TCM-8EV

SERVICE MANUAL

INCLUDES SUPPLEMENT AT END OF THIS SECTION

US Model
Canadian Model
AEP Model
E Model

Apricable serial number

for US model	10,001 ~ 11,500
for Canadian model	10,001 ~ 10,300
for AEP model	10,301 ~ 11,100
for E model	11,101 ~ 12,200

SPECIFICATIONS

Tape Transport Mechanism Type	MT-6-06

Recording system	2-track 1-channel monaural
Fast winding time	Approx. 2 min. with Sony Cassette HF60
Frequency response	200–8,000 Hz (EIAJ) 200–4,000 Hz (VOR)
Tape speed	4.8 cm/sec (1 7/8 ips) $^{+20}_{-10}$ % adjustable in playback
Speaker	Approx. 4.5 cm (1 13/16 inches) dia.
Power output	350 mW
Input	Microphone input jack (minijack) sensitivity 0.2 mV (–72 dB) for low impedance microphone
Output	Earphone jack (minijack) for 8-ohm earphone or load impedance 10 kilohms or higher
Power requirements	3 V dc, 2 batteries IEC designaiton R6 (size AA) 120 V ac, 60 Hz with optional Sony AC-30 ac power adaptor (US, Canadian Model) 220, 240 V ac, 60 Hz with optional Sony AC-37 ac power adaptor (AEP, UK Model) 110 or 120, 220 or 240 V ac adjustable with optional Sony AC-92 ac power adaptor (E Model) 12 V car battery with optional Sony DCC-127A car battery cord

Battery life

Batteries	Recording	Playback
Sony New Super SUM-3(NS) batteries	2.5	2.5
Sony Eveready AM3 Alkaline batteries	6	6

(hours)

Dimensions	Approx. 90.8 x 133 x 31.7 mm (w/h/d) including projecting parts and controls
Weight	Approx. 300 g including batteries

MICROFILM

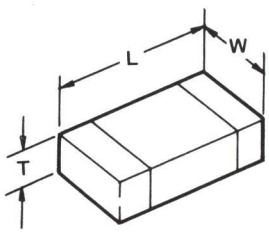
CASSETTE CORDER

SONY®

TC

Chip components

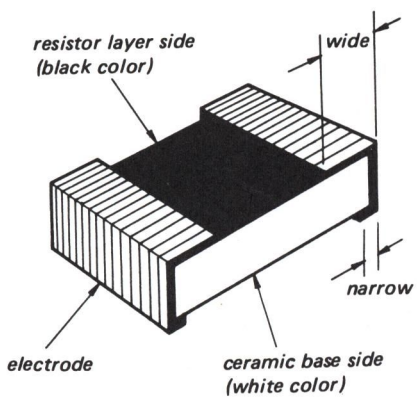
Chip components include resistors, capacitors, transistors, diodes, coil and adjustable resistors.
In this section, the types of resistors, ceramic capacitors, transistors and diodes which are used most frequently will be described.
Dimension of transistors and capacitors



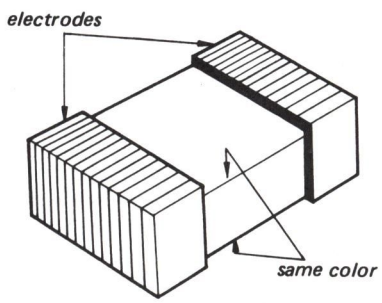
(Unit: mm)

Type	L	W	T
3216	3.2	1.6	0.45 ~ 0.6
2125	2.0	1.25	0.35 ~ 0.5

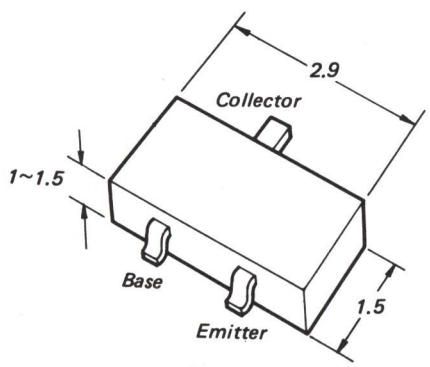
Identification



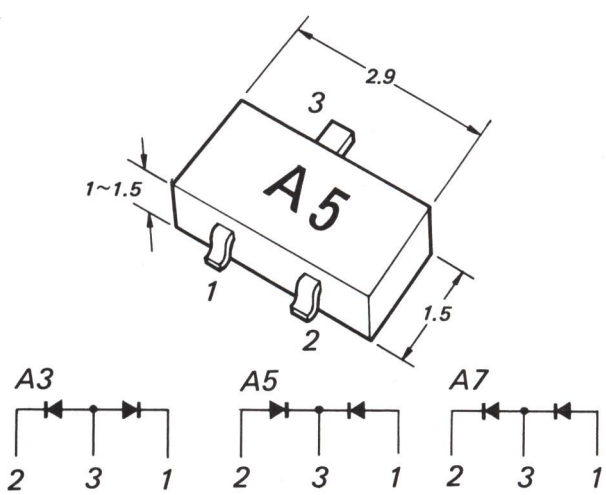
Resistor



Laminated Ceramic Capacitor



Transistor



Diode

Replacing chip components

All chip components should be connected and disconnected, using a tapered soldering iron [temperature of the iron tip: less than 280°C (536°F)], a pair of tweezers and braided wire.

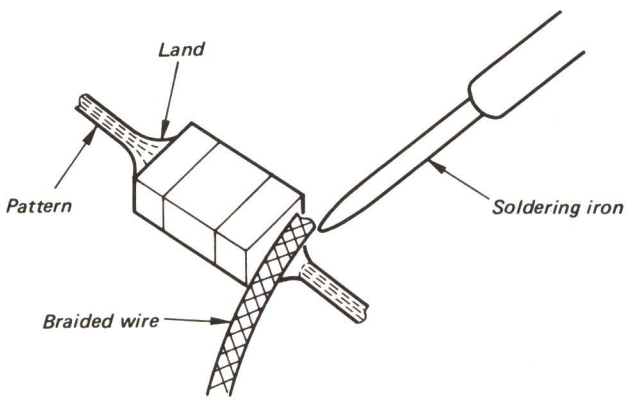
Precautions for replacement

1. **Do not disconnect the chip component forcefully. Otherwise, the pattern may peel off.**
2. **Never re-use a disconnected chip component. Dispose of all old chip components.**
3. **To protect the chip component, heating time for attaching the component should be within 3 seconds.**

○ **Removing chip components**

(1) Removing solder at electrode

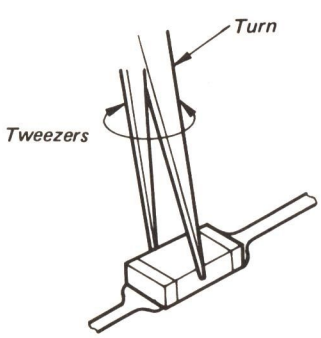
Remove the solder at the electrode, using a thin braided wire. Do not remove the solder of the part (chip component) attached adjacent to the electrode.



(2) Disconnecting chip components

Turn the tweezers with the soldering iron alternately applied to both electrodes, and the chip component will be disconnected. Take careful precautions while disconnecting, because if the chip component is forcefully removed the land may peel off.

Never re-use a disconnected chip component.



(3) Smoothing the soldered surface

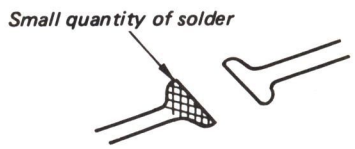
After disconnecting the chip component, remove the solder by using a braided wire to smooth the land surface.

○ **Connecting chip components**

The value of chip components is not displayed on the main body. Take due precautions to avoid mixing new chip components with other ones.

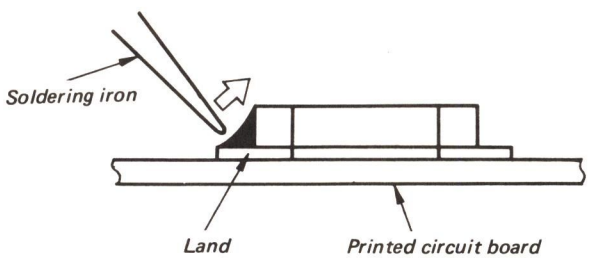
(1) Applying solder to land on one side

Apply a thin layer of solder to the land on one side where the chip component is to be connected. Too much solder may cause bridging.



(2) Speedy soldering

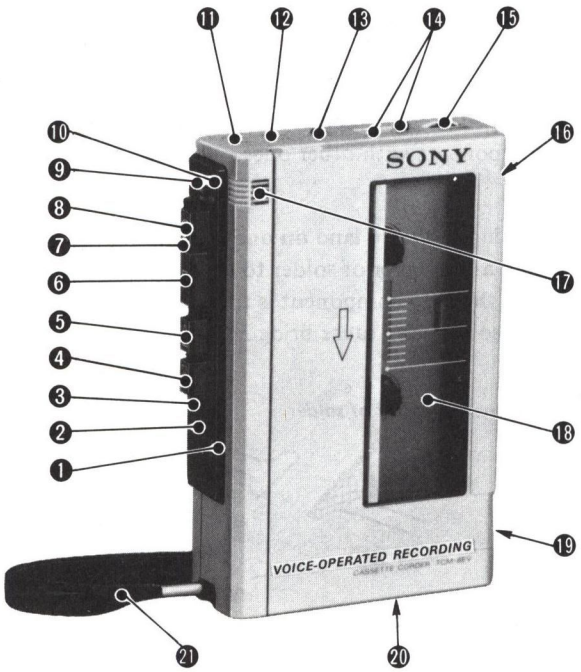
Hold the chip component at the desired position, using tweezers, and apply the soldering iron in the arrow-marked direction. To protect the chip component, heating time should be within 3 seconds.



(3) Speedy soldering of electrode on the other side

Solder the electrode on the other side in the same way as in (2) above.

Parts identification



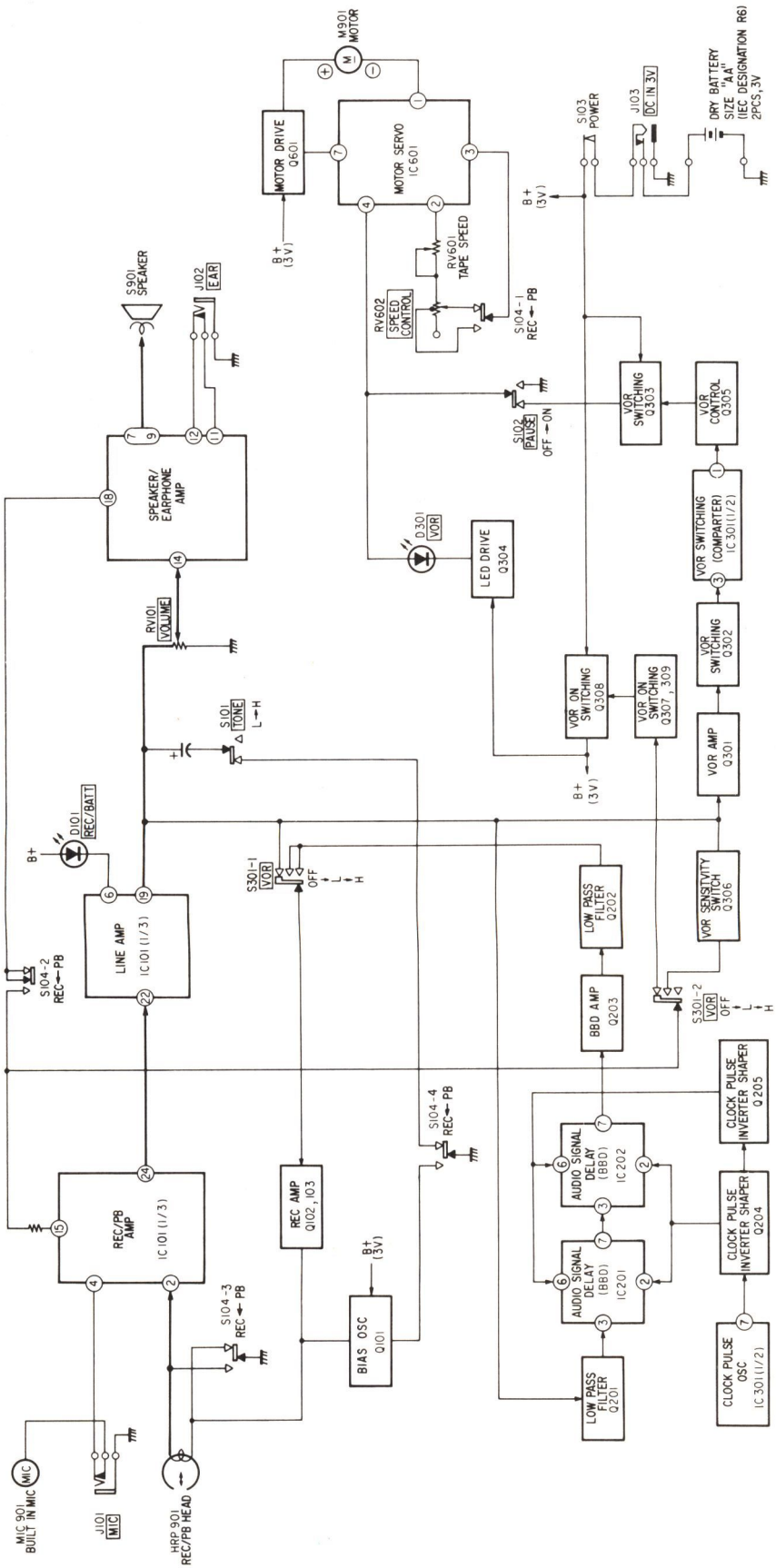
1. VOR selector
2. SPEED CONTROL knob
3. PAUSE switch
4. FF/CUE button
5. REW/REVIEW button
6. PLAY button
7. STOP/EJECT button
8. REC button
9. REC/BATT indicator
10. VOR indicator
11. MIC jack
12. EAR jack
13. TONE switch
14. Tape counter and Reset button
15. VOLUME knob
16. DC IN 3V jack
17. Built-in microphone
18. Cassette compartment
19. Battery compartment (Rear)
20. Speaker (Rear)
21. Hand Strap

