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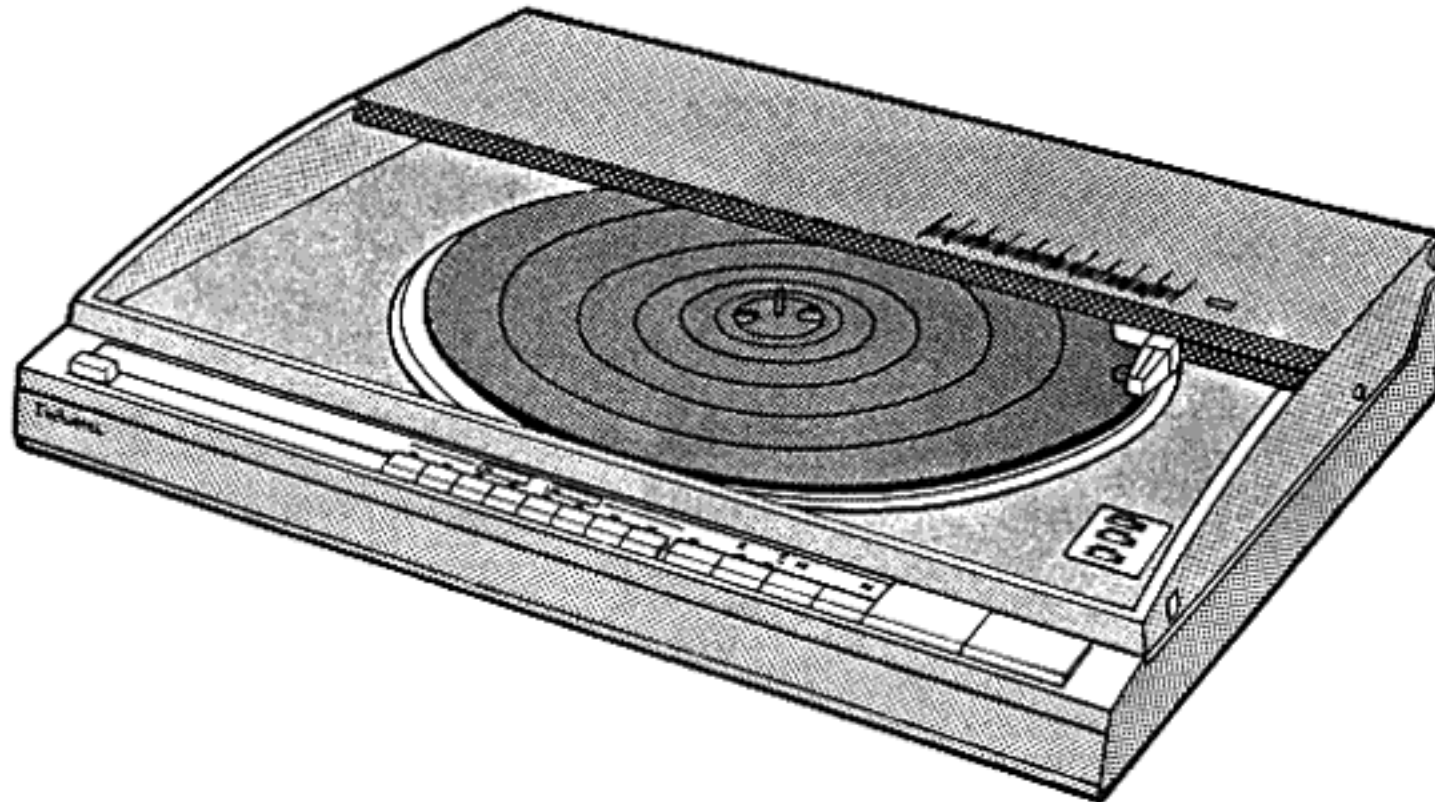
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# Service Manual

Turntable System

## SL-L3

**QUARTZ Direct Drive**  
Fully Automatic Turntable System



### Color

(S)...Silver Type

### Area

[M] .....U.S.A.

[MC] .....Canada

**T4P** is the standard mark for the "P-mount" plug-in-connector system. Products carrying this mark are interchangeable and compatible with each other.

## SPECIFICATIONS

### ■ Turntable section

|                                                                                    |                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type:</b>                                                                       | Quartz direct drive<br>Automatic turntable system                                                                                                                                                                                          |
| <b>Features:</b>                                                                   | Auto start/Auto lead-in,<br>Auto return/Auto stop,<br>Repeat play,<br>Program play,<br>Direct music select play,<br>Forward and backward skip play,<br>Forward and backward search play,<br>Auto size select,<br>Record presence detection |
| <b>Drive method:</b>                                                               | Direct drive                                                                                                                                                                                                                               |
| <b>Motor:</b>                                                                      | Brushless DC motor                                                                                                                                                                                                                         |
| <b>Drive control method:</b>                                                       | Quartz-phase-locked control                                                                                                                                                                                                                |
| <b>Turntable platter:</b>                                                          | Aluminum die-cast<br>Diameter 30 cm (12")                                                                                                                                                                                                  |
| <b>Turntable speeds:</b>                                                           | 33-1/3 rpm and 45 rpm<br>Auto speed select<br>(Manual selection possible)                                                                                                                                                                  |
| <b>Wow and flutter:</b>                                                            | 0.012% WRMS*<br>0.025% WRMS (JIS C5521)<br>±0.035% peak<br>(IEC 98A Weighted)                                                                                                                                                              |
| *Measured by obtaining signal from built-in frequency generator of motor assembly. |                                                                                                                                                                                                                                            |
| <b>Rumble:</b>                                                                     | -56 dB (IEC 98A Unweighted)<br>-78 dB (IEC 98A Weighted)                                                                                                                                                                                   |

### ■ Tonearm section

|                                     |                                                                 |
|-------------------------------------|-----------------------------------------------------------------|
| <b>Type:</b>                        | Linear tracking tonearm<br>4-pivot gimbal suspension <b>T4P</b> |
| <b>Effective length:</b>            | 10.5 cm (4-1/8")                                                |
| <b>Tracking error angle:</b>        | Within ±0.1°                                                    |
| <b>Effective mass:</b>              | 9 g (including cartridge)                                       |
| <b>Resonance frequency:</b>         | 12 Hz                                                           |
| <b>Tonearm drive motor:</b>         | DC motor                                                        |
| <b>Applicable cartridge weight:</b> | 6 g                                                             |
| <b>Stylus pressure:</b>             | 1.25 g (Fixed)                                                  |
| <b>Phono cable capacitance:</b>     | 150 pF                                                          |

### ■ General

|                                   |                                                                                                                             |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Power supply:</b>              | AC 120 V, 60 Hz                                                                                                             |
| <b>Power consumption:</b>         | 16 W                                                                                                                        |
| <b>Dimensions:</b><br>(W × H × D) | 43 × 9 × 35 cm<br>(16-15/16" × 3-17/32" ×<br>13-25/32")<br>(Maximum height when dust<br>cover is open)<br>39 cm (15-11/32") |
| <b>Weight:</b>                    | 5.2 kg (11.5 lb.)                                                                                                           |

Specifications are subject to change without notice for further improvement.

Weight and dimensions shown are approximate.

# Technics

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Victoria Industrial Park  
Carolina, Puerto Rico 00630

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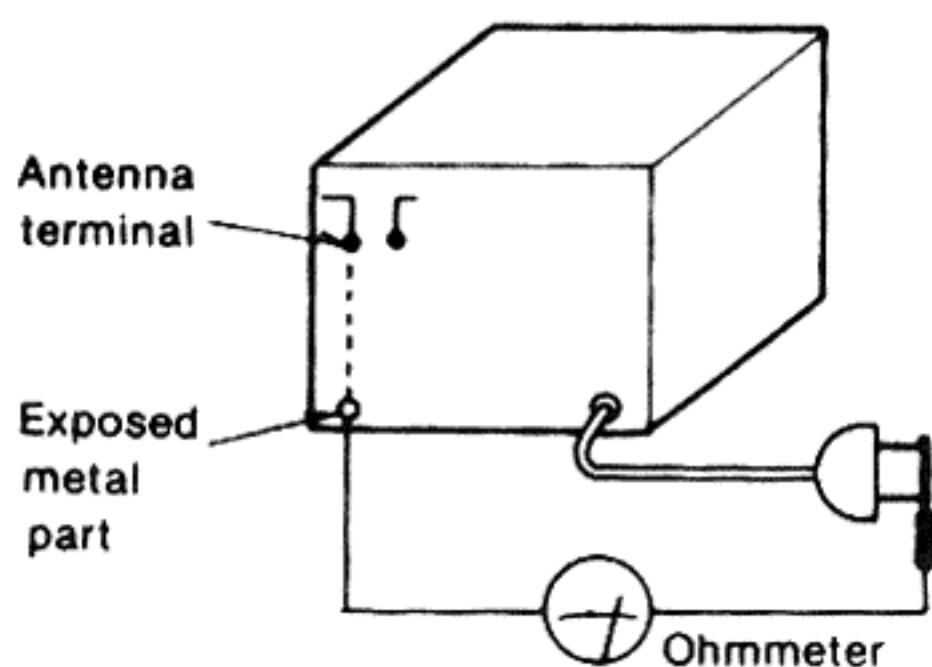
## ■ SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

### ● INSULATION RESISTANCE TEST

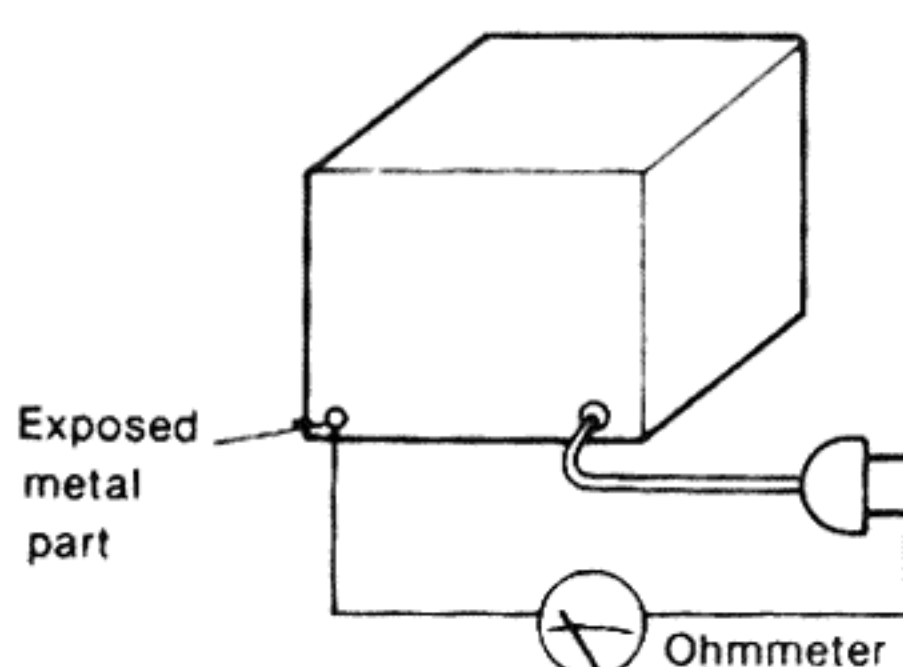
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between  $3M\Omega$  and  $5.2M\Omega$  to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

**Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance =  $3M\Omega - 5.2M\Omega$



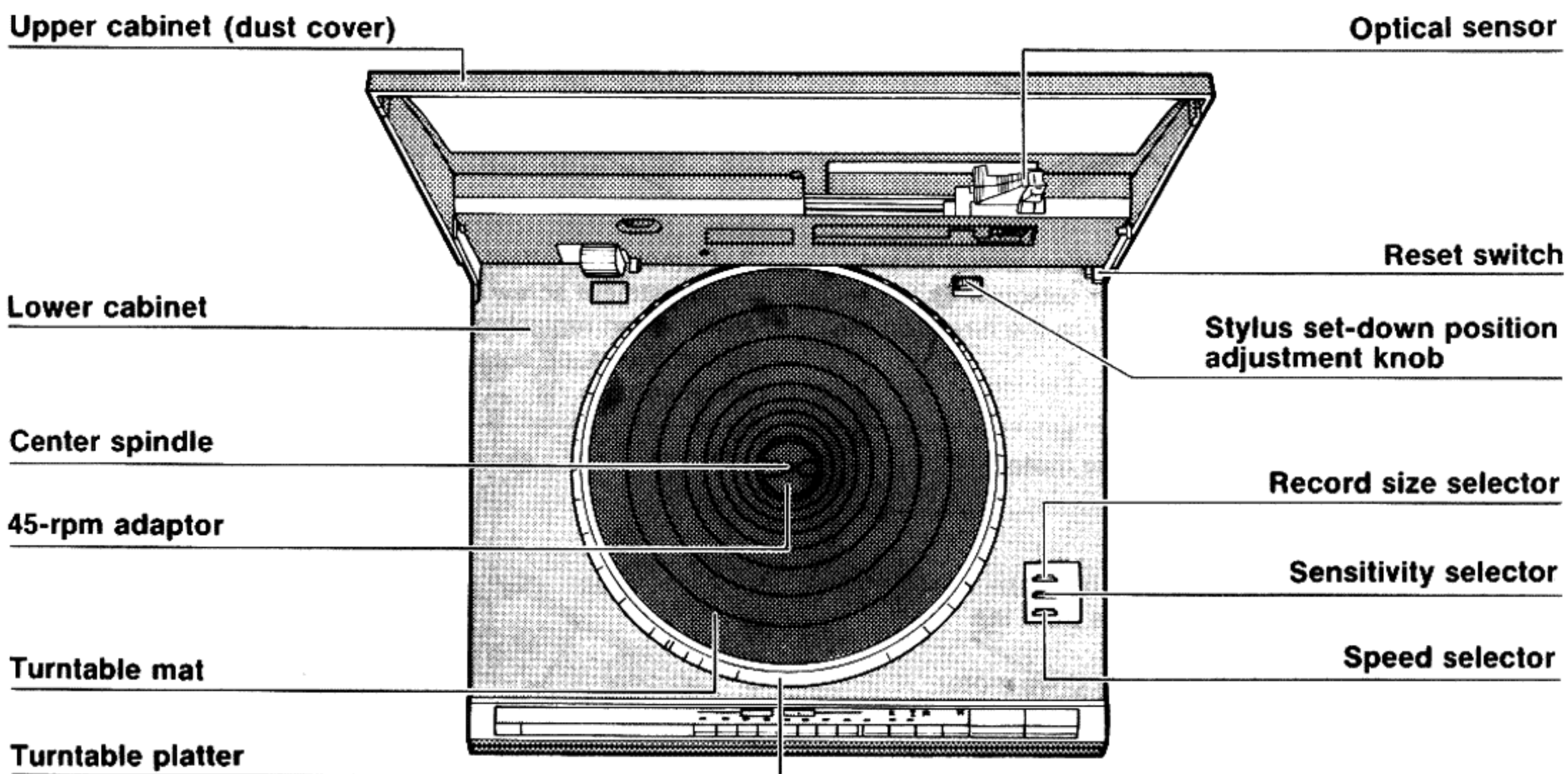
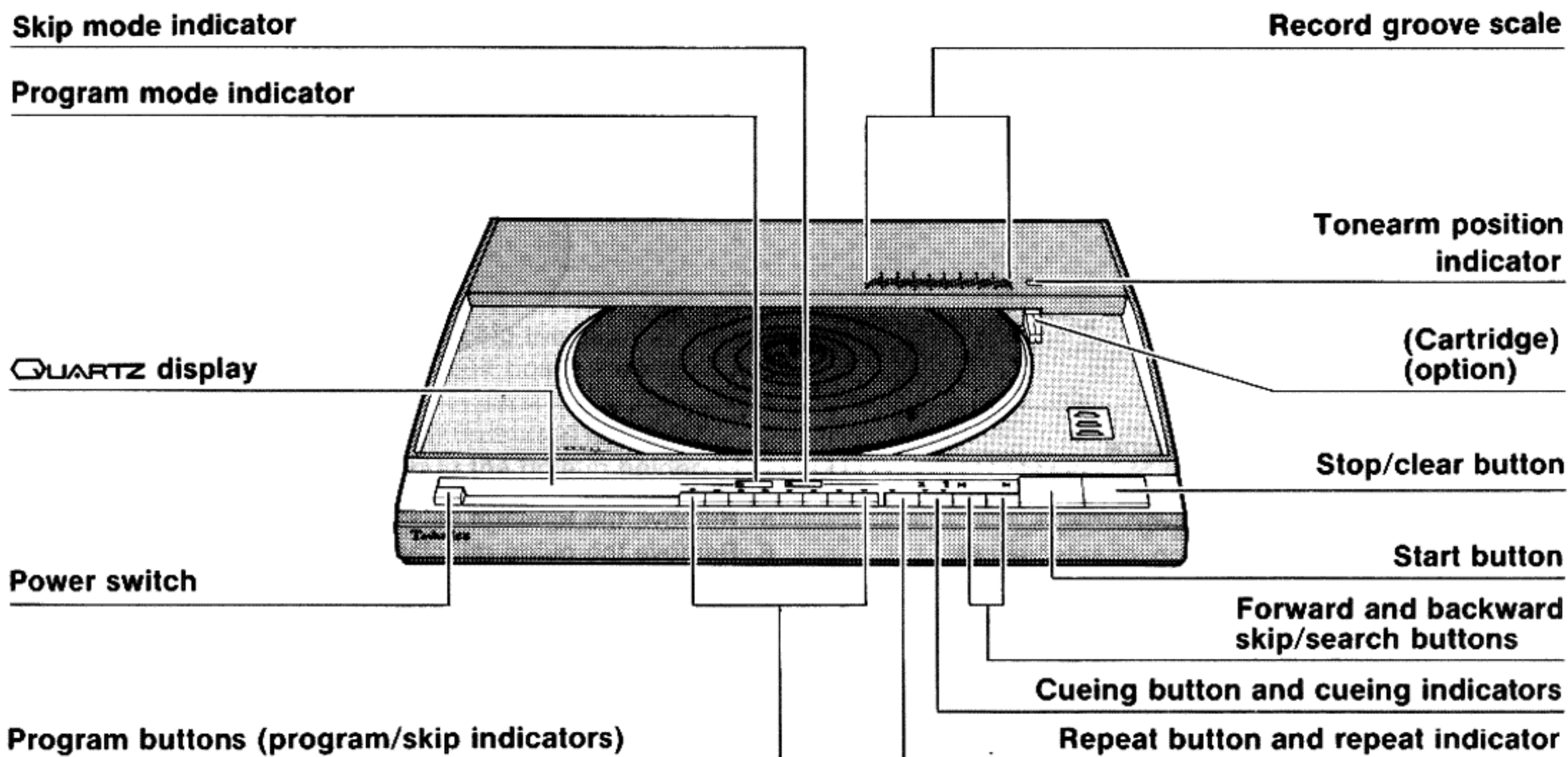
(Fig. B)

Resistance = Approx  $\infty$

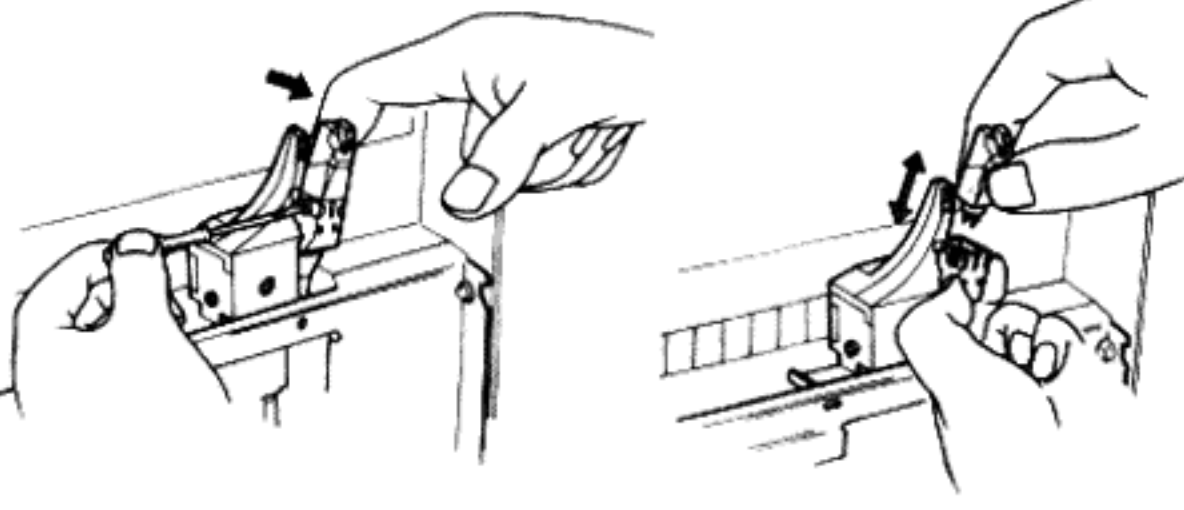
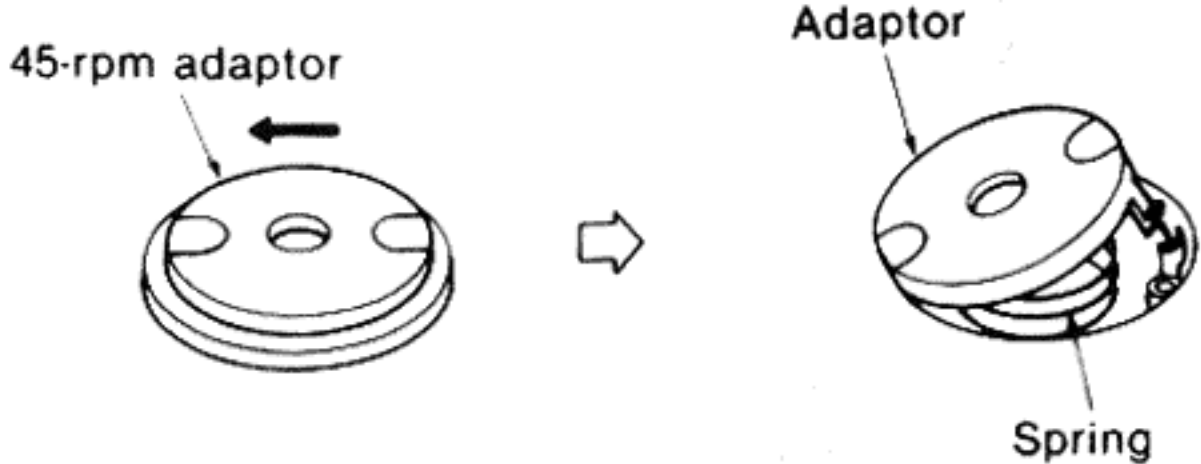
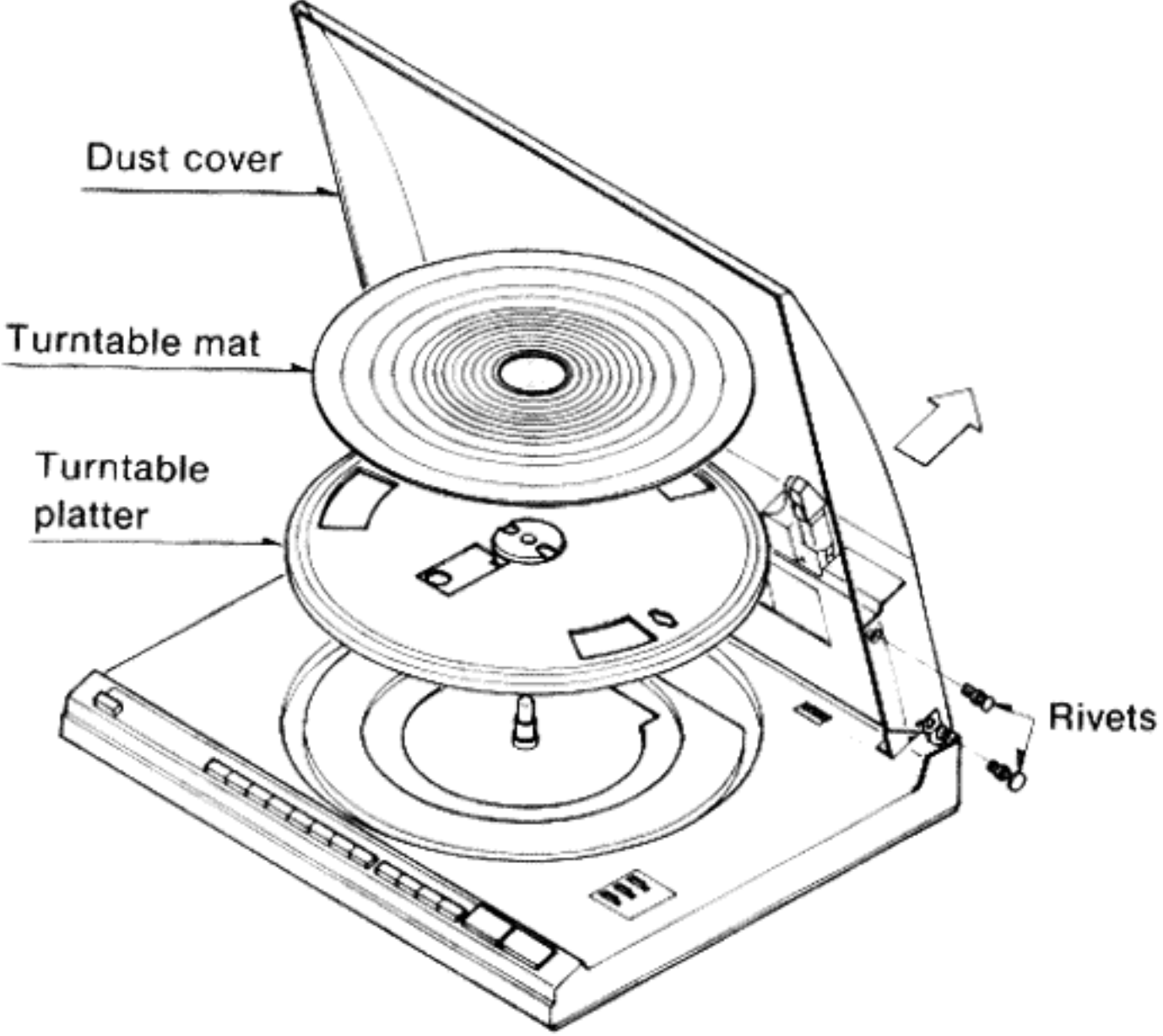
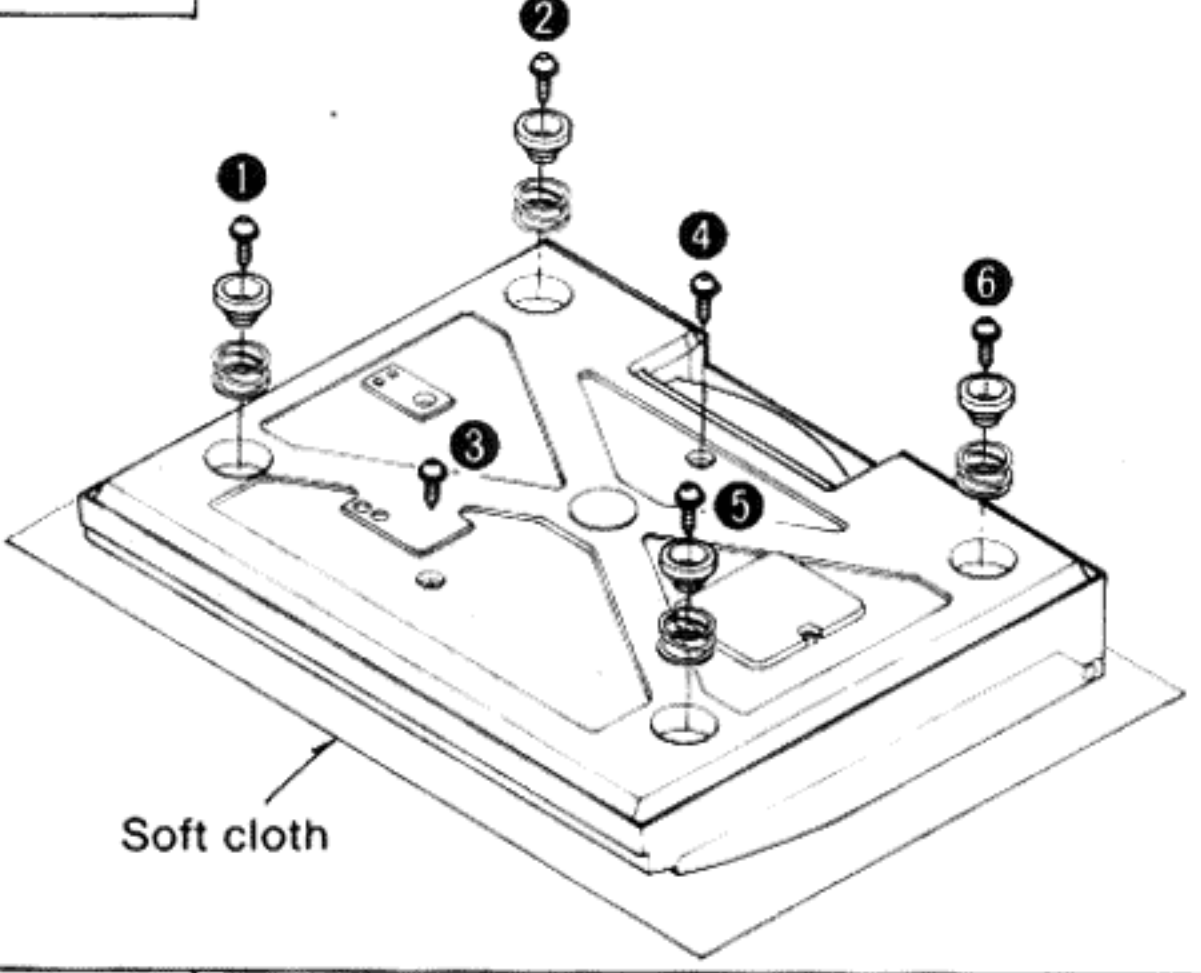
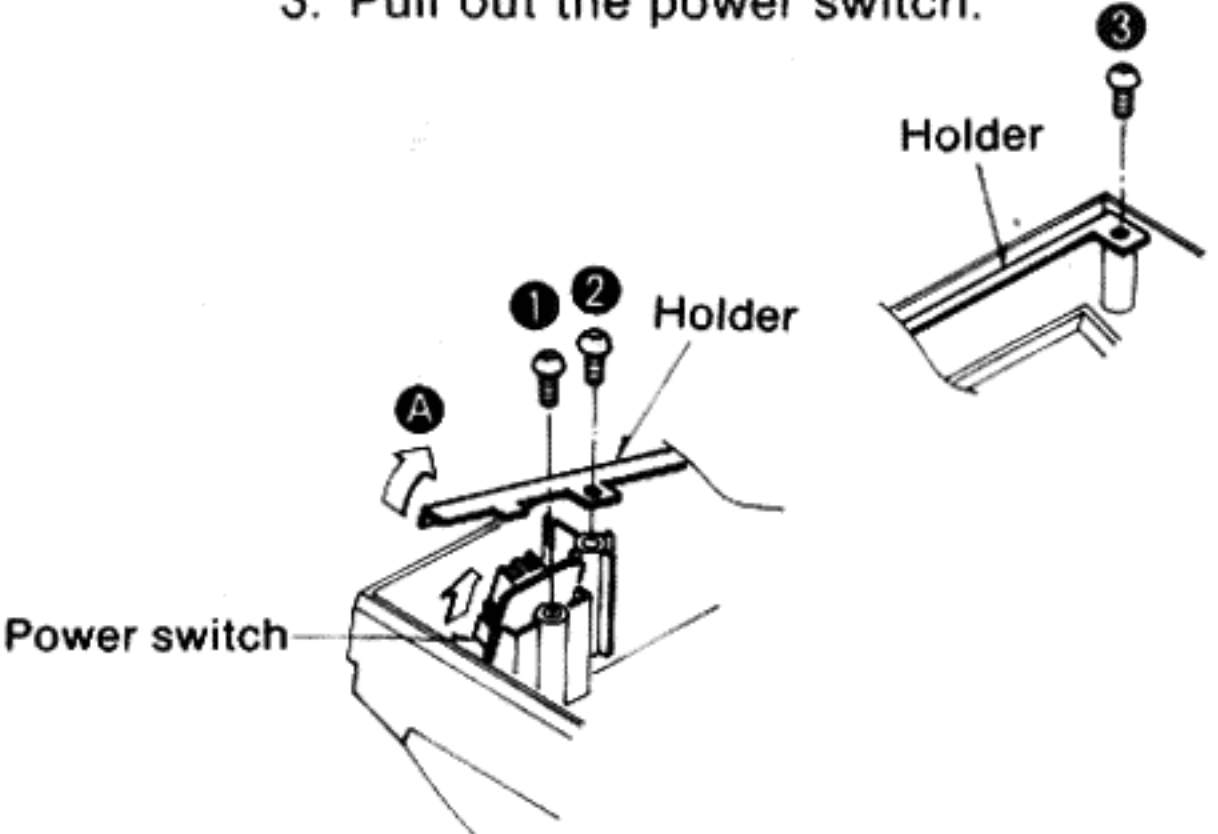
4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.



