SERVICE MANUAL

MODEL
ST630

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FEATURES

Linear Tracking, Fully Automatic Direct Drive Turntable

Version	Destination
EUR	Europe (220V 50Hz)
AUS	Australia (240V 50Hz)
CND	Canada (120V 60Hz)

SPECIFICATIONS

TURNTABLE

Motor	20-pole 30-slot 3-phase brushless type DC servo controlled direct-drive motor
Speeds	33-1/3 and 45 r.p.m.
Speed calibration	Pitch control ±3%
Wow & Flutter	±0.15% (DIN45507)
Rumble	36dB DIN45539A (unweighted) 62dB DIN45539B (weighted)
Turntable platter	296mm aluminum alloy die-cast with strobe outside rim (for 33-1/3 r.p.m.)

TONEARM

Effective length	130 mm
Tracking error	Within 0.1°
Usable cartridge	Universal, P-mount type

CARTRIDGE

Type	PM100, P-mount system, with 0.6 mil stylus Induced Magnet type
Frequency response	20 – 20,000 Hz
Output voltage	3 mV ±3dB at 1 KHz 3.54 cm/sec.
Channel balance	Within 2dB at 1 KHz
Channel separation	More than 18dB at 1 KHz
Load resistance	47 KΩ
Weight	6 g

OPERATION

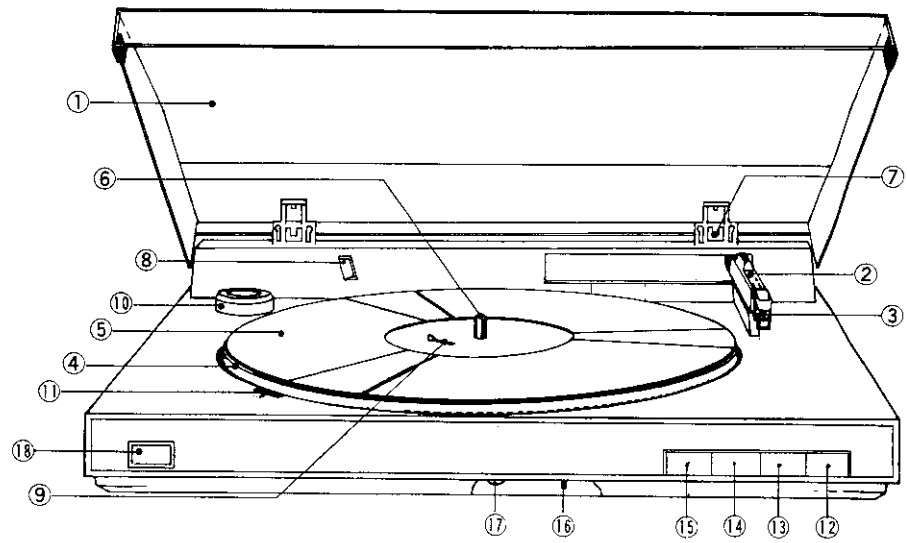
	Microcomputer-controlled fully automatic: Automatic start, return, repeat and record size selector by beam sensor
Cueing	DC motor controlled
Muting	Reed relay method avoiding shock noise
Speed selector	Automatic selection by beam sensor (switchable for manual operation)

GENERAL

Power consumption	12 watts
Dimensions	416(w) × 94(h) × 346(d) mm
Weight	4.5 Kg(net)

DESIGNATION OF PARTS

1. Dust cover
2. Tonearm
3. Cartridge
4. Turntable platter
5. Turntable platter mat
6. Turntable shaft
7. Hinge
8. Record size / Safety searcher light
9. Record size / Safety searcher crest
10. 45 rpm adapter
11. Neon lamp
12. STOP (▶) button
13. START (◀) button
14. CUEING button
15. REPEAT button
16. SPEED SELECTOR button
17. PITCH CONTROL knob
18. POWER button



1. SHOCK, FIRE HAZARD SERVICE TEST

CAUTION: After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before return to user/customer.

Ref. UL Standard No. 1270. Para. 66. 3. D (Mandatory Test after servicing Electrical Appliances, effective 7-1-83).

2. MECHANISM OPERATING PRINCIPLES

(A) RECORD SIZE SEARCHER MECHANISM

An optical sensor equipped with this unit automatically searches the size of record and the existence of record as well. The sensor system consists of the lamp, photo transistor and the slits on turntable platter.

One of the two slits on turntable platter has the crest which works as a shutter. When no record is placed on the platter, the photo transistor receives light from the lamp twice a turn through the two slits; when a 17 cm record is placed, the photo transistor receives light once a turn through the slit without crest.

The pulse of light which photo transistor gets is transmitted to the microcomputer, and the pulse of light is sensed as the size or the non-existence of record by the Microcomputer (IC003). Then the microcomputer transmits the command-signal of speed to the motor: for 30 cm record 33-1/3 rpm, for 17 cm record 45 rpm, for no record no rotation.

(B) TRACKING ERROR CORRECTION MECHANISM

The tonearm tracking error is searched by the Sensor (PC201) on Phono PWB (67-1) and the shutter plate mounted to the tonearm. The sensitivity of the sensor has been adjusted by (VR001). No tracking error point has been settled by the correct positioning of phono PWB with (VR002). The tracking error, if occurs, will be corrected as follows:

When the tracking error angle is created, the intensity of light which the sensor gets will be varied. The variety of intensity of light will be converted to the current which flows the sensor. The degree of tracking angle is almost in direct proportion to the current near 0 degree with correct adjustment of positioning.

The current will be converted to the voltage and will be then amplified so that the signal amplified starts rotating the Servo-controlled Motor (76). The rotation of the motor will be transmitted to the Worm Gear (31) by the Belt (34). The Worm Wheel Gear (35) bited the worm gear will roll the wire so that the Plate Assy (47) on which the tonearm stands will be moved.

When the tonearm is moved to the position where the tracking error angle is disappeared, the shutter plate will obstruct the light to the sensor. The current will become lower, the voltage will become lower too, and then servo-controlled motor will stop rotation.

3. DISASSEMBLY INSTRUCTIONS

(A) TOOLS REQUIRED FOR DISASSEMBLY

Phillips-head screwdrivers: for M2 and M3
Slotted-head screwdrivers: for the width 2.5~4 and 5~7.5 mm

(B) REMOVE CABINET TOP (1) AS FOLLOWS:

1. In case that the tonearm starts moving normally,

1-1. Press the POWER Button (5) so that the power will be switched off, and remove the turntable platter and mat (Fig. 1).

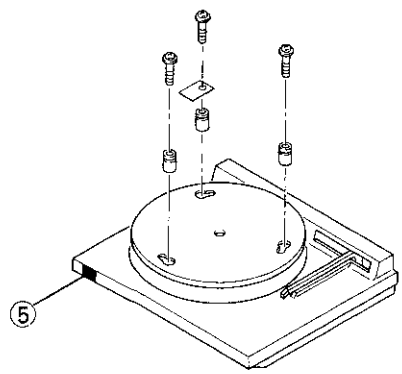


Figure 1

1-2. Place the turntable upside down on a suitable bench.

1-3. Remove the seven Screws (207) which mount the Cabinet bottom (15) (Fig. 2).

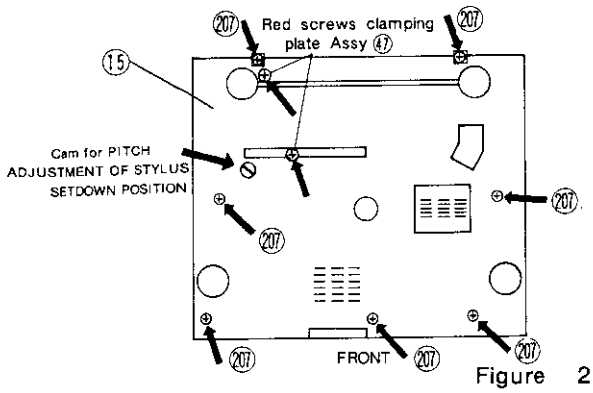


Figure 2

1-4. Reverse the turntable.

1-5. Remove the screw (206) which mounts the Cover(10) to the Cabinet top (1).

1-6. Remove the Cover (10) from the Cabinet top by drawing it (Fig. 3).

1-7. Press the POWER button so that the power will be switched on and remove the tonearm to the position where the Cover (10) was mounted, pressing the START button.

1-8. Press the POWER button to switch the unit off.

1-9. Remove the three Screws (207) which mount the Cabinet top (Fig. 4) and lift the Cabinet top.

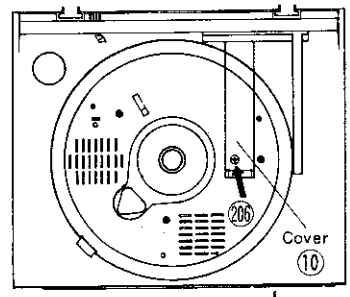


Figure 3

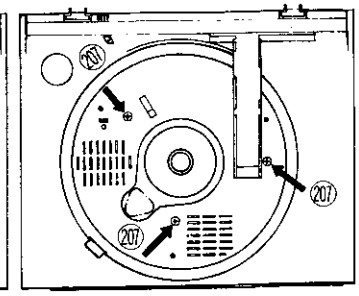


Figure 4

2. In case that the tonearm does not start moving with trouble,

2-1. If the tonearm is above or on the turntable platter, turn the Pulley (33) counterclockwise through the hole referring to Fig. 5 with the slotted-head screwdriver (width 2.5 ~ 4 mm) until tonearm moves to its rest position.

2-2. Remove the turntable platter and mat.

2-3. Follow the same steps as described above 1-2, 1-3, 1-4, 1-5 and 1-6.

2-4. Move the tonearm to the position where the Cover (10) was mounted, turning the Pulley (33) clockwise (Fig. 5).

2-5. Follow the same step as above 1-9.

NOTE: If the tonearm does not move by turning the Pulley (33) (Fig. 5), an additional force by finger should be added to the bended part of tonearm in the desired direction.

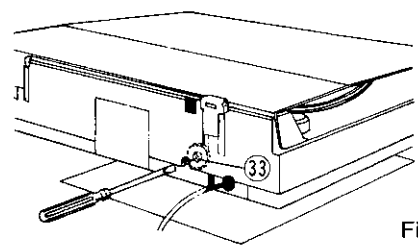


Figure 5

(C) REMOVE THE PLATE ASSY (47) AS FOLLOWS:

1. After removing the cabinet top, remove Position PWB Assy (69) referring to Fig. 6.
2. Remove the Belt (34) between Servo-controlled Motor (76) and Pulley (33).
3. Remove the Bearing Assy (30) referring to Fig. 7.

