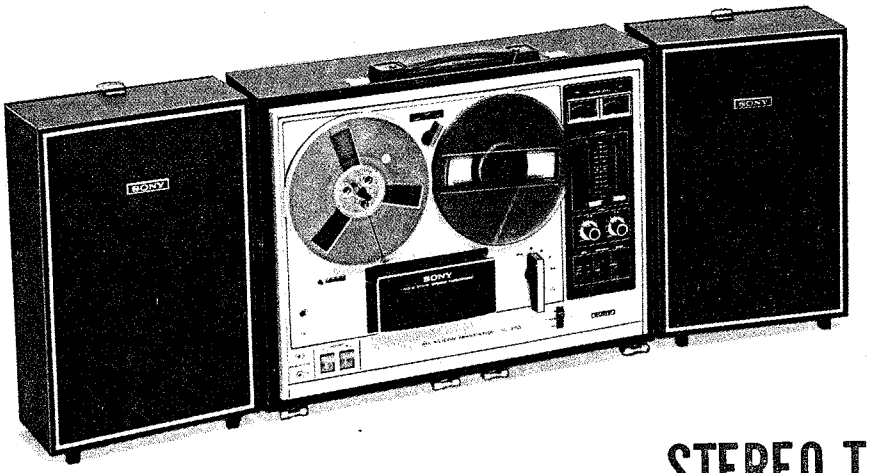
TC-270

AEP Model



STEREO TAPECORDER

SPECIFICATIONS

Power Requirements: AC 50/60 Hz, 110V, 127V, 220V, 240V 55W

Track System: Four-track stereo and mono

Reel Size: 7" (18 cm) maximum

Tape Speed: $7\frac{1}{2}$ ips, $3\frac{3}{4}$ ips and $1\frac{7}{8}$ ips (19 cm/s, 9.5 cm/s and 4.8 cm/s)

Frequency Response:

NAB	DIN
30～18,000 Hz, at $7\frac{1}{2}$ ips (19 cm/s)	30～16,000 Hz
30～13,000 Hz, at $3\frac{3}{4}$ ips (9.5 cm/s)	40～12,500 Hz
30～7,000 Hz at $1\frac{7}{8}$ ips (4.8 cm/s)	

Signal-to-Noise Ratio: 50 dB or more

Wow and Flutter:

NAB	DIN
0.12%, at $7\frac{1}{2}$ ips (19 cm/s)	0.18%
0.15%, at $3\frac{3}{4}$ ips (9.5 cm/s)	0.25%
0.2% at $1\frac{7}{8}$ ips (4.8 cm/s)	

Frequency: Approx. 85 kHz

Power Output: 5W maximum per channel

Inputs: MIC
- Input impedance: low impedance
- Maximum sensitivity: 0.19 mV (-72 dB)

REC/PB connector
- Input impedance: 3.9 k ohms
- Input level: 17.4 mV (-33 dB)

Outputs: LINE OUTputs
- Load impedance: more than 10 k ohms
- Output level: -5 dB (0.43V)

SPEAKER outputs
- Load impedance: 8Ω

REC/PB connector
- Output impedance: 80 ohms
- Output level: 0 dB (0.775V)

Headphone output
- Load impedance: 8Ω

Semiconductors: 18 transistors and 4 diodes

Dimensions: $20\frac{13}{16}$(W) x $10\frac{3}{16}$(H) x $15\frac{1}{4}$"(D) (513 x 260 x 387 mm)

Weight: 36 lb 6 oz (16.5 kg)

SONY®

SERVICE MANUAL

TABLE OF CONTENTS

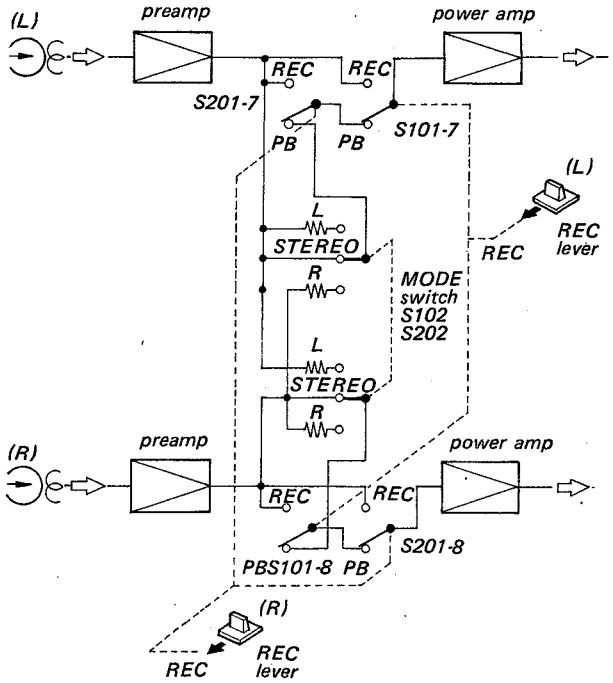
When ordering replacement parts, you should use PART NUMBER listed on the Parts Lists or shown in the EXPLODED VIEW. The reference number should not be used for ordering purposes.

SECTION 1
OUTLINE

1-1. GENERAL DESCRIPTION

The SONY model TC-270 is a 4-track 2-channel stereo-phonic and monaural tape recorder. The special circuit is equipped as follows:

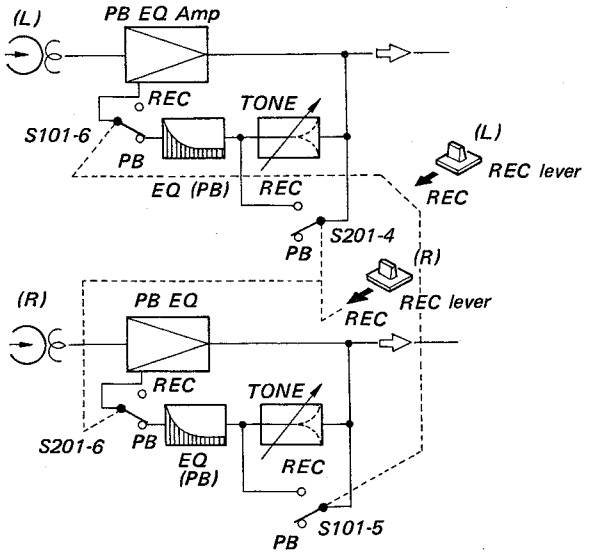
* **S102, S202 (Playback Mode Switch)**
(Mode switch is disconnected in recording mode.)



In the monaural playback mode, power amplifiers of both channels are connected in parallel to increase output power.

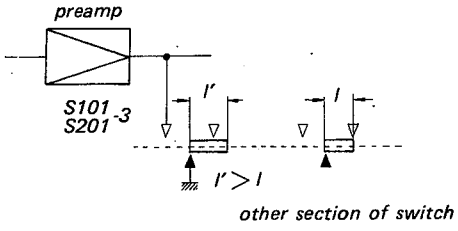
* **S201-4, S101-5 (TONE Defeat Switch)**

TONE controls are worked when both channels are in playback mode and disconnected when one channel is in record mode.
When one channel is in record mode, the other playback channel picks up a leakage of recording bias and recording signals. To prevent such a high frequency leakage from boosting, S201-4 or S101-5 short-circuits TONE control.

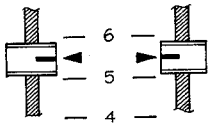


*** S101-3, S201-3**

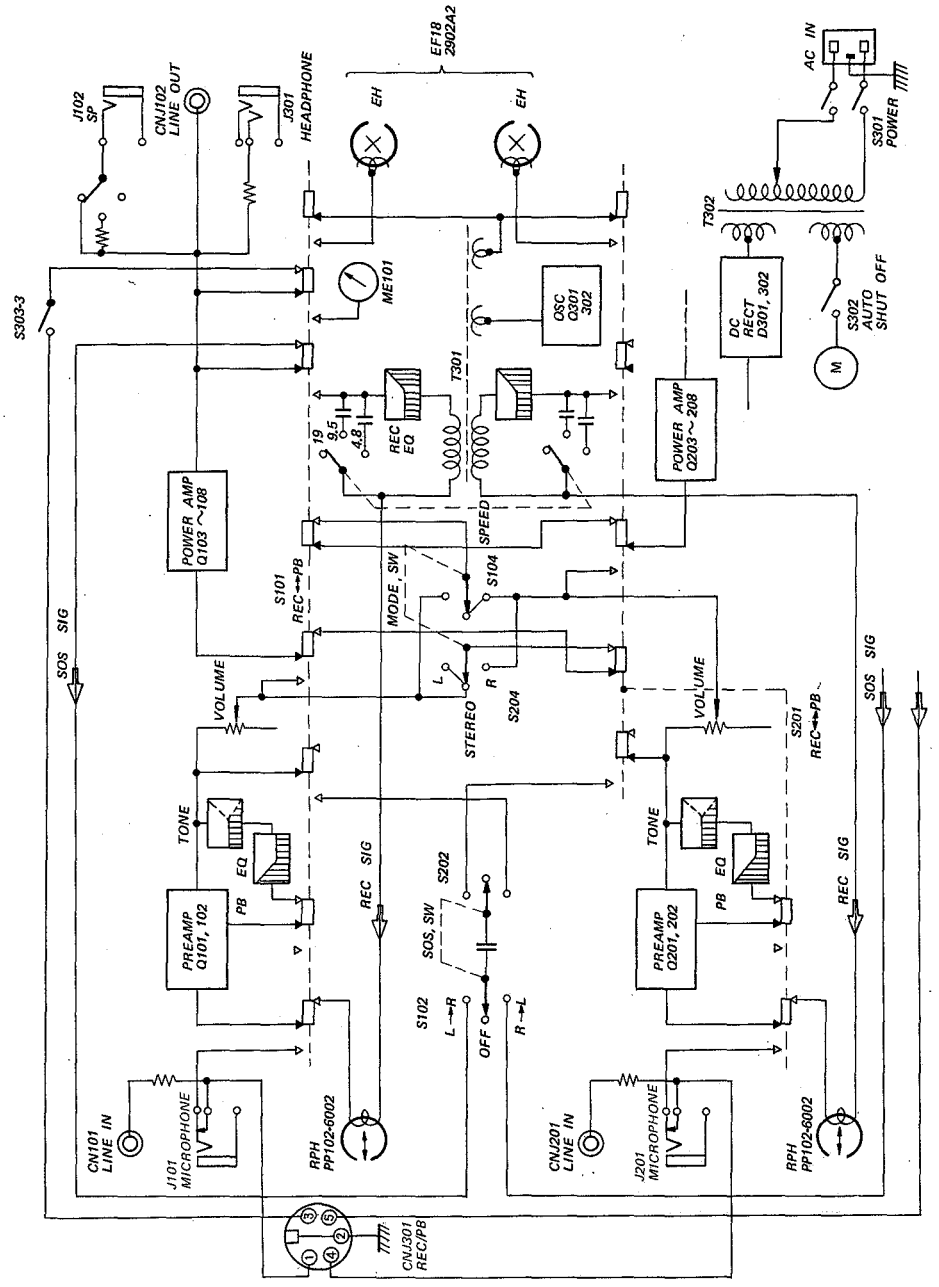
S101-3 or S201-3, one section of record/playback switch, grounds preamplifier output until the other section is completely changed over to avoid switching click noise.



Note:

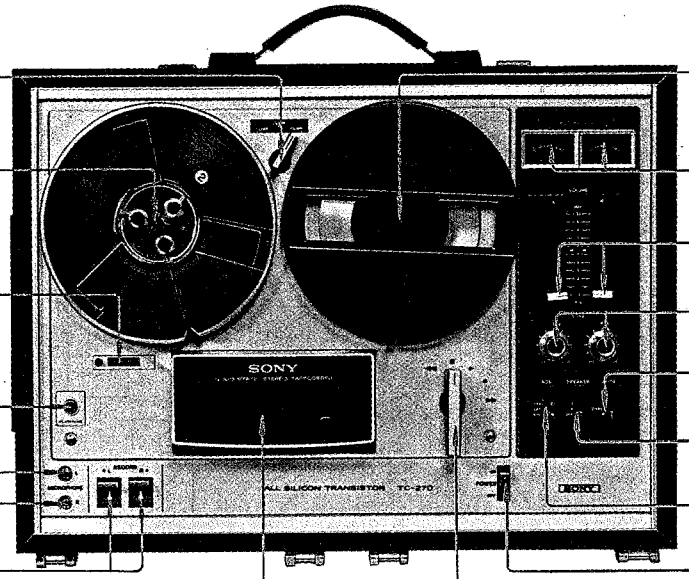
	Electrical Mid Position	Remarks
TONE control	 TONE control ▼ on the panel	flat frequency response
VOLUME control	VOLUME control  ▼ on the panel	-5 dB (0.44V) at LINE OUT jack

1-2. BLOCK DIAGRAM



1-3. MAJOR PARTS LOCATION

Front Panel



X-34580-22-1
knob ass'y, speed selector

X-35112-01-0
reel table ass'y (B), supply

Y-20410-22-1
counter, tape index

1-507-282-00
jack, HEADPHONE (J301)

1-507-251-00
jack, MICROPHONE
(J101, 201)

3-472-262-00
knob, RECORD

X-35310-08-0
cover ass'y, head

X-35112-02-0
reel table ass'y (B), take-up

1-524-078-21
meter, RECORD LEVEL
(ME101, 201)

X-34838-02-1
knob ass'y, VOLUME

X-34970-50-1
knob ass'y, TONE

1-514-635-00
switch, slide, MODE
(S104, 204)

