

# **Rock - Ola**

## **Trouble Shooting Guide**

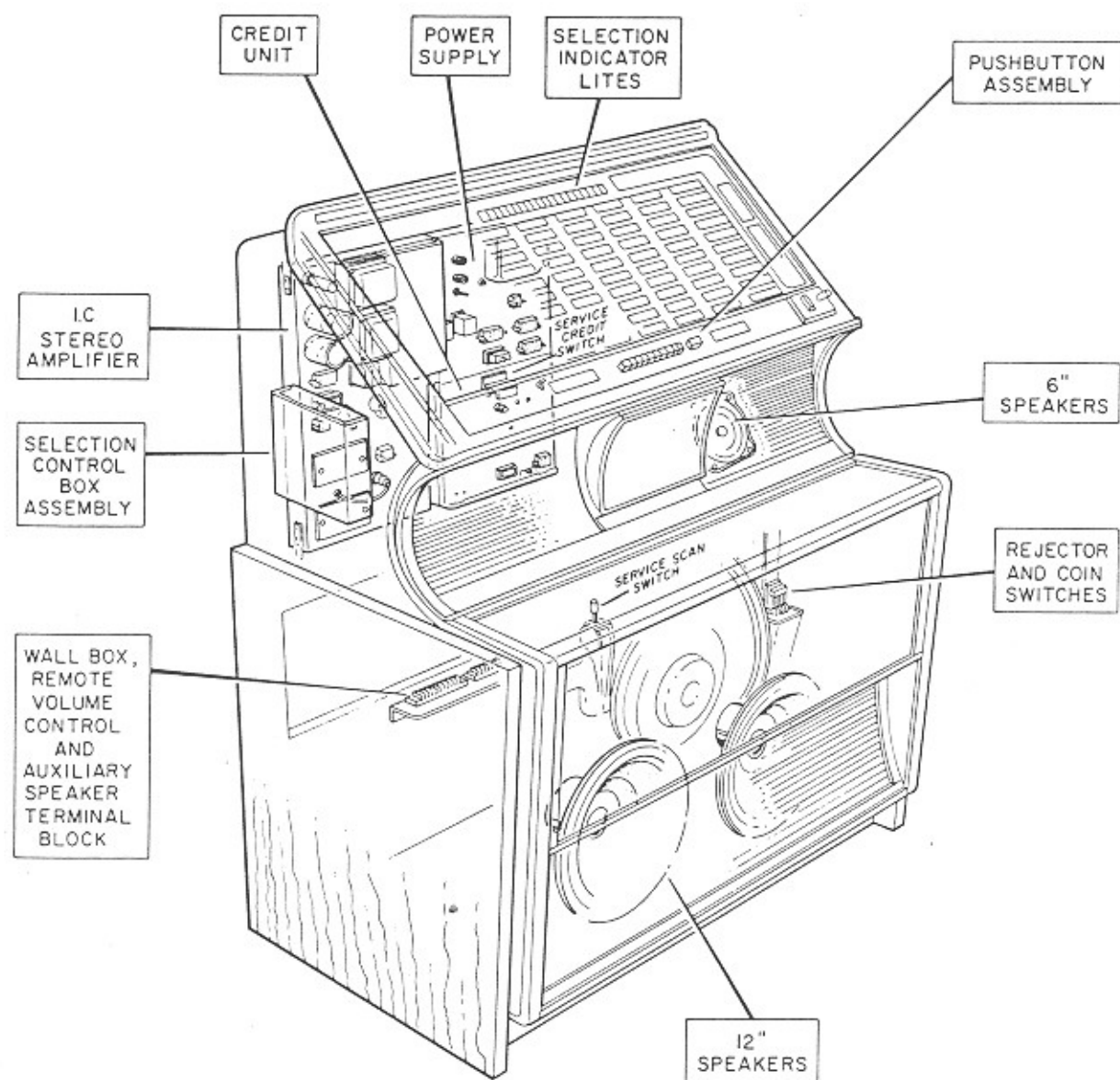
**Models 447 to 452**

Rock - Ola provided this guide to help operators with the digital selection system phonographs introduced in the early 70's. Most of this information is valid for this machine so it is included with this manual.

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MODEL 450 — 160 SELECTION

MODEL 451 — 100 SELECTION





## DEAR MR. SERVICEMAN:

Rock-Ola's coin operated phonographs have established for themselves a long history of dependability. Throughout the world they are renowned for their playing durability and simplicity of operation.

This is the result of Rock-Ola's heavy reliance on electro-mechanical operations wherever possible in place of complicated electronic circuits. The selection system, however, out of necessity, has incorporated an easy to understand electronic system to operate the electro-mechanical devices. Should problems ever occur in this area, Rock-Ola provides you with two instruction booklets to solve any malfunction, the majority of which are easily corrected on location.

## ROCK-OLA PHONOGRAPH SERVICE MANUAL

This Service Manual is included with every phonograph for handy reference whenever needed. The instruction manual



covers the entire operational cycle of Rock-Ola's line of coin operated phonographs. Basically it tells how it should operate.

## ROCK-OLA PHONOGRAPH TROUBLE SHOOTING GUIDE

This booklet, which contains two sections, is designed to pinpoint the probable cause and correction of any malfunction in the operational system of the phonograph.

Part I of this booklet is an index of symptoms of the various possible malfunctions. It will give you the symptom of the problem, the probable cause and the solution for on location correction. It will then lead you to Part II for the repair of the part or component involved.

Part II of this booklet is a Trouble Shooting Guide. In

conjunction with the index, this section will show you once again the Problem, the Problem Area or Part, and the Procedure for correcting. The Trouble Shooting Guide will also lead to the proper section of the Phonograph Service Manual which shows the complete electrical and mechanical action of the components involved.

To illustrate the use of this Trouble Shooting Guide in conjunction with the Service Manual, please follow the example problem situation as illustrated.

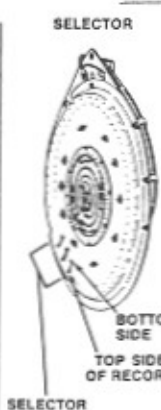
### PROBLEM: REGISTERS BOTTOM SIDE OF RECORD WHEN TOP SIDE SELECTED

#### SOLUTION: STEP I

Turn through index down symptom column until problem is found. Then follow procedure for isolating the problem on the phonograph under "Probable Cause" column; then make

necessary on location corrections as instructed in the "Correction" column. This will take you to Step II of the Trouble Shooting Guide which shows the corrective repair procedure for the faulty component, in this case Trouble Shooting Guide - 11.

#### STEP I

| WRITE-IN SELECTION PHASE   |  | SYMPTOM   | PROBABLE CAUSE   | CORRECTION   |
|--|--|---|--|--|
|  <p>SELECTOR LEVERS</p> <p>A REMINDER<br/>Always check for loose plug connections</p> |  | 1. 1ST DIGIT LITE NOT   | 1. Defective Selection Control P.C. Board  | Replace.<br>(To repair see Trouble Shooting Guide - 8.)                          |
|  |  | 6. RESET AND RESELECT LITES TURN ON WHEN 2ND DIGIT NUMBERS "3" THRU "0" PRESSED. SOME SELECTIONS THEN REGISTER TOP SIDE OF RECORD WHEN BOTTOM SELECTED. | 1. Defective Selection Control P.C. Board  | Replace.<br>(To repair see Trouble Shooting Guide - 8.)                          |
|  |  | 7. REGISTERS WRONG SELECTIONS ON THE SELECTOR MOST OF THE TIME.   | 1. Defective Selection Control P.C. Board  | Replace.<br>(To repair see Trouble Shooting Guide - 9.)                          |
|  |  | 8. 1ST DIGIT NUMBER PRESSED. 1ST AND 2ND DIGIT LITES TURN ON. 2ND DIGIT NUMBER PRESSED STARTS MECHANISM AND REGISTERS WRONG SELECTION.                  | 1. Defective Selection Control P.C. Board  | Replace.<br>(To repair see Trouble Shooting Guide - 10.)                         |
|  |  | 9. REGISTERS BOTTOM SIDE OF RECORD ON SELECTOR WHEN TOP SIDE SELECTED.  | 1. Plug-in type Record Side Relay K6 loose in Selection Control Box.<br>2. Open 270 Ohm Resistor in Selection Control Box.<br>3. Defective Selection Control P.C. Board. | Push in.<br>Replace.<br>Replace.<br>(To repair see Trouble Shooting Guide - 11.) |

#### STEP II

## STEP II

Follow the corrective procedure for this problem as illustrated in Trouble Shooting Guide No. 11 in Part II of this booklet. To provide you with a complete understanding of the electrical and mechanical functions of this segment of the selection system, your attention is called to Step III and the Rock-Ola Phonograph Service Manual.

## STEP III

This step refers you to the specific Sequence Diagram in the Service Manual related to the problem at hand.

The operating circuits on the schematics are shown in heavy black lines accompanied by a mechanical illustration of the actual operation.

## STEP II





**TROUBLE SHOOTING GUIDE 11**

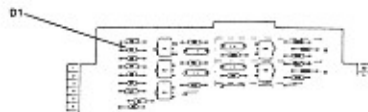
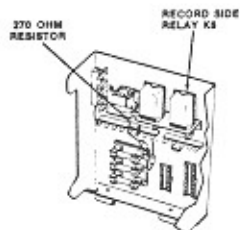
**PROBLEM: REGISTERS BOTTOM SIDE OF RECORD WHEN TOP SIDE SELECTED**

**PROBLEM AREA: Selection Control Box.**

**A Reminder: Always check for loose plug connections.**

### PROCEDURE:

1. Press No. 1 for 1st Digit number. Record Side Relay K6 should be energized. IF RELAY NOT ENERGIZED, see if Relay firmly seated. Interchange with Relay K7 to check if relay defective.
- IF RELAY K6 STILL NOT ENERGIZED then:
2. Shut off phone power. With an Ohmmeter check for open "D1" Diode or open 270 ohm resistor (See Service Manual Sequence Diagram No. 2).

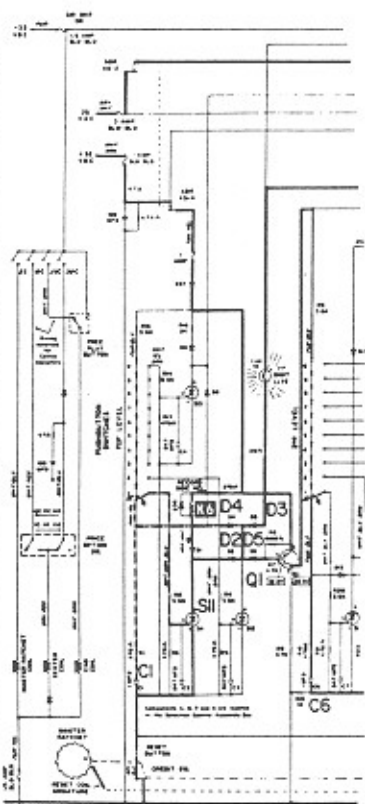


## STEP III

## ELECTRICAL OPERATION

## MECHANICAL OPERATION

### SERVICE MANUAL — SEQUENCE No. 2



#### EXAMPLE

#### 1 PRESSED

action relates pushbutton record selection connections.

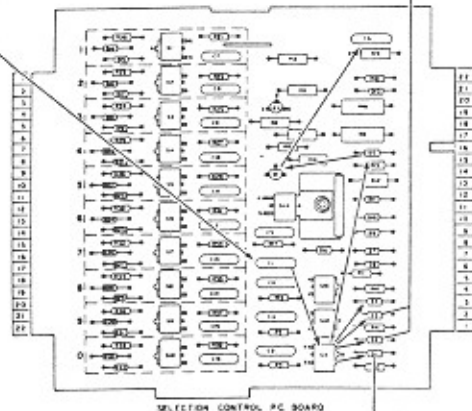
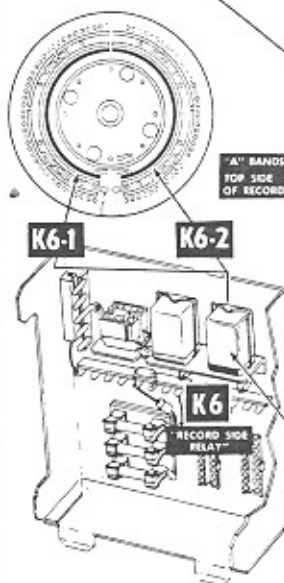
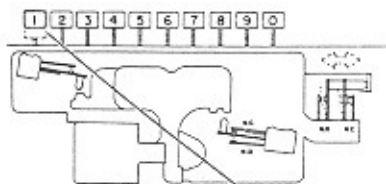
has "on" if "A" condition is "selected" sequence for

pushbutton C1 which gets the gate down. Record side D1 contacts K6-1 & to the "A" at P.C. Board up side of the

"this D2 and


in this case clamps the switch and is also low in the 1st jump push-

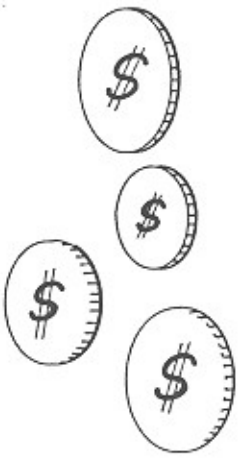
"on" via D5 age to Cap-Button is re-






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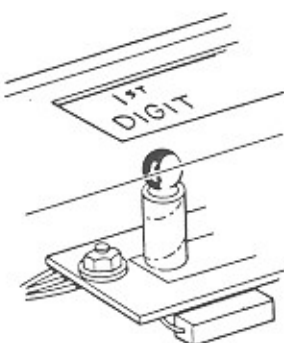
| <b>PHONOGRAPH DEAD</b><br> | SYMPTOM                             | PROBABLE CAUSE                                   | CORRECTION   |
|--|-------------------------------------|--|--|
|  | 1. NO LITES . . . NOTHING OPERATES. | 1. No power at outlet.                           | House fuse or wiring.                                    |
|  |                                     | 2. Phono not plugged in.                         | Insert in wall socket.                                   |
|  |                                     | 3. Phono Master Switch not "On".                 | "On-Off" Switch in back of cabinet.                      |
|  |                                     | 4. 6¼ Slo-Blo master fuse blown in Power Supply. | Replace - If blows again see Trouble Shooting Guide - 1. |

| <b>COINS DO NOT WORK</b><br> | SYMPTOM   | PROBABLE CAUSE  | CORRECTION   |
|--|---|---|--|
|  | 1. COINS JAM IN REJECTOR OR FALL INTO COIN RETURN CUP.                        | 1. Bind in Coin Return Reject Arm.                                | Locate bind and repair.  |
|  |   | 2. Rejector not level.  | Level phonograph.  |
|  |   | 3. Rejector.  | Needs cleaning.  |
|  | 2. COINS FALL INTO CASH BOX BUT NO CREDITS - SELECT LITES NOT ON.             | 1. Selection system Circuit Breaker tripped open in power supply. | Push to reset Circuit Breaker. (See Trouble Shooting Guide - 2.) |
|  |   | 2. Blown ¼ Amp Slo-Blo fuse in Accumulator.                       | Replace.   |
|  |   | 3. Loose Coin Switch Cable plug connection.                       | Push in to seat firmly.  |
|  |   | 4. Dirty Coin Switches.   | Clean with a burnishing tool.                                    |
|  | 3. INCORRECT NUMBER OF CREDITS FOR THE SAME COIN. SELECT LITES ON.            | 1. Bouncing Coin Switch Paddle.                                   | For adjustments see Trouble Shooting Guide - 3.                  |
|  |   | 2. Insufficient Coin Switch closing time.                         |  |
|  |   | 3. Incorrect alignment of Rejector and Coin Switch Paddles.       | Rejector not seated properly in housing.                         |
|  |   | 4. Dirty Coin Switches.   | Clean with burnishing tool.                                      |
|  | 4. CORRECT COINS INSERTED - SELECT LITE NOT ON BUT SELECTION OPERATION NORMAL | 1. Defective No. 53 lamp.   | Replace  |
|  |   | 2. Open 120 ohm resistor.   | Replace  |

| <b>WRITE-IN SELECTION PHASE</b><br><br><b>A REMINDER</b><br>Always check for loose plug connections | SYMPTOM  | PROBABLE CAUSE   | CORRECTION   |
|---|--|--|--|
|   | 1. SELECT LITE ON, KEYBOARD DEAD. . . . 1ST AND 2ND DIGIT LITES DO NOT WORK. | 1. 1 Amp Slo-Blo fuse blown. (Underside of Power Supply, White/Brown wire connection.) | Replace  |
|   |  | 2. 1 Amp fuse blown in Selection Control Box. (Tan/Yellow wire connection.)            | Replace  |
|   |  | 3. Defective Selection Control P.C. Board.   | Replace - If problem still exists then see Trouble Shooting Guide - 4. |

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## WRITE-IN SELECTION PHASE



2. 1ST DIGIT LITE NOT ON WHEN "1" PRESSED FOR 1ST DIGIT. TOP RECORD SIDE DOES NOT REGISTER ON SELECTOR. 1ST DIGIT LITE OK WHEN "2" PRESSED FOR 1ST DIGIT. ... BOTTOM RECORD SIDE REGISTERS ON SELECTOR.

1. Defective Selection Control P.C. Board.

Replace.  
(To repair see Trouble Shooting Guide - 5.)

3. 1ST DIGIT LITE NOT ON WHEN "2" PRESSED FOR 1ST DIGIT. BOTTOM RECORD SIDE DOES NOT REGISTER ON SELECTOR. 1ST DIGIT LITE OK WHEN "1" PRESSED FOR 1ST DIGIT. ... TOP RECORD SIDE REGISTERS ON SELECTOR.

1. Defective Selection Control P.C. Board

Replace.  
(To repair see Trouble Shooting Guide - 6.)

4. 1ST DIGIT NUMBER PRESSED GIVES DIM 2ND DIGIT LITE. 2ND DIGIT NUMBER PRESSED TURNS OFF 2ND DIGIT LITE. ALL SELECTIONS REGISTER ON SELECTOR.

1. 1 Amp fuse blown in Selection Control Box. (Gray/White wire connection.)

Replace.  
(See Trouble Shooting Guide - 7.)

5. 1ST DIGIT LITE DOES NOT TURN ON WHEN 1ST DIGIT NUMBER PRESSED. ... ALL SELECTIONS REGISTER ON SELECTOR.

1. Defective No. 53 Lamp.

Replace.

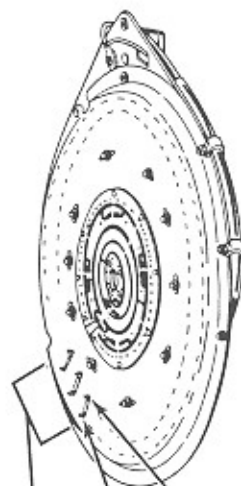
2. Open 39 Ohm Resistor in Lite Box.

Replace.

3. Defective Selection Control P.C. Board.

Replace.  
(To repair see Trouble Shooting Guide - 7.)

## SELECTOR



BOTTOM SIDE

TOP SIDE OF RECORD

SELECTOR LEVERS

A REMINDER  
Always check for loose plug connections

6. RESET AND RESELECT LITES TURN ON WHEN 2ND DIGIT NUMBERS "3" THRU "0" PRESSED. ... SOME SELECTIONS THEN REGISTER TOP SIDE OF RECORD WHEN BOTTOM SELECTED.

1. Defective Selection Control P.C. Board.

Replace.  
(To repair see Trouble Shooting Guide - 8.)

7. REGISTERS WRONG SELECTIONS ON THE SELECTOR MOST OF THE TIME.

1. Defective Selection Control P.C. Board.

Replace.  
(To repair see Trouble Shooting Guide - 9.)

8. 1ST DIGIT NUMBER PRESSED, 1ST AND 2ND DIGIT LITES TURN ON. ... 2ND DIGIT NUMBER PRESSED STARTS MECHANISM AND REGISTERS WRONG SELECTION.

1. Defective Selection Control P.C. Board.

Replace.  
(To repair see Trouble Shooting Guide - 10.)

9. REGISTERS BOTTOM SIDE OF RECORD ON SELECTOR WHEN TOP SIDE SELECTED.

1. Plug-in type Record Side Relay K6 loose in Selection Control Box.

Push in

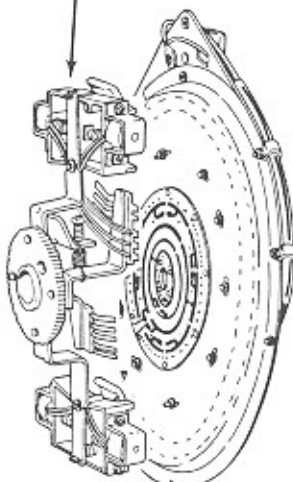
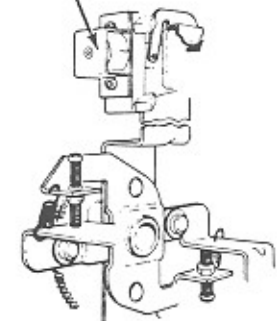
2. Open 270 Ohm Resistor in Selection Control Box.

Replace

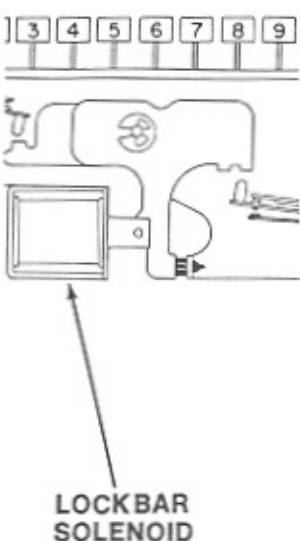

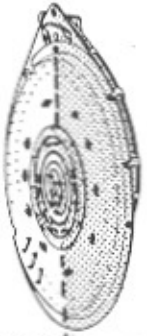
3. Defective Selection Control P.C. Board.

Replace.  
(To repair see Trouble Shooting Guide - 11.)