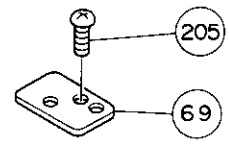


Figure 6

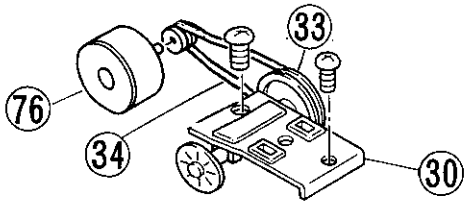


Figure 7

4. After removing the Screw (202) described in Fig. 8, remove the Plate Assy (47) by lifting the left end of the Pipe (42).

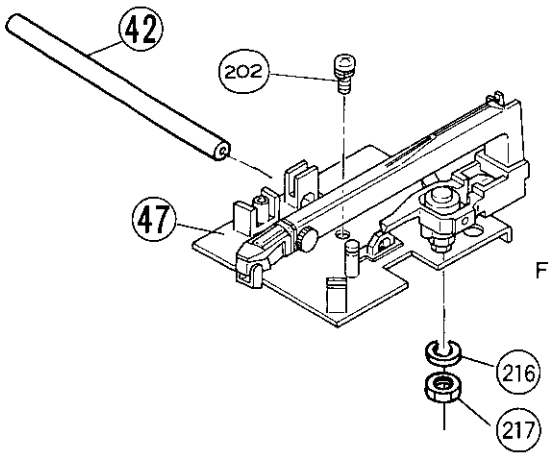


Figure 8

(D) REMOVE THE TONEARM ASSY (63) AS FOLLOWS:

1. Unsolder the five lead-wires on Phono PWB Assy (67) coming from tonearm.
2. Remove the Phono PWB Assy which is mounted to the Plate Assy (47) by two Screws, (203) and (205) (Fig. 9).
3. Remove the Hexagon Nut (217) and Spring Washer (216) to remove the Tonearm assy (Fig. 8).
   NOTE: When the Phono PWB Assy (67) is mounted, make sure to refer to "NO TRACKING ERROR" adjustment (ADJUSTMENT D, page 6).

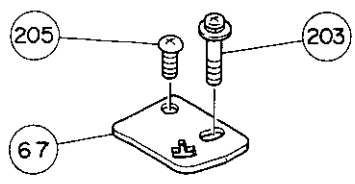


Figure 9

(E) REMOVE THE SWITCH (79) ON THE PLATE ASSY (47) AS FOLLOWS:

1. Remove the E type Washer (220) 2ϕ on Plate Assy (47).
2. Remove the Washer (218) and Spring (59).
3. Remove the Lift angle Assy (48).
4. Remove the Screw (200) (Fig. 10).

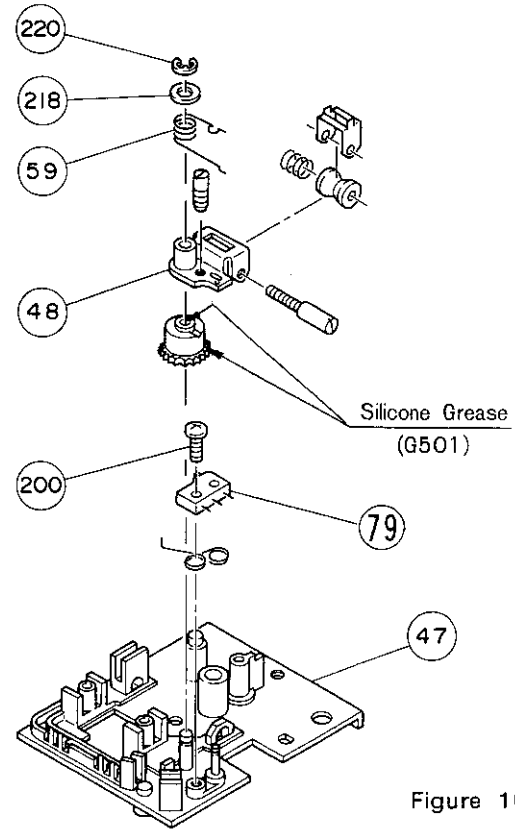


Figure 10

(F) REMOVE THE WORM GEARS, (31) AND (54), AS FOLLOWS:

1. Worm gears have been press-insert mounted. When worm gears are lifted, make sure to apply an equal force to each connecting parts (Fig. 11).
2. To lift the Worm Gear (54) remove the two Screws (222).

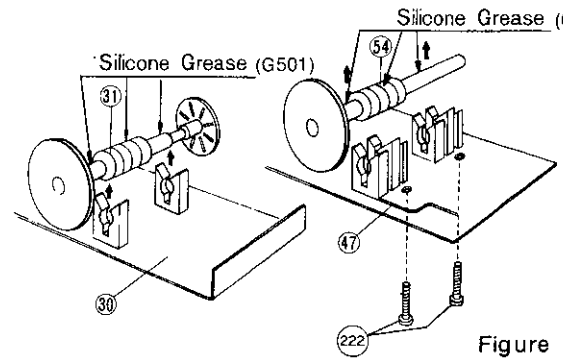


Figure 11

4. REPLACING AND REASSEMBLY INSTRUCTIONS

(A) REPLACE THE WIRE ASSY (38) AS FOLLOWS:

1. Prior to mounting, Wire Assy (38) should be rolled two turns by Wheel (35) (Fig. 12).
2. Place the Wheel (35) to the Shaft (36), and rotate the wheel clockwise until the starting point of the wire (slit on pulley) comes to the Point A (Fig. 13).
3. Rotate the Wheel (35) then counterclockwise until the

point A comes to the point B. This position will correspond to the most left possible location of Plate Assy (47).

4. Place the Guide (38-2) to the depressed part on Cabinet bottom (Fig. 12).

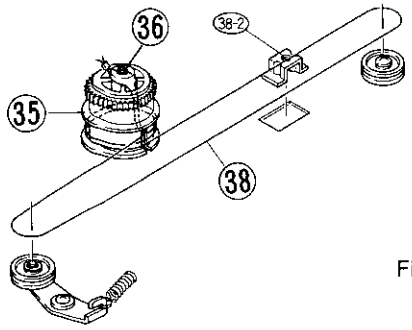


Figure 12

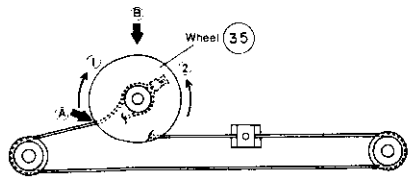


Figure 13

(B) REPLACE THE CAM (60) WITH FOLLOWING CAUTION:

When Cam (60) is replaced, make sure that the depressed part on the cam should be mounted facing with the Tonearm (63) (Fig. 14).

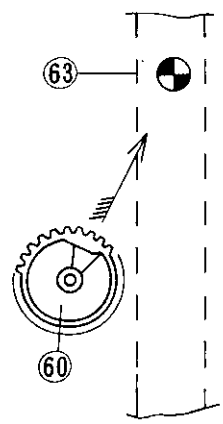


Figure 14

(C) REASSEMBLY THE WORM GEAR ASSYS, (31) AND (54), WITH FOLLOWING CAUTIONS:

1. **Worm gear (54) Assy**
   Pressing insert the Pulley (55) to the Worm Gear (54) so that the left end of the worm gear will be on the same level as the face of the smaller circle in the pulley (Fig. 15).

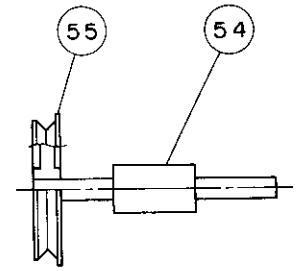


Figure 15

2. **Worm gear (31) Assy**
   As described in Fig. 16 pressing insert the Shifter (32) and pulley to the long and short bars of Worm Gear (31) respectively. When the Encorder (32) is assembled, make sure that the left end of the bar is on the same level as the face of the shorter boss of shifter. When the Pulley (33) is assembled, press the pulley as long as it goes.

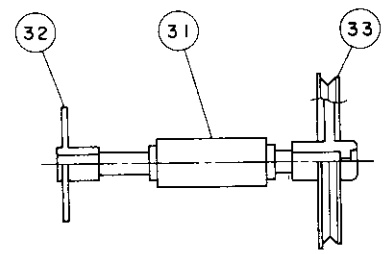


Figure 16

(D) REASSEMBLY THE MOTORS, (75) AND (76), WITH THE FOLLOWING CAUTIONS:

1. When the Pulley (61 or 62) is mounted to the Motor (75 or 76), make sure to have the specified clearance between the pulley and the motor referring to Fig. 17 and Fig. 18.
2. After mounting the pulley, apply quick-dry adhesive agent. We recommend "NEJI-LOCK SUPER, 1324B" for this assembly.

(E) To REASSEMBLE, use DISASSEMBLY INSTRUCTIONS in reverse.

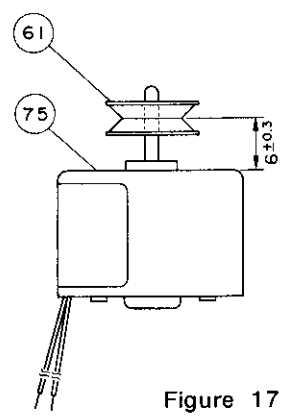


Figure 17

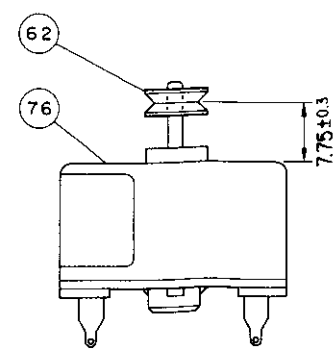


Figure 18

5. ADJUSTMENTS

(A) STYLUS POINT HEIGHT

1. Remove the Cabinet top according to DISASSEMBLY INSTRUCTIONS (B) (page 3).
2. Turn the Screw (53) described in Fig. 19 so that the clearance between stylus and turntable platter will be within 8 ~ 10 mm when the tonearm is in up position (Fig. 20).

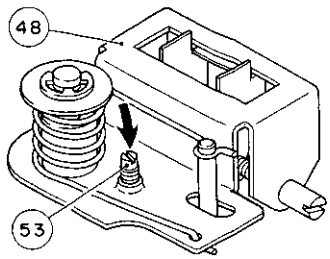


Figure 19

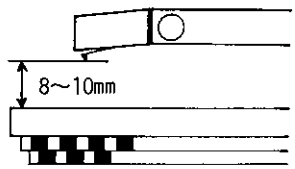


Figure 20

(B) TONEARM SETUP POSITION

1. Remove the Cabinet top according to DISASSEMBLY INSTRUCTIONS (B) (page 3).
2. Turn the Screw (50) described in Fig. 21 so that the tonearm will be mounted at right angles with its moving direction (Fig. 22).
3. After this adjustment, make sure to apply "NO TRACKING ERROR" adjustment (ADJUSTMENT D, page 6).

