Quality. Uncompromised.

ROTEL®

Technical Manual

STEREO SEMI-AUTOMATIC BELT DRIVE TURNTABLE

RP-2400
RP-4400

TABLE OF CONTENTS

Serial No. Beginning
RP-2400: Y9411501
RP-4400: G9417001

THE ROTEL CO., LTD. 1-36-8 OHOKAYAMA, MEGURO-KU, TOKYO 152, JAPAN
ROTEL ELECTRONICS CO., LTD. 2ND FLOOR, EVERGLORY BLDG., NO. 305, SECTION 3, NANKING E. ROAD, TAIPEI, TAIWAN, REPUBLIC OF CHINA
ROTEL OF AMERICA, INC. 1055 SAW MILL RIVER ROAD, ARDSLEY, N.Y. 10502, U.S.A.

I. AUTO-RETURN POINT ADJUSTMENT

A. When Auto-return Point Is Slightly Deviated:
   1. If stylus leaves the disk after passing the designated spot, turn the adjusting screw clockwise.
   2. If stylus leaves the disk before reaching the designated spot, turn the adjusting screw counterclockwise.

   N.B. Auto-return function is normal when rejection point is within a range designated on the test record RG-667 (JVC).

B. When Auto-return Point Is Largely Deviated:
   1. Screw in the adjusting screw midway.
   2. Loosen two set-screws on restore lever. Position the lever so that the distance between the actuating arm and the tip of restore lever is about 4mm. Fix the lever only provisionally by lightly tightening the set-screws. Then, make adjustment as described in phase A above.
   3. Secure the set-screws firmly after completing adjustment.

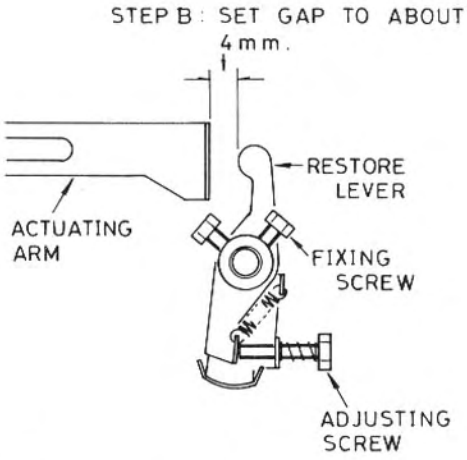


Fig. 1 Auto-return Point Adjustment

II. TONE ARM RESTORATION ADJUSTMENT

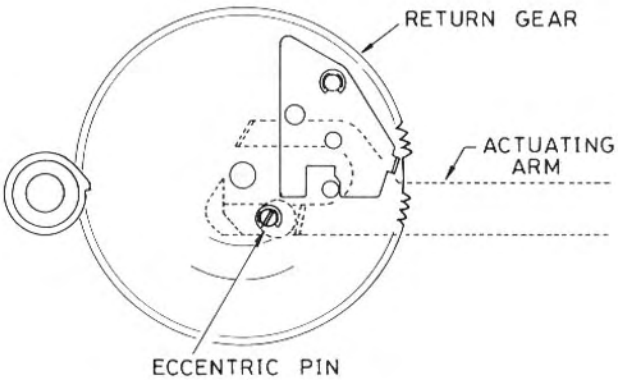
When the tone arm does not return all the way to its rest or when return stroke is excessive and the arm forcibly strikes the rest, make adjustment as follows:

1. Gently move the tone arm toward the center of the turntable platter until the arm comes to a complete stop.
2. Gently turn the return gear counterclockwise by hand. The tone arm will rise and begin to move toward its rest. With approximately one-half a rotation (180°) of the return gear, tone arm reaches its outermost position (see Fig. 2).
3. With tone arm in that position, rotate the eccentric pin either to the right or left to adjust contact stroke between the pin and the bent portion of the actuating arm.

N.B. The adjustment is to be made with the turntable platter removed.

To remove the turntable platter:

1) Remove rubber mat.
2) Remove rubber belt from the pulley with your index finger inserted through a hole on the platter. (For model RP-2400, be sure to set the speed selector at "33" when doing this.)
3) Lift out the platter from the center shaft.
4) Reverse the procedure in installation.



THIS ILLUSTRATION SHOWS THE RETURN GEAR REVOLVED 180° FROM THE NORMAL LOCATION.

Fig. 2 Tone Arm Restoration Adjustment

III. ADJUSTMENT OF TONE ARM HEIGHT IN RETURN ACTION

Tone arm, when returning automatically to rest, normally points slightly upward (headshell is slightly higher than level). If the inclination of tone arm is excessive, either upward or downward, follow the procedures below.

1. Lift the tone arm from its rest and place it on the top of the elevation arm. Press reject button. Gently rotate the turntable clockwise by hand, and the elevation arm will begin to rise gradually. Stop turning turntable when elevation arm stops rising.

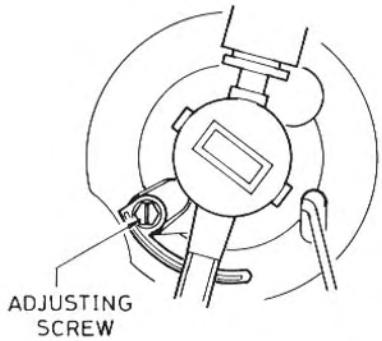


Fig. 3 Tone Arm Height Adjustment

2. Maintaining this state, rotate the adjusting screw (Fig. 3) so that distance between stylus tip and disk surface is about 6mm: turn the screw counterclockwise to raise the position of stylus tip, and clockwise to lower it.
3. After completing adjustment, gently rotate the turntable clockwise again to lower the elevation arm to the original position.