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|  | SYMPTOM   | PROBABLE CAUSE  | CORRECTION   |
|--|---|---|--|
| <b>WRITE-IN SELECTION PHASE</b><br><br><b>WRITE-IN CARRIAGE</b><br>                       | 10. FAILS TO REGISTER ALL SELECTIONS WITH THE SAME 2ND DIGIT NUMBER. ... 1ST AND 2ND DIGIT LITES ON. ... WRITE-IN CARRIAGE KEEPS SCANNING. ... ALL OTHER SELECTIONS OK.           | 1. Defective Selection Control P.C. Board.  | Replace.<br>(To repair see Trouble Shooting Guide - 12.)   |
|  |   | 2. Break in circuit between 2nd Level of Pushbutton Switches, Selection Control Edge Connectors and Selector. | See if Edge Connectors loose on P.C. Board.<br><br>To locate break in circuit see Service Manual Sequence Diagram No. 4. |
|  | 11. FAILS TO REGISTER ALL SELECTIONS WITH THE SAME 2ND DIGIT NUMBER. ... 1ST DIGIT LITE ON, 2ND DIGIT LITE OFF. ... WRITE-IN CARRIAGE DOES NOT SCAN. ... ALL OTHER SELECTIONS OK. | 1. Defective Selection Control P.C. Board.  | Replace.<br><br>(To repair see Trouble Shooting Guide - 16.)   |
|  | 12. FAILS TO REGISTER ALL SELECTIONS WITH THE SAME 3RD DIGIT NUMBER. WRITE-IN CARRIAGE KEEPS SCANNING. ... ALL OTHER SELECTIONS OK.   | 1. Break in circuit between 3rd Level of Pushbutton Switch and Selector Segment circuit.                      | To locate break in circuit see Service Manual Sequence Diagram No. 6.  |
|  | 13. FAILS TO REGISTER ALL SELECTIONS ON THE SELECTOR. ... WRITE-IN CARRIAGE KEEPS SCANNING.   | 1. Receiver Jumper Plug not seated firmly in Power Supply.  | Push in.   |
| 2. Plug-in type Stop Relay not seated firmly in Power Supply.  |   | Push in.  |  |
| 3. Dirty selector Write-in P.C. Board.   |   | Clean with denatured alcohol. Wipe a light film of petroleum jelly over P.C. Board.                           |  |
| 4. Open 120 Ohm Resistor in Power Supply.<br>5. Break in Pushbutton Switch circuit.  |   | See Trouble Shooting Guide - 13.  |  |
| <b>CARRIAGE COIL</b><br><br><b>A REMINDER</b><br>Always check for loose plug connections | 14. WRITE-IN CARRIAGE INDEXES, ... CARRIAGE COIL FAILS TO OPERATE. NO SELECTIONS REGISTER ON THE SELECTOR.  | 1. Record Side Relay K6 or Dual Carriage Relay K7 not seated firmly in Selection Control Box.                 | Push in.<br><br>(Note: Relay K7 not used on 100 selection phonographs.)  |
|  |   | 2. Open Carriage Coil.  | Replace.   |
|  |   | 3. Dirty selector Write-in P.C. Board.  | Clean.   |
|  |   | 4. Break in Carriage Coil circuit.  | To locate break in circuit see Service Manual Sequence Diagram No. 8.  |

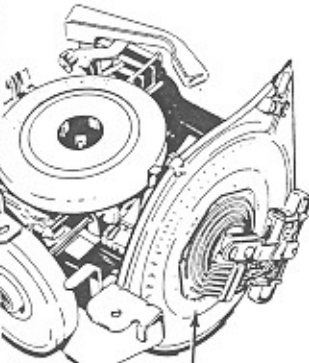
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|  | SYMPTOM   | PROBABLE CAUSE  | CORRECTION   |
|--|---|---|--|
| <p><b>WRITE-IN SELECTION PHASE</b></p>  <p><b>LOCKBAR SOLENOID</b></p>  | <p>15. 3RD DIGIT NUMBER BUTTON FAILS TO LATCH. ... 1ST DIGIT LITE ON, 2ND DIGIT LITE OFF. ... LOCKBAR SOLENOID NOT ENERGIZED.</p>   | <p>1. Defective Selection Control P.C. Board.</p>   | <p>Replace.<br/>(To repair see Trouble Shooting Guide - 14 &amp; 15.)</p>  |
|  | <p>16. 3RD DIGIT NUMBER BUTTON FAILS TO LATCH. ... 1ST AND 2ND DIGIT LITES ON. ... LOCKBAR SOLENOID NOT ENERGIZED.</p>  | <p>1. 1 Amp fuse blown in Selection Control Box. (Gray/Blue wire connection.)</p> <p>2. Normally closed Push-button Lockbar Switch or Solenoid Switch open or dirty.</p> <p>3. Solenoid push-on connectors loose.</p> | <p>Replace - If blows again Diode "D38" shorted in Selection Control Box. (See Trouble Shooting Guide 17.)</p> <p>Clean or adjust.</p> <p>Push on.</p> |
|  | <p>17. 3RD DIGIT NUMBER BUTTON FAILS TO LATCH. ... 1ST AND 2ND DIGIT LITES ON LOCKBAR SOLENOID ENERGIZED.</p>   | <p>1. Pushbutton Lockbar not adjusted correctly.</p>  | <p>For adjustment procedure see Trouble Shooting Guide - 18.</p>   |
|  | <p>18. BUZZING LOCKBAR SOLENOID</p>   | <p>1. Normally closed Lockbar Solenoid Switch open or dirty.</p> <p>2. Open Diode "D38" in Selection Control Box.</p>   | <p>Clean or adjust.<br/>(See Trouble Shooting Guide - 19.)</p> <p>Replace.<br/>(See Trouble Shooting Guide - 19.)</p>                                  |
|  | <p>19. WRONG NUMBER PRESSED FOR 1ST DIGIT, RESET &amp; RESELECT LITES DO NOT WORK. ... WORKS OK WHEN WRONG 3RD DIGIT NUMBER PRESSED.</p>  | <p>1. Defective Selection Control P.C. Board.</p>   | <p>Replace.<br/>(To repair see Trouble Shooting Guide - 20.)</p>   |
|  <p><b>RESET AND RESELECT</b></p>   | <p>20. WRONG NUMBER PRESSED FOR 3RD DIGIT, RESET &amp; RESELECT LITES DO NOT WORK. ... WORKS OK WHEN WRONG 1ST DIGIT NUMBER PRESSED.</p>  | <p>1. Defective Selection Control P.C. Board</p>  | <p>Replace.<br/>(To repair see Trouble Shooting Guide - 21.)</p>   |
|  | <p>21. 160 SELECTION PHONOGRAPH ONLY</p> <p>3RD DIGIT NUMBERS "0" THRU "3" REGISTER SELECTIONS OK, BUT NUMBERS "4" THRU "7" REGISTER SELECTIONS ON WRONG SECTOR OF SELECTOR. ... WRONG SELECTIONS RESULT.</p> | <p>1. Dual Carriage Relay K7 not seated properly in Selection Control Box.</p> <p>2. Open Diode "D34" in Selection Control Box.</p>   | <p>Push in.</p> <p>Replace.<br/>(See Trouble Shooting Guide - 22.)</p>   |
|  <p><b>"0" TO "3" SECTOR   "4" TO "7" SECTOR</b></p> <p><b>A REMINDER</b><br/>Always check for loose plug connections</p> |   |   |  |

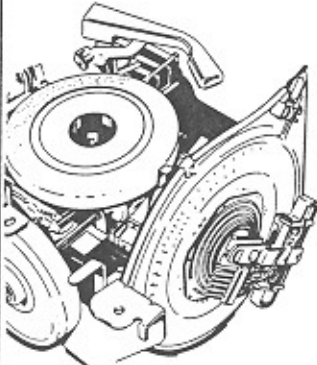



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| WRITE-IN SELECTION<br>PHASE | SYMPTOM  | PROBABLE CAUSE   | CORRECTION  |
|-----------------------------|--|--|---|
|                             | 22. 3RD DIGIT NUMBER LATCHES ON ALL SELECTIONS, ... SEARCH MOTOR DOES NOT RUN. | 1. Latch Switch open or dirty.<br>2. Write-In Relay not seated properly.<br>3. Loose Search Motor connection.<br>4. Break in Search Motor circuit. | See Trouble Shooting Guide - 23.                          |
|                             | 23. WRITE-IN CARRIAGE TRIPS 2 SELECTION LEVERS INTO PLAY POSITION.             | 1. Write-In Carriage not adjusted properly.<br>2. Current Limiting Lamp loose in socket or defective.  | For Adjustment Procedure see Trouble Shooting Guide - 24. |

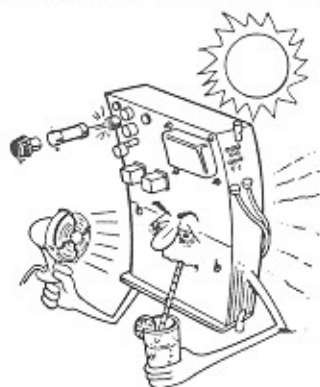
| <br>READ-OUT<br>SIDE | SYMPTOM   | PROBABLE CAUSE  | CORRECTION  |
|---|---|---|---|
|   | 1. SELECTION OPERATION NORMAL BUT RECORD MAGAZINE DOES NOT ROTATE.                          | 1. "Mech" Circuit Breaker.  | Reset Circuit Breaker. If problem not corrected then see Trouble Shooting Guide - 25.   |
|   | 2. MAGAZINE ROTATES, 2ND BANK OF INDICATOR LITES DO NOT FLASH.                              | 1. ¼ Amp Slo-Blo Fuse on Transistor Mounting Bracket blown.<br>2. Open Diode.<br>3. Defective Transistor.   | See Trouble Shooting Guide - 26.  |
|   | 3. SELECTION INDICATOR LITES ERRATIC IN OPERATION.  | 1. P.C. Lite Board Wipers out of adjustment.  | For Adjustment Procedure see Trouble Shooting Guide - 26.   |
|   | 4. MAGAZINE ROTATES, READ-OUT CARRIAGE FAILS TO FIND SELECTED RECORD AND CONTINUES TO SCAN. | 1. Dirty Selector Read-Out P.C. Board.<br>2. Indexing circuit open.<br>3. Dirty Carriage Contacts.          | Clean with denatured alcohol. Wipe a light film of petroleum jelly over the printed circuits.<br>If problem not corrected then see Trouble Shooting Guide - 27. |
|   | 5. GRIPPER ARM OVER SELECTED RECORD, ... GRIPPER MOTOR DOES NOT RUN.                        | 1. No. 2 Micro Switch.<br>2. Control Box.<br>3. Gripper Motor.  | See Trouble Shooting Guide - 28.  |
|   | 6. GRIPPER ARM DROPS RECORDS.   | 1. Read-Out Carriage out of adjustment.   | For Adjustment Procedure see Trouble Shooting Guide - 29.   |
|   | 7. GRIPPER MOTOR STOPS JUST AS RECORD IS PLACED ON THE TURNTABLE.                           | 1. Open 15 Ohm Resistor in Control Box.   | See Trouble Shooting Guide - 30.  |
|   | 8. ONE OR BOTH CARRIAGE COILS DO NOT OPERATE, ... KEEPS REPEATING SAME SELECTIONS.          | 1. Dirty Selector Read-Out P.C. Board.<br>2. A-B Snap Switch.<br>3. No. 2A Micro Switch.<br>4. Control Box. | See Trouble Shooting Guide - 31.  |
|   | 9. RECORD ON TURNTABLE, ... MECHANISM JAMMED, ... "MECH" CIRCUIT BREAKER TIPPED.            | 1. No. 3 Micro Switch.<br>2. Control Box.   | See Trouble Shooting Guide - 32.  |

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|  <b>READ-OUT SELECTION<br/>PHASE</b> | SYMPTOM  | PROBABLE CAUSE  | CORRECTION   |
|---|--|---|--|
|   | 10. TONE ARM DOES NOT OPERATE CORRECTLY.                               | 1. Tone Arm Adjustments.  | For Adjustment Procedures see Trouble Shooting Guide – 33                            |
|   | 11. MUSIC CYCLE ENDS. . . . RECORD DOES NOT RETURN TO MAGAZINE.        | 1. "Mech" Circuit Breaker.<br>2. No. 1 Micro Switch.<br>3. Control Box.                     | Reset Circuit Breaker. If problem not corrected then see Trouble Shooting Guide – 34 |
|   | 12. AT NORMAL LINE VOLTAGE ONE OR BOTH MECHANISM D.C. MOTORS RUN SLOW. | 1. Rectifier 3 Amp Slo-Blo-Fuses blown in Power Supply.<br>2. D.C. Motors.<br>3. Rectifier. | Replace. – If problem not corrected then see Trouble Shooting Guide – 35             |

|  <b>SOUND<br/>SYSTEM</b> | SYMPTOM              | CORRECTION                      |
|---|----------------------|---------------------------------|
|   | 1. ONE CHANNEL DEAD  | See Trouble Shooting Guide – 36 |
|   | 2. TWO CHANNELS DEAD | See Trouble Shooting Guide – 37 |

SPEAKER INSTALLATION SECTION . . . . . PAGE 49

**PROBLEM: 6 1/4 AMP SLO-BLO MASTER FUSE BLOWS IN POWER SUPPLY.**

**PROBLEM AREA:** Power Plug and Cable, On-Off Switch, Transformer Primary, Junction Box, Cabinet Lite, Door Lite, Turntable Motor, Play Control Relay.

A Reminder: Always check for loose plug connections.

**PROCEDURE:**

1. Disconnect junction box from power supply. Remove all plugs.
2. Replace fuse.

IF FUSE BLOWS, short in POWER CABLE, ON-OFF SWITCH, defective TRANSFORMER PRIMARY.  
IF FUSE OK proceed to next step.

3. Connect junction box to power supply.

IF FUSE BLOWS, locate short in JUNCTION BOX.  
IF FUSE OK proceed to next step.

4. Reconnect cabinet lite.

IF FUSE BLOWS, locate short in CABINET LITE.  
IF FUSE OK proceed to next step.

5. Reconnect door lite.

IF FUSE BLOWS, locate short in DOOR LITE.  
IF FUSE OK proceed to next step.

6. Reconnect turntable motor ... Move scan switch to "scan" position.

IF FUSE BLOWS, .022 CAPACITOR, or TURN-TABLE MOTOR is shorted.

PLAY CONTROL  
RELAY CONTACT

.022  
CAPACITOR

MASTER  
6 1/4 AMP.  
SLO-BLO

TRANSFORMER

ON-OFF  
SWITCH

POWER  
CABLE

CABINET  
LIGHT

TURN  
TABLE

FRONT  
DOOR  
LIGHT

JUNCTION  
BOX

POWER SUPPLY





**PROBLEM: COINS FALL INTO CASH BOX BUT  
NO CREDIT. SELECT LITES NOT ON.**

**PROBLEM AREA: Power Supply, Accumulator, Coin Switch Cable.**

**A Reminder: Always check for loose plug connections.**

**PROCEDURE:**

1. Reset Circuit Breaker in Power Supply.
2. Check for blown  $\frac{1}{4}$  Amp Slo-Blo Fuse in Accumulator.
3. See if Coin Switch Cable Plug seated firmly into Accumulator.

**SELECTION  
SYSTEM  
CIRCUIT  
BREAKER**

**$\frac{1}{4}$  AMP.  
SLO-BLO  
FUSE**

**POWER SUPPLY**

**COIN SWITCH  
PLUG CONNECTION**

**PROBLEM: INCORRECT NUMBER OF CREDITS FOR THE SAME COIN. SELECT LITES ON.****PROBLEM AREA: Coin Switches****A Reminder: Always check for loose plug connections.****PROCEDURE:**

If the same coin does not add the same number of credits each time then check for;

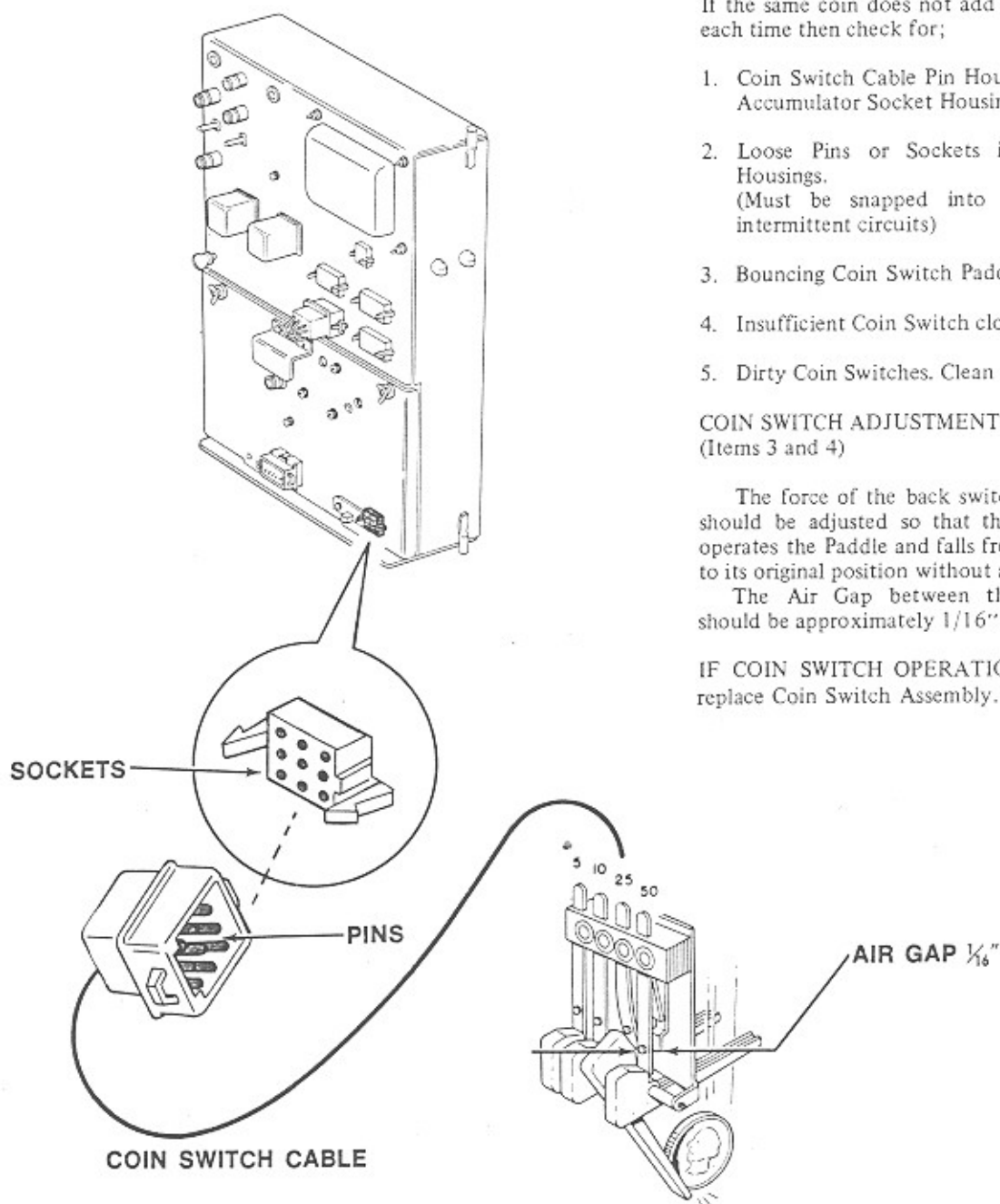
1. Coin Switch Cable Pin Housing not seated properly in Accumulator Socket Housing.
2. Loose Pins or Sockets in their respective M-N-L Housings. (Must be snapped into lock position to prevent intermittent circuits)
3. Bouncing Coin Switch Paddle.
4. Insufficient Coin Switch closing time.
5. Dirty Coin Switches. Clean with a burnishing tool.

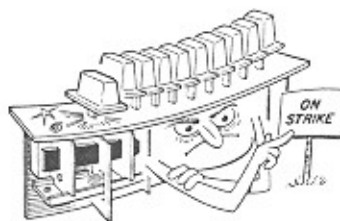
**COIN SWITCH ADJUSTMENTS**  
(Items 3 and 4)

The force of the back switch blade against the Paddle should be adjusted so that the dead weight of the coin operates the Paddle and falls freely, and the Paddle returns to its original position without a bounce.

The Air Gap between the Coin Switch Contacts should be approximately  $1/16"$ .

IF COIN SWITCH OPERATION STILL ERRATIC then replace Coin Switch Assembly.





**PROBLEM: SELECT LITES ON, KEYBOARD DEAD,  
1st AND 2nd DIGIT LITES DO NOT WORK.**

**PROBLEM AREA:** Power Supply, Selection Control Box, Pushbutton  
Switches, Accumulator.

**A Reminder:** Always check for loose plug connections.

## POWER SUPPLY

## RECTIFIER

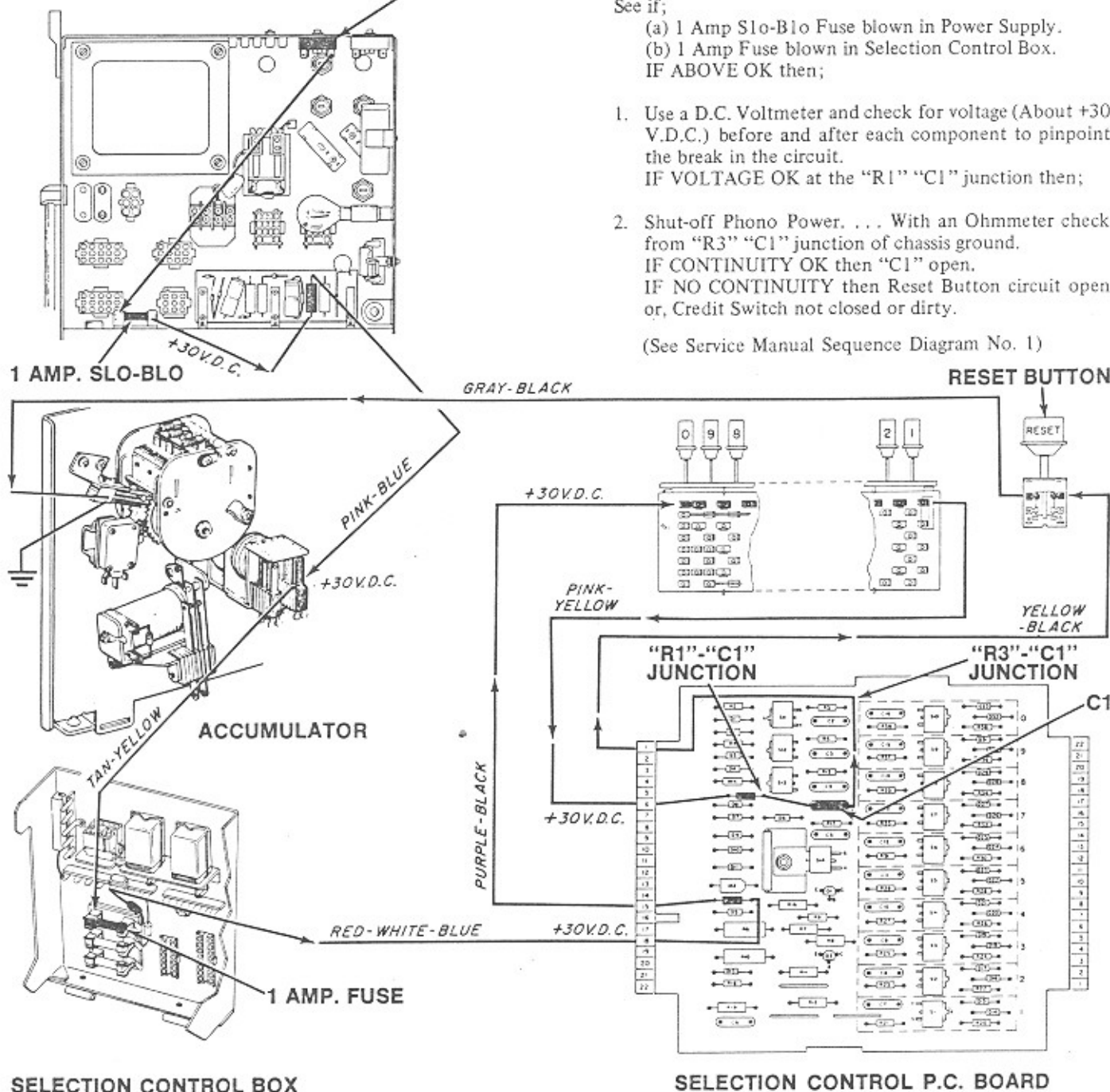
## PROCEDURE:

See if;

- 1 Amp Slo-Blo Fuse blown in Power Supply.
  - 1 Amp Fuse blown in Selection Control Box.
- IF ABOVE OK then;

1. Use a D.C. Voltmeter and check for voltage (About +30 V.D.C.) before and after each component to pinpoint the break in the circuit.  
IF VOLTAGE OK at the "R1" "C1" junction then;
2. Shut-off Phono Power. . . . With an Ohmmeter check from "R3" "C1" junction of chassis ground.  
IF CONTINUITY OK then "C1" open.  
IF NO CONTINUITY then Reset Button circuit open or, Credit Switch not closed or dirty.

(See Service Manual Sequence Diagram No. 1)





**PROBLEM: 1st DIGIT LITE NOT ON WHEN "1" PRESSED FOR 1st DIGIT. TOP RECORD SIDE DOES NOT REGISTER ON SELECTOR.**  
**1st DIGIT LITE OK WHEN "2" PRESSED FOR 1st DIGIT**  
**... TOP RECORD SIDE REGISTERS ON SELECTOR.**

**PROBLEM AREA:** Selection Control Box.

**A Reminder:** Always check for loose plug connections.

### PROCEDURE:

1. Depress No. 1 for 1st Digit. . . . Using a D.C. Voltmeter connect the plus (+) test lead to the + 32 V.D.C. junction as shown. . . . Probe the Anode of SCR "S11" with the minus (-) test lead.

