

SONY**TROUBLESHOOTING GUIDE**

COMPACT DISC PLAYER

CDP-101*US, Canadian Model
AEP, UK, E Model***Sony Corporation/Consumer Products Group/Technical Support Dept.****TABLE OF CONTENTS**

<u>Description</u>	<u>Page</u>	<u>Description</u>	<u>Page</u>
How to Use the Troubleshooting Guide	2	SCAN Continues in PLAY (SCAN Indication does not go out)	25, 26
Notes on Handling the Optical System Block (KSS-100A)	3	SCAN Continues in PLAY Mode, and a Squeaking Noise is Generated from TOP. (2-axis Device Track Jump Operation does not stop.)	27, 28
Notes on Laser Diode Emission Check	4	No Operation when POWER is Turned On (1)	29, 30
Laser Diode Check	4	No Operation when POWER is Turned On (2)	31
Focus Search Operation Check	5	When ◀◀, ◀, ▶, or ▶▶ is Pressed, Fast Forward or Fast Reverse Occurs.	32
Notes on Removing Bottom Plate	5	▶▶ Only Cannot be Accessed.	33
Adjustment Mode	6	For OPEN/CLOSE During PLAY, the Disc Table Opens Before Disc Stops Rotating.	34
Disc Ejection after Disc Table Closing	7, 8	Noise During POWER OFF	35
• Focus Search Circuit	9	No Remote Control Operation	37, 38
• Focus OK Circuit	10	No Sound	39, 40
• Focus Zero Cross Circuit	11	Sound Skipping (Suddenly Skips to Several Minutes Later During PLAY)	41
• Disc Motor Servo Circuit (1)	12	Rapid Blip Noise (Error Correction Not Performed)	42
• Disc Motor Servo Circuit (2)	13, 14	Display Tube Does Not Light Up	43
• Run-up Circuit	15, 16	Defective Display (Set Operates Normally)	44
• Data Processing Circuits	17, 18	LAP TIME Not Displayed	45
• Tracking Servo Circuit	19, 20		
Defective Disc Table Open or Close, Defective Chucking	21, 22		
SCAN Continues Even when PLAY Switch is Pressed. Mis-operation of Access Mode Sometimes During PALY. (e.g. FF for ◀◀)	23		
Delayed PLAY Start, No ▶▶, and Selection Skipping Mis-operation Occurs	24		

This book is for quick and easy repairing.
File with the service manual.

How to Use the Troubleshooting Guide

- B circuit check and defective locations are not included. When B voltage drops below standard on CDP-101, the "disc ejection" symptom may occur. Before beginning repair, be sure to check each B voltage.
- Before repair, check that each adjustment is performed properly.
- Unless otherwise indicated, the waveforms and voltages are those measured while playing YEDS-1.
- Be sure that the set is level when measuring voltages and waveforms. In some cases the level may be wrong when the set is vertical, but correct when placed level.
- Voltages, etc. may not correspond to those in the Service Manual.
- Defective soldering and pattern cuts are not included under defective parts, so be sure to check these.
- Voltage values written simply as $\square\square V$ are DC voltages measured by oscilloscope.
- Before repair, replace the disc and play to make sure that the disc is not the cause.
- Be very careful when handling the optical block (TOP). (See page 3)
- For "disc ejection" symptom, first check laser beam and focus search. (See pages 4, 5)
- When necessary, use adjustment mode. (See page 6)
- TOP means the optical system block.

NOTES ON HANDLING THE OPTICAL SYSTEM BLOCK (KSS-100A)

— CAUTION FOR ELECTROSTATIC BREAKDOWN —

The laser diode in the optical system block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

The printed matter below is included in the repair parts. During repair, use the procedure in the printed matter.

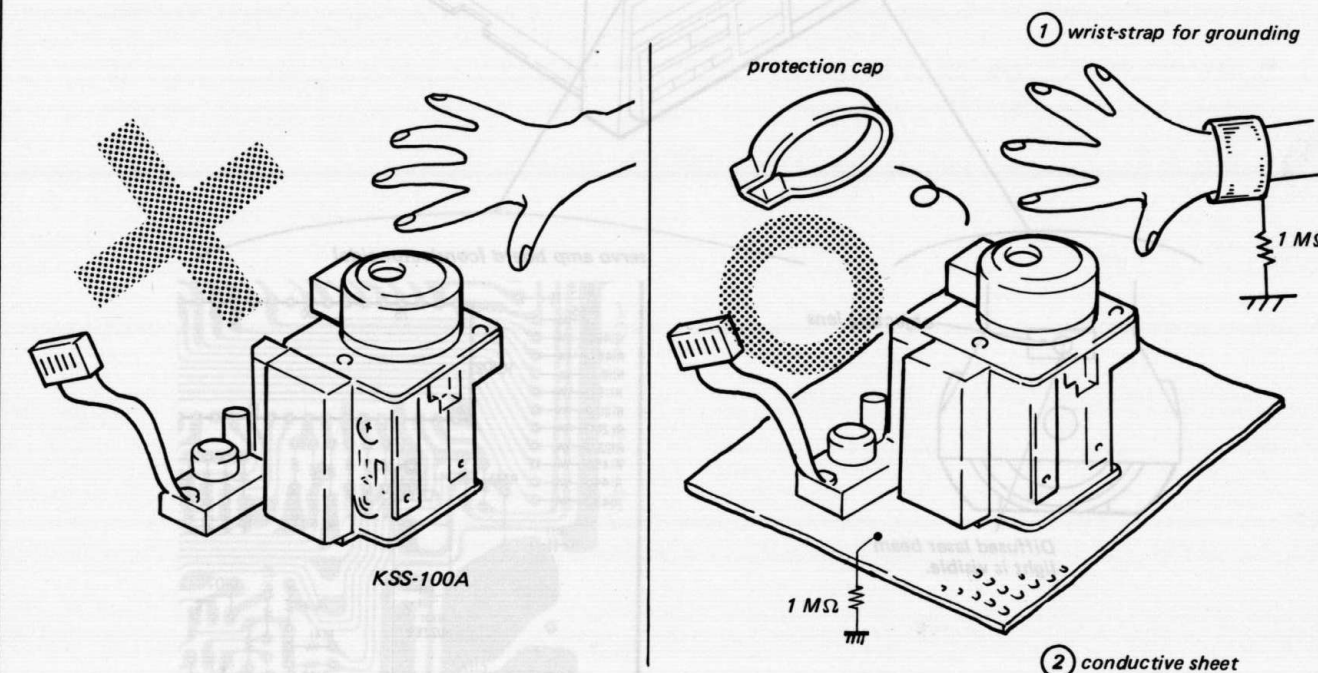
The following method is an example for reference purposes:

1. Place a conductive sheet on the workbench. (The black sheet used as repair parts wrapping.)
2. Place the set on the conductive sheet so that the chassis touches the sheet. (This makes it the same potential as the conductive sheet.)
3. Place your hands on the conductive sheet. (This makes them the same potential as the sheet.)
4. Remove the optical system block from the bag (conductive).
5. Perform work on top of the conductive sheet. Be careful that clothing does not touch the optical system block.

Printed Matter Included in the Repair Parts

When opening or repairing a KSS-100A, the procedure for grounding as follows is required to prevent damage caused by static electricity.

- 1 Grounding for the human body
Be sure to put on a wrist-strap for grounding (with impedance lower than $10^8 \Omega$) whose other end is grounded. The strap works to drain away the static electricity build-up on the human body.
- 2 Grounding for the work table
Be sure to lay on the table a conductive sheet (with impedance lower than $10^9 \Omega$) such as a sheet of copper, which is grounded.
- 3 As static electricity build-up on clothes is not drained away, be careful not to let your clothes touch the KSS-100A.

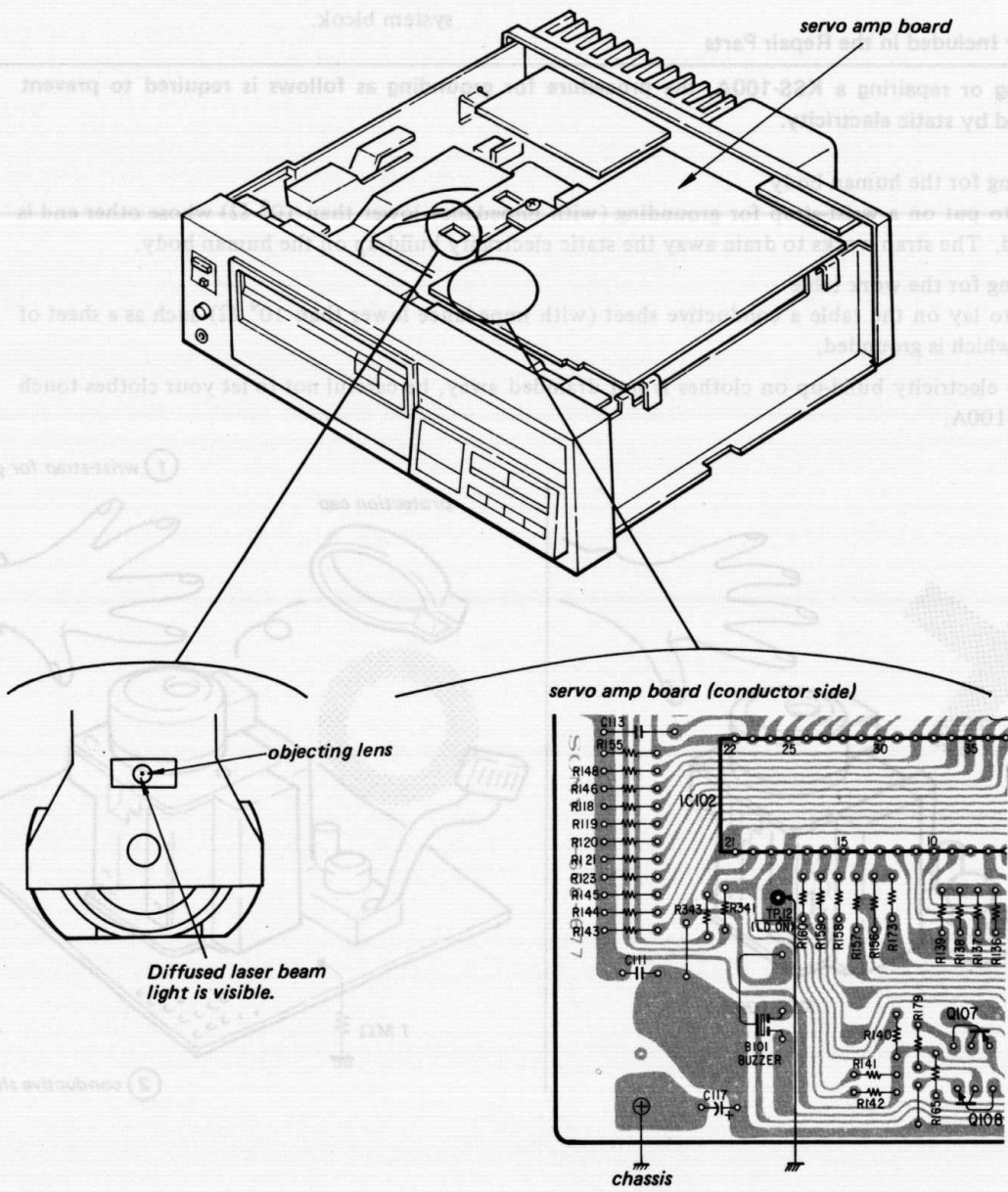


NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical system block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE CHECK

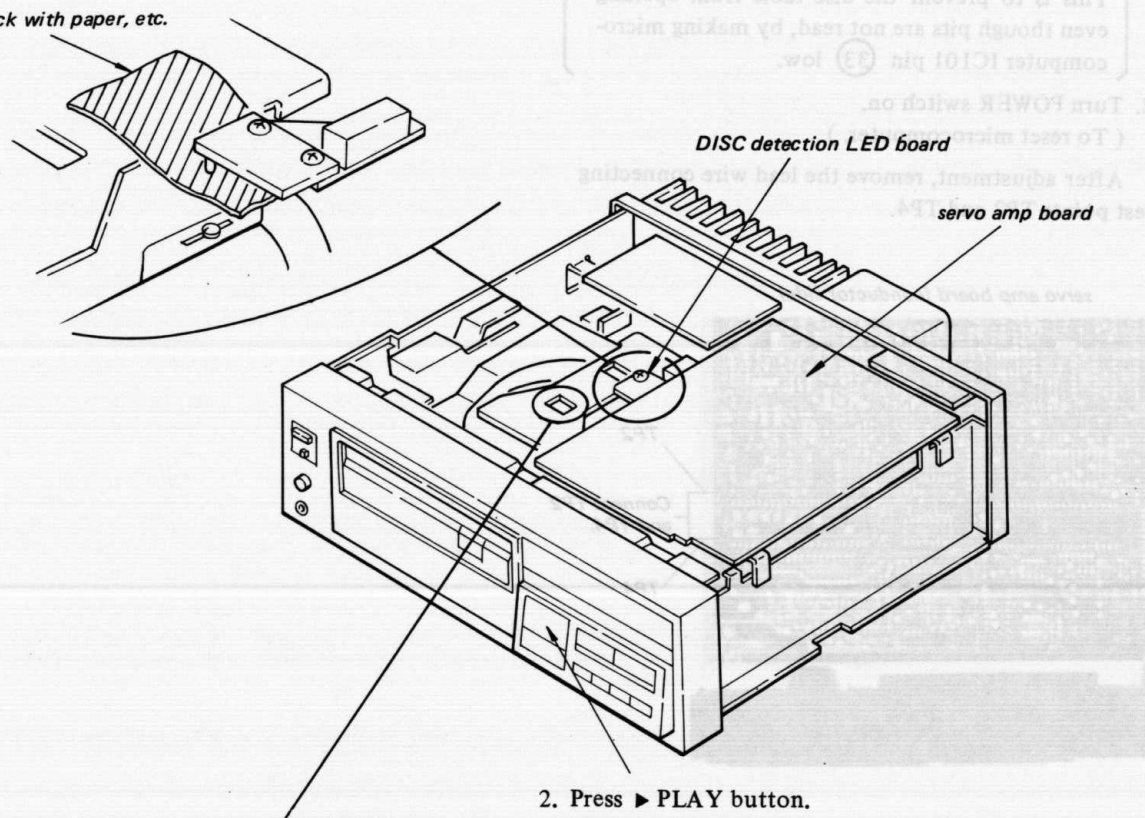
1. Ground servo amp board TP12 (IC102 pin 18 (LD ON)).
2. Observe the objective lens and confirm that the laser diode is emitting light.



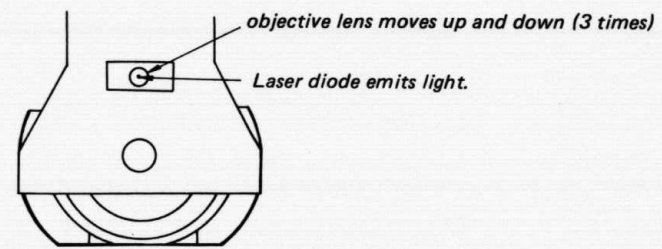
FOCUS SEARCH OPERATION CHECK

1. Block the disc detection phototransistor so that light does not hit it.

Block with paper, etc.

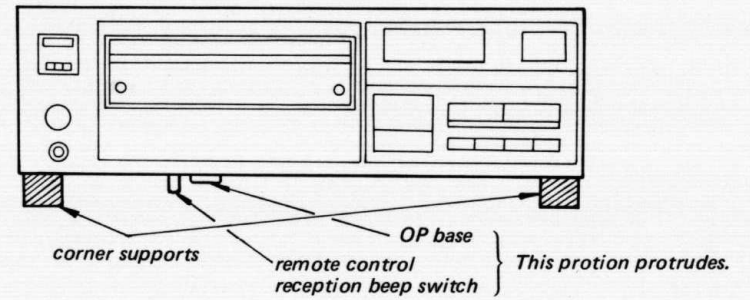


2. Press ► PLAY button.
3. Observe the objective lens and confirm the operations below.



NOTES ON REMOVING BOTTOM PLATE

When placing the set level with the bottom plate removed, place on four corner supports.



