PS-X3

AEP Model

Cartridge is not supplied with this turntable system.

STEREO TURNTABLE SYSTEM

SPECIFICATIONS

GENERAL

Power Requirements: 110, 120, 220, 240 V ac, 50/60 Hz

Power Consumption: 12 W

Dimensions: Approx. 445 (w) × 150 (h) × 375 (d) mm
Approx. 17 1/2 (w) × 5 7/8 (h) × 14 3/4 (d) inches
including projecting parts and controls

Weight: Approx. 10.2 kg, 22 lb 8 oz (net)
Approx. 11.9 kg, 26 lb 4 oz (in shipping carton)

TURNTABLE

Platter: 31.7 cm, 12½ inches aluminum-alloy diecast

Motor: DC servo-controlled motor (brushless and slotless)

Drive System: Direct drive, crystal lock control system

Speed: 33 1/3 rpm, 45 rpm

Starting Characteristics: Comes to nominal speed within a third revolution (33 1/3 rpm)

Wow and Flutter: ±0.045% (DIN)
0.025% (WRMS)

S/N Ratio: 73 dB (DIN-B)

Initial Drift: Within 0.0003%

Load Characteristics: 0% at 150 g tracking force

Speed Deviation: Within 0.003%

TONEARM

Type: Statically balanced, universal pivot

Pivot to Stylus Length: 216.5 mm, 8 1/2 inches

Overall Arm Length: 300 mm, 11 7/8 inches

Overhang: 16.5 mm, 21/32 inches

Tracking Error: +3°, −1°

Tracking-force Adjustment Range: 0–3 g

Shell Weight: 10.5 g

Cartridge Weight Range: 2.5–9.5 g
8–14.5 g (with extra weight)

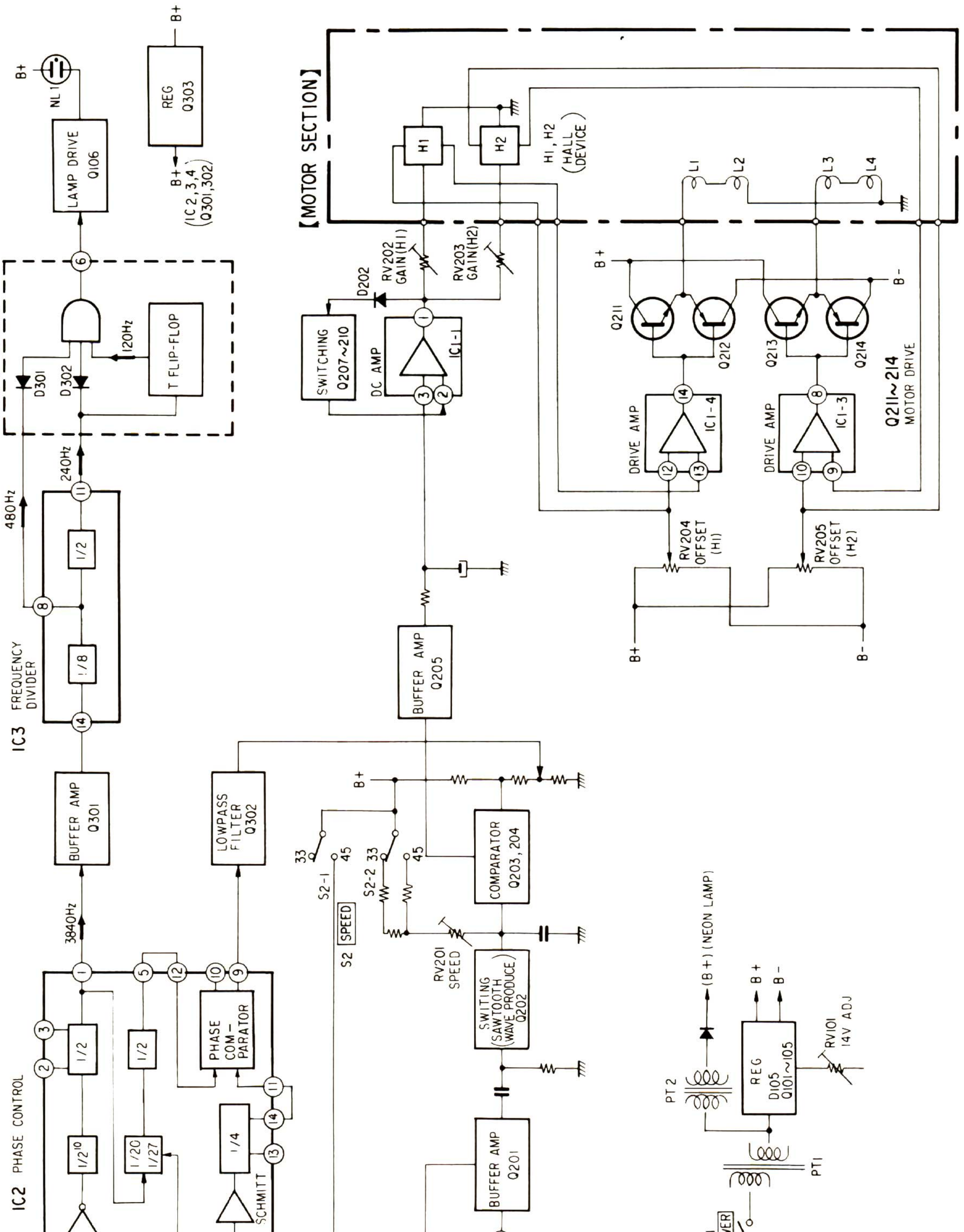
SAFETY-RELATED COMPONENT WARNING!!

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

SONY®

SERVICE MANUAL

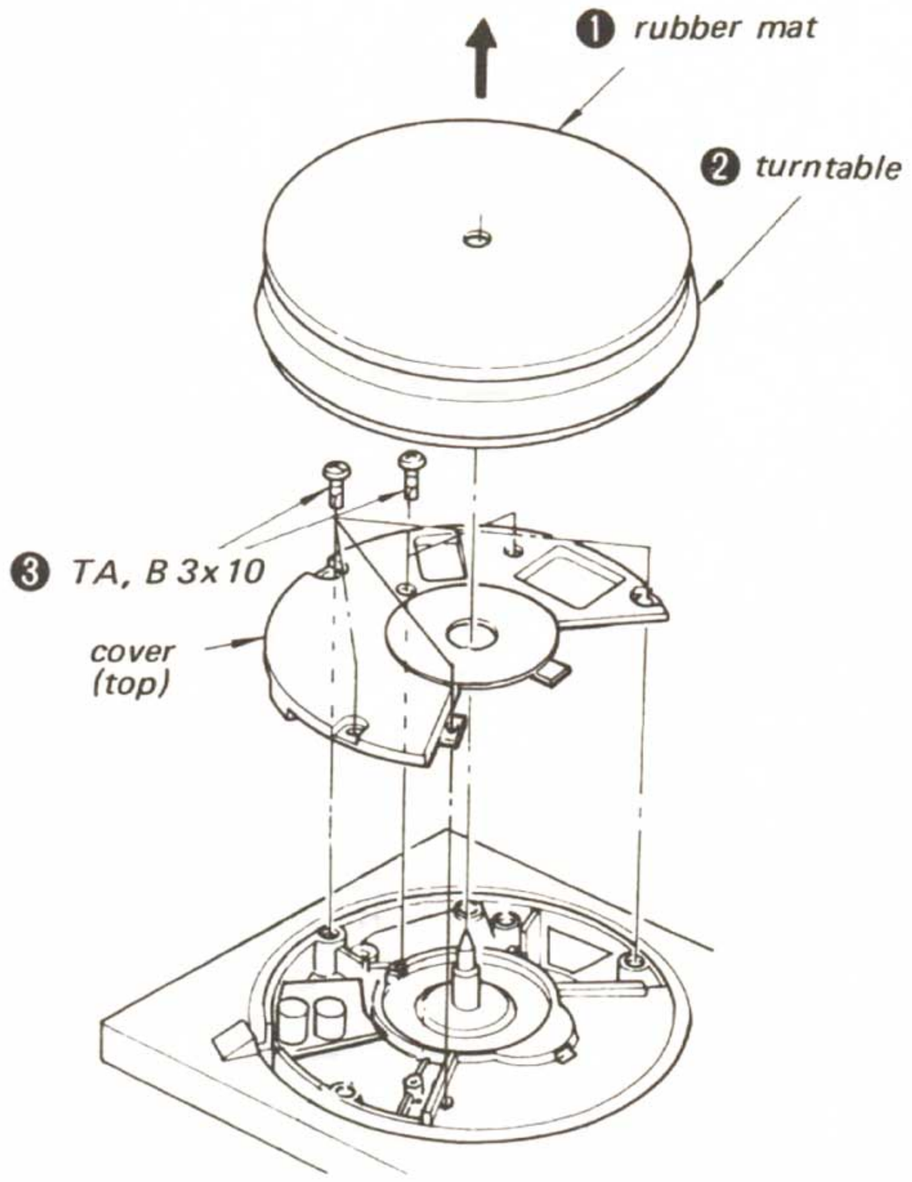
SECTION 1
BLOCK DIAGRAM



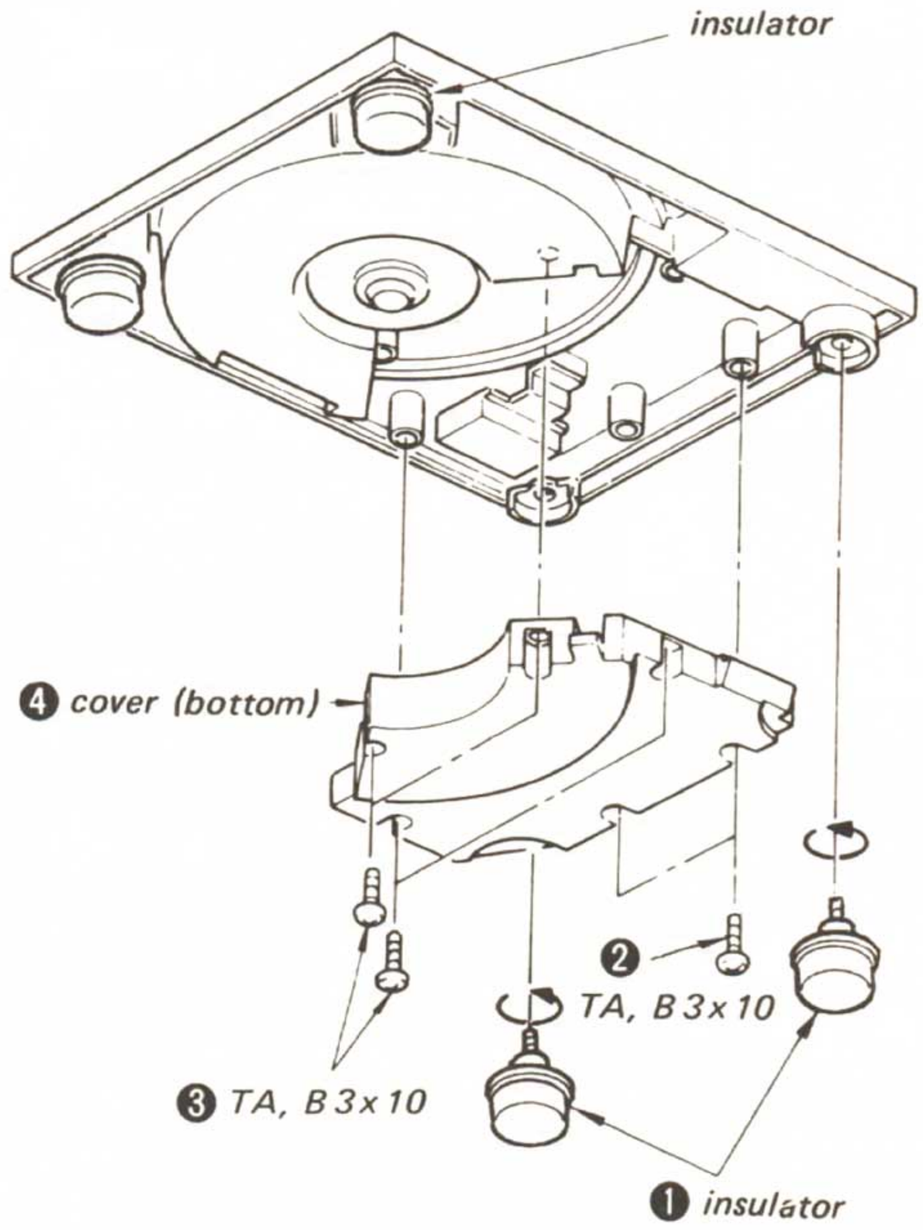
SECTION 2
DISASSEMBLY

Remove the parts in the numerical order.

