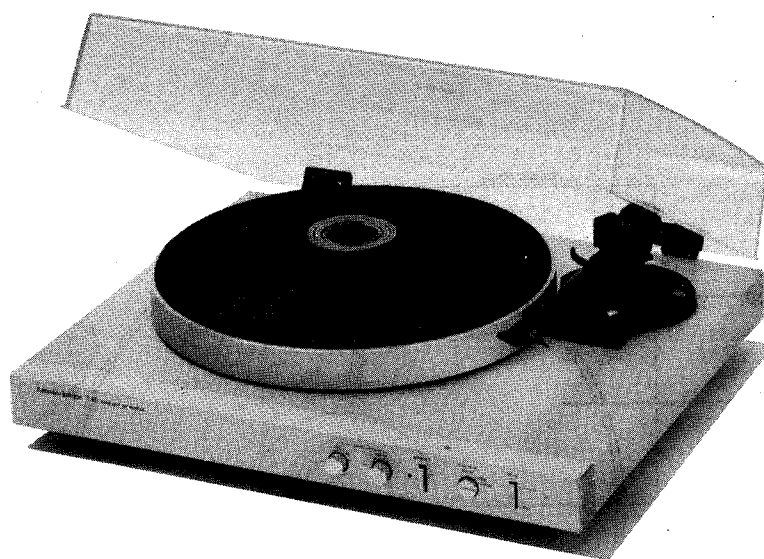


# The Harman Kardon Model T40

Manual No. 46A

## AUTO-LIFT TURNTABLE

# Technical Manual



T40

**harman/kardon**

240 CROSSWAYS PARK WEST, WOODBURY, N.Y. 11797  
PRINTED IN JAPAN 1112-H15246A8 P-07824

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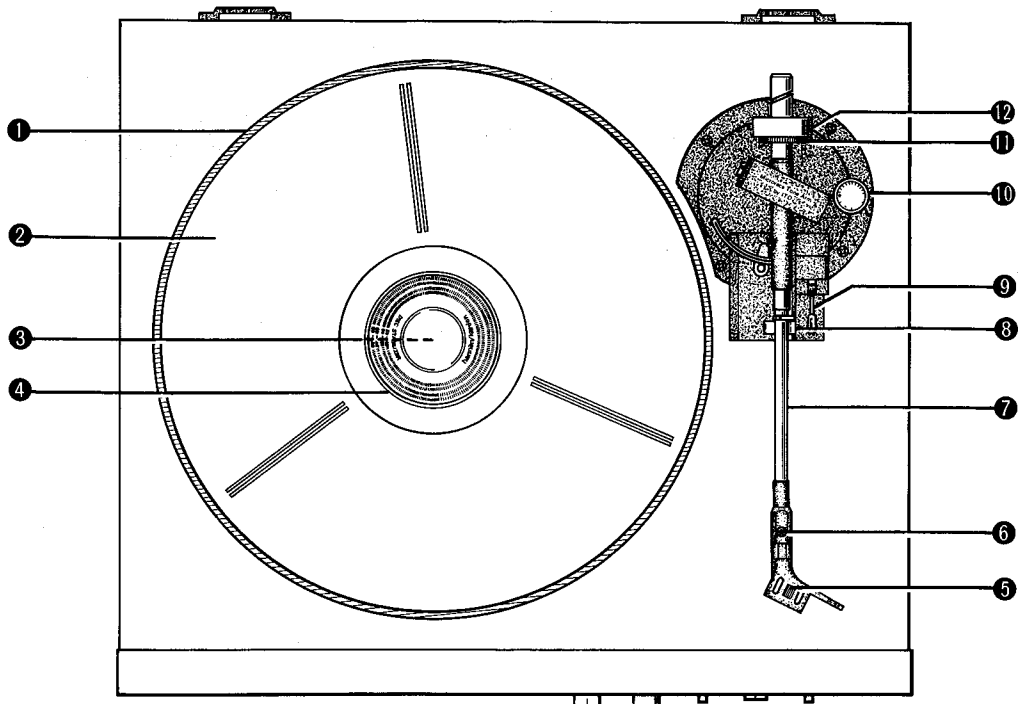
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## SPECIFICATIONS

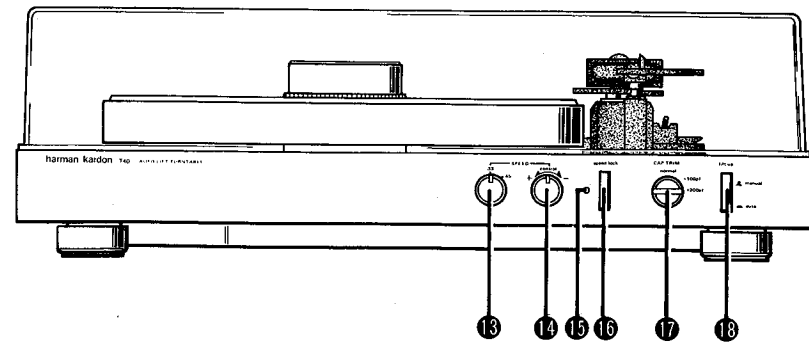
	Nominal	Limit		
• <b>Speed Control Width</b>			• <b>Power Supply</b>	
33-1/3 R.P.M.		±3.0%	U.S. & Canadian Models	AC 120V, 60 Hz
45 R.P.M.		±3.0%	Multi-Voltage Model	AC 110-120V/220-240V, 50/60 Hz
• <b>Wow and Flutter</b>	0.06%	≤0.09%	• <b>Power Consumption</b>	
• <b>Signal-to-Noise Ratio</b>		≥60dB	U.S. & Canadian Models	8W
• <b>Possible Cartridge Weights</b>	2.5g ~ 8g		Multi-Voltage Model	10W
• <b>Dimensions (W x H x D)</b>	17-1/2" x 5-3/4" x 15-1/8"			
	(443 x 144 x 384 mm)			
• <b>Weight</b>	15 lbs. 4 oz. (6.9 kg)			

Specifications and components subject to change without notice.  
Overall performance will be maintained or improved.

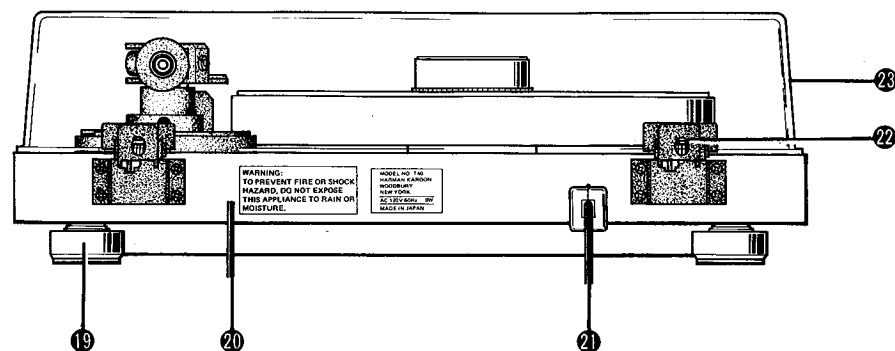
## COMPONENTS



- |                   |                             |
|-------------------|-----------------------------|
| ① PLATTER         | ⑦ TONEARM                   |
| ② PLATTER MAT     | ⑧ ARMREST/CLAMP             |
| ③ CENTER SPINDLE  | ⑨ CUE LEVER                 |
| ④ DISC STABILIZER | ⑩ ANTI-SKATING CONTROL      |
| ⑤ HEADSHELL       | ⑪ TRACKING FORCE SCALE RING |
| ⑥ HEADSHELL CLAMP | ⑫ COUNTERWEIGHT             |



- 13 33/45 SPEED SELECTOR
- 14 SPEED CONTROL
- 15 SPEED LOCK INDICATOR
- 16 SPEED LOCK BUTTON
- 17 CAPACITANCE TRIM SELECTOR
- 18 LIFT BUTTON



- 19 FOOT
- 20 OUTPUT LEADS AND GROUND WIRE
- 21 AC LINE CORD
- 22 DUST COVER HINGE
- 23 DUST COVER

## DISASSEMBLY PROCEDURES

**NOTE:** Before disassembling the unit, remove the platter and headshell with cartridge, and securely tie the arm to the armrest with string, etc. Then gently turn the unit upside down and place it on cloths, etc. piled up on both sides to protect the arm and cabinet from damage.

### 1 CABINET BOTTOM REMOVAL

1. Remove screws 1 to 13 in Fig. 1 and then remove the cabinet bottom.

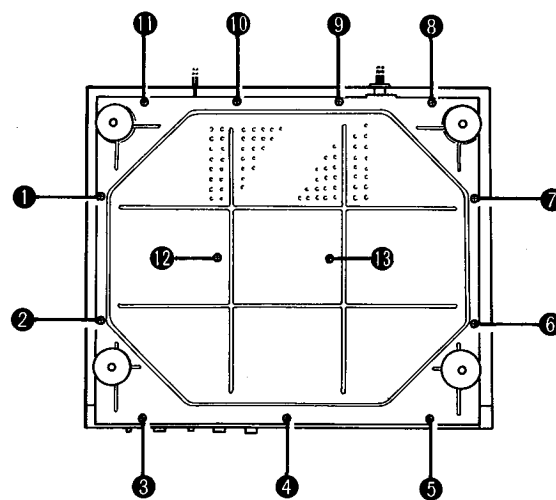


Fig. 1

### 2 FRONT PANEL REMOVAL

1. Remove the cabinet bottom. (Refer to step 1)
2. Remove screws 1 to 4 in Fig. 2 and remove the front panel with chassis and PCB-2, 3, 4.
3. Remove screws 5 and 6 in Fig. 2 and separate the chassis with PCB-2, 3, 4 from the front panel.