Features

- Voice operated recording —— Recording starts automatically when detecting the sound stronger than some extent and stops when no sound is applied.
- Extremely compact size for easy one-hand operation.
- Simplicity of recording — merely insert a cassette and depress a single button.
- TONE switch to adjust the tone in the playback mode and the built-in microphone sensitivity in the record mode.
- Adjustable tape speed in playback mode.
- Cue and review functions to quickly locate any desired portion of the tape.
- One touch review function facilitates listening to the just recorded program.
- Tape counter for indexing the tape contents.
- Automatic shut-off mechanism activates at the end of the tape in either the record or playback mode.

SECTION 1
OUTLINE

BLOCK DIAGRAM



SECTION 2
CIRCUIT DESCRIPTION

CIRCUIT DESCRIPTION

This set utilizes a BBD (Bucket Brigade Device) IC in order to prevent the beginning audio from being recorded brokenly during VOR recording, by delaying the audio signal.

Fig. 1 is a block diagram of the audio signal delay. The audio signal is output from IC101 pin (19), passes the R201, 202 attenuator and Q201 low pass filter, and is input to IC201 pin (3). The R201, 202 attenuator attenuates the signal so that it does not go over IC201 maximum input level of about −5dB.

Q201 low pass filter operates at cut-off frequency of 4kHz so that it does not go over the clock pulse and beat which operate IC201, 202. IC201, 202 form an audio signal delay 1024-stage BBD IC. On this set, these two ICs delay about 85msec. The delayed signal has the amount attenuated at R201, 202 amplified at Q203, it passes Q202 low pass filter and is input to Q102, 103 recording amp. Q202 low pass filter is to cut the clock pulse so that it is not superimposed on the signal at the BBD IC.

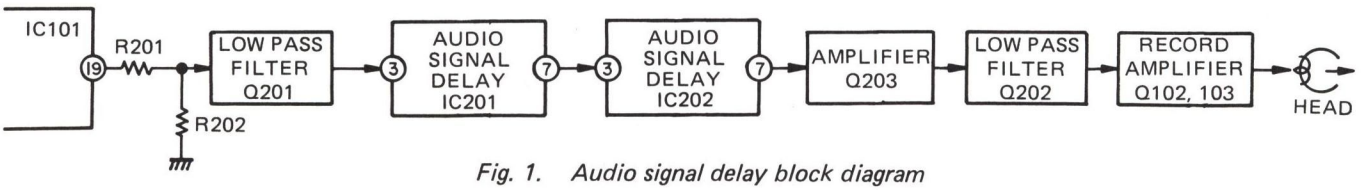


Fig. 1. Audio signal delay block diagram

Fig. 2 shows the circuit which controls on and off of the motor and bias oscillation during VOR recording. The audio signal output from IC101 pin (19) is amplified at Q301. When the level of the audio signal input to Q301 is large, Q302 base potential drops and Q302 goes on. When this happens, IC301 pin (3) voltage goes higher than pin (2) and pin (1) goes high. Then Q305, 303 turn on, and supply power to servo IC (IC601) and bias oscillation transistor (Q101). Q306 is a transistor for switching VOR recording sensitivity, and when VOR recording sensitivity is low it turns on and attenuates the audio signal input to Q301. Also, when there is no audio signal from the microphone, and the motor bias oscillation is stopped immediately, the last audio is not recorded (the audio signal is delayed about 85msec for VOR recording), and further, if on/off is repeated at too short intervals, the playback sound will be hard to heas, so C304 maintains IC301 pin (3) at high for about 2–3 seconds to prevent this.

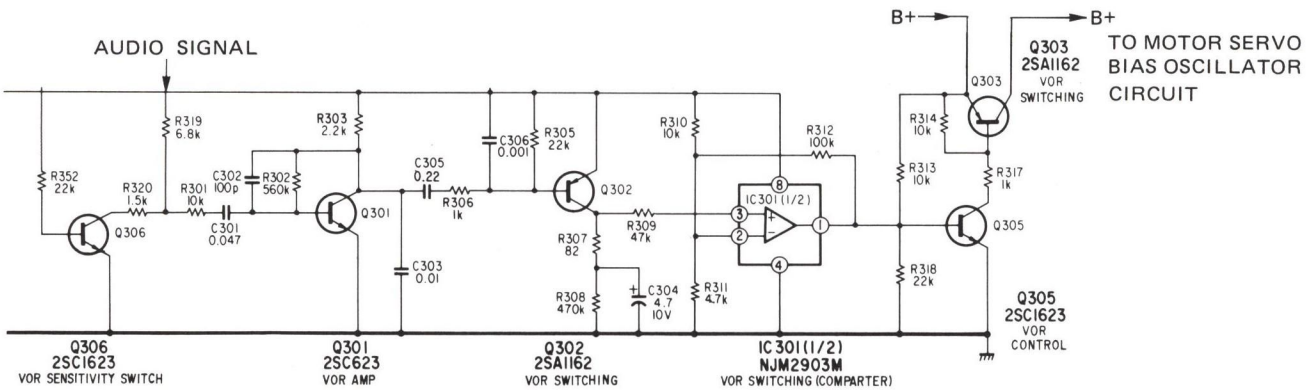
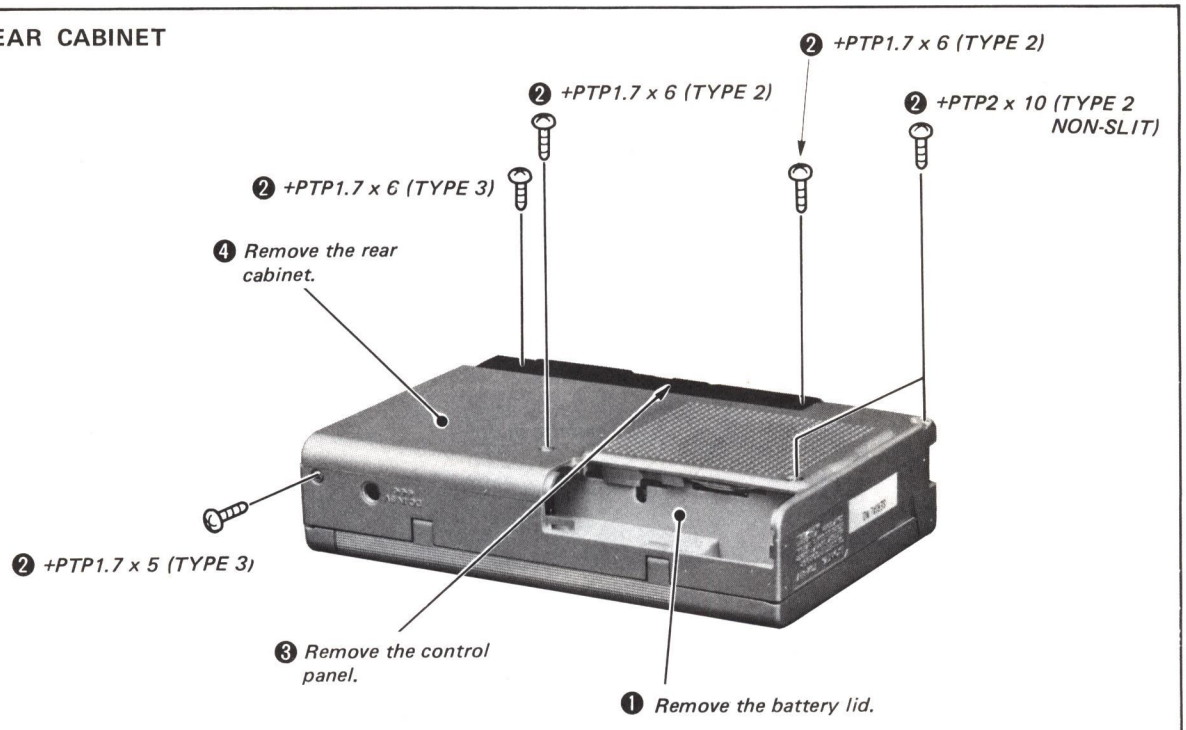


