

# PS-X75



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*US Model  
Canadian Model  
AEP Model  
UK Model  
E Model*

## STEREO TURNTABLE SYSTEM

### SPECIFICATIONS

#### GENERAL


**Power Requirements:** 240 V ac ~ adjustable, 50/60 Hz (UK model)  
220 V ac ~ adjustable, 50/60 Hz (AEP model)  
120 V ac, 60 Hz (US, Canadian model)  
110 - 120, 220 - 240 V ac ~ adjustable, 50/60 Hz (E model)

**Power Consumption:** 18 W

**Dimensions:** Approx. 480 (w) x 165 (h) x 420 (d) mm  
19 (w) x 6½ (h) x 16⅞ (d) inches  
including projecting parts and controls

**Weight:** Approx. 13 kg, 28 lb 11 oz (net)  
Approx. 15 kg, 33 lb 2 oz (in shipping carton)

#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

#### TURNTABLE

**Platter:** 32 cm (12⅝ inches), aluminum-alloy diecast

**Motor:** DC servo-controlled linear BSL motor

**Drive System:** Direct drive, crystal-lock and magnedisc servo control system

**Speed:** 33⅓ rpm, 45 rpm

**Speed Control Range:** ±10 % (crystal lock OFF)

**Starting Characteristics:** Comes to nominal speed within a half revolution (33⅓ rpm)

**Wow and Flutter:** ±0.035 % (DIN)  
0.025 % (WRMS)

**Signal-to-Noise Ratio:** 78 dB (DIN-B)

**Speed Deviation:** Within 0.003 %

**Load Characteristics:** 0 % at tracking force up to 150 g (at lead-in groove of a record)

**Automatic System:** Lead-in, return, reject, repeat record-size selection

— Continued on page 2 —

# SONY®

## SERVICE MANUAL





Handling Precautions for MOS ICs (IC103, 104, 107, 108, 110 – 112)

Generally, the insulation resistance of the oxide layer in MOS IC structures is very high, and the oxide layer is very thin. Because of this, it is possible that the static voltages usually present on clothes and the human body will be enough to generate a potential difference across the insulator, high enough to cause a breakdown of the insulating layer.

The following precautions should be taken while handling these ICs.

(Particular care should be taken under conditions of low humidity.)

Precautions in Replacing MOS ICs

1. Store new ICs by inserting them into a urethane-polyester cushion (which is somewhat conductive), or wrapping it in aluminum foil, so that all the pins are at the same potential. (The ICs should be stored in that manner until mounted on the circuit board.)

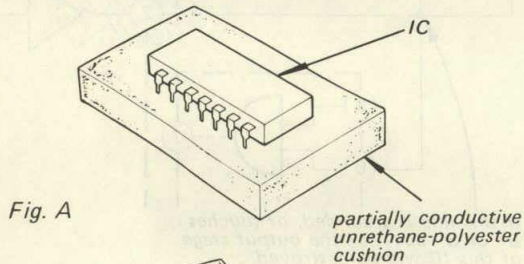


Fig. A

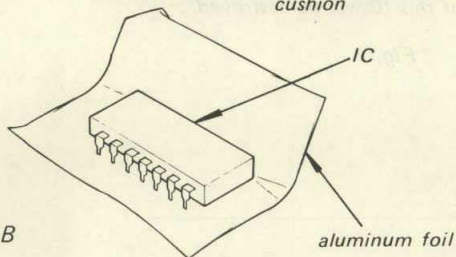


Fig. B

2. Check the soldering iron for possible power-line leakage current. Make sure that there is no leakage path by connecting an ohmmeter to the tip of the soldering iron and the plug as shown in Fig. C. If there is a leakage path, use some other soldering iron.

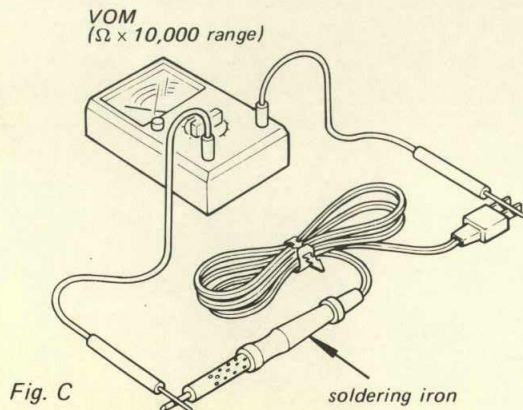


Fig. C

3. Equalize any potential difference between the clothes, the tools in use, the work bench, the set being worked on, and the packaged IC by touching them all in succession with the hands or a conductive wire or tool.
4. The following are effective methods for handling ICs that remove the potential difference across the oxide layer.
  - Use a paper clip modified by soldering in a wire braid insert.

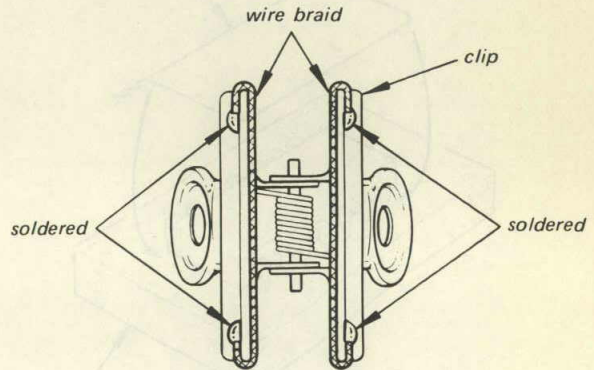


Fig. D

Make sure that there is no solder on the inside.

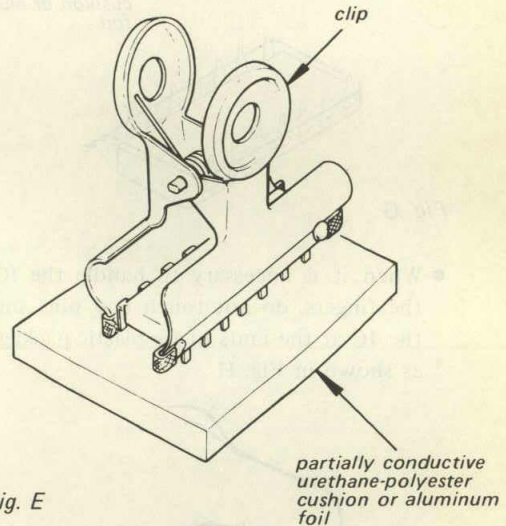


Fig. E

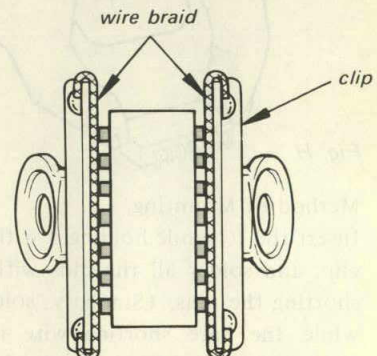


Fig. F

Make sure that all the pins are in contact with the wire braid (all the pins will then be at the same potential.).



- Take a short length of fine bare wire and wind it around the IC so that it shorts all the pins of the IC, while it is still in the urethane-polyester cushion or aluminum foil. This ensures that all the pins are at the same potential.

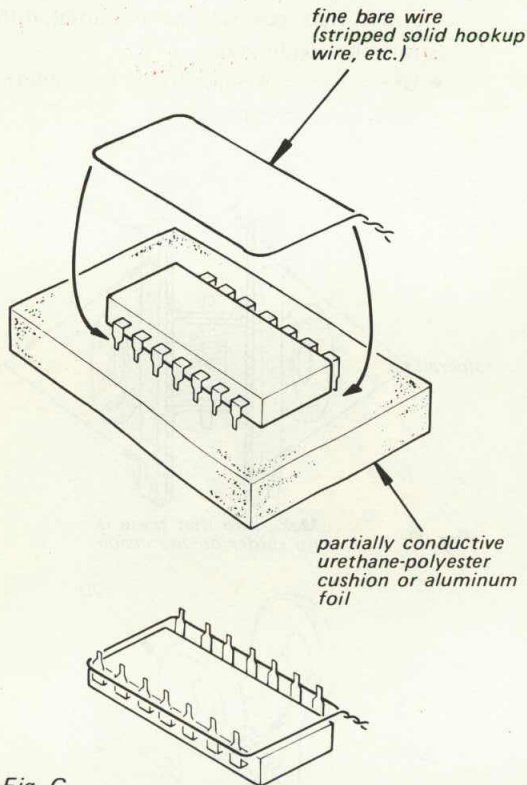


Fig. G

- When it is necessary to handle the IC with the fingers, do not touch any pin, and hold the IC at the ends of its plastic-package case as shown in Fig. H.

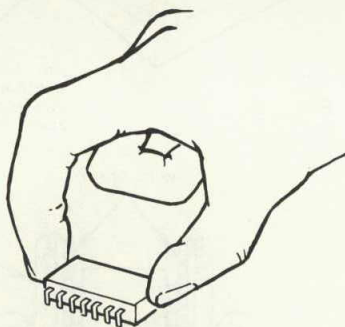


Fig. H

5. Method of Mounting

Insert the IC while holding it with the modified clip, and solder all the pins with the clip still shorting the pins. (Similarly, solder all the pins while the bare shorting wire is still wound around them.). Remove the clip or the bare shorting wire only after all the pins have been soldered.

**Precaution while Checking C-MOS ICs**

The C-MOS ICs (Complementary MOS) are MOS ICs that have their output sections made up of N-channel and P-channel push-pull stages to increase their speed of operation. If the output terminal of these ICs comes into contact with B+ or B- voltage, then the FET which is ON at that time will either become shorted or open.

This is valid for all the output sections that are connected together by the interconnections. Even the circuits that are physically separated (and not on the same board) can be destroyed simultaneously.