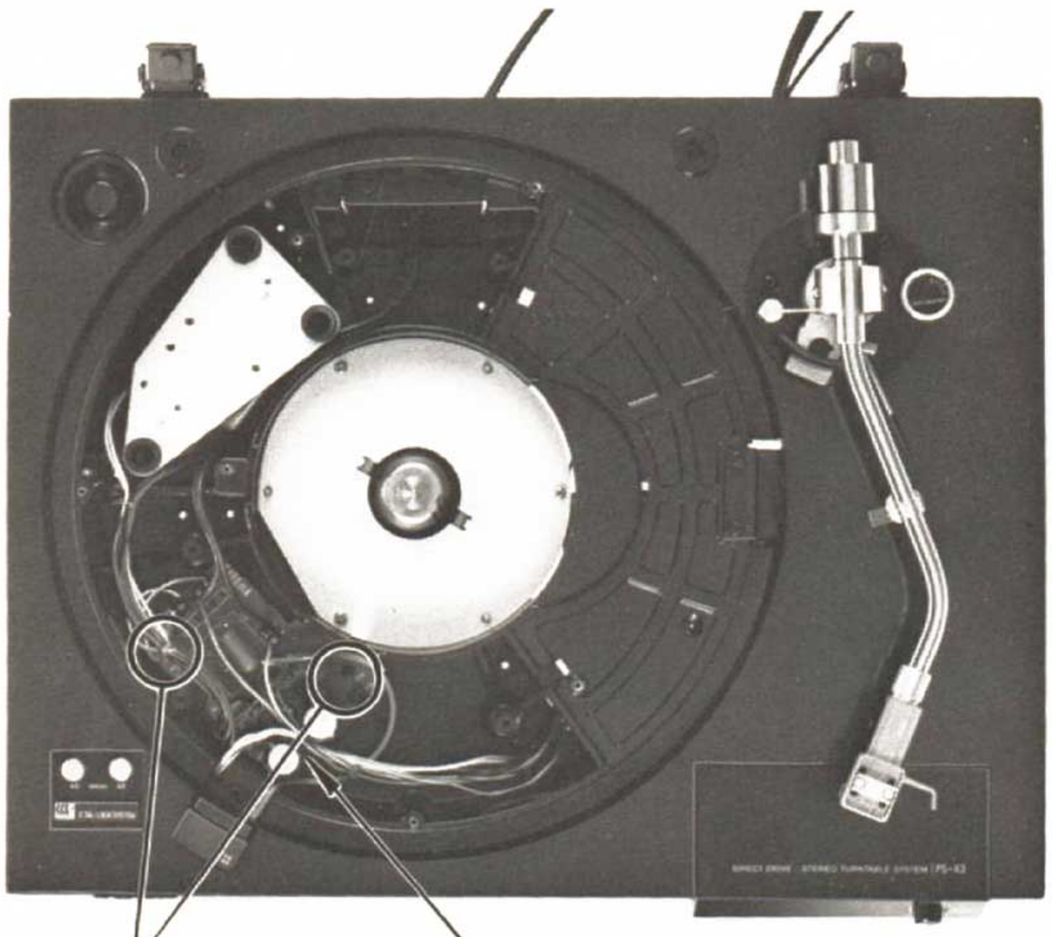
COVER (TOP) REMOVAL



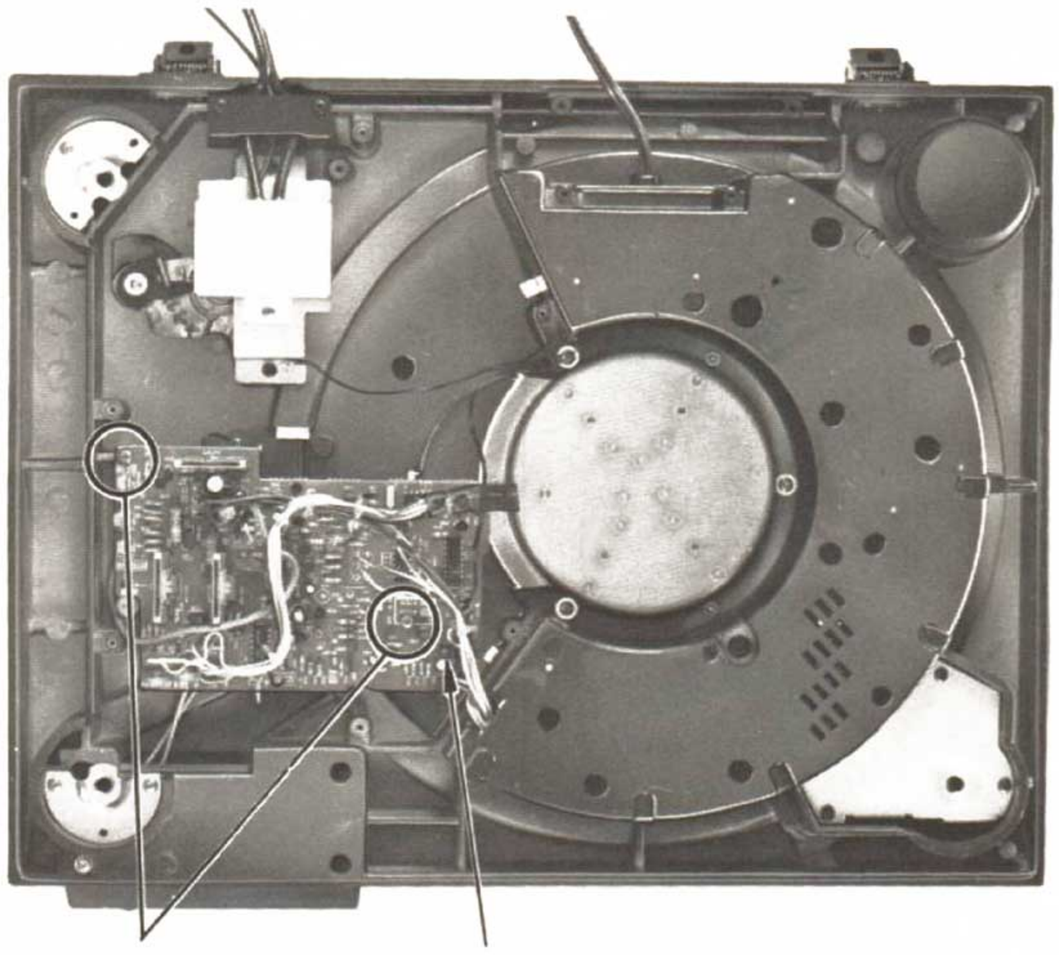
COVER (BOTTOM) REMOVAL



POWER SUPPLY CIRCUIT BOARD REMOVAL

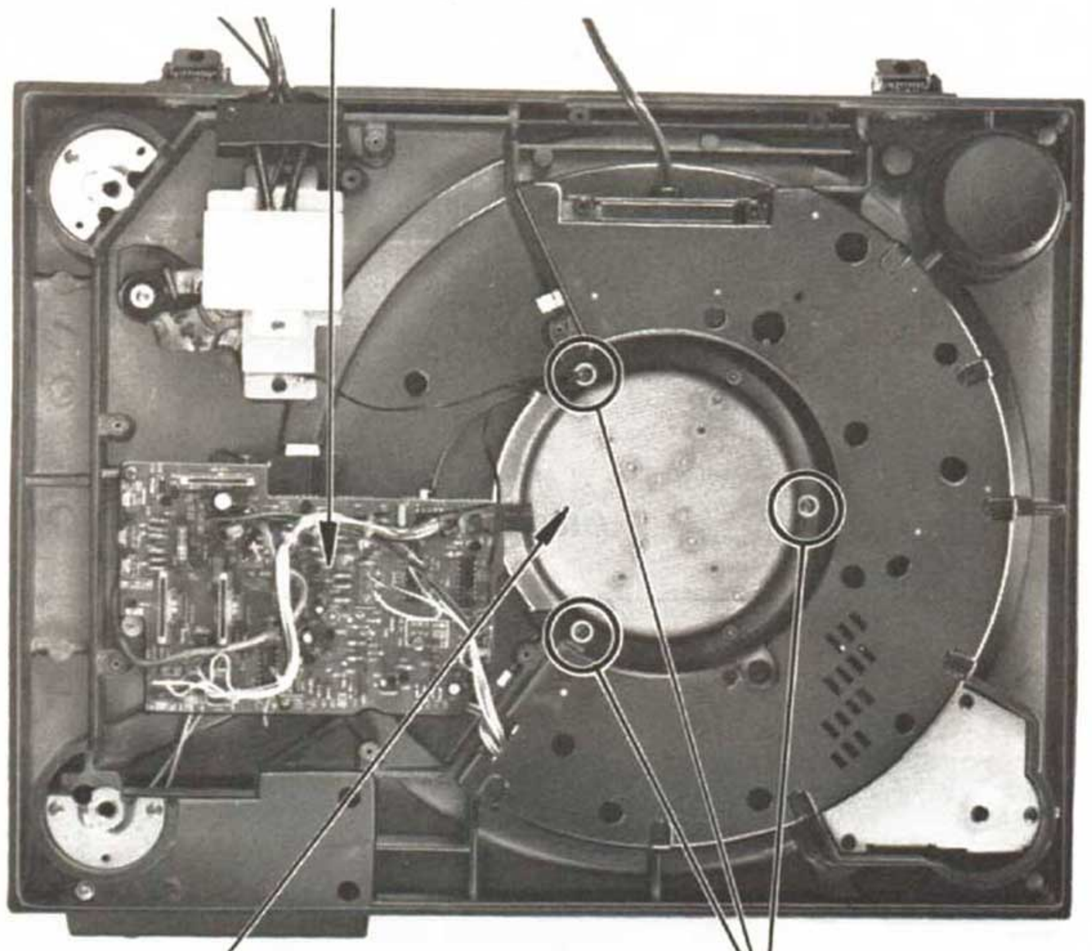


SERVO AMP/PLL CIRCUIT BOARD REMOVAL



MOTOR REMOVAL

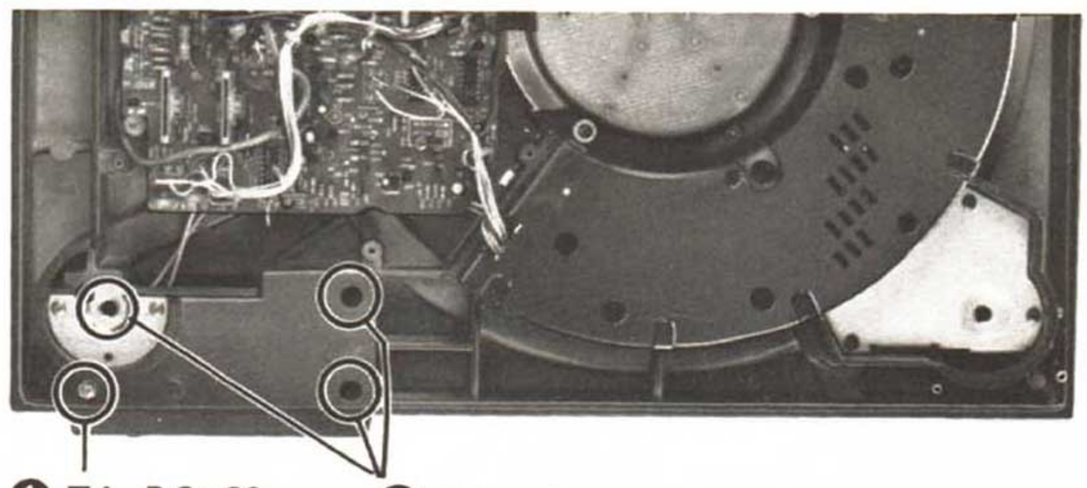
❶ *Unsolder nine motor-lead wires from the servo amp/PLL circuit board. (Refer to page 13.)*