Fig. 2. Motor, Bias oscillator control circuit

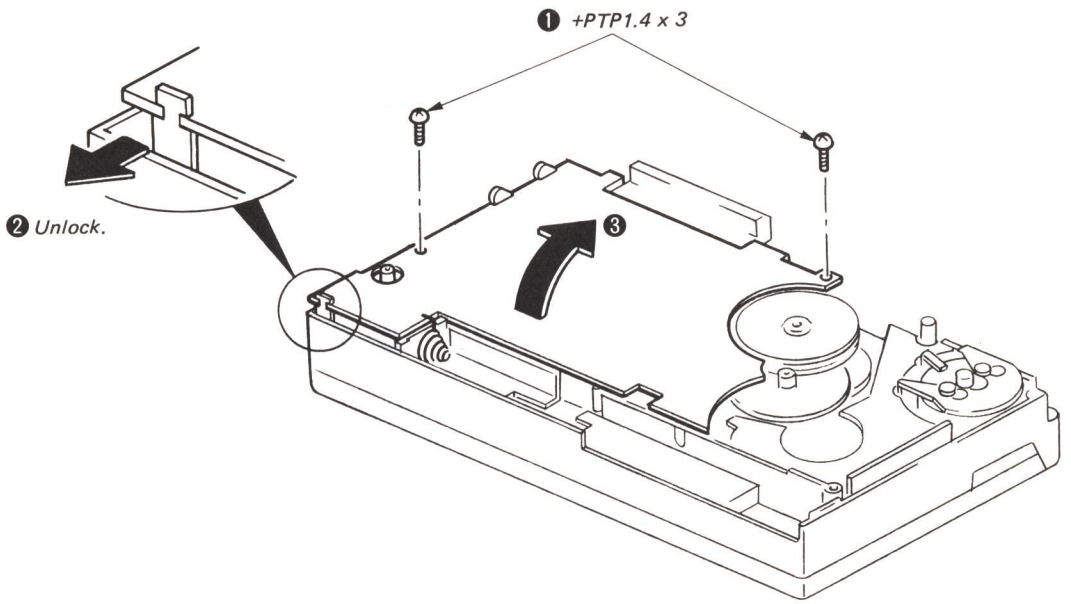
SECTION 3
DISASSEMBLY

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

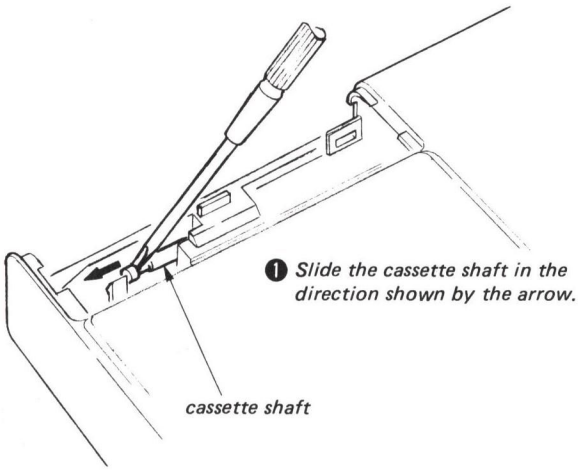
REAR CABINET

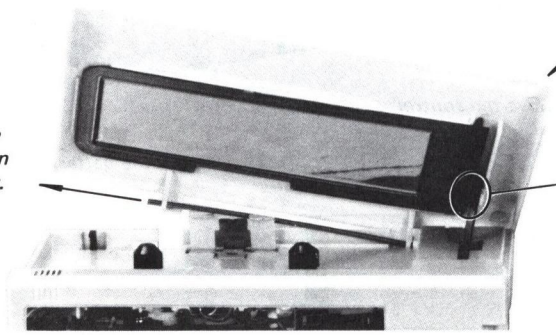


AUDIO BOARD

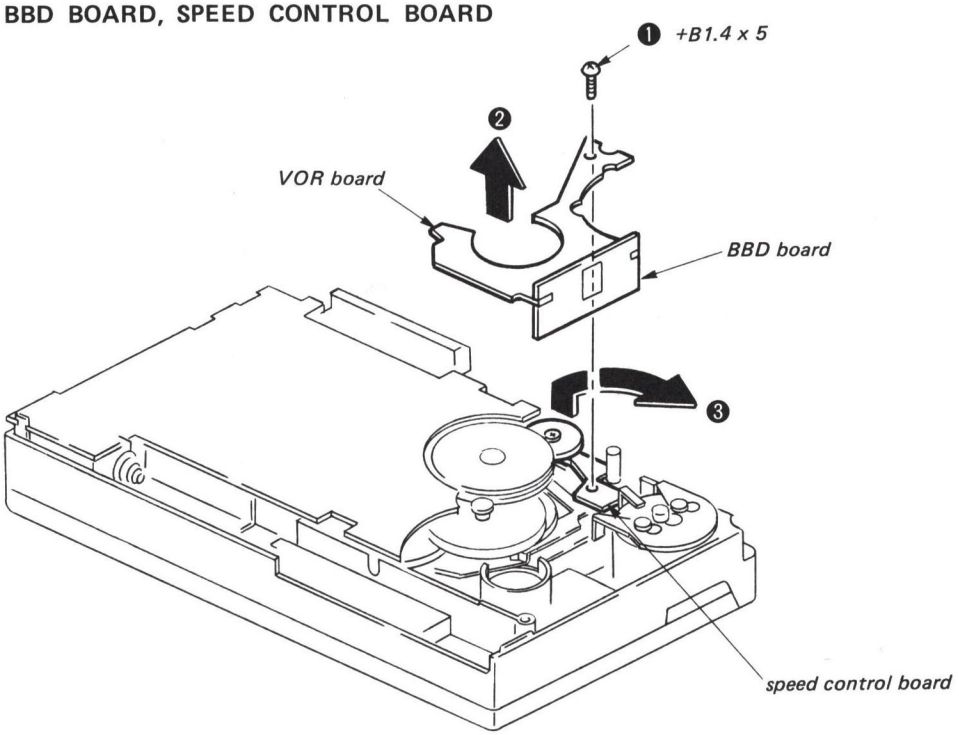


CASSETTE LID

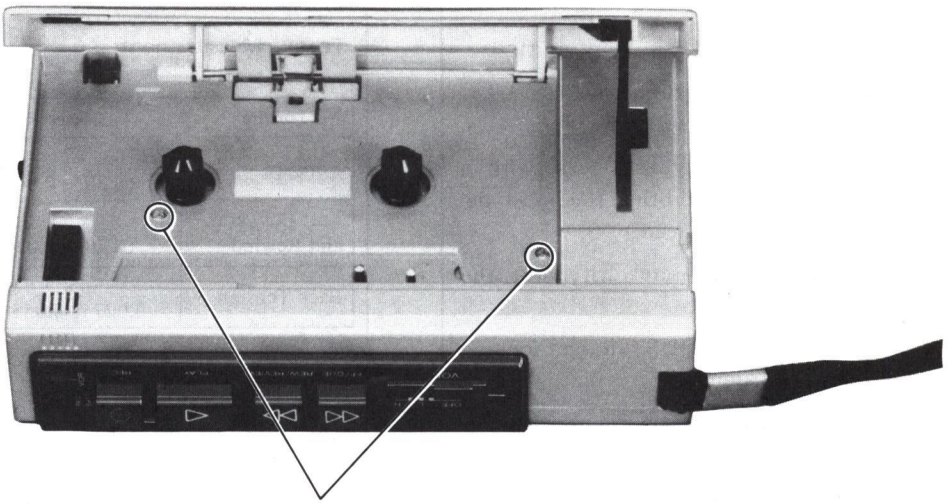




VOR BOARD, BBD BOARD, SPEED CONTROL BOARD

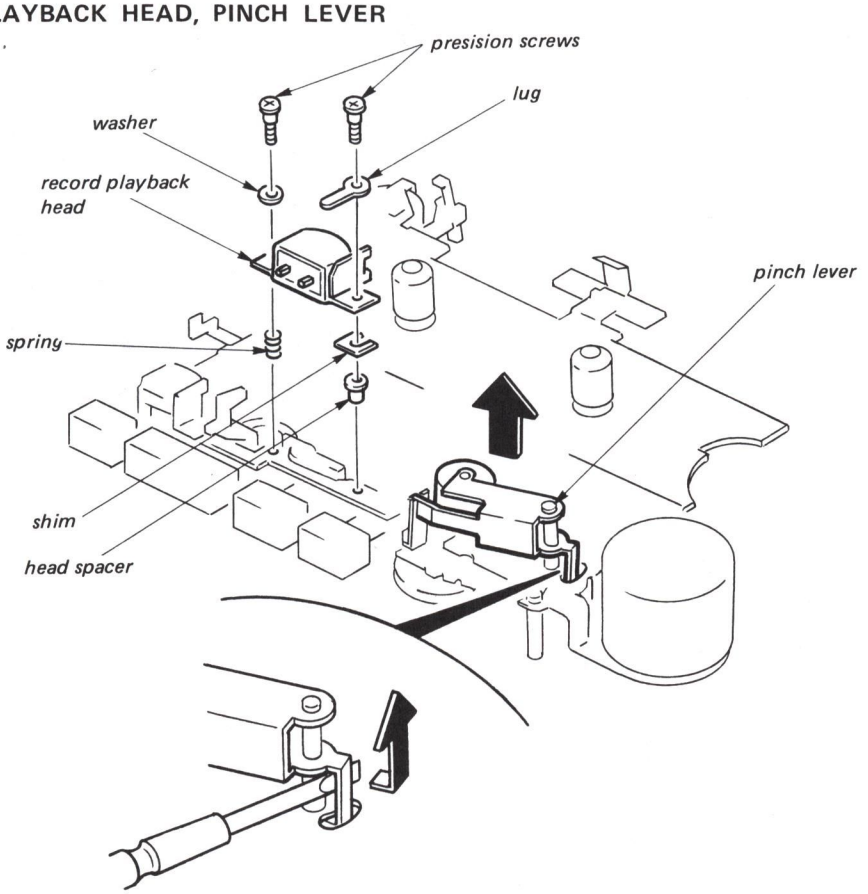


MECHANISM SECTION



+PTP1.7 x 6 (TYPE 3)

RECORD/PLAYBACK HEAD, PINCH LEVER



SECTION 4
ADJUSTMENTS

4-1. MECHANICAL ADJUSTMENTS AND MEASUREMENT

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

2. Demagnetize the record/playback head with a head demagnetizer. (Do not bring the head demagnetizer close to the erase head.)
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.

power supply voltage : 3V dc
SPEED CONTROL knob : center click

Torque Measurement

Torque	Meter Reading	Torque Meter
Forward	27 – 48 g·cm (0.37 – 0.66 oz·inch)	CQ-102C
Fast Forward and Rewind	55 – 75 g·cm (0.76 – 1.03 oz·inch)	CQ-201B
Back Tension	2 – 4 g·cm 0.027 – 0.055 oz·inch)	CQ-102C

Tape Tension Measurement

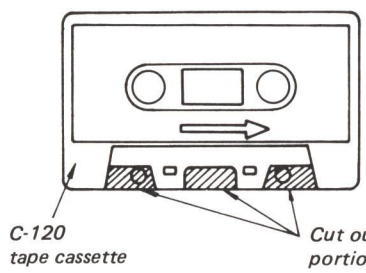
Meter	Meter Reading
CQ-403A	More than 100 g (3.53 oz)

Head Height Adjustment

power supply voltage: 3V dc

Procedure:

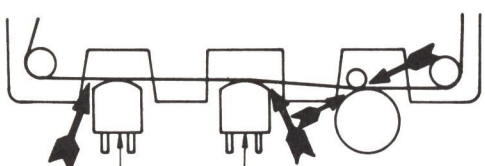
1. Prepare an adjustment cassette as shown below.



C-120 tape cassette

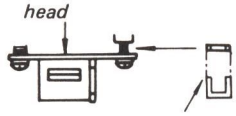
Cut out hatched portions.

2. In record mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at arrowed portions.

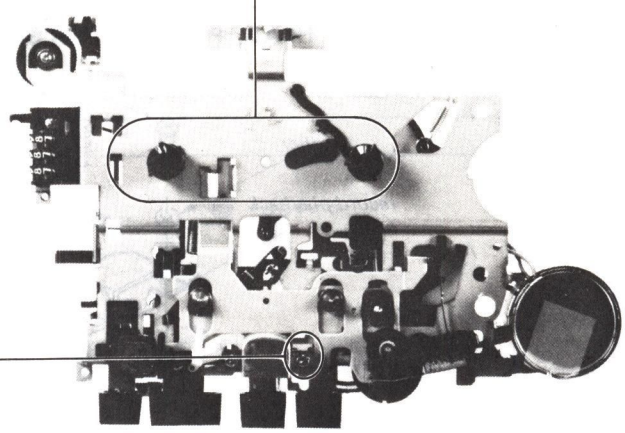


erase head

record/playback head



3-578-138-01 (t=0.1)
3-578-138-11 (t=0.2)
Shim, head height adjustment



4-2. ELECTRICAL ADJUSTMENTS

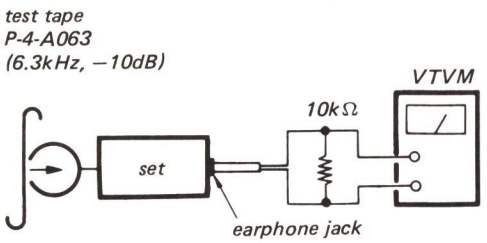
Record/playback Head Azimuth Adjustment

Setting:

VOLUME knob: center click
SPEED CONTROL knob: center click

Procedure:

1. Mode: playback

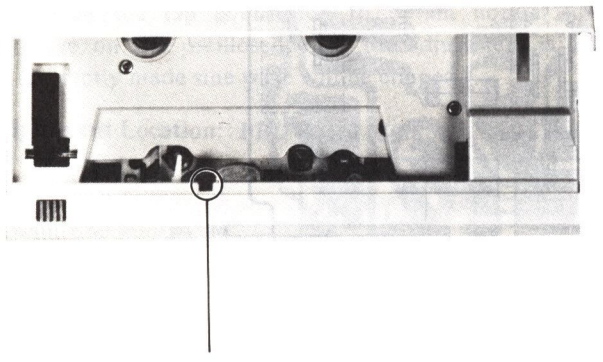


2. Turn the adjustment screw to obtain the maximum reading on VTVM.

   Note: Several peaks may appear, but take the maximum.

