



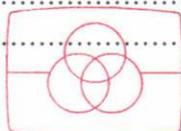
SERVICE MANUAL TURNTABLE

MODEL DP-EC10



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SPECIFICATIONS

1. PHONO-MOTOR SECTION

Type	Electronically controlled fully automatic operation	
Drive mechanism	Direct drive	
Motor	4-phase 12-pole brushless DC servo motor	
Platter	Diameter	33.3 cm (13-1/8")
	Weight	1.3 kg
	Material	Aluminum die-cast
Platter speed	33-1/3, 45 r.p.m.	
Wow and Flutter	0.03% (Wrms) ±0.03 (Wp-p, DIN 45-507)	
Signal to noise ratio	65 dB (IEC-B) 75 dB (DIN 45-539, -B)	

2. TONE ARM

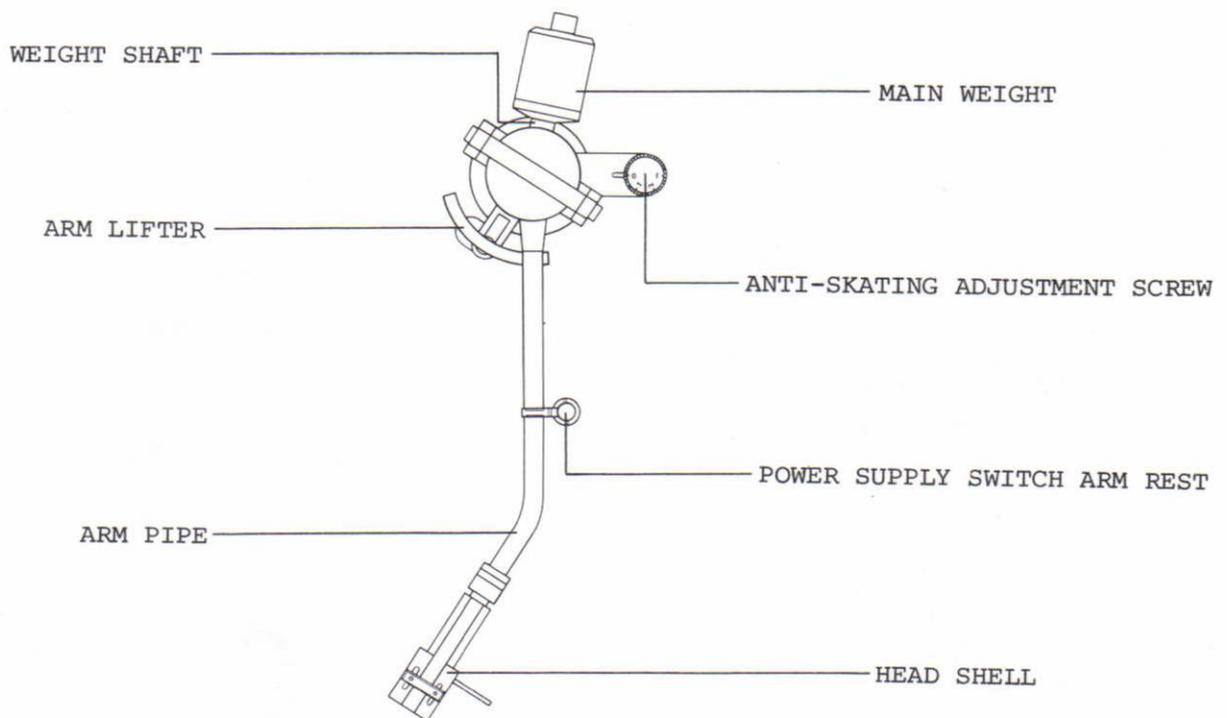
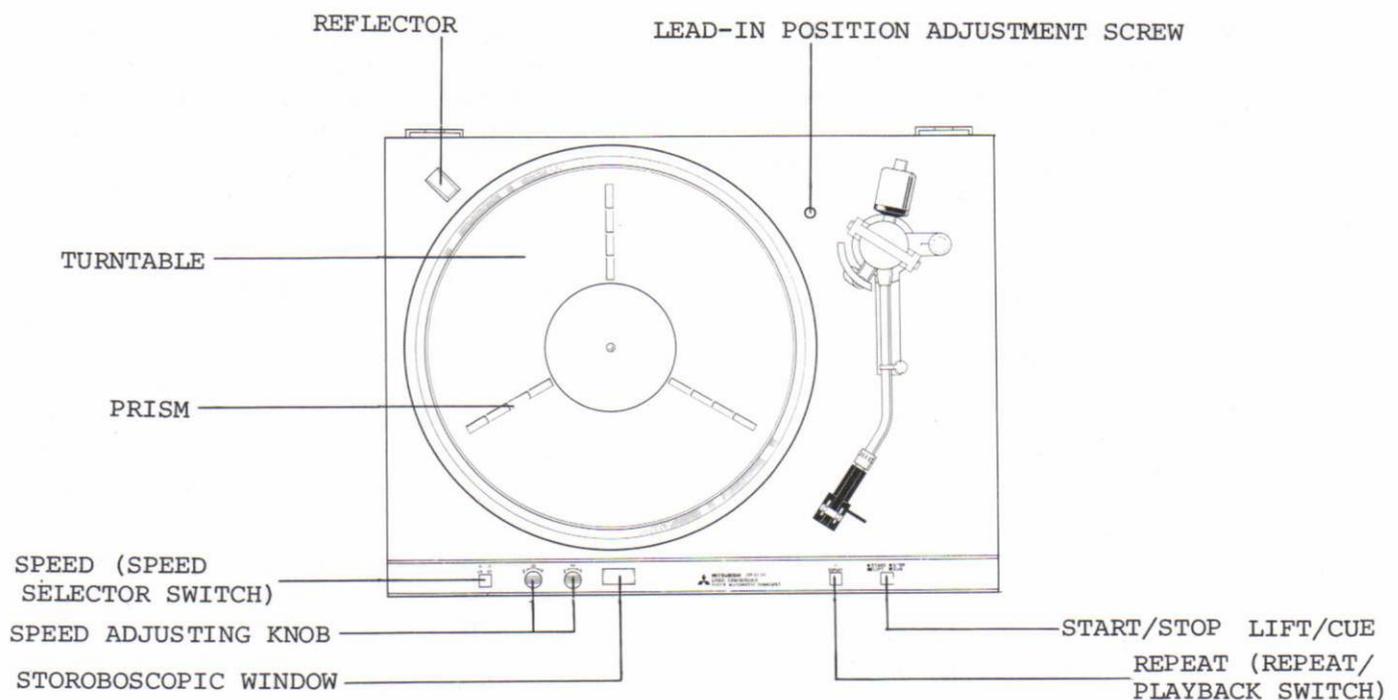
Type	S-type universal static balanced	
Overall length	320 mm (12-5/8")	
Effective length	227 mm (8-15/16")	
Overhang	14 mm (9/16")	
Tracking error (30 cm LP)	+2.9°- -1.5°	
Offset angle	22°	
Head shell	Material	Magnesium alloy diecast
	Weight	6.2 g
Possible cartridge weight	11 g to 16.5 g (with head shell) 16 g to 21.5 g (with head shell and sub-weight)	

3. GENERAL

Power consumption	9 W
Dimensions (W × H × D)	470 × 135 × 395 mm (18-1/2 × 5-5/16 × 15-5/8")
Weight	12 kg (26-3/4 lbs)

Design and specifications are subject to change without notice for improvement.