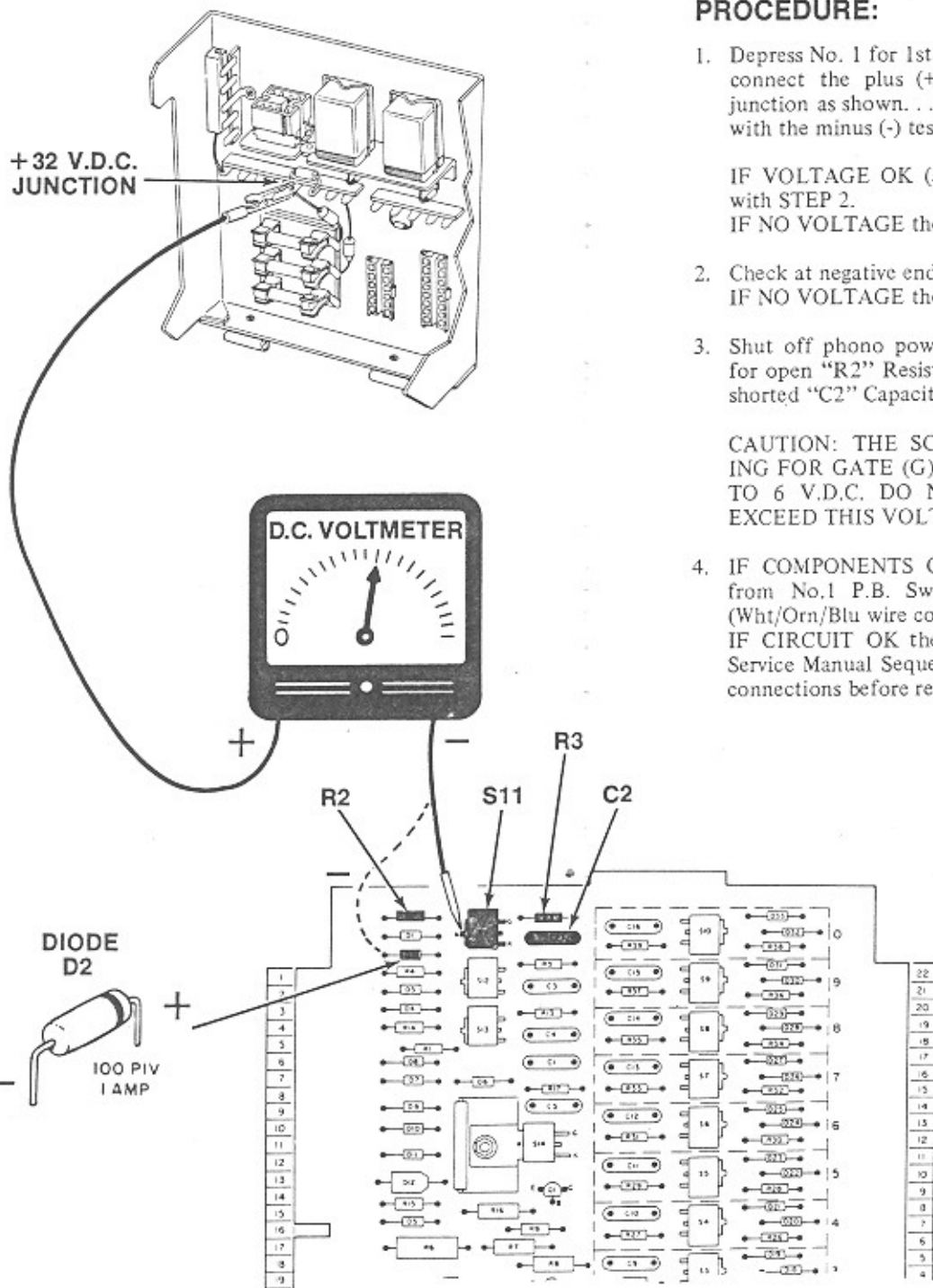
IF VOLTAGE OK (about + 30 V.D.C.) then proceed with STEP 2.

IF NO VOLTAGE then proceed with STEP 3.

2. Check at negative end of Diode "D2".  
IF NO VOLTAGE then "D2" is open.
3. Shut off phono power. . . . With an Ohmmeter check for open "R2" Resistor or, shorted "R3" Resistor or, shorted "C2" Capacitor.

**CAUTION:** THE SCR REVERSE VOLTAGE RATING FOR GATE (G) TO CATHODE (K) IS LIMITED TO 6 V.D.C. DO NOT USE OHMMETERS THAT EXCEED THIS VOLTAGE.

4. IF COMPONENTS OK then check for open circuit from No.1 P.B. Switch to Selection Control Box. (Wht/Orn/Blu wire connection)  
IF CIRCUIT OK then SCR "S11" is defective. (See Service Manual Sequence Diagram No. 2) Check solder connections before replacing components.





**PROBLEM: 1st DIGIT LITE NOT ON WHEN "2" PRESSED FOR 1st DIGIT. BOTTOM RECORD SIDE DOES NOT REGISTER ON SELECTOR.**  
**1st DIGIT LITE OK WHEN "1" PRESSED FOR 1st DIGIT ... TOP RECORD SIDE REGISTERS ON SELECTOR.**

**PROBLEM AREA:** Selection Control Box.

**A Reminder:** Always check for loose plug connections.

### PROCEDURE:

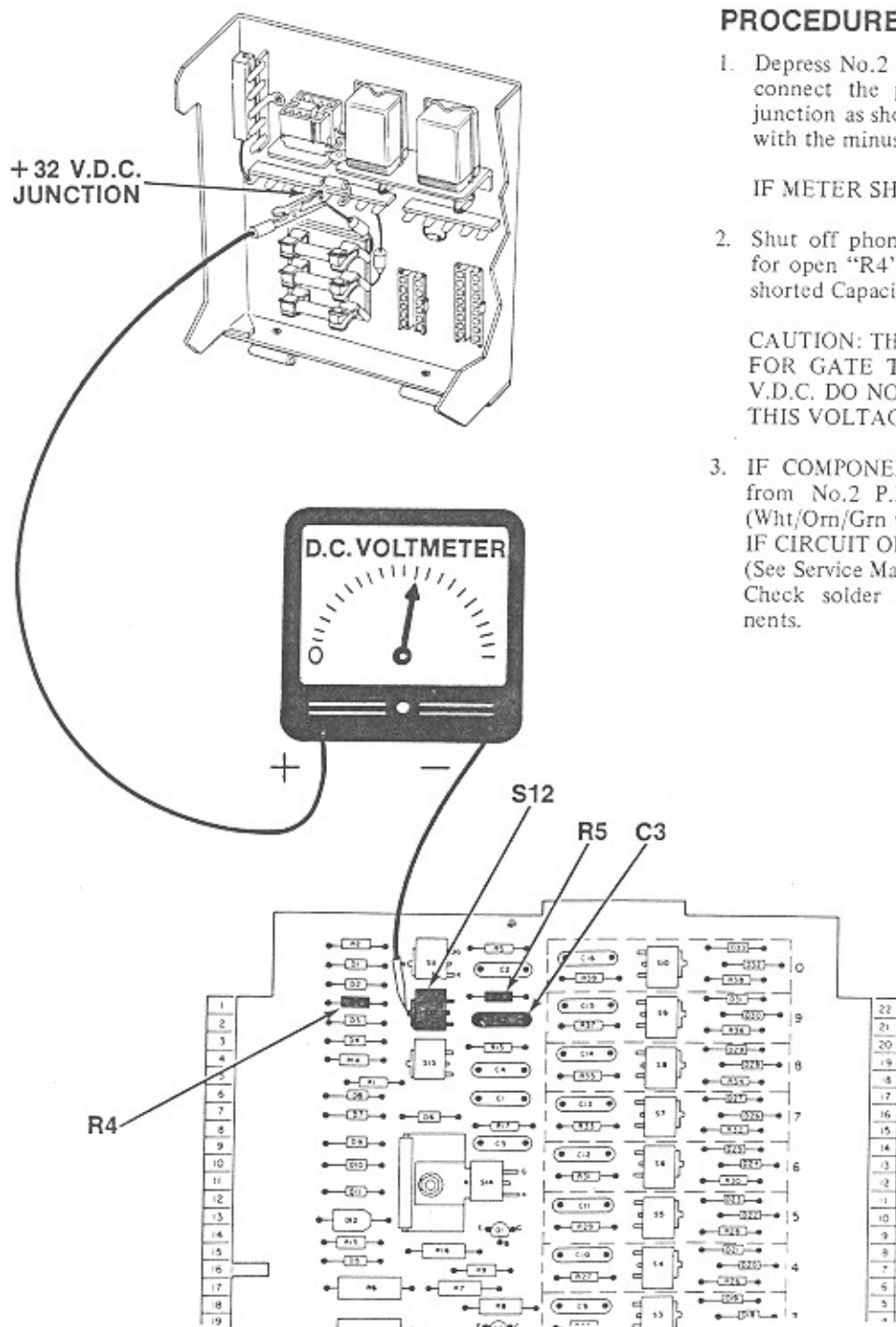
1. Depress No.2 for 1st Digit. ... Using a D.C. Voltmeter connect the plus (+) test lead to the + 32 V.D.C. junction as shown. ... Probe the Anode of SCR "S12" with the minus (-) test lead.

IF METER SHOWS NO READING then;

2. Shut off phono power. ... With an Ohmmeter check for open "R4" Resistor or, shorted Resistor "R5" or, shorted Capacitor "C3".

**CAUTION:** THE SCR REVERSE VOLTAGE RATING FOR GATE TO CATHODE (K) IS LIMITED TO 6 V.D.C. DO NOT USE OHMMETERS THAT EXCEED THIS VOLTAGE.

3. IF COMPONENTS OK then check for open circuit from No.2 P.B. Switch to Selection Control Box. (Wht/Orn/Grn wire connection)  
 IF CIRCUIT OK, then SCR "S12" is defective.  
 (See Service Manual Sequence Diagram No. 2)  
 Check solder connections before replacing components.







**PROBLEM: 1st DIGIT LITE DOES NOT TURN ON WHEN 1st DIGIT NUMBER PRESSED . . . ALL SELECTIONS REGISTER ON SELECTOR.**

**PROBLEM AREA:** Signal Lite Housing, Selection Control Box.

**A Reminder:** Always check for loose plug connections.

## PROCEDURE:

See if;

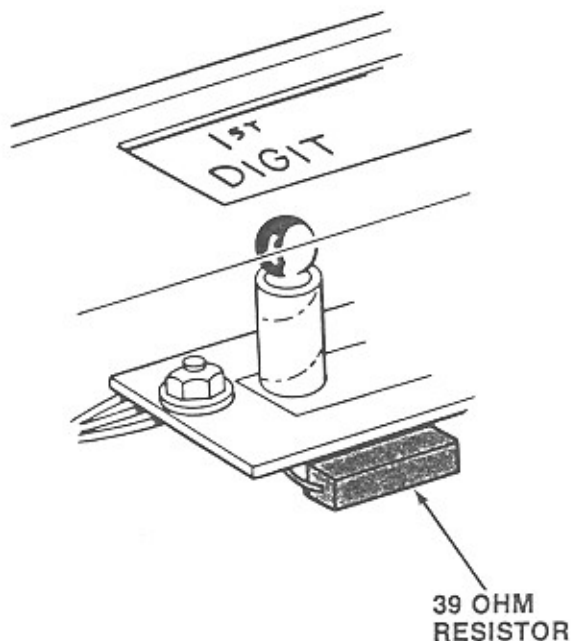
- (a) 1st Digit Number pressed GIVES DIM 2ND DIGIT LITE; . . . 2nd Digit Number pressed TURNS OFF 2ND DIGIT LITE.

If the above effect is produced, then the 1 AMP FUSE in the circuit is blown.  
IF FUSE OK, then see if;

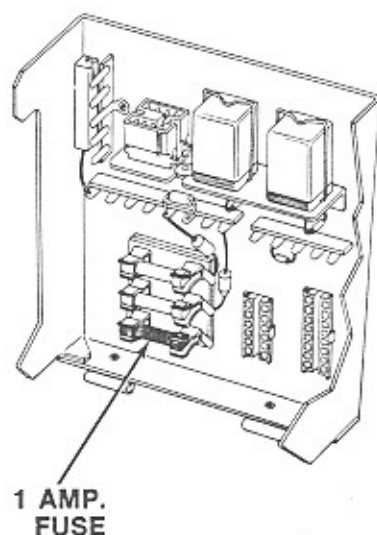
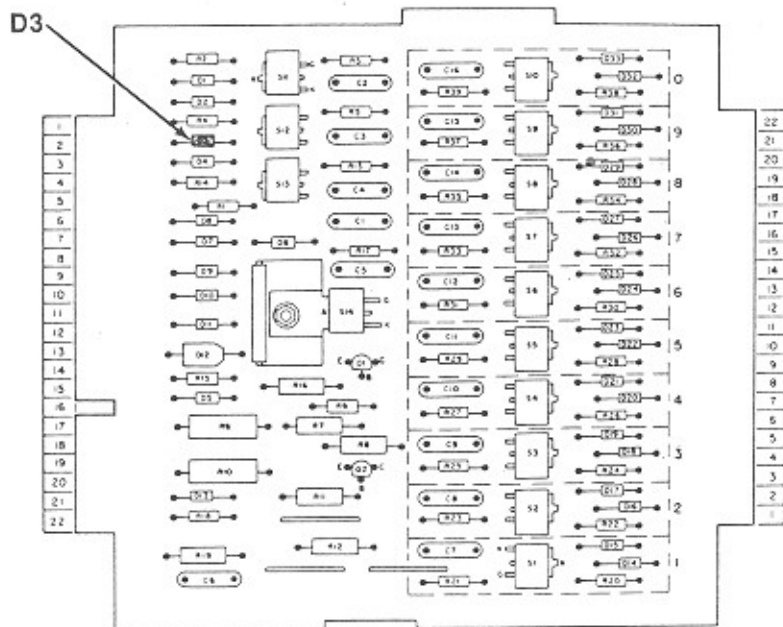
- (b) Lamp burned out.  
(c) 39 Ohm Resistor open.  
(d) Diode "D3" open.

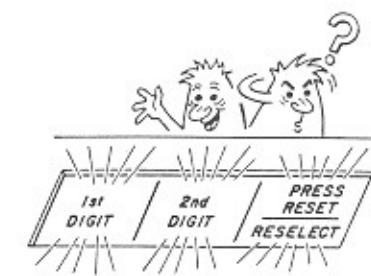
Check solder connections before replacing Diode.

### SIGNAL LITE HOUSING



### SELECTION CONTROL BOX

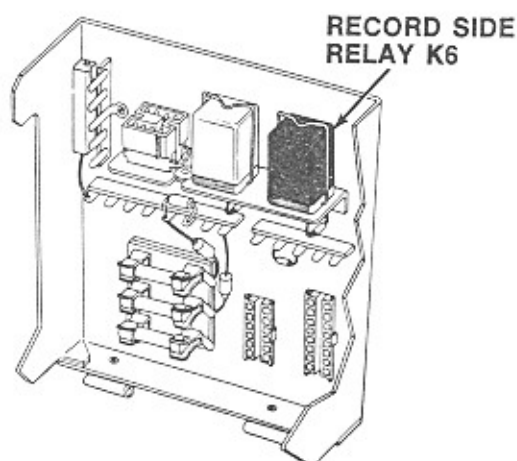




**PROBLEM: RESET AND RESELECT LITES TURN ON WHEN 2nd DIGIT NUMBERS "3" THRU "0" PRESSED . . . SOME SELECTIONS THEN REGISTER TOP SIDE OF RECORD WHEN BOTTOM SELECTED.**

**PROBLEM AREA:** Selection Control Box.

**A Reminder:** Always check for loose plug connections.

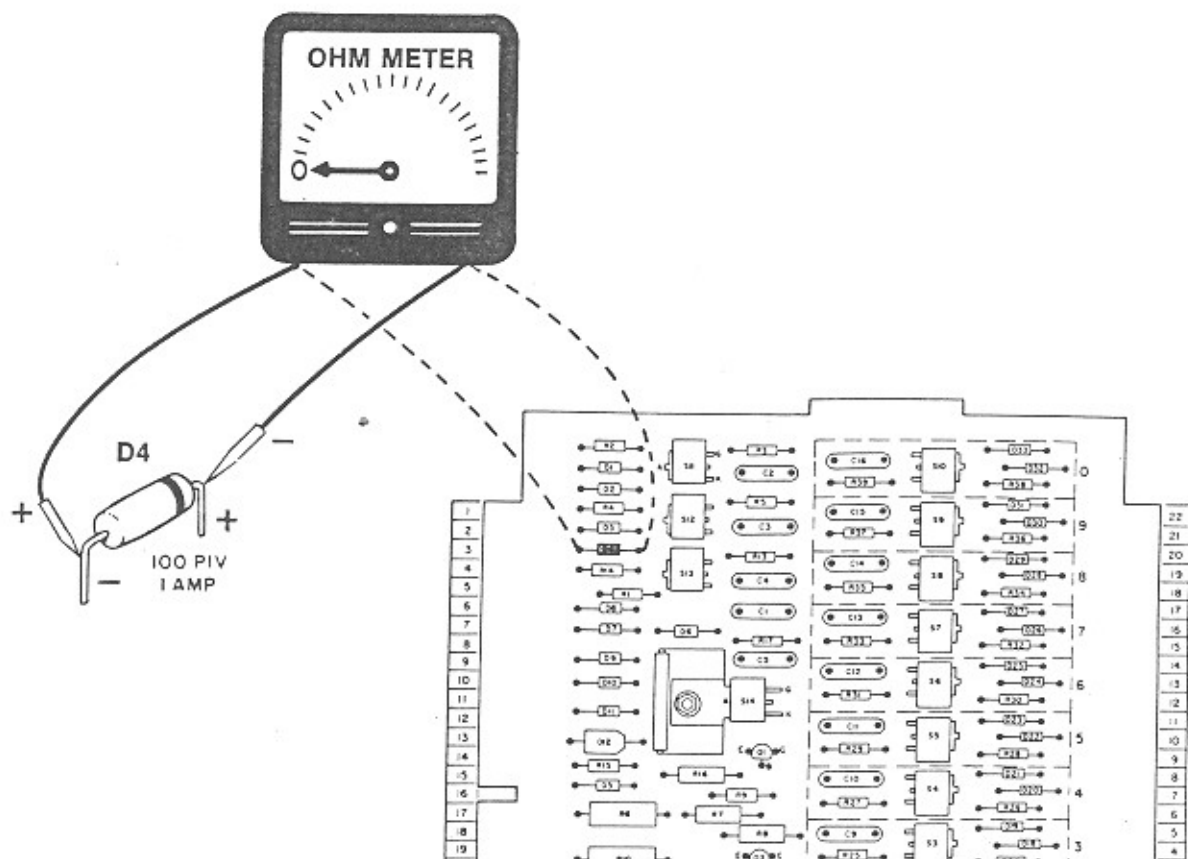


## PROCEDURE:

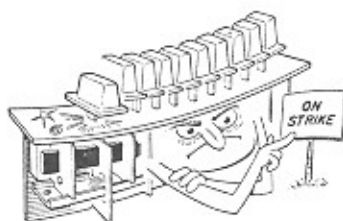
To pinpoint the defective circuit proceed as follows:

1. For the 1st Digit press button number "2".
2. For the 2nd Digit press button number "1". IF RECORD SIDE RELAY K6 ENERGIZES on the 2nd Digit number (and it should not), then check for open Diode "D4".
3. Use an Ohmmeter. Shut off Phono Power. . . Connect the plus (+) test lead to the negative (-) side of the Diode, . . . the minus (-) test lead to the plus (+) side.

IF METER SHOWS NO READING then Diode is open.







# PROBLEM: REGISTERS WRONG SELECTIONS ON THE SELECTOR MOST OF THE TIME.

PROBLEM AREA: Selection Control Box.

A Reminder: Always check for loose plug connections.

## PROCEDURE:

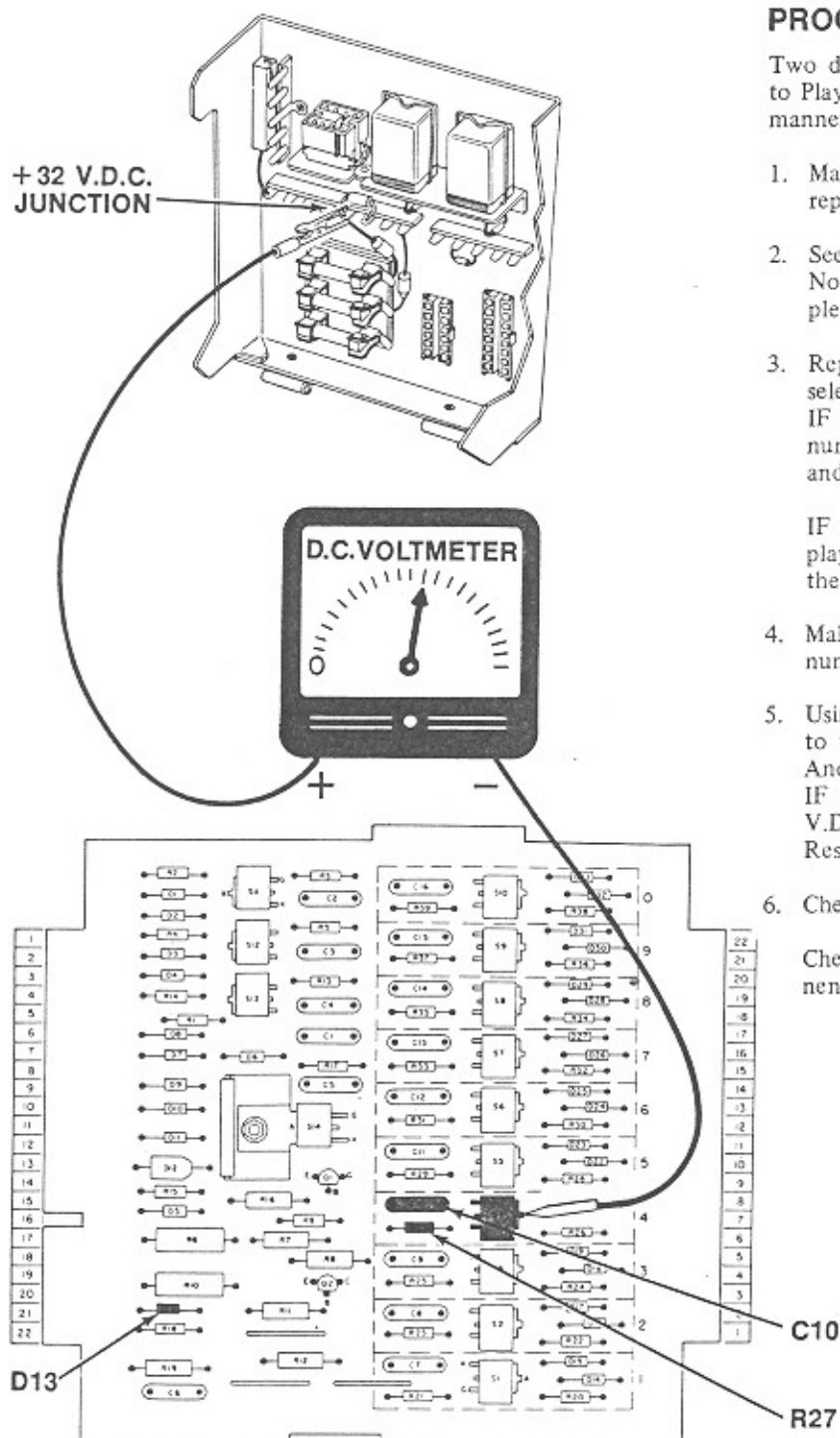
Two different circuit problems can cause Wrong Records to Play. The problem area can be isolated in the following manner:

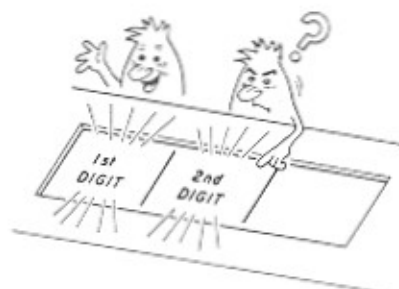
1. Make any selection. . . If correct record plays then repeat procedure until wrong record plays.
2. See Record Magazine or Indicator Lites for "Record Now Playing". . . Note number of 2nd Digit. Example: 2nd Digit number is "4".
3. Repeat STEP 1 several times omitting 2nd Digit selections with "4".  
IF "4" CONTINUES TO APPEAR as the 2nd Digit number with other random selections, then do STEP 4 and STEP 5 only.