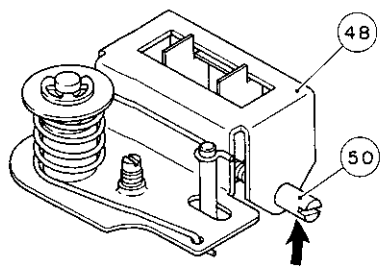


Figure 21

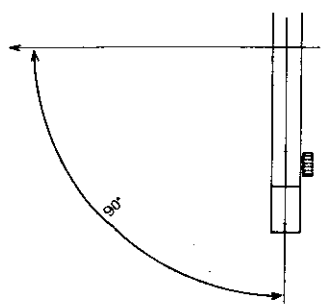


Figure 22

(C) TRACKING SENSOR SENSITIVITY

This adjustment is subject to rectifying the uneven sensitivity of Photo Interrupter (PC201) on the Phono PWB Assy (67).

NOTE: This adjustment has to be done without any direct sun shine nor any strong light.

1. Remove the Cabinet top according to DISASSEMBLY INSTRUCTIONS (B) (page 3).
2. Press the POWER button so that the unit will be switched on.
3. Connect the D.C. voltmeter between TP1 and GND terminals on Control PWB Assy (65) (Fig. 23).

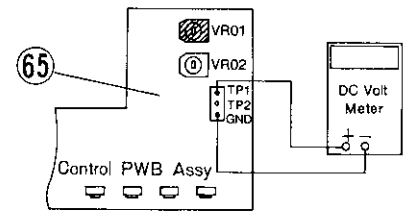


Figure 23

4. Slightly loosen the two Screws, (203) and (205), which fasten the Phono PWB Assy (67). (Fig. 24).
5. Turn the adjusting boss counterclockwise with the screwdriver (Fig. 24).

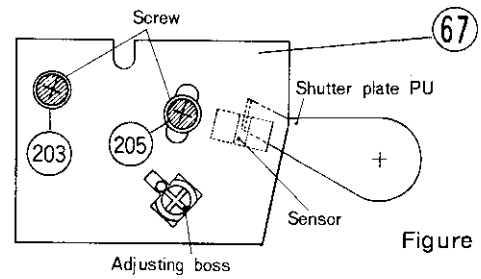


Figure 24

6. Turn the Phono PWB Assy clockwise by approximately 5° with the screw A as a center (Fig. 25).

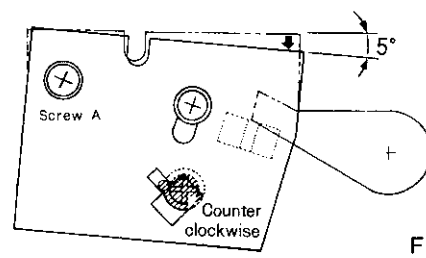


Figure 25

7. Make sure that the sensor gets enough light not being obstracted by shutter plate.
8. Turn the Variable Resistor (VR001) with a small size slotted-head screwdriver so that the voltmeter shows -3.9 ~ -4.1 volts.
9. After the above adjustment, make sure to apply "NO TRACKING ERROR" and "STYLUS SET-DOWN POSITION" adjustments (ADJUSTMENTS D AND E, page 6 and 7).

(D) NO TRACKING ERROR

NOTE: This adjustment has to be done without any direct sun shine nor any strong light.

1. Remove the Cabinet top according to DISASSEMBLY INSTRUCTIONS (B) (page 3).
2. Press the POWER button so that the unit will be switched on.

3. Connect the D.C. voltmeter between TP1 and GND terminals on Control PWB Assy (65) (Fig. 23).
4. Slightly loosen the two Screws, (203) and (205), which fasten the Phono PWB Assy (Fig. 24).
5. Turn the adjusting boss with a screwdriver so that the voltmeter shows -1.6 ~ -2.0 volts.
6. Disconnect the D.C. voltmeter and re-connect it between TP2 and GND terminals on Control PWB Assy (Fig. 26).

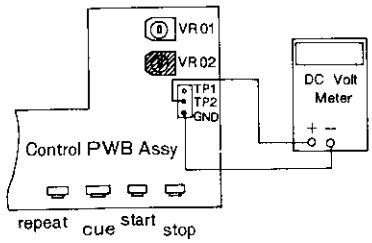


Figure 26

7. Without placing the turntable platter, press the START button so that the tonearm starts moving.
8. Press the CUE button so that the tonearm lifts after stylus set-down.
9. Turn the Variable Resistor (VR002) with a screwdriver so that the voltmeter shows -1.9 ~ -2.1 volts.
10. Press the CUEING button so that the tonearm descends and press the STOP button for tonearm return to its rest.
11. After above adjustment, make sure to apply "STYLUS SET-DOWN" adjustment (ADJUSTMENT E, page 7).

(E) STYLUS SET-DOWN POSITION

1. Remove the Cabinet top according to DISASSEMBLY INSTRUCTIONS (B) (page 3).
2. Press the POWER button so that the unit will be switched on.
3. Place the turntable platter and mat.
4. Use the first face of NEC test record ES-1008 for this adjustment. Press the START button; turntable starts rotation, the tonearm will move and descend onto a record.
5. Turn the adjusting pin described in Fig. 27 so that the stylus set-down position will be counted between 15 and 17 points.
6. Using the second face of the test record ES-1008 make sure that the automatic return position will be counted between 19 and 22 points.

   NOTE: After the above steps, no adjustment for 17 cm records is required. However, to settle the specified counting position by the first time adjustment may be difficult. Apply several times adjustments to confirm the above specified position.

(F) PITCH ADJUSTMENT OF STYLUS SET-DOWN POSITION

After fundamental adjustment mentioned above (E), pitch adjustment of stylus set-down position is available without removing the Cabinet top.

1. Place the unit upside down on a suitable bench.
2. Stylus set-down position can be adjusted by rotating the cam through the hole which is marked in Fig. 2 with a slotted-head screwdriver.
3. Counterclockwise turn moves the set-down position inward; clockwise turn moves the set-down position outward.

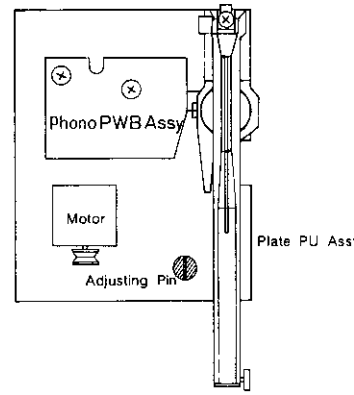


Figure 27

6. TROUBLESHOOTING

(A) THE STROBE LIGHT DOES NOT TURN ON

Measure the voltage between 4 and 5 terminals on Power PWB Assy (70) with A.C. voltmeter.

* Local voltage is supplied: (R501), Neon Lamp (71-2) or Lead-wire is defective.
* Different voltage from local one or no voltage is supplied: Power Cord (73), Power Switch (SW501) or Fuse (70-2) is defective.

(B) THE RECORD SIZE SEARCHER LIGHT DOES NOT TURN ON

Measure the voltage between GND and each ±9 volts terminals, (J10) and (J12), on Control PWB Assy (65) with D.C. voltmeter.

* Approx. ±9V is supplied: Measure the voltage between 1 and 2 terminals on Position PWB (69-1) with D.C. voltmeter.
  * Approx. 18V is supplied: Lamp (78) or Lead-wire is defective.
  * Too short voltage is supplied: Cord Assy 6P (69-2) or connector is defective.
* Quite different voltage from +9V is supplied: (Q001), (Q002) or (Q003) is defective.
* Quite different voltage from -9V is supplied: (Q004), (Q005) or (Q006) is defective.

(C) THE TURNTABLE DOES NOT START ROTATION AFTER PLACING THE RECORD

Check to see that the base-voltage at (Q019) is approx. +9V when tonearm returns to its rest upon STOP button being pressed, and the voltage is lowered by approx. 0.6V upon START button being pressed.

* **Yes:** (Q033), Cord Assy 7P (65-3) or Direct-drive Motor (77) is defective.
* **No:** (IC003) or (R044) is defective.

(D) STYLUS SET-DOWN POSITION IS NOT CORRESPONDING TO THE RECORD SIZE

Check to see that the collector voltage at (Q024) against GND will be changed from approx. +9V to approx. 0V when the light through the slit on the turntable platter reaches to the Photo Transistor (Q301) on Record PWB Assy (68).

NOTE: Make sure that no outside light will be reached to photo transistor during the measurement. Use D.C. voltmeter or oscilloscope for the measurement.

* No change: Photo Transistor (Q301), Cord Assy 6P (69-2) or (Q024) is defective.
* Changing: (IC003) is defective.

NOTE: After replacement the part, the adjustment according to ADJUSTMENT (E) on page 7 should be applied.

(E) TONEARM MOVES TOO INSIDE UPON START BUTTON BEING PRESSED

Check to see that the collector voltage at (PC401) against GND with the oscilloscope will be changed by 8 pulses per one turn (from approx. +9V to approx. 0V) according to the turn of Shifter (32) which has 8 slits.

* No change or small number of pulse: (PC401), Cord Assy 6P (69-2), (Q021), (Q022) or (Q023) is defective.
* Changing: (IC003) is defective.

INFORMATION: The (IC003) acknowledges that the tonearm moves to the stylus set-down and/or return position when the number of the pulse from the start point corresponds to the number programmed beforehand. After the acknowledgement, (IC003) will supply the necessary signal for various movement according to the position of tonearm.

(F) NO SOUND FROM THE LOUD SPEAKER

Measure the value of resistor between Output Shield Wire (74) and its shielded part.

* 0 ohm: The Circuit (65) or (67) is shortage or muting relay is defective.
* Approx. ∞ ohm: The dead circuit or defective cartridge.

(G) NO MUTING WORKS UPON STYLUS UP ACTION

Check to see that the base-voltage at (Q017) against GND is approx. +9V when tonearm is in up position upon CUEING button being pressed, and the voltage is lowered by approx. 0.6V upon CUEING button being pressed again.

* **Yes:** (Q017), (Q032) or muting relay is defective.
* **No:** (IC003) is defective.

