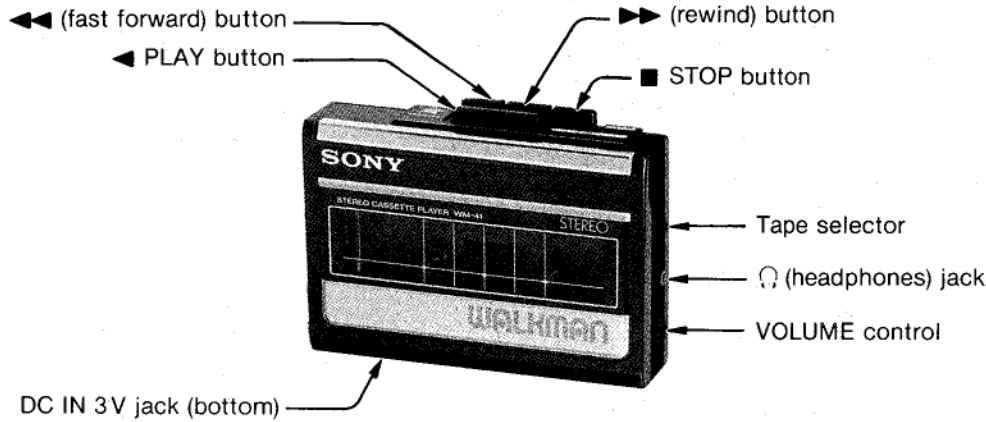


WM-31/31SS/41

SERVICE MANUAL

Refer to SRS-3 Service Manual issued by Sony for information of speaker system supplied with WM-31SS.



WM-31:
G-AEP Model
E Model

WM-31SS:
UK Model
AEP Model

WM-41:
US Model
Canadian Model

PHOTO: WM-41

SPECIFICATIONS

Similar Mechanism Set WM-33/43

Tape track	4-track 2-channel stereo
Fast winding time	Approx. 3 min. 20 sec. with Sony C-60 cassette
Frequency response	40-14,000Hz (with the tape selector set to CrO ₂ /METAL) 40-14,000Hz (with the tape selector set to NORMAL)
Power output	15 mW + 15 mW at DC operation (at 10% harmonic distortion) load impedance 32 ohms
Power requirements	3V DC, two size AA (IEC designation R6) batteries External batteries (used in the optional EBP-500 battery case): two size D (IEC designation R20) batteries DC IN 3V jack accepts: Sony AC-D2 AC power adaptor (optional) Sony DCC-70 car battery cord (optional)

Battery life

Batteries	Continuous playback hours
Sony SUM-3(NS) New Super or Eveready No. 1015 Heavy Duty batteries	Approx. 4
Sony Eveready AM3 alkaline or Eveready No. E91 alkaline batteries	Approx. 8

For maximum performance we recommend the use of alkaline batteries.

Dimensions	Approx. 120×88.1×33.5 mm (w/h/d) (4¾ × 3½ × 1⅜ inches) not incl. projecting parts and controls
Weight	Approx. 195 g (6.9 oz) incl. batteries, not incl. other accessories

