	CARBON	8.2K	5%	1/6W
R279	1-247-879-00	CARBON	100K	5%	1/6W
R280	1-249-429-11	CARBON	10K	5%	1/6W
R282	1-247-831-00	CARBON	1K	5%	1/6W
R301	1-249-437-11	CARBON	47K	5%	1/6W
R302	1-247-819-00	CARBON	330	5%	1/6W
R303	1-247-873-00	CARBON	56K	5%	1/6W
R304	1-247-827-00	CARBON	680	5%	1/6W
R305	1-247-899-00	CARBON	680K	5%	1/6W
R306	1-249-429-11	CARBON	10K	5%	1/6W
R307	1-247-879-00	CARBON	100K	5%	1/6W
R308	1-247-831-00	CARBON	1K	5%	1/6W
R309	1-249-429-11	CARBON	10K	5%	1/6W
R310	1-247-879-00	CARBON	100K	5%	1/6W
R351	1-249-433-11	CARBON	22K	5%	1/6W
R352	1-249-421-11	CARBON	2.2K	5%	1/6W
R353	1-247-879-00	CARBON	100K	5%	1/6W
R354	1-247-843-00	CARBON	3.3K	5%	1/6W
R355	1-247-879-00	CARBON	100K	5%	1/6W
R356	1-247-843-00	CARBON	3.3K	5%	1/6W
R357	1-247-879-00	CARBON	100K	5%	1/6W
R358	1-249-437-11	CARBON	47K	5%	1/6W
R401	1-249-437-11	CARBON	47K	5%	1/6W
R402	1-247-819-00	CARBON	330	5%	1/6W
R403	1-247-873-00	CARBON	56K	5%	1/6W
R404	1-247-827-00	CARBON	680	5%	1/6W
R405	1-247-899-00	CARBON	680K	5%	1/6W
R406	1-249-429-11	CARBON	10K	5%	1/6W
R407	1-247-879-00	CARBON	100K	5%	1/6W
R408	1-247-831-00	CARBON	1K	5%	1/6W
R409	1-249-429-11	CARBON	10K	5%	1/6W
R410	1-247-879-00	CARBON	100K	5%	1/6W
R501	1-249-433-11	CARBON	22K	5%	1/6W
R502	1-247-879-00	CARBON	100K	5%	1/6W
R503	1-249-433-11	CARBON	22K	5%	1/6W
R504	1-247-879-00	CARBON	100K	5%	1/6W
R505	1-249-433-11	CARBON	22K	5%	1/6W
R506	1-247-879-00	CARBON	100K	5%	1/6W
R507	1-249-433-11	CARBON	22K	5%	1/6W
R508	1-247-879-00	CARBON	100K	5%	1/6W
R515	1-249-437-11	CARBON	47K	5%	1/6W
R516	1-249-437-11	CARBON	47K	5%	1/6W
R517	1-249-437-11	CARBON	47K	5%	1/6W
R518	1-249-437-11	CARBON	47K	5%	1/6W
R519	1-247-859-00	CARBON	15K	5%	1/6W
R520	1-249-437-11	CARBON	47K	5%	1/6W
R521	1-247-843-00	CARBON	3.3K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R522	1-249-437-11	CARBON	47K	5%	1/6W
R523	1-247-859-00	CARBON	15K	5%	1/6W
R524	1-249-437-11	CARBON	47K	5%	1/6W
R525	1-247-843-00	CARBON	3.3K	5%	1/6W
R526	1-249-437-11	CARBON	47K	5%	1/6W
R527	1-247-879-00	CARBON	100K	5%	1/6W
R528	1-249-429-11	CARBON	10K	5%	1/6W
R529	1-249-437-11	CARBON	47K	5%	1/6W
R530	1-249-425-11	CARBON	4.7K	5%	1/6W
R531	1-247-887-00	CARBON	220K	5%	1/6W
R532	1-249-437-11	CARBON	47K	5%	1/6W
R539	1-249-437-11	CARBON	47K	5%	1/6W
R540	1-247-857-00	CARBON	12K	5%	1/6W
R541	1-249-433-11	CARBON	22K	5%	1/6W
R542	1-249-429-11	CARBON	10K	5%	1/6W
R543	1-247-823-00	CARBON	470	5%	1/6W
R551	1-249-429-11	CARBON	10K	5%	1/6W
R552	1-249-437-11	CARBON	47K	5%	1/6W
R553	1-249-437-11	CARBON	47K	5%	1/6W
R554	1-249-437-11	CARBON	47K	5%	1/6W
R555	1-249-437-11	CARBON	47K	5%	1/6W
R556	1-249-437-11	CARBON	47K	5%	1/6W
R559	1-249-437-11	CARBON	47K	5%	1/6W
R563	1-247-843-00	CARBON	3.3K	5%	1/6W
R564	1-249-419-11	CARBON	1.5K	5%	1/6W
R565	1-247-843-00	CARBON	3.3K	5%	1/6W
R566	1-247-843-00	CARBON	3.3K	5%	1/6W
R571	1-247-879-00	CARBON	100K	5%	1/6W
R572	1-247-879-00	CARBON	100K	5%	1/6W
R573	1-247-879-00	CARBON	100K	5%	1/6W
R574	1-247-879-00	CARBON	100K	5%	1/6W
R575	1-247-879-00	CARBON	100K	5%	1/6W
R576	1-247-879-00	CARBON	100K	5%	1/6W