(H) THE TONEARM MOVES LEFT-WARD UPON UP AND DOWN ACTIONS

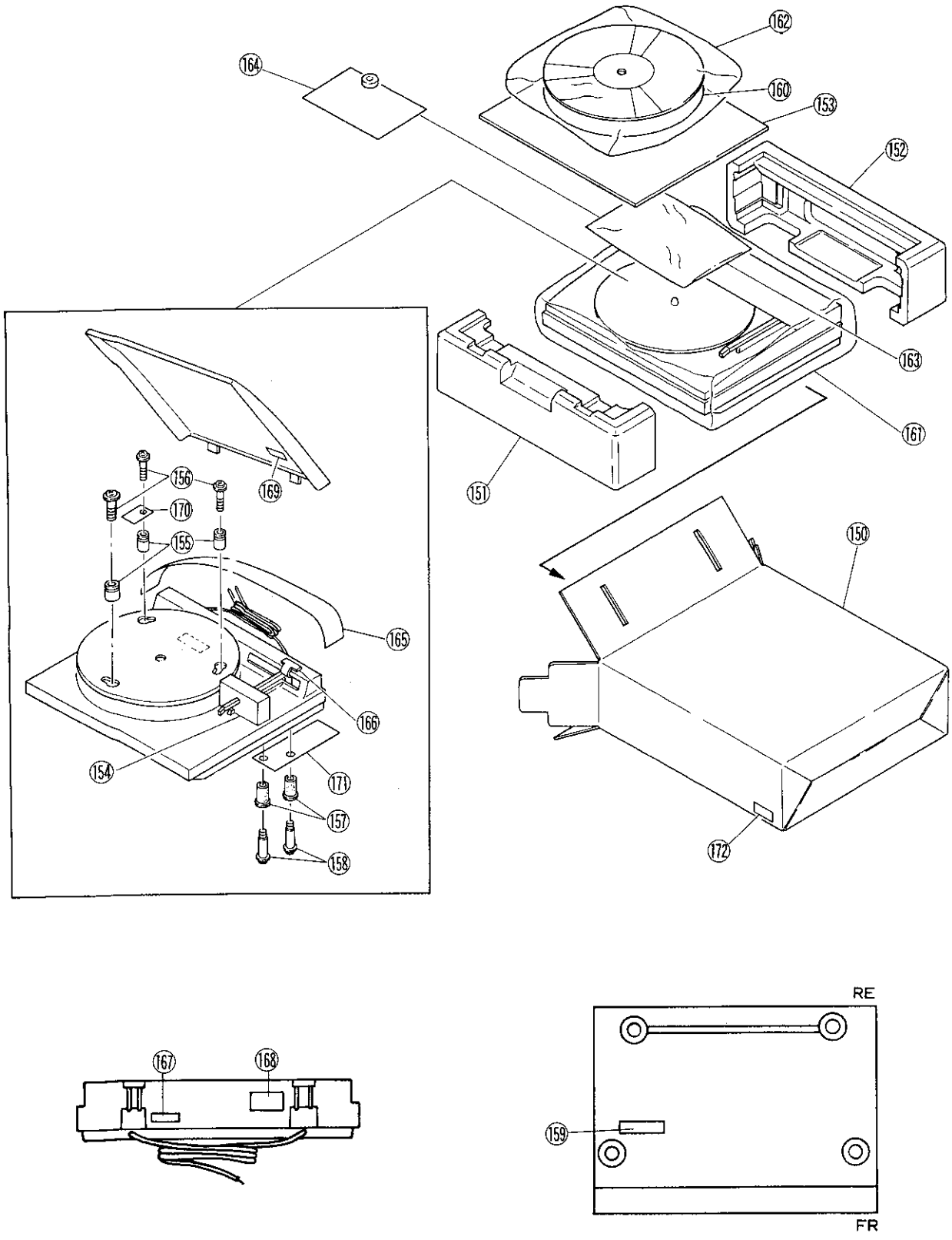
Apply ADJUSTMENTS (C), (D) and (E) (page 6 and 7).

(I) THE STYLUS KICKS THE RECORD UPON ITS UP ACTION

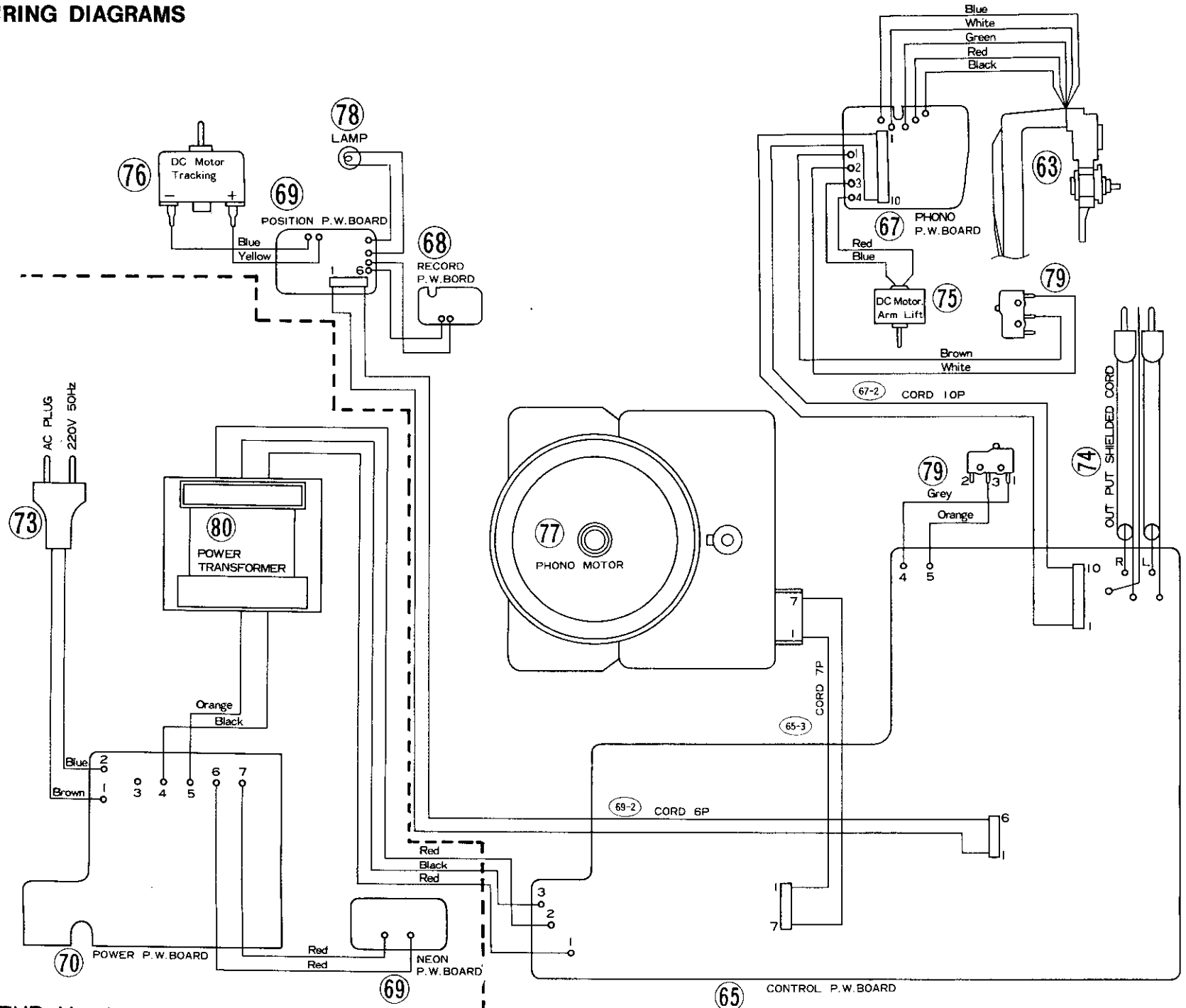
Apply ADJUSTMENTS (C), (D) and (E) (page 6 and 7).

NOTE: The extent up to 0.2 mm fall within the specification settled. If the pitch of the record groove increases, this figure tends to increase.