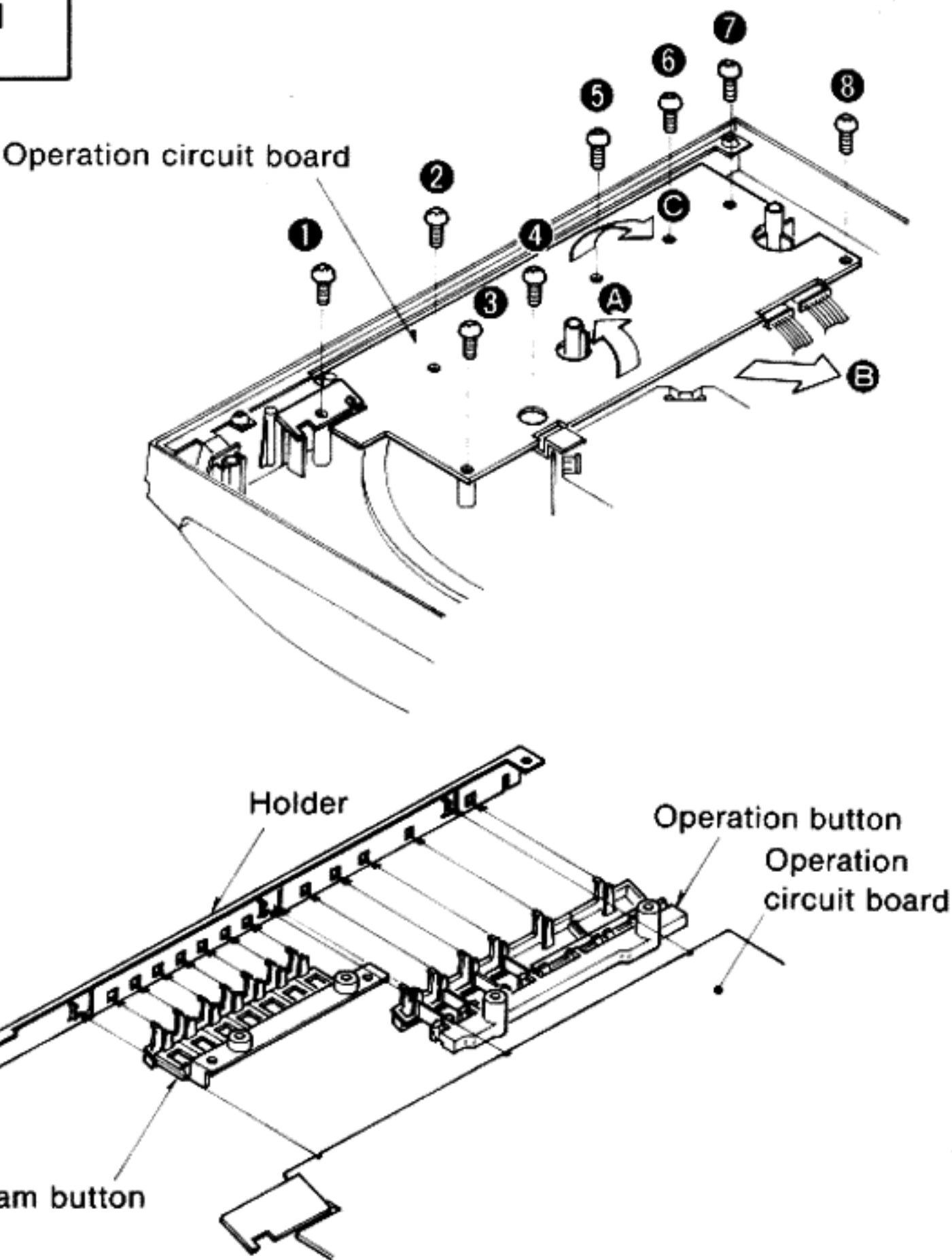
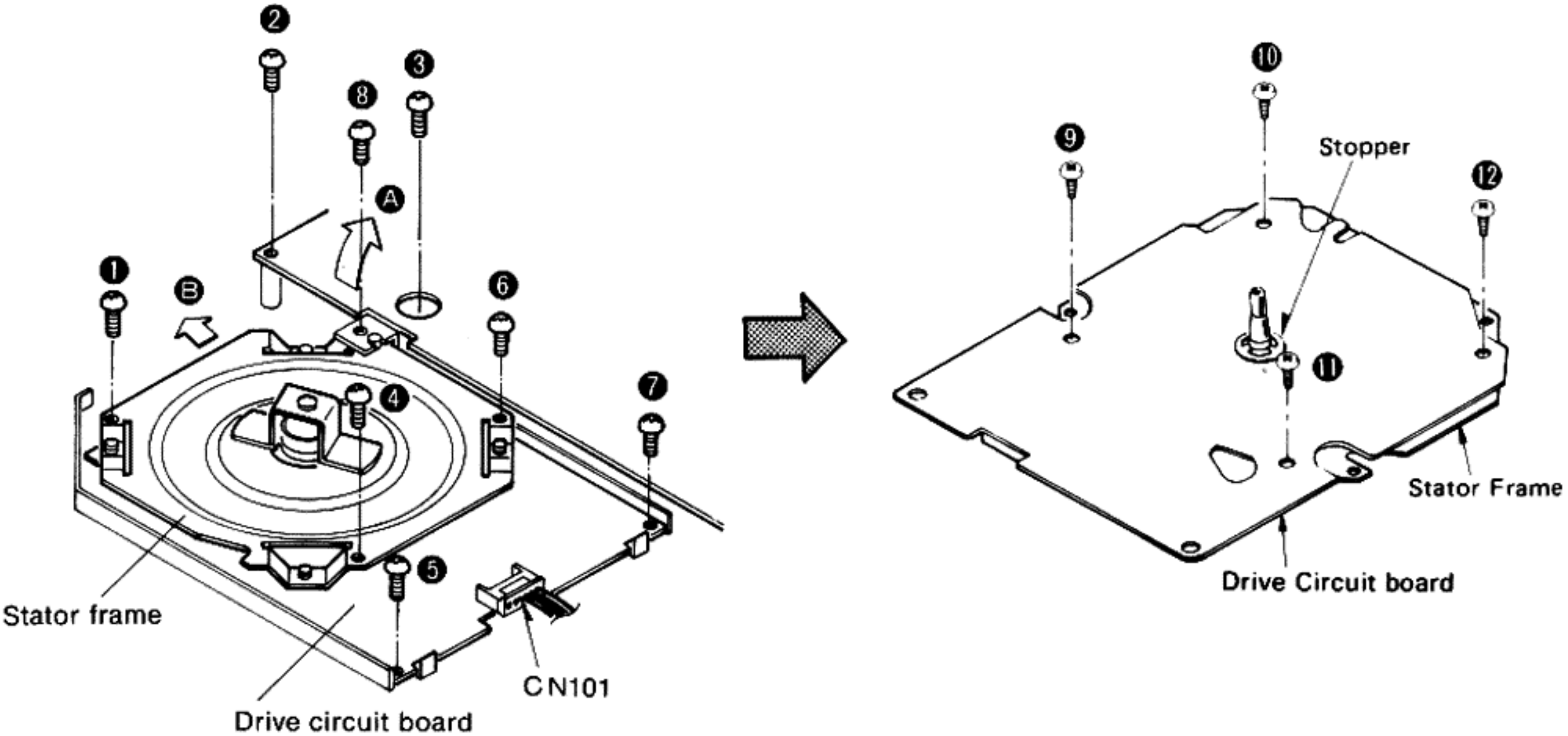
## ■ LOCATION OF CONTROLS

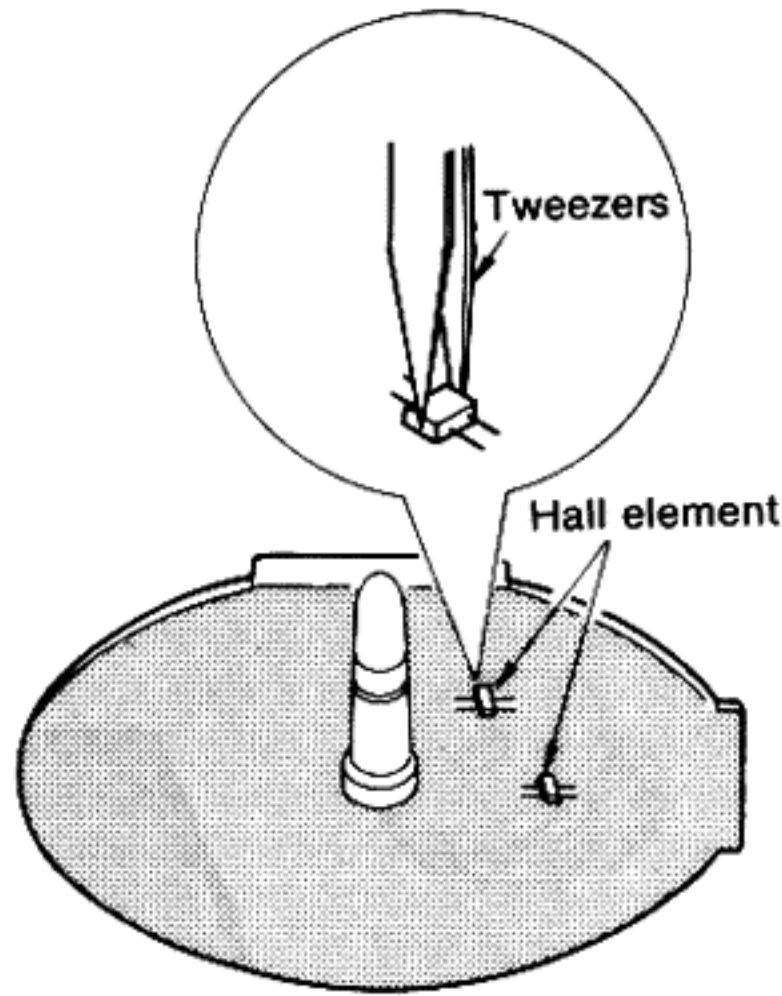


# ■ DISASSEMBLY INSTRUCTIONS

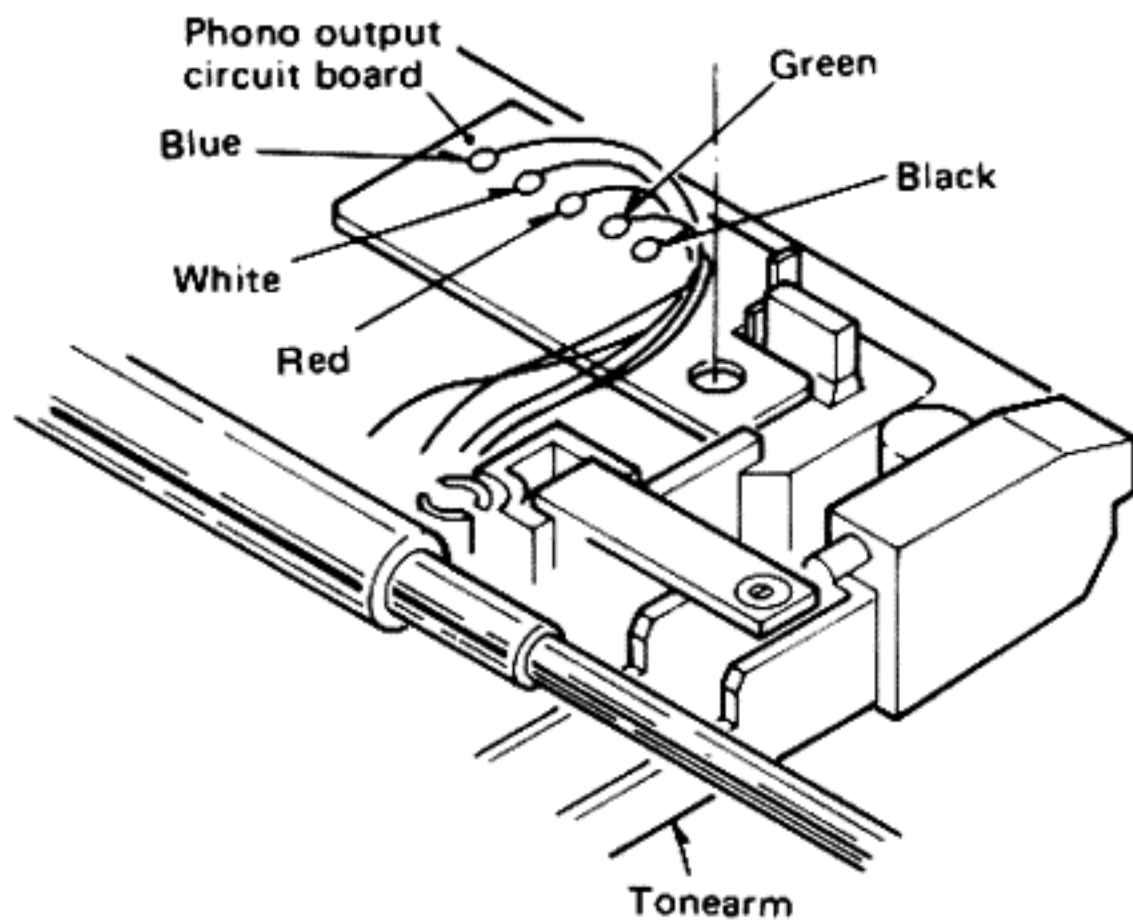
| Ref. No<br>1               | How to remove the cartridge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Ref. No<br>3           | How to remove the 45 rpm adaptor                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Procedure 1</b>         | <ol style="list-style-type: none"> <li>1. Open the upper cabinet.</li> <li>2. Remove the setscrew and pull out the cartridge.</li> </ol> <p><b>Note:</b> When attaching the cartridge again, match the tonearm connector with the cartridge pin, then completely insert it and tighten the setscrew.</p>                                                                                                                                                                                                                                                                                                                                                                            | <b>Procedure 2 + 3</b> | <ul style="list-style-type: none"> <li>• The 2 adaptor claws fit into the turntable platter, so remove the 45 rpm adaptor by pushing it in the direction of the arrow.</li> </ul>  <p><b>Note:</b> When removing the 45 rpm adaptor, remove the turntable platter; otherwise the 45 rpm adaptor claws will be broken.</p> |
| Ref. No<br>2               | How to remove the turntable platter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Ref. No<br>4           | How to remove the bottom board                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Procedure 2</b>         | <ol style="list-style-type: none"> <li>1. Open the upper cabinet.</li> <li>2. Remove the turntable mat, and lift the turntable platter.</li> </ol> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• When removing the turntable platter, it is not necessary to remove the 45 rpm adaptor.</li> <li>• The turntable platter is tightly fitted to the center spindle. When removing the turntable platter, take care not to damage the upper cabinet.</li> </ul>  <p><b>★ To remove the dust cover</b></p> <ol style="list-style-type: none"> <li>1. Pull out the 4 right and left rivets.</li> <li>2. Remove the dust cover in the direction of the arrow.</li> </ol> | <b>Procedure 2 + 4</b> | <ol style="list-style-type: none"> <li>1. Turn over the unit on a soft cloth.</li> <li>2. Remove the 6 setscrews (① ~ ⑥).</li> </ol>                                                                                                                                                                                    |
| Ref. No<br>5               | How to remove the power switch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                        |                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Procedure 2 + 4 + 5</b> | <ol style="list-style-type: none"> <li>1. Remove the 3 setscrews (① ~ ③).</li> <li>2. Lift the holder slightly in the direction of arrow A.</li> <li>3. Pull out the power switch.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                        |                                                                                                                                                                                                                                                                                                                                                                                                              |



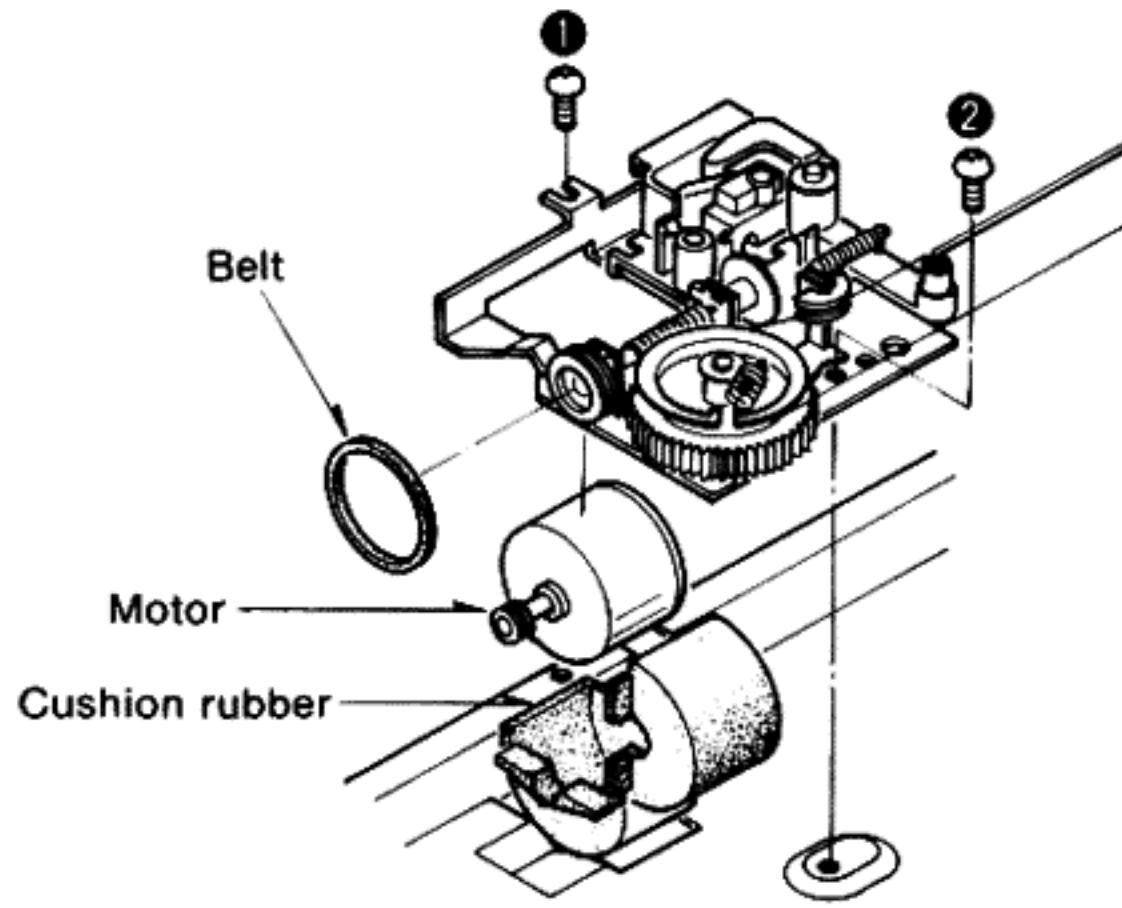
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|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Ref. No</b><br>6           | <b>How to remove the operation circuit board</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| <b>Procedure</b><br>2 ▶ 4 ▶ 6 | <ol style="list-style-type: none"> <li>1. Remove the 8 setscrews (① ~ ⑧).</li> <li>2. Lift the circuit board up in the direction indicated by arrow ①.</li> <li>3. Next, while Pulling in the direction of arrow ②, lift it up in the direction of the arrow ③.</li> </ol> <p>★ <b>Caution when replacing the board</b></p> <ol style="list-style-type: none"> <li>1. The operation circuit board fits into guide rails.</li> <li>2. Match the operation button and program button to the hole in holder.</li> </ol> |                                                                                      |
| <b>Ref. No</b><br>7           | <b>How to remove the drive circuit board and stator frame</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| <b>Procedure</b><br>2 ▶ 4 ▶ 7 | <ol style="list-style-type: none"> <li>1. Remove the 8 setscrews (① ~ ⑧).</li> <li>2. Pull out the connector CN101.</li> <li>3. Lift the operation circuit board slightly in the direction of arrow ①.</li> <li>4. Remove the stator frame in the direction of the arrow ②.</li> <li>5. Cut off the stopper with nippers.</li> <li>6. Remove the 4 setscrews (⑨ ~ ⑫).</li> <li>7. Then, separate the drive circuit board and stator frame.</li> </ol>                                                                |                                                                                      |

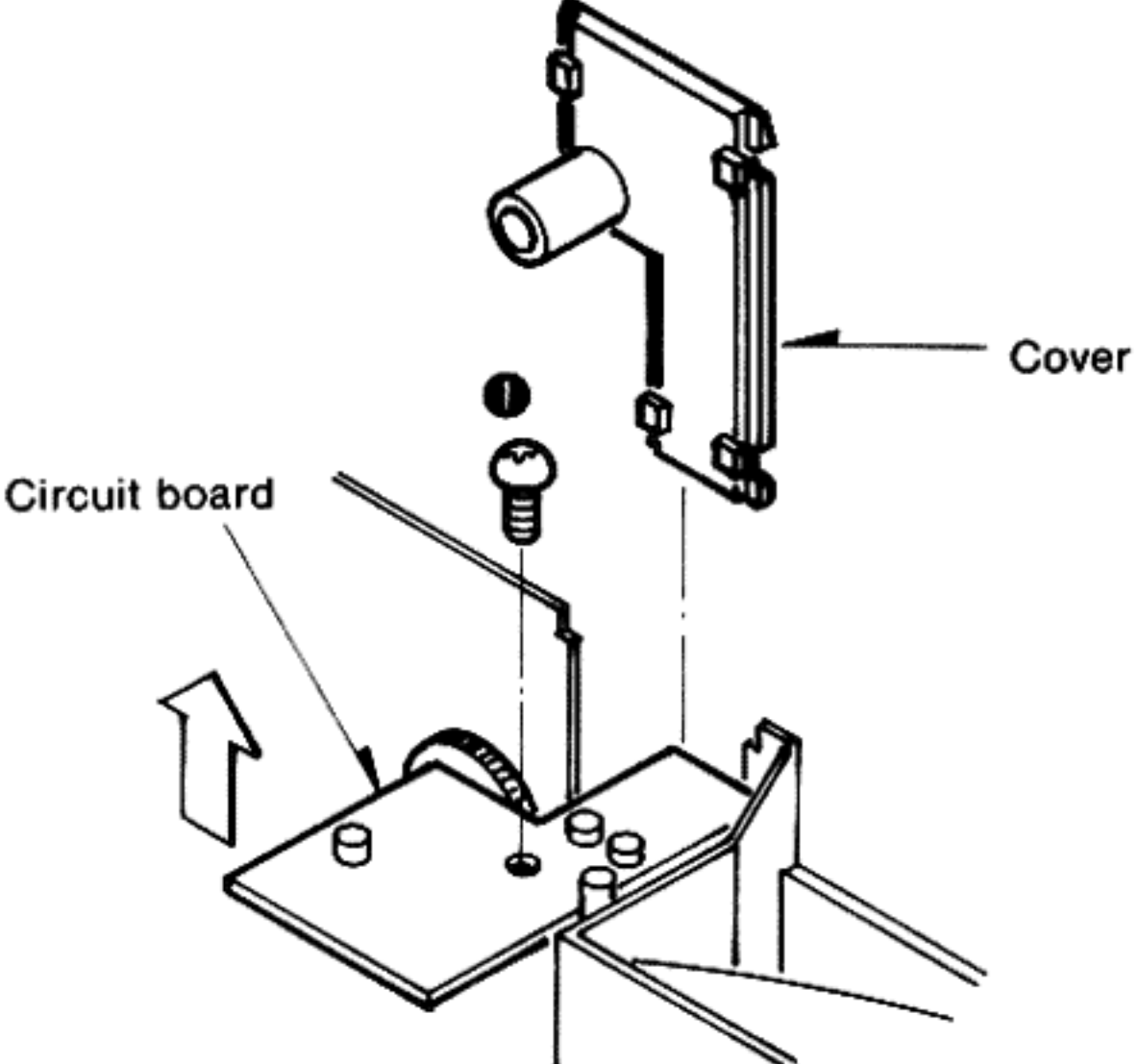
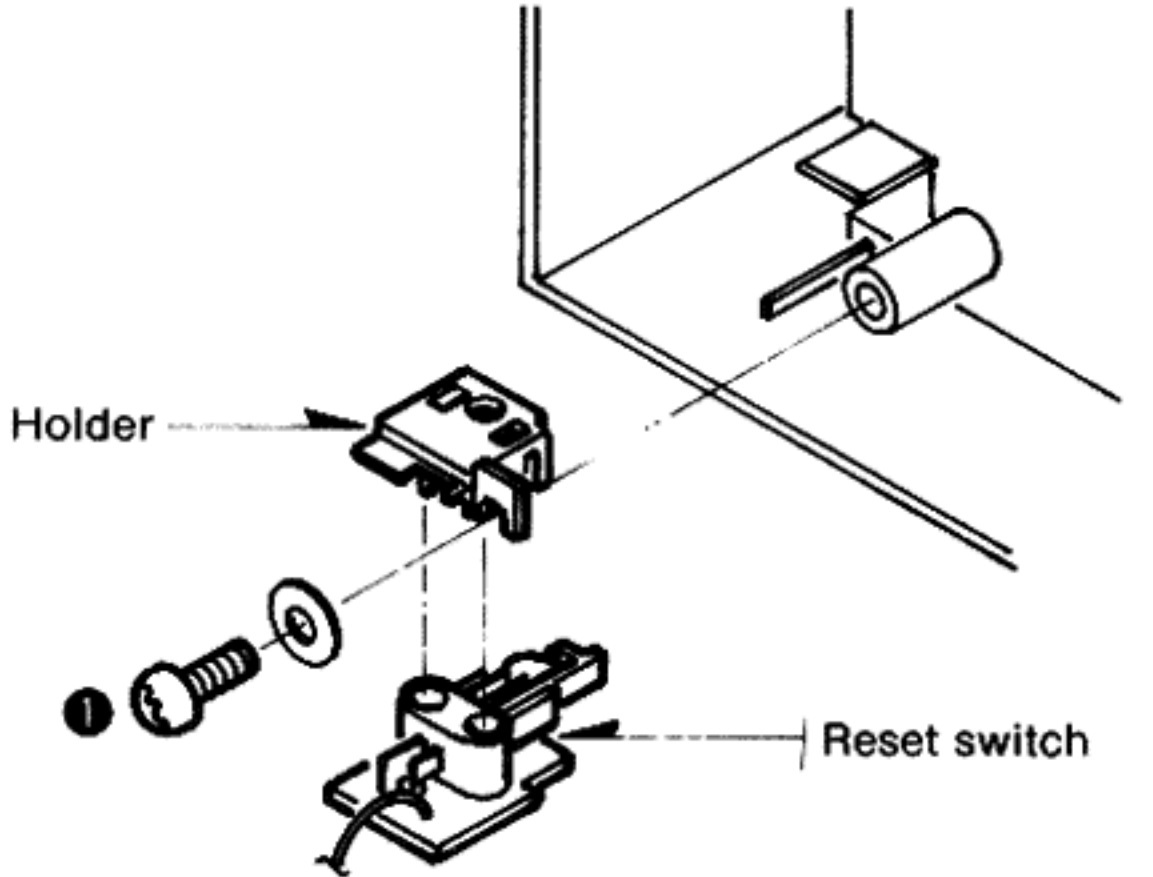
|                    |                                                                                                                                                                                                                                                                                                      |                                                                                     |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Ref. No<br>8       | How to remove the Hall element                                                                                                                                                                                                                                                                       |  |
| Procedure<br>2 ⇨ 8 | <ol style="list-style-type: none"> <li>1. Remove the terminal solder by use of solder sucker.</li> <li>2. Hold the Hall element with a tweezers and remove it while touching the soldering iron to the terminal.</li> </ol> <p><b>Note:</b><br/>Fit the Hall element with the part No. print up.</p> |                                                                                     |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                     |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Ref. No<br>9       | How to remove the tonearm                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
| Procedure<br>2 ⇨ 9 | <ol style="list-style-type: none"> <li>1. Remove the dust cover.</li> <li>2. Remove the shield cover setscrew ❶.</li> <li>3. Unsolder the 5 lead wires.</li> <li>4. Turn the worm gear with your fingers to move the tonearm inward.</li> </ol> <p>★ <b>To remove offset angle detection circuit board</b></p> <ol style="list-style-type: none"> <li>1. Remove the indicator cover setscrew ❸.</li> <li>2. Remove the indicator cover in the direction the arrow ❹.</li> </ol> |                                                                                     |

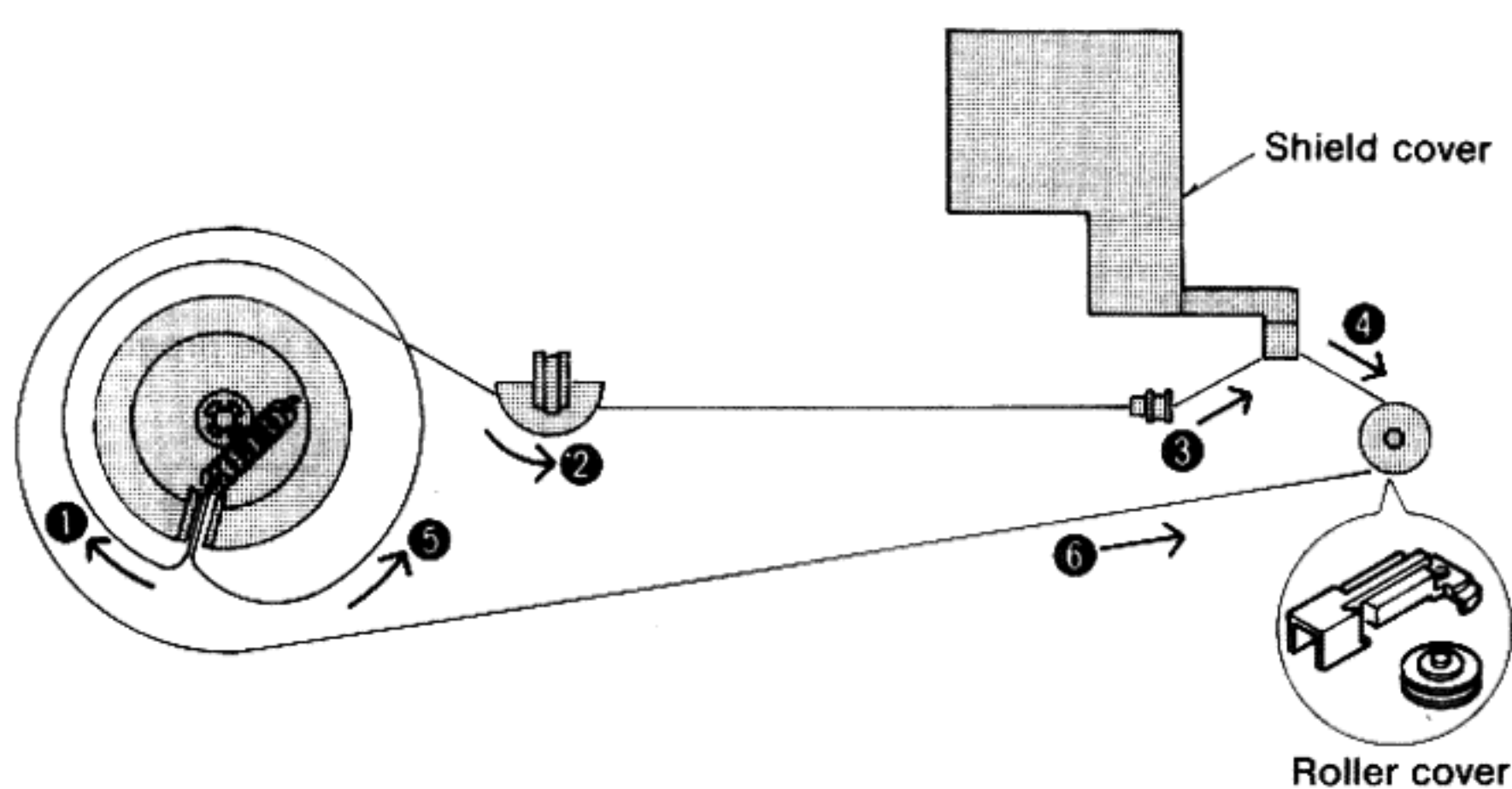
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|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Ref. No<br>10       | How to remove the arm drive motor                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| Procedure<br>2 ⇨ 10 | <ol style="list-style-type: none"> <li>1. Remove the dust cover.</li> <li>2. Remove the 2 setscrews (❶, ❷).</li> <li>3. Unsolder the 2 lead wires from the motor.</li> <li>4. Remove the belt and arm drive motor</li> <li>5. Open the cushion rubber.</li> </ol> <p><b>Note:</b><br/>Connection of the arm drive motor<br/>Red wire ..... (+) terminal of the arm drive motor.<br/>Blue wire ..... (-) terminal of the arm drive motor.<br/>• An arrow mark is the (-) terminal.</p> |                                                                                       |

| Ref. No<br>11                                                                      | How to remove the stylus set-down position volume circuit board                                 | Ref. No<br>12           | How to remove the reset switch                                                                                                                                                                      |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Procedure<br>2 ▶ 4 ▶ 11                                                            | 1. Remove the cover.<br>2. Remove the stylus set-down position volume circuit board setscrew ❶. | Procedure<br>2 ▶ 4 ▶ 12 | 1. Remove the screw ❶.<br>2. Remove the 2 claws of the switch holder.<br>3. Unsolder the 2 switch terminals.<br><b>Note:</b><br>When replacing the reset switch, be sure to open the upper cabinet. |
|  |                                                                                                 |                         |                                                                                                                 |

## ■ HOW TO SET THE TONEARM DRIVE ROPE

When setting the rope, follow the procedure given below.

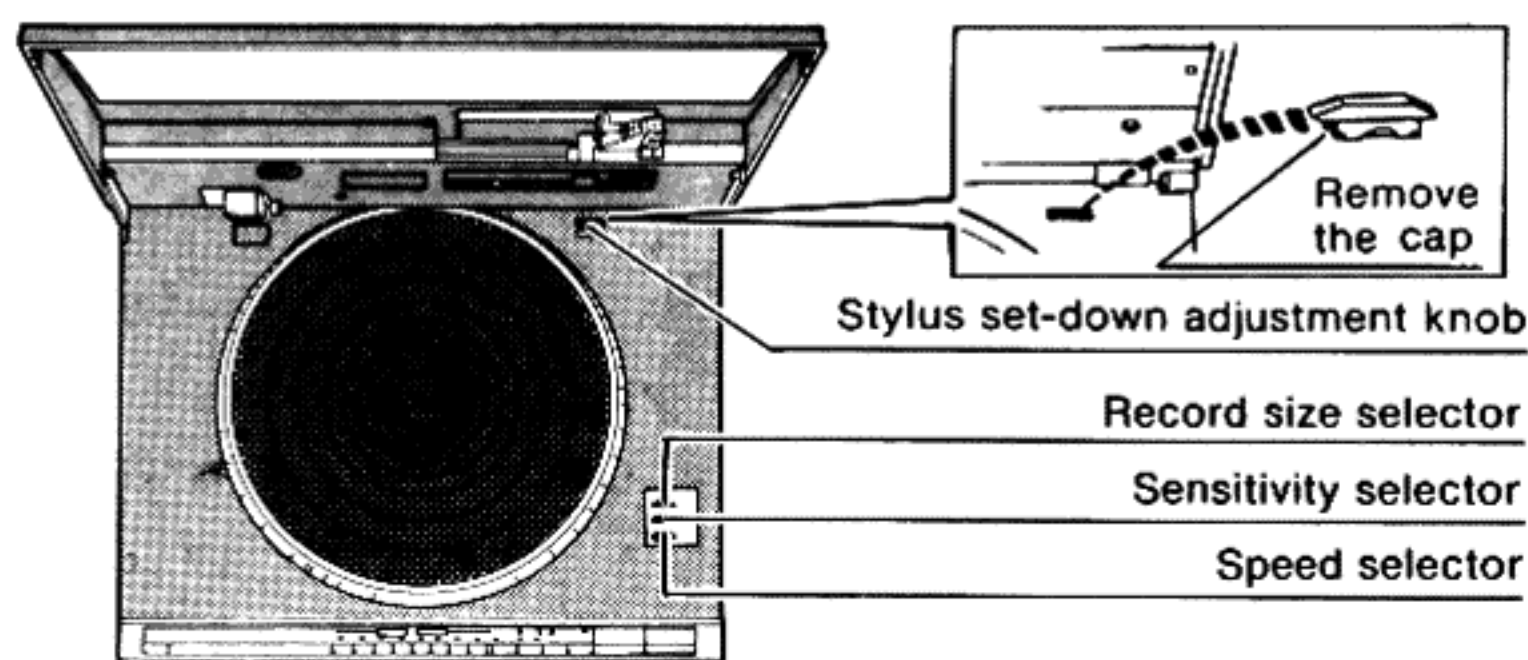
1. Remove the dust cover.
2. Remove the roller cover.
3. Set the rope in the order of steps ❶ ~ ❸.
4. Fit the rope connector to the tonearm.
5. Set the roller cover and turn the worm gear by hand to see that the tonearm moves.





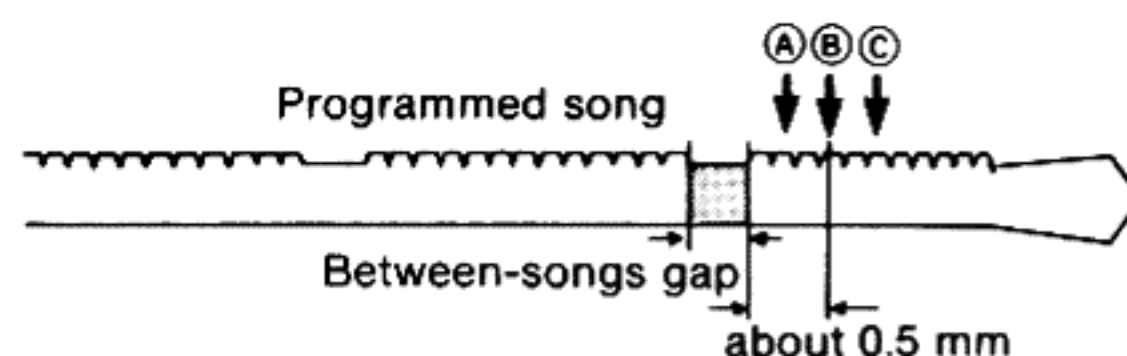
# ■ PLAYING NON-STANDARD AND SPECIAL RECORDS AND MAKING ADJUSTMENTS

In order to perform program record play, direct song selection, and forward and backward skip functions properly, this unit is designed so that the stylus is lowered shortly before (about 0.5 mm) the beginning of the between-songs gap. Because of this, no sound is heard for about ten seconds after the stylus contacts the record when using one of the above functions.