**Example:**

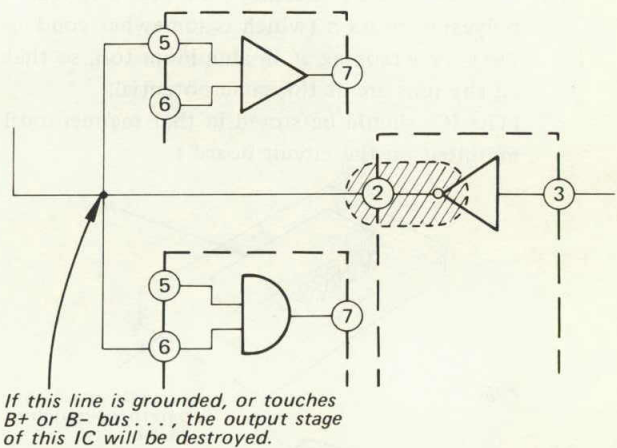
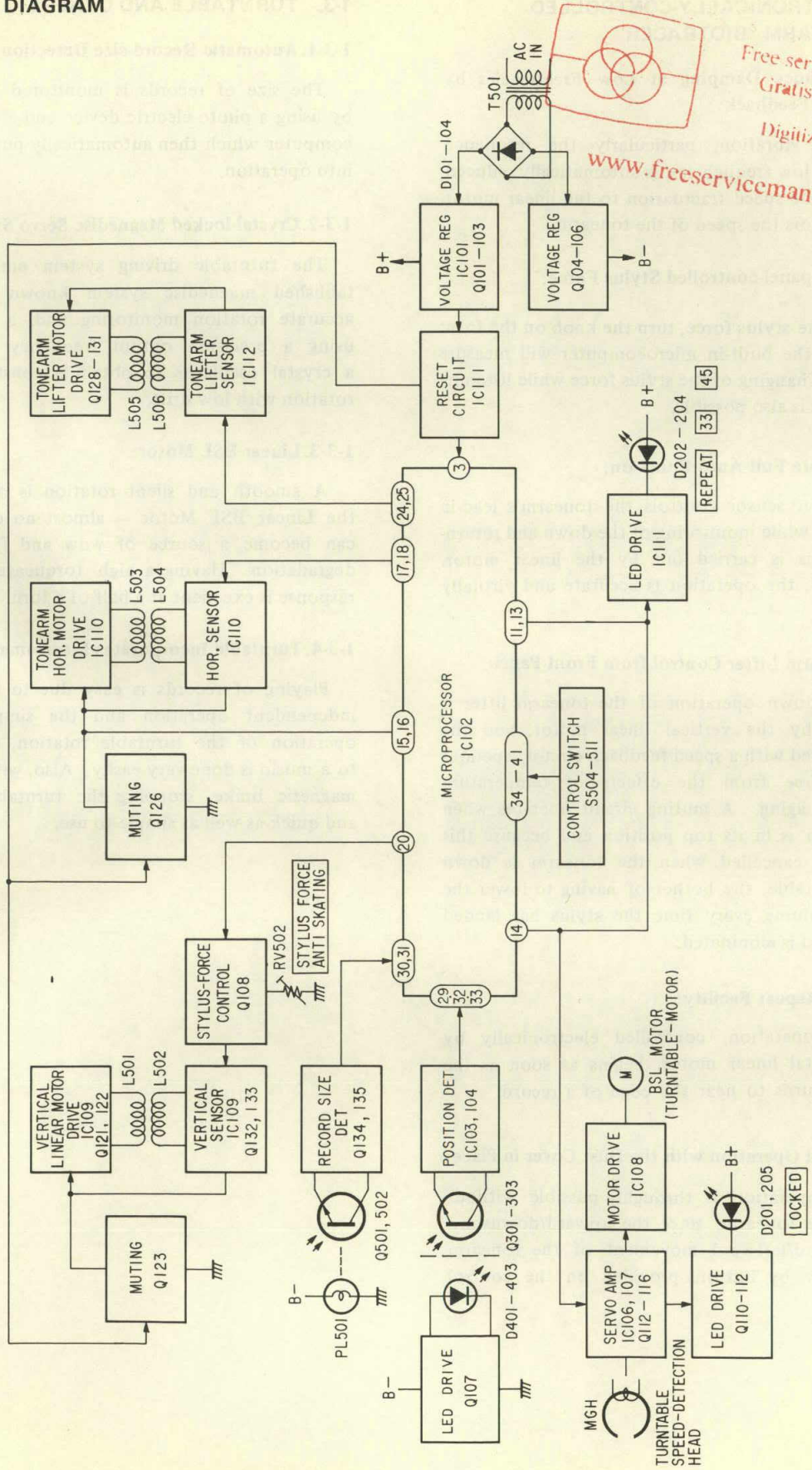


Fig. I



# SECTION 1 OUTLINE

## 1-1. BLOCK DIAGRAM



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## 1-2. ELECTRONICALLY-CONTROLLED TONEARM "BIOTRACER"

### 1-2-1. Resonance Damping at Low Frequencies by Speed Feedback:

Tonearm vibration, particularly the resonance generated at low frequencies, is automatically reduced by feeding the speed fluctuation to the linear motor which monitors the speed of the tonearm.

### 1-2-2. Front-panel-controlled Stylus Force:

To set the stylus force, turn the knob on the front panel, and the built-in microcomputer will measure the force. Changing of the stylus force while listening to the tones is also possible.

### 1-2-3. Remote Full-Auto Function:

A lumina sensor controls the tonearm's lead-in and return, while monitoring of the down and returning positions is carried out by the linear motor. Accordingly, the operation is accurate and virtually silent.

### 1-2-4. Tonearm Lifter Control from Front Panel:

The up/down operation of the tonearm lifter is controlled by the vertical linear motor, and the damper, fitted with a speed feedback circuit, operates smoothly free from the effects of temperature change and aging. A muting circuit operates when the tonearm is in its top position and because this function is cancelled when the tonearm is down on the turntable, the bother of having to lower the amplifier volume every time the stylus has landed on the record is eliminated.

### 1-2-5. Fast Repeat Facility:

Repeat operation, controlled electronically by the horizontal linear motor, begins as soon as the tonearm returns to near the edge of a record.

### 1-2-6. Manual Operation with the Dust Cover in Place:

Manual operation is thoroughly possible without touching the tonearm, since the upward/downward and rightward/leftward movement of the tonearm can be done by buttons provided on the control panel.

## 1-3. TURNTABLE AND OTHERS

### 1-3-1. Automatic Record-size Detection Facility:

The size of records is monitored and measured by using a photo-electric device and a built-in micro-computer which then automatically puts the tonearm into operation.

### 1-3-2. Crystal-locked Magnedisc Servo System:

The turntable driving system employs the established magnedisc system known as a highly-accurate rotation monitoring and, a phase-locking using a precision output frequency generated by a crystal oscillator to obtain a constant turntable rotation with low drift.

### 1-3-3. Linear BSL Motor:

A smooth and silent rotation is obtained from the Linear BSL Motor — almost no cogging which can become a source of wow and flutter or S/N degradation. Having a high torqueage, the starting response is excellent at a half of a turn.

### 1-3-4. Turntable Incorporates Electromagnetic Brake:

Playing of records is easy due to the tonearm's independent operation and the simple start/stop operation of the turntable rotation, and a lead-in to a music is done very easily. Also, with the electromagnetic brake, stopping the turntable is smooth and quick as well as simple to use.



### 1-4. CIRCUIT DESCRIPTION

#### 1-4-1. When the POWER Switch is turned on (see Fig. 1):

The waveform shaper, consisting of IC111, turns the voltage at terminal (3) of IC102 to low level "0" in half a second during which C112 is charged with B+ power. As a result, IC102 is reset.

This means that the microprocessor (IC102) does not operate for 0.5 seconds after the power switch is turned on.

Also, buttons can be effectively pressed after it is assured that the tonearm has been on the arm rest for about 0.5 seconds.

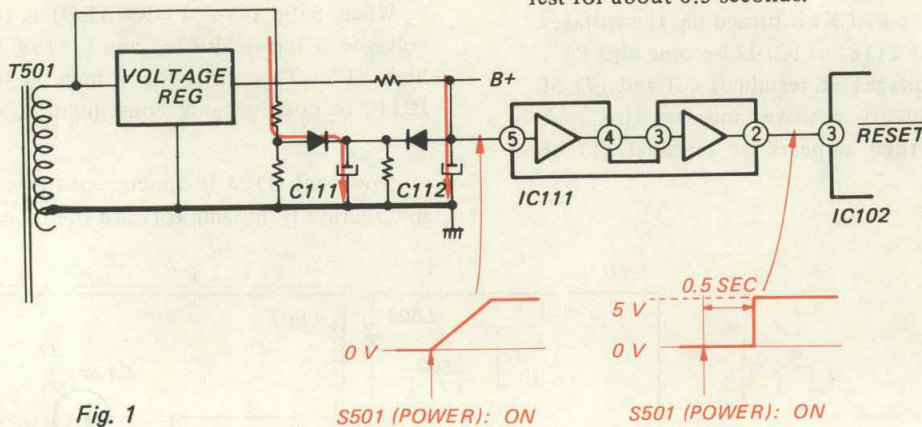


Fig. 1

#### 1-4-2. Arm Lifter Raising/Lowering Circuit (see Fig. 2):

Turning the power switch on raises the arm lifter.

##### [Lowering the arm lifter]

When S508 (UP/DOWN) is depressed, the voltage at terminal (24) of IC102 becomes high "1". This turns the voltage at terminal (6) of IC112 to positive and the voltage at terminal (7) to negative. As a result, Q131 switches on.

The potential of the terminal (2) of IC112 now becomes negative and the output of the terminal (1) goes positive. This turns Q128 on.

Since both Q128 and Q131 are on, current passes through L505 (lifter drive coil) in direction A, thus lowering the arm lifter.

##### [Raising the arm lifter]

When S508 is depressed, the voltage at terminal (25) of IC102 becomes high "1". This turns the voltage at terminal (7) of IC112 to positive, switching Q130 on.

Since Q130 is on, a negative voltage appears at terminal (1), turning Q127 on. Now that both Q127 and Q130 are on, current passes through L505 in direction B, thus raising the arm lifter.

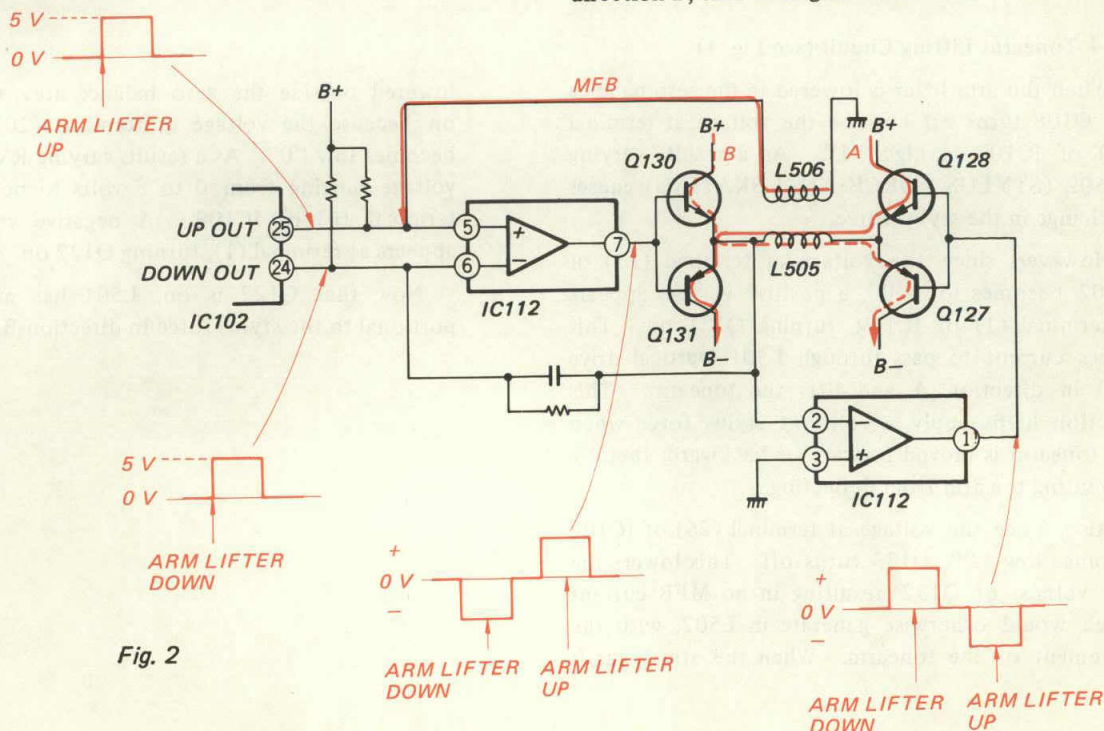


Fig. 2



### 1-4-3. Tonearm Swivelling Circuit (see Fig. 3):

Turning the power switch on returns the tonearm to the arm rest.