STEREO CASSETTE PLAYER
SONY®

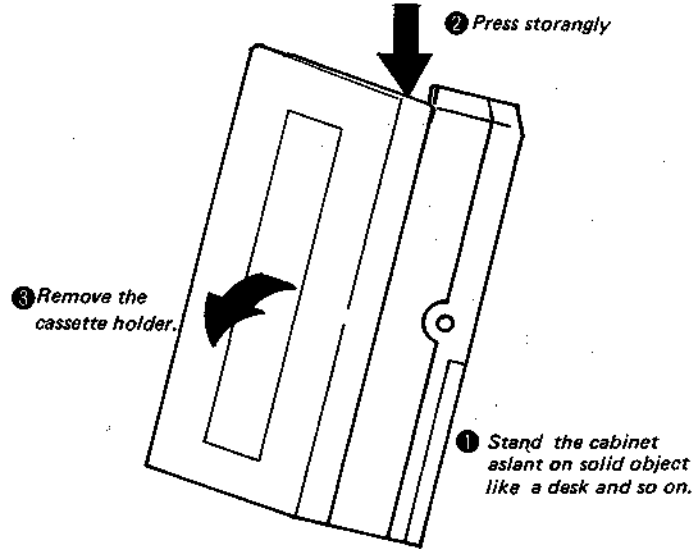


TC

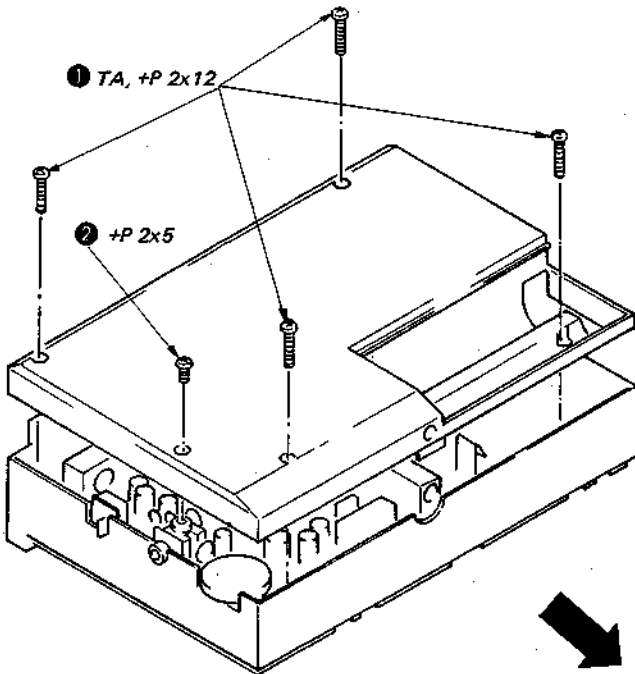
**SECTION 1
DISASSEMBLY**

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

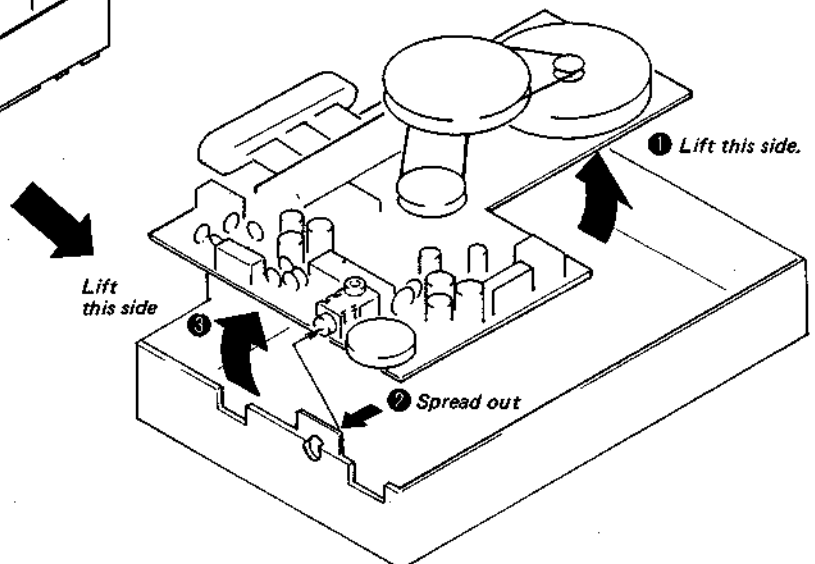
CASSETTE HOLDER REMOVAL



CABINET (REAR) REMOVAL



MAIN BOARD & TRANSPORT MECHANISM REMOVAL



SECTION 2
ADJUSTMENTS

2-1. MECHANICAL ADJUSTMENTS

PRECAUTION

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

Torque Measurement

Torque	Meter Reading	Torque Meter
Forward	22-36g·cm (0.3-0.5 oz·inch)	CQ-102C
Fast Forward and Rewind	55-150g·cm (0.77-2.1 oz·inch)	CQ-201B
Back Tension	0.5-2g·cm (0.007-0.028 oz·inch)	CQ-102C

Tape Tension Measurement

Meter	Meter Reading
CQ-403A	more than 100g (3.57 oz)

2-2. ELECTRICAL ADJUSTMENTS

CASSETTE Section

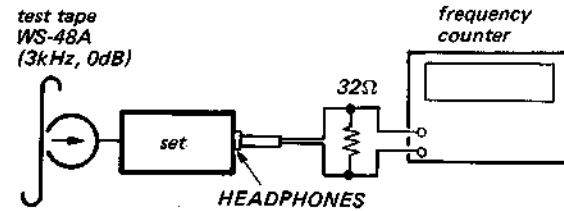
Tape Speed Adjustment

Setting:

VOL control: mechanical mid

Procedure:

Mode: playback



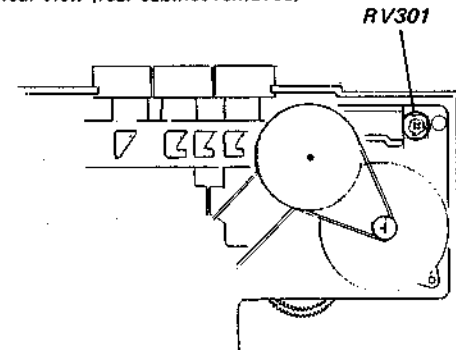
Specifications:

Digital frequency counter
2,990 - 3,010 Hz

Frequency difference between beginning and end of tape should be within ± 1% (30 Hz).

Adjustment Location: main board

Rear view (rear cabinet removed)

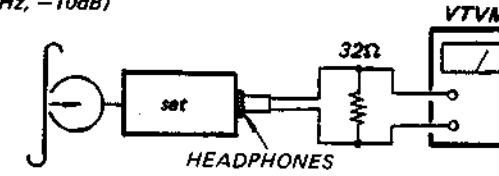


Playback Head Azimuth Adjustment

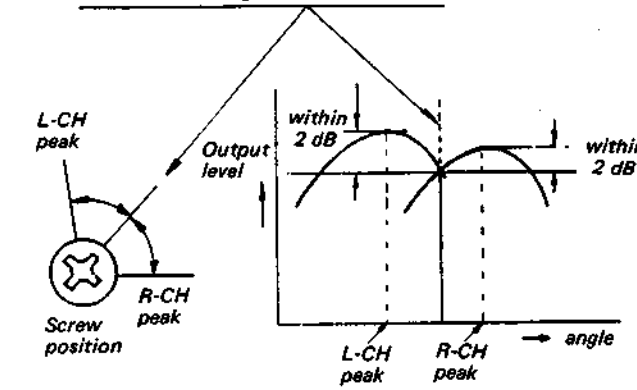
Procedure:

1. Mode: playback

test tape
P-4-A063
(6.3kHz, -10dB)



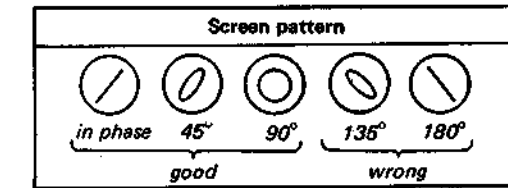
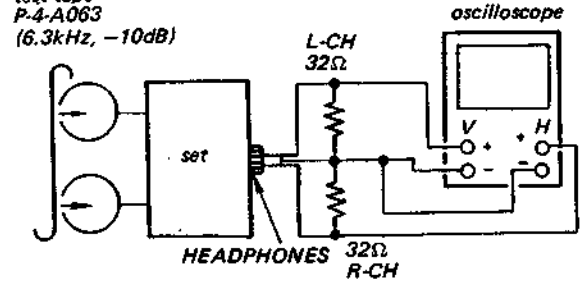
- Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 2dB.



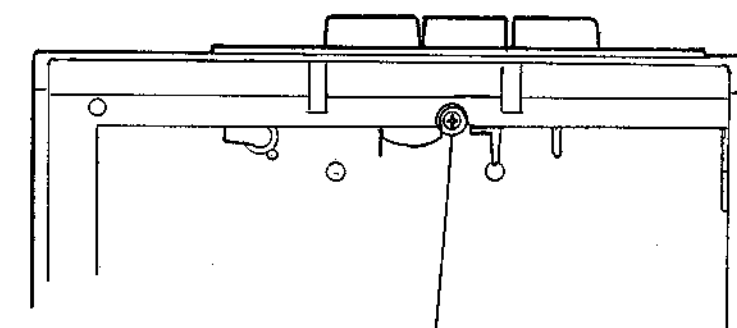
3. Phase Check

Mode: playback

test tape
P-4-A063
(6.3kHz, -10dB)



Adjustment Location:



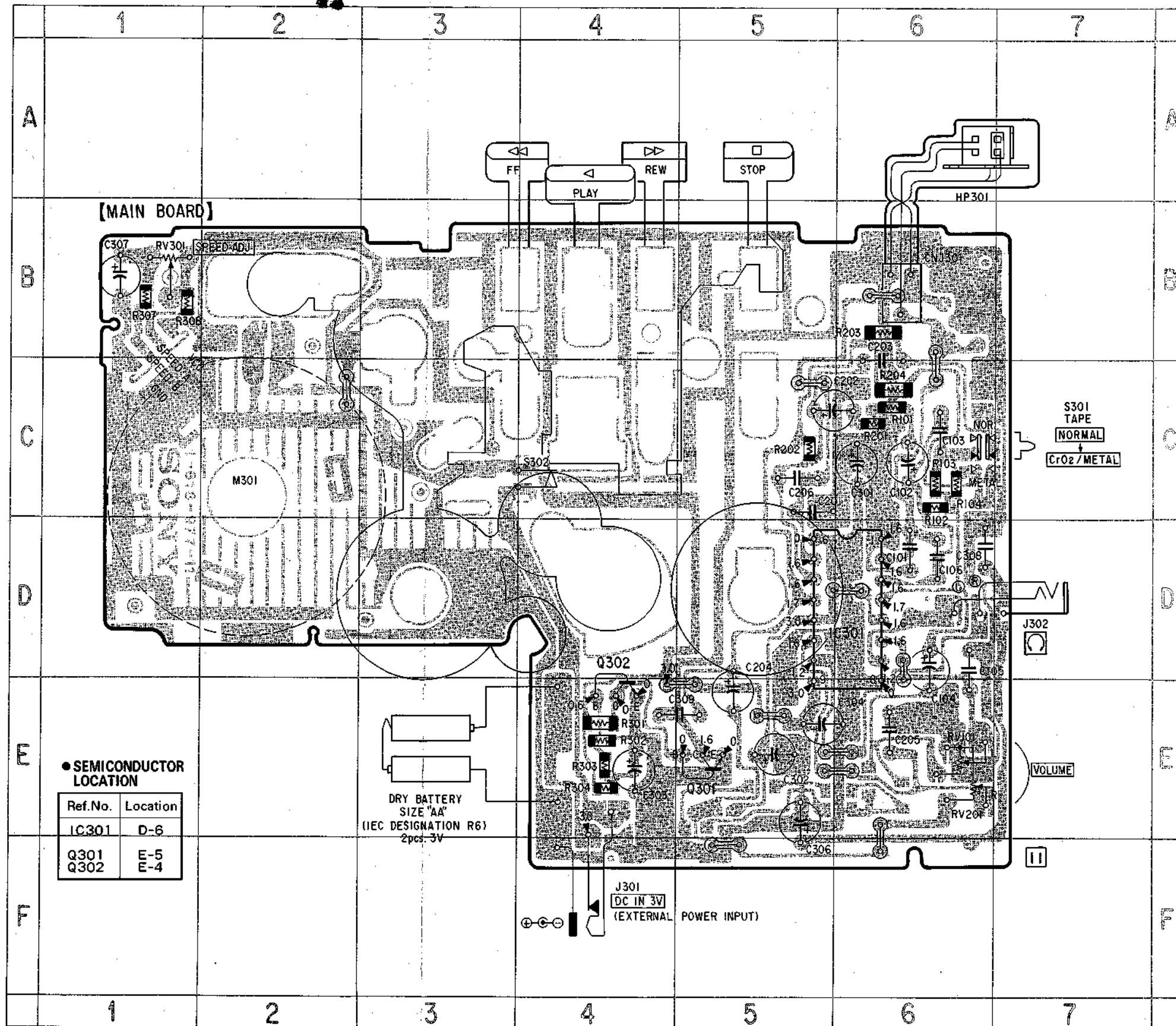
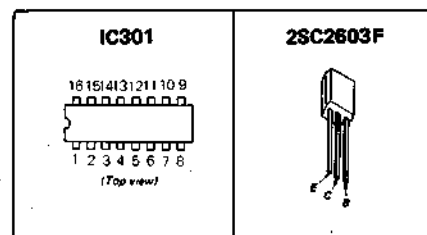
azimuth adjustment screw.

SECTION 3
DIAGRAMS

3-1. MOUNTING DIAGRAM

• ○ : parts extracted from the component side.