## 1. Adjusting the tonearm lowering position

- The stylus set-down adjustment knob is properly set at the factory. However, if it has been jarred loose during shipment, the tonearm may be lowered too far to one side as shown in the diagram to the right. If necessary, correct the problem as described below.



- Ⓐ Tonearm lowered too far to the left.
- Ⓑ Proper location
- Ⓒ Tonearm lowered too far to the right.

| Problem                                                                                                                                                                                                 | Confirmation/Adjustment                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Ⓐ <b>Tonearm lowered too far to the left</b></p> <ul style="list-style-type: none"> <li>• No sound is heard even when the stylus reaches the beginning of the specified song.</li> </ul>             | <p>① Set sensitivity selector to <b>H</b>.</p> <p>② If beginning of song is cut off during program record play:</p> <p>③ Rotate knob in the <b>OUT</b> direction (to the right).</p> <p><b>Note:</b><br/>Always return the sensitivity selector to <b>M</b> after completing the above adjustment.</p> |
| <p>Ⓒ <b>Tonearm lowered too far to the right</b></p> <ul style="list-style-type: none"> <li>• No sound is heard for a long time (more than 30 seconds) after the stylus contacts the record.</li> </ul> | <p>① Set sensitivity selector to <b>H</b>.</p> <p>② If the end of the song before the programmed song is heard:</p> <p>③ Rotate knob in the <b>IN</b> direction (to the left).</p> <p><b>Note:</b><br/>Always return the sensitivity selector to <b>M</b> after completing the above adjustment.</p>   |

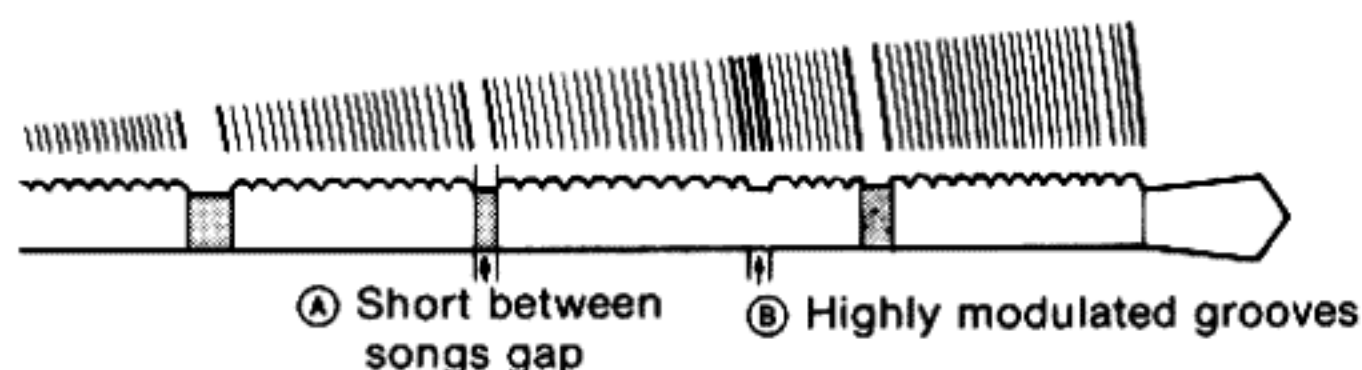
- The tonearm lowering position for the first song of a record cannot be adjusted. Adjustment is possible only for songs 2 through 8.
- If between-songs gaps are extremely short or contain music and when an eccentric record is used, the problem cannot be corrected by this adjustment.

## 2. Using the sensitivity selector

The between-songs detection function may not operate properly when using the following kinds of records:

- A) Records having extremely short spaces between songs.
- B) Records made at a very high recording level (highly modulated grooves).

In these cases, it may be necessary to change the sensitivity selector.



| Problem                                                                                                                                                                                                                                                                  | Confirmation/Adjustment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Short spaces between songs</b> <ul style="list-style-type: none"> <li>Specified song is skipped over and the next song is played instead.</li> <li>Tonearm lowers at beginning of specified song but no sound is heard.</li> </ul>                                    | <ul style="list-style-type: none"> <li>Set sensitivity selector to <b>H</b>.<br/>(If the beginning of the song is still not played correctly, adjust the stylus set-down adjustment knob.)</li> </ul>                                                                                                                                                                                                                                                                                                      |
| <b>Highly modulated grooves</b> <ul style="list-style-type: none"> <li>Tonearm is lowered at point such as the one shown above.</li> <li>Song before the specified song is played.<br/>(For example, song 4 is heard even though song 5 has been programmed.)</li> </ul> | <ul style="list-style-type: none"> <li>Set sensitivity selector to <b>L</b>.</li> </ul> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>Always return the sensitivity selector to <b>M</b> before playing other records.</li> <li>With some records, the problem will persist even after making the above adjustment. In this case, program record play, direct song selection and skip functions cannot be used. Play the record using the search function or automatic operation.</li> </ul> |

## 3. When playing non-standard records

| Record type and problem                                                                                                                                                                                                                                                                                                                                                                  | Operation and adjustment                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Records having very short between-songs gaps</li> <li>Severely warped or eccentric records</li> <li>Colored records</li> <li>Very dusty and scratched records</li> <li>30 cm (12") transparent or colored records and sonosheets (including black records that allow some light to pass through or that have very reflective surfaces)</li> </ul> | <ul style="list-style-type: none"> <li>Program record play, direct song selection, forward/backward skip and repeat play are not possible.</li> <li>Set the record size selector to <b>manual</b> and use the search play function.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> <li>Set the selector to <b>auto</b> for colored records having a diameter of 17 cm (7") and for standard records.</li> </ul> </div> |
| <ul style="list-style-type: none"> <li>17 cm (7") diameter 33 rpm records</li> <li>30 cm (12") diameter 45 rpm records</li> </ul>                                                                                                                                                                                                                                                        | <p>Set the speed selector to the correct speed for the record to be played.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <ul style="list-style-type: none"> <li>The speed selector should be left in the <b>auto</b> position at all other times.</li> </ul> </div>                                                                                                                                                                                            |



# ■ MEASUREMENTS AND ADJUSTMENTS

- **Equipment used and condition of the set**
  1. Oscilloscope
  2. DC voltmeter
  3. Record (SFTR007) for adjustment
  4. Set the optical sensor sensitivity selector to "M".

| Step | Item                          | Preparations                                                                                                                                                                                                                                                                                                                                                                                                                      | Parts adjusted                                                             | Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Start position                | <ol style="list-style-type: none"><li>1) Open the upper cabinet and put on the record.</li><li>2) Turn the power switch on.</li><li>3) Push the "start" switch.</li></ol>                                                                                                                                                                                                                                                         | Start position adjust screw.<br>(Fig. 1)                                   | <ol style="list-style-type: none"><li>1) Turn the start position adjusting screw.<br/>If it descends between tunes, turn the screw counterclockwise.</li></ol>                                                                                                                                                                                                                                                                                                                                                 |
| 2    | Sensor gain                   | <ol style="list-style-type: none"><li>1) Connect DC voltmeter to IC401 12-pin (+) and ground (-).</li><li>2) Put on the record for adjustment with side A up.</li></ol>                                                                                                                                                                                                                                                           | VR401<br>(Fig. 2)                                                          | <ol style="list-style-type: none"><li>1) Turn the power switch on.</li><li>2) Tonearm is on a between songs gap (blank area of the record).</li><li>3) Adjust VR401 so that the output voltage is <math>8.5\pm0.3V</math>.</li></ol>                                                                                                                                                                                                                                                                           |
| 3    | Sensor resolution             | <ol style="list-style-type: none"><li>1) Connect the oscilloscope to the IC401 9-pin (+) and ground (-).</li><li>2) Put on the record for adjustment with side A up.</li></ol>                                                                                                                                                                                                                                                    | VR402<br>(Fig. 2)                                                          | <ol style="list-style-type: none"><li>1) Turn the power switch on.</li><li>2) Keep the F skip switch depressed to move the tonearm.<br/>(Output is delivered between the tunes.)</li><li>3) Adjust VR402 so that the peak output between tunes is <math>3V\pm0.3V</math>.<br/>(Fig. 3)</li></ol>                                                                                                                                                                                                               |
| 4    | Stylus set-down position      | <ol style="list-style-type: none"><li>1) Connect lead wire with clip to CN301 6-pin to 2-pin of operation circuit board. (Muting operation stops.)</li><li>2) Open the upper cabinet and hold the reset switch with tape.</li><li>3) Put on the record for adjustment with side B up.</li><li>4) Close the upper cabinet.</li><li>5) Connect the unit to the amplifier (Connect the speakers to the speaker terminals.)</li></ol> | VR302<br>(Fig. 4)                                                          | <ol style="list-style-type: none"><li>1) Turn the power switch on.</li><li>2) Push the program key 2, followed by start switch.</li><li>3) After completion of cueing down, push the program key 2 for the purpose of skipping.</li><li>4) Make sure the descending at count "13".</li><li>5) Adjust VR302 so that the descending position is at count "13".</li></ol> <p><b>Note:</b></p> <ul style="list-style-type: none"><li>• VR302 can also be adjusted from the back of the set. (Fig. 4 (B))</li></ul> |
| 5    | Tonearm offset angle          | <ol style="list-style-type: none"><li>1) Remove the dust cover.<br/>(Refer to "DISASSEMBLY INSTRUCTIONS.")</li><li>2) Open the upper cabinet and hold the reset switch with tape.</li><li>3) Close the upper cabinet.</li><li>4) Put on the record.</li></ol>                                                                                                                                                                     | Adjusting screw<br>(Fig. 5)                                                | <ol style="list-style-type: none"><li>1) Turn the power switch on.</li><li>2) Keep the F skip switch depressed to move the tonearm.</li><li>3) Turn the adjusting screw so that the arm center matches the V-groove of the lift bar.</li></ol>                                                                                                                                                                                                                                                                 |
| 6    | Servo gain and offset voltage | <ol style="list-style-type: none"><li>1) Remove the dust cover.<br/>(Refer to "DISASSEMBLY INSTRUCTIONS.")</li><li>2) Open the upper cabinet and hold the reset switch with tape.</li><li>3) Connect the DC voltmeter to CN301 5-pin (+) 2-pin (-).</li><li>4) Remove the sensor cover.</li></ol>                                                                                                                                 | VR501<br>(Servo gain)<br>(Fig. 6)<br>Screw<br>(Offset voltage)<br>(Fig. 6) | <ol style="list-style-type: none"><li>1) Turn the power switch on.</li><li>2) Keep the F skip switch depressed to move the tonearm.</li><li>3) Open the upper cabinet.</li><li>4) Completely shift the tonearm to the left. Then, adjust VR501 so that the voltage is 6.0V (Servo gain).</li><li>5) Set the tonearm to the center and make sure that the output voltage is 3.0V.</li><li>6) If the voltage is not 3.0V, adjust screw so that the output voltage is 3.0V (Offset voltage).</li></ol>            |



## • Adjustment points

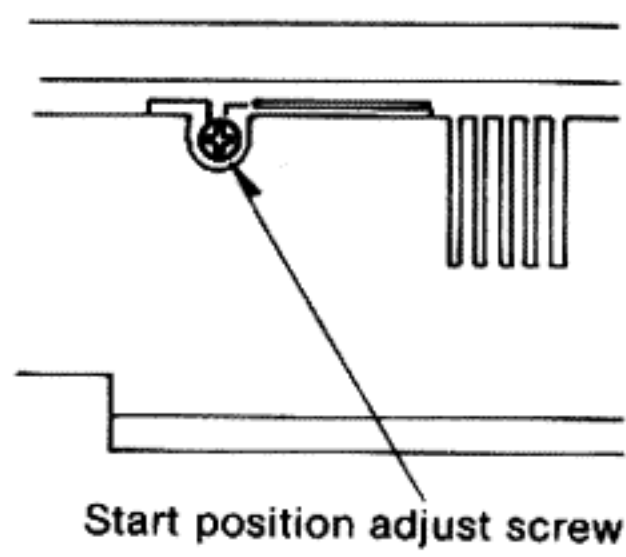


Fig. 1

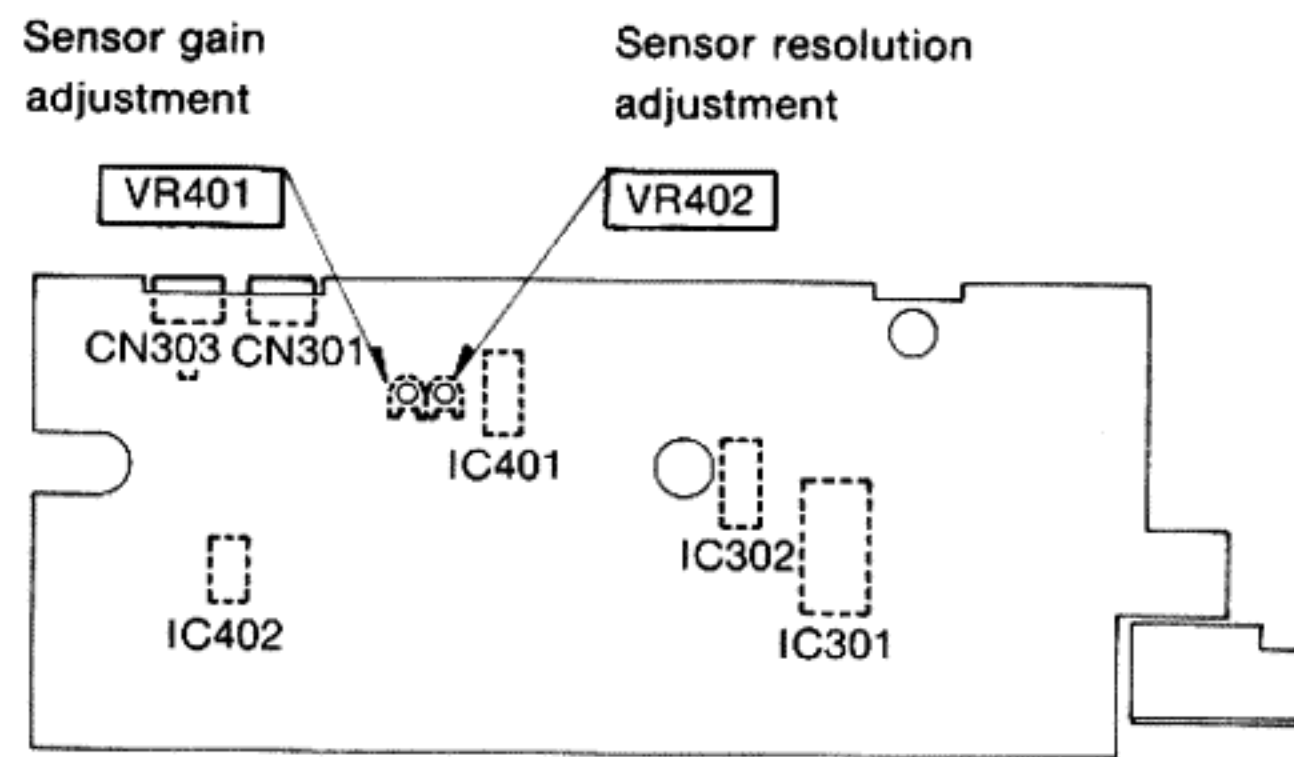


Fig. 2

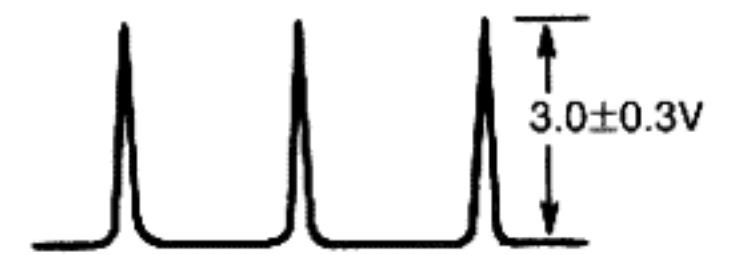


Fig. 3

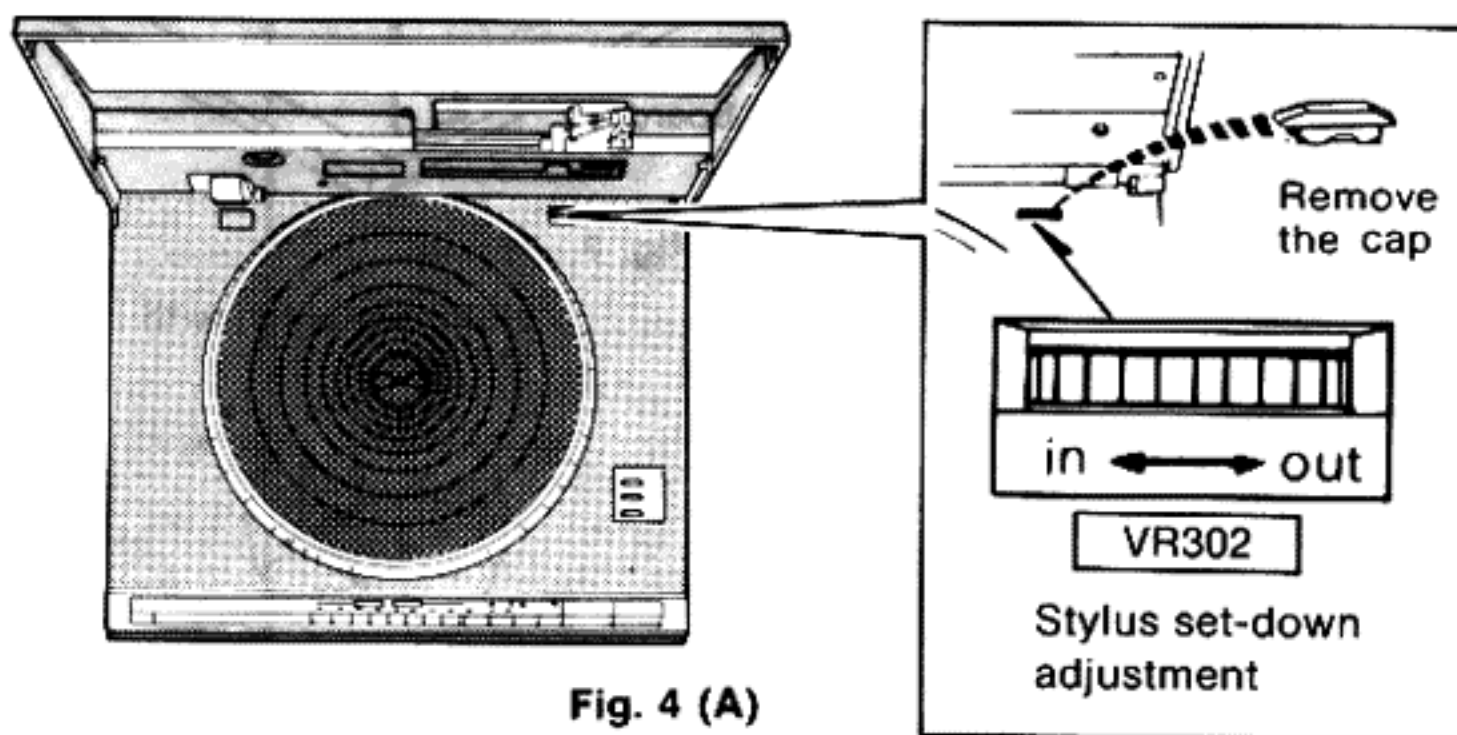


Fig. 4 (A)

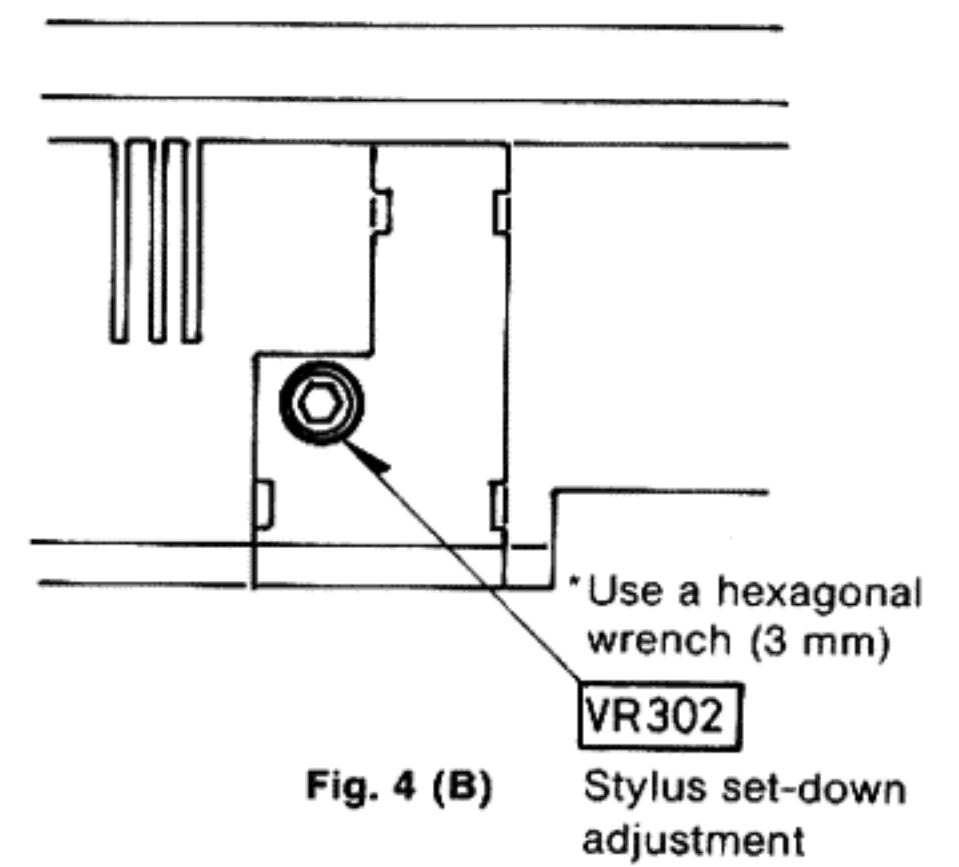


Fig. 4 (B)

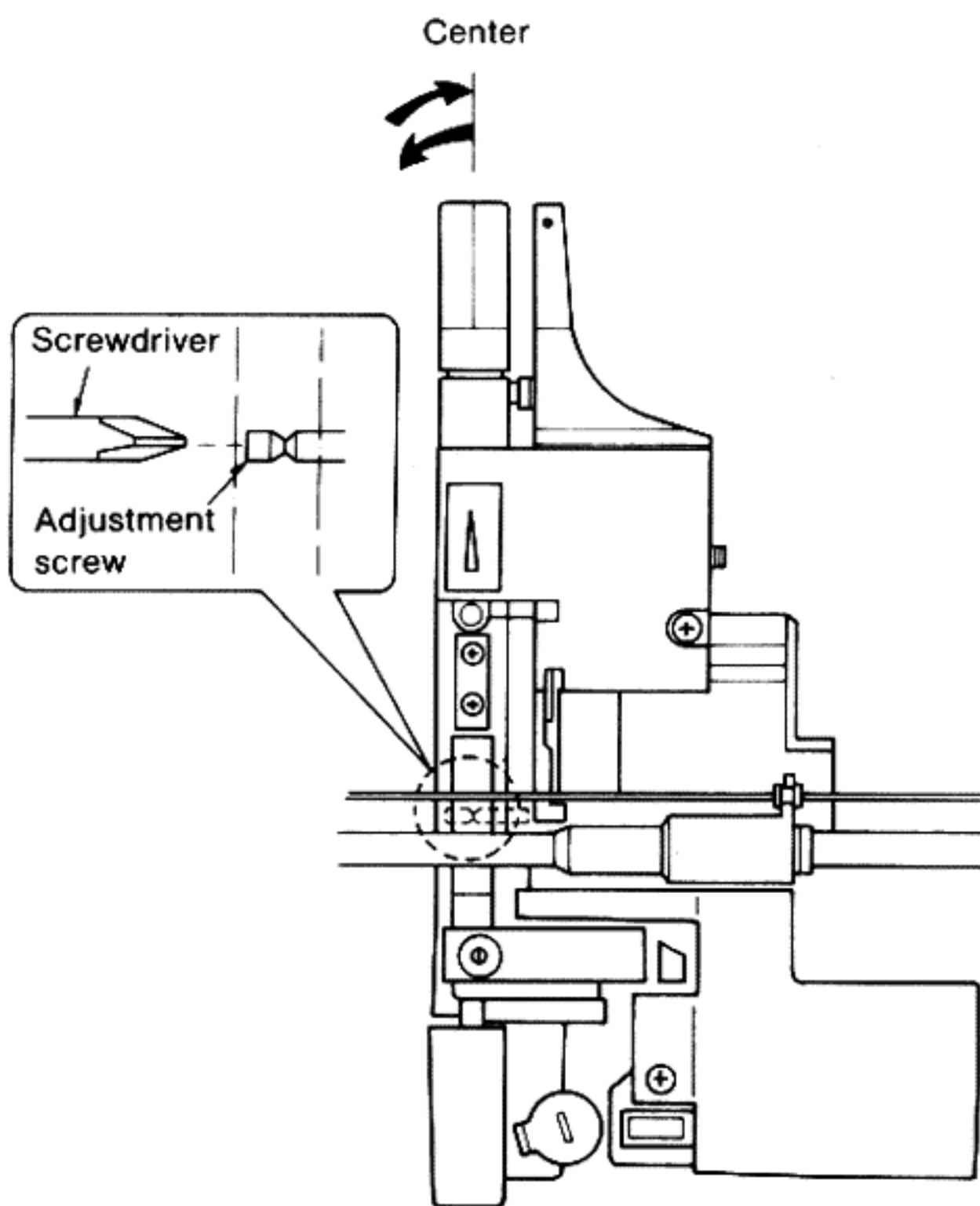
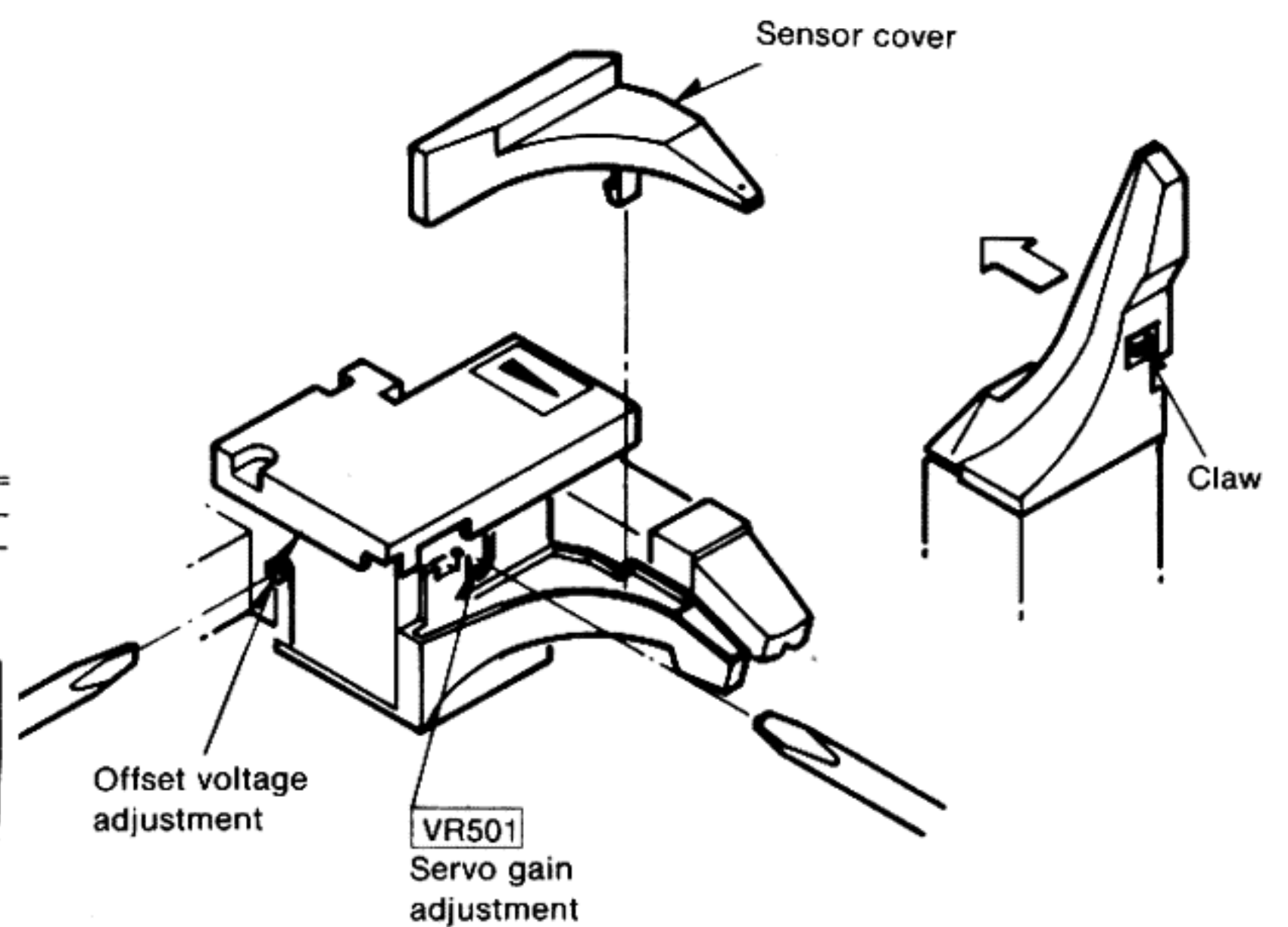


Fig. 5



(Fig. 6)

# ■ TROUBLESHOOTING

## 1. How to use the repair table (Fig. 7)

- ① Remove the bottom board.
- ② Remove the operation circuit board and connect the P.C.B. ground terminal to the chassis (Stator frame.)
- ③ Put the unit on the repair table.
- ④ Fit the turntable platter and put on the turntable mat.
- ⑤ Put on the record and check the circuits from under the unit.

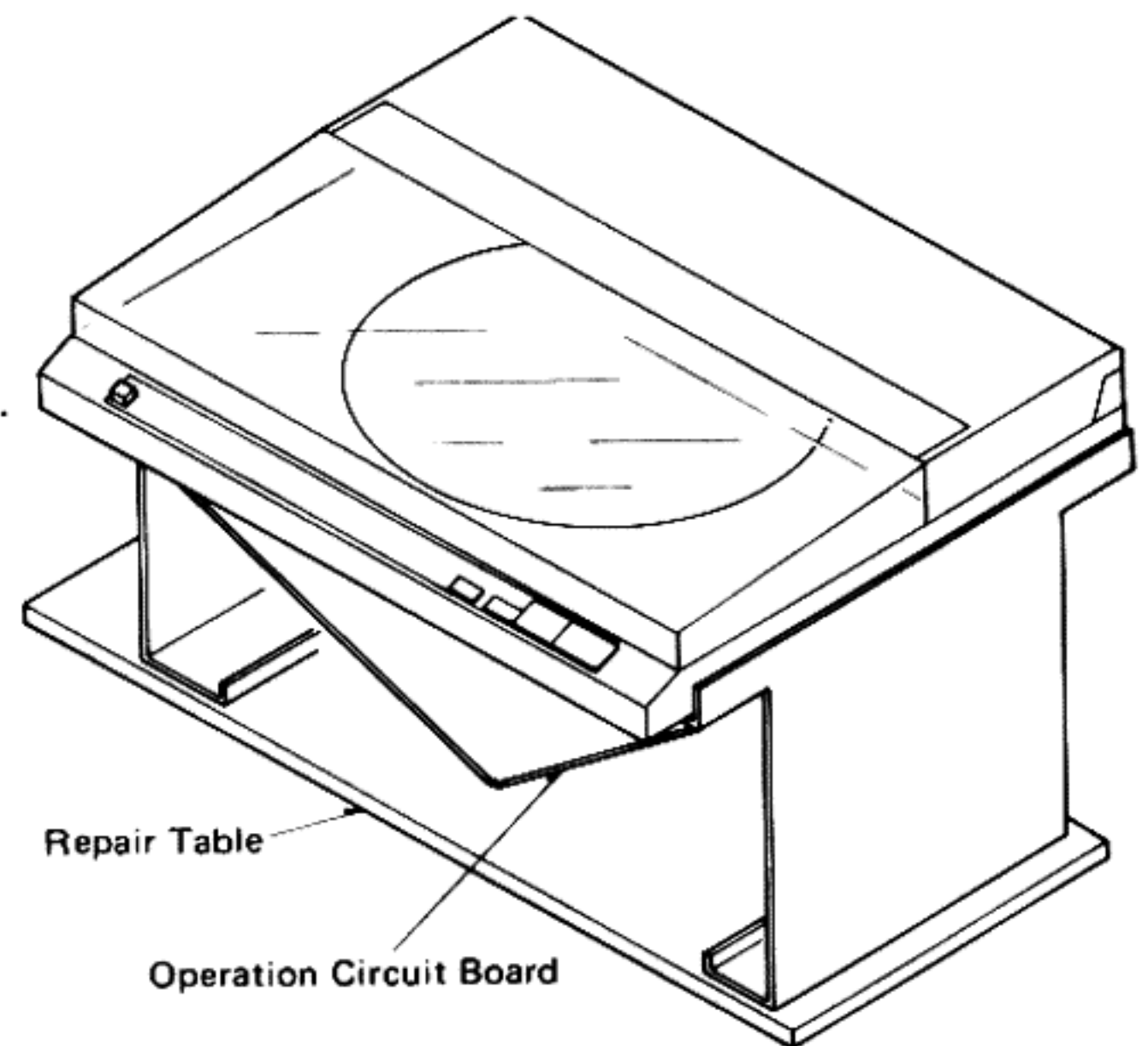


Fig. 7

## 2. How to raise the set (Fig. 8)

**Note:** Turntable platter is not fixed on the center spindle.  
Take care so that the turntable platter will not come loose. Also, take care allow the set to fall down.

- ① Remove the bottom board.
- ② Completely open the upper cabinet.
- ③ Hold the reset switch with the tape.
- ④ Fit the turntable platter.
- ⑤ Raise the unit and check the circuits.