7. PACKING MATERIALS

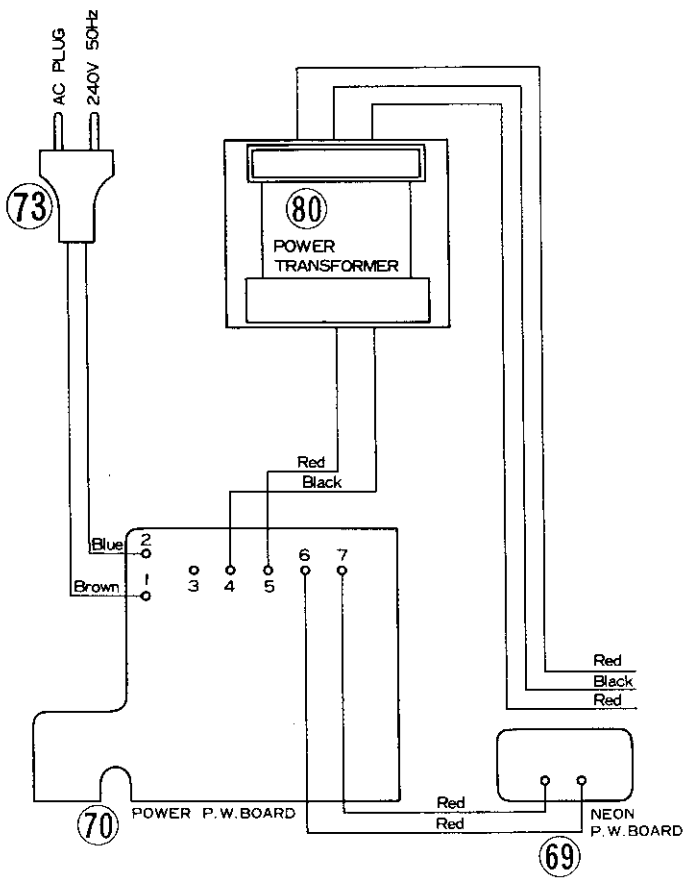


8. WIRING DIAGRAMS

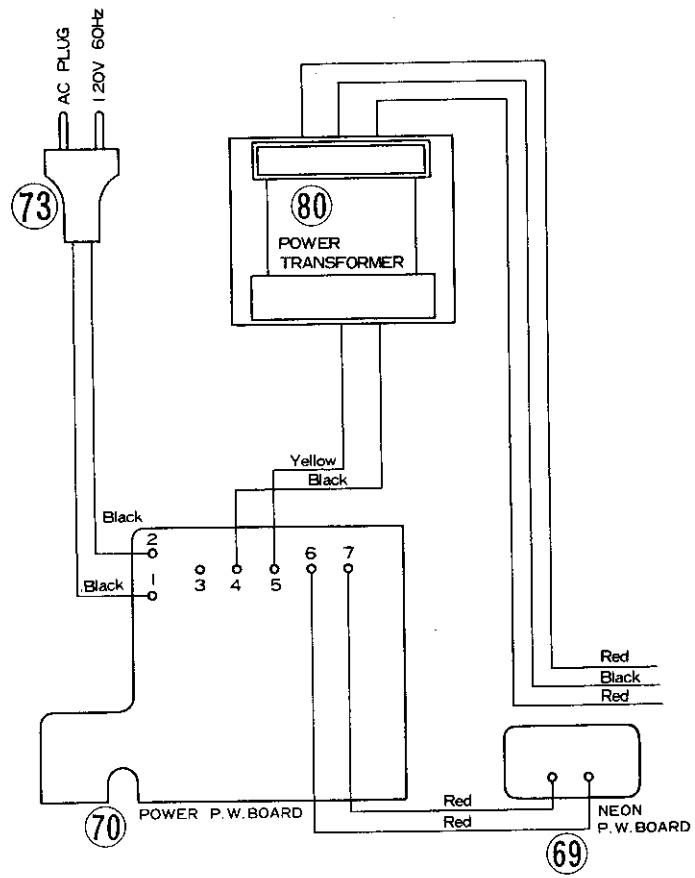


EUR Version

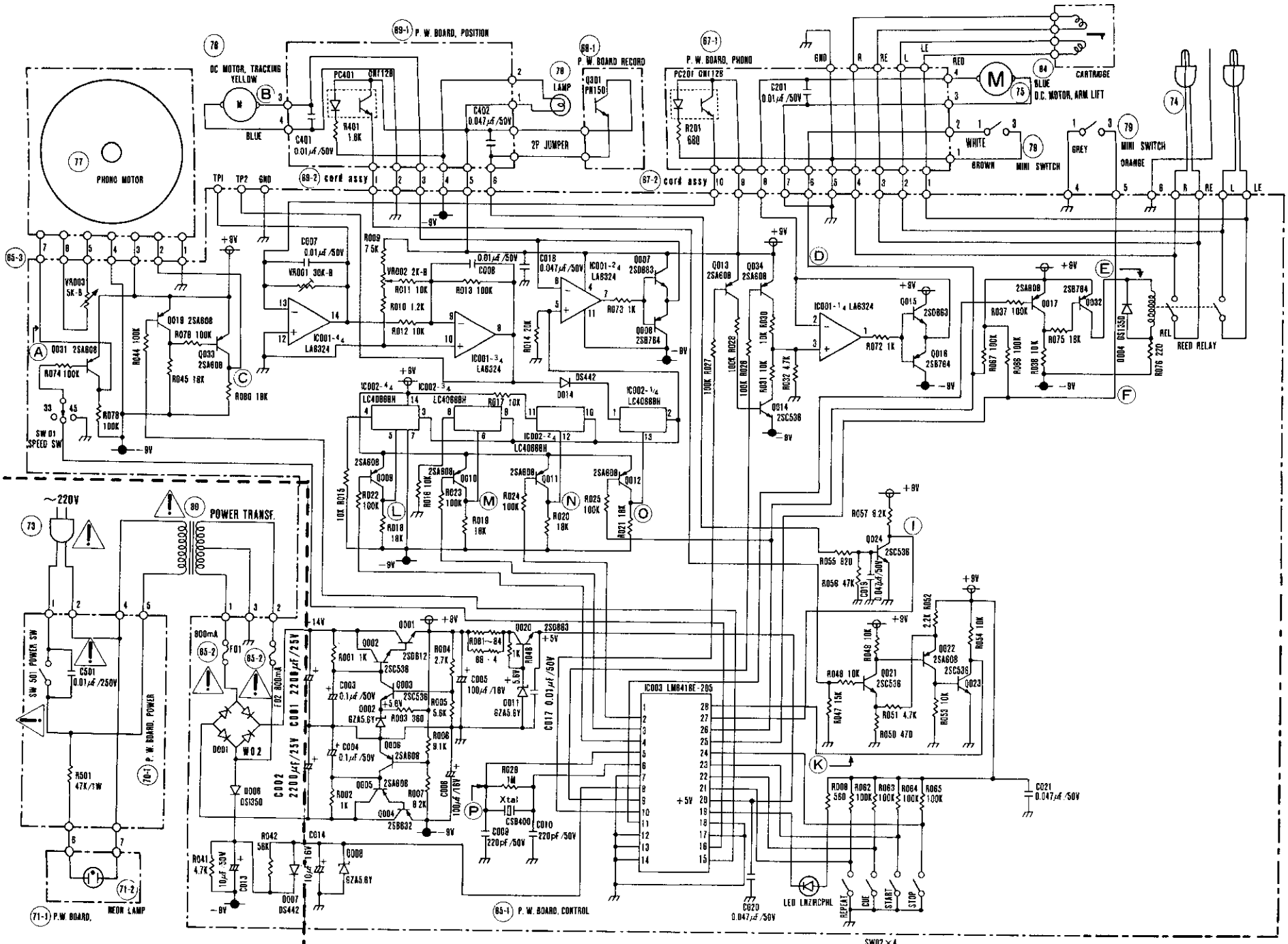
AUS Version



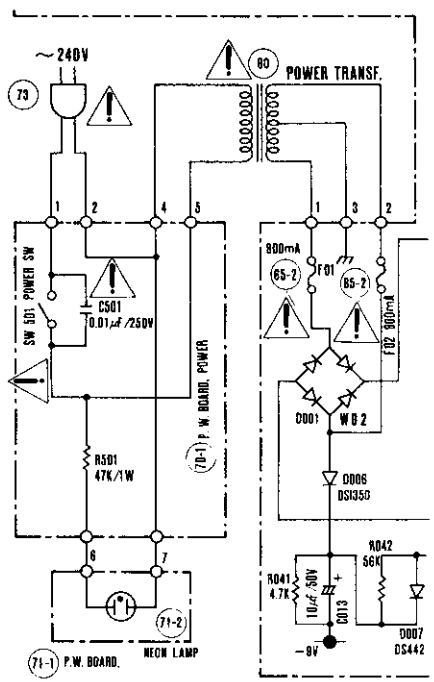
CND Version



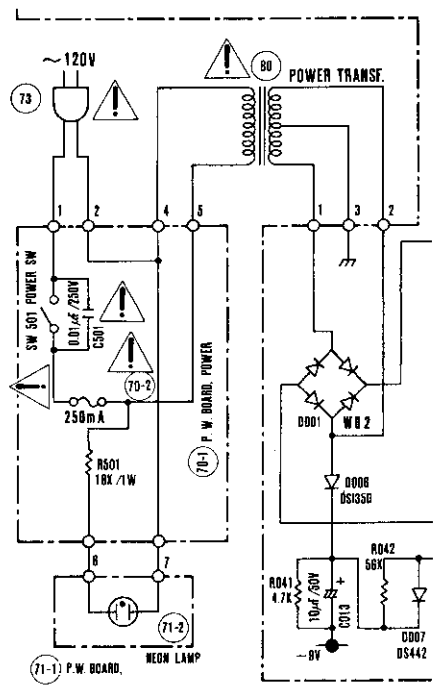
9. CONTROLLER CIRCUIT DIAGRAMS



AUS Version



CND Version



A	33rpm −9V
	45rpm +9V
B	PU TO RIGHT +6V
	PU TO LEFT −6V
C	PU AT REST −9V
	PU AT PLAY +9V
D	PU AT REST +9V
	PU AT PLAY 0V
E	PU AT REST +9V
	PU AT PLAY −9V
F	PU AT REST +9V
	PU AT PLAY 0V

I	30cm RECORD +9V
	17cm RECORD +8V / 0V
J	SW ON 0V
	SW OFF 9V
K	PU MOVE +8V / 0V
L	PU TO RIGHT +9V
M	PU SLOW MOVE +9V
N	PU TO LEFT +9V
O	PU AT PLAY +9V
P	+5V / 0V 400KHz

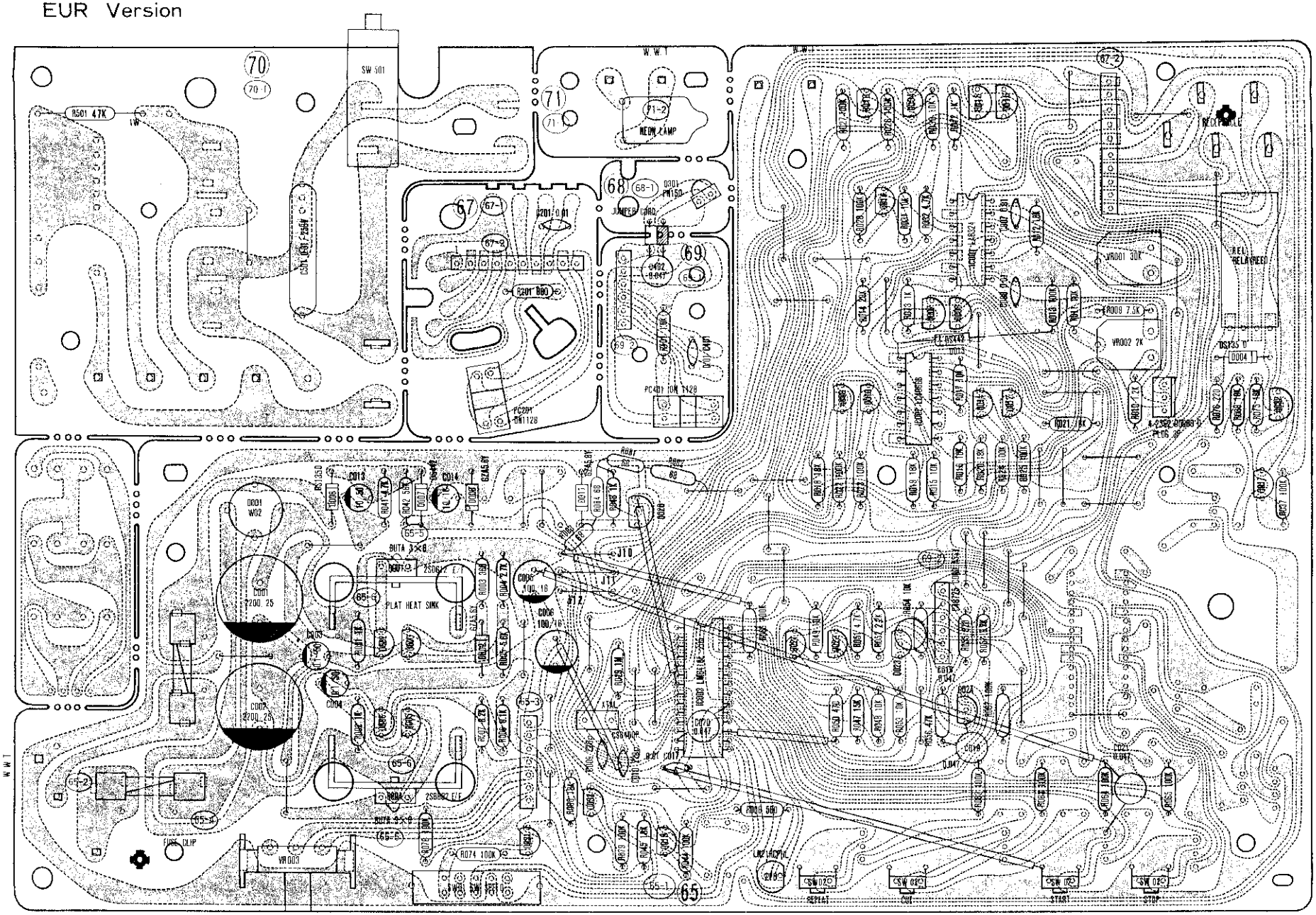
To service personnel

Make sure that only replacement parts recommended by the manufacturer should be used when the parts marked "⚠" in schematic diagram are exchanged.