• Semiconductor Lead Layouts



• SEMICONDUCTOR LOCATION

Ref.No.	Location
IC301	D-6
Q301	E-5
Q302	E-4

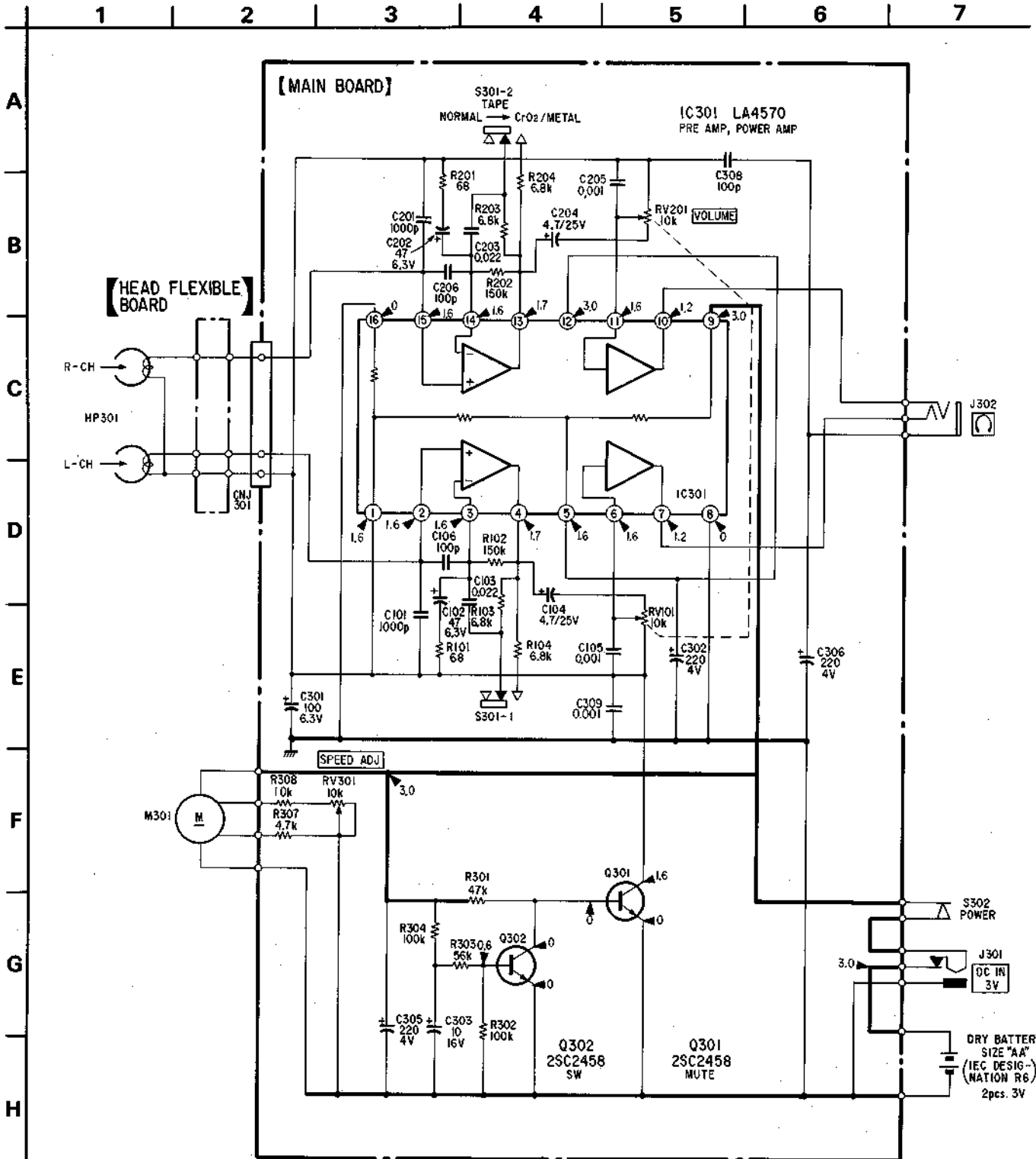
DRY BATTERY
SIZE "AA"
(IEC DESIGNATION R6)
2pcs. 3V

J301
DC IN 3V
(EXTERNAL POWER INPUT)

S301 TAPE
NORMAL
CrO₂ / METAL

VOLUME

3-2. SCHEMATIC DIAGRAM



Note:

- All capacitors are in μF unless otherwise noted. pF : μpF
50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/64\text{W}$.
- All resistors in this set are "PRINTING RESISTOR".
When repairing, replace "PRINTING RESISTOR" with conventional "CARBON RESISTOR." Refer to the electrical parts list.