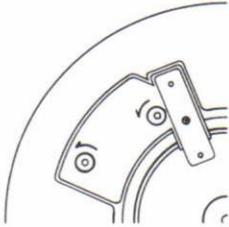
DESCRIPTION AND FUNCTION OF EACH PART



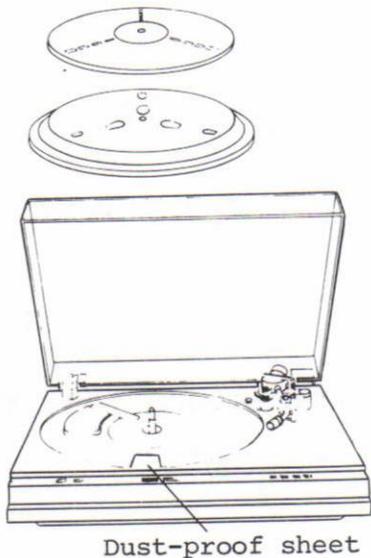
ASSEMBLY

- (1) Remove the two screws fixing the transformer by turning them in the arrow direction. (The screws are labeled).

When moving this unit, tighten the screws.



- (2) Take off the dust-proof sheet on the stroboscopic window under the turntable.



- (3) Place fingers on the three holes in the center and insert the turntable into the turntable shaft.

Note: Do not touch the stroboscopic window covered with special coating.

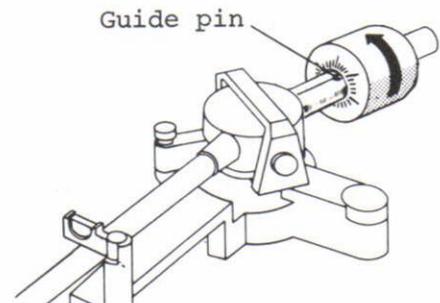
- (4) Mount the turntable sheet on the platter.

Three prisms are placed radially on the turntable. Position the turntable sheet so as to align the sheet grooves with the prisms, and verify that all the prisms are correctly placed in the turntable holes.

Note: The prisms send the light which selects the disc size to the sensor in the turntable. If they are not correctly positioned, they may not function properly.

- (5) Mount the main weight.

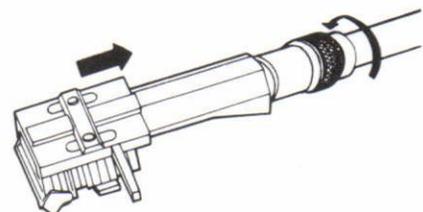
Take out main weight from the accessory box, and mount it on the end of the tonearm by depressing the guide pin and turning it counterclockwise towards you as shown in the illustration.



- (6) Mounting the head shell

Cartridge installation is described in the subsequent page.

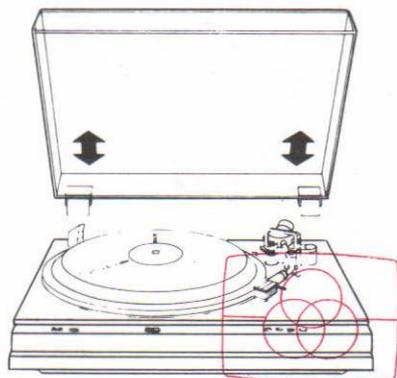
Tighten the head shell with the cartridge fixed completely by pushing it and the lock nut as illustrated.



REMOVING THE DUST COVER

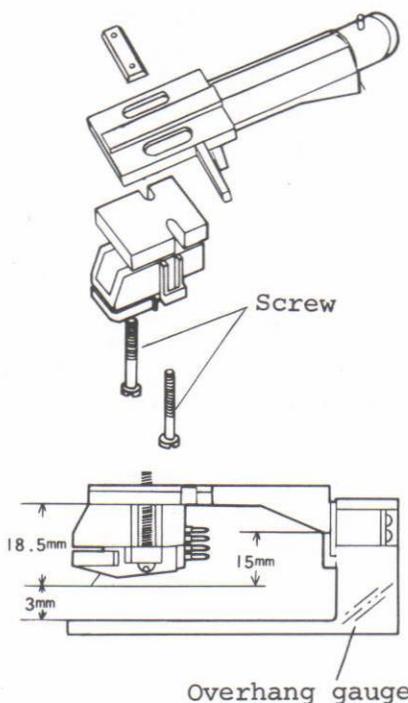
Insert the dust cover right on the hinge part into the holder itself on the die cast base.

To remove it, hold the cover with hands and push it up while it is open.



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CARTRIDGE INSTALLATION

This unit is not provided with any cartridge. Mount the cartridge on the market in accordance with the following steps.

(1) Verifying the stylus height

Verify the stylus height of the cartridge to be mounted.

The standard stylus height from the cartridge mount of the shell provided for the unit is 18.5 mm. Check the specification of the cartridge to be mounted, and select a proper spacer from among those provided to make the stylus height 18.5 mm.

The thick spacer provided is 4 mm and the thin one 2 mm. When using a shell on the market or when the cartridge specification is not known, verify the stylus height by using the overhang gauge provided.

The proper stylus height from the center of the head shell connector is 15 mm. The gauge inserted into the shell has a height of 18.5 mm from the surface below. A clearance of 3 mm is, therefore, a correct height.

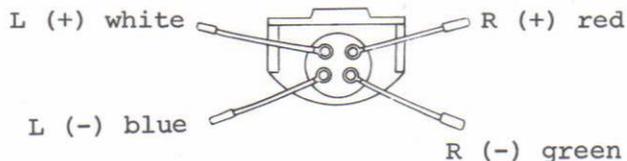
Note: When a shell other than the one provided is used, the correct stylus height from the center of the head shell connector is 15 mm. Verify it with the gauge provided.