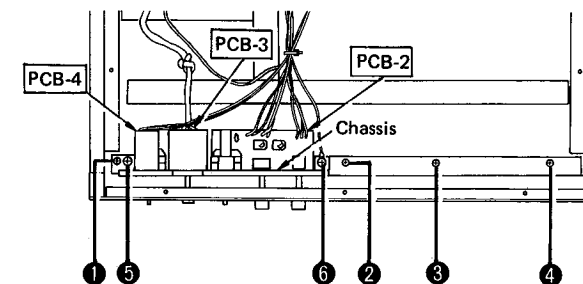


Fig. 2

### 3 MAIN P.C. BOARD (PCB-1) REMOVAL

1. Remove the cabinet bottom. (Refer to step 1)
2. Disconnect the connector with leads from the PCB-1.
3. Remove nuts 1 and 2 in Fig. 3 and remove the PCB-1. If necessary, unsolder the leads.

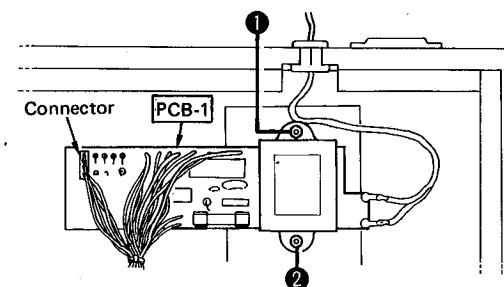


Fig. 3

### 4 MOTOR ASSEMBLY REMOVAL

1. Unsolder the leads from motor control circuit.
2. Remove screws 1 to 3 in Fig. 4 and remove the motor assembly.

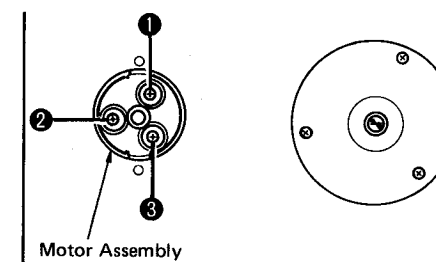


Fig. 4

### 5 PICK-UP ASSEMBLY WITH BASE REMOVAL

1. Remove the cabinet bottom. (Refer to step 1)
2. Remove screws 1 and 2 in Fig. 5 and remove the microswitches.
3. Remove screws 3 and 4 in Fig. 5 and remove the PCB-5.
4. Unsolder the pick-up leads from relay P.C. board.
5. Remove screws 5 and 6 in Fig. 6 and remove the solenoid.
6. Remove screws 7 to 10 in Fig. 7 and remove the pick-up assembly with base.

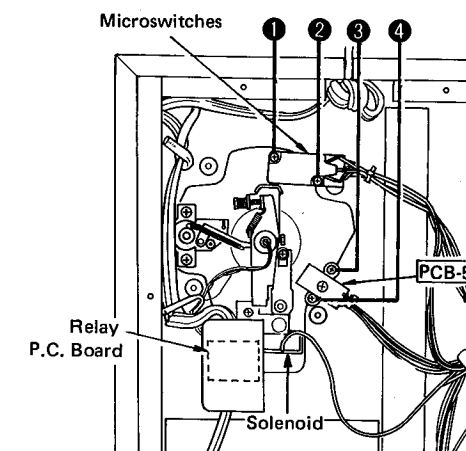


Fig. 5

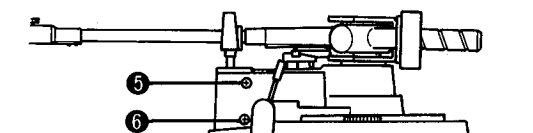


Fig. 6

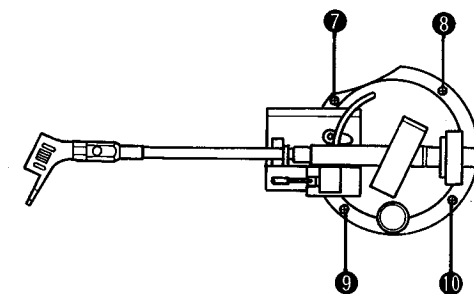
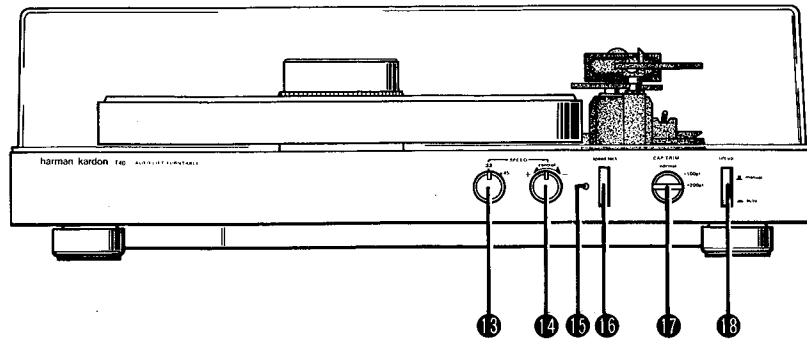
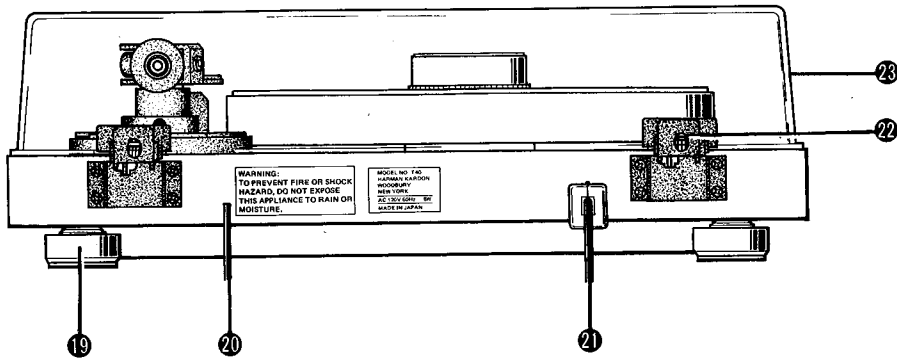


Fig. 7



- 13 33/45 SPEED SELECTOR
- 14 SPEED CONTROL
- 15 SPEED LOCK INDICATOR
- 16 SPEED LOCK BUTTON
- 17 CAPACITANCE TRIM SELECTOR
- 18 LIFT BUTTON



- 19 FOOT
- 20 OUTPUT LEADS AND GROUND WIRE
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## DISASSEMBLY PROCEDURES

**NOTE:** Before disassembling the unit, remove the platter and headshell with cartridge, and securely tie the arm to the armrest with string, etc. Then gently turn the unit upside down and place it on cloths, etc. piled up on both sides to protect the arm and cabinet from damage.

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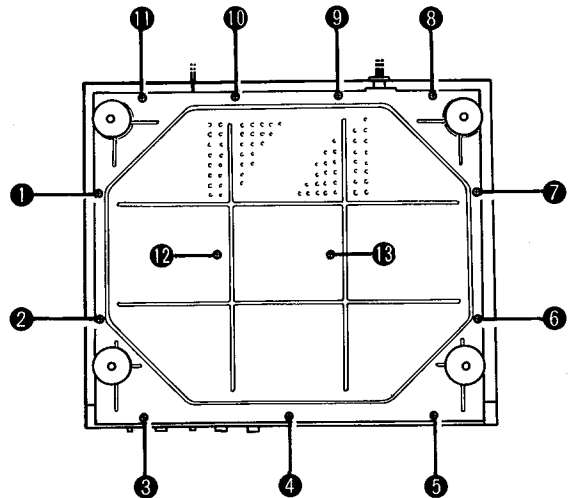


Fig. 1

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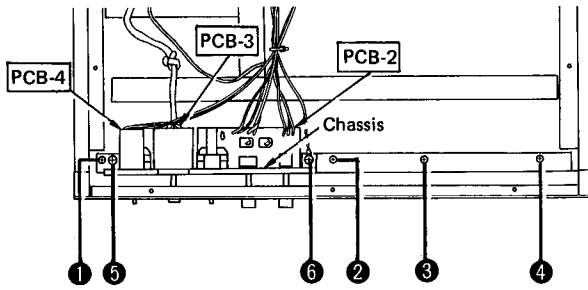


Fig. 2

**3 MAIN P.C. BOARD (PCB-1) REMOVAL**

1. Remove the cabinet bottom. (Refer to step 1)
2. Disconnect the connector with leads from the PCB-1.
3. Remove nuts 1 and 2 in Fig. 3 and remove the PCB-1. If necessary, unsolder the leads.