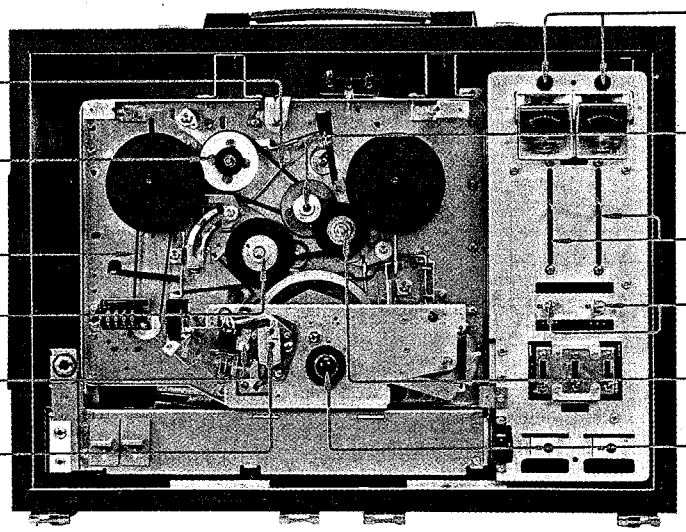
1-514-635-00
switch, slide, SPEAKER
(S103, 203)

1-514-635-00
switch, slide, SOS
(S102, 202)

1-514-472-21
switch, seesaw, POWER
(S301)

X-34608-06-3
knob ass'y, function

Chassis Front



3-431-149-00
belt, rewind

X-34860-18-0
pulley ass'y (B), rewind

3-458-116-00
belt, counter

X-34720-33-0
idler ass'y, capstan

8-825-547-00
head, erase
(EF18-2902A-1)

8-829-106-20
head, record/playback
(PP102-6002)

1-518-052-11
lamp, 2.5 V 250 mA
(PL303, 304)

50 Hz	60 Hz
3-486-120-01	3-486-121-01 (mark 2)
3-486-120-11	3-486-121-11 (mark 3)
3-486-120-21	3-486-121-21 (mark 4)
3-486-120-31	3-486-121-31 (mark 5)
3-486-120-41	(mark 6)

pulley, motor

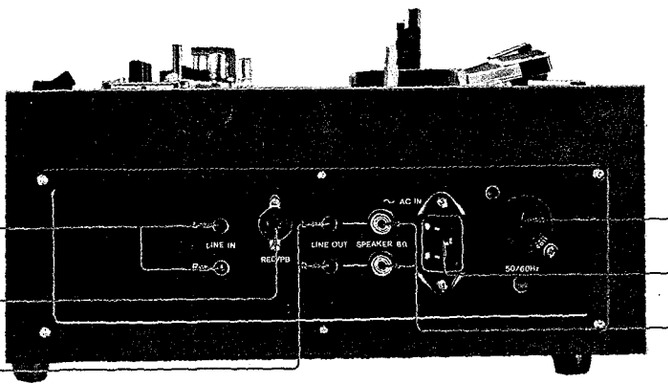
1-224-008-00
variable resistor, slide; 10 kΩ

1-222-306-00
variable resistor, 20 kΩ (TONE)
(R118, 218)

X-34600-11-0
idler ass'y, take-up

3-421-086-00
pinch roller

Side Panel



1-507-142-00
jack, 2-P phono; LINE IN
(CNJ101, 201)

1-509-359-00
connector, REC/PB
(CNJ301)

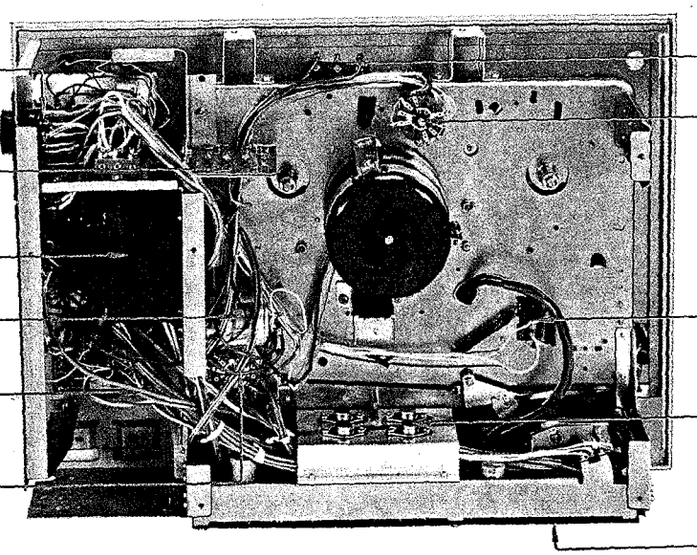
1-507-142-00
jack, 2-P phono; LINE OUT
(CNJ102, 202)

1-509-482-00
socket, VOLTAGE SELECTOR
(CN301)

1-509-445-00
connector, AC IN
(CNJ302)

1-507-251-00
jack, mini; SPEAKER
(J102, 202)

Chassis Bottom



1-509-482-00
socket, VOLTAGE SELECTOR
(CN301)

1-532-259-00
fuse, 1.6A (F1.2)

1-532-053-00
fuse, 1.6A (F3)

1-441-903-11
transformer, power
(T302)

1-117-036-22
capacitor, 1.5 + 0.5 µF,
250 V, MP

X-35310-52-1
mounted circuit board,
switch control

1-514-967-00
switch, rotary, timing
(S303)

1-536-189-00
terminal strip, 1L1, B

1-516-079-00
switch, rotary, equalizer
(S105, 205)

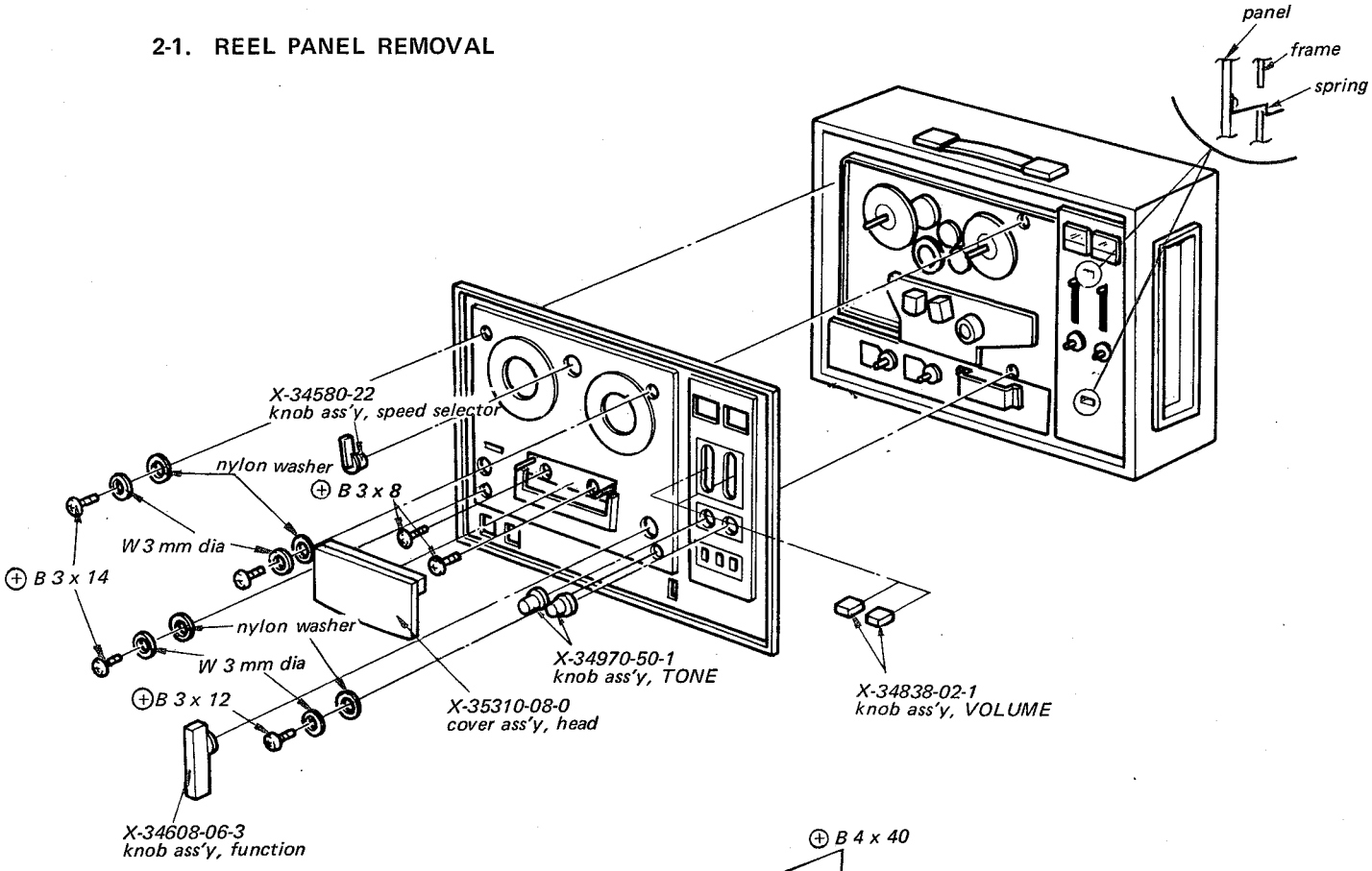
1-514-079-00
switch, micro, auto shut-off
(S302)

X-35310-53-1
mounted circuit board,
power transistor

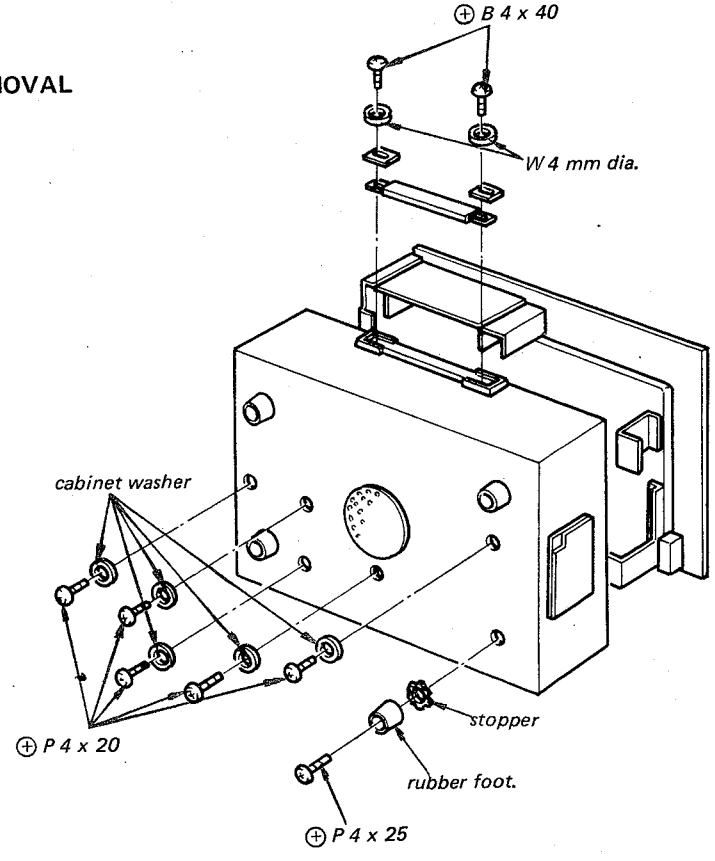
X-35310-51-1
mounted circuit board, amp

SECTION 2
DISASSEMBLY

2-1. REEL PANEL REMOVAL



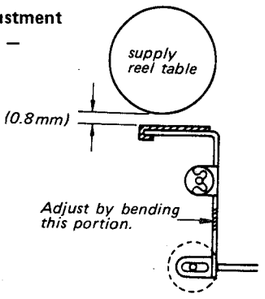
2-2. CABINET REMOVAL



SECTION 3
ADJUSTMENT PROCEDURES

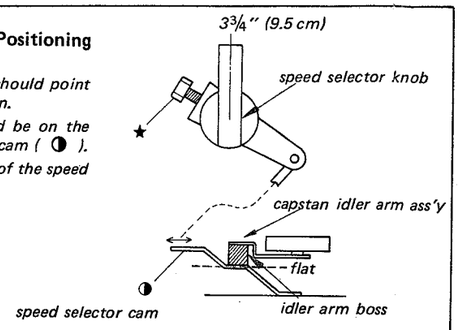
3-1. MECHANICAL ADJUSTMENTS

Brake (Supply) Adjustment
— in FF mode —

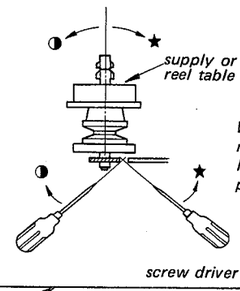


Speed Selector Knob Positioning

1. Speed selector knob should point 3¾" (9.5 cm) position.
2. Idler arm boss should be on the flat of speed selector cam (◑).
3. Fasten the screw (★) of the speed selector knob.

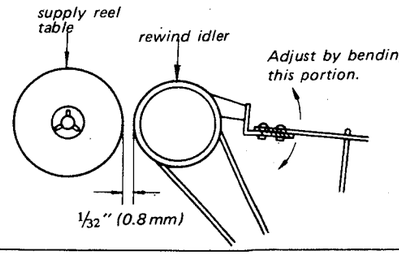


Tape Touch Adjustment

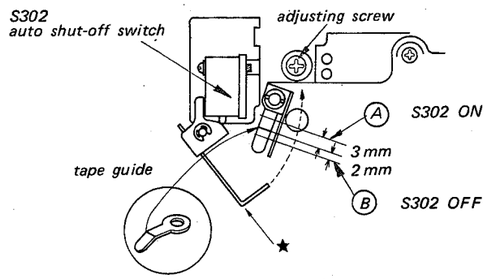


When the tape touches the reel edge in FF, REW and FWD modes, bend this portion.

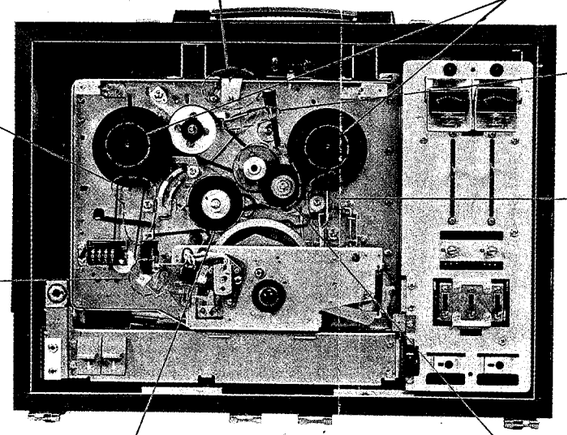
Rewind Idler Adjustment
in STOP mode



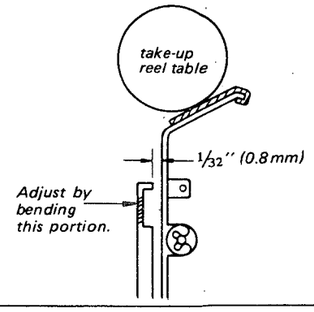
Actuator Adjustment



Loosen the screw and adjust auto shut-off switch position.
When actuator comes to the portion (A), auto shut-off switch should be turned ON.
When actuator comes to the portion (B), auto shut-off switch should be turned OFF.