R577	1-247-879-00	CARBON	100K	5%	1/6W
R578	1-247-879-00	CARBON	100K	5%	1/6W
R579	1-247-879-00	CARBON	100K	5%	1/6W
R580	1-247-879-00	CARBON	100K	5%	1/6W
R581	1-247-879-00	CARBON	100K	5%	1/6W
R582	1-247-879-00	CARBON	100K	5%	1/6W
R583	1-247-879-00	CARBON	100K	5%	1/6W
R601	1-247-859-00	CARBON	15K	5%	1/6W
R602	1-247-859-00	CARBON	15K	5%	1/6W
R603	1-247-811-00	CARBON	150	5%	1/6W
R604	1-249-429-11	CARBON	10K	5%	1/6W
R612	1-247-883-00	CARBON	150K	5%	1/6W
R613	1-249-437-11	CARBON	47K	5%	1/6W
R614	1-249-429-11	CARBON	10K	5%	1/6W
R615	1-249-419-11	CARBON	1.5K	5%	1/6W
R616	1-247-879-00	CARBON	100K	5%	1/6W
R617	1-247-879-00	CARBON	100K	5%	1/6W
R618	1-247-879-00	CARBON	100K	5%	1/6W
R619	1-247-879-00	CARBON	100K	5%	1/6W
R620	1-247-879-00	CARBON	100K	5%	1/6W
R621	1-247-845-00	CARBON	3.9K	5%	1/6W
R622	1-247-899-00	CARBON	680K	5%	1/6W
R623	1-247-807-00	CARBON	100	5%	1/6W
R624	1-247-845-00	CARBON	3.9K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R625	1-247-899-00	CARBON	680K	5%	1/6W
R626	1-247-899-00	CARBON	680K	5%	1/6W
R627	1-247-845-00	CARBON	3.9K	5%	1/6W
R628	1-247-807-00	CARBON	100	5%	1/6W
R629	1-247-845-00	CARBON	3.9K	5%	1/6W
R630	1-247-899-00	CARBON	680K	5%	1/6W
R631	1-247-819-00	CARBON	330	5%	1/6W
R632	1-247-819-00	CARBON	330	5%	1/6W
R633	1-247-819-00	CARBON	330	5%	1/6W
R634	1-247-819-00	CARBON	330	5%	1/6W
R635	1-247-819-00	CARBON	330	5%	1/6W
R636	1-247-819-00	CARBON	330	5%	1/6W
R651	1-247-857-00	CARBON	12K	5%	1/6W
R652	1-247-857-00	CARBON	12K	5%	1/6W
R653	1-247-857-00	CARBON	12K	5%	1/6W
R654	1-247-867-00	CARBON	33K	5%	1/6W
R655	1-249-425-11	CARBON	4.7K	5%	1/6W
R656	1-249-437-11	CARBON	47K	5%	1/6W
R657	1-249-437-11	CARBON	47K	5%	1/6W
R658	1-249-437-11	CARBON	47K	5%	1/6W
R659	1-249-421-11	CARBON	2.2K	5%	1/6W
R660	1-249-437-11	CARBON	47K	5%	1/6W
R662	1-249-425-11	CARBON	4.7K	5%	1/6W
R663	1-249-437-11	CARBON	47K	5%	1/6W
R664	1-247-819-00	CARBON	330	5%	1/6W
RV251	1-226-711-00	RES, ADJ, SOLID 22K			
RV252	1-226-711-00	RES, ADJ, SOLID 22K			
RV253	1-230-522-11	RES, ADJ, SOLID 4.7K			
RV254	1-226-925-00	RES, ADJ, SOLID 22Ω			
RV501	1-230-566-11	RES, VAR, SLIDE 20K (VSC/SPEED)			
RV502	1-230-565-11	RES, VAR, SLIDE 5K (VSC/PITCH)			
RV503	1-230-564-11	RES, VAR, SLIDE 10K (TONE)			
RV504	1-230-564-11	RES, VAR, SLIDE 10K (VOLUME)			
RV651	1-226-703-00	RES, ADJ, METAL GLAZE 10K			
RV652	1-226-703-00	RES, ADJ, METAL GLAZE 10K			
RV653	1-230-522-11	RES, ADJ, METAL GLAZE 4.7K			
RV654	1-226-776-00	RES, ADJ, METAL GLAZE 220K			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S101	1-570-550-11	SWITCH, PUSH (5 KEY) (MONITOR CHANNEL SELECT)
S102	1-552-425-00	SWITCH, PUSH (VSC)
S103	1-516-777-XX	SLIDE SWITCH (ON-STANDBY)
S501	1-552-334-00	SWITCH, SLIDE (TAPE SPEED)
S503	1-554-303-21	SWITCH, KEY BOARD (REW)
S504	1-554-303-21	SWITCH, KEY BOARD (STOP)
S505	1-554-303-21	SWITCH, KEY BOARD (LISTEN)
S506	1-554-303-21	SWITCH, KEY BOARD (FF)
S508	1-554-303-21	SWITCH, KEY BOARD (RESET)
S509	1-554-998-11	SWITCH, DIGITAL (REVERSE TIME)
SP901	1-503-393-11	SPEAKER
[redacted]		
X501	1-527-802-00	OSCILLATOR, CERAMIC, 3.58MHz