(2) Lead wire connections

Connect the lead wires according to the cartridge marks and the color codes as follows:

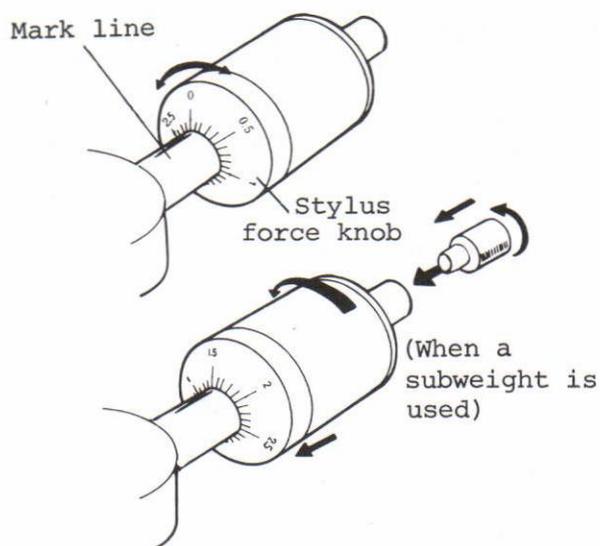
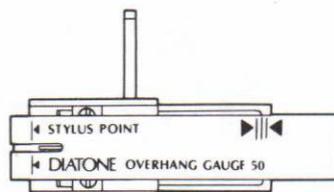
Cartridge marks	Lead wire color codes
L (+)	white
L (-) (G) (E)	blue
R (+)	red
R (-) (G) (E)	green

o Mount the cartridge on the head shell with screws of appropriate length.



(3) Adjusting the stylus tip position

Adjust the stylus tip with the overhang gauge so that it reaches the stylus position (◀) of the gauge, after which fix the cartridge.



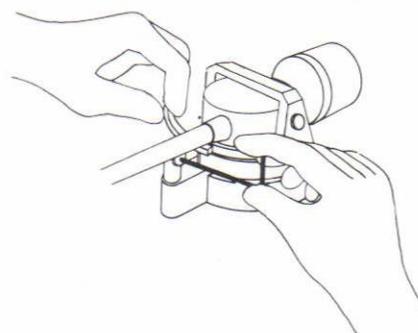
ADJUSTMENT

STYLUS FORCE ADJUSTMENT

Adjust the stylus force by the following steps:

- (1) Adjust the anti-skating adjustment knob by setting it to "0".
- (2) Remove the tonearm off the arm rest.
- (3) Maintain the horizontal balance by shifting and turning the main weight while lightly holding the finger of the head shell with one hand.
- (4) Hold the main weight to prevent it from rotating and set the "0" scale of the stylus force knob to the mark line of the weight shaft.
- (5) Return the tonearm to the arm rest and increase the stylus force while turning the main weight counterclockwise towards you.

Set the scale of the proper stylus force value of the cartridge to the mark line.



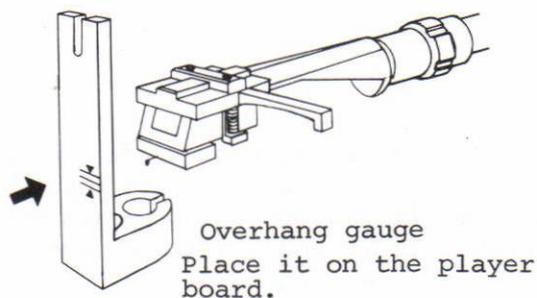
Note: If the weight of the head shell exceeds 16.5 g, screw the subweight provided into the rear end of the weight shaft to maintain a balance.

If a cartridge with the head shell weighing more than 21.5 g is used, the stylus force cannot be adjusted with the subweight provided. In this case, buy an appropriate subweight at the dealer from whom you bought your unit.

STYLUS TIP HEIGHT ADJUSTMENT

Check to see that the stylus tip height is proper before starting Auto Play.

- (1) Turn on the power, remove the arm from the arm rest and keep the arm in an UP position while depressing the control button.
- (2) Put the overhang gauge on the player board as illustrated.
- (3) Adjust the stylus tip height to reach the center of the three mark lines printed on the gauge as STYLUS HEIGHT for the stylus position by turning the stylus tip height adjustment screw with a hexagon wrench while watching the tip in the arrow direction.



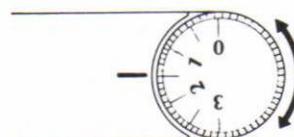
Note:

- o When the stylus tip height is too low
 - (1) While the arm is moving horizontally, the tip is liable to touch the record and turntable sheet.
- o When the height is too high
 - (1) The stylus tip floats at a low position of a warped record, which will damage a proper record play.

ANTI-SKATING ADJUSTMENT

This adjustment is required to assure smooth lowering of the stylus tip onto the record groove. Set its anti-skating dial to the same value as that of the cartridge to be used.

Note: Do not set the anti-skating dial in excess of the stylus force of the cartridge. Otherwise, it may damage normal auto play.

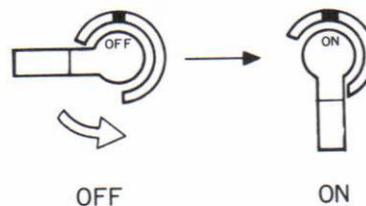


OPERATING THE TURNTABLE

AUTO PLAY

Prepare the following before the playback.

- (1) Place a record on the turntable.
- (2) Turn the power supply switch knob towards you as illustrated, which turns on the power. At the same time the arm becomes free, making the playback ready.



STARTING THE PLAYBACK

This unit has been set to rotate the record at 33 rpm regardless of its record size when the power is turned on. When using a record of 45 rpm, depress the speed selector switch to set its speed at 45 rpm after turning on the power.

Depress the start button.

This turns on the operating circuit.

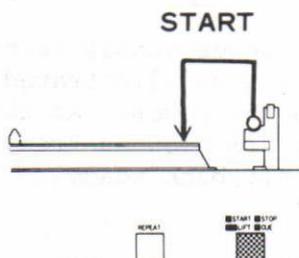
The turntable starts to rotate.

The arm lifter is actuated to lift the tonearm gently and the tonearm moves horizontally towards the inside. The tonearm stops above the outside lead-in groove of the record and descends quietly onto the record to begin the playback.

Note: No noise will be heard before the playback is started because muting takes place in the cartridge output circuit.

Adjust the fine speed adjustment knob so that the flow of the stripes of the stroboscope while watching it. If the stripes flow towards the right, adjustment shall be made towards F direction.

If they flow towards the left, adjustment shall be made towards S direction.

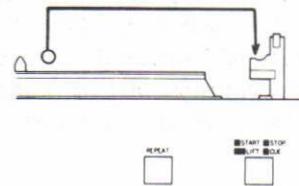


ENDING THE PLAYBACK

When the playback is completed, the tonearm will be lifted gently to return to the arm rest and the turntable will be stopped. Note that the power supply is on in preparation for the next playback.

When the entire program is finished, check to see that the tonearm has descended and then turn off the power supply.

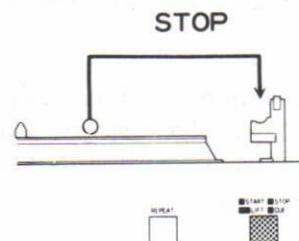
RETURN



STOP

To stop the playback of a record in the middle, depress the stop button. The tonearm will return to the arm rest wherever it is and the turntable will be brought to a stop.