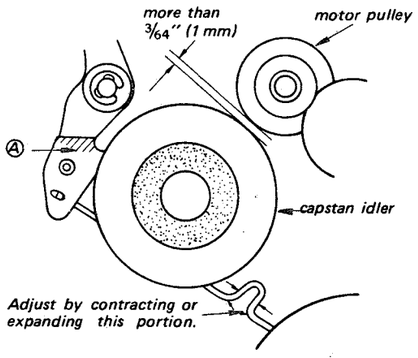


Brake (Take-up) Adjustment
in STOP mode



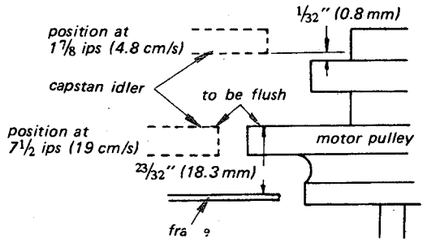
Capstan Idler Position Adjustment
in STOP mode

1. Clearance Adjustment



2. Height Adjustment

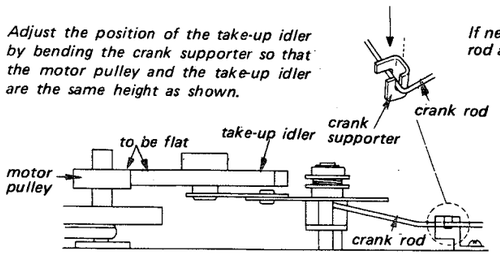
Adjust the portion (A) shown in the figure in the item 1 by bending so that the height of capstan idler at 7½ ips (19 cm/s) and 1⅞ ips (4.8 cm/s) are as shown.



Take-up Idler Position Adjustment
— in FF and STOP modes —

1. Height Adjustment
— in FF mode —

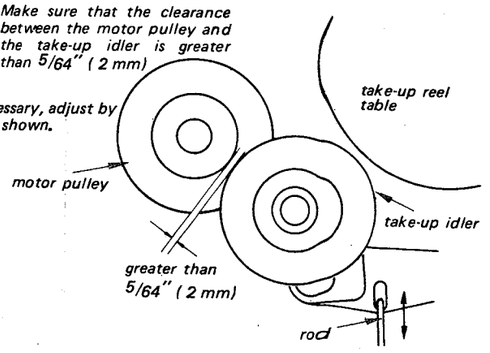
Adjust the position of the take-up idler by bending the crank supporter so that the motor pulley and the take-up idler are the same height as shown.

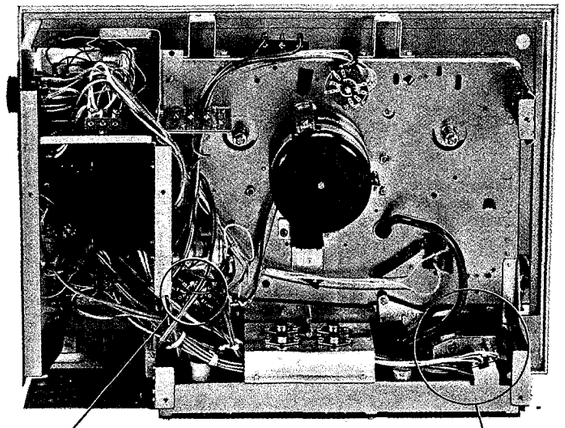


2. Position Check
— in STOP mode —

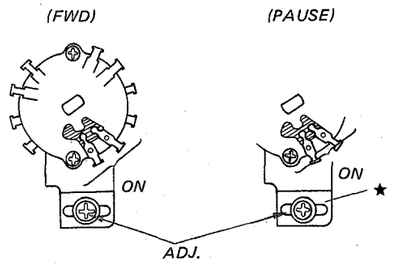
Make sure that the clearance between the motor pulley and the take-up idler is greater than 5/64" (2 mm)

If necessary, adjust by rod as shown.



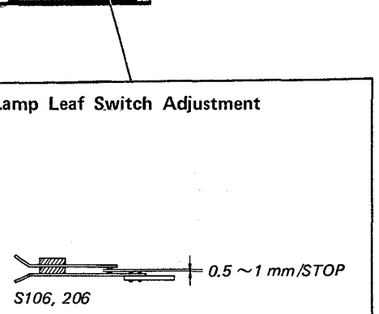


Timing Rotary Switch Adjustment (S303)



Adjust ★ portion by screw so that the switch should be ON in FWD and PAUSE modes.

Record Lamp Leaf Switch Adjustment



When REC lever is depressed, S106, 206 should be ON.

Torque Measurement

Take-up torque: 300 ±25 g·cm (4.2 ±0.3 oz·inch)

Fast forward torque: 1,200 ± 100 g·cm (16.8 ± 1.4 oz·inch)

Rewind torque: 1,400 ± 100 g·cm (19.6 ± 1.4 oz·inch)

Back Tension (supply reel table) Measurement

In forward mode: 80~120 g·cm (1.1~1.7 oz·inch)

Pinch Roller Pressure Measurement

1,200 ~ 1,500 g (2.6 ~ 3.3 lb)

3-2. ELECTRICAL ADJUSTMENTS/ MEASUREMENTS

Precautions:

1. Clean the following parts with alcohol moistened swab:
   - record/playback head
   - erase head
   - capstan
   - pinch roller
   - rubber belts
   - idlers
   - tape guides
2. Demagnetize record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for adjustments.
4. Perform the following adjustments in numerical order.
5. Perform the following adjustments for each channel, unless otherwise noted.
6. After adjustment, fix adjusted parts with locking compound.

Test Equipment Required:

audio oscillator (af osc)
attenuator 600 Ω (att)
VTVM
digital frequency counter
wow meter
1-kHz bandpass filter
resistors;
10W type 8Ω
¼W type 300Ω, 600Ω
10 kΩ, 100 kΩ
blank tape (erased by bulk eraser)
SONY alignment tapes:

J-19-F1

	1	2	3	4	5	6	7
Frequency (Hz)	10k	400	400	10k	7k	80	40
Level (dB)	-10	0	-10	-10	-10	-10	-10

SPC-47 (4 kHz, 0 dB)
WS-19-7 (3 kHz, 0 dB)
WS-9-7 (3 kHz, 0 dB)

Normal Operating Level

	Signal Level	*Impedance*
MICROPHONE	-60 dB (0.77 mV)	600 Ω
LINE IN	-10 dB (0.25 V)	10 kΩ
LINE OUT	-5 dB (0.44 V)	100 kΩ load
SPEAKER (REC MODE)	+3 dB (1.1 V)	8 Ω load
(playback MODE)	+9 dB (2.2 V)	8 Ω load

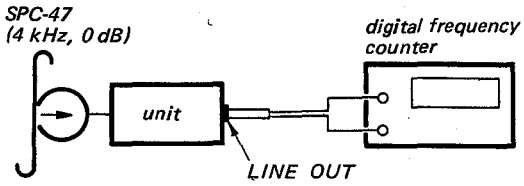
Tape Speed Adjustment

Control/Switch Setting:

SOS switch:	OFF
tape speed selector:	7½ ips 19 cm/s
SPEAKER switch:	OFF
MODE switch:	STEREO
TONE control:	▼ position
VOLUME control:	mechanical mid.

Procedure:

Mode: playback

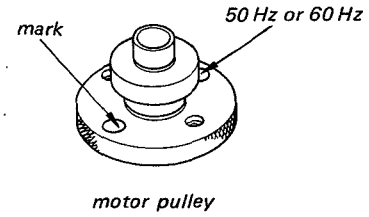


Specification:

counter reading: 3,920 ~ 4,080 Hz

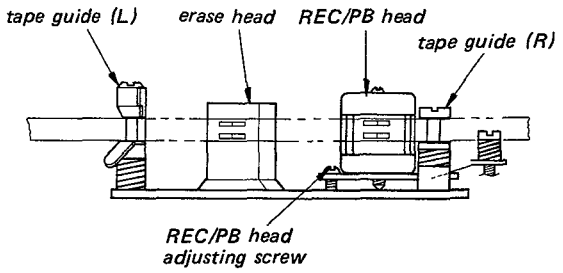
Note: If the counter reading is out of the specified range, replace motor pulley.

Motor Pulley			
Mark	**Diameter**	**50 Hz Part No.**	**60 Hz Part No.**
2	bigger	3-486-120-01	3-486-121-01
3	↕	3-486-120-11	3-486-121-11
4		3-486-120-21	3-486-121-21
5	smaller	3-486-120-31	3-486-121-31



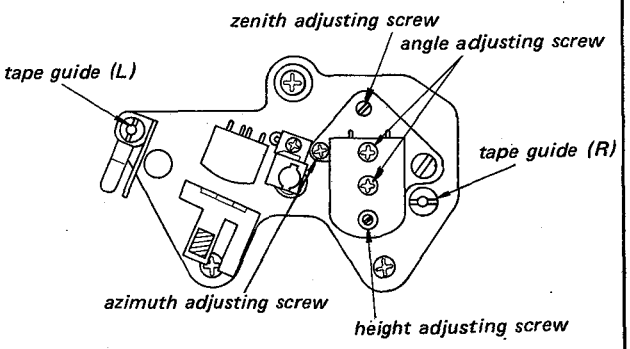
motor pulley

Tape Path Adjustment

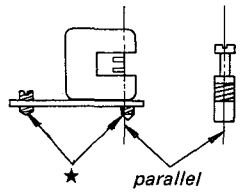


Procedure:

1. Thread a tape and place the unit in playback mode.
2. Align the upper edge of the erase head core and reocrd/playback head core for that of the tape by turning the tape guides (R, L).
3. Turn the tape guides (R, L) clockwise by approximately 35 degrees.



Record/Playback Head Height Adjustment



Procedure:

1. Parallel the face of the head and tape guide by adjusting the screws (marked ★).
2. Align the upper edge of the record/playback head core and that of the tape by evenly turning the screws (marked ★).
3. Turn the screws (marked ★) counterclockwise by 20 degrees.

Record/Playback Head Angle Adjustment

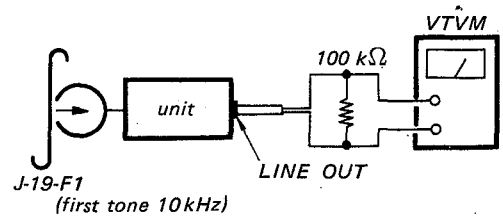
Control/Switch Setting:

tape speed selector: 7½ ips 19 cm/s

Procedure:

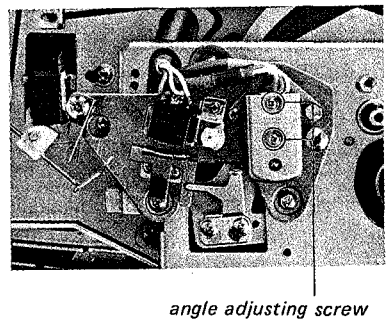
1.

Mode: playback



2. Adjust the angle adjusting screws for maximum VTVM reading.

Adjustment Location:



Playback Head Azimuth Adjustment

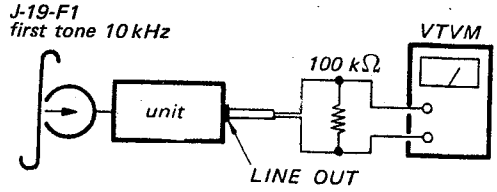
Control/Switch Setting:

SOS switch:	OFF
tape speed selector:	7½ ips 19 cm/s
SPEAKER switch:	OFF
MODE siwtch:	STEREO
TONE control:	▼ position
VOLUME control:	mechanical mid.

Procedure:

1.

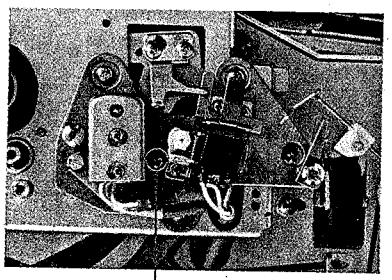
Mode: playback



2. Adjust the azimuth adjusting screw for maximum VTVM reading.

Note: If the azimuth angles of L-CH and R-CH are not the same, set the screw midway between two screw positions.

Adjustment Location:



azimuth adjusting screw

Playback Signal-to-Noise Ratio Measurment

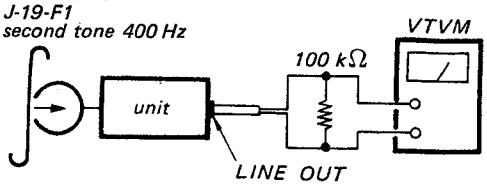
Control/Switch Setting:

SOS switch:	OFF
tape speed selector:	7½ ips 19 cm/s
	3¾ ips 9.5 cm/s
SPEAKER switch:	OFF
MODE switch:	STEREO
TONE control:	▼ position

Procedure:

1.