ACCESSORY & PACKING MATERIAL

Part No.	Description
3-323-592-01	CUSHION (LEFT)
3-323-593-01	CUSHION (RIGHT)
3-323-648-01	INDIVIDUAL CARTON
3-701-630-00	BAG, POLYETHYLENE
3-765-071-21	MANUAL, INSTRUCTION (ENGLISH)
3-765-071-31	(Canadian)...MANUAL, INSTRUCTION (FRENCH)
3-881-644-00	PEOTECTION BAG

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.

English
86G0515-1
Printed in Japan

9-952-322-11

Sony Corporation

SONY

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model

SUPPLEMENT-1

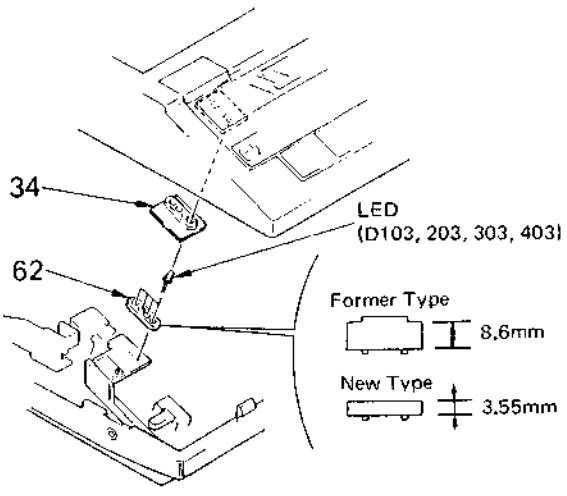
File this supplement with the service manual.