N.B. Distance between stylus tip and record surface should be within a range from 5 to 10mm. If the height of stylus tip is inadequate, it may scratch the record, and if too large, it may not come in contact with the record.

IV. POSITIONING OF PULLEY WHEN REPLACING PULLEY OR MOTOR (FOR RP-2400 ONLY)

Set speed selector to "33." Install pulley making sure that its top surface is at exactly the same level as that of the belt guide (see Fig. 4). After the pulley is secured, turn on the motor and check that the belt is not touching the guide.

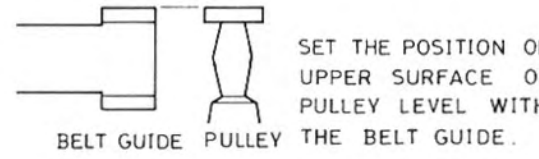


Fig. 4 Positioning of Pulley

V. SPEED ADJUSTMENT (FOR RP-4400 ONLY)

1. Set the speed-fine-adjust control (located on the side of base) to mid-position.
2. Adjust by turning potentiometer on the control PC board so that specified speed is obtained (the stroboscopic marks on the rim will stand still when speed is correct). Use potentiometer VR1 for 45rpm speed adjustment and VR2 for 33 1/3 rpm speed.

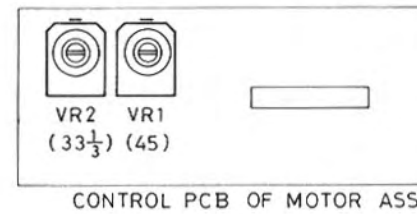


Fig. 5 Speed Adjustment for RP-4400

Troubleshooting Guide

A. Turntable does not rotate even when tone arm is positioned over the lead groove.

RP-2400:
1. Power switch is faulty.
2. Power cord is faulty.
3. Motor is faulty.

RP-4400:
1. Power switch is faulty.
2. Power cord is faulty.
3. Power transformer is faulty.
4. Fuse is blown or bad contact of fuse.
5. Motor assembly is faulty.
   a) Control circuit (including transistor X1) is faulty or
   b) Motor is faulty.

B. Tone arm does not return to its rest when reject button is pressed.
1. Movement of actuating arm is incorrect.
2. Return gear (R gear) and turntable gear (TT gear) are not properly engaged.
   a) Mesh between R gear and TT gear is improper.*1
   b) Gear(s) is worn out.
3. Protruded portion of TT gear is worn out.

C. Tone arm returns to its rest before reaching the end of play.
1. Restore-lever fitting position is incorrect.
   a) Distance between restore lever and actuating arm is too small (Refer to section I for proper adjustment.)
   N.B. The same symptom may be seen when the unit is tilted to the left (as you see the front of the unit).

D. Tone arm does not return to its rest at the end of play.
1. Restore-lever fitting position is incorrect.
   a) Distance between restore lever and actuating arm is too large. (Refer to section I for proper adjustment.)

E. Abnormal sound is generated during return of tone arm.
1. Gear engagement is faulty.
   a) Mesh between gears is improper.
   b) Gear(s) is worn out.
2. Clutch plate does not work correctly.
3. Clutch plate's contact surface which meets protruded portion of TT gear is deformed.

F. Pickup descends onto the disk too abruptly when the cueing lever is lowered.
1. Elevation shaft is out of oil.*2
2. Elevation spring is faulty.
3. Stylus force is excessive.

Notes:

*1 Distance between the center of R gear and the center of TT gear should be 47mm. R gear is correctly in the original position when the center of its cut portion aligns with the center of TT gear.

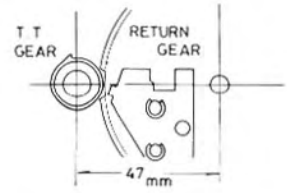


Fig. 6

*2 For lubrication of elevation shaft, use silicon oil of 100000 CS unit.

Specifications

	RP-2400	RP-4400
MOTOR AND TURNTABLE		
Motor	4-pole hysteresis synchronous motor	FG DC servo motor
Drive	Belt-drive system	
Speed	33 1/3 rpm and 45 rpm	
Wow and Flutter	0.06% (JIS WRMS)	0.04% (JIS WRMS)
Signal-to-Noise Ratio		
IEC-B	More than 55dB	More than 58dB
DIN-B	More than 65dB	More than 68dB
Platter	Aluminum diecast, 310mm diameter	Aluminum diecast, 310mm diameter with strobe rim
TONE ARM		
Type	Static-balanced straight pipe arm with plug-in headshell, oil-damped cueing device, direct-readout stylus gauge, counter weight, anti-skating device	
Overhang	17mm	
Tracking Error	+2.5° to −1.5°	+2.4° to −1.2°
Suitable Cartridge Weight	Minimum 4g, Maximum 12g	
Suitable Stylus Pressure	Minimum 1g, Maximum 3g	
MISCELLANEOUS		
Power Requirement	120V/60Hz	
Power Consumption	9 watts maximum	3 watts maximum