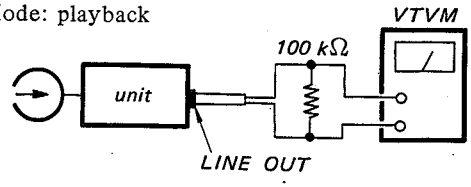
Mode: playback



2. Adjust VOLUME control for -5 dB (0.44V) VTVM reading.

3. With no tape threaded

Mode: playback



4. [-5 dB] − [VTVM reading (dB) in step 3] = [S/N Ratio]

5. Specification

tape speed	S/N ratio
19 cm/s	46 dB or greater
9.5 cm/s	44 dB or greater

Bias Adjustment

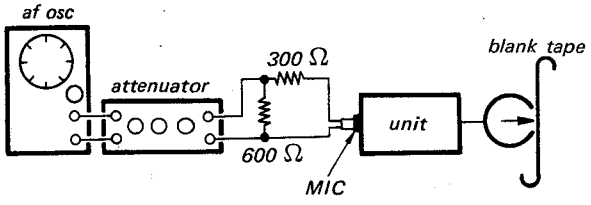
Control/Switch Setting:

tape speed switch:	7½ ips 19 cm/s
TONE control:	▼ position
VOLUME control:	Position to obtain -5 dB (0.44V) LINE OUTput for 1 kHz, -60 dB (0.78 mV) MIC input in record mode.

Procedure:

1.

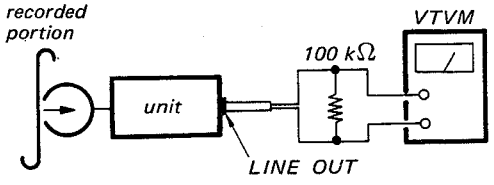
Mode: record



1 kHz, -80 dB (77.5 μV)
10 kHz, -80 dB (77.5 μV)

2.

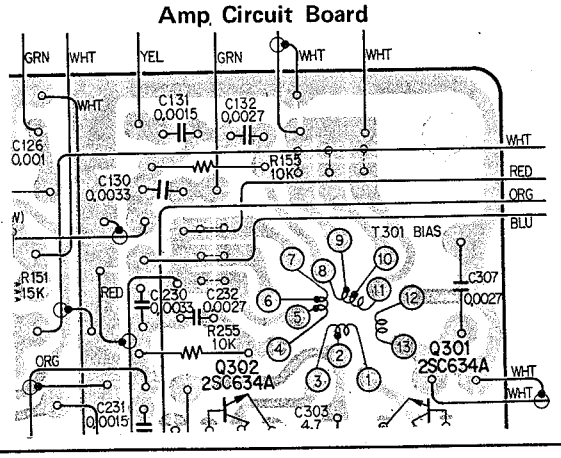
Mode: playback



Output level difference should be within 3 dB.

3. If the difference is more than 3 dB, change the tap of T301, ⑤ ~ ⑦, ⑨ ~ ⑪ as shown in the following figure.

Amp. Circuit Board



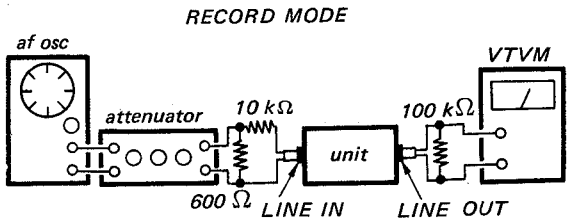
Level Meter Calibration

Control/Switch Setting:

SOS switch:	OFF
tape speed selector:	7½ ips 19 cm/s
SPEAKER switch:	OFF
MODE switch:	STEREO
TONE control:	▼ position

Procedure:

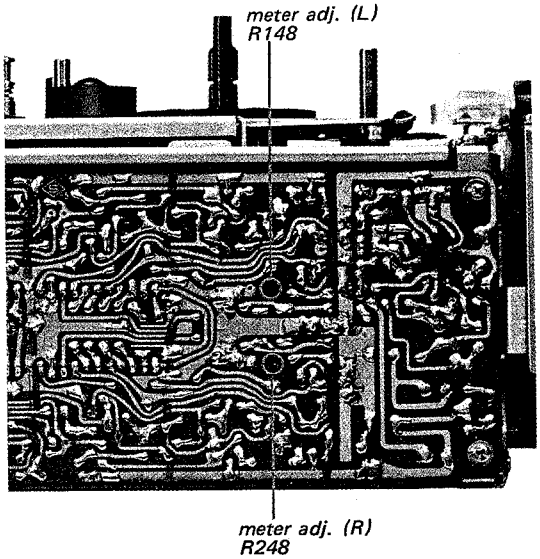
1.



1 kHz, -10 dB (0.25V)

2. Adjust VOLUME control for -5 dB (0.44V) VTVM reading.

3. Adjust R148 (L), R248 (R) for 0 reading on the RECORD LEVEL meter.



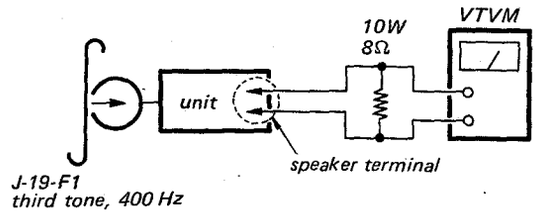
Maximum Output Measurement

Control/Switch Setting:

SOS switch:	OFF
tape speed selector:	7½ ips 19 cm/s
SPEAKER switch:	2 position
MODE switch:	STEREO
TONE control:	▼ position
VOLUME control:	10 max.

Procedure:

1.
Mode: playback



Specification:

more than +18.5 dB (6.25V)

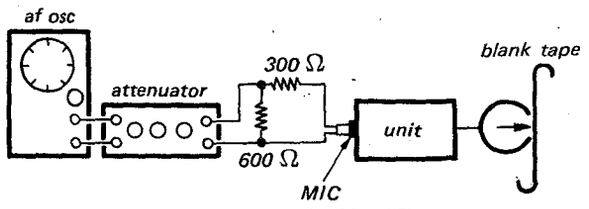
Overall Signal-to-Noise Ratio Measurement

Control/Switch Setting:

tape speed switch:	7½ ips 19 cm/s
TONE control:	▼ position
VOLUME control:	Position to obtain -5 dB (0.44V) LINE OUTput for 1 kHz, -60 dB (0.78 mV) MIC input in record mode.

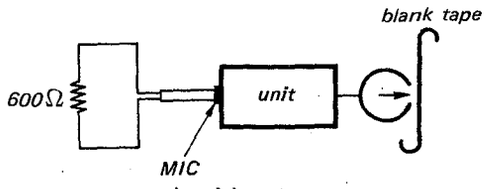
Procedure:

1.
Mode: record



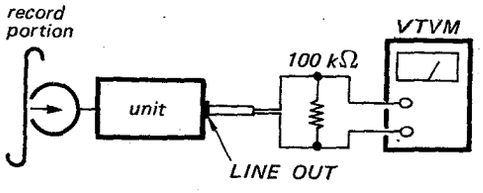
1 kHz, -60 dB (0.78 mV)

2.
Mode: record



no signal input

3.
Mode: playback



Recorded Signal	VTVM Reading
1 kHz	Adjust VOLUME control for -5 dB (0.44V)
no signal	-48 dB (3.08 mV) or less

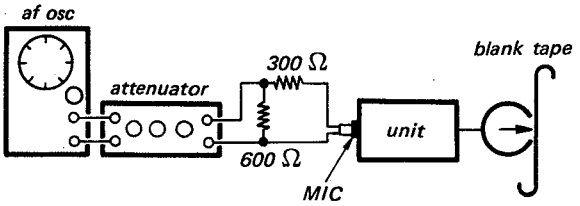
Erase Ratio Measurement

Control/Switch Setting:

tape speed switch:	7½ ips 19 cm/s
TONE control:	▼ position
VOLUME control:	Position to obtain -5 dB (0.44V) LINE OUTput for 1 kHz, -60 dB (0.78 mV) MIC input in record mode.

Procedure:

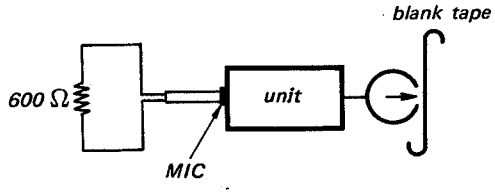
1.
Mode: record



1 kHz, -50 dB (2.45 mV)

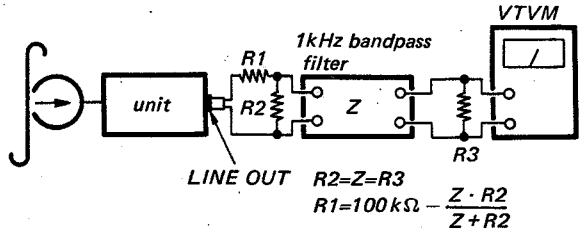
2. Rewind half of the recorded part.

3.
Mode: record



no signal input

4.
Mode: playback



Recorded Signal	VTVM Reading
1 kHz	Adjust VOLUME control for -5 dB (0.44V)
no signal	-70 dB (0.25 mV) or less

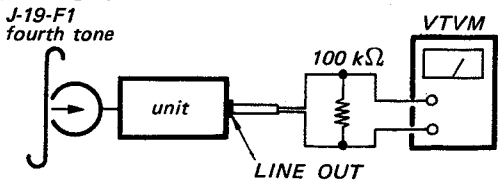
TONE Control Range Check

Control/Switch Setting:

SOS switch:	OFF
tape speed selector:	7½ ips 19 cm/s
SPEAKER switch:	OFF
MODE switch:	STEREO
TONE control:	▼ position
VOLUME control:	mechanical mid.

Procedure:

1.
Mode: playback



2.

TONE Control Setting	Output Level Difference
▼ position	0 dB
HIGH max.	approx. +10 dB
LOW max.	approx. -10 dB

Wow and Flutter Measurement

Control/Switch Setting:

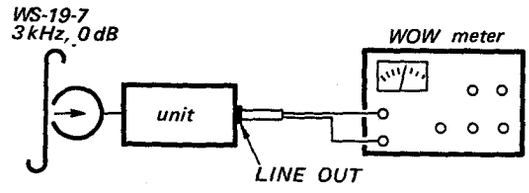
VOLUME control: 5 position
TONE control: mechanical mid position

Procedure:

Note: Measure wow and flutter for beginning, midway and end portion of tapes in both vertical and horizontal set positions.

1. at 7½ ips (19 cm/s)

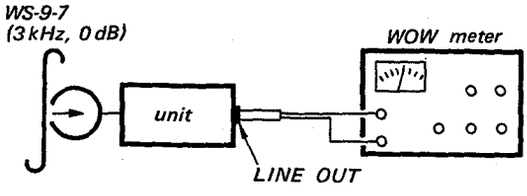
Mode: playback



Specification: 0.19% RMS or less

2. at 3¾ ips (9.5 cm/s)

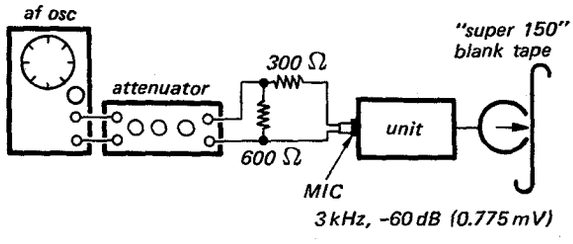
Mode: playback



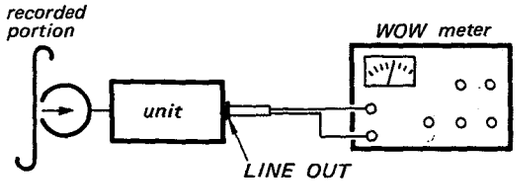
Specification: 0.24% RMS or less

3. at 1⅞ ips (4.8 cm/s)

Mode: record



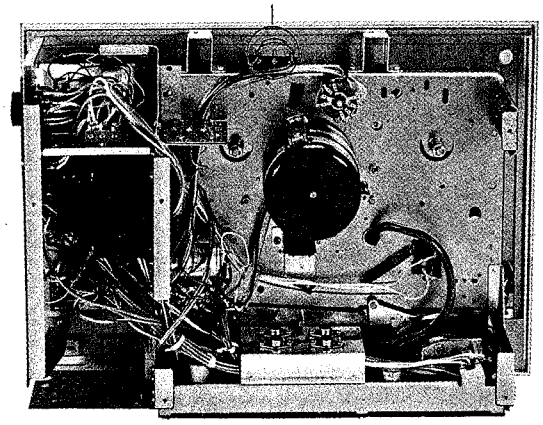
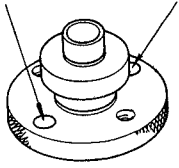
Mode: playback



Specification: 0.4% RMS or less

POWER FREQUENCY ADAPTATION

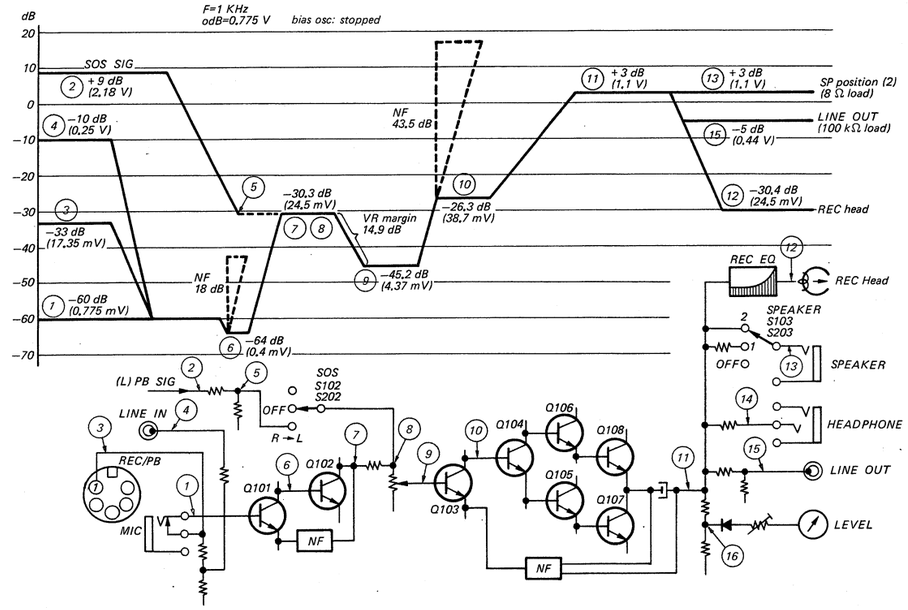
The MOTOR PULLEY and tapping of the MOTOR STARTING CAPACITOR TERMINALS must be altered if the line frequency differs from what the recorder is set for.