• Switch

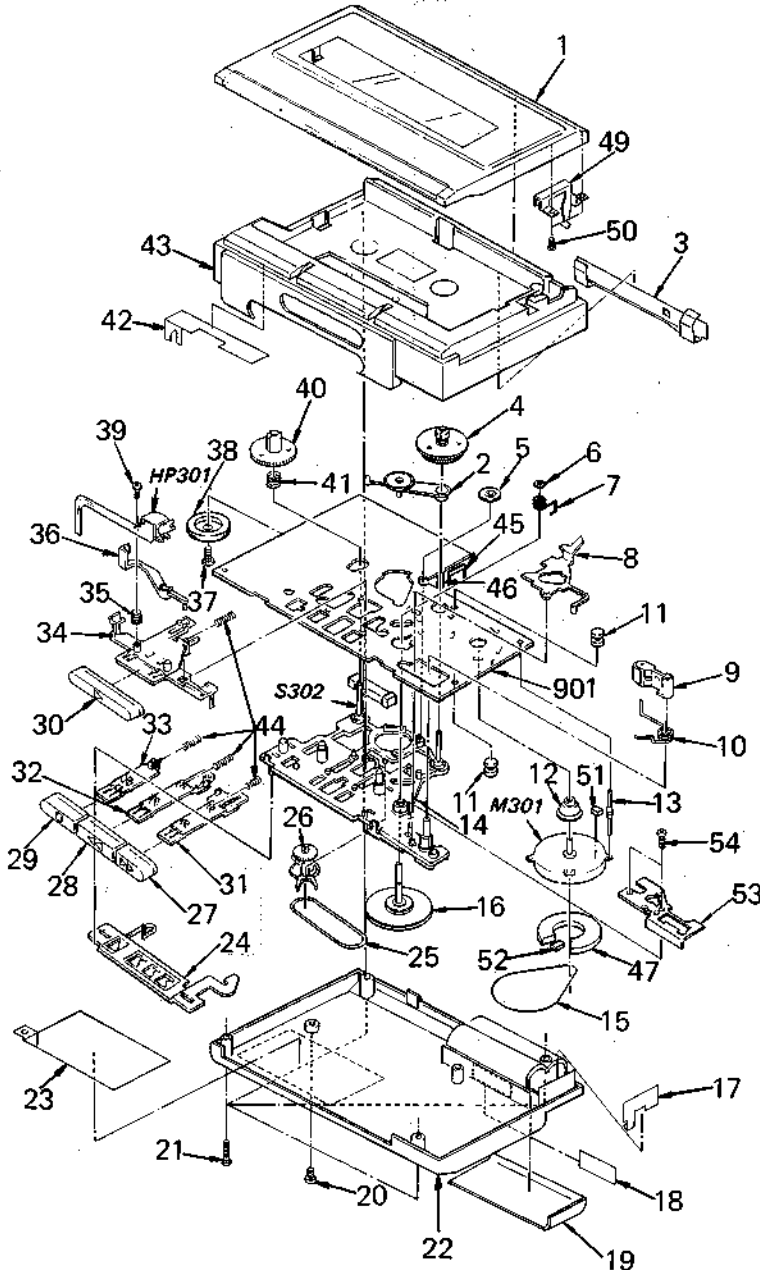
Ref. No.	Switch	Position
S301	TAPE	NORMAL
S302	POWER	OFF

- — : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under with a VOM (50 $\text{k}\Omega/\text{V}$).
- Voltage variations may be noted due to normal production tolerances.

SECTION 4 EXPLODED VIEW

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 in the remark column.