3. After the adjustment, lock the adjustment screw with suitable locking compound.

Adjustment Location:



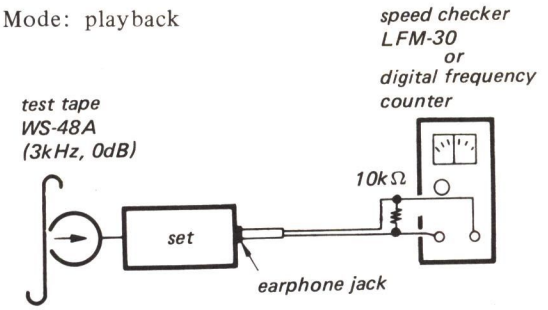
Tape Speed Adjustment

Setting:

VOLUME knob: center click
SPEED CONTROL knob: center click

Procedure:

Mode: playback

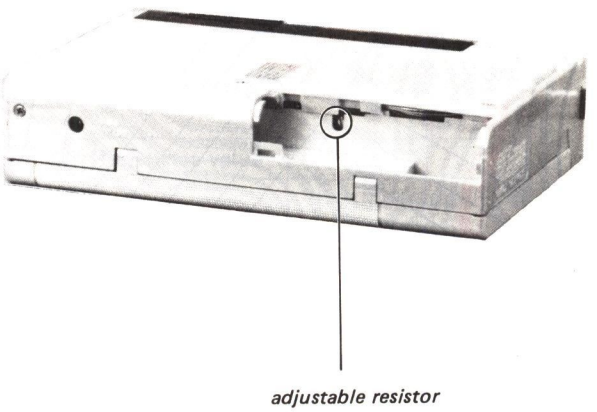


Specification:

Speed checker	Digital frequency counter
± 2%	2,940 – 3,060Hz

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

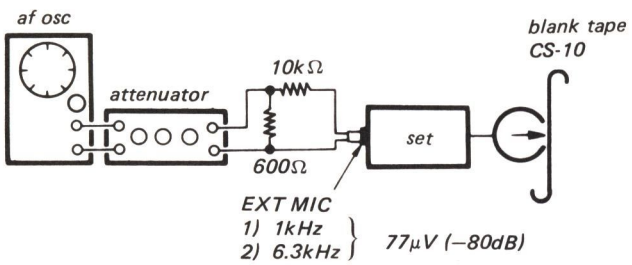
Adjustment Location:

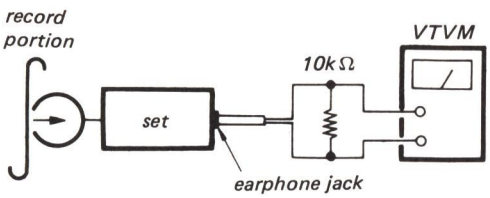


Record Bias Adjustment

Procedure:

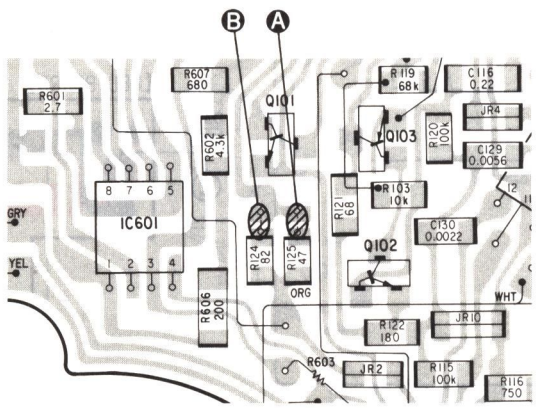
1. Mode: record





Play back the tape recorded in step 1.
Adjust the VOLUME control so that VTVM reading is 0.25V (−10dB) when 1kHz is played back. Next play back 6.3kHz and check that the level difference at this time is within ±3dB.
If not, connect or disconnect patterns Ⓐ and Ⓑ and repeat step 1 and 2.

Adjustment Location: Audio Board



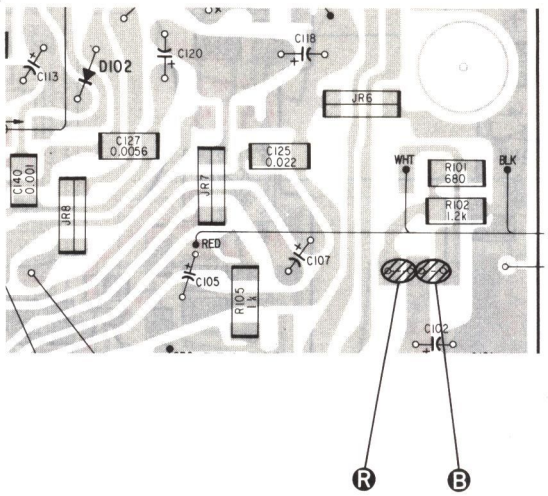
Pattern connection	6.3kHz VTVM reading
Ⓐ Ⓑ	down ↕ up
Ⓐ	
Ⓑ	

Microphone Sensitivity Adjustment

When replacing the microphone, perform this adjustment.

Mark of Microphone	Pattern Connection
BLACK	Ⓑ
RED	Ⓡ

Adjustment Location: Audio Board

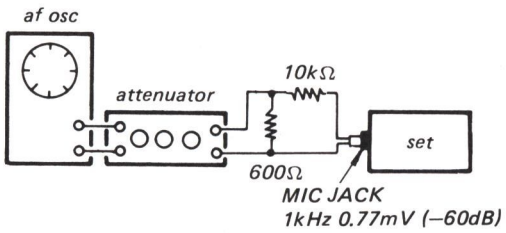


BBD Circuit Bias Adjustment

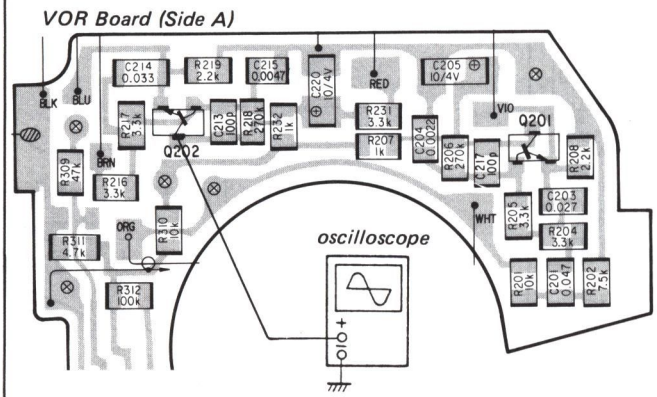
power supply voltage: 2.1V dc

Procedure:

VOR recording mode

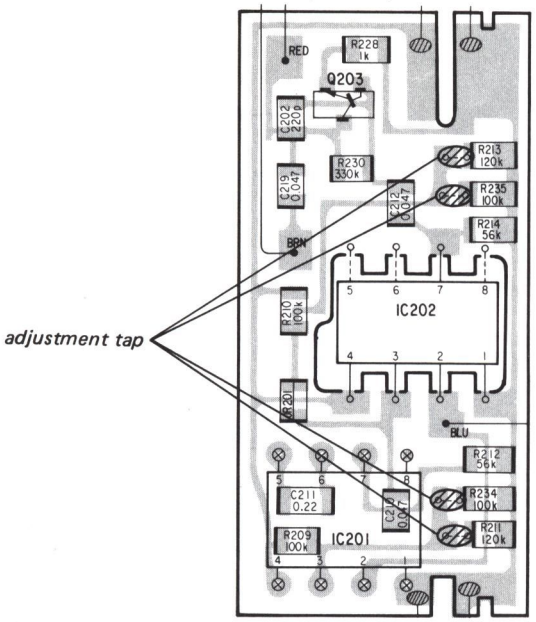


Apply a 1kHz, 0.77mV (–60dB) signal to mic jack and place the set in VOR recording mode.



Adjust the tap connection to obtain normal sine wave on the oscilloscope. If the adjustment is not correctly made sine wave will be clipped.

Adjustment Location: BBD Board (Side A)



VOR LED Brightness Adjustment

power supply voltage: 2.5V dc

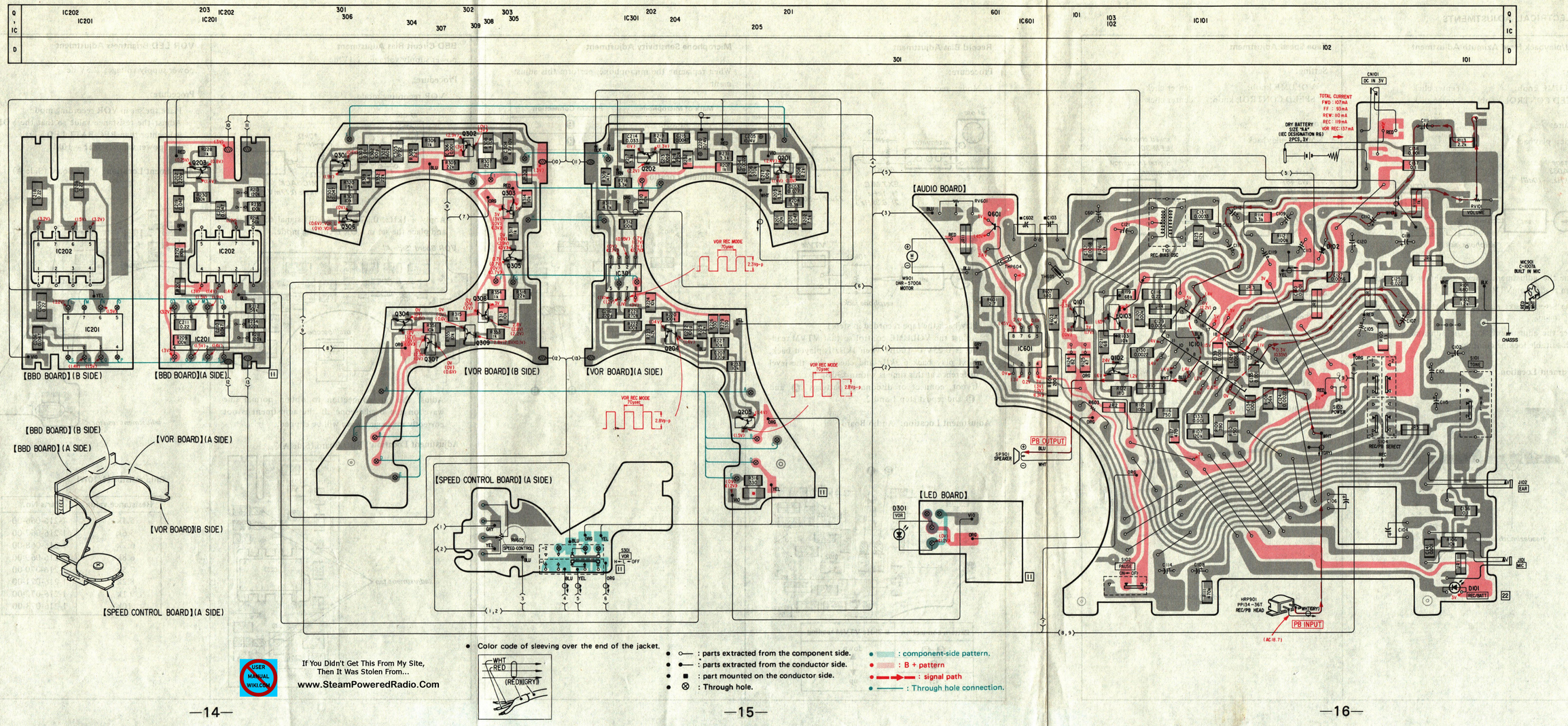
Procedure:

Place the set in VOR recording mode.
Adjust the resistance value so that the VOR LED is brighter than REC/BATT LED a little.
The power value is 5kΩ – 10kΩ.

Adjustment Location: VOR Board (Side A)

Chip resistor (1/10W)

Resistance value	Parts No.
5.1k	1-216-066-00
5.6k	1-216-067-00
6.2k	1-216-068-00
6.8k	1-216-069-00
7.5k	1-216-070-00
8.2k	1-216-071-00
9.1k	1-216-072-00
10k	1-216-073-00