Adjustment Mode

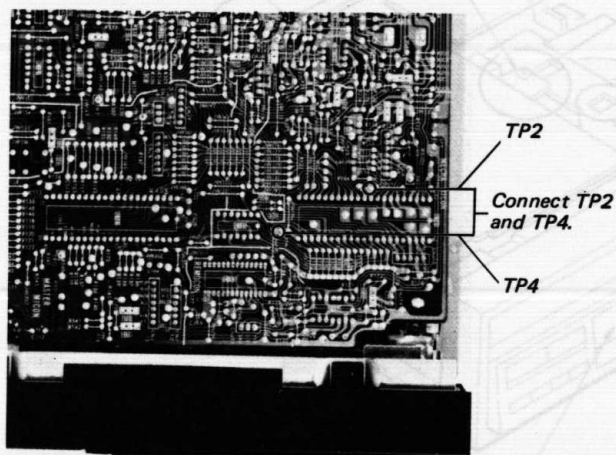
1. Connect servo amp board test points TP2 and TP4.

⎧ This is to prevent the disc table from opening
even though pits are not read, by making micro-
computer IC101 pin ③③ low. ⎫

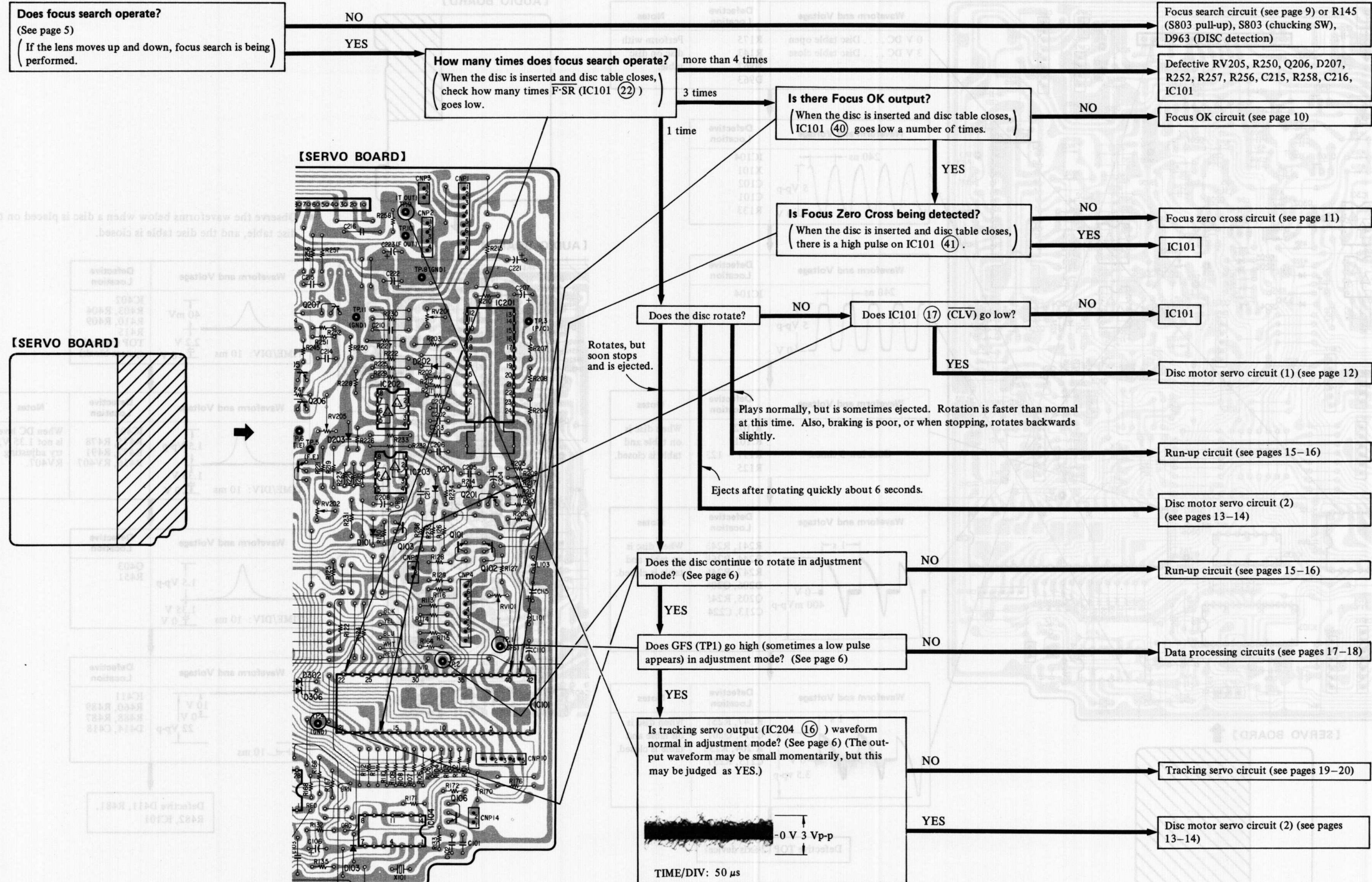
2. Turn POWER switch on.
(To reset microcomputer.)

After adjustment, remove the lead wire connecting
test points TP2 and TP4.

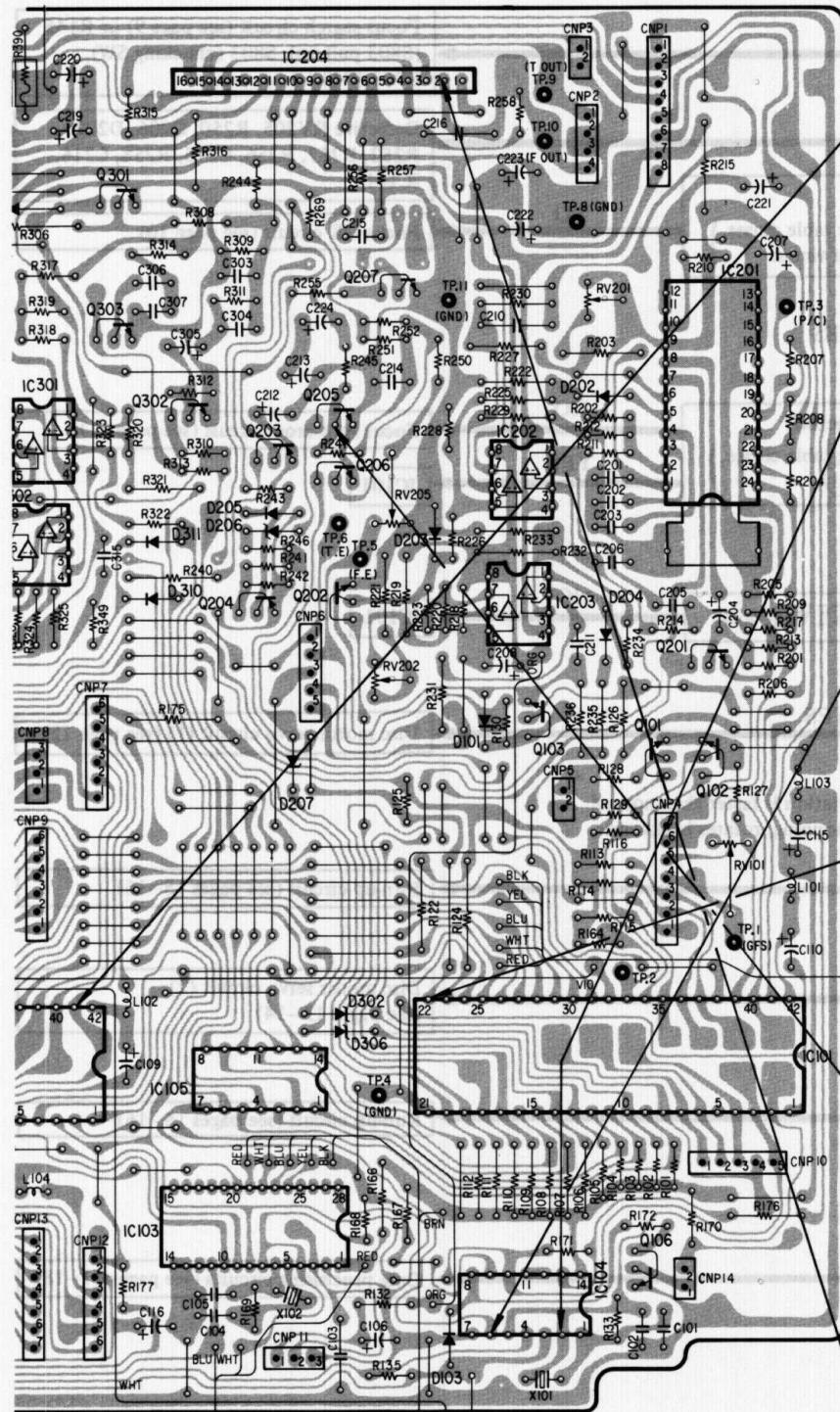
servo amp board (conductor side)



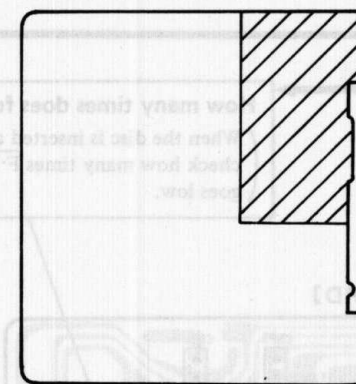
[Disc Ejection after Disc Table Closing]



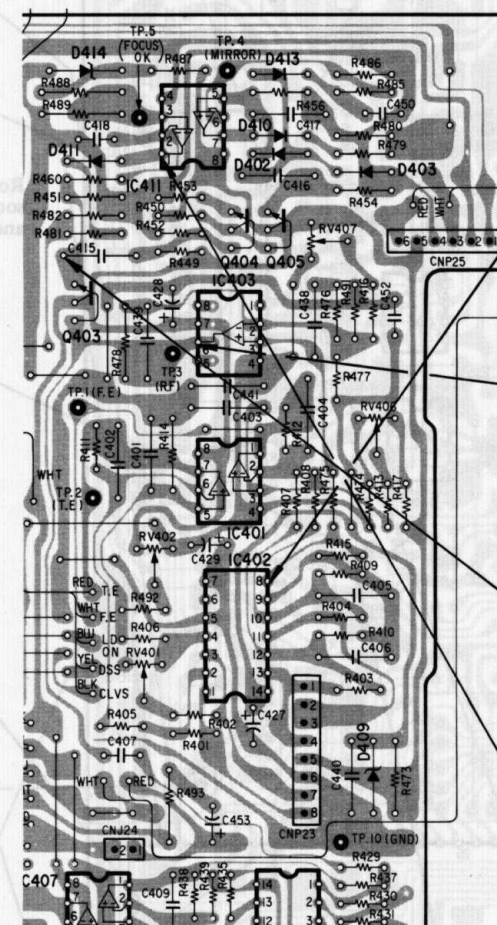
【SERVO BOARD】




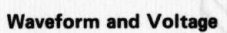
【SERVO BOARD】

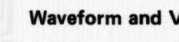



【AUDIO BOARD】



Waveform and Voltage	Defective Location
 <p>TIME/DIV: 10 ms</p>	IC402 R403, R404 R410, R409 R415 TOP (optical system block)


Waveform and Voltage	Defective Location	Notes
 <p>1.5 V_{p-p}</p> <p>1.35 V</p> <p>0 V</p> <p>TIME/DIV: 10 ms</p>	IC403 R475, R478 R477, R491 R416, RV407	When DC level is not 1.35 V, try adjusting RV407.


Waveform and Voltage	Defective Location
 <p>1.5 V_{p-p}</p> <p>1.35 V</p> <p>0 V</p> <p>TIME/DIV: 10 ms</p>	<p>Q403 R451</p>

Waveform and Voltage	Defective Location
	IC411 R460, R489 R488, R487 D414, C418

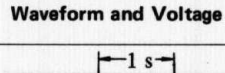
Defective D411, R481,
R482, IC101


Waveform and Voltage	Defective Location	Notes
0 V DC Disc table open	R175	Perform with disc on disc table.
3 V DC Disc table close	R143	
	D962	
	D963	

Waveform and Voltage	Defective Location
 <p>240 ns</p> <p>5 V_{p-p}</p> <p>0 V</p>	IC104 X101 C102 C101 R133

Waveform and Voltage	Defective Location
	IC104

Waveform and Voltage	Defective Location	Notes
Goes low 3 times.	IC102 IC101 R117 – 123 R125	When disc is on table and table is closed

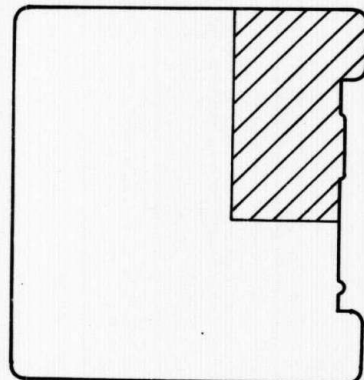
Waveform and Voltage	Defective Location	Notes
	R241, R243 R244, R269 R247, R246 D206, Q204 Q205, R245 C213, C224	When disc is on table and table is closed

Waveform and Voltage	Defective Location	Notes
	R247, R251 C214, Q207 IC204, R258 C215, R257	When disc is on table and table is closed

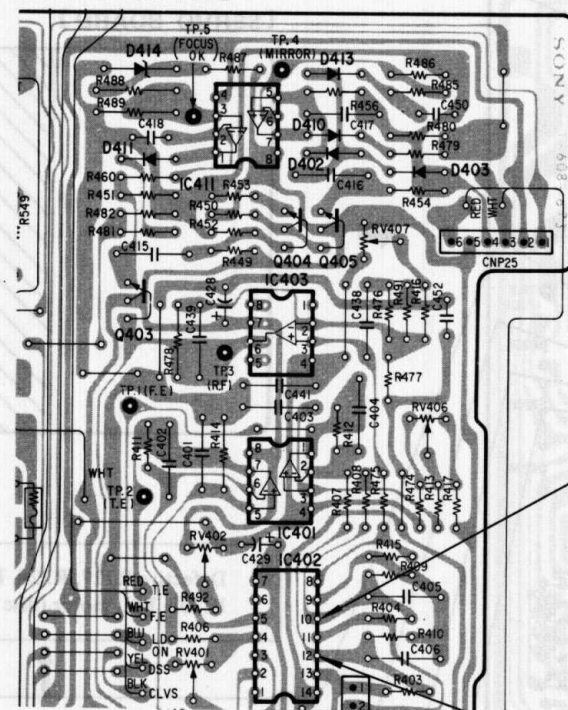
Defective TOP (2-axis device)

• FOCUS ZERO CROSS CIRCUIT

[AUDIO BOARD]



[AUDIO BOARD]



Waveform and Voltage	Defective Location	Notes
 (AC)	IC402 R404 TOP	When the disc is inserted and the disc table closes, the waveform appears 3 times. The width may be narrow, but this is OK.

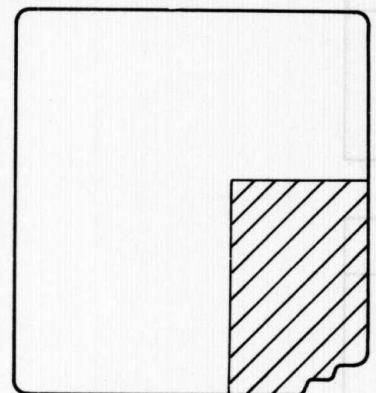
Waveform and Voltage	Defective Location	Notes
 (AC)	IC402 R402 TOP	When the disc is inserted and the disc table closes, the waveform appears 3 times. The width may be narrow, but this is OK.

Waveform and Voltage	Defective Location	Notes
 7.5 V 0 V -10 V	R407, R408 C403, R474 R417, R413 R412, C404 IC401 RV406	When the disc is inserted and the disc table closes, the waveform appears 3 times. The width may be narrow, but this is OK.

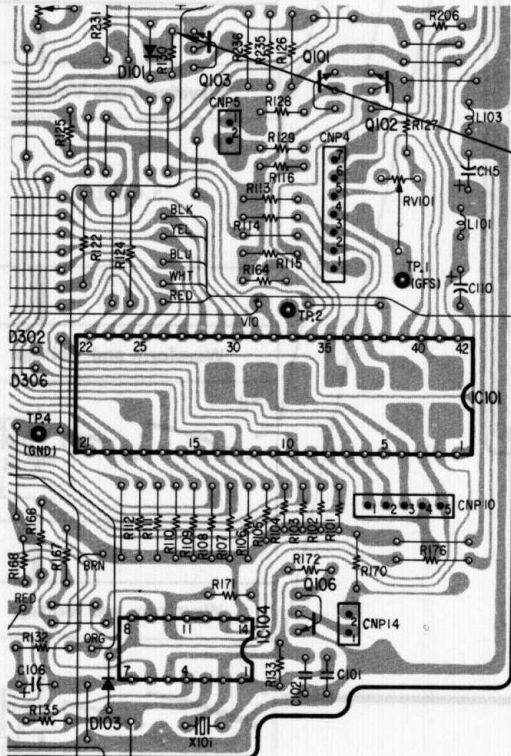
Defective Location

R130, D101
Q103, R126
IC101

[SERVO BOARD]



[SERVO BOARD]



• DISC MOTOR SERVO CIRCUIT (1) Defective Start Signal

- Power ON.
- Do not insert disc.