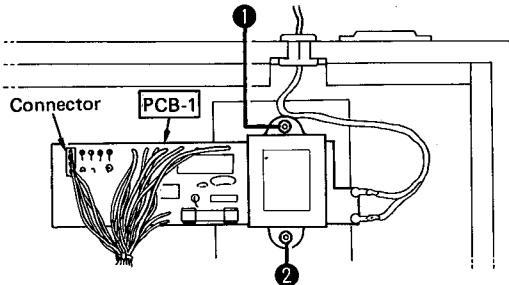


Fig. 3

**4 MOTOR ASSEMBLY REMOVAL**

1. Unsolder the leads from motor control circuit.
2. Remove screws 1 to 3 in Fig. 4 and remove the motor assembly.

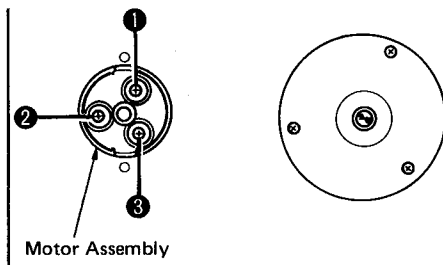


Fig. 4

**5 PICK-UP ASSEMBLY WITH BASE REMOVAL**

1. Remove the cabinet bottom. (Refer to step 1)
2. Remove screws 1 and 2 in Fig. 5 and remove the microswitches.
3. Remove screws 3 and 4 in Fig. 5 and remove the PCB-5.
4. Unsolder the pick-up leads from relay P.C. board.
5. Remove screws 5 and 6 in Fig. 6 and remove the solenoid.
6. Remove screws 7 to 10 in Fig. 7 and remove the pick-up assembly with base.

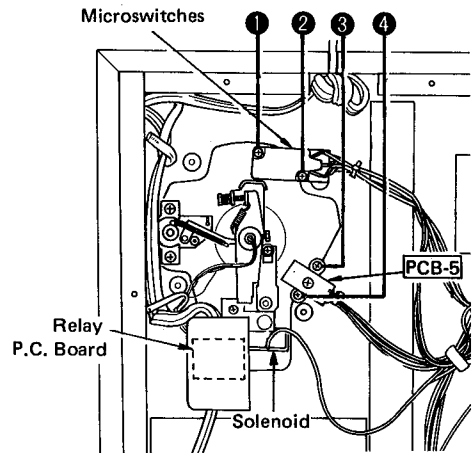


Fig. 5

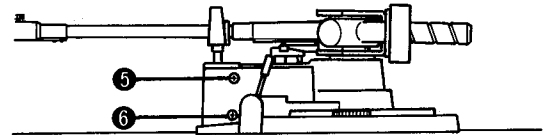


Fig. 6

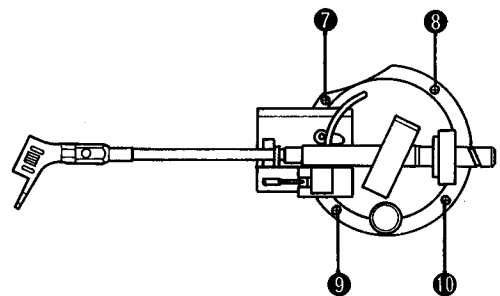
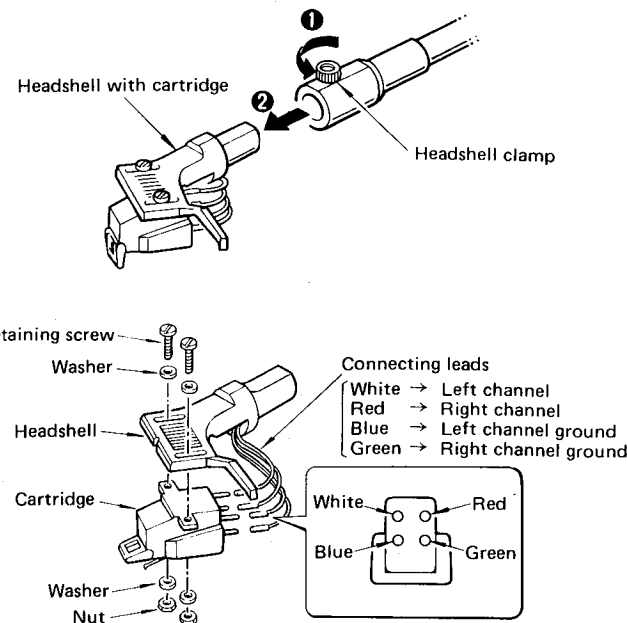


Fig. 7

## CARTRIDGE REPLACEMENT INSTRUCTION

Only use cartridges in the headshell provided. Be sure to use a cartridge weighting 2.5 to 8 grams.

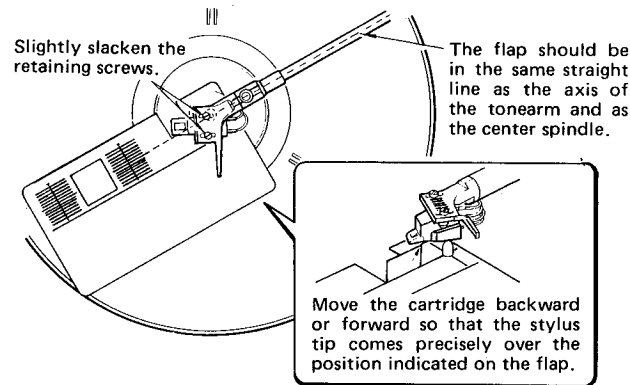
1. Release the tonearm clamp and lift the tonearm gently.
2. Loosen the headshell clamp and gently pull the headshell with cartridge.
3. Disconnect the 4 leads from cartridge terminals using a tweezers and then loosen the retaining screws so that the cartridge comes out.
4. Replace the leads onto the new cartridge. Refer to figure right for correct placement of leads.
5. When all leads are connected properly, install cartridge to the headshell as shown in the figure right.
6. Temporarily tighten the retaining screw to hold the cartridge.
7. Insert the headshell with the cartridge fully into the tonearm and then tighten the headshell clamp.



When cartridge is replaced with new one, it is necessary to adjust the Overhang and Tracking angle.

### ● Overhang Adjustment

1. Place the accessory tracking angle gauge on the center spindle and raise the flap.
2. Be sure to remove the stylus guard when adjusting the overhang.
3. Set the anti-skating control to "0" position, and move the tonearm directly over the center spindle. Line up the raised flap on the gauge with the center spindle and the tonearm base. Gently move the cartridge backward or forward in the headshell so that the stylus tip lines up with the corner of the flap.



### ● Tracking Angle Adjustment

1. Check to be sure that the overhang adjustment has been completed.
2. Now move the tracking angle gauge until it is in the same position with respect to the tonearm as that shown in Fig. A. Place the stylus over the tracking angle setting point with keeping stylus guard attached.
3. Without changing the stylus position, turn the cartridge so that its front edge is parallel with the lines on the gauge.
4. Now move it so that it is in the position shown in Fig. B and check that the cartridge is still parallel with the parallel lines as it was in step 3 above. If it is not parallel, then repeat step 3 and 4 alternately until the cartridge is parallel in both cases.
5. When the above adjustment is completed, then tighten the screws that attach the cartridge to the headshell fully.

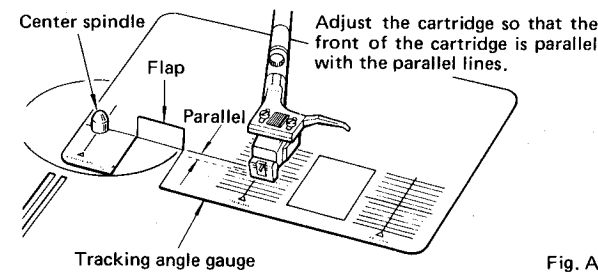


Fig. A

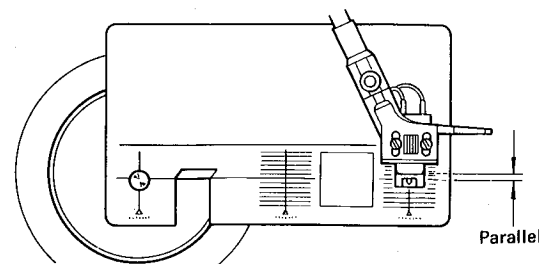


Fig. B

## ALIGNMENT PROCEDURES

### ■ DISC END DETECTION POSITION ADJUSTMENT

#### \* Conditions

Be sure not to hang the drive belt between platter and motor pulley.

Lift Switch. . . . . Auto

#### ● LP POSITION ADJUSTMENT

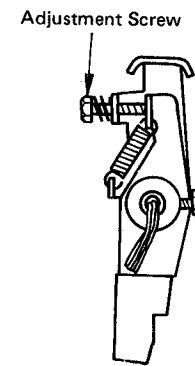
1. Set the speed selector to 33 r.p.m.
2. Lower the cue lever.
3. Adjust by adjustment screw attached to the lower part of the tonearm so that the stylus of cartridge detects the disc end position between 111.94 mm ~ 107.2 mm from the center of spindle.

#### ● EP POSITION ADJUSTMENT

1. Set the speed selector to 45 r.p.m.
2. Lower the cue lever.
3. Adjust by adjustment screw attached to the lower part of the tonearm so that the stylus of cartridge detects the disc end position between 102.74 mm ~ 98.4 mm from the center of spindle.

#### NOTE:

Turning the adjustment screw clockwise makes a fast detection of the disc end position, and turning it counterclockwise makes slow detection.