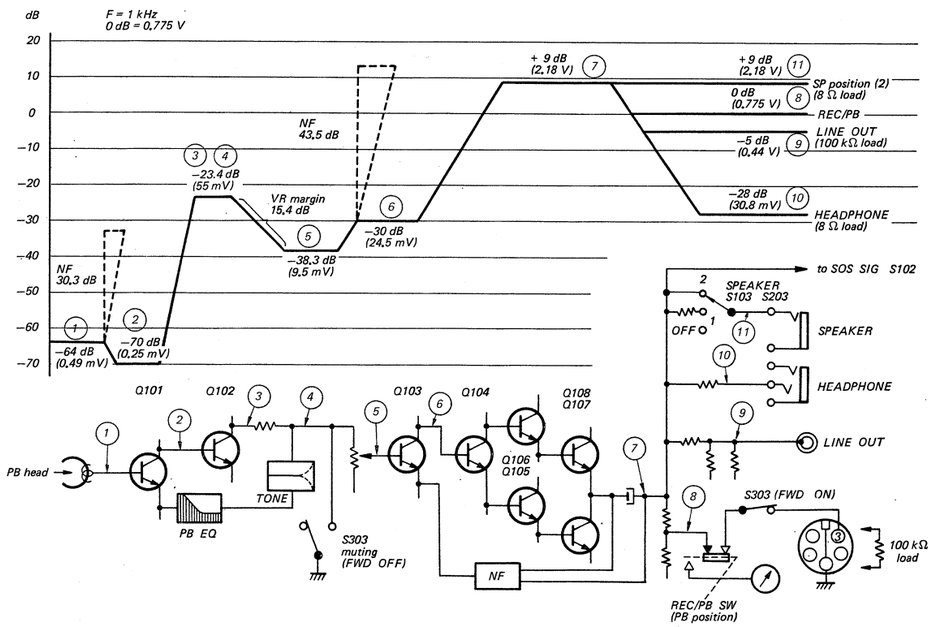
Connection of Motor Starting Capacitor	Motor Pulley
green jumper wire is connected ..... 50 Hz green jumper wire is removed .... 60 Hz *green jumper wire* 	Change motor pulley. Use motor pulley with same mark of 2~6. 50 Hz (mark) (Part No.) 2 ..... 3-486-120-01 3 ..... 3-486-120-11 4 ..... 3-486-120-21 5 ..... 3-486-120-31 60 Hz (mark) (Part No.) 2 ..... 3-486-121-01 3 ..... 3-486-121-11 4 ..... 3-486-121-21 5 ..... 3-486-121-31 *mark* *50 Hz or 60 Hz*  *motor pulley*

SECTION 4
DIAGRAMS

4-1. LEVEL DIAGRAMS

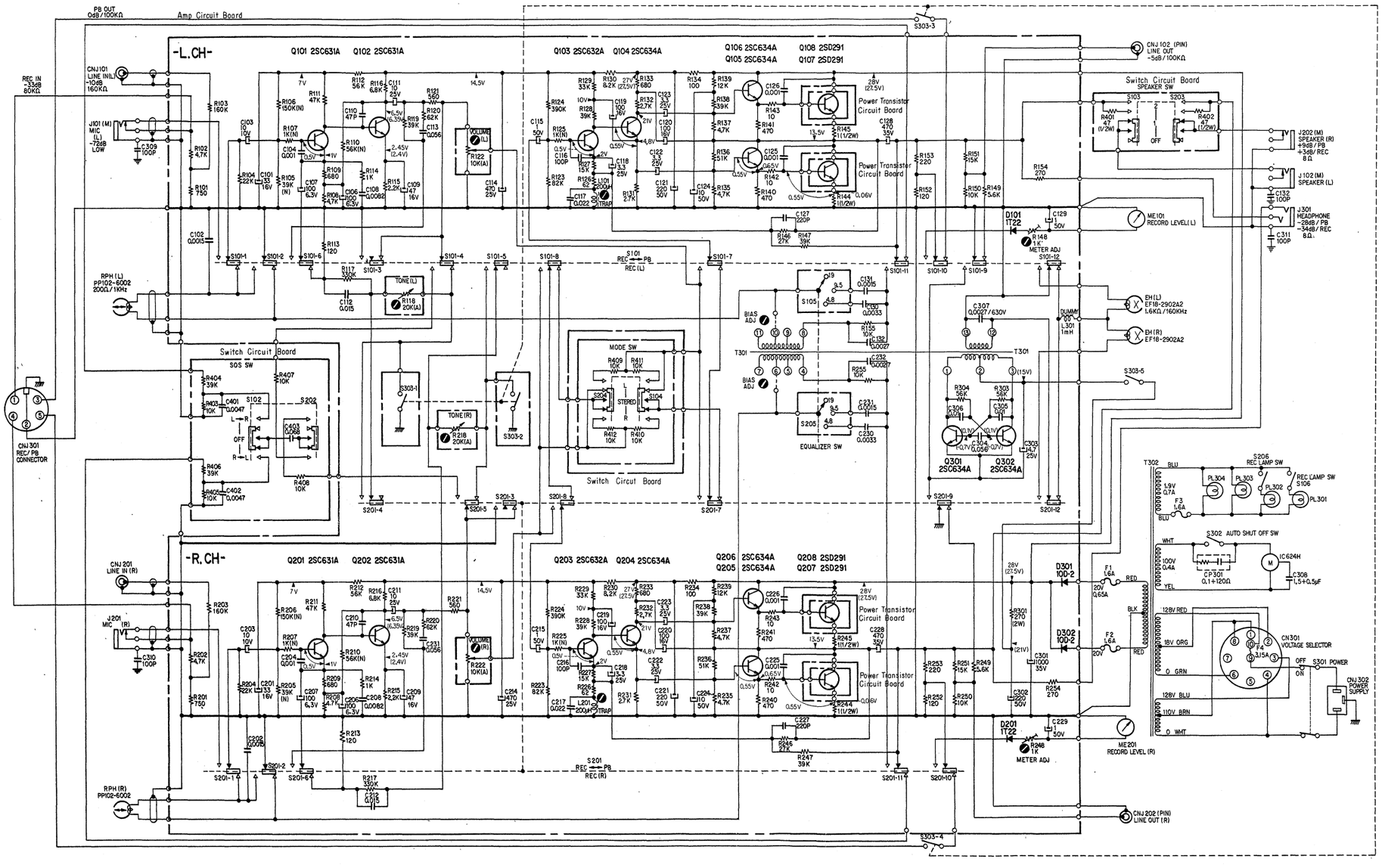
Record





MEMO

4-2. SCHEMATIC DIAGRAM



Note: 1. All resistors and capacitors are rated in Ω and μF, unless otherwise specified.

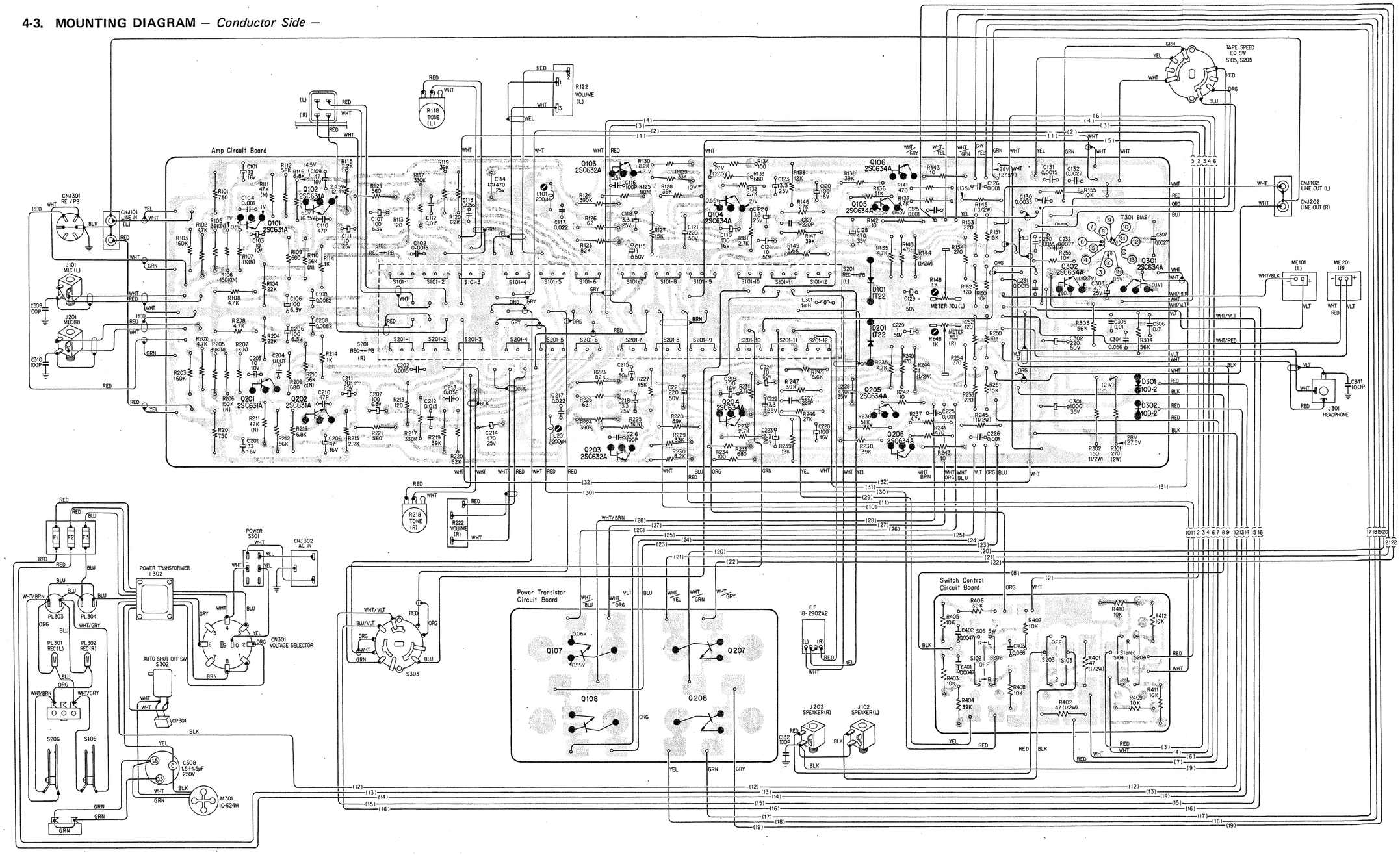
2. Voltage values shown are measured with a voltmeter (20 kΩ/V) in playback mode.
Voltage values in ( ) are measured in record mode. Variations may be noted because of normal production tolerances.

3. Symbols
⏚ . . . . . Chassis ground
⏚ . . . . . Common ground on circuit board
N . . . . . Low noise resistor

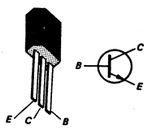
4. Switch position

(Ref. No.)	(Description)	(Position)
S101, 201	record/playback switch	PB
S102, 202	SOS switch	OFF
S103, 203	SPEAKER switch	OFF
S104, 204	MODE switch	STEREO
S105, 205	equalizer	19 cm/sec
S106, 206	record lamp switch	OFF
S301	POWER switch	ON
S302	auto shut-off switch	OFF
S303	timing switch	forward

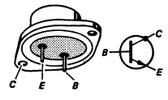
4-3. MOUNTING DIAGRAM — *Conductor Side* —



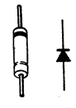
2SC631A Q101, 102, 103, 104, 105, 106
2SC632A Q201, 202, 203, 204, 205, 206
2SC634A Q301, 302