[ ▷ : BACK ]

When S507 ( ▷ : BACK ) is turned on, the voltages at terminals (17) and (18) of IC102 become high "1". This turns the voltages at terminals (6) and (7) of IC110 respectively to positive and negative. A negative voltage then appears at terminal (1) of IC110.

As a result, Q125 turns on to pass current through L503 (horizontal drive coil) in direction A, returning home the tonearm.

[ ◁ : FORWARD ]

When S506 ( ◁ : FORWARD ) is turned on, the voltages at terminals (15) and (16) of IC102 become high "1". This turns the voltage at terminal (1) of IC110 to positive, and, consequently, switches Q124 on.

Now that Q124 is on, current flows through L503 in direction B, moving forward the tonearm.

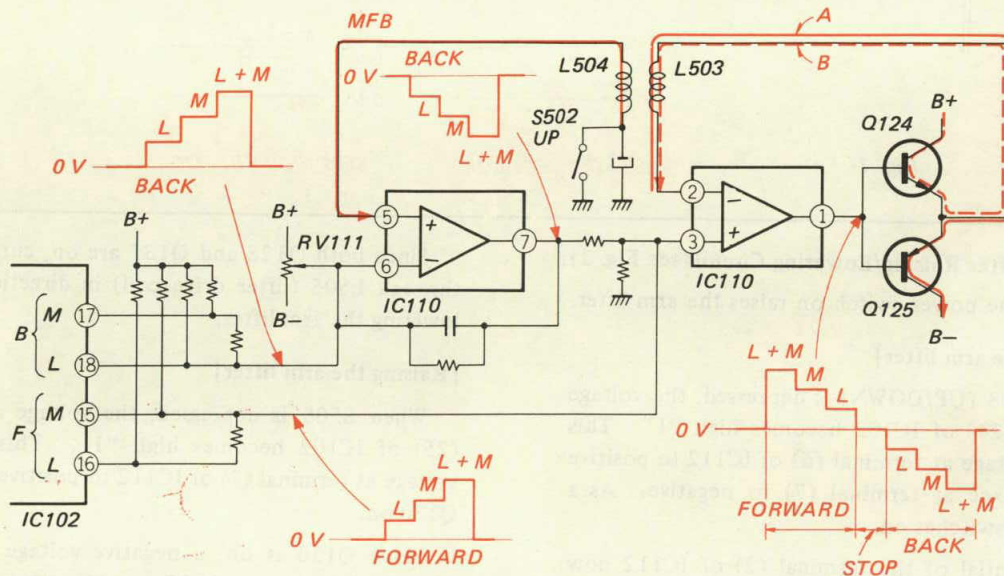


Fig. 3

### 1-4-4. Tonearm Lifting Circuit (see Fig. 4):

When the arm lifter is lowered in the zero balance area, Q108 turns off because the voltage at terminal (20) of IC102 is high "1". As a result, varying RV502 (STYLUS FORCE•ANTI SKATING) causes no change in the stylus force.

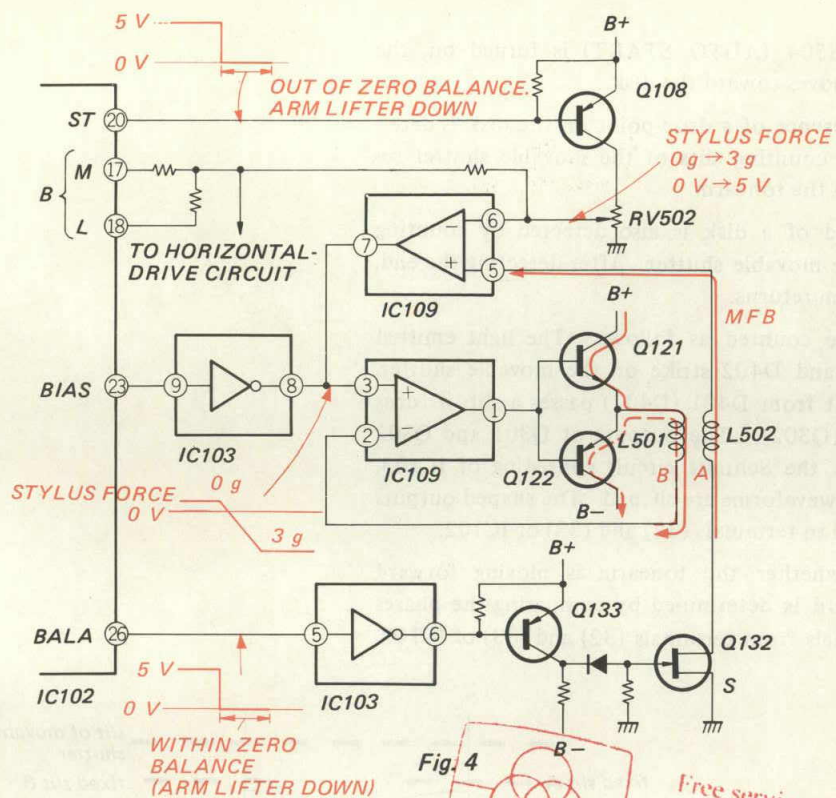
However, since the voltage at terminal (23) of IC102 becomes low "0", a positive voltage appears at terminal (1) of IC109, turning Q121 on. This causes current to pass through L501 (vertical drive coil) in direction A and lifts the tonearm. This function helps apply a constant stylus force when the tonearm is moved forward or backward, thereby preventing the arm from deflecting.

Also, since the voltage at terminal (26) of IC102 becomes low "0", Q133 turns off. This lowers the gate voltage of Q132, resulting in no MFB current which would otherwise generate in L502, with the movement of the tonearm. When the arm lifter is

lowered outside the zero balance area, Q108 turns on because the voltage at terminal (20) of IC102 becomes low "0". As a result, varying RV502 causes voltage ranging from 0 to 5 volts to be applied to terminal (6) of IC109. A negative voltage then appears at terminal (1), turning Q122 on.

Now that Q122 is on, L501 has current proportional to the stylus force in direction B.





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**1-4-5. Automatic Disk Size Detector (see Fig. 5):**

As long as the turntable is rotating, the light from PL501 passes through the prism on the turntable mat and switches phototransistors Q501 and Q502.

The outputs of Q501 and Q502 are fed to terminals (30) and (31) of IC102 to be used for automatic detection of the disk size.

	IC102	
	Terminal (30)	Terminal (31)
No disk	1	1
17 cm	1	0
30 cm	0	0

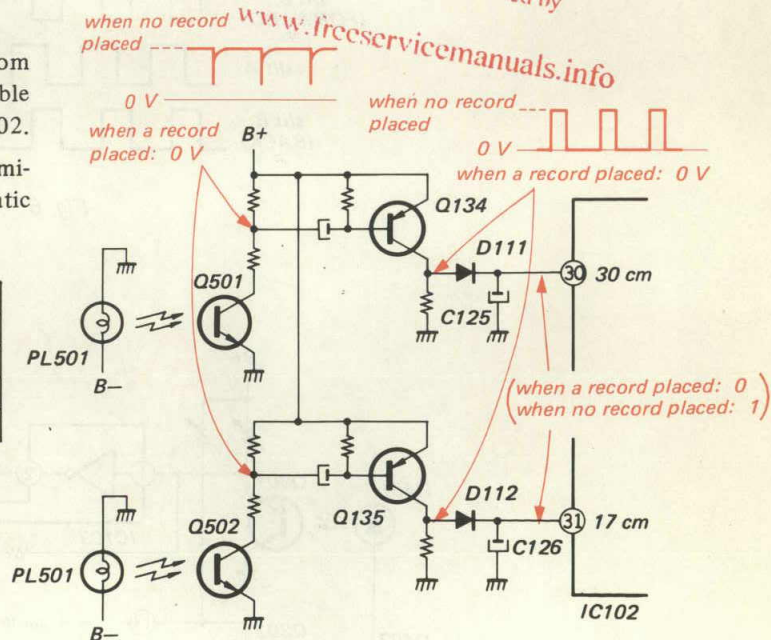


Fig. 5



**1-4-6. Drop-point and End Detection (see Figs. 6 and 7):**

When S504 (AUTO START) is turned on, the tonearm moves toward the disk.

The presence of a drop-point on the disk is determined by counting slits of the movable shutter rotating with the tonearm.

The end of a disk is also detected by counting slits of the movable shutter. After detecting the end, the tonearm returns.

Slits are counted as follows. The light emitted by D401 and D402 strike on the movable shutter. If the light from D401 (D402) passes a slit, it turns on Q301 (Q302). The outputs of Q301 and Q302 are fed to the Schmitt circuit consisting of IC103, where the waveforms are shaped. The shaped outputs are applied to terminals (32) and (33) of IC102.

Also, whether the tonearm is moving forward or backward is determined by comparing the phases of the signals from terminals (32) and (33) of IC102.