### ■ MOTOR R.P.M. ADJUSTMENT

#### \* Instrument

Stroboscope or Low range tachometer

#### \* Conditions

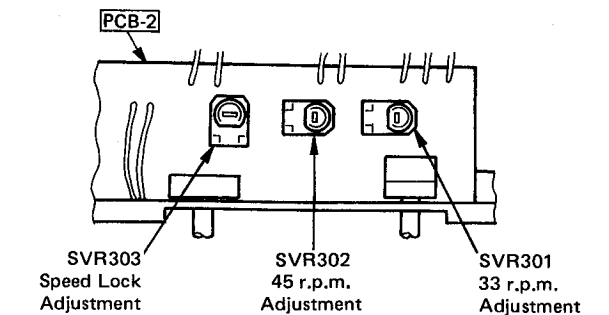
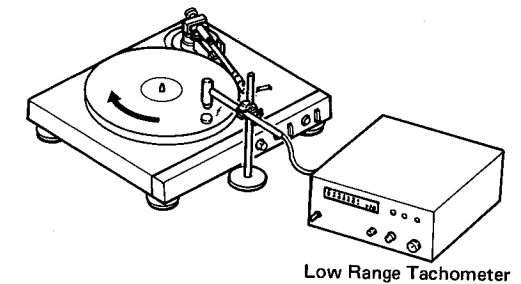
1. Be sure that the drive belt between platter and motor pulley is hung.
2. Flip the cue lever forward to lift the tonearm up.

#### ● When the speed lock switch is off position.

1. Set the speed selector to 33 position and set the speed control knob to the center.
2. Move tonearm horizontally as to be level with the platter, and rotate the platter.
3. Adjust SVR301 by turning the platter so that the motor speed rating is within 33-1/3 r.p.m.
4. Adjust SVR302 in the condition that the speed selector is set to 45 position so that the motor speed rating is within 45 r.p.m.

#### ● When the speed lock switch is on position.

1. Set the speed selector to 33 position.
2. Move tonearm horizontally as to be level with the platter, and rotate the platter.
3. Adjust SVR303 by turning the platter so that the motor speed rating is within 33-1/3 r.p.m.
4. Check the motor speed in condition that the speed selector is set to 45 position.

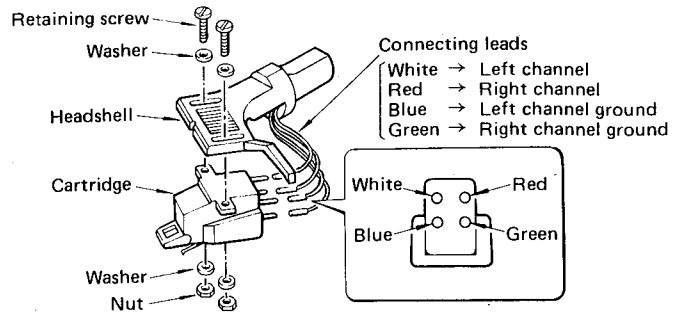
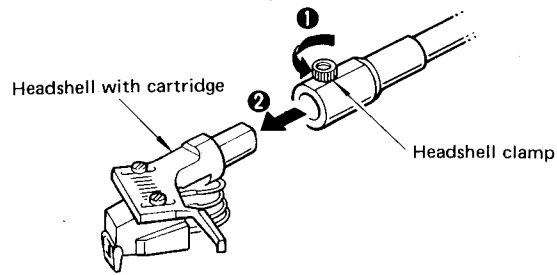


## CARTRIDGE REPLACEMENT INSTRUCTION

Only use cartridges in the headshell provided. Be sure to use a cartridge weighting 2.5 to 8 grams.

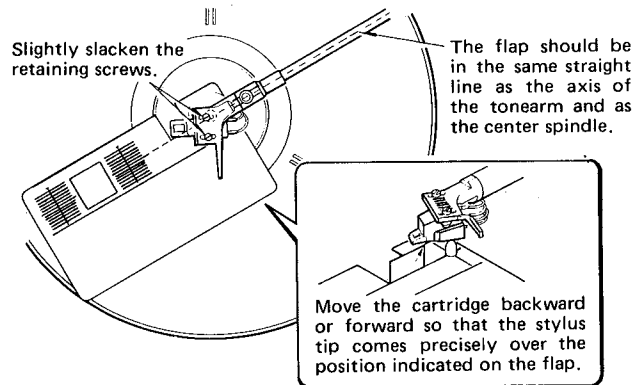
1. Release the tonearm clamp and lift the tonearm gently.
2. Loosen the headshell clamp and gently pull the headshell with cartridge.
3. Disconnect the 4 leads from cartridge terminals using a tweezers and then loosen the retaining screws so that the cartridge comes out.
4. Replace the leads onto the new cartridge. Refer to figure right for correct placement of leads.
5. When all leads are connected properly, install cartridge to the headshell as shown in the figure right.
6. Temporarily tighten the retaining screw to hold the cartridge.
7. Insert the headshell with the cartridge fully into the tonearm and then tighten the headshell clamp.

When cartridge is replaced with new one, it is necessary to adjust the Overhang and Tracking angle.



### ● Overhang Adjustment

1. Place the accessory tracking angle gauge on the center spindle and raise the flap.
2. Be sure to remove the stylus guard when adjusting the overhang.
3. Set the anti-skating control to "0" position, and move the tonearm directly over the center spindle. Line up the raised flap on the gauge with the center spindle and the tonearm base. Gently move the cartridge backward or forward in the headshell so that the stylus tip lines up with the corner of the flap.



### ● Tracking Angle Adjustment

1. Check to be sure that the overhang adjustment has been completed.
2. Now move the tracking angle gauge until it is in the same position with respect to the tonearm as that shown in Fig. A. Place the stylus over the tracking angle setting point with keeping stylus guard attached.
3. Without changing the stylus position, turn the cartridge so that its front edge is parallel with the lines on the gauge.
4. Now move it so that it is in the position shown in Fig. B and check that the cartridge is still parallel with the parallel lines as it was in step 3 above. If it is not parallel, then repeat step 3 and 4 alternately until the cartridge is parallel in both cases.
5. When the above adjustment is completed, then tighten the screws that attach the cartridge to the headshell fully.

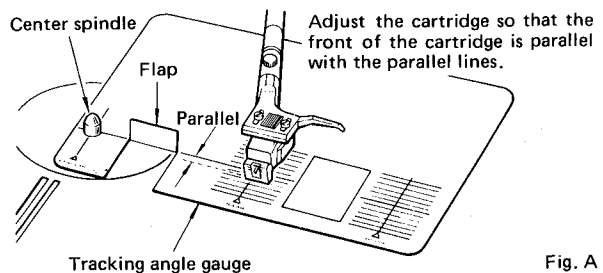


Fig. A

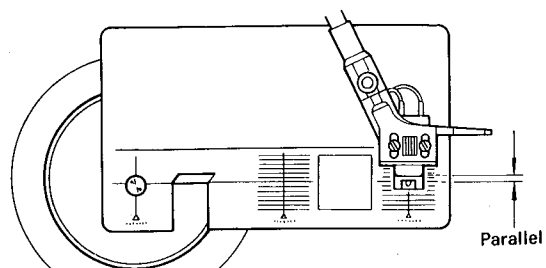


Fig. B

# ALIGNMENT PROCEDURES

## ■ DISC END DETECTION POSITION ADJUSTMENT

### \* Conditions

Be sure not to hang the drive belt between platter and motor pulley.

Lift Switch. . . . . Auto

### ● LP POSITION ADJUSTMENT

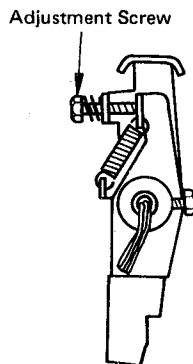
1. Set the speed selector to 33 r.p.m.
2. Lower the cue lever.  
(Raising plate is set to the low position.)
3. Adjust by adjustment screw attached to the lower part of the tonearm so that the stylus of cartridge detects the disc end position between 111.94 mm ~ 107.2 mm from the center of spindle.

### ● EP POSITION ADJUSTMENT

1. Set the speed selector to 45 r.p.m.
2. Lower the cue lever.  
(Raising plate is set to the low position.)
3. Adjust by adjustment screw attached to the lower part of the tonearm so that the stylus of cartridge detects the disc end position between 102.74 mm ~ 98.4 mm from the center of spindle.

### NOTE:

Turning the adjustment screw clockwise makes a fast detection of the disc end position, and turning it counterclockwise makes slow detection.



## ■ MOTOR R.P.M. ADJUSTMENT

### \* Instrument

Stroboscope or Low range tachometer

### \* Conditions

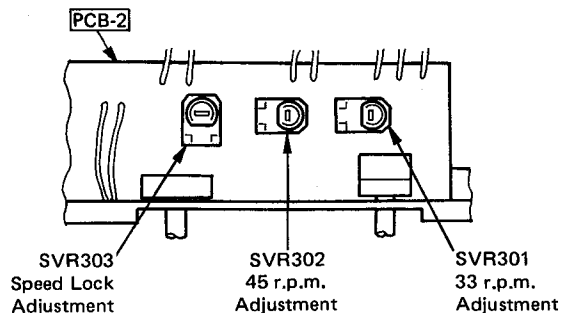
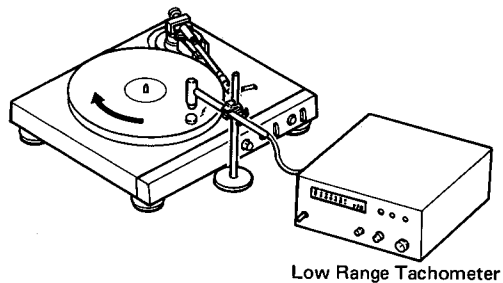
1. Be sure that the drive belt between platter and motor pulley is hung.
2. Flip the cue lever forward to lift the tonearm up.