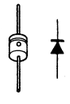
2SD291 Q107, 108, 207, 208



1T-22 D101, 201

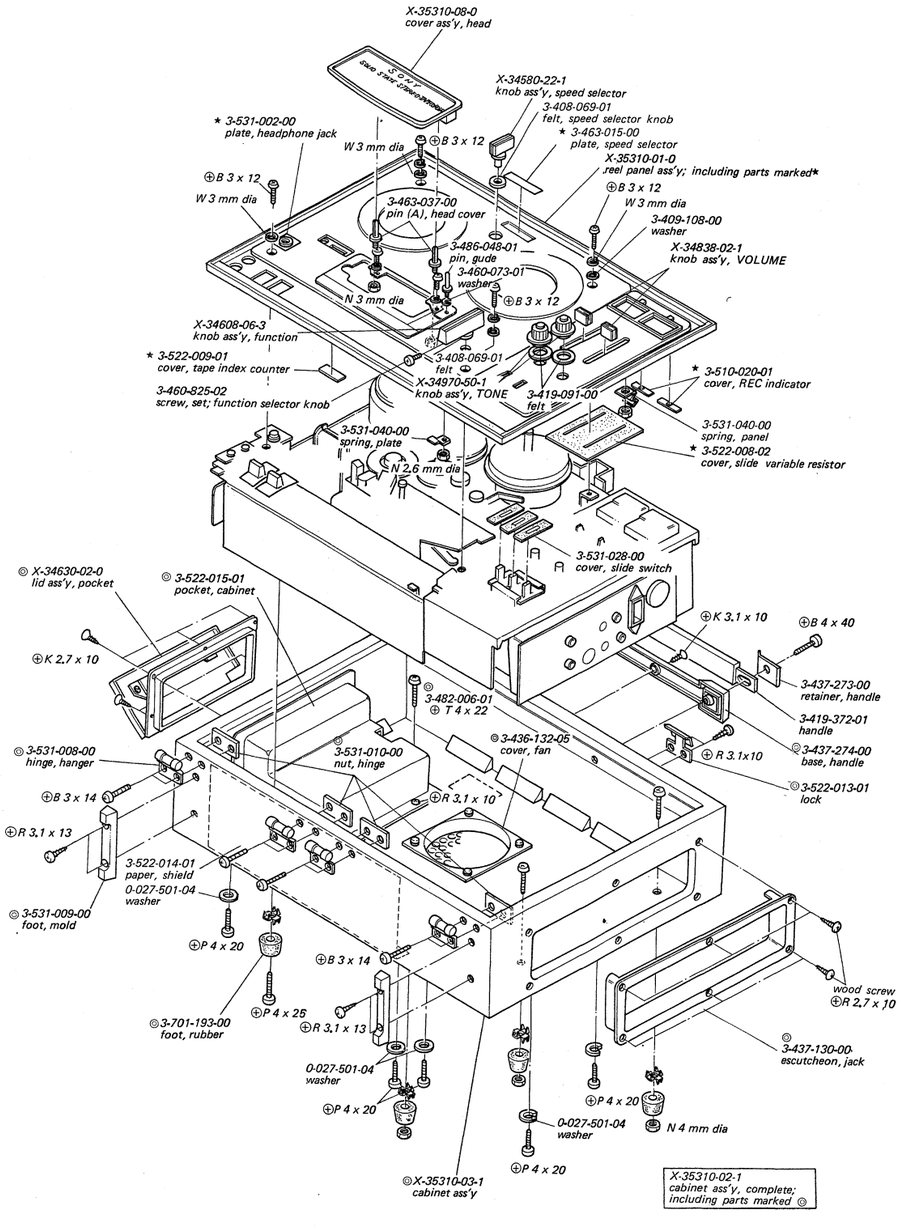


10D-2 D301, 302

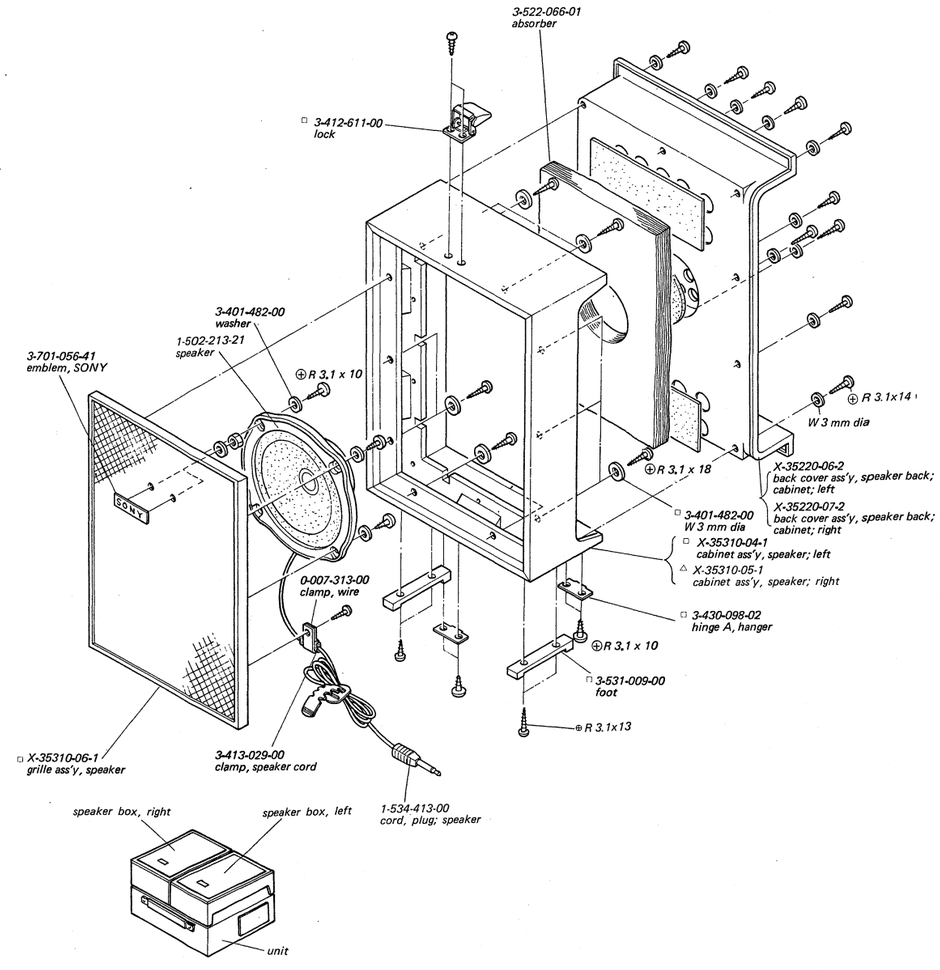


SECTION 5
EXPLODED VIEWS

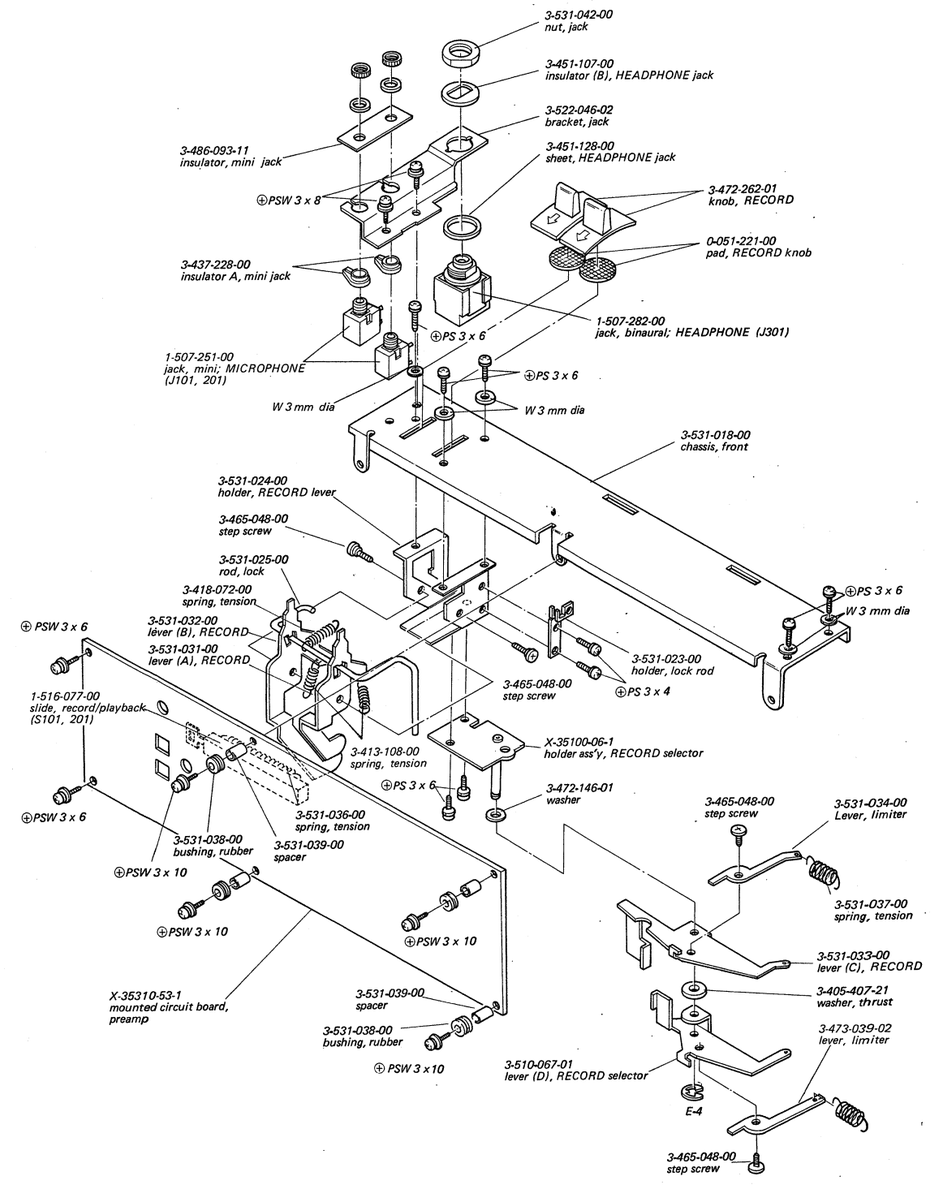
5-1. CABINET — Top View —



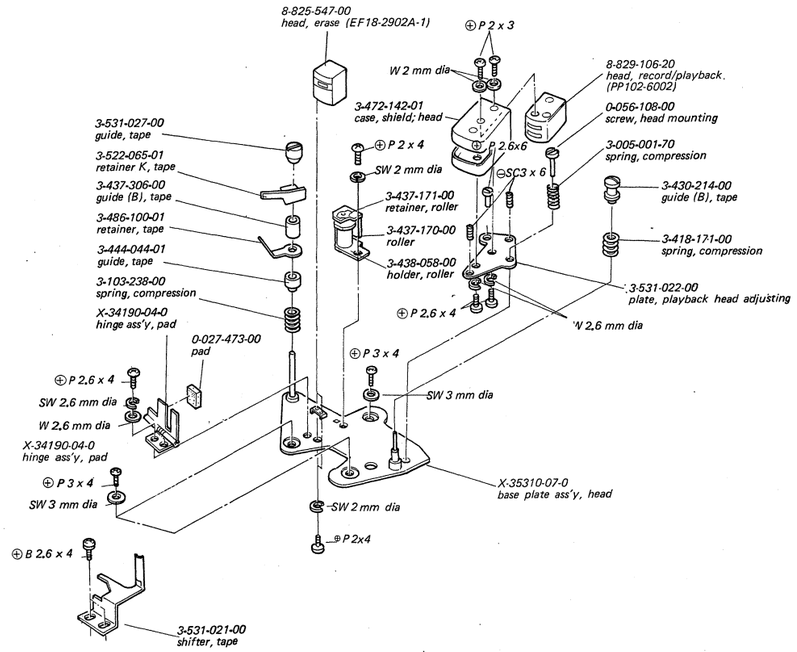
5-2. SPEAKER



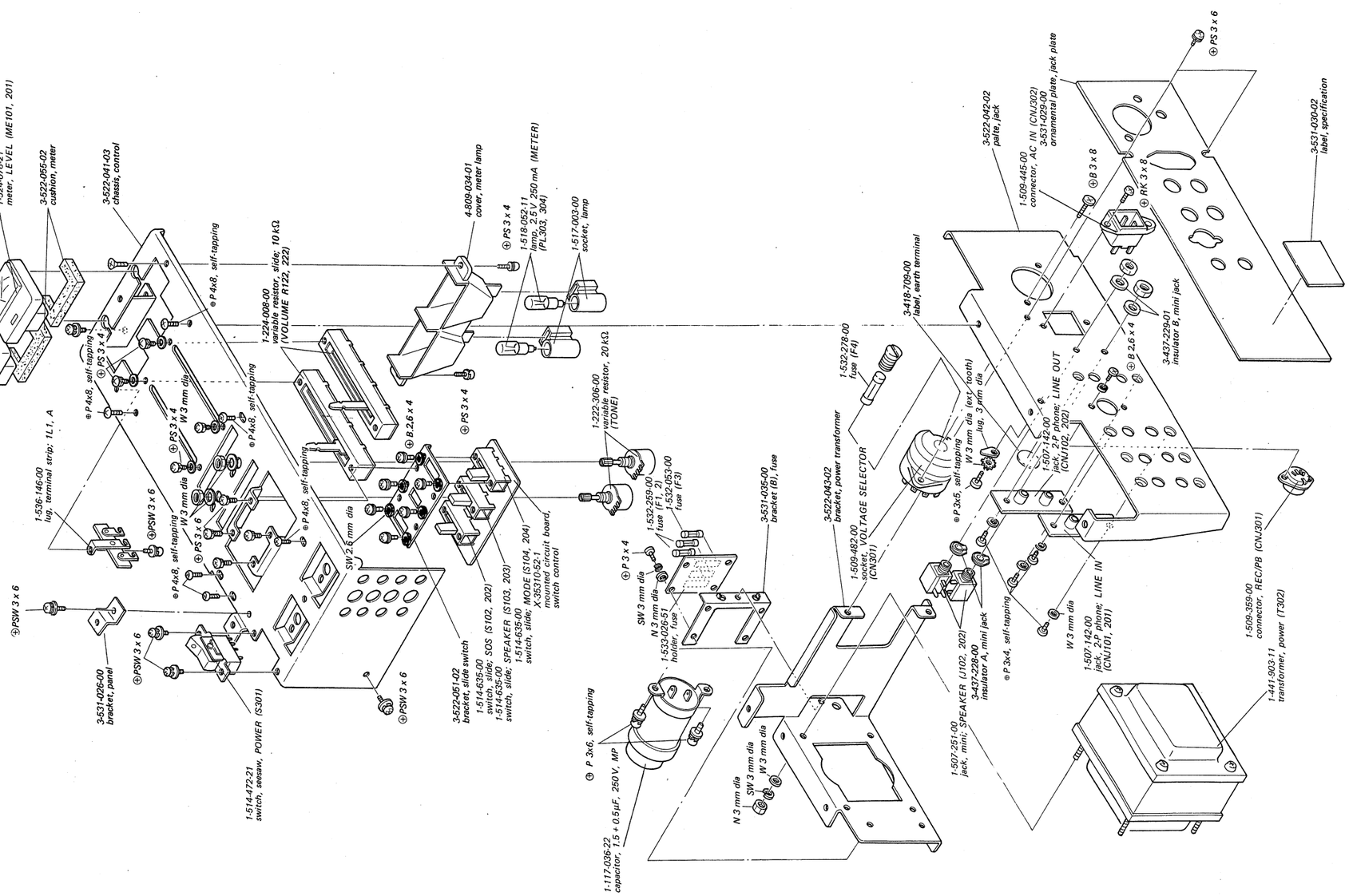
5-3. FRONT CHASSIS



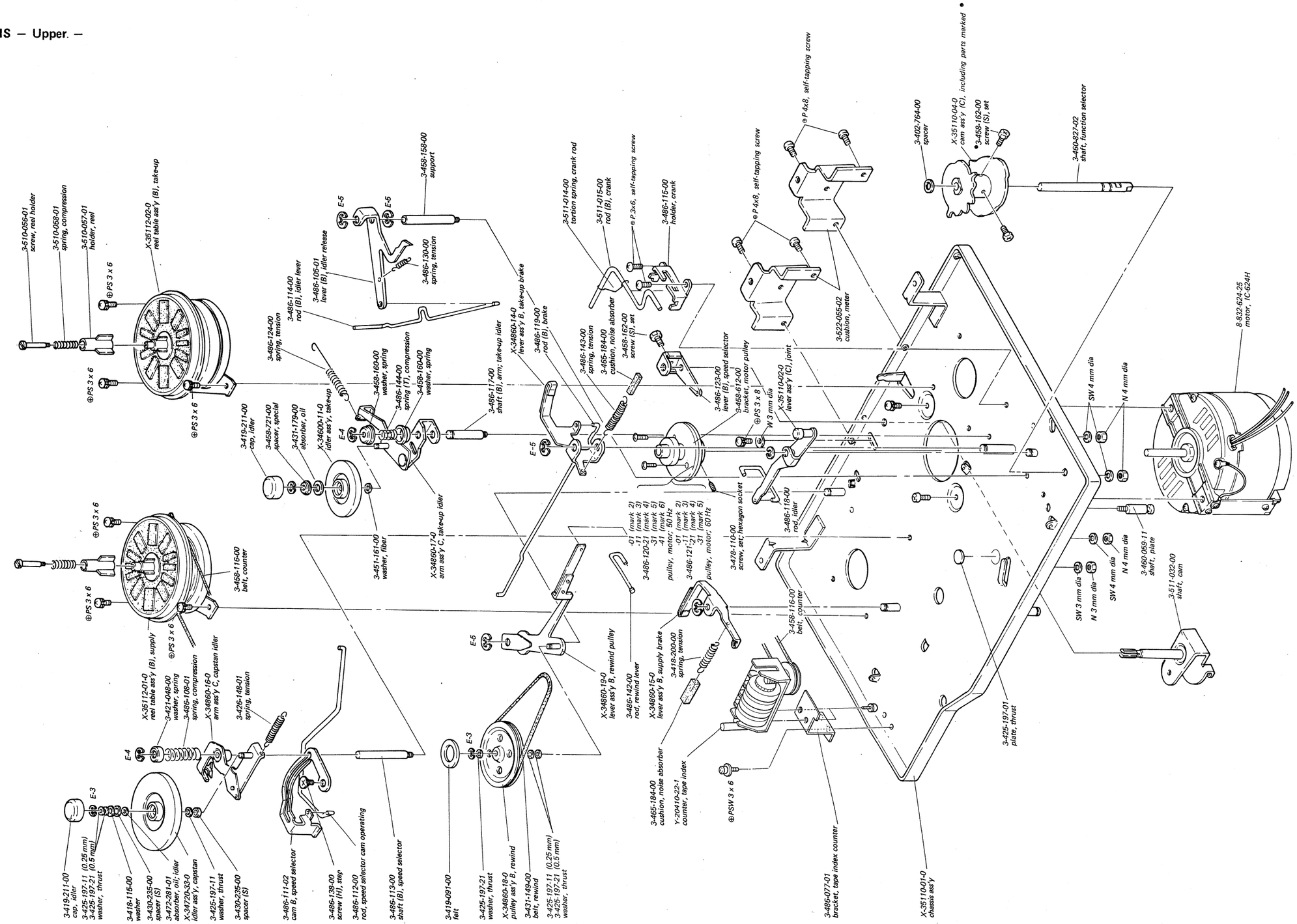
5-4. HEAD DECK – Upper –



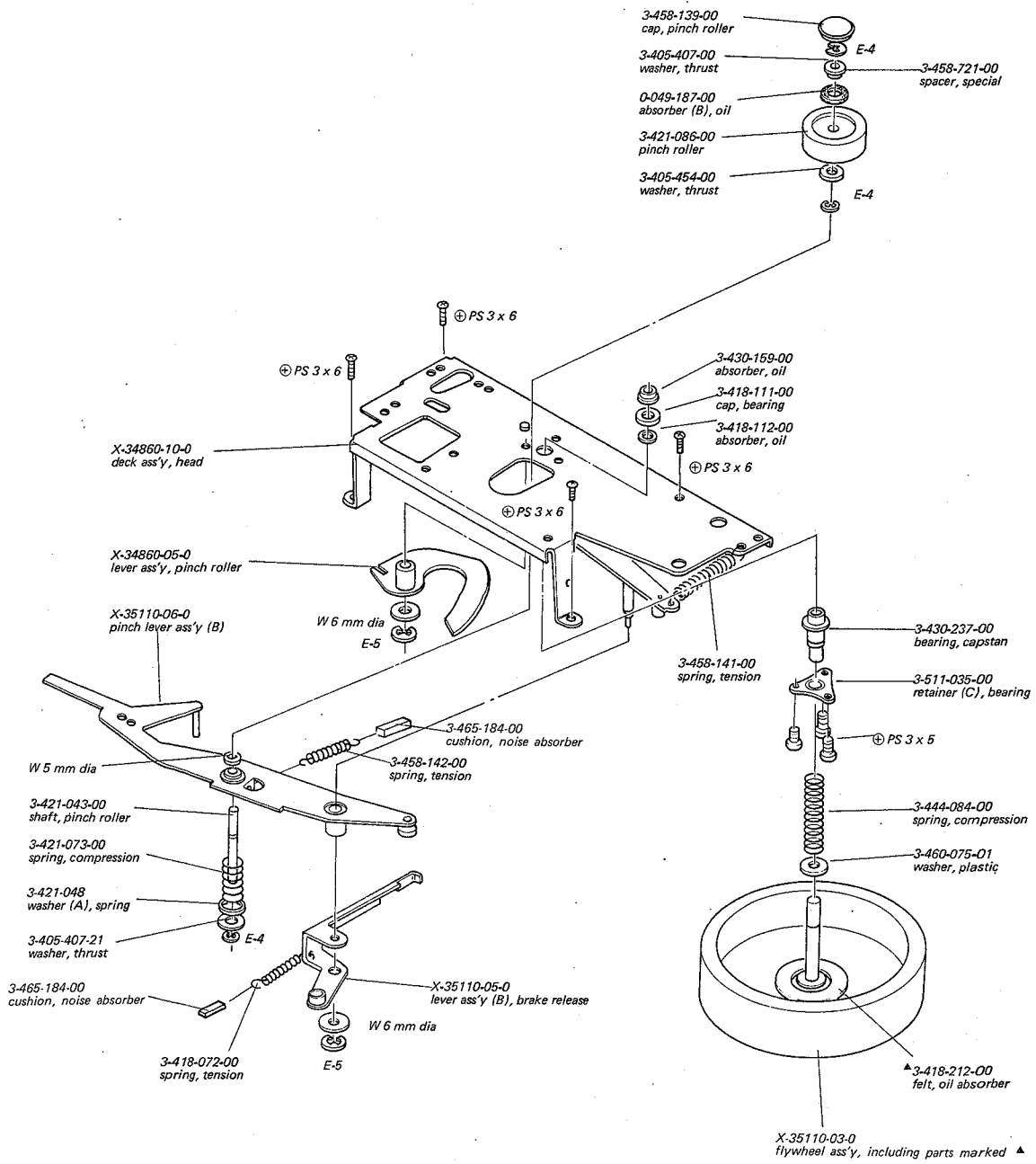
5-5. CONTROL CHASSIS



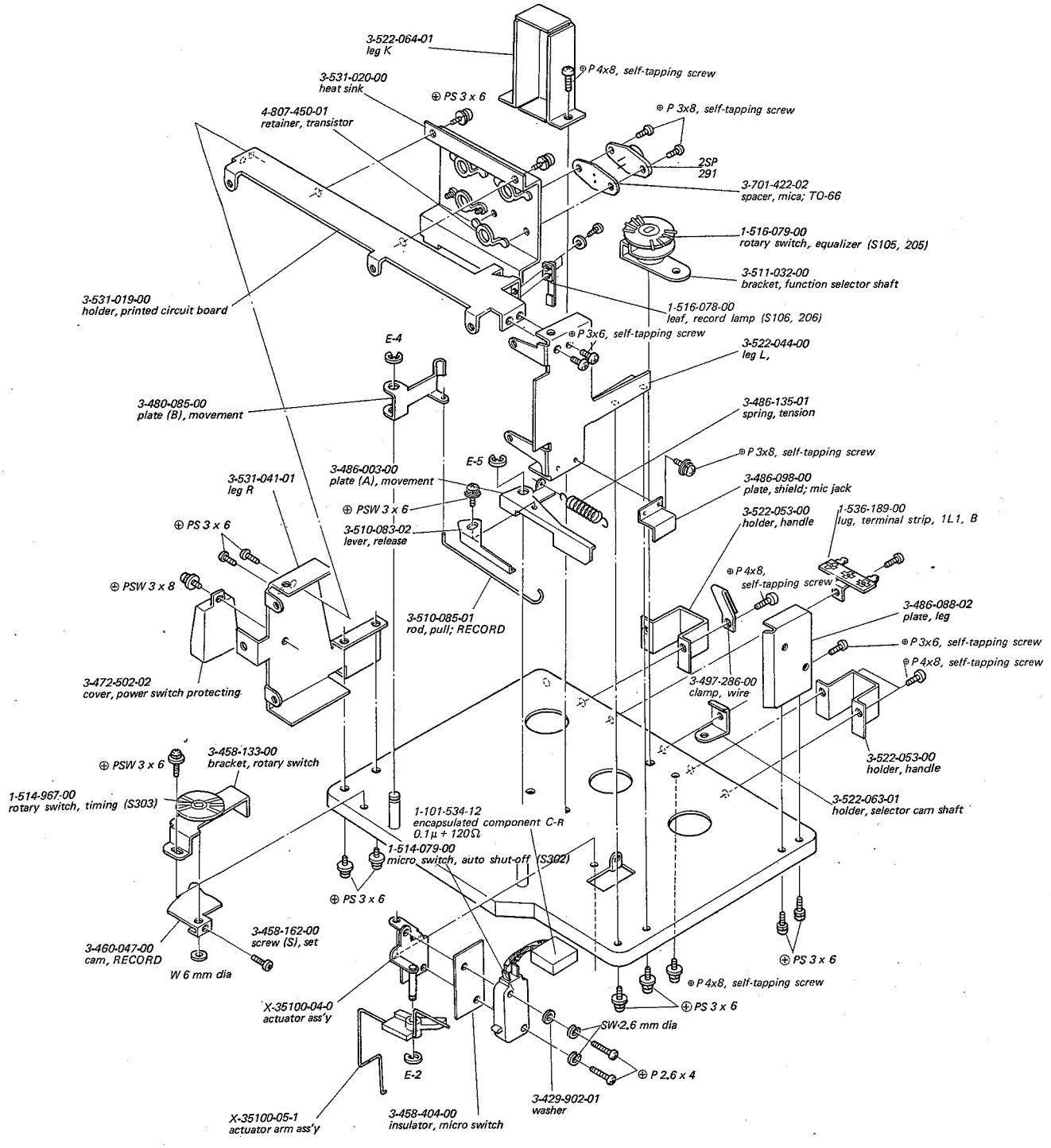
5-6. CHASSIS — Upper. —



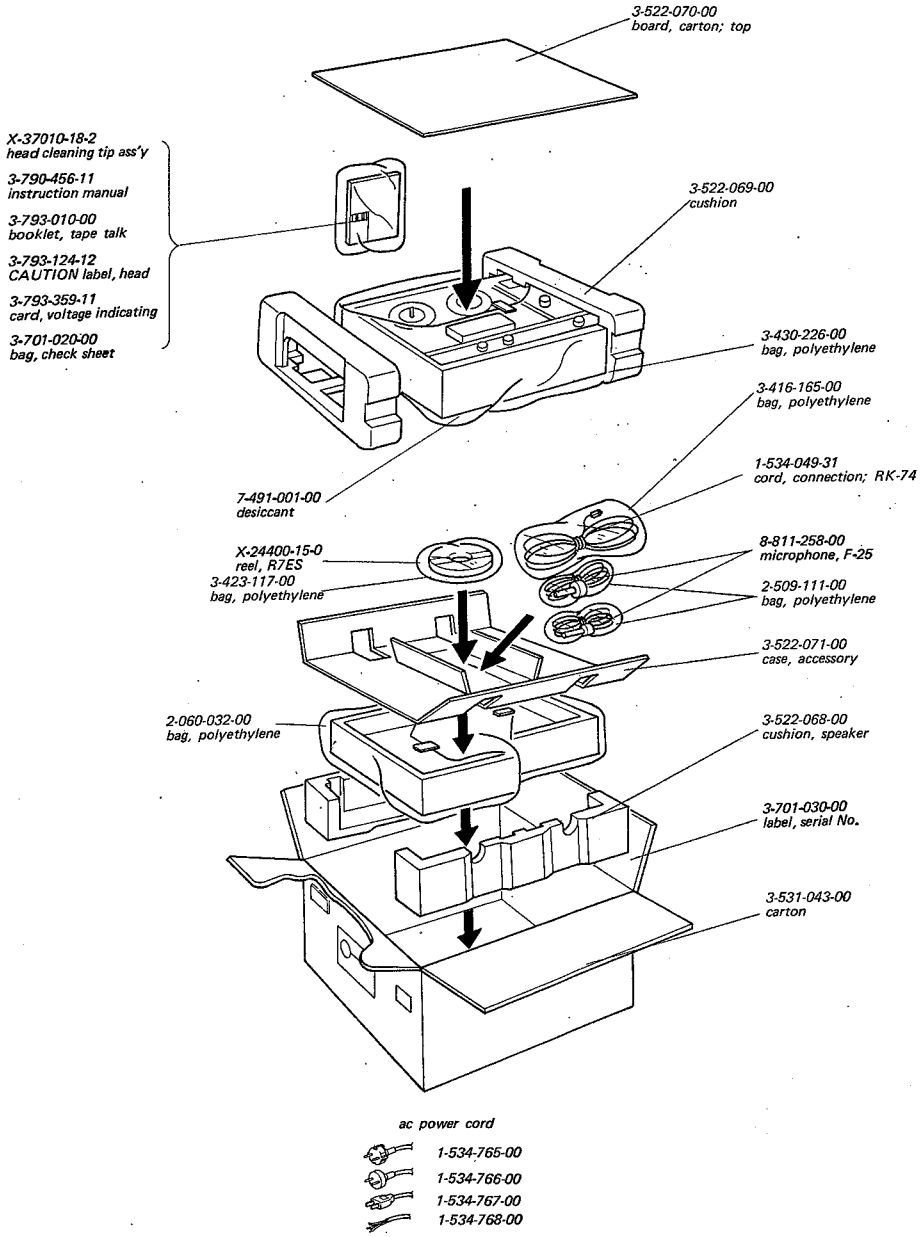
5-7. HEAD DECK – Lower –



5-8. CHASSIS – Lower –



5-9. PACKING


3-522-070-00
board, carton; top
X-37010-18-2
head cleaning tip ass'y
3-790-456-11
instruction manual
3-793-010-00
booklet, tape talk
3-793-124-12
CAUTION label, head
3-793-359-11
card, voltage indicating
3-701-020-00
bag, check sheet
3-522-069-00
cushion
3-430-226-00
bag, polyethylene
3-416-165-00
bag, polyethylene
7-491-001-00
desiccant
1-534-049-31
cord, connection; RK-74
X-24400-15-0
reel, R7ES
3-423-117-00
bag, polyethylene
8-811-258-00
microphone, F-25
2-509-111-00
bag, polyethylene
3-522-071-00
case, accessory
2-060-032-00
bag, polyethylene
3-522-068-00
cushion, speaker
3-701-030-00
label, serial No.
3-531-043-00
carton
ac power cord
1-534-765-00
1-534-766-00
1-534-767-00
1-534-768-00