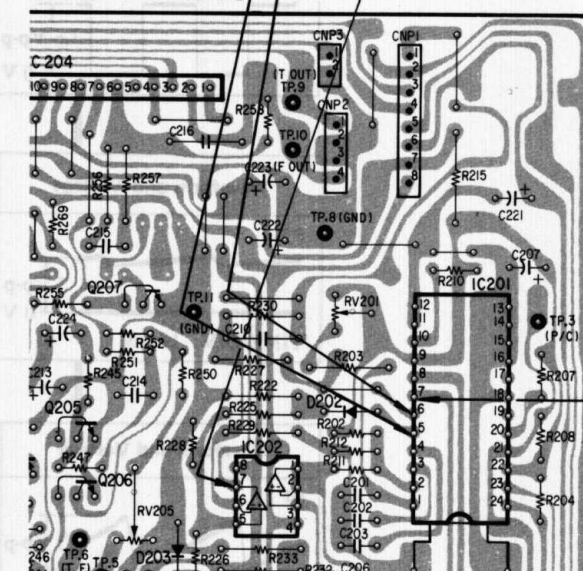
Ground IC201 ⑦

Waveform and Voltage	Defective Location
⑤ 4.5 V DC	IC201 R210 C203
⑥ 5.4 V DC	

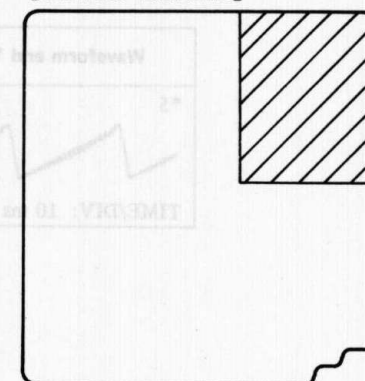
Waveform and Voltage	Defective Location
10 V DC	IC202 R225 R227 R229

Defective disc motor

[SERVO BOARD]

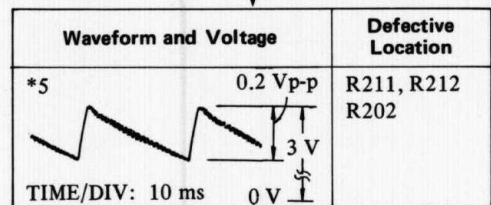
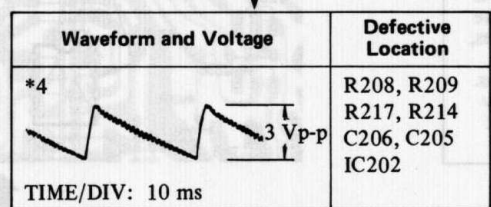
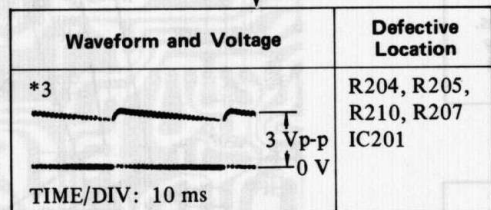
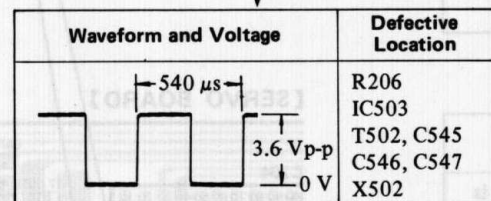
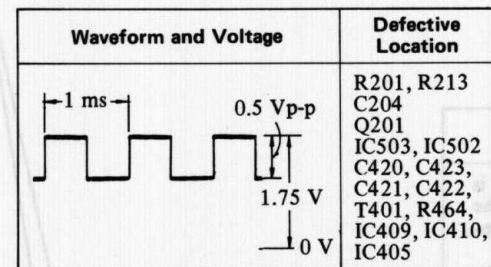


[SERVO BOARD]

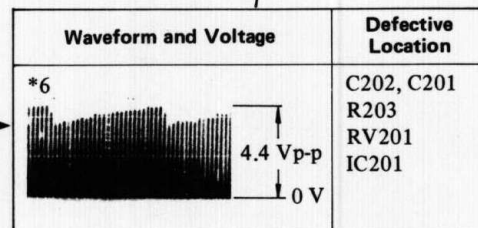
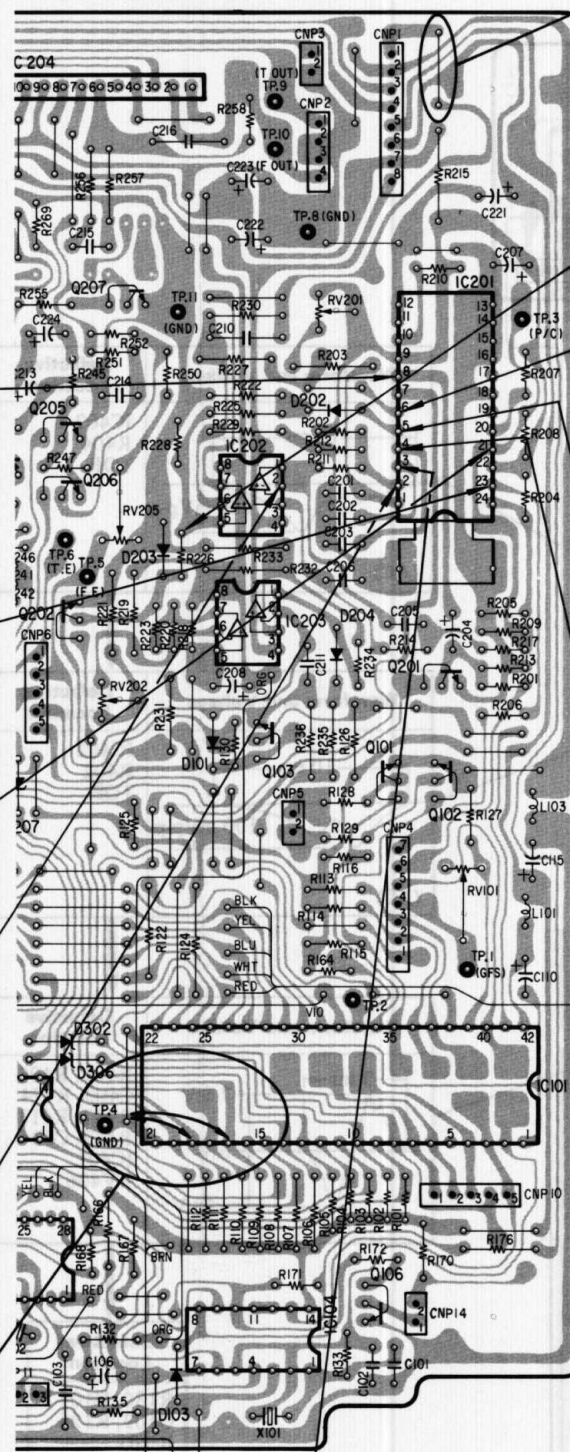


• DISC MOTOR SERVO CIRCUIT (2)

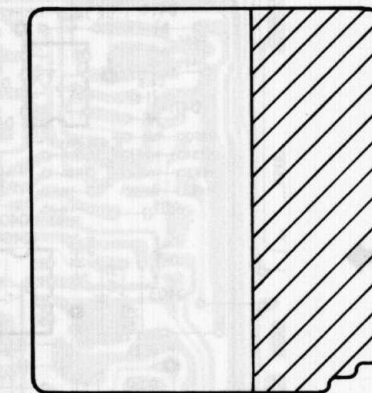
- Power on.
- Do not insert disc.
- As shown at *1, ground IC101 (17), (19) and measure.
- Disconnect *2 jumper and measure.
- The left and right of waveforms *3-9 may be opposite.



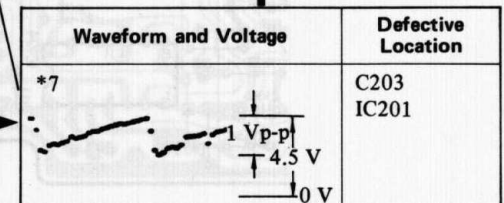
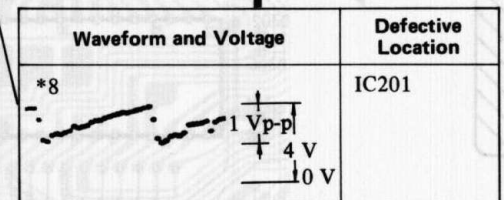
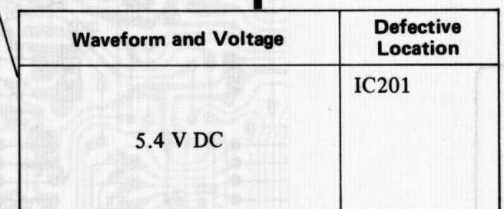
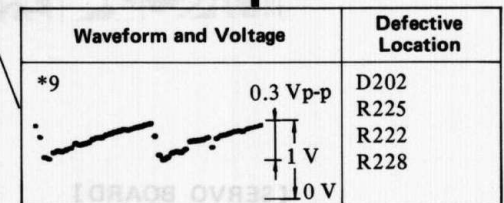
[SERVO BOARD]



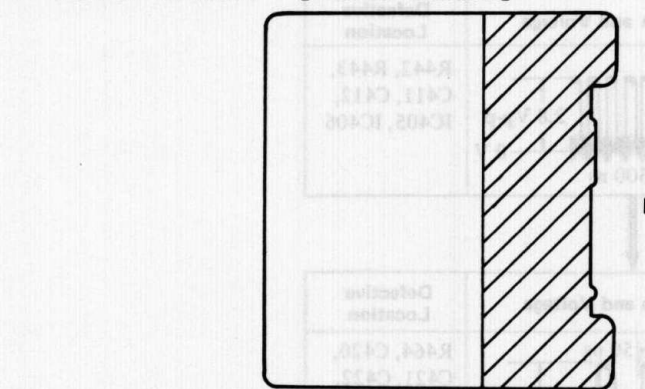
[SERVO BOARD]



Defective R227, R229, R230, C210
IC202, BSL motor (disc motor)



● RUN-UP CIRCUIT [AUDIO BOARD]



Waveform and Voltage	Defective Location	Notes
	IC402 R402, R404 TOP (2-axis device)	Waveform for focus search

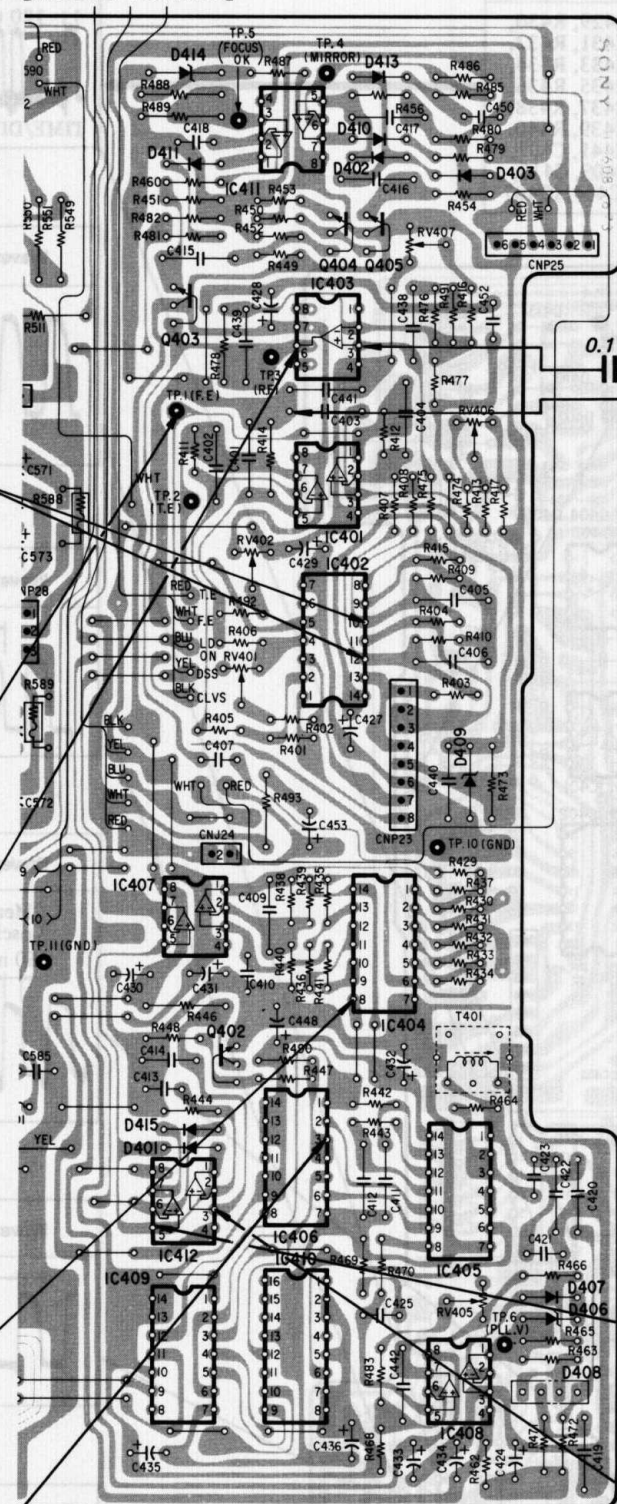
Waveform and Voltage	Defective Location	Notes
	IC401 R407, R408, R413, R417, R474, RV406, R412, C403, C404	Waveform for focus search (focus error signal)

Waveform and Voltage	Defective Location	Notes
	IC403 R478, C439 C438, R477 R491, R476 RV407	As shown in the diagram, input AF SG signal and measure. Set is in stop mode.

Waveform and Voltage	Defective Location	Notes
	C407, R429, R430, R431, R432, R433, R434, R435, R436, R441, C410, R439, R440, R438, C409, R437, IC404, IC407	As shown in the diagram, input AF SG signal and measure. Set is in stop mode.

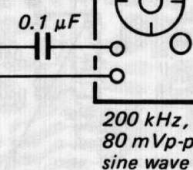
Waveform and Voltage	Defective Location	Notes
	IC405, IC406 R442, R443, C411, C412	As shown in the diagram, input AF SG signal and measure. Set is in stop mode.

[AUDIO BOARD]

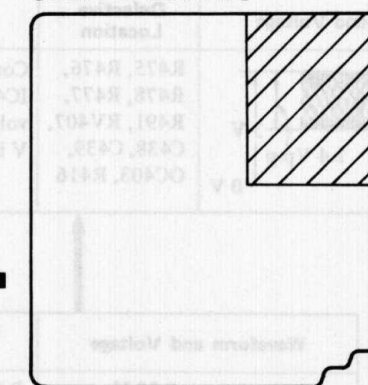


Note: If power is turned on while inputting the AF SG signal, the disc will rotate too fast, so apply AF SG signal after turning power on.

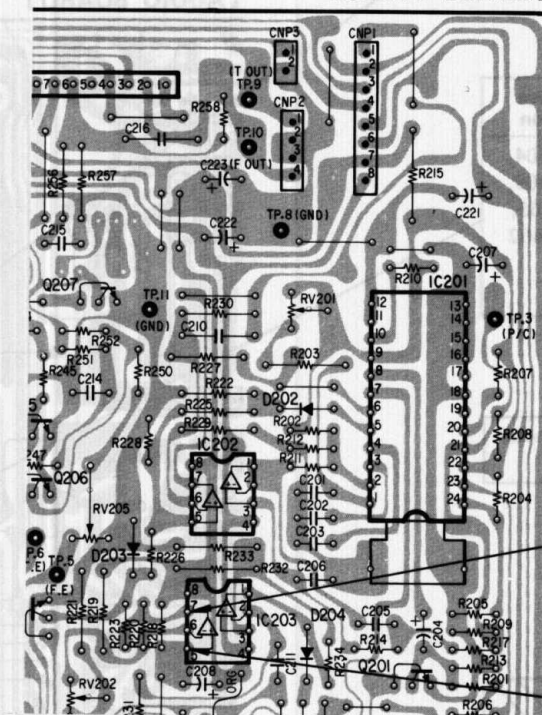
AF. SG



[SERVO BOARD]



[SERVO BOARD]



Defective R223, R226, D203,
R228, Q202, IC101

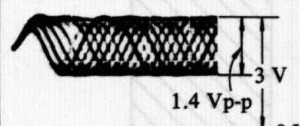
Waveform and Voltage	Defective Location	Notes
10.5 V ... When SG frequency is slightly lowered	R219 RV202	If normal, try adjusting RV202.
-10.5 V ... When SG frequency is slightly raised	R221 R220 IC203	


Waveform and Voltage	Defective Location	Notes
3.4 V DC	IC412 D415 C208 R218	The voltage should change smoothly when SG frequency is changed. Rising is slightly slower than falling.