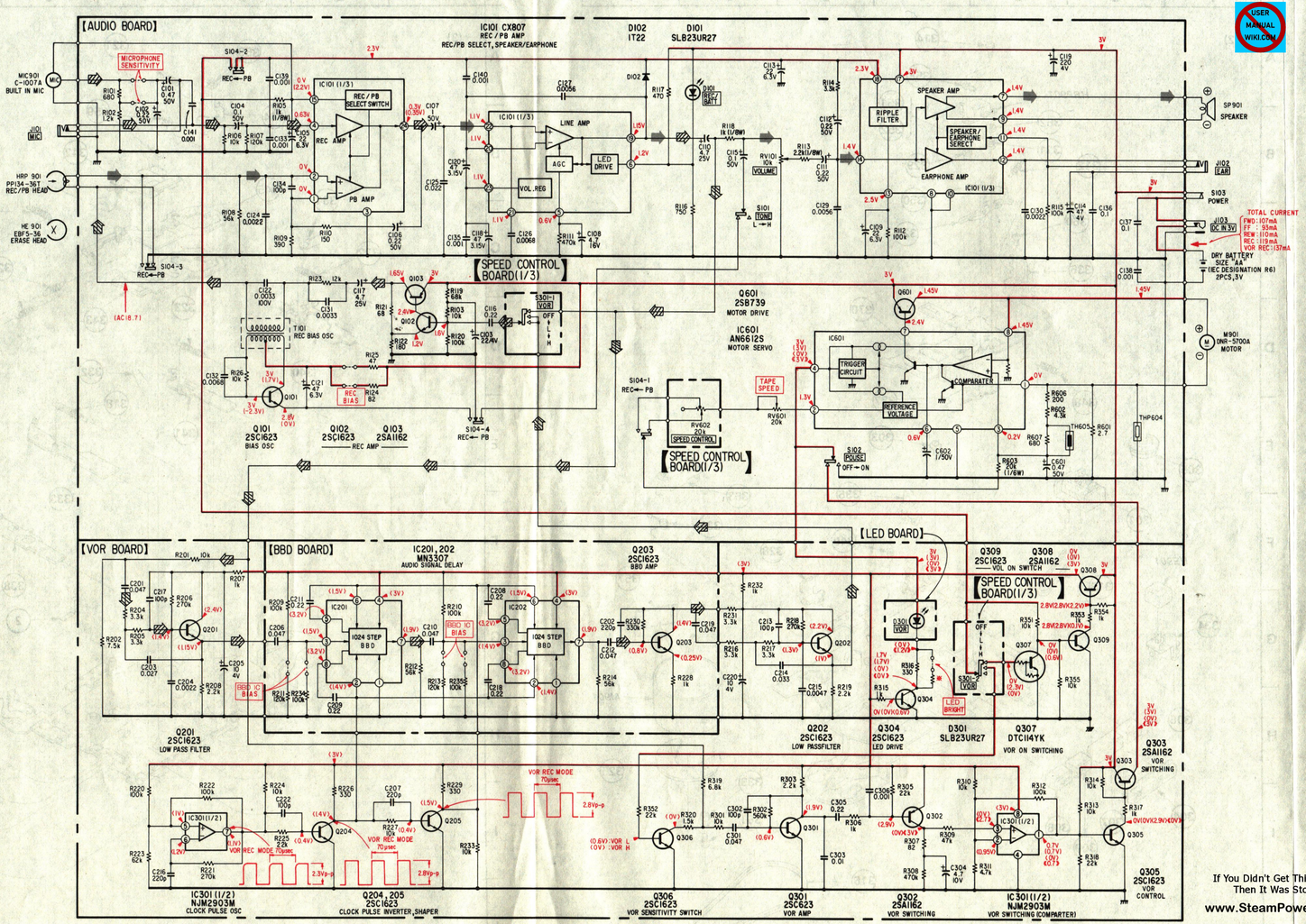


● Color code of sleeving over the end of the jacket.

● ○— : parts extracted from the component side.
● —○ : parts extracted from the conductor side.
● ■ : part mounted on the conductor side.
● ⊗ : Through hole.

● : component-side pattern.
● : B + pattern
● : signal path
● : Through hole connection.

5-2. SCHEMATIC DIAGRAM • Semiconductor Lead Layouts



Note:

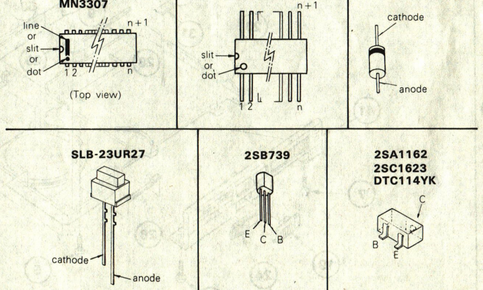
- All capacitors are in μF unless otherwise noted. pF : μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ : 1000Ω, MΩ : 1000kΩ
- ※ : selected to yield optimum performance.
- ▭ : adjustment for repair.
- ——: B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (DC 50kΩ/V).
  no mark : PB
  ( ) : REC
  〈 〉: VOR REC (TAPE STOP)
  { } : VOR REC (TAPE RUNNING)
- Voltage variations may be noted due to normal production tolerances.
- AC voltage readings in the bias oscillator with a VTVM.
- Total current is measured with no cassette installed.
- Switch

Ref. No.	Switch	Position
S101	TONE	L
S102	PAUSE	OFF
S103	POWER	OFF
S104	REC/PB	PB
S301	VOR	OFF

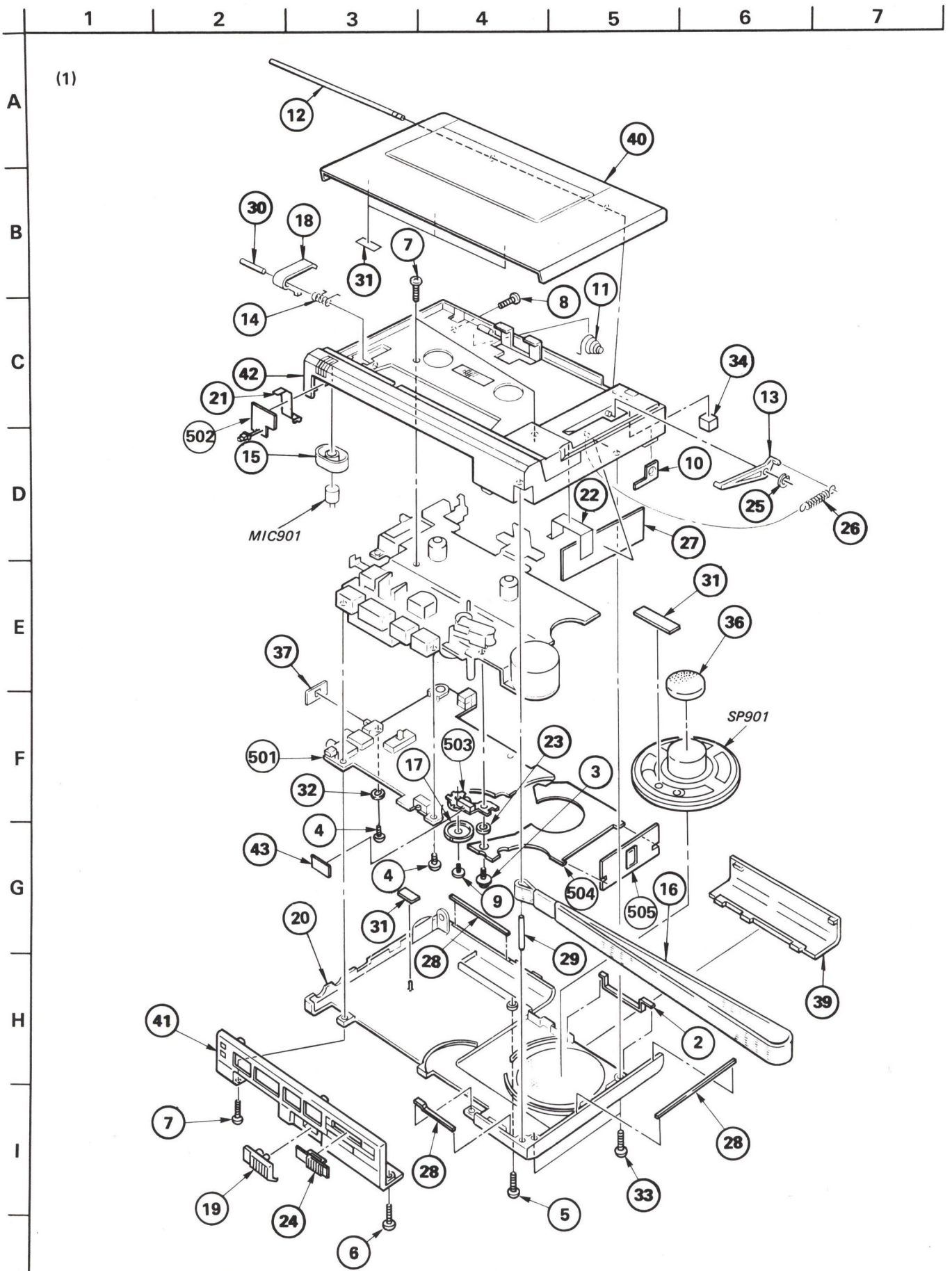
- ➡ : signal path. (PB)
- ▨ : signal path. (VOR REC)

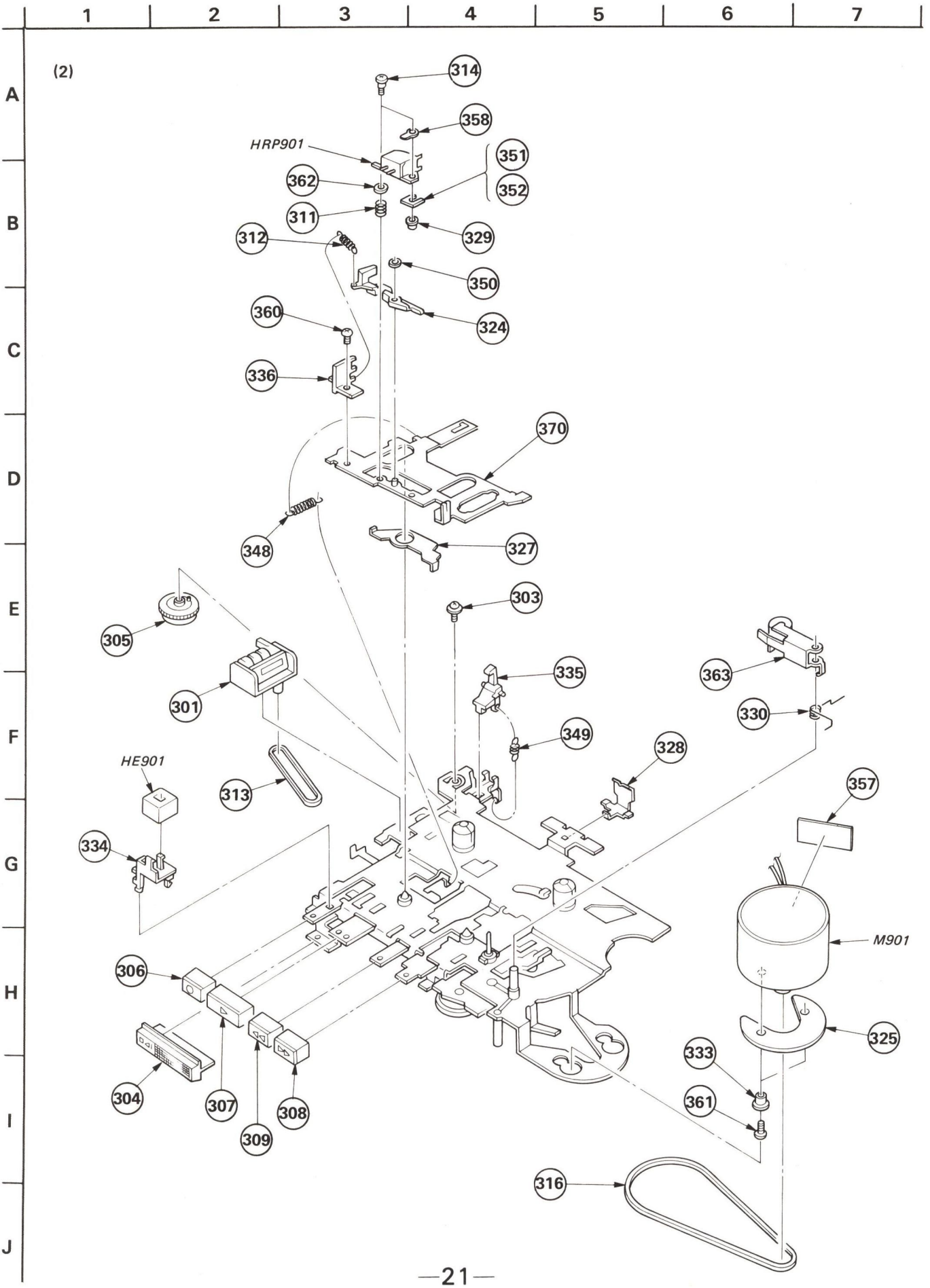
Note: Voltages are measured with a VOM (50kΩ/V).