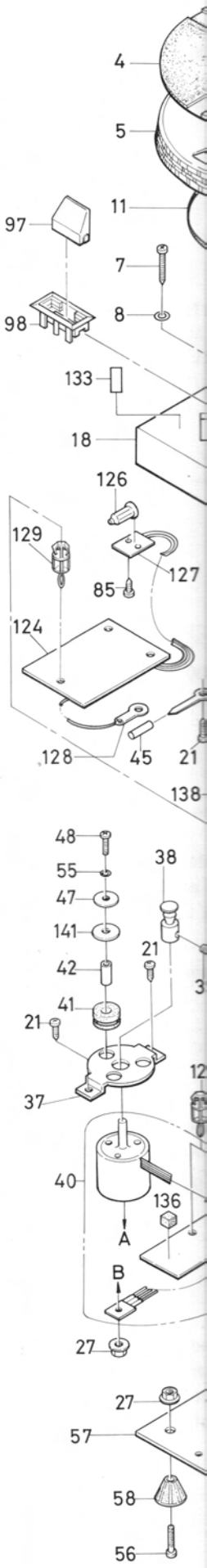
Note: Specifications subject to change for improvement without prior notice.

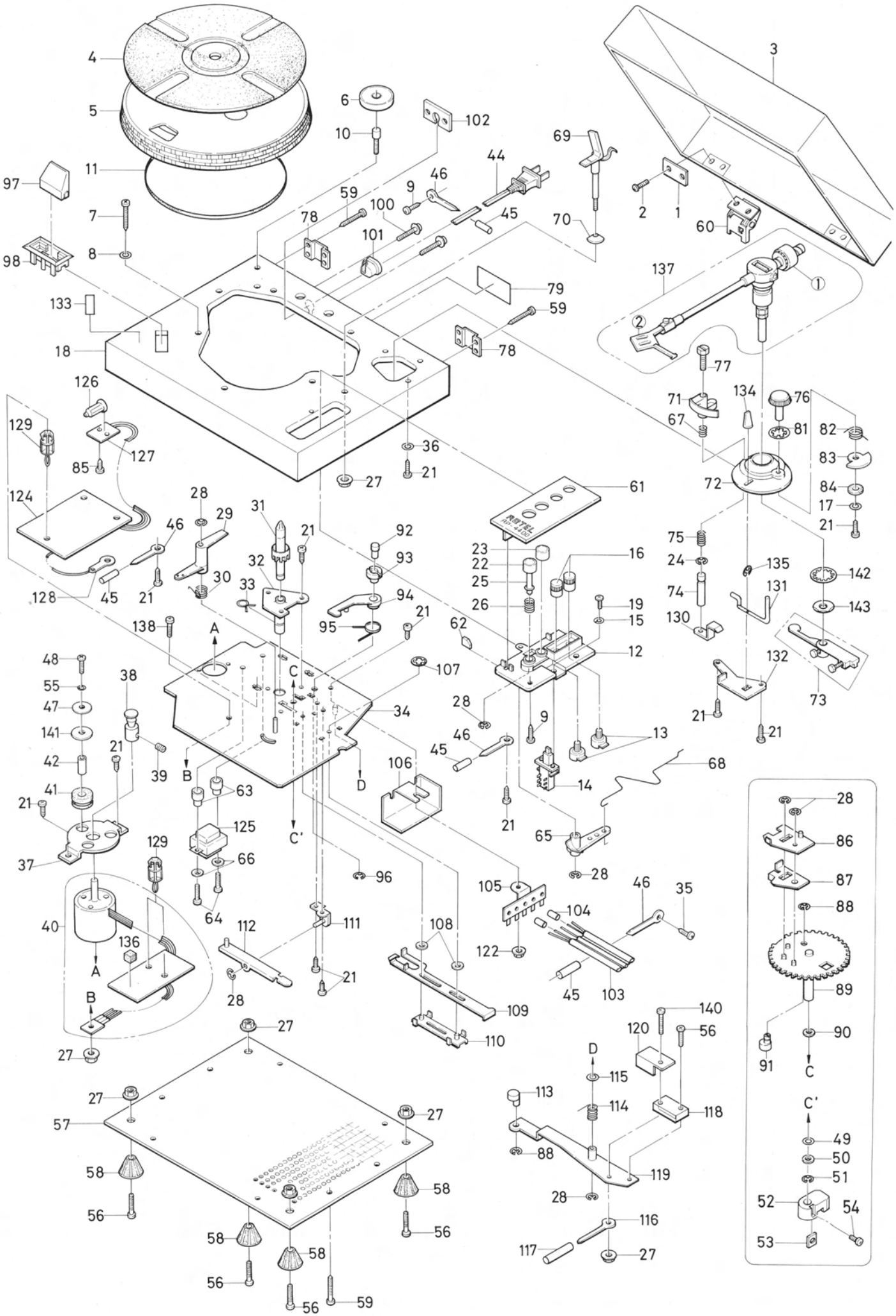
Repair Parts List

Schematic Location	Description	Part No.
Applicable to RP-4400 Only		
X1	Transistor, 2SC1449	301201208
IC1	IC, CX-065A	303452233
D1	Diode, 1S953 (Si)	300111011
D901	Rectifier, S1RBA10	300919041
ZD1	Zener Diode, RD6.8E	300313051
VR1	Potentiometer, 20KB	092045114
VR2	Potentiometer, 50KB	092045115
C901	Capacitor, LH, 0.047	470101130
F901	Fuse, 0.1A	341222010
	Clip, Fuse	648211146
	Power Supply PC Board Ass'y	092041128
	Neon Lamp PC Board Ass'y	092041133
Common to RP-2400 and RP-4400		
	Screw, M2.6 x 15mm	092017024
	Screw, M2.6 x 10mm	092017025
	Nut, Circular, M2.6	092017006
	Washer, (Hard PVC)	092017005