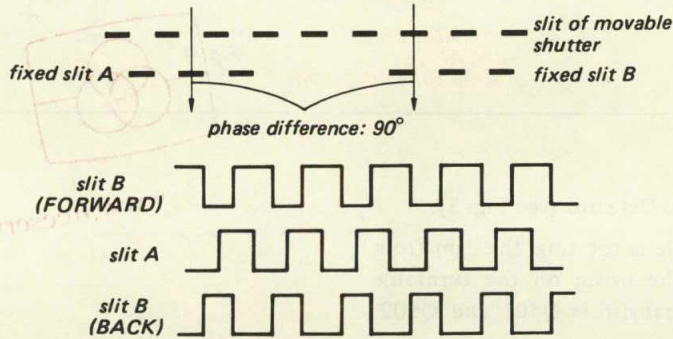


Fig. 6

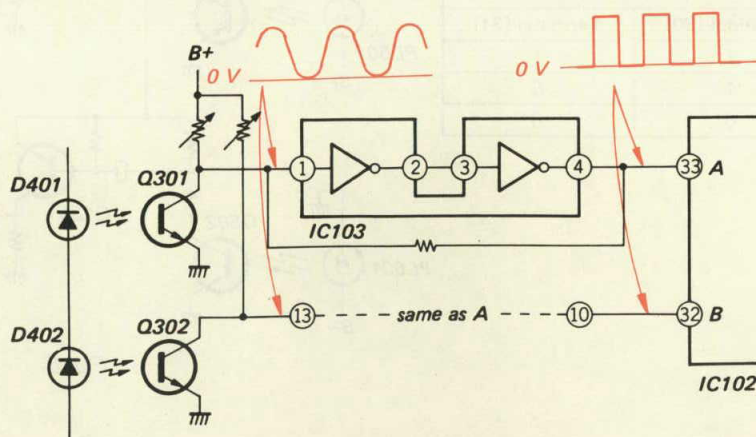


Fig. 7



1-4-7. Waveforms

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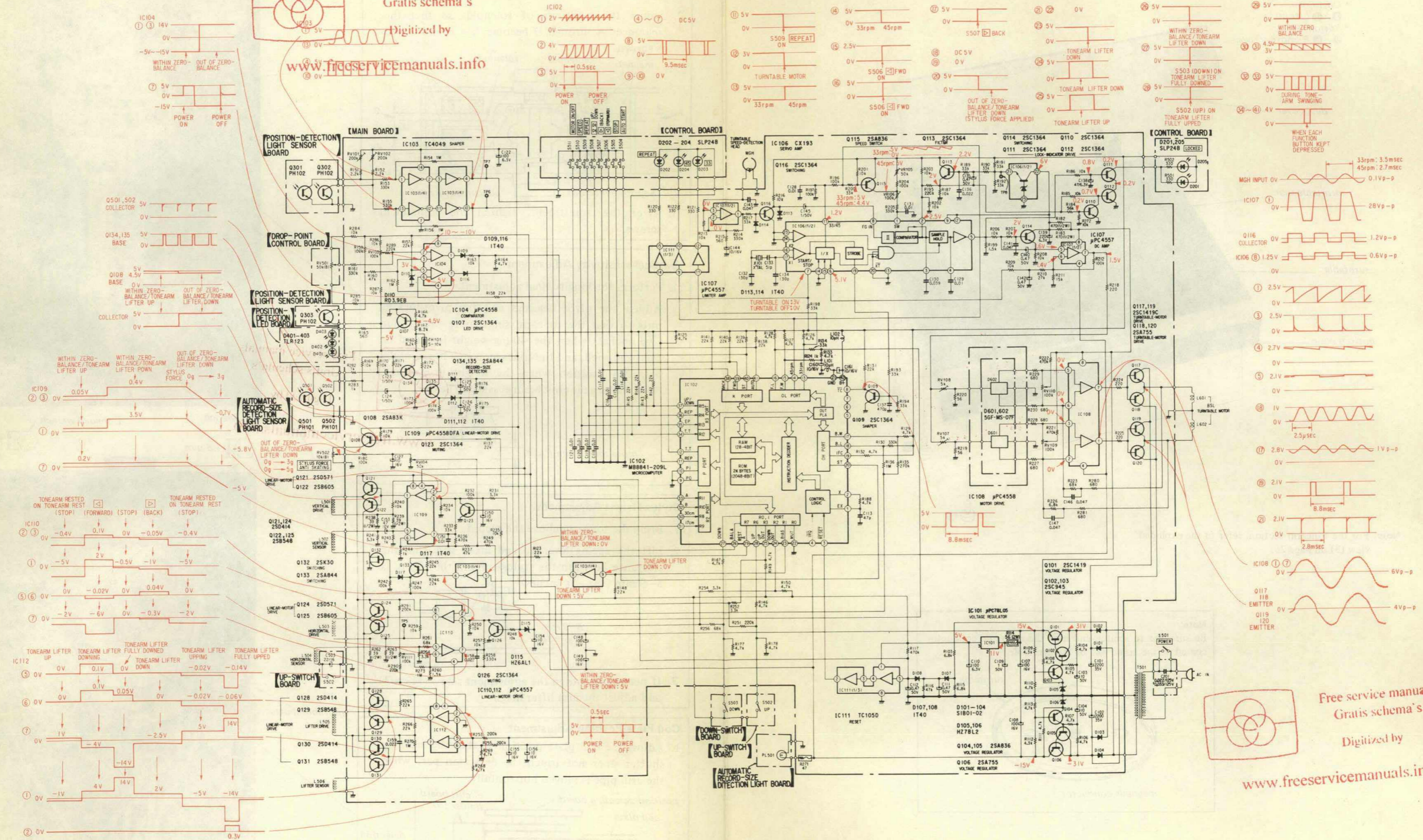


Fig. 8

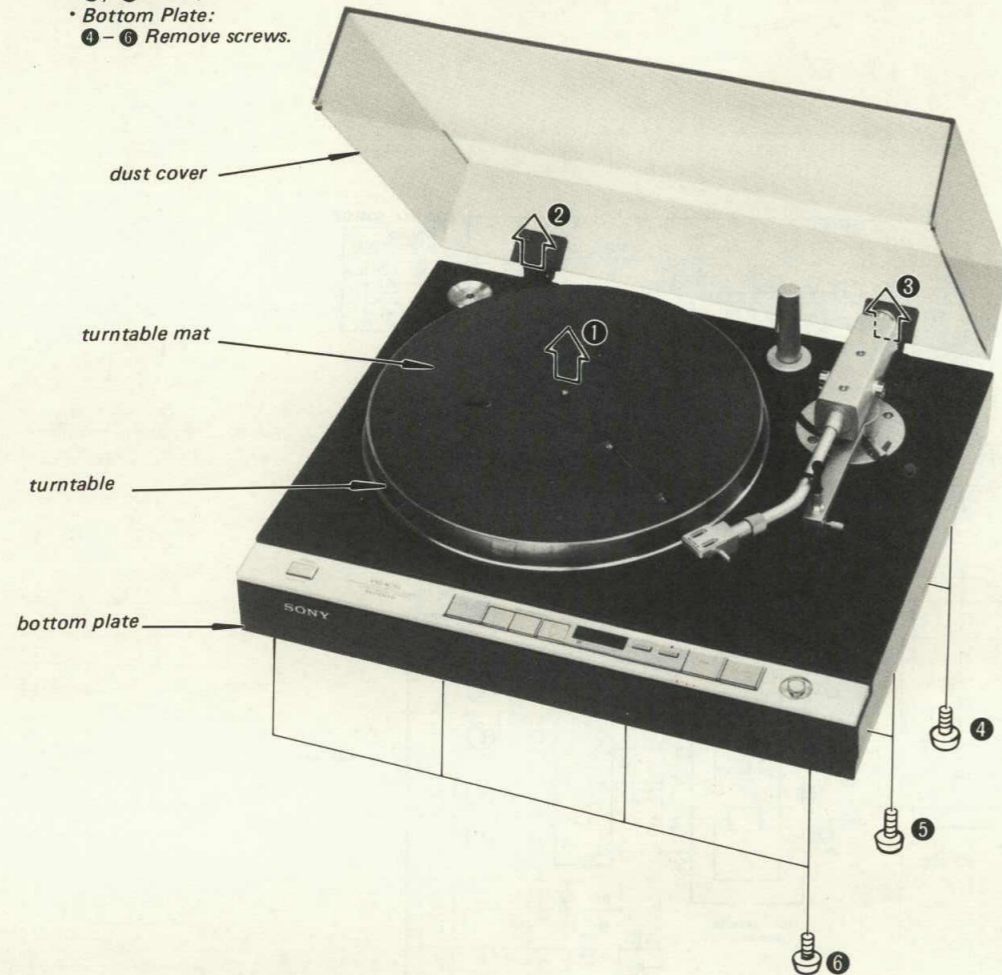
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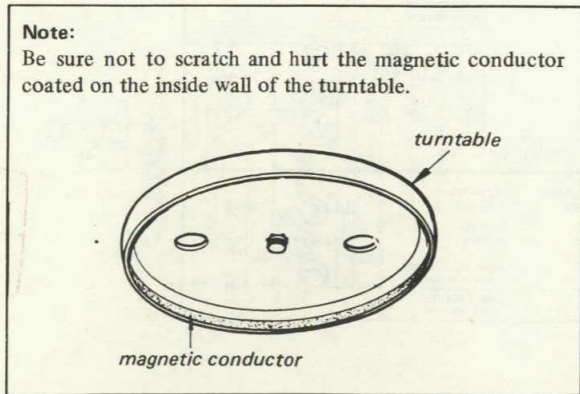


### SECTION 2 DISASSEMBLY

- Turntable:
  - 1 Lift up.
- Dust Cover:
  - 2, 3 Lift up.
- Bottom Plate:
  - 4 - 6 Remove screws.



Note: For the tonearm section, refer to the exploded view (3) on page 26.

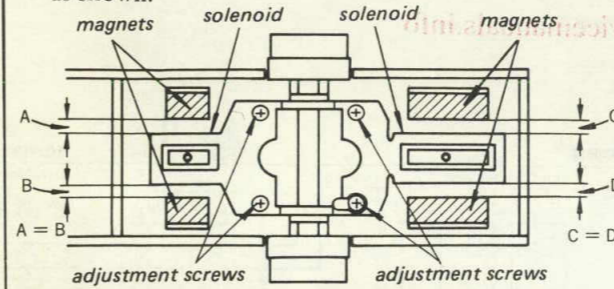


### SECTION 3 ADJUSTMENTS

#### 3-1. MECHANICAL ADJUSTMENTS

##### Solenoid Position Adjustment

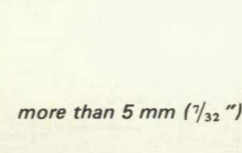
1. Loosen the adjustment screws.
2. Adjust the positions of solenoids so that the clearances A through D become  $A = B$  and  $C = D$  as shown.



3. After the adjustment, tighten the adjustment screws.

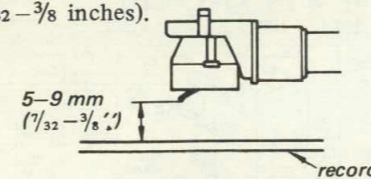
##### Vertical-sensitivity Adjustment

1. Perform the longitudinal adjustment.
  2. Adjust the pivot bearings and the pivot-locking nuts so that the tonearm sinks more than 5 mm ( $7/32$  inches) when the 40 mg weight is placed on the head shell, and the tonearm is in a horizontally balanced position when the weight is removed.
- Note: Tighten the pivot bearings as shown below.



##### Stylus Height Adjustment

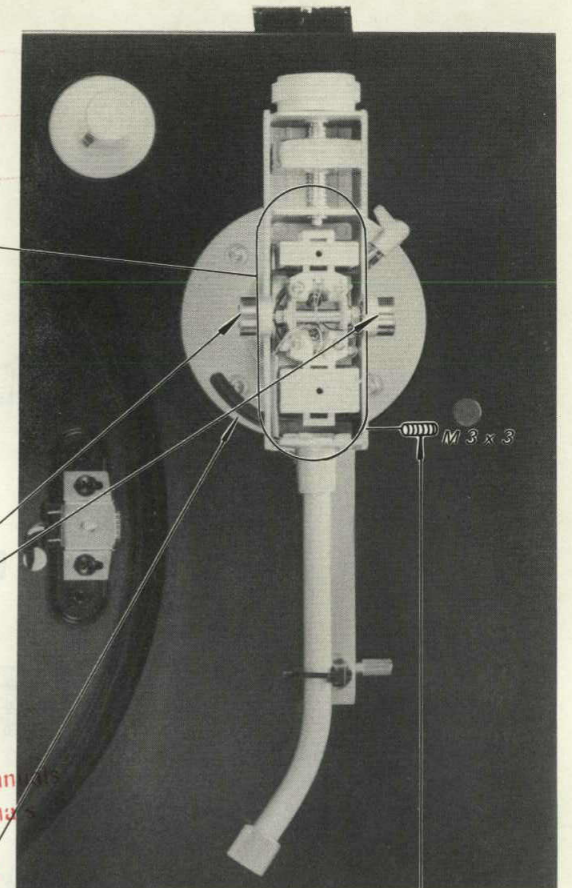
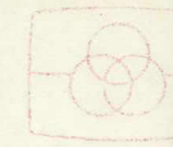
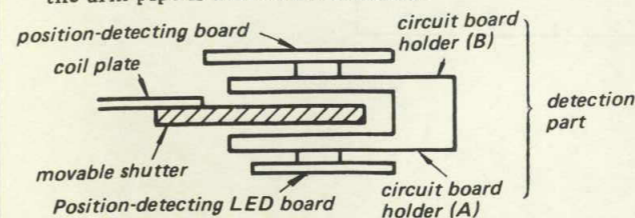
1. Bring the tonearm above the record.
2. Lift the cueing lever up and make sure that the clearance between the stylus tip and the record is 5-9 mm ( $7/32 - 3/8$  inches).