IF ON RANDOM SELECTIONS the wrong record plays and the 2nd Digit number is always the same as the 3rd Digit number, then do STEP 6 only.

4. Make any selection omitting "4" for the 2nd digit number.
5. Using a D.C. Voltmeter, connect the plus (+) test lead to the +32 V.D.C. junction as shown. . . Probe the Anode of "S4" with the minus (-) test lead.  
IF THE METER SHOWS A READING (about +30 V.D.C.) then "S4" has been turned on because Resistor "R27" or Capacitor "C10" is open.
6. Check for open Diode "D13"

Check solder connections before replacing components.





**PROBLEM:** 1st DIGIT NUMBER PRESSED, 1st AND 2nd DIGIT LITES TURN ON . . . 2nd DIGIT NUMBER PRESSED STARTS MECHANISM AND REGISTERS WRONG SELECTION.

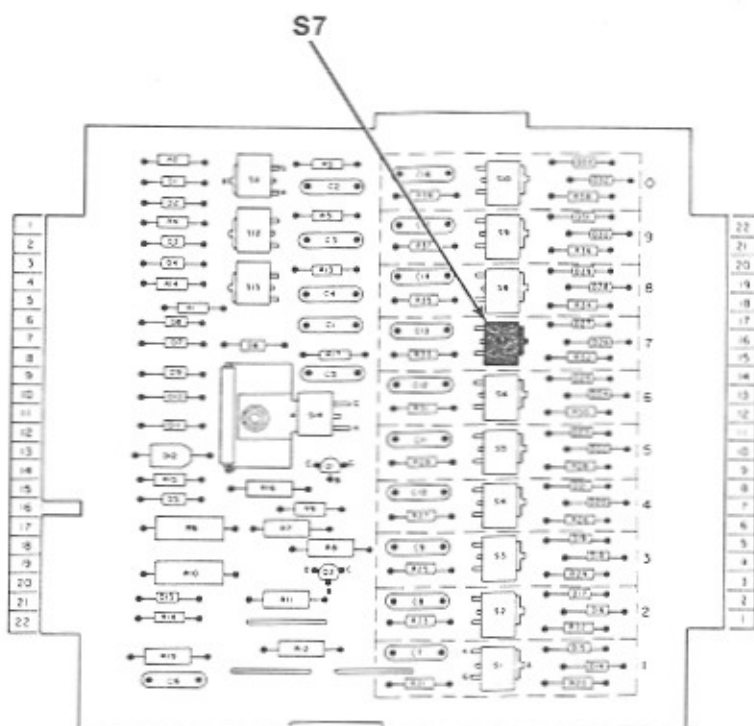
**PROBLEM AREA:** Selection Control Box.

**A Reminder:** Always check for loose plug connections.

**NOTE:** There are 10 SCR'S used in the 2nd Digit circuit. Each one is numbered. "S1" thru "S10" and represents 2nd Digit Selection from "1" thru (1) "0". SHOULD ONE OF THEM BE SHORTED, a wrong selection will result.

### PROCEDURE:

1. Make any selection. . . After wrong record is placed on turntable, see Record Magazine or Indicator Lites for "Record Now Playing."  
Note 2nd Digit Number, (as "7") and replace corresponding SCR (as "S7").



SELECTION CONTROL P.C. BOARD



# PROBLEM: REGISTERS BOTTOM SIDE OF RECORD WHEN TOP SIDE SELECTED

PROBLEM AREA: Selection Control Box.

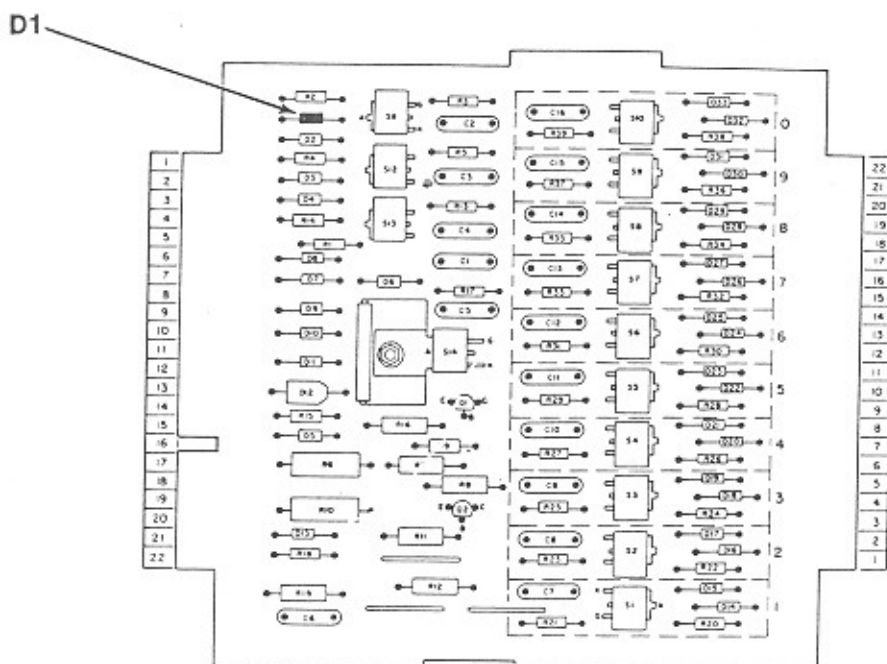
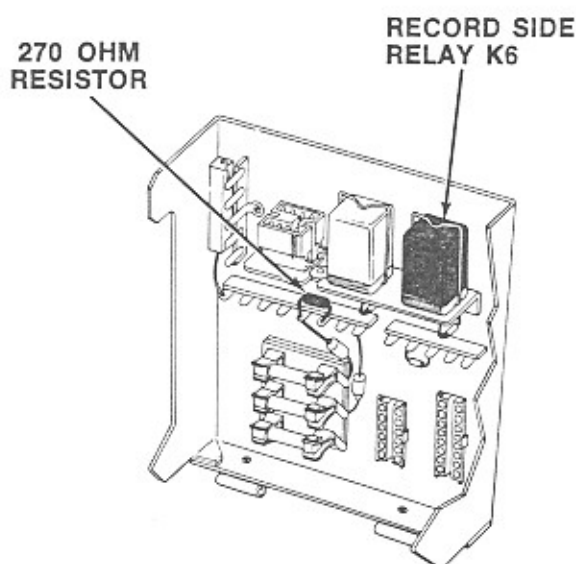
A Reminder: Always check for loose plug connections.

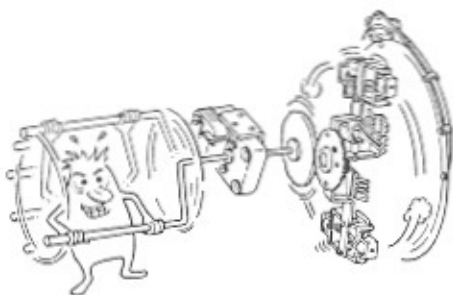
## PROCEDURE:

1. Press No.1 for 1st Digit number. . . Record Side Relay K6 should be energized. IF RELAY NOT ENERGIZED, see if Relay firmly seated. Interchange with Relay K7 to check if relay defective.

IF RELAY K6 STILL NOT ENERGIZED then;

2. Shut off phono power. . . With an Ohmmeter check for open "D1" Diode or, open 270 ohm resistor. (See Service Manual Sequence Diagram No.2)





**PROBLEM: FAILS TO REGISTER A SECTION OF RECORDS WITH THE SAME 2nd DIGIT NUMBER . . . 1st and 2nd DIGIT LITES ON . . . WRITE-IN CARRIAGE KEEPS SCANNING . . . ALL OTHER SELECTIONS OK.**

**PROBLEM AREA:** Selection Control Box, Selector.

**A Reminder:** Always check for loose plug connections.

### PROCEDURE:

1. After faulty record selection has been established, note the 2nd Digit number of the selection, as "0".
2. Shut off phono power. . . With an Ohmmeter check for continuity from the negative (-) side of Diode "D33", to the 1st rivet contact in any group of 10, on the selector write-in P.C. Board.

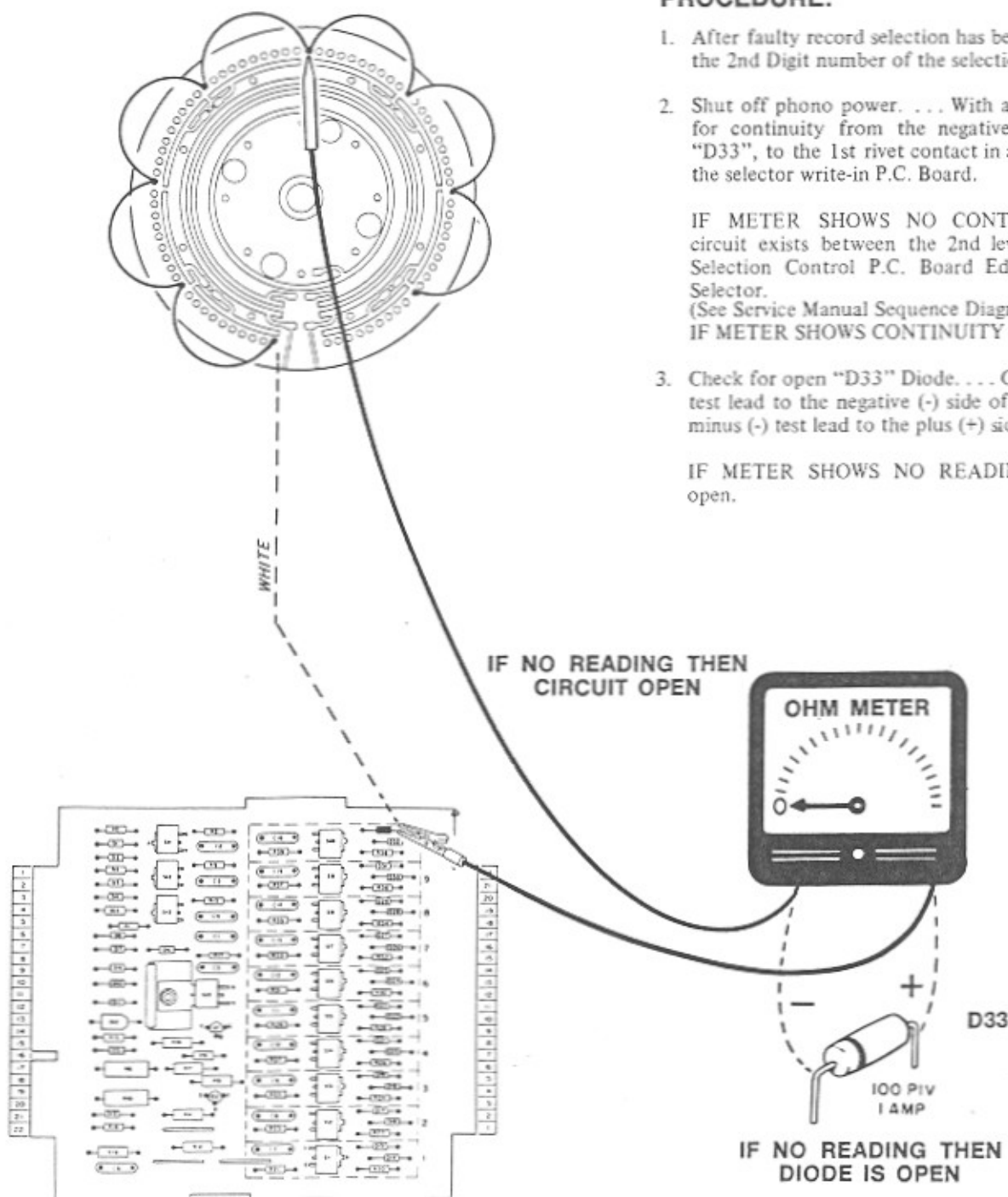
IF METER SHOWS NO CONTINUITY, an open circuit exists between the 2nd level of Pushbuttons Selection Control P.C. Board Edge Connectors and Selector.

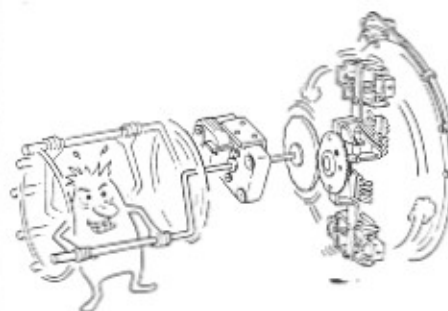
(See Service Manual Sequence Diagram No. 4).

IF METER SHOWS CONTINUITY then;

3. Check for open "D33" Diode. . . Connect the plus (+) test lead to the negative (-) side of the Diode, . . . the minus (-) test lead to the plus (+) side.

IF METER SHOWS NO READING then Diode is open.



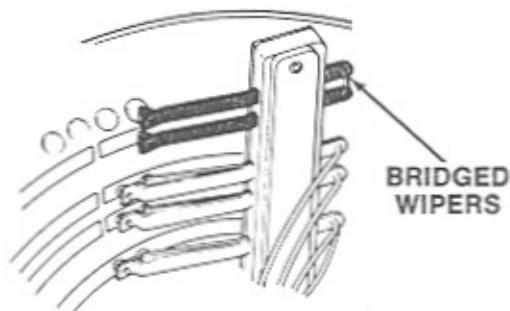


**PROBLEM: FAILS TO REGISTER ALL SELECTIONS ON THE SELECTOR ... WRITE-IN CARRIAGE KEEPS SCANNING.**

**PROBLEM AREA:** Receiver Jumper Plug, Stop Relay, Selector, Pushbutton Switches.

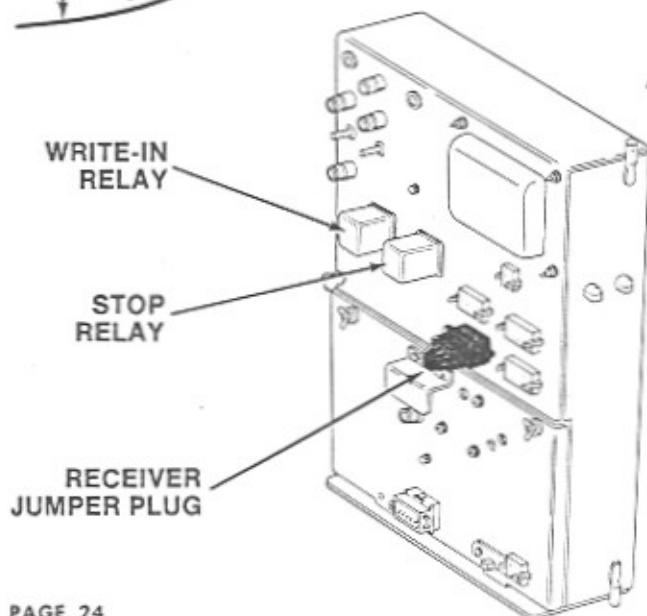
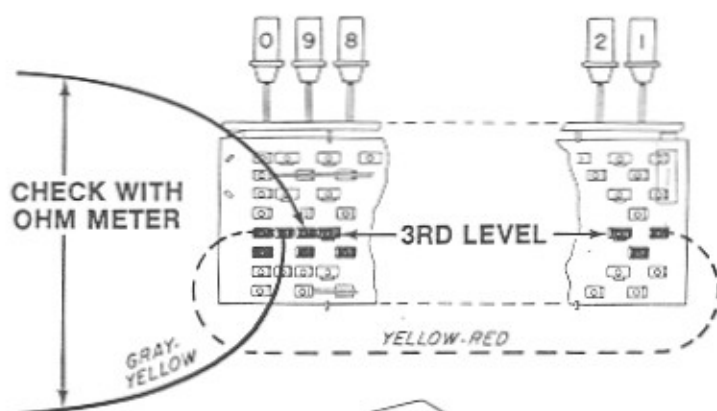
**A Reminder:** Always check for loose plug connections.

### SELECTOR

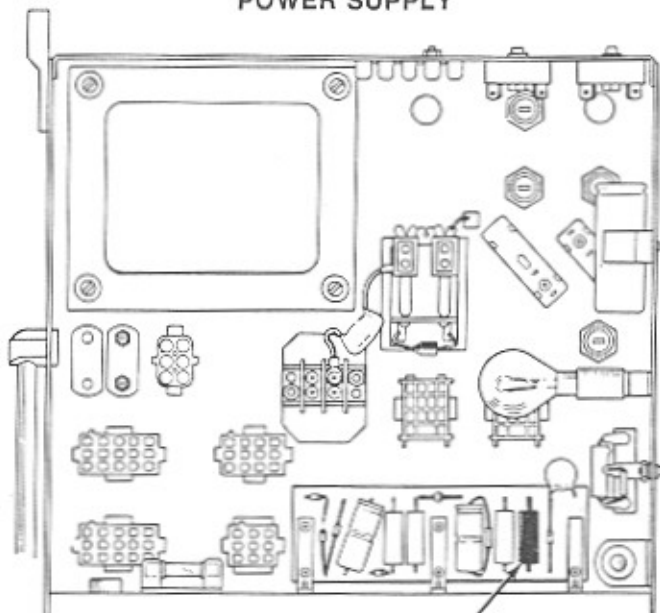


### PROCEDURE:

1. See if Receiver Jumper Plug seated firmly in socket.
2. See if Stop Relay seated firmly in socket. Interchange with Write-In Relay to Check if relay defective.
3. Check for open 120 Ohm Resistor in Stop Relay circuit. (See Service Manual Sequence Diagram No.6) IF OK then;
4. See if Bridged Wipers on Write-In Carriage exerting pressure on Selector Contacts and Segments. ... Clean P.C. Board.  
IF PROBLEM STILL NOT CORRECTED then;
5. With an Ohmmeter check the 3rd level of Pushbutton Switches from Gray/Yellow wire connection at "0" button number, to the preceding lug at "9" button number.  
IF NO READING then either a break in the Yellow/Red wire connection or open pushbutton switch.  
(See Service Manual Sequence Diagram No. 6)

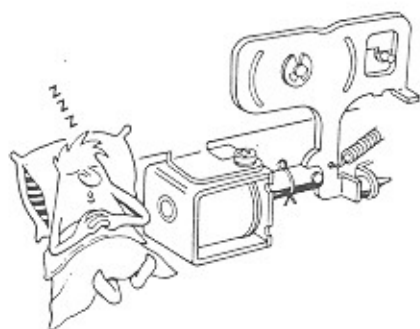


### POWER SUPPLY



120 OHM RESISTOR





**PROBLEM: 3rd DIGIT NUMBER BUTTON FAILS TO LATCH  
... 1st DIGIT LITE ON, 2nd DIGIT LITE OFF ...  
LOCKBAR SOLENOID NOT ENERGIZED.**

**PROBLEM AREA:** Selection Control Box.

**A Reminder:** Always check for loose plug connections.

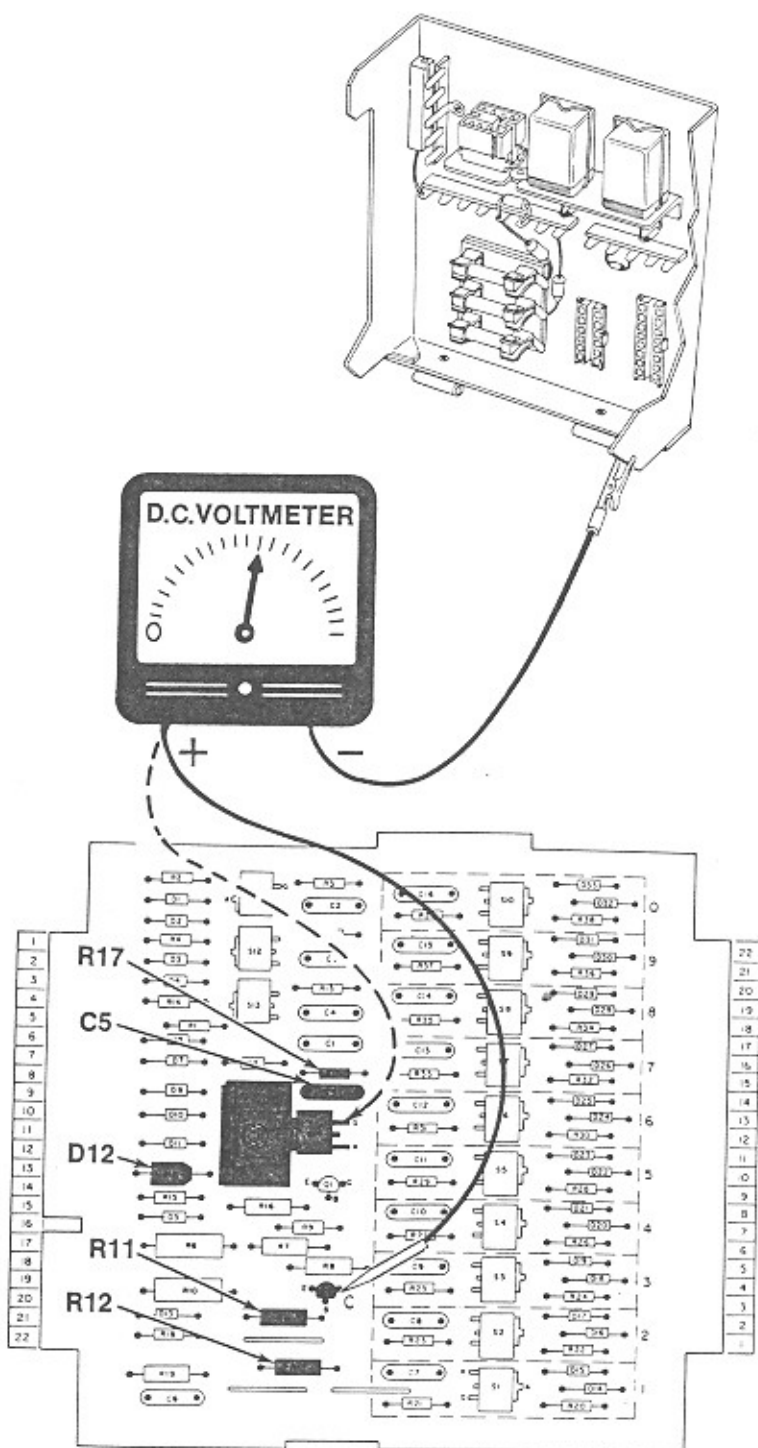
### PROCEDURE:

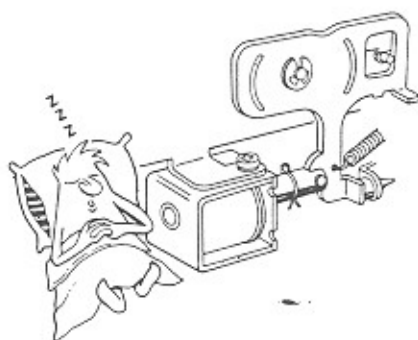
1. Move the Scan Switch to "Off". ... Press Number Button "1" twice. This establishes the 1st and 2nd Digit numbers of a selection.