Disassembly Diagram **RP-4400**

Key No.	Description	Part No.
1.	Plate, Hinge Mtg	092041030
2.	Screw, M4 x 8mm (BLZ)	707224008
3.	Dust Cover	092041029
4.	TT Sheet	672301115
5.	Turntable	092041037
6.	EP Adapter	648211249
7.	Screw, 3 x 16mm, B-tight	092047016
8.	Washer, ø3.2 x ø10 x t1	770500069
9.	Screw, 3 x 8mm, Tapping-I	092047018
10.	Shaft, Adapter	092047003
11.	Belt	671011015
12.	Control Base	092041076
13.	Variable Resistor, 5KB	515321126
14.	Switch, Push 1 key	092046524
15.	Spring Washer, SSW-3	770500070
16.	Knob, Speed Control	092041077
17.	Washer, ø3.2 x ø8 x t0.5	770500060
18.	Cabinet	092041042
19.	Screw, M3 x 6mm	703203006
20.	Not used	–
21.	Screw, 3 x 8mm, B-tight	092047017
22.	Pushbutton Ass'y	092041078
23.	Pushbutton	116210070
24.	E-ring, ø3	770500039
25.	Reject Shaft	092046525
26.	Spring, Reject Button	092046505
27.	Flange Nut, M3	770402215
28.	E-ring, ø3.2	770500045
29.	Kick Lever	092041004
30.	Spring, Return	092046513
31.	TT Shaft Ass'y	092046514
32.	Bearing Ass'y, TT Shaft	092046515
33.	Stopper	092047005
34.	Top Board Ass'y	NSP
35.	Screw, 3 x 8mm, Tapping-I	092047018
36.	Washer, ø3.2 x ø10 x t0.8	770500059
37.	Bracket, Motor	092041049
38.	Pulley	651110021
39.	Set Screw, M2 x 3mm	770911257
40.	Motor Ass'y	260101127
41.	Cushion Rubber	672200880
42.	Column	092047011
43.	Not used	–
44.	Power Supply Cord	796301151
45.	Tube, ø3 x 60mm (L), (UL/CSA)	792011206
46.	Lug, Wire Clamp	770031333
47.	Washer, ø3.2 x ø13 x t0.8	770500058
48.	Screw, M2.6 x 12mm	703202612
49.	Fiber Washer, ø5 x ø10 x t0.2, (Thrust adjust)	770500062
50.	Fiber Washer, ø5 x ø10 x t1.0, (Thrust adjust)	770500063
51.	E-ring, ø4	770500040
52.	Switch Lever (A)	092041050
53.	Square Nut, M3	770911254
54.	Screw, M3 x 8mm	703203008
55.	Spring Washer, ø2.6	770500071
56.	Screw, M3 x 14mm	703203014
57.	Bottom Cover	092041053
58.	Foot	673402016
59.	Wood Screw, 3.1 x 16mm	730203116
60.	Hinge Ass'y	092041030
61.	Panel, Control	092041080
62.	Wedge	092041081
63.	Column, Power Trans Mtg	770911249
64.	Screw, 3 x 25mm, B-tight	092047019
65.	Reject Lever	092041051
66.	Washer, ø3.2 x ø8 x t0.5	770500060
67.	Spring, Elevation Arm	092046509
68.	Reject Spring	092046516
69.	Arm Rest Ass'y	092041056
70.	Base, Arm Rest	092041057
71.	Elevation Arm	092041017
72.	Base, Tone Arm	092041058
73.	Restore Lever Ass'y	092041082
74.	Shaft, Elevation	092046517
75.	Elevation Spring	092046507
76.	Knob Ass'y, IFC	092041023
77.	Screw, ⊖3 x 10mm (BLZ)	770911255
78.	Lock Plate	092041059
79.	Rating Label	136001464
80.	Not used	–
81.	Spring	092046518
82.	Spring, IFC	092046519
83.	Cam, IFC	092041062
84.	Rubber Bush	092046520
85.	Screw, 2.6 x 6mm, Tapping-II	723202606
86.	Clutch	092041063
87.	Clutch Guide	092041064
88.	Arch E-ring, ø3	770500064
89.	Return Gear Ass'y (1)	092046521
90.	Fiber Washer, ø5 x ø10 x t0.5, (Thrust adjust)	770500066
91.	Eccentric Pin, ø8	092047006
92.	GS Stud, ø7	092047007
93.	Shaft, Eccentric	092047008
94.	GS Arm	092041065
95.	GS Spring	092046522
96.	Arch E-ring, ø4	770500065
97.	Prism	092041013
98.	Holder, Prism	092041083
99.	Not used	–
100.	Flange Screw, M3 x 14mm	709203014
101.	Cord Stopper	675201111
102.	Metal Fittings	092041066
103.	Signal Cord Ass'y	791001143
104.	Tube, Varnish, ø3 x 14mm (L)	792011207
105.	Lug Terminal	645702002
106.	Cover, Shield	092041068
107.	Circular External Ring, CSTW-3.5	770911256
108.	Spacer	092047009
109.	Actuating Arm Ass'y	092041069
110.	Holder, Actuating Arm	092041070
111.	Seesaw Base Ass'y	092041071
112.	Seesaw Arm Ass'y	092041072
113.	Eccentric Pin, ø8	092047010
114.	Spring, Switch Arm	092046523
115.	Washer, ø5 x ø10 x t0.2, (BsP)	770500068
116.	Lug, Wire Clamp	770031339
117.	Tube, ø2 x 35mm (L)	792011208
118.	Micro Switch	615212279
119.	Switch Arm Ass'y	092041073
120.	Switch Cover	092041084
121.	Not used	–
122.	Flange Nut, M3	770402215
123.	Not used	–
124.	PC Board, Power Supply	092041085
125.	Power Transformer	201001494
126.	Neon Lamp	092043112
127.	PC Board, Neon Lamp	092041086
128.	Wire Ass'y Chassis Ground	791001147
129.	Support, PC Board	092046542
130.	Cueing Arm	092041018
131.	Cueing Lever	092041074
132.	Tone Arm Base Plate	092041075
133.	Label, Strobe	880001245
134.	Cueing Cap	092041021
135.	E-ring, ø2	770500035
136.	Sponge	990201312
137.	Tone Arm Ass'y	902111125
137-1.	Weight Ass'y	092011041
137-2.	Head Shell	150011255
138.	Screw, 3 x 12mm, C-tight	763203012
139.	Not used	–
140.	Screw, M3 x 18mm	703203018
141.	Fiber Washer, ø4.6 x ø13 x t0.8	770500061
142.	Teethed Washer, M10	770500075
143.	Nut, M10 x P1	770402216