Note: The tonearm will remain UP if you keep on depressing the stop button.



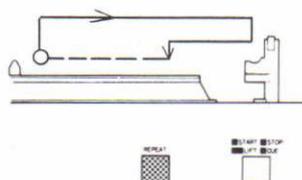
REPEATING THE PLAYBACK

To listen the same record repeatedly, set the repeat switch to ON position.

The tonearm ascends when the playback is completed and is then shifted to the position above the outermost groove. Thereafter the records starts the playback from the outermost groove.

To release the repeat playback, depress the repeat button again.

As the repeat indicator goes off, it can be confirmed whether the repeat playback is released.

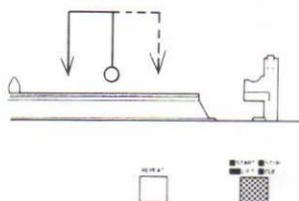


STARTING THE PLAYBACK AT THE MIDDLE (How to use the lifter)

To start the playback at any point in the middle of the record, proceed as follows:

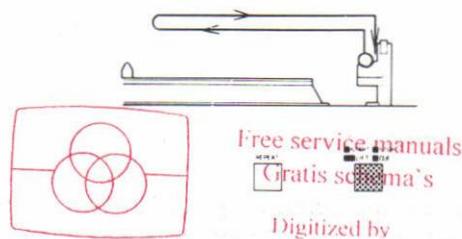
- (1) Keep on depressing the lift button until the arm has completed lifting up and the tone will then stop.
- (2) Move the tonearm manually to any desired position.
- (3) Cue down the tonearm to start the playback by depressing the cue button.

Note: When the tonearm is in an UP state, it can be manually moved to any desired position. At this time horizontal movement seems to be slightly heavy, but it is due to the fact that the clutch has been engaged. So there is no trouble occurring in the tonearm.



WHEN THE RECORD CANNOT BE PLACED ON THE TURNTABLE

Even if the start button is depressed, the stylus does not touch the turntable. At this time the tonearm moves horizontally on the turntable to return to the arm rest.



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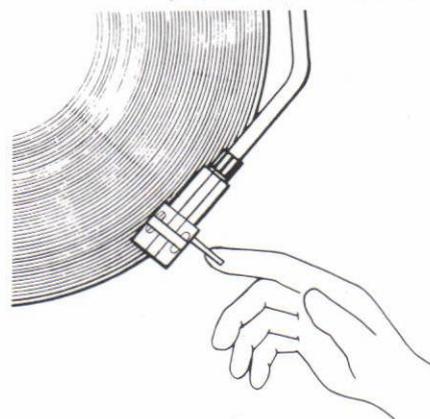
MANUAL OPERATION

This turntable can be manually operated as the conventional manual player.

Lift the tonearm from the arm rest manually and lower it on the record.

When the playback is finished, the tonearm will be returned automatically to the arm rest as in the auto play.

Note: Except when the arm is during Auto Play, the tonearm can be manually moved freely.

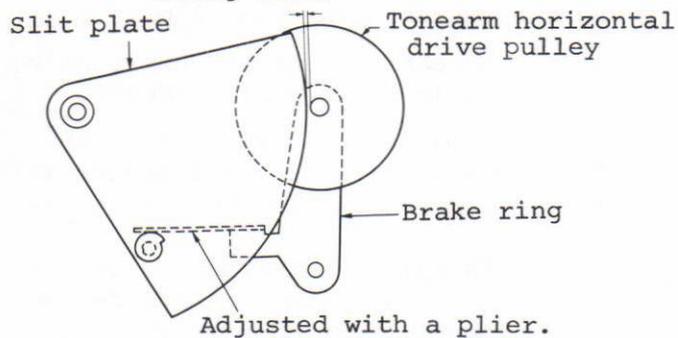


- 3) The lead-in and lead-out position is adjusted with adjusting screws in Step 2 mounting. If its position is not correct, adjustment will be impossible.
- 4) Adjust the rest/end and lead-out position after having mounted the tonearm.

BRAKE ADJUSTMENT

The brake is adjusted by adjusting the brake lever with a plier so that a clearance between the slit plate and the horizontal drive pulley shaft can be 0.5 to 1.0 mm with the state of the tonearm being down.

To be adjusted to be a clearance of 0.5 to 1 mm with the tonearm being down.



Brake Adjustment

POWER FAILURE

- o When power failure suddenly happens during playback, the playback will be kept on after power supply is restored or return the record by depressing the stop button.
- o When power failure happens while the tonearm is moving horizontally, shift the tonearm manually to the arm rest and depress the start button. This cues the tonearm down to the arm rest.

Note: When the tonearm is at a standstill after the power supply is restored, it starts to cue down if the stop button is depressed. If the tonearm is not on the record at this time, it may damage the stylus tip.

NON-AUTO PLAY RECORD

Such special records as those mentioned below are not allowed Auto Play. Therefore run them manually.

- o Transparent records (red, blue, yellow records, etc.)
- o Extremely warped records
- o Records not conformity with JIS specifications
- o 25 cm record

If a 25 cm record is used, the stylus is lowered on the position of the 17 cm record. Then operate the record manually.

ON-OFF OPERATION OF POWER SUPPLY SOURCE

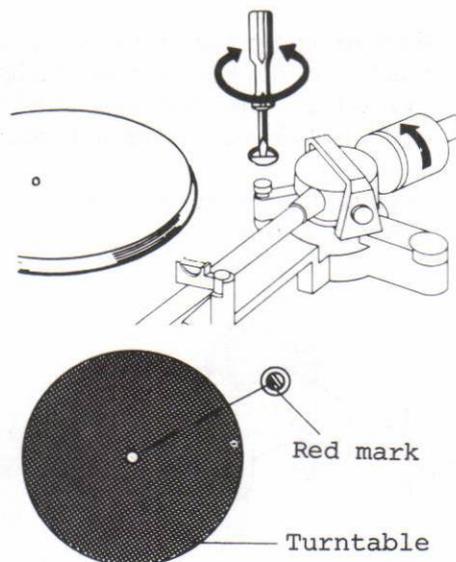
If the power supply source is turned on and off promptly, the tonearm driving motor may rotate

ADJUSTMENT OF EACH PART

LEAD-IN POSITIONING

When the lead-in position of the stylus is not correct during Auto Play (when the stylus is down outside the record), adjust it by turning the lead-in position adjusting screw with a screw-driver.

1. Remove the rubber cap.
2. The tonearm comes at the innermost position when the red mark of the adjusting screw reaches the nearest position to the platter. So adjust the adjusting screw to cause the stylus to be placed in the optimum position.