3. If necessary, loosen the adjustment screw (M3 x 3) and adjust the arm lifter height.

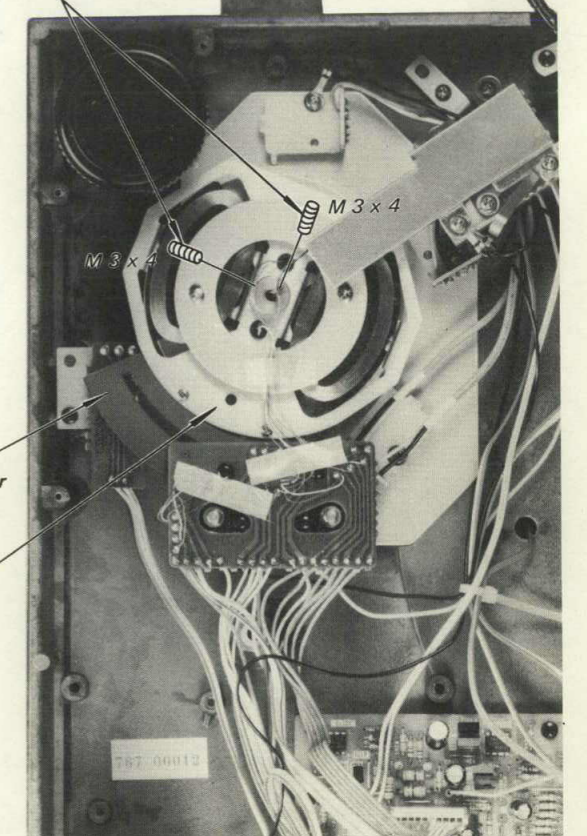
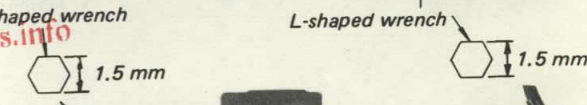
##### Coil Plate Position Adjustment

1. Adjust the coil plate position so that the movable shutter does not touch the detection part when the arm pipe is moved horizontally.



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**Drop-point Adjustment**

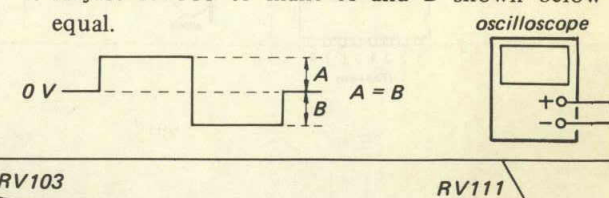
1. Set RV501 to the mechanical-mid position.
2. Adjust RV103 so that the stylus drops on the specified point of the test record.

Test record	Count of drop-point
YFSC-16	9 to 16
YFSB-6	14 to 32

3. When RV501 is turned clockwise, the count of drop-point should be smaller than the specified.

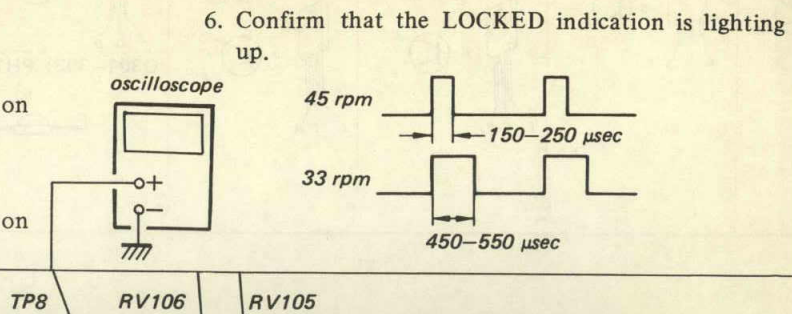
**Tonearm Horizontal Motor Offset Adjustment**

1. Secure the tonearm on the arm rest.
2. Connect an oscilloscope to TP5.
3. Push the ARM TRANSPORT ( $\nabla$ ,  $\nabla$ ) button and move the arm rest up and down several times.
4. Adjust RV111 to make A and B shown below equal.



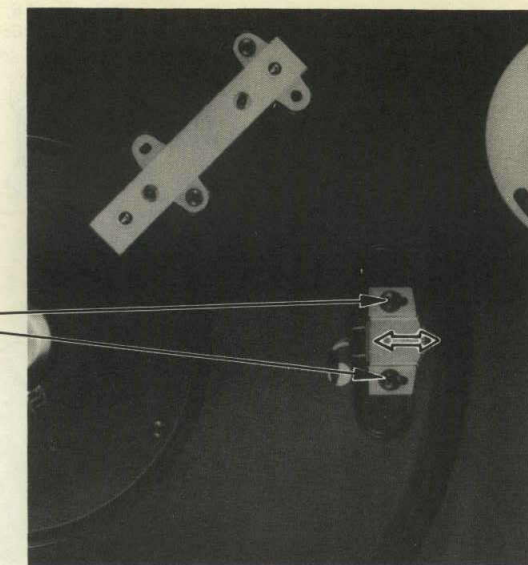
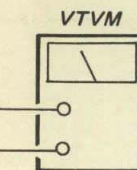
**Speed Adjustment**

1. Set the SPEED to 45 rpm.
2. Connect an oscilloscope to TP8.
3. Adjust RV106 for a waveform as shown on the right.
4. Set the SPEED to 33 rpm.
5. Adjust RV105 for a waveform as shown on the right.



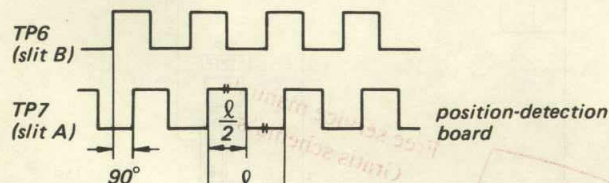
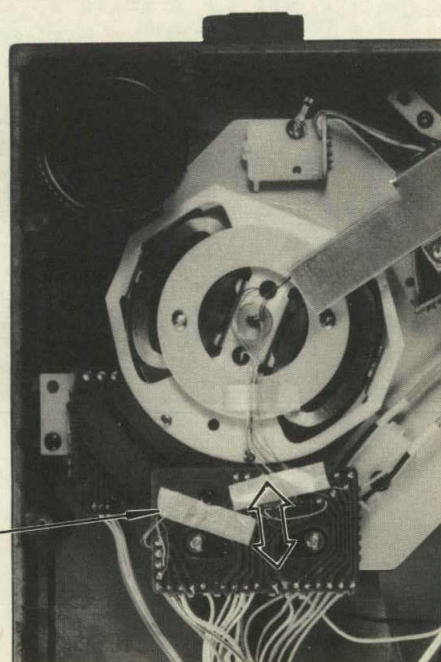
**Speed-detecting Head Output Level Adjustment**

1. Set the SPEED to 33 rpm.
2. Connect a VTVM as shown below.
3. Push the MOTOR ON/OFF button to rotate the turntable.
4. Adjust the position of the speed-detecting head so that the VTVM reading is 20 mV ac to 50 mV ac.



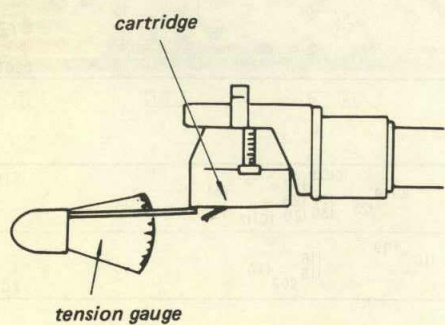
**Slit A and B Adjustments**

1. Connect a dual-trace oscilloscope to TP6 (for slit B) and TP7 (for slit A).
2. Push the ARM TRANSPORT button  $\triangleleft$  (forward) or  $\triangleright$  (back) and swing the tonearm.
3. During the tonearm swinging, adjust RV102 (slit B) and RV101 (slit A) to obtain the square waves as shown below.
4. Push the ARM TRANSPORT button  $\triangleleft$  (forward) or  $\triangleright$  (back) and swing the tonearm.
5. Move the position-detecting board for the phase difference shown below.



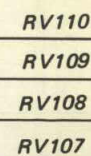
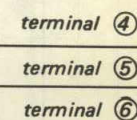
**Stylus Force Adjustment**

1. Set the STYLUS FORCE control to 3 g.
2. Adjust RV104 so that the tension gauge reads 3 g.
3. Set the STYLUS FORCE control to 0.5 g. Confirm that the tension gauge indicates 0.5 g.

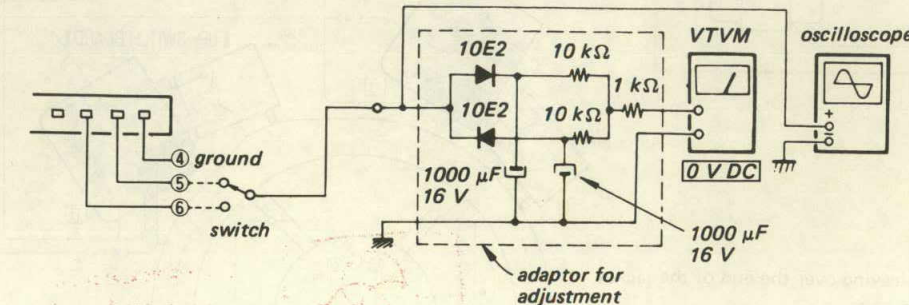
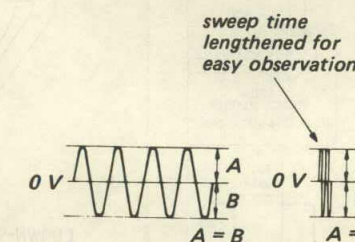


**Turntable Motor Adjustment**

1. Make an adaptor for adjustment as shown below.
2. Connect a VTVM and an oscilloscope as shown.
3. Set the SPEED to 33 rpm.
4. Throw the switch to terminal ⑤ and adjust RV108 for a 4 V<sub>p-p</sub> reading on the oscilloscope.
5. Throw the switch to terminal ⑥ and adjust RV107 for a 4 V<sub>p-p</sub> reading on the oscilloscope.
6. Throw the switch to terminal ⑤ and adjust RV110 for a 0 V dc reading on the VTVM or for a waveform as shown right.
7. Throw the switch to terminal ⑥ and adjust RV109 for a 0 V dc reading on the VTVM or for a waveform as shown right.