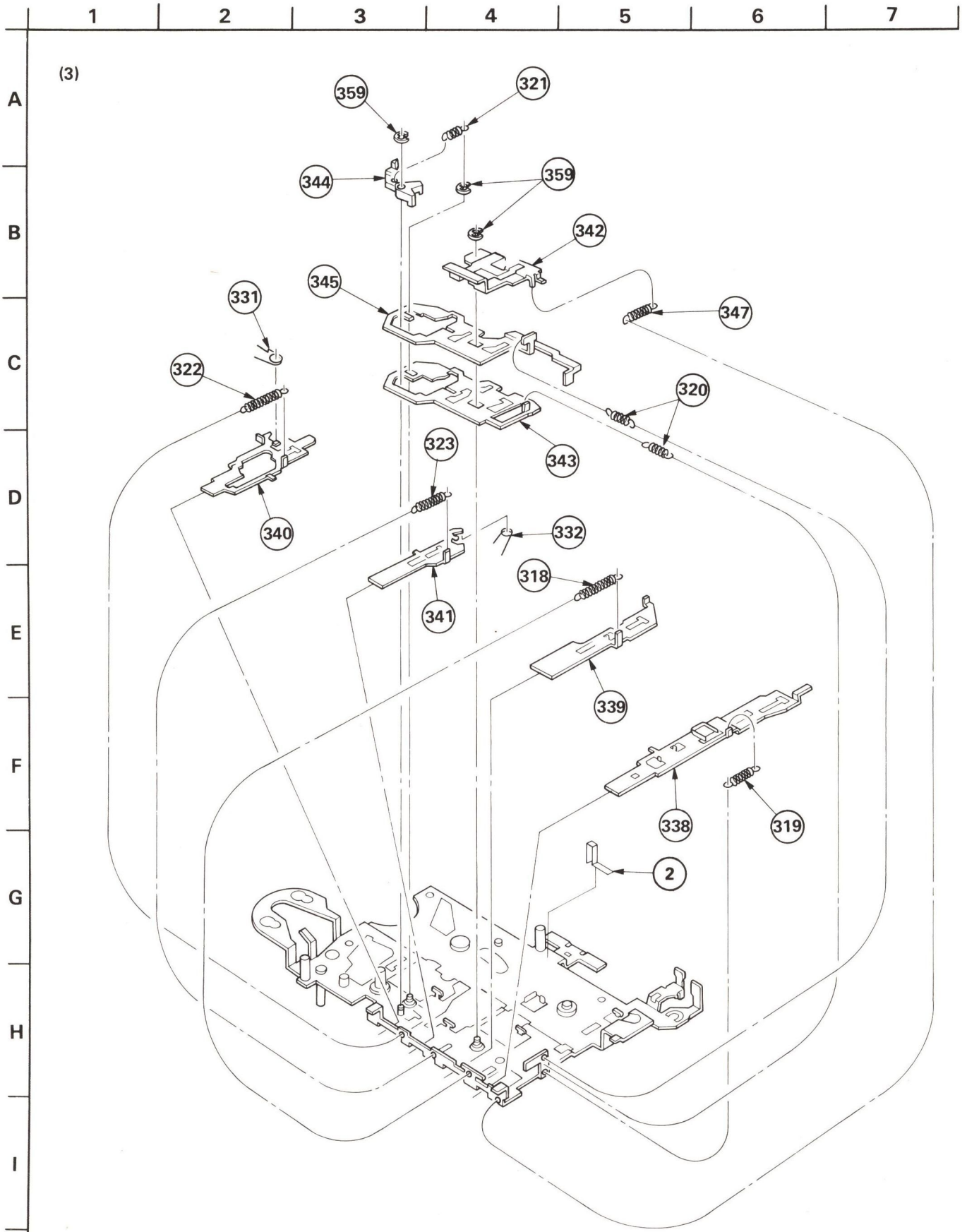
5-3. SEMICONDUCTORS

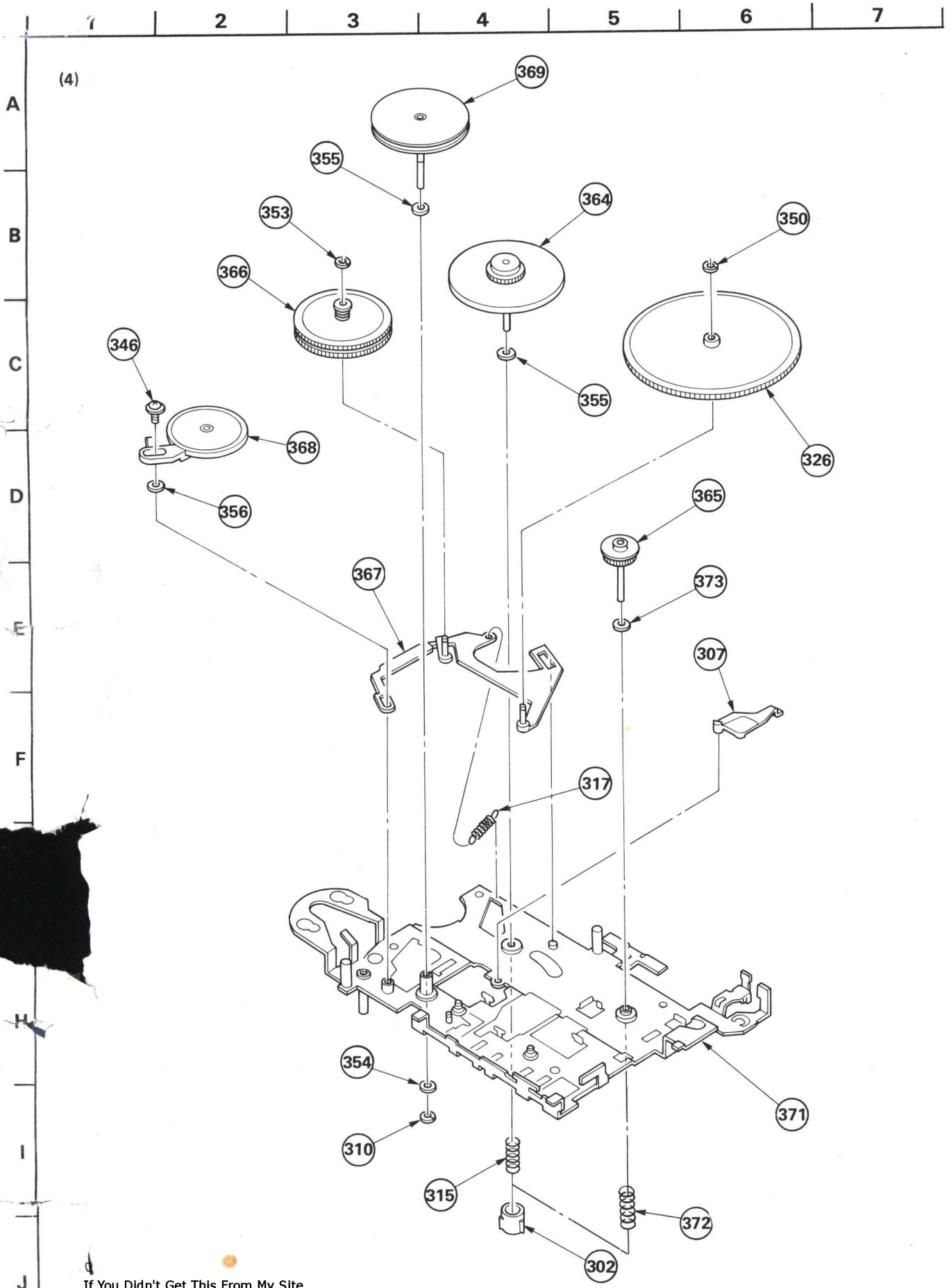


SECTION 6
EXPLODED VIEWS AND PARTS LIST









GENERAL SECTION

No.	Part No.	Description
1	.....	
2	♦;3-311-853-01	CONDUCTOR, GROUND
3	3-318-201-21	SCREW (B) (1.4X5), TAPPING
4	3-318-202-01	SCREW (M3) (1.4X3), TAPPING
5	3-318-203-01	SCREW (1.7X6), TAPPING
6	3-318-203-11	SCREW (1.7X6), TAPPING
7	3-318-204-31	SCREW (M1.7X6), TAPPING
8	3-318-204-61	SCREW (M1.7X5), TAPPING
9	3-318-205-01	SCREW (1.7X2.5)
10	3-318-209-01	TERMINAL BOARD, PLUS
11	3-318-210-01	SPRING
12	3-318-211-01	SHAFT, CASSETTE
13	3-318-214-01	ARM, TOGGLE
14	3-318-215-01	SPRING
15	3-318-216-01	CUSHION, MICROPHONE
16	3-318-218-11	STRAP, HAND
17	3-318-225-01	KNOB, SPEED CONTROL
18	3-318-226-01	LEVER, EJECT
19	3-318-227-01	KNOB, PAUSE
20	3-318-231-21	CABINET (REAR)
21	3-318-311-01	SHEET, CONDUCTIVE, MIC
22	3-318-312-01	SHEET, CONDUCTIVE, SP
23	3-318-314-01	SPACER
24	3-318-315-01	KNOB, CONTROL
25	3-318-323-01	RING, RETAINING (3)
26	3-318-327-01	SPRING, TENSION
27	♦;3-318-328-01	SHEET (A), INSULATING
28	♦;3-318-339-01	SHEET (E) CONDUCTIVE
29	3-649-266-00	PIN, PARALLEL
30	3-703-357-06	PIN, PARALLEL (DIA. 1.6X14)
31	3-831-441-XX	CUSHION
32	7-623-203-11	SW 1.4, TYPE 1
33	7-685-106-14	SCREW +P 2X10 TYPE2 NON-SLIT
34	9-911-841-XX	CUSHION
35	9-911-840-XX	CUSHION, RUBBER
36	9-911-844-XX	CUSHION, SPEAKER
37	9-911-863-XX	PLATE, BLIND
38	.....	
39	A-3046-031-A	BATTERY LID ASSY
40	X-3318-218-1	LID ASSY, CASSETTE
41	X-3318-219-1	CONTROL PANEL ASSY
42	X-3318-220-1	CABINET ASSY
43	3-318-341-01	SHEET (B) INSULATING

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
81	3-318-344-01	INDIVIDUAL CARTON
82	1-504-059-11	MAGNETIC EARPHONE(ME-20H)
83	3-314-036-00	SPACER
84	3-318-305-01	CUSHION
85	3-318-335-01	CASE, CARRYING
86	3-570-631-81	BAG, POLYETHYLENE
87	3-701-624-00	BAG, POLYETHYLENE
88	3-701-999-00	LABEL, SERIAL NUMBER
89	3-703-710-01	STICKER, SONY SYMBOL (12)
90	3-793-828-11	QUESTIONNAIRE
91	3-773-823-11	(AEP,E).....MANUAL, INSTRUCTION
91	3-773-823-21	(US,Canadian)...MANUAL, INSTRUCTION
91	3-773-823-31	(Canadian).....MANUAL, INSTRUCTION
91	3-773-823-41	(AEP).....MANUAL, INSTRUCTION

MECHANISM SECTION

No.	Part No.	Description
301	1-548-541-31	COUNTER
302	3-306-836-02	CAP, REEL, T
303	3-318-201-01	SCREW (B) (1.4X3), TAPPING
304	3-318-208-01	BUTTON, STOP
305	3-318-220-01	KNOB, CONTROL
306	3-318-221-01	BUTTON, REC
307	3-318-222-01	BUTTON, PLAY
308	3-318-223-01	BUTTON, FF
309	3-318-228-01	BUTTON, REW
310	3-318-236-01	WASHER, POLY, SLIT
311	3-318-237-01	SPRING, COMPRESSION
312	3-318-238-01	SPRING, TENSION
313	3-318-239-01	BELT
314	3-318-240-01	SCREW (1.4), SPECIAL
315	3-318-241-01	SPRING, COMPRESSION
316	3-318-242-01	BELT
317	3-318-243-01	SPRING, TENSION
318	3-318-246-01	SPRING, TENSION
319	3-318-247-01	SPRING, TENSION
320	3-318-248-01	SPRING, TENSION
321	3-318-249-01	SPRING, TENSION
322	3-318-250-01	SPRING, TENSION
323	3-318-251-01	SPRING, TENSION
324	3-318-252-01	ARM, DETECTION
325	3-318-254-01	CUSHION, MOTOR
326	3-318-265-01	GEAR (B), FR
327	♦;3-318-267-01	LEVER, CR

NOTE:

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

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···

MECHANISM SECTION

No.	Part No.	Description
328	3-318-269-01	SPRING
329	3-318-309-01	SPACER, HEAD
330	3-318-275-01	SPRING
331	3-318-276-01	SPRING, FF
332	3-318-277-01	SPRING, REW
333 ♦	3-318-278-01	COLLAR, MOTOR
334	3-318-285-01	BRACKET, ERASE HEAD
335	3-318-286-01	LEVER, ERASING PROTECTION
336	3-318-287-01	GUIDE, TAPE
337	3-318-288-01	ARM, FF
338 ♦	3-318-289-01	LEVER, REC
339 ♦	3-318-290-01	LEVER, PLAY
340	3-318-291-01	LEVER, FF
341	3-318-292-01	LEVER, REW
342 ♦	3-318-293-01	LEVER, STOP
343 ♦	3-318-294-01	PLATE, LOCK
344	3-318-296-01	LEVER, SHUT-OFF
345	3-318-300-01	LEVER, SWITCH
346	3-318-324-01	BUSHING, IDLER LEVER
347	3-547-669-00	SPRING, TENSION
348	3-565-927-00	SPRING, TENSION
349	3-318-336-01	SPRING, TENSION
350	3-570-615-00	POLY-WASHER (DIA.1.2)
351	3-578-138-01	SEAM (t=0.1)
352	3-578-138-11	SEAM (t=0.2)
353	3-578-265-11	WASHER, STOPPER
354	3-701-437-01	WASHER
355	3-701-437-11	WASHER
356	3-827-323-11	WASHER (DIA. 3.1)
357	3-831-441-XX	CUSHION
358	7-623-505-01	LUG 2
359	7-624-101-01	RING, RETAINING E-1.2
360	7-627-552-07	SCREW, PRECISION +P 1.7X2.5
361	7-627-552-47	SCREW, PRECISION +P 1.7X4
362	7-688-001-01	W 2, SMALL
363	A-3110-010-A	PINCH LEVER ASSY
364	X-3318-202-1	CLUTCH ASSY
365	X-3318-204-1	GEAR ASSY, REW
366	X-3318-207-1	GEAR (A) ASSY, FR
367	X-3318-208-1	LEVER ASSY, FR
368	X-3318-210-1	LEVER ASSY, FWD IDLER
369	X-3318-211-1	FLYWHEEL ASSY
370	X-3318-213-1	CHASSIS ASSY, HEAD
371 ♦	X-3318-214-1	CHASSIS ASSY, MECHANICAL
372	3-318-334-01	SPRING, COMPRESSION
373	3-701-437-21	WASHER