Waveform and Voltage	Defective Location	Notes
3.4 V DC	C413, D401, IC412	As shown in the diagram, input AF SG signal and measure. Set is in stop mode.

Waveform and Voltage	Defective Location	Notes
	R447, R446, C414, R448, Q402, R490	As shown in the diagram, input AF SG signal and measure. Set is in stop mode.

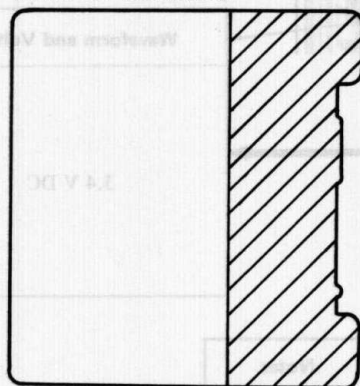
• DATA PROCESSING CIRCUITS

Waveform and Voltage	Defective Location	Notes
	R475, R476, R478, R477, R491, RV407, C438, C439, OC403, R416	Confirm that IC403 ⑥ voltage is 1.35 V in stop state.

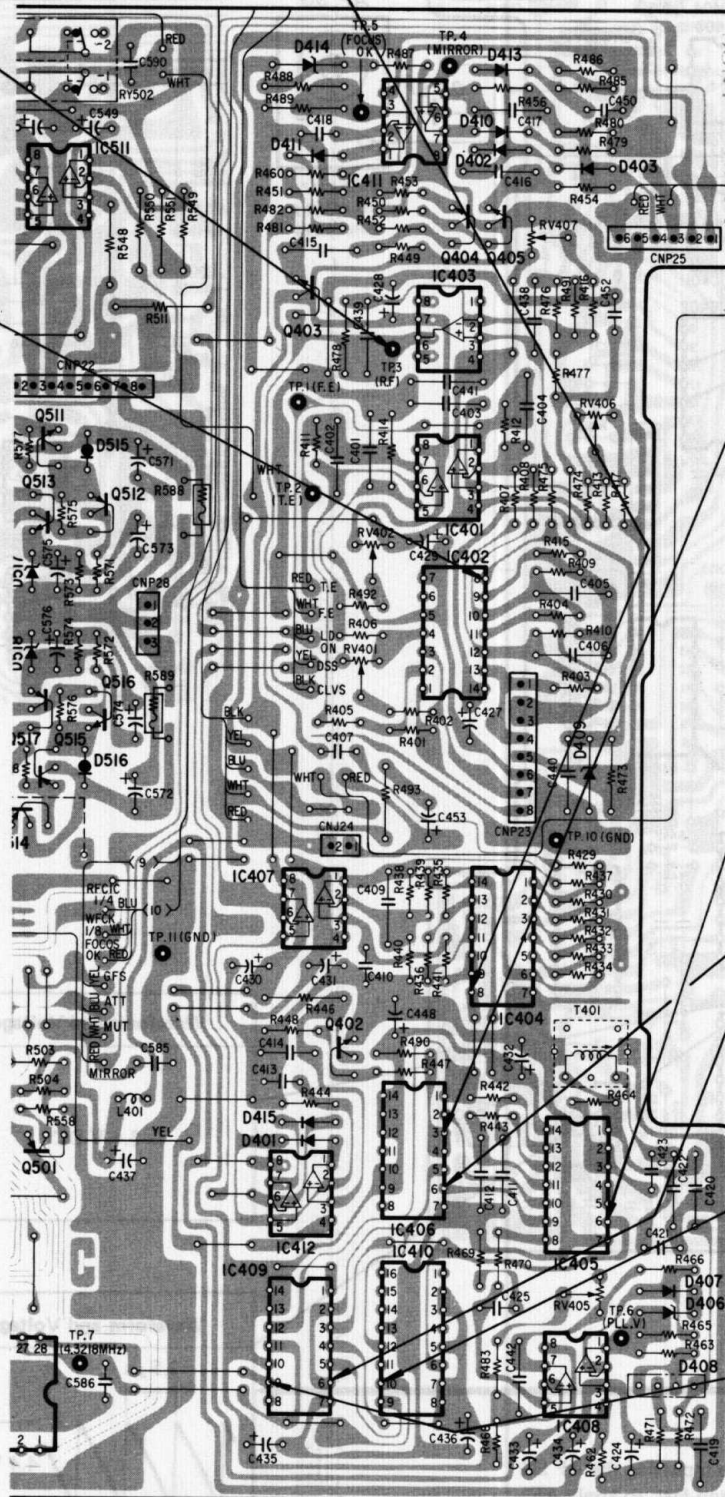
Waveform and Voltage	Defective Location
	R403, R404, R410, R409, C406, C405, R415, IC402 TOP


Put into PLAY in adjustment mode (see page 6) and check.

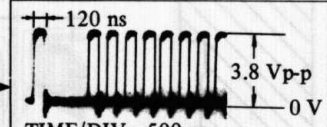
[AUDIO BOARD]

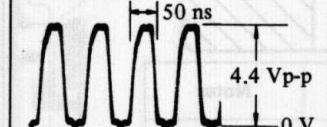


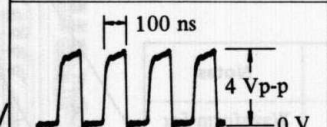
[AUDIO BOARD]

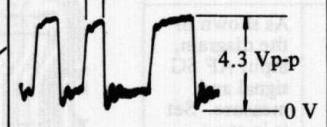


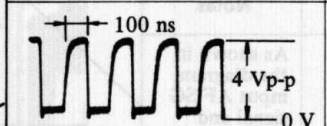
Waveform and Voltage	Defective Location
	R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, C407, C409, C410, IC404, IC407
TIME/DIV: 2 μ s	

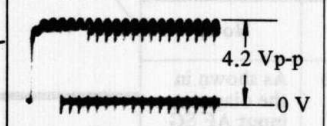
Waveform and Voltage	Defective Location
	R442, R443, C411, C412, IC405, IC406
TIME/DIV: 500 ns	

Waveform and Voltage	Defective Location
	R464, C420, C421, C422, C423, C419, T401, IC405, D408

Waveform and Voltage	Defective Location
	IC409

Waveform and Voltage	Defective Location	Notes
(Measured by storage) oscilloscope 	R470, R469, R483, R468, R466, R465, R463, R472, R471, R462, C425, C442, C419, C420, D408, IC408, IC405, RV405	Trigger source: IC406 ③

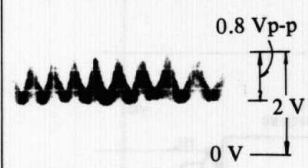
Waveform and Voltage	Defective Location
	IC410

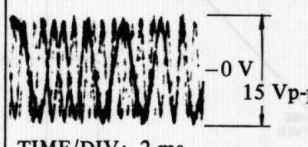
Waveform and Voltage	Defective Location
	IC409

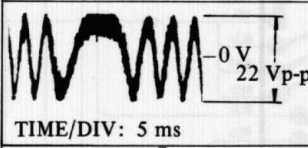
Defective IC502.

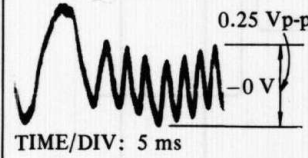
TRACKING SERVO CIRCUIT

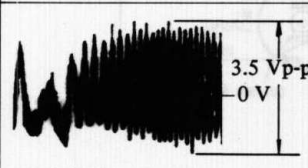
Put into PLAY in adjustment mode
(see page 6) and check.
ANTI SHOCK switch: OFF

Waveform and Voltage	Defective Location	Notes
 <p>0.8 Vp-p 2 V 0 V TIME/DIV: 2 ms</p>	R401, R402, RV401 IC402, TOP	Measured by storage oscilloscope. When a waveform as shown in the photo is not obtained, try cutting the portion *1.

Waveform and Voltage	Defective Location
 <p>0 V 15 Vp-p TIME/DIV: 2 ms</p>	R405, R406, R414, R411, R492, RV402, C402, C401, IC401

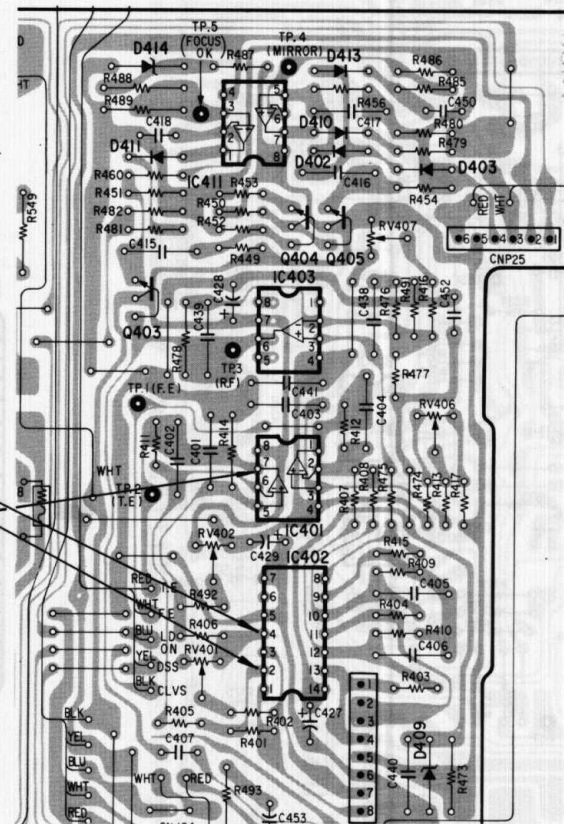
Waveform and Voltage	Defective Location
 <p>0 V 22 Vp-p TIME/DIV: 5 ms</p>	RV301, R304, R303, R305, C301, C302, IC301

Waveform and Voltage	Defective Location	Notes
 <p>0.25 Vp-p 0 V TIME/DIV: 5 ms</p>	R306, R308, R309, R311, R312, C303, C304, C305, Q301, Q302, D301, D302, *2 brake circuit	*2 When IC107 (1) is high, defective brake circuit.

Waveform and Voltage	Defective Location	Notes
 <p>3.5 Vp-p 0 V TIME/DIV: 10 ms</p>	R314, R316, R315, C306, C307, Q303, IC204, R317, R319 *3 jump circuit	*3 When IC301 (1) is not 0 V, defective jump circuit (IC301, IC105, R321, R322, R320).

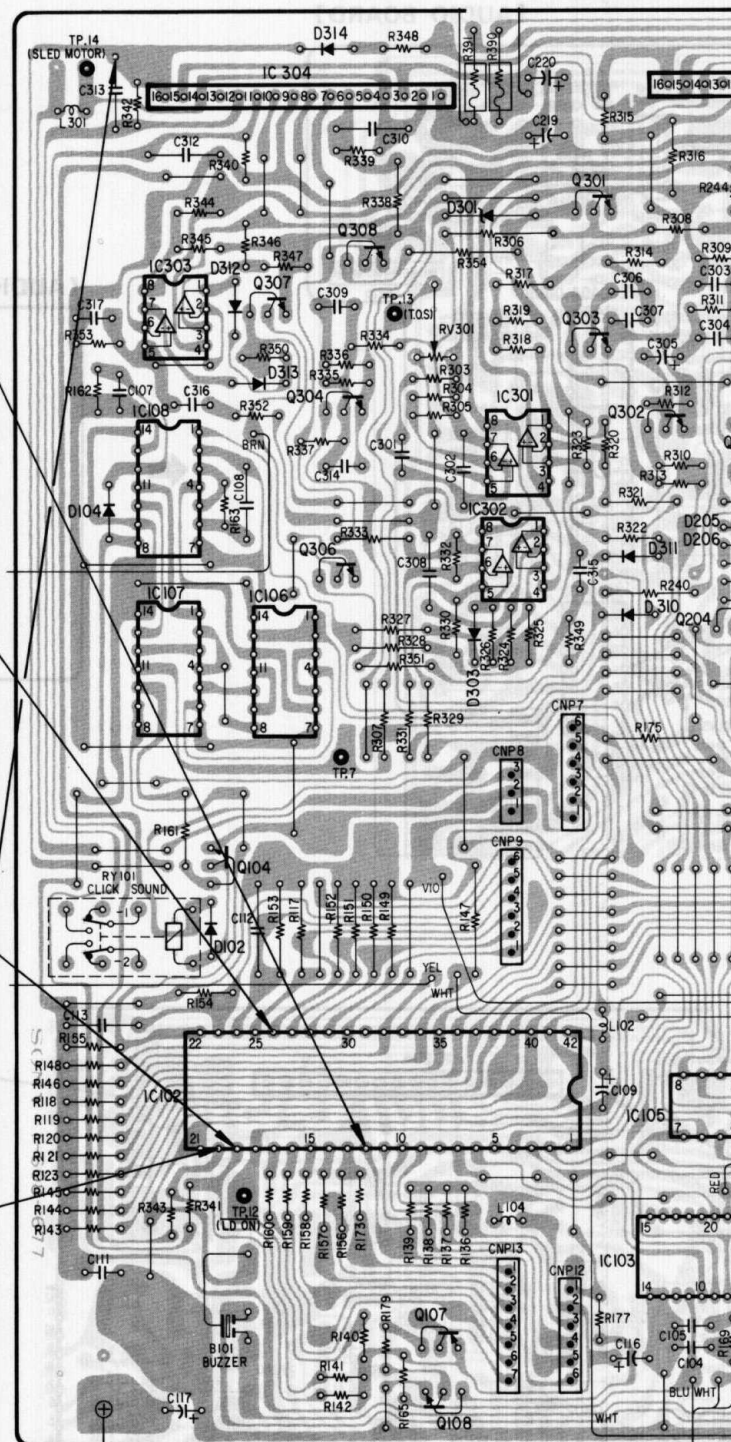
Defective TOP (2-axis device)

【AUDIO BOARD】

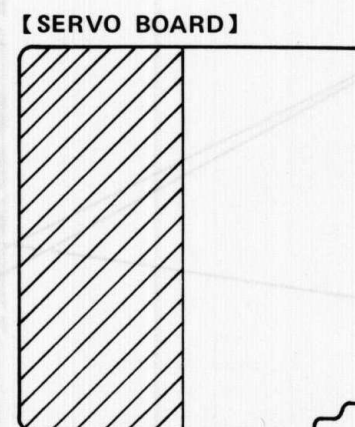


【SERVO BOARD】

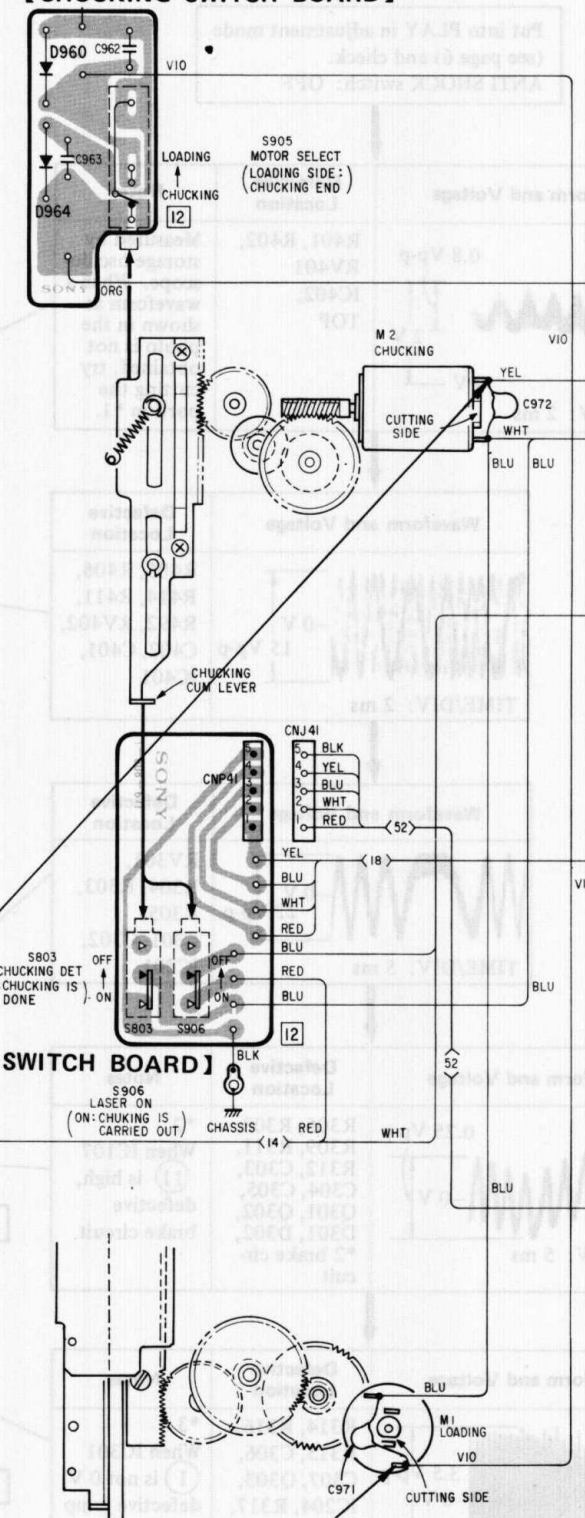
Waveform and Voltage	Defective Location
0 V DC -9 V DC ... for OPEN 9.8 V DC ... for CLOSE	R341, R343, R340, R342, C312, C313, IC304



Waveform and Voltage	Defective Location	Notes
0 V DC 10 V DC ... for chucking -10 V DC ... for chucking release	S905, S904 D964 C963, C961, C972	When chucking is not performed even when the voltage is normal, the chucking motor, gear, or mechanism is defective.