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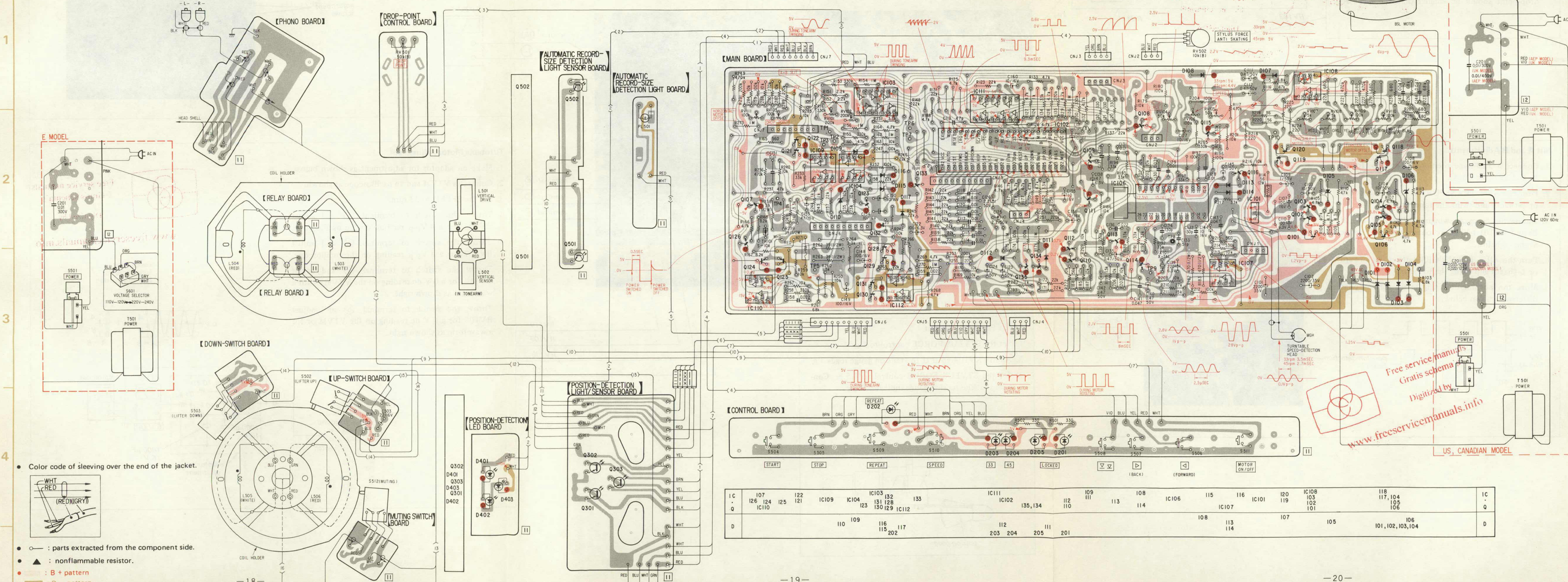
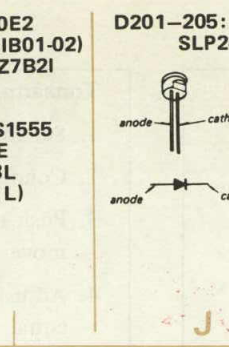
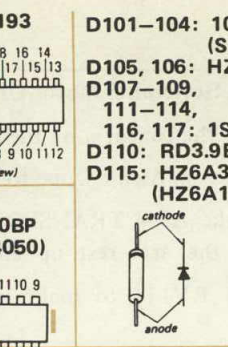
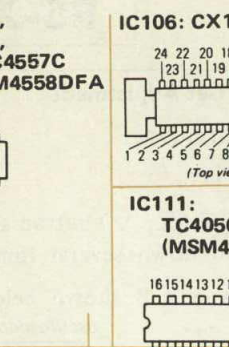
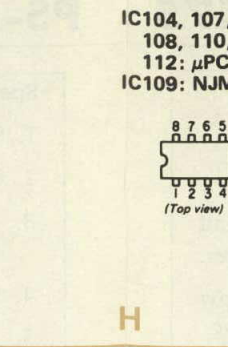
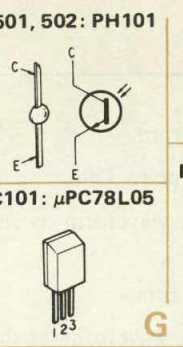
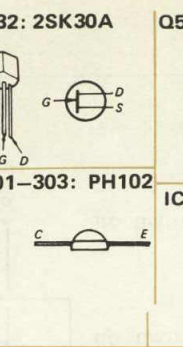
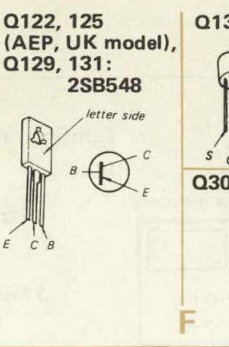
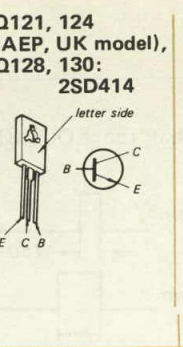
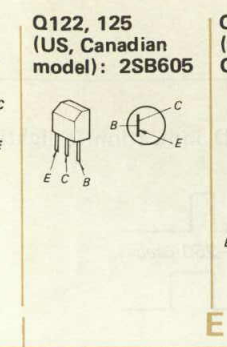
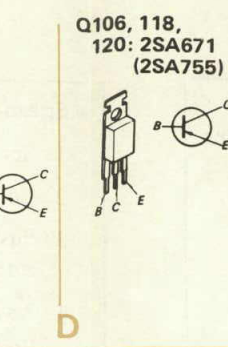
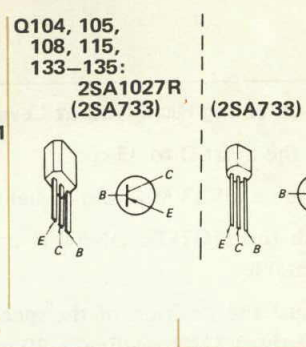
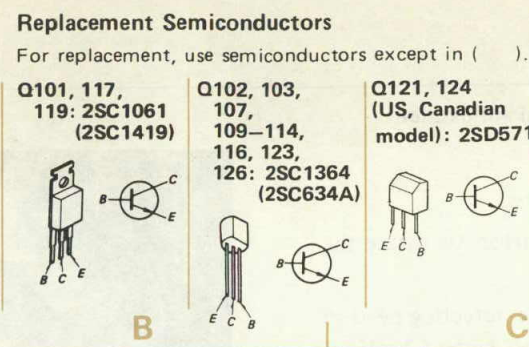


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# SECTION 4 DIAGRAMS

## 4-1. MOUNTING DIAGRAM — Conductor Side —



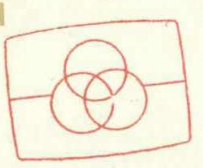
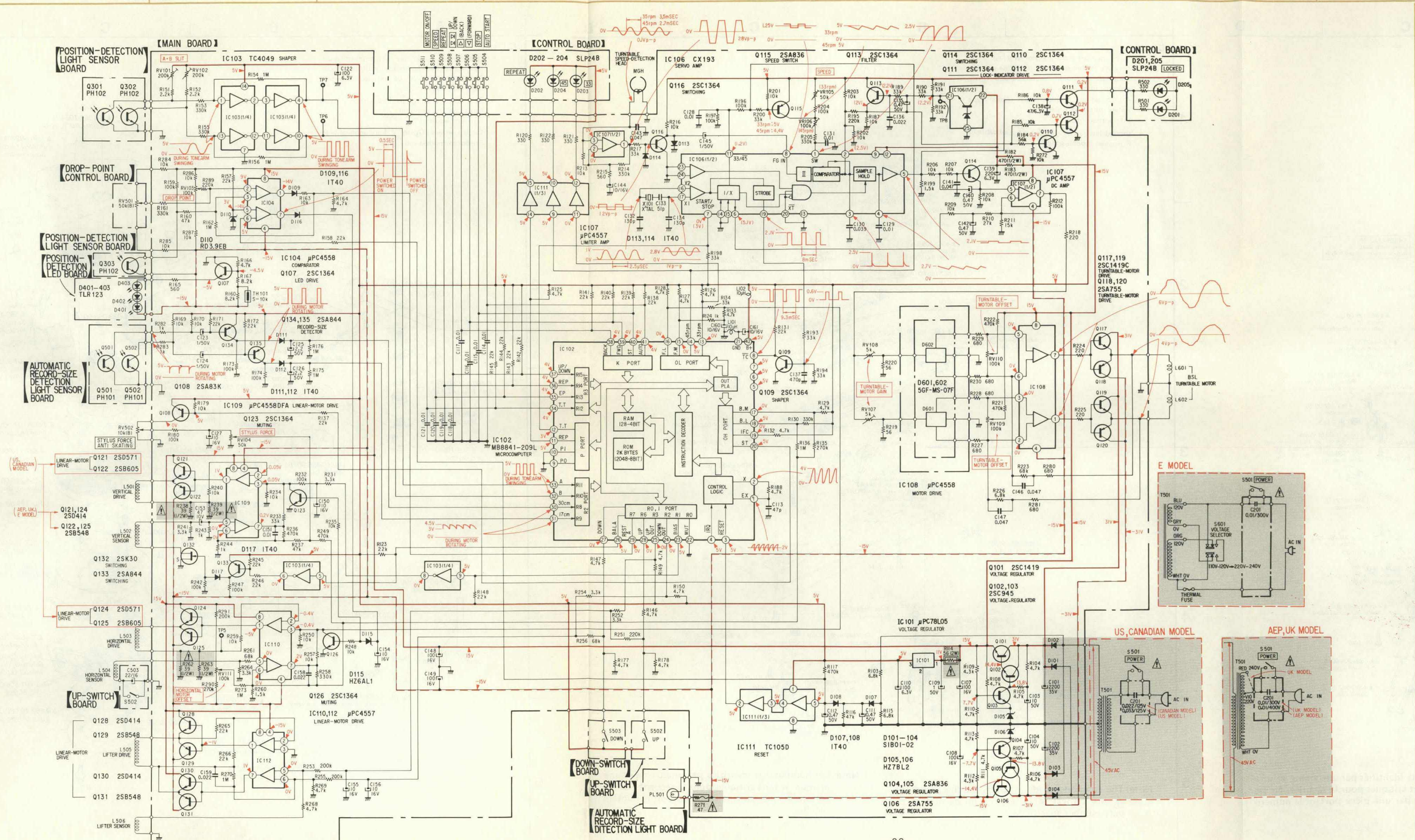
- Color code of sleeving over the end of the jacket.
- WHT (White)
- RED (Red)
- RED(GRY) (Red-Gray)
- — : parts extracted from the component side.
- ▲ : nonflammable resistor.
- : B + pattern
- : B - pattern

IC	107	122	IC109	IC104	IC103	132	IC111	109	108	IC106	115	116	IC108	118	104	IC
Q	IC110	124	125	123	131	128	135, 134	113	114	135, 134	108	113	103	117, 104	105	Q
D		110	116	117	112	111	203	204	205	201	107	105	106	101, 102, 103, 104		D

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**Note:**

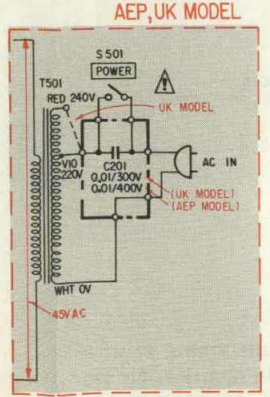
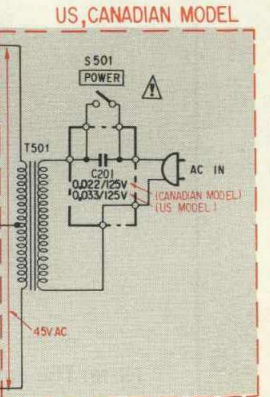
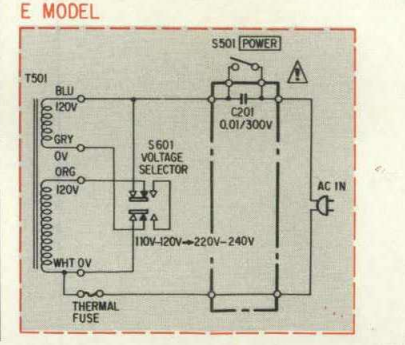
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF} : \mu\text{F} = 50\text{WV}$  or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms,  $\frac{1}{4}\text{W}$  unless otherwise noted.  $\text{k}\Omega : 1000\Omega, \text{M}\Omega : 1000\text{k}\Omega$
- $\square$  : nonflammable resistor.
- $\square$  : panel designation.
- $\square$  : adjustment for repair.
- $\text{---}$  : B+ bus.
- $\text{- - -}$  : B- bus.
- Waveforms and their voltage readings are taken with an oscilloscope.
- turntable motor: OFF, 33 rpm
- tonearm: rested on tonearm rest
- tonearm lifter: upped
- servo amp circuit: When turntable motor is turning.
- Readings are taken under no-signal conditions with a VOM (20  $\text{k}\Omega/\text{V}$ ).
- ( ) : turntable motor ON