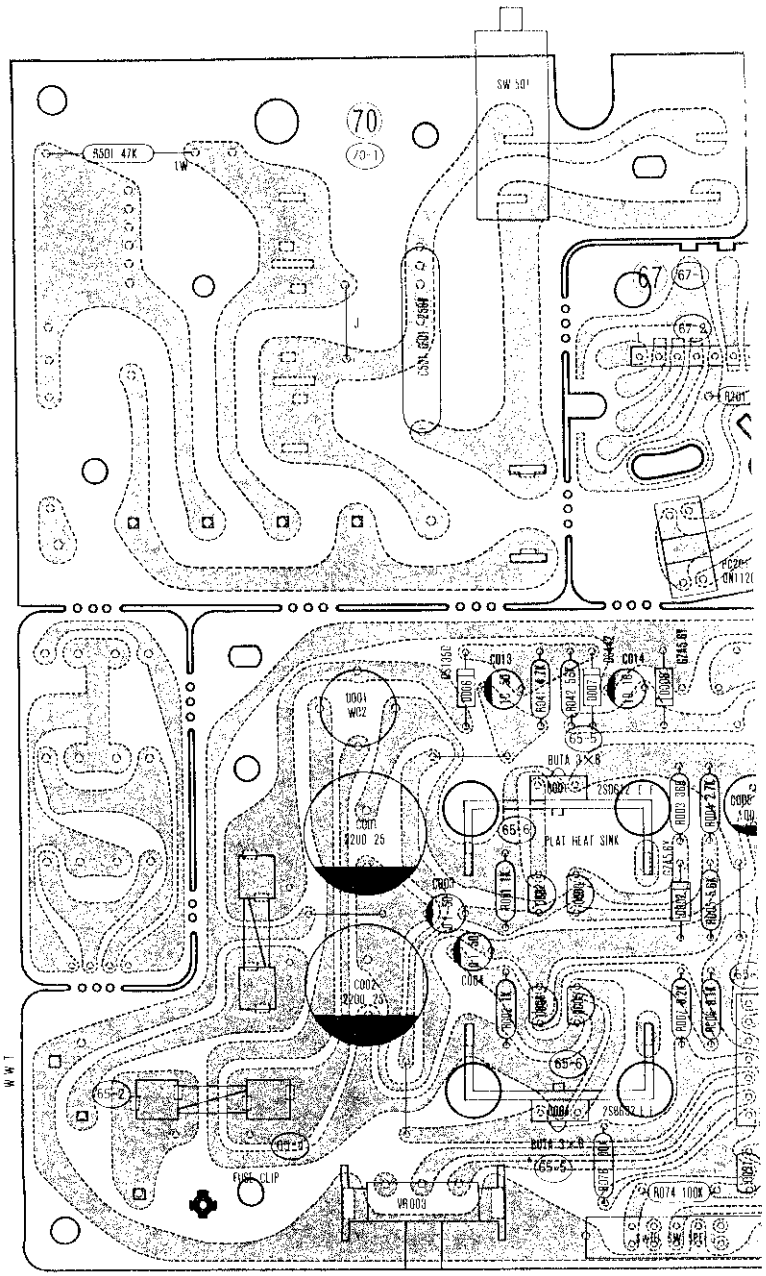
Never fail to make leakage-current or resistance measurements before returning the appliance to the customer so as to make sure that exposed parts are acceptably insulated from the supply circuit.