【CHUCKING SWITCH BOARD】

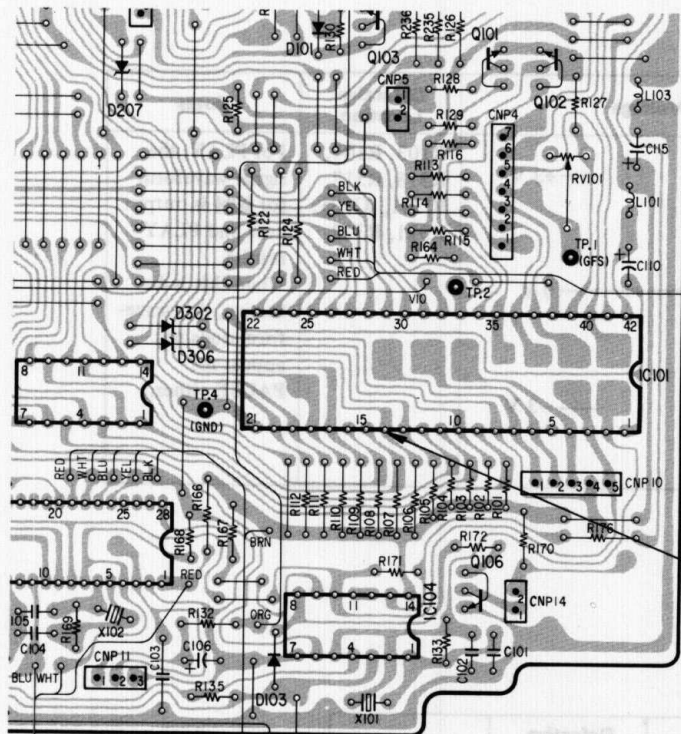


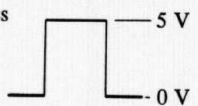
Waveform and Voltage	Defective Location	Notes
0 V DC -10 V DC ... for OPEN 10 V DC ... for CLOSE (9 V DC for chucking)	S905 C962, C971, D960	If voltage is normal, loading motor or loading mechanism is defective.

(SCAN Continues Even when PLAY Switch is Pressed. Mis-operation of Access Mode Sometimes During PLAY (e.g. FF for ◀◀)

[Delayed PLAY Start, No ▶▶, and Selection Skipping Mis-operation Occurs]

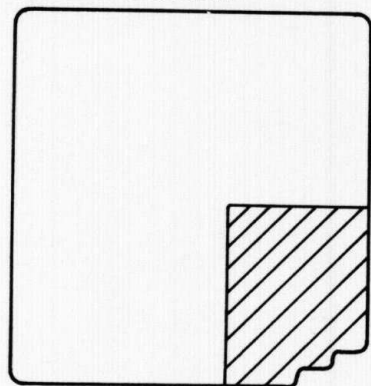
【SERVO BOARD】



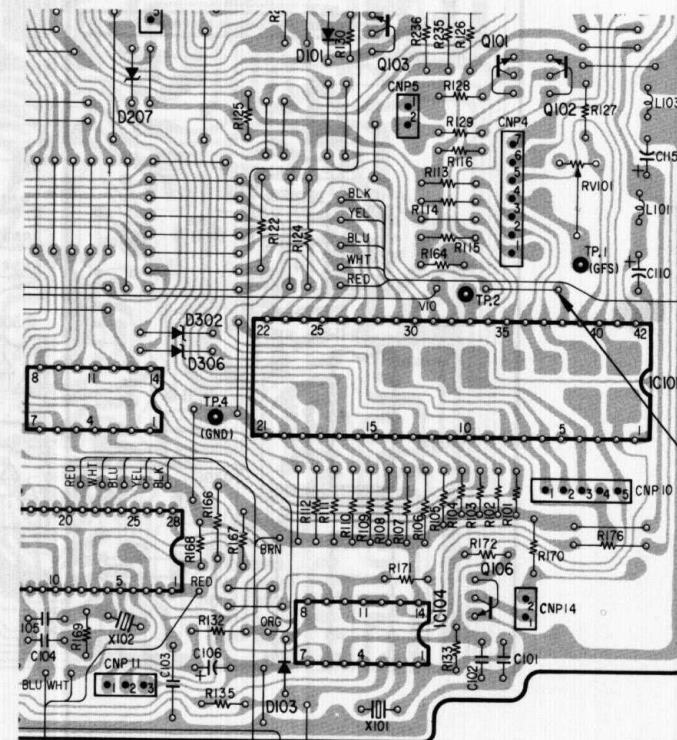
Waveform and Voltage	Defective Location
for access 	IC101 IC108 R106


Note: When Q301 continues ON, the disc is ejected.

【SERVO BOARD】

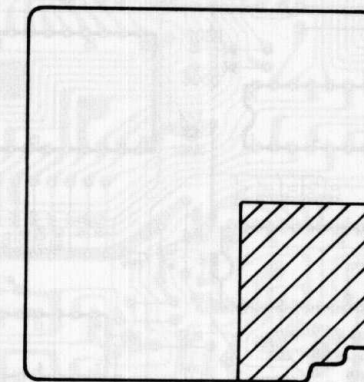


【SERVO BOARD】

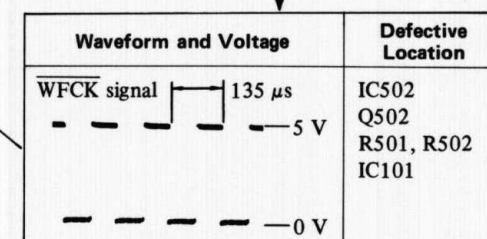
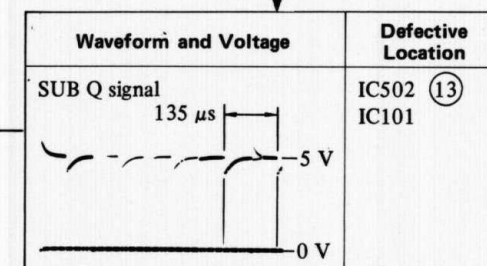
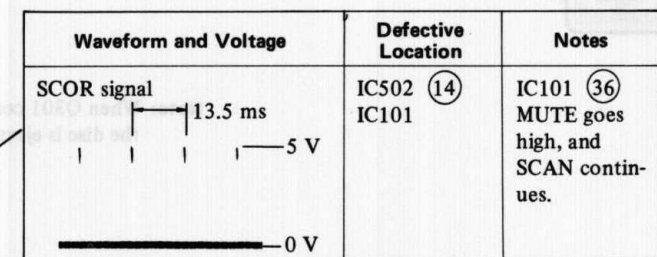
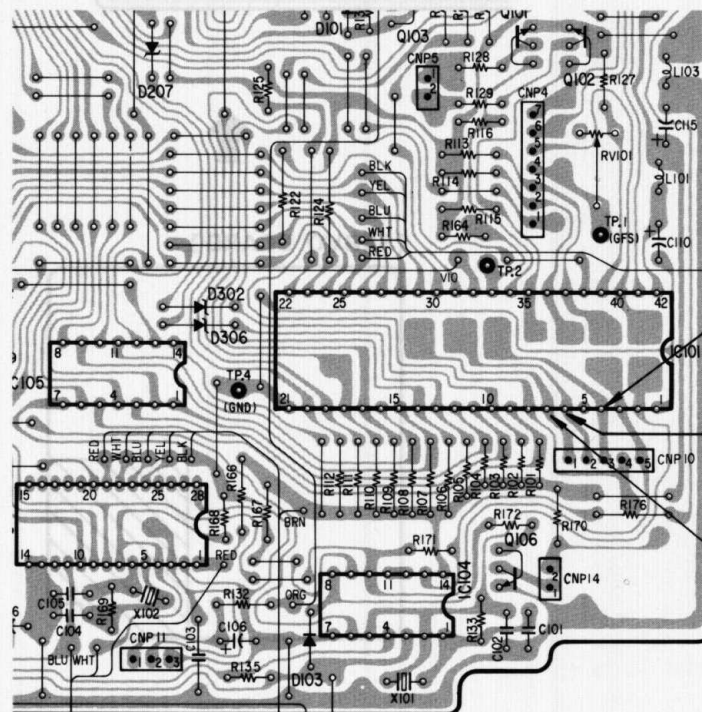
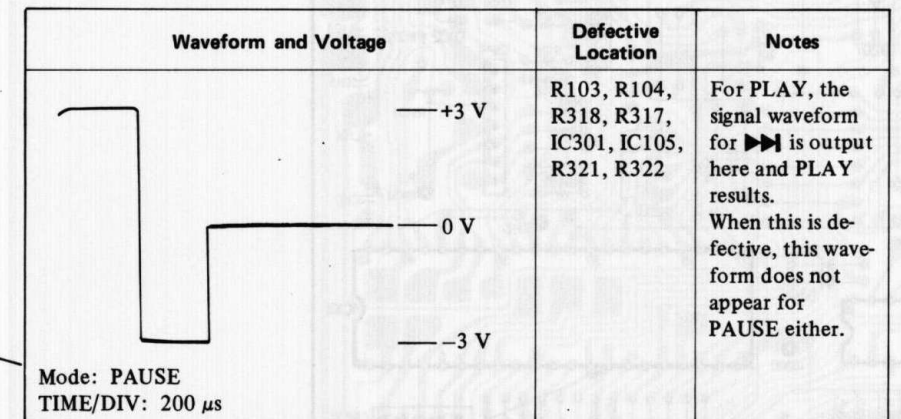
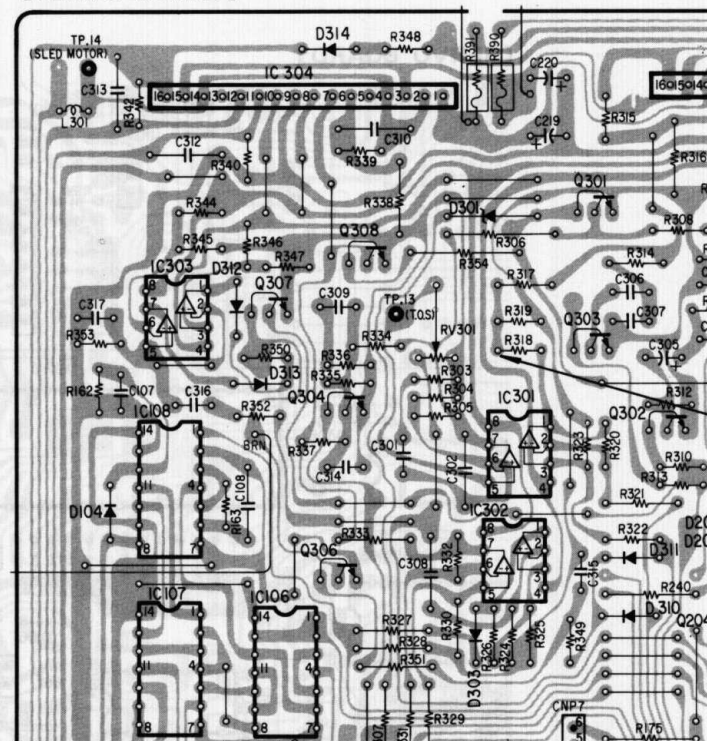
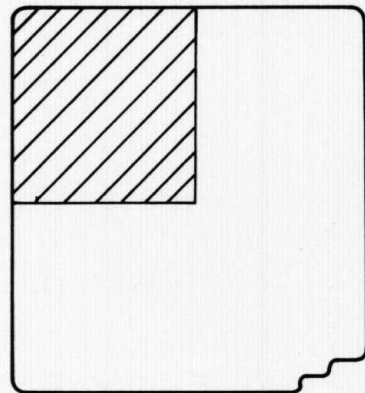
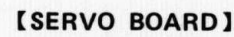


Waveform and Voltage	Defective Location	Notes
 At the instant when ◀◀ is pressed TIME/DIV: 10 μs	IC302, IC101, D303, R324-327, C308	This defect is caused when "TC" signal is not input to microcomputer IC101 (38).

【SERVO BOARD】



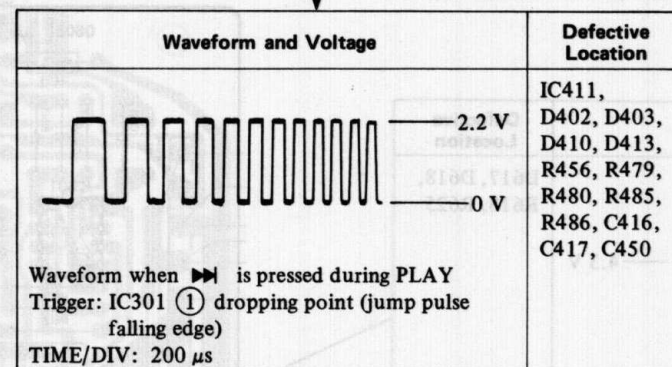
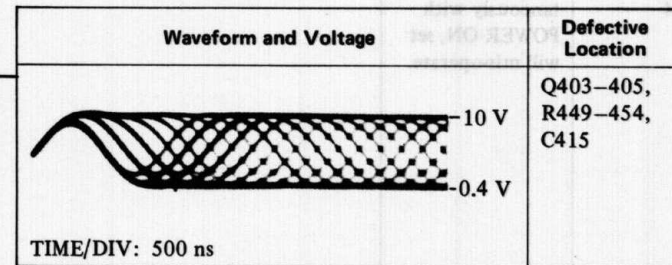
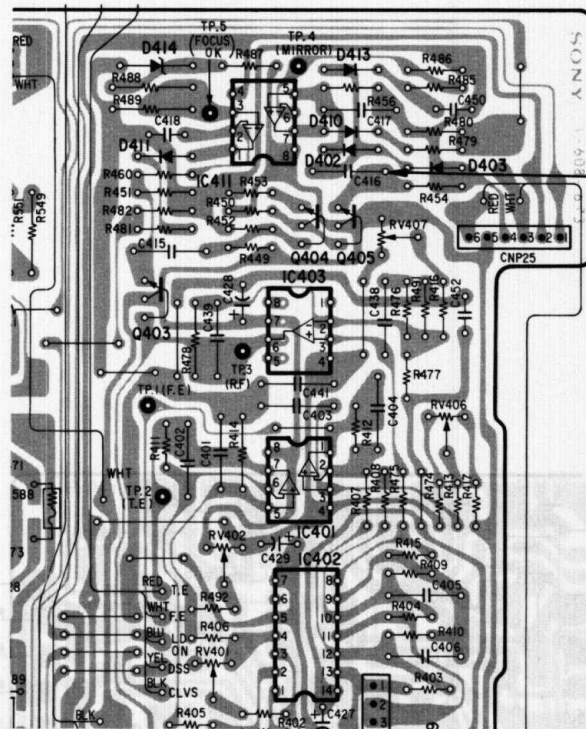
【SERVO BOARD】