REST POSITION ADJUSTMENT

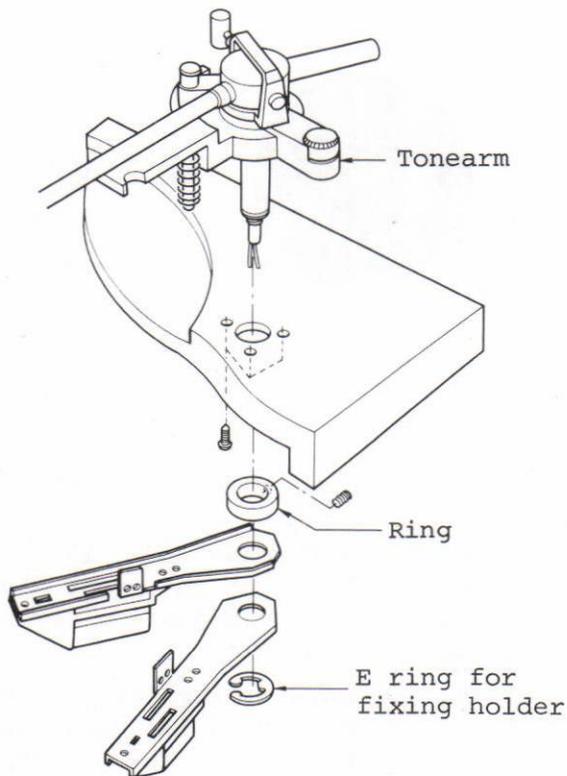
Remove the platter and you will find the adjusting hole at the right hand in the rear. Turn the adjusting screw with the screw-driver.

When the red mark of the screw is at the position of 45° on the upper left, the tonearm returns to the outermost position, while when the red mark is at the position of 45° on the lower right, the tonearm returns and stops at the innermost position of the turntable.

REPLACING THE TONEARM

1. Removing the Tonearm

- 1) Fix the tonearm on the rest.
- 2) Remove the bottom cover by placing the turntable face downward.
- 3) Remove the tonearm output lead-in wire with a soldering iron.
- 4) Loosen the two slit plate fixing screws and remove the slit plate. (Removal is made by turning the slit plate.)
- 5) Remove the E ring fixing the center holder and the sensor holder (Position Rest/End).
- 6) Remove the ring determining the position of the sensor holder (fixed to the tonearm shaft) with a 1.5 mm hexagon wrench.
- 7) Remove the four mechanical base fixing screws.



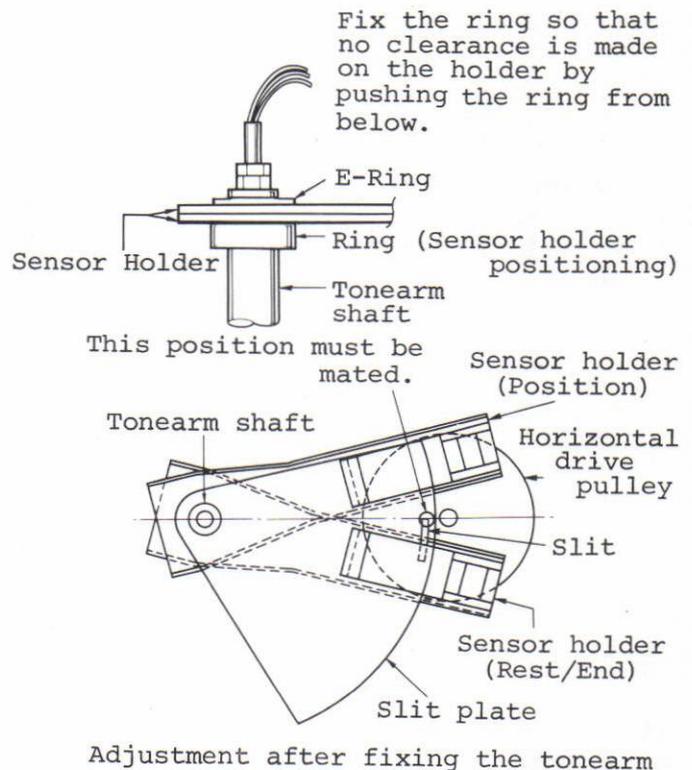
Disassembled view of the tonearm

- 8) Remove the three tonearm mounting screws and take out the tonearm from the rest while holding the mechanical base as if it was afloat. Thereafter remove the tonearm end by pushing it inward.

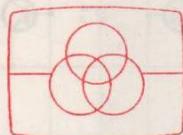
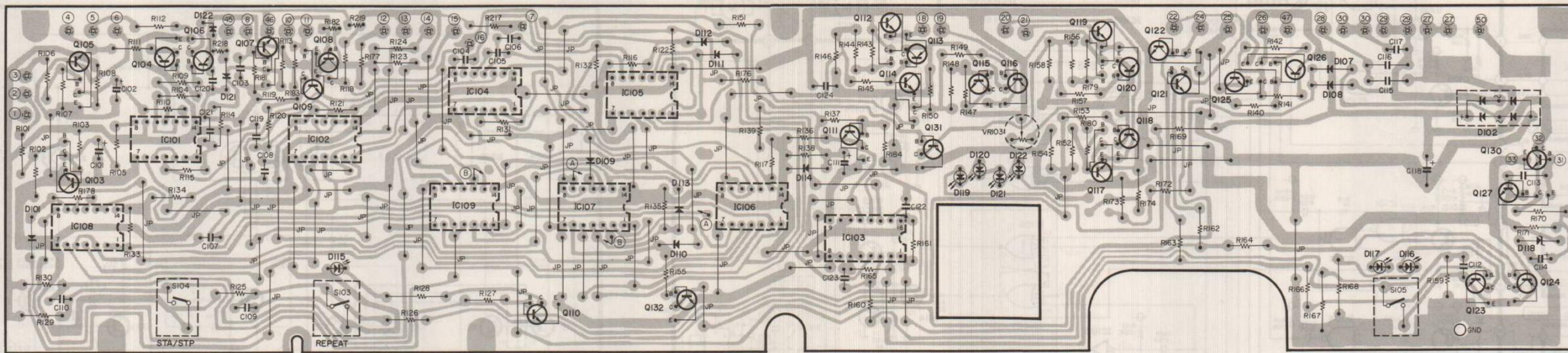
2. Mounting the Tonearm

Mounting of the tonearm is made in the reverse procedure of its removal by making the following adjustment.

- 1) The ring must be attached to the shaft as illustrated after fixing the tonearm.
- 2) When mounting the slit plate, the slit end (outermost slit) of the slit plate is matched with the position where the center of the tonearm shaft meets that of the horizontal drive pulley.