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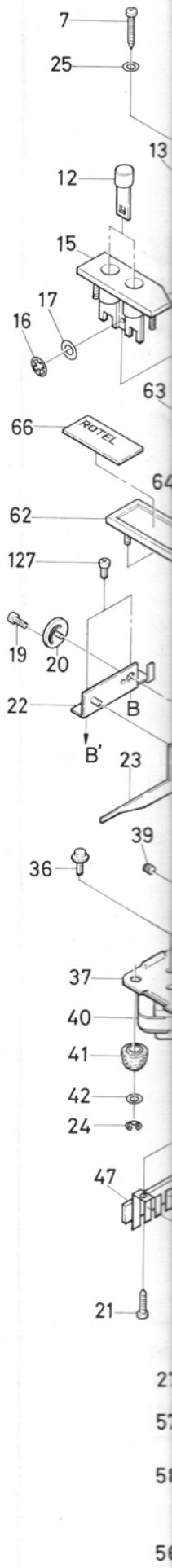
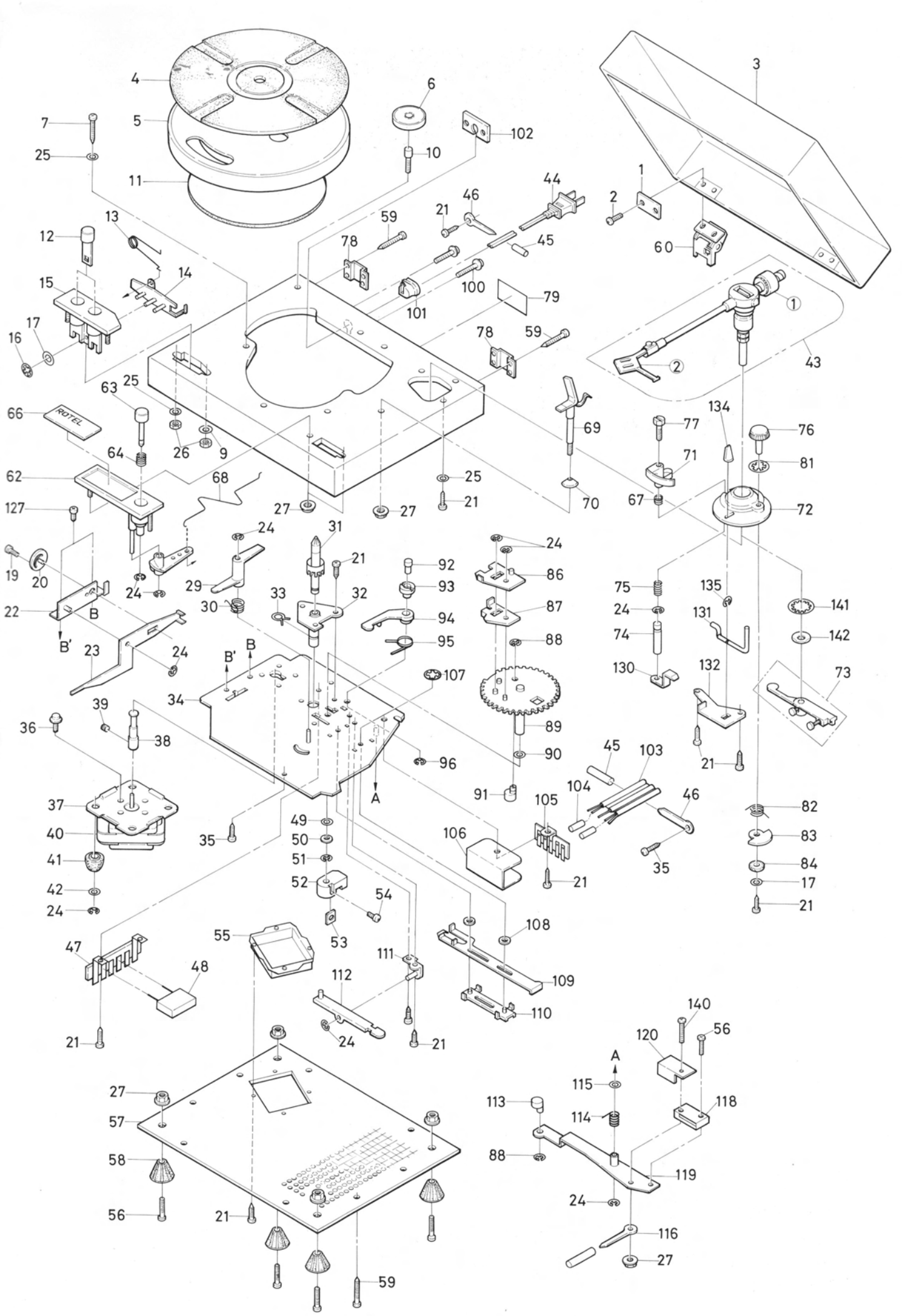
RP-2400