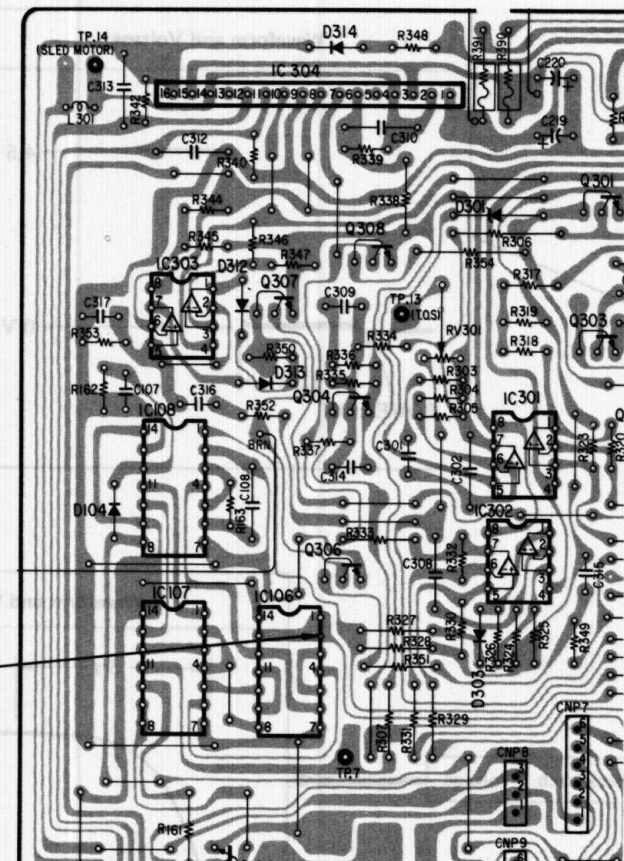
[SCAN Continues in PLAY Mode, and a Squeaking Noise is Generated from TOP (2-axis)
Device Track Jump Operation does not stop). Defective Mirror Circuit]

Mode: PLAY

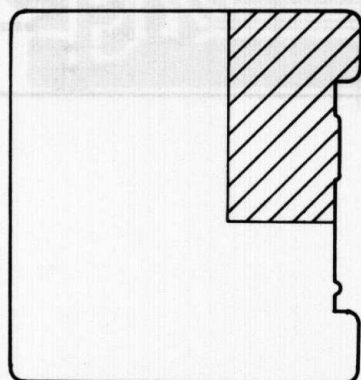
[AUDIO BOARD]



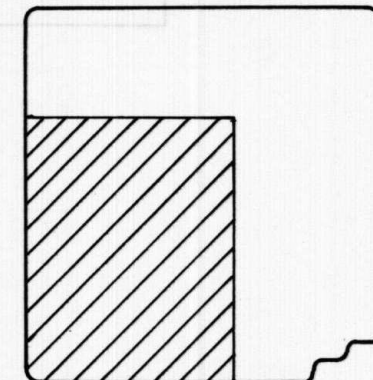
[SERVO BOARD]



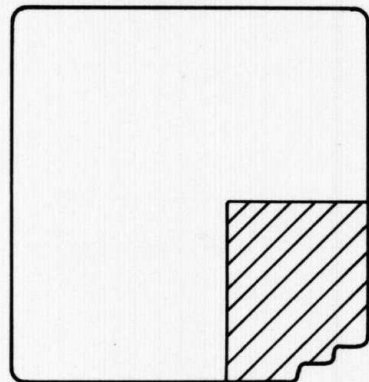
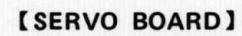
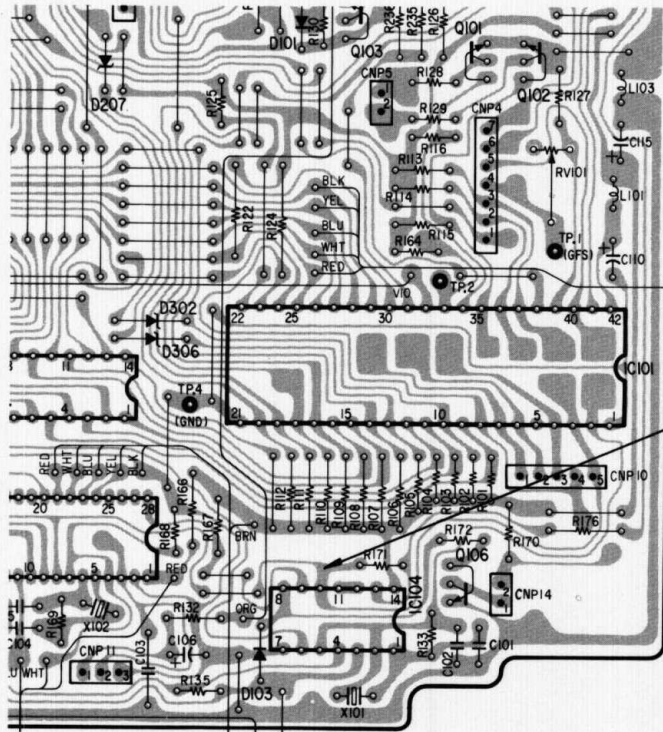
[AUDIO BOARD]

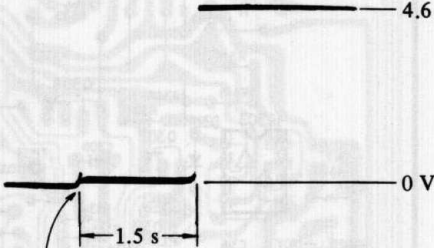


[SERVO BOARD]



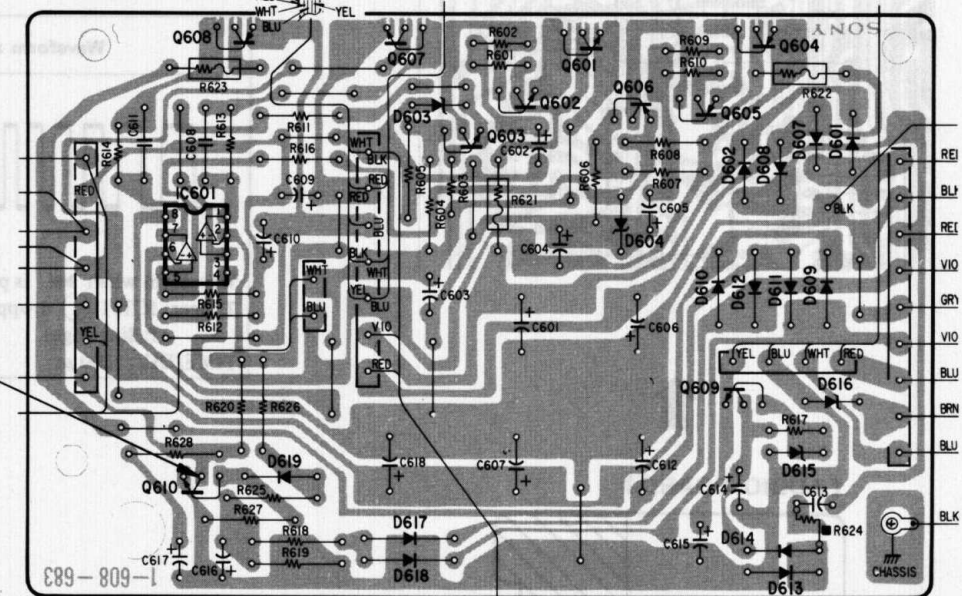
【SERVO BOARD】



Waveform and Voltage	Defective Location	Notes
 <p>4.6 V</p> <p>0 V</p> <p>1.5 s</p> <p>POWER ON</p>	<p>R176 IC104</p>	<p>When high simultaneously with POWER ON, set will mis-operate.</p>

Waveform and Voltage	Defective Location
	D617, D618, R618, R625

Check each B voltage.

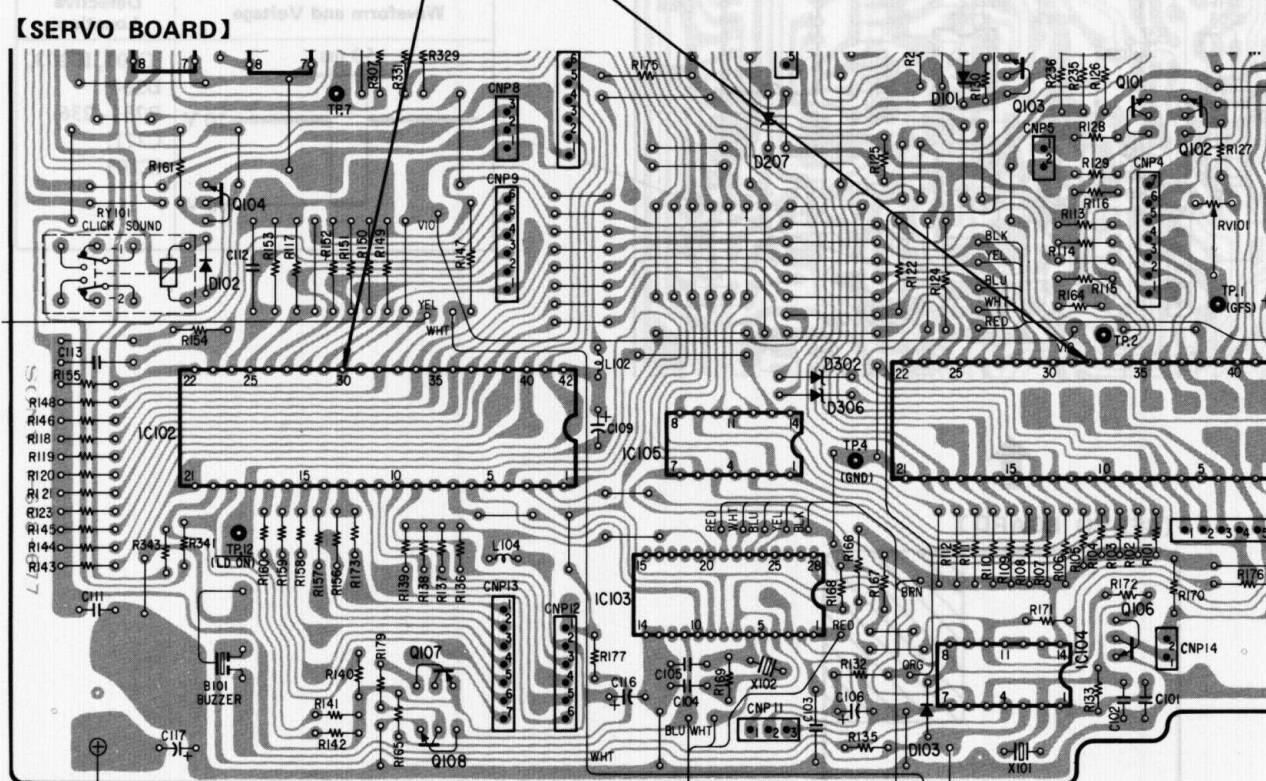


[No Operation when POWER is Turned On (2)]

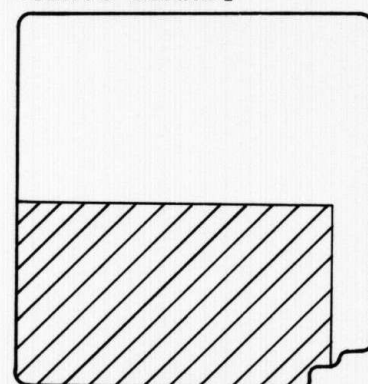
[When ◀◀, ◀, ▶ or ▶▶ is Pressed, Fast Forward or Fast Reverse Occurs.]

Waveform and Voltage	Defective Location
0 V DC 4.8 V DC . . . for play	S908 R148

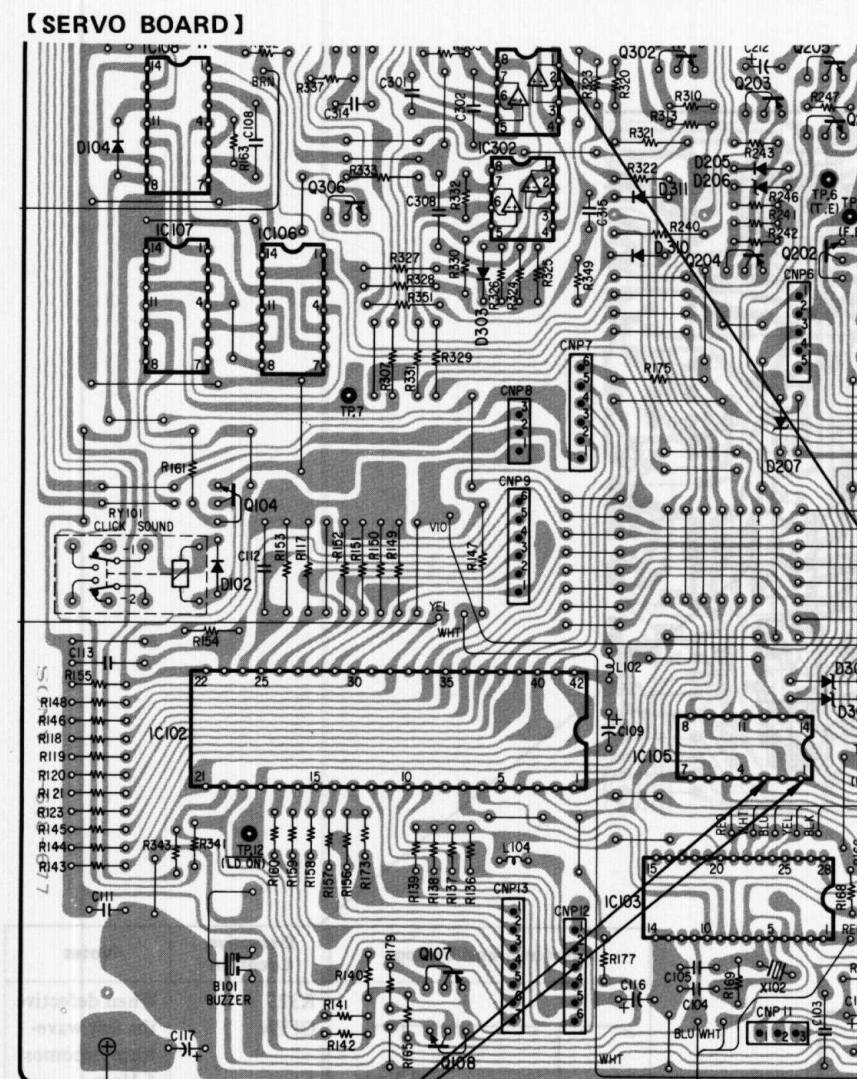
Defective R117-123, IC101, IC102



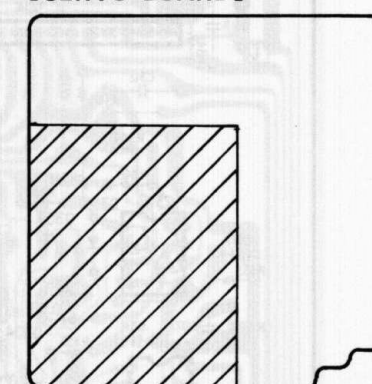
【SERVO BOARD】

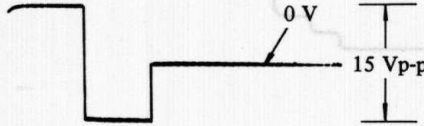


Waveform and Voltage	Defective Location	
	FWD direction	Reverse direction
<p>IC105 ③</p> <p>IC105 ①</p> <p>0 V 5 V_{p-p}</p> <p>0 V 5 V_{p-p}</p> <p>Mode: PAUSE TIME/DIV: 200 μs</p>	IC101	IC101



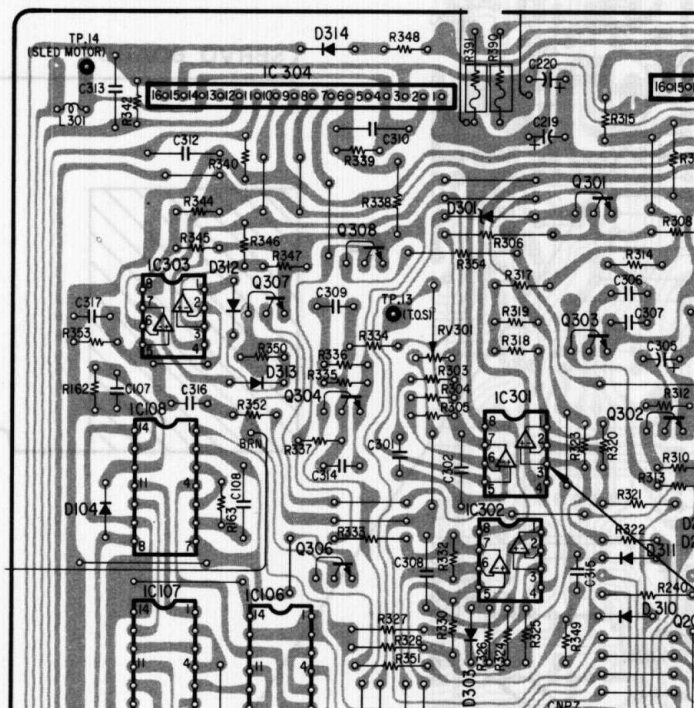
【SERVO BOARD】



Waveform and Voltage	Defective Location	
	FWD direction	Reverse direction
 <p>Mode: PAUSE TIME/DIV: 200 μs</p>	IC105 R321	IC105 R323 R322