SECTION 6
ELECTRICAL PARTS LIST

MOUNTED CIRCUIT BOARDS

X-35310-51-1	power transistor
X-35310-52-1	switch control
X-35310-53-1	amp

SEMICONDUCTORS

Q101, 201	transistor	2SC631A
Q102, 202	transistor	2SC631A
Q103, 203	transistor	2SC632A
Q104, 204	transistor	2SC634A
Q105, 205	transistor	2SC634A
Q106, 206	transistor	2SC634A
Q107, 207	transistor	2SD291
Q108, 208	transistor	2SD291
Q301, 302	transistor	2SC634A
D101, 201	diode	1T-22
D301, 302	diode	10D-2

COILS

L101, 201	1-409-132-00	trap	200 μH
L301	1-431-038-00	dummy	1 mH

TRANSFORMERS

T301	1-433-136-00	bias osc
T302	1-441-903-11	power

CAPACITORS

All capacitors are in μF unless otherwise indicated.
(p = μμ, elect = electrolytic)

Ref. No.	Part No.			
C101, 201	1-121-403-11	33	16 V	elect
C102, 202	1-105-663-12	0.0015	50 V	mylar
C103, 203	1-121-469-11	10	10 V	elect
C104, 204	1-105-661-12	0.001	50 V	mylar
C105, 205		----------		
C106, 206	1-121-413-11	100	6.3V	elect
C107, 207	1-121-413-11	100	6.3V	elect
C108, 208	1-105-672-12	0.0082	50V	mylar
C109, 209	1-121-409-11	47	16V	elect
C110, 210	1-107-123-11	47 p	50V	silvered mica
C111, 211	1-121-398-11	10	25V	elect
C112, 212	1-105-675-12	0.015	50V	mylar
C113, 213	1-105-682-12	0.056	50V	mylar
C114, 214	1-121-733-11	470	25V	elect
C115, 215	1-121-391-11	1	50V	elect
C116, 216	1-107-131-11	100 p	50V	silvered mica
C117, 217	1-105-677-12	0.022	50V	mylar
C118, 218	1-121-392-11	3.3	25V	elect
C119, 219	1-121-415-11	100	16V	elect
C120, 220	1-121-415-11	100	16V	elect
C121, 221	1-121-423-11	220	50V	elect
C122, 222	1-121-392-11	3.3	25V	elect
C123, 223	1-121-392-11	3.3	25V	elect
C124, 224	1-121-738-11	10	50V	elect
C125, 225	1-105-661-12	0.001	50V	mylar
C126, 226	1-105-661-12	0.001	50V	mylar
C127, 227	1-107-139-11	220 p	50V	silvered mica
C128, 228	1-121-361-11	470	35V	elect
C129, 229		----------		
C130, 230	1-105-667-12	0.0033	50V	mylar
C131, 231	1-105-663-12	0.0015	50V	mylar
C132, 232	1-105-666-12	0.0027	50V	mylar
C301	1-121-388-11	1000	35V	elect
C302	1-121-423-11	220	50V	elect
C303	1-121-395-11	4.7	10V	elect
C304	1-105-682-12	0.056	50V	mylar
C305	1-105-673-12	0.01	50V	mylar
C306	1-105-673-12	0.01	50V	mylar
C307	1-129-707-11	0.0027	630V	polypropylene film
C308	1-117-036-22	1.5 + 0.5	250V	MP
C309	1-107-004-11	100 p	50V	silvered mica
C310	1-107-004-11	100 p	50V	silvered mica
C311	1-107-004-11	100 p	50V	silvered mica
C312	1-107-004-11	100 p	50V	silvered mica
C401	1-105-669-12	0.0047	50V	mylar
C402	1-105-669-12	0.0047	50V	mylar
C403	1-105-683-12	0.0047	50V	mylar

RESISTORS

All resistors are ¼ W, carbon type and in Ω unless otherwise indicated. (k = 1000)

R101, 201	1-244-705-11	750
R102, 202	1-244-689-11	4.7 k
R103, 203	1-244-726-11	160 k
R104, 204	1-244-705-11	22 k
R105, 205	1-244-711-11	39 k
R106, 206	1-244-725-11	150 k
R107, 207	1-244-673-11	1 k
R108, 208	1-244-689-11	4.7 k
R109, 209	1-244-669-11	680
R110, 210	1-244-715-11	56 k
R111, 211	1-244-713-11	47 k
R112, 212	1-244-715-11	56 k
R113, 213	1-244-651-11	120
R114, 214	1-244-673-11	1 k
R115, 215	1-244-681-11	2.2 k
R116, 216	1-244-693-11	6.8 k

Ref. No.	Part No.	Description	
R117, 217	1-244-733-11	330 k	
R118, 218	1-222-306-11	20 k	variable (TONE)
R119, 219	1-244-711-11	39 k	
R120, 220	1-244-716-11	62 k	
R121, 221	1-244-667-11	560	
R122, 222	1-224-008-00	10 k	variable (VOUUME)
R123, 223	1-244-719-11	82 k	
R124, 224	1-244-735-11	390 k	
R125, 225	1-244-673-11	1 k	
R126, 226	1-244-644-11	62	
R127, 227	1-244-701-11	15 k	
R128, 228	1-244-711-11	39 k	
R129, 229	1-244-709-11	33 k	
R130, 230	1-244-695-11	8.2 k	
R131, 231	1-244-683-11	2.7 k	
R132, 232	1-244-683-11	2.7 k	
R133, 233	1-244-669-11	680	
R134, 234	1-244-649-11	100	
R135, 235	1-244-689-11	4.7 k	
R136, 236	1-244-714-11	51 k	
R137, 237	1-244-689-11	4.7 k	
R138, 238	1-244-711-11	39 k	
R139, 239	1-244-699-11	12 k	
R140, 240	1-244-665-11	470	
R141, 241	1-244-665-11	470	
R142, 242	1-244-625-11	10	
R143, 243	1-244-625-11	10	
R144, 244	1-244-801-11	1	½W
R145, 245	1-244-801-11	1	½W
R146, 246	1-244-707-11	27 k	
R147, 247	1-244-711-11	39 k	
R148, 248	1-222-771-00	1 k (B),	semi-fixed
R149, 249	1-244-691-11	5.6 k	
R150, 250	1-244-697-11	10 k	
R151, 251	1-244-701-11	15 k	
R152, 252	1-244-651-11	120	
R153, 253	1-244-657-11	220	
R154, 254	1-244-659-11	270	
R155, 255	1-244-697-11	10 k	
R301	1-244-859-11	270	
R302	1-244-853-11	150	
R303		----------	
R304	1-244-715-11	56 k	
R305	1-244-715-11	56 k	
R401	1-244-841-11	47	
R402	1-244-841-11	47	
R403	1-244-697-11	10 k	
R404	1-244-711-11	39 k	
R405	1-244-697-11	10 k	
R406	1-244-711-11	39 k	
R407	1-244-697-11	10 k	
R408	1-244-697-11	10 k	
R409	1-244-697-11	10 k	
R410	1-244-697-11	10 k	

SWITCHES

S101, 201	1-516-077-00	slide, record/playback
S102, 202	1-514-635-00	slide, SOS
S103, 203	1-514-635-00	slide SPEAKER
S104, 204	1-514-635-00	slide, MODE
S105, 205	1-516-079-00	rotary, equalizer
S106, 206	1-516-078-00	leaf, record lamp
S301	1-514-472-21	seesaw, POWER
S302	1-514-079-00	micro, auto shut-off
S303	1-514-967-00	rotary, timing

JACKS

J101, 201	1-507-251-00	mini, MICROPHONE
J102, 202	1-507-251-00	mini, SPEAKER
J301	1-507-282-00	binaural, HEADPHONE
CNJ 101, 201	1-507-142-00	2 p phono, LINE IN
CNJ 102, 202	1-507-142-00	2 p phono, LINE OUT
CNJ 301	1-509-359-00	connector, REC/PB
CNJ 302	1-509-445-00	connector, AC IN

MISCELLANEOUS

CN301	1-509-482-00	socket, VOLTAGE SELECTOR
PL303. 304	1-518-052-11	lamp, 2.5 V 250 mA (METER)
PL301, 302	1-518-134-11	lamp, 2 V 100 mA (REC)
ME101, 201	1-524-078-21	meter, RECORD LEVEL
F1, 2	1-532-259-00	fuse, 1.6 AT
F3	1-532-053-00	fuse, 1.6 A
F4	1-532-278-00	fuse, 3.15A
	1-533-026-51	holder, fuse
	1-534-413-00	cord, plug; speaker
CP301	1-101-534-12	encapsulated component C-R $0.1\mu + 120\Omega$
EH	8-825-547-00	head, erase (EF18-2902A-1)
R PH	8-829-106-20	head, record/playback (PP102-6002)
	1-536-146-00	lug, terminal strip; 1-L-1. A
	1-536-189-00	lug, terminal strip; 1-L-1. B
M	8-832-624-25	motor, IC624H
SP	1-502-213-21	speaker
	1-517-003-00	socket, lamp

SECTION 7
HARDWARE

Part No.	Description
	SCREWS
7-621-255-15	⊕ P 2 x 3
7-621-255-25	⊕ P 2 x 4
7-621-255-35	⊕ P 2 x 5
7-621-259-25	⊕ P 2.6 x 4
7-621-259-35	⊕ P 2.6 x 5
7-621-259-37	⊕ P 2.6 x 5
7-621-259-45	⊕ P 2.6 x 6
7-621-259-85	⊕ P 2.6 x 14
7-621-773-86	⊕ B 2.6 x 4
7-621-843-25	⊕ R 3.1 x 10
7-621-843-35	⊕ R 3.1 x 13
7-621-843-45	⊕ R 3.1 x 16
7-628-254-05	⊕ P 2.6 x 5
7-682-145-01	⊕ P 3 x 4
7-682-146-01	⊕ P 3 x 5
7-682-147-01	⊕ P 3 x 6
7-682-149-01	⊕ P 3 x 10
7-682-165-05	⊕ P 4 x 16
7-682-347-04	⊕ RK 3 x 6
7-682-351-04	⊕ RK 3 x 14
7-682-547-01	⊕ B 3 x 6
7-682-548-05	⊕ B 3 x 8
7-682-549-04	⊕ B 3 x 10
7-682-569-05	⊕ B 4 x 35
7-682-547-14	⊕ B 3 x 6
7-682-562-01	⊕ B 4 x 10
7-682-647-01	⊕ PS 3 x 6
7-682-661-01	⊕ PS 4 x 8
7-682-662-01	⊕ PS 4 x 10
7-682-947-01	⊕ PSW 3 x 6
7-682-948-01	⊕ PSW 3 x 8
7-682-949-01	⊕ PSW 3 x 10
7-683-137-00	⊖ SC 3 x 3
7-683-140-20	⊖ SC 3 x 6
7-685-144-51	⊕ P 3 x 5
7-685-145-31	⊕ P 3 x 6, self-tapping
7-685-145-51	⊕ P 3 x 6
7-685-159-51	⊕ P 4 x 8
7-685-547-21	⊕ B 3 x 10
	NUTS
7-622-307-02	2.6 mm dia
7-684-013-01	3 mm dia
7-684-014-01	4 mm dia
7-684-033-01	3 mm dia
	WASHERS
7-623-105-12	2 mm dia
7-623-107-12	2.6 mm dia
7-623-108-02	3 mm dia
7-623-108-12	3 mm dia
7-623-108-20	3 mm dia
7-623-110-09	4 mm dia
7-623-110-12	4 mm dia
	5 mm dia
7-623-113-18	6 mm dia
7-623-113-27	6 mm dia
7-623-205-22	2 mm dia (small)
7-623-207-22	2.6 mm dia (small)
7-623-208-22	3 mm dia (small)
7-623-208-27	3 mm dia (small)
7-623-210-28	4 mm dia (small)
7-623-308-05	3 mm dia, int. tooth
7-623-408-05	3 mm dia, ext. tooth
	RETAINING RINGS
7-624-104-01	E-2
7-624-106-05	E-3
7-624-108-05	E-4
7-624-109-05	E-5
	LUG
7-623-505-01	3 mm dia

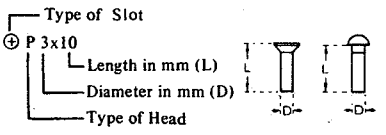
Hardware Nomenclature

P – Pan Head Screw
PS – Pan Head Screw with Spring Washer
K – Flat Countersunk Head Screw
B – Binding Head Screw
RK – Oval Countersunk Head Screw
T – Truss Head Screw
R – Round Head Screw
F – Flat Fillister Head Screw

SC – Set Screw
E – Retaining Ring (E Washer)

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

– Example –



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