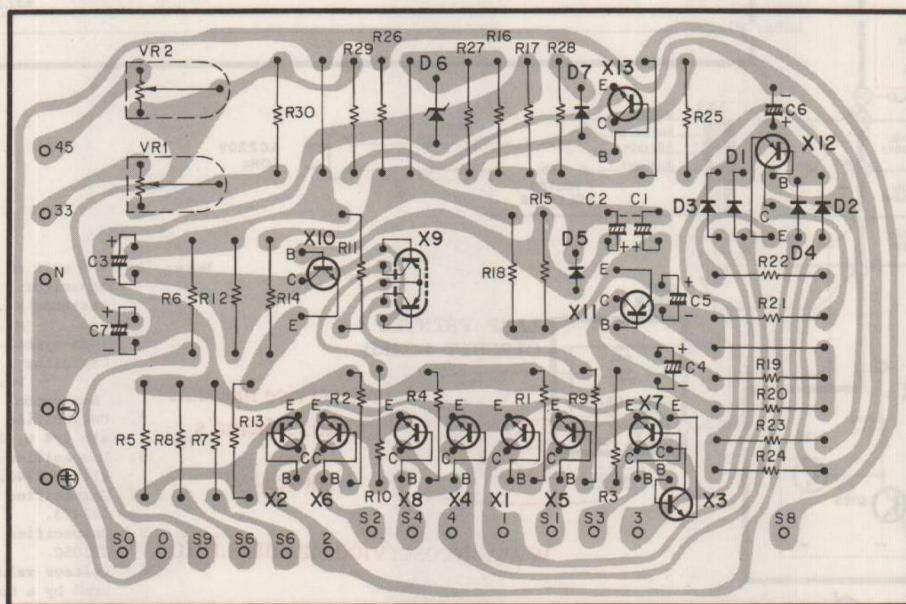


Adjustment after fixing the tonearm

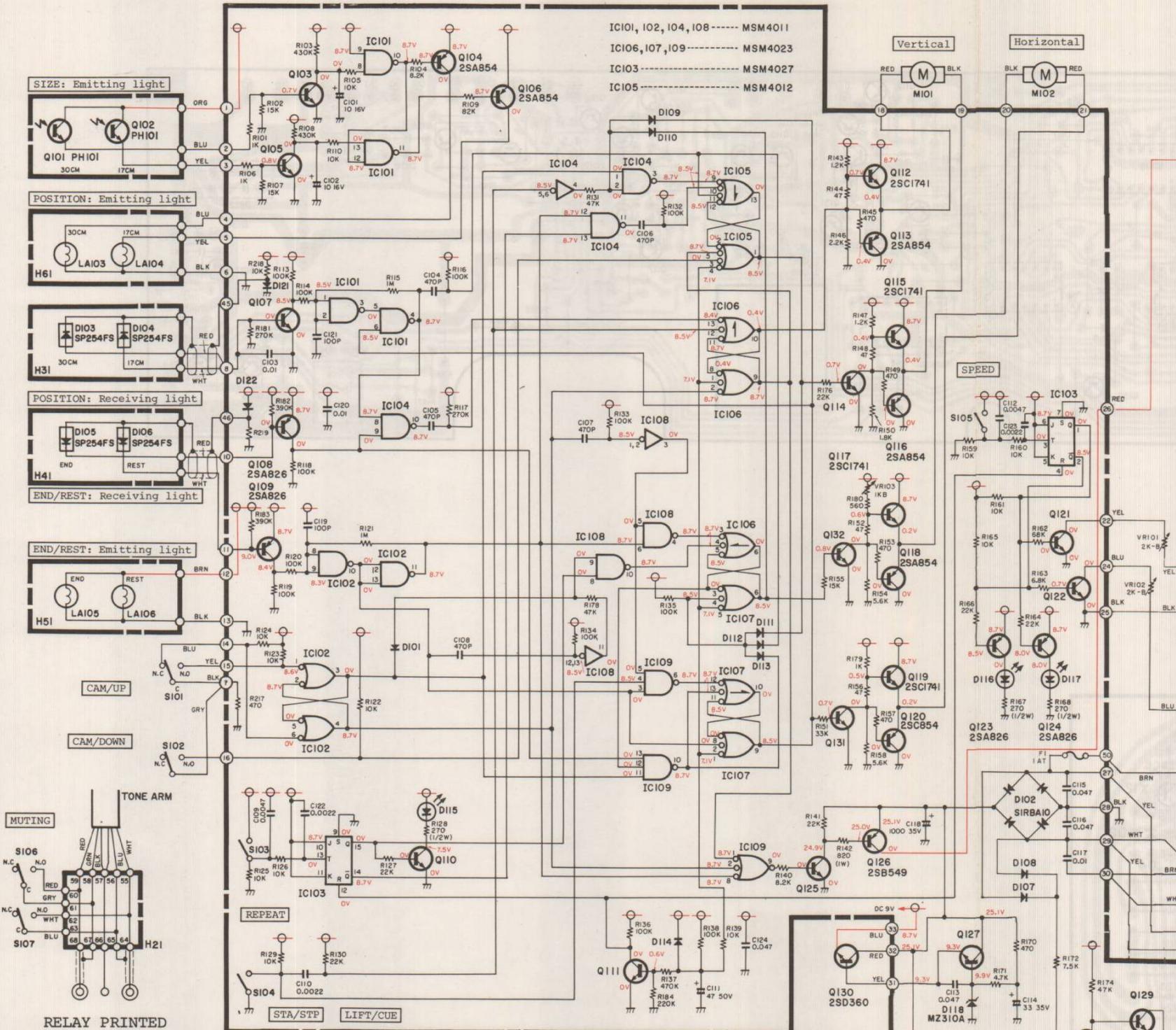


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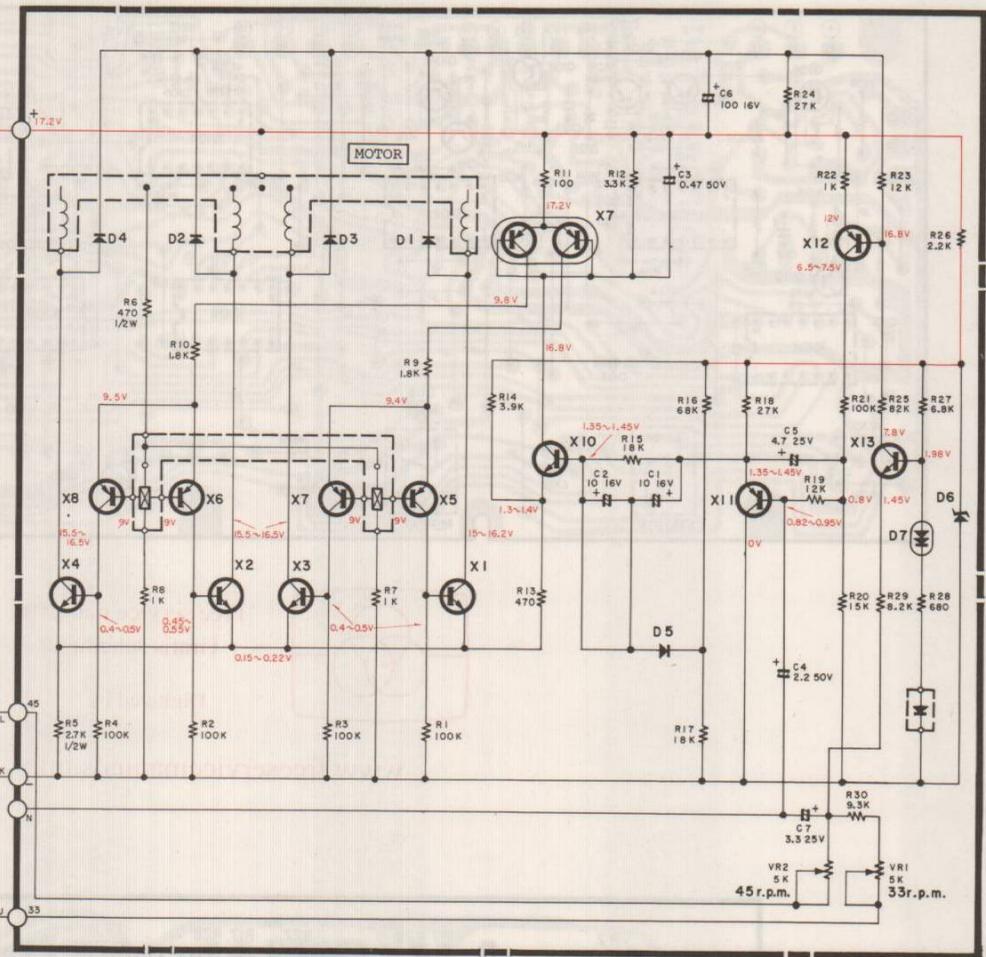
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MAIN PRINTED CIRCUIT BOARD