Subject: **1. LED (D103, 203, 303, 403) and LED cover have been changed.**
2. Cabinet color gray has been added in US and Canadian models.
3. AEP and UK models have been added.

1. LED (D103, 203, 303, 403) and LED cover have been changed in US and Canadian models on the production. (AEP, UK models: New type only)

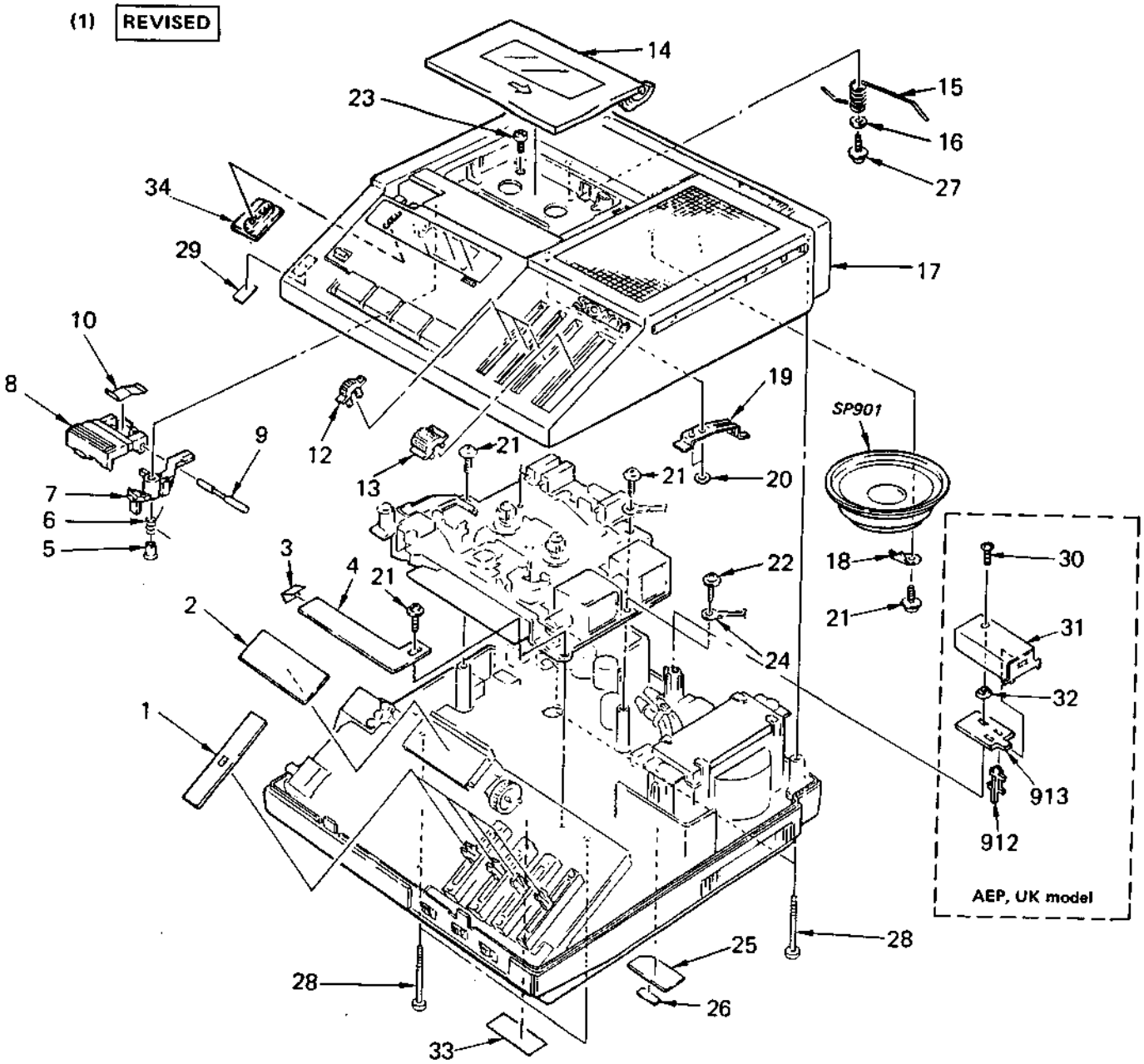
	Former Type		New Type		Remarks
No.	Part No.	Description	Part No.	Description	
34	————		*3-323-669-01	HOLDER (UPPER), LED	Add
62	*3-323-634-01	COVER, LED	*3-323-670-01	HOLDER (LOWER), LED	Change
D103	8-719-102-05	DIODE SG205D	8-719-938-67	DIODE GL-3EG8	Change
D203	8-719-102-05	DIODE SG205D	8-719-938-67	DIODE GL-3EG8	Change
D303	8-719-102-05	DIODE SG205D	8-719-938-67	DIODE GL-3EG8	Change
D403	8-719-102-05	DIODE SG205D	8-719-938-67	DIODE GL-3EG8	Change