❸ *motor*

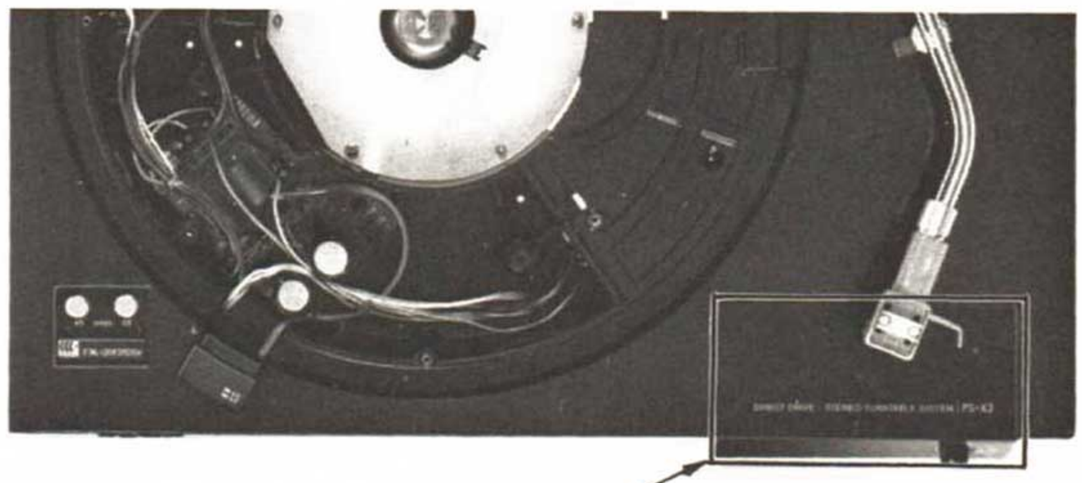
❷ *PSW 3x12*

POWER SWITCH (S1) REMOVAL



❶ *TA, P 3x30 W 4*

❷ *TA, B 3x10*



❸ *control panel*

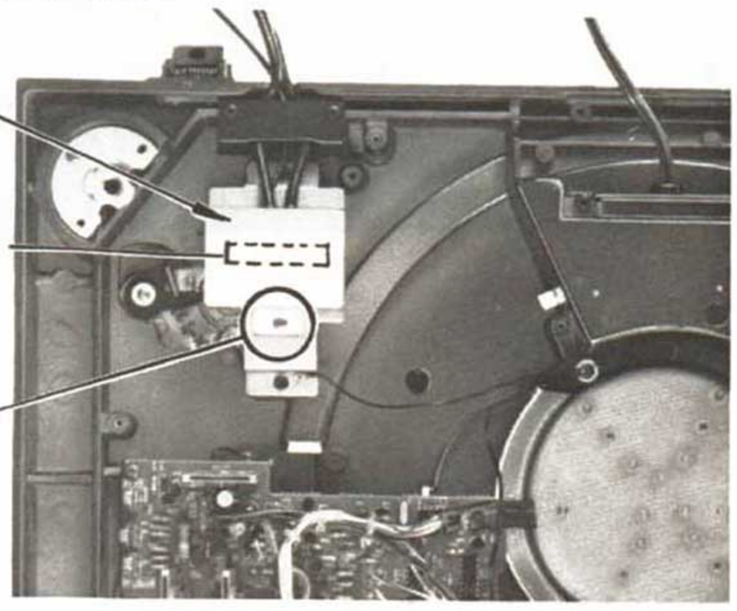
❹ *Power switch (S1) can be removed.*

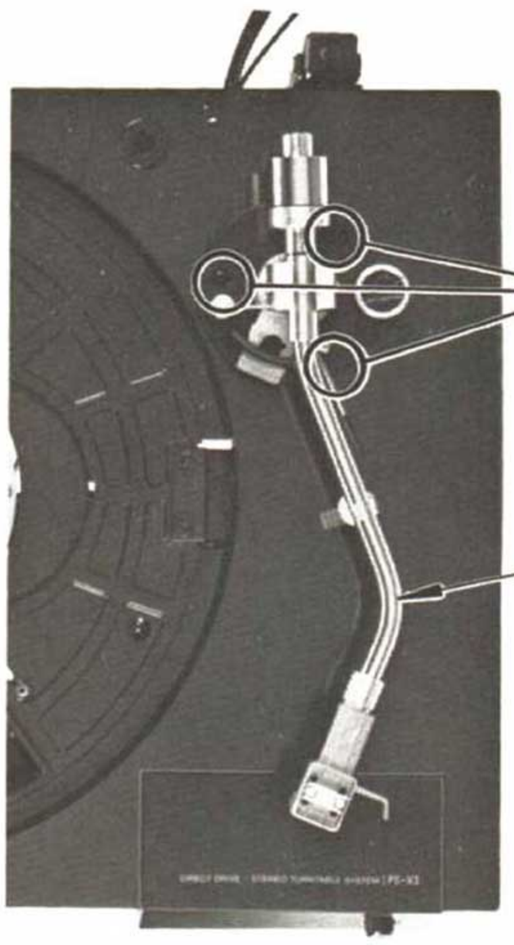
TONEARM REMOVAL

❷ *shield case*

❸ *Unsolder five lead wires on the phono circuit board.*

❶ *B 3x6*



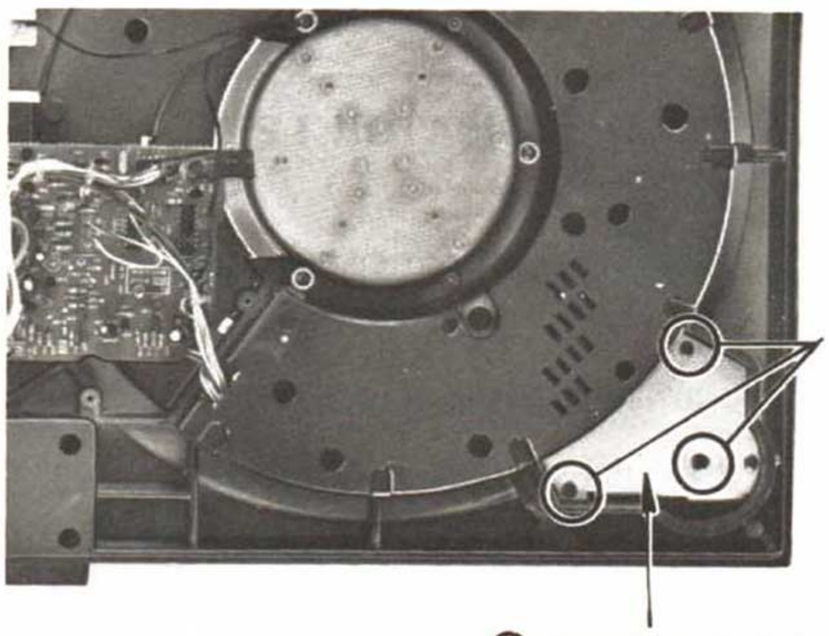


❹ *TA, B 3x10 (black)*

❺ *tonearm*

SPEED SWITCH (S2) REMOVAL

❶ *insulator*

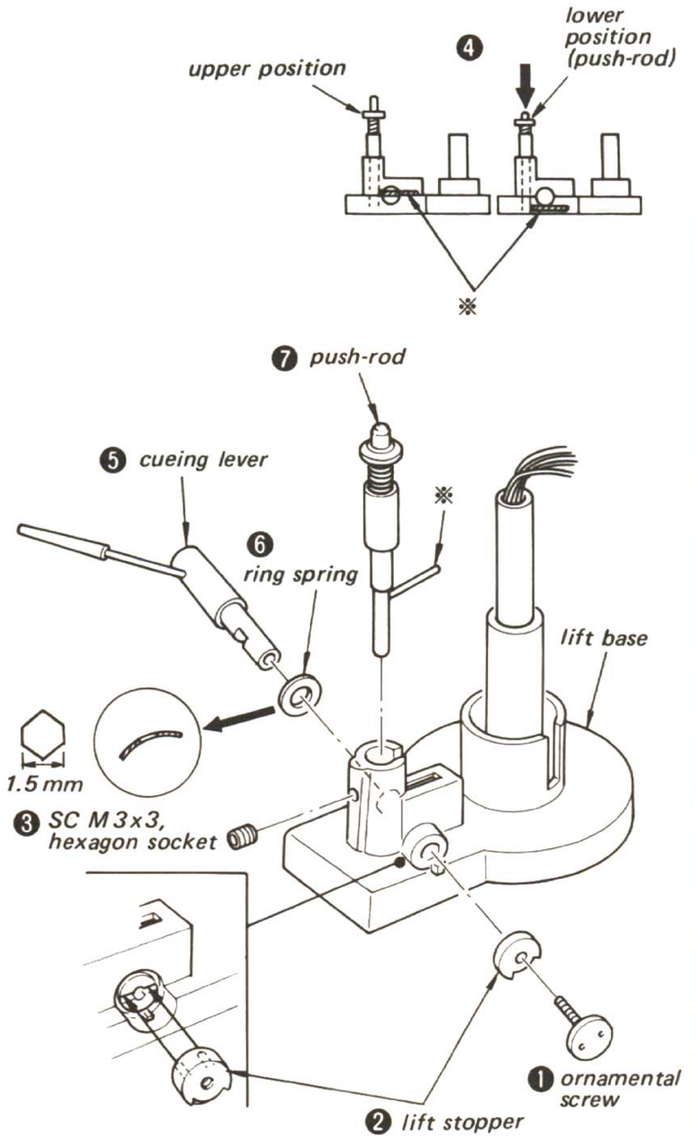


❷ *TA, B 3x10*

❸ *speed selector base*

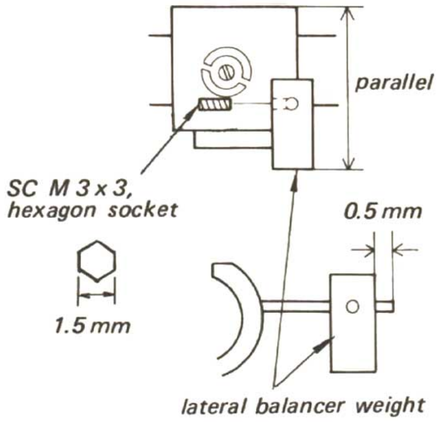
❹ *Speed switch can be removed.*

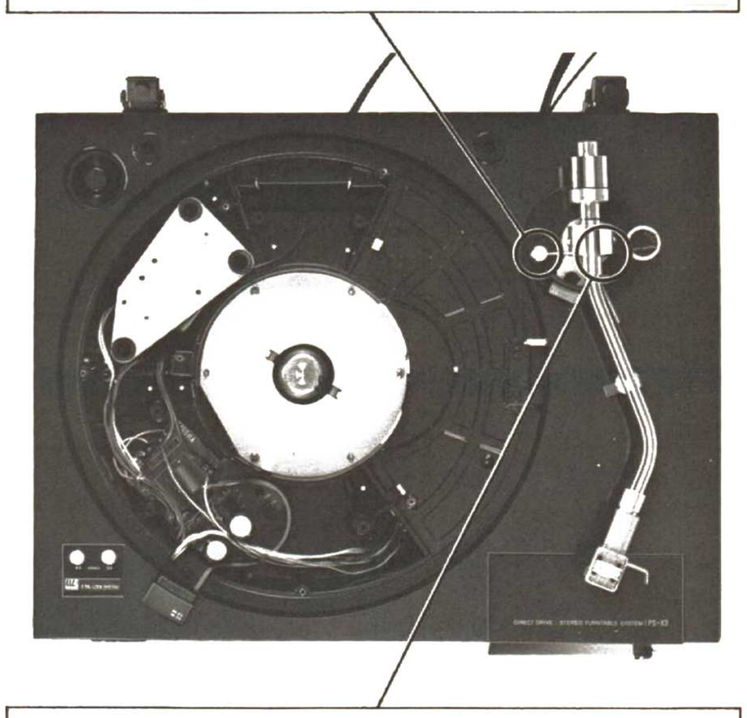
PUSH-ROD REMOVAL



Note: *When installing the lifter cam shaft, take care of the ring spring and lift stopper directions.*