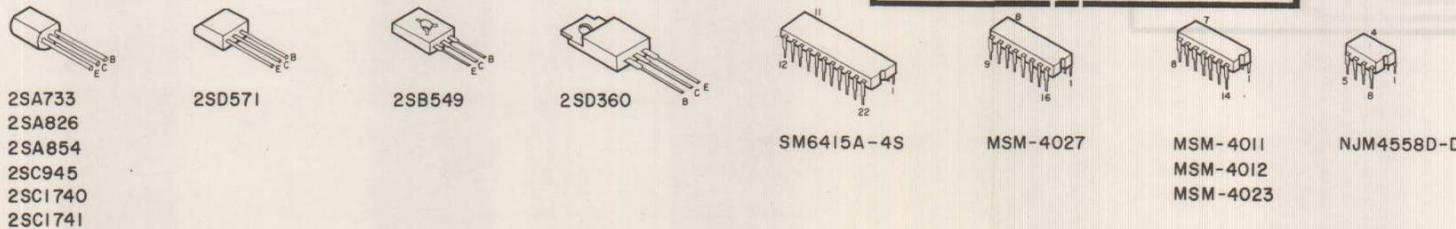


SERVO PRINTED CIRCUIT BOARD

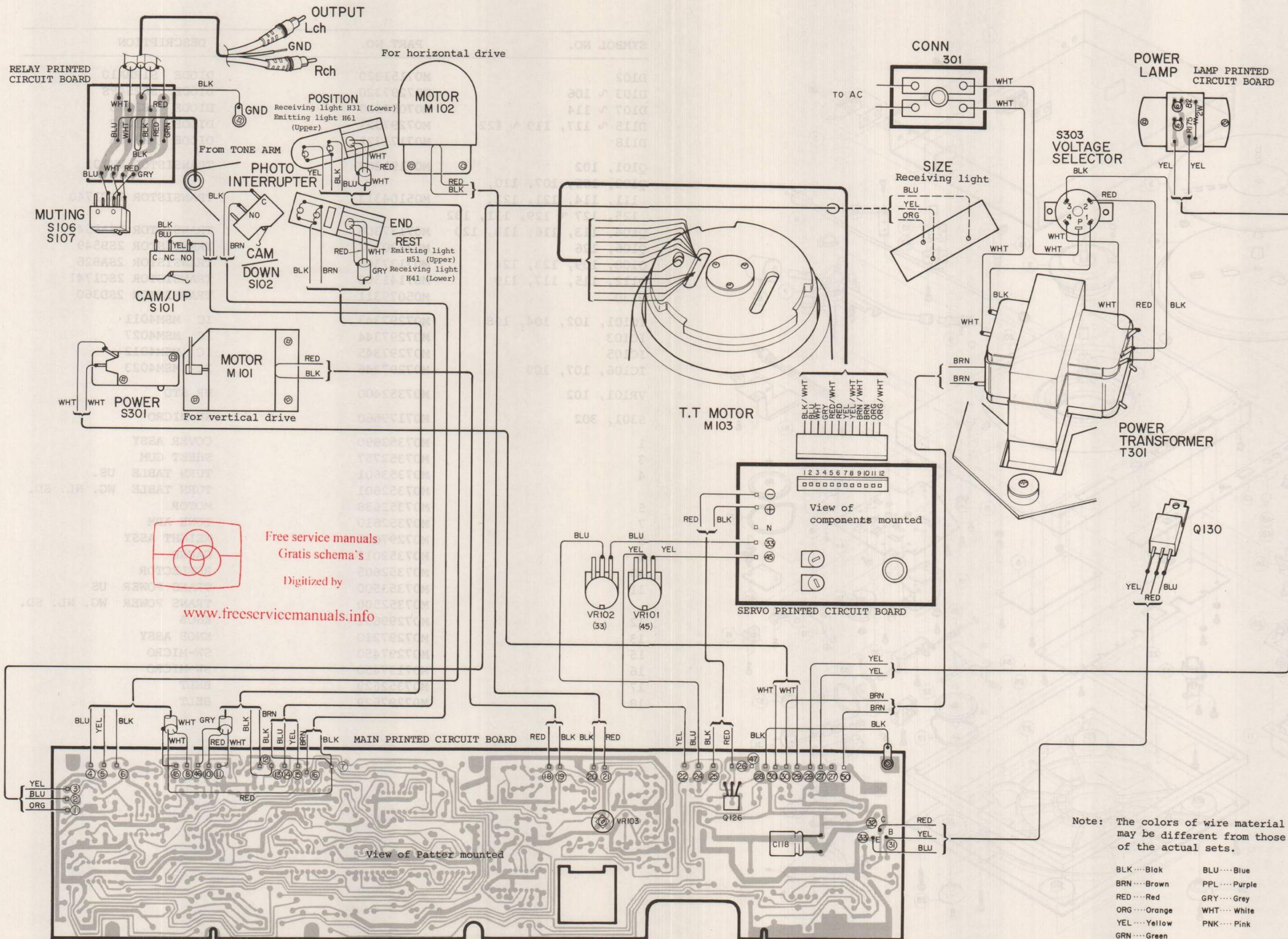


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EXTERNAL VIEW AND POLARLITY DIAGRAM OF THE TRANSISTOR AND IC

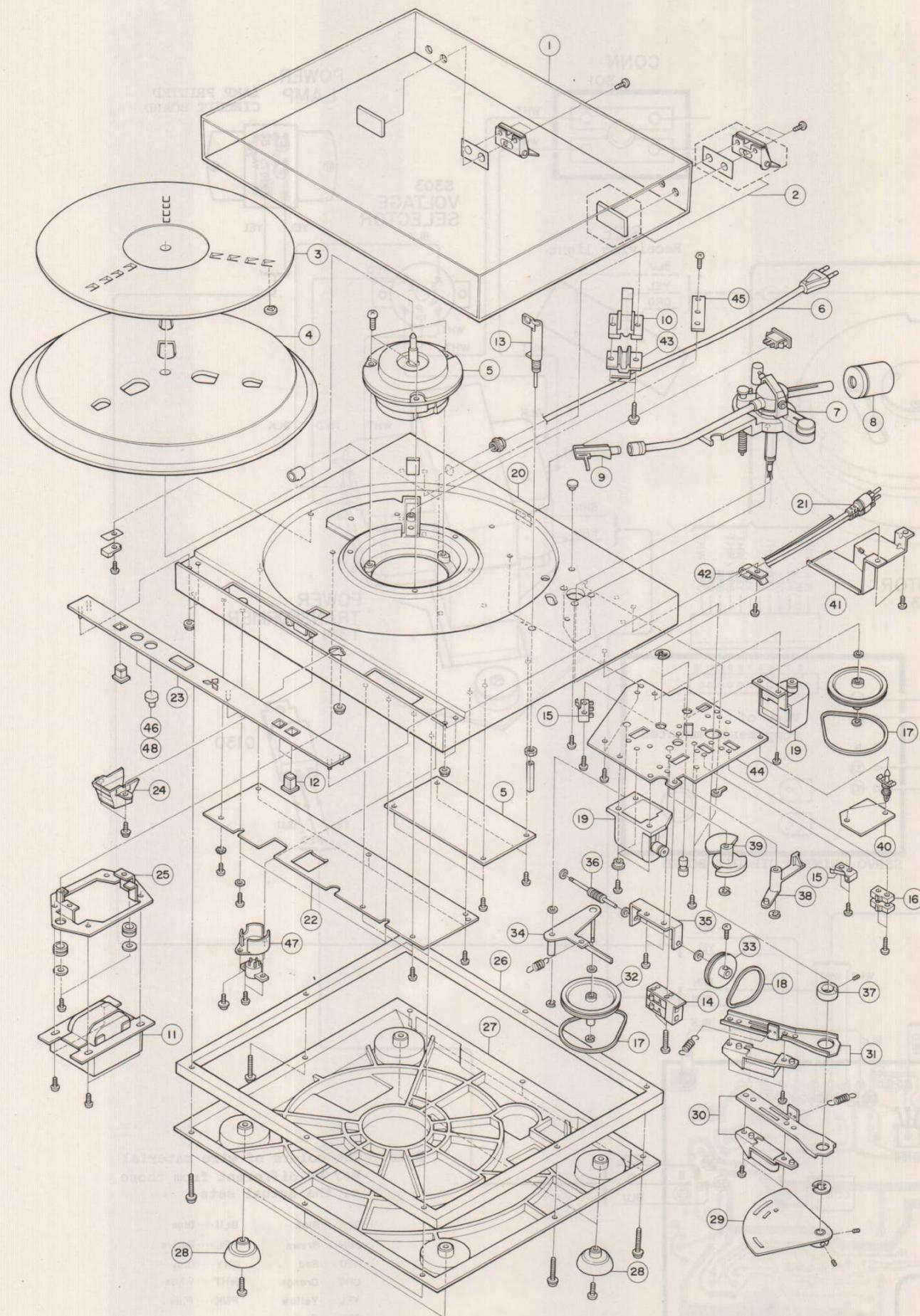


- Note: 1. The unit of resistance and capacitor
Resistor K KΩ
 M MΩ
Non-symbol Ω
Capacitor P pF
 Non-symbol μF
2. Unspecified resistors are all 1/4 W, J (5%).
3. Unspecified transistors are all 2SC1740.
4. Unspecified diodes are all 1S2473.
5. Unspecified LEDs are all SR105C.
6. Voltage value is that measured by a tester of 30 kΩ/V.
7. Pu arm is at the position of rest. The voltage value of the servo circuit is that given when revolution of the turntable is 33-1/3.
8. This circuit is a basic circuit diagram and is subject to change without notice for improvements.



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EXPLODED VIEW



PARTS LIST

SYMBOL NO.	PART NO.	DESCRIPTION
D102	M07151320	DIODE 1SRBA10
D103 ~ 106	M07297320	DIODE SP254FS
D107 ~ 114	M07060320	DIODE 1S2473
D115 ~ 117, 119 ~ 122	M07297321	DIODE SR105C
D118	M07171322	DIODE MZ310A
Q101, 102	M07191303	TRANSISTOR PH101