2. By hand, pull-in Lockbar Solenoid Plunger and depress 3rd Digit Number.  
IF WRITE-IN CARRIAGE KEEPS SCANNING then see Trouble Shooting Guide No. 15

IF WRITE-IN CARRIAGE INDEXES AND MOVES SELECTOR LEVER INTO PLAY POSITION then proceed to next step.

3. With an Ohmmeter check for open or shorted; Resistors "R11", "R12", "R17", Capacitor "C5" and Diode "D12".  
IF COMPONENTS OK then;
4. Repeat STEP 1. ... Using a D.C. Voltmeter, connect the minus (-) test lead to the metal case of the Selection Control Box.
5. With the plus (+) test lead check voltage (about +30 V.D.C.) at Collector of "Q2".  
IF NO VOLTAGE then "Q2" defective.  
IF VOLTAGE OK then;
6. Check voltage at Gate of SCR "S14". IF VOLTAGE 3 VOLTS OR LESS then "S14" defective.  
(See Service Manual Sequence Diagram No.4)





**PROBLEM: 3rd DIGIT NUMBER BUTTON FAILS TO LATCH  
... 1st DIGIT LITE ON, 2nd DIGIT LITE OFF ...  
LOCKBAR SOLENOID NOT ENERGIZED.**

**PROBLEM AREA:** Selection Control Box.

**A Reminder:** Always check for loose plug connections.

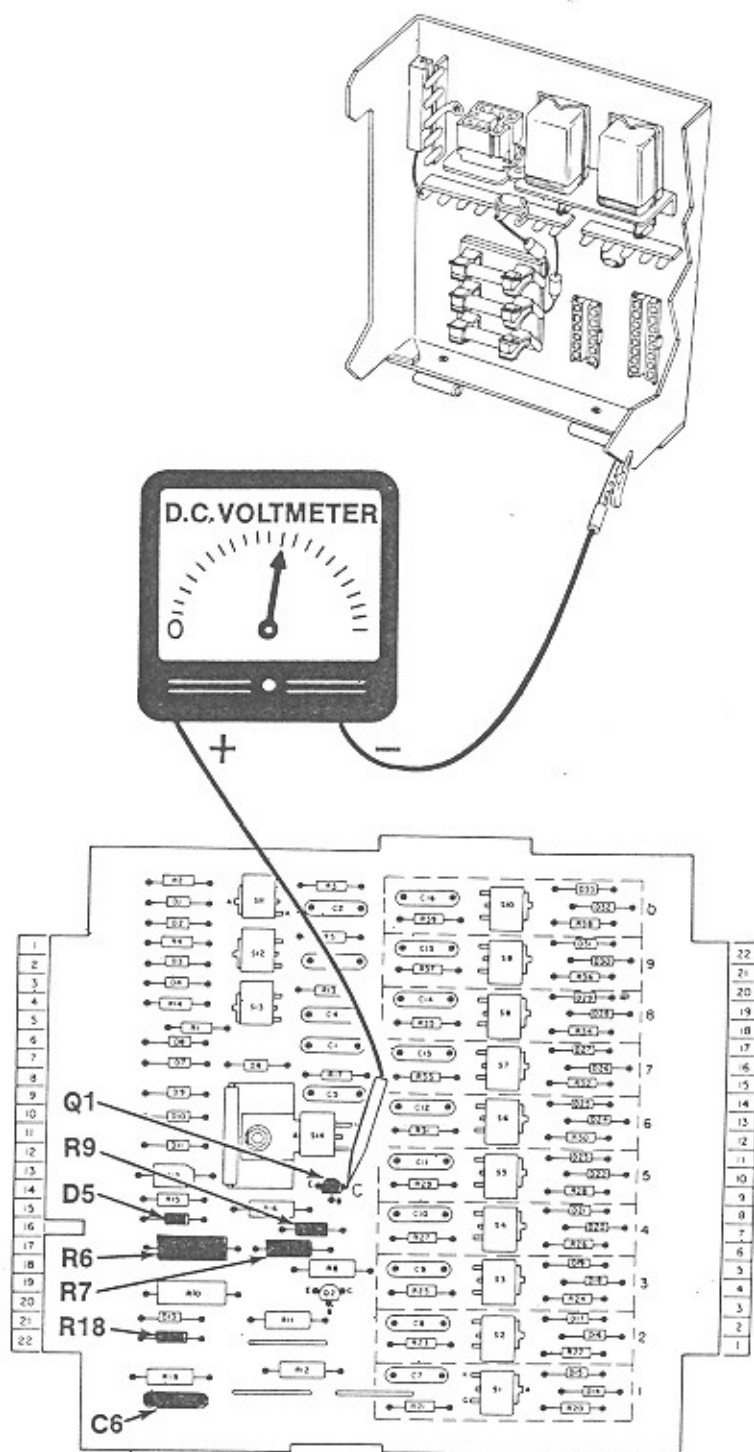
### PROCEDURE:

1. Move Scan Switch to "Off". . . . Press Number Button "1" twice. This establishes the 1st and 2nd Digit of a selection.
2. By hand, pull-in Lockbar Solenoid and depress 3rd Digit Number.  
IF WRITE-IN CARRIAGE INDEXES AND MOVES SELECTOR LEVER INTO PLAY POSITION, then see Trouble Shooting Guide No. 14

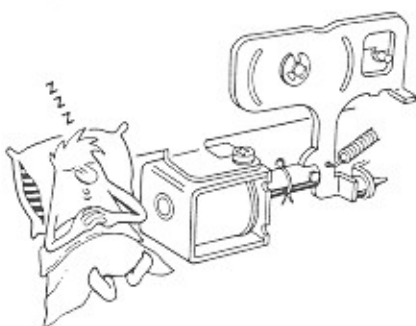
IF WRITE-IN CARRIAGE KEEPS SCANNING then proceed to next step.

3. With an Ohmmeter check for open or shorted; Resistors "R6", "R7", "R9", "R18", Capacitor "C6" and Diode "D5".  
IF COMPONENTS OK then;
4. Repeat STEP 1. . . . Using a D.C. Voltmeter, connect the minus (-) test lead to the metal case of the Selection Control Box.
5. With the plus (+) test lead check voltage (about +30 V.D.C.) at Collector of "Q1". IF NO VOLTAGE then "Q1" defective.

IF VOLTAGE OK, then check for break in 2nd Level Pushbutton Switch circuit.  
(See Service Manual Sequence Diagram No. 4)







## TROUBLE SHOOTING GUIDE

# 16



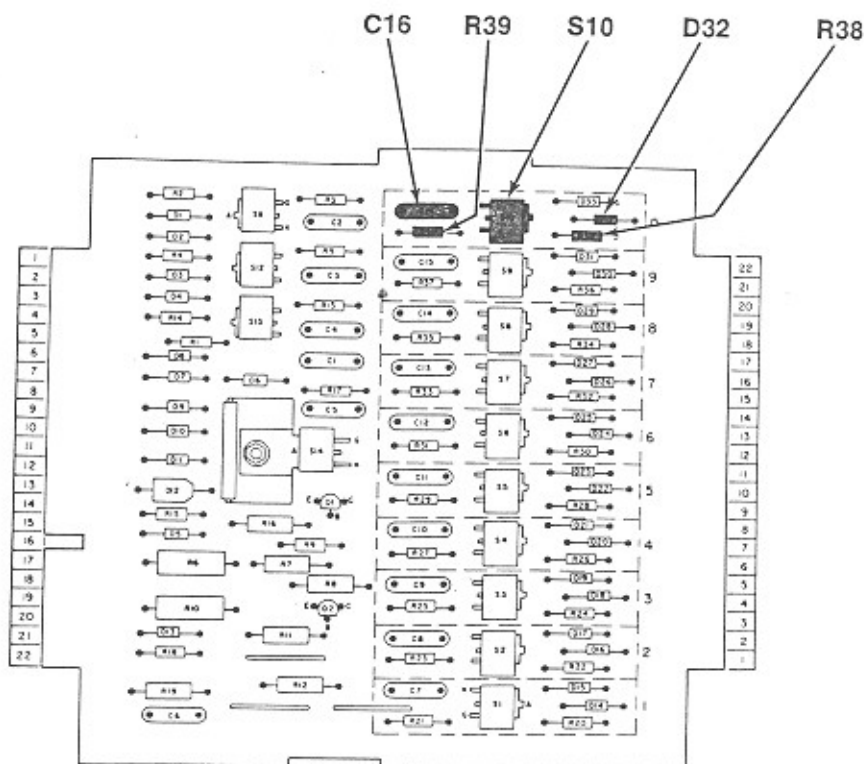
**PROBLEM: FAILS TO REGISTER A SECTION OF RECORDS WITH THE SAME 2nd DIGIT NUMBER . . . 1st DIGIT LITE ON, 2nd DIGIT LITE OFF . . . WRITE-IN CARRIAGE DOES NOT SCAN . . . ALL OTHER SELECTIONS OK.**

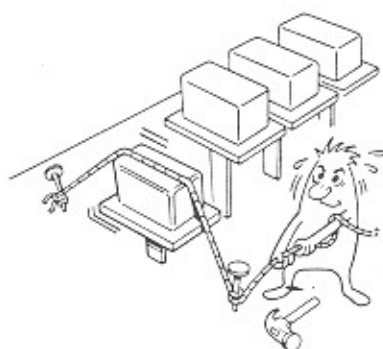
**PROBLEM AREA:** Selection Control Box.

**A Reminder:** Always check for loose plug connections.

### PROCEDURE:

1. After failing 2nd Digit Number has been established, as Number "0", shut off Phono Power.
2. With an Ohmmeter check for open Resistor "R38" or, shorted "R39" or, shorted Capacitor "C16" or, open Diode "D32".  
IF COMPONENTS OK then;
3. Check for break in White/Black/Red wire connection from 2nd Level of P.B. Switches.  
IF CIRCUIT OK then SCR "S10" defective.  
(See Service Manual Sequence Diagram No. 4)





**PROBLEM: 3rd DIGIT NUMBER BUTTON FAILS TO LATCH  
... 1st DIGIT LITE ON, 2nd DIGIT LITE OFF ...  
LOCKBAR SOLENOID NOT ENERGIZED.**

**PROBLEM AREA:** Selection Control Box, Pushbutton Switches.

**A Reminder:** Always check for loose plug connections.

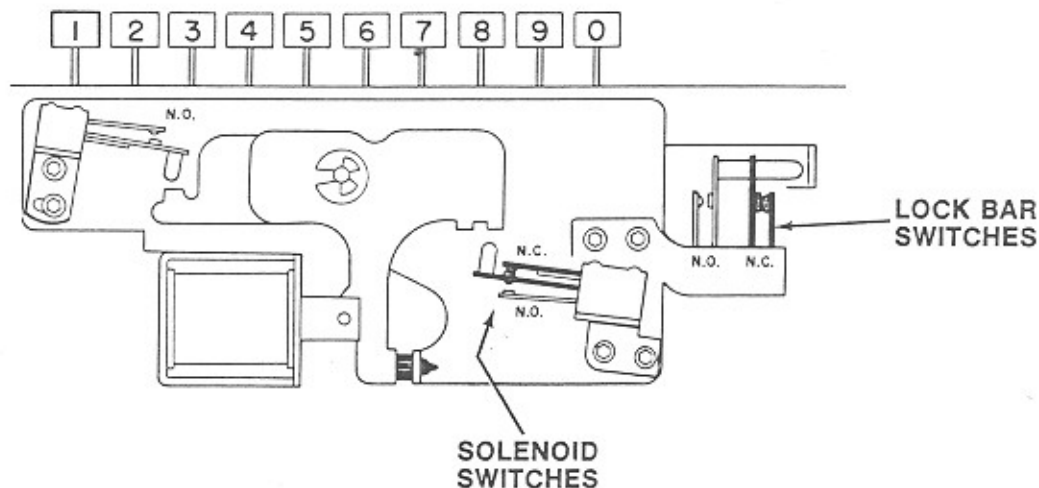
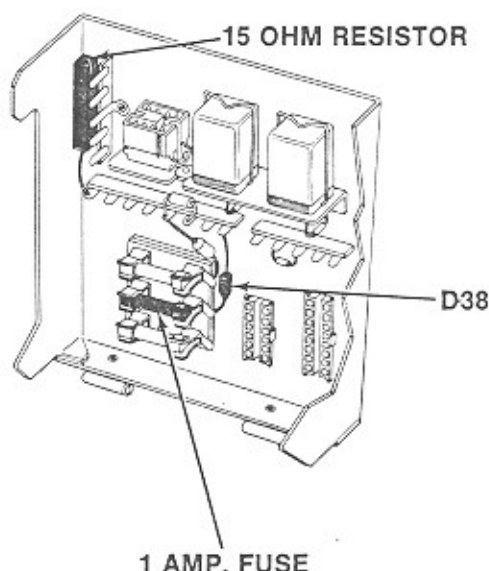
### PROCEDURE:

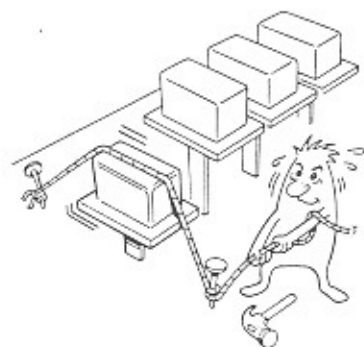
1. Make any selection, ... IF LOCKBAR SOLENOID IS NOT ENERGIZED, check for blown 1 Amp Fuse in the Selection Control Box.  
If fuse replaced and CONTINUES TO BLOW, then Diode "D38" is shorted.

IF FUSE OK, then see if;

2. Normally closed Lockbar and Solenoid Switches are closed and clean.
3. 15 Ohm Resistor open.
4. Solenoid Push-On Connectors loose.

### SELECTION CONTROL BOX





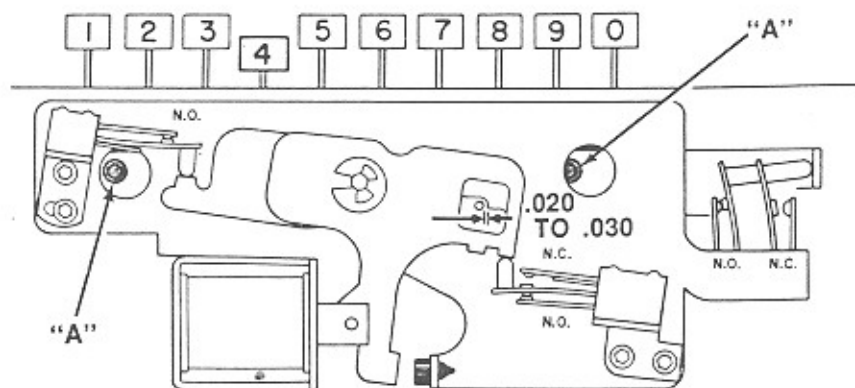
**PROBLEM: 3rd DIGIT NUMBER BUTTON FAILS TO LATCH ... 1st AND 2nd DIGIT LITES ON ... LOCKBAR SOLENOID ENERGIZED.**

**PROBLEM AREA: Pushbutton Lockbar Adjustment.**

**A Reminder: Always check for loose plug connections.**

### PROCEDURE:

IF SOLENOID ENERGIZED AND 3RD DIGIT NUMBER FAILS TO LATCH when pressed, adjust Lockbar Bracket as shown.



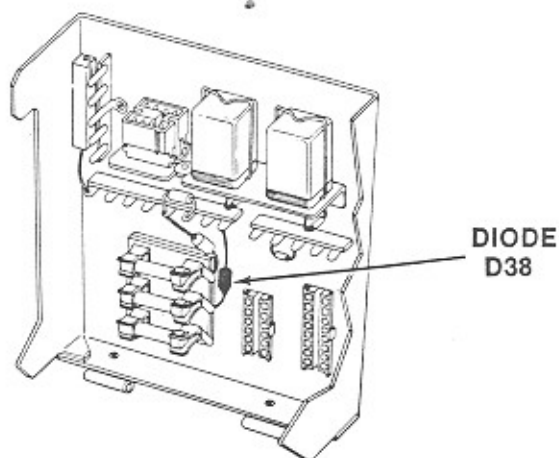
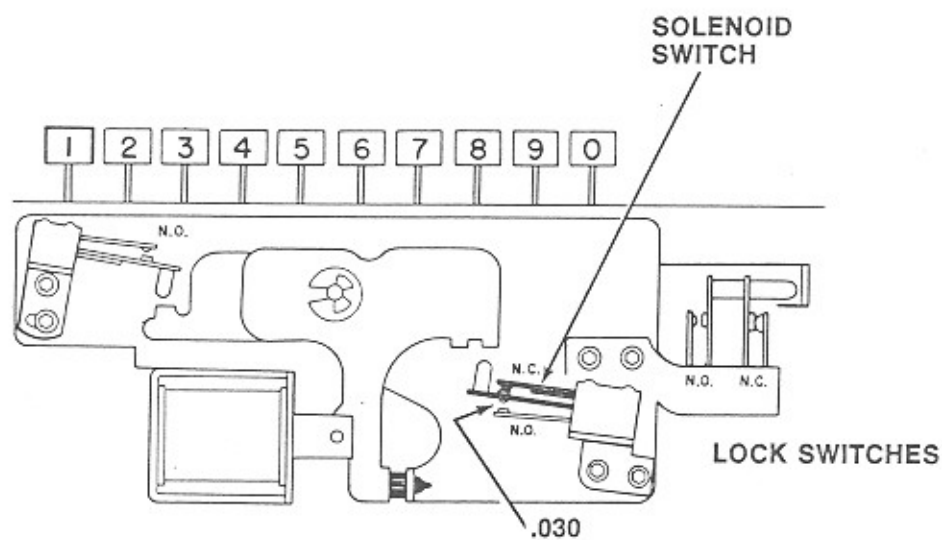
### PUSHBUTTON LOCKING ADJUSTMENT

With an energized solenoid and a pushbutton pressed in fully, the lockbar bracket should have approximately  $1/32"$  (.020-.030) overtravel between the rocker cam and chrome pin.

If adjustment necessary, loosen two screws "A" and adjust accordingly.

**PROBLEM: BUZZING LOCKBAR SOLENOID.****PROBLEM AREA:** Selection Control Box, Solenoid Switch.**A Reminder:** Always check for loose plug connections.**PROCEDURE:**

1. Dirty or open Solenoid Switch. Clean or adjust
2. Open Diode "D38". Replace.





## TROUBLE SHOOTING GUIDE

# 20



**PROBLEM: WRONG NUMBER PRESSED FOR 1st DIGIT, RESET AND RESELECT LITES DO NOT WORK . . . WORKS OK WHEN WRONG 3rd DIGIT NUMBER PRESSED.**

**PROBLEM AREA:** Selection Control Box.

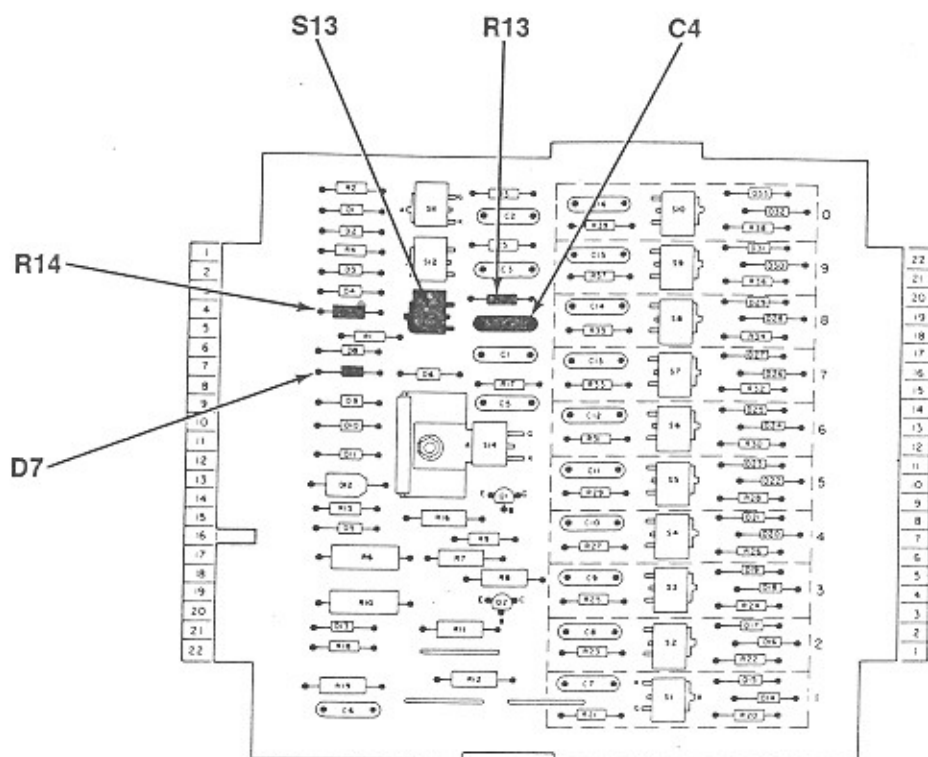
**A Reminder:** Always check for loose plug connections.

### PROCEDURE:

1. In the Lite Housing, check for defective lamps or, open 39 Ohm or, 22 Ohm Resistors or, break in Gray/White wire from 1st Digit Lite.  
IF ABOVE OK then;
2. On the Selection Control P.C. Board, check for open Resistor "R14" or, shorted Resistor "R13" or, shorted Capacitor "C4" or, open Diode "D7".

IF COMPONENTS OK then "S13" defective.

(See Service Manual Sequence Diagram No. 3)





**PROBLEM: WRONG NUMBER PRESSED FOR 3rd DIGIT, RESET AND RESELECT LITES DO NOT WORK . . . WORKS OK WHEN WRONG 1st DIGIT NUMBER PRESSED.**

**PROBLEM AREA:** Selection Control Box.

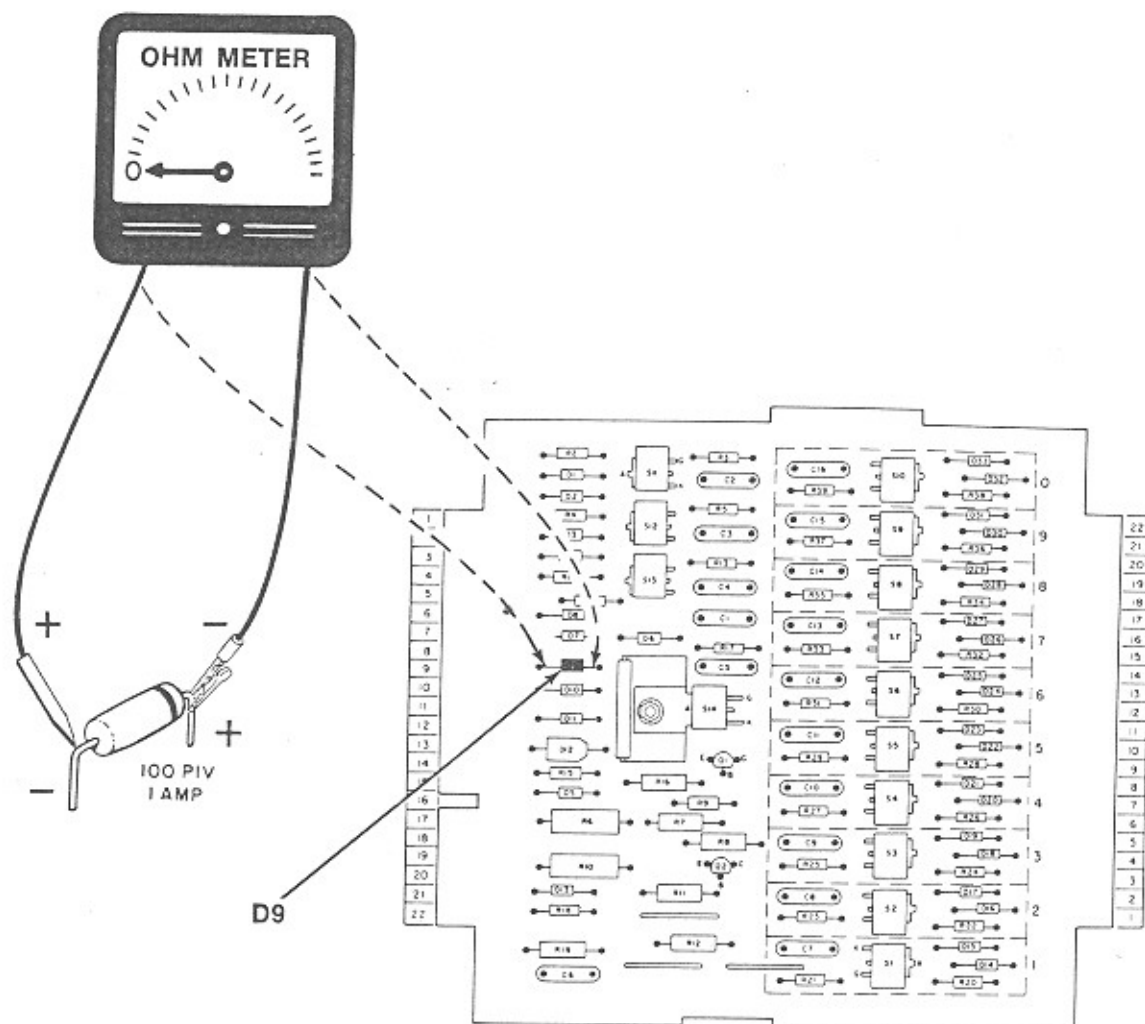
**A Reminder:** Always check for loose plug connections.