Key No.	Description	Part No.
1.	Plate, Hinge Mtg	092041030
2.	Screw, M4 x 8mm, (BLZ)	707224008
3.	Dust Cover	092041029
4.	Rubber Sheet	672301115
5.	Turntable	092041036
6.	EP Adapter	648211249
7.	Screw, 3 x 16mm, B-tight	092047016
8.	Not used	—
9.	Washer, ø3.2 x ø13 x t0.8	770500058
10.	Shaft, Adapter	092047003
11.	Belt	671011015
12.	Pushbutton Ass'y	092041038
13.	Click Spring	092046512
14.	Cam, Speed Select	092041039
15.	Cover, Speed Select	092041040
16.	Circular External Ring, CSTW-3	770911252
17.	Washer, ø3.2 x ø8 x t0.5	770500060
18.	Cabinet	092041041
19.	Screw, M3 x 6mm	703203006
20.	Eccentric	092047004
21.	Screw, 3 x 8mm, B-tight	092047017
22.	Metal Fittings, Speed Change Arm Mtg	092041043
23.	Arm, Speed Change	092041044
24.	E-ring, ø3	770500039
25.	Washer, ø3.2 x ø10 x t0.8	770500059
26.	Nut, M3, Hex	770402217
27.	Flange Nut, M3	770402215
28.	Not used	—
29.	Kick Lever	092041004
30.	Spring, Return	092046513
31.	TT Shaft Ass'y	092046514
32.	Bearing Ass'y, TT Shaft	092046515
33.	Stopper	092047005
34.	Top Board Ass'y	NSP
35.	Screw, 3 x 8mm, Tapping-I	092047018
36.	Flange Screw, M3 x 6mm	709203006
37.	Plate, Motor Mtg	092041048
38.	Pulley	651110020
39.	Set Screw, M2.6 x 2mm, Pulley Mtg	770911253
40.	Motor	260101126
41.	Cushion, Rubber	672200879
42.	Fiber Washer, ø4.6 x ø13 x t0.8	770500061
43.	Tone Arm Ass'y	902111125
43-1.	Head Shell	150011255
43-2.	Main Weight Ass'y	092011041
44.	Power Supply Cord	796301151
45.	Tube, ø3 x 60mm (L), (UL/CSA)	792011206
46.	Lug, Wire Clamp	770031333
47.	Lug Terminal, (2L4P)	645600400
48.	Noise Canceller, LH 0.047, Y	470101130
49.	Fiber Washer, ø5 x ø10 x t0.2, (Thrust adjust)	770500062
50.	Fiber Washer, ø5 x ø10 x t1.0, (Thrust adjust)	770500063
51.	E-ring, ø4	770500040
52.	Switch Lever-A	092041050
53.	Nut, M3, Square	770911254
54.	Screw, M3 x 8mm	703203008
55.	Cover, Motor	092041051
56.	Screw, M3 x 14mm	703203014
57.	Bottom Cover	092041052
58.	Foot, Rubber	673402016
59.	Wood Screw, 3.1 x 16mm	730203116
60.	Hinge Ass'y	092041030
61.	Not used	—
62.	Cover, Reject Button	092041054
63.	Reject Button Ass'y	092041055
64.	Spring, Reject Button	092046505
65.	Reject Lever	092041015
66.	Name Plate	092041135