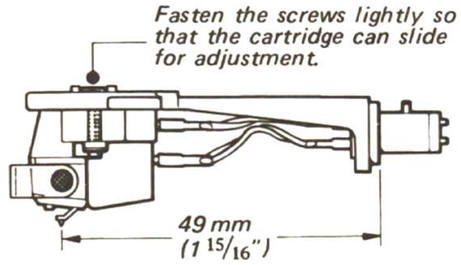
LATERAL BALANCER WEIGHT INSTALLATION



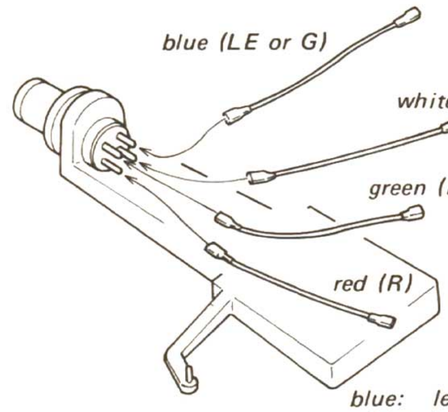


CARTRIDGE INSTALLATION

Install the cartridge into the shell with the mounting screws so that the distance between the shell end and the stylus tip is 49 mm (1 15/16 inches).



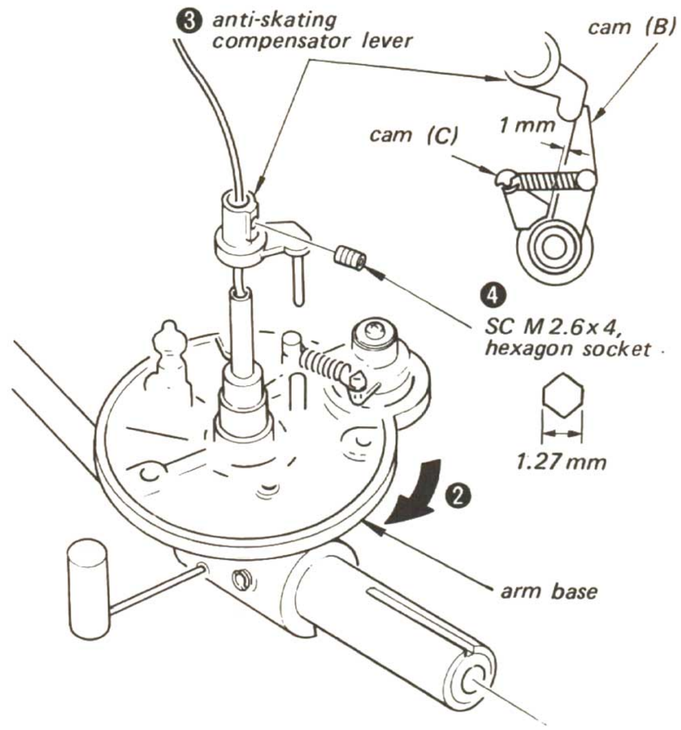
LEAD WIRE CONNECTION



blue: left channel ground
white: left channel signal
green: right channel ground
red: right channel signal

ANTI-SKATING COMPENSATOR LEVER INSTALLATION

1. Set the anti-skating force compensator knob to 0.
2. Turn the arm base fully clockwise.
3. Install the anti-skating compensator lever so that the clearance between the anti-skating compensator cam (A) and cam (B) is 1 mm.

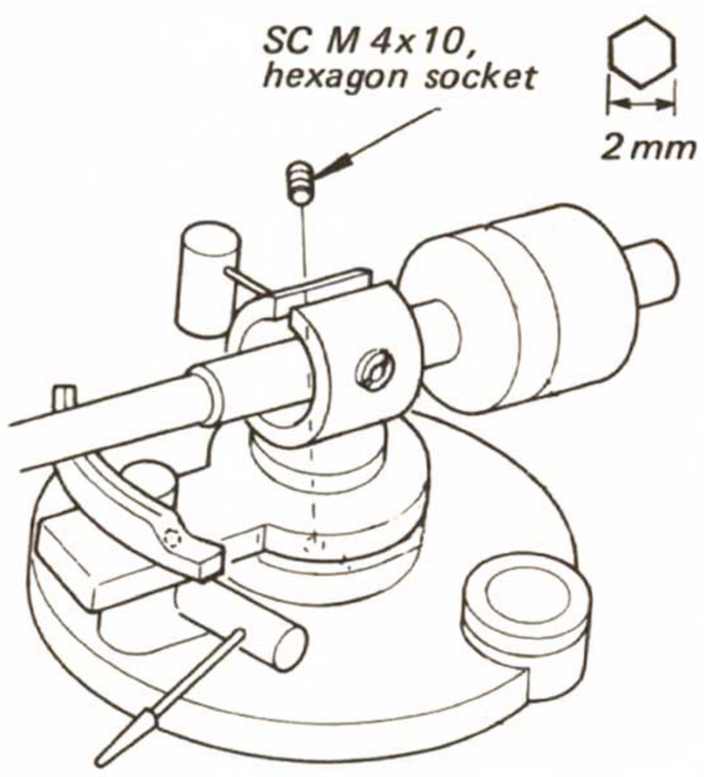


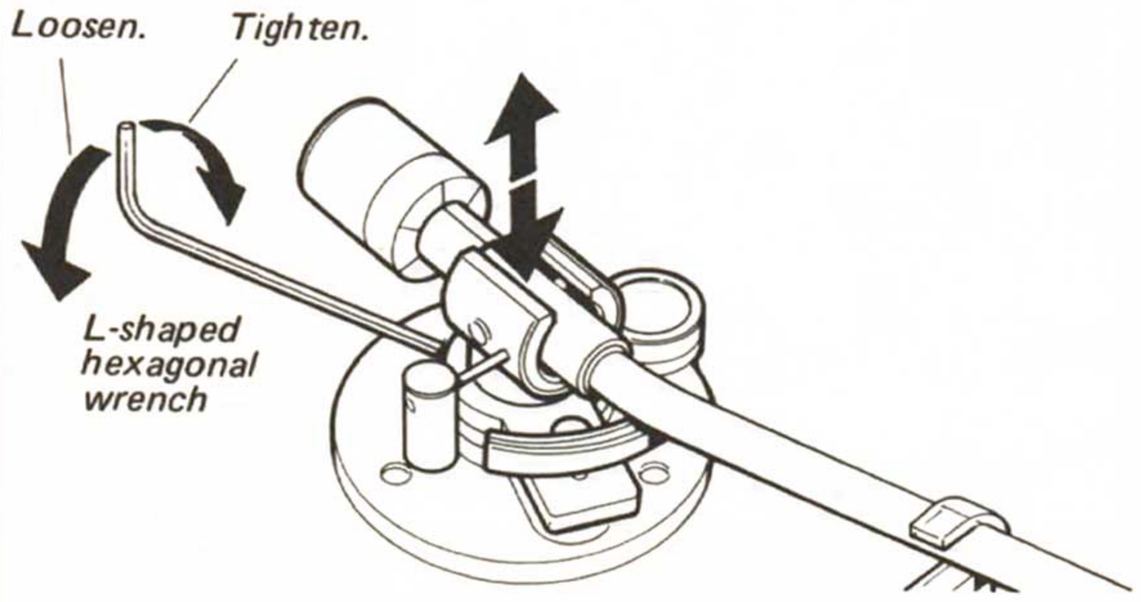
SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

Tonearm Height Adjustment

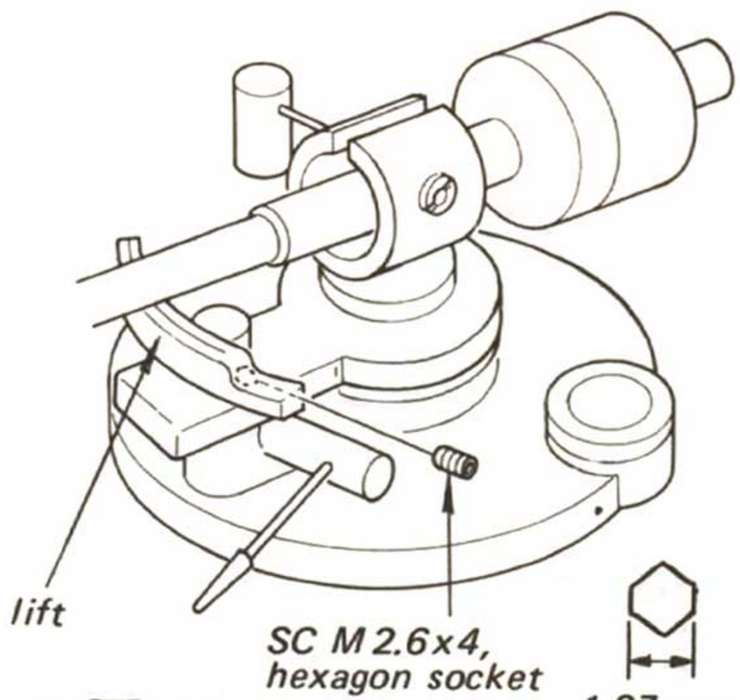
1. With the tonearm lowered on the record, make sure that the tonearm is parallel with the record.
2. If necessary, loosen the set screw and adjust the tonearm height.

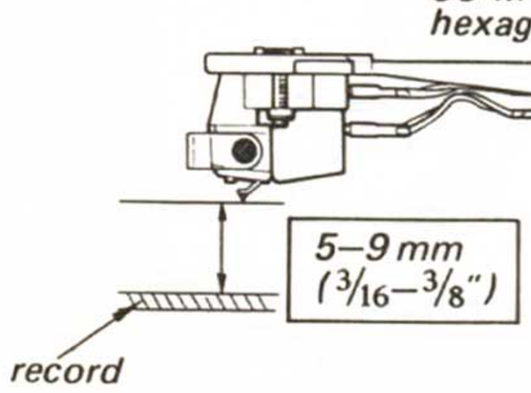




Stylus Height Adjustment

1. Bring the tonearm on the record.
2. Lift the cueing lever up and make sure that the clearance between the stylus tip and the record is 5–9 mm ($3/16$ – $3/8$ inches).
3. If necessary, loosen the set screw and adjust the lift height.