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
501 ♦	A-3015-255-A	PC BOARD ASSY, AUDIO			
502 ♦	1-612-413-11	PC BOARD, LED			
503 ♦	1-612-415-11	PC BOARD, SPEED CONTROL			
504 ♦	A-3078-003-A	MOUNTED PCB, VOR			
505 ♦	A-3015-257-A	PC BOARD ASSY, BBD			
C101	1-123-610-00	ELECT	0.47MF	20%	50V
C102	1-123-608-00	ELECT	0.22MF	20%	50V
C103	1-124-430-00	ELECT	22MF	20%	4V
C104	1-123-607-00	ELECT	0.1MF	20%	50V
C105	1-124-222-00	ELECT	22MF	20%	6.3V
C106	1-123-608-00	ELECT	0.22MF	20%	50V
C107	1-124-255-00	ELECT	1MF	20%	50V
C108	1-124-231-00	ELECT	4.7MF	20%	16V
C109	1-123-618-00	ELECT	22MF	20%	6.3V
C110	1-123-616-00	ELECT	4.7MF	20%	25V
C111	1-123-608-00	ELECT	0.22MF	20%	50V
C112	1-123-608-00	ELECT	0.22MF	20%	50V
C113	1-123-618-00	ELECT	22MF	20%	6.3V
C114	1-124-432-00	ELECT	47MF	20%	4V
C115	1-123-607-00	ELECT	0.1MF	20%	50V
C116	1-163-081-00	CERAMIC CHIP	0.22MF		25V
C117	1-123-616-00	ELECT	4.7MF	20%	25V
C118	1-131-393-00	TANTALUM	47MF	20%	3.15V
C119	1-123-827-00	ELECT	220MF	20%	4V
C120	1-131-393-00	TANTALUM	47MF	20%	3.15V
C121	1-123-647-00	ELECT	47MF	20%	6.3V
C122	1-108-371-00	MYLAR	0.0033MF	10%	100V
C124	1-163-013-00	CERAMIC CHIP	0.0022MF	10%	50V
C125	1-163-033-00	CERAMIC CHIP	0.022MF	10%	25V
C126	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C127	1-163-018-00	CERAMIC CHIP	0.0056MF	10%	50V
C129	1-163-018-00	CERAMIC CHIP	0.0056MF	10%	50V
C130	1-163-013-00	CERAMIC CHIP	0.0022MF	10%	50V
C131	1-163-015-00	CERAMIC CHIP	0.0033MF	10%	50V
C132	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C133	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C134	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C135	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C136	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C137	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C138	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C139	1-163-047-00	CERAMIC CHIP	0.001MF	10%	50V
C140	1-163-141-00	CERAMIC CHIP	0.001MF	10%	50V
C141	1-163-047-00	CERAMIC CHIP	0.001MF	10%	50V
C201	1-163-035-00	CERAMIC CHIP	0.047MF		50V

NOTE:

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

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		
C202	1-163-001-00	CERAMIC CHIP 220PF	10%	50V
C203	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
C204	1-163-013-00	CERAMIC CHIP 0.0022MF	10%	50V
C205	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C206	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C207	1-163-001-00	CERAMIC CHIP 220PF	10%	50V
C208	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C209	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C210	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C211	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C212	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C213	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C214	1-163-074-00	CERAMIC CHIP 0.033MF	10%	25V
C215	1-163-017-00	CERAMIC CHIP 0.0047MF	10%	50V
C216	1-163-001-00	CERAMIC CHIP 220PF	10%	50V
C217	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C218	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C219	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C220	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C222	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C301	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C302	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C303	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C304	1-135-096-21	TANTAL. CHIP 4.7MF	20%	10V
C305	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C306	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C601	1-124-253-00	ELECT 0.47MF	20%	50V
C602	1-124-438-00	ELECT 1MF	20%	50V
D101	8-719-908-16	DIODE SLB-23UR27		
D102	8-719-022-21	DIODE 1T22A		
D301	8-719-908-16	DIODE SLB-23UR27		
HE901	8-658-096-02	HEAD, ERASE EBF5-36		
HRP901	8-829-336-35	HEAD (PP134-36T)		
IC101	8-759-911-78	IC CX-807		
IC201	8-759-400-16	IC MN3307		
IC202	8-759-400-16	IC MN3307		
IC301	8-759-700-07	IC NJM2903M		
IC601	8-759-400-12	IC AN6612S		
J101	1-507-921-00	JACK		
J102	1-507-921-00	JACK		
J103	1-507-723-00	JACK, EXTENTION POWER		
JR1	1-216-295-00	METAL CHIP 0	5%	1/10W
JR2	1-216-295-00	METAL CHIP 0	5%	1/10W
JR3	1-216-295-00	METAL CHIP 0	5%	1/10W
JR4	1-216-295-00	METAL CHIP 0	5%	1/10W

ELECTRICAL PARTS

Ref.No.	Part No.	Description		
JR5	1-216-296-00	METAL CHIP 0	5%	1/8W
JR6	1-216-296-00	METAL CHIP 0	5%	1/8W
JR7	1-216-296-00	METAL CHIP 0	5%	1/8W
JR8	1-216-296-00	METAL CHIP 0	5%	1/8W
JR9	1-216-296-00	METAL CHIP 0	5%	1/8W
JR10	1-216-296-00	METAL CHIP 0	5%	1/8W
JR11	1-216-296-00	METAL CHIP 0	5%	1/8W
JR201	1-216-295-00	METAL CHIP 0	5%	1/10W
JR301	1-216-295-00	METAL CHIP 0	5%	1/10W
M901	8-835-104-01	MOTOR, DC (DNR-5700A)		
MIC901	8-814-189-31	MICROPHONE, BUILT-IN (C-1007A)		
Q101	8-729-100-66	TRANSISTOR 2SC1623		
Q102	8-729-100-66	TRANSISTOR 2SC1623		
Q103	8-729-216-22	TRANSISTOR 2SA1162		
Q201	8-729-100-66	TRANSISTOR 2SC1623		
Q202	8-729-100-66	TRANSISTOR 2SC1623		
Q203	8-729-100-66	TRANSISTOR 2SC1623		
Q204	8-729-100-66	TRANSISTOR 2SC1623		
Q205	8-729-100-66	TRANSISTOR 2SC1623		
Q301	8-729-100-66	TRANSISTOR 2SC1623		
Q302	8-729-216-22	TRANSISTOR 2SA1162		
Q303	8-729-216-22	TRANSISTOR 2SA1162		
Q304	8-729-100-66	TRANSISTOR 2SC1623		
Q305	8-729-100-66	TRANSISTOR 2SC1623		
Q306	8-729-100-66	TRANSISTOR 2SC1623		
Q307	8-729-900-52	TRANSISTOR DTC114YK		
Q308	8-729-216-22	TRANSISTOR 2SA1162		
Q309	8-729-100-66	TRANSISTOR 2SC1623		
Q601	8-729-373-92	TRANSISTOR 2SB739		
R101	1-216-045-00	METAL CHIP 680	5%	1/10W
R102	1-216-051-00	METAL CHIP 1.2K	5%	1/10W
R103	1-216-073-00	METAL CHIP 10K	5%	1/10W
R105	1-216-198-00	METAL CHIP 1K	5%	1/8W
R106	1-216-073-00	METAL CHIP 10K	5%	1/10W
R107	1-216-099-00	METAL CHIP 120K	5%	1/10W
R108	1-216-091-00	METAL CHIP 56K	5%	1/10W
R109	1-216-039-00	METAL CHIP 390	5%	1/10W
R110	1-216-029-00	METAL CHIP 150	5%	1/10W
R111	1-216-113-00	METAL CHIP 470K	5%	1/10W
R112	1-216-097-00	METAL CHIP 100K	5%	1/10W
R113	1-216-206-00	METAL CHIP 2.2K	5%	1/8W
R114	1-216-061-00	METAL CHIP 3.3K	5%	1/10W
R115	1-216-097-00	METAL CHIP 100K	5%	1/10W
R116	1-216-046-00	METAL CHIP 750	5%	1/10W
R117	1-216-041-00	METAL CHIP 470	5%	1/10W

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In each case, U : μ, for example:
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UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R118	1-216-198-00	METAL CHIP	1K	5%	1/8W
R119	1-216-093-00	METAL CHIP	68K	5%	1/10W
R120	1-216-097-00	METAL CHIP	100K	5%	1/10W
R121	1-216-021-00	METAL CHIP	68	5%	1/10W
R122	1-216-031-00	METAL CHIP	180	5%	1/10W
R123	1-216-075-00	METAL CHIP	12K	5%	1/10W
R124	1-216-023-00	METAL CHIP	82	5%	1/10W
R125	1-216-017-00	METAL CHIP	47	5%	1/10W
R126	1-216-073-00	METAL CHIP	10K	5%	1/10W
R201	1-216-073-00	METAL CHIP	10K	5%	1/10W
R202	1-216-070-00	METAL CHIP	7.5K	5%	1/10W
R204	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R205	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R206	1-216-107-00	METAL CHIP	270K	5%	1/10W
R207	1-216-049-00	METAL CHIP	1K	5%	1/10W
R208	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R209	1-216-097-00	METAL CHIP	100K	5%	1/10W
R210	1-216-097-00	METAL CHIP	100K	5%	1/10W
R211	1-216-099-00	METAL CHIP	120K	5%	1/10W
R212	1-216-091-00	METAL CHIP	56K	5%	1/10W
R213	1-216-099-00	METAL CHIP	120K	5%	1/10W
R214	1-216-091-00	METAL CHIP	56K	5%	1/10W
R216	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R217	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R218	1-216-107-00	METAL CHIP	270K	5%	1/10W
R219	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R220	1-216-097-00	METAL CHIP	100K	5%	1/10W
R221	1-216-107-00	METAL CHIP	270K	5%	1/10W
R222	1-216-097-00	METAL CHIP	100K	5%	1/10W
R223	1-216-092-00	METAL CHIP	62K	5%	1/10W
R224	1-216-073-00	METAL CHIP	10K	5%	1/10W
R225	1-216-081-00	METAL CHIP	22K	5%	1/10W
R226	1-216-037-00	METAL CHIP	330	5%	1/10W
R227	1-216-073-00	METAL CHIP	10K	5%	1/10W
R228	1-216-049-00	METAL CHIP	1K	5%	1/10W
R229	1-216-037-00	METAL CHIP	330	5%	1/10W
R230	1-216-109-00	METAL CHIP	330K	5%	1/10W
R231	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R232	1-216-049-00	METAL CHIP	1K	5%	1/10W
R233	1-216-073-00	METAL CHIP	10K	5%	1/10W
R234	1-216-097-00	METAL CHIP	100K	5%	1/10W
R235	1-216-097-00	METAL CHIP	100K	5%	1/10W
R301	1-216-073-00	METAL CHIP	10K	5%	1/10W
R302	1-216-115-00	METAL CHIP	560K	5%	1/10W
R303	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R305	1-216-081-00	METAL CHIP	22K	5%	1/10W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R306	1-216-049-00	METAL CHIP	1K	5%	1/10W
R307	1-216-023-00	METAL CHIP	82	5%	1/10W
R308	1-216-113-00	METAL CHIP	470K	5%	1/10W
R309	1-216-089-00	METAL CHIP	47K	5%	1/10W
R310	1-216-073-00	METAL CHIP	10K	5%	1/10W
R311	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R312	1-216-097-00	METAL CHIP	100K	5%	1/10W
R313	1-216-073-00	METAL CHIP	10K	5%	1/10W
R314	1-216-073-00	METAL CHIP	10K	5%	1/10W
R315	1-216-049-00	METAL CHIP	1K	5%	1/10W
R316	1-216-037-00	METAL CHIP	330	5%	1/10W
R317	1-216-049-00	METAL CHIP	1K	5%	1/10W
R318	1-216-081-00	METAL CHIP	22K	5%	1/10W
R319	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R320	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R351	1-216-073-00	METAL CHIP	10K	5%	1/10W
R352	1-216-081-00	METAL CHIP	22K	5%	1/10W
R353	1-216-049-00	METAL CHIP	1K	5%	1/10W
R354	1-216-049-00	METAL CHIP	1K	5%	1/10W
R355	1-216-073-00	METAL CHIP	10K	5%	1/10W
R601	1-216-302-00	METAL CHIP	2.7	5%	1/10W
R602	1-216-064-00	METAL CHIP	4.3K	5%	1/10W
R603	1-247-862-00	CARBON	20K	5%	1/6W
R606	1-216-032-00	METAL CHIP	200	5%	1/10W
R607	1-216-045-00	METAL CHIP	680	5%	1/10W
RV101	1-228-121-00	RES, VAR, CARBON 10K (VOLUME)			
RV601	1-230-036-00	RES, ADJ, CARBON 20K (SPEED Adj.)			
RV602	1-228-382-00	RES, VAR, CARBON 20K (SPEED CONTROL)			
S101	1-554-123-00	SWITCH, SLIDE (TONE)			
S102	1-553-510-00	SWITCH, SLIDE (PAUSE)			
S103	1-554-297-00	SWITCH, LEAF (POWER)			
S104	1-554-745-11	SWITCH, SLIDE (REC/PB)			
S301	1-554-843-11	SWITCH, SLIDE (VOR)			
SP901	1-503-322-11	SPEAKER			
T101	1-433-251-00	TRANSFORMER, BIAS OSCILLATOR			
TH605	1-806-716-00	THERMISTOR			
THP604	1-806-800-11	THERMISTOR (POSITIVE)			