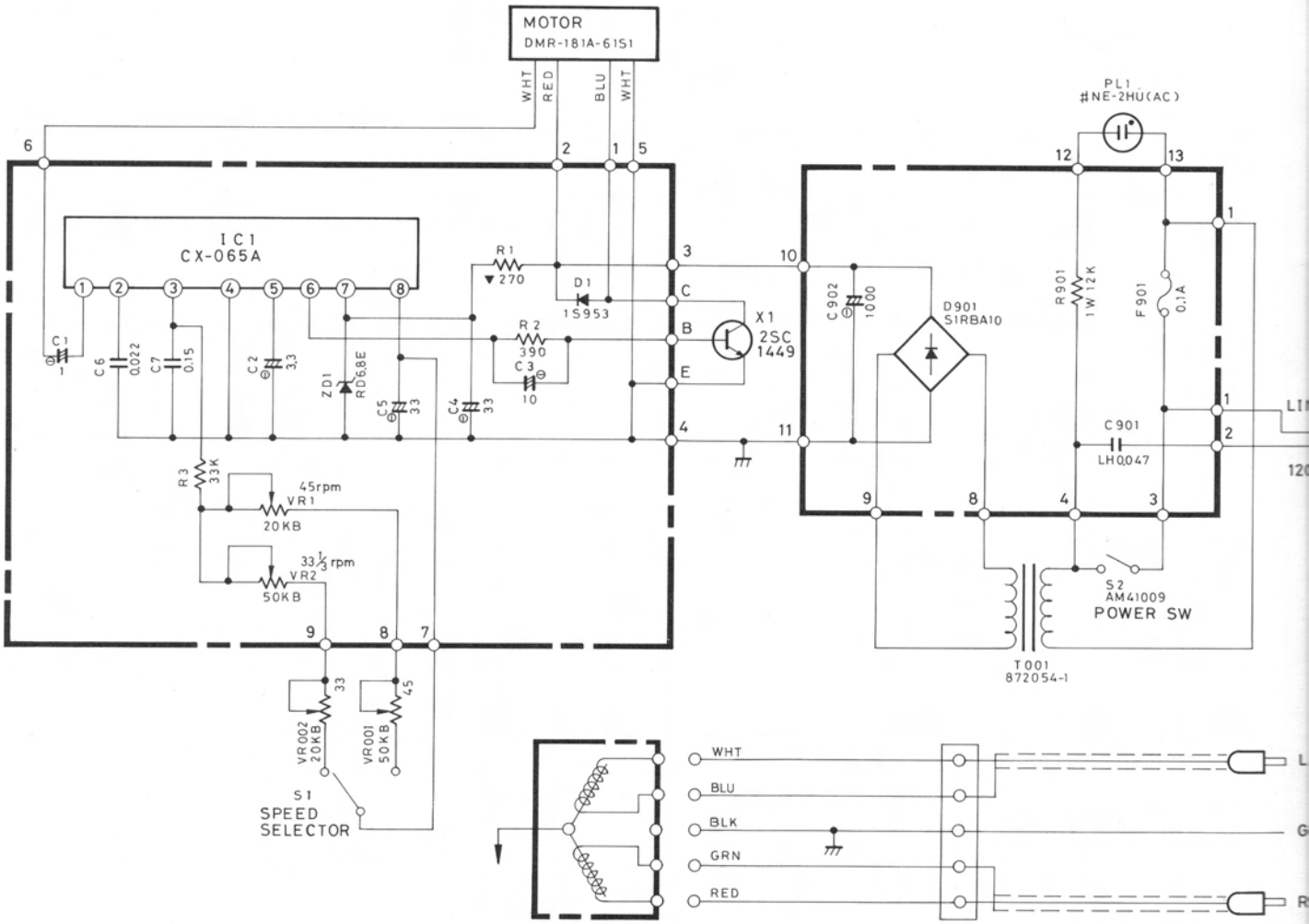
Key No.	Description	Part No.
67.	Spring, Elevation Arm	092046509
68.	Spring, Reject	092046515
69.	Arm Rest Ass'y	092041056
70.	Rest Base	092041057
71.	Elevation Arm	092041017
72.	Base, Tone Arm	092041058
73.	Restore Lever Ass'y	092041082
74.	Shaft, Elevation	092046517
75.	Elevation Spring	092046507
76.	Knob Ass,y, IFC	092041023
77.	Screw, ⊖ 3 x 10mm, (BLZ)	770911255
78.	Lock Plate	092041059
79.	Rating Label	136001463
80.	Not used	—
81.	Spring	092046518
82.	Spring, IFC	092046519
83.	Cam, IFC	092041062
84.	Rubber Bush	092046520
85.	Not used	—
86.	Clutch	092041063
87.	Clutch Guide	092041064
88.	Arch E-ring, ø3	770500064
89.	Return Gear Ass'y (1)	092046521
90.	Fiber Washer, ø5 x ø10 x t0.5	770500066
91.	Eccentric Pin, ø8	092047006
92.	GS Stud, ø7	092047007
93.	Shaft, Eccentric	092047008
94.	GS Arm	092041065
95.	GS Spring	092046522
96.	Arch E-ring, ø4	770500065
97 to 99	Not used	—
100.	Flange Screw, M3 x 14mm	709203014
101.	Cord Stopper	675201111
102.	Metal Fittings	092041066
103.	Signal Cord Ass'y	791001143
104.	Tube, Varnish, ø3 x 14mm (L)	792011207
105.	Lug Terminal	645702002
106.	Cover, Shield	092041067
107.	Circular External Ring, CSTW-3.5	770911256
108.	Spacer	092047009
109.	Actuating Arm Ass'y	092041069
110.	Holder, Actuating Arm	092041070
111.	Seesaw Base Ass'y	092041071
112.	Seesaw Arm Ass'y	092041072
113.	Eccentric Pin, ø8	092047010
114.	Spring, Switch Arm	092046523
115.	Washer, ø5 x ø10 x t0.2 (BsP)	770500068
116.	Lug, Wire Clamp	770031339
117.	Tube, ø2 x 35mm (L)	792011208
118.	Micro Switch	615212279
119.	Switch Arm Ass'y	092041073
120.	Switch Cover	092041084
121 to 126	Not used	—
127.	Screw, 3 x 5mm, C-tight	763203005
128.	Not used	—
129.	Not used	—
130.	Cueing Arm	092041018
131.	Cueing Lever	092041074
132.	Tone Arm Base Plate	092041075
133.	Not used	—
134.	Cueing Cap	092041021
135.	E-ring, ø2	770500035
136 to 139	Not used	—
140.	Screw, M3 x 18mm	703203018
141.	Teethed Washer, M10	770500075
142.	Nut, M10 x P1	770402216