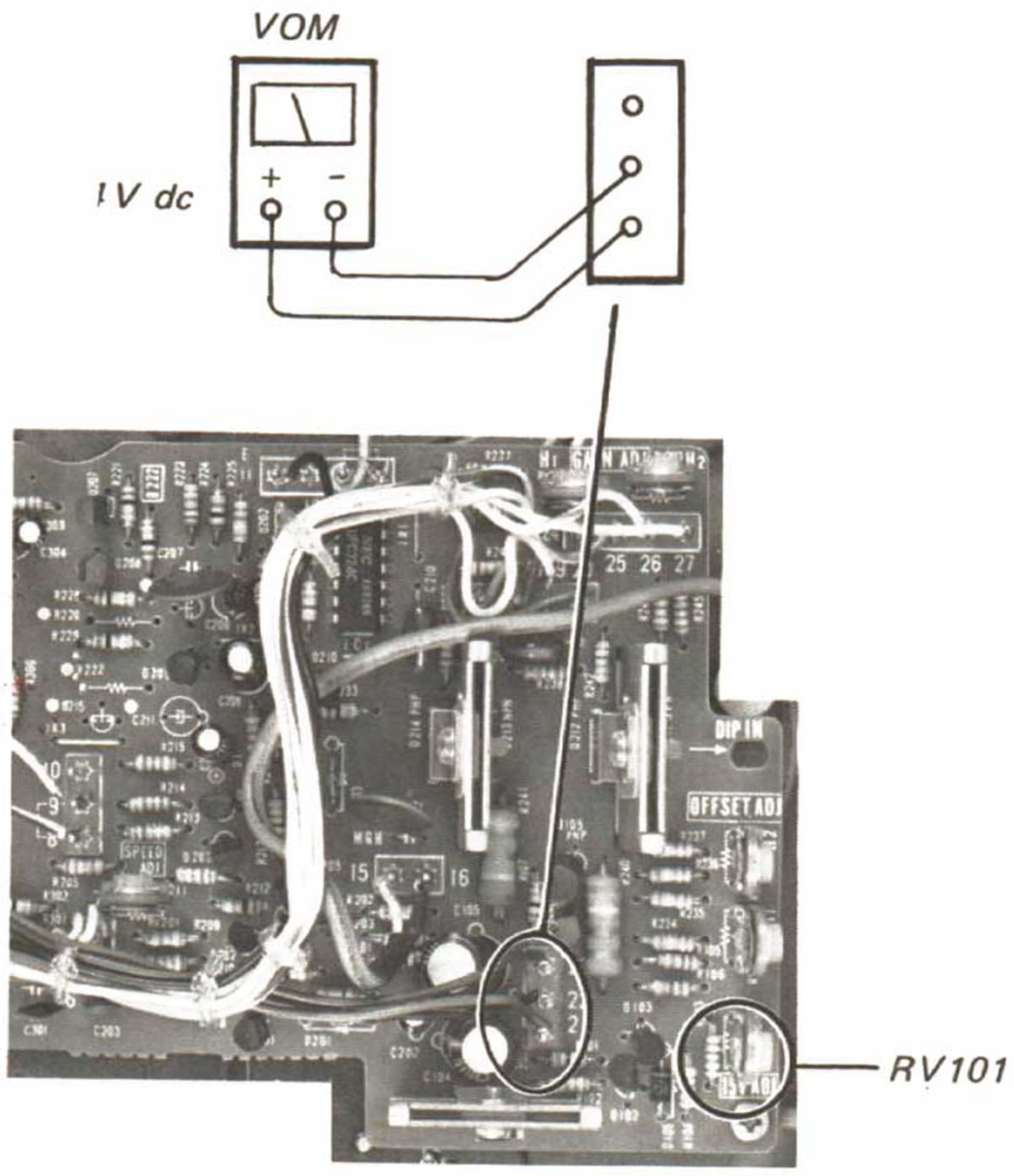
Note: Wait a few seconds for warm-up after the power switch is turned on.

3-2. ELECTRICAL ADJUSTMENTS

B+ (14V) Adjustment

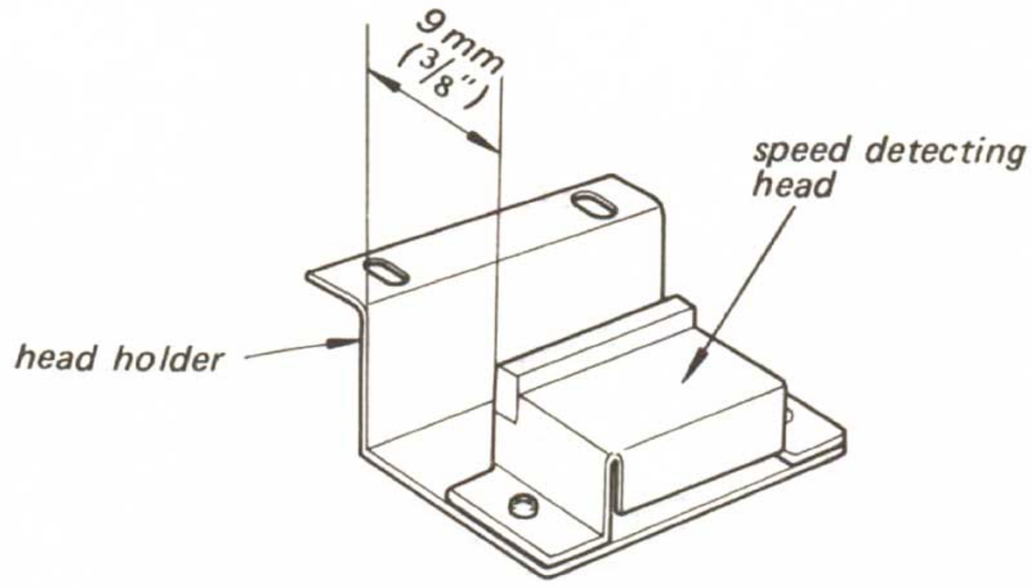
Adjust RV101 for 14V dc reading on VOM.

Note: Wait a few seconds for warm-up after the power switch is turned on.

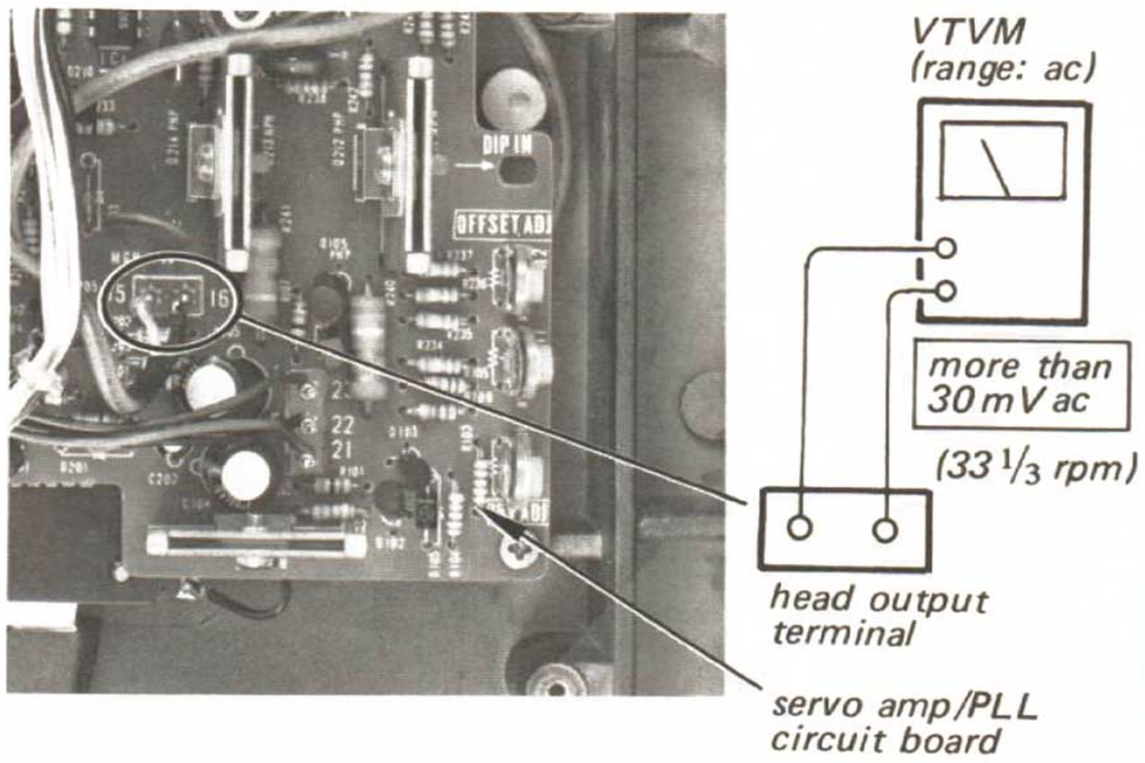


Speed Detecting Head Output Adjustment

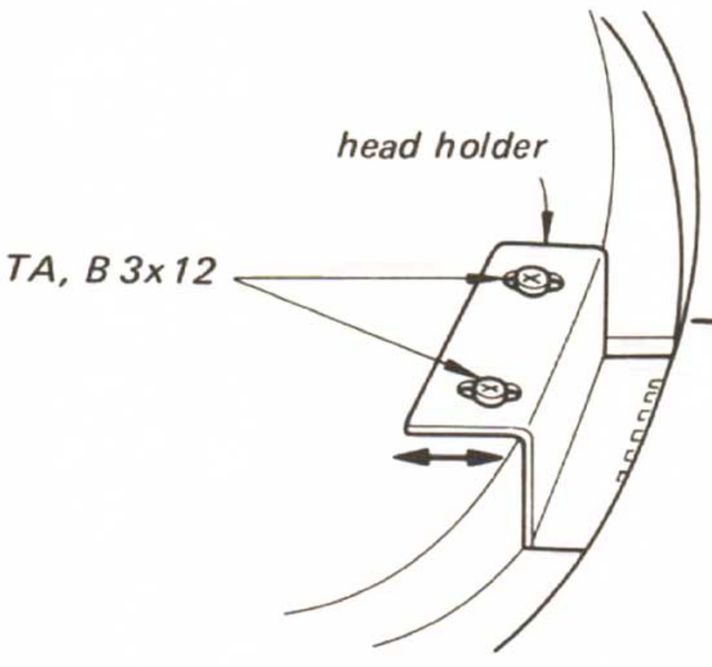
Note: Before this adjustment, set the speed detecting head on the head holder as shown below.