Note: LED of SG205D can not be installed in the set using a new type of LED holder (lower).



2. Cabinet color gray has been added in US and Canadian models, and AEP and UK models has been added.
Therefore, exploded view (1) and (2) on service manual page 35 and 36 have been revised.

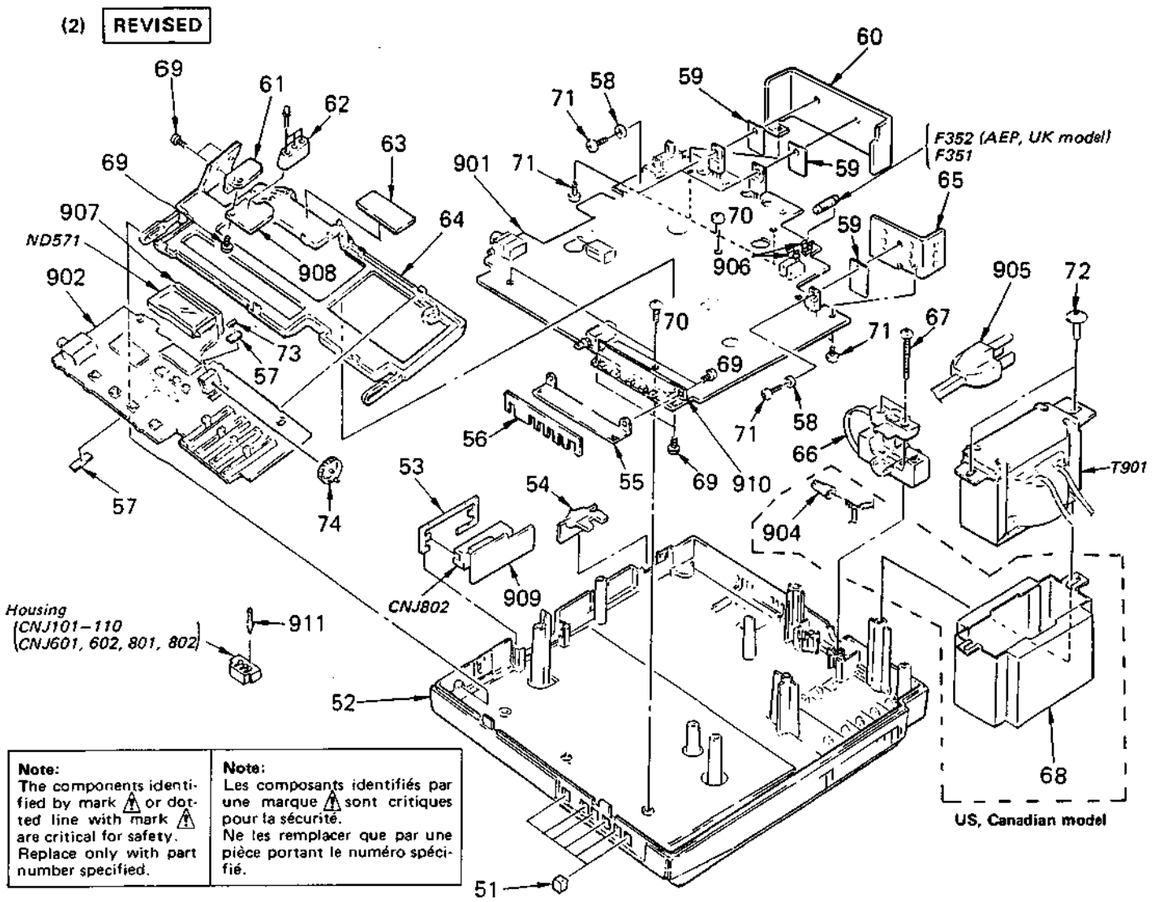
(1) REVISED



No.	Part No.	Description	Remarks
1	3-323-568-01	SHEET, CONTROL	
2	*3-323-576-01	SHEET, PANEL	
3	3-831-441-11	CUSHION (B)	
4	*3-323-635-01	PAPER, SHIELD, FL	
5	*3-323-598-01	SLEEVE	
6	3-323-605-01	SPRING	
7	3-323-607-01	CLAW, CASSETTE LID	
8	3-323-583-11	(WOOD)...BUTTON, EJECT	
8	3-323-583-21	(GRAY)...BUTTON, EJECT (GRAY)	
9	*3-323-622-01	SHAFT, BUTTON	
10	3-323-623-01	SPRING	
12	3-323-562-11	(WOOD)...KNOB (B)	
12	3-323-562-01	(GRAY)...KNOB (B)	
13	3-323-561-11	(WOOD)...KNOB (A)	
13	3-323-561-01	(GRAY)...KNOB (A)	
14	X-3323-523-1	(WOOD)...LID ASSY, CASSETTE	
14	X-3323-513-1	(GRAY)...LID ASSY, CASSETTE	
15	3-323-567-01	SPRING	
16	3-009-117-61	SPACER, MOTOR	
17	X-3323-526-1	(WOOD)...CABINET (UPPER) ASSY	