### PROCEDURE:

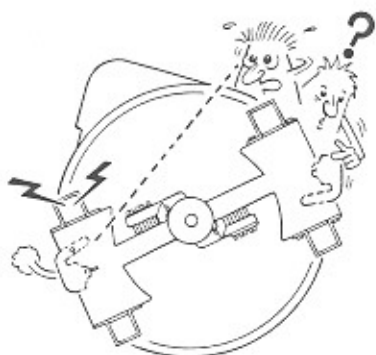
1. With an Ohmmeter check for open Diode "D9".

IF DIODE OK then check Pink/Green wire connection for break between the Bottom Level of P.B. Switches and Diode "D9".

See Service Manual Sequence Diagram No. 3.





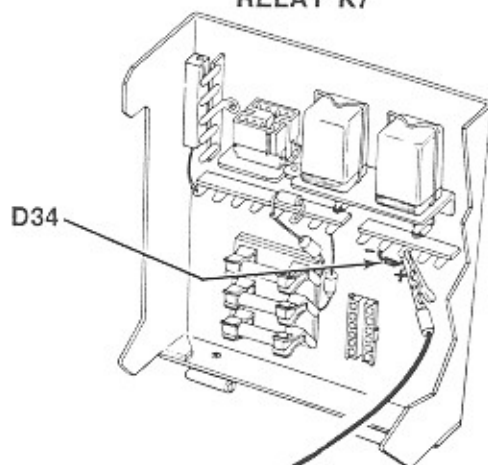


**PROBLEM: 3rd DIGIT NUMBERS "0" THRU "3" REGISTER SELECTIONS OK, BUT NUMBERS "4" THRU "7" REGISTER SELECTIONS ON WRONG SECTOR OF SELECTOR . . . WRONG SELECTIONS RESULT.**

**PROBLEM AREA:** Selection Control Box, Pushbutton Switches.

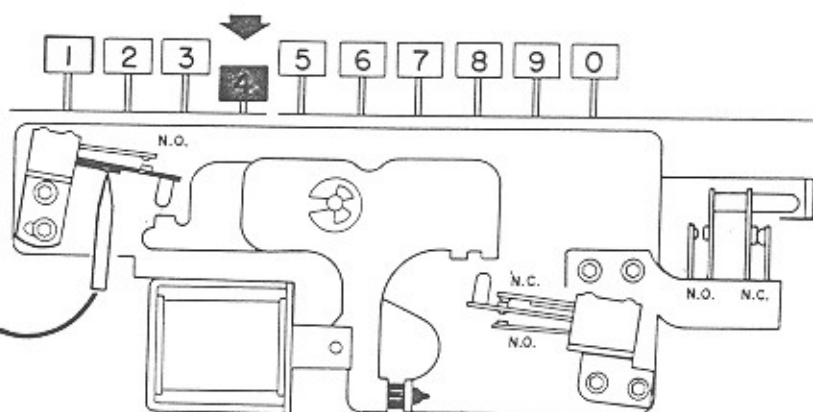
**A Reminder:** Always check for loose plug connections.

### DUAL CARRIAGE RELAY K7

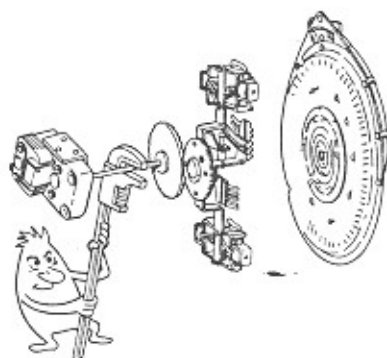


### PROCEDURE:

1. Disconnect Search Motor plug. . . . Make any selection that ends with 3rd Digit "4". Dual Carriage Relay K7 should be energized.  
IF RELAY NOT ENERGIZED, see if Relay firmly seated, Interchange with Relay K6 to check if Relay defective.
2. Using a A.C. Voltmeter, connect the minus (-) test lead to the metal case of the Selection Control Box.
3. With the plus (+) test lead check for voltage (about 25 V.A.C.) at the negative side of Diode "D34".  
IF METER SHOWS VOLTAGE READING then probe the positive side of "D34".
4. IF NO VOLTAGE, then "D34" open.  
IF VOLTAGE OK then;
5. Shut off phono power. . . . Depress and hold No. 4 P.B. Switch. . . . With an Ohmmeter check from the Latch Switch (Purple/Orange) to the positive side of Diode "D34".  
IF NO READING then break in Bottom Level P.B. Switch Circuit. (See Service Manual Sequence Diagram No. 5)







**PROBLEM: 3rd DIGIT NUMBER LATCHES ON ALL SELECTIONS, SEARCH MOTOR DOES NOT RUN.**

**A Reminder: Always check for loose plug connections.**

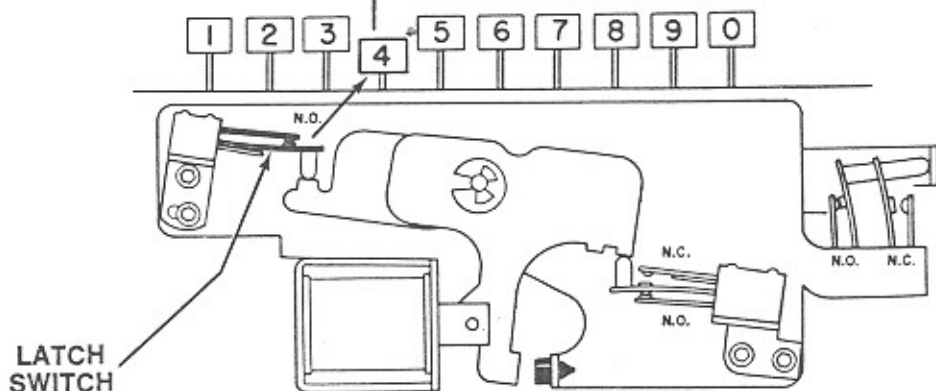
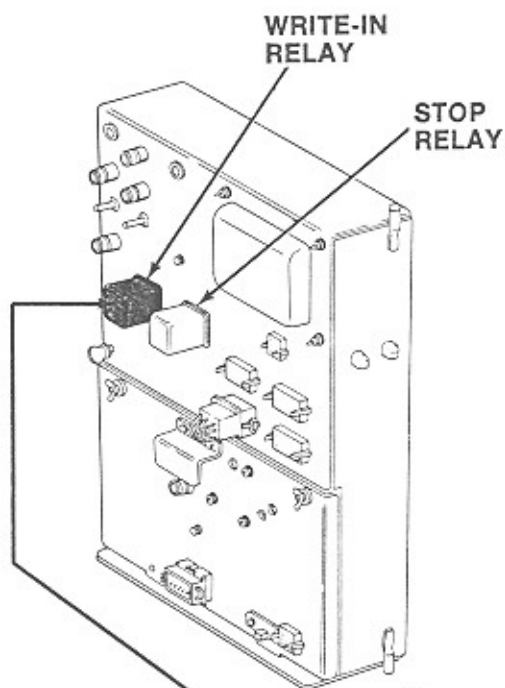
### PROCEDURE:

See if;

- Pushbutton Latch Switch closed. ... If closed, clean.
- Write-In Relay firmly seated in socket and energized.  
IF NOT ENERGIZED interchange with Stop Relay to see if relay defective.
- Search Motor plug connection loose.

IF SEARCH MOTOR STILL DOES NOT RUN,  
then there is a break in the Search Motor circuit.

See Service Manual Sequence Diagram No. 5 to locate cause.



**PROBLEM: WRITE-IN CARRIAGE TRIPS TWO SELECTION LEVERS INTO PLAY POSITION.**

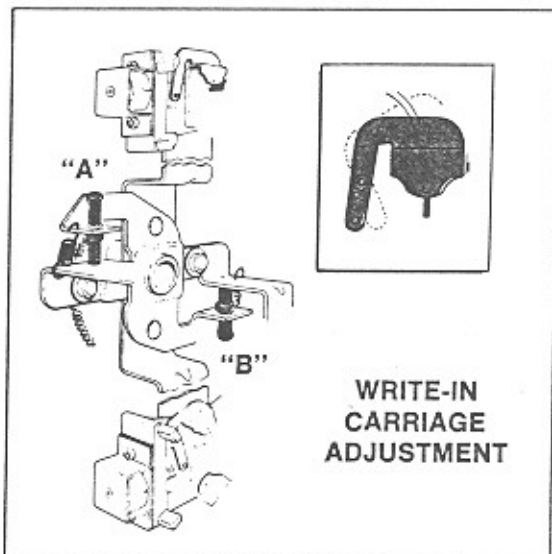
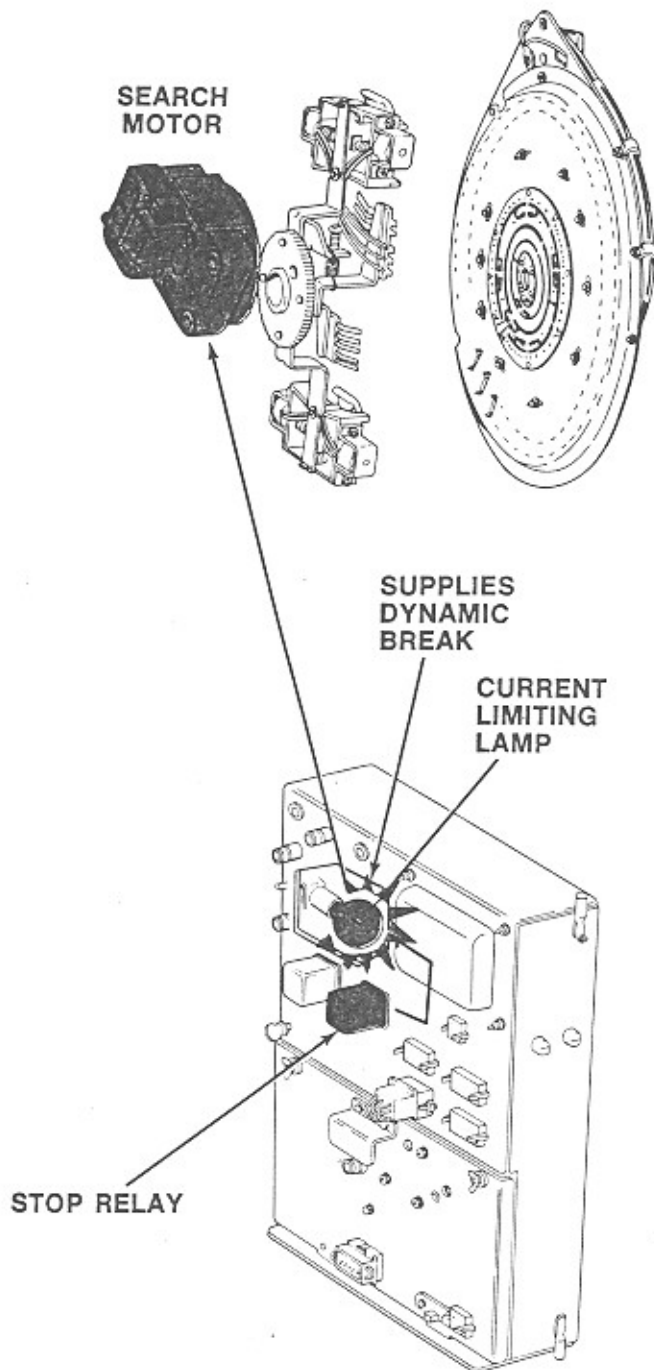
**PROBLEM AREA:** Defective Current Limiting Lamp, Write-In Carriage out of adjustment.

**A Reminder:** Always check for loose plug connections.

**PROCEDURE:**

1. Make any selection. Observe if Current Limiting Lamp flashes at point when Carriage rotation stops.  
IF NO FLASH, see if loose in socket before replacing lamp.  
IF LAMP OK, proceed to next step.
2. If phono 160 selection model, select record side 104.  
... Shut off mechanism power by moving Scan Switch to "off".
3. Observe the centering position of the carriage hammer in relation to the selector lever 104.
4. Move adjustment screw "A" to compensate for misalignment with respect to center.
5. Re-check adjustment by making additional selections as 114, 124 and 134.
6. Adjust the opposite carriage assembly with adjustment screw "B".

If phono 100 selection model, select record side 162.  
Re-check adjustment with selections 172 and 182.





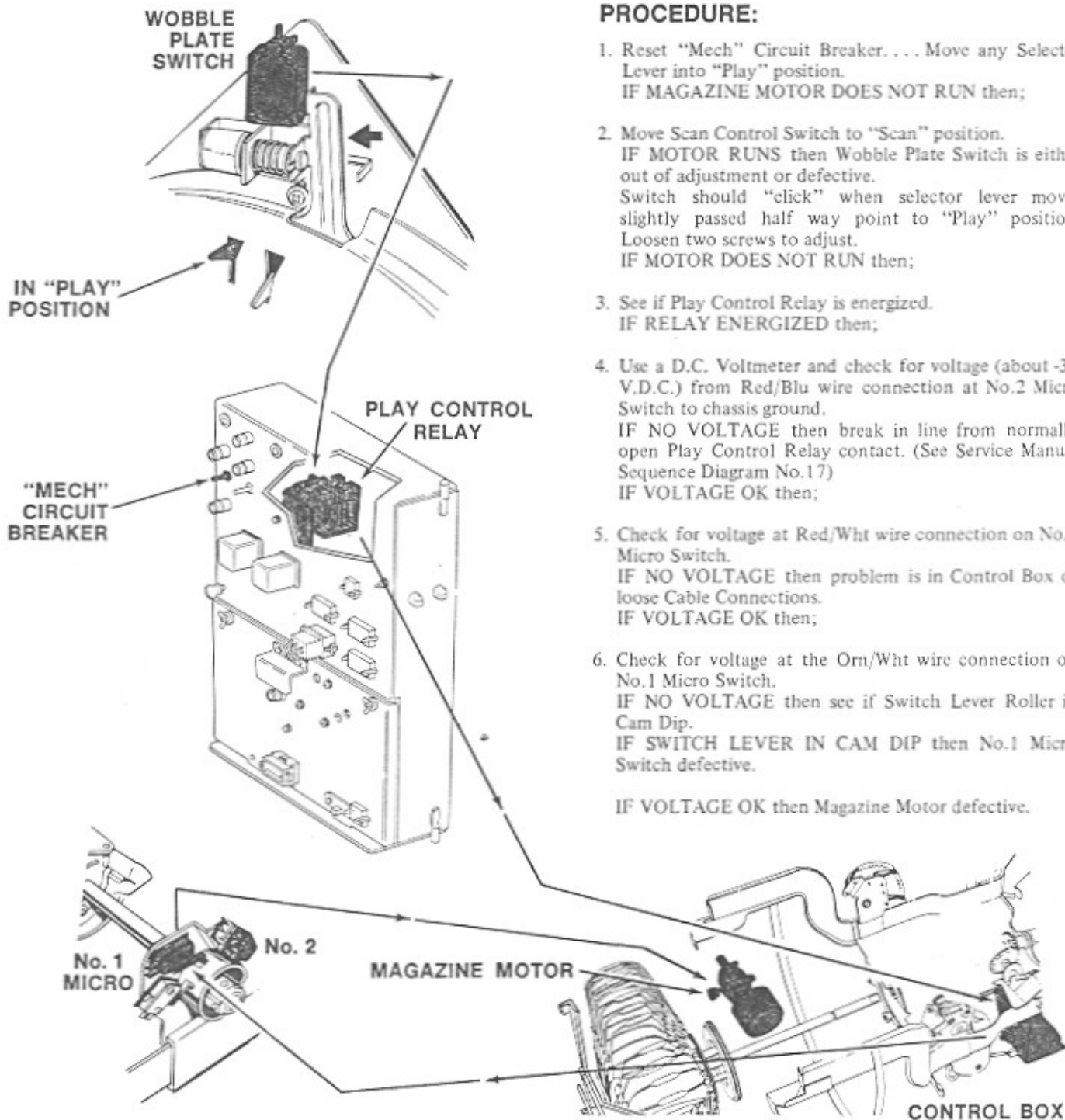
**PROBLEM: SELECTION OPERATION NORMAL BUT  
RECORD MAGAZINE DOES NOT ROTATE.**

**PROBLEM AREA:** "Mech" Circuit Breaker, Wobble Plate Switch, Play Control Relay, Control Box, No.1 Micro Switch, Magazine Motor.

**A Reminder:** Always check for loose wire connections.

**PROCEDURE:**

1. Reset "Mech" Circuit Breaker. . . Move any Selector Lever into "Play" position.  
IF MAGAZINE MOTOR DOES NOT RUN then;
2. Move Scan Control Switch to "Scan" position.  
IF MOTOR RUNS then Wobble Plate Switch is either out of adjustment or defective.  
Switch should "click" when selector lever moves slightly passed half way point to "Play" position.  
Loosen two screws to adjust.  
IF MOTOR DOES NOT RUN then;
3. See if Play Control Relay is energized.  
IF RELAY ENERGIZED then;
4. Use a D.C. Voltmeter and check for voltage (about -30 V.D.C.) from Red/Blu wire connection at No.2 Micro Switch to chassis ground.  
IF NO VOLTAGE then break in line from normally open Play Control Relay contact. (See Service Manual Sequence Diagram No.17)  
IF VOLTAGE OK then;
5. Check for voltage at Red/Wht wire connection on No.1 Micro Switch.  
IF NO VOLTAGE then problem is in Control Box or loose Cable Connections.  
IF VOLTAGE OK then;
6. Check for voltage at the Orn/Wht wire connection on No.1 Micro Switch.  
IF NO VOLTAGE then see if Switch Lever Roller in Cam Dip.  
IF SWITCH LEVER IN CAM DIP then No.1 Micro Switch defective.  
IF VOLTAGE OK then Magazine Motor defective.





**PROBLEM: MAGAZINE ROTATES, 2nd BANK OF INDICATOR LITES DO NOT FLASH, OR ERRATIC IN OPERATION.**

**PROBLEM AREA:** Transistor Mounting Bracket Assembly. P.C. Lite Board Wipers.

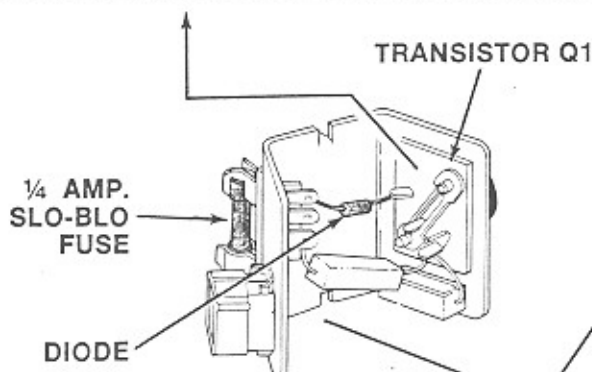
A Reminder: Always check for loose plug connections.

### PROCEDURE:

See if;

- ¼ Amp Slo-Blo Fuse blown.
- Diode open.
- Transistor Q1 defective.  
(See Service Manual Sequence Diagram 18.)
- If operation of lites erratic then P.C. Lite Board Wipers out of adjustment. Adjust as shown.

### LITE BOX

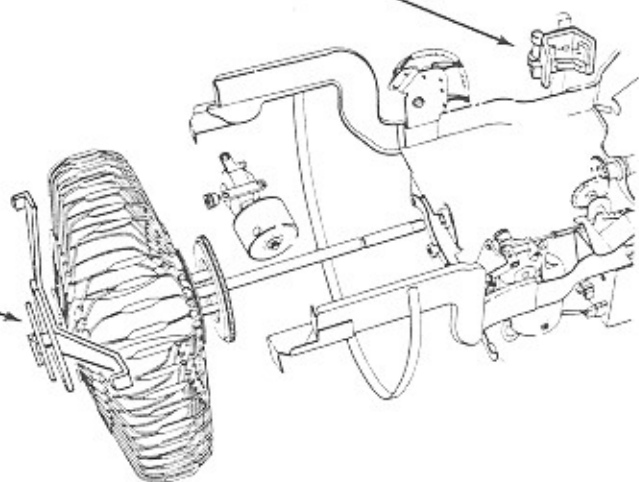
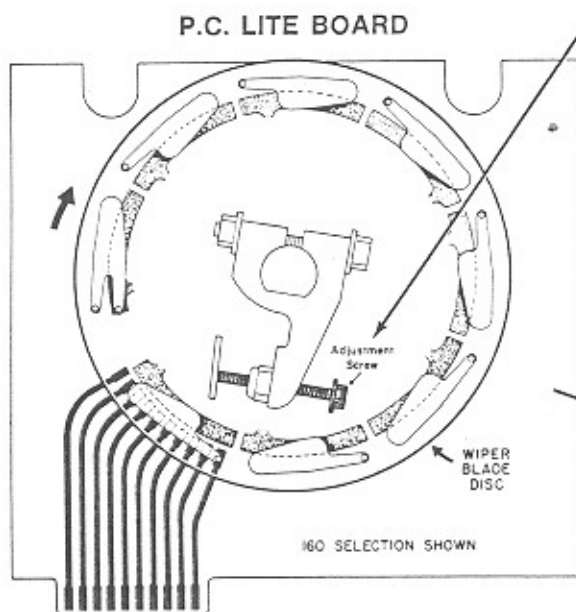


### SELECTION INDICATOR LITE ADJUSTMENT

Do not adjust wiper blade disc until Read-Out Carriage adjustment has been checked as outlined in Trouble Shooting Guide 29.

To adjust wiper blade disc, select record selection 100. When music cycle begins, remove record from turntable. Scan switch remains in "Operate" position.

Move wiper disc adjustment screw "in" or "out" to compensate for printed circuit wiper misalignment to lite selection 100.