[▶▶ Only Cannot be Accessed]

[SERVO BOARD]



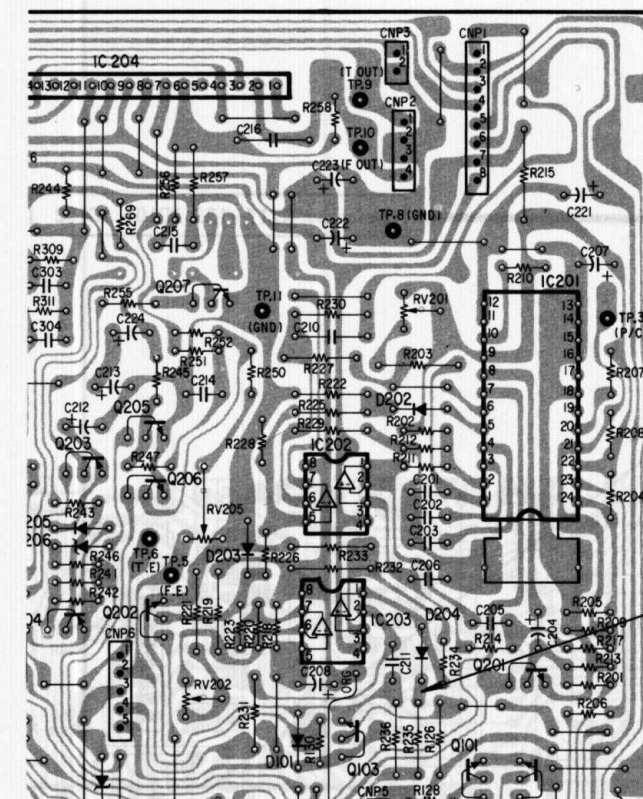
[SERVO BOARD]



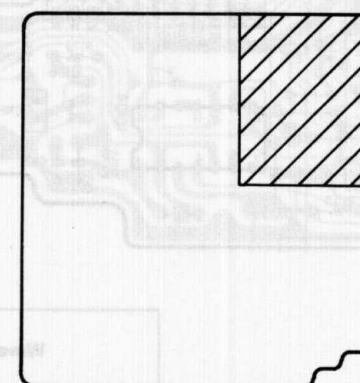
Waveform and Voltage	Defective Location	Notes
<p>Mode: ▶▶ TIME/DIVE: 200 μs</p>	R323 OPEN	When defective the left wave- form becomes 5 Vp-p

[For OPEN/CLOSE During PLAY, the Disc Table Opens Before Disc Stops Rotating.]
(The customer will not normally discover this symptom.)

[SERVO BOARD]



[SERVO BOARD]



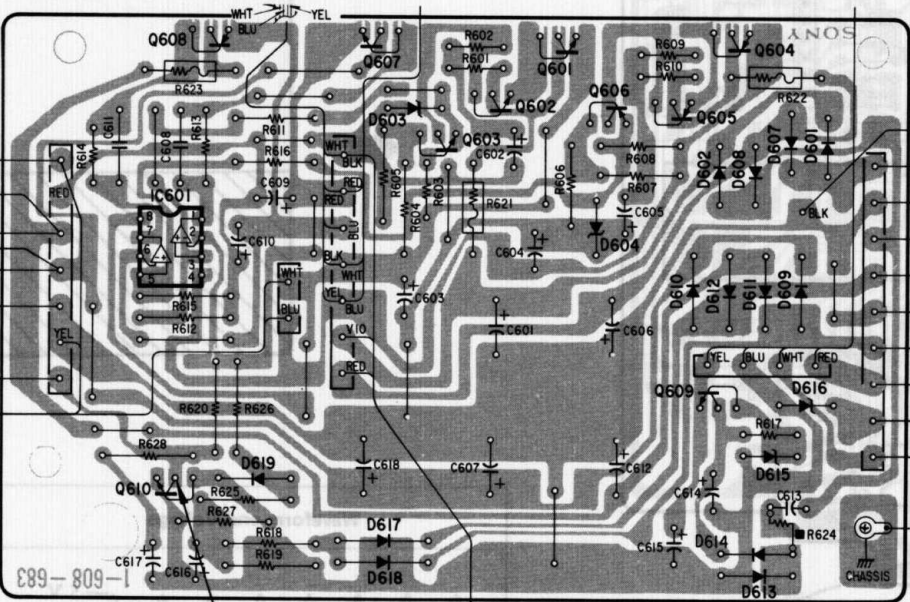
Waveform and Voltage	Defective Location
	IC407, IC203, D204 R231-236, C211, IC101


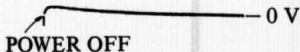
[Noise During POWER OFF]

[No Remote Control Operation]

MEMO

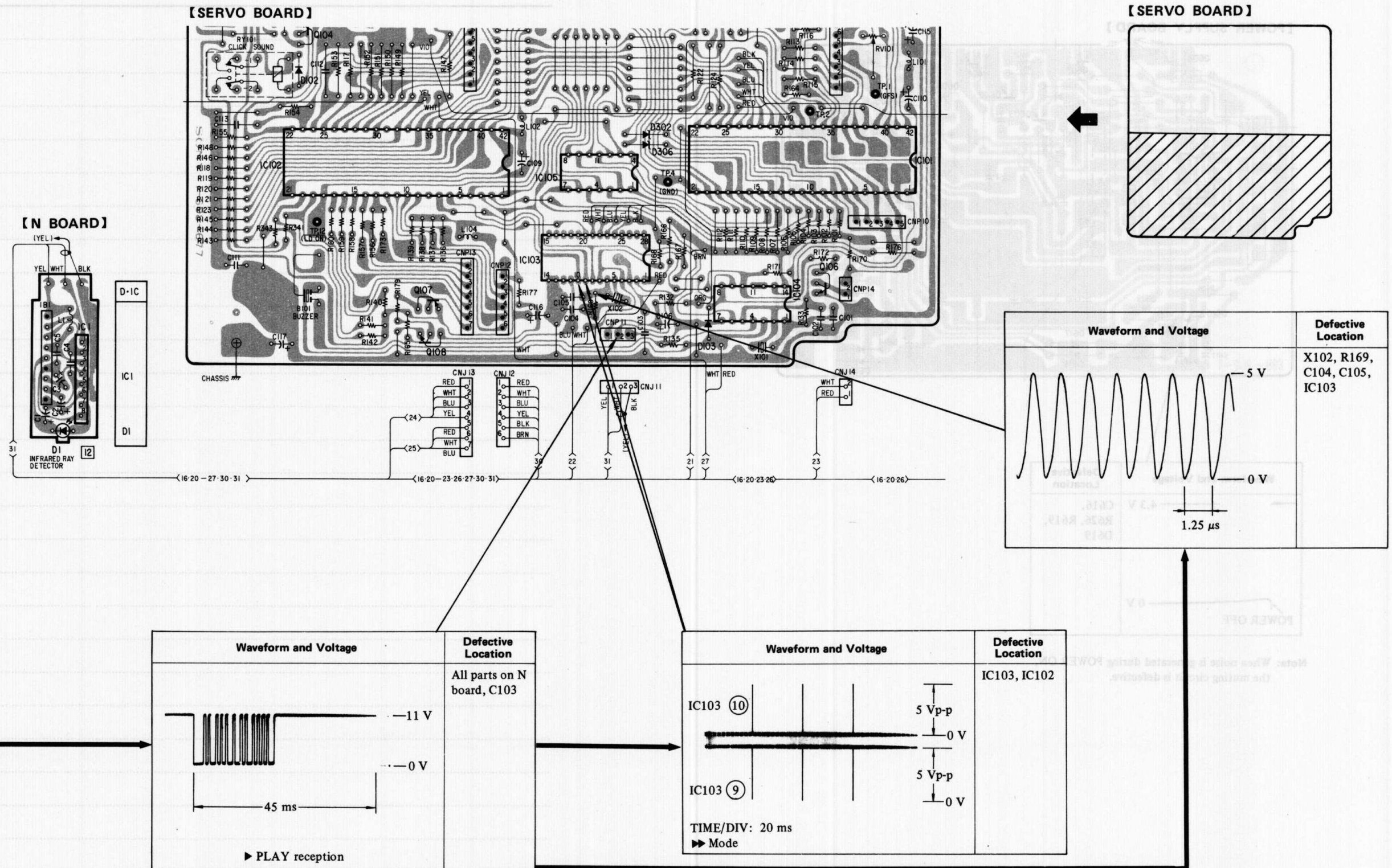
[POWER SUPPLY BOARD]



Waveform and Voltage	Defective Location
 4.3 V	C616, R626, R619, D619
 0 V POWER OFF	

Note: When noise is generated during POWER ON, the muting circuit is defective.

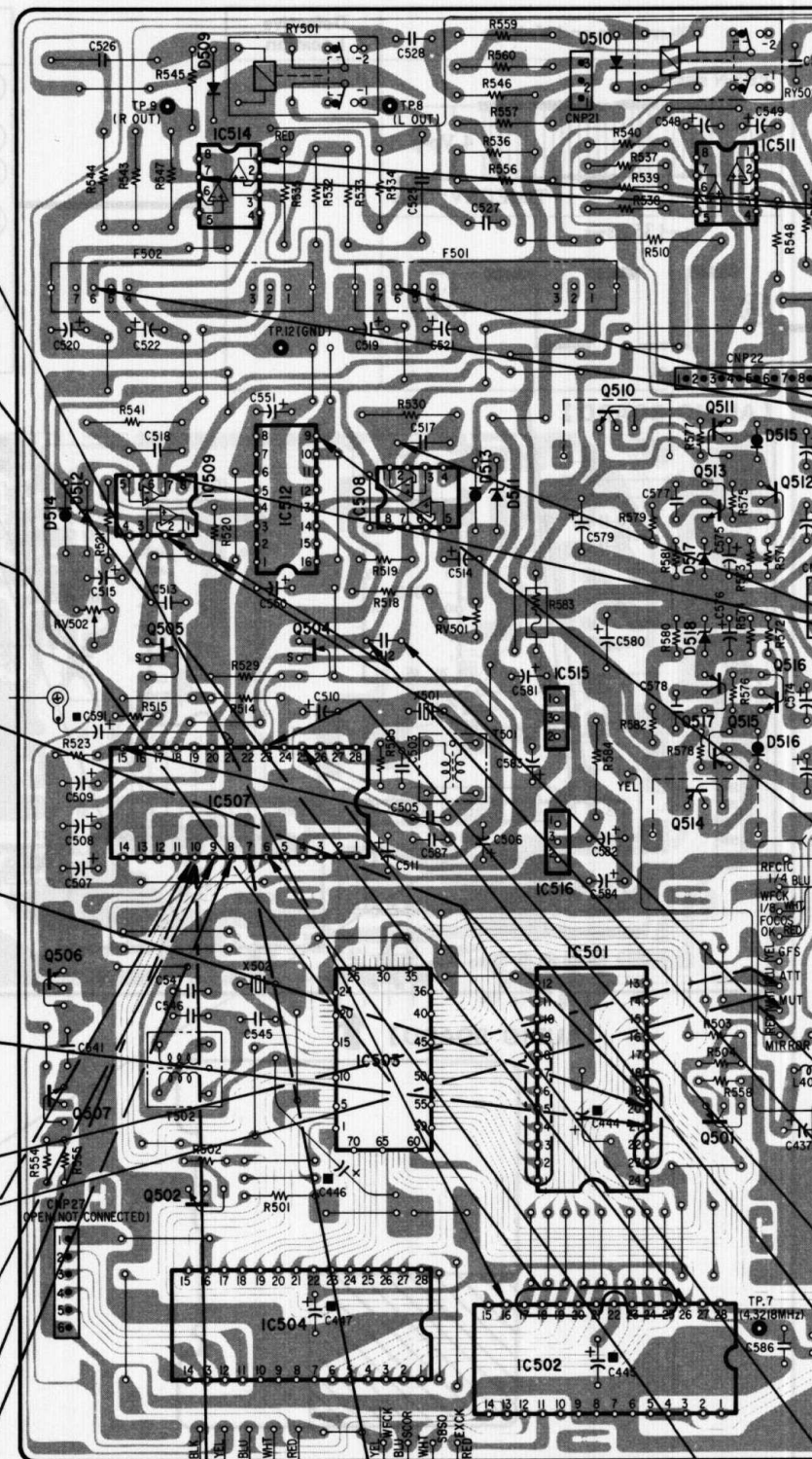
[No Remote Control Operation]



[No Sound]

Waveform and Voltage	Defective Location
<p>WERQ signal</p> <p>4 μs</p> <p>4 Vp-p</p> <p>0 V</p>	IC502
<p>OENB signal</p> <p>4 μs</p> <p>4 Vp-p</p> <p>0 V</p>	IC503
<p>DB01 - DB08 signal</p> <p>4.8 Vp-p</p> <p>0 V</p>	IC501 IC502
TIME/DIV: 2 μ s	
<p>A0 - A10 signal</p> <p>4 Vp-p</p> <p>0 V</p>	IC503
TIME/DIV: 500 ns	
<p>OE signal</p> <p>4 Vp-p</p> <p>0 V</p>	IC503
TIME/DIV: 1 μ s	
<p>WE signal</p> <p>4 Vp-p</p> <p>0 V</p>	IC503
TIME/DIV: 1 μ s	
4.4 V DC	R113, IC101
0 V DC	R114, IC101
<p>10</p> <p>460 ns</p> <p>3.5 Vp-p</p> <p>0 V</p>	IC503
<p>9</p> <p>3.8 Vp-p</p> <p>0 V</p>	
<p>10</p> <p>3.8 Vp-p</p> <p>0 V</p>	IC503
<p>8</p> <p>5.5 μs</p> <p>3.8 Vp-p</p> <p>0 V</p>	

[AUDIO BOARD]



Defective C527, C528, R556,
R559, R557, R560, RY502,
R554, Q507

Waveform and Voltage	Defective Location		Note
	L-CH R535 R532	R-CH R547 R543	OK if audio signal appears.
	IC514		

Waveform and Voltage	Defective Location		Note
	L-CH F501	R-CH F502	OK if audio signal appears.