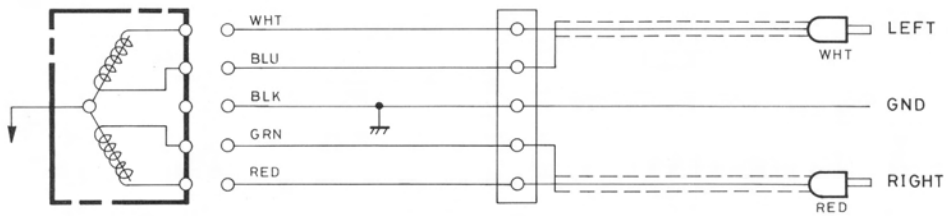

ROTEL

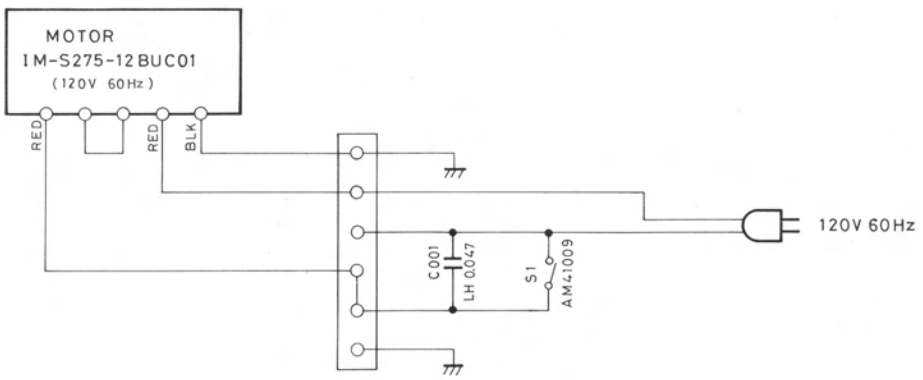
Schematic Diagram

RP-4400

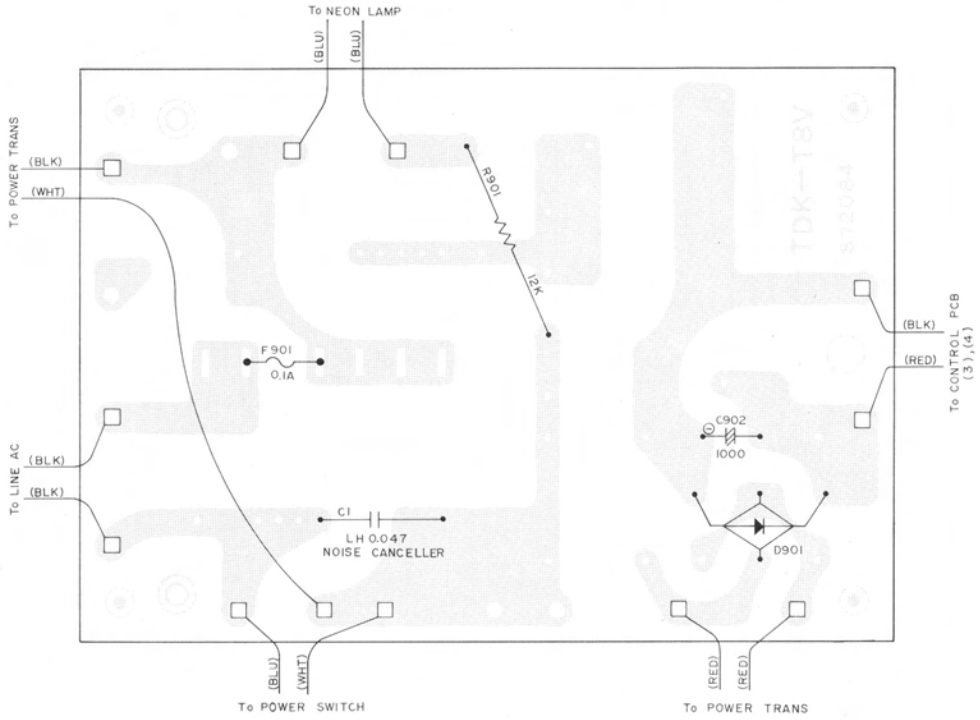


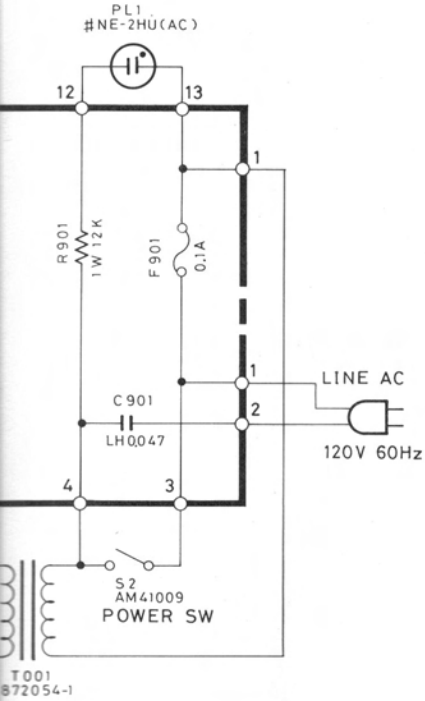
RP-2400

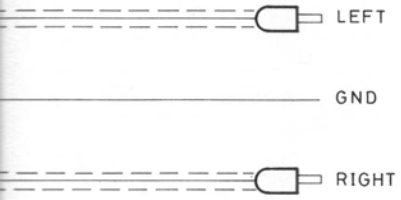




Power Supply Circuit Board Diagram (RP-4400)







Control Circuit Board Diagram (RP-4400)