17	X-3323-531-1	(GRAY)...CABINET (UPPER) ASSY	

No.	Part No.	Description	Remarks
18	3-845-110-00	RETAINER, SPEAKER	
19	*3-323-589-01	SPRING, LEAF, ELECTROSTATIC	
20	7-624-200-11	NUT, PUSH 2	
21	7-687-234-21	SCREW, TOTSU PTPWH 2.6X8, TYPE2	
22	7-682-660-01	SCREW +PS 4X6	
23	7-621-770-67	SCREW +B 2.6X6	
24	7-623-510-01	LUG, 4	
25	*3-323-631-01	(US).....LABEL, MODEL NUMBER (U)	
	*3-323-653-01	(Canadian)...LABEL, MODEL NUMBER (CA)	
25	*3-323-671-11	(UK).....LABEL, MODEL NUMBER (UK)	
	*3-323-672-01	(AEP).....LABEL, MODEL NUMBER (AE)	
26	*3-701-999-00	LABEL, SERIAL NUMBER	
27	7-687-246-21	SCREW, TOTSU PTPWH 2.6X8, TYPE	
28	3-846-072-00	SCREW, TAPPING, +P 3X48	
29	9-911-863-XX	SPACER	
30	7-687-238-21	(AEP, UK)....SCREW +PTPWH 2.6X16	
31	⚠ *3-323-615-01	(AEP, UK)....COVER, PCB	
32	*3-323-614-01	(AEP, UK)....TABLE, FITTING, COVER	
33	*3-703-043-51	(UK).....LABEL, MAIN CAUTION	
34	*3-323-669-01	(NEW TYPE)...HOLDER, (UPPER), LED	
912	⚠ 1-535-416-00	(AEP, UK)....TERMINAL	
913	*1-615-361-11	(AEP, UK)....PC BOARD, POWER TRANSLATION	
SP901	1-503-393-11	SPEAKER	