**PROBLEM: MAGAZINE ROTATES, READ-OUT CARRIAGE FAILS TO FIND SELECTED RECORD AND CONTINUES TO SCAN.**

**PROBLEM AREA:** Selector, Carriage Wipers, Carriage Contacts, Control Box.

**A Reminder:** Always check for loose plug connections.

### PROCEDURE:

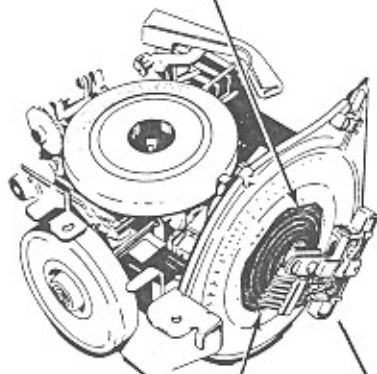
1. Clean outer P.C. Board with denatured alcohol and wipe a *LIGHT* film of petroleum jelly over the printed circuits.  
IF PROBLEM NOT CORRECTED then see if:

- (a) Carriage Wipers exerting pressure on Printed Circuits.
- (b) Interlock Trip Coil Contacts latched in a forward position.

IF FORWARD CONTACT NOT LATCHED then;

2. Clean Carriage Contacts.
  3. Check for loose Control Box Plug connections.
  4. Open 60 Ohm Resistor.
- See Service Manual Sequence Diagram No. 20

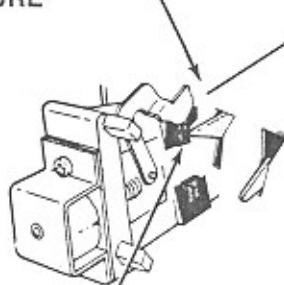
OUTER P.C. BOARD



READ-OUT  
CARRIAGE

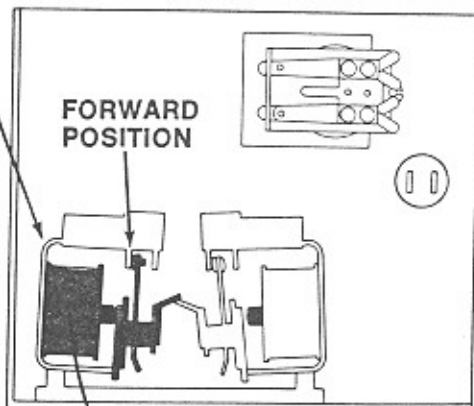
WIPERS MUST  
EXERT 20 TO 30  
GRAMS PRESSURE

CARRIAGE  
CONTACT



TRIP COIL

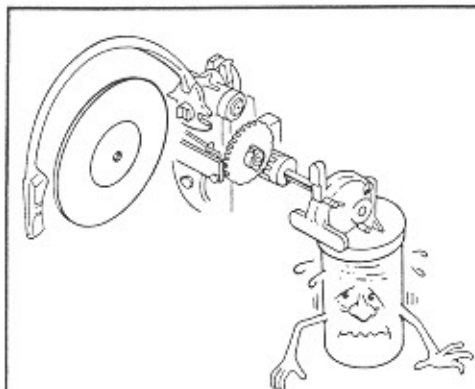
CONTROL BOX



FORWARD  
POSITION

60 OHM RESISTOR





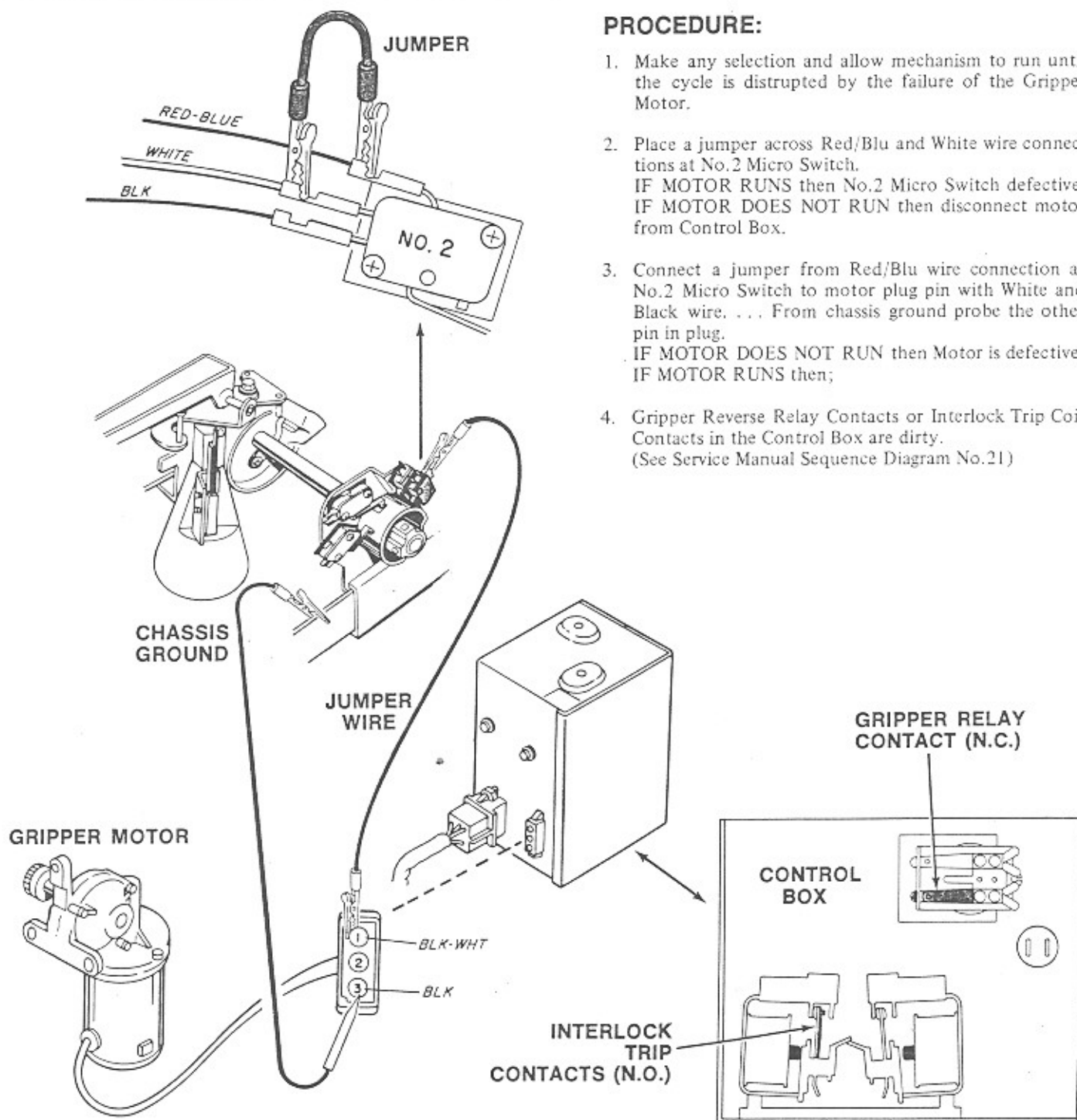
**PROBLEM: GRIPPER ARM OVER SELECTED RECORD, GRIPPER MOTOR DOES NOT RUN.**

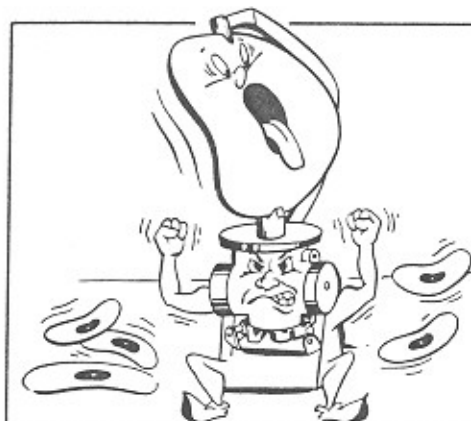
**PROBLEM AREA:** No.2 Micro Switch, Control Box Gripper Motor.

**A Reminder:** Always check for loose plug connection.

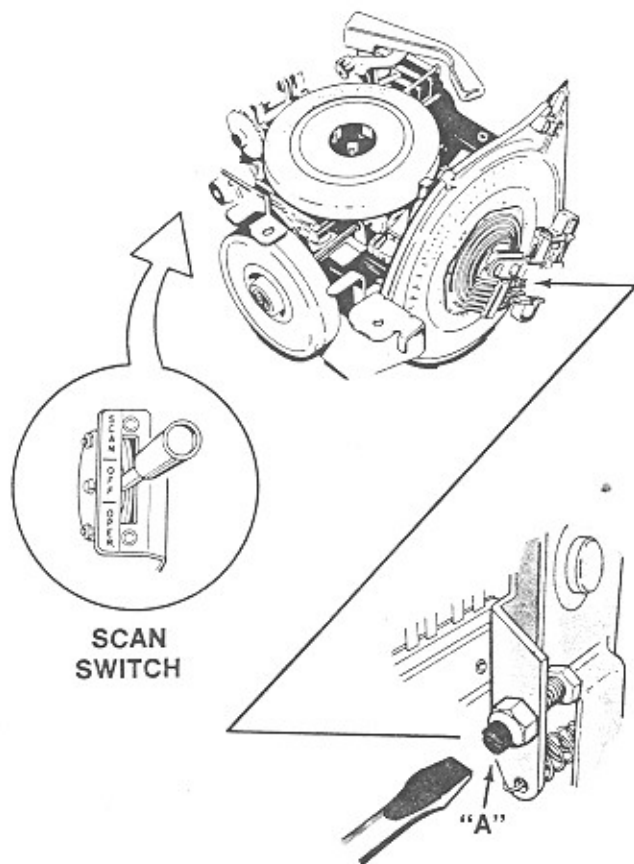
**PROCEDURE:**

1. Make any selection and allow mechanism to run until the cycle is disrupted by the failure of the Gripper Motor.
2. Place a jumper across Red/Blu and White wire connections at No.2 Micro Switch.  
IF MOTOR RUNS then No.2 Micro Switch defective.  
IF MOTOR DOES NOT RUN then disconnect motor from Control Box.
3. Connect a jumper from Red/Blu wire connection at No.2 Micro Switch to motor plug pin with White and Black wire. . . . From chassis ground probe the other pin in plug.  
IF MOTOR DOES NOT RUN then Motor is defective.  
IF MOTOR RUNS then;
4. Gripper Reverse Relay Contacts or Interlock Trip Coil Contacts in the Control Box are dirty.  
(See Service Manual Sequence Diagram No.21)



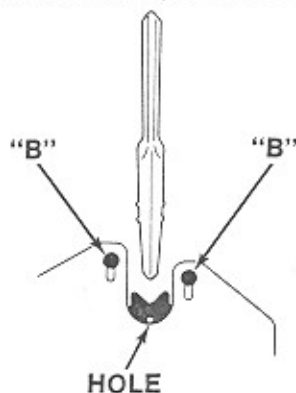
**PROBLEM: GRIPPER ARM DROPS RECORDS.**

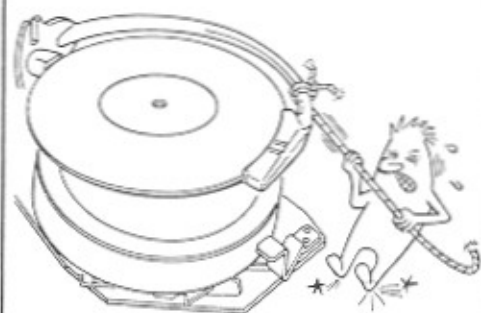
**PROBLEM AREA:** Read-Out Carriage Adjustment, Gripper Arm Rest adjustment.

**READ-OUT CARRIAGE ADJUSTMENT****RECORD CENTER****PROCEDURE:**

Record must be in correct pick-up position for removal by the gripper jaws.

1. Select record 100. . . . Allow record to be placed on the turntable.
2. Cancel record. . . . As record starts to enter record slot, shut-off mechanism power by moving Scan Switch to "off".
3. Note record alignment between left and right separators with respect to center.
4. To adjust, turn screw "A". . . . Right turn, record alignment will advance to the right; . . . left turn, to the left. Re-check adjustment by repeating the above procedure.  
IF CARRIAGE ADJUSTMENT OK, proceed to the next step.
5. Repeat the above procedure only this time stop the mechanism just before the Gripper Arm strikes the Rear Gripper Arm Rest.
6. Observe the "V" alignment between the Gripper and Gripper Arm Rest, they should be in perfect alignment.
7. To adjust, loosen 2 screws "B". Allow hole to be visible above the edge of plate before retightening screws.

**GRIPPER ARM REST ADJUSTMENT****REAR OF MAGAZINE**



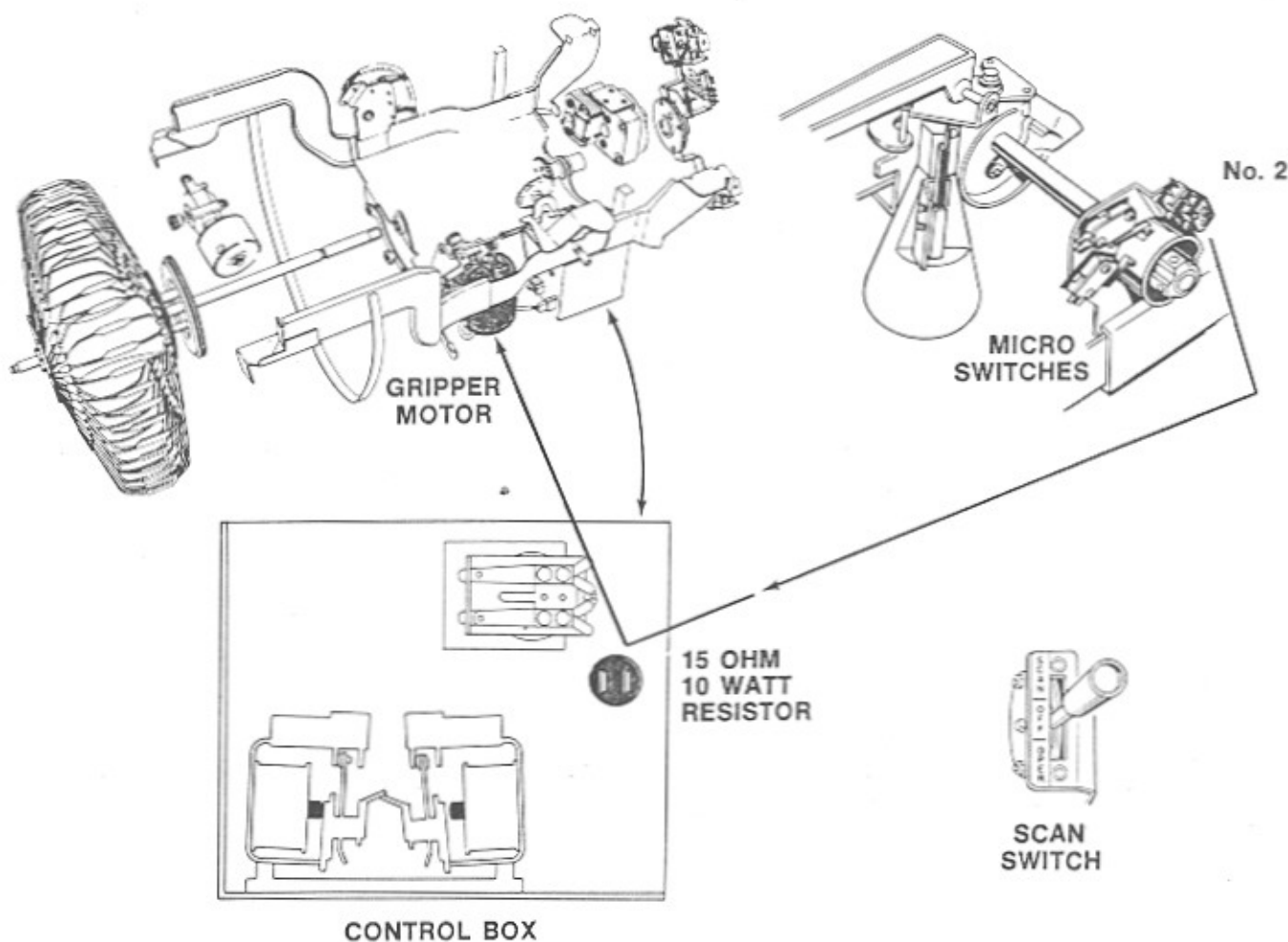
**PROBLEM: GRIPPER MOTOR STOPS JUST AS RECORD IS PLACED ON THE TURNTABLE.**

**PROBLEM AREA:** Control Box.

A Reminder: Always check for loose plug connections.

### PROCEDURE:

1. Make any selection. Allow mechanism to cycle until the No.2 Micro Switch is actuated. (Switch lever falls into the cam dip. . . . At this point shut-off mechanism power by moving Scan Switch to "Off".
2. Return Scan Switch to "Operate". If Gripper Motor does not start, then 15 OHM 10 WATT STANDEE RESISTOR is open. . . . Replace.





**PROBLEM: ONE OR BOTH READ-OUT CARRIAGE COILS DO NOT OPERATE, KEEPS REPEATING SAME SELECTIONS.**

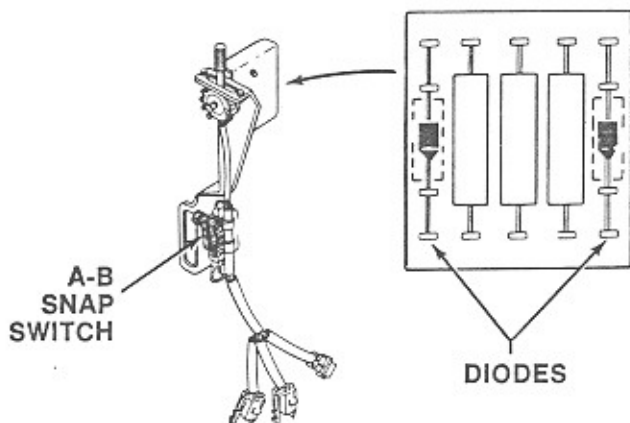
**PROBLEM AREA: A-B Snap Switch, Selector, No.2A Micro Switch, Control Box.**

**A Reminder: Always check for loose plug connections.**

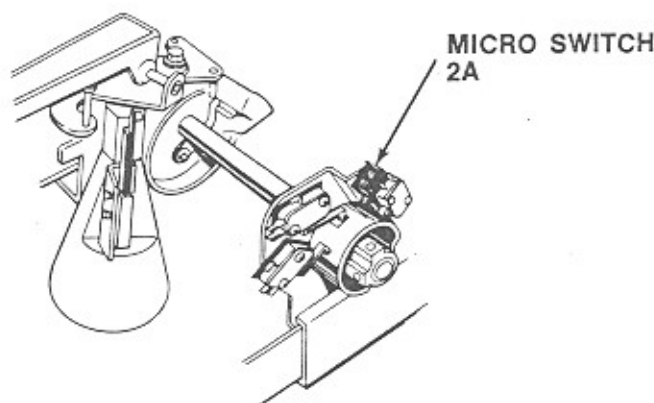
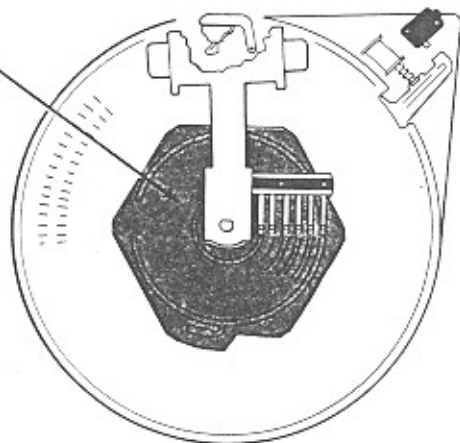
### PROCEDURE:

Scan the Magazine. . . See if the "Record Now Playing" 1st Digit Lites "1" or "2" turns on.  
IF THE 1ST DIGIT LITES DO NOT TURN ON then problem is at the A-B Snap Switch.  
IF 1ST DIGIT LITES TURN ON then;

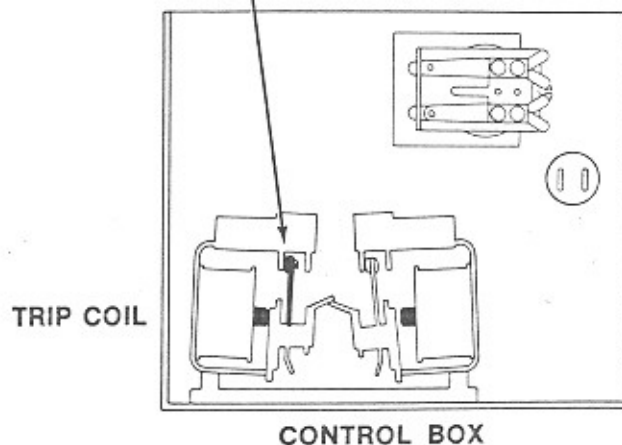
1. Clean outter P.C. Board with denatured alcohol and wipe a *LIGHT* film of petroleum jelly over the printed circuits.  
IF PROBLEM NOT CORRECTED then;
2. Reset mechanism to standby. . . Make any selection. . . Shut off mechanism power when No.2A Micro Switch falls into the cam dip.
3. With an Ohmmeter check continuity from chassis ground to Yel/Blk wire connection at Micro Switch No.2A.  
IF NO READING then open circuit from Interlock Trip Contact in Control Box to Micro Switch.
4. IF READING OK then probe Yellow wire connection on same Micro Switch.  
IF NO READING then Micro Switch 2A defective.  
IF READING OK, check solder connections at the Wiper Blades.
5. IF SOLDER CONNECTIONS OK then check for open Carriage Coils and open Diodes.  
(See Service Manual Sequence Diagram No.24)

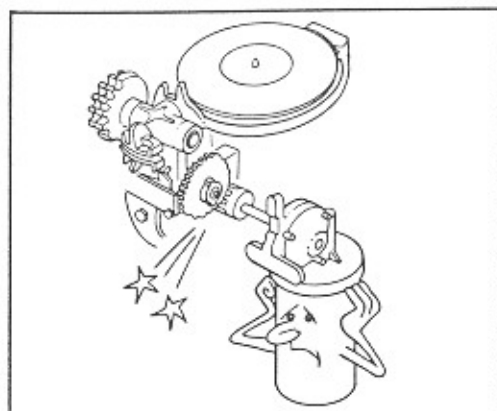


CLEAN



### CLEAN CONTACT (YELLOW WIRE CONNECTION)

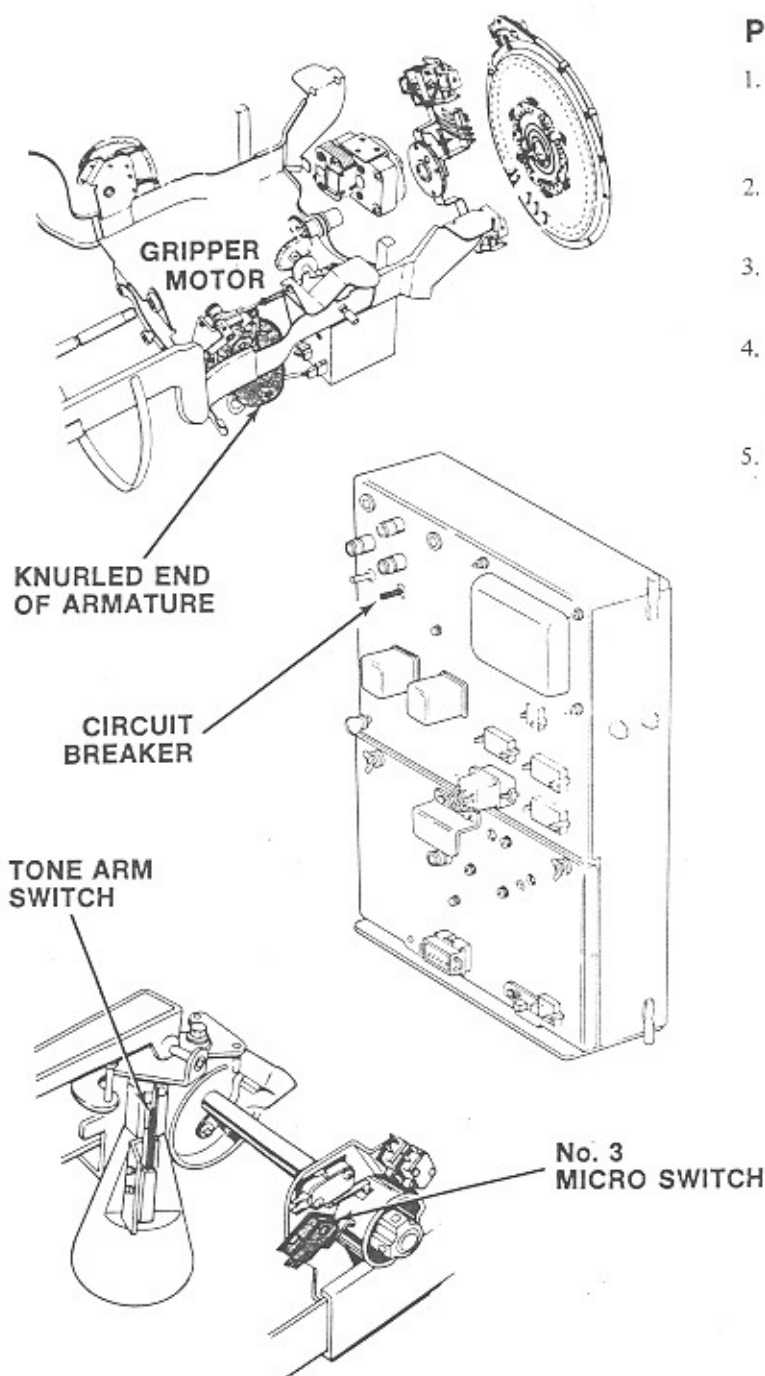




**PROBLEM: RECORD ON TURNTABLE, MECHANISM JAMMED, MECHANISM CIRCUIT BREAKER TRIPPED.**

**PROBLEM AREA: No.3 Micro Switch, Control Box.**

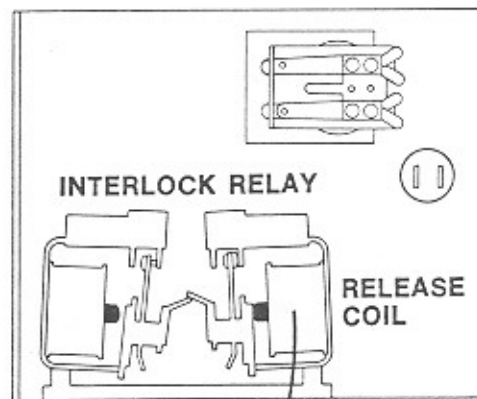
**A Reminder: Always check for loose plug connections.**



### PROCEDURE:

1. By hand, turn the knurled armature end of the Gripper Motor counter clockwise until the jam is relieved and No.3 Micro Switch Lever is returned to the cam dip.
2. Reset Circuit Breaker. . . . Actuate Tone Arm Switch to return Record to the Magazine.
3. Make any selection. . . . When No.3 Micro Switch falls into the cam dip, shut off Phono Power.
4. With an Ohmmeter check continuity from Orn/Grn to Black wire connections at No.3 Micro Switch. IF NO READING then No.3 Micro Switch defective.
5. IF READING OK then circuit open between Micro Switch and Interlock Release Coil in Control Box. Check for open 47 Ohm Resistor. (See Service Manual Sequence Diagram No.25).