No.	Part No.	Description	Remarks
1	3-334-065-01	(BLACK)....HOLDER (TC), CASSETTE	
	3-334-065-11	(SILVER)....HOLDER (TC), CASSETTE	
	3-334-065-21	(RED).....HOLDER (TC), CASSETTE	
	3-334-065-31	(BLUE).....HOLDER (TC), CASSETTE	
2	X-3334-007-1	GEAR ASSY, PLAY	
3	3-334-058-01	SPRING, CASSETTE	
4	X-3334-006-1	TABLE ASSY, REEL, TAKE-UP	
5	3-334-089-01	GEAR, FF	
6	3-335-666-01	RING, RETAINING	
7	3-336-705-01	SPRING, GROUND	
8	3-335-613-01	LEVER (A), SHUT-OFF	
9	X-3334-005-1	PINCH ROLLER ASSY	
10	3-335-608-01	SPRING PINCH ROLLER	
11	3-335-652-00	MOTOR, CUSHION (C)	
12	3-335-653-00	MOTOR, CUSHION	
13	3-334-942-00	MOTOR, CUSHION (B)	
14	X-3334-619-1	BASE, GUIDE ASSY	
15	3-335-603-01	BELT, CAPSTAN	
16	X-3334-027-1	FLYWHEEL ASSY	
17	3-334-057-01	TERMINAL BOARD, RELAY	
18	3-330-644-01	(WM-31/31SS/41:Canadian) ...LABEL, SERIAL NUMBER	
	3-701-999-02	(WM-41:US)....LABEL, SERIAL NUMBER	
19	3-334-063-01	(BLACK)....LID, BATTERY CASE	
	3-334-063-11	(SILVER)....LID, BATTERY CASE	
	3-334-063-21	(RED).....LID, BATTERY CASE	
	3-334-063-31	(BLUE)....LID, BATTERY CASE	
20	3-335-641-01	SCREW (M2)	
21	3-335-640-01	SCREW (M2) TP	
22	X-3334-034-1	(WM-31SS/41:BLACK).... CABINET (REAR) SUB ASSY (TC)	
	X-3334-011-1	(WM-31:BLACK)....CABINET (REAR) (TC) ASSY	
	X-3334-012-1	(WM-31:SILVER)....CABINET (REAR) (TC) ASSY	
	X-3334-013-1	(WM-31:RED)....CABINET (REAR) (TC) ASSY	
	X-3334-014-1	(WM-31:BLUE)....CABINET (REAR) (TC) ASSY	
23	3-335-638-01	PAPER (TC), SHIELD	
24	*3-335-618-01	PLATE, LOCK, BUTTON	
25	3-335-604-01	BELT, MIDWAY	
26	X-3334-008-1	GEAR ASSY, MIDWAY	
27	3-334-059-01	BUTTON, FF	
28	3-334-060-01	BUTTON, REW	
29	3-334-061-01	BUTTON, STOP	
30	3-334-062-01	BUTTON, PLAY	
31	3-335-611-01	LEVER, FF	
32	3-335-610-01	LEVER, REW	
33	3-335-609-01	LEVER, STOP	
34	3-334-080-01	CHASSIS, HEAD	
35	3-334-078-01	SPRING (AZIMUTH), COMPRESSION	
36	3-334-079-01	LEVER (B), SHUT-OFF	
37	3-703-502-41	SCREW PTPWH + 1.4X3.5 (TYPE 1)	
38	3-334-056-01	KNOB (TC), VOLUME	
39	3-336-706-01	SCREW (IT3-C) TAPPING	
40	3-335-612-01	GEAR, SUPPLY REEL	
41	3-335-602-01	SPRING, COMPRESSION	
42	3-335-637-01	PAPER, SHIELD, HEAD	
43	3-334-066-01	(WM-31/31SS).....CABINET (TC)	
	3-334-066-21	(WM-41:US).....CABINET (TC)	
	3-334-066-31	(WM-41:Canadian)....CABINET (TC)	
44	3-335-605-01	SPRING, COMPRESSION	
45	3-334-055-01	TERMINAL BOARD, MINUS	
46	3-334-054-01	TERMINAL BOARD, PLUS	
47	3-335-681-11	SHEET, MOTOR	
49	3-335-661-01	STOPPER, HOLDER	
50	3-318-382-01	SCREW, 1.7X3 TAPPING	
51	3-534-598-01	CUSHION	
52	3-334-971-01	SPACER, MOTOR	
53	3-335-667-01	SPACER, GUIDE	
54	3-894-748-01	SCREW, B 1.4X2.5 TAPPING	
901	*A-3015-430-A	PC BOARD ASSY, MAIN	
HP301	1-543-339-11	HEAD MAGNETIC (PLAYBACK)	
M301	1-541-334-21	MOTOR (NBL-22)	
S302	1-570-549-11	SWITCH, LEAF (POWER)	

SECTION 5
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 circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
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...

ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	*A-3015-430-A	PC BOARD ASSY, MAIN
C101	1-161-039-00	CERAMIC 0.001MF 10% 25V
C102	1-123-647-00	ELECT 47MF 20% 6.3V
C103	1-161-055-00	CERAMIC 0.022MF 10% 25V
C104	1-123-616-00	ELECT 4.7MF 20% 25V
C105	1-102-074-00	CERAMIC 0.001MF 10% 50V
C106	1-102-973-00	CERAMIC 100PF 5% 50V
C201	1-161-039-00	CERAMIC 0.001MF 10% 25V
C202	1-123-647-00	ELECT 47MF 20% 6.3V
C203	1-161-055-00	CERAMIC 0.022MF 10% 25V
C204	1-123-616-00	ELECT 4.7MF 20% 25V
C205	1-102-074-00	CERAMIC 0.001MF 10% 50V
C206	1-102-973-00	CERAMIC 100PF 5% 50V
C301	1-123-661-00	ELECT 100MF 20% 6.3V
C302	1-123-827-00	ELECT 220MF 20% 4V
C303	1-123-617-00	ELECT 10MF 20% 16V
C304	1-123-827-00	ELECT 220MF 20% 4V
C306	1-123-827-00	ELECT 220MF 20% 4V
C307	1-123-612-00	ELECT 2.2MF 20% 50V
C308	1-102-973-00	CERAMIC 100PF 5% 50V
C309	1-102-074-00	CERAMIC 0.001MF 10% 50V
CNJ301	*1-563-350-11	CONNECTOR, F.P.C 3P (HEAD)
HP301	1-543-339-11	HEAD, MAGNETIC (PLAYBACK)
IC301	8-759-802-85	IC LA4570
J301	1-507-723-00	JACK, EXTENTION POWER
J302	1-563-316-11	JACK (HEADPHONES)
M301	1-541-334-21	MOTOR (NBL-22)
Q301	8-729-606-33	TRANSISTOR 2SC2603F
Q302	8-729-606-33	TRANSISTOR 2SC2603F

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R101	1-247-803-00	CARBON 68 5% 1/6W
R102	1-247-883-00	CARBON 150 5% 1/6W
R103	1-247-851-00	CARBON 6.8K 5% 1/6W
R104	1-247-851-00	CARBON 6.8K 5% 1/6W
R201	1-247-803-00	CARBON 68 5% 1/6W
R202	1-247-883-00	CARBON 150 5% 1/6W
R203	1-247-851-00	CARBON 6.8K 5% 1/6W
R204	1-247-851-00	CARBON 6.8K 5% 1/6W
R301	1-247-871-00	CARBON 47K 5% 1/6W
R302	1-247-879-00	CARBON 100K 5% 1/6W
R303	1-247-873-00	CARBON 56K 5% 1/6W
R304	1-247-879-00	CARBON 100K 5% 1/6W
R307	1-247-847-00	CARBON 4.7K 5% 1/6W
R308	1-247-855-00	CARBON 10K 5% 1/6W
RV101	1-230-485-11	RES, VAR, CARBON 10K/10K
RV201	1-230-485-11	RES, VAR, CARBON 10K/10K
RV301	1-230-881-11	RES, ADJ, CARBON 10K
S301	1-570-659-11	SWITCH, SLIDE(TAPE NORMAL/METAL)
S302	1-570-549-11	SWITCH, LEAF (POWER)

ACCESSORY & PACKING MATERIAL

Part No.	Description
3-330-644-01	LABEL, SERIAL NUMBER (PRINTER)
3-527-213-00	LABEL, SERIAL NUMBER
3-765-280-21	MANUAL, INSTRUCTION
3-765-280-71	MANUAL, INSTRUCTION (G-AEP ONLY)
3-795-748-21	SAFETY INSTRUCTIONS, HEADPHONE
8-952-257-90	HEADPHONE MDR-OIL/K SET
X-3334-010-1	CASE ASSY, CARRYING

Note:

- All resistors in this set are "PRINTING RESISTOR".
When repairing, replace "PRINTING RESISTOR" with conventional "CARBON RESISTOR". Refer to the electrical parts list.