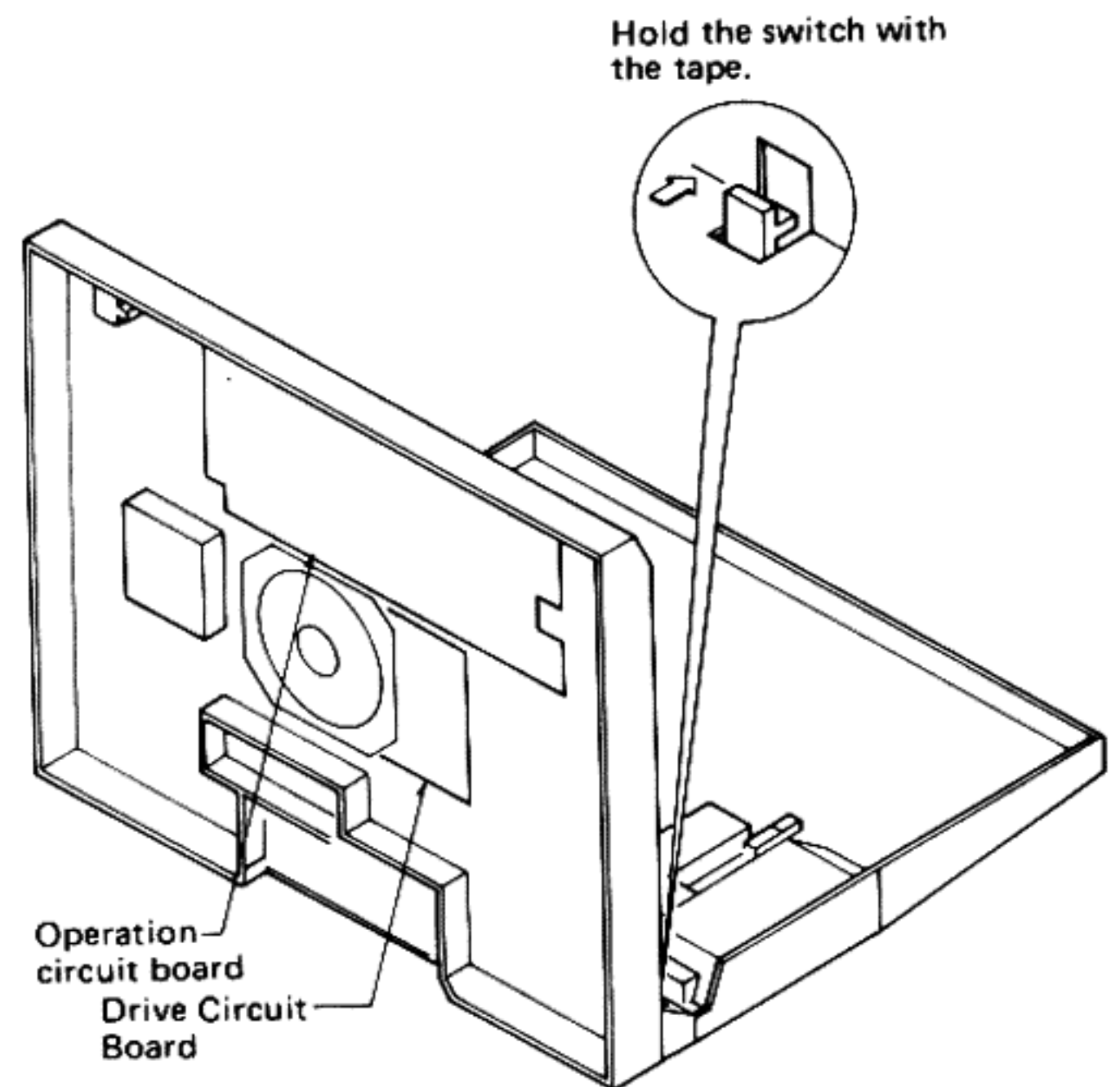


Fig. 8

## 3. How to turn over the set (Fig. 9)

**Note:** This purpose is to check the voltage of each circuit during stop of the turntable.

- ① Remove the turntable platter and turn over the unit.
- ② Remove the bottom board.
- ③ Turn the power switch "on" and check the voltage.

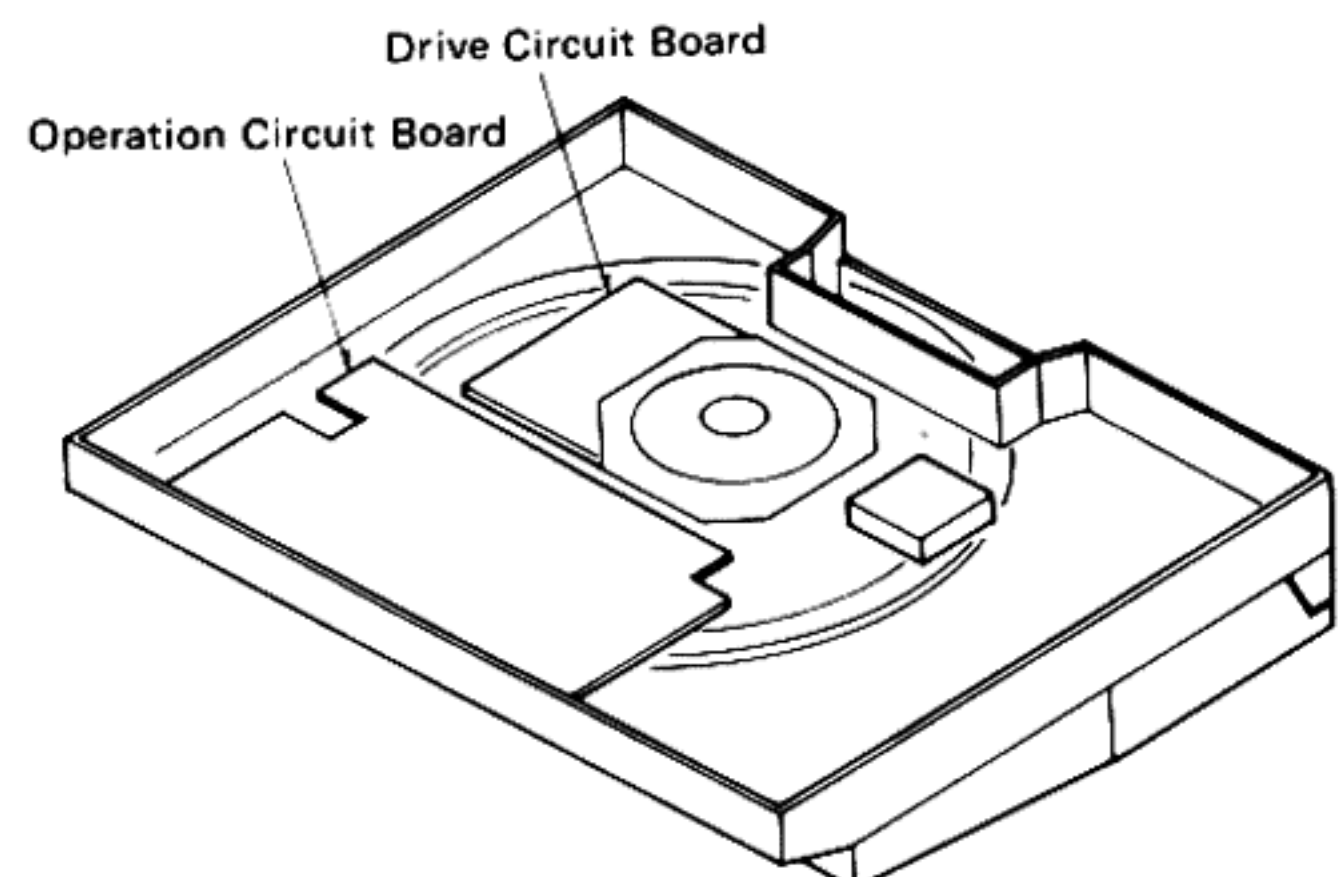
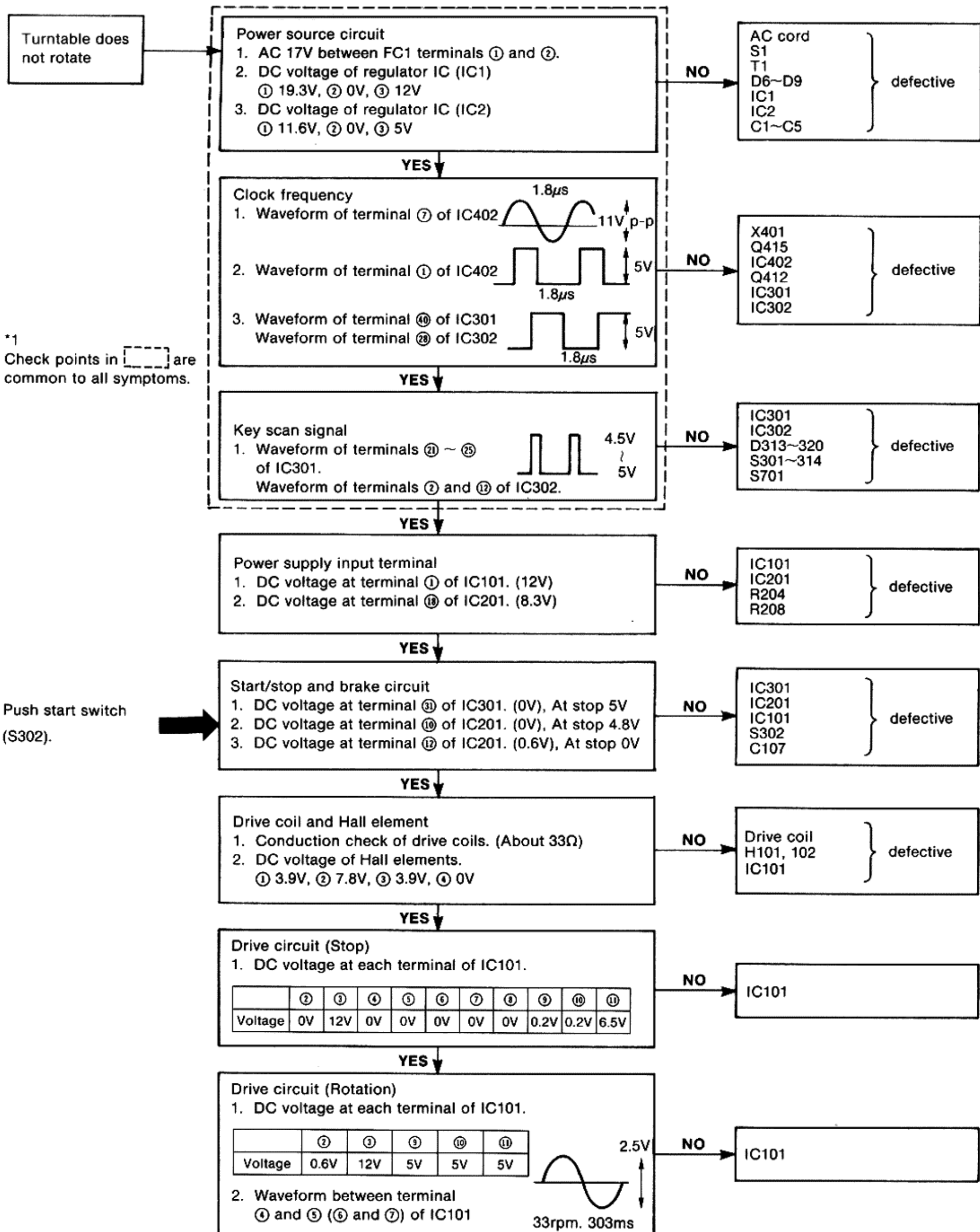
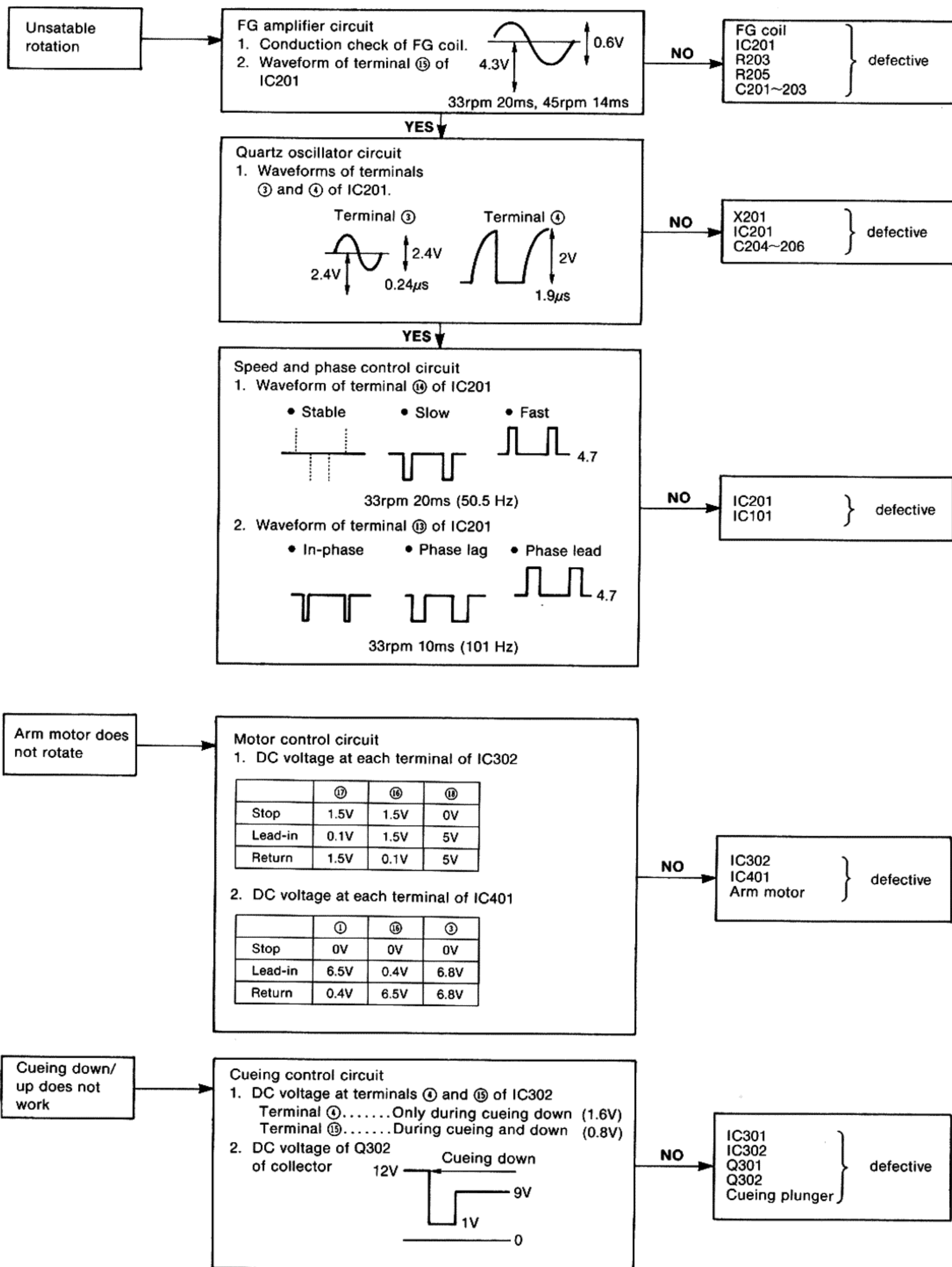


Fig. 9

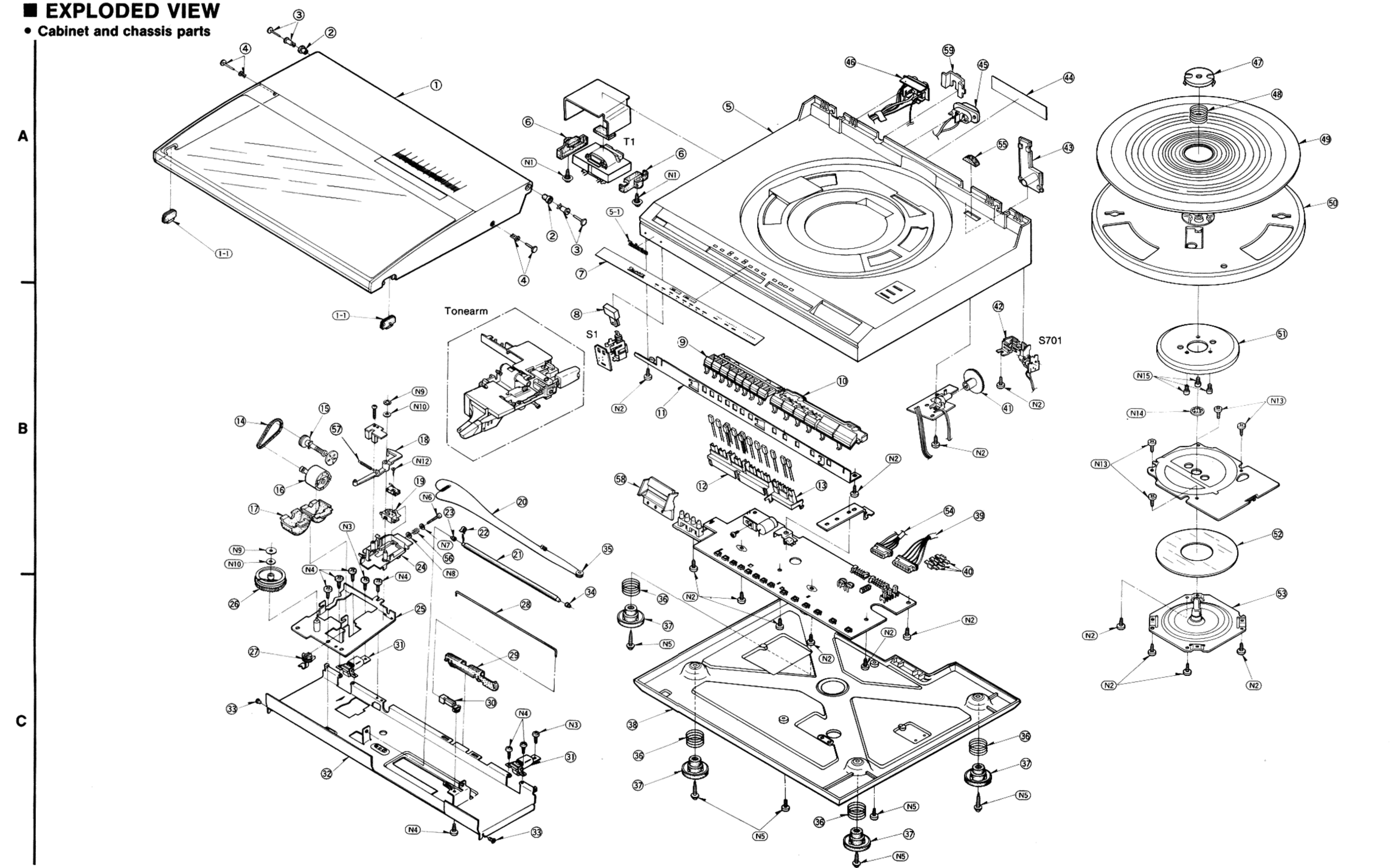






■ EXPLODED VIEW

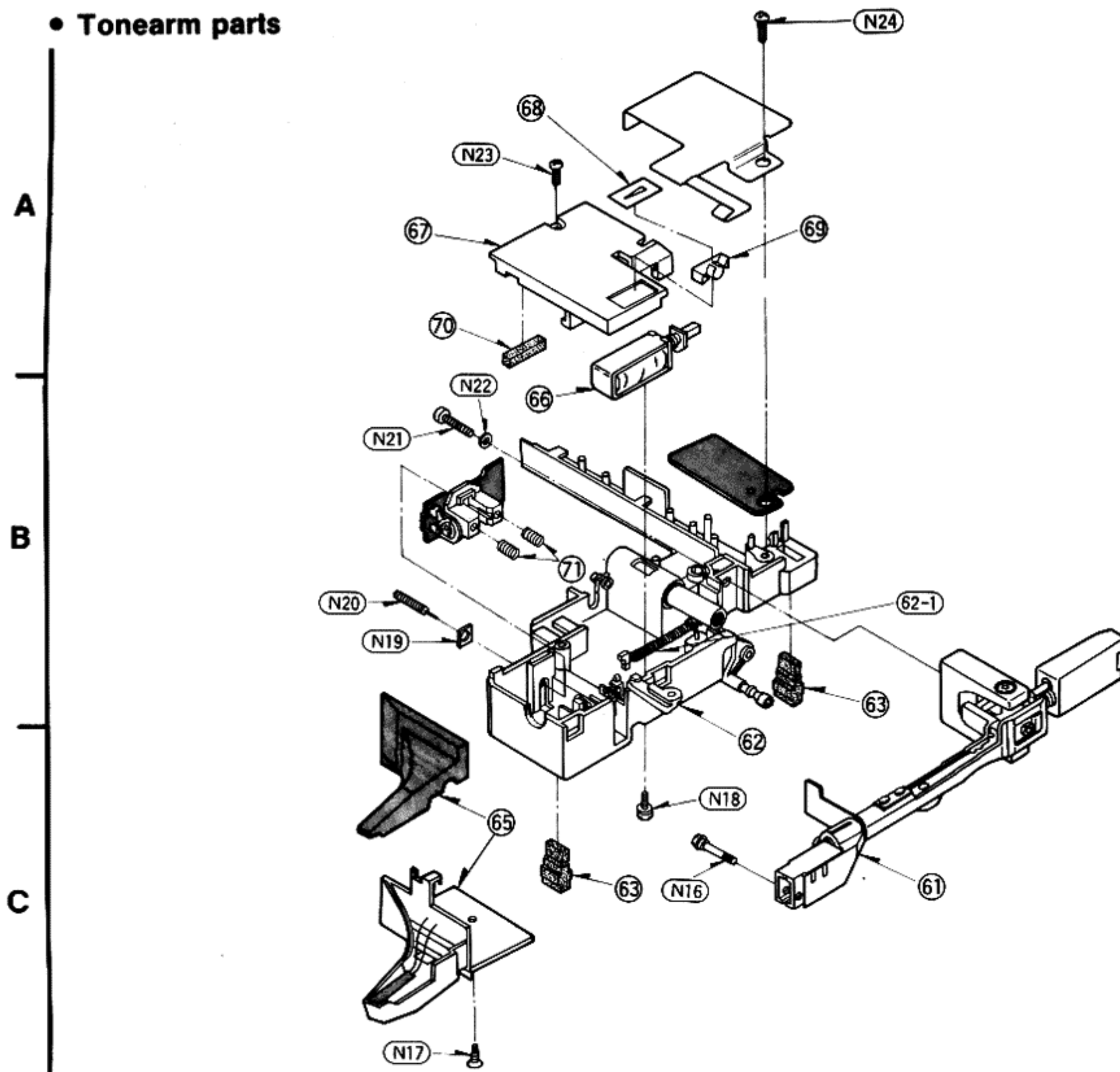
• Cabinet and chassis parts



|   |       |    |    |    |    |       |    |    |    |    |       |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| A | (1-1) | ④  | ③  | ②  | ①  | ④     | ⑥  | ②  | ③  | ⑦  | (5-1) | ⑥  | ⑤  | ④⑥ | ⑤⑨ | ④⑤ | ⑤⑤ | ④③ | ④④ | ④⑦ | ④⑧ | ④⑨ | ⑤⑩ |    |    |    |    |    |    |
| B | ⑭     | ⑰  | ⑱  | ⑮  | ⑤⑦ | (1-1) | ⑰  | ⑱  | ②④ | ②③ | ⑤⑥    | ②② | ②① | ②① | ⑧  | ③⑤ | ⑤⑧ | ⑪  | ⑨  | ⑩  | ⑬  | ⑩  | ⑤④ | ④① | ③⑨ | ④② | ④① | ⑤① | ⑤② |
| C | ③③    | ②⑥ | ②⑦ | ③② | ③① | ②⑤    | ③① | ②⑨ | ②⑧ | ③③ | ③①    | ③④ | ③⑧ | ③⑦ | ③⑥ | ③⑥ | ③⑦ | ③⑥ | ③⑦ | ③⑥ | ③⑦ | ③⑥ | ③⑦ | ③⑥ | ③⑦ | ③⑥ | ③⑦ | ③⑥ | ③⑦ |



## • Tonearm parts



|   |               |
|---|---------------|
| A | 67 70 68 69   |
| B | 66 71 63 62-1 |
| C | 65 63 62 61   |

## ■ REPLACEMENT PARTS LIST

- Notes:**
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
  2. Important safety notice:  
Components identified by a  $\triangle$  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
  3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

4. The "S" mark is service standard parts and may differ from production parts.
5. The parenthesized numbers in the columns of description stand for the quantity per set.

### Area

[M]..... U.S.A.  
[MC]..... Canada

| Ref. No.                   | Part. No. | Description                             |
|----------------------------|-----------|-----------------------------------------|
| <b>INTEGRATED CIRCUITS</b> |           |                                         |
| IC1                        | AN7812    | Regulator                               |
| IC2                        | AN78N05   | Regulator                               |
| IC101                      | AN6638    | Turntable Drive                         |
| IC201                      | AN6683    | Turntable Control                       |
| IC301                      | MN1425FPT | Micro Computer                          |
| IC302                      | MN1402FPM | Micro Computer                          |
| IC401                      | AN6690    | Arm Motor Drive & Blank Groove Detector |
| IC402                      | AN6912    | Comparator                              |
| IC951                      | AN6914    | Comparator                              |

| Ref. No.           | Part. No. | Description |
|--------------------|-----------|-------------|
| <b>TRANSISTORS</b> |           |             |
| Q301, 304,         | 2SD636    | Switching   |
| 364, 402,          |           |             |
| 951                |           |             |
| Q302, 303          | 2SD892    | Switching   |
| Q306, 311,         | 2SB641    | Switching   |
| 412, 952,          |           |             |
| 953                |           |             |
| Q401, 411,         | UN1111    | Switching   |
| 413                |           |             |
| Q415               | 2SC2206   | OSC         |
| Q430               | 2SD638    | Regulator   |

| Ref. No.      | Part. No.                | Description |
|---------------|--------------------------|-------------|
| <b>DIODES</b> |                          |             |
| D2~5          | SVDAY5525S               | LED         |
| D6~9          | $\triangle$ SVD1SR35200V | Rectifier   |
| D301, 302,    | SVDGL-9PG2               | LED         |
| 343           |                          |             |
| D303~311,     | SVDGL-9HY82              | LED         |
| 342           |                          |             |
| D312          | MA4062                   | 6.2V Zener  |
| D313~319,     | MA165                    | Switching   |
| 321~323,      |                          |             |
| 347, 430,     |                          |             |
| 431, 951      |                          |             |
| 952           |                          |             |



| Ref. No.                         | Part. No.             | Description                                      |
|----------------------------------|-----------------------|--------------------------------------------------|
| D401                             | MA4068                | 6.8V Zener                                       |
| D402                             | MA4110                | 11V Zener                                        |
| D501, ⑤<br>701                   | MA162A                | Switching                                        |
| D502                             | SVDSL31VC3            | LED                                              |
| <b>CRYSTAL</b>                   |                       |                                                  |
| X201                             | SVQSH41TR             | 4.1931 MHz                                       |
| <b>CERAMIC OSC</b>               |                       |                                                  |
| X401                             | SVFCSB540P3           | 540 kHz                                          |
| <b>VARIABLE RESISTORS</b>        |                       |                                                  |
| VR302                            | EVJE1AF20B54          | Stylus Set-down<br>Position Control,<br>50 kΩ(B) |
| VR401                            | EVN61AA00B55          | Sensor Gain Adjustment,<br>500kΩ(B)              |
| VR402                            | EVN61AA00B25          | Sensor Resolution<br>Adjustment, 200kΩ(B)        |
| VR501                            | EVNK0AA00B14          | Servo Gain Adjustment,<br>10kΩ(B)                |
| <b>RELAY</b>                     |                       |                                                  |
| RL701                            | SFDYQ11N02            | Muting                                           |
| <b>SWITCHES</b>                  |                       |                                                  |
| S1                               | △ SFDSC02N02          | Power                                            |
| S301~314                         | EVQQS405K             | Operation                                        |
| S315, 317                        | SFDSHSW08314          | Speed and Size Selector                          |
| S316                             | SFDSHSW08315          | Sens Selector                                    |
| S601                             | SFDSC02N03            | Rest                                             |
| S701                             | SFDSC05N01            | Reset                                            |
| <b>PHOTO INTERRUPTERS</b>        |                       |                                                  |
| PC501                            | 0N1186                | Offset Angle Sensor                              |
| PC502                            | SFPABJ0205R           | Blank Groove Sensor                              |
| PC601                            | 0N1161                | Tonearm Position<br>Sensor                       |
| <b>HALL ELEMENT</b>              |                       |                                                  |
| H101, 102                        | 0H-002                | Turntable Position<br>Detector                   |
| <b>POWER TRANSFORMER</b>         |                       |                                                  |
| T1 [M]                           | △ SLT57DTL2A          | Power Source                                     |
| T1 [MC]                          | △ SLT57DTS18C         | Power Source                                     |
| <b>FUSE</b>                      |                       |                                                  |
| F1 [MC]                          | △ XBA1F10NU14<br>only | 250V, 1A                                         |
| <b>CABINET AND CHASSIS PARTS</b> |                       |                                                  |
| 1                                | SFADC13M01E           | Dust Cover (1)                                   |
| 1-1                              | SFGZJ02N01            | Rubber Cushion (2)                               |
| 2                                | SFGZC02N01            | Rubber Cushion (2)                               |
| 3                                | SFUMC02N14            | Latch, Dust Cover (2)                            |
| 4                                | SFUMQ06N22            | Latch, Dust Cover (2)                            |
| 5                                | SFACC13N01E           | Cabinet (1)                                      |
| 5-1                              | SFKBBD2N01            | Badge (1)                                        |
| 6                                | SFGCQ06X01            | Rubber Cushion,<br>Transformer (2)               |
| 7                                | SFKKC13N01            | Ornament (1)                                     |

| Ref. No. | Part. No.     | Description                        |
|----------|---------------|------------------------------------|
| 8        | SRKTK15N26    | Knob, Power (1)                    |
| 9        | SFKTC13N02    | Knob, Program (1)                  |
| 10       | SFKTC13N01    | Knob, Operation (1)                |
| 11       | SFUPC13N01    | Guide (1)                          |
| 12       | SFUMC13N02    | Holder (B) (1)                     |
| 13       | SFUMC13N01    | Holder (A) (1)                     |
| 14       | SFGBC10-01    | Belt (1)                           |
| 15       | SFUMQ06N06A   | Worm Ass'y (1)                     |
| 16       | SFMHC02N02R   | Motor, (With<br>Capstan) (1)       |
| 17       | SFUMC02N07    | Rubber Cushion (1)                 |
| 18       | SFUMC02N05    | Lever, Switch (1)                  |
| 19       | SFUMQ06N09    | Holder, Rest Switch (1)            |
| 20       | SFUZC05N02E   | Rope Ass'y (1)                     |
| 21       | SFXJC02N03    | Guide, Rail (1)                    |
| 22       | SFUMQ06N07    | Clamper, Guide Rail (1)            |
| 23       | SFGCQ06N01    | Rubber, Cushion (1)                |
| 24       | SFUMC02N06    | Base, Rest Switch (1)              |
| 25       | SFUPBL3N11E   | Base, Motor (1)                    |
| 26       | SFUML11R03    | Wheel, Tonearm Drive (1)           |
| 27       | SFUMC02N10    | Holder, Lead Wire (1)              |
| 28       | SFUZC02N01    | Rod, Rest Switch (1)               |
| 29       | SFUMC02N12    | Holder, Lead Wire (1)              |
| 30       | SFUMV05N23    | Cap (1)                            |
| 31       | SFATQ06N01E   | Hinge (2)                          |
| 32       | SFUKC13N01E   | Base, Tonearm (1)                  |
| 33       | SFGZBL3N03    | Rubber Cushion (1)                 |
| 34       | SFGCC05N05    | Rubber Cushion, Guide<br>Rail (1)  |
| 35       | SFUMC05N22    | Pulley (1)                         |
| 36       | SFQCC05N01    | Spring, Insulator (4)              |
| 37       | SFGAJ02N01    | Insulator (4)                      |
| 38       | SFAUC13N01    | Bottom Cover (1)                   |
| 39       | SFEHJ02N02E   | Phono Output Cord (1)              |
| 40       | SFKTK06N01    | Knob, Selector (3)                 |
| 41       | SFKTK06N02    | Knob, Tonearm Down<br>Adjuster (1) |
| 42       | SFUMJ02N14    | Cover, Rest Switch (1)             |
| 43       | SFACC13N011   | Cover (1)                          |
| 44 [M]   | SFNNC13M01    | Name Plate (1)                     |
| 44 [MC]  | SFNNC13C01    | Name Plate (1)                     |
| 45       | △ SFDJHSC0491 | AC Socket (1)                      |
| 46       | SFDJJ02N04E   | Jack, Phono Output (1)             |
| 47       | SFWEC06N01    | 45 rpm Adaptor (1)                 |
| 48       | SFQAC06N01    | Spring, 45 rpm<br>Adaptor (1)      |
| 49       | SFTGQ06N01    | Turntable Mat (1)                  |
| 50       | SFTEQ05N01    | Turntable Platter (1)              |
| 51       | SFTMC07-01E   | Magnet (1)                         |
| 52       | SFMGQ34N01    | Cover, Coil (1)                    |
| 53       | SFMZC06N01R   | Stator Flame Ass'y (1)             |
| 54       | SFDJC13N03E   | Connector, Ass'y (1)               |
| 55       | SFGKQ06N01    | Cap (1)                            |
| 56       | SFQA913-01    | Spring (1)                         |
| 57       | SFQHQ34N22    | Spring (1)                         |
| 58       | SFUMC13N03    | Prism (1)                          |
| 59       | SFACC13N012   | Cover (1)                          |

| Ref. No.                        | Part. No.    | Description                        |
|---------------------------------|--------------|------------------------------------|
| <b>TONEARM PARTS</b>            |              |                                    |
| 61                              | SFPAMJ0201A  | Tonearm Ass'y (1)                  |
| 62                              | SFPKDJ0201R  | Tonearm Base (1)                   |
| 62-1                            | SFPSP00504   | Spring (1)                         |
| 63                              | SFPGML1101   | Rubber, Tonearm<br>Guide (2)       |
| 65                              | SFPABJ0205R  | Sensor Ass'y (1)                   |
| 66                              | SFDZC05N01E  | Solenoid Ass'y (1)                 |
| 67                              | SFPCS0Q601   | Cover, Indicator (1)               |
| 68                              | SFPAK0Q601   | Plate, Indicator (1)               |
| 69                              | SFPCSJ0201   | Holder, LED (1)                    |
| 70                              | SFPGM0Q601   | Rubber, LED (1)                    |
| 71                              | SFPSP00302   | Spring, Adjustor (2)               |
| <b>SCREWS, WASHERS AND NUTS</b> |              |                                    |
| N1                              | SFXGQ06N01   | Screw (2)                          |
| N2                              | ⑤ XTV3+10BFN | Screw, ⊕3×10 (11)                  |
| N3                              | XTW3+14TFZ   | Screw, ⊕3×14 (2)                   |
| N4                              | XTV3+6JFZ    | Screw, ⊕3×6 (4)                    |
| N5                              | XTW3+14QFYR  | Screw, ⊕3×14 (6)                   |
| N6                              | XSN3+30S     | Screw, ⊕3×30 (1)                   |
| N7                              | XWE3D10      | Washer, ϕ3 (1)                     |
| N8                              | XNC3HS       | Nut (1)                            |
| N9                              | CSTW3        | Washer (2)                         |
| N10                             | XWE3A8BW     | Washer (1)                         |
| N11                             | XTV3+20J     | Screw, ⊕3×20 (1)                   |
| N12                             | XTN16+10G    | Screw, ⊕16×10 (1)                  |
| N13                             | ⑤ XTV3+6BFN  | Screw, ⊕3×6 (4)                    |
| N14                             | SFXWC06N02   | Washer (1)                         |
| N15                             | ⑤ XSN3+5S    | Screw (3)                          |
| N16                             | SFPEV0Q601   | Screw, Cartridge (1)               |
| N17                             | XTS26+6JFZ   | Screw, ⊕2.6×6 (1)                  |
| N18                             | XYN2+C4FZ    | Screw, ⊕2×4 (1)                    |
| N19                             | SFXN623-1    | Nut (1)                            |
| N20                             | SFPTN00301   | Screw (1)                          |
| N21                             | ⑤ XSN3+12S   | Screw, ⊕3×12 (1)                   |
| N22                             | ⑤ XWA3B      | Washer (1)                         |
| N23                             | XTN23+6JFZ   | Screw, ⊕2.3×6 (1)                  |
| <b>ACCESSORIES</b>              |              |                                    |
| A1 [M]                          | SFNUC13M01   | Instruction Book (1)               |
| A1 [MC]                         | SFNUC13C01E  | Instruction Book (1)               |
| A2                              | SFDHC05N01   | Phono Output Cord (1)              |
| A3                              | SFDLJ02N11E  | Ground Wire (1)                    |
| A4                              | △ SFDAC05M01 | AC Cord (1)                        |
| <b>PACKING PARTS</b>            |              |                                    |
| P1 [M]                          | SFHPC13M01   | Carton Box (1)                     |
| P1 [MC]                         | SFHPC13C01   | Carton Box (1)                     |
| P2                              | SFHHC13N01   | Pad, Front (1)                     |
| P3                              | SFHHC13N02   | Pad, Rear (1)                      |
| P4                              | SFHKC05N01   | Clamper, Turntable<br>Platter (2)  |
| P5                              | SFHKQ06N01   | Spacer, Tonearm (1)                |
| P6                              | SFHSC13N01   | Spacer, Dust Cover (1)             |
| P7                              | SFYH60×60    | Polyethylene Bag (1)               |
| P8                              | SFYH17×16    | Polyethylene, Cord (1)             |
| P9                              | SFYF32A35    | Polyethylene,<br>Turntable Mat (1) |
| P10                             | SFHDD04N01   | Pad, Turntable Mat (1)             |

# RESISTORS AND CAPACITORS

**Notes:** 1. Part numbers are indicated on most mechanical parts.  
Please use this part number for parts orders.

2. Important safety notice:

Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

3. This "S" mark is service standard parts and may differ from production parts.

4. Unless otherwise specified.

All resistors are in OHMS ( $\Omega$ ) K = 1000 $\Omega$ , M = 1000k $\Omega$   
All capacitors are in MICROFARADS( $\mu$ F), P = 10<sup>-6</sup> $\mu$ F.