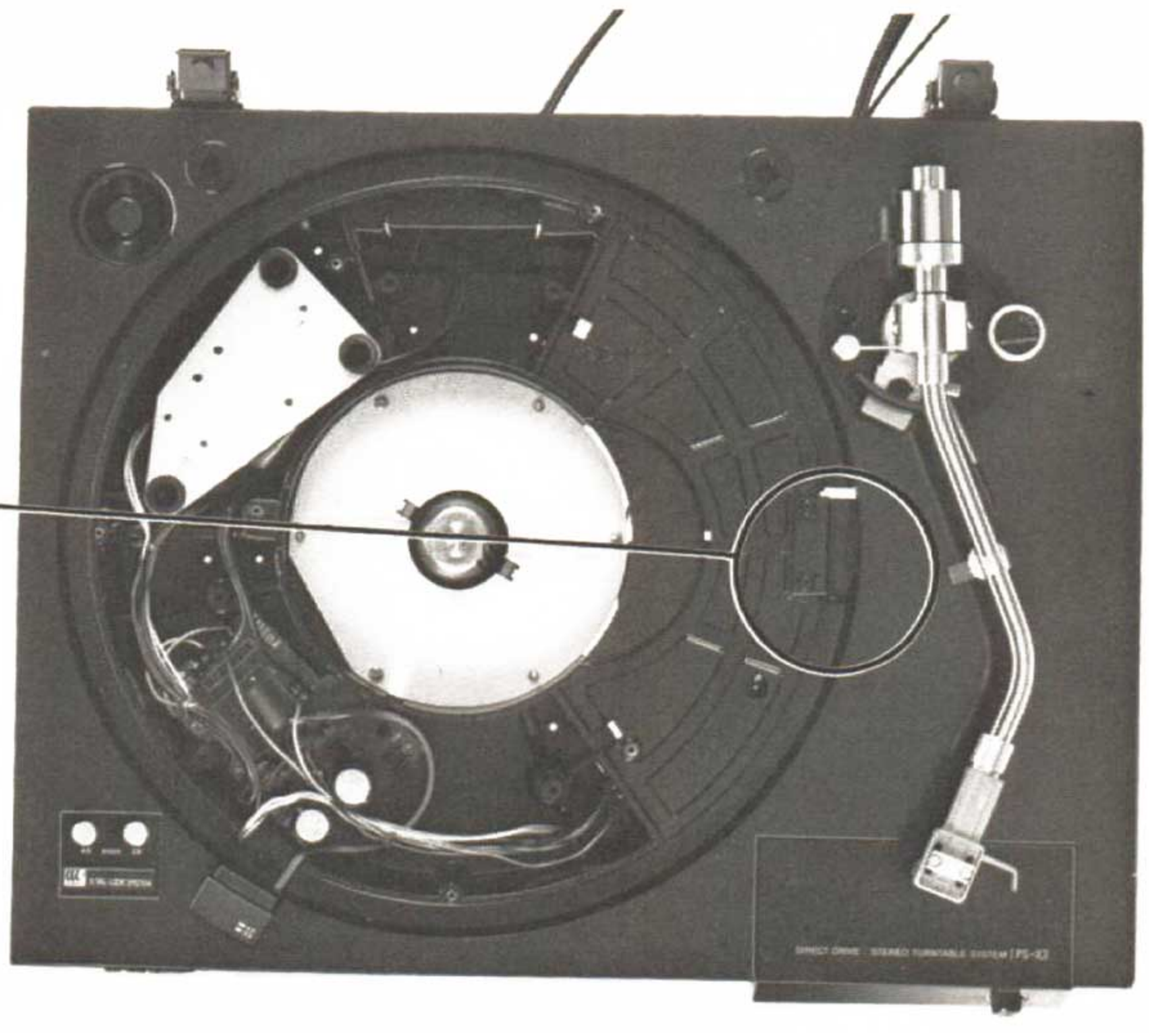


1. Adjust the position of the head holder by loosening B 3 x 12 screws so that the VTVM reads more than 30 mV ac (33 rpm) as shown below.
2. Make sure that the head does not touch the turntable and tighten B 3 x 12 screws securely.



Adjustment Location:

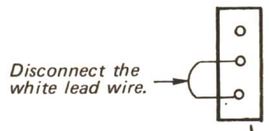




Note: The clearance between the magnet coated rim and the speed detecting head is more than 0.3 mm.

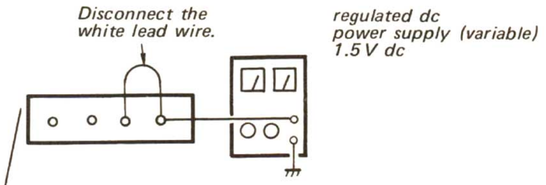
Turntable Speed Adjustment

1. Disconnect the white lead wire and adjust RV201 so that the stroboscope pattern appears stationary.
2. Connect the white lead wire and make sure that the stroboscope pattern appears stationary after changing the turntable speed by hand.

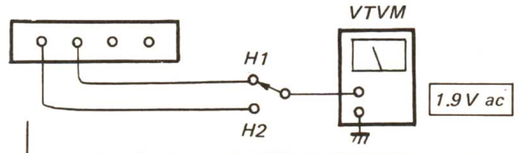


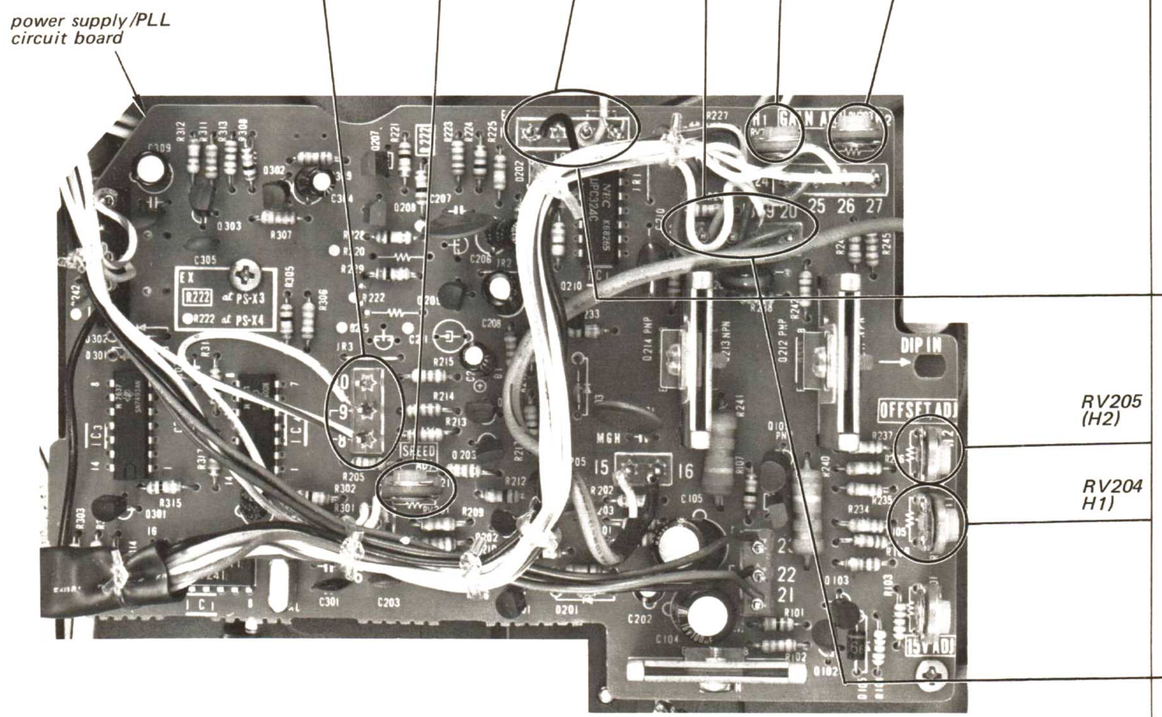
Hall Device Gain Adjustment (33 1/3 rpm)

1. Disconnect the white lead wire and connect the regulated power supply as shown below.

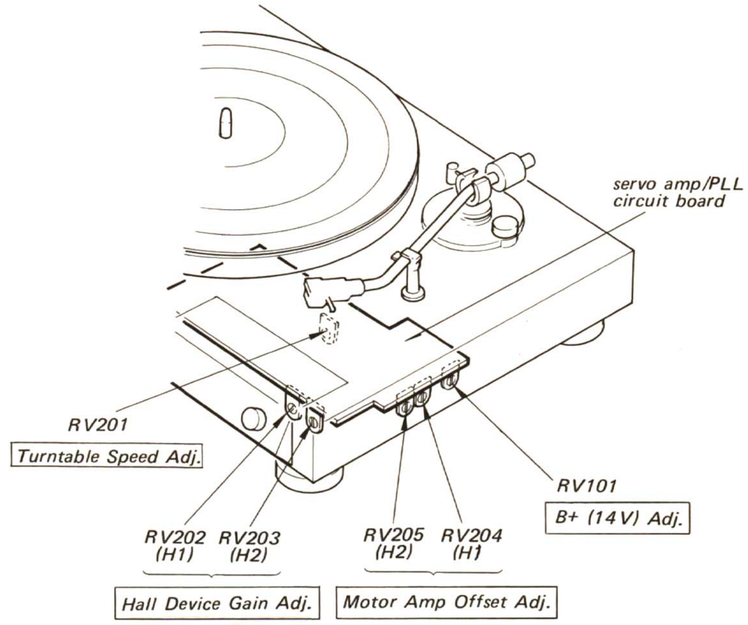


2. Connect VTVM to H1 and adjust RV202 for 1.9 V ac reading on VTVM.
3. Connect VTVM to H2 and adjust RV203 for 1.9 V ac reading on VTVM.



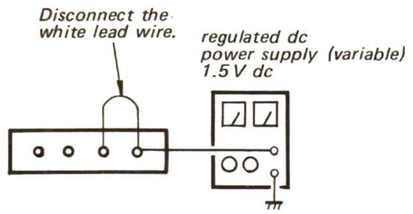


Adjustment Location



Motor Amp Offset Adjustment (33 1/3 rpm)

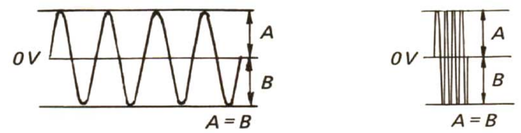
1. Disconnect the white lead wire and connect the regulated power supply as shown below.



2. Connect VTVM or oscilloscope to H1 and adjust RV204 for 0 V dc VTVM reading or the waveform on oscilloscope as shown below.
3. Connect VTVM or oscilloscope to H2 and adjust RV205 for 0 V dc VTVM reading or the waveform on oscilloscope as shown below.

Waveform on Oscilloscope:

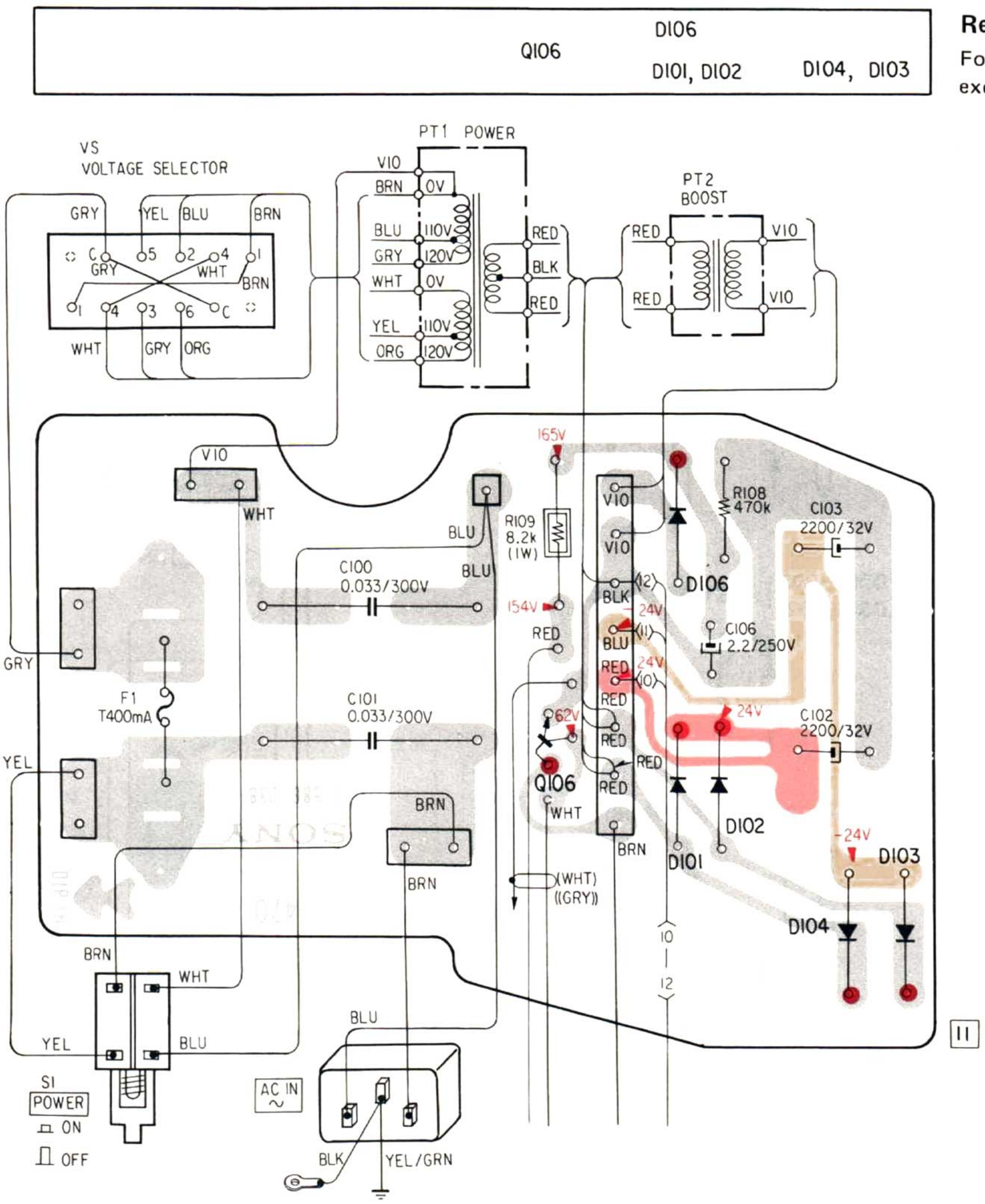
Note: Set the sweep time to longer for easy checking the waveform.



SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM – Power Supply Board –

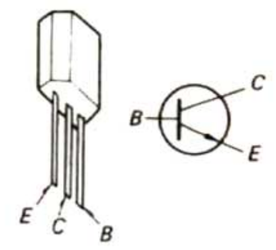
– Conductor Side –



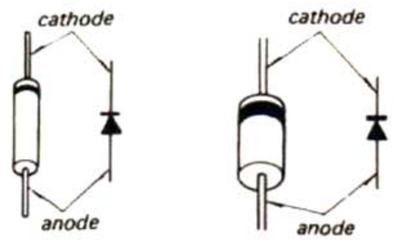
Replacement Semiconductors

For replacement, use semiconductors except in ( ).

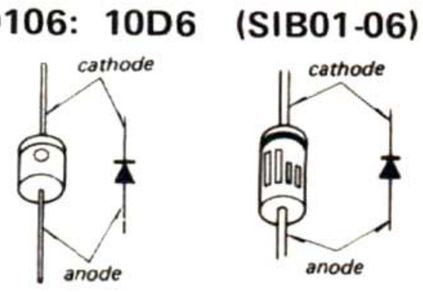
Q106: 2SC926A



D101–106: 10E2 (GP08-D)

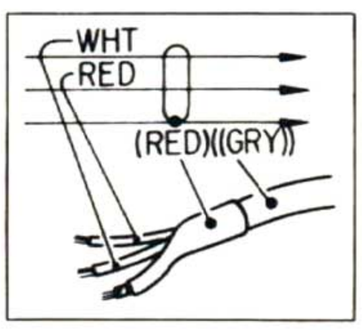


D106: 10D6 (SIB01-06)



Note:

- ○—: parts extracted from the component side.
- ■ : B+ pattern.
- ■ : B– pattern.
- Readings are taken under 33 rpm conditions with a VOM (20 kΩ/V).
- Color code of sleeving over the end of the jacket.



CAUTION ON NEON LAMP

Apply higher dc voltage to the terminal marked by ●. (●side is equivalent to + side shown in diagram.)

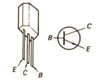
4-2. MOUNTING DIAGRAM

Replacement Semiconductors

For replacement, use semiconductors except in ( ).

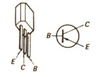
Q106: 2SC926A
Q102, 1.3
Q201–204
Q209, 210
Q301–303 : 2SC634A (2SC633A)

IC1: μPC324C
IC3: M53293P (SN7493AN)
IC4: M53200P (SN7400N)



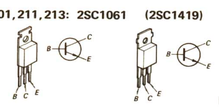
Q104, 205
Q207, 208 : 2SA678 (2SA677)

IC2: MSM5811



D101–104: 10E2 (GP08-D)

Q101, 211, 213: 2SC1061 (2SC1419)

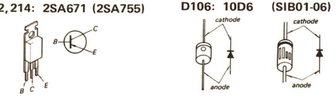


D201–203
D301, 302 : 1S1555 (1T40)

Q105: 2SA684 (2SA773)

Q212, 214: 2SA671 (2SA755)

D106: 10D6 (SIB01-06)

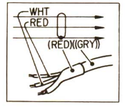


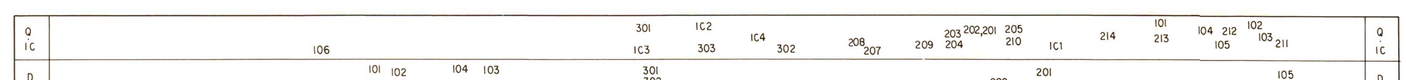
H1, 2: 5GF-MS-07F

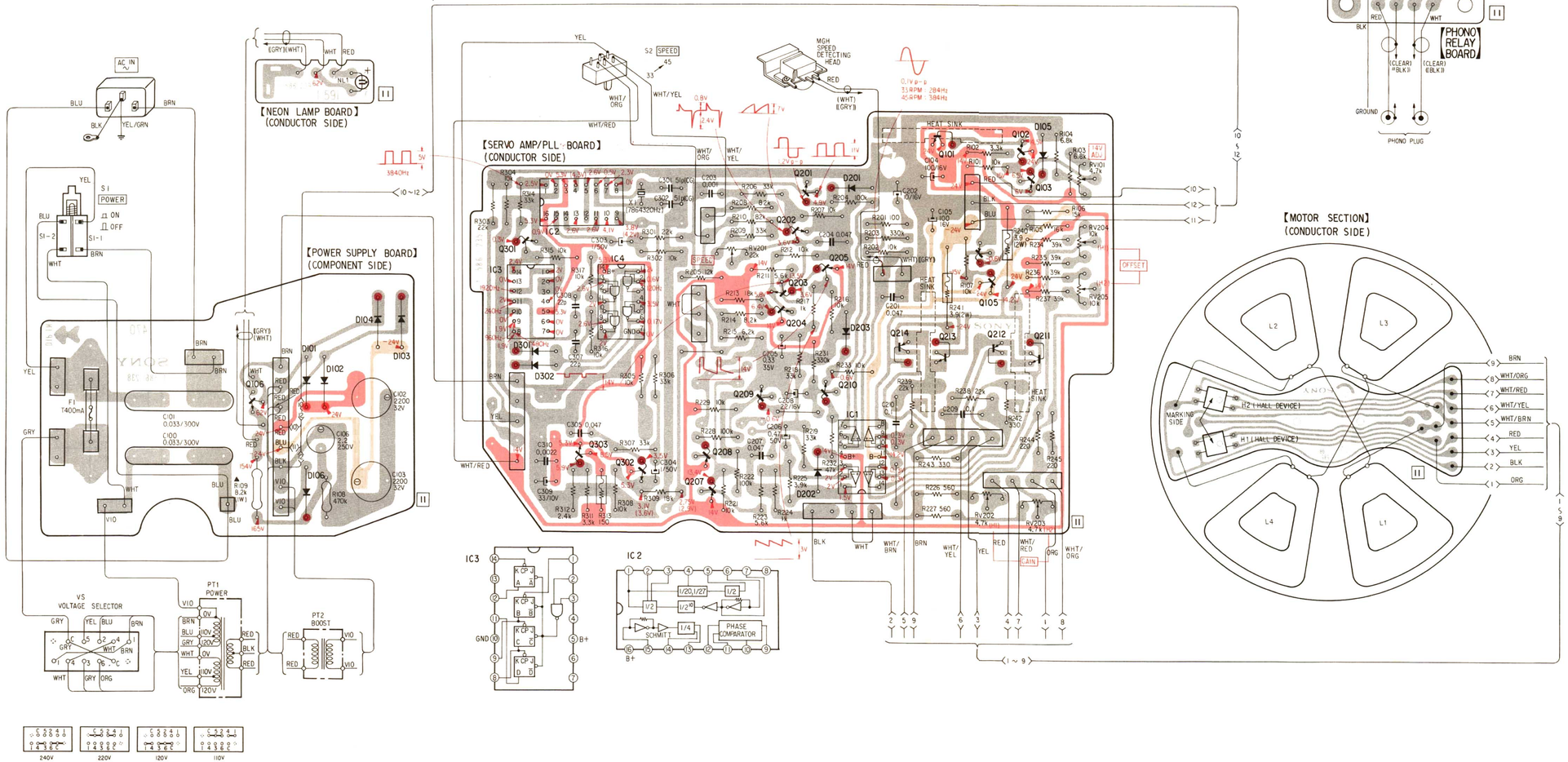
D105: EQB01-06 (EQA01-06)

Note:

- ○—: parts extracted from the component side.
- ●—: parts extracted from the conductor side.
- ▬ : B+ pattern.
- ▲: nonflammable resistor.
- Ⓕ : fusible resistor.
- Readings are taken under 33 rpm condition with a VOM (20 kΩ/V).
  ( ) : 45 rpm
- Color code of sleeving over the end of the jacket.

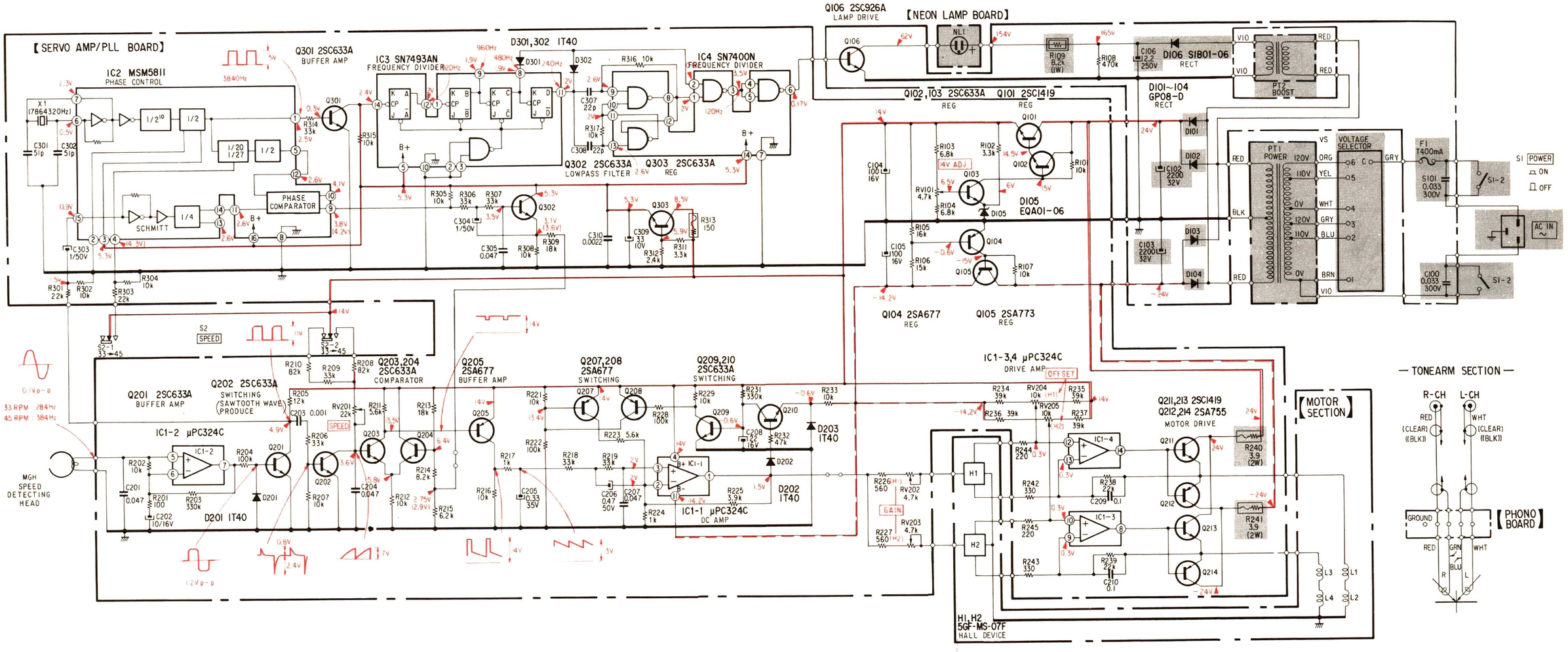


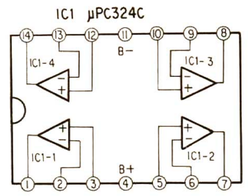




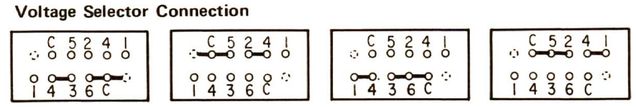
Note: The components identified by shading are critical for safety. Replace only with part number specified.