(2) **REVISED**



Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

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

No.	Part No.	Description	Remarks
51	3-323-638-01	SELECTOR, CH	
52	A-3040-626-A	CABINET (LOWER) ASSY	
53	*3-323-566-01	BRACKET, 12P CONNECTOR	
54	3-323-573-01	KNOB, POWER SWITCH	
55	*3-323-639-01	PLATE, SELECTOR, CH	
56	*3-323-632-01	SHEET, CH	
57	3-831-441-11	CUSHION (B)	
58	2-832-007-00	BUSHING (K), INSULATING	
59	4-875-726-00	SHEET, INSULATING	
60	*3-323-577-01	HEAT SINK (A)	
61	*3-323-637-01	BRACKET, LED	
62	*3-323-634-01	(FORMER TYPE)...COVER, LED	
62	*3-323-670-01	(NEW TYPE).....HOLDER (LOWER), LED	
63	9-911-815-01	CUSHION	
64	*3-323-641-01	FRAME	
65	*3-323-578-01	HEAT SINK (B)	
66	3-556-081-00	RETAINER (B), CORD	
67	3-323-594-01	SCREW, TAPPING, (M2.6X20)	
68	*3-323-597-01	(US, Canadian)...COVER, TR	
69	7-621-771-06	SCREW +B 2X5	
70	7-685-133-14	SCREW +BTP 2.6X6 TYPE2 N-S	
71	7-621-770-67	SCREW +B 2.6X6	
72	7-687-264-21	SCREW, TOTSU PTPWH 4X10, TYPE2	
73	3-485-330-21	FELT	
74	3-323-559-01	KNOB, REVERSE	
901	*A-3060-038-A	(US, Canadian)...MOUNTED PCB, AUDIO	
901	*A-3060-140-A	(AEP, UK).....MOUNTED PCB, AUDIO	
902	*A-3089-166-A	MOUNTED PCB, SYSTEM CONTROL	
904	1-535-507-11	(US, Canadian)...CONNECTOR (TRANSLATION)	
905	⚠1-551-780-00	(US, Canadian)...CORD, POWER	
905	⚠1-555-750-00	(AEP).....CORD, POWER	
905	⚠1-555-841-00	(UK).....CORD, POWER	
906	1-533-037-XX	HOLDER, FUSE	
907	*1-618-190-11	PC BOARD, FL TUBE	
908	*1-618-191-11	PC BOARD, LED	
909	*1-618-193-11	PC BOARD, 12P	
910	*1-618-194-11	PC BOARD, SW	
911	*1-564-026-00	CONTACT, RECEPTACLE	
CNJ802	*1-561-533-00	SOCKET, CONNECTOR 12P (CONTROL UNIT)	
F351	⚠1-532-743-11	(US, Canadian)...FUSE, GLASS TUBE 2A	
F351	⚠1-532-259-00	(AEP, UK).....FUSE, TIME-LUG 1.6A	
F352	⚠1-532-259-00	(AEP, UK).....FUSE, TIME-LUG 1.6A	
ND571	1-519-328-11	INDICATOR TUBE, FLUORESCENT	
T901	⚠1-447-918-11	(US, Candian).....TRANSFORMER, POWER	
T901	⚠1-448-116-11	(AEP, UK).....TRANSFORMER, POWER	

3. The sets of AEP and UK models are the same as the set of US model except for power supply section.
Therefore, only different portions among these models have been described in this supplement.

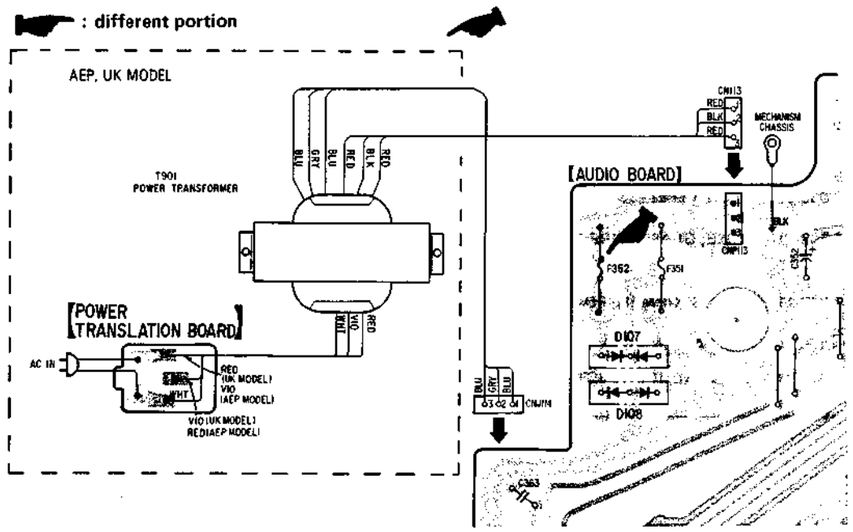
Cabinet color in AEP and UK models is gray only.