## Numbering System of Resistor

Example

|      |         |       |           |       |
|------|---------|-------|-----------|-------|
| ERD  | 25      | F     | J         | 101   |
| Type | Wattage | Shape | Tolerance | Value |
| ERG  | 1       | AN    | J         | 2R2   |
| Type | Wattage | Shape | Tolerance | Value |

## Numbering System of Capacitor

Example

|      |         |                 |           |             |
|------|---------|-----------------|-----------|-------------|
| ECKD | 1H      | 102             | Z         | F           |
| Type | Voltage | Value           | Tolerance | Peculiarity |
| ECEA | 50      | M               | R47       | R           |
| Type | Voltage | Peculiarity use | Value     | Special use |

| Resistor Type     | Wattage   | Tolerance     |
|-------------------|-----------|---------------|
| ERD : Carbon      | S2 : 1/4W | F : $\pm 1\%$ |
| ERG : Metal Oxide | 25 : 1/4W | J : $\pm 5\%$ |
| ERX : Metal Film  | 1 : 1W    | G : $\pm 2\%$ |
|                   | 2 : 2W    |               |

ERD2FCG□□□ → Fuse type carbon (1/4W)

ERDS2TJ□□□ → Small type carbon (1/4W)

| Capacitor Type      | Voltage   |              | Tolerance      |
|---------------------|-----------|--------------|----------------|
|                     | ECEA Type | Others       |                |
| ECEA : Electrolytic | 1A : 10V  | 1H : 50V DC  | J : $\pm 5\%$  |
| ECKD : Ceramic      | 1C : 16V  | 2H : 500V DC | K : $\pm 10\%$ |
| ECQM : Polyester    | 1E : 25V  | 1 : 100V     | Z : +80%, -20% |
| ECCD : Ceramic      | 1V : 35V  |              | P : +100%, -0% |
| ECKD : Ceramic      | 1H : 50V  |              | M : $\pm 20\%$ |
| ECEB : Electrolytic | 1J : 63V  |              |                |
| ECFR : Ceramic      | 50 : 50V  |              |                |
| ECFB : Ceramic      |           |              |                |

| Ref. No.         | Part No.   | Value |
|------------------|------------|-------|
| <b>RESISTORS</b> |            |       |
| R3               | ERG2SJ101  | 100   |
| R4               | ERDS2TJ271 | 270   |
| R103             | ERDS2TJ104 | 100K  |
| R104             | ERX1ANJ2R7 | 2.7   |
| R105             | ERDS2TJ270 | 27    |
| R201             | ERDS2TJ273 | 27K   |
| R202             | ERDS2TJ394 | 390K  |
| R203             | ERDS2TJ680 | 68    |
| R204             | ERDS2TJ151 | 150   |
| R205             | ERDS2TJ223 | 22K   |
| R207             | ERDS2TJ102 | 1K    |
| R208             | ERDS2TJ680 | 68    |
| R301, 302        | ERDS2TJ471 | 470   |
| R303, 304        | ERDS2TJ471 | 470   |
| R305, 306        | ERDS2TJ471 | 470   |
| R307, 308        | ERDS2TJ471 | 470   |
| R309, 310        | ERDS2TJ471 | 470   |
| R311             | ERDS2TJ471 | 470   |
| R312             | ERDS2TJ223 | 22K   |
| R313             | ERDS2TJ123 | 12K   |
| R314             | ERDS2TJ332 | 3.3K  |
| R318, 319        | ERDS2TJ333 | 33K   |
| R321             | ERDS2TJ102 | 1K    |
| R324             | ERDS2TJ821 | 820   |
| R325             | ERDS2TJ101 | 100   |
| R326             | ERDS2TJ271 | 270   |
| R327             | ERDS2TJ101 | 100   |
| R332             | ERDS2TJ103 | 10K   |
| R333             | ERDS2TJ101 | 100   |
| R335, 336        | ERDS2TJ332 | 3.3K  |
| R337, 338        | ERDS2TJ332 | 3.3K  |
| R341, 342        | ERDS2TJ332 | 3.3K  |
| R343, 344        | ERDS2TJ103 | 10K   |
| R346, 347        | ERDS2TJ563 | 56K   |
| R348             | ERDS2TJ562 | 5.6K  |
| R349, 350        | ERDS2TJ272 | 2.7K  |

| Ref. No.  | Part No.   | Value |
|-----------|------------|-------|
| R351      | ERDS2TJ103 | 10K   |
| R352      | ERDS2TJ101 | 100   |
| R353      | ERDS2TJ222 | 2.2K  |
| R354      | ERDS2TJ333 | 33K   |
| R355, 356 | ERDS2TJ101 | 100   |
| R381      | ERDS2TJ331 | 330   |
| R383      | ERDS2TJ331 | 330   |
| R385      | ERDS2TJ152 | 1.5K  |
| R386      | ERDS2TJ154 | 150K  |
| R387      | ERDS2TJ102 | 1K    |
| R389, 390 | ERDS2TJ223 | 22K   |
| R393, 394 | ERDS2TJ333 | 33K   |
| R396      | ERDS2TJ471 | 470   |
| R397      | ERDS2TJ122 | 1.2K  |
| R398      | ERDS2TJ153 | 15K   |
| R401      | ERDS2TJ103 | 10K   |
| R402, 403 | ERDS2TJ123 | 12K   |
| R404, 405 | ERDS2TJ474 | 470K  |
| R406      | ERDS2TJ104 | 100K  |
| R407      | ERDS2TJ122 | 1.2K  |
| R408      | ERDS2TJ271 | 270   |
| R409      | ERDS2TJ473 | 47K   |
| R410      | ERDS2TJ102 | 1K    |
| R412      | ERDS2TJ222 | 2.2K  |
| R413      | ERDS2TJ821 | 820   |
| R414      | ERDS2TJ561 | 560   |
| R415      | ERDS2TJ271 | 270   |
| R416      | ERDS2TJ153 | 15K   |
| R417      | ERDS2TJ224 | 220K  |
| R418, 419 | ERDS2TJ333 | 33K   |
| R420      | ERDS2TJ103 | 10K   |
| R421, 422 | ERDS2TJ333 | 33K   |
| R423      | ERDS2TJ563 | 56K   |
| R424      | ERDS2TJ224 | 220K  |
| R425      | ERDS2TJ393 | 39K   |
| R426      | ERDS2TJ153 | 15K   |
| R427      | ERDS2TJ224 | 220K  |

| Ref. No.  | Part No.            | Value |
|-----------|---------------------|-------|
| R428      | ERDS2TJ392          | 3.9K  |
| R430      | ERDS2TJ562          | 5.6K  |
| R431      | ERDS2TJ563          | 56K   |
| R432      | ERDS2TJ154          | 150K  |
| R433      | ERDS2TJ471          | 470   |
| R434, 435 | ERG1SJ390           | 39    |
| R436      | ERDS2TJ471          | 470   |
| R437      | ERDS2TJ5R6          | 5.6   |
| R501      | ⑤ ERD25FJ391        | 390   |
| R502      | ⑤ ERD25FJ271        | 270   |
| R503      | ⑤ ERD25FJ471        | 470   |
| R951      | ERDS2TJ823          | 82K   |
| R952      | ERDS2TJ103          | 10K   |
| R953      | ERDS2TJ272          | 2.7K  |
| R954      | ERDS2TJ274          | 270K  |
| R955      | ERDS2TJ472          | 4.7K  |
| R956      | ERDS2TJ563          | 56K   |
| R957      | ERDS2TJ683          | 68K   |
| RF1       | $\Delta$ ERD2FCG120 | 12    |

| Ref. No.          | Part No.             | Value  |
|-------------------|----------------------|--------|
| <b>CAPACITORS</b> |                      |        |
| C1, 2             | $\Delta$ ECQG1223KZ  | 0.022  |
| C3                | $\Delta$ ECQG1223KZ  | 0.022  |
| C4                | ECEB1EU222           | 2200   |
| C5                | ECEA1CU330           | 33     |
| C6                | ECEA0JU470           | 47     |
| C101              | ECEA1CU330           | 33     |
| C102              | ⑤ ECEA50ZR22         | 0.22   |
| C103              | ECQV05274JZ          | 0.27   |
| C105, 106         | $\Delta$ ECEA1AN470S | 47     |
| C107              | ECEA1HU010           | 1      |
| C201              | ECEA0JU470           | 47     |
| C202              | ⑤ ECEA50ZR22         | 0.22   |
| C203              | ECQM1H683KV          | 0.068  |
| C204              | ECCD1H121J           | 120P   |
| C205              | ECCD1H330JC          | 33P    |
| C206              | ECCD1H121J           | 120P   |
| C207              | ECEA0JU470           | 47     |
| C208              | ECEA1AU221           | 220    |
| C302              | ECEA1EU4R7           | 4.7    |
| C305              | ECFR1E104ZFM         | 0.1    |
| C310, 311         | ECFR1E104ZFM         | 0.1    |
| C320              | ECFR1E104ZFM         | 0.1    |
| C401              | ECEA1HUR47           | 0.47   |
| C402              | $\Delta$ ECEA1CN100  | 10     |
| C403, 404         | ECQG1H473KZ          | 0.047  |
| C405              | ECEA1CU100           | 10     |
| C411, 412         | ECQG1H104KZT         | 0.1    |
| C413              | ECFR1E104ZFM         | 0.1    |
| C414              | ECCD1H181J           | 180P   |
| C415              | ECQG1H682KZ          | 0.0068 |
| C601              | ECFB1B104ZM          | 0.1    |
| C701              | ECEA1CU101           | 100    |
| C951              | ECEA1HU010           | 1      |
| C952              | ECEA1CU101           | 100    |
| C953              | ECEA0JU101           | 100    |



# ■ HOW TO REPLACE CHIPS

(Resistor, capacitor and jumper)

● **Removing procedure**

- 1. Completely remove the solder from both ends of the chip by use of solder suker.
- 2. Touch the soldering iron to the end of the chip as shown in Fig. A , then turn the tweezers in the direction of the arrow.

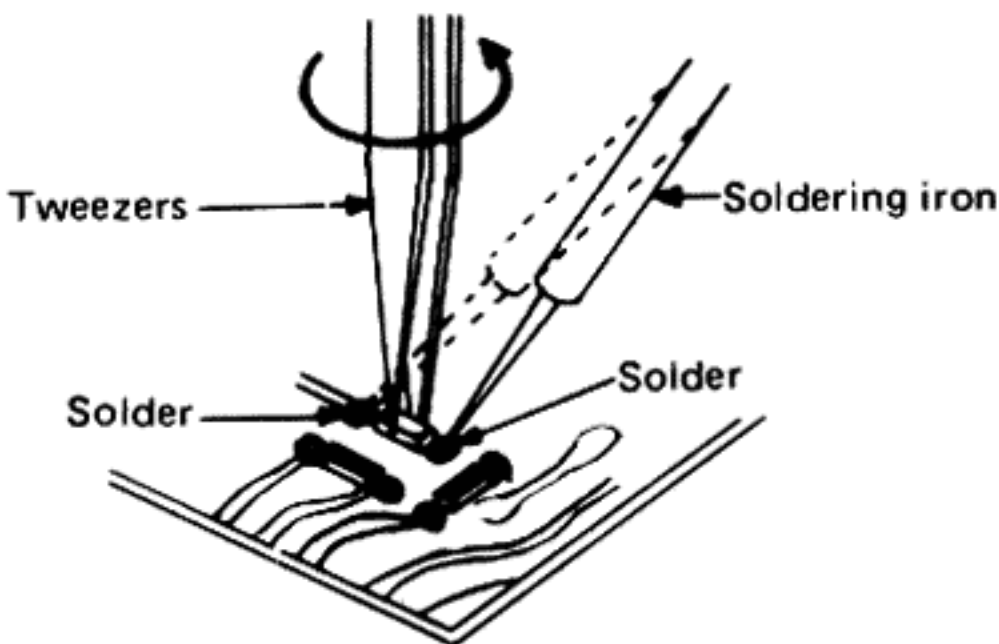
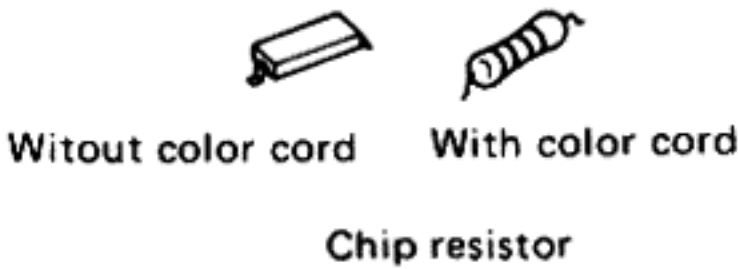


Fig. A

● **Replacing procedure**

- 1. Place solder on the foil where the chip is fitted.  
Then solder the chip by holding the soldering iron as shown in Fig. B .

Note:

- 1. If the chip jumper is removed, connect a coated lead wire to the part. (See Fig. C ).  
Chip jumper is marked with "J" on the printed circuit board.

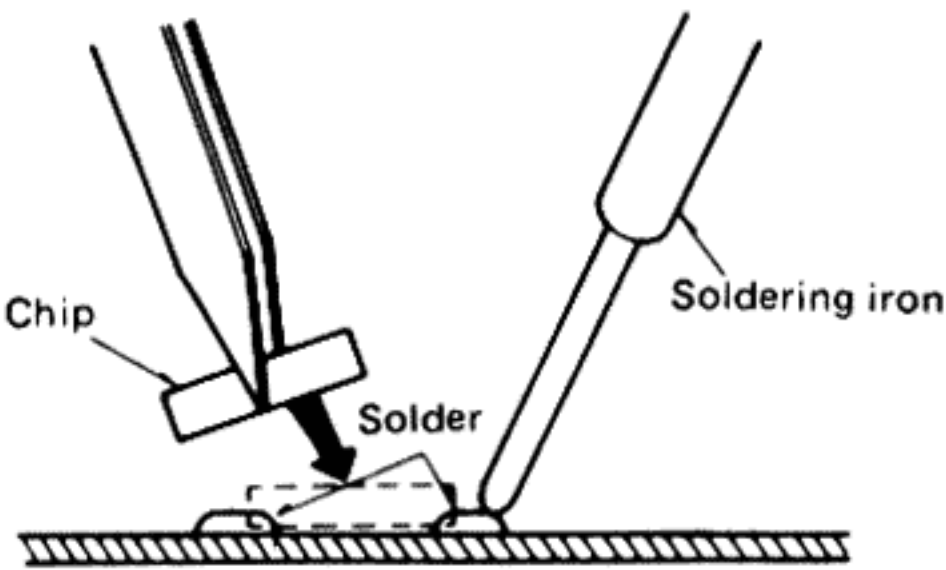


Fig. B

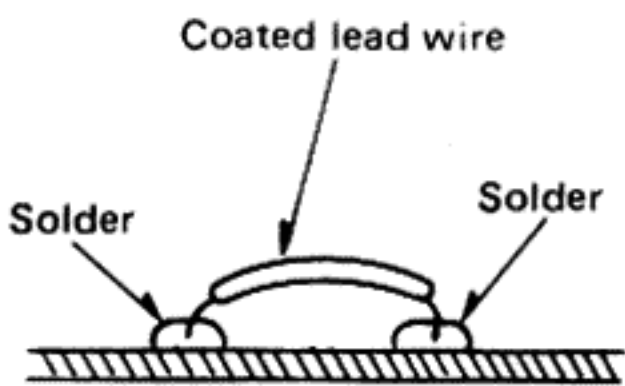
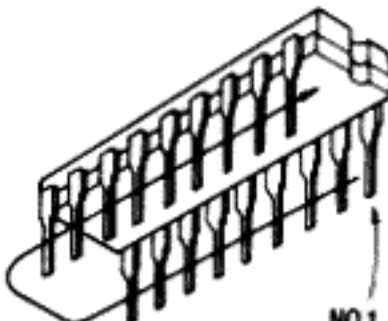
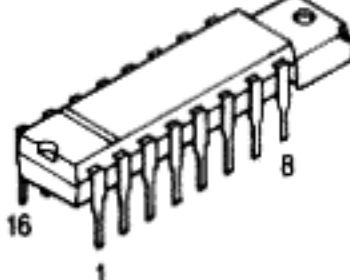
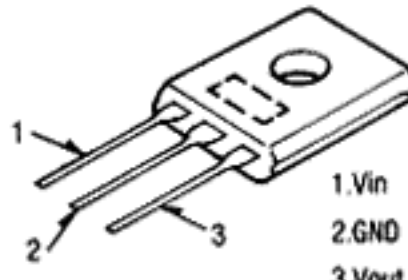
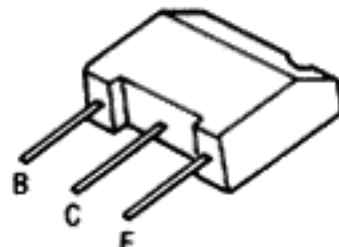
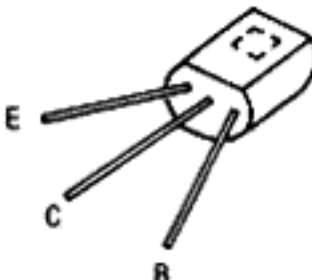
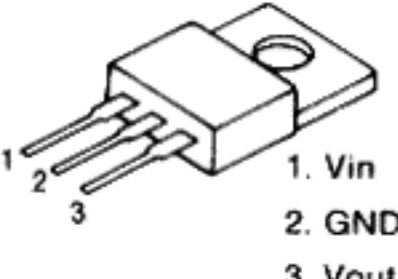
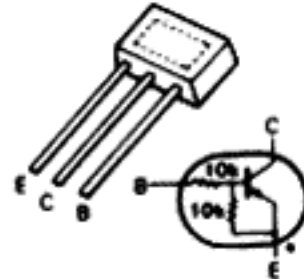


Fig. C

● **Note for replacing chips**

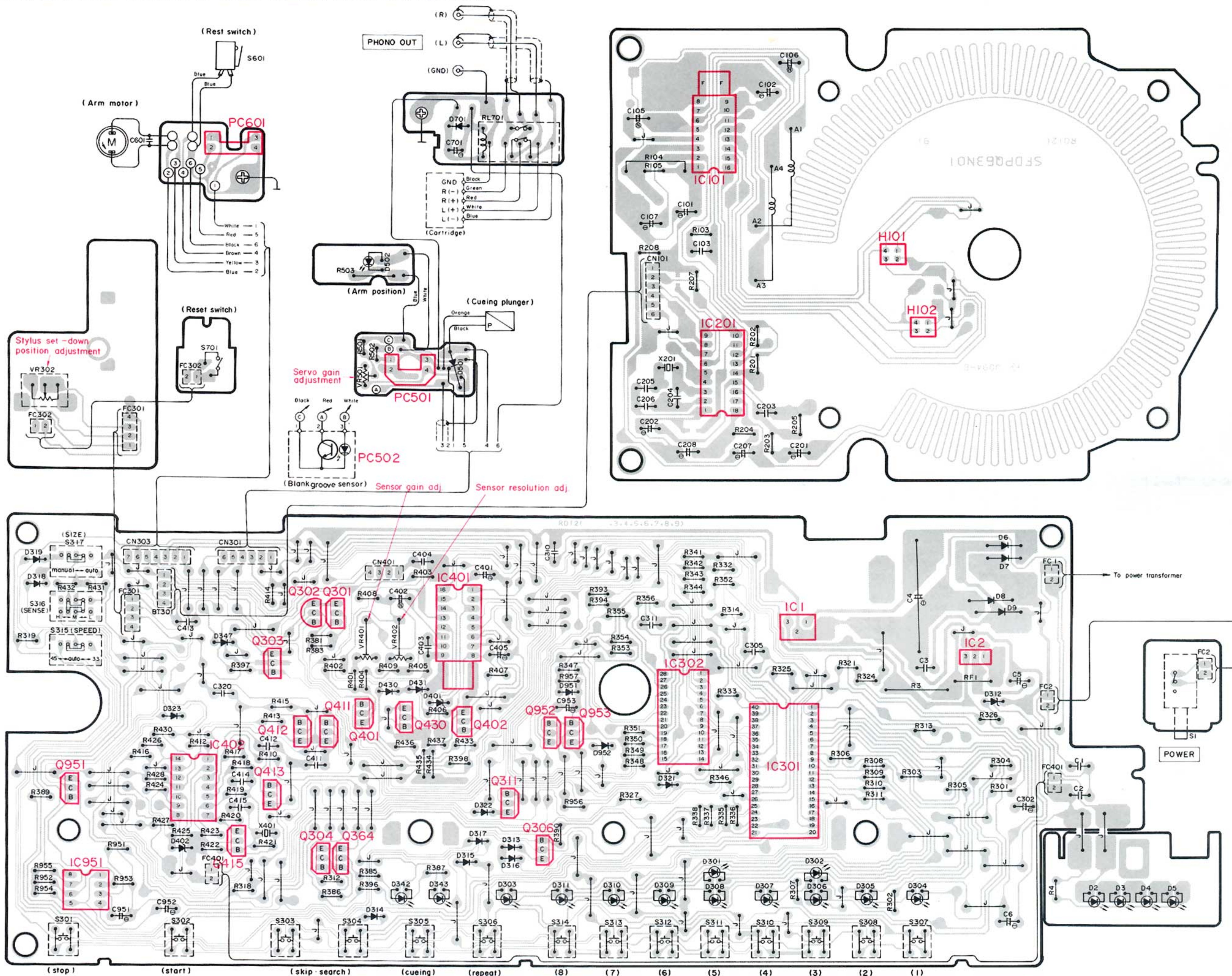
- 1. Do not heat the chip more than 3 seconds.
- 2. Do not rub the electrode against the chip.
- 3. Use the tweezers with care not to damage the surface of the chip.
- 4. It is desirable to use a pencil type soldering iron. And use soldering iron less than 60W.

● **Terminal guide of transistors, and IC's.**

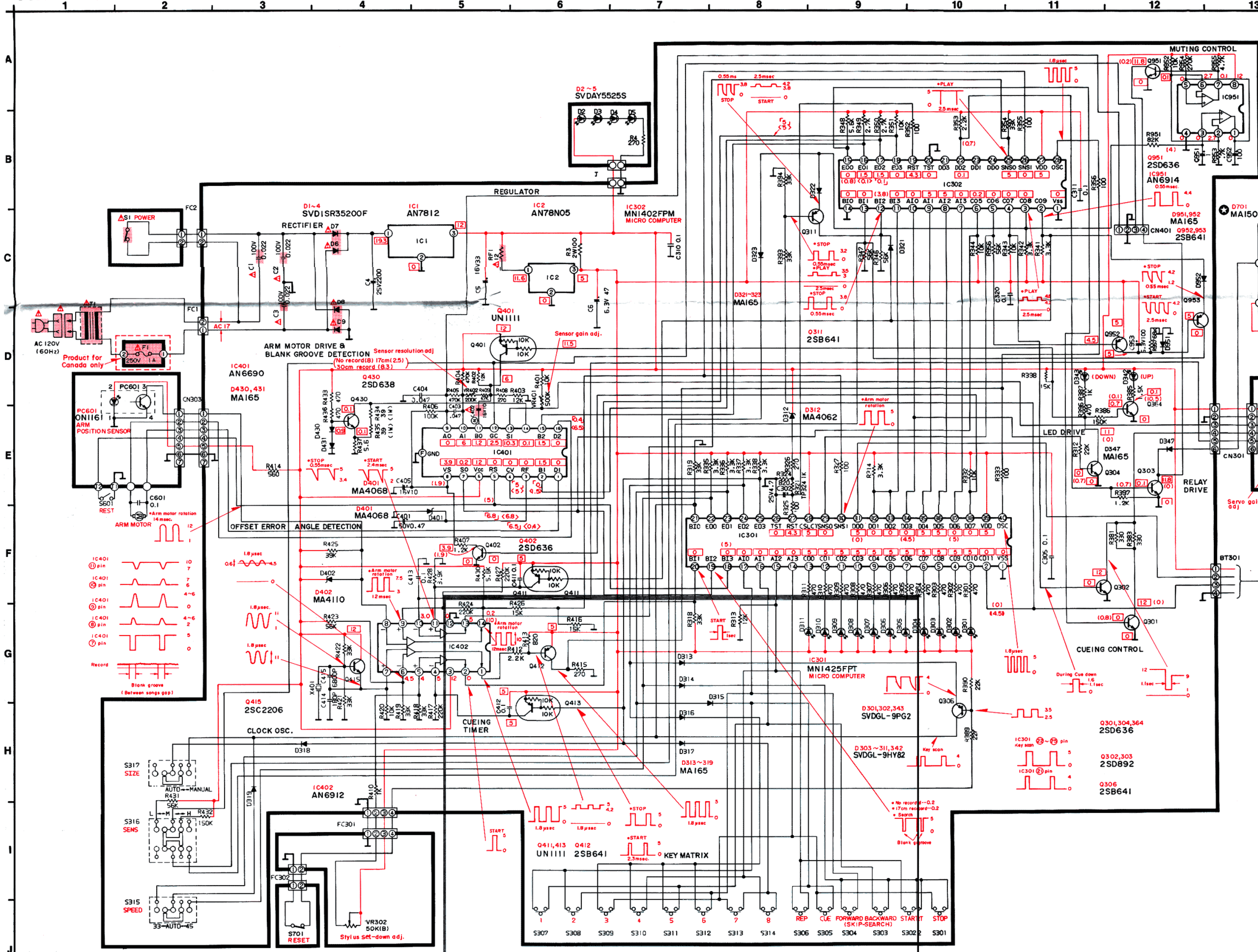
|                                                                                                          |                                                                                                                                                                                                                              |                                                                                                                                                |                                                                                                                                 |        |        |        |        |        |        |        |        |                                                                                                            |                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>NO.1</p>          | <table border="1"><tr><td>AN6914</td><td>8 pin</td></tr><tr><td>AN6912</td><td>14 pin</td></tr><tr><td>AN6683</td><td>18 pin</td></tr><tr><td>MN1425</td><td>40 pin</td></tr><tr><td>MN1402</td><td>28 pin</td></tr></table> | AN6914                                                                                                                                         | 8 pin                                                                                                                           | AN6912 | 14 pin | AN6683 | 18 pin | MN1425 | 40 pin | MN1402 | 28 pin |  <p>16<br/>1<br/>B</p> |  <p>1<br/>2<br/>3</p> <p>1.Vin<br/>2.GND<br/>3.Vout</p> |
| AN6914                                                                                                   | 8 pin                                                                                                                                                                                                                        |                                                                                                                                                |                                                                                                                                 |        |        |        |        |        |        |        |        |                                                                                                            |                                                                                                                                              |
| AN6912                                                                                                   | 14 pin                                                                                                                                                                                                                       |                                                                                                                                                |                                                                                                                                 |        |        |        |        |        |        |        |        |                                                                                                            |                                                                                                                                              |
| AN6683                                                                                                   | 18 pin                                                                                                                                                                                                                       |                                                                                                                                                |                                                                                                                                 |        |        |        |        |        |        |        |        |                                                                                                            |                                                                                                                                              |
| MN1425                                                                                                   | 40 pin                                                                                                                                                                                                                       |                                                                                                                                                |                                                                                                                                 |        |        |        |        |        |        |        |        |                                                                                                            |                                                                                                                                              |
| MN1402                                                                                                   | 28 pin                                                                                                                                                                                                                       |                                                                                                                                                |                                                                                                                                 |        |        |        |        |        |        |        |        |                                                                                                            |                                                                                                                                              |
|  <p>B<br/>C<br/>E</p> |  <p>E<br/>C<br/>B</p>                                                                                                                     |  <p>1<br/>2<br/>3</p> <p>1. Vin<br/>2. GND<br/>3. Vout</p> |  <p>E<br/>C<br/>B</p> <p>100k<br/>100k</p> |        |        |        |        |        |        |        |        |                                                                                                            |                                                                                                                                              |



# ■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM







- Notes:**
- S1: Power switch in "on" position.
  - S301: Stop switch.
  - S302: Start switch.
  - S303: Backward skip/search switch.
  - S304: Forward skip/search switch.
  - S305: Cueing control switch.
  - S307: Program switch (Program key 1 ~ 8).
  - S315: Speed selector switch in "auto" position.
  - S316: Sensitivity selector switch in "M" position.
  - S317: Record size selector switch in "auto" position.
  - S601: Rest switch in "off" position. (Tonearm is presently on rest.)
  - S701: Reset switch in "on" position.
  - The voltage value and waveform are the standard values of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Therefore, the voltage value and waveform may include some error due to the internal impedance of the tester or the measuring unit.
  - Waveform symbols:
    - is the voltage when turntable is stopped.
    - is the voltage when turntable is in rotating.
    - is the voltage when tonearm is in lead-in mode.
    - is the voltage when tonearm is in return mode.
    - is the voltage at 45 rpm.
    - Positive voltage lines.
- Important safety notice: Components identified by a mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

**IMPORTANT SAFETY NOTICE**

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

**Product for MC only**

**FUSE REPLACEMENT**

⚡ symbol located near the fuse indicates fast-operating type. For continued protection against fire hazard, replace with same type fuse. Refer to the symbol for fuse rating.

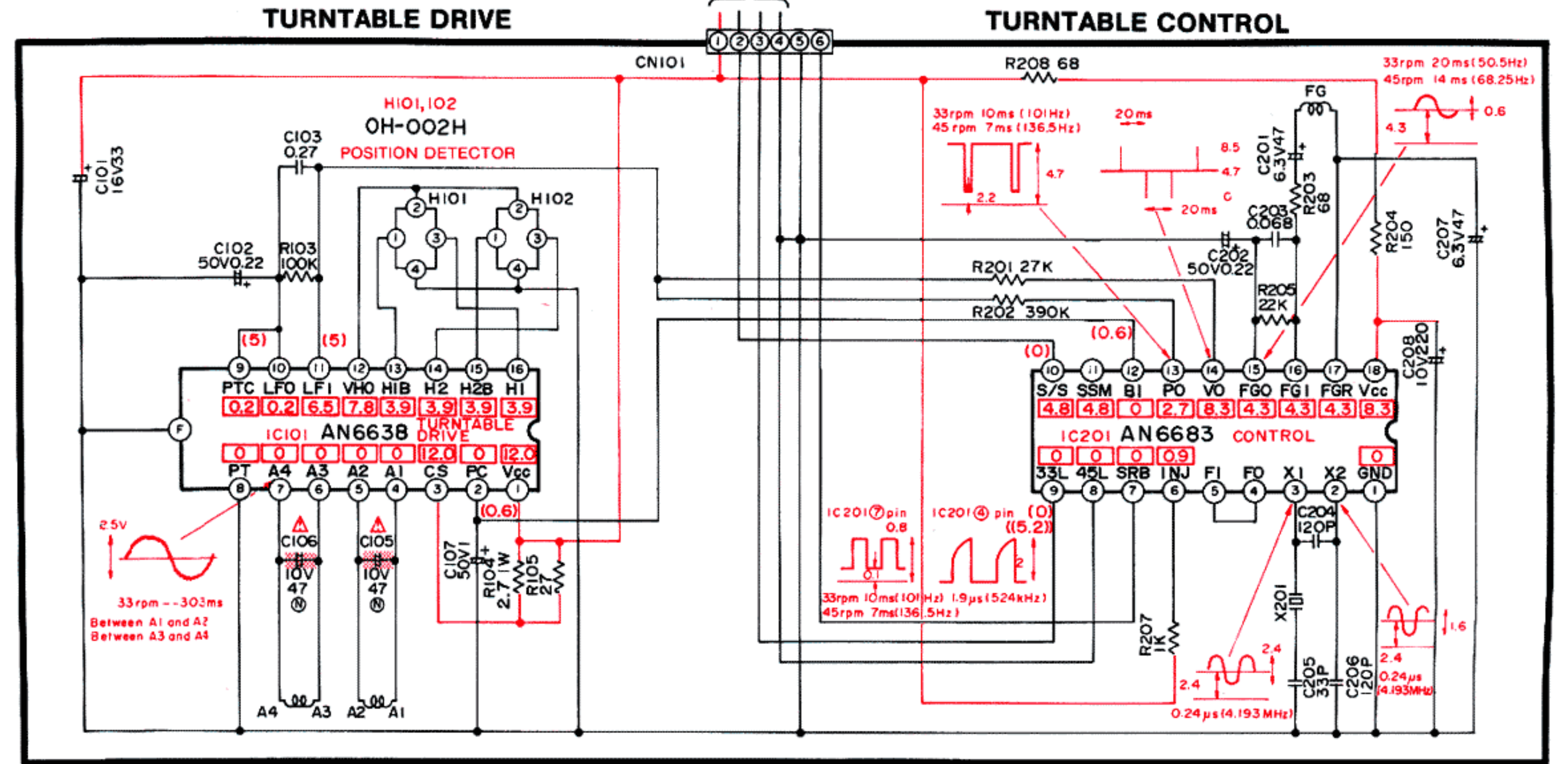
**FUSIBLE REMPLACEMENT**

⚡ Le symbole qui se trouve près du fusible signifie un fusible à action rapide. Pour une protection continue contre les risques d'incendie, n'utilisez que des fusibles du même type. Se reporter au symbole pour la valeur des fusibles.

The part numbers of transistor, IC and diodes mentioned in the schematic diagram stand for production part numbers. Regarding part numbers with a mark, the production part numbers are different from the replacement part numbers. Therefore, when placing an order for replacement part(s), please use the part number(s) in the replacement parts list.