### ● When the speed lock switch is off position.

1. Set the speed selector to 33 position and set the speed control knob to the center.
2. Move tonearm horizontally as to be level with the platter, and rotate the platter.
3. Adjust SVR301 by turning the platter so that the motor speed rating is within 33-1/3 r.p.m.
4. Adjust SVR302 in the condition that the speed selector is set to 45 position so that the motor speed rating is within 45 r.p.m.

### ● When the speed lock switch is on position.

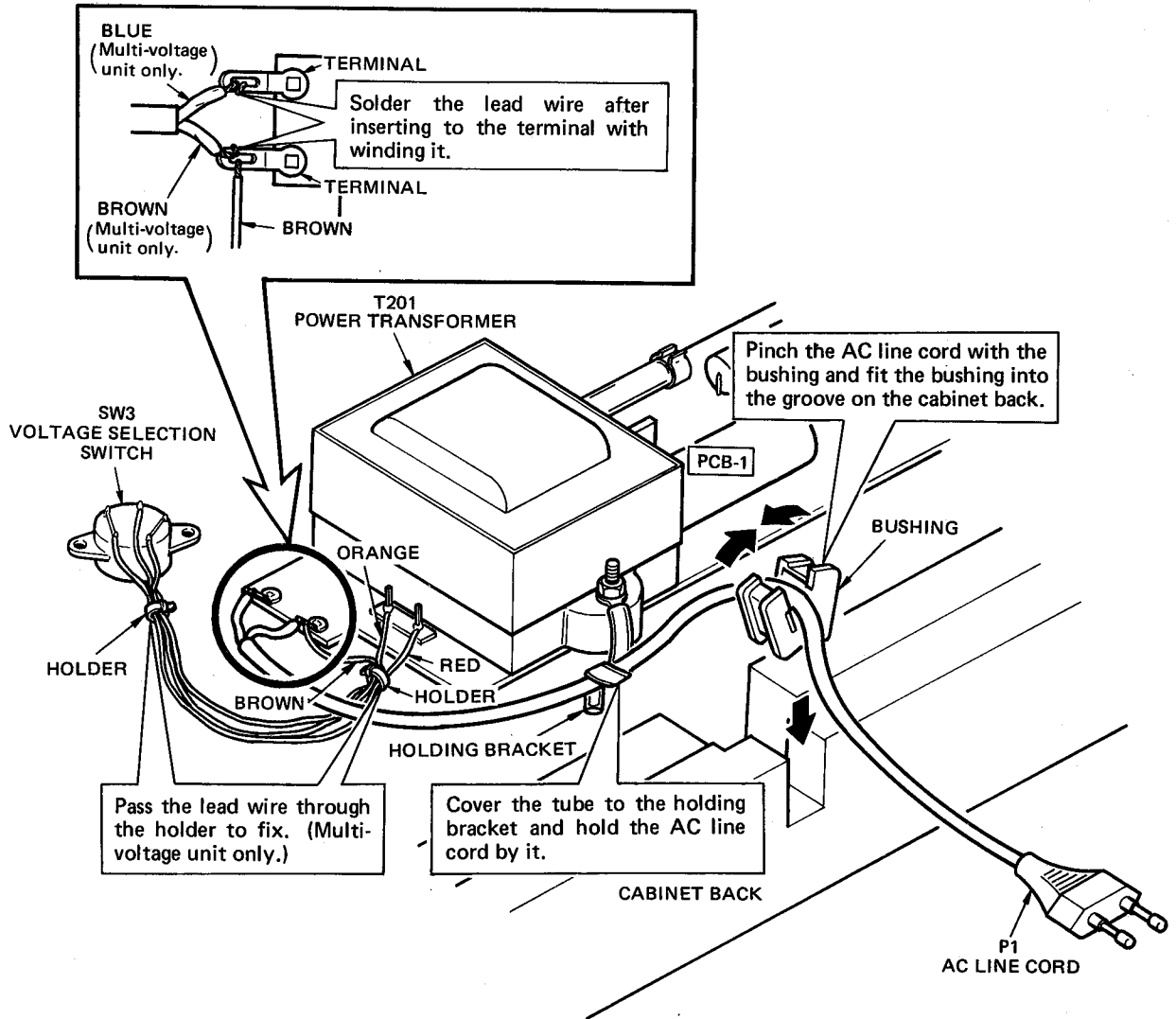
1. Set the speed selector to 33 position.
2. Move tonearm horizontally as to be level with the platter, and rotate the platter.
3. Adjust SVR303 by turning the platter so that the motor speed rating is within 33-1/3 r.p.m.
4. Check the motor speed in condition that the speed selector is set to 45 position.



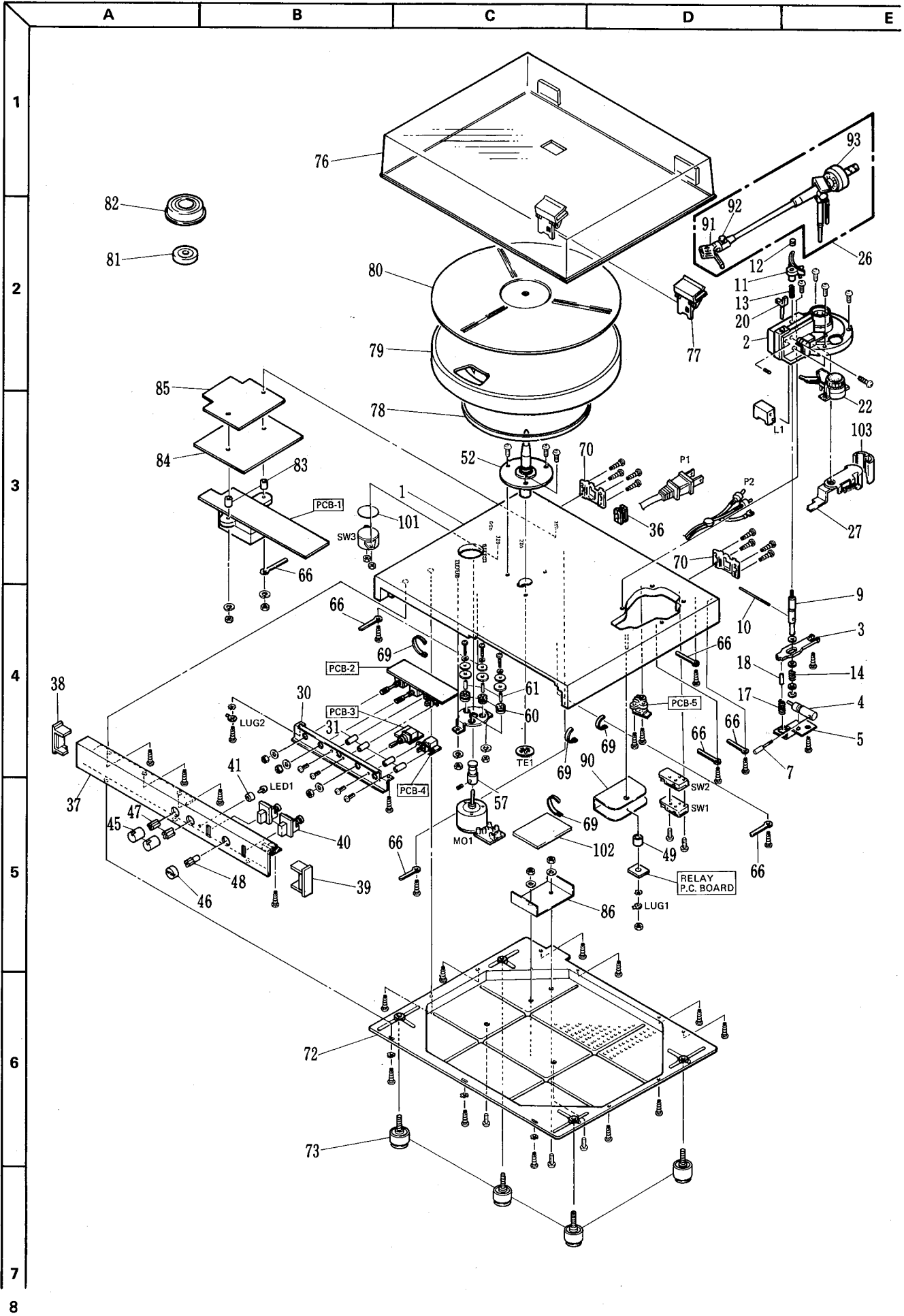


# AC LINE CORD REPLACEMENT

In order to prevent fire or shock hazard when replacing the AC line cord, follow the steps below to replace the parts with the standard supply parts.