### CONTROL BOX

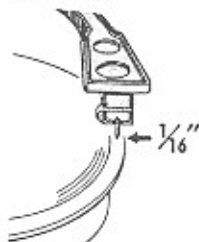


47 OHM RESISTOR



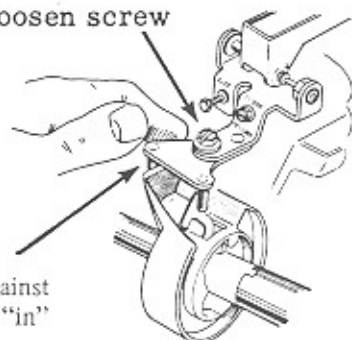
## TONE ARM ADJUSTMENTS

## NEEDLE SET-DOWN



Stop mechanism just before needle lands on record. Needle must be at least  $\frac{1}{16}$ " in from record edge.

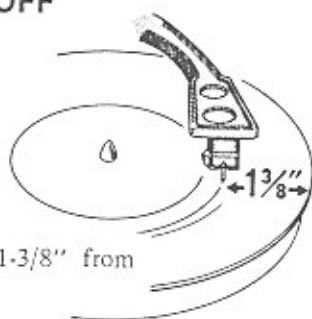
Loosen screw



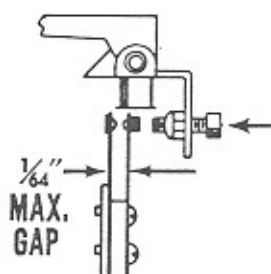
To adjust:

Hold outer pin guide against cam and move Tone Arm "in" or "out"—Tighten screw.

## RECORD CUT-OFF



Cut-off position is  $1\frac{3}{8}$ " from record edge.

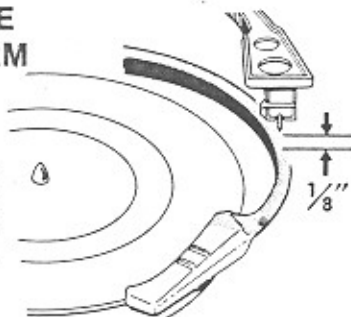


To adjust:

Move adjustment screw to obtain proper gap.

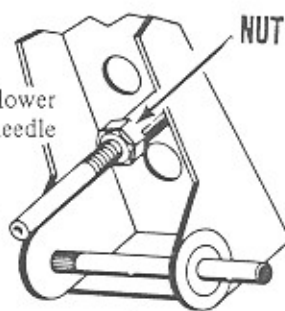
NEEDLE CLEARANCE  
ABOVE GRIPPER ARM

On even numbered selections the tone arm needle passes over the bow of the gripper arm. Needle clearance must be  $\frac{1}{8}$ ".



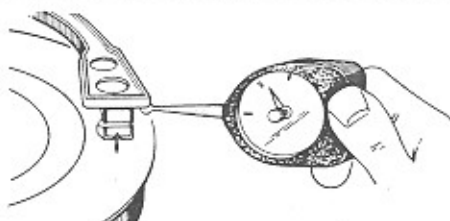
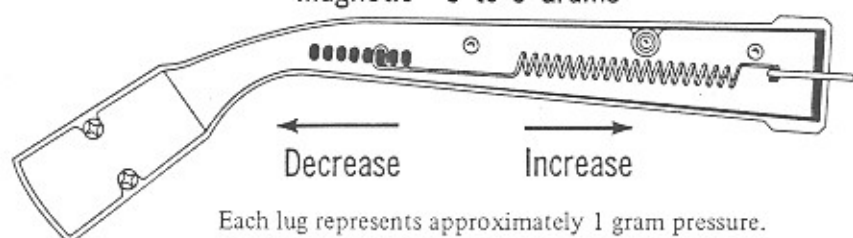
To adjust:

Loosen nut. Raise or lower adjustment screw for needle clearance. Tighten nut.

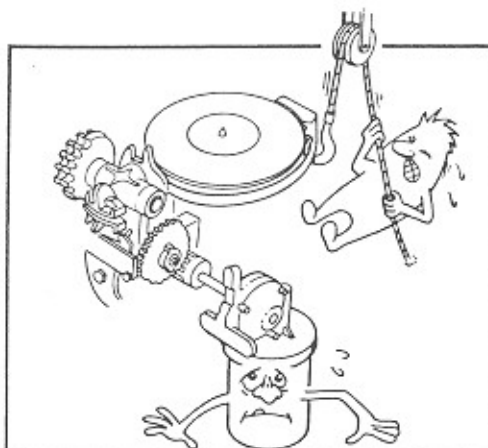


## TONE ARM GRAM PRESSURE ADJUSTMENT

Magnetic—3 to 5 Grams

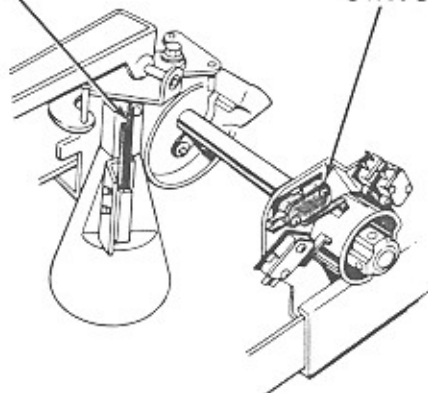


Needle pressure reading is taken at the point of contact of the needle on the record.

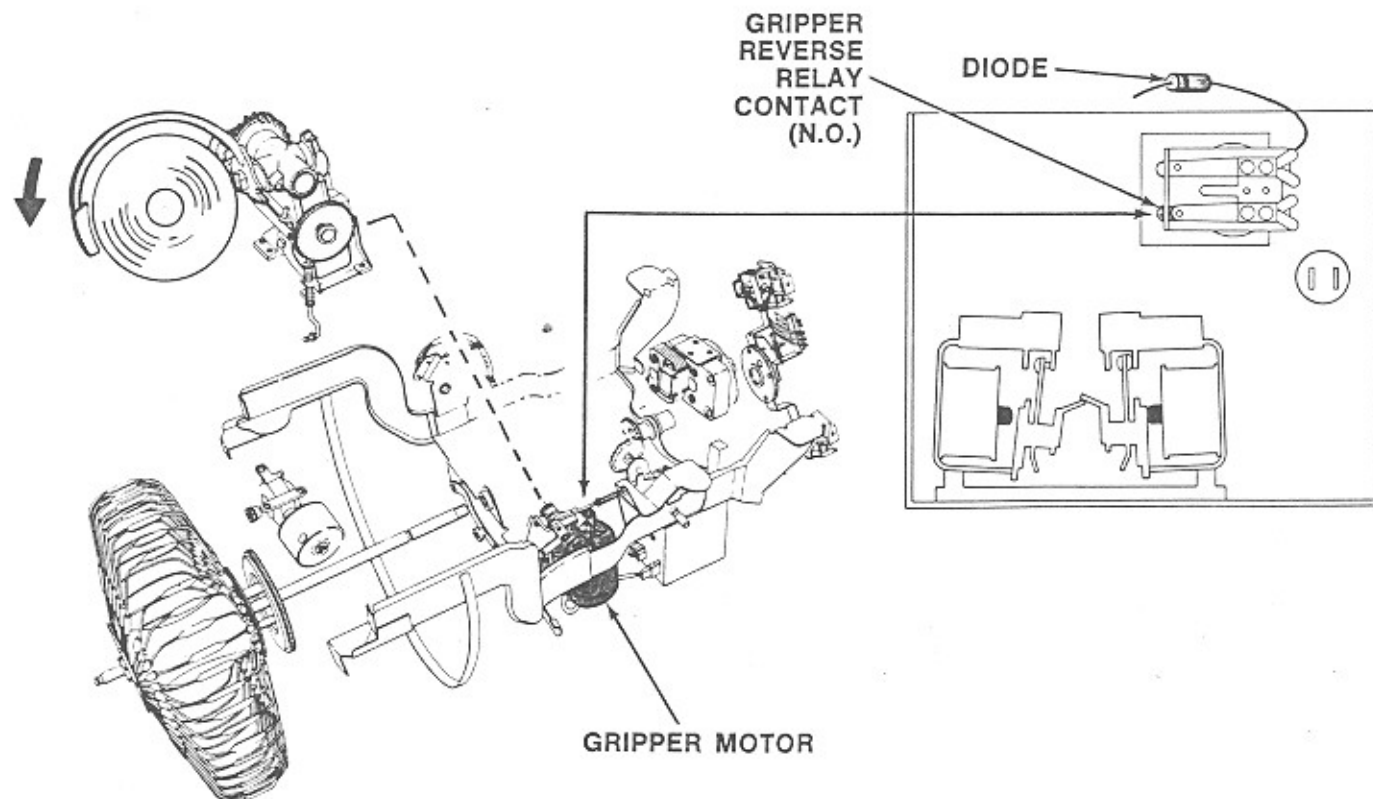
**PROBLEM: MUSIC CYCLE ENDS, RECORD DOES NOT RETURN TO MAGAZINE.**

**PROBLEM AREA:** "Mech" Circuit Breaker. Tone Arm Switch, No.1 Micro Switch, Control Box.

**A Reminder:** Always check for loose plug connections.

**TONE ARM  
SWITCH****No. 1  
MICRO  
SWITCH****PROCEDURE:**

1. Reset "Mech" Circuit Breaker and see if Tone Arm Switch is closed. . . . If closed, clean.  
IF GRIPPER MOTOR STILL DOES NOT RUN then;
2. Use a D.C. Voltmeter. Connect the plus (+) test lead to chassis ground.
3. With the minus (-) test lead probe Blu/Yel wire connection at No.1 Micro Switch.  
IF NO VOLTAGE (about -30 V.D.C.) then No.1 Micro Switch defective.  
IF VOLTAGE OK then the Reverse Relay or Diode in the Control Box are at fault.
4. Check for open Diode and clean normally open Gripper Reverse Relay Contact.  
(See Service Manual Sequence Diagram No.27)





**PROBLEM: AT NORMAL LINE VOLTAGE ONE OR BOTH MECHANISM D.C. MOTORS RUN SLOW.**

**PROBLEM AREA:** Power Supply, D.C. Motors.

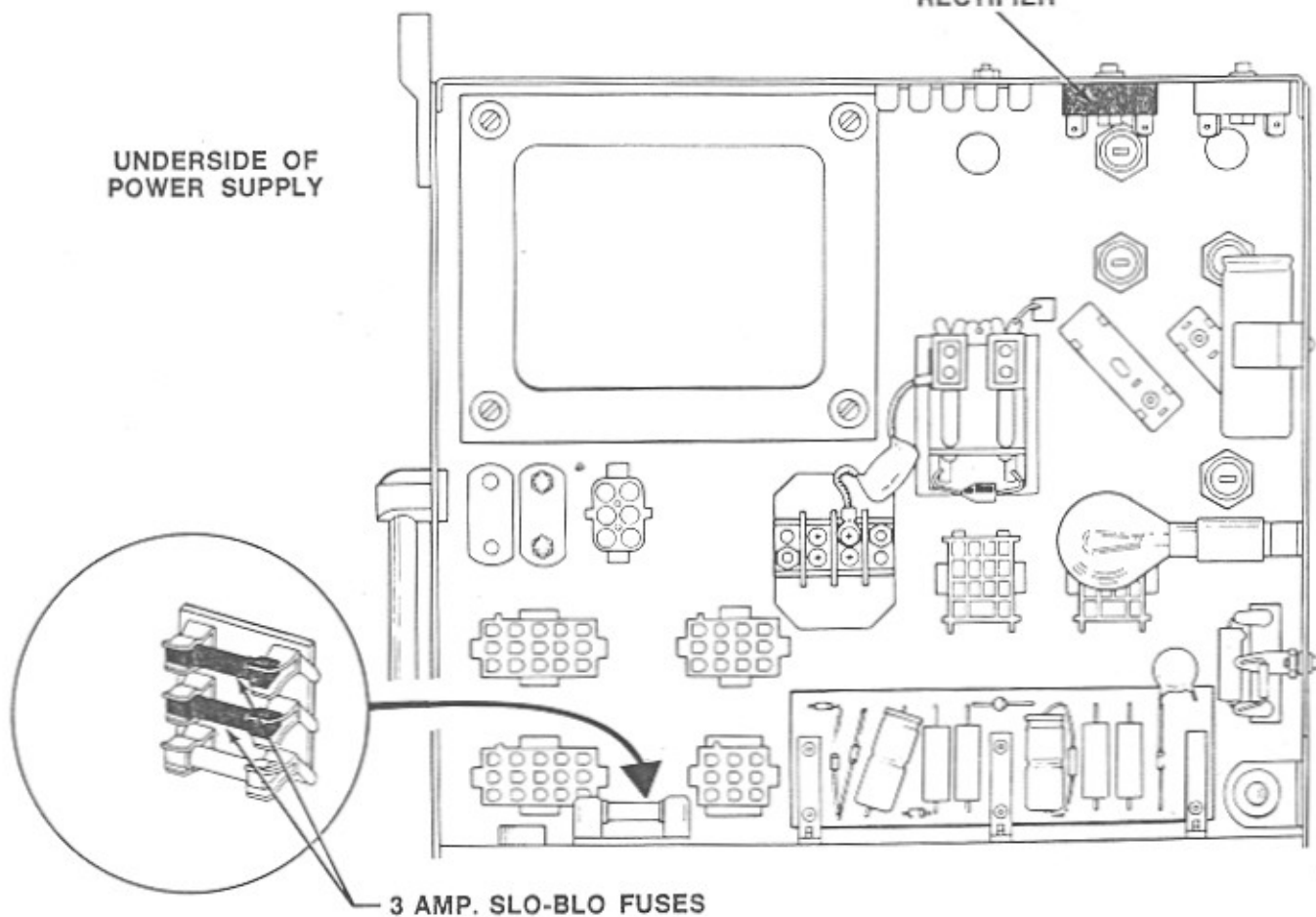
**A Reminder:** Always check for loose plug connections.

**PROCEDURE:**

1. IF BOTH MOTORS RUN SLOW then check for blown 3 Amp Slo-Blo Fuses in the Power Supply. (One on each side of rectifier input)  
IF FUSE REPLACED AND BLOWS AGAIN, replace Rectifier.
2. IF ONLY ONE OF THE D.C. MOTORS RUNS SLOW, replace Motor Brushes with RMC Part No. 45716.  
IF MOTOR STILL RUNS SLOW then Motor defective.

**UNDERSIDE OF  
POWER SUPPLY**

**MECHANISM  
RECTIFIER**



**PROBLEM: ONE CHANNEL DEAD.****PROCEDURE:**

Move "MONO-STEREO" switch to "MONO"... IF SOUND COMES ON, then the problem is in the front end of the Amplifier with the Pre-Amp circuit, or Tone Control circuit, or Pick-up. Proceed with STEP 1 thru STEP 3.

IF THE SAME CHANNEL IS STILL DEAD, then the problem is in the back end of the Amplifier. Proceed with STEP 4.

1. Move "MONO-STEREO" switch to "STEREO"... Reverse input leads (Orange/Red-Right Channel) (Orange/White-Left Channel) on the Pre-Amp P.C. Board. IF OPPOSITE CHANNEL IS DEAD and the DEAD CHANNEL PLAYS, then the Pick-up is defective.

IF DEAD CHANNEL REMAINS DEAD then;

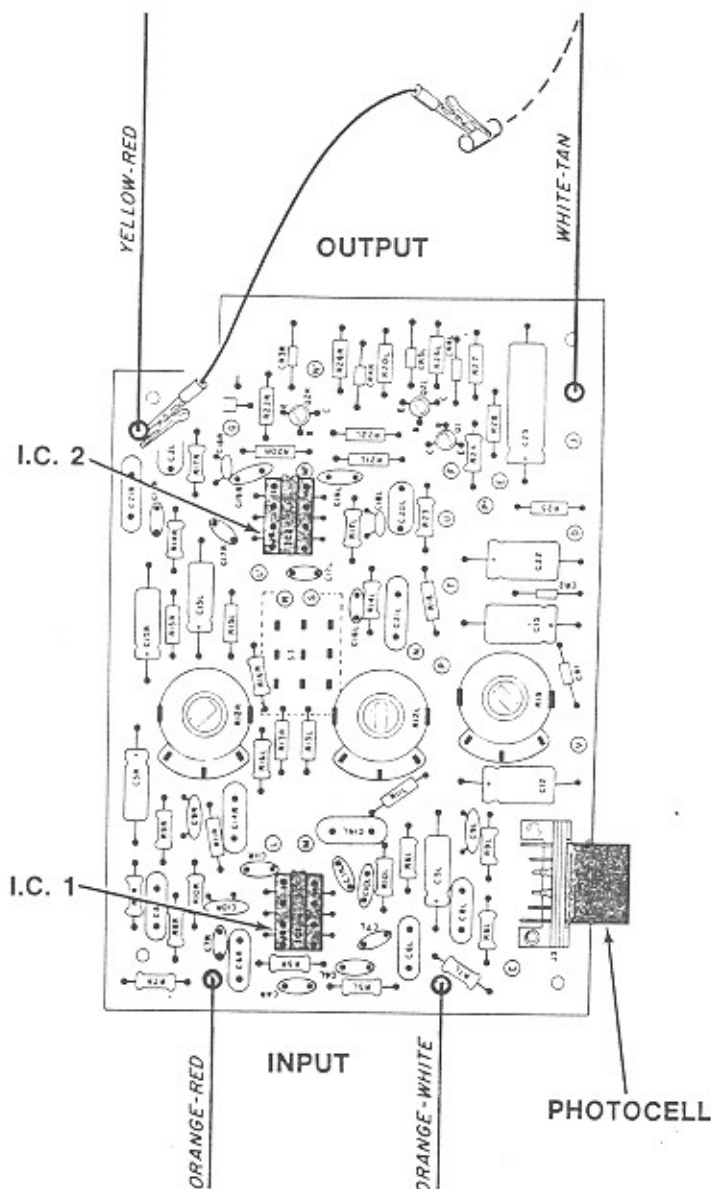
2. Reverse the two output leads (Yellow/Red-Right Channel) (White/Tan-Left Channel) on the Pre-Amp P.C. Board. IF OPPOSITE CHANNEL IS DEAD and the DEAD CHANNEL PLAYS, then the I.C.'s or Photocell is defective.

After replacement of components and problem still exists then;

3. Check for bad Volume Control plug connection in Amplifier socket, or a dirty Base Control Switch. Work the switch back and forth and apply contact cleaner. IF PROBLEM STILL EXISTS then replace Amplifier.
4. Reverse connections to Left and Right Speakers. IF SAME SPEAKER IS STILL DEAD then Speaker defective. IF OPPOSITE SPEAKER IS DEAD then replace Amplifier.

See Service Manual Sound System Section for servicing Amplifier.

Jumper will be required to reverse White-Tan Wire Connection



PRE-AMP A.V.C. BOARD

**PROBLEM: BOTH CHANNELS DEAD.****PROCEDURE:**

See if;

D.C. power 3 Amp Slo-Blo fuses blown in Power Supply. IF FUSES OK then proceed to STEP 1.

IF FUSES REPLACED AND BLOW AGAIN then check if;

(a) Rectifier in Power Supply shorted, or

(b) Power Transistors shorted, or

(c) 1500 Mfd 60V Capacitors C36 and C37 shorted.

To check Power Transistors Q5 L&R and Q6 L&R, use a D.C. Voltmeter. Remove Heat Sink. . . Measure voltage from metal case of transistors to chassis ground.

Q5 L&R should read -51 V.D.C. . . Q6 L&R should read -25 V.D.C.

IF Q5 SHORTED then Q6 will read -51 V.D.C.

IF Q6 SHORTED then Q6 voltage reading will be near "zero"

See amplifier section in Service Manual for replacement of transistors.

1. If Fuses OK then set Volume Control to a low setting (about one quarter turn). Disconnect Pick-up Input Cable from Amplifier.

IF HUM IN BOTH CHANNELS then Pick-up lead or Pick-up defective.

IF NO HUM then;

2. Remove Volume Control Plug from Amplifier. Insert a bare wire into pin socket #1 (Right Channel) and pin socket #5 (Left Channel)

IF HUM IN BOTH CHANNELS then Pre-Amp P.C. Board defective. . . Replace I.C.'s and Photocell.

IF BOTH CHANNELS STILL DEAD then check voltage of Power Transistors Q5 L&R and Q6 L&R.

If Q5 and Q6 voltage differs from -51 V.D.C. and -25 V.D.C. respectively, then problem is internally. Replace Amplifier.

See Service Manual Sound Section for servicing Amplifiers.