- **SPECIFICATIONS (Page 1)**

	US Model	AEP Model	UK Model
Power requirements	120V AC, 60 Hz	220V AC, 50 Hz	240V AC, 50 Hz
Power consumption	200 mA	13 W	13 W

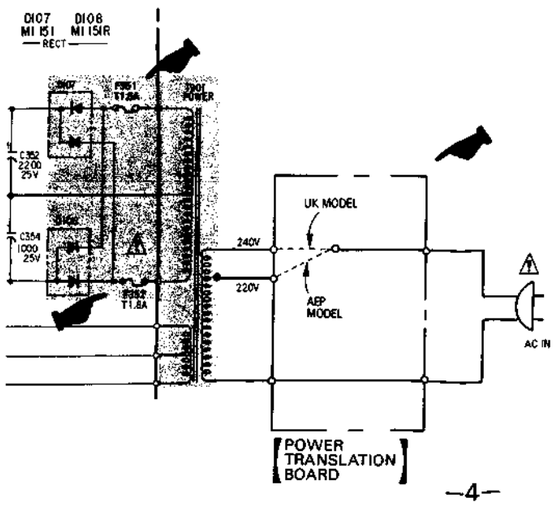
- **MOUNTING DIAGRAM (Page 28)**

: different portion



- **SCHEMATIC DIAGRAM (Page 34)**

: different portion



• ELECTRICAL PARTS LIST (Page 39 to 43)

Only the following parts are different from those of US model.

Page	US Model			AEP, UK Model	
	No.	Part No.	Description	Part No.	Description
39	901	*A-3060-038-A	MOUNTED PCB, AUDIO	*A-3060-140-A	MOUNTED PCB, AUDIO
39	904	1-535-507-11	CONNECTOR (TRANSLATION)	————	
39	905	⚠ 1-551-780-00	CORD, POWER	⚠ 1-555-750-00	(AEP) . . . CORD, POWER
				⚠ 1-555-841-00	(UK) . . . . CORD, POWER
39	912	————		⚠ 1-535-416-00	TERMINAL
39	913	————		*1-615-361-11	PC BOARD, POWER TRANSLATION
40	D103	8-719-102-05	(FORMER TYPE) . . . DIODE SG205D	————	
40	D103	8-719-938-67	(NEW TYPE) . . . DIODE GL-3EG8	8-719-938-67	DIODE GL-3EG8
40	D203	8-719-102-05	(FORMER TYPE) . . . DIODE SG205D	————	
40	D203	8-719-938-67	(NEW TYPE) . . . DIODE GL-3EG8	8-719-938-67	DIODE GL-3EG8
40	D303	8-719-102-05	(FORMER TYPE) . . . DIODE SG205D	————	
40	D303	8-719-938-67	(NEW TYPE) . . . DIODE GL-3EG8	8-719-938-67	DIODE GL-3EG8
40	D403	8-719-102-05	(FORMER TYPE) . . . DIODE SG205D	————	
40	D403	8-719-938-67	(NEW TYPE) . . . DIODE GL-3EG8	8-719-938-67	DIODE GL-3EG8
40	F351	⚠ 1-532-743-11	FUSE, GLASS TUBE 2A	⚠ 1-532-259-00	FUSE, TIME-LAG 1.6A
40	F352	————		⚠ 1-532-259-00	FUSE, TIME-LAG 1.6A
43	T901	⚠ 1-447-918-11	TRANSFORMER, POWER	⚠ 1-448-116-11	TRANSFORMER, POWER
		ACCESSORY & PACKING MATERIAL		ACCESSORY & PACKING MATERIAL	
43		3-765-071-21	MANUAL, INSTRUCTION (ENGLISH)	3-765-071-11	MANUAL, INSTRUCTION (ENGLISH/FRENCH)

9-952-322-81

Sony Corporation
Audio Group

English
89A05[illegible]5-1
Printed in Japan

Published by A/V Engineering Service Dept.