**Caution!**

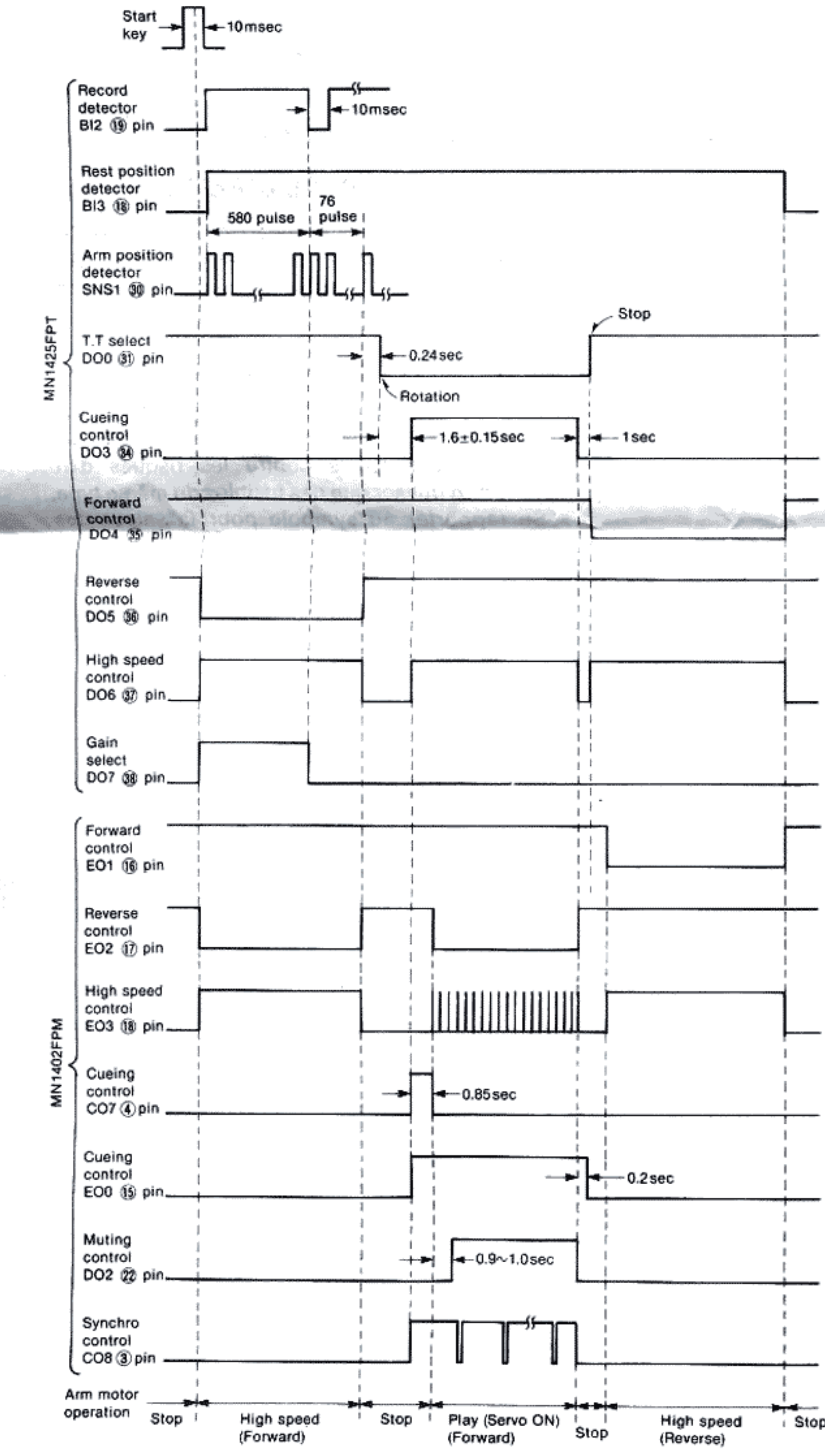
- IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.
- Cover the parts boxes made of plastics with aluminum foil.
  - Ground the soldering iron.
  - Put a conductive mat on the work table.
  - Do not touch the legs of IC or LSI with the fingers directly.



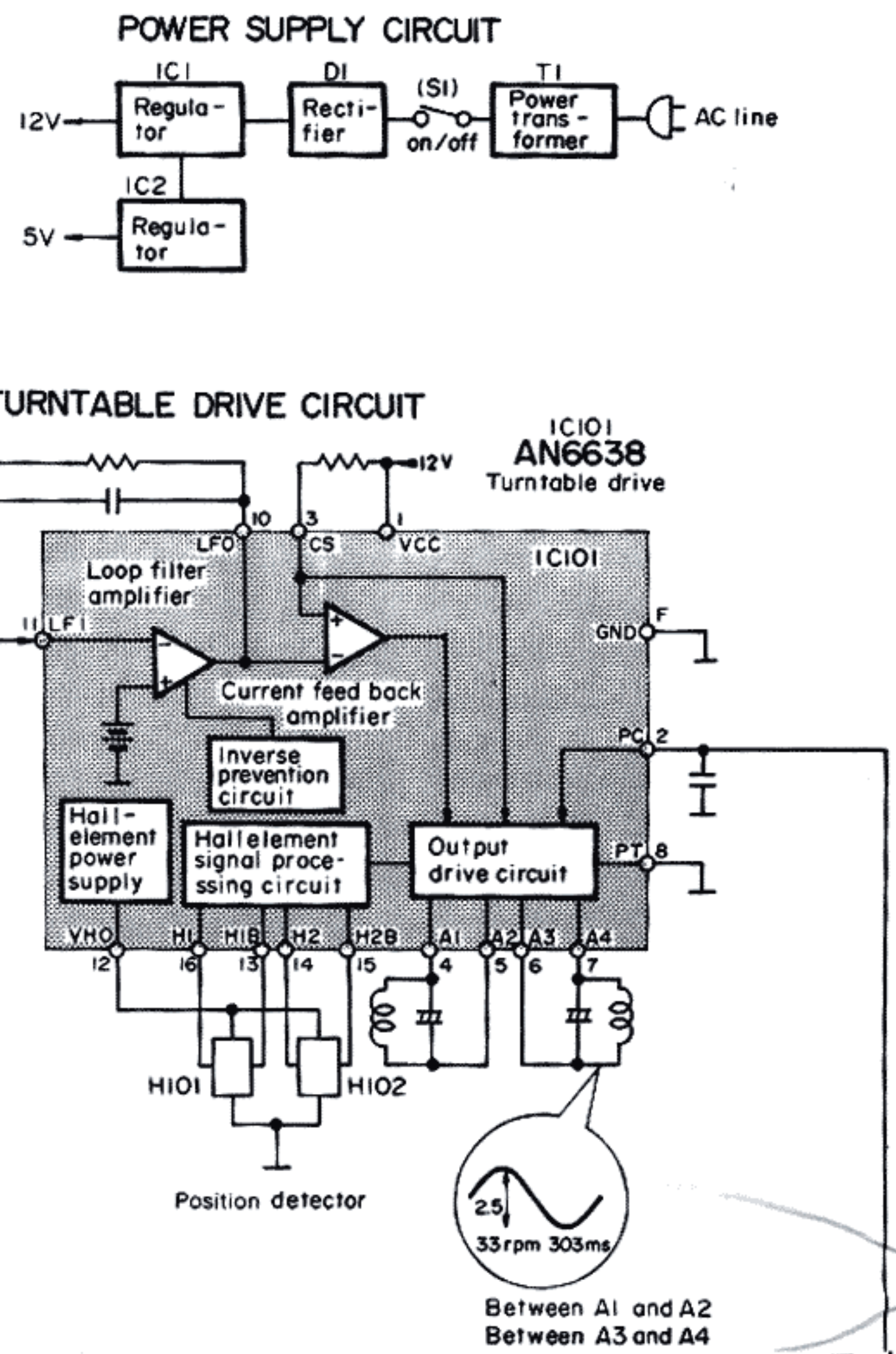
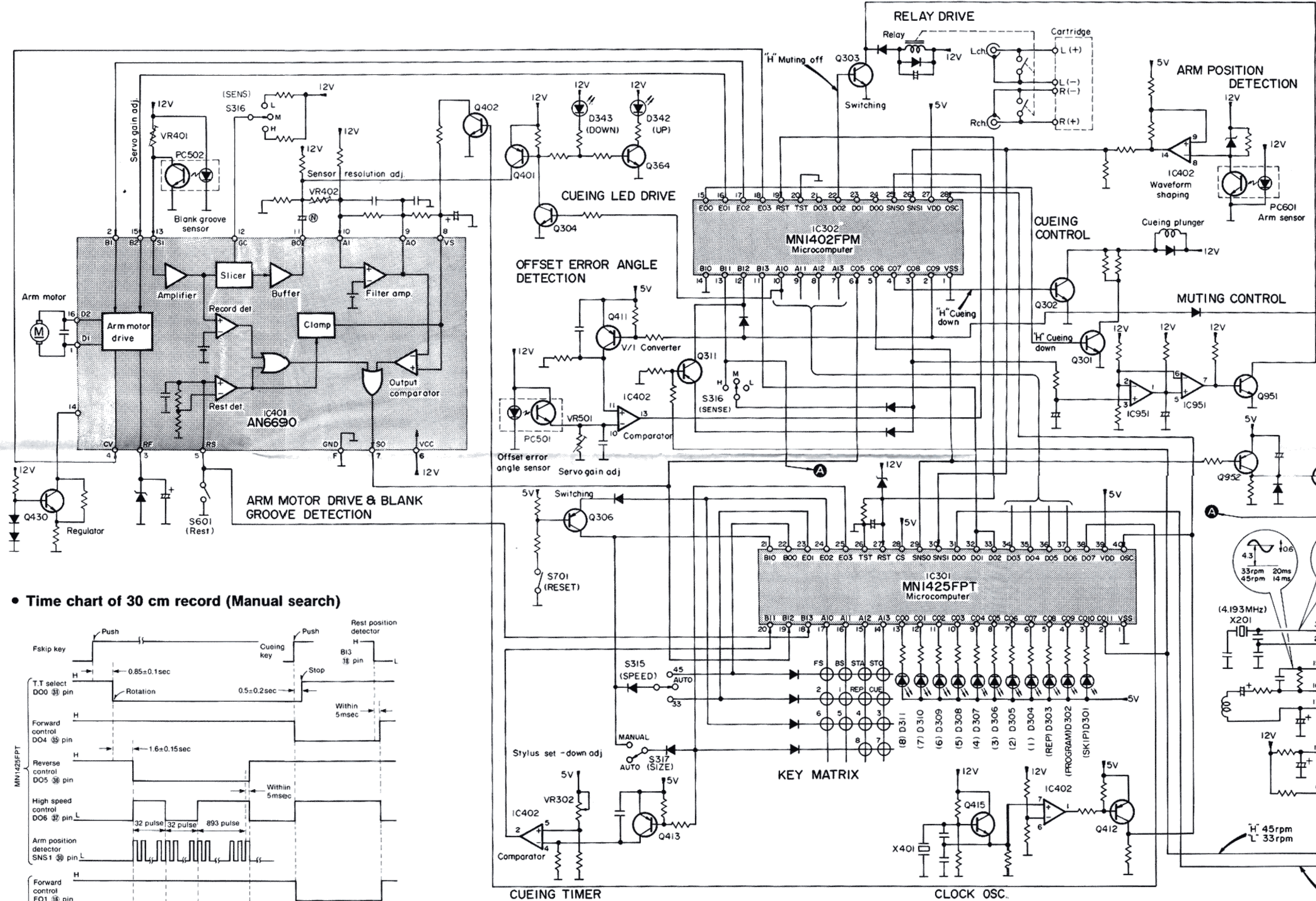
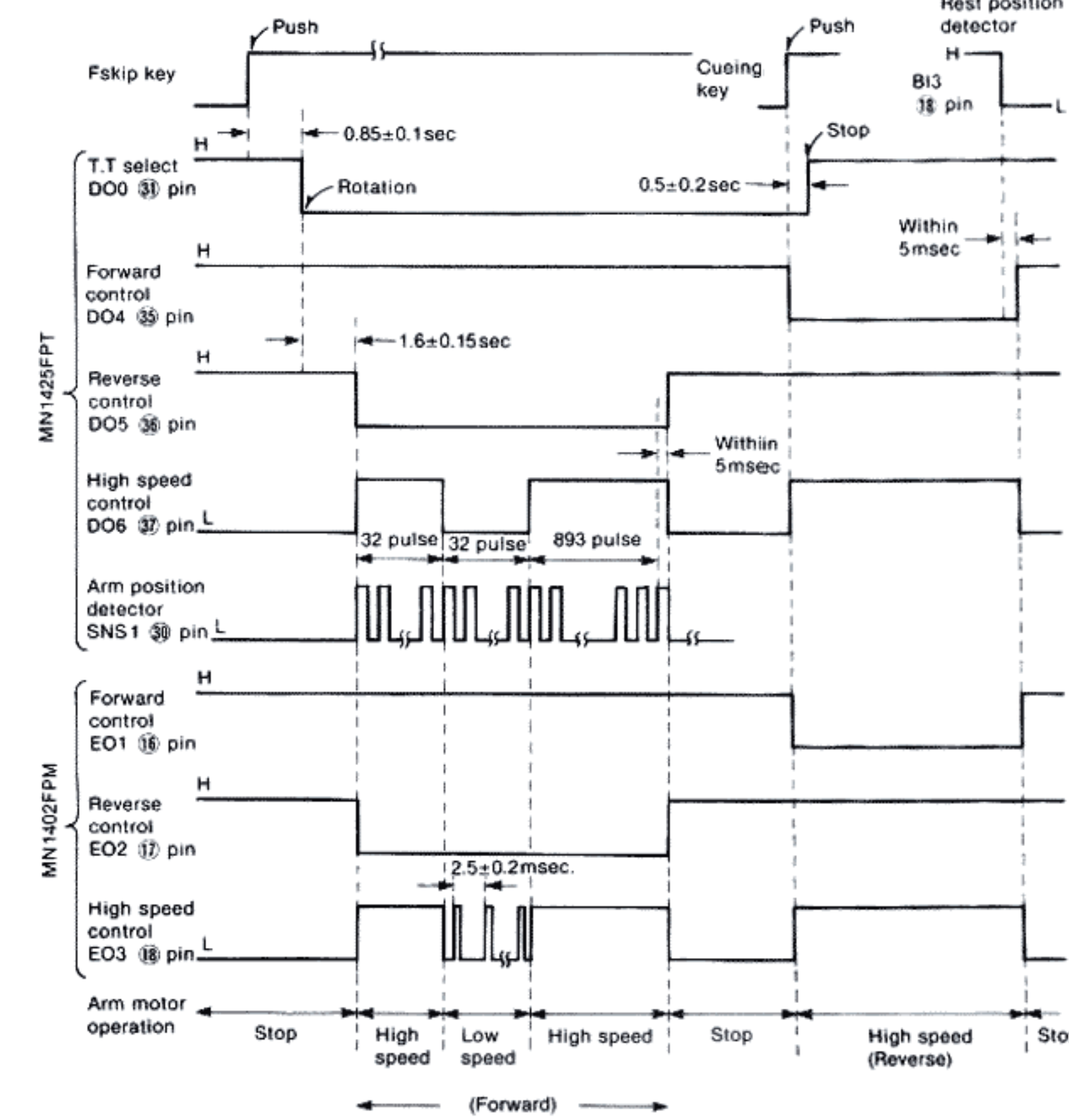


■ BLOCK DIAGRAM

• Time chart of 17 cm record (Lead-in)



• Time chart of 30 cm record (Manual search)



• Function of terminal of MN1425FPT

| No. | Symbol | Description                                                                                                   |
|-----|--------|---------------------------------------------------------------------------------------------------------------|
| 1   | VSS    | Ground terminal                                                                                               |
| 2   | CO11   | Turntable speed select (45 rpm "H", 33 rpm "L")                                                               |
| 3   | CO10   | Skip indicator display                                                                                        |
| 4   | CO9    | Program indicator display                                                                                     |
| 5   | CO8    | Repeat indicator display                                                                                      |
| 6   | CO7    | Program No. 1 indicator display                                                                               |
| 7   | CO6    | Program No. 2 indicator display                                                                               |
| 8   | CO5    | Program No. 3 indicator display                                                                               |
| 9   | CO4    | Program No. 4 indicator display                                                                               |
| 10  | CO3    | Program No. 5 indicator display                                                                               |
| 11  | CO2    | Program No. 6 indicator display                                                                               |
| 12  | CO1    | Program No. 7 indicator display                                                                               |
| 13  | CO0    | Program No. 8 indicator display                                                                               |
| 14  | AI3    | Key (F skip, B skip, start, stop, repeat, cueing and program) are read by key scan of E port (pin No. ② ~ ⑤). |
| 15  | AI2    |                                                                                                               |
| 16  | AI1    |                                                                                                               |
| 17  | AI0    |                                                                                                               |
| 18  | BI3    | Rest position detection ("L" when tonearm is on rest)                                                         |

| No. | Symbol | Description                                                                                                                                                                                                                                        |
|-----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19  | BI2    | 30 cm record is present<br>No record<br>17 cm record is present<br>Blank pulse read (during cueing up) and blank width correction pulse count end (during cueing down) signal input terminal.<br>Blank pulse is active at "L".<br>Record detection |
| 20  | BI1    | Reading to stylus lowering adjust timer.<br>E03<br>BI1<br>Time to until BI1 is "H" after E03 becomes "H" just before cueing down of arm is read into microcomputer.                                                                                |
| 21  | BI0    | Turntable platter speed select, reset switch detection and record size select are performed by key scan (E port pin No. ② ~ ⑤) and BI0 key scan.                                                                                                   |
| 22  | EO0    | Keys (F skip, B skip, start, stop, repeat, cueing and program) are read by key scan of A port (pin No. ④ ~ ⑦), and turntable platter speed select, reset switch detection, and record size selector are performed by key scan of E port and BI0.   |
| 23  | EO1    |                                                                                                                                                                                                                                                    |
| 24  | EO2    |                                                                                                                                                                                                                                                    |
| 25  | EO3    |                                                                                                                                                                                                                                                    |

| No. | Symbol | Description                                        |
|-----|--------|----------------------------------------------------|
| 26  | TST    | Test terminal                                      |
| 27  | RST    | Reset terminal (Micom is reset at "L")             |
| 28  | CSLCT  | Select terminal                                    |
| 29  | SNS0   | Return detection in play mode (Return at "H")      |
| 30  | SNS1   | Arm position detection signal input terminal       |
| 31  | DO0    | Turntable start, stop select ("H" stop, "L" start) |
| 32  | DO1    | Speed detection program play mode. (ON at "H")     |
| 33  | DO2    |                                                    |
| 34  | DO3    | Tonearm motor and cueing (muting) control          |
| 35  | DO4    |                                                    |
| 36  | DO5    |                                                    |
| 37  | DO6    | Gain select in record size select mode (ON at "H") |
| 38  | DO7    |                                                    |
| 39  | VDD    | Power supply                                       |
| 40  | OSC    | Clock oscillation (Frequency : 525 kHz)            |



• Function of terminal of MN1402FPL

| No.             | Symbol | Description                                                                                                                                                                                                                                                                                                                                                            |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
|-----------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|----|----------|----------|---|---|---------------|---|----------------|---|--------------|---|---|-----------------|---|---|---|---|--------------|---|---|---|---|
| 1               | VSS    | Ground terminal                                                                                                                                                                                                                                                                                                                                                        |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 2               | CO9    | Key scan strobe<br>(Offset error angle read strobe)                                                                                                                                                                                                                                                                                                                    |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 3               | CO8    | Key scan strobe<br>(Synchro. rec. control, ON at "H")                                                                                                                                                                                                                                                                                                                  |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 4               | CO7    | Cueing control                                                                                                                                                                                                                                                                                                                                                         |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 5               | CO6    | Return detection in play mode (return at "H")                                                                                                                                                                                                                                                                                                                          |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 6               | CO5    | Pulse count end signal (end at "L")                                                                                                                                                                                                                                                                                                                                    |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 7               | AI3    | <ul style="list-style-type: none"><li>• Tonearm motor and cueing (muting) control</li><li>• The 4-bit signal from MN1425FPT causes the state to become as follows:</li></ul>                                                                                                                                                                                           |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 8               | AI2    | <table><tr><th>No.</th><th>7</th><th>8</th><th>9</th><th>10</th></tr><tr><td>Arm free</td><td>L</td><td>L</td><td>L</td><td>L</td></tr><tr><td>Forward search</td><td>L</td><td>L</td><td>H</td><td>L</td></tr><tr><td>Backward search</td><td>L</td><td>H</td><td>L</td><td>L</td></tr><tr><td>Brake (stop)</td><td>L</td><td>H</td><td>H</td><td>L</td></tr></table> | No. | 7  | 8  | 9  | 10       | Arm free | L | L | L             | L | Forward search | L | L            | H | L | Backward search | L | H | L | L | Brake (stop) | L | H | H | L |
| No.             | 7      | 8                                                                                                                                                                                                                                                                                                                                                                      | 9   | 10 |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Arm free        | L      | L                                                                                                                                                                                                                                                                                                                                                                      | L   | L  |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Forward search  | L      | L                                                                                                                                                                                                                                                                                                                                                                      | H   | L  |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Backward search | L      | H                                                                                                                                                                                                                                                                                                                                                                      | L   | L  |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Brake (stop)    | L      | H                                                                                                                                                                                                                                                                                                                                                                      | H   | L  |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 9               | AI1    | <table><tr><th>No.</th><th>7</th><th>8</th><th>9</th><th>10</th></tr><tr><td>Lead-in</td><td>H</td><td>L</td><td>H</td><td>L</td></tr><tr><td>Return</td><td>H</td><td>H</td><td>L</td><td>L</td></tr></table>                                                                                                                                                         | No. | 7  | 8  | 9  | 10       | Lead-in  | H | L | H             | L | Return         | H | H            | L | L |                 |   |   |   |   |              |   |   |   |   |
| No.             | 7      | 8                                                                                                                                                                                                                                                                                                                                                                      | 9   | 10 |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Lead-in         | H      | L                                                                                                                                                                                                                                                                                                                                                                      | H   | L  |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Return          | H      | H                                                                                                                                                                                                                                                                                                                                                                      | L   | L  |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 10              | AI0    |                                                                                                                                                                                                                                                                                                                                                                        |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 11              | BI3    | Speed (blank) detection during program play (ON at "H")                                                                                                                                                                                                                                                                                                                |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 12              | BI2    | } Key scan<br>Sensitivity and speed selector keys are read by key scan of C08, C09, BI1, BI2.                                                                                                                                                                                                                                                                          |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 13              | BI1    |                                                                                                                                                                                                                                                                                                                                                                        |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 14              | BI0    | Not used in this unit (Ground)                                                                                                                                                                                                                                                                                                                                         |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 15              | EO0    | Cueing control                                                                                                                                                                                                                                                                                                                                                         |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 16              | EO1    | Arm motor control                                                                                                                                                                                                                                                                                                                                                      |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 17              | EO2    | <table><tr><th>No.</th><th>16</th><th>17</th><th>18</th></tr><tr><td>Arm free</td><td>L</td><td>L</td><td>L</td></tr><tr><td>Brake</td><td>H</td><td>H</td><td>L</td></tr><tr><td>Forward slow</td><td>H</td><td>L</td><td>L</td></tr></table>                                                                                                                         | No. | 16 | 17 | 18 | Arm free | L        | L | L | Brake         | H | H              | L | Forward slow | H | L | L               |   |   |   |   |              |   |   |   |   |
| No.             | 16     | 17                                                                                                                                                                                                                                                                                                                                                                     | 18  |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Arm free        | L      | L                                                                                                                                                                                                                                                                                                                                                                      | L   |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Brake           | H      | H                                                                                                                                                                                                                                                                                                                                                                      | L   |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Forward slow    | H      | L                                                                                                                                                                                                                                                                                                                                                                      | L   |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 18              | EO3    | <table><tr><th>No.</th><th>16</th><th>17</th><th>18</th></tr><tr><td>Lead-in</td><td>H</td><td>L</td><td>H</td></tr><tr><td>Backward slow</td><td>L</td><td>H</td><td>L</td></tr><tr><td>Return</td><td>L</td><td>H</td><td>H</td></tr></table>                                                                                                                        | No. | 16 | 17 | 18 | Lead-in  | H        | L | H | Backward slow | L | H              | L | Return       | L | H | H               |   |   |   |   |              |   |   |   |   |
| No.             | 16     | 17                                                                                                                                                                                                                                                                                                                                                                     | 18  |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Lead-in         | H      | L                                                                                                                                                                                                                                                                                                                                                                      | H   |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Backward slow   | L      | H                                                                                                                                                                                                                                                                                                                                                                      | L   |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| Return          | L      | H                                                                                                                                                                                                                                                                                                                                                                      | H   |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 19              | RST    | Reset terminal (Micom is reset at "L")                                                                                                                                                                                                                                                                                                                                 |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 20              | TST    | Test terminal                                                                                                                                                                                                                                                                                                                                                          |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 21              | DO3    | Not used in this unit                                                                                                                                                                                                                                                                                                                                                  |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 22              | DO2    | Muting control ("H" muting OFF)                                                                                                                                                                                                                                                                                                                                        |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 23              | DO1    | } Not used in this unit                                                                                                                                                                                                                                                                                                                                                |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 24              | DO0    |                                                                                                                                                                                                                                                                                                                                                                        |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 25              | SNS0   | Offset angle detection signal input terminal                                                                                                                                                                                                                                                                                                                           |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 26              | SNS1   | Arm position detection signal input terminal                                                                                                                                                                                                                                                                                                                           |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 27              | VDD    | Power supply                                                                                                                                                                                                                                                                                                                                                           |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |
| 28              | OSC    | Clock oscillation (Frequency : 525 kHz)                                                                                                                                                                                                                                                                                                                                |     |    |    |    |          |          |   |   |               |   |                |   |              |   |   |                 |   |   |   |   |              |   |   |   |   |



# Service Manual

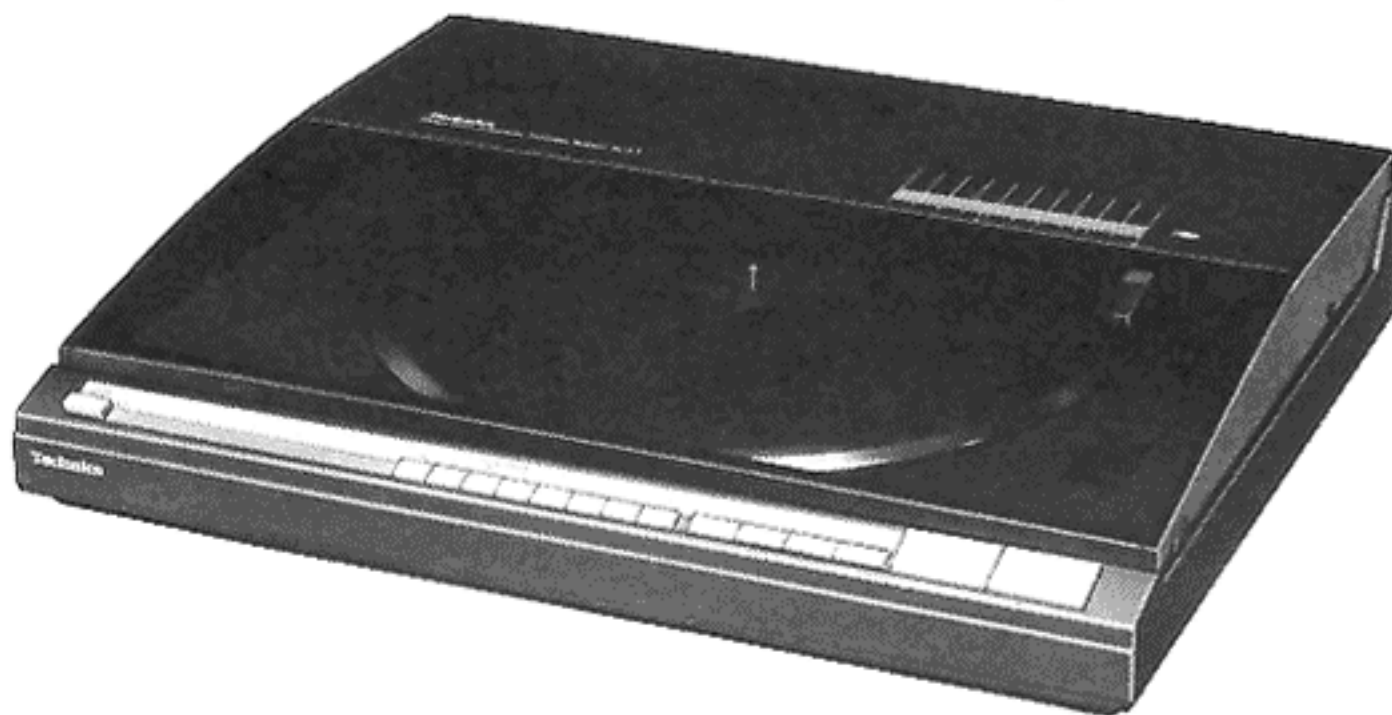
QUARTZ Direct Drive  
Automatic Turntable System

Turntable System

## SL-L3

Color

(S)..... Silver Type  
(K) .... Black Type



**T4P** is the standard mark for plug-in-connector type.  
Products carrying this mark are interchangeable and adaptable  
among each other.

| Color   | Areas                                                                                  |
|---------|----------------------------------------------------------------------------------------|
| (S) (K) | [E] ..... Switzerland and Scandinavia.                                                 |
| (S) (K) | [EK] .... United Kingdom.                                                              |
| (S) (K) | [XL] .... Australia.                                                                   |
| (S) (K) | [EG] ... F.R. Germany.                                                                 |
| (S) (K) | [EB] .... Belgium.                                                                     |
| (S) (K) | [EH] .... Holland.                                                                     |
| (S) (K) | [EF] .... France.                                                                      |
| (S) (K) | [Ei] ..... Italy.                                                                      |
| (S) (K) | [EC] .... Czechoslovakia.                                                              |
| (S) (K) | [XA] .... Southeast Asia, Oceania, Africa, Middle Near East and Central South America. |
| (S) (K) | [PA] .... Far East PX.                                                                 |
| (S) (K) | [PE] .... European Military.                                                           |
| (S) (K) | [PC] .... European Audio Club.                                                         |

Please use this manual together with the service manual for Model No. SL-L3 [M],  
Order No. HAD85042489C1.

## SPECIFICATIONS

### ■ Turntable section

**Type:** Direct drive  
Automatic turntable

**Features:** Auto start/Auto lead-in,  
Auto return,  
Auto stop,  
Forward search play,  
Backward search play,  
Repeat play,  
Record presence detection

**Drive method:** Direct drive

**Motor:** Brushless DC motor

**Turntable platter:** Aluminum die-cast  
Diameter 30 cm

**Turntable speeds:** 33-1/3 rpm and 45 rpm

**Wow and flutter:** 0.012% WRMS\*  
0.025% WRMS (JIS C5521)  
±0.035% peak  
(IEC 98A Weighted)

\*Measured by obtaining signal from built-in frequency generator of motor assembly.

**Rumble:** -56 dB (IEC 98A Unweighted)  
-78 dB (IEC 98A Weighted)

### ■ Tonearm section

**Type:** Linear tracking tonearm  
4-pivot gimbal suspension

**Effective length:** 10.5 cm (4-1/8")

**Tracking error angle:** Within ±0.1°

**Effective mass:** 9 g (including cartridge)

**Resonance frequency:** 12 Hz

# Technics

Matsushita Electric Trading Co., Ltd.  
P.O. Box 288, Central Osaka Japan

Panasonic Tokyo Office  
Matsushita Electric Trading Co., Ltd.  
1-2, 1-chome, Shibakoen, Minato-ku, Tokyo 105, Japan



**Tonearm drive motor:** DC motor  
**Stylus pressure:** 1.25 g (fixed)

## ■ Cartridge section

**Model No.:** EPC-P33  
**Type:** Moving magnet stereo cartridge  
  
**Magnetic circuit:** All laminated core  
**Frequency response:** 10 Hz ~ 50 kHz  
20 Hz ~ 10 kHz  $\pm 1$  dB  
**Output voltage:** 2.5 mV at 1 kHz, 5 cm/s. zero to peak lateral velocity  
(7 mV at 1 kHz, 10 cm/s. zero to peak 45° velocity [DIN 45 500])  
**Channel separation:** 22 dB at 1 kHz  
**Channel balance:** Within 1.8 dB at 1 kHz  
**Recommended load impedance:** 47 k $\Omega$ ~100 k $\Omega$   
**Compliance (dynamic):** 12 $\times 10^{-6}$  cm/dyne at 100 Hz  
**Stylus pressure range:** 1.25 $\pm 0.25$  g (12.5 $\pm 2.5$  mN)  
**Weight:** 6 g (cartridge only)  
**Replacement stylus:** EPS-33ES (Elliptical)

## ■ General

**Power supply:** For Australia and United Kingdom: AC 240 V, 50 Hz  
For continental Europe: AC 220 V, 50 Hz  
For others: ~ 110-127/220-240 V, 50 or 60 Hz  
**Power consumption:** For Australia, United Kingdom and continental Europe: 14 W  
For others: 16 W  
**Dimensions:** 43  $\times$  9  $\times$  35 cm  
(W  $\times$  H  $\times$  D)  
(Maximum height when the dust cover is open)  
39 cm  
**Weight:** 5.2 kg

Specifications are subject to change without notice for further improvement.

# TECHNISCHE DATEN

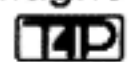
## ■ Plattenteller

**Typ:** Automatischer Plattenteller mit Quarz-Direktantrieb  
**Eigenschaften:** Auto-Start/Auto-Zuführung  
Auto-Rückkehr/Auto-Stop  
Wiederholtes Abspielen  
Programm-Abspielen  
Direktmusikwahl  
Vorwärts- und Rückwärts-Sprungabspiel  
Vorwärts- und Rückwärts-Suchabspiel  
Autom. Plattengrößenwahl  
Schallplattendetektion  
**Antrieb:** Direktantrieb  
**Motor:** Kollektorloser Gleichstrommotor  
**Antriebsregel-Methode:** Quarz-Steuerung QPL  
**Plattenteller:** Aluminium-Druckguß  
Durchmesser 30 cm  
**Plattenteller-Drehzahlen:** 33-1/3 und 45 U./min  
Automatische Drehzahlwahl  
(manuelle Wahl möglich)  
**Gleichlaufschwankungen:** 0,012% WRMS\*  
0,025% WRMS (JIS C5521)  
 $\pm 0,035\%$  Spitze  
(IEC 98A bewertet)  
\*Gemessen anhand von Signalen vom eingebauten Frequenzgenerator des Motorteils.  
**Rumpeln:** -56 dB (IEC 98A unbewertet)  
-78 dB (IEC 98A bewertet)

## ■ Tonarm

**Typ:** Linearabtastungs-Tonarm mit Kardanaufhängung mit 4-Punkt-Drehlager  
**Effektive Länge:** 10,5 cm  
**Spurfehlwinkel:** Innerhalb  $\pm 0,1^\circ$   
**Effektive Masse:** 9 g (einschließlich Tonabnehmer)  
**Resonanzfrequenz:** 12 Hz  
**Tonarm-Antriebsmotor:** Gleichstrommotor  
**Nadeldruck:** 1,25 g (nicht einstellbar)

## ■ Tonabnehmer

**Modell Nr.:** EPC-P33  
**Typ:** Beweglicher Magnet-Stereo-tonabnehmer   
**Magnetkreis:** Ganzlamellenkern  
**Frequenzgang:** 10 Hz bis 50 kHz  
20 Hz bis 10 kHz  $\pm 1$  dB  
**Ausgangsspannung:** 2,5 mV bei 1 kHz  
5 cm/s. Null-zu-Spitze, lateral  
[7 mV bei 1 kHz 10 cm/s. Null-zu-Spitze, 45° (DIN 45 500)]  
22 dB bei 1 kHz  
Innerhalb 1,8 dB bei 1 kHz  
**Kanaltrennung:**  
**Kanalabweichung:**  
**Empfohlene Endimpedanz:** 47 k $\Omega$ ~100 k $\Omega$   
**Nachgiebigkeit (dynamisch):** 12 $\times 10^{-6}$  cm/dyn bei 100 Hz  
**Nadeldruckbereich:** 1,25 $\pm 0,25$  g (12,5 $\pm 2,5$  mN)  
**Gewicht:** 6 g (nur Tonabnehmer)  
**Ersatznadel:** EPS-33ES (elliptisch)

## ■ Allgemeine Daten

**Stromversorgung:** ~220 V, 50 Hz  
**Leistungsaufnahme:** 14 W  
**Abmessungen:** 43  $\times$  9  $\times$  35 cm  
(B  $\times$  H  $\times$  T)  
(Maximale Höhe bei vollständig geöffnetem Gehäuseoberteil)  
39 cm  
**Gewicht:** 5,2 kg

Die technischen Daten können infolge von Verbesserungen ohne Ankündigung geändert werden.