Q103, 105, 107, 110, 111, 114, 121, 122, 125, 127 ~ 129, 131, 132	M05104313	TRANSISTOR 2SC1740
Q104, 113, 116, 118, 120	M07137308	TRANSISTOR 2SA854
Q106, 126	M07230307	TRANSISTOR 2SB549
Q108, 109, 123, 124	M07137306	TRANSISTOR 2SA826
Q112, 115, 117, 119	M07141303	TRANSISTOR 2SC1741
Q130	M05079311	TRANSISTOR 2SD360
IC101, 102, 104, 108	M07297343	IC MSM4011
IC103	M07297344	IC MSM4027
IC105	M07297345	IC MSM4012
IC106, 107, 109	M07297346	IC MSM4023
VR101, 102	M07352400	VR STD
S301, 302	M07179660	SW-MICRO
1	M07352690	COVER ASSY
3	M07352757	SHEET GUM
4	M07353601	TURN TABLE US.
	M07352601	TURN TABLE WG. NL. SD.
5	M07352638	MOTOR
7	M07352610	TONE ARM
8	M07297635	WEIGHT ASSY
9	M07352012	GAUGE
10	M07352605	REFLECTOR
11	M07353500	TRANS POWER US
	M07352500	TRANS POWER WG. NL. SD.
12	M07299651	KNOB
13	M07297210	KNOB ASSY
15	M07297450	SW-MICRO
16	M07137450	SW-MICRO
17	M07352629	BELT
18	M07297629	BELT

SYMBOL NO.	PART NO.	DESCROPTION
19	M07297639	MOTOR
28	M07297695	LEG
47	M07295450	SW-ROTARY
	M07191603	ADAPTOR
	M07299734	HEAD SHELL ASSY
	M07297636	SUB WEIGHT
	M07297250	LAMP 5 V 0.06 A
	M07297251	LAMP 12 V 0.05 A
	M07297660	SW-PUSH
	M07352490	FUSE 1 A