GENERAL UNIT EXPLODED VIEW



## GENERAL UNIT PARTS LIST

## DESTINATION ABBREVIATIONS

R: U.S.A. A: Canadian E: Multi-Voltage

Ref. No.	Part No.	Description	Market
1	848934	Cabinet Assembly	R,A
1	848934-1	Cabinet Assembly	E
2	852671	Pick-Up Base Assembly	
3	911100	Trigger Lever	
4	911101-1	Cue Cam	
5	911102	Holding Plate	
7	912200	Cue Lever	
9	912206	Raising Spindle	
10	L16	Spring Pin	
11	896269-1	Raising Plate	
12	896268	Raising Nut	
13	387680	Cam Spring	
14	910073	Raising Spring	
17	911106	Trigger Lever Up Spring	
18	399724	Sponge	
20	912285	Armrest Assembly	
22	912283	Anti-Skating Control Base Assembly	
26	852675	Pick-Up Assembly	
27	911451-1	Forwarding Arm Assembly	
30	873400	Chassis	
31	912580	Spacer	
36	871025	Bushing	R,A
36	871026	Bushing	E
37	852704	Front Panel	
38	912203	Side Panel Left	
39	912204	Side Panel Right	
40	898519	Button Assembly, Speed Lock, Lift	
41	912251	LED Holder	
45	912276	Knob, Speed Selector, Speed Control	
46	912565	Knob, Cap. Trim	
47	910722	Knob Base	
48	910723	Knob Base	
49	912425	Spacer	
52	2601-7108	Center Spindle Assembly	
57	894021	Motor Pulley	
59	912205	Motor Bracket	
60	242020	Cushion	
61	234971	Pipe	
66	890755	Holding Bracket	
69	894408	Holder	
70	895259	Lock Plate	
72	848935	Cabinet Bottom	
73	912354	Foot	
76	852682	Dust Cover	
77	910557-1	Hinge Assembly	
78	700515B	Drive Belt	
79	620107	Platter	
80	873412	Platter Mat	
81	912286	E.P. Adaptor	
82	1161-00101	Disc Stabilizer with Stroboscope	
83	E-832380-4	Spacer	
84	912440	Shield Plate	
85	912441	Insulator	
86	912442	Shield Plate	
90	890959-1	Shield Plate	
91	852366S	Headshell	
92	852366A	Headshell Clamp	
93	852366W	Counterweight	
101	911133	Ornament, Voltage Selector	E
102	913088	Vibration Braker	E
103	894756	Forwarding Arm Cover	E

## ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Market
<b>CHASSIS MISCELLANEOUS</b>			
P1	912389	AC Line Cord	R,A
P1	895617-2	AC Line Cord	E
P2	910810-1	Output Leads and Ground Wire	
MO1	705838	Motor Assembly	
SW1,2	871418	Micro Switch, Power, Rest	
SW3	898256	Voltage Selection Switch	E
LED1	873409	L.E.D. , GL2PR1, Speed Lock Indicator	
L1	911436-2	Solenoid, Auto Lift	
J201	911461-1	Connector with Lead Wire, 5 pos.	
TE1	Y37001402	Ground Terminal	
LUG1,2	Z42601321	Lug	

## PCB-1 MAIN P.C. BOARD

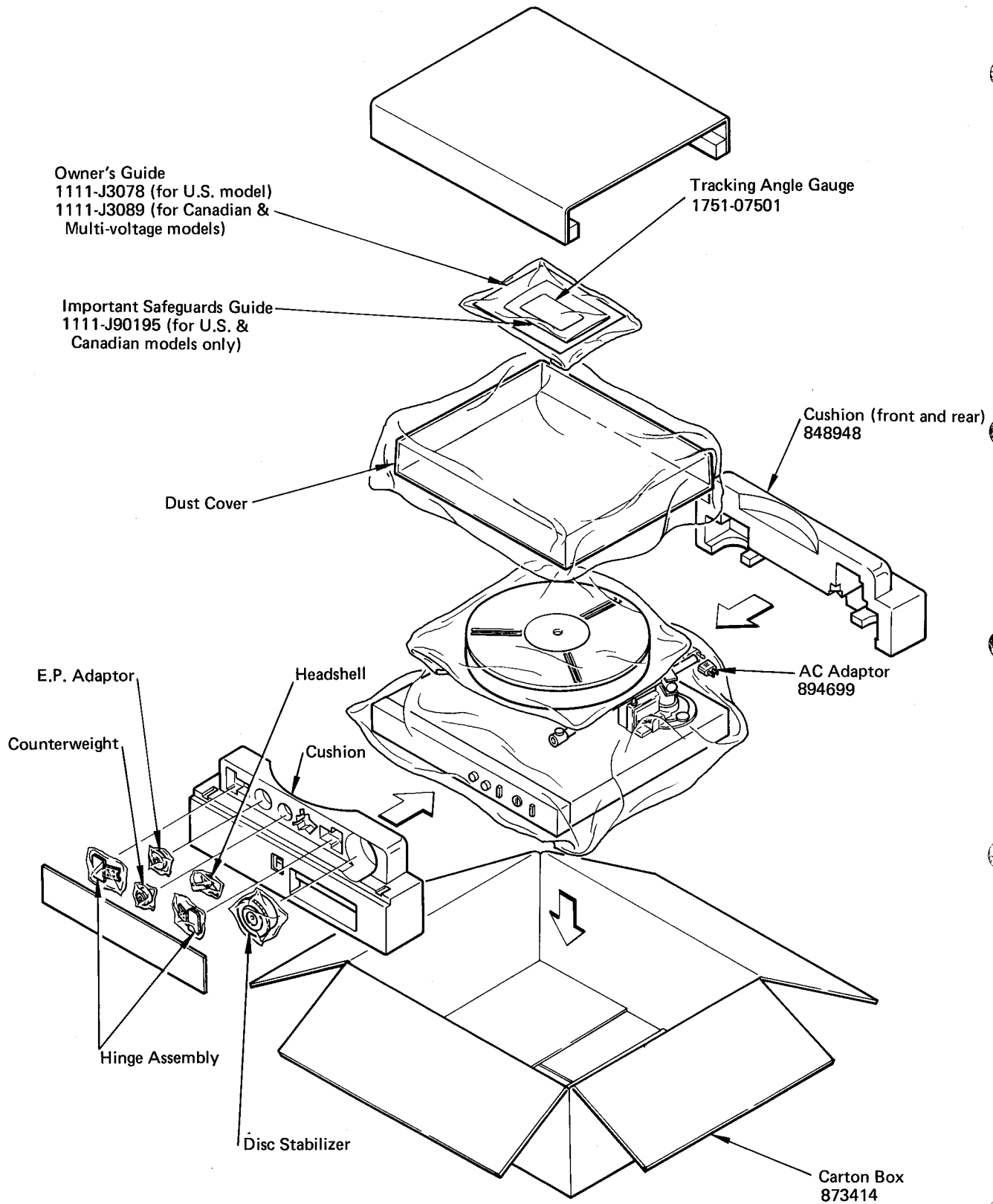
<b>RESISTORS</b>			
R211	Z4054030	270 $\Omega$ , 1W, Metal	
<b>CAPACITORS</b>			
C201	Z4086057	47 $\mu$ F, 25V, Electrolytic	
C202	Z4081008	1000 $\mu$ F, 35V, Electrolytic	
C206	Z4080509	4.7 $\mu$ F, 50V, Electrolytic	
C207	Z4080907	470 $\mu$ F, 25V, Electrolytic	
C208	Z4080507	2.2 $\mu$ F, 25V, Electrolytic	
<b>TRANSISTORS</b>			
Q201,202,204	Z4104103	2SC945(Q,P,K) or 2SC2308(B,C)	
Q203	Z4106132	2SD882	
<b>DIODES</b>			
D201	Z4110111	1S935 or 1SS53	
D202	Z4110041	Bridge Silicon, S1VB10	
ZD201	Z4112112	Zener, RD12EB	
<b>MISCELLANEOUS</b>			
T201	873410	Power Transformer	R,A
T201	873499	Power Transformer	E
SCR201	Z4115021	Silicon Controlled Rectifier, 03P05M	
FU201	704395-5	Fuse, 1.25A, 250V	R,A
FU201	893791-3	Fuse, T800mA	E
P201	399253-5	Connector, 5 Pos.	
TE201,202	Z42601102	Terminal	
	893395-1	Fuse Holder (x2)	R,A
	893395	Fuse Holder (x2)	E