**Switch**

Ref. No.	Switch	Position
S501	POWER	OFF
S502	UP	OFF
S503	DOWN	OFF
S504	AUTO START	OFF
S505	STOP	OFF
S506	$\triangle$ (FWD)	OFF
S507	$\nabla$ (BACK)	OFF
S508	$\nabla$ (UP/DOWN)	OFF
S509	REPEAT	OFF
S510	SPEED	OFF
S511	MOTOR ON/OFF	OFF
S512	MUTING	OFF

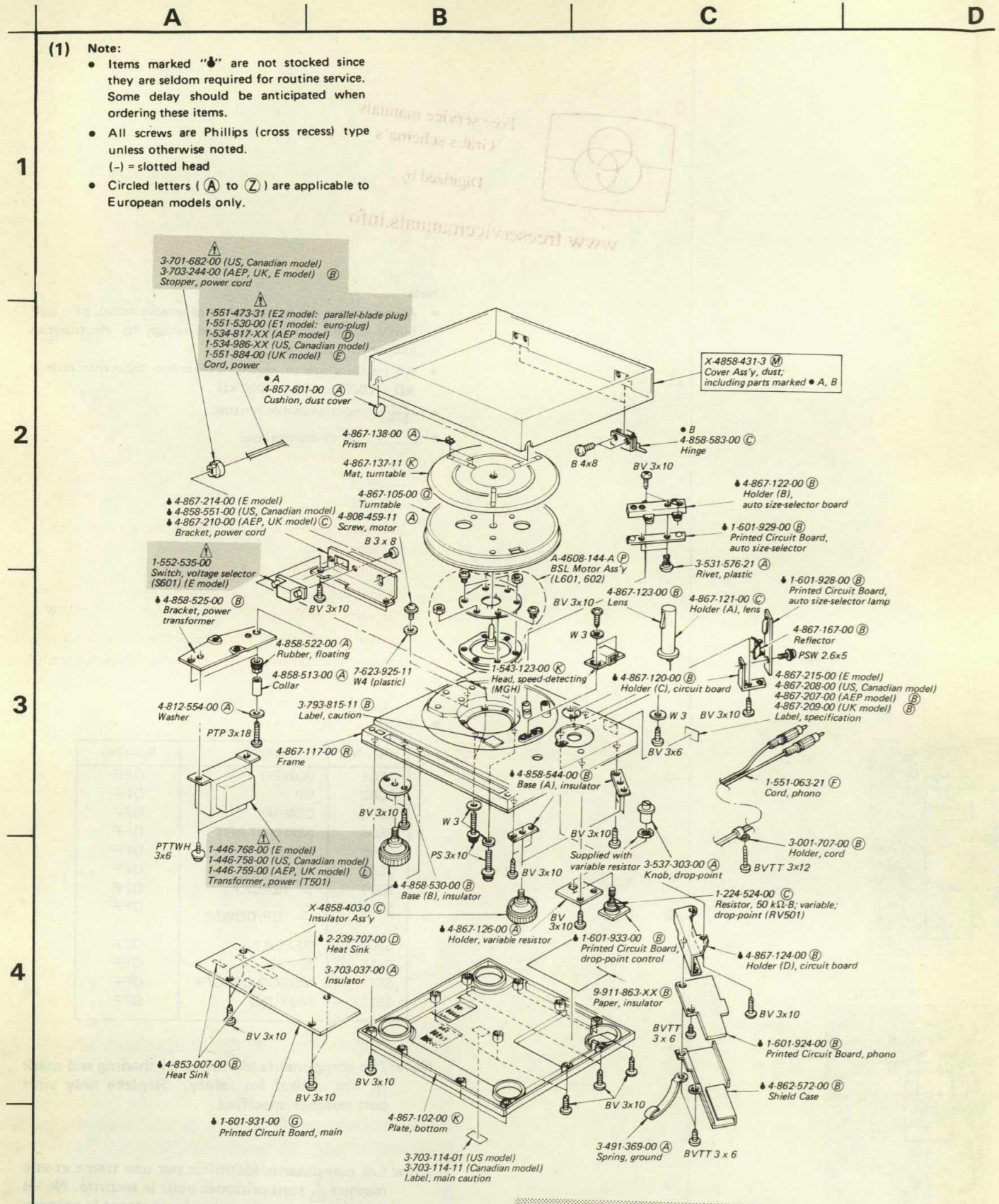
**Note:** The components identified by shading and mark  $\triangle$  are critical for safety. Replace only with part number specified.

**Note:** Les composants identifiés par une trame et une marque  $\triangle$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



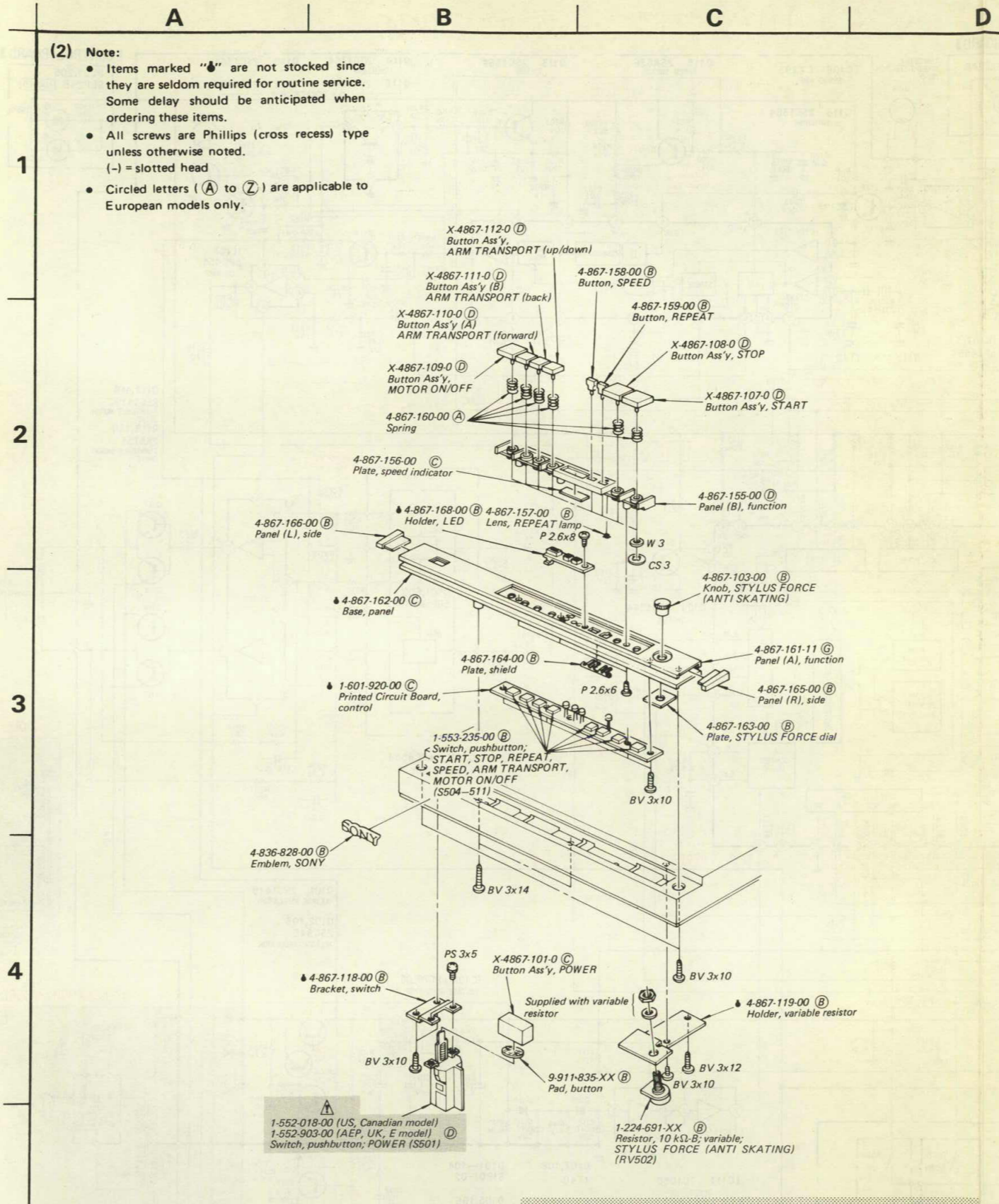


SECTION 5  
EXPLODED VIEWS



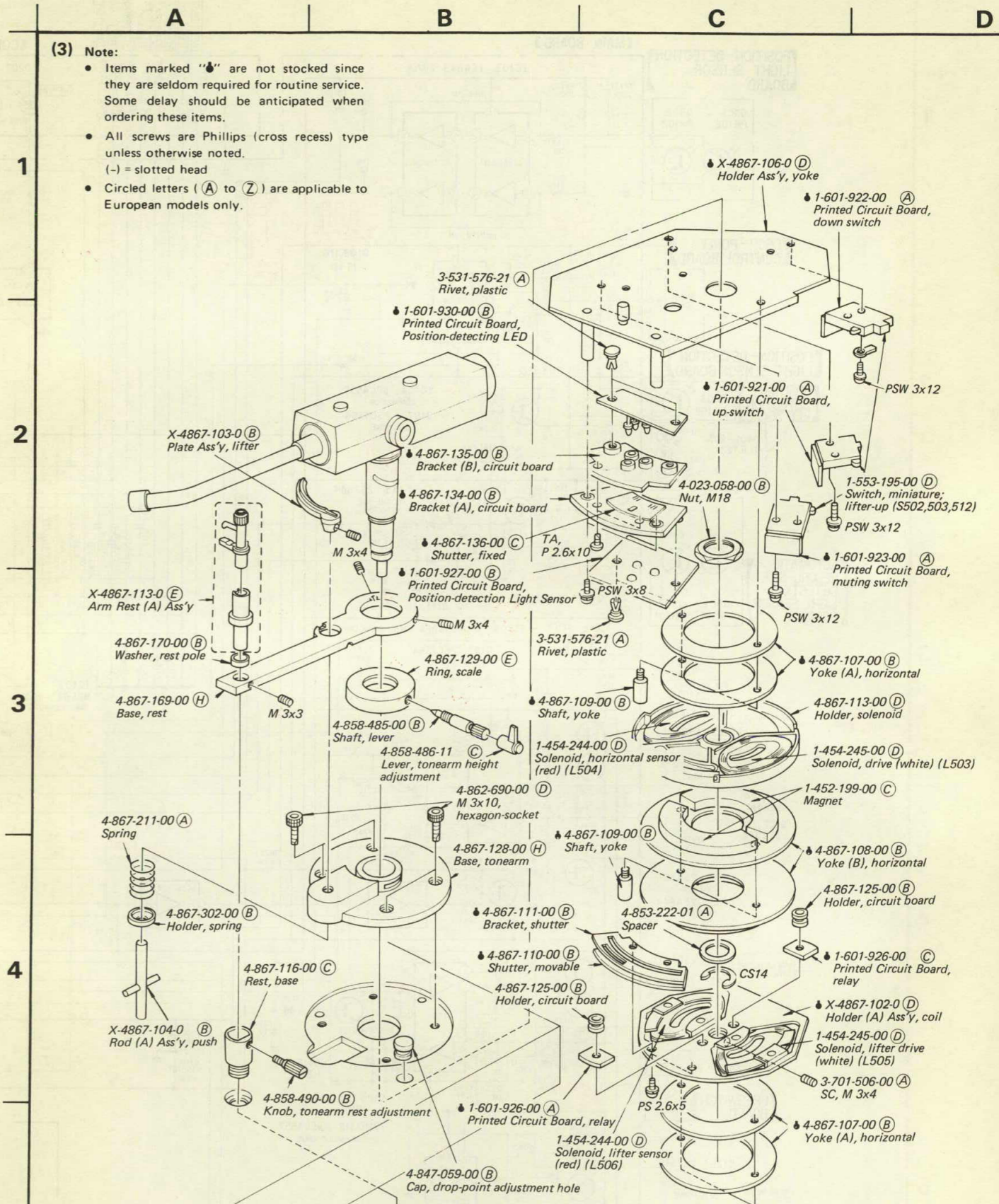
- (1) Note:
- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - All screws are Phillips (cross recess) type unless otherwise noted. (-) = slotted head
  - Circled letters (A to Z) are applicable to European models only.