# CARACTERISTIQUES

## ■ Section de la platine

|                                     |                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type:                               | Entraînement direct par quartz<br>Système de platine automatique                                                                                                                                                                                                                                                                                                         |
| Caractéristiques:                   | Démarrage automatique/Entrée automatique,<br>Retour automatique/Arrêt automatique,<br>Audition répétée,<br>Audition programmée,<br>Audition sélectionnée musicale directe,<br>Audition de saut vers l'avant et l'arrière,<br>Audition de recherche vers l'avant et l'arrière,<br>Sélection automatique du diamètre des disques,<br>Détection de la présence d'un disque. |
| Système d'entraînement:             | Entraînement direct                                                                                                                                                                                                                                                                                                                                                      |
| Moteur:                             | Moteur C.C. sans balai                                                                                                                                                                                                                                                                                                                                                   |
| Système de commande d'entraînement: | Réglage d'accrochage de phase par quartz                                                                                                                                                                                                                                                                                                                                 |
| Plateau de lecture:                 | Aluminium moulé sous pression<br>Diamètre 30 cm                                                                                                                                                                                                                                                                                                                          |
| Vitesses de la platine:             | 33-1/3 et 45 t/p.m.<br>Sélecteur de vitesse automatique<br>(Sélection manuelle possible)                                                                                                                                                                                                                                                                                 |
| Pleurage et scintillement:          | 0,012% de valeur efficace*<br>0,025% de valeur efficace<br>(JIS C5521)<br>±0,035% de crête<br>(IEC 98A pondéré)                                                                                                                                                                                                                                                          |

\* Mesuré par l'obtention d'un signal provenant du générateur de fréquences incorporé de l'ensemble du moteur.

|             |                                                          |
|-------------|----------------------------------------------------------|
| Ronflement: | -56 dB (IEC 98A non pondéré)<br>-78 dB (IEC 98A pondéré) |
|-------------|----------------------------------------------------------|

## ■ Section du bras de lecture

|                                           |                                                                                     |
|-------------------------------------------|-------------------------------------------------------------------------------------|
| Type:                                     | Bras de lecture d'alignement linéaire de type à suspension à la cardan sur 4 pivots |
| Longueur effective:                       | 10,5 cm                                                                             |
| Erreur d'angle d'alignement de piste:     | En deçà de $\pm 0,1^\circ$                                                          |
| Masse réelle:                             | 9 g (y compris la cellule)                                                          |
| Fréquence de résonance:                   | 12 Hz                                                                               |
| Moteur d'entraînement du bras de lecture: | Moteur C.C.                                                                         |
| Force verticale d'appui:                  | 1,25 g (Fixé)                                                                       |

## ■ Section de la cellule pick-up

|                                       |                                                                                                                               |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| N°-olu modèle:                        | EPC-P33                                                                                                                       |
| Type:                                 | Cellule pick-up stéréo à aimant mobile     |
| Circuit magnétique:                   | Noyau entièrement feuilleté                                                                                                   |
| Réponse en fréquence:                 | 10 Hz à 50 kHz<br>20 Hz à 10 kHz $\pm 1$ dB                                                                                   |
| Tension de sortie:                    | 2,5 mV à 1 kHz; 5 cm/s. zéro à vitesse latérale de crête<br>[7 mV à 1 kHz; 10 cm/s. zéro à vitesse 45° de crête (DIN 45 500)] |
| Séparation des canaux:                | 22 dB à 1 kHz                                                                                                                 |
| Equilibrage des canaux:               | En deçà de 1,8 dB à 1 kHz                                                                                                     |
| Impédance de charge recommandée:      | 47 k $\Omega$ ~100 k $\Omega$                                                                                                 |
| Elasticité acoustique: (dynamique)    | 12 $\times 10^{-6}$ cm/dyne à 100 Hz                                                                                          |
| Plage de la force verticale d'appui:  | 1,25 $\pm$ 0,25 g (12,5 $\pm$ 2,5 mN)                                                                                         |
| Poids:                                | 6 g (cellule seule)                                                                                                           |
| Remplacement de la pointe de lecture: | EPS-33ES<br>(Pointe de lecture ellipsoïdale)                                                                                  |

## ■ Généralités

|                                       |                                                                                                            |
|---------------------------------------|------------------------------------------------------------------------------------------------------------|
| Alimentation:                         | ~220V, 50 Hz                                                                                               |
| Consommation:                         | 14 W                                                                                                       |
| Dimensions: (L $\times$ H $\times$ P) | 43 $\times$ 9 $\times$ 35 cm<br>(Hauteur maximum lorsque le couvercle protège-poussière est ouvert: 39 cm) |
| Poids:                                | 5,2 kg                                                                                                     |

Sujet à changement sans préavis.



# ESPECIFICACIONES

## ■ Sección del plato giratorio

|                                                                                                           |                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tipo:</b>                                                                                              | Plato giratorio automático con accionamiento directo de cuarzo                                                                                                                                                                                                                                                                   |
| <b>Ventajas:</b>                                                                                          | Arranque/Descenso automáticos<br>Retorno/Parada automáticos<br>Ejecución repetida<br>Ejecución programada<br>Ejecución con selección directa de música<br>Ejecución con salto hacia adelante y hacia atrás<br>Ejecución con búsqueda hacia adelante y hacia atrás<br>Selección automática de tamaño<br>Detección de disco metido |
| <b>Método de accionamiento:</b>                                                                           | Accionamiento directo                                                                                                                                                                                                                                                                                                            |
| <b>Motor:</b>                                                                                             | Motor de corriente continua sin escobillas                                                                                                                                                                                                                                                                                       |
| <b>Método de control de accionamiento:</b>                                                                | Control enclavado de fase de cuarzo                                                                                                                                                                                                                                                                                              |
| <b>Platillo del plato giratorio:</b>                                                                      | Aluminio fundido<br>30 cm de diámetro                                                                                                                                                                                                                                                                                            |
| <b>Velocidades del plato giratorio:</b>                                                                   | 33-1/3 y 45 rpm<br>Selección automática de la velocidad<br>(También posibilidad de seleccionar a mano)                                                                                                                                                                                                                           |
| <b>Ululaciones y trémolo:</b>                                                                             | 0,012% WRMS*<br>0,025% WRMS (JIS C5521)<br>±0,035% cresta<br>(IEC 98A Ponderado)                                                                                                                                                                                                                                                 |
| *Medido obteniendo una señal proveniente del generador de frecuencias incorporado del conjunto del motor. |                                                                                                                                                                                                                                                                                                                                  |
| <b>Ruido de rodadura:</b>                                                                                 | -56 dB (IEC 98A No ponderado)<br>-78 dB (IEC 98A Ponderado)                                                                                                                                                                                                                                                                      |

## ■ Sección del brazo sonoro

|                                                 |                                                                          |
|-------------------------------------------------|--------------------------------------------------------------------------|
| <b>Tipo:</b>                                    | Brazo sonoro de seguimiento lineal con suspensión cardánica de 4 pivotes |
| <b>Longitud efectiva:</b>                       | 10,5 cm                                                                  |
| <b>Angulo de error de seguimiento:</b>          | Inferior a 0,1° aproxim.                                                 |
| <b>Masa efectiva:</b>                           | 9 g (incluyendo el cartucho)                                             |
| <b>Frecuencia de resonancia:</b>                | 12 Hz                                                                    |
| <b>Motor de accionamiento del brazo sonoro:</b> | Motor de corriente continua                                              |
| <b>Presión de la aguja:</b>                     | 1,25 g (fija)                                                            |

## ■ Sección del cartucho

|                                         |                                                                                                                                             |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Núm. del modelo:</b>                 | EPC-P33                                                                                                                                     |
| <b>Tipo:</b>                            | Cartucho estereofónico de imán móvil                     |
| <b>Circuito magnético:</b>              | Núcleo totalmente laminado                                                                                                                  |
| <b>Respuesta de frecuencia:</b>         | 10 Hz a 50 kHz<br>20 Hz a 10 kHz ±1 dB                                                                                                      |
| <b>Voltaje de salida:</b>               | 2,5 mV a 1 kHz<br>Velocidad lateral de cero a cresta de 5 cm/s<br>(7 mV a 1 kHz, Velocidad de 45° de cero a cresta de 10 cm/s [DIN 45 500]) |
| <b>Separación de canales:</b>           | 22 dB a 1 kHz                                                                                                                               |
| <b>Equilibrio de canales:</b>           | Inferior a 1,8 dB a 1 kHz                                                                                                                   |
| <b>Impedancia de carga recomendada:</b> | 47 kΩ a 100 kΩ                                                                                                                              |
| <b>Elasticidad (dinámica):</b>          | 12×10 <sup>-6</sup> cm/dina a 100 Hz                                                                                                        |
| <b>Radio de presión de la aguja:</b>    | 1,25±0,25 g (12,5±2,5 mN)                                                                                                                   |
| <b>Peso:</b>                            | 6 g (cartucho solamente)                                                                                                                    |
| <b>Aguja de recambio:</b>               | EPS-33ES<br>(Aguja elíptica)                                                                                                                |

## ■ En general

|                                        |                                                                                      |
|----------------------------------------|--------------------------------------------------------------------------------------|
| <b>Alimentación de corriente:</b>      | ~110-127/ 220-240V,<br>50 ó 60 Hz                                                    |
| <b>Consumo de corriente:</b>           | 16W                                                                                  |
| <b>Dimensiones: (Ancho×Alto×Prof.)</b> | 43 × 9 × 35 cm<br>(Altura máxima cuando la tapa contra el polvo está abierta: 39 cm) |
| <b>Peso:</b>                           | 5,2 kg                                                                               |

Estas especificaciones están sujetas a cualquier cambio sin previo aviso.



■ MESSUNGEN UND JUSTIERUNGEN

Deutsch

• Verwendete Geräte und Zustand des Gerätes

1. Oszilloskop

2. Gleichstrom-Voltmeter
3. Plate (SFTR007) für Justierung

4. Den Empfindlichkeits-Wahlschalter des optischen Sensors auf "M" stellen.

| Schritt | Gegenstand                           | Vorbereitungen für die Justierung                                                                                                                                                                                                                                                                                                                                                                                                                    | Zu justierende Teile                                          | Justiermethode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | Startposition                        | 1) Das Gehäuseoberteil öffnen und die Platte auflegen.<br>2) Den Ein/Aus-Schalter einschalten.<br>3) Den Startschalter drücken.                                                                                                                                                                                                                                                                                                                      | Absenk-positions-Justierschraube (Abb. 1)                     | <ul style="list-style-type: none"><li>Die Startposition-Justierschraube drehen. Falls er zwischen Musikstücken absenkt, die Schraube entgegen dem Uhrzeigersinn drehen.</li></ul>                                                                                                                                                                                                                                                                                                                                   |
| 2       | Sensorverstärkung                    | 1) Das Gleichstrom-Voltmeter an IC401, Stift 12 (+) und Masse (–) anschließen.<br>2) Die Platte für Justierung mit Seite A auflegen.<br>3) Das Gehäuseoberteil schließen.                                                                                                                                                                                                                                                                            | VR401 (Abb. 2)                                                | 1) Den Ein/Aus-Schalter einschalten.<br>2) Der Tonarm ist in der Ruheposition. (Unbespielter Teil der Platte.)<br>3) VR401 so abgleichen, daß die Ausgangsspannung $8,5V\pm0,3V$ beträgt.                                                                                                                                                                                                                                                                                                                           |
| 3       | Sensorauflösung                      | 1) Das Oszilloskop an IC401, Stift 9 (+) und Masse (–) anschließen.<br>2) Die Platte für Justierung mit Seite A auflegen.<br>3) Das Gehäuseoberteil schließen.                                                                                                                                                                                                                                                                                       | VR402 (Abb. 2)                                                | 1) Den Ein/Aus-Schalter einschalten.<br>2) Den F-Überspring-Schalter gebrückt halten, um den Tonarm zu bewegen. (Ausgangsleistung tritt auf zwischen den Musikstücken.)<br>3) VR402 so abgleichen, daß die maximale Ausgangsleistung zwischen den Musikstücken $3V\pm0,3V$ beträgt. (Abb. 3)                                                                                                                                                                                                                        |
| 4       | Nadel-Absenkposition                 | 1) Leistungsdraht mit Klemme an CN301, Shift 6 und Stift 2 der Betriebs-Platine anschließen. (Stummschal tungsbetrieb stoppt.)<br>2) Das Gehäuseoberteil öffnen und den Gehäuseschalter mit Klebband in der gedrückten Stellung arretieren.<br>3) Die Platte für Justierung mit Seite B auflegen.<br>4) Das Gehäuseoberteil schließen.<br>5) Das Gerät an den Verstärker anschließen. (Die Lautsprecher an die Lautsprecher-Anschlüsse anschließen.) | VR302 (Abb. 4)                                                | 1) Den Ein/Aus-Schalter einschalten.<br>2) Die Programmtaste 2 und anschließend den Startschalter drücken.<br>3) Nach Beendigung des Liftbetriebs die Programmtaste 2 zum Zwecke des Überspringens drücken.<br>4) Überprüfen, daß die Absenkposition bei "13" liegt.<br>5) VR302 so justieren, daß die Absenkposition bei "13" auf der Skala ist.<br><b>Anmerkung:</b> <ul style="list-style-type: none"><li>VR302 Kann auch von der Geräterückseite her justiert werden. (Abb. 4 (B))</li></ul>                    |
| 5       | Tonarm-Spurfehlwinkel                | 1) Die Staubabdeckung entfernen. (Siehe "ANLEITUNG FÜR DIE DEMONTAGE".)<br>2) Das Gehäuseoberteil öffnen und den Gehäuseschalter mit Klebband in der gedrückten Stellung arretieren.<br>3) Das Gehäuseoberteil schließen.<br>4) Eine Platte auflegen.                                                                                                                                                                                                | Justierschraube (Abb. 5)                                      | 1) Den Ein/Aus-Schalter einschalten.<br>2) Den F-Überspring-Schalter gedrückt halten, um den Tonarm zu bewegen.<br>3) Die Justierschraube so weit drehen, daß die Tonarmmitte mit der V-Kerbe der Liftstange übereinstimmt.                                                                                                                                                                                                                                                                                         |
| 6       | Servo-Verstärkung und Offsetspannung | 1) Die Staubabdeckung entfernen. (Siehe "ANLEITUNG FÜR DIE DEMONTAGE".)<br>2) Das Gehäuseoberteil öffnen und den Gehäuseschalter mit Klebband in der gedrückten Stellung arretieren.<br>3) Das Gleichstrom-Voltmeter an CN301, Stift 5 (+) und Stift 2 (–) anschließen.<br>4) Die Sensorabdeckung entfernen.                                                                                                                                         | VR501 (Servo Verstärkung) Schraube (Offset-Spannung) (Abb. 6) | 1) Den Ein/Aus-Schalter einschalten.<br>2) Den F-Überspring-Schalter gedrückt halten, um den Tonarm zu bewegen.<br>3) Das Gehäuseoberteil öffnen.<br>4) Den Tonarm ganz nach links bewegen. Dann VR501 so justieren, daß die Spannung $6,0V$ beträgt. (Servo-Verstärkung)<br>5) Den Tonarm zur Mitte him stellen und überüfen, daß die Ausgangsspannung $3,0V$ beträgt.<br>6) Falls die Spannung nicht $3,0V$ beträgt, ist die Schraube so zu justieren, daß die Ausgangsspannung $3,0V$ beträgt. (Offset-Spannung) |



■ MESURAGES ET RÉGLAGES

Français

• Equipement utilisé et conditions de service de l'appareil

1. Oscilloscope

2. Voltmètre à C.C.
3. Disque (SFTR007) pour la mise au point

4. Régler le sélecteur de sensibilité de détecteur optique sur "M".

| Etape | Article                                                     | Préparatifs pour la réglage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Portion du réglage                                                                    | Méthode de mise au point                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Position de démarrage                                       | <div>1) Ouvrir la boîte supérieure et installer un disque.</div> <div>2) Mettre en circuit l'interrupteur d'alimentation.</div> <div>3) Appuyer sur la touche "Start" (mise en marche).</div>                                                                                                                                                                                                                                                                                                                                                  | Vis d'ajustement de la position descendante. (Fig. 1)                                 | <div>• Tourner la vis de réglage du positionnement de démarrage.</div> <div>Si elle descend entre les plages, la tourner dans le sens inverse des aiguilles d'une montre.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 2     | Gain du dispositif détecteur                                | <div>1) Raccorder un voltmètre à C.C. aux 12 ergotes (+) de IC401 et à la terre (-).</div> <div>2) Installer le disque pour la mise au point avec le côté A vers le haut.</div> <div>3) Refermer le boîtier supérieur.</div>                                                                                                                                                                                                                                                                                                                   | VR401 (Fig. 2)                                                                        | <div>1) Mettre en marche l'interrupteur d'alimentation.</div> <div>2) Le bras de lecture est à la position de repos. (Zone vierge du disque.)</div> <div>3) Ajuste VR401 de telle sorte que la tension de sortie soit de 8,5V±0,3V.</div>                                                                                                                                                                                                                                                                                                                                                                                   |
| 3     | Résolution du dispositif détecteur                          | <div>1) Raccorder l'oscilloscope aux 9 ergots (+) de IC401 et à la terre (-).</div> <div>2) Installer le disque pour la mise au point avec le côté A vers la haut.</div> <div>3) Refermer le boîtier supérieur.</div>                                                                                                                                                                                                                                                                                                                          | VR402 (Fig. 2)                                                                        | <div>1) Mettre en circuit l'interrupteur d'alimentation.</div> <div>2) Maintenir enfoncé le commutateur de saut F pour déplacer le bras de lecture. (La puissance de sortie est délivrée entre les plages.)</div> <div>3) Ajuster VR402 de telle sorte que la puissance de crête entre les plages soit de 3V±0,3V. (Fig. 3)</div>                                                                                                                                                                                                                                                                                           |
| 4     | Position de pose/relevage de la pointe de lecture           | <div>1) Raccorder le fil de jonction avec attache à la broche 2 et à la broche 6 de CN301 du circuit de fonctionnement. (Arrête fonctionnement de l'accord silencieux.)</div> <div>2) Ouvrir le boîtier supérieur et maintenir appuyée la touche du boîtier avec une bande adhésive.</div> <div>3) Installer le disque pour la mise au point avec le côté B vers le haut.</div> <div>4) Refermer le boîtier supérieur.</div> <div>5) Raccorder l'appareil à l'amplificateur. (Raccorder les haut-parleurs aux bornes des haut-parleurs.)</div> | VR302 (Fig. 4)                                                                        | <div>1) Mettre en circuit l'interrupteur d'alimentation.</div> <div>2) Appuyer respectivement sur la touche de programmation 2 et sur la touche de mise en marche.</div> <div>3) Après l'achèvement de la pose, appuyer sur la touche de programmation 2 dans le but d'opérer un saut.</div> <div>4) S'assurer que la position descendante est au compte de "13".</div> <div>5) Régler VR302 de telle sorte que la position descendante soit au comptage de "13".</div> <div>Nota:</div> <div>• VR302 peut aussi être ajusté à partir de l'arrière de l'appareil. (Fig. 4 (B))</div>                                        |
| 5     | Angle de décalage du bras de lecture                        | <div>1) Retirer le couvercle protège-poussière. (Se référer aux "INSTRUCTIONS POUR LE DÉMONTAGE".)</div> <div>2) Ouvrir la boîte supérieure et maintenir appuyée la touche du boîtier avec une bande adhésive.</div> <div>3) Refermer le boîtier supérieur.</div> <div>4) Installer un disque.</div>                                                                                                                                                                                                                                           | Vis de réglage (Fig. 5)                                                               | <div>1) Mettre en circuit l'interrupteur d'alimentation.</div> <div>2) Maintenir enfoncé le commutateur de saut F pour déplacer le bras de lecture.</div> <div>3) Tourner la vis de réglage de façon à ce que le centre de bras coïncide avec la rainure en V de la tige d'élévation.</div>                                                                                                                                                                                                                                                                                                                                 |
| 6     | Amplification servo-mécanique et tension d'écart de réglage | <div>1) Retirer le couvercle protège-poussière. (Se référer aux "INSTRUCTIONS POUR LE DÉMONTAGE".)</div> <div>2) Ouvrir le boîtier supérieur et maintenir appuyée la touche du boîtier avec une bande adhésive.</div> <div>3) Raccorder le voltmètre à C.C. à la broche 5 (+) et à la broche 2 (-) de CN301.</div> <div>4) Retirer le couvercle du dispositif détecteur.</div>                                                                                                                                                                 | VR501 (Amplification servo-mécanique) Plaquette à Vis. (Tension de décalage) (Fig. 6) | <div>1) Mettre en circuit l'interrupteur d'alimentation.</div> <div>2) Maintenir enfoncé le commutateur de saut F pour déplacer le bras de lecture.</div> <div>3) Ouvrir le boîtier supérieur.</div> <div>4) Déplacer complètement le bras de lecture vers la gauche. Puis, ajuster VR501 de telle sorte que la tension soit de 6,0V. (Amplification servo-mécanique)</div> <div>5) Régler le bras de lecture au centre et s'assurer que la tension de sortie soit de 3,0V.</div> <div>6) Si la tension n'est pas de 3,0V, ajuster la vis de telle sorte que la tension de sortie soit de 3,0V. (Tension de décalage)</div> |



• Equipos usados y estado del aparato

1. Osciloscopio

2. Voltímetro de corriente continua
3. Disco (SFTR007) de ajuste

4. Poner el selector de sensibilidad del sensor óptico en "M".

| Paso | Punto tratado                                      | Preparativos para el ajuste                                                                                                                                                                                                                                                                                                                                                                                                                             | Porción a ajustar                                                               | Manera de hacer el ajuste                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Posición de arranque                               | 1) Abrir el gabinete superior y colocar el disco.<br>2) Encender el interruptor de la corriente.<br>3) Empujar el interruptor de arranque ("Start").                                                                                                                                                                                                                                                                                                    | Tornillo de regulación de la posición de descenso (Fig. 1)                      | <ul style="list-style-type: none"><li>Hacer girar el tornillo de regulación de la posición de descenso. Si se deposita en medio de una pieza, girar el tornillo hacia la izquierda.</li></ul>                                                                                                                                                                                                                                                                                                                                                 |
| 2    | Ganancia del sensor                                | 1) Conectar el voltímetro de CC al perno 12 (+) de IC401 y tierra (-).<br>2) Colocar el disco de ajuste con el lado A mirando hacia arriba.<br>3) Cerrar el gabinete superior.                                                                                                                                                                                                                                                                          | VR401 (Fig. 2)                                                                  | 1) Encender el interruptor de la corriente.<br>2) El brazo sonoro está en la posición de descanso. (Area negra del disco.)<br>3) Regular VR401 de manera tal que la tensión de salida sea de 8,5V ±0,3V.                                                                                                                                                                                                                                                                                                                                      |
| 3    | Rasolución del sensor                              | 1) Conectar el osciloscopio al perno 9 (+) de IC401 y tierra (-).<br>2) Colocar el disco de ajuste con el lado A mirando hacia arriba.<br>3) Cerrar el gabinete superior.                                                                                                                                                                                                                                                                               | VR402 (Fig. 2)                                                                  | 1) Encender el interruptor de la corriente.<br>2) Mantener el interruptor de salto F oprimido para mover el brazo sonoro. (La salida se suministra entre las piezas.)<br>3) Regular VR402 de manera tal que la salida de cresta entre las piezas sea de 3V±0,3V. (Fig. 3)                                                                                                                                                                                                                                                                     |
| 4    | Posición de descenso de aguja.                     | 1) Conectar el hilo conductor con clip a 6 pernos y 2 perno CN301 de tablero de circuitos de operation. (Cesa la operación de silenciamiento.)<br>2) Abrir el gabinete superior y sujetar el interruptor del mismo con cinta.<br>3) Colocar el disco de ajuste con el lado B mirando hacia arriba.<br>4) Cerrar el gabinete superior.<br>5) Conectar el aparato al amplificador. (Conectar los altoparlantes a los bornes para conexión de los mismos.) | VR302 (Fig. 4)                                                                  | 1) Encender el interruptor de la corriente.<br>2) Apretar la tecla de programa 2 seguida del interruptor de arranque.<br>3) Una vez que el brazo sonoro haya descendido, apretar la tecla de programa 2 con el fin de saltar.<br>4) Asegurarse de que la posición de descenso se encuentre en el número "13".<br>5) Regular VR302 de manera que la posición de descenso esté en conteo "13".<br><b>Nota:</b> <ul style="list-style-type: none"><li>VR302 puede también ajustarse desde la parte posterior del aparato. (Fig. 4 (B))</li></ul> |
| 5    | Angulo de descentramiento del brazo sonoro         | 1) Remover la tapa contra el polvo. (Referir a "INSTRUCCION DE DESMONTAJE".)<br>2) Abrir el gabinete superior y sujetar el interruptor del mismo con cinta.<br>3) Cerrar el gabinete superior.<br>4) Colocar el disco.                                                                                                                                                                                                                                  | Tornillo de ajuste (Fig. 5)                                                     | 1) Encender el interruptor de la corriente.<br>2) Manetener el interruptor de salto F oprimido para mover el brazo sonoro.<br>3) Girar el tornillo de ajuste de manera tal que el centro del brazo concuerde con la ranura en V de la barra de elevación.                                                                                                                                                                                                                                                                                     |
| 6    | Canancia del sarvome canismo y tensión de desnivel | 1) Remover la tapa contra el polvo. (Referir a "INSTRUCCION DE DESMONTAJE".)<br>2) Abrir el gabinete superior y sujetar el interruptor del mismo con cinta.<br>3) Conectar el voltímetro de CC a 5 pernos (+) y 2 pernos (-) de CN301.<br>4) Remover la cubierta de sensor.                                                                                                                                                                             | VR501 (Ganancia del servo-mecanismo)<br>Tornillo (Tensión de desnivel) (Fig. 6) | 1) Encender el interruptor de la corriente.<br>2) Mantener el interruptor de salto F oprimido para mover el brazo sonoro.<br>3) Abrir el gabinete superior.<br>4) Mover completamente el brazo sonoro a la izquierda. Luego, regular VR501 de manera que la tensión sea 6,0V. (Ganancia del servomecanismo.)<br>5) Colocar el brazo sonoro en el centro y asegurarse de que la tension de salida sea de 3,0V.<br>6) Si la tensión no es 3,0V, regular el tornillo de manera que la tensión de salida sea 3,0V. (Tensión de desnivel)          |



# CHANGE IN REPLACEMENT PARTS LIST

Notes:

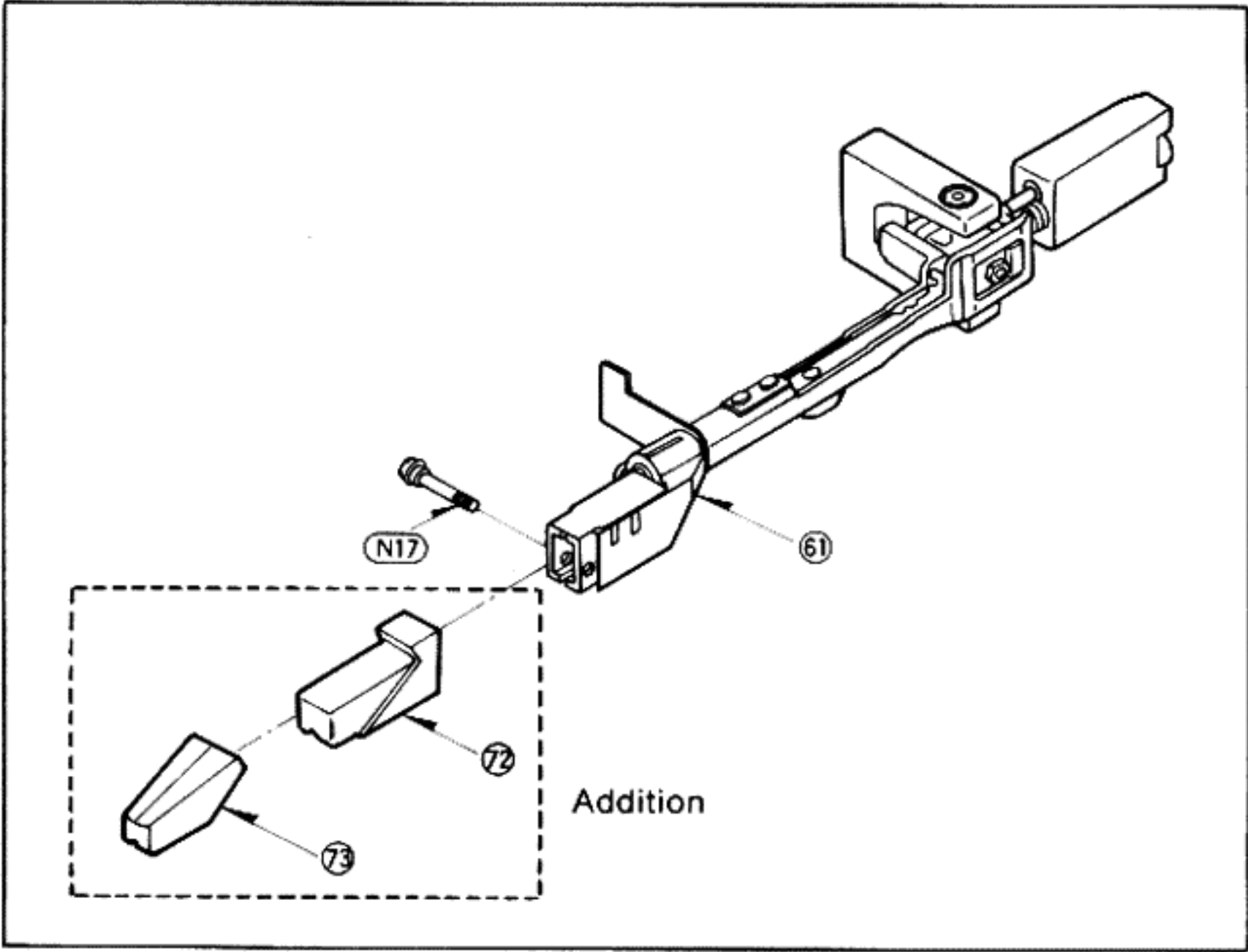
- 1. Mentioned in this parts list are only those changes in Model No. SL-L3 for destination [M] area.
- 2. Important safety notice:  
Components identified by a  mark have special characteristics important for safety.  
When replacing any of these components, use only manufacturer's specified parts.
- 3. -marked parts are used for black only, while -marked parts are for silver type only.
- 4. Parts other than -and -marked are used for both black and silver types.
- 5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

| Ref. No.                  | Change of Part |              | Area & Color          | Part Name & Description |
|---------------------------|----------------|--------------|-----------------------|-------------------------|
|                           | SL-L3 [M]      | SL-L3/(K)    |                       |                         |
| SWITCH                    |                |              |                       |                         |
| S901                      | Addition       | SFDSHXW225-3 | [XA, PA, PE, PC] only | Voltage Selector ⚠      |
| POWER TRANSFORMER         |                |              |                       |                         |
| T1                        | SLT57DTL2A     | SLT57DTE15E  | [EK, XL]              | Power Source ⚠          |
|                           |                | SLT57DTS17E  | [XA, PA, PE, PC]      |                         |
|                           |                | SLT57DTS16E  | [other]               |                         |
| FUSES                     |                |              |                       |                         |
| F1                        | Addition       | XBAS2C016T1B | [XA, PA, PE, PC]      | 250V, T160mA ⚠          |
|                           |                | XBA2C06T1B   | [other]               | 250V, T630mA ⚠          |
| F2                        | Addition       | XBA2C06T1B   | [XA, PA, PE, PC] only | 250V, T630mA ⚠          |
| CABINET AND CHASSIS PARTS |                |              |                       |                         |
| 1                         | SFADC13M01E    | SFADC13N01E  |                       | Dust Cover              |
| 5                         | SFACC13N01E    | SFACC13N01E  | ○                     | Cabinet                 |
|                           |                | SFACC13N21E  | ⊗                     |                         |
| 5-1                       | SFKBBD2N01     | SFKBBD2N01   | ○                     | Badge                   |
|                           |                | SFKBBD2N21   | ⊗                     |                         |
| 7                         | SFKKC13N01     | SFKKC13S01   |                       | Ornament Plate          |
| 43                        | SFACC13N011    | SFACC13N011  | ○                     | Cover                   |
|                           |                | SFACC13N211  | ⊗                     |                         |
| 44                        | SFNNC13M01     | SFNNC13X01   | [XA]                  | Name Plate              |
|                           |                | SFNNC13R01   | [EG]                  |                         |
|                           |                | SFNNC13S01   | [E, EC]               |                         |
|                           |                | SFNNC13P02   | [PC]                  |                         |
|                           |                | SFNNC13P01   | [PA, PE]              |                         |
|                           |                | SFNNC13G01   | [EK, XL]              |                         |
|                           |                | SFNNC13Q01   | [other]               |                         |
| 45                        | SFDJHSC0491    | SFDJHSC0491  | [XL]                  | AC Socket ⚠             |
|                           |                | SFDJHSC04912 | [XA, PA, PE, PC]      |                         |
|                           |                | SFDJHSC0516  | [other]               |                         |

| Ref. No.      | Change of Part |             | Area & Color                  | Part Name & Description |
|---------------|----------------|-------------|-------------------------------|-------------------------|
|               | SL-L3 [M]      | SL-L3/(K)   |                               |                         |
| 59            | SFACC13N012    | SFACC13N012 | ○ Except for [XA, PA, PE, PC] | Cover                   |
|               |                | SFACC13N212 | ⊗ Except for [XA, PA, PE, PC] |                         |
| TONEARM PARTS |                |             |                               |                         |
| 72            | Addition       | EPC-P33     |                               | ★ Cartridge             |
| 73            | Addition       | EPS-33ES    |                               | ★ Stylus                |
| ACCESSORIES   |                |             |                               |                         |
| A1            | SFNUC13M01     | SFNUC13G01  | [EK]                          | Instruction Book        |
|               |                | SFNUC13I01  | [Ei]                          |                         |
|               |                | SFNUC13P01  | [PA, PE, PC]                  |                         |
|               |                | SFNUC13S01E | [E, EB, EH, EC]               |                         |
|               |                | SFNUC13X01  | [other]                       |                         |
| A4            | SFDAC05M01     | SFDAC05G02  | [EK]                          | AC Cord ⚠               |
|               |                | SFDAC05L01  | [XL]                          |                         |
|               |                | SFDAC05X02  | [XA]                          |                         |
|               |                | SFDAC05N01  | [PA, PE, PC]                  |                         |
|               |                | SFDAC05E02  | [other]                       |                         |
| A5            | Addition       | SFDKI19118  | [XA] only                     | 2 Pin Plug ⚠            |
| A6            | Addition       | QJP0803S    | [PA, PE, PC] only             | Adaptor ⚠               |
| PACKING PART  |                |             |                               |                         |
| P1            | SFHPC13M01     | SFHPC13C01  | ○ [EF] only                   | Carton Box              |
|               |                | SFHPC13M01  | ○ [other]                     |                         |
|               |                | SFHPC13F21  | ⊗ [EF] only                   |                         |
|               |                | SFHPC13S21  | ⊗ [other]                     |                         |