## PCB-2 SPEED CONTROL P.C. BOARD

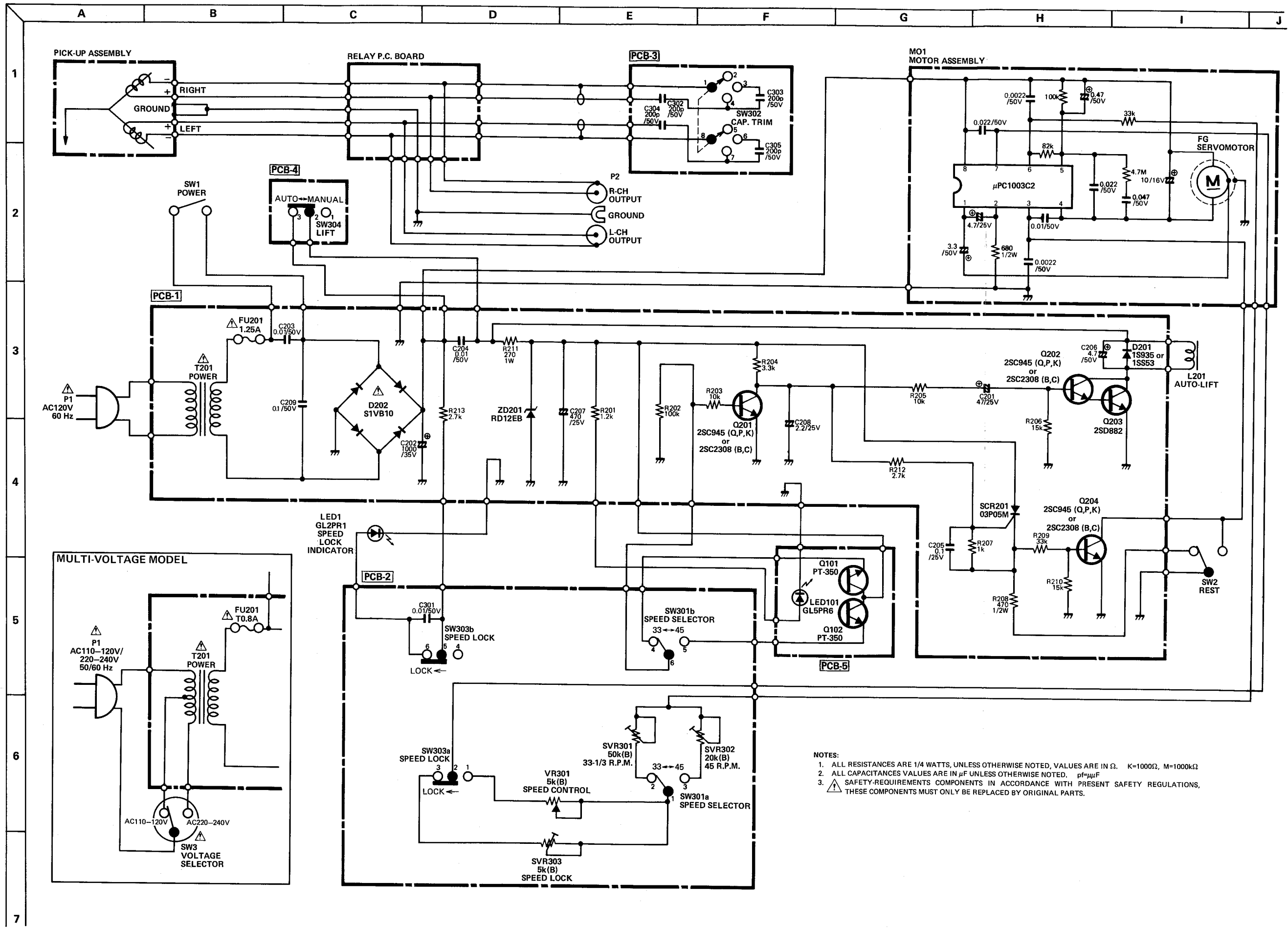
<b>CONTROLS</b>			
VR301	873407	5k $\Omega$ (B), Speed Control	
SVR301	704825-11	50k $\Omega$ (B), 33 R.P.M.	
SVR302	704825-9	20k $\Omega$ (B), 45 R.P.M.	
SVR303	704825-7	5k $\Omega$ (B), Speed Lock	
<b>MISCELLANEOUS</b>			
SW301	873404	Rotary Switch, 33/45 Speed Selector	
SW303	873406	Push Switch, Speed Lock	

Ref. No.	Part No.	Description	Market
<b>PCB-3 CAPACITANCE TRIM P.C. BOARD</b>			
SW302	873405	Rotary Switch, Capacitance Trim Selector	
<b>PCB-4 LIFT SWITCH P.C. BOARD</b>			
SW304	899019-1	Push Switch, Lift	
<b>PCB-5 SENSER P.C. BOARD</b>			
Q101, 102	911462	Photo Transistor, PT-350	
LED101	897917	L.E.D., GL5PR6	
	911108	Holder	