4-3. SCHEMATIC DIAGRAM





Voltage Selector Connection



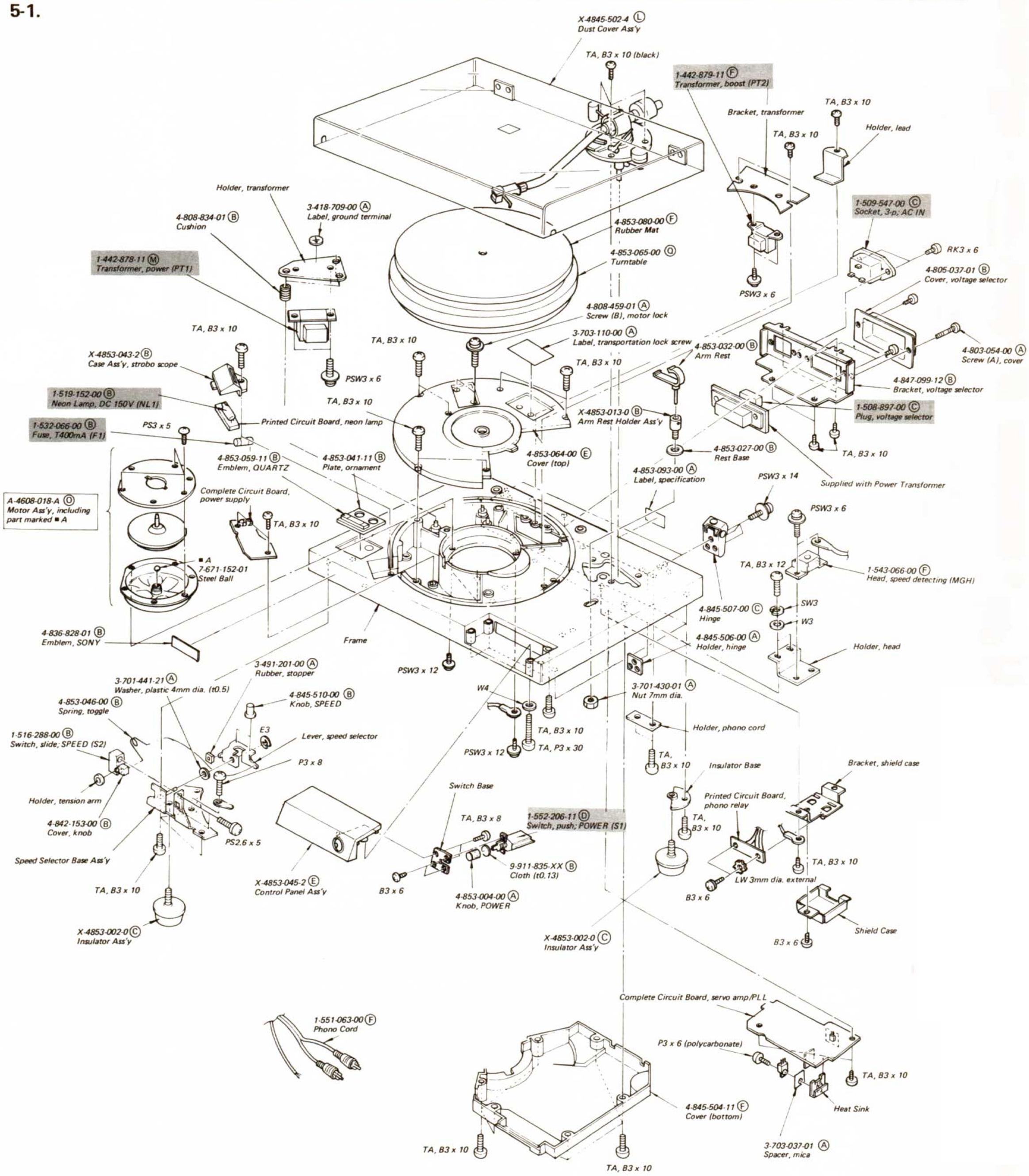
Note:

- All capacitors are in μF unless otherwise noted. pF = μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ = 1000Ω, MΩ = 1000 kΩ
- All adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : B+ bus.
- : panel designation.
- : direct connection to points marked on the chassis.
- : adjustment for repair.
- : B− bus.
- Readings are taken under 33 rpm condition with a VOM (20 kΩ/V).
  ( ) : 45 rpm
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S1	POWER	OFF
S2	SPEED	33

SECTION 5
EXPLODED VIEWS

5-1.



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters (Ⓐ to Ⓩ) are applicable to European models only.

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

5-2.

Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- Circled letters ((A) to (Z)) are applicable to European models only.

SECTION 6
ELECTRICAL PARTS LIST

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

SEMICONDUCTORS

Transistors

Ref. No.	Part No.	Description
⇒ Q101		Ⓓ 2SC1061
⇒ Q102, 103		Ⓑ 2SC634A
⇒ Q104		Ⓒ 2SA678
⇒ Q105		Ⓒ 2SA684
Q106		Ⓒ 2SC926A
⇒ Q201–204		Ⓑ 2SC634A
⇒ Q205, 207, 208		Ⓒ 2SA678
⇒ Q209, 210		Ⓑ 2SC634A
⇒ Q211		Ⓓ 2SC1061
⇒ Q212		Ⓔ 2SA671
⇒ Q213		Ⓓ 2SC1061
⇒ Q214		Ⓔ 2SA671
⇒ Q301–303		Ⓑ 2SC634A

ICs

IC1		Ⓖ μPC324C
IC2		Ⓛ MSM5811
⇒ IC3		Ⓚ M53293P
⇒ IC4		Ⓔ M53200P

Diodes

⇒ D101–104		Ⓑ 10E2
⇒ D105		Ⓑ EQB01-06
⇒ D106		Ⓑ 10D6
⇒ D201–203		Ⓑ 1S1555
⇒ D301, 302		Ⓑ 1S1555
H1, H2		Ⓓ 5GF-MS-07F

TRANSFORMERS

PT1	1-442-878-11	Ⓜ Power
PT2	1-442-879-11	Ⓕ Boost

CAPACITORS

All capacitors are in μF and ceramic unless otherwise noted.
50WV or less are not indicated except for electrolytics.
pF = μμF, elect = electrolytic

Ref. No.	Part No.			
C100, 101	1-108-750-12	Ⓑ 0.033	300V	mylar
C102, 103	1-123-047-11	Ⓒ 2200	32V	elect
C104, 105	1-123-193-11	Ⓑ 100	16V	elect
C106	1-123-027-11	Ⓑ 2.2	250V	elect
C201	1-101-925-11	Ⓐ 0.047		
C202	1-121-651-11	Ⓐ 10	16V	elect
C203	1-102-074-11	Ⓐ 0.001		
C204	1-108-246-12	Ⓐ 0.047		mylar
C205	1-131-212-11	Ⓑ 0.33	35V	tantalum
C206	1-121-951-11	Ⓐ 0.47	50V	elect
C207	1-101-925-11	Ⓐ 0.047		
C208	1-123-191-11	Ⓐ 22	16V	elect
C209, 210	1-108-251-12	Ⓑ 0.1		mylar
C301, 302	1-102-491-11	Ⓐ 51p		
C303	1-121-391-11	Ⓐ 1	50V	elect
C304	1-121-952-11	Ⓐ 1	50V	elect
C305	1-101-925-11	Ⓐ 0.047		
C307, 308	1-102-959-11	Ⓐ 22p		
C309	1-123-194-11	Ⓐ 33	10V	elect
C310	1-101-919-11	Ⓐ 0.0022		

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted. Check schematic diagram for values.

R109	1-213-154-11	Ⓐ 8.2k	1W	metal oxide (nonflammable)
R240, 241	1-217-429-11	Ⓑ 3.9	2W	fusible
R313	1-217-401-11	Ⓑ 150	¼W	fusible
RV101	1-224-644-XX	Ⓑ 4.7k, adjustable		
RV201	1-224-635-00	Ⓑ 22k, adjustable		
RV202,203	1-224-644-XX	Ⓑ 4.7k, adjustable		
RV204,205	1-224-645-XX	Ⓑ 10k, adjustable		

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

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

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

Ref. No.	*Part No.*	*Description*
		SWITCHES
S1	1-552-206-11	Ⓓ Pushbutton, POWER
S2	1-516-288-00	Ⓑ Slide, SPEED
		MISCELLANEOUS
F1	1-532-066-11	Ⓑ Fuse, T400mA
NL1	1-519-152-00	Ⓑ Neon Lamp, DC150V 10mA
MGH	1-543-066-00	Ⓕ Head, speed detecting
X1	1-527-304-00	Ⓕ Crystal 7.864320MHz
	A-4608-018-A	Ⓞ Motor Ass'y
	X-2089-618-1	Ⓑ Lead Ass'y, cartridge (red)
	X-2089-618-2	Ⓑ Lead Ass'y, cartridge (green)
	X-2089-618-3	Ⓑ Lead Ass'y, cartridge (white)
	X-2089-618-4	Ⓑ Lead Ass'y, cartridge (blue)
	1-508-897-00	Ⓒ Plug, voltage selector
	1-509-547-11	Ⓒ Socket, 3-p; AC IN
	1-509-550-00	Ⓕ Connector, head shell
	1-551-063-00	Ⓕ Phono Cord
	1-551-283-11	Ⓑ Lead, with ground plate

ACCESSORIES & PACKING MATERIALS

Part No.	*Description*
X-4853-006-2	Ⓔ Screw Ass'y, carridge
including;	
2-054-625-00	Ⓐ Screw (C), cartridge
2-056-532-00	Ⓑ Screw (A), cartridge
2-224-081-01	Ⓑ Screw (E), cartridge
2-224-018-11	Ⓑ Screw (E), cartridge
3-701-614-00	Ⓐ Bag, plastic
4-815-655-01	Ⓐ Nut (A), cartridge
4-853-038-01	Ⓒ Holder, screw
X-4853-018-0	Ⓒ Sub-weight Ass'y
3-701-613-00	Ⓐ Bag, plastic; sub-weight, wrench
3-701-616-00	Ⓐ Bag, plastic; shell
3-701-623-00	Ⓐ Bag, plastic
3-701-630-00	Ⓐ Bag, plastic; printed matters
3-701-806-01	Ⓐ Adaptor, 45 rpm
3-770-313-11	Ⓔ Manual, instruction
3-793-395-11	Ⓑ Gauge, tracking-error check
3-849-790-00	Ⓑ Bag, protection
4-844-060-00	Ⓒ Bag, protection; set
4-848-005-00	Ⓒ Box, accessory
4-848-006-00	Ⓑ Bag, accessory
4-848-012-00	Ⓐ Board, protection
4-853-086-00	Ⓐ Wrench, hexagonal
4-853-836-00	Ⓒ Cushion
4-853-837-00	Ⓕ Carton
4-853-839-00	Ⓕ Frame

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

Sony Corporation

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