10. PRINTED WIRING BOARDS

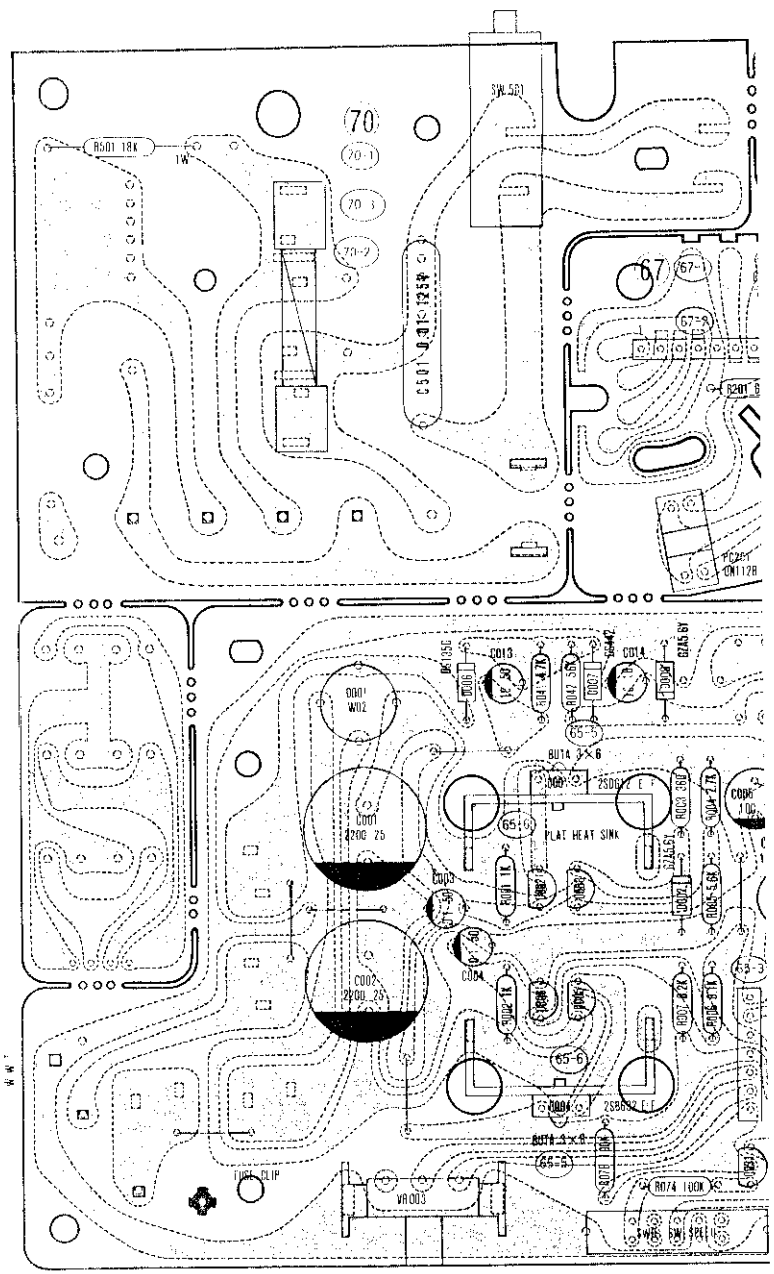
EUR Version



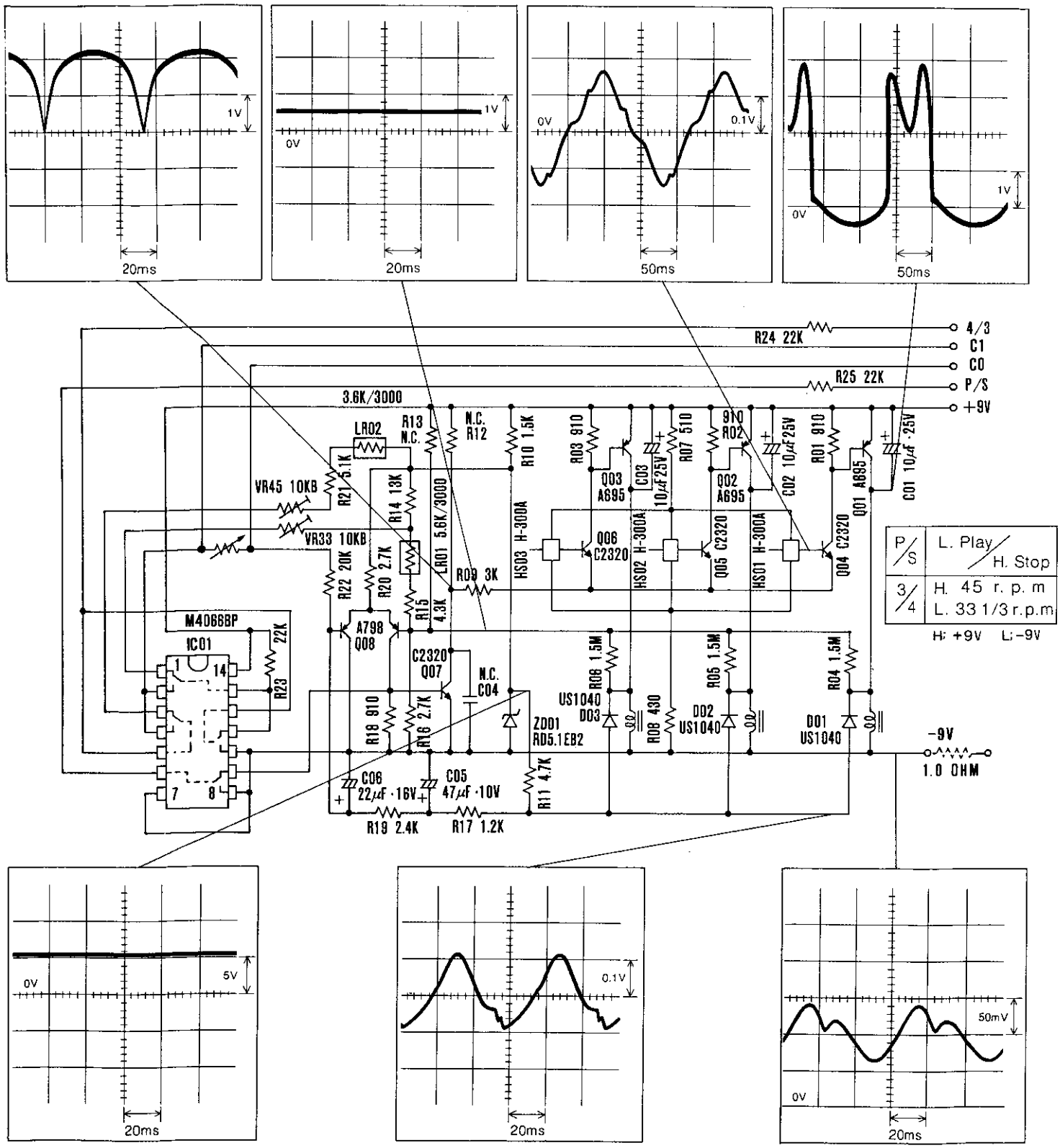
AUS Version



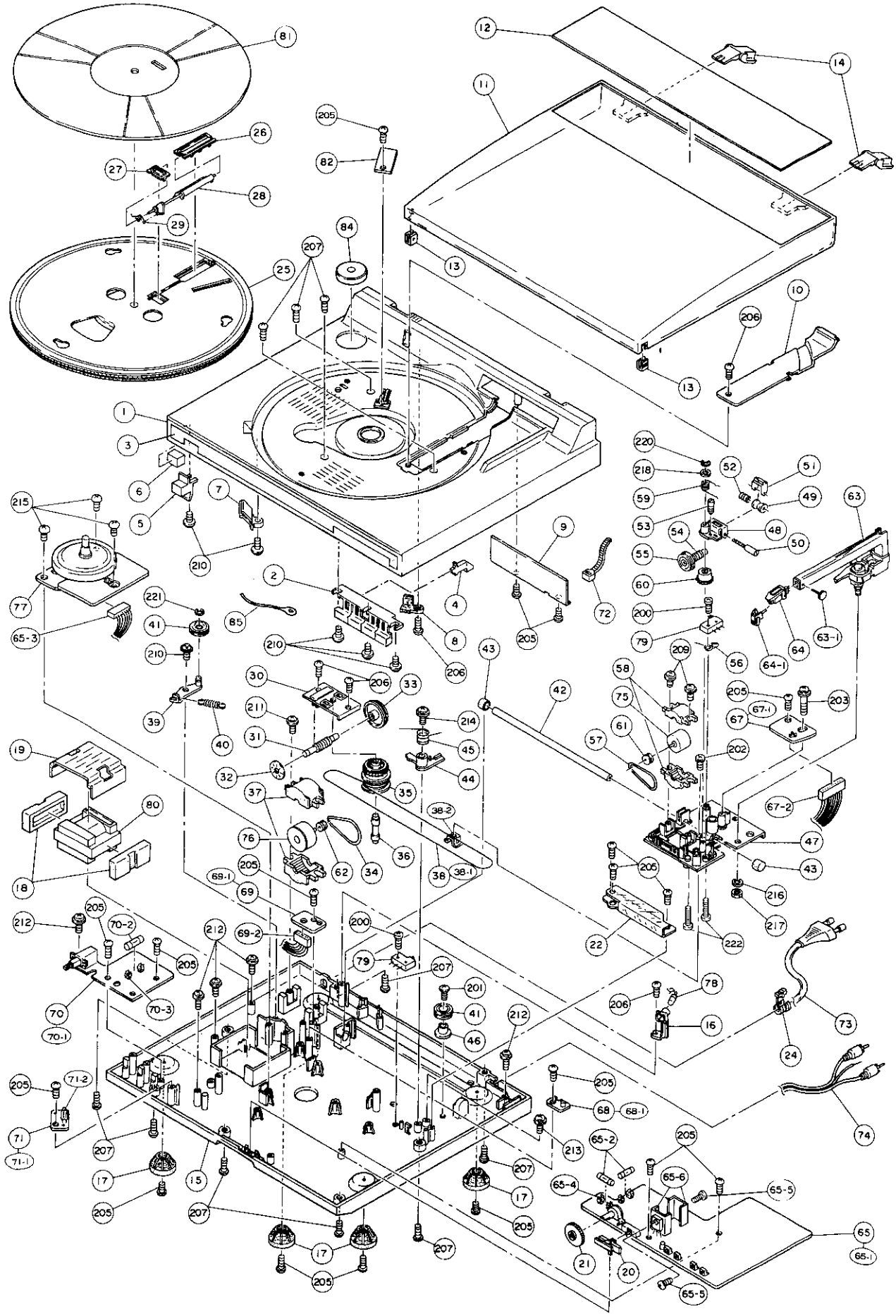
CND Version



11. SCHEMATIC DIAGRAM (Phono Motor)



12. EXPLODED VIEW



EUR : for Europe
AUS : for Australia
CND : for Canada

13. PARTS LIST

Ref. No.	Parts No.	Description	Version	Q'ty
1	D 1005700	Cabinet, top		1
2	D 3183600	Knob		1
3	K 3183900	Panel, control	EUR,CND	1
3	K 3183901	Panel, control	AUS	1
4	D 4874200	Indicator		1
5	D 4874500	Knob, power		1
6	D 4874700	Cushion		1
7	D 3183800	Filter		1
8	D 4874900	Filter		1
9	A 4877100	Plate		1
10	D 3184000	Cover		1
11	D 2101700	Lid		1
12	K 3182500	Panel, decorate		1
13	D 4873900	Pad lid		2
14	K 3184100	Hinge		2
15	D 1005500	Cabinet, bottom		1
16	D 3182400	Holder		1
17	D 4872700	Cushion		4
18	D 4872600	Cushion		2
19	A 4872800	Metal, mount		1
20	D 4873000	Knob		1
21	D 4849800	Knob		1
22	A 4875000	Guide		1
24	D 4442100	Bushing	EUR,AUS	1
24	131 2611121300	Bushing	CND	1
25	D 1005600	Turntable platter		1
26	D 3181300	Holder (A)		1
27	D 3181400	Holder (B)		1
28	D 3181900	Lever		1
29	E 4872900	Spring		1
30	C 4870900	Bearing assy		1
31	B 4864800	Worm gear		1
32	D 4865800	Encoder		1
33	D 4871000	Pulley		1
34	D 4871700	Rubber belt		1
35	D 3181800	Wheel		1
36	B 4865000	Shaft		1
37	D 3181700	Cover, motor		2
38	C 4873400	Wire assy		1
38-1	R 4872100	Wire		1
38-2	A 4871100	Guide		1
39	C 4871200	Plate assy		1
40	E 4876200	Spring		1
41	D 4865700	Pulley		1
42	B 4864900	Pipe		1
43	D 4864700	Cushion		2
44	D 4870300	Arm		1
45	E 4870400	Spring		1
46	B 4871300	Spacer		1
47	D 2101400	Plate assy		1
48	C 4869800	Lift angle assy		1
49	B 4871400	Guide		1
50	R 4871500	Screw		1
51	A 4870100	Protector		1
52	134 2510128200	Spring		1
53	R 4866400	Screw		1
54	B 4865500	Worm gear		1
55	D 486630	Pulley		1
56	E 4876900	Spring		1
57	D 4871600	Rubber belt		1
58	D 3180100	Cover, motor		2
59	E 4876400	Spring		1
60	D 4865200	Cam		1
61	B 4864500	Pulley		1
62	B 4871800	Pulley		1
63	C 3182300	Tonearm assy		1
63-1	D 4869300	Screw		1
64	F 3182600	Cartridge	EUR,AUS	1
64-1	F 4877300	Stylus	EUR,AUS	1
65	C 2102500	PWB assy, control	EUR,AUS	1
65	C 2102700	PWB assy, control	CND	1
65-1	F 2102000	PWB		1
65-2	4234200260	Fuse 800MAT	EUR,AUS	2
65-3	C 4872300	Cord assy 7P		1
65-4	4235923080	Fuse clip	EUR,AUS	4
65-5	102 3220300601	Screw ϕ3 x 6		2
65-6	131 2620121500	Plate, heat.sink		2

Ref. No.	Parts No.	Description	Version	Q'ty
C001	42232006900	ELECT 2200MF 25V		1
C002	42232006900	ELECT 2200MF 25V		1
C003	CD1 045000001V1	ELECT 0.1MF 50V		1
C004	CD1 045000001V1	ELECT 0.1MF 50V		1
C005	CD1 071600001V1	ELECT 100MF 16V		1
C006	CD1 071600001V1	ELECT 100MF 16V		1
C007	CC1 03500KD00C1	CERAM 0.01MF 50V		1
C008	CC1 03500KD00C1	CERAM 0.01MF 50V		1
C009	CC2 21500KD00C1	CERAM 220PF 50V		1
C010	CC2 21500KD00C1	CERAM 220PF 50V		1
C013	CD1 065000001V1	ELECT 10MF 50V		1
C014	CD1 061600001V1	ELECT 10MF 16V		1
C017	CC1 03500KD00C1	CERAM 0.01MF 50V		1
D001	DGG W02	Diode bridge		1
D002	202 53140056450	GZA 5.6Y		1
D004	202 52470135400	DS135D		1
D006	202 52470135400	DS135D		1
D007	205 59040442100	DS442		
D008	202 53140056450	GZA 5.6Y		1
D011	202 53140056450	GZA 5.6Y		1
IC001	206 51296324100	LA 6324		1
IC002	206 58144066100	LC4066 BH		1
IC003	F 3181600	LM6416E-205		1
Q001	203 57330612500	2SD 612E		1
Q001	203 57330612600	2SD 612F		
Q002	203 55000536500	2SC 536E – NP		1
Q002	203 55000536600	2SC 536F – NP		1
Q003	203 55000536500	2SC 536E – NP		1
Q003	203 55000536600	2SC 536F – NP		1
Q004	203 57320632500	2SB 632E		1
Q004	203 57320632600	2SB 632F		1
Q005	203 57230608500	2SA 608E –N P		1
Q005	203 57230608600	2SA 608F – NP		1
Q006	203 57230608500	2SA 608E – NP		1
Q006	203 57230608600	2SA 608F – NP		1
Q007	203 57340863500	2SD 863E		1
Q007	203 57340863600	2SD 863F		1
Q008	203 57350764500	2SB 764E		1
Q008	203 57350764600	2SB 764F		1
Q009	203 57230608500	2SA 608E – NP		1
Q009	203 57230608600	2SA 608F – NP		1
Q010	203 57230608500	2SA 608E – NP		1
Q010	203 57230608600	2SA 608F – NP		1
Q011	203 57230608500	2SA 608E – NP		1
Q011	203 57230608600	2SA 608F – NP		1
Q012	203 57230608500	2SA 608E – NP		1
Q012	203 57230608600	2SA 608F – NP		1
Q013	203 57230608500	2SA 608E – NP		1
Q013	203 57230608600	2SA 608F – NP		1
Q014	203 55000536500	2SC 536E – NP		1
Q014	203 55000536600	2SC 536F – NP		1
Q015	203 57340863500	2SD 863E		1
Q015	203 57340863600	2SD 863F		1
Q016	203 57350764500	2SB 764E		1
Q016	203 57350764600	2SB 764F		1
Q017	203 57230608500	2SA 608E – NP		1
Q017	203 57230608600	2SA 608F – NP		1
Q019	203 57230608500	2SA 608E – NP		1
Q019	203 57230608600	2SA 608F – NP		1
Q020	203 57340863500	2SD 863E		1
Q020	203 57340863600	2SD 863F		1
Q021	203 55000536500	2SC 536E – NP		1
Q021	203 55000536600	2SC 536F – NP		1
Q022	203 57230608500	2SA 608E – NP		1
Q022	203 57230608600	2SA 608F – NP		1
Q023	203 55000536500	2SC 536E – NP		1
Q023	203 55000536600	2SC 536F – NP		1
Q024	203 55000536500	2SC 536E – NP		1
Q024	203 55000536600	2SC 536F – NP		1
Q031	203 57230608500	2SA 608E – NP		1
Q031	203 57230608600	2SA 608F – NP		1
Q032	203 57350764500	2SB 764E		1
Q032	203 57350764600	2SB 764F		1
Q033	203 57230608500	2SA 608E – NP		1
Q033	203 57230608600	2SA 608F – NP		1