PACKAGE

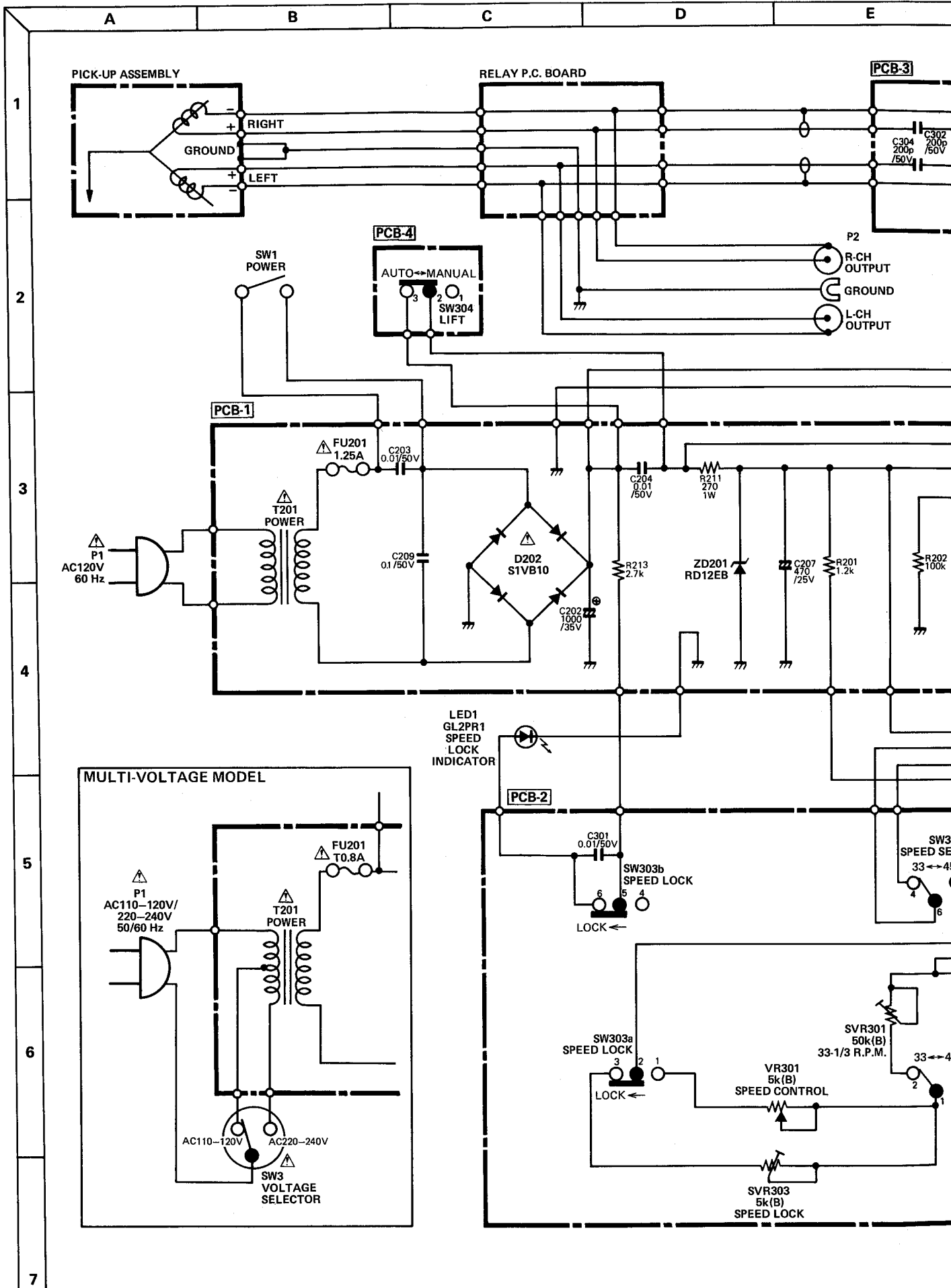


SCHEMATIC DIAGRAM



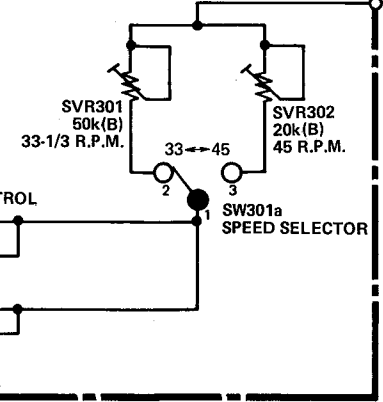
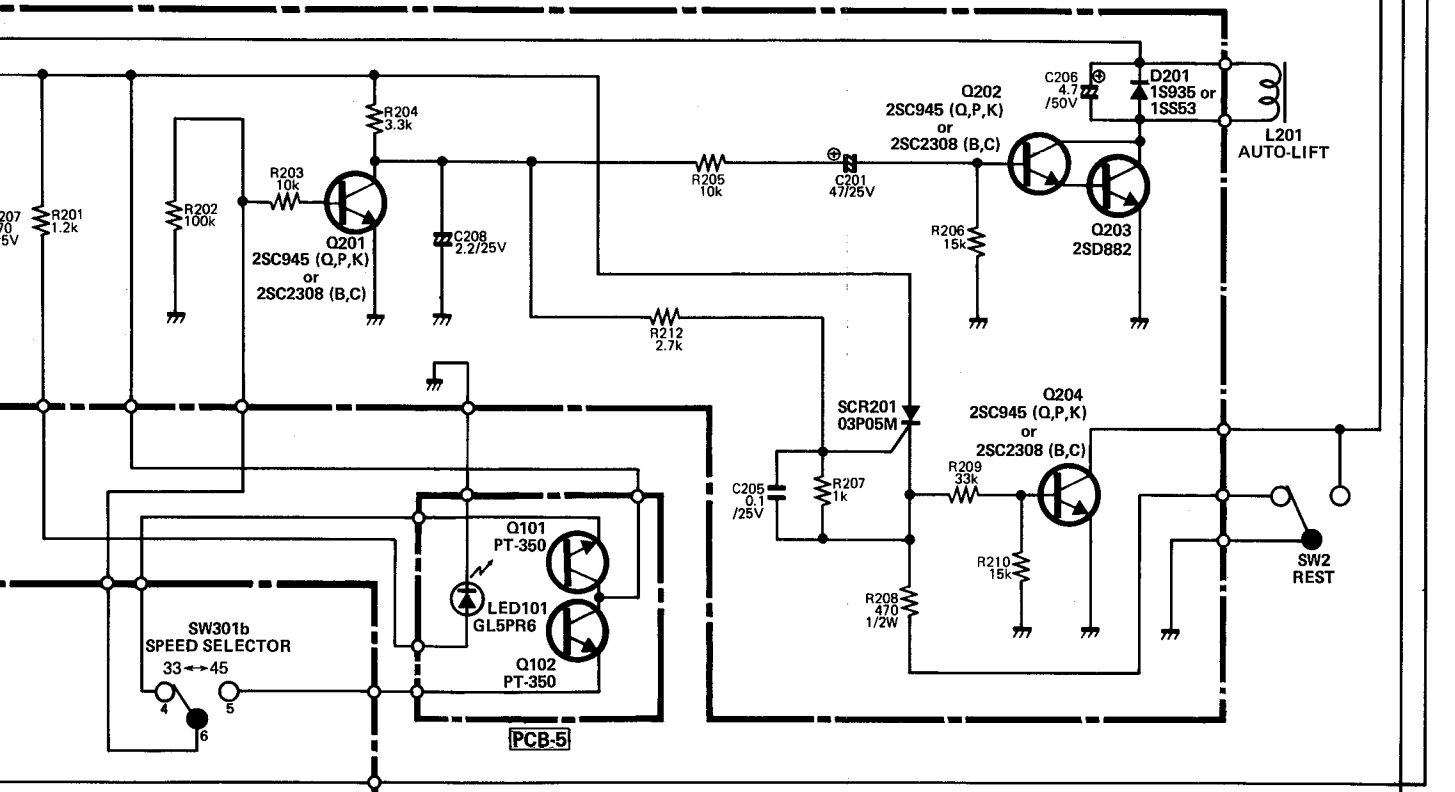
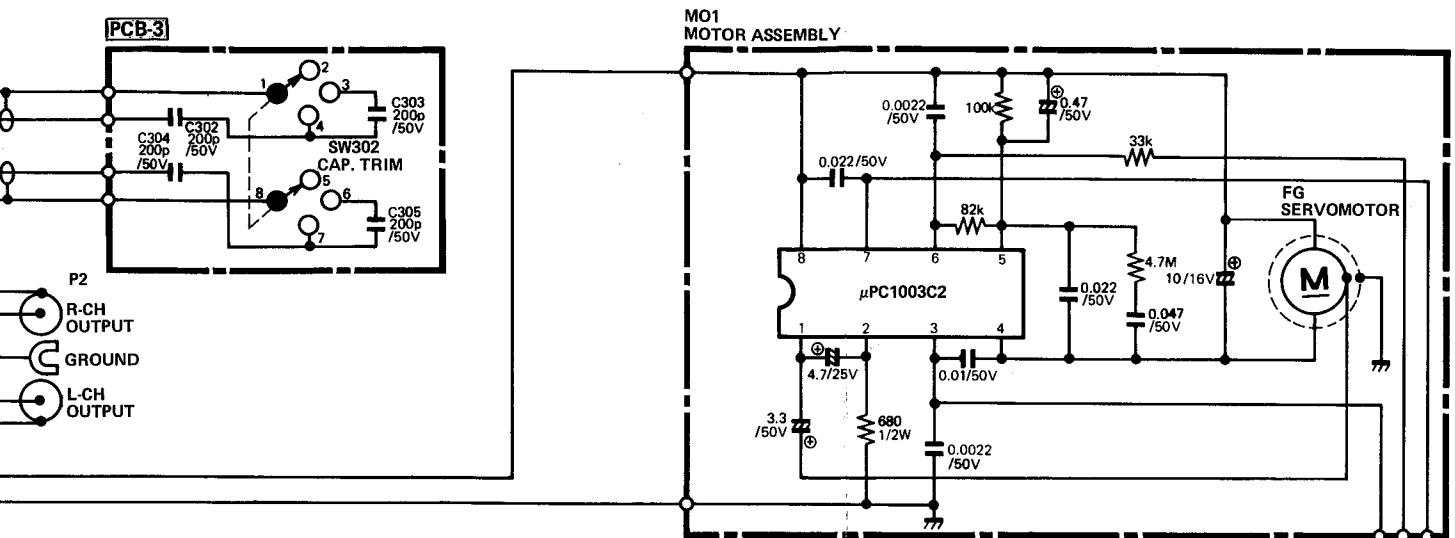
- NOTES:
1. ALL RESISTANCES ARE 1/4 WATTS, UNLESS OTHERWISE NOTED, VALUES ARE IN Ω. K=1000Ω, M=1000kΩ
  2. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. pf=μF
  3. SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS, THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

# SCHEMATIC DIAGRAM



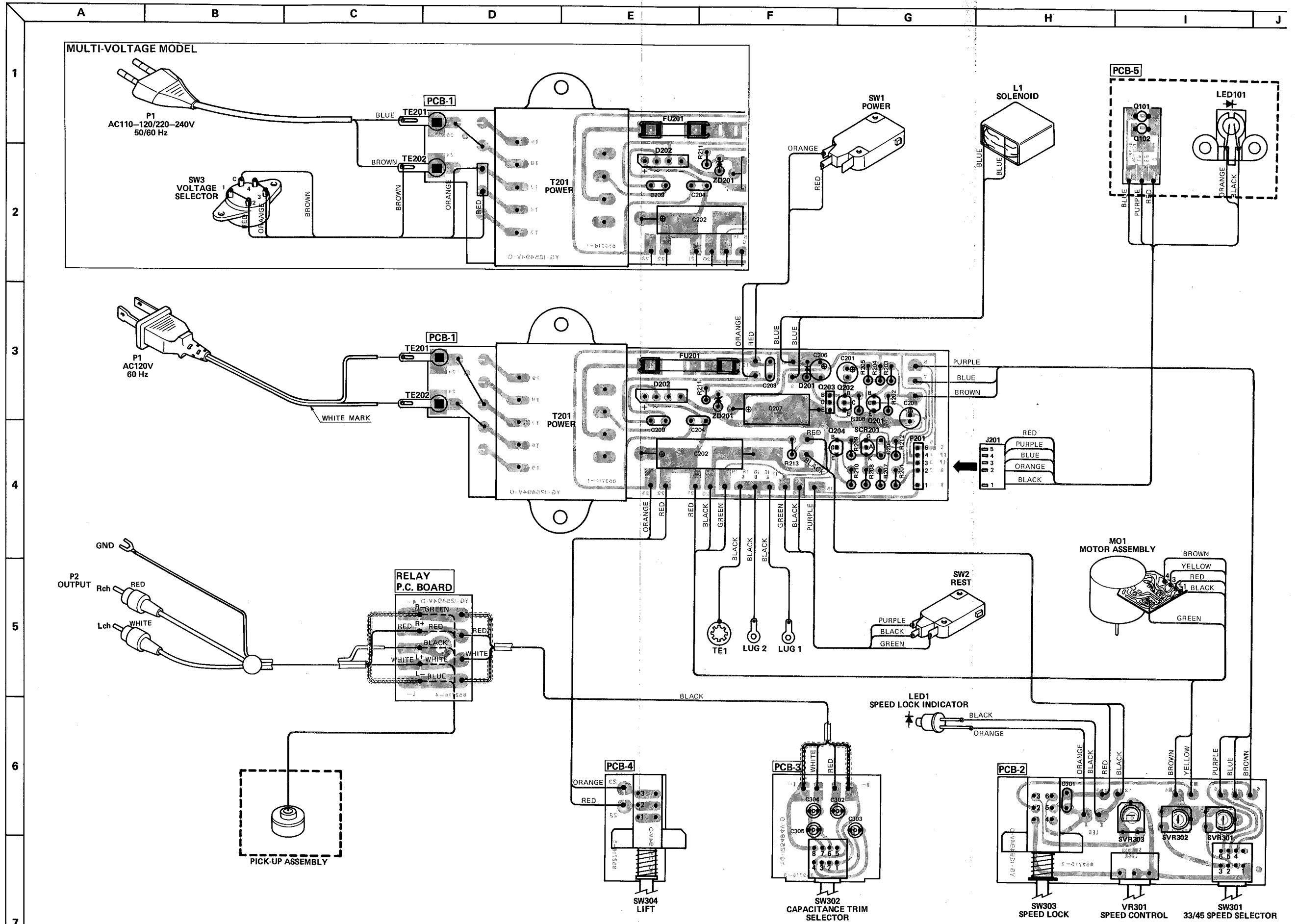


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- NOTES:
1. ALL RESISTANCES ARE 1/4 WATTS, UNLESS OTHERWISE NOTED, VALUES ARE IN Ω. K=1000Ω, M=1000kΩ
  2. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. pf=μμF
  3. SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS, THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

# WIRING DIAGRAM



WIRING DIAGRAM