Waveform and Voltage	Defective Location	
	L-CH R530 C517	R-CH R541 C518
	IC512	

Waveform and Voltage	Defective Location
	IC507

Waveform and Voltage	Defective Location	
	L-CH C512 Q504 IC508	R-CH C513 Q505 IC509
	IC507 R523 R529	

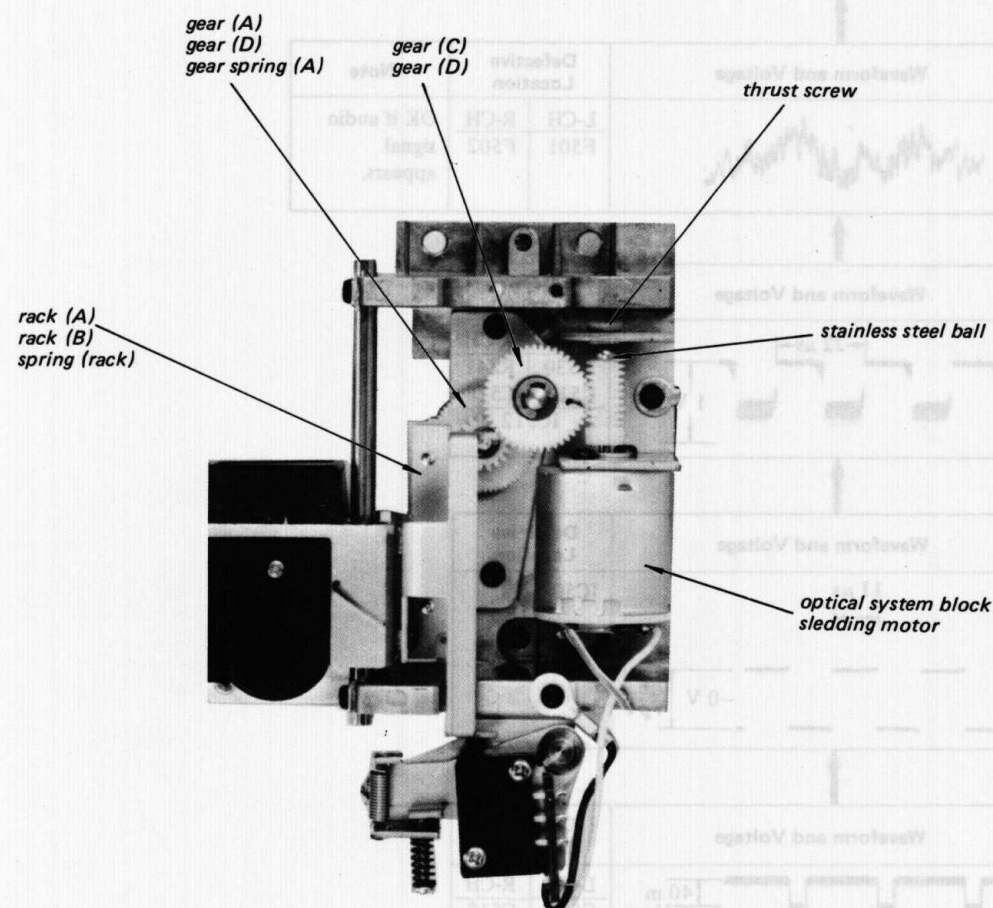
Waveform and Voltage	Defective Location
	IC503

Waveform and Voltage	Defective Location
	IC503

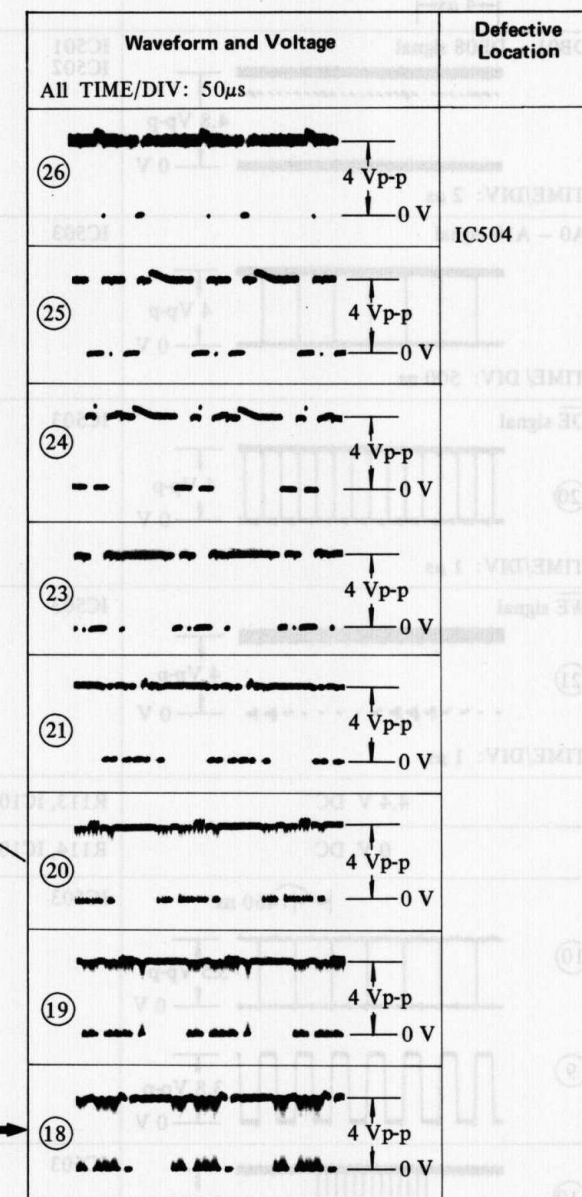
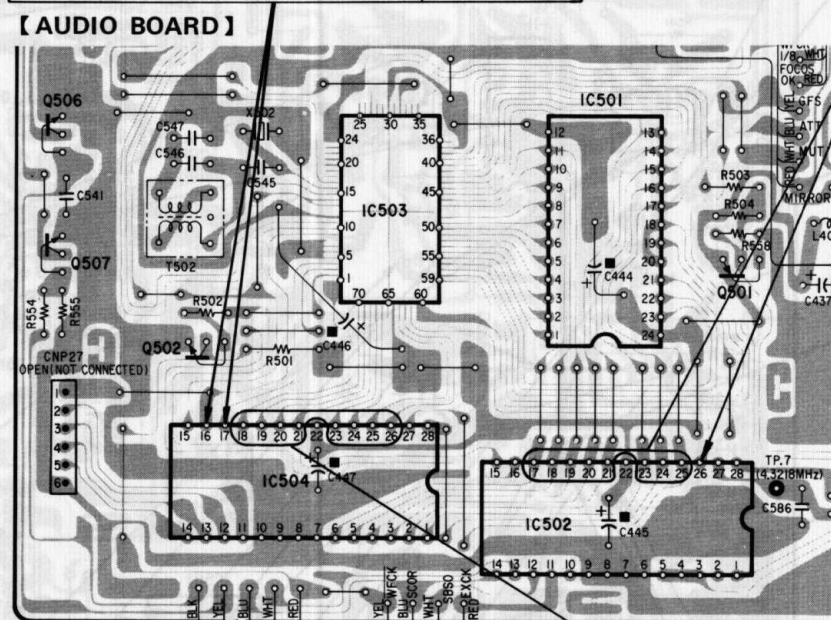
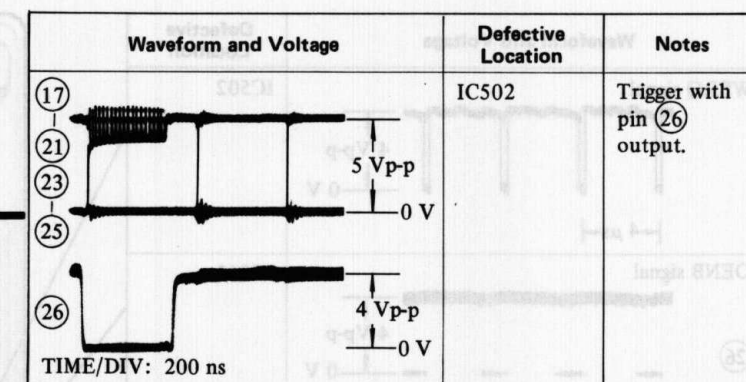
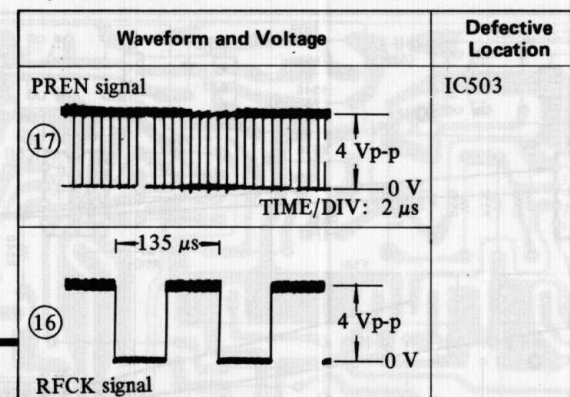
Waveform and Voltage	Defective Location
	C503, C505 T501, R585 X501, IC507

[Sound Skipping (Suddenly Skips to Several Minutes Later During PLAY)]

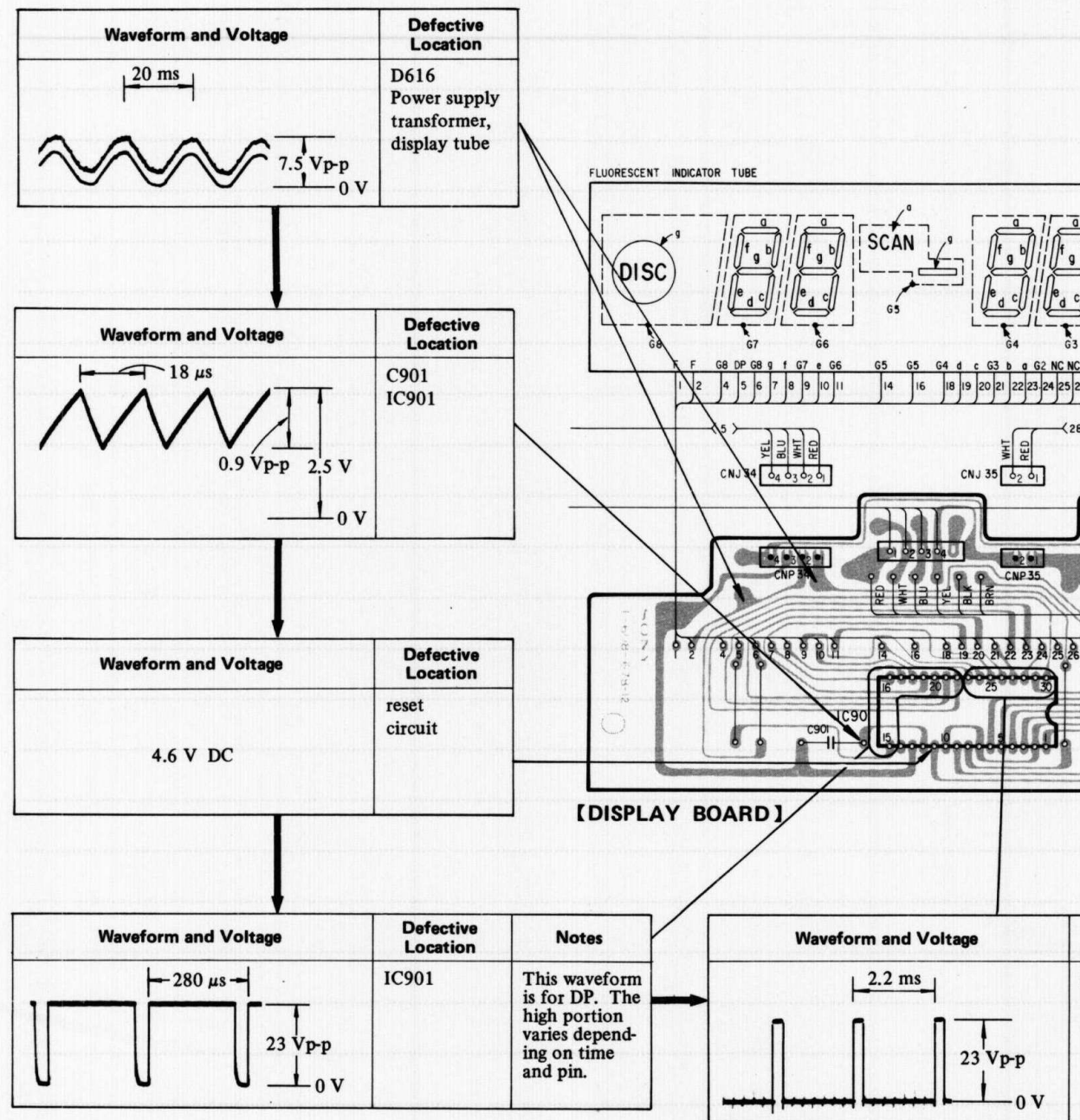
It is possible that the optical system block sledding mechanism is not working smoothly, so check the parts shown in the photograph and the leads coming from the optical system block. When the cause is unclear, replace racks (A), (B).



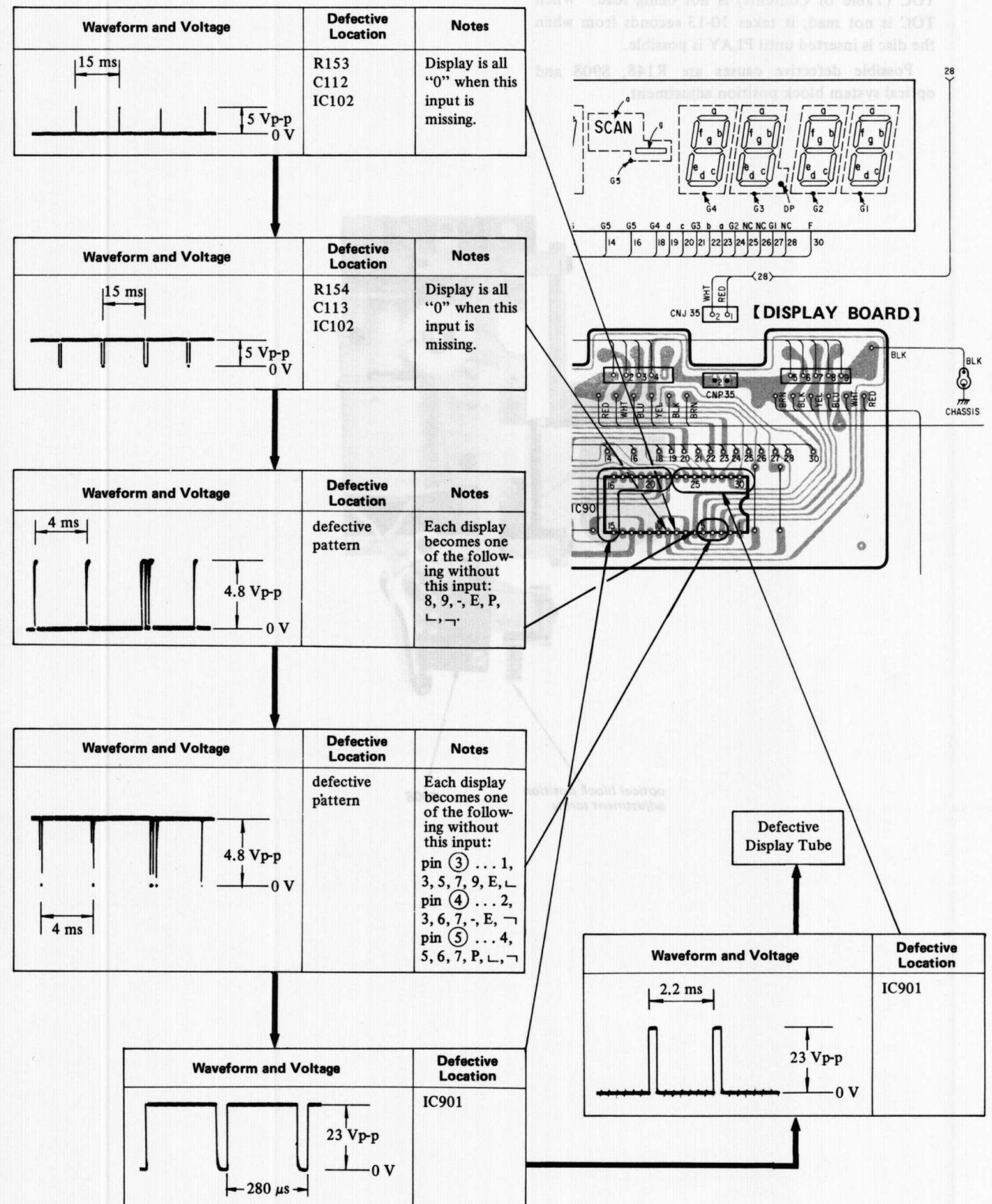
[Rapid Blip Noise (Error Correction Not Performed)]



[Display Tube Does Not Light Up]



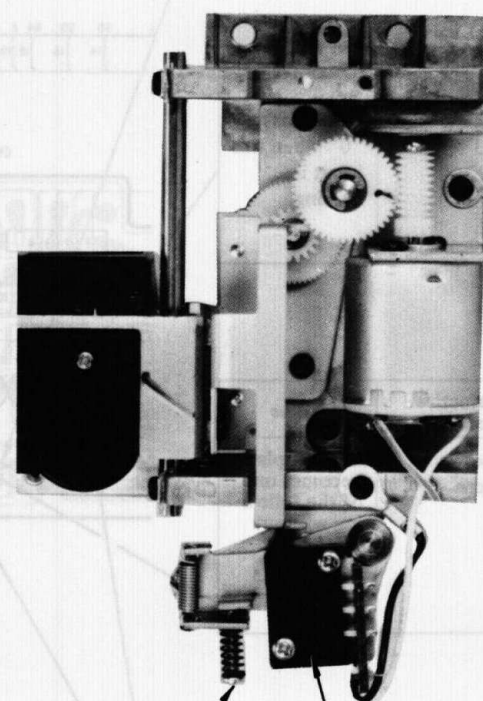
[Defective Display (Set Operates Normally)]



[LAP TIME Not Displayed]

The cause of LAP TIME not being displayed is that TOC (Table of Contents) is not being read. When TOC is not read, it takes 10-13 seconds from when the disc is inserted until PLAY is possible.

Possible defective causes are R148, S908 and optical system block position adjustment.



optical block position
adjustment screw

S908

MEMO

—47—

ONLY

9-959-021-11

Sony Corporation
Consumer Products Group
Technical Support Dept.

English
83A05109-1
Printed in Japan
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