Note: Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



- (2) Note:
- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - All screws are Phillips (cross recess) type unless otherwise noted. (-) = slotted head
  - Circled letters (A to Z) are applicable to European models only.

Note: Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



- (3) Note:
- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - All screws are Phillips (cross recess) type unless otherwise noted. (-) = slotted head
  - Circled letters (A to Z) are applicable to European models only.

Note: Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



SECTION 6 ELECTRICAL PARTS LIST Note: Circled letters (A to Z) are applicable to European models only.

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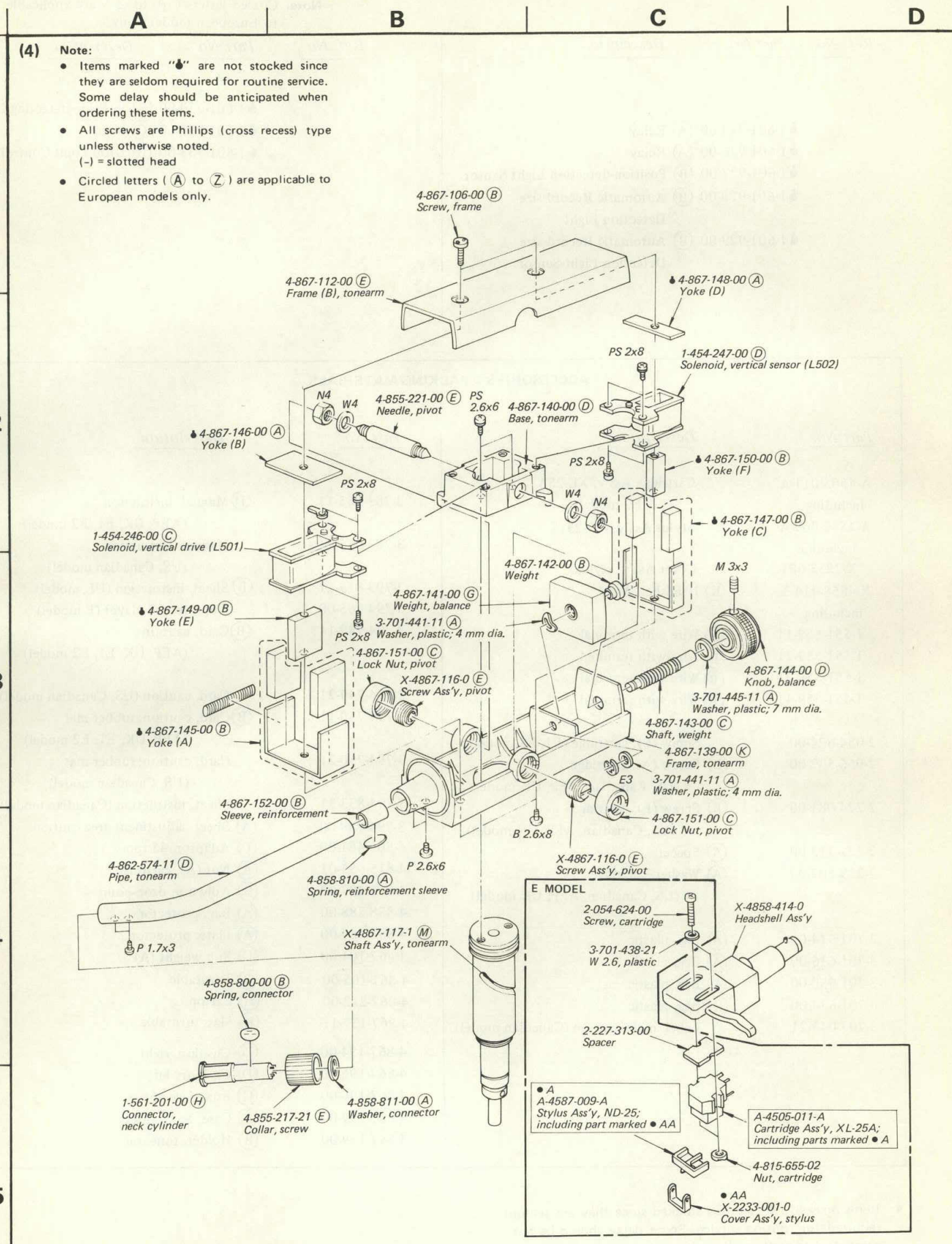


Table with 3 columns: Ref. No., Part No., and Description. It lists various electronic components including transistors (2SC1061, 2SA1027R, 2SC1364, 2SA671, 2SD414, 2SB548) and ICs (PH102, PH101, μPC78L05, MB8841-209L).

Table with 3 columns: Ref. No., Part No., and Description. It lists various electronic components including diodes (10E2, HZ7B2L, 1S1555, RD3.9E, HZ6A3L, SLP24B, TLR123, 5GFMS-07F) and capacitors (2200 35 V electrolytic, 51 p ceramic, 470 p ceramic, 0.022 125 V film, 0.01 300 V metallized film, 0.033 125 V film, 0.01 400 V ceramic, 22 16 V electrolytic).

Note: Items marked "A" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items. Note: The components identified by shading and mark A are critical for safety. Replace only with part number specified.

=> : Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note: Les composants identifiés par une trame et une marque A sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



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Note: Circled letters (A to Z) are applicable to European models only.

Ref. No. Part No. Description

RESISTORS

All resistors are in ohms. Common 1/4 W carbon resistors are omitted. Refer to the list on page 32 for their part numbers.

Table of resistors including R109, R114, R238, R262, R271, RV101, RV103, RV104, RV105, RV106, RV107, RV109, RV111, RV501, RV502.

MISCELLANEOUS

Table of miscellaneous parts including L101, L501, L502, L503, L504, L505, L506, L601, 602.

Table of miscellaneous parts including MGH, PL501, 502.

Table of miscellaneous parts including S501, S502, S503.

Note: The components identified by shading and mark A are critical for safety. Replace only with part number specified.

Ref. No. Part No. Description

Table of electrical components including S504-511, S512, S601, T501, TH101, X101, magnets, and cords.

PRINTED CIRCUIT BOARDS

Table of printed circuit boards including 1-601-920-00, 1-601-921-00, 1-601-922-00, 1-601-923-00, 1-601-924-00.

Items marked "•" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: Les composants identifiés par une trame et une marque A sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: Circled letters (A to Z) are applicable to European models only.

Ref. No. Part No. Description

Table of electrical components including 1-601-925-00, 1-601-926-00, 1-601-927-00, 1-601-928-00, 1-601-929-00.

Ref. No. Part No. Description

Table of electrical components including 1-601-930-00, 1-601-931-00, 1-601-933-00.

ACCESSORIES & PACKING MATERIALS

Large table of accessories and packing materials with columns for Part No., Description, Part No., and Description.

Items marked "•" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.



ELECTROLYTIC CAPACITORS

Note: Circled letter (A to Z) are applicable to European models only.

Table with columns for CAP. (μF) and RATING (6.3 VOLT., 10 VOLT., 16 VOLT., 25 VOLT., 35 VOLT., 50 VOLT.) with part numbers and circled letters.

Table with columns for CAP. (μF) and RATING (100 VOLT., 160 VOLT., 250 VOLT., 350 VOLT.) with part numbers and circled letters.

CERAMIC CAPACITORS (A)

Table with columns for CAP. (pF) and RATING (50 VOLT., 50 VOLT., 50 VOLT., 50 VOLT., 50 VOLT., 50 VOLT.) with part numbers and circled letters.

0.001μF = 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS (A)

Table with columns for CAP. (μF) and RATING (25 VOLT., 50 VOLT., 25 VOLT., 50 VOLT.) with part numbers and circled letters.

MYLAR CAPACITORS (A)

Note: Circled letters (A to Z) are applicable to European models only.

Table with columns for CAP. (μF) and RATING (50 VOLT., 100 VOLT., 200 VOLT., 50 VOLT., 100 VOLT., 200 VOLT.) with part numbers and circled letters.

TANTALUM CAPACITORS



Table with columns for CAP. (μF) and RATING (3.15 VOLT., 6.3 VOLT., 10 VOLT., 16 VOLT., 20 VOLT., 25 VOLT., 35 VOLT.) with part numbers and circled letters.

TANTALUM CAPACITORS

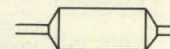


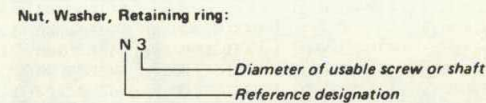
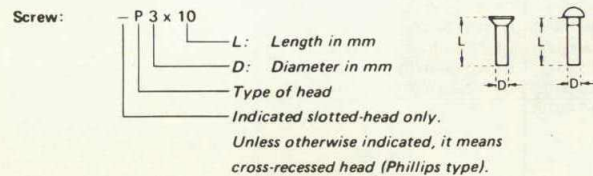
Table with columns for CAP. (μF) and RATING (3 VOLT., 6.3 VOLT., 10 VOLT., 16 VOLT., 20 VOLT., 35 VOLT.) with part numbers and circled letters.



1/4 WATT CARBON RESISTORS <sup>(A)</sup> **Note:** Circled letter <sup>(A)</sup> is applicable to European models only.

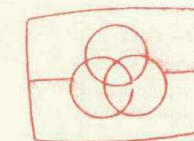
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

HARDWARE NOMENCLATURE



Reference Designation	Shape	Description	Remarks
<b>SCREWS</b>			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
<b>SELF-TAPPING SCREWS</b>			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
<b>SET SCREWS</b>			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
<b>NUT</b>			
N		nut	
<b>WASHERS</b>			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
<b>RETAINING RINGS</b>			
E		retaining ring	
G		grip-type retaining ring	



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