EUR : for Europe
AUS : for Australia
CND : for Canada

PARTS LIST

Ref. No.	Parts No.	Description	Version	Q'ty
LED	F 3183400	LN21ECPHL		1
R001	R2E DZJ102APA	CARBO 1K 1/4W J		1
R002	R2E DZJ102APA	CARBO 1K 1/4W J		1
R003	R2E DZJ361APA	CARBO 360 1/4W J		1
R004	R2E DZJ272APA	CARBO 2.7K 1/4W J		1
R005	R2E DZJ562APA	CARBO 5.6K 1/4W J		1
R006	R2E DZJ912APA	CARBO 9.1K 1/4W J		1
R007	R2E DZJ822APA	CARBO 8.2K 1/4W J		1
R008	R2E DZJ561APA	CARBO 560 1/4W J		1
R009	R2E DZJ752APA	CARBO 7.5K 1/4W J		1
R010	R2E DZJ122APA	CARBO 1.2K 1/4W J		1
R011	R2E DZJ103APA	CARBO 10K 1/4W J		1
R012	R2E DZJ103APA	CARBO 10K 1/4W J		1
R013	R2E DZJ104APA	CARBO 100K 1/4W J		1
R014	R2E DZJ203APA	CARBO 20K 1/4W J		1
R015	R2E DZJ103APA	CARBO 10K 1/4W J		1
R016	R2E DZJ103APA	CARBO 10K 1/4W J		1
R017	R2E DZJ103APA	CARBO 10K 1/4W J		1
R018	R2E DZJ183APA	CARBO 18K 1/4W J		1
R019	R2E DZJ183APA	CARBO 18K 1/4W J		1
R020	R2E DZJ183APA	CARBO 18K 1/4W J		1
R021	R2E DZJ183APA	CARBO 18K 1/4W J		1
R022	R2E DZJ104APA	CARBO 100K 1/4W J		1
R023	R2E DZJ104APA	CARBO 100K 1/4W J		1
R024	R2E DZJ104APA	CARBO 100K 1/4W J		1
R025	R2E DZJ104APA	CARBO 100K 1/4W J		1
R026	R2E DZJ104APA	CARBO 100K 1/4W J		1
R027	R2E DZJ104APA	CARBO 100K 1/4W J		1
R028	R2E DZJ104APA	CARBO 100K 1/4W J		1
R029	R2E DZJ105APA	CARBO 1M 1/4W J		1
R030	R2E DZJ103APA	CARBO 10K 1/4W J		1
R031	R2E DZJ103APA	CARBO 10K 1/4W J		1
R032	R2E DZJ472APA	CARBO 4.7K 1/4W J		1
R037	R2E DZJ104APA	CARBO 100K 1/4W J		1
R038	R2E DZJ103APA	CARBO 10K 1/4W J		1
R041	R2E DZJ472APA	CARBO 4.7K 1/4W J		1
R042	R2E DZJ563APA	CARBO 56K 1/4W J		1
R044	R2E DZJ104APA	CARBO 100K 1/4W J		1
R045	R2E DZJ183APA	CARBO 18K 1/4W J		1
R046	R2E DZJ102APA	CARBO 1K 1/4W J		1
R047	R2E DZJ153APA	CARBO 15K 1/4W J		1
R048	R2E DZJ103APA	CARBO 10K 1/4W J		1
R049	R2E DZJ103APA	CARBO 10K 1/4W J		1
R050	R2E DZJ471APA	CARBO 470 1/4W J		1
R051	R2E DZJ472APA	CARBO 4.7K 1/4W J		1
R052	R2E DZJ222APA	CARBO 2.2K 1/4W J		1
R053	R2E DZJ103APA	CARBO 10K 1/4W J		1
R054	R2E DZJ103APA	CARBO 10K 1/4W J		1
R055	R2E DZJ821APA	CARBO 820 1/4W J		1
R056	R2E DZJ473APA	CARBO 47K 1/4W J		1
R057	R2E DZJ822APA	CARBO 8.2K 1/4W J		1
R062	R2E DZJ104APA	CARBO 100K 1/4W J		1
R063	R2E DZJ104APA	CARBO 100K 1/4W J		1
R064	R2E DZJ104APA	CARBO 100K 1/4W J		1
R065	R2E DZJ104APA	CARBO 100K 1/4W J		1
R066	R2E DZJ104APA	CARBO 100K 1/4W J		1
R067	R2E DZJ104APA	CARBO 100K 1/4W J		1
R072	R2E DZJ102APA	CARBO 1K 1/4W J		1
R073	R2E DZJ102APA	CARBO 1K 1/4W J		1
R074	R2E DZJ104APA	CARBO 100K 1/4W J		1
R075	R2E DZJ183APA	CARBO 18K 1/4W J		1
R076	R2E DZJ221APA	CARBO 220 1/4W J		1
R078	R2E DZJ104APA	CARBO 100K 1/4W J		1
R079	R2E DZJ104APA	CARBO 100K 1/4W J		1
R080	R2E DZJ183APA	CARBO 18K 1/4W J		1
SW01	F 3183000	SW		1
SW02	F 3182900	SW		4
VR001	F 3189000	SEMI FIXED 30K		1
VR002	F 3189001	SEMI FIXED 2K		1
VR003	F 3183100	VR 5K B		1
XTAL	F 3184300	CERALOCK 400KHz		1
REL	42329702800	Relay reed		1

Ref. No.	Parts No.	Description	Version	Q'ty
Q034	203 57230608500	2SA 608E – NP		1
Q034	203 57230608600	2SA 608F – NP		1
D014	205 59040442100	DS-442		1
R081	R2E DZJ680A	CARBO 68 1/4W J		1
R082	R2E DZJ680A	CARBO 68 1/4W J		1
R083	R2E DZJ680A	CARBO 68 1/4W J		1
R084	R2E DZJ680A	CARBO 68 1/4W J		1
C018	CC4 73500KD00C0	CERAM 0.047MF 50V		1
C019	CC4 73500KD00C0	CERAM 0.047MF 50V		1
C020	CC4 73500KD00C0	CERAM 0.047MF 50V		1
C021	CC4 73500KD00C0	CERAM 0.047MF 50V		1
67	C 2102502	PWB assy, Phono		1
67-1	F 2102002	PWB		1
PC201	F 3183300	ON1128		1
R201	R2E DZJ681APA	CARBO 680 1/4W J		1
C201	CC1 03500KD00C1	CERAM 0.01MF 50V		1
67-2	F 4877200	Cord assy 10P		1
68	C 2102503	PWB assy, Record		1
68-1	F 2102003	PWB		1
Q301	F 3183200	PN150		1
69	C 2102504	PWB assy, Position		1
69-1	F 2102004	PWB		1
PC401	F 3183300	ON1128		1
R401	R2E DZJ162APA	CARBO 1.6K 1/4W J		1
69-2	C 4872500	Cord assy		1
C402	CC4 73500KD00C0	CERAM 0.047MF 50V		1
70	C 2102505	PWB assy, Power	EUR,AUS	1
70	C 2102705	PWB assy, Power	CND	1
70-1	F 2102005	PWB		1
R501	R3A XBJ473A	OMF 47K 1W J	EUR,AUS	1
R501	R3A XBJ183A	OMF 18K 1W J	CND	1
⚠ C501	C2E FRM103C-S	MYLAR 0.01MF	EUR,AUS	1
⚠ C501	F 4795000	MYLAR 0.01MF	CND	1
⚠ SW501	F 3182700	SW		1
⚠ 70-2	42349212800	Fuse ST4 250mA	CND	1
70-3	42359230000	Fuse holder	CND	2
71	C 2102506	PWB assy, Neon		1
71-1	F 2102006	PWB		1
71-2	F 4876700	Neon lamp		1
72	131 23608141000	Clamp wire		4
⚠ 73	42432000710	Power cord	EUR	1
⚠ 73	F 471001	Power cord	AUS	1
⚠ 73	F 4756200	Power cord	CND	1
74	F 3132403	Wire shield assy		1
75	F 3182800	Motor, arm lifting		1
76	F 3184400	Motor, tracking		1
77	F 3183500	Motor		1
78	F 3175500	Lamp		1
79	F 3185900	SW		2
⚠ 80	F 3185100	Power trans.	EUR	1
⚠ 80	F 3185200	Power trans.	AUS	1
⚠ 80	F 3185301	Power trans.	CND	1
81	D 2101500	Turntable platter mat		1
82	A 4882300	Sheet		1
84	D 4310000	45 rpm adapter		1

EUR : for Europe
AUS : for Australia
CND : for Canada

PARTS LIST

Ref. No.	Parts No.	Description	Version	Q'ty
150	H 3187500	Box corrugate-Exp.	EUR,CND	1
150	H 3187501	Box corurgate-Exp.	AUS	1
151	D 2103000	Pad front		1
152	D 2103100	Pad rear		1
153	H 4880300	Pad		1
154	H 4880400	Pad, arm		1
155	134 2420815900	Spacer		3
156	134 2210412300	Screw transit		3
157	D 4873200	Sleeve		2
158	R 4873100	Screw transit		2
159	H 4857700	Label	CND	1
160	H 2101900	Sheet		1
162	131 62419002010	Bag polyethylene-Ind.		1
163	131 62719104000	Bag fan		1
164	H 3184200	Explanetory booklet		1
165	H 4880500	Pad		1
166	H 4883300	Pad		1
167	H 4431200	Serial No. label		2
168	K 4875100	Name plate	EUR	1
168	K 4881000	Name plate	AUS	1
168	K 4875200	Name plate	CND	1
169	K 4882400	Label		1
170	H 4880900	Notes		1
171	H 4882600	Notes		1

To service personnel
Make sure that only replacement parts recommended by the manufacturer should be used when the parts marked "⚠" in schematic diagram are exchanged.
Never fail to make leakage-current or resistance measurements before returning the appliance to the customer so as to make sure that exposed parts are acceptably insulated from the supply circuit.