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the

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···

Sony Corporation

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English
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Printed in Japan

TCM-8EV

SERVICE MANUAL

SUPPLEMENT

File this supplement with the service manual.

US Model
Canadian Model
AEP Model
E Model

CIRCUIT CHANGED

No. 1
September, 1984

Applicable serial No.

For US model: 16,001 and later
For Canadian model: 10,301 and later
For AEP model: 13,701 and later
For E model: 14,801 and later

- **VOR board and BBD board have been changed.**
  The parts in the table below have been changed.

Ref.No.	FORMER	NEW	
	Description	Description	
C212	CERAMIC (CHIP) 0.047MF	1-163-081-00 CERAMIC (CHIP) 0.22MF	CHANGED
C213	CERAMIC (CHIP) 100P	....	DELETED
C217	CERAMIC (CHIP) 100P	....	DELETED
C221	.....	1-163-081-00 CERAMIC (CHIP) 0.22MF	ADDED
C351	.....	1-124-434-00 ELECT 220MF 4V	ADDED
R356	.....	1-216-009-00 METAL (CHIP) 22 1/10W	ADDED

US model: 16,001 and later
Canadian model: 10,301 and later
AEP model: 13,701 and later
E model: 14,801 and later

Note on schematic diagram

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 ohms, 1/10W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- ※ : selected to yield optimum performance.
- ▭ : adjustment for repair.
- ——: B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (DC 50kΩ/V).
  no mark : PB
  ( ) : REC
  〈 〉 : VOR REC (TAPE STOP)
  《 》 : VOR REC (TAPE RUNNING)
- Voltage variations may be noted due to normal production tolerances.
- AC voltage readings in the bias oscillator with a VTVM.
- Total current is measured with no cassette installed.
- Switch

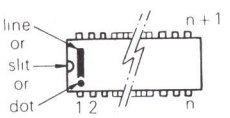
Ref. No.	Switch	Position
S101	TONE	L
S102	PAUSE	OFF
S103	POWER	OFF
S104	REC/PB	PB
S301	VOR	OFF

- ▨ : signal path. (PB)
- ▨ : signal path. (VOR REC)

Note: Voltages are measured with a VOM (50kΩ/V).

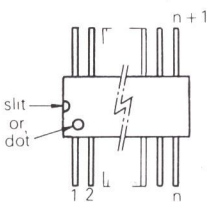
SEMICONDUCTORS LEAD LAYOUT

MN3307

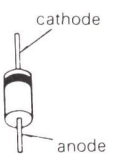


(Top view)

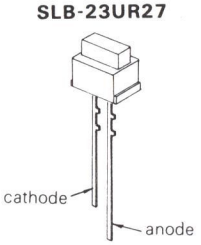
AN6612S
CX807
NJM2903M



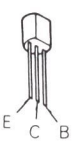
1T22A



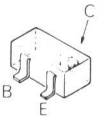
SLB-23UR27



2SB739

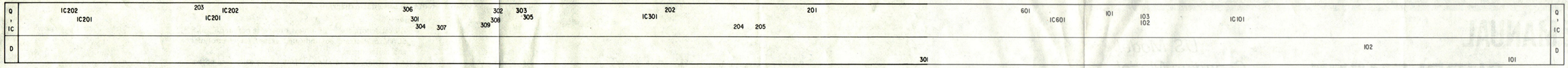


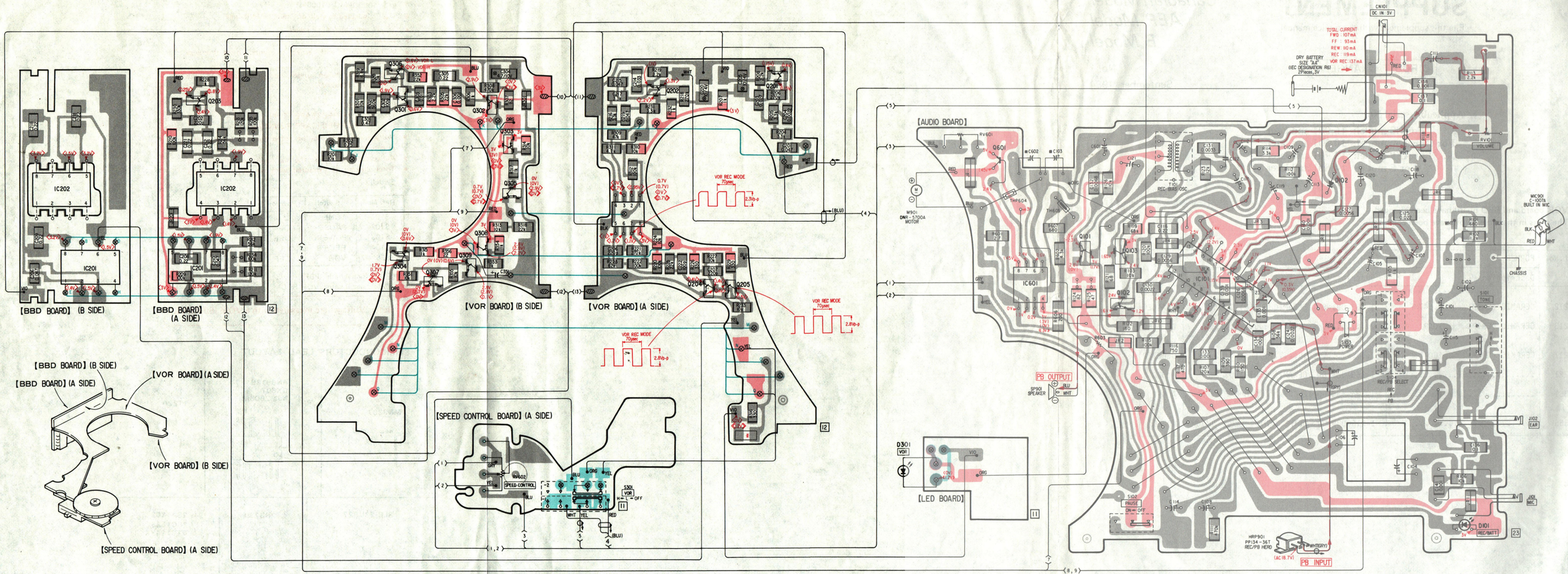
2SA1162
2SC1623
DTC114YK



US model: 16,001 and later AEP model: 13,701 and later
Canadian model: 10,301 and later E model: 14,801 and later
TCM-8EV
TCM-8EV
US model: 16,001 and later AEP model: 13,701 and later
Canadian model: 10,301 and later E model: 14,801 and later

MOUNTING DIAGRAM • Refer to page 3 for semiconductors lead layout.





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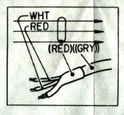
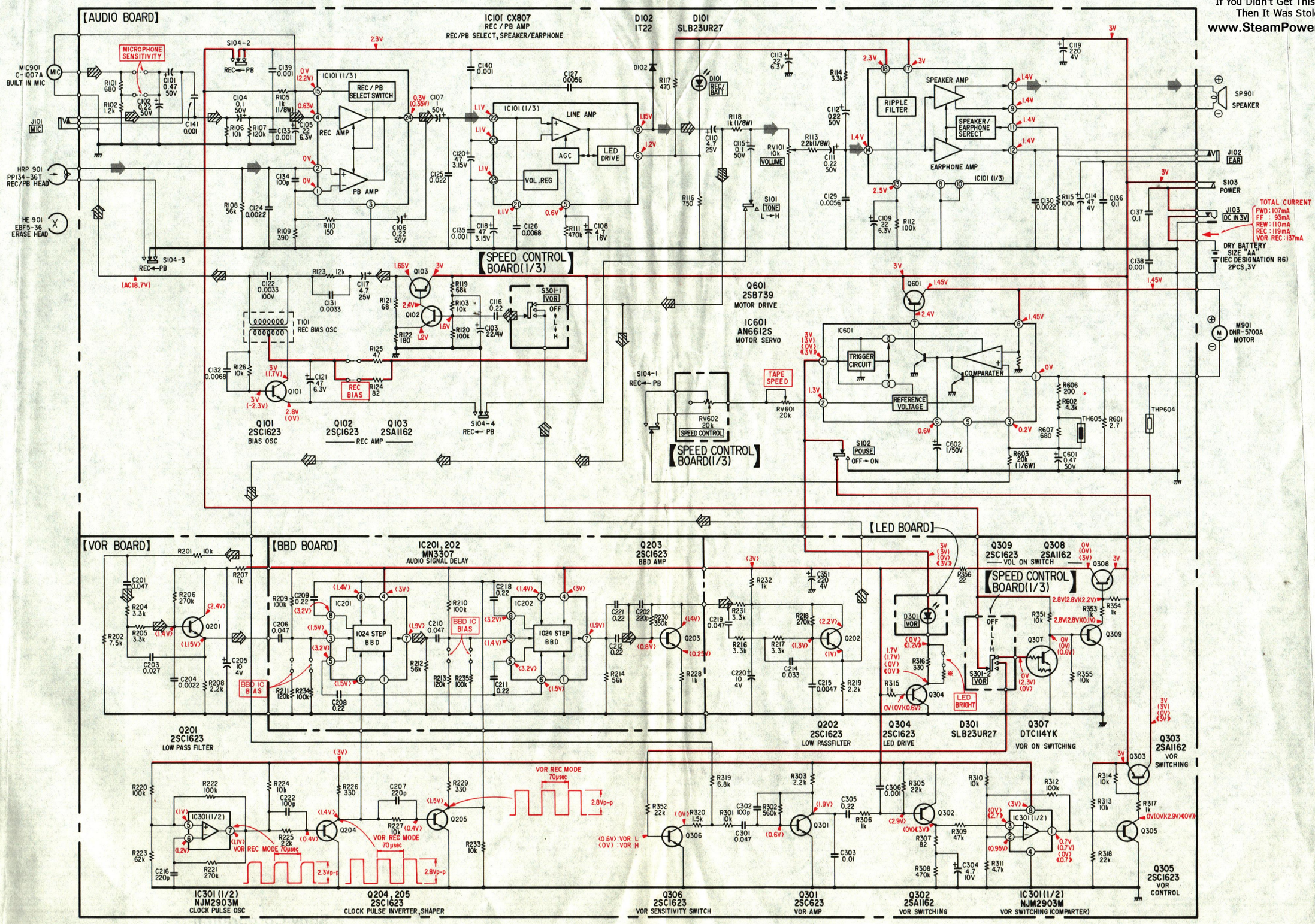
• Color code of sleeving over the end of the jacket.



• ○— : parts extracted from the component side.
• ●— : parts extracted from the conductor side.
• ■ : part mounted on the conductor side.
• ⊗ : Through hole.

• ▒▒ : component-side pattern.
• ▒▒ : B + pattern
• ▬▶ : signal path
• ——— : Through hole connection.

SCHEMATIC DIAGRAM • Refer to page 3 for notes.



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