# EXPLODED VIEW

- Addition of cartridge and stylus





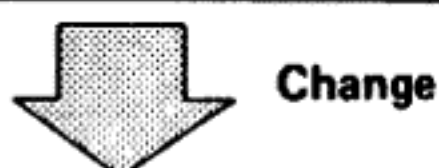
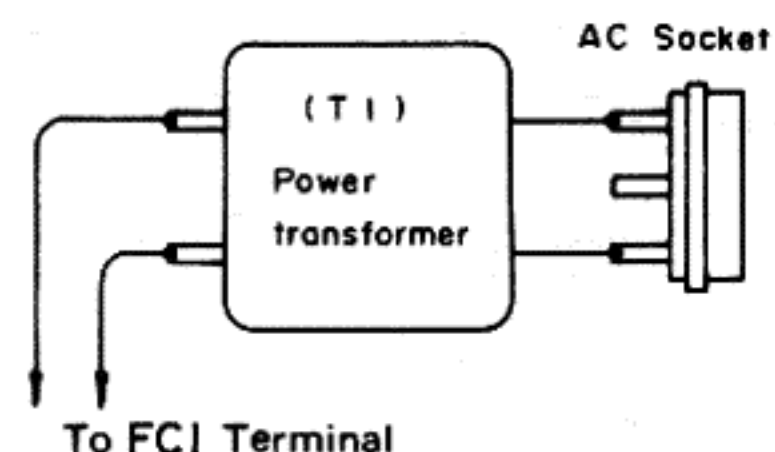
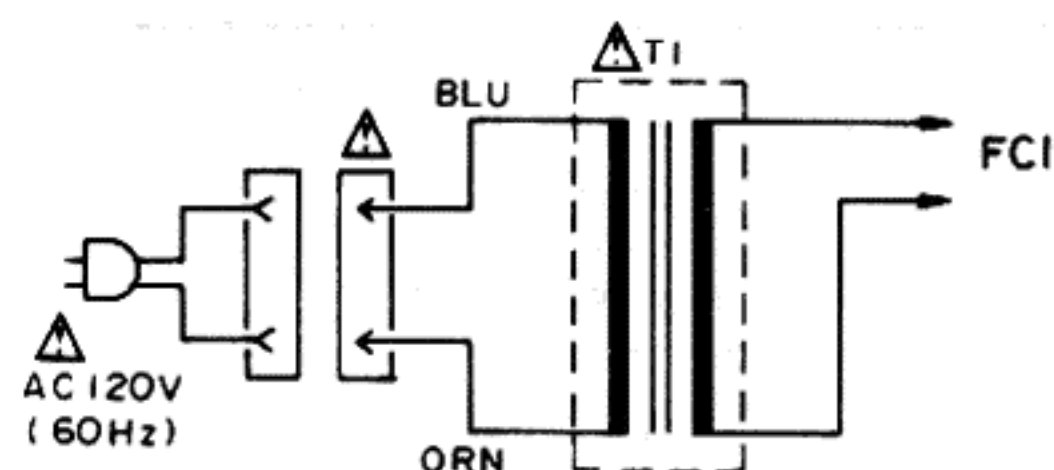
# ■ SCHEMATIC DIAGRAM AND PRINTED CIRCUIT BOARD

## Important safety notice:

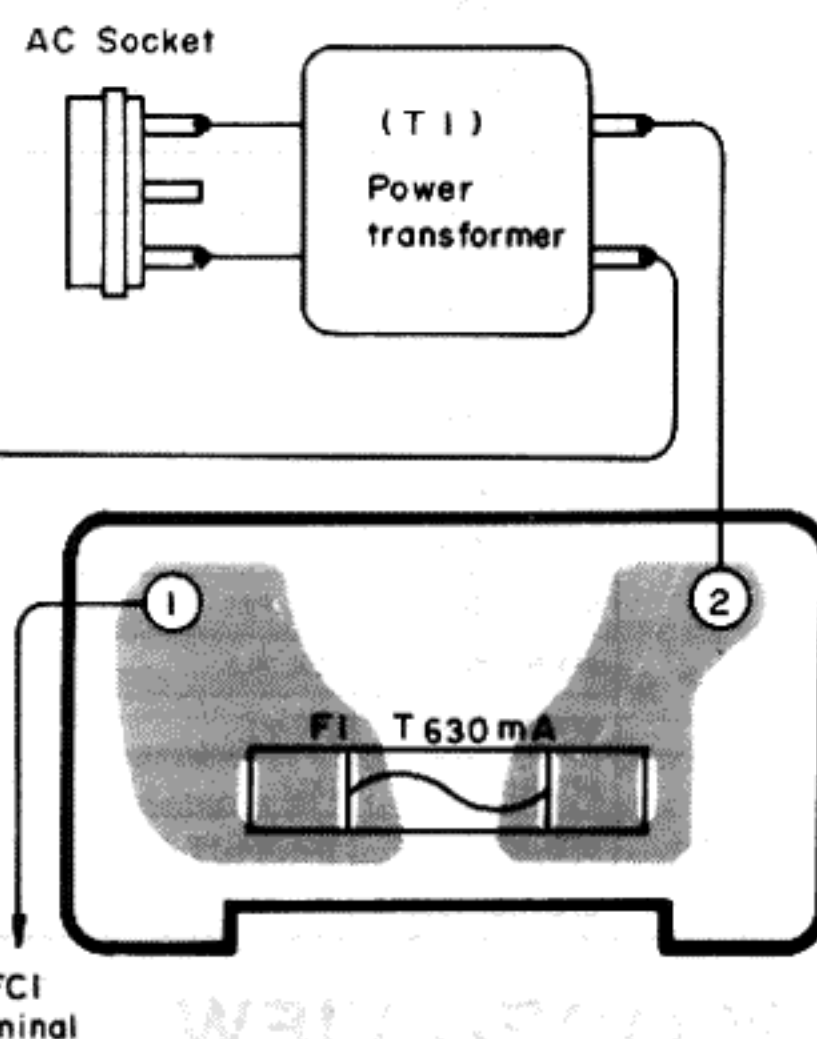
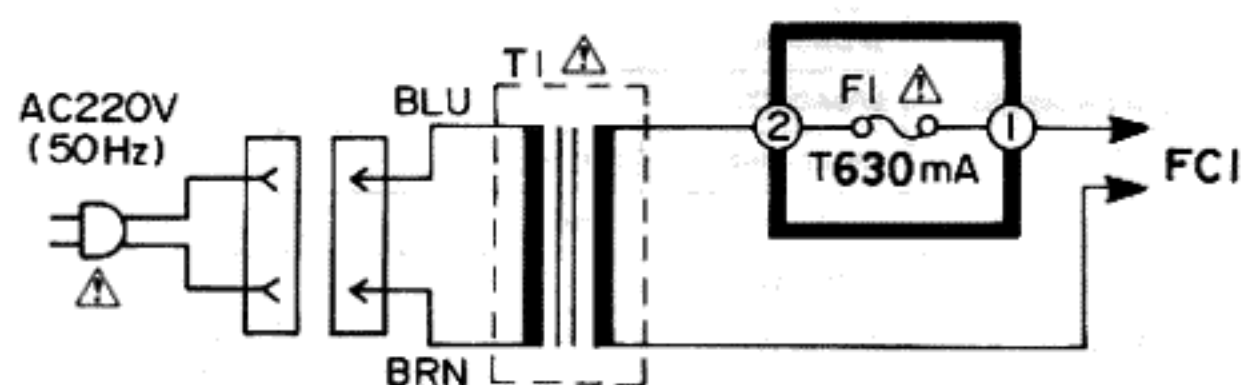
Components identified by  $\Delta$  mark have special characteristics important for safety.  
When replacing any of these components use only manufacturer's specified parts.

### • Change in power source circuit

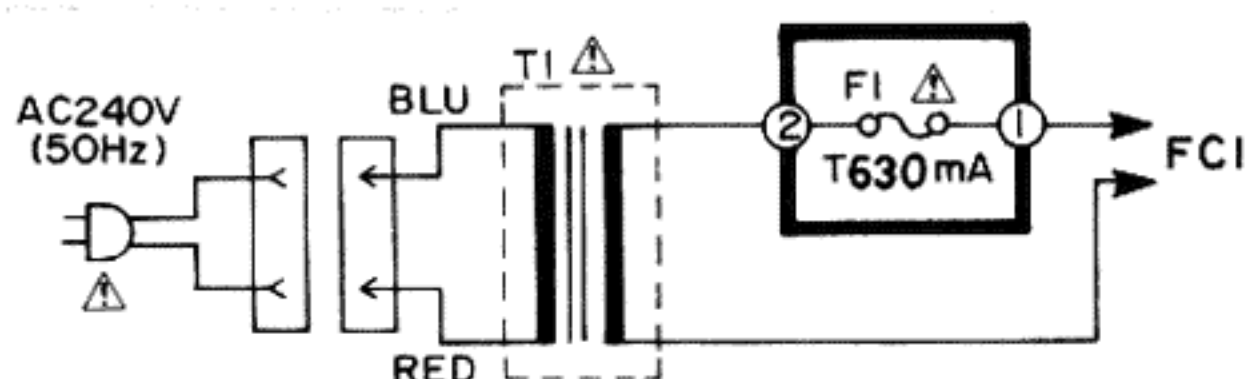
#### Product for U.S.A. ([M] area)



#### Product for Continental Europe ([E], [EG], [EB], [EH], [EF], [Ei] and [EC] areas.)

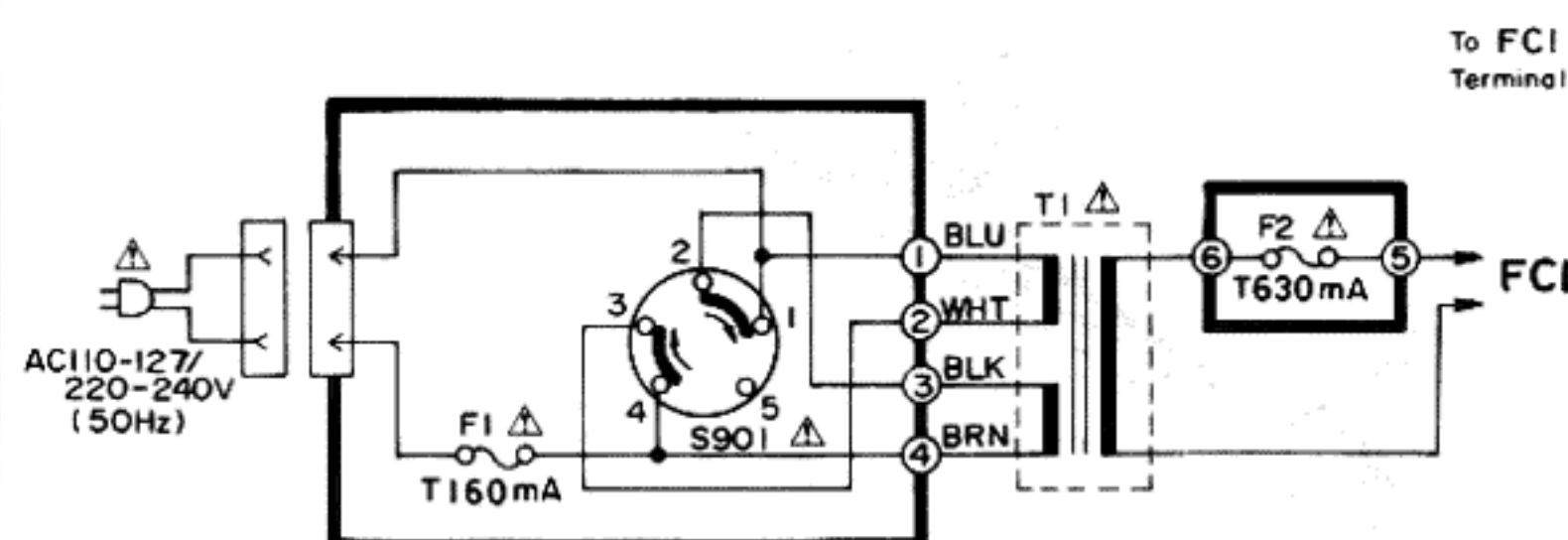


#### Product for United Kingdom and Australia ([EK] and [XL] areas)

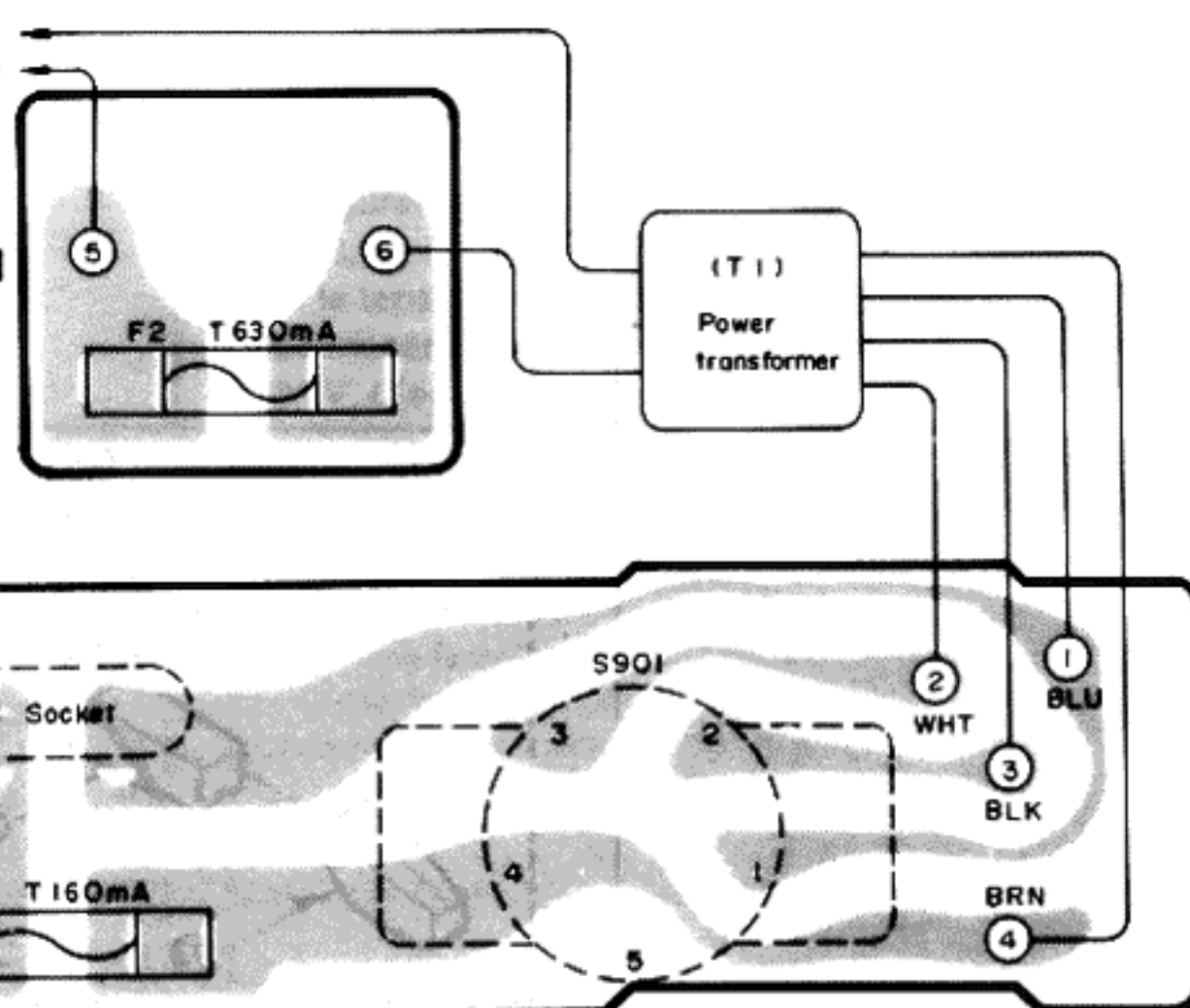


To FCI Terminal

#### Product for Southeast Asia, Oceania, Africa, Middle Near East, Central South America, Far East PX, European Military and European Audio Club. ([XA], [PA], [PE], and [PC] areas.)



To FCI Terminal





# ■ REPLACEMENT PARTS LIST

## Notes:

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice:  
Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3.  $\textcircled{K}$ -marked parts are used for black only, while  $\textcircled{O}$ -marked parts are for silver type only.
4. Part other than  $\textcircled{K}$ -and  $\textcircled{O}$ -marked are used for both black and silver type.
5. Bracketed indications in Ref. No. columns specify the area.  
Parts without these indications can be used for all areas.
6. The "S" mark is service standard parts and may differ from production parts.
7. The parenthesized numbers in the column of description stand for the quantity per set.

| Ref. No.                                   | Part. No.                | Description                                         |
|--------------------------------------------|--------------------------|-----------------------------------------------------|
| <b>INTEGRATED CIRCUITS</b>                 |                          |                                                     |
| IC1                                        | AN7812                   | Regulator                                           |
| IC2                                        | AN78N05                  | Regulator                                           |
| IC101                                      | AN6638                   | Turntable Drive                                     |
| IC201                                      | AN6683                   | Turntable Control                                   |
| IC301                                      | MN1425FPT                | Micro Computer                                      |
| IC302                                      | MN1402FPM                | Micro Computer                                      |
| IC401                                      | AN6690                   | Arm Motor Drive & Blank Groove Detector             |
| IC402                                      | AN6912                   | Comparator                                          |
| IC951                                      | AN6914                   | Comparator                                          |
| <b>TRANSISTORS</b>                         |                          |                                                     |
| Q301, 304, 364, 402, 951                   | 2SD636                   | Switching                                           |
| Q302, 303                                  | 2SD892                   | Switching                                           |
| Q306, 311, 412, 952, 953                   | 2SB641                   | Switching                                           |
| Q401, 411, 413                             | UN1111                   | Switching                                           |
| Q415                                       | 2SC2206                  | OSC                                                 |
| Q430                                       | 2SD638                   | Regulator                                           |
| <b>DIODES</b>                              |                          |                                                     |
| D2~5                                       | SVDAY5525S               | LED                                                 |
| D6~9                                       | $\Delta$ SVD1SR35200V    | Rectifier                                           |
| D301, 302, 343                             | SVDGL-9PG2               | LED                                                 |
| D303~311, 342                              | SVDGL-9HY82              | LED                                                 |
| D312                                       | MA4062                   | 6.2V Zener                                          |
| D313~319, 321~323, 347, 430, 431, 951, 952 | MA165                    | Switching                                           |
| D401                                       | MA4068                   | 6.8V Zener                                          |
| D402                                       | MA4110                   | 11V Zener                                           |
| D501, 701                                  | $\textcircled{S}$ MA162A | Switching                                           |
| D502                                       | SVDSL31VC3               | LED                                                 |
| <b>CRYSTAL</b>                             |                          |                                                     |
| X201                                       | SVQSH41TR                | 4.1931 MHz                                          |
| <b>CERAMIC OSC</b>                         |                          |                                                     |
| X401                                       | SVFCSB540P3              | 540 kHz                                             |
| <b>VARIABLE RESISTORS</b>                  |                          |                                                     |
| VR302                                      | EVJE1AF20B54             | Stylus Cue-down Position Control, 50 k $\Omega$ (B) |
| VR401                                      | EVN61AA00B55             | Sensor Gain Adjustment, 500k $\Omega$ (B)           |
| VR402                                      | EVN61AA00B25             | Sensor Resolution Adjustment, 200k $\Omega$ (B)     |
| VR501                                      | EVNK0AA00B14             | Servo Gain Adjustment, 10k $\Omega$ (B)             |
| <b>RELAY</b>                               |                          |                                                     |
| RL701                                      | SFDYQ11N02               | Muting                                              |

| Ref. No.                         | Part. No.                     | Description                     |
|----------------------------------|-------------------------------|---------------------------------|
| <b>SWITCHES</b>                  |                               |                                 |
| S1                               | $\Delta$ SFDSC02N02           | Power                           |
| S301~314                         | EVQQS405K                     | Operation                       |
| S315, 317                        | SFDSHSW08314                  | Speed and Size Selector         |
| S316                             | SFDSHSW08315                  | Sens Selector                   |
| S601                             | SFDSC02N03                    | Rest                            |
| S701                             | SFDSC05N01                    | Reset                           |
| S901                             | $\Delta$ SFDSHXW225-3         | Voltage Selector                |
| [XA, PA, PE, PC] only            |                               |                                 |
| <b>PHOTO INTERRUPTERS</b>        |                               |                                 |
| PC501                            | 0N1186                        | Offset Angle Sensor             |
| PC502                            | SFPABJ0205R                   | Blank Groove Sensor             |
| PC601                            | 0N1161                        | Tonearm Position Sensor         |
| <b>HALL ELEMENT</b>              |                               |                                 |
| H101, 102                        | 0H-002                        | Turntable Position Detector     |
| <b>POWER TRANSFORMER</b>         |                               |                                 |
| T1                               | $\Delta$ SLT57DTE15E          | Power Source                    |
| [EK, XL]                         |                               |                                 |
| T1                               | $\Delta$ SLT57DTS17E          | Power Source                    |
| [XA, PA, PE, PC]                 |                               |                                 |
| T1 [other]                       | $\Delta$ SLT57DTS16E          | Power Source                    |
| <b>FUSE</b>                      |                               |                                 |
| F1                               | $\Delta$ XBAS2C016T1B         | 250V, T160 mA                   |
| [XA, PA, PE, PC]                 |                               |                                 |
| F1 [other]                       | $\Delta$ XBA2C06T1B           | 250V, T630 mA                   |
| F2                               | $\Delta$ XBA2C06T1B           | 250V, T630 mA                   |
| [XA, PA, PE, PC] only            |                               |                                 |
| <b>CABINET AND CHASSIS PARTS</b> |                               |                                 |
| 1                                | SFADC13N01E                   | Dust Cover (1)                  |
| 1-1                              | SFGZJ02N01                    | Rubber Cushion (2)              |
| 2                                | SFGZC02N01                    | Rubber Cushion (2)              |
| 3                                | SFUMC02N14                    | Latch, Dust Cover (2)           |
| 4                                | SFUMQ06N22                    | Latch, Dust Cover (2)           |
| 5                                | $\textcircled{O}$ SFACC13N01E | Cabinet (1)                     |
| 5                                | $\textcircled{K}$ SFACC13N21E | Cabinet (1)                     |
| 5-1                              | $\textcircled{O}$ SFKBB2N01   | Badge (1)                       |
| 5-1                              | $\textcircled{K}$ SFKBB2N21   | Badge (1)                       |
| 6                                | SFGCQ06X01                    | Rubber Cushion, Transformer (2) |
| 7                                | SFKKC13S01                    | Ornament (1)                    |
| 8                                | SRKTK15N26                    | Knob, Power (1)                 |
| 9                                | SFKTC13N02                    | Knob, Start Stop (1)            |
| 10                               | SFKTC13N01                    | Knob, Operation (1)             |
| 11                               | SFUPC13N01                    | Guide (1)                       |
| 12                               | SFUMC13N02                    | Holder (B) (1)                  |
| 13                               | SFUMC13N01                    | Holder (A) (1)                  |
| 14                               | SFGBC10-01                    | Belt (1)                        |

| Ref. No.         | Part. No.                     | Description                     |
|------------------|-------------------------------|---------------------------------|
| 15               | SFUMQ06N06A                   | Worm Ass'y (1)                  |
| 16               | SFMHC02N02R                   | Motor, (With Capstan) (1)       |
| 17               | SFUMC02N07                    | Rubber Cushion (1)              |
| 18               | SFUMC02N05                    | Lever, Switch (1)               |
| 19               | SFUMQ06N09                    | Holder, Rest Switch (1)         |
| 20               | SFUZC05N02E                   | Rope Ass'y (1)                  |
| 21               | SFXJC02N03                    | Guide, Rail (1)                 |
| 22               | SFUMQ06N07                    | Clamper, Guide Rail (1)         |
| 23               | SFGCQ06N01                    | Rubber, Cushion (1)             |
| 24               | SFUMC02N06                    | Base, Rest Switch (1)           |
| 25               | SFUPBL3N11E                   | Base, Motor (1)                 |
| 26               | SFUML11R03                    | Wheel, Tonearm Drive (1)        |
| 27               | SFUMC02N10                    | Holder, Lead Wire (1)           |
| 28               | SFUZC02N01                    | Rod, Rest Switch (1)            |
| 29               | SFUMC02N12                    | Holder, Lead Wire (1)           |
| 30               | SFUMV05N23                    | Cap (1)                         |
| 31               | SFATQ06N01E                   | Hinge (2)                       |
| 32               | SFUKE13N01E                   | Base, Tonearm (1)               |
| 33               | SFGZBL3N03                    | Rubber Cushion (1)              |
| 34               | SFGCC05N05                    | Rubber Cushion, Guide Rail (1)  |
| 35               | SFUMC05N22                    | Pulley (1)                      |
| 36               | SFQCC05N01                    | Spring, Insulator (4)           |
| 37               | SFGAJ02N01                    | Insulator (4)                   |
| 38               | SFAUC13N01                    | Bottom Cover (1)                |
| 39               | SFEHJ02N02E                   | Phono Output Cord (1)           |
| 40               | SFKTQ06N01                    | Knob, Selector (3)              |
| 41               | SFKTQ06N02                    | Knob, Tonearm Down Adjuster (1) |
| 42               | SFUMJ02N14                    | Cover, Rest Switch (1)          |
| 43               | $\textcircled{O}$ SFACC13N011 | Cover (1)                       |
| 43               | $\textcircled{K}$ SFACC13N211 | Cover (1)                       |
| 44 [XA]          | SFNNC13X01                    | Name Plate (1)                  |
| 44 [EG]          | SFNNC13R01                    | Name Plate (1)                  |
| 44 [PC]          | SFNNC13P02                    | Name Plate (1)                  |
| 44               | SFNNC13P01                    | Name Plate (1)                  |
| [PA, PE]         |                               |                                 |
| 44 [E, EC]       | SFNNC13S01                    | Name Plate (1)                  |
| 44               | SFNNC13G01                    | Name Plate (1)                  |
| [EK, XL]         |                               |                                 |
| 44 [other]       | SFNNC13Q01                    | Name Plate (1)                  |
| 45 [XL]          | $\Delta$ SFDJHSC0491          | AC Socket (1)                   |
| 45               | $\Delta$ SFDJHSC04912         | AC Socket (1)                   |
| [XA, PA, PE, PC] |                               |                                 |
| 45 [other]       | $\Delta$ SFDJHSC0516          | AC Socket (1)                   |
| 46               | SFDJJ02N04E                   | Jack, Phono Output (1)          |
| 47               | SFWEC06N01                    | 45 rpm Adaptor (1)              |
| 48               | SFQAC06N01                    | Spring, 45 rpm Adaptor (1)      |
| 49               | SFTGQ06N01                    | Turntable Mat (1)               |
| 50               | SFTEQ05N01                    | Turntable Platter (1)           |
| 51               | SFTMC07-01E                   | Magnet (1)                      |
| 52               | SFMGQ34N01                    | Cover, Coil (1)                 |
| 53               | SFMZC06N01R                   | Stator Flame Ass'y (1)          |
| 54               | SFDJC13N03E                   | Connector, Ass'y (1)            |
| 55               | SFGKQ06N01                    | Cap (1)                         |
| 56               | SFQA913-01                    | Spring (1)                      |
| 57               | SFQHQ34N22                    | Spring (1)                      |



| Ref. No.                        | Part. No.     | Description           |      |
|---------------------------------|---------------|-----------------------|------|
| 58                              | SFUMC13N03    | Prism                 | (1)  |
| 59                              | ○ SFACC13N012 | Cover                 | (1)  |
| Except for [XA, PA, PE, PC]     |               |                       |      |
| 59                              | Ⓢ SFACC13N212 | Cover                 | (1)  |
| Except for [XA, PA, PE, PC]     |               |                       |      |
| <b>TONEARM PARTS</b>            |               |                       |      |
| 61                              | SFPAMJ0201A   | Tonearm Ass'y         | (1)  |
| 62                              | SFPKDJ0201R   | Tonearm Base          | (1)  |
| 62-1                            | SFPSP00504    | Spring                | (1)  |
| 63                              | SFPGML1101    | Rubber, Tonearm Guide | (2)  |
| 65                              | SFPABJ0205R   | Sensor Ass'y          | (1)  |
| 66                              | SFDZC05N01E   | Solenoid Ass'y        | (1)  |
| 67                              | SFPCS0Q601    | Cover, Indicator      | (1)  |
| 68                              | SFPAK0Q601    | Plate, Indicator      | (1)  |
| 69                              | SFPCSJ0201    | Holder, LED           | (1)  |
| 70                              | SFPGM0Q601    | Rubber, LED           | (1)  |
| 71                              | SFPSP00302    | Spring, Adjustor      | (2)  |
| 72                              | EPC-P33       | ★ Cartridge           | (1)  |
| 73                              | EPS-33ES      | ★ Stylus              | (1)  |
| <b>SCREWS, WASHERS AND NUTS</b> |               |                       |      |
| N1                              | SFXGQ06N01    | Screw                 | (2)  |
| N2                              | Ⓢ XTV3+10BFN  | Screw, Ⓢ3×10          | (11) |
| N3                              | XTW3+14TFZ    | Screw, Ⓢ3×14          | (2)  |
| N4                              | XTV3+6JFZ     | Screw, Ⓢ3×6           | (4)  |
| N5                              | XTW3+14QFYR   | Screw, Ⓢ3×14          | (6)  |
| N6                              | XSN3+30S      | Screw, Ⓢ3×30          | (1)  |
| N7                              | XWE3D10       | Washer, Ⓢ3            | (1)  |
| N8                              | XNC3HS        | Nut                   | (1)  |

| Ref. No.           | Part. No.    | Description       |     |
|--------------------|--------------|-------------------|-----|
| N9                 | CSTW3        | Washer            | (2) |
| N10                | XWE3A8BW     | Washer            | (1) |
| N11                | XTV3+20J     | Screw, Ⓢ3×20      | (1) |
| N12                | XTN16+10G    | Screw, Ⓢ1.6×10    | (1) |
| N13                | Ⓢ XTV3+6BFN  | Screw, Ⓢ3×6       | (4) |
| N14                | SFXWC06N02   | Washer            | (1) |
| N15                | Ⓢ XSN3+5S    | Screw, Ⓢ3×5       | (3) |
| N16                | SFPEV0Q601   | Screw, Cartridge  | (1) |
| N17                | XTS26+6JFZ   | Screw, Ⓢ2.6×6     | (1) |
| N18                | XYN2+C4FZ    | Screw, Ⓢ2×4       | (1) |
| N19                | SFXN623-1    | Nut               | (1) |
| N20                | SFPTN00301   | Screw             | (1) |
| N21                | Ⓢ XSN3+12S   | Screw, Ⓢ3×12      | (1) |
| N22                | Ⓢ XWA3B      | Washer            | (1) |
| N23                | XTN23+6JFZ   | Screw, Ⓢ2.3×6     | (1) |
| <b>ACCESSORIES</b> |              |                   |     |
| A1 [EK]            | SFNUC13G01   | Instruction Book  | (1) |
| A1 [Ei]            | SFNUC13I01   | Instruction Book  | (1) |
| A1                 | SFNUC13P01   | Instruction Book  | (1) |
| [PA, PE, PC]       |              |                   |     |
| A1                 | SFNUC13S01E  | Instruction Book  | (1) |
| [E, EB, EH, EC]    |              |                   |     |
| A1 [other]         | SFNUC13X01   | Instruction Book  | (1) |
| A2                 | SFDHC05N01   | Phono Output Cord | (1) |
| A3                 | SFDLJ02N11E  | Ground Wire       | (1) |
| A4 [EK]            | Ⓢ SFDAC05G02 | AC Cord           | (1) |
| A4 [XL]            | Ⓢ SFDAC05L01 | AC Cord           | (1) |
| A4 [XA]            | Ⓢ SFDAC05X02 | AC Cord           | (1) |
| A4                 | Ⓢ SFDAC05N01 | AC Cord           | (1) |
| [PA, PE, PC]       |              |                   |     |
| A4 [other]         | Ⓢ SFDAC05E02 | AC Cord           | (1) |

| Ref. No.             | Part. No.    | Description                 |     |
|----------------------|--------------|-----------------------------|-----|
| A5 [XA]              | Ⓢ SFDKI19118 | 2 Pin Plug                  | (1) |
| only                 |              |                             |     |
| A6                   | Ⓢ QJP0603S   | Adaptor                     | (1) |
| [PA, PE, PC] only    |              |                             |     |
| <b>PACKING PARTS</b> |              |                             |     |
| P1                   | ○ SFHPC13C01 | Carton Box                  | (1) |
| [EF] only            |              |                             |     |
| P1                   | ○ SFHPC13M01 | Carton Box                  | (1) |
| [other]              |              |                             |     |
| P1                   | Ⓢ SFHPC13F21 | Carton Box                  | (1) |
| [EF] only            |              |                             |     |
| P1                   | Ⓢ SFHPC13S21 | Carton Box                  | (1) |
| [other]              |              |                             |     |
| P2                   | SFHHC13N01   | Pad, Front                  | (1) |
| P3                   | SFHHC13N02   | Pad, Rear                   | (1) |
| P4                   | SFHKC05N01   | Clamper, Turntable Platter  | (2) |
| P5                   | SFHQ06N01    | Spacer, Tonearm             | (1) |
| P6                   | SFHSC13N01   | Spacer, Dust Cover          | (1) |
| P7                   | SFYH60×60    | Polyethylene Bag            | (1) |
| P8                   | SFYH17×16    | Polyethylene, Cord          | (1) |
| P9                   | SFYF32A35    | Polyethylene, Turntable Mat | (1) |
| P10                  | SFHDD04N01   | Pad, Turntable Mat          | (1) |

| Color   | Areas                                  | Color   | Areas                                                                                  |
|---------|----------------------------------------|---------|----------------------------------------------------------------------------------------|
| (S) (K) | [E] ..... Switzerland and Scandinavia. | (S) (K) | [XA] .... Southeast Asia, Oceania, Africa, Middle Near East and Central South America. |
| (S) (K) | [EK] .... United Kingdom.              |         |                                                                                        |
| (S) (K) | [XL] .... Australia.                   |         |                                                                                        |
| (S) (K) | [EG] ... F.R. Germany.                 |         |                                                                                        |
| (S) (K) | [EB] .... Belgium.                     | (S) (K) | [PA] .... Far East PX.                                                                 |
| (S) (K) | [EH] .... Holland.                     | (S) (K) | [PE] .... European Military.                                                           |
| (S) (K) | [EF] .... France.                      | (S) (K) | [PC] .... European Audio Club.                                                         |
| (S) (K) | [Ei] ..... Italy.                      |         |                                                                                        |
| (S) (K) | [EC] .... Czechoslovakia.              |         |                                                                                        |